

**FCC 47 CFR PART 27 SUBPART L  
&  
INDUSTRY CANADA RSS-130 & RSS-139**

**For**

**Computer**

**FCC Model: AIM8Q, AIM8Qxxxxxxxxxxxxxxxxx,  
AIM-x5BTxxxxxxxxxxx(where "x" may be any alphanumeric character,  
"- " or blank for marketing purpose and no impact safety related critical  
components and constructions)**

**IC Model: AIM8Q, AIM-25BT, AIM-35BT, AIM-55BT, AIM-65BT, AIM-75BT**

**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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**Issued Date: June 8, 2017**



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**Revision History**

Rev.	Issue Date	Revisions	Effect Page	Revised By
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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:** AIM8Q, AIM8Qxxxxxxxxxxxxxxxxxx,  
 AIM-x5BTxxxxxxxxxxx(where "x" may be any alphanumeric  
 character, "-" or blank for marketing purpose and no impact  
 safety related critical components and constructions)

**IC Model:** AIM8Q, AIM-25BT, AIM-35BT, AIM-55BT, AIM-65BT,  
 AIM-75BT

**Date of Test:** April 12 ~ May 16, 2017

APPLICABLE STANDARDS	
Standard	TEST RESULT
FCC Part 27, Subpart C, L, FCC Part 2 & RSS-130 Issue 1 October 2013 & RSS-139 Issue 3 July 2015	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*





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Sam Chuang  
 Manager  
 Compliance Certification Services Inc.

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Timmy Wang  
 Engineer  
 Compliance Certification Services Inc.

## 2. EUT DESCRIPTION

<b>Product</b>	Computer	
<b>FCC Model No.</b>	AIM8Q, AIM8Qxxxxxxxxxxxxxxxx, AIM-x5BTxxxxxxxxxxxxx(where "x" may be any alphanumeric character, "-" or blank for marketing purpose and no impact safety related critical components and constructions)	
<b>IC Model No.</b>	AIM8Q, AIM-25BT, AIM-35BT, AIM-55BT, AIM-65BT, AIM-75BT	
<b>Model Discrepancy</b>	All models are electrically identical, different model names are for marketing purpose	
<b>Trade Name</b>	ADVANTECH	
<b>Received Date</b>	April 6, 2017	
<b>Power Supply</b>	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, 4900mAh, 18.62Wh	
<b>Modulation Technology</b>	LTE Band 17	QPSK, 16QAM
	LTE Band 4	QPSK, 16QAM
<b>Frequency Range</b>	LTE Band 17 Channel Bandwidth: 5MHz	706.5MHz ~ 713.5MHz
	LTE Band 17 Channel Bandwidth: 10MHz	709MHz ~ 711MHz
	LTE Band 4 Channel Bandwidth: 1.4MHz	1710.7MHz ~1754.2MHz
	LTE Band 4 Channel Bandwidth: 3MHz	1711.5MHz ~ 1753.4MHz
	LTE Band 4 Channel Bandwidth: 5MHz	1712.5MHz ~1752.5MHz
	LTE Band 4 Channel Bandwidth: 10MHz	1715.0MHz ~1750.0MHz
	LTE Band 4 Channel Bandwidth: 15MHz	1717.5MHz ~ 1747.5MHz
	LTE Band 4 Channel Bandwidth: 20MHz	1720MHz ~1745MHz
<b>Maximum EIRP Power</b>	LTE Band 17 Channel Bandwidth: 5MHz	QPSK: 29.62 dBm 16QAM: 29.93 dBm
	LTE Band 17 Channel Bandwidth: 10MHz	QPSK : 29.82 dBm 16QAM: 29.96 dBm

Maximum EIRP Power	LTE Band 4 Channel Bandwidth: 1.4MHz	QPSK: 29.79 dBm 16QAM: 29.98 dBm
	LTE Band 4 Channel Bandwidth: 3MHz	QPSK: 29.72 dBm 16QAM: 29.76 dBm
	LTE Band 4 Channel Bandwidth: 5MHz	QPSK: 29.73 dBm 16QAM: 29.73 dBm
	LTE Band 4 Channel Bandwidth: 10MHz	QPSK: 29.85 dBm 16QAM: 29.99 dBm
	LTE Band 4 Channel Bandwidth: 15MHz	QPSK: 24.11 dBm 16QAM: 24.80 dBm
	LTE Band 4 Channel Bandwidth: 20MHz	QPSK: 23.19 dBm 16QAM: 22.79 dBm
<b>Antenna Specification</b>	Dipole Antenna LTE Band 4: Gain: -2.67dBi LTE Band 17: Gain: -4.21dBi	

**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: AIM8Q) had been tested under operating condition.

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

#### LTE Band 17: 704 MHz ~ 716 MHz

Three channels had been tested for each channel bandwidth.

Channel Bandwidth	5MHz		10MHz	
	Channel	Frequency(MHz)	Channel	Frequency(MHz)
Low channel (L)	23755	706.5	23780	709.0
Middle channel (M)	23790	710.0	23790	710.0
High channel (H)	23825	713.5	23800	711.0

#### LTE Band 4: 1710MHz ~ 1755MHz

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)	19957	1710.7	19965	1711.5	19975	1712.5
Middle channel (M)	20175	1732.5	20175	1732.5	20175	1732.5
High channel (H)	20393	1754.3	20384	1753.4	20375	1752.5
Channel Bandwidth	10MHz		15MHz		20MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low channel (L)	20000	1715.0	20025	1717.5	20000	1715.0
Middle channel (M)	20175	1732.5	20175	1732.5	20175	1732.5
High channel (H)	20350	1750.0	20325	1747.5	20350	1750.0

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
Band4	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
Band17	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

### 3.1.1 The worst mode of measurement

For LTE Band 4

Radiated Emission Measurement	
<b>Test Condition</b>	<b>Band edge, Emission for Unwanted and Fundamental</b>
<b>Voltage/Hz</b>	<b>120V/60Hz</b>
<b>Test Mode</b>	<b>Mode 1:EUT power by AC adapter via power cable. Mode 2:EUT power by Battery.</b>
<b>Worst Mode</b>	<input checked="" type="checkbox"/> <b>Mode 1</b> <input type="checkbox"/> <b>Mode 2</b> <input type="checkbox"/> <b>Mode 3</b> <input type="checkbox"/> <b>Mode 4</b>
<b>Position</b>	<input type="checkbox"/> Placed in fixed position. <input checked="" type="checkbox"/> Placed in fixed position at X-Plane (E2-Plane) <input type="checkbox"/> Placed in fixed position at Y-Plane (E1-Plane) <input type="checkbox"/> Placed in fixed position at Z-Plane (H-Plane)

Radiated Emission Measurement Below 1G	
<b>Test Condition</b>	<b>Radiated Emission Below 1G</b>
<b>Voltage/Hz</b>	<b>120V/60Hz</b>
<b>Test Mode</b>	<b>Mode 1:EUT power by AC adapter via power cable. Mode 2:EUT power by Battery.</b>
<b>Worst Mode</b>	<input checked="" type="checkbox"/> <b>Mode 1</b> <input type="checkbox"/> <b>Mode 2</b> <input type="checkbox"/> <b>Mode 3</b> <input type="checkbox"/> <b>Mode 4</b>

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.



**For LTE Band 17**

<b>Radiated Emission Measurement</b>	
<b>Test Condition</b>	<b>Band edge, Emission for Unwanted and Fundamental</b>
<b>Voltage/Hz</b>	<b>120V/60Hz</b>
<b>Test Mode</b>	<b>Mode 1:EUT power by AC adapter via power cable. Mode 2:EUT power by Battery.</b>
<b>Worst Mode</b>	<input checked="" type="checkbox"/> <b>Mode 1</b> <input type="checkbox"/> <b>Mode 2</b> <input type="checkbox"/> <b>Mode 3</b> <input type="checkbox"/> <b>Mode 4</b>
<b>Position</b>	<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)

<b>Radiated Emission Measurement Below 1G</b>	
<b>Test Condition</b>	<b>Radiated Emission Below 1G</b>
<b>Voltage/Hz</b>	<b>120V/60Hz</b>
<b>Test Mode</b>	<b>Mode 1:EUT power by AC adapter via power cable. Mode 2:EUT power by Battery.</b>
<b>Worst Mode</b>	<input checked="" type="checkbox"/> <b>Mode 1</b> <input type="checkbox"/> <b>Mode 2</b> <input type="checkbox"/> <b>Mode 3</b> <input type="checkbox"/> <b>Mode 4</b>

*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 (Z-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, Chungshen 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	
Canada	Industry Canada	3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform	 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 17

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
17	10	23780	709.0	QPSK	1	0	0	23.0	0.19953
					1	24	0	22.8	0.19055
					1	49	0	22.7	0.18621
					25	0	1	22.0	0.15849
					25	12	1	21.9	0.15488
					25	24	1	21.7	0.14791
					50	0	1	22.0	0.15849
				16QAM	1	0	1	22.1	0.16218
					1	24	1	21.8	0.15136
					1	49	1	21.8	0.15136
					25	0	2	21.0	0.12589
					25	12	2	20.8	0.12023
					25	24	2	20.8	0.12023
					50	0	2	20.9	0.12303
		23790	710.0	QPSK	1	0	0	23.1	0.20417
					1	24	0	23.0	0.19953
					1	49	0	22.8	0.19055
					25	0	1	22.1	0.16218
					25	12	1	22.1	0.16218
					25	24	1	22.0	0.15849
					50	0	1	22.1	0.16218
				16QAM	1	0	1	22.2	0.16596
					1	24	1	22.1	0.16218
					1	49	1	21.8	0.15136
					25	0	2	21.2	0.13183
					25	12	2	21.0	0.12589
					25	24	2	20.9	0.12303
					50	0	2	21.1	0.12882
		23800	711.0	QPSK	1	0	0	23.0	0.19953
					1	24	0	22.9	0.19498
1	49				0	22.7	0.18621		
25	0				1	22.1	0.16218		
25	12				1	22.0	0.15849		
25	24				1	21.9	0.15488		
50	0				1	21.8	0.15136		
16QAM	1			0	1	22.0	0.15849		
	1			24	1	22.0	0.15849		
	1			49	1	21.8	0.15136		
	25			0	2	21.0	0.12589		
	25			12	2	21.0	0.12589		
	25			24	2	20.8	0.12023		
	50			0	2	21.0	0.12589		

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
17	5	23755	706.5	QPSK	1	0	0	23.0	0.19724
					1	12	0	22.8	0.18836
					1	24	0	22.7	0.18408
					12	0	1	22.0	0.15668
					12	6	1	21.9	0.15311
					12	11	1	21.7	0.14622
		25	0	1	22.0	0.15668			
		16QAM	1	0	1	22.1	0.16032		
			1	12	1	21.8	0.14962		
			1	24	1	21.8	0.14962		
			12	0	2	21.0	0.12445		
			12	6	2	20.8	0.11885		
			12	11	2	20.8	0.11885		
		25	0	2	20.9	0.12162			
		23790	710.0	QPSK	1	0	0	23.1	0.20184
					1	12	0	23.0	0.19724
					1	24	0	22.8	0.18836
					12	0	1	22.1	0.16032
	12				6	1	22.1	0.16032	
	12				11	1	22.0	0.15668	
	25	0	1	22.1	0.16032				
	16QAM	1	0	1	22.2	0.16406			
		1	12	1	22.1	0.16032			
		1	24	1	21.8	0.14962			
		12	0	2	21.2	0.13032			
		12	6	2	21.0	0.12445			
		12	11	2	20.9	0.12162			
	25	0	2	21.1	0.12882				
	23825	713.5	QPSK	1	0	0	23.0	0.19724	
				1	12	0	22.9	0.19275	
				1	24	0	22.7	0.18408	
				12	0	1	22.1	0.16032	
				12	6	1	22.0	0.15668	
				12	11	1	21.9	0.15311	
		25	0	1	21.8	0.14962			
		16QAM	1	0	1	22.0	0.15668		
1			12	1	22.0	0.15668			
1			24	1	21.8	0.14962			
12			0	2	21.0	0.12445			
12			6	2	21.0	0.12445			
12	11		2	20.8	0.11885				
25	0	2	21.0	0.12445					



**LTE Band 4**

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
4	20	20050	1720.0	QPSK	1	0	0	23.0	0.19953
					1	49	0	22.8	0.19055
					1	99	0	22.8	0.19055
					50	0	1	22.0	0.15849
					50	24	1	21.9	0.15488
					50	49	1	21.8	0.15136
					100	0	1	22.0	0.15849
				16QAM	1	0	1	22.1	0.16218
					1	49	1	21.8	0.15136
					1	99	1	21.9	0.15488
					50	0	2	21.0	0.12589
					50	24	2	20.9	0.12303
					50	49	2	20.9	0.12303
					100	0	2	21.0	0.12589
		20175	1732.5	QPSK	1	0	0	23.2	0.20893
					1	49	0	23.1	0.20417
					1	99	0	23.0	0.19953
					50	0	1	22.3	0.16982
					50	24	1	22.1	0.16218
					50	49	1	22.0	0.15849
					100	0	1	22.0	0.15849
				16QAM	1	0	1	22.3	0.16982
					1	49	1	22.2	0.16596
					1	99	1	22.0	0.15849
					50	0	2	21.3	0.13490
					50	24	2	21.1	0.12882
					50	49	2	21.1	0.12882
					100	0	2	21.2	0.13183
		20300	1745.0	QPSK	1	0	0	23.0	0.19953
					1	49	0	23.0	0.19953
1	99				0	22.7	0.18621		
50	0				1	22.0	0.15849		
50	24				1	22.0	0.15849		
50	49				1	21.8	0.15136		
100	0				1	21.9	0.15488		
16QAM	1			0	1	22.0	0.15849		
	1			49	1	22.0	0.15849		
	1			99	1	21.7	0.14791		
	50			0	2	21.0	0.12589		
	50			24	2	21.0	0.12589		
	50			49	2	20.9	0.12303		
	100			0	2	21.0	0.12589		

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)					
4	15	20025	1717.5	QPSK	1	0	0	23.0	0.19724					
					1	37	0	22.8	0.18836					
					1	74	0	22.8	0.18836					
					36	0	1	22.0	0.15668					
					36	18	1	21.9	0.15311					
					36	35	1	21.8	0.14962					
				75	0	1	22.0	0.15668						
				16QAM	1	0	1	22.1	0.16032					
					1	37	1	21.8	0.14962					
					1	74	1	21.9	0.15311					
					36	0	2	21.0	0.12445					
					36	18	2	20.9	0.12162					
					36	35	2	20.9	0.12162					
				75	0	2	21.0	0.12445						
				20175	15	20175	1732.5	QPSK	1	0	0	23.2	0.20654	
									1	37	0	23.1	0.20184	
									1	74	0	23.0	0.19724	
									36	0	1	22.3	0.16788	
	36	18	1						22.1	0.16032				
	36	35	1						22.0	0.15668				
	75	0	1					22.0	0.15668					
	16QAM	1	0					1	22.3	0.16788				
		1	37					1	22.2	0.16406				
		1	74					1	22.0	0.15668				
		36	0					2	21.3	0.13335				
		36	18					2	21.1	0.12735				
		36	35					2	21.1	0.12735				
	75	0	2					21.2	0.13032					
	20325	15	20325					1747.5	QPSK	1	0	0	23.0	0.19724
										1	37	0	23.0	0.19724
										1	74	0	22.7	0.18408
										36	0	1	22.0	0.15668
				36	18	1	22.0			0.15668				
				36	35	1	21.8			0.14962				
				75	0	1	21.9		0.15311					
				16QAM	1	0	1		22.0	0.15668				
1					37	1	22.0		0.15668					
1					74	1	21.7		0.14622					
36					0	2	21.0		0.12445					
36					18	2	21.0		0.12445					
36					35	2	20.9		0.12162					
75				0	2	21.0	0.12445							

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
4	10	20000	1715.0	QPSK	1	0	0	22.9	0.19498
					1	24	0	22.7	0.18621
					1	49	0	22.7	0.18621
					25	0	1	21.9	0.15488
					25	12	1	21.8	0.15136
					25	24	1	21.7	0.14791
					50	0	1	21.9	0.15488
				16QAM	1	0	1	22.0	0.15849
					1	24	1	21.7	0.14791
					1	49	1	21.8	0.15136
					25	0	2	20.9	0.12303
					25	12	2	20.8	0.12023
					25	24	2	20.8	0.12023
					50	0	2	20.9	0.12303
		20175	1732.5	QPSK	1	0	0	23.1	0.20417
					1	24	0	23.0	0.19953
					1	49	0	22.9	0.19498
					25	0	1	22.2	0.16596
					25	12	1	22.0	0.15849
					25	24	1	21.9	0.15488
					50	0	1	21.9	0.15488
				16QAM	1	0	1	22.2	0.16596
					1	24	1	22.1	0.16218
					1	49	1	21.9	0.15488
					25	0	2	21.2	0.13183
					25	12	2	21.0	0.12589
					25	24	2	21.0	0.12589
					50	0	2	21.1	0.12882
		20350	1750.0	QPSK	1	0	0	22.9	0.19498
					1	24	0	22.9	0.19498
1	49				0	22.6	0.18197		
25	0				1	21.9	0.15488		
25	12				1	21.9	0.15488		
25	24				1	21.7	0.14791		
50	0				1	21.8	0.15136		
16QAM	1			0	1	21.9	0.15488		
	1			24	1	21.9	0.15488		
	1			49	1	21.6	0.14454		
	25			0	2	20.9	0.12303		
	25			12	2	20.9	0.12303		
	25			24	2	20.8	0.12023		
	50			0	2	20.9	0.12303		

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
4	5	19975	1712.5	QPSK	1	0	0	22.9	0.19275
					1	12	0	22.7	0.18408
					1	24	0	22.7	0.18408
					12	0	1	21.9	0.15311
					12	6	1	21.8	0.14962
					12	11	1	21.7	0.14622
		25	0	1	21.9	0.15311			
		16QAM	1	0	1	22.0	0.15668		
			1	12	1	21.7	0.14622		
			1	24	1	21.8	0.14962		
			12	0	2	20.9	0.12162		
			12	6	2	20.8	0.11885		
			12	11	2	20.8	0.11885		
		25	0	2	20.9	0.12162			
		20175	1732.5	QPSK	1	0	0	23.1	0.20184
					1	12	0	23.0	0.19724
					1	24	0	22.9	0.19275
					12	0	1	22.2	0.16406
	12				6	1	22.0	0.15668	
	12				11	1	21.9	0.15311	
	25	0	1	21.9	0.15311				
	16QAM	1	0	1	22.2	0.16406			
		1	12	1	22.1	0.16032			
		1	24	1	21.9	0.15311			
		12	0	2	21.2	0.13032			
		12	6	2	21.0	0.12445			
		12	11	2	21.0	0.12445			
	25	0	2	21.1	0.12735				
	20375	1752.5	QPSK	1	0	0	22.9	0.19275	
				1	12	0	22.9	0.19275	
				1	24	0	22.6	0.17989	
				12	0	1	21.9	0.15311	
				12	6	1	21.9	0.15311	
				12	11	1	21.7	0.14622	
		25	0	1	21.8	0.14962			
		16QAM	1	0	1	21.9	0.15311		
1			12	1	21.9	0.15311			
1			24	1	21.6	0.14289			
12			0	2	20.9	0.12162			
12			6	2	20.9	0.12162			
12	11		2	20.8	0.11885				
25	0	2	20.9	0.12162					

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)		
4	3	19965	1711.5	QPSK	1	0	0	22.8	0.19055		
					1	7	0	22.6	0.18197		
					1	14	0	22.6	0.18197		
					8	0	1	21.8	0.15136		
					8	4	1	21.7	0.14791		
					8	7	1	21.6	0.14454		
				15	0	1	21.8	0.15136			
				16QAM	1	0	1	21.9	0.15488		
					1	7	1	21.6	0.14454		
					1	14	1	21.7	0.14791		
					8	0	2	20.8	0.12023		
					8	4	2	20.7	0.11749		
					8	7	2	20.7	0.11749		
				15	0	2	20.8	0.12023			
				20175	1732.5	QPSK	1	0	0	23.0	0.19953
							1	7	0	22.9	0.19498
							1	14	0	22.8	0.19055
							8	0	1	22.1	0.16218
	8	4	1				21.9	0.15488			
	8	7	1				21.8	0.15136			
	15	0	1			21.8	0.15136				
	16QAM	1	0			1	22.1	0.16218			
		1	7			1	22.0	0.15849			
		1	14			1	21.8	0.15136			
		8	0			2	21.1	0.12882			
		8	4			2	20.9	0.12303			
		8	7			2	20.9	0.12303			
	15	0	2			21.0	0.12589				
	20384	1753.4	QPSK			1	0	0	22.8	0.19055	
						1	7	0	22.8	0.19055	
						1	14	0	22.5	0.17783	
						8	0	1	21.8	0.15136	
				8	4	1	21.8	0.15136			
				8	7	1	21.6	0.14454			
			15	0	1	21.7	0.14791				
			16QAM	1	0	1	21.8	0.15136			
1				7	1	21.8	0.15136				
1				14	1	21.5	0.14125				
8				0	2	20.8	0.12023				
8				4	2	20.8	0.12023				
8				7	2	20.7	0.11749				
15			0	2	20.8	0.12023					

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)	
4	1.4	19957	1710.7	QPSK	1	0	0	22.8	0.18836	
					1	2	0	22.6	0.17989	
					1	5	0	22.6	0.17989	
					3	0	1	21.8	0.14962	
					3	1	1	21.7	0.14622	
					3	2	1	21.6	0.14289	
				6	0	1	21.8	0.14962		
				16QAM	1	0	1	21.9	0.15311	
					1	2	1	21.6	0.14289	
					1	5	1	21.7	0.14622	
					3	0	2	20.8	0.11885	
					3	1	2	20.7	0.11614	
		3	2		2	20.7	0.11614			
		20175	1732.5	QPSK	1732.5	1	0	0	23.0	0.19724
						1	2	0	22.9	0.19275
						1	5	0	22.8	0.18836
						3	0	1	22.1	0.16032
						3	1	1	21.9	0.15311
						3	2	1	21.8	0.14962
				6	0	1	21.8	0.14962		
				16QAM	1	0	1	22.1	0.16032	
					1	2	1	22.0	0.15668	
					1	5	1	21.8	0.14962	
					3	0	2	21.1	0.12735	
					3	1	2	20.9	0.12162	
		3	2		2	20.9	0.12162			
		20392	1754.2	QPSK	1754.2	1	0	0	22.8	0.18836
						1	2	0	22.8	0.18836
						1	5	0	22.5	0.17579
						3	0	1	21.8	0.14962
						3	1	1	21.8	0.14962
						3	2	1	21.6	0.14289
				6	0	1	21.7	0.14622		
				16QAM	1	0	1	21.8	0.14962	
					1	2	1	21.8	0.14962	
					1	5	1	21.5	0.13964	
3	0				2	20.8	0.11885			
3	1				2	20.8	0.11885			
3	2	2	20.7		0.11614					
6	0	2	20.8	0.11885						

## **7.2 ERP & EIRP MEASUREMENT**

### **LIMIT**

#### **According to FCC §2.1046**

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

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

#### **According to RSS-130, Band 17,**

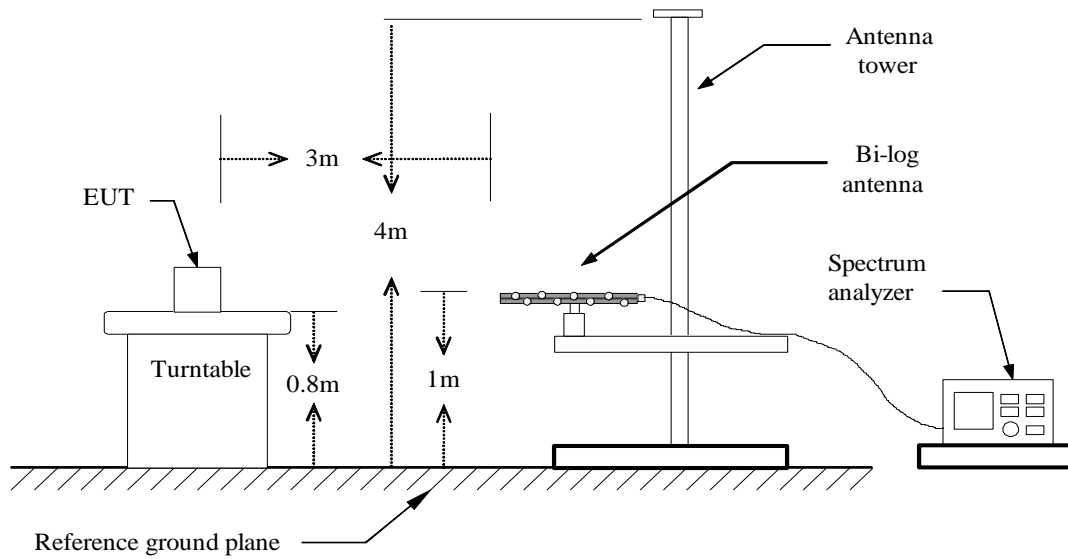
The e.i.r.p. shall not exceed 50 watts for mobile equipment or for outdoor fixed subscriber equipment, nor shall it exceed 5 watts for portable equipment or for indoor fixed subscriber equipment.

#### **According to RSS-139, Band 4,**

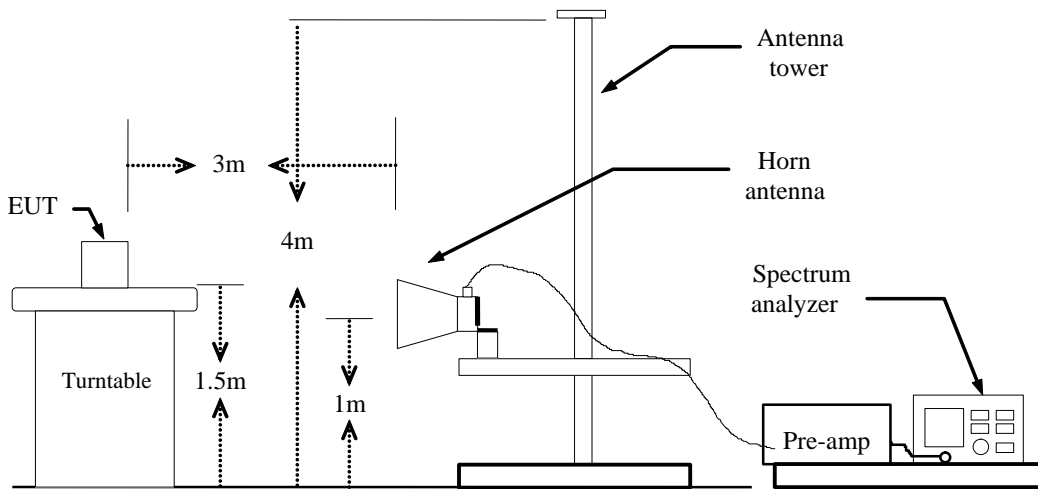
The equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one watt. The e.i.r.p. for fixed and base stations in the band 1710-1780 MHz shall not exceed 1 watt.

**Test Configuration**

**Below 1 GHz**

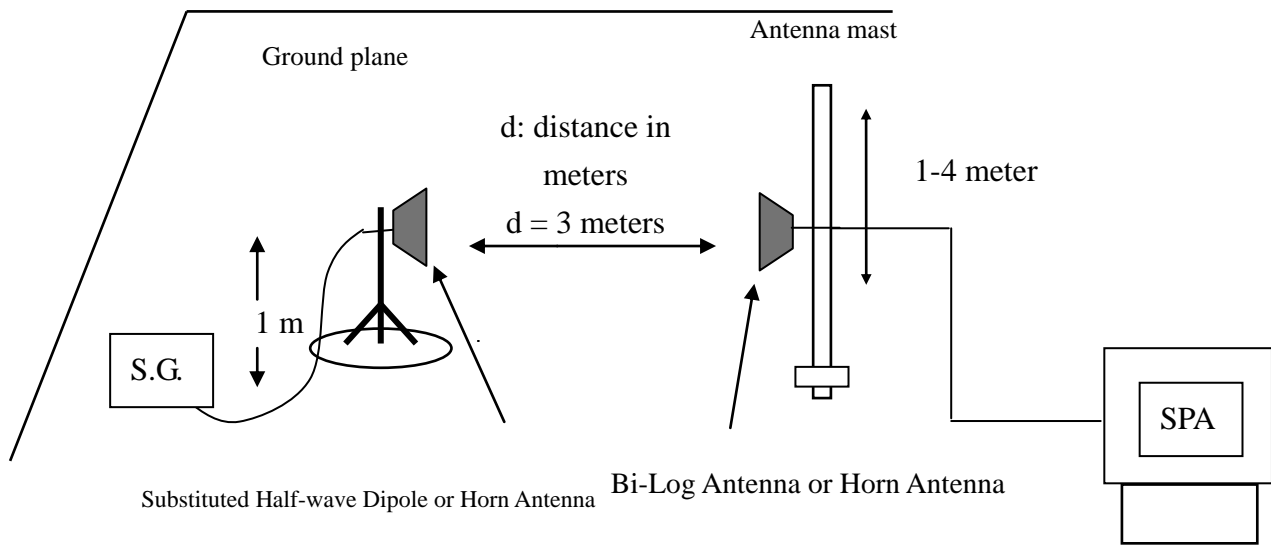


**Above 1 GHz**





**For Substituted Method Test Set-UP**



**TEST PROCEDURE**

1. The EUT was placed on a non-conductive rotating platform (0.8m for below 1G and 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.

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

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

**TEST RESULTS**

*No non-compliance noted.*

**ERP POWER**

**LTE Band 4**

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

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	1.4	Lowest	QPSK	1	0	27.84	0.608	29.32	0.855
		Middle		1	0	28.04	0.636	29.62	0.916
		Highest		1	0	28.49	0.706	27.96	0.625
		Lowest	16 QAM	1	0	28.38	0.688	29.93	0.948
		Middle		1	0	27.95	0.623	29.81	0.957
		Highest		1	0	29.41	0.872	28.69	0.739

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

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	3	Lowest	QPSK	1	0	28.41	0.693	29.82	0.959
		Middle		1	0	27.74	0.594	29.76	0.946
		Highest		1	0	28.20	0.660	27.59	0.574
		Lowest	16 QAM	1	0	28.39	0.690	29.52	0.895
		Middle		1	0	27.75	0.595	29.96	0.990
		Highest		1	0	28.73	0.746	28.42	0.695

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

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	5	Lowest	QPSK	1	0	28.40	0.691	28.68	0.739
		Middle		1	0	27.63	0.579	29.79	0.952
		Highest		1	0	28.55	0.716	27.73	0.592
		Lowest	16 QAM	1	0	28.28	0.672	29.63	0.918
		Middle		1	0	28.04	0.636	29.98	0.995
		Highest		1	0	28.71	0.743	28.47	0.703

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

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	10	Lowest	QPSK	1	0	28.48	0.704	29.72	0.937
		Middle		1	0	27.59	0.574	29.51	0.893
		Highest		1	0	28.00	0.630	28.47	0.703
		Lowest	16 QAM	1	0	28.38	0.688	29.05	0.803
		Middle		1	0	27.71	0.59	29.76	0.946
		Highest		1	0	28.20	0.660	28.44	0.698

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

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	15	Lowest	QPSK	1	0	28.24	0.666	29.73	0.939
		Middle		1	0	27.41	0.550	29.30	0.851
		Highest		1	0	27.98	0.628	29.15	.822
		Lowest	16 QAM	1	0	28.29	0.674	29.64	0.920
		Middle		1	0	27.66	0.583	29.73	0.939
		Highest		1	0	28.26	0.669	29.26	0.843

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

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	20	Lowest	QPSK	1	0	28.36	0.685	29.66	0.924
		Middle		1	0	27.49	0.561	29.15	0.822
		Highest		1	0	27.58	0.572	29.85	0.966
		Lowest	16 QAM	1	0	29.01	0.796	29.99	0.997
		Middle		1	0	27.89	0.615	29.30	0.851
		Highest		1	0	27.82	0.605	29.80	0.954

**LTE Band 17**

**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)
17	5	Lowest	QPSK	1	0	23.49	0.223	20.82	0.120
		Middle		1	0	22.13	0.163	19.82	0.095
		Highest		1	0	24.11	0.257	21.89	0.154
		Lowest	16 QAM	1	0	23.28	0.212	19.00	0.079
		Middle		1	0	21.55	0.142	19.75	0.094
		Highest		1	0	24.80	0.301	22.46	0.176

**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)
17	10	Lowest	QPSK	1	0	23.19	0.208	21.00	0.125
		Middle		1	0	22.76	0.188	20.45	0.110
		Highest		1	0	22.30	0.169	20.16	0.103
		Lowest	16 QAM	1	0	23.34	0.215	21.12	0.129
		Middle		1	0	22.79	0.190	20.70	0.117
		Highest		1	0	22.29	0.169	20.17	0.103

## 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.

### **According to RSS-139 and RSS-130,**

The frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

### TEST PROCEDURE

Use Anritsu 8820 with frequency Error measurement capability.

Temp = -30 to +50°C

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 17**

<b>Reference Frequency: LTE Band 17 Max Bandwidth QPSK, 710 MHz</b>				
Limit: $\pm 2.5$ ppm = 1775Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
120	50	0.03	0.000042	+/- 2.5
120	40	-0.01	-0.000007	
120	30	0.00	-0.000004	
120	20	-0.01	-0.000009	
120	10	0.02	0.000028	
120	0	0.02	0.000028	
120	-10	0.01	0.000014	
120	-20	0.00	0.000006	

<b>Reference Frequency: LTE Band 17 Max Bandwidth 16QAM, 710 MHz</b>				
Limit: $\pm 2.5$ ppm = 1775Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
120	50	-0.01	-0.000014	+/- 2.5
120	40	0.02	0.000028	
120	30	0.01	0.000014	
120	20	-0.01	-0.000007	
120	10	0.01	0.000012	
120	0	0.00	0.000000	
120	-10	0.00	0.000004	
120	-20	0.03	0.000042	

**LTE Band 4**

<b>Reference Frequency: LTE Band 4 Max Bandwidth QPSK, 1732.5MHz</b>				
Limit: $\pm 2.5$ ppm = 4331.25Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
120	50	0.05	0.000029	+/- 2.5
120	40	0.06	0.000035	
120	30	0.00	0.000003	
120	20	0.03	0.000017	
120	10	0.01	0.000006	
120	0	0.03	0.000017	
120	-10	0.02	0.000012	
120	-20	0.00	0.000000	

<b>Reference Frequency: LTE Band 4 Max Bandwidth 16QAM, 1732.5MHz</b>				
Limit: $\pm 2.5$ ppm = 4331.25Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
120	50	0.06	0.000035	+/- 2.5
120	40	0.00	-0.000002	
120	30	-0.01	-0.000006	
120	20	0.01	0.000006	
120	10	0.02	0.000012	
120	0	0.01	0.000006	
120	-10	0.03	0.000017	
120	-20	0.05	0.000029	

**FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT:**

**LTE Band 17**

<b>Reference Frequency: LTE Band 17 Max Bandwidth QPSK, MHz</b>				
Limit: $\pm 2.5$ ppm = Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
102	20	0.00	0.000000	+/- 2.5
120	20	-0.01	-0.000009	
138	20	0.00	-0.000005	

<b>Reference Frequency: LTE Band 17 Max Bandwidth 16QAM, MHz</b>				
Limit: $\pm 2.5$ ppm = Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
102	20	0.00	0.000005	+/- 2.5
120	20	0.03	0.000042	
138	20	-0.01	-0.000010	



**LTE Band 4**

<b>Reference Frequency: LTE Band 4 Max Bandwidth QPSK, MHz</b>				
Limit: $\pm 2.5$ ppm = Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
102	20	0.02	0.000012	+/- 2.5
120	20	0.03	0.000017	
138	20	0.03	0.000017	

<b>Reference Frequency: LTE Band 4 Max Bandwidth 16QAM, MHz</b>				
Limit: $\pm 2.5$ ppm = Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
102	20	0.02	0.000009	+/- 2.5
120	20	0.01	0.000006	
138	20	0.01	0.000008	

## **7.4 OCCUPIED BANDWIDTH MEASUREMENT**

### **LIMITS**

For Reporting purpose only.

.

### **TEST PROCEDURES**

KDB 971168 D01 v02r02 - Section 4.2

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

**TEST RESULTS****LTE Band 17****CHANNEL BANDWIDTH: 5MHz / QPSK**

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
23790	710.00	4.4717

**CHANNEL BANDWIDTH: 10MHz / QPSK**

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
23790	710.00	8.9725

**CHANNEL BANDWIDTH: 5MHz / 16QAM**

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
23790	710.00	4.4717

**CHANNEL BANDWIDTH: 10MHz / 16QAM**

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
23790	710.00	8.9146

**LTE Band 4**

**CHANNEL BANDWIDTH: 1.4MHz / QPSK**

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.5	1.1027

**CHANNEL BANDWIDTH: 3MHz / QPSK**

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.5	2.6830

**CHANNEL BANDWIDTH: 5MHz / QPSK**

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.5	4.4717

**CHANNEL BANDWIDTH: 10MHz / QPSK**

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.5	8.9435

**CHANNEL BANDWIDTH: 15MHz / QPSK**

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.5	13.4153

**CHANNEL BANDWIDTH: 20MHz / QPSK**

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.5	17.9450

**CHANNEL BANDWIDTH: 1.4MHz / 16QAM**

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.5	1.1027

**CHANNEL BANDWIDTH: 3MHz / 16QAM**

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.5	2.6743

**CHANNEL BANDWIDTH: 5MHz / 16QAM**

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.5	4.4717

**CHANNEL BANDWIDTH: 10MHz / 16QAM**

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.5	8.9146

**CHANNEL BANDWIDTH: 15MHz / 16QAM**

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.5	13.4153

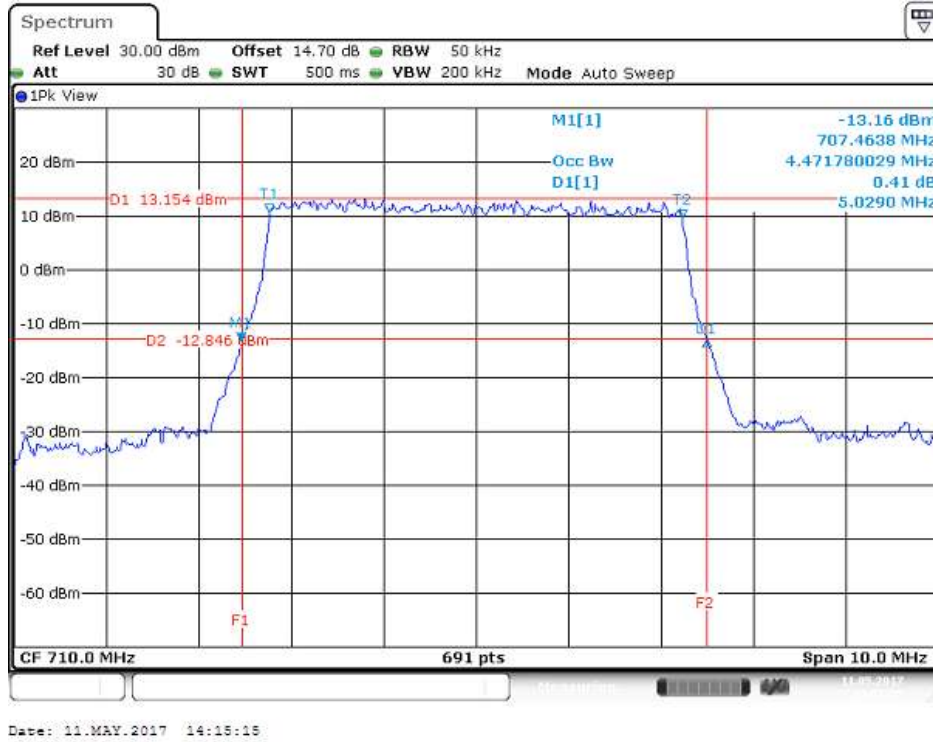
**CHANNEL BANDWIDTH: 20MHz / 16QAM**

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.5	18.0028

**LTE Band 17**

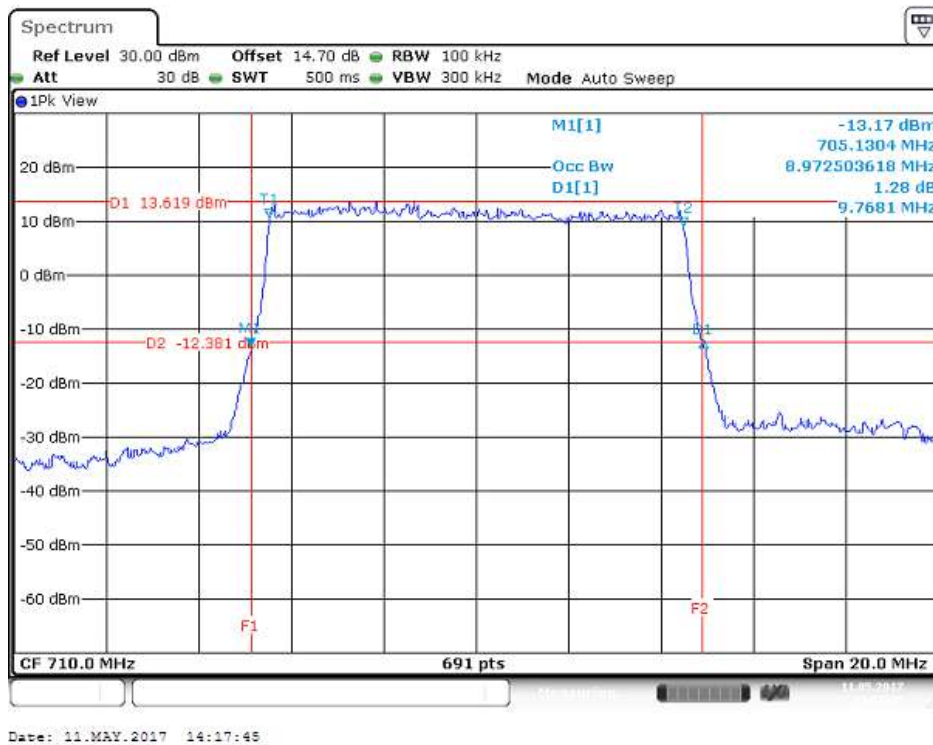
**CHANNEL BANDWIDTH: 5MHz / QPSK**

**CH Mid**



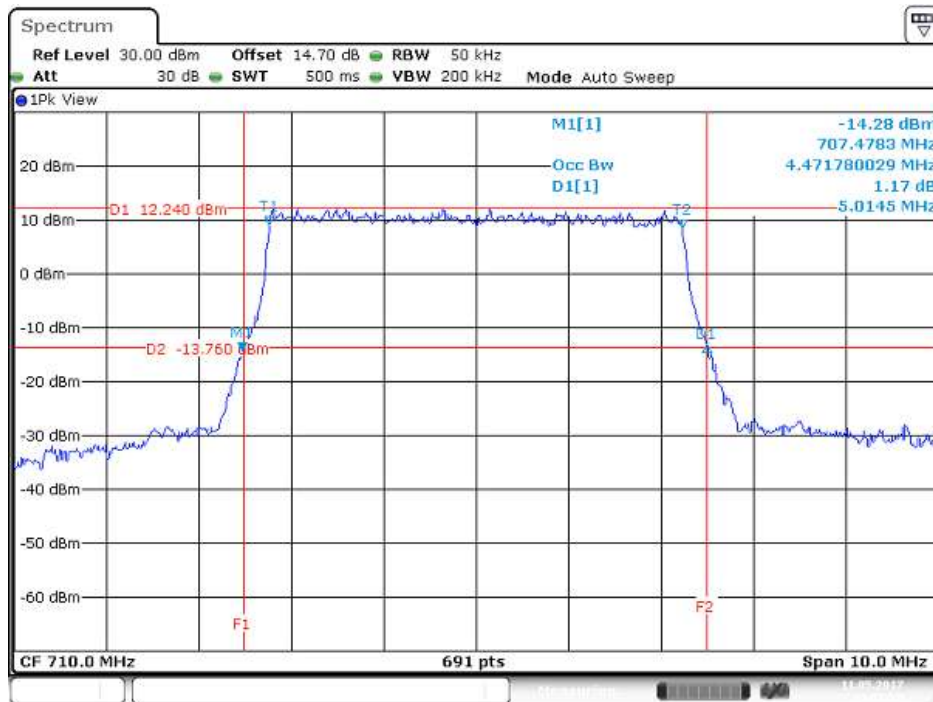
**CHANNEL BANDWIDTH: 10MHz / QPSK**

**CH Mid**



**CHANNEL BANDWIDTH: 5MHz / 16QAM**

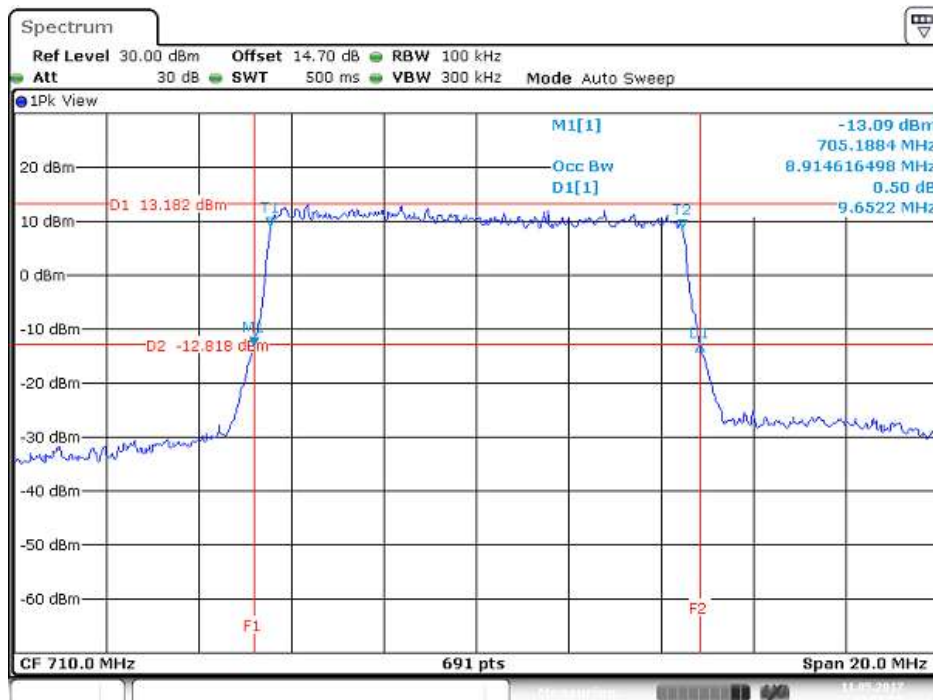
**CH Min**



Date: 11.MAY.2017 14:15:59

**CHANNEL BANDWIDTH: 10MHz / 16QAM**

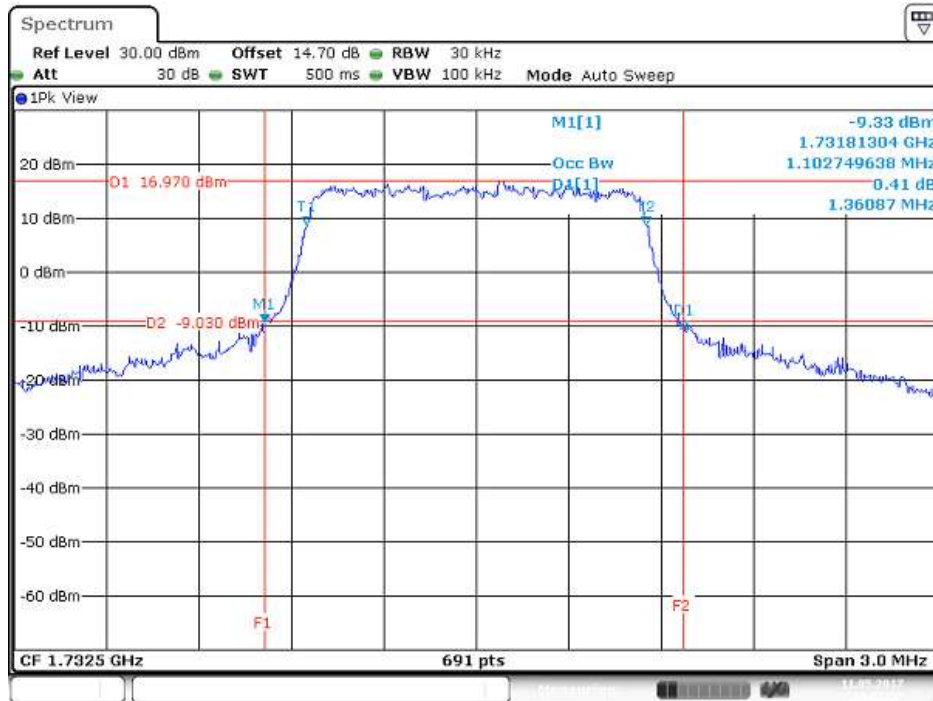
**CH Min**



Date: 11.MAY.2017 14:16:55

**LTE Band 4**  
**CHANNEL BANDWIDTH: 1.4MHz / QPSK**

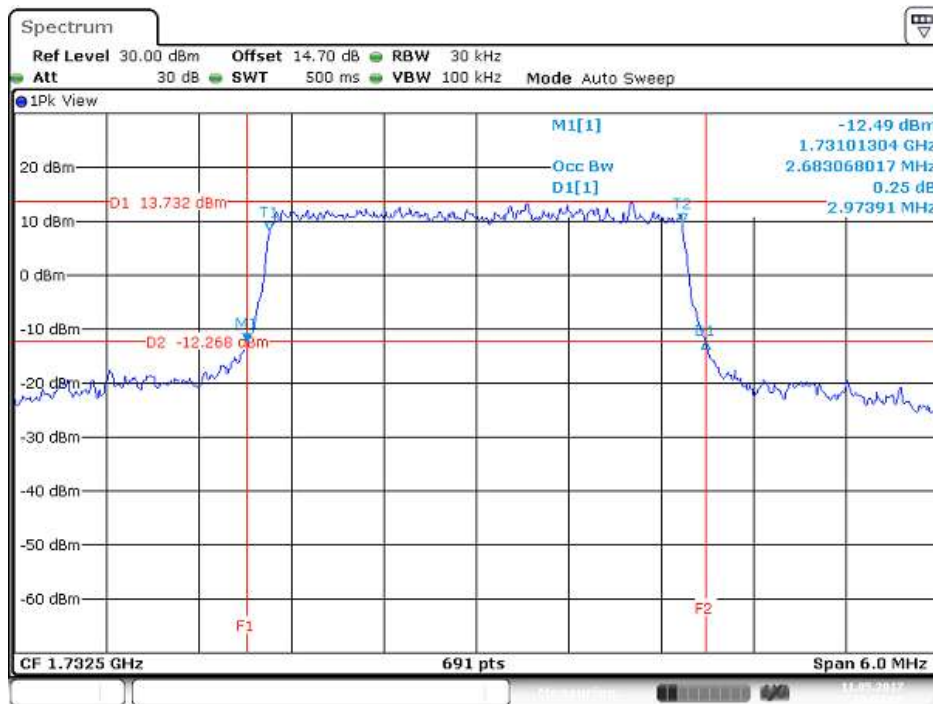
**CH Min**



Date: 11.MAY.2017 13:51:32

**CHANNEL BANDWIDTH: 3MHz / QPSK**

**CH Min**

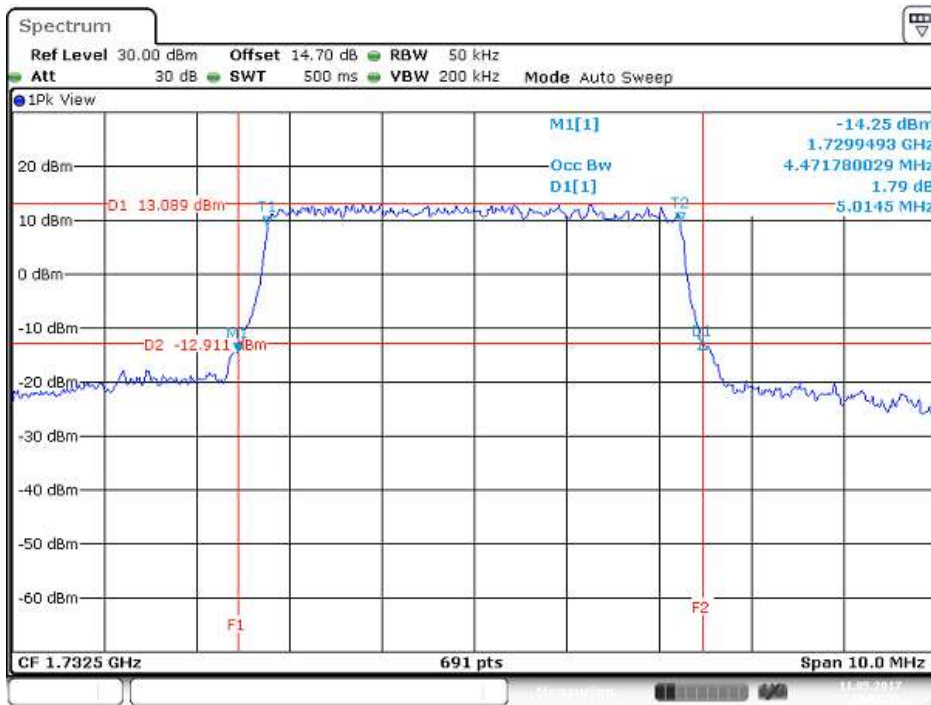


Date: 11.MAY.2017 13:54:08



**CHANNEL BANDWIDTH: 5MHz / QPSK**

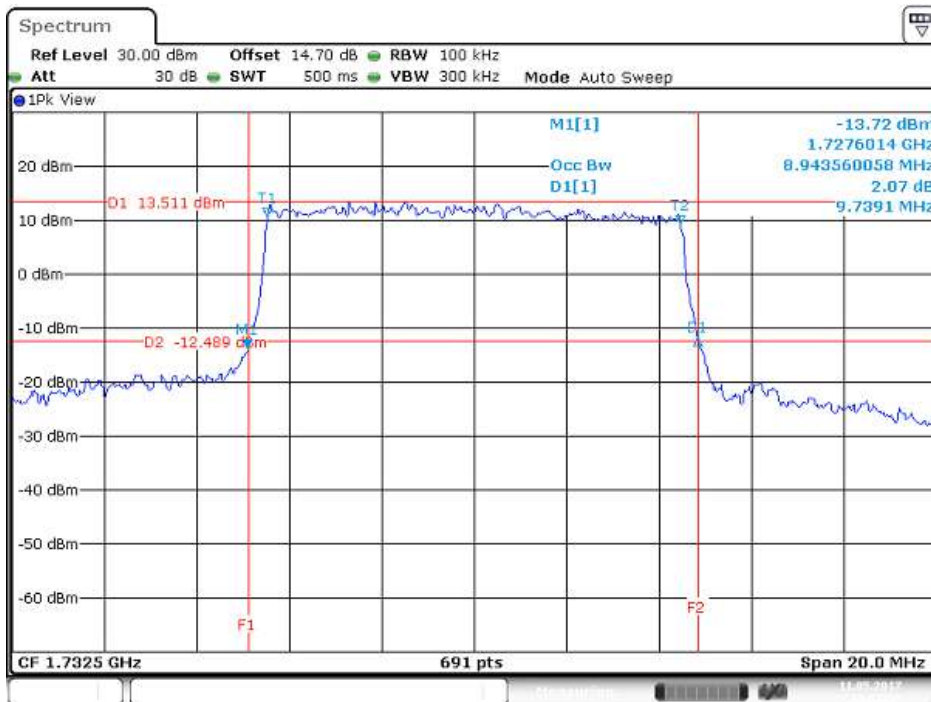
**CH Min**



Date: 11.MAY.2017 13:55:11

**CHANNEL BANDWIDTH: 10MHz / QPSK**

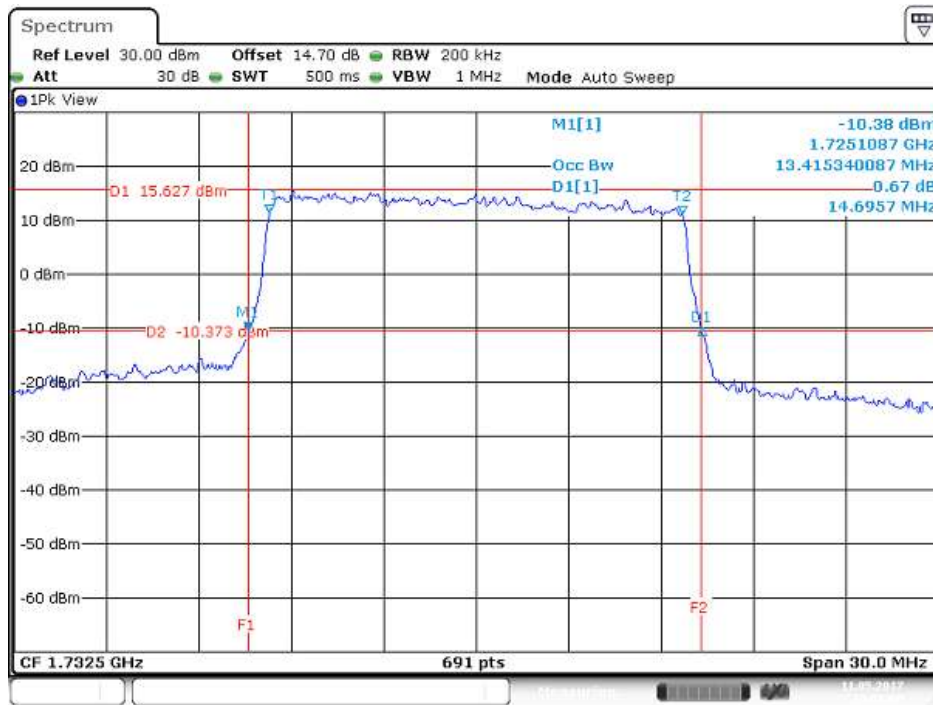
**CH Min**



Date: 11.MAY.2017 13:57:52

**CHANNEL BANDWIDTH: 15MHz / QPSK**

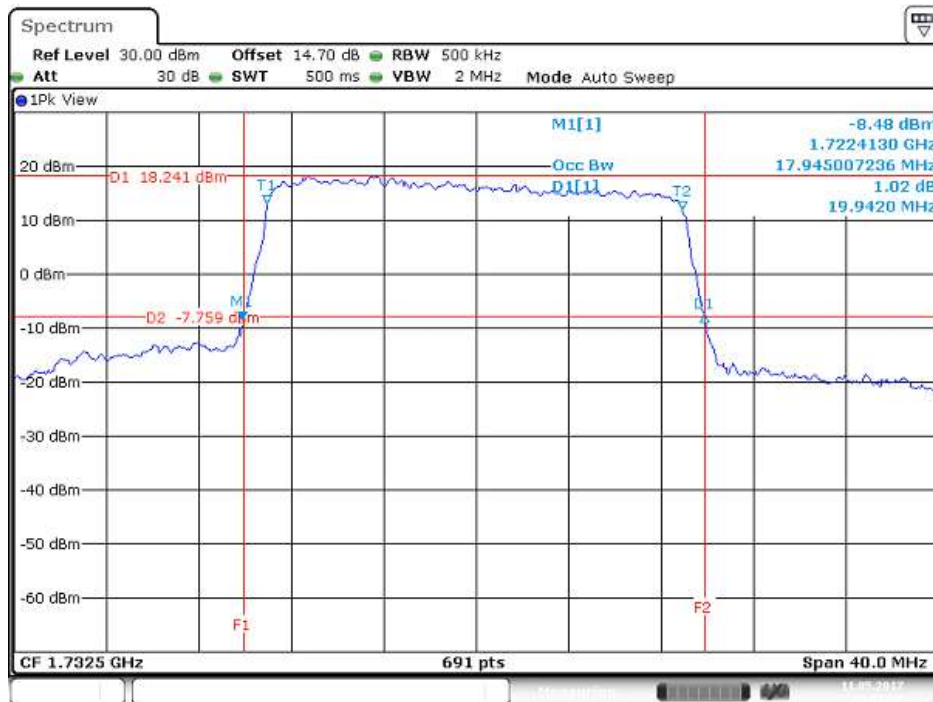
**CH Min**



Date: 11.MAY.2017 13:59:00

**CHANNEL BANDWIDTH: 20MHz / QPSK**

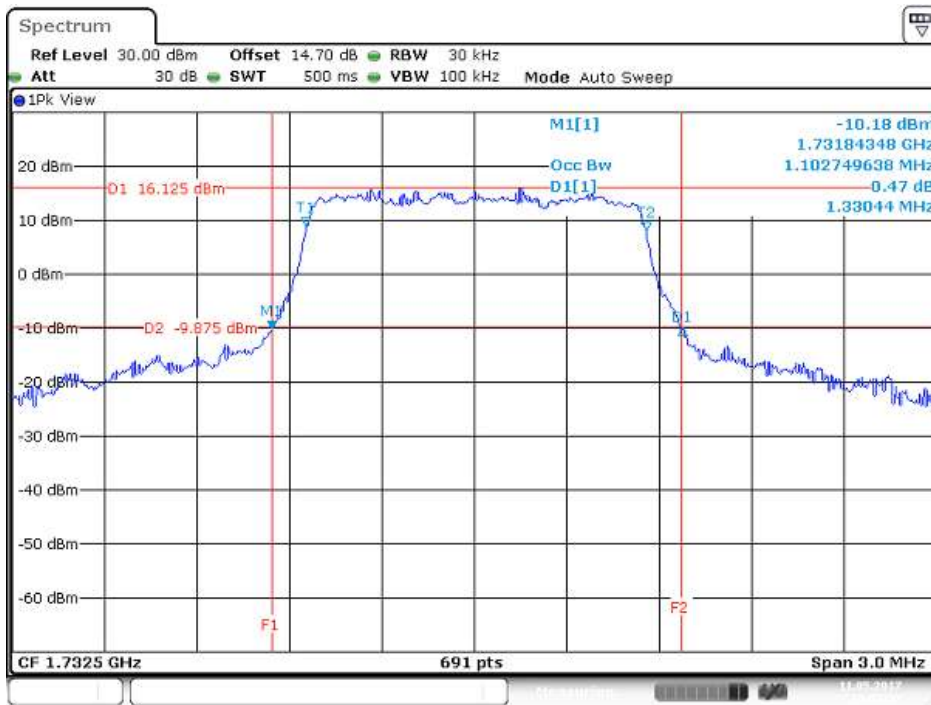
**CH Min**



Date: 11.MAY.2017 14:01:26

**CHANNEL BANDWIDTH: 1.4MHz / 16QAM**

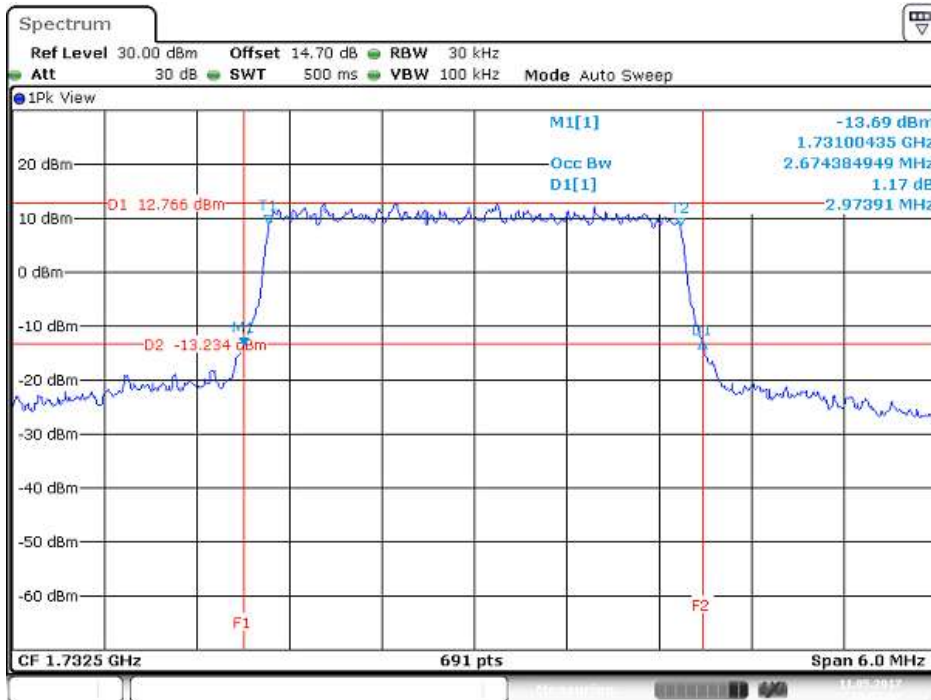
**CH Min**



Date: 11.MAY.2017 13:52:17

**CHANNEL BANDWIDTH: 3MHz / 16QAM**

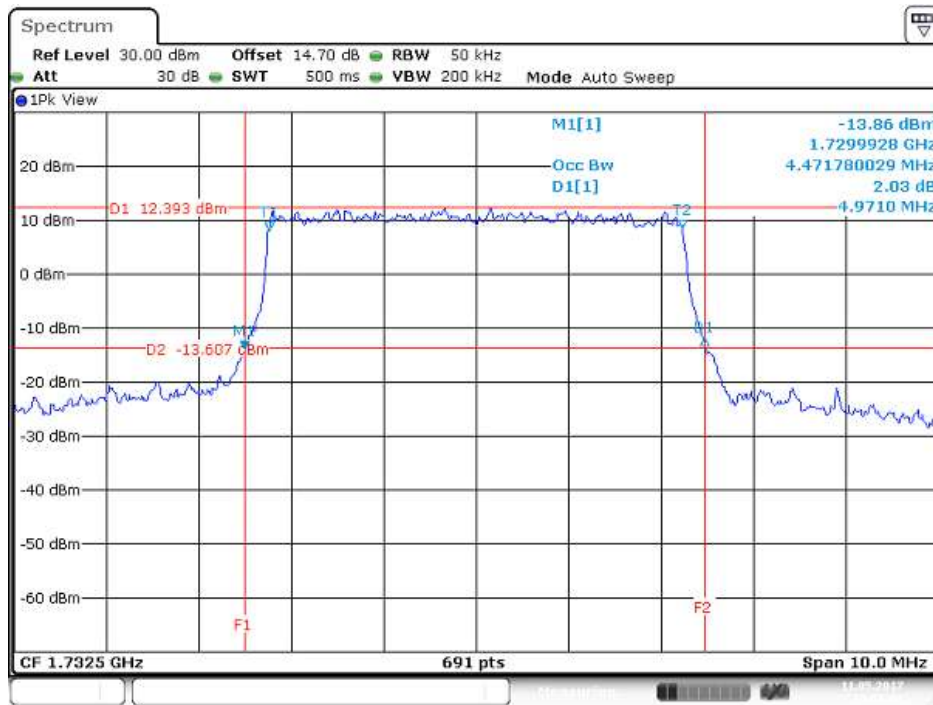
**CH Min**



Date: 11.MAY.2017 13:53:07

**CHANNEL BANDWIDTH: 5MHz / 16QAM**

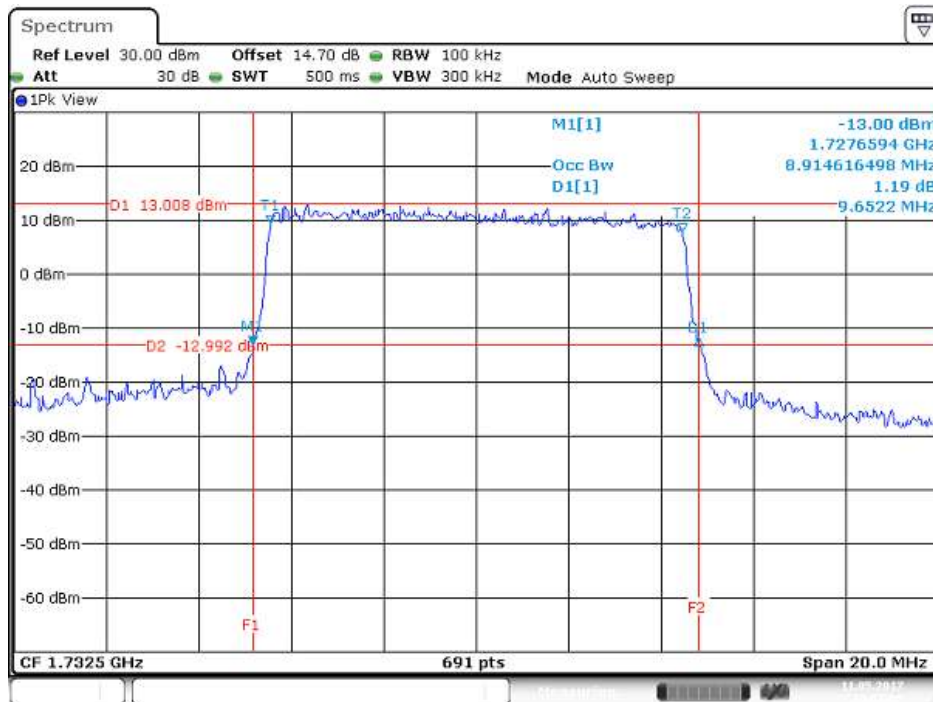
**CH Min**



Date: 11.MAY.2017 13:56:01

**CHANNEL BANDWIDTH: 10MHz / 16QAM**

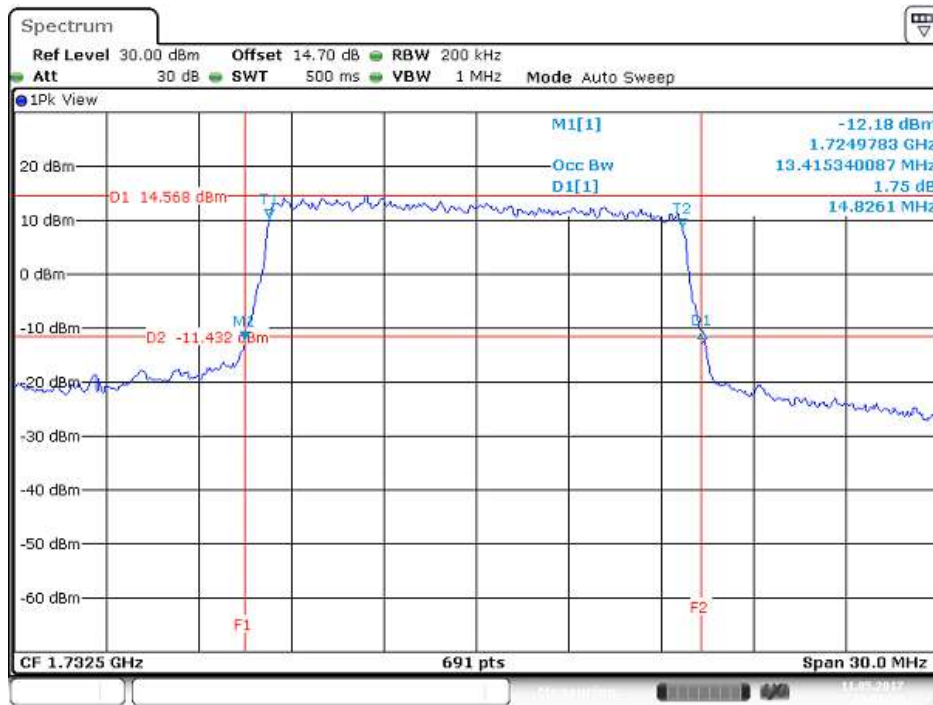
**CH Min**



Date: 11.MAY.2017 13:57:05

**CHANNEL BANDWIDTH: 15MHz / 16QAM**

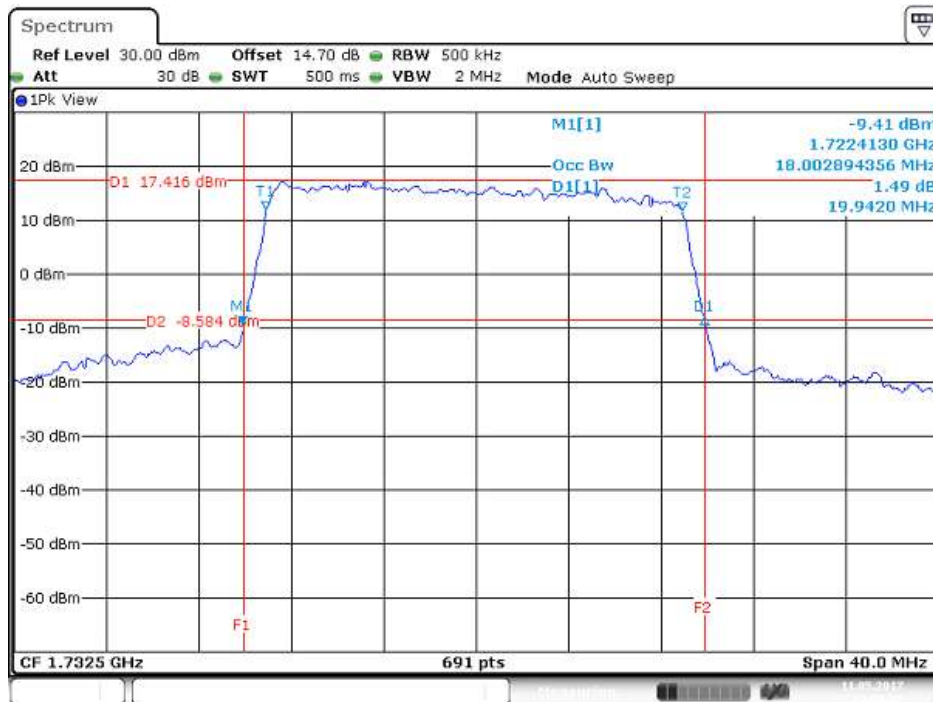
**CH Min**



Date: 11.MAY.2017 13:59:39

**CHANNEL BANDWIDTH: 20MHz / 16QAM**

**CH Min**



Date: 11.MAY.2017 14:00:38

## **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 17****CHANNEL BANDWIDTH: 5Hz / QPSK / 1RB**

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	4.87

**CHANNEL BANDWIDTH: 10Hz / QPSK / 1RB**

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	4.93

**CHANNEL BANDWIDTH: 5Hz / QPSK / 100%RB**

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	5.68

**CHANNEL BANDWIDTH: 10Hz / QPSK / 100%RB**

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	5.71

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23790	710.00	6.14

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23790	710.00	6.17

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23790	710.00	5.94

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23790	710.00	6.46



**LTE Band 4**

**CHANNEL BANDWIDTH: 1.4MHz / QPSK / 1RB**

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	2.99

**CHANNEL BANDWIDTH: 3MHz / QPSK / 1RB**

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	3.10

**CHANNEL BANDWIDTH: 5MHz / QPSK / 1RB**

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.50	3.04

**CHANNEL BANDWIDTH: 10MHz / QPSK / 1RB**

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.50	5.19

**CHANNEL BANDWIDTH: 15MHz / QPSK / 1RB**

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.50	5.19

**CHANNEL BANDWIDTH: 20MHz / QPSK / 1RB**

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.50	5.22

**CHANNEL BANDWIDTH: 1.4MHz / QPSK / 100%RB**

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	4.26

**CHANNEL BANDWIDTH: 3MHz / QPSK / 100%RB**

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	4.29

**CHANNEL BANDWIDTH: 5MHz / QPSK / 100%RB**

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.50	4.26

**CHANNEL BANDWIDTH: 10MHz / QPSK / 100%RB**

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.50	5.30

**CHANNEL BANDWIDTH: 15MHz / QPSK / 100%RB**

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.50	5.45

**CHANNEL BANDWIDTH: 20MHz / QPSK / 100%RB**

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.50	5.36

**CHANNEL BANDWIDTH: 1.4MHz / 16QAM / 1RB**

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	4.06

**CHANNEL BANDWIDTH: 3MHz / 16QAM / 1RB**

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	4.41

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.50	4.46

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.50	5.77

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.50	5.42

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.50	5.88

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	5.10

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	5.28

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.50	5.25

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.50	5.86

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

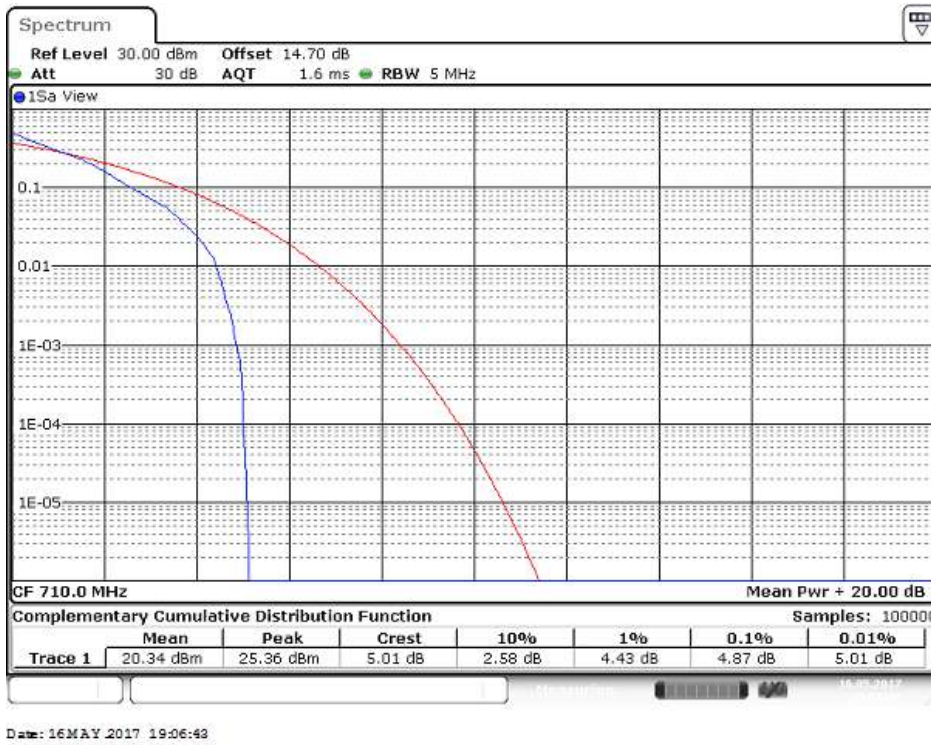
Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.50	5.91

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

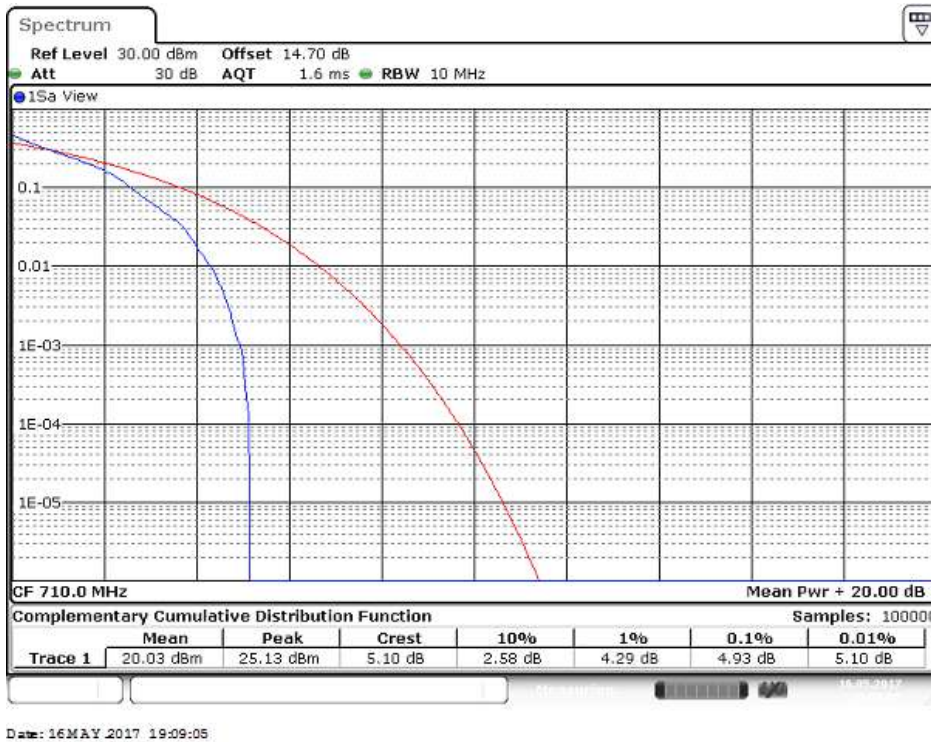
Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.50	5.57

**LTE Band 17**

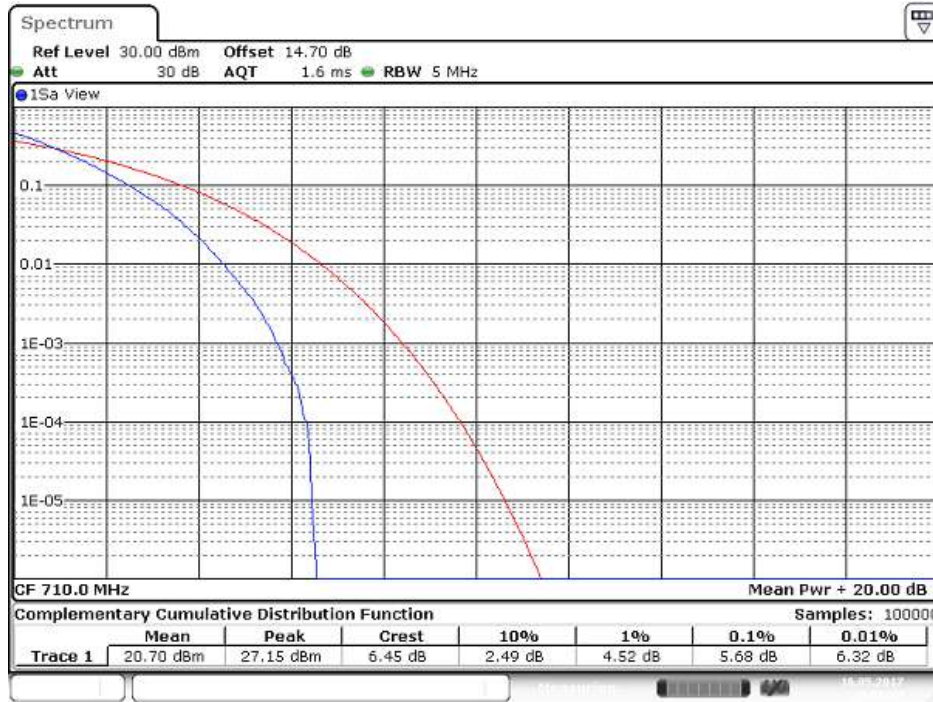
**CHANNEL BANDWIDTH: 5MHz / QPSK/ 1RB**



**CHANNEL BANDWIDTH: 10MHz / QPSK/ 1RB**

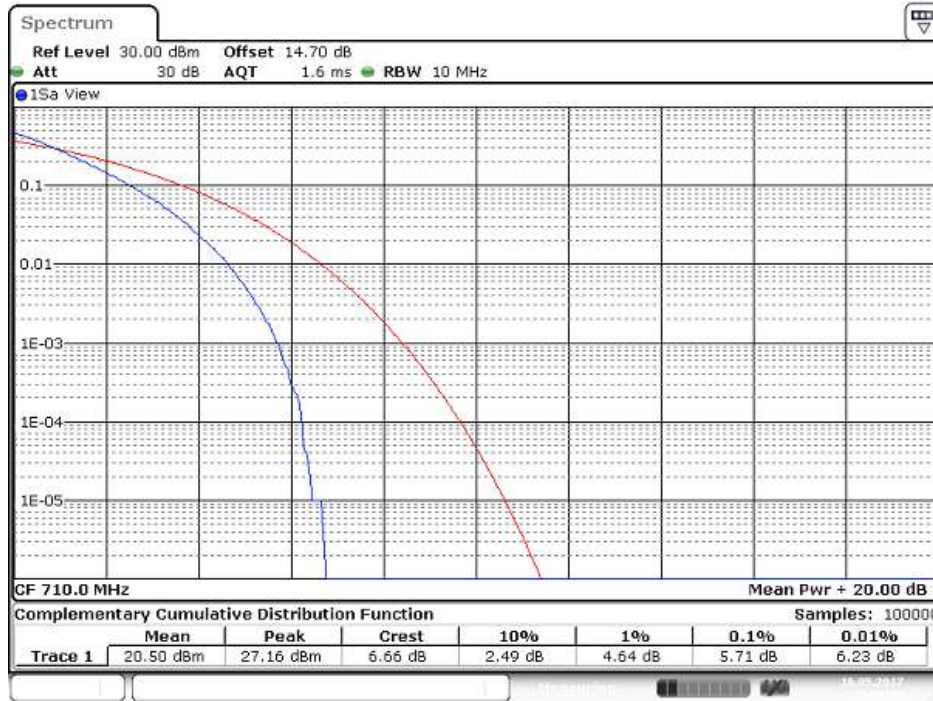


**CHANNEL BANDWIDTH: 5MHz / QPSK/ 100%RB**



Date: 16MAY 2017 19:06:10

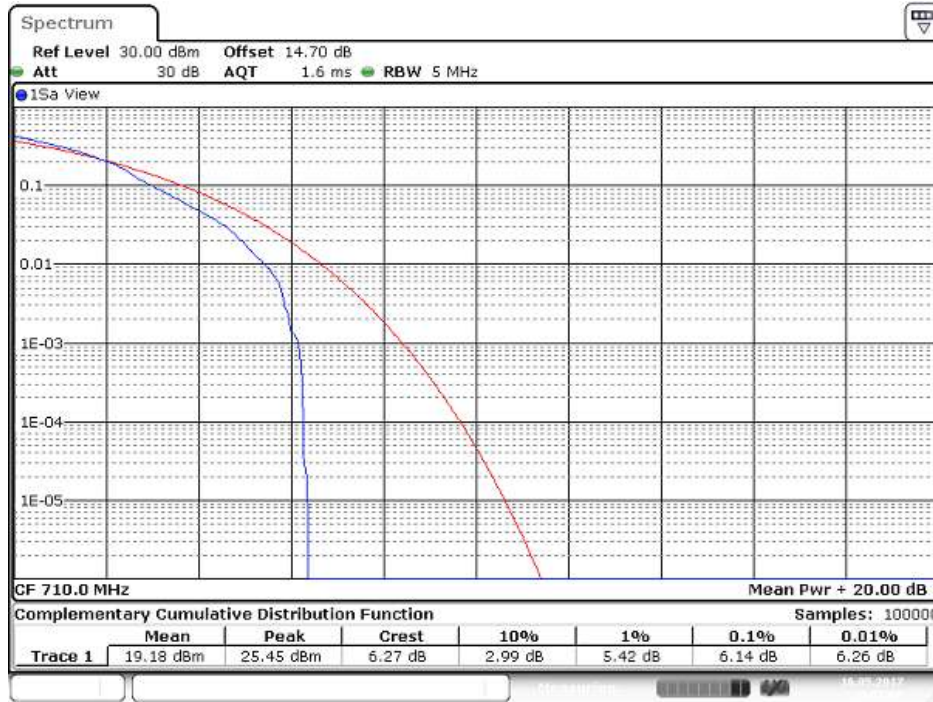
**CHANNEL BANDWIDTH: 10MHz / QPSK/ 100%RB**



Date: 16MAY 2017 19:09:50

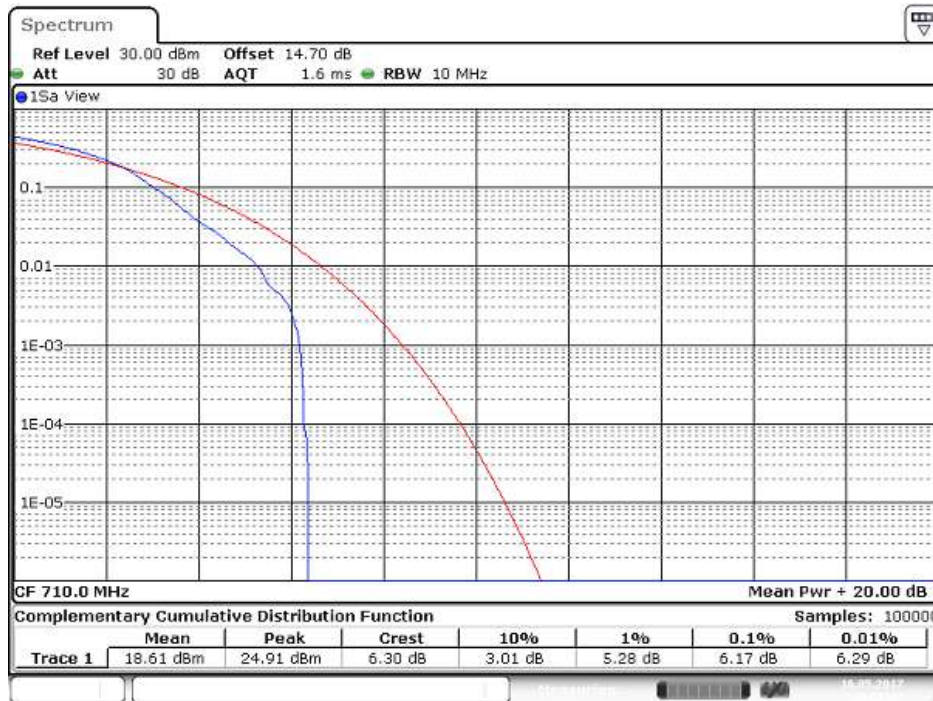


**CHANNEL BANDWIDTH: 5MHz / 16QAM / 1RB**



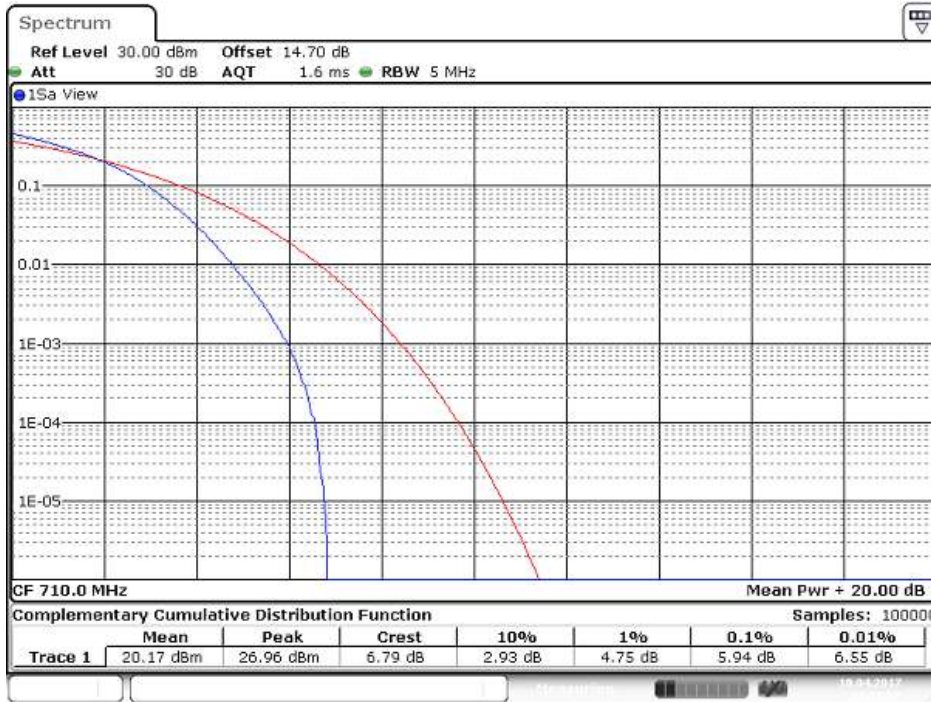
Date: 16 MAY 2017 19:07:06

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



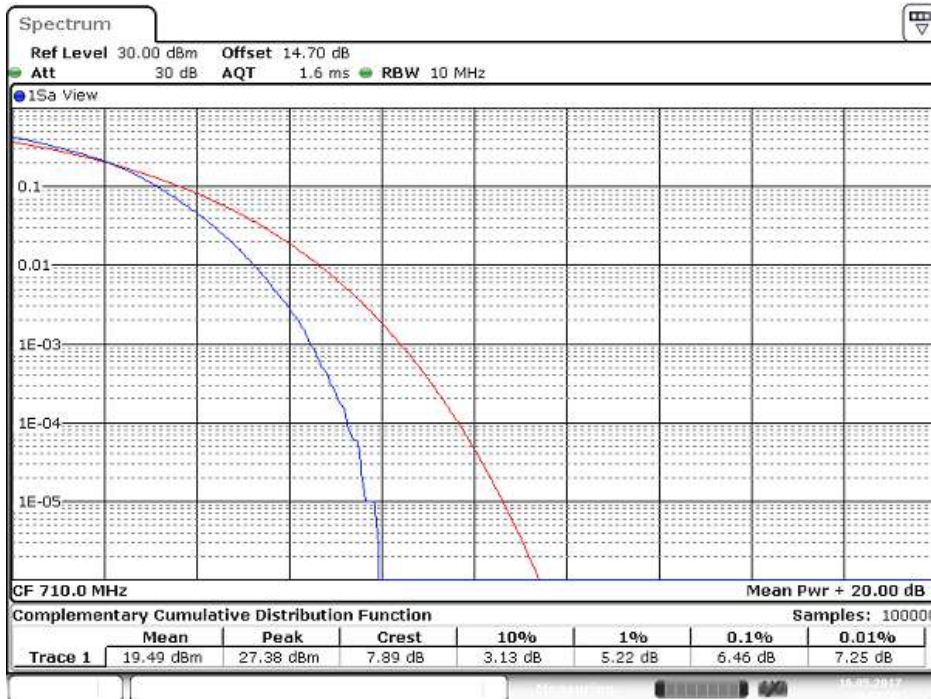
Date: 16 MAY 2017 19:08:43

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



Date: 10.APR.2017 17:20:56

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

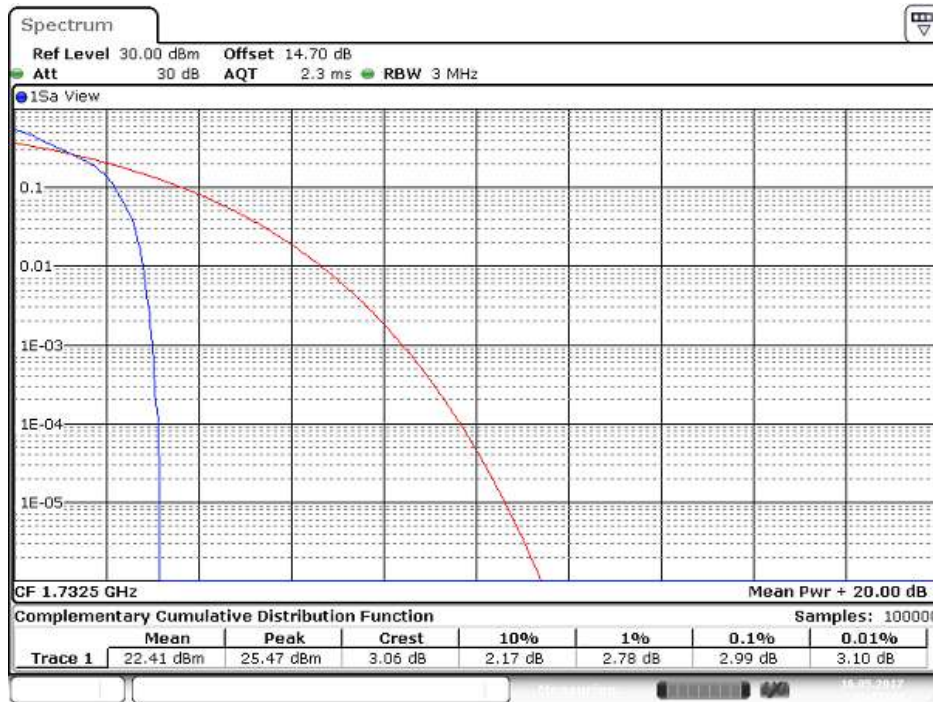


Date: 16.MAY.2017 19:08:11



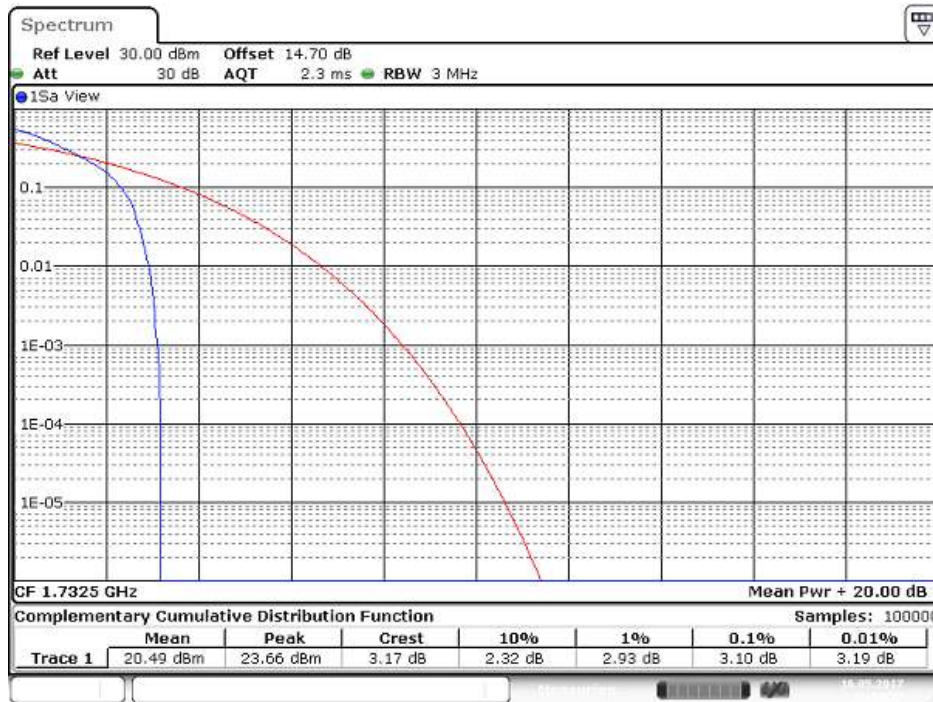
**LTE Band 4**

**CHANNEL BANDWIDTH: 1.4MHz / QPSK/1RB**



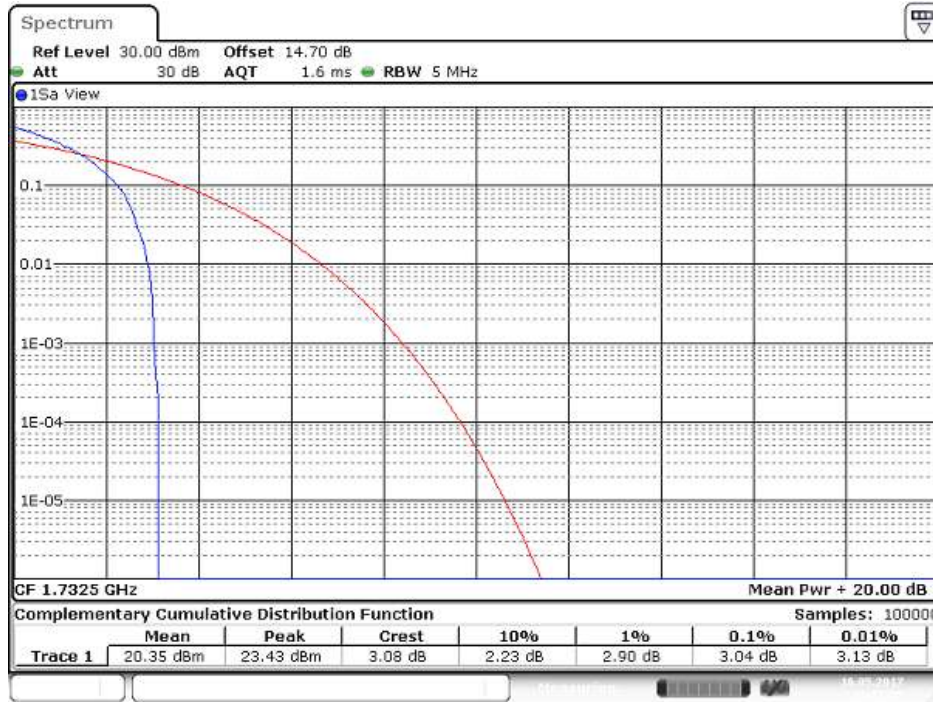
Date: 16MAY 2017 17:25:24

**CHANNEL BANDWIDTH: 3MHz / QPSK /1RB**



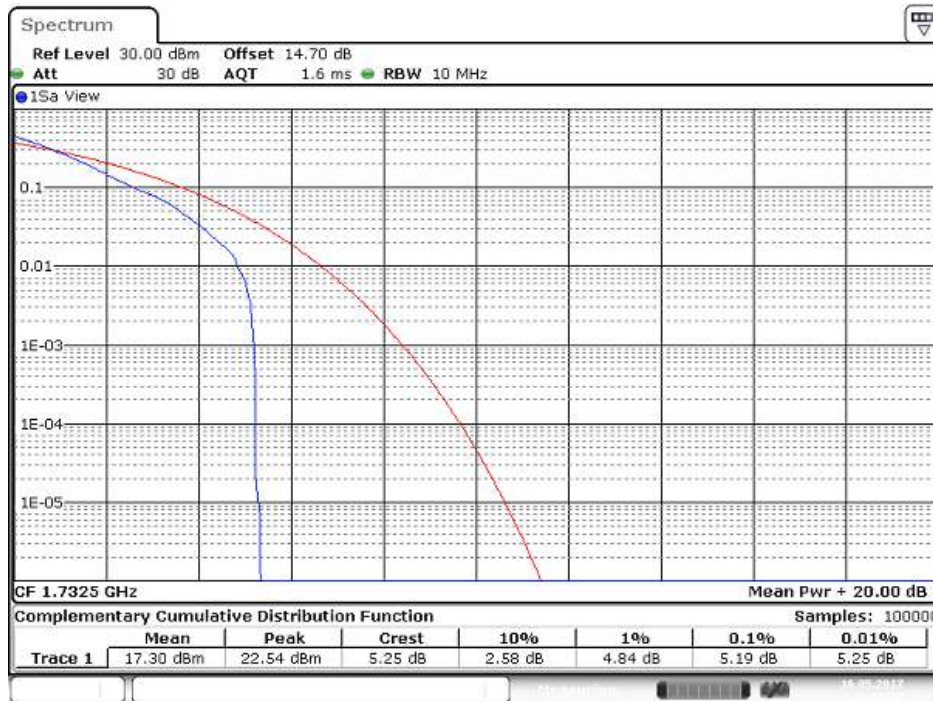
Date: 16MAY 2017 17:24:13

**CHANNEL BANDWIDTH: 5MHz / QPSK/1RB**



Date: 16MAY 2017 17:22:15

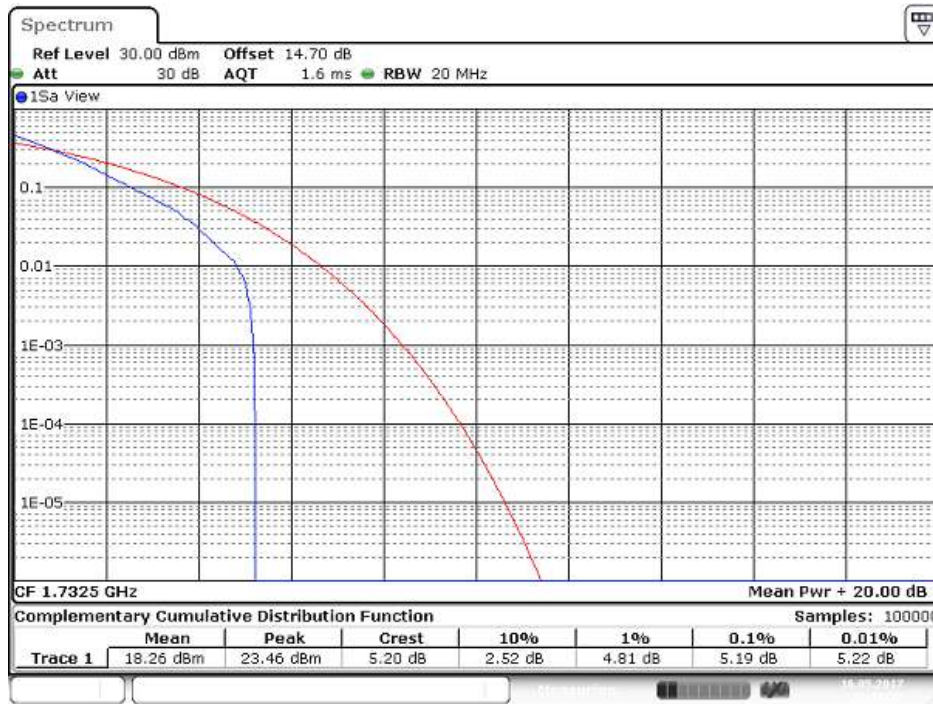
**CHANNEL BANDWIDTH: 10MHz / QPSK /1RB**



Date: 16MAY 2017 17:38:27

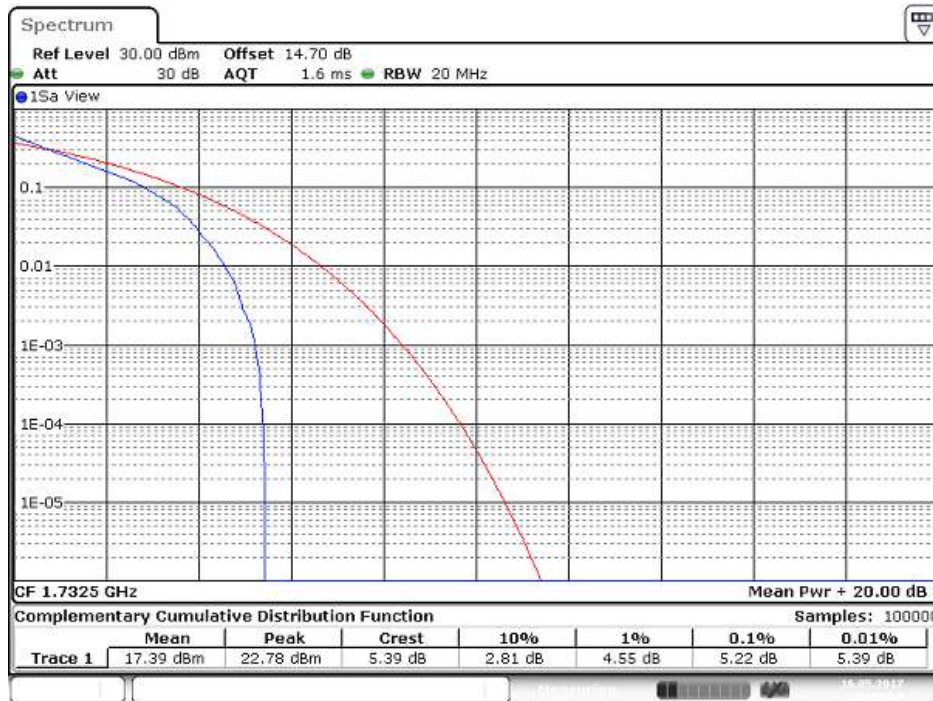


**CHANNEL BANDWIDTH: 15MHz / QPSK/1RB**



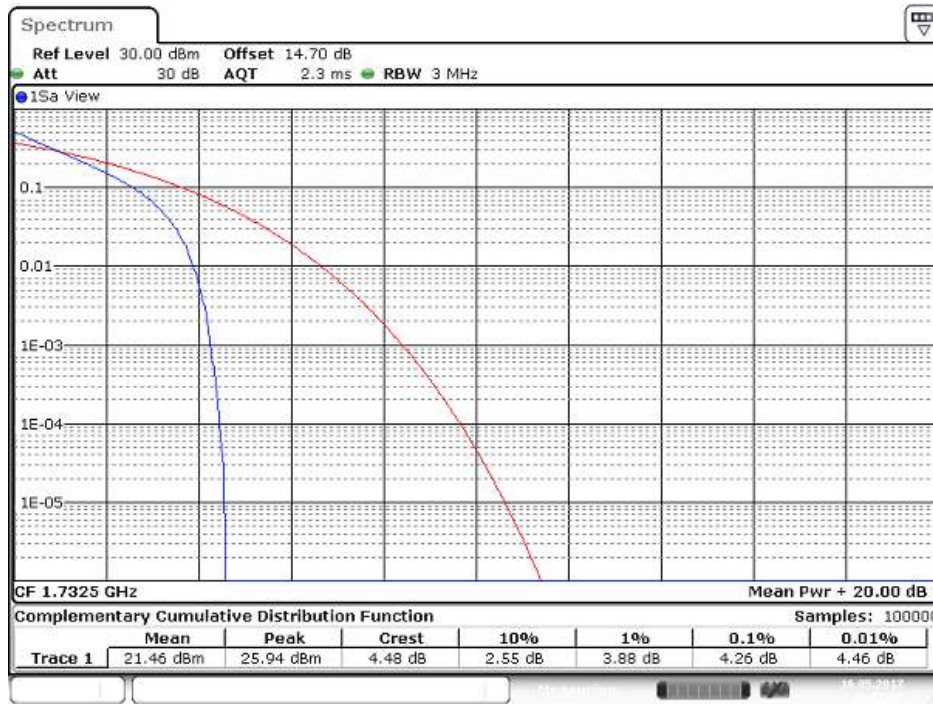
Date: 16MAY 2017 17:26:13

**CHANNEL BANDWIDTH: 20MHz / QPSK /1RB**



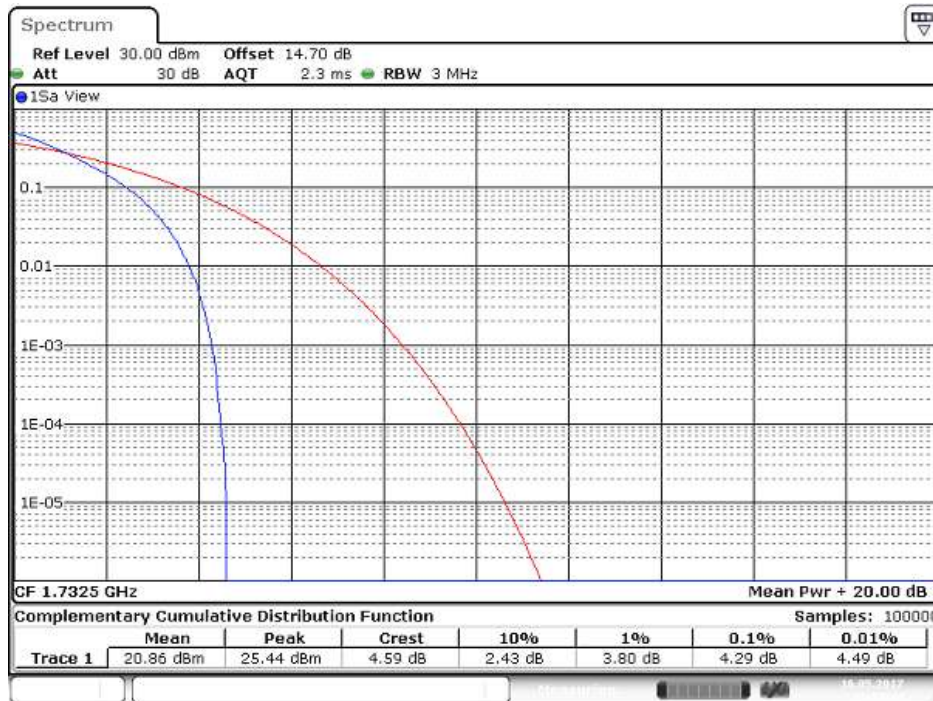
Date: 16MAY 2017 17:24:50

**CHANNEL BANDWIDTH: 1.4MHz / QPSK/100%RB**



Date: 16 MAY 2017 17:25:04

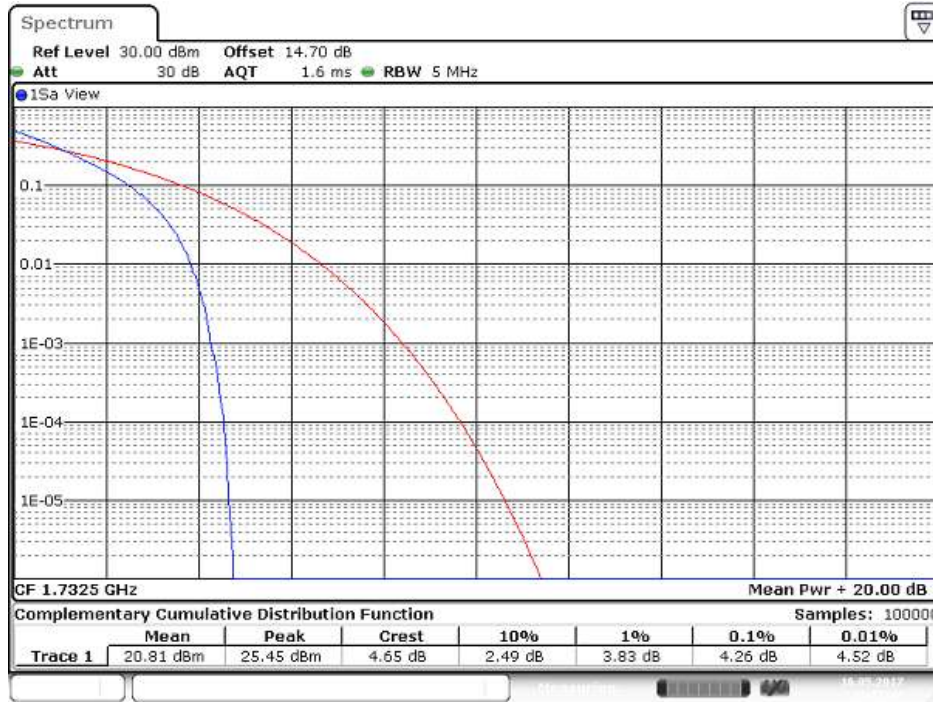
**CHANNEL BANDWIDTH: 3MHz / QPSK /100%RB**



Date: 16 MAY 2017 17:24:34

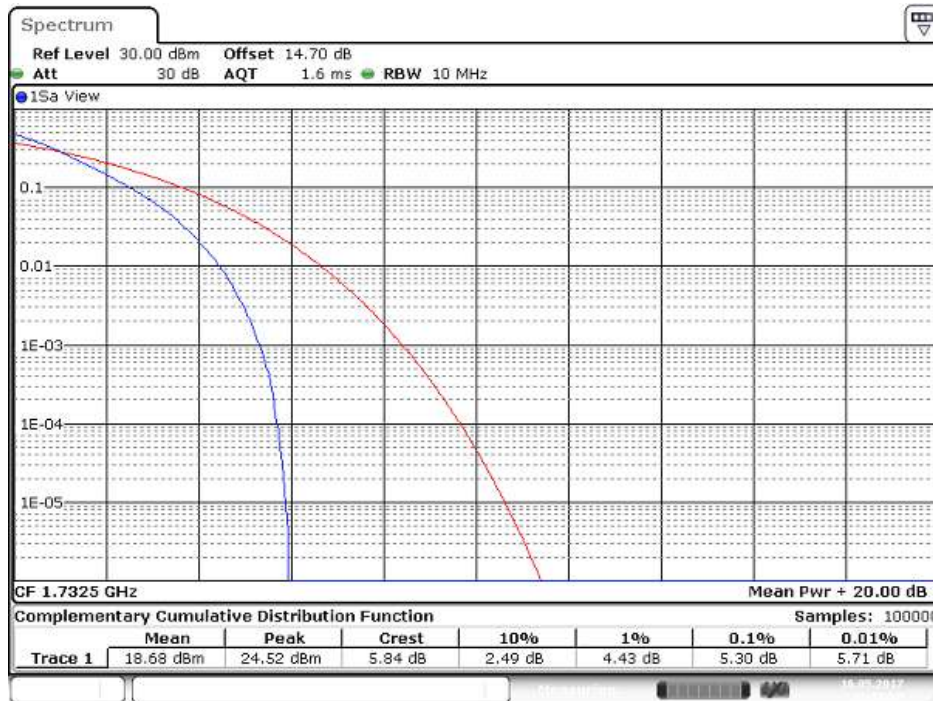


**CHANNEL BANDWIDTH: 5MHz / QPSK/100%RB**



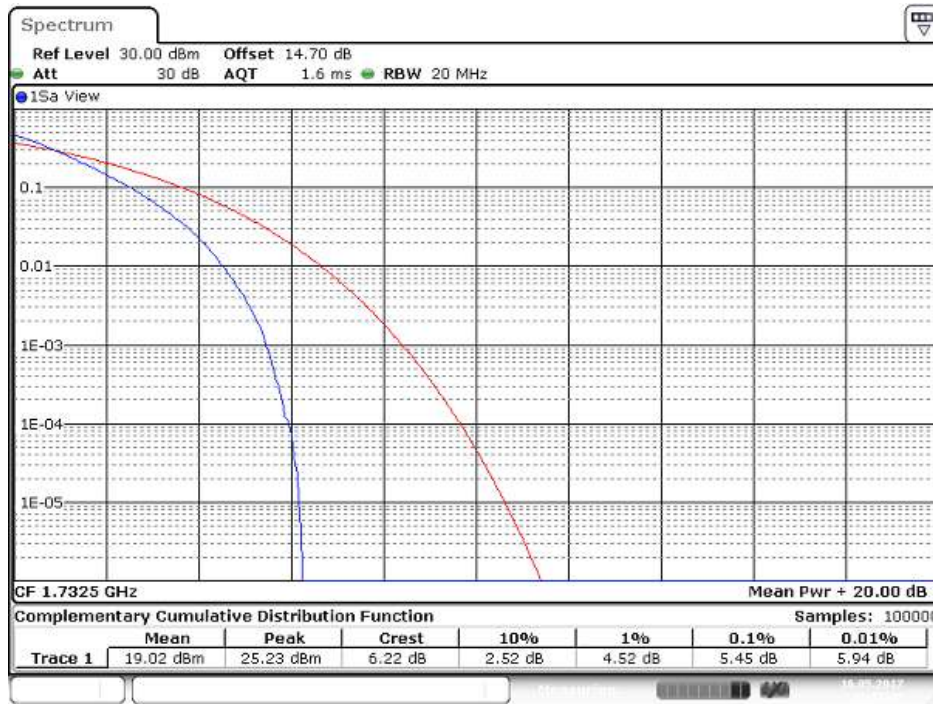
Date: 16MAY 2017 17:21:46

**CHANNEL BANDWIDTH: 10MHz / QPSK /100%RB**



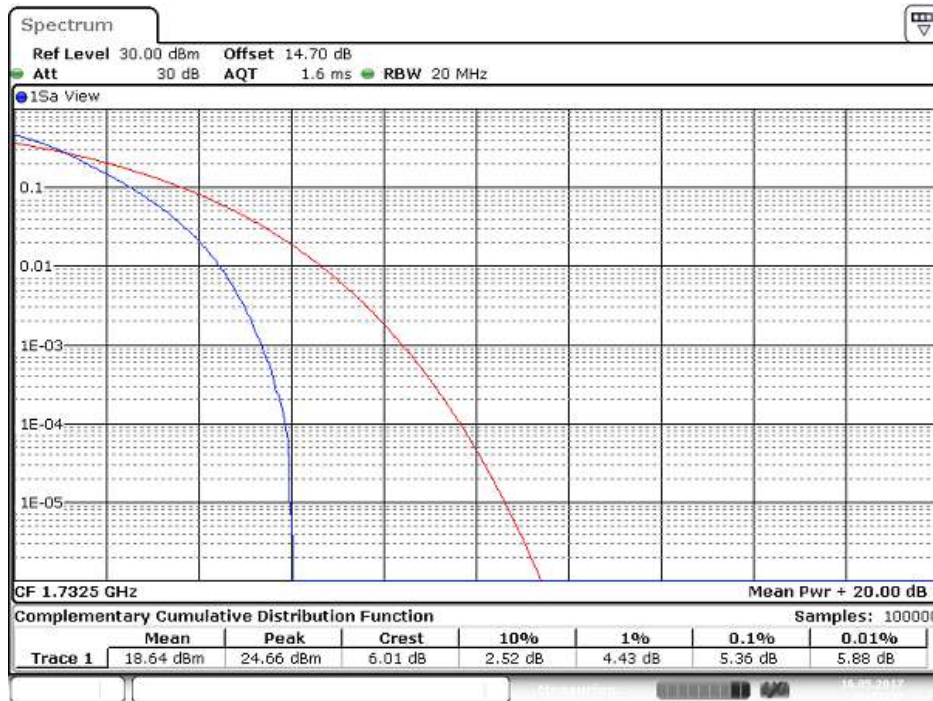
Date: 16MAY 2017 17:38:50

**CHANNEL BANDWIDTH: 15MHz / QPSK/100%RB**



Date: 16 MAY 2017 17:25:48

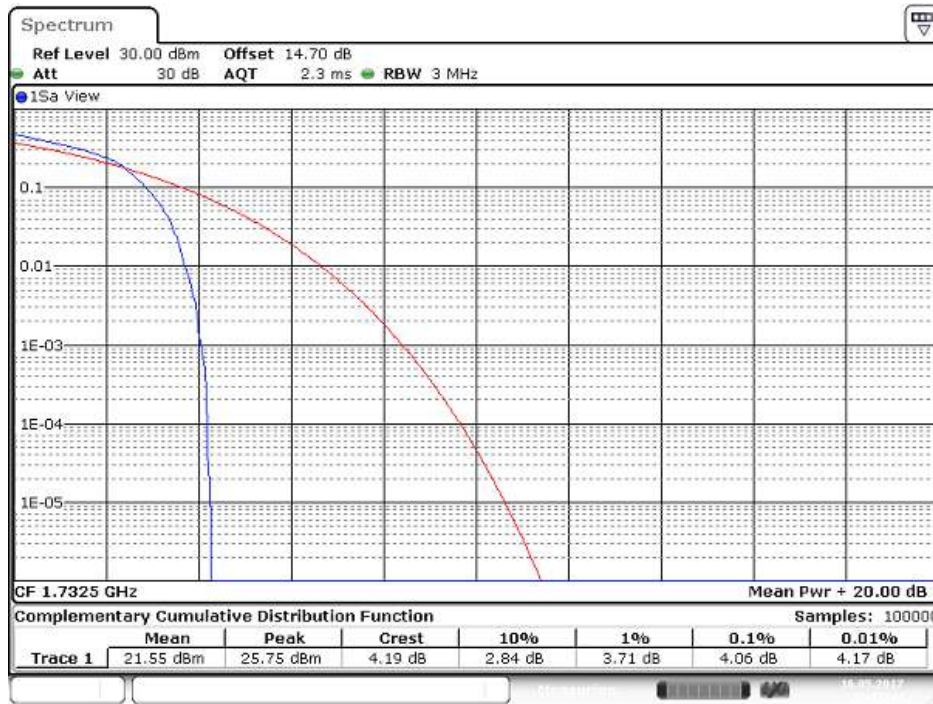
**CHANNEL BANDWIDTH: 20MHz / QPSK /100%RB**



Date: 16 MAY 2017 17:35:12

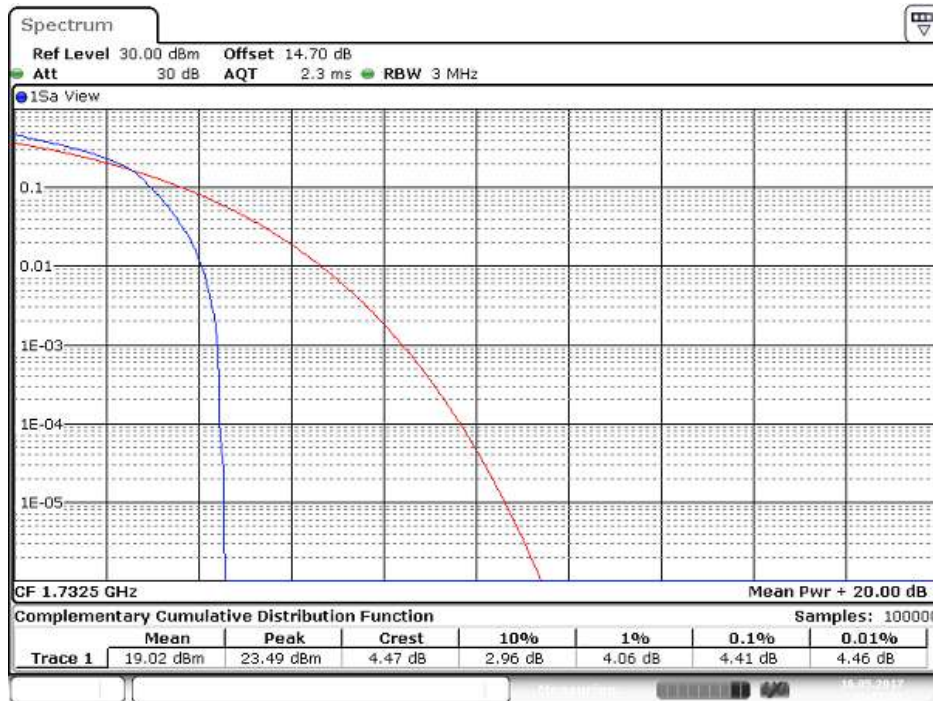


**CHANNEL BANDWIDTH: 1.4MHz / 16QAM/1RB**



Date: 16 MAY 2017 17:25:44

**CHANNEL BANDWIDTH: 3MHz / 16QAM /1RB**



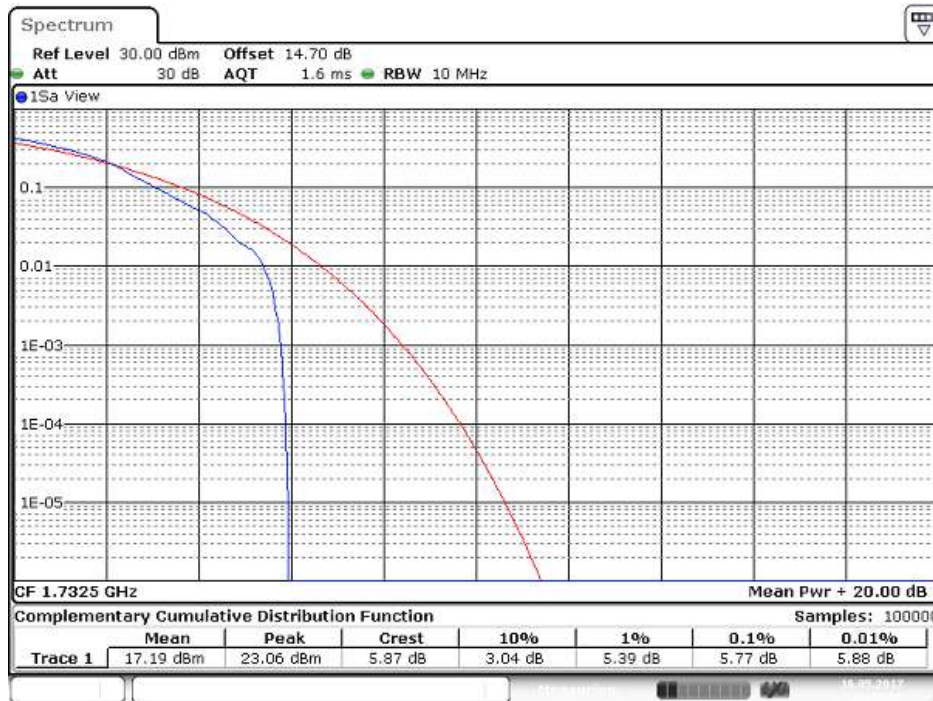
Date: 16 MAY 2017 17:23:51

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



Date: 16MAY 2017 17:22:38

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



Date: 16MAY 2017 17:38:06

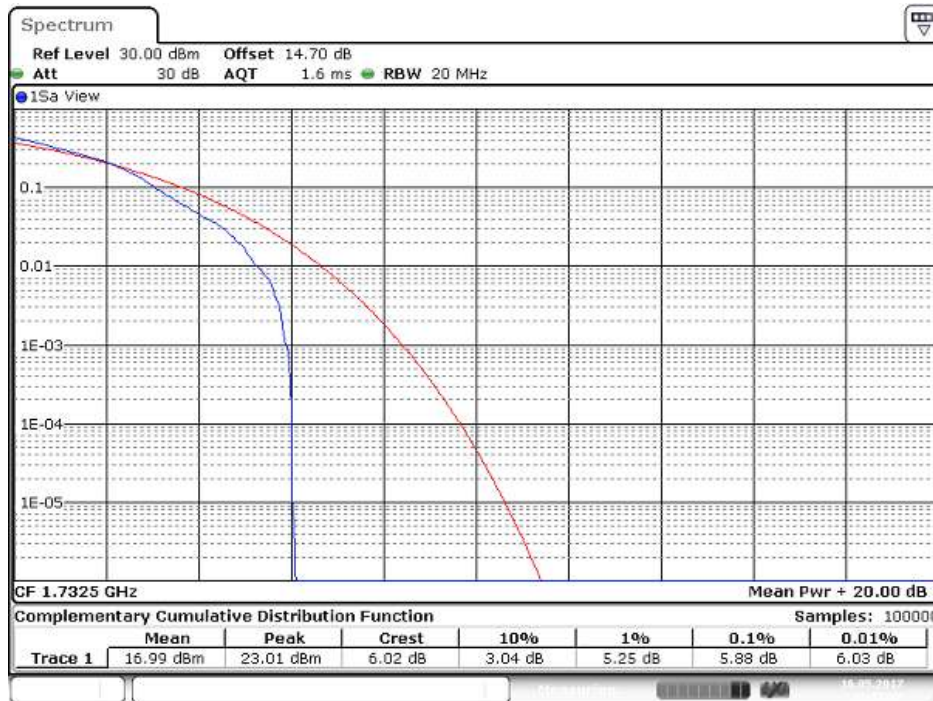


**CHANNEL BANDWIDTH: 15MHz / 16QAM /1RB**



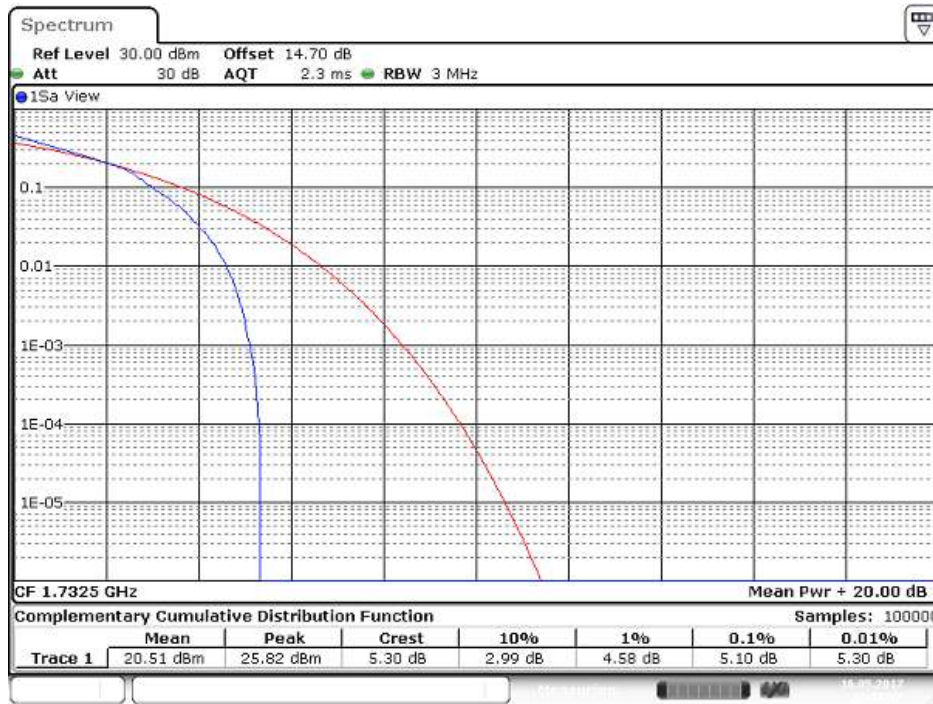
Date: 16 MAY 2017 17:26:36

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



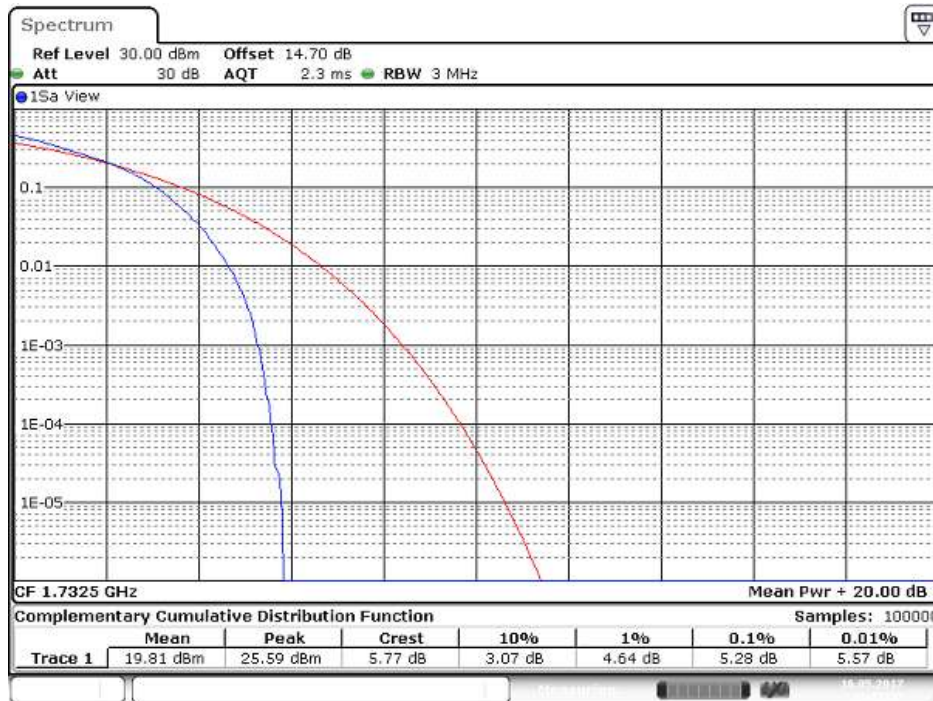
Date: 16 MAY 2017 17:32:18

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



Date: 16 MAY 2017 17:26:17

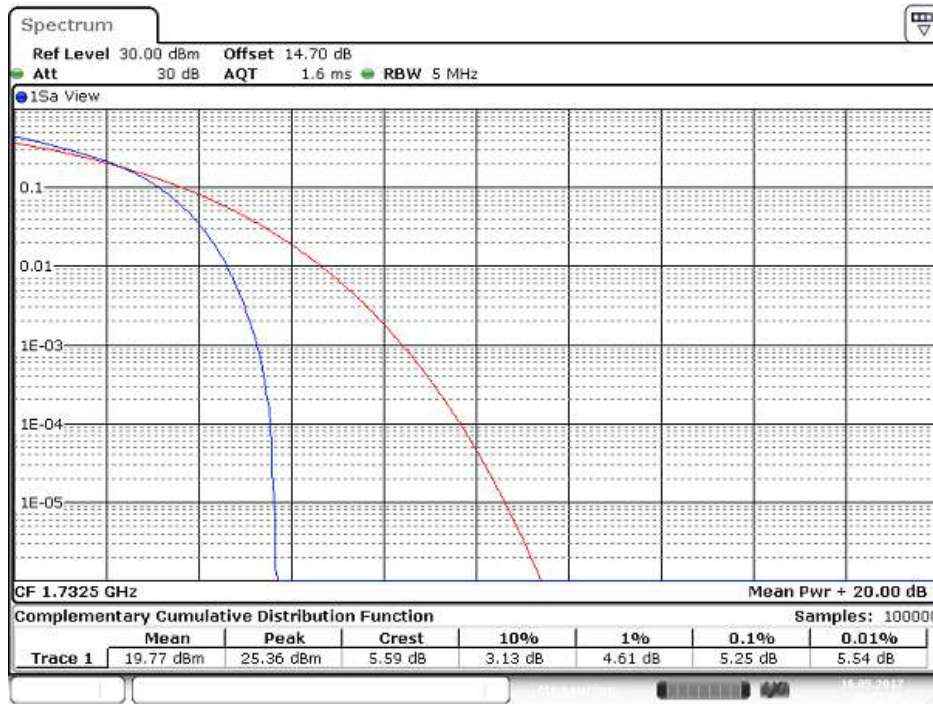
**CHANNEL BANDWIDTH: 3MHz / 16QAM /100%RB**



Date: 16 MAY 2017 17:23:32

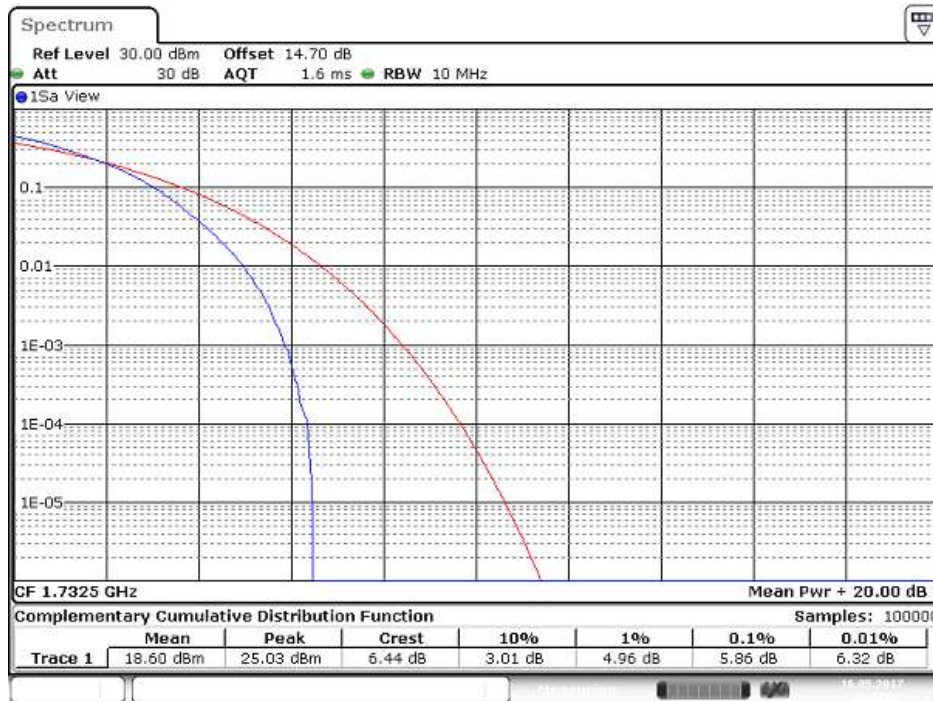


**CHANNEL BANDWIDTH: 5MHz / 16QAM /100%RB**



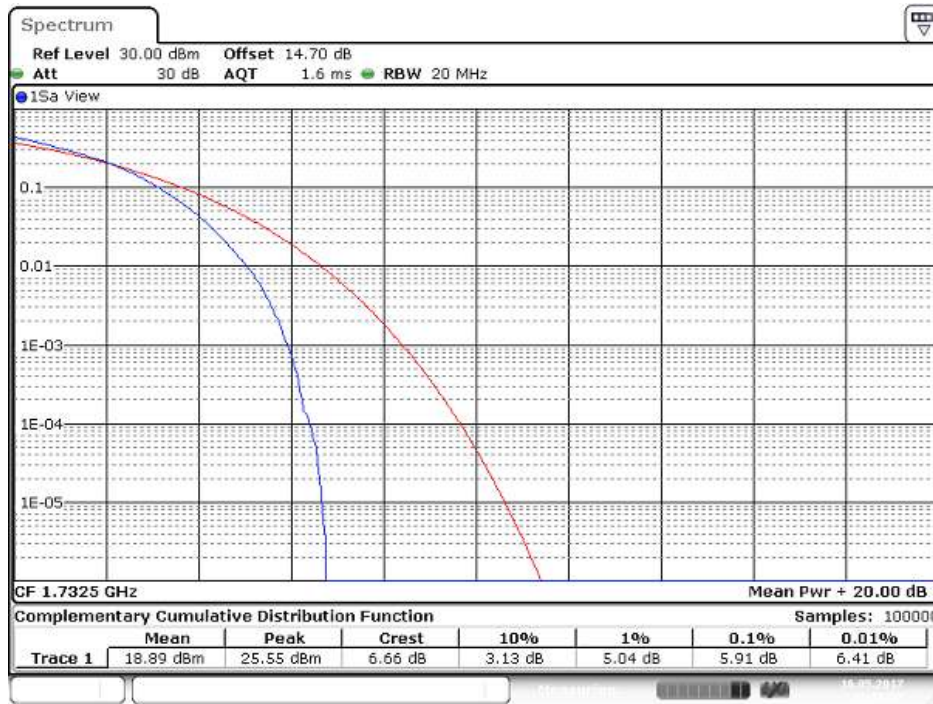
Date: 16MAY 2017 17:23:01

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



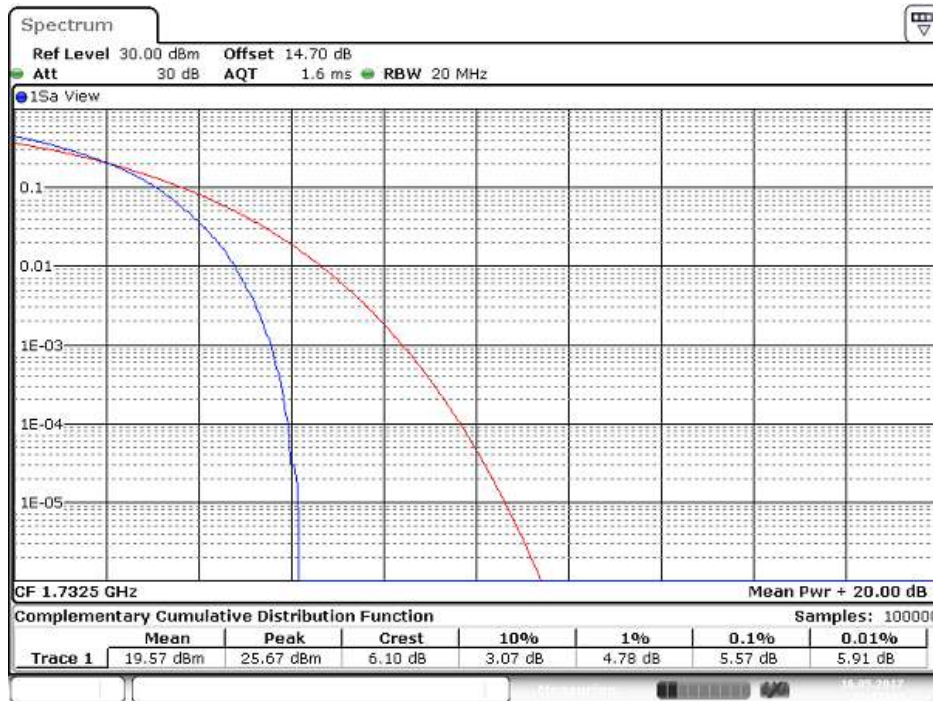
Date: 16MAY 2017 17:27:26

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



Date: 16 MAY 2017 17:26:58

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



Date: 16 MAY 2017 17:31:50

## 7.6 BAND EDGE MEASUREMENT

### LIMIT

#### **FCC §27.53(g), Band 17**

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

#### **FCC §27.53(h), Band 4**

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

#### **According to RSS-130, Band 17,**

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  $43 + 10 \log_{10} p$  (watts), dB. However, in the 100 kHz band immediately outside the equipment's operating frequency range, a resolution bandwidth of 30 kHz may be employed.

#### **According to RSS-139, Band 4,**

General protection levels. Except as otherwise specified below, for operations in the In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block,<sup>2</sup> which can contain the equipment's occupied bandwidth, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least  $43 + 10 \log_{10} p$  (watts) dB

After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least  $43 + 10 \log_{10} p$  (watts) dB.

### **TEST PROCEDURES**

KDB 971168 D01 v02r02 - Section 6.0

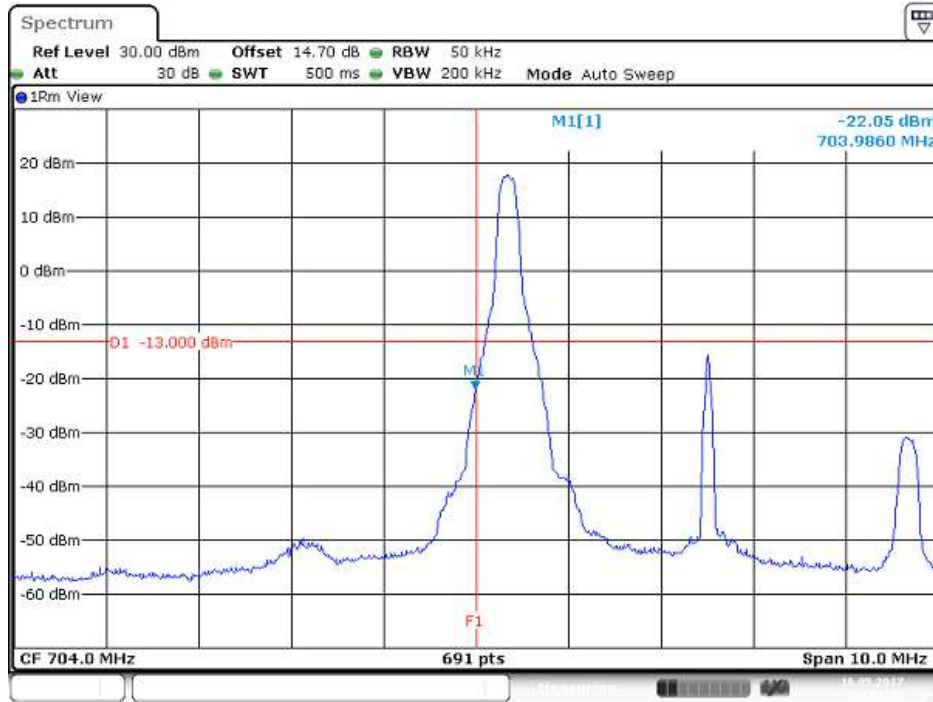
1. RBW  $\geq$  1% of the emission bandwidth
2. VBW  $\geq$  3 x RBW
3. Span was set large enough so as to capture all out of emissions near the band edge.

**TEST RESULTS:**

**LTE Band 17**

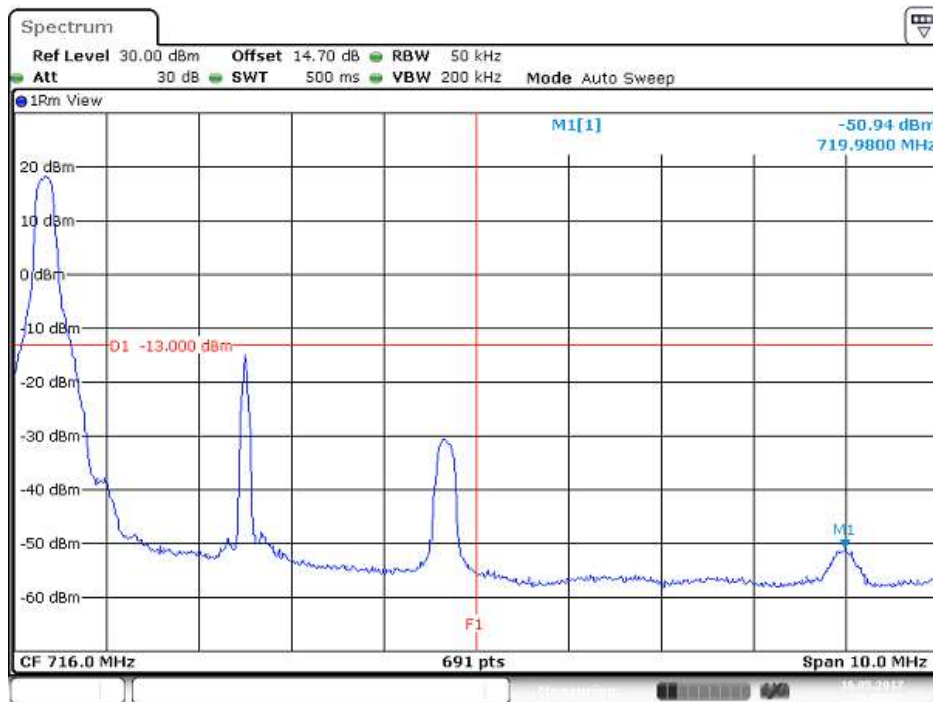
**CHANNEL BANDWIDTH: 5MHz / QPSK / 1 RB ALLOCATED**

**LOWER BAND EDGE**



Date: 16 MAY 2017 18:48:42

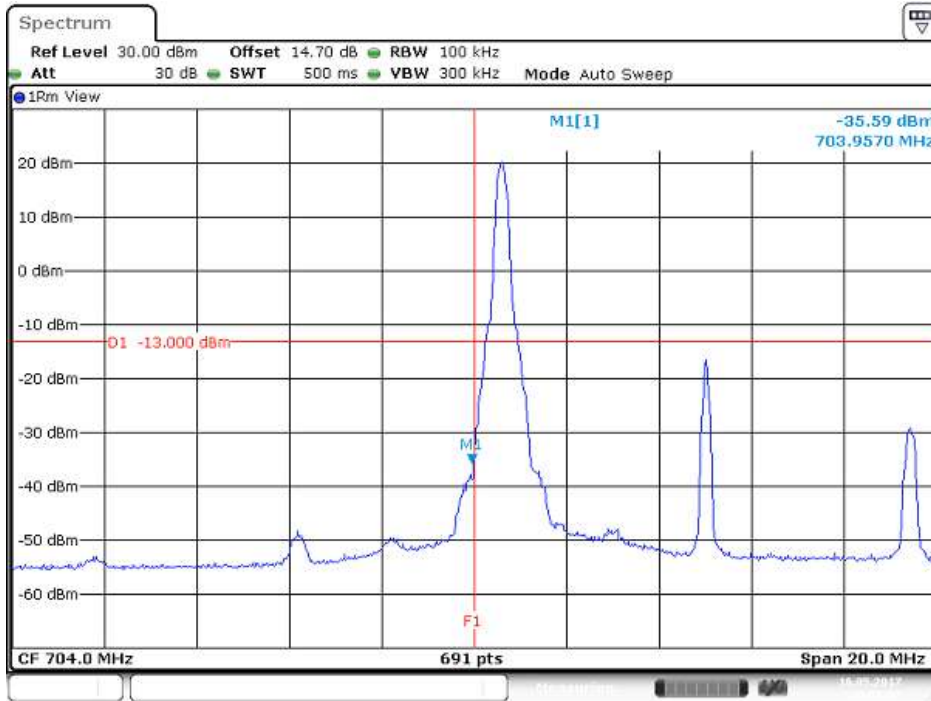
**HIGHER BAND EDGE**



Date: 16 MAY 2017 19:03:53

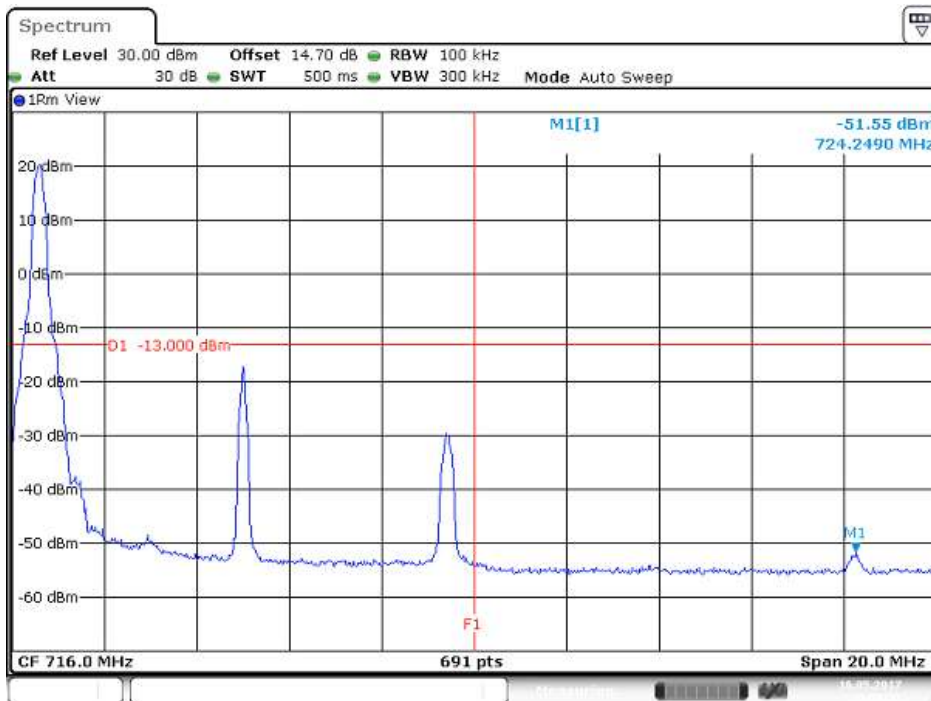


### CHANNEL BANDWIDTH: 10MHz / QPSK / 1 RB ALLOCATED LOWER BAND EDGE



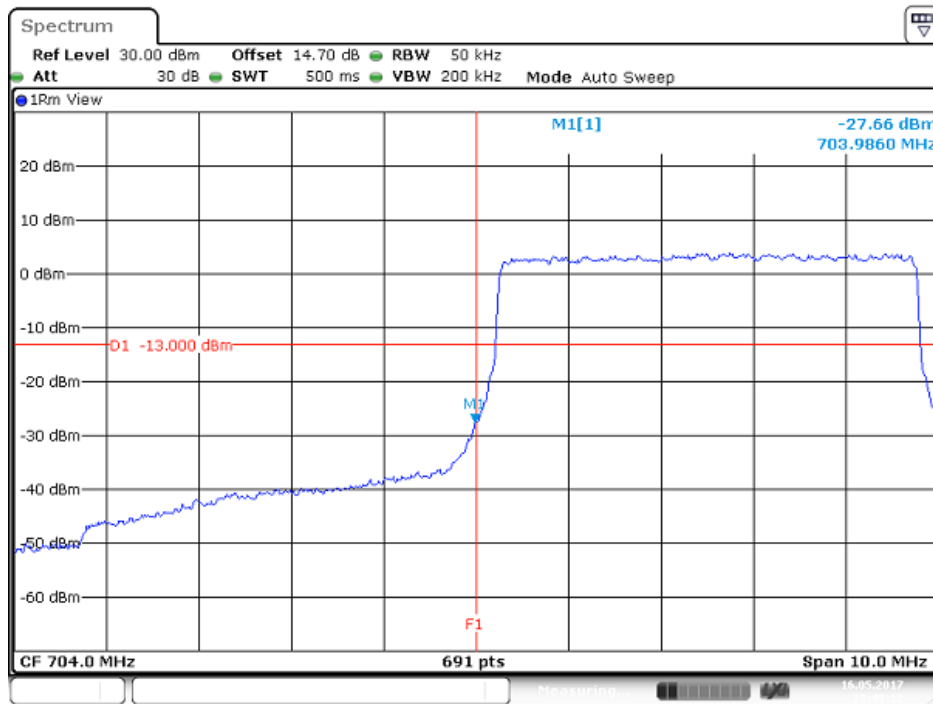
Date: 16 MAY 2017 18:58:03

### HIGHER BAND EDGE

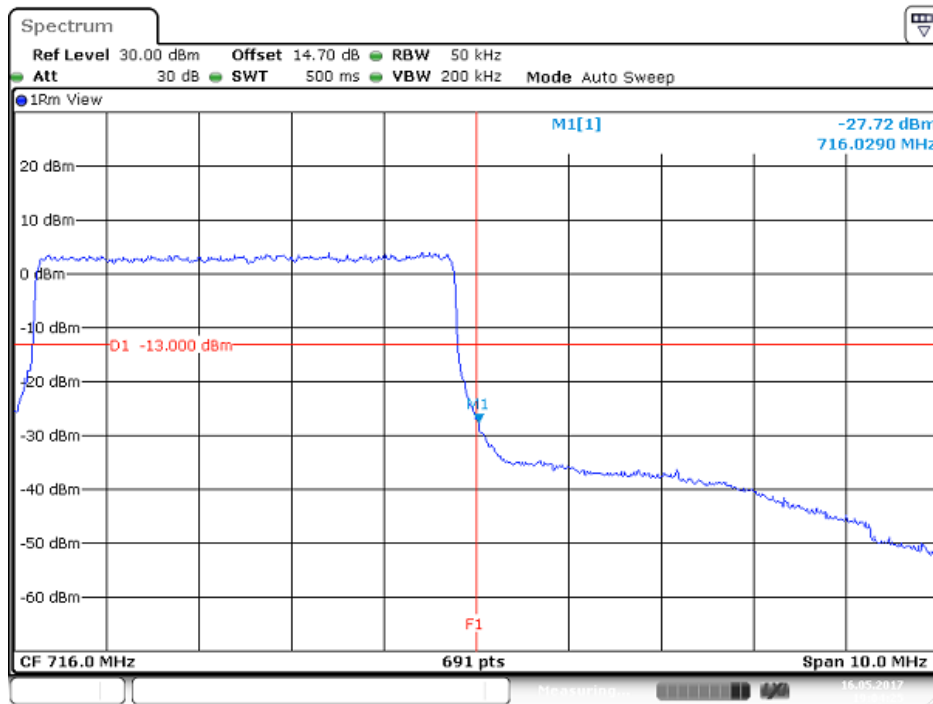


Date: 16 MAY 2017 19:00:21

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

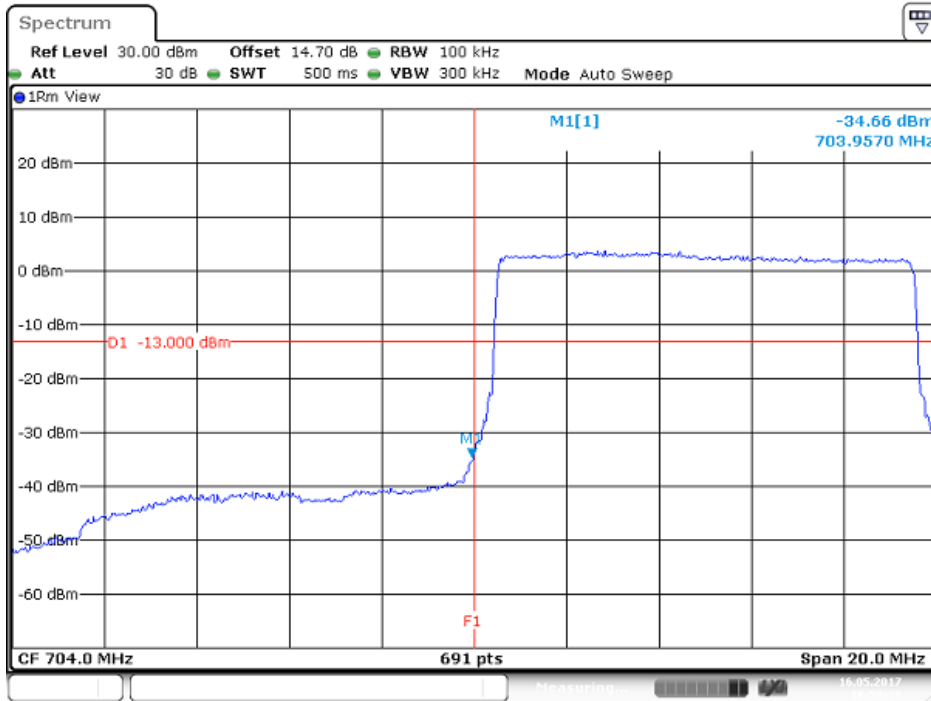


**HIGHER BAND EDGE**

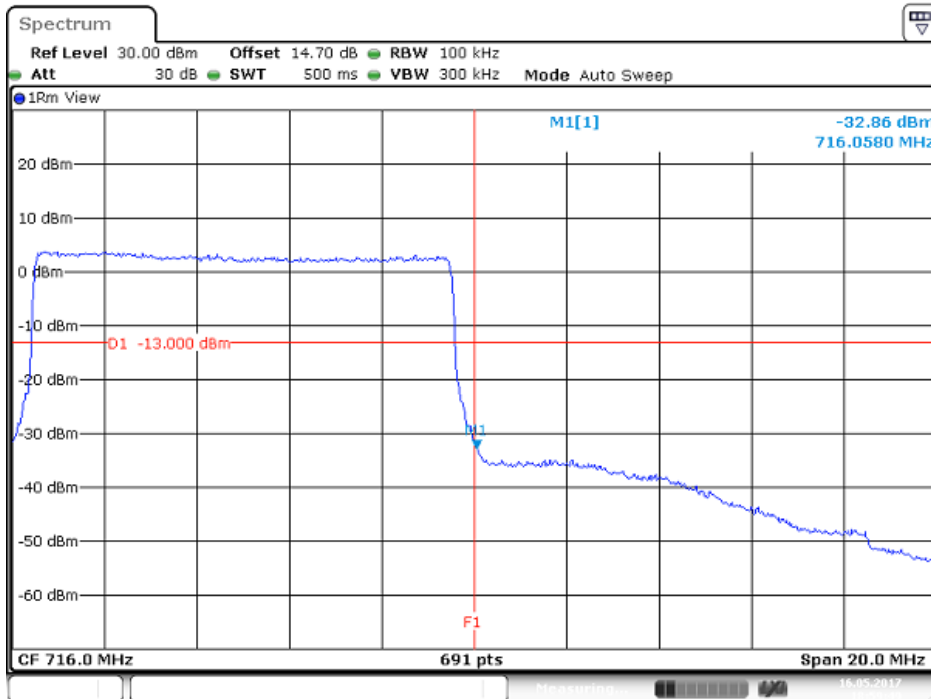




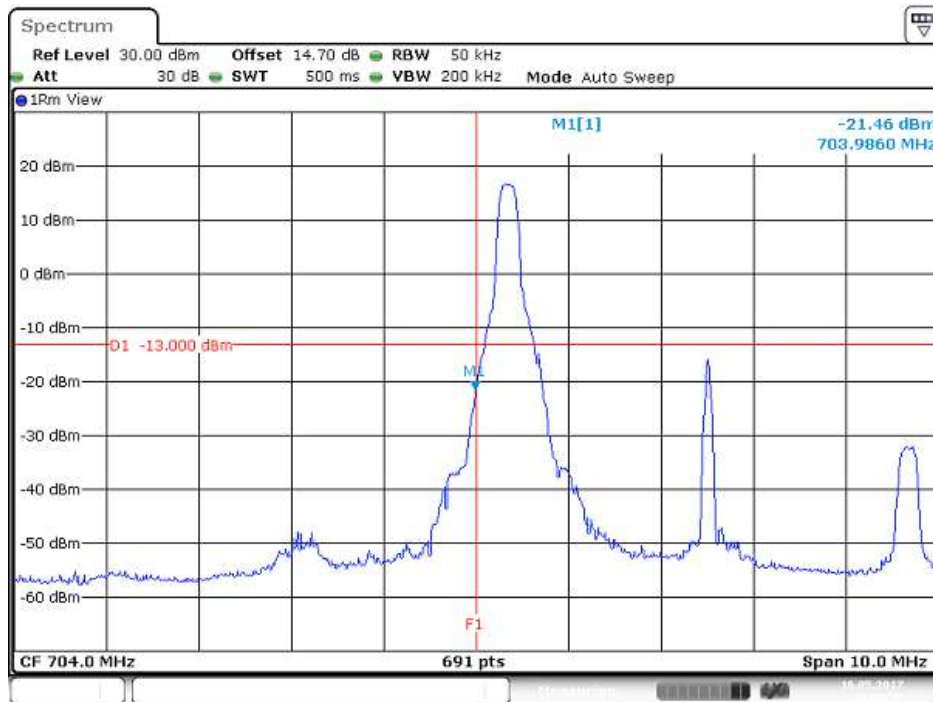
**CHANNEL BANDWIDTH: 10MHz / QPSK / FULL RB ALLOCATED  
LOWER BAND EDGE**



**HIGHER BAND EDGE**

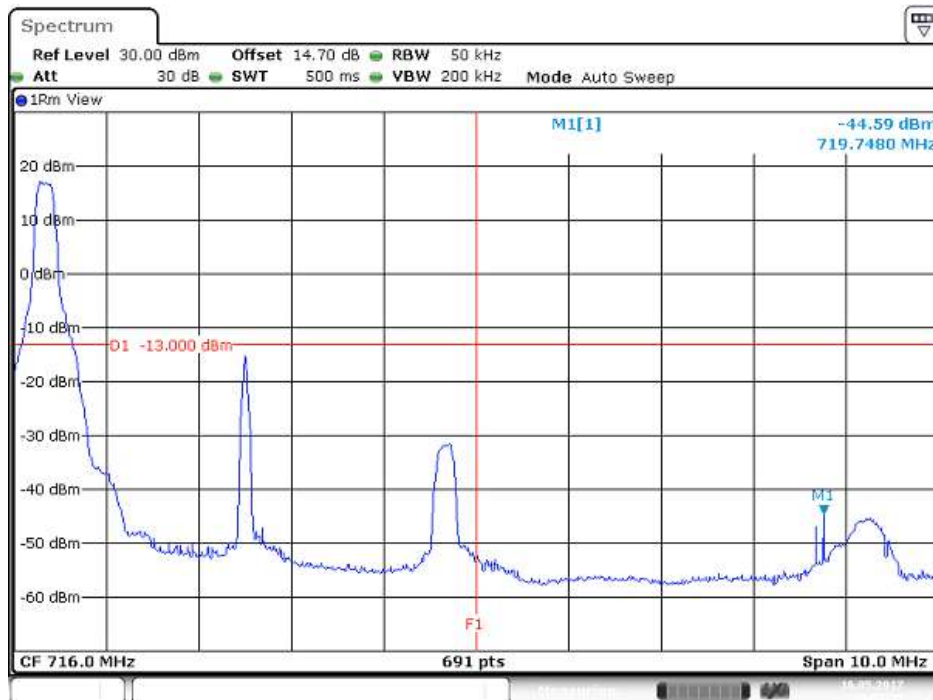


### CHANNEL BANDWIDTH: 5MHz / 16QAM / 1RB ALLOCATED LOWER BAND EDGE



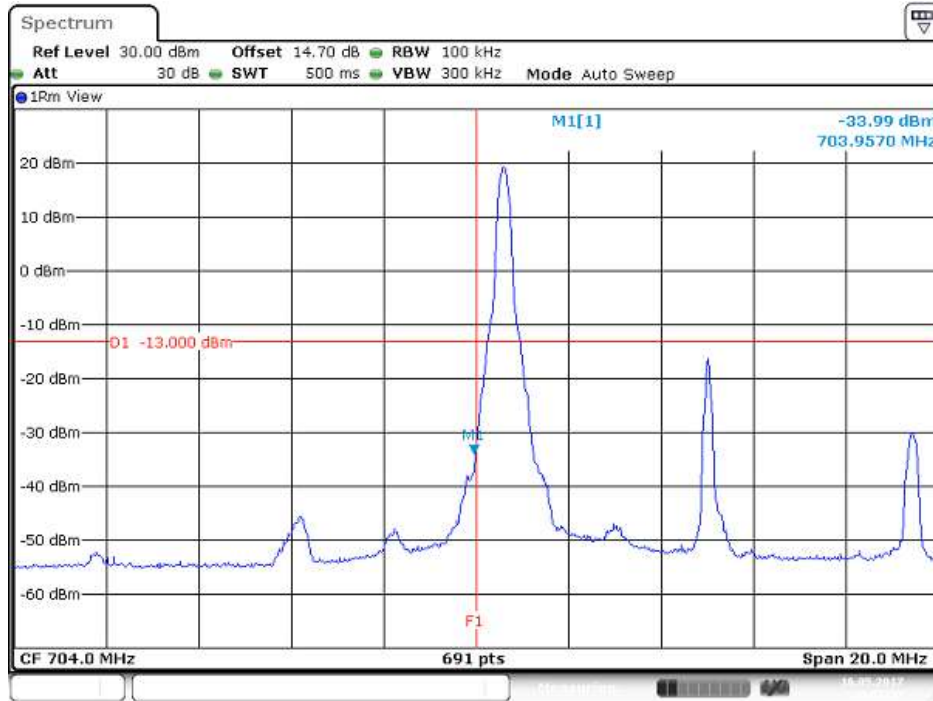
Date: 16MAY 2017 18:49:13

### HIGHER BAND EDGE



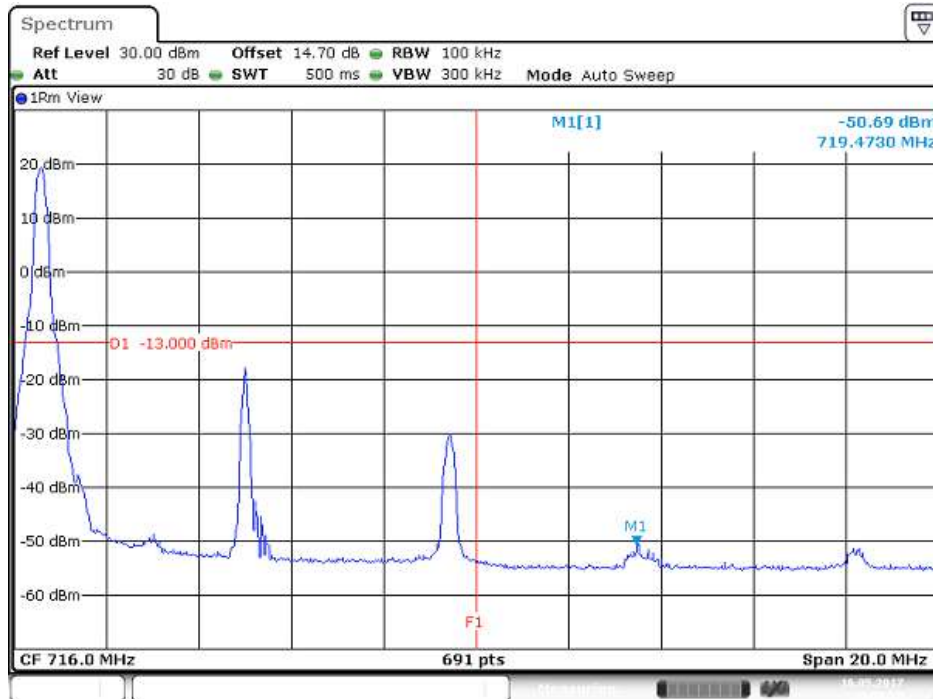
Date: 16MAY 2017 19:09:26

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



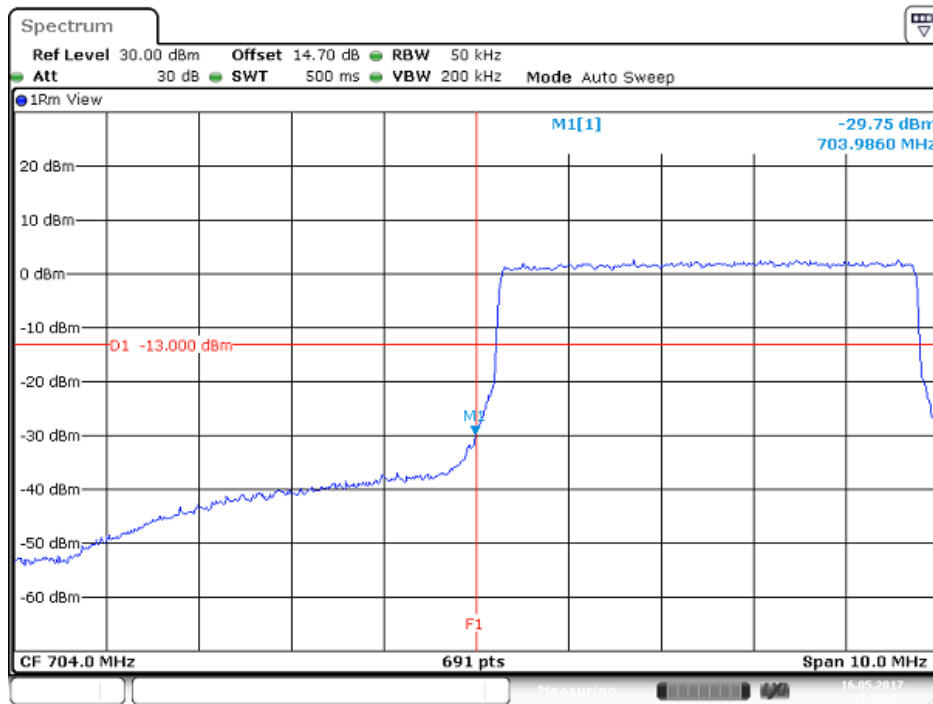
Date: 16 MAY 2017 18:51:17

**HIGHER BAND EDGE**



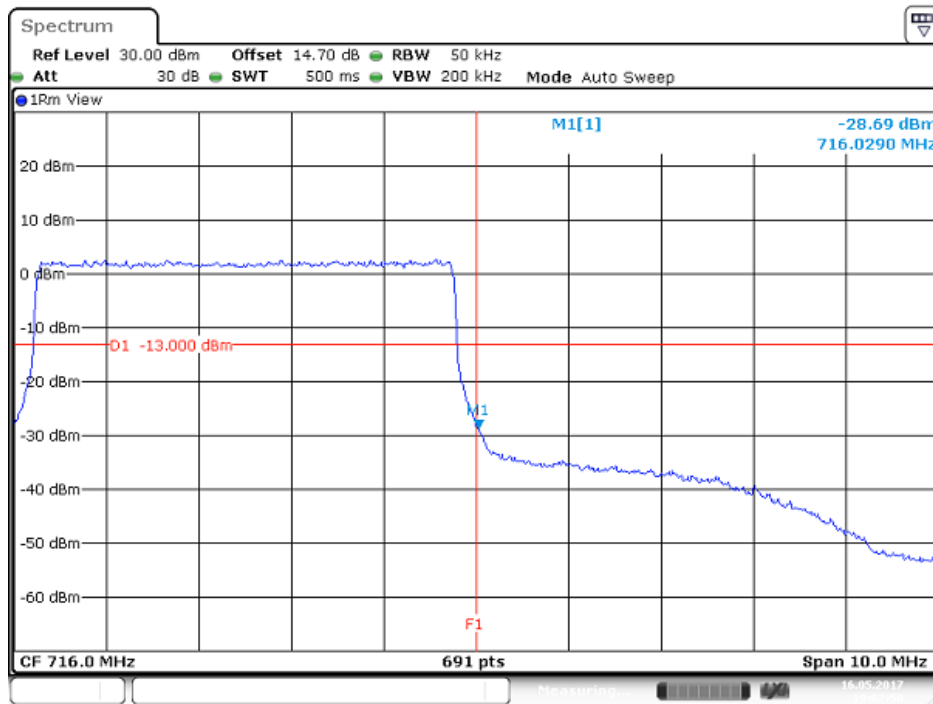
Date: 16 MAY 2017 19:01:00

### CHANNEL BANDWIDTH: 5MHz / 16QAM / FULLRB ALLOCATED LOWER BAND EDGE



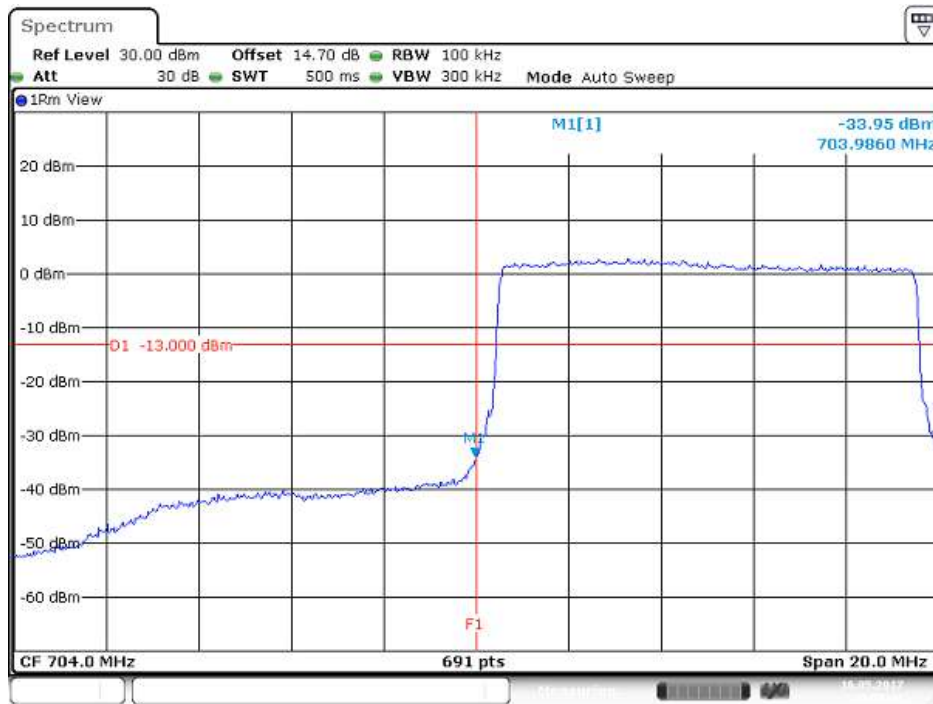
Date: 16 MAY 2017 18:49:42

### HIGHER BAND EDGE



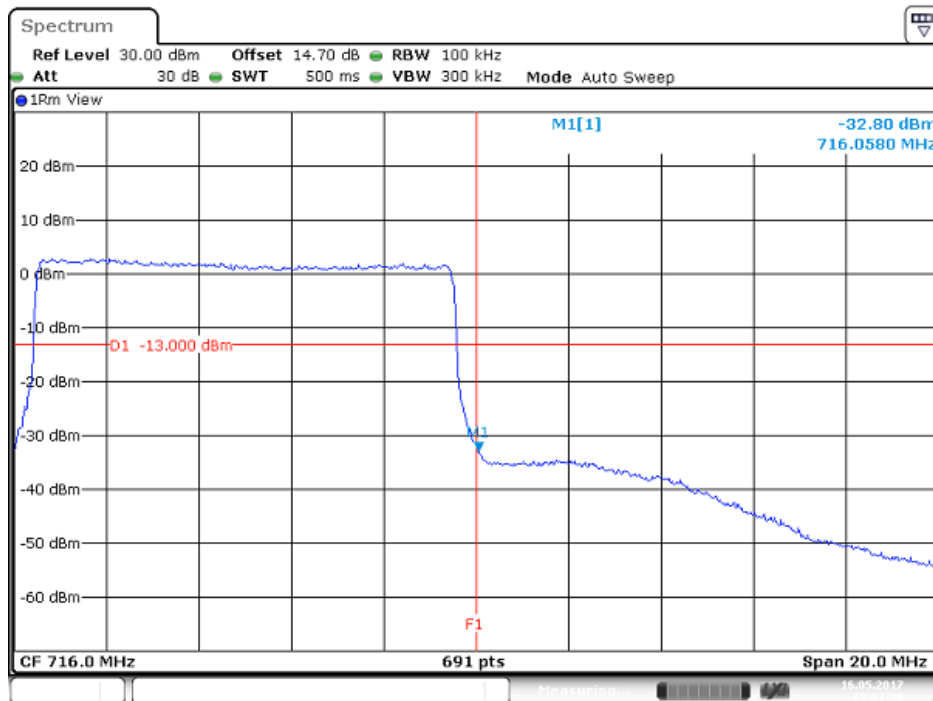
Date: 16 MAY 2017 19:02:51

### CHANNEL BANDWIDTH: 10MHz / 16QAM / FULLRB ALLOCATED LOWER BAND EDGE



Date: 16 MAY 2017 18:50:42

### HIGHER BAND EDGE

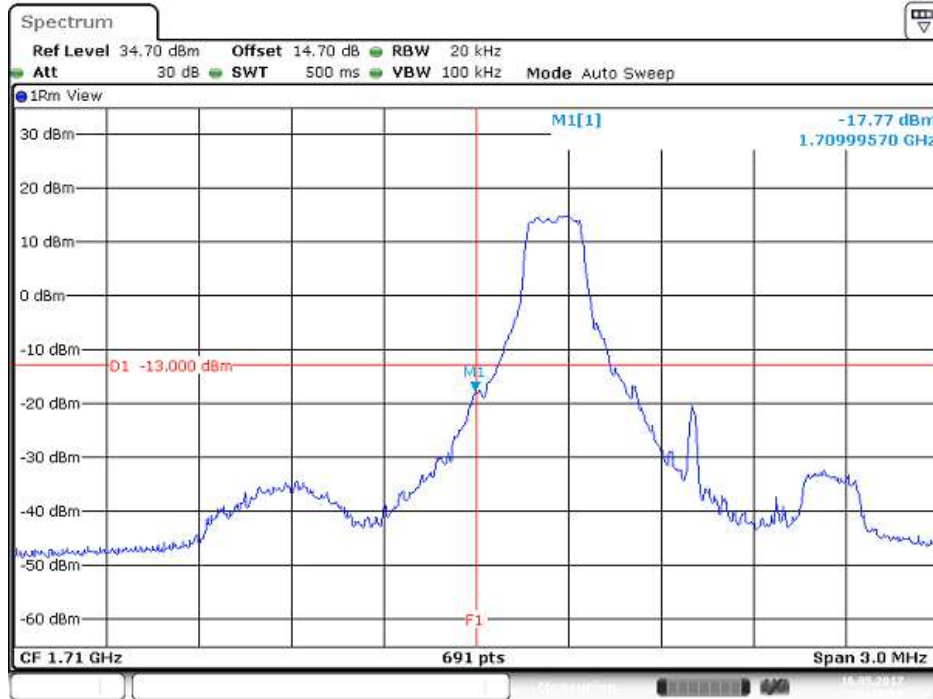


Date: 16 MAY 2017 19:01:37

### LTE Band 4

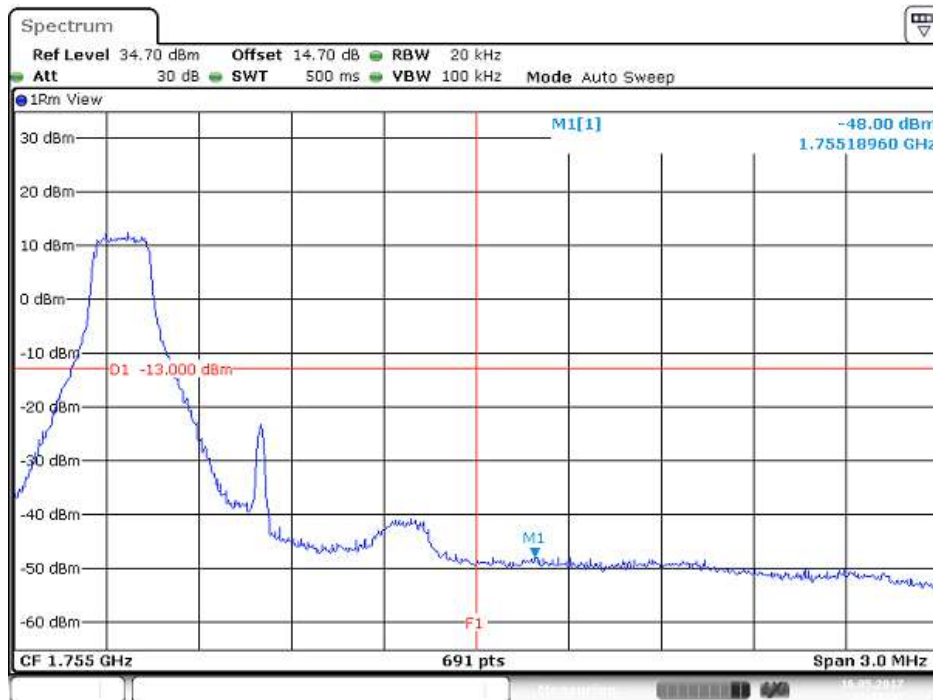
CHANNEL BANDWIDTH: 1.4MHz / QPSK / 1RB ALLOCATION

### LOWER BAND EDGE



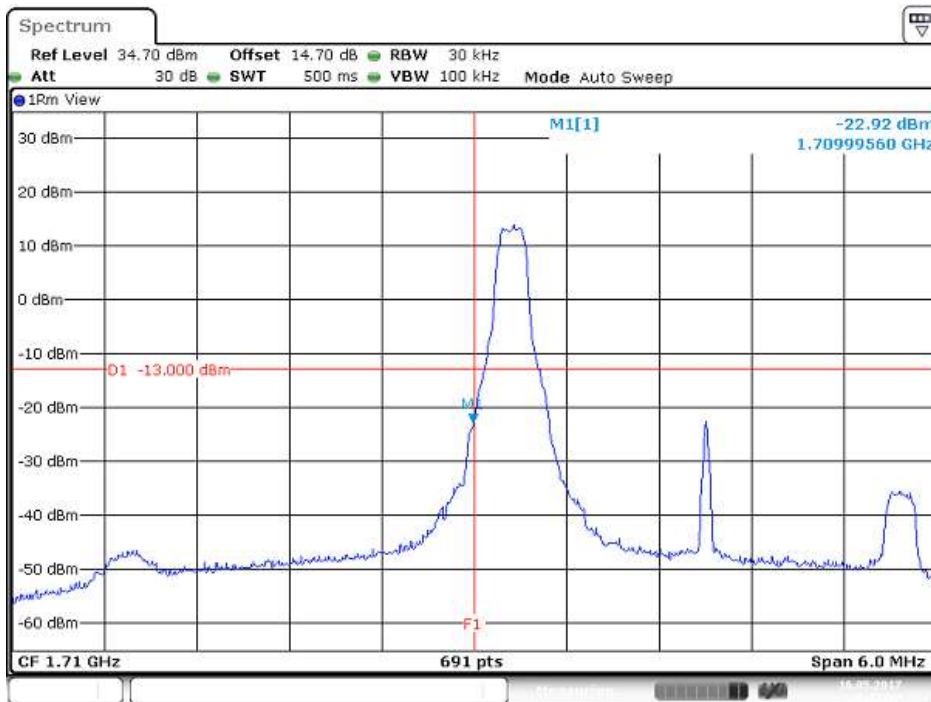
Date: 16MAY 2017 16:28:56

### HIGHER BAND EDGE



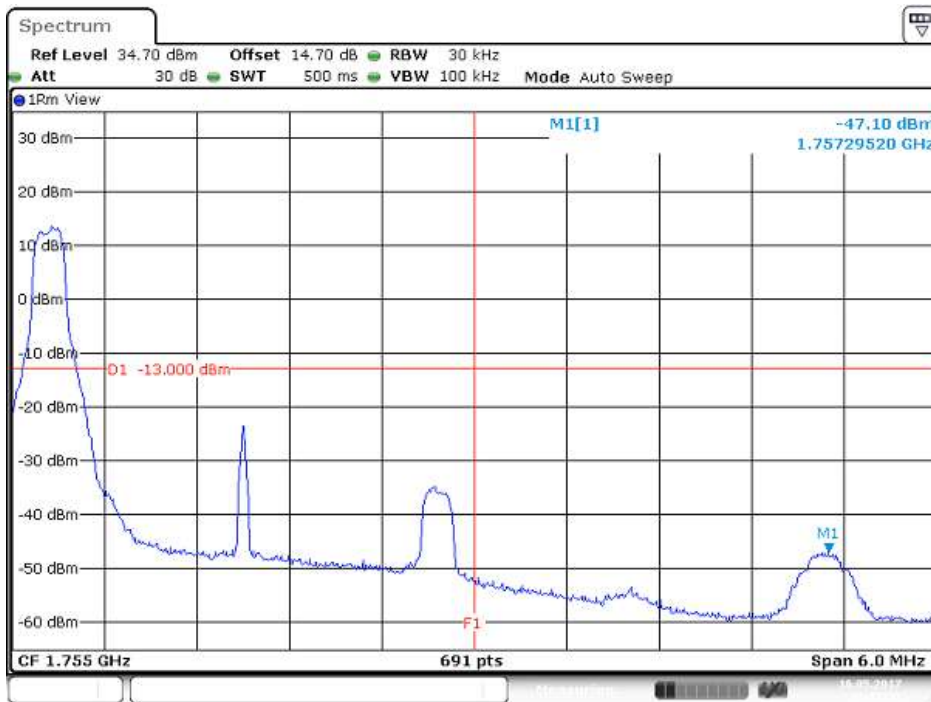
Date: 16MAY 2017 17:08:47

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



Date: 16 MAY 2017 16:32:20

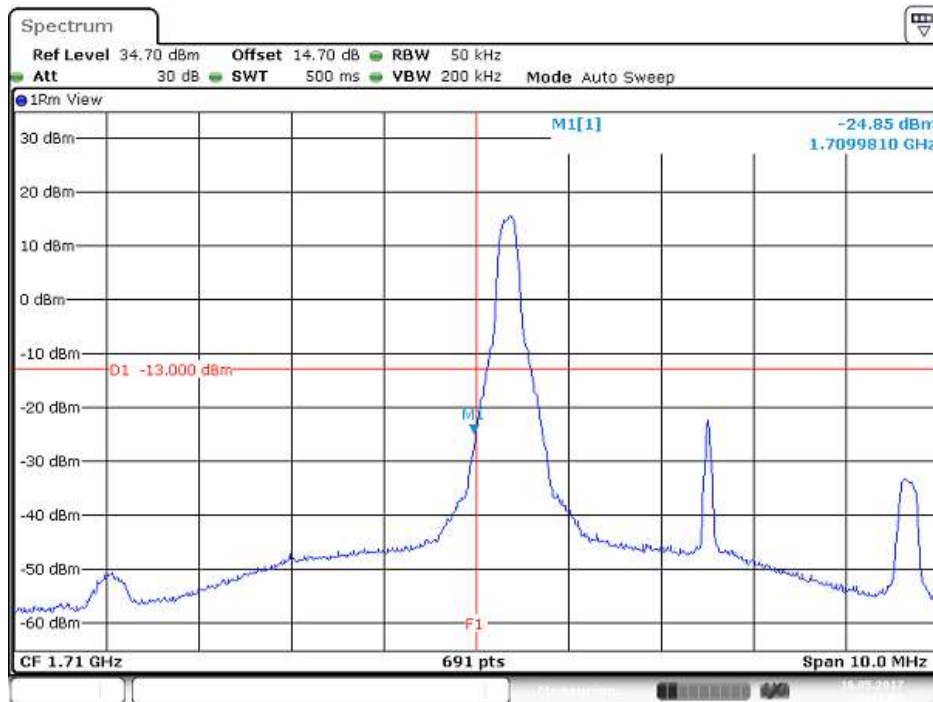
### HIGHER BAND EDGE



Date: 16 MAY 2017 17:01:21

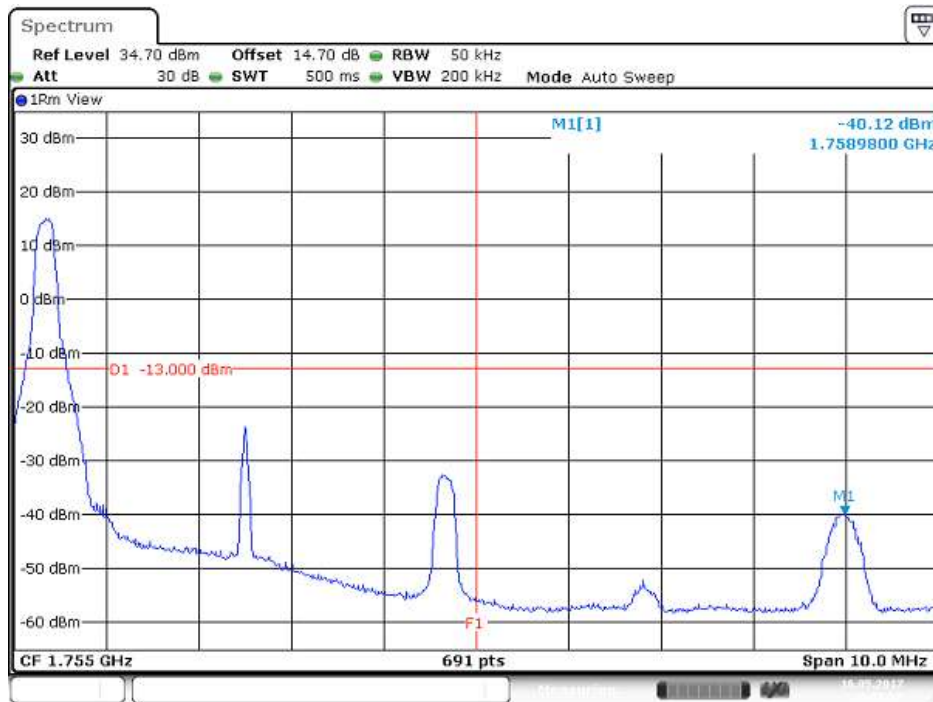


### CHANNEL BANDWIDTH: 5MHz / QPSK / 1RB ALLOCATION LOWER BAND EDGE



Date: 16 MAY 2017 16:25:09

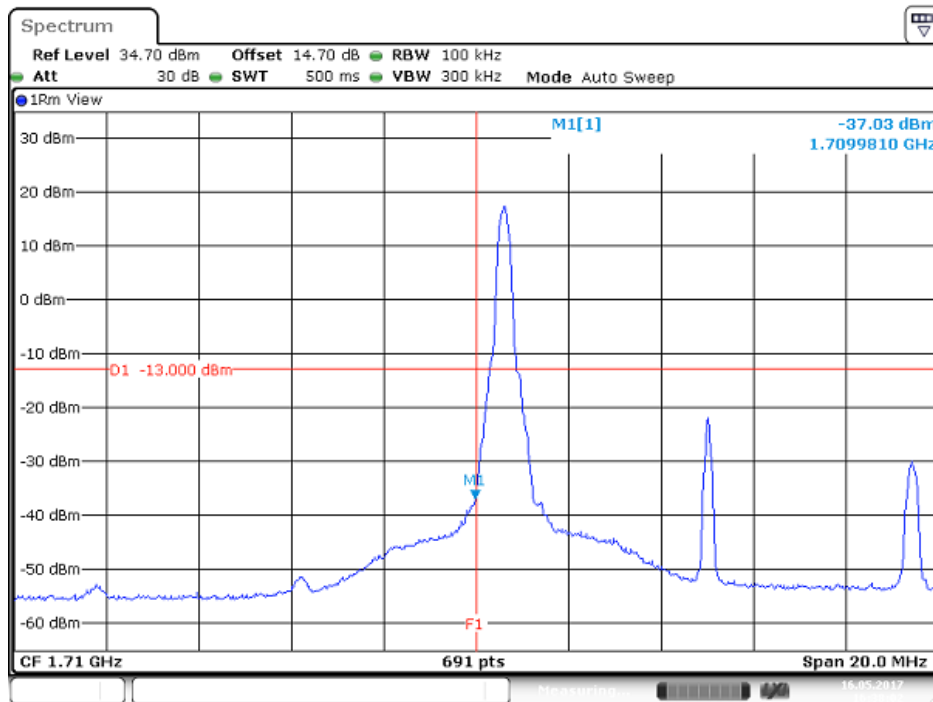
### HIGHER BAND EDGE



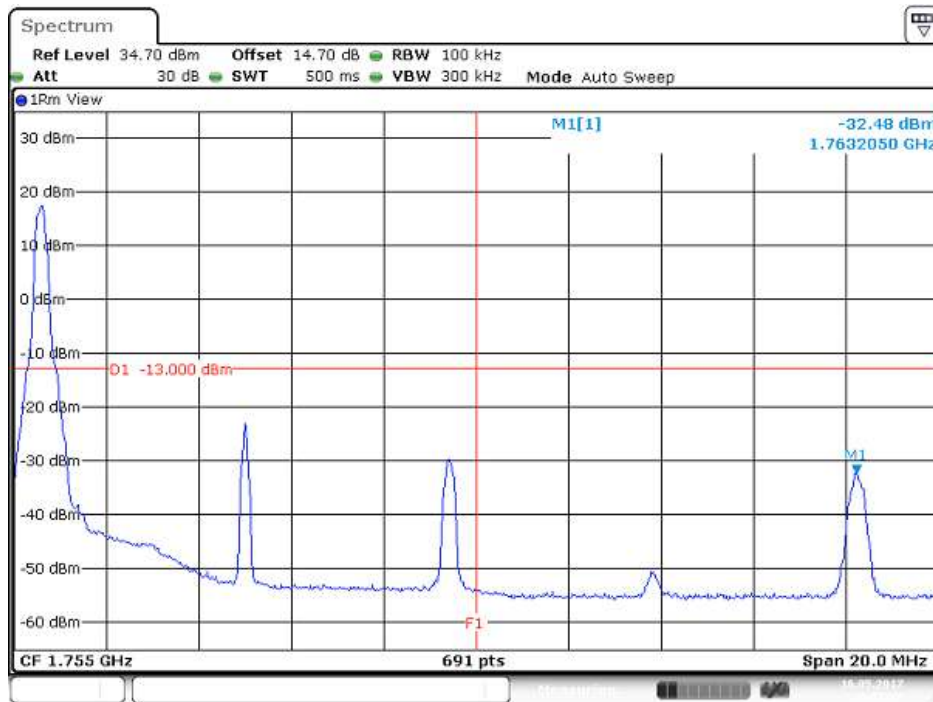
Date: 16 MAY 2017 16:28:56



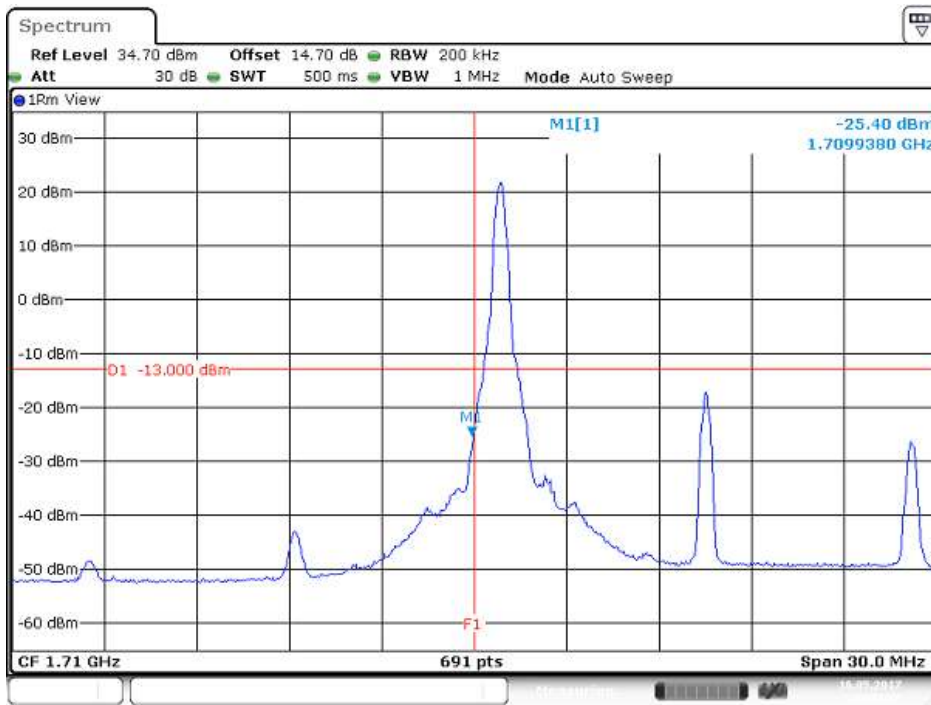
### CHANNEL BANDWIDTH: 10MHz / QPSK / 1RB ALLOCATION LOWER BAND EDGE



### HIGHER BAND EDGE

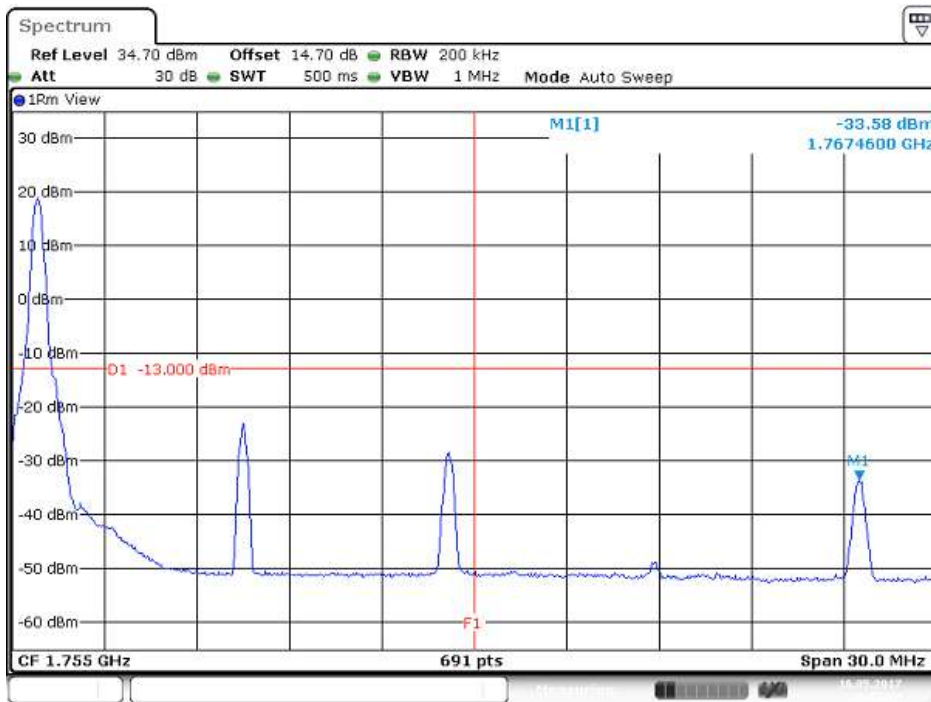


### CHANNEL BANDWIDTH: 15MHz / QPSK / 1RB ALLOCATION LOWER BAND EDGE



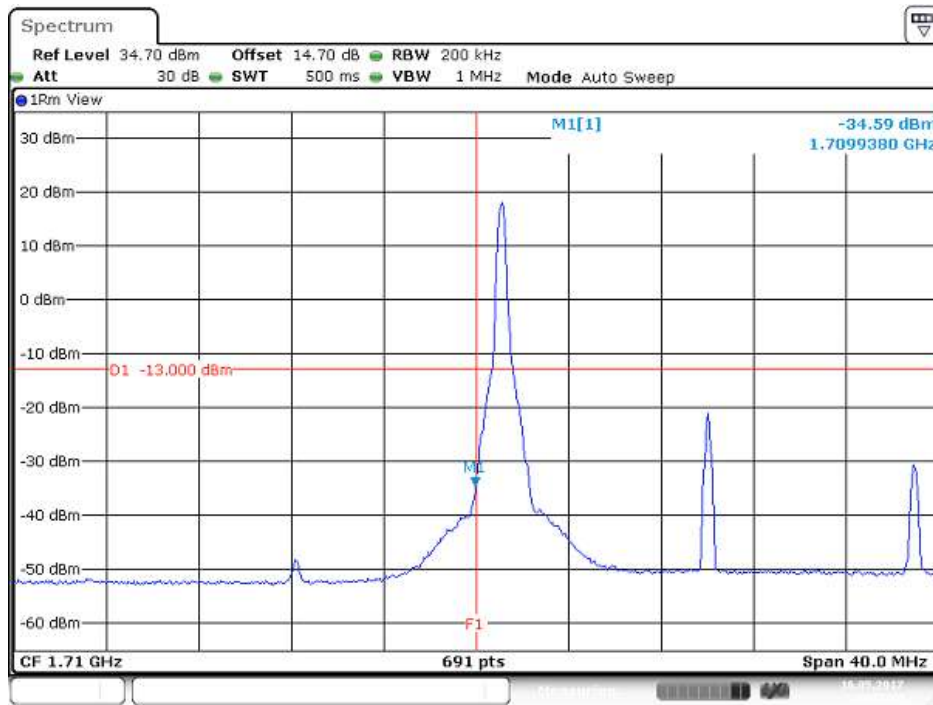
Date: 16MAY 2017 16:44:18

### HIGHER BAND EDGE



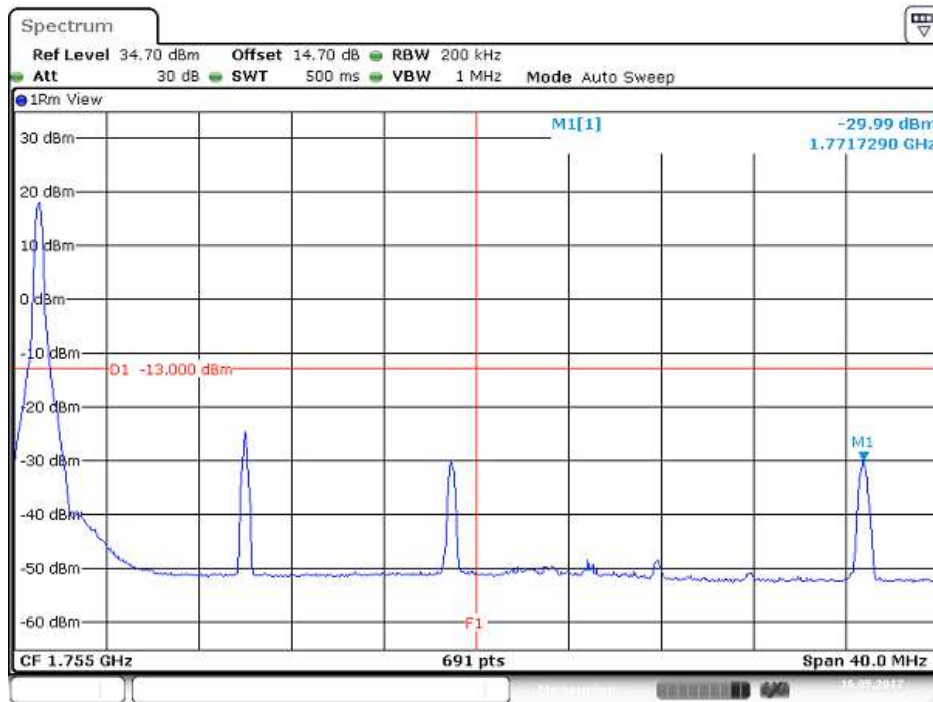
Date: 16MAY 2017 16:53:11

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



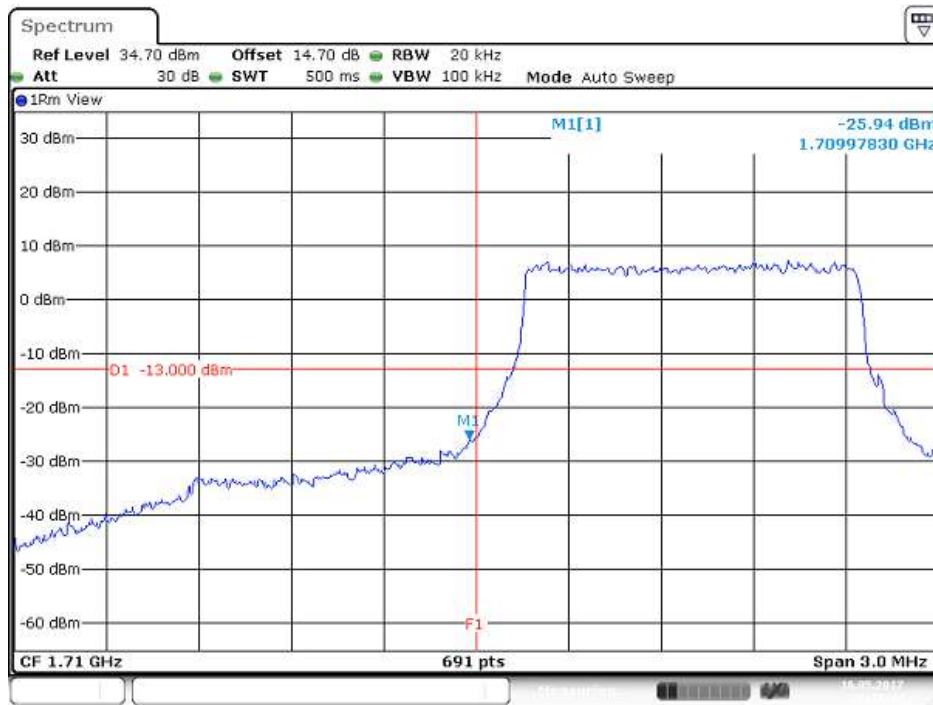
Date: 16 MAY 2017 16:47:20

### HIGHER BAND EDGE



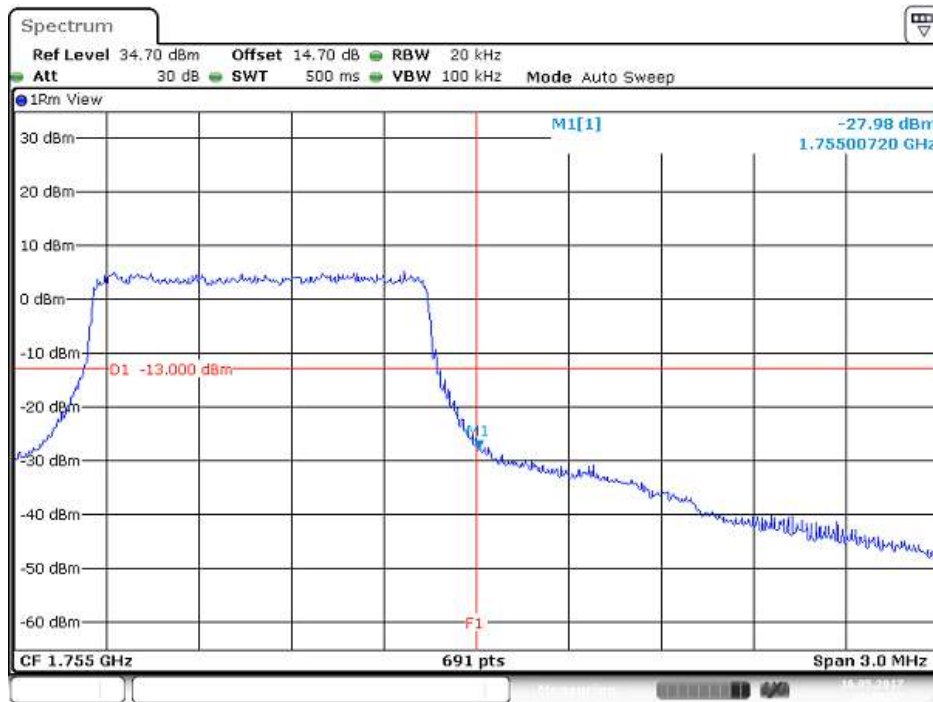
Date: 16 MAY 2017 16:49:25

### CHANNEL BANDWIDTH: 1.4MHz / QPSK / FULLRB ALLOCATION LOWER BAND EDGE



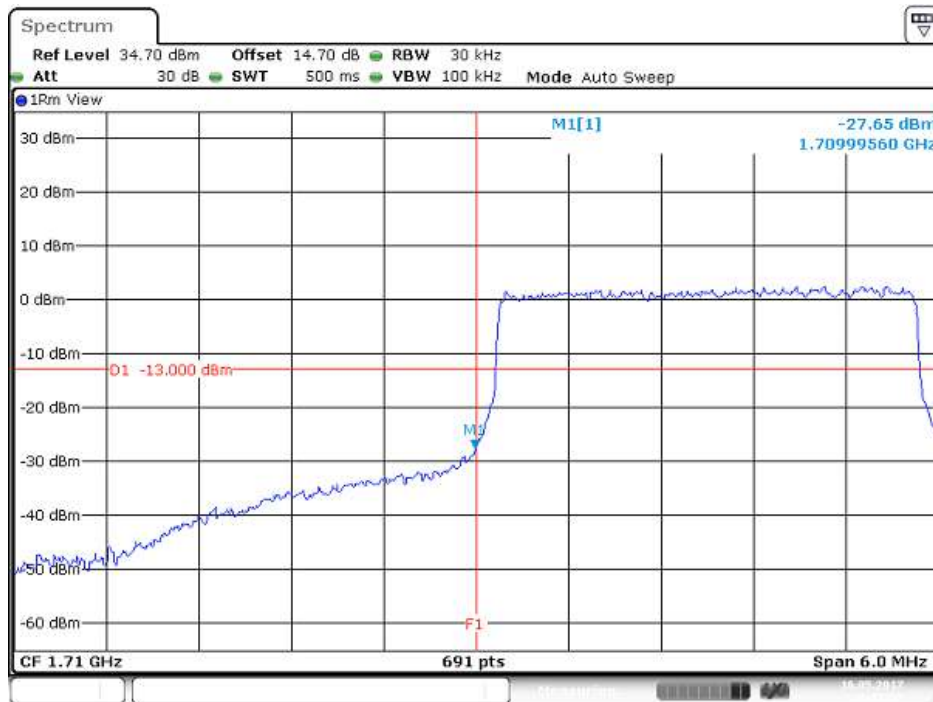
Date: 16 MAY 2017 16:28:14

### HIGHER BAND EDGE



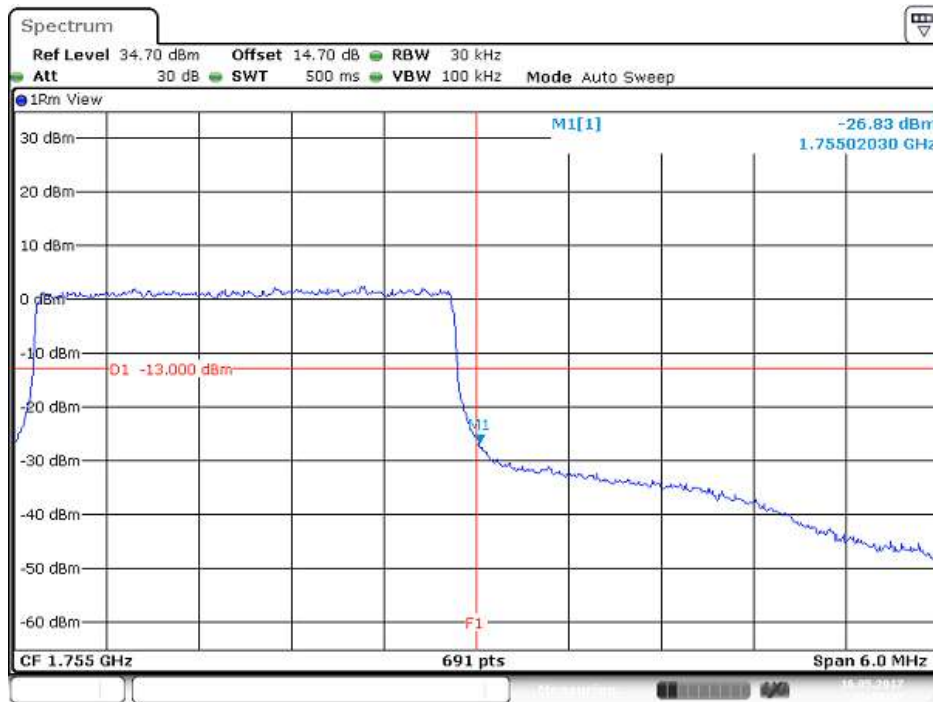
Date: 16 MAY 2017 17:09:23

**CHANNEL BANDWIDTH: 3MHz / QPSK / FULLRB ALLOCATION**  
**LOWER BAND EDGE**



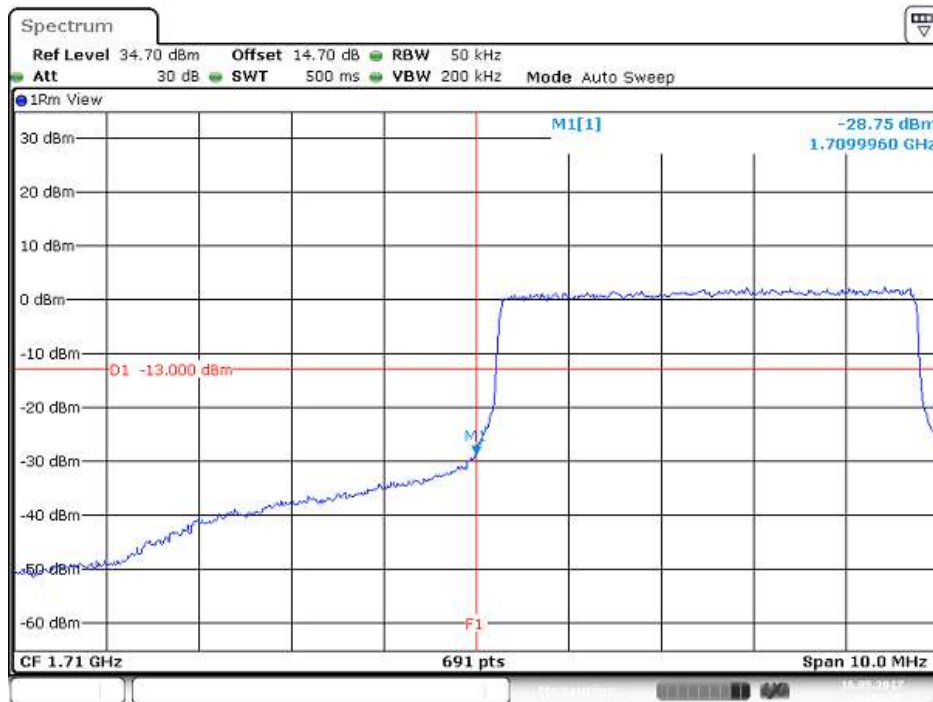
Date: 16 MAY 2017 16:32:54

**HIGHER BAND EDGE**



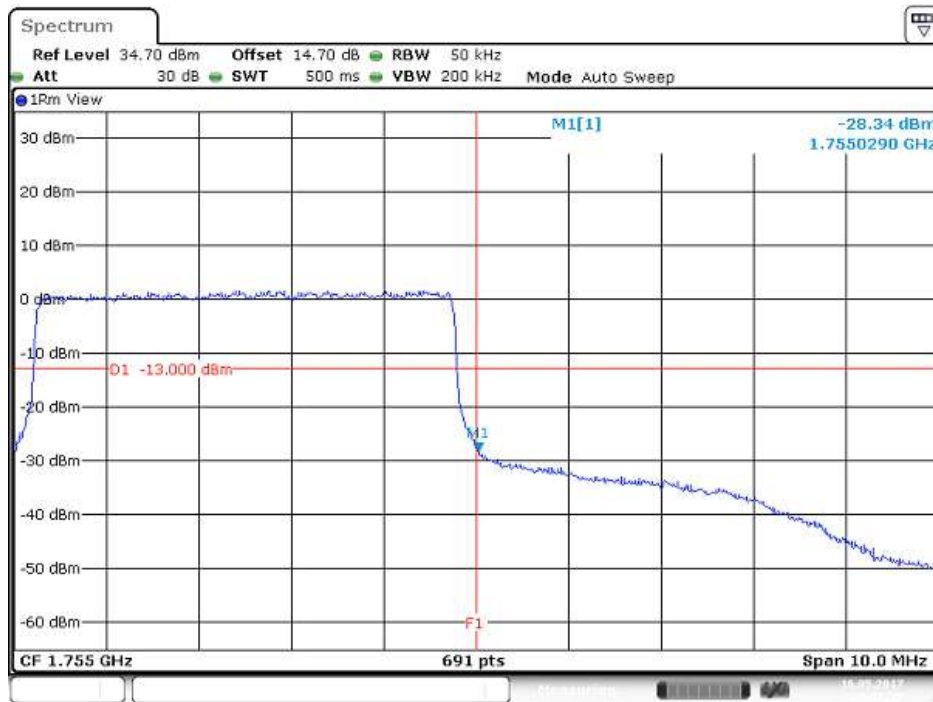
Date: 16 MAY 2017 17:00:48

### CHANNEL BANDWIDTH: 5MHz / QPSK / FULLRB ALLOCATION LOWER BAND EDGE



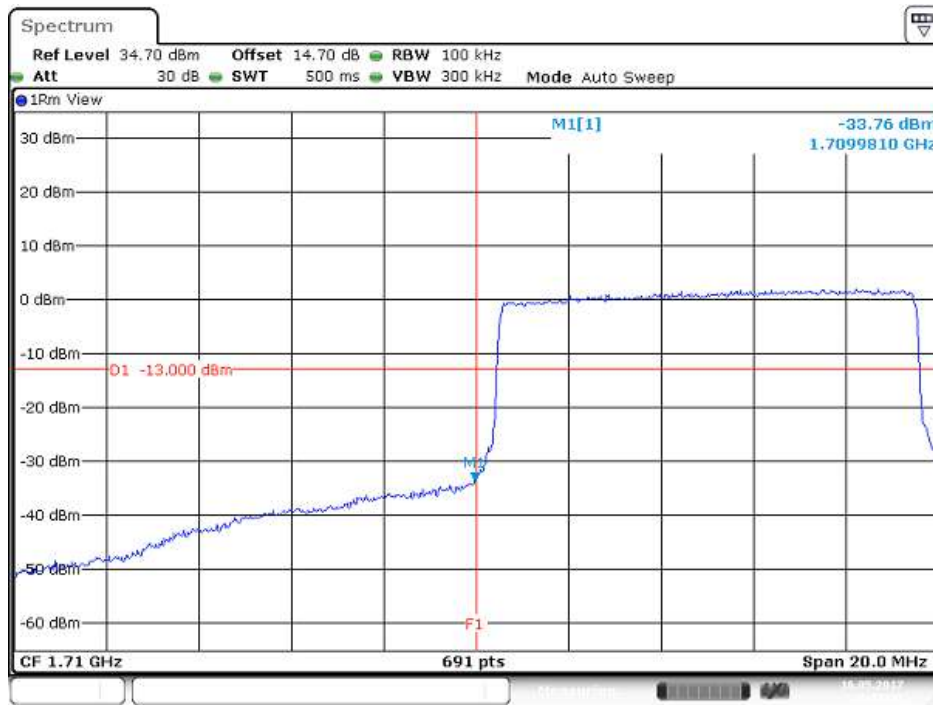
Date: 16 MAY 2017 16:24:38

### HIGHER BAND EDGE



Date: 16 MAY 2017 16:29:29

### CHANNEL BANDWIDTH: 10MHz / QPSK / FULLRB ALLOCATION LOWER BAND EDGE



Date: 16 MAY 2017 16:38:31

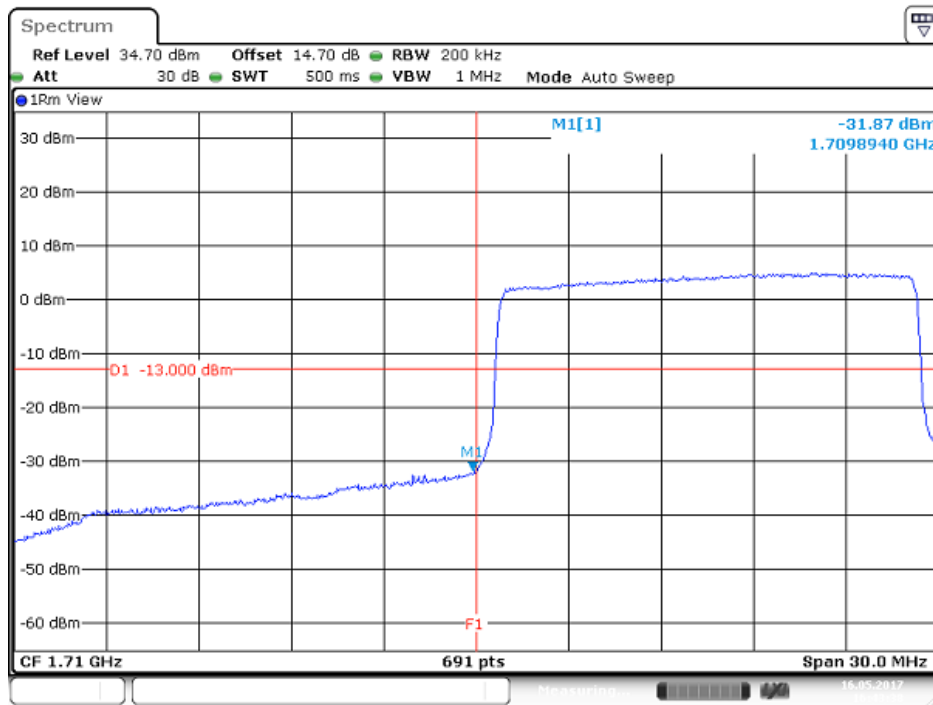
### HIGHER BAND EDGE



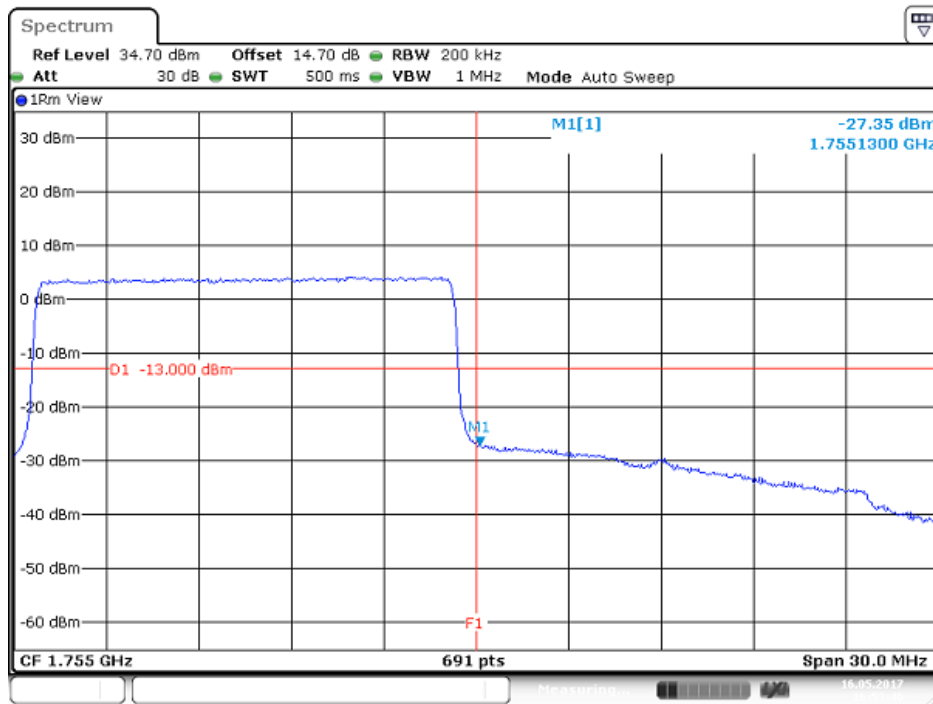
Date: 16 MAY 2017 16:54:47



### CHANNEL BANDWIDTH: 15MHz / QPSK / FULLRB ALLOCATION LOWER BAND EDGE

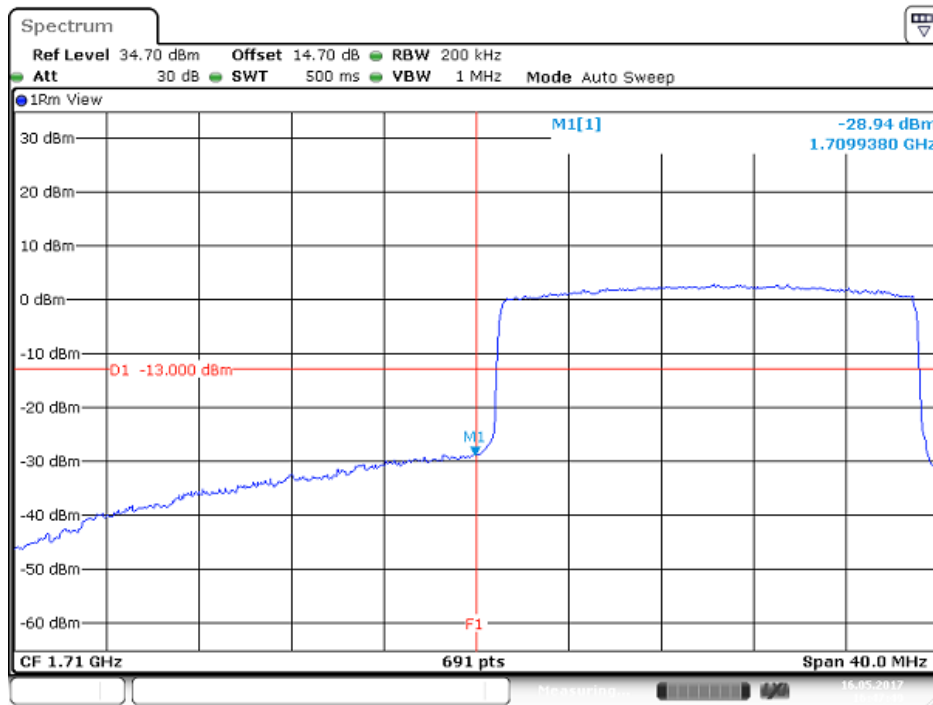


### HIGHER BAND EDGE

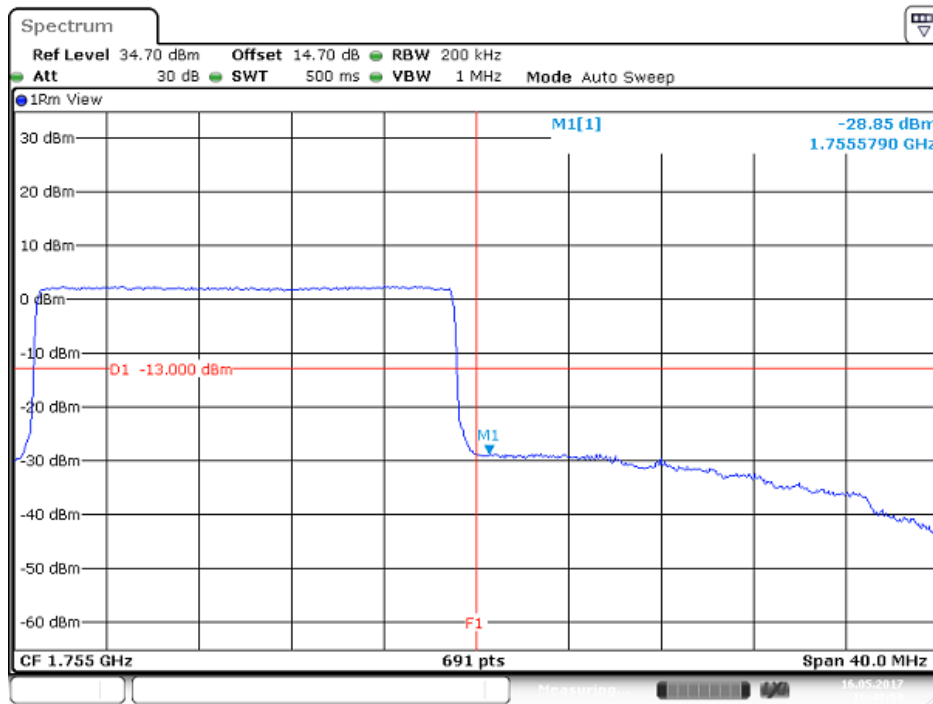




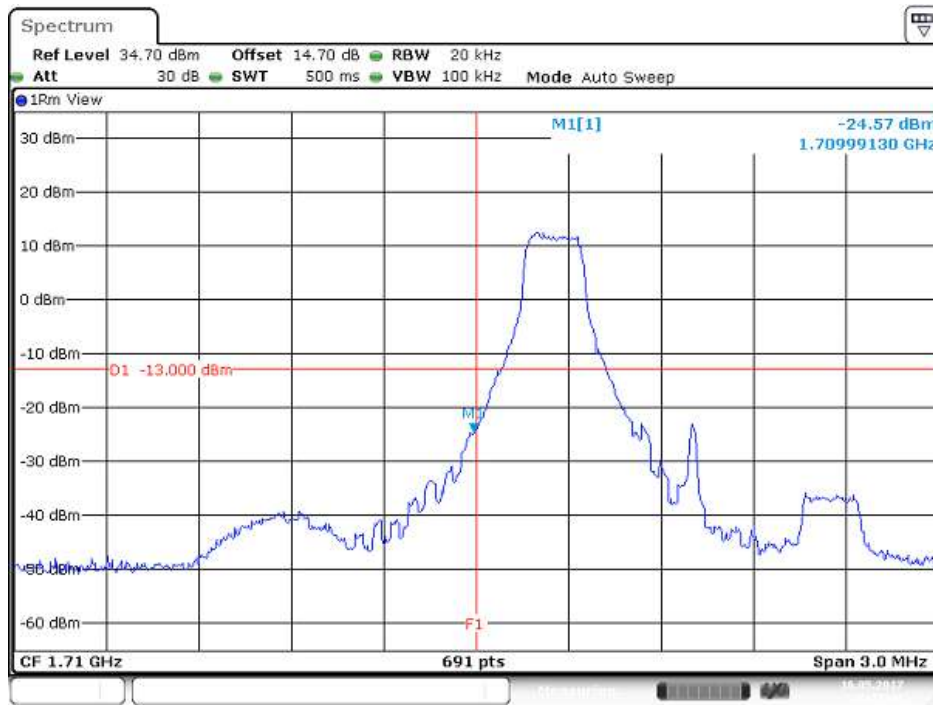
### CHANNEL BANDWIDTH: 20MHz / QPSK / FULLRB ALLOCATION LOWER BAND EDGE



### HIGHER BAND EDGE

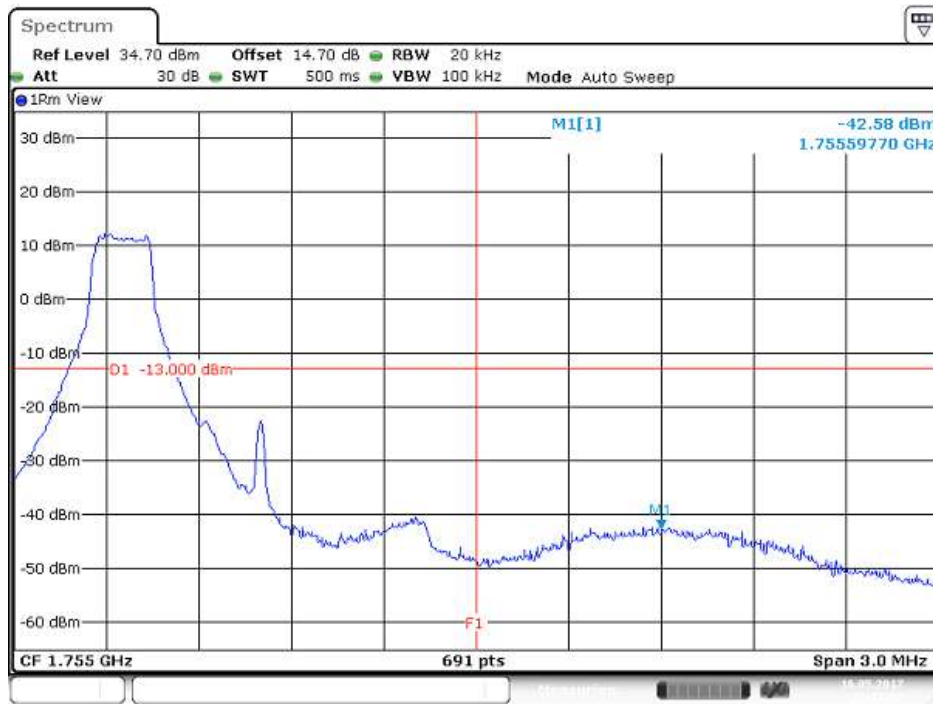


### CHANNEL BANDWIDTH: 1.4MHz / 16QAM/ 1RB ALLOCATION LOWER BAND EDGE



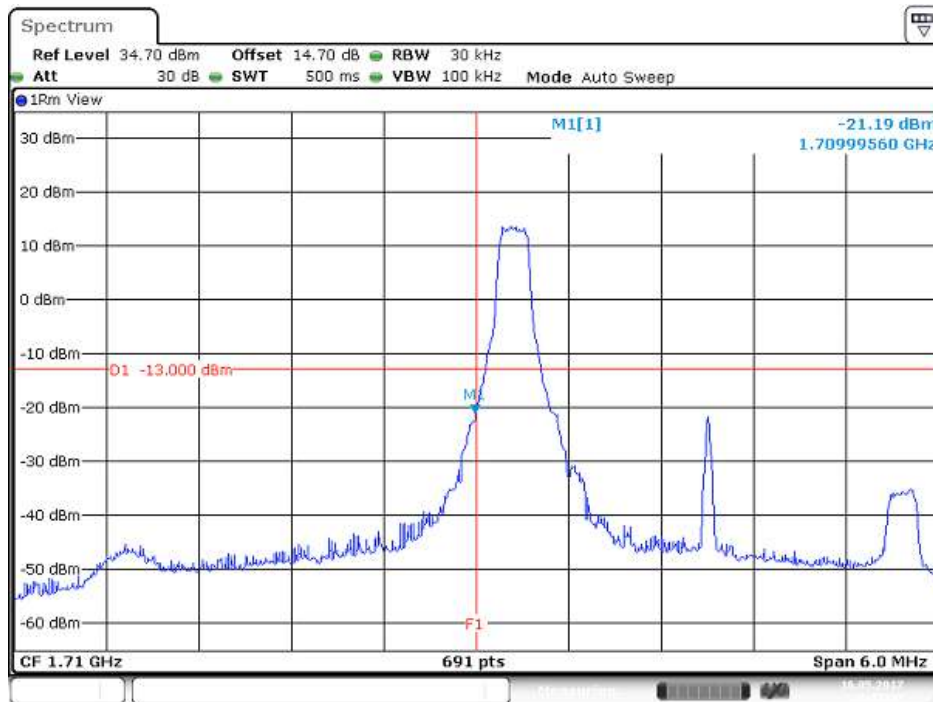
Date: 16 MAY 2017 16:29:41

### HIGHER BAND EDGE



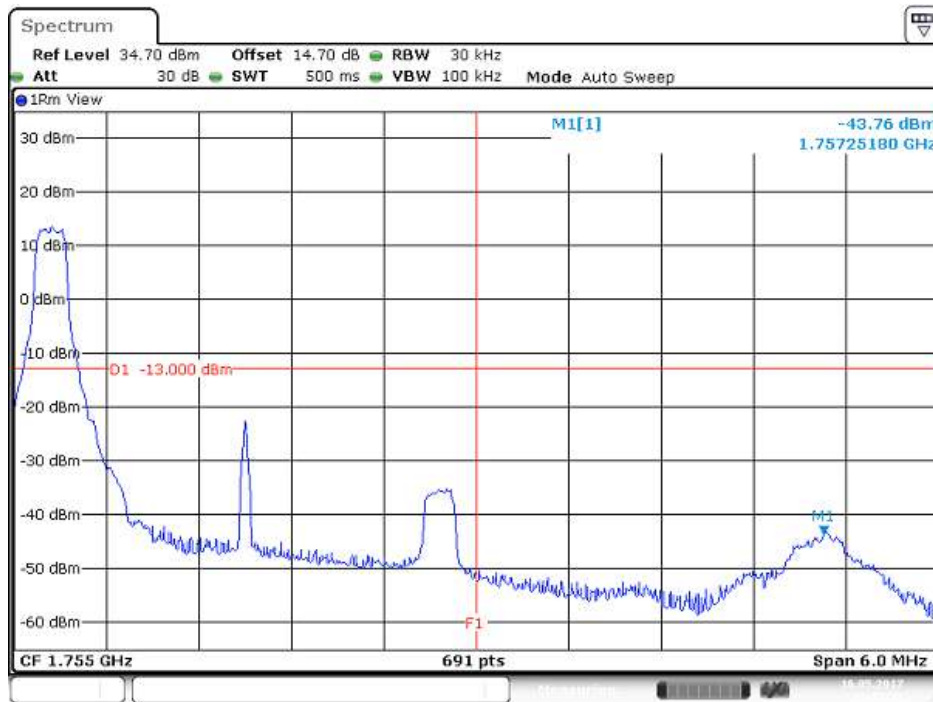
Date: 16 MAY 2017 17:07:03

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



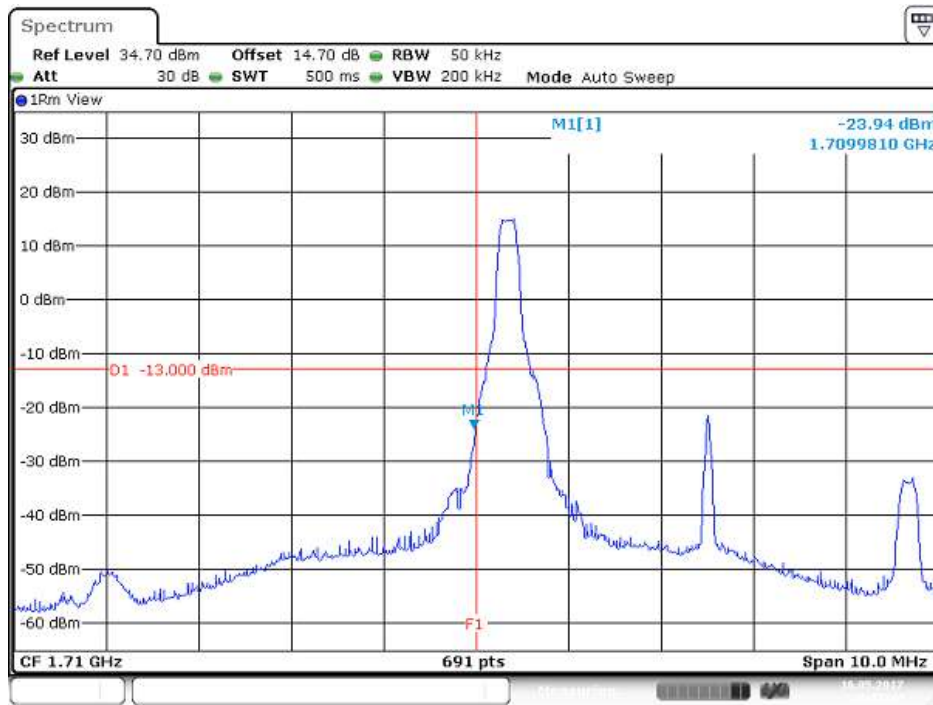
Date: 16 MAY 2017 16:21:48

### HIGHER BAND EDGE



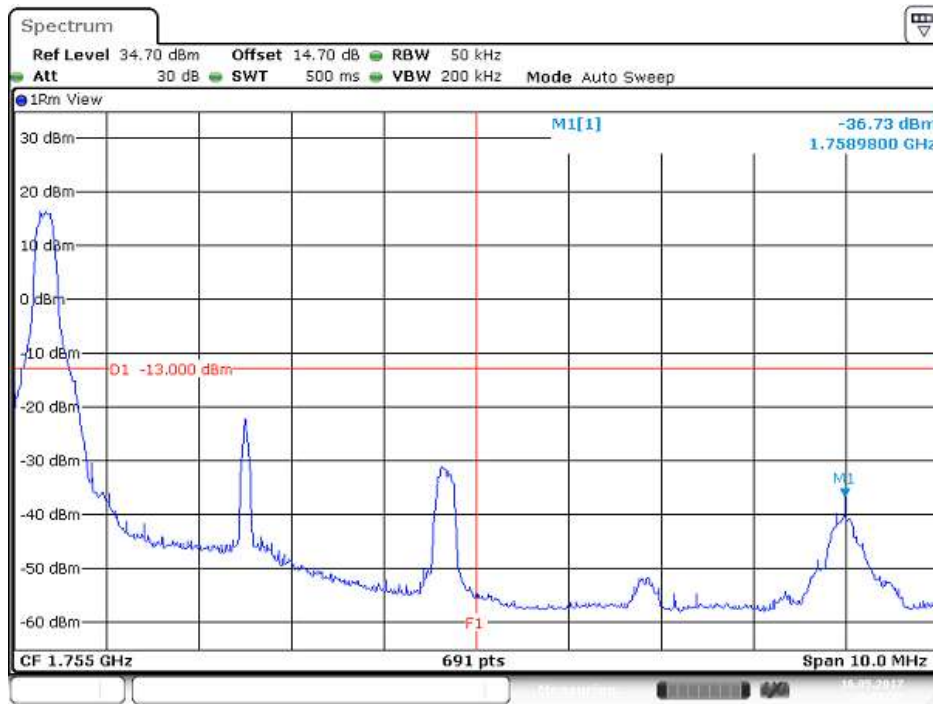
Date: 16 MAY 2017 17:02:11

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



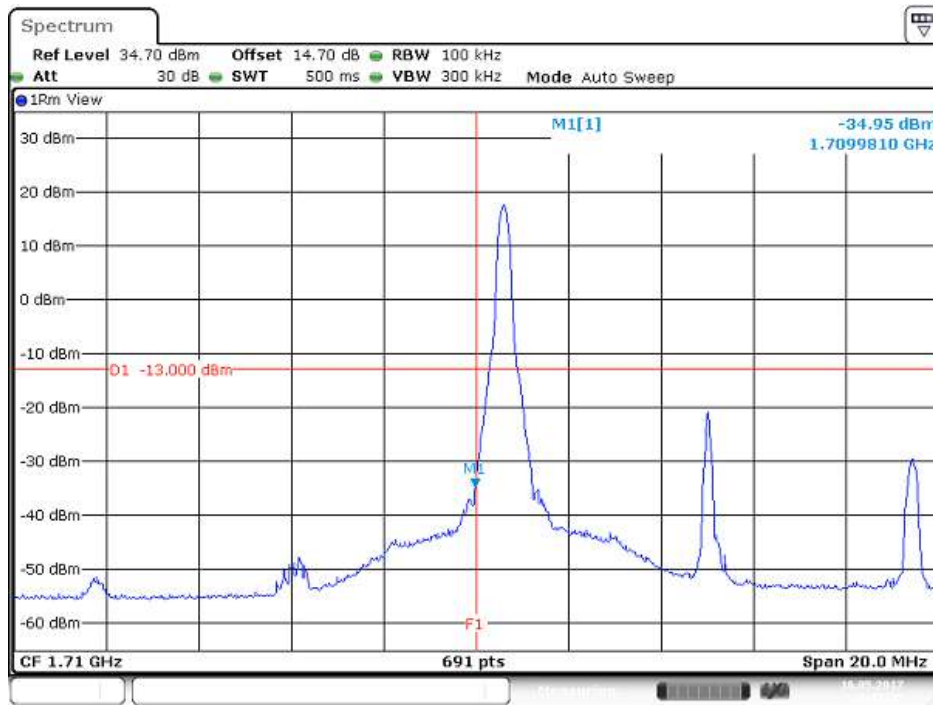
Date: 16MAY.2017 16:35:41

### HIGHER BAND EDGE



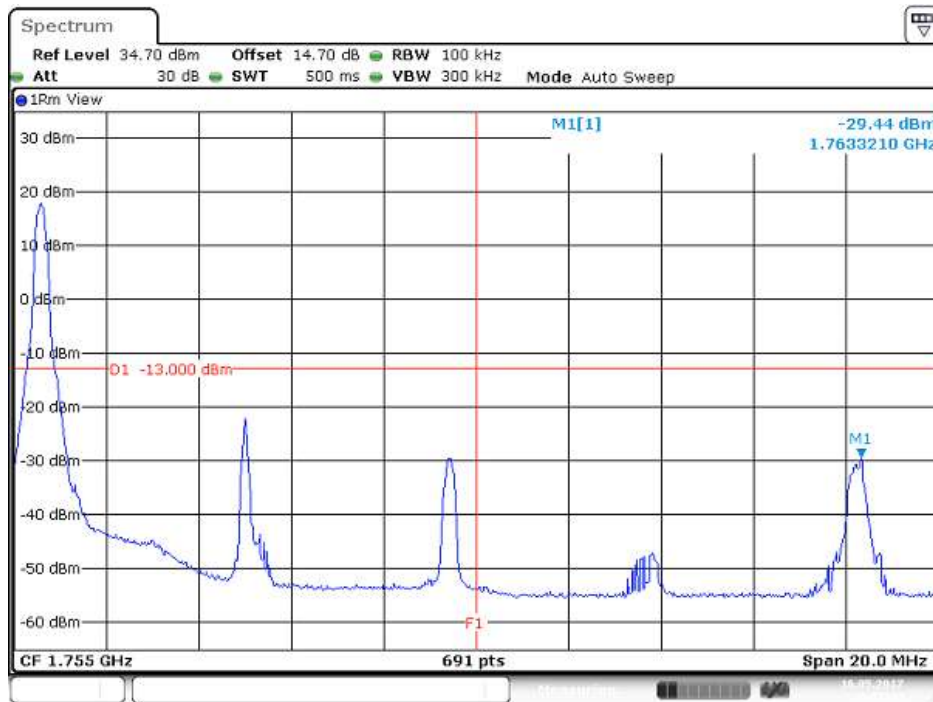
Date: 16MAY.2017 16:58:13

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



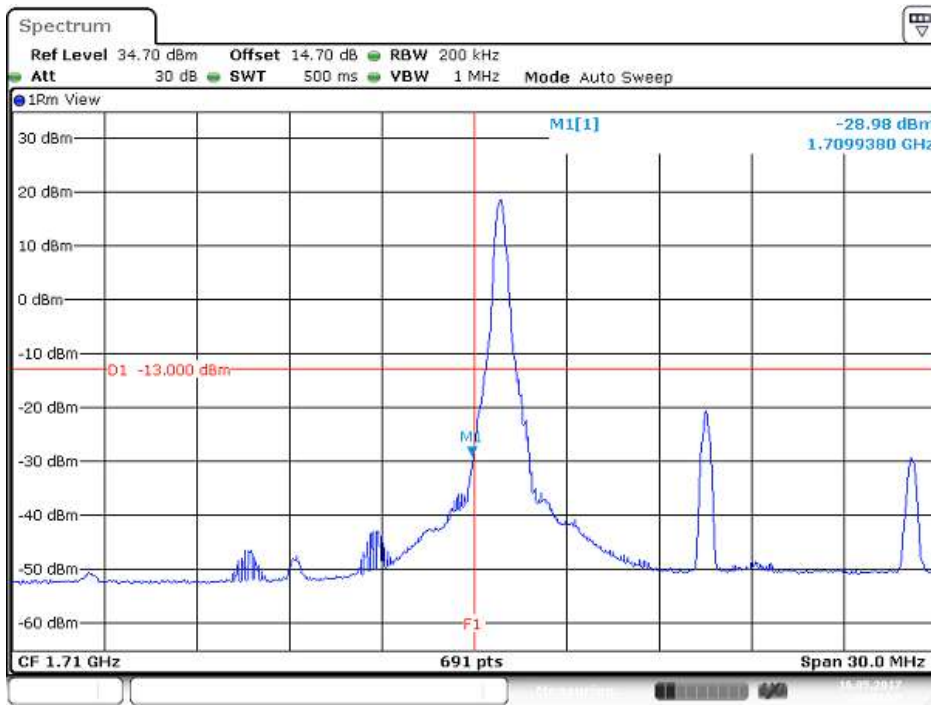
Date: 16 MAY 2017 16:27:36

### HIGHER BAND EDGE



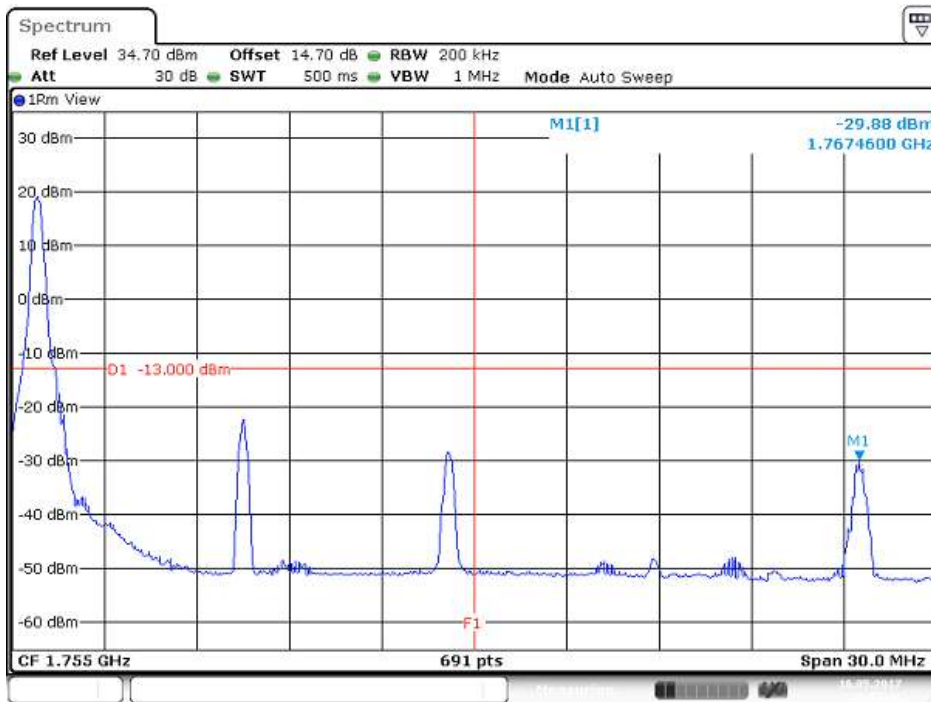
Date: 16 MAY 2017 16:55:49

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



Date: 16 MAY 2017 16:44:50

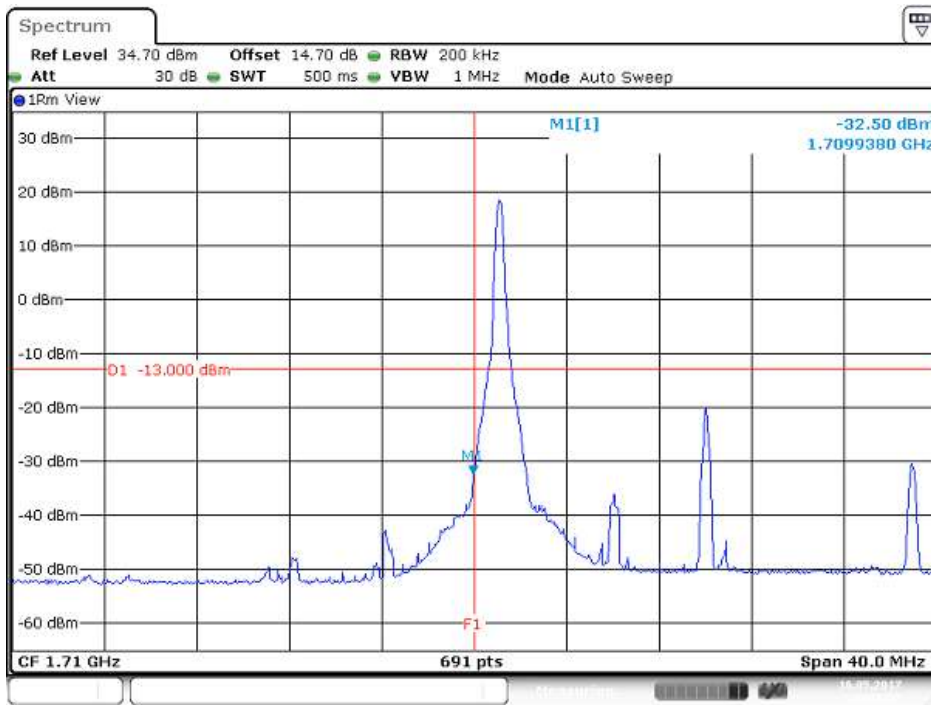
### HIGHER BAND EDGE



Date: 16 MAY 2017 16:52:41

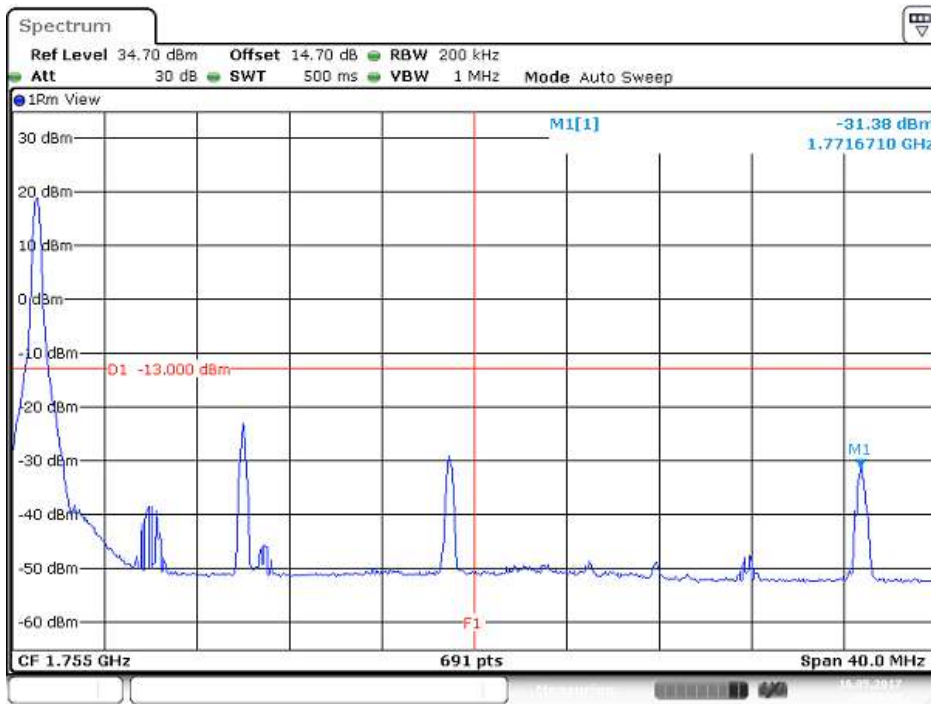


### CHANNEL BANDWIDTH: 20MHz / 16QAM/ 1RB ALLOCATION LOWER BAND EDGE



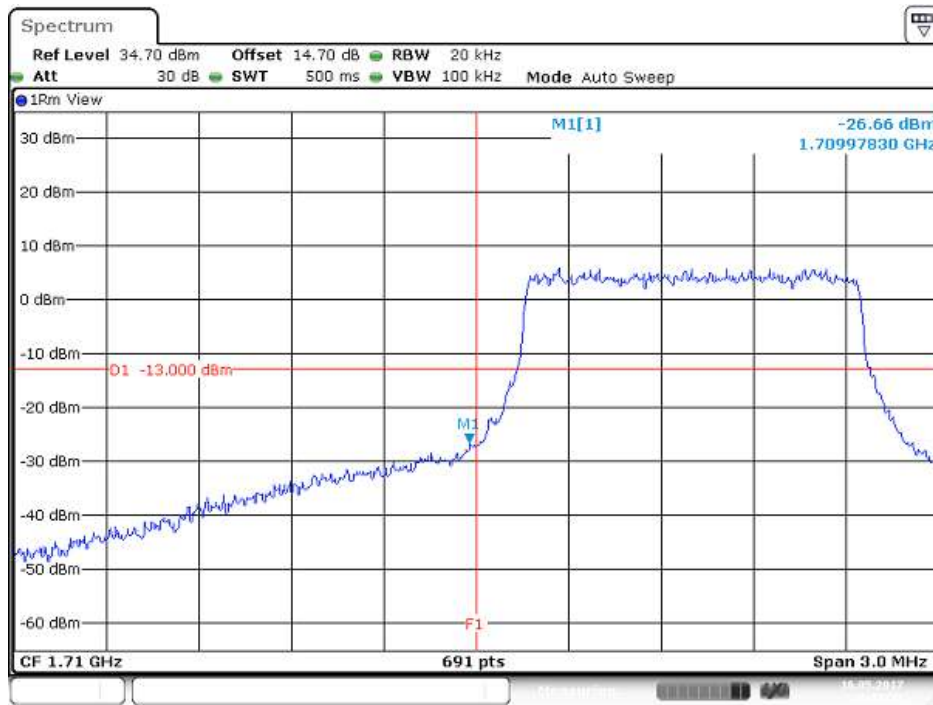
Date: 16 MAY 2017 16:46:53

### HIGHER BAND EDGE



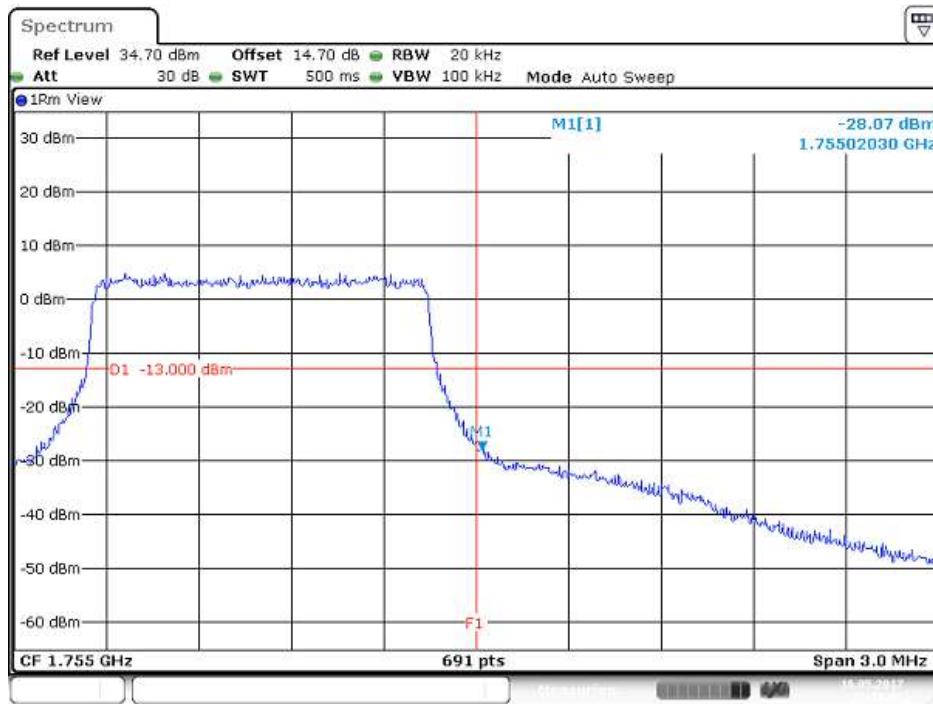
Date: 16 MAY 2017 16:49:55

### CHANNEL BANDWIDTH: 1.4MHz / 16QAM/ FULLRB ALLOCATION LOWER BAND EDGE



Date: 16MAY.2017 16:30:12

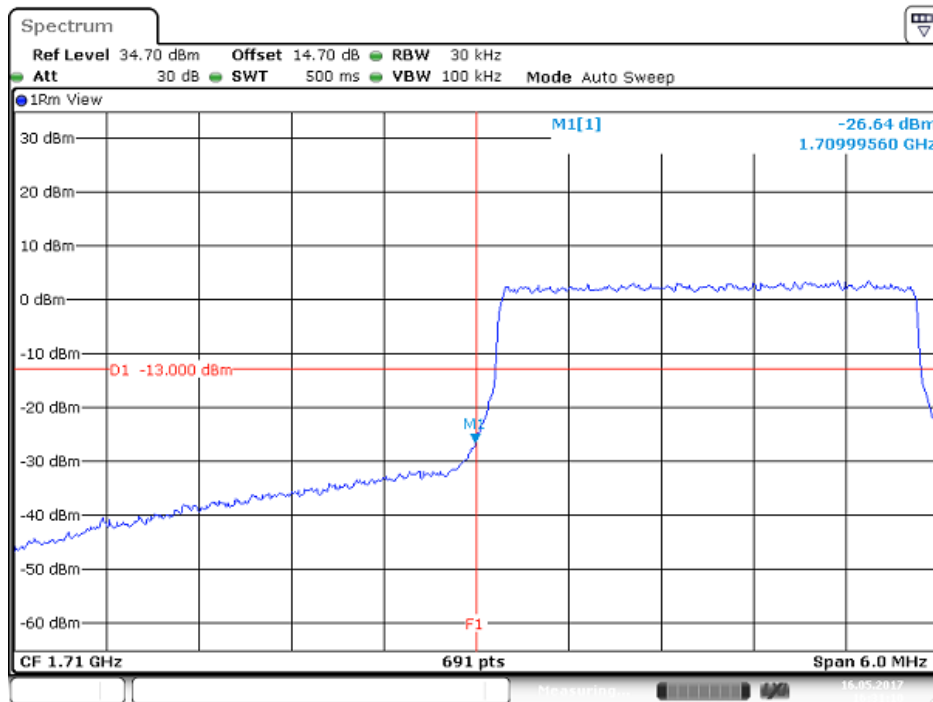
### HIGHER BAND EDGE



Date: 16MAY.2017 17:06:01

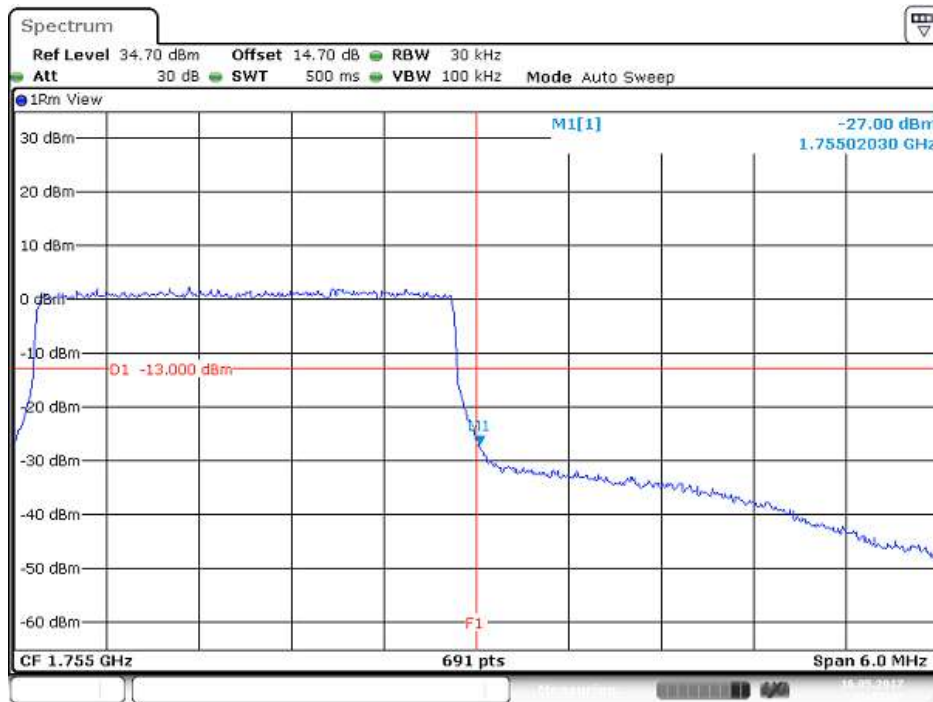


### CHANNEL BANDWIDTH: 3 MHz / 16QAM/ FULLRB ALLOCATION LOWER BAND EDGE



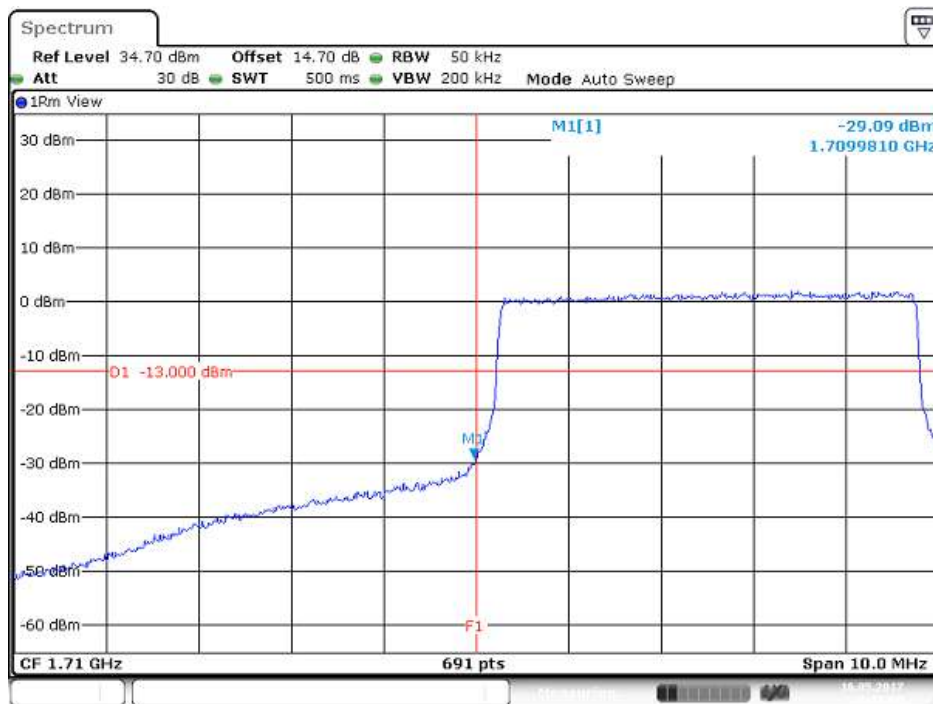
Date: 16MAY.2017 16:31:10

### HIGHER BAND EDGE



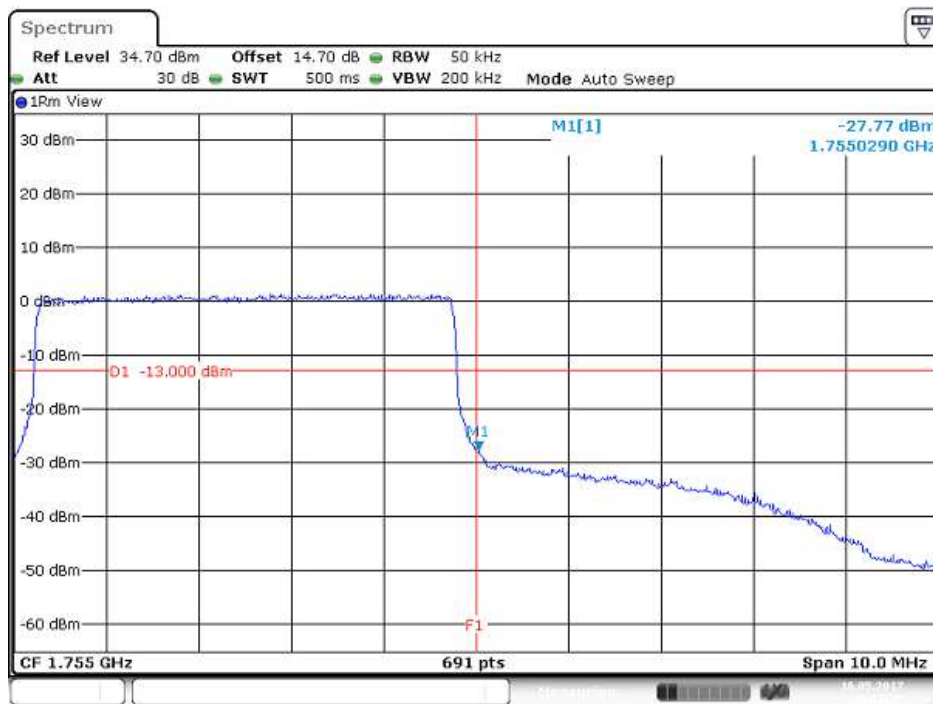
Date: 16MAY.2017 17:02:42

### CHANNEL BANDWIDTH: 5MHz / 16QAM/ FULLRB ALLOCATION LOWER BAND EDGE



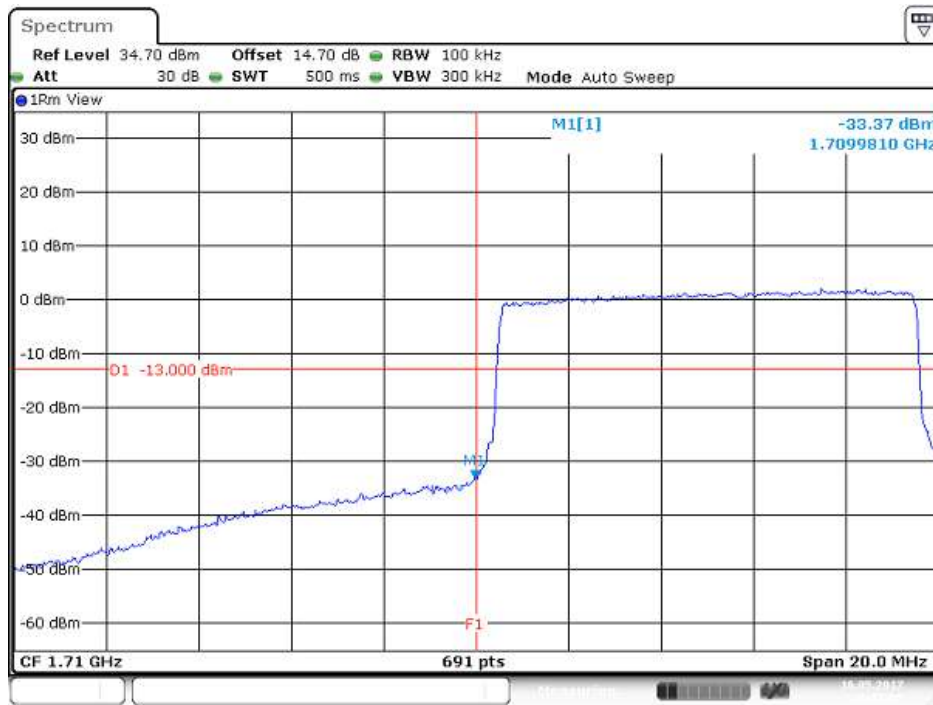
Date: 16 MAY 2017 16:26:09

### HIGHER BAND EDGE



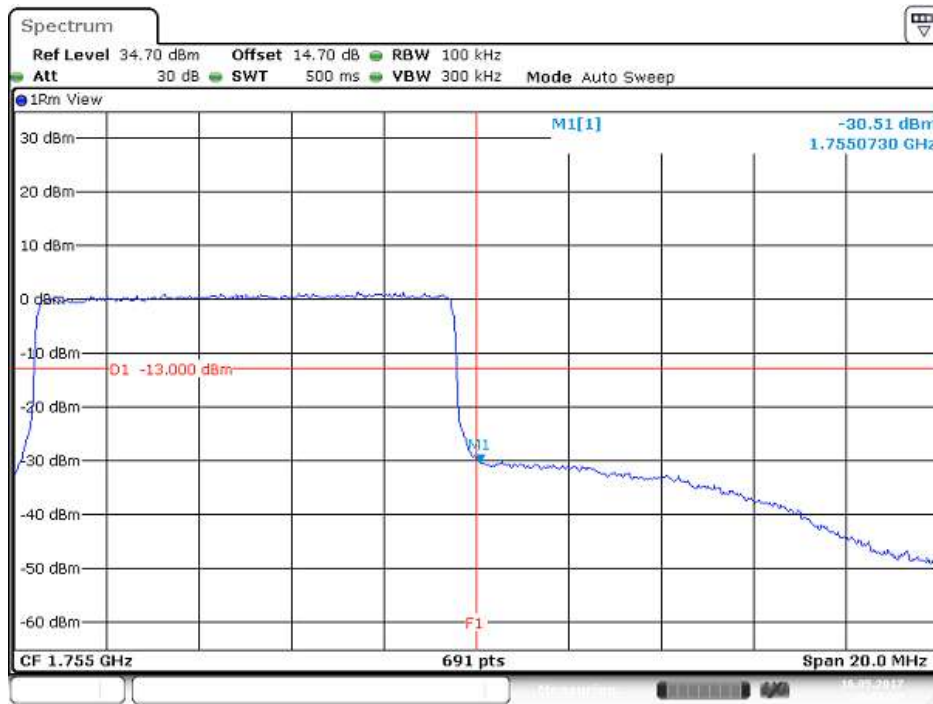
Date: 16 MAY 2017 16:27:28

### CHANNEL BANDWIDTH: 10MHz / 16QAM/ FULLRB ALLOCATION LOWER BAND EDGE



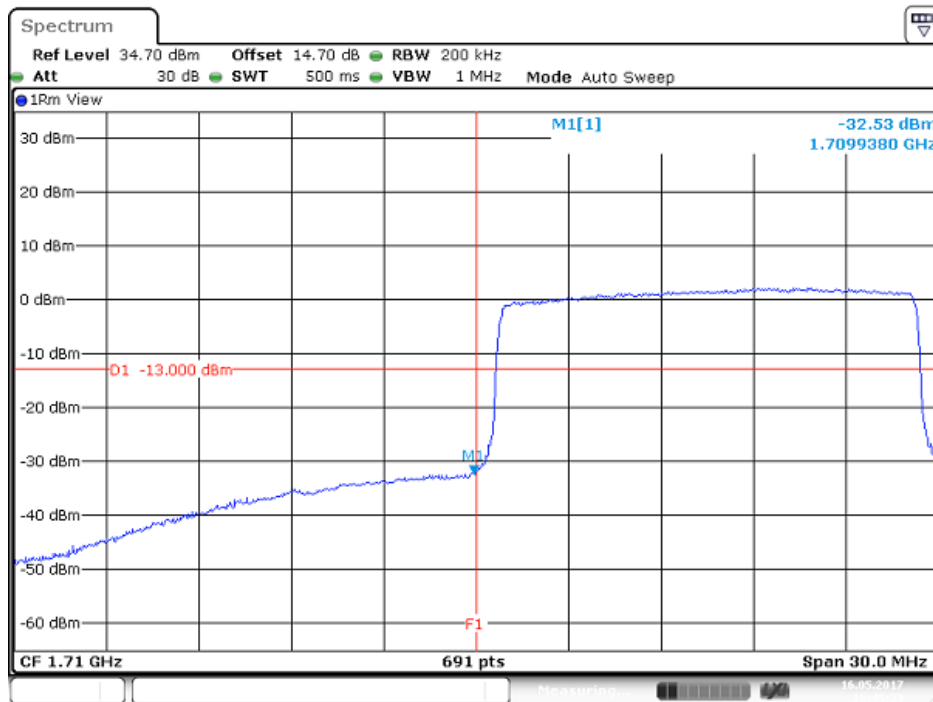
Date: 16 MAY 2017 16:27:05

### HIGHER BAND EDGE

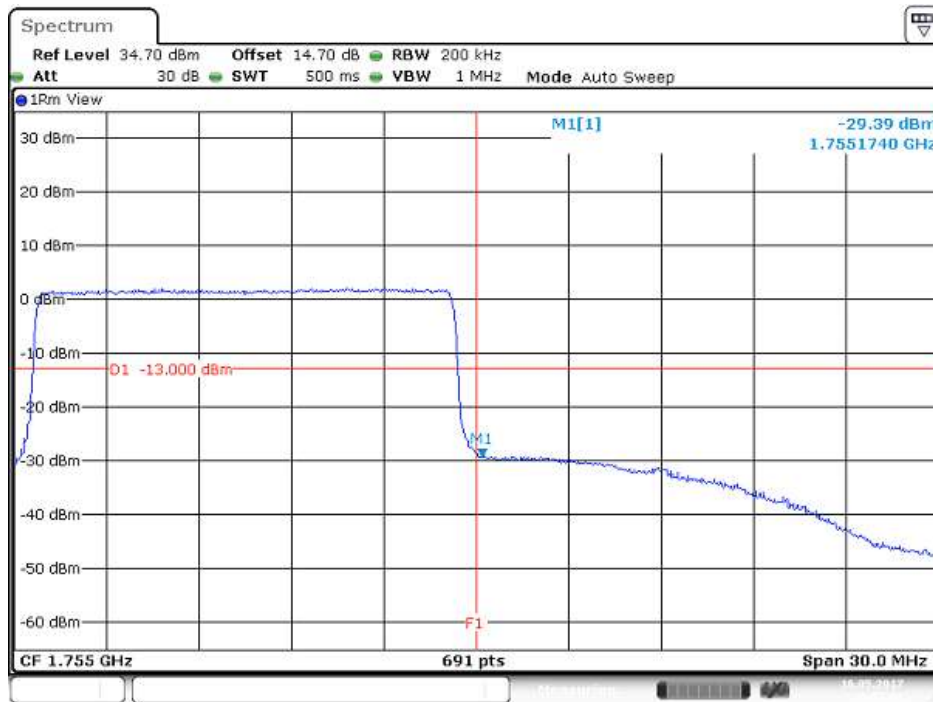


Date: 16 MAY 2017 16:56:20

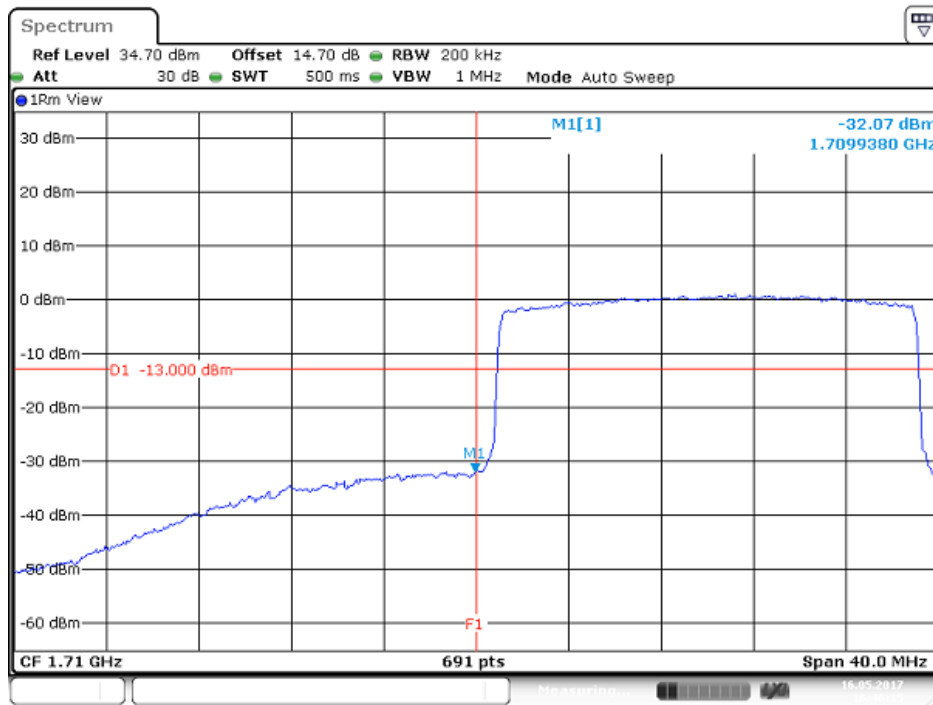
### CHANNEL BANDWIDTH: 15MHz / 16QAM/ FULLRB ALLOCATION LOWER BAND EDGE



### HIGHER BAND EDGE



### CHANNEL BANDWIDTH: 20MHz / 16QAM/ FULLRB ALLOCATION LOWER BAND EDGE



Date: 16MAY.2017 16:46:15

### HIGHER BAND EDGE



Date: 16MAY.2017 16:51:15