

FCC 47 CFR PART 27 SUBPART L

For

Xerox TMS

Model: IVU-4000

Trade Name: xerox

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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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	June 3, 2016	Initial Issue	ALL	Doris Chu
01	July 18, 2016	1. Added 1.4MHz data. 2. Modify Peak and Average power	ALL	Doris Chu

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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: Xerox TMS

Trade Name: xerox

Model: IVU-4000

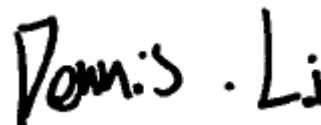
Date of Test: April 19 ~ July 14, 2016

APPLICABLE STANDARDS	
Standard	TEST RESULT
FCC Part 27, Subpart C, L, FCC Part 2	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

Miller Lee
 Section Manager
 Compliance Certification Services Inc.

Dennis Li
 Engineer
 Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product	Xerox TMS	
Model Number	IVU-4000	
Trade	xerox	
Received Date	May 15, 2016	
Power Source	Powered from host device.	
Modulation Technology	LTE Band 17	QPSK, 16QAM
	LTE Band 13	QPSK, 16QAM
	LTE Band 4	QPSK, 16QAM
Frequency Range	LTE Band 17 Channel Bandwidth: 5MHz	706.5MHz ~ 713.5MHz
	LTE Band 17 Channel Bandwidth: 10MHz	709MHz ~ 711MHz
	LTE Band 13 Channel Bandwidth: 5MHz	779.5MHz ~ 784.5MHz
	LTE Band 13 Channel Bandwidth: 10MHz	782MHz
	LTE Band 4 Channel Bandwidth: 1.4MHz	1710.7MHz ~1754.2MHz
	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: 20MHz	1720MHz ~1745MHz

Maximum ERP Power	LTE Band 17 Channel Bandwidth: 5MHz	QPSK: 14.63dBm 16QAM: 14.91dBm
	LTE Band 17 Channel Bandwidth: 10MHz	QPSK : 13.29dBm 16QAM: 13.72dBm
Maximum ERP Power	LTE Band 13 Channel Bandwidth: 5MHz	QPSK: 17.00dBm 16QAM: 15.49dBm
	LTE Band 13 Channel Bandwidth: 10MHz	QPSK : 14.29dBm 16QAM: 14.64dBm
Maximum EIRP Power	LTE Band 4 Channel Bandwidth: 1.4MHz	QPSK: 24.96dBm 16QAM: 23.97dBm
	LTE Band 4 Channel Bandwidth: 5MHz	QPSK: 23.58dBm 16QAM: 21.11dBm
	LTE Band 4 Channel Bandwidth: 10MHz	QPSK: 22.75dBm 16QAM: 19.01dBm
	LTE Band 4 Channel Bandwidth: 20MHz	QPSK: 19.74dBm 16QAM: 17.93dBm
Antenna Specification	1. GSA.8822.B.301111 / DIPOLE Antenna LTE Band 4: Gain: -1.34dBi LTE Band 13: Gain: 1.27dBi LTE Band 17: Gain: 1.27dBi 2. MA230.LBC.002 / MONOPOLE Antenna LTE Band 4: Gain: 0.42dBi LTE Band 13: Gain: 2.16dBi LTE Band 17: Gain: 2.16dBi	

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: IVU-4000) 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 13: 777 MHz ~ 787 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		5MHz		10MHz		20MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low channel (L)	19957	1710.7	19975	1712.5	20000	1715.0	20050	1720.00
Middle channel (M)	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.50
High channel (H)	20393	1754.3	20375	1752.5	20350	1750.0	20300	1745.00

For LTE Band 17

The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (Y axis) and the worst case was recorded.

LTE Band 13

The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded.

LTE Band 4

The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

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
DC Power Supplies	GW Instek	SPS-3610	GPE880163	01/19/2016	01/18/2017
Power Meter	Anritsu	ML2495A	1012009	07/04/2016	07/03/2017
Power Sensor	Anritsu	MA2411B	917072	07/04/2016	07/03/2017
Signal Analyzer	R&S	FSV 40	101073	07/20/2015	07/19/2016
Spectrum Analyzer	Agilent	E4446A	US42510268	02/15/2016	02/14/2017
Thermostatic/Hrgrosatic Chamber	TAICHY	MHG-150LF	930619	10/08/2015	10/07/2016
Vector Signal Generator	R&S	SMU 200A	102239	03/10/2016	03/09/2017
AC Power Source	EXTECH	6205	1140845	N.C.R	N.C.R

Wugu 966 Chamber A					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Bilog Antenna	Sunol Sciences	JB3	A030105	08/06/2015	08/05/2016
EMI Test Receiver	R&S	ESCI	100064	05/31/2016	05/30/2017
Horn Antenna	EMCO	3117	55165	02/24/2016	02/23/2017
Horn Antenna	EMCO	3116	26370	01/15/2016	01/14/2017
K Type Cable	Huber+Suhner	SUCOFLEX 102	29406/2	01/12/2016	01/11/2017
K Type Cable	Huber+Suhner	SUCOFLEX 102	22470/2	01/12/2016	01/11/2017
Pre-Amplifier	MITEQ	AMF-6F-2604 00-40-8P	985646	01/14/2016	01/13/2017
Pre-Amplifier	EMCI	EMC 012635	980151	06/23/2016	06/22/2017
Pre-Amplifier	EMCI	EM330	N/A	06/08/2016	06/07/2017
Spectrum Analyzer	Agilent	E4446A	US42510252	12/08/2015	12/07/2016
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	 Testing Laboratory 1309
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.	Device Type	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

EIRP / ERP MEASUREMENT:

1. The EUT was set up for the maximum power with LTE link data modulation. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high operational frequency range). RWB and VBW is 10MHz for LTE.
2. E.I.R.P power measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
3. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G d. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$
4. $E.R.P = E.I.R.P - 2.15 \text{ dB}$

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 17

Channel Bandwidth: 5MHz

Conducted Output Power (QPSK 1 RB ALLOCATED AT THE LOWER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
706.50	23755	21.69	0.14757
710.00	23790	21.66	0.14655
713.50	23825	21.83	0.15241

Conducted Output Power (QPSK 1 RB ALLOCATED AT THE UPPER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
706.50	23755	21.85	0.15311
710.00	23790	21.83	0.15241
713.50	23825	21.76	0.14997

Conducted Output Power (QPSK 50% RB ALLOCATION CENTERED)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
706.50	23755	20.90	0.12303
710.00	23790	20.90	0.12303
713.50	23825	20.89	0.12274

Conducted Output Power (QPSK 100% RB ALLOCATION)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
706.50	23755	20.74	0.11858
710.00	23790	20.76	0.11912
713.50	23825	20.86	0.12190

Remarks:

1. Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Power Splitter Loss (dB) + Cable Loss (dB) + 20dB Attenuator.
3. The value in bold is the worst.

Channel Bandwidth: 5MHz

Conducted Output Power (16QAM 1 RB ALLOCATED AT THE LOWER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
706.50	23755	20.71	0.11776
710.00	23790	20.66	0.11641
713.50	23825	20.84	0.12134

Conducted Output Power (16QAM 1 RB ALLOCATED AT THE UPPER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
706.50	23755	20.86	0.12190
710.00	23790	20.90	0.12303
713.50	23825	20.83	0.12106

Conducted Output Power (16QAM 50% RB ALLOCATION CENTERED)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
706.50	23755	20.28	0.10666
710.00	23790	20.19	0.10447
713.50	23825	20.22	0.10520

Conducted Output Power (16QAM 100% RB ALLOCATION)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
706.50	23755	20.25	0.10593
710.00	23790	20.18	0.10423
713.50	23825	20.19	0.10447

Remarks:

1. Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Power Splitter Loss (dB) + Cable Loss (dB) + 20dB Attenuator.
3. The value in bold is the worst.

Channel Bandwidth: 10MHz

Conducted Output Power (QPSK 1 RB ALLOCATED AT THE LOWER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
709.00	23780	21.74	0.14928
710.00	23790	21.71	0.14825
711.00	23800	21.87	0.15382

Conducted Output Power (QPSK 1 RB ALLOCATED AT THE UPPER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
709.00	23780	21.89	0.15453
710.00	23790	21.88	0.15417
711.00	23800	21.80	0.15136

Conducted Output Power (QPSK 50% RB ALLOCATION CENTERED)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
709.00	23780	20.93	0.12388
710.00	23790	20.94	0.12417
711.00	23800	20.94	0.12417

Conducted Output Power (QPSK 100% RB ALLOCATION)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
709.00	23780	20.88	0.12246
710.00	23790	20.85	0.12162
711.00	23800	20.90	0.12303

Remarks:

1. *Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).*
2. *Correction Factor (dB) = Power Splitter Loss (dB) + Cable Loss (dB) + 20dB Attenuator.*
3. *The value in bold is the worst.*

Channel Bandwidth: 10MHz

Conducted Output Power (16QAM 1 RB ALLOCATED AT THE LOWER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
709.00	23780	20.76	0.11912
710.00	23790	20.71	0.11776
711.00	23800	20.89	0.12274

Conducted Output Power (16QAM 1 RB ALLOCATED AT THE UPPER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
709.00	23780	20.91	0.12331
710.00	23790	20.94	0.12417
711.00	23800	20.88	0.12246

Conducted Output Power (16QAM 50% RB ALLOCATION CENTERED)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
709.00	23780	20.44	0.11066
710.00	23790	20.51	0.11246
711.00	23800	20.47	0.11143

Conducted Output Power (16QAM 100% RB ALLOCATION)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
709.00	23780	20.37	0.10889
710.00	23790	20.43	0.11041
711.00	23800	20.39	0.10940

Remarks:

1. *Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).*
2. *Correction Factor (dB) = Power Splitter Loss (dB) + Cable Loss (dB) + 20dB Attenuator.*
3. *The value in bold is the worst.*

LTE Band 13

Channel Bandwidth: 5MHz

Conducted Output Power (QPSK 1 RB ALLOCATED AT THE LOWER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
779.50	23205	21.87	0.15382
782.00	23230	21.89	0.15453
784.50	23255	21.83	0.15241

Conducted Output Power (QPSK 1 RB ALLOCATED AT THE UPPER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
779.50	23205	21.84	0.15276
782.00	23230	21.81	0.15171
784.50	23255	21.83	0.15241

Conducted Output Power (QPSK 50% RB ALLOCATION CENTERED)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
779.50	23205	20.91	0.12331
782.00	23230	20.94	0.12417
784.50	23255	20.90	0.12303

Conducted Output Power (QPSK 100% RB ALLOCATION)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
779.50	23205	20.88	0.12246
782.00	23230	20.86	0.12190
784.50	23255	20.84	0.12134

Remarks:

1. Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Power Splitter Loss (dB) + Cable Loss (dB) + 20dB Attenuator.
3. The value in bold is the worst.

Channel Bandwidth: 5MHz

Conducted Output Power (16QAM 1 RB ALLOCATED AT THE LOWER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
779.50	23205	20.85	0.12162
782.00	23230	20.92	0.12359
784.50	23255	20.86	0.12190

Conducted Output Power (16QAM 1 RB ALLOCATED AT THE UPPER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
779.50	23205	20.87	0.12218
782.00	23230	20.81	0.12050
784.50	23255	20.83	0.12106

Conducted Output Power (16QAM 50% RB ALLOCATION CENTERED)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
779.50	23205	20.16	0.10375
782.00	23230	20.21	0.10495
784.50	23255	20.09	0.10209

Conducted Output Power (16QAM 100% RB ALLOCATION)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
779.50	23205	20.14	0.10328
782.00	23230	20.17	0.10399
784.50	23255	20.07	0.10162

Remarks:

1. *Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).*
2. *Correction Factor (dB) = Power Splitter Loss (dB) + Cable Loss (dB) + 20dB Attenuator.*
3. *The value in bold is the worst.*

Channel Bandwidth: 10MHz

Conducted Output Power (QPSK 1 RB ALLOCATED AT THE LOWER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
782.00	23230	22.14	0.16368

Conducted Output Power (QPSK 1 RB ALLOCATED AT THE UPPER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
782.00	23230	22.08	0.16144

Conducted Output Power (QPSK 50% RB ALLOCATION CENTERED)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
782.00	23230	21.31	0.13521

Conducted Output Power (QPSK 100% RB ALLOCATION)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
782.00	23230	21.22	0.13243

Remarks:

1. *Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).*
2. *Correction Factor (dB) = Power Splitter Loss (dB) + Cable Loss (dB) + 20dB Attenuator.*
3. *The value in bold is the worst.*

Channel Bandwidth: 10MHz

Conducted Output Power (16QAM 1 RB ALLOCATED AT THE LOWER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
782.00	23230	21.24	0.13305

Conducted Output Power (16QAM 1 RB ALLOCATED AT THE UPPER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
782.00	23230	21.28	0.13428

Conducted Output Power (16QAM 50% RB ALLOCATION CENTERED)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
782.00	23230	20.44	0.11066

Conducted Output Power (16QAM 100% RB ALLOCATION)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
782.00	23230	20.49	0.11194

Remarks:

1. *Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).*
2. *Correction Factor (dB) = Power Splitter Loss (dB) + Cable Loss (dB) + 20dB Attenuator.*
3. *The value in bold is the worst.*

LTE Band 4

Channel Bandwidth: 1.4MHz

Conducted Output Power (QPSK 1 RB ALLOCATED AT THE LOWER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1710.7	19957	21.07	0.12794
1732.5	20175	21.15	0.13032
1754.3	20393	21.31	0.13521

Conducted Output Power (QPSK 1 RB ALLOCATED AT THE UPPER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1710.7	19957	21.78	0.15066
1732.5	20175	21.29	0.13459
1754.3	20393	21.63	0.14555

Conducted Output Power (QPSK 50% RB ALLOCATION CENTERED)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1710.7	19957	20.83	0.12106
1732.5	20175	20.39	0.10940
1754.3	20393	20.66	0.11641

Conducted Output Power (QPSK 100% RB ALLOCATION)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1710.7	19957	20.13	0.10304
1732.5	20175	20.21	0.10495
1754.3	20393	20.41	0.10990

Remarks:

1. Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Power Splitter Loss (dB) + Cable Loss (dB) + 20dB Attenuator.
3. The value in bold is the worst.

Channel Bandwidth: 1.4MHz

Conducted Output Power (16QAM 1 RB ALLOCATED AT THE LOWER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1710.7	19957	20.38	0.10914
1732.5	20175	20.20	0.10471
1754.3	20393	20.47	0.11143

Conducted Output Power (16QAM 1 RB ALLOCATED AT THE UPPER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1710.7	19957	20.73	0.11830
1732.5	20175	20.34	0.10814
1754.3	20393	20.54	0.11324

Conducted Output Power (16QAM 50% RB ALLOCATION CENTERED)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1710.7	19957	20.34	0.10814
1732.5	20175	20.23	0.10544
1754.3	20393	20.29	0.10691

Conducted Output Power (16QAM 100% RB ALLOCATION)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1710.7	19957	20.28	0.10666
1732.5	20175	20.11	0.10257
1754.3	20393	20.22	0.10520

Remarks:

1. Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Power Splitter Loss (dB) + Cable Loss (dB) + 20dB Attenuator.
3. The value in bold is the worst.

Channel Bandwidth: 5MHz

Conducted Output Power (QPSK 1 RB ALLOCATED AT THE LOWER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1712.50	19975	21.13	0.12972
1732.50	20175	21.19	0.13152
1752.50	20375	21.36	0.13677

Conducted Output Power (QPSK 1 RB ALLOCATED AT THE UPPER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1712.50	19975	21.83	0.15241
1732.50	20175	21.33	0.13583
1752.50	20375	21.69	0.14757

Conducted Output Power (QPSK 50% RB ALLOCATION CENTERED)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1712.50	19975	20.88	0.12246
1732.50	20175	20.44	0.11066
1752.50	20375	20.74	0.11858

Conducted Output Power (QPSK 100% RB ALLOCATION)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1712.50	19975	20.18	0.10423
1732.50	20175	20.38	0.10914
1752.50	20375	20.45	0.11092

Remarks:

1. *Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).*
2. *Correction Factor (dB) = Power Splitter Loss (dB) + Cable Loss (dB) + 20dB Attenuator.*
3. *The value in bold is the worst.*

Channel Bandwidth: 5MHz

Conducted Output Power (16QAM 1 RB ALLOCATED AT THE LOWER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1712.50	19975	20.63	0.11561
1732.50	20175	20.45	0.11092
1752.50	20375	20.62	0.11535

Conducted Output Power (16QAM 1 RB ALLOCATED AT THE UPPER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1712.50	19975	20.89	0.12274
1732.50	20175	20.48	0.11169
1752.50	20375	20.69	0.11722

Conducted Output Power (16QAM 50% RB ALLOCATION CENTERED)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1712.50	19975	20.41	0.10990
1732.50	20175	20.27	0.10641
1752.50	20375	20.37	0.10889

Conducted Output Power (16QAM 100% RB ALLOCATION)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1712.50	19975	20.36	0.10864
1732.50	20175	20.20	0.10471
1752.50	20375	20.33	0.10789

Remarks:

1. *Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).*
2. *Correction Factor (dB) = Power Splitter Loss (dB) + Cable Loss (dB) + 20dB Attenuator.*
3. *The value in bold is the worst.*

LTE Band 4

Channel Bandwidth: 10MHz

Conducted Output Power (QPSK 1 RB ALLOCATED AT THE LOWER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1715.00	20000	21.18	0.13122
1732.50	20175	21.24	0.13305
1750.00	20350	21.41	0.13836

Conducted Output Power (QPSK 1 RB ALLOCATED AT THE UPPER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1715.00	20000	21.87	0.15382
1732.50	20175	21.39	0.13772
1750.00	20350	21.74	0.14928

Conducted Output Power (QPSK 50% RB ALLOCATION CENTERED)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1715.00	20000	20.89	0.12274
1732.50	20175	20.45	0.11092
1750.00	20350	20.86	0.12190

Conducted Output Power (QPSK 100% RB ALLOCATION)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1715.00	20000	20.25	0.10593
1732.50	20175	20.35	0.10839
1750.00	20350	20.55	0.11350

Remarks:

1. Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Power Splitter Loss (dB) + Cable Loss (dB) + 20dB Attenuator.
3. The value in bold is the worst.

Channel Bandwidth: 10MHz

Conducted Output Power (16QAM RB ALLOCATED AT THE LOWER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1715.00	20000	20.78	0.11967
1732.50	20175	20.53	0.11298
1750.00	20350	20.76	0.11912

Conducted Output Power (16QAM RB ALLOCATED AT THE UPPER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1715.00	20000	20.94	0.12417
1732.50	20175	20.53	0.11298
1750.00	20350	20.73	0.11830

Conducted Output Power (16QAM 50% RB ALLOCATION CENTERED)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1715.00	20000	20.49	0.11194
1732.50	20175	20.31	0.10740
1750.00	20350	20.40	0.10965

Conducted Output Power (16QAM 100% RB ALLOCATION)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1715.00	20000	20.44	0.11066
1732.50	20175	20.26	0.10617
1750.00	20350	20.37	0.10889

Remarks:

1. Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Power Splitter Loss (dB) + Cable Loss (dB) + 20dB Attenuator.
3. The value in bold is the worst.

LTE Band 4

Channel Bandwidth: 20MHz

Conducted Output Power (QPSK 1 RB ALLOCATED AT THE LOWER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1720.00	20050	21.22	0.13243
1732.50	20175	21.29	0.13459
1745.00	20300	21.45	0.13964

Conducted Output Power (QPSK 1 RB ALLOCATED AT THE UPPER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1720.00	20050	21.92	0.15560
1732.50	20175	21.43	0.13900
1745.00	20300	21.78	0.15066

Conducted Output Power (QPSK 50% RB ALLOCATION CENTERED)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1720.00	20050	20.99	0.12560
1732.50	20175	20.55	0.11350
1745.00	20300	20.86	0.12190

Conducted Output Power (QPSK 100% RB ALLOCATION)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1720.00	20050	20.35	0.10839
1732.50	20175	20.35	0.10839
1745.00	20300	20.56	0.11376

Remarks:

1. Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Power Splitter Loss (dB) + Cable Loss (dB) + 20dB Attenuator.
3. The value in bold is the worst.

Conducted Output Power (16QAM 1 RB ALLOCATED AT THE LOWER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1720.00	20050	20.83	0.12106
1732.50	20175	20.64	0.11588
1745.00	20300	20.83	0.12106

Conducted Output Power (16QAM 1 RB ALLOCATED AT THE UPPER EDGE)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1720.00	20050	20.98	0.12531
1732.50	20175	20.61	0.11508
1745.00	20300	20.81	0.12050

Conducted Output Power (16QAM 50% RB ALLOCATION CENTERED)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1720.00	20050	20.55	0.11350
1732.50	20175	20.34	0.10814
1745.00	20300	20.43	0.11041

Conducted Output Power (16QAM 100% RB ALLOCATION)			
Frequency (MHz)	Channel	Output Power	
		(dBm)	(W)
1720.00	20050	20.49	0.11194
1732.50	20175	20.28	0.10666
1745.00	20300	20.40	0.10965

Remarks:

1. *Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).*
2. *Correction Factor (dB) = Power Splitter Loss (dB) + Cable Loss (dB) + 20dB Attenuator.*
3. *The value in bold is the worst.*

7.2 ERP & EIRP MEASUREMENT

LIMIT

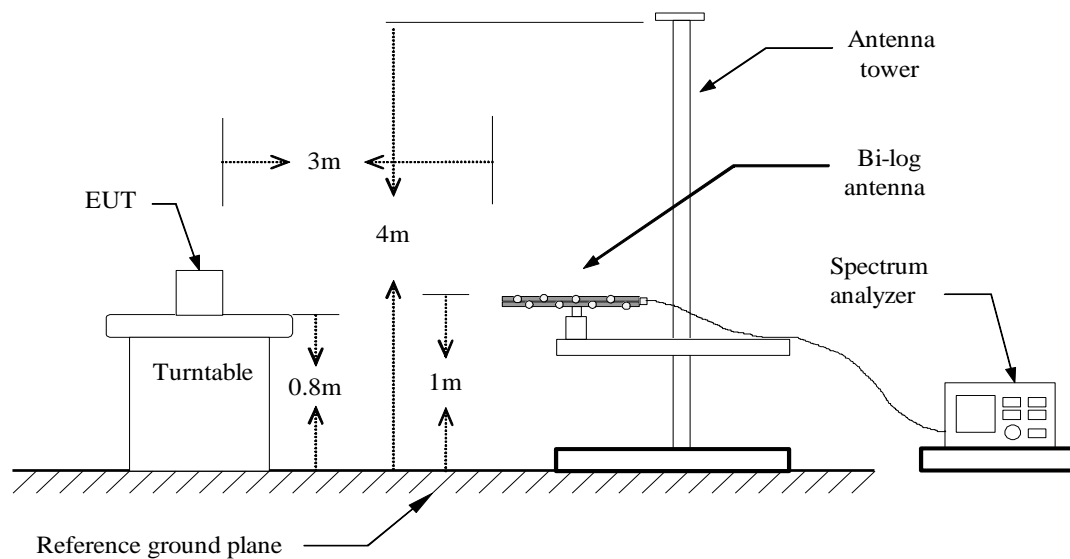
According to FCC §2.1046

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

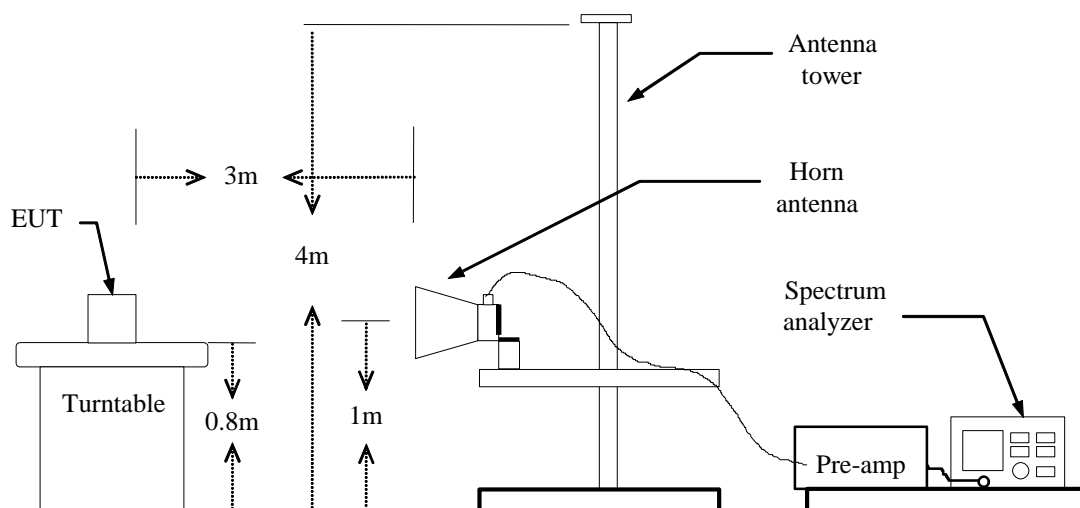
FCC 24.232(b): The equivalent Isotropic Radiated Power (EIRP) must not exceed 2 Watts.

Test Configuration

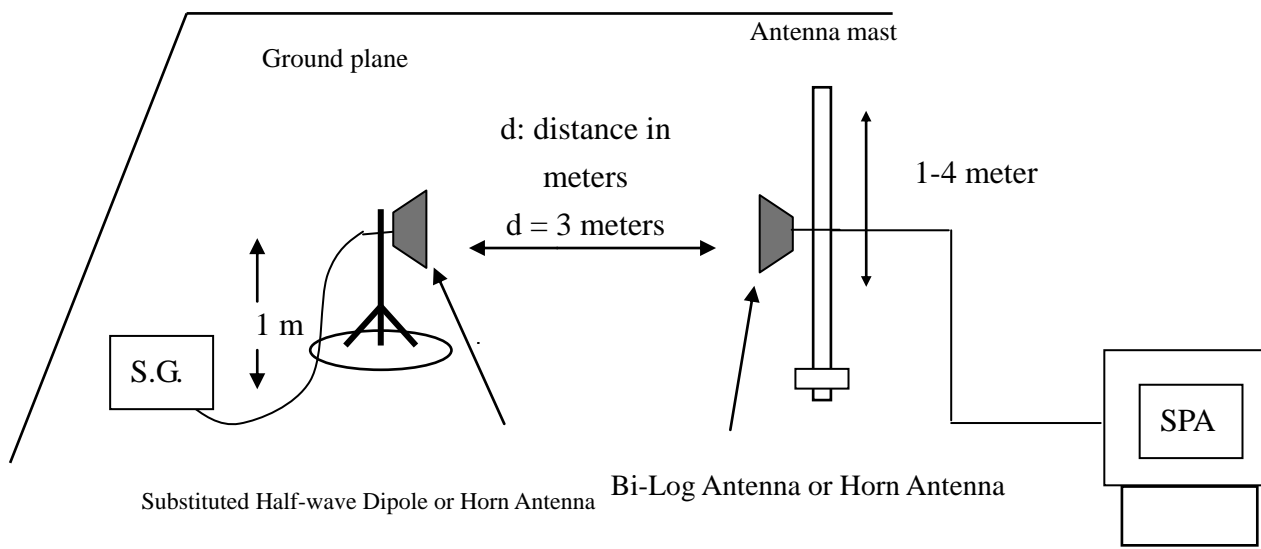
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP



TEST PROCEDURE

The EUT was placed on an 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.

ERP POWER

LTE Band 17

Channel Bandwidth: 5MHz / QPSK

Channel	Frequency (MHz)	Antenna Pol.	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
23755	707.9000	V	4.43	3.14	6.31	7.60	34.77	-27.17
	707.7500	H	10.84	3.14	6.31	14.01	34.77	-20.76
23790	708.9500	V	5.63	3.14	6.3	8.79	34.77	-25.98
	708.6500	H	8.84	3.14	6.3	12.00	34.77	-22.77
23825	714.8000	V	6.1	3.15	6.4	9.35	34.77	-25.42
	712.1000	H	11.43	3.15	6.35	*14.63	34.77	-20.14

Channel Bandwidth: 5MHz / 16QAM

Channel	Frequency (MHz)	Antenna Pol.	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
23755	710.7500	V	6.19	3.14	6.33	9.38	34.77	-25.39
	707.7500	H	11.42	3.14	6.31	14.59	34.77	-20.18
23790	708.8000	V	6.41	3.14	6.3	9.57	34.77	-25.20
	708.5000	H	11.53	3.14	6.31	14.70	34.77	-20.07
23825	709.7000	V	6.8	3.14	6.31	9.97	34.77	-24.80
	709.5500	H	11.74	3.14	6.31	*14.91	34.77	-19.86

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.

Channel Bandwidth: 10MHz / QPSK

Channel	Frequency (MHz)	Antenna Pol.	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
23780	712.2500	V	3.46	3.15	6.35	6.66	34.77	-28.11
	712.5500	H	9.08	3.15	6.36	12.29	34.77	-22.48
23790	713.6000	V	3.6	3.15	6.38	6.83	34.77	-27.94
	706.7000	H	8.9	3.13	6.32	12.09	34.77	-22.68
23800	707.7500	V	3.9	3.14	6.31	7.07	34.77	-27.70
	707.7500	H	10.12	3.14	6.31	*13.29	34.77	-21.48

Channel Bandwidth: 10MHz / 16QAM

Channel	Frequency (MHz)	Antenna Pol.	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
23780	711.5000	V	5.16	3.15	6.34	8.35	34.77	-26.42
	708.9500	H	10.1	3.14	6.3	13.26	34.77	-21.51
23790	712.1000	V	4.85	3.15	6.35	8.05	34.77	-26.72
	707.6000	H	10.29	3.14	6.31	13.46	34.77	-21.31
23800	708.6500	V	4.93	3.14	6.3	8.09	34.77	-26.68
	707.6000	H	10.55	3.14	6.31	*13.72	34.77	-21.05

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 13

Channel Bandwidth: 5MHz / QPSK

Channel	Frequency (MHz)	Antenna Pol.	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
23205	781.1000	V	9.16	3.31	6.13	11.98	34.77	-22.79
	781.4000	H	12.31	3.31	6.13	15.13	34.77	-19.64
23230	783.8000	V	14.16	3.31	6.15	*17.00	34.77	-17.77
	783.3500	H	10.3	3.31	6.15	13.14	34.77	-21.63
23255	784.5500	V	9.48	3.32	6.16	12.32	34.77	-22.45
	785.9000	H	11.97	3.32	6.17	14.82	34.77	-19.95

Channel Bandwidth: 5MHz / 16QAM

Channel	Frequency (MHz)	Antenna Pol.	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
23305	780.5000	V	9.48	3.3	6.12	12.30	34.77	-22.47
	780.8000	H	12.67	3.3	6.12	*15.49	34.77	-19.28
23230	783.3500	V	9.85	3.31	6.15	12.69	34.77	-22.08
	783.9500	H	12.22	3.31	6.15	15.06	34.77	-19.71
23255	785.7500	V	10.06	3.32	6.17	12.91	34.77	-21.86
	785.0000	H	12.62	3.32	6.16	15.46	34.77	-19.31

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.

Channel Bandwidth: 10MHz / QPSK

Channel	Frequency (MHz)	Antenna Pol.	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
23230	785.1500	V	8.53	3.32	6.16	11.37	34.77	-23.40
	785.1500	H	11.45	3.32	6.16	*14.29	34.77	-20.48

Channel Bandwidth: 10MHz / 16QAM

Channel	Frequency (MHz)	Antenna Pol.	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
23230	783.9500	V	9.35	3.31	6.15	12.19	34.77	-22.58
	784.7000	H	11.8	3.32	6.16	*14.64	34.77	-20.13

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.

EIRP POWER

LTE Band 4

Channel Bandwidth: 1.4MHz / QPSK

Channel	Frequency (MHz)	Antenna Pol.	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
19957	1711.000	V	19.34	5.13	5.92	20.13	33.00	-12.87
	1710.900	H	23.15	5.13	5.92	23.94	33.00	-9.06
20175	1732.500	V	18.64	5.17	5.88	19.35	33.00	-13.65
	1732.700	H	24.25	5.17	5.88	*24.96	33.00	-8.04
20393	1754.400	V	17.4	5.21	5.84	18.03	33.00	-14.97
	1754.500	H	23.74	5.21	5.84	24.37	33.00	-8.63

Channel Bandwidth: 1.4MHz / 16QAM

Channel	Frequency (MHz)	Antenna Pol.	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
19957	1710.800	V	15.8	5.13	5.92	16.59	33.00	-16.41
	1710.900	H	22.38	5.13	5.92	23.17	33.00	-9.83
20175	1732.200	V	15.18	5.17	5.88	15.89	33.00	-17.11
	1732.600	H	22.88	5.17	5.88	23.59	33.00	-9.41
20393	1754.200	V	15.1	5.21	5.84	15.73	33.00	-17.27
	1754.300	H	23.34	5.21	5.84	*23.97	33.00	-9.03

Channel Bandwidth: 5MHz / QPSK

Channel	Frequency (MHz)	Antenna Pol.	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
19975	1713.900	V	15.76	5.14	5.91	16.53	33.00	-16.47
	1713.700	H	22.02	5.13	5.92	22.81	33.00	-10.19
20175	1731.000	V	16.04	5.17	5.88	16.75	33.00	-16.25
	1734.100	H	22.87	5.17	5.88	*23.58	33.00	-9.42
20375	1754.000	V	15.77	5.21	5.84	16.40	33.00	-16.60
	1754.600	H	21.94	5.21	5.84	22.57	33.00	-10.43

Channel Bandwidth: 5MHz / 16QAM

Channel	Frequency (MHz)	Antenna Pol.	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
19975	1712.800	V	12.73	5.13	5.92	13.52	33.00	-19.48
	1711.800	H	19.61	5.13	5.92	20.40	33.00	-12.60
20175	1731.100	V	13.16	5.17	5.88	13.87	33.00	-19.13
	1732.800	H	20.4	5.17	5.88	*21.11	33.00	-11.89
20375	1753.000	V	11.95	5.21	5.84	12.58	33.00	-20.42
	1752.500	H	20.24	5.2	5.85	20.89	33.00	-12.11

Channel Bandwidth: 10MHz / QPSK

Channel	Frequency (MHz)	Antenna Pol.	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
20000	1718.600	V	15.41	5.14	5.91	16.18	33.00	-16.82
	1718.900	H	21.98	5.14	5.91	*22.75	33.00	-10.25
20175	1729.300	V	15.04	5.16	5.89	15.77	33.00	-17.23
	1729.400	H	21.08	5.16	5.89	21.81	33.00	-11.19
20350	1752.700	V	13.71	5.2	5.85	14.36	33.00	-18.64
	1752.700	H	19.82	5.2	5.85	20.47	33.00	-12.53

Channel Bandwidth: 10MHz / 16QAM

Channel	Frequency (MHz)	Antenna Pol.	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
20000	1718.000	V	12.07	5.14	5.91	12.84	33.00	-20.16
	1717.500	H	18.1	5.14	5.91	18.87	33.00	-14.13
20175	1730.000	V	12.38	5.16	5.89	13.11	33.00	-19.89
	1729.100	H	18.28	5.16	5.89	*19.01	33.00	-13.99
20350	1752.700	V	10.9	5.2	5.85	11.55	33.00	-21.45
	1752.800	H	17.64	5.21	5.84	18.27	33.00	-14.73

Channel Bandwidth: 20MHz / QPSK

Channel	Frequency (MHz)	Antenna Pol.	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
20050	1720.300	V	15.06	5.15	5.9	15.81	33.00	-17.19
	1723.500	H	18.99	5.15	5.9	*19.74	33.00	-13.26
20175	1724.700	V	14.12	5.15	5.9	14.87	33.00	-18.13
	1724.900	H	18.7	5.15	5.9	19.45	33.00	-13.55
20300	1738.600	V	12.69	5.18	5.87	13.38	33.00	-19.62
	1737.300	H	18.51	5.18	5.87	19.20	33.00	-13.80

Channel Bandwidth: 20MHz / 16QAM

Channel	Frequency (MHz)	Antenna Pol.	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
20050	1719.000	V	11.43	5.14	5.91	12.20	33.00	-20.80
	1723.100	H	17.18	5.15	5.9	*17.93	33.00	-15.07
20175	1732.400	V	10.94	5.17	5.88	11.65	33.00	-21.35
	1726.600	H	17.12	5.16	5.89	17.85	33.00	-15.15
20300	1737.700	V	10.21	5.18	5.87	10.90	33.00	-22.10
	1738.100	H	16.39	5.18	5.87	17.08	33.00	-15.92

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 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. The test extreme voltage is according to the 2.1055(d)(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment and the extreme temperature rule is comply with the 1055(a)(1) $-30^{\circ}\text{C} \sim 50^{\circ}\text{C}$.

TEST PROCEDURE

1. Because of the measure the carrier frequency under the condition of the AFC lock, it shall be used the mobile station in the LTE link mode. This is accomplished with the use of the communication simulator station. The oven room could control the temperatures and humidity.
2. Power must be removed when changing from one temperature to another or one voltage to another voltage. Power warm up is at least 15 min and power applied should perform before recording frequency error.
3. Laptop pc is connected the external power supply to control the AC input power. The various Volts from the minimum 126.5 Volts to 93.5 Volts. Each step shall be record the frequency error rate.
4. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}\text{C}$ during the measurement testing.
5. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

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

TEST RESULTS

FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT:

LTE Band 17

Reference Frequency: LTE Band 17 710 MHz @ 20°C						
Limit: ± 2.5 ppm = 1775Hz						
Power Supply Vdc	Environment Temperature (°C)	5M Frequency (Hz)	Frequency (Hz) (ppm)	10M Frequency (Hz)	Frequency (Hz) (ppm)	Limit (ppm)
12	50	-5.44	-0.0077	-10.12	-0.0143	2.5
12	40	-6.59	-0.0093	-11.03	-0.0155	
12	30	-6.23	-0.0088	-11.46	-0.0161	
12	20	-5.16	-0.0073	-15.93	-0.0224	
12	10	-6.89	-0.0097	-12.77	-0.0180	
12	0	-6.23	-0.0088	-13.38	-0.0188	
12	-10	-7.87	-0.0111	-10.17	-0.0143	
12	-20	-8.16	-0.0115	-9.13	-0.0129	
12	-30	4.41	0.0062	-10.25	-0.0144	

LTE Band 13

Reference Frequency: LTE Band 13 782 MHz @ 20°C						
Limit: ± 2.5 ppm = 1955Hz						
Power Supply Vdc	Environment Temperature (°C)	5M Frequency (Hz)	Frequency (Hz) (ppm)	10M Frequency (Hz)	Frequency (Hz) (ppm)	Limit (ppm)
12	50	-12.22	-0.0156	-7.87	-0.0101	2.5
12	40	-12.63	-0.0162	-8.16	-0.0104	
12	30	-7.44	-0.0095	4.41	0.0056	
12	20	-7.87	-0.0101	-5.44	-0.0070	
12	10	-8.16	-0.0104	-6.59	-0.0084	
12	0	4.41	0.0056	-6.23	-0.0080	
12	-10	-10.17	-0.0130	-5.40	-0.0069	
12	-20	-9.13	-0.0117	3.61	0.0046	
12	-30	-10.25	-0.0131	-1.27	-0.0016	

LTE Band 4

Reference Frequency: LTE Band 4 1732.5 MHz @ 20°C								
Limit: ± 2.5 ppm = 4331Hz								
Power Supply Vdc	Environment Temperature (°C)	5M Frequency (Hz)	Frequency (Hz) (ppm)	10M Frequency (Hz)	Frequency (Hz) (ppm)	20M Frequency (Hz)	Frequency (Hz) (ppm)	Limit (ppm)
12	50	-15.93	-0.0092	-12.34	-0.0071	-12.22	-0.0071	2.5
12	40	-12.77	-0.0074	-12.84	-0.0074	-12.63	-0.0073	
12	30	-13.38	-0.0077	-6.12	-0.0035	-7.44	-0.0043	
12	20	-10.17	-0.0059	-10.42	-0.0060	-10.12	-0.0058	
12	10	-9.13	-0.0053	-10.48	-0.0060	-11.03	-0.0064	
12	0	-10.25	-0.0059	-9.86	-0.0057	-11.46	-0.0066	
12	-10	-5.44	-0.0031	-7.87	-0.0045	5.53	0.0032	
12	-20	-6.59	-0.0038	-8.16	-0.0047	-6.02	-0.0035	
12	-30	-6.23	-0.0036	4.41	0.0025	-6.89	-0.0040	

FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT:

LTE Band 17

Reference Frequency: LTE Band 17 710 MHz @ 20°C						
Limit: ± 2.5 ppm = 1775Hz						
Power Supply Vdc	Environment Temperature (°C)	5M Frequency (Hz)	Delta (ppm)	10M Frequency (Hz)	Delta (ppm)	Limit (ppm)
10.2	20	-6.82	-0.0096	-15.83	-0.0223	2.5
12		-5.16	-0.0073	-15.93	-0.0224	
13.8		-6.54	-0.0092	-16.43	-0.0231	

LTE Band 13

Reference Frequency: LTE Band 13 782 MHz @ 20°C						
Limit: ± 2.5 ppm = 1955Hz						
Power Supply Vdc	Environment Temperature (°C)	5M Frequency (Hz)	Delta (ppm)	10M Frequency (Hz)	Delta (ppm)	Limit (ppm)
10.2	20	-9.51	-0.0122	-7.53	-0.0096	2.5
12		-7.87	-0.0101	-5.44	-0.0070	
13.8		-8.52	-0.0109	-6.98	-0.0089	

LTE Band 4

Reference Frequency: LTE Band 4 1732.5 MHz @ 20°C								
Limit: ± 2.5 ppm = 4331Hz								
Power Supply Vdc	Environment Temperature (°C)	5M Frequency (Hz)	Delta (ppm)	10M Frequency (Hz)	Delta (ppm)	20M Frequency (Hz)	Delta (ppm)	Limit (ppm)
10.2	20	-11.11	-0.0064	-10.98	-0.0063	-10.58	-0.0061	2.5
12		-10.17	-0.0059	-10.42	-0.0060	-10.12	-0.0058	
13.8		-10.69	-0.0062	-11.17	-0.0064	-10.69	-0.0062	

7.4 OCCUPIED BANDWIDTH MEASUREMENT

LIMITS

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

TEST PROCEDURES

1. The EUT makes a phone call to the communication simulator. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels. (low, middle and high operational frequency range.)
2. The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
3. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

TEST RESULTS

LTE Band 17

CHANNEL BANDWIDTH: 5MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
23755	706.50	4.4717
23790	710.00	4.4717
23825	713.50	4.4717

CHANNEL BANDWIDTH: 5MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
23755	706.50	4.4717
23790	710.00	4.4717
23825	713.50	4.4717

CHANNEL BANDWIDTH: 10MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
23780	709.00	8.9146
23790	710.00	8.9435
23800	711.00	8.9435

CHANNEL BANDWIDTH: 10MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
23780	709.00	8.9146
23790	710.00	8.9146
23800	711.00	8.9146

LTE Band 13

CHANNEL BANDWIDTH: 5MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
23205	779.50	4.4717
23230	782.00	4.4717
23255	784.50	4.4717

CHANNEL BANDWIDTH: 5MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
23205	779.50	4.4717
23230	782.00	4.4717
23255	784.50	4.4717

CHANNEL BANDWIDTH: 10MHz / QPSK

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

CHANNEL BANDWIDTH: 10MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
23230	782.00	8.8856

LTE Band 4

CHANNEL BANDWIDTH: 1.4MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
19957	1710.7	1.0940
20175	1732.5	1.0940
20393	1754.3	1.0940

CHANNEL BANDWIDTH: 5MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
19957	1710.7	1.0940
20175	1732.5	1.0940
20393	1754.3	1.0984

CHANNEL BANDWIDTH: 5MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
19975	1712.50	4.4862
20175	1732.50	4.4717
20375	1752.50	4.4717

CHANNEL BANDWIDTH: 5MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
19975	1712.50	4.4717
20175	1732.50	4.4717
20375	1752.50	4.4862

CHANNEL BANDWIDTH: 10MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20000	1715.00	8.9435
20175	1732.50	8.9435
20350	1750.00	8.9435

CHANNEL BANDWIDTH: 10MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20000	1715.00	8.9146
20175	1732.50	8.9146
20350	1750.00	8.9435

CHANNEL BANDWIDTH: 20MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20050	1720.00	17.7713
20175	1732.50	17.8871
20300	1745.00	17.8871

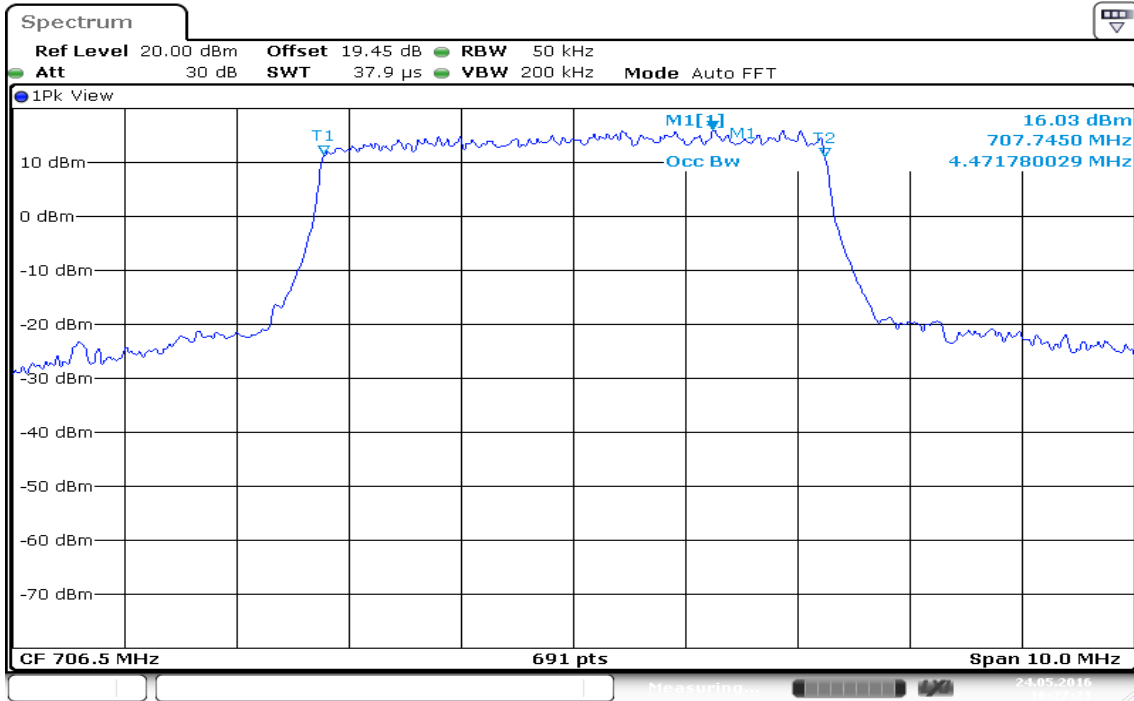
CHANNEL BANDWIDTH: 20MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20050	1720.00	17.8292
20175	1732.50	17.8292
20300	1745.00	17.9450

LTE Band 17

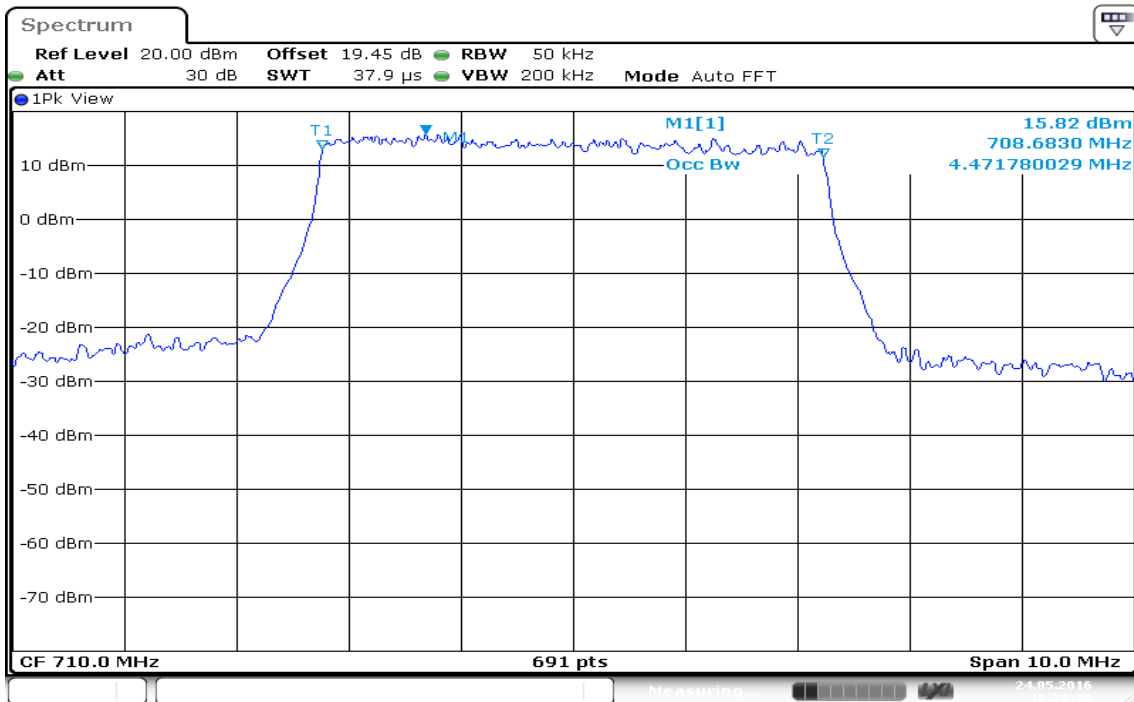
CHANNEL BANDWIDTH: 5MHz / QPSK

CH Low



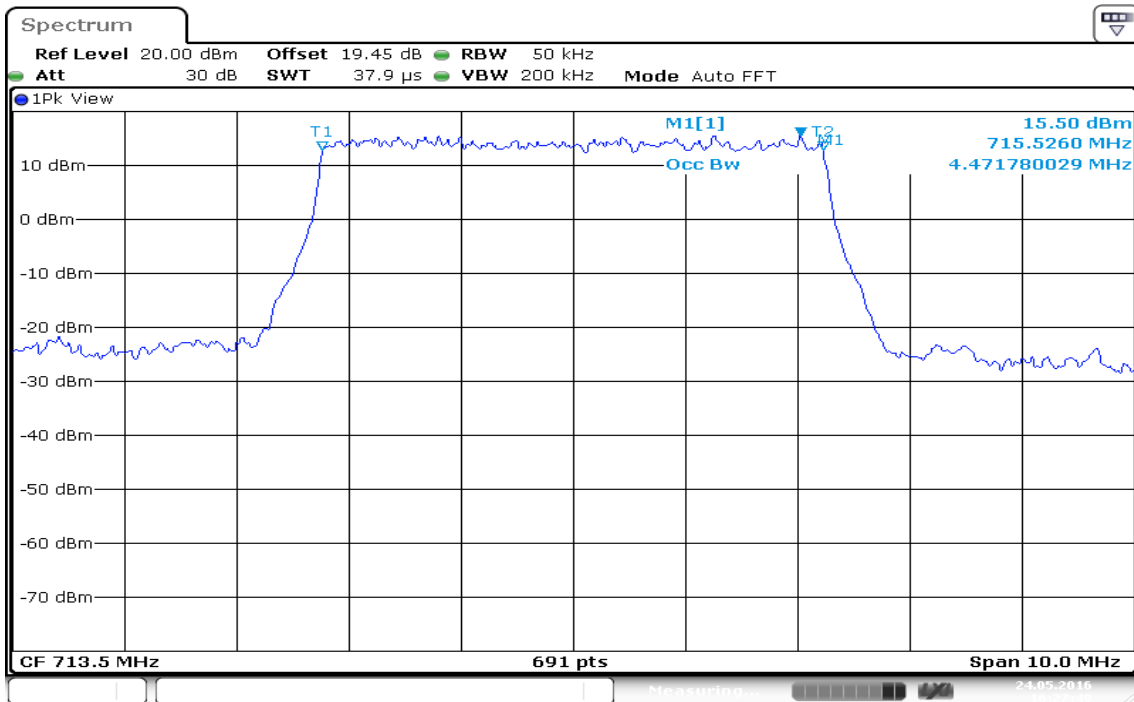
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CH Mid



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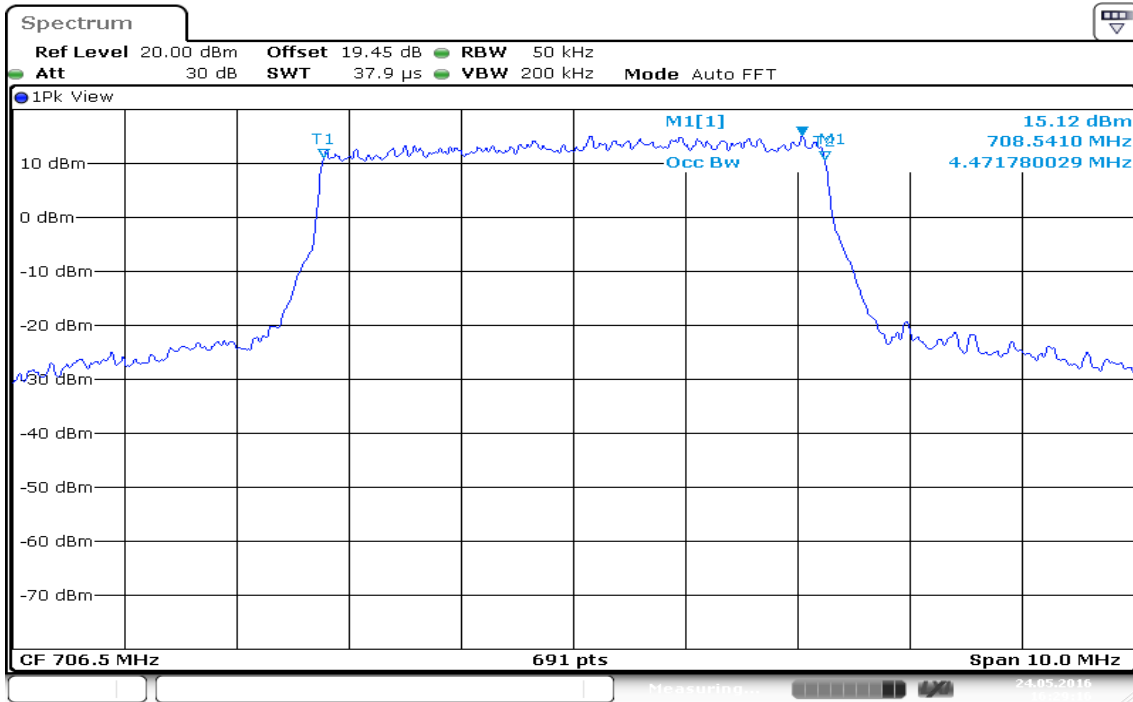
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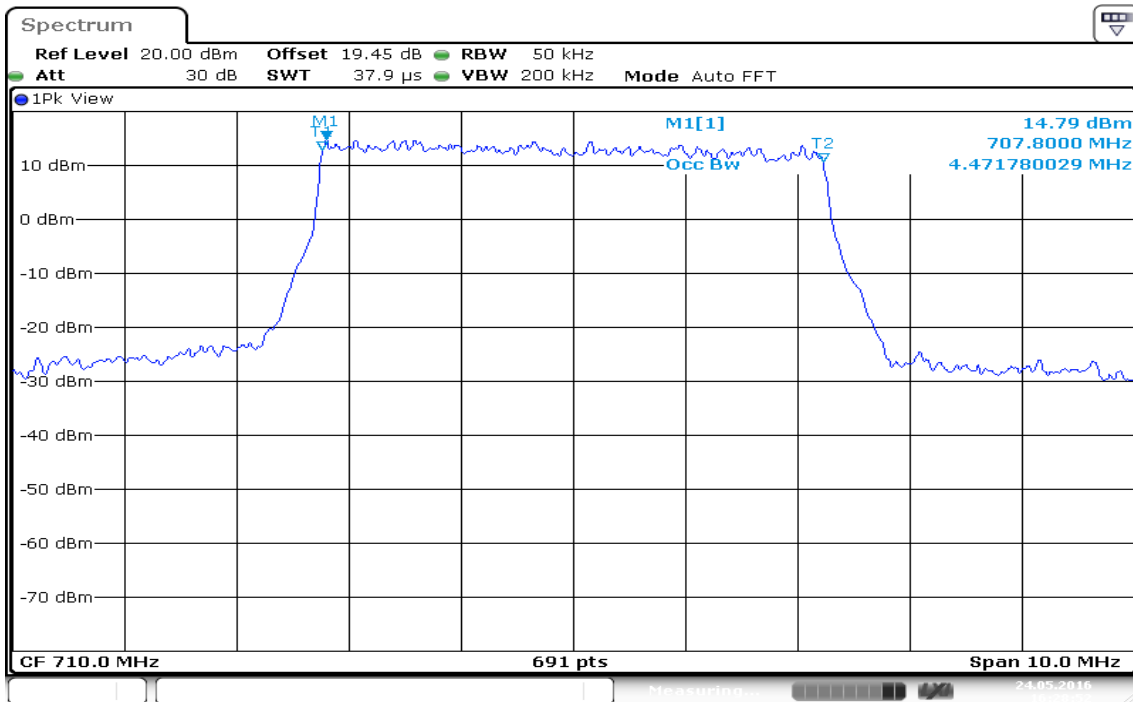
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CHANNEL BANDWIDTH: 5MHz / 16QAM

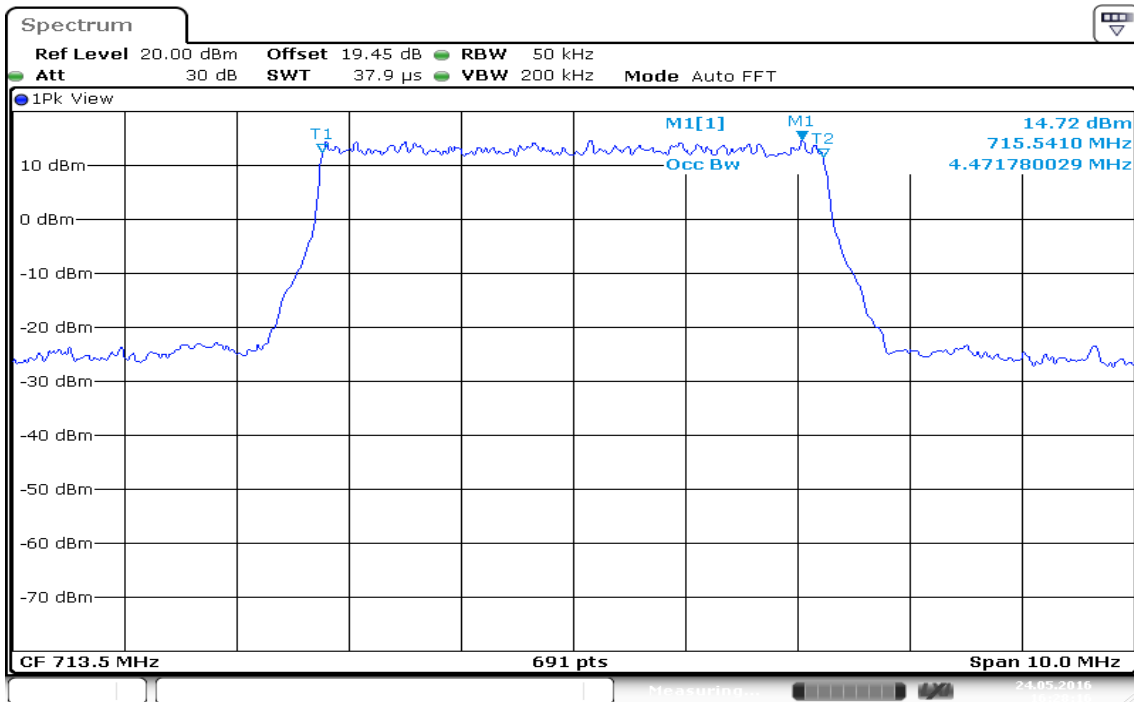
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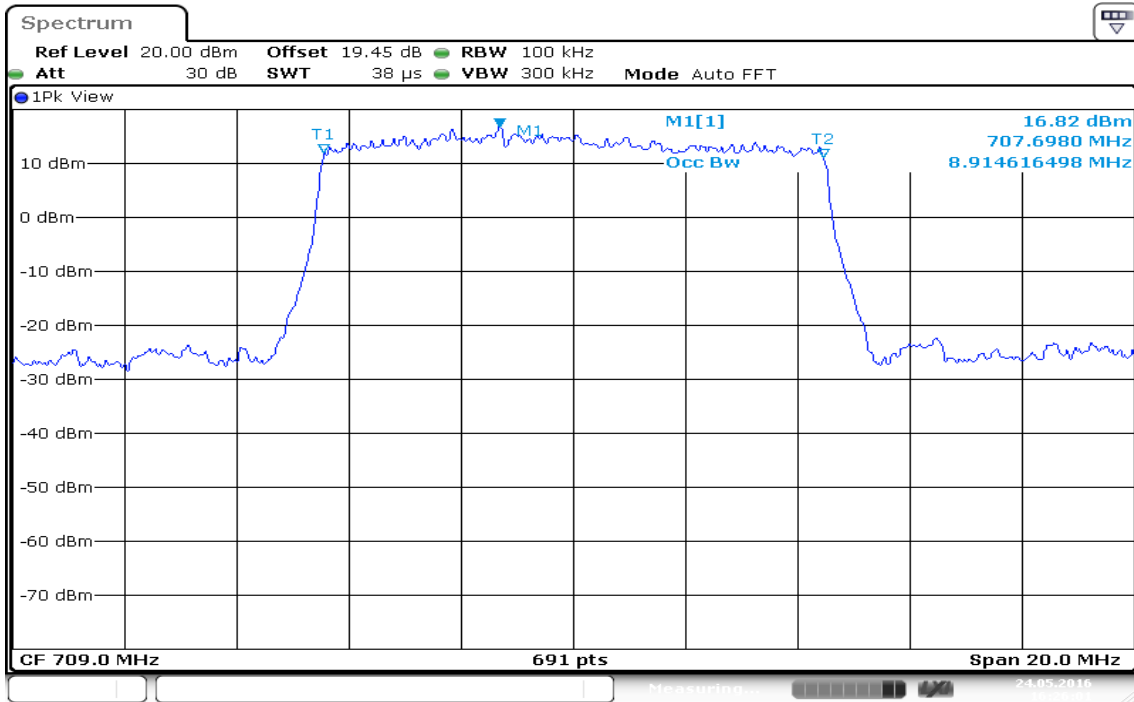
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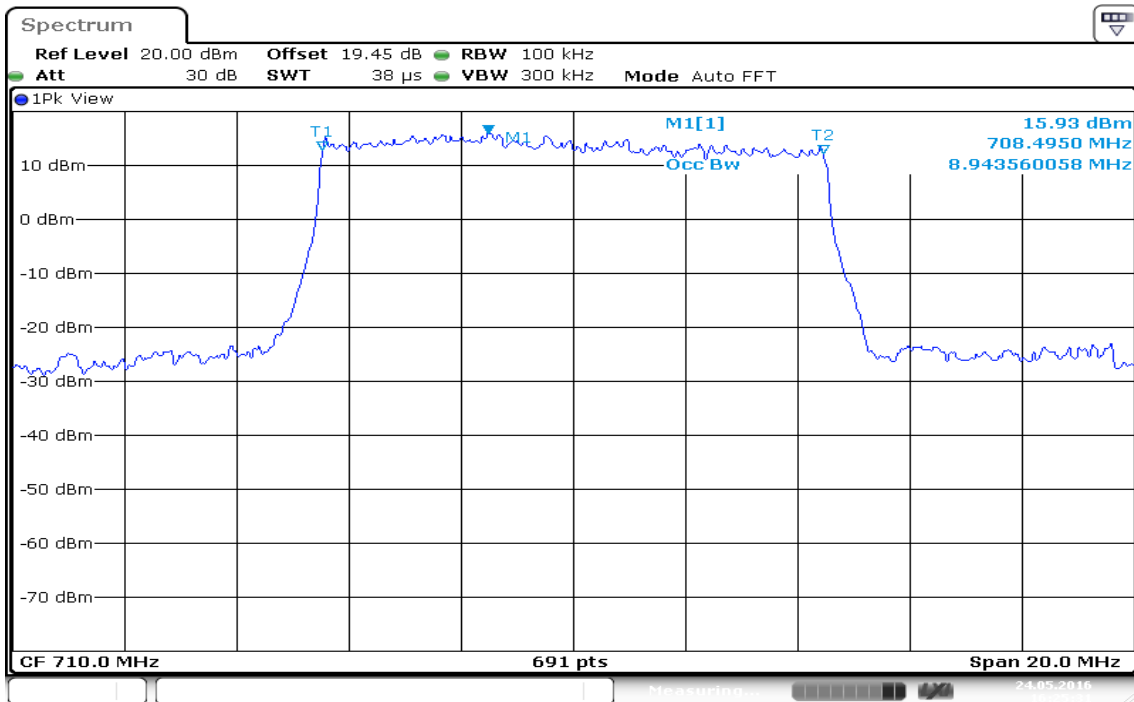
CHANNEL BANDWIDTH: 10MHz / QPSK

CH Low



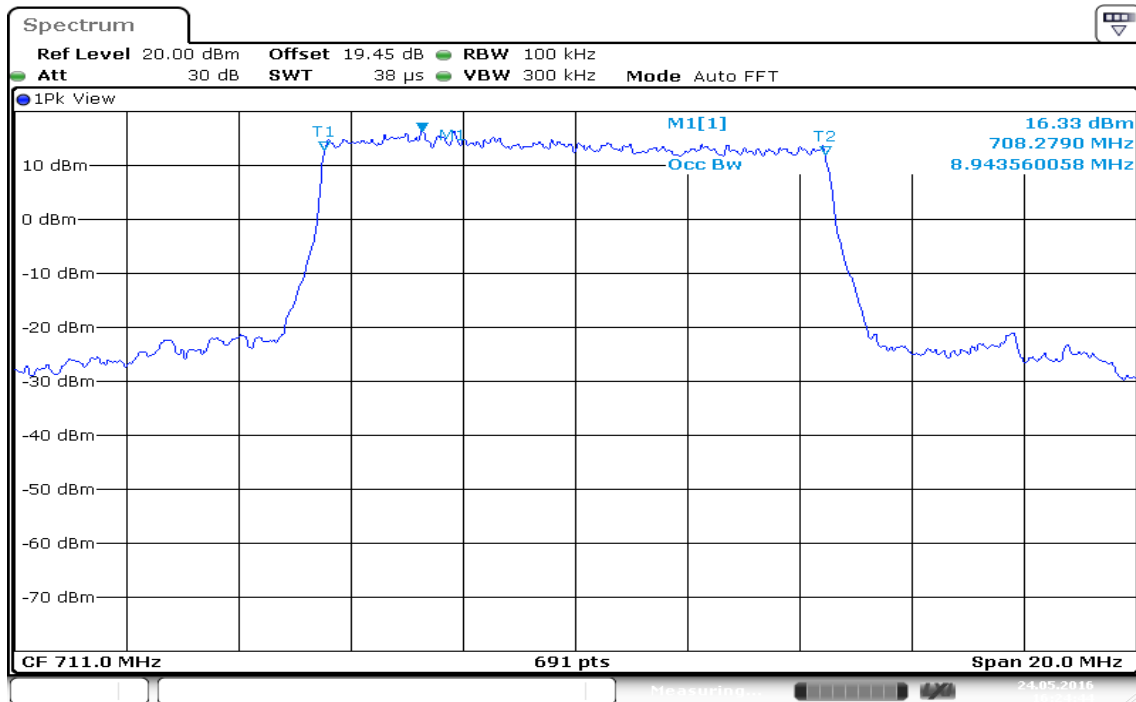
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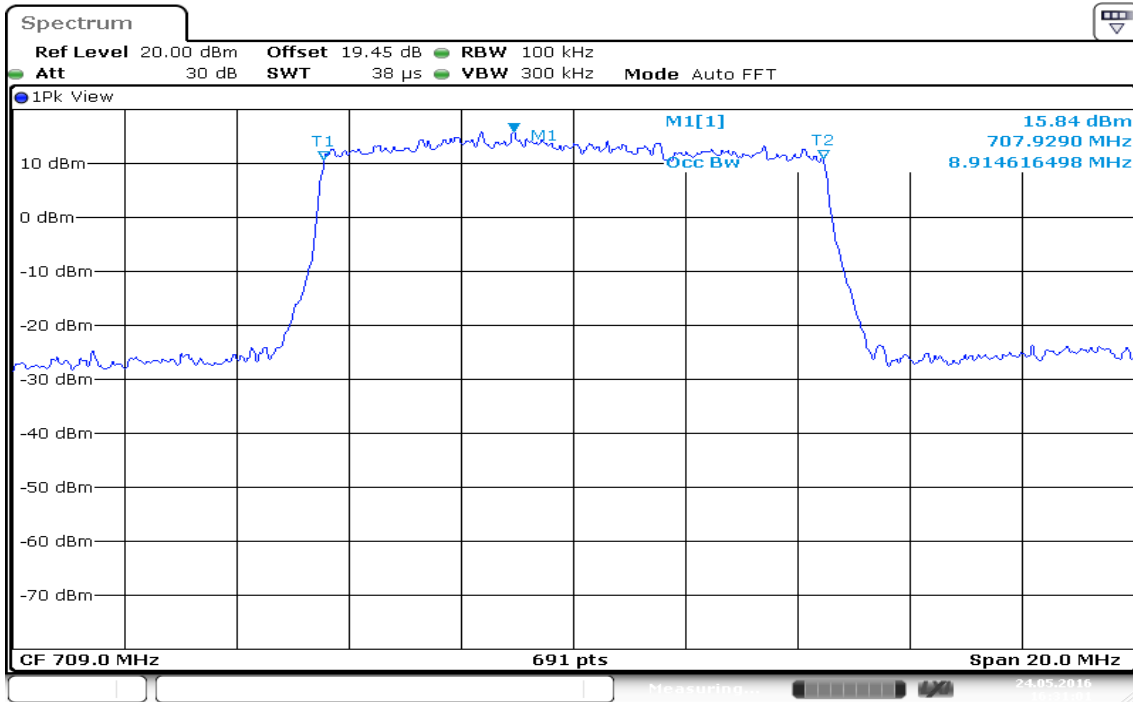
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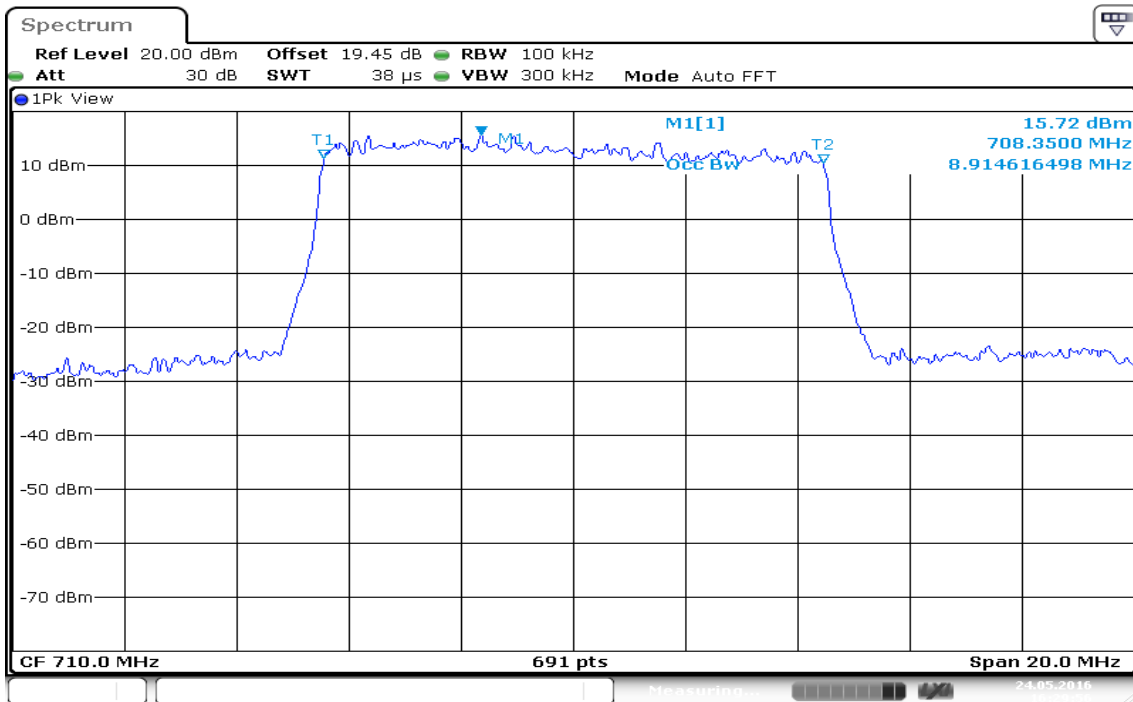
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CHANNEL BANDWIDTH: 10MHz / 16QAM

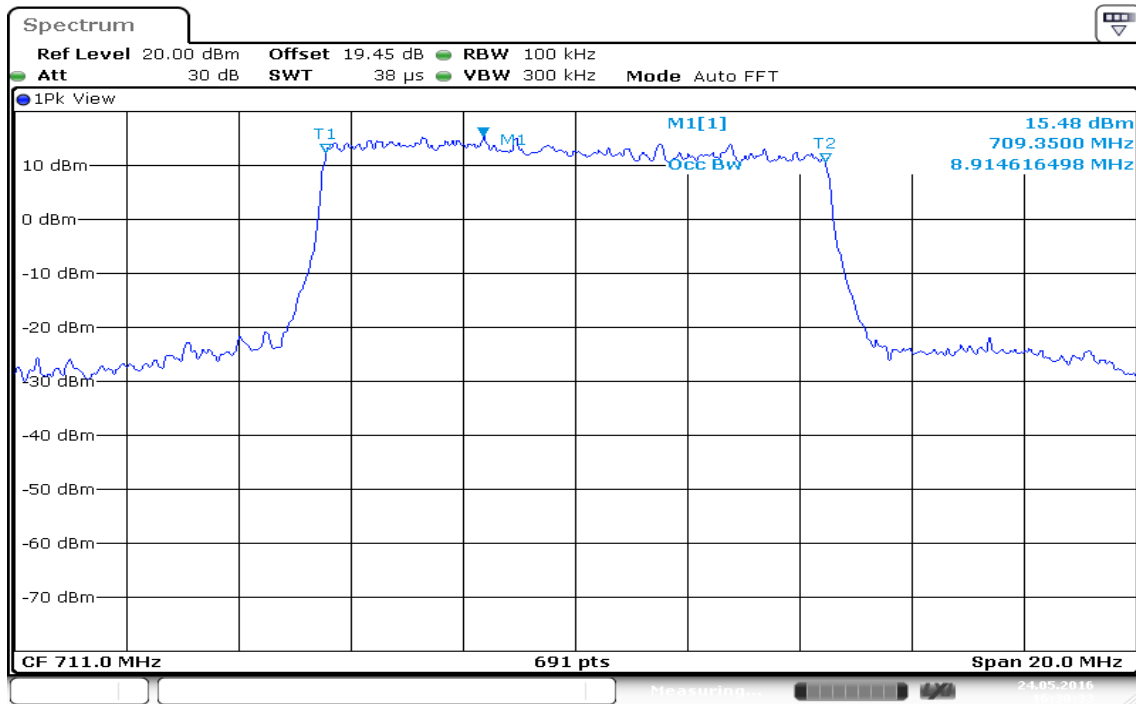
CH Low



CH Mid



CH High

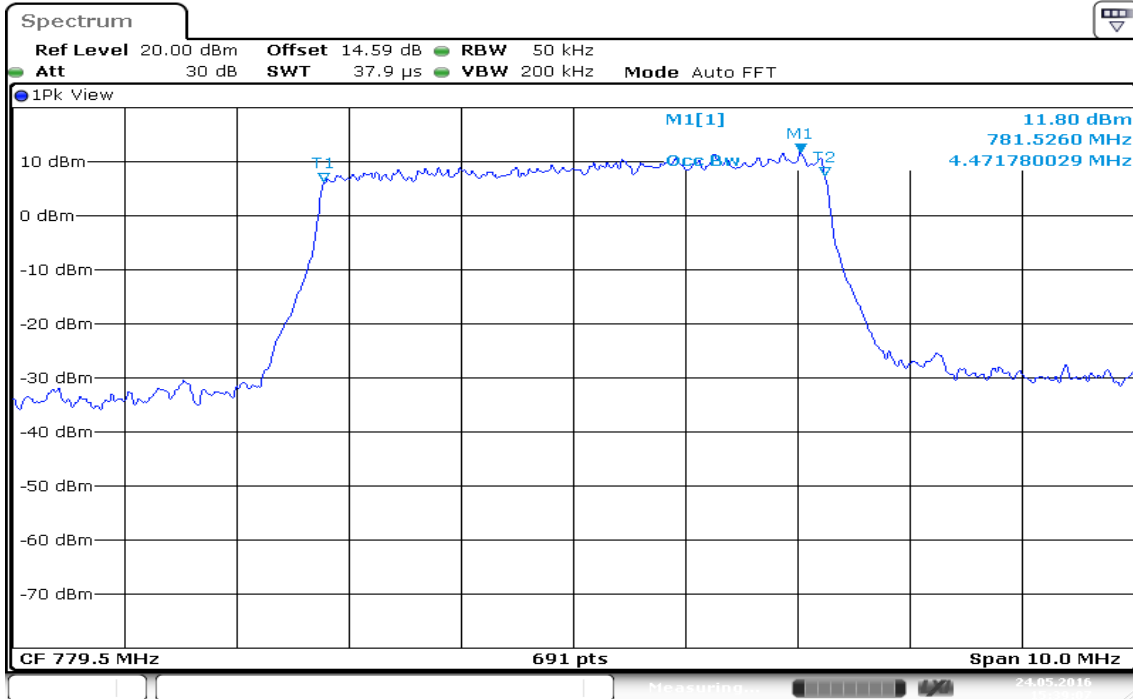


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LTE Band 13

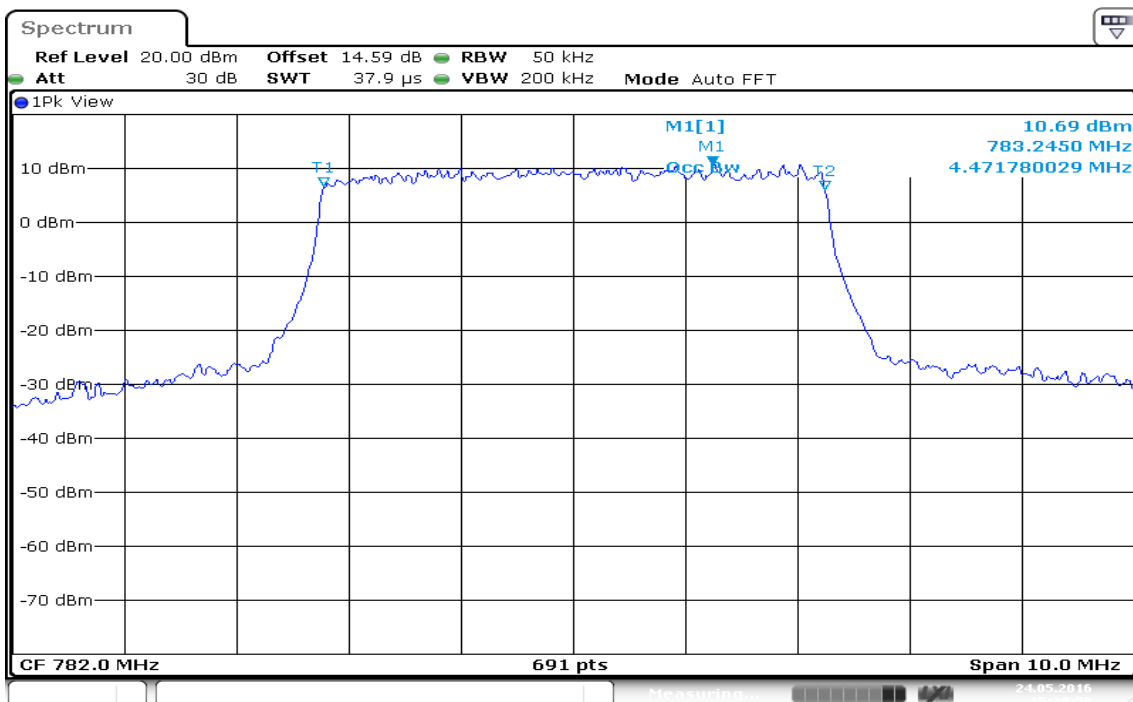
CHANNEL BANDWIDTH: 5MHz / QPSK

CH Low



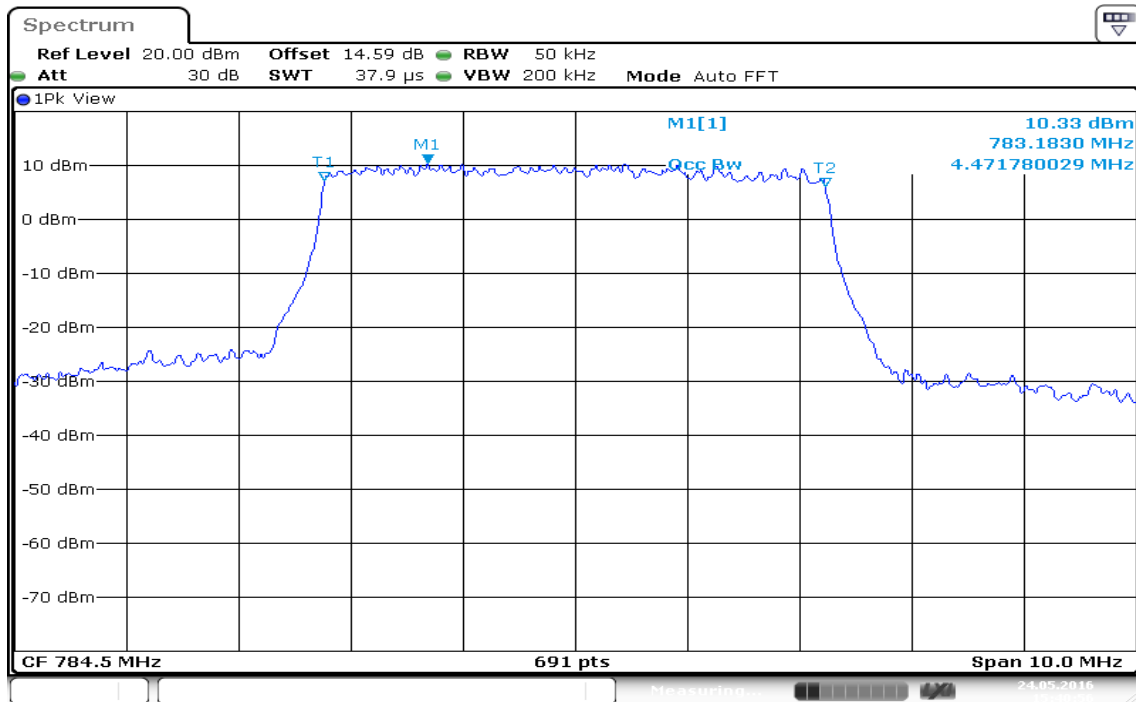
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CH Mid



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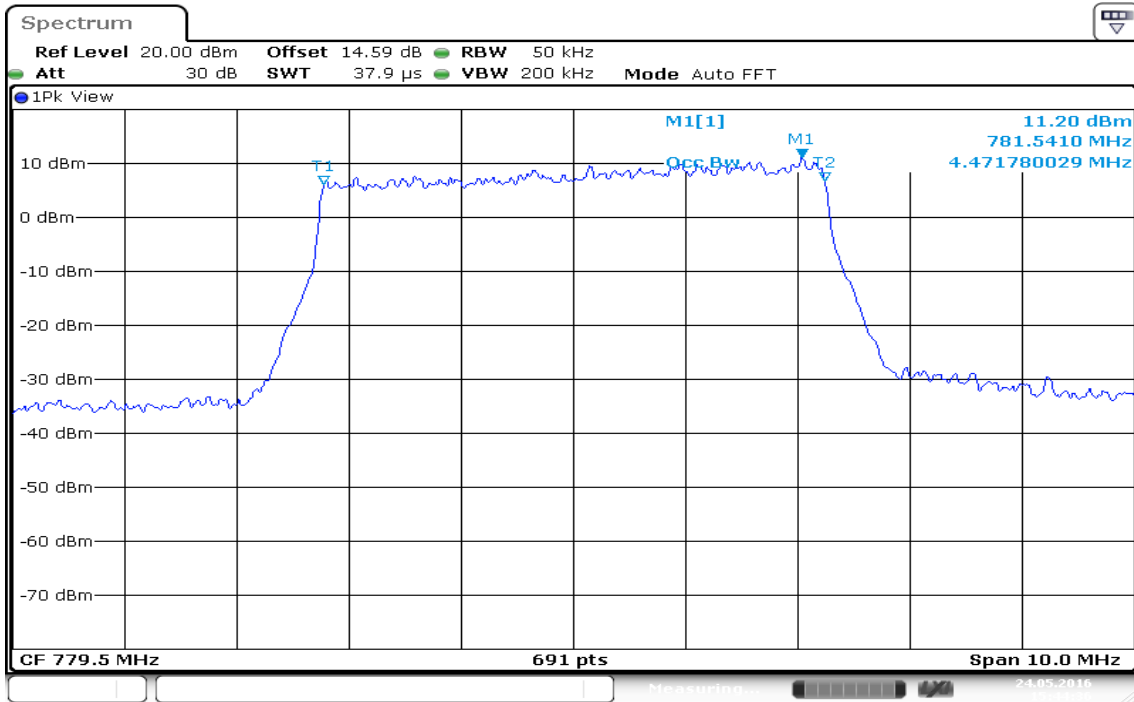
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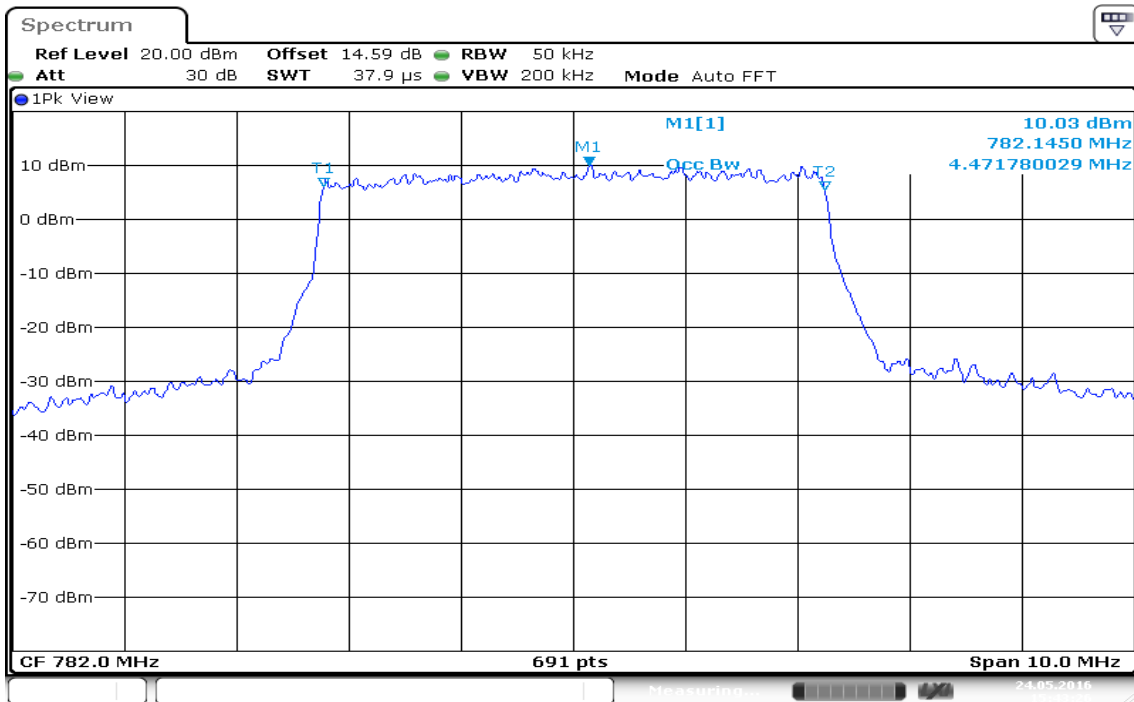
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CHANNEL BANDWIDTH: 5MHz / 16QAM

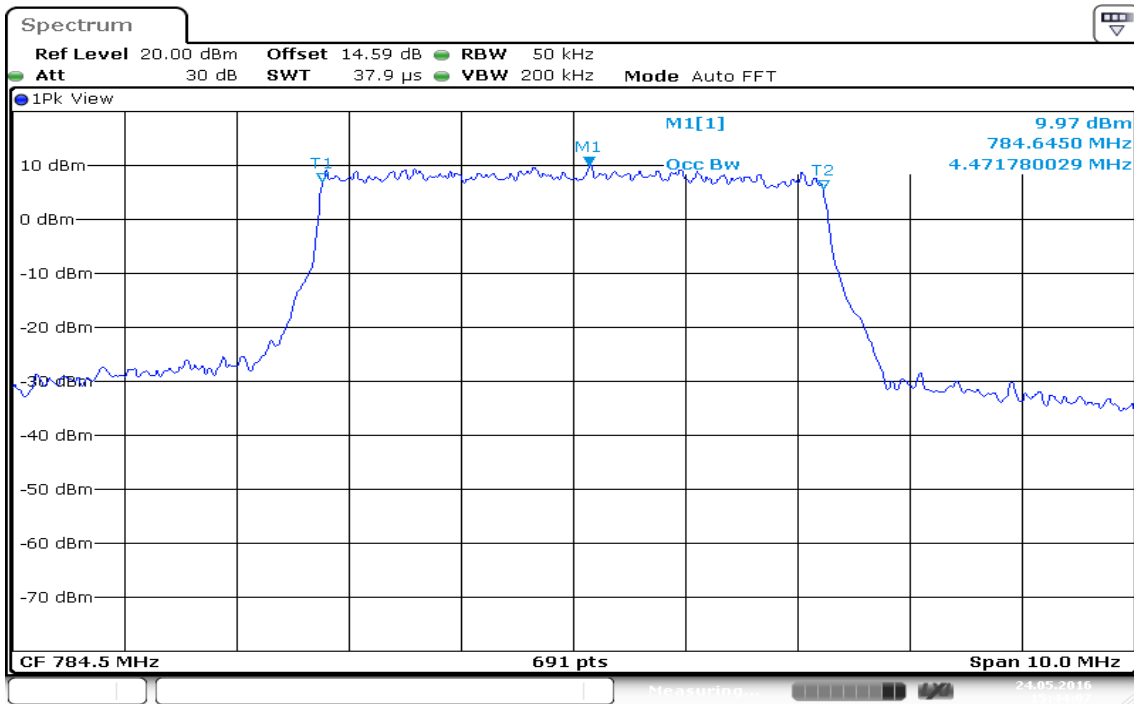
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CH Mid



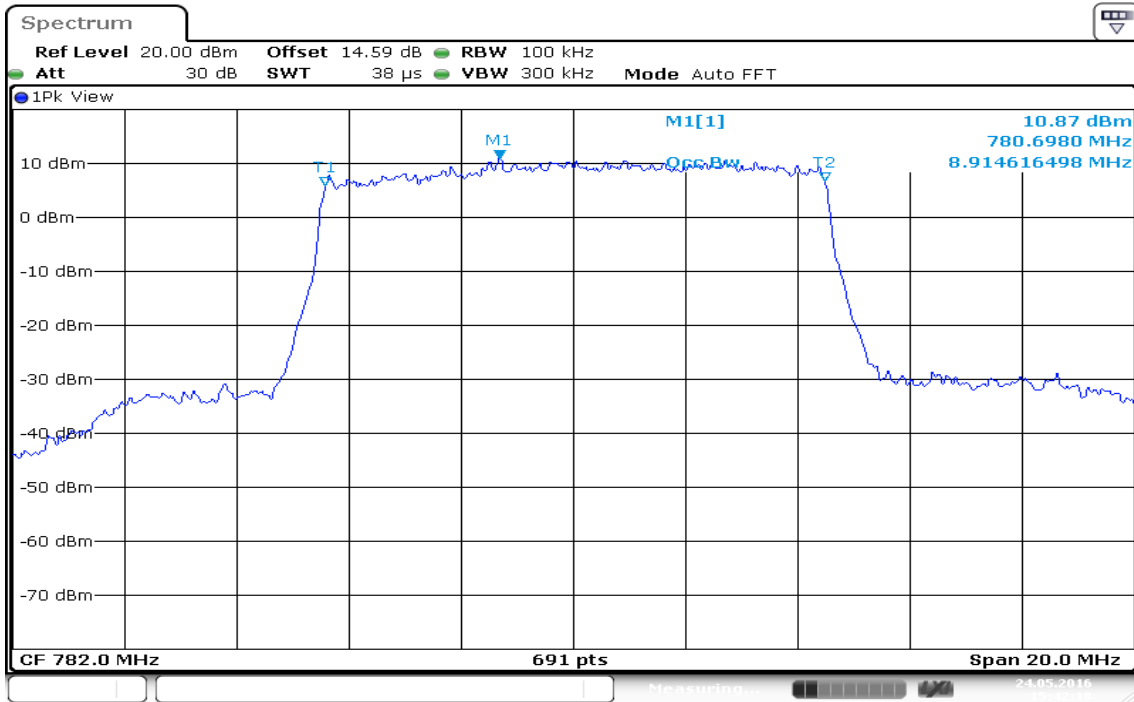
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CHANNEL BANDWIDTH: 10MHz / QPSK

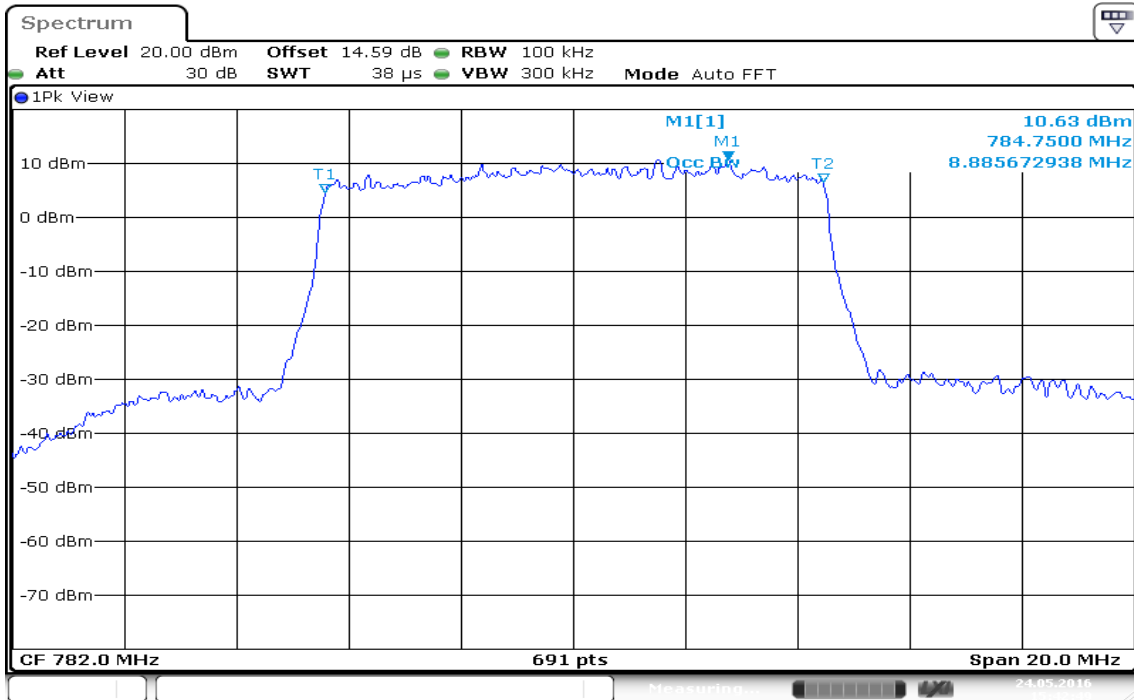
CH Mid



Date: 24.MAY.2016 15:42:18

CHANNEL BANDWIDTH: 10MHz / 16QAM

CH Mid

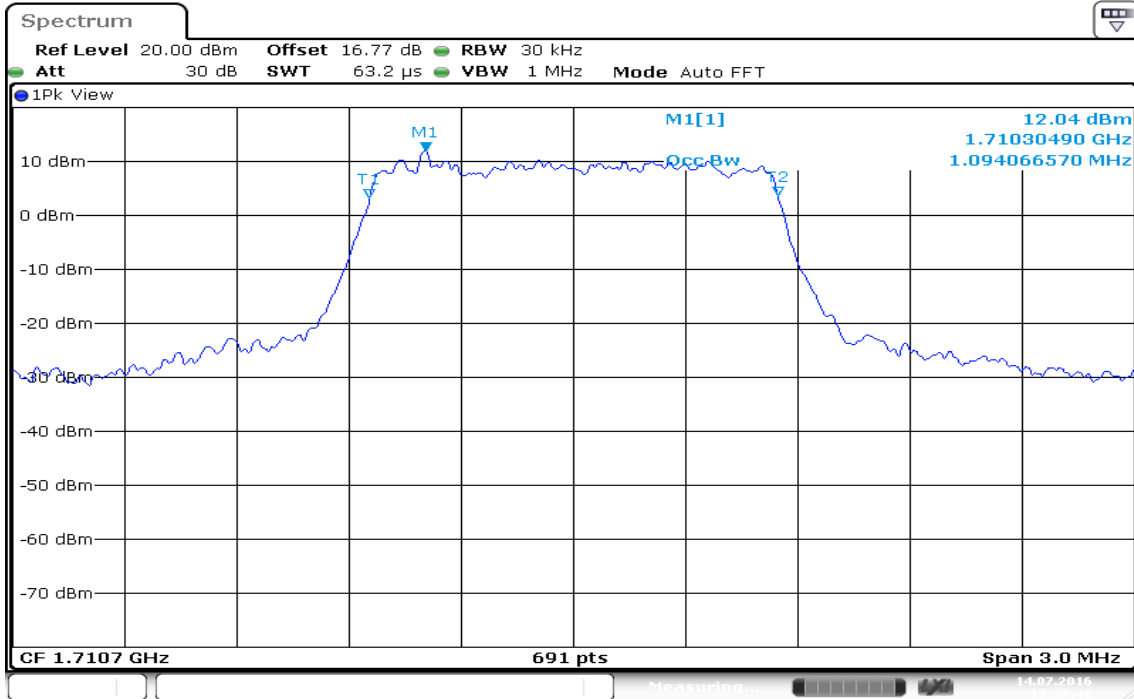


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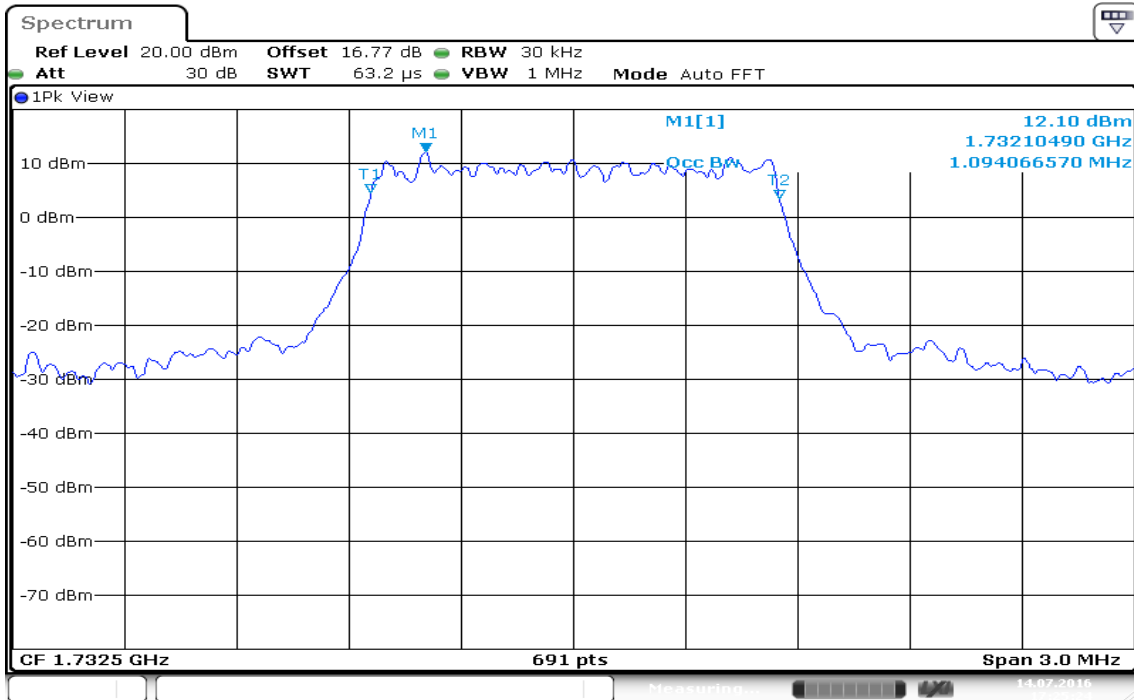
LTE Band 4

CHANNEL BANDWIDTH: 1.4MHz / QPSK

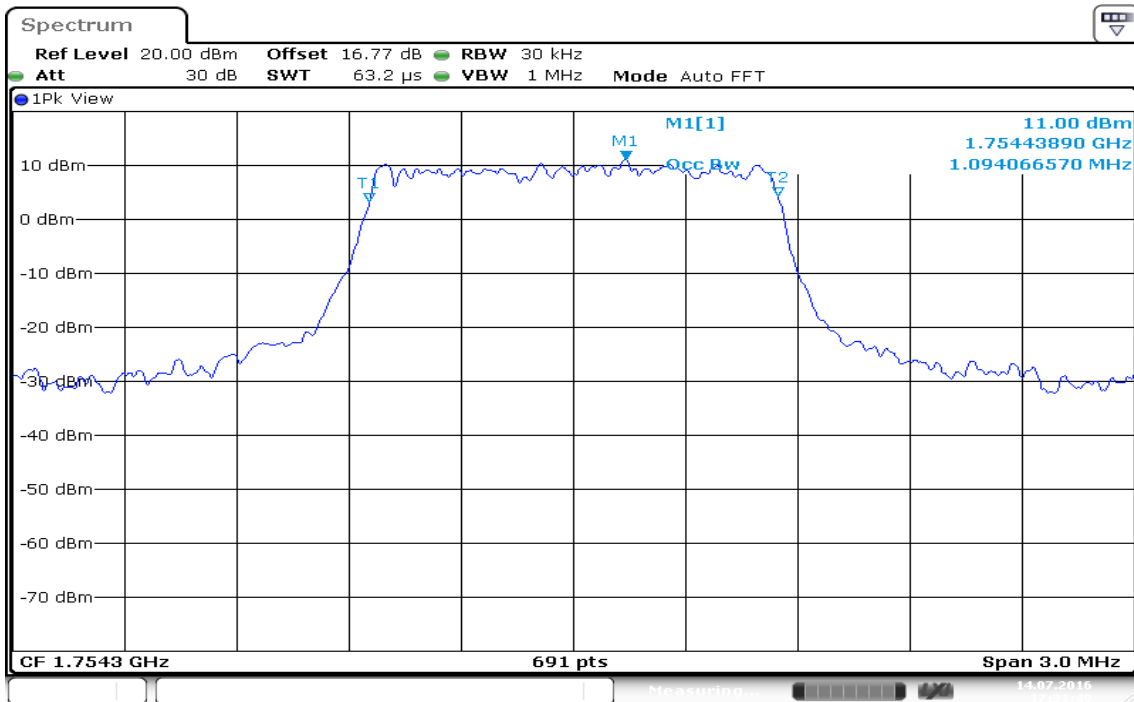
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CH Mid



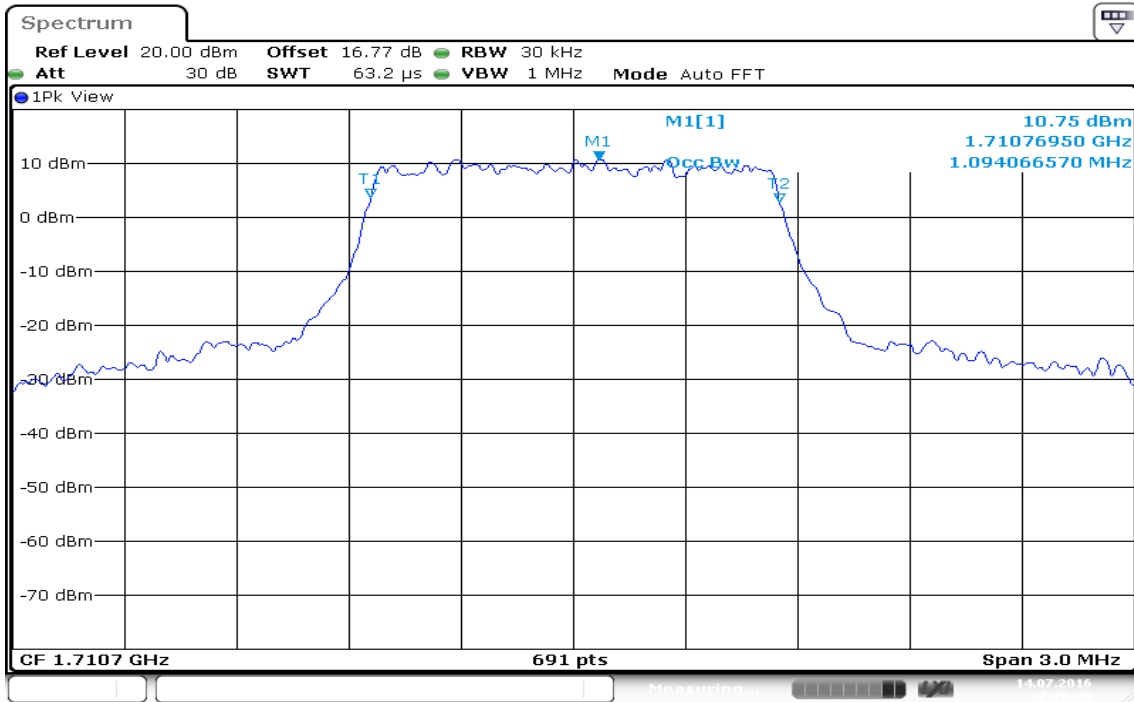
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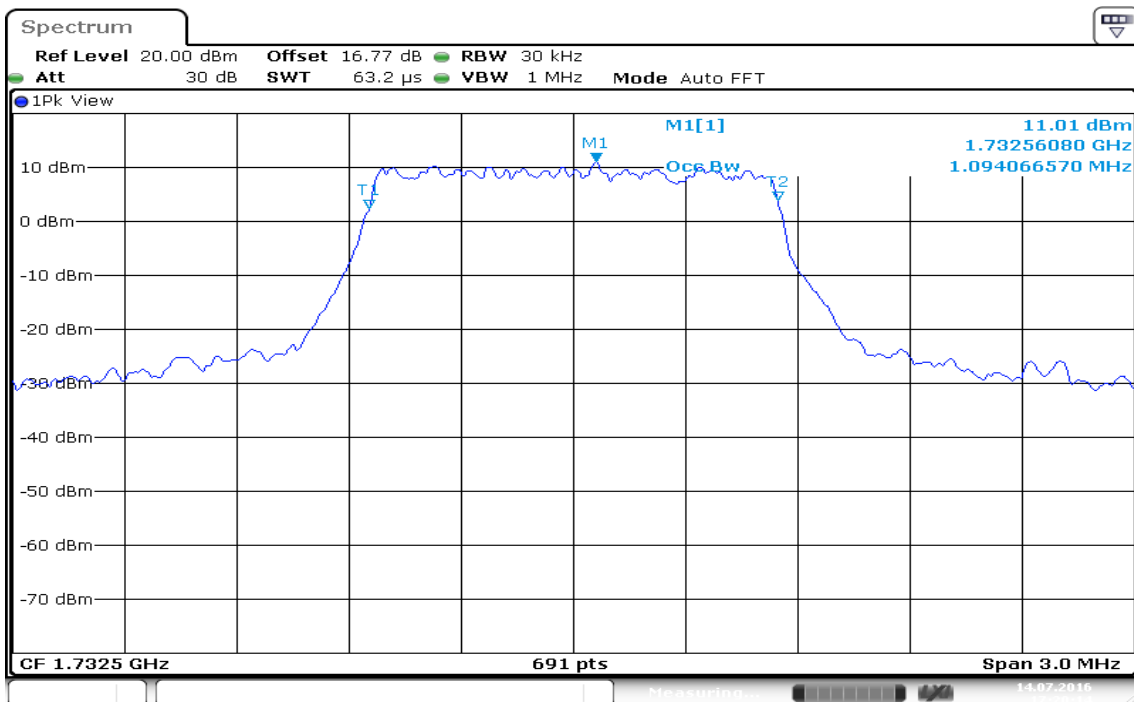
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CHANNEL BANDWIDTH: 1.4MHz / 16QAM

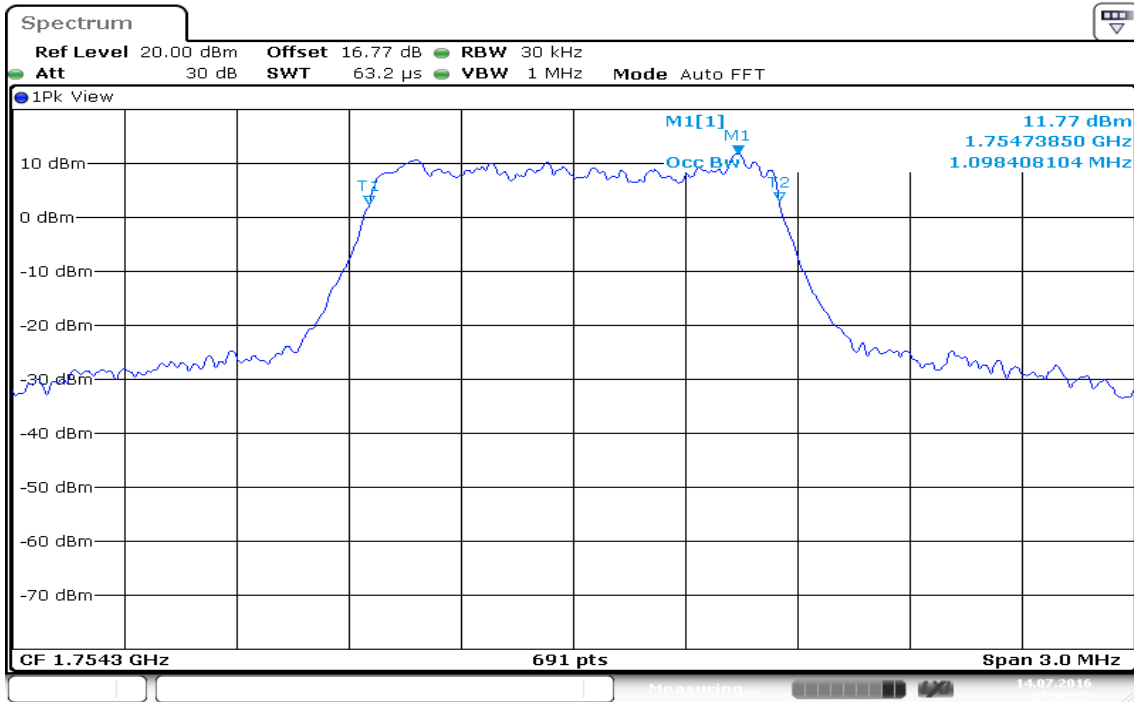
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CH Mid



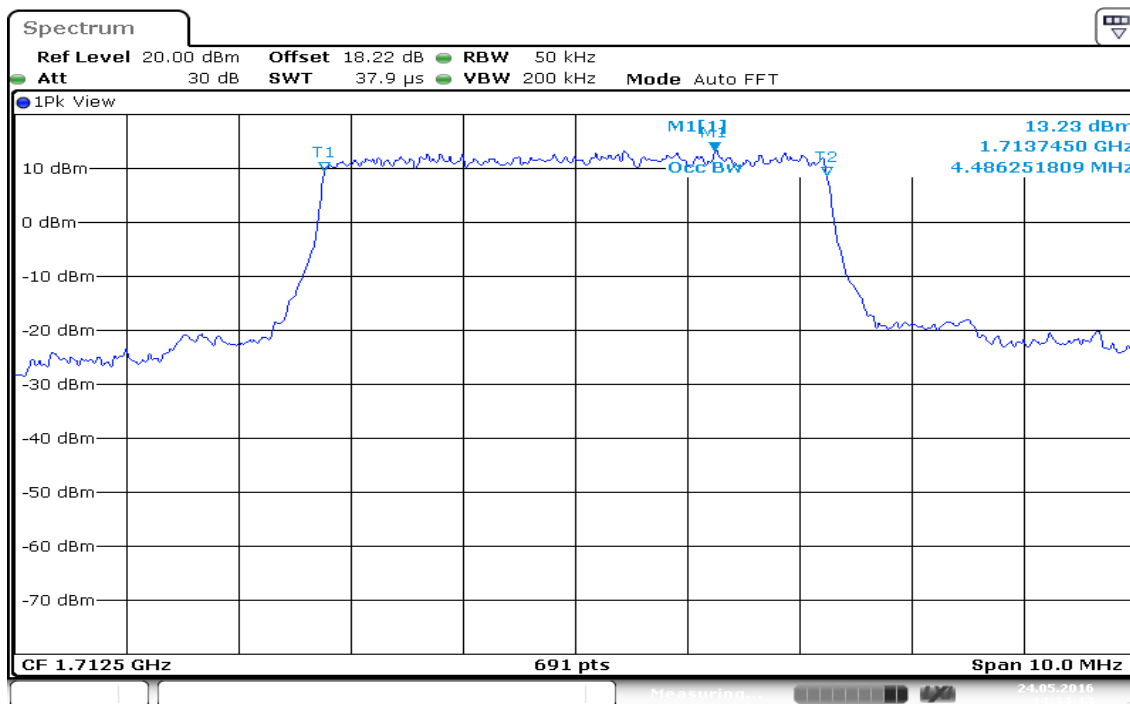
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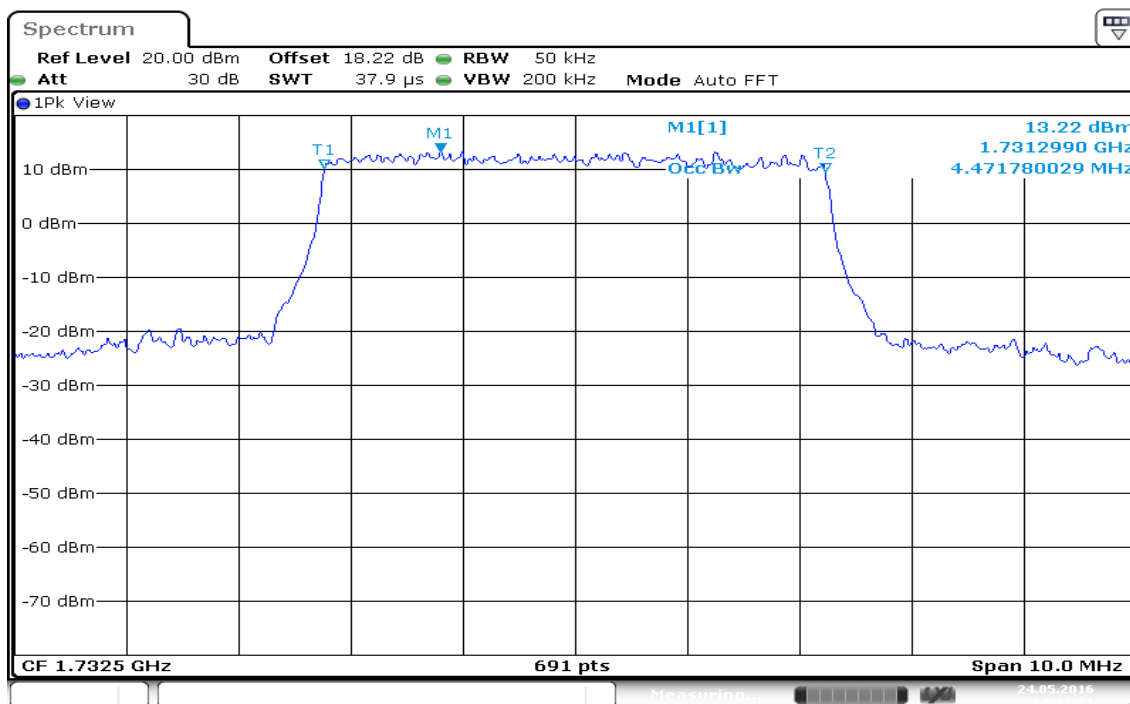
CHANNEL BANDWIDTH: 5MHz / QPSK

CH Low



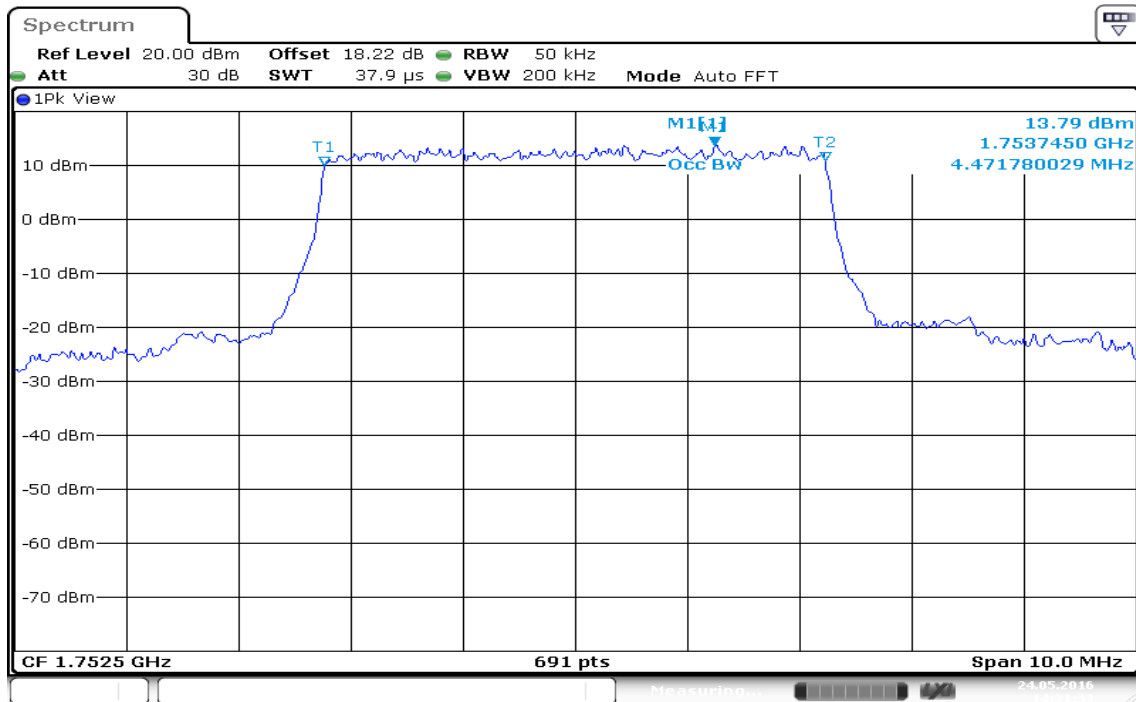
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CH Mid



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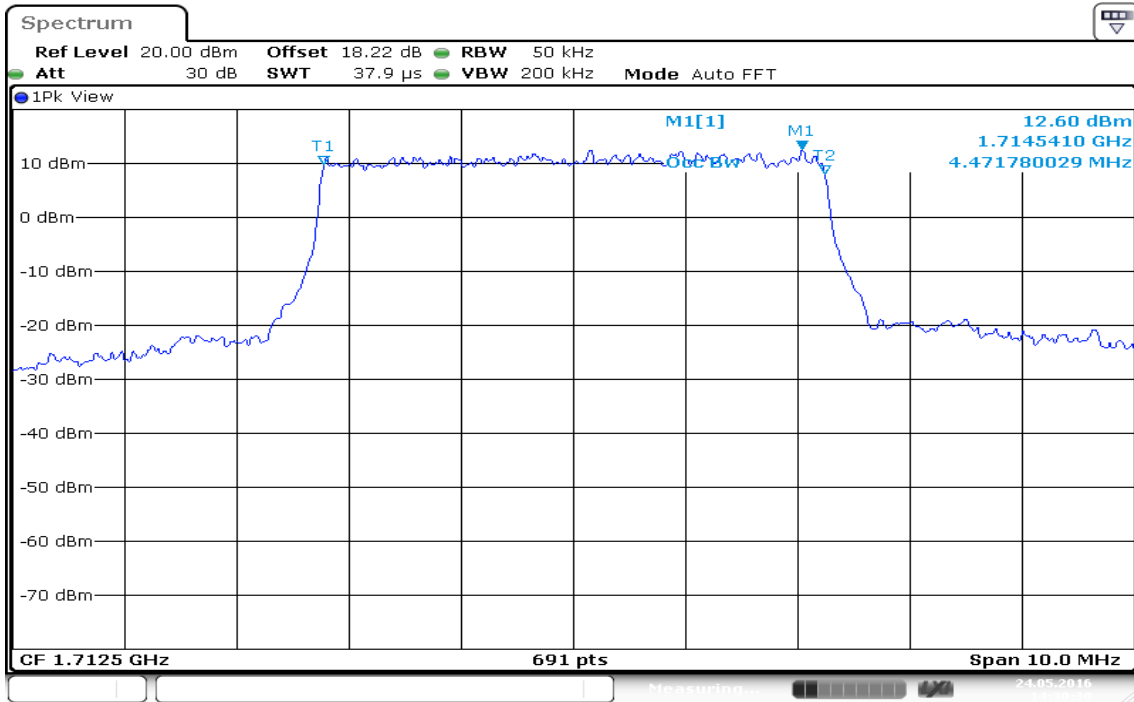
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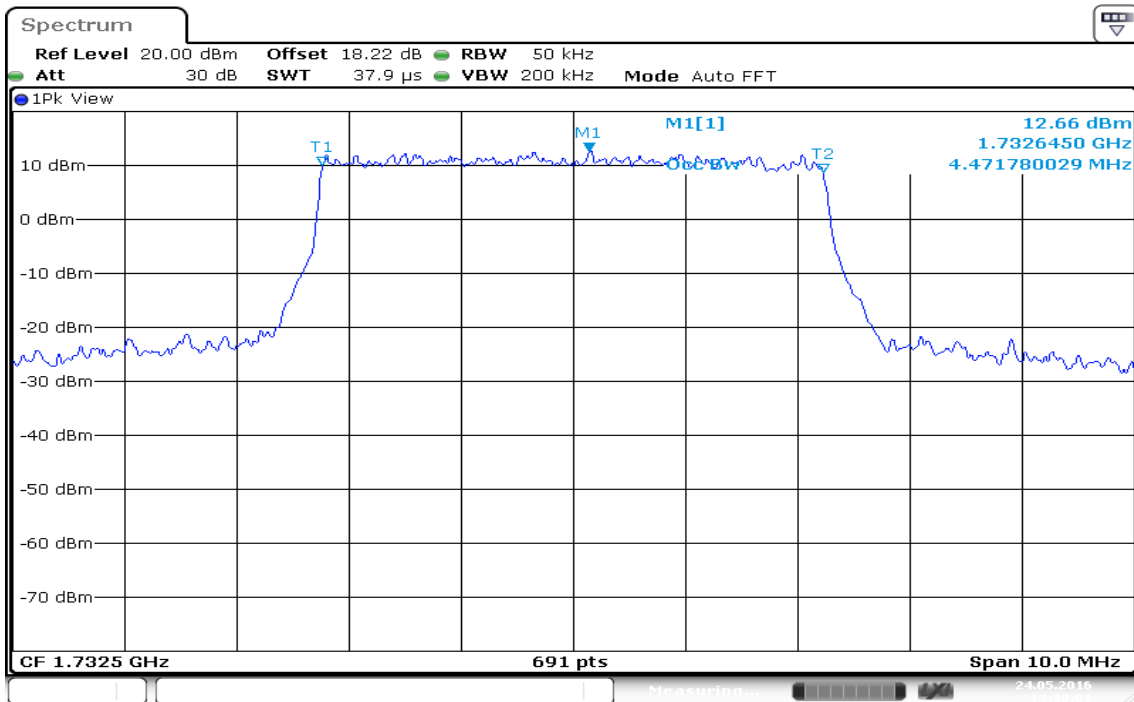
CHANNEL BANDWIDTH: 5MHz / 16QAM

CH Low



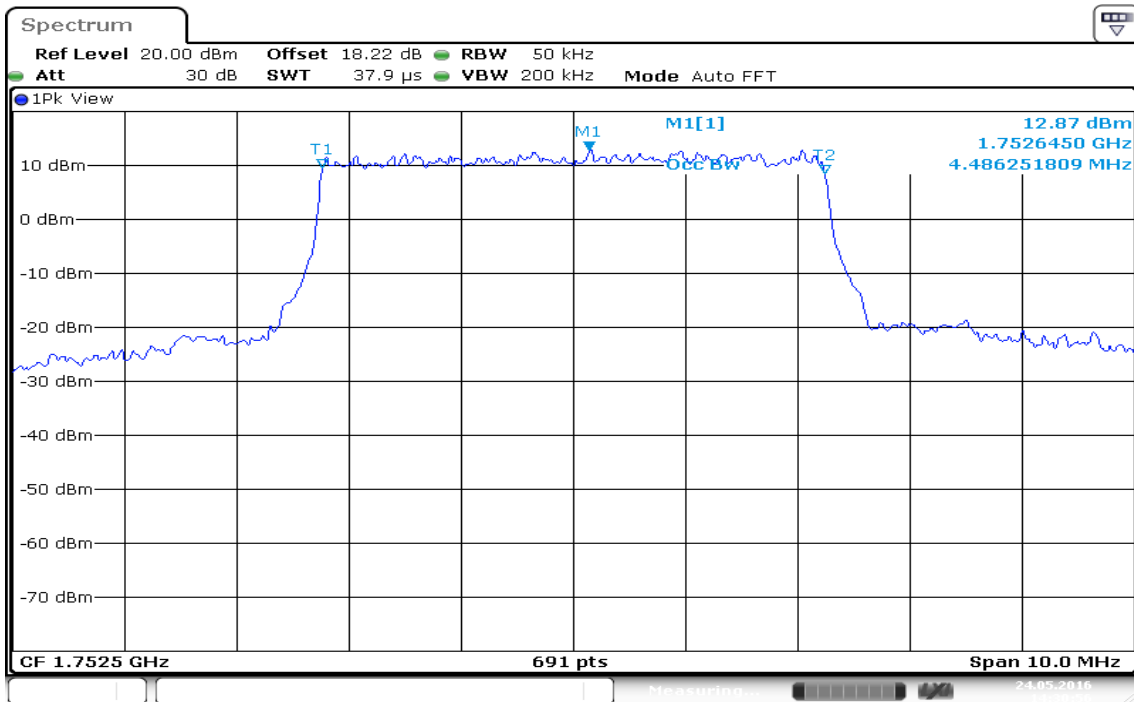
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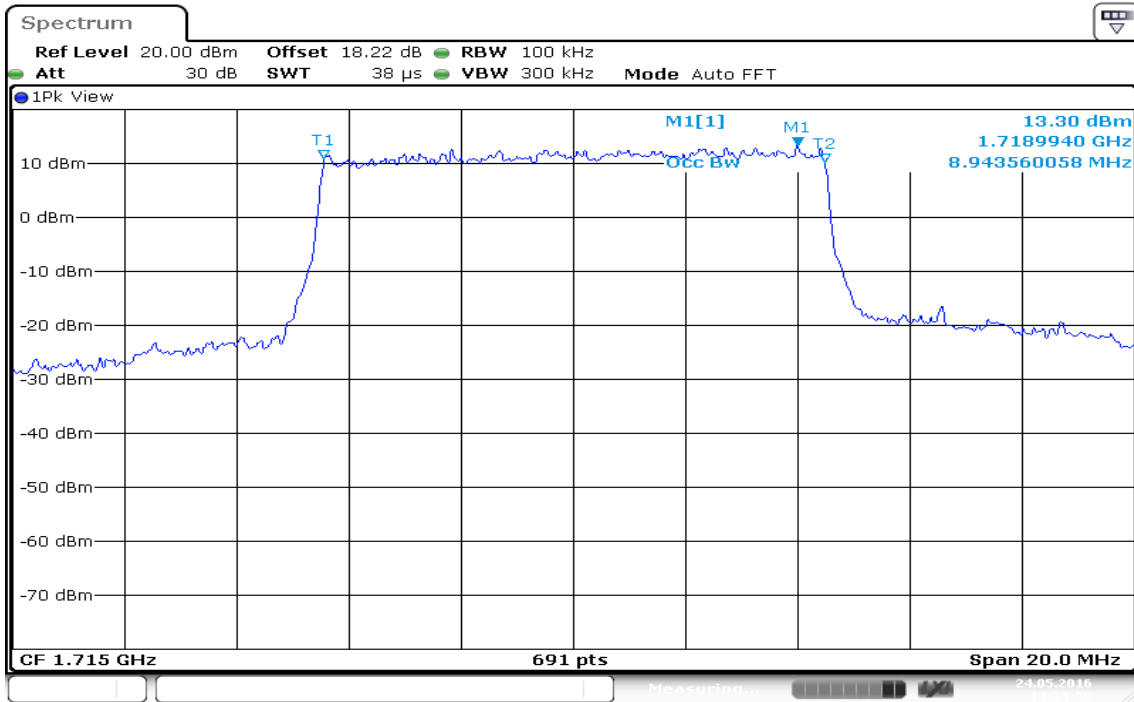
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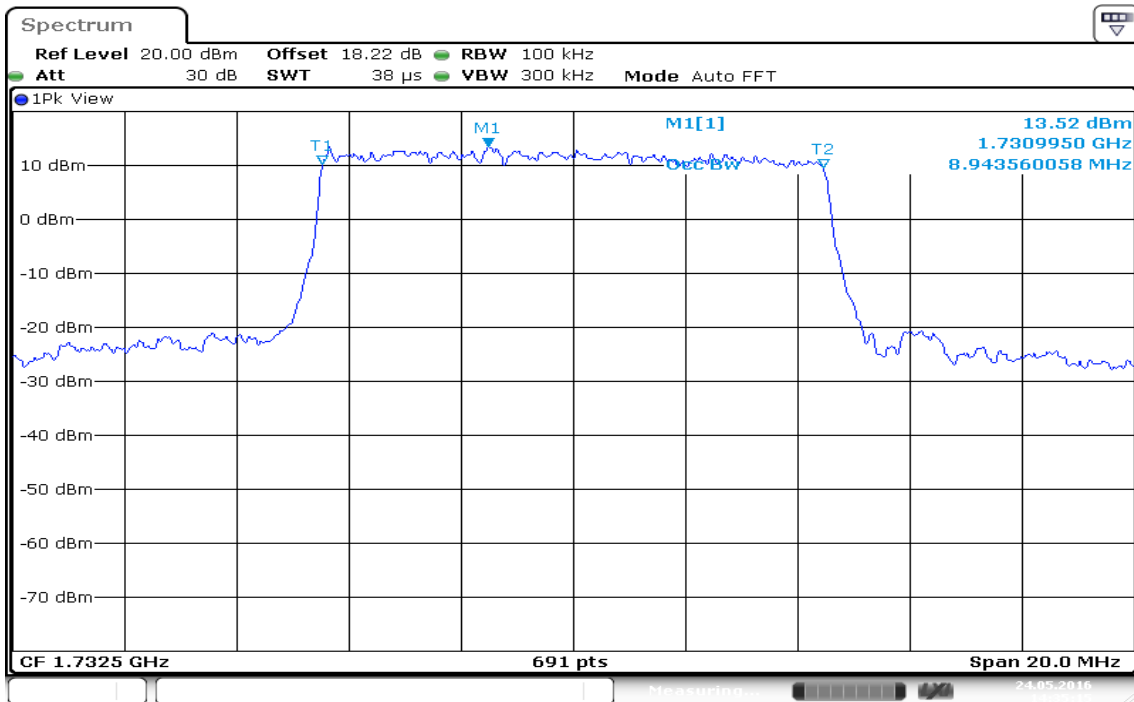
Date: 24.MAY.2016 14:30:56

CHANNEL BANDWIDTH: 10MHz / QPSK

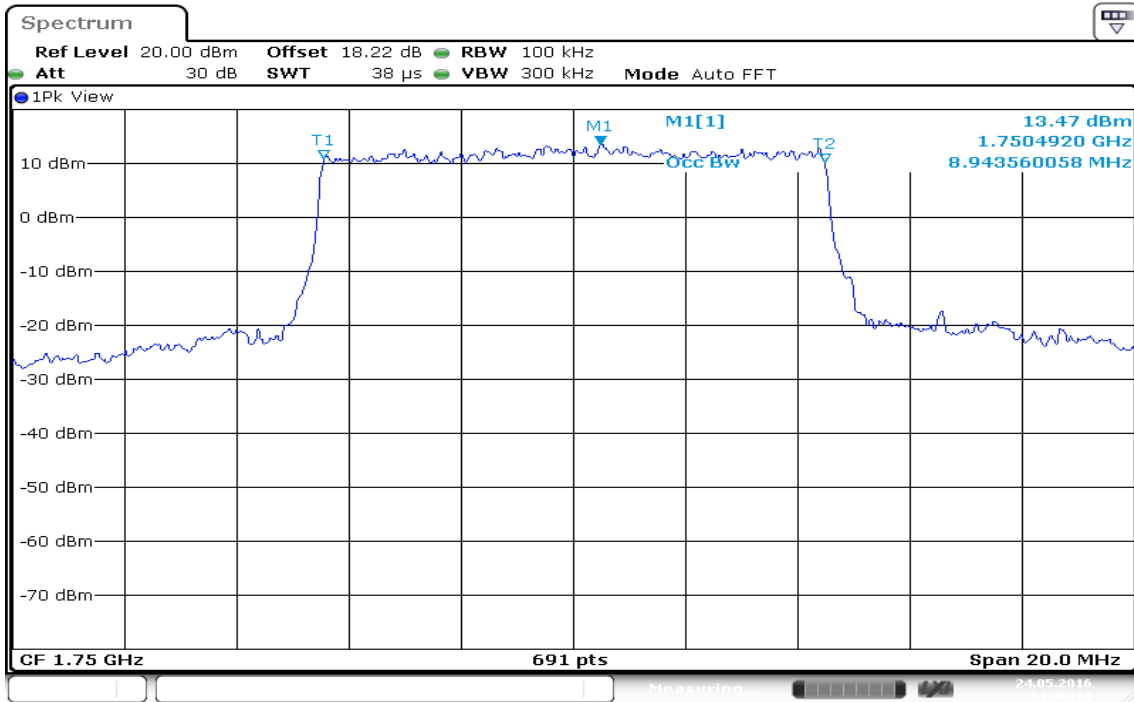
CH Low



CH Mid



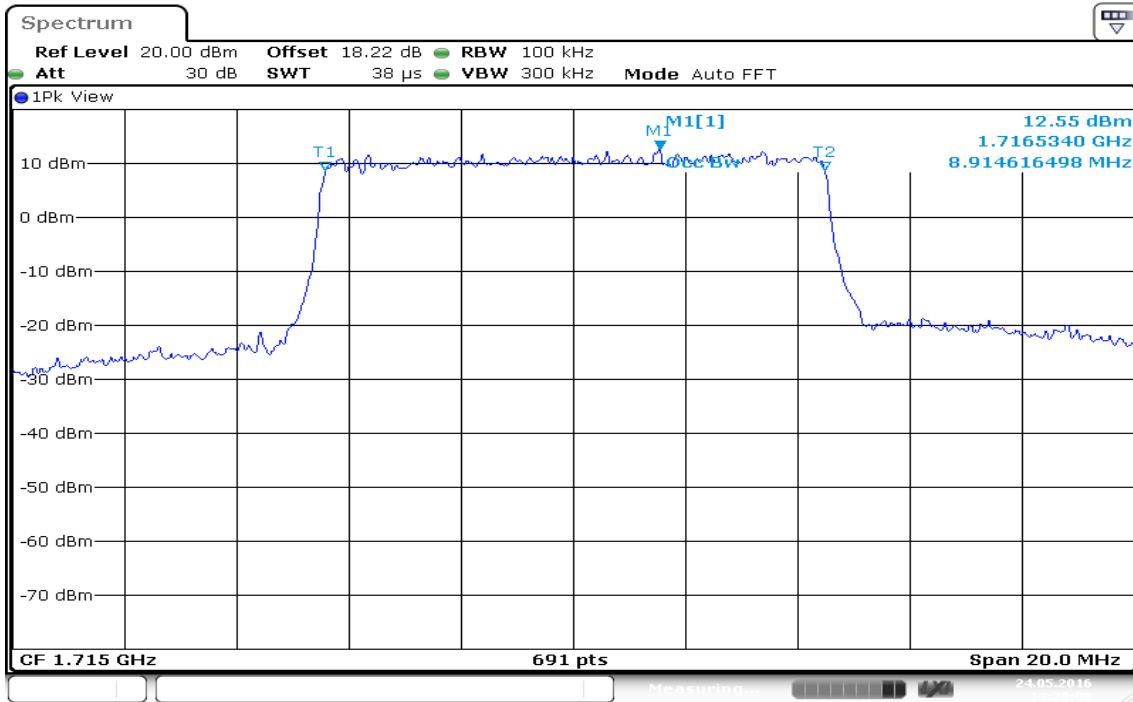
CH High



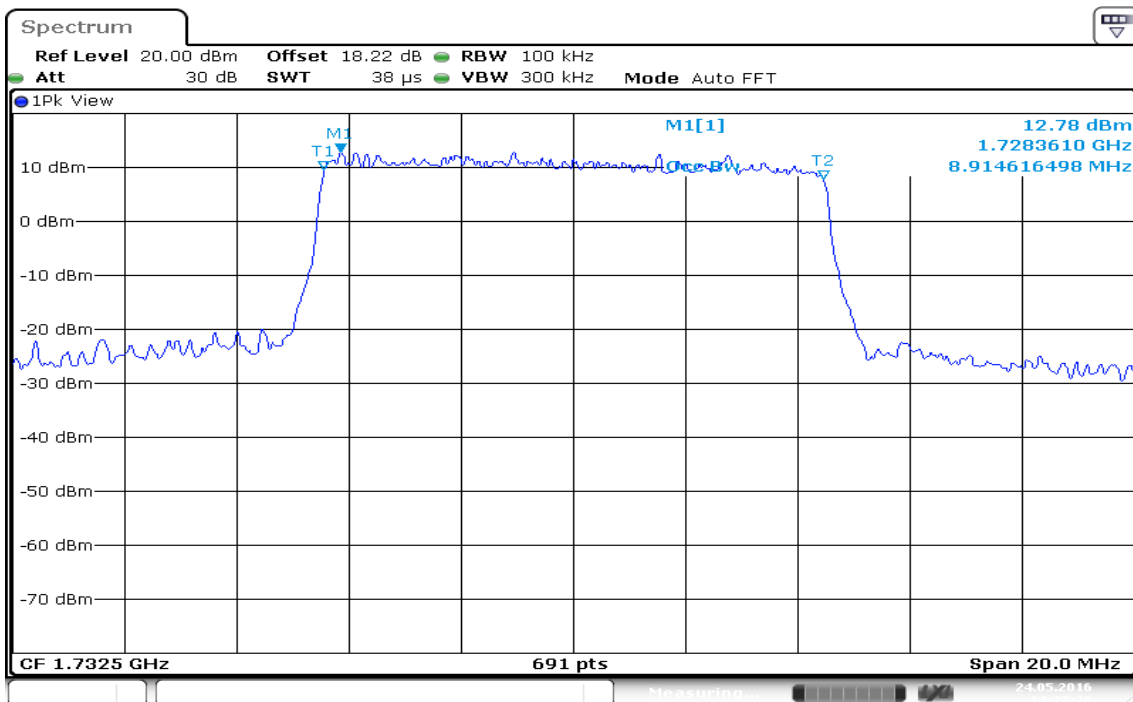
Date: 24.MAY.2016 14:36:14

CHANNEL BANDWIDTH: 10MHz / 16QAM

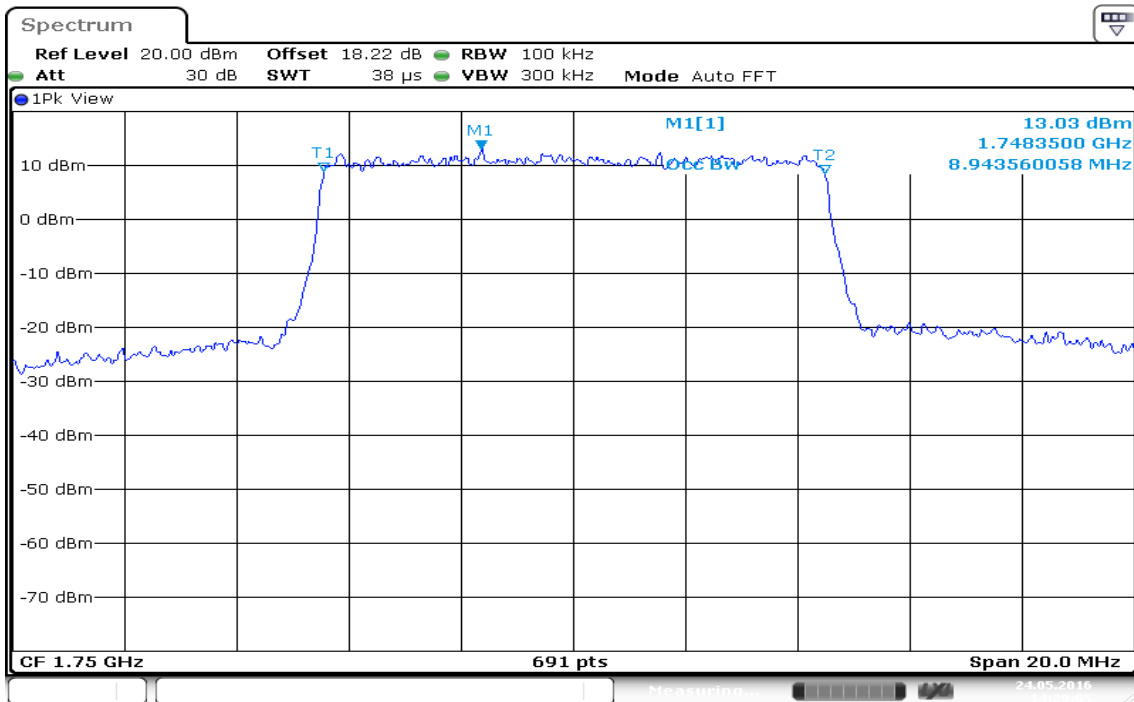
CH Low



CH Mid



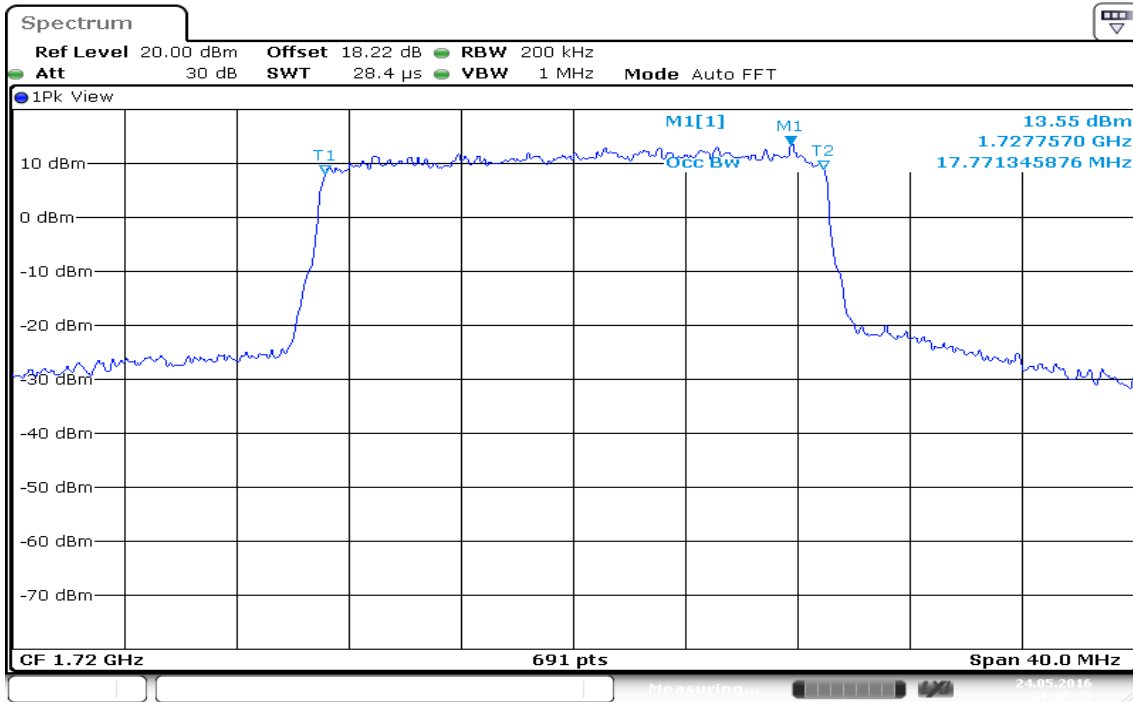
CH High



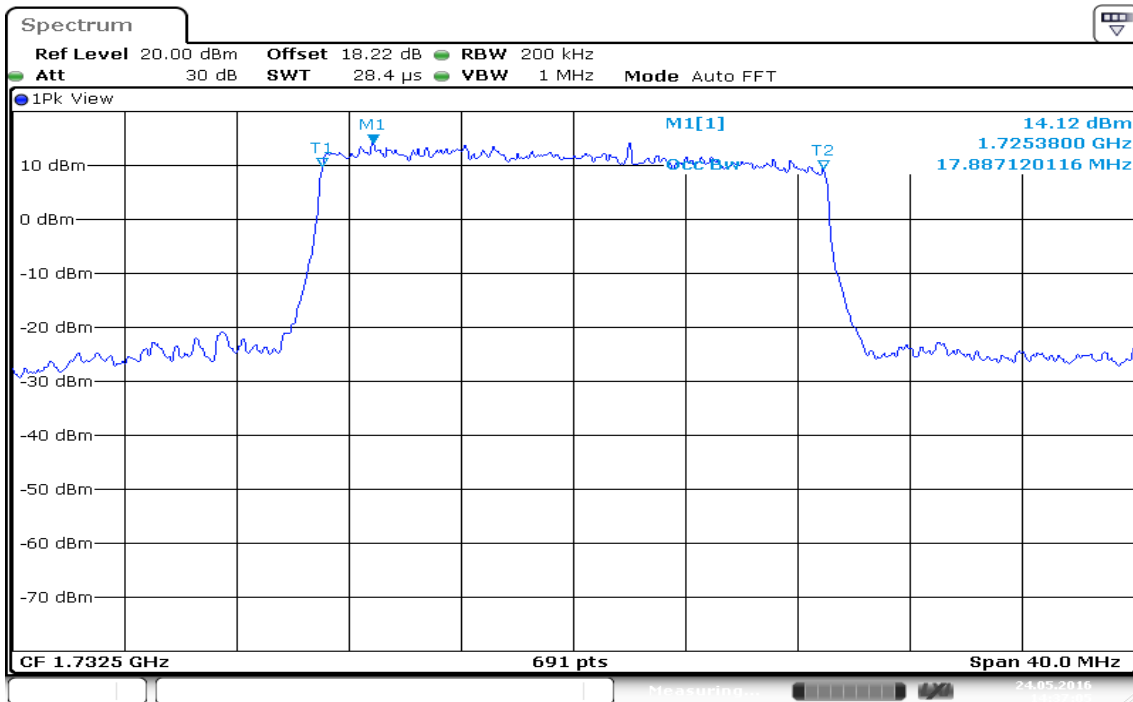
Date: 24.MAY.2016 14:29:05

CHANNEL BANDWIDTH: 20MHz / QPSK

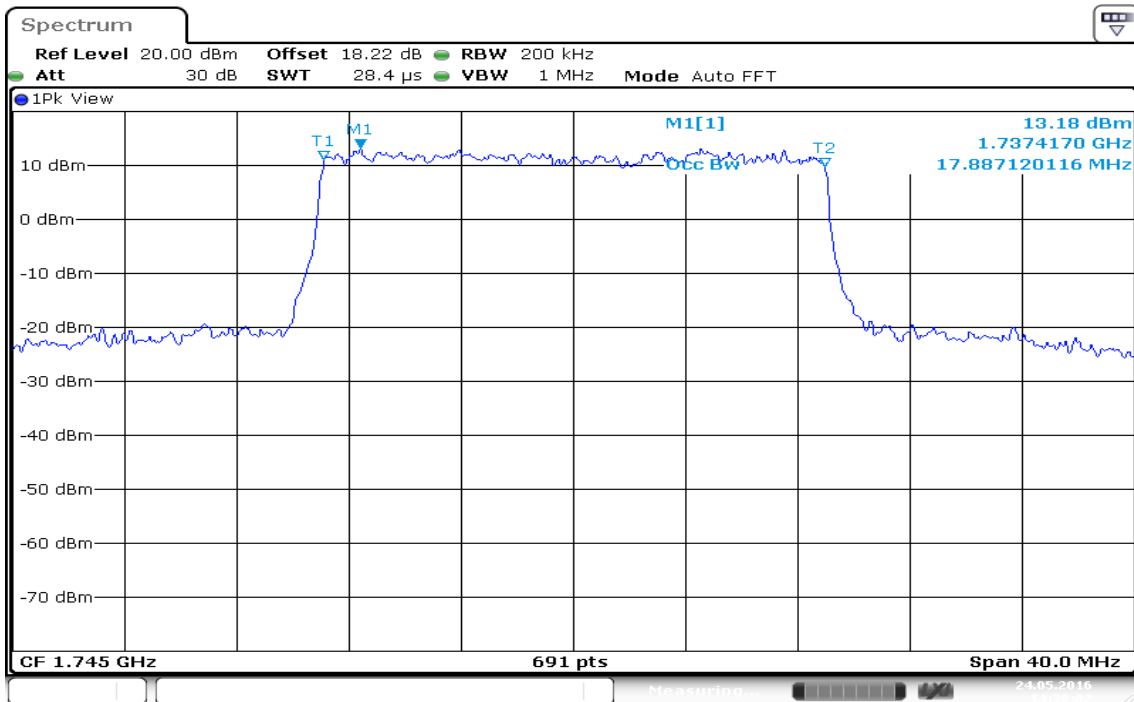
CH Low



CH Mid



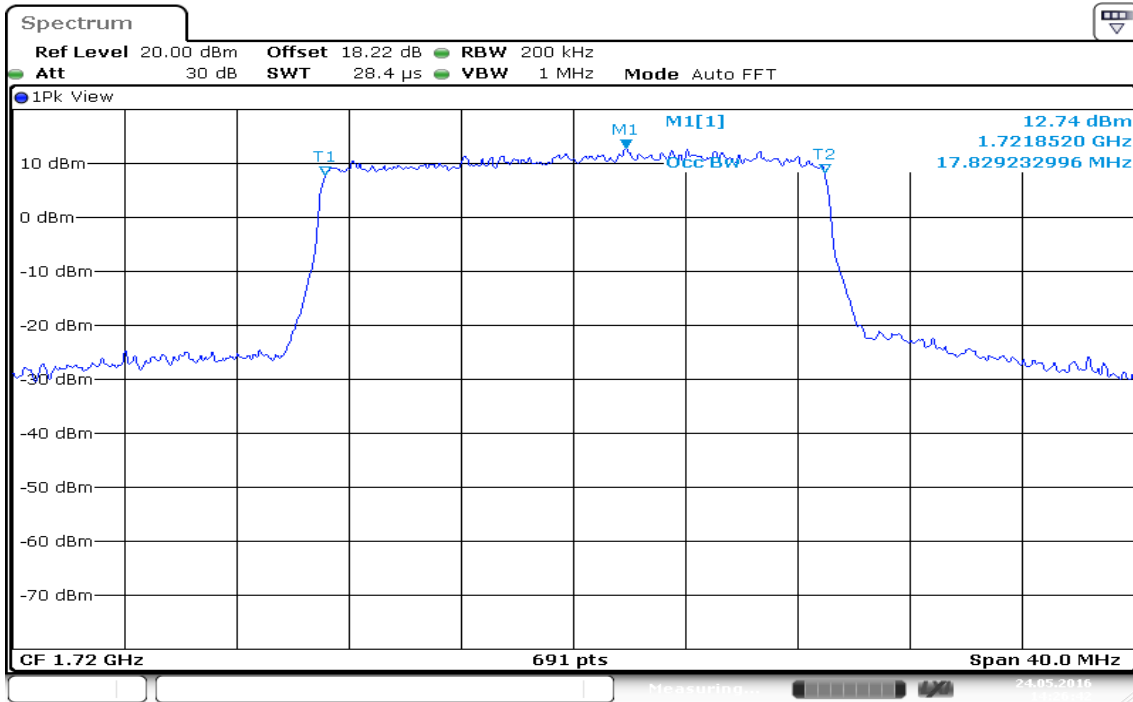
CH High



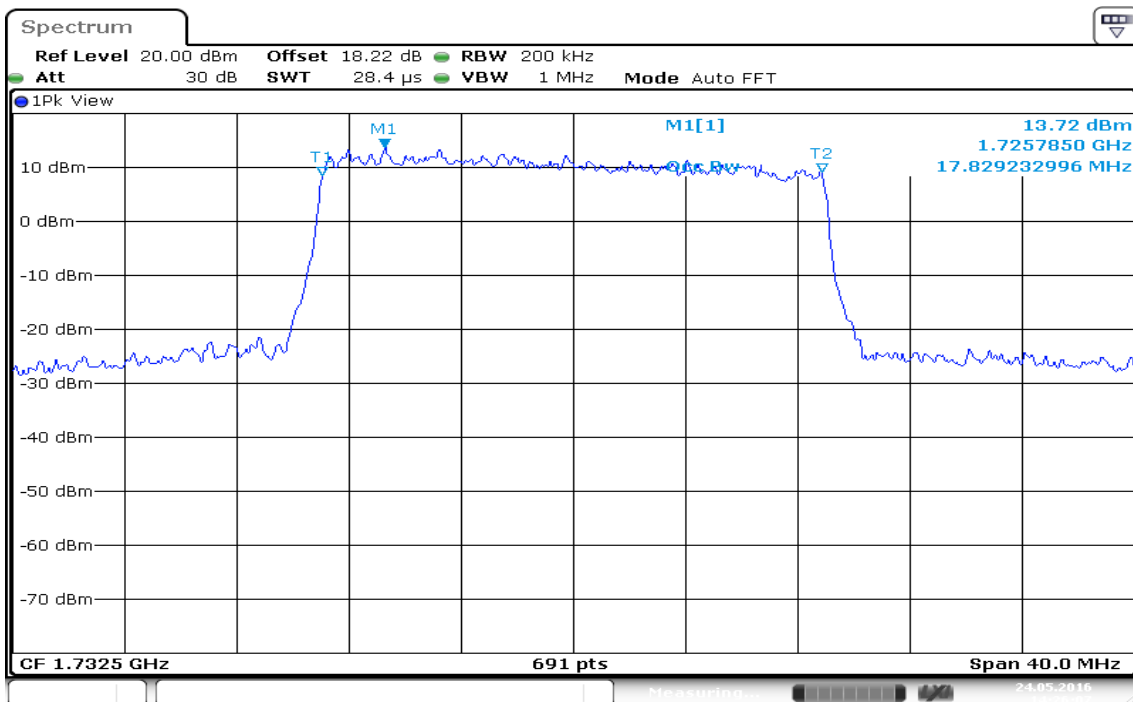
Date: 24.MAY.2016 14:38:02

CHANNEL BANDWIDTH: 20MHz / 16QAM

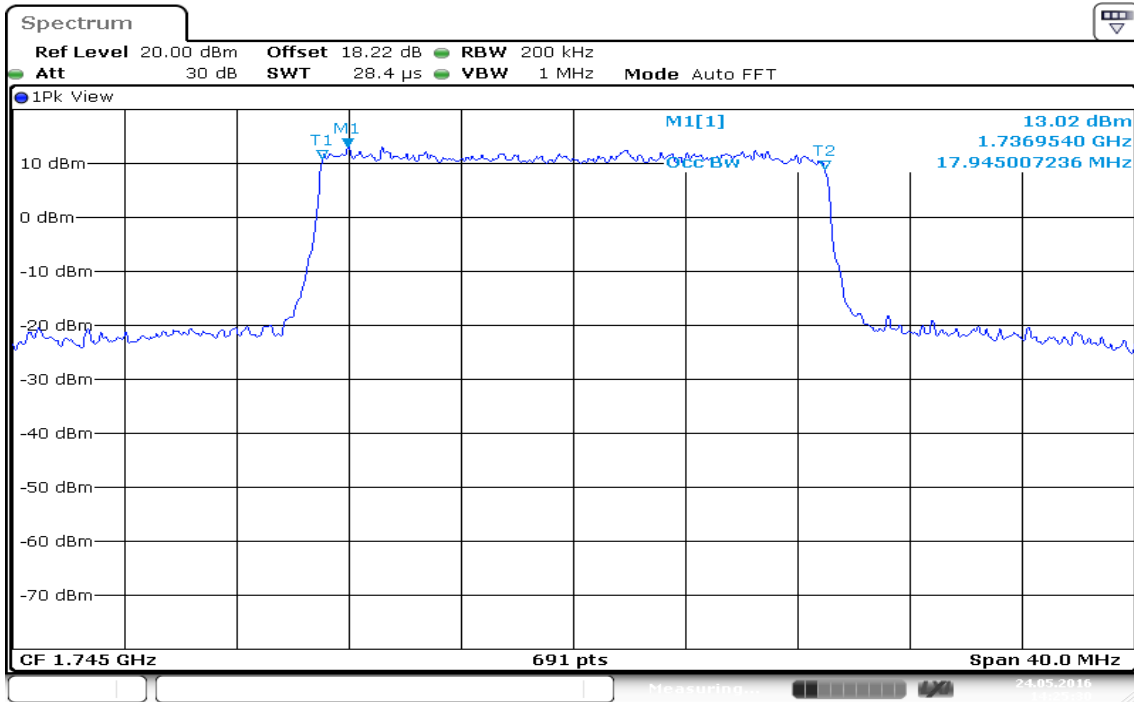
CH Low



CH Mid



CH High



Date: 24.MAY.2016 14:25:30

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 17

CHANNEL BANDWIDTH: 5MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23755	706.50	4.99
23790	710.00	5.22
23825	713.50	5.65

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23755	706.50	6.06
23790	710.00	6.06
23825	713.50	6.26

CHANNEL BANDWIDTH: 10MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23780	709.00	5.19
23790	710.00	5.28
23800	711.00	5.25

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23780	709.00	6.00
23790	710.00	6.12
23800	711.00	6.23

LTE Band 13

CHANNEL BANDWIDTH: 5MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23205	779.50	5.36
23230	782.00	4.75
23255	784.50	4.81

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23205	779.50	6.23
23230	782.00	5.77
23255	784.50	5.65

CHANNEL BANDWIDTH: 10MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23230	782.00	4.84

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23230	782.00	5.91

LTE Band 4

CHANNEL BANDWIDTH: 1.4MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
19957	1710.7	5.54
20175	1732.5	4.70
20393	1754.3	5.74

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
19957	1710.7	5.80
20175	1732.5	5.65
20393	1754.3	5.68

CHANNEL BANDWIDTH: 5MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
19975	1712.50	5.71
20175	1732.50	4.67
20375	1752.50	5.65

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
19975	1712.50	6.43
20175	1732.50	5.42
20375	1752.50	6.58

CHANNEL BANDWIDTH: 10MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20000	1715.00	5.77
20175	1732.50	4.75
20350	1750.00	5.48

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20000	1715.00	6.49
20175	1732.50	5.54
20350	1750.00	6.49

CHANNEL BANDWIDTH: 20MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20050	1720.00	5.16
20175	1732.50	4.96
20300	1745.00	5.39

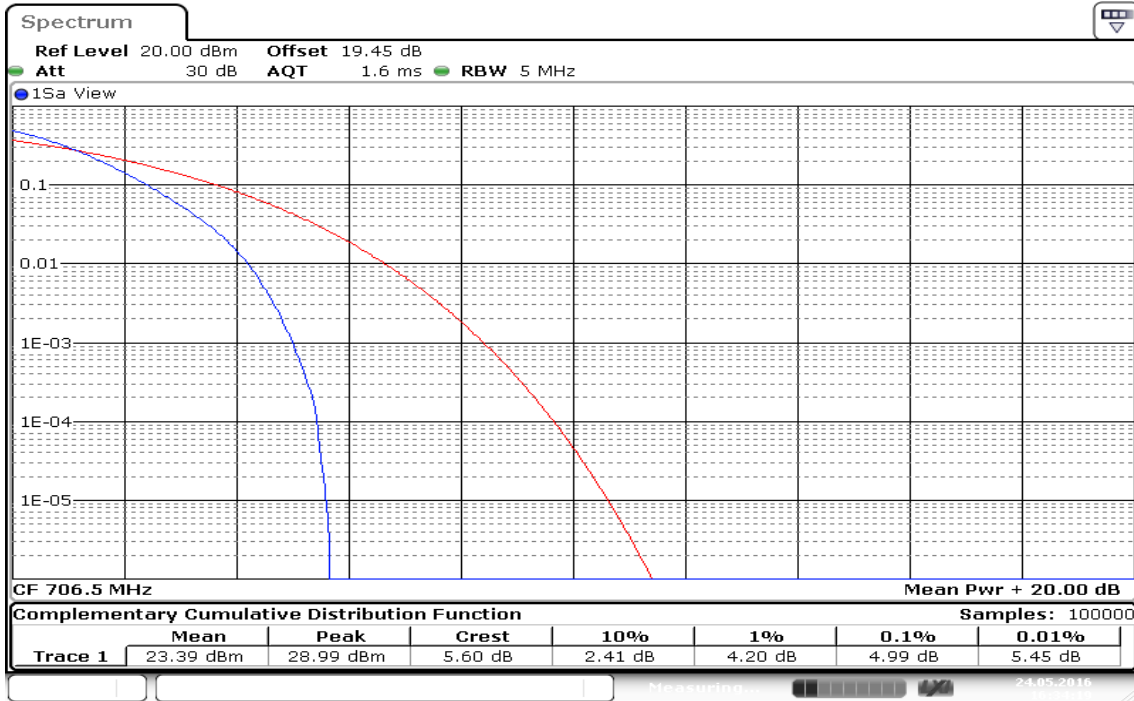
CHANNEL BANDWIDTH: 20MHz / 16QAM / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20050	1720.00	6.20
20175	1732.50	5.74
20300	1745.00	6.26

LTE Band 17

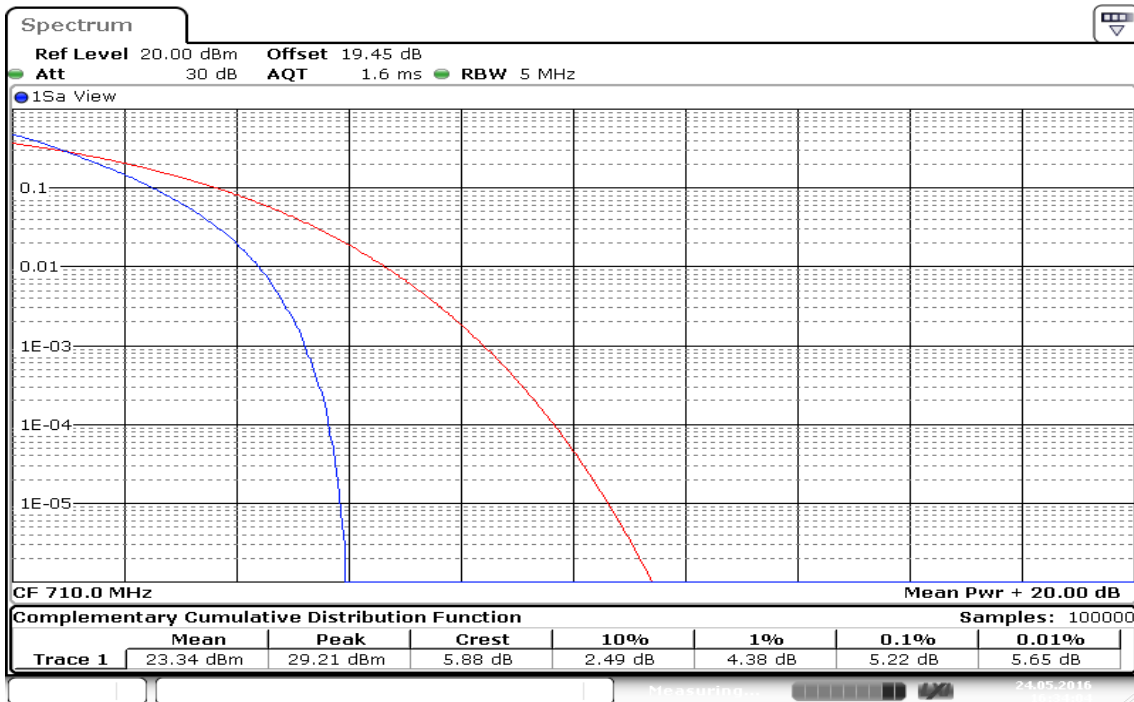
CHANNEL BANDWIDTH: 5MHz / QPSK

CH Low



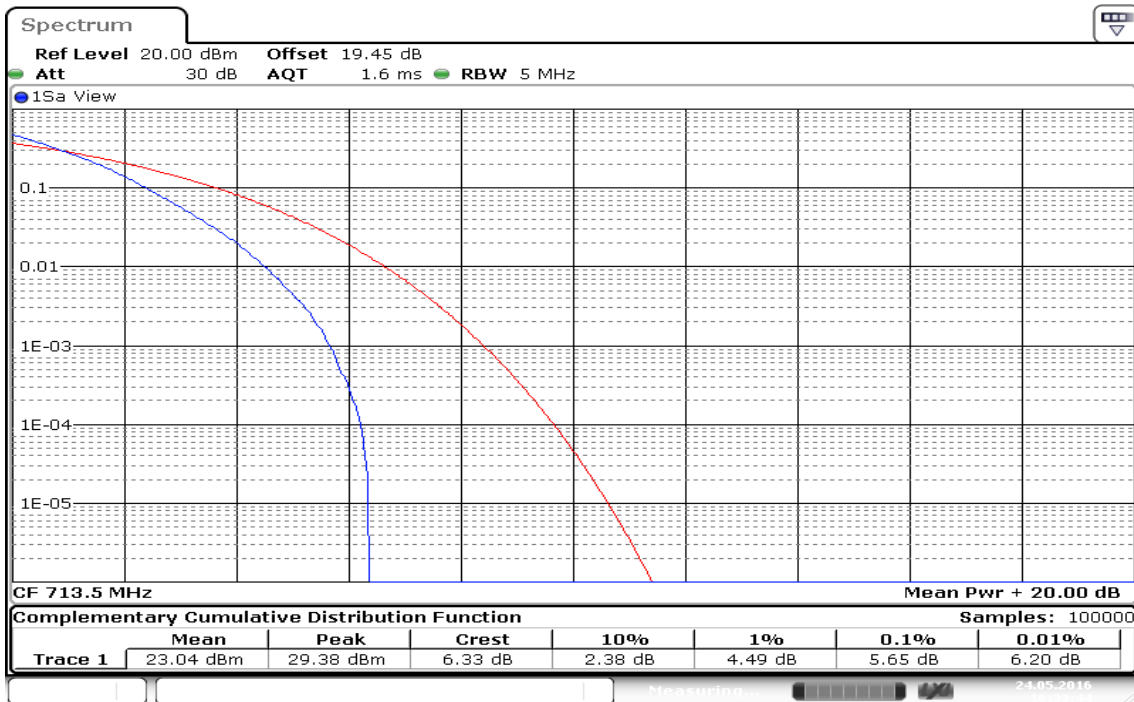
Date: 24.MAY.2016 16:34:19

CH Mid



Date: 24.MAY.2016 16:34:04

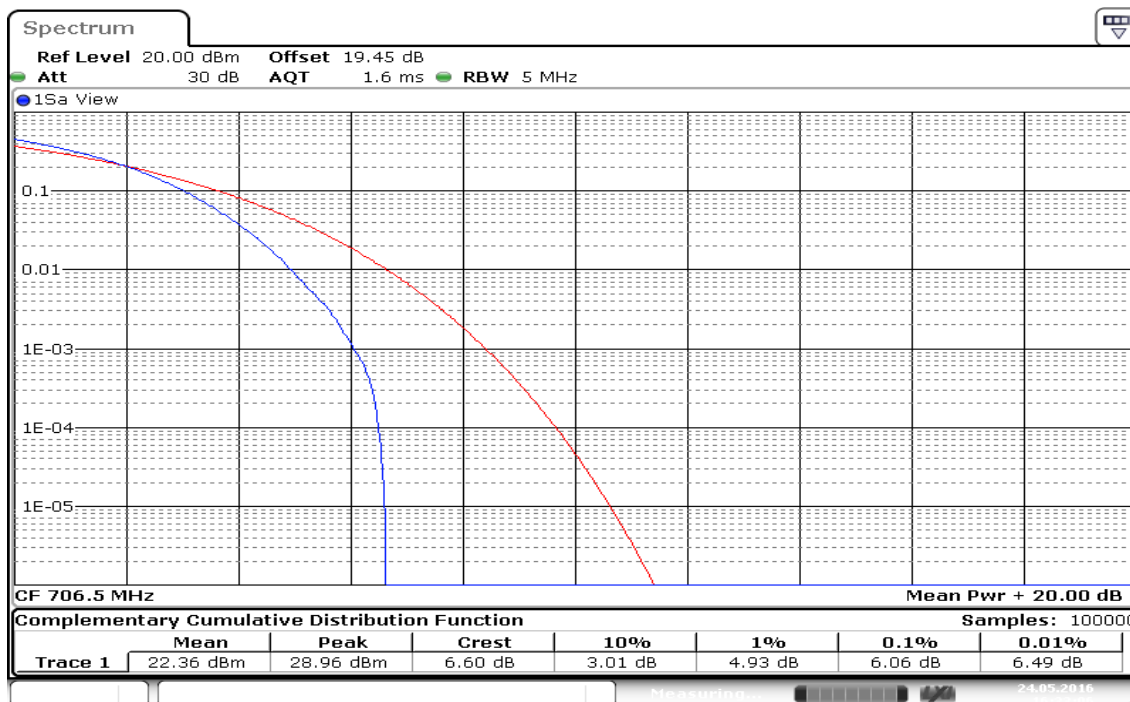
CH High



Date: 24.MAY.2016 16:33:44

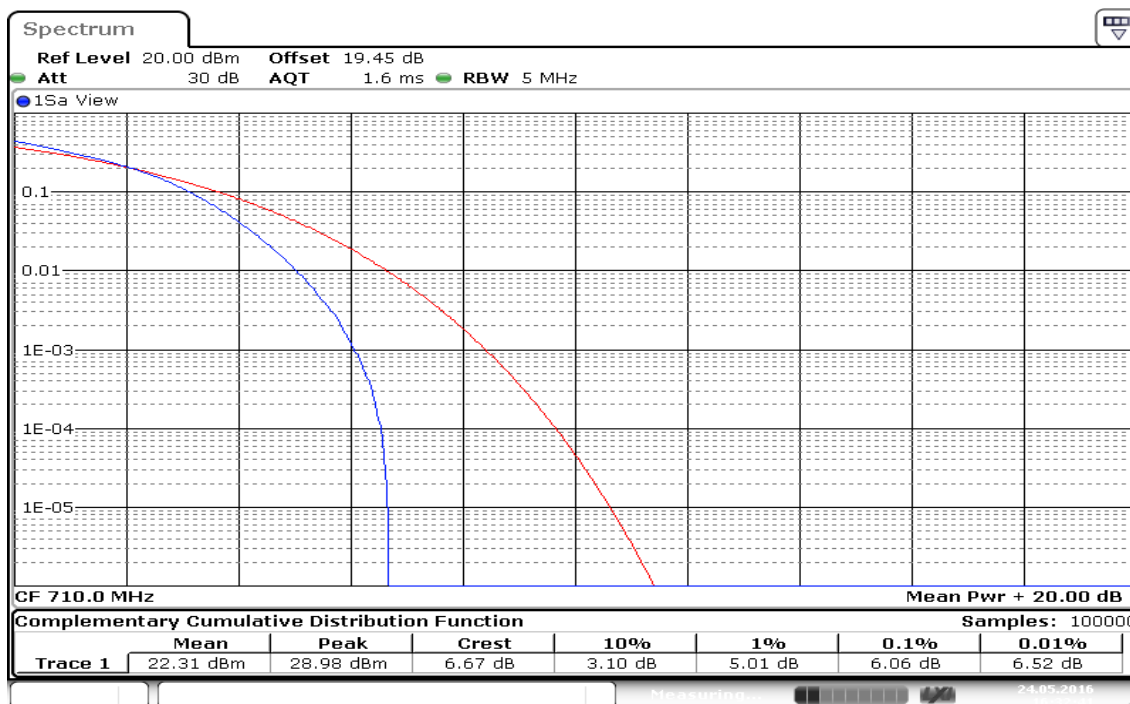
CHANNEL BANDWIDTH: 5MHz / 16QAM

CH Low



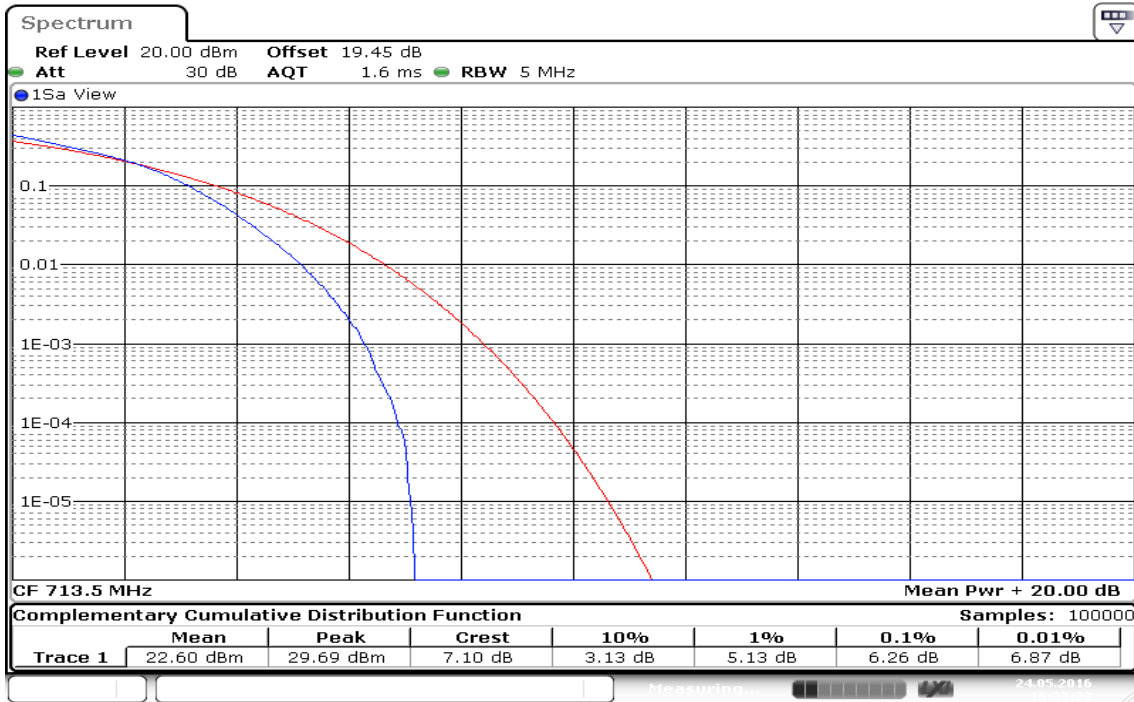
Date: 24.MAY.2016 16:33:05

CH Mid



Date: 24.MAY.2016 16:32:41

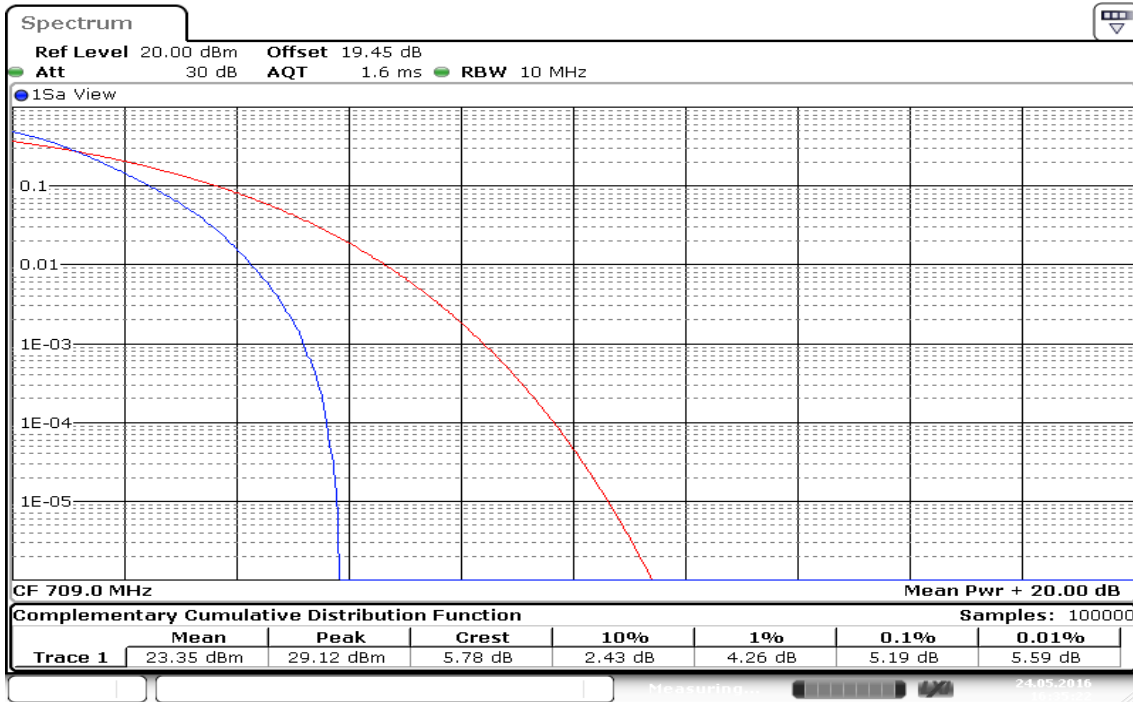
CH High



Date: 24.MAY.2016 16:33:22

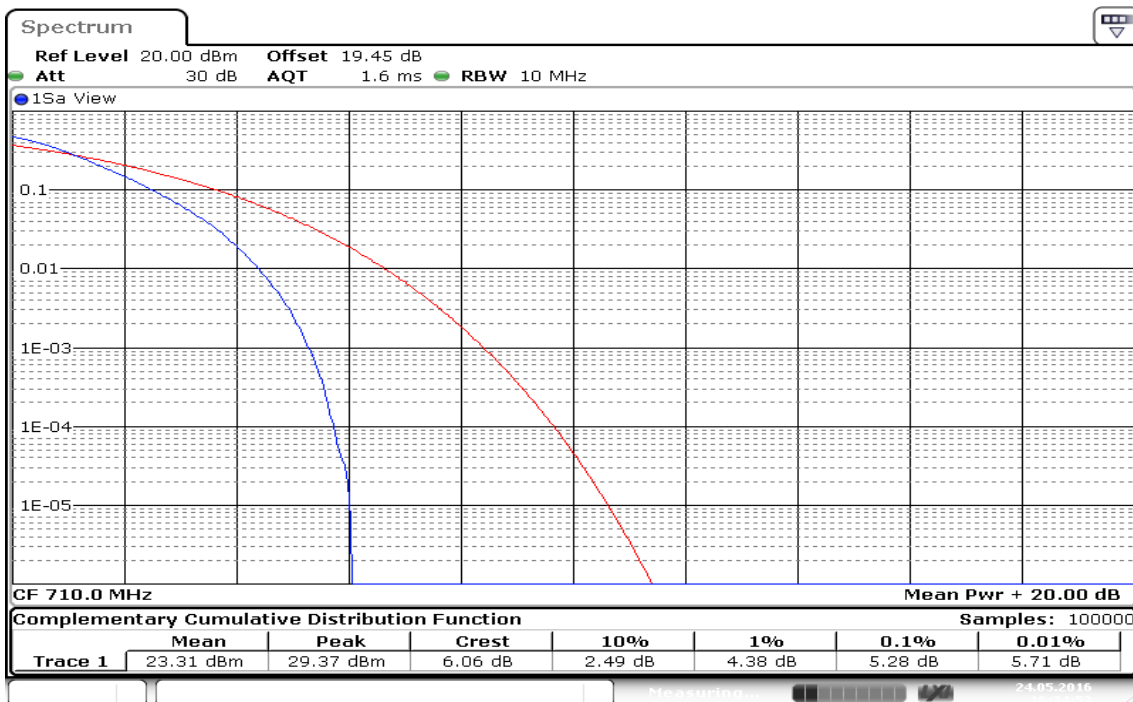
CHANNEL BANDWIDTH: 10MHz / QPSK

CH Low



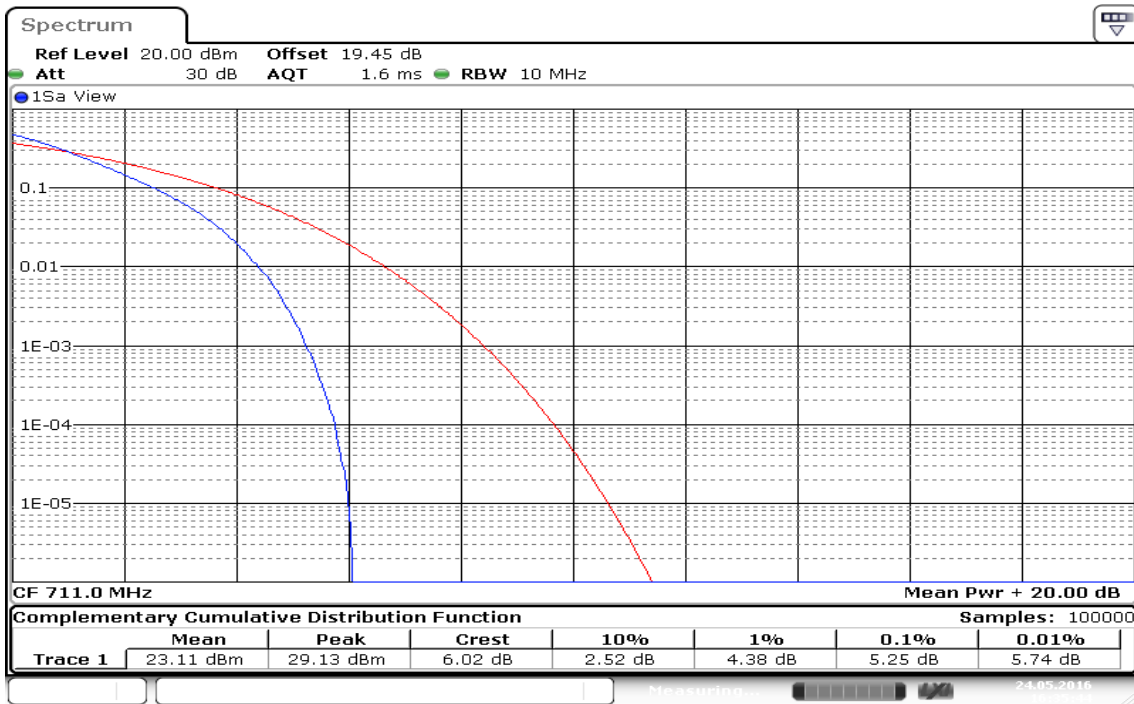
Date: 24.MAY.2016 16:35:22

CH Mid



Date: 24.MAY.2016 16:34:53

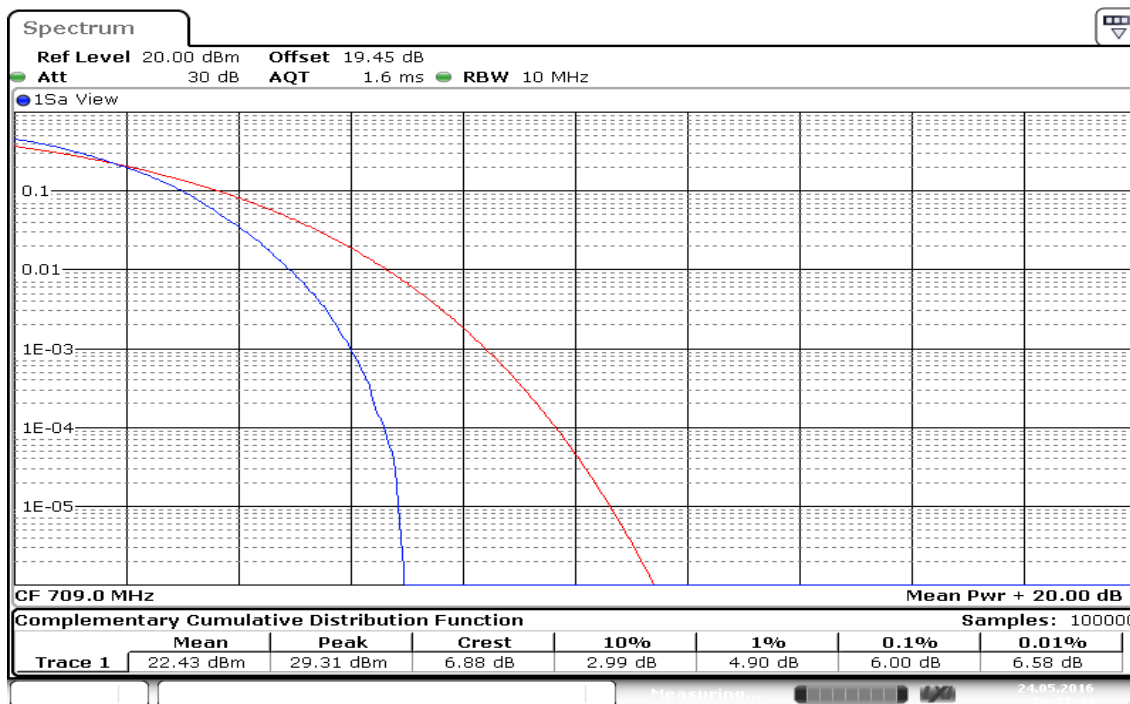
CH High



Date: 24.MAY.2016 16:35:44

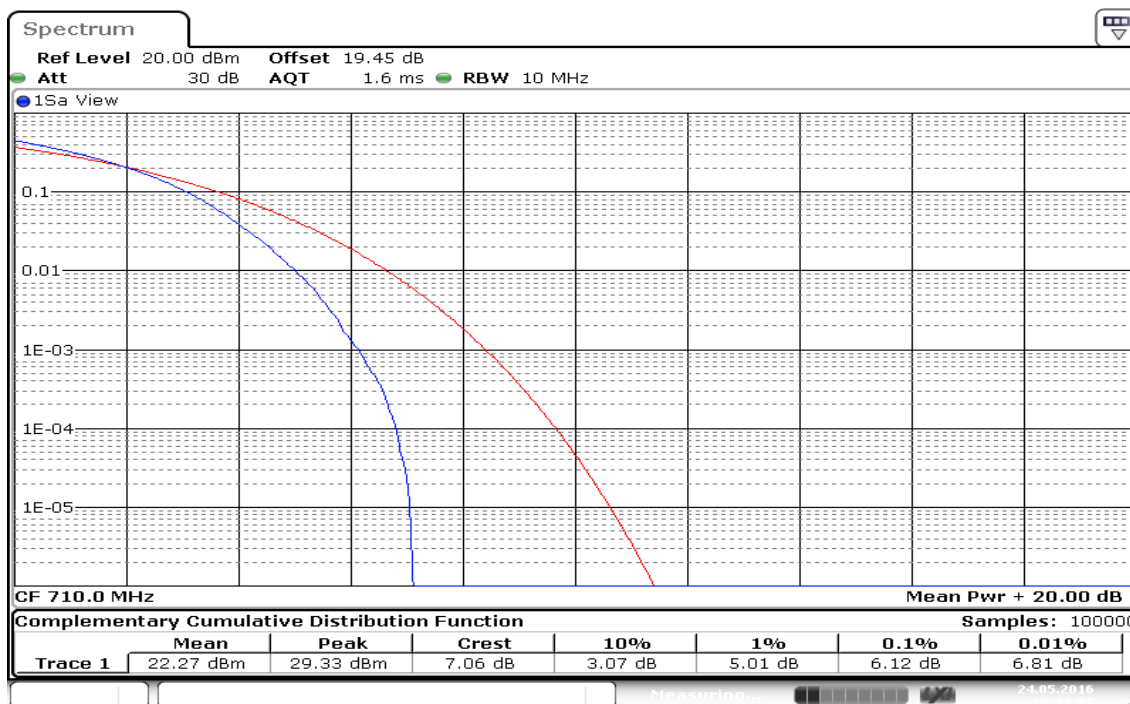
CHANNEL BANDWIDTH: 10MHz / 16QAM

CH Low



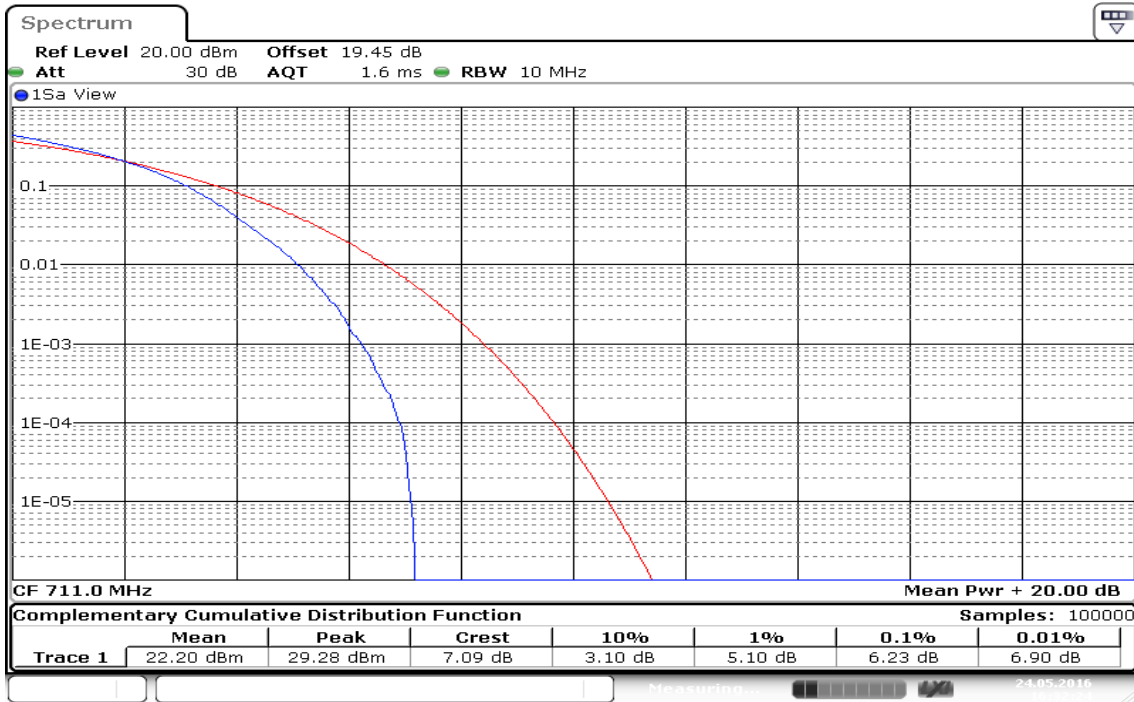
Date: 24.MAY.2016 16:31:43

CH Mid



Date: 24.MAY.2016 16:32:07

CH High

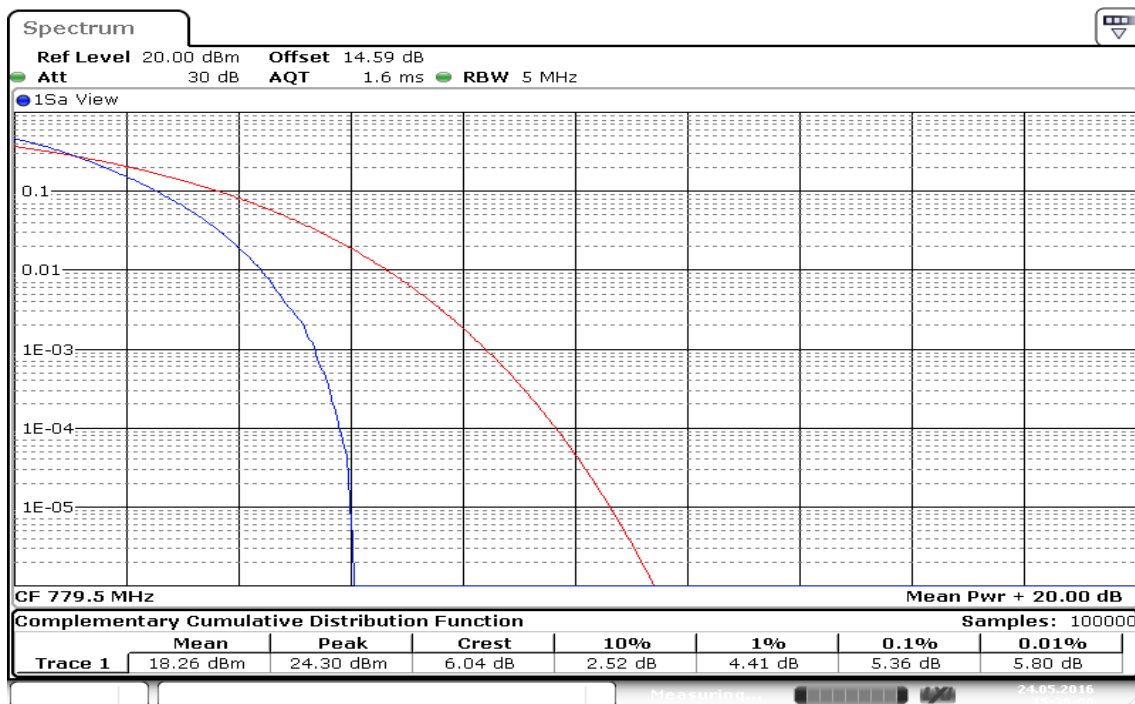


Date: 24.MAY.2016 16:32:24

LTE Band 13

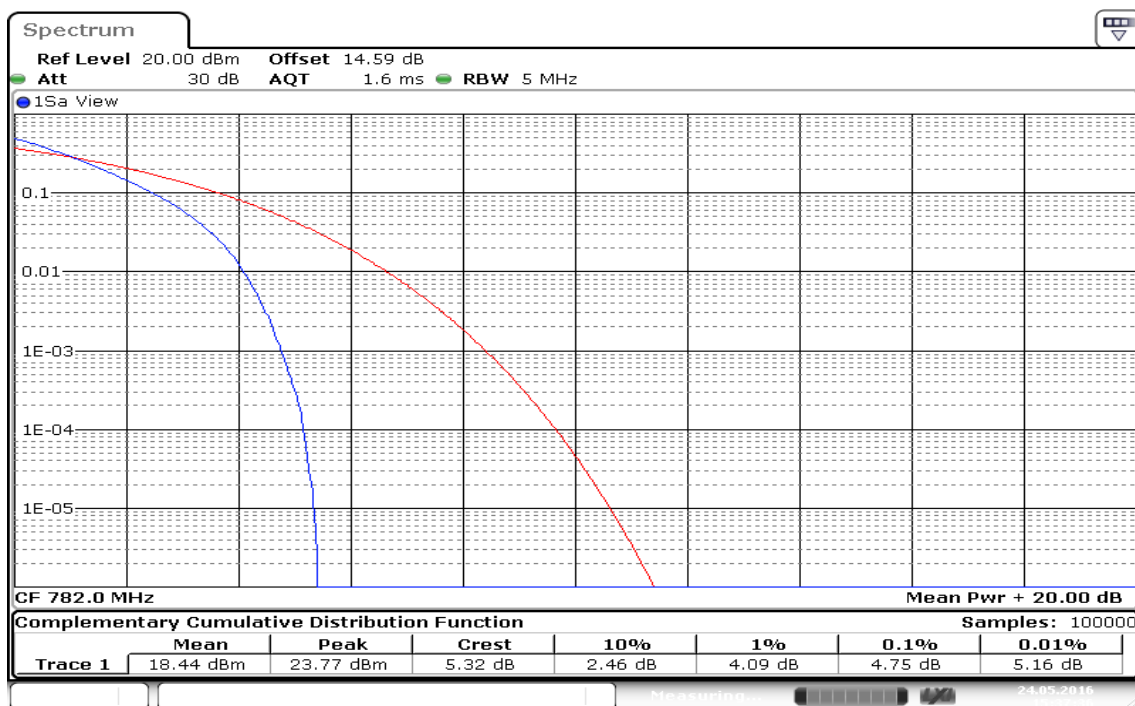
CHANNEL BANDWIDTH: 5MHz / QPSK

CH Low



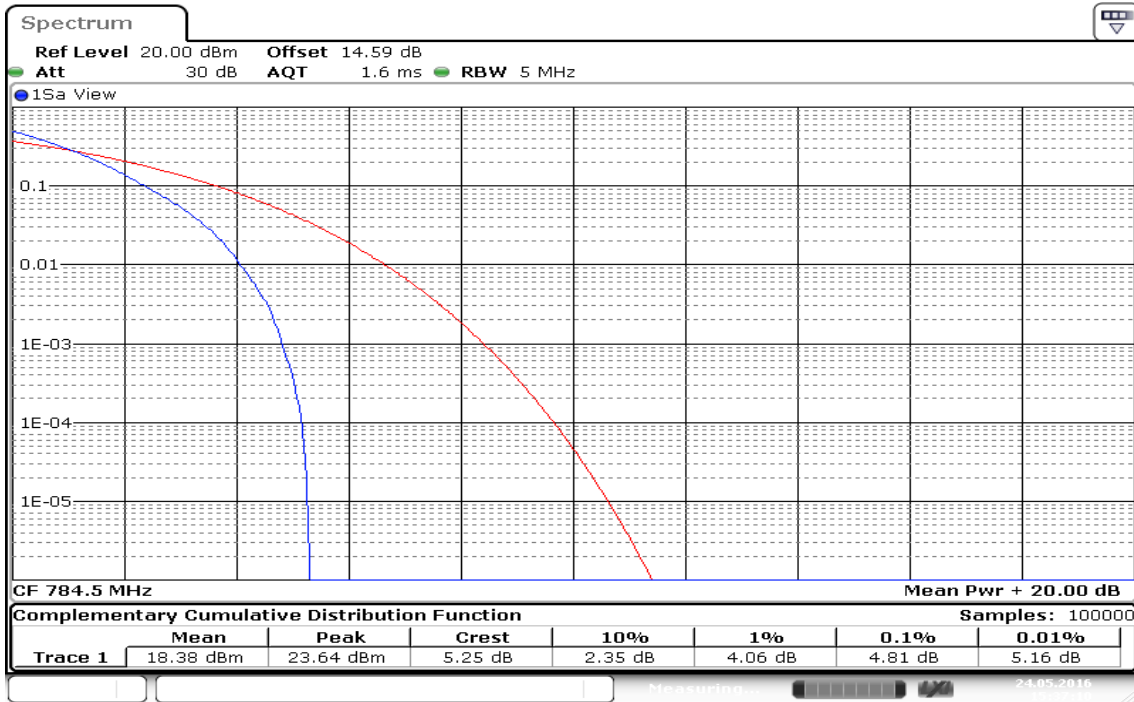
Date: 24.MAY.2016 15:38:00

CH Mid



Date: 24.MAY.2016 15:37:36

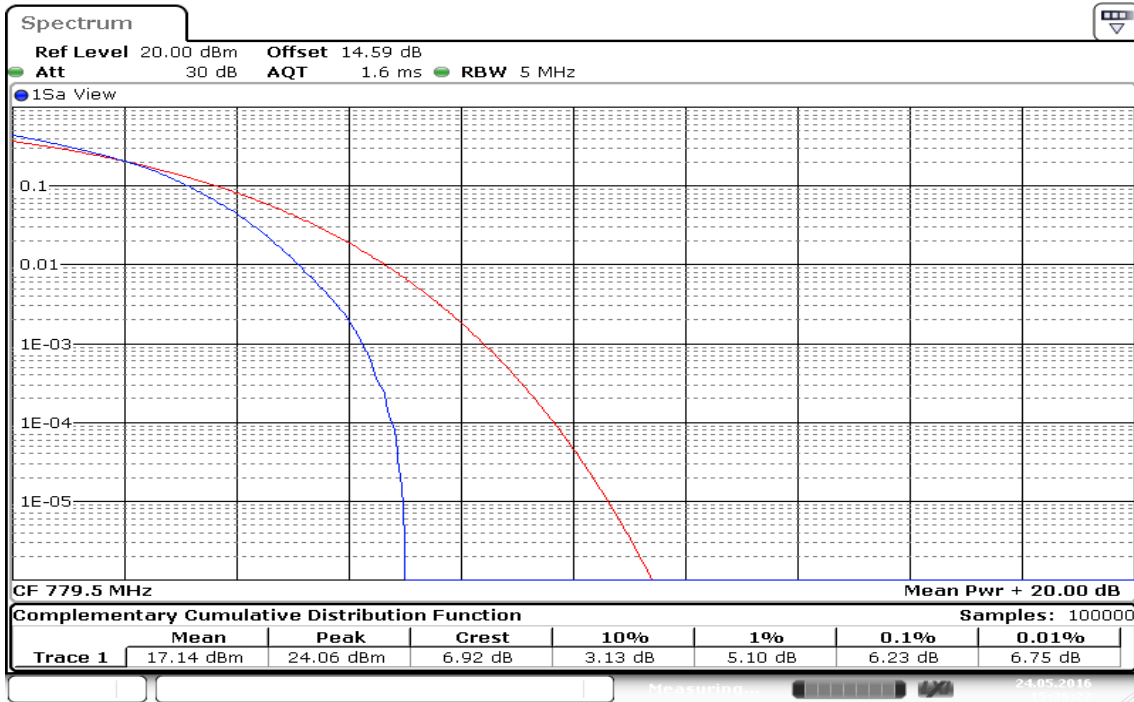
CH High



Date: 24.MAY.2016 15:37:09

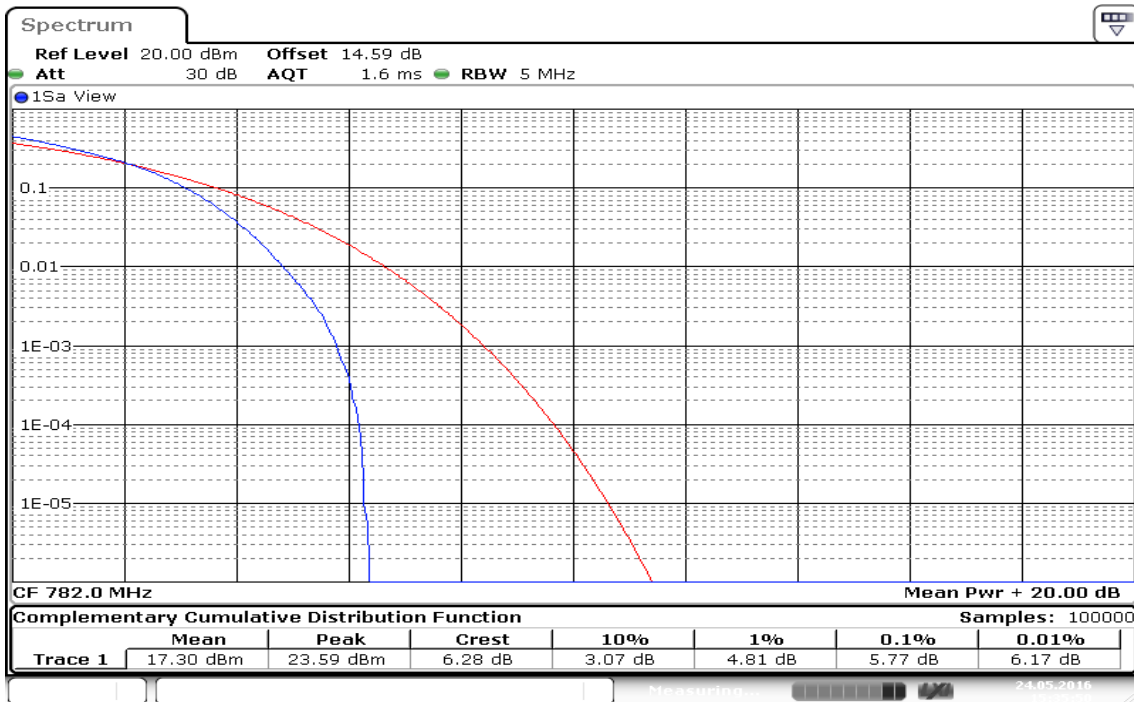
CHANNEL BANDWIDTH: 5MHz / 16QAM

CH Low



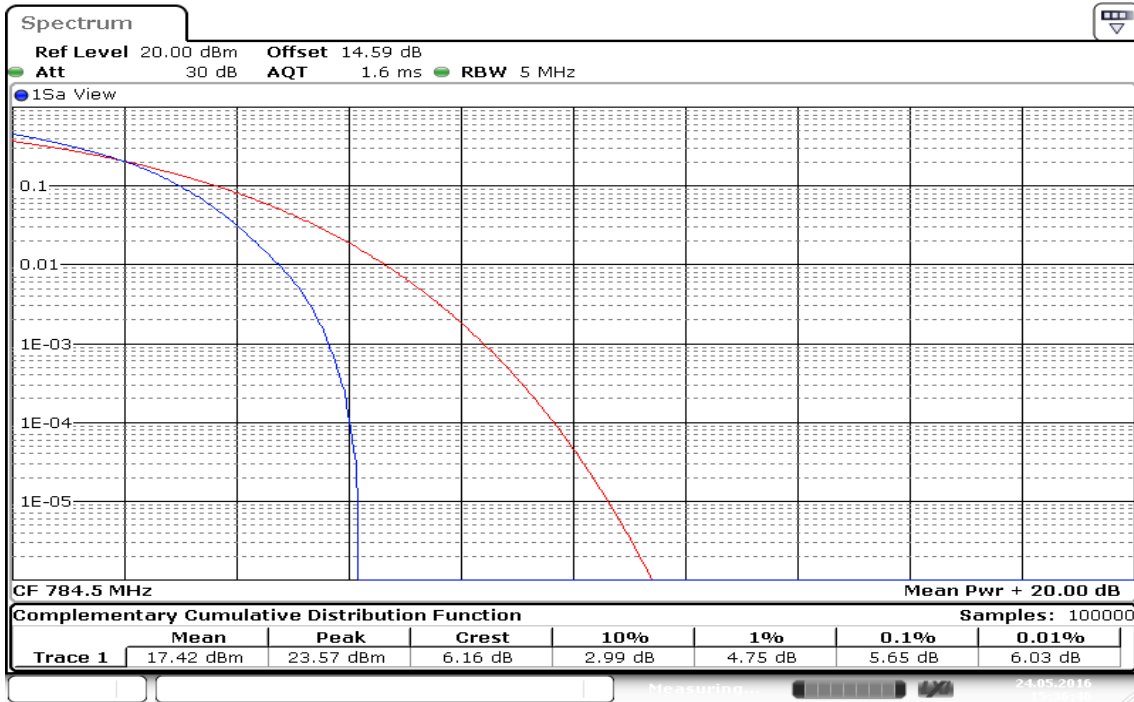
Date: 24.MAY.2016 15:36:22

CH Mid



Date: 24.MAY.2016 15:35:50

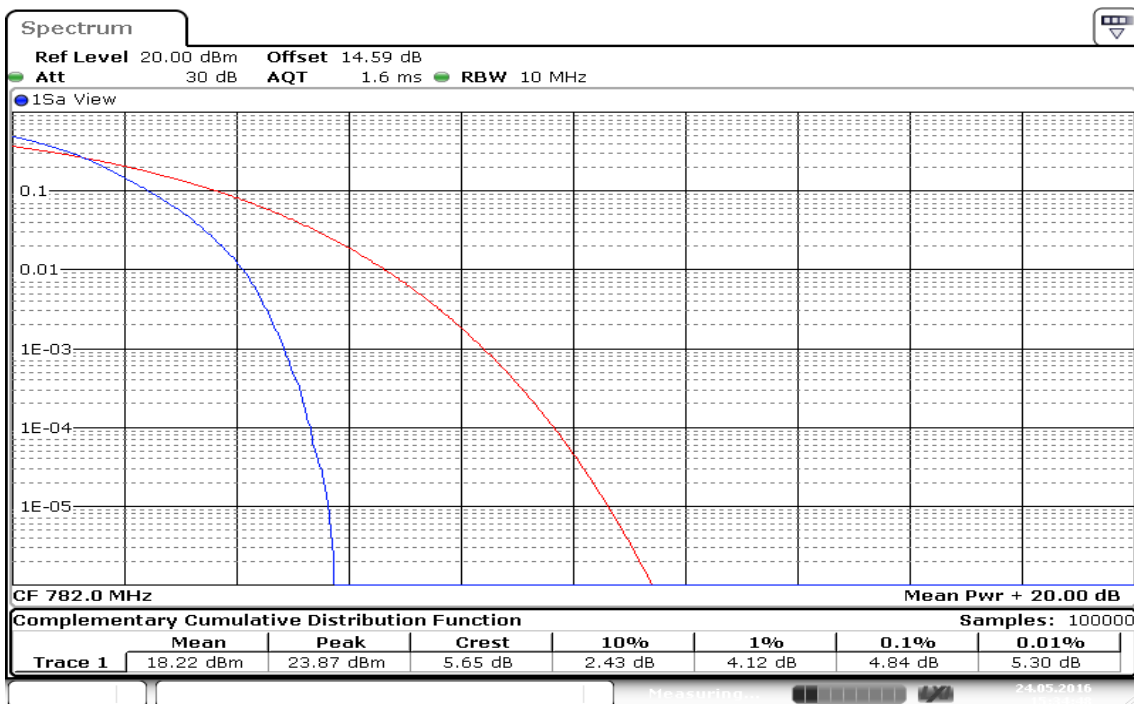
CH High



Date: 24.MAY.2016 15:36:46

CHANNEL BANDWIDTH: 10MHz / QPSK

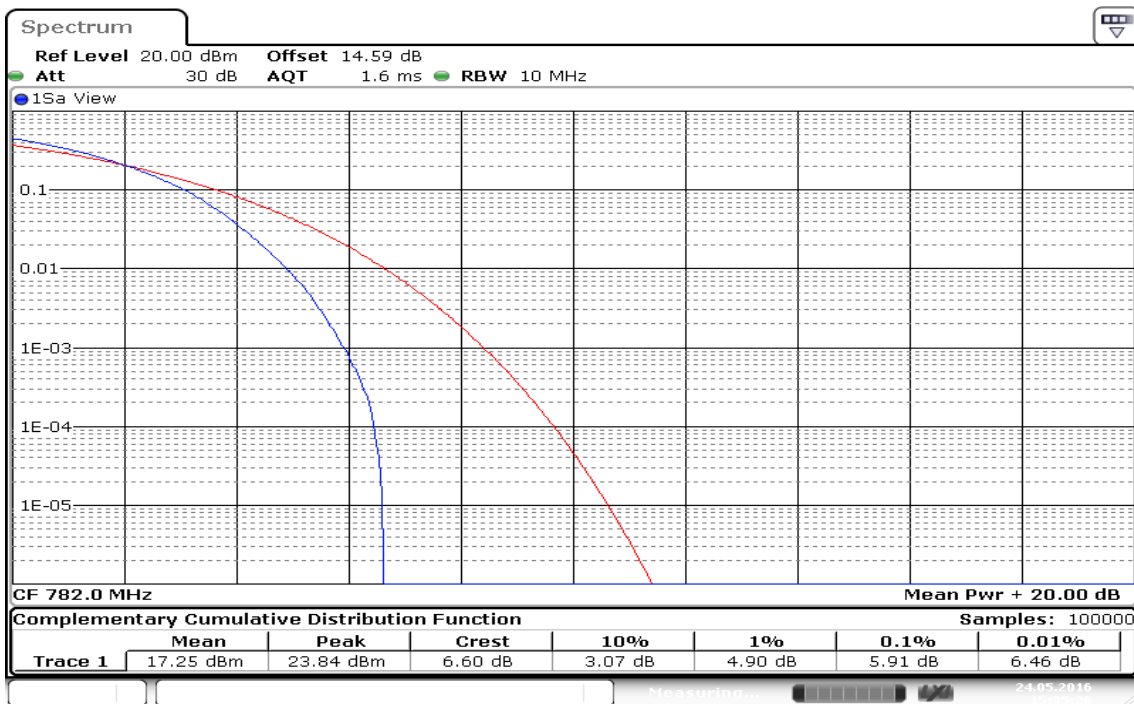
CH Mid



Date: 24.MAY.2016 15:34:48

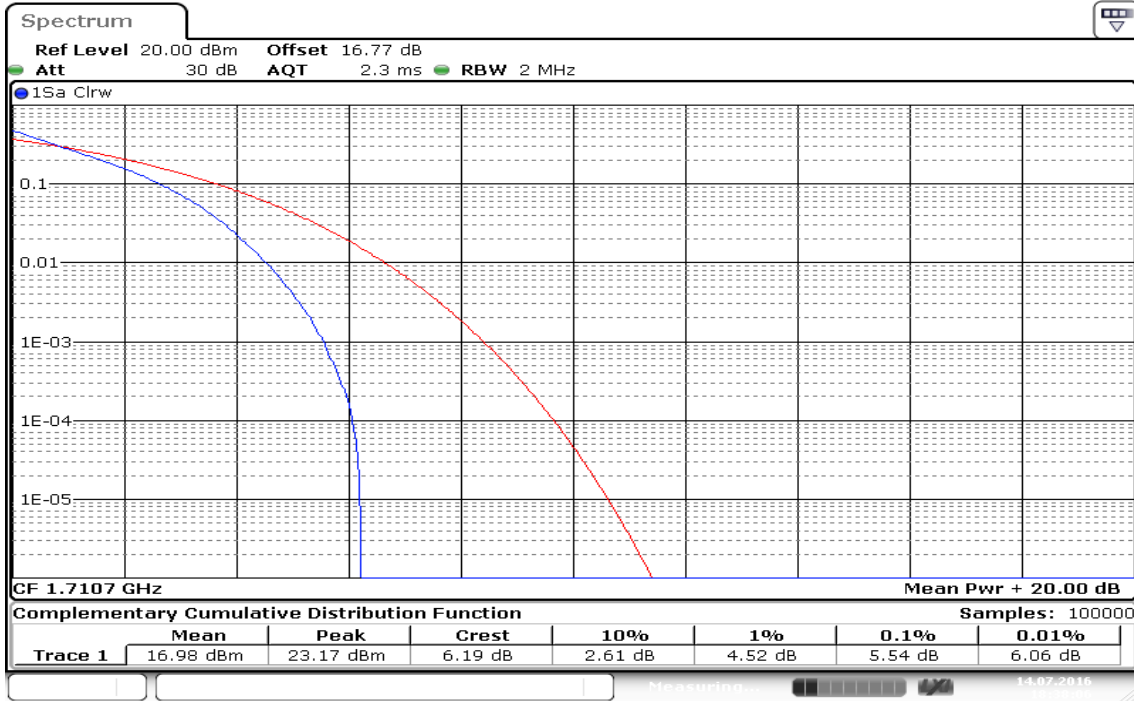
CHANNEL BANDWIDTH: 10MHz / 16QAM

CH Mid



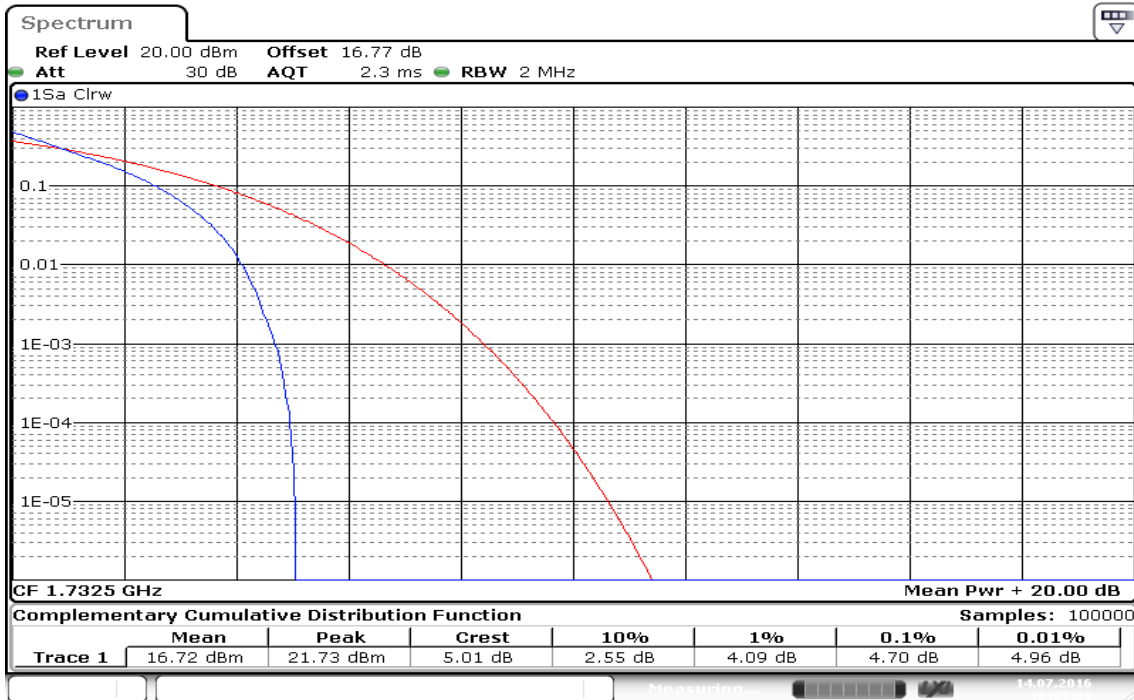
Date: 24.MAY.2016 15:35:25

LTE Band 4
CHANNEL BANDWIDTH: 1.4MHz / QPSK
CH Low



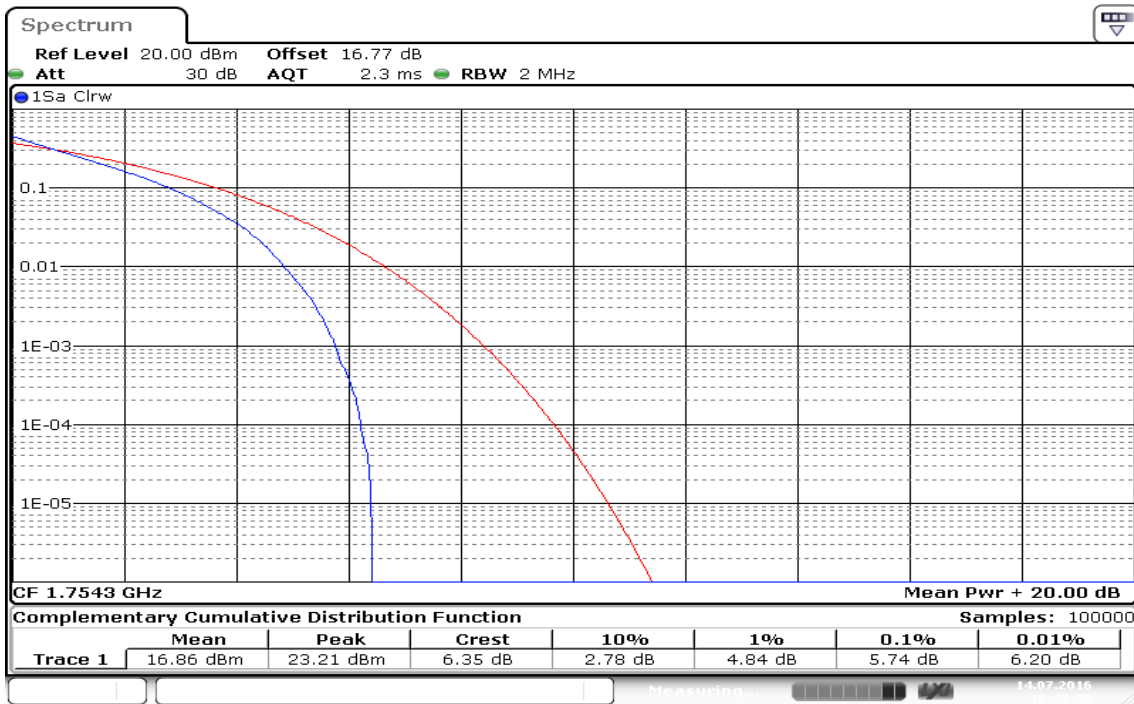
Date: 14.JUL.2016 18:38:07

CH Mid



Date: 14.JUL.2016 18:35:21

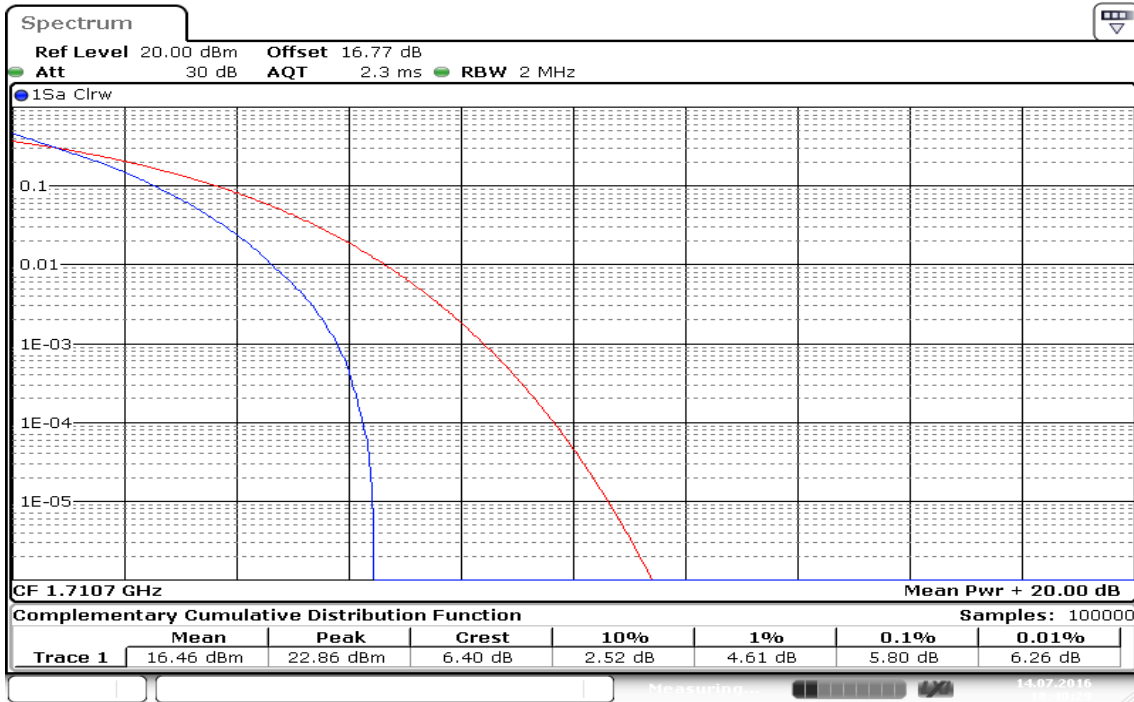
CH High



Date: 14.JUL.2016 18:43:48

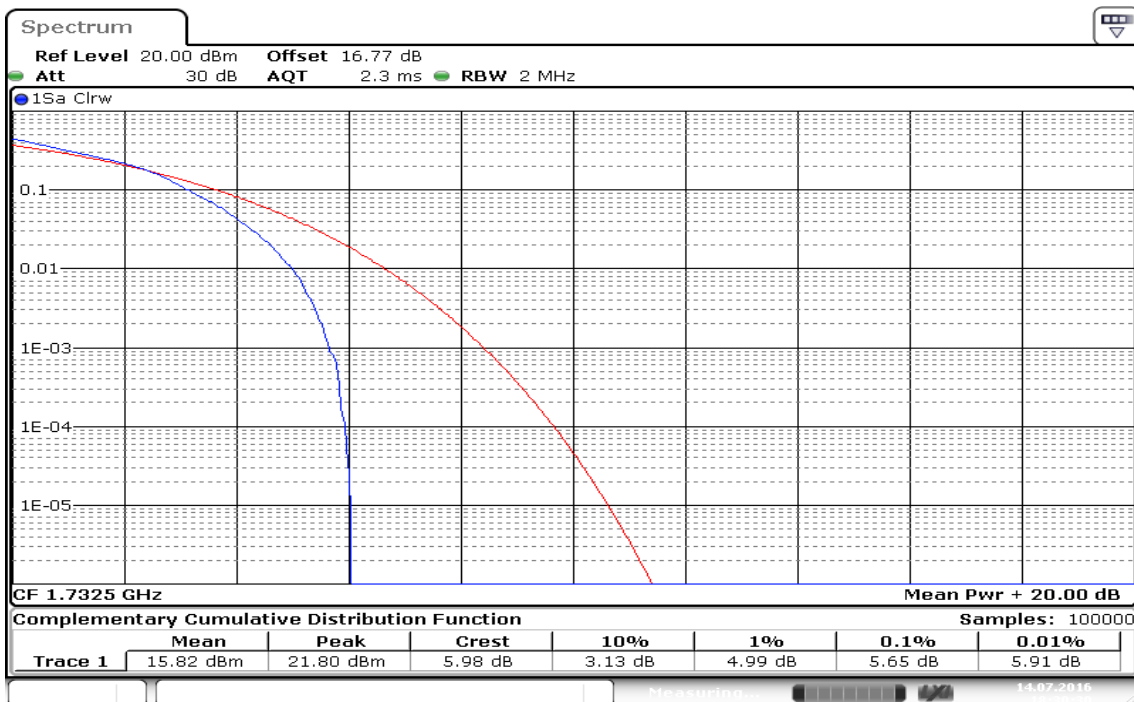
CHANNEL BANDWIDTH: 1.4MHz / 16QAM

CH Low



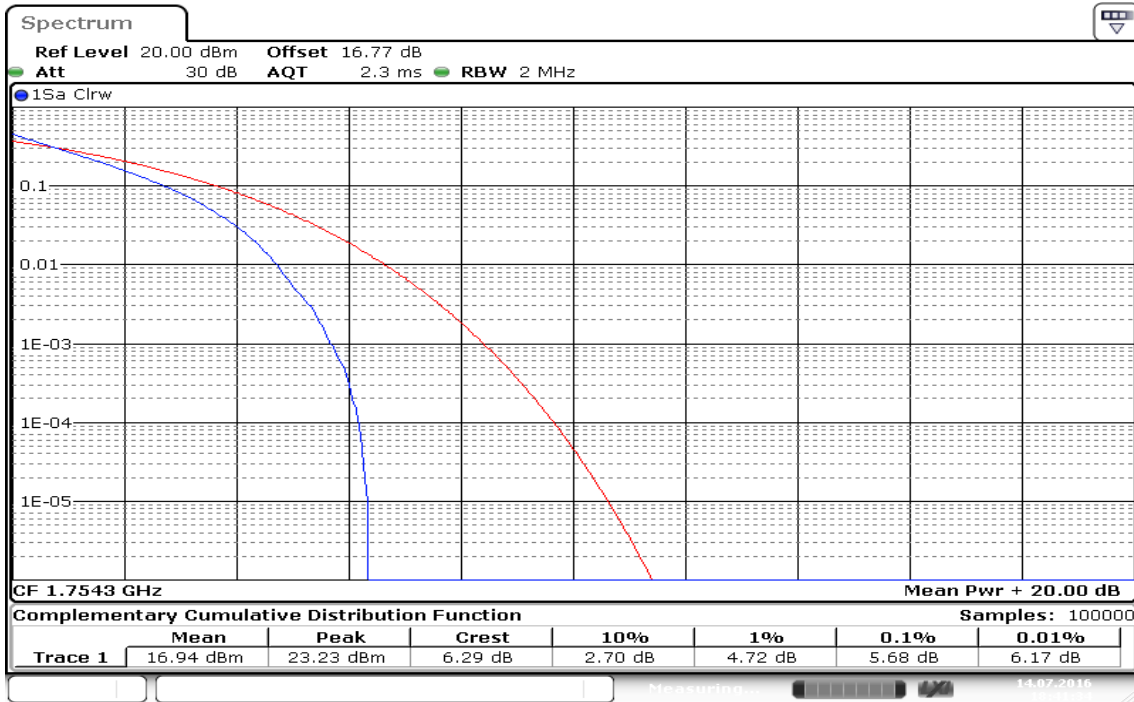
Date: 14.JUL.2016 18:40:29

CH Mid



Date: 14.JUL.2016 18:30:30

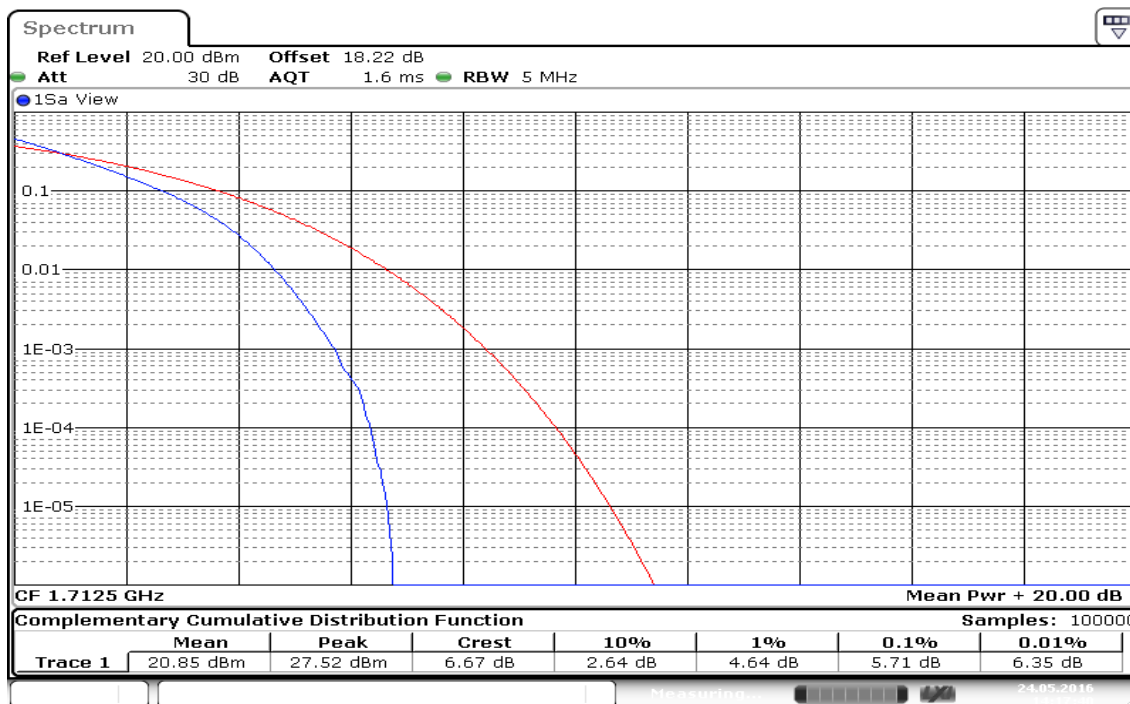
CH High



Date: 14.JUL.2016 18:41:34

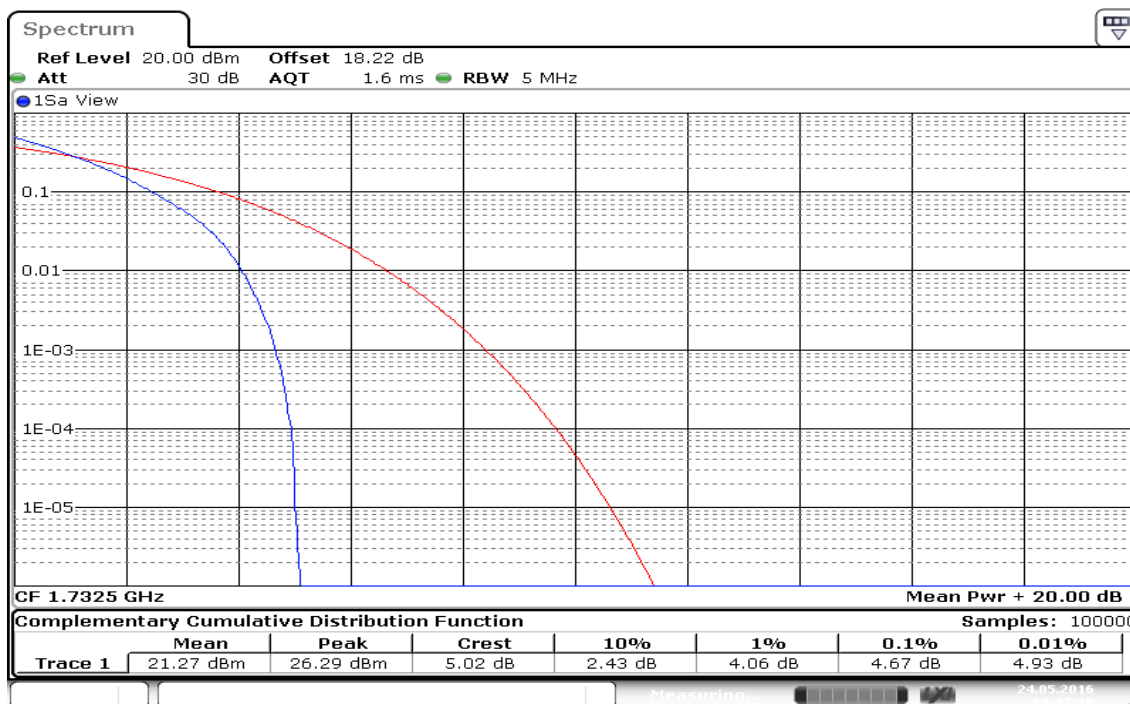
CHANNEL BANDWIDTH: 5MHz / QPSK

CH Low



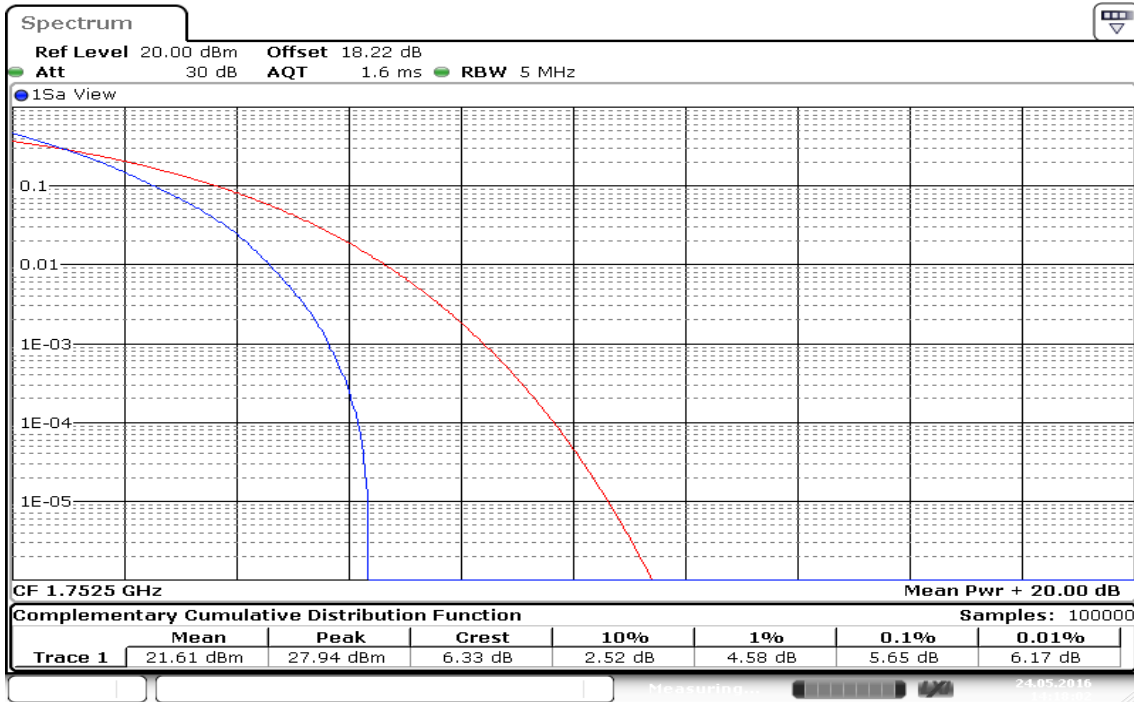
Date: 24.MAY.2016 14:17:39

CH Mid



Date: 24.MAY.2016 14:17:10

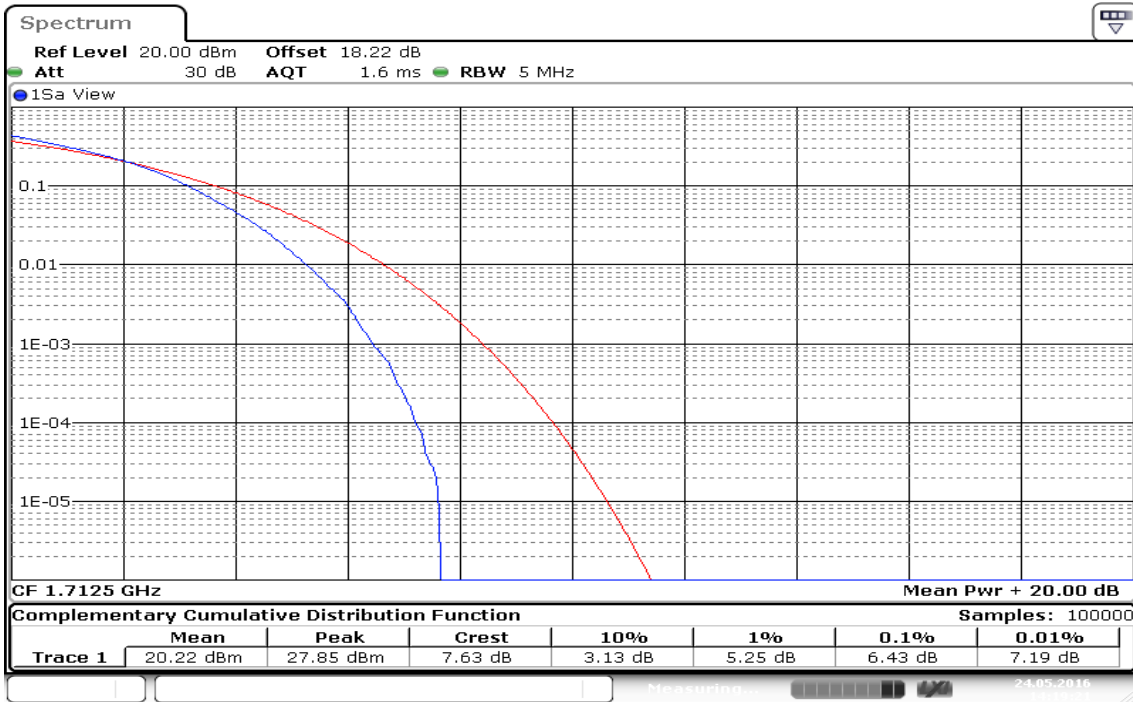
CH High



Date: 24.MAY.2016 14:18:02

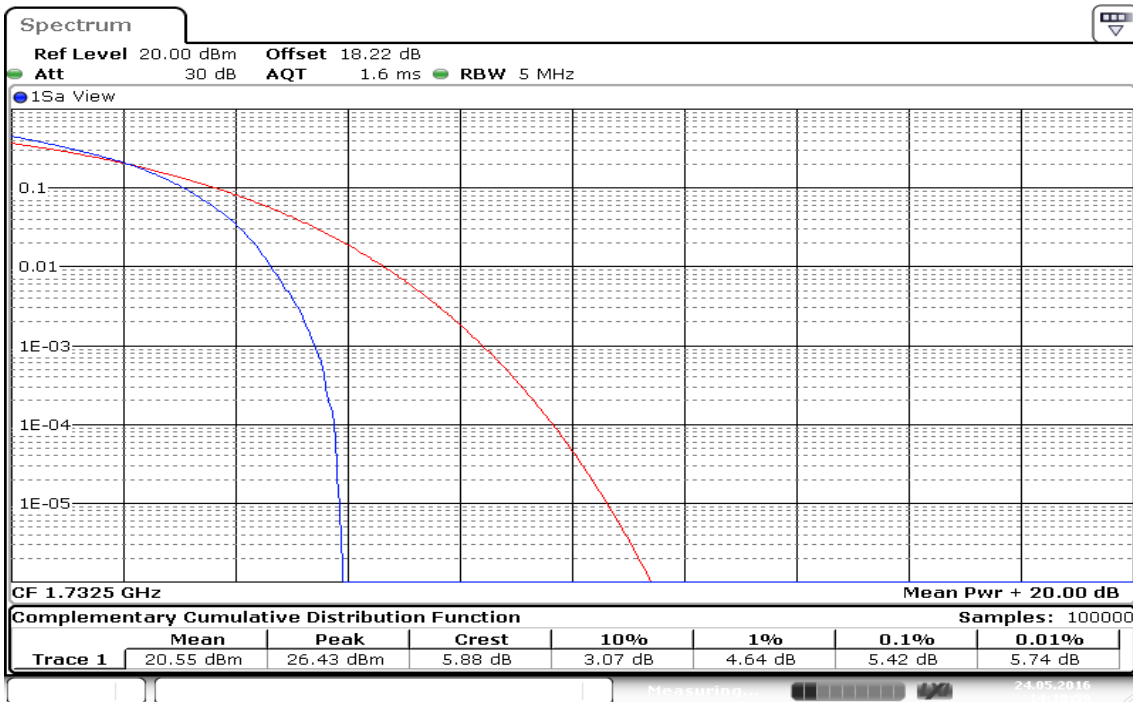
CHANNEL BANDWIDTH: 5MHz / 16QAM

CH Low



Date: 24.MAY.2016 14:19:20

CH Mid



Date: 24.MAY.2016 14:18:59

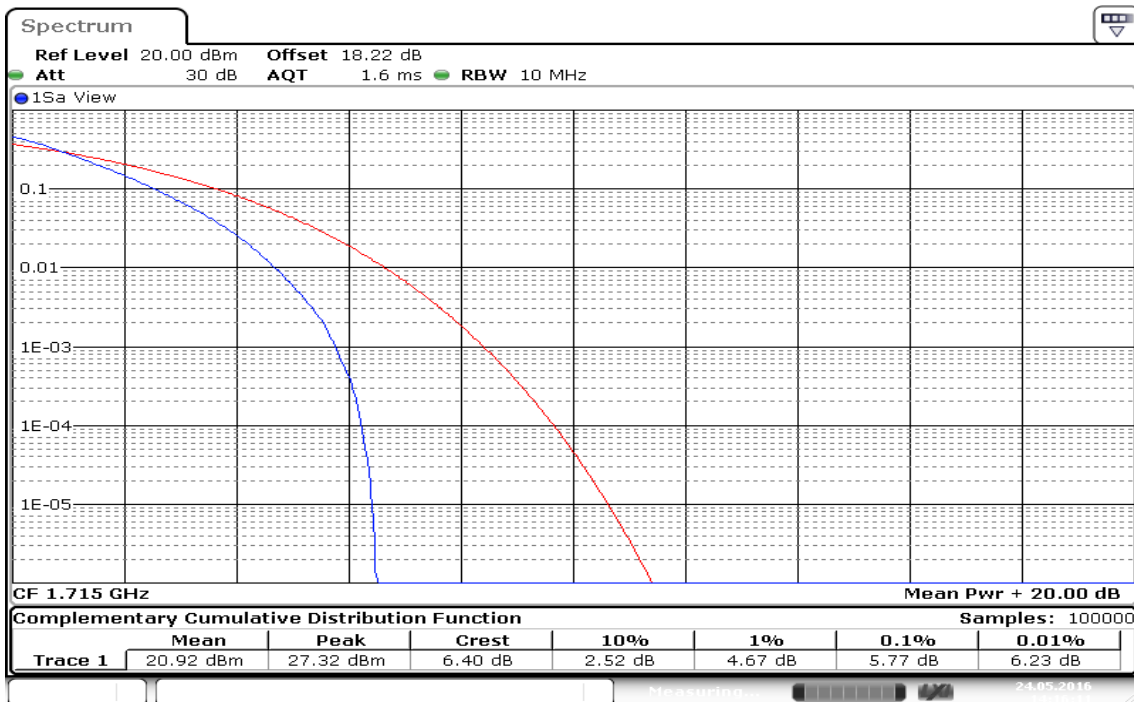
CH High



Date: 24.MAY.2016 14:18:35

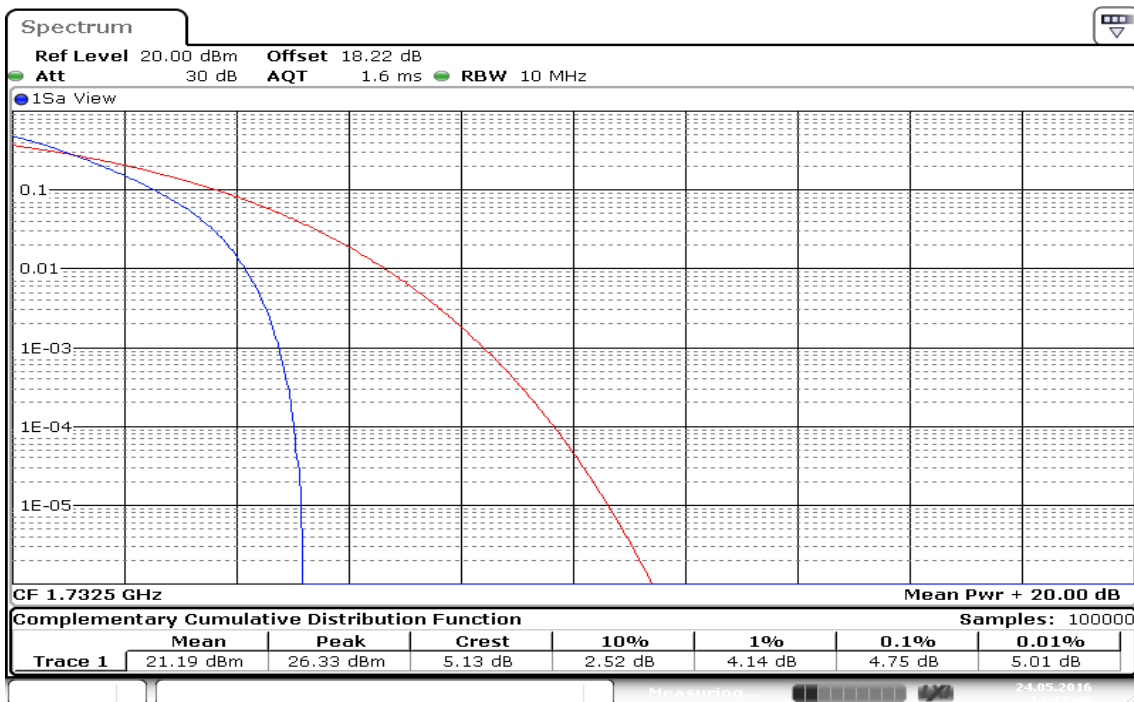
CHANNEL BANDWIDTH: 10MHz / QPSK

CH Low



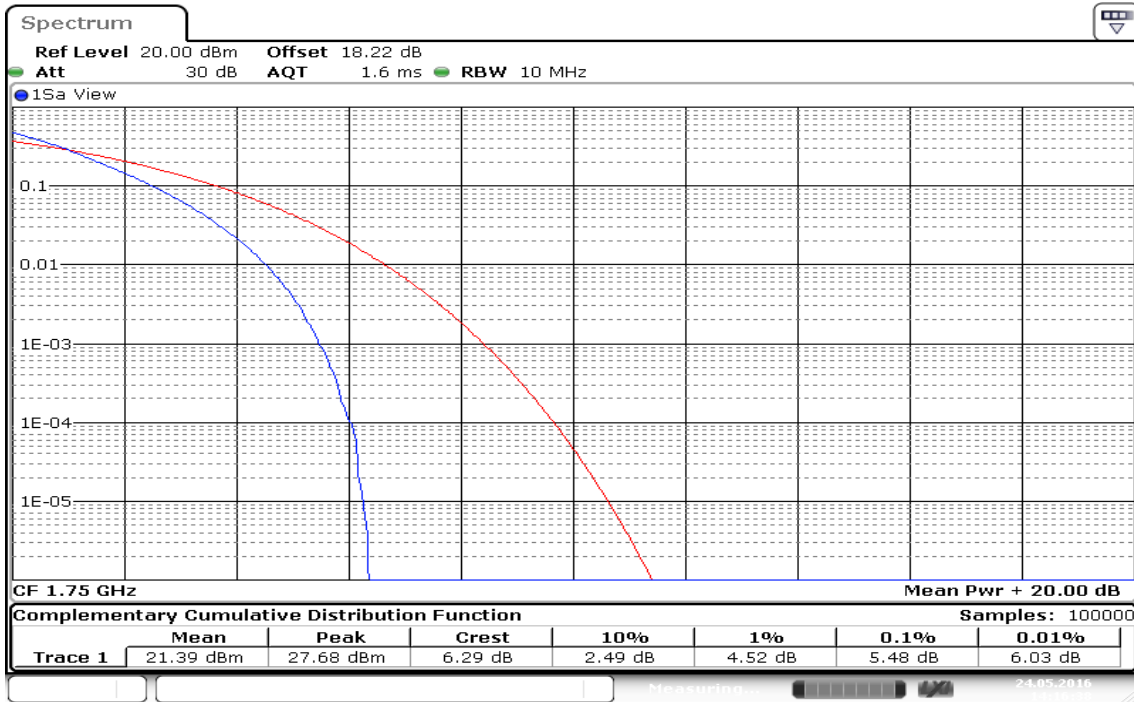
Date: 24.MAY.2016 14:16:11

CH Mid



Date: 24.MAY.2016 14:15:46

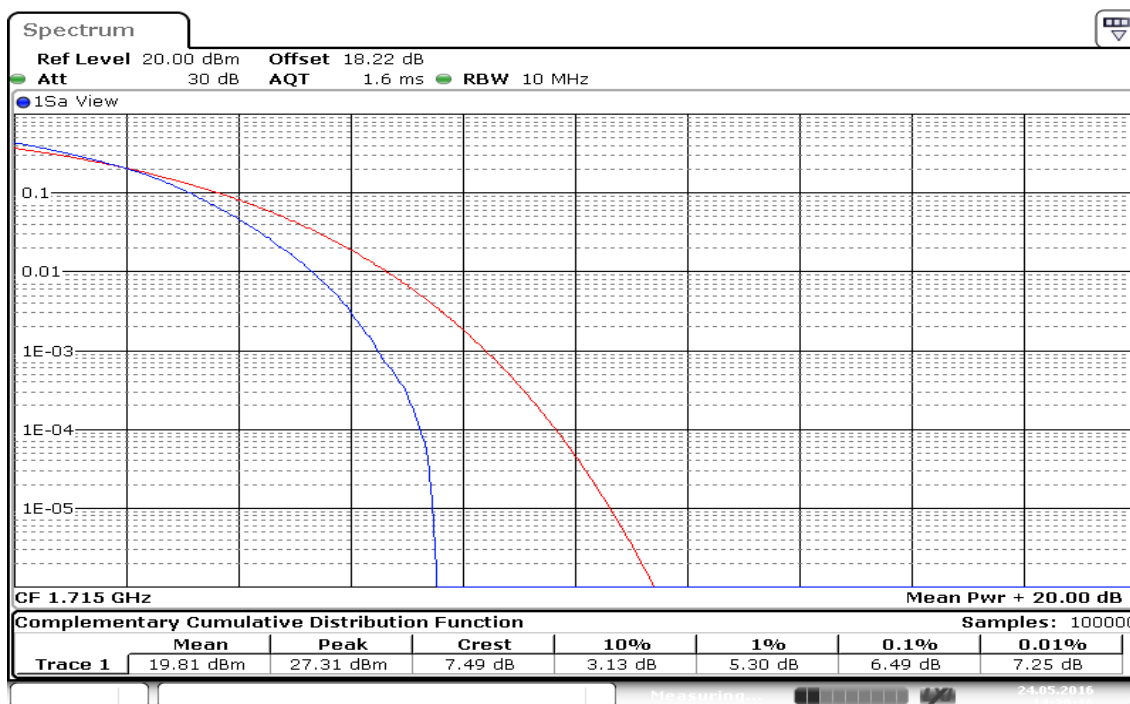
CH High



Date: 24.MAY.2016 14:16:38

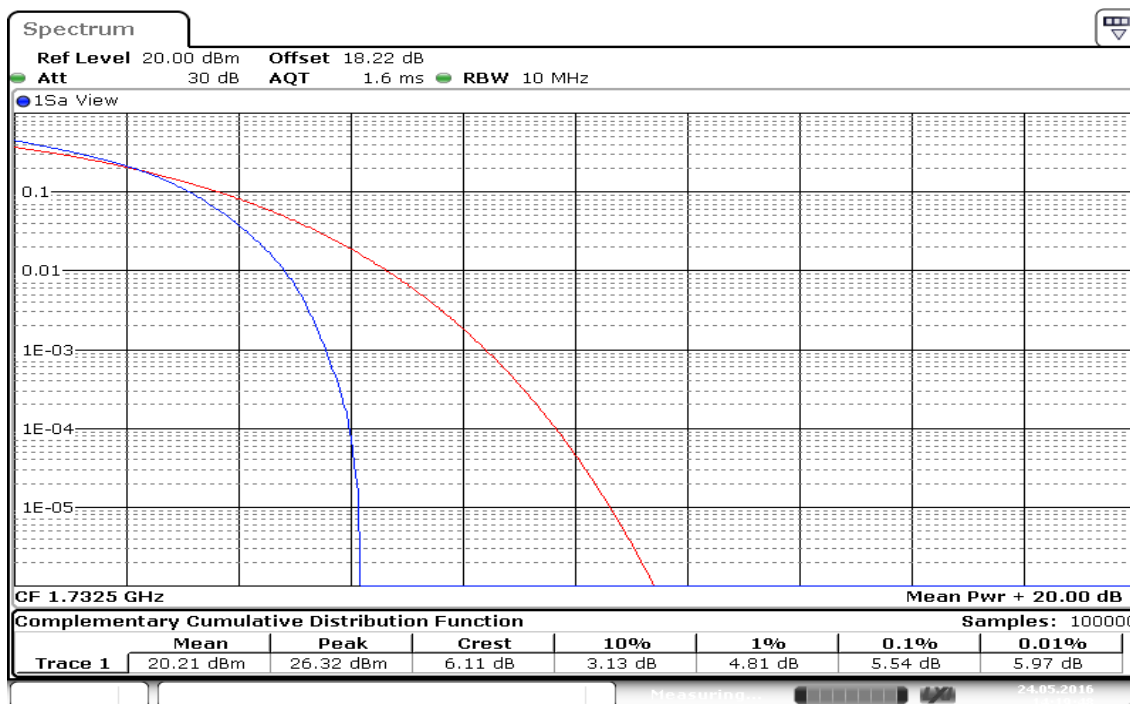
CHANNEL BANDWIDTH: 10MHz / 16QAM

CH Low



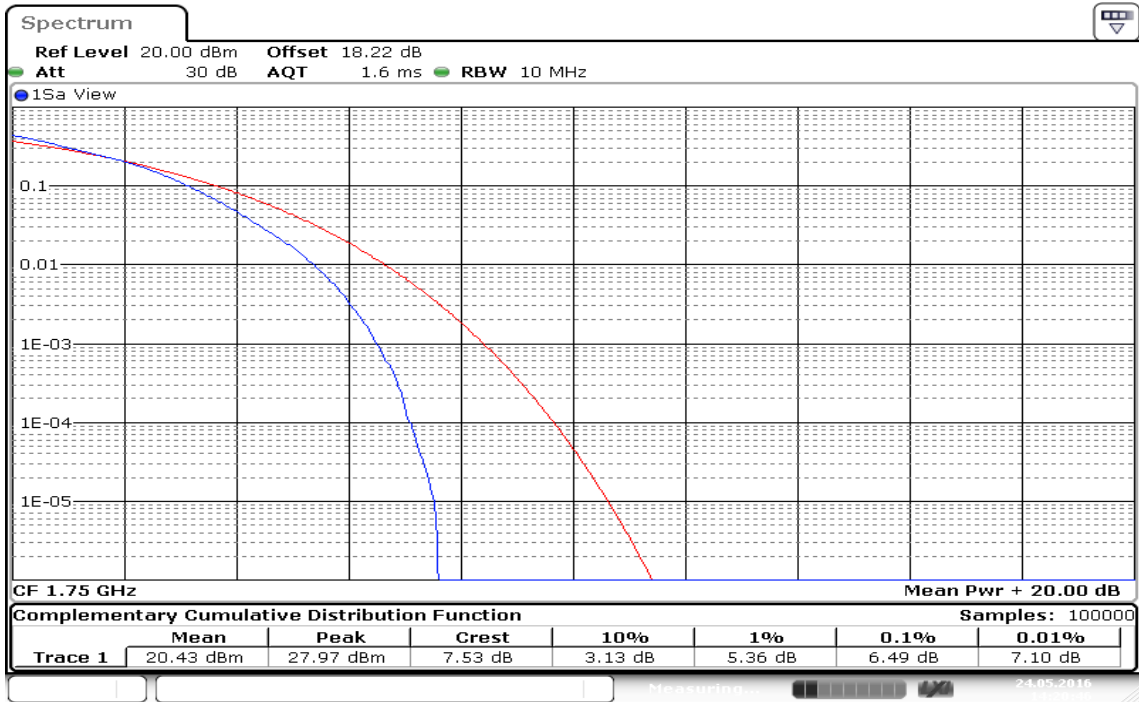
Date: 24.MAY.2016 14:20:16

CH Mid



Date: 24.MAY.2016 14:19:48

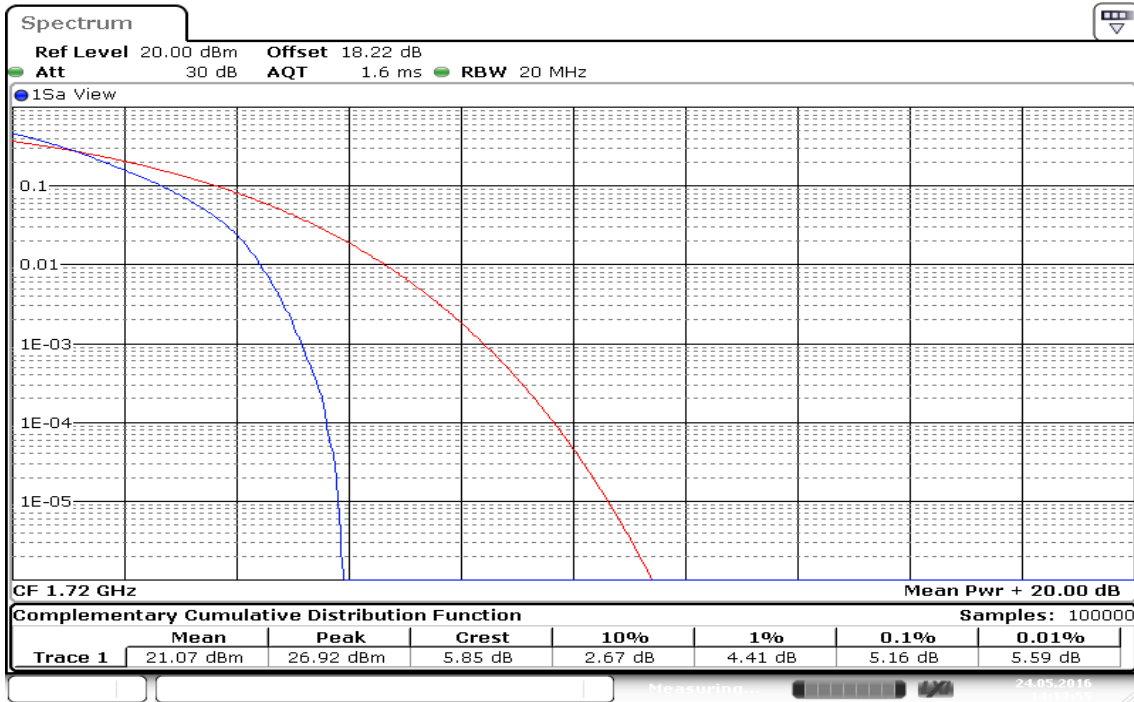
CH High



Date: 24.MAY.2016 14:20:46

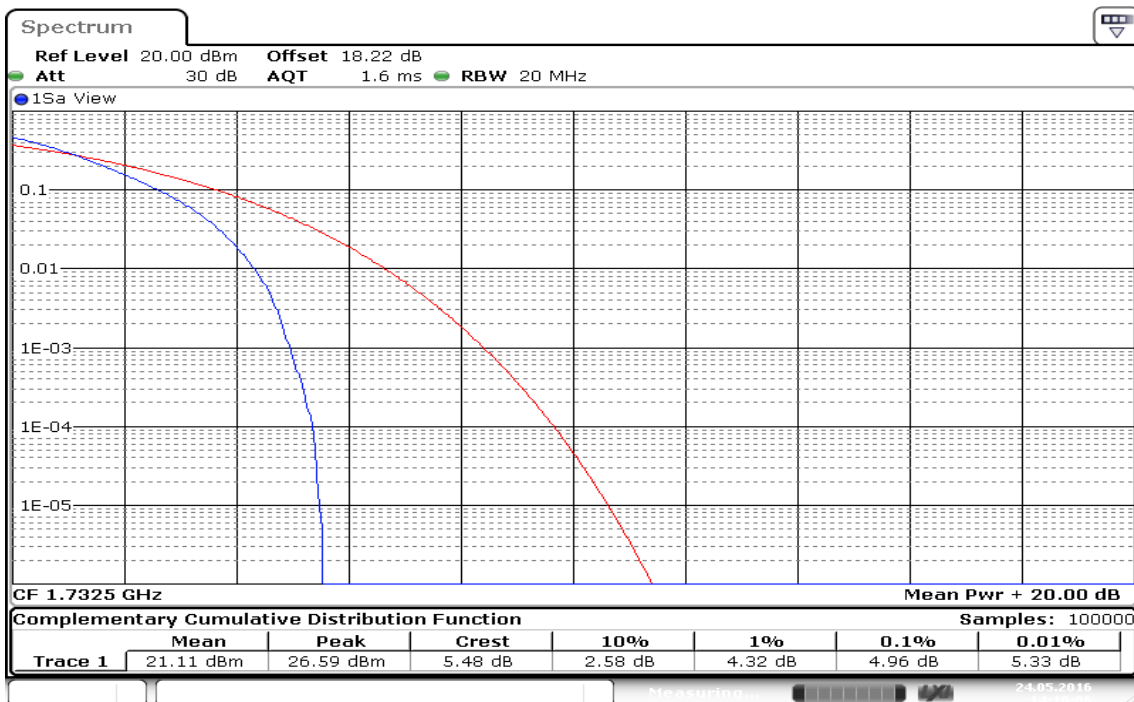
CHANNEL BANDWIDTH: 20MHz / QPSK

CH Low



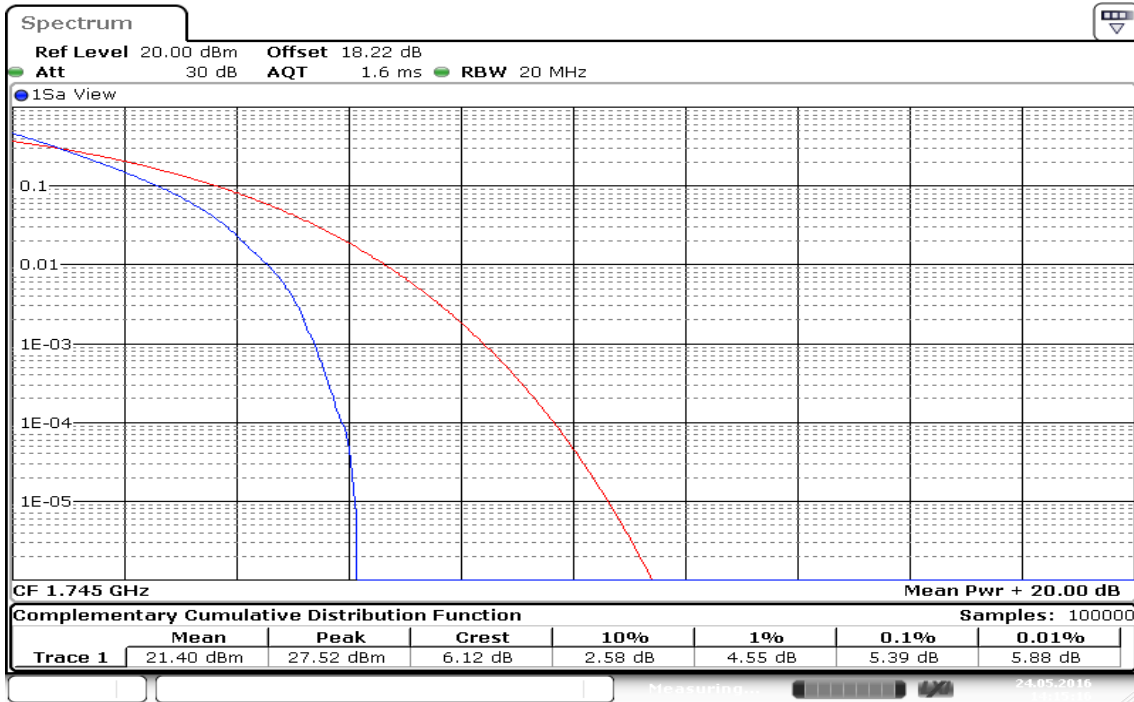
Date: 24.MAY.2016 14:13:55

CH Mid



Date: 24.MAY.2016 14:10:06

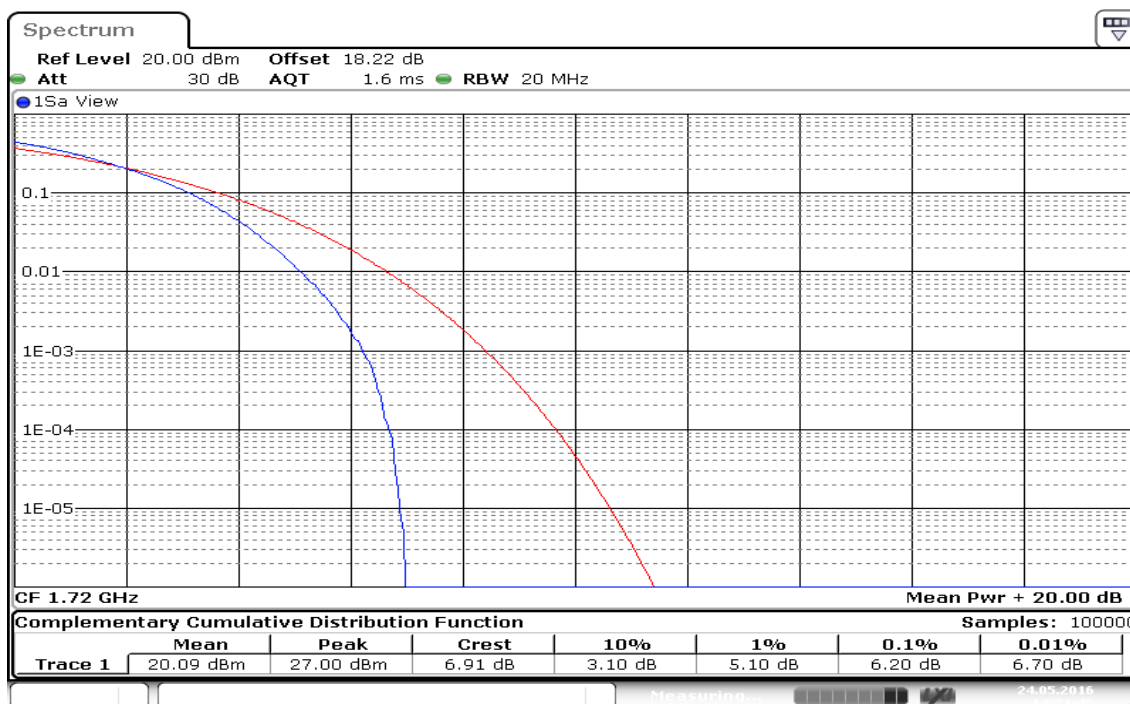
CH High



Date: 24.MAY.2016 14:15:16

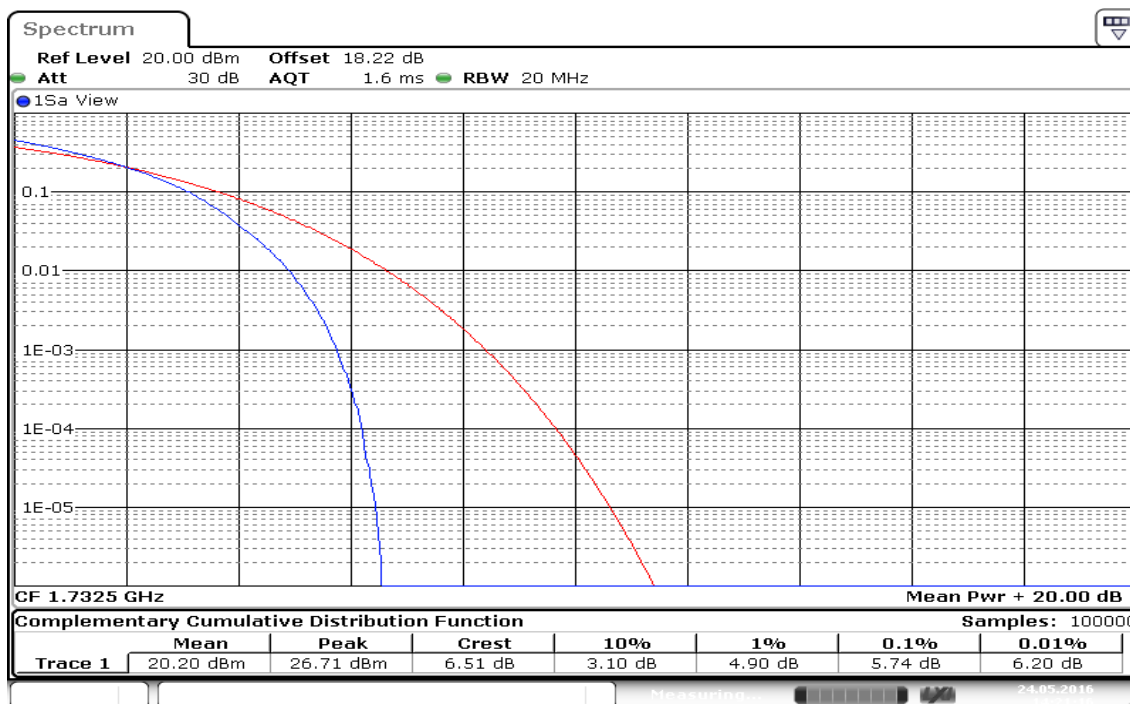
CHANNEL BANDWIDTH: 20MHz / 16QAM

CH Low



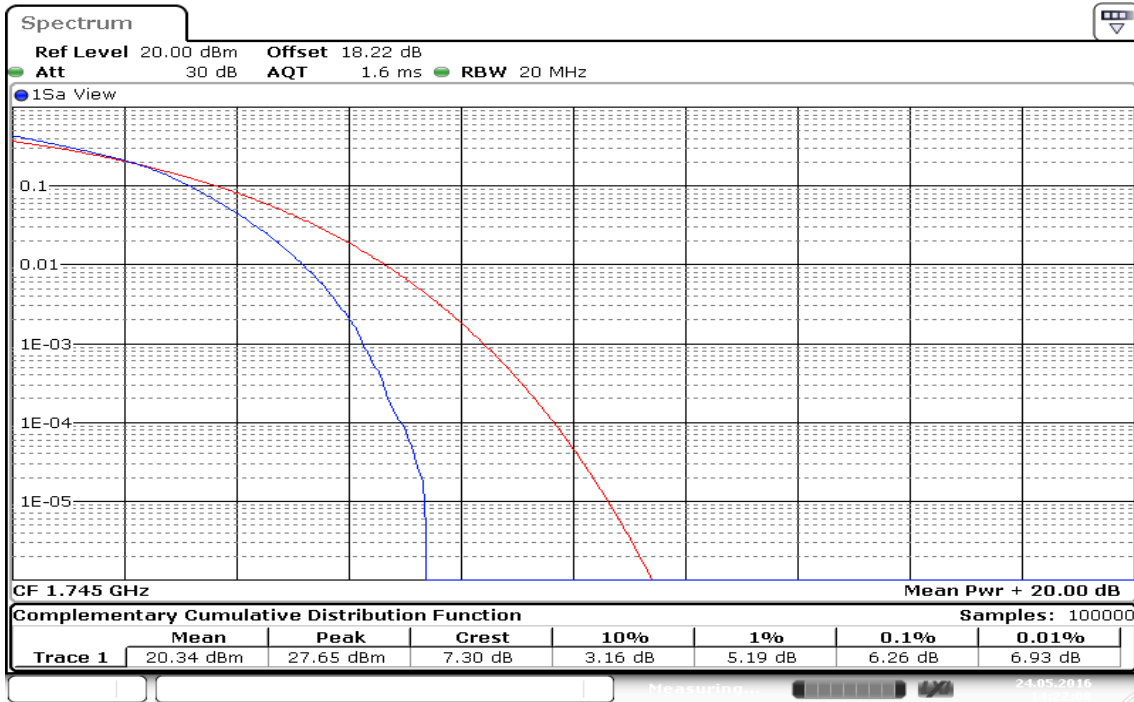
Date: 24.MAY.2016 14:21:45

CH Mid



Date: 24.MAY.2016 14:21:16

CH High



Date: 24.MAY.2016 14:22:08

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

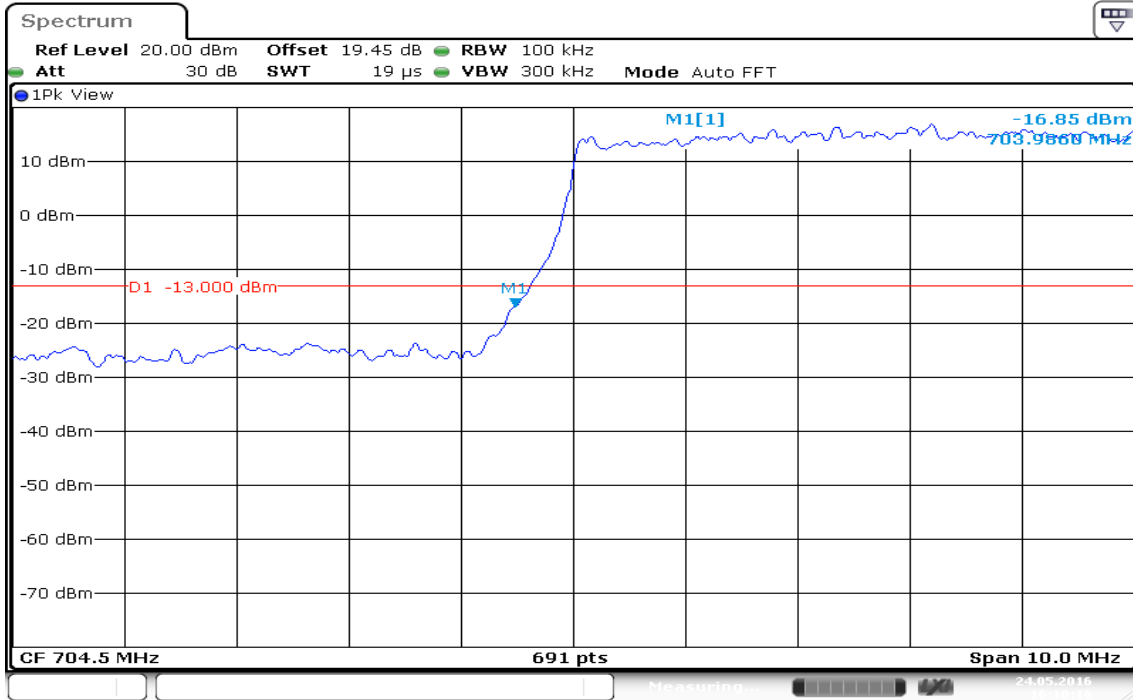
1. The EUT was set up for the maximum peak power with LTE link data modulation. The power was measured with Spectrum Analyzer. All measurements were done at 2 channels (low and high operational frequency range.).
2. The band edge measurement used the power splitter via EUT RF power connector between 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 17

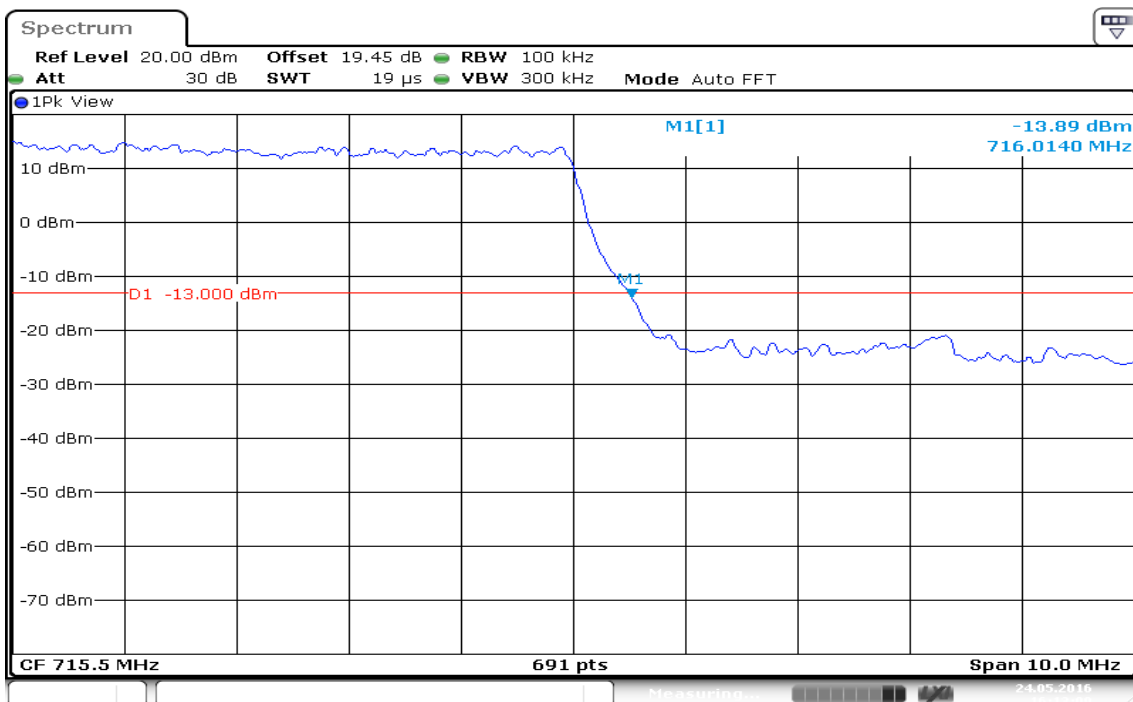
CHANNEL BANDWIDTH: 10MHz / QPSK / FULL RB ALLOCATED

LOWER BAND EDGE



Date: 24.MAY.2016 16:10:16

HIGHER BAND EDGE

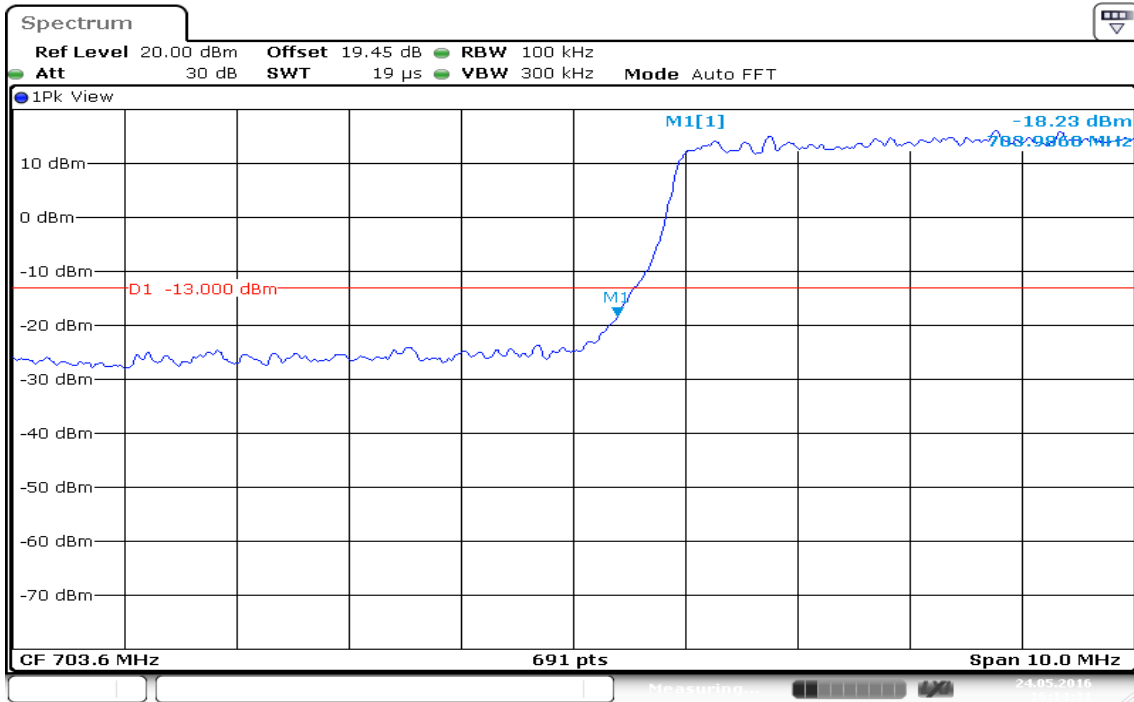


Date: 24.MAY.2016 16:13:09

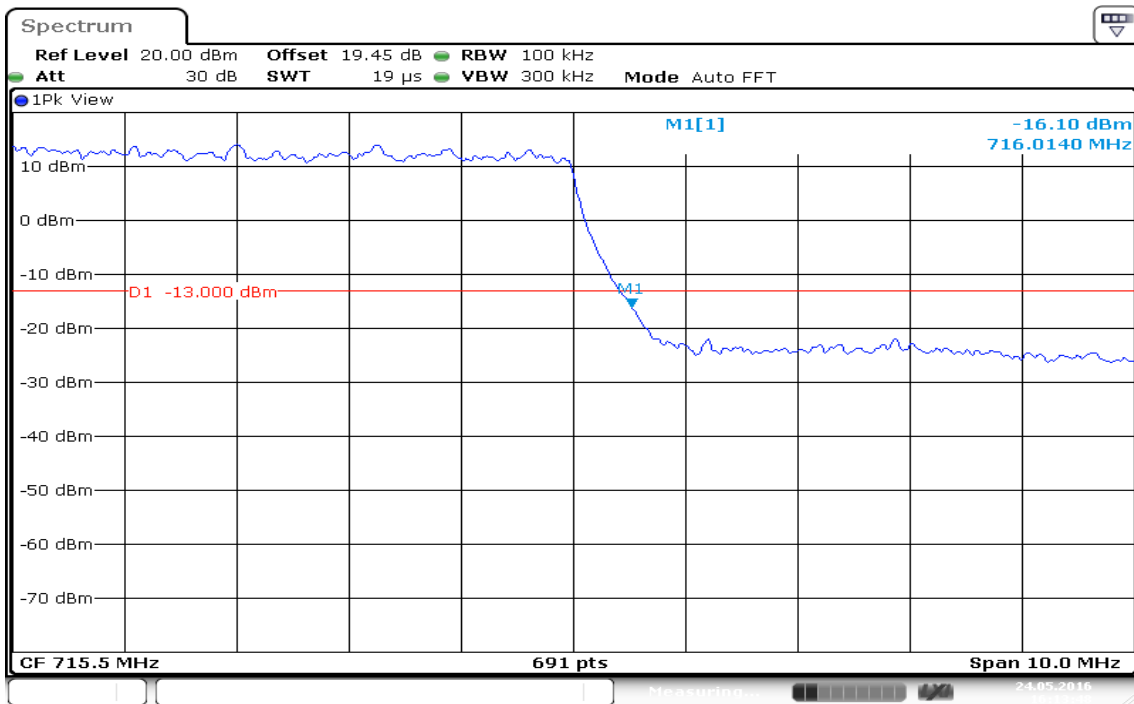
LTE Band 17

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

LOWER BAND EDGE



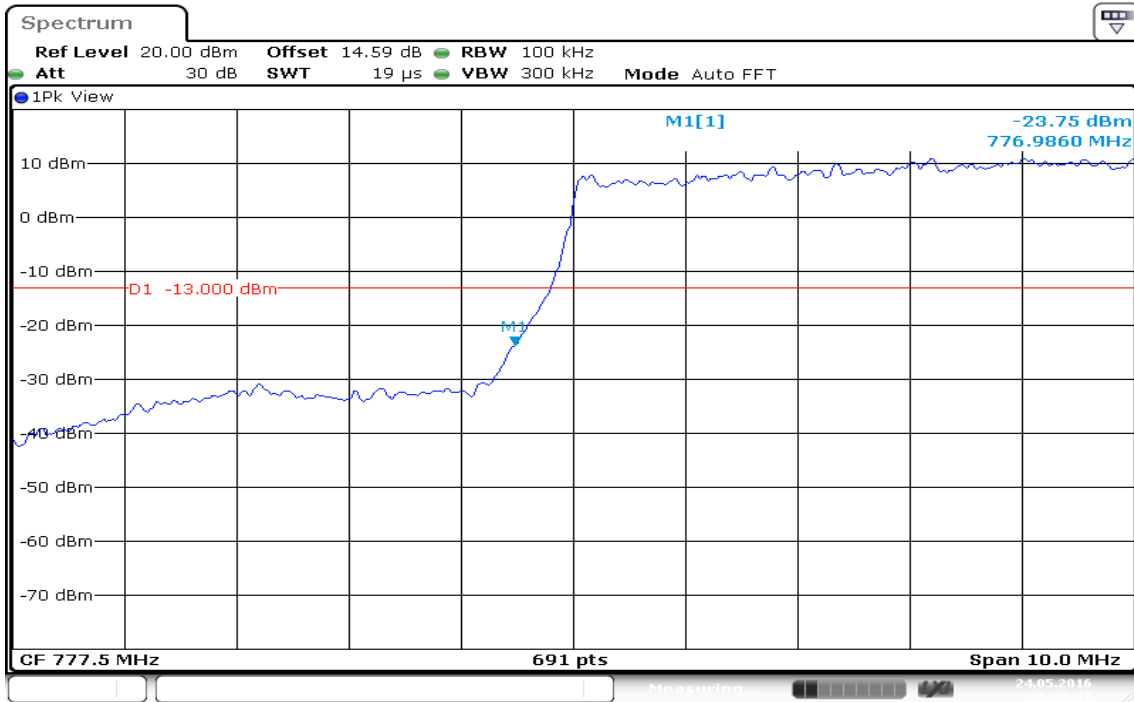
HIGHER BAND EDGE



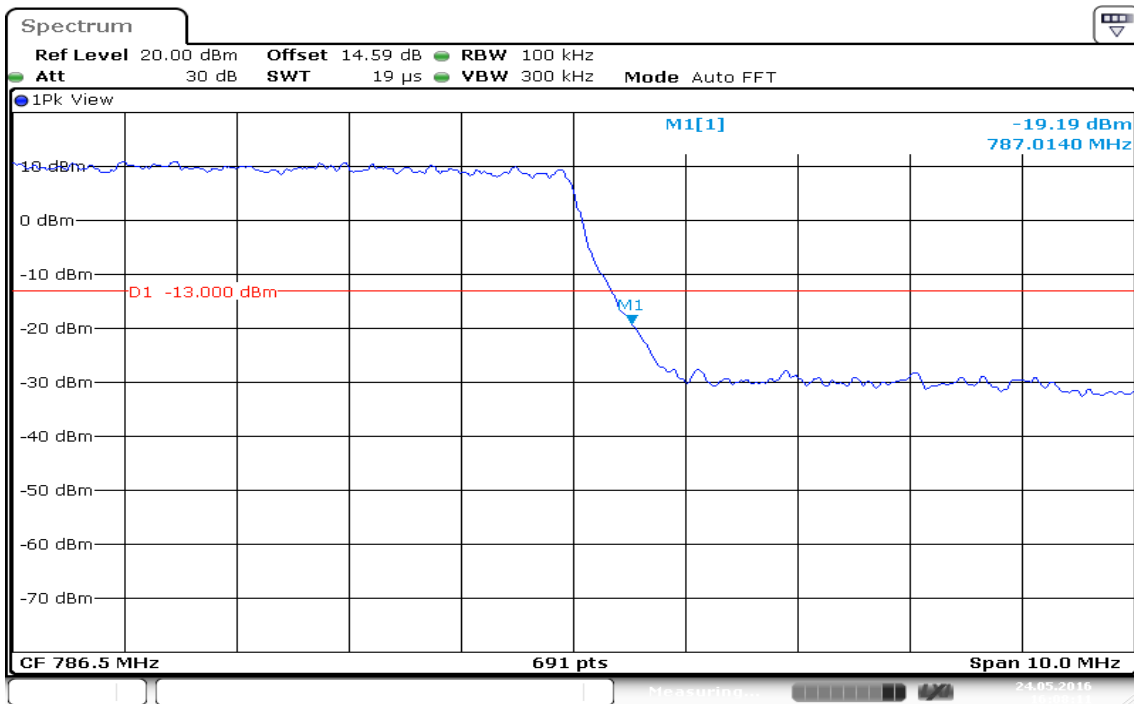
LTE Band 13

CHANNEL BANDWIDTH: 10MHz / QPSK / FULL RB ALLOCATED

LOWER BAND EDGE



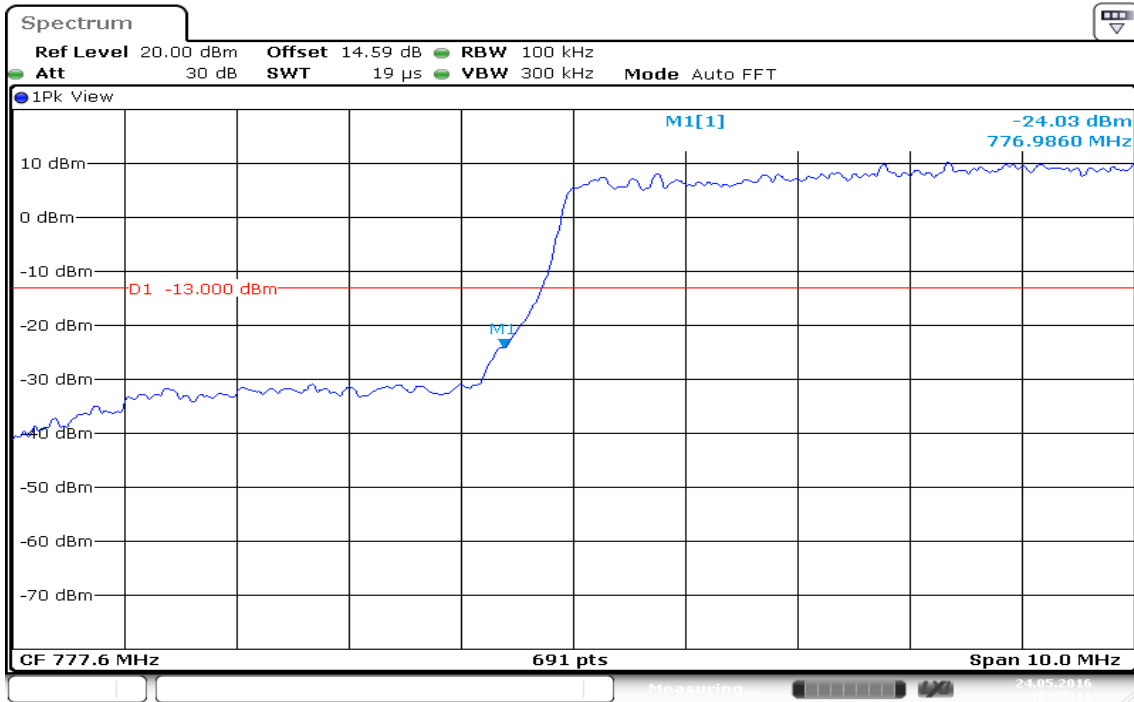
HIGHER BAND EDGE



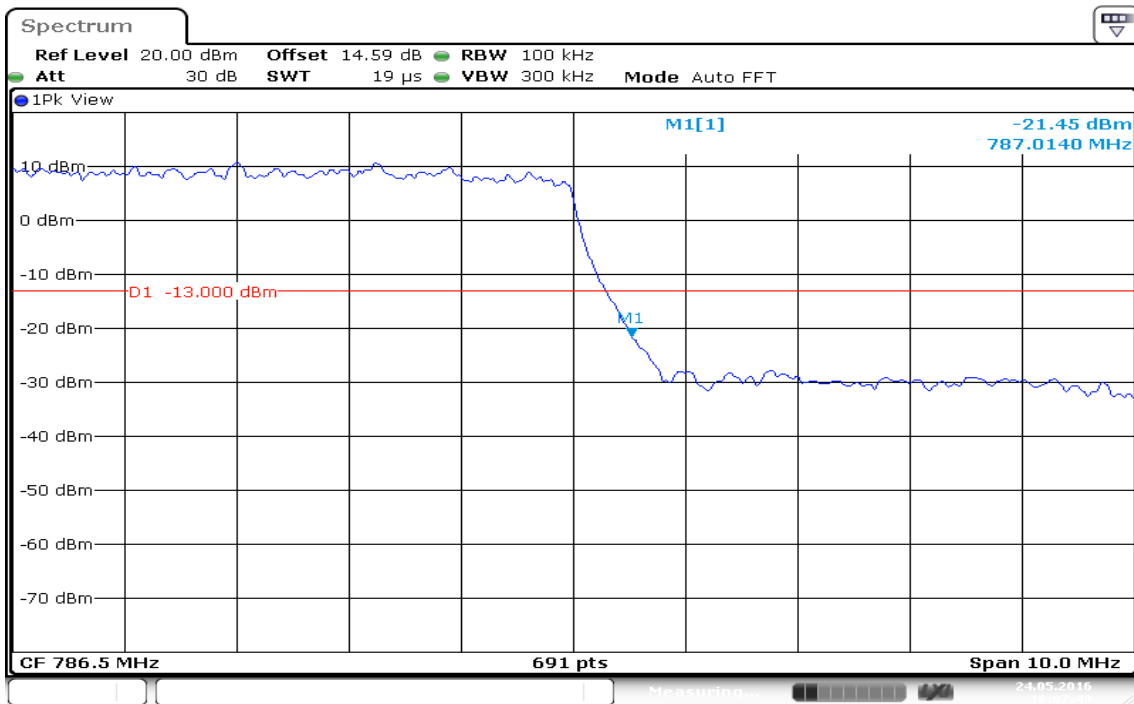
LTE Band 13

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

LOWER BAND EDGE



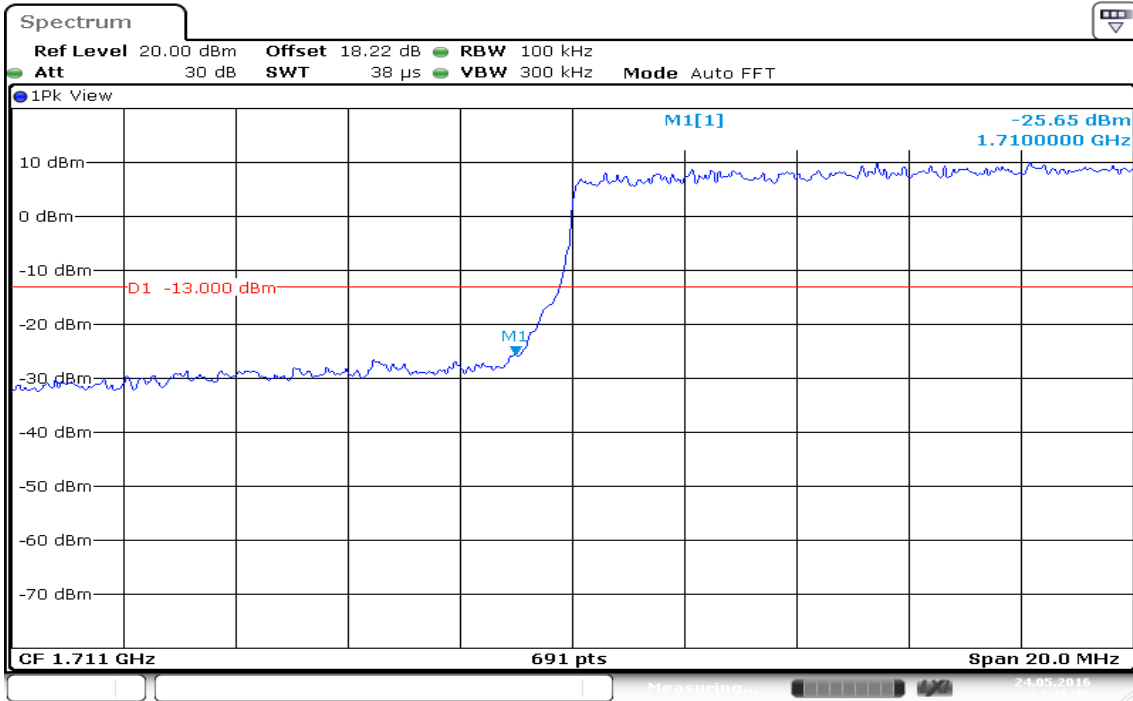
HIGHER BAND EDGE



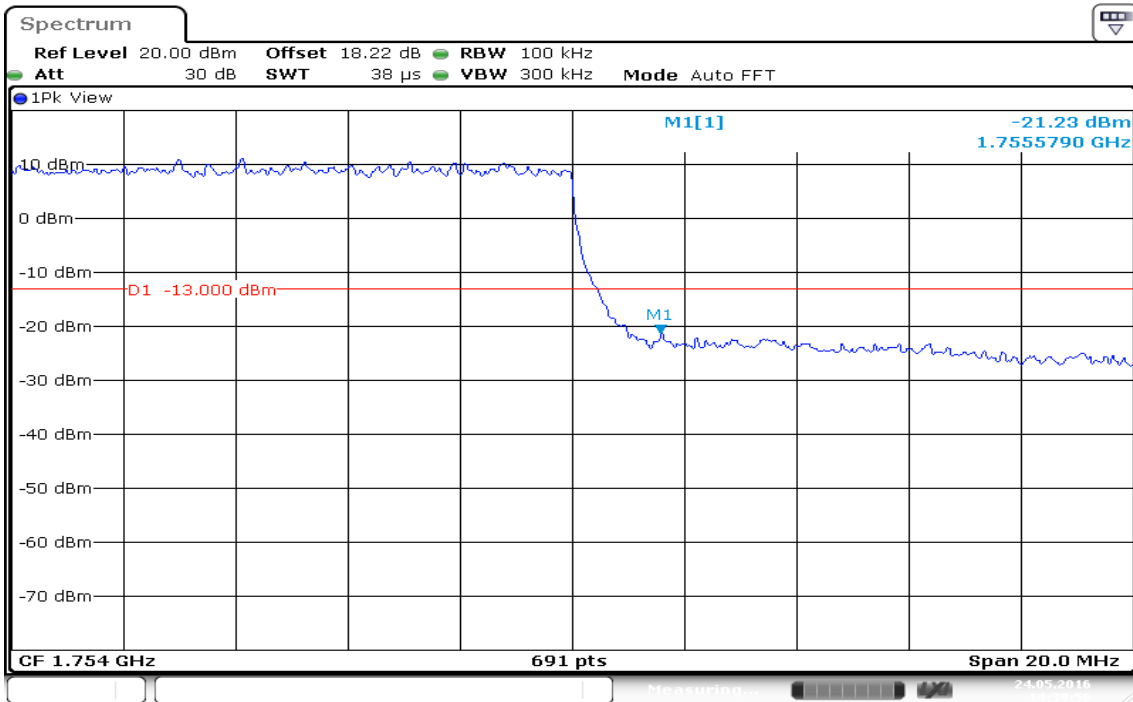
LTE Band 4

CHANNEL BANDWIDTH: 20MHz / QPSK / FULL RB ALLOCATION

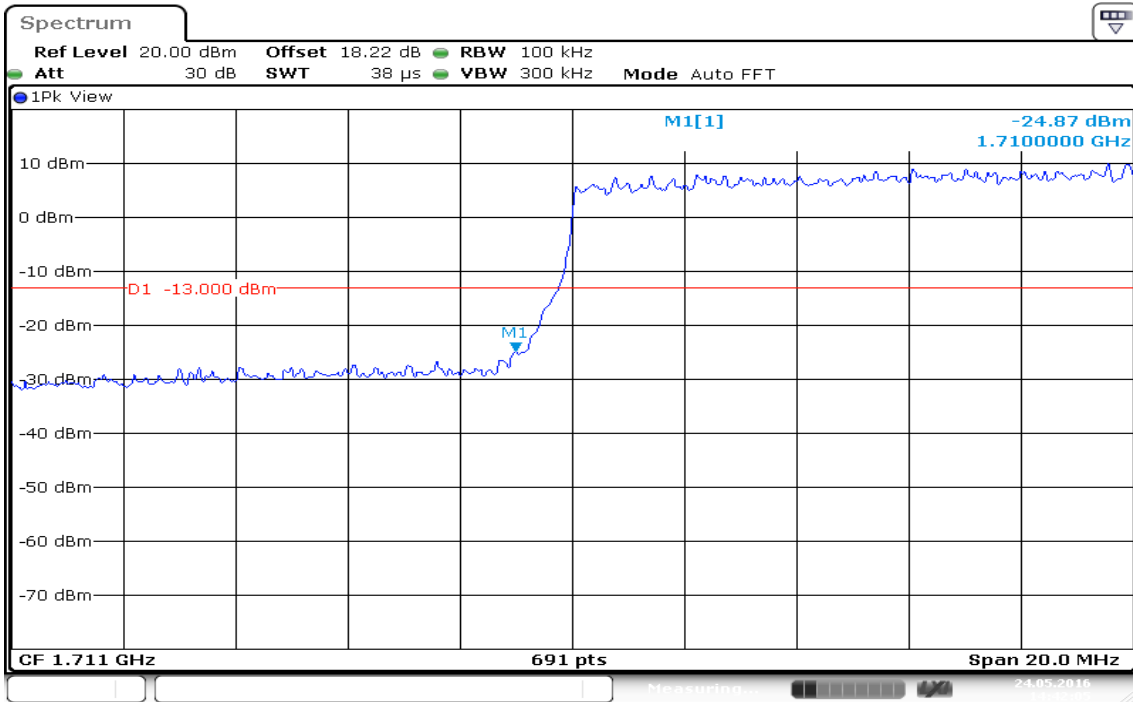
LOWER BAND EDGE



HIGHER BAND EDGE

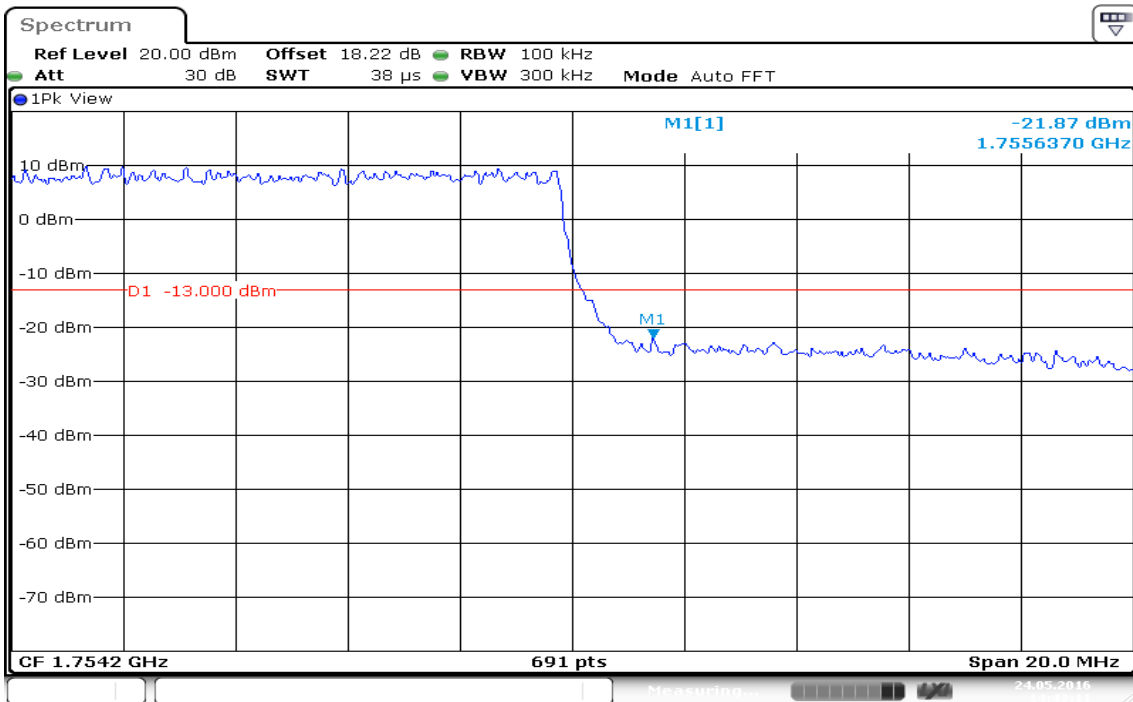


CHANNEL BANDWIDTH: 20MHz / 16QAM / FULL RB ALLOCATION
LOWER BAND EDGE



Date: 24.MAY.2016 14:42:05

HIGHER BAND EDGE



Date: 24.MAY.2016 14:43:10