Shenzhen Huatongwei International Inspection Co., Ltd.
1/F,Bldg 3,Hongfa Hi-tech Industrial Park,Genyu Road,Tianliao,Gongming,Shenzhen,China
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FCC REPORT

Report Reference No. ..... :	**TRE1705015009**	R/C…….: 75990
FCC ID ..... :	**YAMPTC760FXB1**	
Applicant's name ..... :	**Hytera Communications Corporation Limited**	
Address.....:	Hytera Tower, Hi-Tech Industrial Park North, 9108# Beihuan Road, Nanshan District, Shenzhen, People's Republic of China	
Manufacturer.....:	Hytera Communications Corporation Limited	
Address.....:	Hytera Tower, Hi-Tech Industrial Park North, 9108# Beihuan Road, Nanshan District, Shenzhen, People's Republic of China	
Test item description ..... :	**Multi-mode Advanced Radio**	
Trade Mark .....:	Hytera	
Model/Type reference.....:	PTC760 FxB1	
Listed Model(s) .....:	-	
Standard ..... :	**FCC Part 90:PRIVATE LAND MOBILE RADIO SERVICES**	
Date of receipt of test sample……..:	May 17, 2017	
Date of testing……:	May 18, 2017 - Sep. 20, 2017	
Date of issue……..:	Sep. 20, 2017	
Result……..:	**Pass**	

Compiled by (position+printedname+signature)...:	File administrators Becky Liang	Becky Liang
Supervised by (position+printedname+signature)....:	Project Engineer Cary Luo	Cary Luo
Approved by (position+printedname+signature)....:	Manager Hans Hu	Hans Hu

Testing Laboratory Name ..... :	**Shenzhen Huatongwei International Inspection Co., Ltd.**
Address.....:	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

Contents

1. Test standards and Report version

1.1. Test Standards

The tests were performed according to following standards:

FCC Part 90: PRIVATE LAND MOBILE RADIO SERVICES.
TIA/EIA 603 D June 2010:Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.
FCC Part 2:FREQUENCY ALLOCA-TIONS AND RADIO TREATY MAT-TERS; GENERAL RULES AND REG-ULATIONS

1.2. Report version

Version No.	Date of issue	Description
00	Jun.22, 2017	Original

2. Test Description

Test Item	Section in CFR 47	Result	Test Engineer
RF Output Power	Part 2.1046	Pass	William Wang
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 90.209	Pass	William Wang
Emission mask-In band emissions	Part 2.1051 Part 90.691	Pass	William Wang
Emission mask-Out band emissions	Part 2.1051 Part 90.691	Pass	William Wang
Radiated Spurious Emissions	Part 2.1051 Part 90.691	Pass	William Wang
Frequency stability vs. temperature	Part 2.1055(a)(1)(b) Part 90.213	Pass	William Wang
Frequency stability vs. voltage	Part 2.1055(a)(1)(b) Part 90.213	Pass	William Wang

Note: The measurement uncertainty is not included in the test result.

3. SUMMARY

3.1. Client Information

Applicant:	Hytera Communications Corporation Limited
Address:	Hytera Tower, Hi-Tech Industrial Park North, 9108# Beihuan Road, Nanshan District, Shenzhen, People's Republic of China
Manufacturer:	Hytera Communications Corporation Limited
Address:	Hytera Tower, Hi-Tech Industrial Park North, 9108# Beihuan Road, Nanshan District, Shenzhen, People's Republic of China

3.2. Product Description

Name of EUT:	Multi-mode Advanced Radio
Trade Mark:	Hytera
Model/Type reference:	PTC760 FxB1
Listed Model(s):	-
Power supply:	DC 7.6V
Adapter information:	Model: S024WM1200200 Input: 100-240Va.c., 50/60Hz, 600mA Output: 12.0Vd.c., 2000mA
Battery information:	Model: BP2901 Output: 7.6Vd.c., 2900mAh
Charger information:	Model: CH20L08 Input: 12Vd.c., 2000mA Output: 12Vd.c., 2000mA
Hardware version:	V1.0
Software version:	R1.0
RF Technical Description	
☒FDD Band 26	
Operation Frequency:	Uplink:814.7 MHz – 823.3 MHz Downlink: 859.7MHz – 868.3 MHz
Channel bandwidth:	☒1.4MHz ☒ 3MHz ☒ 5MHz ☒ 10MHz ☒15MHz ☐20MHz
Power Class:	☐ Class 1 ☐ Class 2 ☒ Class 3 ☐ Class 4
Modulation type:	☒QPSK ☒16QAM ☐64QAM
Antennna type:	Integral Antennna
Antenna gain:	Band 26: -0.5 dBi,

3.3. Operation state

➢ **Test frequency list**

LTE Band 26 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Low	Mid	High
15	Channel	26765	-	-
	Frequency	821.5	-	-
10	Channel	-	26740	-
	Frequency	-	819	-
5	Channel	26715	26740	26765
	Frequency	816.5	819	821.5
3	Channel	26705	26740	26775
	Frequency	815.5	819	822.5
1.4	Channel	26697	26740	26783
	Frequency	814.7	819	823.3

3.4. EUT operation mode

For RF test items
The EUT has been tested under typical operating condition. Testing was performed by configuring EUT to maimum output power status.

Test Items	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Max Output Power	26	v	v	v	v	v	-	v	v	v	v	v	v	v	v
26dB and 99% Bandwidth	26	v	v	v	v	v	-	v	v			v	v	v	v
Emission mask-In band emissions	26	v	v	v	v	v	-	v	v	v		v	v		v
Emission mask-Out band emissions	26	v	v	v	v	v	-	v	v	v			v	v	v
Radiated Spurious Emission	26	v	v	v	v	v	-	v		v			v	v	v
Frequency Stability	26				v		-	v	v			v		v	
Remark	1. The mark "v"means that this configuration is chosenfor testing 2. The mark "-"means that this fuction is not supported. 3. The device is investigatedfrom 30MHz to10 times offundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported. 4. Bandwidth 10MHz only test Low channel,and 15MHz only test Mid channel														

3.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

		Length (m) :	/
		Shield :	/
		Detachable :	/
		Manufacturer :	/
		Model No. :	/

3.6. Modifications

No modifications were implemented to meet testing criteria.

4. TEST ENVIRONMENT

4.1. Address of the test laboratory

Laboratory: Shenzhen Huatongwei International Inspection Co., Ltd.
Address: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

4.2. Test Facility

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 3902.01

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 762235

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files.

IC-Registration No.:5377B-1

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No.: 5377B-1.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

4.3. Equipments Used during the Test

RF Conducted					
No.	Equipment	Manufacturer	Model No.	SerialNo.	Last Cal.
1	UNIVERSAL RADIO COMMUNICATION	Rohde&Schwarz	CMU200	112012	2016/11/13
2	WIDEB.RADIO COMM.TESRER	Rohde&Schwarz	CMW500	1201.0002K50	2016/11/13
3	Spectrum Analyzer	Rohde&Schwarz	FSU26	201141	2016/11/13
4	MXA Signal Analyzer	Agilent Technologies	N9020A	MY5050187	2016/11/13
5	Splitter	Mini-Circuit	ZAPD-4	400059	2016/11/13
6	Climate Chamber	ESPEC	EL-10KA	05107008	2016/11/13

RF Radiated					
No.	Equipment	Manufacturer	Model No.	SerialNo.	Last Cal.
1	UNIVERSAL RADIO COMMUNICATION	Rohde&Schwarz	CMU200	112012	2016/11/13
2	WIDEB.RADIO COMM.TESRER	Rohde&Schwarz	CMW500	1201.0002K50	2016/11/13
3	Spectrum Analyzer	Rohde&Schwarz	FSU26	201141	2016/11/13
4	HORNANTENNA	ShwarzBeck	9120D	1012	2016/11/13
5	HORNANTENNA	ShwarzBeck	9120D	1011	2016/11/13
6	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	538	2016/11/13
7	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	539	2016/11/13
8	TURNTABLE	MATURO	TT2.0	----	N/A
9	ANTENNA MAST	MATURO	TAM-4.0-P	----	N/A
10	EMI Test Software	Audix	E3	N/A	N/A
11	EMI Test Receiver	Rohde&Schwarz	ESIB 26	100009	2016/11/13
12	RF Test Panel	Rohde&Schwarz	TS / RSP	335015/ 0017	2016/11/13
13	High pass filter	Compliance Direction systems	BSU-6	34202	2016/11/13
14	Splitter	Mini-Circuit	ZAPD-4	400059	2016/11/13
15	Horn Antenna	SCHWARZBECK	BBHA9170	25841	2016/11/13
16	Horn Antenna	SCHWARZBECK	BBHA9170	25842	2016/11/13
17	Preamplifier	ShwarzBeck	BBV 9718	BBV 9718	2016/11/13
18	Broadband Preamplifier	ShwarzBeck	BBV743	9743-0079	2016/11/13
19	Signal Generator	Rohde&Schwarz	SMF100A	101932	2016/11/13
20	Amplifer	Compliance Direction systems	PAP1-4060	120	2016/11/13
21	TURNTABLE	ETS	2088	2149	2016/11/13
22	ANTENNA MAST	ETS	2075	2346	2016/11/13
23	HORNANTENNA	Rohde&Schwarz	HF906	100068	2016/11/13
24	HORNANTENNA	Rohde&Schwarz	HF906	100039	2016/11/13

The calibration interval was one year.

4.4. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Conditon	Temperature	15 °C to +35 °C
	Relative humidity	20 % to 75 %.
	Voltage	the equipment shall be the nominal voltage for which the equipment was designed.
Extreme Conditon	Temperature	From −30° to + 50° centigrade
	Voltage	For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer

4.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01"Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics;Part 1"and TR-100028-02 "Electromagnetic compatibilityand Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics;Part 2 " and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongweilaboratory is reported:

Test Items	MeasurementUncertainty	Notes
Frequency stability	25 Hz	(1)
Transmitter power conducted	0.57 dB	(1)
Transmitter power Radiated	2.20 dB	(1)
Conducted spurious emission 9KHz-12.75 GHz	1.60 dB	(1)
Conducted Emissions 9KHz-30MHz	3.39 dB	(1)
Radiated Emissions 30~1000MHz	4.24 dB	(1)
Radiated Emissions 1~18GHz	5.16 dB	(1)
Radiated Emissions 18-40GHz	5.54 dB	(1)
Occupied Bandwidth	---------	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

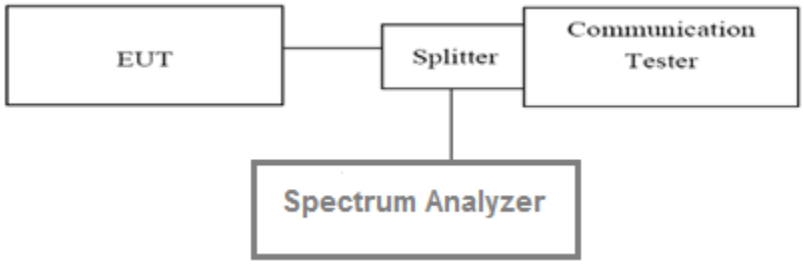
5. TEST CONDITIONS AND RESULTS

5.1. Conducted Output Power

LIMIT

N/A

TEST CONFIGURATION



TEST PROCEDURE

1. The transmitter output port was connected to base station.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator, the path loss was compensated to the results for each measurement.
3. Set EUT at maximum power through base station.
4. Select lowest, middle, and highest channels for each band and different modulation.
5. Measure the maximum burst average power.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

LTE-FDD Band 26				Actual output Power (dBm)		
Band-width	RBallocation	RBoffset	Modulation	Low	Middle	High
1.4MHz	1RB	High	QPSK	22.63	22.73	22.71
			16QAM	22.36	22.39	22.33
		Mid	QPSK	22.54	22.70	22.52
			16QAM	22.33	22.32	22.11
		Low	QPSK	22.58	22.65	22.60
			16QAM	22.27	22.31	22.24
	3RB	High	QPSK	21.25	21.28	21.08
			16QAM	20.61	20.63	20.55
		Mid	QPSK	21.23	21.33	21.01
			16QAM	20.59	20.57	20.35
		Low	QPSK	21.20	21.20	20.98
			16QAM	20.53	20.56	20.47
	6RB	/	QPSK	21.17	20.93	20.51
			16QAM	20.31	20.37	20.18
3MHz	1RB	High	QPSK	22.70	22.71	22.68
			16QAM	22.42	22.37	22.29
		Mid	QPSK	22.61	22.68	22.49
			16QAM	22.40	22.30	22.08
		Low	QPSK	22.65	22.63	22.57
			16QAM	22.33	22.29	22.21
	8RB	High	QPSK	21.31	21.26	21.04
			16QAM	20.67	20.61	20.52
		Mid	QPSK	21.29	21.31	20.97
			16QAM	20.65	20.55	20.32
		Low	QPSK	21.27	21.18	20.94
			16QAM	20.59	20.55	20.44
	15RB	/	QPSK	21.23	20.91	20.47
			16QAM	20.37	20.35	20.15

5MHz	1RB	High	QPSK	22.65	22.76	22.64
			16QAM	22.38	22.42	22.26
		Mid	QPSK	22.56	22.73	22.45
			16QAM	22.35	22.35	22.04
		Low	QPSK	22.60	22.68	22.53
			16QAM	22.28	22.34	22.17
	12RB	High	QPSK	21.27	21.31	21.01
			16QAM	20.63	20.66	20.49
		Mid	QPSK	21.25	21.36	20.94
			16QAM	20.60	20.60	20.29
		Low	QPSK	21.22	21.23	20.91
			16QAM	20.54	20.59	20.40
	25RB		QPSK	21.19	20.96	20.44
			16QAM	20.32	20.39	20.12
10MHz	1RB	High	QPSK	-	-	-
			16QAM	-	-	-
		Mid	QPSK	22.53	22.76	22.43
			16QAM	22.33	22.38	22.03
		Low	QPSK	-	-	-
			16QAM	-	-	-
	25RB	High	QPSK	-	-	-
			16QAM	-	-	-
		Mid	QPSK	21.22	21.38	20.93
			16QAM	20.58	20.62	20.27
		Low	QPSK	-	-	-
			16QAM	-	-	-
	50RB	/	QPSK	21.17	20.98	20.43
			16QAM	20.30	20.42	20.10

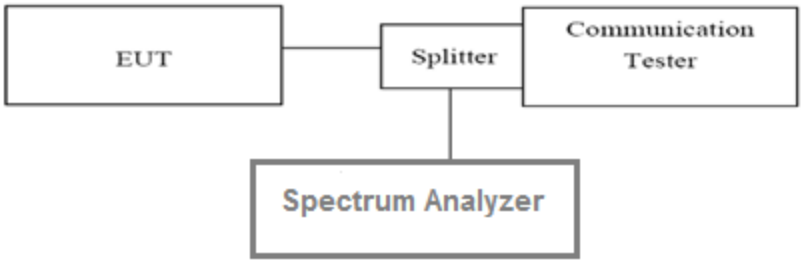
15MHz	1RB	High	QPSK	22.67	22.76	22.65
			16QAM	22.07	22.16	22.03
		Mid	QPSK	-	-	-
			16QAM	-	-	-
		Low	QPSK	-	-	-
			16QAM	-	-	-
	36RB	High	QPSK	21.29	21.30	21.02
			16QAM	20.34	20.42	20.28
		Mid	QPSK	-	-	-
			16QAM	-	-	-
		Low	QPSK	-	-	-
			16QAM	-	-	-
	75RB	/	QPSK	21.21	20.95	20.45
			16QAM	20.04	20.16	19.91

5.2. 99% & -26 dB Occupied Bandwidth

LIMIT

N/A

TEST CONFIGURATION



TEST PROCEDURE

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

TEST MODE:

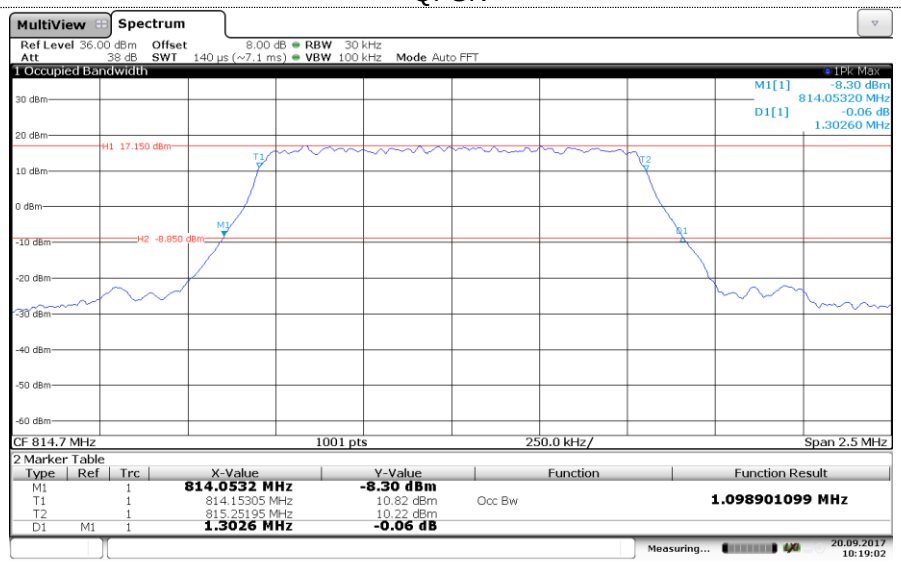
Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

LTE Band 26					
Bandwidth	Channel	99% Occupy bandwidth (MHz)		-26dB bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
1.4MHz	Low	1.10	1.10	1.30	1.29
	Mid	1.10	1.10	1.30	1.30
	High	1.09	1.10	1.30	1.31
3MHz	Low	2.69	2.68	2.93	2.94
	Mid	2.68	2.68	2.94	2.93
	High	2.68	2.68	2.94	2.97
5MHz	Low	4.50	4.51	5.01	5.01
	Mid	4.48	4.51	5.00	5.04
	High	4.51	4.48	5.01	4.98
10MHz	Mid	8.91	8.91	9.70	9.74
15MHz	Low	13.40	13.43	14.70	14.74

LTE Band 26-1.4MHz
QPSK



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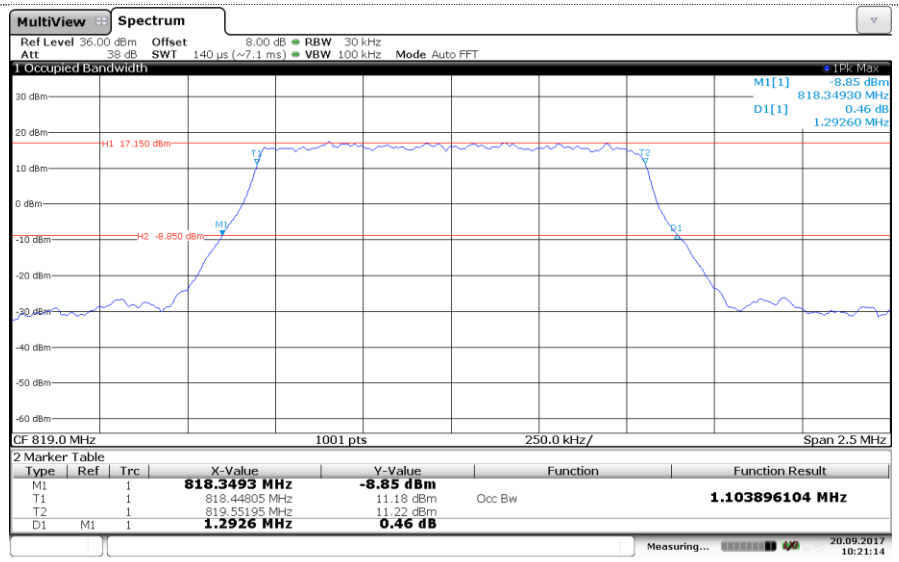
Channel Low



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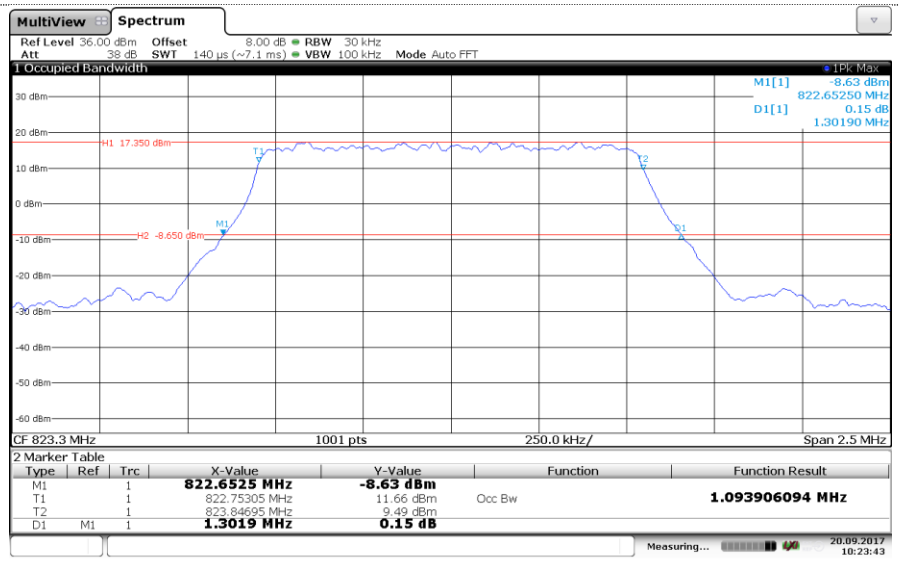
Channel Mid



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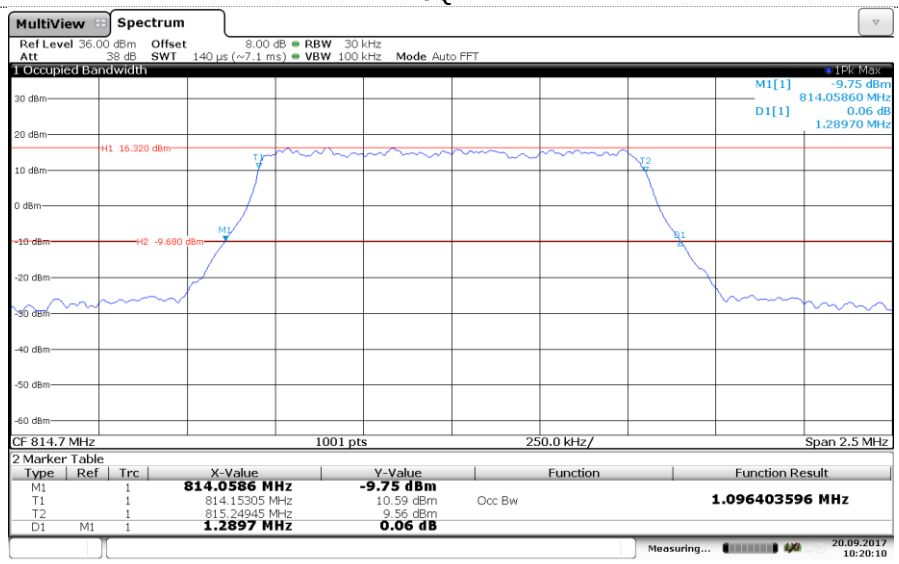
Channel High

LTE Band 26-1.4MHz
16QAM



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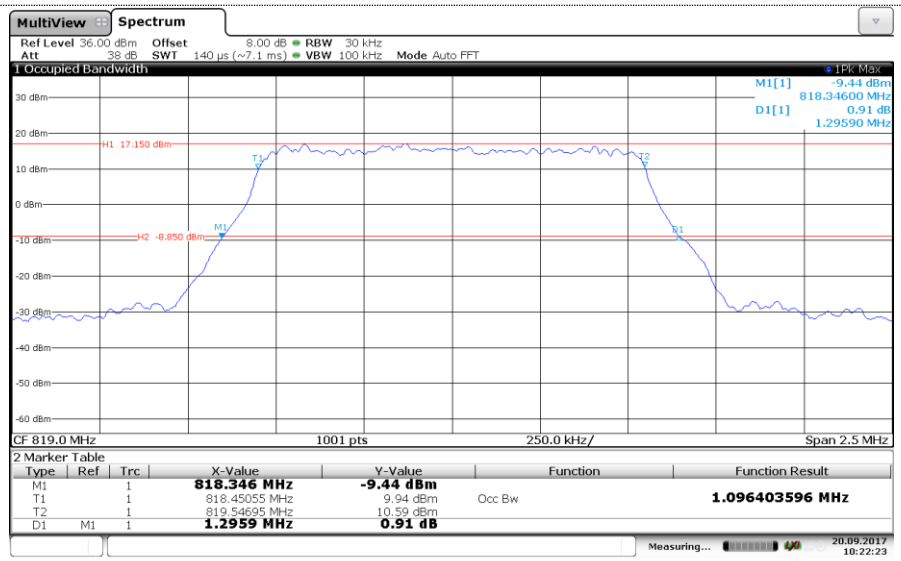

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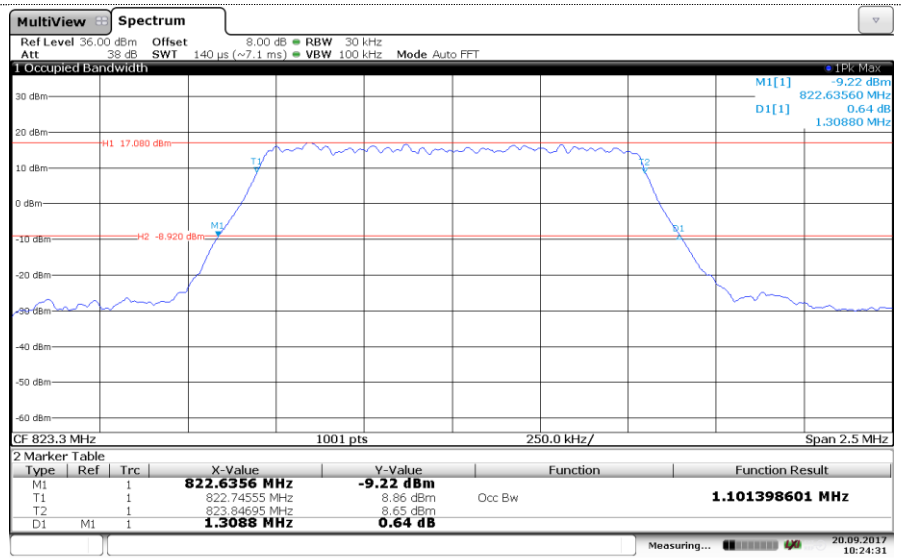
Channel Mid



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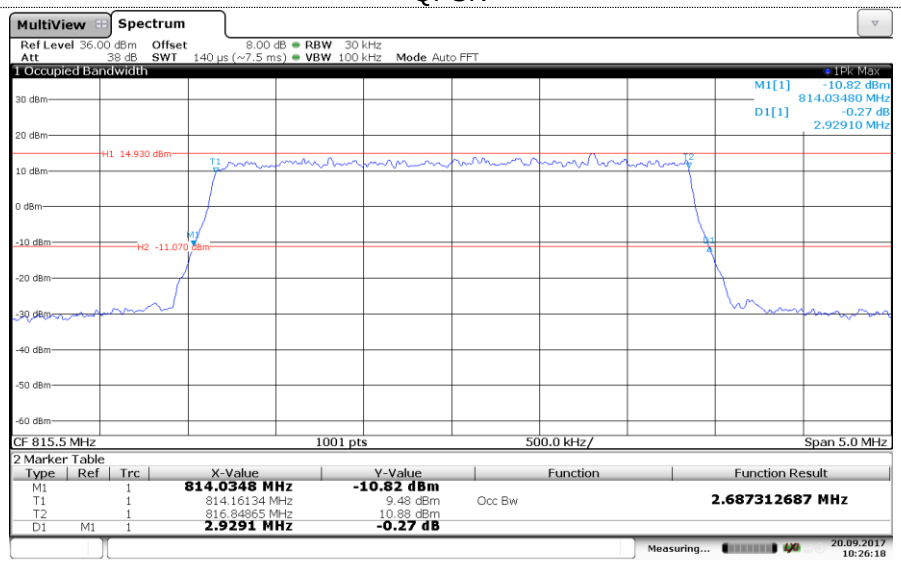
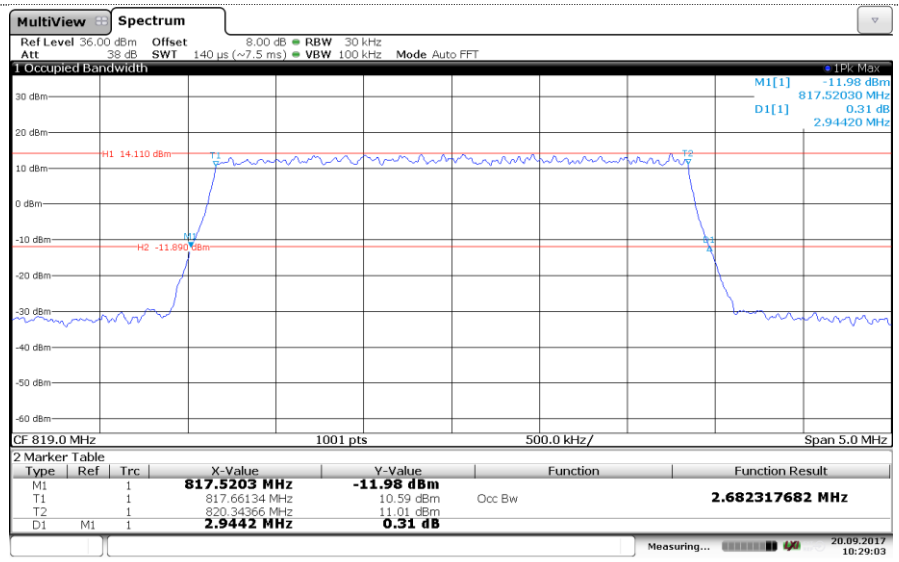
Channel High

LTE Band 26-3MHz
QPSK



Date: 20.SEP.2017 10:26:18

Channel Low



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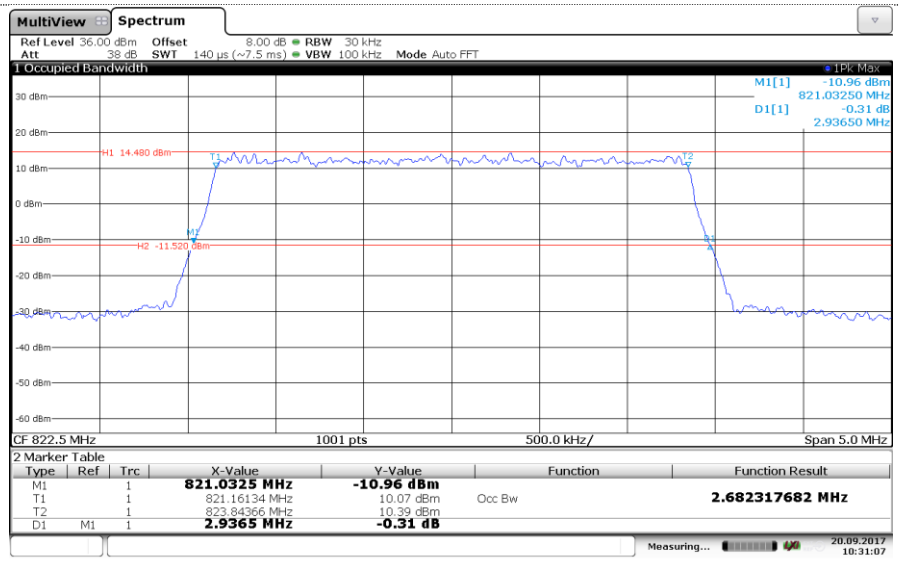
Channel Mid



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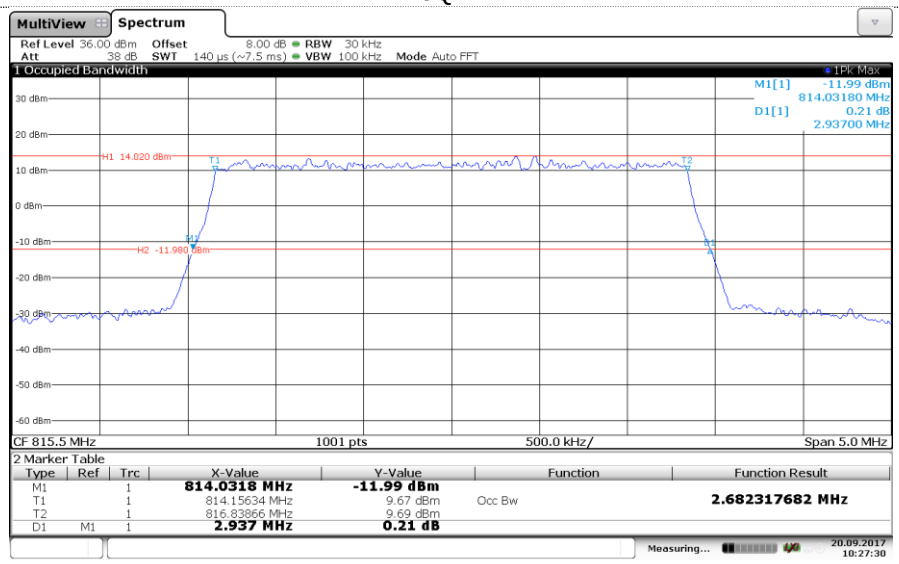
Channel High

LTE Band 26-3MHz
16QAM
 Date: 20.SEP.2017 10:27:30
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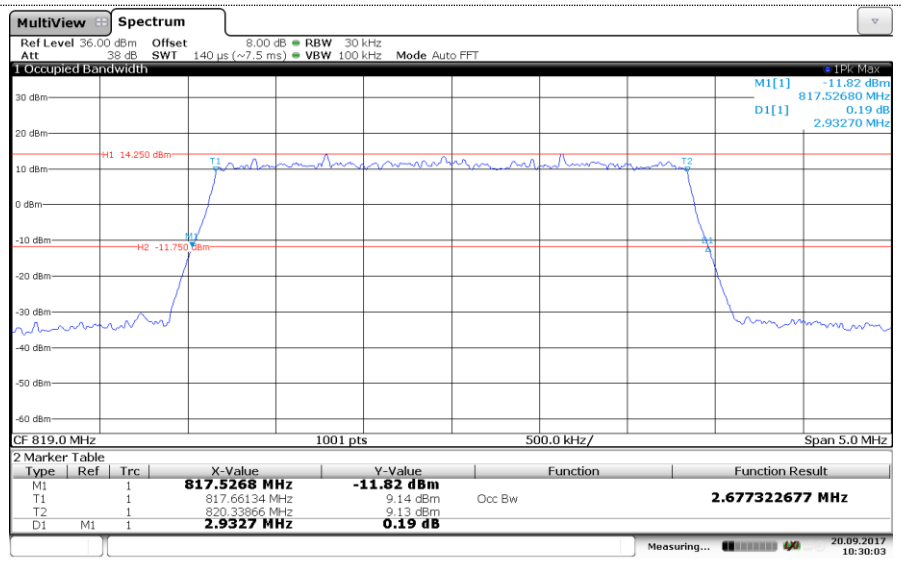
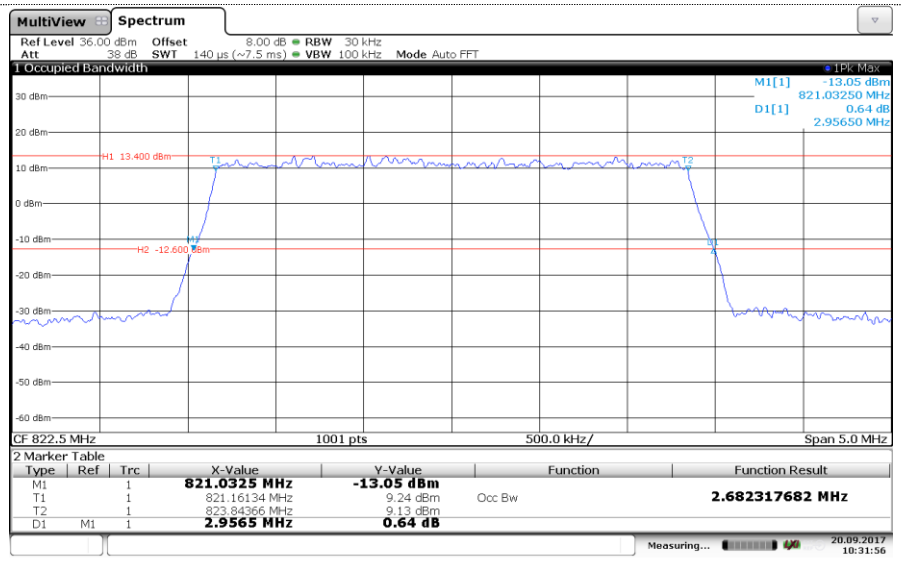
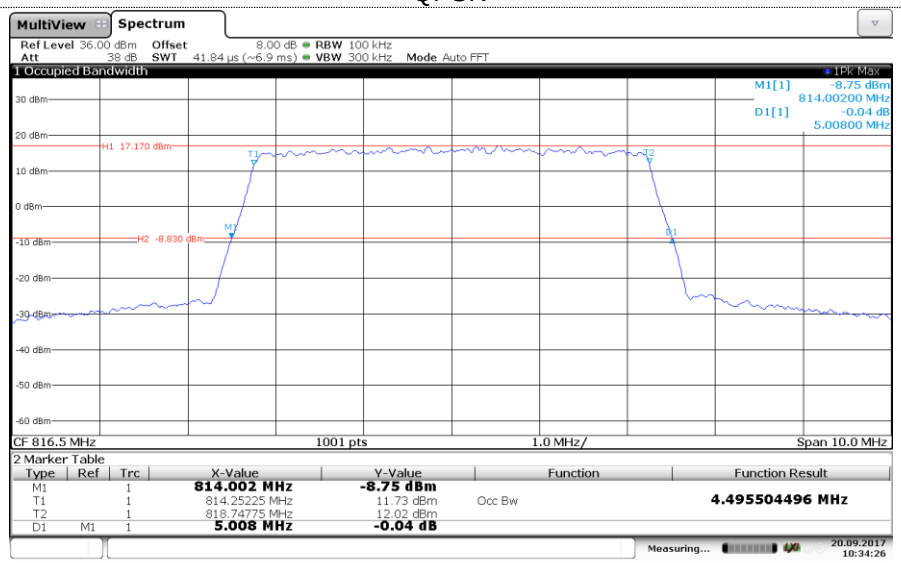
 Date: 20.SEP.2017 10:30:03
Channel Mid
 Date: 20.SEP.2017 10:31:56
Channel High

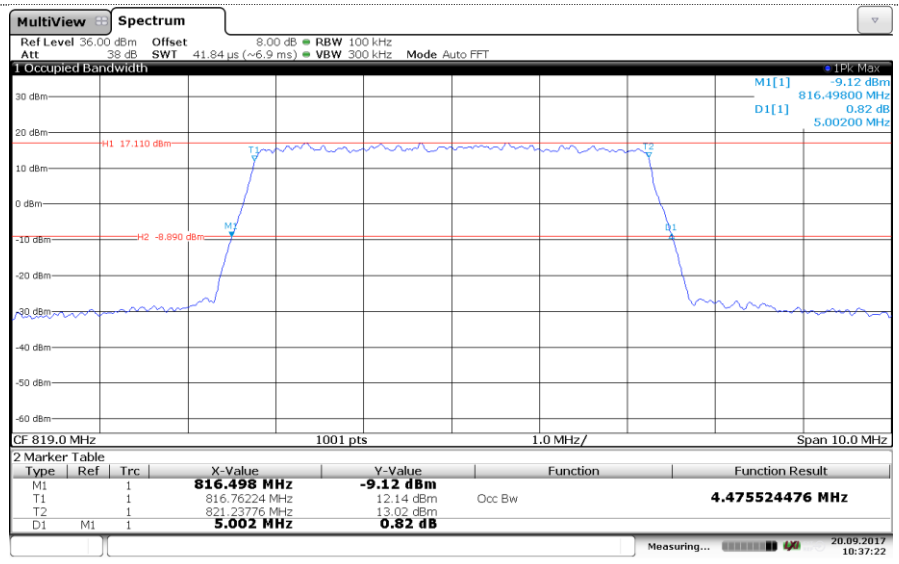
LTE Band 26-5MHz

QPSK



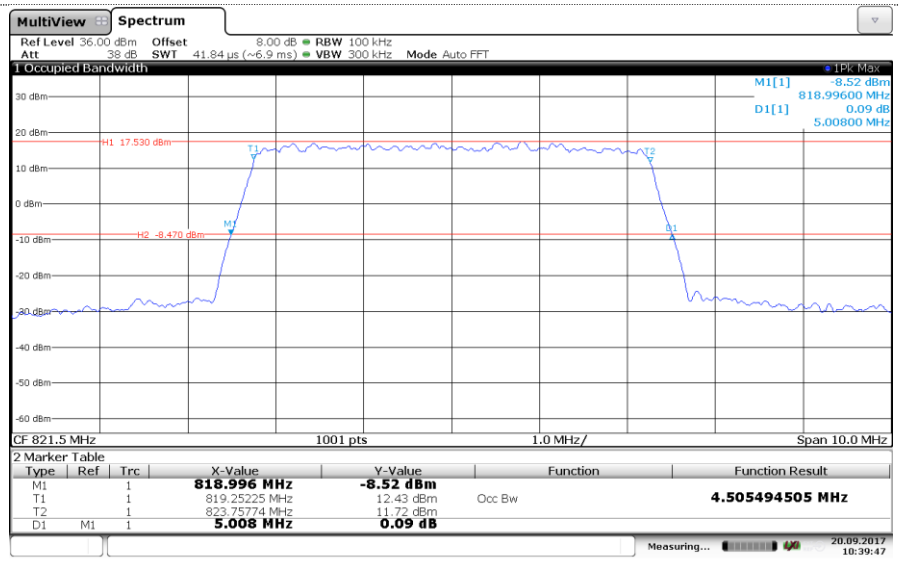
Date: 20.SEP.2017 10:34:26

Channel Low



Date: 20.SEP.2017 10:37:22

Channel Mid

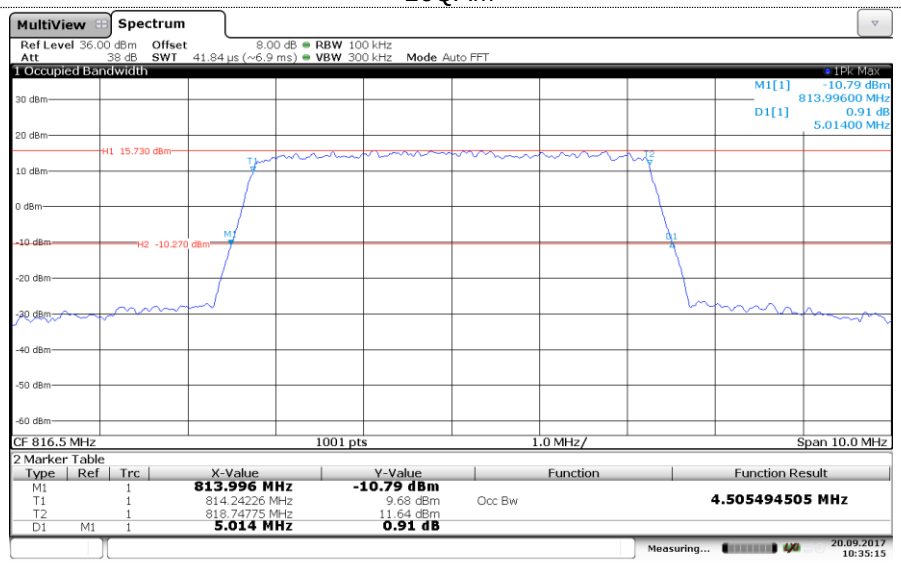


Date: 20.SEP.2017 10:39:47

Channel High

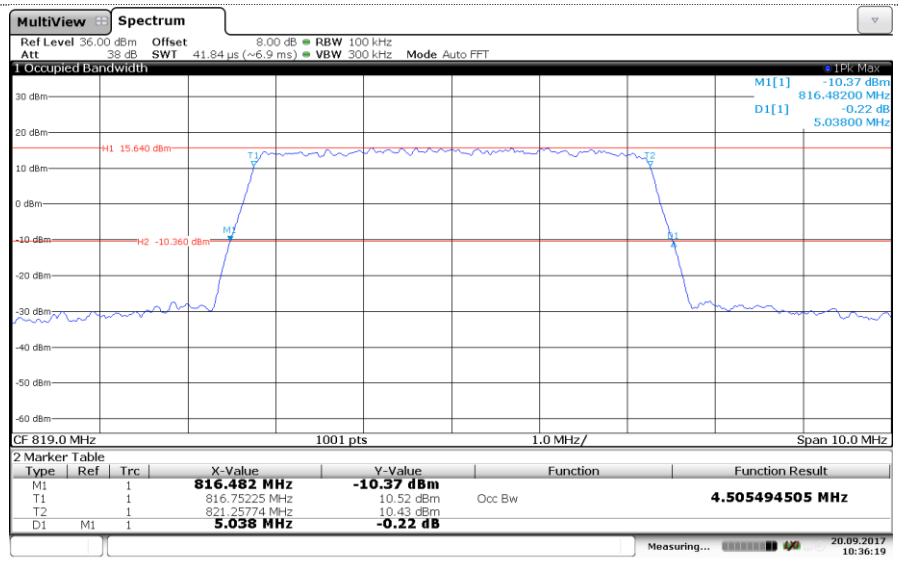
LTE Band 26-5MHz

16QAM



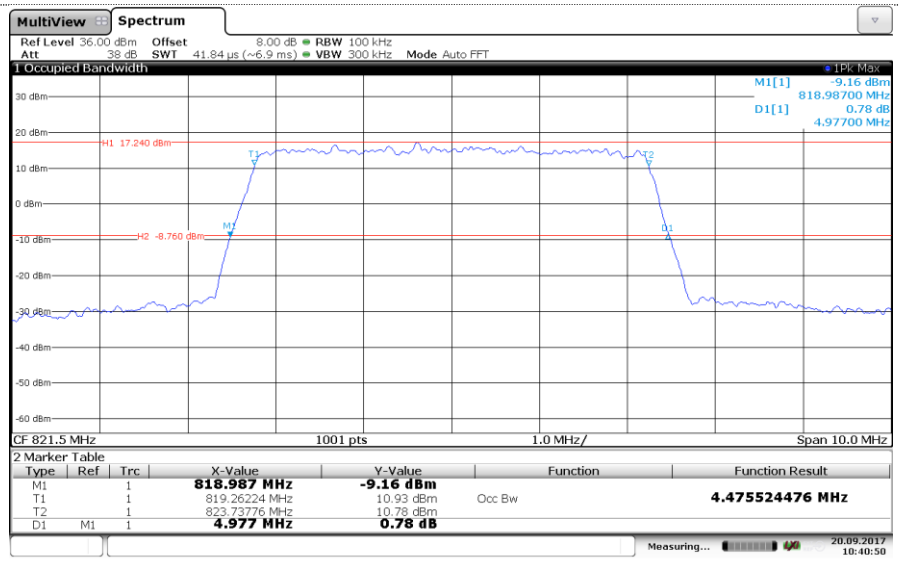
Date: 20.SEP.2017 10:35:15

Channel Low



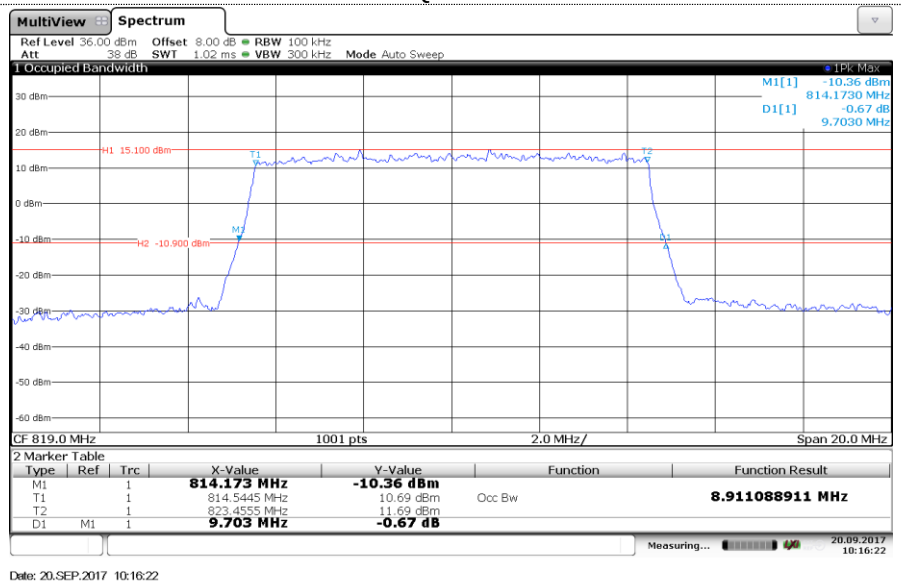
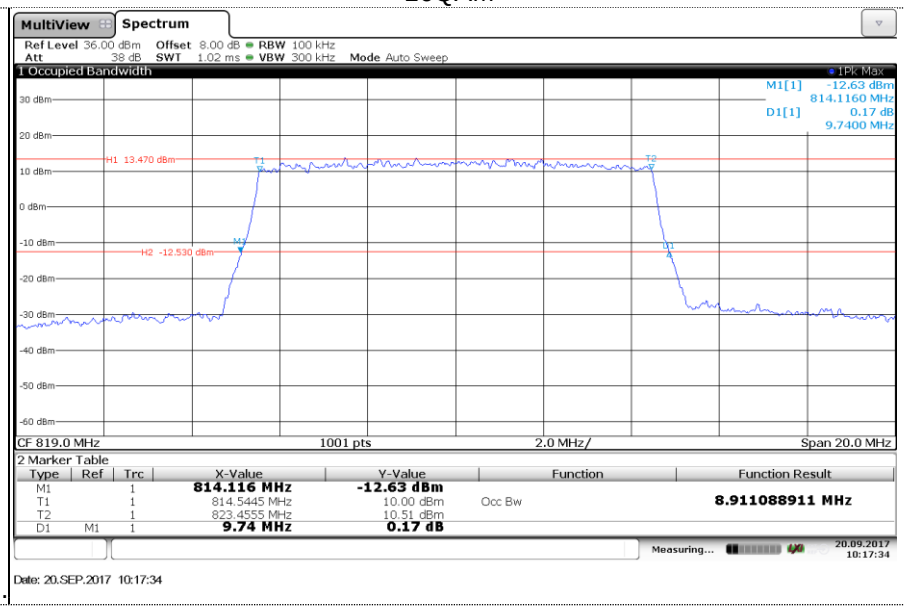
Date: 20.SEP.2017 10:36:19

Channel Mid



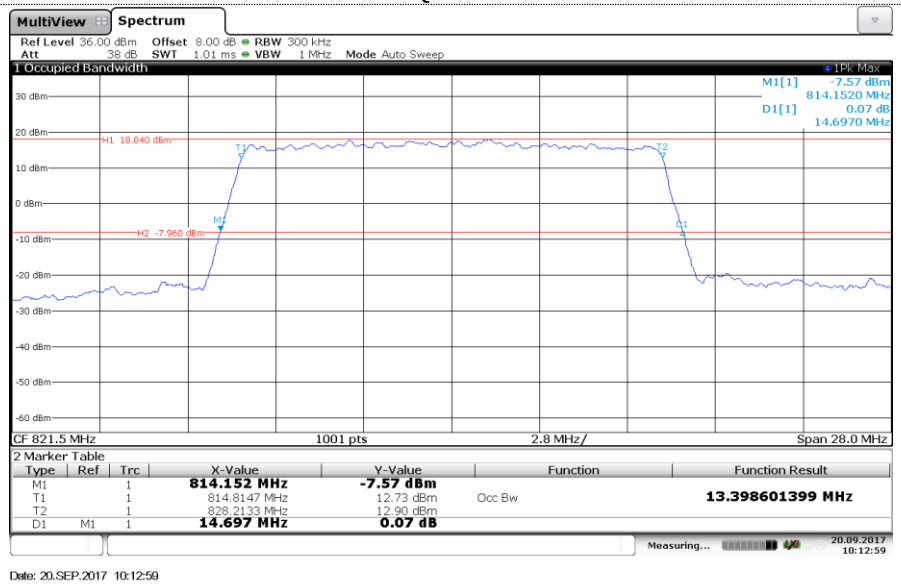
Date: 20.SEP.2017 10:40:51

Channel High

LTE Band 26-10MHz
QPSK

Channel Mid
16QAM

Channel Mid

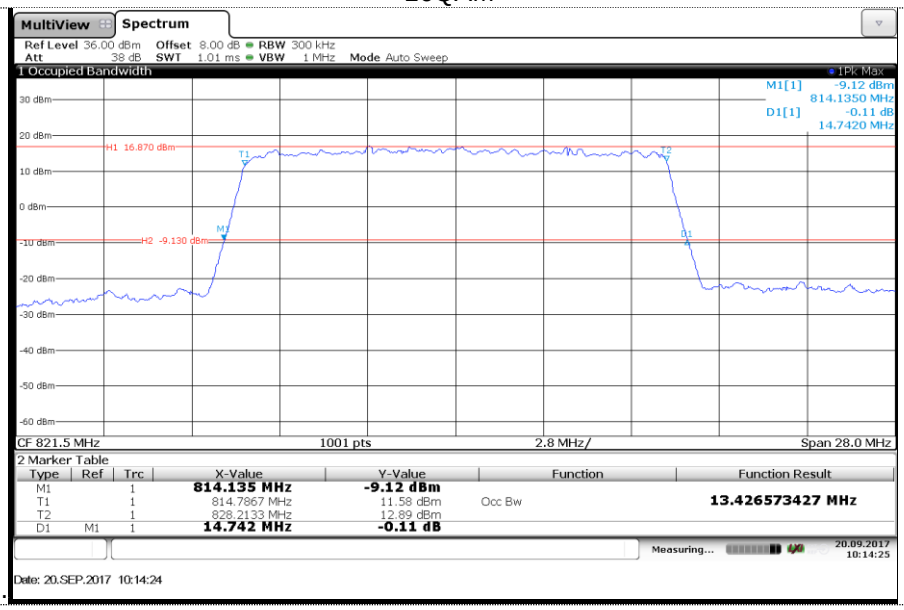
LTE Band 26-15MHz

QPSK



Channel Low

16QAM



Channel Low

5.3. Emission mask-In band emissions

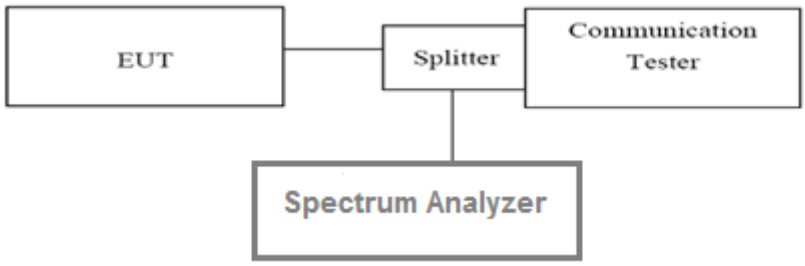
LIMIT

Part 90.691 (a) Out of band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50 + 10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log10(P) decibels or 80 decibels,whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

TEST CONFIGURATION



TEST PROCEDURE

1. The RF output of the transceiver was connected to a spectrum analyzer through appropriateattenuation.
2. The band edges of low and high channels for the highest RF powers were measured. Set RBW>= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
3. Set spectrum analyzer with RMS detector.

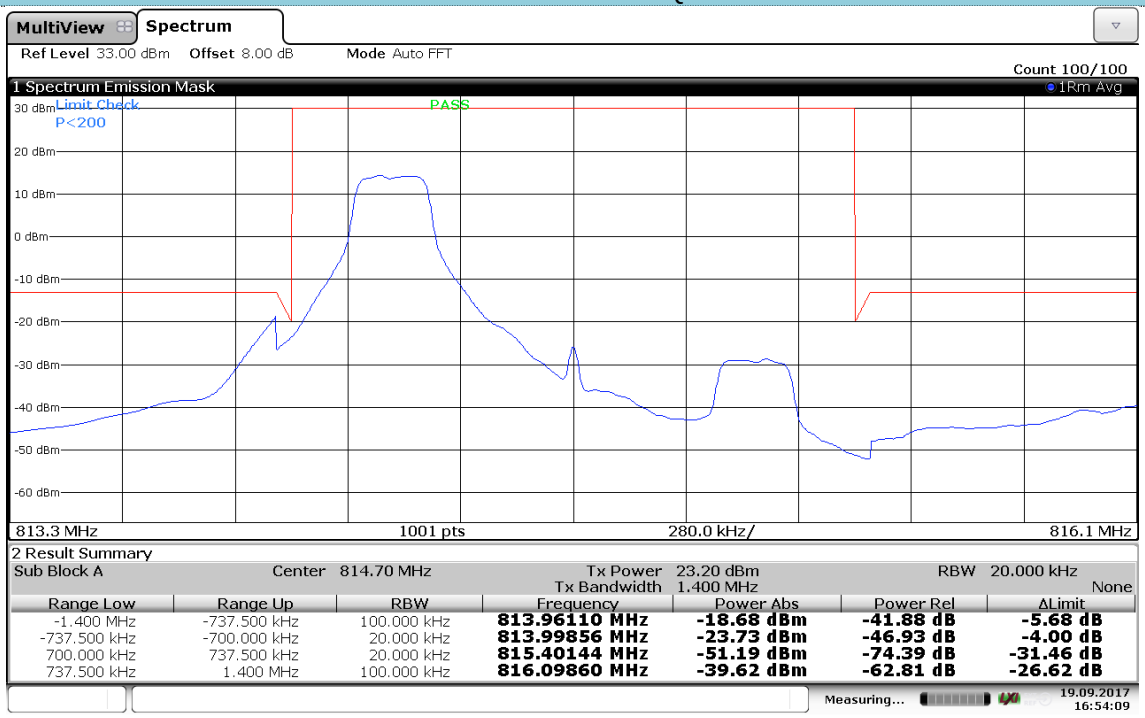
TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

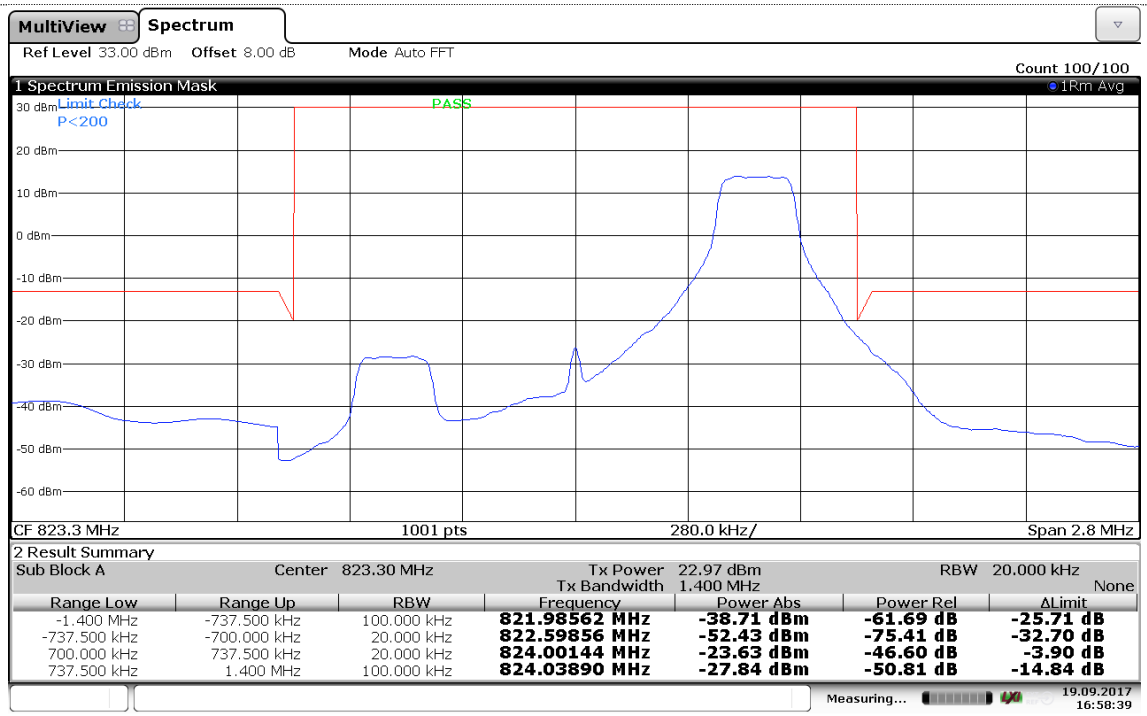
☒ **Passed** ☐ **Not Applicable**

LTE Band 26-1.4MHz-QPSK



Date: 19.SEP.2017 16:54:10

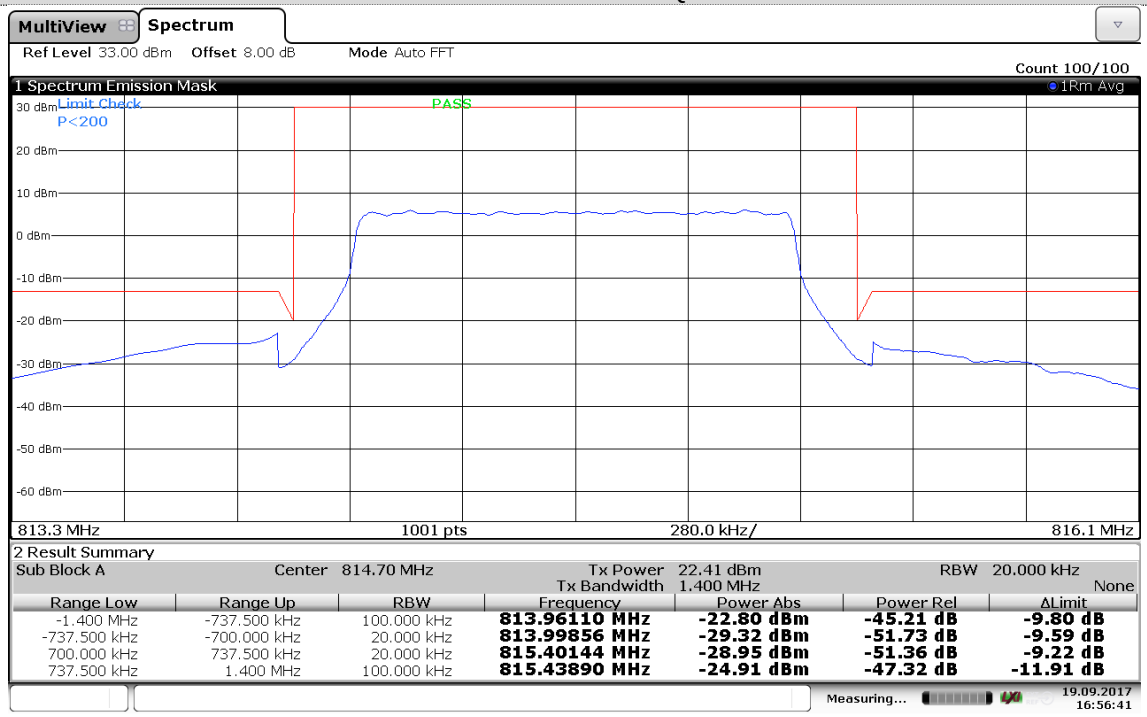
Channel Low-1RB#



Date: 19.SEP.2017 16:58:39

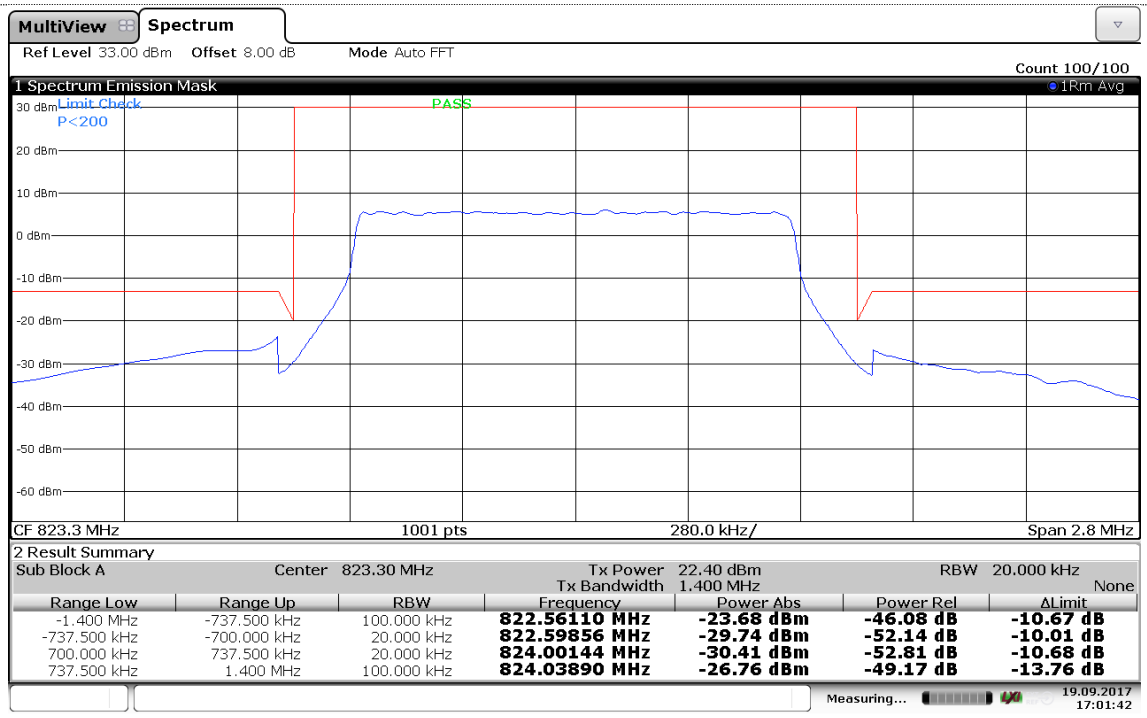
Channel High-1RB#

LTE Band 26-1.4MHz-QPSK



Date: 19.SEP.2017 16:56:42

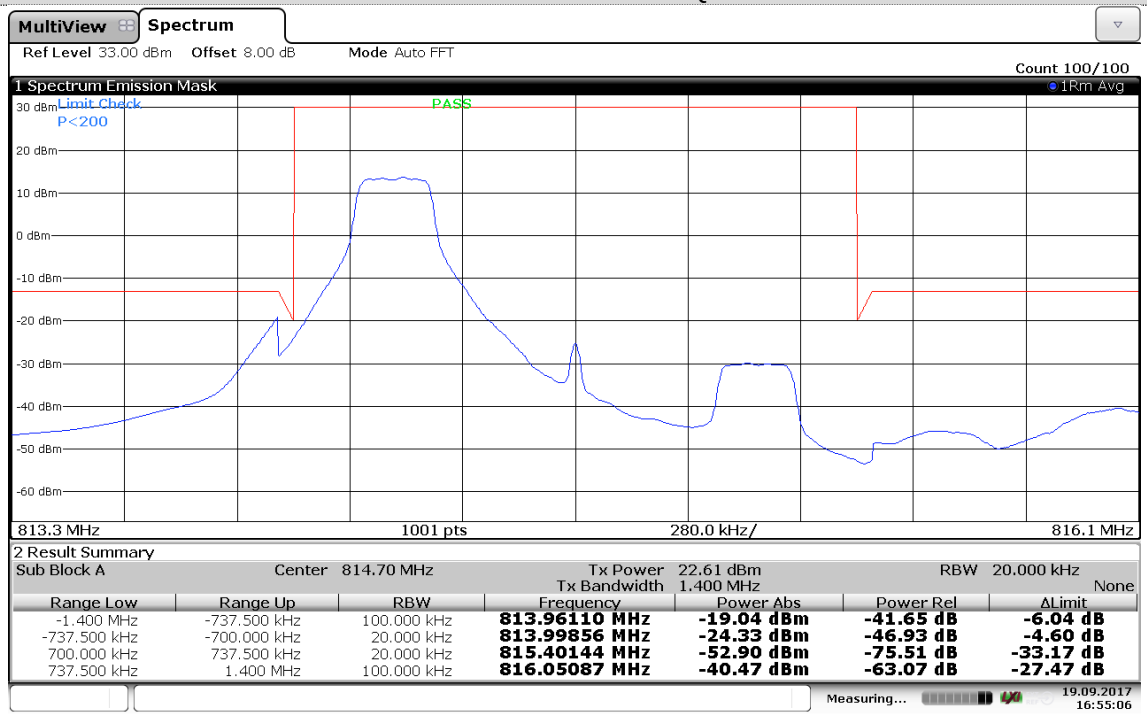
Channel Low-Full RB#



Date: 19.SEP.2017 17:01:41

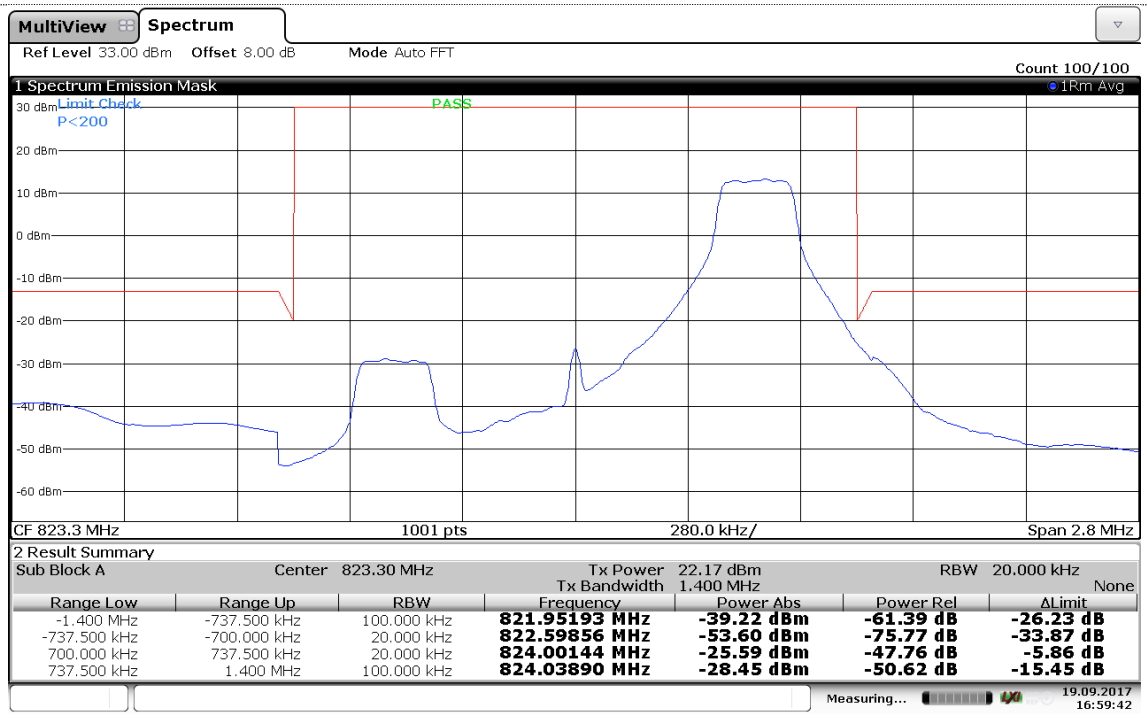
Channel High-Full RB#

LTE Band 26-1.4MHz-16QAM



Date: 19.SEP.2017 16:55:07

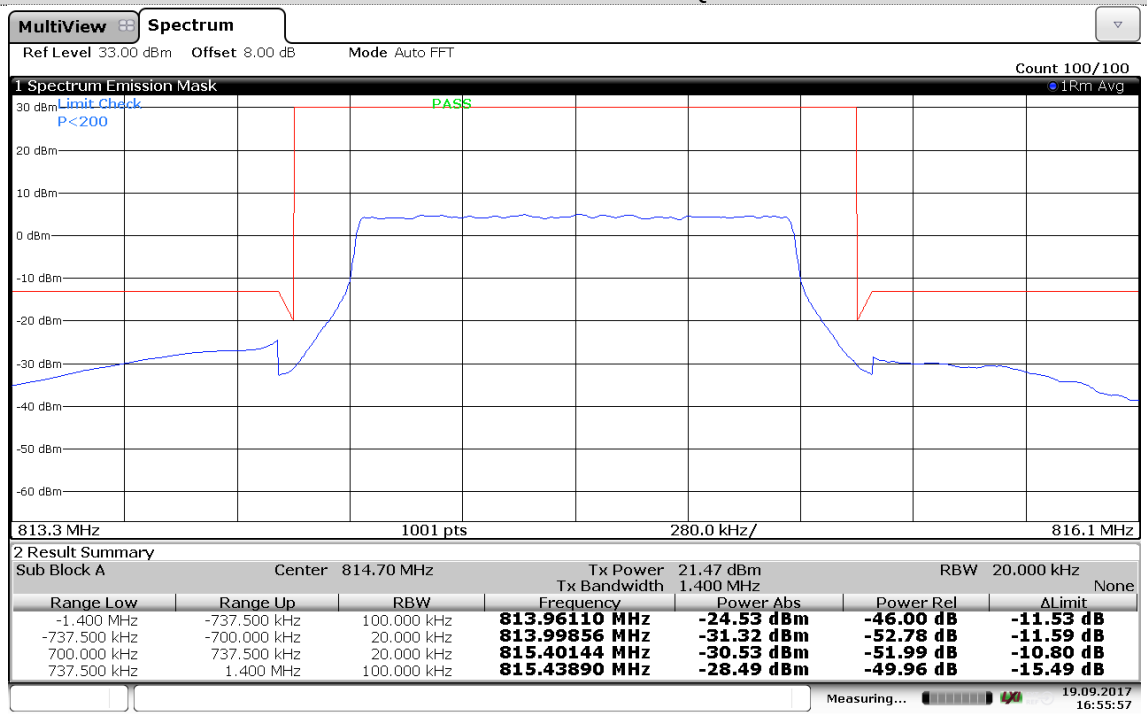
Channel Low-1RB#



Date: 19.SEP.2017 16:59:42

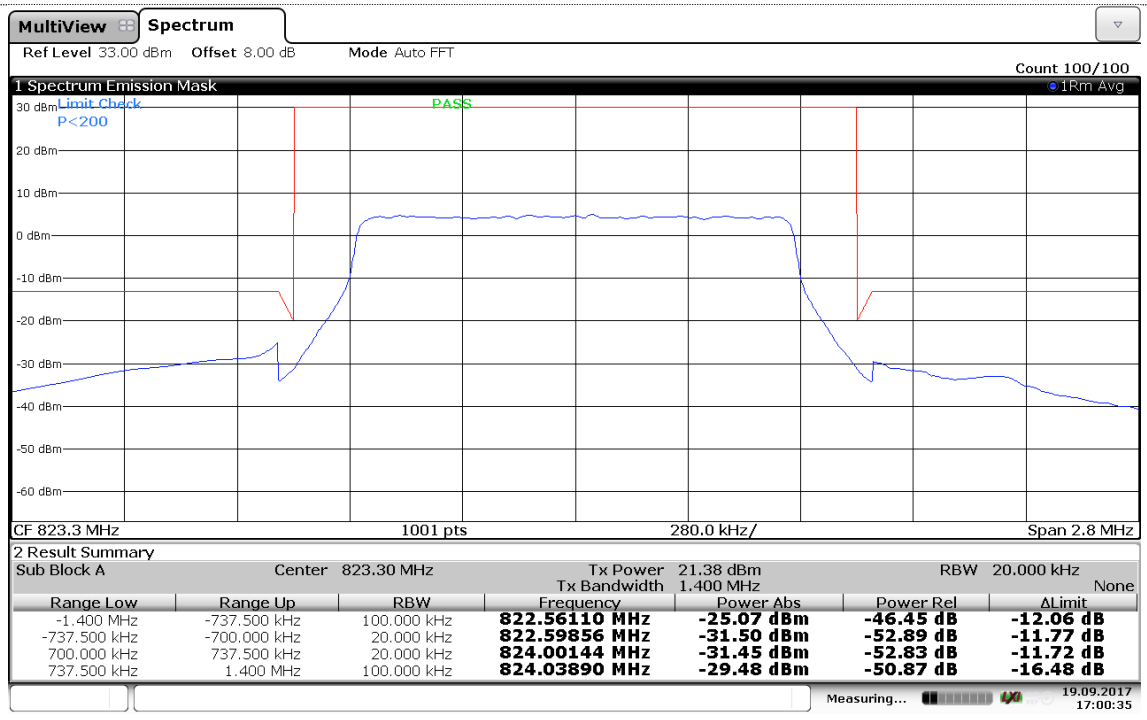
Channel High-1RB#

LTE Band 26-1.4MHz-16QAM



Date: 19.SEP.2017 16:55:57

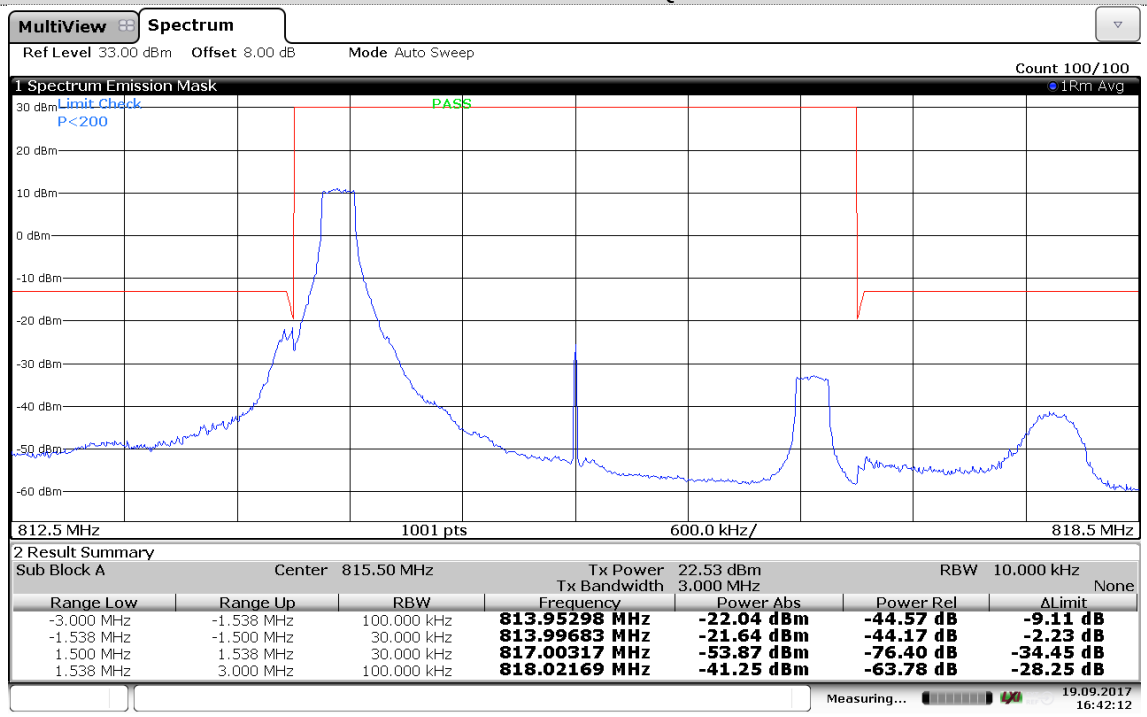
Channel Low-Full RB#



Date: 19.SEP.2017 17:00:34

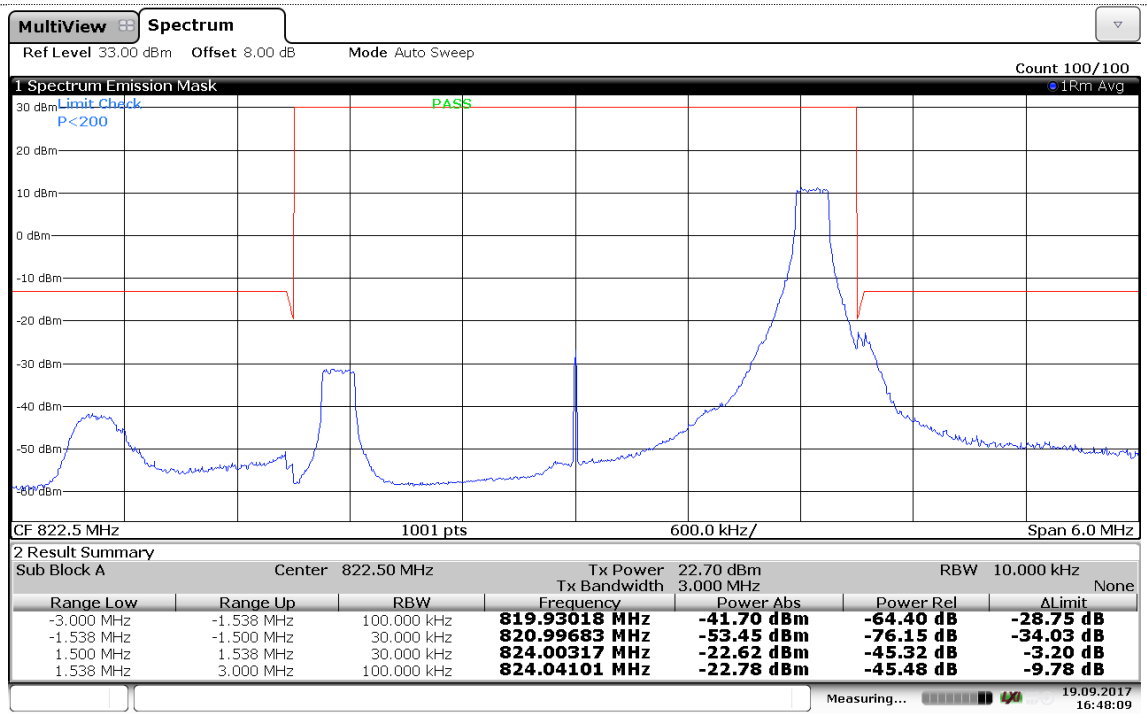
Channel High-Full RB#

LTE Band 26-3MHz-QPSK



Date: 19.SEP.2017 16:42:12

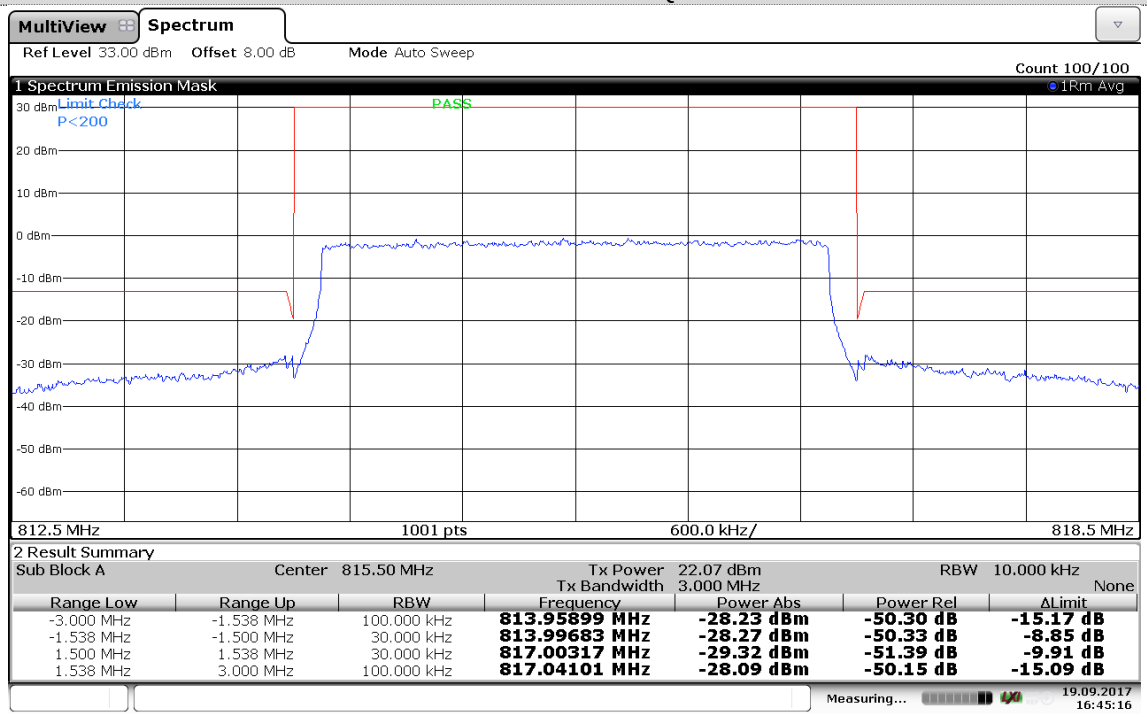
Channel Low-1RB#



Date: 19.SEP.2017 16:48:10

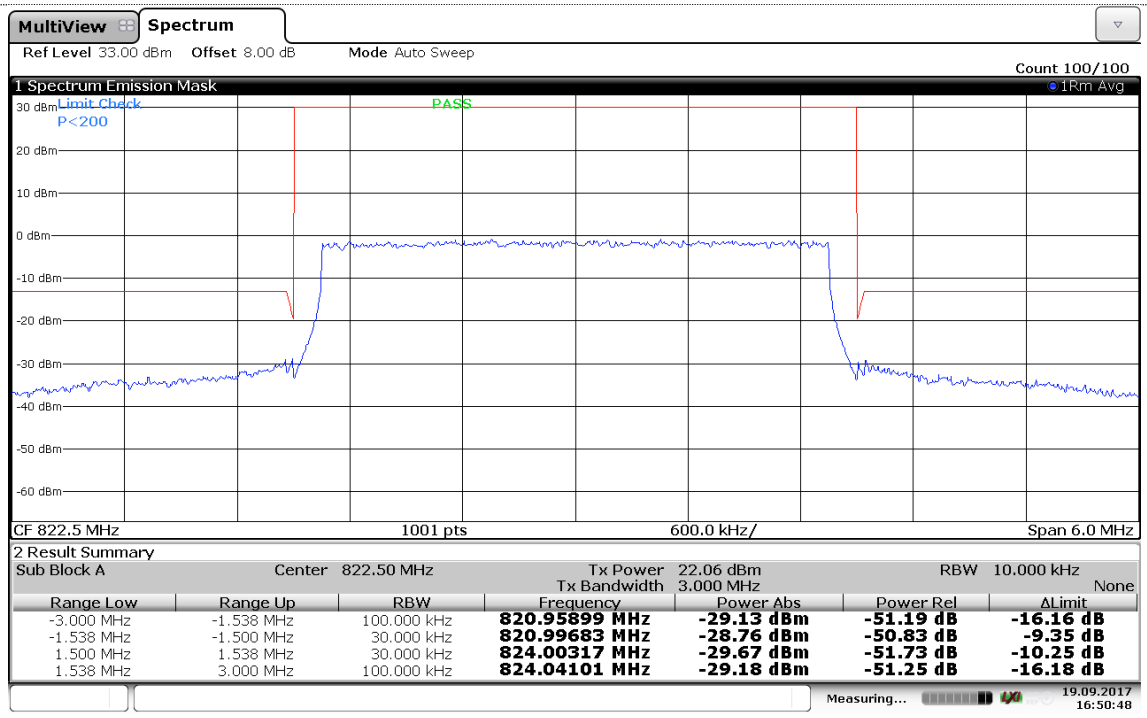
Channel High-1RB#

LTE Band 26-3MHz-QPSK



Date: 19.SEP.2017 16:45:15

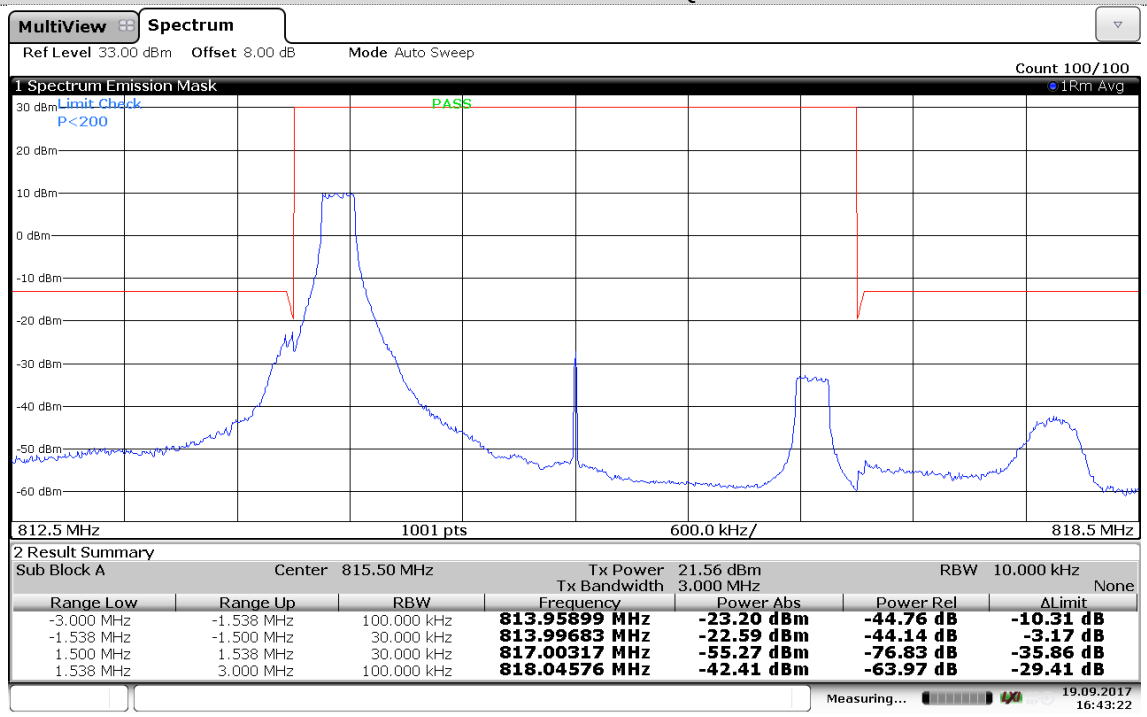
Channel Low-Full RB#



Date: 19.SEP.2017 16:50:48

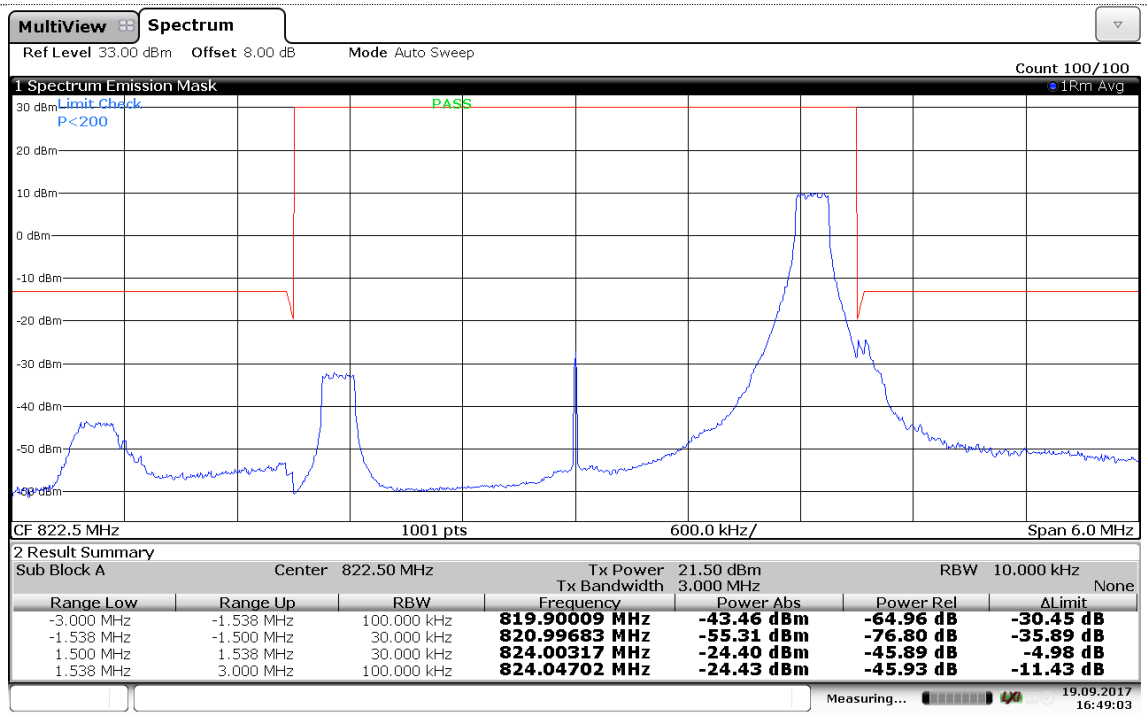
Channel High-Full RB#

LTE Band 26-3MHz-16QAM



Date: 19.SEP.2017 16:43:23

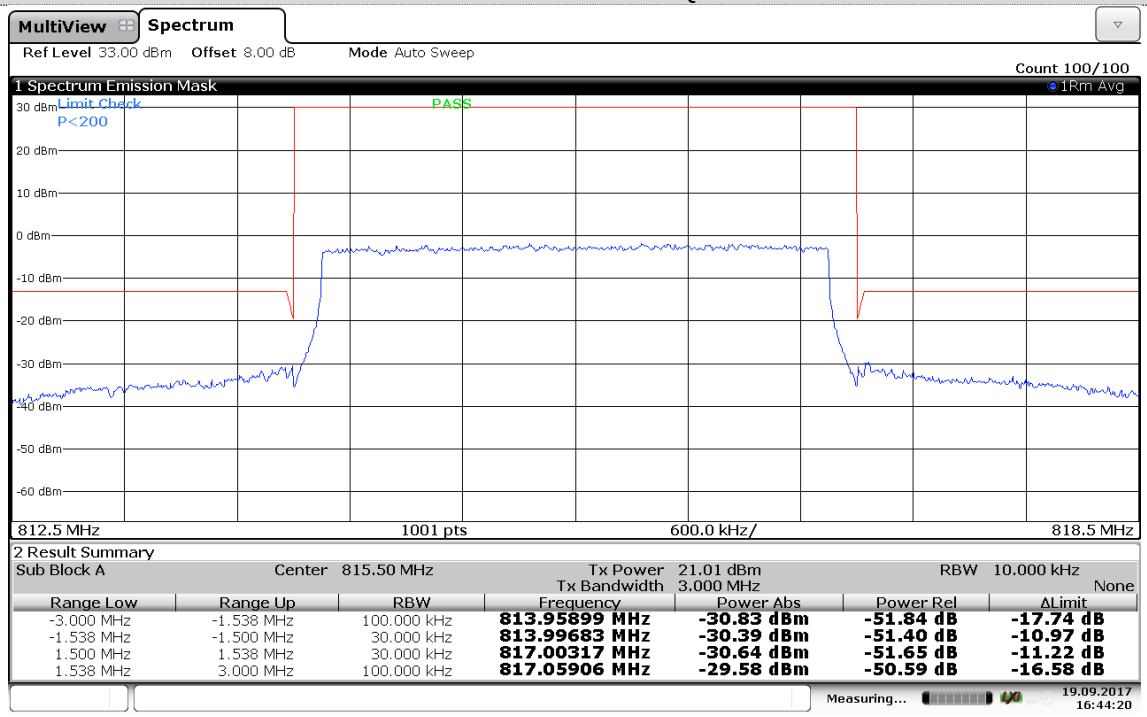
Channel Low-1RB#



Date: 19.SEP.2017 16:49:03

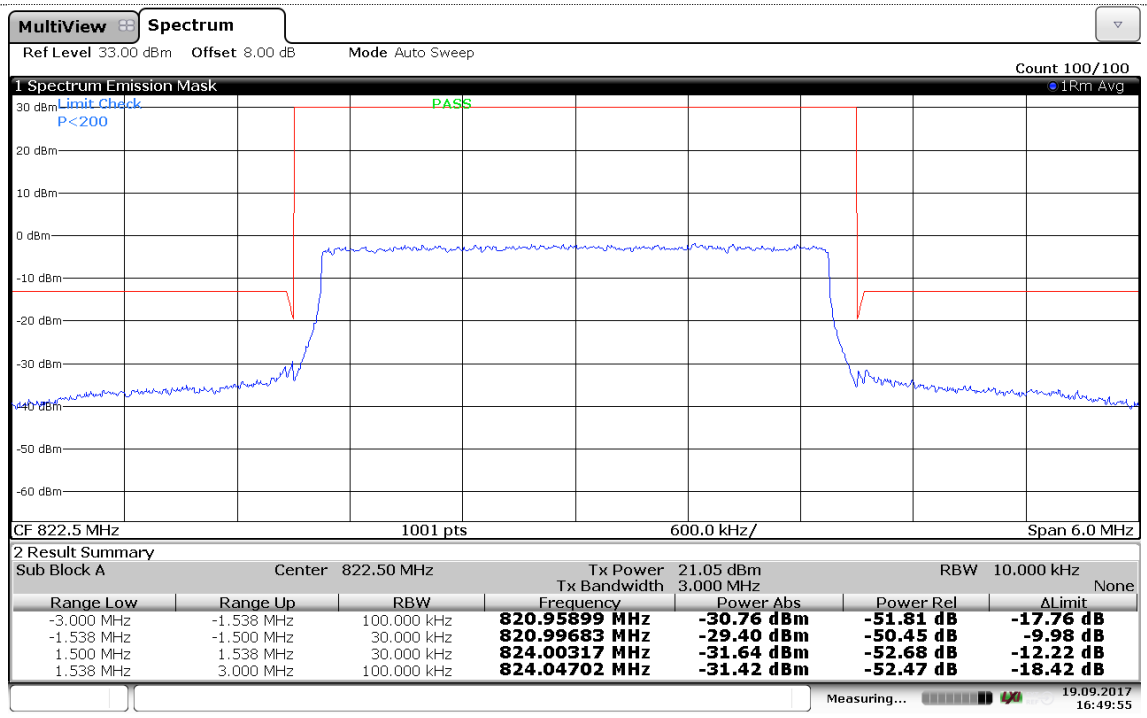
Channel High-1RB#

LTE Band 26-3MHz-16QAM



Date: 19.SEP.2017 16:44:20

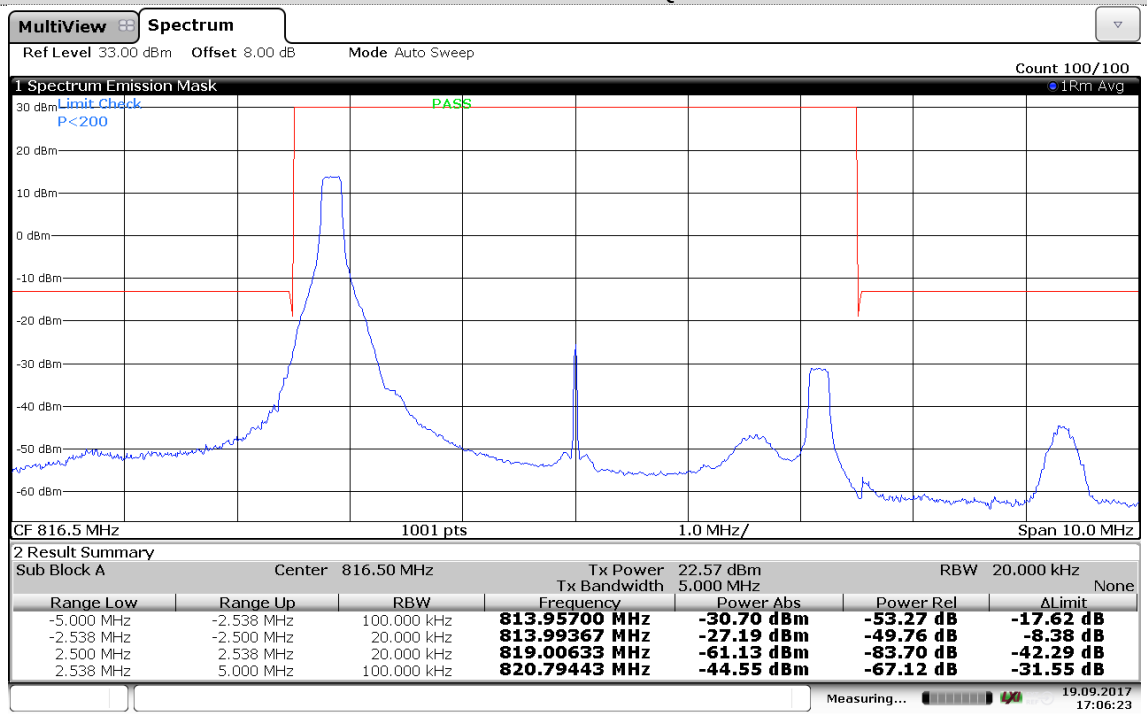
Channel Low-Full RB#



Date: 19.SEP.2017 16:49:55

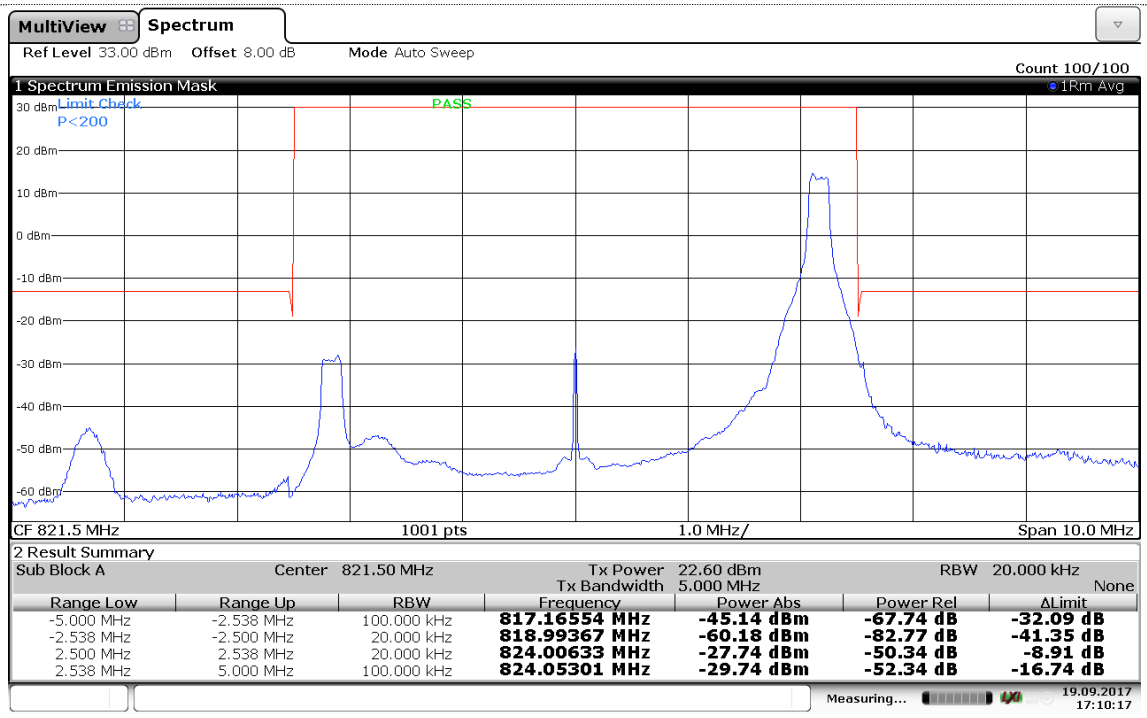
Channel High-Full RB#

LTE Band 26-5MHz-QPSK



Date: 19.SEP.2017 17:06:23

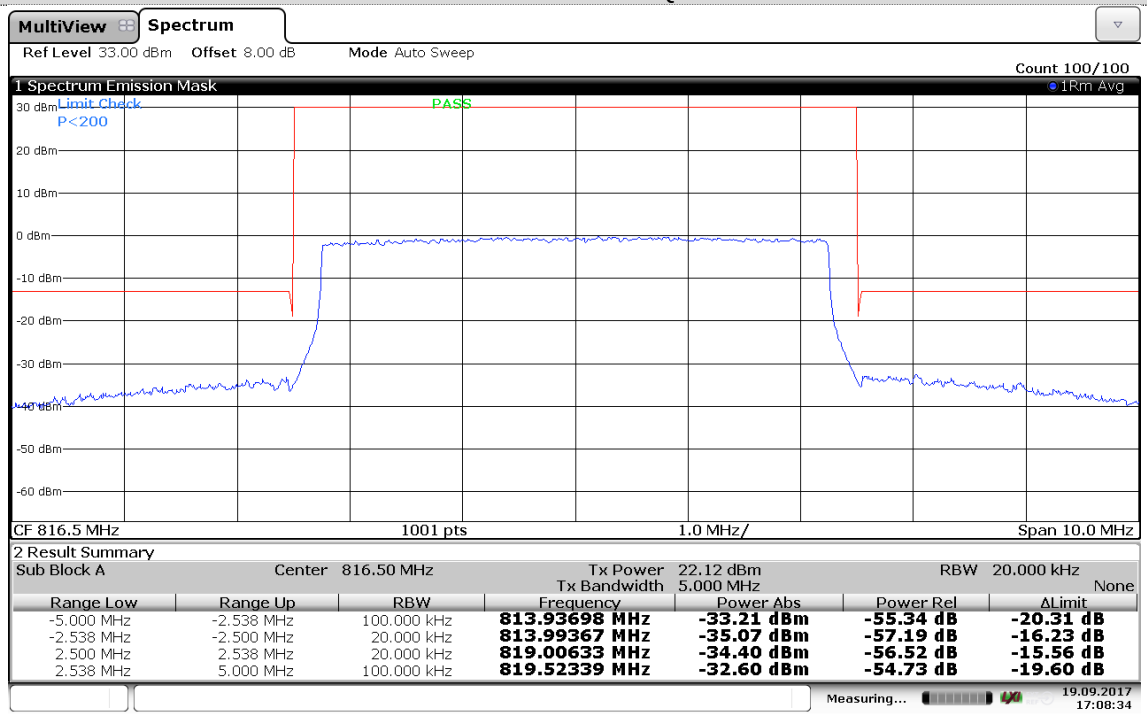
Channel Low-1RB#



Date: 19.SEP.2017 17:10:16

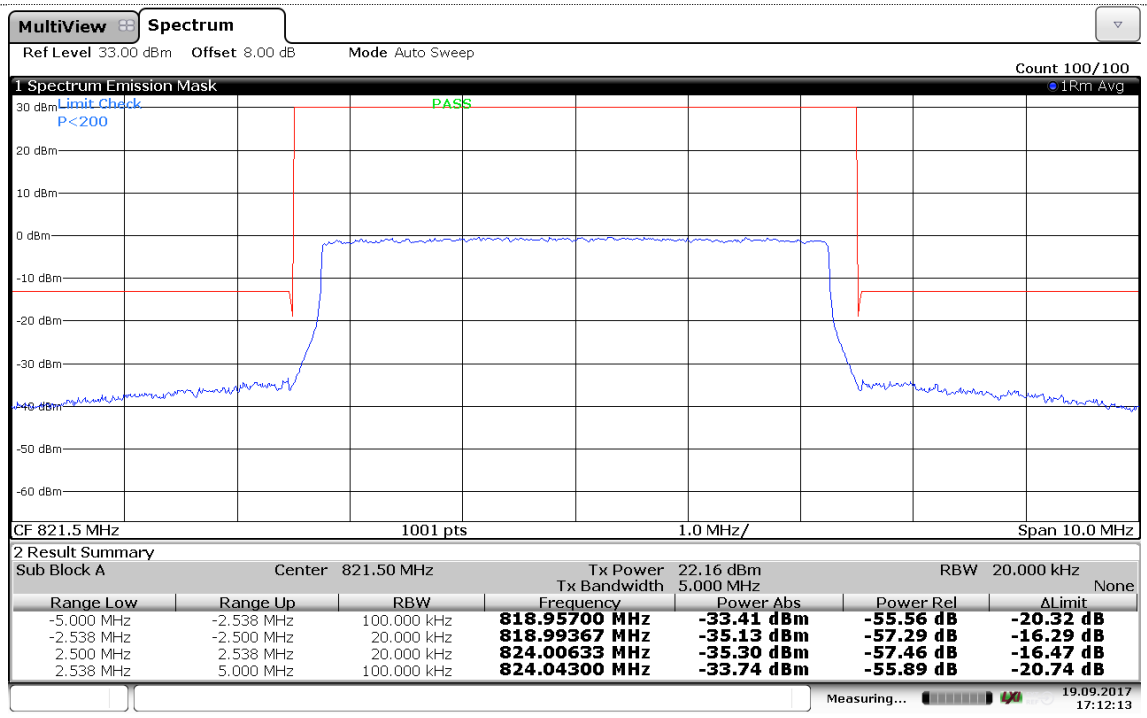
Channel High-1RB#

LTE Band 26-5MHz-QPSK



Date: 19.SEP.2017 17:08:34

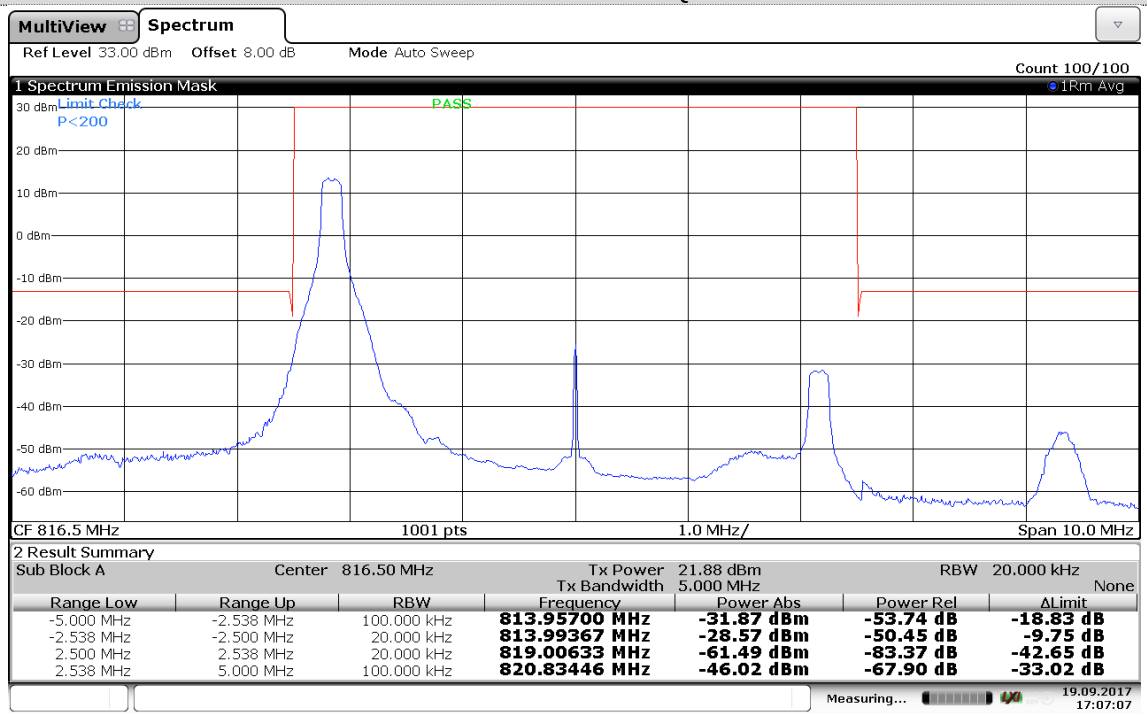
Channel Low-Full RB#



Date: 19.SEP.2017 17:12:12

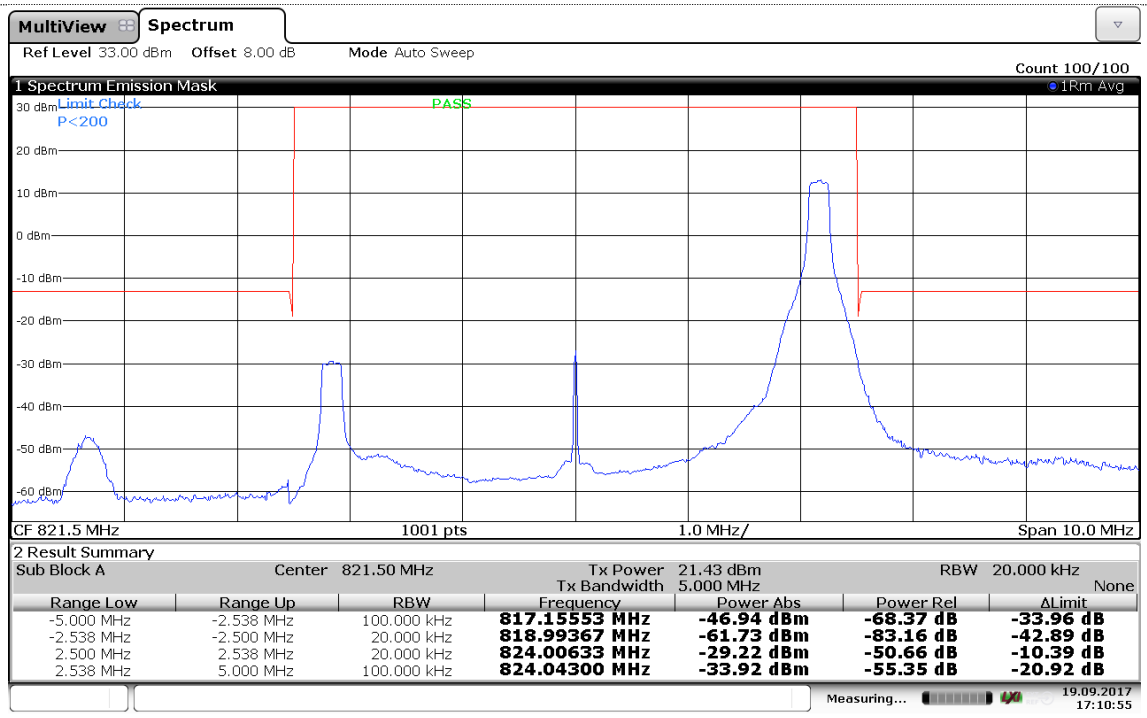
Channel High-Full RB#

LTE Band 2-5MHz-16QAM



Date: 19.SEP.2017 17:07:07

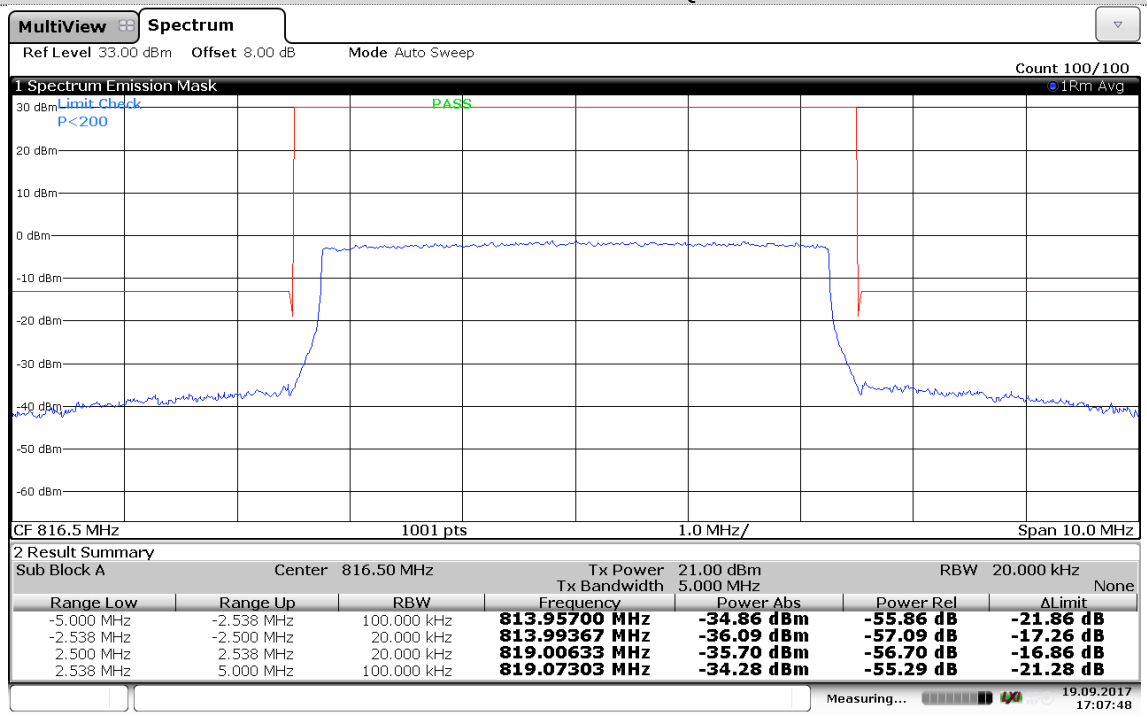
Channel Low-1RB#



Date: 19.SEP.2017 17:10:55

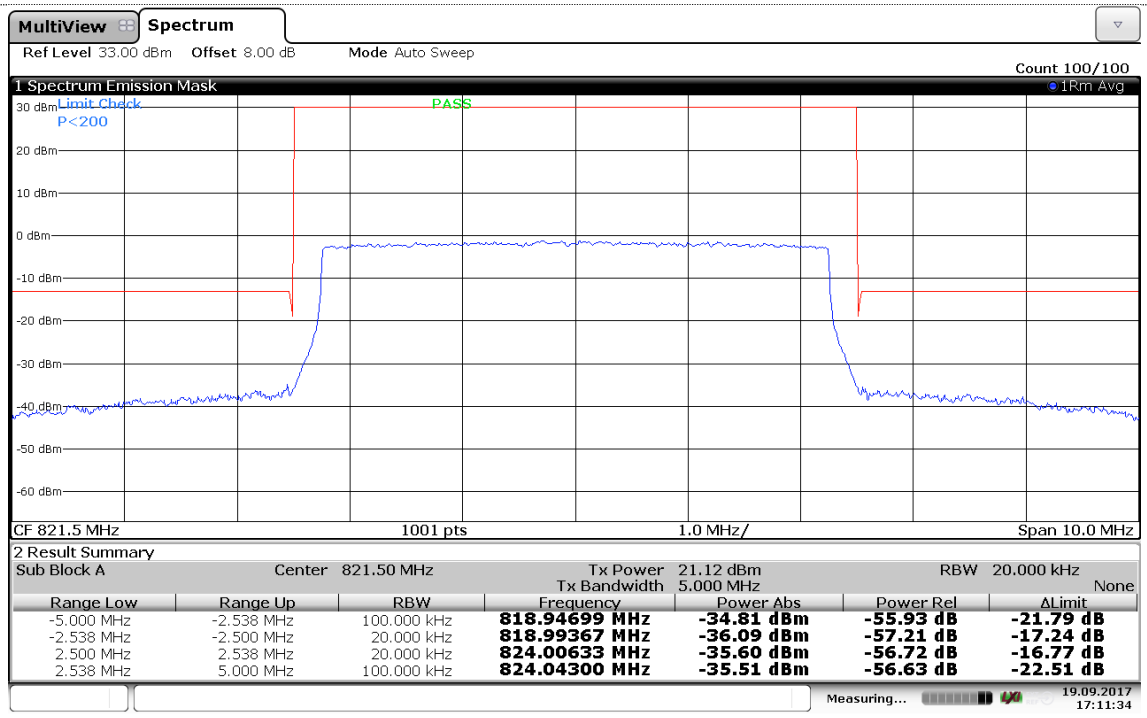
Channel High-1RB#

LTE Band 26-5MHz-16QAM



Date: 19.SEP.2017 17:07:48

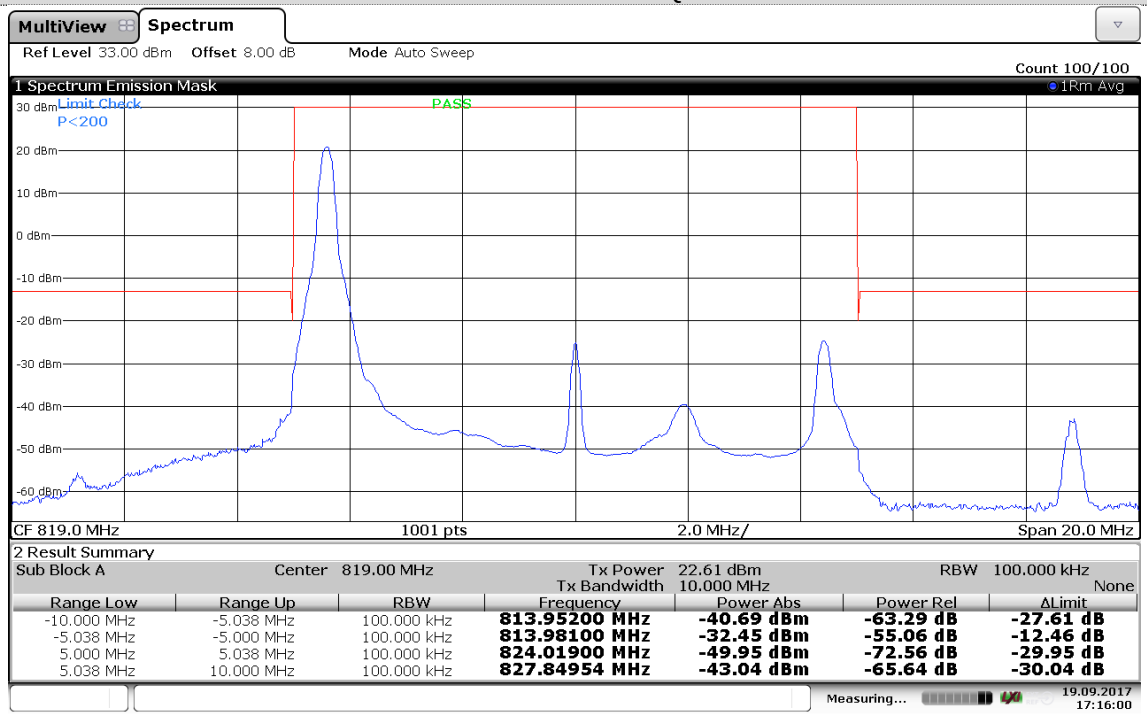
Channel Low-Full RB#



Date: 19.SEP.2017 17:11:34

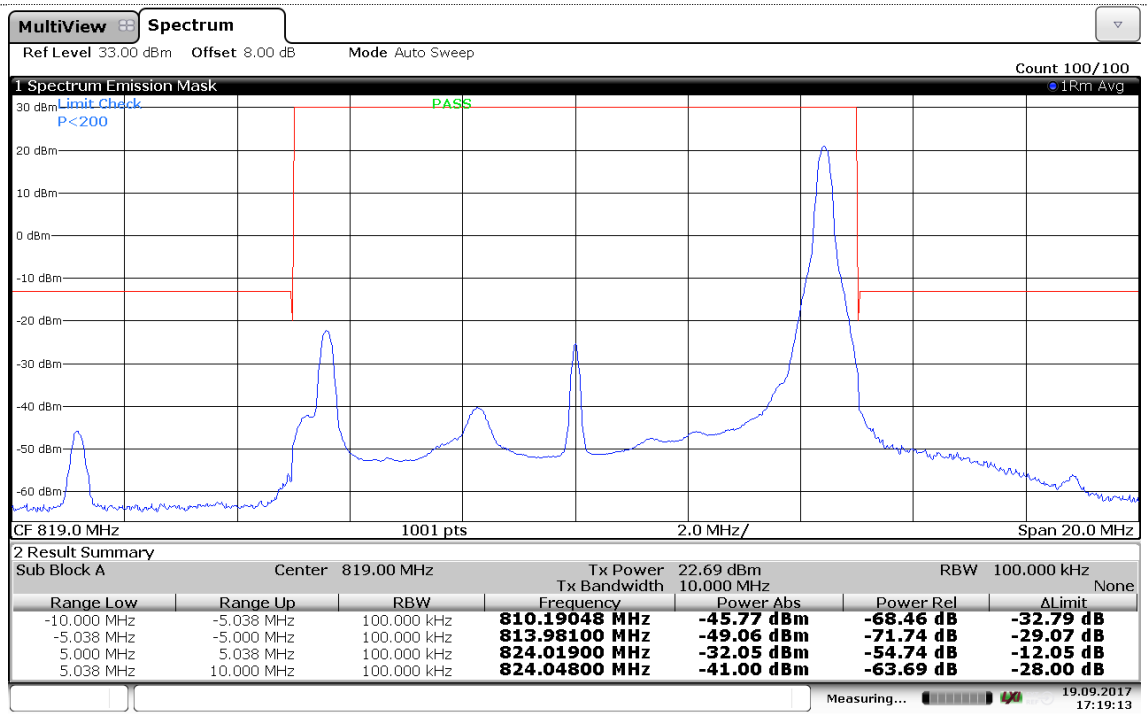
Channel High-Full RB#

LTE Band 26-10MHz-QPSK



Date: 19.SEP.2017 17:15:59

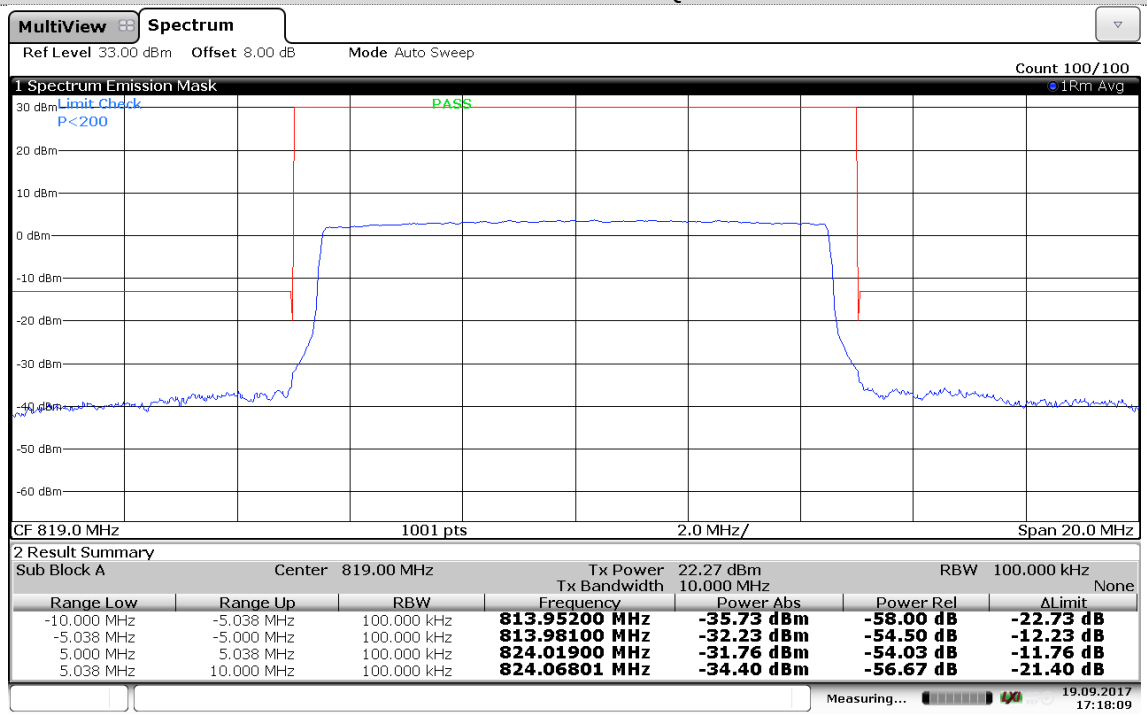
Channel Low-1RB#



Date: 19.SEP.2017 17:19:13

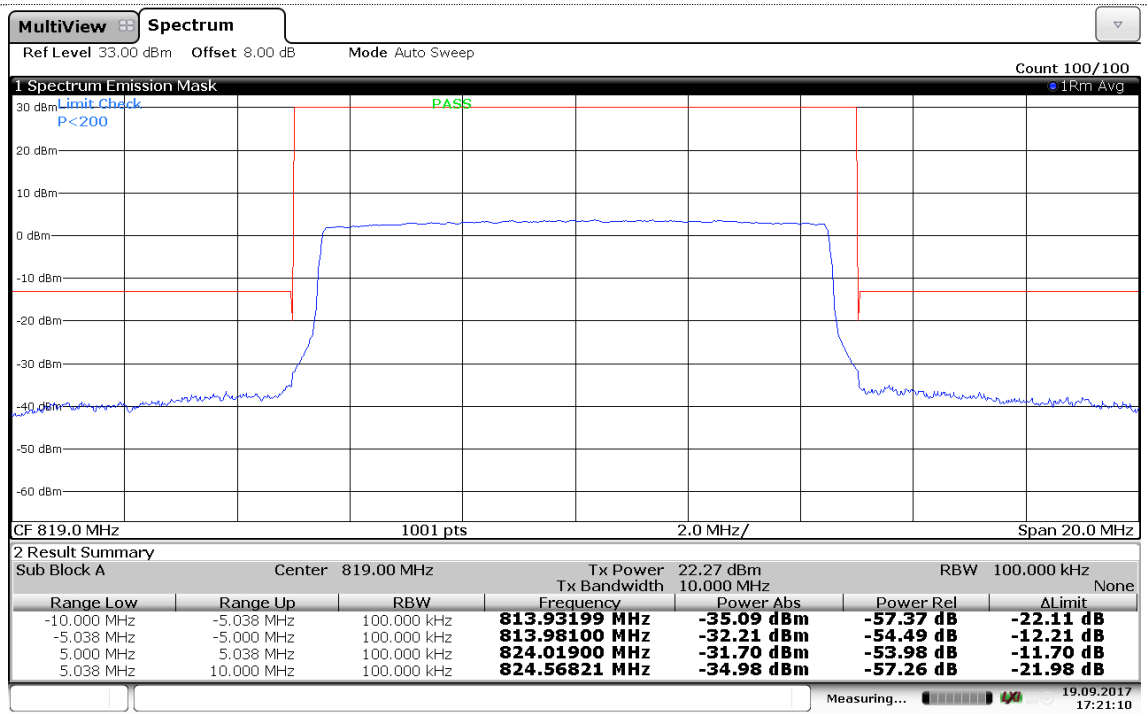
Channel High-1RB#

LTE Band 26-10MHz-QPSK



Date: 19.SEP.2017 17:18:10

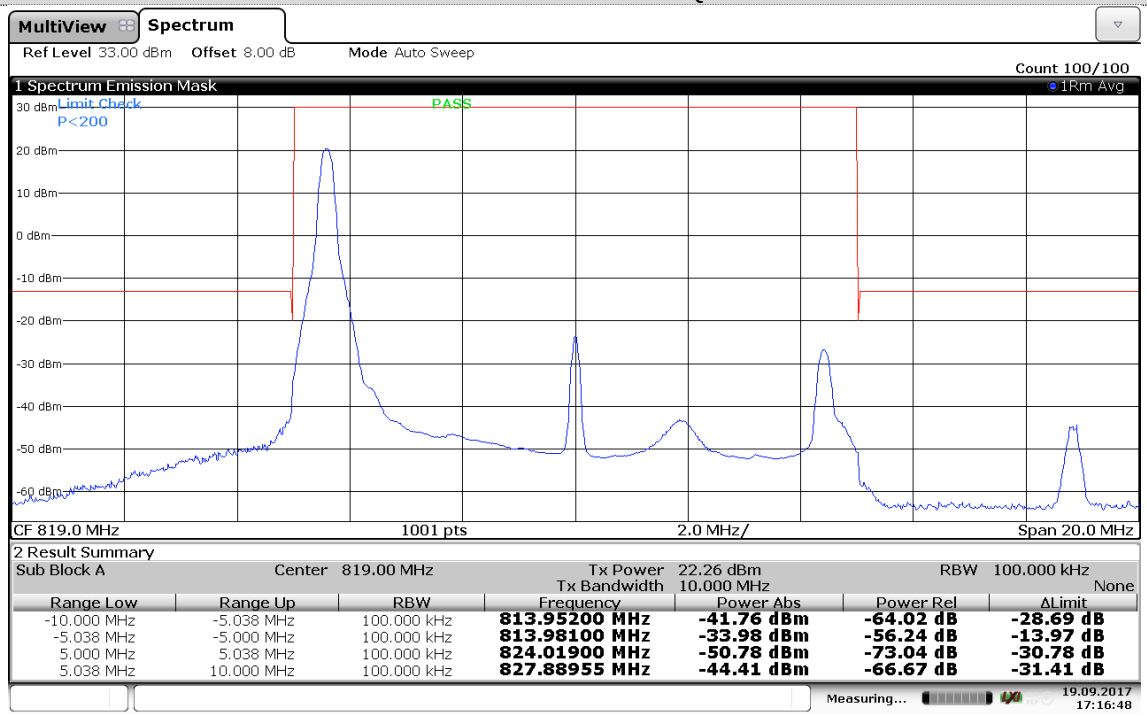
Channel Low-Full RB#



Date: 19.SEP.2017 17:21:10

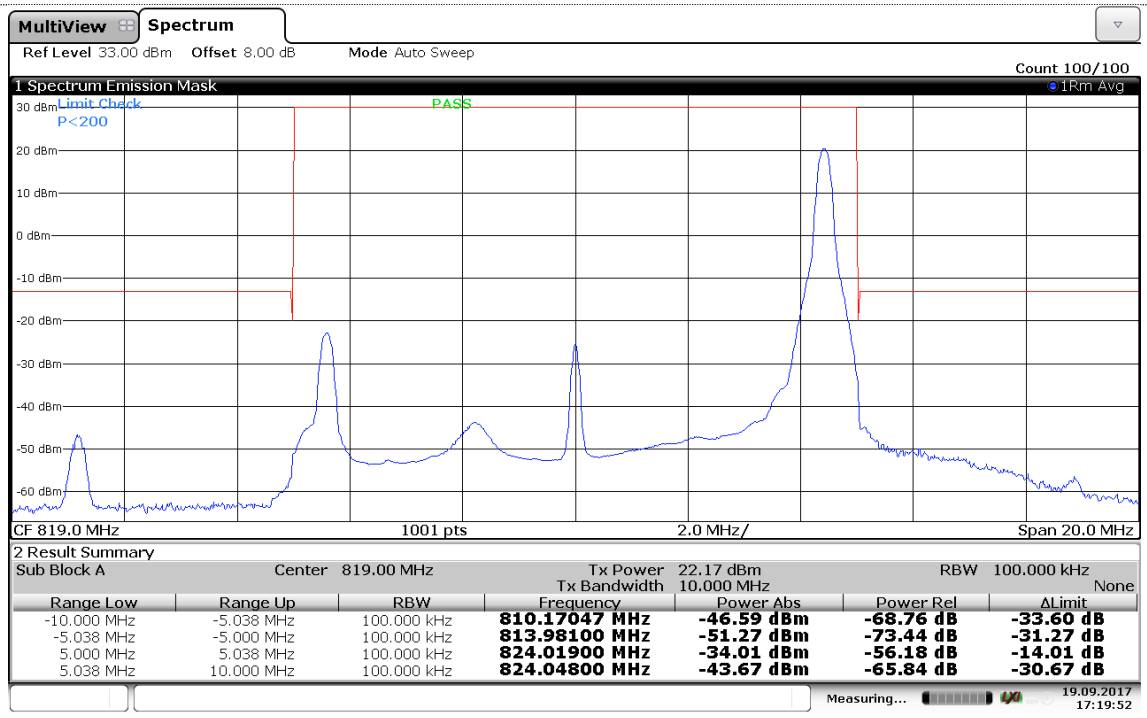
Channel High-Full RB#

LTE Band 26-10MHz-16QAM



Date: 19.SEP.2017 17:16:48

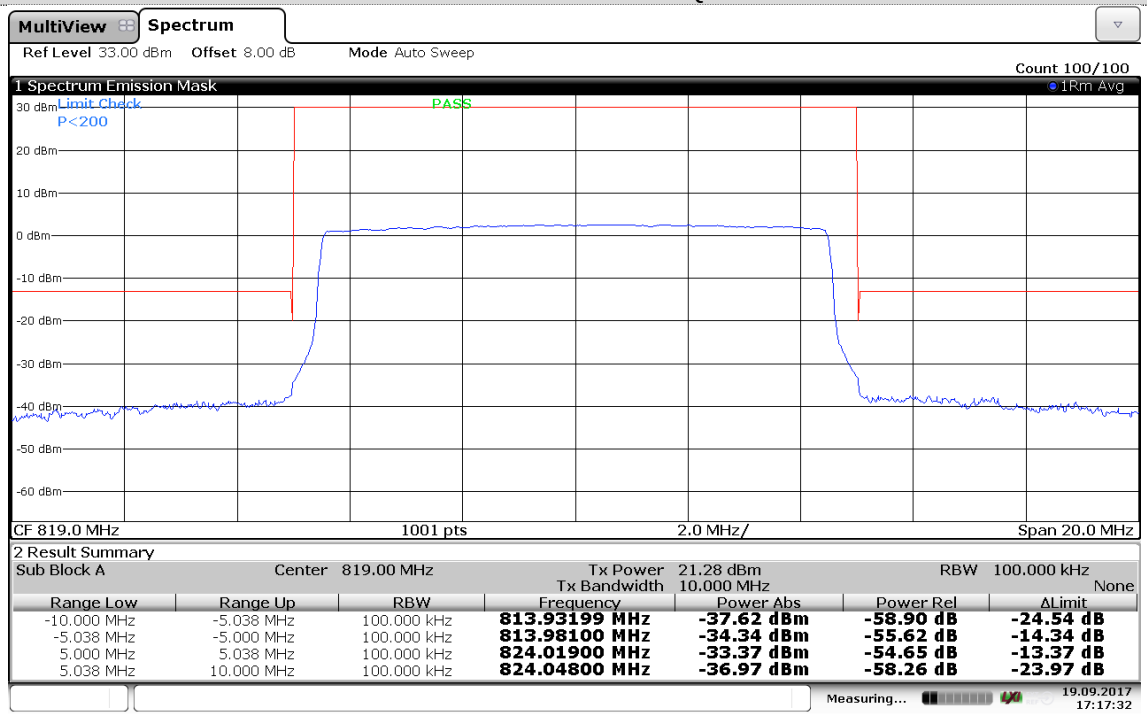
Channel Low-1RB#



Date: 19.SEP.2017 17:19:52

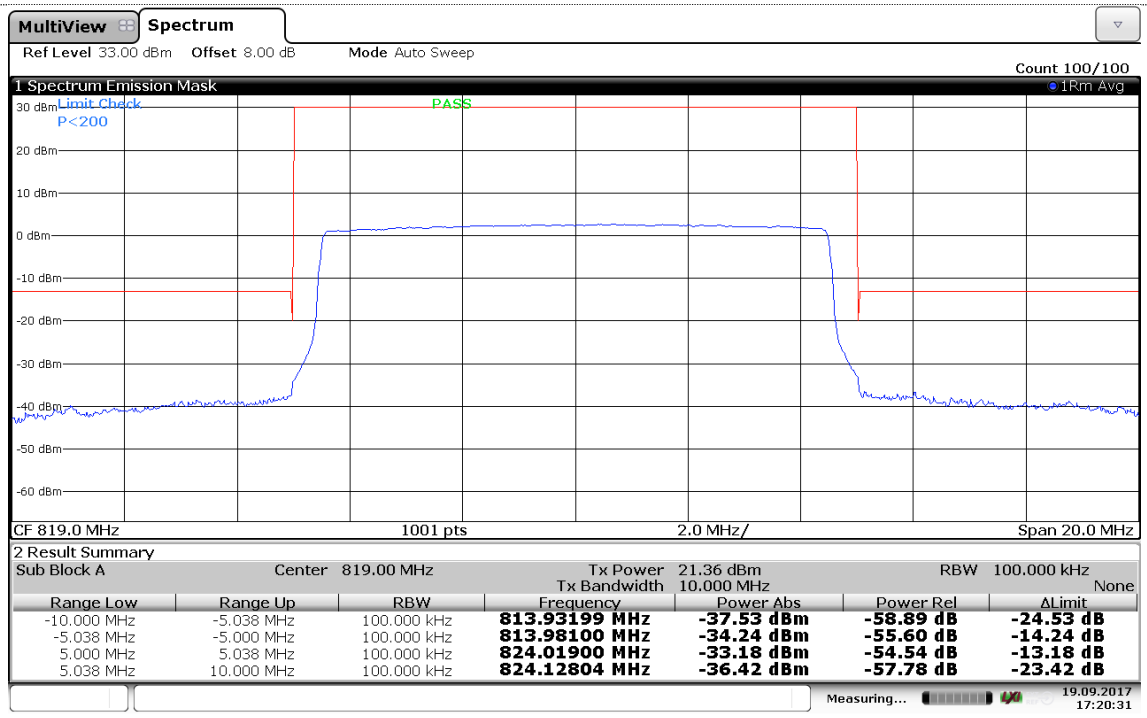
Channel High-1RB#

LTE Band 26-10MHz-16QAM



Date: 19.SEP.2017 17:17:32

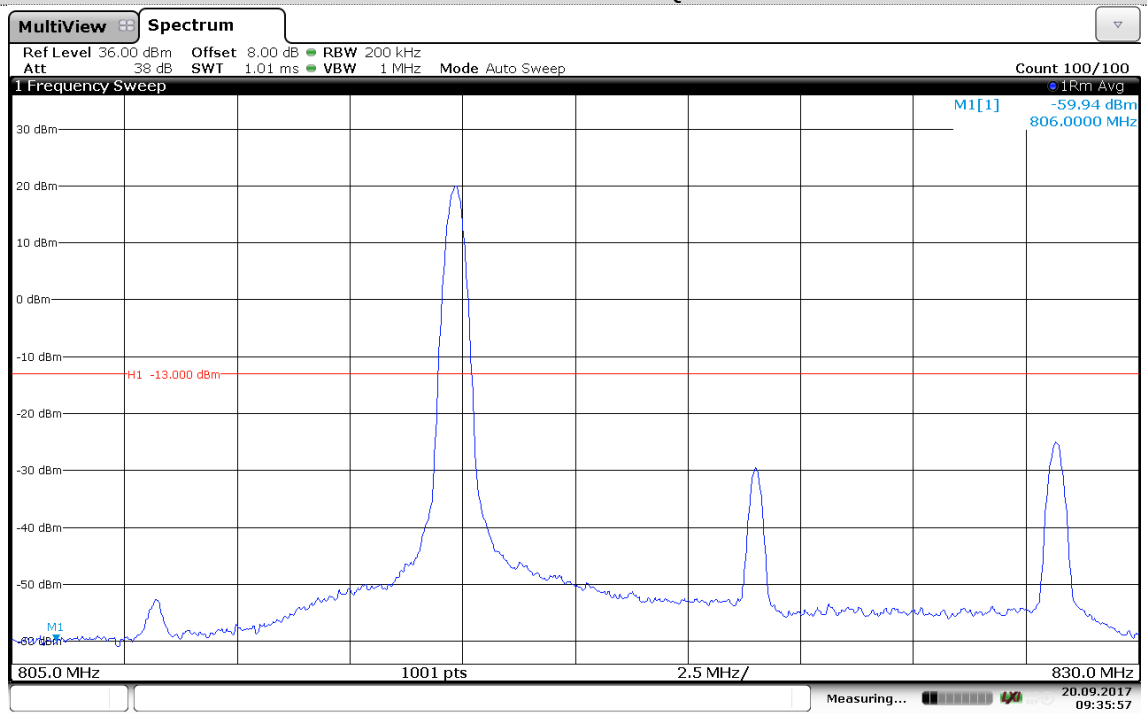
Channel Low-Full RB#



Date: 19.SEP.2017 17:20:31

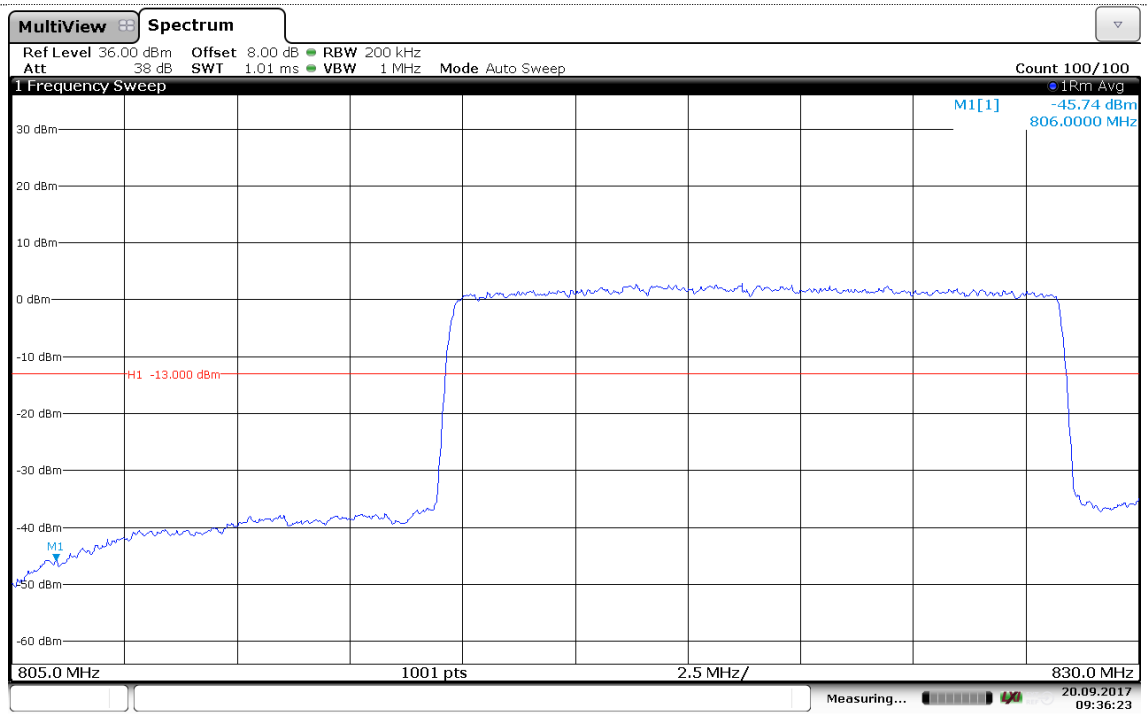
Channel High-Full RB#

LTE Band 26-15MHz-QPSK



Date: 20.SEP.2017 09:35:57

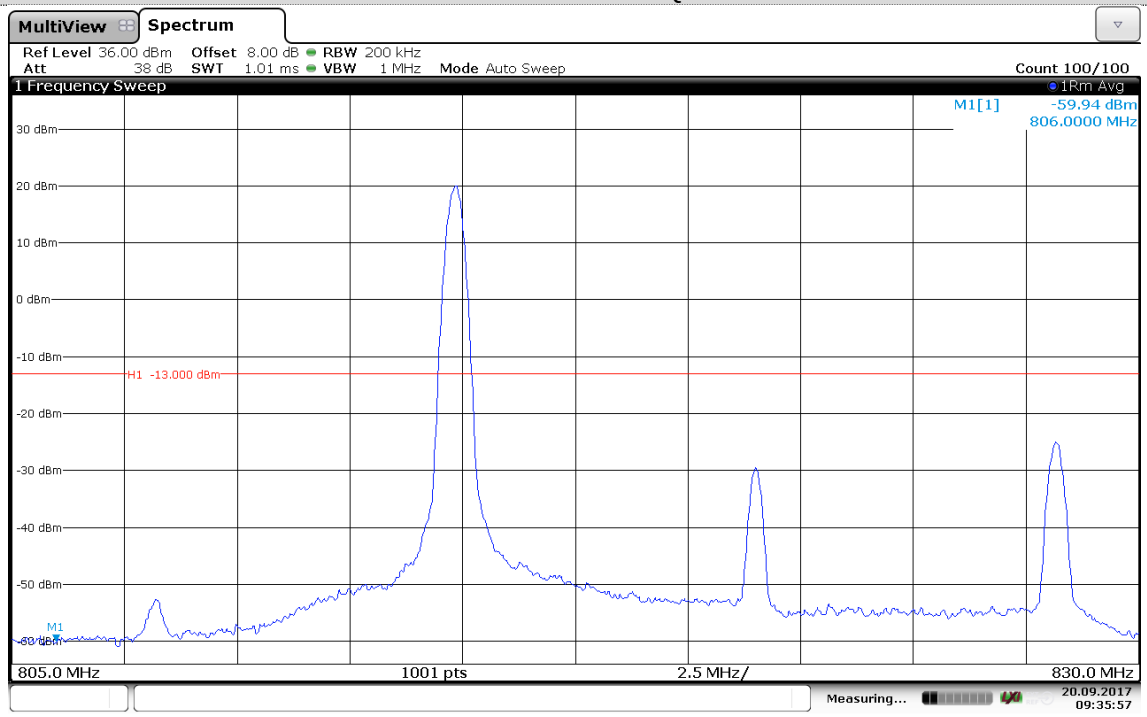
Channel Low-1RB#



Date: 20.SEP.2017 09:36:23

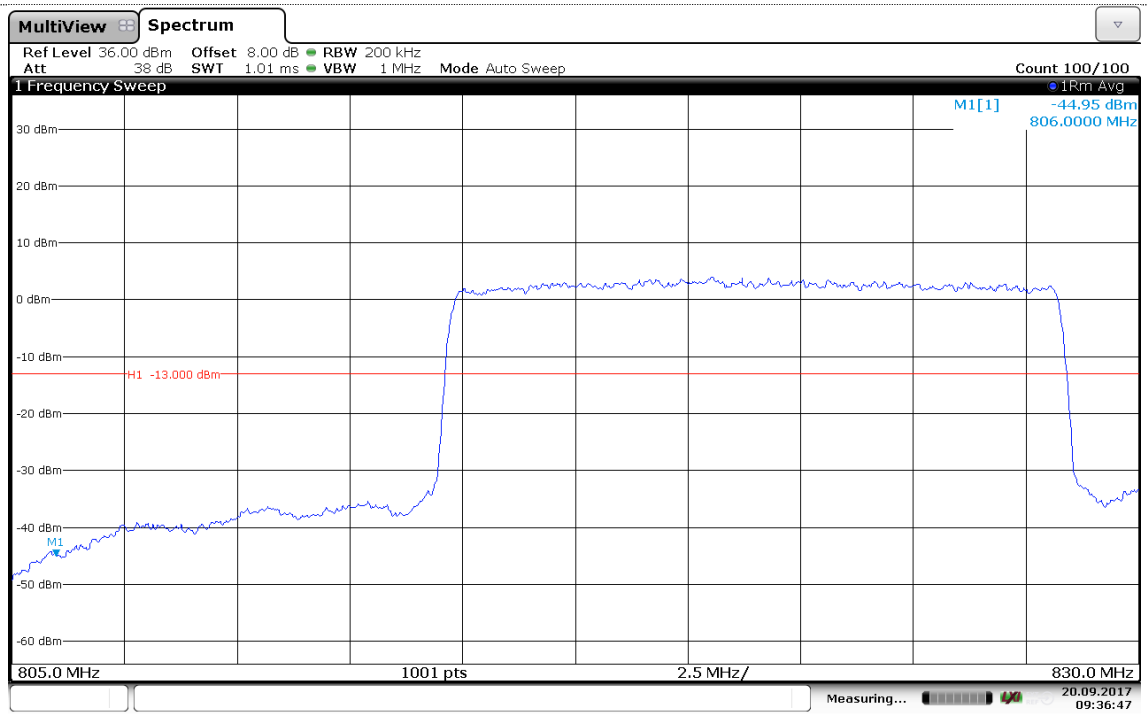
Channel Low-Full RB#

LTE Band 26-15MHz-QPSK



Date: 20.SEP.2017 09:35:57

Channel Low-1 RB#



Date: 20.SEP.2017 09:36:47

Channel Low-Full RB#

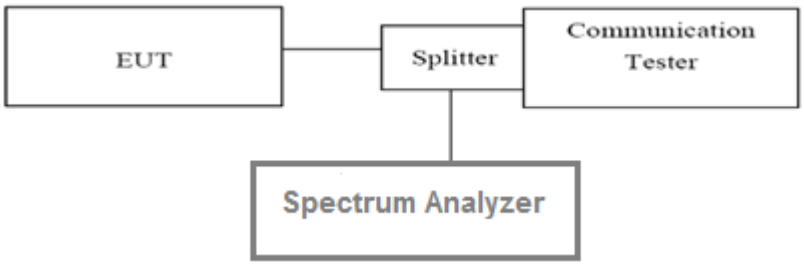
5.4. Emission mask-Out band emissions

LIMIT

Part 90.691 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

TEST CONFIGURATION



TEST PROCEDURE

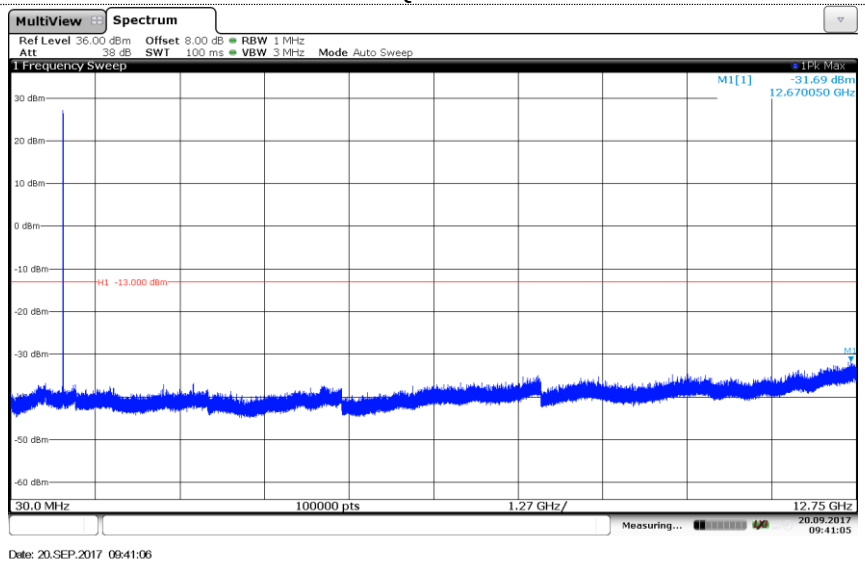
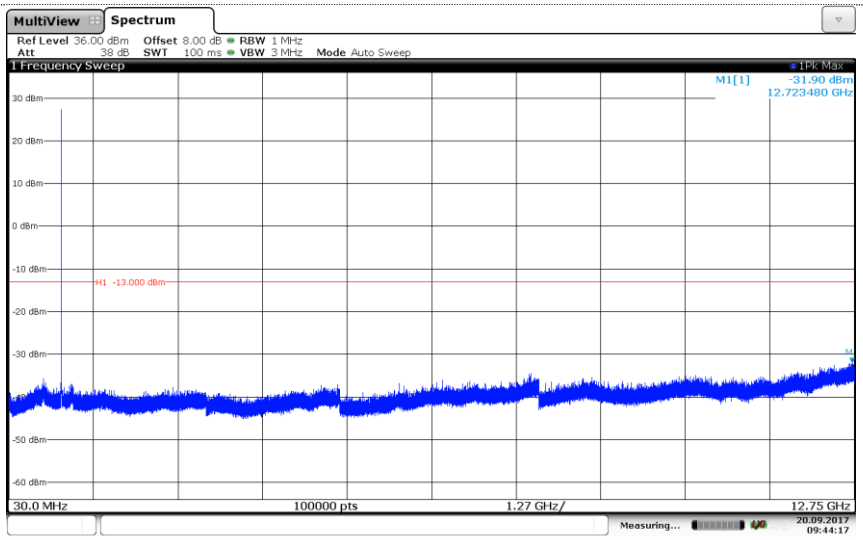
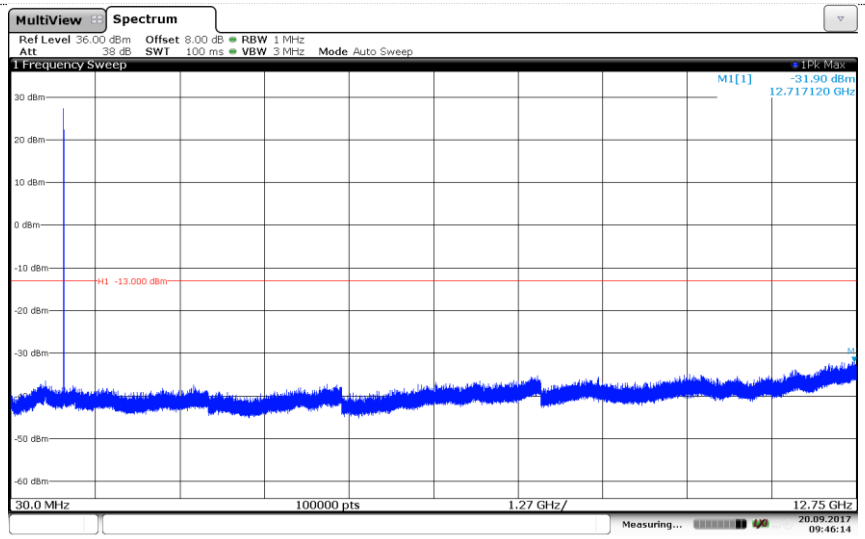
1. The RF output of the transceiver was connected to a spectrum analyzer through appropriateattenuation.
2. The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficientscans were taken to show the out of band Emissions if any up to 10th harmonic.
3. For the out of band: Set the RBW= 1MHz, VBW = 3MHz, Start=30MHz, Stop= 10th harmonic.

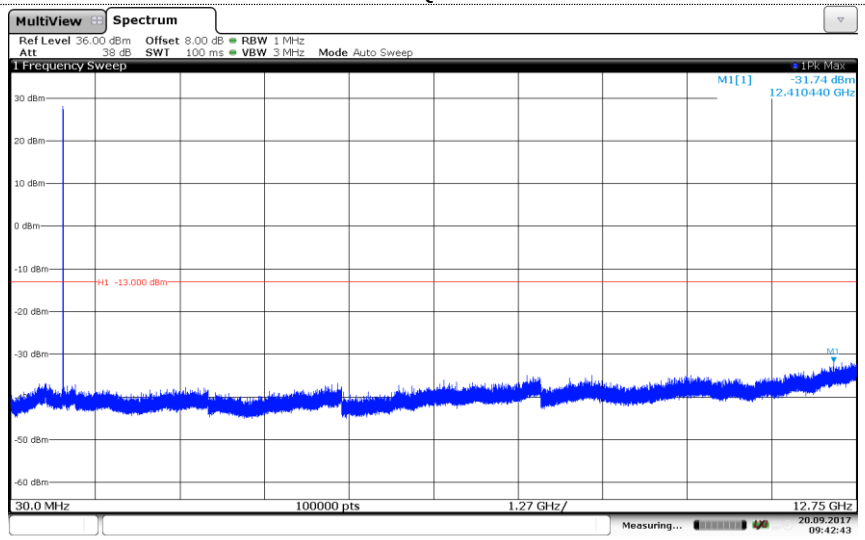
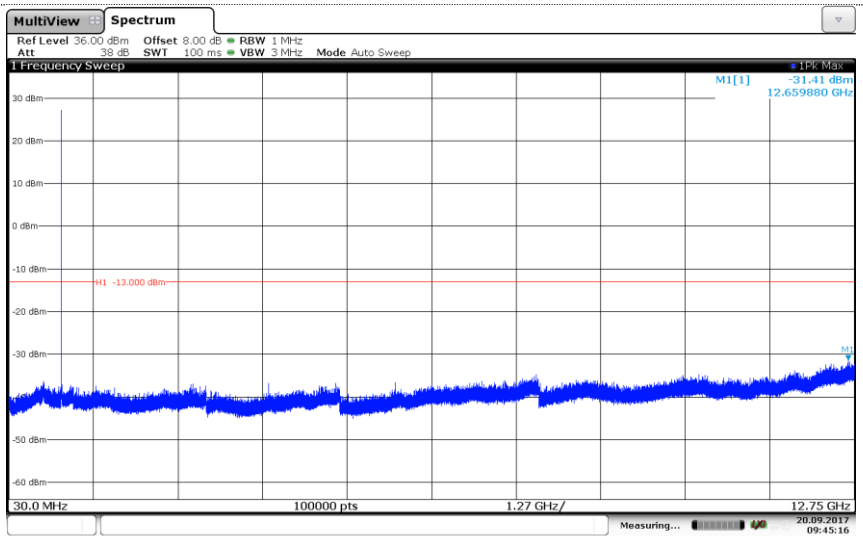
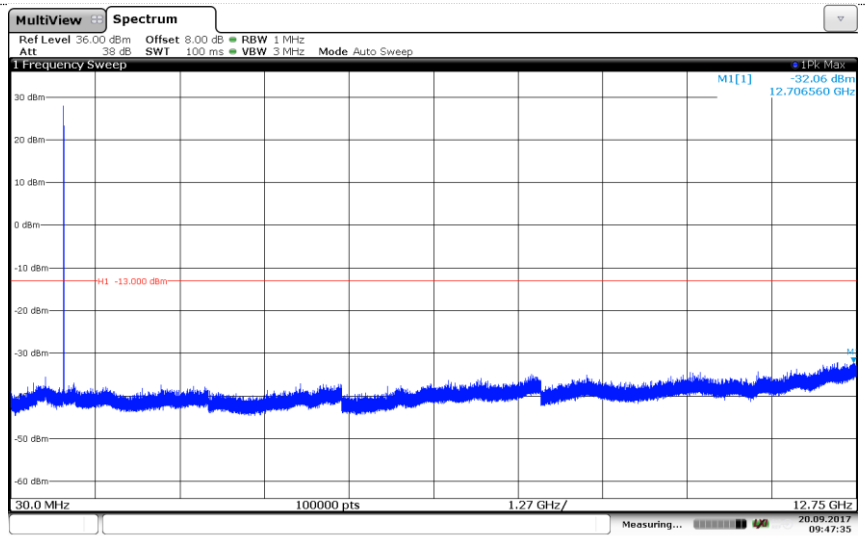
TEST MODE:

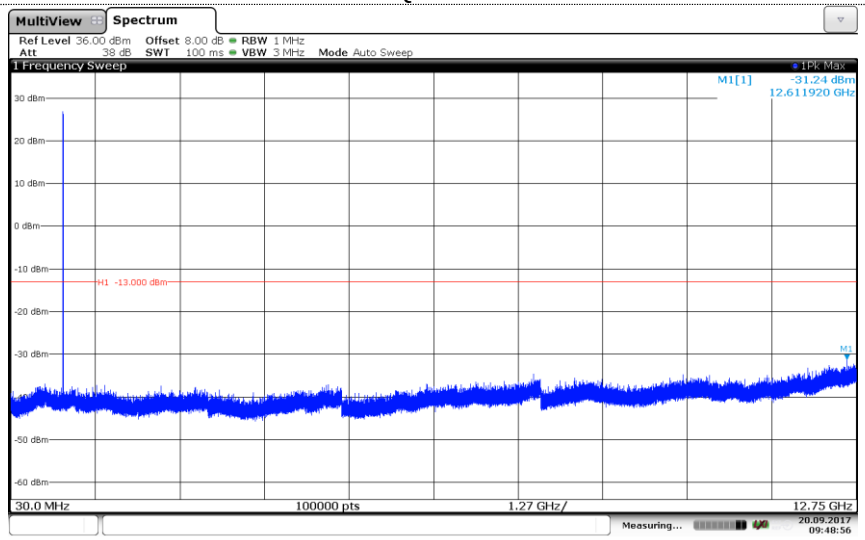
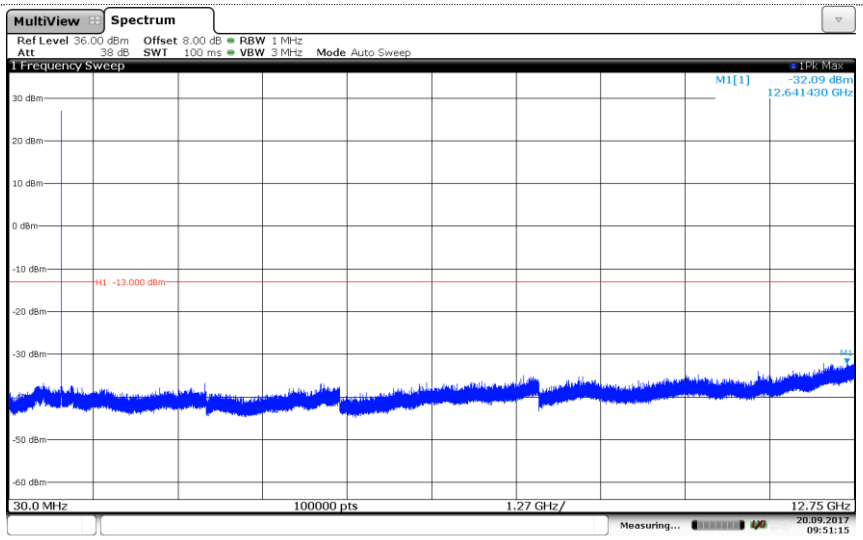
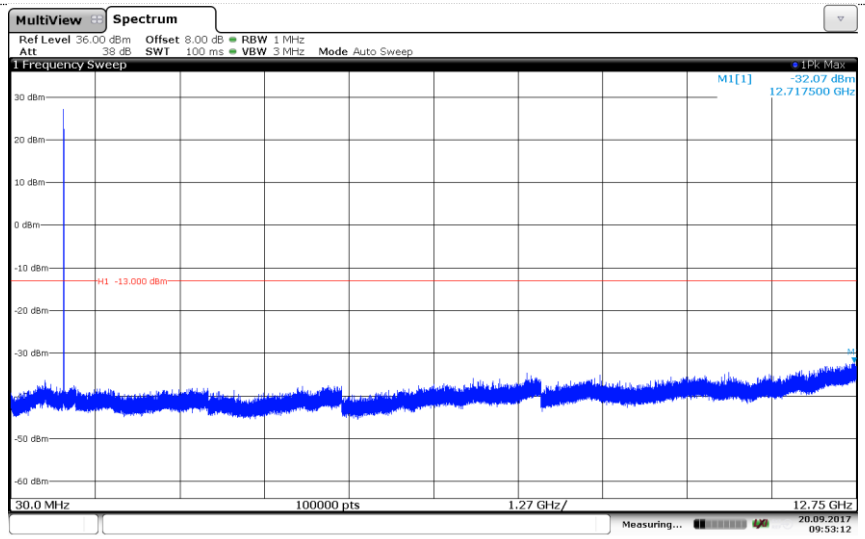
Please refer to the clause 3.3

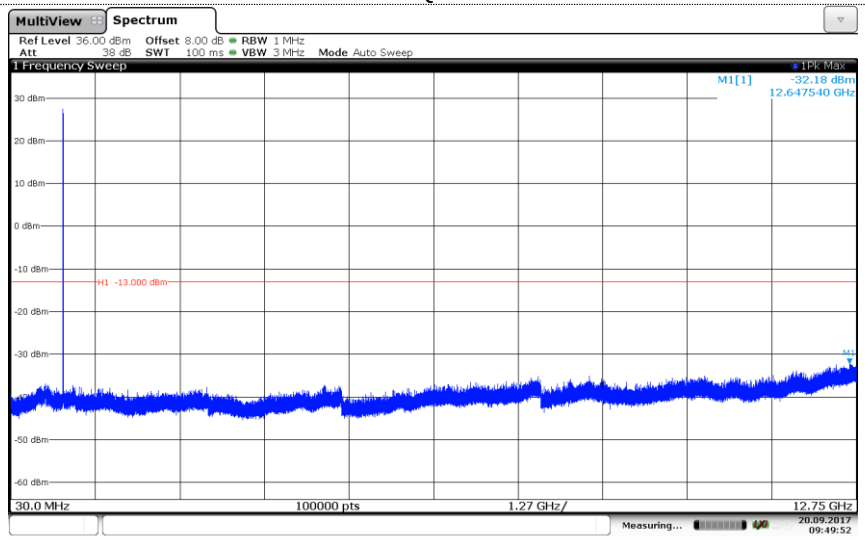
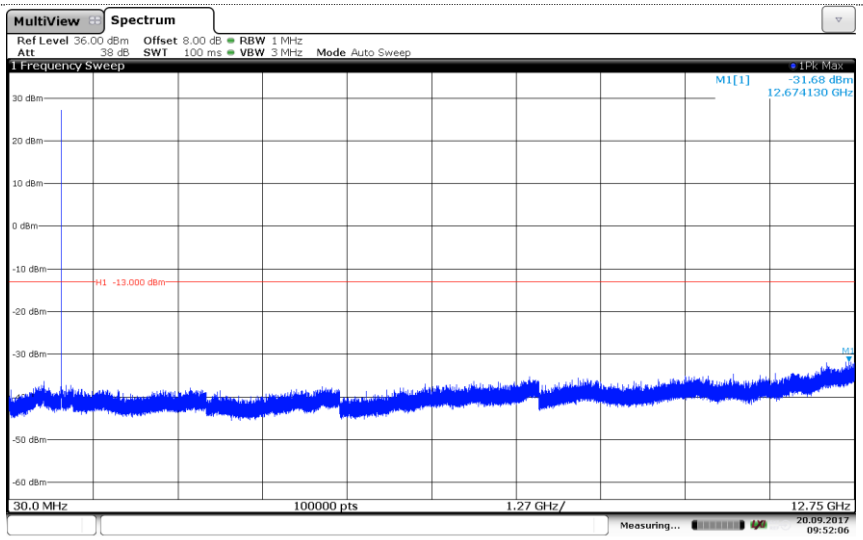
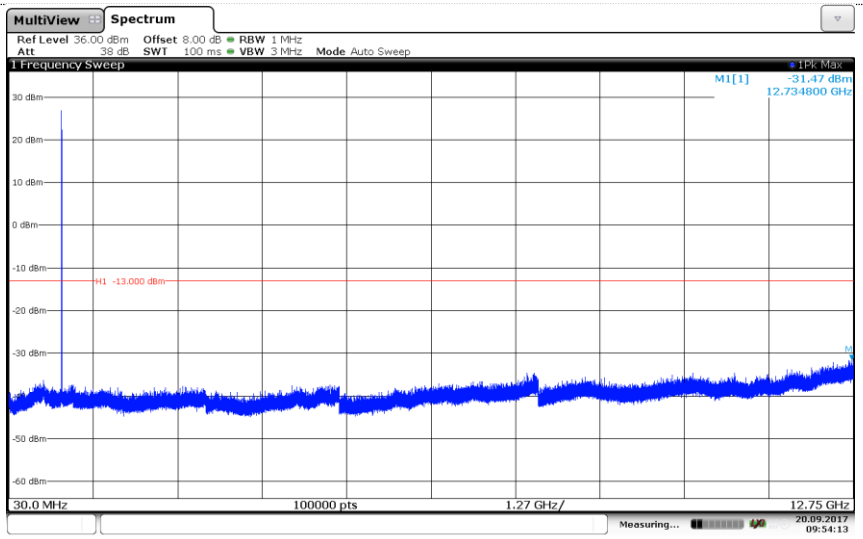
TEST RESULTS

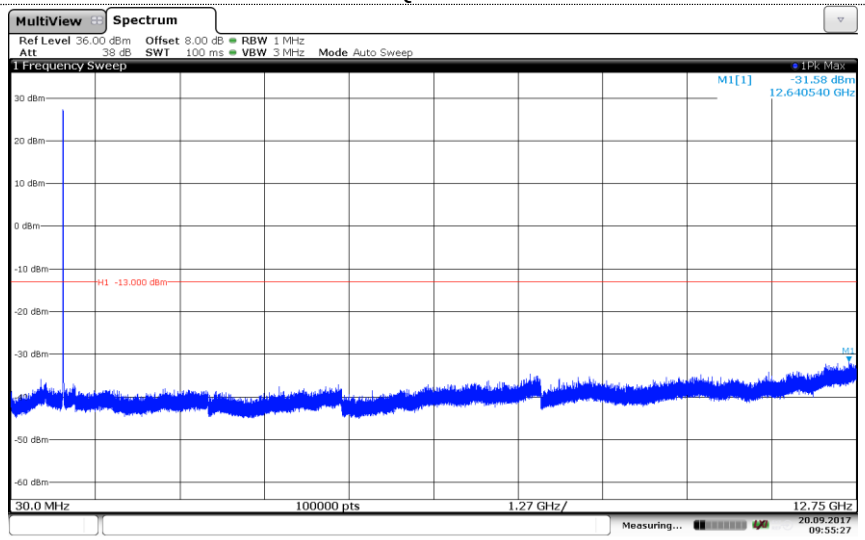
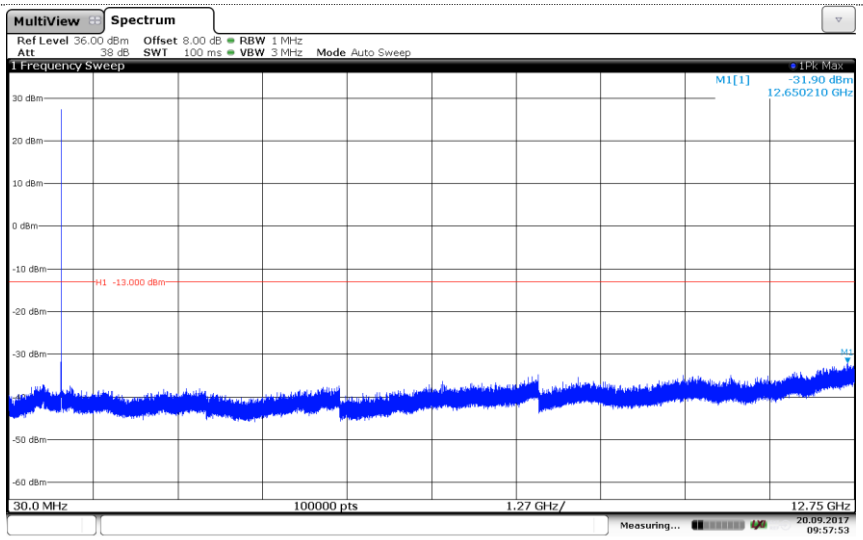
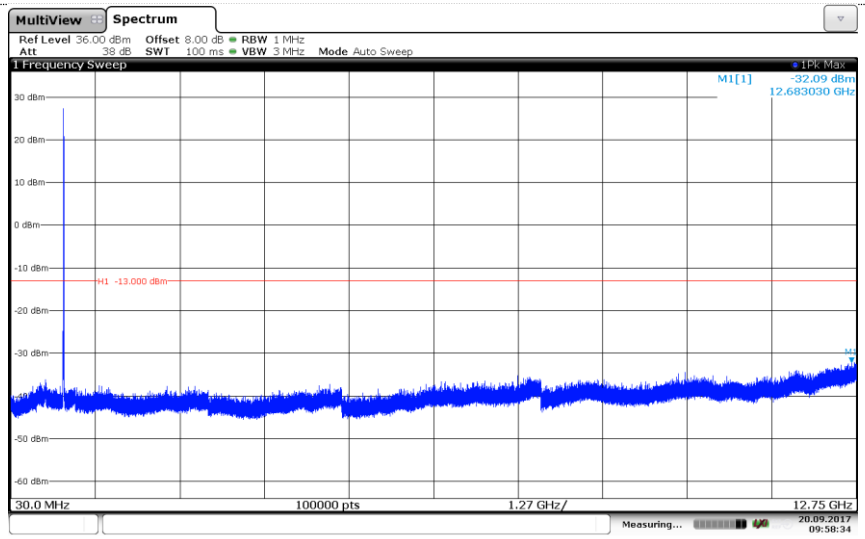
☒ **Passed** ☐ **Not Applicable**

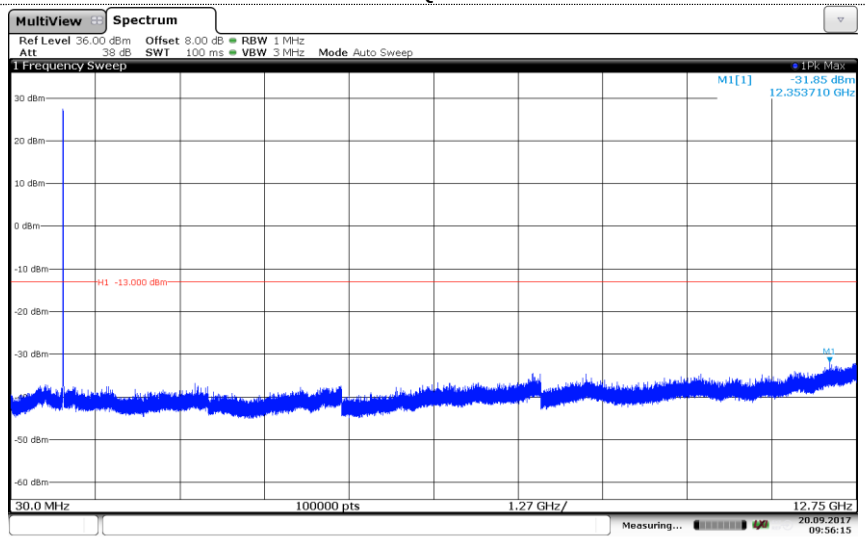
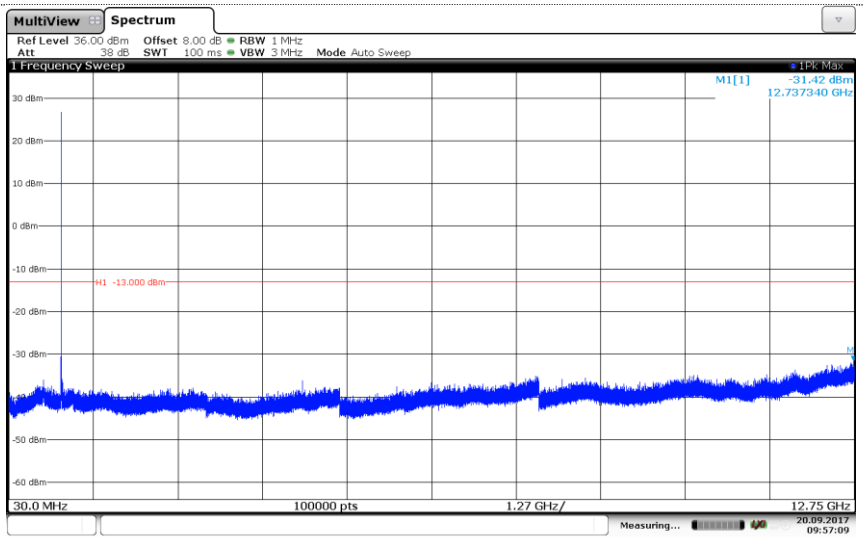
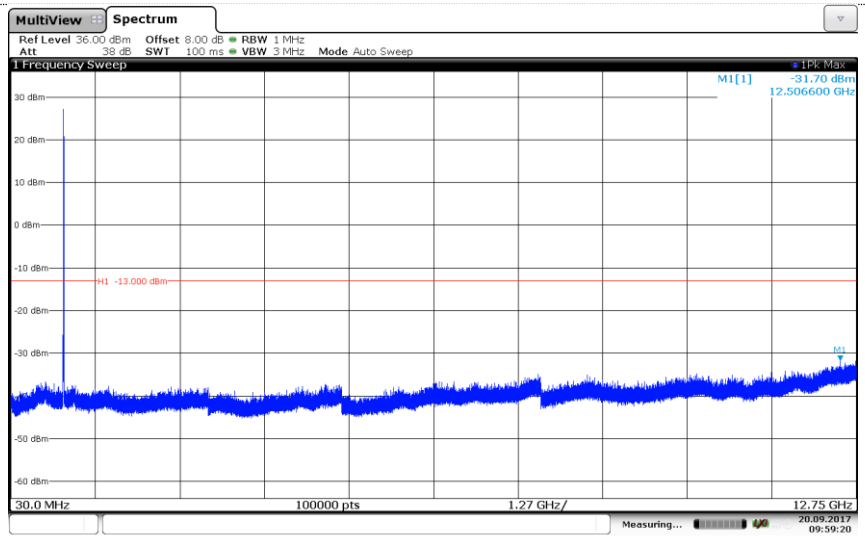
LTE Band 26-1.4MHz
QPSK
 Date: 20.SEP.2017 09:41:06
Channel Low
 Date: 20.SEP.2017 09:44:17
Channel Mid
 Date: 20.SEP.2017 09:46:14
Channel High

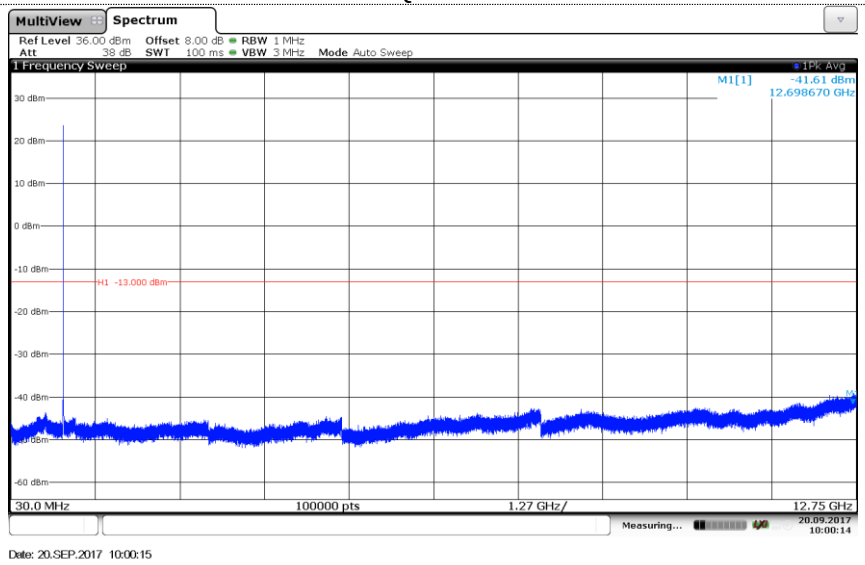
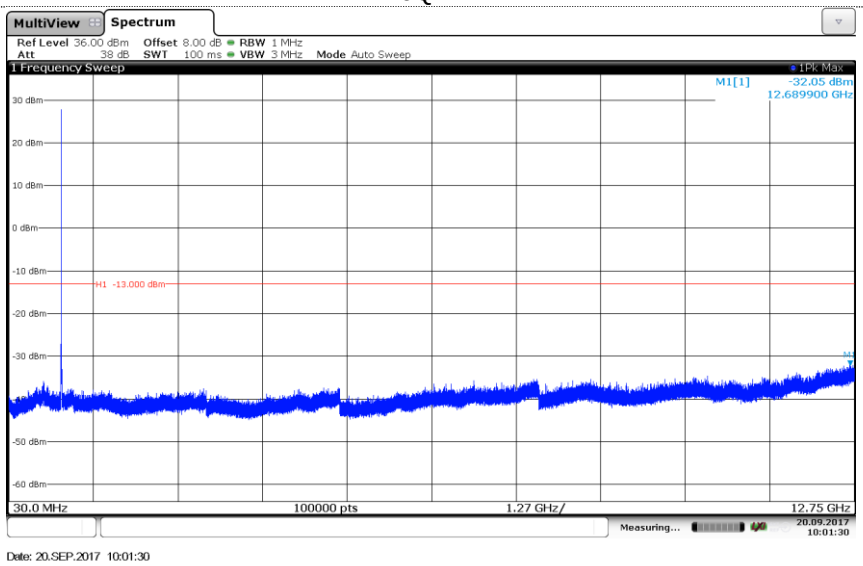
LTE Band 26-1.4MHz
16QAM
 Date: 20.SEP.2017 09:42:43
Channel Low
 Date: 20.SEP.2017 09:45:15
Channel Mid
 Date: 20.SEP.2017 09:47:35
Channel High

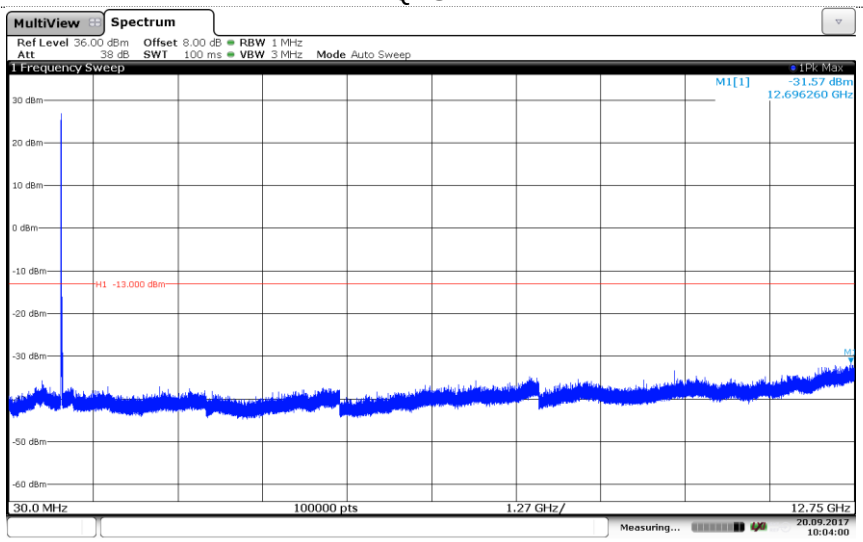
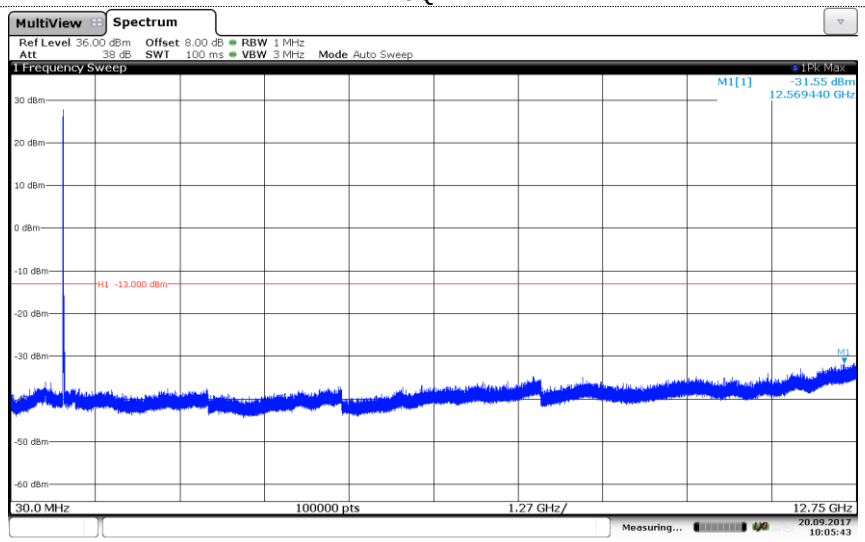
LTE Band 26-3MHz
QPSK
 Date: 20.SEP.2017 09:48:56
Channel Low
 Date: 20.SEP.2017 09:51:15
Channel Mid
 Date: 20.SEP.2017 09:53:11
Channel High

LTE Band 26-3MHz
16QAM
 Date: 20.SEP.2017 09:49:52
Channel Low
 Date: 20.SEP.2017 09:52:06
Channel Mid
 7 Date: 20.SEP.2017 09:54:13
Channel High

LTE Band 26-5MHz
QPSK
 Date: 20.SEP.2017 09:55:27
Channel Low
 Date: 20.SEP.2017 09:57:54
Channel Mid
 Date: 20.SEP.2017 09:58:34
Channel High

LTE Band 26-5MHz
16QAM
 Date: 20.SEP.2017 09:56:15
Channel Low
 Date: 20.SEP.2017 09:57:09
Channel Mid
 Date: 20.SEP.2017 09:59:20
Channel High

LTE Band 26-10MHz
QPSK
 Date: 20.SEP.2017 10:00:15
Channel Mid
16QAM
 Date: 20.SEP.2017 10:01:30
Channel Mid

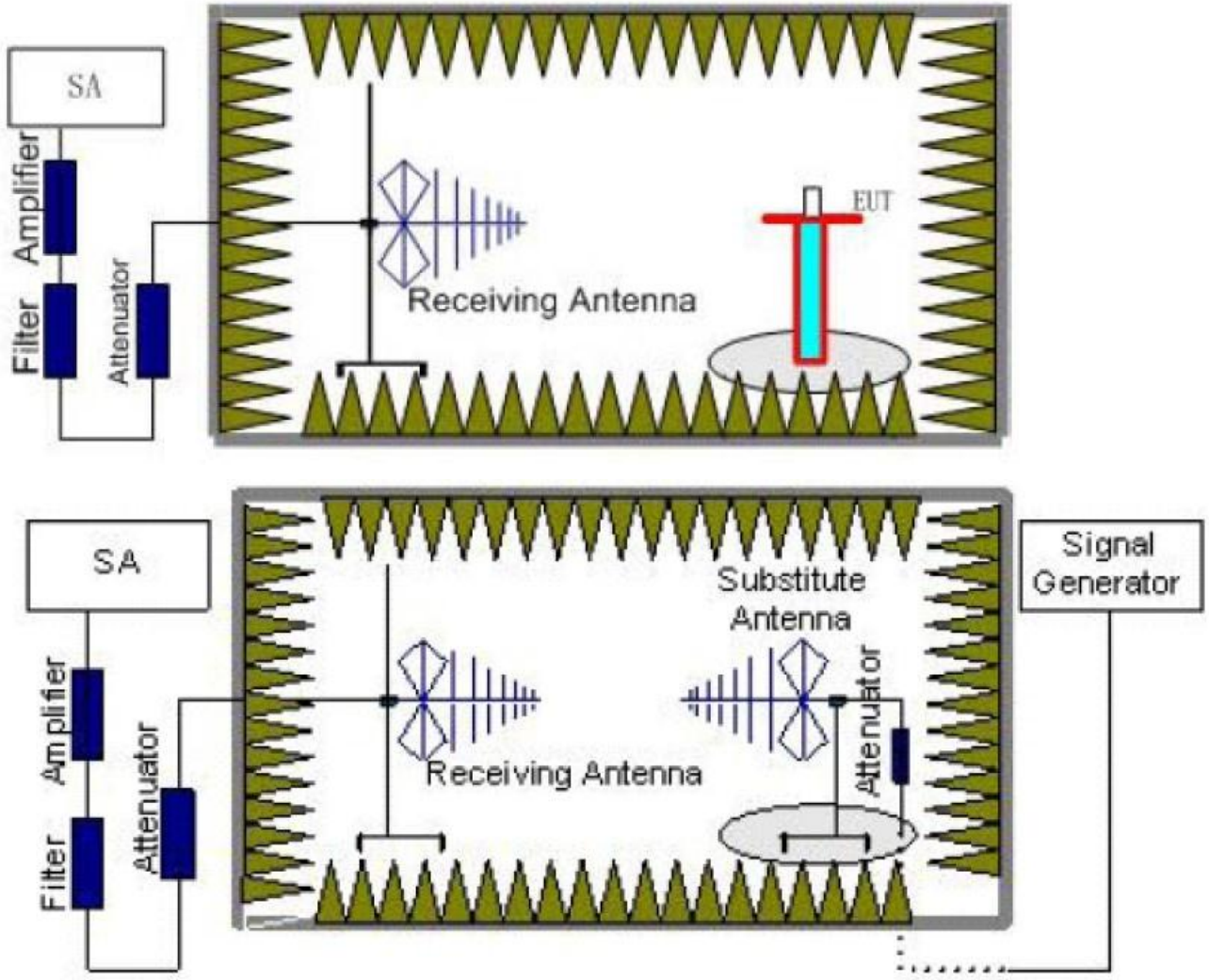
LTE Band 26-15MHz
QPSK
 Date: 20.SEP.2017 10:04:00
Channel Low
16QAM
 Date: 20.SEP.2017 10:05:43
Channel Low

5.5. Radiated Spurious Emssion

LIMIT

LTE Band 26:<-13dBm

TEST CONFIGURATION



TEST RESULTS

1. EUT was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna shall be moved from 1m to 4m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.
2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
3. The EUT is then put into continuously transmitting mode at its maximum power level during the test.Set Test Receiver or Spectrum RBW=1MHz,VBW=3MHz for above 1GHz and RBW=100kHz,VBW=300kHz for 30MHz to 1GHz, And the maximum value of the receiver should be recorded as (Pr).
4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest isconnected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the

substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

5. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
6. The measurement results are obtained as described below:
   Power(EIRP)=PMea- PAg - Pcl + Ga
   We used SMF100A micowave signal generator which signal level can up to 33dBm,so we not used power Amplifier for substituation test; The measurement results are amend as described below:
   Power(EIRP)=PMea- Pcl + Ga
7. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
   ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Worst case at all bandwidth Mid Channel,expect bandwidth 15MHz use low channel

LTE Band 26-1.4MHz					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
Mid	1638	Vertical	-42.21	-13.00	Pass
	2457	V	-40.60		
	3276	V	---		
	1638	Horizontal	-42.25	-13.00	Pass
	2457	H	-43.63		
	3276	H	---		

Remark:
1. Remark"---" means that the emission level is too low to be measured
2. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

LTE Band 26-3MHz					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
Mid	1638	Vertical	-44.35	-13.00	Pass
	2457	V	-41.76		
	3276	V	---		
	1638	Horizontal	-45.38	-13.00	Pass
	2457	H	-42.64		
	3276	H	---		

Remark:
1. Remark"---" means that the emission level is too low to be measured
2. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

LTE Band 26-5MHz					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
Mid	1638	Vertical	-41.52	-13.00	Pass
	2457	V	-40.85		
	3276	V	---		
	1638	Horizontal	-43.52	-13.00	Pass
	2457	H	-43.66		
	3276	H	---		

Remark:
1. Remark"---" means that the emission level is too low to be measured
2. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

LTE Band 26-10MHz					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
Mid	1638	Vertical	-44.35	-13.00	Pass
	2457	V	-46.38		
	3276	V	---		
	1638	Horizontal	-45.74	-13.00	Pass
	2457	H	-47.85		
	3276	H	---		

Remark:
1. Remark"---" means that the emission level is too low to be measured
2. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

LTE Band 26-15MHz					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
Low	1638	Vertical	-44.66	-13.00	Pass
	2457	V	-42.65		
	3276	V	---		
	1638	Horizontal	-46.78	-13.00	Pass
	2457	H	-43.52		
	3276	H	---		

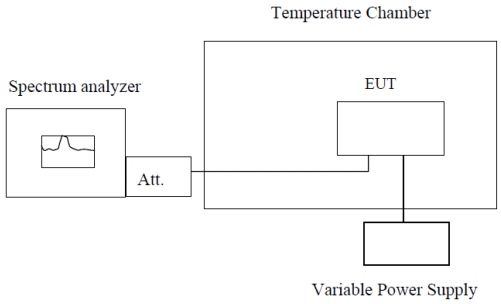
Remark:
1. Remark"---" means that the emission level is too low to be measured
2. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

5.6. Frequency stability V.S. Temperature measurement

LIMIT

2.5ppm

TEST CONFIGURATION



Note : Measurement setup for testing on Antenna connector

TEST PROCEDURE

1. The equipment under test was connected to an external DC power supply and input rated voltage.
2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators.
3. The EUT was placed inside the temperature chamber.
4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency.
5. Turn EUT off and set the chamber temperature to –30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency.
6. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Worst case

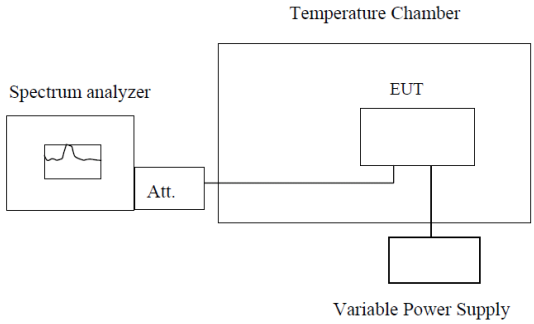
Reference Frequency: LTE Band 26 Middle channel=819MHz,10MHz Bandwidth							
Power supplied (Vdc)	Temperature (°C)	Frequency error				Limit (ppm)	Result
		QPSK		16QAM			
		Hz	ppm	Hz	ppm		
7.60	-30	15	0.018	29	0.035	2.50	Pass
	-20	16	0.020	31	0.038		
	-10	14	0.017	32	0.039		
	0	15	0.018	30	0.037		
	10	17	0.021	35	0.043		
	20	18	0.022	29	0.035		
	30	16	0.020	31	0.038		
	40	19	0.023	28	0.034		
	50	17	0.021	33	0.040		

5.7. Frequency stability V.S. Voltagemeasurement

LIMIT

2.5ppm

TEST CONFIGURATION



Note : Measurement setup for testing on Antenna connector

TEST PROCEDURE

1. Set chamber temperature to 25°C. Use a variable DC power source topower the EUT and set the voltage to rated voltage.
2. Set the spectrum analyzer RBW lowenough to obtain the desired frequency resolution and recorded the frequency.
3. Reduce the input voltage to specified extreme voltage variation (+/- 15%) and endpoint, recordthe maximum frequency change.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

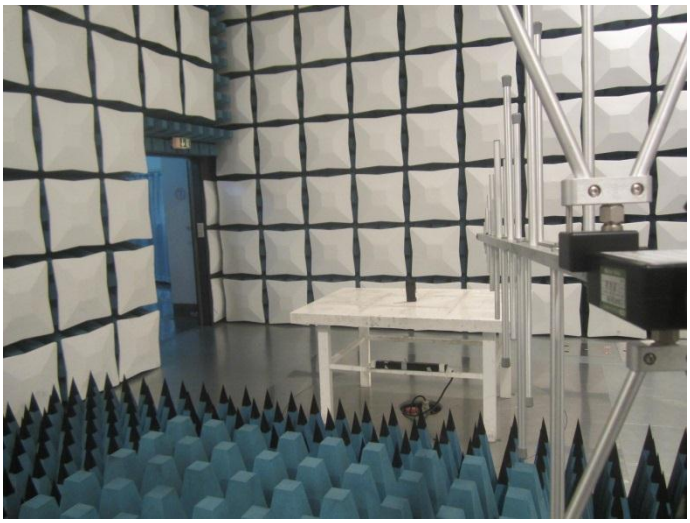
☒ **Passed** ☐ **Not Applicable**

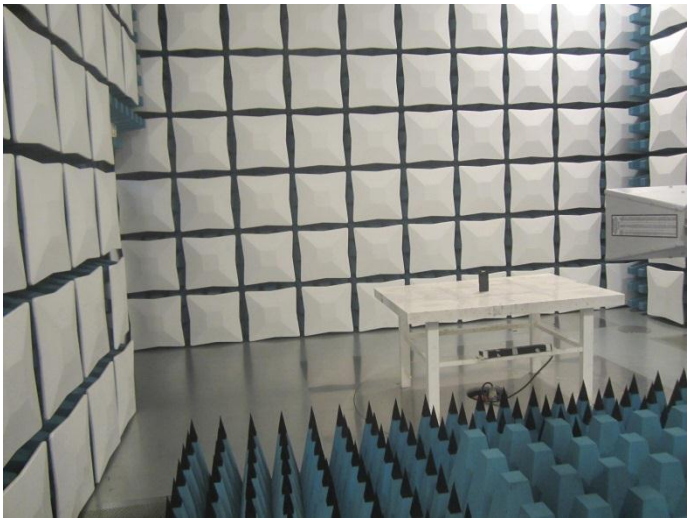
Worst case

Reference Frequency: LTE Band 26 Middle channel=819MHz,10MHz Bandwidth							
Temperature (°C)	Power supplied (Vdc)	Frequency error				Limit (ppm)	Result
		QPSK		16QAM			
		Hz	ppm	Hz	ppm		
25	8.74	11	0.013	29	0.035	2.50	Pass
	7.60	19	0.023	28	0.034		
	6.46	17	0.021	36	0.044		

6. Test Setup Photos of the EUT

Radiated emission:





7. External and Internal Photos of the EUT

Reference to the test report No.: TRE1705015001.

.....End of Report.....