



TEST REPORT

No. I17Z61374-WMD03

for

Reliance Communications, LLC

GSM/CDMA/WCDMA/LTE mobile phone

Model Name: RC555L

FCC ID: 2AGBH-RC555L

with

Hardware Version: V2.0

Software Version: Orbic-RC555L-V1.6.3

Issued Date: 2017-10-17



Note:

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The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

Test Laboratory:

Test Firm Designation Number: CN5017

CTTL, Telecommunication Technology Labs, CAICT

No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191.

Tel: +86(0)10-62304633-2512, Fax: +86(0)10-62304633-2504

Email: cttl_terminals@caict.ac.cn, website: www.caict.ac.cn

REPORT HISTORY

Report Number	Revision	Description	Issue Date
I17Z61374-WMD03	Rev.0	1 st edition	2017-09-26
I17Z61374-WMD03	Rev.1	Add LTE Band17	2017-10-17

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1. Test Laboratory

1.1. Testing Location

Location 1: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,
P. R. China 100191

Location 2: CTTL(Shouxiang)

Address: No. 51 Shouxiang Science Building, Xueyuan Road,
Haidian District, Beijing, P. R. China 100191

1.2. Testing Environment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2017-08-17

Testing End Date: 2017-10-17

1.4. Signature



Shen Yi

(Prepared this test report)



Zhou Yu

(Reviewed this test report)



Zhao Hui Lin

Deputy Director of the laboratory

(Approved this test report)



2. Client Information

2.1. Applicant Information

Company Name: Reliance Communications, LLC
Address /Post: 555 Wireless BLVD, Hauppauge NY 11788
Contact: Saqib Ghouri /Chandler Chen
Email: saqib.ghouri@reliance.us/chandler.chen@reliance.us
Telephone: +92-317-512-6111/+86 185-7557-6433
Fax: \

2.2. Manufacturer Information

Company Name: Unimaxcomm
Address /Post: Room 602, Building-B, Shenzhen Software Park T3, Hi-Tech Park
South, Nan Shan District, Shenzhen, China
Contact: Chunli.He
Email: hchunli@unimaxcomm.com
Telephone: 130 7785 5257
Fax: \

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	GSM/CDMA/WCDMA/LTE mobile phone
Model Name	RC555L
FCC ID	2AGBH-RC555L
Antenna	Integrated
Extreme vol. Limits	3.6VDC to 4.3VDC (nominal: 3.8VDC)
Extreme temp. Tolerance	-10°C to +55°C

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of CTTL, Telecommunication Technology Labs, Academy of Telecommunication Research, MIIT

3.2. Internal Identification of EUT used during the test

EUT ID*	IMEI	HW Version	SW Version	Date of receipt
UT08a	358924080002271	V2.0	Orbic-RC555L-V1.6.3	2017-08-17

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	SN
AE1	Battery	/
AE2	Normal Charger	/

AE1

Model	RC555L
Manufacturer	Veken
Capacitance	3000mAh
Nominal Voltage	3.8V

AE2

Model	RC555L
Manufacturer	BLJ

*AE ID: is used to identify the test sample in the lab internally.

3.4. General Description

The Equipment Under Test (EUT) is a model of GSM Quad-band/CDMA/EVDO Tri-band/HSPA-UMTS Six-band/LTE 19 band mobile phone with integrated antenna. Manual and specifications of the EUT were provided to fulfil the test.

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 24	PERSONAL COMMUNICATIONS SERVICES	10-1-16 Edition
FCC Part 22	PUBLIC MOBILE SERVICES	10-1-16 Edition
FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	10-1-16 Edition
ANSI/TIA-603-D	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2010
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2014
KDB 971168 D01	MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS	v02r02

5. SUMMARY OF TEST RESULTS

5.1. Summary of test results

Abbreviations used in this clause:		
Verdict Column	P	Pass
	F	Fail
	NA	Not applicable
	NM	Not measured
Location Column	A/B/C/D	The test is performed in test location A, B, C or D which are described in section 1.1 of this report

LTE Band 2

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	24.232(c)	A.1	P
2	Emission Limit	24.238(a), 2.1051	A.2	P
3	Frequency Stability	24.235, 2.1055	A.3	P
4	Occupied Bandwidth	2.1049(h)(i)	A.4	P
5	Emission Bandwidth	24.238(a)	A.5	P
6	Band Edge Compliance	24.238(a)	A.6	P
7	Conducted Spurious Emission	24.238, 2.1057	A.7	P
8	Peak to Average Power Ratio	24.232 (d)	A.8	P

LTE Band 4

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	27.50(d)(4)	A.1	P
2	Emission Limit	27.53(h), 2.1051	A.2	P
3	Frequency Stability	27.54, 2.1055	A.3	P
4	Occupied Bandwidth	2.1049(h)(i)	A.4	P
5	Emission Bandwidth	27.53(h)	A.5	P
6	Band Edge Compliance	27.53(h)	A.6	P
7	Conducted Spurious Emission	27.53(h), 2.1057	A.7	P
8	Peak to Average Power Ratio	27.50(a)	A.8	P

LTE Band 5

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	§2.1046(a), 22.913(a)	A.1	P
2	Emission Limit	22.917, 2.1051	A.2	P
3	Frequency Stability	22.235, 2.1055	A.3	P
4	Occupied Bandwidth	2.1049(h)(i)	A.4	P
5	Emission Bandwidth	22.917(b)	A.5	P
6	Band Edge Compliance	22.917(b)	A.6	P
7	Conducted Spurious Emission	22.917, 2.1057	A.7	P

LTE Band 12

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	27.50(c)(10)	A.1	P
2	Emission Limit	27.53(g), 2.1051	A.2	P
3	Frequency Stability	27.54, 2.1055	A.3	P
4	Occupied Bandwidth	2.1049(h)(i)	A.4	P
5	Emission Bandwidth	27.53(g)	A.5	P
6	Band Edge Compliance	27.53(g)	A.6	P
7	Conducted Spurious Emission	27.53(g), 2.1057	A.7	P
8	Peak to Average Power Ratio	27.50(a)	A.8	P

LTE Band 17

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	27.50(c)(10)	A.1	P
2	Emission Limit	27.53(g), 2.1051	A.2	P
3	Frequency Stability	27.54, 2.1055	A.3	P
4	Occupied Bandwidth	2.1049(h)(i)	A.4	P
5	Emission Bandwidth	27.53(g)	A.5	P
6	Band Edge Compliance	27.53(g)	A.6	P
7	Conducted Spurious Emission	27.53(g), 2.1057	A.7	P
8	Peak to Average Power Ratio	27.50(a)	A.8	P

LTE Band 13

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	27.50(b)(10)	A.1	P
2	Emission Limit	27.53(c), 2.1051	A.2	P
3	Frequency Stability	27.54, 2.1055	A.3	P
4	Occupied Bandwidth	2.1049(h)(i)	A.4	P
5	Emission Bandwidth	27.53(c)	A.5	P
6	Band Edge Compliance	27.53(c)	A.6	P
7	Conducted Spurious Emission	27.53(c), 2.1057	A.7	P
8	Peak to Average Power Ratio	27.50(a)	A.8	P

LTE Band 25

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	24.232(c)	A.1	P
2	Emission Limit	24.238(a), 2.1051	A.2	P
3	Frequency Stability	24.235, 2.1055	A.3	P
4	Occupied Bandwidth	2.1049(h)(i)	A.4	P
5	Emission Bandwidth	24.238(a)	A.5	P
6	Band Edge Compliance	24.238(a)	A.6	P
7	Conducted Spurious Emission	24.238, 2.1057	A.7	P
8	Peak to Average Power Ratio	24.232 (d)	A.8	P

LTE Band 26

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	22.913(a)	A.1	P
2	Emission Limit	22.917	A.2	P
3	Frequency Stability	22.355	A.3	P
4	Occupied Bandwidth	22.99	A.4	P
5	Emission Bandwidth	22.917(b)	A.5	P
6	Band Edge Compliance	22.917(b)	A.6	P
7	Conducted Spurious Emission	22.917	A.7	P

LTE Band 41

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	27.50(h)(2)	A.1	P
2	Emission Limit	27.53(m), 2.1051	A.2	P
3	Frequency Stability	27.54, 2.1055	A.3	P
4	Occupied Bandwidth	2.1049(h)(i)	A.4	P
5	Emission Bandwidth	27.53(m)	A.5	P
6	Band Edge Compliance	27.53(m)	A.6	P
7	Conducted Spurious Emission	27.53(m), 2.1057	A.7	P
8	Peak to Average Power Ratio	27.50(a)	A.8	P

5.2. Statements

The test cases listed in section 6.1 of this report for the EUT specified in section 3 were performed by CTTL according to the standards or reference documents in section 4.1

The EUT met all applicable requirements of the standards or reference documents in section 4.1.

This report only deals with the LTE functions among the features described in section 3.

6. Test Equipments Utilized

NO.	Description	TYPE	series number	MANUFACTURE	CAL DUE DATE	Calibration interval
1	Universal Radio Communication Tester	CMW500	159082	R&S	2017-12-06	1 year
2	Spectrum Analyzer	FSU26	200030	R&S	2018-06-20	1 year
3	Climate chamber	SH-241	92007454	ESPEC	2017-12-14	2 year

ANNEX A: MEASUREMENT RESULTS

A.1 OUTPUT POWER

A.1.1 Summary

During the process of testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication tester (CMW500) to ensure max power transmission and proper modulation. In all cases, output power is within the specified limits.

A.1.2 Conducted

A.1.2.1 Method of Measurements

The EUT was set up for the max output power with pseudo random data modulation. These measurements were done at 3 frequencies (bottom, middle and top of operational frequency range) for each bandwidth.

A.1.2.2 Measurement result

LTE band 2

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
1.4MHz	1 RB high	1909.3	23.07	22.20
		1880.0	23.29	22.42
		1850.7	22.86	22.00
	1 RB low	1909.3	23.14	22.24
		1880.0	23.22	22.85
		1850.7	23.09	22.12
	50% RB mid	1909.3	23.26	22.22
		1880.0	23.24	22.31
		1850.7	23.40	22.51
	100% RB	1909.3	22.20	21.03
		1880.0	22.31	21.21
		1850.7	22.14	21.15
3MHz	1 RB high	1908.5	23.12	22.01
		1880.0	23.19	22.84
		1851.5	23.44	22.31
	1 RB low	1908.5	23.19	22.20
		1880.0	23.33	22.49
		1851.5	23.28	22.37
	50% RB mid	1908.5	22.29	21.31
		1880.0	22.30	21.27
		1851.5	22.33	21.50

	100% RB	1908.5	22.26	21.36
		1880.0	22.32	21.38
		1851.5	22.28	21.34
5MHz	1 RB high	1907.5	23.28	22.41
		1880.0	23.26	22.56
		1852.5	23.43	22.54
	1 RB low	1907.5	23.37	22.34
		1880.0	23.20	22.68
		1852.5	23.30	22.36
	50% RB mid	1907.5	22.35	21.45
		1880.0	22.41	21.46
		1852.5	22.36	21.43
	100% RB	1907.5	22.31	21.41
		1880.0	22.28	21.33
		1852.5	22.27	21.33
10MHz	1 RB high	1905.0	23.36	22.44
		1880.0	23.37	22.85
		1855.0	23.20	22.37
	1 RB low	1905.0	23.41	22.55
		1880.0	23.38	22.80
		1855.0	23.51	22.40
	50% RB mid	1905.0	22.46	21.44
		1880.0	22.51	21.44
		1855.0	22.48	21.70
	100% RB	1905.0	22.35	21.39
		1880.0	22.30	21.31
		1855.0	22.44	21.41
15MHz	1 RB high	1902.5	23.25	22.27
		1880.0	23.37	23.28
		1857.5	23.28	22.29
	1 RB low	1902.5	23.14	22.41
		1880.0	23.29	22.49
		1857.5	23.20	22.17
	50% RB mid	1902.5	22.40	21.47
		1880.0	22.38	21.44
		1857.5	22.48	21.55
	100% RB	1902.5	22.29	21.44
		1880.0	22.35	21.39
		1857.5	22.31	21.40

20MHz	1 RB high	1900.0	23.24	22.87
		1880.0	23.24	22.47
		1860.0	23.26	23.36
	1 RB low	1900.0	23.48	23.09
		1880.0	23.56	22.61
		1860.0	23.38	22.96
	50% RB mid	1900.0	22.40	21.44
		1880.0	22.42	21.44
		1860.0	22.31	21.26
	100% RB	1900.0	22.30	21.33
		1880.0	22.32	21.30
		1860.0	22.36	21.53

LTE band 4

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
1.4MHz	1 RB high	1754.3	23.33	22.42
		1732.5	23.82	22.81
		1710.7	23.34	22.45
	1 RB low	1754.3	23.26	22.40
		1732.5	23.74	22.86
		1710.7	23.34	22.53
	50% RB mid	1754.3	23.34	22.51
		1732.5	23.70	22.82
		1710.7	23.51	22.73
	100% RB	1754.3	22.25	21.35
		1732.5	22.51	21.39
		1710.7	22.74	21.74
3MHz	1 RB high	1753.5	23.30	22.30
		1732.5	23.30	23.40
		1711.5	23.41	22.57
	1 RB low	1753.5	23.29	22.49
		1732.5	23.37	23.30
		1711.5	23.45	22.41
	50% RB mid	1753.5	22.32	21.53
		1732.5	22.45	21.28
		1711.5	22.44	21.73
	100% RB	1753.5	22.30	21.43
		1732.5	22.43	21.52
		1711.5	22.58	21.70
5MHz	1 RB high	1752.5	23.41	22.67
		1732.5	23.21	22.72
		1712.5	23.18	22.34
	1 RB low	1752.5	23.39	22.57
		1732.5	23.28	22.72
		1712.5	23.67	22.27
	50% RB mid	1752.5	22.52	21.40
		1732.5	22.36	21.46
		1712.5	22.44	21.38
	100% RB	1752.5	22.42	21.47
		1732.5	22.45	21.56
		1712.5	22.49	21.43
10MHz	1 RB high	1750	23.46	22.54
		1732.5	23.42	23.01

	1 RB low	1715	23.88	22.80
		1750	23.70	22.58
		1732.5	23.25	23.23
		1715	23.66	22.75
	50% RB mid	1750	22.55	21.59
		1732.5	22.39	21.48
		1715	22.72	21.79
	100% RB	1750	22.37	21.44
		1732.5	22.41	21.25
		1715	22.56	21.59
15MHz	1 RB high	1747.5	23.43	22.32
		1732.5	23.32	22.17
		1717.5	23.27	22.65
	1 RB low	1747.5	23.69	22.44
		1732.5	23.34	23.21
		1717.5	23.42	22.68
	50% RB mid	1747.5	22.44	21.55
		1732.5	22.46	21.50
		1717.5	22.41	21.47
	100% RB	1747.5	22.27	21.44
		1732.5	22.32	21.39
		1717.5	22.35	21.28
20MHz	1 RB high	1745	23.45	23.17
		1732.5	23.71	22.28
		1720	23.36	23.06
	1 RB low	1745	23.55	23.16
		1732.5	23.52	22.42
		1720	23.18	22.87
	50% RB mid	1745	22.47	21.36
		1732.5	22.47	21.24
		1720	22.41	21.38
	100% RB	1745	22.41	21.40
		1732.5	22.38	21.31
		1720	22.62	21.38

LTE band 5

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
1.4MHz	1 RB high	848.3	23.30	22.25
		836.5	23.09	22.25
		824.7	23.28	22.43
	1 RB low	848.3	23.11	22.28
		836.5	23.06	22.21
		824.7	23.25	22.39
	50% RB mid	848.3	23.12	22.05
		836.5	23.26	22.09
		824.7	23.19	22.18
	100% RB	848.3	22.07	20.98
		836.5	22.06	20.99
		824.7	22.24	20.91
3MHz	1 RB high	847.5	23.24	22.31
		836.5	23.30	22.45
		825.5	23.21	22.75
	1 RB low	847.5	23.17	22.36
		836.5	23.33	22.86
		825.5	23.32	22.99
	50% RB mid	847.5	22.27	21.38
		836.5	22.30	21.40
		825.5	22.35	21.16
	100% RB	847.5	22.21	21.30
		836.5	22.25	21.27
		825.5	22.21	21.36
5MHz	1 RB high	846.5	23.27	22.06
		836.5	23.30	22.56
		826.5	23.16	22.38
	1 RB low	846.5	22.99	21.95
		836.5	23.23	22.34
		826.5	23.13	22.02
	50% RB mid	846.5	22.34	21.23
		836.5	22.35	21.23
		826.5	22.38	21.27
	100% RB	846.5	22.15	21.17
		836.5	22.30	21.33
		826.5	22.26	21.34
10MHz	1 RB high	844.0	23.31	22.37
		836.5	23.61	22.99



	1 RB low	829.0	23.29	22.24
		844.0	23.21	22.25
		836.5	23.25	22.98
		829.0	23.43	22.23
	50% RB mid	844.0	22.21	21.36
		836.5	22.40	21.37
		829.0	22.45	21.61
	100% RB	844.0	22.31	21.13
		836.5	22.30	21.34
		829.0	22.32	21.28

LTE band 12

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
1.4MHz	1 RB high	715.3	23.41	22.51
		707.5	23.50	22.40
		699.7	23.36	22.56
	1 RB low	715.3	23.58	22.68
		707.5	23.55	22.75
		699.7	23.50	22.50
	50% RB mid	715.3	23.76	22.78
		707.5	23.60	22.68
		699.7	23.72	22.59
	100% RB	715.3	22.62	21.62
		707.5	22.57	21.61
		699.7	22.68	21.64
3MHz	1 RB high	714.5	23.56	22.50
		707.5	23.39	23.09
		700.5	23.45	22.60
	1 RB low	714.5	23.31	22.62
		707.5	23.40	22.63
		700.5	23.56	22.58
	50% RB mid	714.5	22.57	21.56
		707.5	22.67	21.79
		700.5	22.61	21.81
	100% RB	714.5	22.60	21.72
		707.5	22.61	21.62
		700.5	22.60	21.60
5MHz	1 RB high	713.5	23.49	22.48
		707.5	23.32	22.77
		701.5	23.55	22.40
	1 RB low	713.5	23.30	22.38
		707.5	23.57	22.75
		701.5	23.55	22.71
	50% RB mid	713.5	22.57	21.77
		707.5	22.65	21.65
		701.5	22.51	21.42
	100% RB	713.5	22.51	21.63
		707.5	22.59	21.60
		701.5	22.54	21.49
10MHz	1 RB high	711.0	23.34	22.51
		707.5	23.15	22.76

	1 RB low	704.0	23.46	22.56
		711.0	23.70	22.73
		707.5	23.45	22.71
		704.0	23.47	22.61
	50% RB mid	711.0	22.66	21.63
		707.5	22.60	21.67
		704.0	22.53	21.46
	100% RB	711.0	22.51	21.57
		707.5	22.48	21.54
		704.0	22.60	21.48

LTE band 13

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
5MHz	1 RB high	784.5	23.60	22.61
		782	23.96	22.51
		779.5	23.94	22.16
	1 RB low	784.5	23.63	22.89
		782	23.68	22.46
		779.5	23.91	22.30
	50% RB mid	784.5	22.77	21.78
		782	22.85	21.71
		779.5	22.74	21.52
	100% RB	784.5	22.75	21.78
		782	22.65	21.87
		779.5	22.76	21.87
10MHz	1 RB high	782.0	23.74	22.89
	1 RB low	782.0	23.57	23.10
	50% RB mid	782.0	22.84	21.84
	100% RB	782.0	22.76	21.74

LTE band 17

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
5MHz	1 RB high	713.5	23.28	21.99
		710.0	23.35	22.39
		706.5	23.26	22.02
	1 RB low	713.5	23.42	22.33
		710.0	23.61	22.29
		706.5	23.55	22.13
	50% RB mid	713.5	22.43	21.47
		710.0	22.58	21.77
		706.5	22.65	21.49
	100% RB	713.5	22.45	21.47
		710.0	22.51	21.62
		706.5	22.54	21.56
10MHz	1 RB high	711	23.31	22.53
		710	23.07	23.04
		709	23.38	22.45
	1 RB low	711	23.58	22.55
		710	23.44	23.33
		709	24.08	22.76
	50% RB mid	711	22.48	21.49
		710	22.62	21.60
		709	22.74	21.83
	100% RB	711	22.60	21.45
		710	22.53	21.60
		709	22.69	21.67

LTE band 25

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
1.4MHz	1 RB high	1914.3	23.63	22.68
		1882.5	23.83	22.76
		1850.7	23.36	22.53
	1 RB low	1914.3	23.36	22.53
		1882.5	23.65	22.75
		1850.7	23.48	22.49
	50% RB mid	1914.3	23.73	22.65
		1882.5	23.76	22.67
		1850.7	23.74	22.57
	100% RB	1914.3	22.57	21.48
		1882.5	22.59	21.40
		1850.7	22.72	21.61
3MHz	1 RB high	1913.5	23.59	22.83
		1882.5	23.63	23.46
		1851.5	23.59	22.68
	1 RB low	1913.5	23.51	22.65
		1882.5	23.81	23.28
		1851.5	23.60	22.73
	50% RB mid	1913.5	22.51	21.70
		1882.5	22.65	21.94
		1851.5	22.61	21.63
	100% RB	1913.5	22.57	21.72
		1882.5	22.65	21.86
		1851.5	22.57	21.74
5MHz	1 RB high	1912.5	23.48	22.71
		1882.5	23.60	22.93
		1852.5	23.78	22.56
	1 RB low	1912.5	23.45	22.55
		1882.5	23.68	22.88
		1852.5	23.67	22.78
	50% RB mid	1912.5	22.68	21.66
		1882.5	22.80	21.48
		1852.5	22.68	21.60
	100% RB	1912.5	22.64	21.70
		1882.5	22.78	21.86
		1852.5	22.69	21.70
10MHz	1 RB high	1910.0	23.65	22.83
		1882.5	23.66	22.90

	1 RB low	1855.0	23.67	22.79
		1910.0	23.52	22.69
		1882.5	23.73	23.12
		1855.0	23.70	22.74
	50% RB mid	1910.0	22.56	21.63
		1882.5	22.79	21.84
		1855.0	22.77	21.74
	100% RB	1910.0	22.51	21.53
		1882.5	22.68	21.62
		1855.0	22.74	21.71
15MHz	1 RB high	1907.5	23.63	22.35
		1882.5	23.45	22.87
		1857.5	23.59	22.73
	1 RB low	1907.5	23.58	22.67
		1882.5	23.69	23.08
		1857.5	23.59	22.85
	50% RB mid	1907.5	22.60	21.71
		1882.5	22.76	21.74
		1857.5	22.80	21.68
	100% RB	1907.5	22.52	21.62
		1882.5	22.62	21.79
		1857.5	22.63	21.66
20MHz	1 RB high	1905.0	23.46	23.18
		1882.5	23.66	22.63
		1860.0	23.48	23.18
	1 RB low	1905.0	23.48	23.16
		1882.5	23.51	22.65
		1860.0	23.65	23.18
	50% RB mid	1905.0	22.62	21.61
		1882.5	22.77	21.73
		1860.0	22.83	21.70
	100% RB	1905.0	22.54	21.53
		1882.5	22.70	21.71
		1860.0	22.67	21.81

LTE band 26

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
1.4MHz	1 RB high	848.3	23.26	22.29
		836.5	23.64	22.47
		824.7	23.58	22.74
	1 RB low	848.3	23.25	22.43
		836.5	23.39	22.46
		824.7	23.32	22.46
	50% RB mid	848.3	23.28	22.41
		836.5	23.43	22.70
		824.7	23.56	22.66
	100% RB	848.3	22.39	21.45
		836.5	22.47	21.50
		824.7	22.42	21.44
3MHz	1 RB high	847.5	23.24	22.34
		836.5	23.46	22.55
		825.5	23.28	22.36
	1 RB low	847.5	23.36	22.34
		836.5	23.32	22.46
		825.5	23.40	22.29
	50% RB mid	847.5	22.29	21.45
		836.5	22.49	21.60
		825.5	22.39	21.57
	100% RB	847.5	22.38	21.38
		836.5	22.34	21.41
		825.5	22.44	21.32
5MHz	1 RB high	846.5	23.01	22.12
		836.5	23.54	22.41
		826.5	23.46	22.44
	1 RB low	846.5	23.45	22.17
		836.5	23.20	22.14
		826.5	23.50	22.29
	50% RB mid	846.5	22.32	21.32
		836.5	22.50	21.50
		826.5	22.34	21.23
	100% RB	846.5	22.28	21.28
		836.5	22.43	21.41
		826.5	22.30	21.38
10MHz	1 RB high	844.0	23.49	22.42
		836.5	23.38	22.34

	1 RB low	829.0	23.19	22.36
		844.0	23.64	22.47
		836.5	23.40	22.32
		829.0	23.44	22.37
	50% RB mid	844.0	22.37	21.49
		836.5	22.45	21.62
		829.0	22.54	21.61
	100% RB	844.0	22.39	21.35
		836.5	22.29	21.34
		829.0	22.36	21.53
15MHz	1 RB high	841.5	23.34	22.21
		836.5	23.01	23.18
		831.5	23.14	22.41
	1 RB low	841.5	23.27	22.49
		836.5	23.37	22.75
		831.5	23.27	22.43
	50% RB mid	841.5	22.32	21.19
		836.5	22.42	21.36
		831.5	22.38	21.49
	100% RB	841.5	22.39	21.42
		836.5	22.31	21.35
		831.5	22.33	21.41

LTE band 41

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
5MHz	1 RB high	2687.5	23.92	24.13
		2593.0	23.88	23.56
		2498.5	24.25	24.51
	1 RB low	2687.5	23.93	24.14
		2593.0	23.78	23.72
		2498.5	24.21	24.16
	50% RB mid	2687.5	24.30	24.38
		2593.0	24.17	24.20
		2498.5	24.08	24.00
	100% RB	2687.5	24.31	24.28
		2593.0	24.08	24.00
		2498.5	24.01	24.12
10MHz	1 RB high	2685.0	24.36	24.46
		2593.0	24.47	24.39
		2501.0	24.40	24.53
	1 RB low	2685.0	24.29	24.09
		2593.0	24.25	24.70
		2501.0	24.08	24.29
	50% RB mid	2685.0	24.32	24.27
		2593.0	24.31	24.35
		2501.0	24.39	24.38
	100% RB	2685.0	24.24	24.37
		2593.0	24.23	24.36
		2501.0	24.25	24.31
15MHz	1 RB high	2682.5	24.03	24.35
		2593.0	24.05	24.15
		2503.5	23.97	24.24
	1 RB low	2682.5	24.10	24.41
		2593.0	23.75	24.28
		2503.5	23.81	24.26
	50% RB mid	2682.5	24.19	24.23
		2593.0	24.21	24.09
		2503.5	24.18	24.07
	100% RB	2682.5	24.08	24.31
		2593.0	24.08	24.20
		2503.5	24.16	24.15
20MHz	1 RB high	2680.0	24.30	24.42

		2593.0	24.01	24.40
		2506.0	24.48	24.55
	1 RB low	2680.0	24.47	24.49
		2593.0	23.78	24.40
		2506.0	24.16	24.34
	50% RB mid	2680.0	24.16	24.27
		2593.0	24.11	24.15
		2506.0	24.11	24.23
	100% RB	2680.0	24.16	24.15
		2593.0	24.00	24.01
		2506.0	24.00	24.16

A.2 FREQUENCY STABILITY

A.2.1 Method of Measurement

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a “call mode”. This is accomplished with the use of R&S CMW500 DIGITAL RADIO COMMUNICATION TESTER.

1. Measure the carrier frequency at room temperature.
2. Subject the EUT to overnight soak at -10°C.
3. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on middle channel for LTE band 2 4 5 12 13 25 26 41, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
4. Repeat the above measurements at 10°C increments from -10°C to +40°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
5. Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments re-measuring carrier frequency at each voltage. Pause at nominal voltage for 1.5 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +40°C.
7. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
8. Repeat the above measurements at 10 °C increments from -10°C to +40°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5°C during the measurement procedure.

A.2.2 Measurement Limit

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d) (2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of between 3.6VDC and 4.3VDC, with a nominal voltage of 3.8VDC. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress. These voltages represent a tolerance from -5.4% to 10.8%. For the purposes of measuring frequency stability these voltage limits are to be used.

A.2.3 Measurement results

LTE Band 2, 1.4MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
3.6	-3.60	-4.41	0.002	0.002
3.8	-1.37	-11.04	0.001	0.006
4.3	0.70	-10.11	0.000	0.005

Frequency Error vs Temperature

Temperature (°C)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
40	-1.63	-5.76	0.001	0.003
30	-2.88	-9.53	0.002	0.005
20	-2.30	-6.49	0.001	0.003
10	0.01	-3.39	0.000	0.002
0	-7.31	-3.48	0.004	0.002
- 10	-3.78	-5.52	0.002	0.003

LTE Band 4, 1.4MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
3.6	1.46	18.27	0.001	0.011
3.8	-2.57	16.68	0.001	0.010
4.3	2.16	17.42	0.001	0.010

Frequency Error vs Temperature

Temperature (°C)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
40	-0.56	16.37	0.000	0.009
30	-0.11	17.41	0.000	0.010
20	-0.09	18.83	0.000	0.011
10	-1.50	20.11	0.001	0.012
0	-3.29	17.72	0.002	0.010
- 10	-2.23	17.87	0.001	0.010

LTE Band 5, 1.4MHz bandwidth (worst case of all bandwidths)
Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
3.6	0.00	17.01	0.000	0.020
3.8	-0.53	17.50	0.001	0.021
4.3	-2.60	18.85	0.003	0.023

Frequency Error vs Temperature

Temperature (°C)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
40	-2.56	17.14	0.003	0.020
30	-0.47	17.98	0.001	0.021
20	-1.13	16.94	0.001	0.020
10	-0.64	16.55	0.001	0.020
0	-0.09	17.02	0.000	0.020
- 10	-0.33	16.78	0.000	0.020

LTE Band 12, 5MHz bandwidth (worst case of all bandwidths)
Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
3.6	0.74	16.02	0.001	0.023
3.8	-0.69	16.42	0.001	0.023
4.3	0.51	17.34	0.001	0.025

Frequency Error vs Temperature

Temperature (°C)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
40	-0.23	17.41	0.000	0.025
30	-0.16	16.31	0.000	0.023
20	0.41	18.77	0.001	0.027
10	-2.69	15.74	0.004	0.022
0	0.84	17.19	0.001	0.024
- 10	-0.87	15.79	0.001	0.022

LTE Band 13, 5MHz bandwidth (worst case of all bandwidths)
Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
3.6	0.10	5.64	0.000	0.007
3.8	-1.77	5.18	0.002	0.007
4.3	-2.20	5.61	0.003	0.007

Frequency Error vs Temperature

Temperature (°C)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
40	0.96	5.46	0.001	0.007
30	-2.29	5.79	0.003	0.007
20	-1.02	4.53	0.001	0.006
10	-1.83	4.55	0.002	0.006
0	1.14	5.19	0.001	0.007
- 10	-1.86	5.66	0.002	0.007

LTE Band 25, 1.4MHz bandwidth (worst case of all bandwidths)
Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
3.6	-3.05	19.25	0.002	0.010
3.8	-0.80	18.71	0.000	0.010
4.3	-1.00	16.87	0.001	0.009

Frequency Error vs Temperature

Temperature (°C)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
40	-4.73	19.77	0.003	0.011
30	2.03	16.12	0.001	0.009
20	0.67	17.94	0.000	0.010
10	0.01	15.98	0.000	0.008
0	-1.73	15.41	0.001	0.008
- 10	3.40	19.21	0.002	0.010

LTE Band 26, 1.4MHz bandwidth (worst case of all bandwidths)
Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
3.6	-4.21	5.15	0.005	0.006
3.8	0.23	5.44	0.000	0.006
4.3	-1.37	4.82	0.002	0.006

Frequency Error vs Temperature

Temperature (°C)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
40	-0.20	6.90	0.000	0.008
30	-2.33	8.83	0.003	0.011
20	-0.33	6.14	0.000	0.007
10	-0.80	8.01	0.001	0.010
0	-1.04	7.10	0.001	0.008
- 10	-0.67	5.16	0.001	0.006

LTE Band 41, 5MHz bandwidth (worst case of all bandwidths)
Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
3.6	2.49	9.78	0.001	0.004
3.8	-1.97	4.39	0.001	0.002
4.3	8.97	5.44	0.003	0.002

Frequency Error vs Temperature

Temperature (°C)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
40	1.89	6.19	0.001	0.002
30	2.29	4.59	0.001	0.002
20	-2.60	5.65	0.001	0.002
10	-3.43	9.13	0.001	0.004
0	1.49	12.95	0.001	0.005
- 10	0.46	11.33	0.000	0.004

Expanded measurement uncertainty for this test item is 10 Hz, $k = 2$.

A.3 OCCUPIED BANDWIDTH

A.3.1 Occupied Bandwidth Results

Occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the US Cellular/PCS frequency bands. The table below lists the measured 99% BW. Spectrum analyzer plots are included on the following pages.

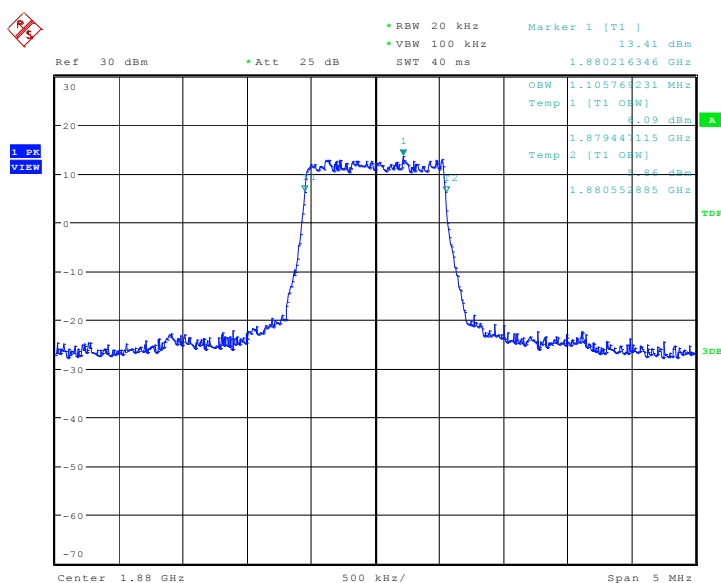
The measurement method is from KDB 971168 4.2:

- The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (i.e., two to five times the OBW).
- The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
- Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least $10\log(\text{OBW} / \text{RBW})$ below the reference level.
- Set the detection mode to peak, and the trace mode to max hold.
- Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

LTE band 2, 1.4MHz (99%)

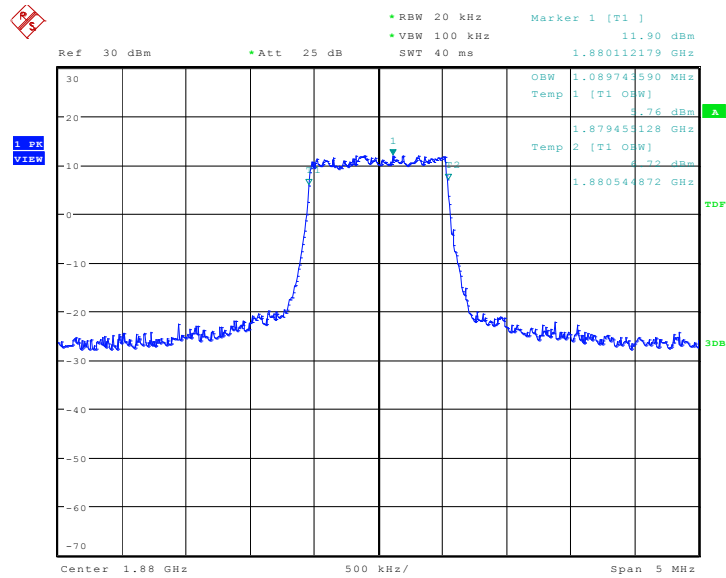
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	1105.77	1089.74

LTE band 2, 1.4MHz Bandwidth, QPSK (99% BW)



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LTE band 2, 1.4MHz Bandwidth, 16QAM (99% BW)

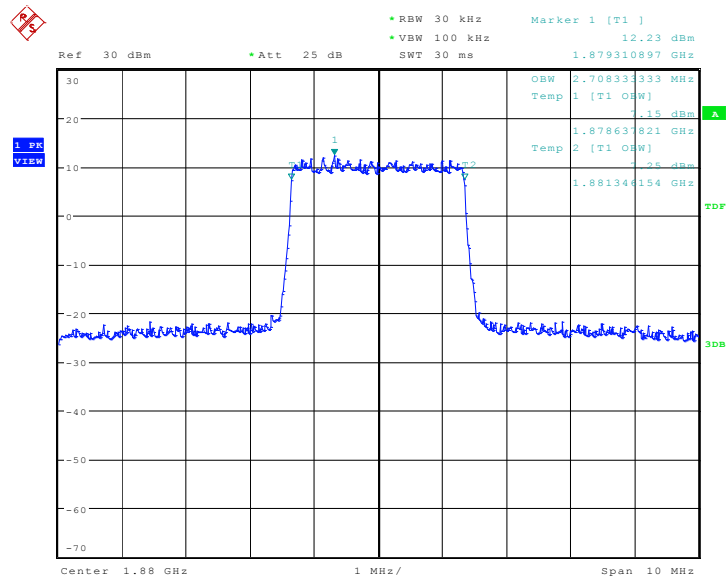


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LTE band 2, 3MHz (99%)

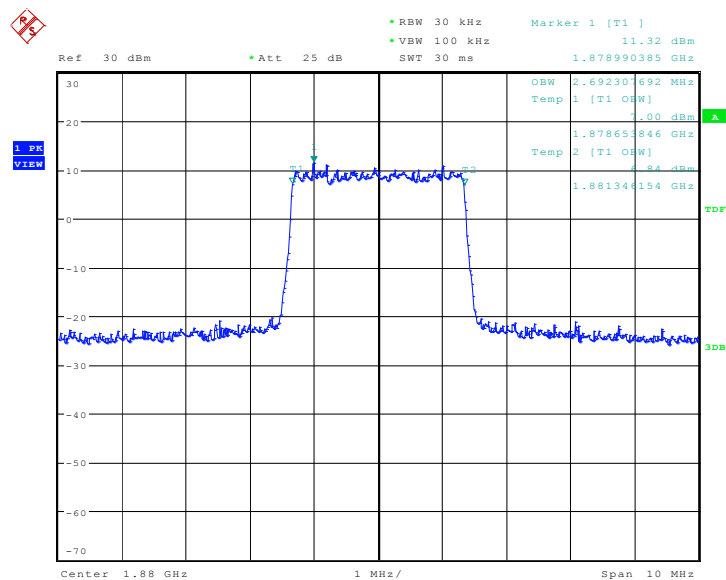
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	2708.33	2692.31

LTE band 2, 3MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 14:36:20

LTE band 2, 3MHz Bandwidth, 16QAM (99% BW)

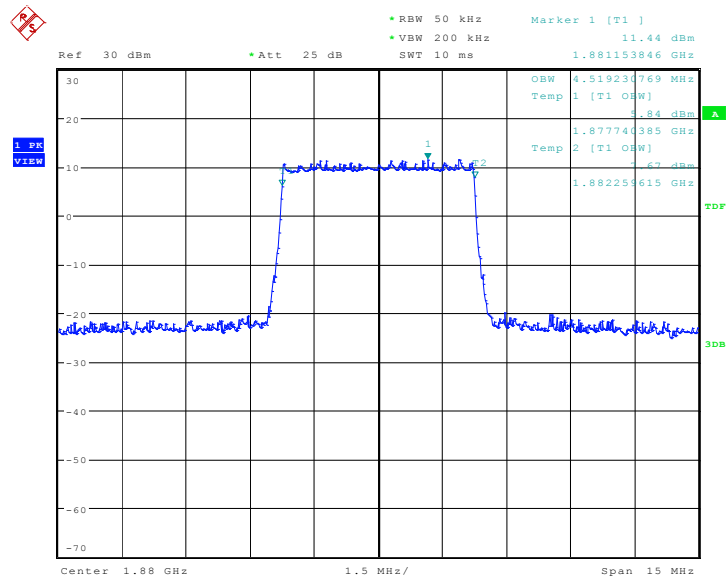


Date: 29.AUG.2017 14:36:35

LTE band 2, 5MHz (99%)

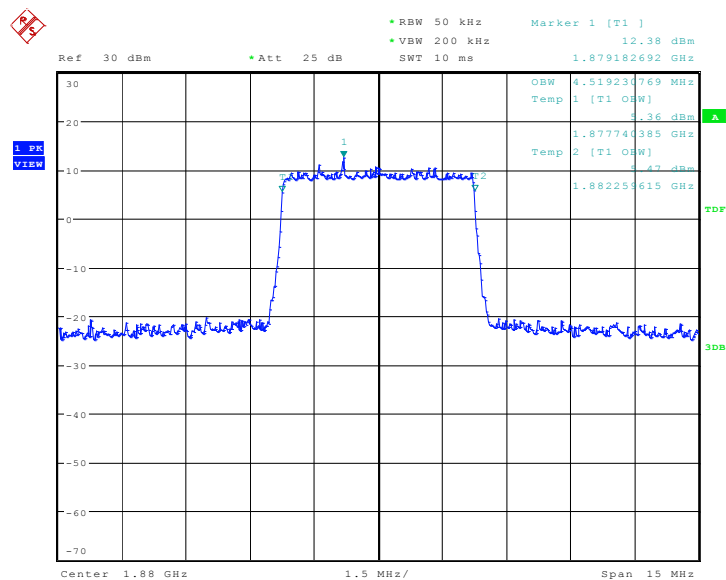
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	4519.23	4519.23

LTE band 2, 5MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 14:43:05

LTE band 2, 5MHz Bandwidth,16QAM (99% BW)

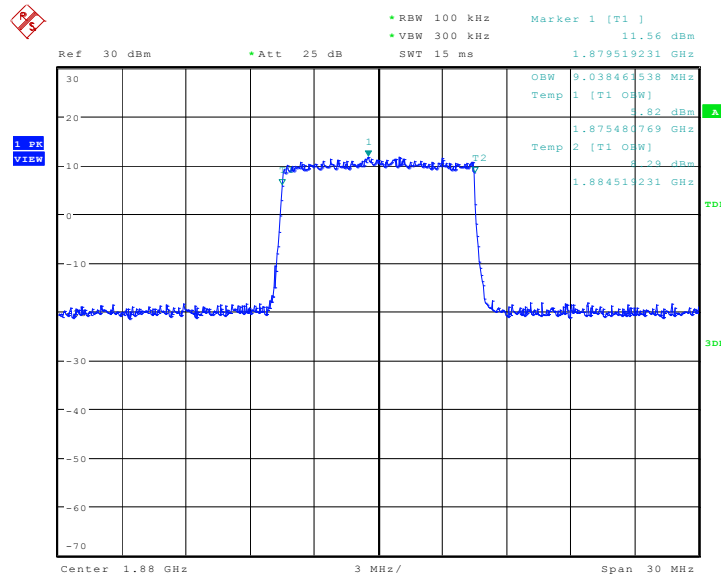


Date: 29.AUG.2017 14:43:19

LTE band 2, 10MHz (99%)

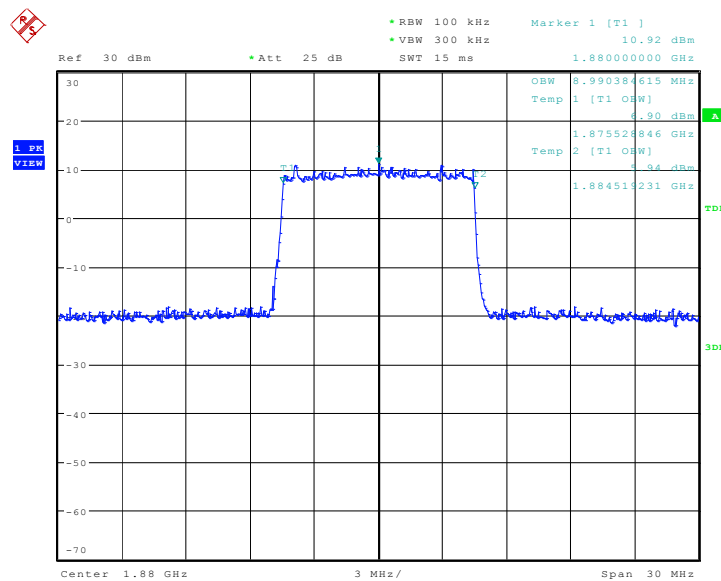
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	9038.46	8990.38

LTE band 2, 10MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 14:49:48

LTE band 2, 10MHz Bandwidth, 16QAM (99% BW)

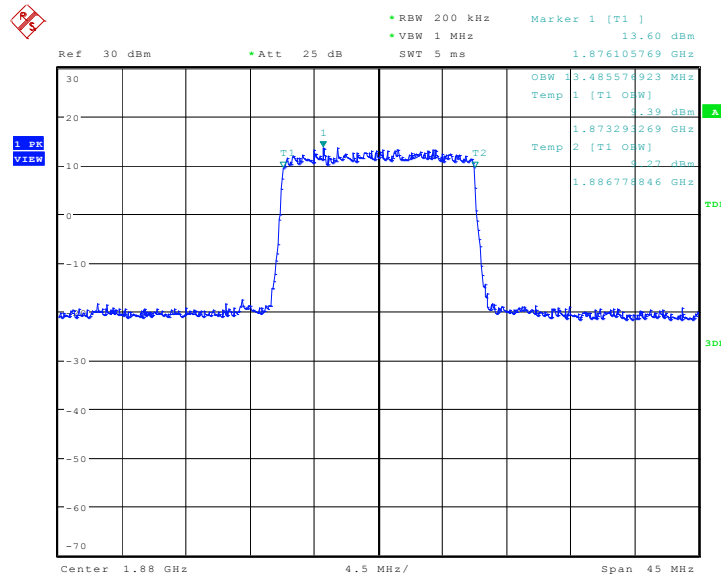


Date: 29.AUG.2017 14:50:01

LTE band 2, 15MHz (99%)

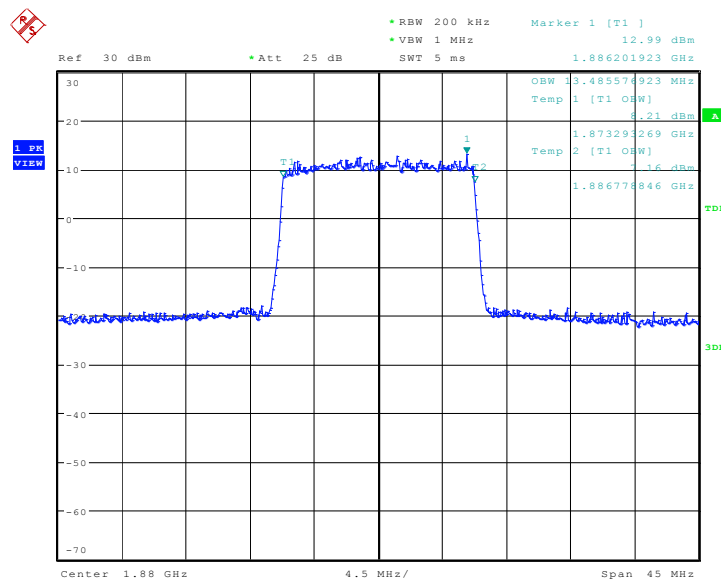
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	13485.58	13485.58

LTE band 2, 15MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 14:57:08

LTE band 2, 15MHz Bandwidth, 16QAM (99% BW)

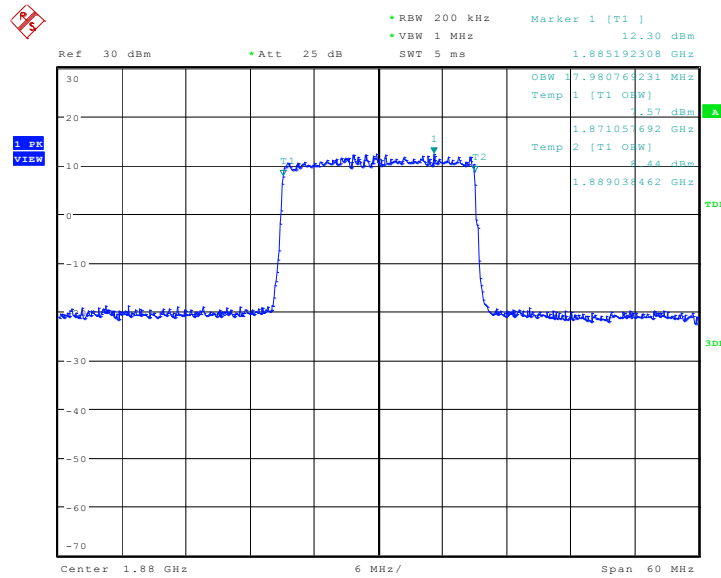


Date: 29.AUG.2017 14:57:21

LTE band 2, 20MHz (99%)

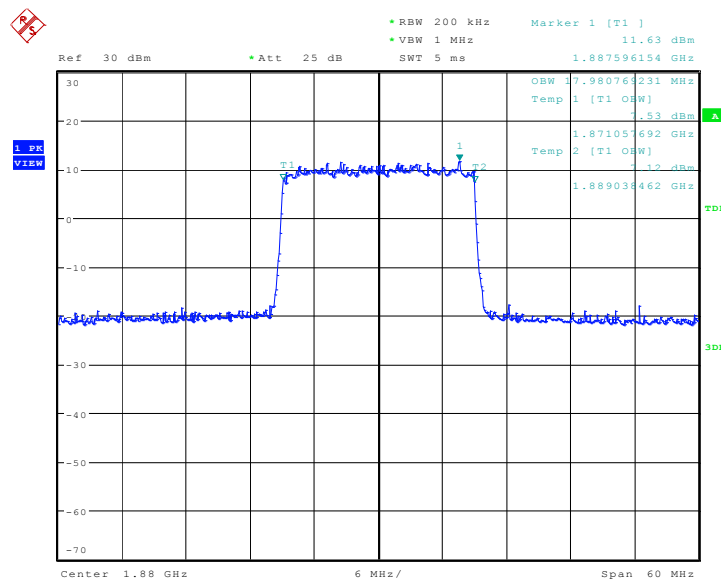
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	17980.77	17980.77

LTE band 2, 20MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 15:04:31

LTE band 2, 20MHz Bandwidth, 16QAM (99% BW)

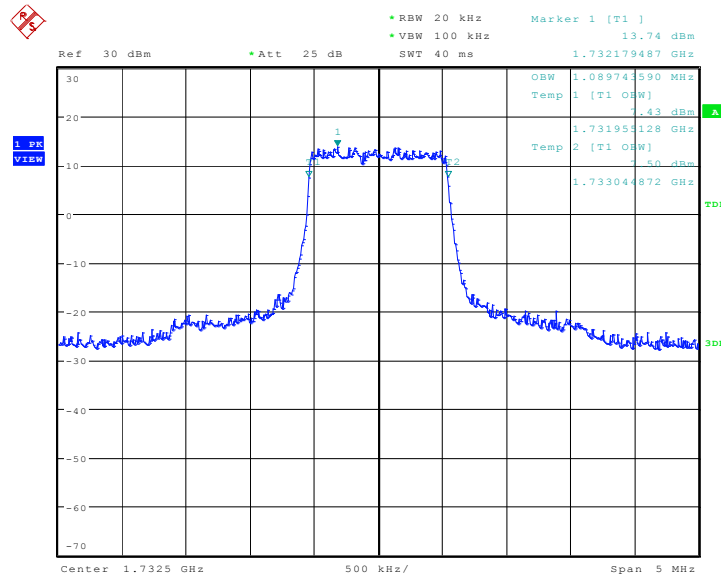


Date: 29.AUG.2017 15:04:45

LTE band 4, 1.4MHz (99%)

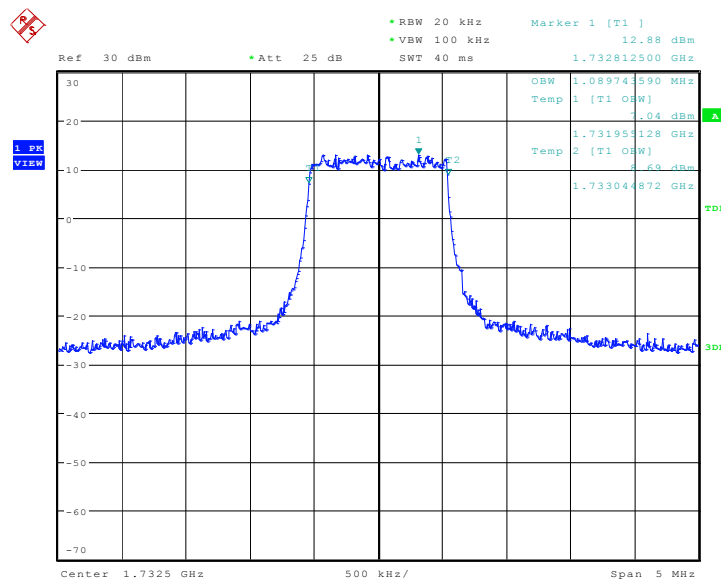
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	1089.74	1089.74

LTE band 4, 1.4MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 15:57:14

LTE band 4, 1.4MHz Bandwidth, 16QAM (99% BW)

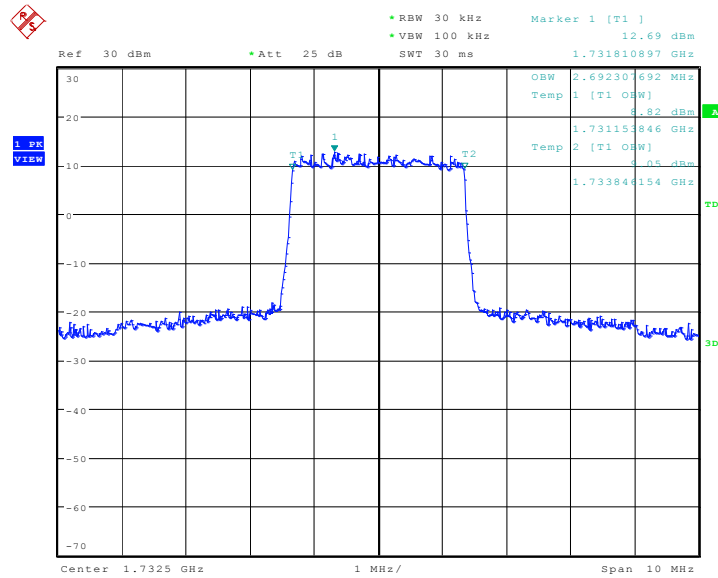


Date: 29.AUG.2017 15:57:27

LTE band 4, 3MHz (99%)

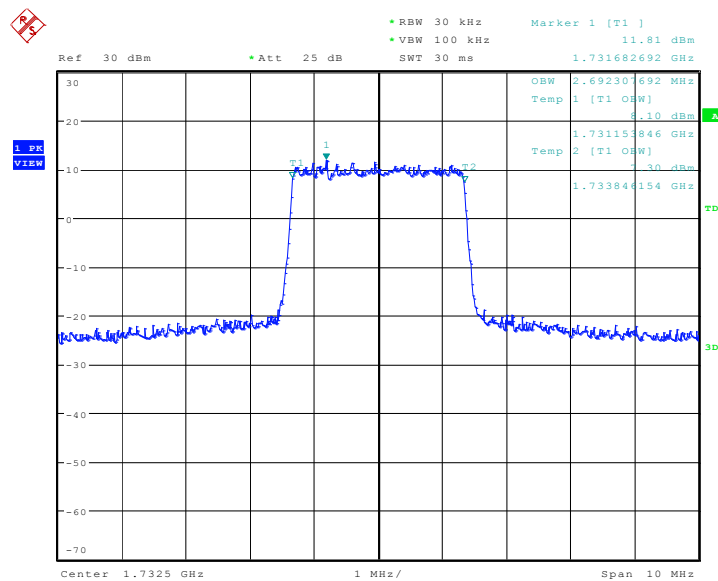
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	2692.31	2692.31

LTE band 4, 3MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 16:04:56

LTE band 4, 3MHz Bandwidth, 16QAM (99% BW)

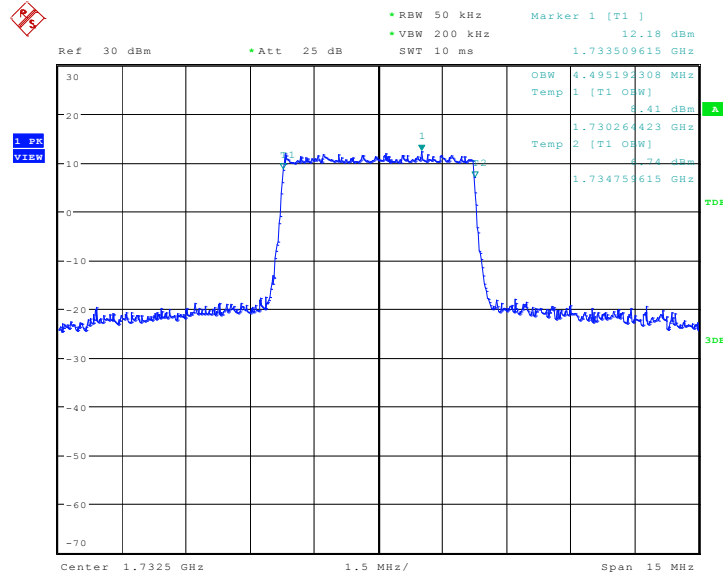


Date: 29.AUG.2017 16:05:10

LTE band 4, 5MHz (99%)

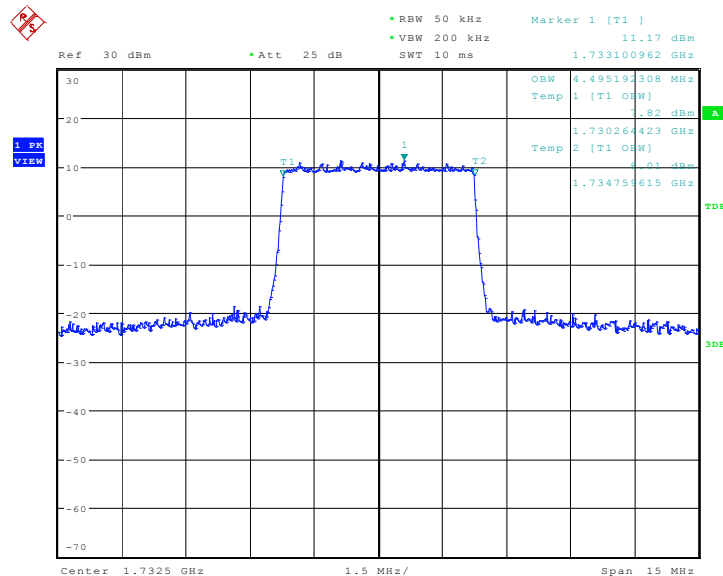
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	4495.19	4495.19

LTE band 4, 5MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 16:11:38

LTE band 4, 5MHz Bandwidth,16QAM (99% BW)

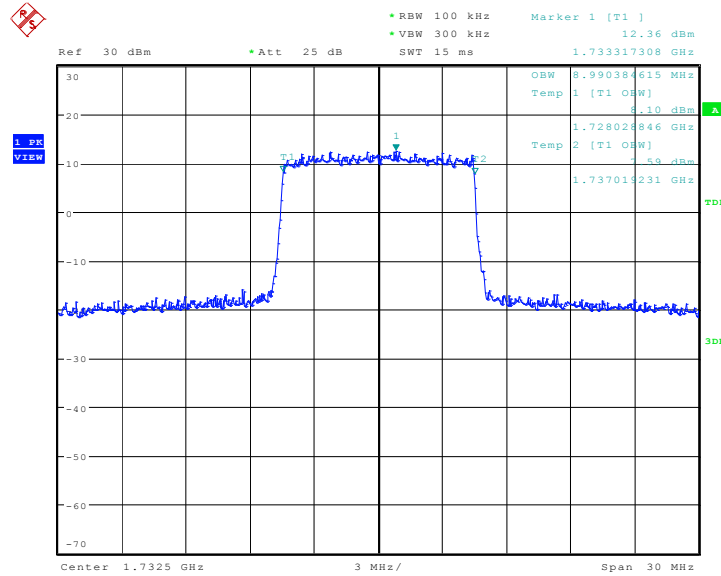


Date: 29.AUG.2017 16:11:52

LTE band 4, 10MHz (99%)

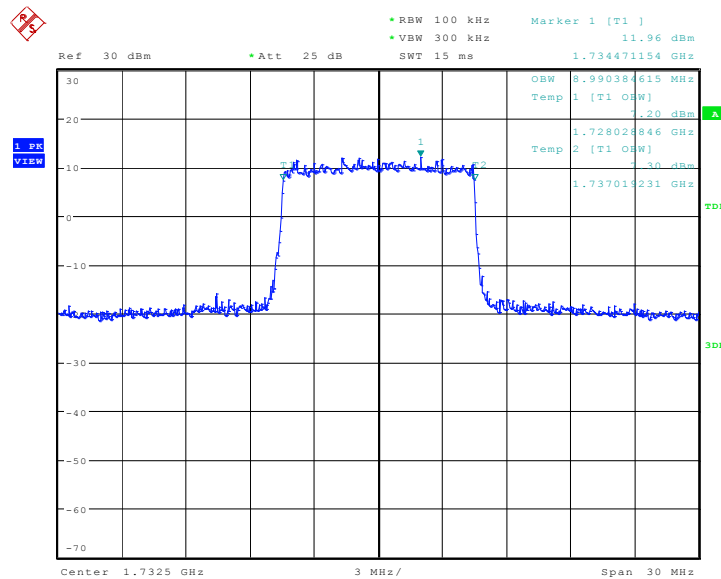
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	8990.38	8990.38

LTE band 4, 10MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 16:18:21

LTE band 4, 10MHz Bandwidth, 16QAM (99% BW)

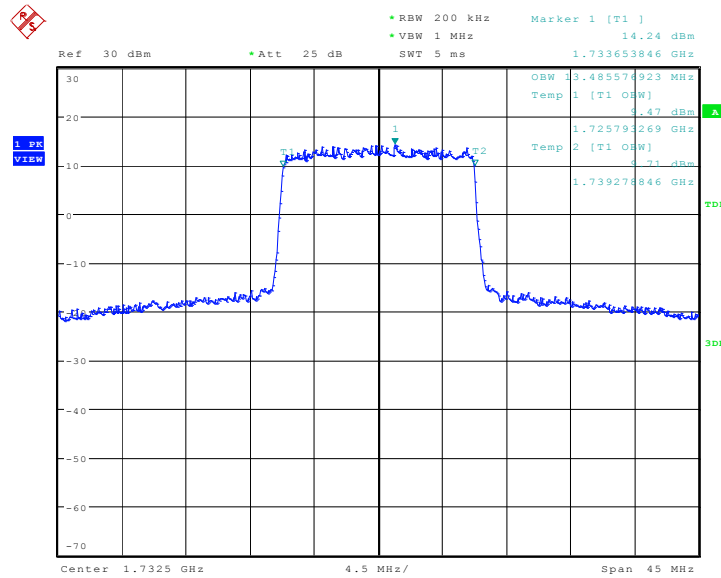


Date: 29.AUG.2017 16:18:35

LTE band 4, 15MHz (99%)

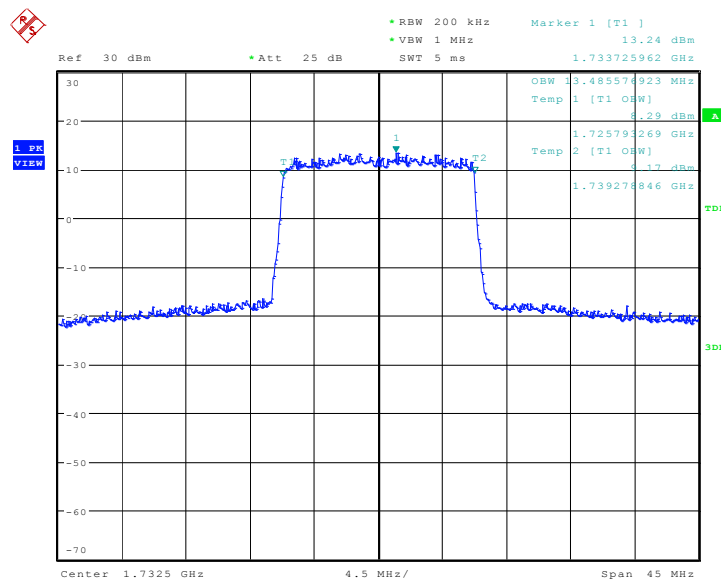
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	13485.58	13485.58

LTE band 4, 15MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 16:25:41

LTE band 4, 15MHz Bandwidth, 16QAM (99% BW)

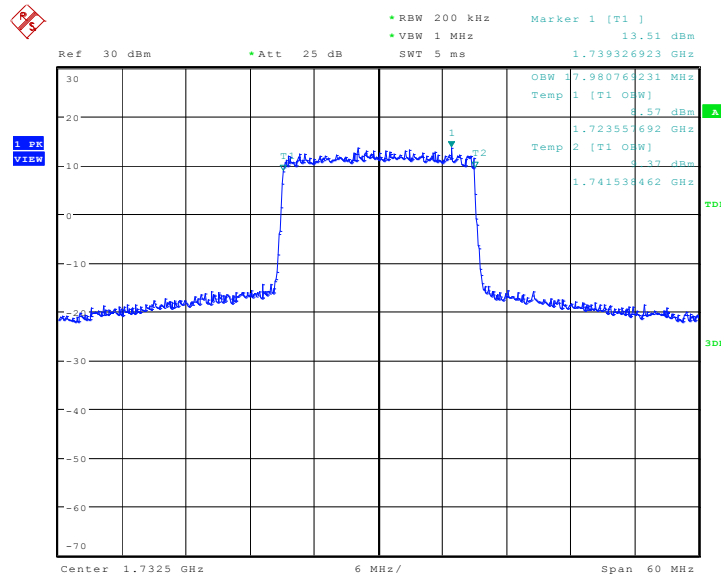


Date: 29.AUG.2017 16:25:55

LTE band 4, 20MHz (99%)

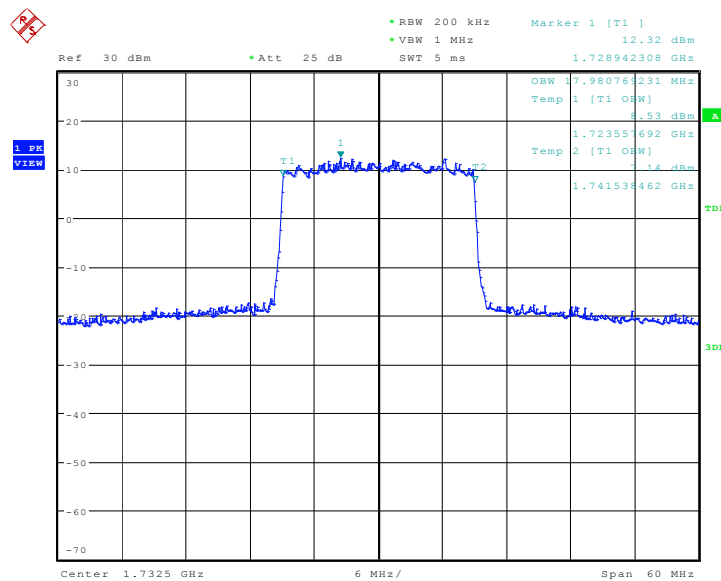
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	17980.77	17980.77

LTE band 4, 20MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 16:33:04

LTE band 4, 20MHz Bandwidth, 16QAM (99% BW)

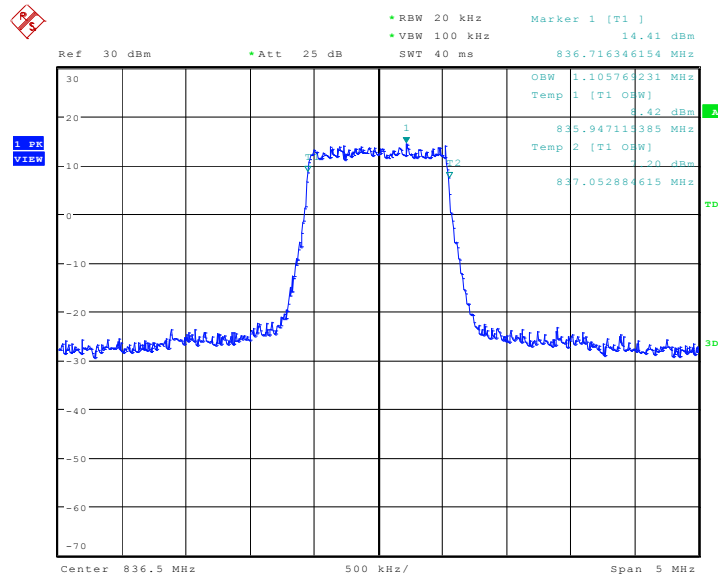


Date: 29.AUG.2017 16:33:18

LTE band 5, 1.4MHz (99%)

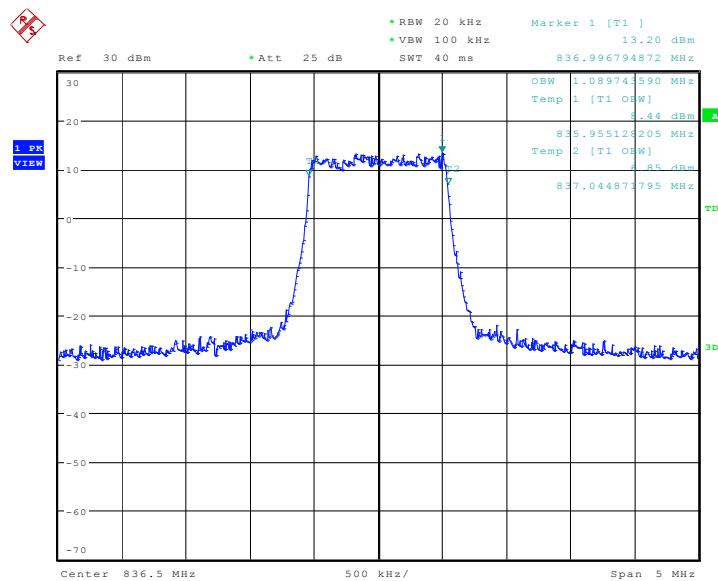
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	1105.77	1089.74

LTE band 5, 1.4MHz Bandwidth, QPSK (99% BW)



Date: 12.SEP.2017 17:01:52

LTE band 5, 1.4MHz Bandwidth, 16QAM (99% BW)

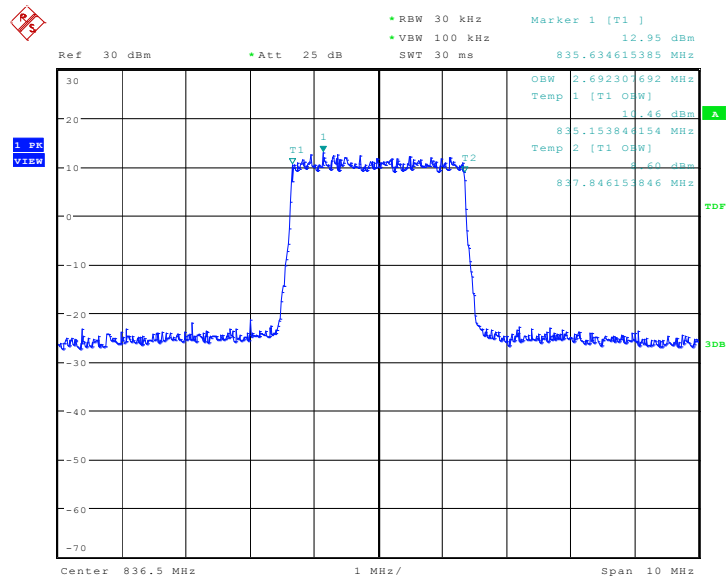


Date: 12.SEP.2017 17:02:07

LTE band 5, 3MHz (99%)

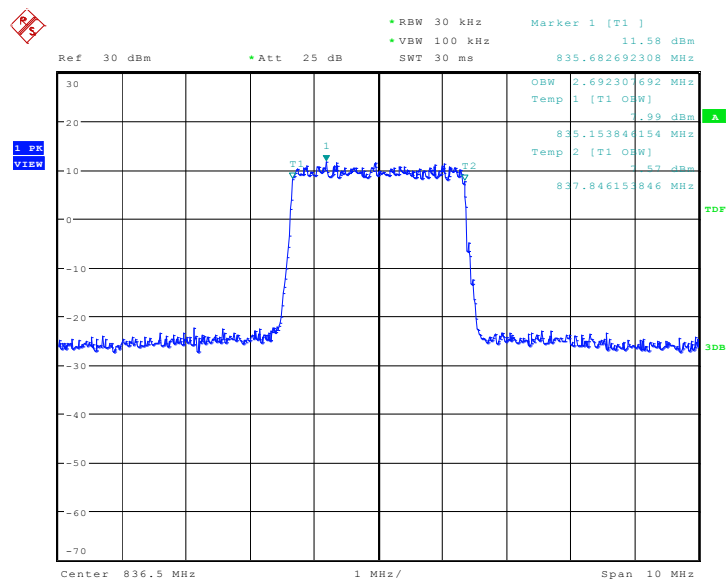
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	2692.31	2692.31

LTE band 5, 3MHz Bandwidth, QPSK (99% BW)



Date: 12.SEP.2017 17:08:43

LTE band 5, 3MHz Bandwidth, 16QAM (99% BW)

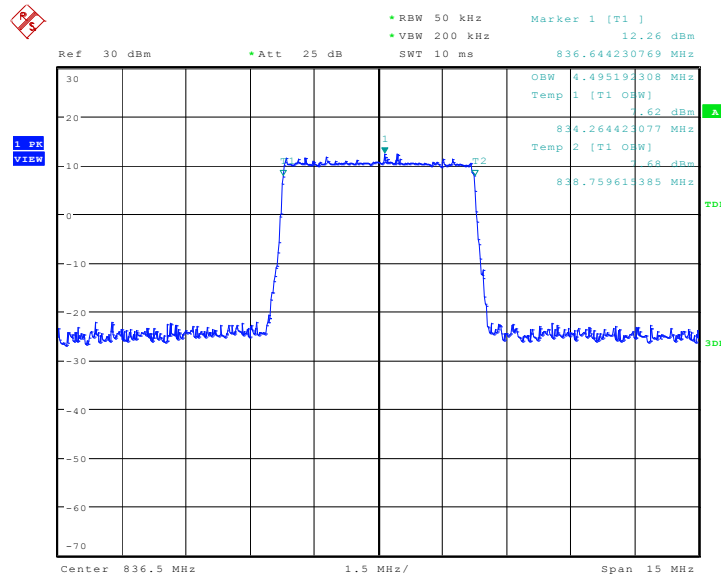


Date: 12.SEP.2017 17:08:58

LTE band 5, 5MHz (99%)

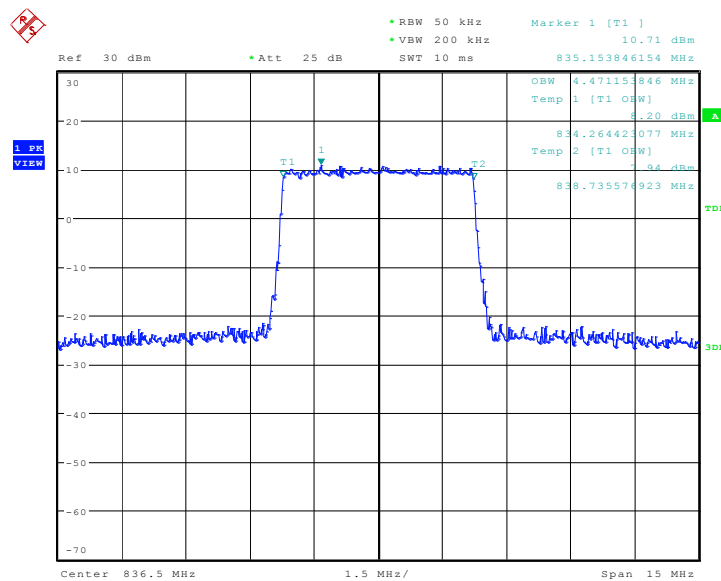
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	4495.19	4471.15

LTE band 5, 5MHz Bandwidth, QPSK (99% BW)



Date: 12.SEP.2017 17:15:34

LTE band 5, 5MHz Bandwidth,16QAM (99% BW)

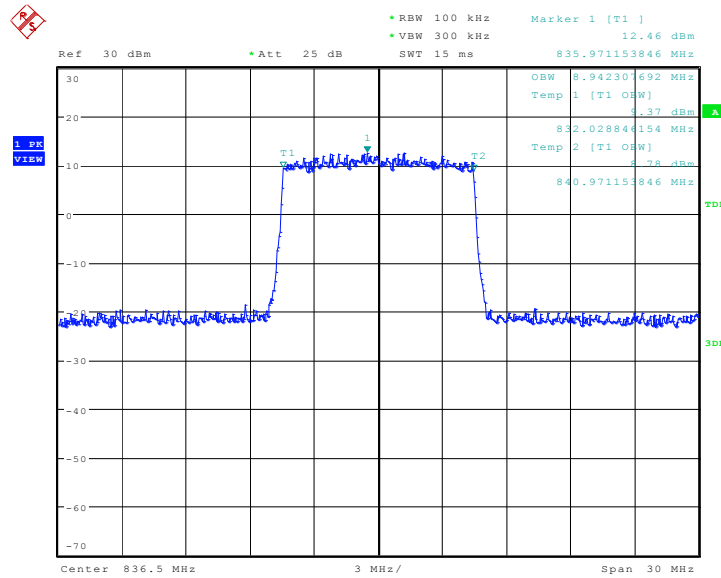


Date: 12.SEP.2017 17:15:49

LTE band 5, 10MHz (99%)

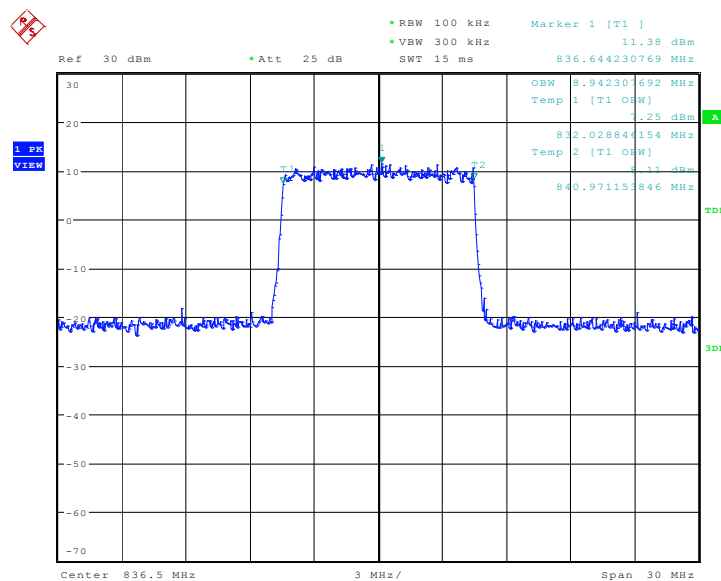
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	8942.31	8942.31

LTE band 5, 10MHz Bandwidth, QPSK (99% BW)



Date: 12.SEP.2017 17:22:24

LTE band 5, 10MHz Bandwidth, 16QAM (99% BW)

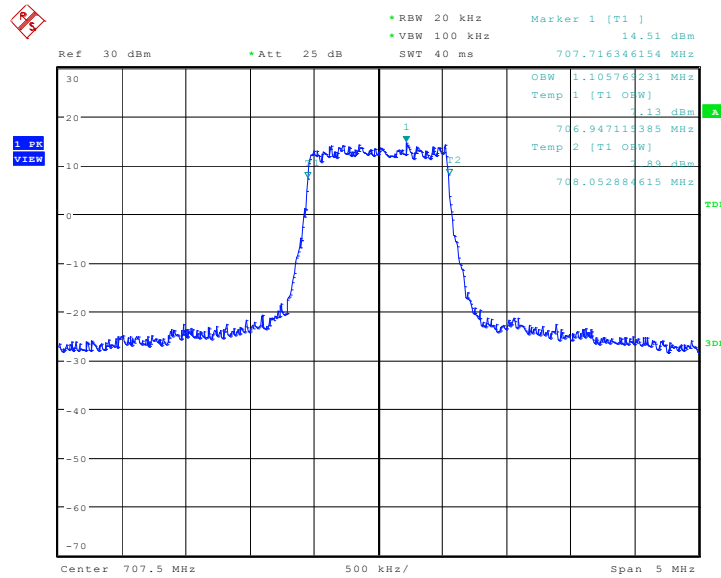


Date: 12.SEP.2017 17:22:39

LTE band 12, 1.4MHz (99%)

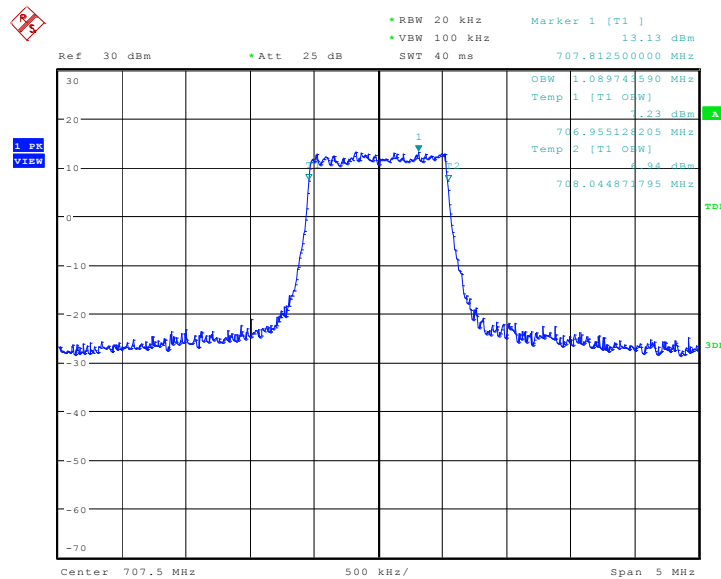
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	1105.77	1089.74

LTE band 12, 1.4MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 16:39:51

LTE band 12, 1.4MHz Bandwidth, 16QAM (99% BW)

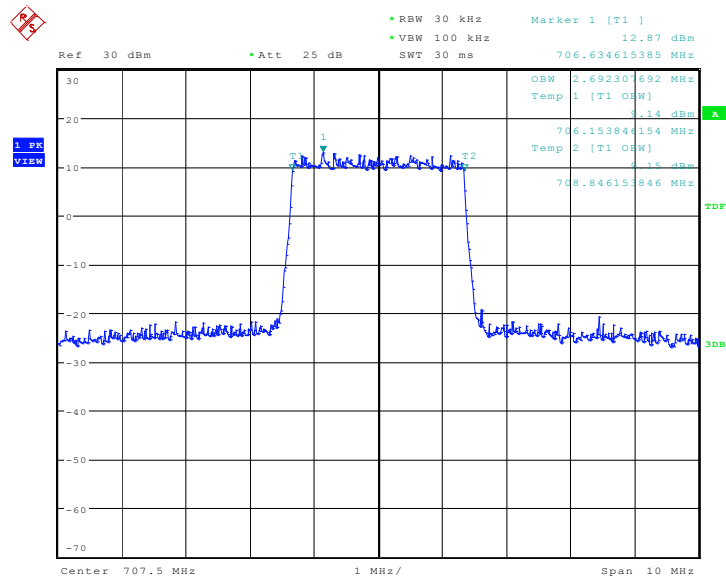


Date: 29.AUG.2017 16:40:04

LTE band 12, 3MHz (99%)

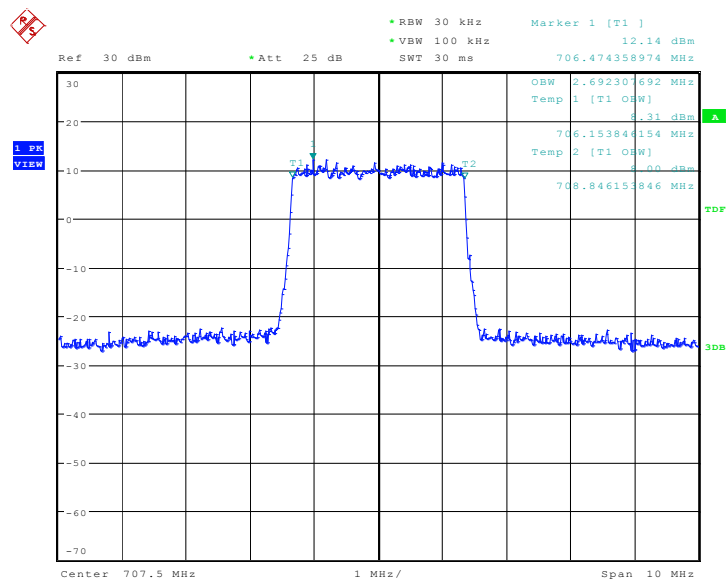
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	2692.31	2692.31

LTE band 12, 3MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 16:46:33

LTE band 12, 3MHz Bandwidth, 16QAM (99% BW)

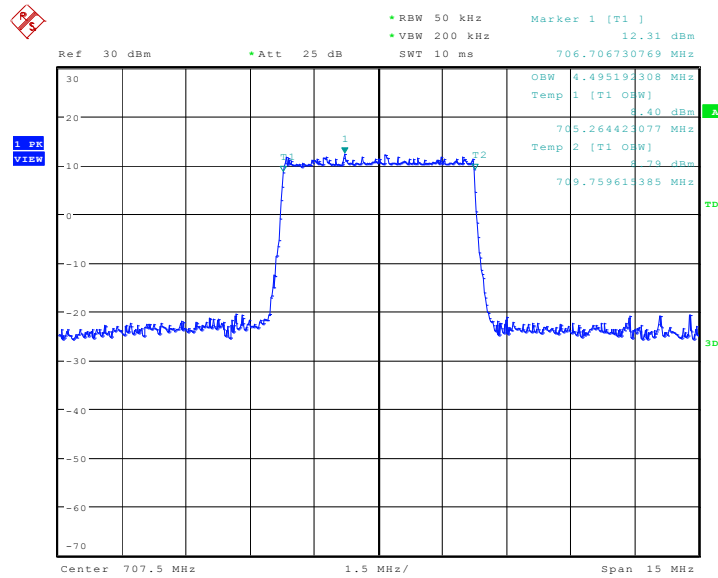


Date: 29.AUG.2017 16:46:47

LTE band 12, 5MHz (99%)

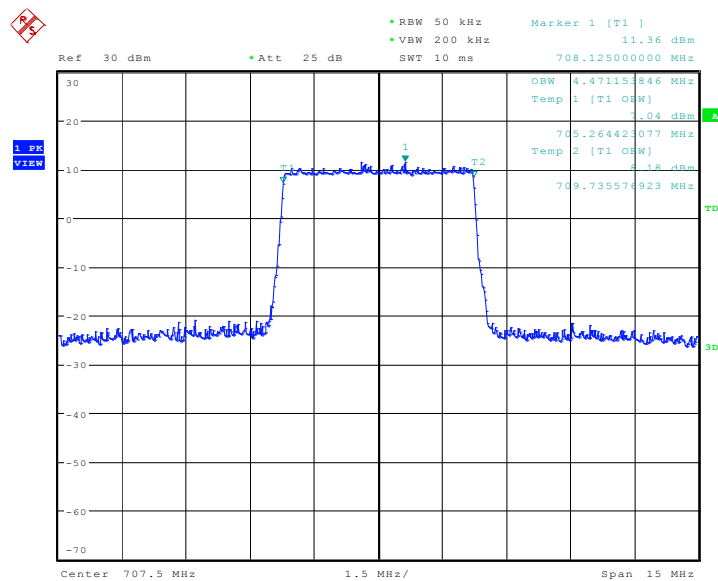
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	4495.19	4471.15

LTE band 12, 5MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 16:53:15

LTE band 12, 5MHz Bandwidth, 16QAM (99% BW)

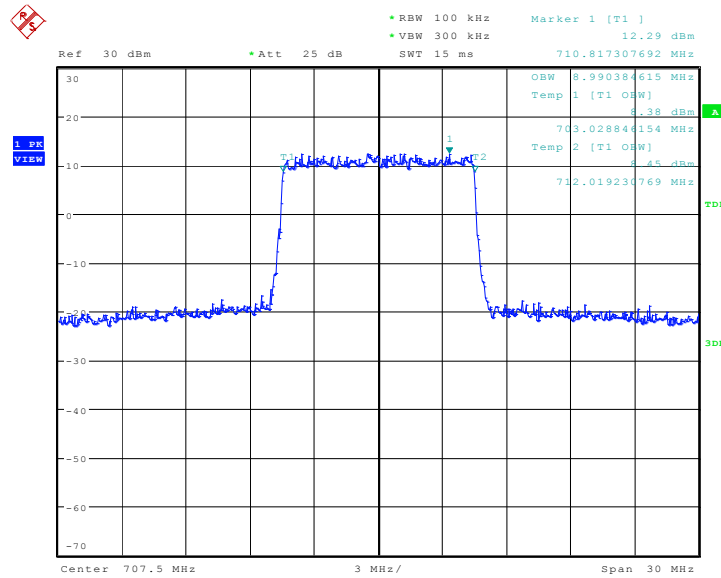


Date: 29.AUG.2017 16:53:29

LTE band 12, 10MHz (99%)

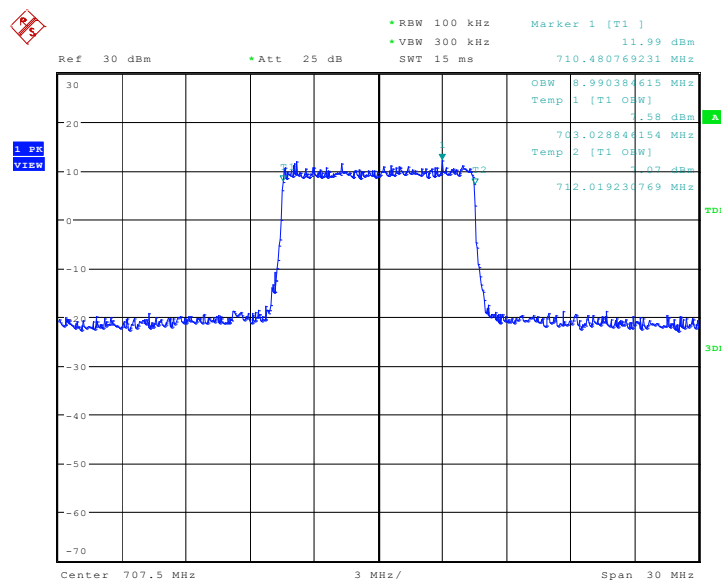
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	8990.38	8990.38

LTE band 12, 10MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 16:59:58

LTE band 12, 10MHz Bandwidth, 16QAM (99% BW)

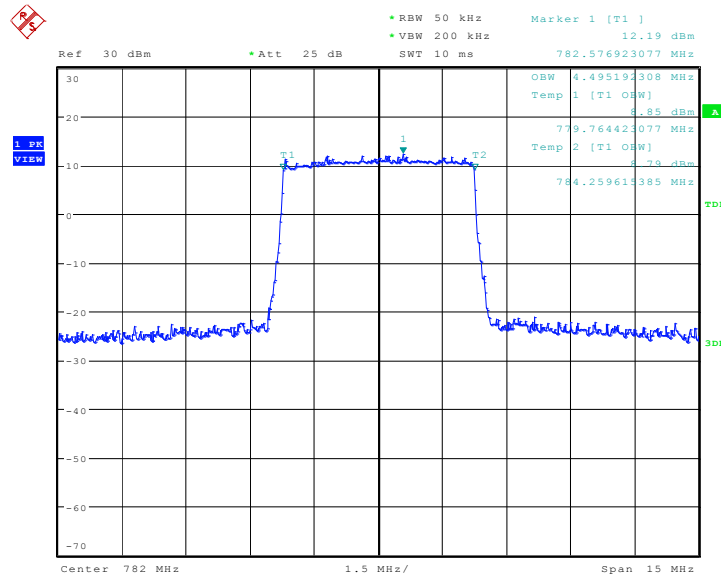


Date: 29.AUG.2017 17:00:11

LTE band 13, 5MHz (99%)

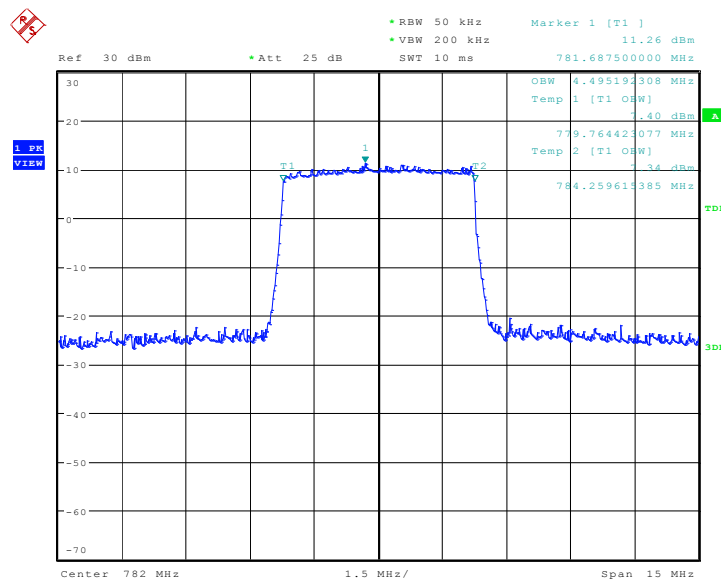
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
782.0	QPSK	16QAM
	4495.19	4495.19

LTE band 13, 5MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 14:09:11

LTE band 13, 5MHz Bandwidth, 16QAM (99% BW)

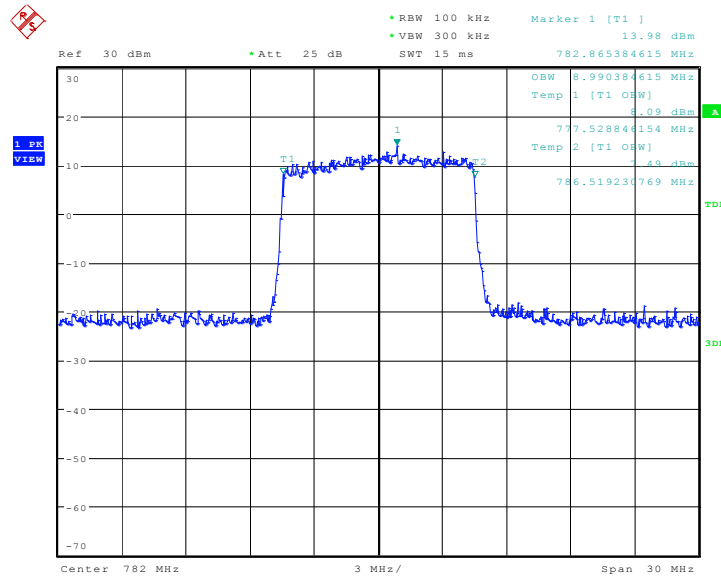


Date: 29.AUG.2017 14:09:26

LTE band 13, 10MHz (99%)

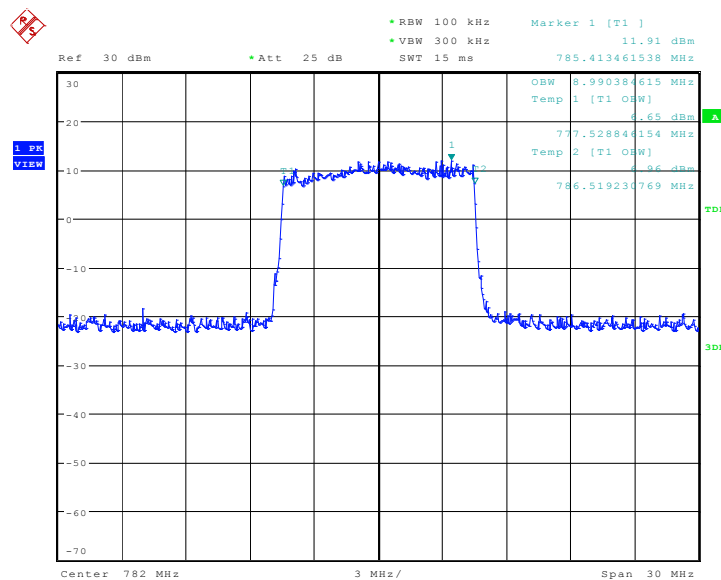
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
782.0	QPSK	16QAM
	8990.38	8990.38

LTE band 13, 10MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 14:16:02

LTE band 13, 10MHz Bandwidth, 16QAM (99% BW)

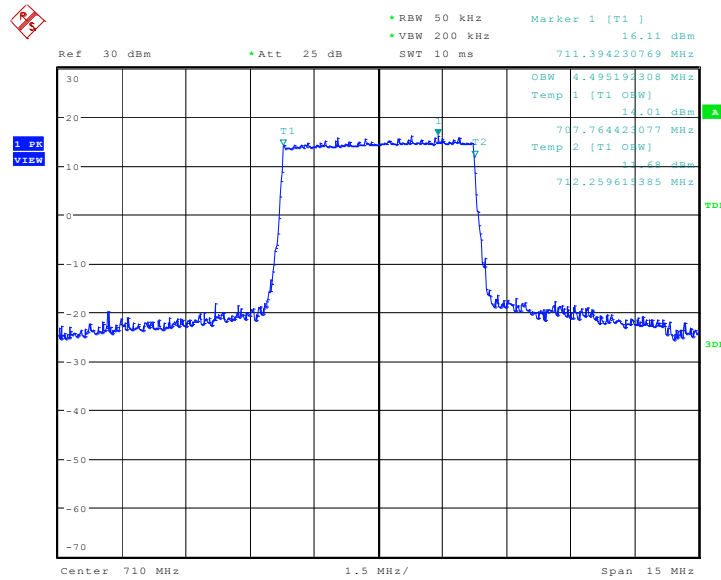


Date: 29.AUG.2017 14:16:17

LTE band 17, 5MHz (99%)

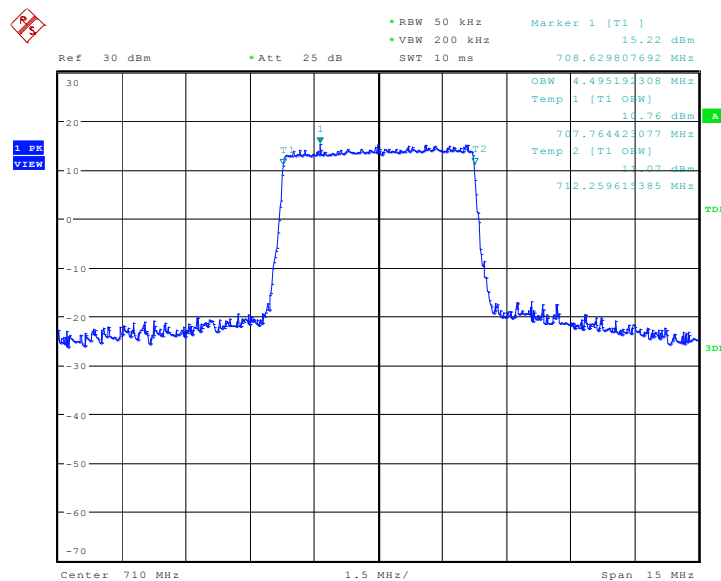
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
710.0	QPSK	16QAM
	4495.19	4495.19

LTE band 17, 5MHz Bandwidth, QPSK (99% BW)



Date: 13.OCT.2017 13:57:43

LTE band 17, 5MHz Bandwidth,16QAM (99% BW)

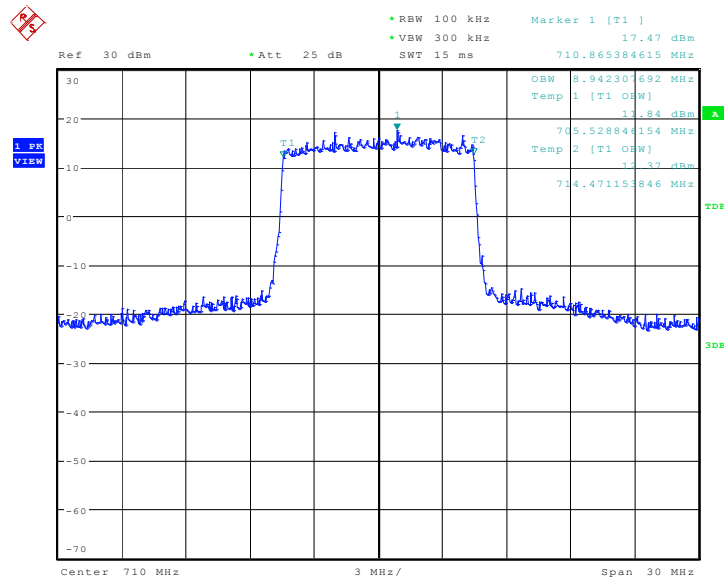


Date: 13.OCT.2017 13:57:58

LTE band 17, 10MHz (99%)

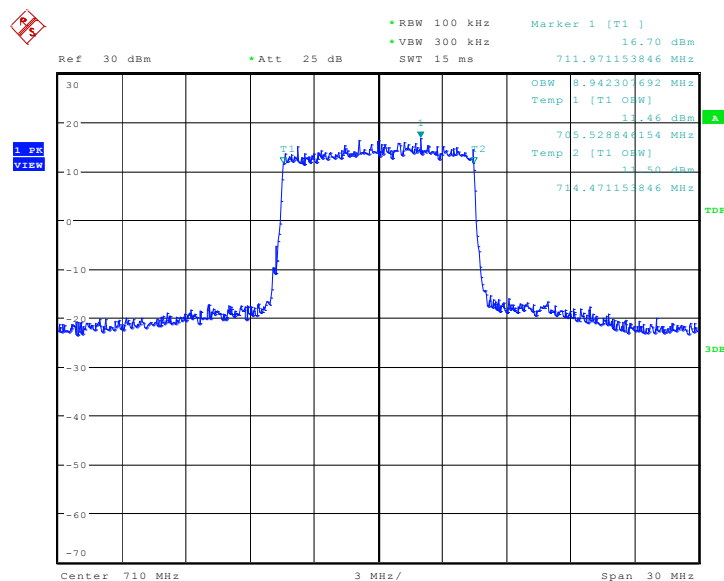
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
710.0	QPSK	16QAM
	8942.31	8942.31

LTE band 17, 10MHz Bandwidth, QPSK (99% BW)



Date: 13.OCT.2017 14:00:01

LTE band 17, 10MHz Bandwidth, 16QAM (99% BW)

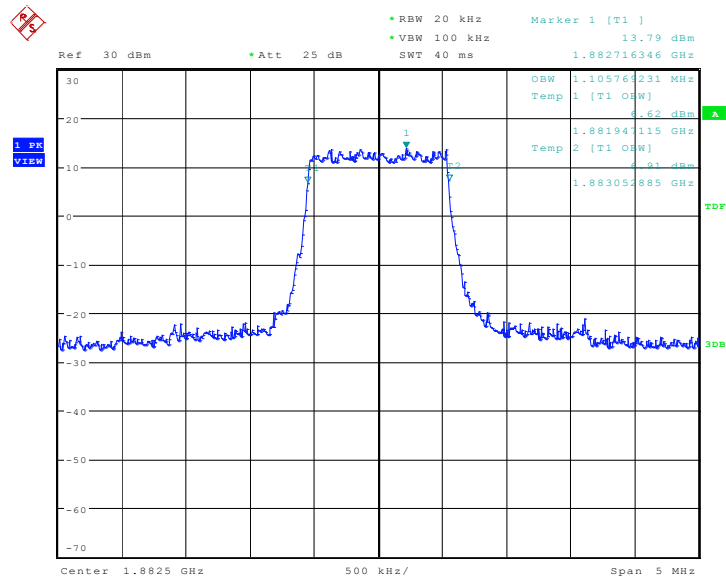


Date: 13.OCT.2017 14:00:16

LTE band 25, 1.4MHz (99%)

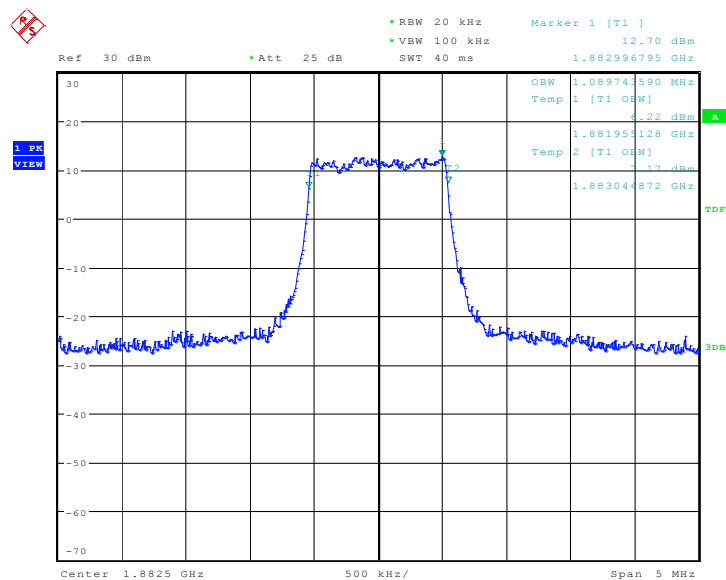
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	1105.77	1089.74

LTE band 25, 1.4MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 17:06:44

LTE band 25, 1.4MHz Bandwidth, 16QAM (99% BW)

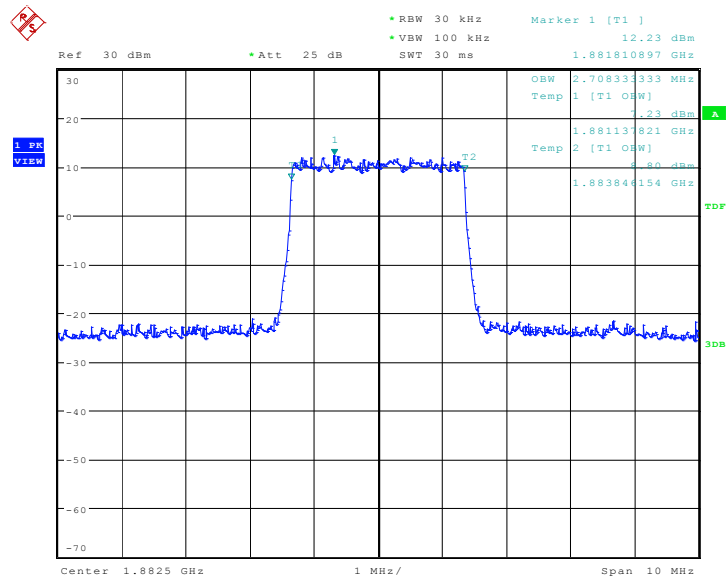


Date: 29.AUG.2017 17:06:57

LTE band 25, 3MHz (99%)

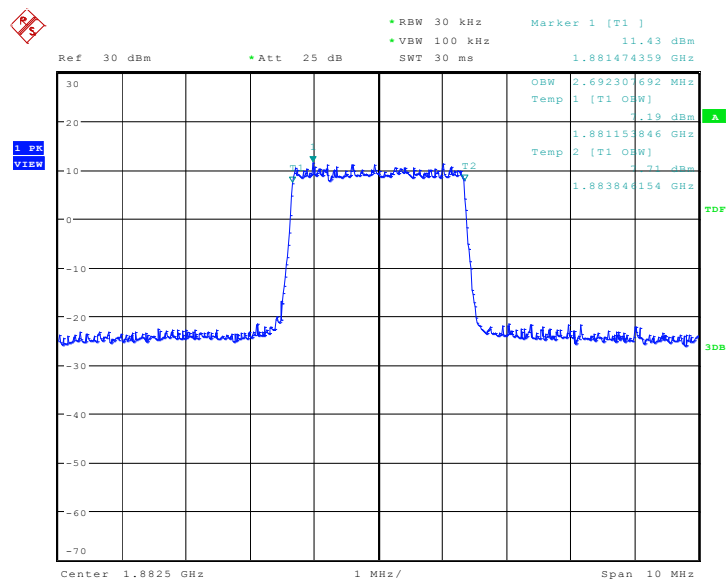
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	2708.33	2692.31

LTE band 25, 3MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 17:13:26

LTE band 25, 3MHz Bandwidth, 16QAM (99% BW)

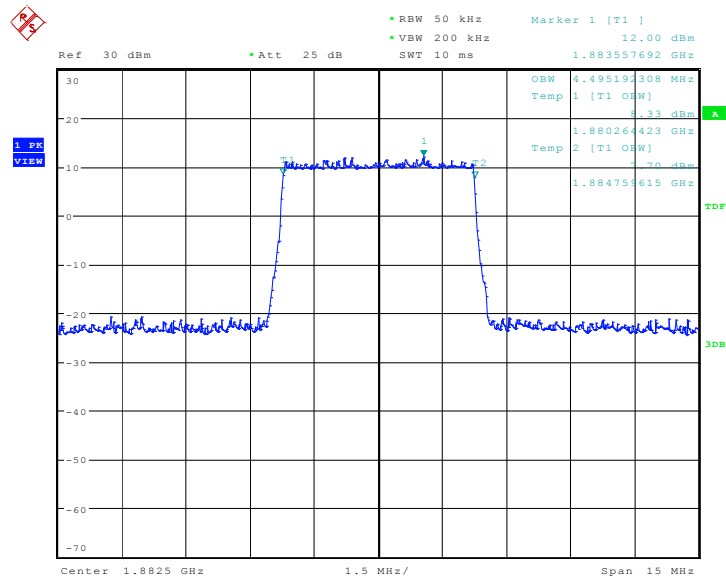


Date: 29.AUG.2017 17:13:40

LTE band 25, 5MHz (99%)

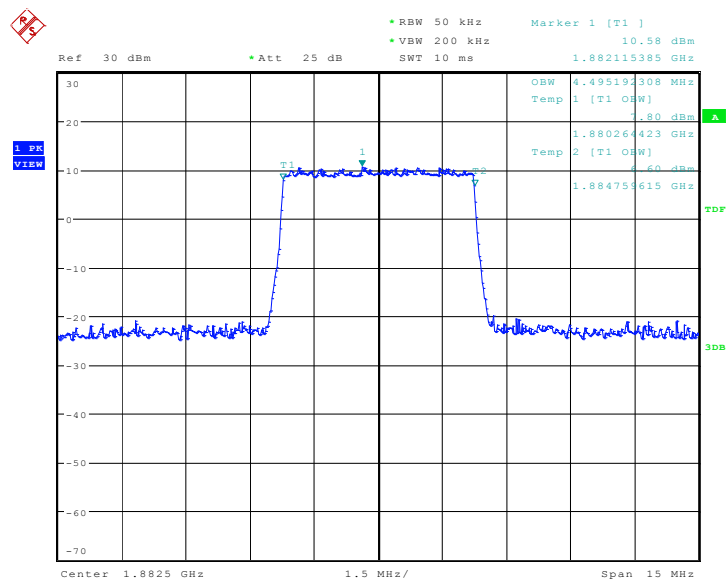
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	4495.19	4495.19

LTE band 25, 5MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 17:20:09

LTE band 25, 5MHz Bandwidth,16QAM (99% BW)

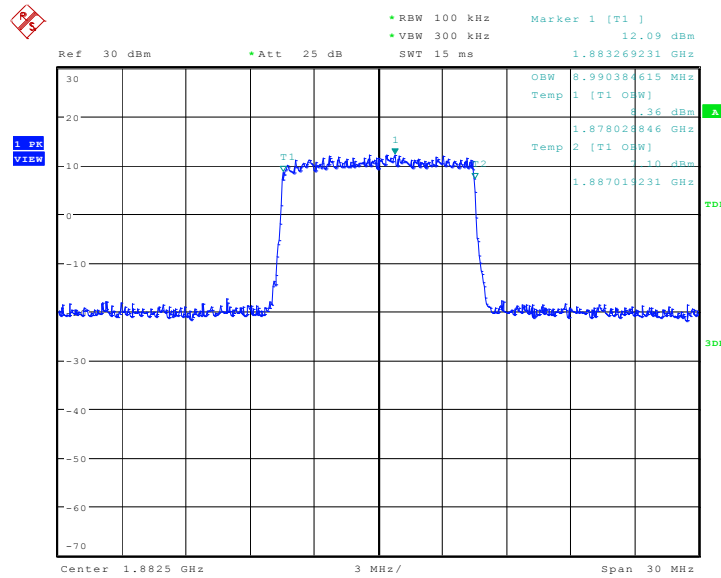


Date: 29.AUG.2017 17:20:22

LTE band 25, 10MHz (99%)

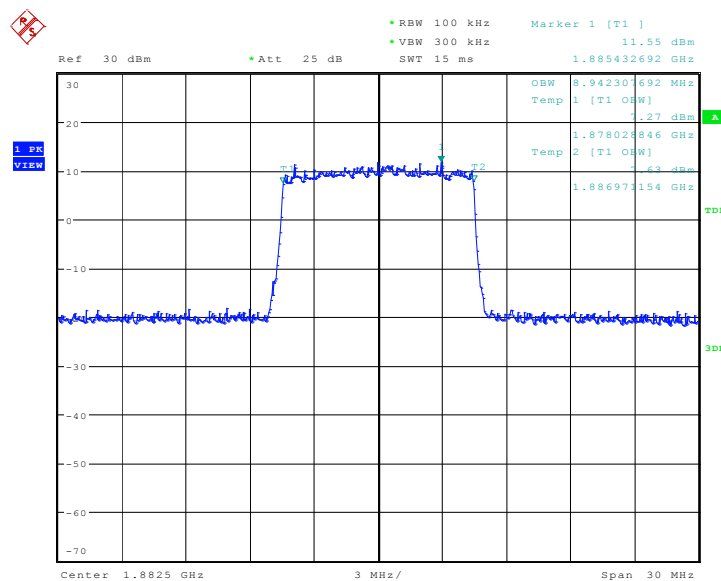
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	8990.38	8942.31

LTE band 25, 10MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 17:26:51

LTE band 25, 10MHz Bandwidth, 16QAM (99% BW)

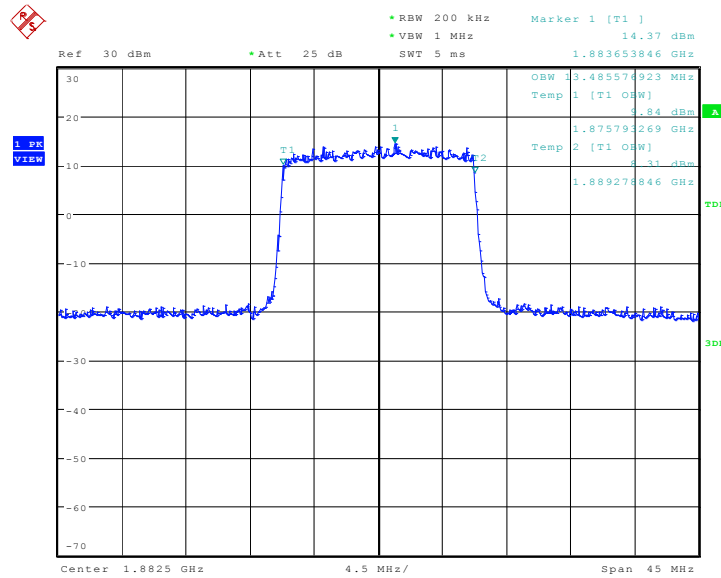


Date: 29.AUG.2017 17:27:05

LTE band 25, 15MHz (99%)

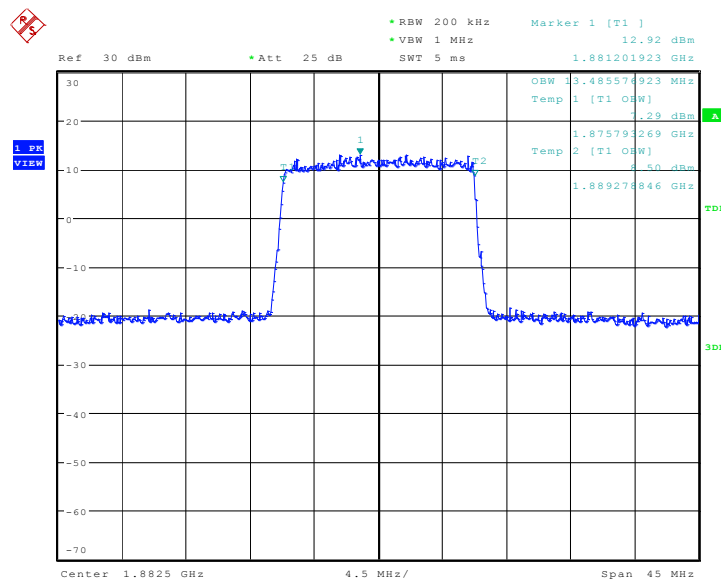
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	13485.58	13485.58

LTE band 25, 15MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 17:34:24

LTE band 25, 15MHz Bandwidth, 16QAM (99% BW)

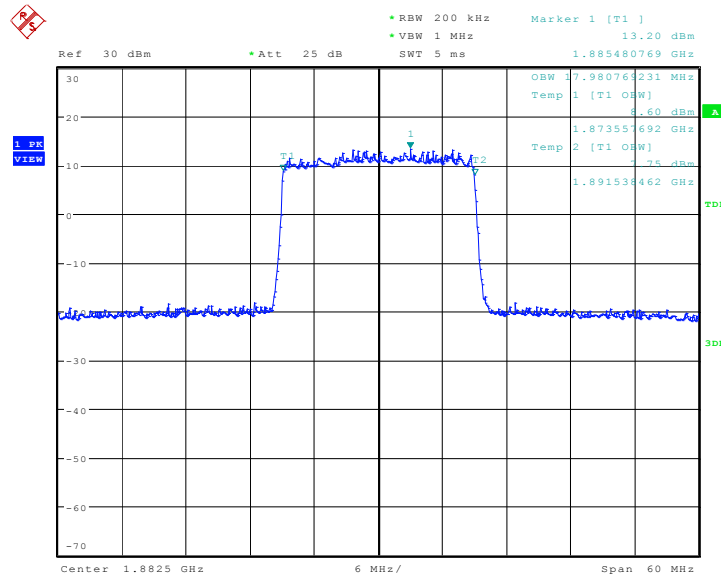


Date: 29.AUG.2017 17:34:37

LTE band 25, 20MHz (99%)

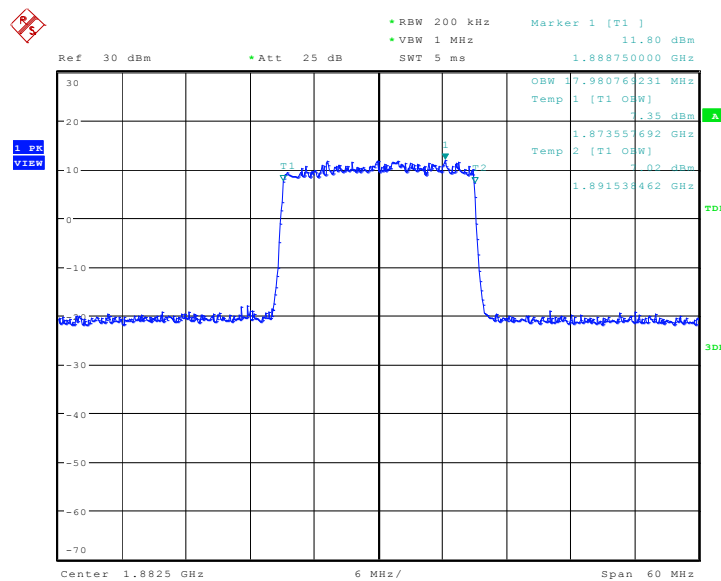
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	17980.77	17980.77

LTE band 25, 20MHz Bandwidth, QPSK (99% BW)



Date: 29.AUG.2017 17:41:52

LTE band 25, 20MHz Bandwidth, 16QAM (99% BW)

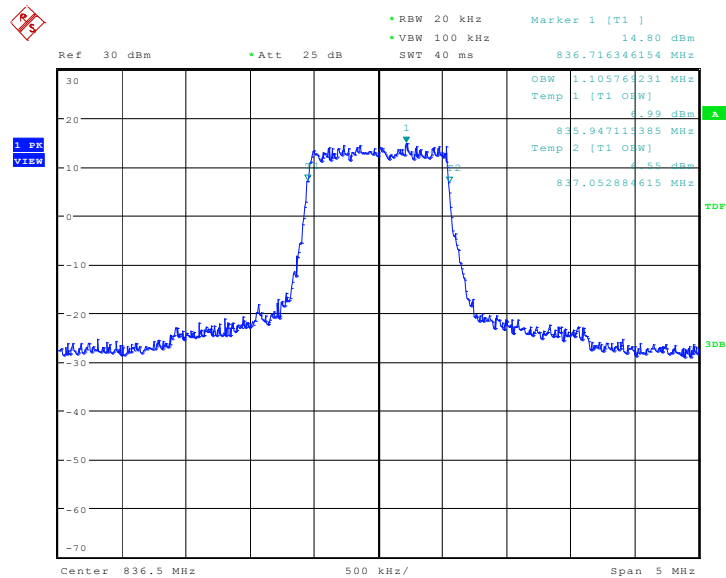


Date: 29.AUG.2017 17:42:06

LTE band 26, 1.4MHz (99%)

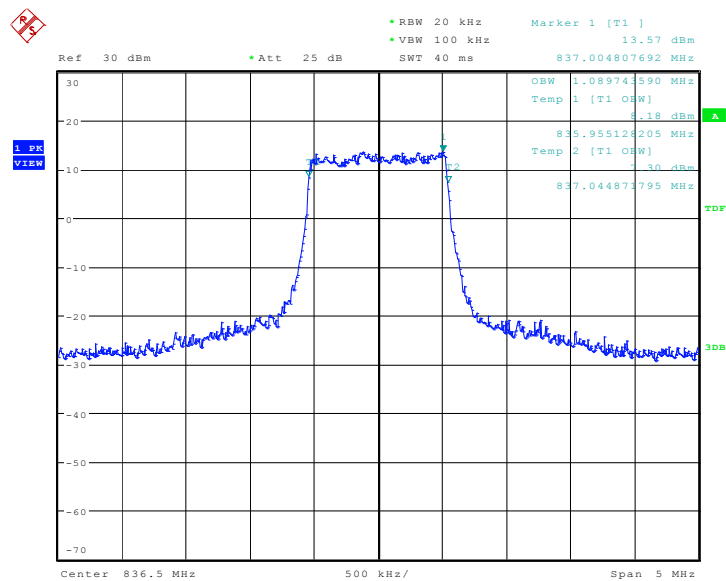
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	1105.77	1089.74

LTE band 26, 1.4MHz Bandwidth, QPSK (99% BW)



Date: 11.SEP.2017 14:31:34

LTE band 26, 1.4MHz Bandwidth, 16QAM (99% BW)

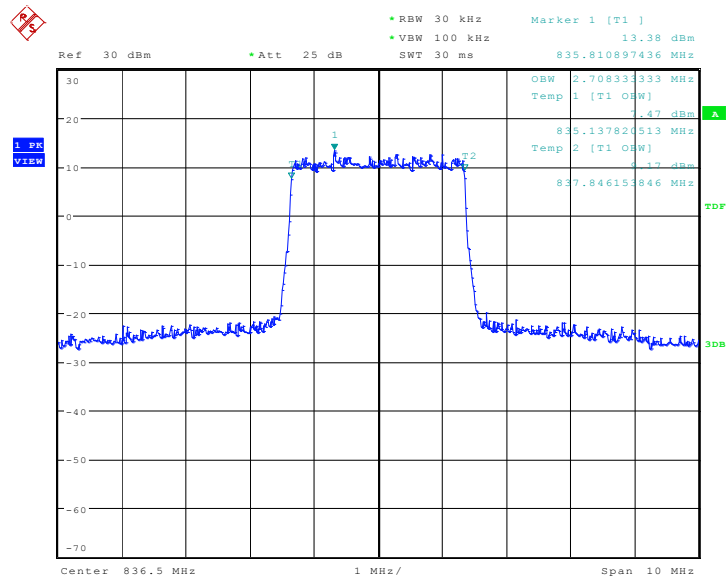


Date: 11.SEP.2017 14:31:49

LTE band 26, 3MHz (99%)

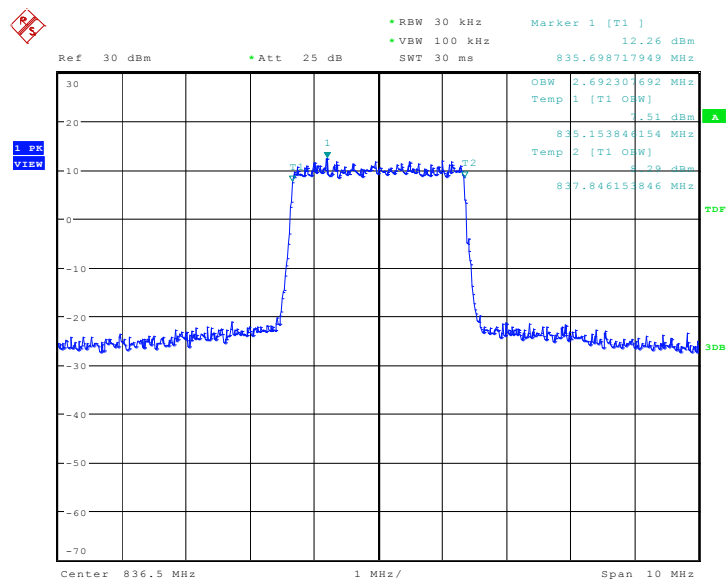
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	2708.33	2692.31

LTE band 26, 3MHz Bandwidth, QPSK (99% BW)



Date: 11.SEP.2017 14:38:25

LTE band 26, 3MHz Bandwidth, 16QAM (99% BW)

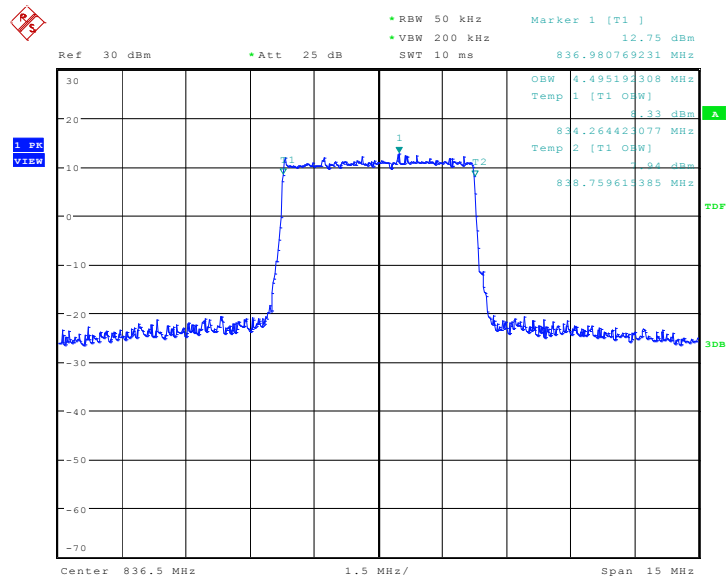


Date: 11.SEP.2017 14:38:40

LTE band 26, 5MHz (99%)

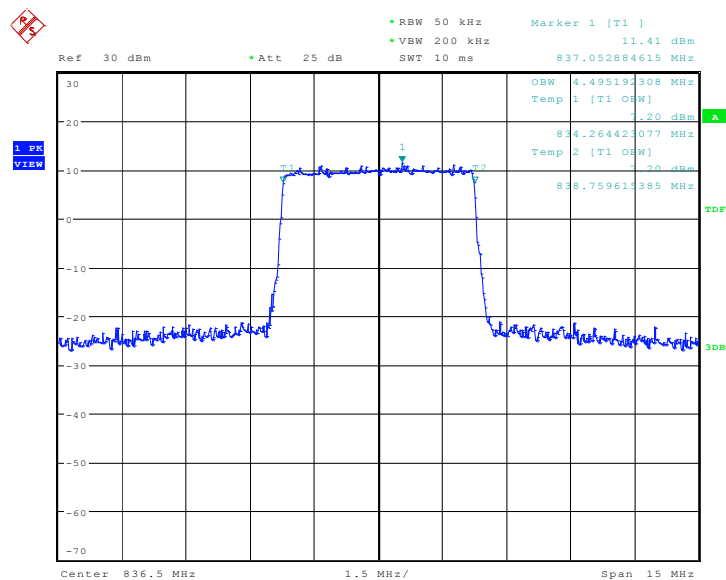
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	4495.19	4495.19

LTE band 26, 5MHz Bandwidth, QPSK (99% BW)



Date: 11.SEP.2017 14:45:15

LTE band 26, 5MHz Bandwidth,16QAM (99% BW)

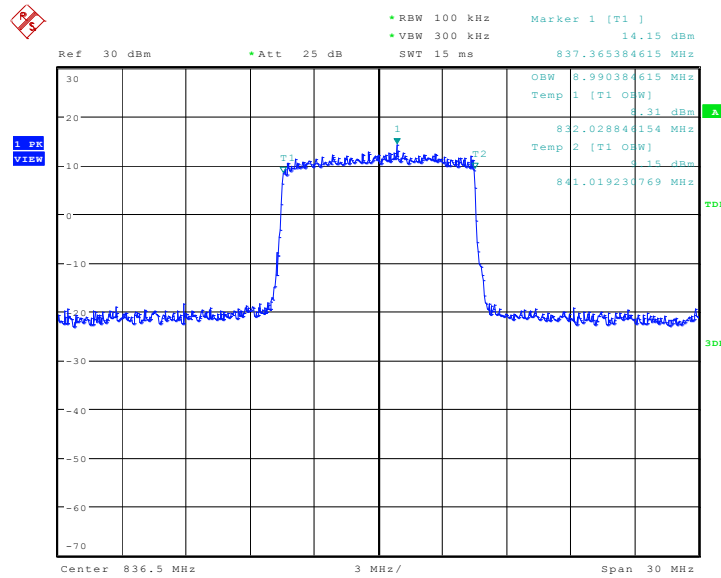


Date: 11.SEP.2017 14:45:30

LTE band 26, 10MHz (99%)

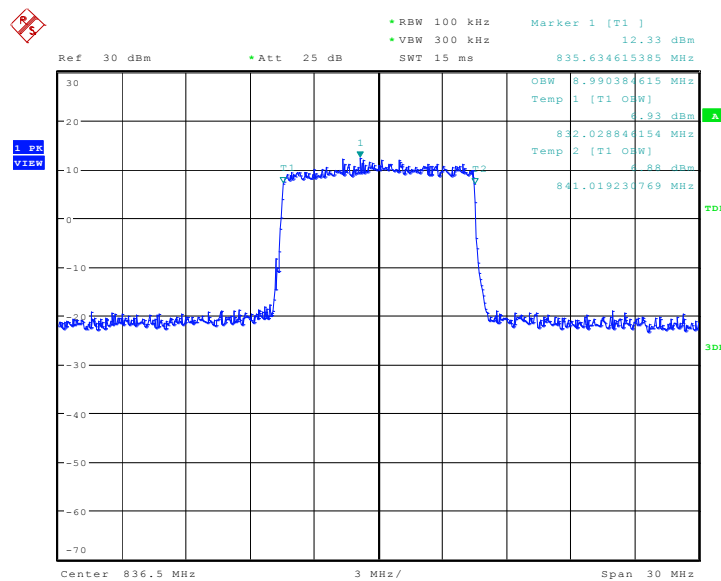
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	8990.38	8990.38

LTE band 26, 10MHz Bandwidth, QPSK (99% BW)



Date: 11.SEP.2017 14:52:06

LTE band 26, 10MHz Bandwidth, 16QAM (99% BW)

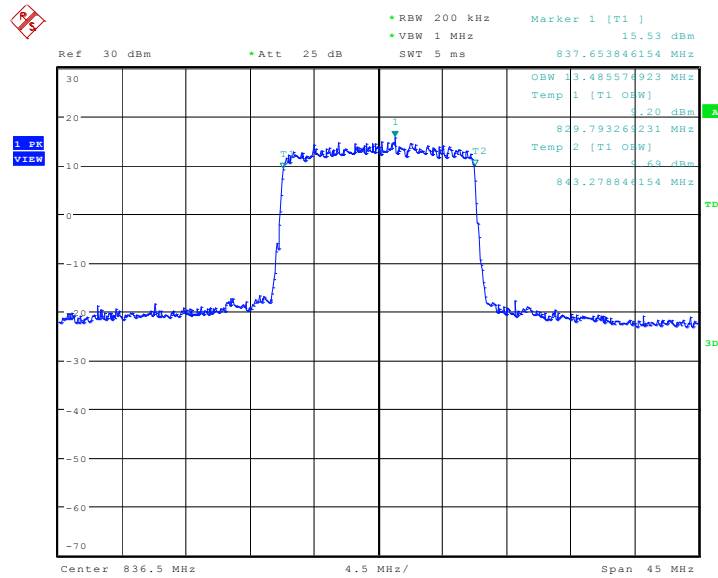


Date: 11.SEP.2017 14:52:21

LTE band 26, 15MHz (99%)

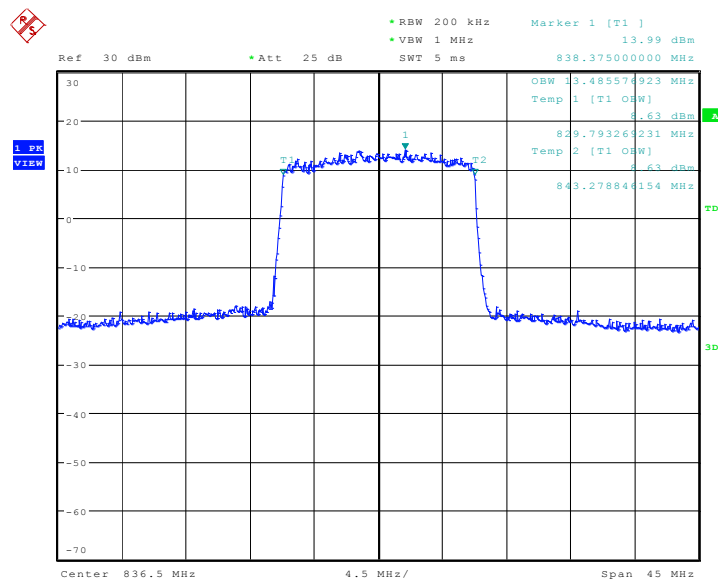
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	13485.58	13485.58

LTE band 26, 15MHz Bandwidth, QPSK (99% BW)



Date: 11.SEP.2017 14:59:02

LTE band 26, 15MHz Bandwidth, 16QAM (99% BW)

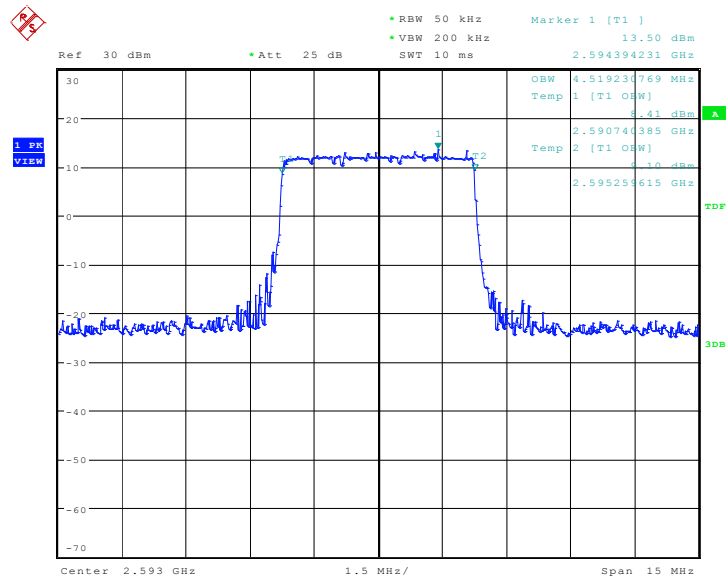


Date: 11.SEP.2017 14:59:17

LTE band 41, 5MHz (99%)

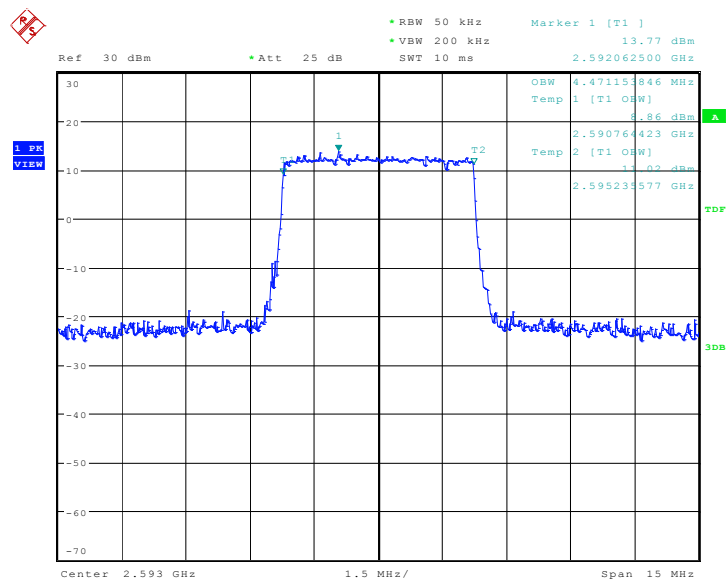
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2593.0	QPSK	16QAM
	4519.23	4471.15

LTE band 41, 5MHz Bandwidth, QPSK (99% BW)



Date: 11.SEP.2017 16:29:31

LTE band 41, 5MHz Bandwidth,16QAM (99% BW)

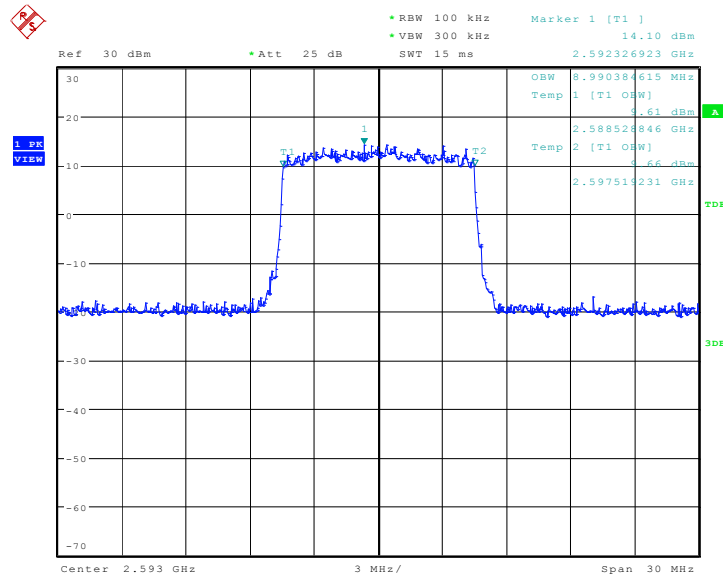


Date: 11.SEP.2017 16:29:46

LTE band 41, 10MHz (99%)

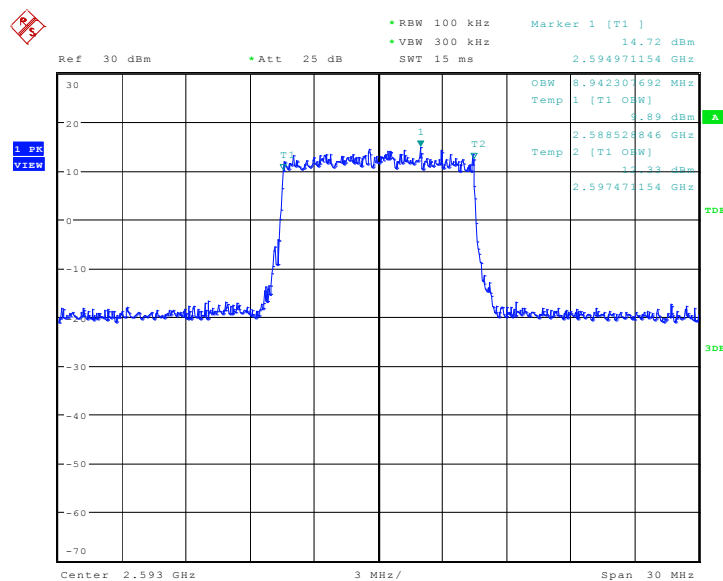
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2593.0	QPSK	16QAM
	8990.38	8942.31

LTE band 41, 10MHz Bandwidth, QPSK (99% BW)



Date: 11.SEP.2017 16:36:21

LTE band 41, 10MHz Bandwidth, 16QAM (99% BW)

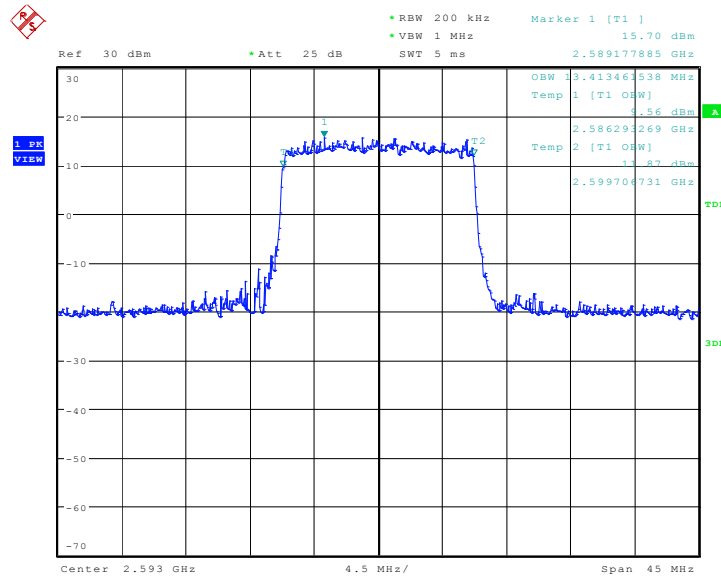


Date: 11.SEP.2017 16:36:36

LTE band 41, 15MHz (99%)

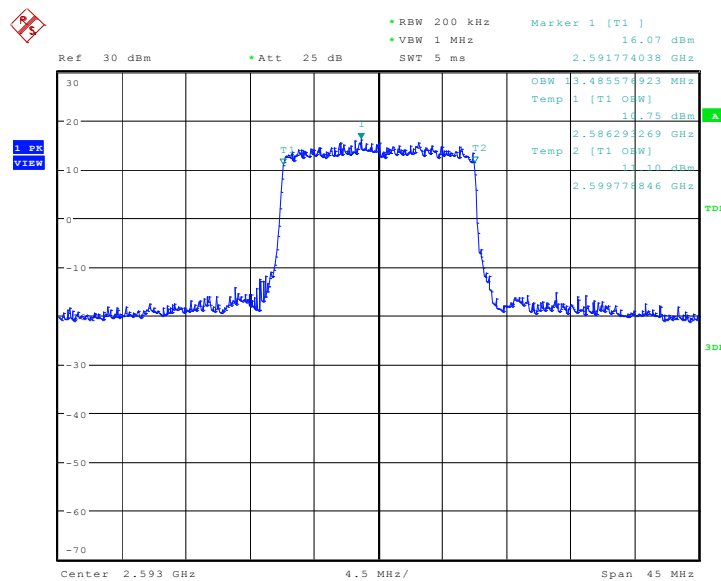
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2593.0	QPSK	16QAM
	13413.46	13485.58

LTE band 41, 15MHz Bandwidth, QPSK (99% BW)



Date: 11.SEP.2017 16:44:18

LTE band 41, 15MHz Bandwidth, 16QAM (99% BW)

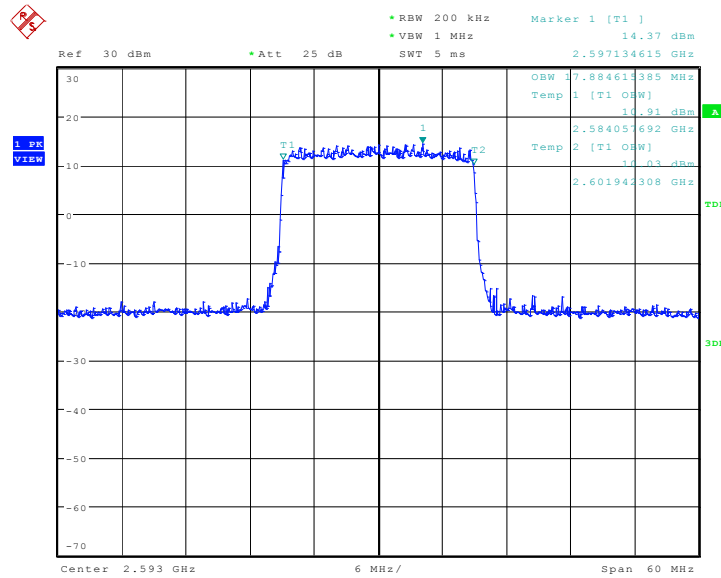


Date: 11.SEP.2017 16:44:33

LTE band 41, 20MHz (99%)

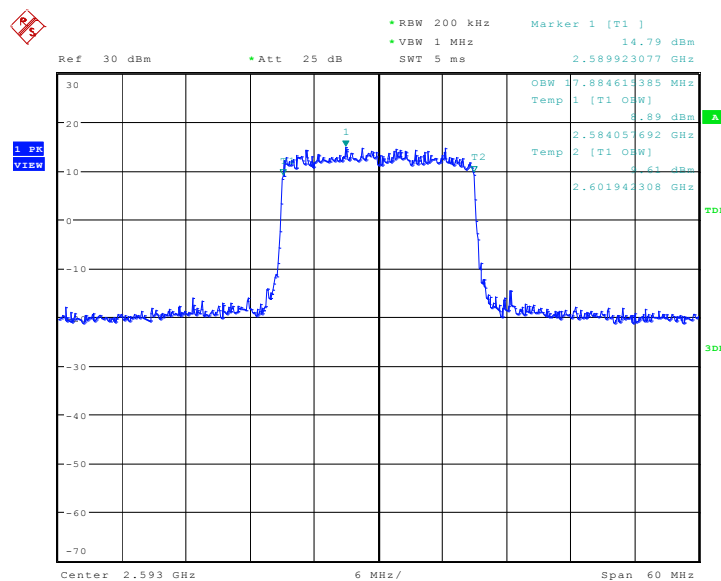
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2593.0	QPSK	16QAM
	17884.62	17884.62

LTE band 41, 20MHz Bandwidth, QPSK (99% BW)



Date: 11.SEP.2017 16:54:18

LTE band 41, 20MHz Bandwidth, 16QAM (99% BW)



Date: 11.SEP.2017 16:54:33

A.4 EMISSION BANDWIDTH

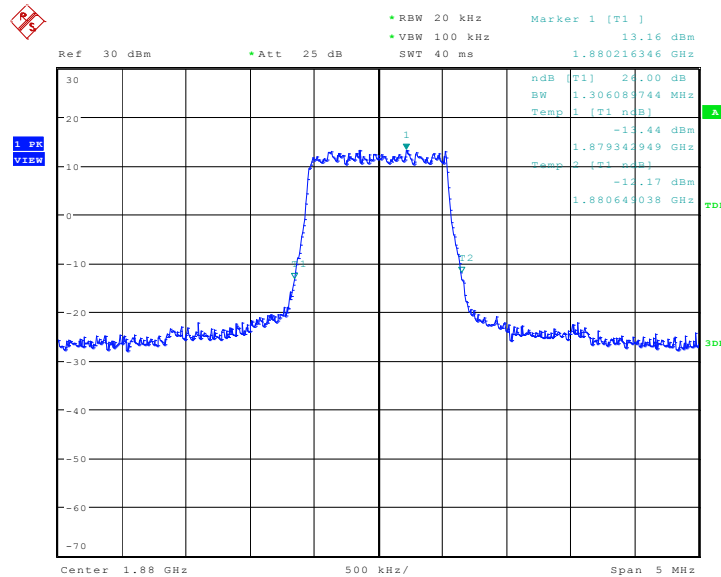
A.4.1 Emission Bandwidth Results

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. Table below lists the measured -26dBc BW. Spectrum analyzer plots are included on the following pages.

LTE band 2, 1.4MHz (-26dBc)

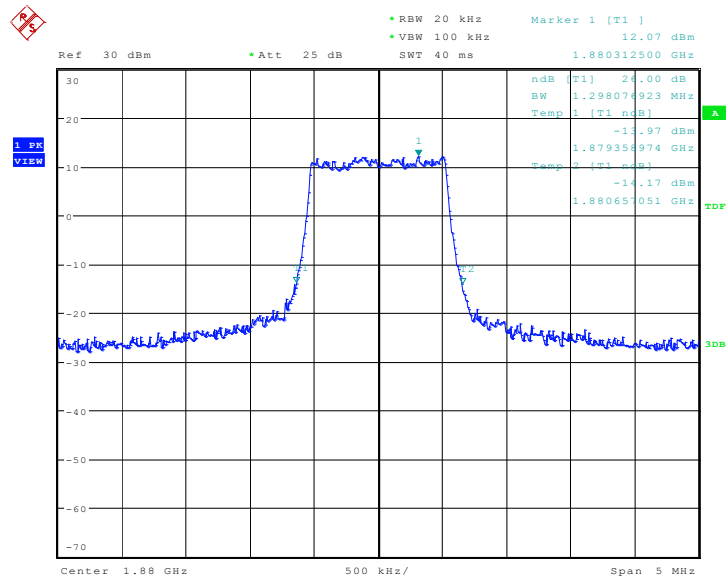
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1880.0	QPSK	16QAM
	1306.09	1298.08

LTE band 2, 1.4MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 14:30:38

LTE band 2, 1.4MHz Bandwidth, 16QAM (-26dBc BW)

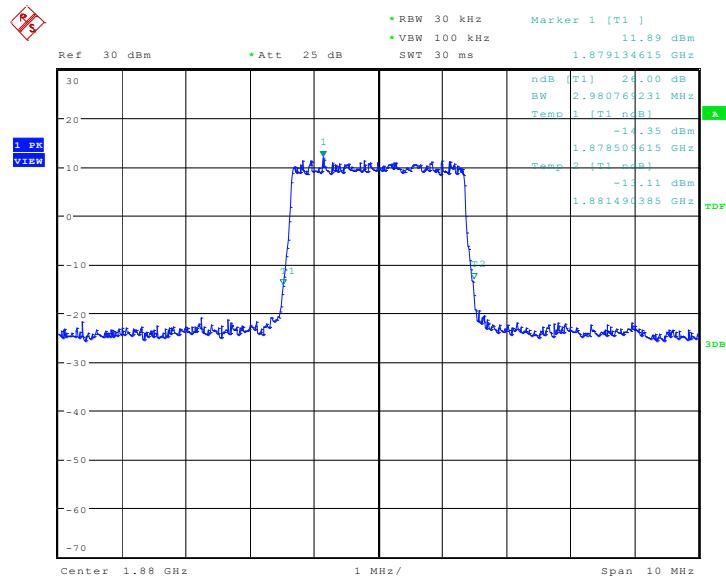


Date: 29.AUG.2017 14:30:54

LTE band 2, 3MHz (-26dBc)

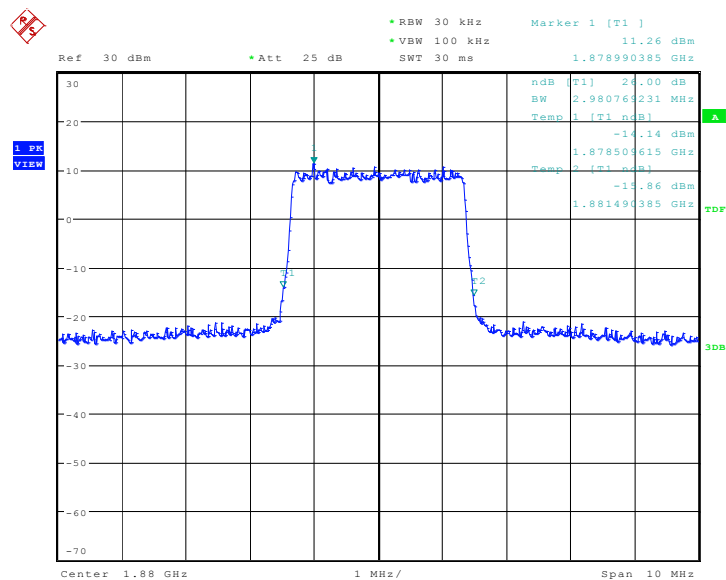
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1880.0	QPSK	16QAM
	2980.77	2980.77

LTE band 2, 3MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 14:37:28

LTE band 2, 3MHz Bandwidth, 16QAM (-26dBc BW)

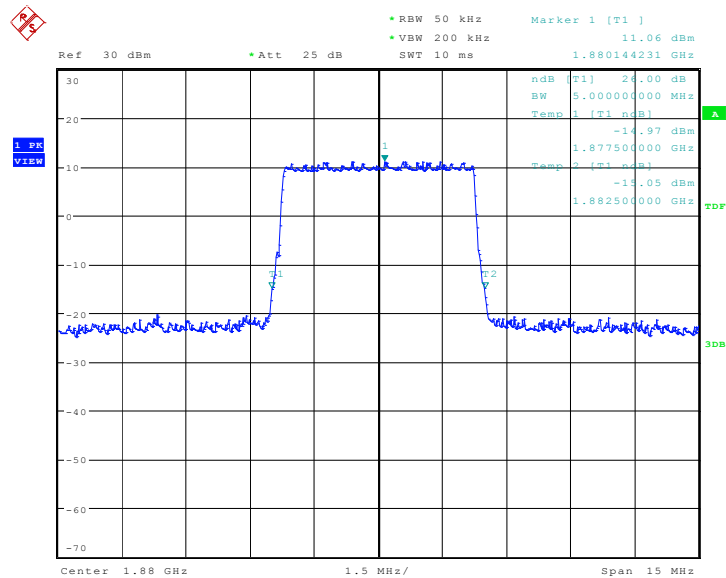


Date: 29.AUG.2017 14:37:44

LTE band 2, 5MHz (-26dBc)

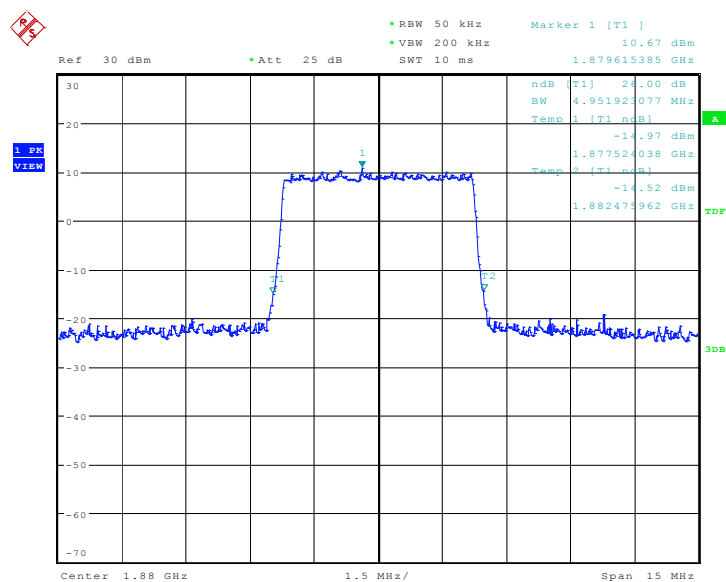
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1880.0	QPSK	16QAM
	5000.00	4951.92

LTE band 2, 5MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 14:44:11

LTE band 2, 5MHz Bandwidth,16QAM (-26dBc BW)

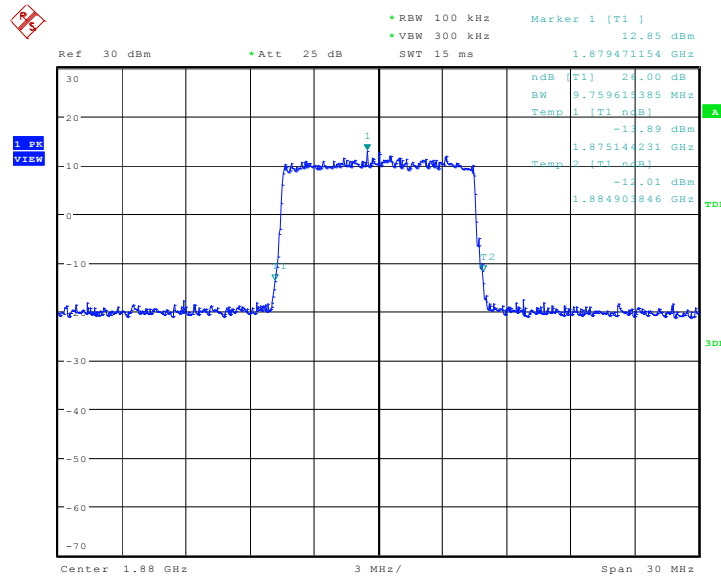


Date: 29.AUG.2017 14:44:26

LTE band 2, 10MHz (-26dBc)

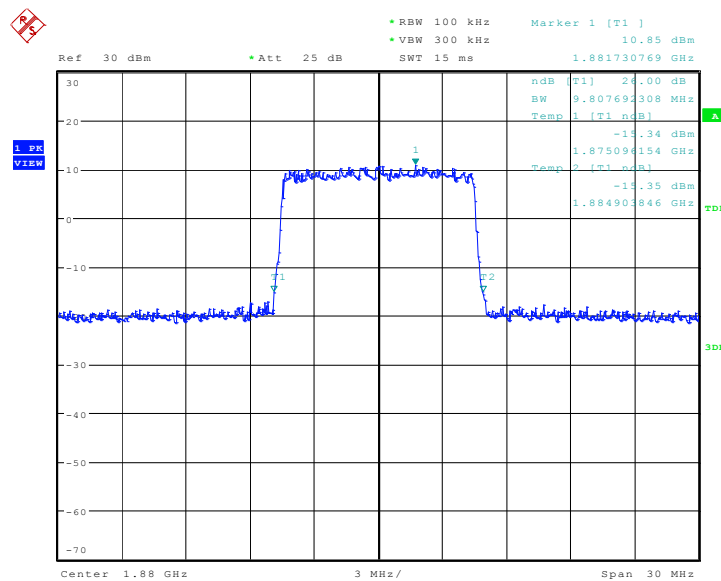
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1880.0	QPSK	16QAM
	9759.62	9807.69

LTE band 2, 10MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 14:50:53

LTE band 2, 10MHz Bandwidth, 16QAM (-26dBc BW)

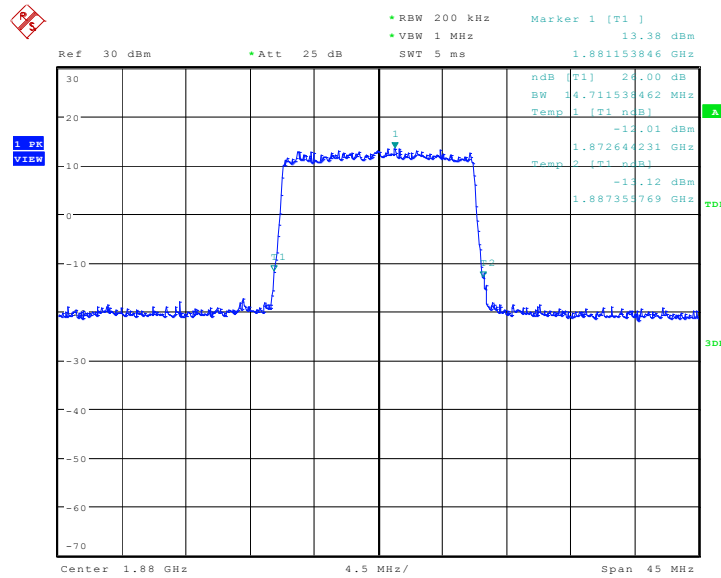


Date: 29.AUG.2017 14:51:09

LTE band 2, 15MHz (-26dBc)

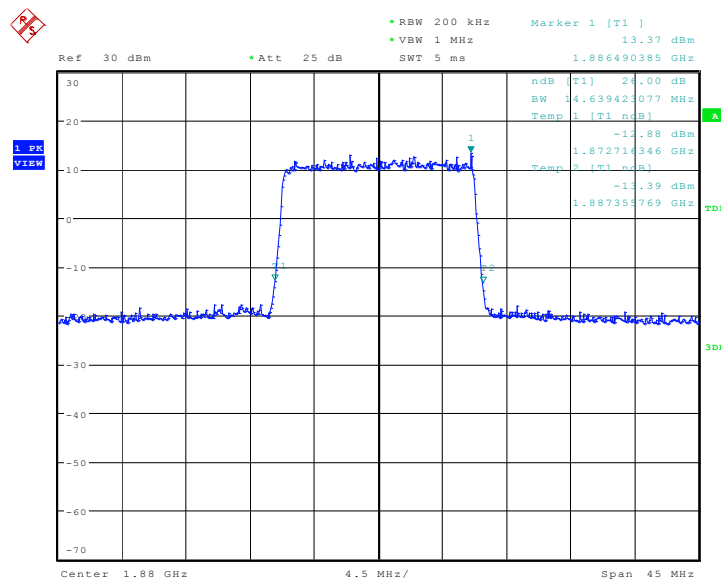
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1880.0	QPSK	16QAM
	14711.54	14639.42

LTE band 2, 15MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 14:58:13

LTE band 2, 15MHz Bandwidth, 16QAM (-26dBc BW)

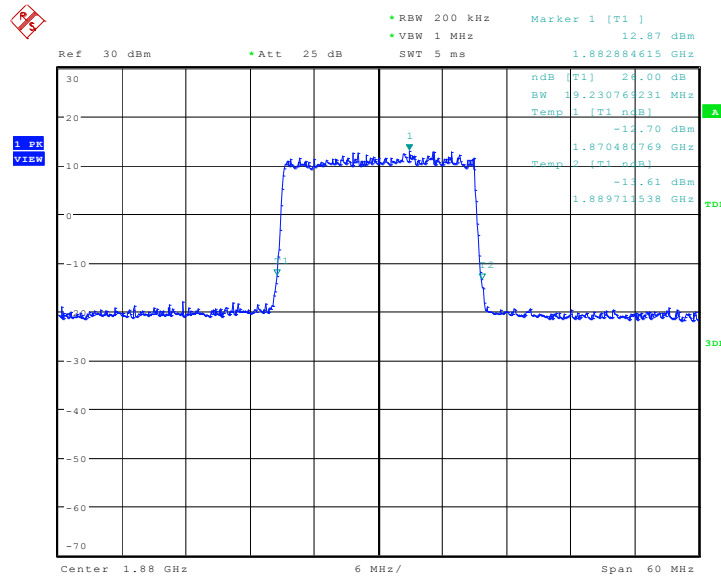


Date: 29.AUG.2017 14:58:29

LTE band 2, 20MHz (-26dBc)

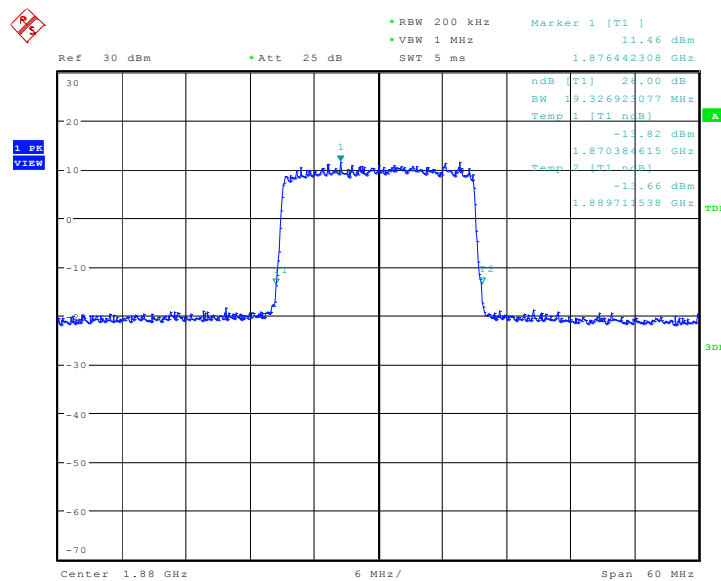
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1880.0	QPSK	16QAM
	19230.77	19326.92

LTE band 2, 20MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 15:05:37

LTE band 2, 20MHz Bandwidth, 16QAM (-26dBc BW)

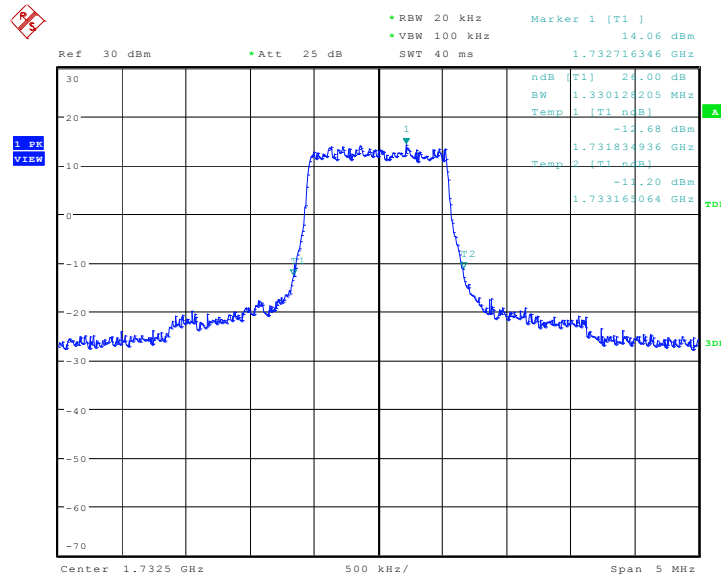


Date: 29.AUG.2017 15:05:52

LTE band 4, 1.4MHz (-26dBc)

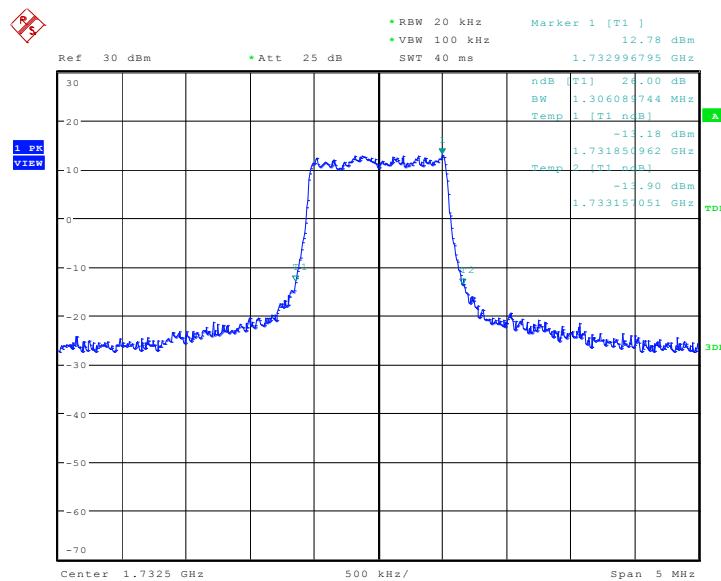
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1732.5	QPSK	16QAM
	1330.13	1306.09

LTE band 4, 1.4MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 15:58:19

LTE band 4, 1.4MHz Bandwidth, 16QAM (-26dBc BW)

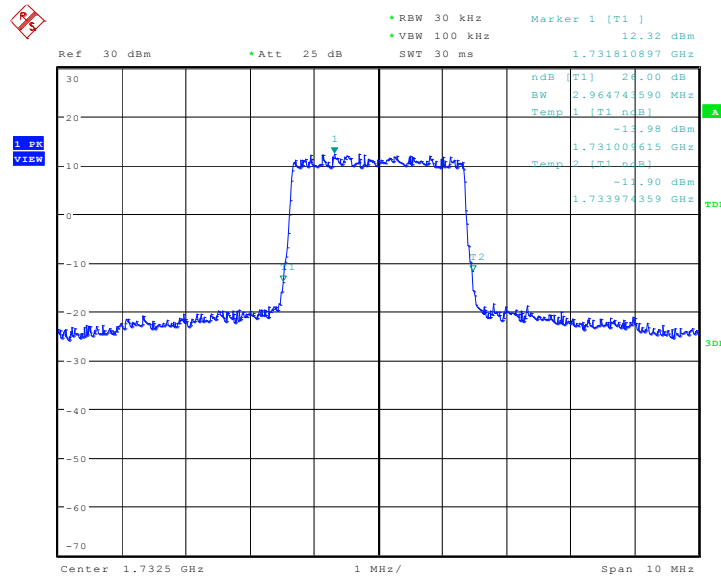


Date: 29.AUG.2017 15:58:35

LTE band 4, 3MHz (-26dBc)

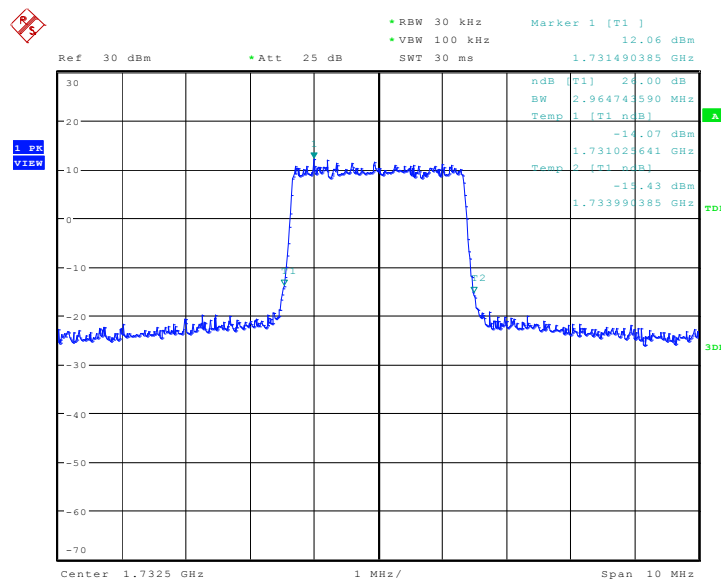
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1732.5	QPSK	16QAM
	2964.74	2964.74

LTE band 4, 3MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 16:06:01

LTE band 4, 3MHz Bandwidth, 16QAM (-26dBc BW)

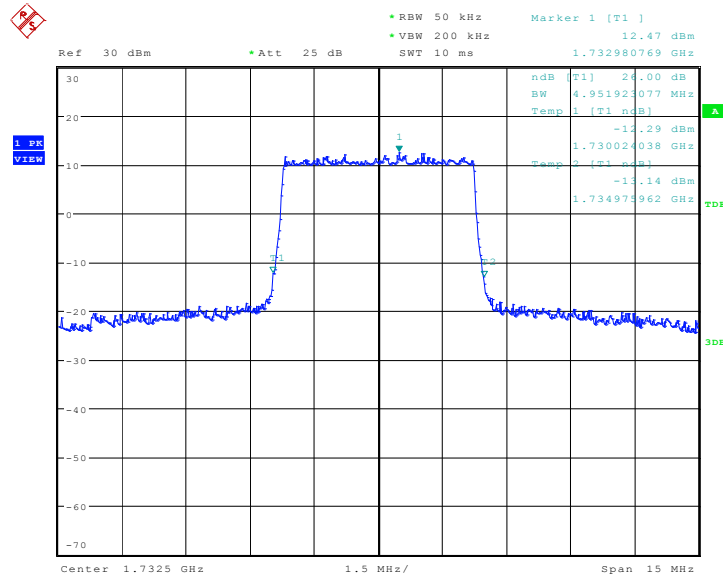


Date: 29.AUG.2017 16:06:17

LTE band 4, 5MHz (-26dBc)

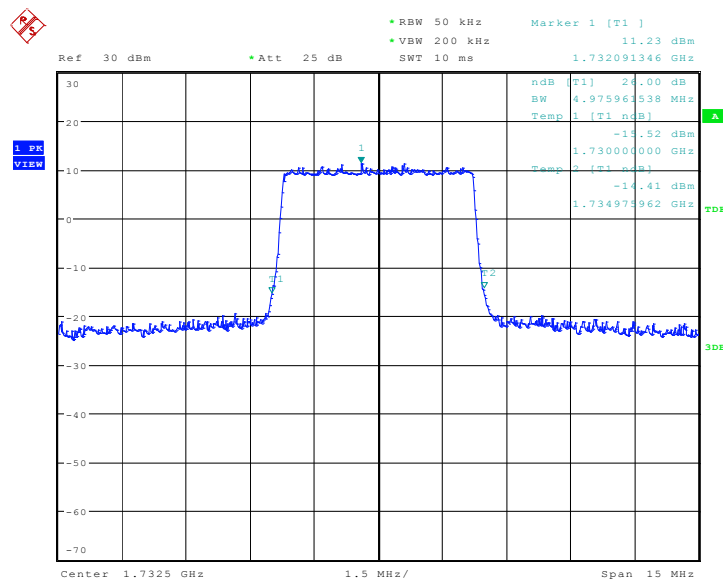
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1732.5	QPSK	16QAM
	4951.92	4975.96

LTE band 4, 5MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 16:12:44

LTE band 4, 5MHz Bandwidth,16QAM (-26dBc BW)

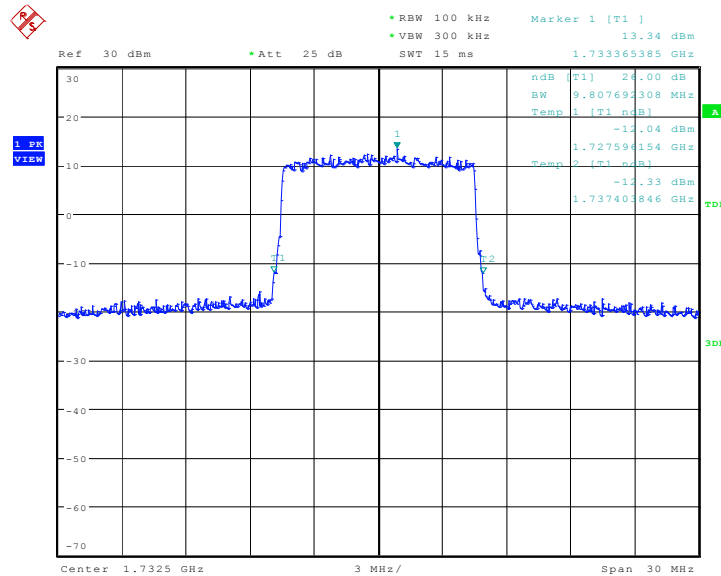


Date: 29.AUG.2017 16:12:59

LTE band 4, 10MHz (-26dBc)

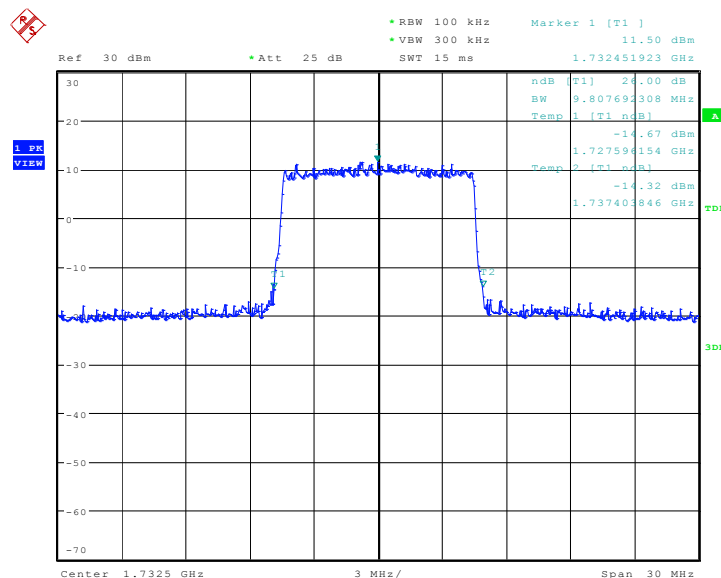
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1732.5	QPSK	16QAM
	9807.69	9807.69

LTE band 4, 10MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 16:19:27

LTE band 4, 10MHz Bandwidth, 16QAM (-26dBc BW)

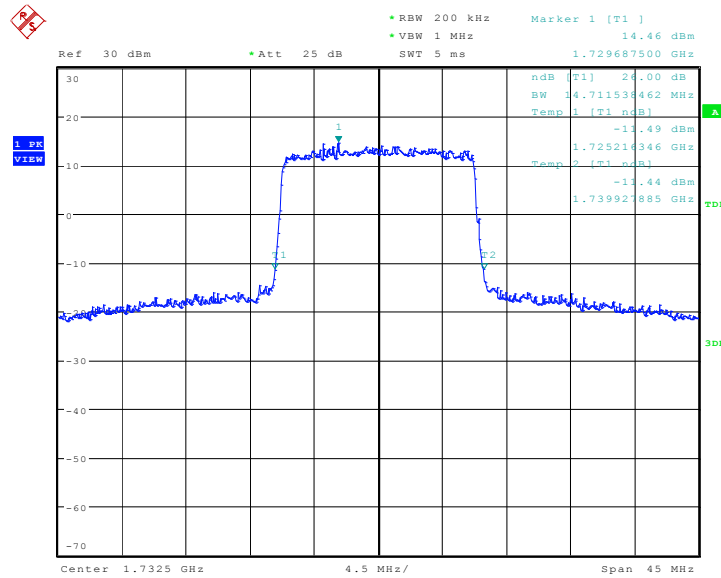


Date: 29.AUG.2017 16:19:42

LTE band 4, 15MHz (-26dBc)

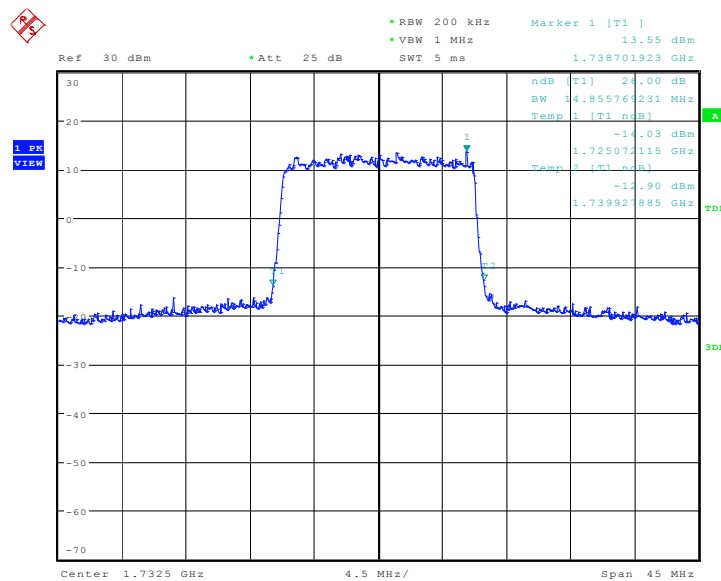
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1732.5	QPSK	16QAM
	14711.54	14855.77

LTE band 4, 15MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 16:26:46

LTE band 4, 15MHz Bandwidth, 16QAM (-26dBc BW)

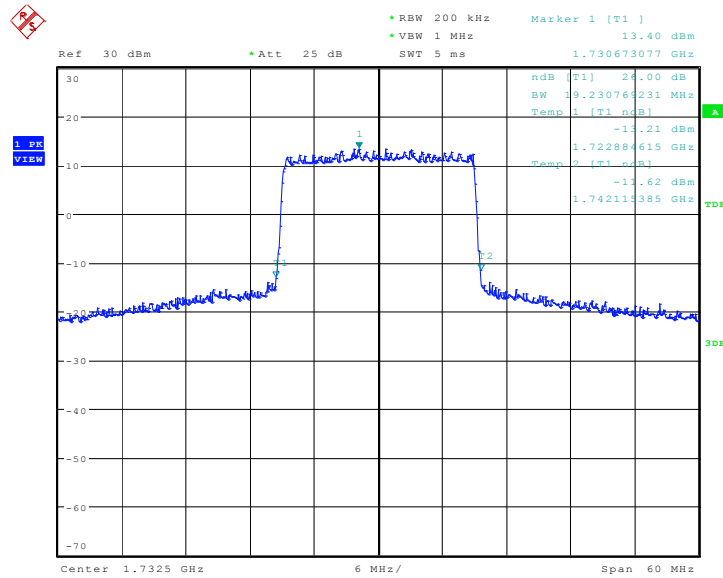


Date: 29.AUG.2017 16:27:02

LTE band 4, 20MHz (-26dBc)

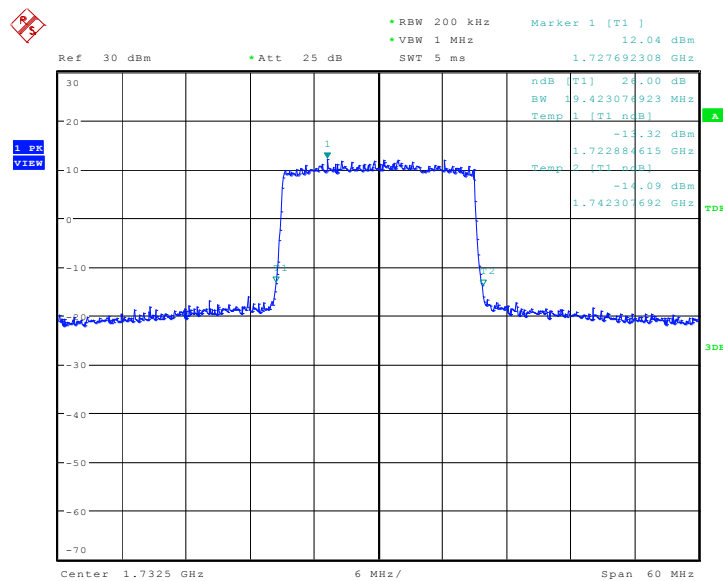
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1732.5	QPSK	16QAM
	19230.77	19423.08

LTE band 4, 20MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 16:34:10

LTE band 4, 20MHz Bandwidth, 16QAM (-26dBc BW)

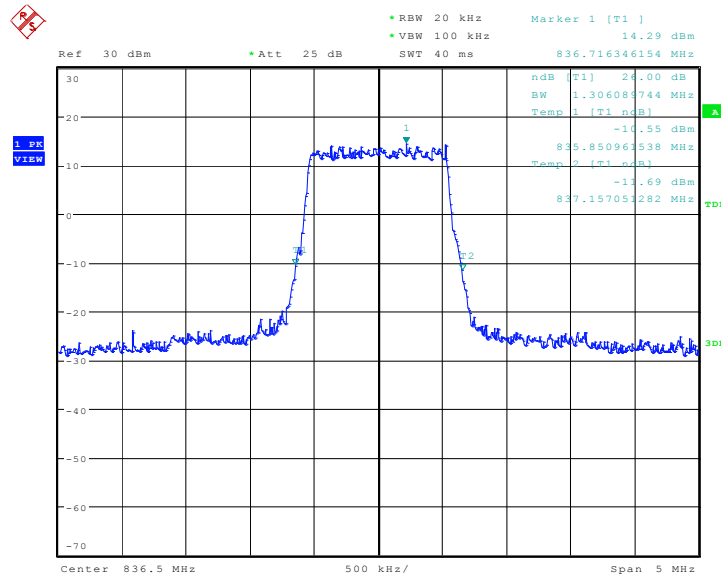


Date: 29.AUG.2017 16:34:25

LTE band 5, 1.4MHz (-26dBc)

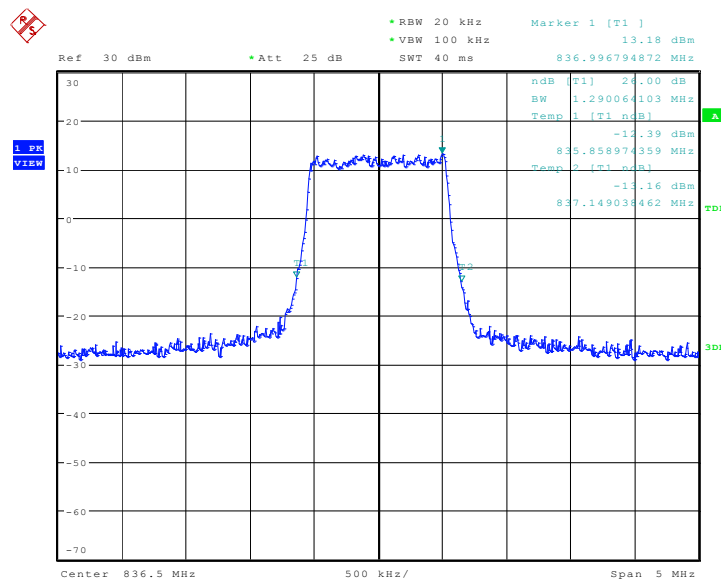
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	1306.09	1290.06

LTE band 5, 1.4MHz Bandwidth, QPSK (-26dBc BW)



Date: 12.SEP.2017 17:03:01

LTE band 5, 1.4MHz Bandwidth, 16QAM (-26dBc BW)

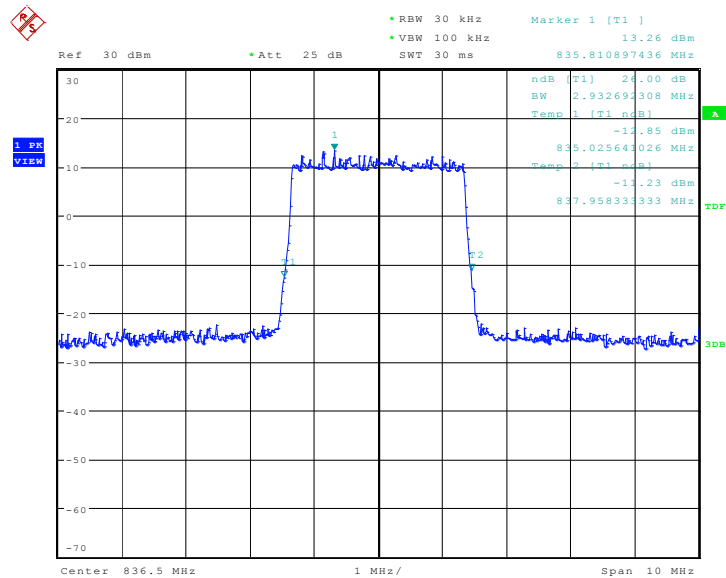


Date: 12.SEP.2017 17:03:17

LTE band 5, 3MHz (-26dBc)

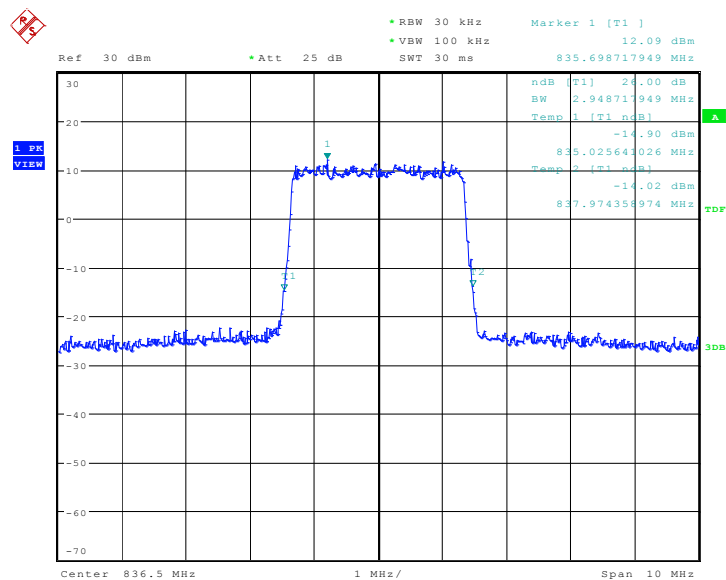
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	2932.69	2948.72

LTE band 5, 3MHz Bandwidth, QPSK (-26dBc BW)



Date: 12.SEP.2017 17:09:51

LTE band 5, 3MHz Bandwidth, 16QAM (-26dBc BW)

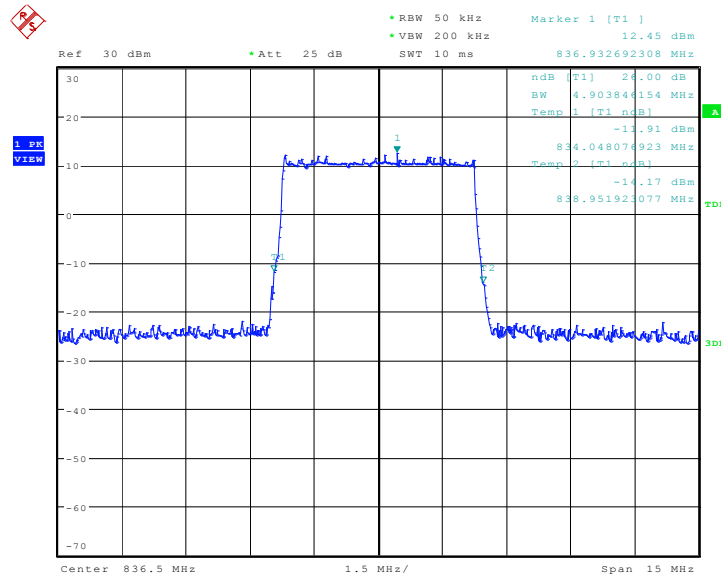


Date: 12.SEP.2017 17:10:08

LTE band 5, 5MHz (-26dBc)

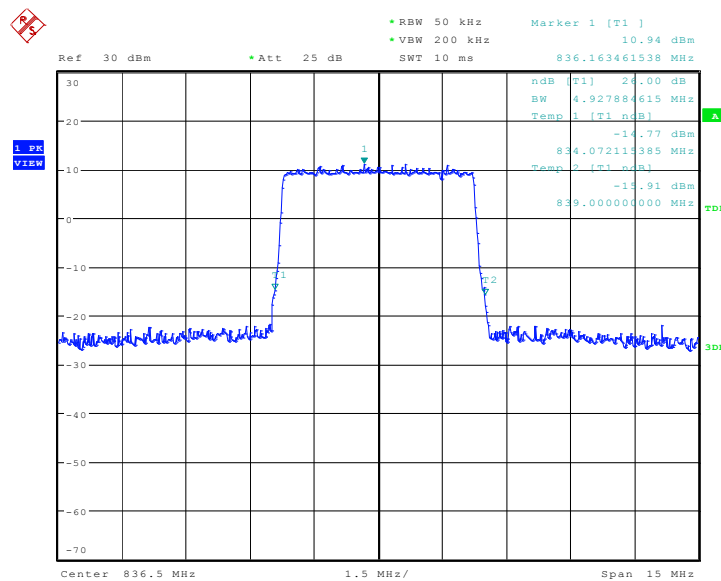
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	4903.85	4927.88

LTE band 5, 5MHz Bandwidth, QPSK (-26dBc BW)



Date: 12.SEP.2017 17:16:42

LTE band 5, 5MHz Bandwidth, 16QAM (-26dBc BW)

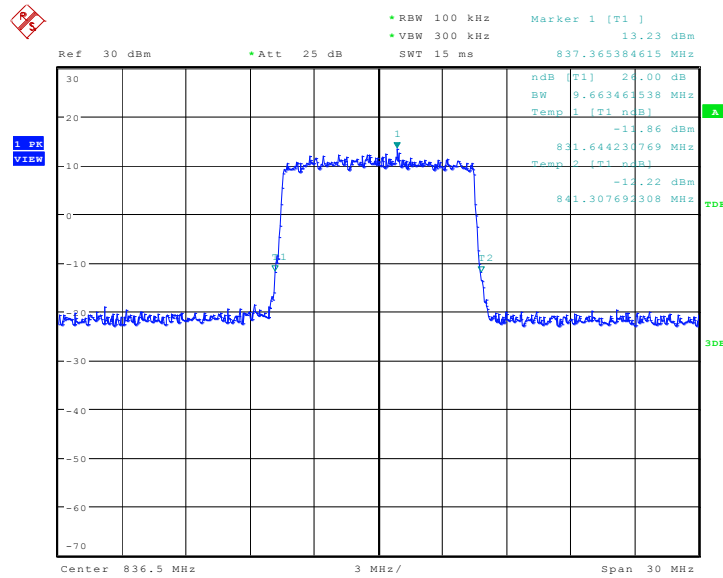


Date: 12.SEP.2017 17:16:59

LTE band 5, 10MHz (-26dBc)

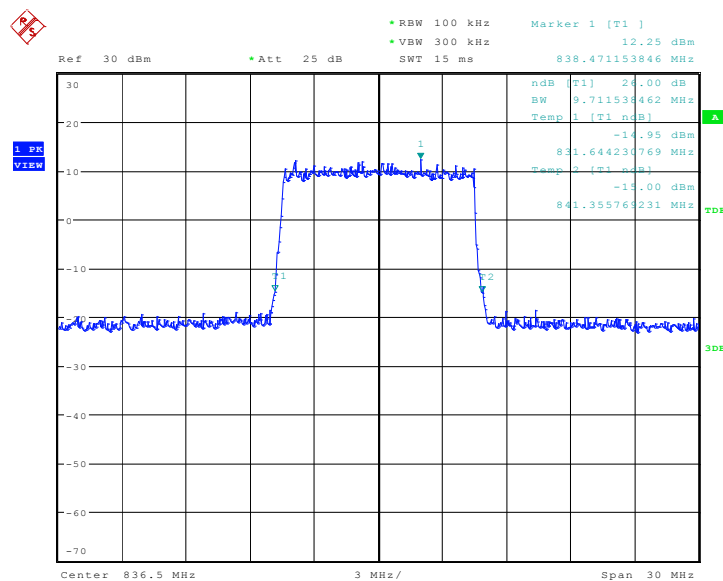
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	9663.46	9711.54

LTE band 5, 10MHz Bandwidth, QPSK (-26dBc BW)



Date: 12.SEP.2017 17:23:32

LTE band 5, 10MHz Bandwidth, 16QAM (-26dBc BW)

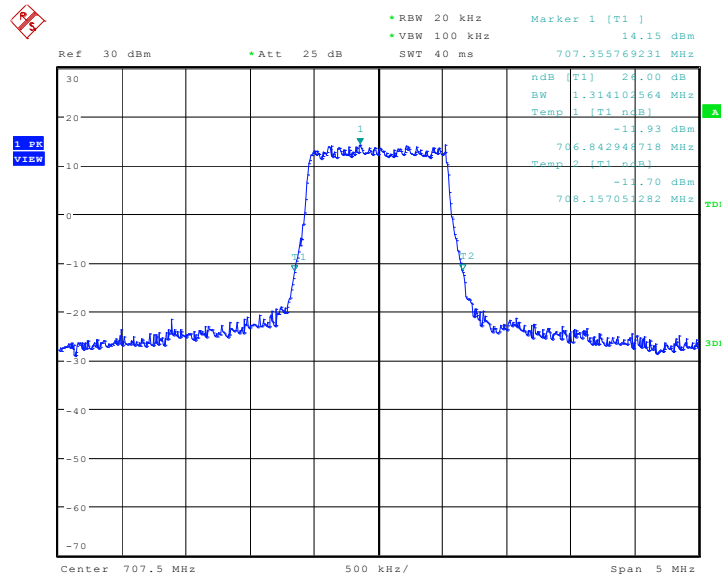


Date: 12.SEP.2017 17:23:49

LTE band 12, 1.4MHz (-26dBc)

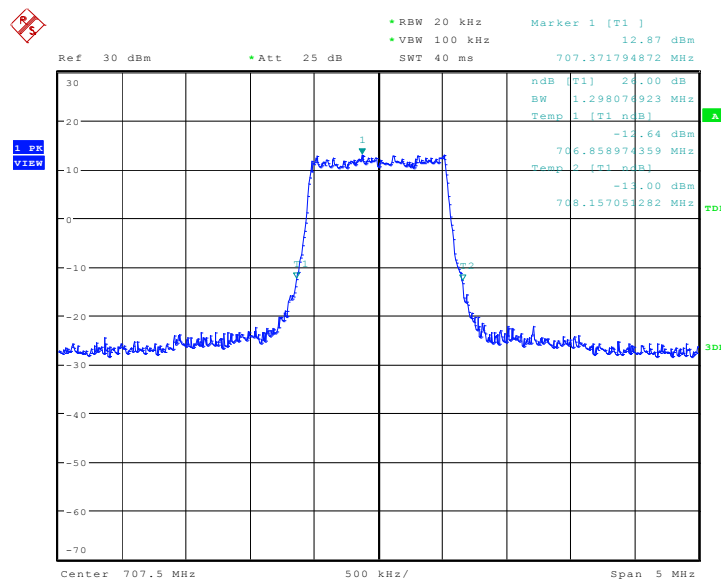
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
707.5	QPSK	16QAM
	1314.10	1298.08

LTE band 12, 1.4MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 16:40:56

LTE band 12, 1.4MHz Bandwidth, 16QAM (-26dBc BW)

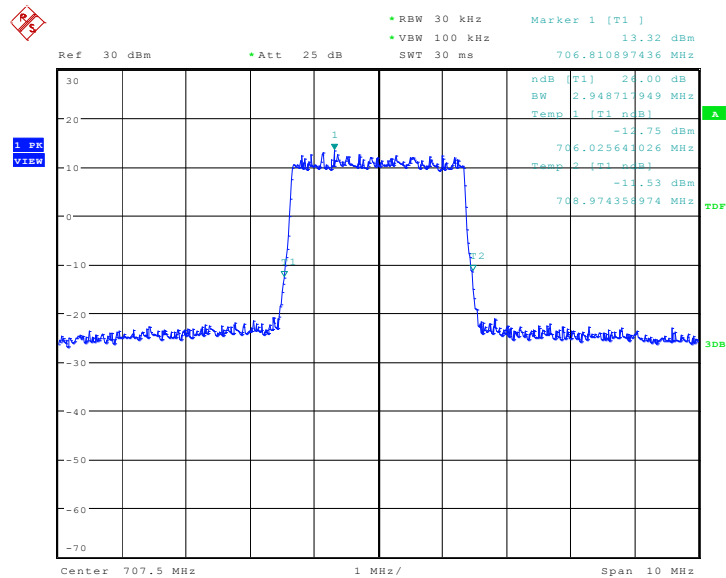


Date: 29.AUG.2017 16:41:12

LTE band 12, 3MHz (-26dBc)

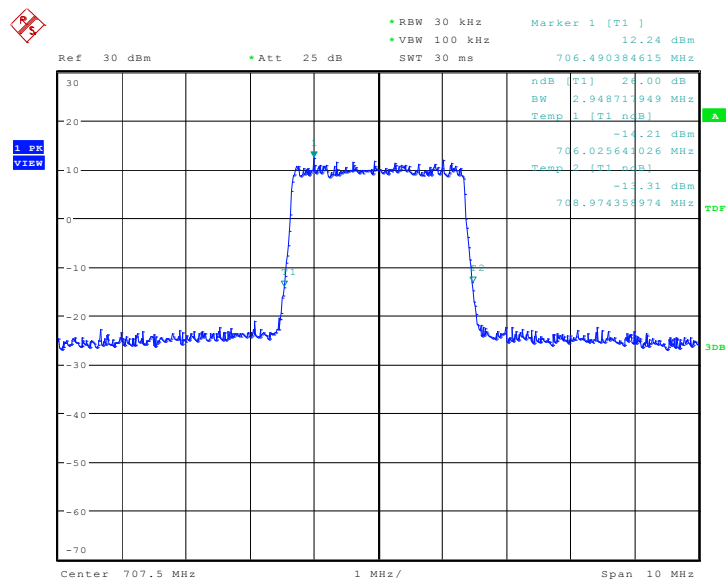
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
707.5	QPSK	16QAM
	2948.72	2948.72

LTE band 12, 3MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 16:47:38

LTE band 12, 3MHz Bandwidth, 16QAM (-26dBc BW)

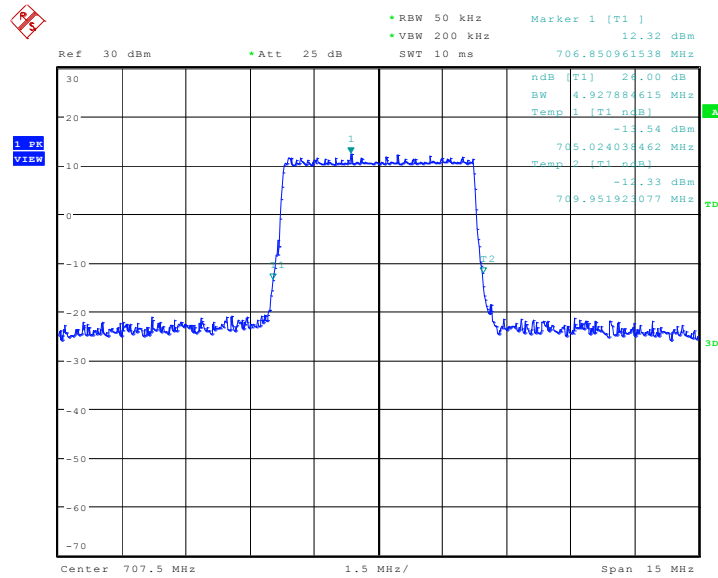


Date: 29.AUG.2017 16:47:54

LTE band 12, 5MHz (-26dBc)

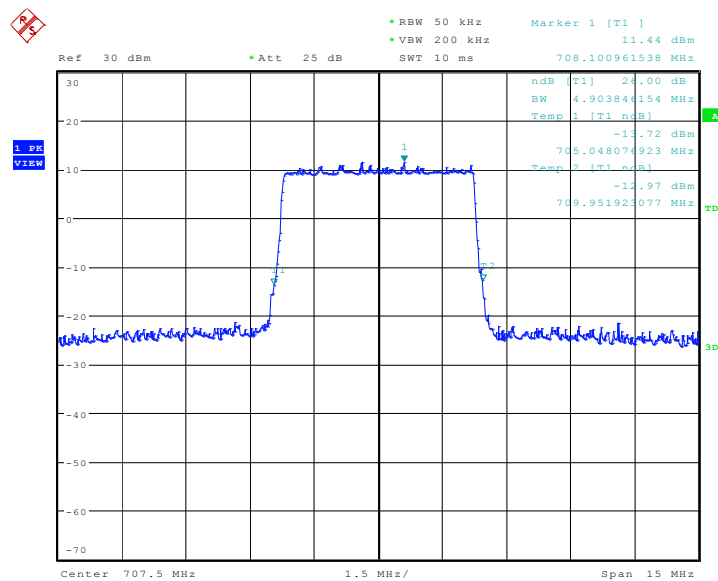
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
707.5	QPSK	16QAM
	4927.88	4903.85

LTE band 12, 5MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 16:54:21

LTE band 12, 5MHz Bandwidth, 16QAM (-26dBc BW)

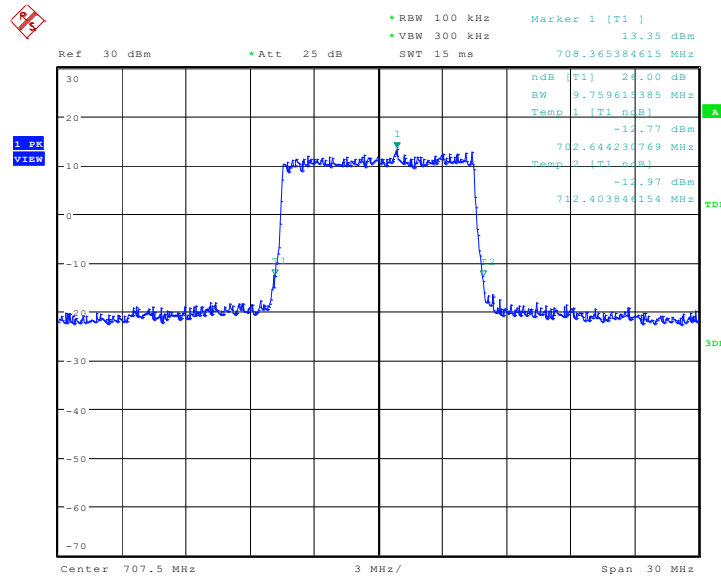


Date: 29.AUG.2017 16:54:36

LTE band 12, 10MHz (-26dBc)

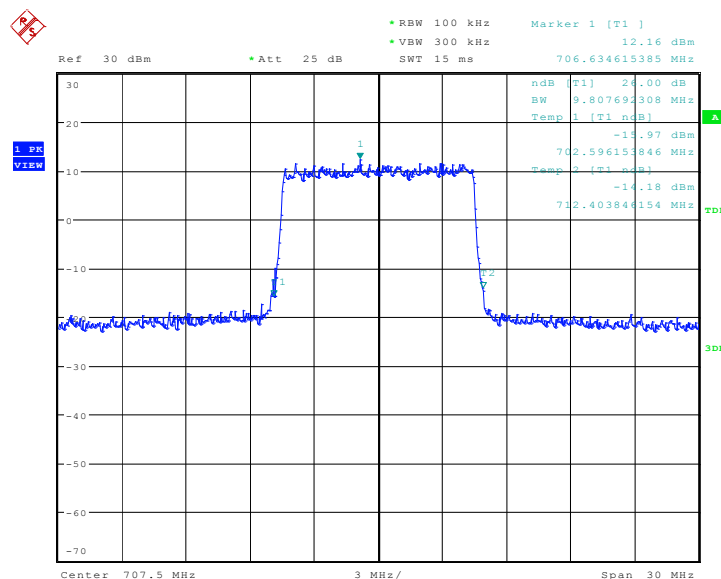
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
707.5	QPSK	16QAM
	9759.62	9807.69

LTE band 12, 10MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 17:01:03

LTE band 12, 10MHz Bandwidth, 16QAM (-26dBc BW)

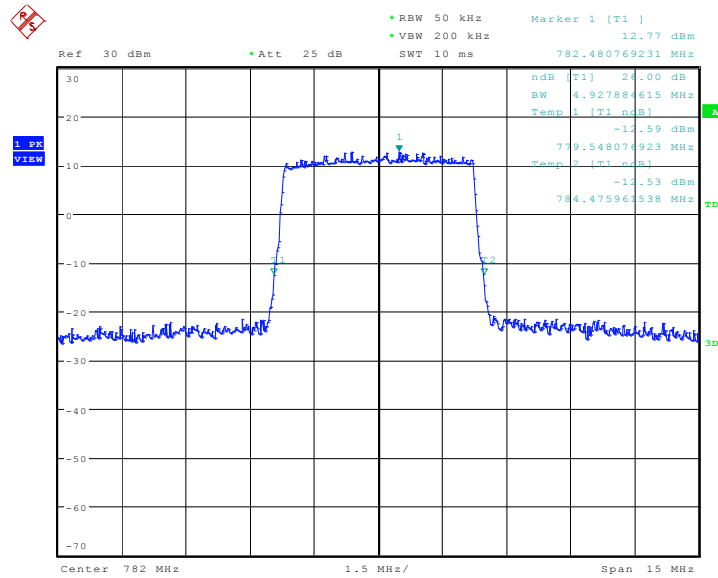


Date: 29.AUG.2017 17:01:19

LTE band 13, 5MHz (-26dBc)

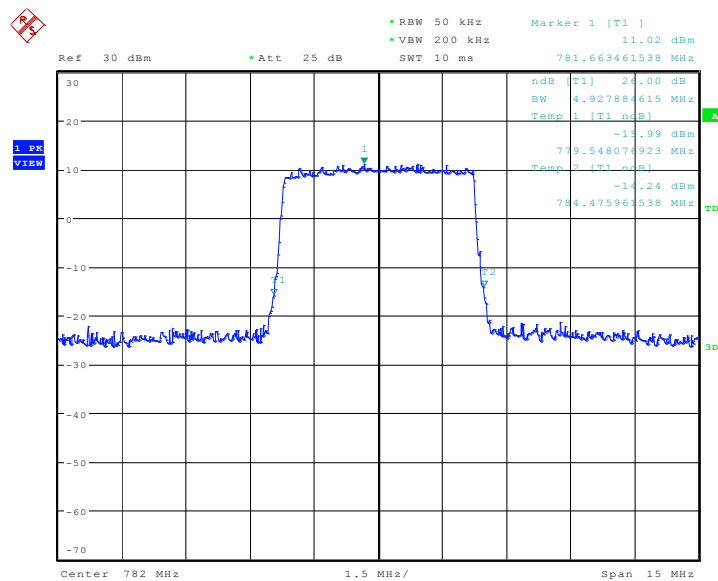
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
782.0	QPSK	16QAM
	4927.88	4927.88

LTE band 13, 5MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 14:10:19

LTE band 13, 5MHz Bandwidth, 16QAM (-26dBc BW)

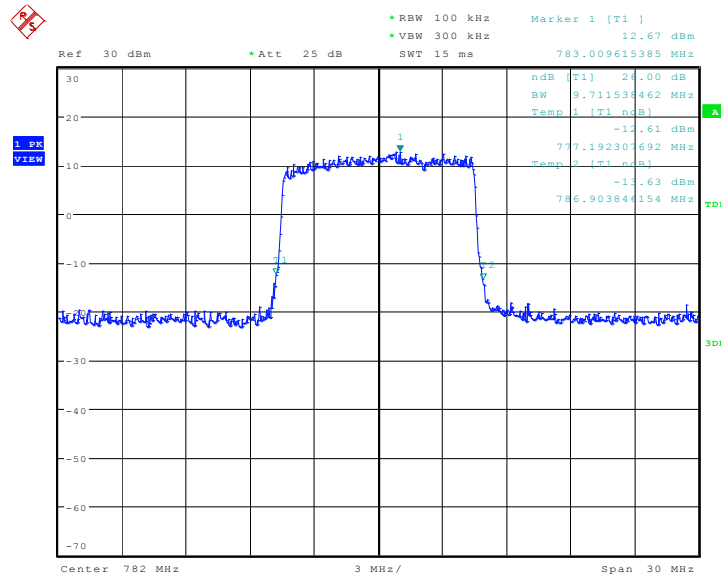


Date: 29.AUG.2017 14:10:36

LTE band 13, 10MHz (-26dBc)

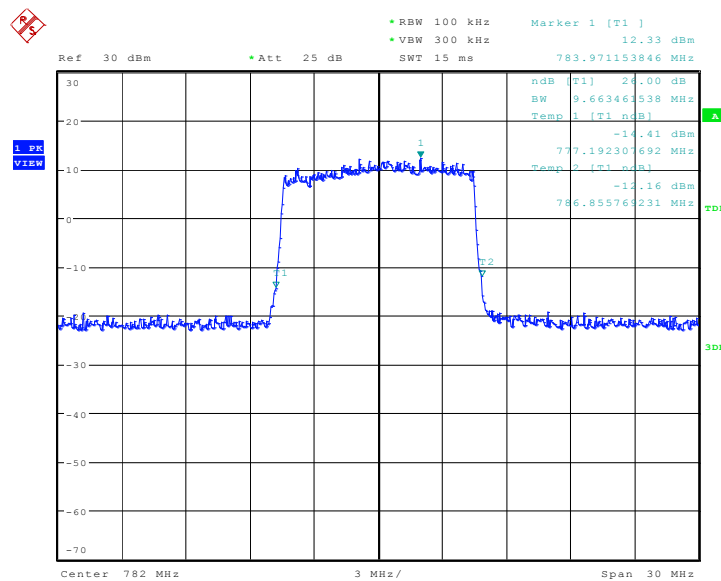
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
782.0	QPSK	16QAM
	9711.54	9663.46

LTE band 13, 10MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 14:17:10

LTE band 13, 10MHz Bandwidth, 16QAM (-26dBc BW)

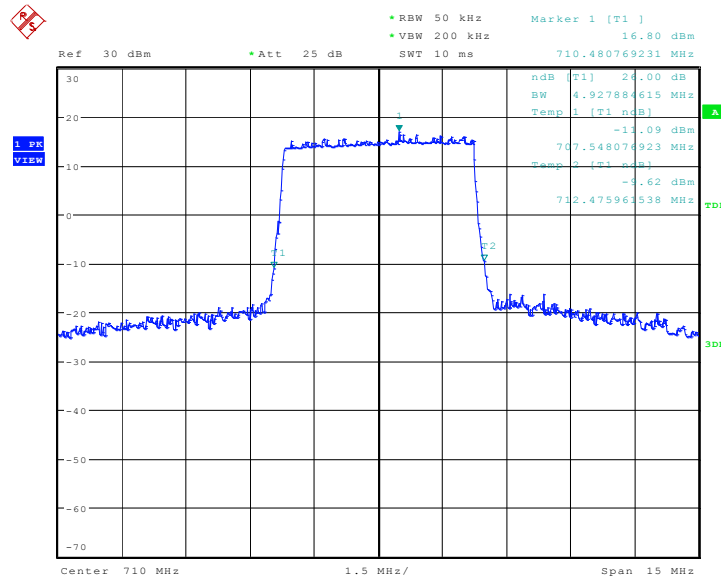


Date: 29.AUG.2017 14:17:27

LTE band 17, 5MHz (-26dBc)

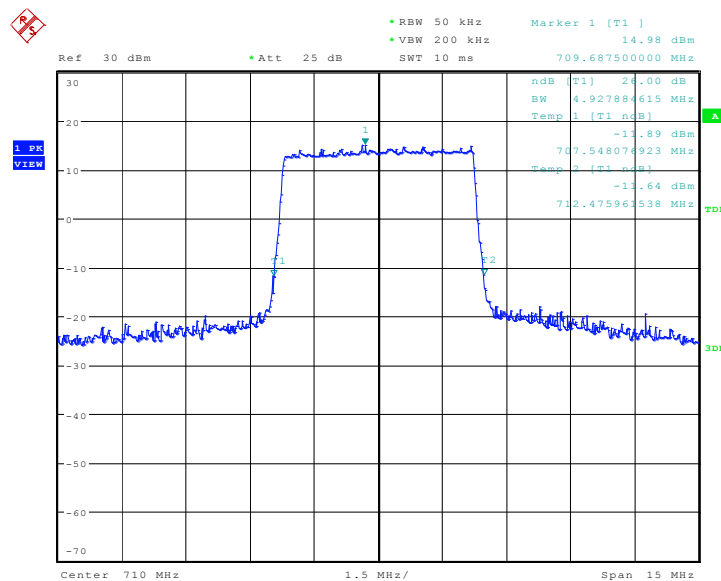
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
710.0	QPSK	16QAM
	4927.88	4927.88

LTE band 17, 5MHz Bandwidth, QPSK (-26dBc BW)



Date: 13.OCT.2017 13:58:51

LTE band 17, 5MHz Bandwidth, 16QAM (-26dBc BW)

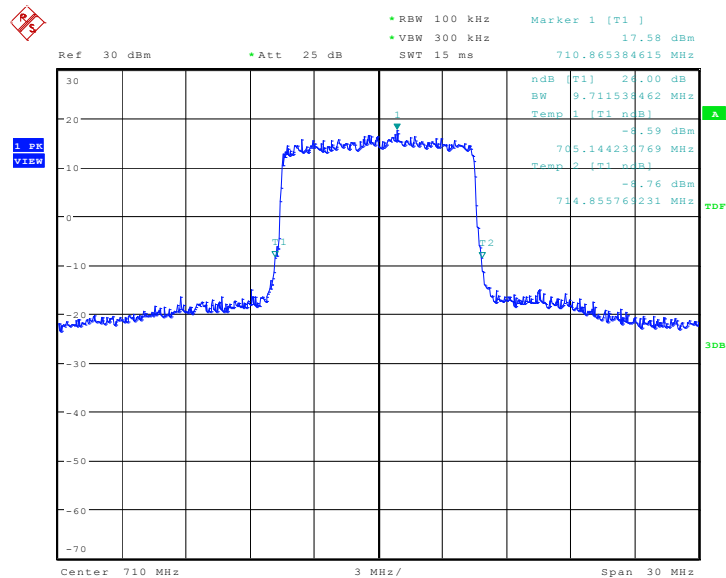


Date: 13.OCT.2017 13:59:08

LTE band 17, 10MHz (-26dBc)

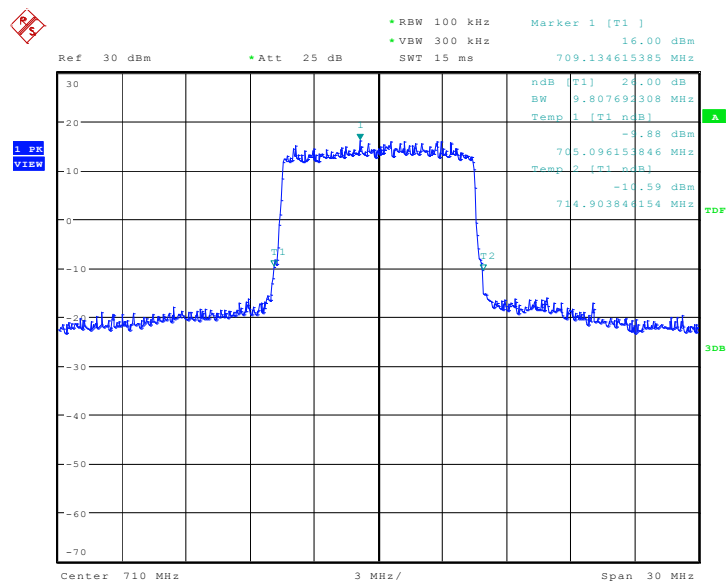
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
710.0	QPSK	16QAM
	9711.54	9807.69

LTE band 17, 10MHz Bandwidth, QPSK (-26dBc BW)



Date: 13.OCT.2017 14:01:09

LTE band 17, 10MHz Bandwidth, 16QAM (-26dBc BW)

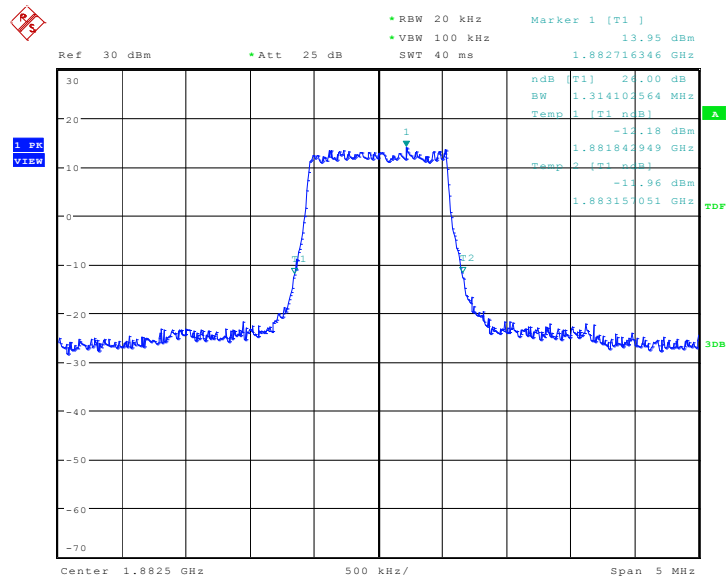


Date: 13.OCT.2017 14:01:26

LTE band 25, 1.4MHz (-26dBc)

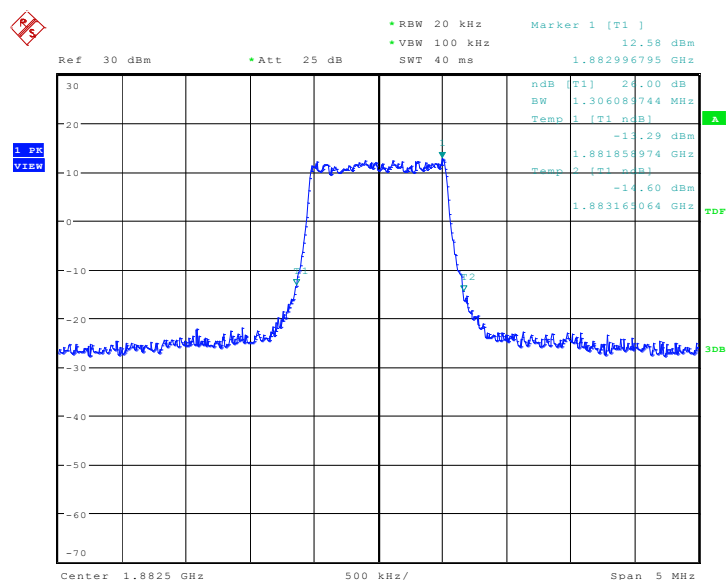
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1882.5	QPSK	16QAM
	1314.10	1306.09

LTE band 25, 1.4MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 17:07:49

LTE band 25, 1.4MHz Bandwidth, 16QAM (-26dBc BW)

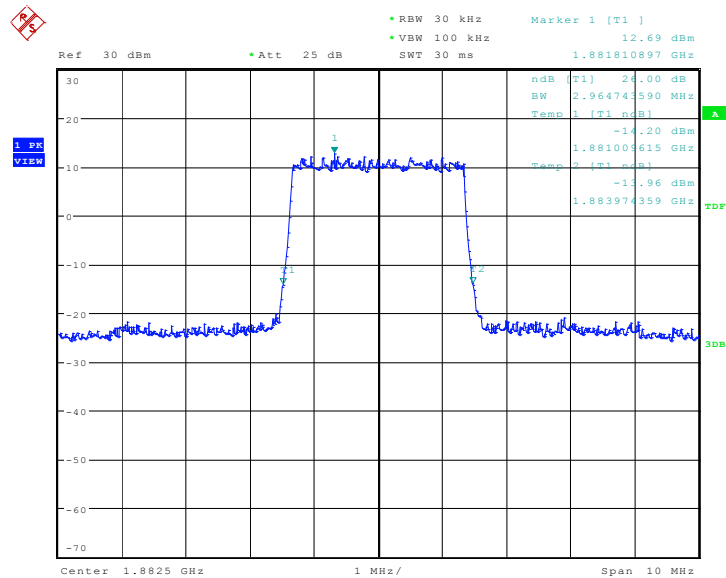


Date: 29.AUG.2017 17:08:05

LTE band 25, 3MHz (-26dBc)

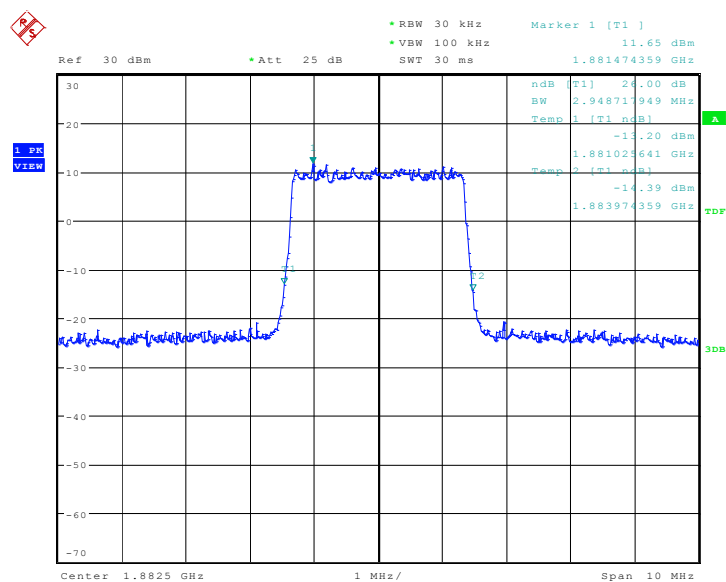
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1882.5	QPSK	16QAM
	2964.74	2948.72

LTE band 25, 3MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 17:14:31

LTE band 25, 3MHz Bandwidth, 16QAM (-26dBc BW)

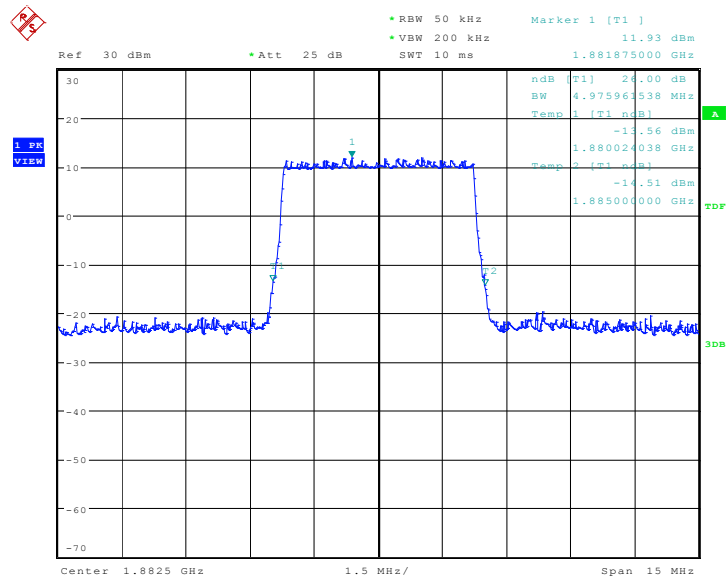


Date: 29.AUG.2017 17:14:47

LTE band 25, 5MHz (-26dBc)

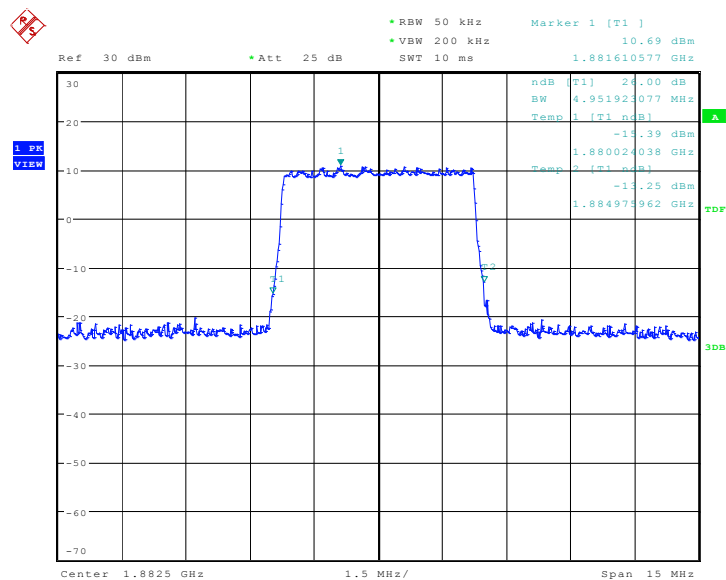
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1882.5	QPSK	16QAM
	4975.96	4951.92

LTE band 25, 5MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 17:21:14

LTE band 25, 5MHz Bandwidth, 16QAM (-26dBc BW)

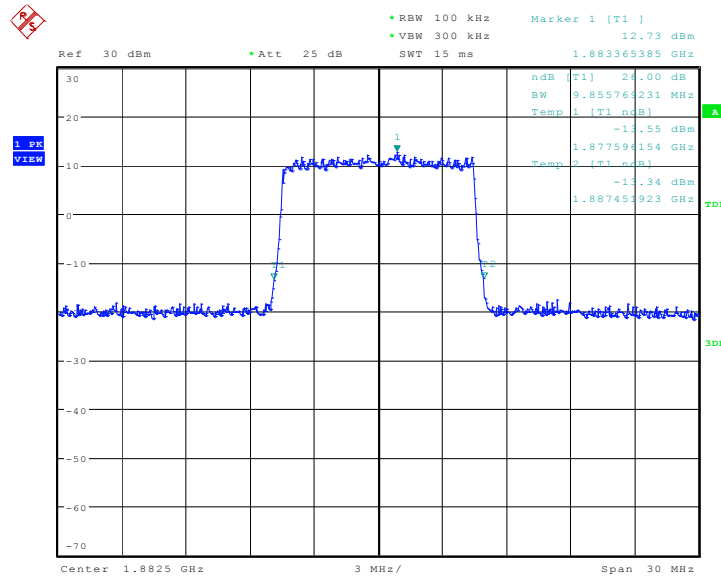


Date: 29.AUG.2017 17:21:30

LTE band 25, 10MHz (-26dBc)

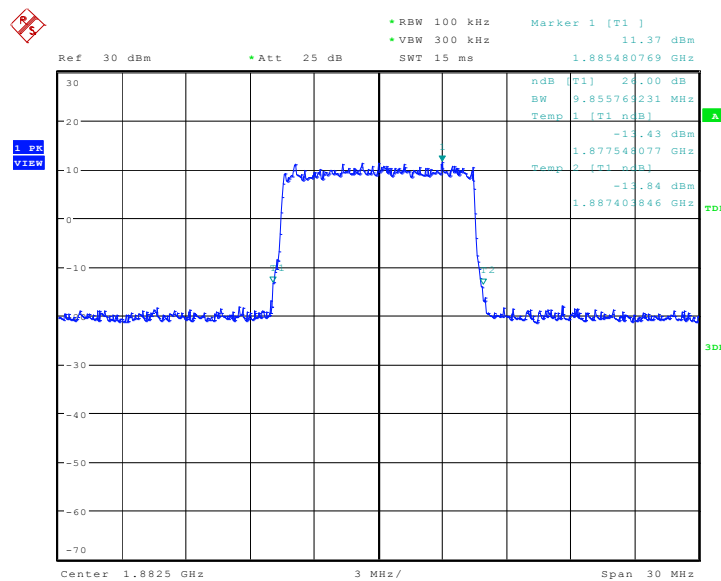
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1882.5	QPSK	16QAM
	9855.77	9855.77

LTE band 25, 10MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 17:27:57

LTE band 25, 10MHz Bandwidth, 16QAM (-26dBc BW)

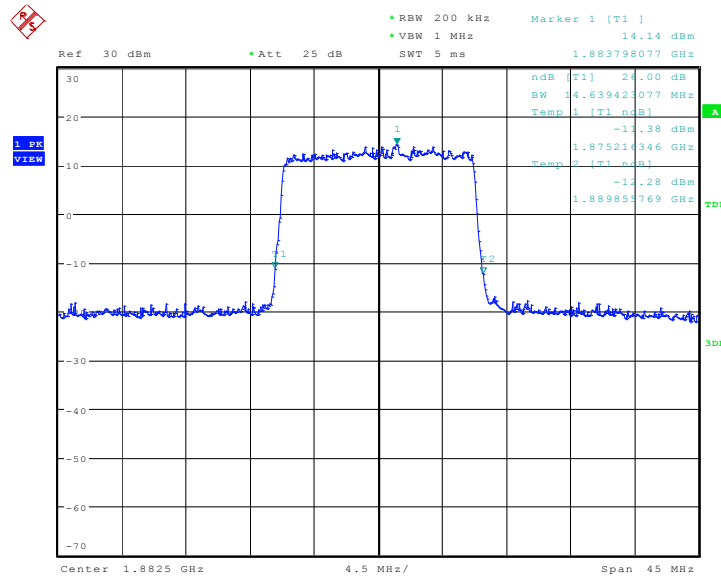


Date: 29.AUG.2017 17:28:12

LTE band 25, 15MHz (-26dBc)

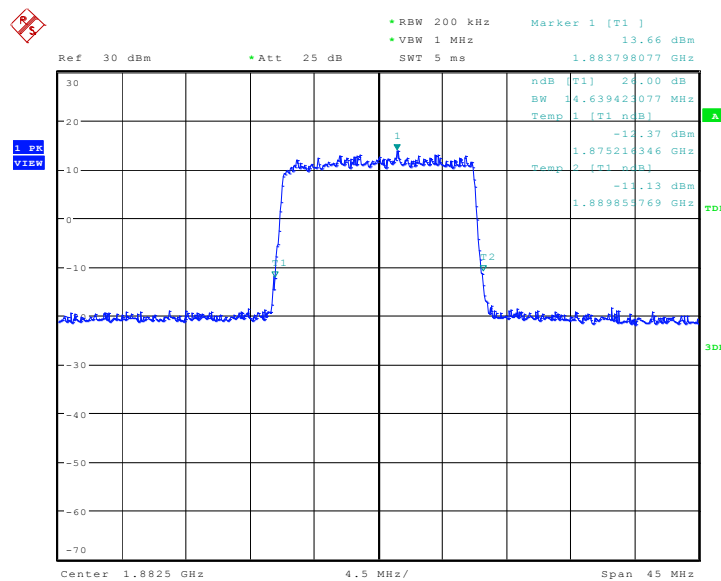
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1882.5	QPSK	16QAM
	14639.42	14639.42

LTE band 25, 15MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 17:35:29

LTE band 25, 15MHz Bandwidth, 16QAM (-26dBc BW)

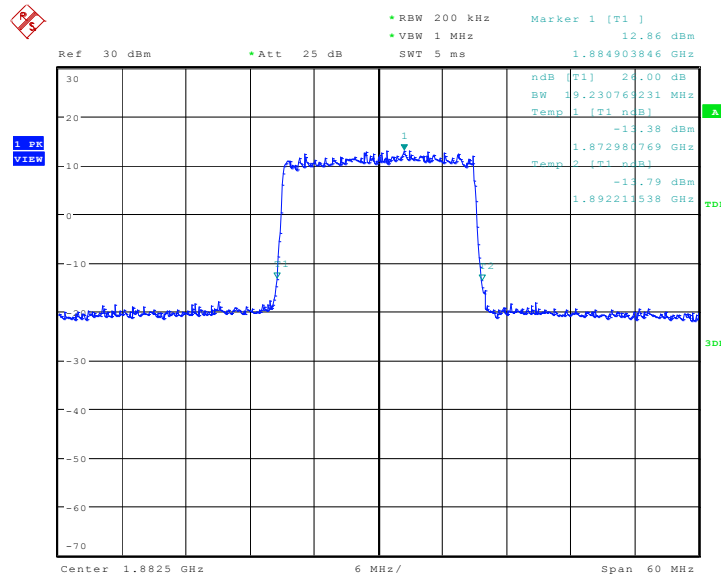


Date: 29.AUG.2017 17:35:45

LTE band 25, 20MHz (-26dBc)

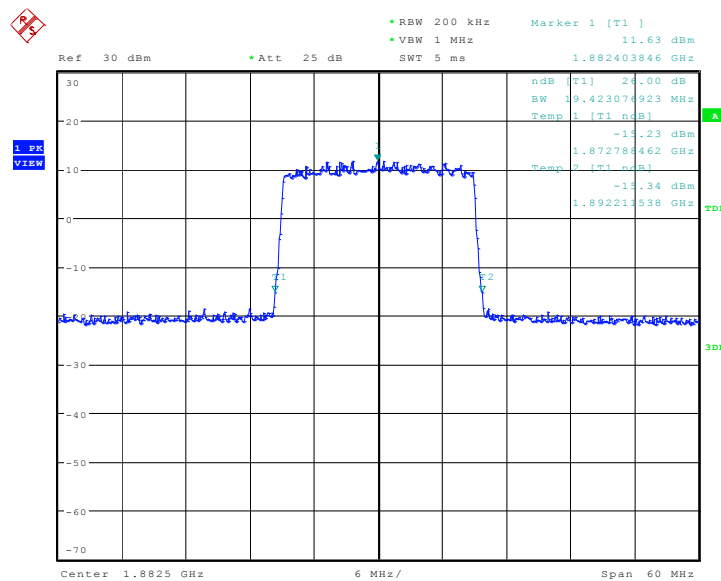
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1882.5	QPSK	16QAM
	19230.77	19423.08

LTE band 25, 20MHz Bandwidth, QPSK (-26dBc BW)



Date: 29.AUG.2017 17:42:58

LTE band 25, 20MHz Bandwidth, 16QAM (-26dBc BW)

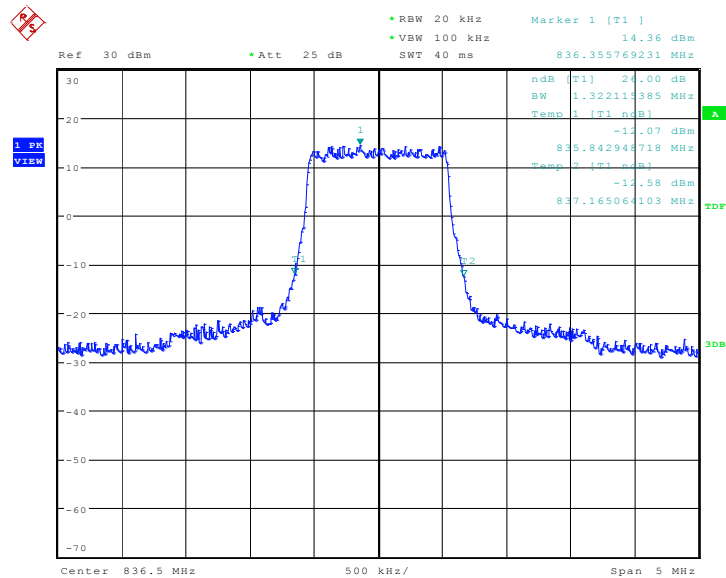


Date: 29.AUG.2017 17:43:13

LTE band 26, 1.4MHz (-26dBc)

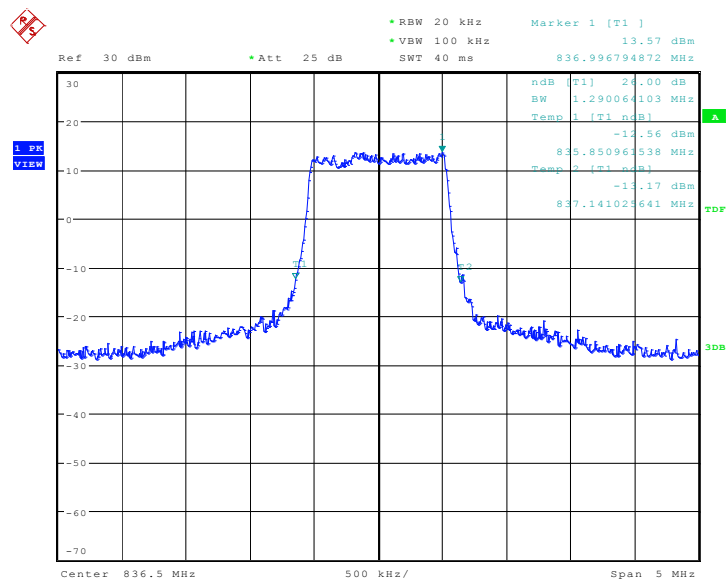
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	1322.12	1290.06

LTE band 26, 1.4MHz Bandwidth, QPSK (-26dBc BW)



Date: 11.SEP.2017 14:32:42

LTE band 26, 1.4MHz Bandwidth, 16QAM (-26dBc BW)

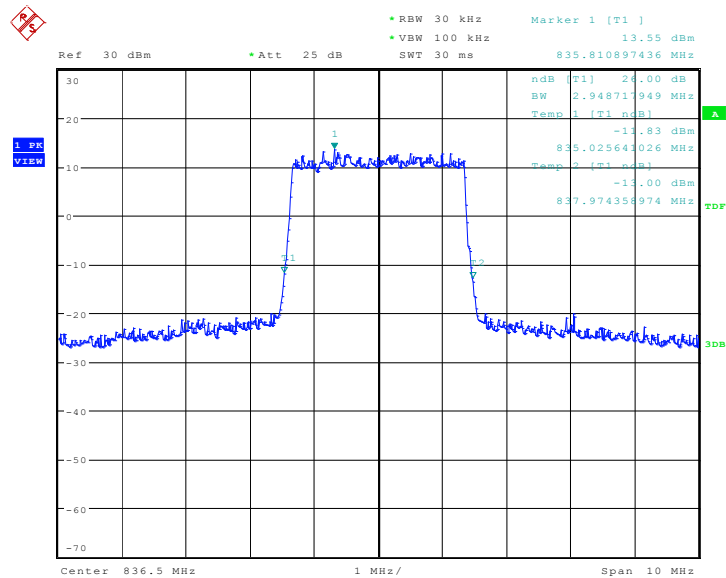


Date: 11.SEP.2017 14:32:59

LTE band 26, 3MHz (-26dBc)

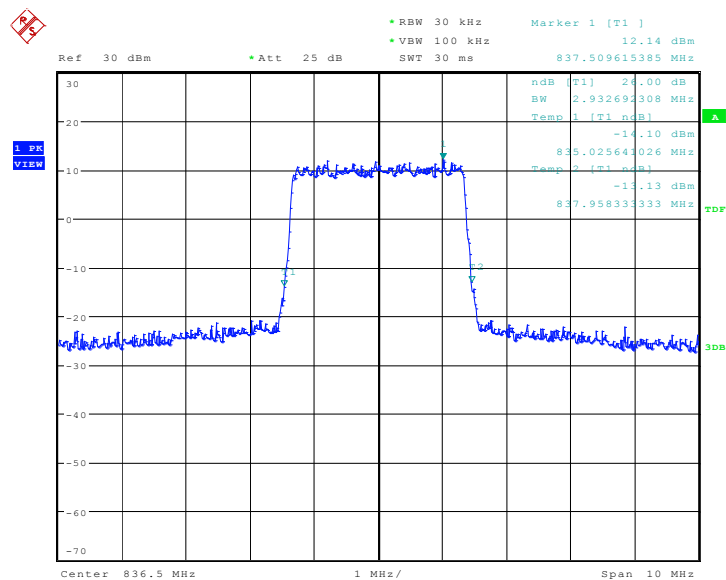
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	2948.72	2932.69

LTE band 26, 3MHz Bandwidth, QPSK (-26dBc BW)



Date: 11.SEP.2017 14:39:33

LTE band 26, 3MHz Bandwidth, 16QAM (-26dBc BW)

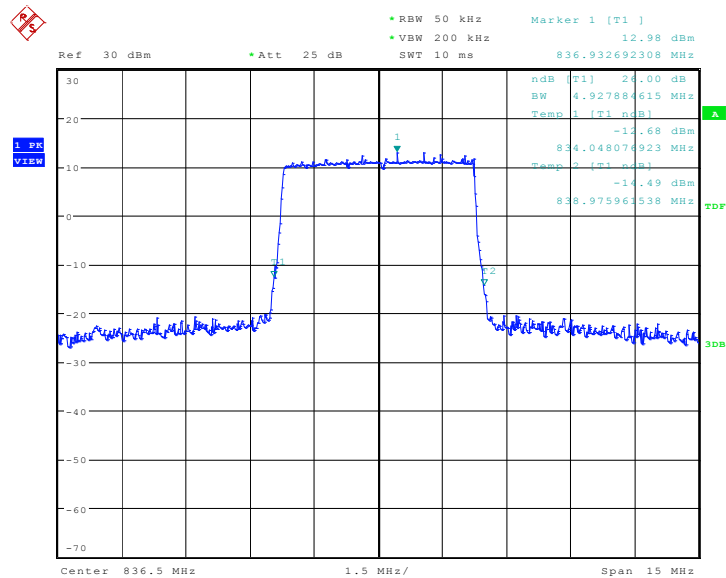


Date: 11.SEP.2017 14:39:50

LTE band 26, 5MHz (-26dBc)

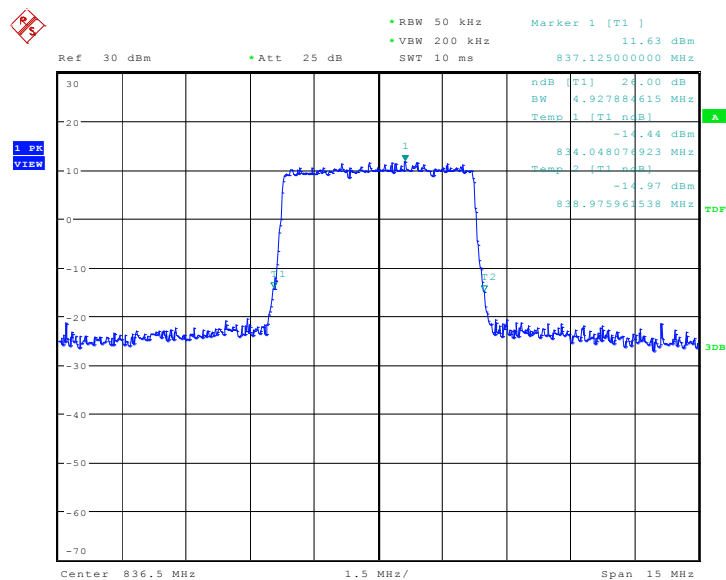
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	4927.88	4927.88

LTE band 26, 5MHz Bandwidth, QPSK (-26dBc BW)



Date: 11.SEP.2017 14:46:23

LTE band 26, 5MHz Bandwidth, 16QAM (-26dBc BW)

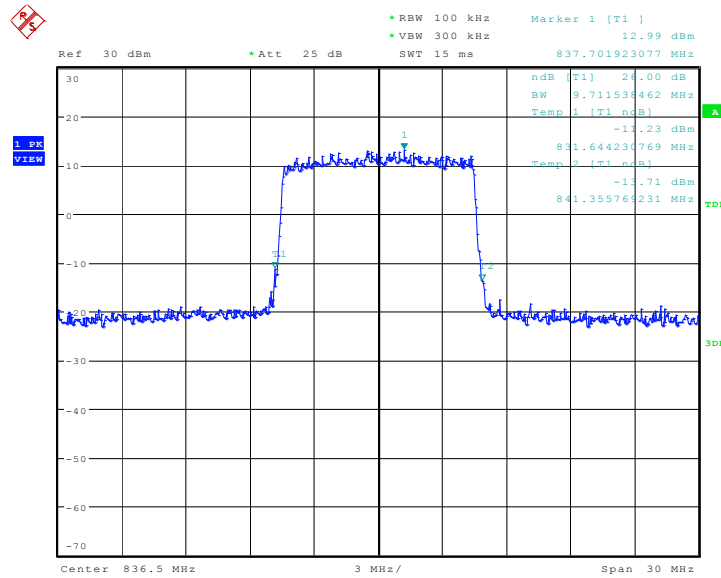


Date: 11.SEP.2017 14:46:40

LTE band 26, 10MHz (-26dBc)

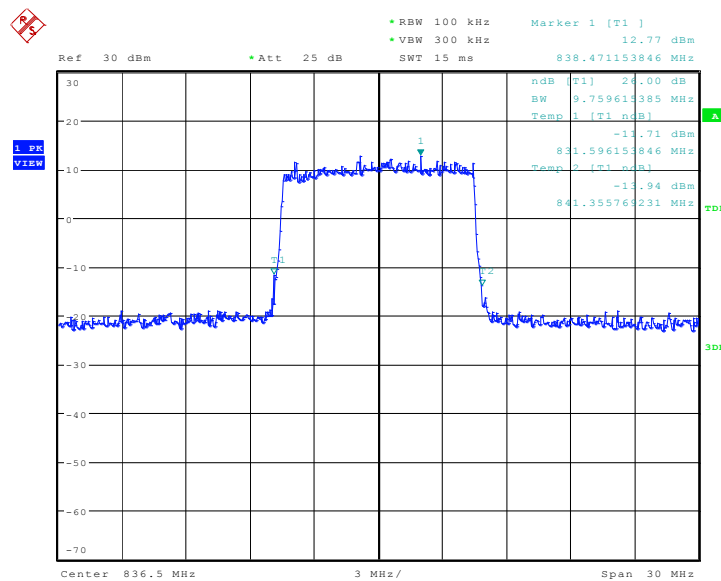
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	9711.54	9759.62

LTE band 26, 10MHz Bandwidth, QPSK (-26dBc BW)



Date: 11.SEP.2017 14:53:14

LTE band 26, 10MHz Bandwidth, 16QAM (-26dBc BW)

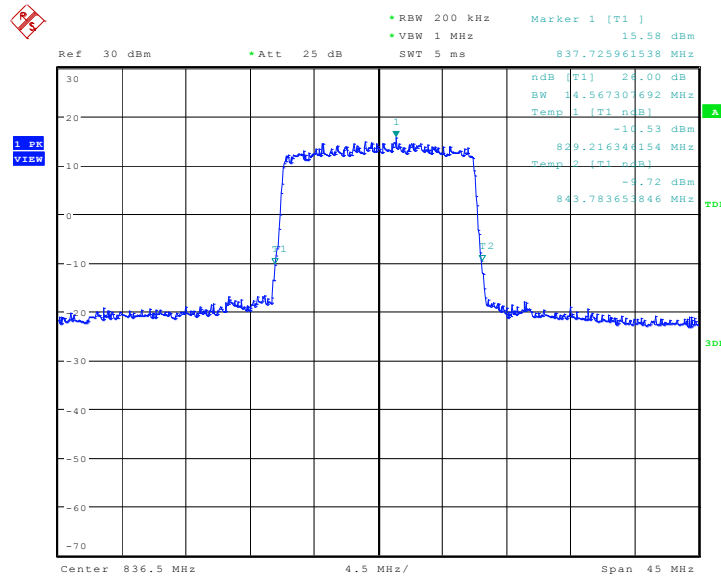


Date: 11.SEP.2017 14:53:31

LTE band 26, 15MHz (-26dBc)

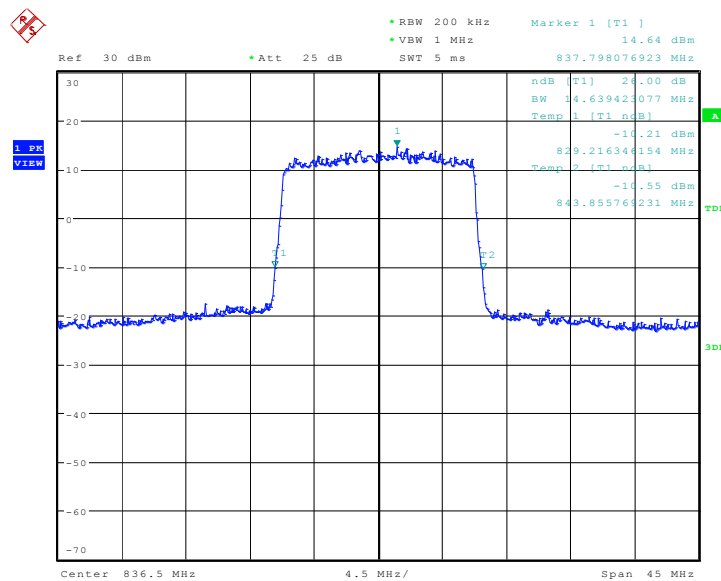
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	14567.31	14639.42

LTE band 26, 15MHz Bandwidth, QPSK (-26dBc BW)



Date: 11.SEP.2017 15:00:10

LTE band 26, 15MHz Bandwidth, 16QAM (-26dBc BW)

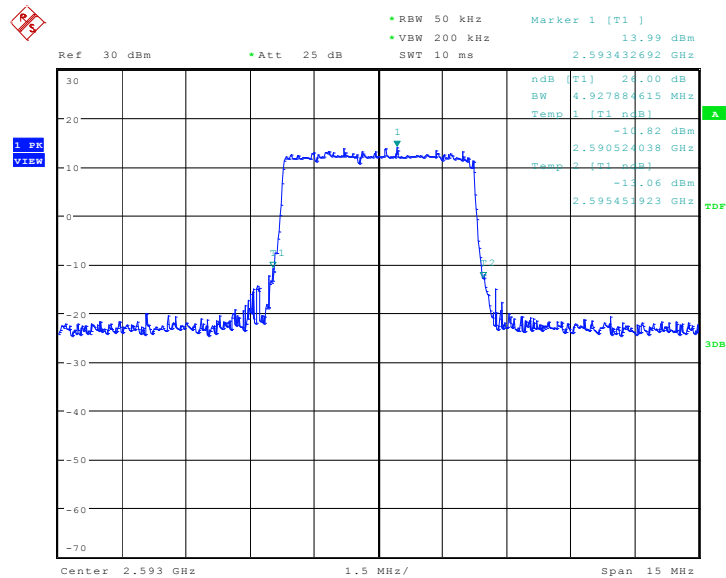


Date: 11.SEP.2017 15:00:27

LTE band 41, 5MHz (-26dBc)

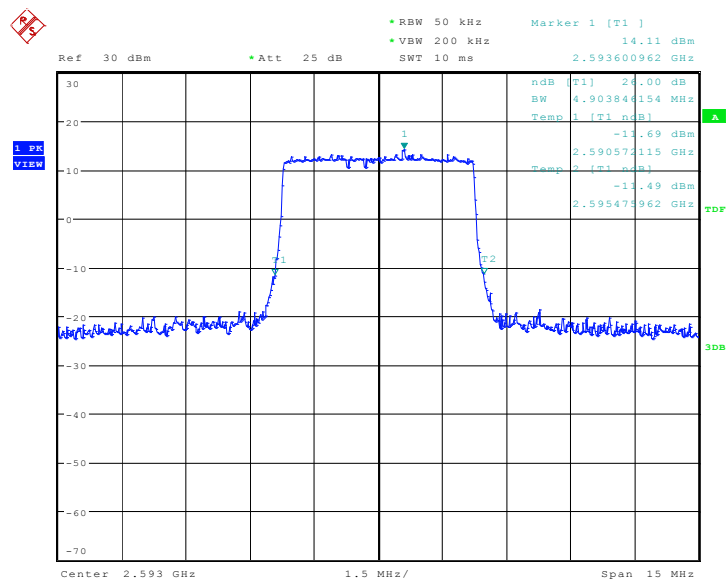
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
2593.0	QPSK	16QAM
	4927.88	4903.85

LTE band 41, 5MHz Bandwidth, QPSK (-26dBc BW)



Date: 11.SEP.2017 16:30:39

LTE band 41, 5MHz Bandwidth, 16QAM (-26dBc BW)

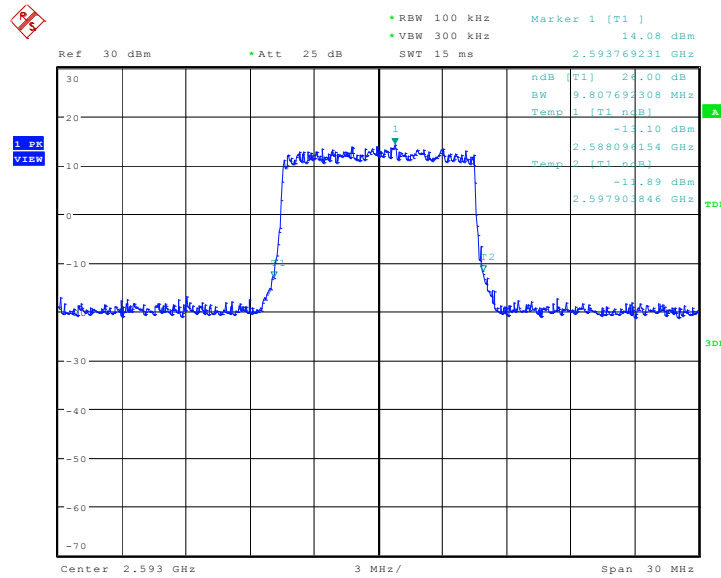


Date: 11.SEP.2017 16:30:56

LTE band 41, 10MHz (-26dBc)

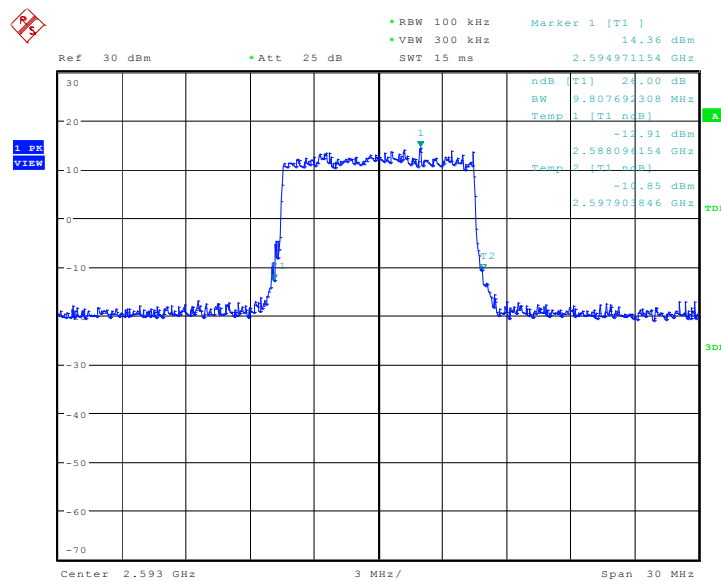
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
2593.0	QPSK	16QAM
	9807.69	9807.69

LTE band 41, 10MHz Bandwidth, QPSK (-26dBc BW)



Date: 11.SEP.2017 16:37:29

LTE band 41, 10MHz Bandwidth, 16QAM (-26dBc BW)

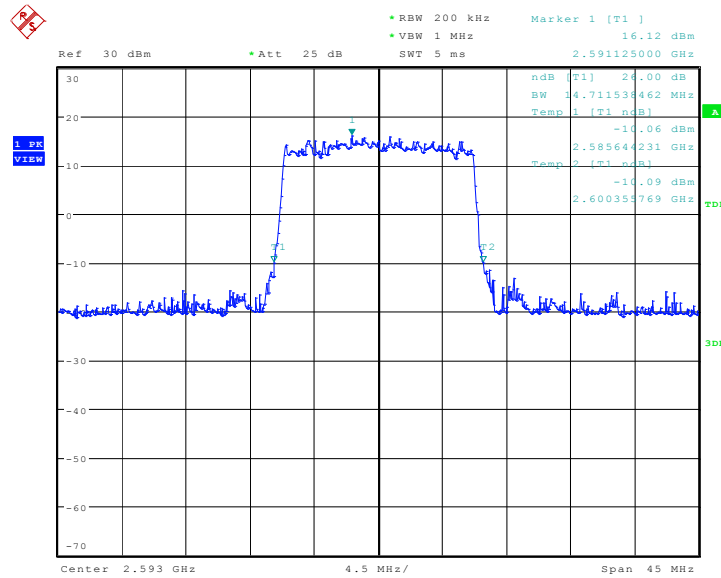


Date: 11.SEP.2017 16:37:46

LTE band 41, 15MHz (-26dBc)

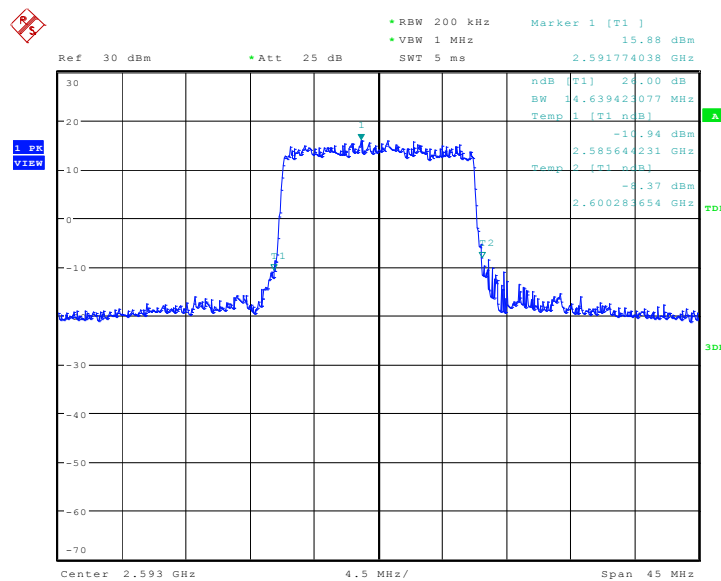
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
2593.0	QPSK	16QAM
	14711.54	14639.42

LTE band 41, 15MHz Bandwidth, QPSK (-26dBc BW)



Date: 11.SEP.2017 16:48:26

LTE band 41, 15MHz Bandwidth, 16QAM (-26dBc BW)

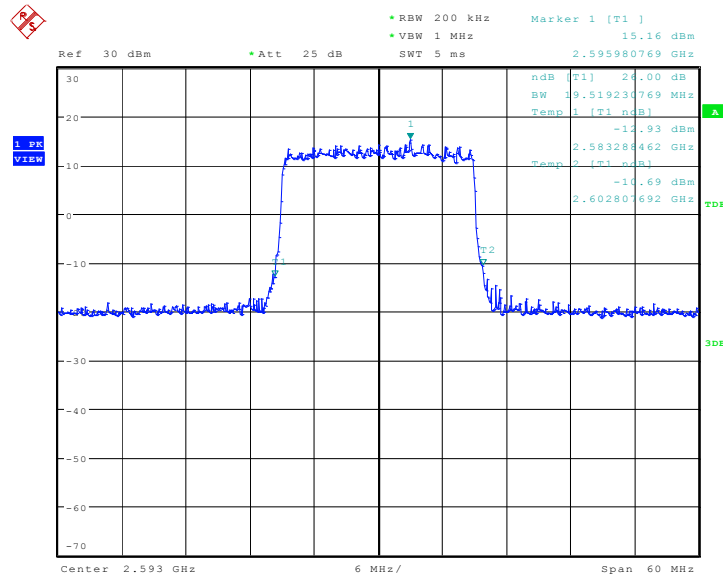


Date: 11.SEP.2017 16:48:43

LTE band 41, 20MHz (-26dBc)

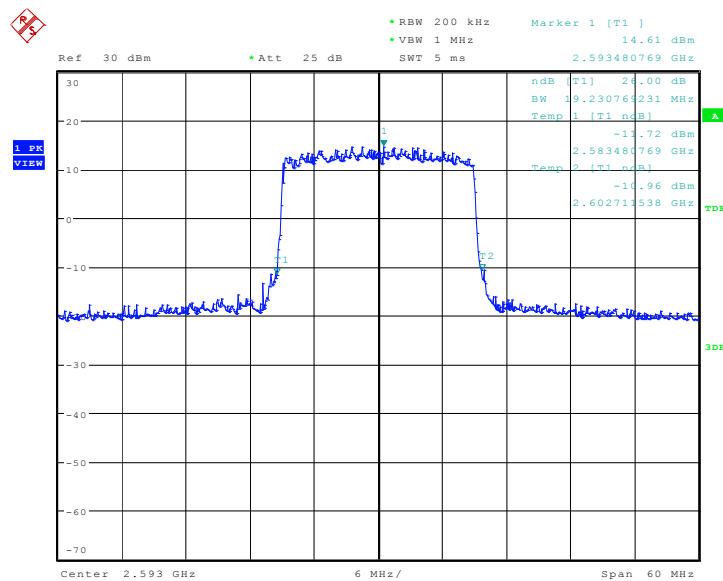
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
2593.0	QPSK	16QAM
	19519.23	19230.77

LTE band 41, 20MHz Bandwidth, QPSK (-26dBc BW)



Date: 11.SEP.2017 16:55:26

LTE band 41, 20MHz Bandwidth, 16QAM (-26dBc BW)



Date: 11.SEP.2017 16:55:43

A.5 BAND EDGE COMPLIANCE

A.5.1 Measurement limit

Part 22.917(b), 24.238(a), 27.53(h) state that on any frequency outside frequency band of the US Cellular/PCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least $43 + 10 \log(P)$ dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

According to KDB 971168 6.0, a relaxation of the reference bandwidth is often provided for measurements within a specified frequency range at the edge of the authorized frequency block/band. This is often implemented by permitting the use of a narrower RBW (typically limited to a minimum RBW of 1% of the OBW) for measuring the out-of-band emissions without a requirement to integrate the result over the full reference bandwidth.

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

Part 27.53(a) states for mobile and portable stations operating in the 2305–2315 MHz and 2350–2360 MHz bands: By a factor of not less than: $43 + 10 \log(P)$ dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than $55 + 10 \log(P)$ dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than $61 + 10 \log(P)$ dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than $67 + 10 \log(P)$ dB on all frequencies between 2328 and 2337 MHz; By a factor of not less than $43 + 10 \log(P)$ dB on all frequencies between 2300 and 2305 MHz, $55 + 10 \log(P)$ dB on all frequencies between 2296 and 2300 MHz, $61 + 10 \log(P)$ dB on all frequencies between 2292 and 2296 MHz, $67 + 10 \log(P)$ dB on all frequencies between 2288 and 2292 MHz, and $70 + 10 \log(P)$ dB below 2288 MHz; By a factor of not less than $43 + 10 \log(P)$ dB on all frequencies between 2360 and 2365 MHz, and not less than $70 + 10 \log(P)$ dB above 2365 MHz.

Part 27.53(c) states for operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the 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, in accordance with the following: (1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB; (2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB.



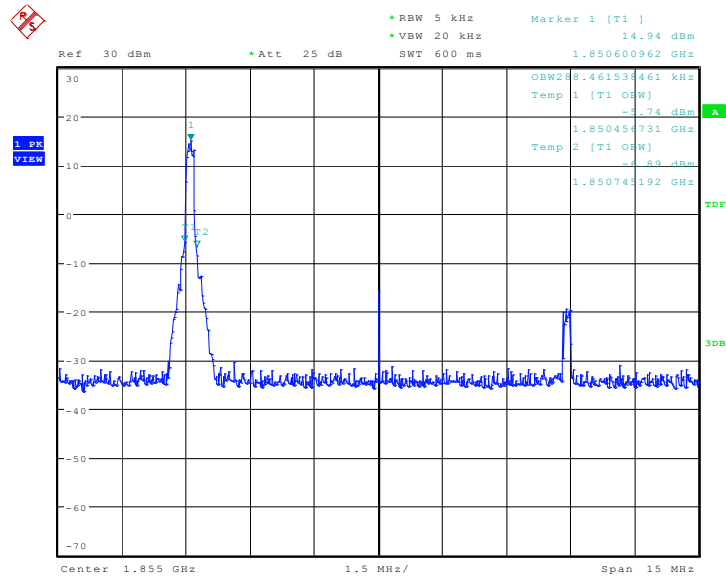
dB;(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations

A.5.2 Measurement result

Only worst case result is given below

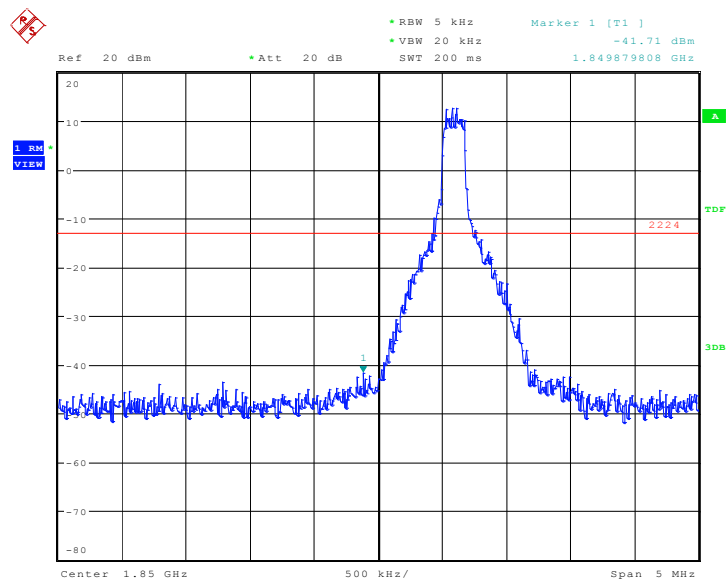
LTE band 2

OBW: 1RB-low_offset



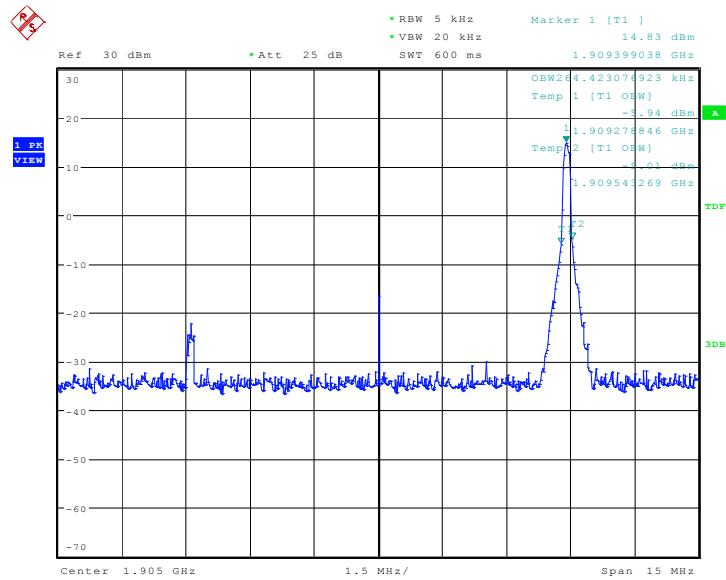
Date: 12.SEP.2017 09:10:02

LOW BAND EDGE BLOCK-1RB-low_offset



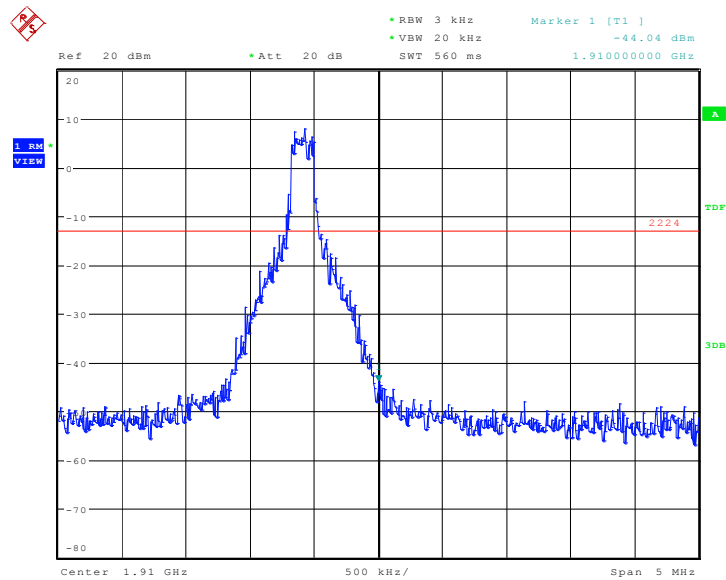
Date: 12.SEP.2017 09:10:46

OBW: 1RB-high_offset



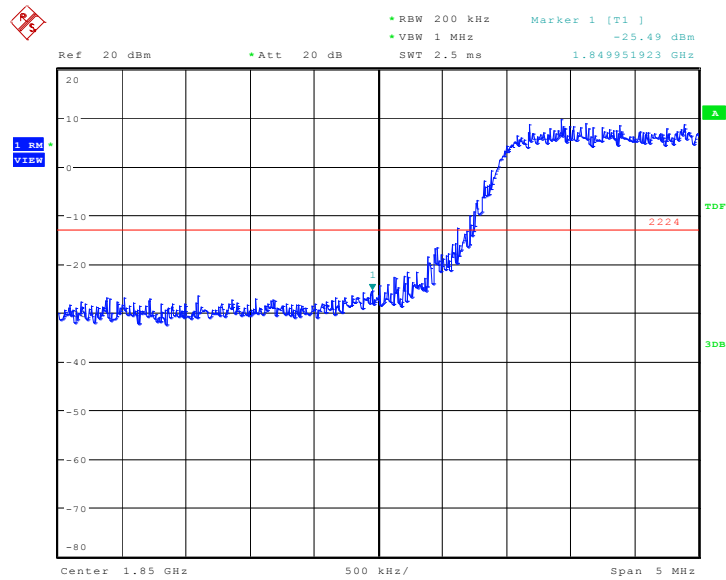
Date: 12.SEP.2017 08:56:34

HIGH BAND EDGE BLOCK-1RB-high_offset



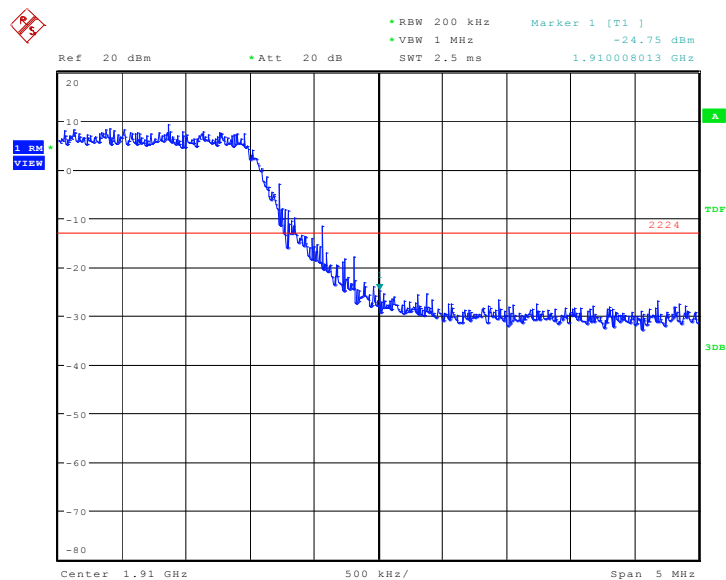
Date: 12.SEP.2017 08:57:18

LOW BAND EDGE BLOCK-20MHz-100%RB



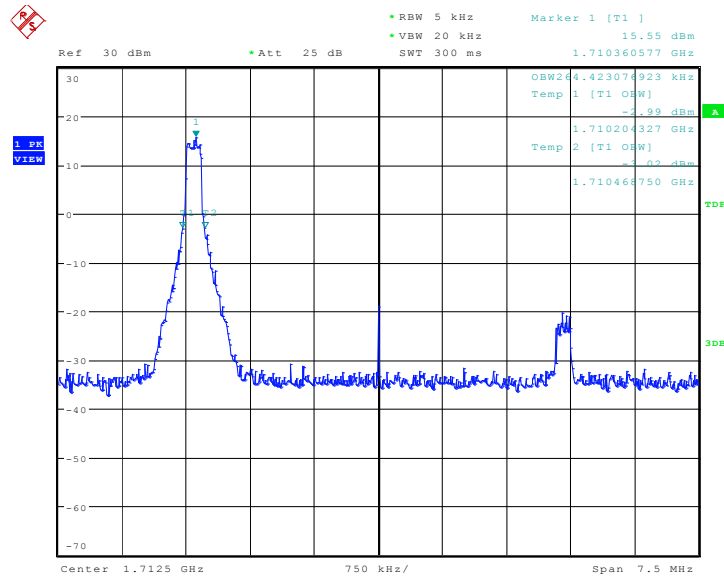
Date: 12.SEP.2017 15:26:42

HIGH BAND EDGE BLOCK-20MHz-100%RB



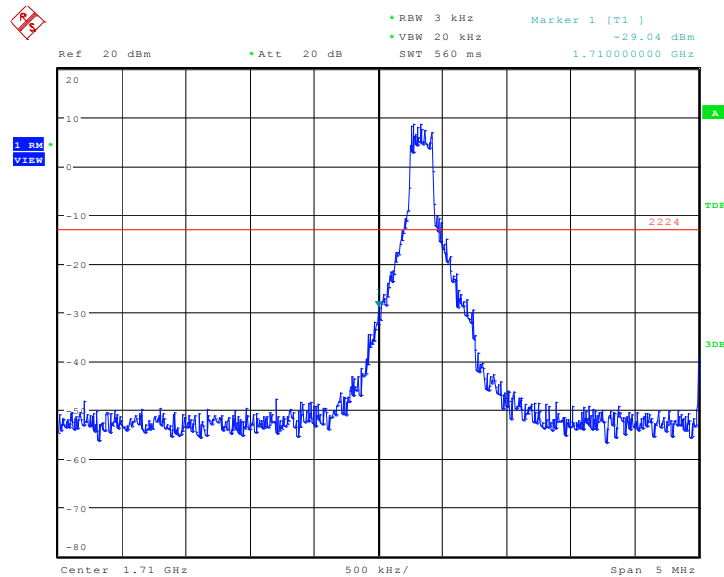
Date: 12.SEP.2017 15:27:28

LTE band 4 OBW: 1RB-low_offset



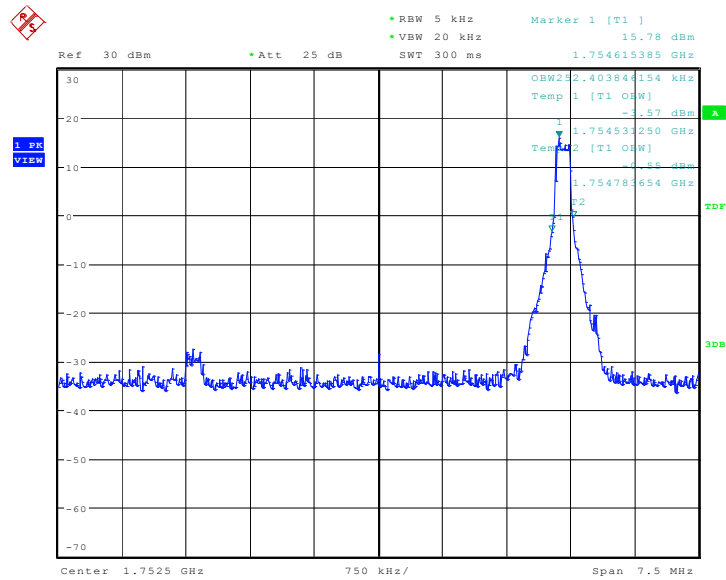
Date: 12.SEP.2017 09:17:08

LOW BAND EDGE BLOCK-1RB-low_offset



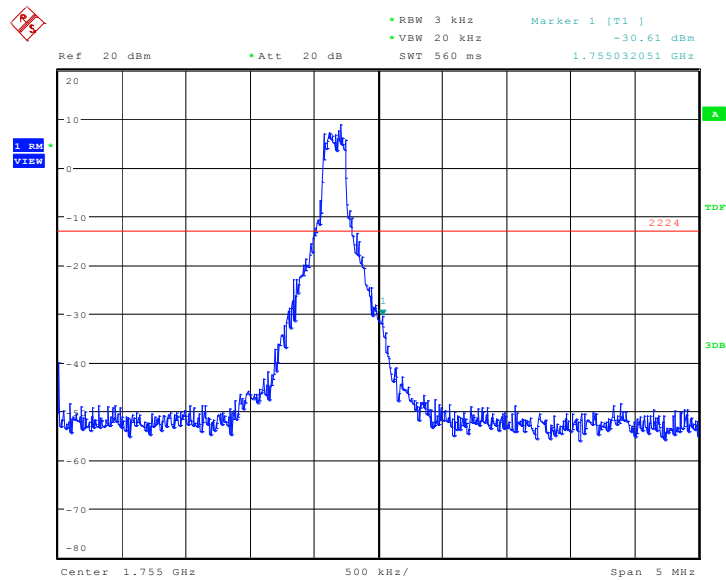
Date: 12.SEP.2017 09:17:51

OBW: 1RB-high_offset



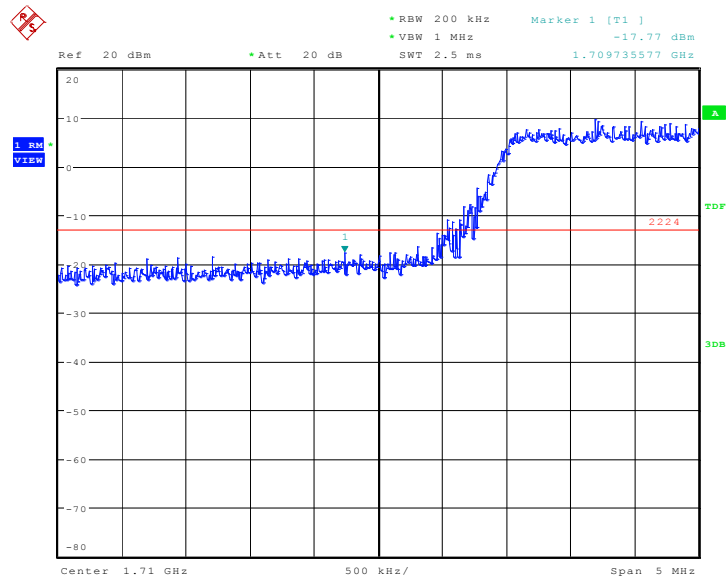
Date: 12.SEP.2017 08:51:14

HIGH BAND EDGE BLOCK-1RB-high_offset



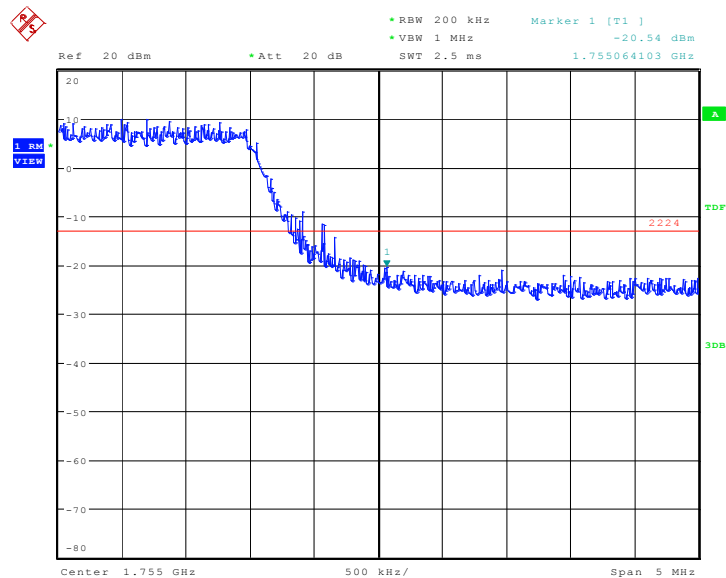
Date: 12.SEP.2017 08:51:57

LOW BAND EDGE BLOCK-20MHz-100%RB



Date: 12.SEP.2017 15:30:38

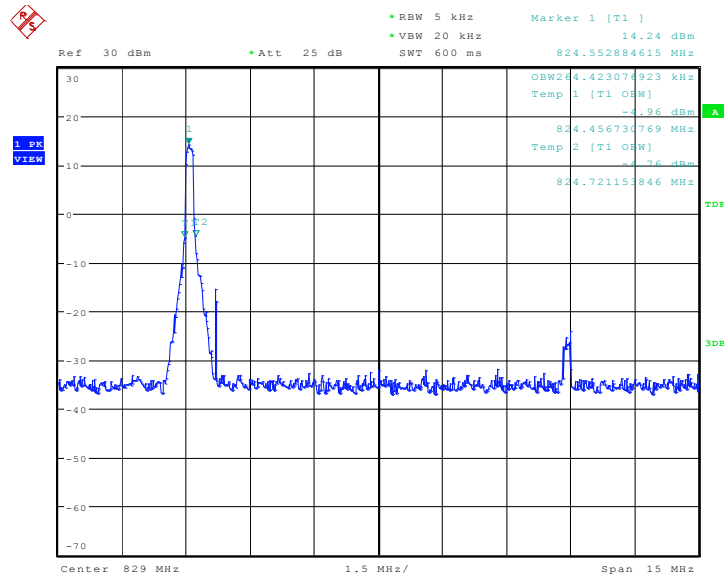
HIGH BAND EDGE BLOCK-20MHz-100%RB



Date: 12.SEP.2017 15:31:23

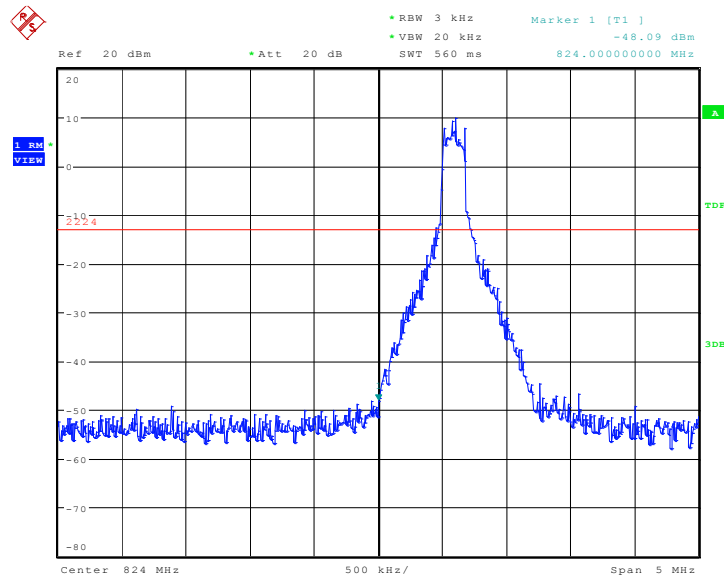
LTE band 5

OBW: 1RB-low_offset



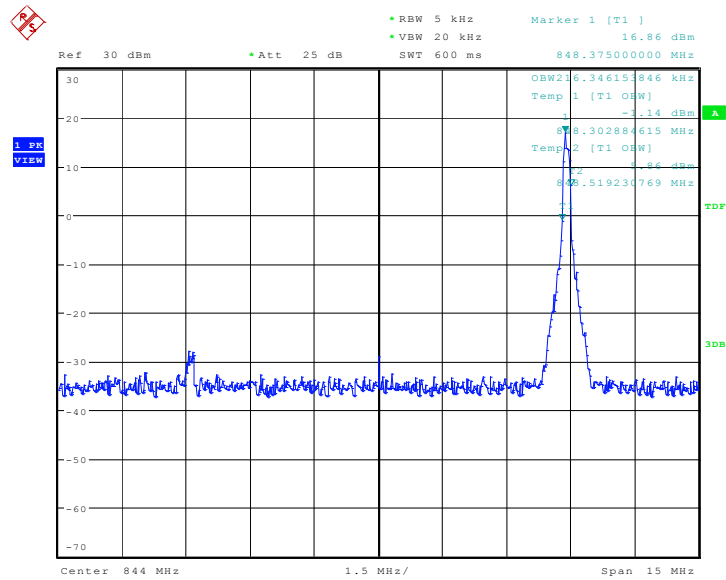
Date: 14.SEP.2017 14:10:11

LOW BAND EDGE BLOCK-1RB-low_offset



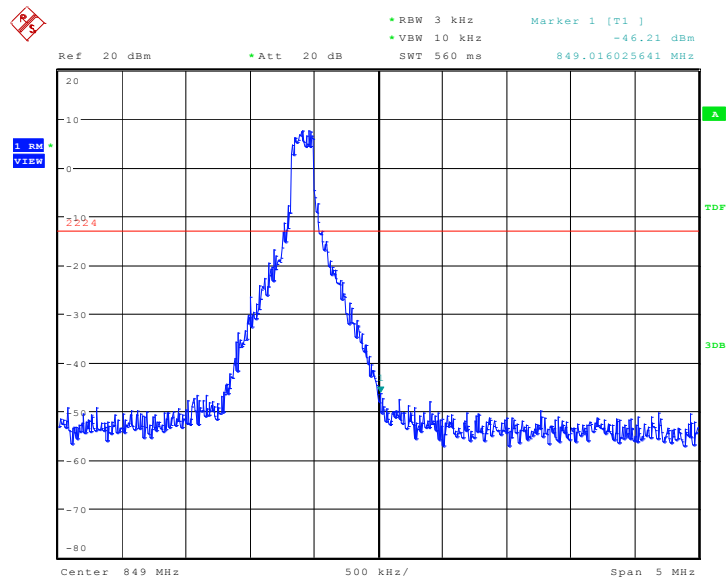
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OBW: 1RB-high_offset



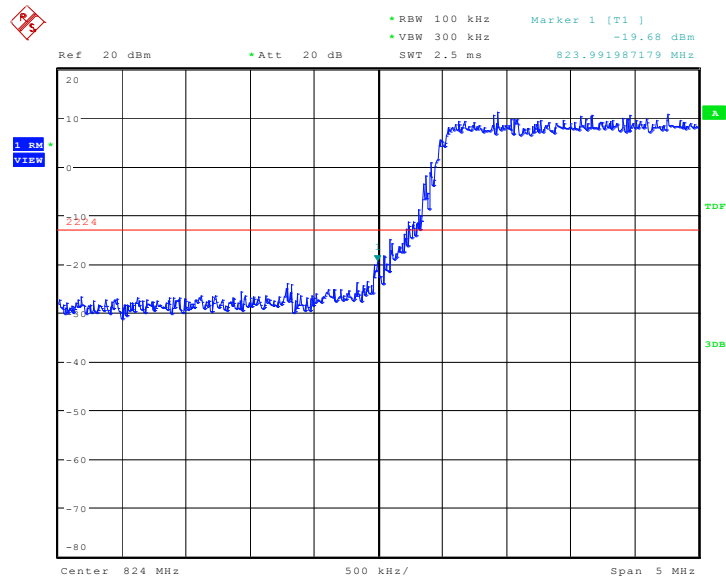
Date: 14.SEP.2017 14:08:20

HIGH BAND EDGE BLOCK-1RB-high_offset



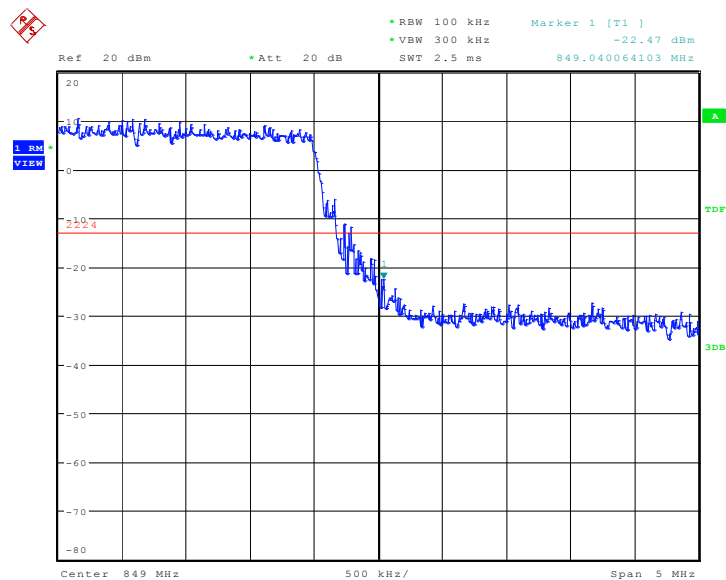
Date: 14.SEP.2017 14:09:04

LOW BAND EDGE BLOCK-10MHz-100%RB



Date: 14.SEP.2017 13:53:10

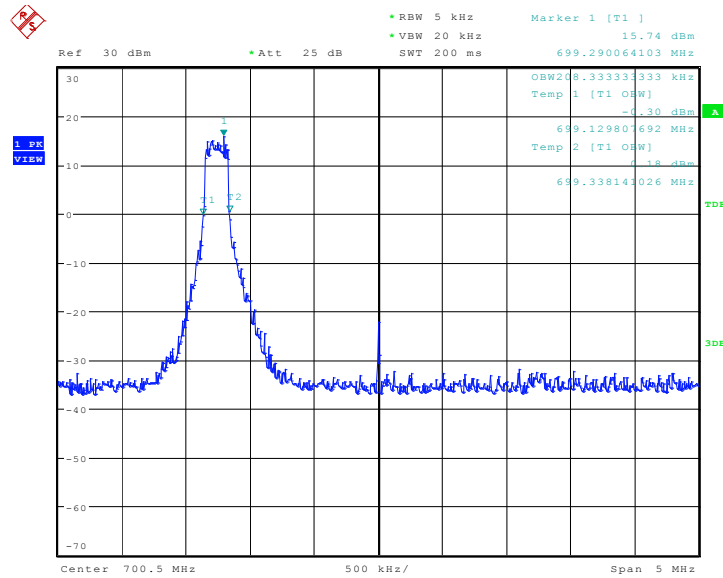
HIGH BAND EDGE BLOCK-10MHz-100%RB



Date: 14.SEP.2017 13:53:56

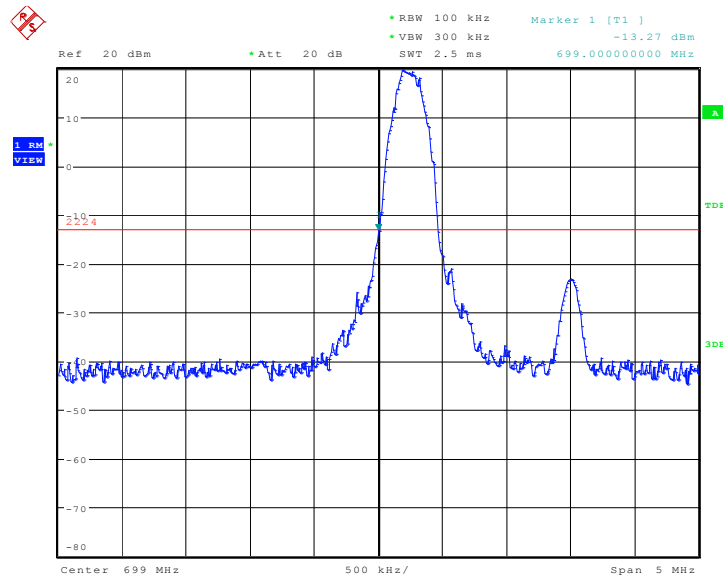
LTE band 12

OBW: 1RB-low_offset



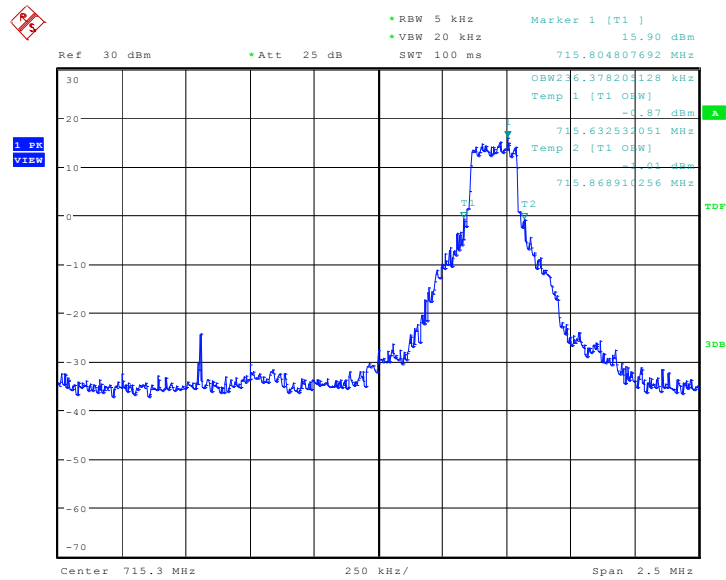
Date: 12.SEP.2017 09:06:59

LOW BAND EDGE BLOCK-1RB-low_offset



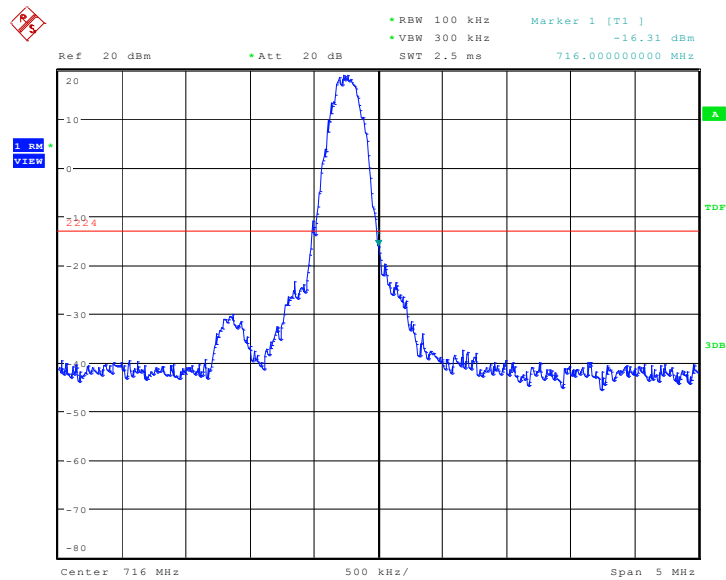
Date: 12.SEP.2017 09:07:42

OBW: 1RB-high_offset



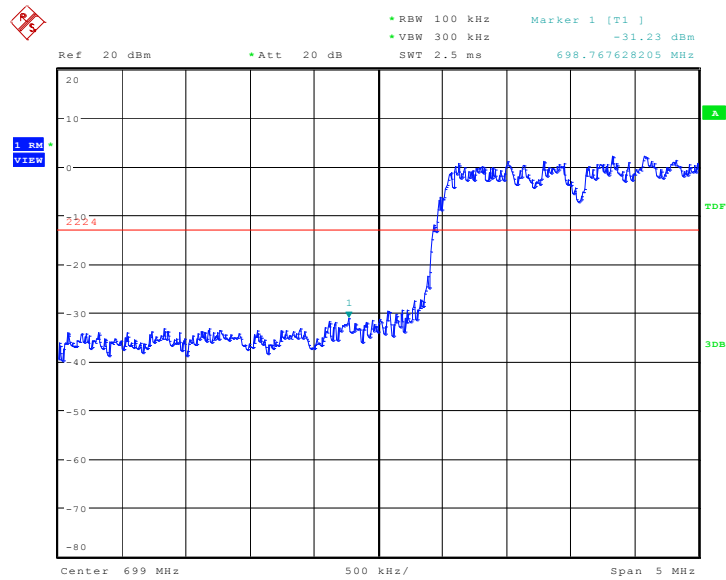
Date: 14.SEP.2017 13:21:11

HIGH BAND EDGE BLOCK-1RB-high_offset



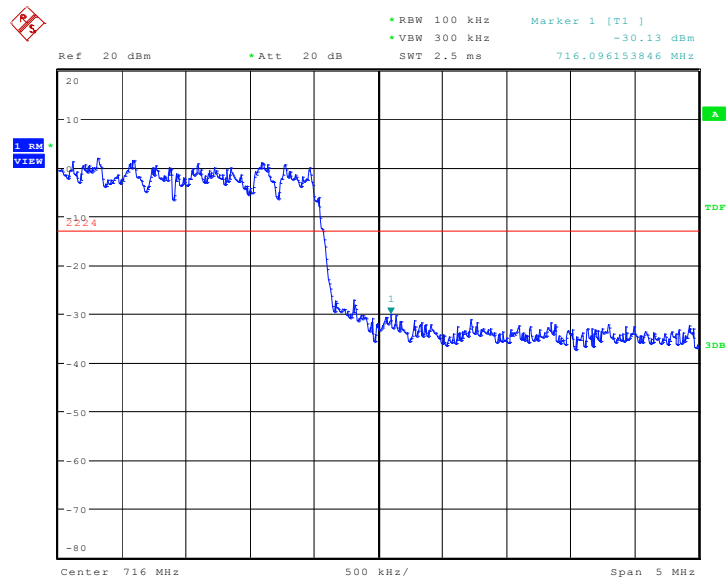
Date: 14.SEP.2017 13:21:55

LOW BAND EDGE BLOCK-10MHz-100%RB



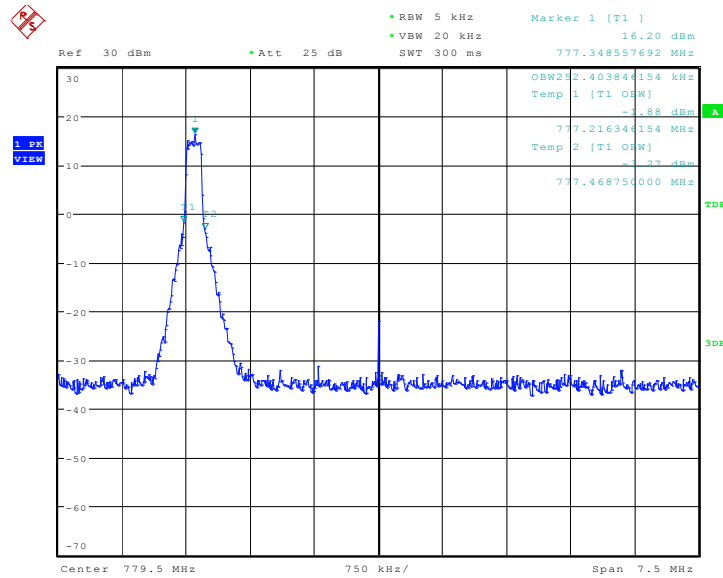
Date: 12.SEP.2017 15:51:26

HIGH BAND EDGE BLOCK-10MHz-100%RB



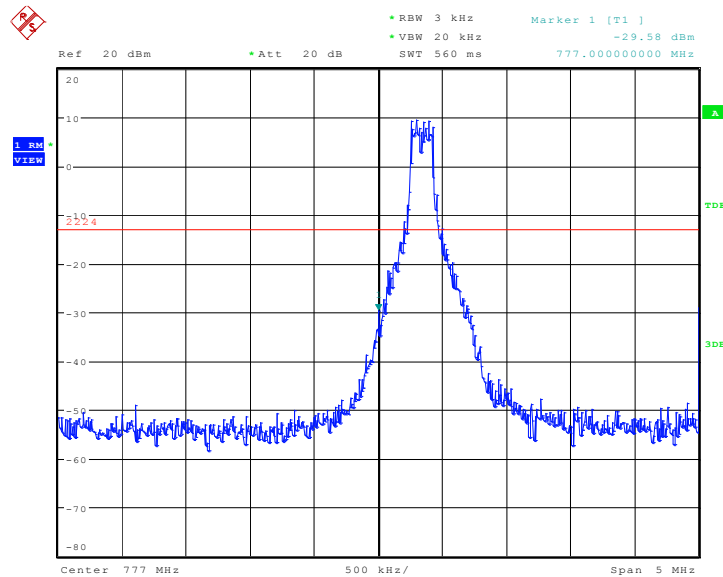
Date: 12.SEP.2017 15:52:11

LTE band 13 OBW: 1RB-low_offset

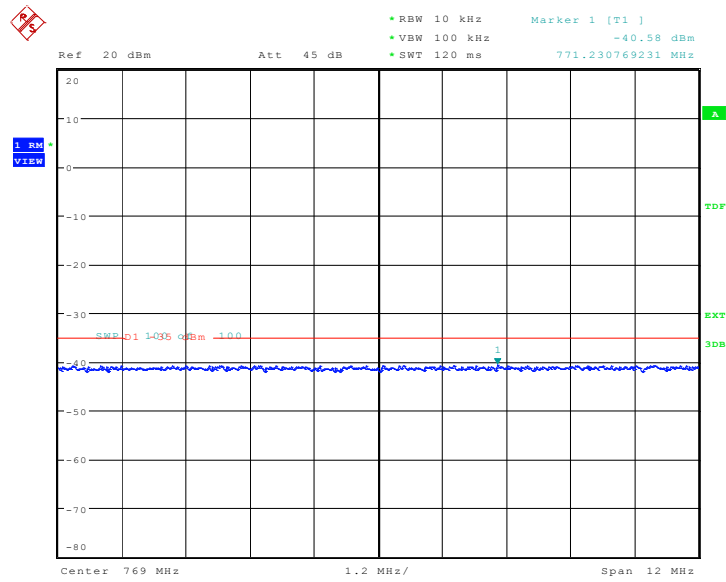


Date: 12.SEP.2017 09:15:30

LOW BAND EDGE BLOCK-1RB-low_offset

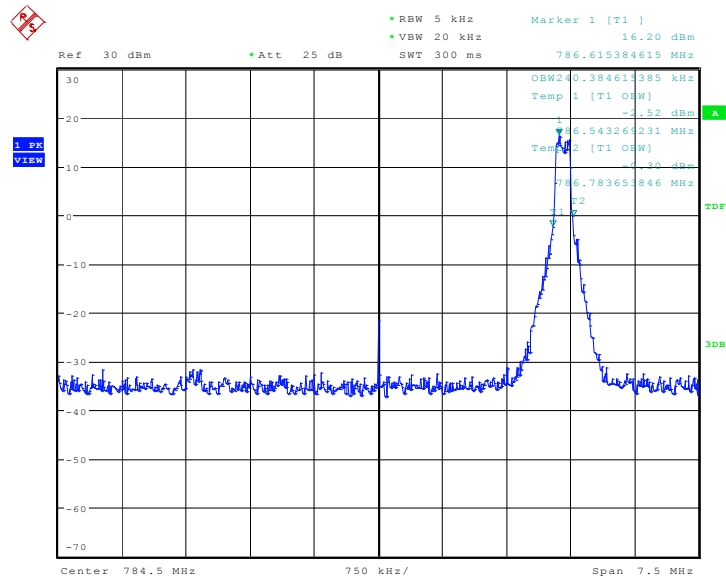


Date: 12.SEP.2017 09:16:13



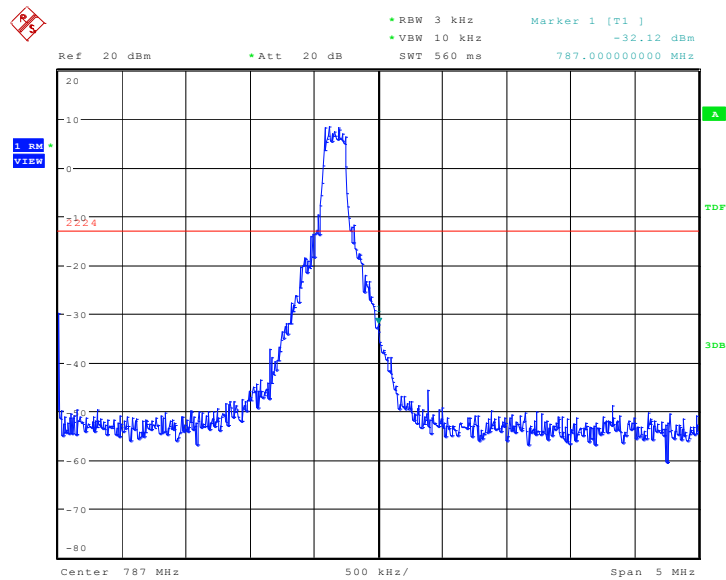
Date: 14.SEP.2017 08:49:20

OBW: 1RB-high_offset

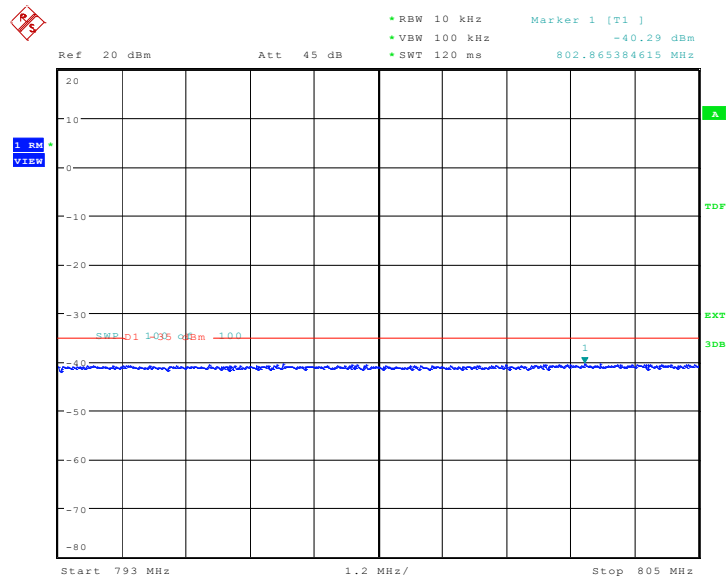


Date: 12.SEP.2017 08:49:36

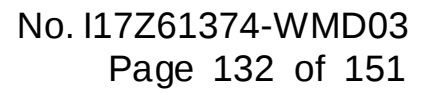
HIGH BAND EDGE BLOCK-1RB-high_offset



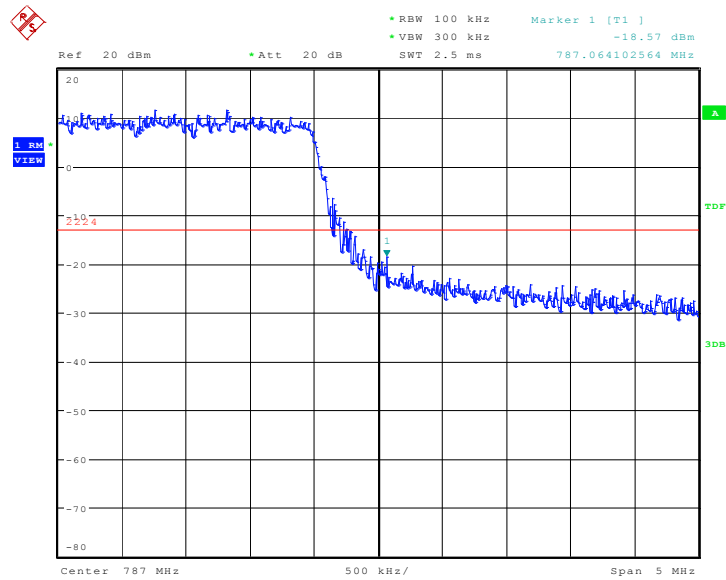
Date: 12.SEP.2017 08:50:19



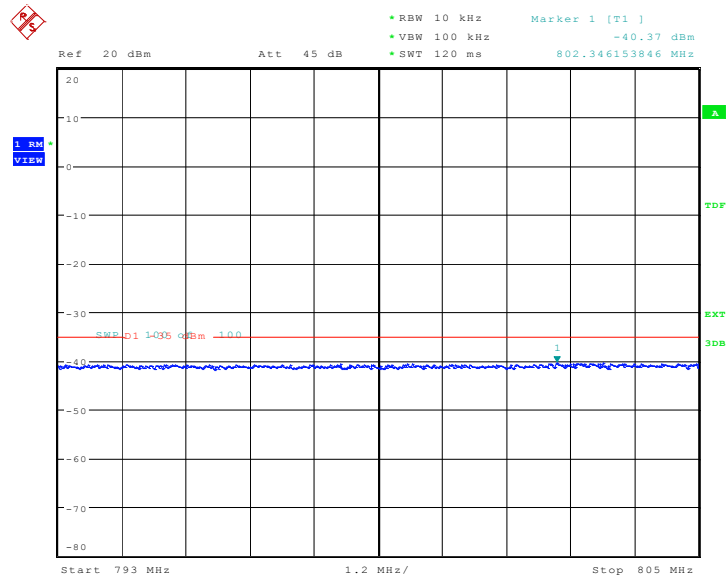
Date: 14.SEP.2017 08:57:51



HIGH BAND EDGE BLOCK-10MHz-100%RB



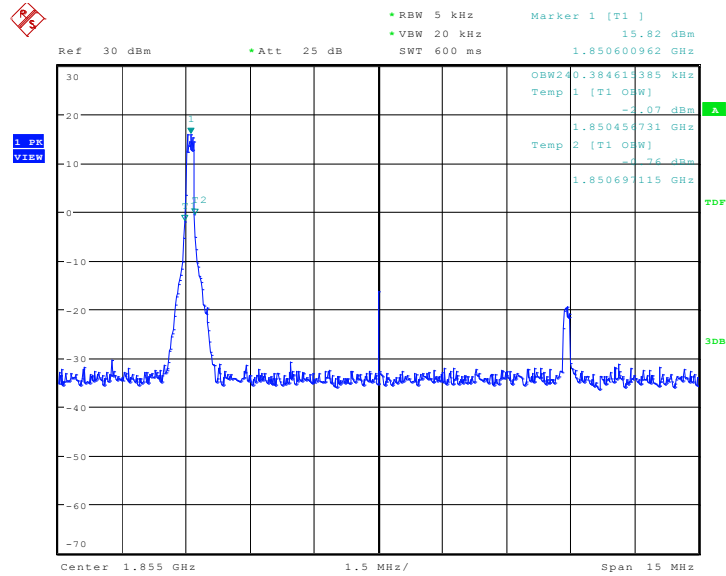
Date: 12.SEP.2017 15:50:40



Date: 14.SEP.2017 08:56:40

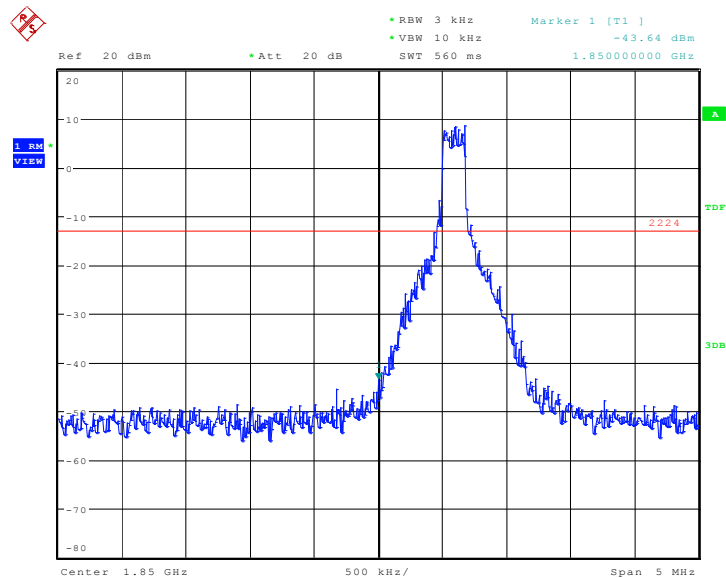
LTE band 25

OBW: 1RB-low_offset



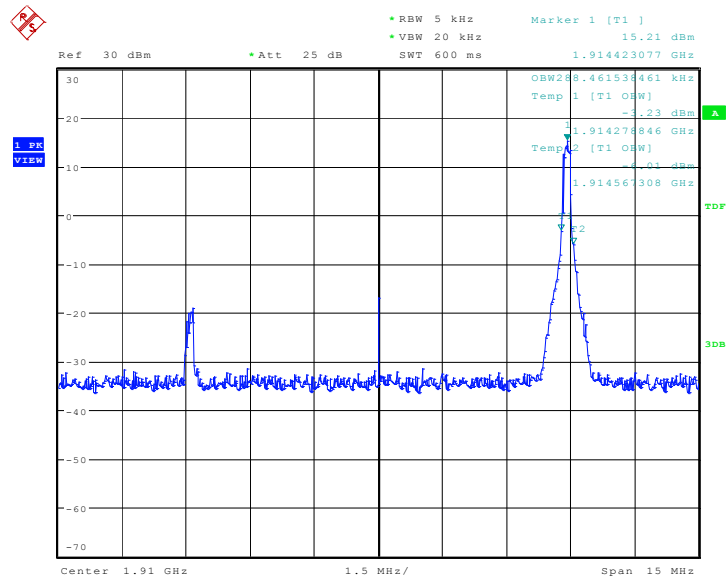
Date: 12.SEP.2017 09:11:40

LOW BAND EDGE BLOCK-1RB-low_offset



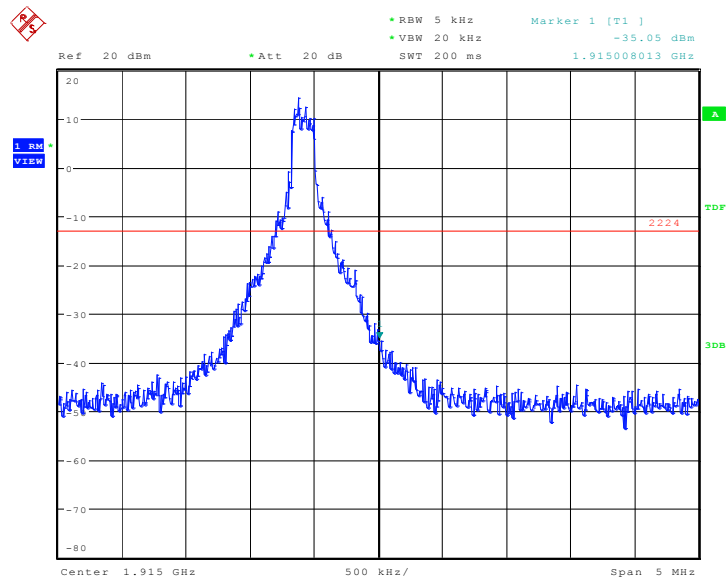
Date: 12.SEP.2017 09:12:23

OBW: 1RB-high_offset



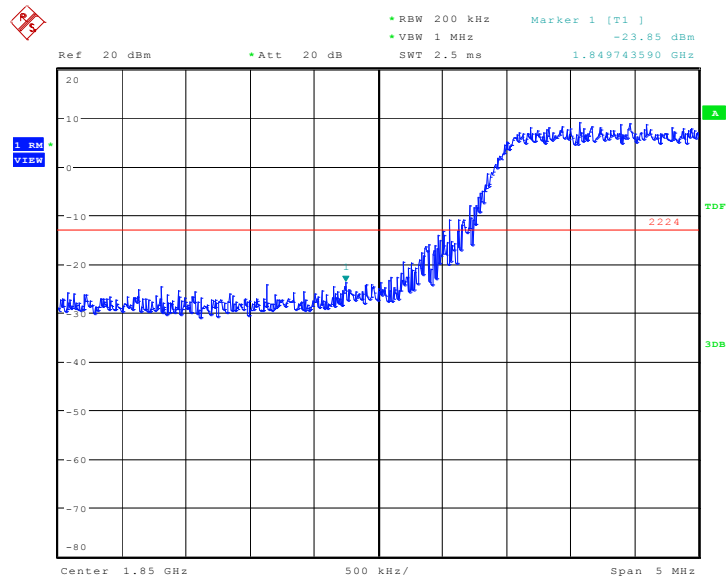
Date: 12.SEP.2017 08:58:12

HIGH BAND EDGE BLOCK-1RB-high_offset



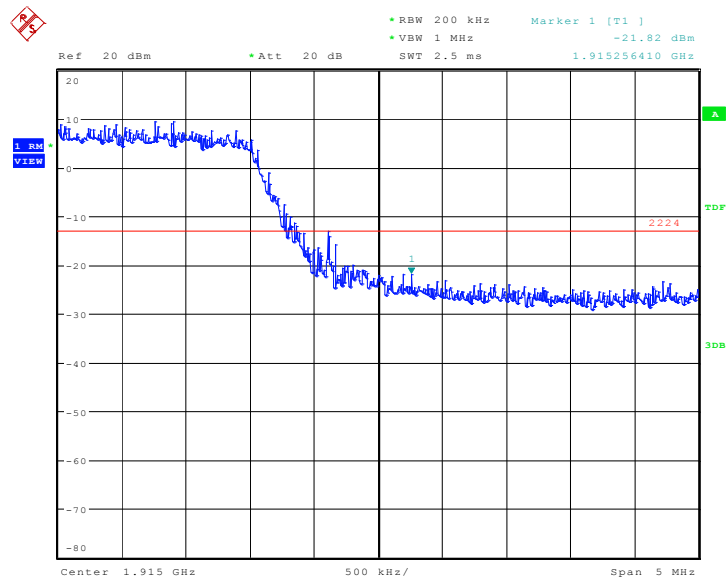
Date: 12.SEP.2017 08:58:56

LOW BAND EDGE BLOCK-20MHz-100%RB



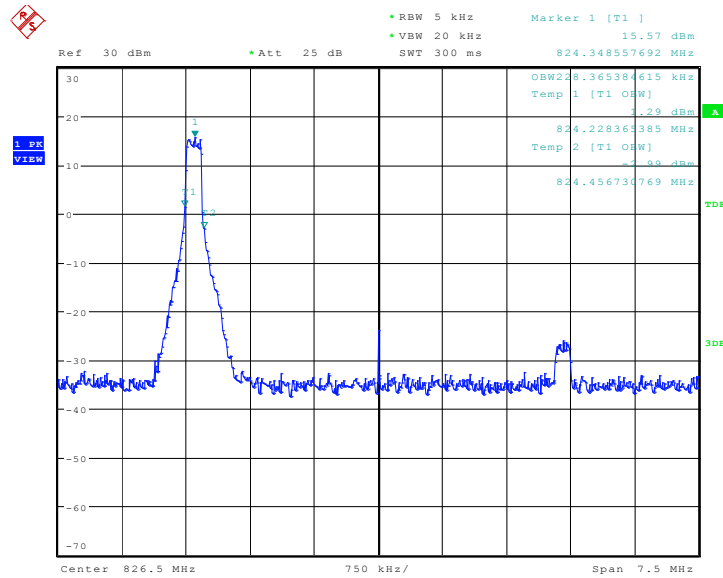
Date: 12.SEP.2017 15:56:51

HIGH BAND EDGE BLOCK-20MHz-100%RB



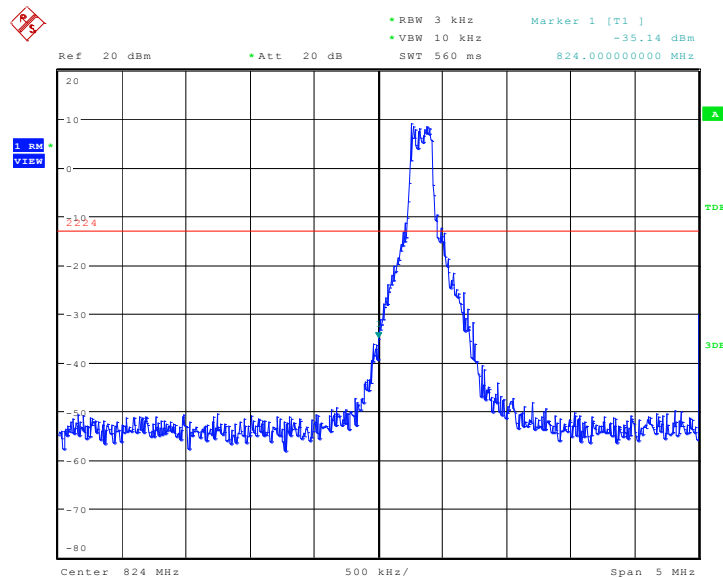
Date: 12.SEP.2017 15:57:37

LTE band 26
OBW: 1RB-low_offset



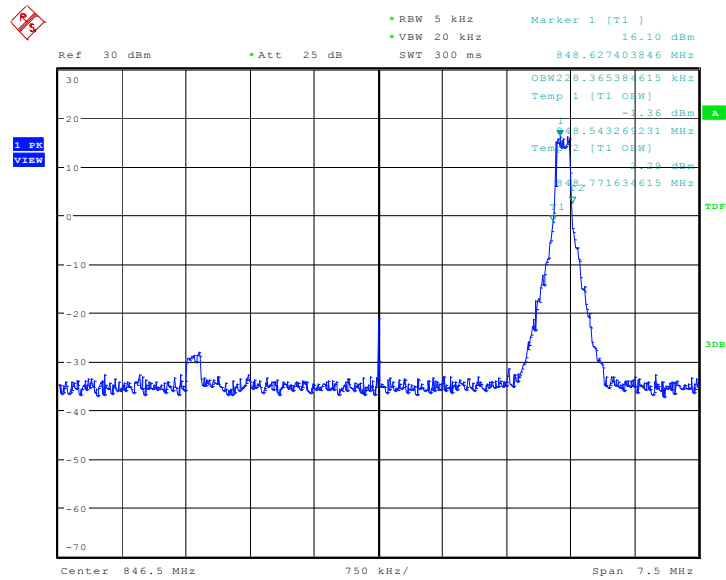
Date: 12.SEP.2017 09:18:45

LOW BAND EDGE BLOCK-1RB-low_offset



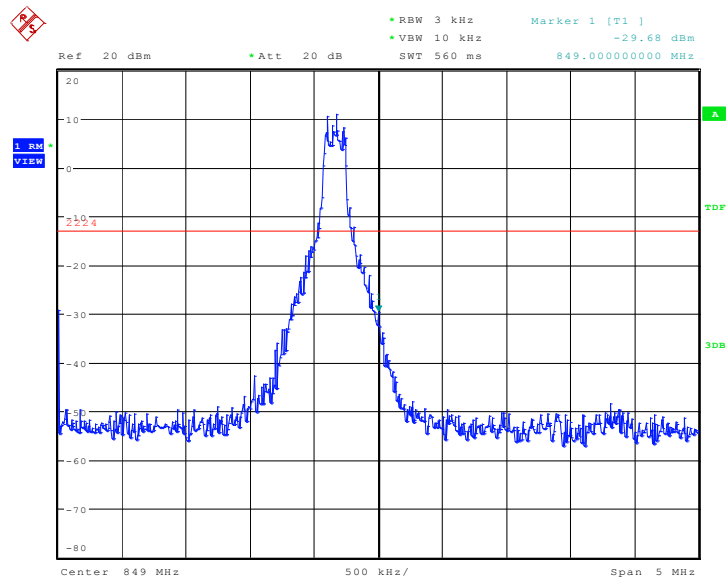
Date: 12.SEP.2017 09:19:29

OBW: 1RB-high_offset



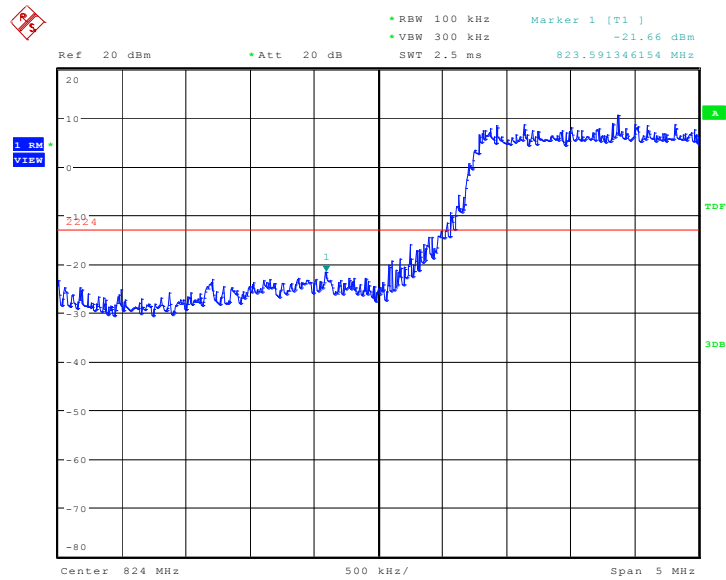
Date: 12.SEP.2017 08:52:52

HIGH BAND EDGE BLOCK-1RB-high_offset



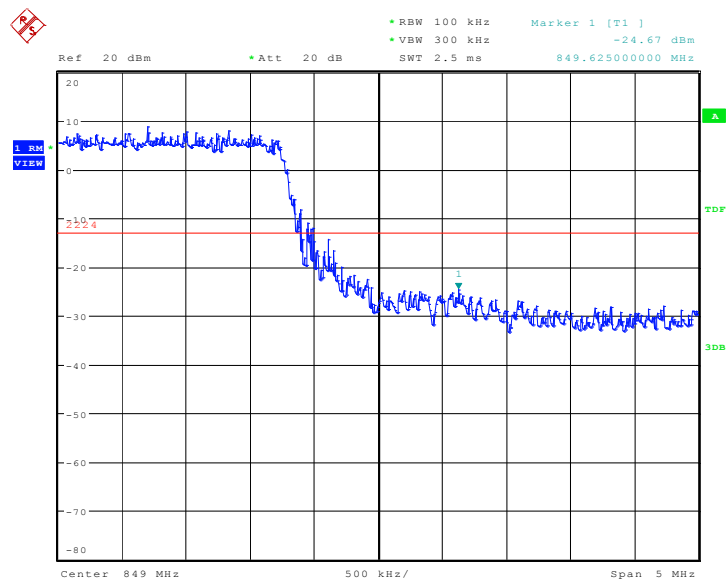
Date: 12.SEP.2017 08:53:35

LOW BAND EDGE BLOCK-15MHz-100%RB



Date: 12.SEP.2017 16:01:36

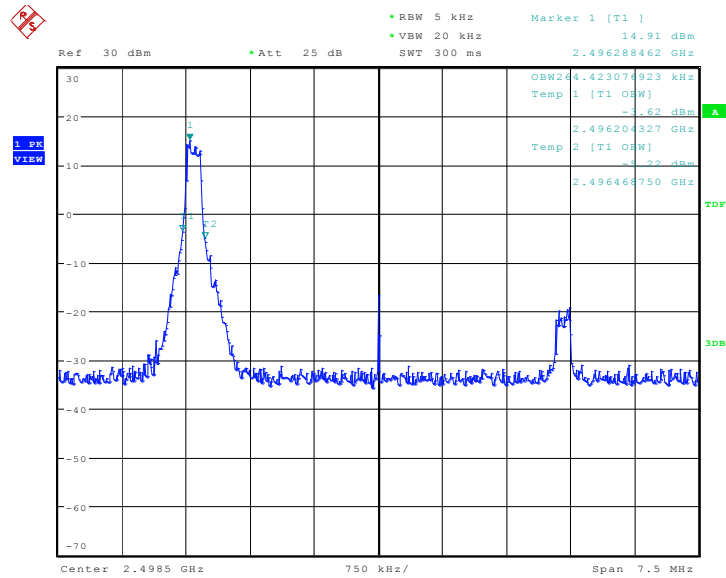
HIGH BAND EDGE BLOCK-15MHz-100%RB



Date: 12.SEP.2017 16:02:22

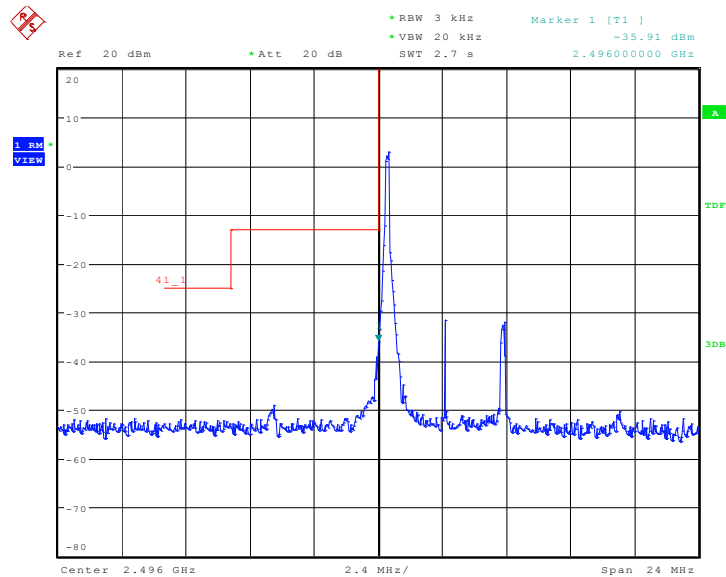
LTE band 41

OBW: 1RB-low_offset



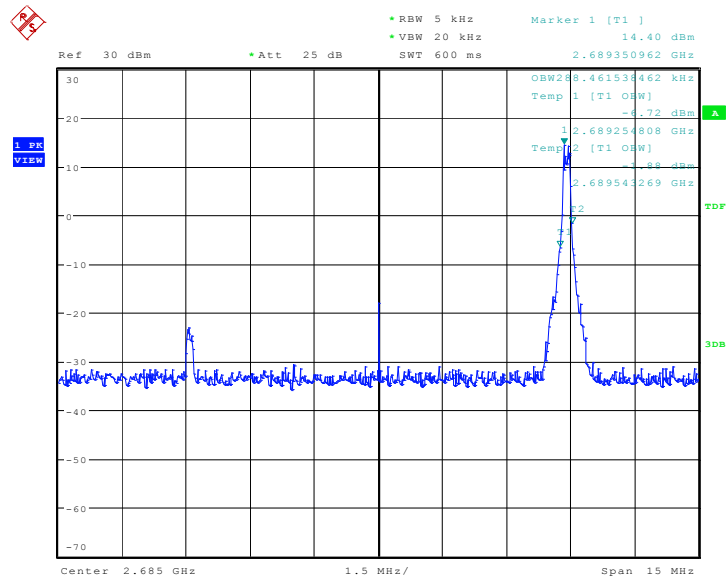
Date: 14.SEP.2017 13:33:58

LOW BAND EDGE BLOCK-1RB-low_offset



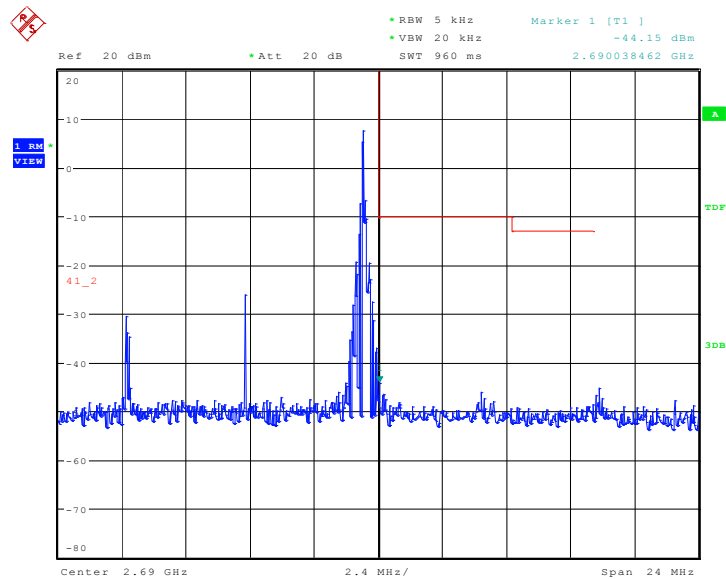
Date: 14.SEP.2017 13:34:44

OBW: 1RB-high_offset



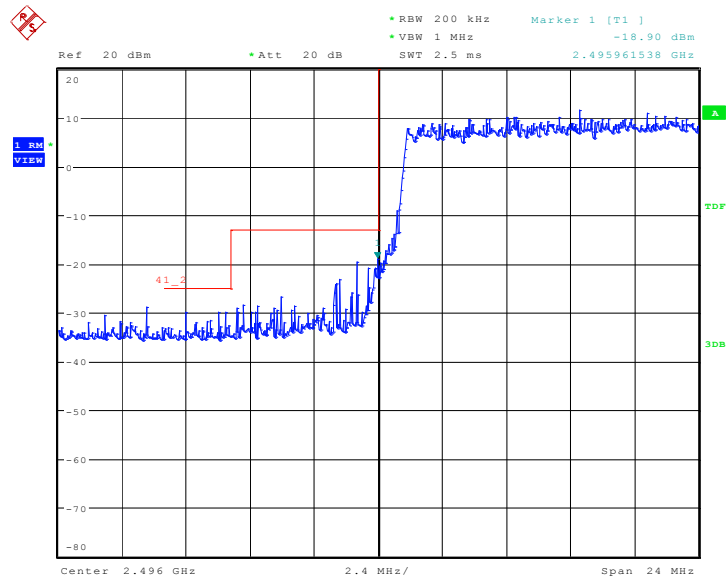
Date: 14.SEP.2017 13:26:55

HIGH BAND EDGE BLOCK-1RB-high_offset



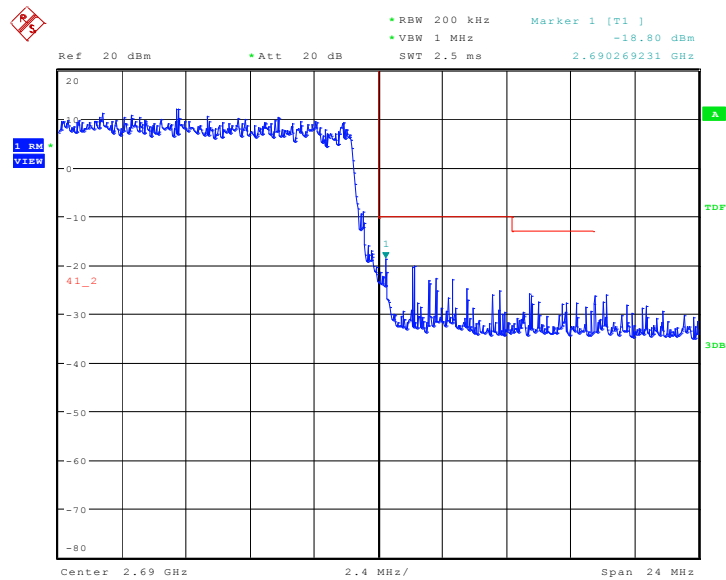
Date: 14.SEP.2017 13:27:38

LOW BAND EDGE BLOCK-20MHz-100%RB



Date: 14.SEP.2017 13:35:46

HIGH BAND EDGE BLOCK-20MHz-100%RB



Date: 14.SEP.2017 13:36:35

A.6 CONDUCTED SPURIOUS EMISSION

A.6.1 Measurement Method

The following steps outline the procedure used to measure the conducted emissions from the EUT.

1. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency. For the mobile station equipment tested, this equates to a frequency range of 13 MHz to 9 GHz, data taken from 10 MHz to 25 GHz.
2. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.
3. The number of sweep points of spectrum analyzer is set to 30001 which is greater than span/RBW.

A. 6.2 Measurement Limit

Part 22.917, Part 24.238 and Part 27.53(h) 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.

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

Part 27.53(a) states for mobile and portable stations operating in the 2305–2315 MHz and 2350–2360 MHz bands: By a factor of not less than: $43 + 10 \log(P)$ dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than $55 + 10 \log(P)$ dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than $61 + 10 \log(P)$ dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than $67 + 10 \log(P)$ dB on all frequencies between 2328 and 2337 MHz; By a factor of not less than $43 + 10 \log(P)$ dB on all frequencies between 2300 and 2305 MHz, 55

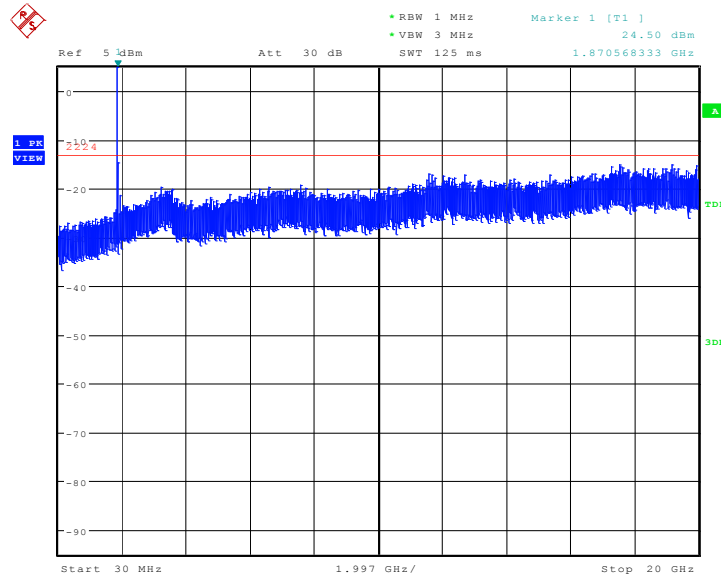
+ 10 log (P) dB on all frequencies between 2296 and 2300MHz, 61 + 10 log (P) dB on all frequencies between 2292 and 2296 MHz, 67 + 10 log (P) dB on all frequencies between 2288 and 2292 MHz, and 70 + 10 log (P) dB below 2288 MHz; By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.

A. 6.3 Measurement result

Only worst case result is given below

LTE band 2: 30MHz – 20GHz

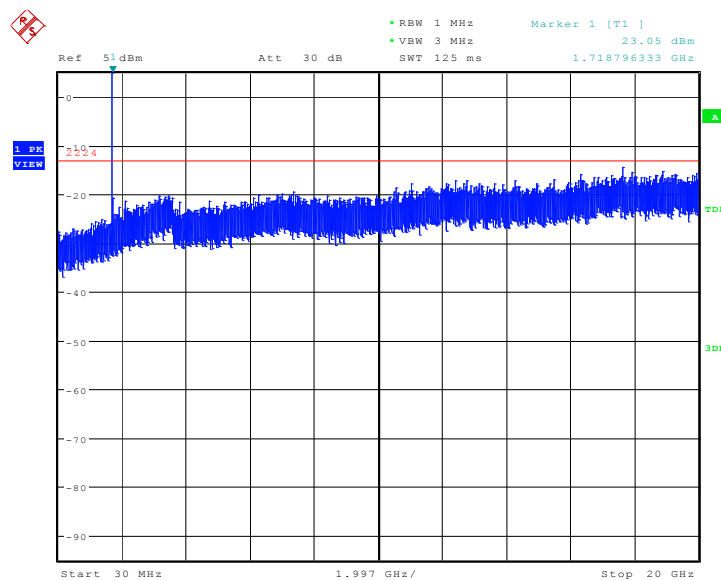
Spurious emission limit –13dBm.



Date: 12.SEP.2017 09:31:12

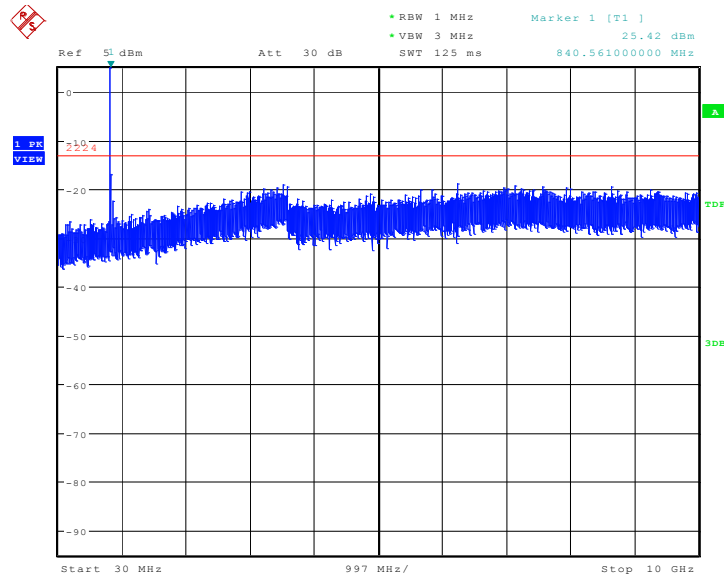
LTE band 4: 30MHz – 20GHz

Spurious emission limit –13dBm.



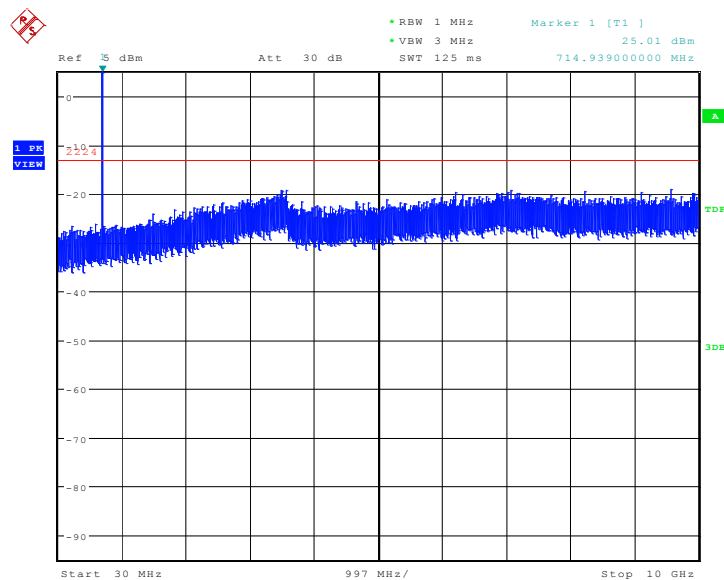
Date: 12.SEP.2017 09:29:10

LTE band 5: 30MHz – 10GHz
Spurious emission limit –13dBm.



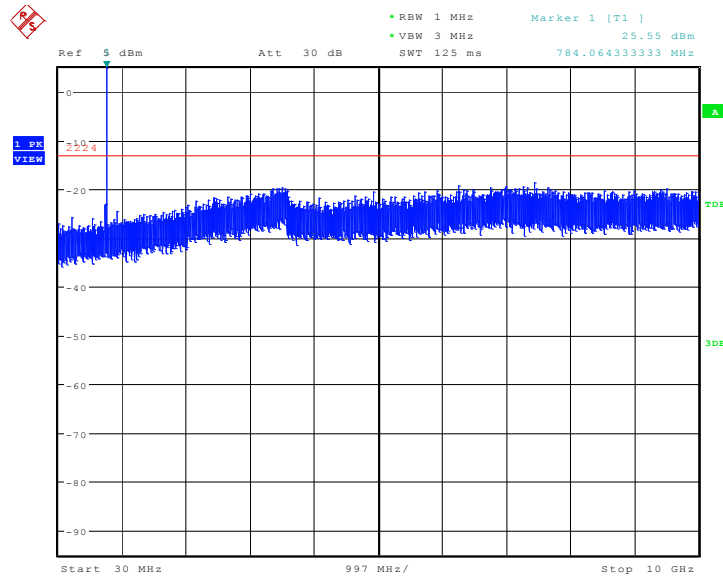
Date: 14.SEP.2017 14:07:00

LTE band 12: 30MHz – 10GHz
Spurious emission limit –13dBm.



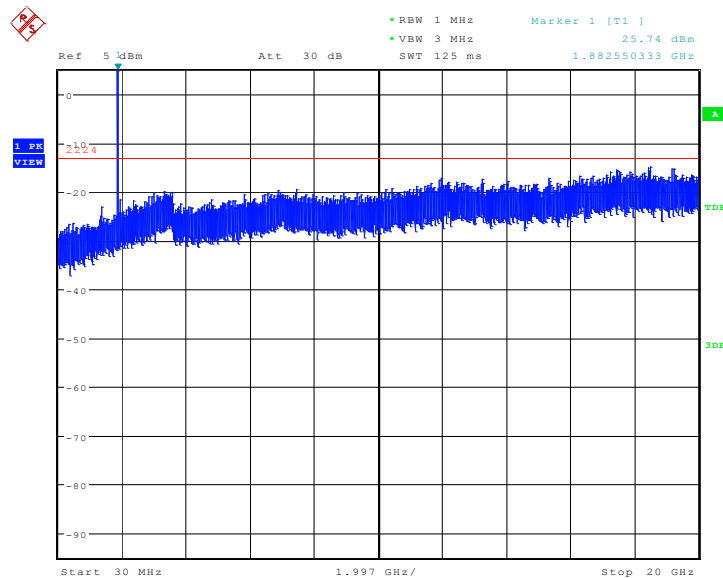
Date: 12.SEP.2017 09:47:06

LTE band 13: 30MHz – 10GHz
Spurious emission limit –13dBm.



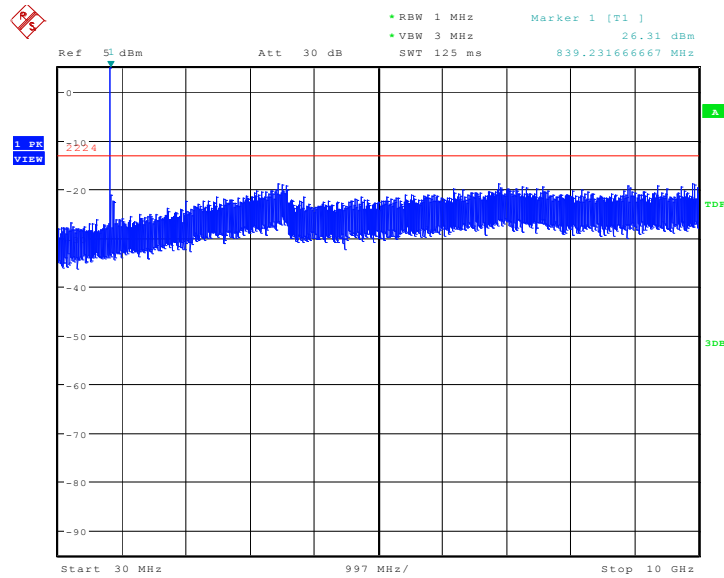
Date: 12.SEP.2017 09:49:05

LTE band 25: 30MHz – 20GHz
Spurious emission limit –13dBm.



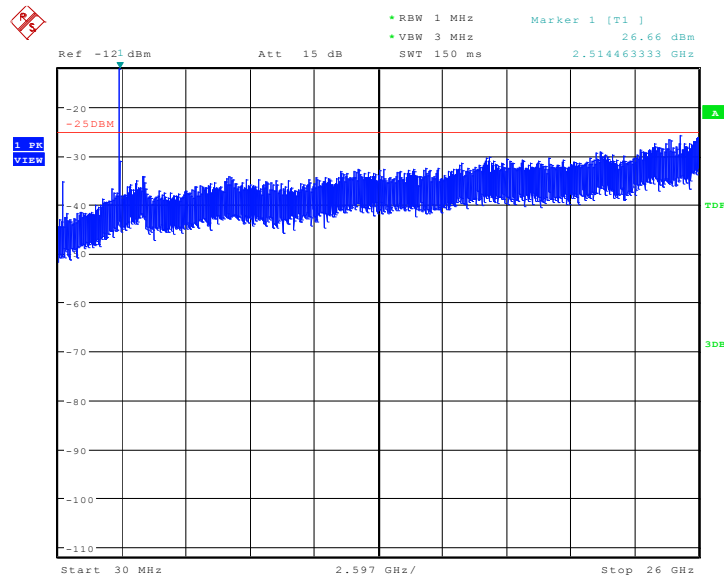
Date: 12.SEP.2017 09:50:38

LTE band 26: 30MHz – 10GHz
Spurious emission limit –13dBm.



Date: 12.SEP.2017 09:55:49

LTE band 41: 30MHz – 26GHz
Spurious emission limit –13dBm.



Date: 12.SEP.2017 10:01:18

A.7 PEAK-TO-AVERAGE POWER RATIO

Reference

FCC: CFR Part 24.232 (d), 27.50(a)

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

According to KDB 971168 5.7.1:

- a) Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;
- b) Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth;
- c) Set the number of counts to a value that stabilizes the measured CCDF curve;
- d) Set the measurement interval to 1 ms
- e) Record the maximum PAPR level associated with a probability of 0.1%

A.7.1 Measurement limit

not exceed 13 dB

A.7.2 Measurement results

LTE band 2, 20MHz

Frequency(MHz)	PAPR(dB)	
1860.0	QPSK	16QAM
	7.02	7.37

LTE band 4, 20MHz

Frequency(MHz)	PAPR(dB)	
1745.0	QPSK	16QAM
	6.89	7.24

LTE band 12,10MHz

Frequency(MHz)	PAPR(dB)	
707.5	QPSK	16QAM
	5.38	6.25

LTE band 13,10MHz

Frequency(MHz)	PAPR(dB)	
782.0	QPSK	16QAM
	5.32	6.15

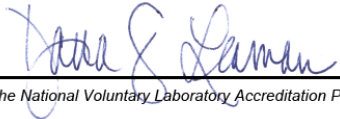
**LTE band 25,20MHz**

Frequency(MHz)	PAPR(dB)	
1962.5	QPSK	16QAM
	6.83	7.44

LTE band 41, 5MHz

Frequency(MHz)	PAPR(dB)	
2680.0	QPSK	16QAM
	5.38	5.83

ANNEX B: Accreditation Certificate

United States Department of Commerce National Institute of Standards and Technology 	
Certificate of Accreditation to ISO/IEC 17025:2005	
NVLAP LAB CODE: 600118-0	
Telecommunication Technology Labs, CAICT Beijing China	
<i>is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:</i>	
Electromagnetic Compatibility & Telecommunications	
<i>This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).</i>	
2016-09-29 through 2017-09-30 <i>Effective Dates</i>	  <i>For the National Voluntary Laboratory Accreditation Program</i>

END OF REPORT