TEST REPORT

No. I16Z42395-GTE01

for

Hisense International Co., Ltd.

Smartphone

Model Name: Hisense F102

FCC ID: 2ADOBF102

with

Hardware Version: V1.00

Software Version: L1307.6.01.05.MX06

Issued Date: 2017-01-09

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

Test Laboratory:

FCC 2.948 Listed: No.525429

CTTL,Telecommunication Technology Labs, Academy of Telecommunication Research, MIIT

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

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I16Z42395-GTE01	Rev.0	1st edition	2016-12-29
I16Z42395-GTE01	Rev.1	Software Update	2017-01-09

CONTENTS

1. Test Laboratory

1.1. Testing Location

Company Name:	CTTL,Telecommunication Technology Labs, Academy of Telecommunication Research, MIIT
Address:	No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191
Postal Code:	100191
Telephone:	00861062304633
Fax:	00861062304793

1.2. Testing Environment

Normal Temperature:	15-35℃
Relative Humidity:	20-75%
Air pressure	980 - 1040 hPa

The climatic requirements above are general exclude the special requirements for dedicated test environments listed in section 5 and some specific test cases in other parts of this report.

1.3. Project data

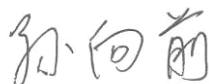|	
Testing Start Date:	2016-12-28
Testing End Date:	2016-12-29

1.4. Signature

Shen Yi
(Prepared this test report)

Zhong Nan
(Reviewed this test report)

Sun Xiang Qian
Deputy Director of the laboratory
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	Hisense International Co., Ltd.
Address /Post:	Floor 22, Hisense Tower, 17 Donghai Xi Road, Qingdao, 266071, China
City:	Qingdao
Postal Code:	266010
Country:	China

2.2. Manufacturer Information

Company Name:	Hisense Communications Co., Ltd.
Address /Post:	218 Qianwangang Road, Economic & Technological Development Zone, Qingdao,Shandong Province, P.R. China
City:	Qingdao
Postal Code:	266510
Country:	China

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

3.1. About EUT

Description	Smartphone
Model Name	Hisense F102
FCC ID	2ADOBF102
Antenna	Integrated
Extreme vol. Limits	3.5VDC to 4.35VDC (nominal: 3.8VDC)
Extreme temp. Tolerance	-30°C to +50°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
UT01a	002101541367367	V1.00	L1307.6.01.05.MX06

*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
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*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 Smartphone 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	10-1-15 Edition
FCC Part 22	PUBLIC MOBILE SERVICES	10-1-15 Edition
FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	10-1-15 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. LABORATORY ENVIRONMENT

Shielded room did not exceed following limits:

Temperature	Min. = 15 $^\circ$C, Max. = 35 $^\circ$C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω

6. SUMMARY OF TEST RESULTS

6.1. 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	Frequency Stability	24.235, 2.1055	A.2	P
3	Occupied Bandwidth	2.1049(h)(i)	A.3	P
4	Emission Bandwidth	24.238(a)	A.4	P
5	Band Edge Compliance	24.238(a)	A.5	P
6	Conducted Spurious Emission	24.238, 2.1057	A.6	P
7	Peak to Average Power Ratio	24.232 (d)	A.7	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	Frequency Stability	27.54, 2.1055	A.2	P
3	Occupied Bandwidth	2.1049(h)(i)	A.3	P
4	Emission Bandwidth	27.53(h)	A.4	P
5	Band Edge Compliance	27.53(h)	A.5	P
6	Conducted Spurious Emission	27.53(h), 2.1057	A.6	P
7	Peak to Average Power Ratio	27.50(a)	A.7	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	Frequency Stability	22.235, 2.1055	A.2	P
3	Occupied Bandwidth	2.1049(h)(i)	A.3	P
4	Emission Bandwidth	22.917(b)	A.4	P
5	Band Edge Compliance	22.917(b)	A.5	P
6	Conducted Spurious Emission	22.917, 2.1057	A.6	P

LTE Band 7

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

6.2. <u>Statements</u>

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.

7. Test Equipments Utilized

NO.	Description	TYPE	series number	MANUFACTURE	CAL DUE DATE	Calibration interval
1	Universal Radio Communication Tester	CMW500	101675	R&S	2017-07-13	1 year
2	Spectrum Analyzer	FSU26	200030	R&S	2017-06-11	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	22.74	21.74
		1880.0	22.78	21.86
		1850.7	22.71	21.72
	1 RB low	1909.3	22.75	21.74
		1880.0	22.80	21.89
		1850.7	22.74	21.72
	50% RB mid	1909.3	22.70	21.83
		1880.0	22.77	21.91
		1850.7	22.70	21.81
	100% RB	1909.3	21.77	20.62
		1880.0	21.83	20.64
		1850.7	21.74	20.58
3MHz	1 RB high	1908.5	22.74	21.72
		1880.0	22.74	21.83
		1851.5	22.70	21.68
	1 RB low	1908.5	22.74	21.76
		1880.0	22.78	21.89
		1851.5	22.73	21.71
	50% RB mid	1908.5	21.80	20.83
		1880.0	21.87	20.89
		1851.5	21.78	20.78
	100% RB	1908.5	21.78	20.78

		1880.0	21.83	20.82
		1851.5	21.75	20.74
5MHz	1 RB high	1907.5	22.76	22.01
		1880.0	22.77	22.00
		1852.5	22.74	21.97
	1 RB low	1907.5	22.80	22.07
		1880.0	22.85	22.11
		1852.5	22.78	22.02
	50% RB mid	1907.5	21.79	20.89
		1880.0	21.87	20.96
		1852.5	21.77	20.85
	100% RB	1907.5	21.76	20.80
		1880.0	21.81	20.83
		1852.5	21.75	20.76
10MHz	1 RB high	1905.0	22.79	21.79
		1880.0	22.81	21.87
		1855.0	22.73	21.85
	1 RB low	1905.0	22.82	21.80
		1880.0	22.82	21.97
		1855.0	22.78	21.89
	50% RB mid	1905.0	21.76	20.77
		1880.0	21.81	20.83
		1855.0	21.74	20.72
	100% RB	1905.0	21.78	20.76
		1880.0	21.82	20.81
		1855.0	21.74	20.71
15MHz	1 RB high	1902.5	22.83	22.08
		1880.0	22.80	21.89
		1857.5	22.76	22.12
	1 RB low	1902.5	22.81	22.12
		1880.0	22.84	21.98
		1857.5	22.88	22.16
	50% RB mid	1902.5	21.77	20.77
		1880.0	21.88	20.86
		1857.5	21.84	20.84
	100% RB	1902.5	21.80	20.76
		1880.0	21.91	20.85
		1857.5	21.87	20.81
20MHz	1 RB high	1900.0	22.82	21.97

		1880.0	22.84	21.96
		1860.0	22.76	22.34
	1 RB low	1900.0	22.84	21.95
		1880.0	22.89	22.08
		1860.0	22.85	22.33
	50% RB mid	1900.0	21.73	20.71
		1880.0	21.82	20.82
		1860.0	21.73	20.74
	100% RB	1900.0	21.77	20.72
		1880.0	21.82	20.79
		1860.0	21.78	20.74

LTE band 4

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
1.4MHz	1 RB high	1754.3	22.59	21.64
		1732.5	22.54	21.64
		1710.7	22.55	21.59
	1 RB low	1754.3	22.60	21.64
		1732.5	22.55	21.67
		1710.7	22.56	21.59
	50% RB mid	1754.3	22.59	21.74
		1732.5	22.50	21.65
		1710.7	22.54	21.67
	100% RB	1754.3	21.66	20.51
		1732.5	21.57	20.41
		1710.7	21.57	20.45
3MHz	1 RB high	1753.5	22.57	21.61
		1732.5	22.52	21.64
		1711.5	22.53	21.55
	1 RB low	1753.5	22.62	21.64
		1732.5	22.56	21.67
		1711.5	22.56	21.58
	50% RB mid	1753.5	21.67	20.74
		1732.5	21.60	20.65
		1711.5	21.64	20.68
	100% RB	1753.5	21.64	20.65
		1732.5	21.56	20.56
		1711.5	21.60	20.59
5MHz	1 RB high	1752.5	22.58	21.68
		1732.5	22.56	21.81
		1712.5	22.54	21.63
	1 RB low	1752.5	22.68	21.75
		1732.5	22.61	21.87
		1712.5	22.62	21.67
	50% RB mid	1752.5	21.70	20.79
		1732.5	21.59	20.69
		1712.5	21.64	20.74
	100% RB	1752.5	21.65	20.66
		1732.5	21.58	20.61
		1712.5	21.61	20.63
10MHz	1 RB high	1750	22.62	21.64
		1732.5	22.61	21.72

		1715	22.58	21.62
	1 RB low	1750	22.67	21.68
		1732.5	22.62	21.76
		1715	22.66	21.69
	50% RB mid	1750	21.61	20.60
		1732.5	21.58	20.57
		1715	21.61	20.60
	100% RB	1750	21.61	20.57
		1732.5	21.60	20.58
		1715	21.64	20.63
15MHz	1 RB high	1747.5	22.63	22.00
		1732.5	22.67	21.74
		1717.5	22.59	21.74
	1 RB low	1747.5	22.69	22.00
		1732.5	22.63	21.80
		1717.5	22.68	21.81
	50% RB mid	1747.5	21.67	20.68
		1732.5	21.63	20.63
		1717.5	21.64	20.64
	100% RB	1747.5	21.70	20.63
		1732.5	21.69	20.64
		1717.5	21.66	20.64
20MHz	1 RB high	1745	22.63	22.19
		1732.5	22.74	21.85
		1720	22.69	21.86
	1 RB low	1745	22.64	22.14
		1732.5	22.67	21.88
		1720	22.74	21.92
	50% RB mid	1745	21.61	20.57
		1732.5	21.57	20.55
		1720	21.58	20.58
	100% RB	1745	21.63	20.58
		1732.5	21.64	20.59
		1720	21.63	20.59

LTE band 5

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
1.4MHz	1 RB high	848.3	22.69	21.94
		836.5	22.66	21.90
		824.7	22.74	21.84
	1 RB low	848.3	22.73	21.96
		836.5	22.65	21.89
		824.7	22.77	21.89
	50% RB mid	848.3	22.77	21.98
		836.5	22.72	21.95
		824.7	22.72	21.84
	100% RB	848.3	21.77	20.74
		836.5	21.69	20.73
		824.7	21.74	20.68
3MHz	1 RB high	847.5	22.68	21.85
		836.5	22.61	21.85
		825.5	22.68	21.81
	1 RB low	847.5	22.77	21.90
		836.5	22.62	21.87
		825.5	22.75	21.86
	50% RB mid	847.5	21.77	20.90
		836.5	21.68	20.90
		825.5	21.76	20.85
	100% RB	847.5	21.84	20.87
		836.5	21.72	20.83
		825.5	21.73	20.75
5MHz	1 RB high	846.5	22.71	21.89
		836.5	22.70	22.08
		826.5	22.75	21.83
	1 RB low	846.5	22.85	21.96
		836.5	22.72	22.07
		826.5	22.81	21.88
	50% RB mid	846.5	21.87	20.98
		836.5	21.78	20.99
		826.5	21.73	20.88
	100% RB	846.5	21.85	20.88
		836.5	21.76	20.88
		826.5	21.75	20.78
10MHz	1 RB high	844.0	22.69	21.84

		836.5	22.73	21.95
		829.0	22.66	21.79
	1 RB low	844.0	22.68	21.84
		836.5	22.75	21.96
		829.0	22.78	21.81
	50% RB mid	844.0	21.77	20.77
		836.5	21.76	20.86
		829.0	21.74	20.77
	100% RB	844.0	21.80	20.78
		836.5	21.81	20.88
		829.0	21.78	20.76

LTE band 7

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
5MHz	1 RB high	2567.5	22.92	21.98
		2535	22.82	22.05
		2502.5	22.98	22.18
	1 RB low	2567.5	23.21	22.26
		2535	22.92	22.15
		2502.5	23.22	22.40
	50% RB mid	2567.5	22.10	21.25
		2535	21.93	21.05
		2502.5	22.12	21.24
	100% RB	2567.5	22.07	21.11
		2535	21.85	20.92
		2502.5	22.07	21.11
10MHz	1 RB high	2565	22.92	21.99
		2535	22.84	21.95
		2505	22.89	21.85
	1 RB low	2565	23.32	22.31
		2535	22.95	22.05
		2505	23.28	22.22
	50% RB mid	2565	22.22	21.26
		2535	21.89	20.92
		2505	22.02	21.03
	100% RB	2565	22.22	21.23
		2535	21.90	20.91
		2505	22.01	21.03
15MHz	1 RB high	2562.5	22.71	22.02
		2535	22.85	21.97
		2507.5	23.01	22.13
	1 RB low	2562.5	22.88	22.21
		2535	23.01	22.12
		2507.5	23.57	22.57
	50% RB mid	2562.5	22.00	21.04
		2535	21.99	21.00
		2507.5	22.29	21.29
	100% RB	2562.5	21.98	20.98
		2535	22.02	21.00
		2507.5	22.31	21.28
20MHz	1 RB high	2560	22.72	22.22

		2535	22.84	21.96
		2510	23.24	22.73
	1 RB low	2560	22.76	22.27
		2535	22.96	22.11
		2510	23.44	22.88
	50% RB mid	2560	21.94	20.98
		2535	21.90	20.93
		2510	22.08	21.10
	100% RB	2560	21.91	20.93
		2535	21.89	20.91
		2510	22.17	21.16

Note: Expanded measurement uncertainty is $U = 0.83$ dB, $k = 2$.

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 -30℃.
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 7, 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℃ increments from -30℃ to +50℃. 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 +50℃.
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 ℃ increments from +50℃ to -30℃. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5℃ 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 3.5VDC and 4.35VDC, 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	Frequency error (Hz)		Frequency error (ppm)	
(V)	QPSK	16QAM	QPSK	16QAM
3.5	-5.49	6.12	0.003	0.003
3.8	-4.62	6.41	0.002	0.003
4.35	-2.15	10.56	0.001	0.006

Frequency Error vs Temperature

Temperature	Frequency error (Hz)		Frequency error (ppm)	
(℃)	QPSK	16QAM	QPSK	16QAM
50°	-5.06	11.07	0.003	0.006
40°	-4.61	13.40	0.002	0.007
30°	3.10	9.34	0.002	0.005
20°	-7.32	10.63	0.004	0.006
10°	-1.32	8.33	0.001	0.004
0°	-4.45	6.24	0.002	0.003
–10°	-6.51	4.43	0.003	0.002
–20°	1.40	11.30	0.001	0.006
–30°	-0.84	7.85	0.000	0.004

LTE Band 4, 1.4MHz bandwidth (worst case of all bandwidths)
Frequency Error vs Voltage

Voltage	Frequency error (Hz)		Frequency error (ppm)	
(V)	QPSK	16QAM	QPSK	16QAM
3.5	-3.22	-6.74	0.002	0.004
3.8	-3.36	-5.15	0.002	0.003
4.35	-4.03	-6.18	0.002	0.004

Frequency Error vs Temperature

Temperature	Frequency error (Hz)		Frequency error (ppm)	
(℃)	QPSK	16QAM	QPSK	16QAM
50°	0.96	-4.02	0.001	0.002
40°	2.29	-4.75	0.001	0.003
30°	0.36	-6.02	0.000	0.003
20°	-3.66	-11.70	0.002	0.007
10°	1.27	-5.41	0.001	0.003
0°	0.37	-6.64	0.000	0.004
–10°	-0.26	-7.55	0.000	0.004
–20°	6.29	-6.39	0.004	0.004
–30°	-3.85	-11.12	0.002	0.006

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

Voltage	Frequency error (Hz)		Frequency error (ppm)	
(V)	QPSK	16QAM	QPSK	16QAM
3.5	-2.43	4.35	0.003	0.005
3.8	-0.86	11.99	0.001	0.014
4.35	0.34	7.64	0.000	0.009

Frequency Error vs Temperature

Temperature	Frequency error (Hz)		Frequency error (ppm)	
(℃)	QPSK	16QAM	QPSK	16QAM
50°	1.43	10.57	0.002	0.013
40°	-3.88	9.26	0.005	0.011
30°	-0.16	7.75	0.000	0.009
20°	1.90	8.98	0.002	0.011
10°	-1.52	11.99	0.002	0.014
0°	0.16	7.42	0.000	0.009
– 10°	-1.36	8.35	0.002	0.010
– 20°	-0.41	8.10	0.000	0.010
– 30°	-0.04	10.16	0.000	0.012

LTE Band 7, 10MHz bandwidth (worst case of all bandwidths)
Frequency Error vs Voltage

Voltage	Frequency error (Hz)		Frequency error (ppm)	
(V)	QPSK	16QAM	QPSK	16QAM
3.5	6.87	9.76	0.003	0.004
3.8	1.66	7.51	0.001	0.003
4.35	2.20	7.88	0.001	0.003

Frequency Error vs Temperature

Temperature	Frequency error (Hz)		Frequency error (ppm)	
(℃)	QPSK	16QAM	QPSK	16QAM
50°	0.84	13.33	0.000	0.005
40°	-0.63	8.25	0.000	0.003
30°	6.57	9.47	0.003	0.004
20°	4.06	12.53	0.002	0.005
10°	-0.17	11.17	0.000	0.004
0°	5.89	16.15	0.002	0.006
– 10°	3.95	12.35	0.002	0.005
– 20°	6.32	10.70	0.002	0.004
– 30°	4.84	14.08	0.002	0.006

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:

a) 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).

b) 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.

c) 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 10log (OBW / RBW) below the reference level.

d) Set the detection mode to peak, and the trace mode to max hold.

e) 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)
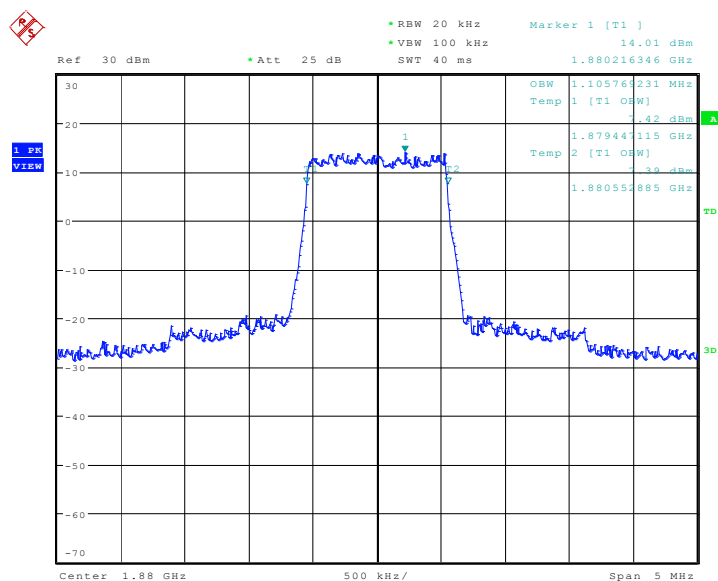
Date: 28.DEC.2016 10:57:52

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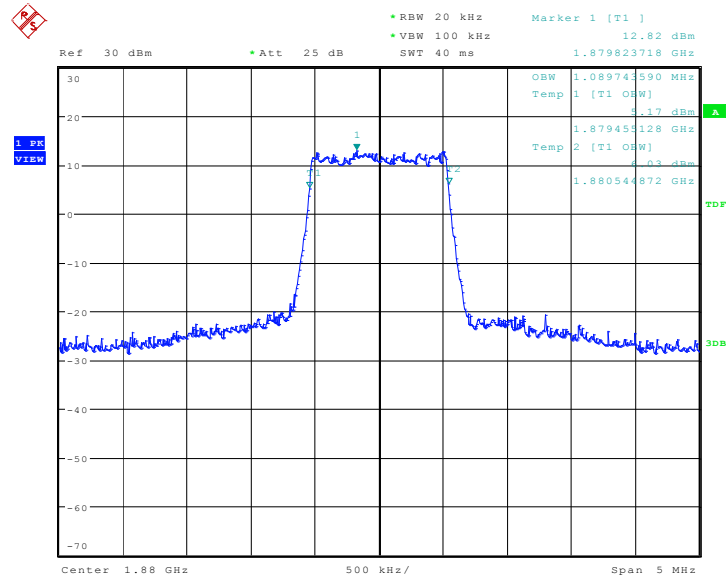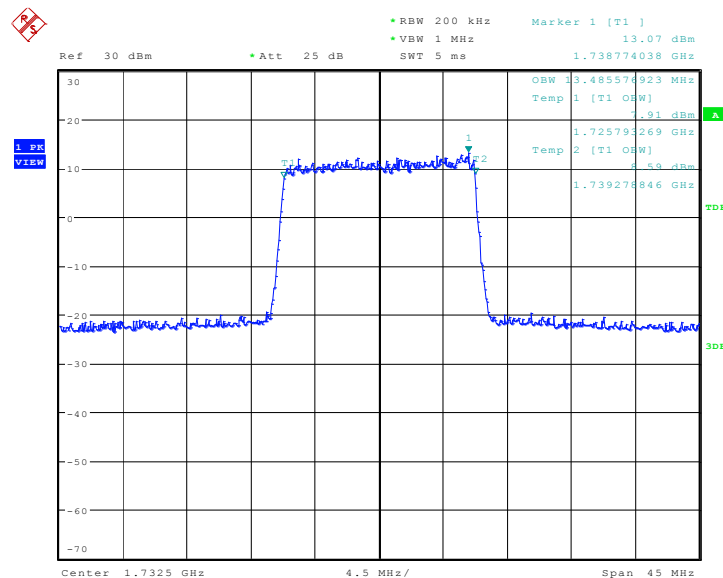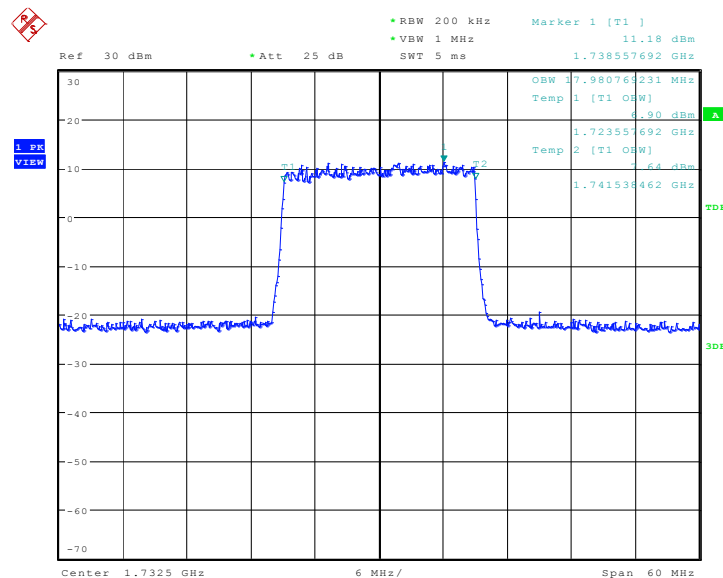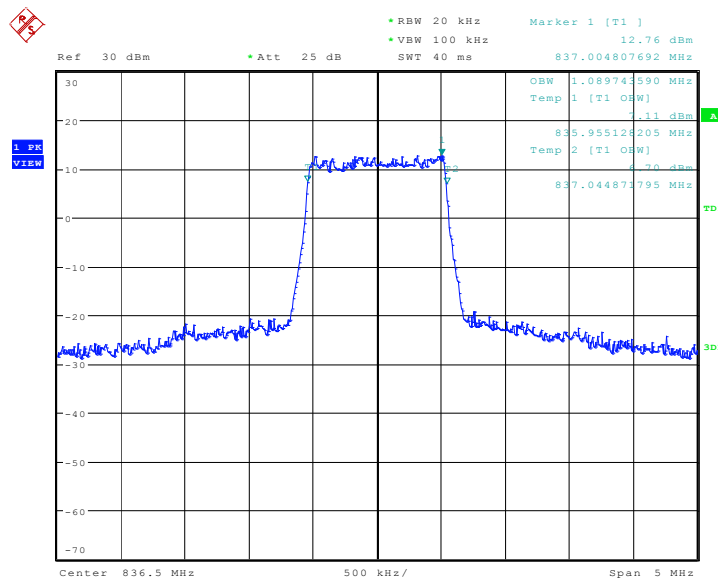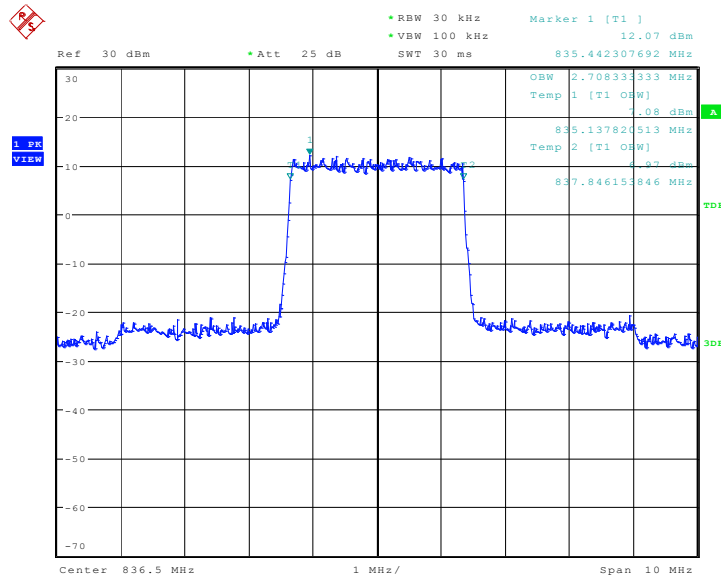

Date: 28.DEC.2016 10:58:07

LTE band 2, 3MHz (99%)

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

LTE band 2, 3MHz Bandwidth, QPSK (99% BW)
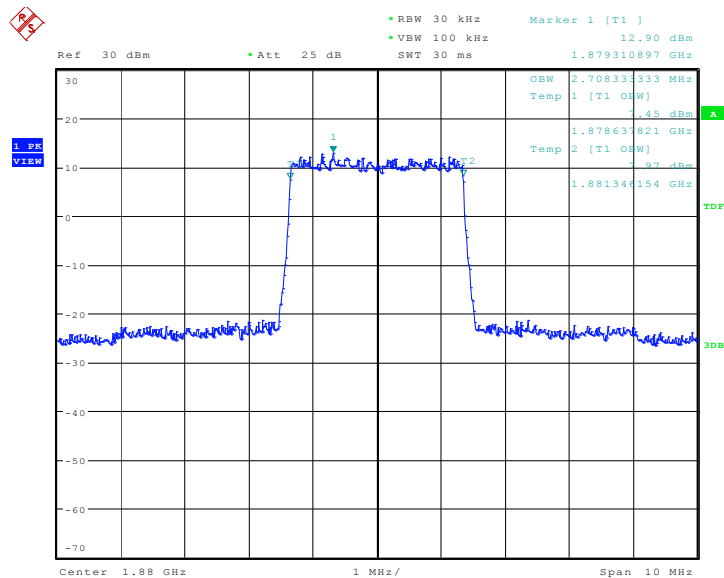
Date: 28.DEC.2016 11:03:35

LTE band 2, 3MHz Bandwidth, 16QAM (99% BW)
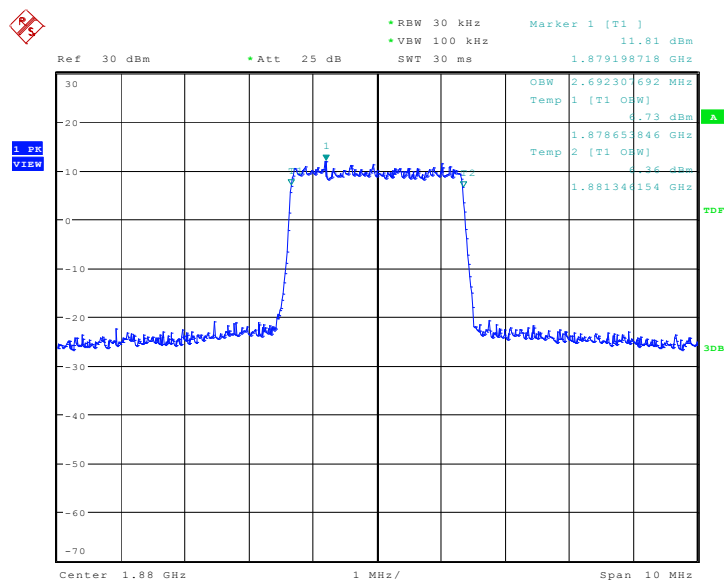
Date: 28.DEC.2016 11:03:50

LTE band 2, 5MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
	QPSK	16QAM
1880.0	4471.15	4519.23

LTE band 2, 5MHz Bandwidth, QPSK (99% BW)
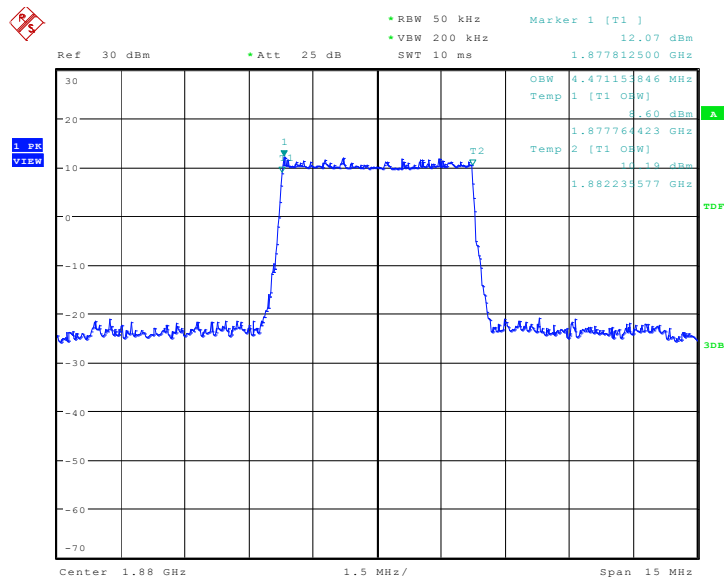
Date: 28.DEC.2016 09:37:11

LTE band 2, 5MHz Bandwidth,16QAM (99% BW)
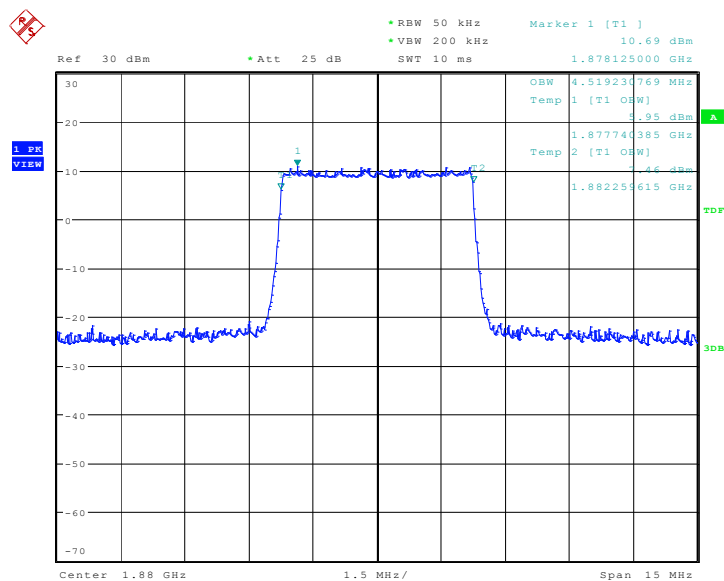
Date: 28.DEC.2016 09:37:27

LTE band 2, 10MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
	QPSK	16QAM
1880.0	9038.46	8942.31

LTE band 2, 10MHz Bandwidth, QPSK (99% BW)
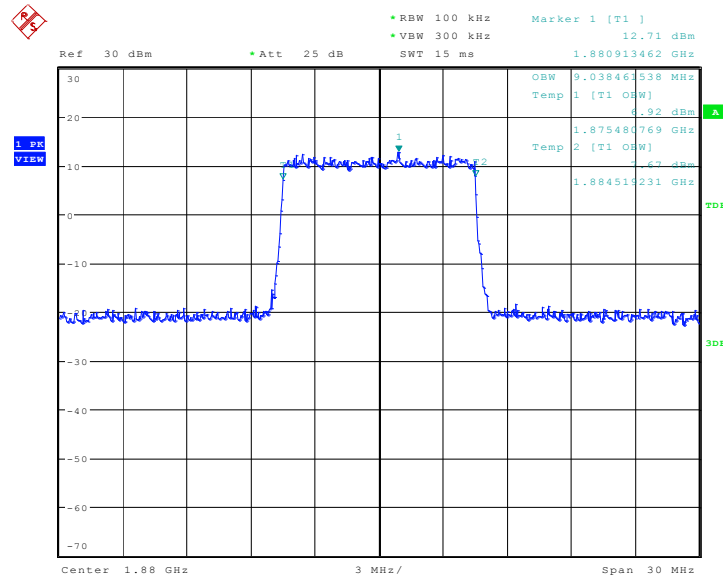
Date: 28.DEC.2016 09:42:54

LTE band 2, 10MHz Bandwidth, 16QAM (99% BW)
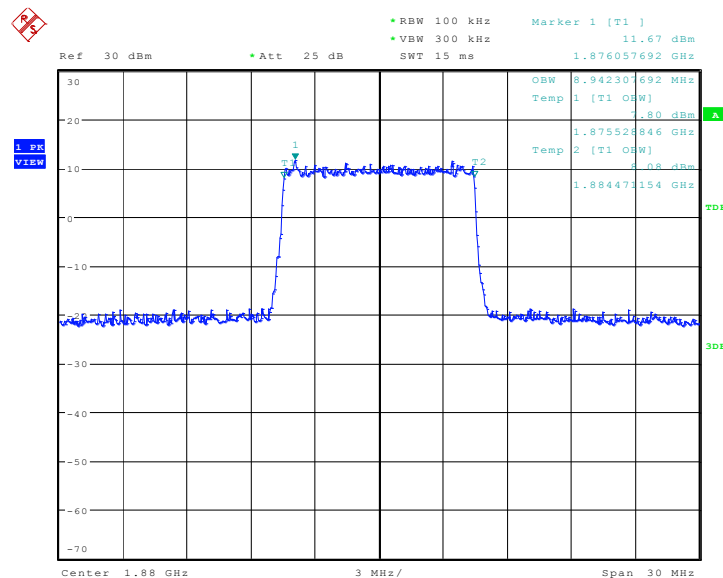
Date: 28.DEC.2016 09:43:09

LTE band 2, 15MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	13485.58	13557.69

LTE band 2, 15MHz Bandwidth, QPSK (99% BW)
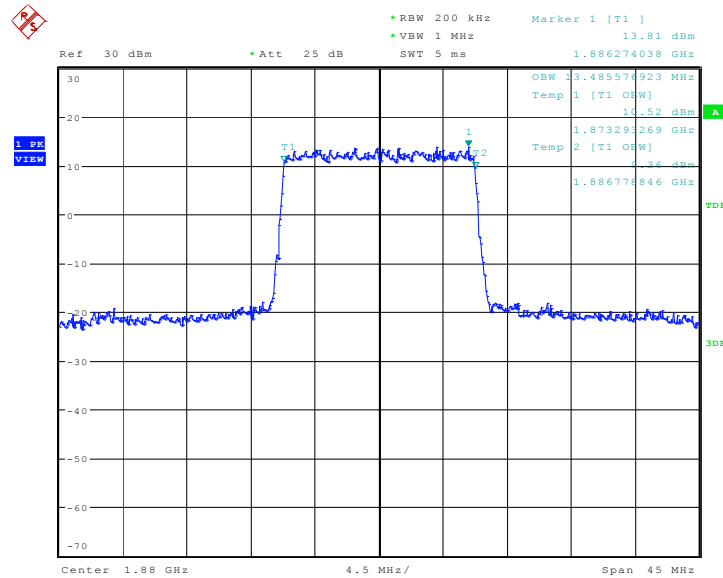
Date: 28.DEC.2016 09:48:42

LTE band 2, 15MHz Bandwidth, 16QAM (99% BW)
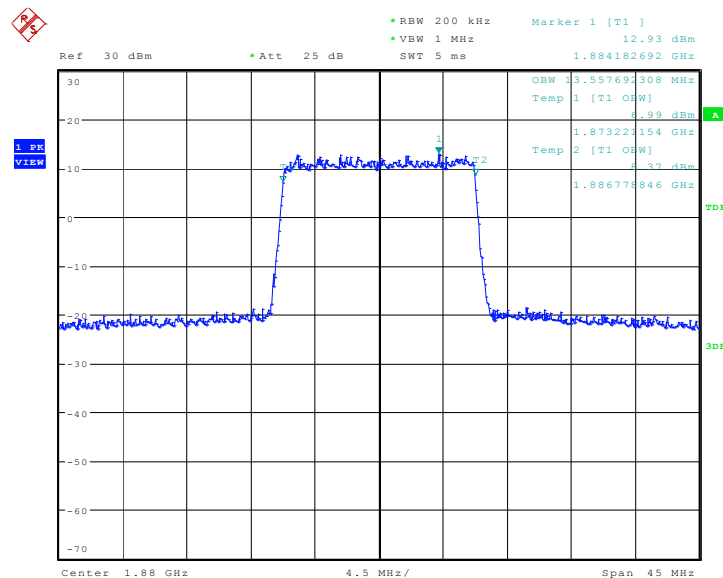
Date: 28.DEC.2016 09:48:57

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)
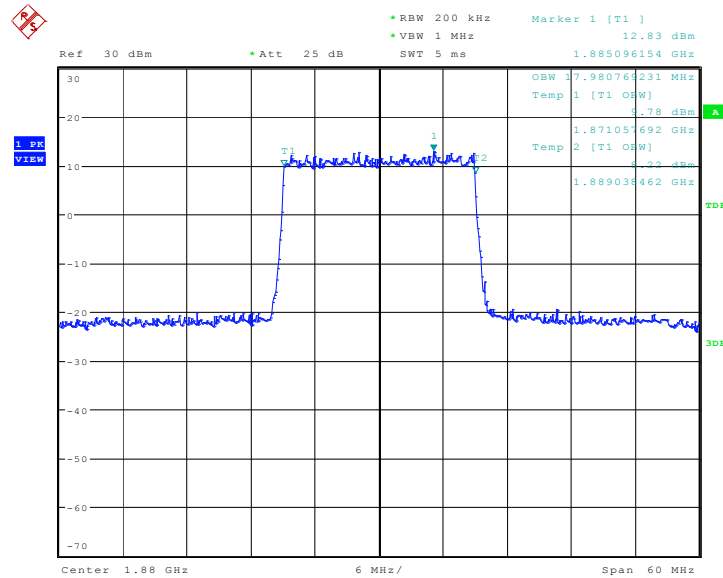
Date: 28.DEC.2016 09:54:35

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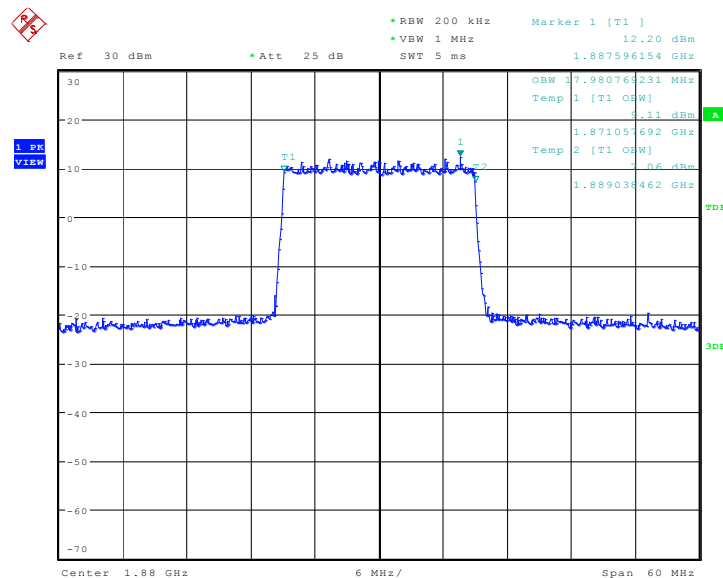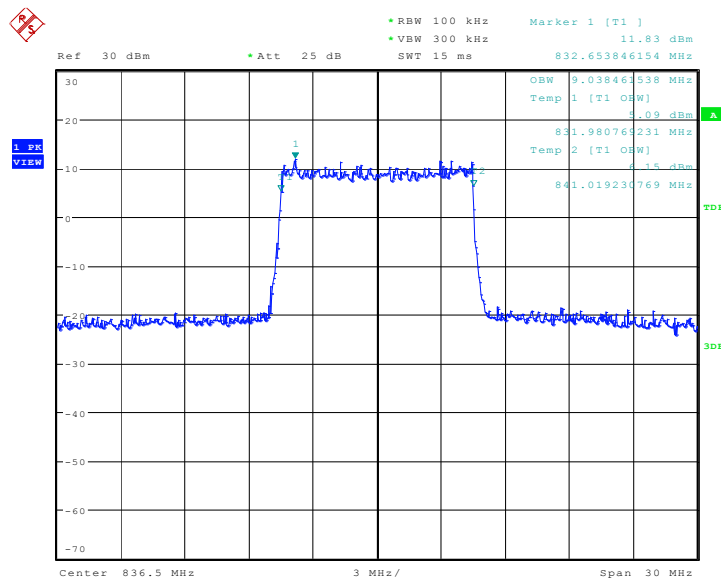

Date: 28.DEC.2016 09:54:50

LTE band 4, 1.4MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
	QPSK	16QAM
1732.5	1105.77	1089.74

LTE band 4, 1.4MHz Bandwidth, QPSK (99% BW)
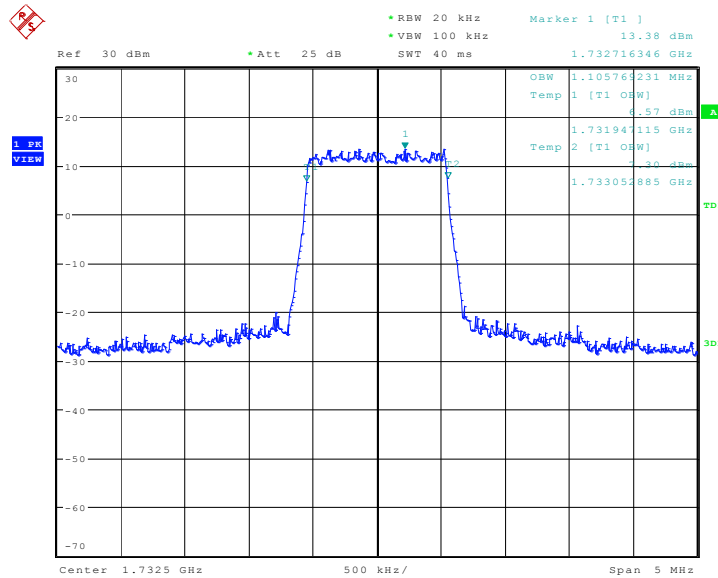
Date: 28.DEC.2016 10:00:22

LTE band 4, 1.4MHz Bandwidth, 16QAM (99% BW)
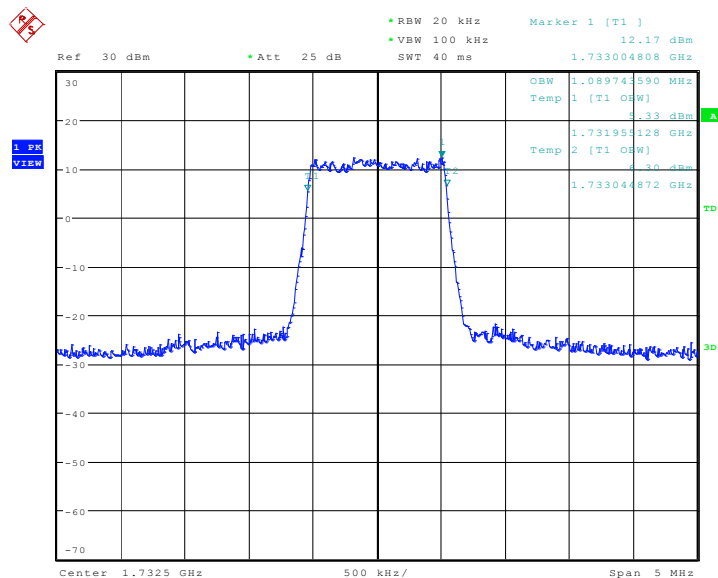
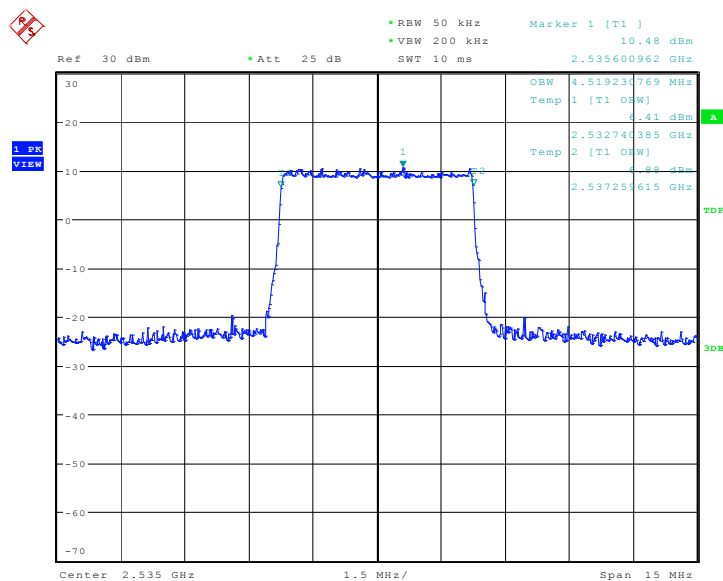Date: 28.DEC.2016 10:00:37

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)
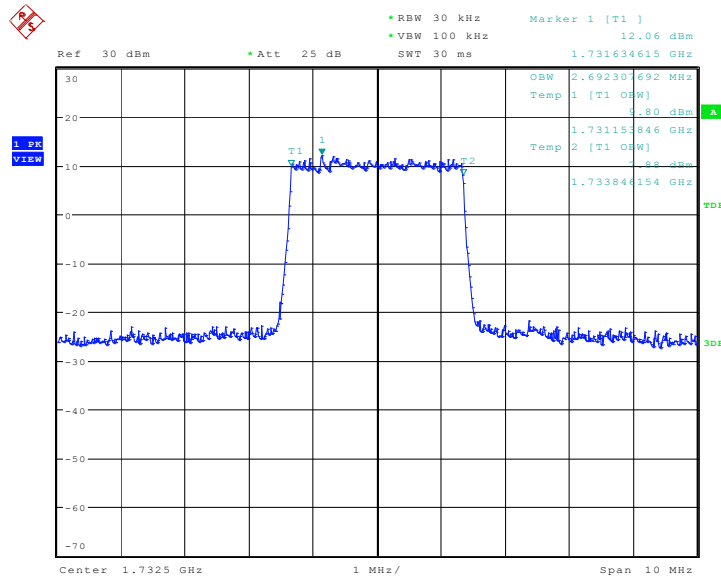
Date: 28.DEC.2016 10:06:04

LTE band 4, 3MHz Bandwidth, 16QAM (99% BW)
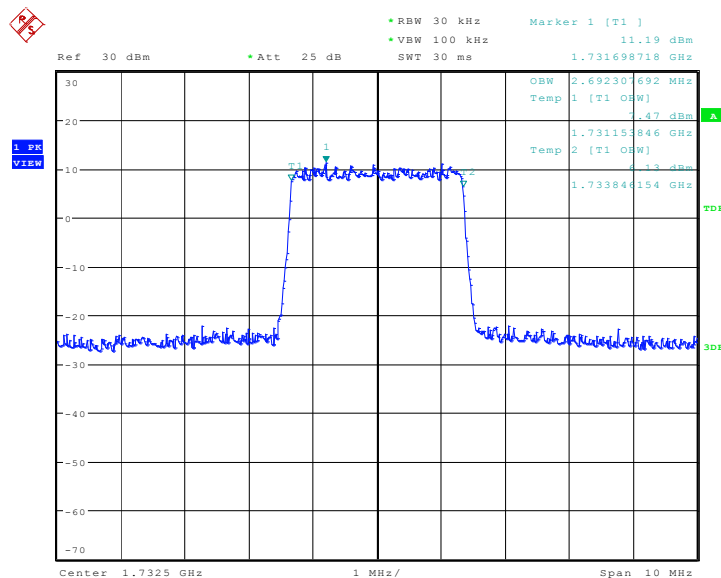
Date: 28.DEC.2016 10:06:19

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)
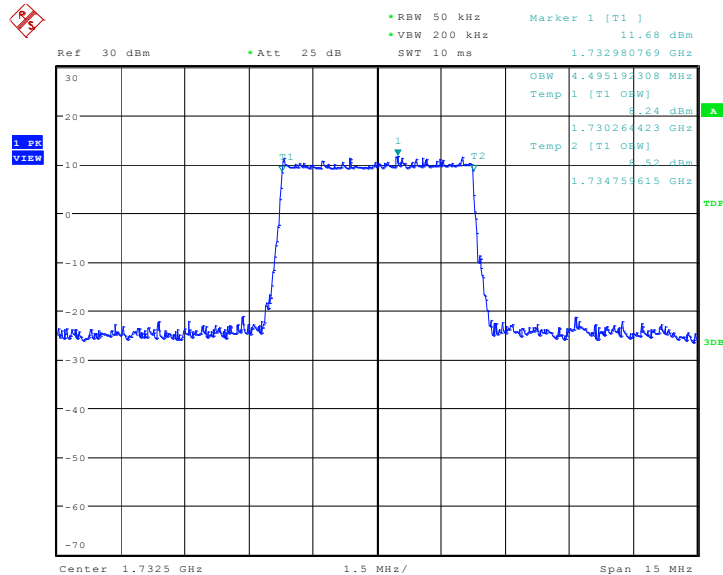
Date: 28.DEC.2016 10:11:46

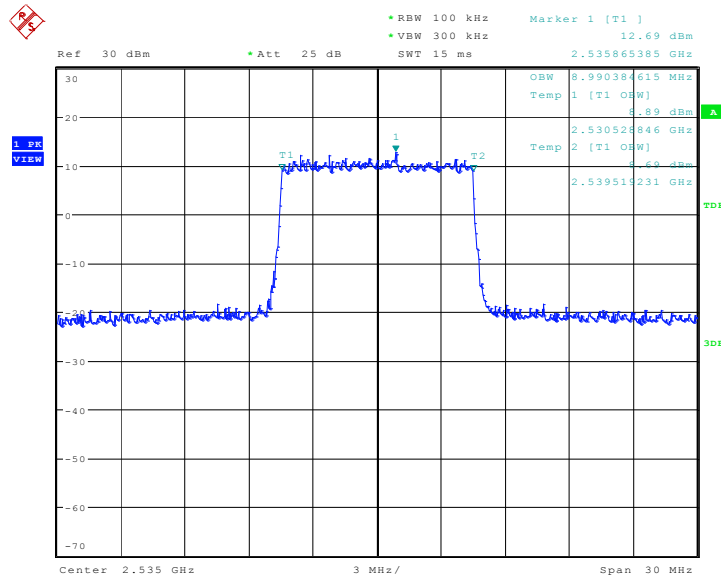**LTE band 4, 5MHz Bandwidth,16QAM (99% BW)**
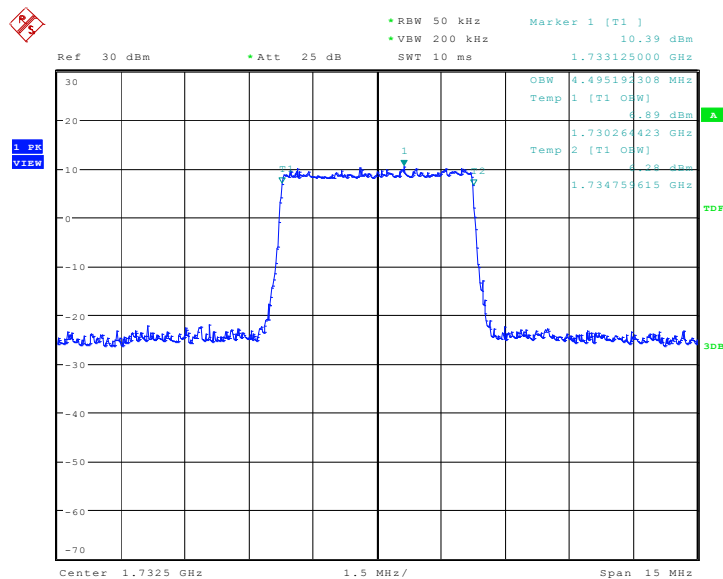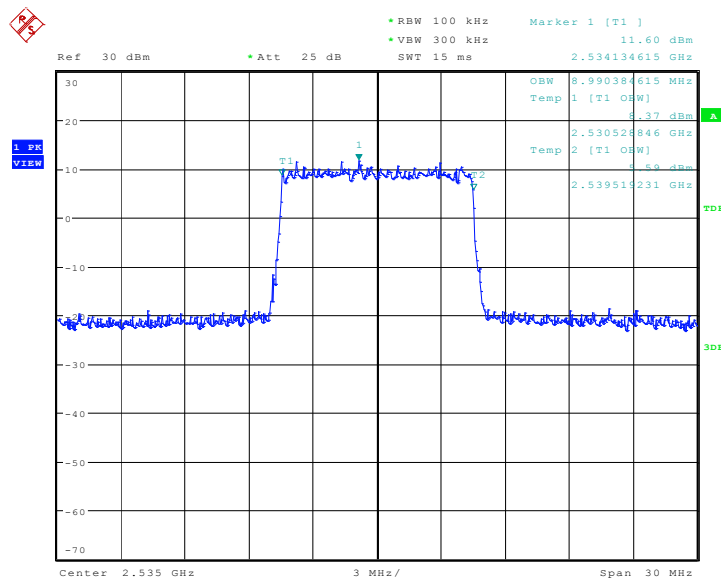

Date: 28.DEC.2016 10:12:01

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)
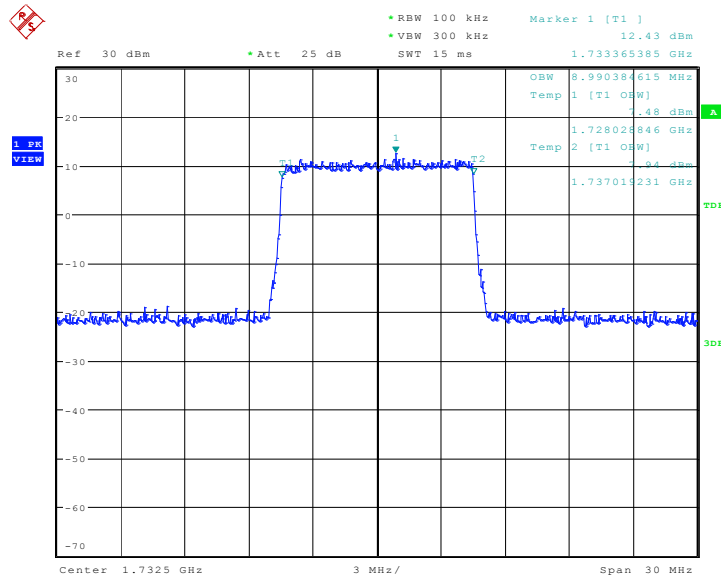
Date: 28.DEC.2016 10:17:29
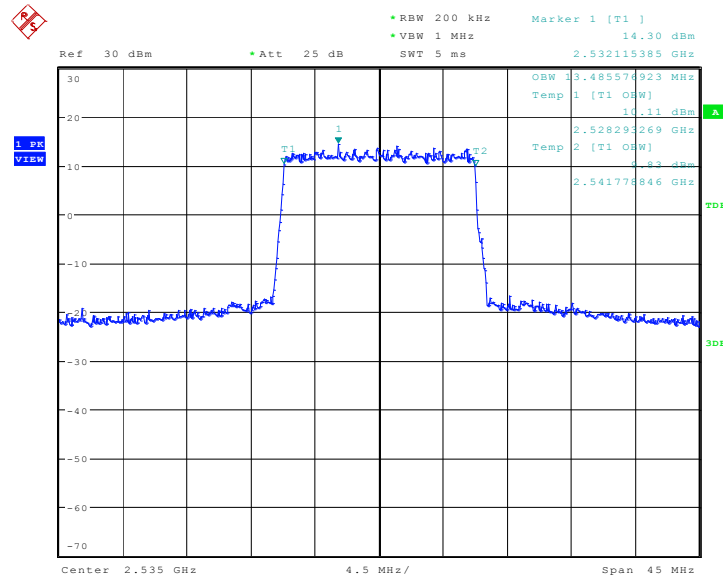
LTE band 4, 10MHz Bandwidth, 16QAM (99% BW)
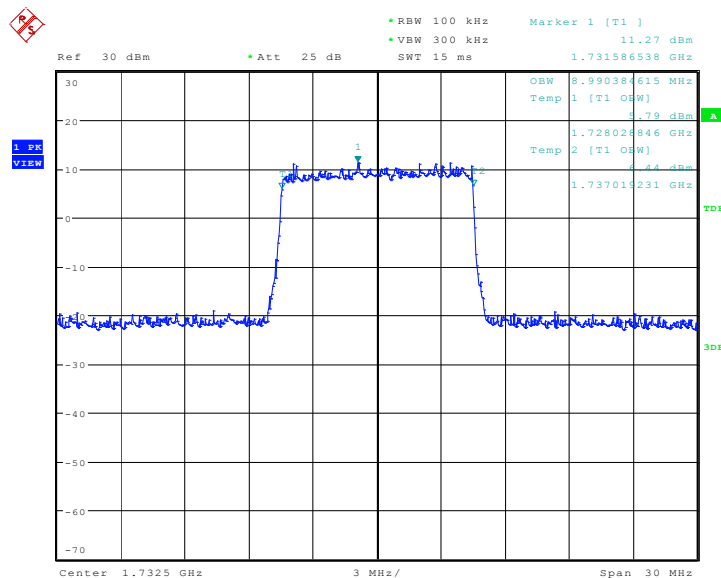
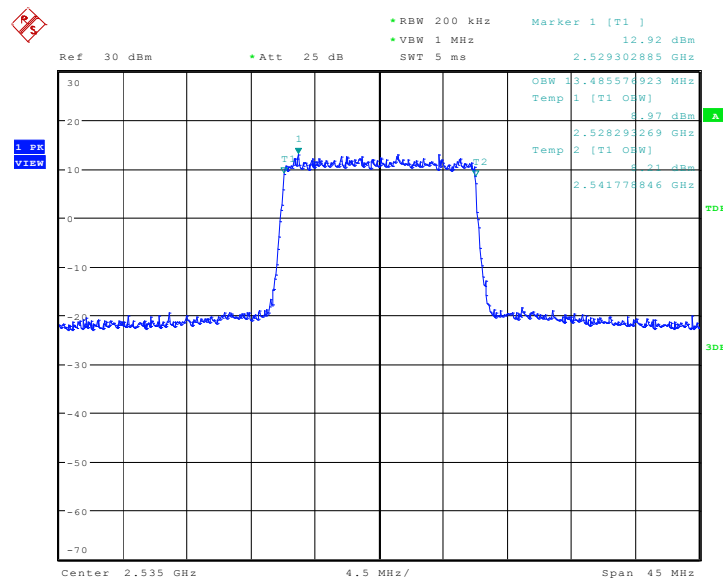Date: 28.DEC.2016 10:17:44

LTE band 4, 15MHz (99%)

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

LTE band 4, 15MHz Bandwidth, QPSK (99% BW)
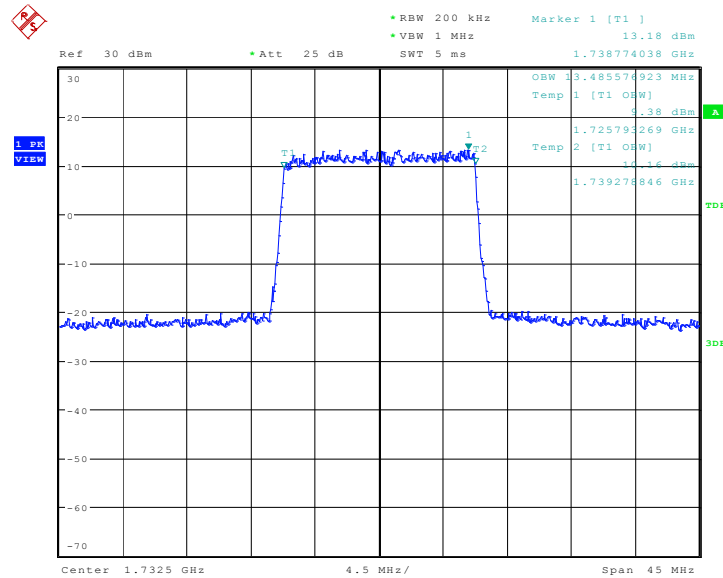
Date: 28.DEC.2016 10:23:17
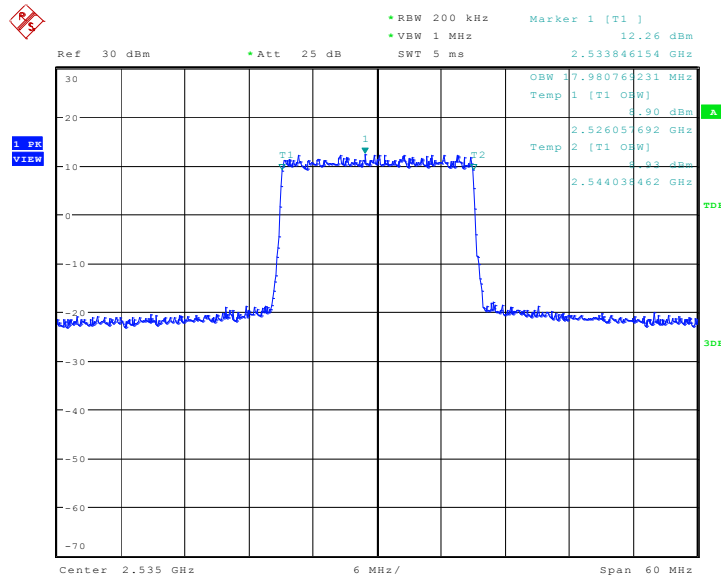
LTE band 4, 15MHz Bandwidth, 16QAM (99% BW)

Date: 28.DEC.2016 10:23:32

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)
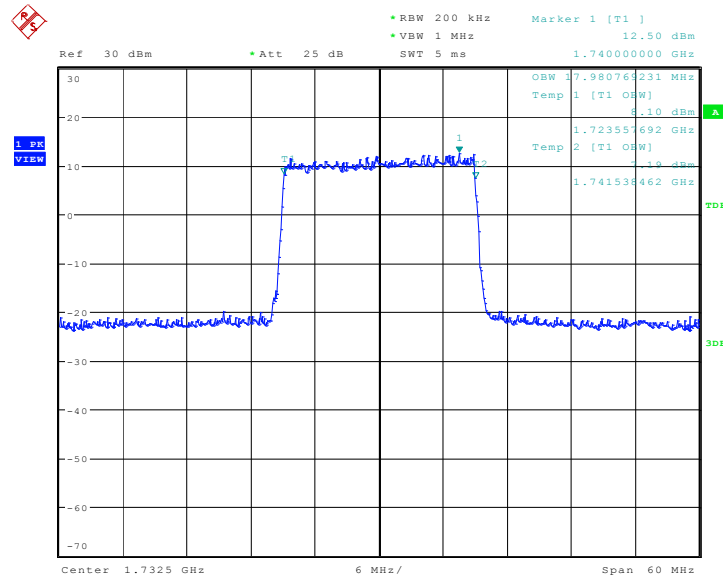
Date: 28.DEC.2016 10:29:10

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

Date: 28.DEC.2016 10:29:25

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)
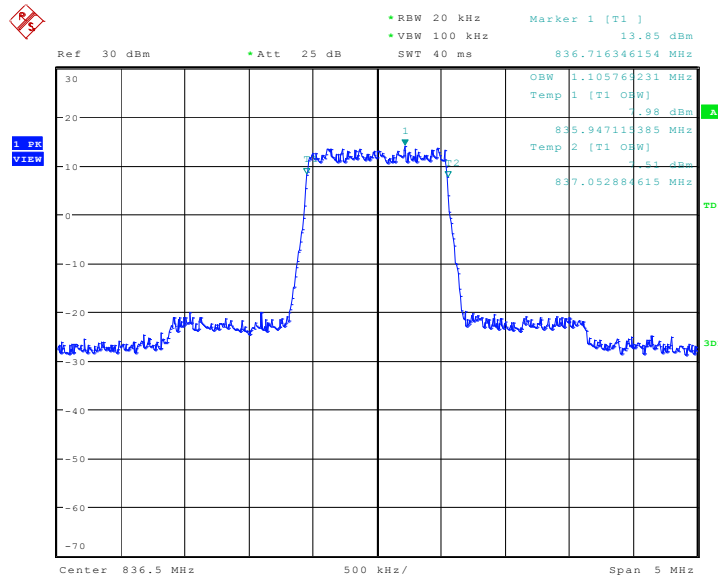
Date: 28.DEC.2016 10:35:00

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

Date: 28.DEC.2016 10:35:15

LTE band 5, 3MHz (99%)

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

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

Date: 28.DEC.2016 10:40:42

LTE band 5, 3MHz Bandwidth, 16QAM (99% BW)
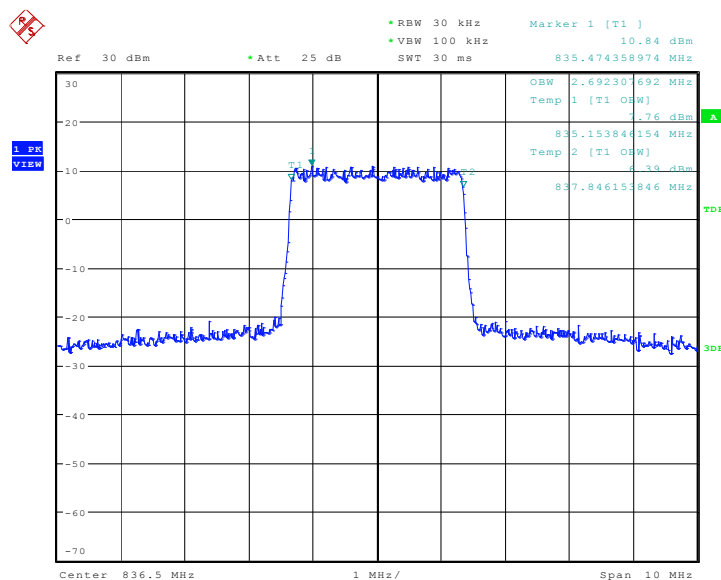
Date: 28.DEC.2016 10:40:57

LTE band 5, 5MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
	QPSK	16QAM
836.5	4519.23	4495.19

LTE band 5, 5MHz Bandwidth, QPSK (99% BW)
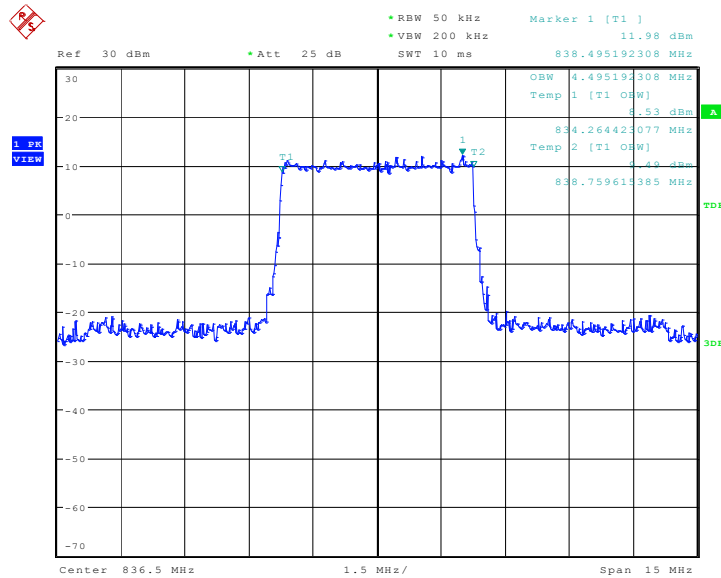
Date: 28.DEC.2016 10:46:24

LTE band 5, 5MHz Bandwidth,16QAM (99% BW)
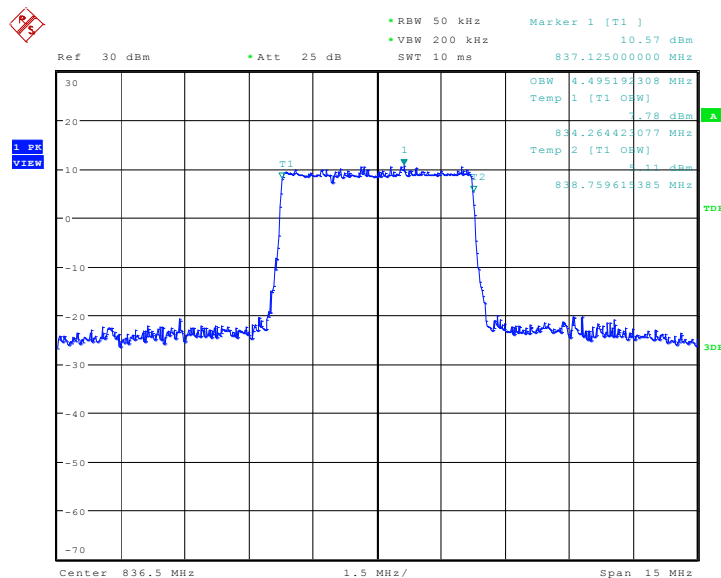
Date: 28.DEC.2016 10:46:39

LTE band 5, 10MHz (99%)

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

LTE band 5, 10MHz Bandwidth, QPSK (99% BW)
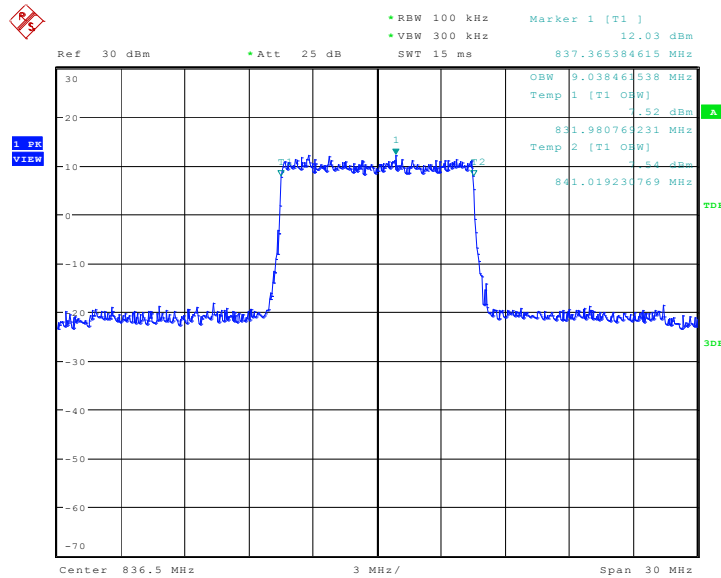
Date: 28.DEC.2016 10:52:07

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

Date: 28.DEC.2016 10:52:22

LTE band 7, 5MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
	QPSK	16QAM
2535.0	4495.19	4519.23

LTE band 7, 5MHz Bandwidth, QPSK (99% BW)
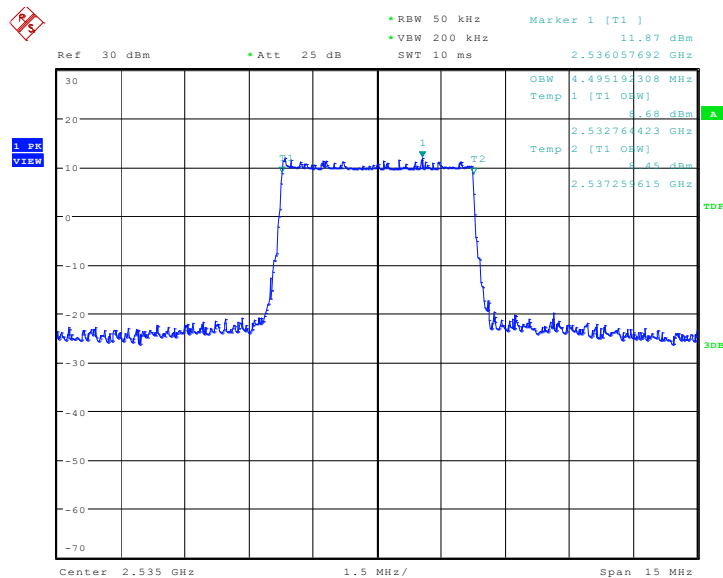
Date: 28.DEC.2016 04:58:49

LTE band 7, 5MHz Bandwidth,16QAM (99% BW)

Date: 28.DEC.2016 04:59:04

LTE band 7, 10MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
	QPSK	16QAM
2535.0	8990.38	8990.38

LTE band 7, 10MHz Bandwidth, QPSK (99% BW)

Date: 28.DEC.2016 05:04:31

LTE band 7, 10MHz Bandwidth, 16QAM (99% BW)

Date: 28.DEC.2016 05:04:46

LTE band 7, 15MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
	QPSK	16QAM
2535.0	13485.58	13485.58

LTE band 7, 15MHz Bandwidth, QPSK (99% BW)

Date: 28.DEC.2016 05:10:19

LTE band 7, 15MHz Bandwidth, 16QAM (99% BW)

Date: 28.DEC.2016 05:10:34

LTE band 7, 20MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
	QPSK	16QAM
2535.0	17980.77	17980.77

LTE band 7, 20MHz Bandwidth, QPSK (99% BW)

Date: 28.DEC.2016 05:16:12

LTE band 7, 20MHz Bandwidth, 16QAM (99% BW)
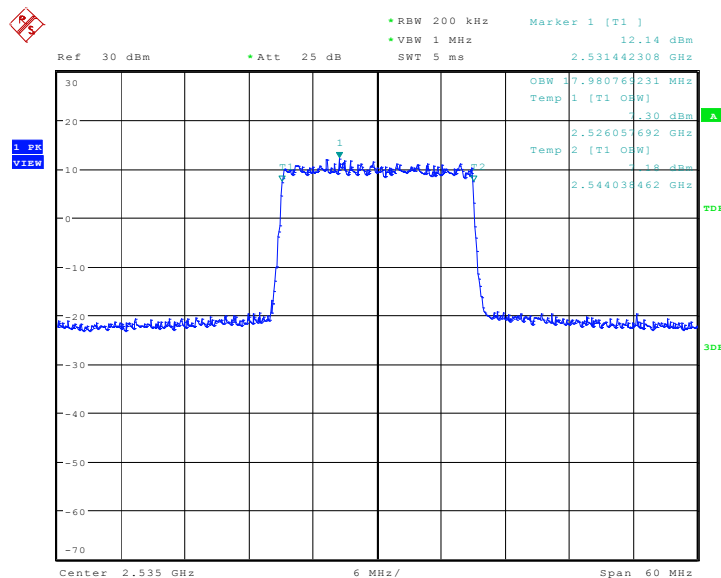
Date: 28.DEC.2016 05:16:27

A.4   EMISSION BANDWIDTH

A.4.1Emission 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.
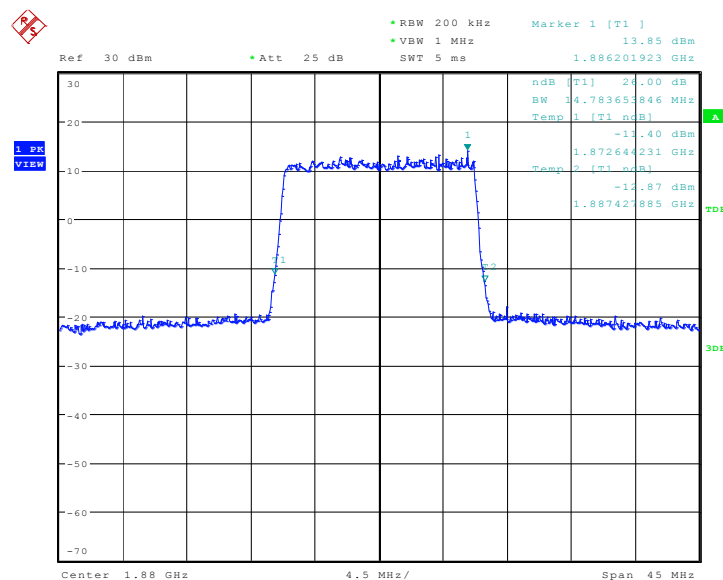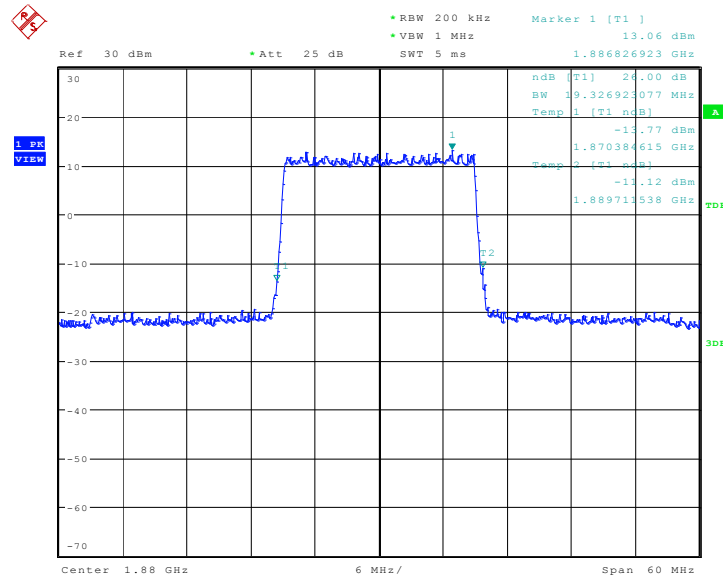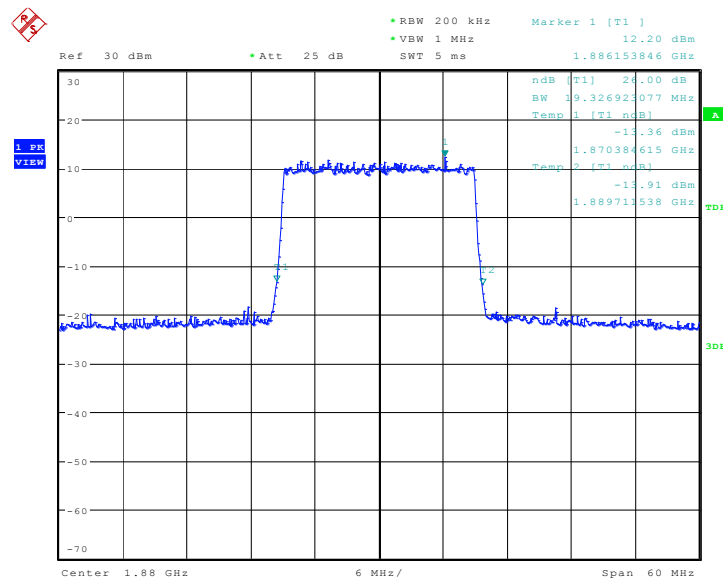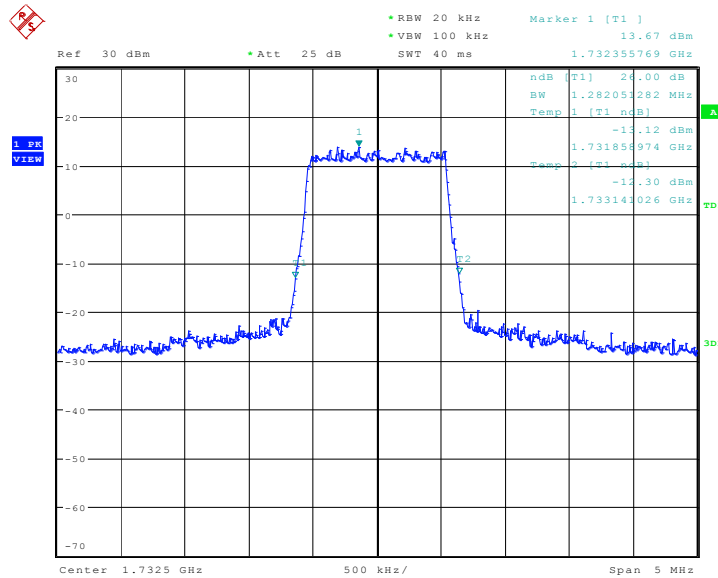
LTE band 2, 1.4MHz (-26dBc)
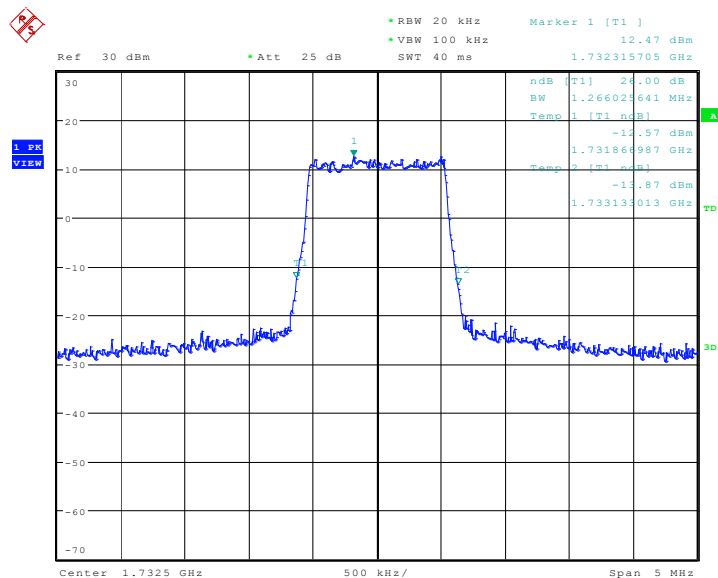
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
	QPSK	16QAM
1880.0	1282.05	1274.04

LTE band 2, 1.4MHz Bandwidth, QPSK (-26dBc BW)
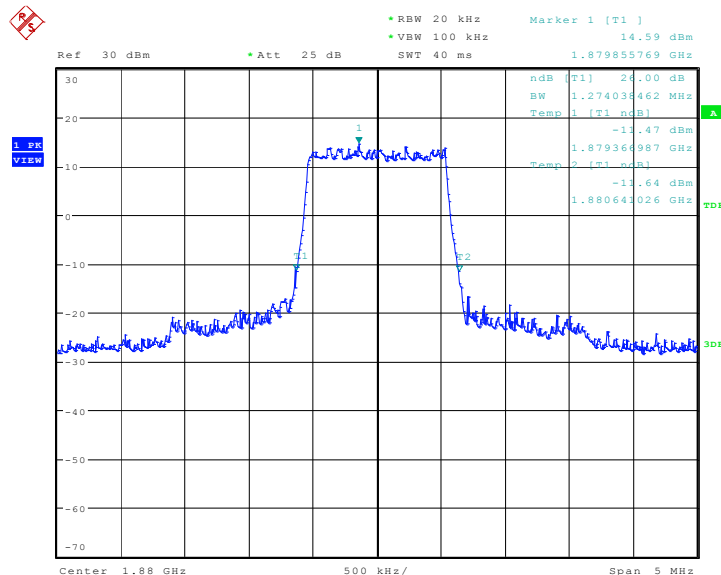
Date: 28.DEC.2016 10:59:00
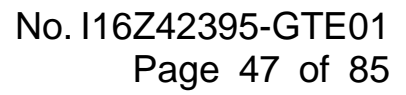
LTE band 2, 1.4MHz Bandwidth, 16QAM (-26dBc BW)

Date: 28.DEC.2016 10:59:17

LTE band 2, 3MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
	QPSK	16QAM
1880.0	2948.72	2932.69

LTE band 2, 3MHz Bandwidth, QPSK (-26dBc BW)
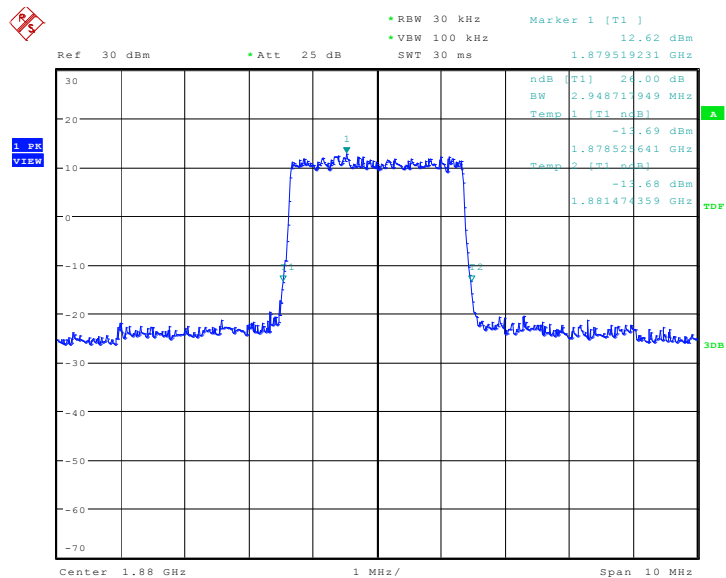
Date: 28.DEC.2016 11:04:43

LTE band 2, 3MHz Bandwidth, 16QAM (-26dBc BW)
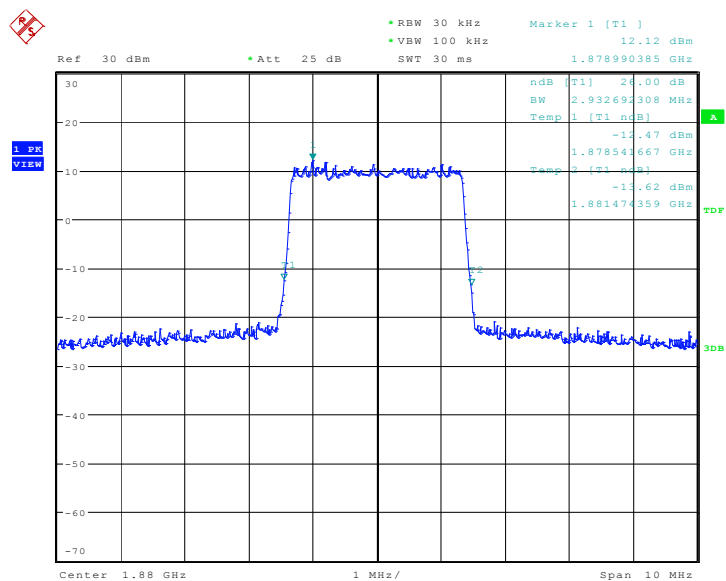
Date: 28.DEC.2016 11:05:00

LTE band 2, 5MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
	QPSK	16QAM
1880.0	5000.00	4975.96

LTE band 2, 5MHz Bandwidth, QPSK (-26dBc BW)
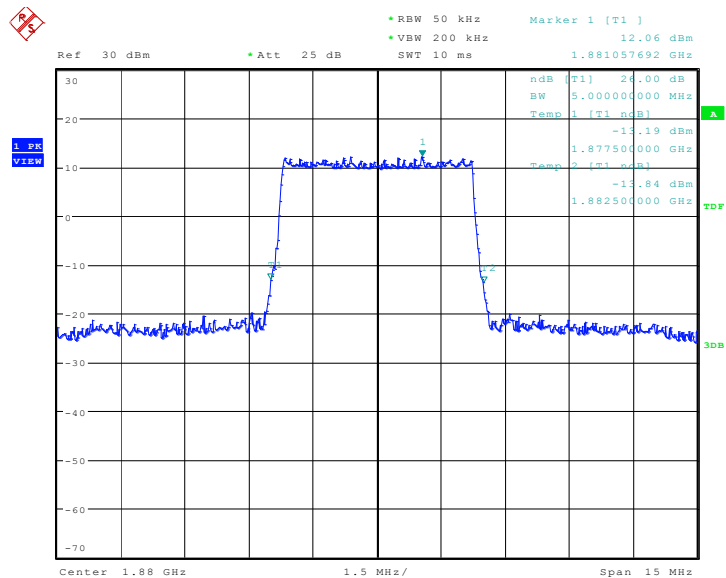
Date: 28.DEC.2016 09:38:20

LTE band 2, 5MHz Bandwidth,16QAM (-26dBc BW)
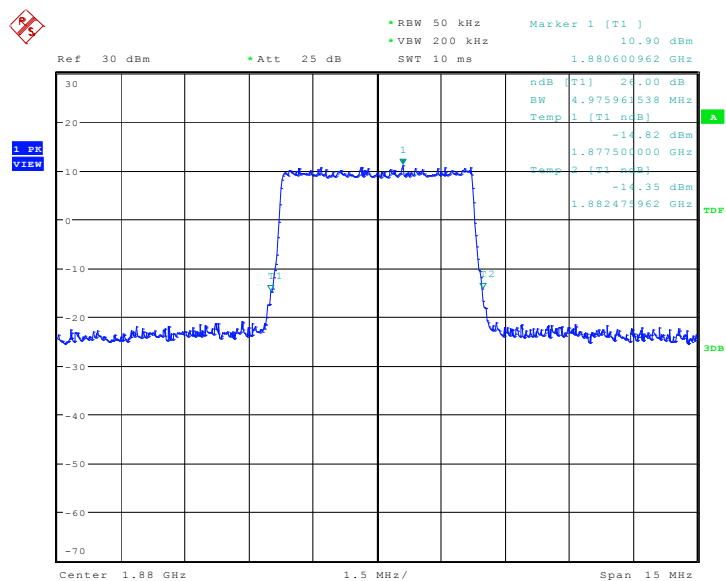
Date: 28.DEC.2016 09:38:37

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)
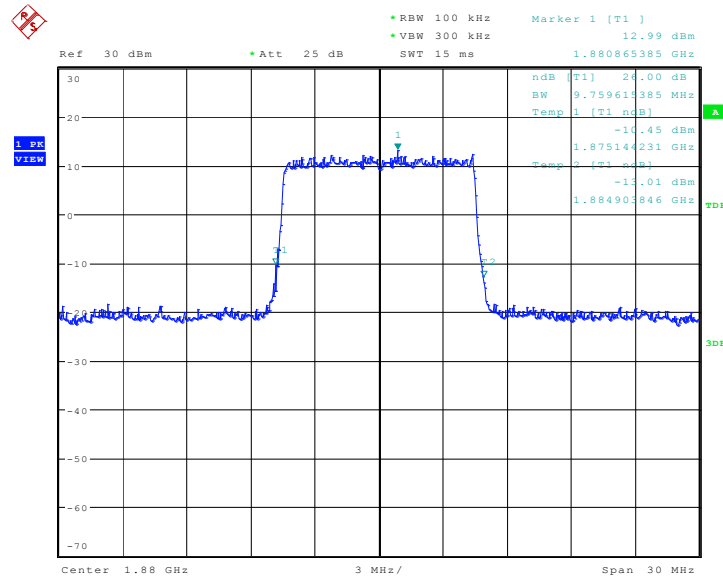
Date: 28.DEC.2016 09:44:02

LTE band 2, 10MHz Bandwidth, 16QAM (-26dBc BW)
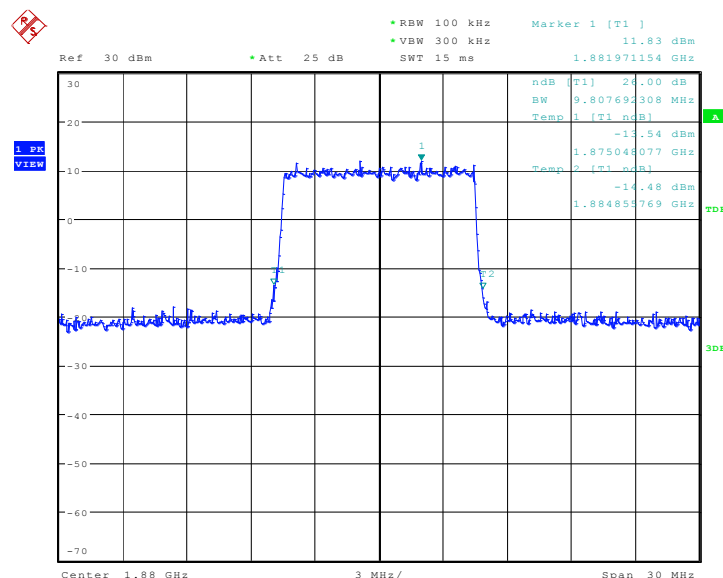
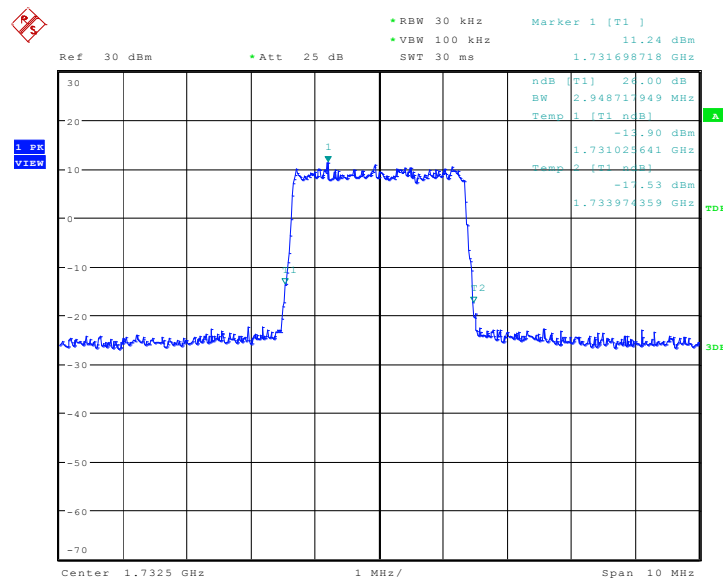Date: 28.DEC.2016 09:44:19

LTE band 2, 15MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
	QPSK	16QAM
1880.0		
	14711.54	14783.65

LTE band 2, 15MHz Bandwidth, QPSK (-26dBc BW)
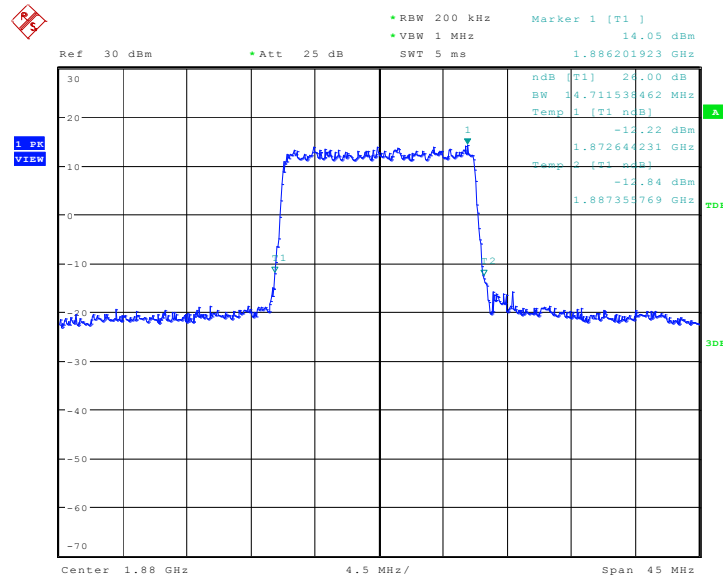
Date: 28.DEC.2016 09:49:50

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

Date: 28.DEC.2016 09:50:07

LTE band 2, 20MHz (-26dBc)

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

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

Date: 28.DEC.2016 09:55:44

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

Date: 28.DEC.2016 09:56:01

LTE band 4, 1.4MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
	QPSK	16QAM
1732.5	1282.05	1266.03

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

Date: 28.DEC.2016 10:01:30

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

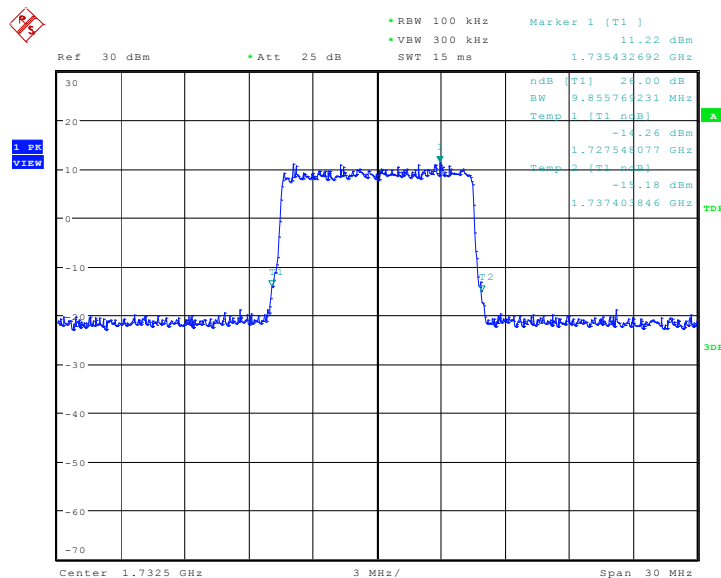

Date: 28.DEC.2016 10:01:47

LTE band 4, 3MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
	QPSK	16QAM
1732.5	2948.72	2948.72

LTE band 4, 3MHz Bandwidth, QPSK (-26dBc BW)
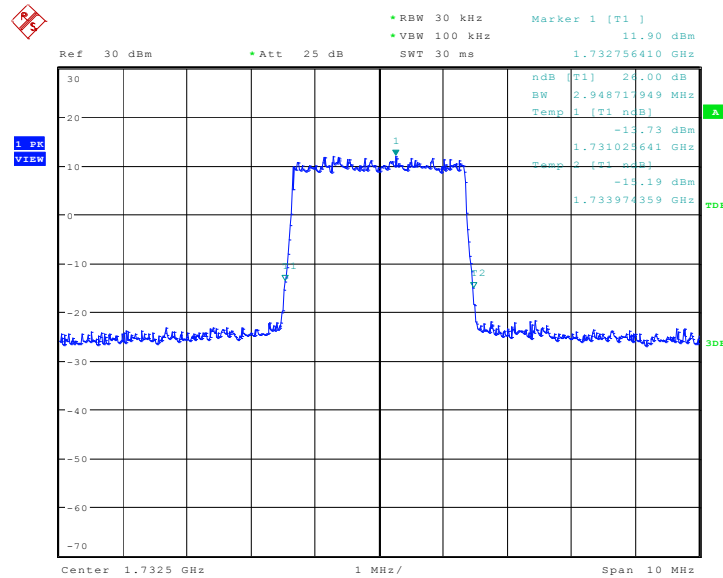
Date: 28.DEC.2016 10:07:12
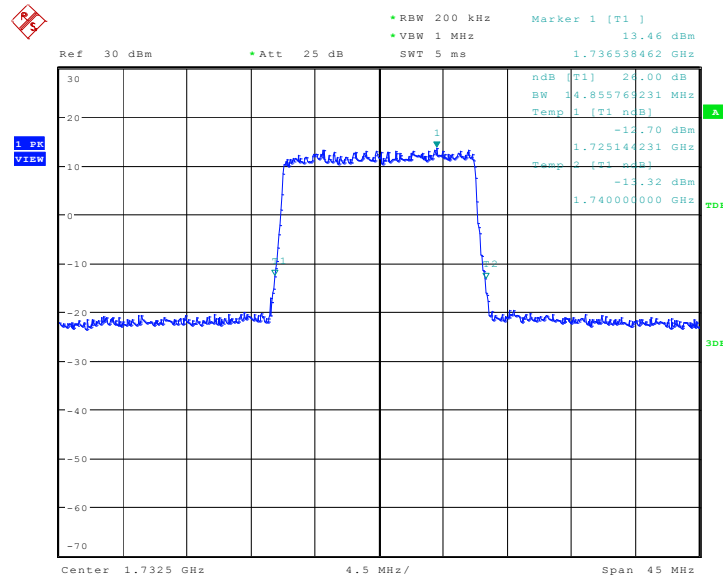
LTE band 4, 3MHz Bandwidth, 16QAM (-26dBc BW)

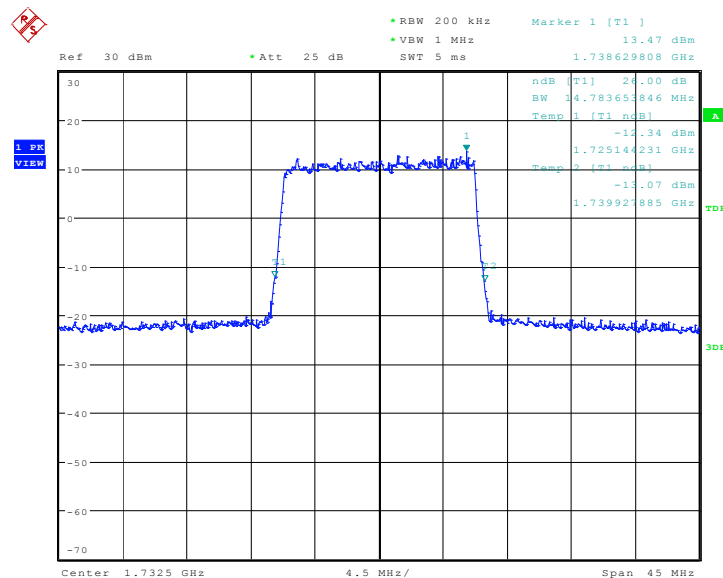Date: 28.DEC.2016 10:07:29

LTE band 4, 5MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
	QPSK	16QAM
1732.5	4975.96	5000.00

LTE band 4, 5MHz Bandwidth, QPSK (-26dBc BW)
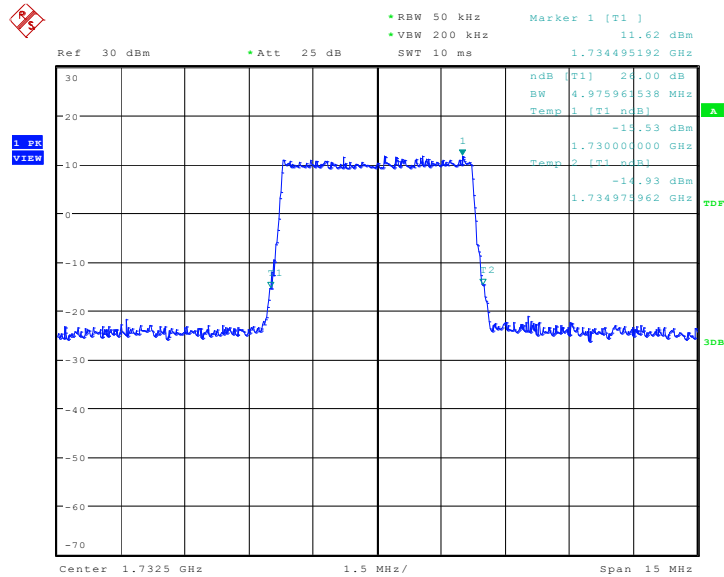
Date: 28.DEC.2016 10:12:55

LTE band 4, 5MHz Bandwidth,16QAM (-26dBc BW)
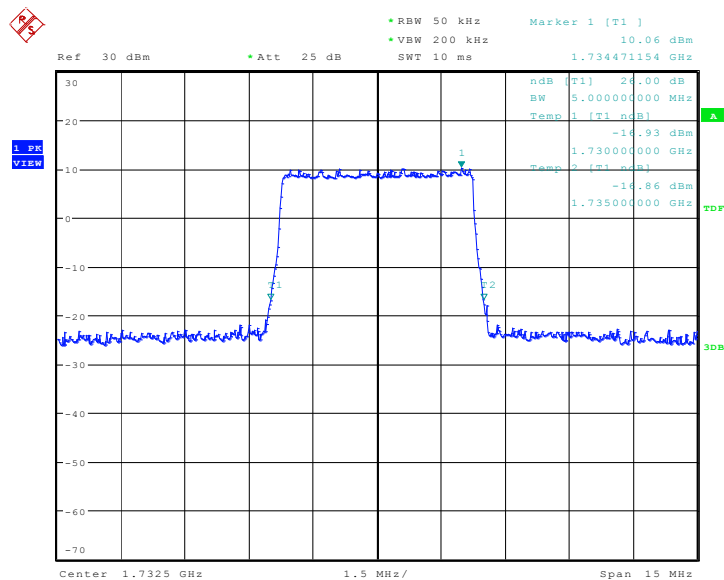
Date: 28.DEC.2016 10:13:12

LTE band 4, 10MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
	QPSK	16QAM
1732.5	9807.69	9855.77

LTE band 4, 10MHz Bandwidth, QPSK (-26dBc BW)
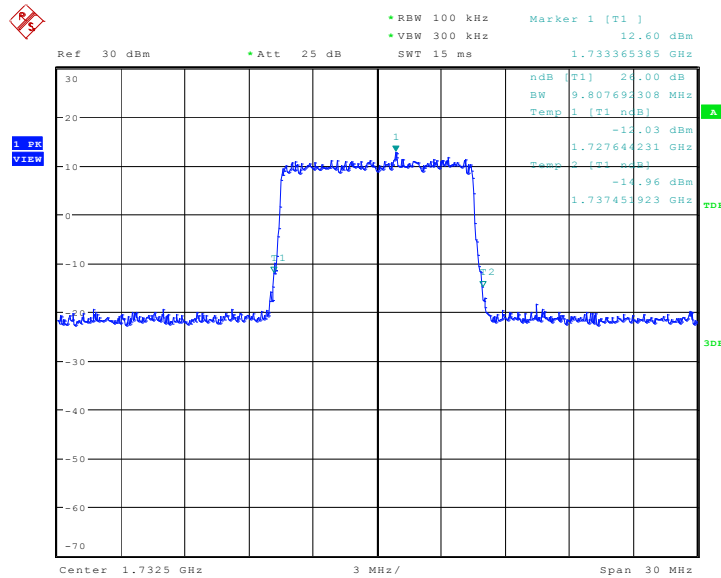
Date: 28.DEC.2016 10:18:37
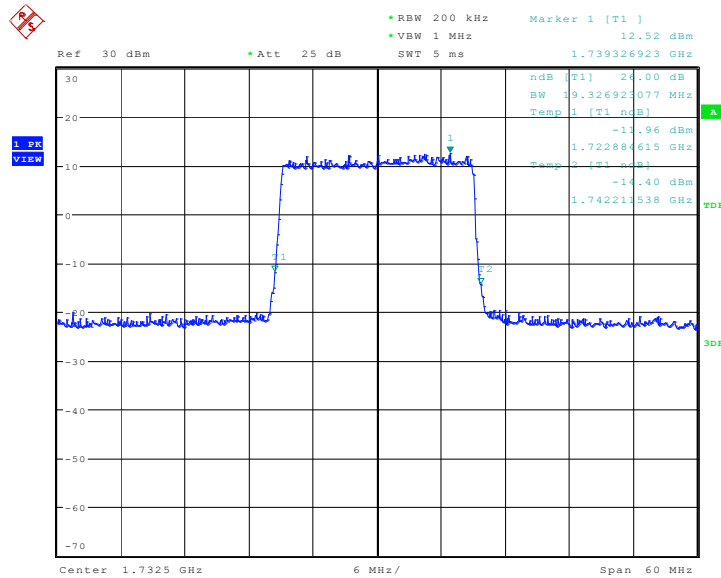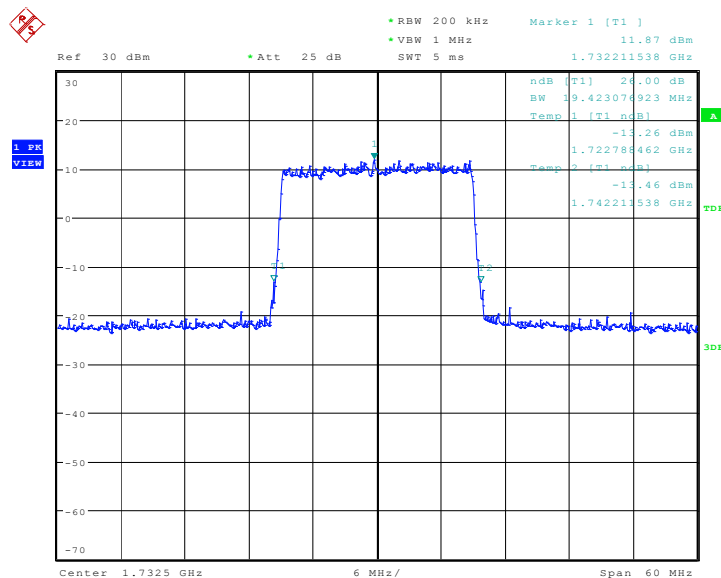
LTE band 4, 10MHz Bandwidth, 16QAM (-26dBc BW)

Date: 28.DEC.2016 10:18:54

LTE band 4, 15MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
	QPSK	16QAM
1732.5	14855.77	14783.65

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

Date: 28.DEC.2016 10:24:25

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

Date: 28.DEC.2016 10:24:42

LTE band 4, 20MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
	QPSK	16QAM
1732.5	19326.92	19423.08

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

Date: 28.DEC.2016 20:59:28

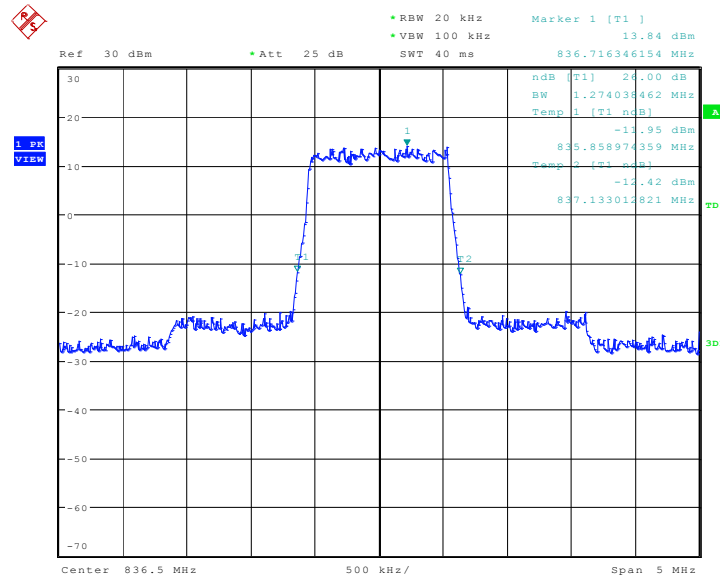**LTE band 4, 20MHz Bandwidth, 16QAM (-26dBc BW)**

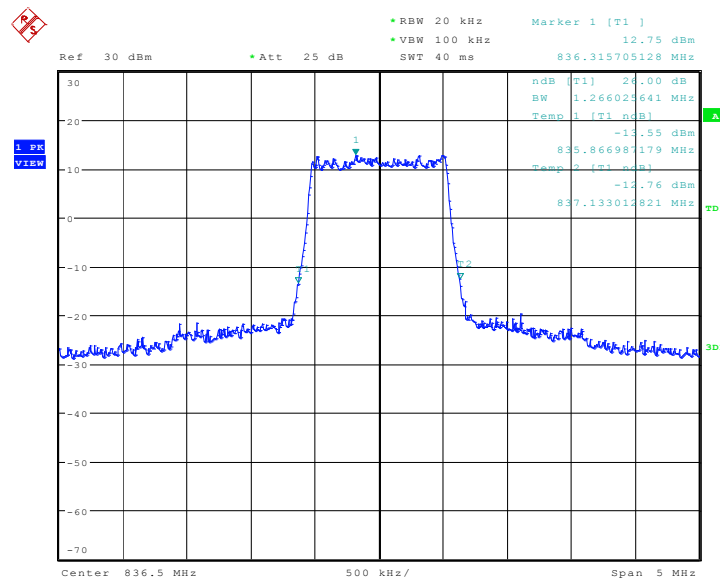Date: 28.DEC.2016 20:59:45

LTE band 5, 1.4MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
	QPSK	16QAM
836.5	1274.04	1258.01

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

Date: 28.DEC.2016 10:36:08

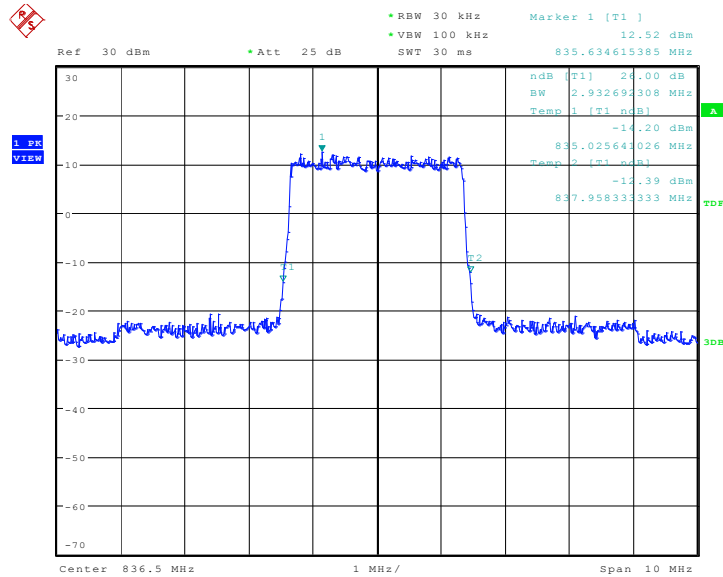**LTE band 5, 1.4MHz Bandwidth, 16QAM (-26dBc BW)**

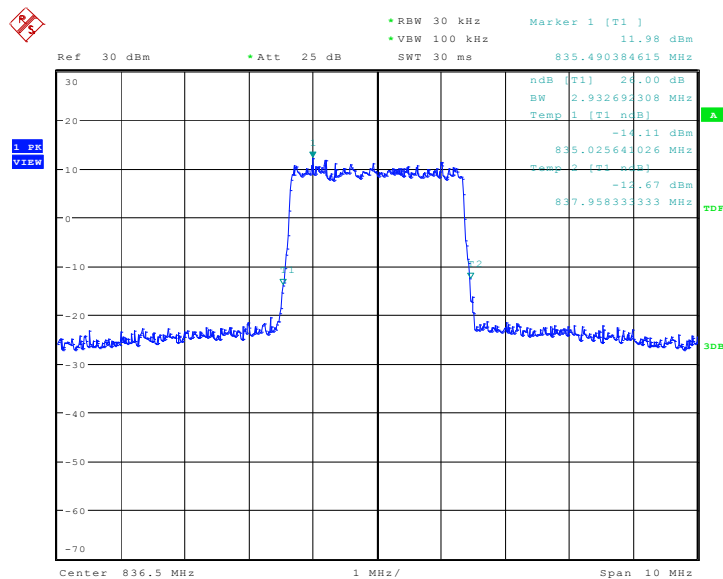
Date: 28.DEC.2016 10:36:25

LTE band 5, 3MHz (-26dBc)

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

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

Date: 28.DEC.2016 10:41:50
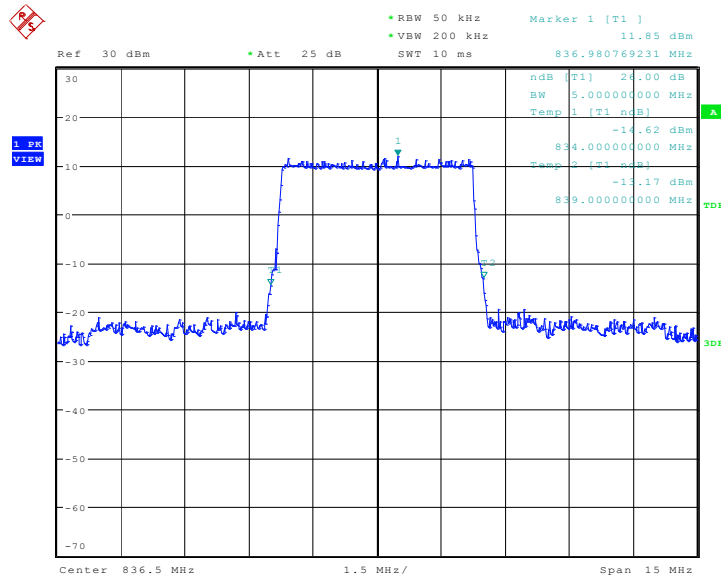
LTE band 5, 3MHz Bandwidth, 16QAM (-26dBc BW)

Date: 28.DEC.2016 10:42:07
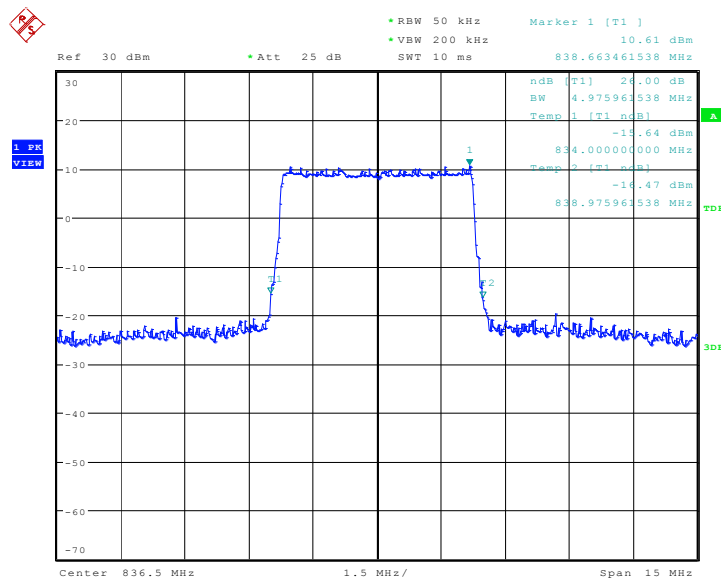
LTE band 5, 5MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
	QPSK	16QAM
836.5	5000.00	4951.92

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

Date: 28.DEC.2016 10:47:32
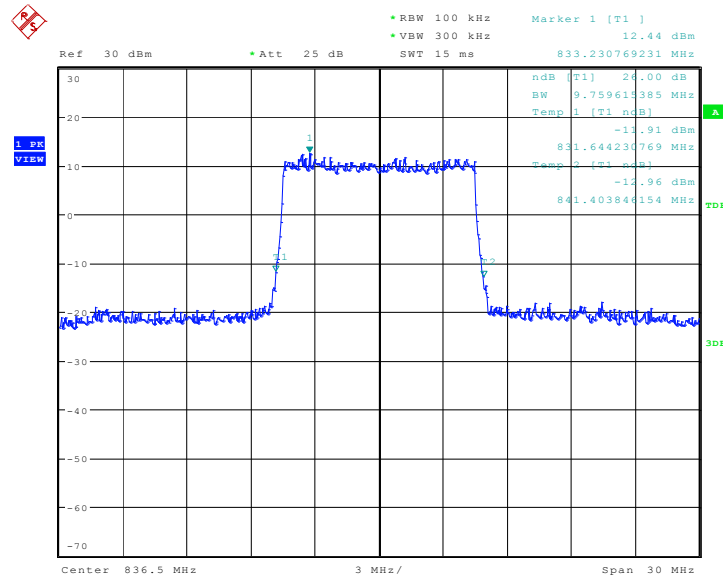
LTE band 5, 5MHz Bandwidth,16QAM (-26dBc BW)

Date: 28.DEC.2016 10:47:49
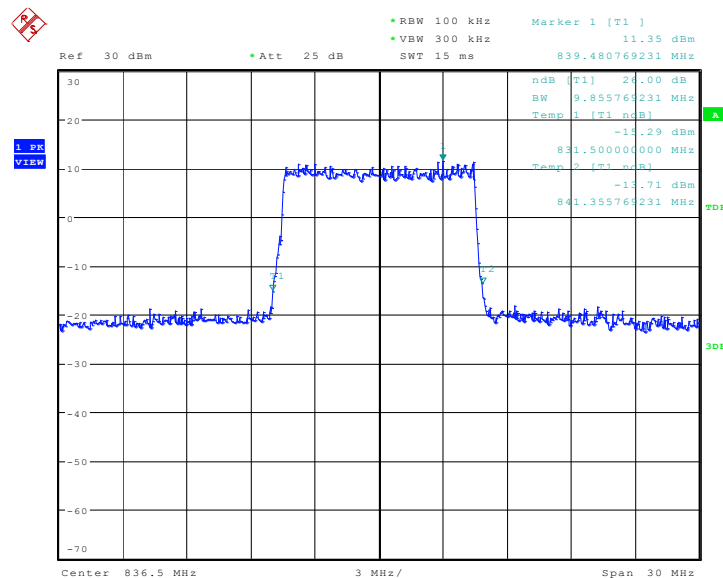
LTE band 5, 10MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
	QPSK	16QAM
836.5	9807.69	9807.69

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

Date: 28.DEC.2016 10:53:15

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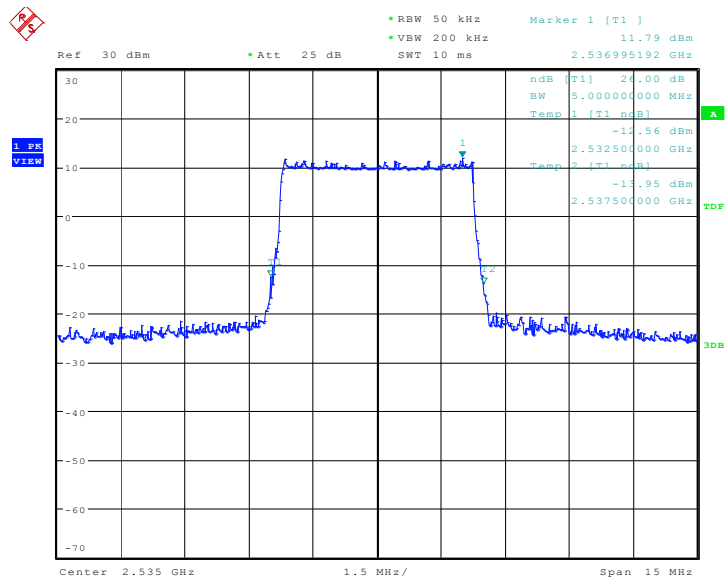

Date: 28.DEC.2016 10:53:32

LTE band 7, 5MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
2535.0	QPSK	16QAM
	5000.00	4975.96

LTE band 7, 5MHz Bandwidth, QPSK (-26dBc BW)

Date: 28.DEC.2016 04:59:57

LTE band 7, 5MHz Bandwidth,16QAM (-26dBc BW)

Date: 28.DEC.2016 05:00:14

LTE band 7, 10MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
2535.0	QPSK	16QAM
	9759.62	9807.69

LTE band 7, 10MHz Bandwidth, QPSK (-26dBc BW)

Date: 28.DEC.2016 05:05:39

LTE band 7, 10MHz Bandwidth, 16QAM (-26dBc BW)
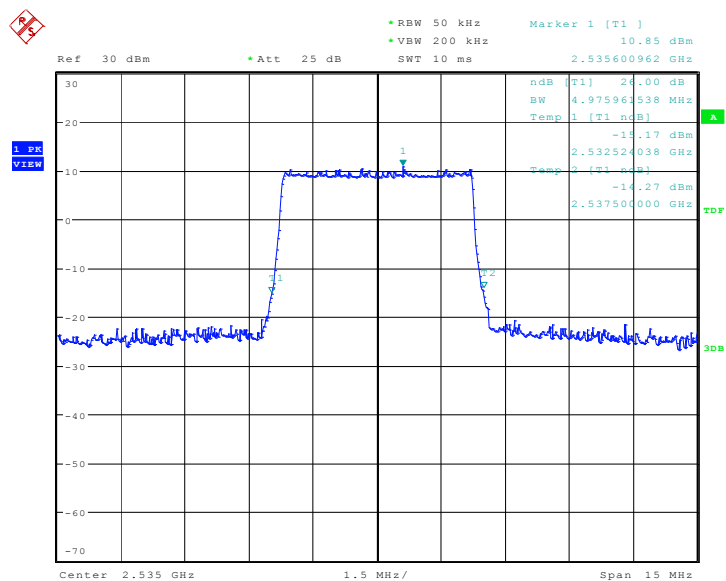

Date: 28.DEC.2016 05:05:56

LTE band 7, 15MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
	QPSK	16QAM
2535.0	14783.65	14855.77

LTE band 7, 15MHz Bandwidth, QPSK (-26dBc BW)

Date: 28.DEC.2016 05:11:27

LTE band 7, 15MHz Bandwidth, 16QAM (-26dBc BW)
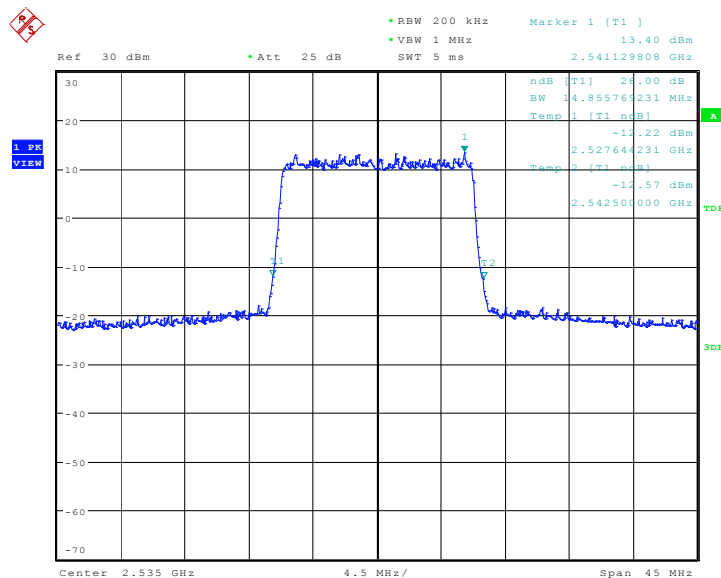
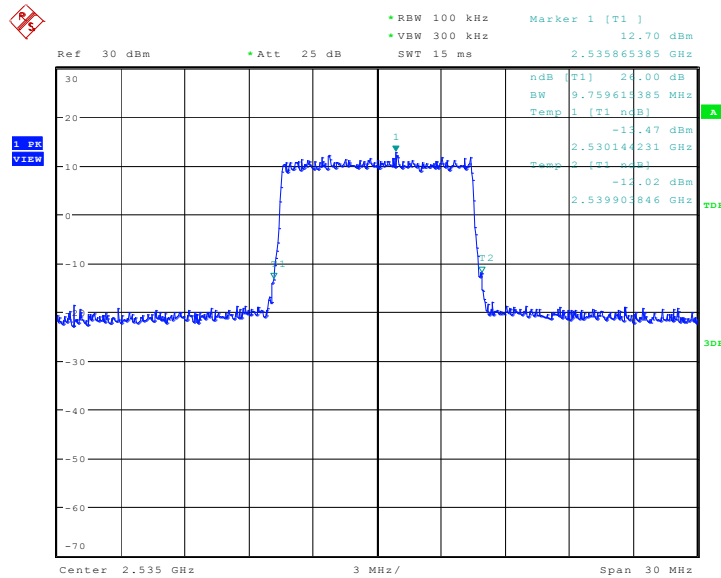
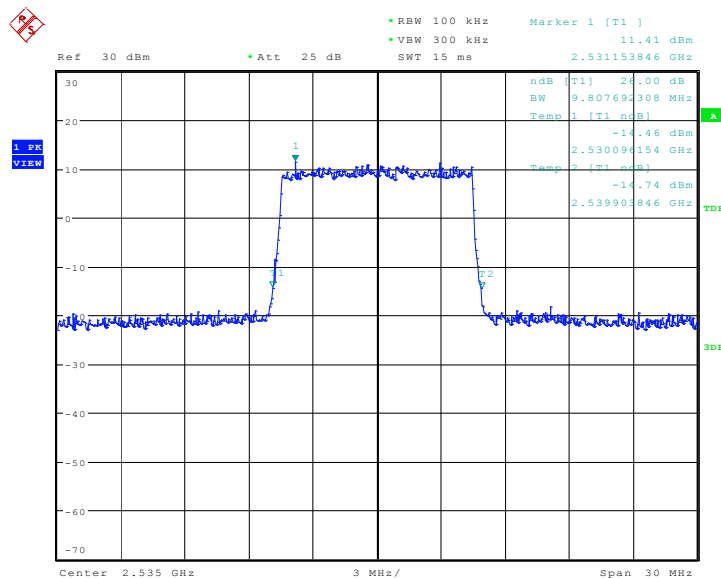
Date: 28.DEC.2016 05:11:45

LTE band 7, 20MHz (-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
	QPSK	16QAM
2535.0	19326.92	19230.77

LTE band 7, 20MHz Bandwidth, QPSK (-26dBc BW)

Date: 28.DEC.2016 05:17:21
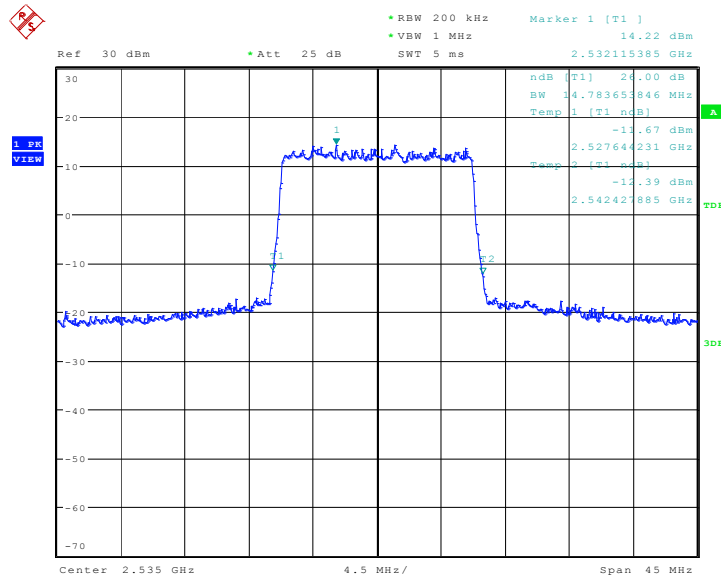
LTE band 7, 20MHz Bandwidth, 16QAM (-26dBc BW)
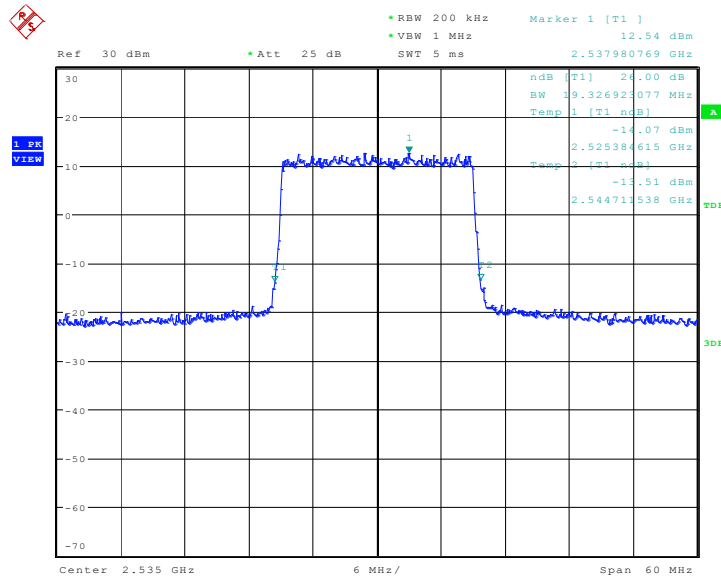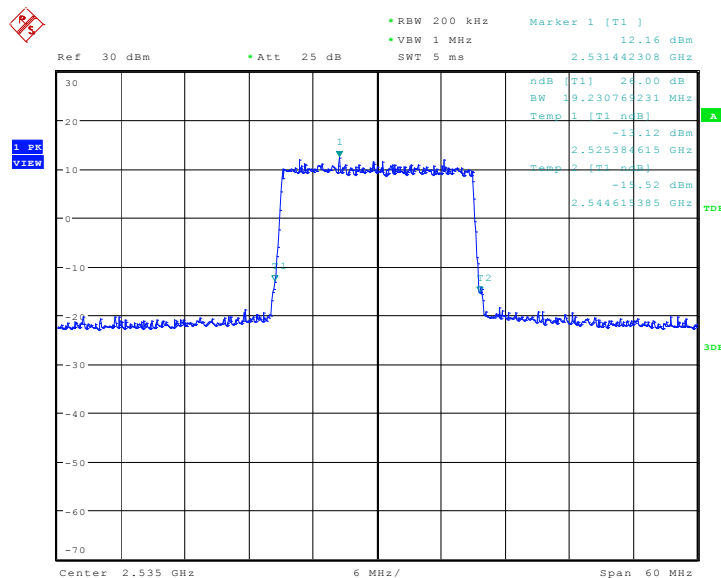

Date: 28.DEC.2016 05:17:38

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+10Log (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 that 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 onall frequencies between 2328 and 2337MHz; 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.5.2 Measurement result
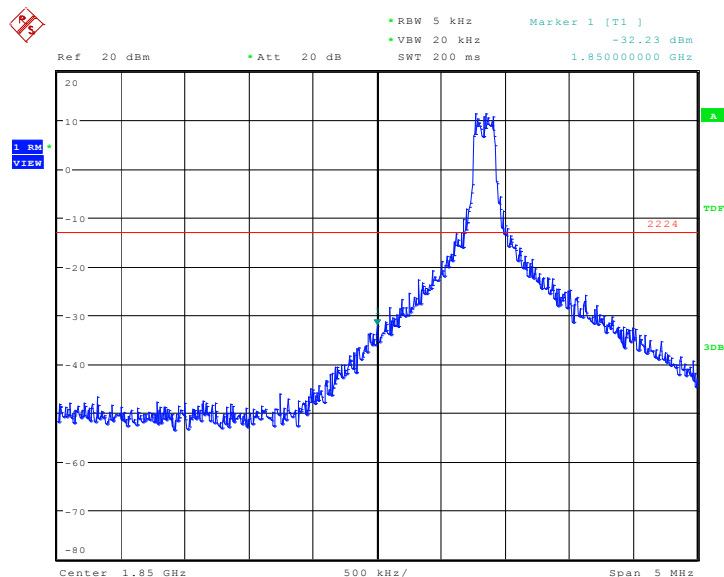
Only worst case result is given below

LTE band 2

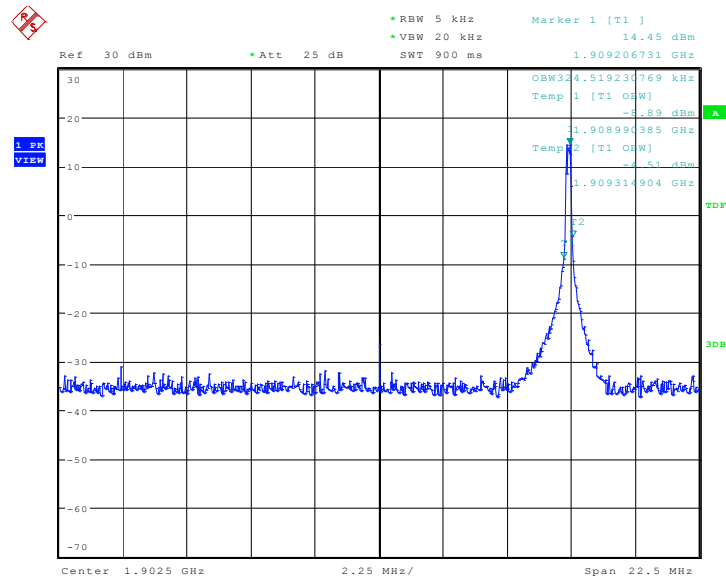**OBW: 1RB-low_offset**
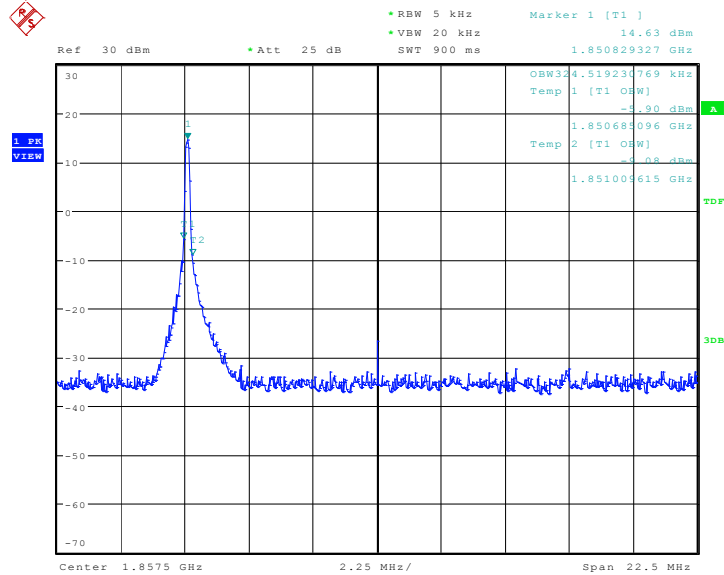
Date: 28.DEC.2016 03:38:19
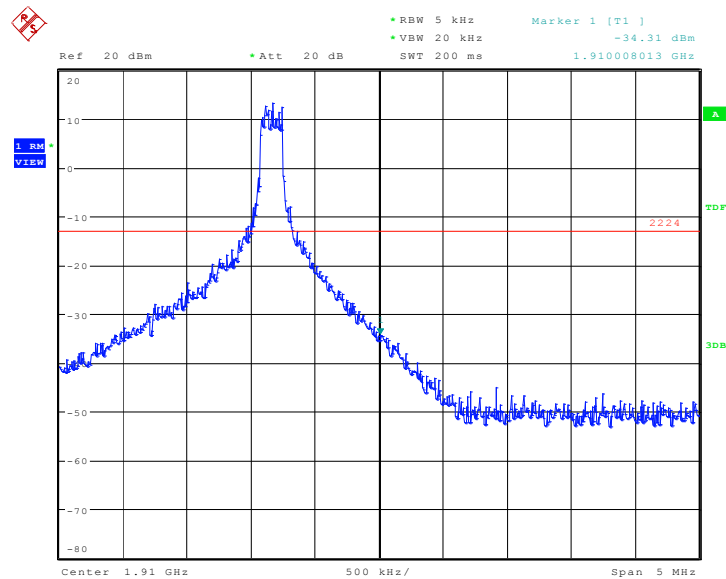
LOW BAND EDGE BLOCK-1RB-low_offset

Date: 28.DEC.2016 03:39:02

OBW: 1RB-high_offset

Date: 28.DEC.2016 03:53:11

HIGH BAND EDGE BLOCK-1RB-high_offset

Date: 28.DEC.2016 03:53:54

LOW BAND EDGE BLOCK-20MHz-100%RB

Date: 28.DEC.2016 03:23:50

HIGH BAND EDGE BLOCK-20MHz-100%RB

Date: 28.DEC.2016 03:24:36

LTE band 4
OBW: 1RB-low_offset

Date: 28.DEC.2016 03:39:56

LOW BAND EDGE BLOCK-1RB-low_offset
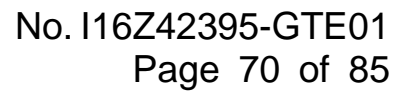

Date: 28.DEC.2016 03:40:39

OBW: 1RB-high_offset

Date: 28.DEC.2016 03:54:49

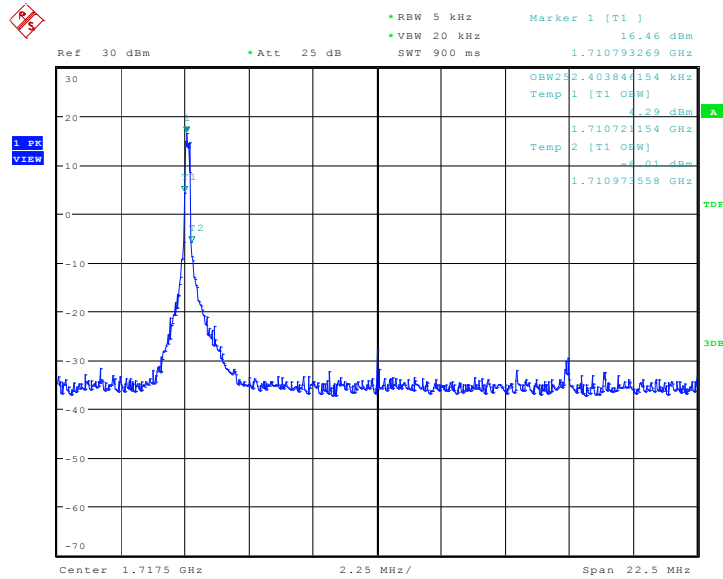**HIGH BAND EDGE BLOCK-1RB-high_offset**

Date: 28.DEC.2016 03:55:32

LOW BAND EDGE BLOCK-20MHz-100%RB

```
                                    • RBW  200 kHz      Marker 1 [T1 ]
                                    • VBW  1 MHz              -24.53 dBm
      Ref  20 dBm      • Att  20 dB   SWT 2.5 ms         1.709927885 GHz
```



```
   Center  1.71 GHz           500 kHz/              Span  5 MHz
```

Date: 28.DEC.2016 03:25:22

HIGH BAND EDGE BLOCK-20MHz-100%RB

```
                                    • RBW  200 kHz      Marker 1 [T1 ]
                                    • VBW  1 MHz              -23.45 dBm
      Ref  20 dBm      • Att  20 dB   SWT 2.5 ms         1.755000000 GHz
```



```
   Center  1.755 GHz          500 kHz/              Span  5 MHz
```
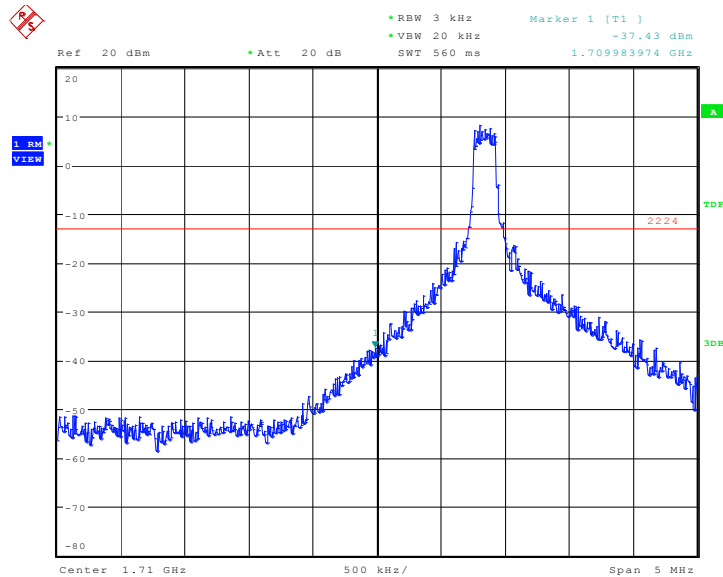
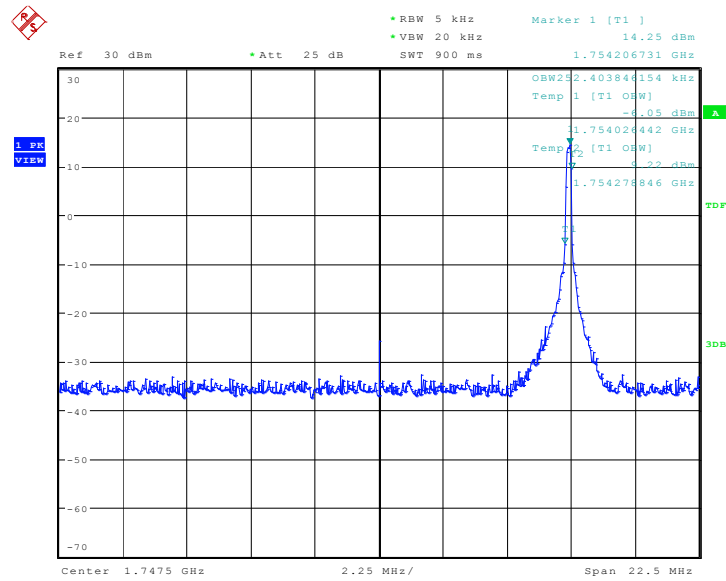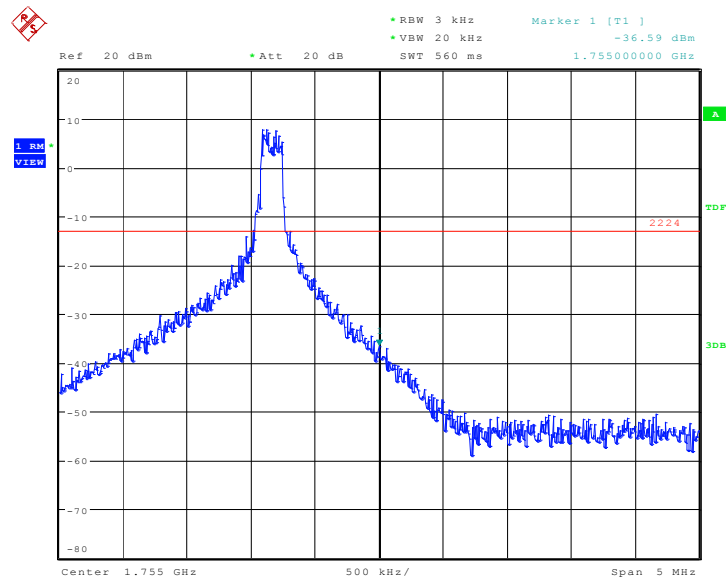Date: 28.DEC.2016 03:26:07

LTE band 5
OBW: 1RB-low_offset

Date: 28.DEC.2016 03:32:56

LOW BAND EDGE BLOCK-1RB-low_offset

Date: 28.DEC.2016 03:33:39
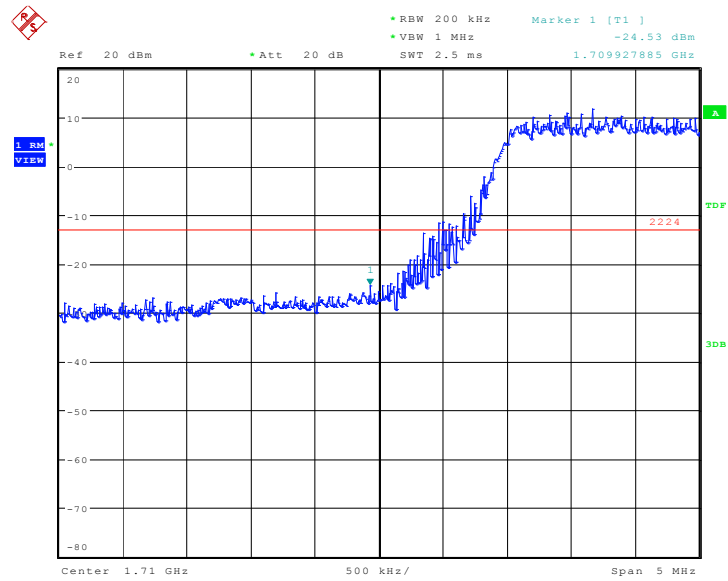
OBW: 1RB-high_offset

Date: 28.DEC.2016 03:49:23
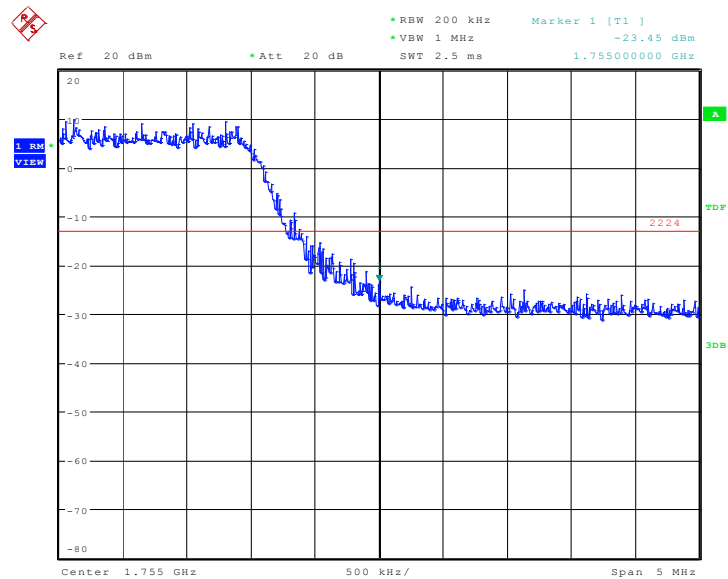
HIGH BAND EDGE BLOCK-1RB-high_offset
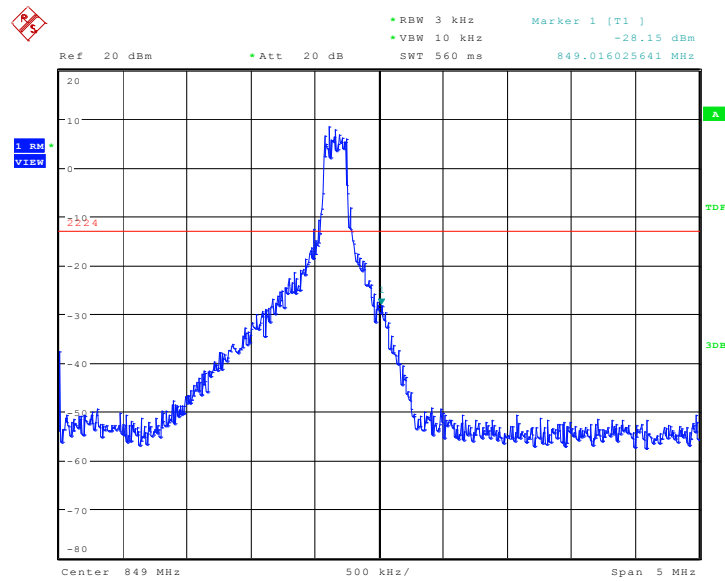
Date: 28.DEC.2016 03:50:07
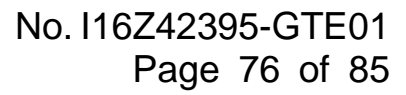
LOW BAND EDGE BLOCK-10MHz-100%RB

Date: 28.DEC.2016 03:29:00

HIGH BAND EDGE BLOCK-10MHz-100%RB

Date: 28.DEC.2016 03:29:45

LTE band 7
OBW: 1RB-low_offset
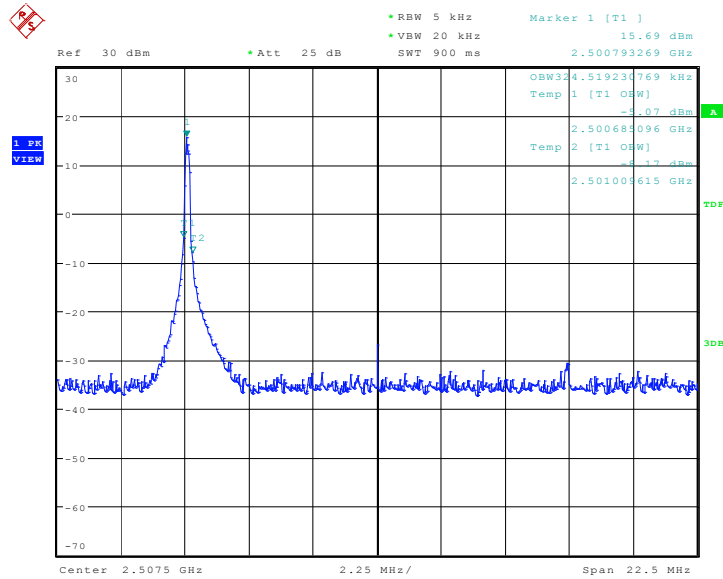
Date: 28.DEC.2016 03:36:41

LOW BAND EDGE BLOCK-1RB-low_offset
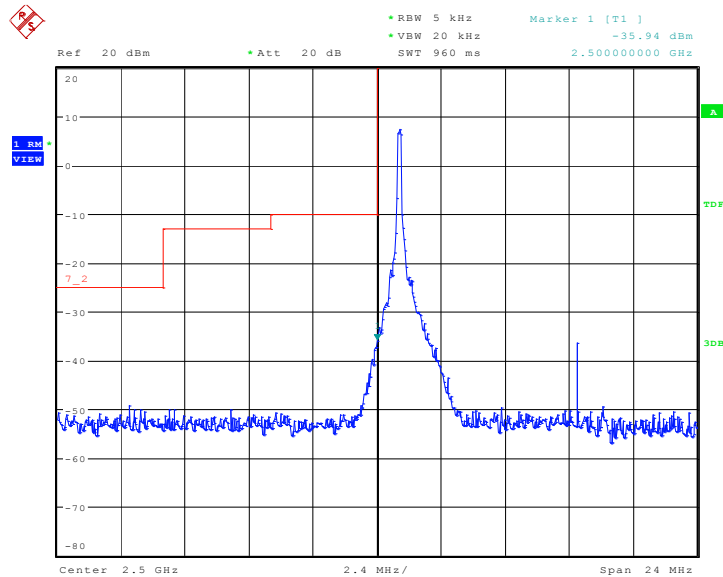
Date: 28.DEC.2016 03:37:24

OBW: 1RB-high_offset
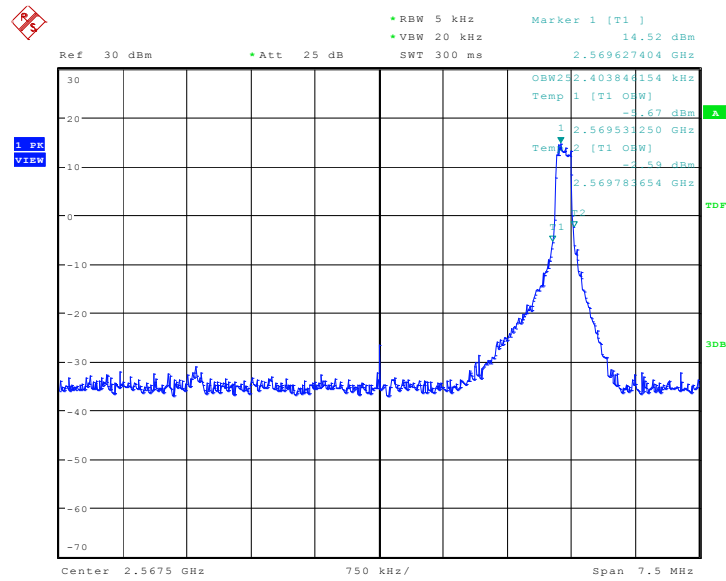
Date: 28.DEC.2016 03:47:46

HIGH BAND EDGE BLOCK-1RB-high_offset
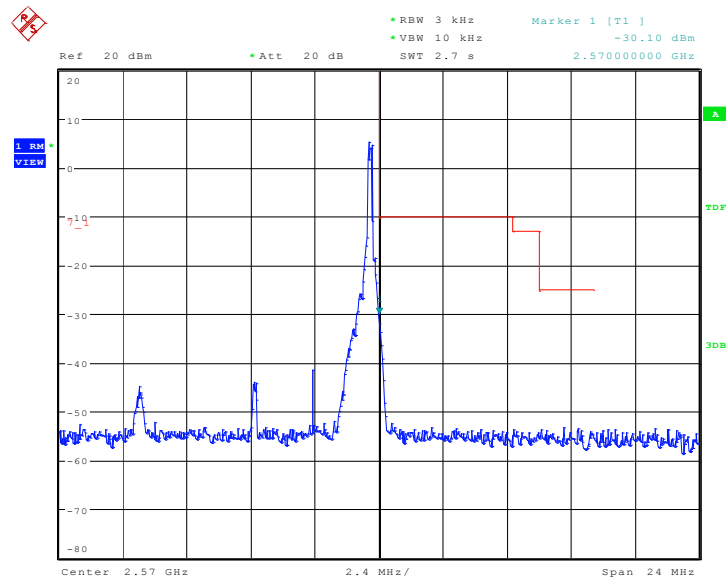
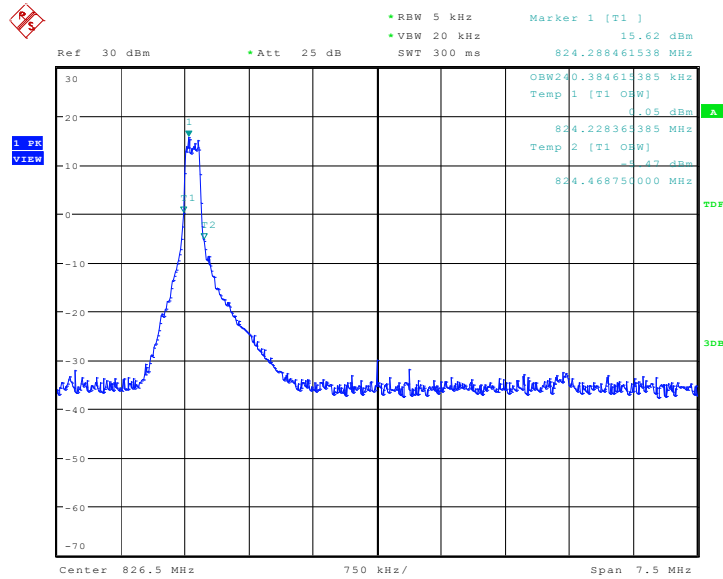Date: 29.DEC.2016 01:47:48

LOW BAND EDGE BLOCK-20MHz-100%RB
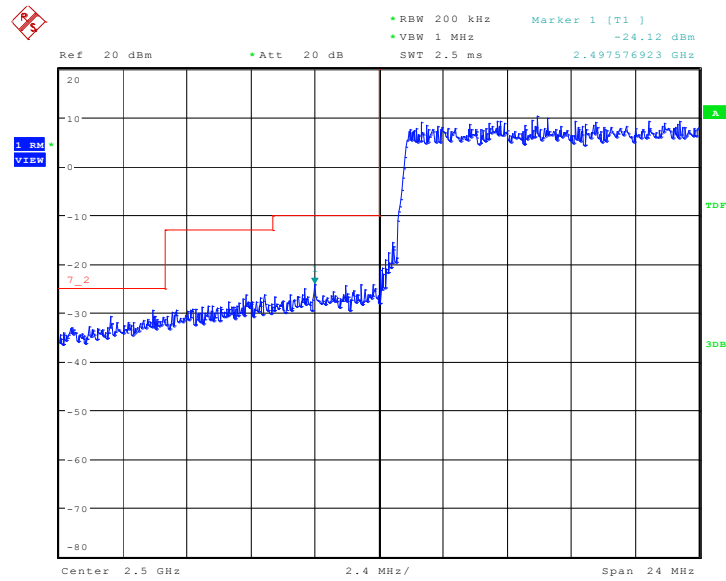
Date: 28.DEC.2016 03:22:19
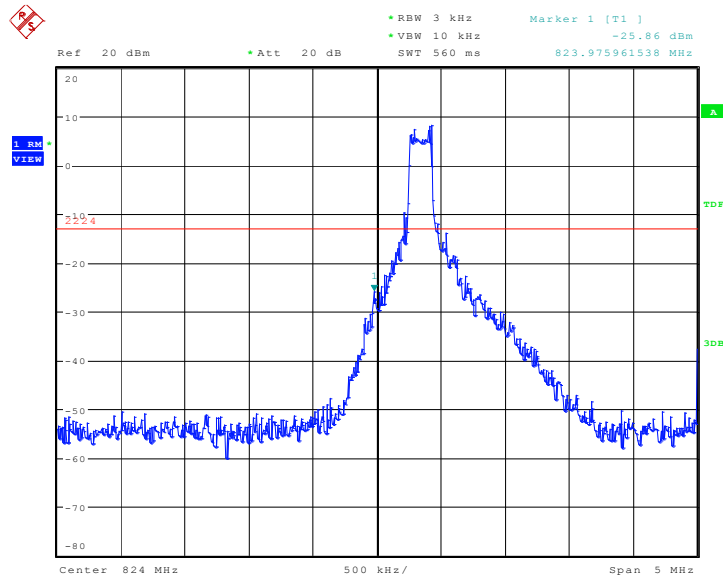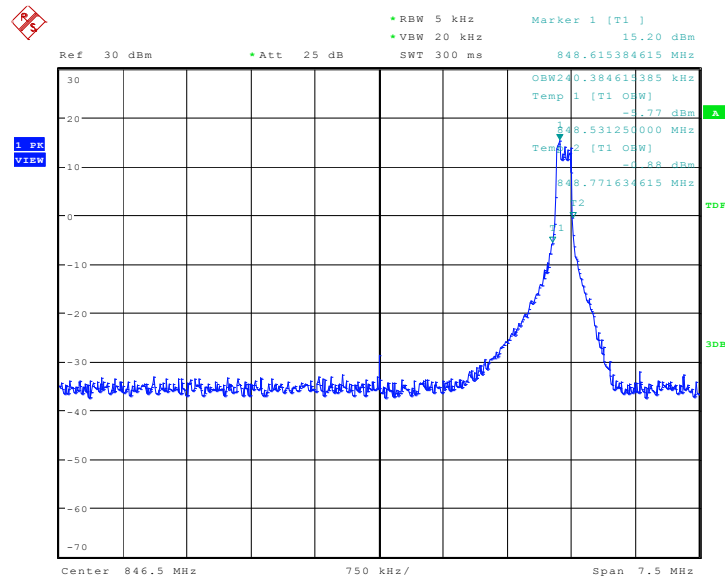
HIGH BAND EDGE BLOCK-20MHz-100%RB

Date: 28.DEC.2016 03:23:04

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.
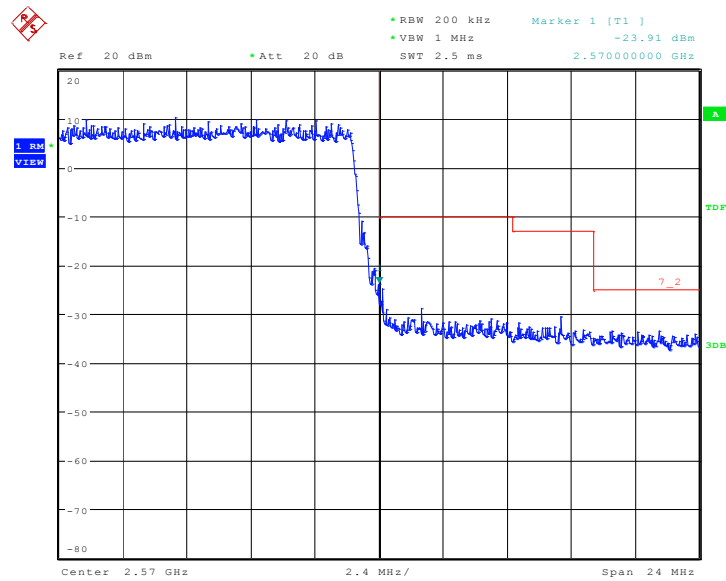2. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.
3. The number of sweep points of spectrum analyzer is set to 30001 which is greater than span/RBW.

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 that 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 onall frequencies between 2328 and 2337MHz;

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
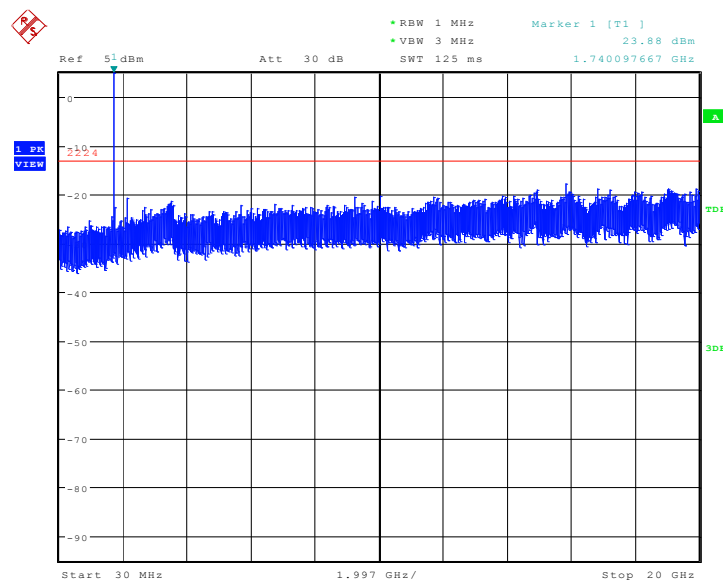
LTE band 2: 30MHz – 20GHz

Spurious emission limit –13dBm.
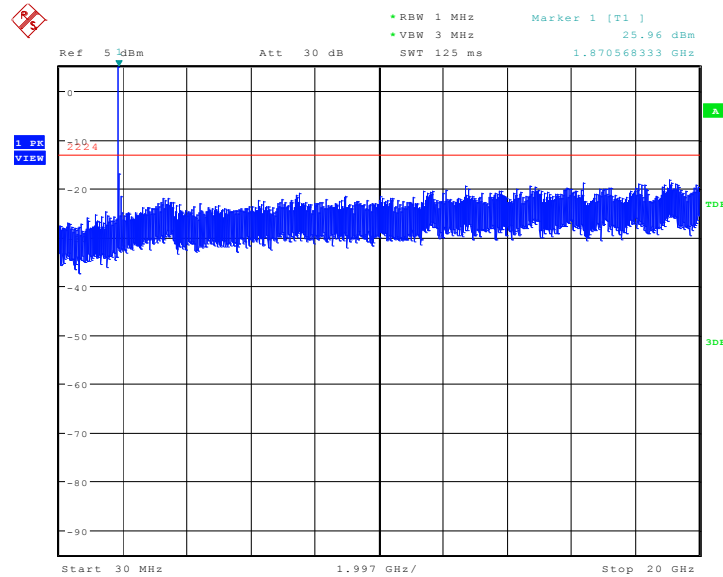
Date: 28.DEC.2016 04:06:48

LTE band 4: 30MHz – 20GHz
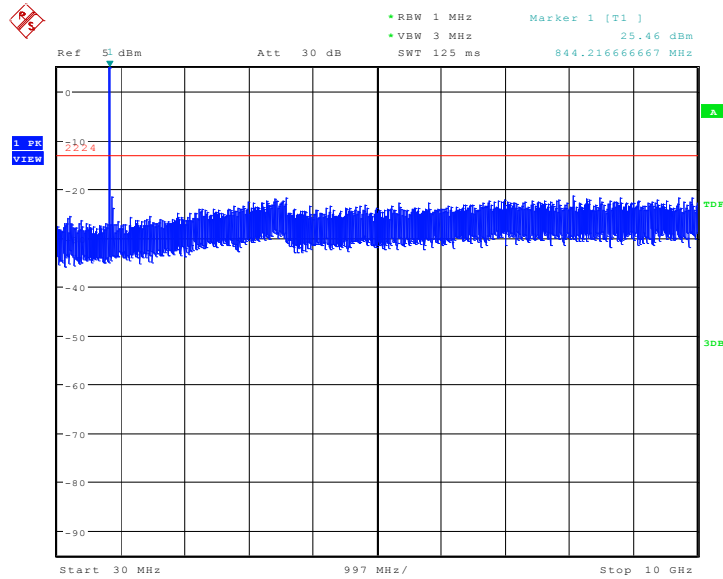
Spurious emission limit –13dBm.

Date: 28.DEC.2016 04:10:47

LTE band 5: 30MHz – 10GHz

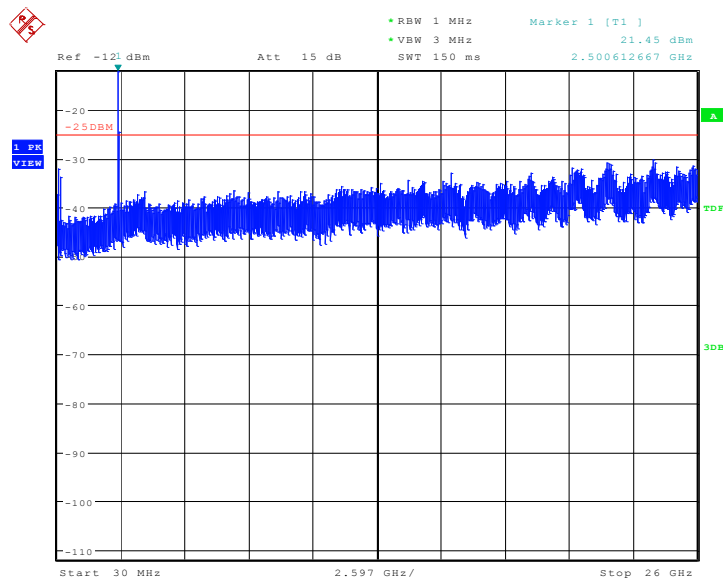Spurious emission limit –13dBm.

Date: 28.DEC.2016 04:04:51

LTE band 7: 30MHz – 26GHz

Spurious emission limit –13dBm.

Date: 29.DEC.2016 01:40:04

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 v02r02 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 ≥ 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
	6.92	7.34

LTE band 4, 20MHz

Frequency(MHz)	PAPR(dB)	
1745.0	QPSK	16QAM
	6.86	7.34

LTE band 7, 20MHz

Frequency(MHz)	PAPR(dB)	
2510.0	QPSK	16QAM
	6.96	7.44

China National Accreditation Service for Conformity Assessment

LABORATORY ACCREDITATION CERTIFICATE
(Registration No. CNAS L0570)

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The scope of accreditation is detailed in the attached schedule bearing the same registration number as above. The schedule form an integral part of this certificate.

Date of Issue: 2015-11-13

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Date of Initial Accreditation: 1998-07-03

Signed on behalf of China National Accreditation Service for Conformity Assessment

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END OF REPORT