TEST REPORT

No. 2013TAR262

for

Sony Mobile Communications (China) Co. Ltd

GSM/WCDMA/LTE Mobile Phone

Type: PM-0390-BV

FCC ID: PY7PM-0390

IC No.: 4170B-PM0390

with

Hardware Version: A

Software Version: 12.0.A.1.69

Issued Date: May 23rd, 2013

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 TMC Beijing.

Test Laboratory:

DAkks accreditation (DIN EN ISO/IEC 17025): No. 12123-01-01

FCC 2.948 Listed: No.733176

IC O.A.T.S listed: No.6629B-1

TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology

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CONTENTS

1. TEST LABORATORY 3

1.1. TESTING LOCATION 3

1.2. TESTING ENVIRONMENT 3

1.3. PROJECT DATA 3

1.4. SIGNATURE 3

2. CLIENT INFORMATION 4

2.1. APPLICANT INFORMATION 4

2.2. MANUFACTURER INFORMATION 4

3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE) 5

3.1. ABOUT EUT 5

3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST 5

3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST 6

3.4. GENERAL DESCRIPTION 6

3.5. EUT SET-UPS 6

4. REFERENCE DOCUMENTS 7

4.1. REFERENCE DOCUMENTS FOR TESTING 7

5. LABORATORY ENVIRONMENT 8

6. SUMMARY OF TEST RESULTS 9

6.1. SUMMARY OF TEST RESULTS 9

6.2. STATEMENTS 10

7. TEST EQUIPMENTS UTILIZED 11

ANNEX A: MEASUREMENT RESULTS 12

A.1 OUTPUT POWER 12
A.2 EMISSION LIMT 23
A.3 CONDUCTED EMISSION 31
A.4 FREQUENCY STABILITY 35
A.5 OCCUPIED BANDWIDTH 38
A.6 EMISSION BANDWIDTH 72
A.7 BAND EDGE COMPLIANCE 89
A.8 CONDUCTED SPURIOUS EMISSION 122
A.9 RECEIVER RADIATION EMISSION 139

ANNEX B: TEST LAYOUT 141

ANNEX C: EUT PHOTOGRAPH 142

1. Test Laboratory

1.1. Testing Location

Company Name:	TMC Beijing, Telecommunication Metrology Center of MIIT
Address:	No 52, Huayuan Bei Road, Haidian District, Beijing, P.R.China
Postal Code:	100191
Telephone:	+86-10-62304633-2561
Fax:	+86-10-62304633-2504

1.2. Testing Environment

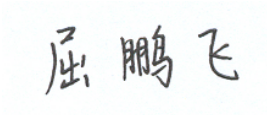
Normal Temperature:	15-35℃
Relative Humidity:	20-75%
Air pressure	980 - 1040 hPa

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

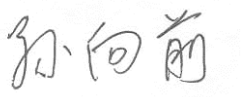
Receipt of Sample	Mar 14th, 2013
Testing Start Date:	Mar 16th, 2013
Testing End Date:	Mar 24th, 2013

1.4. Signature



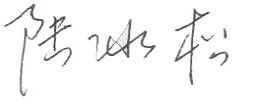
Qu Pengfei

(Prepared this test report)



Sun Xiangqian

(Reviewed this test report)



Song Chongwen

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	Sony Mobile Communications (China) Co. Ltd
Address /Post:	Sony Mobile R&D Center, No. 16, Guangshun South Street, Chaoyang District
City:	Beijing
Postal Code:	100102
Country:	China
Contact Person:	Ma, Gang
Telephone:	+86-10-58656312
Fax:	+86-10-58659049

2.2. Manufacturer Information

Company Name:	Sony Mobile Communications (China) Co. Ltd
Address /Post:	Sony Mobile R&D Center, No. 16, Guangshun South Street, Chaoyang District
City:	Beijing
Postal Code:	100102
Country:	China
Contact Person:	Ma, Gang
Telephone:	+86-10-58656312
Fax:	+86-10-58659049

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

3.1. About EUT

Description	GSM 850/900/1800/1900, GPRS, EDGE, WCDMA FDD Band 1/2/5/8, HSDPA, HSUPA, LTE FDD Band 1/2/4/5 Bluetooth EDR & BLE, WLAN (802.11 a/b/g/n), FM, NFC, GPS receiver mobile phone
Type	PM-0390-BV
IC No.	4170B-PM0390
FCC ID	PY7PM-0390
Frequency range	GSM 850: 824.2 MHz - 848.8 MHz PCS 1900: 1850.2 MHz -1909.8 MHz WCDMA 850:824 MHz - 849 MHz WCDMA 1900:1850 MHz -1910 MHz LTE Band 2: 1850MHz-1910MHz LTE Band 4: 1710MHz-1755MHz LTE Band 5: 824MHz-849MHz
Antenna	Internal
Power supply	Battery, which is charged by the charger (travel adapter / vehicle adapter) attached to the phone
Output power	25.62 dBm maximum EIRP measured for LTE Band 2 23.88 dBm maximum EIRP measured for LTE Band 4 21.42 dBm maximum ERP measured for LTE Band 5
Extreme vol. Limits	3.5VDC to 4.1VDC (nominal: 3.7VDC)
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 Telecommunication Metrology Center of MIIT of People's Republic of China.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN	IMEI	HW Version	SW Version
EUT1	CB5123JXUE	004402450783935	A	12.0.A.1.69
EUT2	CB5123JXYQ	004402450783836	A	12.0.A.1.69

*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	Revision
#22972	Travel Charger	8512W19100199	1
#22533	USB Cable	121607D20003CD2	SP1

#23498

Type	EP880
Manufacturer	SALCOMP
Length of cable	/

#23812

Commercial name	EC801
Type	AI-0401
Manufacturer	Sony Mobile
Length of cable	96.5cm

*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/UMTS/LTE Mobile Phone with integrated antenna and inbuilt Li-Polymer battery.

The EUT supports GSM 850/900/1800/1900MHz bands, WCDMA FDD bands 1/2/5/8 and LTE FDD bands 1/2/4/5. It also supports GPRS service with multi-slots class 33 and EGPRS service with multi-slots class 33 too. The HSDPA and HSUPA features are also supported.

It has MP3, camera, FM radio, USB memory, GPS receiver, NFC, Mobile High-Definition Link (MHL), Bluetooth (EDR and Bluetooth 4.0), WLAN (802.11 a/b/g/n) and Wi-Fi hotspot functions.

It consists of normal option: travel charger.

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the client.

3.5. EUT set-ups

EUT Set-up No.	Combination of EUT and AE	Remarks
Set. 1	EUT1+ #22972+ #22533	Tests with travel charger
Set. 2	EUT1	ERP/EIRP/RSE tests
Set. 3	EUT2	Conducted RF tests

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	10-1-12 Edition
FCC Part 22	PUBLIC MOBILE SERVICES	10-1-12 Edition
FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	10-1-12 Edition
ANSI/TIA-603-C	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2004
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	2003
RSS-139	Advanced Wireless Services Equipment Operating in the Bands 1710-1755 MHz and 2110-2155 MHz	Issue2
RSS-132	Cellular Telephones Employing New Technologies Operating in the Bands 824-849 MHz and 869-894 MHz	Issue3
RSS-133	2 GHz Personal Communications Services	Issue6

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber SAC-2 (10 meters×6.7meters×6.1meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 30 ℃
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 1Ω
Normalised site attenuation (NSA)	< ±3.5 dB, 3m distance, from 30 to 1000 MHz
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

Fully-anechoic chamber FAC-3 (9 meters×6.5 meters×4 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 30 ℃
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 1 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80 to 4000 MHz
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz

Control room/ conducted chamber did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. =20 %, Max. = 80 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω

6. SUMMARY OF TEST RESULTS

6.1. Summary of test results

Abbreviations used in this clause:

P	Pass
NA	Not applicable
F	Fail

LTE Band II

Items	Test Name	Clause in FCC rules	Clause in IC rules	Section in this report	Verdict
1	Output Power	24.232(b)	6.4	A.1	P
2	Emission Limit	24.238, 2.1051	6.5	A.2	P
3	Conducted Emission	15.107/207	/	A.3	P
4	Frequency Stability	24.235, 2.1055	6.3	A.4	P
5	Occupied Bandwidth	2.1049(h)(i)	6.5	A.5	P
6	Emission Bandwidth	24.238(b)	6.5	A.6	P
7	Band Edge Compliance	24.238(b)	6.5	A.7	P
8	Conducted Spurious Emission	24.238, 2.1057	6.5	A.8	P

LTE Band IV

Items	Test Name	Clause in FCC rules	Clause in IC rules	Section in this report	Verdict
1	Output Power	27.50(d)(4)	6.4	A.1	P
2	Emission Limit	27.53(h), 2.1051	6.5	A.2	P
3	Conducted Emission	15.107/15.207	/	A.3	P
4	Frequency Stability	27.54, 2.1055	6.3	A.4	P
5	Occupied Bandwidth	2.1049(h)(i)	6.5	A.5	P
6	Emission Bandwidth	27.53(h)	6.5	A.6	P
7	Band Edge Compliance	27.53(h)	6.5	A.7	P
8	Conducted Spurious Emission	27.53(h), 2.1057	6.5	A.8	P

LTE Band V

Items	Test Name	Clause in FCC rules	Clause in IC rules	Section in this report	Verdict
1	Output Power	22.913(a)	6.4	A.1	P
2	Emission Limit	22.917, 2.1051	6.5	A.2	P
3	Conducted Emission	15.107/207	/	A.3	P
4	Frequency Stability	22.355, 2.1055	6.3	A.4	P
5	Occupied Bandwidth	2.1049(h)(i)	6.5	A.5	P
6	Emission Bandwidth	22.917(b)	6.5	A.6	P
7	Band Edge Compliance	22.917(b)	6.5	A.7	P
8	Conducted Spurious Emission	22.917, 2.1057	6.5	A.8	P

6.2. Statements

The test cases listed in section 6.1 of this report for the EUT specified in section 3 were performed by TMC 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
1	Test Receiver	ESCI	100344	R&S	2013-03-28
3	Test Receiver	ESU26	100376	R&S	2013-11-07
4	EMI Antenna	VULB 9163	514	Schwarzbeck	2014-11-10
5	EMI Antenna	3117	00139065	ETS-Lindgren	2014-07-31
6	LISN	ESH2-Z5	829991/012	R&S	2013-04-16
7	Universal Radio Communication Tester	E5515C	MY48361083	Agilent	2014-03-16
8	Spectrum Analyzer	E4440A	MY48250642	Agilent	2014-03-04
9	EMI Antenna	9117	177	Schwarzbeck	2014-06-29
10	EMI Antenna	VULB 9163	482	Schwarzbeck	2014-02-17
11	EMI Antenna	3117	00119024	ETS-Lindgren	2014-02-02
12	EMI Antenna	3117	00058889	ETS-Lindgren	2014-02-02
13	Signal Generator	N5183A	MY49060052	Agilent	2014-03-19
14	Climatic chamber	PL-2G	343074	ESPEC	2013-05-12
15	Universal Radio Communication Tester	CMW500	116588	R&S	2013-11-06

ANNEX A: MEASUREMENT RESULTS

A.1 OUTPUT POWER

Reference

FCC: CFR Part 22.913(a), 24.232(b), 27.50(d)(4).

IC: RSS-132 Issue 3, Section 4.4. RSS-133 Issue 6, Section 6.4,RSS-139 Issue 2, Section 6.4.

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.

This result contains peak output power and ERP/EIRP measurements for the EUT.

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.

The power was measured with spectrum analyzer's peak detector.

These measurements were done at 3 frequencies (bottom, middle and top of operational frequency range) for each bandwidth.

LTE band 2

Measurement result

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)	
			QPSK	16QAM
1.4MHz	1 RB high	1909.3	22.60	21.65
		1880	22.64	21.72
		1850.7	22.78	21.88
	1 RB low	1909.3	22.56	21.66
		18900	22.61	21.85
		1850.7	22.71	21.84
	50% RB mid	1909.3	22.42	21.41
		1880	22.54	21.53
		1850.7	22.63	21.57
	100% RB	1909.3	21.58	20.40
		1880	21.59	20.47
		1850.7	21.61	20.55
3MHz	1 RB high	1908.5	22.58	21.69
		1880	22.60	21.74
		1851.5	22.68	21.76
	1 RB low	1908.5	22.56	21.64
		1880	22.54	21.66
		1851.5	22.70	21.73

	50% RB mid	1908.5	21.53	20.50
		1880	21.60	20.58
		1851.5	21.62	20.85
	100% RB	1908.5	21.49	20.63
		1880	21.61	20.68
		1851.5	21.73	20.85
5MHz	1 RB high	1907.5	22.49	21.60
		1880	22.61	21.62
		1852.5	22.82	21.81
	1 RB low	1907.5	22.49	21.68
		1880	22.55	21.64
		1852.5	22.55	21.59
	50% RB mid	1907.5	21.57	20.62
		1880	21.65	20.71
		1852.5	21.67	20.81
	100% RB	1907.5	21.55	20.61
		1880	21.64	20.65
		1852.5	21.73	20.79
10MHz	1 RB high	1905	22.54	21.67
		1880	22.63	21.72
		1855	22.56	21.80
	1 RB low	1905	22.51	21.68
		1880	22.52	21.59
		1855	22.67	21.67
	50% RB mid	1905	21.63	20.71
		1880	21.65	20.67
		1855	21.82	20.76
	100% RB	1905	21.59	20.63
		1880	21.62	20.70
		1855	21.80	20.63
15MHz	1 RB high	1902.5	22.50	21.53
		1880	22.50	21.67
		1857.5	22.84	21.94
	1 RB low	1902.5	22.57	21.69
		1880	22.49	21.69
		1857.5	22.66	21.60
	50% RB mid	1902.5	21.69	20.80
		1880	21.72	20.61
		1857.5	21.80	20.85

	100% RB	1902.5	21.62	20.66
		1880	21.61	20.61
		1857.5	21.70	20.87
20MHz	1 RB high	1900	22.57	21.72
		1880	22.66	21.65
		1860	22.73	21.95
	1 RB low	1900	22.57	21.62
		1880	22.59	21.66
		1860	22.69	21.66
	50% RB mid	1900	21.71	20.64
		1880	21.70	20.66
		1860	21.71	20.69
	100% RB	1900	21.70	20.68
		1880	21.61	20.64
		1860	21.76	20.71

. **LTE band 4**

Measurement result

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
1.4MHz	1 RB high	1754.3	23.37	22.00
		1732.5	23.72	22.83
		1710.7	23.30	22.48
	1 RB low	1754.3	23.29	21.92
		1732.5	23.71	22.82
		1710.7	23.33	22.50
	50% RB mid	1754.3	23.39	22.31
		1732.5	23.63	22.53
		1710.7	23.25	22.43
	100% RB	1754.3	22.41	21.24
		1732.5	22.65	21.52
		1710.7	22.24	21.45
3MHz	1 RB high	1753.5	23.39	22.62
		1732.5	23.61	22.79
		1711.5	23.32	22.48
	1 RB low	1753.5	23.37	22.58
		1732.5	23.71	22.77

		1711.5	23.27	22.40
	50% RB mid	1753.5	22.28	21.19
		1732.5	22.54	21.54
		1711.5	22.27	21.19
	100% RB	1753.5	22.24	21.32
		1732.5	22.55	21.56
		1711.5	22.20	21.33
5MHz	1 RB high	1752.5	23.32	22.54
		1732.5	23.70	22.80
		1712.5	23.34	22.45
	1 RB low	1752.5	23.50	22.58
		1732.5	23.68	22.74
		1712.5	23.29	22.41
	50% RB mid	1752.5	22.32	21.41
		1732.5	22.53	21.62
		1712.5	22.23	21.25
	100% RB	1752.5	22.18	21.19
		1732.5	22.46	21.43
		1712.5	22.09	21.19
10MHz	1 RB high	1750	23.38	22.58
		1732.5	23.69	22.67
		1715	23.28	22.50
	1 RB low	1750	23.31	22.41
		1732.5	23.62	22.76
		1715	23.26	22.36
	50% RB mid	1750	22.27	21.33
		1732.5	22.42	21.45
		1715	22.11	21.20
	100% RB	1750	22.17	21.12
		1732.5	22.37	21.32
		1715	22.05	21.01
15MHz	1 RB high	1747.5	23.40	22.55
		1732.5	23.44	22.61
		1717.5	23.36	22.48
	1 RB low	1747.5	23.35	22.46
		1732.5	23.29	22.48
		1717.5	23.27	22.44
	50% RB mid	1747.5	22.16	21.41
		1732.5	22.32	21.58

		1717.5	22.07	21.23
	100% RB	1747.5	22.07	21.12
		1732.5	22.30	21.36
		1717.5	22.05	21.08
20MHz	1 RB high	1745	23.39	22.53
		1732.5	23.45	22.62
		1720	23.73	22.84
	1 RB low	1745	23.59	22.66
		1732.5	23.17	22.26
		1720	23.18	22.35
	50% RB mid	1745	22.12	21.08
		1732.5	22.30	21.36
		1720	22.01	21.01
	100% RB	1745	22.19	21.13
		1732.5	22.29	21.23
		1720	22.09	21.06

LTE band 5
Measurement result

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
1.4MHz	1 RB high	848.3	23.28	21.91
		836.5	23.50	22.60
		824.7	23.19	22.41
	1 RB low	848.3	23.39	21.95
		836.5	23.64	22.72
		824.7	23.30	22.42
	50% RB mid	848.3	23.41	22.37
		836.5	23.50	22.66
		824.7	23.24	22.32
	100% RB	848.3	22.38	21.30
		836.5	22.54	21.66
		824.7	22.22	21.34
3MHz	1 RB high	847.5	23.33	22.45
		836.5	23.30	21.95
		825.5	23.38	22.52
	1 RB low	847.5	23.30	22.18
		836.5	23.44	22.03

		825.5	23.25	22.39
	50% RB mid	847.5	22.36	21.44
		836.5	22.37	21.34
		825.5	22.10	21.10
	100% RB	847.5	22.27	21.37
		836.5	22.38	21.42
		825.5	22.10	21.22
5MHz	1 RB high	846.5	23.34	22.71
		836.5	23.49	22.62
		826.5	23.44	22.52
	1 RB low	846.5	23.36	22.58
		836.5	23.45	22.48
		826.5	23.35	22.37
	50% RB mid	846.5	22.28	21.35
		836.5	22.43	21.44
		826.5	22.21	21.34
	100% RB	846.5	22.25	21.34
		836.5	22.40	21.33
		826.5	22.10	21.19
10MHz	1 RB high	844	23.45	22.54
		836.5	23.41	22.47
		829	23.49	22.63
	1 RB low	844	23.30	22.39
		836.5	23.47	22.58
		829	23.15	22.23
	50% RB mid	844	22.19	21.22
		836.5	22.35	21.37
		829	22.22	21.31
	100% RB	844	22.22	21.23
		836.5	22.32	21.33
		829	22.15	21.15

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

A.1.3 Radiated

A.1.3.1 Description

This is the test for the maximum radiated power from the EUT.

Rule Part 22.913(a) specifies ”Maximum ERP. The effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts. The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.”

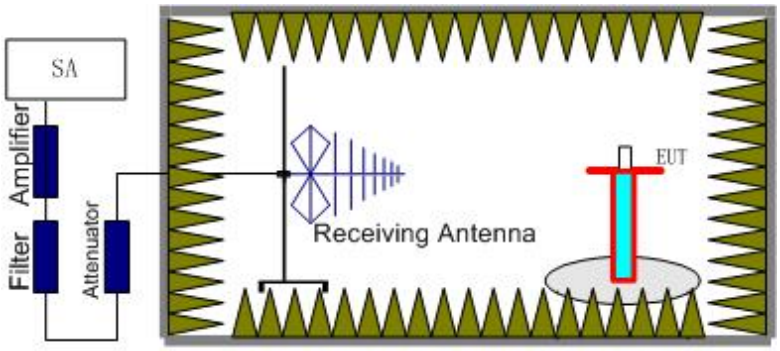
Rule Part 24.232(b) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power" and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."

Rule Part 27.50(d) specifies “Fixed, mobile, and portable (handheld) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP”.

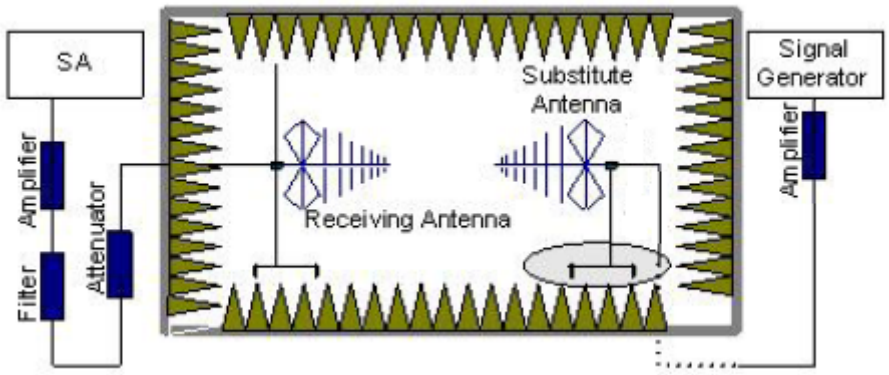
A.1.3.2 Method of Measurement

The measurements procedures in TIA-603C-2004 are used.

1. EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.



2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).
3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



In the chamber, a substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna. Adjust the level of the signal generator output until the value of the receiver reaches the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

4. An amplifier should be connected to the Signal Source output port. And the cable should be connected between the amplifier and the substitution antenna.
   The cable loss (P_{cl}), the substitution antenna Gain (G_a) and the amplifier Gain (P_{Ag}) should be recorded after test.
   The measurement results are obtained as described below:
   Power (EIRP) = P_{Mea} - P_{Ag} - P_{cl} - G_a
5. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15.

For test layout photo, please refer to Pic.1 in Annex B.

LTE Band II- EIRP 24.232(b)

Limits: ≤33dBm (2W)

Measurement result

LTE Band II_1.4MHz

Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	Pag (dB)	Antenna Gain(dBi)	RMS EIRP(dBm)	Polarization
1850.70	-25.76	3.18	-50.00	-4.56	25.62	Horizontal
1880.00	-26.10	3.11	-50.00	-4.43	25.22	Horizontal
1909.30	-26.06	3.18	-50.00	-4.30	25.06	Horizontal

LTE Band II_3MHz

Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	Pag (dB)	Antenna Gain(dBi)	RMS EIRP(dBm)	Polarization
1851.50	-27.03	3.18	-50.00	-4.55	24.34	Horizontal
1880.00	-26.61	3.11	-50.00	-4.43	24.71	Horizontal
1908.50	-25.57	3.18	-50.00	-4.30	25.55	Horizontal

LTE Band II_5MHz

Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	Pag (dB)	Antenna Gain(dBi)	RMS EIRP(dBm)	Polarization
1852.50	-27.25	3.18	-50.00	-4.55	24.12	Horizontal
1880.00	-26.76	3.11	-50.00	-4.43	24.56	Horizontal
1907.50	-25.79	3.18	-50.00	-4.31	25.34	Horizontal

LTE Band II_10MHz

Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	Pag (dB)	Antenna Gain(dBi)	RMS EIRP(dBm)	Polarization
1855.00	-27.91	3.16	-50.00	-4.54	23.47	Horizontal
1880.00	-27.28	3.11	-50.00	-4.43	24.04	Horizontal
1905.00	-26.17	3.17	-50.00	-4.32	24.98	Horizontal

LTE Band II_15MHz

Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	Pag (dB)	Antenna Gain(dBi)	RMS EIRP(dBm)	Polarization
1857.50	-28.85	3.15	-50.00	-4.53	22.53	Horizontal
1880.00	-28.55	3.11	-50.00	-4.43	22.77	Horizontal
1902.50	-26.94	3.16	-50.00	-4.33	24.23	Horizontal

LTE Band II_20MHz

Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	Pag (dB)	Antenna Gain(dBi)	RMS EIRP(dBm)	Polarization
1860.00	-29.96	3.14	-50.00	-4.52	21.42	Horizontal
1880.00	-29.49	3.11	-50.00	-4.43	21.83	Horizontal
1900.00	-28.21	3.16	-50.00	-4.34	22.97	Horizontal

LTE Band IV- EIRP 27.50(d)

Limits: ≤30dBm (1W)

Measurement result

LTE Band IV_1.4MHz

Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	Pag (dB)	Antenna Gain(dBi)	RMS EIRP(dBm)	Polarization
1710.70	-32.11	2.96	-50.00	-5.17	20.10	Horizontal
1732.50	-29.46	2.99	-50.00	-5.08	22.63	Horizontal
1754.30	-28.09	3.01	-50.00	-4.98	23.88	Horizontal

LTE Band IV_3MHz

Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	Pag (dB)	Antenna Gain(dBi)	RMS EIRP(dBm)	Polarization
1711.50	-32.20	2.96	-50.00	-5.17	20.01	Horizontal
1732.50	-29.58	2.99	-50.00	-5.08	22.51	Horizontal
1753.50	-28.21	3.01	-50.00	-4.98	23.76	Horizontal

LTE Band IV_5MHz

Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	Pag (dB)	Antenna Gain(dBi)	RMS EIRP(dBm)	Polarization
1712.50	-32.65	2.97	-50.00	-5.17	19.55	Horizontal
1732.50	-29.43	2.99	-50.00	-5.08	22.66	Horizontal
1752.50	-28.61	3.01	-50.00	-4.99	23.37	Horizontal

LTE Band IV_10MHz

Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	Pag (dB)	Antenna Gain(dBi)	RMS EIRP(dBm)	Polarization
1715.00	-32.87	2.97	-50.00	-5.15	19.31	Horizontal
1732.50	-30.41	2.99	-50.00	-5.08	21.68	Horizontal
1750.50	-29.77	3.01	-50.00	-5.00	22.22	Horizontal

LTE Band IV_15MHz

Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	Pag (dB)	Antenna Gain(dBi)	RMS EIRP(dBm)	Polarization
1717.50	-33.13	2.97	-50.00	-5.14	19.04	Horizontal
1732.50	-31.22	2.99	-50.00	-5.08	20.87	Horizontal
1747.50	-30.93	3.00	-50.00	-5.01	21.08	Horizontal

LTE Band IV_20MHz

Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	Pag (dB)	Antenna Gain(dBi)	RMS EIRP(dBm)	Polarization
1720.00	-33.26	2.97	-50.00	-5.13	18.90	Horizontal
1732.50	-31.99	2.99	-50.00	-5.08	20.10	Horizontal
1745.00	-32.21	3.00	-50.00	-5.02	19.81	Horizontal

LTE Band V- ERP 22.913(a)

Limits: ≤38.45dBm (7W)

Measurement result

LTE Band V_1.4MHz

Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	Pag (dB)	Antenna Gain(dBi)	Correction(dB)	RMS ERP(dBm)	Polarization
824.70	-23.52	2.07	-50.00	0.84	2.15	21.42	Horizontal
836.50	-25.06	2.08	-50.00	0.90	2.15	19.81	Horizontal
848.30	-25.90	2.09	-50.00	0.95	2.15	18.91	Horizontal

LTE Band V_3MHz

Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	Pag (dB)	Antenna Gain(dBi)	Correction(dB)	RMS ERP(dBm)	Polarization
825.50	-23.75	2.07	-50.00	0.85	2.15	21.18	Horizontal
836.50	-25.28	2.08	-50.00	0.90	2.15	19.59	Horizontal
847.50	-25.96	2.09	-50.00	0.94	2.15	18.86	Horizontal

LTE Band V_5MHz

Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	Pag (dB)	Antenna Gain(dBi)	Correction(dB)	RMS ERP(dBm)	Polarization
826.50	-24.26	2.07	-50.00	0.85	2.15	20.67	Horizontal
836.50	-25.63	2.08	-50.00	0.90	2.15	19.24	Horizontal
846.50	-25.25	2.09	-50.00	0.94	2.15	19.57	Horizontal

LTE Band V_10MHz

Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	Pag (dB)	Antenna Gain(dBi)	RMS ERP(dBm)	RMS ERP(dBm)	Polarization
829.00	-24.66	2.08	-50.00	0.86	2.15	20.25	Horizontal
836.50	-25.87	2.08	-50.00	0.90	2.15	19.00	Horizontal
844.00	-26.55	2.09	-50.00	0.93	2.15	18.28	Horizontal

Sample calculation: LTE Band IV,1.4MHz 1710.70 MHz

Peak EIRP(dBm) = P_{Mea}(-32.11 dBm) - G_a (-5.17 dBi) - P_{Ag} (-50.00 dB) - P_{cl} (2.96 dB)

= 20.10 dBm

ANALYZER SETTINGS: RBW = VBW = 3MHz

Note: Expanded measurement uncertainty for LTE band 4 is *U* = 0.96dB, k=2.

A.2 EMISSION LIMT

Reference

FCC: CFR 2.1051, Part 22.917(a), 24.238(a), 27.53(h).

IC: RSS-132 Issue 3, Section 4.4. RSS-133 Issue 6, Section 6.4. RSS-139 Issue 2, Section 6.4.

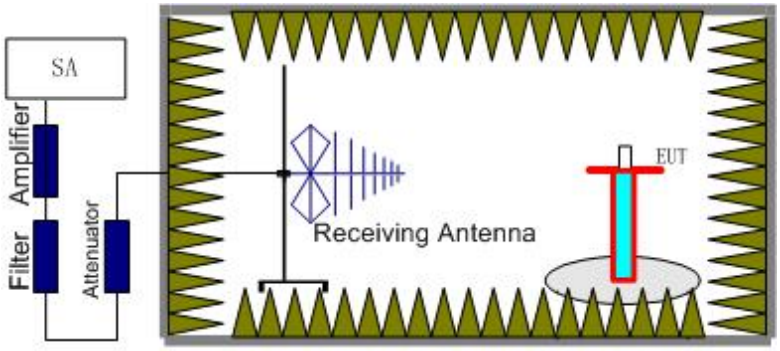
A.2.1 Measurement Method

The measurements procedures in TIA-603C-2004 are used. This measurement is carried out in fully-anechoic chamber FAC-3.

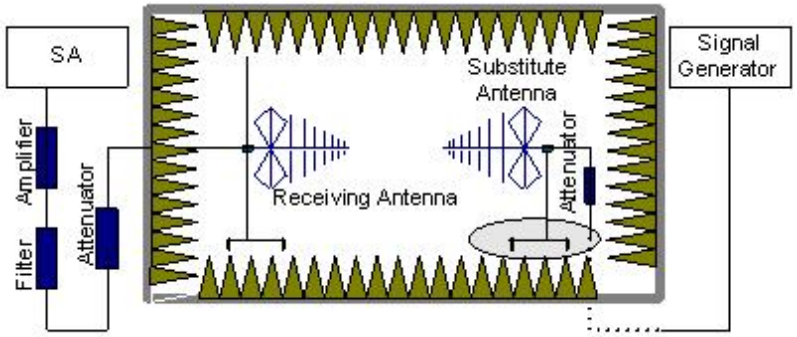
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier that can be as high as 1910 MHz. The resolution bandwidth is set 1MHz as outlined in Part 27.53(h). The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of the LTE Band 2, Band4 and Band 5 .

The procedure of radiated spurious emissions is as follows:

1. EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10th harmonic were measured with peak detector.



2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).
3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna. Adjust the level of the signal generator output until the value of the receiver reaches the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

4. The Path loss (P_{pl}) between the Signal Source with the Substitution Antenna and the Substitution Antenna Gain (G_a) should be recorded after test.
   An amplifier should be connected in for the test.
   The Path loss (P_{pl}) is the summation of the cable loss and the gain of the amplifier.
   The measurement results are obtained as described below:
   Power (EIRP)=P_{Mea}+ P_{pl} + G_a
5. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dB.

A.2.2 Measurement Limit

Part 24.238 specifies 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.

A.2.3 Measurement Results

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the LTE Band 4. It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the LTE Band 4 into any of the other blocks. The equipment must still,

however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

LTE Band 2, 1.4MHz, QPSK, Channel 18607

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit （dBm）	Polarization
3700.55	-50.55	4.44	-8.14	-46.85	-13.00	Vertical
5294.24	-65.05	5.37	-9.88	-60.54	-13.00	Vertical
6983.67	-61.67	6.24	-11.08	-56.83	-13.00	Horizontal
8853.50	-59.59	7.30	-12.48	-54.41	-13.00	Horizontal
12507.76	-55.79	8.86	-12.71	-51.94	-13.00	Vertical
14529.43	-57.15	9.39	-13.59	-52.95	-13.00	Vertical

LTE Band 2, 1.4MHz, QPSK, Channel 18900

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit （dBm）	Polarization
3759.14	-53.06	4.53	-8.21	-49.38	-13.00	Horizontal
5676.67	-62.78	5.49	-10.07	-58.20	-13.00	Vertical
7802.35	-61.81	6.81	-11.70	-56.92	-13.00	Horizontal
9877.31	-59.60	7.54	-12.45	-54.69	-13.00	Horizontal
12648.99	-57.87	8.74	-12.88	-53.73	-13.00	Vertical
14423.96	-57.50	9.30	-13.66	-53.14	-13.00	Vertical

LTE Band 2, 1.4MHz, QPSK, Channel 19193

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit （dBm）	Polarization
3817.70	-42.07	4.49	-8.28	-38.28	-13.00	Horizontal
5170.88	-62.73	5.20	-9.80	-58.13	-13.00	Horizontal
6621.33	-60.96	6.09	-10.72	-56.33	-13.00	Horizontal
8395.78	-60.63	7.18	-12.14	-55.67	-13.00	Vertical
11354.70	-58.59	8.62	-12.40	-54.81	-13.00	Vertical
13575.83	-60.62	9.22	-13.83	-56.01	-13.00	Vertical

LTE Band 2, 1.4MHz,16- QAM, Channel 18607

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit （dBm）	Polarization
3240.15	-62.64	4.17	-7.28	-59.53	-13.00	Vertical
3700.43	-53.88	4.44	-8.14	-50.18	-13.00	Horizontal
5211.41	-63.53	5.28	-9.83	-58.98	-13.00	Vertical
9032.01	-60.83	7.45	-12.60	-55.68	-13.00	Horizontal
9959.21	-59.52	7.73	-12.42	-54.83	-13.00	Horizontal
13167.68	-57.73	9.20	-13.47	-53.46	-13.00	Horizontal

LTE Band 2, 1.4MHz,16- QAM, Channel 18900

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit （dBm）	Polarization
3890.72	-63.29	4.51	-8.37	-59.43	-13.00	Vertical
5034.80	-62.03	5.18	-9.72	-57.49	-13.00	Vertical
6939.38	-62.69	6.09	-11.04	-57.74	-13.00	Vertical
8883.91	-61.06	7.43	-12.51	-55.98	-13.00	Vertical
9734.02	-60.98	7.81	-12.51	-56.28	-13.00	Vertical
17581.11	-52.73	10.74	-13.35	-50.12	-13.00	Horizontal

LTE Band 2, 1.4MHz,16- QAM, Channel 19193

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit （dBm）	Polarization
3817.68	-57.58	4.49	-8.28	-53.79	-13.00	Horizontal
5113.05	-63.01	5.24	-9.77	-58.48	-13.00	Vertical
6898.13	-63.22	6.09	-11.00	-58.31	-13.00	Vertical
8768.31	-61.94	7.36	-12.41	-56.89	-13.00	Horizontal
10203.49	-60.24	7.65	-12.44	-55.45	-13.00	Horizontal
15842.57	-54.34	10.00	-13.13	-51.21	-13.00	Vertical

LTE Band 4, 1.4MHz, QPSK, Channel 19957

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit （dBm）	Polarization
3420.61	-49.12	4.19	-7.71	-45.60	-13.00	Horizontal
5130.91	-52.96	5.25	-9.78	-48.43	-13.00	Horizontal
7843.66	-60.58	7.00	-11.74	-55.84	-13.00	Vertical
10221.65	-59.22	7.55	-12.44	-54.33	-13.00	Vertical
11971.74	-39.87	8.59	-12.49	-35.97	-13.00	Vertical
13681.70	-47.49	8.99	-13.87	-42.61	-13.00	Vertical

LTE Band 4, 1.4MHz, QPSK, Channel 20175

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit （dBm）	Polarization
3464.14	-49.81	4.24	-7.81	-46.24	-13.00	Horizontal
5089.38	-61.86	5.20	-9.75	-57.31	-13.00	Vertical
8660.50	-53.78	7.44	-12.33	-48.89	-13.00	Vertical
12124.30	-42.14	8.81	-12.55	-38.40	-13.00	Vertical
13856.41	-49.60	9.18	-13.94	-44.84	-13.00	Vertical
15588.67	-44.05	10.32	-13.33	-41.04	-13.00	Vertical

LTE Band 4, 1.4MHz, QPSK, Channel 20394

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit （dBm）	Polarization
3507.74	-48.18	4.33	-7.91	-44.60	-13.00	Horizontal
5261.59	-50.24	5.30	-9.86	-45.68	-13.00	Horizontal
7015.19	-58.90	6.34	-11.11	-54.13	-13.00	Horizontal
10213.94	-58.21	7.60	-12.44	-53.37	-13.00	Horizontal
12276.88	-42.54	8.86	-12.61	-38.79	-13.00	Vertical
13257.22	-57.09	9.05	-13.56	-52.58	-13.00	Vertical

LTE Band 4, 1.4MHz,16- QAM, Channel 19957

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit （dBm）	Polarization
3420.39	-49.72	4.19	-7.71	-46.20	-13.00	Horizontal
5130.71	-54.78	5.25	-9.78	-50.25	-13.00	Horizontal
6543.62	-61.09	6.05	-10.64	-56.50	-13.00	Horizontal
8831.94	-62.15	7.37	-12.47	-57.05	-13.00	Horizontal
11971.68	-40.22	8.59	-12.49	-36.32	-13.00	Vertical
13681.92	-47.68	8.99	-13.87	-42.80	-13.00	Vertical

LTE Band 4, 1.4MHz,16- QAM, Channel 20175

Frequency (MHz)	PMea (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit （dBm）	Polarization
3464.25	-50.43	4.24	-7.81	-46.86	-13.00	Horizontal
5196.56	-49.87	5.22	-9.82	-45.27	-13.00	Horizontal
6928.15	-56.93	6.06	-11.03	-51.96	-13.00	Horizontal
8956.49	-61.99	7.32	-12.57	-56.74	-13.00	Vertical
12124.17	-38.55	8.81	-12.55	-34.81	-13.00	Vertical
15588.41	-41.87	10.32	-13.33	-38.86	-13.00	Vertical

LTE Band 4, 1.4MHz,16- QAM, Channel 20393

Frequency (MHz)	PMea (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit （dBm）	Polarization
3507.56	-48.30	4.32	-7.91	-44.71	-13.00	Horizontal
5261.66	-49.82	5.30	-9.86	-45.26	-13.00	Horizontal
6844.47	-62.05	6.17	-10.94	-57.28	-13.00	Vertical
8769.38	-54.58	7.36	-12.42	-49.52	-13.00	Vertical
10209.93	-61.47	7.63	-12.44	-56.66	-13.00	Horizontal
12276.99	-43.44	8.86	-12.61	-39.69	-13.00	Vertical

LTE Band 5, 1.4MHz, QPSK, Channel 20407

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit （dBm）	Polarization
3466.23	-64.55	4.24	-7.82	-60.97	-13.00	Vertical
4526.35	-62.72	4.95	-8.85	-58.82	-13.00	Vertical
5376.31	-62.30	5.42	-9.93	-57.79	-13.00	Horizontal
6612.78	-60.52	6.09	-10.71	-55.90	-13.00	Horizontal
7760.25	-62.10	6.66	-11.66	-57.10	-13.00	Horizontal
8624.62	-60.28	7.39	-12.30	-55.37	-13.00	Horizontal

LTE Band 5, 1.4MHz, QPSK, Channel 20525

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit （dBm）	Polarization
3276.98	-61.80	4.19	-7.36	-58.63	-13.00	Vertical
3988.40	-62.00	4.60	-8.49	-58.11	-13.00	Horizontal
4983.51	-63.64	5.15	-9.67	-59.12	-13.00	Vertical
6075.76	-63.45	5.81	-10.26	-59.00	-13.00	Horizontal
7385.66	-60.43	6.43	-11.33	-55.53	-13.00	Vertical
8633.66	-61.86	7.38	-12.31	-56.93	-13.00	Horizontal

LTE Band 5, 1.4MHz, QPSK, Channel 20643

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit （dBm）	Polarization
3191.59	-62.92	4.10	-7.16	-59.86	-13.00	Vertical
4572.47	-61.02	4.94	-8.93	-57.03	-13.00	Horizontal
6120.50	-59.85	5.80	-10.30	-55.35	-13.00	Horizontal
6889.91	-62.24	6.08	-10.99	-57.33	-13.00	Vertical
7987.73	-59.61	6.97	-11.89	-54.69	-13.00	Horizontal
9049.13	-60.36	7.51	-12.60	-55.27	-13.00	Horizontal

LTE Band 5, 1.4MHz,16- QAM, Channel 20407

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit （dBm）	Polarization
3050.72	-63.23	3.99	-6.82	-60.40	-13.00	Horizontal
4304.79	-65.37	4.90	-8.68	-61.59	-13.00	Vertical
5092.16	-62.27	5.20	-9.76	-57.71	-13.00	Horizontal
6266.24	-61.23	5.83	-10.41	-56.65	-13.00	Vertical
7135.83	-59.01	6.42	-11.18	-54.25	-13.00	Vertical
8631.44	-60.81	7.36	-12.31	-55.86	-13.00	Vertical

LTE Band 5, 1.4MHz,16- QAM, Channel 20525

Frequency (MHz)	PMea (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit （dBm）	Polarization
3132.34	-62.02	4.01	-7.02	-59.01	-13.00	Vertical
4121.12	-63.38	4.68	-8.57	-59.49	-13.00	Horizontal
5185.11	-62.92	5.19	-9.81	-58.30	-13.00	Horizontal
6407.75	-61.48	5.82	-10.53	-56.77	-13.00	Vertical
7139.21	-61.50	6.40	-11.18	-56.72	-13.00	Vertical
8237.50	-62.72	7.04	-12.04	-57.72	-13.00	Vertical

LTE Band 5, 1.4MHz,16- QAM, Channel 20643

Frequency (MHz)	PMea (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit （dBm）	Polarization
3633.87	-63.31	4.38	-8.06	-59.63	-13.00	Horizontal
4365.43	-62.31	4.89	-8.72	-58.48	-13.00	Vertical
5140.12	-62.77	5.24	-9.78	-58.23	-13.00	Vertical
6216.97	-62.47	5.81	-10.37	-57.91	-13.00	Vertical
7609.12	-60.13	6.73	-11.51	-55.35	-13.00	Horizontal
8360.52	-61.40	7.25	-12.12	-56.53	-13.00	Horizontal

Note: The maximum value of expanded measurement uncertainty for this test item is *U* = 4.21dB, k=2.

A.3 CONDUCTED EMISSION

Reference

FCC: CFR Part 15.107/207

IC: RSS-132 Issue 3, Section 4.4. RSS-133 Issue 6, Section 6.4. RSS-139 Issue 2, Section 6.4.

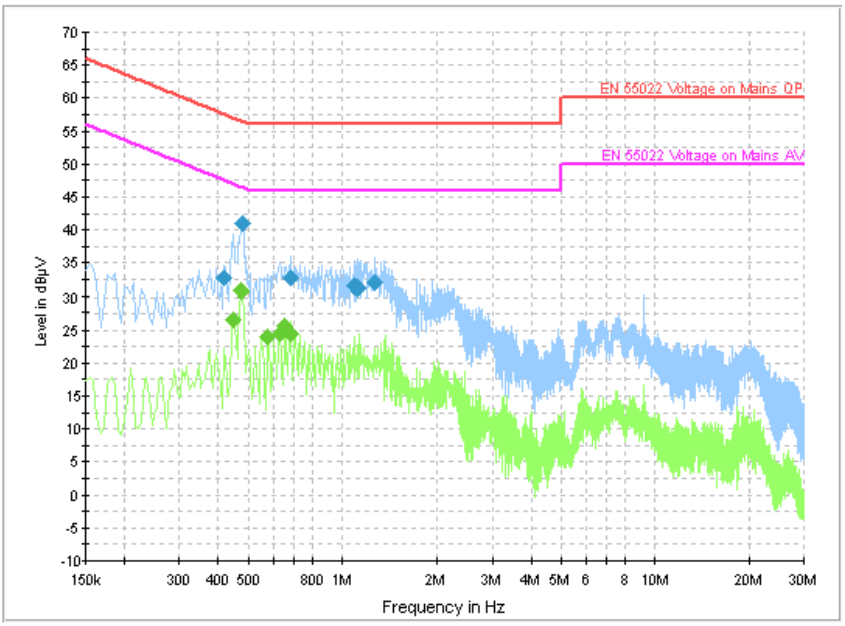
The measurement procedure in ANSI C63.4-2003 is used. Conducted Emission is measured with travel charger. EUT is under transmitting mode. For test layout photo, please refer to Pic.2 in Annex B.

A.3.1 Limit

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi -Peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50
* Decreases with logarithm of the frequency		

A.3.2 Measurement result

LTE Band 2, 1.4MHz



IF bandwidth 9 kHz

Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

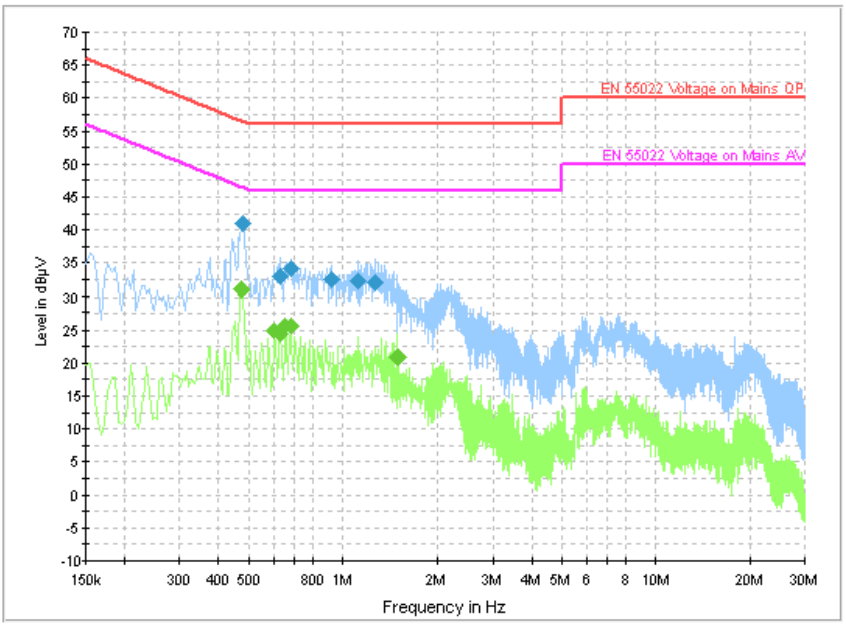
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.415500	32.6	GND	L1	10.0	24.9	57.5
0.478500	41.0	GND	L1	10.0	15.4	56.4
0.681000	32.6	GND	L1	10.0	23.4	56.0
1.090500	31.4	GND	L1	10.0	24.6	56.0
1.117500	31.2	GND	L1	10.0	24.8	56.0
1.275000	31.9	GND	L1	10.0	24.1	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.447000	26.5	GND	L1	10.0	20.5	46.9
0.474000	30.9	GND	L1	10.0	15.6	46.4
0.577500	24.1	GND	L1	10.0	22.0	46.0
0.631500	24.4	GND	L1	10.0	21.6	46.0
0.654000	25.5	GND	L1	10.0	20.5	46.0
0.681000	24.4	GND	L1	10.0	21.6	46.0

LTE Band 4, 1.4MHz



IF bandwidth 9 kHz

Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

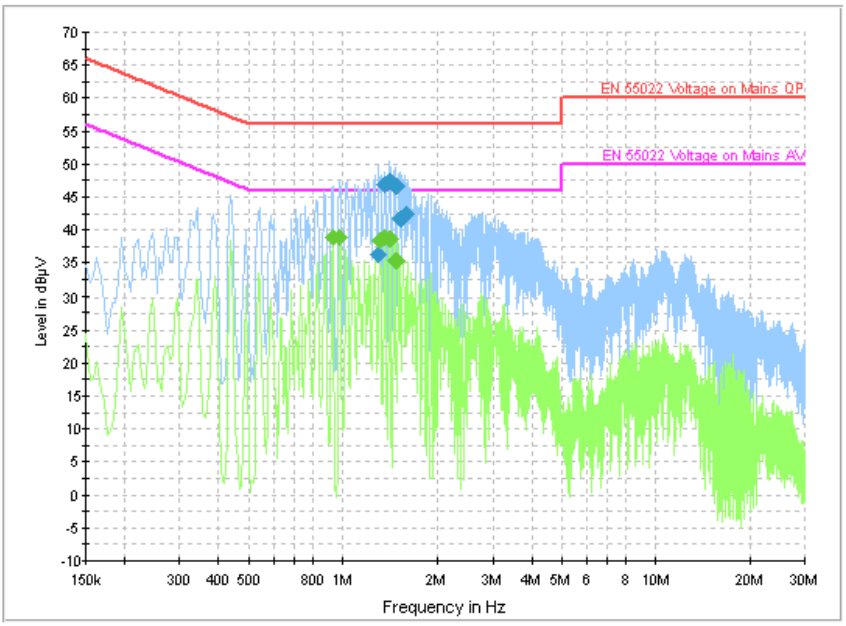
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.478500	41.0	GND	L1	10.0	15.4	56.4
0.631500	32.9	GND	L1	10.0	23.1	56.0
0.681000	34.1	GND	L1	10.0	21.9	56.0
0.919500	32.6	GND	L1	10.0	23.4	56.0
1.117500	32.1	GND	L1	10.0	23.9	56.0
1.275000	31.9	GND	L1	10.0	24.1	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.474000	31.2	GND	L1	10.0	15.3	46.4
0.604500	24.9	GND	L1	10.0	21.1	46.0
0.631500	24.5	GND	L1	10.0	21.5	46.0
0.654000	25.7	GND	L1	10.0	20.3	46.0
0.681000	25.6	GND	L1	10.0	20.4	46.0
1.486500	20.9	GND	L1	10.0	25.1	46.0

LTE Band 5, 1.4MHz



IF bandwidth 9 kHz

Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.306500	36.2	GND	L1	10.0	19.8	56.0
1.365000	46.9	GND	L1	10.0	9.1	56.0
1.414500	47.3	GND	L1	10.0	8.7	56.0
1.473000	46.7	GND	L1	10.0	9.3	56.0
1.527000	41.7	GND	L1	10.0	14.3	56.0
1.576500	42.5	GND	L1	10.0	13.5	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.928500	38.8	GND	L1	10.0	7.2	46.0
0.978000	38.9	GND	L1	10.0	7.1	46.0
1.315500	38.5	GND	L1	10.0	7.5	46.0
1.365000	38.8	GND	L1	10.0	7.2	46.0
1.414500	38.6	GND	L1	10.0	7.4	46.0
1.473000	35.2	GND	L1	10.0	10.8	46.0

Note: The maximum value of expanded measurement uncertainty for this test item is *U* = 3.2dB, k=2.

A.4 FREQUENCY STABILITY

Reference

FCC: CFR Part 2.1055, 22.355, 24.235, 27.54.

IC: RSS-132 Issue 3, Section 4.4. RSS-133 Issue 6, Section 6.4. RSS-139 Issue 2, Section 6.4.

A.4.1 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 channel 661 for LTE band 2,band 4 and band 5 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 1/2 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 1/2 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 1/2 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5℃ during the measurement procedure.

A.4.2 Measurement Limit

A.4.2.1 For Hand carried battery powered equipment

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 4.1VDC, with a nominal voltage of 3.7VDC. 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 of -5.4 % and +10.8 %. For the purposes of measuring frequency stability these voltage limits are to be used.

A.4.3 Measurement results

Room Temperature: 24 ℃

LTE Band 2, 1.4MHz

Frequency Error vs Voltage

Voltage(V)	Frequency error(Hz)		Frequency error(ppm)	
Modulation	QPSK	16QAM	QPSK	16QAM
3.5	-14	-4	0.007	0.002
3.7	-9	2	0.005	0.001
4.1	-13	-8	0.007	0.004

Frequency Error vs Temperature

temperature(℃)	Frequency error(Hz)		Frequency error(ppm)	
Modulation	QPSK	16QAM	QPSK	16QAM
-30	-15	5	0.008	0.003
-20	-4	-1	0.002	0.001
-10	-8	-21	0.004	0.011
0	-13	-4	0.007	0.002
10	-12	-5	0.006	0.002
20	7	-2	0.004	0.001
30	6	-2	0.003	0.001
40	3	-1	0.001	0.000
50	-16	-2	0.008	0.001

LTE Band 4, 1.4MHz

Frequency Error vs Voltage

Voltage(V)	Frequency error(Hz)		Frequency error(ppm)	
Modulation	QPSK	16QAM	QPSK	16QAM
3.5	8	11	0.004	0.006
3.7	4	7	0.002	0.004
4.1	0	12	0.000	0.007

Frequency Error vs Temperature

temperature(℃)	Frequency error(Hz)		Frequency error(ppm)	
Modulation	QPSK	16QAM	QPSK	16QAM
-30	-1	11	0.001	0.006
-20	2	16	0.001	0.009
-10	2	11	0.001	0.006
0	6	5	0.003	0.003
10	-2	9	0.001	0.005
20	8	7	0.004	0.004
30	-2	5	0.001	0.003
40	2	8	0.001	0.005
50	7	18	0.004	0.010

LTE Band 5, 1.4MHz

Frequency Error vs Voltage

Voltage(V)	Frequency error(Hz)		Frequency error(ppm)	
Modulation	QPSK	16QAM	QPSK	16QAM
3.5	-9	7	0.011	0.008
3.7	3	8	0.004	0.0010
4.1	5	13	0.007	0.0016

Frequency Error vs Temperature

temperature(℃)	Frequency error(Hz)		Frequency error(ppm)	
Modulation	QPSK	16QAM	QPSK	16QAM
-30	4	4	0.005	0.004
-20	7	6	0.008	0.008
-10	0	11	0.000	0.013
0	0	5	0.000	0.006
10	1	11	0.002	0.013
20	1	7	0.001	0.008
30	3	10	0.003	0.011
40	1	7	0.001	0.008
50	-2	13	0.002	0.015

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

A.5 OCCUPIED BANDWIDTH

Reference

FCC: CFR Part 2.1049(h)(i)

IC: RSS-132 Issue 3, Section 4.4. RSS-133 Issue 6, Section 6.4. RSS-139 Issue 2, Section 6.4

A.5.1 Occupied Bandwidth Results

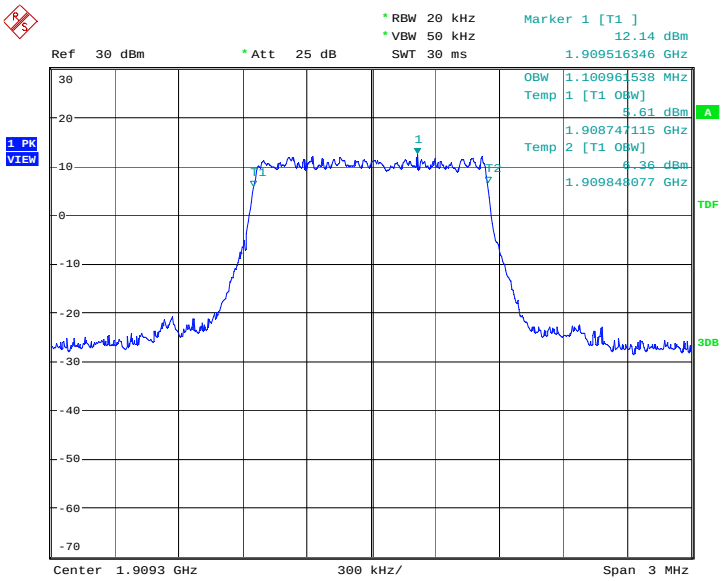
Occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the US Cellular/PCS frequency bands. The table below lists the measured -20dBc BW (99%). Spectrum analyzer plots are included on the following pages.

LTE band 2, 1.4MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880	QPSK	16QAM
	1100.962	1091.346

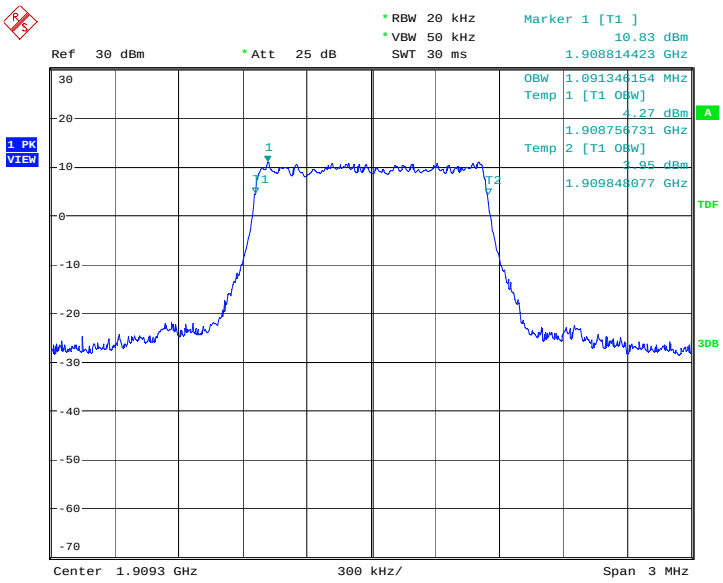
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 2, 1.4MHz Bandwidth, QPSK (-20dBc BW)



Date: 20.MAR.2013 00:54:11

LTE band 2, 1.4MHz Bandwidth, 16QAM (-20dBc BW)



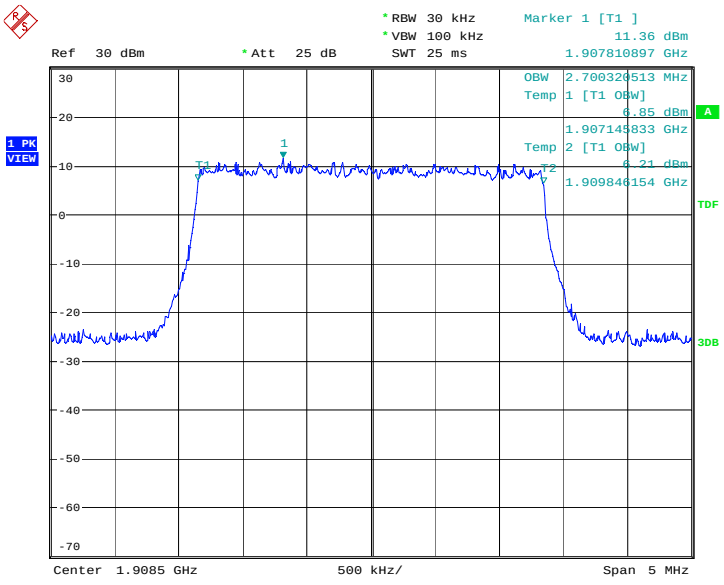
Date: 20.MAR.2013 00:54:35

LTE band 2, 3MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
	QPSK	16QAM
1880	2700.321	2692.308

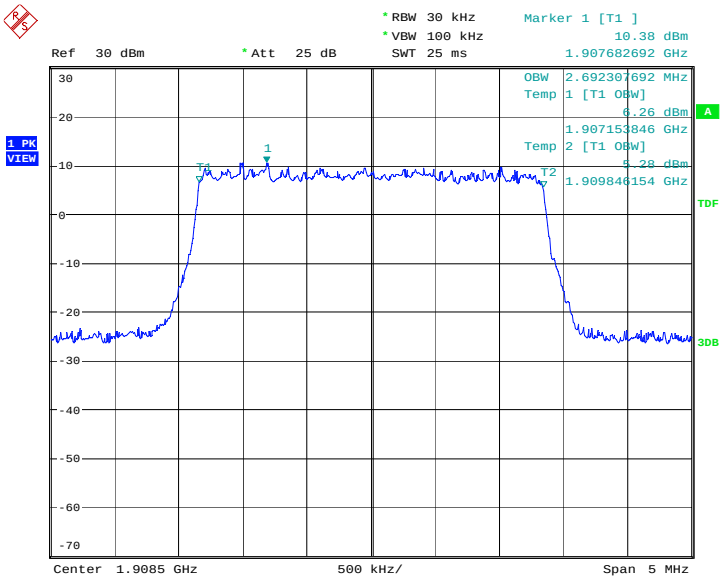
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 2, 3MHz Bandwidth, QPSK (-20dBc BW)



Date: 20.MAR.2013 01:15:33

LTE band 2, 3MHz Bandwidth, 16QAM (-20dBc BW)



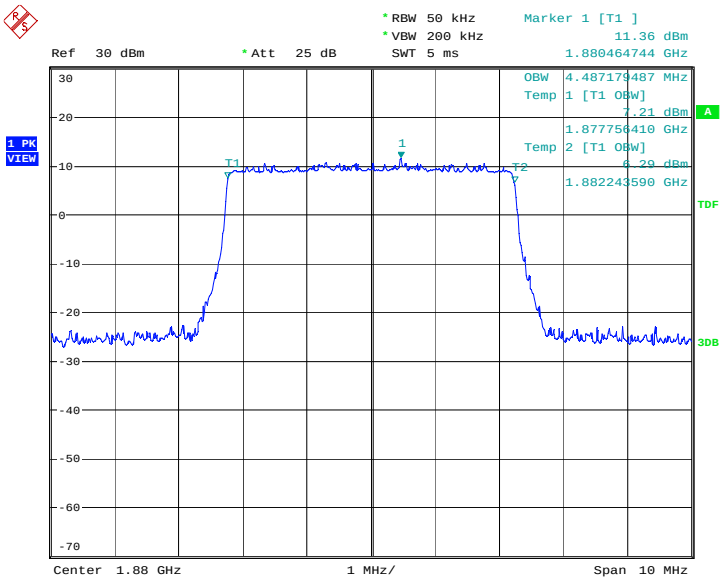
Date: 20.MAR.2013 01:15:57

LTE band2, 5MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
	QPSK	16QAM
1880	4487.179	4503.205

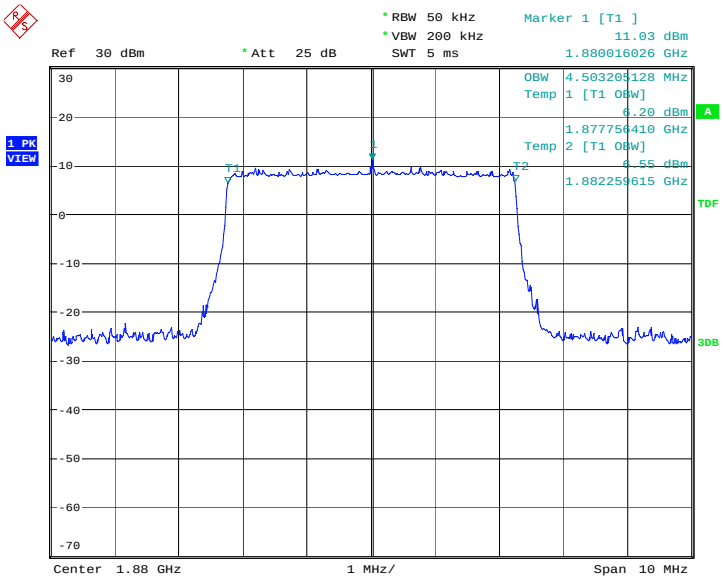
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band2, 5MHz Bandwidth, QPSK (-20dBc BW)



Date: 20.MAR.2013 01:34:01

LTE band 2, 5MHz Bandwidth,16QAM (-20dBc BW)



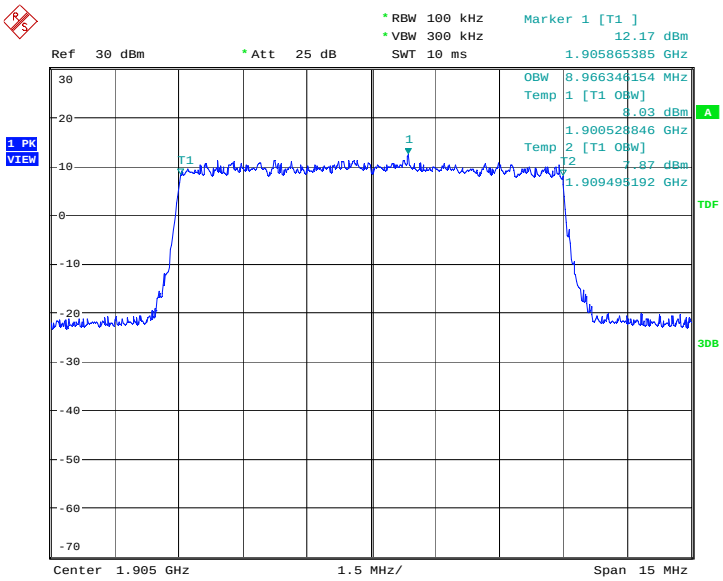
Date: 20.MAR.2013 01:34:24

LTE band 2, 10MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880	QPSK	16QAM
	8966.346	8942.308

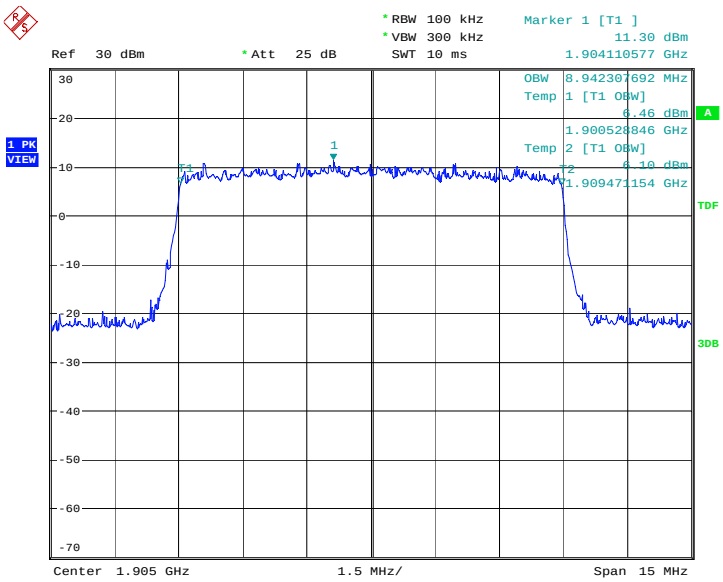
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 2, 10MHz Bandwidth, QPSK (-20dBc BW)



Date: 20.MAR.2013 01:54:19

LTE band 2, 10MHz Bandwidth, 16QAM (-20dBc BW)



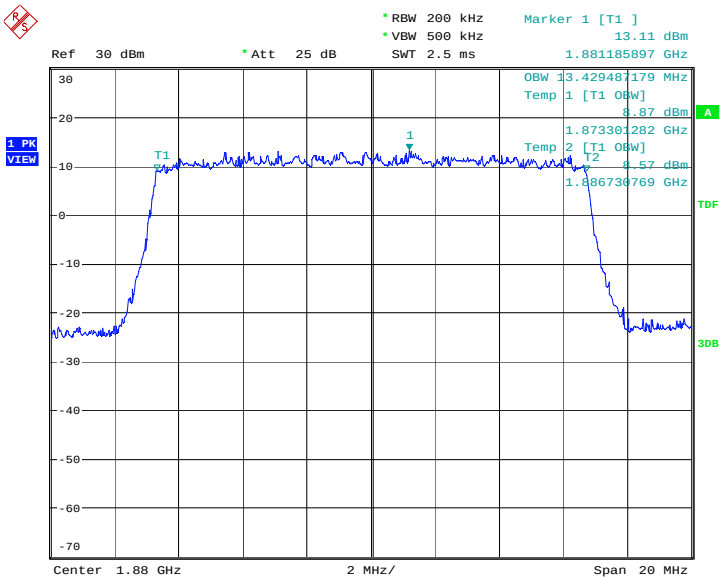
Date: 20.MAR.2013 01:54:43

LTE band 2, 15MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880	QPSK	16QAM
	13429.487	13429.487

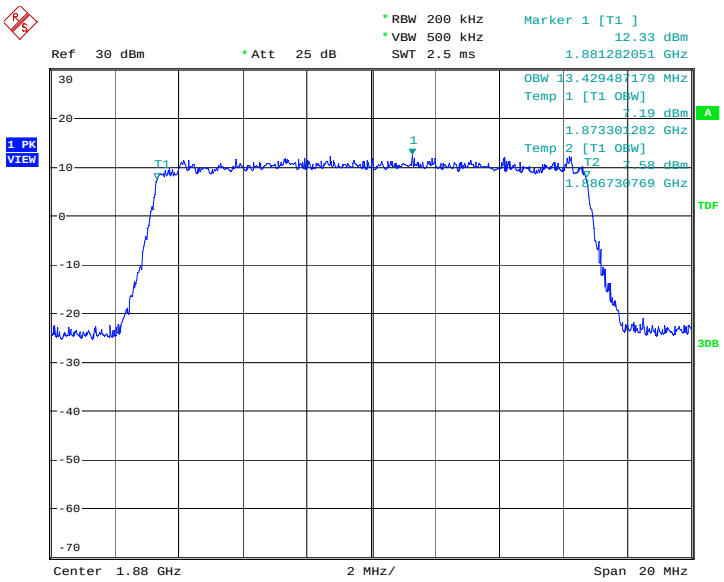
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 2, 15MHz Bandwidth, QPSK (-20dBc BW)



Date: 20.MAR.2013 02:14:31

LTE band 2, 15MHz Bandwidth, 16QAM (-20dBc BW)



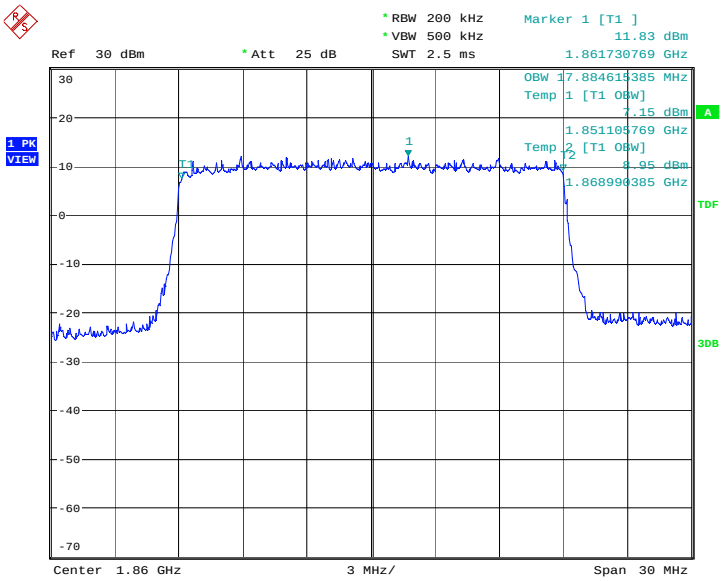
Date: 20.MAR.2013 02:14:55

LTE band 2, 20MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880	QPSK	16QAM
	17884.615	17932.692

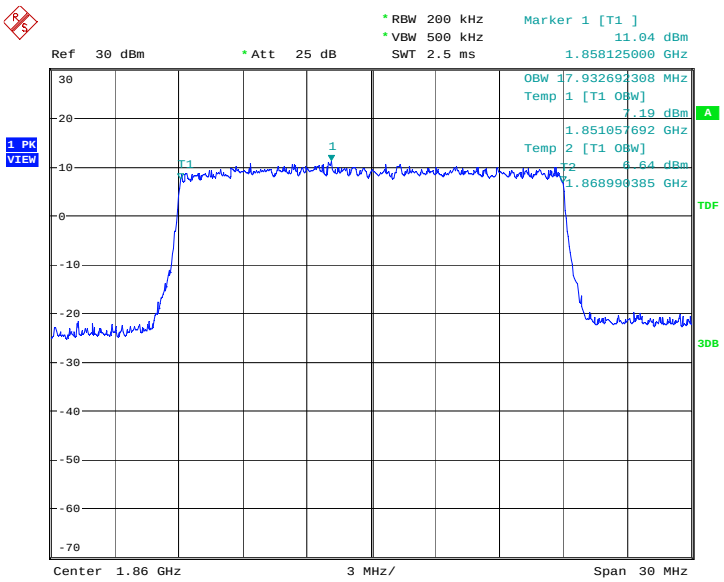
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

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



Date: 20.MAR.2013 02:32:09

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



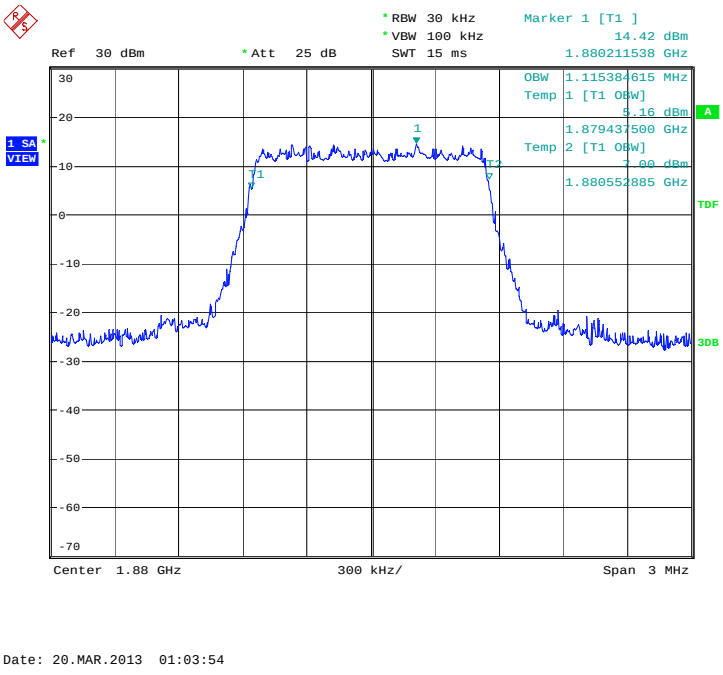
Date: 20.MAR.2013 02:32:34

LTE band 2, 1.4MHz (99%)---IC

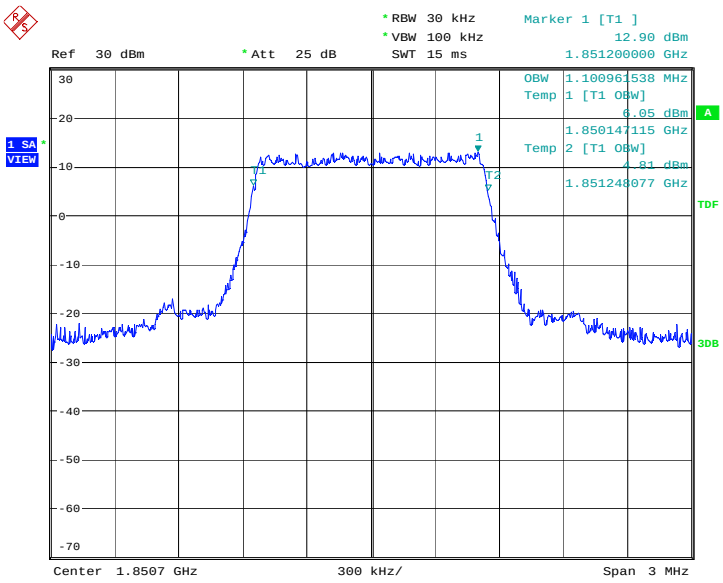
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880	QPSK	16QAM
	1115.385	1100.962

Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 2, 1.4MHz Bandwidth, QPSK (-20dBc BW)



LTE band 2, 1.4MHz Bandwidth, 16QAM (-20dBc BW)

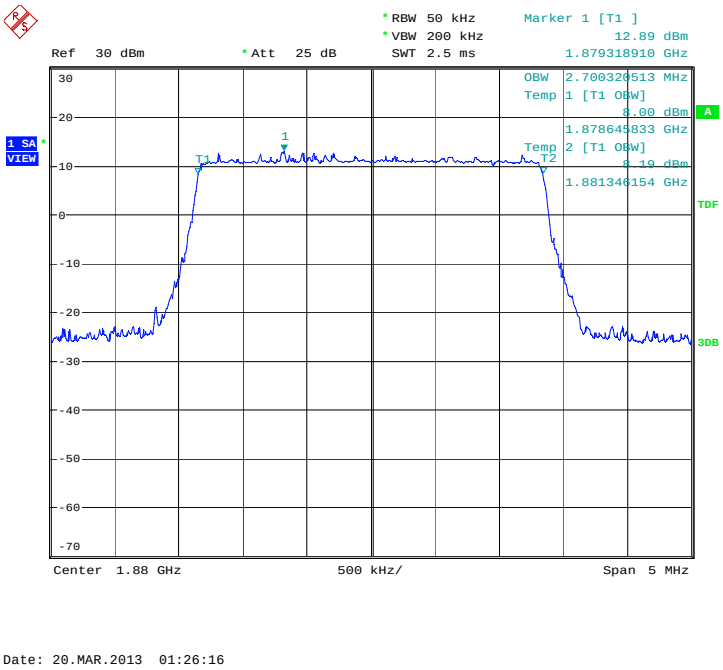


LTE band 2, 3MHz (99%)----IC

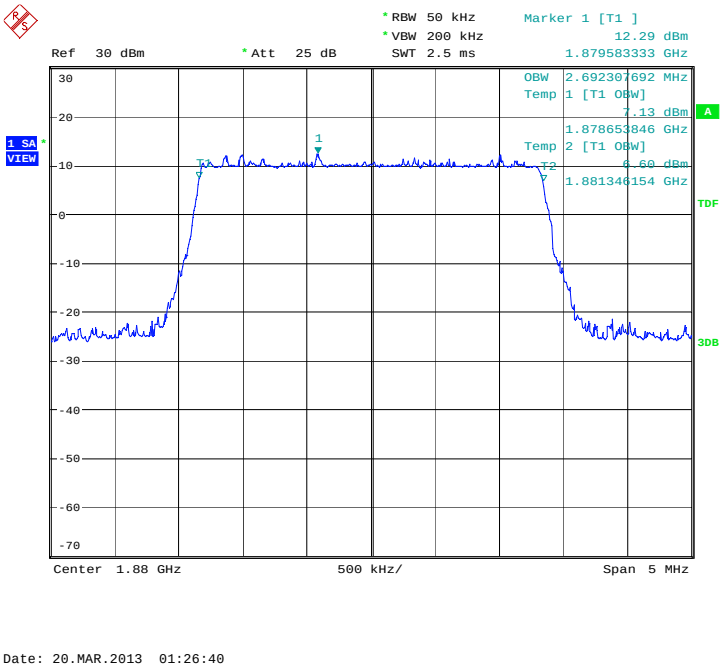
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
	QPSK	16QAM
1880	2700.321	2692.308

Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 2, 3MHz Bandwidth, QPSK (-20dBc BW)



LTE band 2, 3MHz Bandwidth, 16QAM (-20dBc BW)

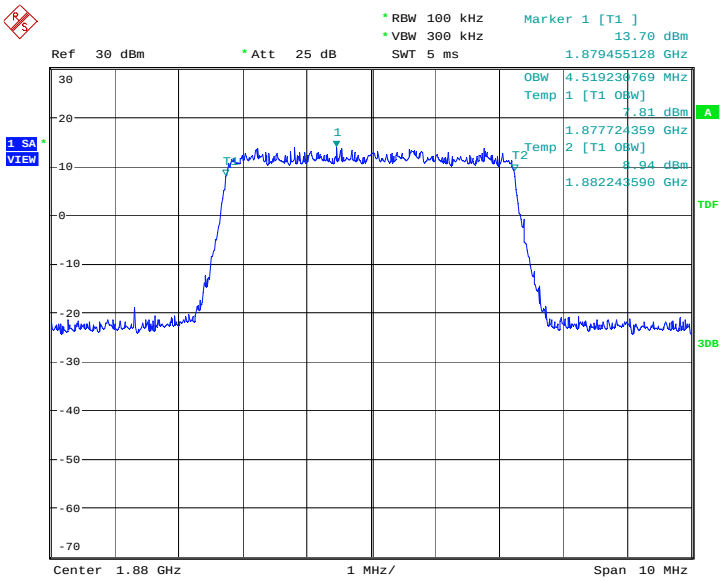


LTE band2, 5MHz (99%)---IC

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880	QPSK	16QAM
	4519.231	4519.231

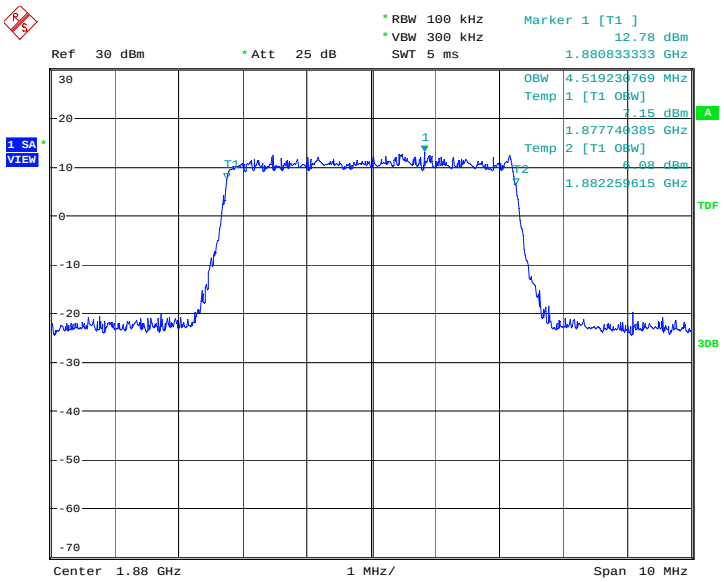
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band2, 5MHz Bandwidth, QPSK (-20dBc BW)



Date: 20.MAR.2013 01:45:09

LTE band 2, 5MHz Bandwidth,16QAM (-20dBc BW)



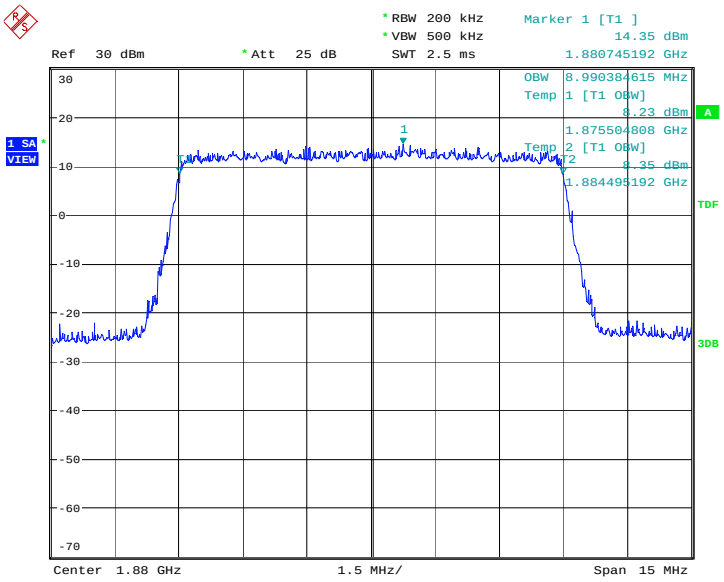
Date: 20.MAR.2013 01:45:33

LTE band 2, 10MHz (99%)----IC

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880	QPSK	16QAM
	8990.385	8990.385

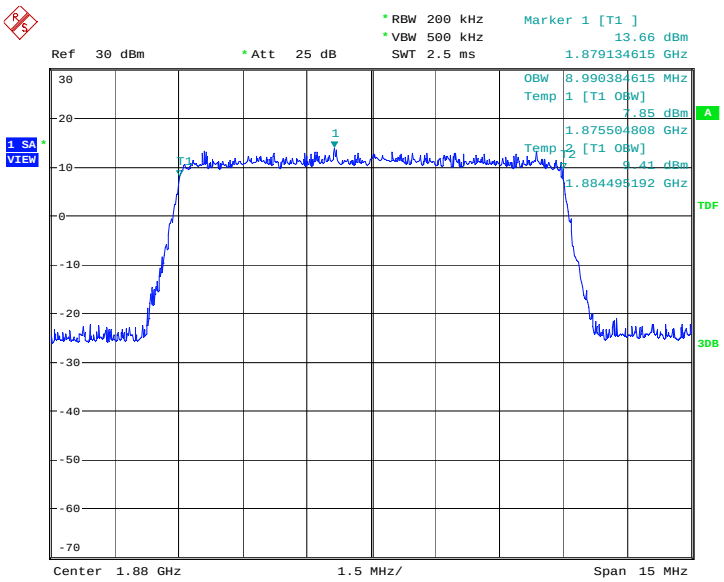
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 2, 10MHz Bandwidth, QPSK (-20dBc BW)



Date: 20.MAR.2013 02:04:03

LTE band 2, 10MHz Bandwidth, 16QAM (-20dBc BW)



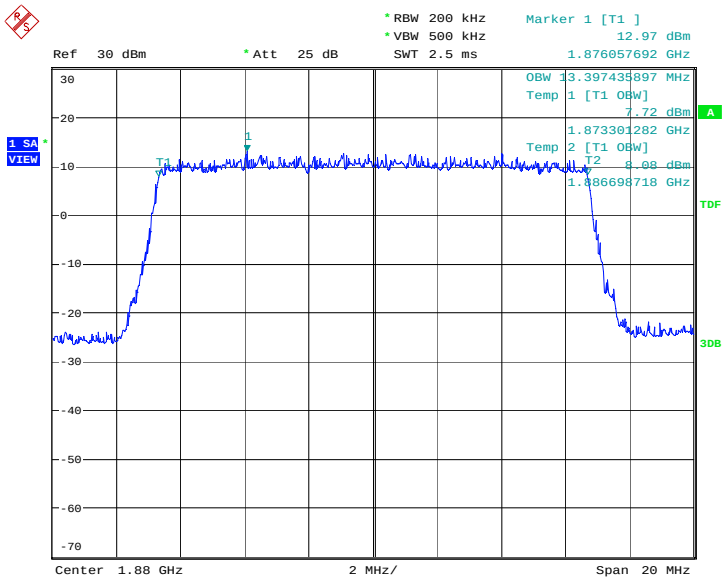
Date: 20.MAR.2013 02:04:27

LTE band 2, 15MHz (99%)---IC

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1902.5	QPSK	16QAM
	13397.436	13429.487

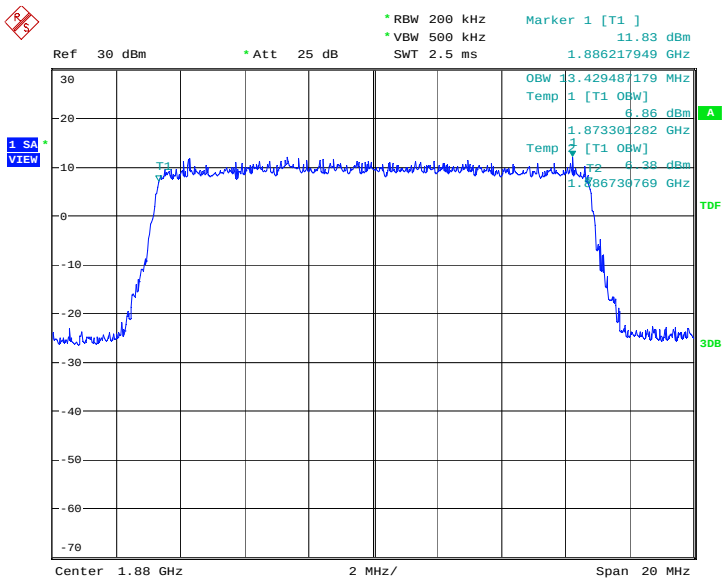
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 2, 15MHz Bandwidth, QPSK (-20dBc BW)



Date: 20.MAR.2013 02:25:41

LTE band 2, 15MHz Bandwidth, 16QAM (-20dBc BW)



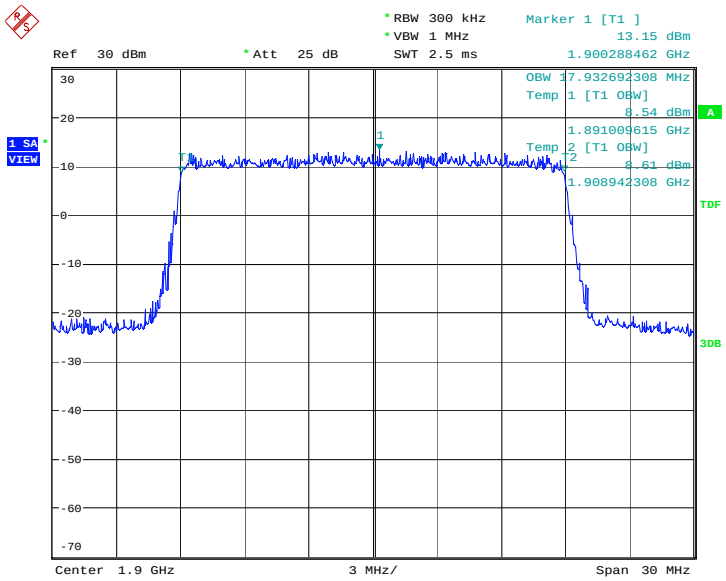
Date: 20.MAR.2013 02:26:05

LTE band 2, 20MHz (99%)---IC

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1900	QPSK	16QAM
	17932.692	17932.692

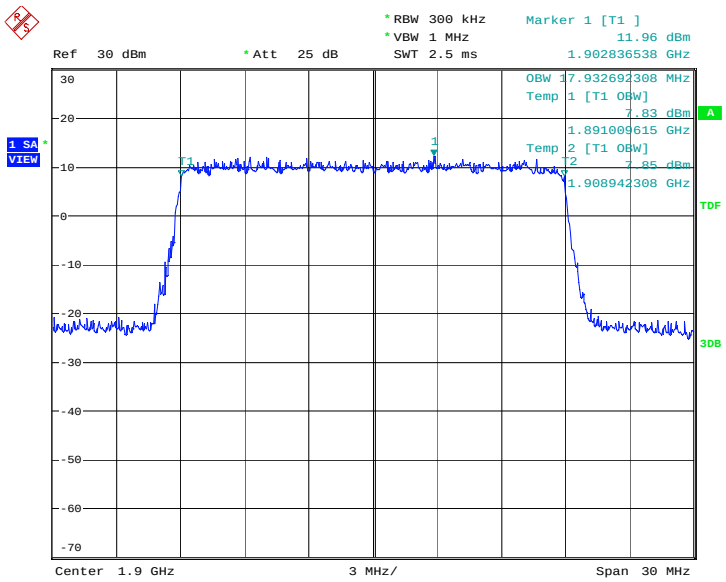
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

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



Date: 20.MAR.2013 02:52:51

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



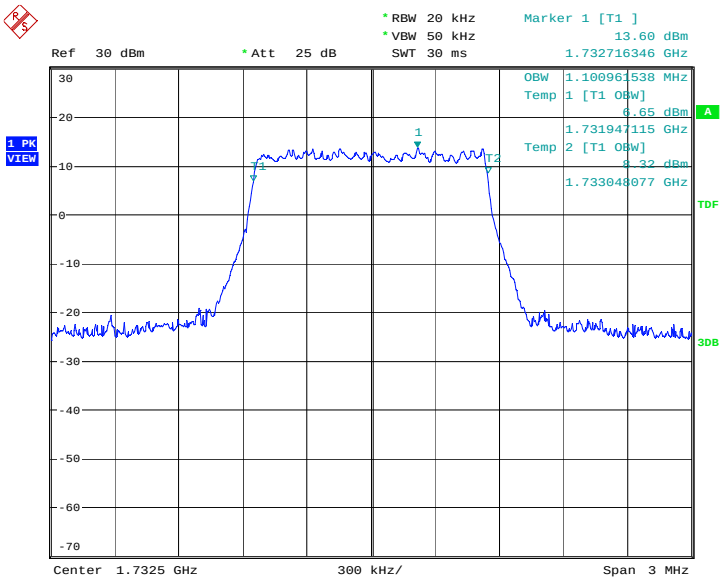
Date: 20.MAR.2013 02:53:15

LTE band 4, 1.4MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	1100.962	1091.346

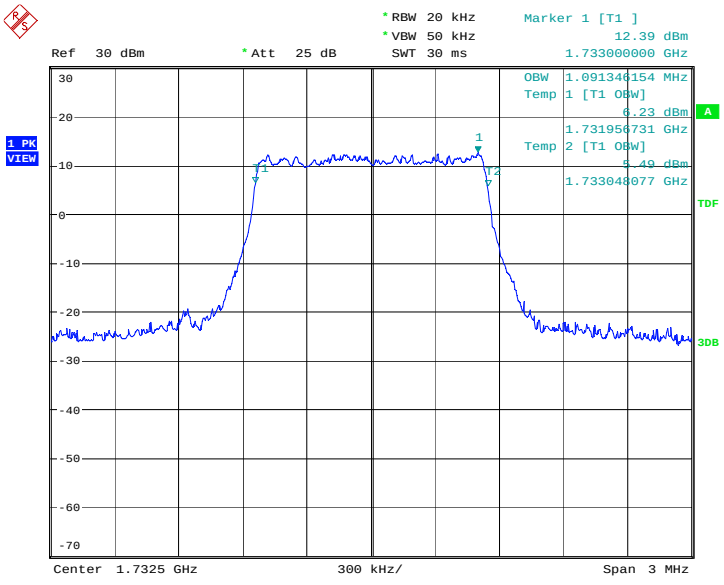
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 4, 1.4MHz Bandwidth, QPSK (-20dBc BW)



Date: 20.MAR.2013 07:55:26

LTE band 4, 1.4MHz Bandwidth, 16QAM (-20dBc BW)



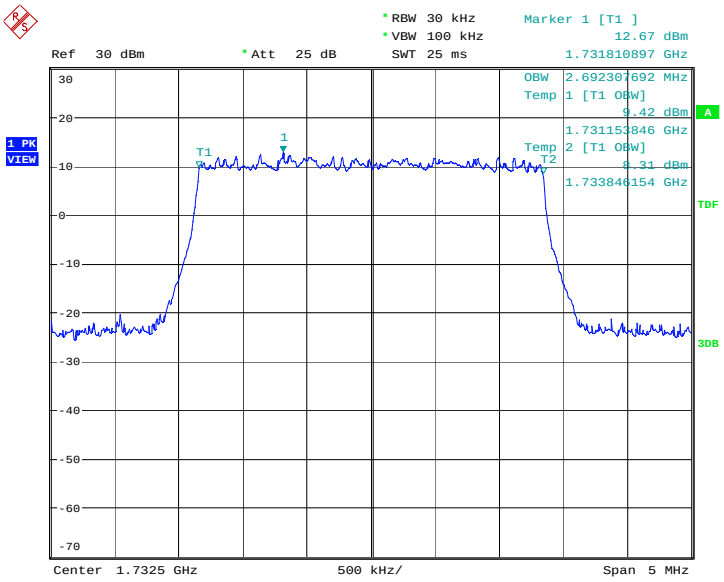
Date: 20.MAR.2013 07:55:50

LTE band 4, 3MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	2692.308	2692.308

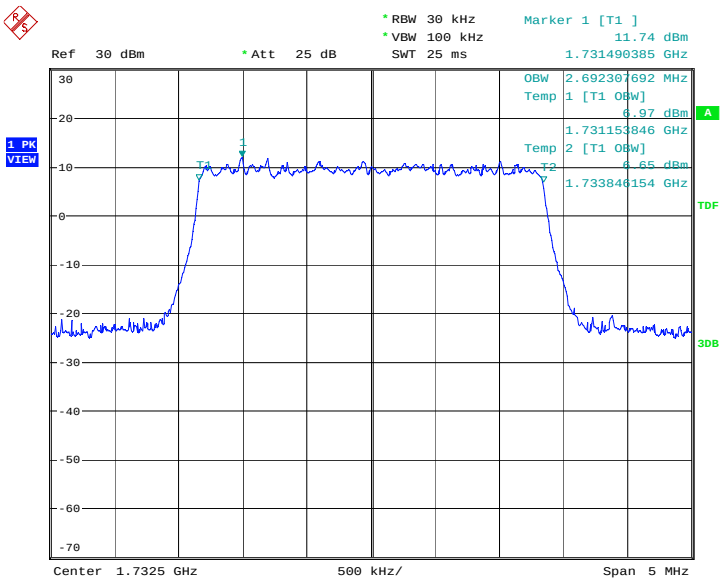
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 4, 3MHz Bandwidth, QPSK (-20dBc BW)



Date: 20.MAR.2013 08:04:43

LTE band 4, 3MHz Bandwidth, 16QAM (-20dBc BW)



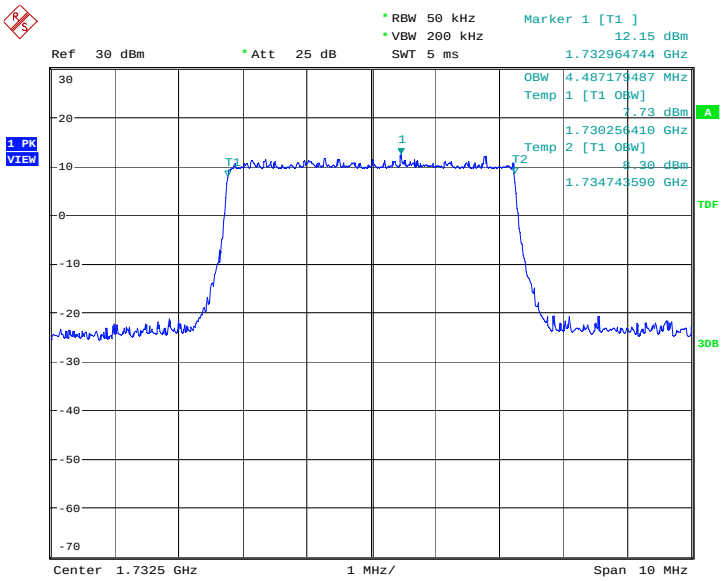
Date: 20.MAR.2013 08:05:07

LTE band 4, 5MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	4487.179	4503.205

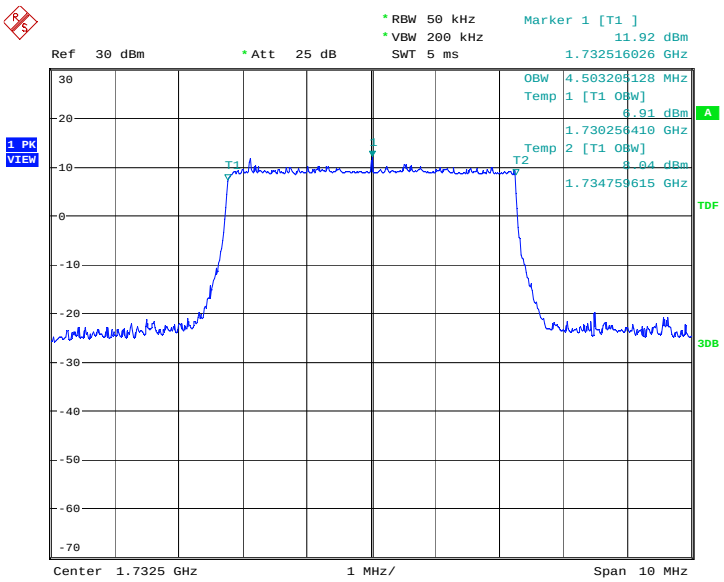
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 4, 5MHz Bandwidth, QPSK (-20dBc BW)



Date: 20.MAR.2013 08:13:34

LTE band 4, 5MHz Bandwidth,16QAM (-20dBc BW)



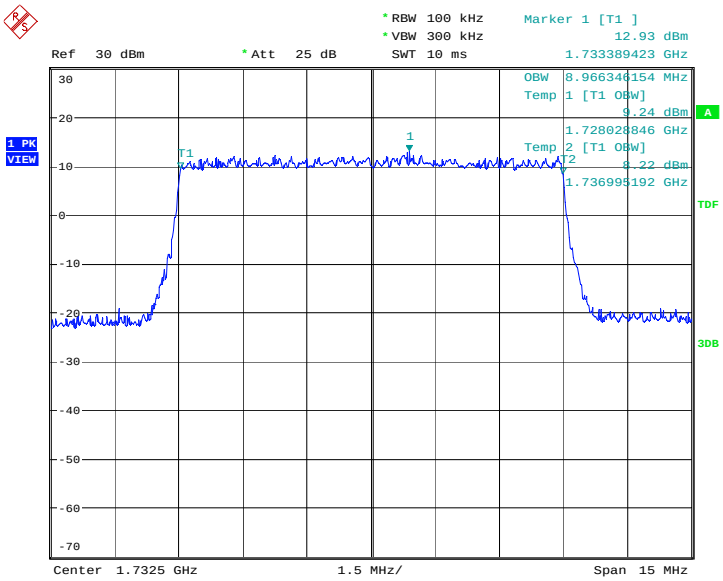
Date: 20.MAR.2013 08:13:57

LTE band 4, 10MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	8966.346	8942.308

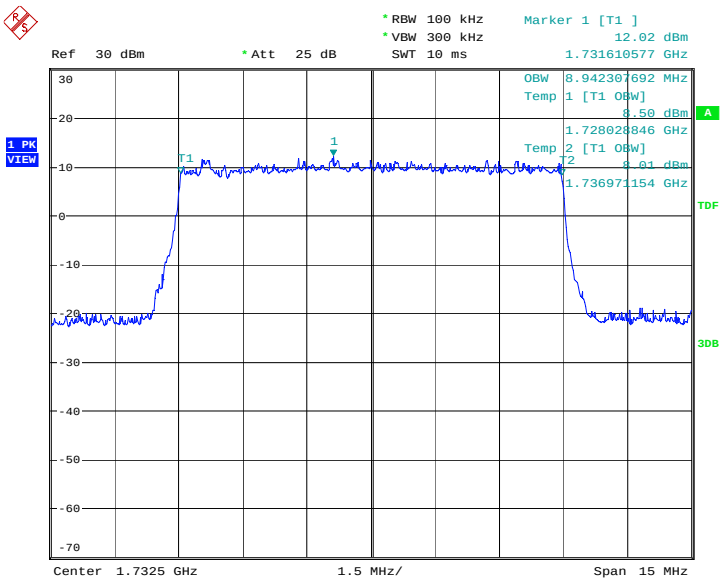
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 4, 10MHz Bandwidth, QPSK (-20dBc BW)



Date: 20.MAR.2013 23:45:44

LTE band 4, 10MHz Bandwidth, 16QAM (-20dBc BW)



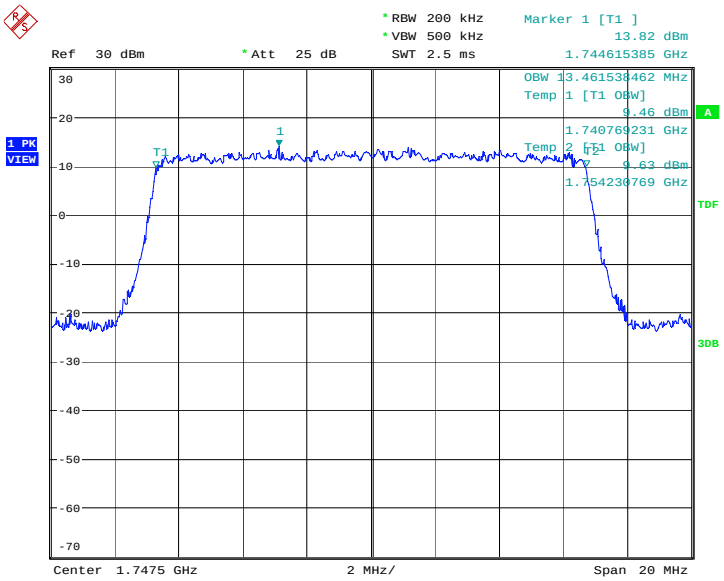
Date: 20.MAR.2013 23:46:08

LTE band 4, 15MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1747.5	QPSK	16QAM
	13461.54	13429.49

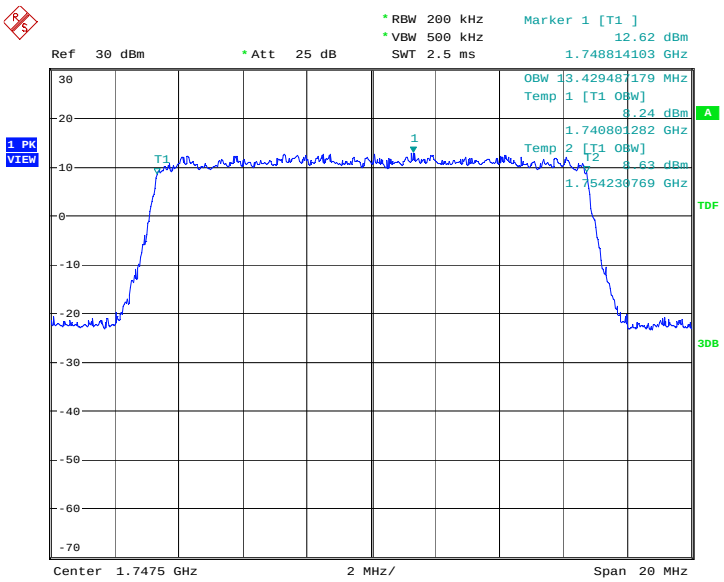
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 4, 15MHz Bandwidth, QPSK (-20dBc BW)



Date: 20.MAR.2013 23:56:14

LTE band 4, 15MHz Bandwidth, 16QAM (-20dBc BW)



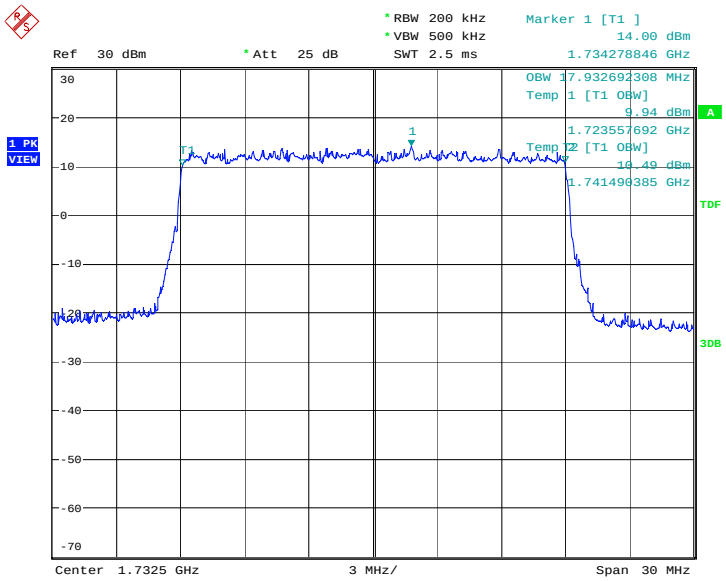
Date: 20.MAR.2013 23:56:37

LTE band 4, 20MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	17932.69	17932.69

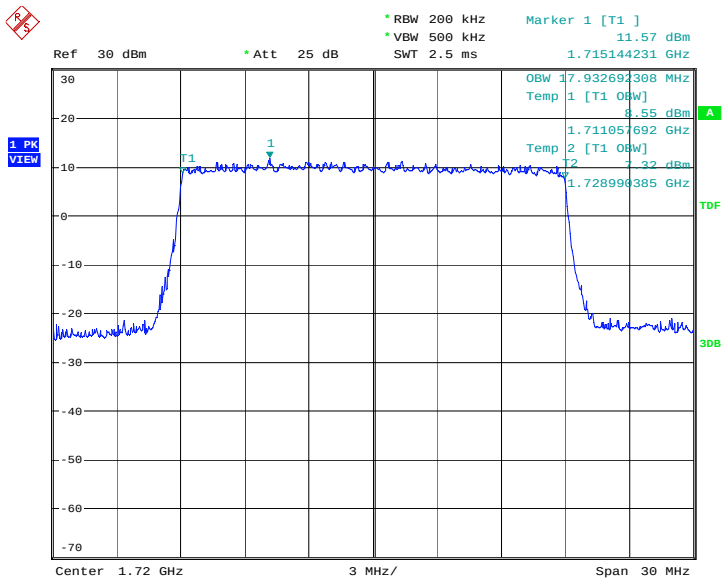
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

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



Date: 8.MAR.2013 02:50:51

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



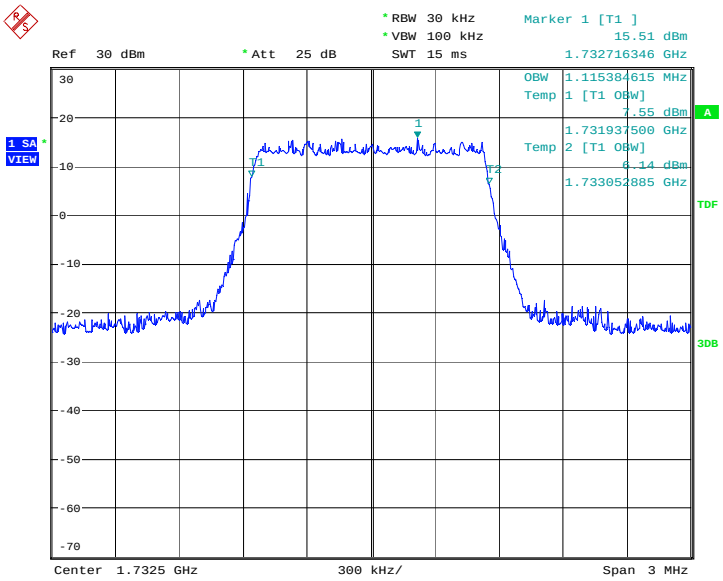
Date: 21.MAR.2013 00:02:47

LTE band 4, 1.4MHz (99%)---IC

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	1115.385	1100.962

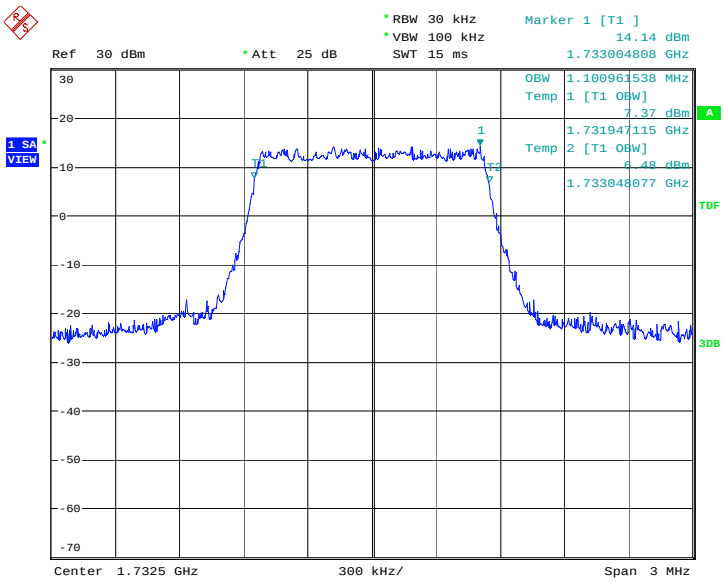
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 4, 1.4MHz Bandwidth, QPSK (-20dBc BW)



Date: 20.MAR.2013 07:59:43

LTE band 4, 1.4MHz Bandwidth, 16QAM (-20dBc BW)



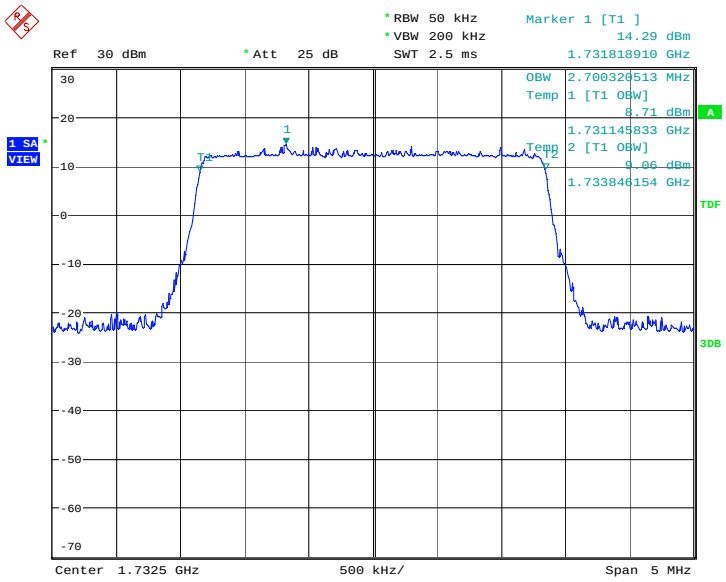
Date: 20.MAR.2013 08:00:07

LTE band 4, 3MHz (99%)---IC

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	2700.321	2692.308

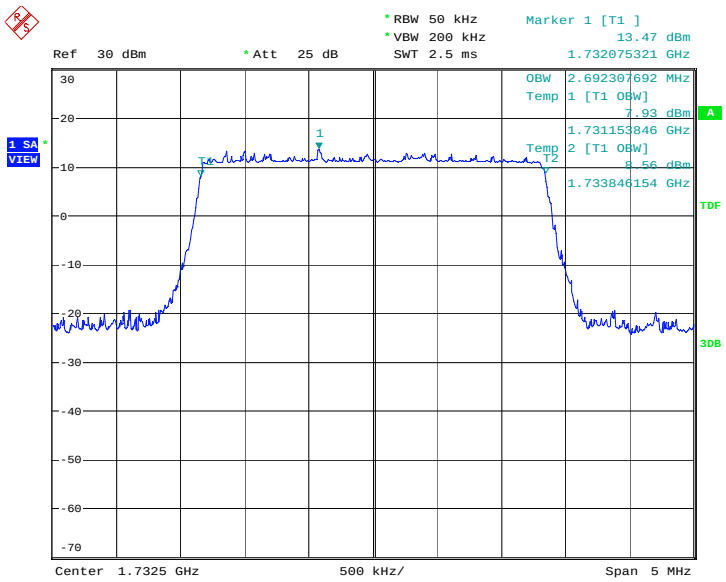
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 4, 3MHz Bandwidth, QPSK (-20dBc BW)



Date: 20.MAR.2013 08:09:01

LTE band 4, 3MHz Bandwidth, 16QAM (-20dBc BW)



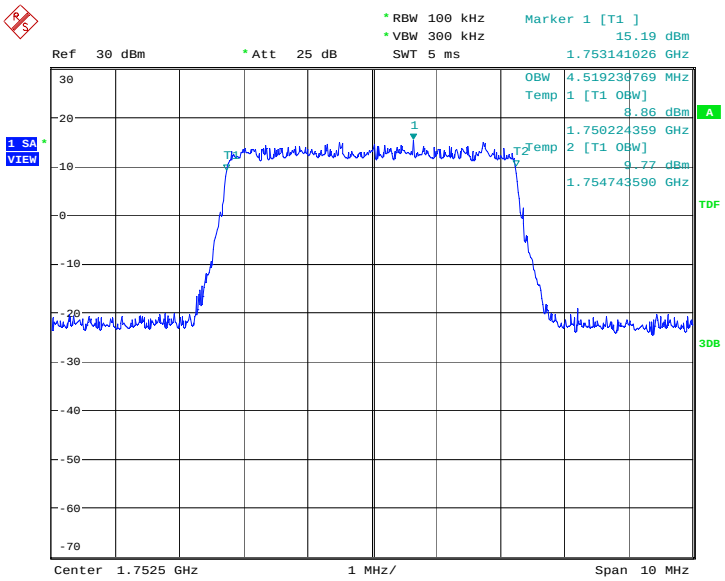
Date: 20.MAR.2013 08:09:25

LTE band 4, 5MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1752.5	QPSK	16QAM
	4519.231	4535.256

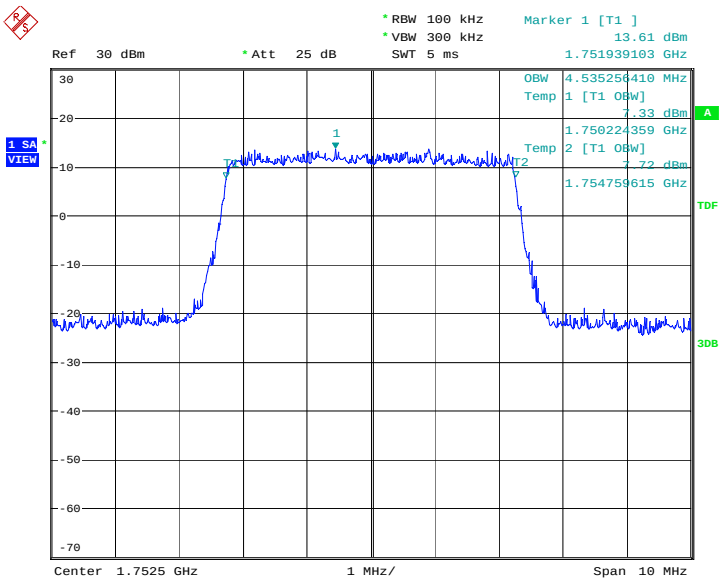
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 4, 5MHz Bandwidth, QPSK (-20dBc BW)



Date: 20.MAR.2013 23:41:56

LTE band 4, 5MHz Bandwidth,16QAM (-20dBc BW)



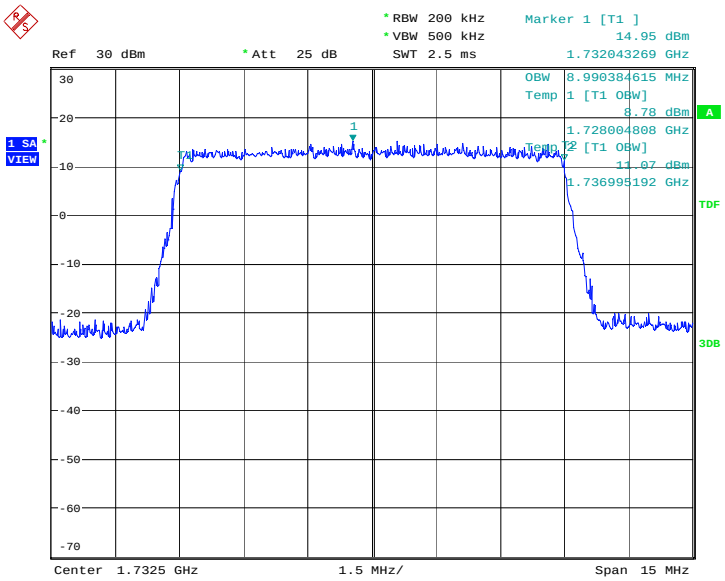
Date: 20.MAR.2013 23:42:19

LTE band 4, 10MHz (99%)---IC

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	8990.385	9014.423

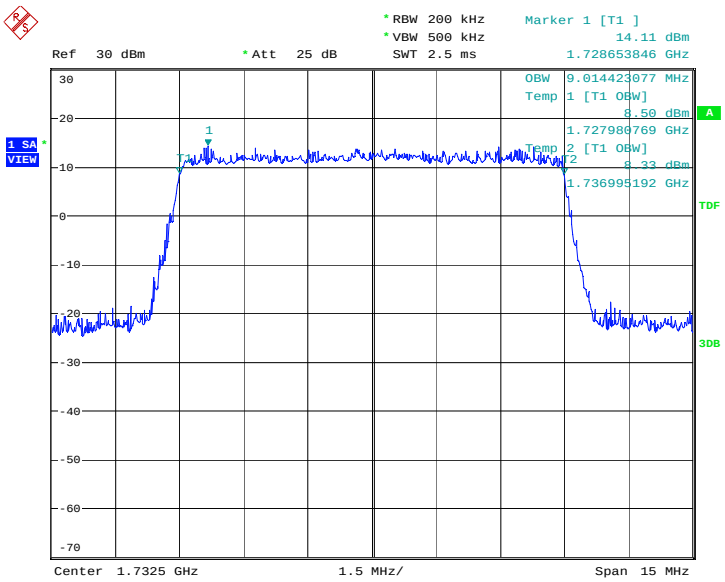
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 4, 10MHz Bandwidth, QPSK (-20dBc BW)



Date: 20.MAR.2013 23:50:02

LTE band 4, 10MHz Bandwidth, 16QAM (-20dBc BW)



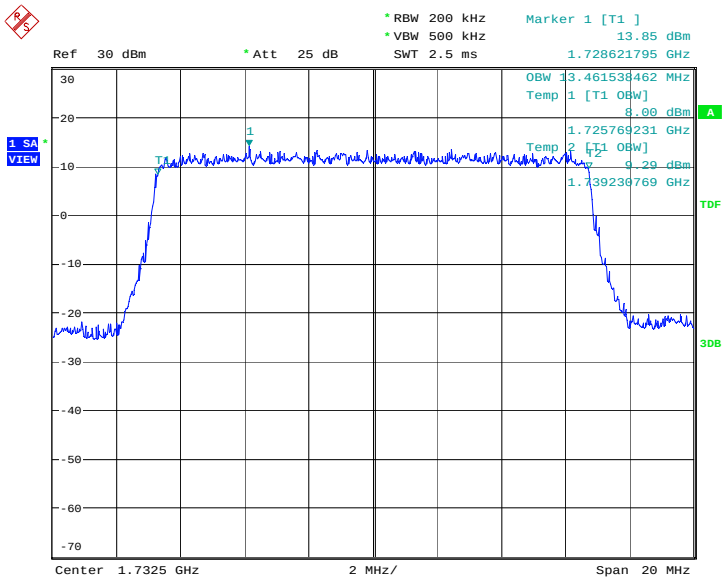
Date: 20.MAR.2013 23:50:26

LTE band 4, 15MHz (99%)----IC

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1747.5	QPSK	16QAM
	13461.54	13429.49

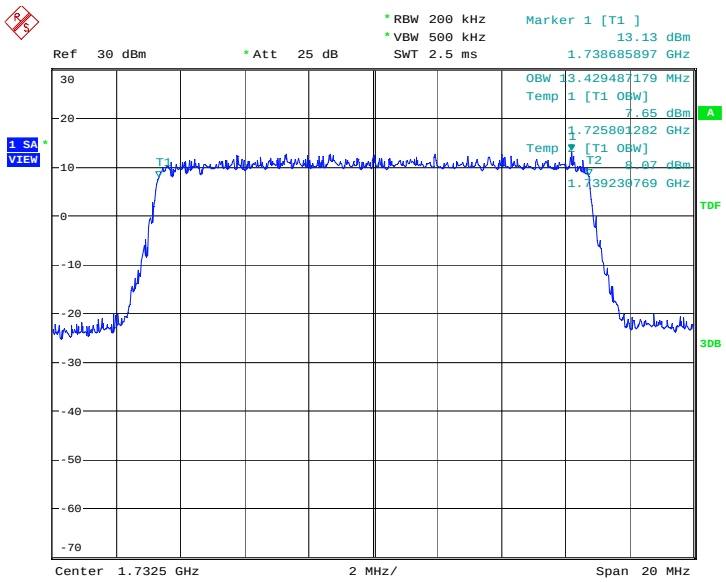
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 4, 15MHz Bandwidth, QPSK (-20dBc BW)



Date: 20.MAR.2013 23:59:02

LTE band 4, 15MHz Bandwidth, 16QAM (-20dBc BW)



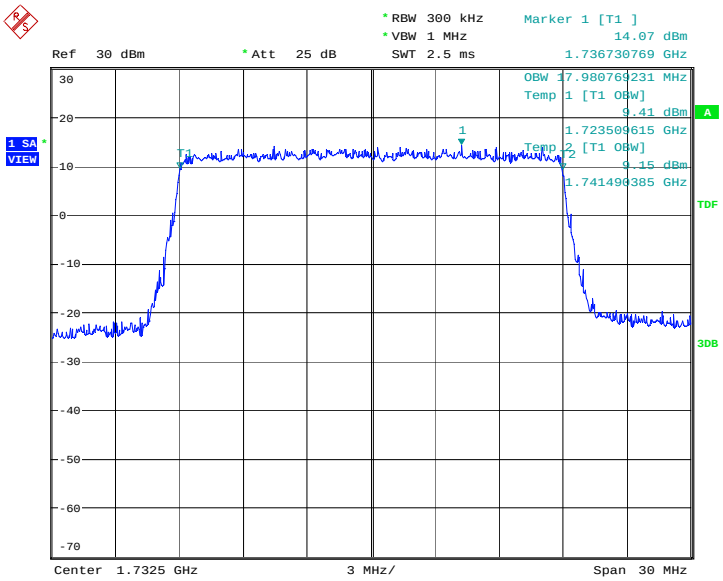
Date: 20.MAR.2013 23:59:26

LTE band 4, 20MHz (99%)---IC

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	17980.77	17932.69

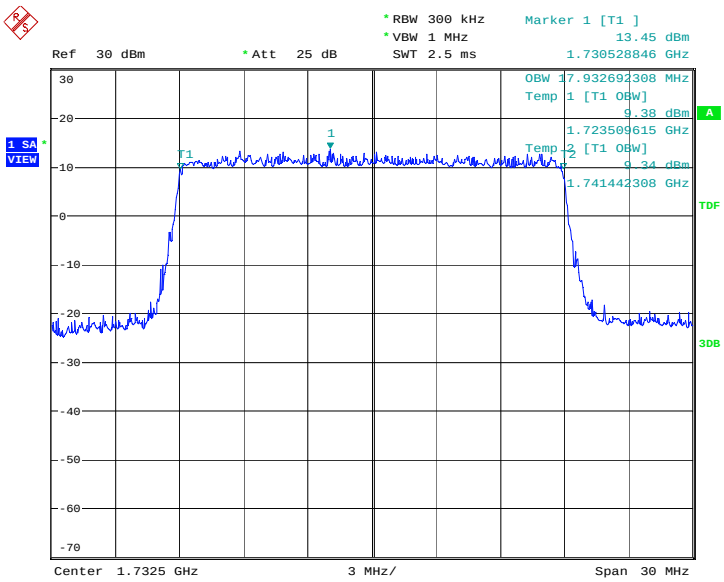
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

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



Date: 21.MAR.2013 00:07:58

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



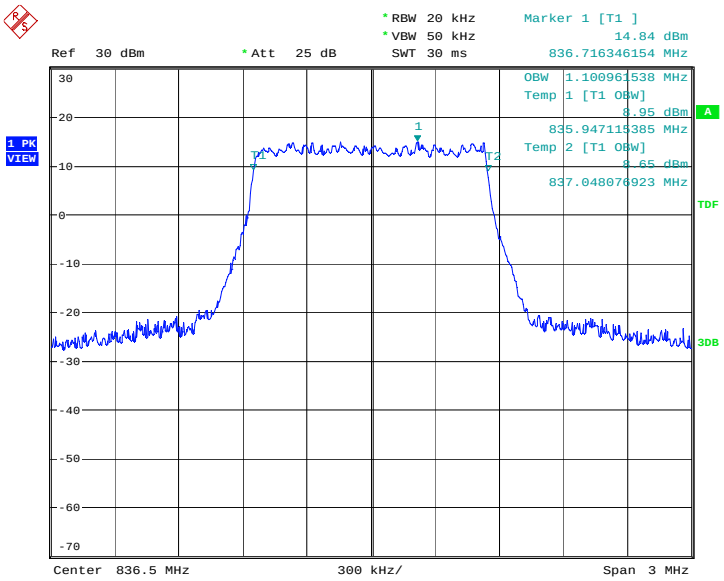
Date: 21.MAR.2013 00:08:21

LTE band 5, 1.4MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	1100.962	1086.538

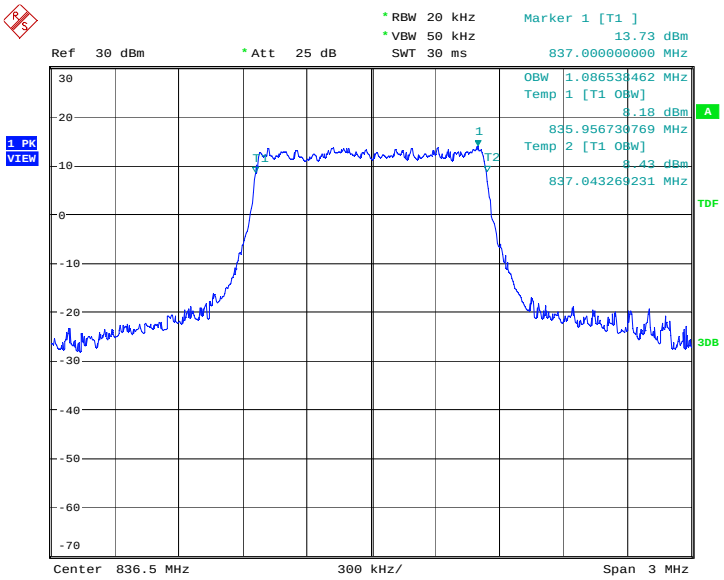
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 5, 1.4MHz Bandwidth, QPSK (-20dBc BW)



Date: 19.MAR.2013 10:52:33

LTE band 5, 1.4MHz Bandwidth, 16QAM (-20dBc BW)



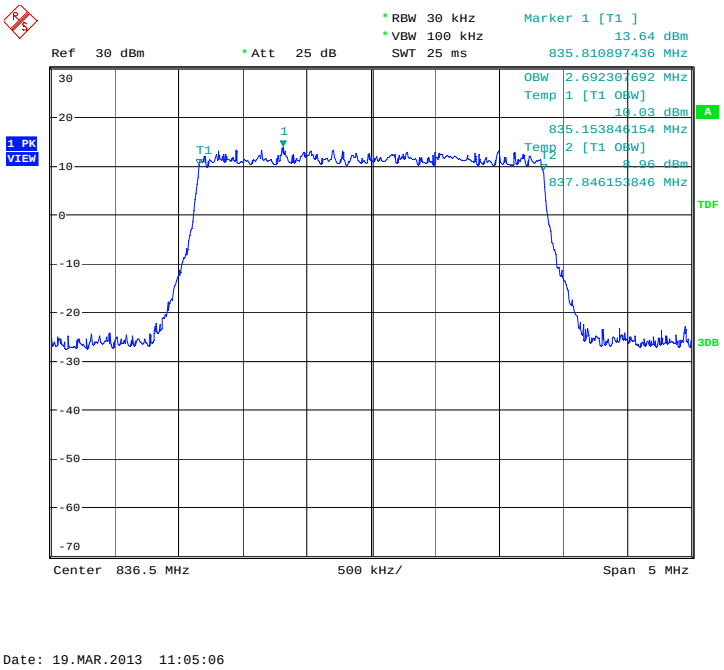
Date: 19.MAR.2013 10:52:56

LTE band 5, 3MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	2692.308	2692.308

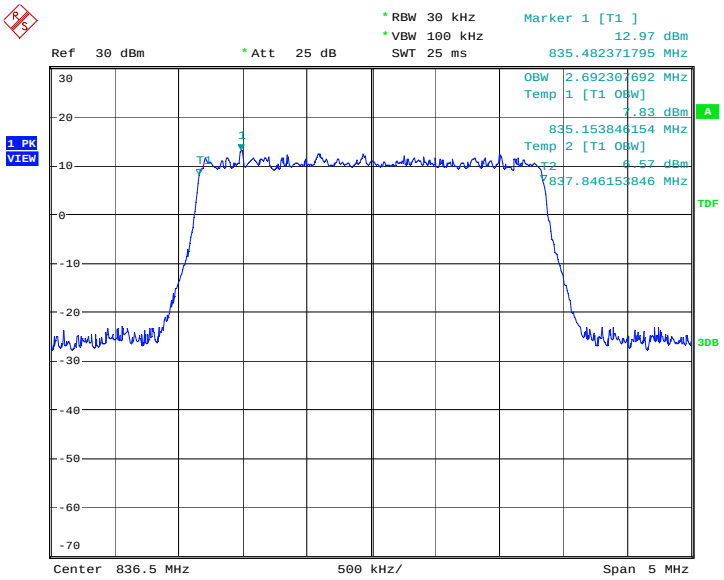
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 5, 3MHz Bandwidth, QPSK (-20dBc BW)



Date: 19.MAR.2013 11:05:06

LTE band 5, 3MHz Bandwidth, 16QAM (-20dBc BW)



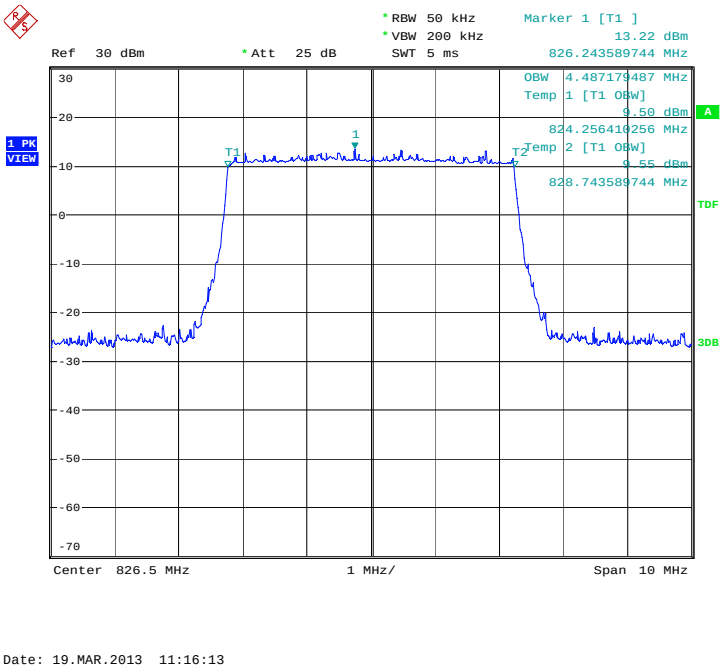
Date: 19.MAR.2013 11:05:30

LTE band 5, 5MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
846.5	QPSK	16QAM
	4487.179	4487.179

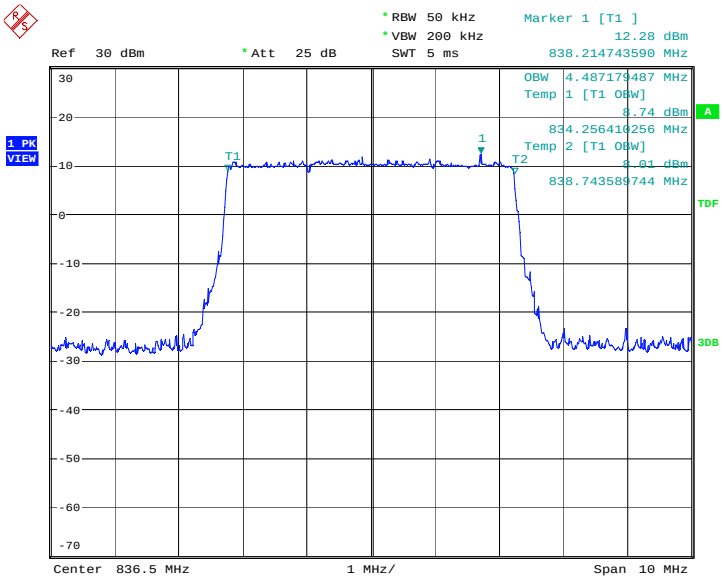
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 5, 5MHz Bandwidth, QPSK (-20dBc BW)



Date: 19.MAR.2013 11:16:13

LTE band 5, 5MHz Bandwidth,16QAM (-20dBc BW)



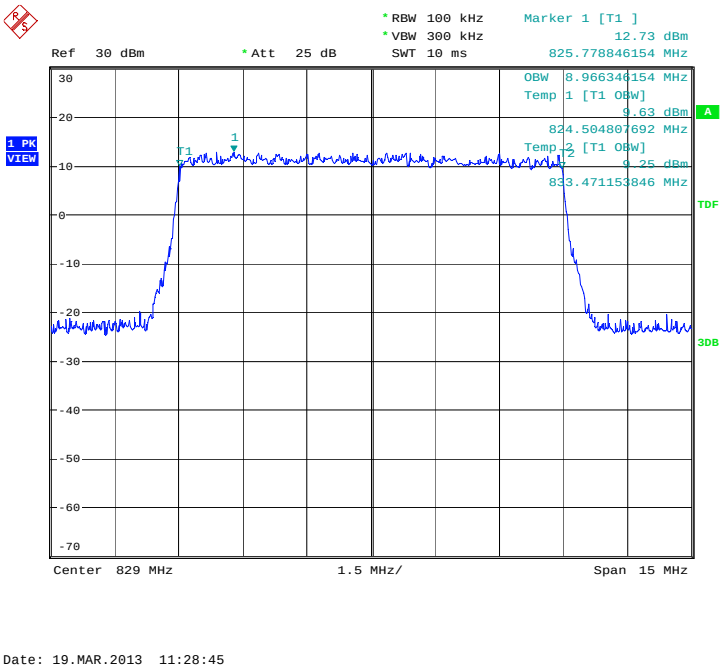
Date: 19.MAR.2013 11:18:32

LTE band 5, 10MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
829	QPSK	16QAM
	8966.346	8942.308

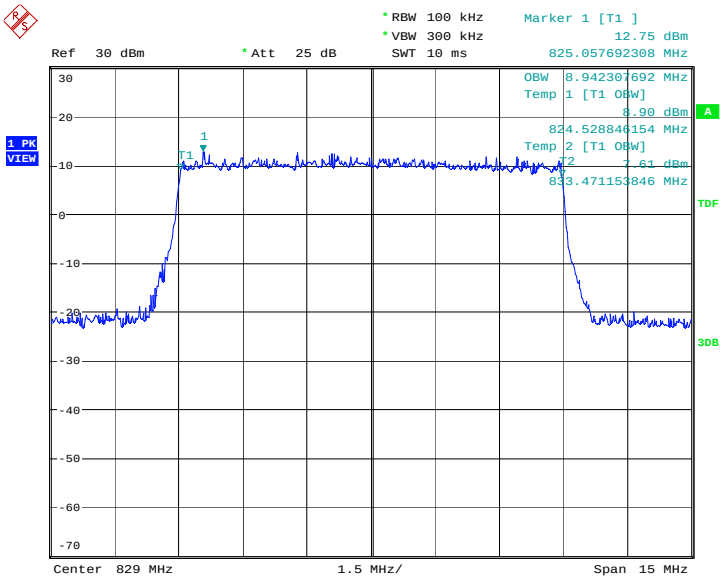
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 5, 10MHz Bandwidth, QPSK (-20dBc BW)



Date: 19.MAR.2013 11:28:45

LTE band 5, 10MHz Bandwidth, 16QAM (-20dBc BW)



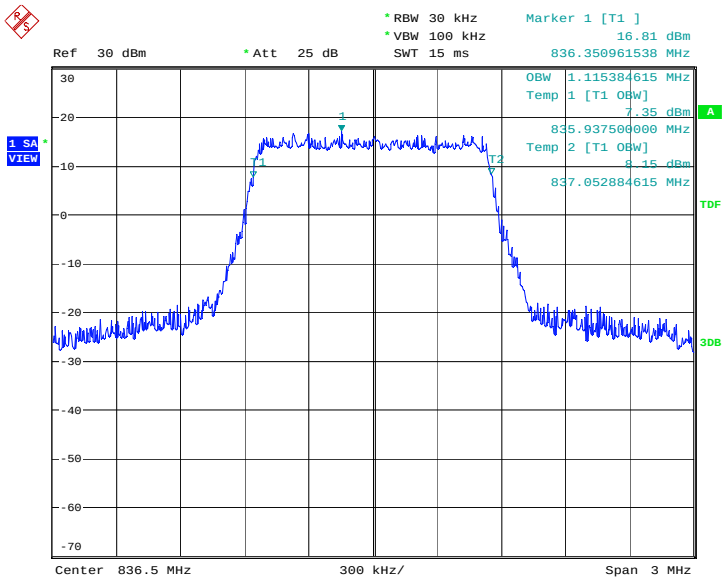
Date: 19.MAR.2013 11:29:08

LTE band 5, 1.4MHz (99%)---IC

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	1115.385	1105.769

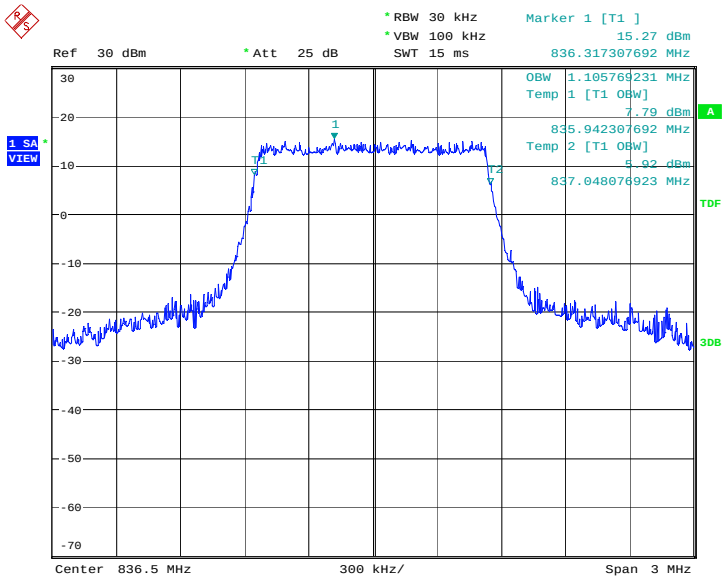
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 5, 1.4MHz Bandwidth, QPSK (-20dBc BW)



Date: 19.MAR.2013 10:56:51

LTE band 5, 1.4MHz Bandwidth, 16QAM (-20dBc BW)



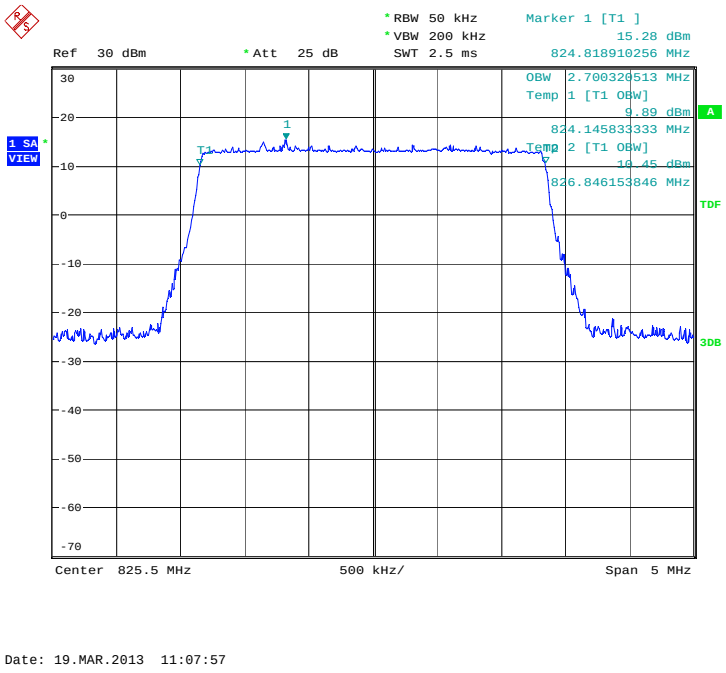
Date: 19.MAR.2013 10:57:15

LTE band 5, 3MHz (99%)---IC

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
825.5	QPSK	16QAM
	2700.321	2692.308

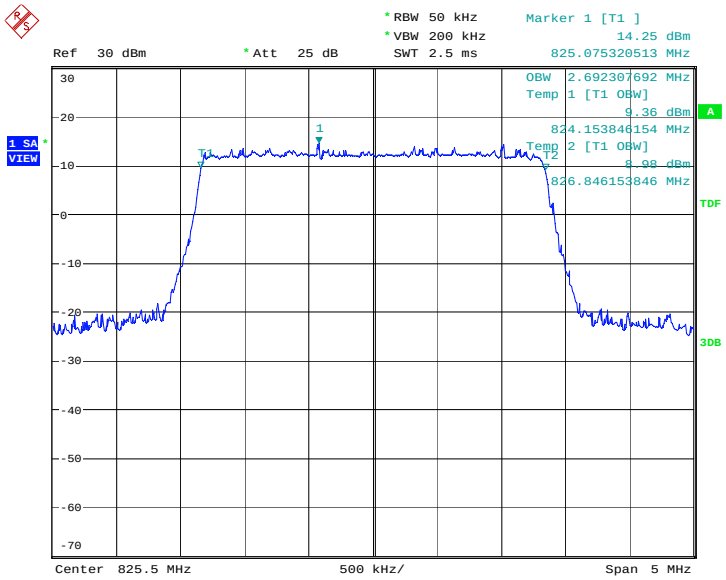
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 5, 3MHz Bandwidth, QPSK (-20dBc BW)



Date: 19.MAR.2013 11:07:57

LTE band 5, 3MHz Bandwidth, 16QAM (-20dBc BW)



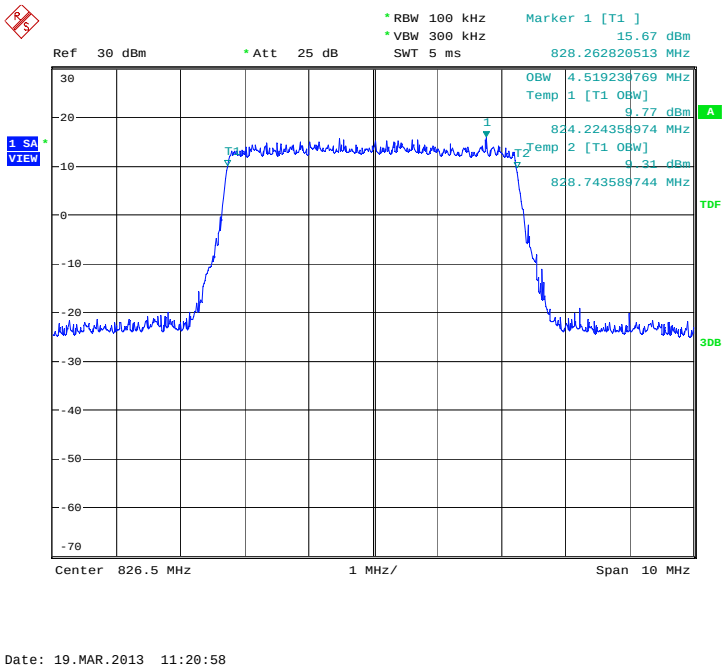
Date: 19.MAR.2013 11:08:20

LTE band 5, 5MHz (99%)---IC

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
826.5	QPSK	16QAM
	4519.231	4503.205

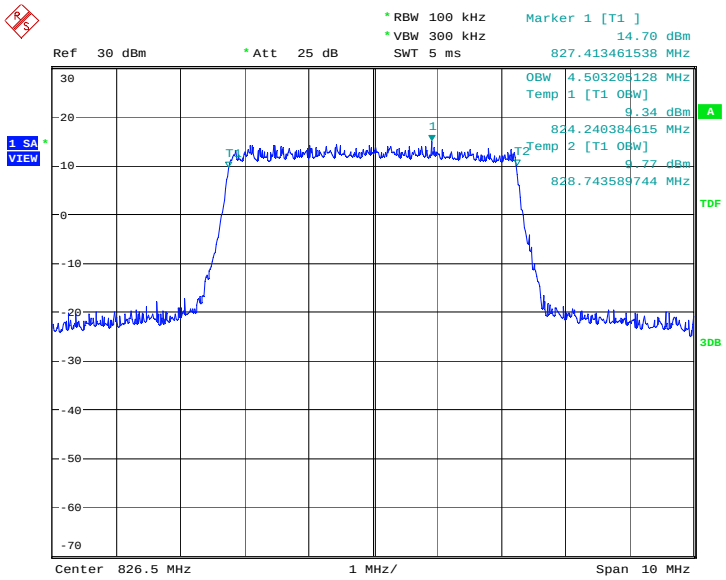
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 5, 5MHz Bandwidth, QPSK (-20dBc BW)



Date: 19.MAR.2013 11:20:58

LTE band 5, 5MHz Bandwidth,16QAM (-20dBc BW)



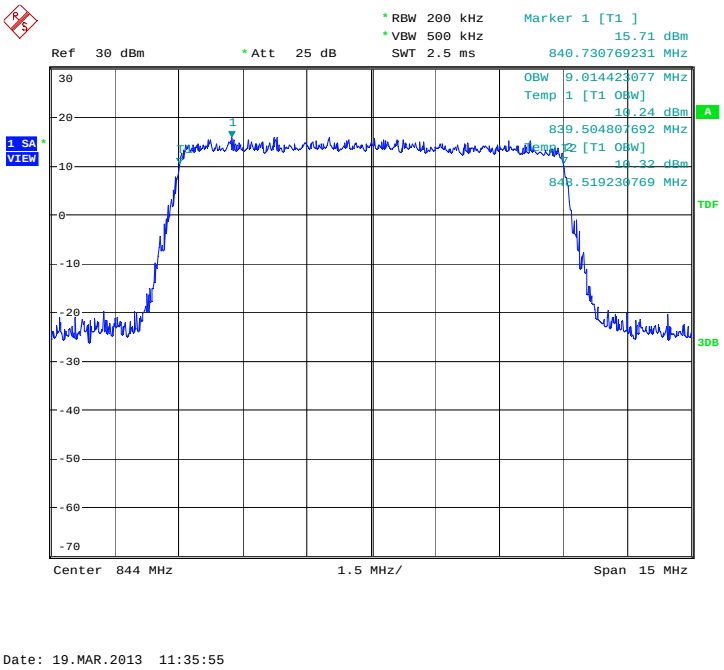
Date: 19.MAR.2013 11:21:22

LTE band 5, 10MHz (99%)----IC

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
844	QPSK	16QAM
	9014.423	8990.385

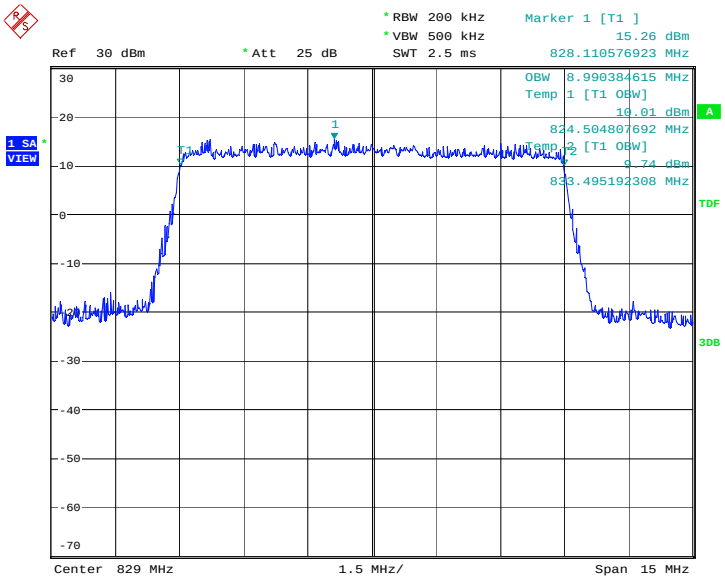
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 5, 10MHz Bandwidth, QPSK (-20dBc BW)



Date: 19.MAR.2013 11:35:55

LTE band 5, 10MHz Bandwidth, 16QAM (-20dBc BW)



Date: 19.MAR.2013 11:33:24

A.6 EMISSION BANDWIDTH

Reference

FCC: CFR Part 22.917(b), 24.238(a), 27.53(h)

IC: RSS-132 Issue 3, Section 4.4. RSS-133 Issue 6, Section 6.4. RSS-139 Issue 2, Section 6.4.

A.6.1Emission Bandwidth Results

Emission 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 LTE band 2, band 4 and band 5. Table below lists the measured -26dBc BW. Spectrum analyzer plots are included on the following pages.

Measurement Parameters:

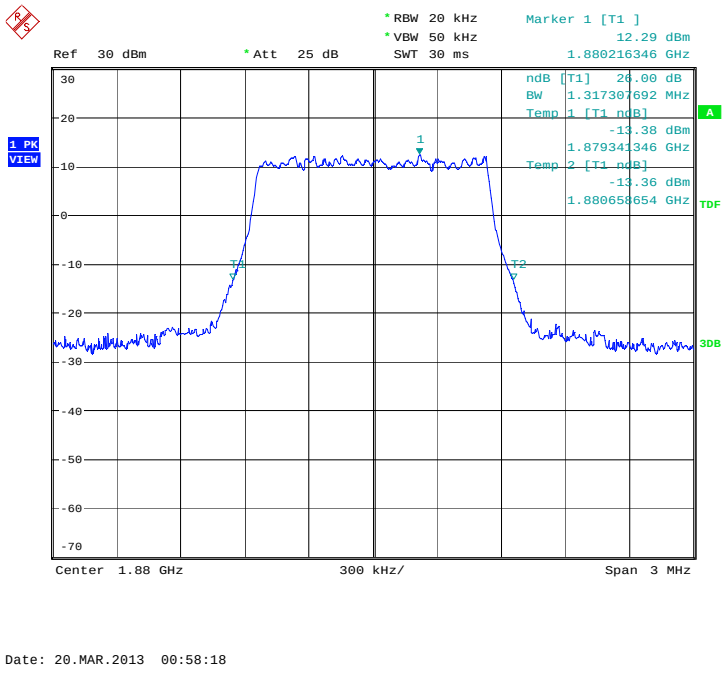
RBW = 20 kHz, VBW = 50 kHz

LTE band 2, 1.4MHz bandwidth (-26dBc)

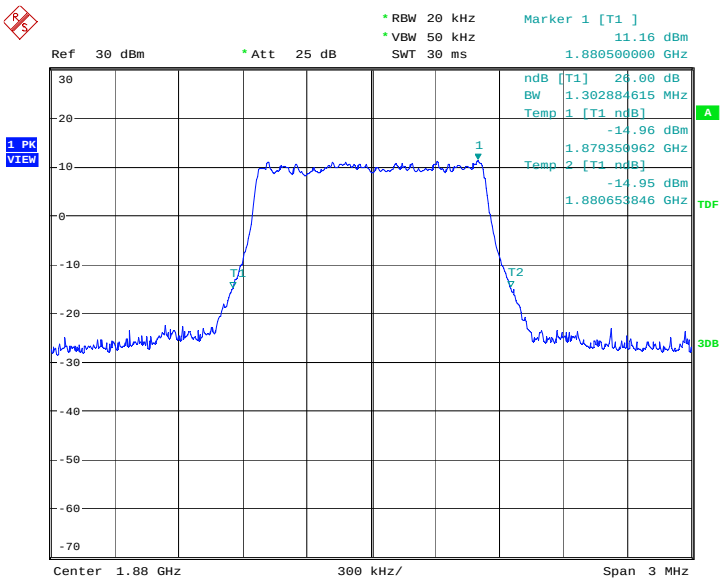
Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)	
1880	QPSK	16QAM
	1317.308	1302.885

Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 2, 1.4MHz bandwidth, QPSK



LTE band 2, 1.4MHz bandwidth, 16QAM



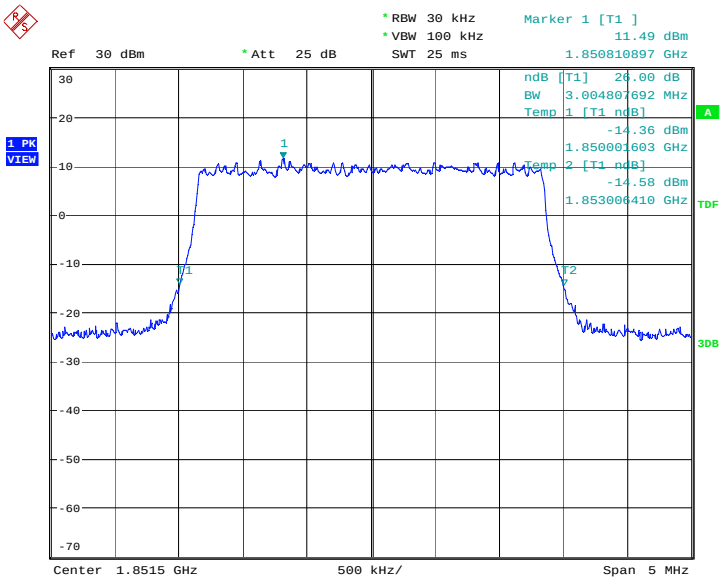
Date: 20.MAR.2013 00:58:44

LTE band 2, 3MHz bandwidth (-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)	
1851.5	QPSK	16QAM
	3004.808	3020.833

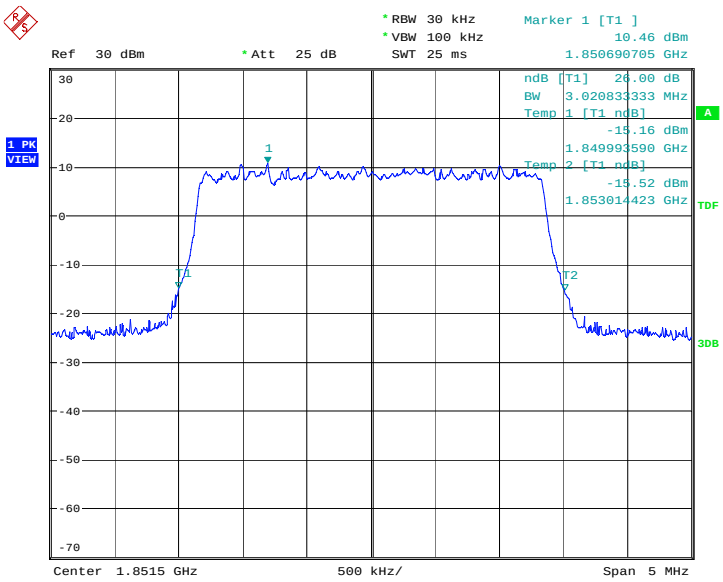
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 2, 3MHz bandwidth, QPSK



Date: 20.MAR.2013 01:17:00

LTE band 2, 3MHz bandwidth, 16QAM



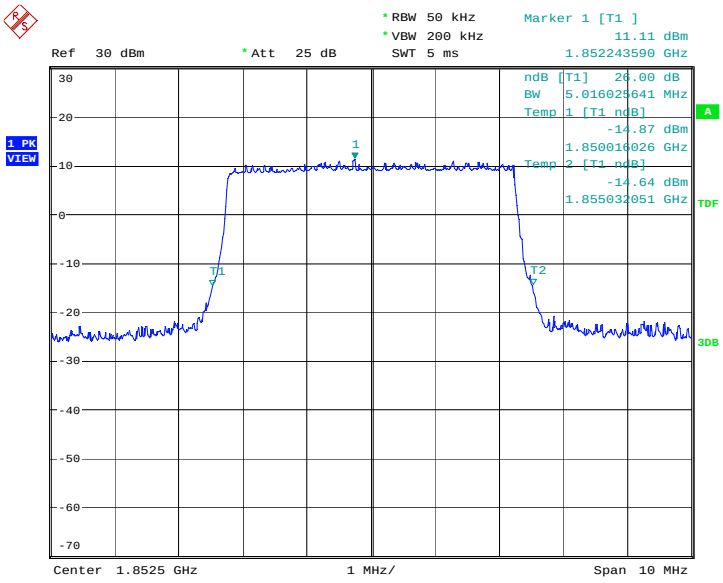
Date: 20.MAR.2013 01:17:26

LTE band 2, 5MHz bandwidth (-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)	
1852.5	QPSK	16QAM
	5016.026	4967.949

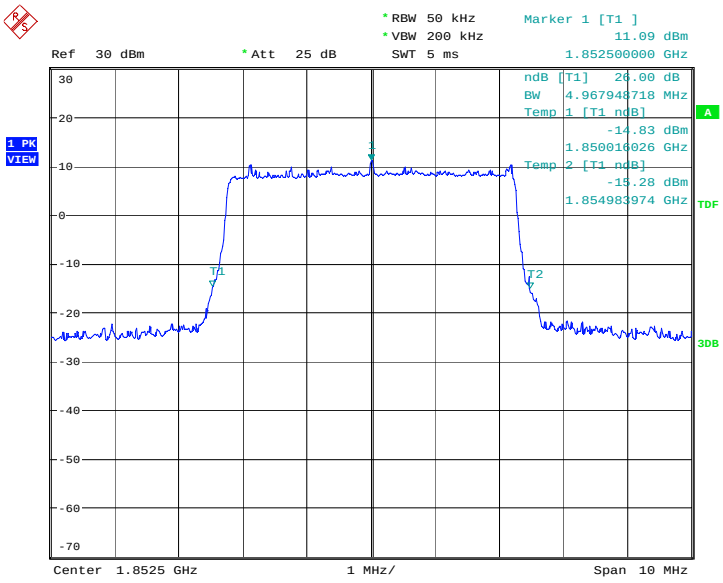
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 2, 5MHz bandwidth, QPSK



Date: 20.MAR.2013 01:36:53

LTE band 2, 5MHz bandwidth, 16QAM



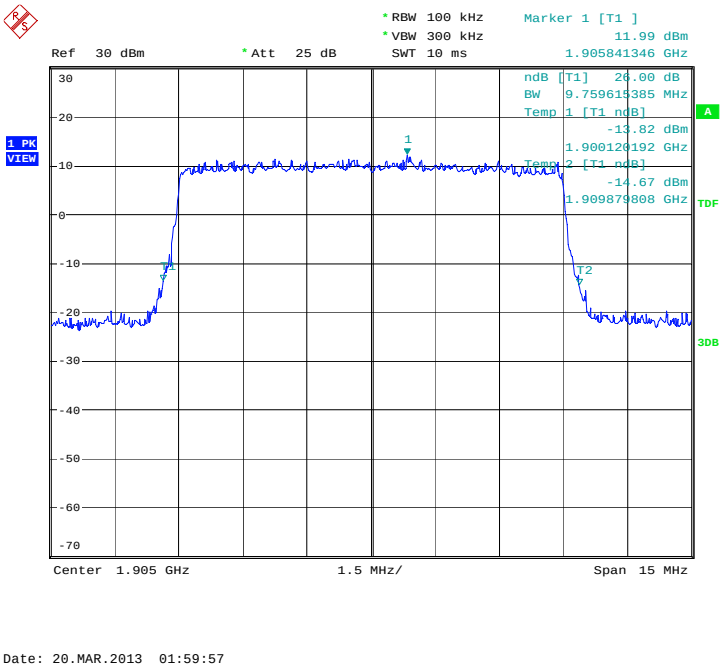
Date: 20.MAR.2013 01:37:19

LTE band 2, 10MHz bandwidth (-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)	
1905	QPSK	16QAM
	9759.615	9687.500

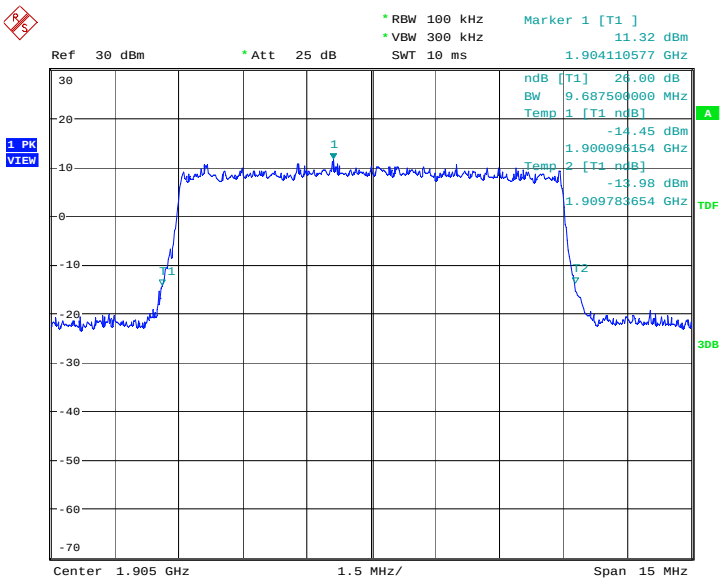
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 2, 10MHz bandwidth, QPSK



Date: 20.MAR.2013 01:59:57

LTE band 2, 10MHz bandwidth, 16QAM



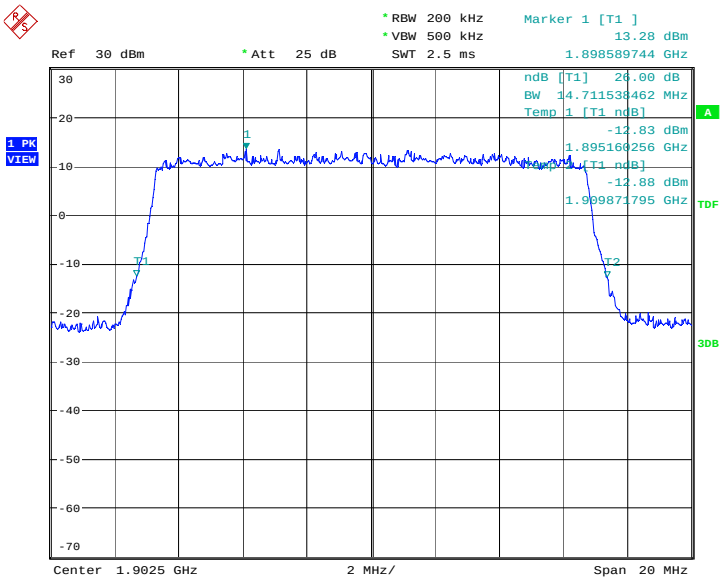
Date: 20.MAR.2013 02:00:22

LTE band 2, 15MHz bandwidth (-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)	
1902.5	QPSK	16QAM
	14711.538	14775.641

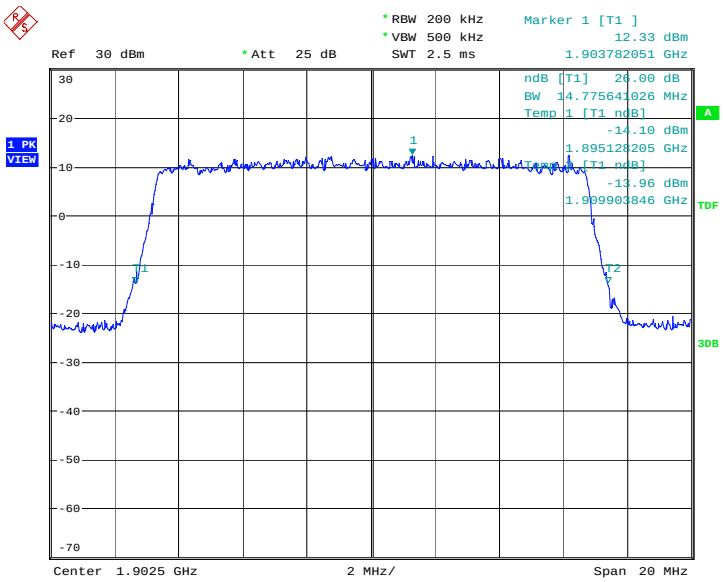
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 2, 15MHz bandwidth, QPSK



Date: 20.MAR.2013 02:21:36

LTE band 2, 15MHz bandwidth, 16QAM



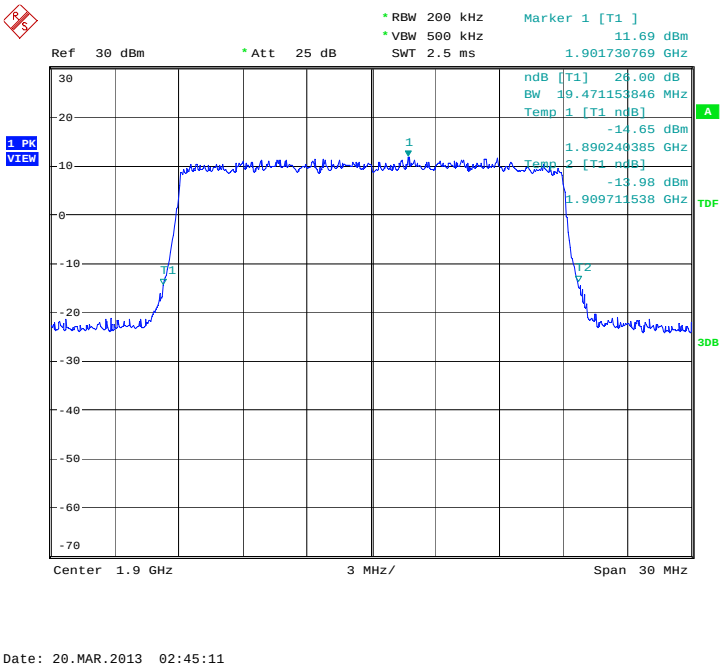
Date: 20.MAR.2013 02:22:02

LTE band 2, 20MHz bandwidth (-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)	
1900	QPSK	16QAM
	19471.154	19471.154

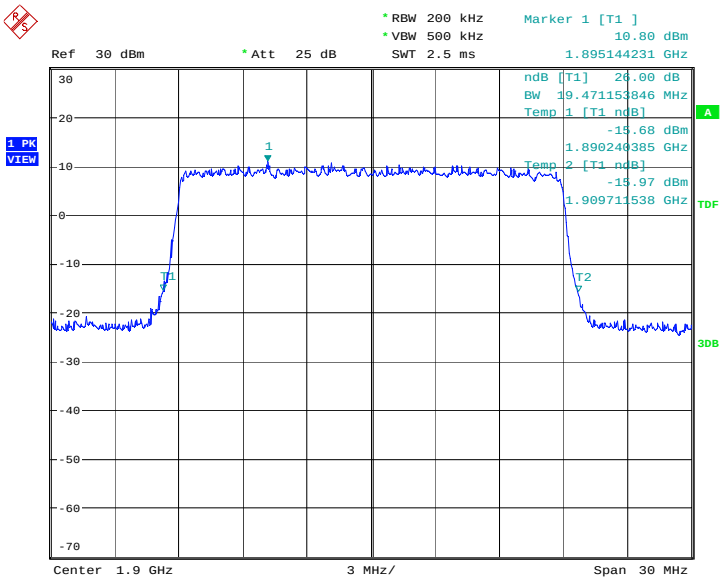
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 2, 20MHz bandwidth, QPSK



Date: 20.MAR.2013 02:45:11

LTE band 2, 20MHz bandwidth, 16QAM



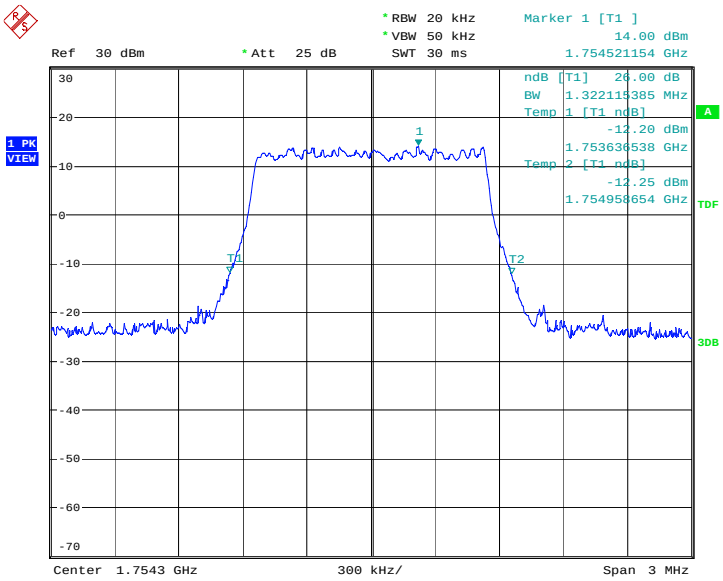
Date: 20.MAR.2013 02:45:37

LTE band 4, 1.4MHz bandwidth (-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)	
1710.7	QPSK	16QAM
	1322.115	1307.692

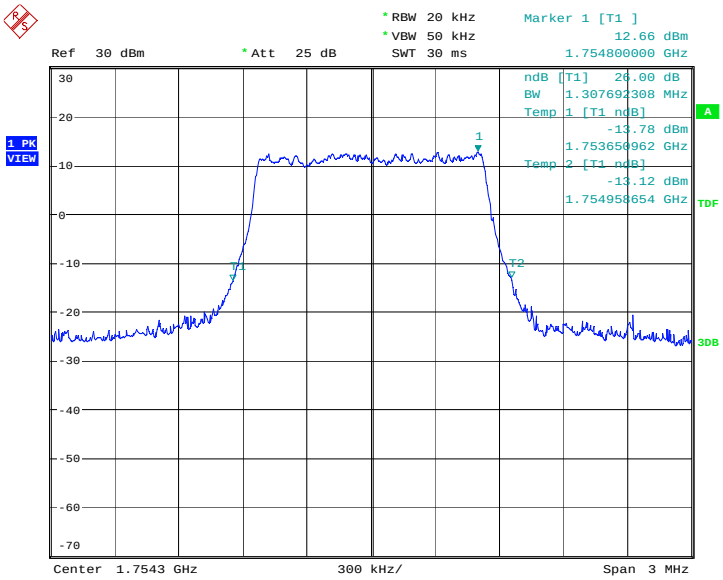
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 4, 1.4MHz bandwidth, QPSK



Date: 21.MAR.2013 00:16:07

LTE band 4, 1.4MHz bandwidth, 16QAM



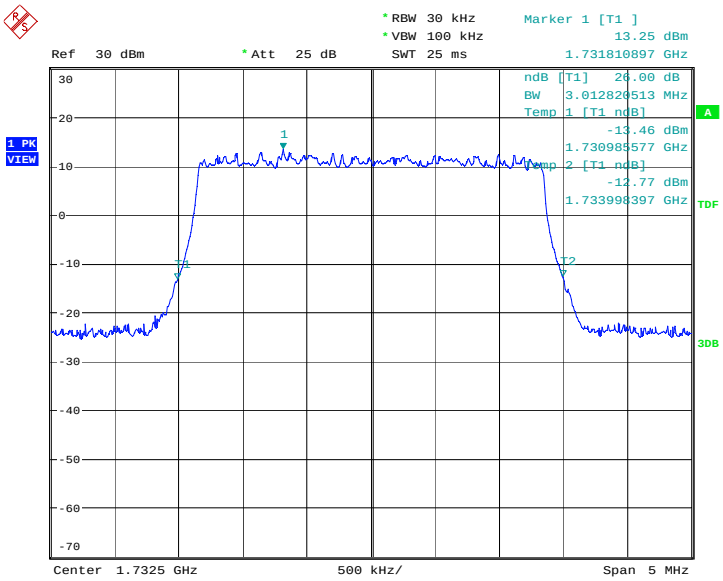
Date: 21.MAR.2013 00:16:33

LTE band 4, 3MHz bandwidth (-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)	
1732.5	QPSK	16QAM
	3012.821	3004.808

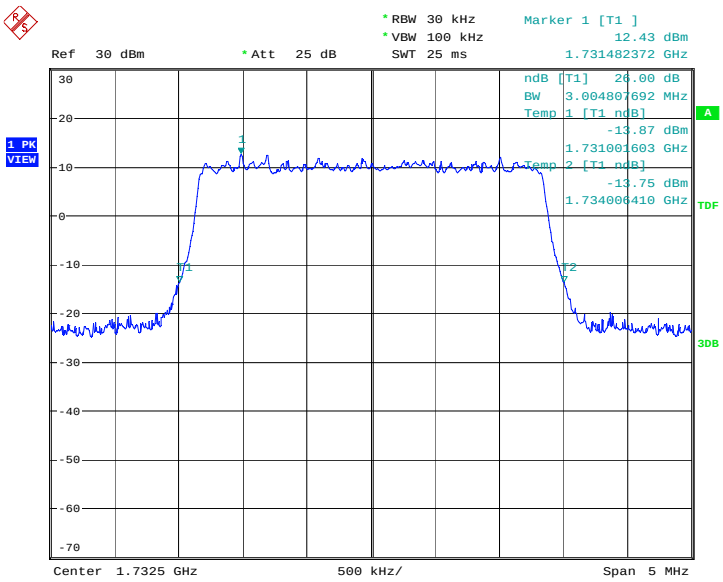
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 4, 3MHz bandwidth, QPSK



Date: 21.MAR.2013 00:22:27

LTE band 4, 3MHz bandwidth, 16QAM



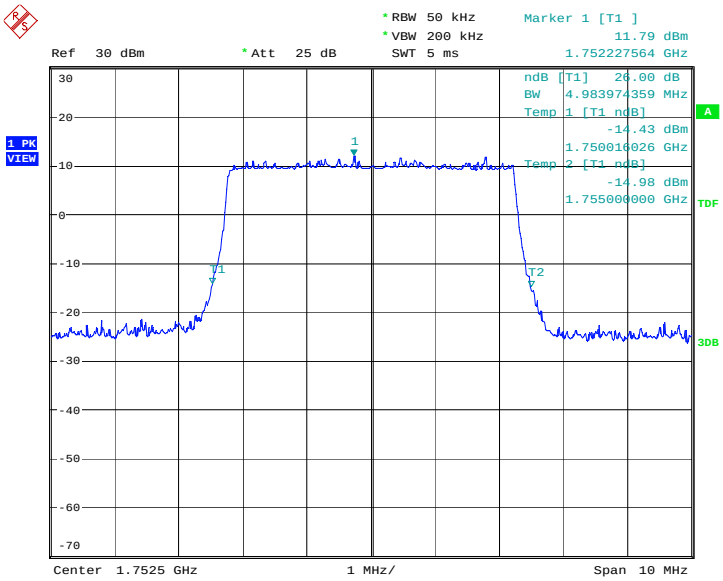
Date: 21.MAR.2013 00:22:53

LTE band 4, 5MHz bandwidth (-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)	
1752.5	QPSK	16QAM
	4983.974	4951.923

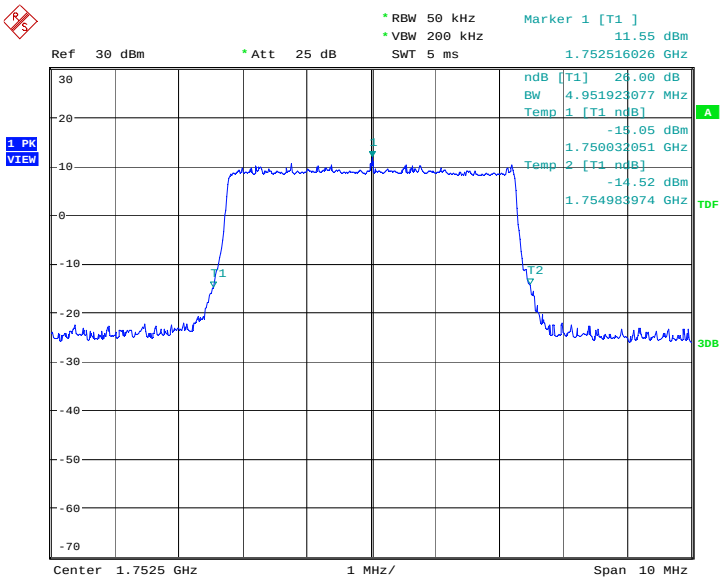
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 4, 5MHz bandwidth, QPSK



Date: 21.MAR.2013 00:31:19

LTE band 4, 5MHz bandwidth, 16QAM



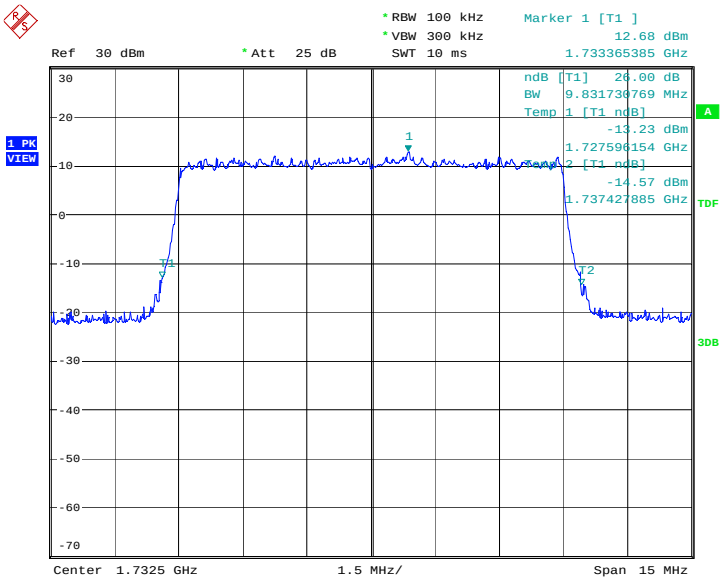
Date: 21.MAR.2013 00:31:45

LTE band 4, 10MHz bandwidth (-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)	
1732.5	QPSK	16QAM
	9831.731	9831.731

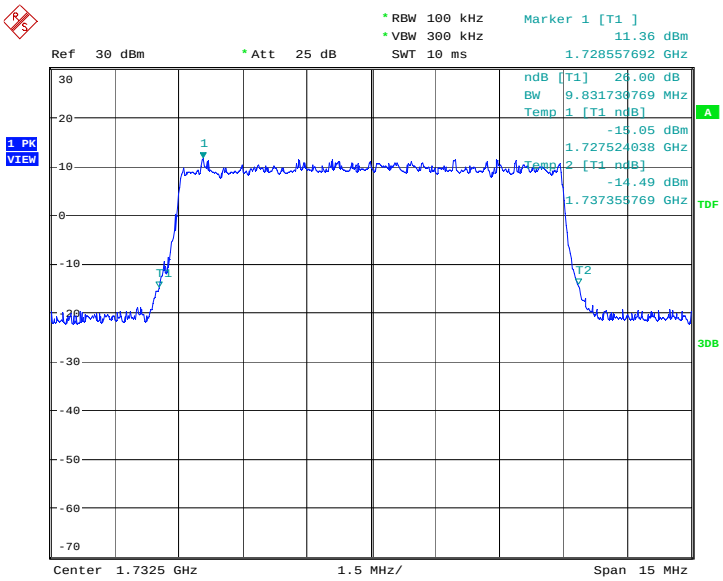
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 4, 10MHz bandwidth, QPSK



Date: 21.MAR.2013 00:37:08

LTE band 4, 10MHz bandwidth, 16QAM



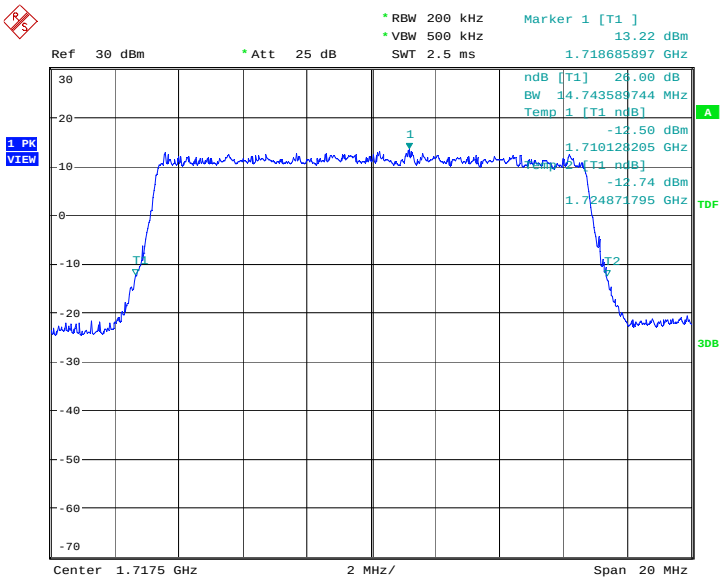
Date: 21.MAR.2013 00:37:34

LTE band 4, 15MHz bandwidth (-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)	
1717.5	QPSK	16QAM
	14743.590	14743.590

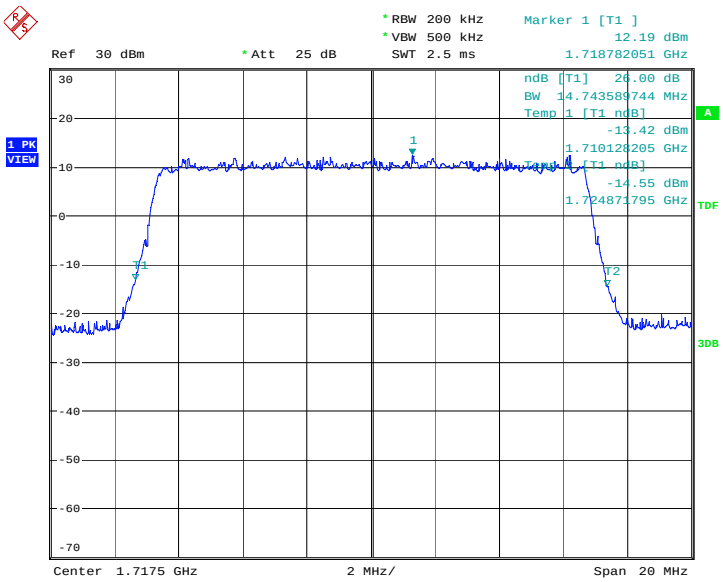
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 4, 15MHz bandwidth, QPSK



Date: 21.MAR.2013 00:47:00

LTE band 4, 15MHz bandwidth, 16QAM



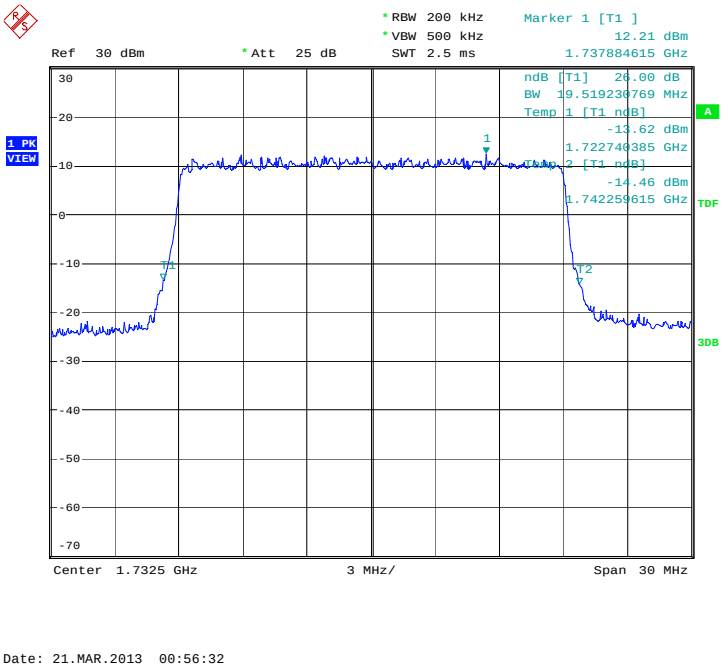
Date: 21.MAR.2013 00:47:26

LTE band 4, 20MHz bandwidth (-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)	
1732.5	QPSK	16QAM
	19519.231	19423.077

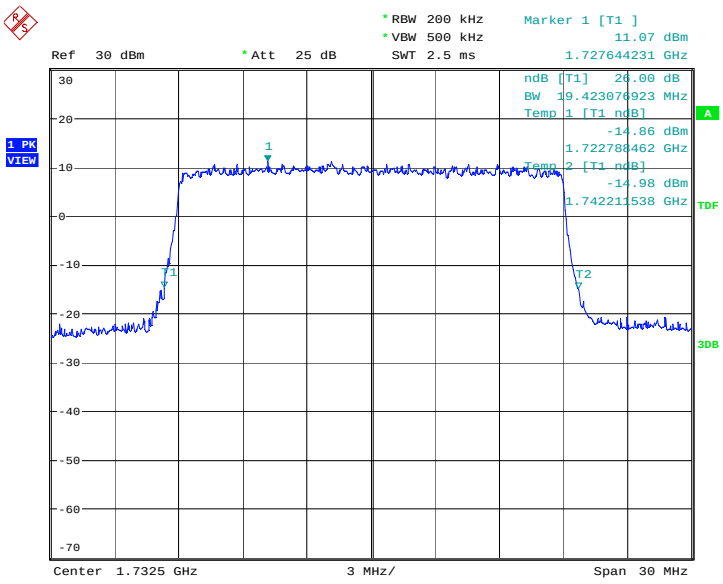
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 4, 20MHz bandwidth, QPSK



Date: 21.MAR.2013 00:56:32

LTE band 4, 20MHz bandwidth, 16QAM



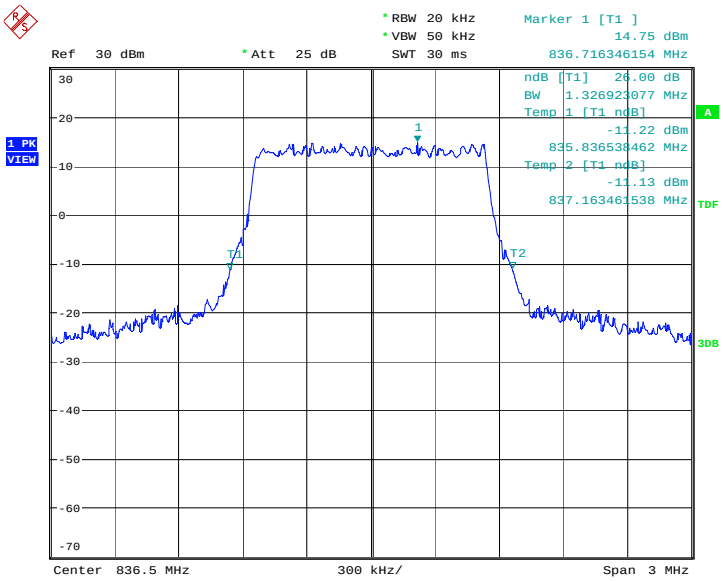
Date: 21.MAR.2013 00:56:58

LTE band 5, 1.4MHz bandwidth (-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)	
836.5	QPSK	16QAM
	1326.923	1307.692

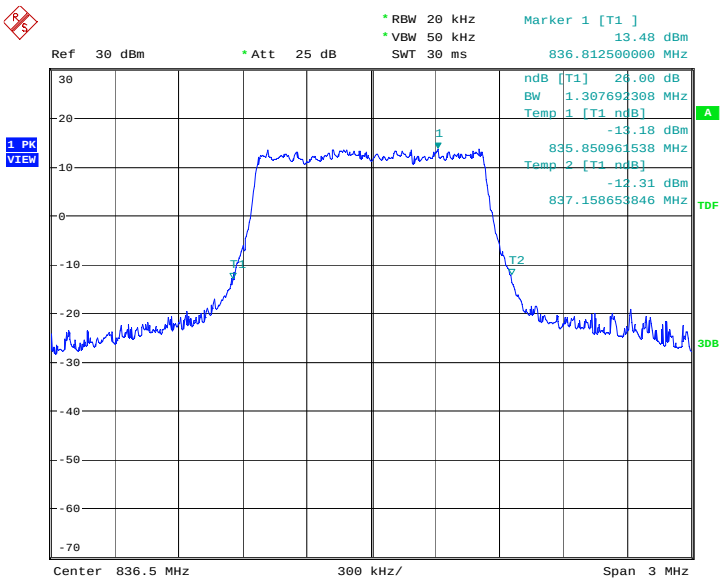
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 5, 1.4MHz bandwidth, QPSK



Date: 19.MAR.2013 23:30:32

LTE band5, 1.4MHz bandwidth, 16QAM



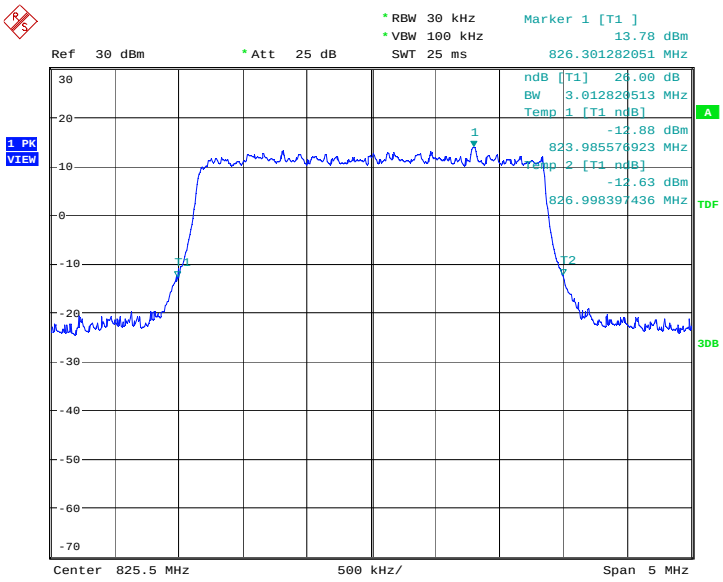
Date: 19.MAR.2013 23:30:58

LTE band 5, 3MHz bandwidth (-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)	
825.5	QPSK	16QAM
	3012.821	3012.821

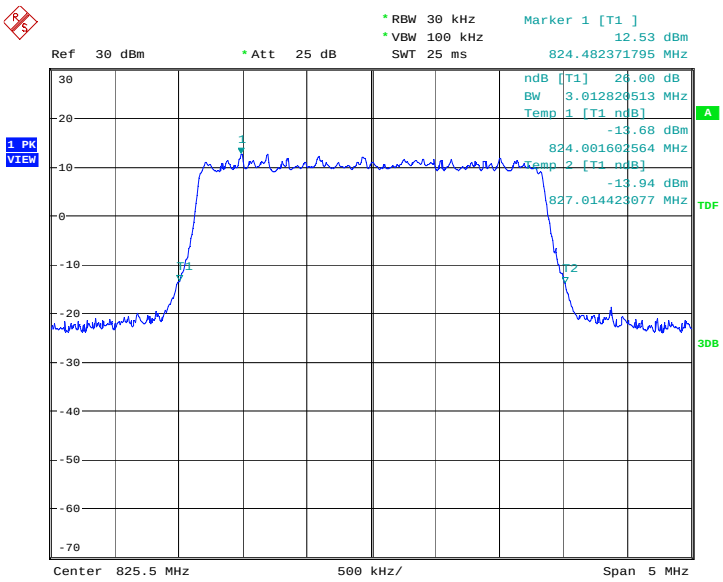
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 5, 3MHz bandwidth, QPSK



Date: 19.MAR.2013 23:59:00

LTE band 5, 3MHz bandwidth, 16QAM



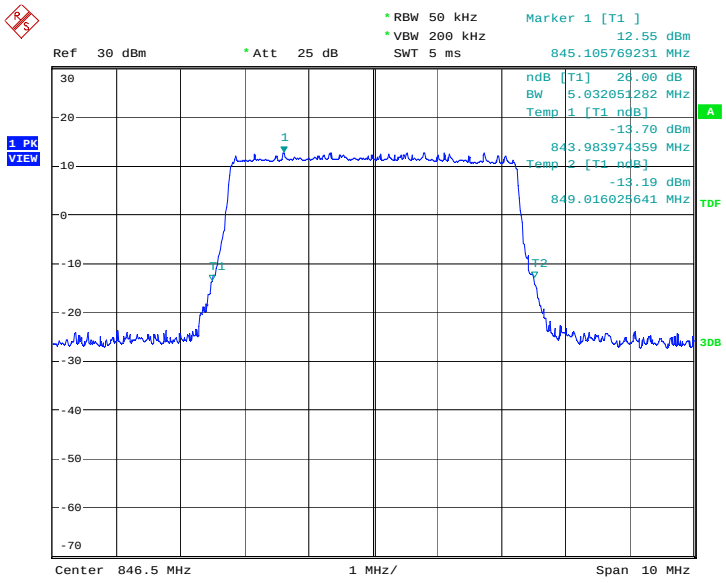
Date: 19.MAR.2013 23:35:09

LTE band 5, 5MHz bandwidth (-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)	
846.5	QPSK	16QAM
	5032.051	5016.026

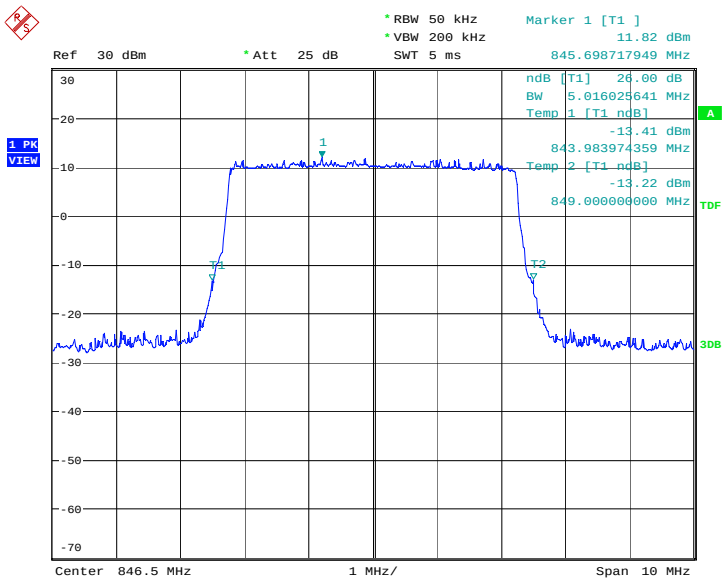
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 5, 5MHz bandwidth, QPSK



Date: 20.MAR.2013 00:05:03

LTE band 5, 5MHz bandwidth, 16QAM



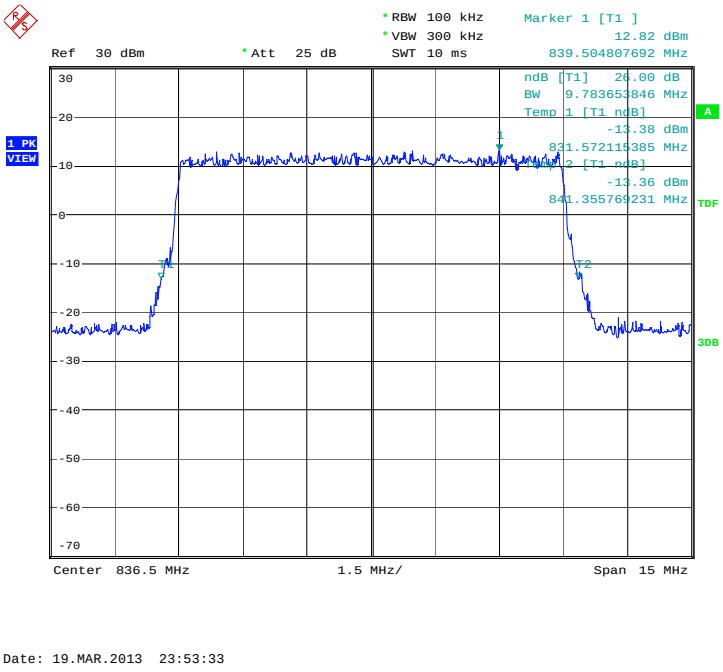
Date: 19.MAR.2013 23:48:40

LTE band 5, 10MHz bandwidth (-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)	
836.5	QPSK	16QAM
	9783.654	9759.615

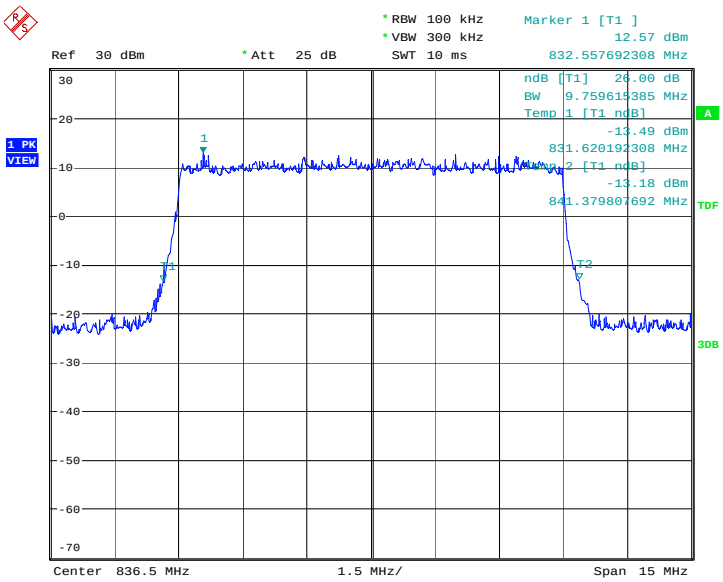
Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

LTE band 5, 10MHz bandwidth, QPSK



Date: 19.MAR.2013 23:53:33

LTE band 10, 10MHz bandwidth, 16QAM



Date: 19.MAR.2013 23:53:59

A.7 BAND EDGE COMPLIANCE

Reference

FCC: CFR Part 22.917(b), 24.238(a), 27.53(h).

IC: RSS-132 Issue 3, Section 4.4. RSS-133 Issue 6, Section 6.4. RSS-139 Issue 2, Section 6.4.

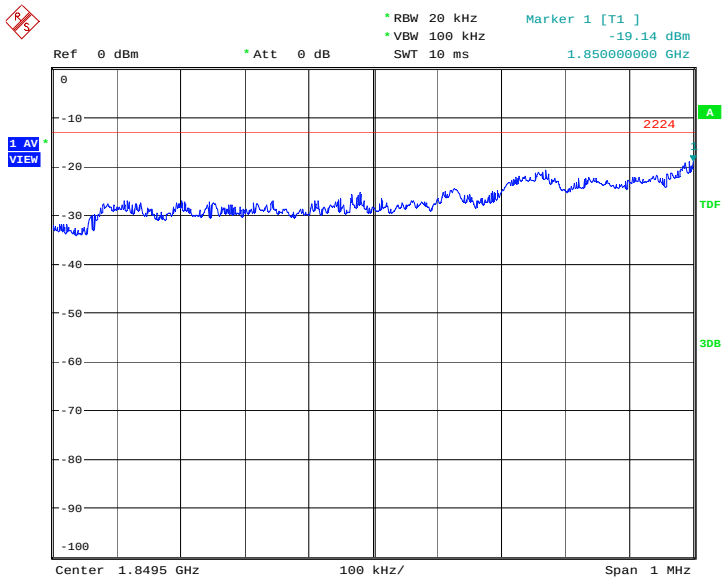
A.7.1 Measurement limit

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.

A.7.2 Measurement result

LTE band 2, 1.4MHz

LOW BAND EDGE BLOCK-QPSK



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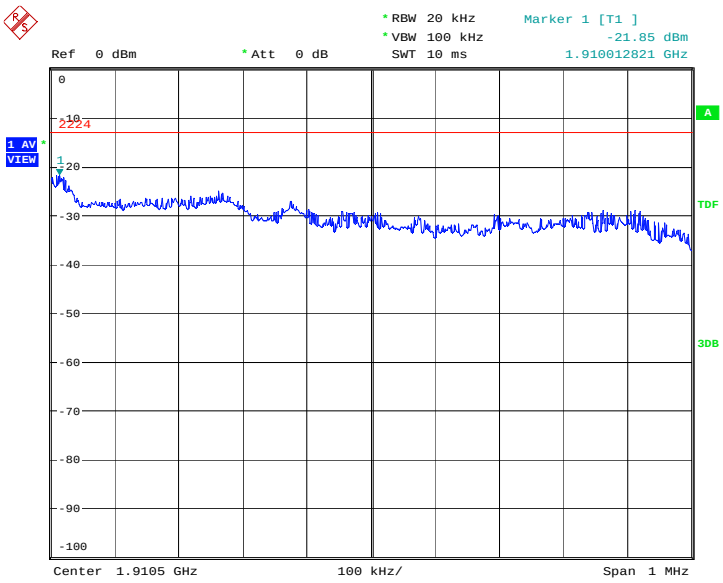
HIGH BAND EDGE BLOCK-QPSK



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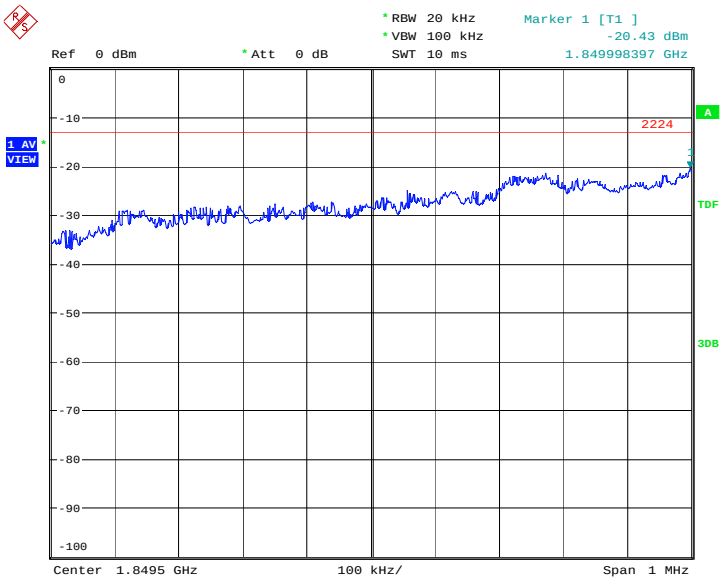
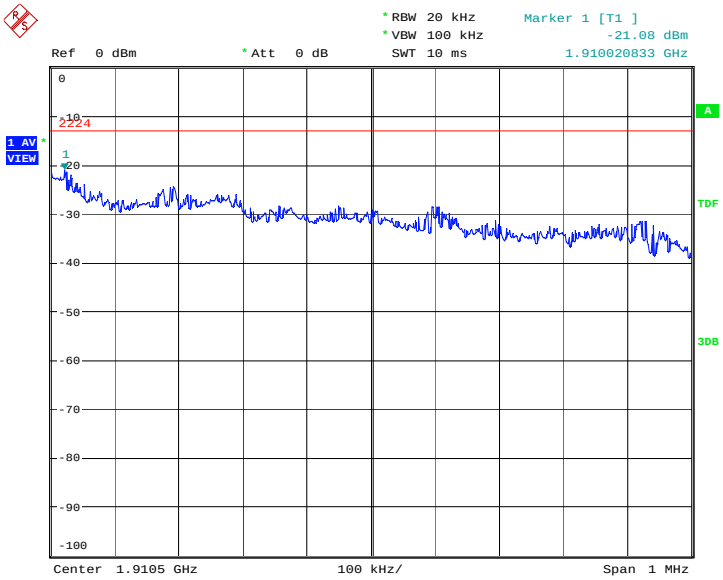


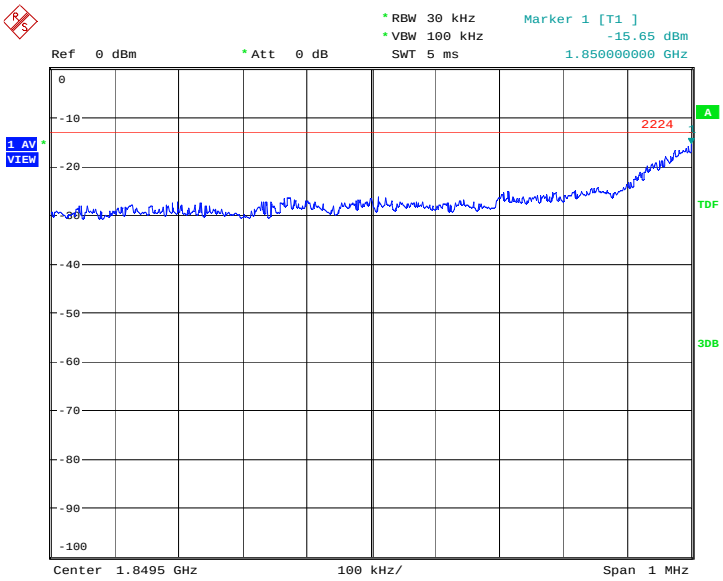
Date: 20.MAR.2013 00:57:13

HIGH BAND EDGE BLOCK-16QAM



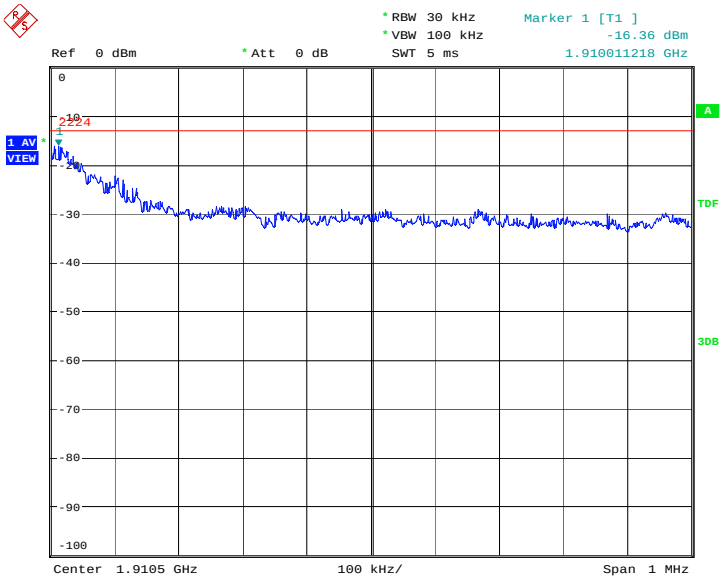
LTE band 2, 3MHz

LOW BAND EDGE BLOCK-QPSK



Date: 20.MAR.2013 01:19:19

HIGH BAND EDGE BLOCK-QPSK



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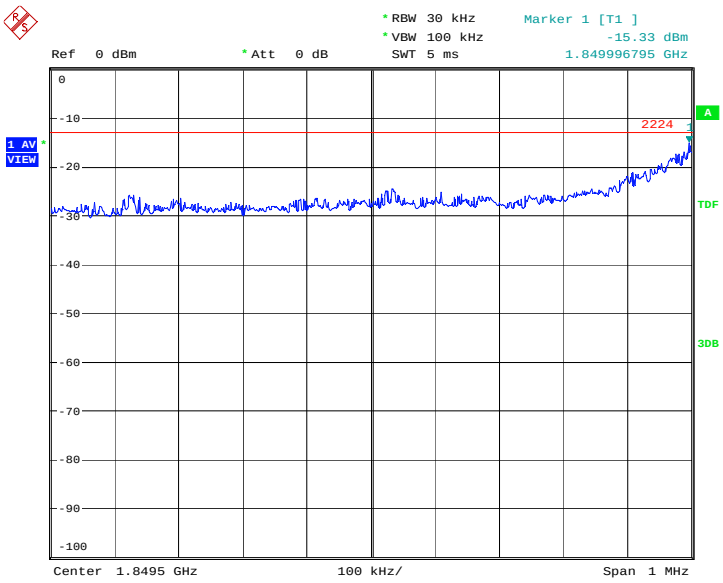
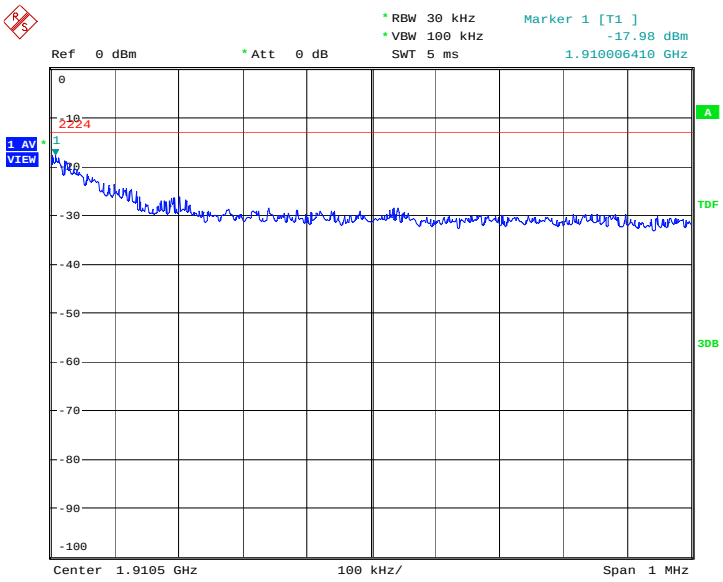


Date: 20.MAR.2013 01:19:35

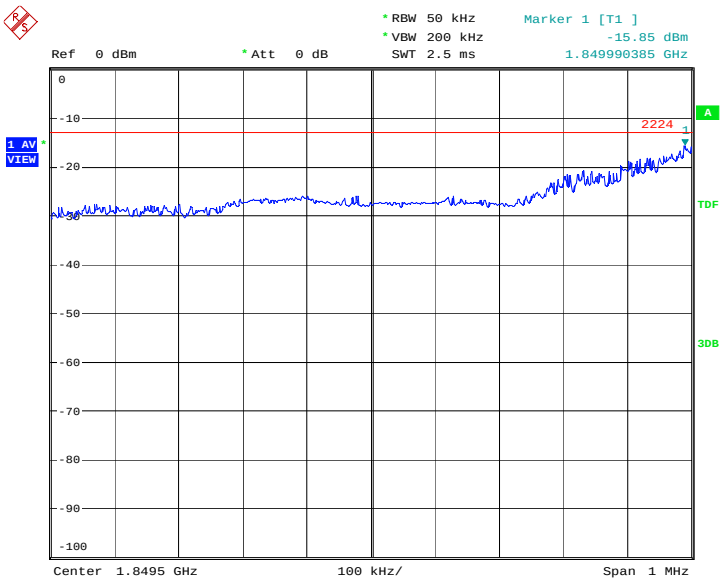
HIGH BAND EDGE BLOCK-16QAM



Date: 20.MAR.2013 01:23:46

LTE band 2, 5MHz

LOW BAND EDGE BLOCK-QPSK



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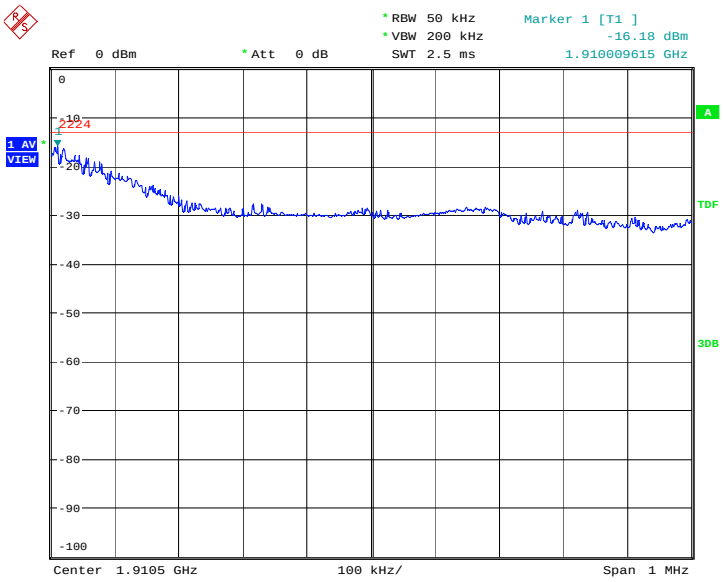
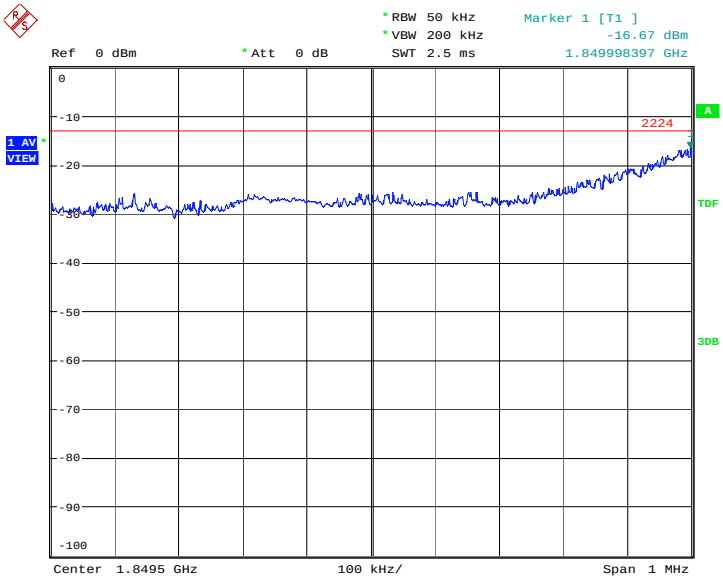
HIGH BAND EDGE BLOCK-QPSK



Date: 20.MAR.2013 01:42:23

LOW BAND EDGE BLOCK-16QAM



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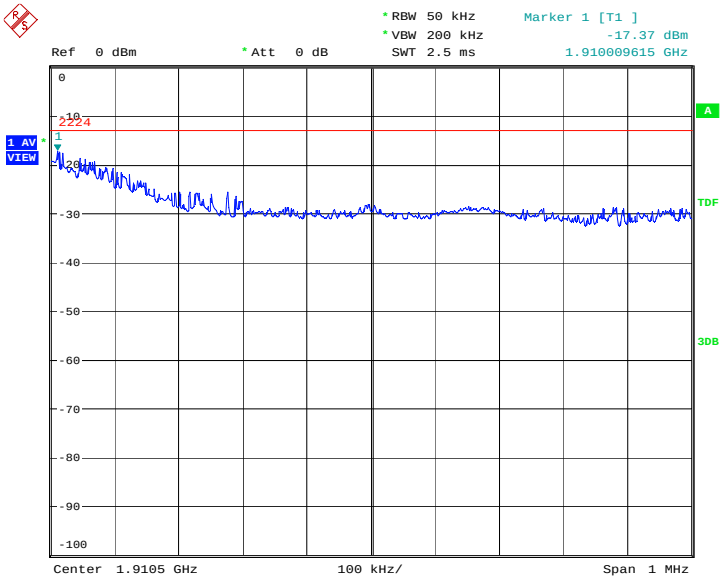

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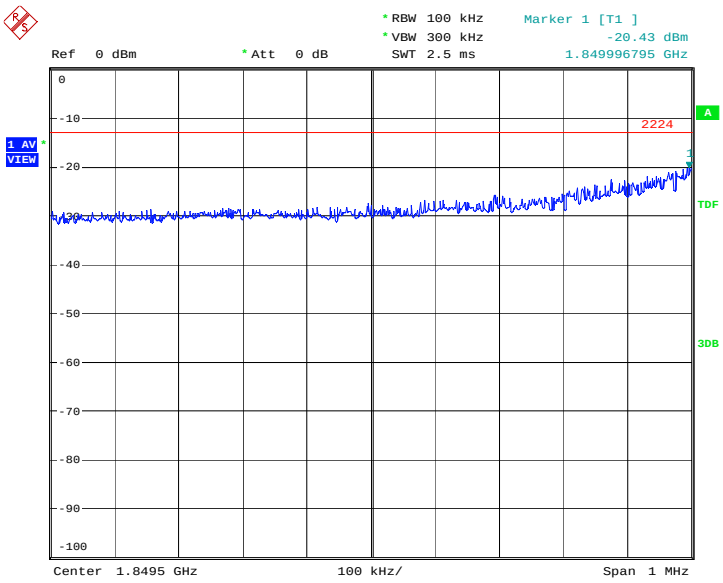
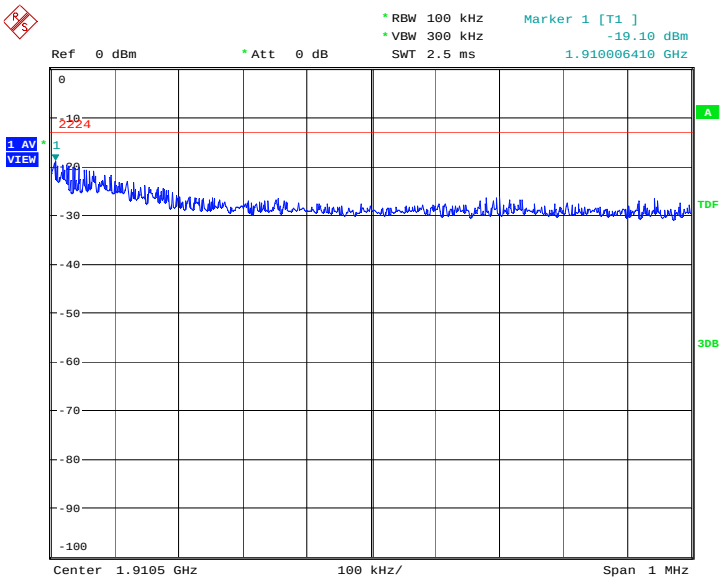
LTE band 2, 10MHz

LOW BAND EDGE BLOCK-QPSK



Date: 20.MAR.2013 01:57:05

HIGH BAND EDGE BLOCK-QPSK



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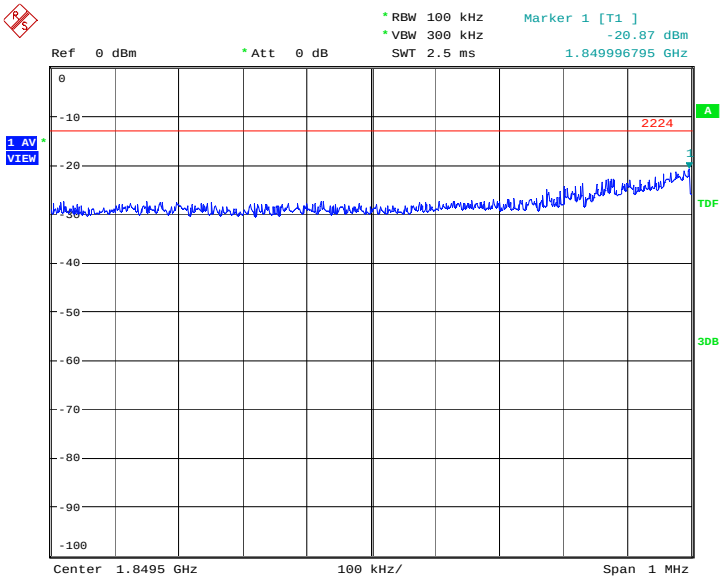

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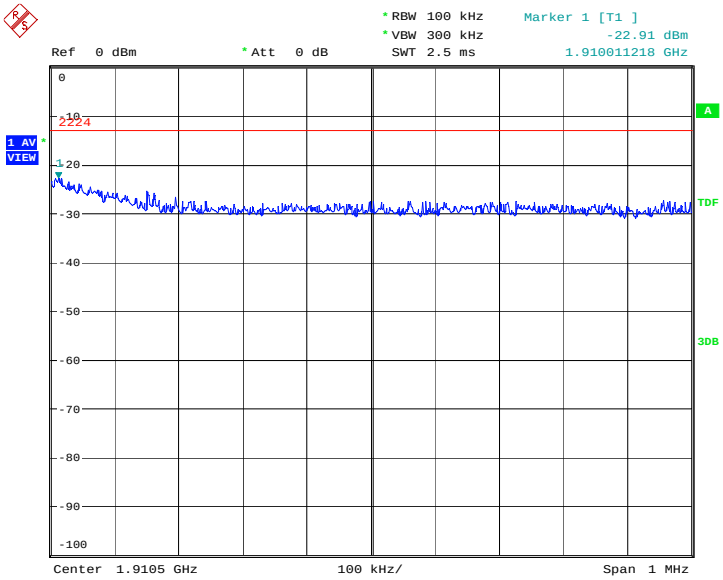
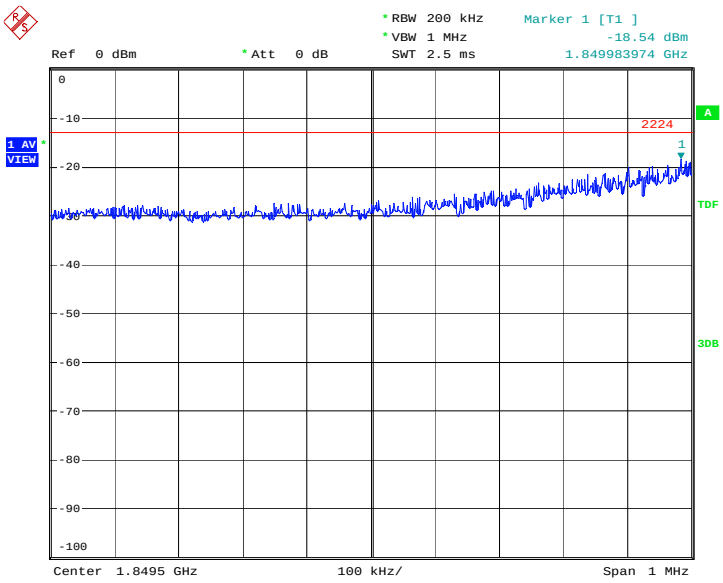


Date: 20.MAR.2013 02:01:31

LTE band 2, 15MHz

LOW BAND EDGE BLOCK-QPSK



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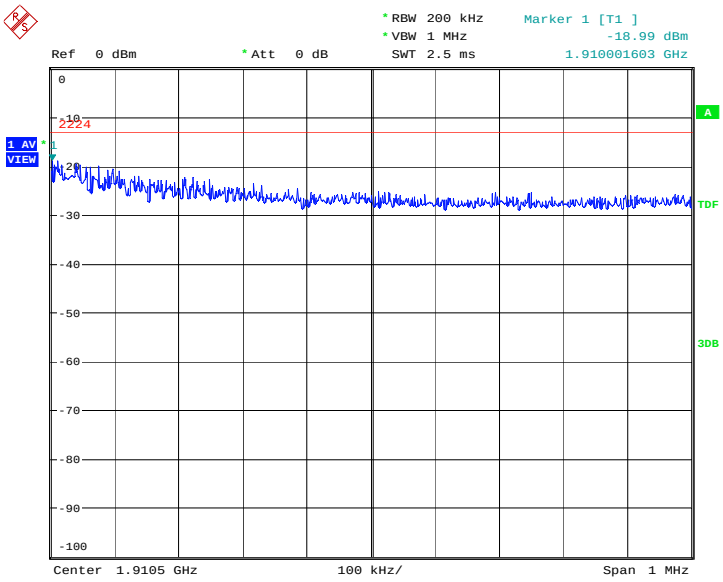
HIGH BAND EDGE BLOCK-QPSK



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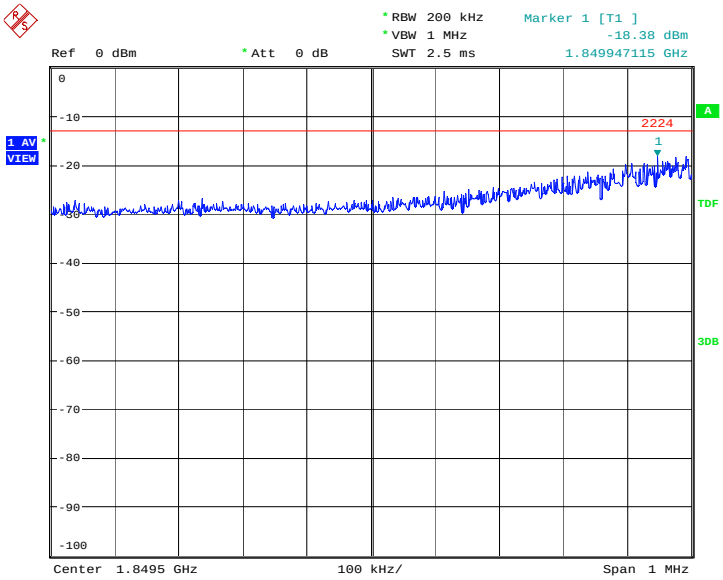

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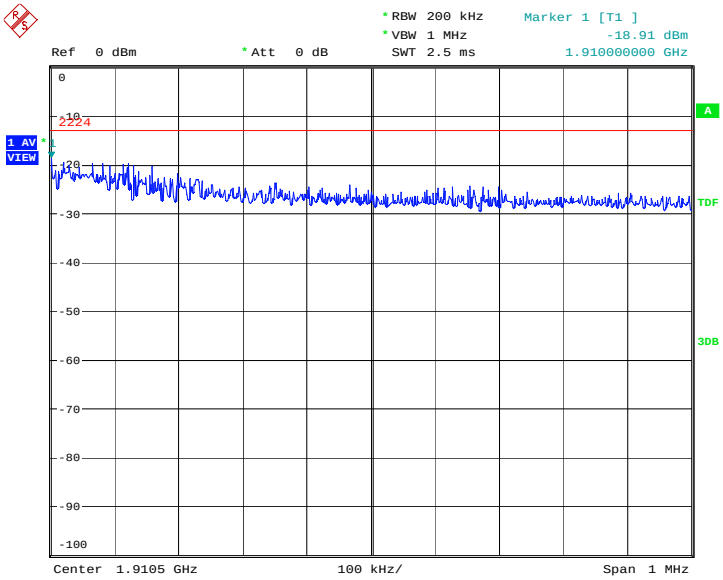
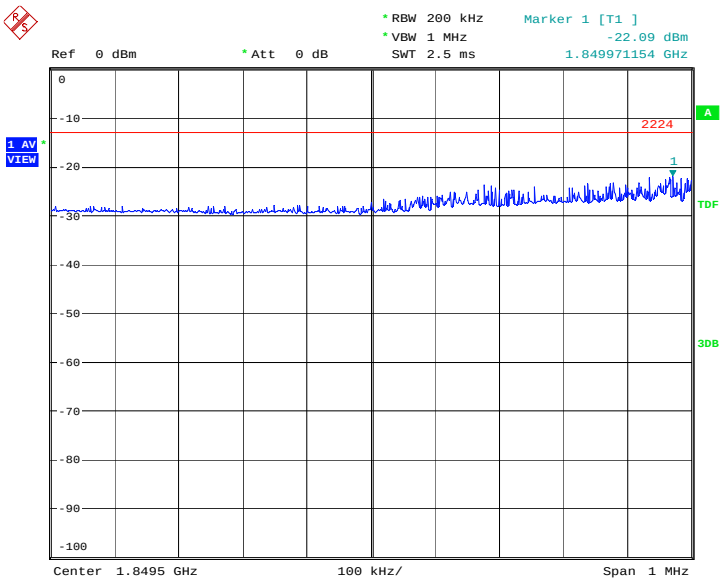


Date: 20.MAR.2013 02:23:11

LTE band 2, 20MHz

LOW BAND EDGE BLOCK-QPSK



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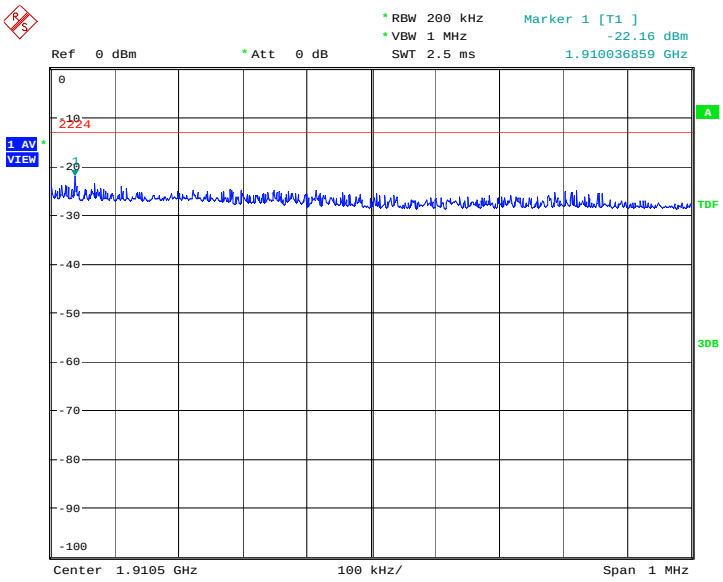
HIGH BAND EDGE BLOCK-QPSK



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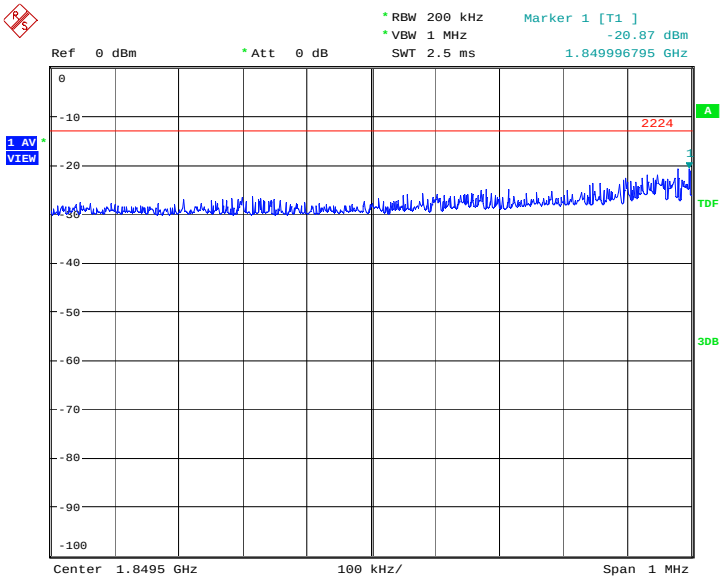

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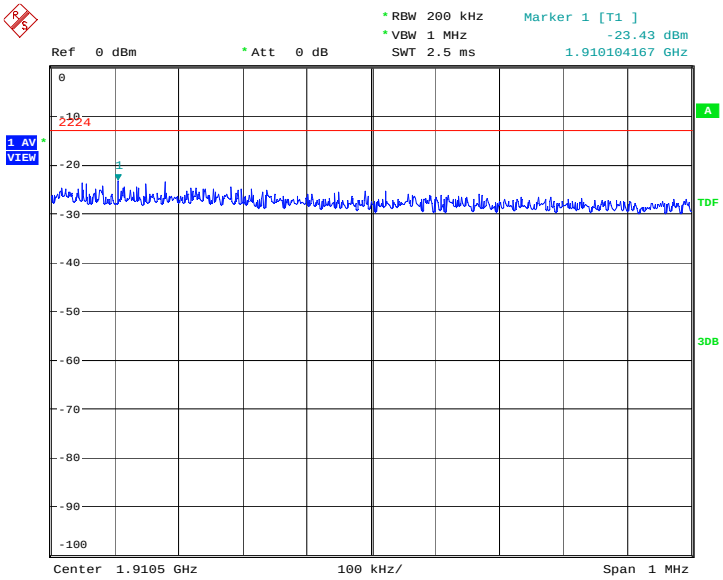
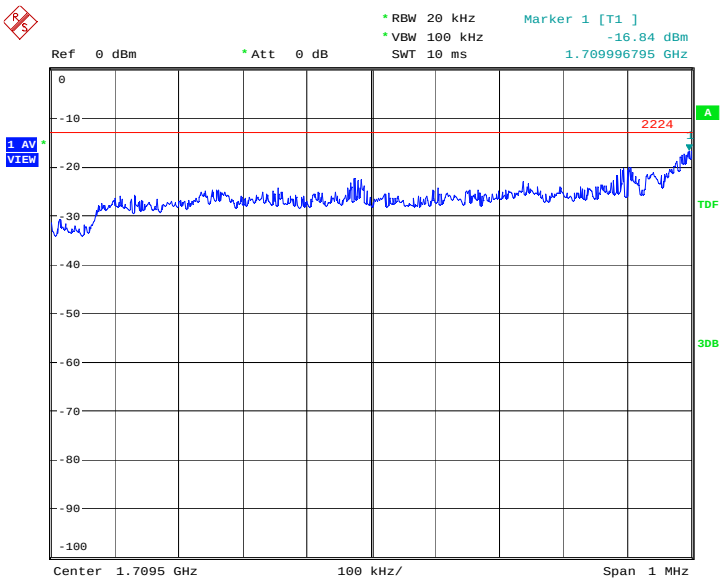


Date: 20.MAR.2013 02:46:46

LTE band 4, 1.4MHz

LOW BAND EDGE BLOCK-QPSK



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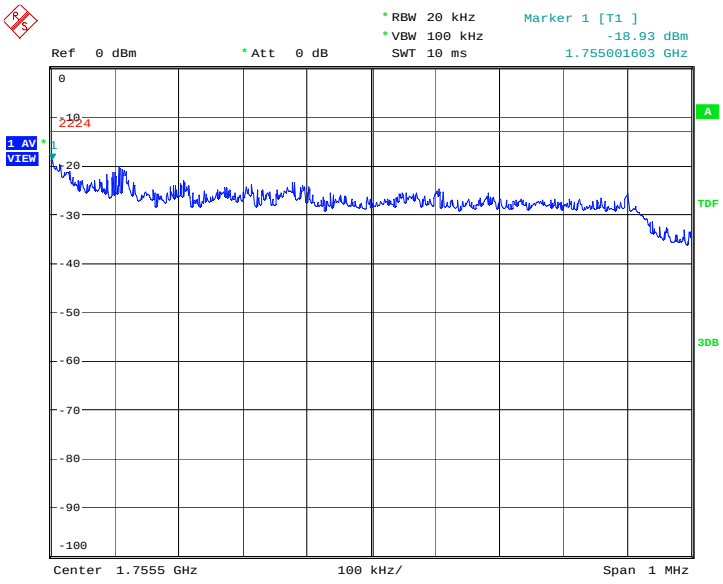

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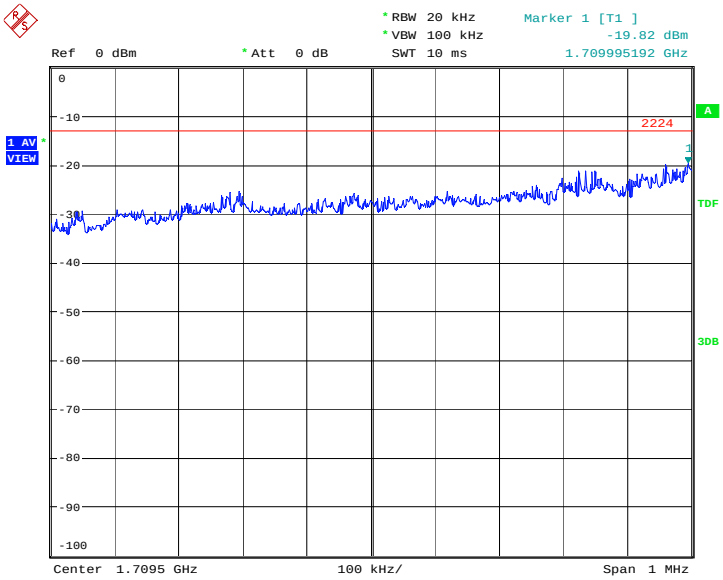

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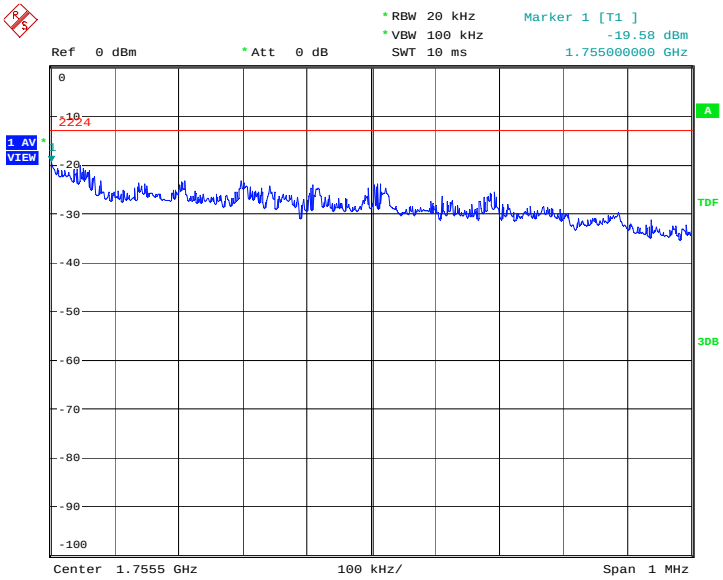
HIGH BAND EDGE BLOCK-16QAM



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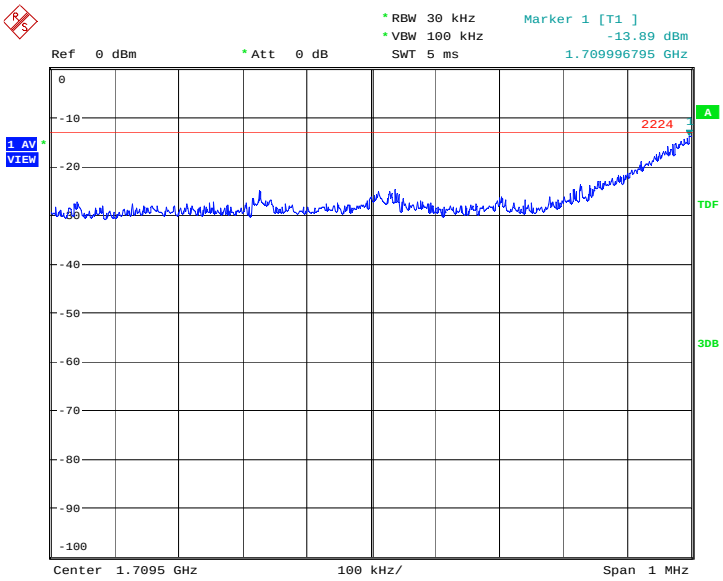
LTE band 4, 3MHz

LOW BAND EDGE BLOCK-QPSK



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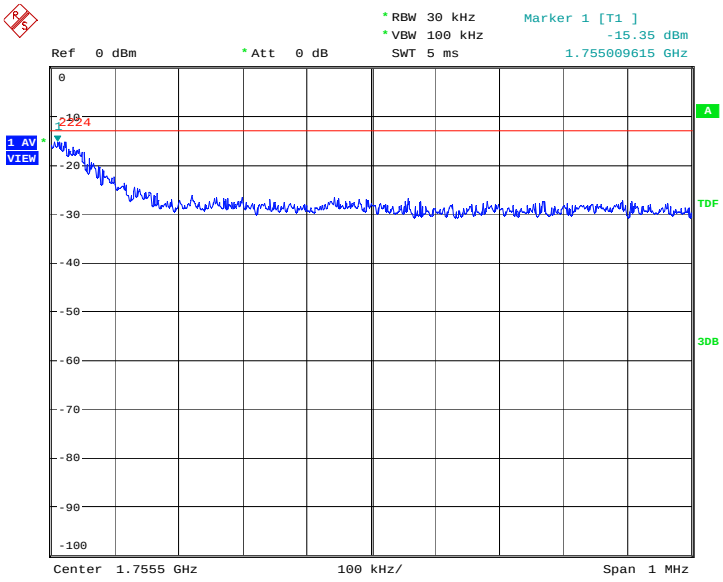
HIGH BAND EDGE BLOCK-QPSK



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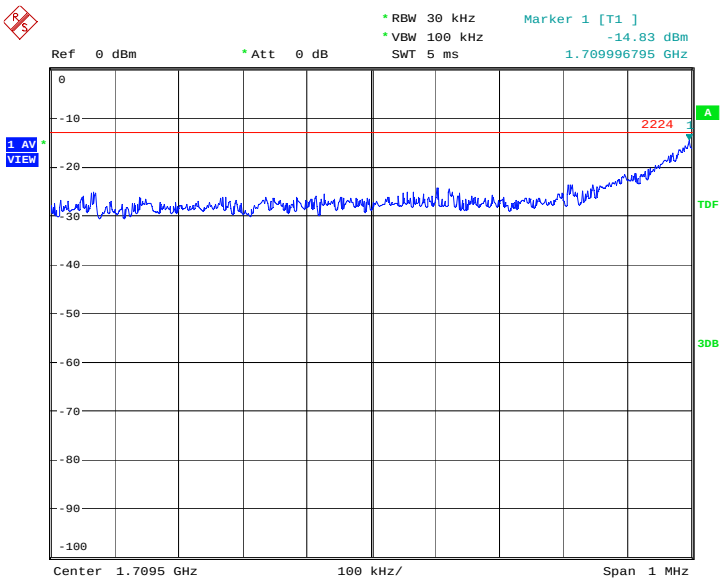

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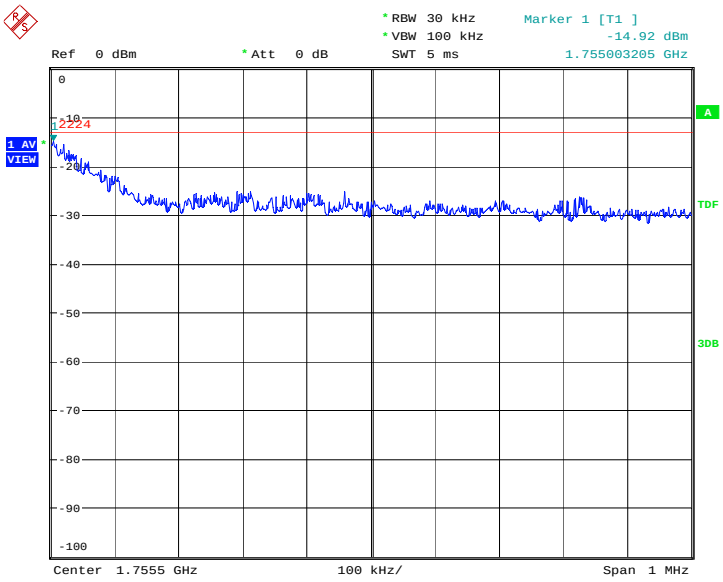
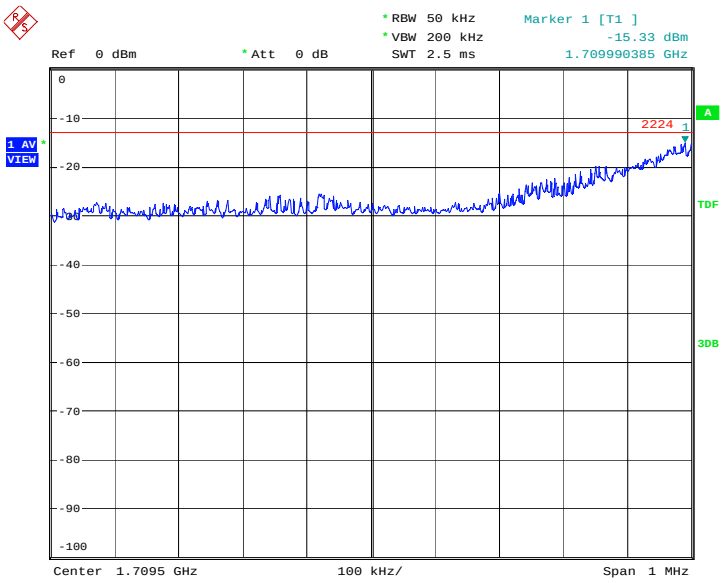


Date: 21.MAR.2013 00:25:33

LTE band 4, 5MHz

LOW BAND EDGE BLOCK-QPSK



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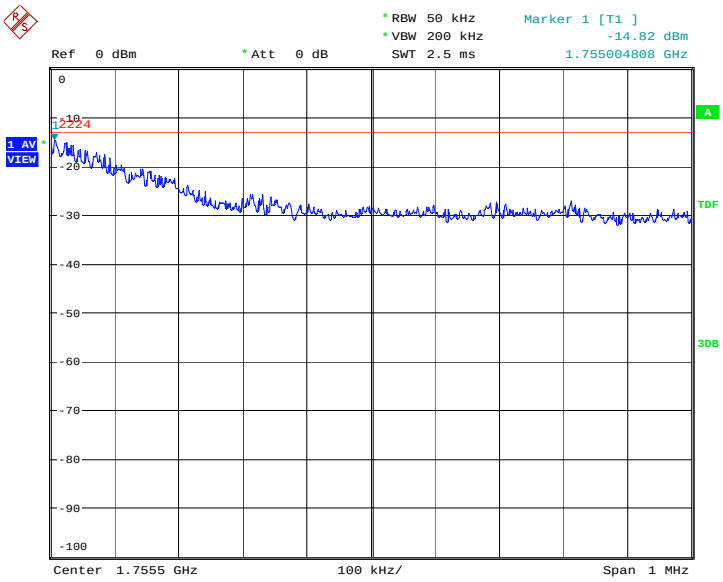

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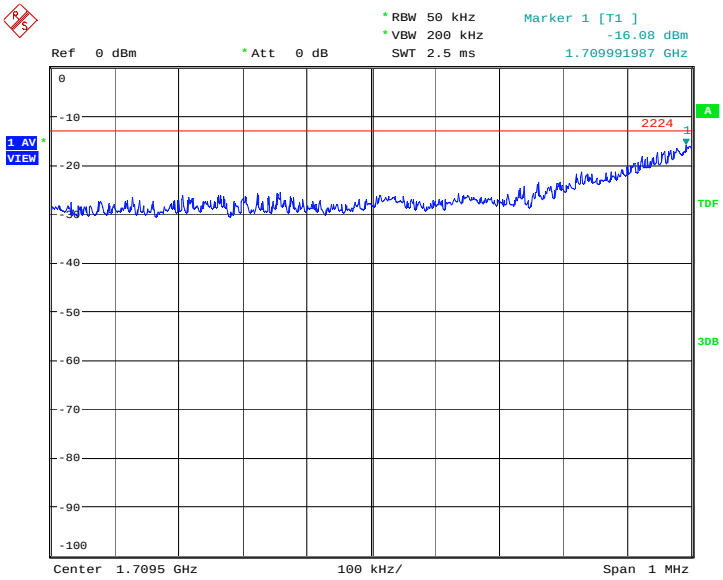
LOW BAND EDGE BLOCK-16QAM



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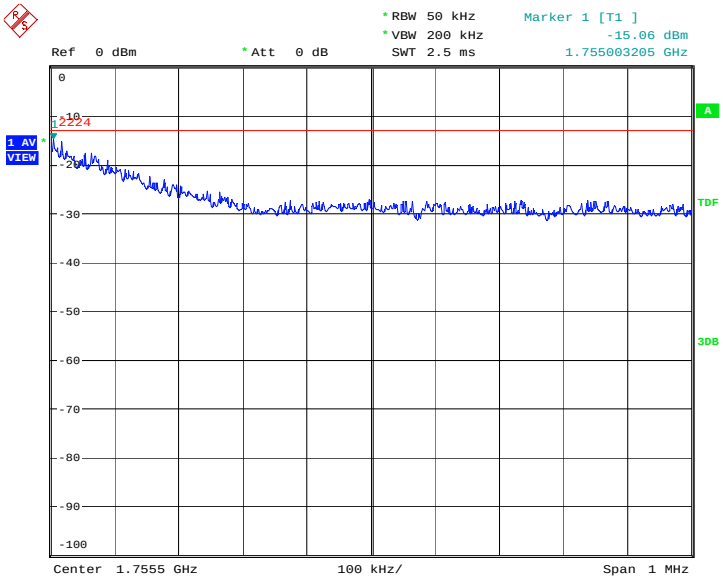
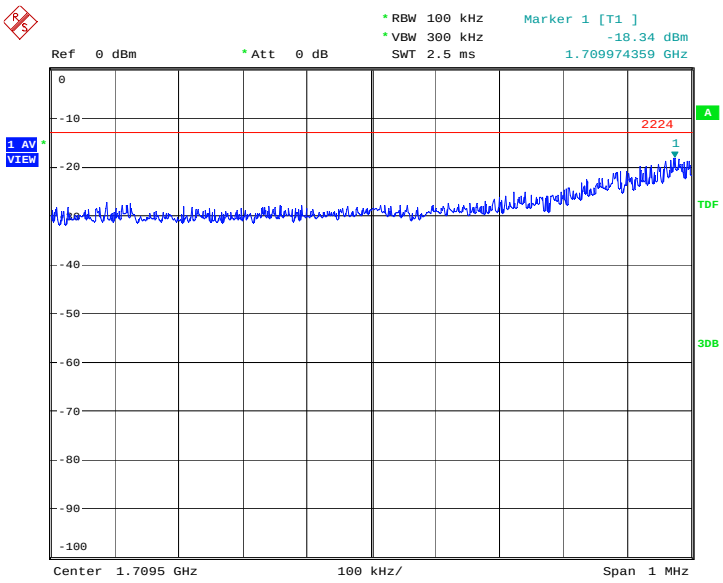
HIGH BAND EDGE BLOCK-16QAM



Date: 21.MAR.2013 00:32:53

LTE band 4, 10MHz

LOW BAND EDGE BLOCK-QPSK



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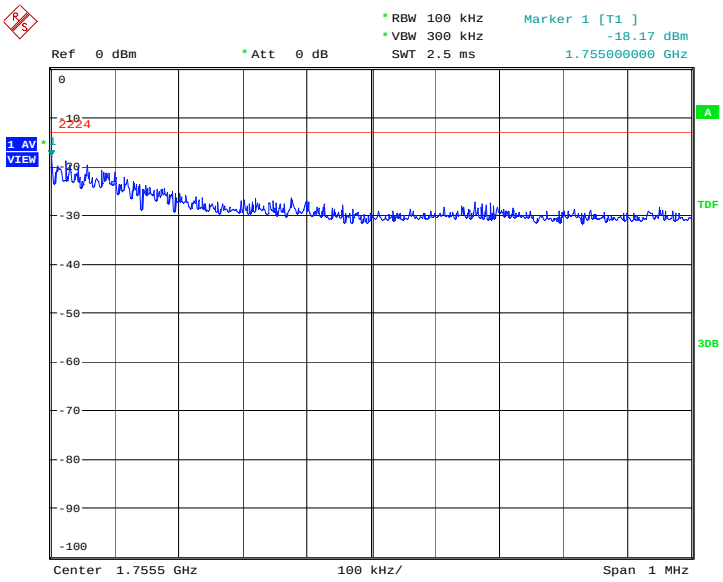

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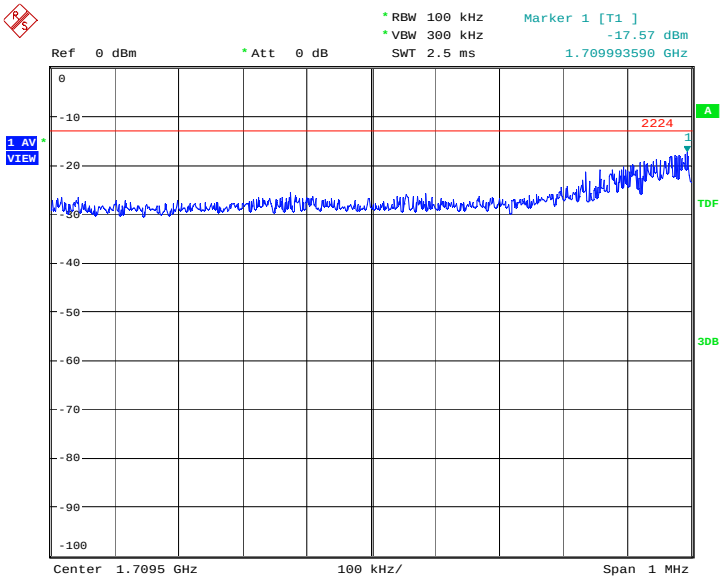
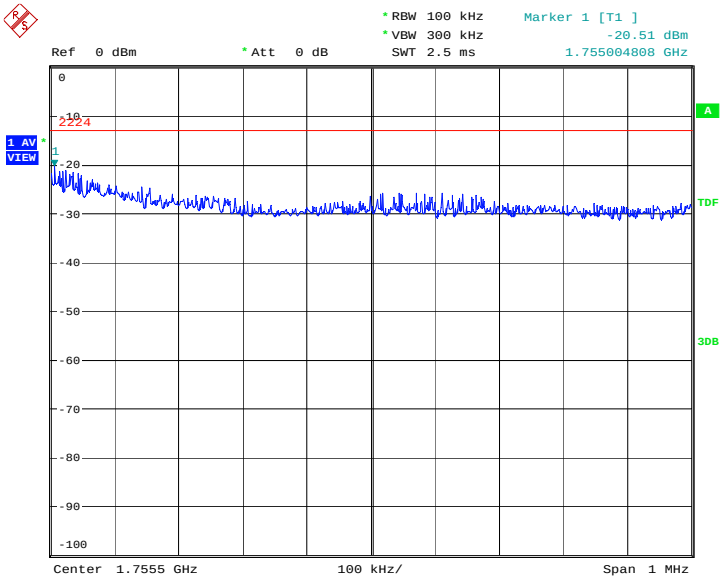


Date: 21.MAR.2013 00:36:03

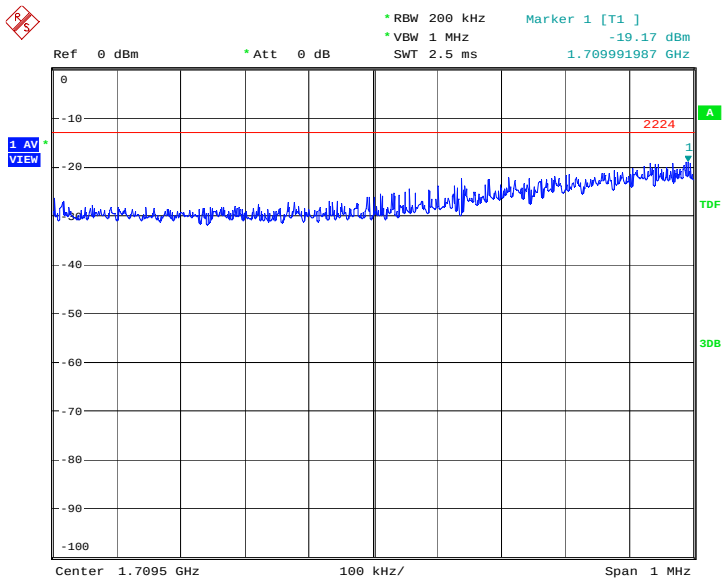
HIGH BAND EDGE BLOCK-16QAM



Date: 21.MAR.2013 00:45:25

LTE band 4, 15MHz

LOW BAND EDGE BLOCK-QPSK



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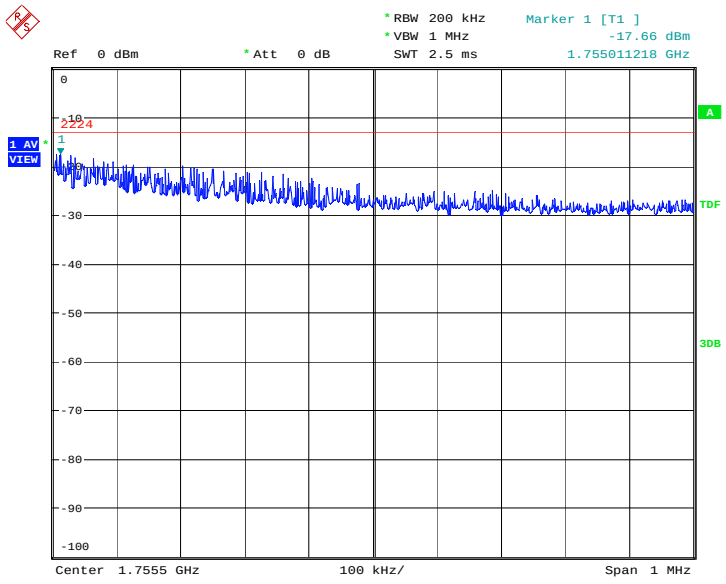
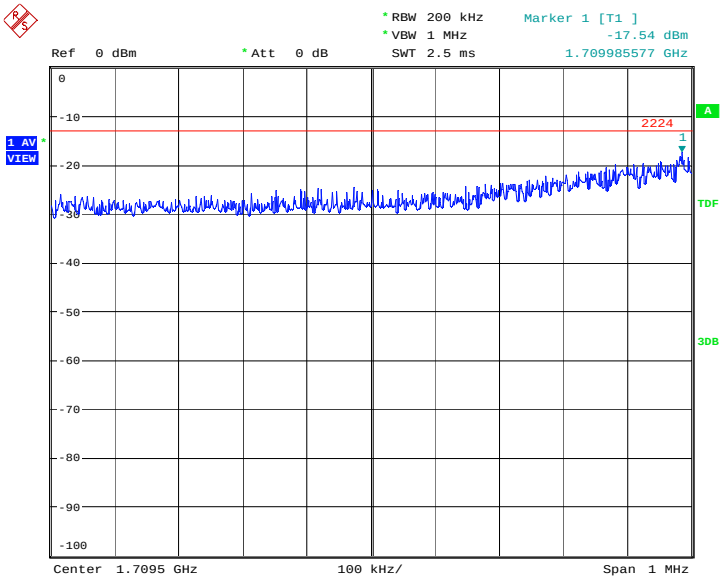
HIGH BAND EDGE BLOCK-QPSK



Date: 21.MAR.2013 00:52:31

LOW BAND EDGE BLOCK-16QAM



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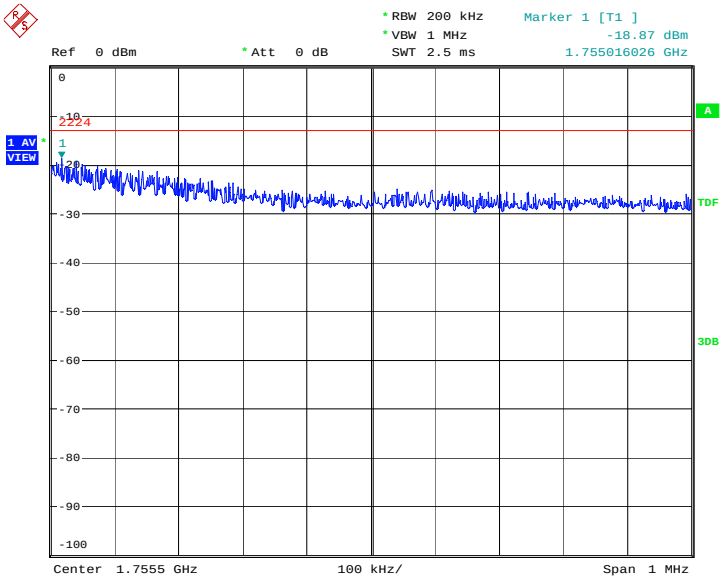
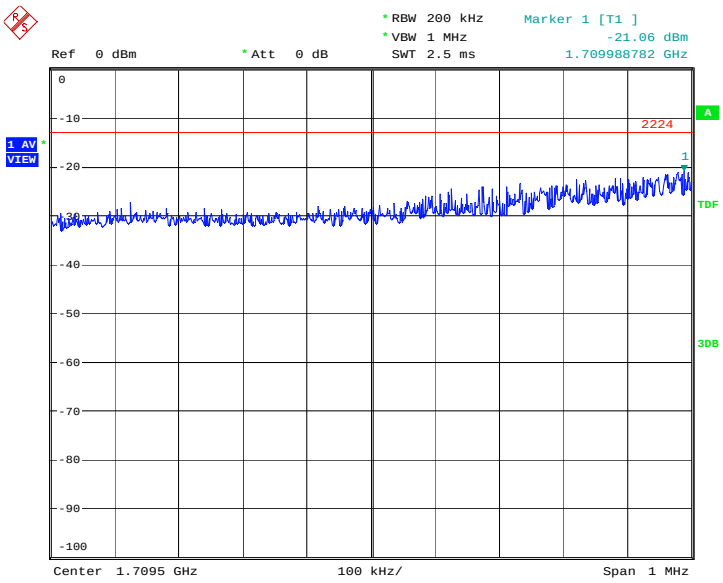


Date: 21.MAR.2013 00:52:46

LTE band 4, 20MHz

LOW BAND EDGE BLOCK-QPSK



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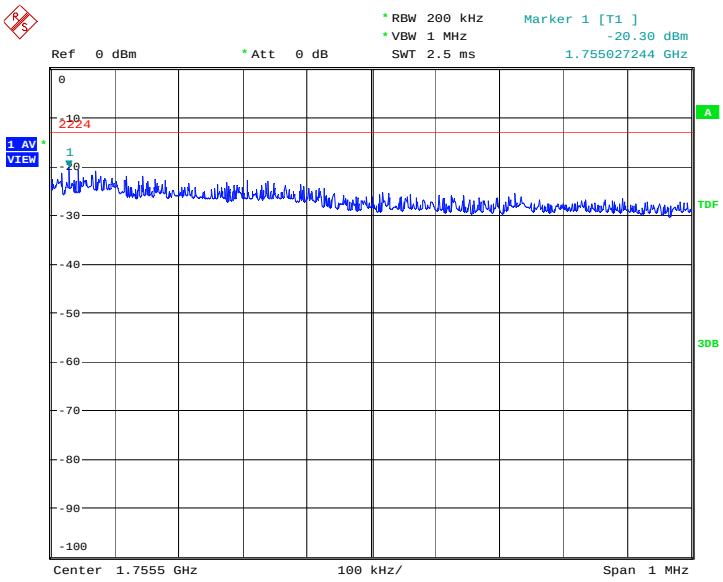

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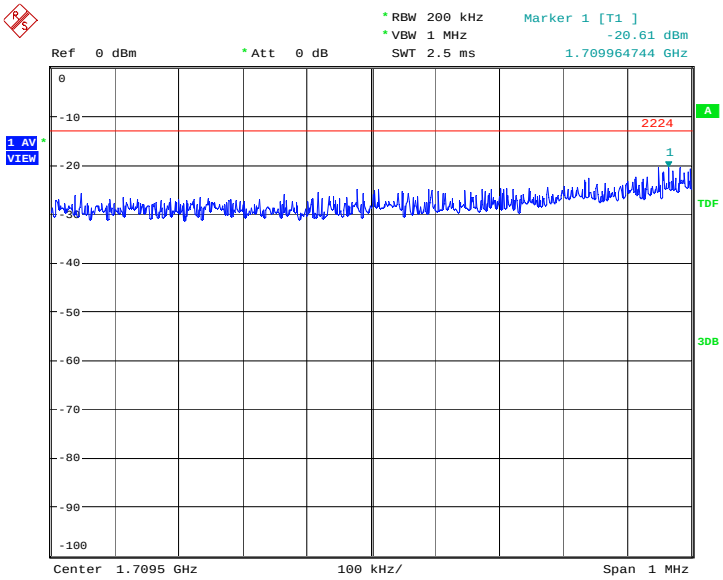
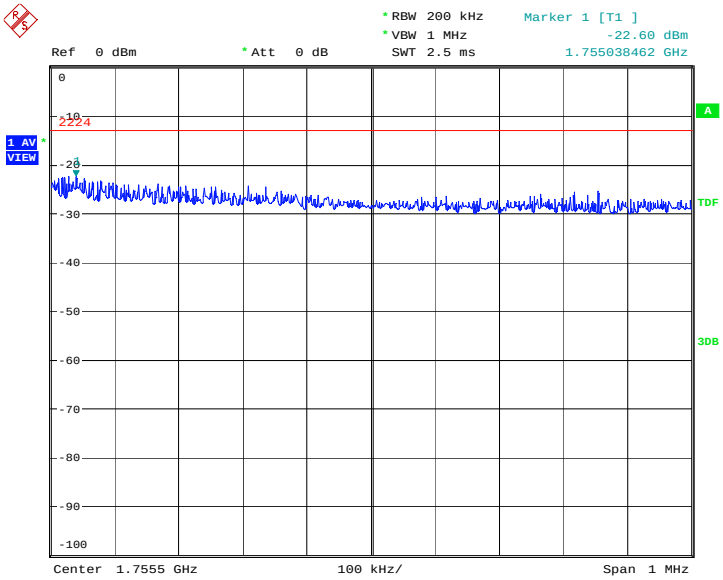
LOW BAND EDGE BLOCK-16QAM



Date: 21.MAR.2013 00:55:27

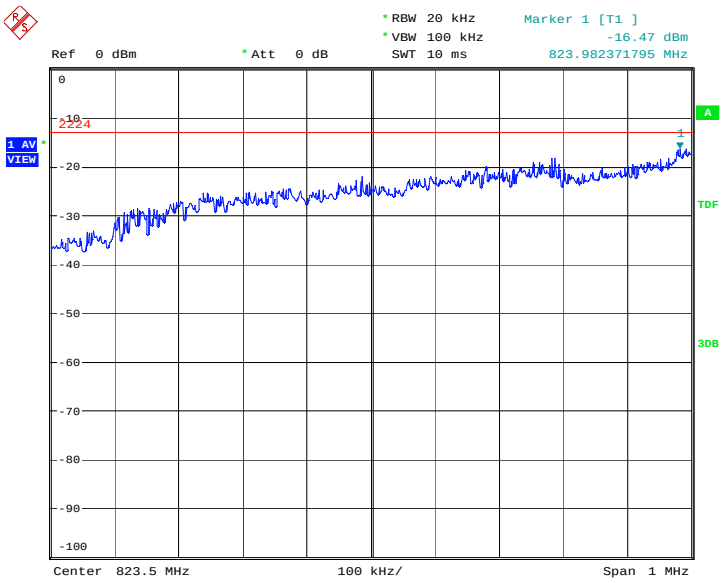
HIGH BAND EDGE BLOCK-16QAM



Date: 21.MAR.2013 00:59:38

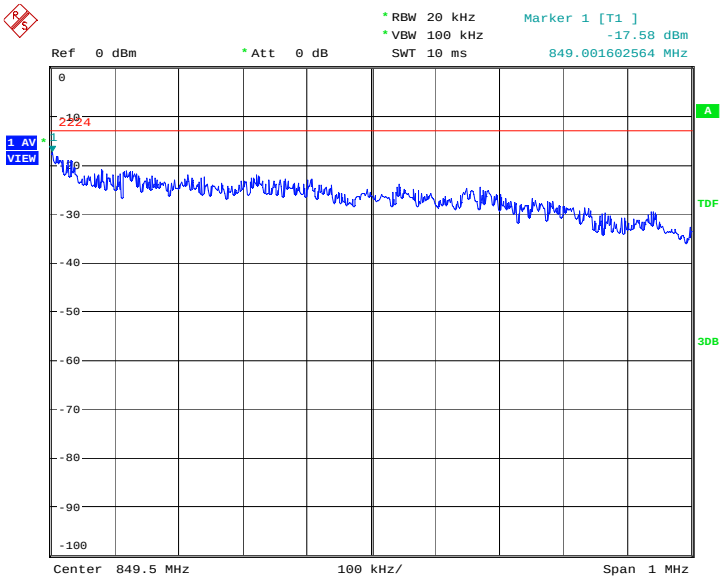
LTE band 5, 1.4MHz

LOW BAND EDGE BLOCK-QPSK



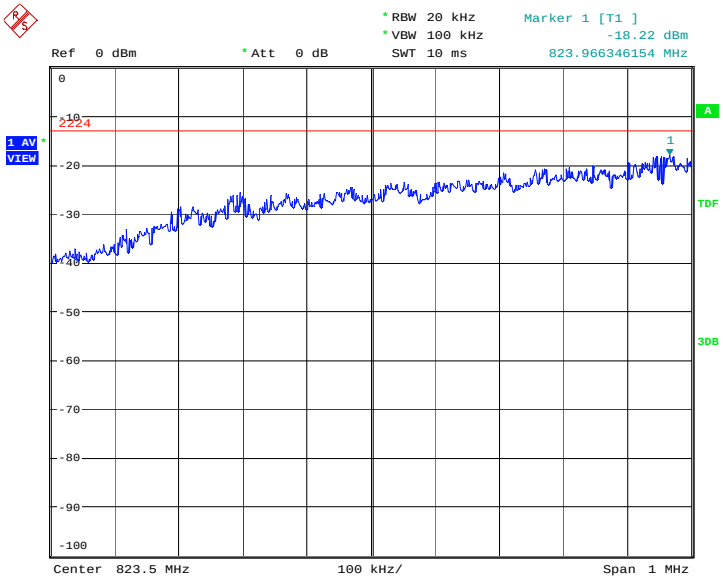
Date: 19.MAR.2013 23:29:12

HIGH BAND EDGE BLOCK-QPSK



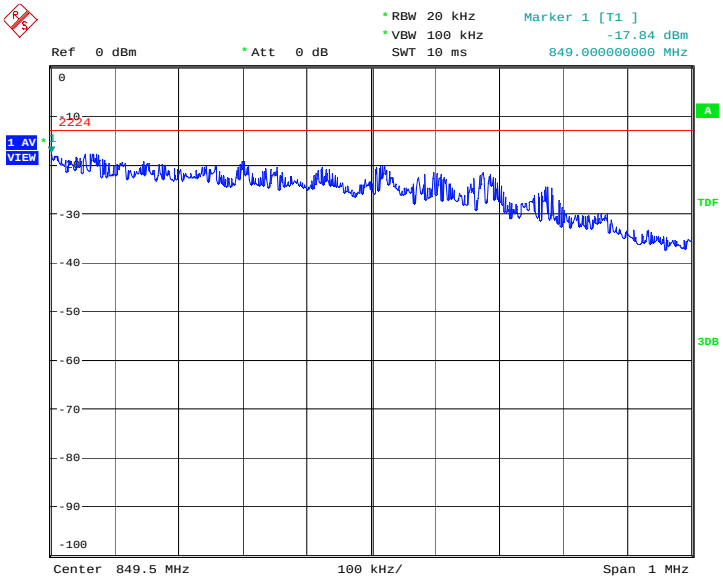
Date: 19.MAR.2013 23:33:23

LOW BAND EDGE BLOCK-16QAM



Date: 19.MAR.2013 23:29:27

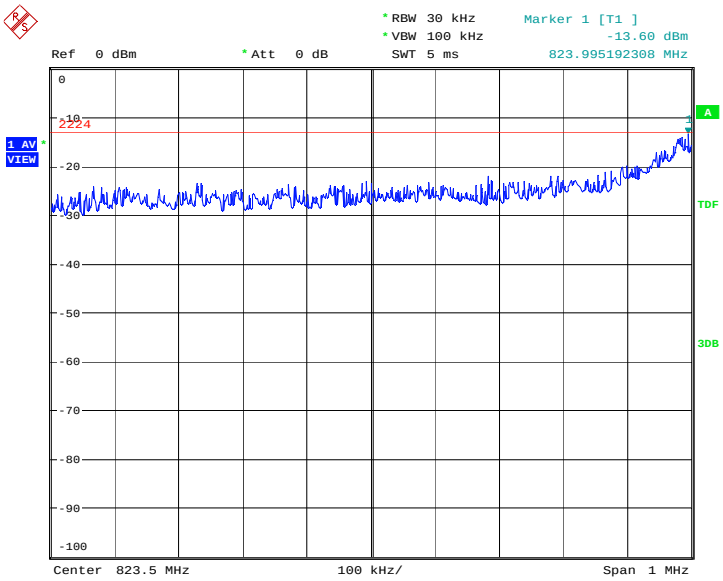
HIGH BAND EDGE BLOCK-16QAM



Date: 19.MAR.2013 23:33:38

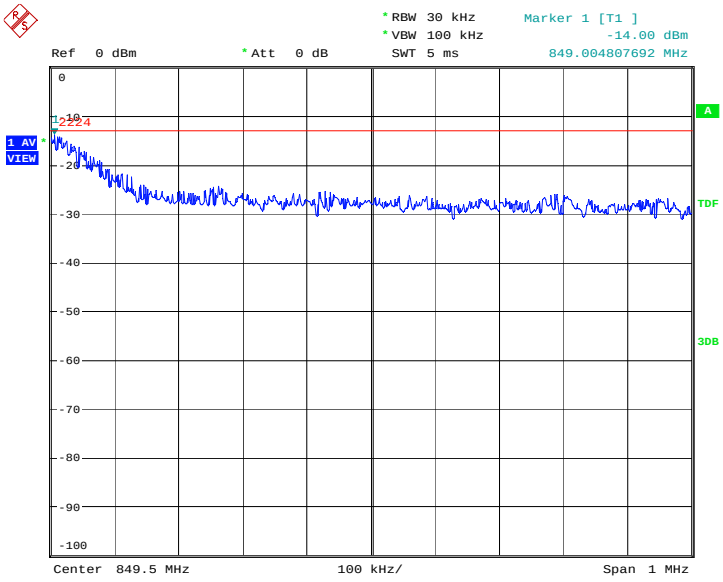
LTE band 5, 3MHz

LOW BAND EDGE BLOCK-QPSK



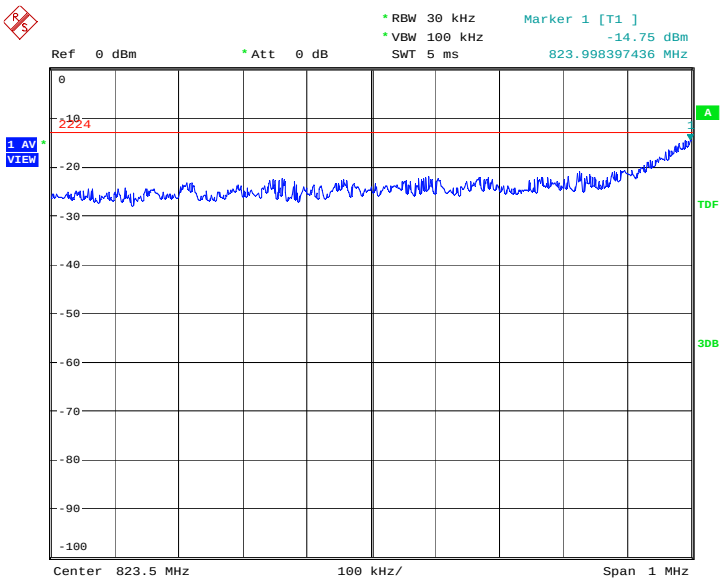
Date: 19.MAR.2013 23:59:53

HIGH BAND EDGE BLOCK-QPSK



Date: 19.MAR.2013 23:41:13

LOW BAND EDGE BLOCK-16QAM



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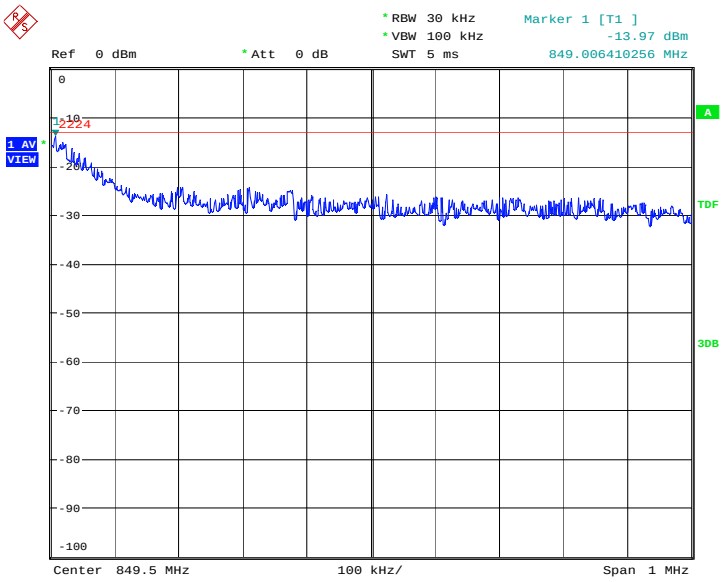
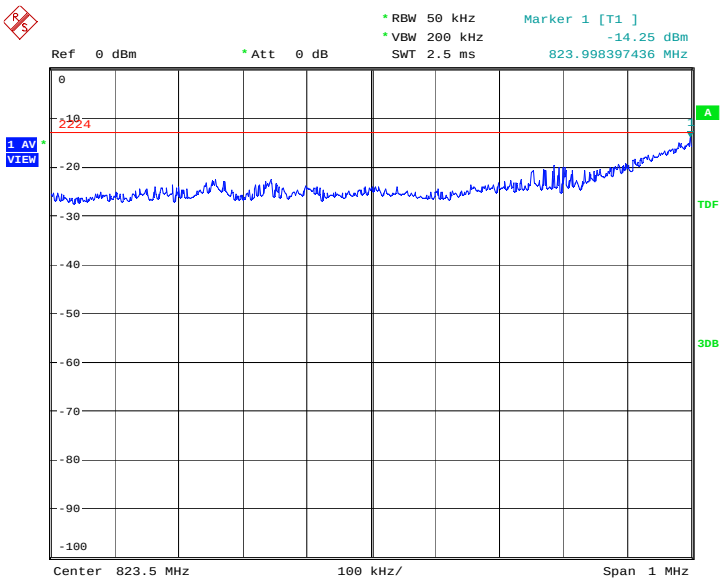


Date: 19.MAR.2013 23:41:28

LTE band 5, 5MHz

LOW BAND EDGE BLOCK-QPSK



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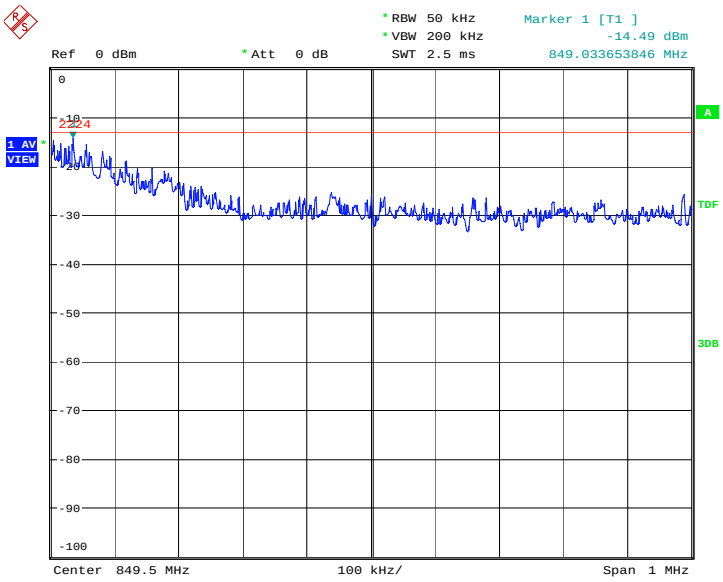
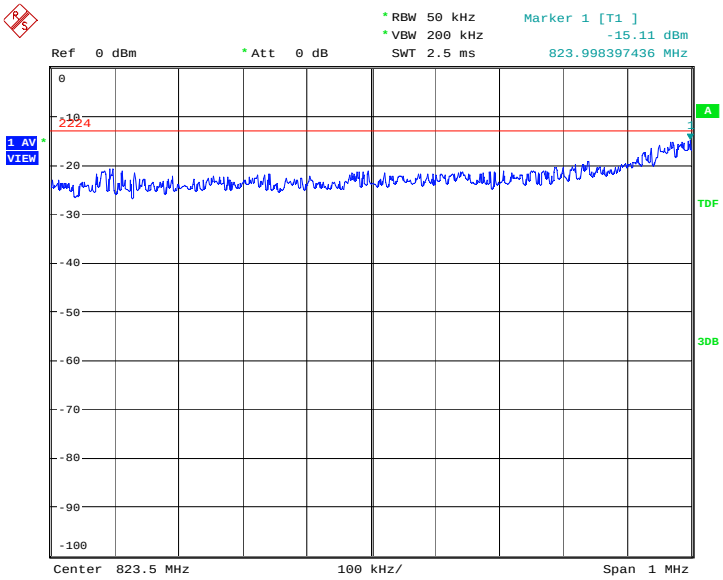
HIGH BAND EDGE BLOCK-QPSK



Date: 20.MAR.2013 00:05:56

LOW BAND EDGE BLOCK-16QAM



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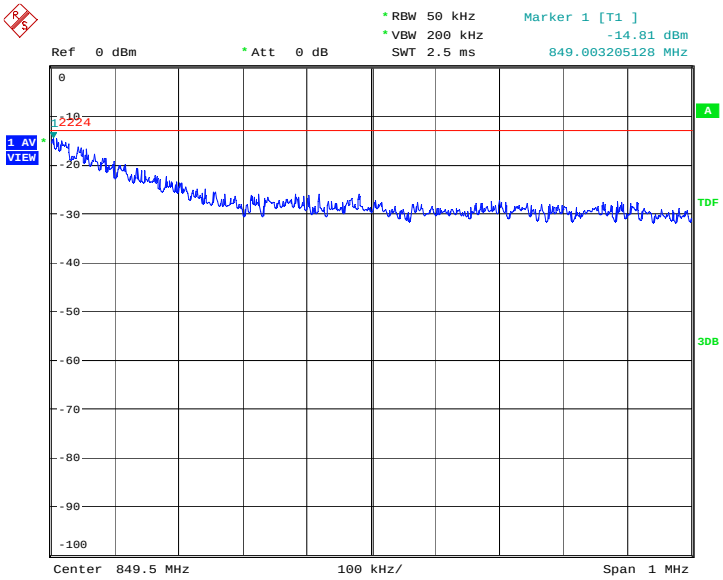
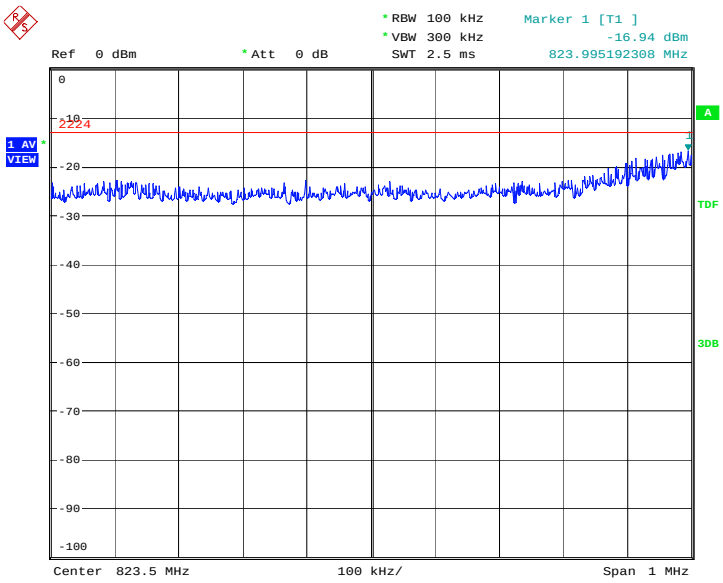
HIGH BAND EDGE BLOCK-16QAM



Date: 19.MAR.2013 23:49:49

LTE band 5, 10MHz

LOW BAND EDGE BLOCK-QPSK



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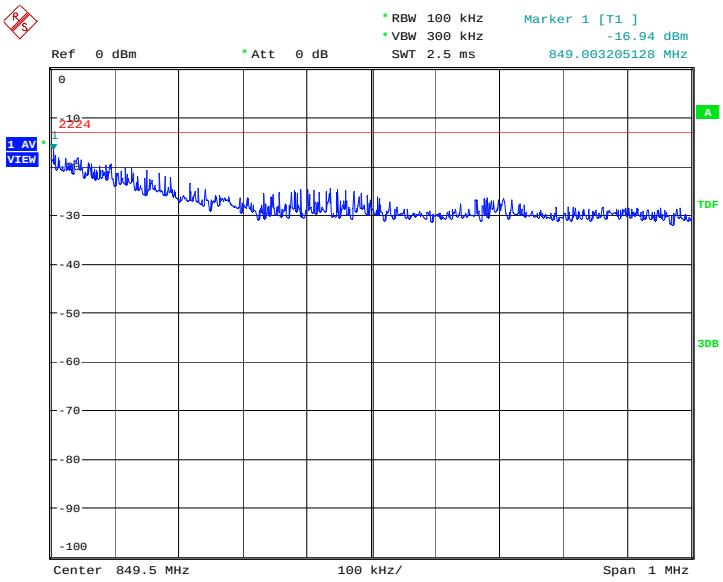
HIGH BAND EDGE BLOCK-QPSK



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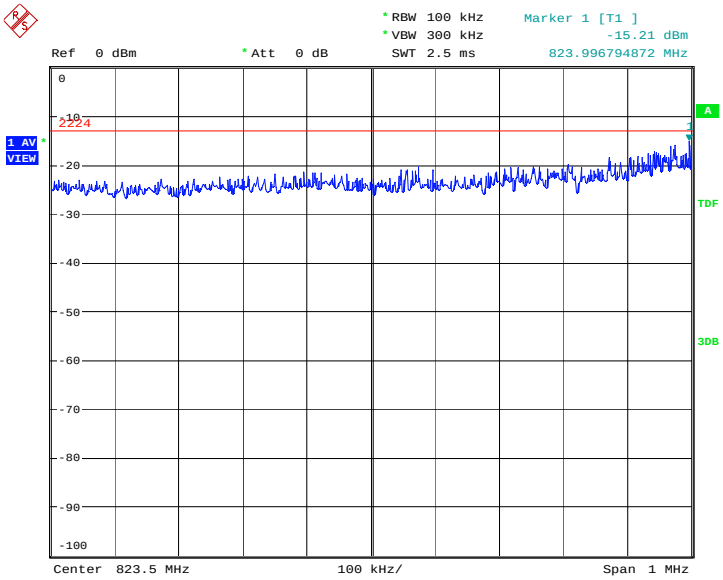
LOW BAND EDGE BLOCK-16QAM



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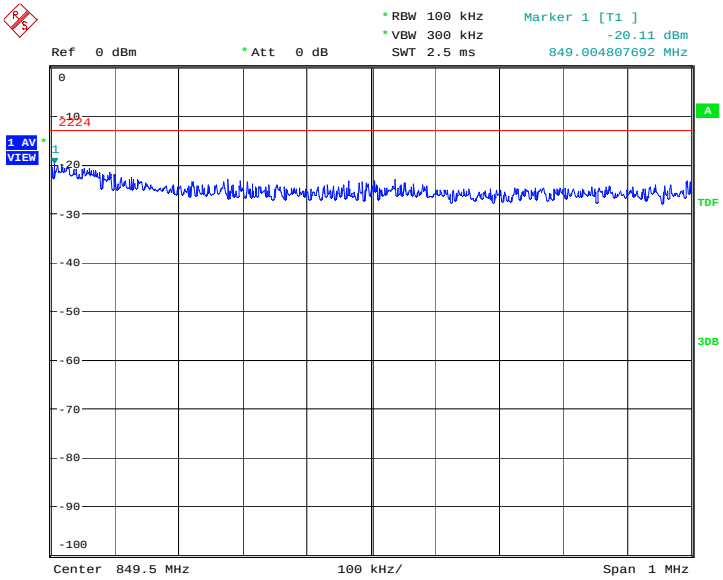
HIGH BAND EDGE BLOCK-16QAM



Date: 19.MAR.2013 23:56:39

A.8 CONDUCTED SPURIOUS EMISSION

Reference

FCC: CFR Part 2.1057, 22.917, 24.238, 27.53(h).

IC: RSS-132 Issue 3, Section 4.4. RSS-133 Issue 6, Section 6.4. RSS-139 Issue 2, Section 6.4.

A.8.1 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.
2. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.

A. 8.2 Measurement Limit

Part 22.917, Part 24.238 and Part 27.53 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.

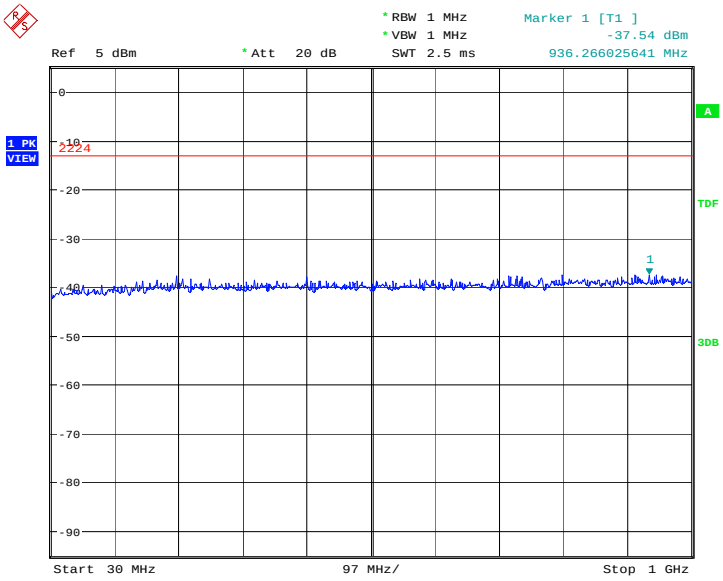
A. 8.3 Measurement result

Measurement Uncertainty: 0.3dB
LTE band 2, 1.4MHz bandwidth

A.8.3.1 QPSK: 30MHz – 1GHz

Spurious emission limit –13dBm.

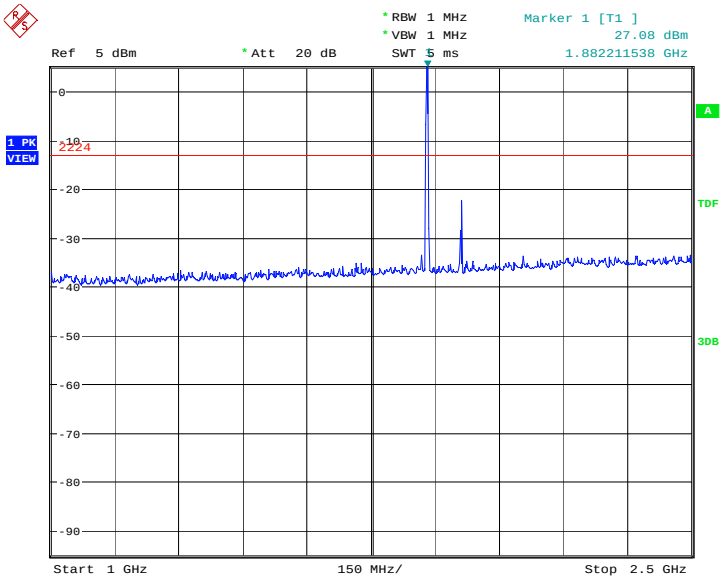
NOTE: peak above the limit line is the carrier frequency.



Date: 20.MAR.2013 05:49:04

A.8.3.2 QPSK: 1GHz – 2.5GHz

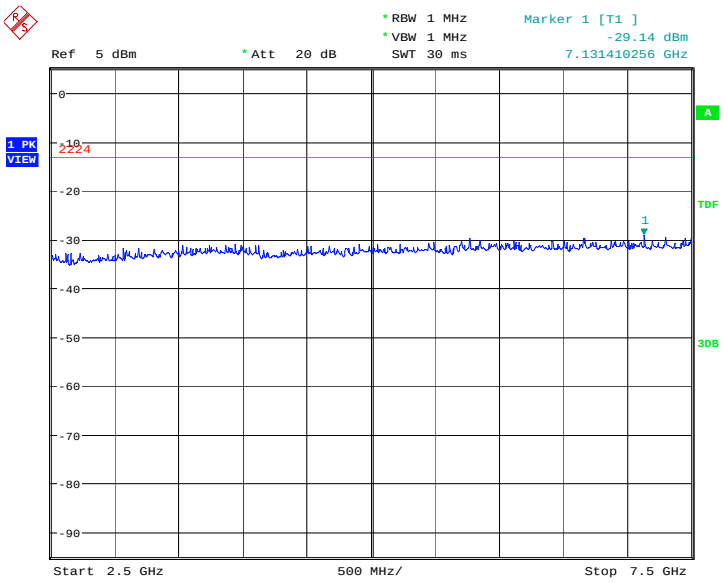
Spurious emission limit –13dBm.



Date: 20.MAR.2013 05:49:17

A.8.3.3 Channel QPSK: 2.5GHz – 7.5GHz

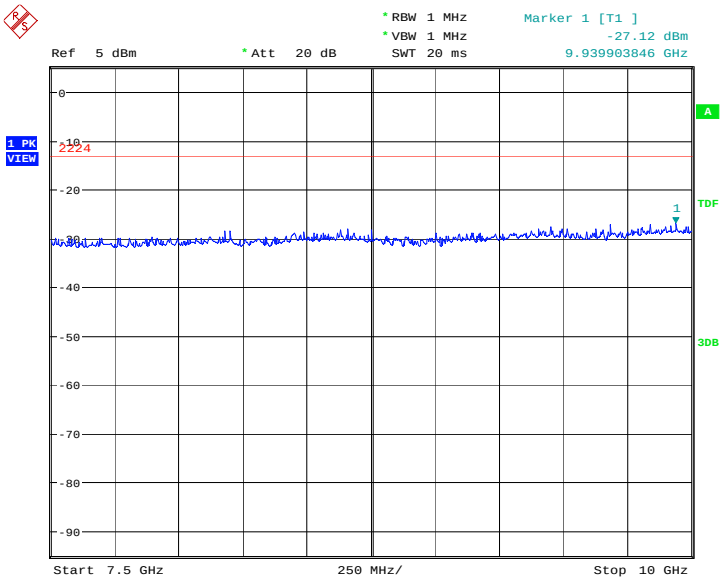
Spurious emission limit –13dBm.



Date: 20.MAR.2013 05:49:30

A.8.3.4 QPSK: 7.5GHz –10GHz

Spurious emission limit –13dBm.



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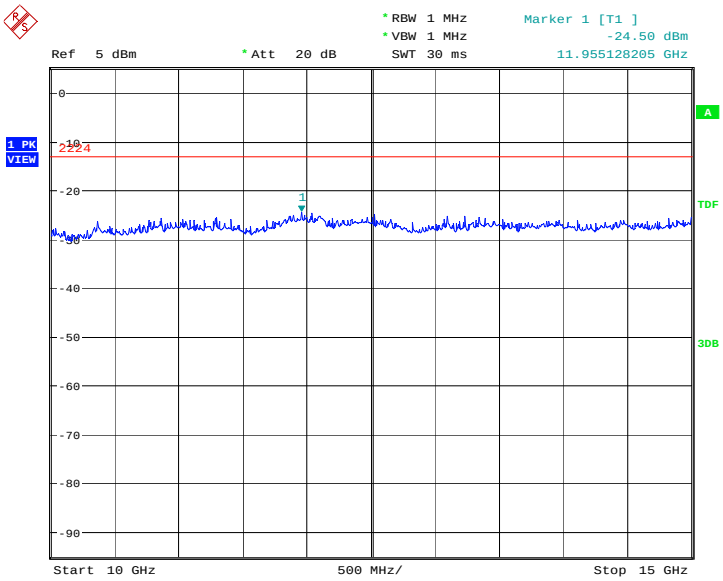
A.8.3.5 QPSK: 10GHz –15GHz

Spurious emission limit –13dBm.



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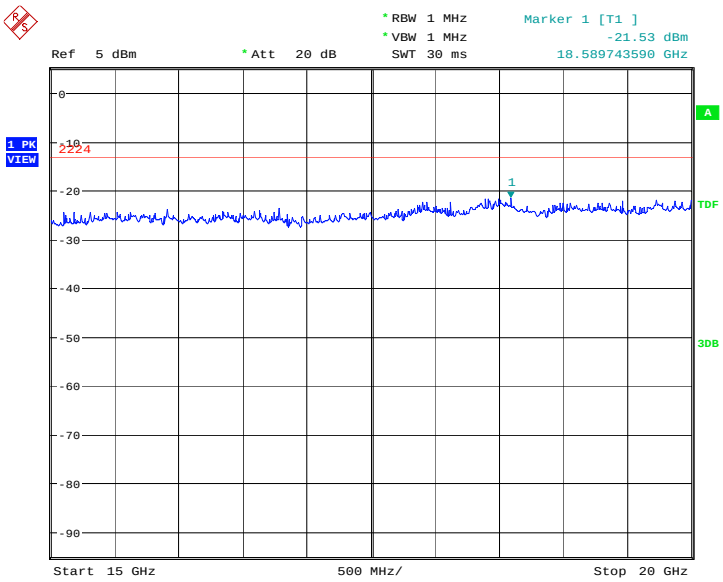
A.8.3.6 QPSK: 15GHz –20GHz

Spurious emission limit –13dBm.

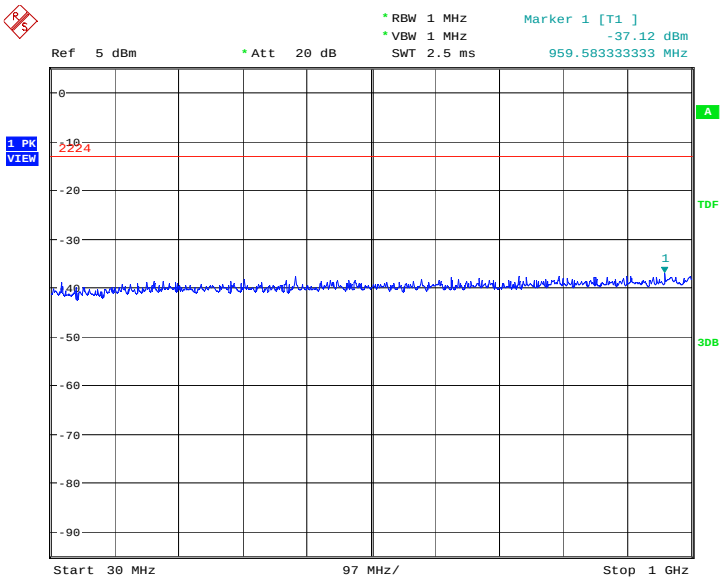


Date: 20.MAR.2013 05:50:09

A.8.3.7 16QAM: 30MHz – 1GHz

Spurious emission limit –13dBm

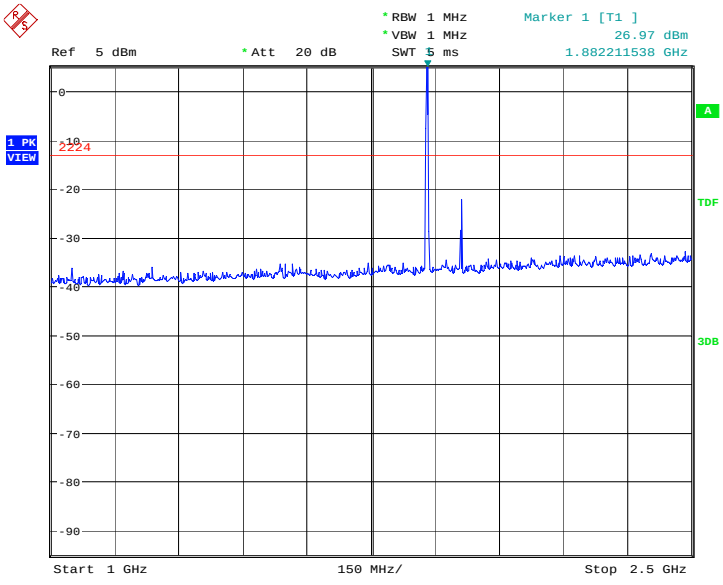
NOTE: peak above the limit line is the carrier frequency.



Date: 20.MAR.2013 05:50:25

A.8.3.8 16QAM: 1GHz –2.5GHz

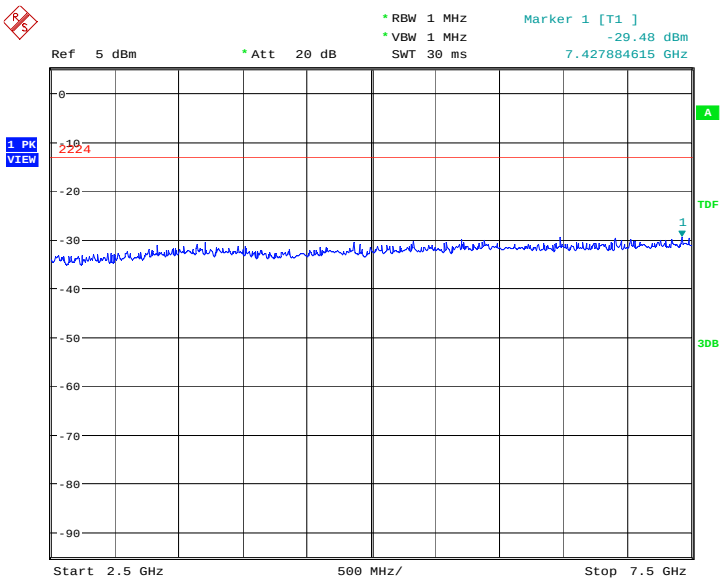
Spurious emission limit –13dBm



Date: 20.MAR.2013 05:50:38

A.8.3.9 16QAM: 2.5GHz –7.5GHz

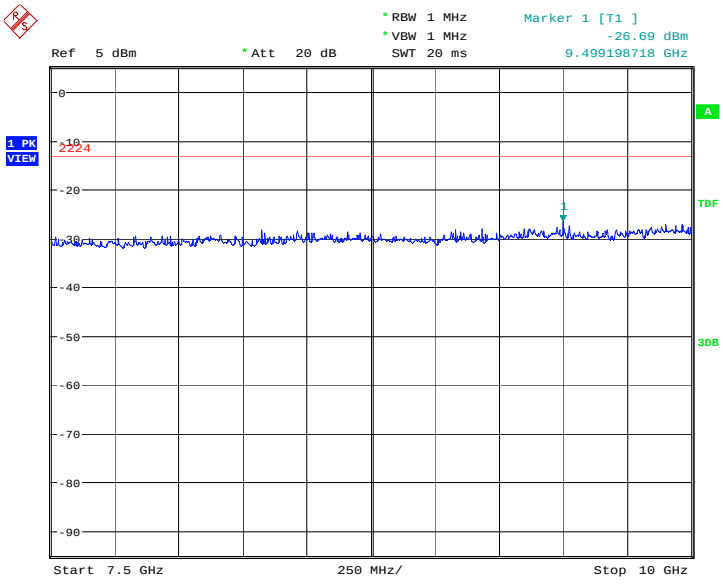
Spurious emission limit –13dBm



Date: 20.MAR.2013 05:50:50

A.8.3.10 16QAM: 7.5GHz –10GHz

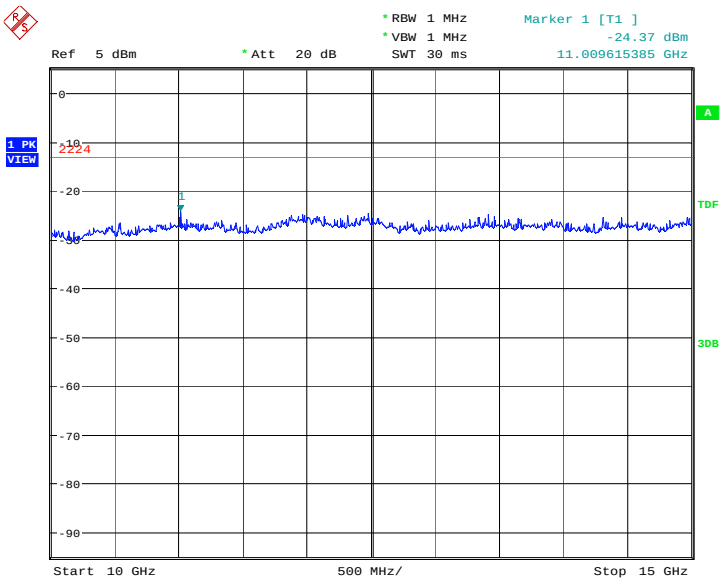
Spurious emission limit –13dBm



Date: 20.MAR.2013 05:51:03

A.8.3.11 16QAM: 10GHz –15GHz

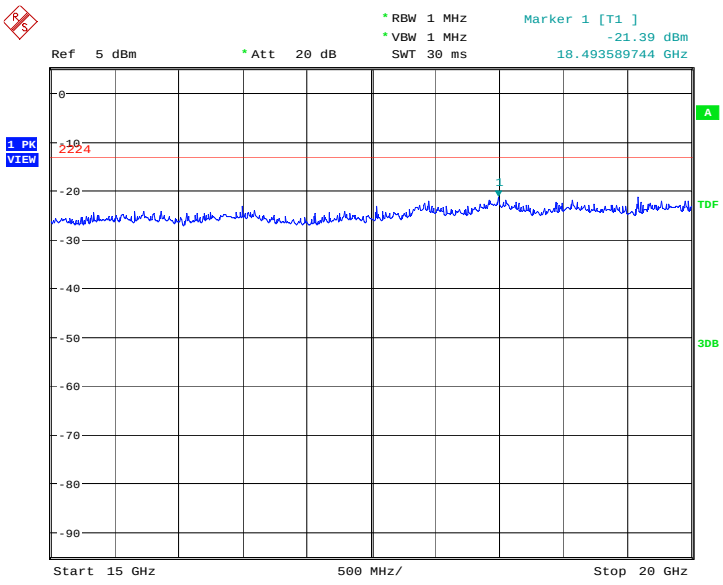
Spurious emission limit –13dBm



Date: 20.MAR.2013 05:51:16

A.8.3.12 16QAM:15GHz –20GHz

Spurious emission limit –13dBm



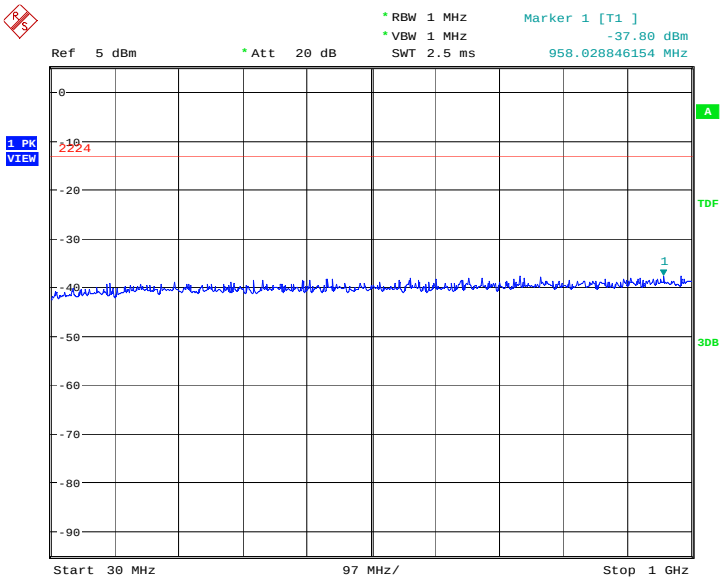
Date: 20.MAR.2013 05:51:29

LTE band 4, 1.4MHz bandwidth

A.8.3.13 QPSK: 30MHz – 1GHz

Spurious emission limit –13dBm.

NOTE: peak above the limit line is the carrier frequency.



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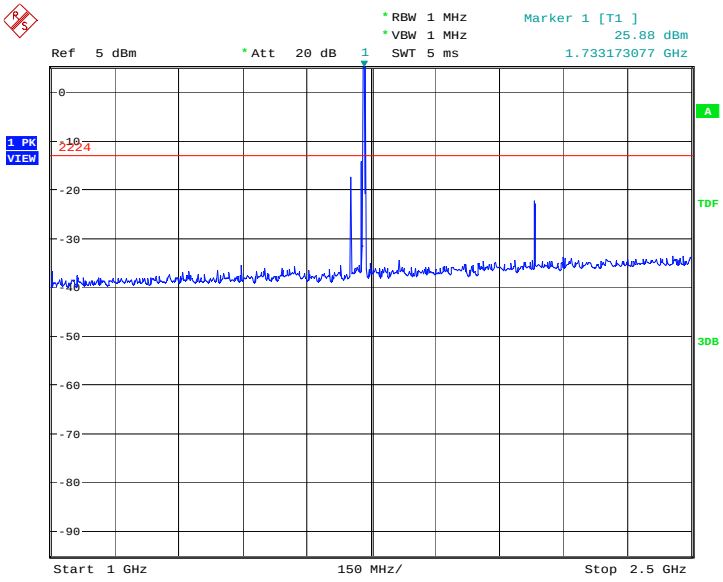
A.8.3.14 QPSK: 1GHz – 2.5GHz

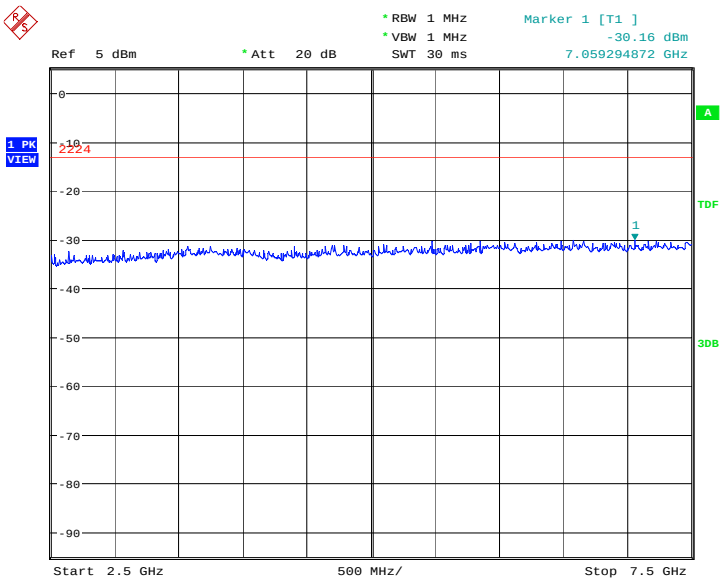
Spurious emission limit –13dBm.



Date: 21.MAR.2013 01:05:55

A.8.3.15 Channel QPSK: 2.5GHz – 7.5GHz

Spurious emission limit –13dBm.



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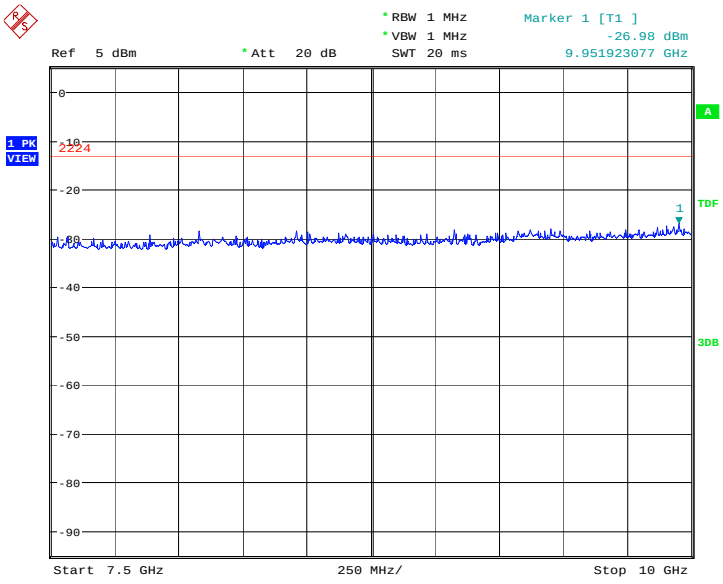
A.8.3.16 QPSK: 7.5GHz –10GHz

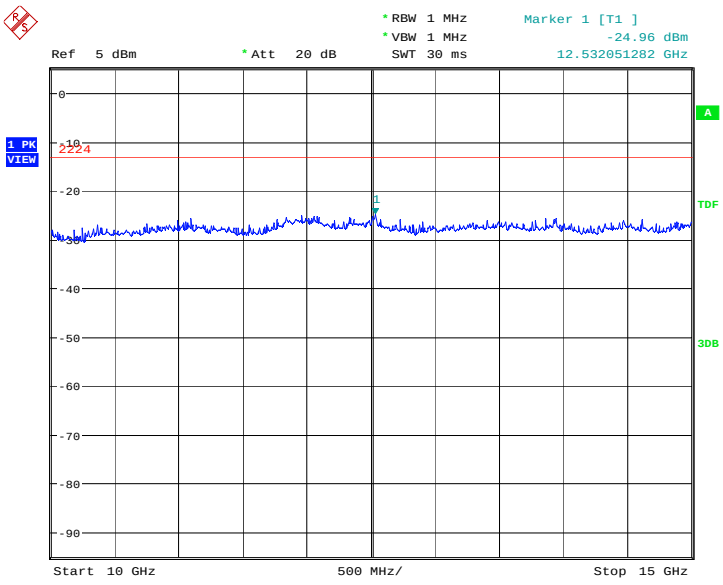
Spurious emission limit –13dBm.



Date: 21.MAR.2013 01:06:21

A.8.3.17 Channel QPSK: 10GHz – 15GHz

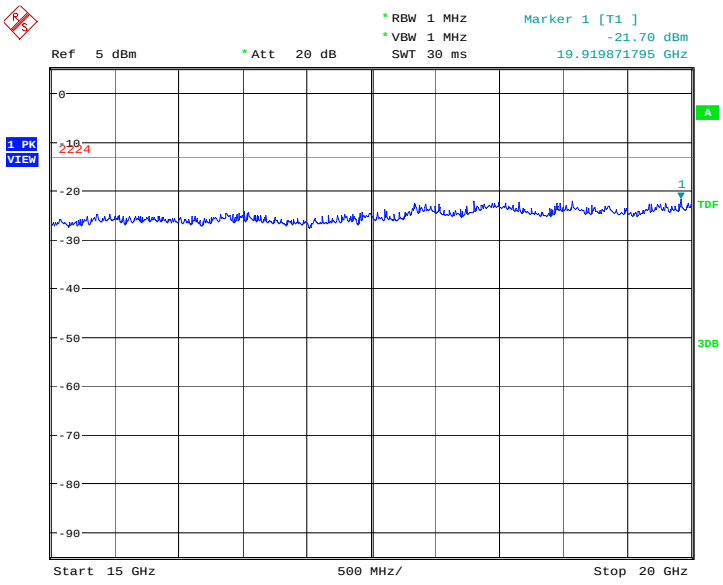
Spurious emission limit –13dBm.



Date: 21.MAR.2013 01:06:34

A.8.3.18 QPSK: 15GHz –20GHz

Spurious emission limit –13dBm.

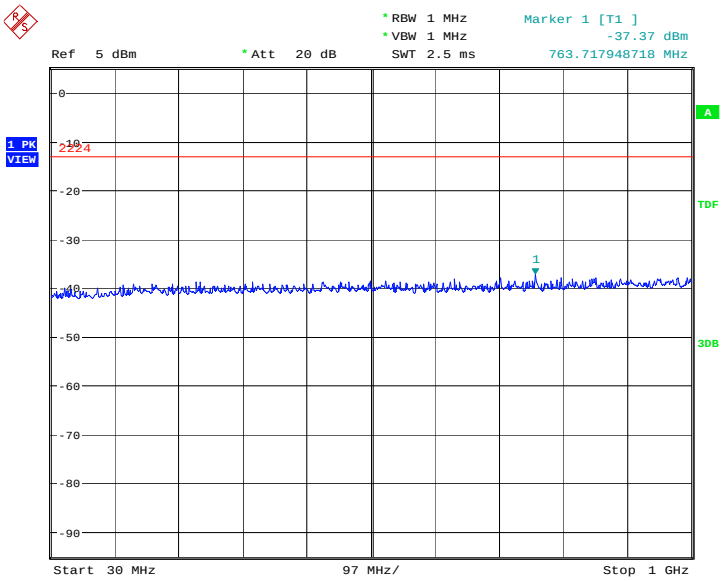


Date: 21.MAR.2013 01:06:47

A.8.3.19 16QAM: 30MHz – 1GHz

Spurious emission limit –13dBm

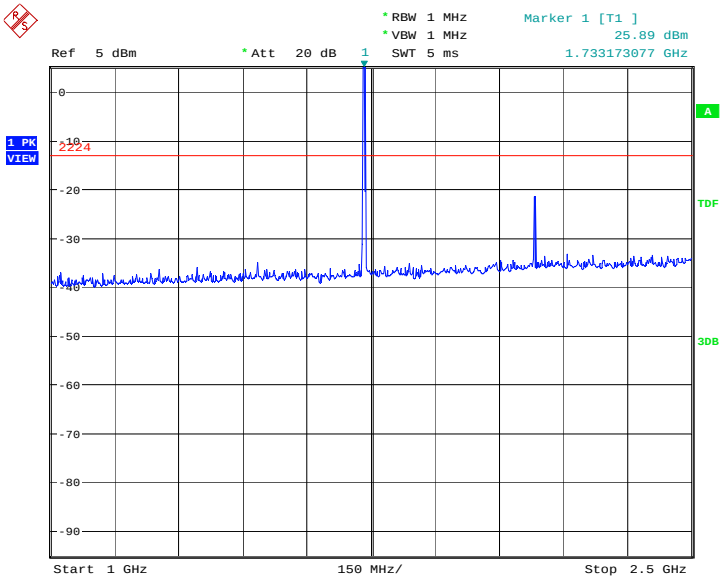
NOTE: peak above the limit line is the carrier frequency.



Date: 21.MAR.2013 01:07:02

A.8.3.20 16QAM: 1GHz –2.5GHz

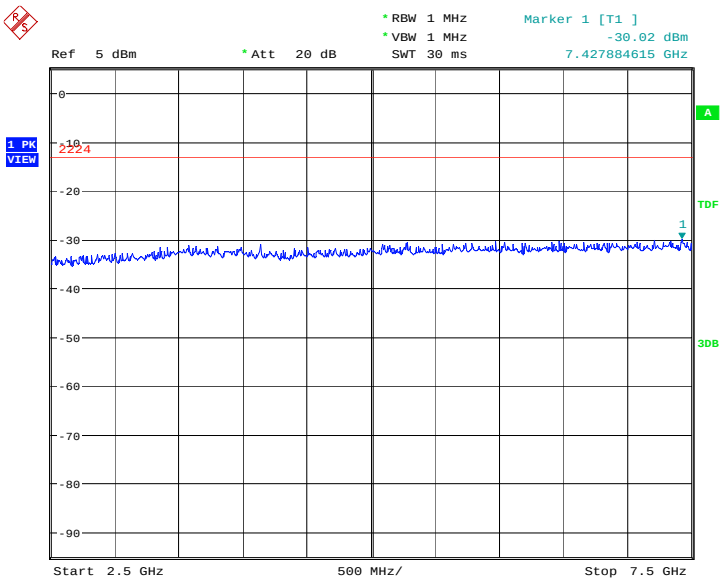
Spurious emission limit –13dBm



Date: 21.MAR.2013 01:07:15

A.8.3.21 16QAM: 2.5GHz –7.5GHz

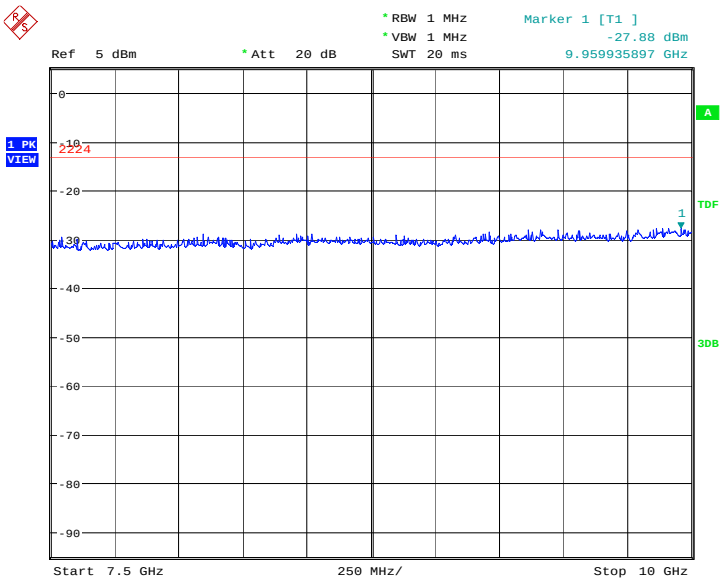
Spurious emission limit –13dBm



Date: 21.MAR.2013 01:07:28

A.8.3.22 16QAM: 7.5GHz –10GHz

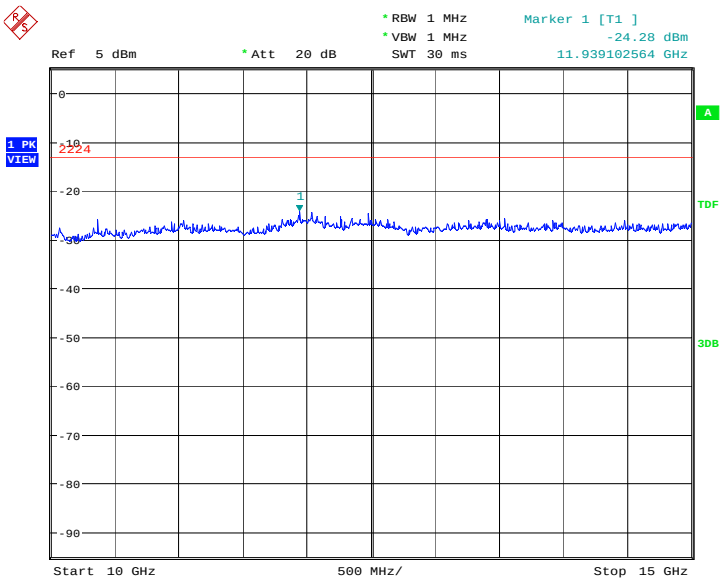
Spurious emission limit –13dBm



Date: 21.MAR.2013 01:07:41

A.8.3.23 16QAM: 10GHz –15GHz

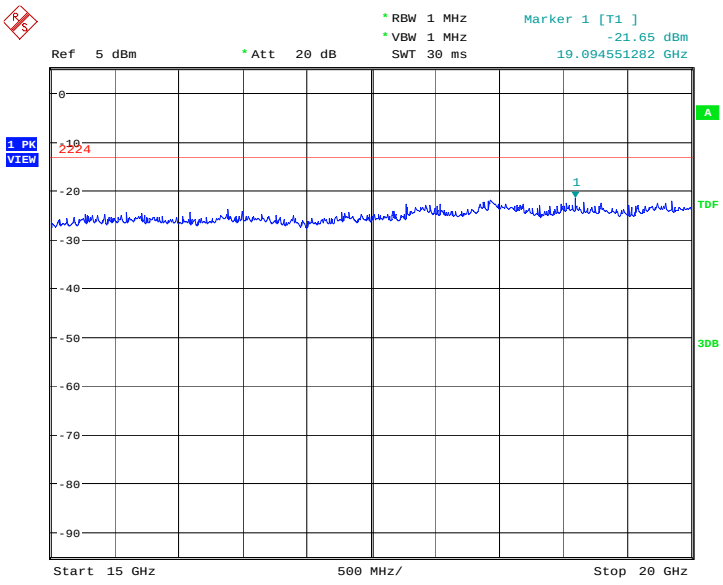
Spurious emission limit –13dBm



Date: 21.MAR.2013 01:07:54

A.8.3.24 16QAM: 15GHz –20GHz

Spurious emission limit –13dBm



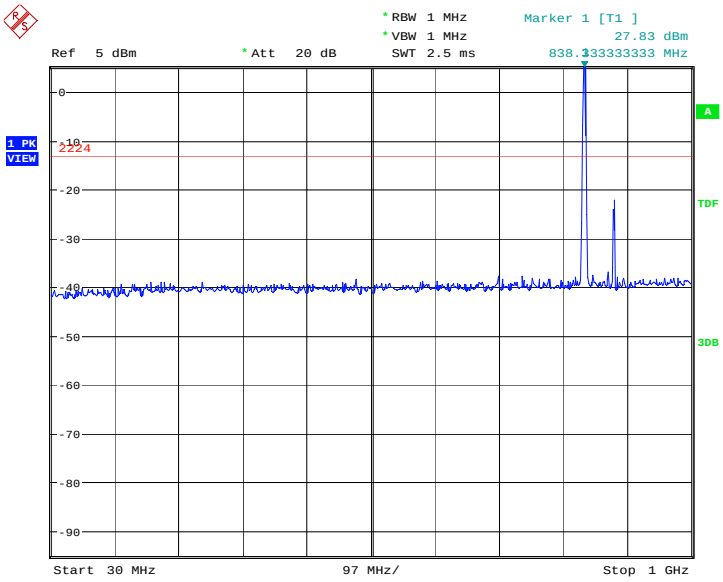
Date: 21.MAR.2013 01:08:07

LTE band 5, 1.4MHz bandwidth

A.8.3.25 QPSK: 30MHz – 1GHz

Spurious emission limit –13dBm.

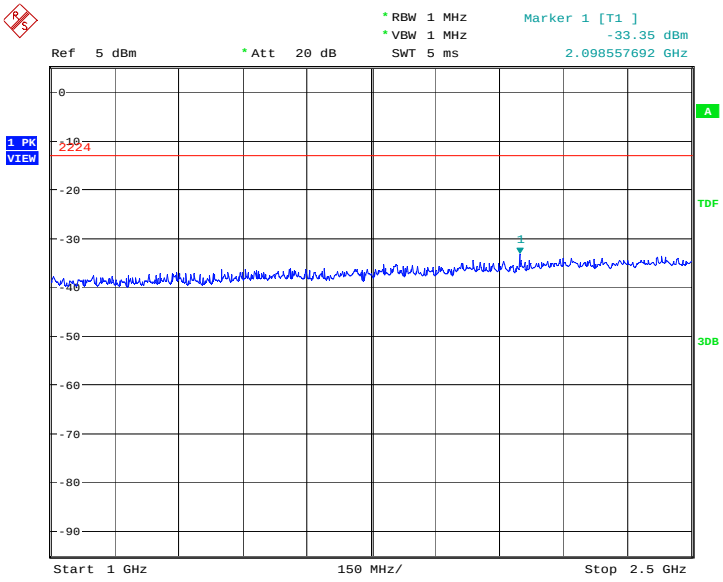
NOTE: peak above the limit line is the carrier frequency.



Date: 20.MAR.2013 00:10:56

A.8.3.26 QPSK: 1GHz – 2.5GHz

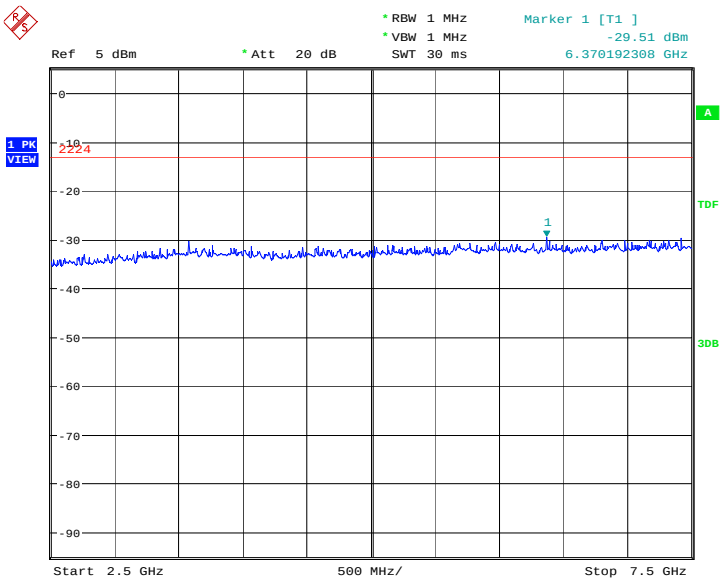
Spurious emission limit –13dBm.



Date: 20.MAR.2013 00:11:09

A.8.3.27 Channel QPSK: 2.5GHz – 7.5GHz

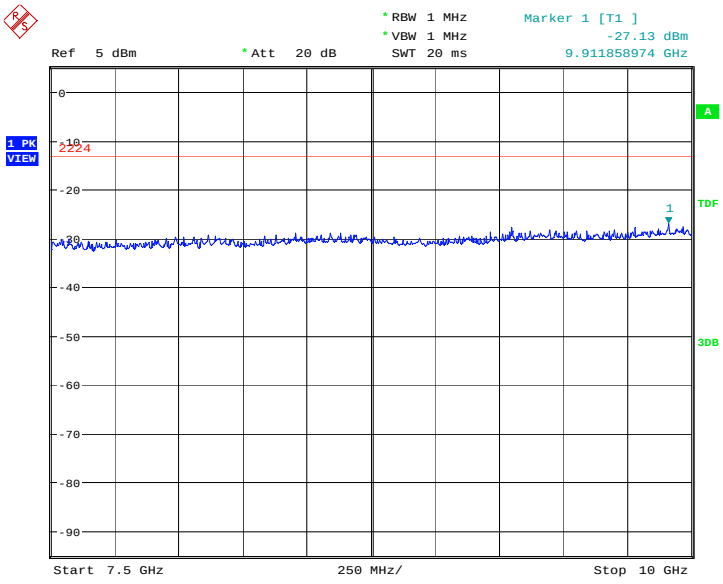
Spurious emission limit –13dBm.



Date: 20.MAR.2013 00:11:22

A.8.3.28 QPSK: 7.5GHz –10GHz

Spurious emission limit –13dBm.

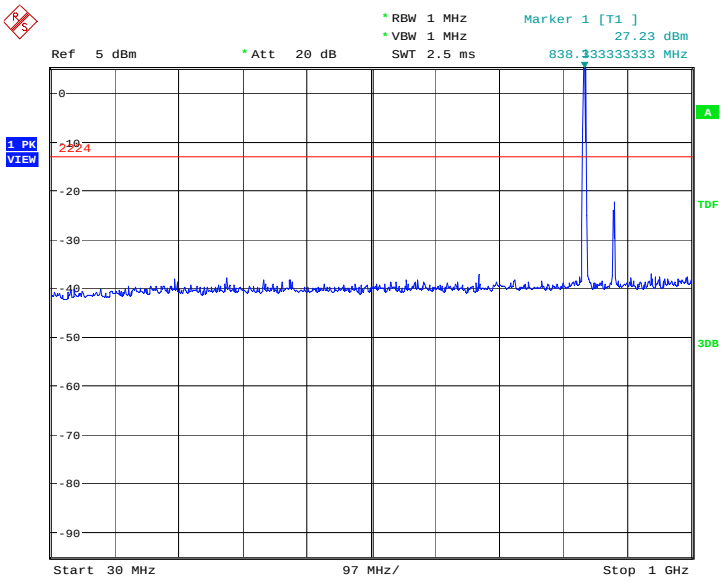


Date: 20.MAR.2013 00:11:35

A.8.3.29 16QAM: 30MHz – 1GHz

Spurious emission limit –13dBm

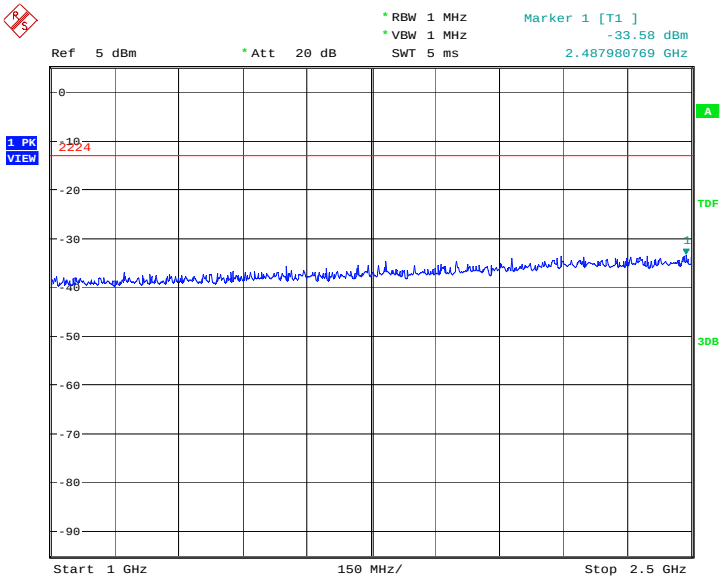
NOTE: peak above the limit line is the carrier frequency.



Date: 20.MAR.2013 00:11:51

A.8.3.30 16QAM: 1GHz –2.5GHz

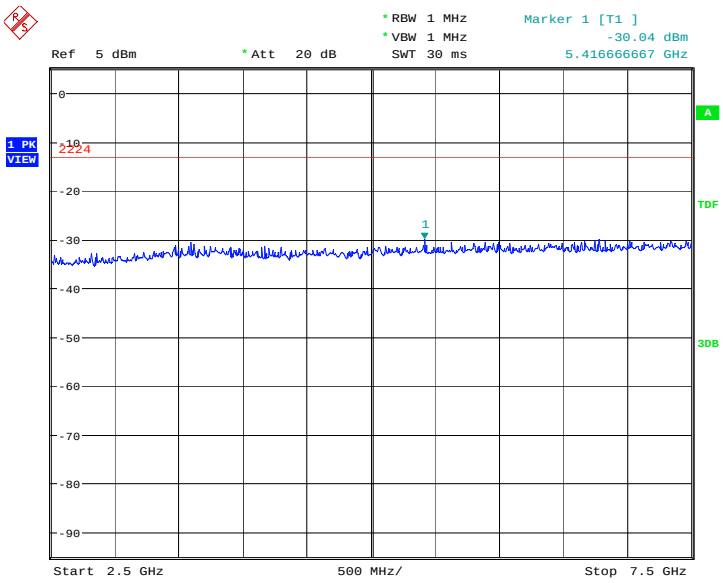
Spurious emission limit –13dBm



Date: 20.MAR.2013 00:12:04

A.8.3.31 16QAM: 2.5GHz –7.5GHz

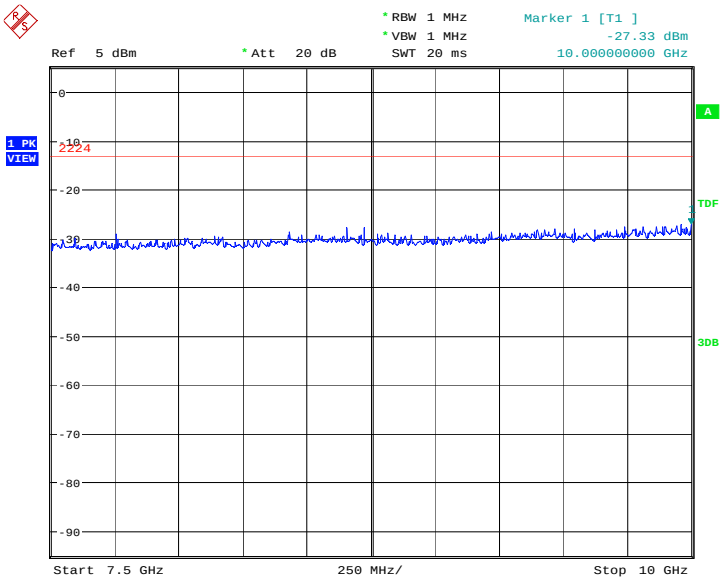
Spurious emission limit –13dBm



Date: 20.MAR.2013 00:12:17

A.8.3.32 16QAM: 7.5GHz –10GHz

Spurious emission limit –13dBm



Date: 20.MAR.2013 00:12:29

A.9 RECEIVER RADIATION EMISSION

Reference

FCC: CFR Part 2.1053, 15.109.

IC: RSS 132, Issue 2, Section 4.6. RSS 133, Issue 5, Section 6.6, RSS-139 Issue 2, Section 6.6..

A.9.1 Method of Measurement

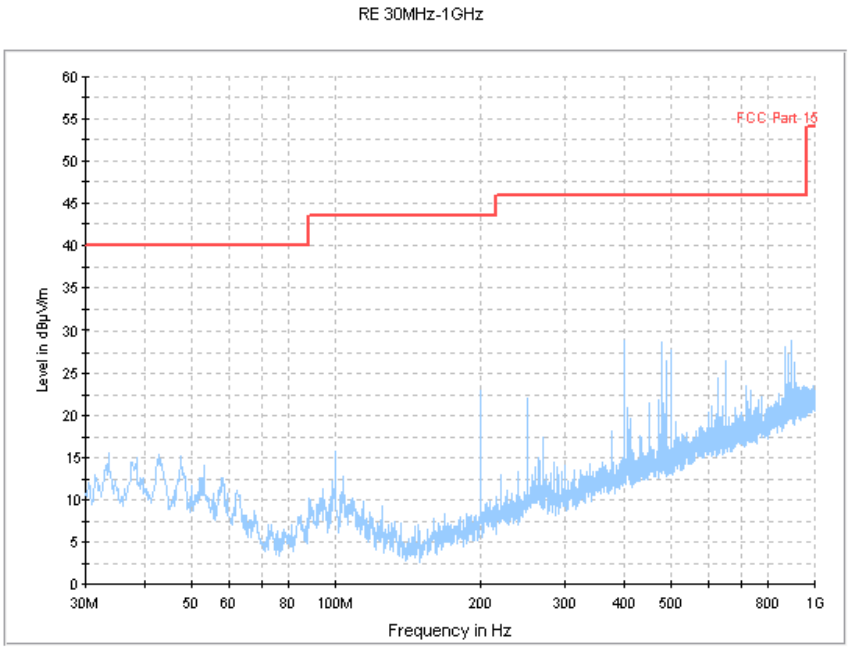
The measurement procedure in ANSI C63.4-2003 is used. The EUT is placed on an 80cm height non-conductive table locating on the center of turntable. From 30MHz-1GHz, the measurement distance is 3 m. For frequency range above 1GHz, the measurement distance is 3m.

The EUT is measured with travel charger and the operating mode is idle without CMW500's signaling.

A.9.2 Method of Measurement

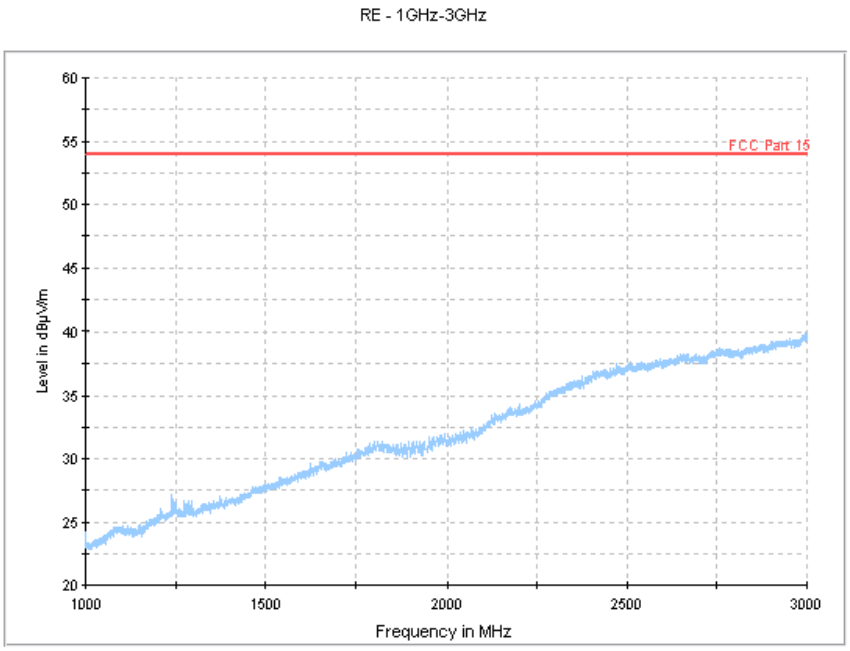
Frequency of Emission (MHz)	Limit (dBμV/m)	Measurement Distance (m)
30-88	40	3
88-216	43.5	3
216-960	46	3
960-1000	54	3
>1000	54	3

A. 9.3 Measurement results



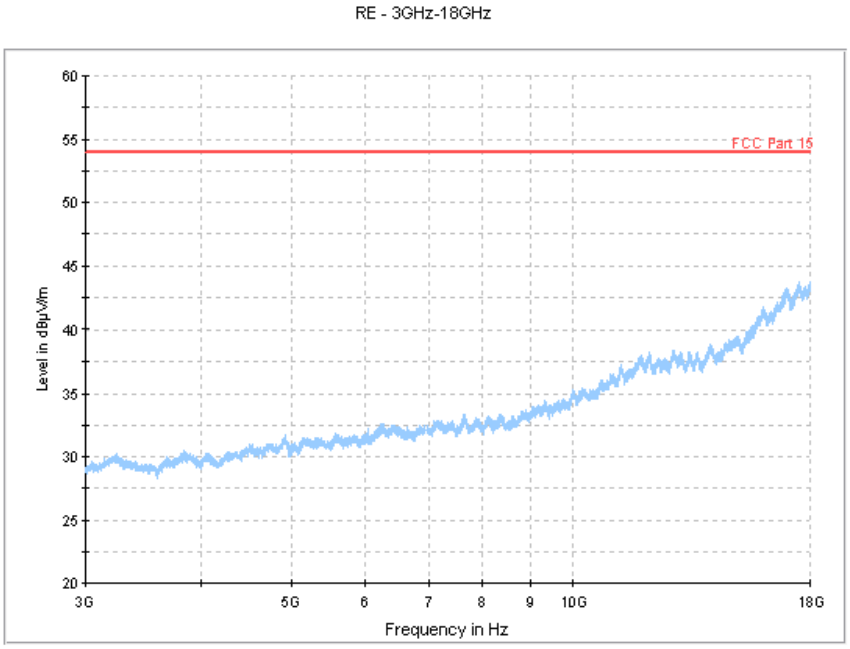
IF bandwidth: 120 kHz

Idle Mode: 30MHz-1GHz



RBW / VBW 1 MHz

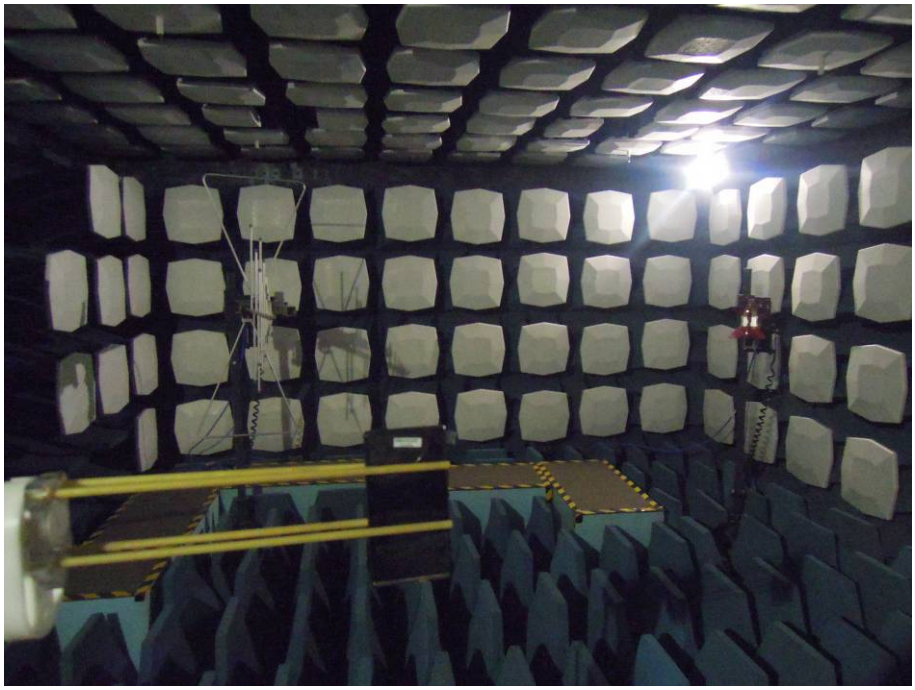
Idle Mode: 1GHz-3GHz



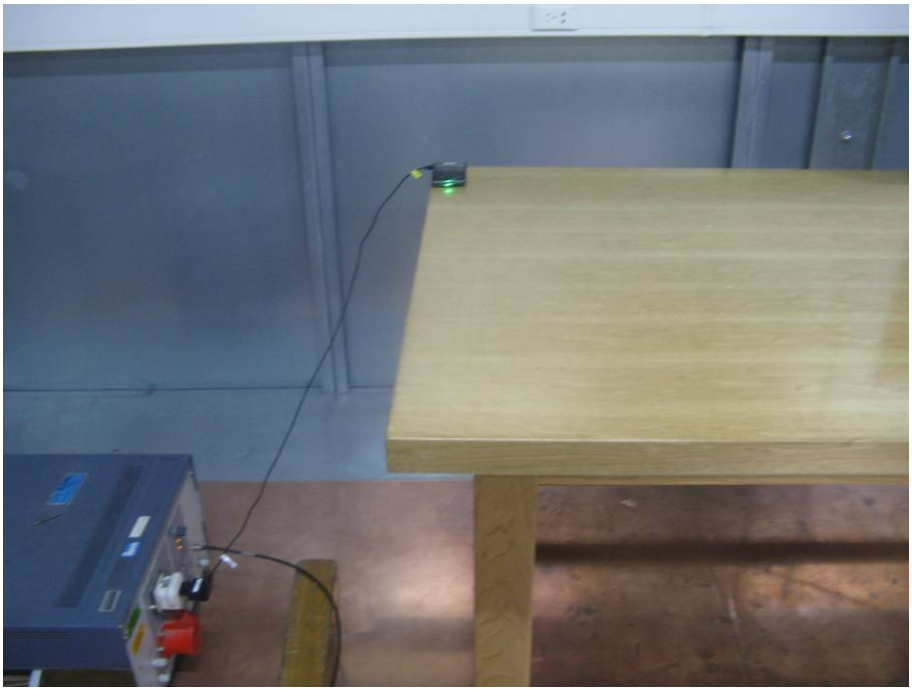
RBW / VBW 1 MHz

Idle Mode: 3GHz-18GHz

ANNEX B: TEST LAYOUT

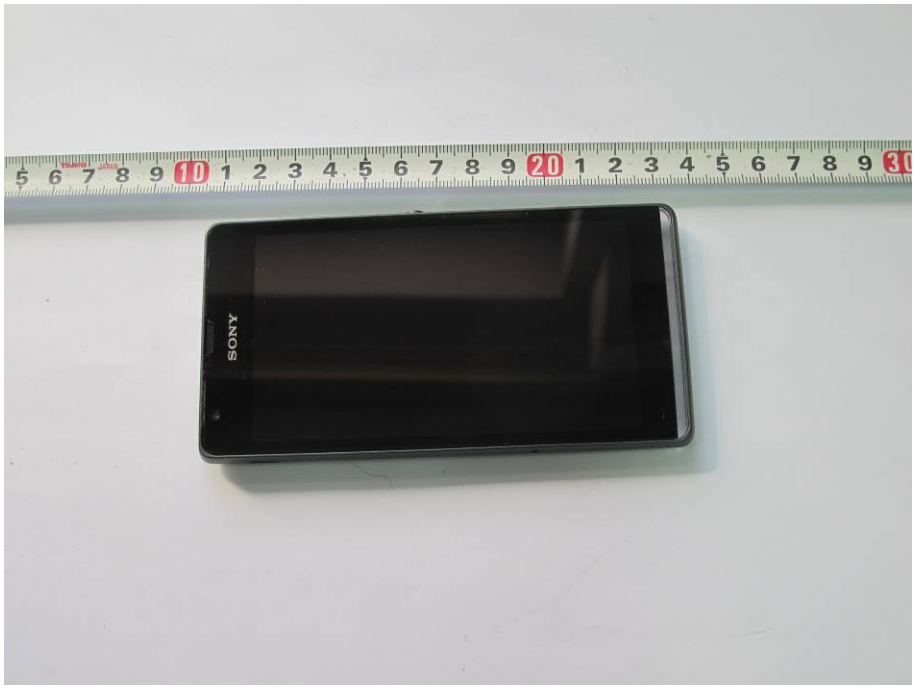


Pic.1 Radiated spurious emission



Pic.2 Conducted emission

ANNEX C: EUT photograph



Mobile Phone

Mobile Phone

Mobile Phone

Mobile Phone

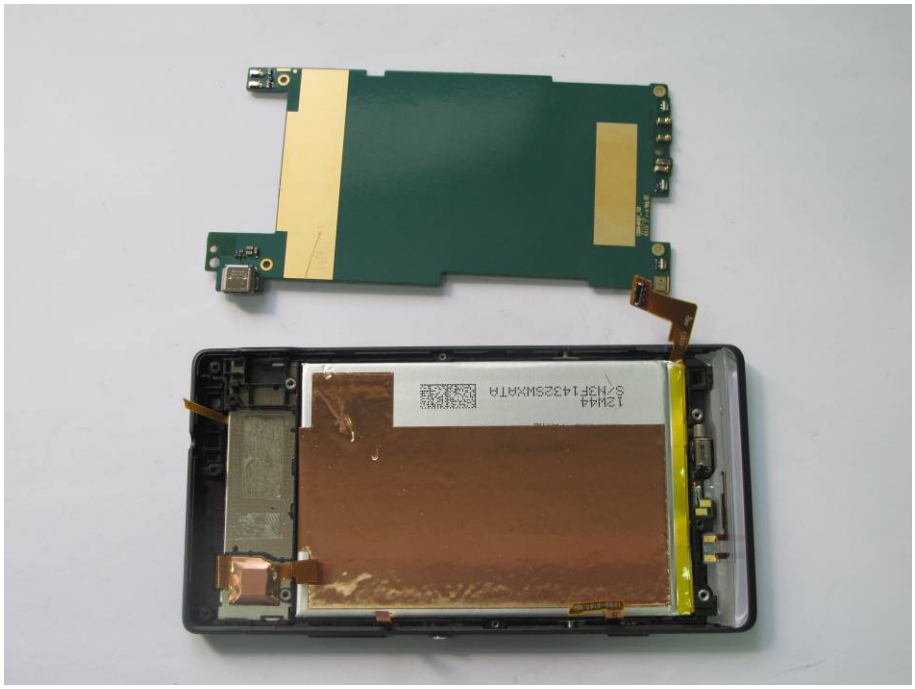
Mobile Phone

Mobile Phone

Label of Mobile Phone

Mobile Phone Disassembly

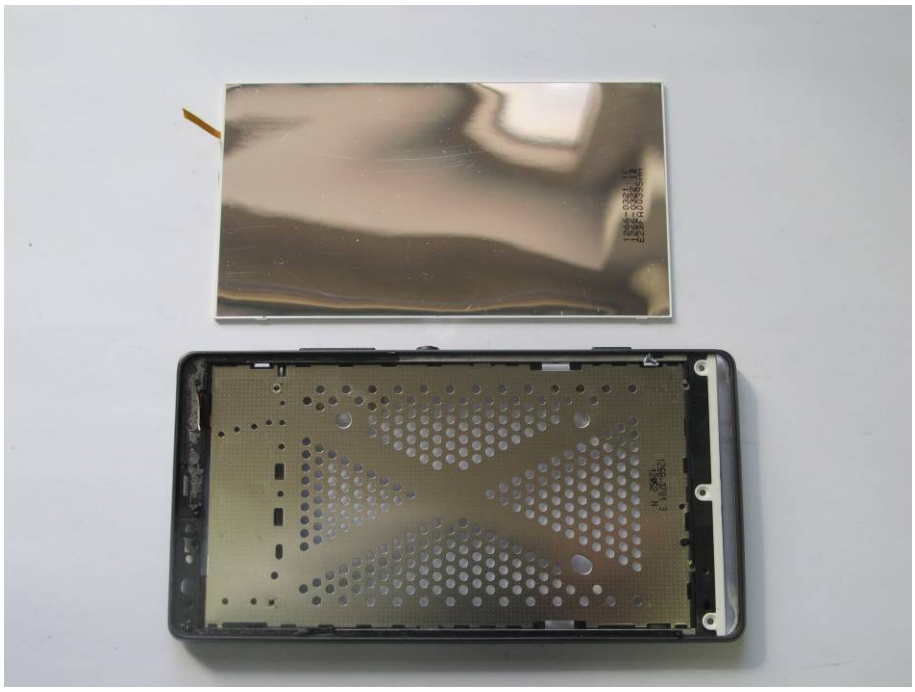
Mobile Phone Disassembly



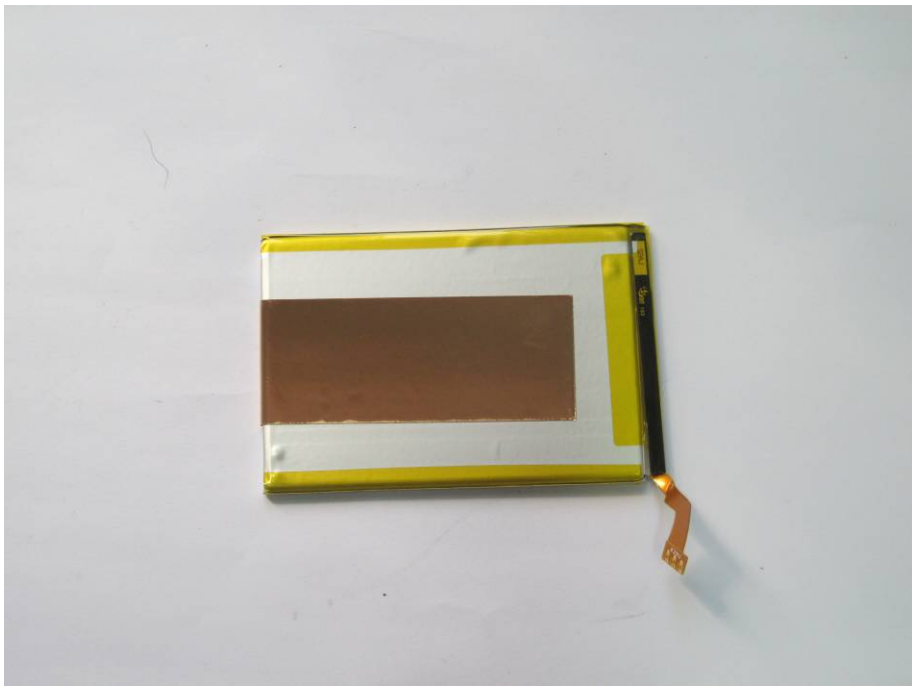
Mobile Phone Disassembly

Mobile Phone Disassembly

Mobile Phone Disassembly



Mobile Phone Disassembly



Inbuilt Li-Polymer Battery

Travel Charger

Label of Travel Charger

USB Cable

*****END OF REPORT*****