



TEST REPORT

No. I14Z45965-GTE03

for

TCT Mobile Limited

HSDPA/HSUPA/HSPA+/UMTS Quad bands / GSM quad bands/LTE 5

bands mobile phone

Model Name: EOS 4G BELL

Marketing Name: 6050A

FCC ID: RAD500

IC No. : 9238A-0034

with

Hardware Version: 02

Software Version: 7D1Q

Issued Date: 2014-06-18

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:

FCC 2.948 Listed: No.733176

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

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

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

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1. Test Laboratory

1.1. Testing Location

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT
Address: 3/F Shou Xiang Technology Building, No.51 Xueyuan Road, Haidian District, Beijing, P. R. China
Postal Code: 100191
Telephone: 00861062304633
Fax: 00861062304793

1.2. Testing Environment

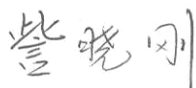
Normal Temperature: 15-35℃
Relative Humidity: 20-75%

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

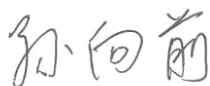
1.3. Project data

Testing Start Date: 2014-05-26
Testing End Date: 2014-06-17

1.4. Signature



Zi Xiaogang
(Prepared this test report)



Sun Xiangqian
(Reviewed this test report)



Lu Bingsong
Deputy Director of the laboratory
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name: TCT Mobile Limited
Address /Post: 5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park,
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2.2. Manufacturer Information

Company Name: TCT Mobile Limited
Address /Post: 5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park,
Pudong Area Shanghai, P.R. China.
City: Shanghai
Postal Code: 201203
Country: China
Telephone: 0086-21-61460890
Fax: 0086-21-61460602

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

3.1. About EUT

Description	HSDPA/HSUPA/HSPA+/UMTS Quad bands / GSM quad bands/LTE 5 bands mobile phone
Model Name	EOS 4G BELL
Marketing Name	6050A
FCC ID	RAD500
IC Number	9238A-0034
Antenna	Integrated
Output power	25.07dBm maximum EIRP measured for LTE FDD Band 2
Extreme vol. Limits	3.5VDC to 4.35VDC (nominal: 3.8VDC)
Extreme temp. Tolerance	-30°C to +50°C

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of Telecommunication Metrology Center of MIIT of People's Republic of China.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
UT21a	014103000011573	02	7D1Q
UT26a	014103000012019	02	7D1Q

*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	Remarks
AE1	Battery	/	Inbuilt
AE2	Battery	/	Inbuilt
AE3	Travel charger	/	TCT-CHR-1011
AE4	USB cable	/	TCT-DC-0549
AE5	USB cable	/	/

AE1

Model	CAB2000013C2
Manufacturer	SCUD
Capacitance	2150 mAh
Nominal voltage	3.8 V

AE2

Model	CAB2000010C1
Manufacturer	/
Capacitance	/
Nominal voltage	/

AE3

Model	CBA3000AG0C1
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Manufacturer	TEN PAO
Length of cable	/
AE4	
Model	CDA3122002C1
Manufacturer	JUWEI
Length of cable	102cm
AE5	
Model	CDA0000026C2
Manufacturer	Shenghua
Length of cable	/

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

3.4. Normal Accessory setting

Fully charged battery was used during the test.

3.5. General Description

The Equipment Under Test (EUT) is a model of HSDPA/HSUPA/HSPA+/UMTS Quad bands / GSM quad bands/LTE 5 bands mobile phone with integrated antenna. It consists of normal options: lithium battery, charger. Manual and specifications of the EUT were provided to fulfil the test.

4. Reference Documents

4.1. Reference Documents for testing

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

Reference	Title	Version
FCC Part 24	PERSONAL COMMUNICATIONS SERVICES	10-1-13 Edition
FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	10-1-13 Edition
RSS-Gen	General Requirements and Information for the Certification of Radiocommunication Equipment	Issue 3
RSS-130	Mobile Broadband Services (MBS) Equipment Operating in the Frequency Bands 698-756 MHz and 777-787 MHz	Issue 1
RSS-133	2 GHz Personal Communications Services	Issue 6
RSS-139	Advanced Wireless Services Equipment Operating in the Bands 1710-1755 MHz and 2110-2155 MHz	Issue 2
RSS-199	Broadband Radio Service (BRS) Equipment Operating in the Band 2500-2690 MHz	Issue 1
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	2009
KDB 971168 D01	Measurement Guidance for Certification of Licensed Digital Transmitters	v02r01

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber SAC-1 (23 meters×17meters×10meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4Ω
Normalised site attenuation (NSA)	< ± 4 dB, 3m/10m 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 F AC-3 (9 meters×6.5 meters×4 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω
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 4000 MHz

Shielded room did not exceed following limits along the EMC testing:

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

6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:		
Verdict Column	P	Pass
	F	Fail
	NA	Not applicable
	NM	Not measured

LTE Band 2

Items	Test Name	Clause in FCC rules	Clause in IC rules	Section in this report	Verdict
1	Output Power	24.232(c)	6.4	A.1	P
2	Emission Limit	24.238(a), 2.1051	6.5	A.2	P
3	Conducted Emission	15.107/207	7.2.2	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(a)	6.5	A.6	P
7	Band Edge Compliance	24.238(a)	6.5	A.7	P
8	Conducted Spurious Emission	24.238, 2.1057	6.5	A.8	P
9	peak-to-average power ratio	24.232(c)	6.4	A.9	P
10	Receiver Spurious Emissions	15.109, 2.1053	6.6	A.10	P

LTE Band 4

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	7.2.2	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
9	peak-to-average power ratio	27.50(d)(4)	6.4	A.9	P
10	Receiver Spurious Emissions	15.109, 2.1053	6.6	A.10	P

LTE Band 7

Items	Test Name	Clause in FCC rules	Clause in IC rules	Section in this report	Verdict
1	Output Power	27.50(h)(2)	4.4	A.1	P
2	Emission Limit	27.53(m), 2.1051	4.5	A.2	P
3	Conducted Emission	15.107/15.207	7.2.2	A.3	P
4	Frequency Stability	27.54, 2.1055	4.3	A.4	P
5	Occupied Bandwidth	2.1049(h)(i)	4.5	A.5	P
6	Emission Bandwidth	27.53(m)	4.5	A.6	P
7	Band Edge Compliance	27.53(m)	4.5	A.7	P
8	Conducted Spurious Emission	27.53(m), 2.1057	4.5	A.8	P
9	peak-to-average power ratio	27.50(h)(2)	4.4	A.9	P
10	Receiver Spurious Emissions	15.109 2.1053	4.6	A.10	P

LTE Band 17

Items	Test Name	Clause in FCC rules	Clause in IC rules	Section in this report	Verdict
1	Output Power	27.50(c)(10)	4.4	A.1	P
2	Emission Limit	27.53(g), 2.1051	4.6	A.2	P
3	Conducted Emission	15.107/15.207	7.2.2	A.3	P
4	Frequency Stability	27.54, 2.1055	4.3	A.4	P
5	Occupied Bandwidth	2.1049(h)(i)	4.6	A.5	P
6	Emission Bandwidth	27.53(g)	4.6	A.6	P
7	Band Edge Compliance	27.53(g)	4.6	A.7	P
8	Conducted Spurious Emission	27.53(g), 2.1057	4.6	A.8	P
9	peak-to-average power ratio	27.50(c)(10)	4.4	A.9	P
10	Receiver Spurious Emissions	15.109 2.1053	6	A.10	P

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE
1	Test Receiver	ESCI	100344	R&S	2015-03-03
2	Test Receiver	ESU26	100376	R&S	2014-11-05
3	EMI Antenna	VULB 9163	514	Schwarzbeck	2014-11-10
4	EMI Antenna	3117	00139065	ETS-Lindgren	2014-07-31
5	LISN	NV216	101200	R&S	2014-07-11
6	Universal Radio Communication Tester	CMW500	116588	R&S	2014-11-04
7	Universal Radio Communication Tester	CMW500	127406	R&S	2015-1-28
8	Spectrum Analyzer	E4440A	MY48250642	Agilent	2015-02-27
9	EMI Antenna	9117	177	Schwarzbeck	2014-06-29
10	EMI Antenna	VULB 9163	9163 175	Schwarzbeck	2014-07-13
11	EMI Antenna	3117	00119024	ETS-Lindgren	2016-01-20
12	Signal Generator	N5183A	MY49060052	Agilent	2015-03-02
13	Climate chamber	SH-241	92007454	ESPEC	2015-12-14
14	Loop Antenna	HFH2-Z2	829324/007	R&S	2014-12-12

ANNEX A: MEASUREMENT RESULTS

A.1 OUTPUT POWER

Reference

FCC: 24.232(c), 27.50(d)(4), 27.50(h)(2), 27.50(c)(10).

IC: RSS-133 Issue 6, Section 6.4. RSS-139 Issue 2, Section 6.4. RSS-199 Issue 1, Section 4.4. RSS-130 Issue 1, Section 4.4.

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, ERP/EIRP measurements and peak-to-average power ratio (PAPR) 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.

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

A.1.2.2 Measurement result

LTE band 2

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
1.4MHz	1 RB high	1850.7	23.56	22.66
		1880.0	23.57	22.75
		1909.3	23.76	22.95
	1 RB low	1850.7	23.56	22.70
		1880.0	23.61	22.80
		1909.3	23.79	22.89
	50% RB mid	1850.7	23.53	22.42
		1880.0	23.61	22.60
		1909.3	23.79	22.68
	100% RB	1850.7	22.59	21.61
		1880.0	22.68	21.66
		1909.3	22.72	21.76

(continued)

3MHz	1 RB high	1851.5	23.49	22.86
		1880.0	23.52	23.02
		1908.5	23.68	23.12
	1 RB low	1851.5	23.49	22.87
		1880.0	23.56	22.97
		1908.5	23.67	23.07
	50% RB mid	1851.5	22.51	21.47
		1880.0	22.62	21.58
		1908.5	22.67	21.68
	100% RB	1851.5	22.54	21.53
		1880.0	22.70	21.57
		1908.5	22.73	21.70
5MHz	1 RB high	1852.5	23.56	22.58
		1880.0	23.62	22.67
		1907.5	23.53	22.62
	1 RB low	1852.5	23.47	22.46
		1880.0	23.49	22.57
		1907.5	23.63	22.61
	50% RB mid	1852.5	22.55	21.53
		1880.0	22.61	21.60
		1907.5	22.76	21.69
	100% RB	1852.5	22.57	21.60
		1880.0	22.65	21.65
		1907.5	22.78	21.74
10MHz	1 RB high	1855.0	23.56	22.87
		1880.0	23.59	23.02
		1905.0	23.56	22.99
	1 RB low	1855.0	23.40	22.77
		1880.0	23.47	22.95
		1905.0	23.57	23.03
	50% RB mid	1855.0	22.56	21.51
		1880.0	22.71	21.56
		1905.0	22.67	21.58
	100% RB	1855.0	22.64	21.51
		1880.0	22.71	21.64
		1905.0	22.78	21.60

(continued)

15MHz	1 RB high	1857.5	23.56	22.85
		1880.0	23.68	23.04
		1902.5	23.56	22.98
	1 RB low	1857.5	23.39	22.86
		1880.0	23.45	22.84
		1902.5	23.58	22.97
	50% RB mid	1857.5	22.53	21.69
		1880.0	22.64	21.82
		1902.5	22.74	21.81
	100% RB	1857.5	22.63	21.59
		1880.0	22.84	21.76
		1902.5	22.86	21.70
20MHz	1 RB high	1860.0	23.68	22.76
		1880.0	23.71	22.79
		1900.0	23.74	22.82
	1 RB low	1860.0	23.63	22.64
		1880.0	23.71	22.71
		1900.0	23.65	22.66
	50% RB mid	1860.0	22.53	21.56
		1880.0	22.76	21.67
		1900.0	22.75	21.68
	100% RB	1860.0	22.54	21.54
		1880.0	22.77	21.72
		1900.0	22.78	21.67

LTE band 4

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
1.4MHz	1 RB high	1754.3	23.37	22.64
		1732.5	23.47	22.68
		1710.7	23.40	22.61
	1 RB low	1754.3	23.36	22.61
		1732.5	23.46	22.66
		1710.7	23.45	22.61
	50% RB mid	1754.3	23.38	22.38
		1732.5	23.45	22.46
		1710.7	23.44	22.42
	100% RB	1754.3	22.47	21.53
		1732.5	22.55	21.61
		1710.7	22.55	21.55
3MHz	1 RB high	1753.5	23.27	22.77
		1732.5	23.39	22.84
		1711.5	23.31	22.84
	1 RB low	1753.5	23.26	22.67
		1732.5	23.40	22.81
		1711.5	23.37	22.84
	50% RB mid	1753.5	22.42	21.38
		1732.5	22.42	21.44
		1711.5	22.41	21.44
	100% RB	1753.5	22.42	21.42
		1732.5	22.45	21.43
		1711.5	22.52	21.45
5MHz	1 RB high	1752.5	23.28	22.33
		1732.5	23.39	22.49
		1712.5	23.32	22.43
	1 RB low	1752.5	23.25	22.29
		1732.5	23.30	22.36
		1712.5	23.29	22.33
	50% RB mid	1752.5	22.34	21.39
		1732.5	22.49	21.48
		1712.5	22.43	21.45
	100% RB	1752.5	22.39	21.52
		1732.5	22.50	21.55
		1712.5	22.46	21.52

(continued)

10MHz	1 RB high	1750	23.28	22.72
		1732.5	23.21	22.74
		1715	23.35	22.79
	1 RB low	1750	23.27	22.76
		1732.5	23.28	22.78
		1715	23.29	22.70
	50% RB mid	1750	22.35	21.36
		1732.5	22.55	21.45
		1715	22.45	21.42
	100% RB	1750	22.58	21.52
		1732.5	22.62	21.55
		1715	22.60	21.53
15MHz	1 RB high	1747.5	23.32	22.68
		1732.5	23.47	22.88
		1717.5	23.44	22.82
	1 RB low	1747.5	23.29	22.79
		1732.5	23.27	22.67
		1717.5	23.28	22.72
	50% RB mid	1747.5	22.66	21.79
		1732.5	22.42	21.76
		1717.5	22.62	21.73
	100% RB	1747.5	22.67	21.61
		1732.5	22.68	21.65
		1717.5	22.72	21.63
20MHz	1 RB high	1745	23.45	22.55
		1732.5	23.62	22.72
		1720	23.56	22.68
	1 RB low	1745	23.26	22.32
		1732.5	23.41	22.45
		1720	23.36	22.49
	50% RB mid	1745	22.63	21.61
		1732.5	22.64	21.59
		1720	22.58	21.59
	100% RB	1745	22.56	21.57
		1732.5	22.61	21.58
		1720	22.60	21.60

LTE band 7

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
5MHz	1 RB high	2502.5	23.53	22.58
		2535	23.63	22.69
		2567.5	23.65	22.66
	1 RB low	2502.5	23.58	22.58
		2535	23.57	22.59
		2567.5	23.56	22.57
	50% RB mid	2502.5	21.60	20.70
		2535	21.68	20.75
		2567.5	21.67	20.73
	100% RB	2502.5	21.59	20.75
		2535	21.67	20.83
		2567.5	21.66	20.87
10MHz	1 RB high	2505	23.53	22.95
		2535	23.59	23.10
		2565	23.61	22.97
	1 RB low	2505	23.51	22.92
		2535	23.53	22.94
		2565	23.46	22.86
	50% RB mid	2505	21.70	20.74
		2535	21.72	20.73
		2565	21.56	20.61
	100% RB	2505	21.67	20.78
		2535	21.73	20.78
		2565	21.58	20.64
15MHz	1 RB high	2507.5	23.55	22.92
		2535	23.71	23.10
		2562.5	23.54	22.94
	1 RB low	2507.5	23.50	22.97
		2535	23.54	22.98
		2562.5	23.41	22.83
	50% RB mid	2507.5	21.74	20.97
		2535	21.71	20.90
		2562.5	21.71	20.94
	100% RB	2507.5	21.77	20.80
		2535	21.72	20.78
		2562.5	21.73	20.76

(Continued)

20MHz	1 RB high	2510	23.61	22.78
		2535	23.82	22.83
		2560	23.68	22.79
	1 RB low	2510	23.57	22.55
		2535	23.64	22.59
		2560	23.56	22.68
	50% RB mid	2510	21.64	20.63
		2535	21.62	20.70
		2560	21.57	20.67
	100% RB	2510	21.67	20.76
		2535	21.62	20.72
		2560	21.58	20.74

LTE band 17

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
5MHz	1 RB high	706.5	23.07	22.13
		710.0	23.06	22.08
		713.5	23.08	22.14
	1 RB low	706.5	23.00	22.01
		710.0	22.88	21.91
		713.5	23.06	21.99
	50% RB mid	706.5	22.15	21.09
		710.0	22.10	21.13
		713.5	22.14	21.13
	100% RB	706.5	22.12	21.19
		710.0	22.17	21.19
		713.5	22.19	21.18

(Continued)

10MHz	1 RB high	709	23.10	22.44
		710	23.11	22.50
		711	23.07	22.40
	1 RB low	709	22.93	22.30
		710	22.97	22.33
		711	22.92	22.24
	50% RB mid	709	22.17	21.08
		710	22.12	21.06
		711	22.16	21.08
	100% RB	709	22.22	21.16
		710	22.22	21.21
		711	22.23	21.17

A.1.3 Radiated

A.1.3.1 Description

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

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".

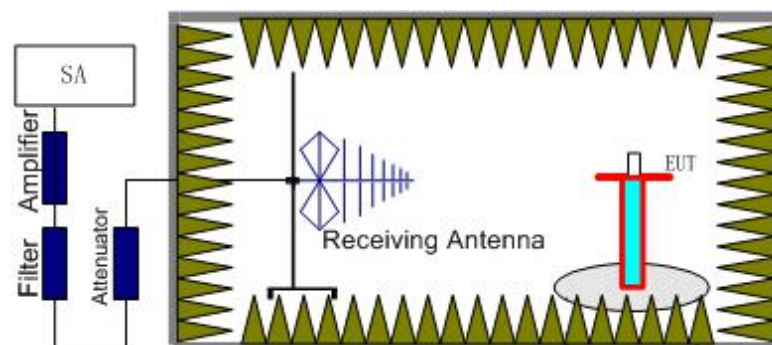
Rule Part 27.50(h)(2) specifies "Mobile stations are limited to 2.0 watts EIRP".

Rule Part 27.50(c)(10) specifies "Portable stations (hand-held devices) are limited to 3 watts ERP".

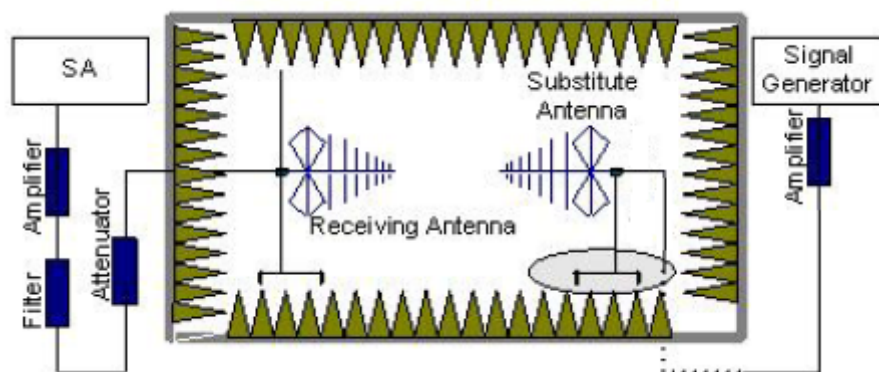
A.1.3.2 Method of Measurement

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:

$$\text{Power (EIRP)} = P_{Mea} - P_{Ag} - P_{cl} - G_a$$

5. This value is EIRP since the measurement is calibrated using an antenna of known gain (unit dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.15$.

A.1.3.3 Measurement result

LTE Band 2- EIRP 24. 232(b)

Limits: $\leq 33\text{dBm}$ (2W)

LTE Band 2_1.4MHz_QPSK

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1850.70	-28.92	3.18	-50.00	-4.56	22.46	33.00	10.54	H
1880.00	-27.30	3.11	-50.00	-4.43	24.02	33.00	8.98	H
1909.30	-26.85	3.18	-50.00	-4.30	24.27	33.00	8.73	H

LTE Band 2_3MHz_QPSK

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1851.50	-28.68	3.18	-50.00	-4.55	22.69	33.00	10.31	H
1880.00	-26.99	3.11	-50.00	-4.43	24.33	33.00	8.67	H
1908.50	-26.41	3.18	-50.00	-4.30	24.71	33.00	8.29	H

LTE Band 2_5MHz_QPSK

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1852.50	-28.79	3.18	-50.00	-4.55	22.58	33.00	10.42	H
1880.00	-27.07	3.11	-50.00	-4.43	24.25	33.00	8.75	H
1907.50	-26.49	3.18	-50.00	-4.31	24.64	33.00	8.36	H

LTE Band 2_10MHz_QPSK

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1855.00	-28.62	3.16	-50.00	-4.54	22.76	33.00	10.24	H
1880.00	-27.31	3.11	-50.00	-4.43	24.01	33.00	8.99	H
1905.00	-26.22	3.17	-50.00	-4.32	24.93	33.00	8.07	H

LTE Band 2_15MHz_QPSK

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1857.50	-28.56	3.15	-50.00	-4.53	22.82	33.00	10.18	H
1880.00	-27.21	3.11	-50.00	-4.43	24.11	33.00	8.89	H
1902.50	-26.12	3.16	-50.00	-4.33	25.05	33.00	7.95	H

LTE Band 2_20 MHz_QPSK

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1860.00	-28.51	3.14	-50.00	-4.52	22.87	33.00	10.13	H
1880.00	-27.20	3.11	-50.00	-4.43	24.12	33.00	8.88	H
1900.00	-26.11	3.16	-50.00	-4.34	25.07	33.00	7.93	H

LTE Band 2_1.4MHz_16QAM

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1850.70	-29.84	3.18	-50.00	-4.56	21.54	33.00	11.46	H
1880.00	-27.91	3.11	-50.00	-4.43	23.41	33.00	9.59	H
1909.30	-27.48	3.18	-50.00	-4.30	23.64	33.00	9.36	H

LTE Band 2_3MHz_16QAM

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1851.50	-29.65	3.18	-50.00	-4.55	21.72	33.00	11.28	H
1880.00	-27.67	3.11	-50.00	-4.43	23.65	33.00	9.35	H
1908.50	-27.17	3.18	-50.00	-4.30	23.95	33.00	9.05	H

LTE Band 2_5MHz_16QAM

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1852.50	-29.81	3.18	-50.00	-4.55	21.56	33.00	11.44	H
1880.00	-28.12	3.11	-50.00	-4.43	23.20	33.00	9.80	H
1907.50	-27.19	3.18	-50.00	-4.31	23.94	33.00	9.06	H

LTE Band 2_10MHz_16QAM

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1855.00	-29.62	3.16	-50.00	-4.54	21.76	33.00	11.24	H
1880.00	-27.99	3.11	-50.00	-4.43	23.33	33.00	9.67	H
1905.00	-26.99	3.17	-50.00	-4.32	24.16	33.00	8.84	H

LTE Band 2_15MHz_16QAM

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1857.50	-29.69	3.15	-50.00	-4.53	21.69	33.00	11.31	H
1880.00	-28.01	3.11	-50.00	-4.43	23.31	33.00	9.69	H
1902.50	-26.86	3.16	-50.00	-4.33	24.31	33.00	8.69	H

LTE Band 2_20 MHz_16QAM

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1860.00	-29.61	3.14	-50.00	-4.52	21.77	33.00	11.23	H
1880.00	-27.80	3.11	-50.00	-4.43	23.52	33.00	9.48	H
1900.00	-26.81	3.16	-50.00	-4.34	24.37	33.00	8.63	H

Frequency: 1900.00MHz

$$\begin{aligned} \text{Peak EIRP(dBm)} &= P_{\text{Mea}}(-26.11 \text{ dBm}) - G_a(-4.34 \text{ dBi}) - P_{\text{Ag}}(-50.00 \text{ dB}) - P_{\text{cl}}(3.16 \text{ dB}) \\ &= 25.07 \text{ dBm} \end{aligned}$$

LTE Band 4- EIRP 27.50(d)

Limits: ≤30dBm (1W)

LTE Band 4_1.4MHz_QPSK

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1710.70	-30.45	2.96	-50.00	-5.17	21.76	30.00	8.24	H
1732.50	-30.32	2.99	-50.00	-5.08	21.77	30.00	8.23	H
1754.30	-29.24	3.01	-50.00	-4.98	22.73	30.00	7.27	H

LTE Band 4_3MHz_QPSK

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1711.50	-30.21	2.96	-50.00	-5.17	22.00	30.00	8.00	H
1732.50	-30.15	2.99	-50.00	-5.08	21.94	30.00	8.06	H
1753.50	-29.25	3.01	-50.00	-4.98	22.72	30.00	7.28	H

LTE Band 4_5MHz_QPSK

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1712.50	-30.15	2.97	-50.00	-5.17	22.05	30.00	7.95	H
1732.50	-29.95	2.99	-50.00	-5.08	22.14	30.00	7.86	H
1752.50	-29.47	3.01	-50.00	-4.99	22.51	30.00	7.49	H

LTE Band 4_10MHz_QPSK

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1715.00	-30.09	2.97	-50.00	-5.15	22.09	30.00	7.91	H
1732.50	-30.12	2.99	-50.00	-5.08	21.97	30.00	8.03	H
1750.00	-29.29	3.00	-50.00	-5.00	22.71	30.00	7.29	H

LTE Band 4_15MHz_QPSK

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1717.50	-30.70	2.97	-50.00	-5.14	21.47	30.00	8.53	H
1732.50	-30.26	2.99	-50.00	-5.08	21.83	30.00	8.17	H
1747.50	-29.36	3.00	-50.00	-5.01	22.65	30.00	7.35	H

LTE Band 4_20MHz_QPSK

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1720.00	-30.78	2.97	-50.00	-5.13	21.38	30.00	8.62	H
1732.50	-30.16	2.99	-50.00	-5.08	21.93	30.00	8.07	H
1745.00	-29.64	3.00	-50.00	-5.02	22.38	30.00	7.62	H

LTE Band 4_1.4MHz_16QAM

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1710.70	-31.14	2.96	-50.00	-5.17	21.07	30.00	8.93	H
1732.50	-30.78	2.99	-50.00	-5.08	21.31	30.00	8.69	H
1754.30	-29.93	3.01	-50.00	-4.98	22.04	30.00	7.96	H

LTE Band 4_3MHz_16QAM

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1711.50	-31.08	2.96	-50.00	-5.17	21.13	30.00	8.87	H
1732.50	-30.50	2.99	-50.00	-5.08	21.59	30.00	8.41	H
1753.50	-30.05	3.01	-50.00	-4.98	21.92	30.00	8.08	H

LTE Band 4_5MHz_16QAM

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1712.50	-31.40	2.97	-50.00	-5.17	20.80	30.00	9.20	H
1732.50	-30.53	2.99	-50.00	-5.08	21.56	30.00	8.44	H
1752.50	-30.18	3.01	-50.00	-4.99	21.80	30.00	8.20	H

LTE Band 4_10MHz_16QAM

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1715.00	-31.02	2.97	-50.00	-5.15	21.16	30.00	8.84	H
1732.50	-31.16	2.99	-50.00	-5.08	20.93	30.00	9.07	H
1750.00	-30.34	3.00	-50.00	-5.00	21.66	30.00	8.34	H

LTE Band 4_15MHz_16QAM

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1717.50	-31.49	2.97	-50.00	-5.14	20.68	30.00	9.32	H
1732.50	-31.14	2.99	-50.00	-5.08	20.95	30.00	9.05	H
1747.50	-30.74	3.00	-50.00	-5.01	21.27	30.00	8.73	H

LTE Band 4_20MHz_16QAM

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1720.00	-32.03	2.97	-50.00	-5.13	20.13	30.00	9.87	H
1732.50	-30.92	2.99	-50.00	-5.08	21.17	30.00	8.83	H
1745.00	-30.36	3.00	-50.00	-5.02	21.66	30.00	8.34	H

Frequency: 1754.30MHz

$$\begin{aligned} \text{Peak EIRP(dBm)} &= P_{\text{Mea}}(-29.24 \text{ dBm}) - G_a(-4.98 \text{ dBi}) - P_{\text{Ag}}(-50.00 \text{ dB}) - P_{\text{cl}}(3.01 \text{ dB}) \\ &= 22.73 \text{ dBm} \end{aligned}$$

LTE Band 7- ERP 27.50(h)(2)

Limits: ≤33 dBm (2W)

LTE Band 7_5MHz_QPSK

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
2502.50	-30.17	3.59	-50.00	-5.41	21.65	33.00	11.35	H
2535.00	-29.15	3.62	-50.00	-5.49	22.72	33.00	10.28	H
2567.50	-29.53	3.65	-50.00	-5.58	22.40	33.00	10.60	H

LTE Band 7_10MHz_QPSK

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
2505.00	-29.90	3.59	-50.00	-5.41	21.92	33.00	11.08	H
2535.00	-29.17	3.62	-50.00	-5.49	22.70	33.00	10.30	H
2565.00	-29.58	3.65	-50.00	-5.57	22.34	33.00	10.66	H

LTE Band 7_15MHz_QPSK

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
2507.50	-29.62	3.59	-50.00	-5.42	22.21	33.00	10.79	H
2535.00	-29.19	3.62	-50.00	-5.49	22.68	33.00	10.32	H
2562.50	-29.58	3.64	-50.00	-5.56	22.34	33.00	10.66	H

LTE Band 7_20MHz_QPSK

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
2510.00	-29.39	3.59	-50.00	-5.43	22.45	33.00	10.55	H
2535.00	-29.01	3.62	-50.00	-5.49	22.86	33.00	10.14	H
2560.00	-28.87	3.64	-50.00	-5.56	23.05	33.00	9.95	H

LTE Band 7_5MHz_16QAM

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
2502.50	-31.11	3.59	-50.00	-5.41	20.71	33.00	12.29	H
2535.00	-29.93	3.62	-50.00	-5.49	21.94	33.00	11.06	H
2567.50	-30.51	3.65	-50.00	-5.58	21.42	33.00	11.58	H

LTE Band 7_10MHz_16QAM

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
2505.00	-30.59	3.59	-50.00	-5.41	21.23	33.00	11.77	H
2535.00	-30.15	3.62	-50.00	-5.49	21.72	33.00	11.28	H
2565.00	-30.56	3.65	-50.00	-5.57	21.36	33.00	11.64	H

LTE Band 7_15MHz_16QAM

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
2507.50	-30.22	3.59	-50.00	-5.42	21.61	33.00	11.39	H
2535.00	-30.03	3.62	-50.00	-5.49	21.84	33.00	11.16	H
2562.50	-30.54	3.64	-50.00	-5.56	21.38	33.00	11.62	H

LTE Band 7_20MHz_16QAM

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
2510.00	-30.59	3.59	-50.00	-5.43	21.25	33.00	11.75	H
2535.00	-30.03	3.62	-50.00	-5.49	21.84	33.00	11.16	H
2560.00	-30.13	3.64	-50.00	-5.56	21.79	33.00	11.21	H

Frequency: 2560.00MHz

$$\begin{aligned} \text{Peak EIRP(dBm)} &= P_{\text{Mea}}(-28.87 \text{ dBm}) - G_a(-5.56 \text{ dBi}) - P_{\text{Ag}}(-50.00 \text{ dB}) - P_{\text{cl}}(3.64 \text{ dB}) \\ &= 23.05 \text{ dBm} \end{aligned}$$

LTE Band 17- ERP 27.50(c)(10)

Limits: $\leq 34.77\text{dBm}$ (3W)

LTE Band 17_5MHz_QPSK

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	Correction (dB)	ERP(dBm)	Limit(dBm)	Margin(dB)	Polarization
706.50	-31.72	1.91	-53.00	0.30	2.15	16.92	34.77	17.85	V
710.00	-31.76	1.92	-53.00	0.32	2.15	16.85	34.77	17.92	V
713.50	-31.17	1.93	-53.00	0.34	2.15	17.41	34.77	17.36	V

LTE Band 17_10MHz_QPSK

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	Correction (dB)	ERP(dBm)	Limit(dBm)	Margin(dB)	Polarization
709.00	-31.62	1.92	-53.00	0.32	2.15	16.99	34.77	17.78	V
710.00	-31.80	1.92	-53.00	0.32	2.15	16.81	34.77	17.96	V
711.00	-31.59	1.92	-53.00	0.33	2.15	17.01	34.77	17.76	V

LTE Band 17_5MHz_16QAM

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	Correction (dB)	ERP(dBm)	Limit(dBm)	Margin(dB)	Polarization
706.50	-32.97	1.91	-53.00	0.30	2.15	15.67	34.77	19.10	V
710.00	-32.45	1.92	-53.00	0.32	2.15	16.16	34.77	18.61	V
713.50	-32.39	1.93	-53.00	0.34	2.15	16.19	34.77	18.58	V

LTE Band 17_10MHz_16QAM

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	Correction (dB)	ERP(dBm)	Limit(dBm)	Margin(dB)	Polarization
709.00	-32.70	1.92	-53.00	0.32	2.15	15.91	34.77	18.86	V
710.00	-32.77	1.92	-53.00	0.32	2.15	15.84	34.77	18.93	V
711.00	-32.36	1.92	-53.00	0.33	2.15	16.24	34.77	18.53	V

Frequency: 713.50 MHz

$$\begin{aligned} \text{Peak ERP(dBm)} &= P_{\text{Mea}}(-31.17 \text{ dBm}) - G_a (1.93 \text{ dBi}) - P_{\text{Ag}} (-53.00 \text{ dB}) - P_{\text{cl}} (0.34 \text{ dB}) - 2.15 \text{ dB} \\ &= 17.41 \text{ dBm} \end{aligned}$$

ANALYZER SETTINGS:

RBW = VBW = 8MHz for occupied bandwidths equal to or less than 5MHz.

RBW = VBW = 20MHz for occupied bandwidths equal to or greater than 10MHz.

A.2 EMIS SION LIMIT

Reference

FCC: CFR 2.1051, 24.238(a), 27.53(h) , 27.53(m), 27.53(g).

IC: RSS-133 Issue 6, Section 6.5. RSS-139 Issue 2, Section 6.5. RSS-199 Issue 1, Section 4.5.

RSS-130 Issue 1, Section 4.6.

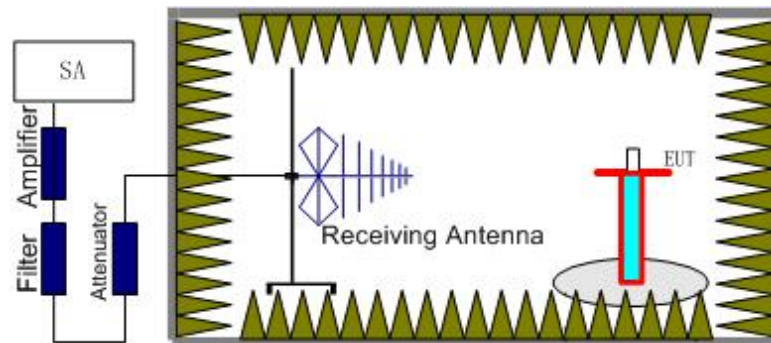
A.2.1 Measurement Method

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

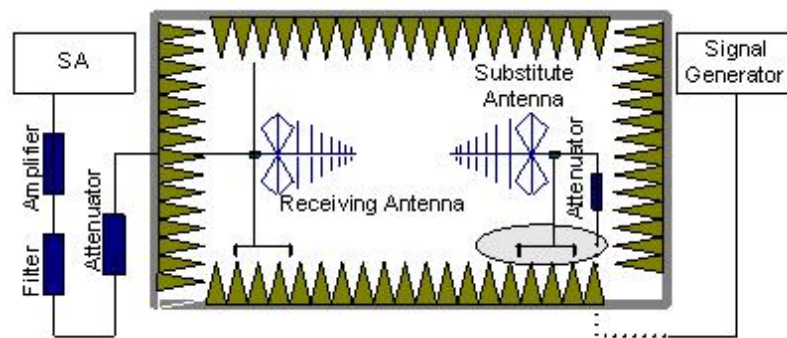
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier. The resolution bandwidth is set 1MHz as outlined in Part 24.238(a), Part 27.53(h), Part 27.53(m) and Part 27.53(g). The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of the LTE Bands 2, 4, 7 and 17.

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:

$$\text{Power (EIRP)} = P_{Mea} + P_{pl} + G_a$$

5. This value is EIRP since the measurement is calibrated using an antenna of known gain (unit: dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.15\text{dB}$.

A.2.2 Measurement Limit

Part 24.238(a), 27.53(h), 27.53(m) and 27.53(g) all 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.2.3 Measurement Results

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the LTE Bands 2, 4, 7 and 17. 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 Bands 2, 4, 7 and 17 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	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Margin(dB)	Polarization
3712.50	-54.95	4.41	-8.15	-51.21	-13.00	38.21	H
5564.46	-52.56	5.43	-10.03	-47.96	-13.00	34.96	H
7471.27	-58.66	6.62	-11.38	-53.90	-13.00	40.90	H
9349.37	-55.92	7.60	-12.60	-50.92	-13.00	37.92	V
11229.65	-55.38	8.50	-12.40	-51.48	-13.00	38.48	V
13131.48	-53.02	9.31	-13.43	-48.90	-13.00	35.90	H

LTE Band 2, 1.4MHz, QPSK, Channel 18900

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Margin(dB)	Polarization
3760.28	-48.95	4.52	-8.21	-45.26	-13.00	32.26	V
5640.60	-42.83	5.45	-10.06	-38.22	-13.00	25.22	H
7522.74	-58.06	6.86	-11.42	-53.50	-13.00	40.50	V
10316.74	-56.15	7.80	-12.46	-51.49	-13.00	38.49	V
13248.58	-52.77	9.12	-13.55	-48.34	-13.00	35.34	H
14026.43	-53.28	9.34	-13.98	-48.64	-13.00	35.64	V

LTE Band 2, 1.4MHz, QPSK, Channel 19193

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Margin(dB)	Polarization
3815.48	-51.19	4.49	-8.28	-47.40	-13.00	34.40	H
5722.94	-39.69	5.53	-10.09	-35.13	-13.00	22.13	H
7632.90	-58.60	6.82	-11.53	-53.89	-13.00	40.89	H
9530.30	-55.27	7.73	-12.59	-50.41	-13.00	37.41	V
11503.25	-55.53	8.62	-12.40	-51.75	-13.00	38.75	H
13397.07	-51.75	9.00	-13.70	-47.05	-13.00	34.05	V

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

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Margin(dB)	Polarization
3710.46	-51.66	4.41	-8.15	-47.92	-13.00	34.92	H
5565.42	-38.68	5.42	-10.03	-34.07	-13.00	21.07	H
7439.63	-58.52	6.43	-11.36	-53.59	-13.00	40.59	H
9343.71	-57.04	7.62	-12.60	-52.06	-13.00	39.06	V
11262.28	-56.58	8.42	-12.40	-52.60	-13.00	39.60	V
13261.73	-52.06	9.01	-13.56	-47.51	-13.00	34.51	V

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

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Margin(dB)	Polarization
3760.13	-49.16	4.52	-8.21	-45.47	-13.00	32.47	V
5640.66	-43.16	5.45	-10.06	-38.55	-13.00	25.55	V
7520.84	-56.92	6.83	-11.42	-52.33	-13.00	39.33	V
9590.53	-55.84	7.99	-12.56	-51.27	-13.00	38.27	H
11542.65	-56.48	8.58	-12.41	-52.65	-13.00	39.65	H
13214.21	-52.40	9.10	-13.51	-47.99	-13.00	34.99	V

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

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Margin(dB)	Polarization
3815.36	-52.16	4.49	-8.28	-48.37	-13.00	35.37	V
5723.14	-38.61	5.53	-10.09	-34.05	-13.00	21.05	H
7623.36	-60.90	6.82	-11.52	-56.20	-13.00	43.20	H
9566.53	-58.58	7.74	-12.57	-53.75	-13.00	40.75	V
11469.16	-56.02	8.63	-12.40	-52.25	-13.00	39.25	V
13463.27	-52.99	9.35	-13.76	-48.58	-13.00	35.58	H

LTE Band 4, 1.4MHz, QPSK, Channel 19957

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Margin(dB)	Polarization
3441.46	-59.45	4.22	-7.76	-55.91	-13.00	42.91	H
5138.04	-38.70	5.24	-9.78	-34.16	-13.00	21.16	H
6987.54	-60.77	6.22	-11.09	-55.90	-13.00	42.90	H
8682.77	-56.28	7.38	-12.35	-51.31	-13.00	38.31	V
10276.14	-51.81	7.62	-12.46	-46.97	-13.00	33.97	H
11898.82	-55.12	8.55	-12.48	-51.19	-13.00	38.19	H

LTE Band 4, 1.4MHz, QPSK, Channel 20175

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Margin(dB)	Polarization
5197.98	-40.48	5.23	-9.82	-35.89	-13.00	22.89	V
6874.64	-58.95	6.07	-10.97	-54.05	-13.00	41.05	V
8625.15	-57.12	7.39	-12.30	-52.21	-13.00	39.21	H
10849.57	-54.83	8.24	-12.43	-50.64	-13.00	37.64	V
13599.51	-52.24	9.16	-13.84	-47.56	-13.00	34.56	V
16148.99	-49.52	10.40	-12.82	-47.10	-13.00	34.10	V

LTE Band 4, 1.4MHz, QPSK, Channel 20393

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Margin(dB)	Polarization
3514.58	-56.85	4.33	-7.92	-53.26	-13.00	40.26	H
5257.86	-43.73	5.29	-9.85	-39.17	-13.00	26.17	V
6980.80	-58.50	6.25	-11.08	-53.67	-13.00	40.67	V
8620.03	-57.70	7.42	-12.30	-52.82	-13.00	39.82	V
10384.88	-56.89	8.05	-12.48	-52.46	-13.00	39.46	H
12137.16	-55.50	8.87	-12.55	-51.82	-13.00	38.82	V

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

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Margin(dB)	Polarization
3381.41	-57.76	4.23	-7.62	-54.37	-13.00	41.37	V
5138.04	-38.80	5.24	-9.78	-34.26	-13.00	21.26	H
6830.71	-60.07	6.19	-10.93	-55.33	-13.00	42.33	V
8549.47	-60.17	7.28	-12.24	-55.21	-13.00	42.21	H
10276.37	-52.59	7.62	-12.46	-47.75	-13.00	34.75	H
12015.16	-53.80	8.81	-12.51	-50.10	-13.00	37.10	V

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

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Margin(dB)	Polarization
5197.97	-40.00	5.23	-9.82	-35.41	-13.00	22.41	V
7570.32	-56.66	6.92	-11.47	-52.11	-13.00	39.11	V
9753.88	-57.93	7.88	-12.50	-53.31	-13.00	40.31	V
12266.71	-55.61	8.90	-12.61	-51.90	-13.00	38.90	V
13964.43	-51.20	9.20	-13.99	-46.41	-13.00	33.41	H
17551.61	-50.35	10.94	-13.33	-47.96	-13.00	34.96	V

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

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Margin(dB)	Polarization
5258.16	-44.05	5.29	-9.85	-39.49	-13.00	26.49	V
7388.41	-58.46	6.44	-11.33	-53.57	-13.00	40.57	H
8684.27	-59.71	7.38	-12.35	-54.74	-13.00	41.74	H
10786.55	-57.13	7.93	-12.44	-52.62	-13.00	39.62	V
13614.68	-51.11	9.12	-13.85	-46.38	-13.00	33.38	V
16042.11	-47.39	10.68	-12.95	-45.12	-13.00	32.12	V

LTE Band 7, 5 MHz, QPSK, Channel 20775

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Margin(dB)	Polarization
5005.38	-45.79	5.17	-9.70	-41.26	-13.00	28.26	V
7508.12	-36.77	6.65	-11.41	-32.01	-13.00	19.01	V
10010.53	-45.12	7.96	-12.40	-40.68	-13.00	27.68	V
13583.93	-51.46	9.23	-13.83	-46.86	-13.00	33.86	H
15202.19	-50.31	9.79	-13.46	-46.64	-13.00	33.64	V
16656.00	-47.91	10.30	-12.40	-45.81	-13.00	32.81	V

LTE Band 7, 5 MHz, QPSK, Channel 21100

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Margin(dB)	Polarization
5070.32	-42.14	5.21	-9.74	-37.61	-13.00	24.61	H
7605.44	-36.99	6.78	-11.51	-32.26	-13.00	19.26	V
10140.95	-52.18	7.92	-12.43	-47.67	-13.00	34.67	V
12676.18	-45.40	8.92	-12.91	-41.41	-13.00	28.41	H
14196.01	-51.04	9.11	-13.84	-46.31	-13.00	33.31	V
16242.86	-47.74	10.12	-12.71	-45.15	-13.00	32.15	H

LTE Band 7, 5 MHz, QPSK, Channel 21425

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Margin(dB)	Polarization
5130.64	-40.82	5.25	-9.78	-36.29	-13.00	23.29	V
7696.05	-37.84	6.56	-11.60	-32.80	-13.00	19.80	V
10261.69	-52.72	7.56	-12.45	-47.83	-13.00	34.83	H
12487.28	-55.36	8.75	-12.69	-51.42	-13.00	38.42	V
13598.72	-52.23	9.16	-13.84	-47.55	-13.00	34.55	H
14308.81	-50.92	9.43	-13.75	-46.60	-13.00	33.60	H

LTE Band 7, 5 MHz, 16QAM, Channel 20775

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Margin(dB)	Polarization
5005.43	-45.49	5.17	-9.70	-40.96	-13.00	27.96	H
7508.05	-36.33	6.65	-11.41	-31.57	-13.00	18.57	H
10010.76	-44.63	7.96	-12.40	-40.19	-13.00	27.19	V
13609.07	-52.18	9.09	-13.84	-47.43	-13.00	34.43	H
15013.25	-50.37	9.68	-13.50	-46.55	-13.00	33.55	V
16252.83	-50.48	10.17	-12.70	-47.95	-13.00	34.95	H

LTE Band 7, 5 MHz, 16QAM, Channel 21100

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Margin(dB)	Polarization
5073.60	-49.43	5.20	-9.74	-44.89	-13.00	31.89	V
7603.61	-45.26	6.81	-11.50	-40.57	-13.00	27.57	V
10136.16	-51.81	7.94	-12.43	-47.32	-13.00	34.32	H
11808.15	-54.64	8.93	-12.46	-51.11	-13.00	38.11	H
13637.32	-51.13	9.18	-13.85	-46.46	-13.00	33.46	V
16159.12	-48.35	10.33	-12.81	-45.87	-13.00	32.87	V

LTE Band 7, 5 MHz, 16QAM, Channel 21425

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Margin(dB)	Polarization
5130.68	-40.00	5.25	-9.78	-35.47	-13.00	22.47	H
7696.04	-37.17	6.56	-11.60	-32.13	-13.00	19.13	V
10261.30	-53.70	7.55	-12.45	-48.80	-13.00	35.80	H
11831.60	-56.10	8.72	-12.47	-52.35	-13.00	39.35	V
13657.19	-51.36	9.04	-13.86	-46.54	-13.00	33.54	H
15281.97	-49.70	9.98	-13.44	-46.24	-13.00	33.24	H

LTE Band 17, 5MHz, QPSK, Channel 23755

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Correction (dB)	Peak ERP(dBm)	Limit (dBm)	Margin(dB)	Polarization
3533.48	-38.10	4.32	-7.94	2.15	-36.63	-13.00	23.63	V
4274.83	-57.91	4.79	-8.66	2.15	-56.19	-13.00	43.19	H
4946.93	-48.10	5.11	-9.60	2.15	-45.76	-13.00	32.76	V
5653.77	-57.53	5.45	-10.06	2.15	-55.07	-13.00	42.07	V
6353.50	-60.53	5.82	-10.48	2.15	-58.02	-13.00	45.02	H
7140.82	-58.11	6.40	-11.18	2.15	-55.48	-13.00	42.48	H

LTE Band 17, 5MHz, QPSK, Channel 23790

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Correction (dB)	Peak ERP(dBm)	Limit (dBm)	Margin(dB)	Polarization
2133.50	-28.30	3.32	-4.30	2.15	-29.47	-13.00	16.47	H
3544.32	-48.58	4.31	-7.95	2.15	-47.09	-13.00	34.09	V
4827.14	-59.13	5.14	-9.39	2.15	-57.03	-13.00	44.03	V
5591.73	-59.81	5.42	-10.04	2.15	-57.34	-13.00	44.34	V
6859.42	-57.21	6.12	-10.96	2.15	-54.52	-13.00	41.52	H
6859.42	-57.21	6.12	-10.96	2.15	-54.52	-13.00	41.52	H

LTE Band 17, 5MHz, QPSK, Channel 23825

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Correction (dB)	Peak ERP(dBm)	Limit (dBm)	Margin(dB)	Polarization
3568.52	-43.24	4.34	-7.98	2.15	-41.75	-13.00	28.75	H
4303.64	-61.98	4.90	-8.68	2.15	-60.35	-13.00	47.35	H
4995.63	-54.51	5.17	-9.69	2.15	-52.14	-13.00	39.14	H
5758.70	-58.73	5.69	-10.10	2.15	-56.47	-13.00	43.47	H
6474.35	-56.37	5.92	-10.58	2.15	-53.86	-13.00	40.86	V
7213.44	-59.13	6.37	-11.23	2.15	-56.42	-13.00	43.42	V

LTE Band 17, 5MHz, 16QAM, Channel 23755

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Correction (dB)	Peak ERP(dBm)	Limit (dBm)	Margin(dB)	Polarization
3533.42	-38.62	4.32	-7.94	2.15	-37.15	-13.00	24.15	V
4269.23	-60.01	4.79	-8.66	2.15	-58.29	-13.00	45.29	H
4946.80	-47.93	5.11	-9.60	2.15	-45.59	-13.00	32.59	V
5665.33	-61.38	5.47	-10.07	2.15	-58.93	-13.00	45.93	H
6359.49	-58.97	5.83	-10.49	2.15	-56.46	-13.00	43.46	V
7177.33	-58.73	6.38	-11.21	2.15	-56.05	-13.00	43.05	V

LTE Band 17, 5MHz, 16QAM, Channel 23790

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Correction (dB)	Peak ERP(dBm)	Limit (dBm)	Margin(dB)	Polarization
3550.85	-39.09	4.31	-7.96	2.15	-37.59	-13.00	24.59	V
4245.01	-57.40	4.76	-8.65	2.15	-55.66	-13.00	42.66	H
4971.32	-50.44	5.11	-9.65	2.15	-48.05	-13.00	35.05	V
5664.99	-60.75	5.46	-10.07	2.15	-58.29	-13.00	45.29	V
6345.09	-58.38	5.83	-10.48	2.15	-55.88	-13.00	42.88	V
7143.41	-58.63	6.39	-11.19	2.15	-55.98	-13.00	42.98	H

LTE Band 17, 5MHz, 16QAM, Channel 23825

Frequency(MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Correction (dB)	Peak ERP(dBm)	Limit (dBm)	Margin(dB)	Polarization
3568.48	-43.74	4.34	-7.98	2.15	-42.25	-13.00	29.25	V
4341.32	-58.41	4.84	-8.70	2.15	-56.70	-13.00	43.70	V
5104.31	-61.17	5.23	-9.76	2.15	-58.79	-13.00	45.79	V
5733.72	-57.13	5.57	-10.09	2.15	-54.76	-13.00	41.76	H
6411.84	-58.98	5.83	-10.53	2.15	-56.43	-13.00	43.43	V
7133.81	-57.75	6.42	-11.18	2.15	-55.14	-13.00	42.14	V

Note: The maximum value of expanded measurement uncertainty for this test item is $U = 4.2 \text{ dB}$, $k = 2$.

A.3 CONDUCT ED EMISSION

Reference

FCC: CFR Part 15.107/207

IC: RSS-Gen Issue 3, Section 7.2.2.

The measurement procedure in ANSI C63.4-2009 is used. Conducted emission is measured with travel charger. The EUT is working under LTE FDD bands 2/4/7/17 traffic mode which is the worst case of conducted emission measurement.

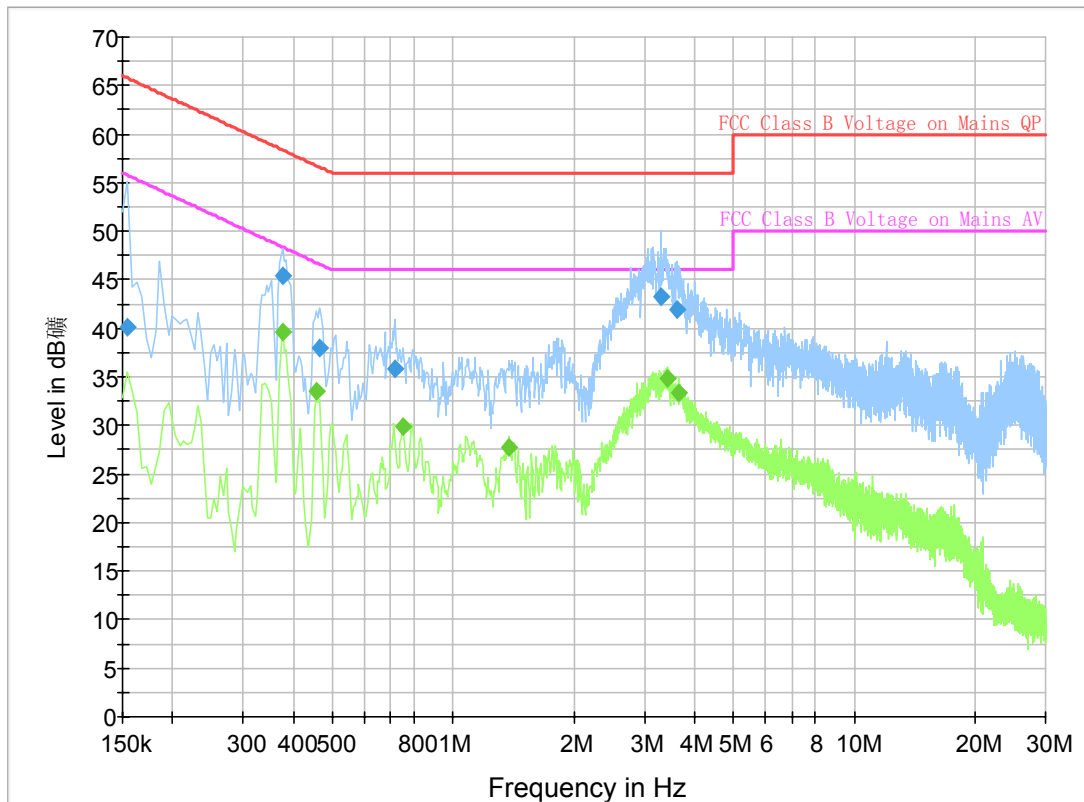
For test layout photo, please refer to Pic.2 in Annex B.

A.3.1 Limit

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	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, 1.4 MHz bandwidth



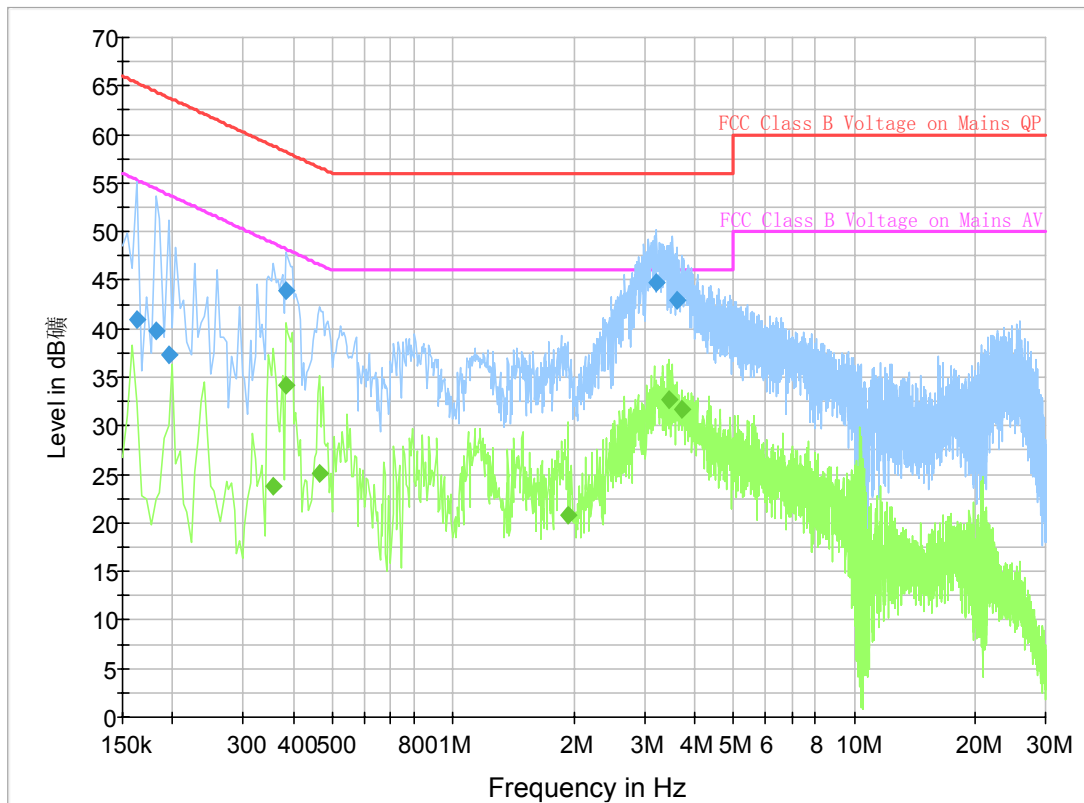
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.154500	40.	1	GND L1	9.8	25.6	65.8
0.375000	45.	3	GND L1	9.8	13.1	58.4
0.465000	37.	9	GND N	9.8	18.7	56.6
0.717000	35.	8	GND N	9.8	20.2	56.0
3.291000	43.	3	GND L1	9.7	12.7	56.0
3.633000	42.	0	GND L1	9.7	14.0	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.375000	39.	6	GND L1	9.8	8.8	48.4
0.456000	33.	5	GND L1	9.8	13.3	46.8
0.748500	29.	9	GND L1	9.8	16.1	46.0
1.383000	27.	8	GND L1	9.7	18.2	46.0
3.412500	34.	9	GND L1	9.7	11.1	46.0
3.660000	33.	3	GND L1	9.7	12.7	46.0

LTE Band 4, 1.4 MHz bandwidth



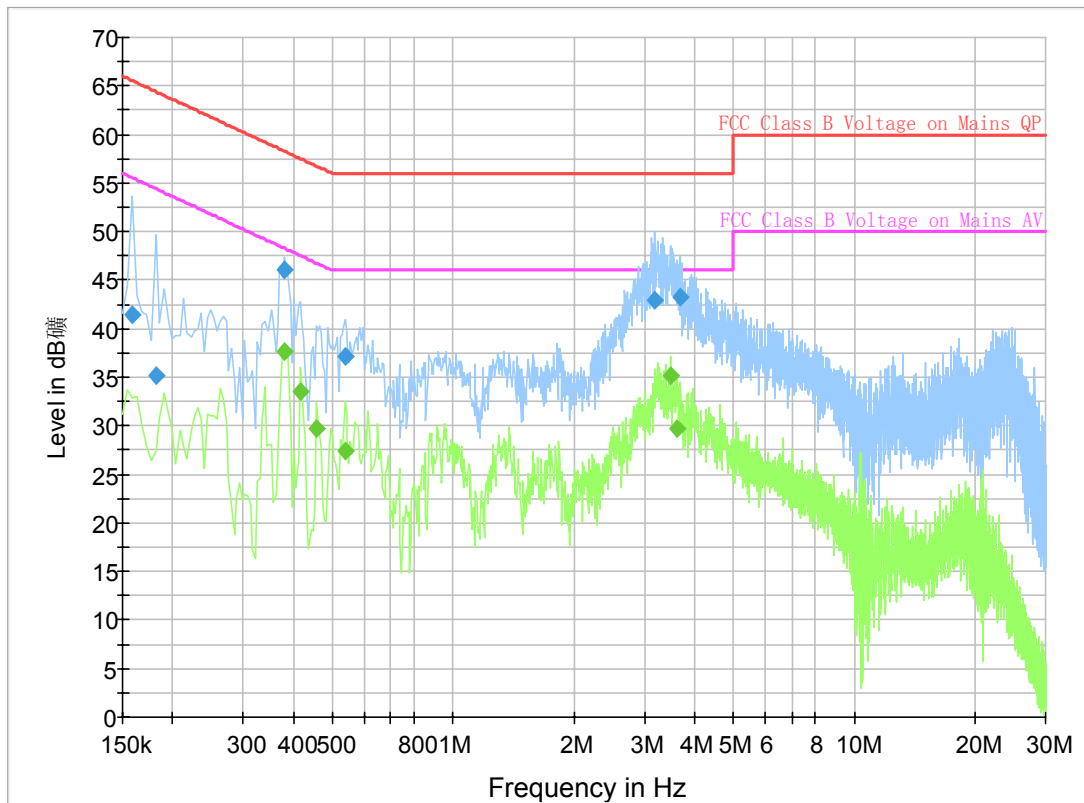
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.163500	40.	9	GND	L1	9.8	24.4
0.181500	39.	9	GND	N	9.8	24.6
0.195000	37.	2	GND	L1	9.8	26.6
0.384000	43.	8	GND	L1	9.8	14.3
3.201000	44.	7	GND	L1	9.7	11.3
3.610500	43.	0	GND	L1	9.7	13.0

Final Result 2

Frequency (MHz)	Average (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.357000	23.	8	GND	L1	9.8	25.0
0.384000	34.	2	GND	L1	9.8	14.0
0.465000	25.	1	GND	L1	9.8	21.5
1.936500	20.	9	GND	L1	9.7	25.1
3.444000	32.	7	GND	L1	9.7	13.3
3.705000	31.	8	GND	L1	9.7	14.2

LTE Band 7, 5 MHz bandwidth



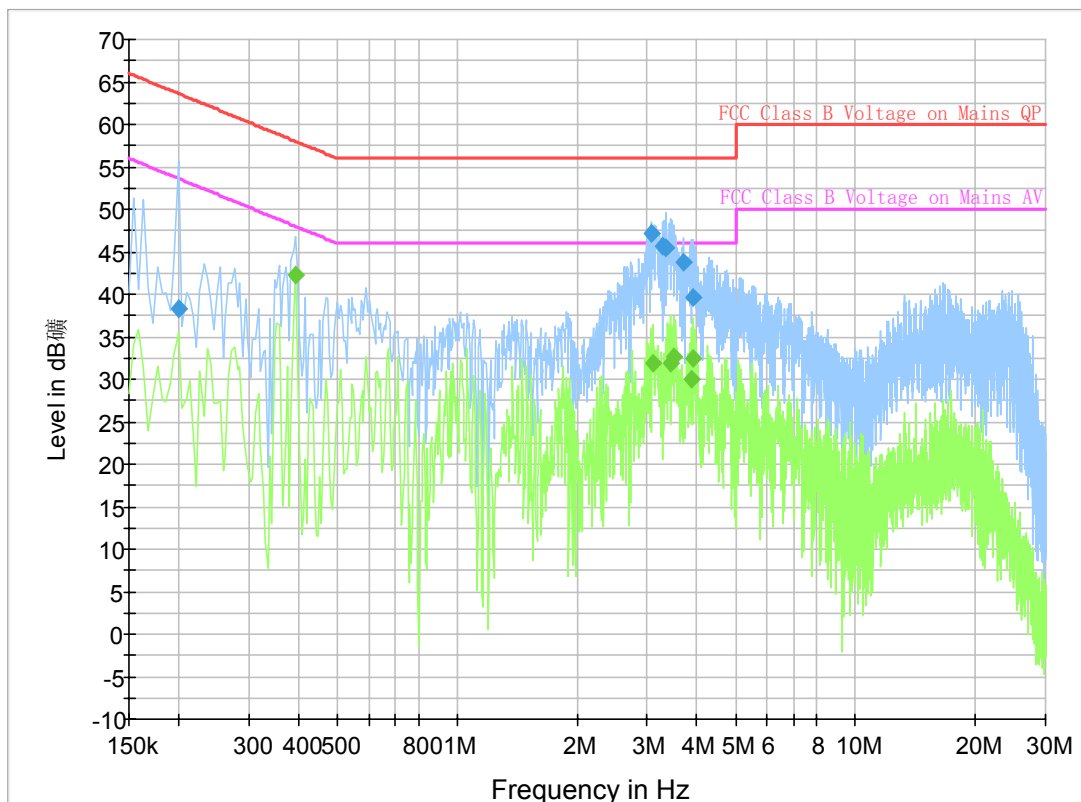
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.159000	41.	4	GND	N	9.8	24.1
0.181500	35.	1	GND	L1	9.8	29.3
0.379500	46.	0	GND	L1	9.8	12.3
0.537000	37.	1	GND	L1	9.8	18.9
3.187500	42.	8	GND	L1	9.7	13.2
3.700500	43.	3	GND	L1	9.7	12.7

Final Result 2

Frequency (MHz)	Average (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.379500	37.	7	GND	L1	9.8	10.6
0.415500	33.	5	GND	L1	9.8	14.0
0.456000	29.	8	GND	L1	9.8	17.0
0.537000	27.	4	GND	L1	9.8	18.6
3.480000	35.	1	GND	L1	9.7	10.9
3.619500	29.	7	GND	L1	9.7	16.3

LTE Band 17, 5 MHz bandwidth



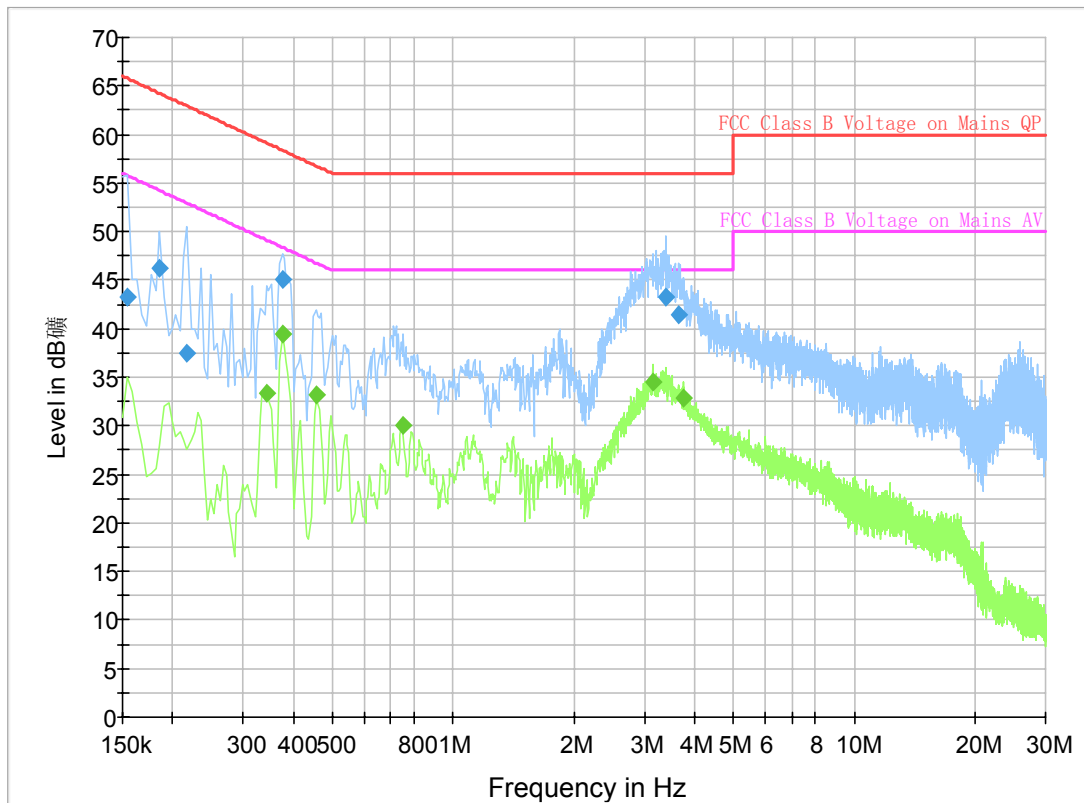
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.199500	38.	3	GND	N	9.8	25.3
3.075000	47.	1	GND	L1	9.7	8.9
3.277500	45.	6	GND	L1	9.7	10.4
3.354000	45.	4	GND	L1	9.7	10.6
3.700500	43.	8	GND	L1	9.7	12.2
3.912000	39.	6	GND	L1	9.7	16.4

Final Result 2

Frequency (MHz)	Average (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.393000	42.	2	GND	L1	9.8	5.8
3.102000	31.	9	GND	L1	9.7	14.1
3.421500	31.	8	GND	L1	9.7	14.2
3.498000	32.	7	GND	L1	9.7	13.3
3.871500	30.	0	GND	L1	9.7	16.0
3.925500	32.	4	GND	L1	9.7	13.6

MP3



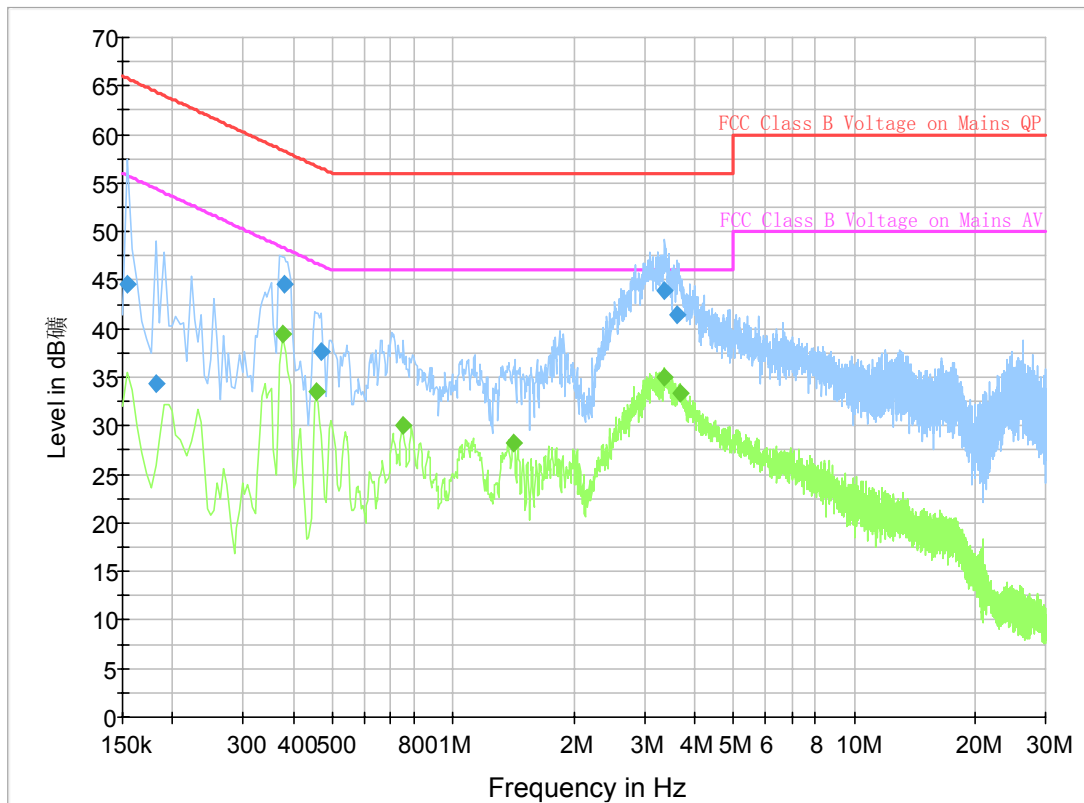
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.154500	43.	2	GND	N	9.8	65.8
0.186000	46.	3	GND	N	9.8	64.2
0.217500	37.	5	GND	N	9.8	62.9
0.375000	45.	1	GND	L1	9.8	58.4
3.385500	43.	3	GND	L1	9.7	56.0
3.660000	41.	5	GND	L1	9.7	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.343500	33.	3	GND	L1	9.8	49.1
0.375000	39.	4	GND	L1	9.8	48.4
0.456000	33.	1	GND	L1	9.8	46.8
0.748500	30.	1	GND	L1	9.8	46.0
3.138000	34.	5	GND	L1	9.7	46.0
3.754500	32.	9	GND	L1	9.7	46.0

Camera



Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	
0.154500	44.	6	GND	L1	9.8	21.1	65.8
0.181500	34.	3	GND	L1	9.8	30.1	64.4
0.379500	44.	6	GND	L1	9.8	13.7	58.3
0.469500	37.	7	GND	L1	9.8	18.8	56.5
3.372000	44.	0	GND	L1	9.7	12.0	56.0
3.633000	41.	5	GND	L1	9.7	14.5	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	
0.375000	39.	5	GND	L1	9.8	8.9	48.4
0.456000	33.	6	GND	L1	9.8	13.2	46.8
0.748500	30.	1	GND	L1	9.8	15.9	46.0
1.410000	28.	2	GND	L1	9.7	17.8	46.0
3.372000	34.	9	GND	L1	9.7	11.1	46.0
3.678000	33.	3	GND	L1	9.7	12.7	46.0

A.4 FREQUENCY STABILITY

Reference

FCC: CFR Part 2.1055, 24.235, 27.54.

IC: RSS-133 Issue 6, Section 6.3. RSS-139 Issue 2, Section 6.3. RSS-199 Issue 1, Section 4.3.
RSS-130 Issue 1, Section 4.3.

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°C.
3. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on middle channel for LTE band 2/4/7/17, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
4. Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
5. Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments re-measuring carrier frequency at each voltage. Pause at nominal voltage for 1.5 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +50°C.
7. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
8. Repeat the above measurements at 10 °C increments from +50°C to -30°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5°C during the measurement procedure.

A.4.2 Measurement Limit

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d) (2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of between 3.5VDC and 4.35VDC, with a nominal voltage of 3.8VDC. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress. For the purposes of measuring frequency stability these voltage limits are to be used.

A.4.3 Measurement results

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

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
3.5	1	17	0.000	0.009
3.8	2	19	0.001	0.010
4.35	0	18	0.000	0.009

Frequency Error vs Temperature

Temperature (°C)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
50°	-1	18	0.001	0.009
40°	0	20	0.000	0.011
30°	0	22	0.000	0.012
20°	1	17	0.001	0.009
10°	1	22	0.000	0.011
0°	-1	19	0.001	0.010
- 10°	13	17	0.007	0.009
- 20°	-2	19	0.001	0.010
- 30°	-1	15	0.000	0.008

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

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
3.5	2	18	0.001	0.010
3.8	-1	19	0.001	0.011
4.35	0	21	0.000	0.012

Frequency Error vs Temperature

Temperature (°C)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
50°	0	20	0.000	0.012
40°	3	18	0.002	0.011
30°	0	19	0.000	0.011
20°	-1	21	0.000	0.012
10°	3	19	0.002	0.011
0°	1	21	0.001	0.012
- 10°	2	21	0.001	0.012
- 20°	1	18	0.000	0.011
- 30°	2	19	0.001	0.011

LTE Band 7, 20MHz bandwidth (worst case of all bandwidths)
Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
3.5	6	1	0.002	0.000
3.8	8	-7	0.003	0.003
4.35	4	-13	0.001	0.005

Frequency Error vs Temperature

Temperature (°C)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
50°	3	-15	0.001	0.006
40°	-4	-1	0.002	0.000
30°	6	-4	0.002	0.002
20°	1	2	0.000	0.001
10°	-6	-14	0.002	0.006
0°	-8	0	0.003	0.000
- 10°	-3	-4	0.001	0.002
- 20°	2	-9	0.001	0.003
- 30°	3	-12	0.001	0.005

LTE Band 17, 10MHz bandwidth (worst case of all bandwidths)
Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
3.5	1	-6	0.002	0.008
3.8	0	-4	0.000	0.005
4.35	1	-5	0.001	0.007

Frequency Error vs Temperature

Temperature (°C)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
50°	-1	-3	0.001	0.005
40°	-1	-3	0.001	0.004
30°	-1	-4	0.001	0.006
20°	-1	-5	0.001	0.007
10°	1	-6	0.002	0.008
0°	1	-5	0.001	0.007
- 10°	-1	-5	0.002	0.007
- 20°	0	-4	0.000	0.006
- 30°	-1	-4	0.001	0.005

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* RBW 20 kHz
 * VBW 50 kHz
 SWT 30 ms

Ref 30 dBm
 * Att 25 dB

Marker 1 [T1]
 15.26 dBm
 1.879884615 GHz

1.096153846 MHz
 1 [T1 OBW]
 8.93 dBm
 1.879451923 GHz
 2 [T1 OBW]
 8.14 dBm
 1.880548077 GHz

1 PK
 V16W

Center 1.88 GHz
 300 kHz/
 Span 3 MHz

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

* RBW 30 kHz
 * VBW 100 kHz
 SWT 25 ms

Marker 1 [T1]
 14.29 dBm

Ref 30 dBm
 * Att 25 dB

1.878822115 GHz
 10.63 dBm

1.878661859 GHz
 0.72 dBm

1.881354167 GHz

Center 1.88 GHz
 500 kHz/
 Span 5 MHz

* RBW 30 kHz
 * VBW 100 kHz
 SWT 25 ms

Ref 30 dBm
 Att 25 dB

Marker 1 [T1]
 13.15 dBm
 1.879759615 GHz

1 PK VIEW

T1
 1
 Temp
 2

2.692301692 MHz
 1 [T1 OBW]
 9.62 dBm
 1.878653846 GHz
 2 [T1 OBW]
 9.98 dBm
 1.881346154 GHz

TDF
 30B

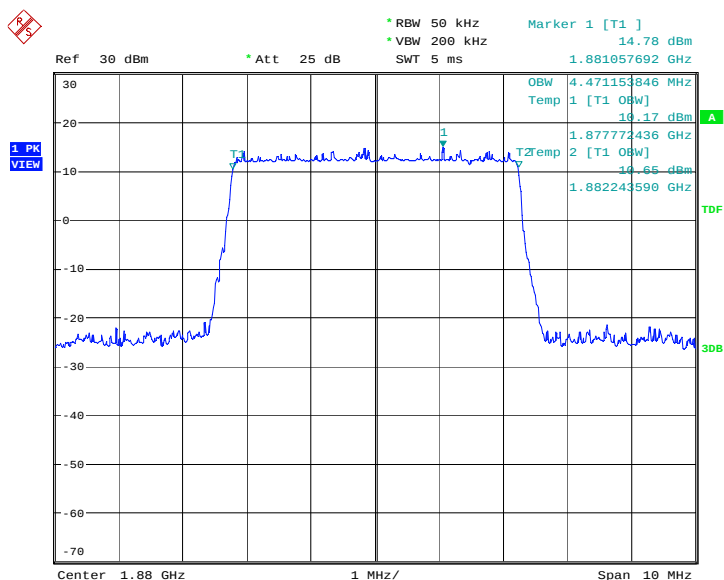
Center 1.8 GHz
 500 kHz/
 Span 5 MHz

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LTE band 2, 5MHz (99%)

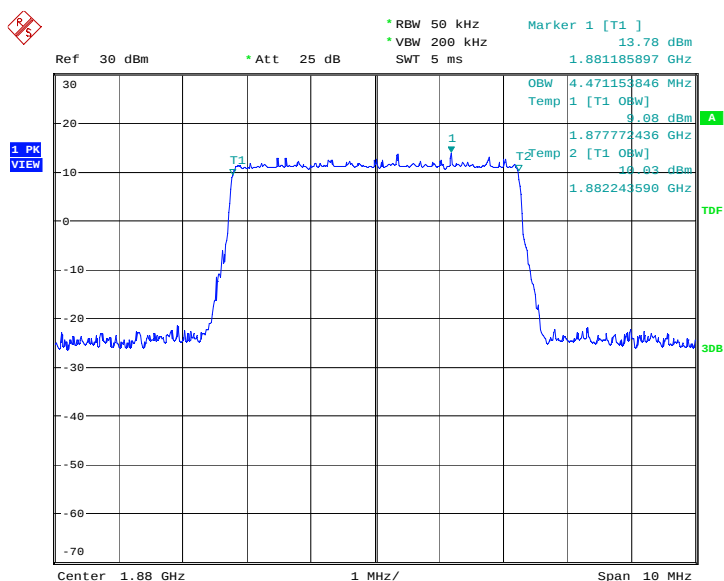
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	4471.15	4471.15

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



Date: 29.MAY.2014 14:38:33

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

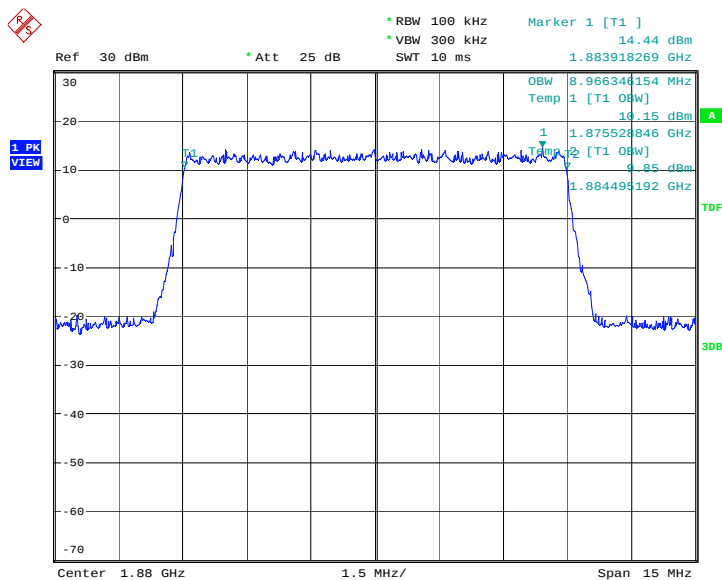


Date: 29.MAY.2014 14:38:47

LTE band 2, 10MHz (99%)

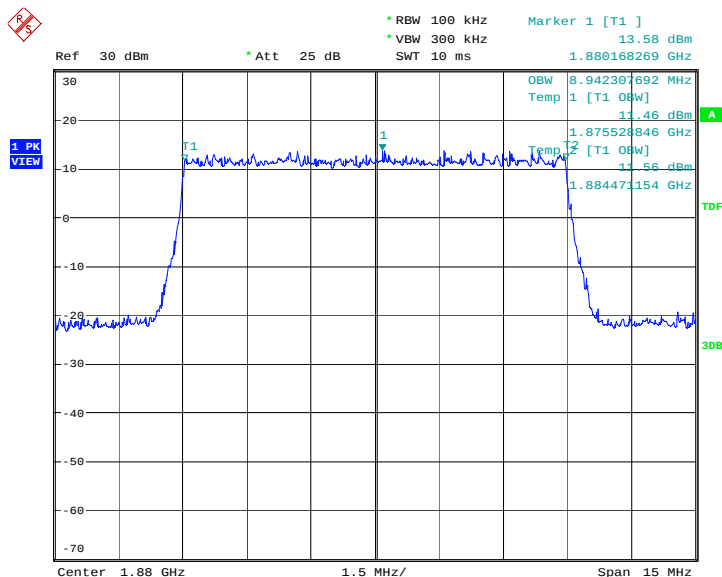
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	8966.35	8942.31

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



Date: 29.MAY.2014 14:50:52

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

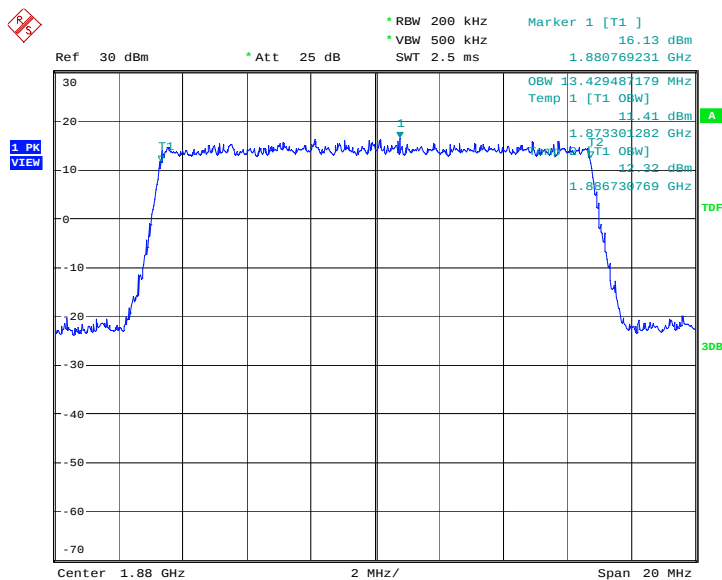


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LTE band 2, 15MHz (99%)

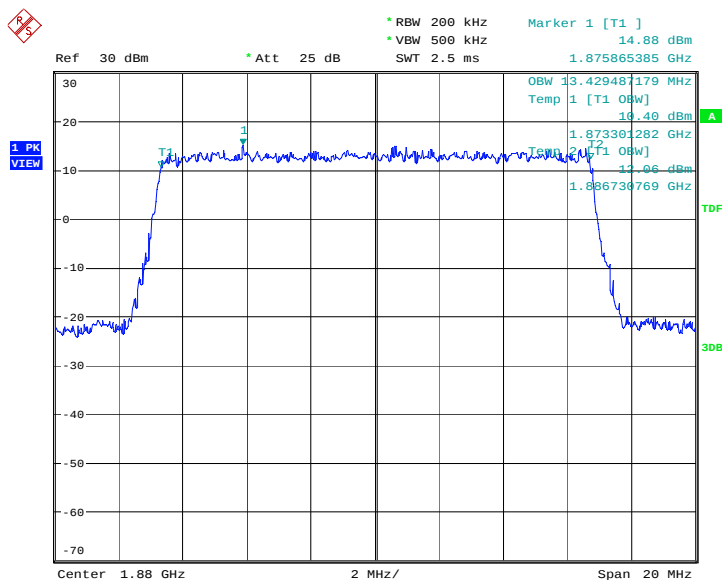
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	13429.49	13429.49

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



Date: 29.MAY.2014 14:57:38

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

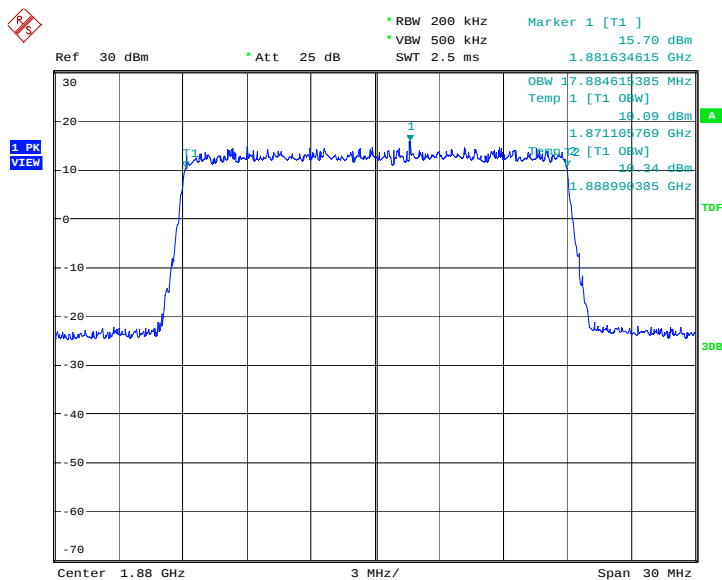


Date: 29.MAY.2014 14:57:52

LTE band 2, 20MHz (99%)

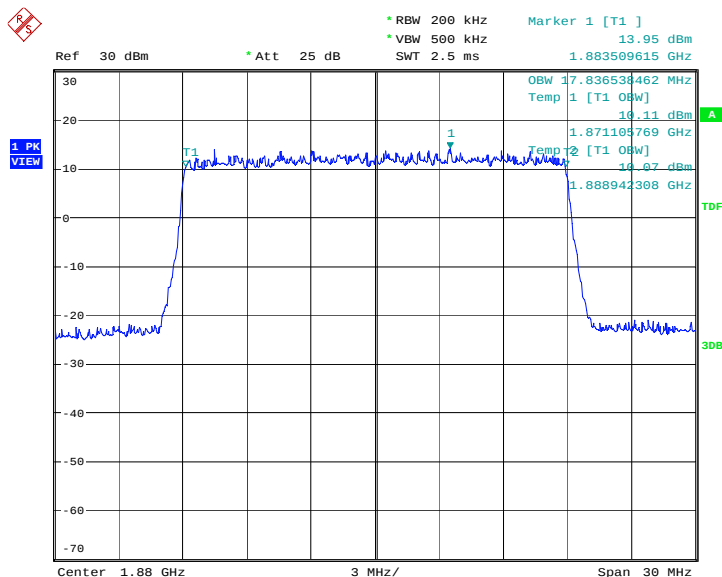
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	17884.62	17836.54

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



Date: 29.MAY.2014 15:05:58

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

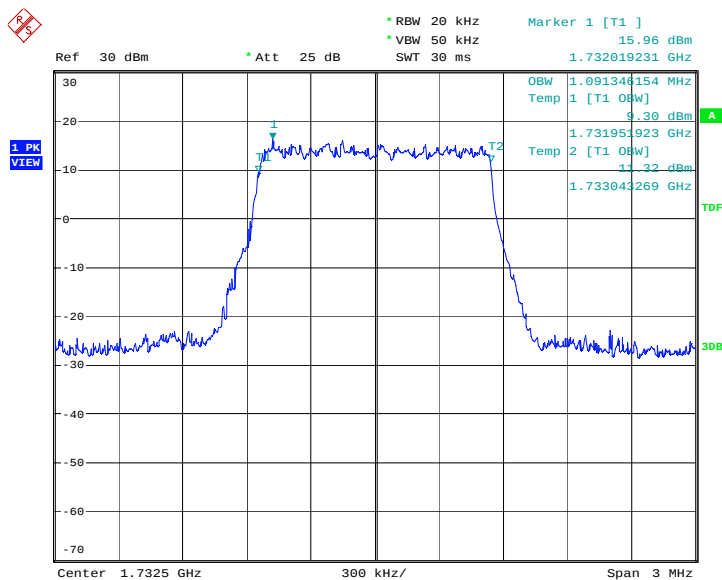


Date: 29.MAY.2014 15:06:12

LTE band 4, 1.4MHz (99%)

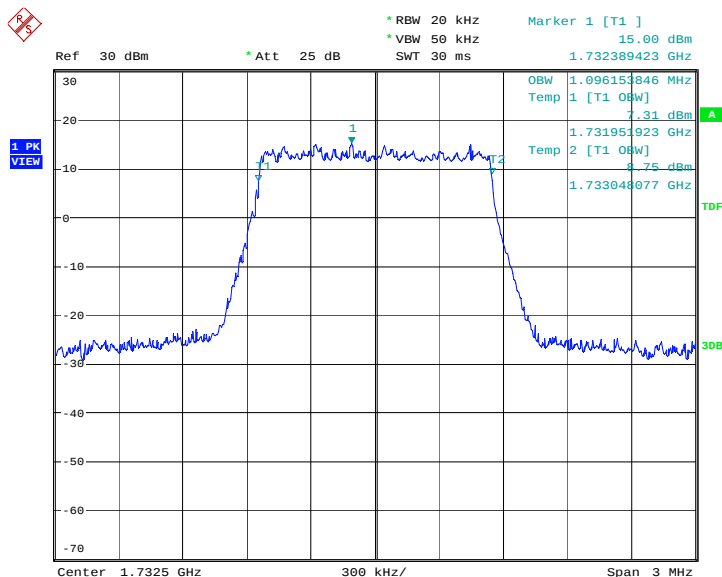
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	1091.35	1096.15

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



Date: 29.MAY.2014 15:13:35

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

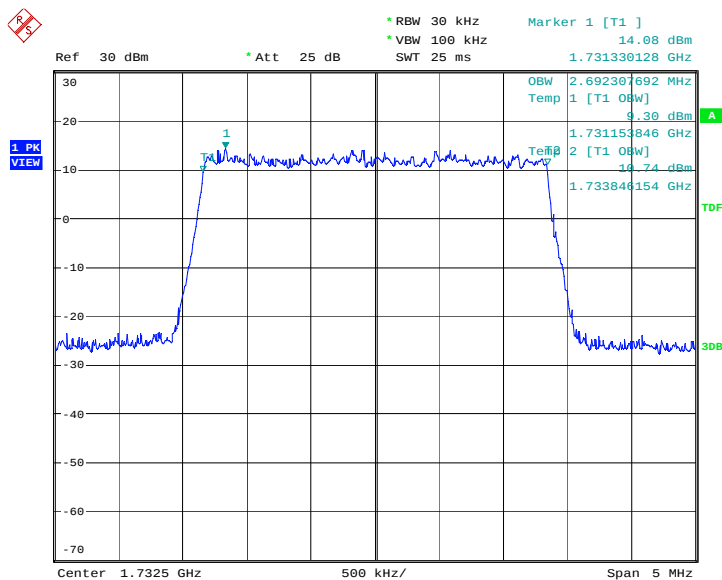


Date: 29.MAY.2014 15:13:49

LTE band 4, 3MHz (99%)

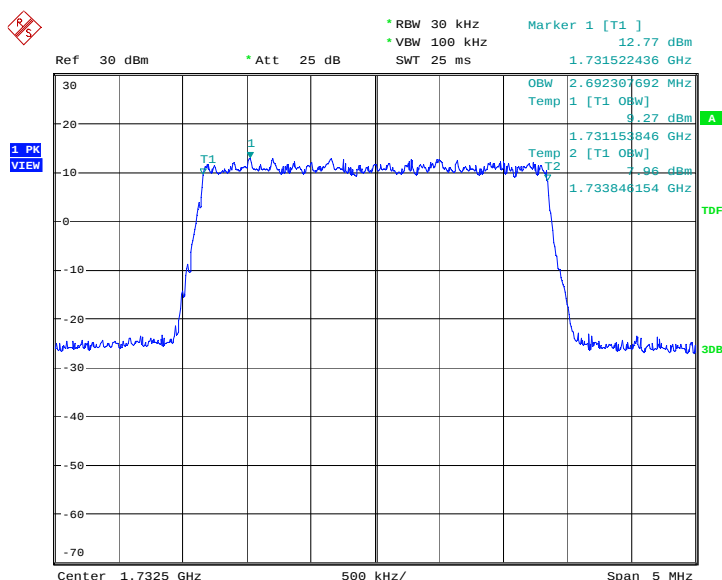
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	2692.31	2692.31

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



Date: 29.MAY.2014 16:15:18

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

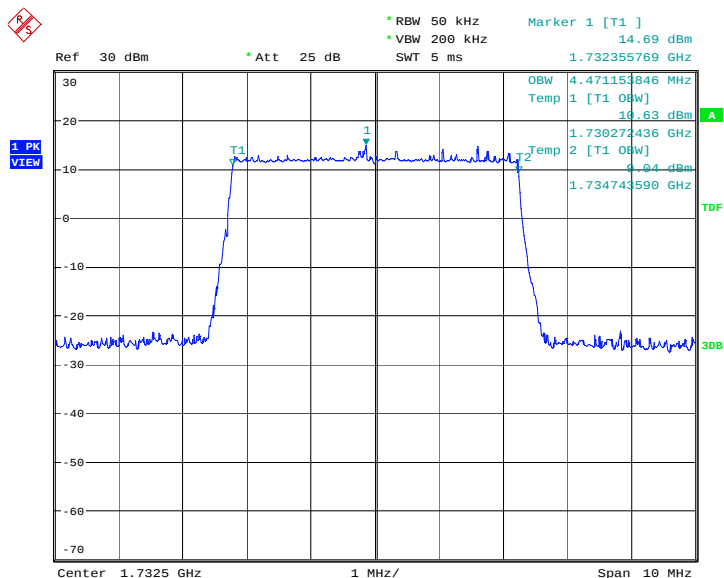


Date: 29.MAY.2014 16:15:32

LTE band 4, 5MHz (99%)

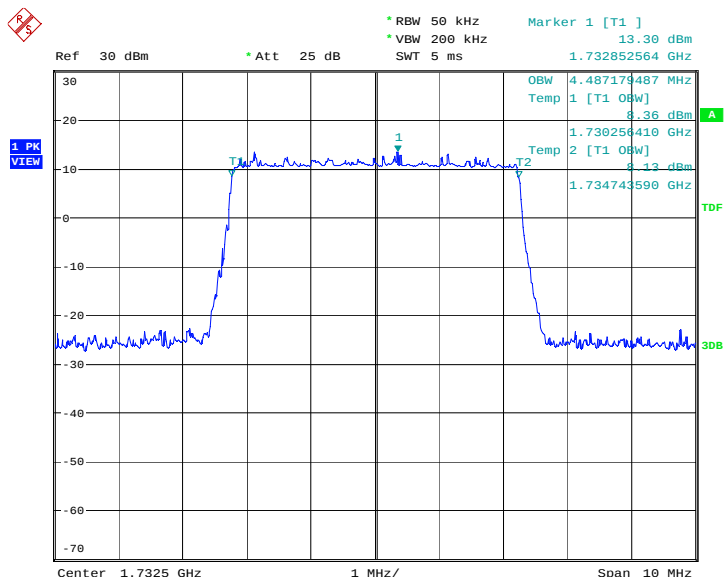
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	4471.15	4487.18

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



Date: 29.MAY.2014 16:22:01

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

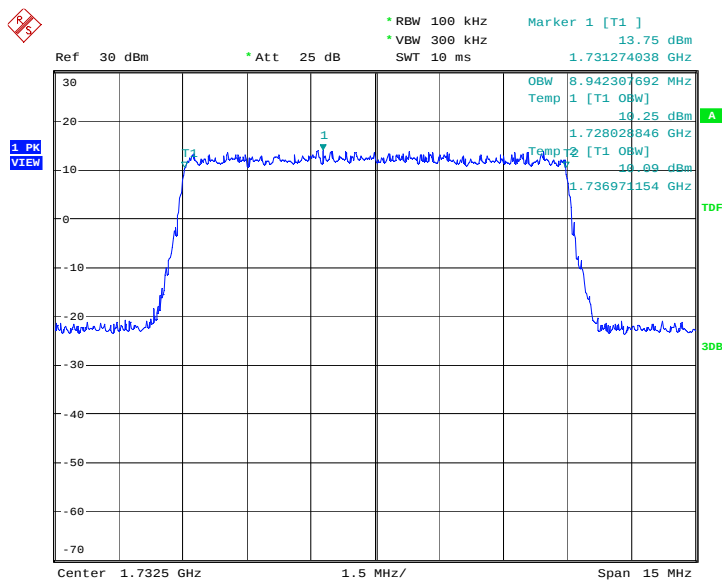


Date: 29.MAY.2014 16:22:15

LTE band 4, 10MHz (99%)

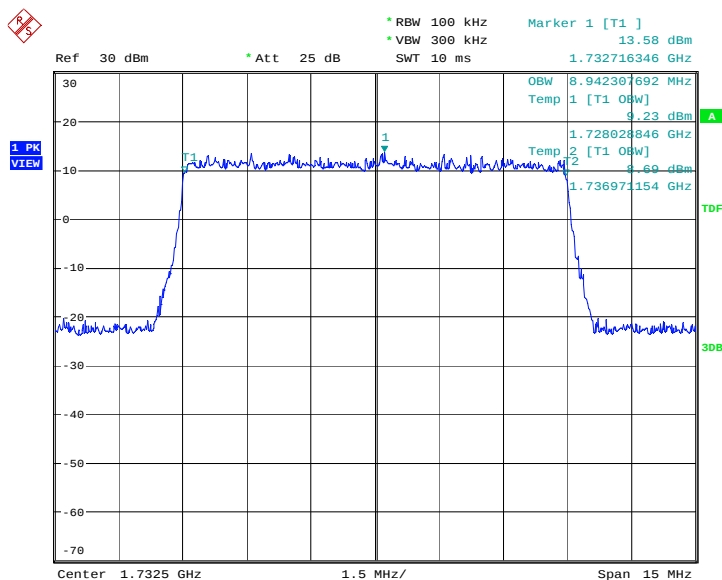
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	8942.31	8942.31

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



Date: 29.MAY.2014 16:30:15

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

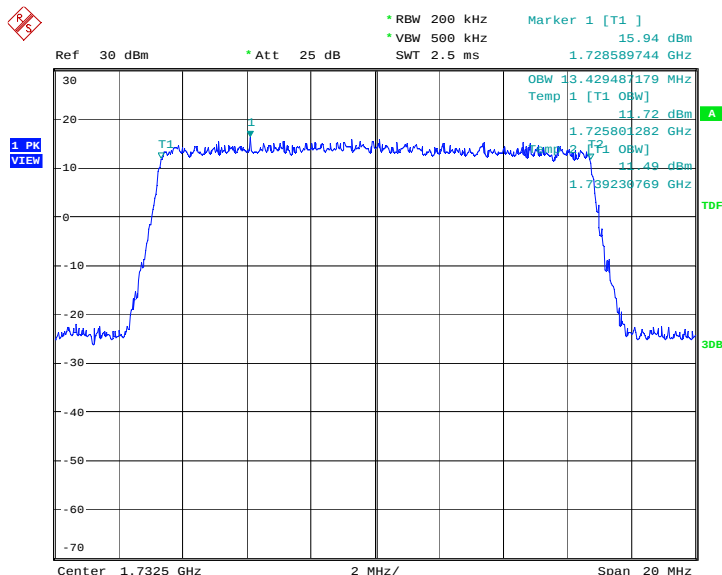


Date: 29.MAY.2014 16:30:29

LTE band 4, 15MHz (99%)

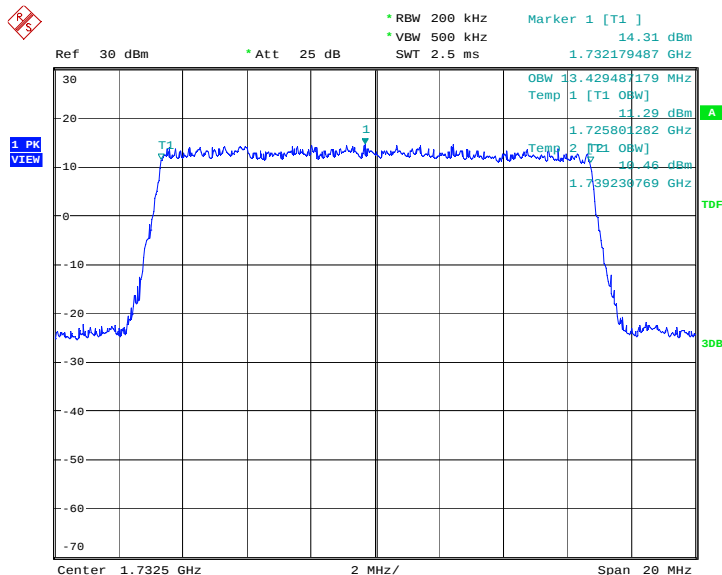
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	13429.49	13429.49

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



Date: 29.MAY.2014 16:37:03

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

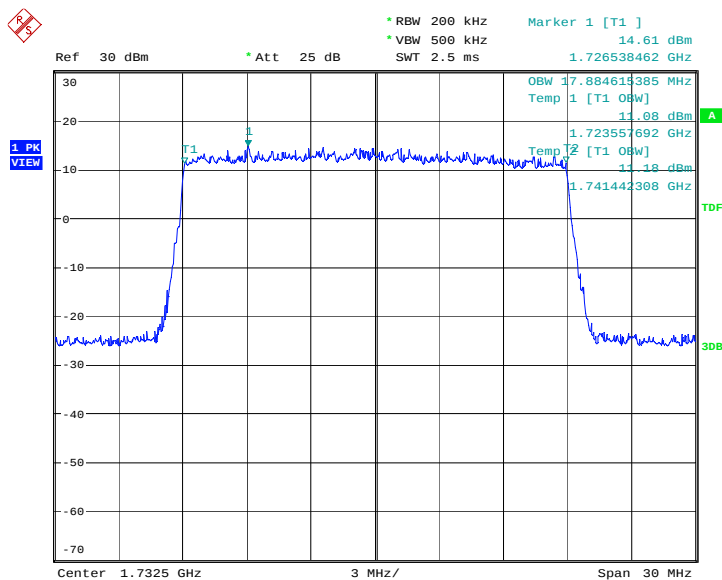


Date: 29.MAY.2014 16:37:17

LTE band 4, 20MHz (99%)

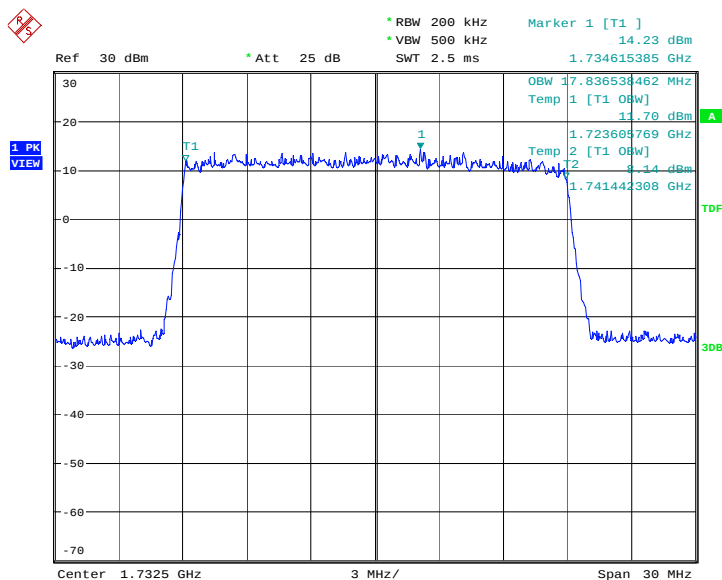
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	17884.62	17836.54

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



Date: 29.MAY.2014 16:42:52

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

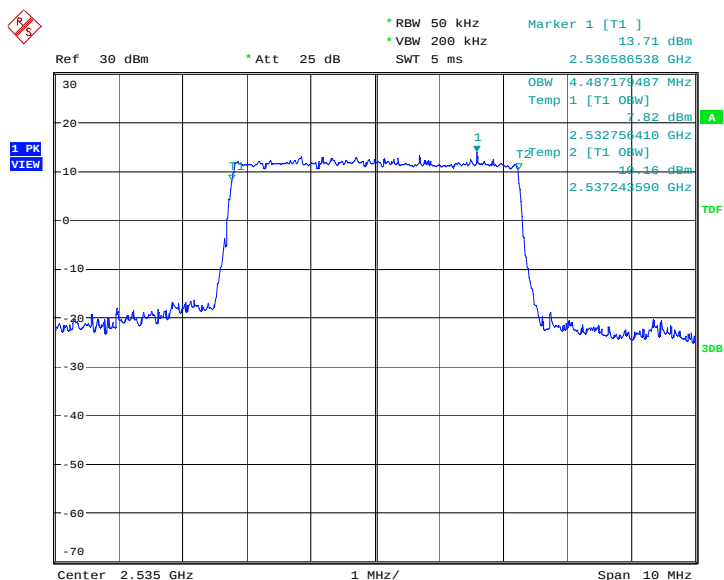


Date: 29.MAY.2014 16:43:06

LTE band 7, 5MHz (99%)

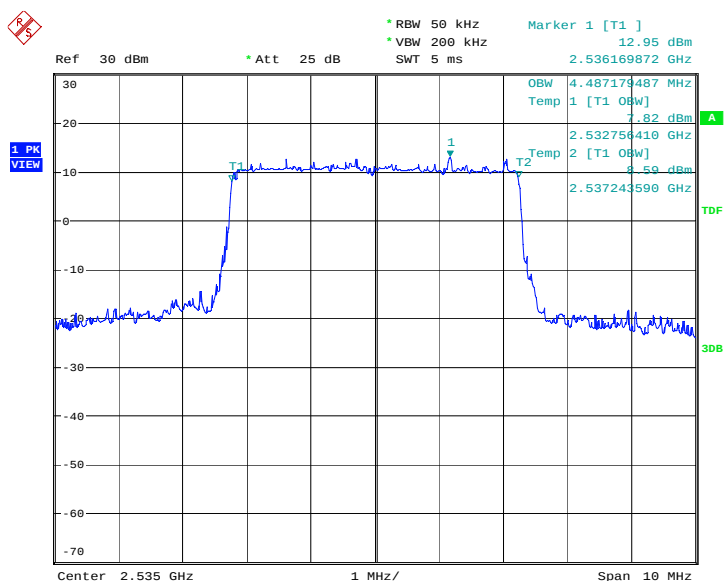
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2535.0	QPSK	16QAM
	4487.18	4487.18

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



Date: 29.MAY.2014 13:55:30

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

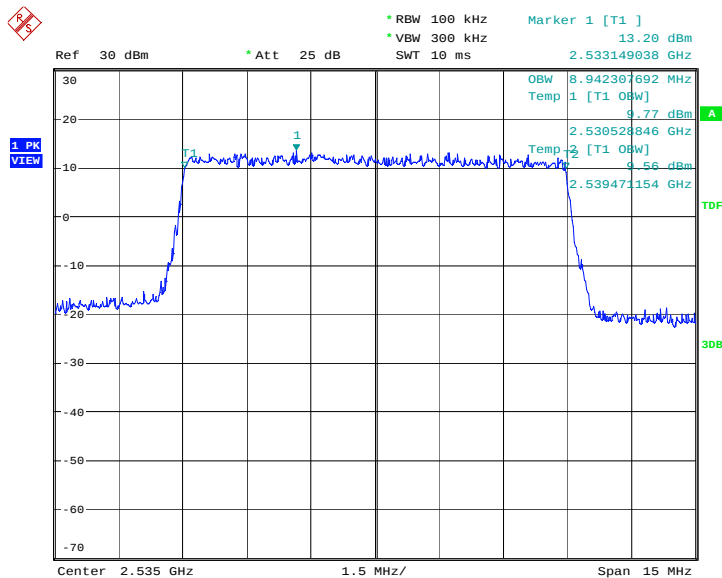


Date: 29.MAY.2014 13:55:44

LTE band 7, 10MHz (99%)

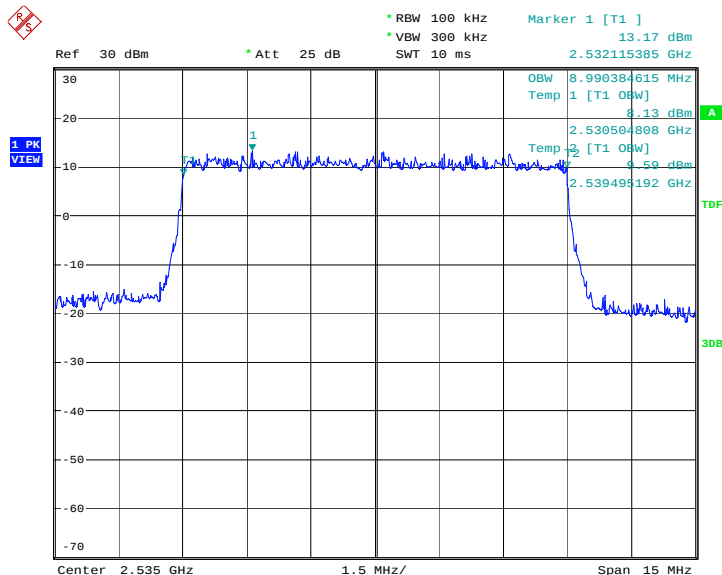
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2535.0	QPSK	16QAM
	8942.31	8990.38

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



Date: 29.MAY.2014 14:01:40

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

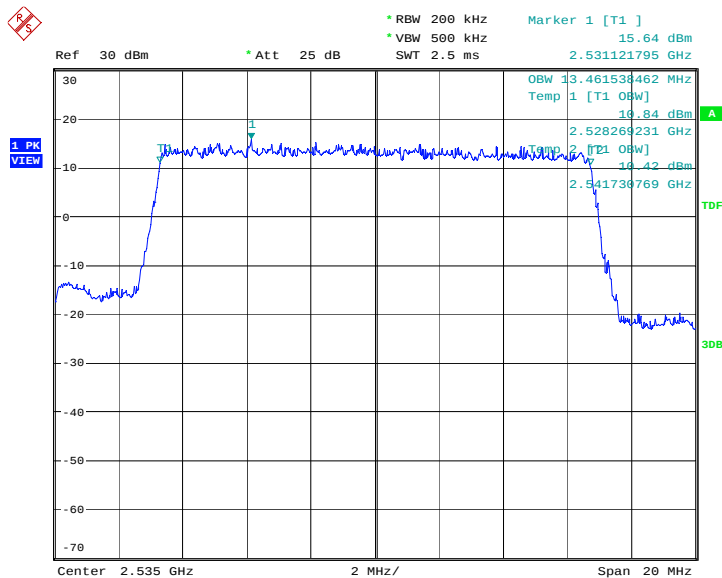


Date: 29.MAY.2014 14:01:54

LTE band 7, 15MHz (99%)

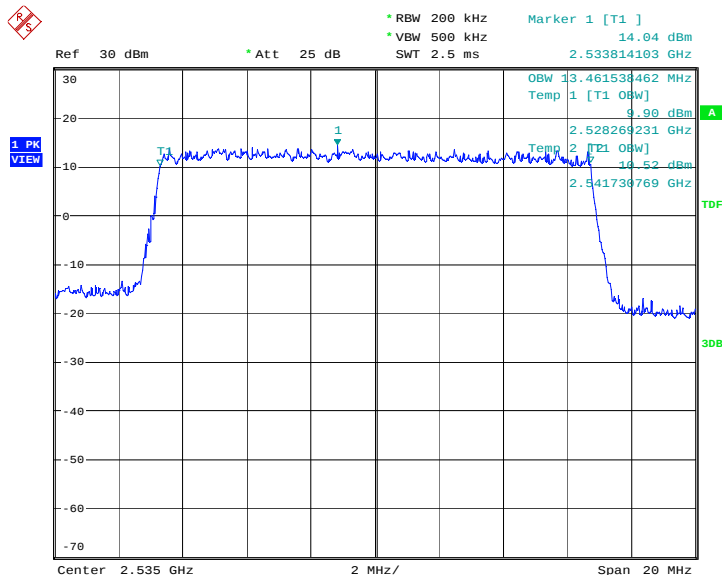
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2535.0	QPSK	16QAM
	13461.54	13461.54

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



Date: 29.MAY.2014 14:09:57

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

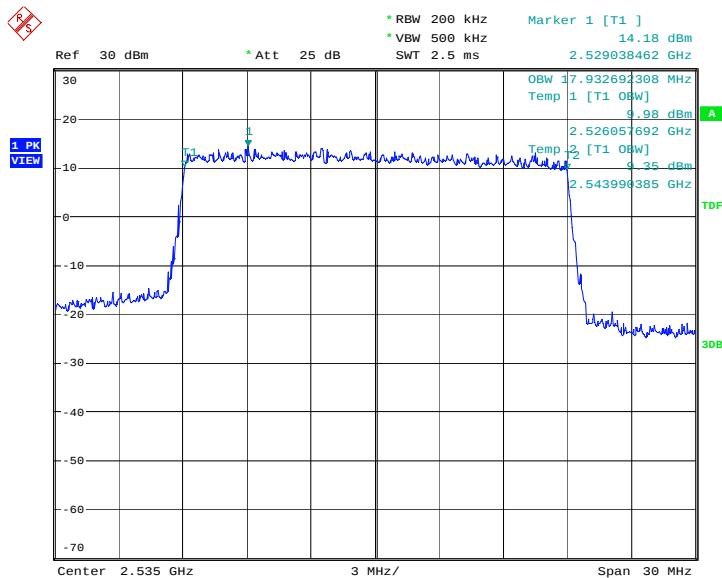


Date: 29.MAY.2014 14:10:11

LTE band 7, 20MHz (99%)

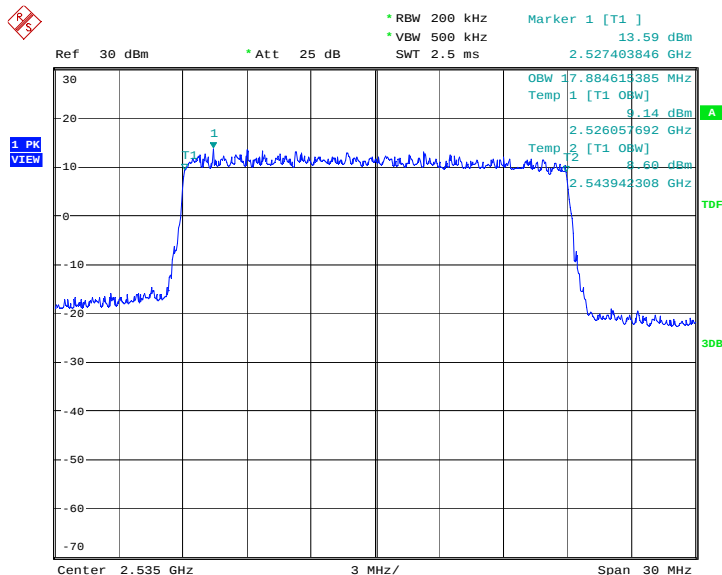
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2535.0	QPSK	16QAM
	17932.69	17884.62

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



Date: 29.MAY.2014 14:16:16

LTE band 7, 20MHz Bandwidth, 16QAM (99% BW)

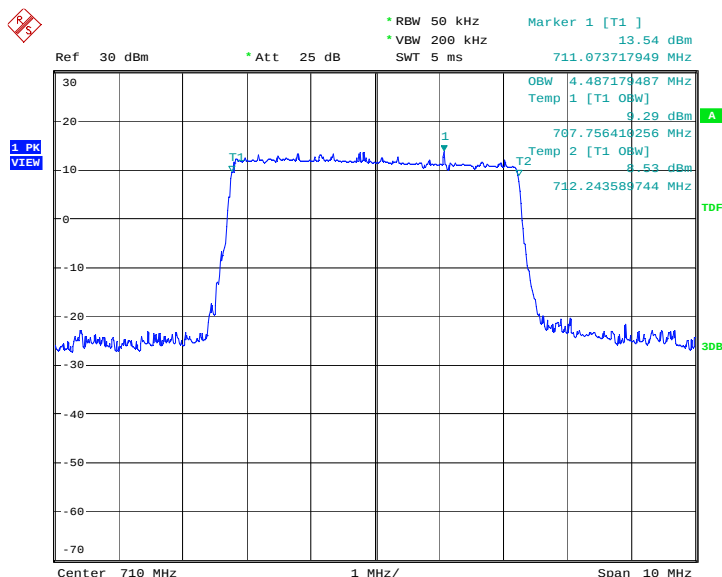


Date: 29.MAY.2014 14:16:30

LTE band 17, 5MHz (99%)

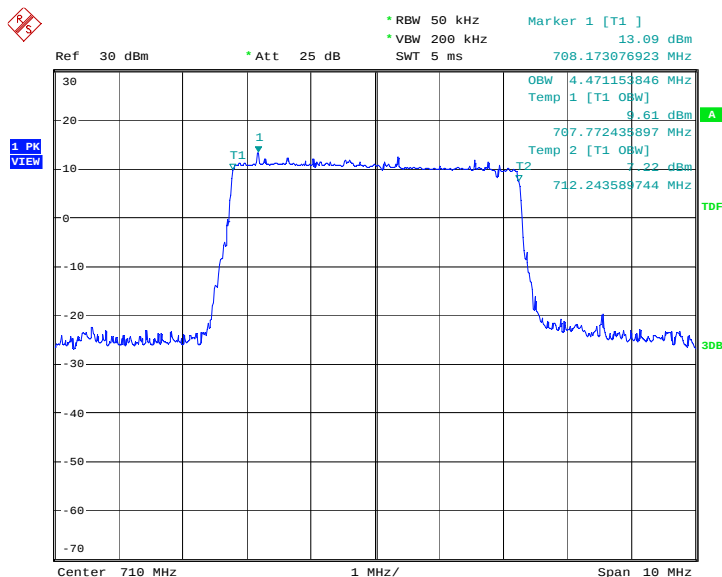
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
710.0	QPSK	16QAM
	4487.18	4471.15

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



Date: 29.MAY.2014 16:53:40

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

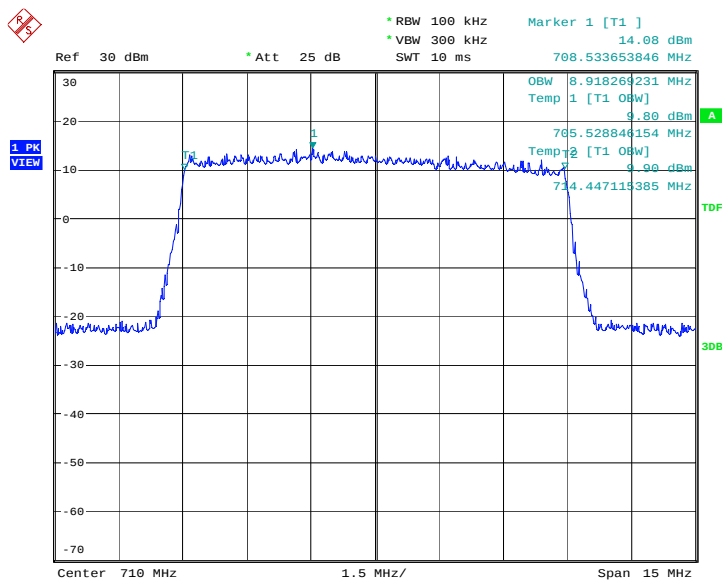


Date: 29.MAY.2014 16:53:54

LTE band 17, 10MHz (99%)

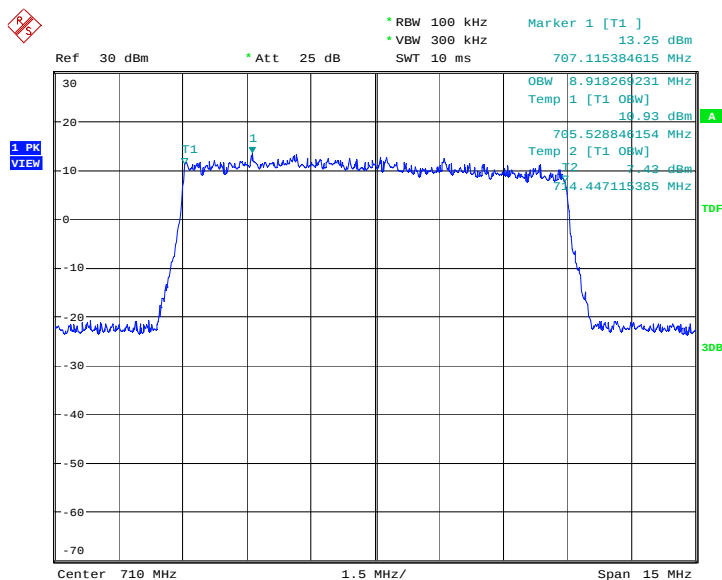
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
710.0	QPSK	16QAM
	8918.27	8918.27

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



Date: 29.MAY.2014 17:10:05

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

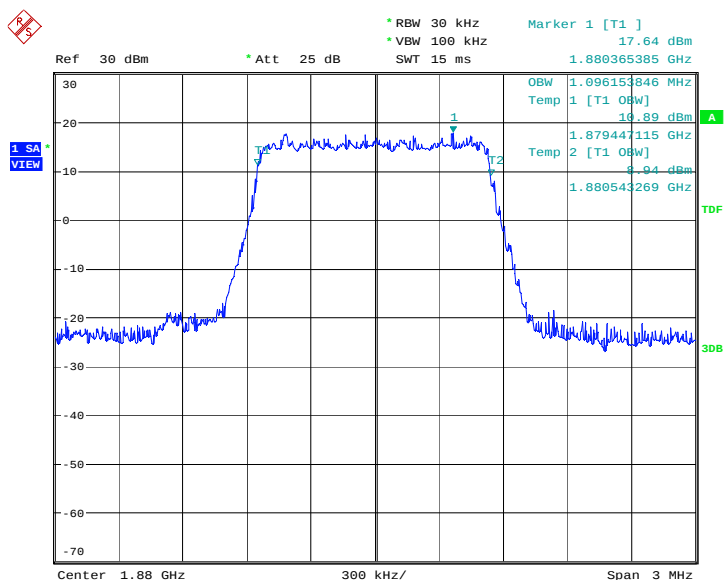


Date: 29.MAY.2014 17:10:18

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

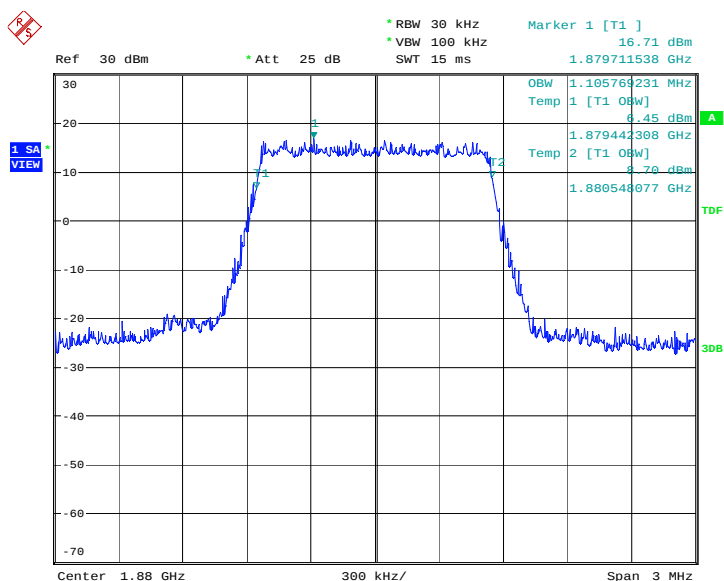
Frequency(MHz)	Occupied Bandwidth (99%)-IC(kHz)	
1880.0	QPSK	16QAM
	1096.15	1105.77

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



Date: 13.JUN.2014 08:30:41

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

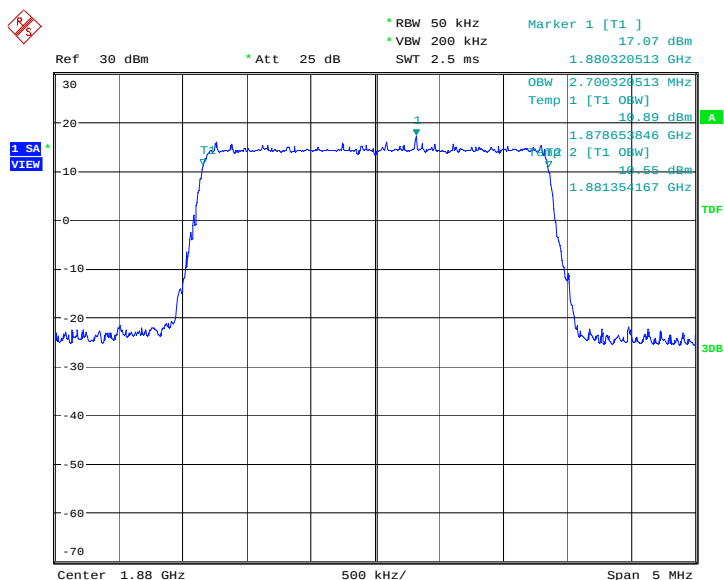


Date: 13.JUN.2014 08:30:55

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

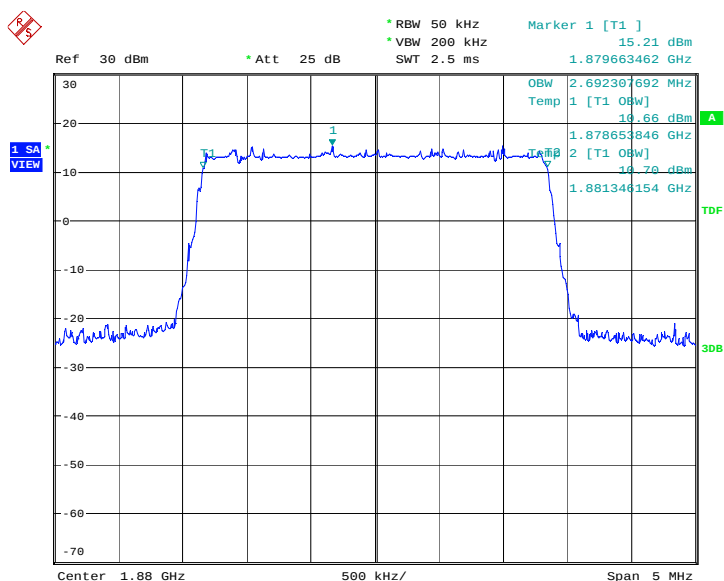
Frequency(MHz)	Occupied Bandwidth (99%)-IC(kHz)	
1880.0	QPSK	16QAM
	2700.32	2692.31

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



Date: 13.JUN.2014 08:31:48

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

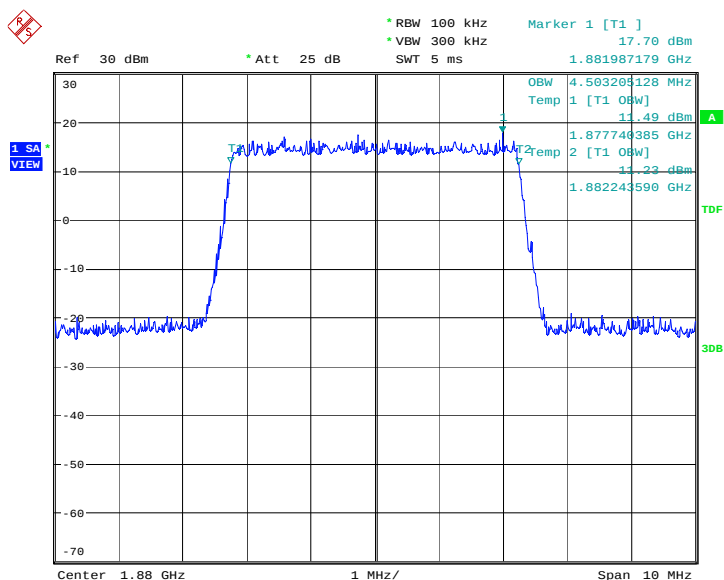


Date: 13.JUN.2014 08:32:02

LTE band 2, 5MHz (99%)-IC

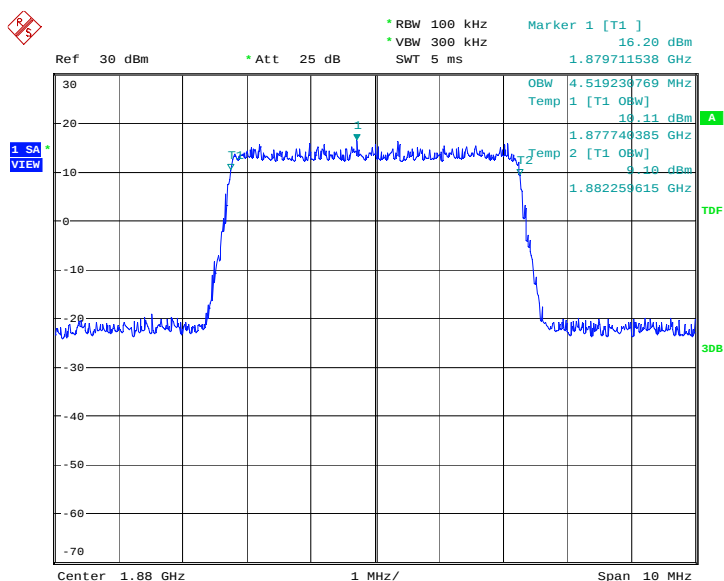
Frequency(MHz)	Occupied Bandwidth (99%)-IC(kHz)	
1880.0	QPSK	16QAM
	4503.21	4519.23

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



Date: 13.JUN.2014 08:36:56

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

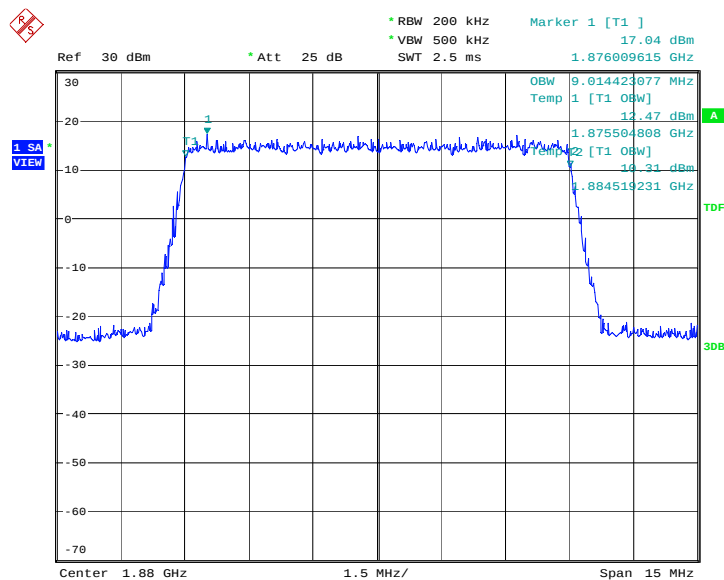


Date: 13.JUN.2014 08:37:10

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

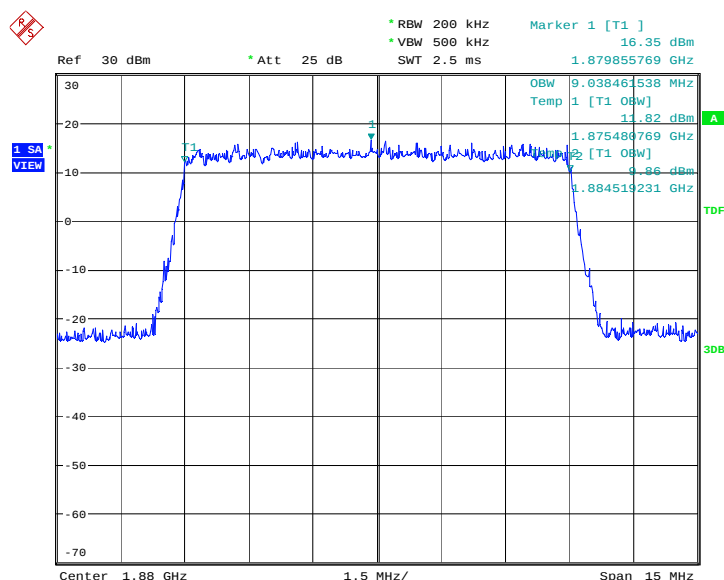
Frequency(MHz)	Occupied Bandwidth (99%)-IC(kHz)	
1880.0	QPSK	16QAM
	9014.42	9038.46

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



Date: 13.JUN.2014 08:40:05

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

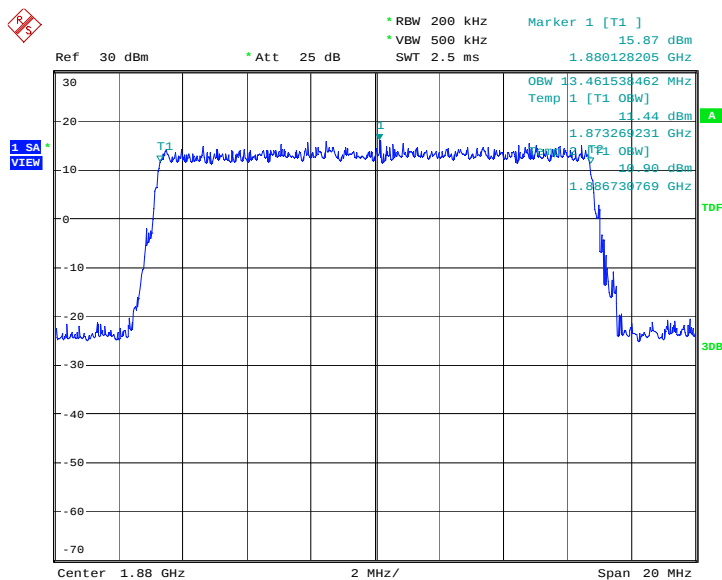


Date: 13.JUN.2014 08:40:19

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

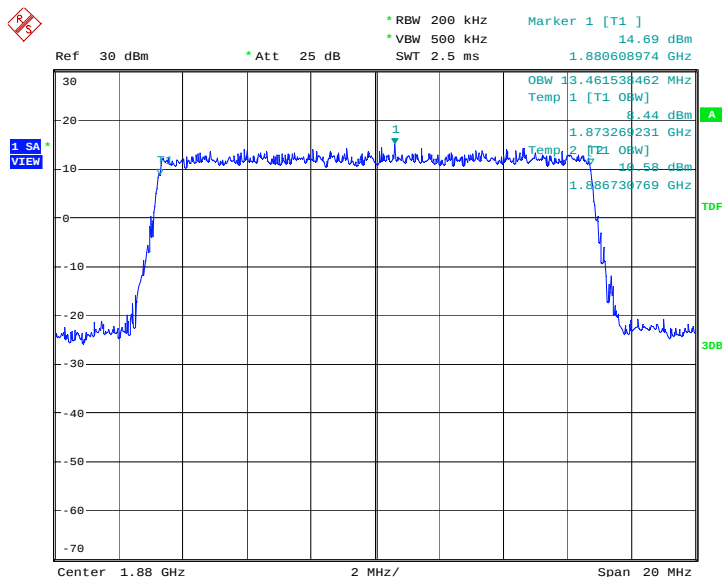
Frequency(MHz)	Occupied Bandwidth (99%)-IC(kHz)	
1880.0	QPSK	16QAM
	13461.54	13461.54

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



Date: 13.JUN.2014 08:42:14

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

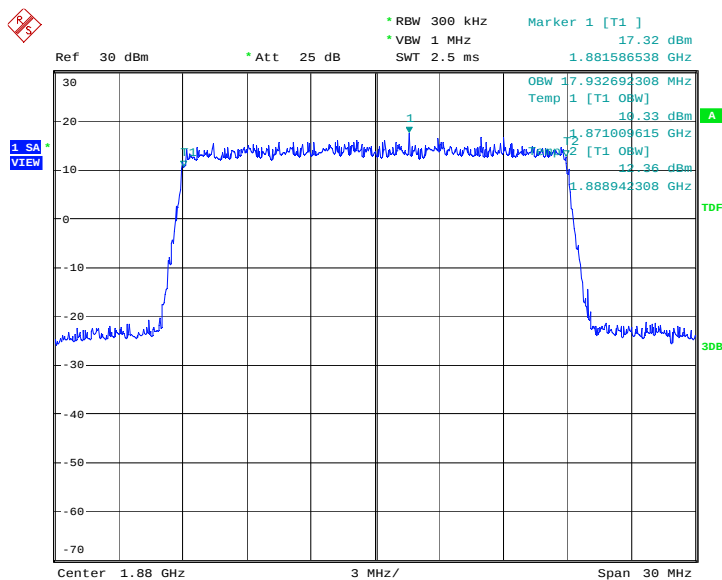


Date: 13.JUN.2014 08:42:28

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

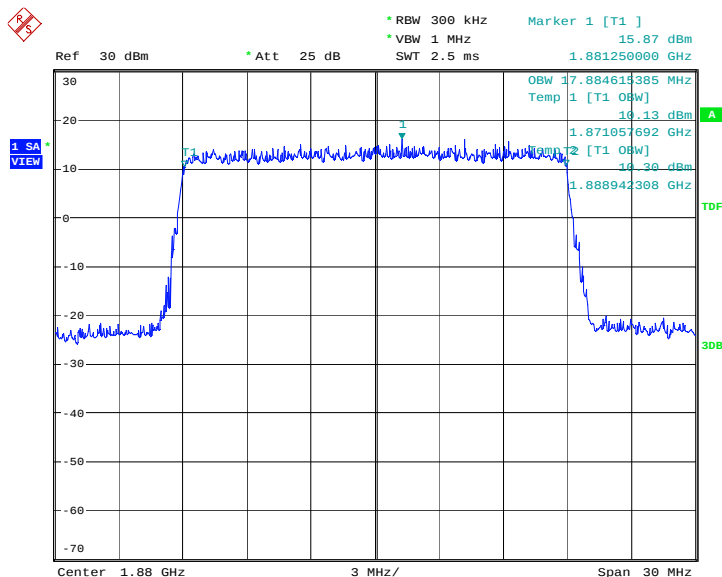
Frequency(MHz)	Occupied Bandwidth (99%)-IC(kHz)	
1880.0	QPSK	16QAM
	17932.69	17884.62

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



Date: 13.JUN.2014 08:43:21

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

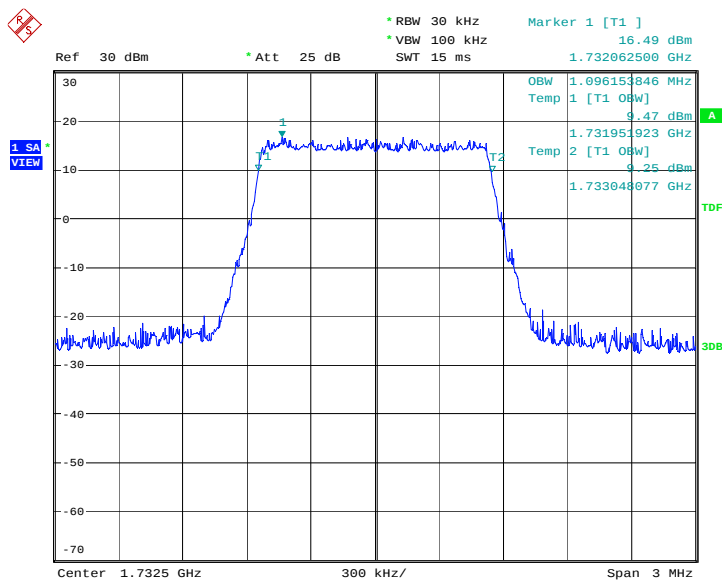


Date: 13.JUN.2014 08:43:35

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

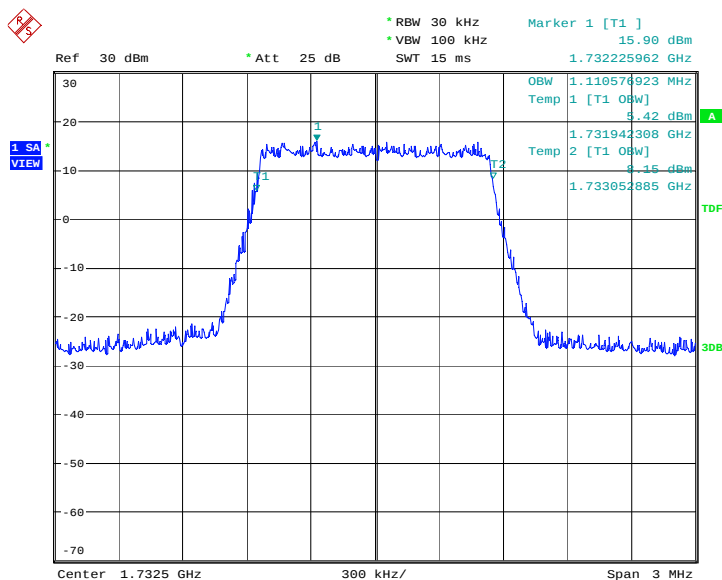
Frequency(MHz)	Occupied Bandwidth (99%)-IC(kHz)	
1732.5	QPSK	16QAM
	1096.15	1110.58

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



Date: 13.JUN.2014 08:46:31

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

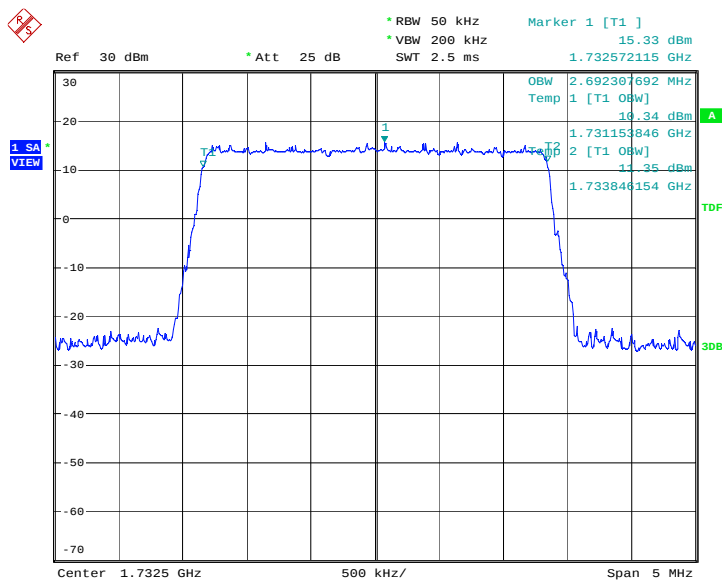


Date: 13.JUN.2014 08:46:44

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

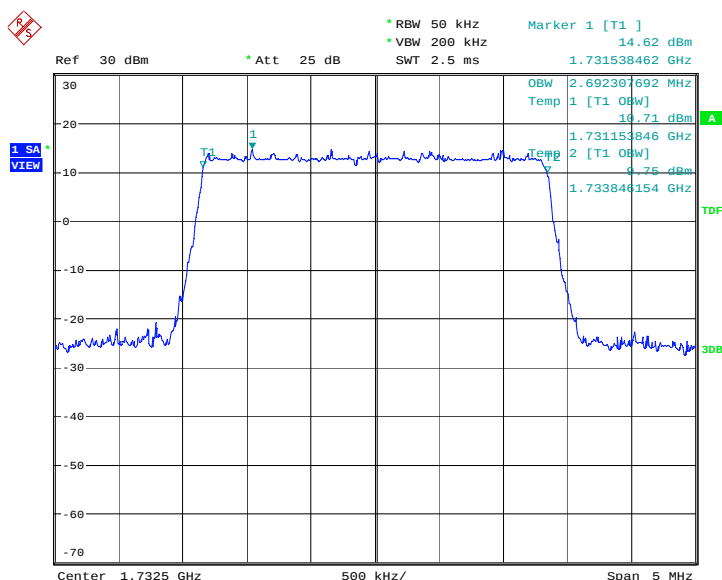
Frequency(MHz)	Occupied Bandwidth (99%)-IC(kHz)	
1732.5	QPSK	16QAM
	2692.31	2692.31

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



Date: 13.JUN.2014 08:48:09

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

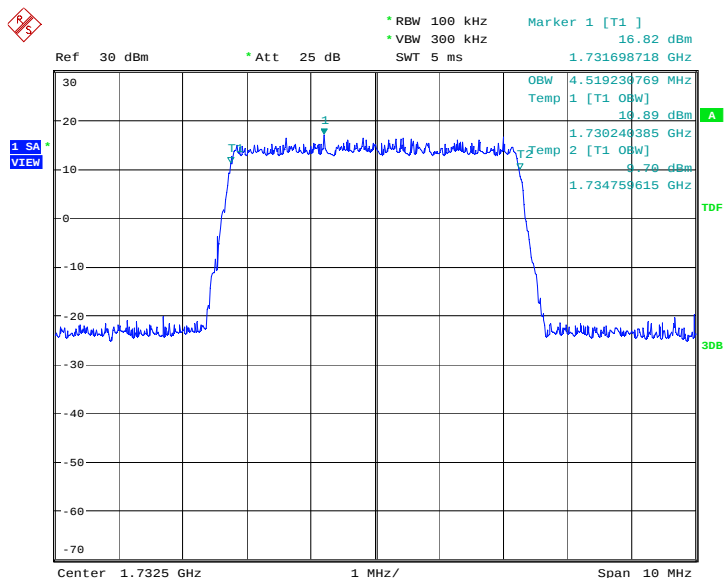


Date: 13.JUN.2014 08:48:22

LTE band 4, 5MHz (99%)-IC

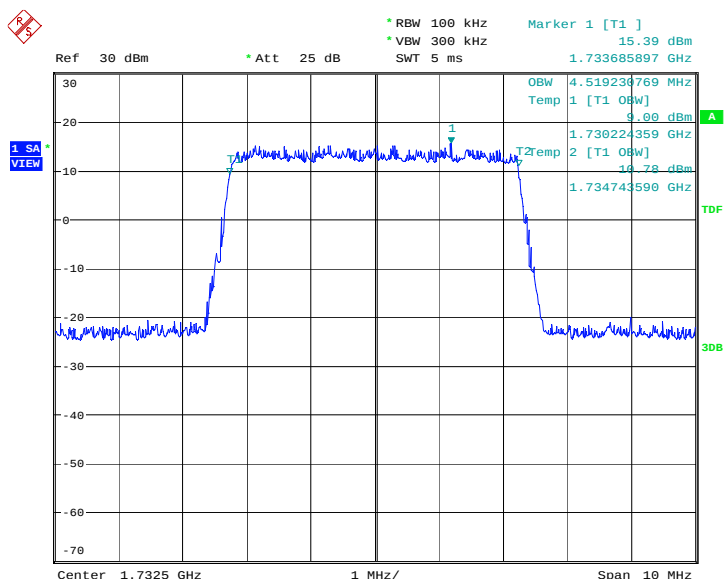
Frequency(MHz)	Occupied Bandwidth (99%)-IC(kHz)	
1732.5	QPSK	16QAM
	4519.23	4519.23

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



Date: 13. JUN. 2014 08:49:46

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

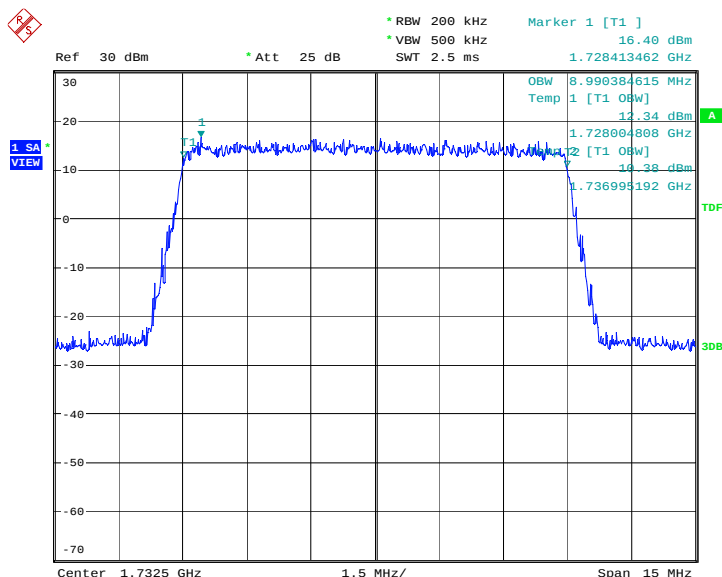


Date: 13. JUN. 2014 08:50:00

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

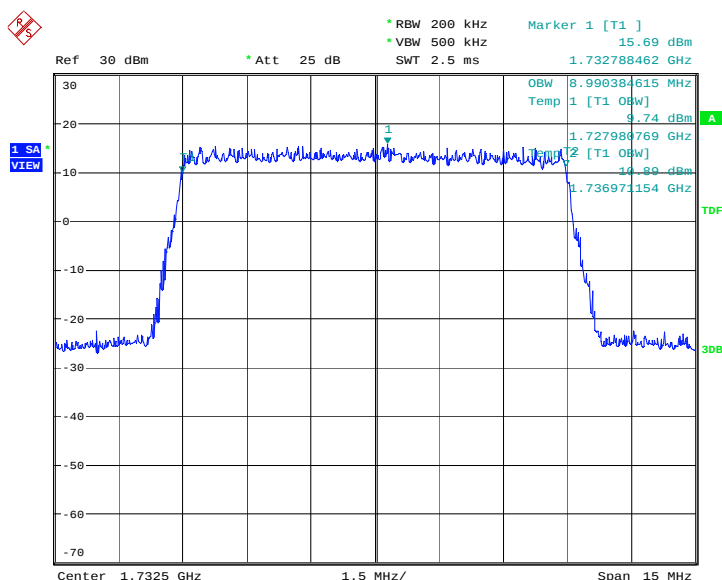
Frequency(MHz)	Occupied Bandwidth (99%)-IC(kHz)	
1732.5	QPSK	16QAM
	8990.38	8990.38

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



Date: 13.JUN.2014 08:51:23

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

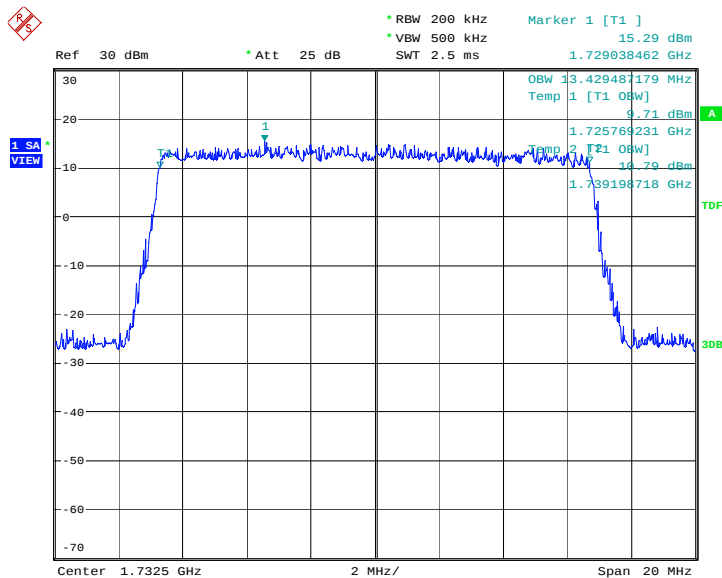


Date: 13.JUN.2014 08:51:37

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

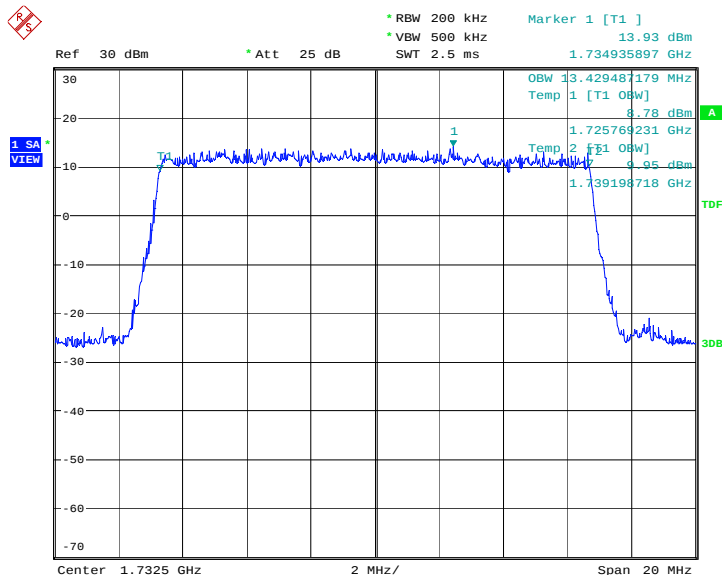
Frequency(MHz)	Occupied Bandwidth (99%)-IC(kHz)	
1732.5	QPSK	16QAM
	13429.49	13429.49

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



Date: 13.JUN.2014 08:52:30

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

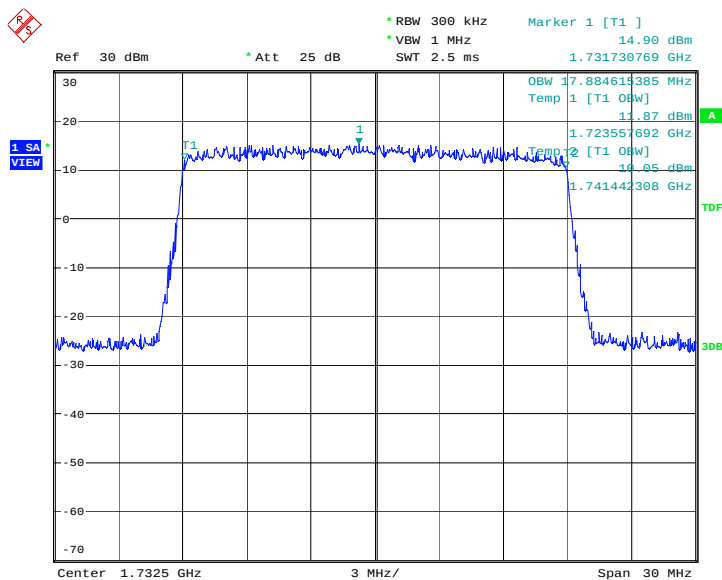


Date: 13.JUN.2014 08:52:44

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

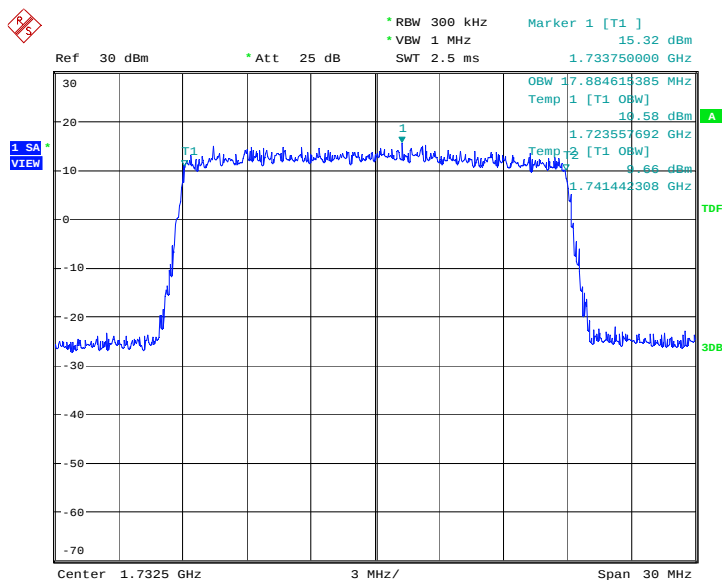
Frequency(MHz)	Occupied Bandwidth (99%)-IC(kHz)	
1732.5	QPSK	16QAM
	17884.62	17884.62

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



Date: 13.JUN.2014 08:54:07

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

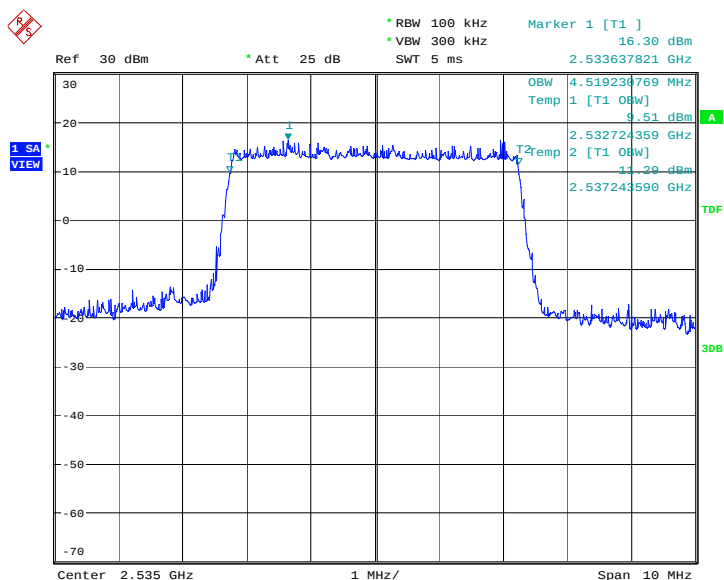


Date: 13.JUN.2014 08:54:21

LTE band 7, 5MHz (99%)-IC

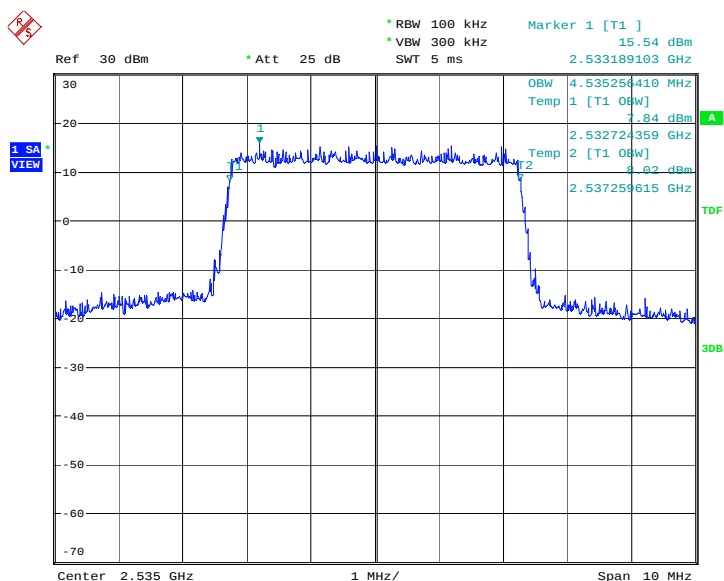
Frequency(MHz)	Occupied Bandwidth (99%)-IC(kHz)	
2535.0	QPSK	16QAM
	4519.23	4535.26

LTE band 7, 5MHz Bandwidth-IC, QPSK (99% BW)



Date: 13.JUN.2014 08:24:41

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

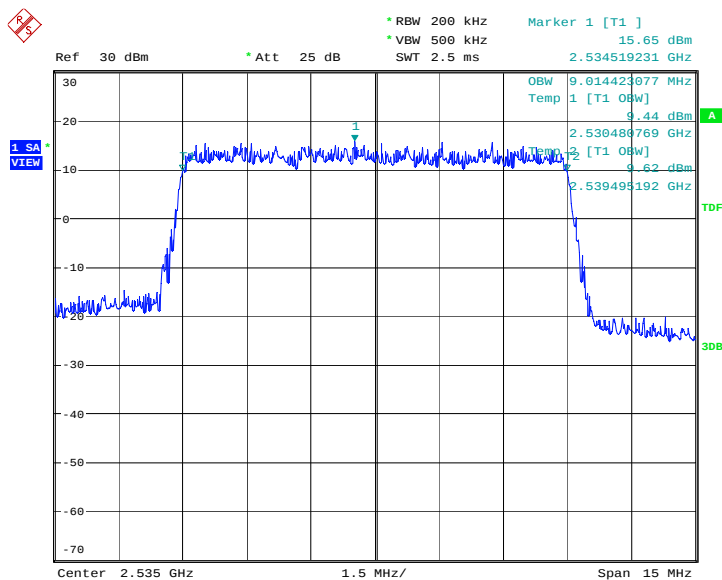


Date: 13.JUN.2014 08:24:54

LTE band 7, 10MHz (99%)-IC

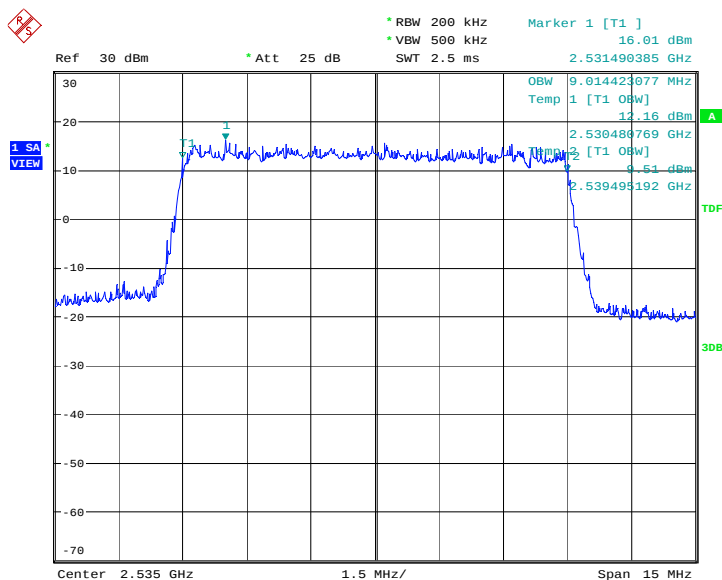
Frequency(MHz)	Occupied Bandwidth (99%)-IC(kHz)	
2535.0	QPSK	16QAM
	9014.42	9014.42

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



Date: 13.JUN.2014 08:26:18

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

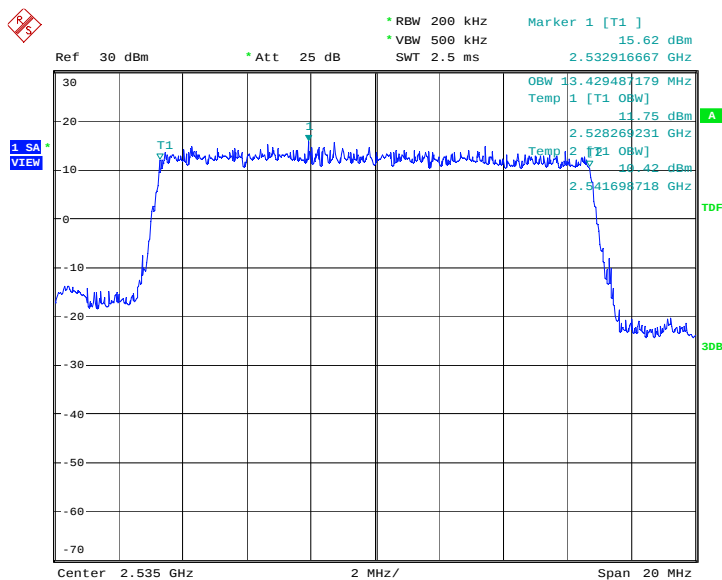


Date: 13.JUN.2014 08:26:31

LTE band 7, 15MHz (99%)-IC

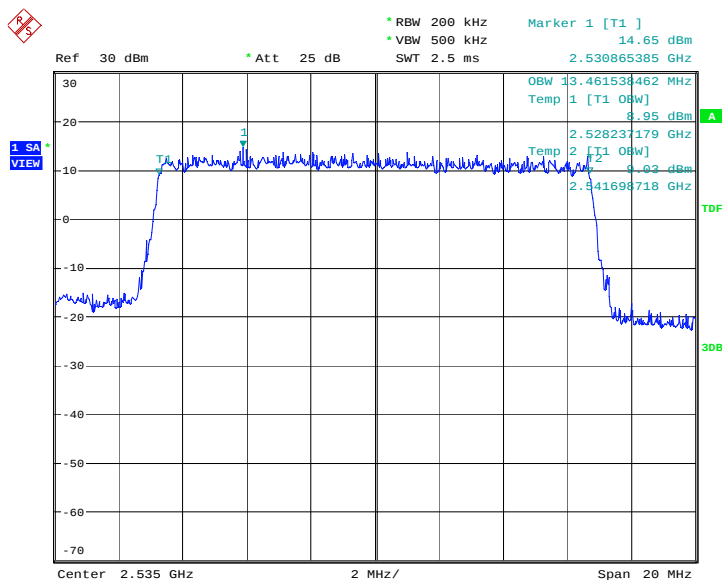
Frequency(MHz)	Occupied Bandwidth (99%)-IC(kHz)	
2535.0	QPSK	16QAM
	13429.49	13461.54

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



Date: 13.JUN.2014 08:27:55

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

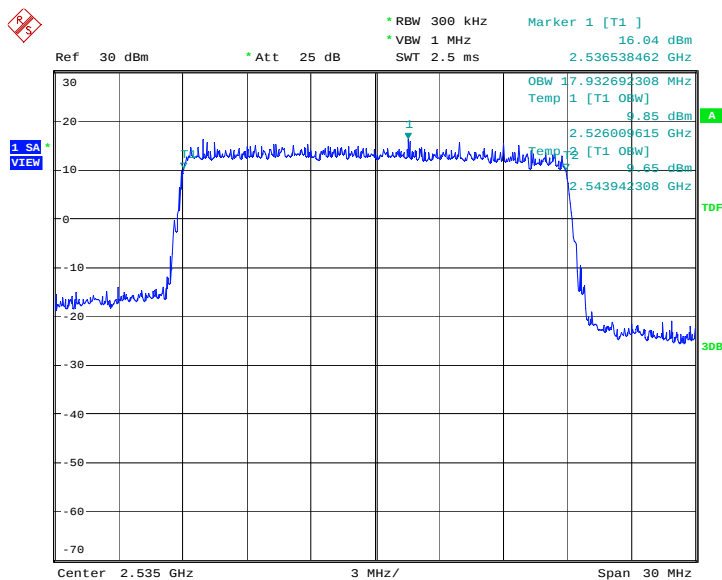


Date: 13.JUN.2014 08:28:09

LTE band 7, 20MHz (99%)-IC

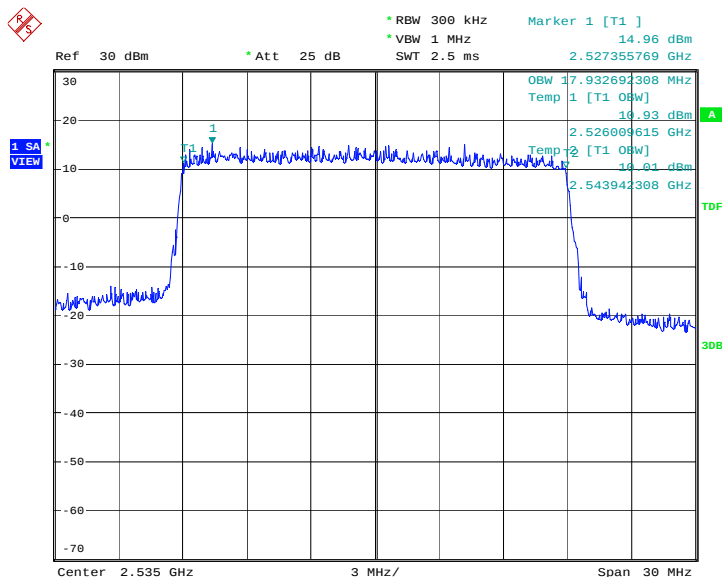
Frequency(MHz)	Occupied Bandwidth (99%)-IC(kHz)	
2535.0	QPSK	16QAM
	17932.69	17932.69

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



Date: 13. JUN. 2014 08:29:02

LTE band 7, 20MHz Bandwidth-IC, 16QAM (99% BW)

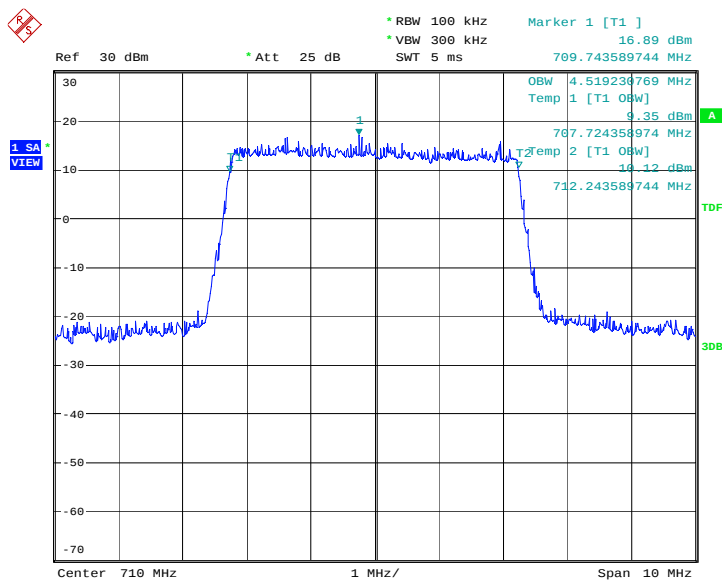


Date: 13. JUN. 2014 08:29:16

LTE band 17, 5MHz (99%)-IC

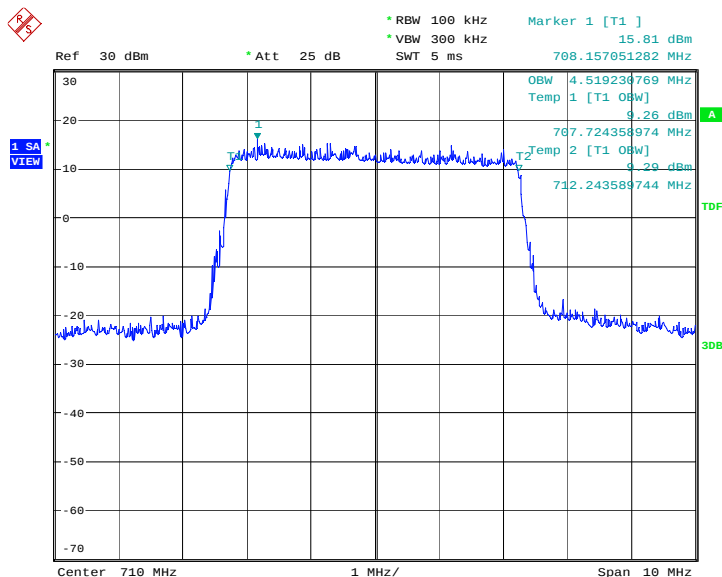
Frequency(MHz)	Occupied Bandwidth (99%)-IC(kHz)	
710.0	QPSK	16QAM
	4519.23	4519.23

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



Date: 13.JUN.2014 08:55:16

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

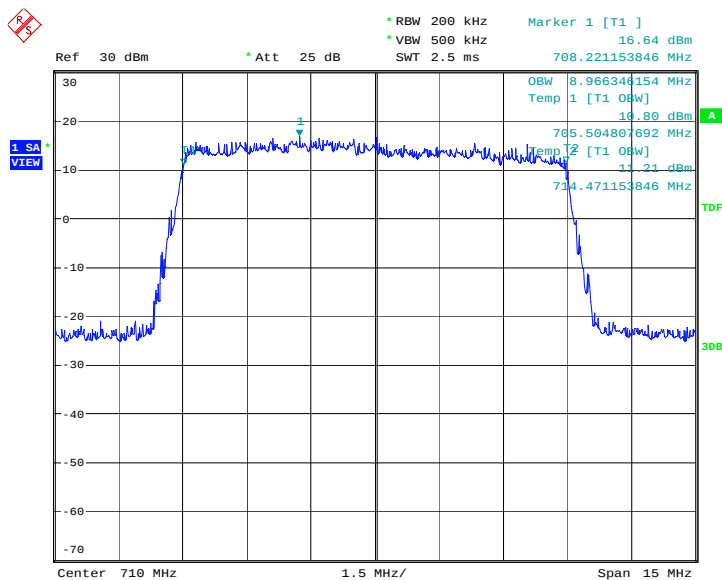


Date: 13.JUN.2014 08:55:29

LTE band 17, 10MHz (99%)-IC

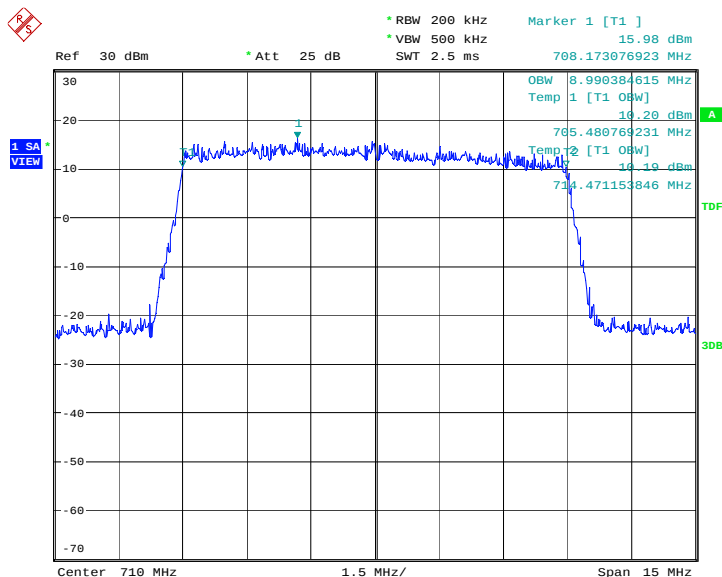
Frequency(MHz)	Occupied Bandwidth (99%)-IC(kHz)	
710.0	QPSK	16QAM
	8966.35	8990.38

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



Date: 13.JUN.2014 09:03:34

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



Date: 13.JUN.2014 09:03:48

A.6 EMISSION BANDWIDTH

Reference

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

A.6.1 Emission Bandwidth Results

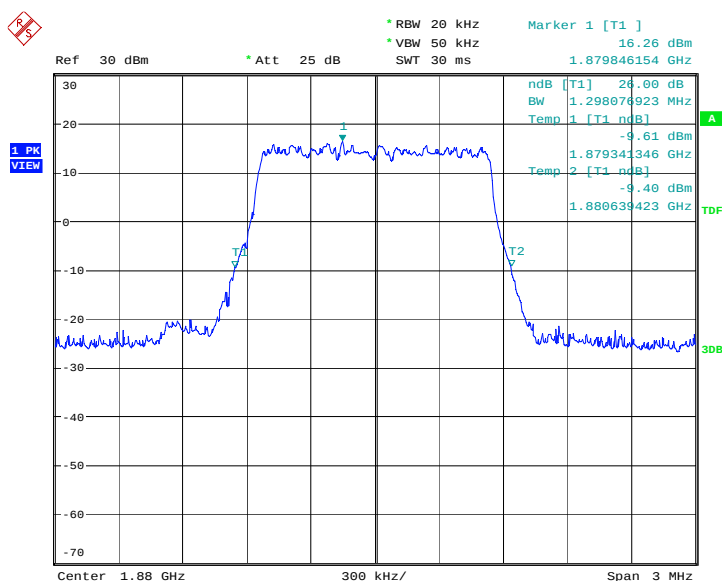
Table below lists the measured -26dBc BW. Spectrum analyzer plots are included on the following pages.

The EUT was set up for the max output power with pseudo random data modulation. Use the Occupied Bandwidth function of SA to measure the -26dBc bandwidth.

LTE band 2, 1.4MHz (-26dBc)

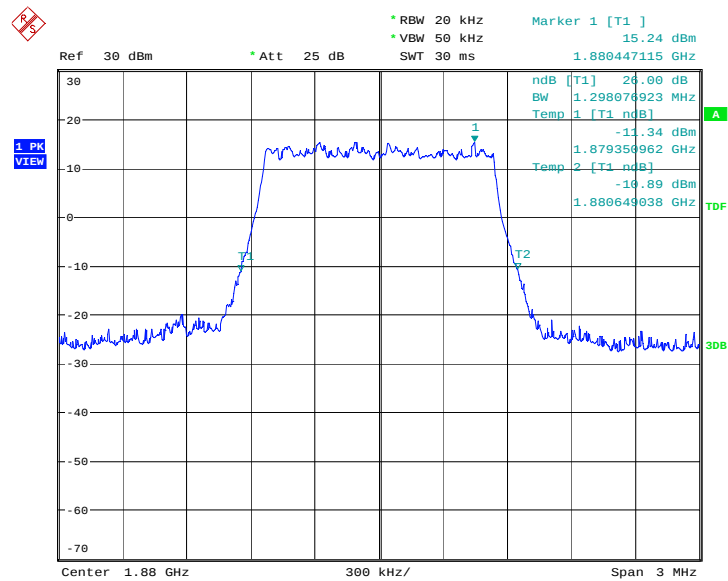
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1880.0	QPSK	16QAM
	1298.08	1298.08

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



Date: 29.MAY.2014 14:24:47

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

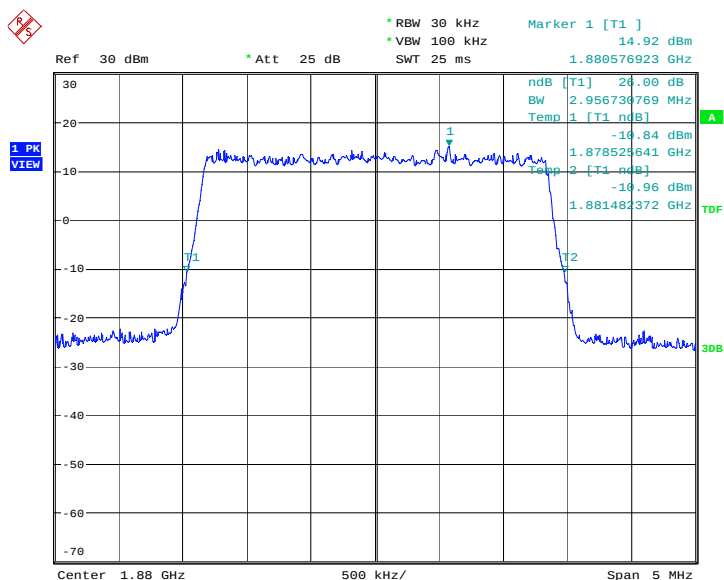


Date: 29.MAY.2014 14:25:03

LTE band 2, 3MHz (-26dBc)

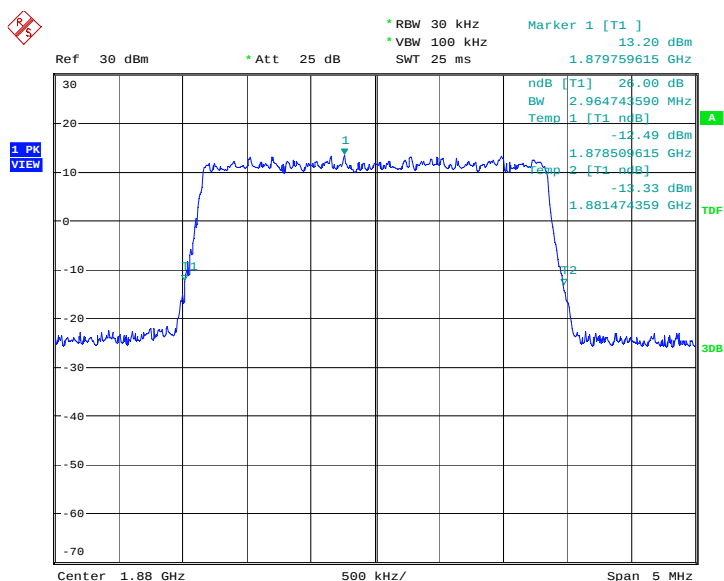
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1880.0	QPSK	16QAM
	2956.73	2964.74

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



Date: 29.MAY.2014 14:30:58

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

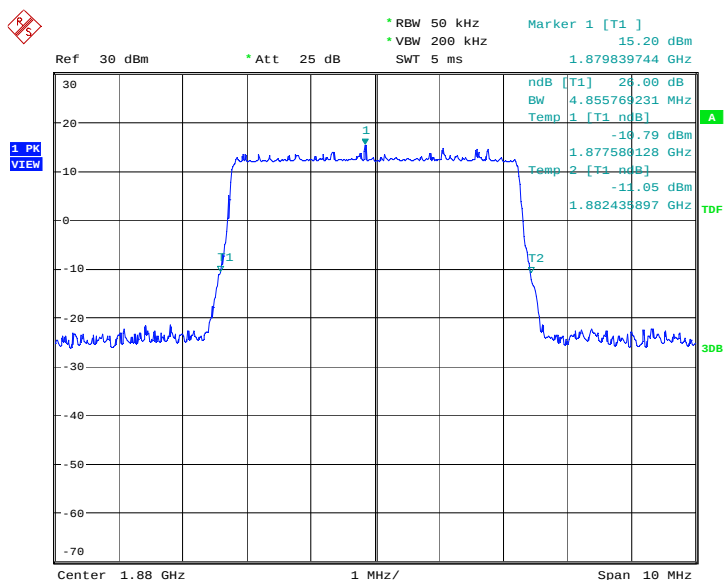


Date: 29.MAY.2014 14:31:13

LTE band 2, 5MHz (-26dBc)

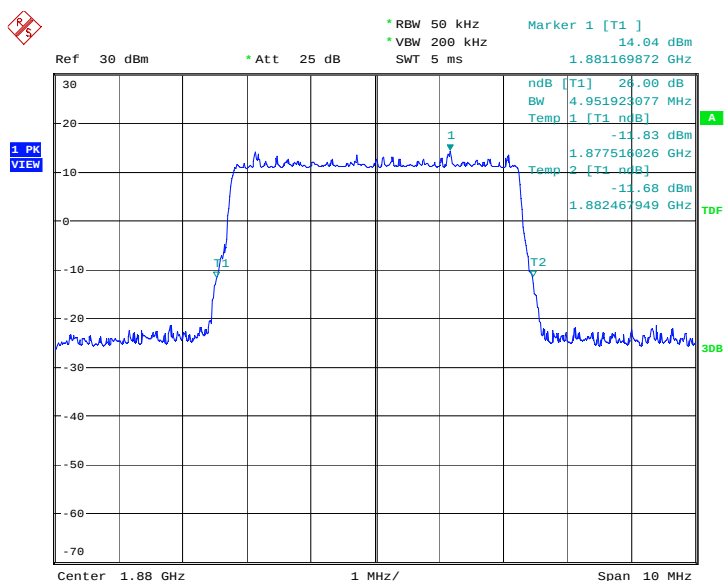
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1880.0	QPSK	16QAM
	4855.77	4951.92

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



Date: 29.MAY.2014 14:40:10

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

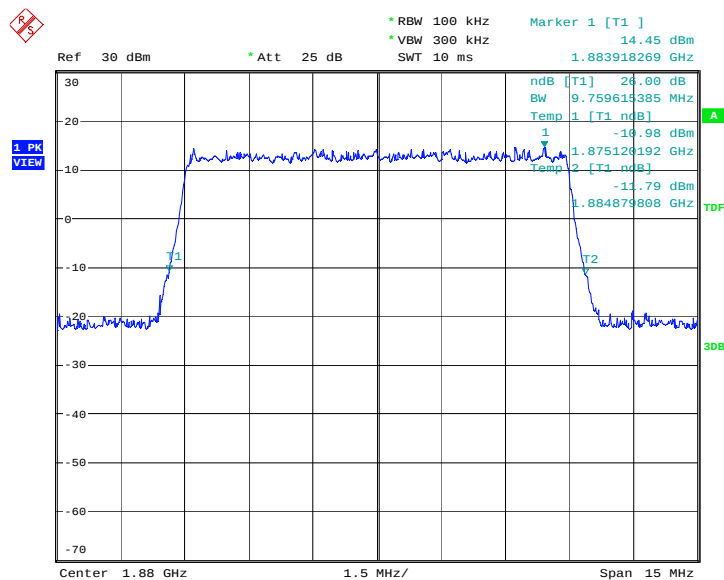


Date: 29.MAY.2014 14:40:26

LTE band 2, 10MHz (-26dBc)

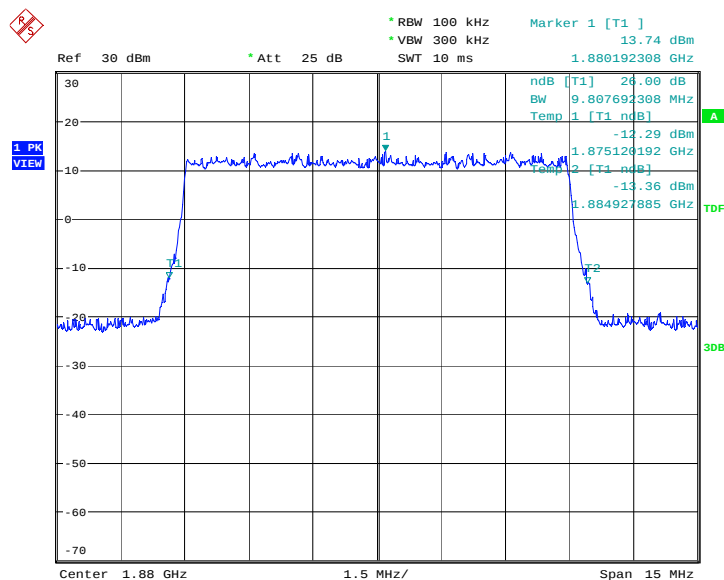
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1880.0	QPSK	16QAM
	9759.62	9807.69

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



Date: 29.MAY.2014 14:52:29

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

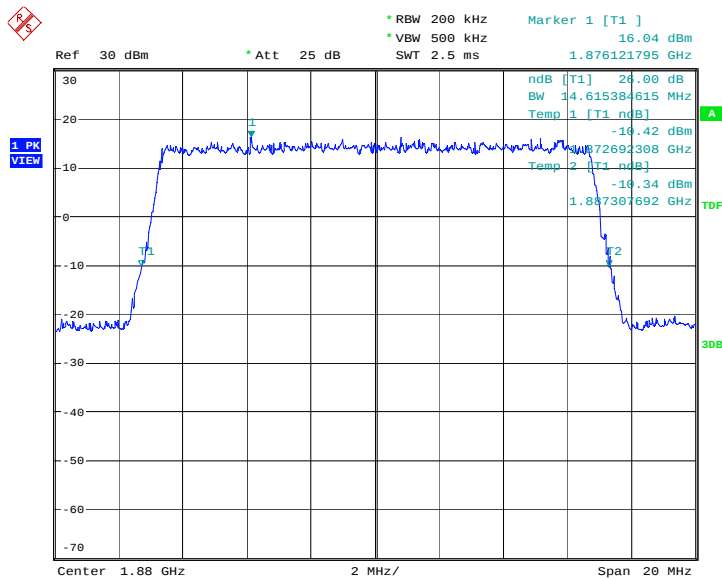


Date: 29.MAY.2014 14:52:45

LTE band 2, 15MHz (-26dBc)

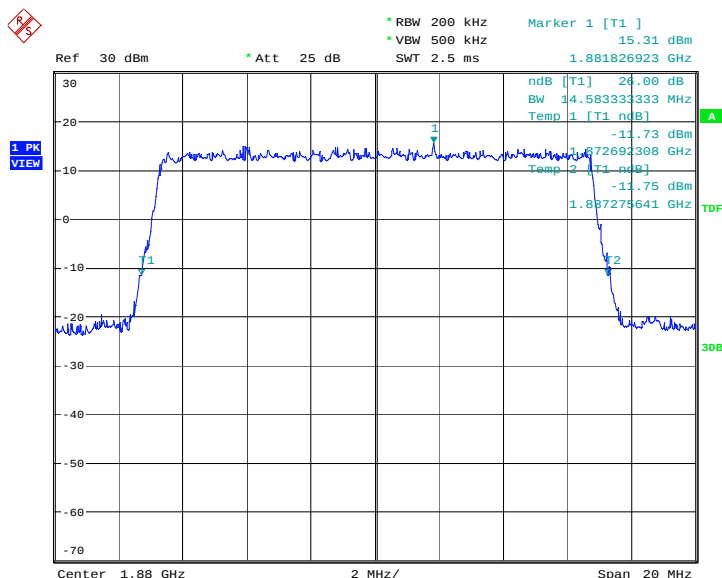
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1880.0	QPSK	16QAM
	14615.38	14583.33

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



Date: 29.MAY.2014 14:58:45

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

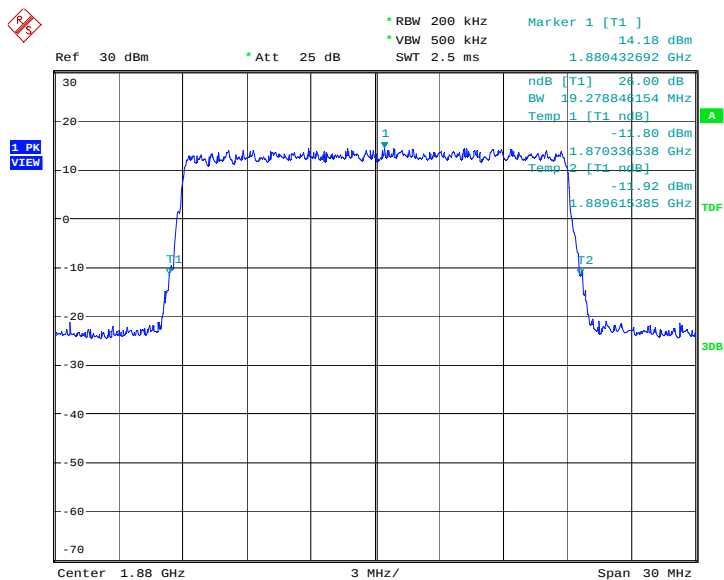


Date: 29.MAY.2014 14:59:01

LTE band 2, 20MHz (-26dBc)

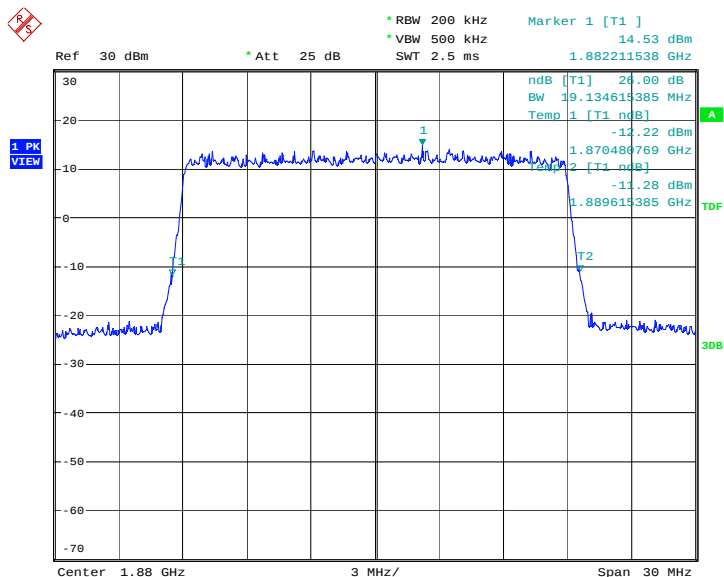
Frequency(MHz)	Occupied Bandwidth (-26dBc)(kHz)	
1880.0	QPSK	16QAM
	19278.85	19134.62

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



Date: 29.MAY.2014 15:07:05

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



Date: 29.MAY.2014 15:07:21