



FCC RF Test Report

APPLICANT : NETGEAR, Inc.
EQUIPMENT : Mobile LTE Broadband 11n Wireless Router
BRAND NAME : NETGEAR
MODEL NAME : LG2200D
FCC ID : PY313400244
STANDARD : 47 CFR Part 2, 22(H), 27
CLASSIFICATION : PCS Licensed Transmitter (PCB)

The product was received on Nov. 15, 2013 and testing was completed on Dec. 17, 2013. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI / TIA / EIA-603-C-2004 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.



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SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	§2.1046	RSS-130(4.4) RSS-132 (5.4) RSS-139(6.4)	Conducted Output Power	Reporting Only	PASS	-
3.1	§22.913(a)(2)	RSS-132(5.4) SRSP-503(5.1.3)	Effective Radiated Power (Band 5)	-	PASS	-
	§27.50(c)(10)	N/A	Effective Radiated Power (Band 12)	ERP < 3 Watts		
	§27.50(d)(4)	RSS-139 (6.4) SRSP-513(5.1.2)	Equivalent Isotropic Radiated Power (Band 4)	EIRP < 1Watt		
3.2	27.53(d)(5)	RSS-130(4.4) RSS-139(6.4)	Peak-to-Average Ratio	<13 dB	PASS	-
3.3	§2.1049 §22.917(a)	RSS-GEN(4.6.1) RSS-132 (3.1) RSS-139 (3.1)	Occupied Bandwidth	Reporting Only	PASS	-
3.4	§2.1049 §22.917(a) §27.53 (g)(h)	RSS-130(4.6) RSS-132 (5.5) RSS-139 (6.5)	Conducted Band Edge Measurement	< 43+10log ₁₀ (P[Watts])	PASS	-
3.5	§2.1051 §22.917(a) §27.53 (g)(h)	RSS-130(4.6) RSS-132 (5.5) RSS-139 (6.5)	Conducted Spurious Emission	< 43+10log ₁₀ (P[Watts])	PASS	-
3.6	§2.1053 §22.917(a) §27.53 (g) (h)	RSS-130(4.6) RSS-132 (5.5) RSS-139 (6.5)	Radiated Spurious Emission	< 43+10log ₁₀ (P[Watts])	PASS	Under limit 22.61 dB at 5250.000 MHz
3.7	§2.1055 §22.355 §27.54	RSS-130(4.3) RSS-132(5.3) RSS-139 (6.3)	Frequency Stability Temperature & Voltage	< 2.5 ppm	PASS	-



1 General Description

1.1 Applicant

NETGEAR, Inc.
350 East Plumeria Drive, San Jose, California 95134, USA

1.2 Manufacturer

NETGEAR, Inc.
350 East Plumeria Drive, San Jose, California 95134, USA

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Mobile LTE Broadband 11n Wireless Router
Brand Name	NETGEAR
Model Name	LG2200D
FCC ID	PY313400244
Integrated the LTE Module	Brand Name: WNC Model Name: D15G7
EUT supports Radios application	LTE / WLAN 11bgn(HT20/HT40)
HW Version	005
SW Version	1.0.0.30
EUT Stage	Production Unit

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx Frequency	LTE Band 5 : 824.7 MHz ~ 848.3 MHz LTE Band 4 : 1710.7 MHz ~ 1754.3 MHz LTE Band 12 : 699.7 MHz ~ 715.3 MHz
Rx Frequency	LTE Band 5 : 869.7 MHz ~ 893.3 MHz LTE Band 4 : 2110.7 MHz ~ 2154.3 MHz LTE Band 12 : 729.7 MHz ~ 745.3 MHz
Bandwidth	1.4MHz / 3MHz / 5MHz / 10MHz (Band 5) 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz (Band 4) 1.4MHz / 3MHz / 5MHz / 10MHz (Band12)
Maximum Output Power to Antenna	LTE Band 5 : 23.94 dBm / 0.25 W LTE Band 4 : 23.11 dBm / 0.20 W LTE Band 12 : 22.47 dBm / 0.18 W
Antenna Type	External dipole Antenna
Antenna Gain	LTE Band 5 : 2.53 dBi LTE Band 4 : 3.44 dBi LTE Band 12 : 2.86 dBi
Type of Modulation	QPSK / 16QAM / 64QAM

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Emission Designator

FCC Rule	System	Type of Modulation	BW	Emission Designator	Frequency Tolerance (ppm)	Maximum ERP/EIRP
Part 22	LTE Band 5	QPSK	1.4 MHz	1M10G7D	-	0.26 W
Part 22	LTE Band 5	16QAM	1.4 MHz	1M10D7W	-	0.25 W
Part 22	LTE Band 5	QPSK	3 MHz	2M72G7D	-	0.27 W
Part 22	LTE Band 5	16QAM	3 MHz	2M72D7W	-	0.25 W
Part 22	LTE Band 5	QPSK	5 MHz	4M49G7D	-	0.27 W
Part 22	LTE Band 5	16QAM	5 MHz	4M50D7W	-	0.25 W
Part 22	LTE Band 5	QPSK	10 MHz	9M08G7D	0.0312 ppm	0.27 W
Part 22	LTE Band 5	16QAM	10 MHz	9M06D7W	-	0.26 W
Part 27	LTE Band 4	QPSK	1.4 MHz	1M10G7D	-	0.45 W
Part 27	LTE Band 4	16QAM	1.4 MHz	1M11D7W	-	0.40 W
Part 27	LTE Band 4	QPSK	3 MHz	2M72G7D	-	0.42 W
Part 27	LTE Band 4	16QAM	3 MHz	2M72D7W	-	0.40 W
Part 27	LTE Band 4	QPSK	5MHz	4M51G7D	-	0.42 W
Part 27	LTE Band 4	16QAM	5MHz	4M49D7W	-	0.40 W
Part 27	LTE Band 4	QPSK	10MHz	9M06G7D	0.0331 ppm	0.43 W
Part 27	LTE Band 4	16QAM	10MHz	9M06D7W	-	0.40 W
Part 27	LTE Band 4	QPSK	15MHz	13M5G7D	-	0.44 W
Part 27	LTE Band 4	16QAM	15MHz	13M5D7W	-	0.41 W
Part 27	LTE Band 4	QPSK	20MHz	18M6G7D	-	0.44 W
Part 27	LTE Band 4	16QAM	20MHz	18M6D7W	-	0.42 W



FCC Rule	System	Type of Modulation	BW	Emission Designator	Frequency Tolerance (ppm)	Maximum ERP/EIRP
Part 27	LTE Band 12	QPSK	1.4 MHz	1M10G7D	-	0.20 W
Part 27	LTE Band 12	16QAM	1.4 MHz	1M11D7W	-	0.20 W
Part 27	LTE Band 12	QPSK	3 MHz	2M72G7D	-	0.21 W
Part 27	LTE Band 12	16QAM	3 MHz	2M72D7W	-	0.20 W
Part 27	LTE Band 12	QPSK	5MHz	4M50G7D	-	0.20 W
Part 27	LTE Band 12	16QAM	5MHz	4M50D7W	-	0.20 W
Part 27	LTE Band 12	QPSK	10MHz	9M06G7D	0.3295 ppm	0.21 W
Part 27	LTE Band 12	16QAM	10MHz	9M06D7W	-	0.20 W

1.7 Testing Site

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	Sporton Site No.	
	TH02-HY	

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.	
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958	
Test Site No.	Sporton Site No.	FCC/IC Registration No.
	03CH01-KS	149928/4086E-1



1.8 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR Part 2, 22(H), 27
- ♦ ANSI / TIA / EIA-603-C-2004
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v02r01
- ♦ FCC KDB 412172 D01 Determining ERP and ERIP v01

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

2.1 Test Mode

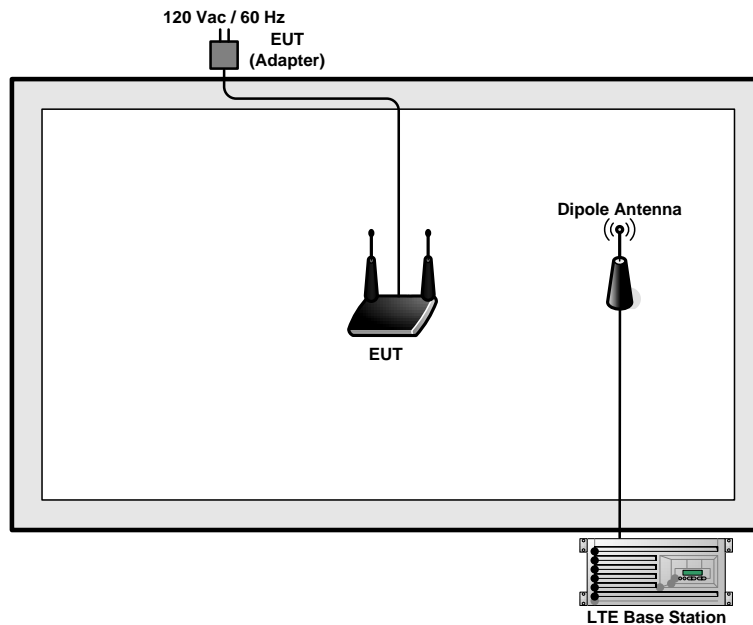
During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT was rotated on three test planes to find out the worst emission.

Frequency range investigated for radiated emission: 30MHz to 10th harmonic.

Test Modes			
Band		Radiated TCs	Conducted TCs
LTE Band 5	BW 1.4MHz	■ LTE (RB Size 1) Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 3) Link ■ LTE (RB Size 6) Link
	BW 3MHz	■ LTE (RB Size 1) Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 8) Link ■ LTE (RB Size 15) Link
	BW 5MHz	■ LTE (RB Size 1) Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 12) Link ■ LTE (RB Size 25) Link
	BW 10MHz	■ LTE (RB Size 1) Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 25) Link ■ LTE (RB Size 50) Link
LTE Band 4	BW 1.4MHz	■ LTE (RB Size 1) Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 3) Link ■ LTE (RB Size 6) Link
	BW 3MHz	■ LTE (RB Size 1) Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 8) Link ■ LTE (RB Size 15) Link
	BW 5MHz	■ LTE (RB Size 1) Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 12) Link ■ LTE (RB Size 25) Link
	BW 10MHz	■ LTE (RB Size 1) Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 25) Link ■ LTE (RB Size 50) Link
	BW 15MHz	■ LTE (RB Size 1) Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 36) Link ■ LTE (RB Size 75) Link
	BW 20MHz	■ LTE (RB Size 1) Link	■ LTE (RB Size 1) Link ■ LTE (RB Size 50) Link ■ LTE (RB Size 100) Link

Test Modes			
Band		Radiated TCs	Conducted TCs
LTE Band 12	BW 1.4MHz	<ul style="list-style-type: none"> ■ LTE (RB Size 1) Link 	<ul style="list-style-type: none"> ■ LTE (RB Size 1) Link ■ LTE (RB Size 25) Link ■ LTE (RB Size 50) Link
	BW 3MHz	<ul style="list-style-type: none"> ■ LTE (RB Size 1) Link 	<ul style="list-style-type: none"> ■ LTE (RB Size 1) Link ■ LTE (RB Size 25) Link ■ LTE (RB Size 50) Link
	BW 5MHz	<ul style="list-style-type: none"> ■ LTE (RB Size 1) Link 	<ul style="list-style-type: none"> ■ LTE (RB Size 1) Link ■ LTE (RB Size 25) Link ■ LTE (RB Size 50) Link
	BW 10MHz	<ul style="list-style-type: none"> ■ LTE (RB Size 1) Link 	<ul style="list-style-type: none"> ■ LTE (RB Size 1) Link ■ LTE (RB Size 25) Link ■ LTE (RB Size 50) Link

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m



2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Example :

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\ &= 4.2 + 10 = 14.2 \text{ (dB)} \end{aligned}$$

3 Test Result

3.1 Conducted Output Power Measurement and ERP/EIRP Measurement

3.1.1 Description of the Conducted Output Power Measurement and ERP/EIRP Measurement

A base station simulator was used to establish communication with the EUT. Its parameters were set to transmit the maximum power on the EUT. The measured power in the radio frequency on the transmitter output terminals shall be reported.

The ERP of mobile transmitters must not exceed 7 Watts for LTE Band 5.

The ERP of mobile transmitters must not exceed 3 Watts for LTE Band 12. (FCC Only)

The EIRP of mobile transmitters must not exceed 5 Watts for LTE Band 12. (IC Only)

The EIRP of mobile transmitters must not exceed 1 Watts for LTE Band 4.

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$, $ERP = EIRP - 2.15$, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

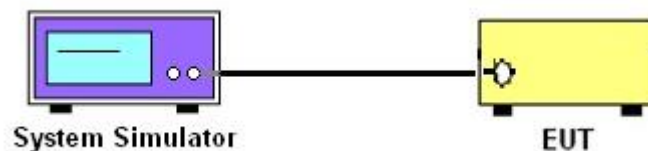
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The transmitter output port was connected to base station.
2. Set EUT at maximum power through base station.
3. Select lowest, middle, and highest channels for each band and different modulation.

3.1.4 Test Setup





3.1.5 Test Result of Conducted Output Power

<LTE Band 5 Conducted Power>

BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				20450	20525	20600
Frequency (MHz)				829	836.5	844
10	QPSK	1	0	23.42	23.93	23.67
10	QPSK	1	24	23.37	23.91	23.64
10	QPSK	1	49	23.63	23.76	23.42
10	QPSK	25	0	22.59	23.82	23.59
10	QPSK	25	12	22.10	23.74	23.51
10	QPSK	25	24	22.60	23.69	23.48
10	QPSK	50	0	22.54	22.86	22.30
10	16QAM	1	0	23.20	23.76	23.25
10	16QAM	1	24	23.31	23.57	22.99
10	16QAM	1	49	23.29	23.52	22.85
10	16QAM	25	0	21.80	22.48	22.77
10	16QAM	25	12	21.89	22.30	22.68
10	16QAM	25	24	21.81	22.27	22.80
10	16QAM	50	0	21.76	22.34	21.56
Channel				20425	20525	20625
Frequency (MHz)				826.5	836.5	846.5
5	QPSK	1	0	23.70	23.89	23.38
5	QPSK	1	12	23.76	23.81	23.56
5	QPSK	1	24	23.94	23.67	23.24
5	QPSK	12	0	22.35	23.75	23.40
5	QPSK	12	6	22.48	23.80	23.35
5	QPSK	12	11	22.45	23.79	23.46
5	QPSK	25	0	22.46	22.83	22.22
5	16QAM	1	0	23.15	23.58	22.95
5	16QAM	1	12	23.19	23.41	22.98
5	16QAM	1	24	23.26	23.37	22.83
5	16QAM	12	0	21.75	22.39	22.77
5	16QAM	12	6	21.71	22.43	22.69
5	16QAM	12	11	21.82	22.20	22.73
5	16QAM	25	0	21.70	22.45	21.44



BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				20415	20525	20635
Frequency (MHz)				825.5	836.5	847.5
3	QPSK	1	0	23.92	23.90	23.54
3	QPSK	1	7	23.85	23.68	23.54
3	QPSK	1	14	23.94	23.73	23.23
3	QPSK	8	0	22.36	23.82	23.42
3	QPSK	8	4	22.46	23.74	23.39
3	QPSK	8	7	22.41	23.86	23.34
3	QPSK	15	0	22.49	22.95	22.31
3	16QAM	1	0	22.98	23.61	22.92
3	16QAM	1	7	23.20	23.58	22.95
3	16QAM	1	14	23.10	23.44	22.77
3	16QAM	8	0	21.62	22.28	22.89
3	16QAM	8	4	21.72	22.40	22.76
3	16QAM	8	7	21.67	22.50	22.70
3	16QAM	15	0	21.57	22.22	21.45
Channel				20407	20525	20643
Frequency (MHz)				824.7	836.5	848.3
1.4	QPSK	1	0	23.52	23.70	23.27
1.4	QPSK	1	2	23.66	23.77	23.34
1.4	QPSK	1	5	23.71	23.55	23.09
1.4	QPSK	3	0	23.69	23.67	23.33
1.4	QPSK	3	1	23.56	23.67	23.25
1.4	QPSK	3	2	23.69	23.63	23.25
1.4	QPSK	6	0	22.56	22.80	23.00
1.4	16QAM	1	0	23.09	23.59	22.94
1.4	16QAM	1	2	23.20	23.49	22.84
1.4	16QAM	1	5	23.11	23.49	22.77
1.4	16QAM	3	0	22.80	23.17	22.58
1.4	16QAM	3	1	22.82	23.10	22.52
1.4	16QAM	3	2	22.82	23.05	22.47
1.4	16QAM	6	0	21.73	22.24	21.40



<LTE Band 4 Conducted Power>

BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				20050	20175	20300
Frequency (MHz)				1720	1732.5	1745
20	QPSK	1	0	22.59	22.90	22.95
20	QPSK	1	49	22.30	22.71	23.04
20	QPSK	1	99	22.42	22.82	22.86
20	QPSK	50	0	21.72	21.72	21.93
20	QPSK	50	24	21.35	21.74	21.99
20	QPSK	50	49	21.16	21.80	21.90
20	QPSK	100	0	21.33	21.78	22.06
20	16QAM	1	0	22.45	22.58	22.46
20	16QAM	1	49	22.05	22.18	22.75
20	16QAM	1	99	21.66	22.55	22.32
20	16QAM	50	0	21.05	21.09	21.34
20	16QAM	50	24	20.93	21.10	21.40
20	16QAM	50	49	20.56	21.19	21.31
20	16QAM	100	0	20.92	21.15	21.47
Channel				20025	20175	20325
Frequency (MHz)				1717.5	1732.5	1747.5
15	QPSK	1	0	22.30	22.64	22.84
15	QPSK	1	37	22.15	22.43	22.98
15	QPSK	1	74	22.22	22.69	22.56
15	QPSK	36	0	21.42	21.72	22.14
15	QPSK	36	18	21.28	21.60	22.10
15	QPSK	36	37	21.05	21.64	21.82
15	QPSK	75	0	21.16	21.59	21.89
15	16QAM	1	0	22.10	22.40	22.59
15	16QAM	1	37	21.88	22.15	22.70
15	16QAM	1	74	21.48	22.48	22.31
15	16QAM	36	0	20.87	21.17	21.59
15	16QAM	36	18	20.74	21.04	21.55
15	16QAM	36	37	20.50	21.10	21.28
15	16QAM	75	0	20.64	21.04	21.36



BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				20000	20175	20350
Frequency (MHz)				1715	1732.5	1750
10	QPSK	1	0	22.28	22.63	22.81
10	QPSK	1	24	22.27	22.55	22.78
10	QPSK	1	49	21.96	22.86	22.53
10	QPSK	25	0	21.58	21.68	22.09
10	QPSK	25	12	21.37	21.63	21.88
10	QPSK	25	24	21.34	21.74	21.92
10	QPSK	50	0	21.35	21.59	22.00
10	16QAM	1	0	22.10	22.14	22.56
10	16QAM	1	24	22.04	22.11	22.55
10	16QAM	1	49	21.75	22.25	22.19
10	16QAM	25	0	21.04	21.13	21.53
10	16QAM	25	12	20.85	21.08	21.32
10	16QAM	25	24	20.83	21.19	21.36
10	16QAM	50	0	20.85	21.04	21.45
Channel				19975	20175	20375
Frequency (MHz)				1712.5	1732.5	1752.5
5	QPSK	1	0	22.40	22.60	22.82
5	QPSK	1	12	22.38	22.68	22.57
5	QPSK	1	24	22.25	22.72	22.49
5	QPSK	12	0	21.48	21.57	21.93
5	QPSK	12	6	21.57	21.69	21.83
5	QPSK	12	11	21.54	21.60	21.86
5	QPSK	25	0	21.53	21.66	21.84
5	16QAM	1	0	22.12	22.22	22.57
5	16QAM	1	12	22.01	22.25	22.36
5	16QAM	1	24	22.06	22.24	22.28
5	16QAM	12	0	20.96	20.99	21.40
5	16QAM	12	6	20.98	21.17	21.30
5	16QAM	12	11	20.97	21.04	21.14
5	16QAM	25	0	21.02	21.19	21.30



BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				19965	20175	20385
Frequency (MHz)				1711.5	1732.5	1753.5
3	QPSK	1	0	22.31	22.60	22.76
3	QPSK	1	7	22.39	22.59	22.75
3	QPSK	1	14	22.37	22.80	22.60
3	QPSK	8	0	21.64	21.62	21.86
3	QPSK	8	4	21.49	21.65	21.77
3	QPSK	8	7	21.47	21.64	21.87
3	QPSK	15	0	21.46	21.69	21.77
3	16QAM	1	0	22.10	22.26	22.63
3	16QAM	1	7	22.19	22.21	22.53
3	16QAM	1	14	21.99	22.40	22.34
3	16QAM	8	0	21.15	21.17	21.33
3	16QAM	8	4	20.90	21.08	21.23
3	16QAM	8	7	20.88	21.20	21.34
3	16QAM	15	0	20.94	21.11	21.23
Channel				19957	20175	20393
Frequency (MHz)				1710.7	1732.5	1754.3
1.4	QPSK	1	0	22.24	22.87	22.61
1.4	QPSK	1	2	22.45	22.70	22.53
1.4	QPSK	1	5	22.37	23.11	22.77
1.4	QPSK	3	0	22.20	22.95	22.84
1.4	QPSK	3	1	22.17	22.62	22.56
1.4	QPSK	3	2	22.30	22.93	22.65
1.4	QPSK	6	0	21.66	22.04	21.94
1.4	16QAM	1	0	22.25	22.37	22.48
1.4	16QAM	1	2	22.12	22.27	22.32
1.4	16QAM	1	5	22.10	22.48	22.59
1.4	16QAM	3	0	21.84	22.02	22.60
1.4	16QAM	3	1	21.82	22.36	22.33
1.4	16QAM	3	2	21.84	22.15	22.33
1.4	16QAM	6	0	21.03	21.59	21.55



<LTE Band 12 Conducted Power>

BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				23060	23095	23130
Frequency (MHz)				704	707.5	711
10	QPSK	1	0	22.28	22.47	22.21
10	QPSK	1	24	22.32	22.05	21.80
10	QPSK	1	49	22.03	21.97	21.75
10	QPSK	25	0	21.46	22.30	21.90
10	QPSK	25	12	21.43	22.27	21.93
10	QPSK	25	24	21.37	22.21	21.98
10	QPSK	50	0	21.44	21.18	21.07
10	16QAM	1	0	22.01	22.30	21.90
10	16QAM	1	24	22.22	21.95	21.56
10	16QAM	1	49	21.92	21.67	21.50
10	16QAM	25	0	21.24	21.08	20.70
10	16QAM	25	12	21.23	20.97	20.58
10	16QAM	25	24	21.02	20.80	20.65
10	16QAM	50	0	21.00	20.86	20.62
Channel				230.5	23095	23155
Frequency (MHz)				701.5	707.5	713.5
5	QPSK	1	0	22.32	22.10	21.72
5	QPSK	1	12	22.20	21.96	21.81
5	QPSK	1	24	22.39	21.80	21.52
5	QPSK	12	0	21.41	21.79	21.63
5	QPSK	12	6	21.38	21.76	21.46
5	QPSK	12	11	21.60	21.78	21.42
5	QPSK	25	0	21.55	21.19	20.92
5	16QAM	1	0	22.05	21.96	21.60
5	16QAM	1	12	22.08	21.81	21.68
5	16QAM	1	24	22.22	21.66	21.29
5	16QAM	12	0	21.00	21.12	20.56
5	16QAM	12	6	21.22	21.01	20.59
5	16QAM	12	11	21.17	20.83	20.64
5	16QAM	25	0	21.32	21.01	20.67



BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				23025	23095	23165
Frequency (MHz)				700.5	707.5	714.5
3	QPSK	1	0	22.16	22.26	21.77
3	QPSK	1	7	22.35	22.17	21.83
3	QPSK	1	14	22.45	22.02	21.55
3	QPSK	8	0	21.49	22.15	21.62
3	QPSK	8	4	21.34	22.09	21.59
3	QPSK	8	7	21.34	22.05	21.70
3	QPSK	15	0	21.34	21.28	20.95
3	16QAM	1	0	22.15	22.11	21.62
3	16QAM	1	7	22.09	21.99	21.69
3	16QAM	1	14	22.23	21.72	21.35
3	16QAM	8	0	21.16	20.94	20.72
3	16QAM	8	4	20.99	20.94	20.63
3	16QAM	8	7	20.98	20.85	20.39
3	16QAM	15	0	21.12	20.85	20.52
Channel				23017	23095	23173
Frequency (MHz)				699.7	707.5	715.3
1.4	QPSK	1	0	22.11	22.18	21.70
1.4	QPSK	1	2	22.14	21.92	21.60
1.4	QPSK	1	5	22.31	22.03	21.51
1.4	QPSK	3	0	22.16	22.05	21.40
1.4	QPSK	3	1	22.06	21.86	21.47
1.4	QPSK	3	2	22.09	21.80	21.39
1.4	QPSK	6	0	21.49	21.24	20.87
1.4	16QAM	1	0	22.06	21.87	21.56
1.4	16QAM	1	2	22.20	21.94	21.30
1.4	16QAM	1	5	22.13	21.84	21.22
1.4	16QAM	3	0	21.79	21.60	21.22
1.4	16QAM	3	1	21.77	21.67	21.09
1.4	16QAM	3	2	21.78	21.57	21.03
1.4	16QAM	6	0	21.14	20.89	20.51

3.1.6 Test Result of Conducted Output Power and ERP/EIRP

Cellular Band ($G_T - L_C = 2.53 \text{ dB}$)						
Modes	LTE Band 5 (QPSK, BW=1.4M)			LTE Band 5 (16QAM, BW=1.4M)		
Channel	20407 (Low)	20525 (Mid)	20643 (High)	20407 (Low)	20525 (Mid)	20643 (High)
Frequency (MHz)	824.7	836.5	848.3	824.7	836.5	848.3
Conducted Power P_T (dBm)	23.71	23.77	23.34	23.20	23.59	22.94
Conducted Power P_T (Watts)	0.23	0.24	0.22	0.21	0.23	0.20
ERP(dBm)	24.09	24.15	23.72	23.58	23.97	23.32
ERP(Watts)	0.26	0.26	0.24	0.23	0.25	0.21

Cellular Band ($G_T - L_C = 2.53 \text{ dB}$)						
Modes	LTE Band 5 (QPSK, BW=3M)			LTE Band 5 (16QAM, BW=3M)		
Channel	20415 (Low)	20525 (Mid)	20635 (High)	20415 (Low)	20525 (Mid)	20635 (High)
Frequency (MHz)	825.5	836.5	847.5	825.5	836.5	847.5
Conducted Power P_T (dBm)	23.94	23.90	23.54	23.20	23.61	22.95
Conducted Power P_T (Watts)	0.25	0.25	0.23	0.21	0.23	0.20
ERP(dBm)	24.32	24.28	23.92	23.58	23.99	23.33
ERP(Watts)	0.27	0.27	0.25	0.23	0.25	0.22



Cellular Band ($G_T - L_C = 2.53$ dB)						
Modes	LTE Band 5 (QPSK,BW=5M)			LTE Band 5 (16QAM,BW=5M)		
Channel	20425 (Low)	20525 (Mid)	20625 (High)	20425 (Low)	20525 (Mid)	20625 (High)
Frequency (MHz)	826.5	836.5	846.5	826.5	836.5	846.5
Conducted Power P_T (dBm)	23.94	23.89	23.56	23.26	23.58	22.98
Conducted Power P_T (Watts)	0.25	0.24	0.23	0.21	0.23	0.20
ERP(dBm)	24.32	24.27	23.94	23.64	23.96	23.36
ERP(Watts)	0.27	0.27	0.25	0.23	0.25	0.22

Cellular Band ($G_T - L_C = 2.53$ dB)						
Modes	LTE Band 5 (QPSK,BW=10M)			LTE Band 5 (16QAM,BW=10M)		
Channel	20450 (Low)	20525 (Mid)	20600 (High)	20450 (Low)	20525 (Mid)	20600 (High)
Frequency (MHz)	829	836.5	844	829	836.5	844
Conducted Power P_T (dBm)	23.63	23.93	23.67	23.31	23.76	23.25
Conducted Power P_T (Watts)	0.23	0.25	0.23	0.21	0.24	0.21
ERP(dBm)	24.01	24.31	24.05	23.69	24.14	23.63
ERP(Watts)	0.25	0.27	0.25	0.23	0.26	0.23



PCS Band ($G_T - L_C = 3.44$ dB)						
Modes	LTE Band 4 (QPSK, BW=1.4M)			LTE Band 4 (16QAM, BW=1.4M)		
Channel	19957 (Low)	20175 (Mid)	20393 (High)	19957 (Low)	20175 (Mid)	20393 (High)
Frequency (MHz)	1710.7	1732.5	1754.3	1710.7	1732.5	1754.3
Conducted Power P_T (dBm)	22.45	23.11	22.84	22.25	22.48	22.60
Conducted Power P_T (Watts)	0.18	0.20	0.19	0.17	0.18	0.18
EIRP(dBm)	25.89	26.55	26.28	25.69	25.92	26.04
EIRP(Watts)	0.39	0.45	0.42	0.37	0.39	0.40

PCS Band ($G_T - L_C = 3.44$ dB)						
Modes	LTE Band 4 (QPSK, BW=3M)			LTE Band 4 (16QAM, BW=3M)		
Channel	19965(Low)	20175 (Mid)	20385 (High)	19965(Low)	20175 (Mid)	20385 (High)
Frequency (MHz)	1711.5	1732.5	1753.5	1711.5	1732.5	1753.5
Conducted Power P_T (dBm)	22.39	22.80	22.76	22.19	22.40	22.63
Conducted Power P_T (Watts)	0.17	0.19	0.19	0.17	0.17	0.18
EIRP(dBm)	25.83	26.24	26.20	25.63	25.84	26.07
EIRP(Watts)	0.38	0.42	0.42	0.37	0.38	0.40



PCS Band ($G_T - L_C = 3.44$ dB)						
Modes	LTE Band 4 (QPSK, BW=5M)			LTE Band 4 (16QAM, BW=5M)		
Channel	19975(Low)	20175 (Mid)	20375 (High)	19975(Low)	20175 (Mid)	20375 (High)
Frequency (MHz)	1712.5	1732.5	1752.5	1712.5	1732.5	1752.5
Conducted Power P_T (dBm)	22.40	22.72	22.82	22.12	22.25	22.57
Conducted Power P_T (Watts)	0.17	0.19	0.19	0.16	0.17	0.18
EIRP(dBm)	25.84	26.16	26.26	25.56	25.69	26.01
EIRP(Watts)	0.38	0.41	0.42	0.36	0.37	0.40

PCS Band ($G_T - L_C = 3.44$ dB)						
Modes	LTE Band 4 (QPSK, BW=10M)			LTE Band 4 (16QAM, BW=10M)		
Channel	20000 (Low)	20175 (Mid)	20350 (High)	20000 (Low)	20175 (Mid)	20350 (High)
Frequency (MHz)	1715	1732.5	1750	1715	1732.5	1750
Conducted Power P_T (dBm)	22.28	22.86	22.81	22.10	22.25	22.56
Conducted Power P_T (Watts)	0.17	0.19	0.19	0.16	0.17	0.18
EIRP(dBm)	25.72	26.30	26.25	25.54	25.69	26.00
EIRP(Watts)	0.37	0.43	0.42	0.36	0.37	0.40



PCS Band ($G_T - L_C = 3.44$ dB)						
Modes	LTE Band 4 (QPSK, BW=15M)			LTE Band 4 (16QAM, BW=15M)		
Channel	20025 (Low)	20175 (Mid)	20325 (High)	20025 (Low)	20175 (Mid)	20325 (High)
Frequency (MHz)	1717.5	1732.5	1747.5	1717.5	1732.5	1747.5
Conducted Power P_T (dBm)	22.30	22.69	22.98	22.10	22.48	22.70
Conducted Power P_T (Watts)	0.17	0.19	0.20	0.16	0.18	0.19
EIRP(dBm)	25.74	26.13	26.42	25.54	25.92	26.14
EIRP(Watts)	0.37	0.41	0.44	0.36	0.39	0.41

PCS Band ($G_T - L_C = 3.44$ dB)						
Modes	LTE Band 4 (QPSK, BW=20M)			LTE Band 4 (16QAM, BW=20M)		
Channel	20050 (Low)	20175 (Mid)	20300 (High)	20050 (Low)	20175 (Mid)	20300 (High)
Frequency (MHz)	1720	1732.5	1745	1720	1732.5	1745
Conducted Power P_T (dBm)	22.59	22.90	23.04	22.45	22.58	22.75
Conducted Power P_T (Watts)	0.18	0.19	0.20	0.18	0.18	0.19
EIRP(dBm)	26.03	26.34	26.48	25.89	26.02	26.19
EIRP(Watts)	0.40	0.43	0.44	0.39	0.40	0.42



Cellular Band (GT - LC = 2.86 dB)						
Modes	LTE Band 12 (QPSK,BW=1.4M)			LTE Band 12 (16QAM,BW=1.4M)		
Channel	23017 (Low)	23095 (Mid)	23173 (High)	23017 (Low)	23095 (Mid)	23173 (High)
Frequency (MHz)	699.7	707.5	715.3	699.7	707.5	715.3
Conducted Power P _T (dBm)	22.31	22.18	21.7	22.20	21.94	21.56
Conducted Power P _T (Watts)	0.17	0.17	0.15	0.17	0.16	0.14
ERP(dBm)	23.02	22.89	22.41	22.91	22.65	22.27
ERP(Watts)	0.20	0.19	0.17	0.20	0.18	0.17

Cellular Band (GT - LC = 2.86 dB)						
Modes	LTE Band 12 (QPSK,BW=3M)			LTE Band 12 (16QAM,BW=3M)		
Channel	23025 (Low)	23095 (Mid)	23165 (High)	23025 (Low)	23095 (Mid)	23165 (High)
Frequency (MHz)	700.5	707.5	714.5	700.5	707.5	714.5
Conducted Power P _T (dBm)	22.45	22.26	21.83	22.23	22.11	21.69
Conducted Power P _T (Watts)	0.18	0.17	0.15	0.17	0.16	0.15
ERP(dBm)	23.16	22.97	22.54	22.94	22.82	22.40
ERP(Watts)	0.21	0.20	0.18	0.20	0.19	0.17



Cellular Band ($G_T - L_C = 2.86$ dB)						
Modes	LTE Band 12 (QPSK, BW=5M)			LTE Band 12 (16QAM, BW=5M)		
Channel	23035(Low)	23095 (Mid)	23155 (High)	23035(Low)	23095 (Mid)	23155 (High)
Frequency (MHz)	701.5	707.5	713.5	701.5	707.5	713.5
Conducted Power P_T (dBm)	22.39	22.10	21.81	22.22	21.96	21.68
Conducted Power P_T (Watts)	0.17	0.16	0.15	0.17	0.16	0.15
ERP(dBm)	23.10	22.81	22.52	22.93	22.67	22.39
ERP(Watts)	0.20	0.19	0.18	0.20	0.18	0.17

Cellular Band ($G_T - L_C = 2.86$ dB)						
Modes	LTE Band 12 (QPSK, BW=10M)			LTE Band 12 (16QAM, BW=10M)		
Channel	23060(Low)	23095 (Mid)	23130 (High)	23060(Low)	23095 (Mid)	23130 (High)
Frequency (MHz)	704	707.5	711	704	707.5	711
Conducted Power P_T (dBm)	22.32	22.47	22.21	22.22	22.30	21.90
Conducted Power P_T (Watts)	0.17	0.18	0.17	0.17	0.17	0.15
ERP(dBm)	23.03	23.18	22.92	22.93	23.01	22.61
ERP(Watts)	0.20	0.21	0.20	0.20	0.20	0.18

3.2 Peak-to-Average Ratio

3.2.1 Description of the PAR Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

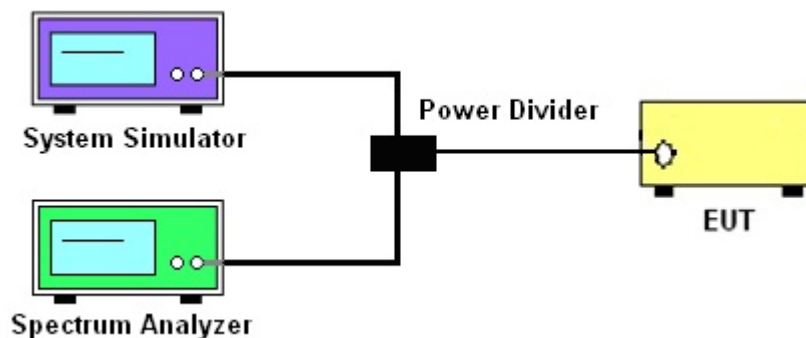
3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. For LTE operating modes:
 - a. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
 - b. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
3. Record the deviation as Peak to Average Ratio.

3.2.4 Test Setup



3.2.5 Test Result of Peak-to-Average Ratio

LTE Band 5						
BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				20450	20525	20600
Frequency (MHz)				829	836.5	844
10	16QAM	1	0	4.97	4.90	5.48
10	16QAM	50	0	6.03	6.03	5.96

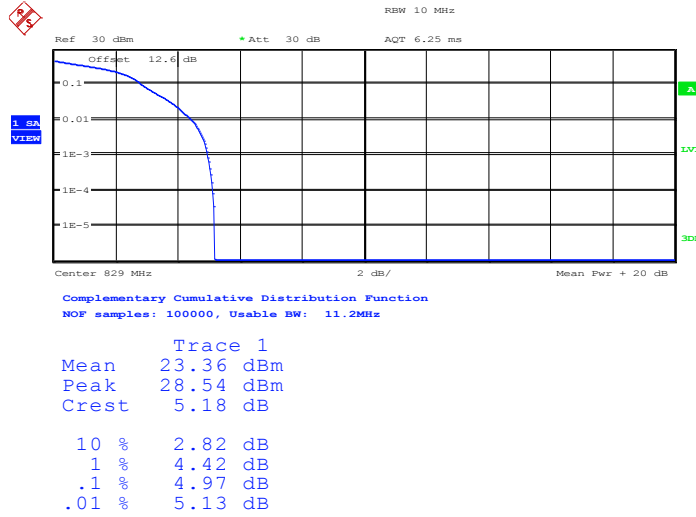
LTE Band 4						
BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				20050	20175	20300
Frequency (MHz)				1720	1732.5	1745
20	16QAM	1	0	6.35	5.71	5.77
20	16QAM	100	0	6.19	6.19	6.15

LTE Band 12						
BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				23060	23095	23130
Frequency (MHz)				704	707.5	711
10	16QAM	1	0	5.71	5.90	5.83
10	16QAM	50	0	6.44	6.60	6.67

3.2.6 Peak to Average Power Ratio

Peak-to-Average Ratio on LTE Band 5

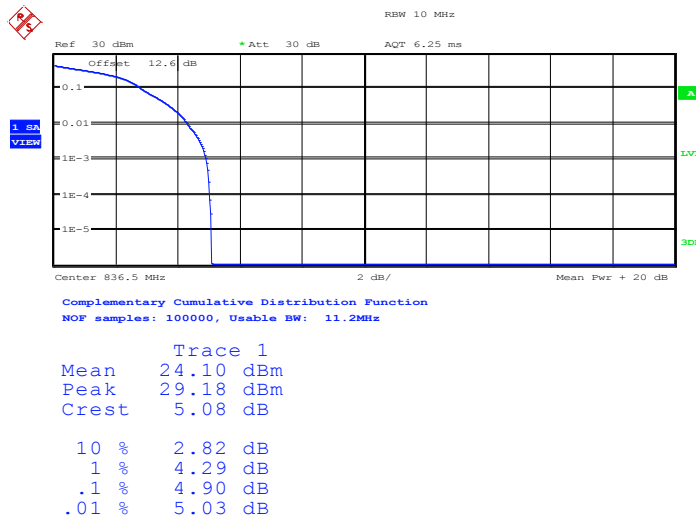
10MHz / 16QAM in Ch. 20450 (1RB Size)



Date: 16.DEC.2013 09:53:25

Peak-to-Average Ratio on LTE Band 5

10MHz / 16QAM in Ch. 20525 (1RB Size)

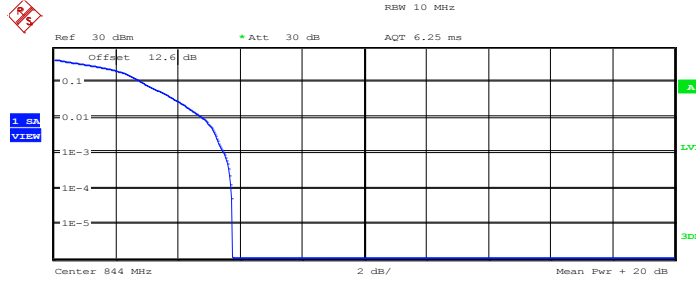


Date: 16.DEC.2013 09:51:41



Peak-to-Average Ratio on LTE Band 5

10MHz / 16QAM in Ch. 20600 (1RB Size)



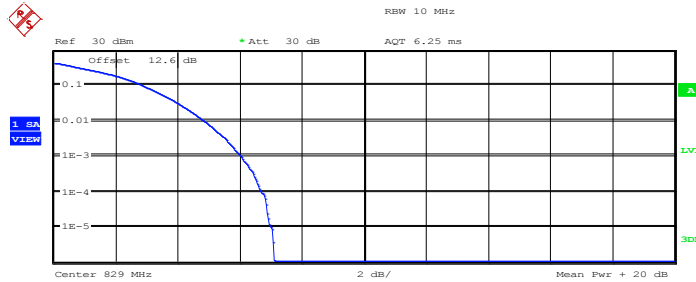
Complementary Cumulative Distribution Function
 NOF samples: 100000, Usable BW: 11.2MHz

Trace 1	
Mean	23.72 dBm
Peak	29.47 dBm
Crest	5.75 dB
10 %	2.82 dB
1 %	4.78 dB
.1 %	5.48 dB
.01 %	5.71 dB

Date: 16.DEC.2013 09:49:02

Peak-to-Average Ratio on LTE Band 5

10MHz / 16QAM in Ch. 20450 (50RB Size)



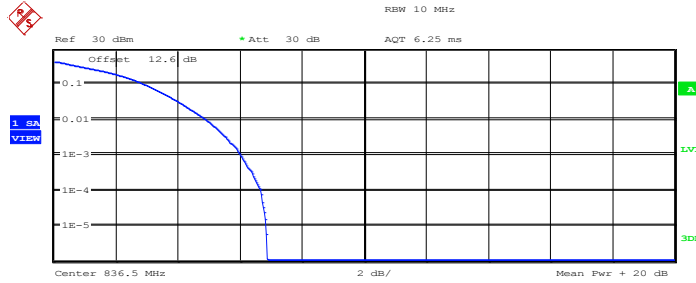
Complementary Cumulative Distribution Function
 NOF samples: 100000, Usable BW: 11.2MHz

Trace 1	
Mean	22.36 dBm
Peak	29.46 dBm
Crest	7.10 dB
10 %	2.88 dB
1 %	4.84 dB
.1 %	6.03 dB
.01 %	6.67 dB

Date: 16.DEC.2013 09:54:24



Peak-to-Average Ratio on LTE Band 5
10MHz / 16QAM in Ch. 20525 (50RB Size)

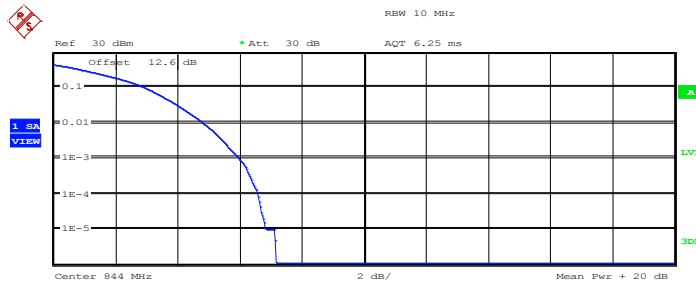


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 11.2MHz

Trace 1	
Mean	22.94 dBm
Peak	29.81 dBm
Crest	6.87 dB
10 %	2.92 dB
1 %	4.90 dB
.1 %	6.03 dB
.01 %	6.67 dB

Date: 16.DEC.2013 09:51:08

Peak-to-Average Ratio on LTE Band 5
10MHz / 16QAM in Ch. 20600 (50RB Size)



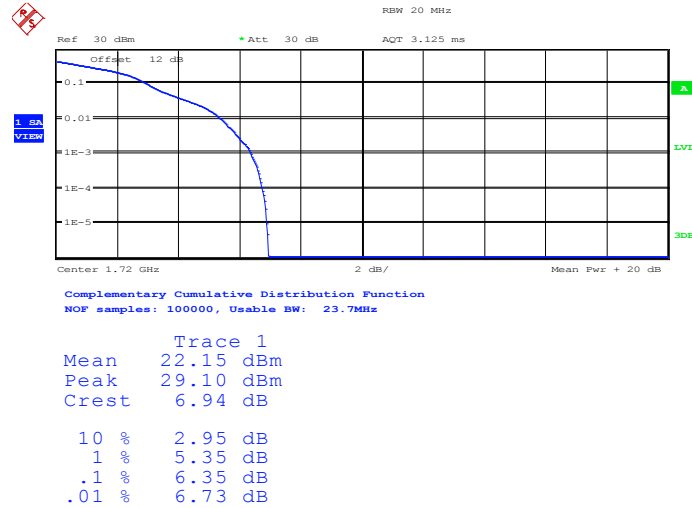
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 11.2MHz

Trace 1	
Mean	22.30 dBm
Peak	29.47 dBm
Crest	7.17 dB
10 %	2.95 dB
1 %	4.81 dB
.1 %	5.96 dB
.01 %	6.57 dB

Date: 16.DEC.2013 09:50:07

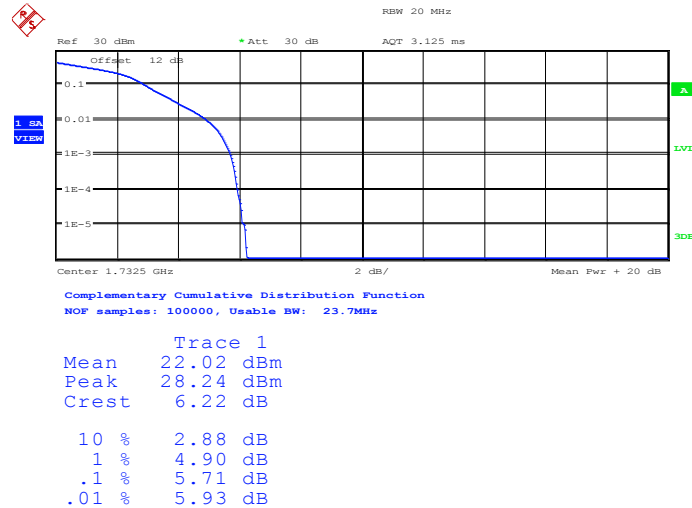


Peak-to-Average Ratio on LTE Band 4
20MHz / 16QAM in Ch. 20050 (1RB Size)



Date: 17.DEC.2013 08:17:23

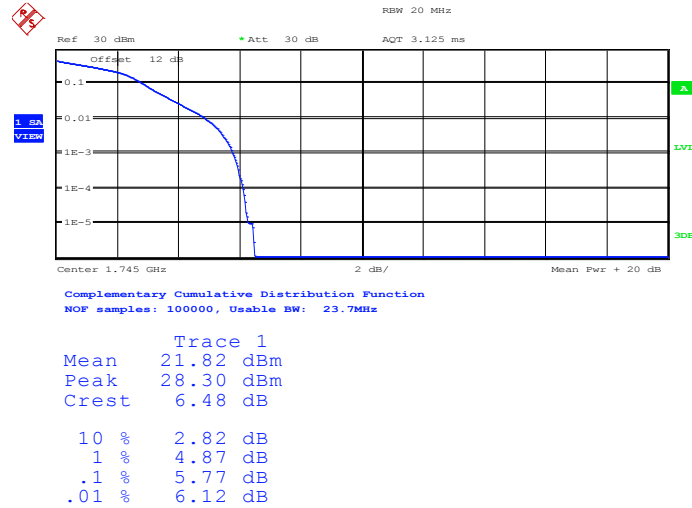
Peak-to-Average Ratio on LTE Band 4
20MHz / 16QAM in Ch. 20175 (1RB Size)



Date: 17.DEC.2013 08:16:30

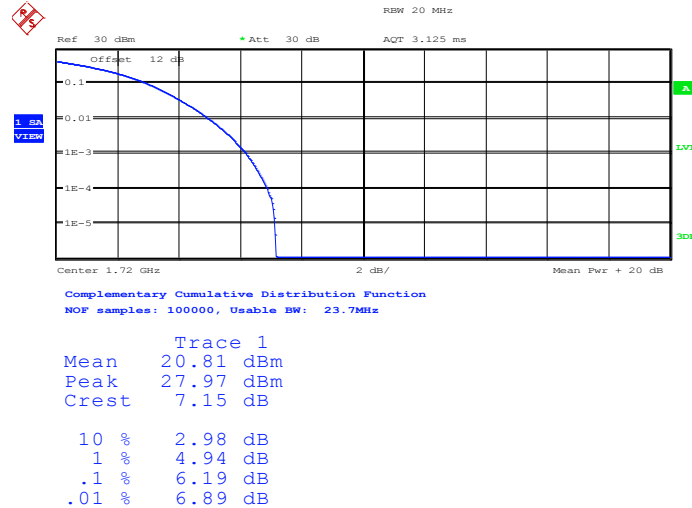


Peak-to-Average Ratio on LTE Band 4
20MHz / 16QAM in Ch. 20300 (1RB Size)



Date: 17.DEC.2013 08:21:30

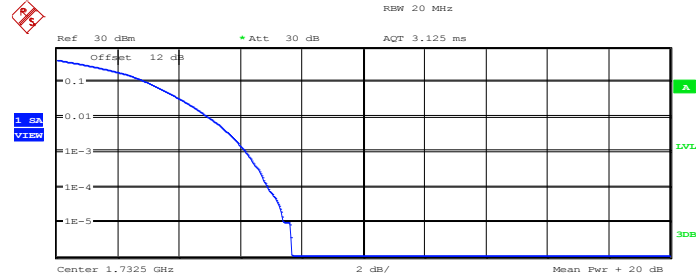
Peak-to-Average Ratio on LTE Band 4
20MHz / 16QAM in Ch. 20050 (100RB Size)



Date: 17.DEC.2013 08:17:51



Peak-to-Average Ratio on LTE Band 4
20MHz / 16QAM in Ch. 20175 (100RB Size)

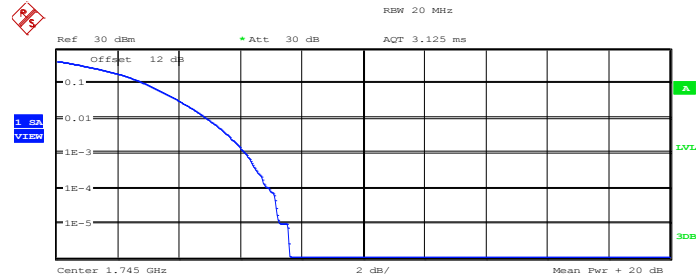


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

Trace 1	
Mean	21.20 dBm
Peak	28.88 dBm
Crest	7.67 dB
10 %	2.95 dB
1 %	4.94 dB
.1 %	6.19 dB
.01 %	6.89 dB

Date: 17.DEC.2013 08:15:55

Peak-to-Average Ratio on LTE Band 4
20MHz / 16QAM in Ch. 20300 (100RB Size)



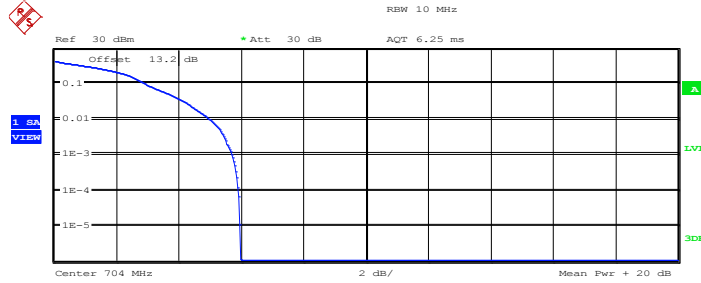
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

Trace 1	
Mean	21.12 dBm
Peak	28.73 dBm
Crest	7.60 dB
10 %	2.88 dB
1 %	4.90 dB
.1 %	6.15 dB
.01 %	6.92 dB

Date: 17.DEC.2013 08:20:59



Peak-to-Average Ratio on LTE Band 12
10MHz / 16QAM in Ch. 23060 (1RB Size)

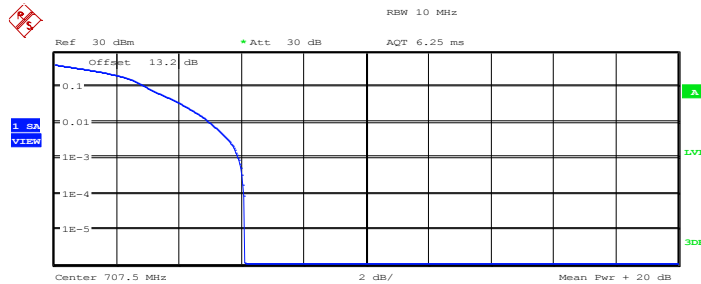


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 11.2MHz

Trace 1	
Mean	23.33 dBm
Peak	29.29 dBm
Crest	5.96 dB
10 %	2.92 dB
1 %	4.97 dB
.1 %	5.71 dB
.01 %	5.90 dB

Date: 16.DEC.2013 13:17:41

Peak-to-Average Ratio on LTE Band 12
10MHz / 16QAM in Ch. 23095 (1RB Size)



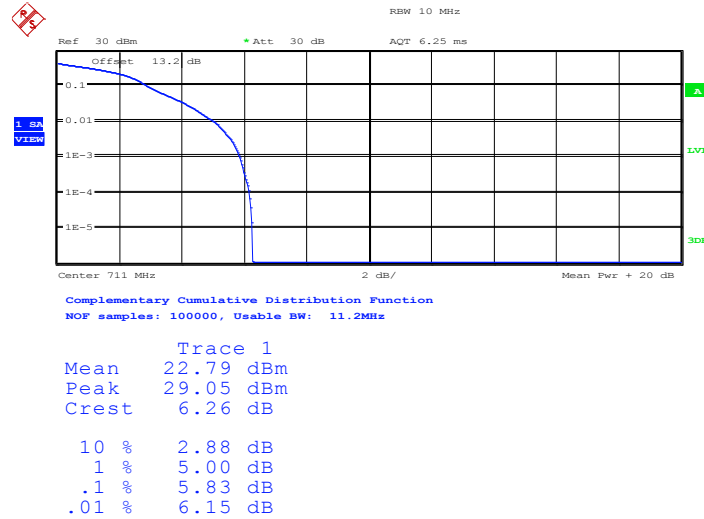
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 11.2MHz

Trace 1	
Mean	23.41 dBm
Peak	29.52 dBm
Crest	6.11 dB
10 %	2.95 dB
1 %	4.97 dB
.1 %	5.90 dB
.01 %	6.09 dB

Date: 16.DEC.2013 13:27:08

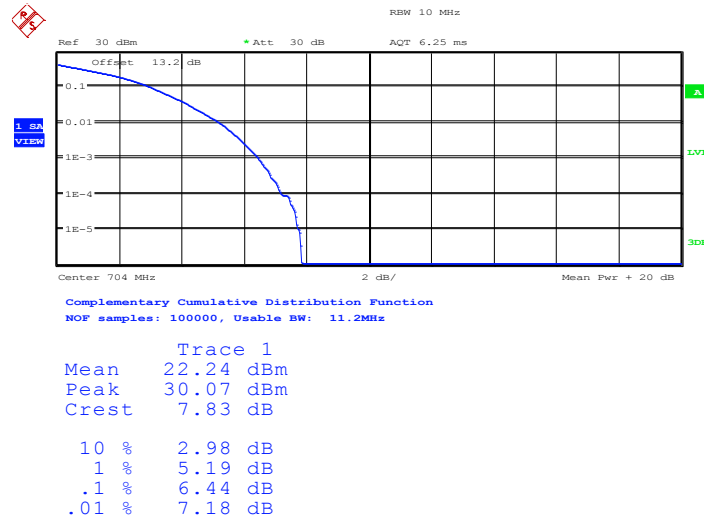


Peak-to-Average Ratio on LTE Band 12
10MHz / 16QAM in Ch. 23130 (1RB Size)



Date: 16.DEC.2013 13:27:57

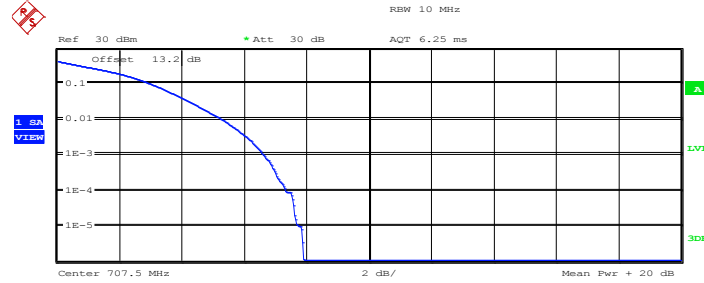
Peak-to-Average Ratio on LTE Band 12
10MHz / 16QAM in Ch. 23060 (50RB Size)



Date: 16.DEC.2013 13:20:46



Peak-to-Average Ratio on LTE Band 12
10MHz / 16QAM in Ch. 23095 (50RB Size)

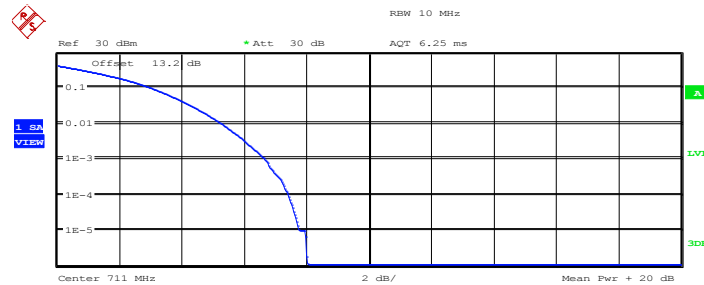


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 11.2MHz

Trace 1	
Mean	22.05 dBm
Peak	29.95 dBm
Crest	7.90 dB
10 %	3.01 dB
1 %	5.29 dB
.1 %	6.60 dB
.01 %	7.34 dB

Date: 16.DEC.2013 13:21:54

Peak-to-Average Ratio on LTE Band 12
10MHz / 16QAM in Ch. 23130 (50RB Size)



Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 11.2MHz

Trace 1	
Mean	21.88 dBm
Peak	29.90 dBm
Crest	8.01 dB
10 %	3.01 dB
1 %	5.26 dB
.1 %	6.67 dB
.01 %	7.40 dB

Date: 16.DEC.2013 13:33:19

3.3 Occupied Bandwidth

3.3.1 Description of Occupied Bandwidth Measurement

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The 26dB occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal 26 dB.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

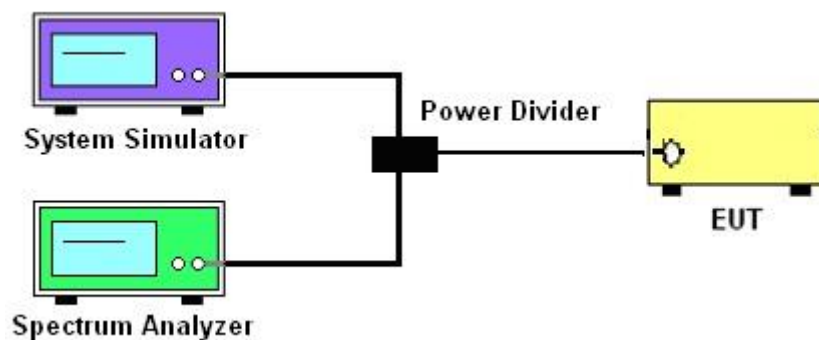
3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

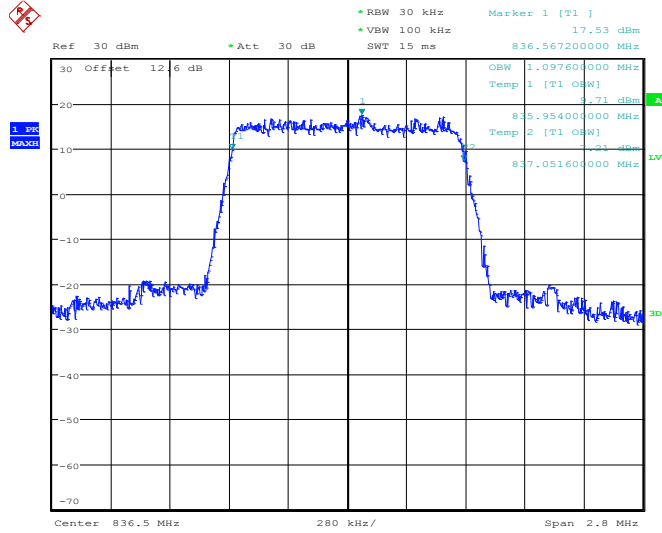
1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The 26dB and 99% occupied bandwidth (BW) of the middle channel for the highest RF powers with full RB sizes were measured.

3.3.4 Test Setup



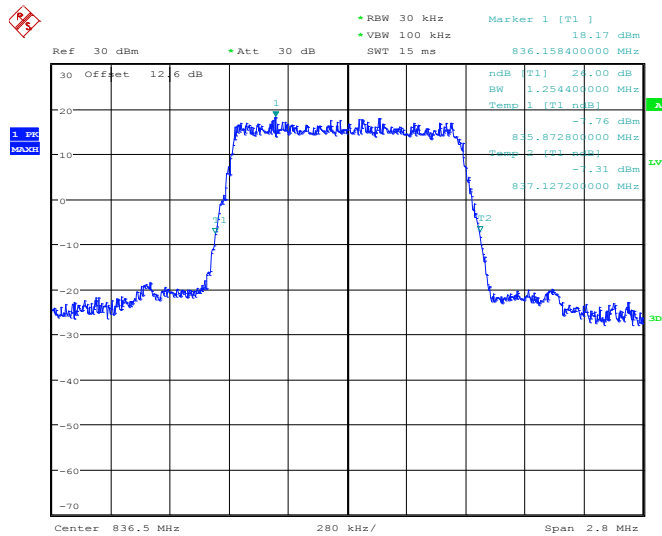


99% Occupied Bandwidth Plot on Channel 20525



Date: 13.DEC.2013 10:41:52

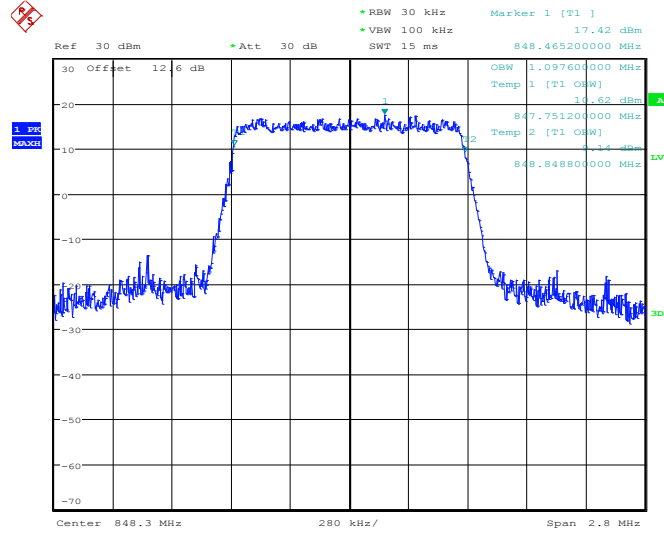
26dB Bandwidth Plot on Channel 20525



Date: 13.DEC.2013 10:42:28

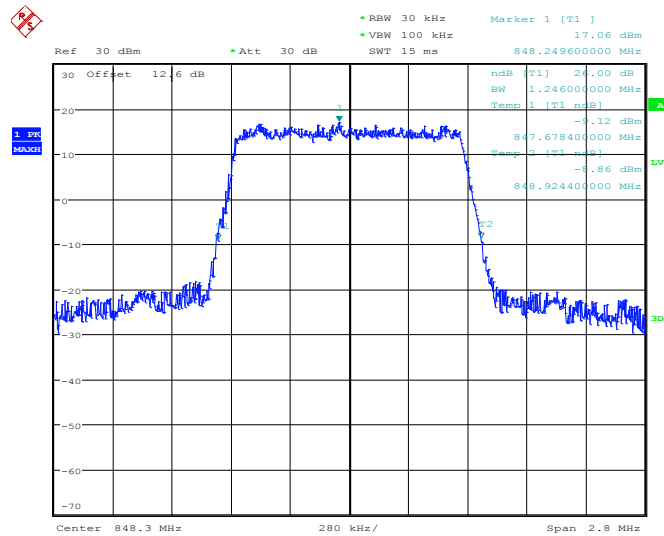


99% Occupied Bandwidth Plot on Channel 20643



Date: 13.DEC.2013 10:45:28

26dB Bandwidth Plot on Channel 20643

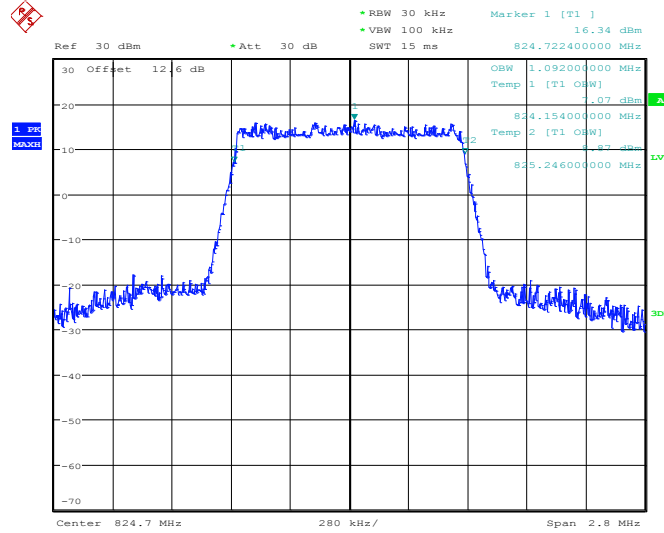


Date: 13.DEC.2013 10:45:47



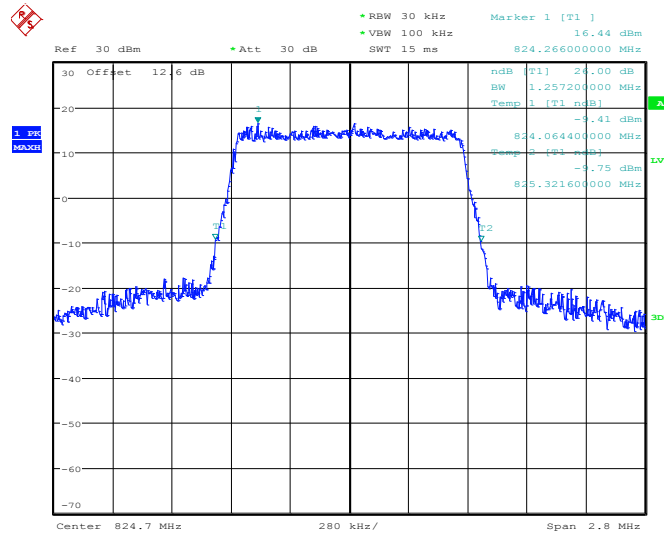
Band :	LTE Band 5	BW / Mod. :	1.4MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20407



Date: 13.DEC.2013 10:36:11

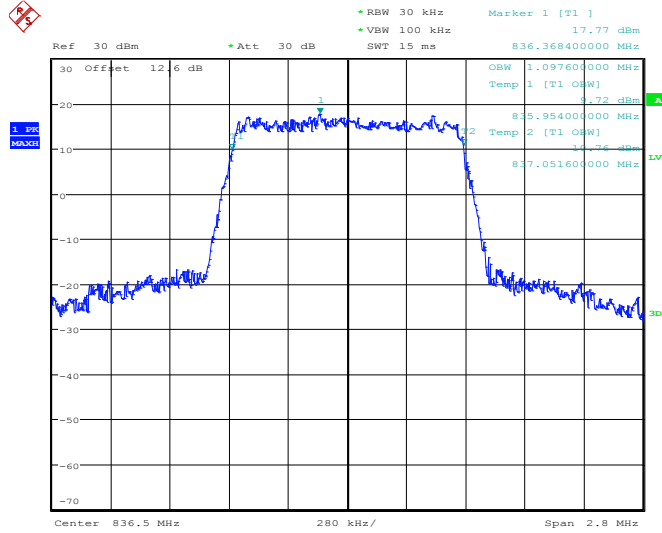
26dB Bandwidth Plot on Channel 20407



Date: 13.DEC.2013 10:36:22

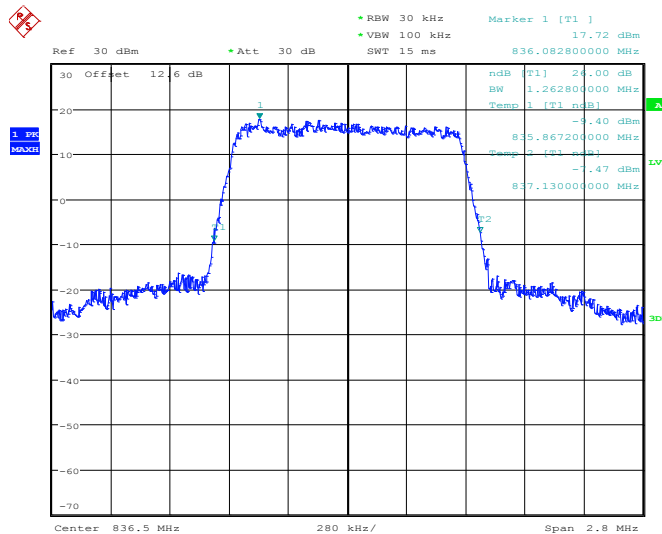


99% Occupied Bandwidth Plot on Channel 20525



Date: 13.DEC.2013 10:42:13

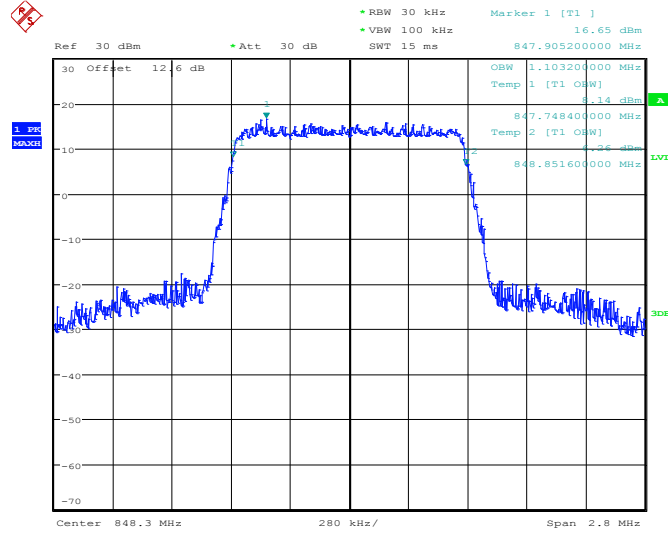
26dB Bandwidth Plot on Channel 20525



Date: 13.DEC.2013 10:42:49

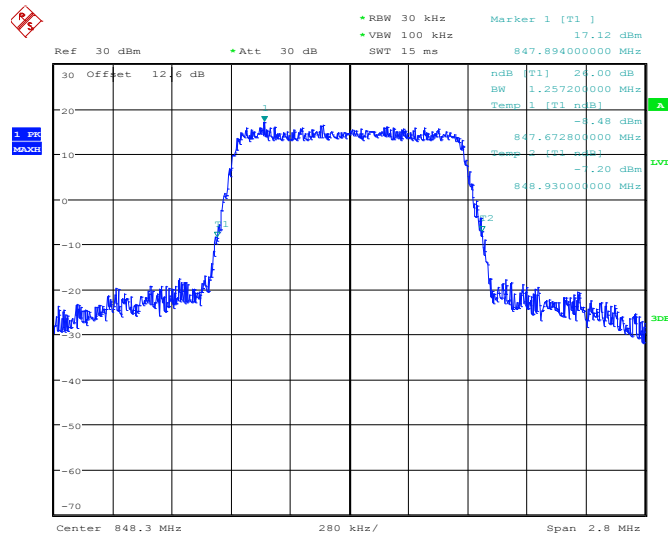


99% Occupied Bandwidth Plot on Channel 20643



Date: 13.DEC.2013 10:45:38

26dB Bandwidth Plot on Channel 20643

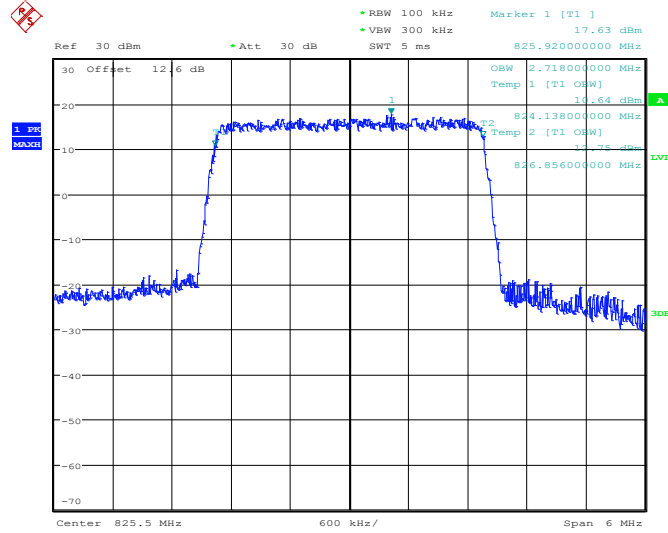


Date: 13.DEC.2013 10:45:55



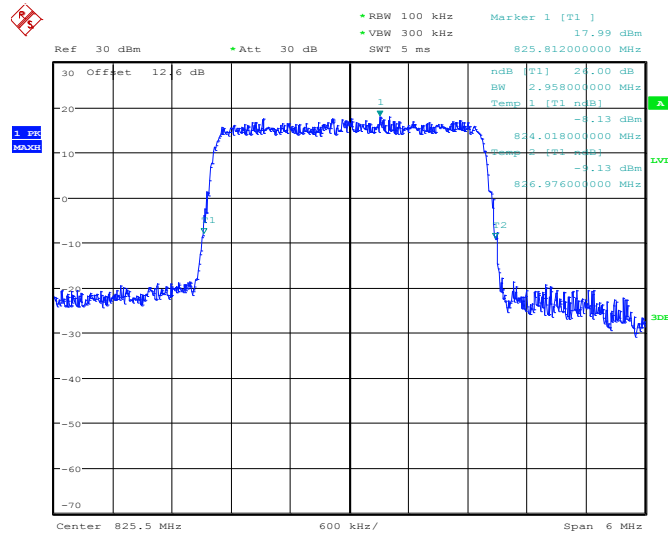
Band :	LTE Band 5	BW / Mod. :	3MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 20415



Date: 13.DEC.2013 12:48:30

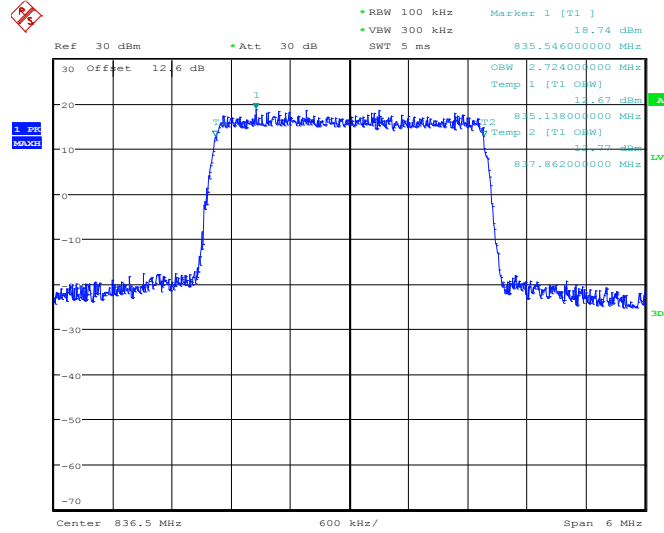
26dB Bandwidth Plot on Channel 20415



Date: 13.DEC.2013 12:48:54

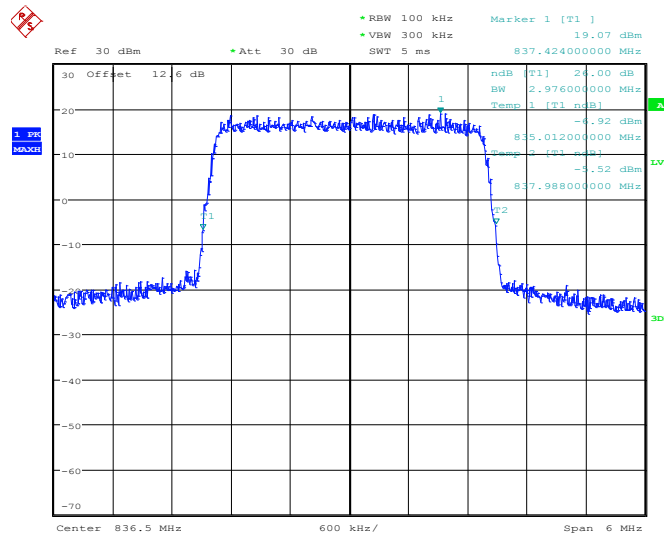


99% Occupied Bandwidth Plot on Channel 20525



Date: 13.DEC.2013 12:54:46

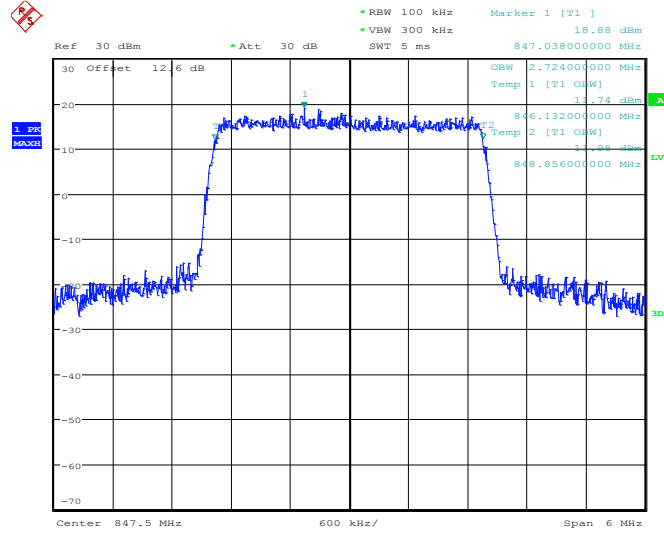
26dB Bandwidth Plot on Channel 20525



Date: 13.DEC.2013 12:55:22

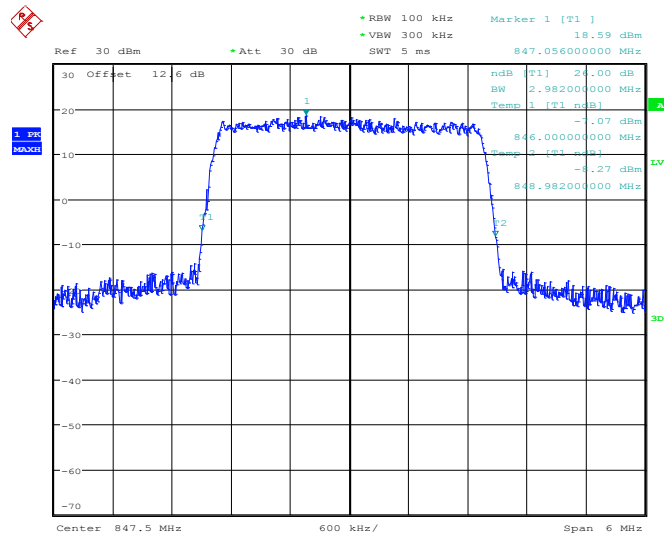


99% Occupied Bandwidth Plot on Channel 20635



Date: 13.DEC.2013 12:57:42

26dB Bandwidth Plot on Channel 20635

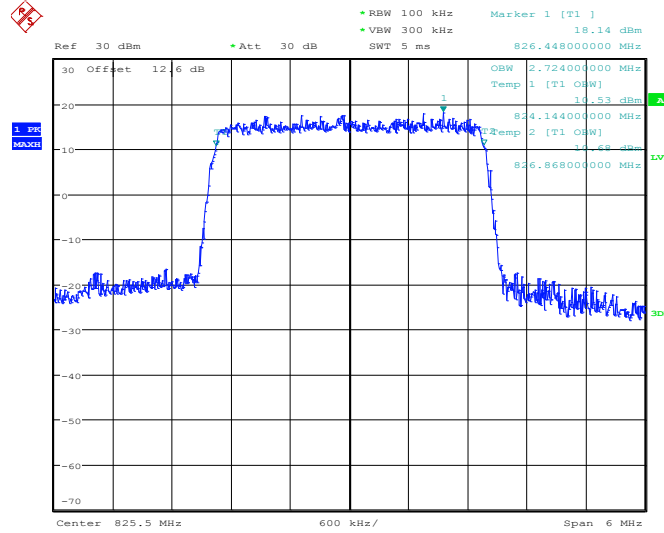


Date: 13.DEC.2013 12:58:04



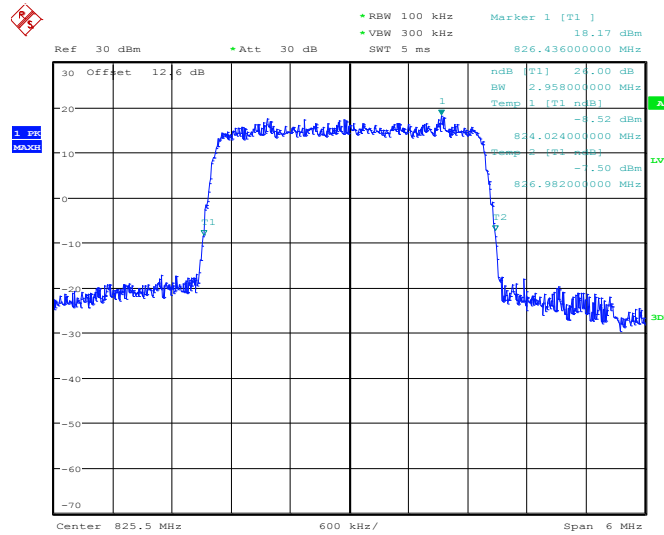
Band :	LTE Band 5	BW / Mod. :	3MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20415



Date: 13.DEC.2013 12:48:45

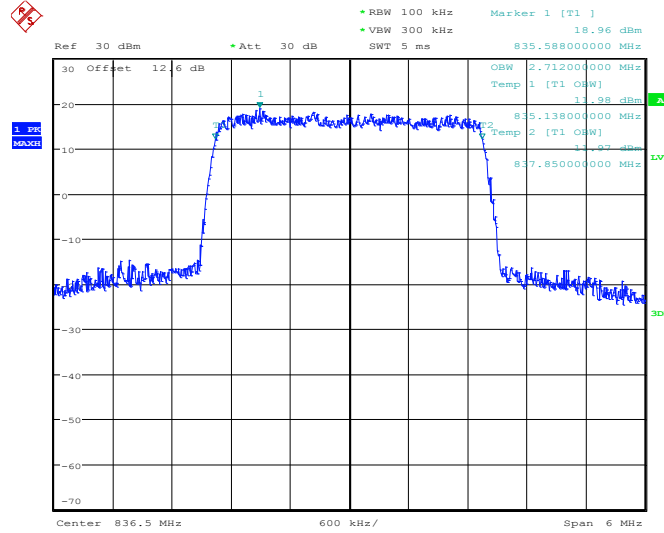
26dB Bandwidth Plot on Channel 20415



Date: 13.DEC.2013 12:49:05

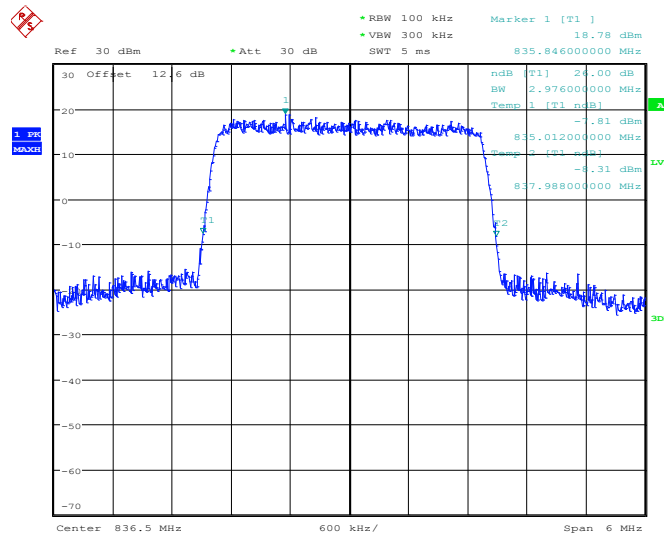


99% Occupied Bandwidth Plot on Channel 20525



Date: 13.DEC.2013 12:55:08

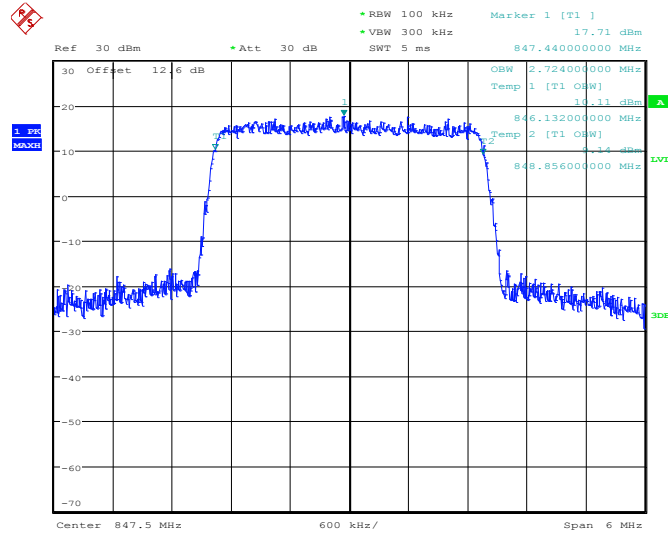
26dB Bandwidth Plot on Channel 20525



Date: 13.DEC.2013 12:55:37

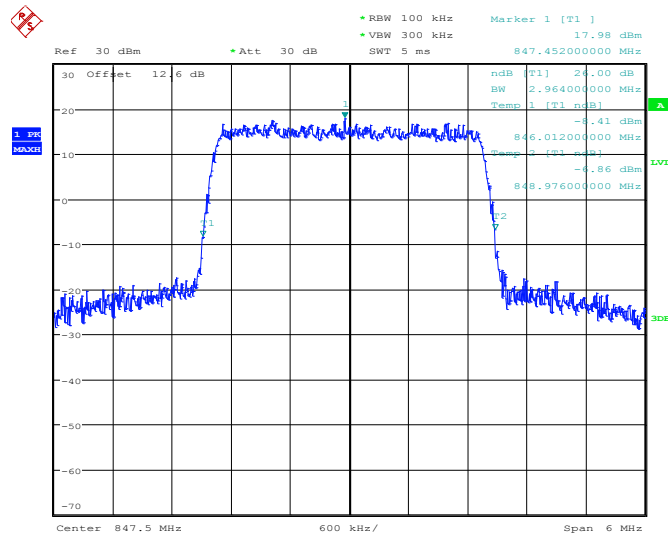


99% Occupied Bandwidth Plot on Channel 20635



Date: 13.DEC.2013 12:57:52

26dB Bandwidth Plot on Channel 20635

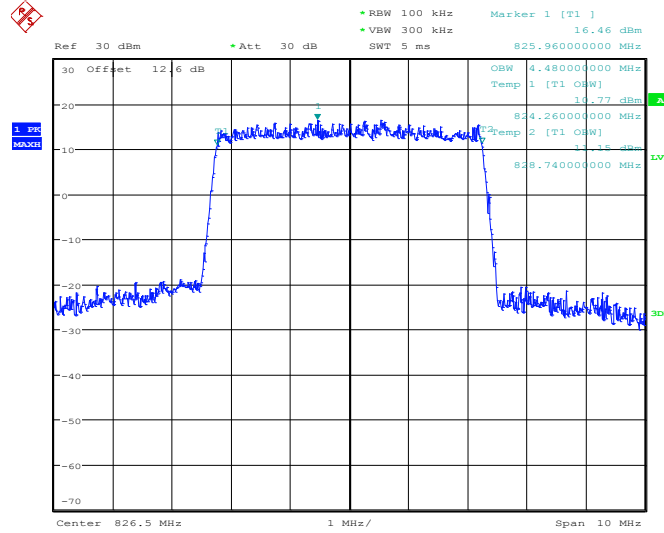


Date: 13.DEC.2013 12:58:14



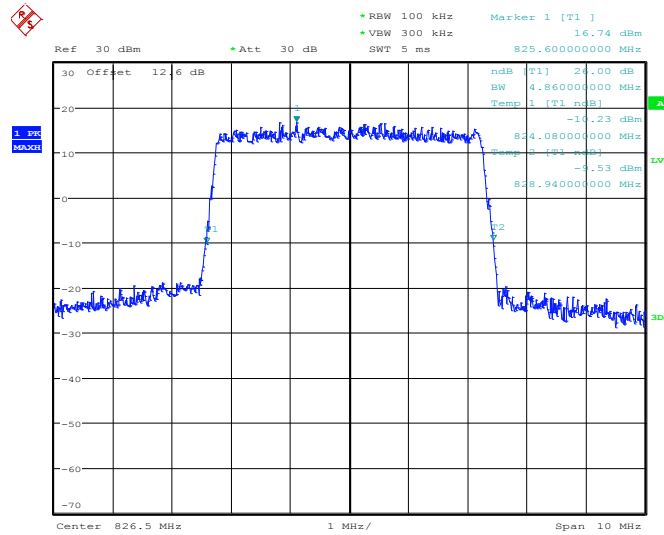
Band :	LTE Band 5	BW / Mod. :	5MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 20425



Date: 13.DEC.2013 13:12:52

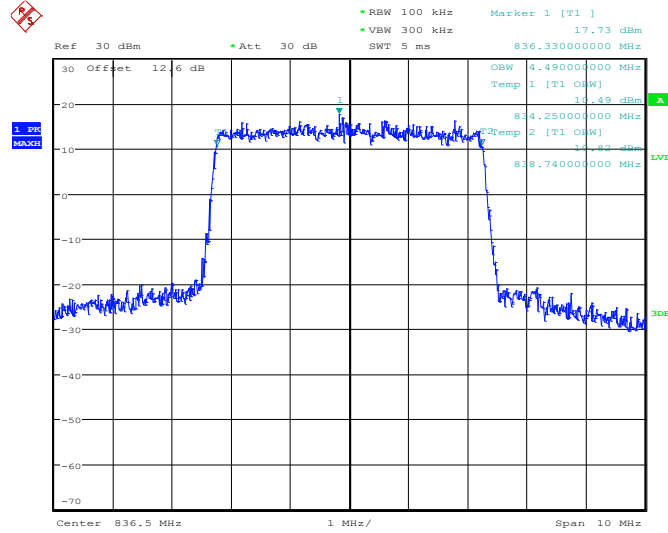
26dB Bandwidth Plot on Channel 20425



Date: 13.DEC.2013 13:13:15

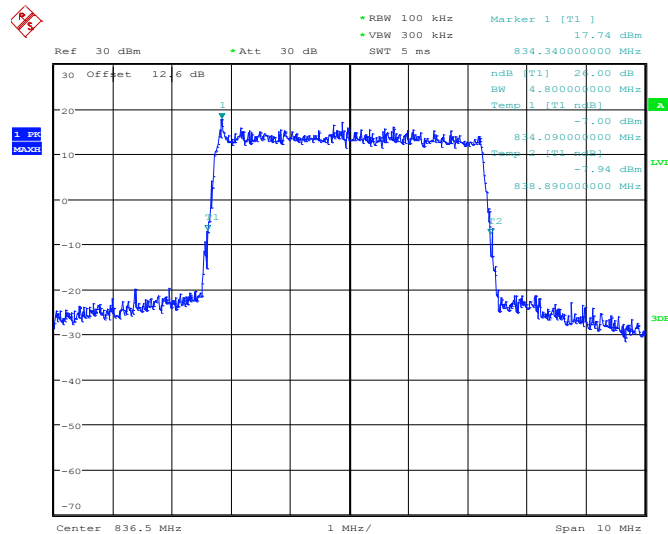


99% Occupied Bandwidth Plot on Channel 20525



Date: 13.DEC.2013 13:22:16

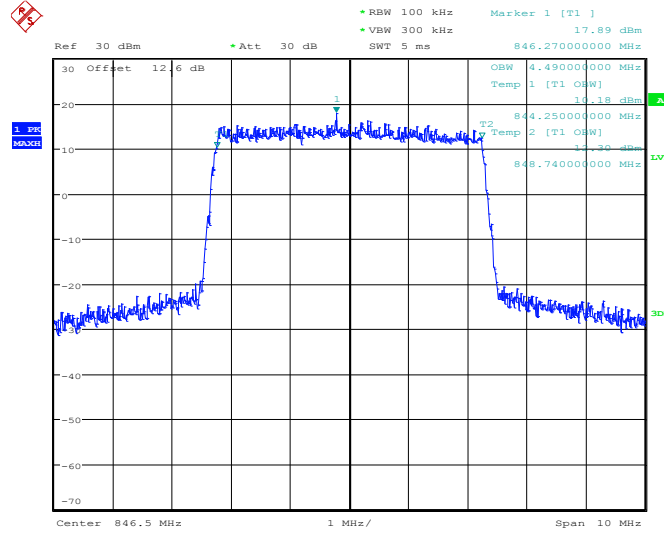
26dB Bandwidth Plot on Channel 20525



Date: 13.DEC.2013 13:22:45

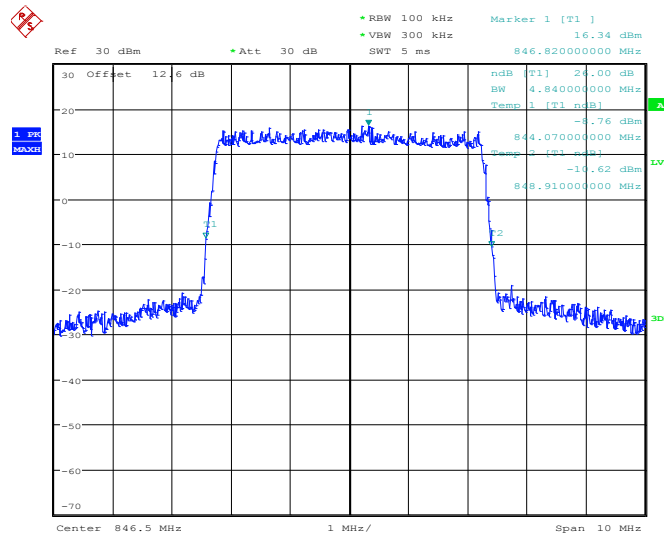


99% Occupied Bandwidth Plot on Channel 20625



Date: 13.DEC.2013 13:25:05

26dB Bandwidth Plot on Channel 20625

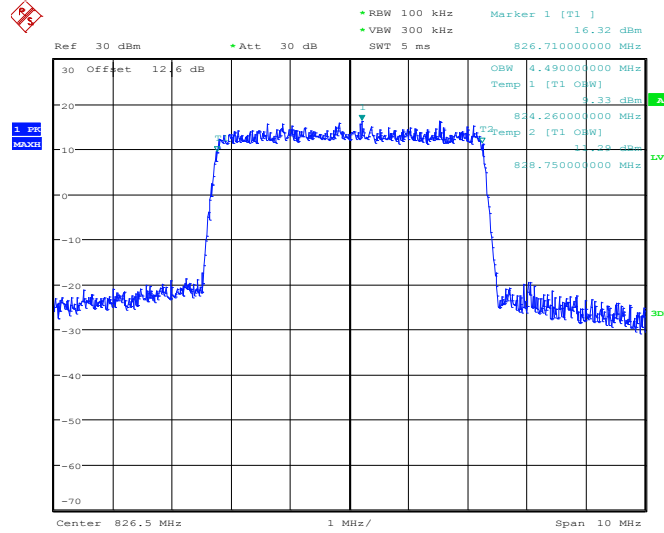


Date: 13.DEC.2013 13:25:20



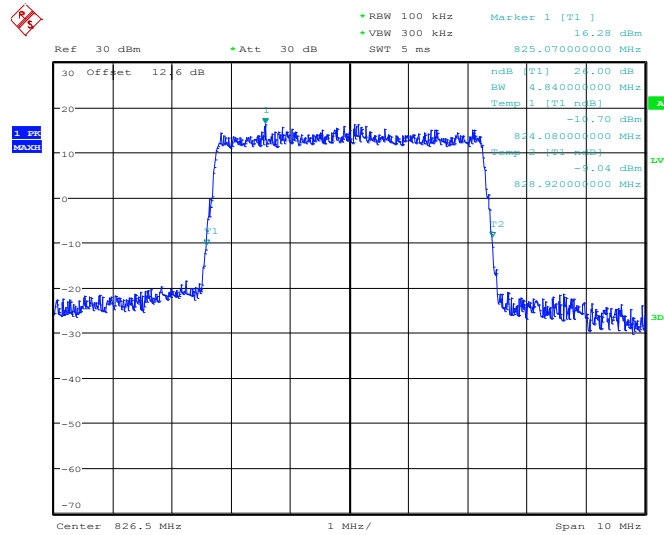
Band :	LTE Band 5	BW / Mod. :	5MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20425



Date: 13.DEC.2013 13:13:03

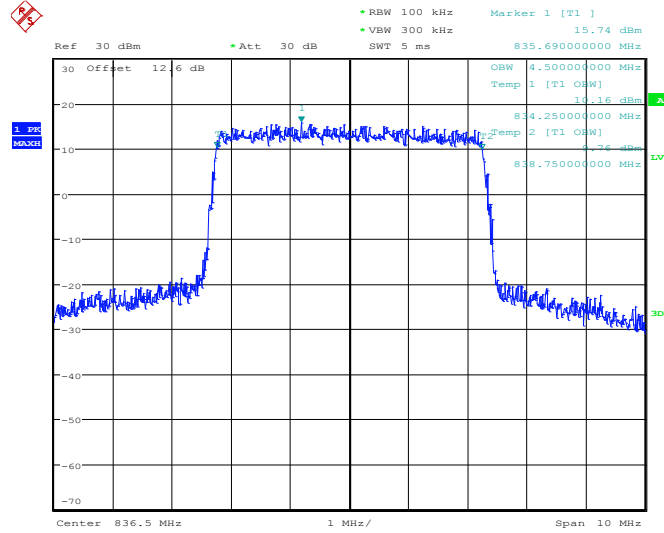
26dB Bandwidth Plot on Channel 20425



Date: 13.DEC.2013 13:13:23

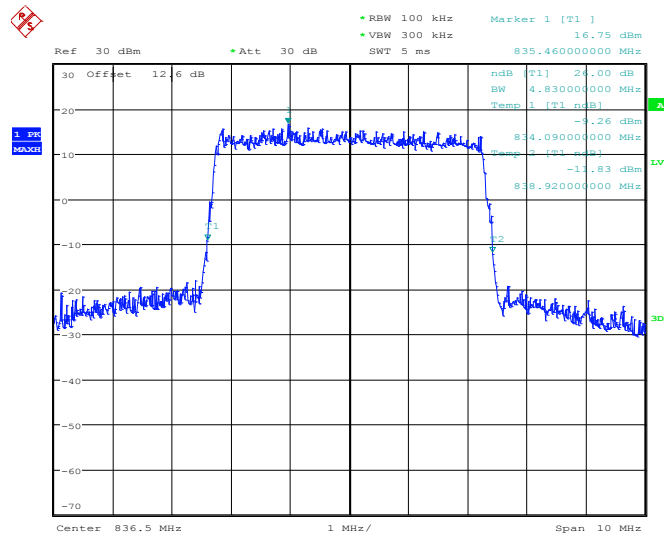


99% Occupied Bandwidth Plot on Channel 20525



Date: 13.DEC.2013 13:22:30

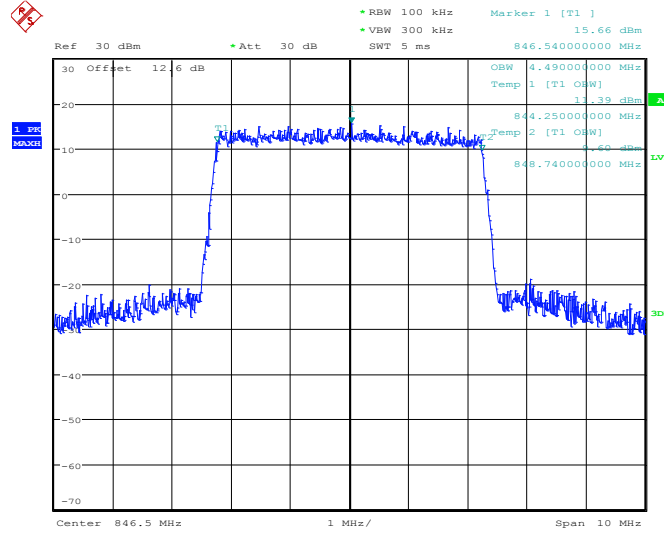
26dB Bandwidth Plot on Channel 20525



Date: 13.DEC.2013 13:22:56

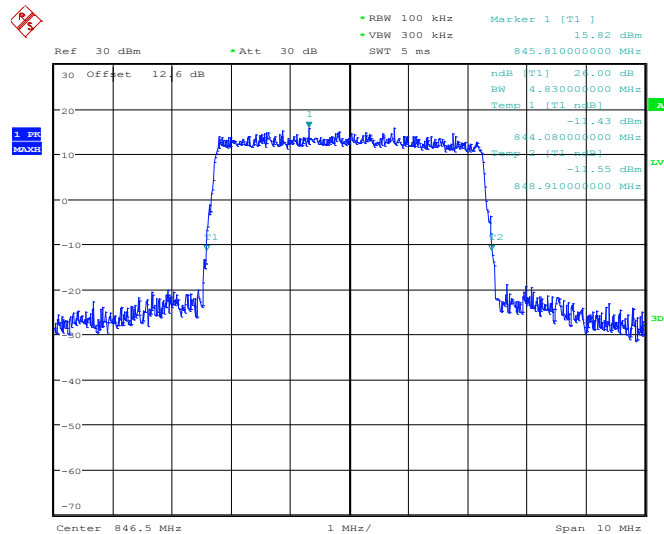


99% Occupied Bandwidth Plot on Channel 20625



Date: 13.DEC.2013 13:25:13

26dB Bandwidth Plot on Channel 20625

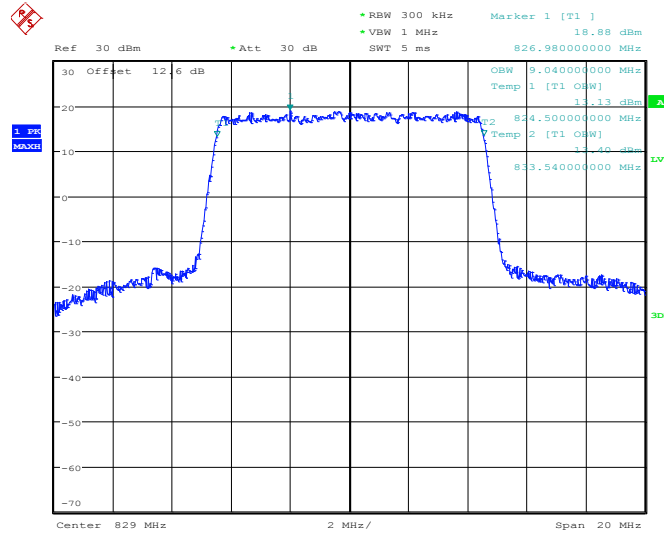


Date: 13.DEC.2013 13:25:28



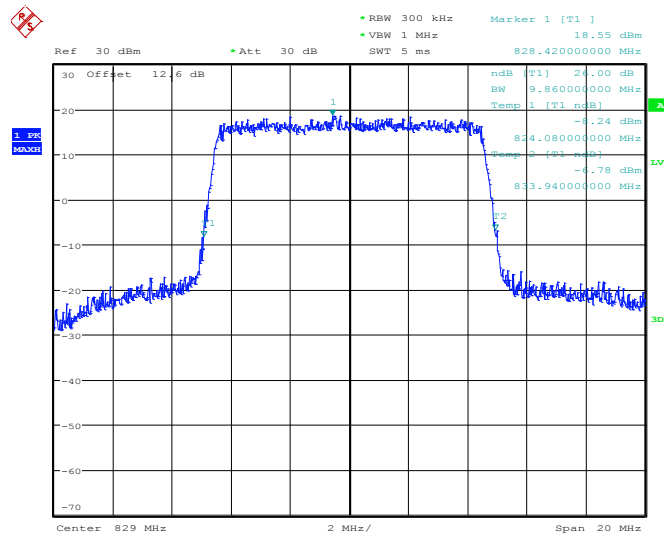
Band :	LTE Band 5	BW / Mod. :	10MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 20450



Date: 16.DEC.2013 09:26:56

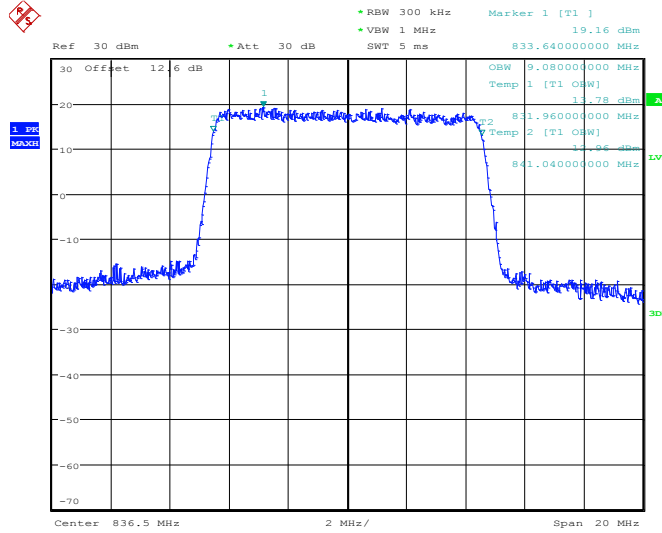
26dB Bandwidth Plot on Channel 20450



Date: 16.DEC.2013 09:28:11

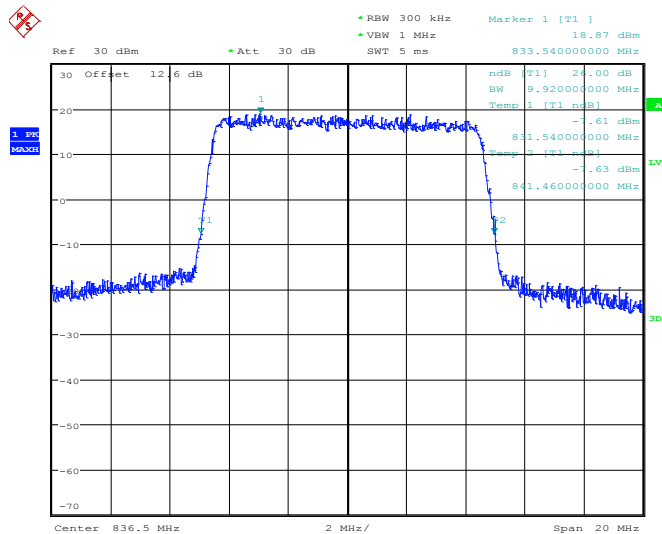


99% Occupied Bandwidth Plot on Channel 20525



Date: 16.DEC.2013 09:33:45

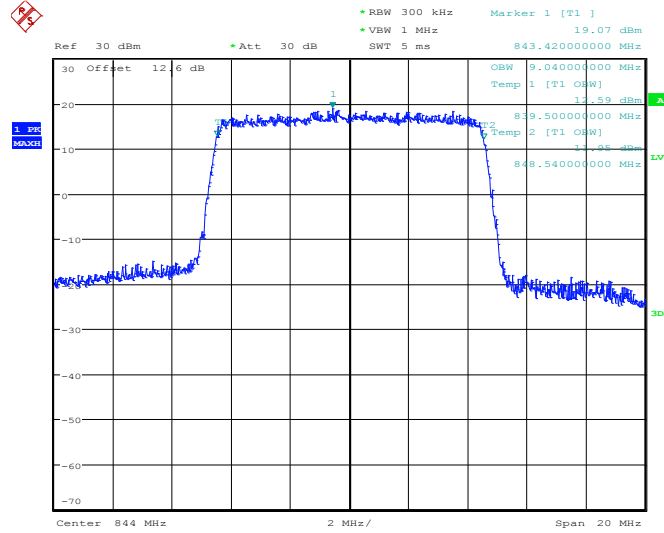
26dB Bandwidth Plot on Channel 20525



Date: 16.DEC.2013 09:34:06

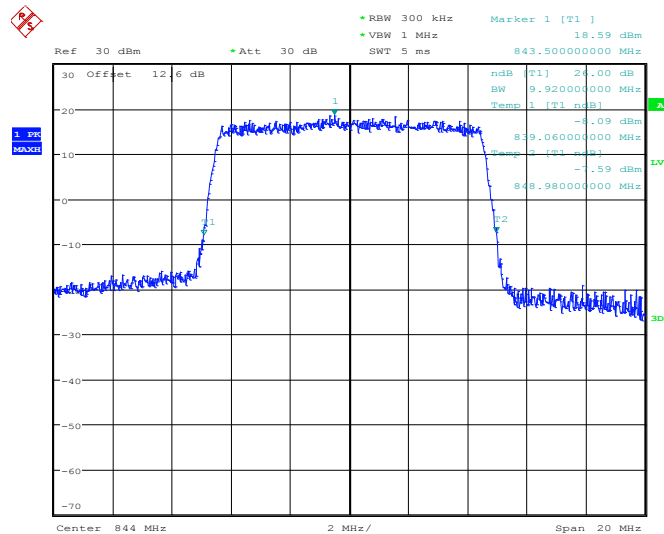


99% Occupied Bandwidth Plot on Channel 20600



Date: 16.DEC.2013 09:39:23

26dB Bandwidth Plot on Channel 20600

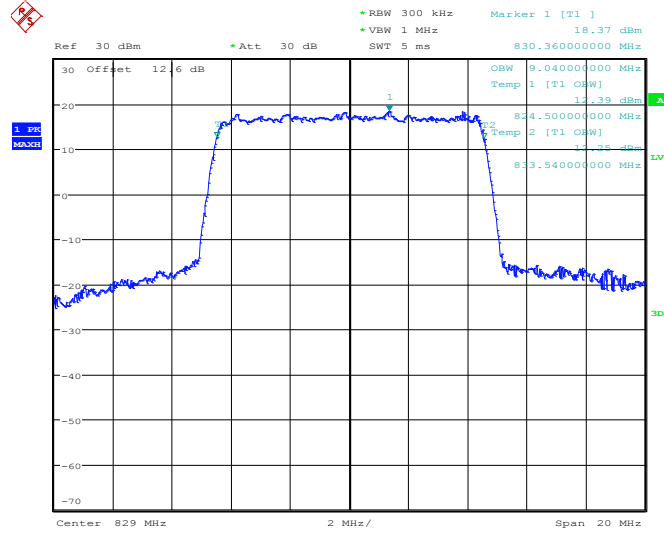


Date: 16.DEC.2013 09:39:38



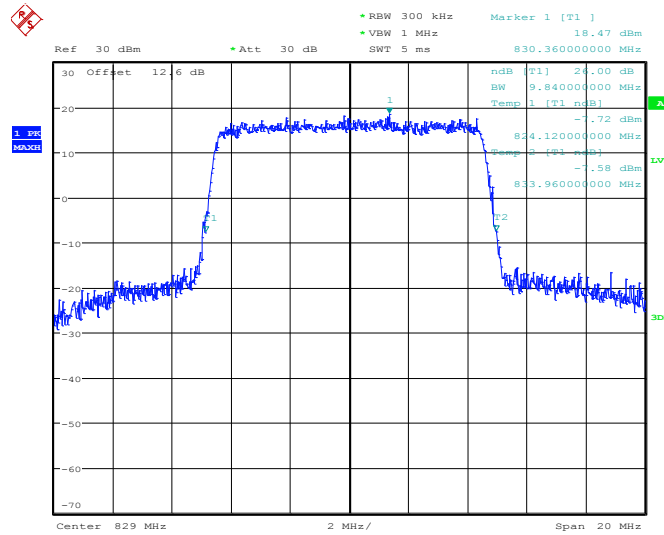
Band :	LTE Band 5	BW / Mod. :	10MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20450



Date: 16.DEC.2013 09:27:51

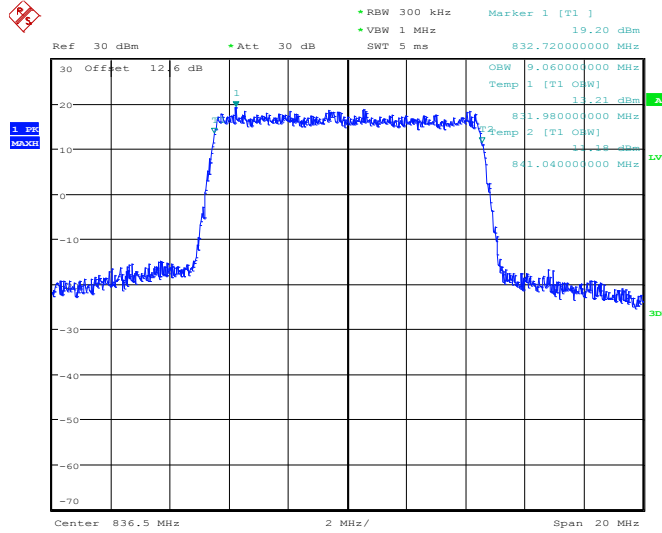
26dB Bandwidth Plot on Channel 20450



Date: 16.DEC.2013 09:28:23

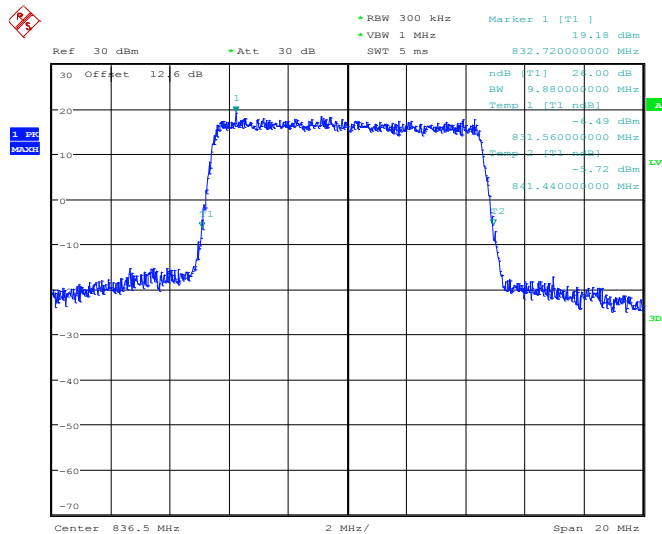


99% Occupied Bandwidth Plot on Channel 20525



Date: 16.DEC.2013 09:33:56

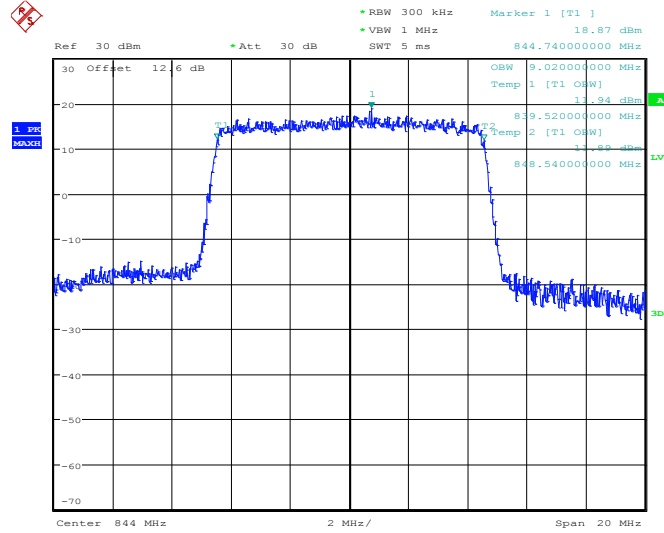
26dB Bandwidth Plot on Channel 20525



Date: 16.DEC.2013 09:34:14

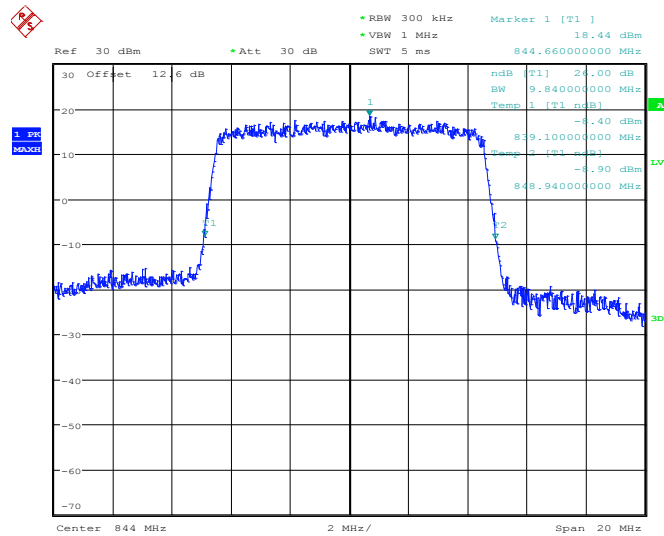


99% Occupied Bandwidth Plot on Channel 20600



Date: 16.DEC.2013 09:39:31

26dB Bandwidth Plot on Channel 20600

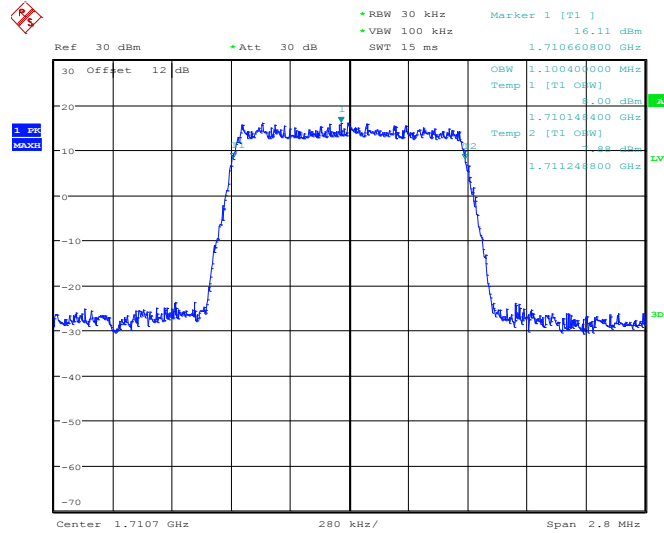


Date: 16.DEC.2013 09:39:45



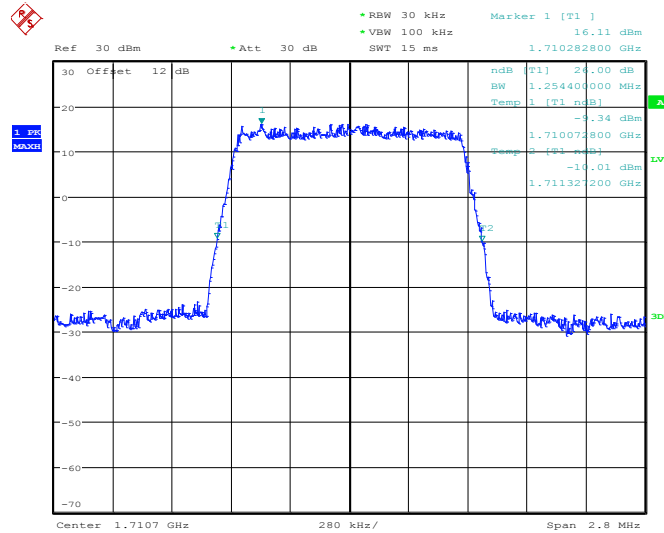
Band :	LTE Band 4	BW / Mod. :	1.4MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 19957



Date: 11.DEC.2013 21:19:05

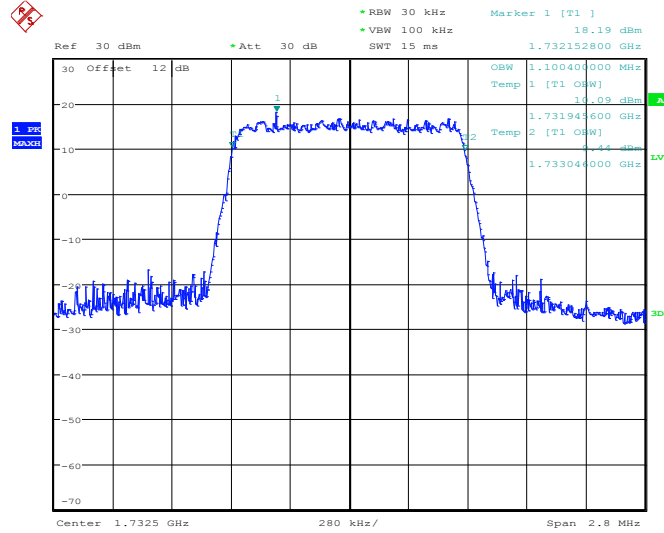
26dB Bandwidth Plot on Channel 19957



Date: 11.DEC.2013 21:19:15

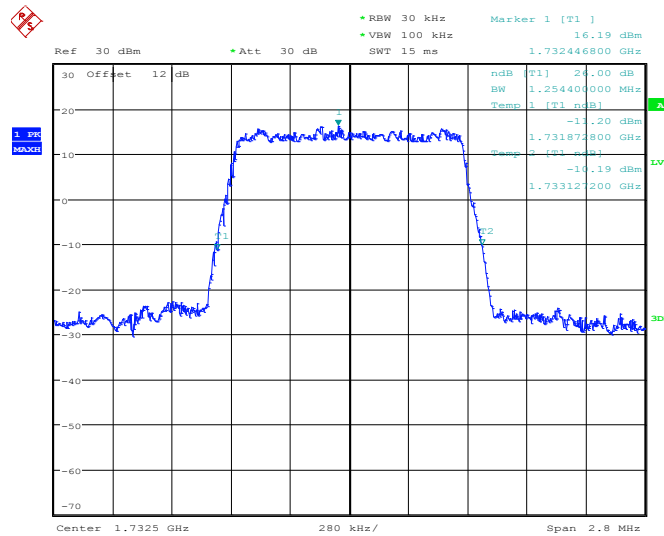


99% Occupied Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 21:16:12

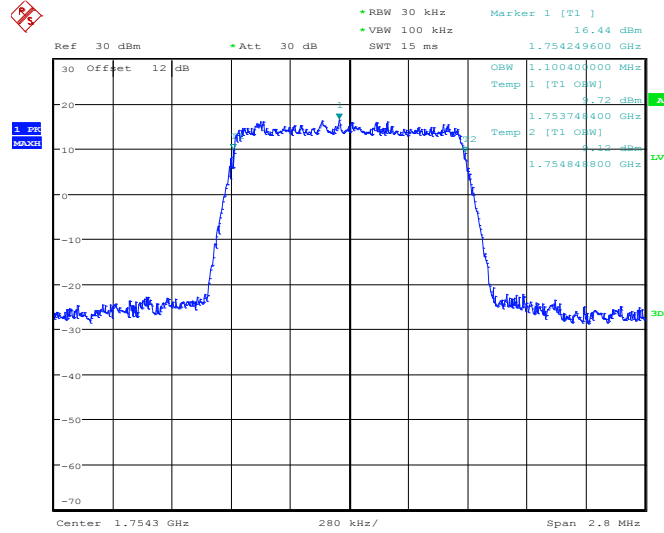
26dB Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 21:17:18

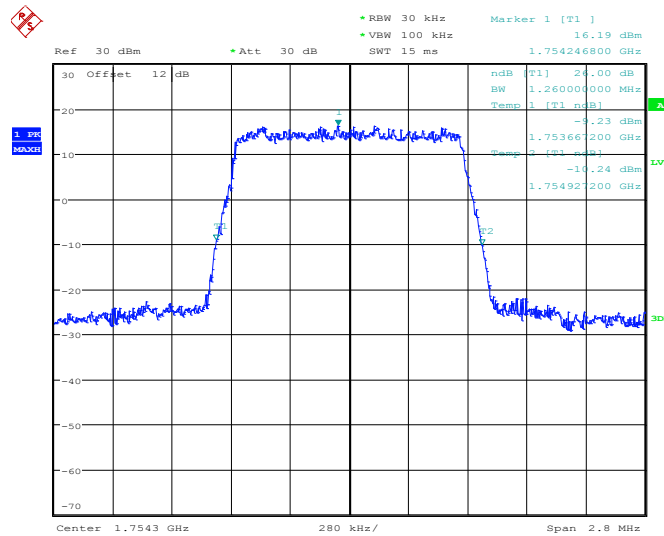


99% Occupied Bandwidth Plot on Channel 20393



Date: 11.DEC.2013 21:29:57

26dB Bandwidth Plot on Channel 20393

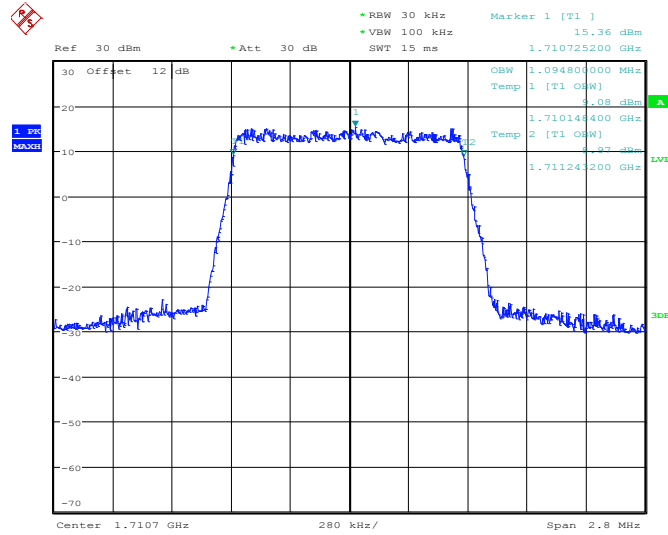


Date: 11.DEC.2013 21:30:17



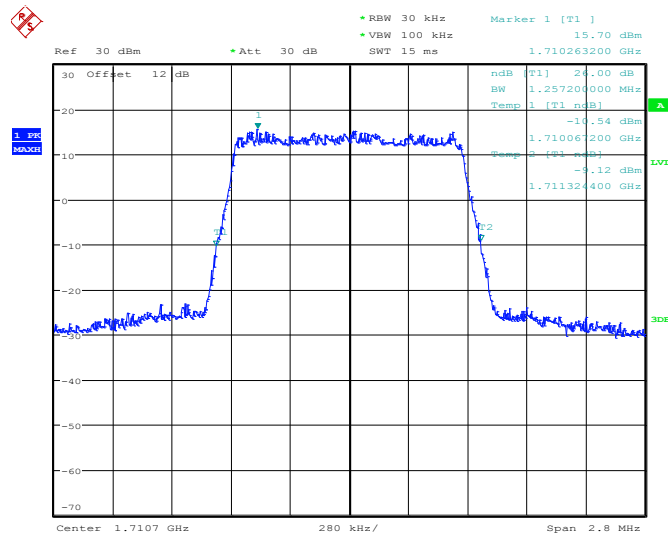
Band :	LTE Band 4	BW / Mod. :	1.4MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 19957



Date: 11.DEC.2013 21:18:39

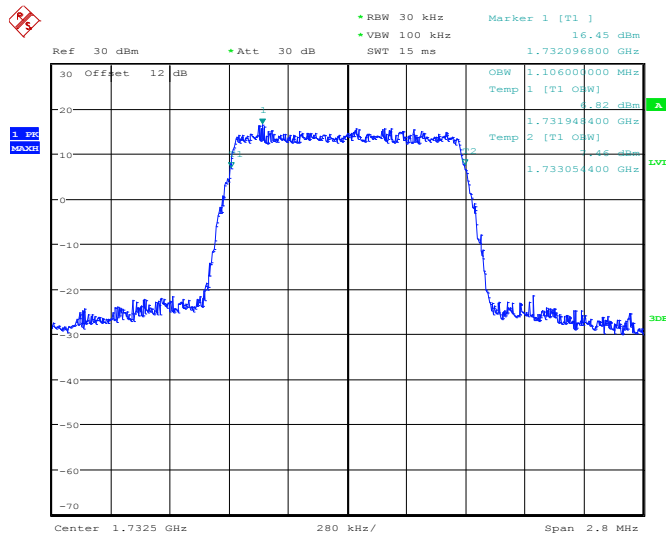
26dB Bandwidth Plot on Channel 19957



Date: 11.DEC.2013 21:18:49

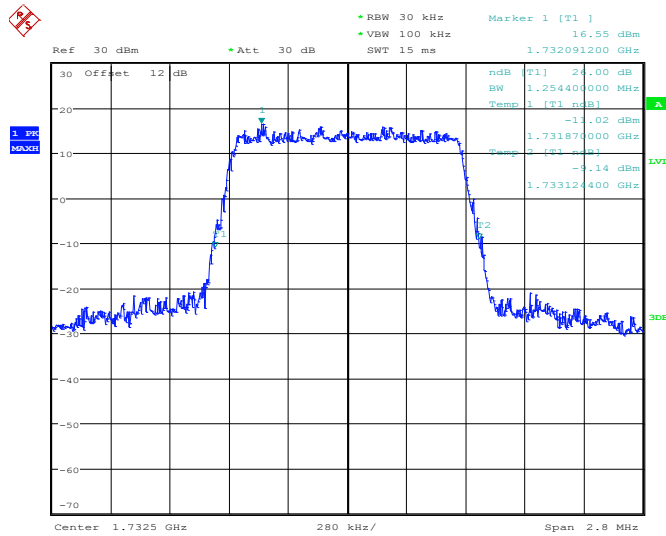


99% Occupied Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 21:18:10

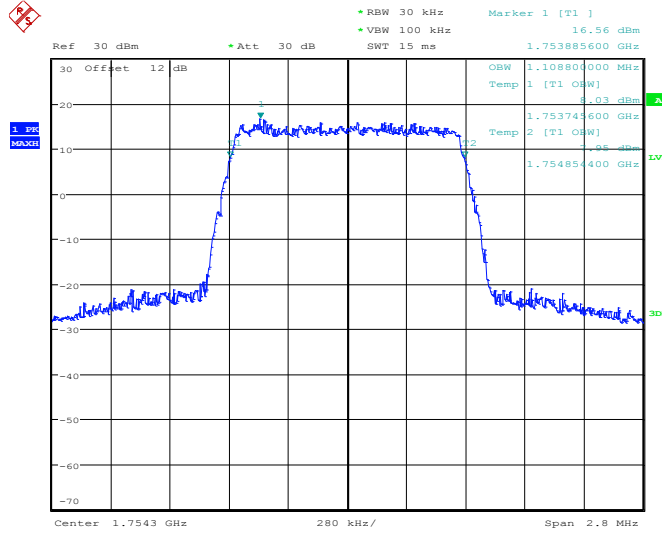
26dB Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 21:18:02

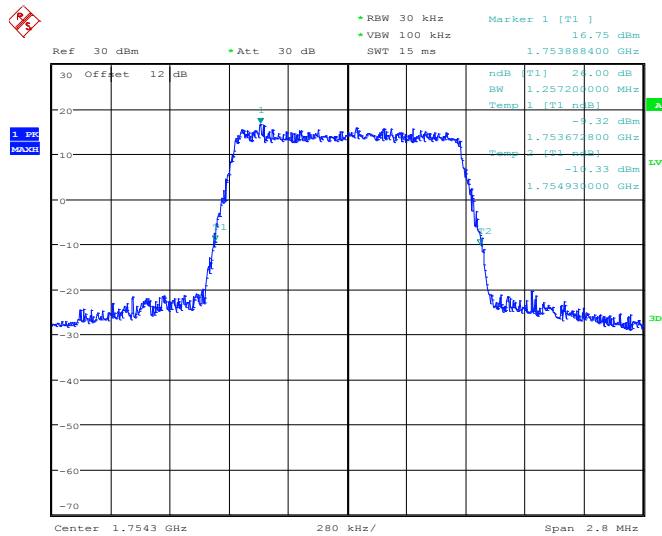


99% Occupied Bandwidth Plot on Channel 20393



Date: 11.DEC.2013 21:29:08

26dB Bandwidth Plot on Channel 20393

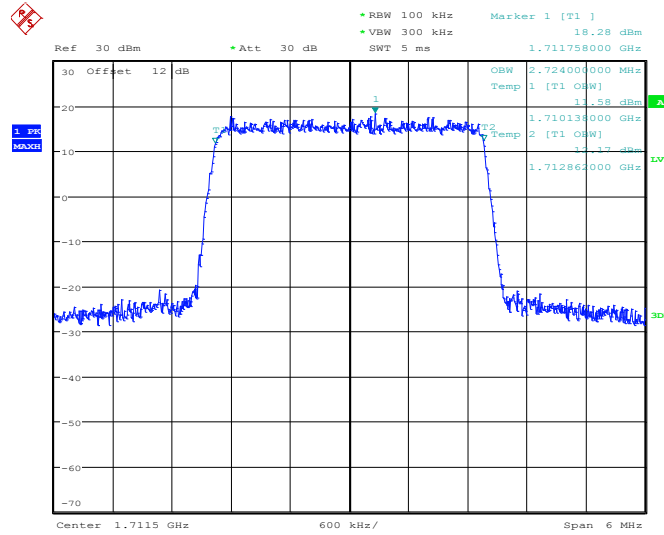


Date: 11.DEC.2013 21:29:30



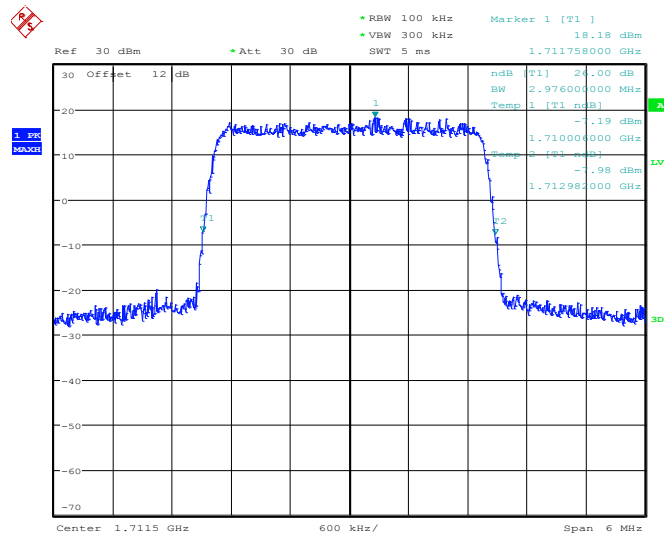
Band :	LTE Band 4	BW / Mod. :	3MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 19965



Date: 11.DEC.2013 21:40:45

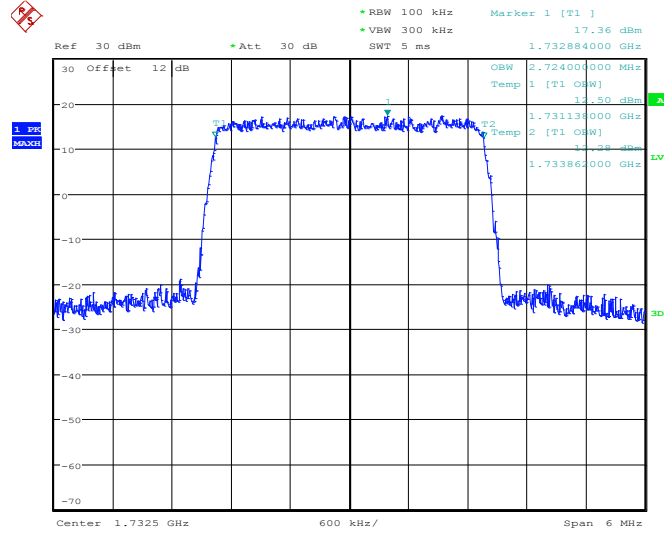
26dB Bandwidth Plot on Channel 19965



Date: 11.DEC.2013 21:40:58

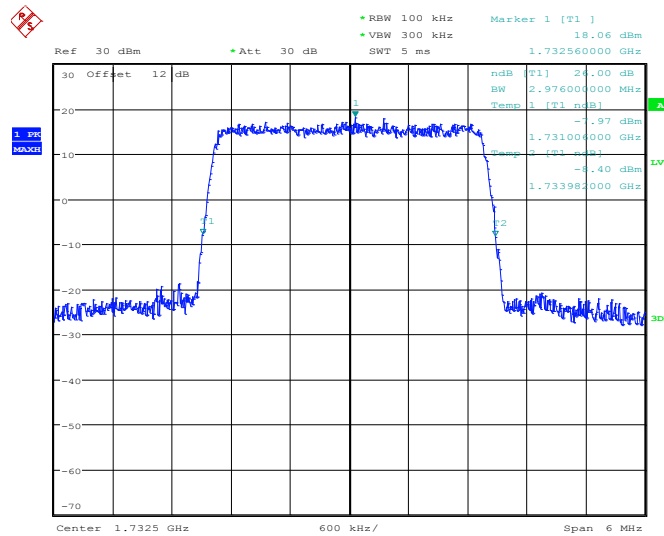


99% Occupied Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 21:33:44

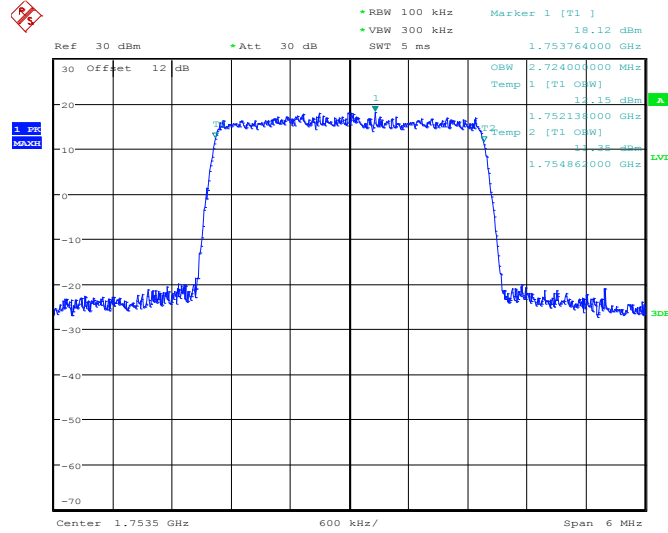
26dB Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 21:33:53

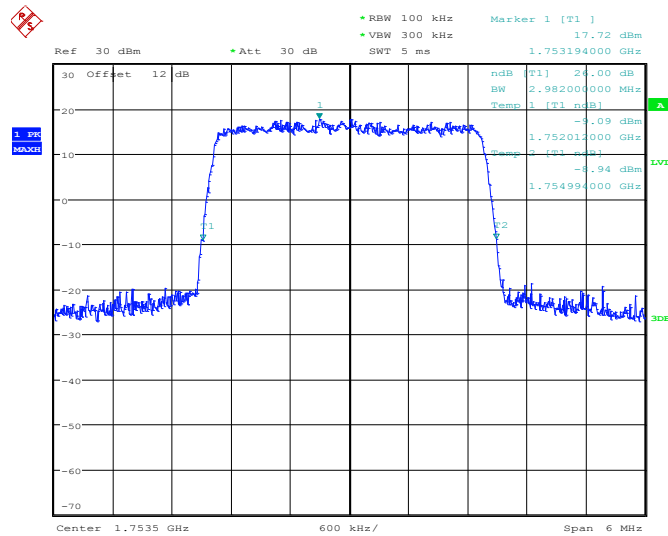


99% Occupied Bandwidth Plot on Channel 20385



Date: 11.DEC.2013 21:41:34

26dB Bandwidth Plot on Channel 20385

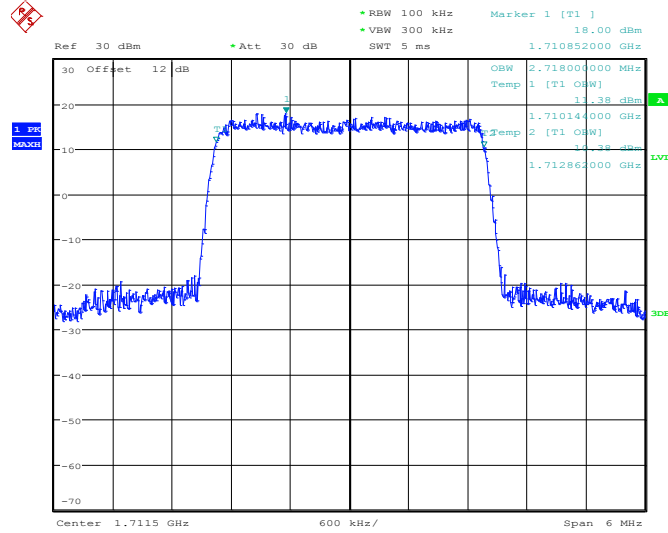


Date: 11.DEC.2013 21:41:47



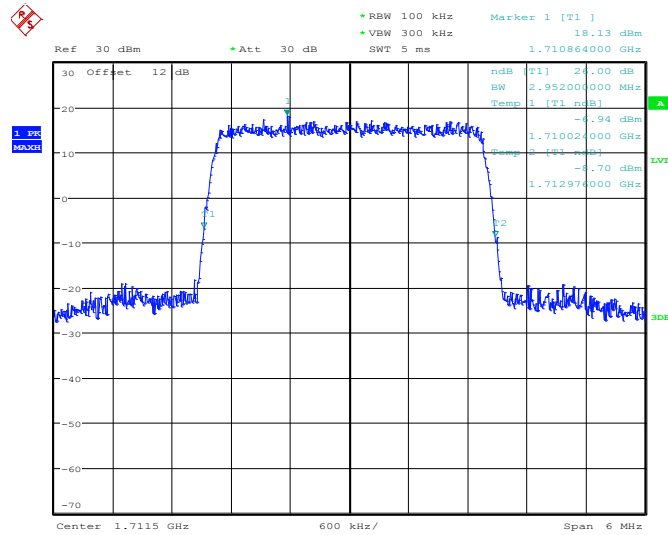
Band :	LTE Band 4	BW / Mod. :	3MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 19965



Date: 11.DEC.2013 21:40:19

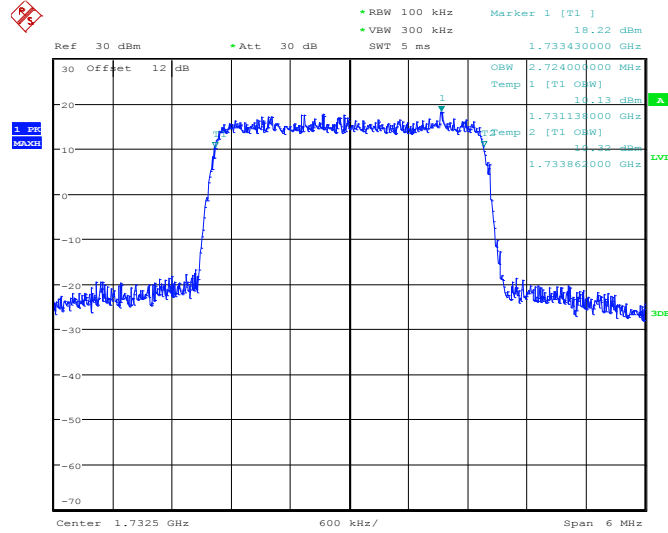
26dB Bandwidth Plot on Channel 19965



Date: 11.DEC.2013 21:40:30

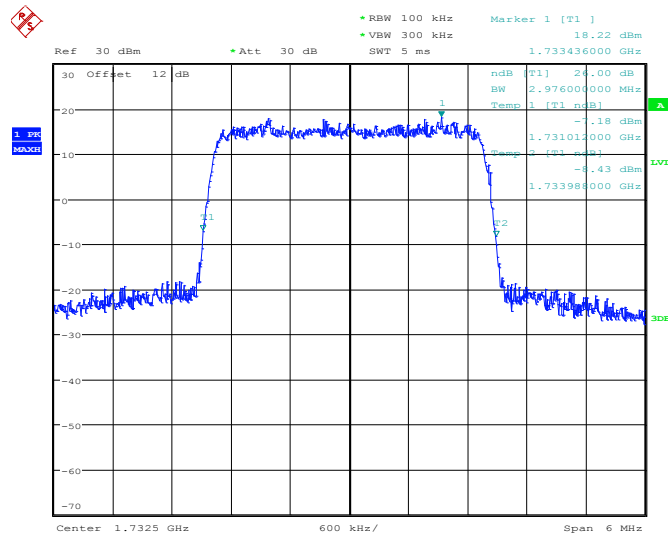


99% Occupied Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 21:34:07

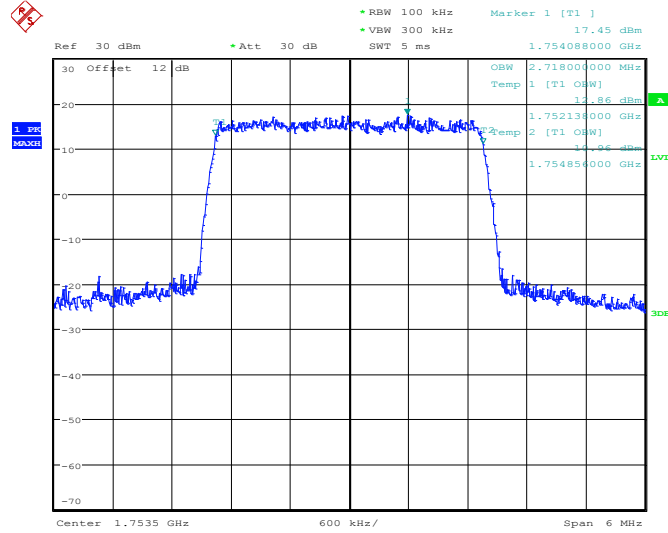
26dB Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 21:34:15

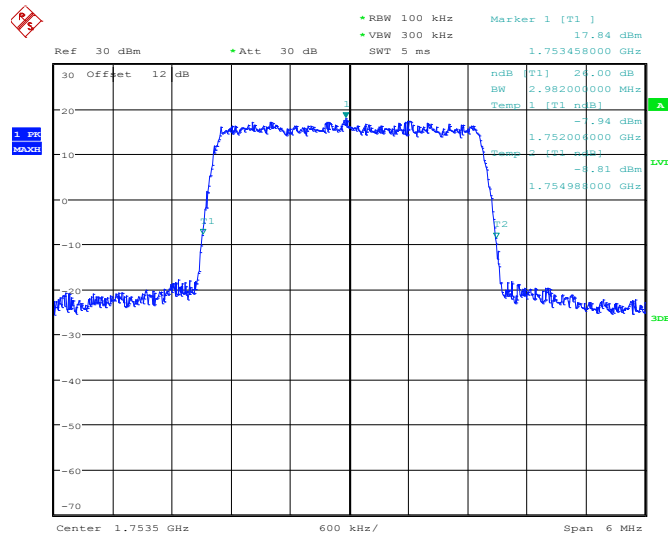


99% Occupied Bandwidth Plot on Channel 20385



Date: 11.DEC.2013 21:43:10

26dB Bandwidth Plot on Channel 20385

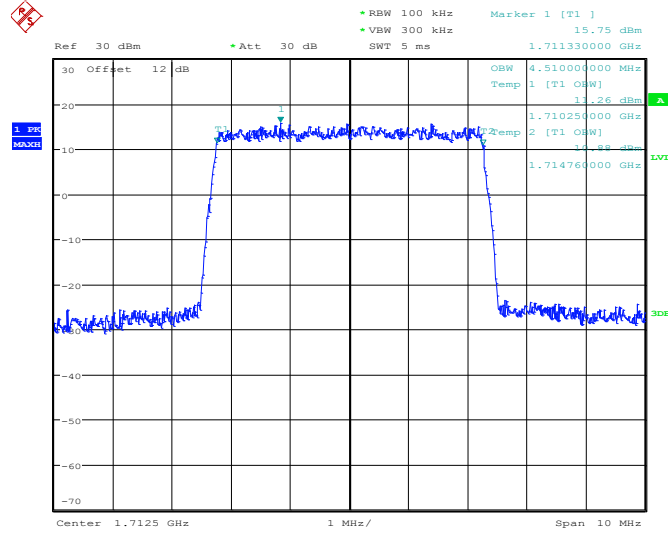


Date: 11.DEC.2013 21:42:53



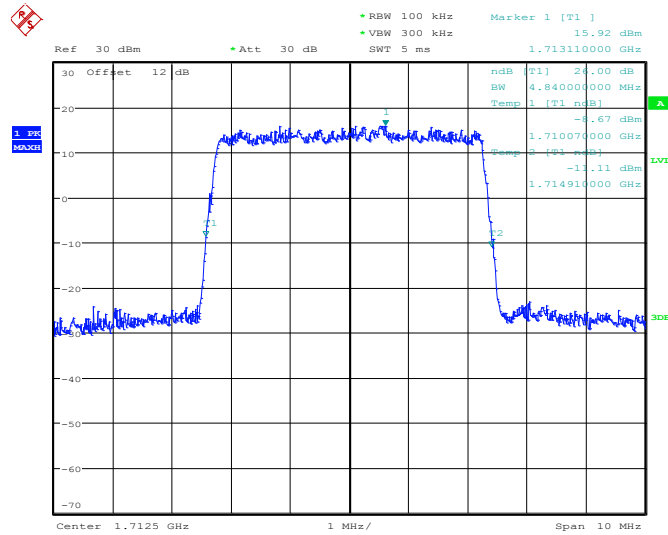
Band :	LTE Band 4	BW / Mod. :	5MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 19975



Date: 11.DEC.2013 21:54:49

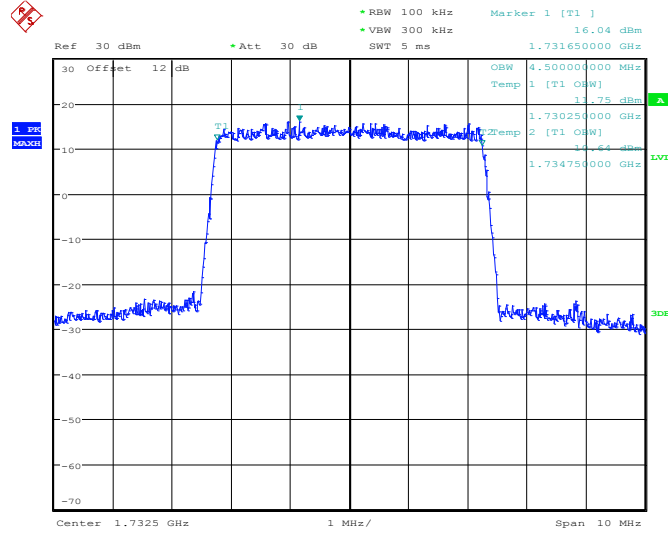
26dB Bandwidth Plot on Channel 19975



Date: 11.DEC.2013 21:55:01

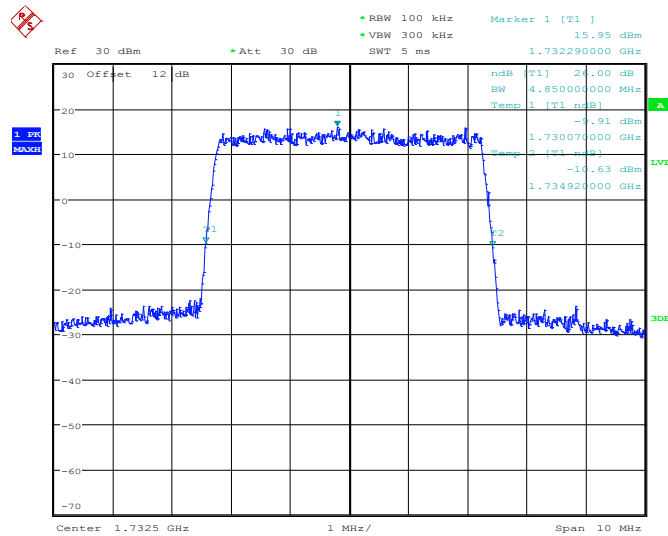


99% Occupied Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 21:47:23

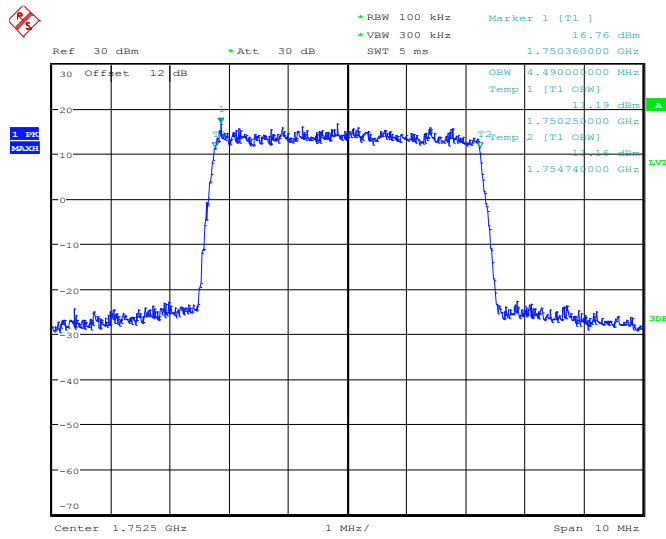
26dB Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 21:47:32

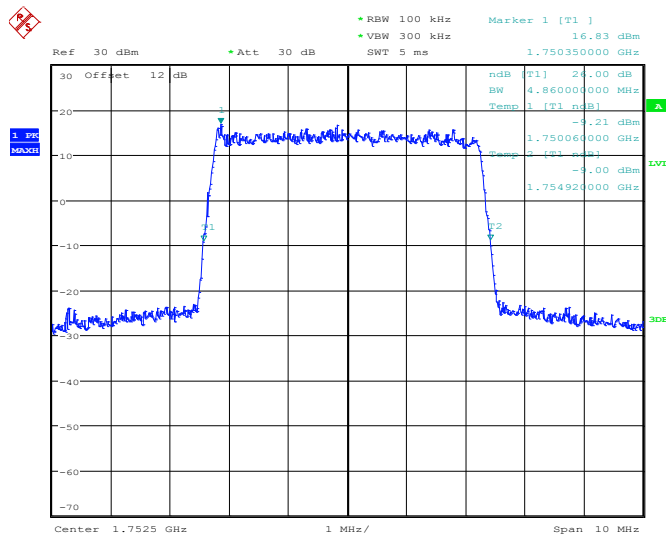


99% Occupied Bandwidth Plot on Channel 20375



Date: 11.DEC.2013 21:55:49

26dB Bandwidth Plot on Channel 20375

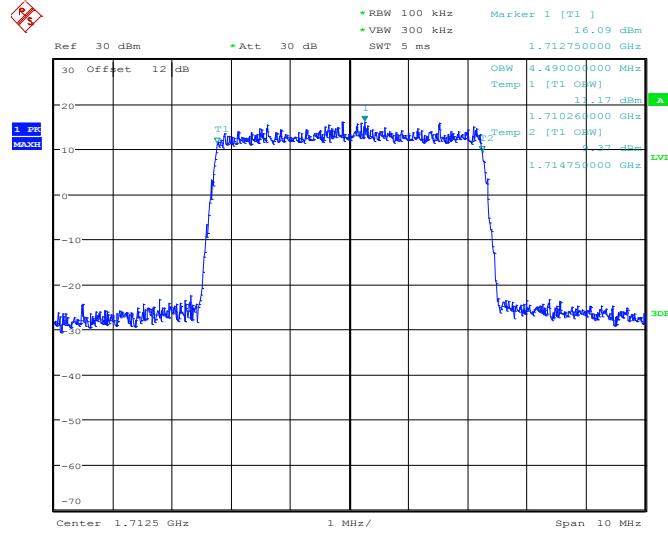


Date: 11.DEC.2013 21:56:03



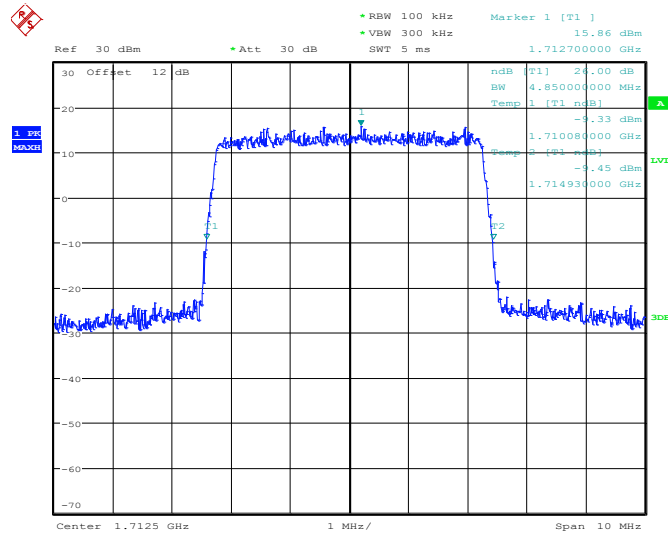
Band :	LTE Band 4	BW / Mod. :	5MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 19975



Date: 11.DEC.2013 21:54:18

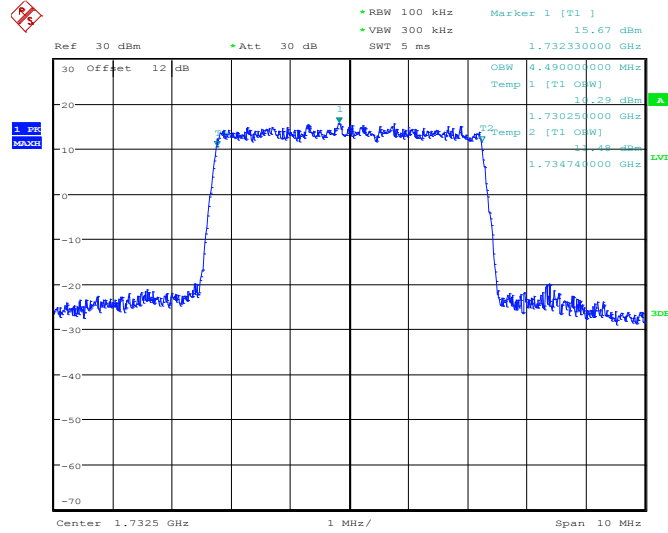
26dB Bandwidth Plot on Channel 19975



Date: 11.DEC.2013 21:54:29

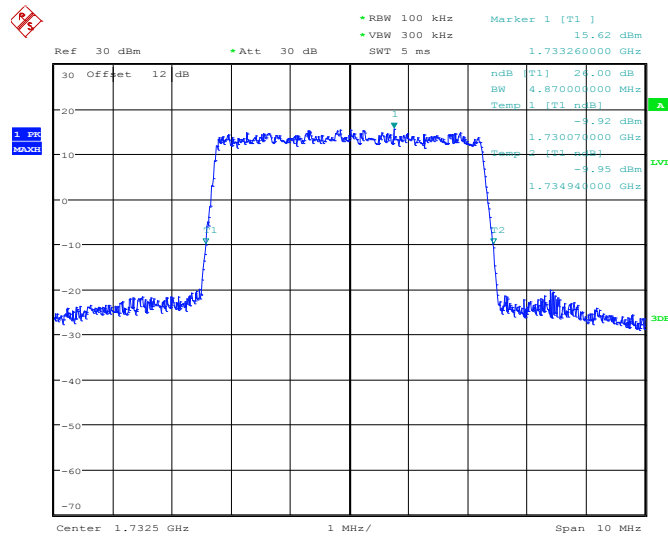


99% Occupied Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 21:47:57

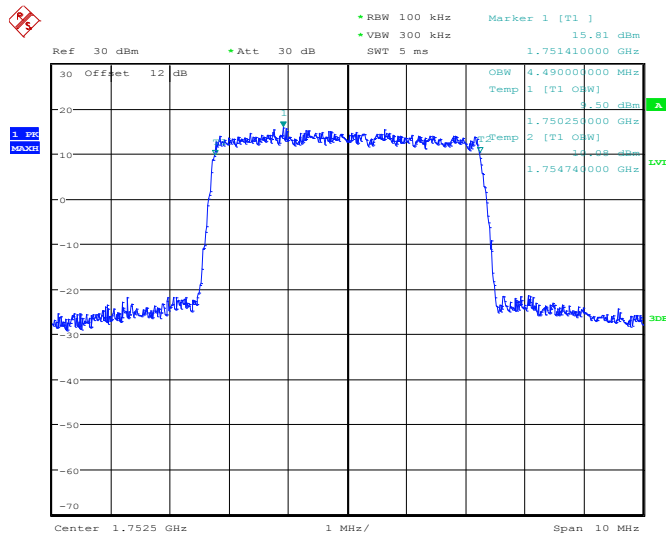
26dB Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 21:48:15

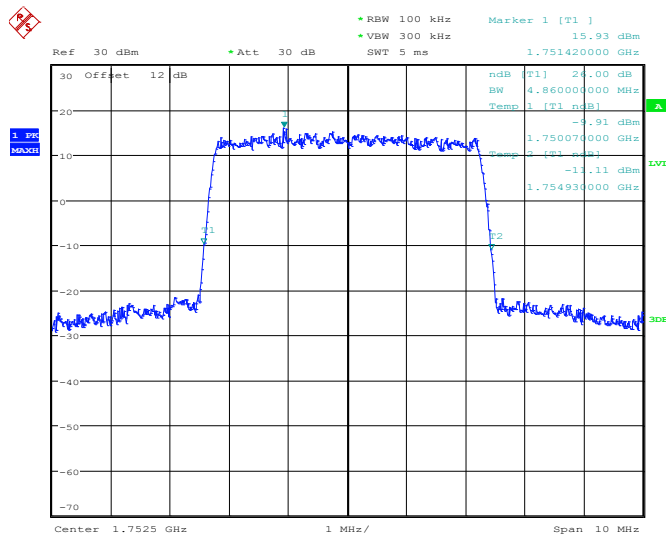


99% Occupied Bandwidth Plot on Channel 20375



Date: 11.DEC.2013 21:56:43

26dB Bandwidth Plot on Channel 20375

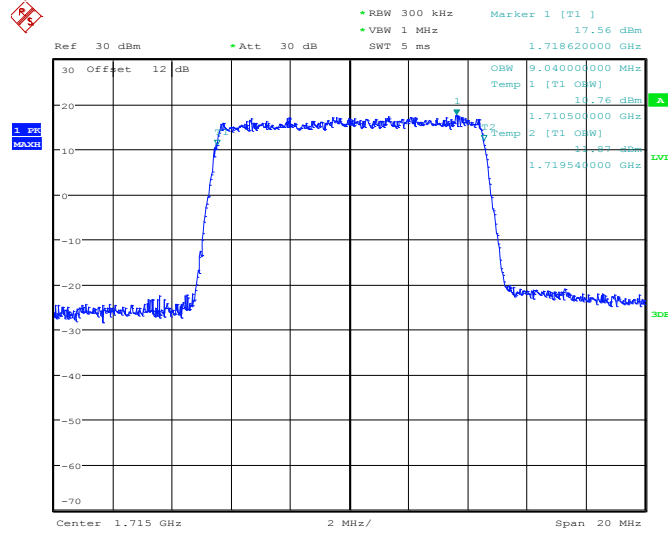


Date: 11.DEC.2013 21:56:55



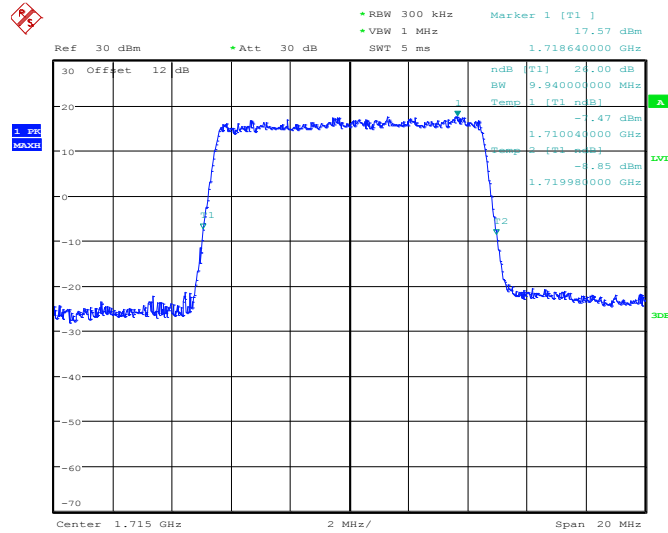
Band :	LTE Band 4	BW / Mod. :	10MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 20000



Date: 11.DEC.2013 20:57:54

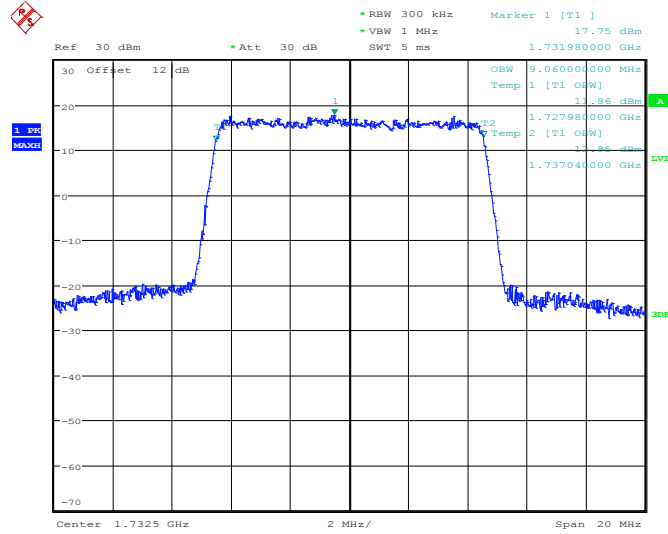
26dB Bandwidth Plot on Channel 20000



Date: 11.DEC.2013 20:58:16

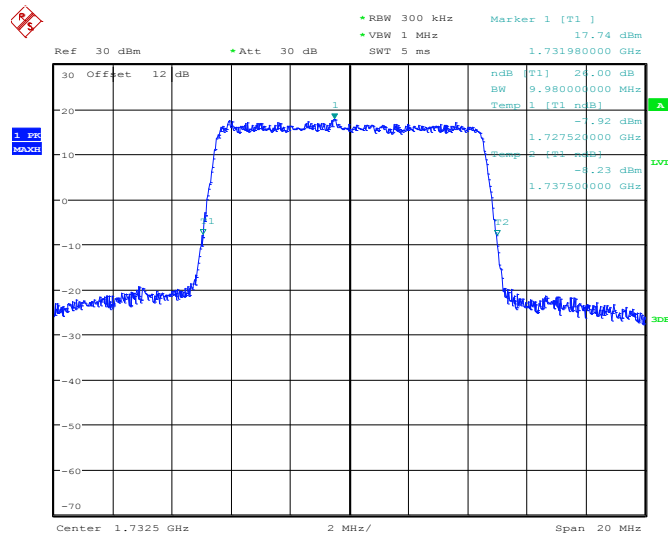


99% Occupied Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 20:55:27

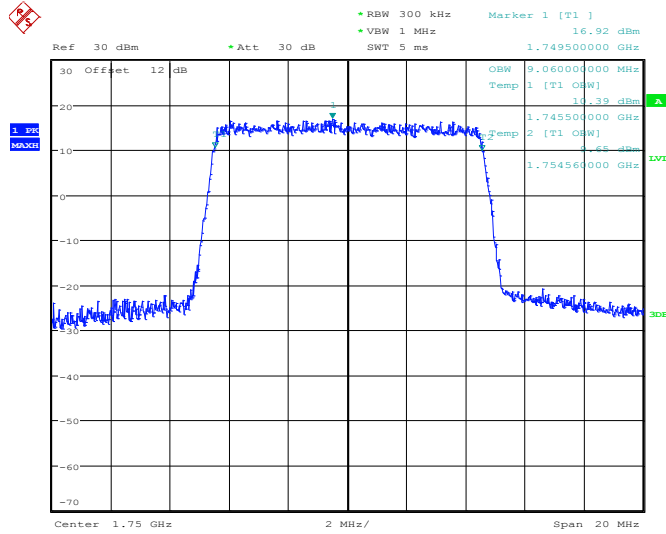
26dB Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 20:57:09

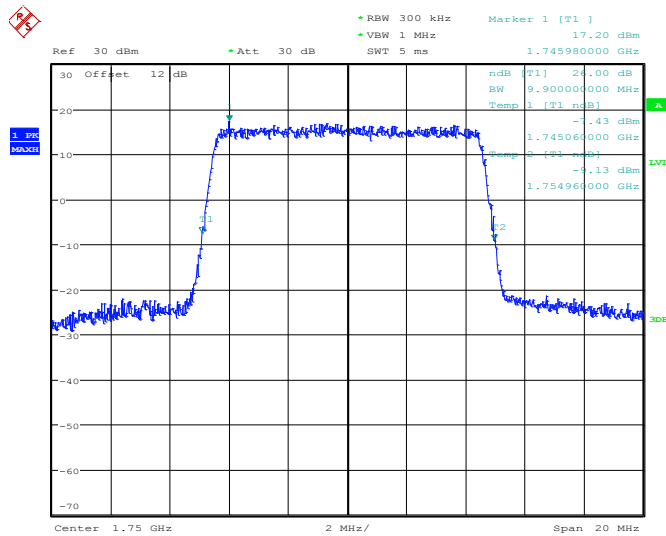


99% Occupied Bandwidth Plot on Channel 20350



Date: 16.DEC.2013 13:48:02

26dB Bandwidth Plot on Channel 20350

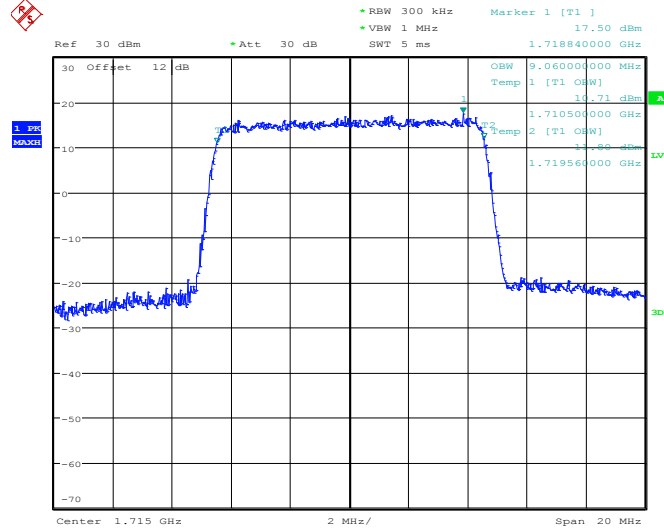


Date: 16.DEC.2013 13:48:13



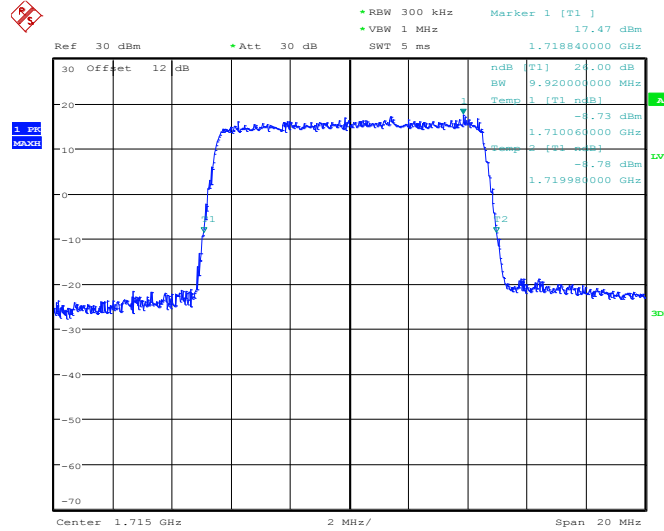
Band :	LTE Band 4	BW / Mod. :	10MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20000



Date: 11.DEC.2013 20:58:44

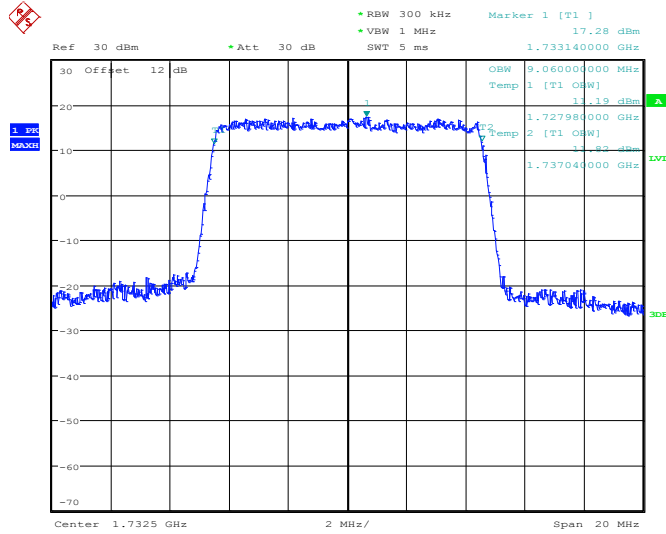
26dB Bandwidth Plot on Channel 20000



Date: 11.DEC.2013 20:59:02

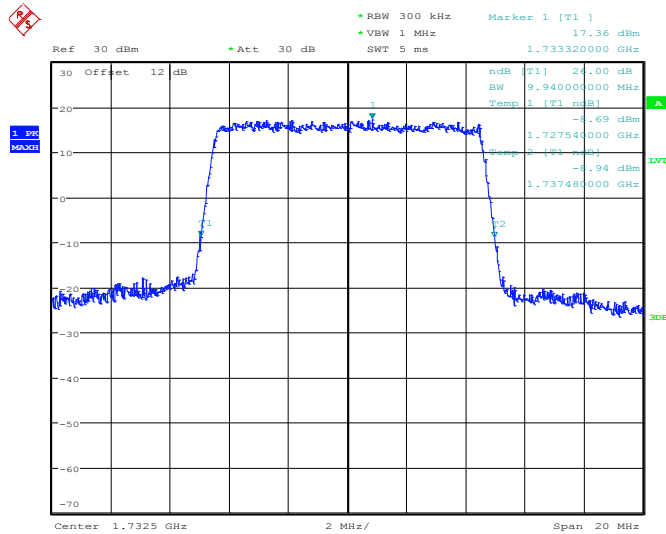


99% Occupied Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 20:56:22

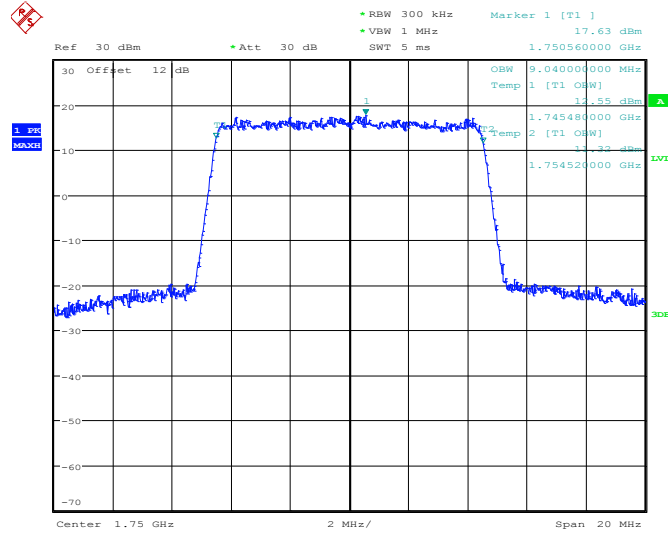
26dB Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 20:56:42

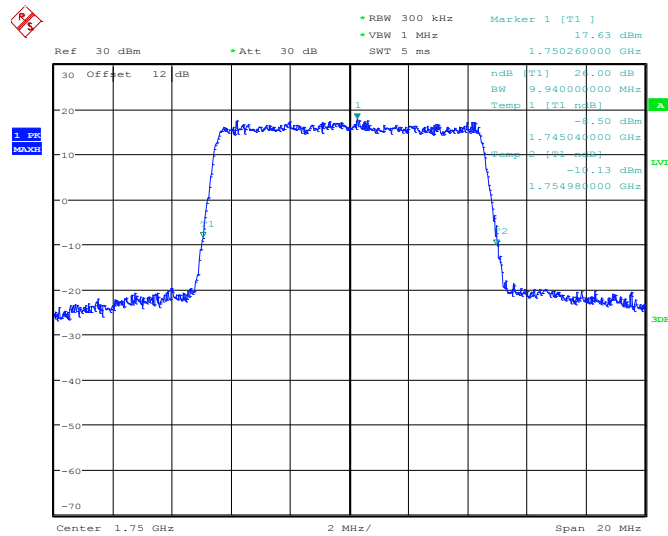


99% Occupied Bandwidth Plot on Channel 20350



Date: 11.DEC.2013 20:59:35

26dB Bandwidth Plot on Channel 20350

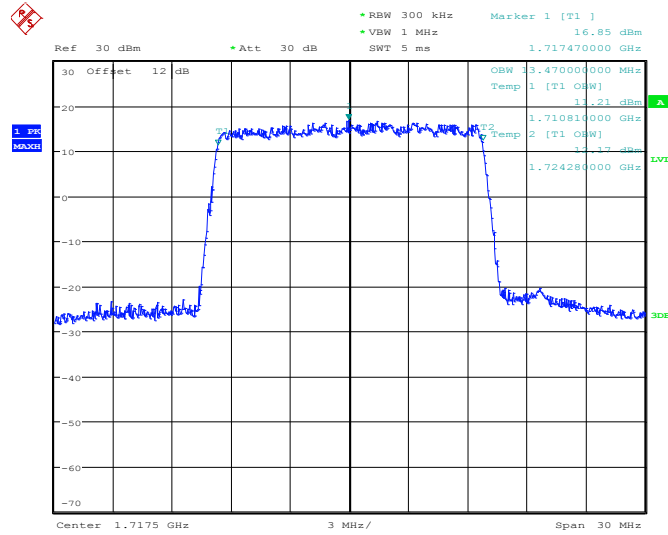


Date: 11.DEC.2013 20:59:54



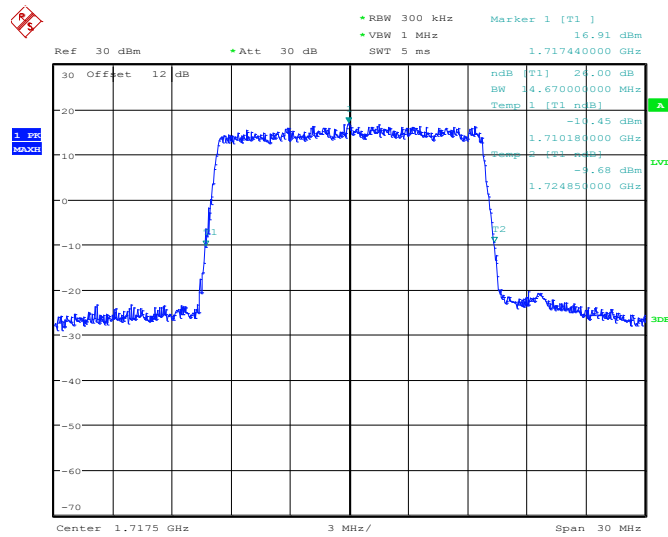
Band :	LTE Band 4	BW / Mod. :	15MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 20025



Date: 11.DEC.2013 22:15:32

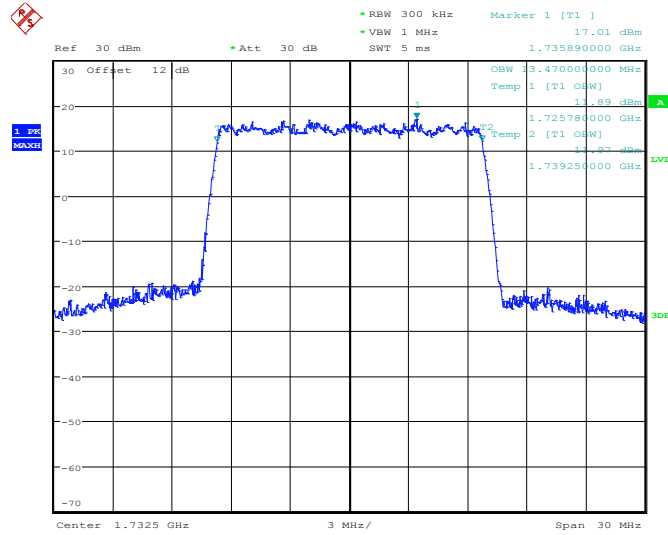
26dB Bandwidth Plot on Channel 20025



Date: 11.DEC.2013 22:15:19

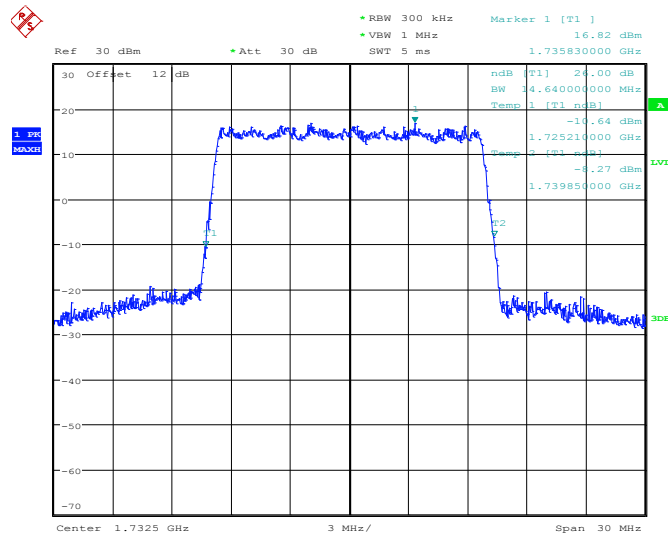


99% Occupied Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 22:01:55

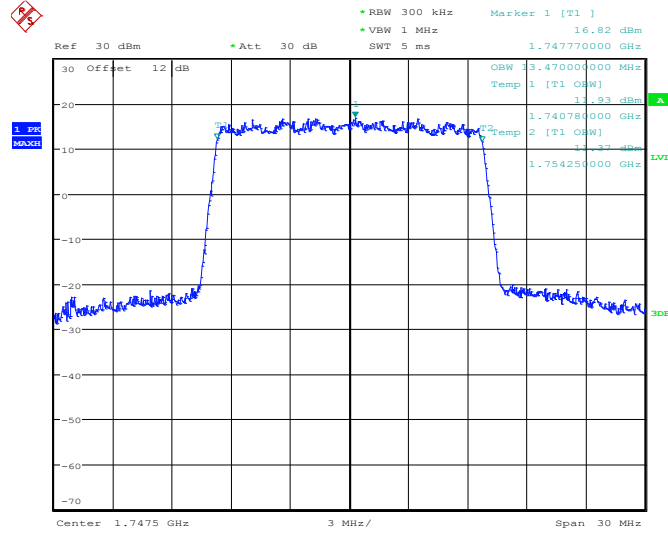
26dB Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 22:02:04

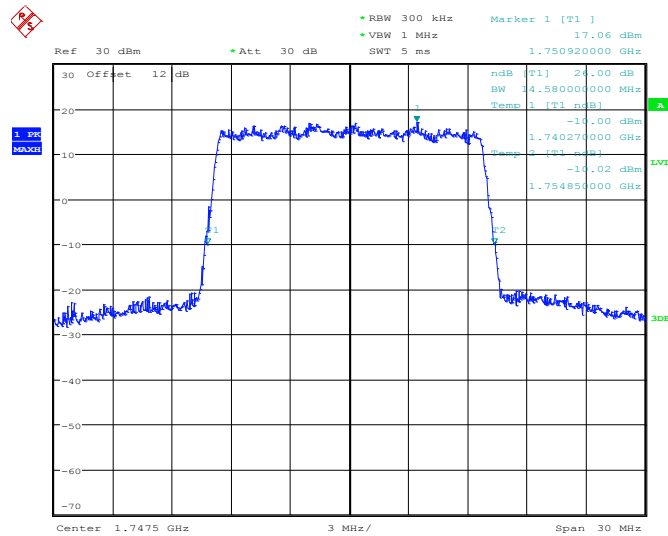


99% Occupied Bandwidth Plot on Channel 20325



Date: 11.DEC.2013 22:15:58

26dB Bandwidth Plot on Channel 20325

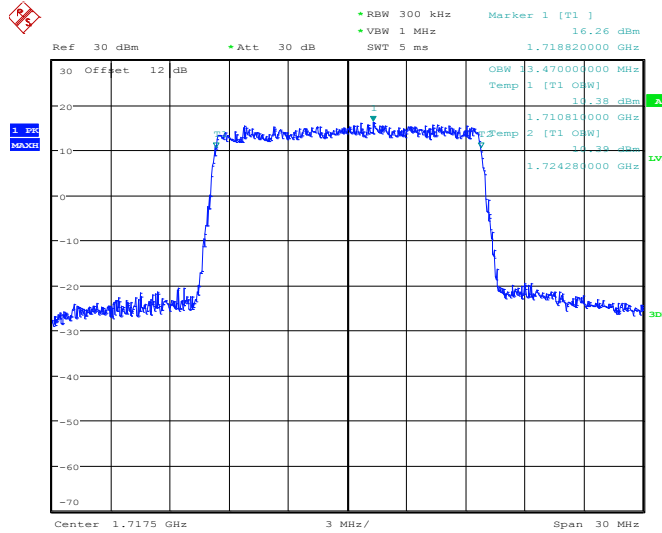


Date: 11.DEC.2013 22:16:12



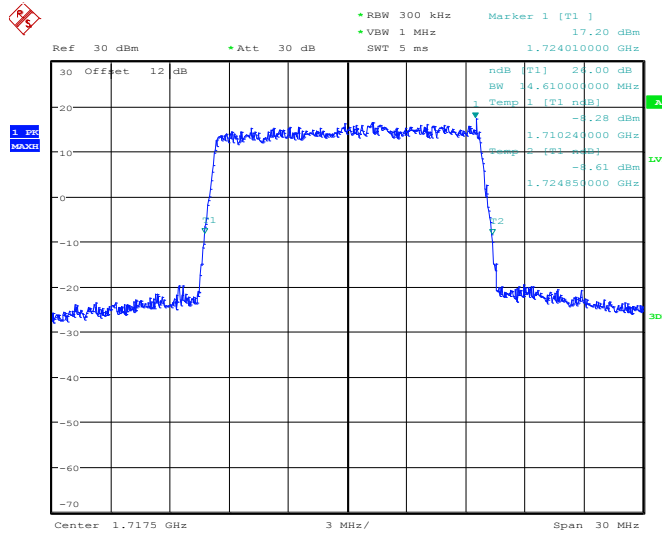
Band :	LTE Band 4	BW / Mod. :	15MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20025



Date: 11.DEC.2013 22:14:01

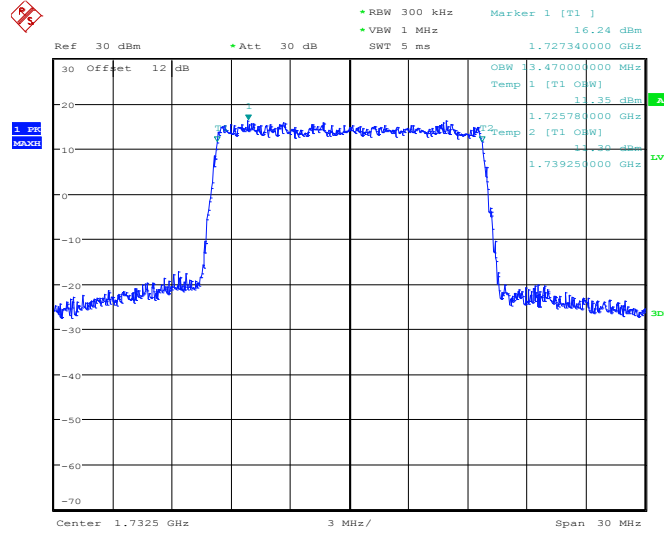
26dB Bandwidth Plot on Channel 20025



Date: 11.DEC.2013 22:14:15

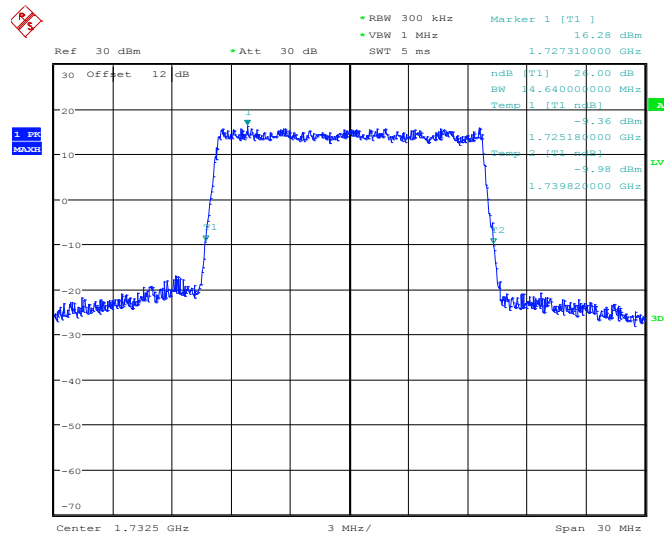


99% Occupied Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 22:02:24

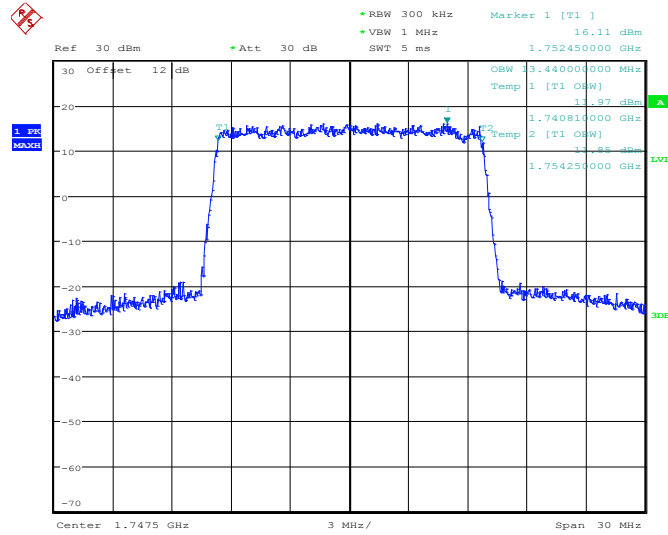
26dB Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 22:02:35

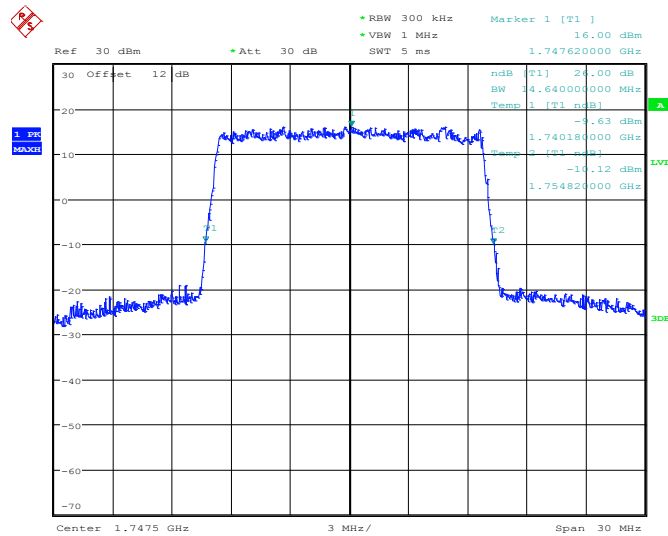


99% Occupied Bandwidth Plot on Channel 20325



Date: 11.DEC.2013 22:17:27

26dB Bandwidth Plot on Channel 20325

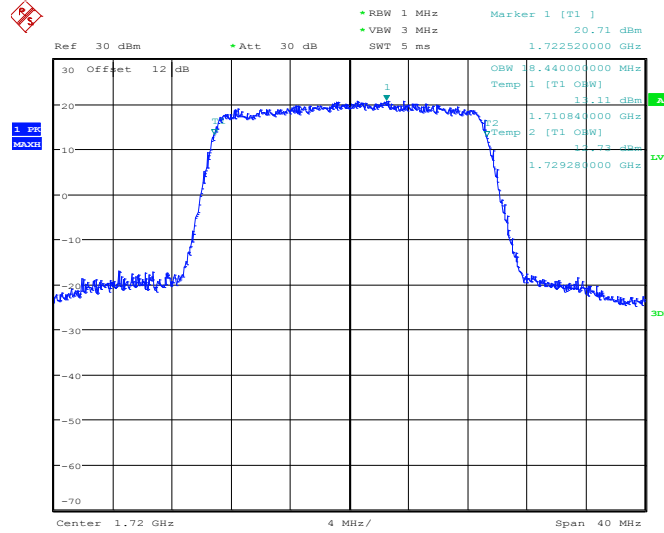


Date: 11.DEC.2013 22:17:14



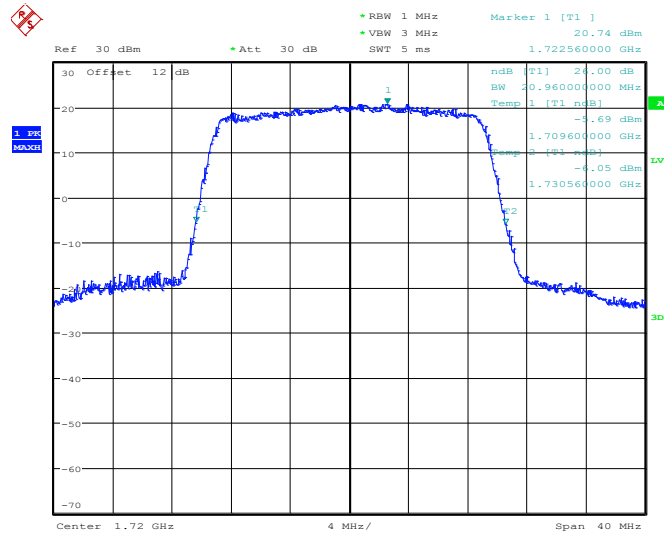
Band :	LTE Band 4	BW / Mod. :	20MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 20050



Date: 11.DEC.2013 22:28:33

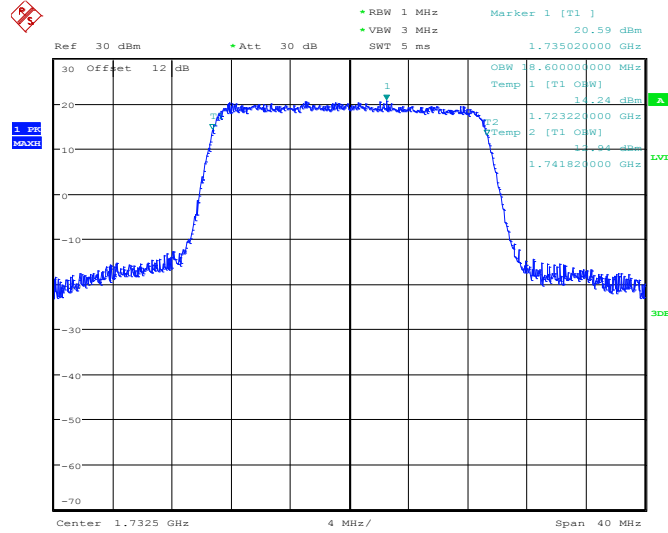
26dB Bandwidth Plot on Channel 20050



Date: 11.DEC.2013 22:28:48

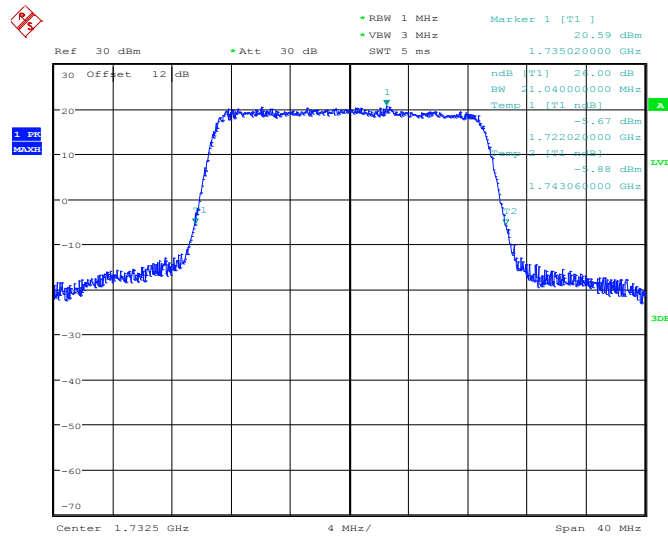


99% Occupied Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 22:21:15

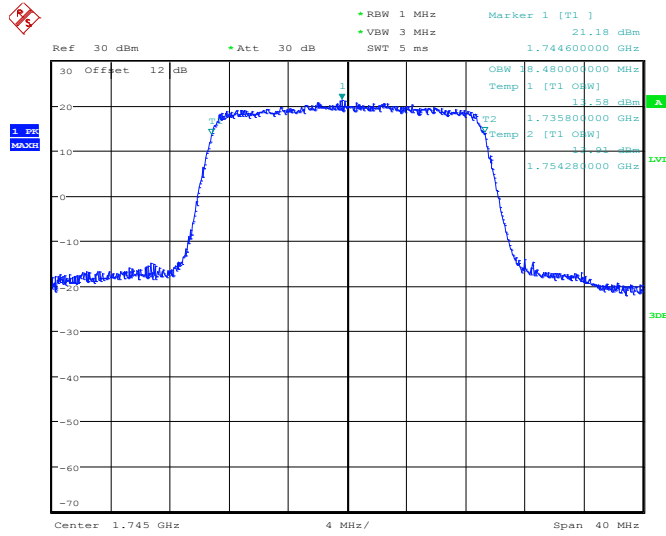
26dB Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 22:21:27

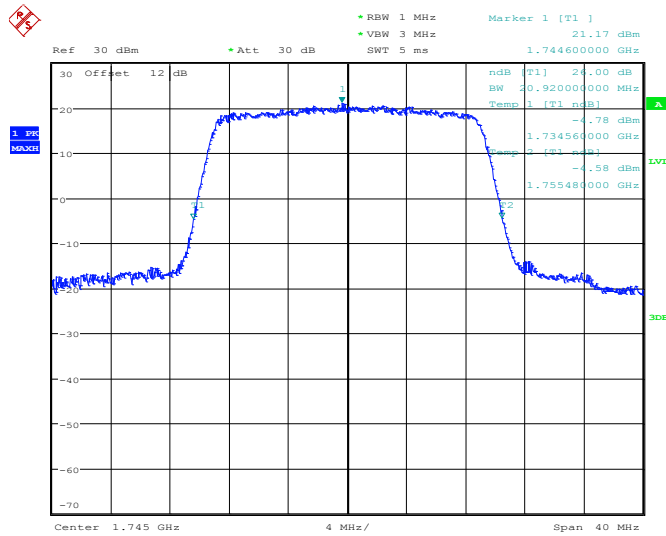


99% Occupied Bandwidth Plot on Channel 20300



Date: 11.DEC.2013 22:29:40

26dB Bandwidth Plot on Channel 20300

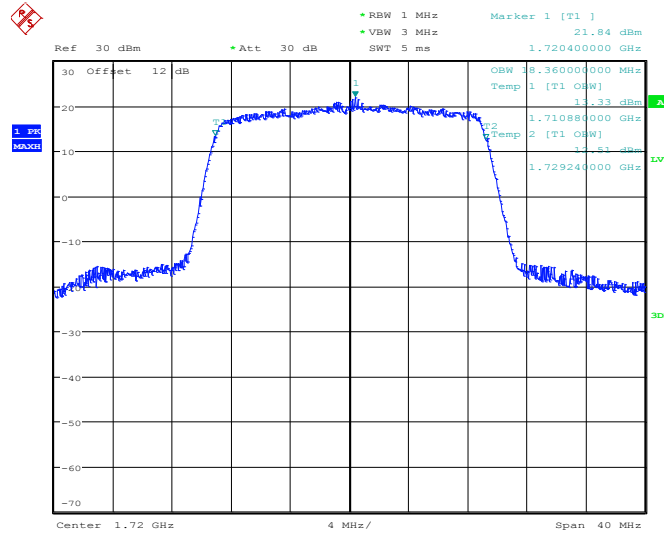


Date: 11.DEC.2013 22:29:54



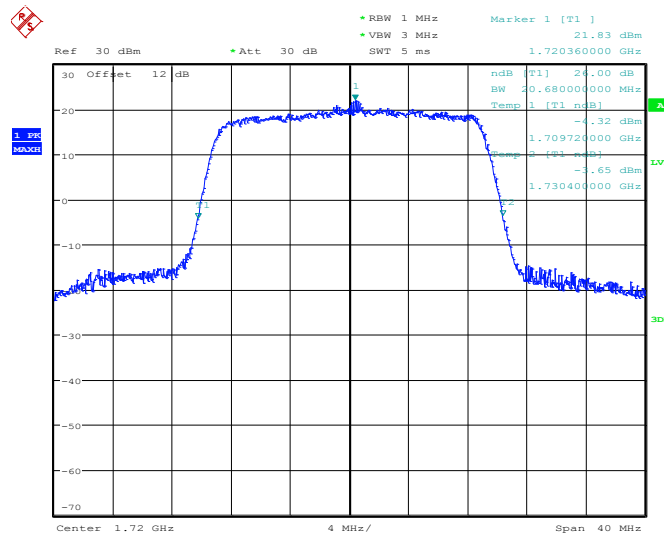
Band :	LTE Band 4	BW / Mod. :	20MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20050



Date: 11.DEC.2013 22:27:39

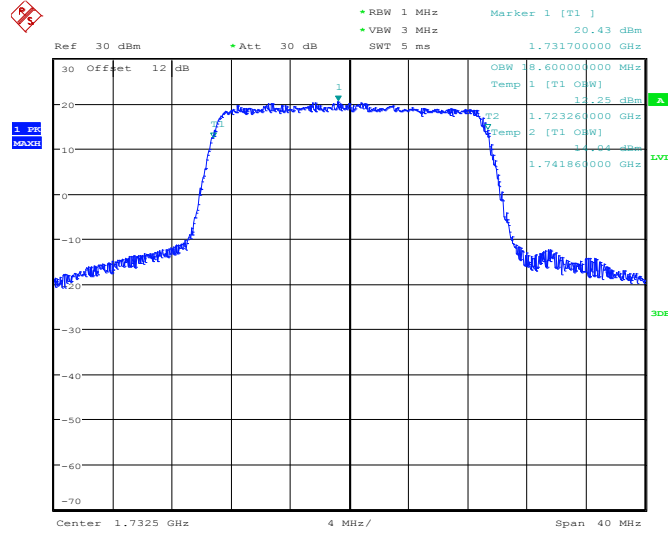
26dB Bandwidth Plot on Channel 20050



Date: 11.DEC.2013 22:27:52

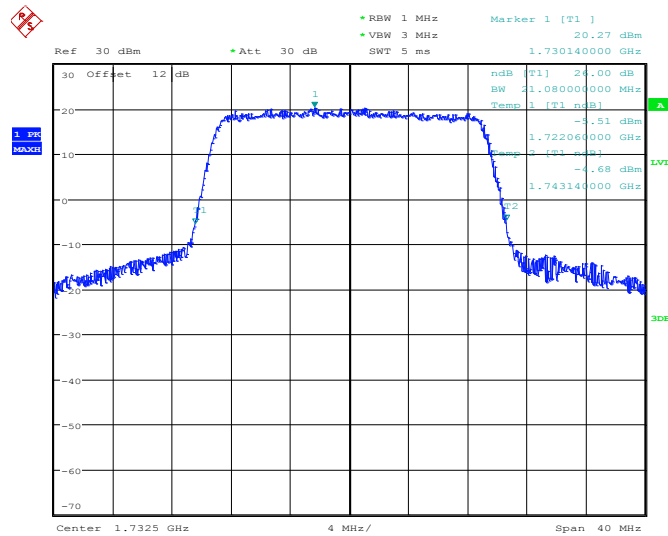


99% Occupied Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 22:22:04

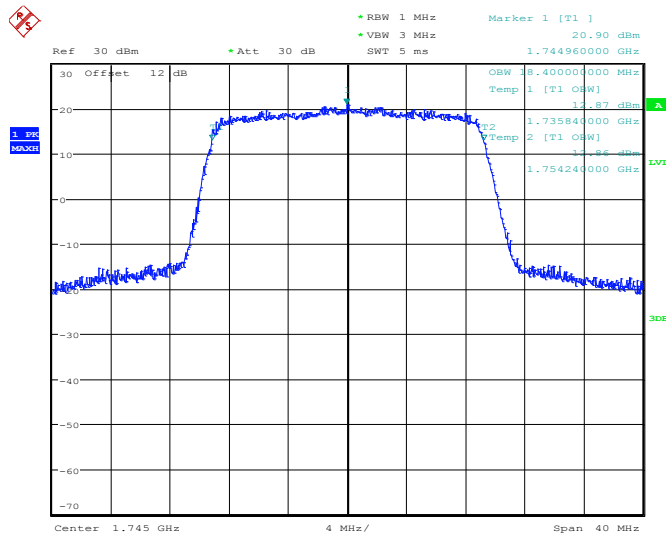
26dB Bandwidth Plot on Channel 20175



Date: 11.DEC.2013 22:22:20

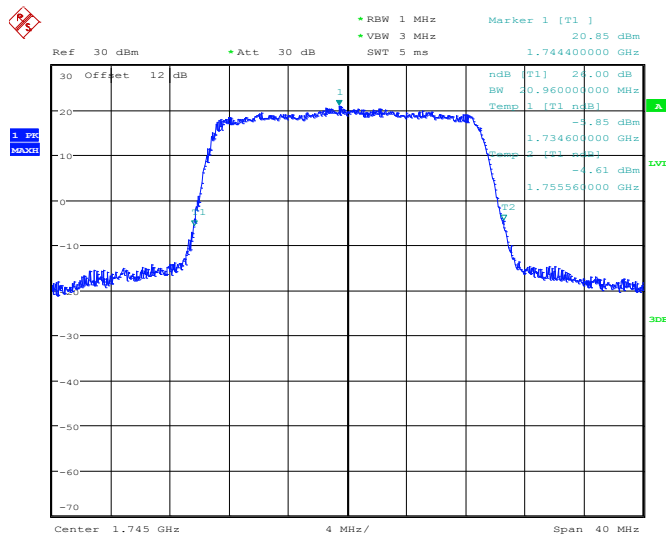


99% Occupied Bandwidth Plot on Channel 20300



Date: 11.DEC.2013 22:30:38

26dB Bandwidth Plot on Channel 20300

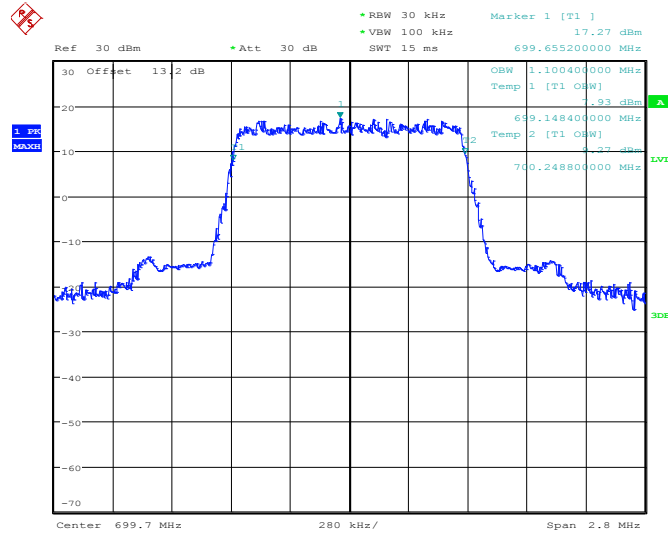


Date: 11.DEC.2013 22:30:52



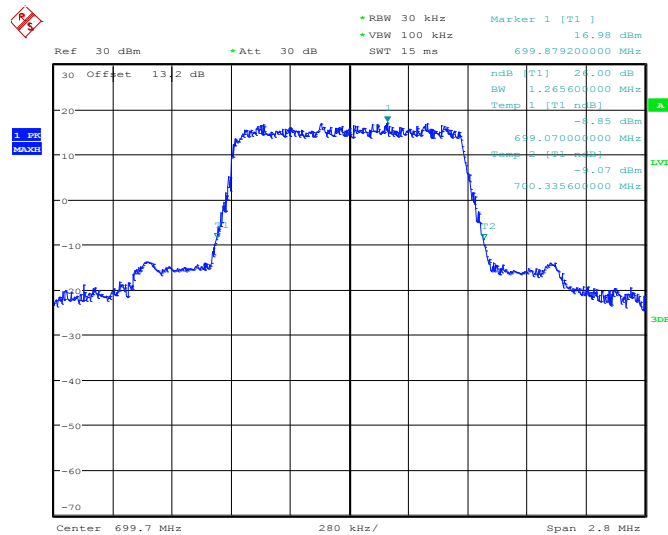
Band :	LTE Band 12	BW / Mod. :	1.4MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 23017



Date: 16.DEC.2013 10:21:26

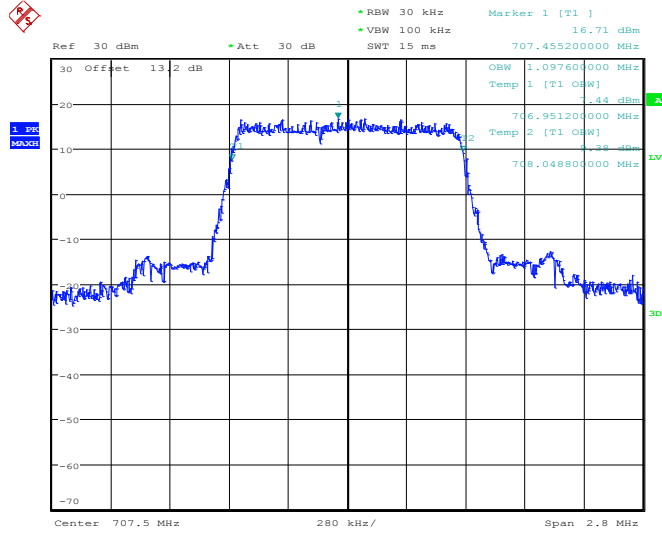
26dB Bandwidth Plot on Channel 23017



Date: 16.DEC.2013 10:21:58

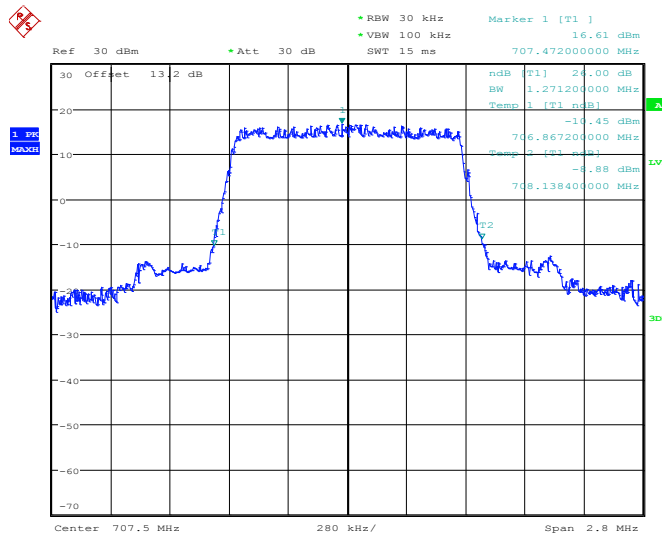


99% Occupied Bandwidth Plot on Channel 23095



Date: 16.DEC.2013 10:35:04

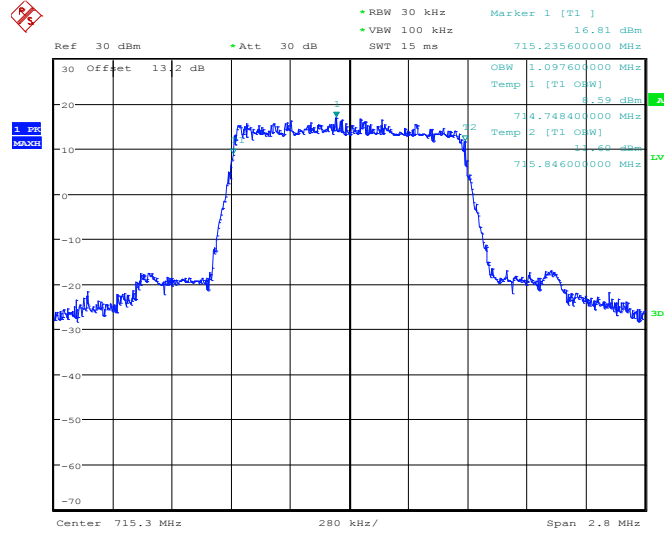
26dB Bandwidth Plot on Channel 23095



Date: 16.DEC.2013 10:35:13

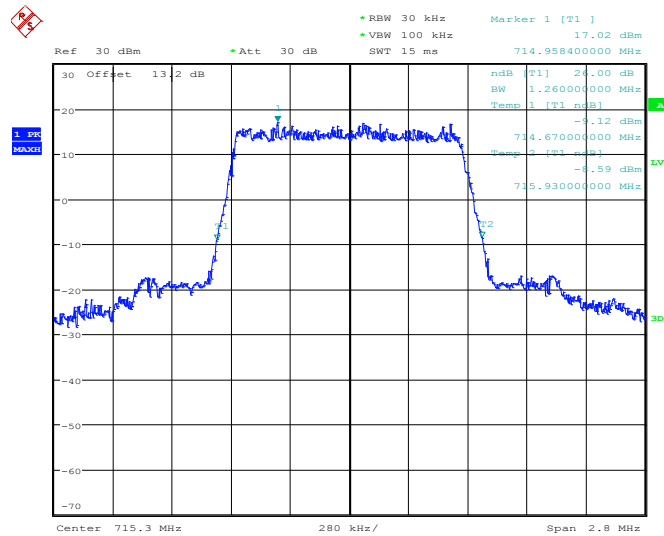


99% Occupied Bandwidth Plot on Channel 23173



Date: 16.DEC.2013 10:39:42

26dB Bandwidth Plot on Channel 23173

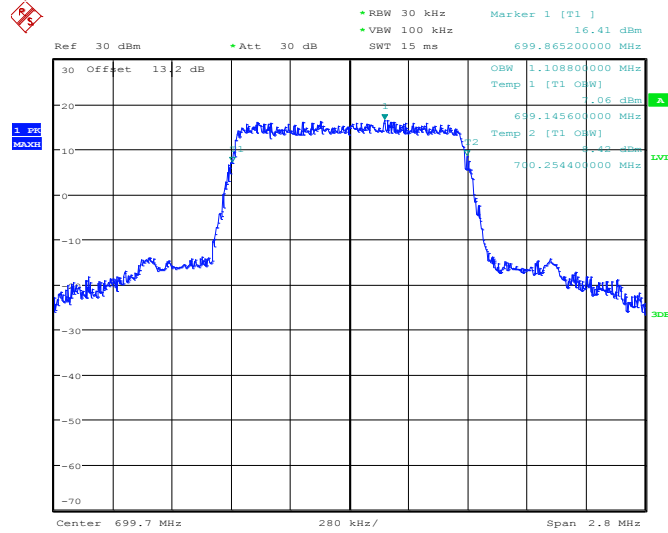


Date: 16.DEC.2013 10:39:50



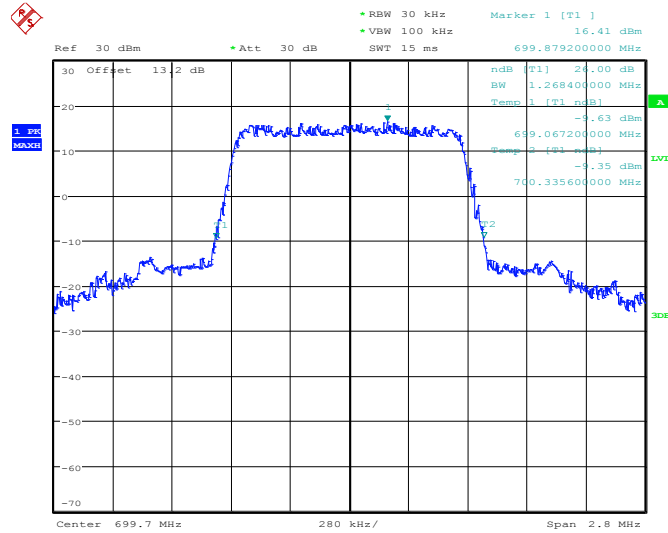
Band :	LTE Band 12	BW / Mod. :	1.4MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 23017



Date: 16.DEC.2013 10:23:53

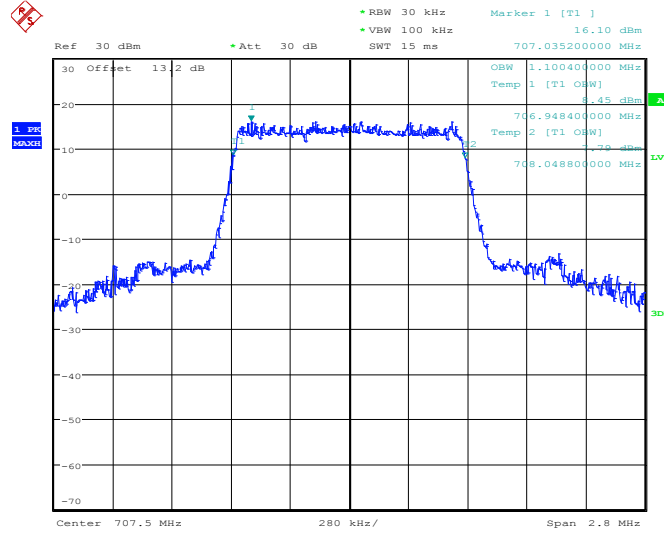
26dB Bandwidth Plot on Channel 23017



Date: 16.DEC.2013 10:24:06

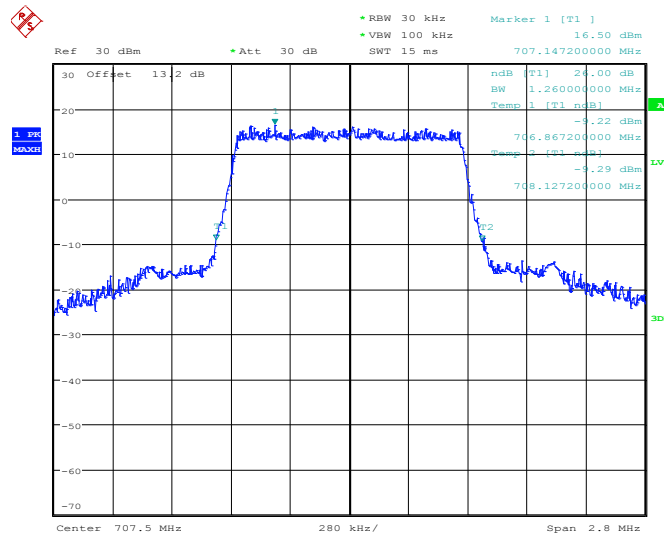


99% Occupied Bandwidth Plot on Channel 23095



Date: 16.DEC.2013 10:34:42

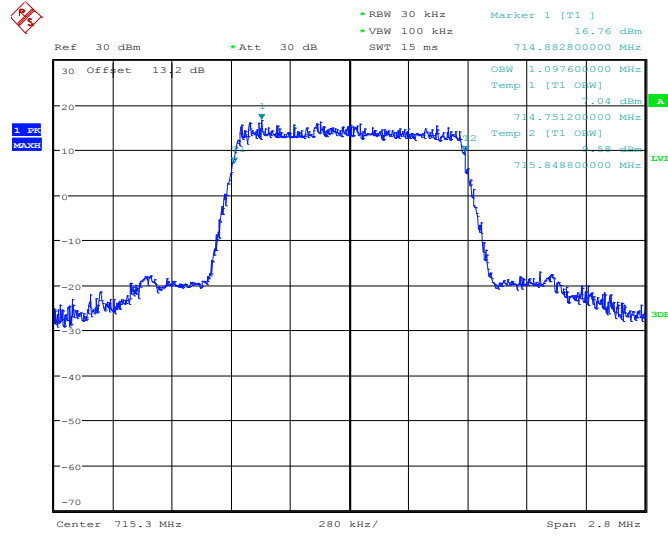
26dB Bandwidth Plot on Channel 23095



Date: 16.DEC.2013 10:34:50

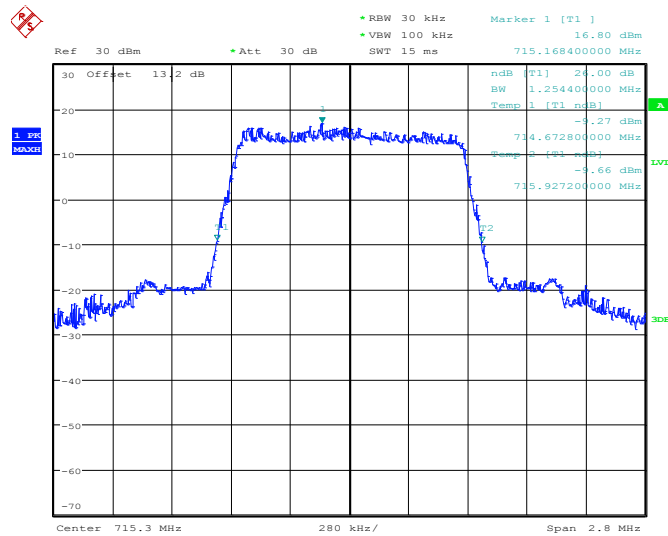


99% Occupied Bandwidth Plot on Channel 23173



Date: 16.DEC.2013 10:43:20

26dB Bandwidth Plot on Channel 23173

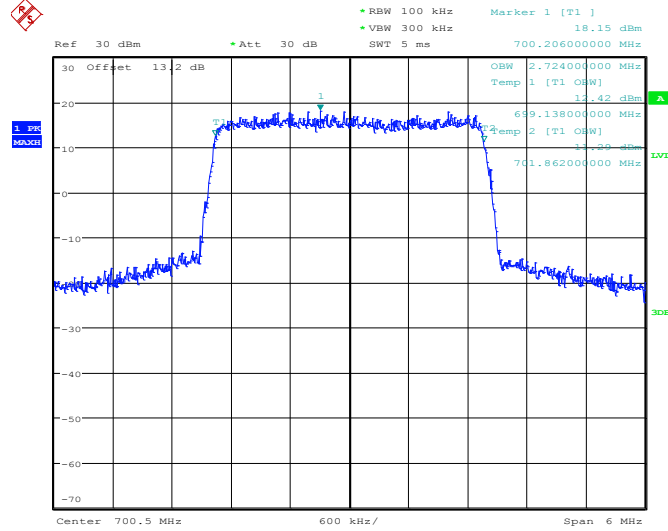


Date: 16.DEC.2013 10:43:27



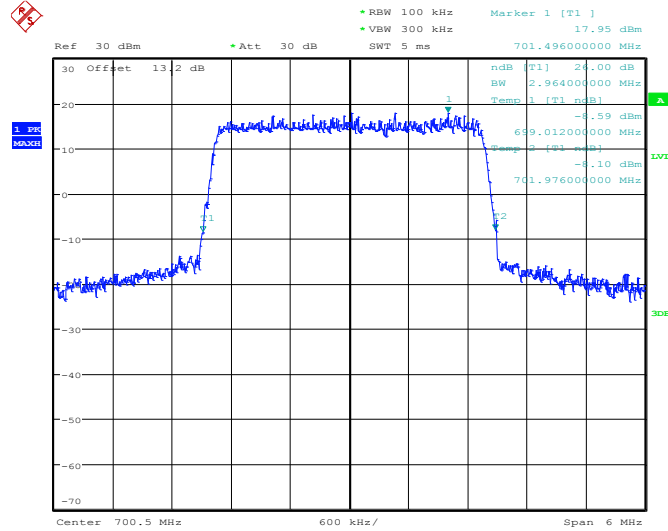
Band :	LTE Band 12	BW / Mod. :	3MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 23025



Date: 16.DEC.2013 10:48:21

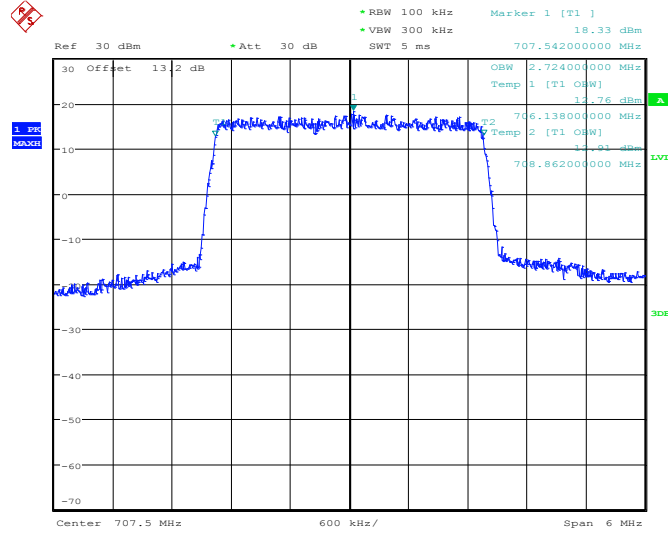
26dB Bandwidth Plot on Channel 23025



Date: 16.DEC.2013 10:48:33

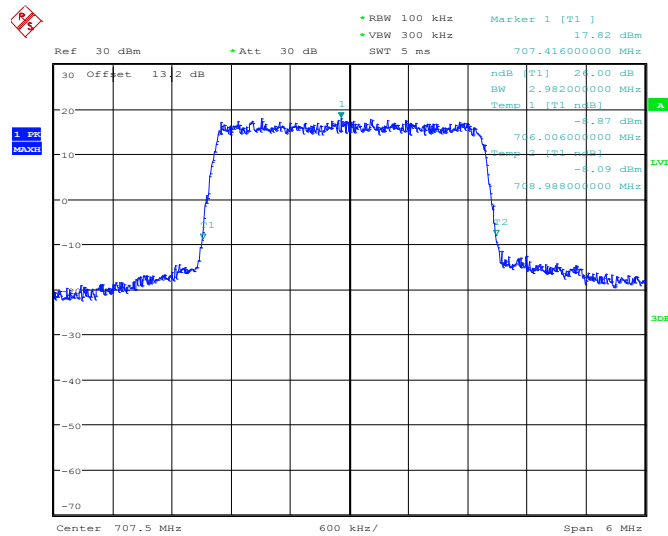


99% Occupied Bandwidth Plot on Channel 23095



Date: 16.DEC.2013 11:02:46

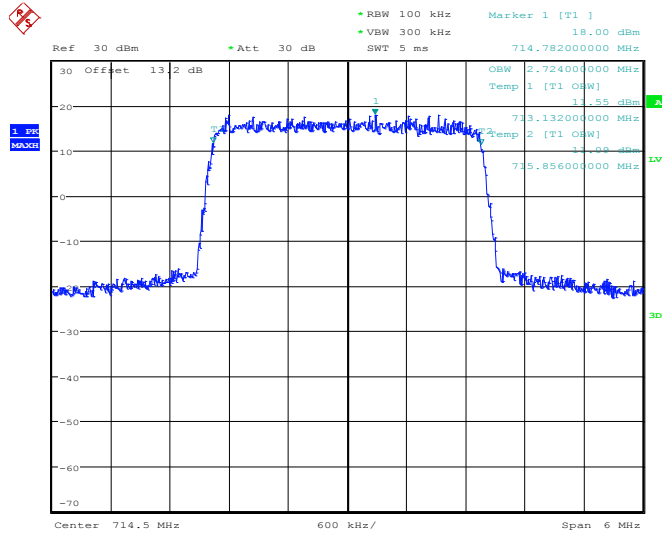
26dB Bandwidth Plot on Channel 23095



Date: 16.DEC.2013 11:02:36

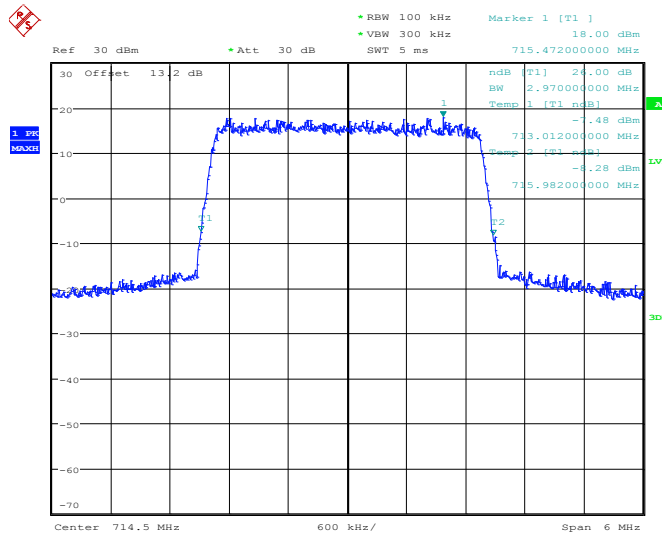


99% Occupied Bandwidth Plot on Channel 23165



Date: 16.DEC.2013 11:03:13

26dB Bandwidth Plot on Channel 23165

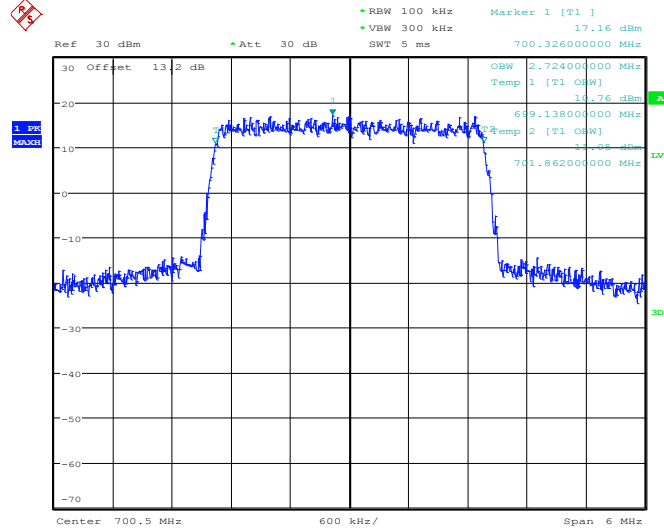


Date: 16.DEC.2013 11:03:22



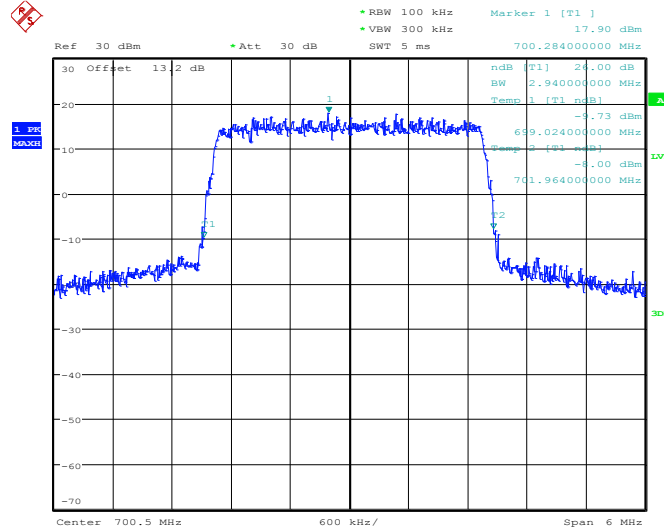
Band :	LTE Band 12	BW / Mod. :	3MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 23025



Date: 16.DEC.2013 10:49:41

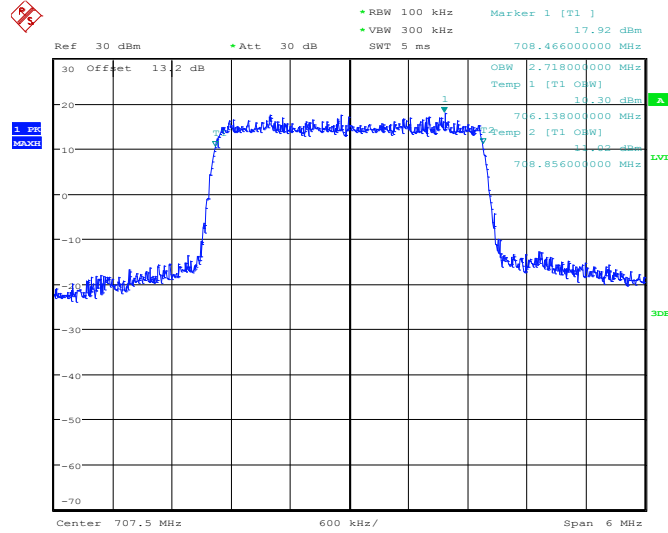
26dB Bandwidth Plot on Channel 23025



Date: 16.DEC.2013 10:49:48

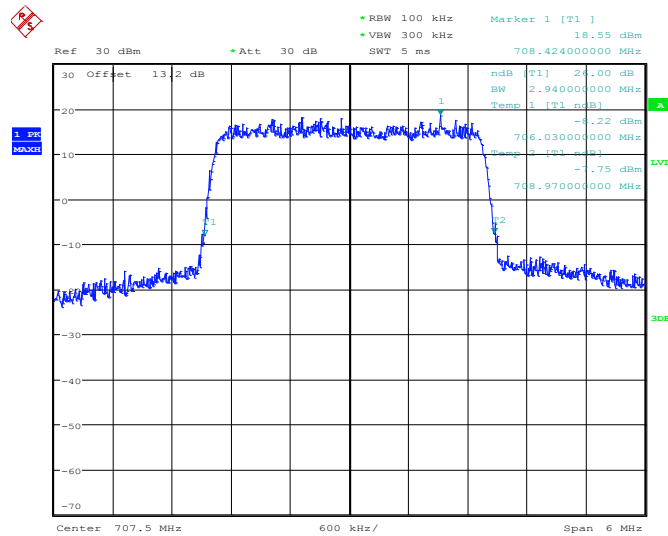


99% Occupied Bandwidth Plot on Channel 23095



Date: 16.DEC.2013 11:02:10

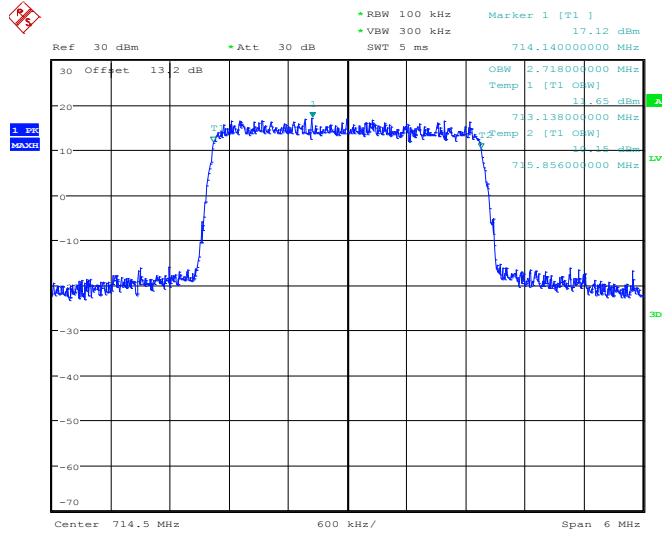
26dB Bandwidth Plot on Channel 23095



Date: 16.DEC.2013 11:02:18

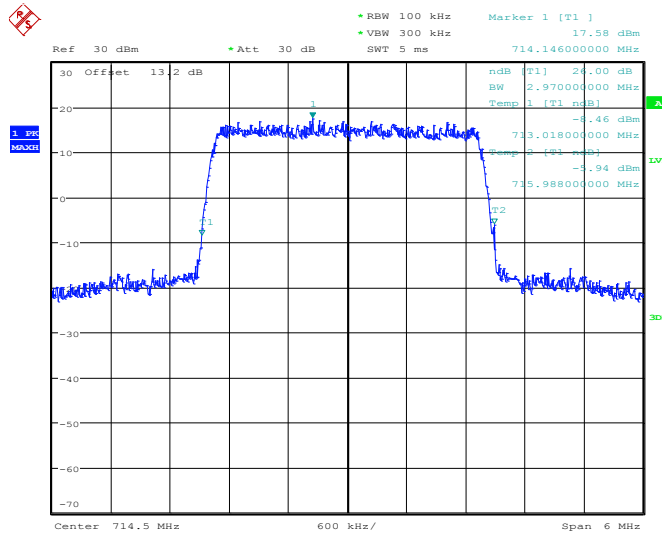


99% Occupied Bandwidth Plot on Channel 23165



Date: 16.DEC.2013 11:04:22

26dB Bandwidth Plot on Channel 23165

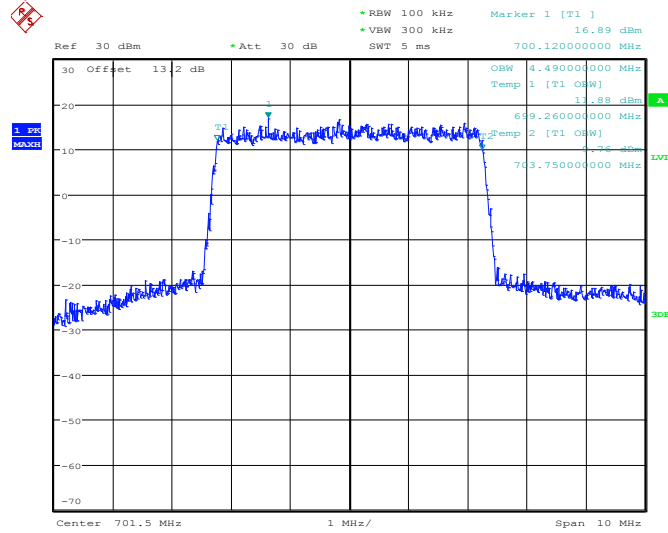


Date: 16.DEC.2013 11:04:28



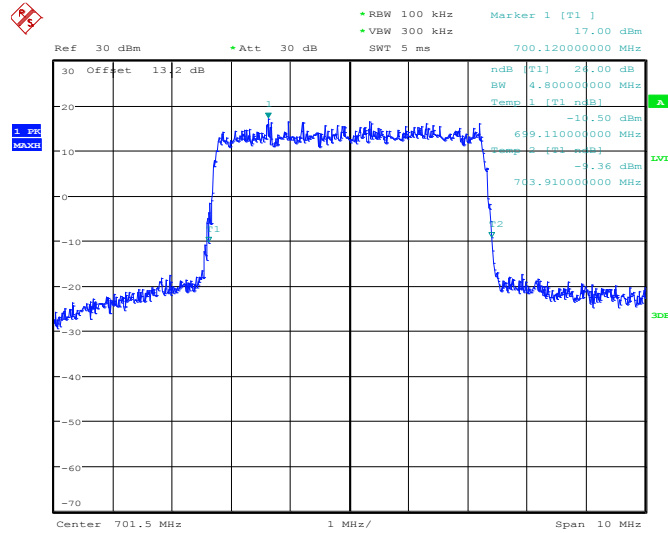
Band :	LTE Band 12	BW / Mod. :	5MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 23035



Date: 16.DEC.2013 12:50:15

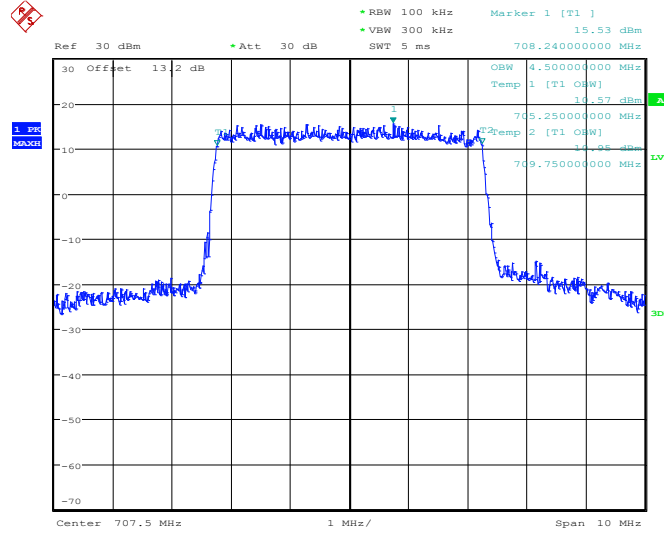
26dB Bandwidth Plot on Channel 23035



Date: 16.DEC.2013 12:50:33

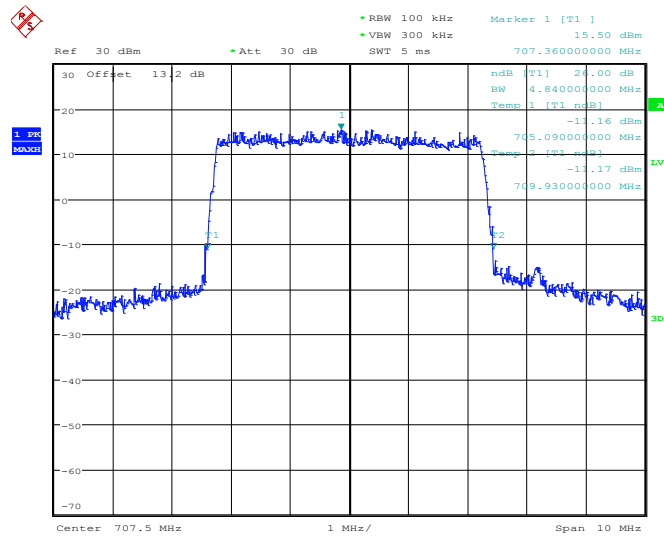


99% Occupied Bandwidth Plot on Channel 23095



Date: 16.DEC.2013 13:00:19

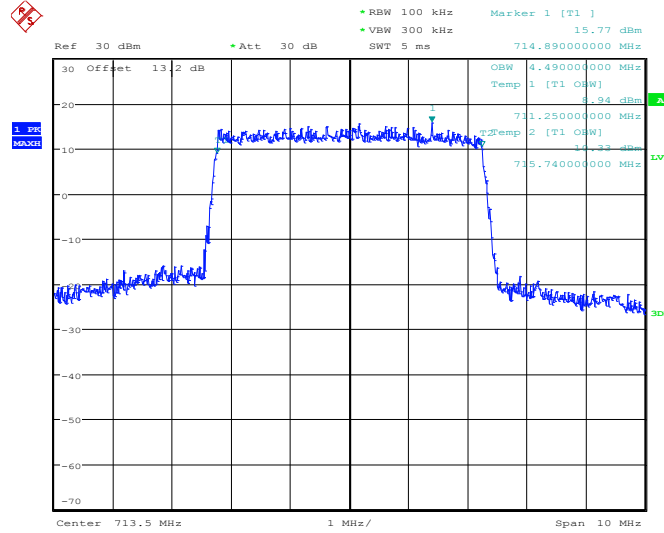
26dB Bandwidth Plot on Channel 23095



Date: 16.DEC.2013 13:00:28

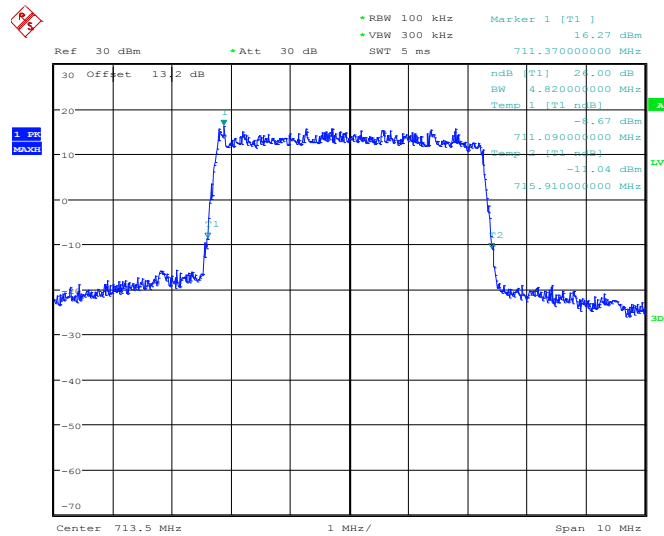


99% Occupied Bandwidth Plot on Channel 23155



Date: 16.DEC.2013 13:01:08

26dB Bandwidth Plot on Channel 23155

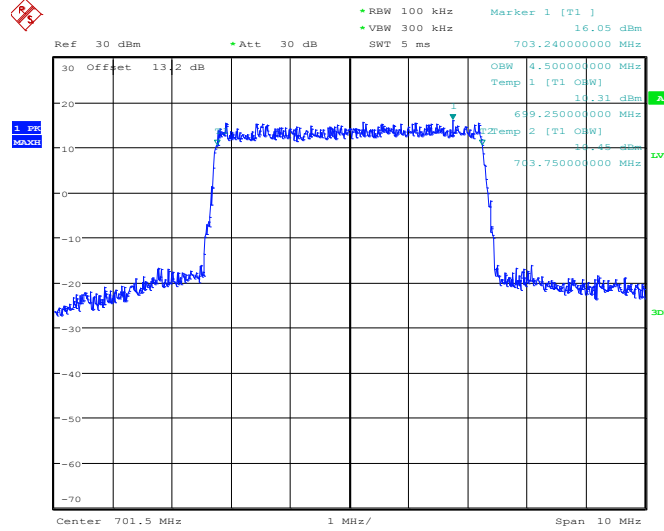


Date: 16.DEC.2013 13:01:17



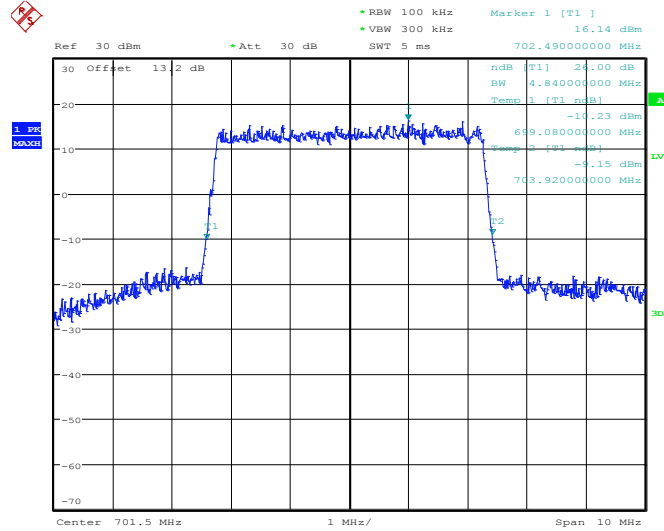
Band :	LTE Band 12	BW / Mod. :	5MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 23035



Date: 16.DEC.2013 12:51:47

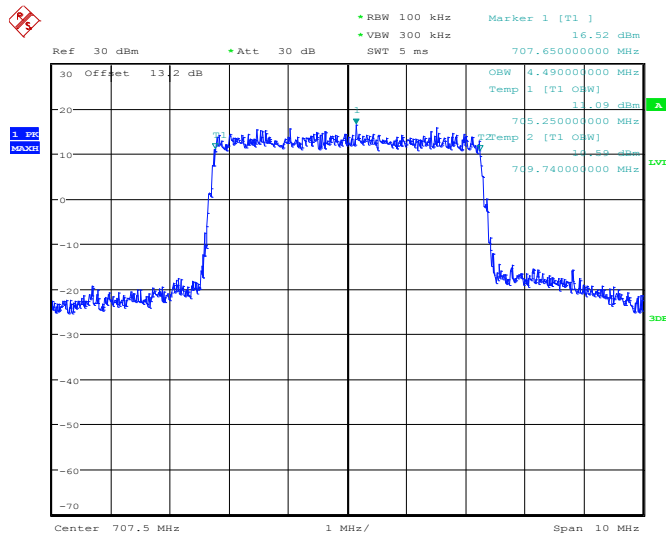
26dB Bandwidth Plot on Channel 23035



Date: 16.DEC.2013 12:51:57

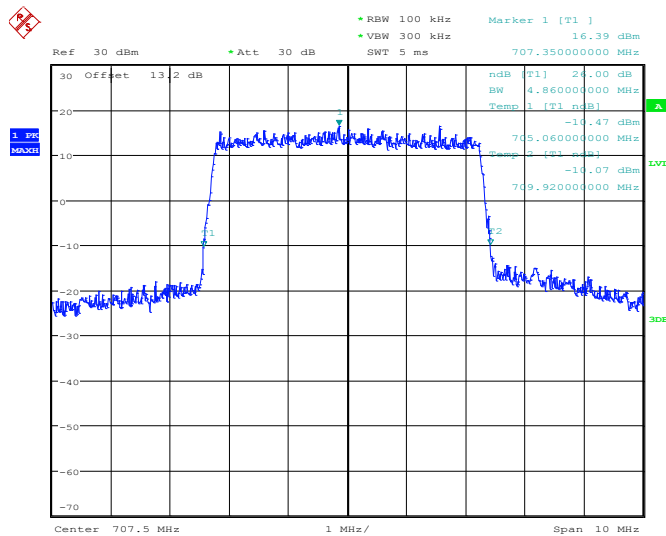


99% Occupied Bandwidth Plot on Channel 23095



Date: 16.DEC.2013 12:59:52

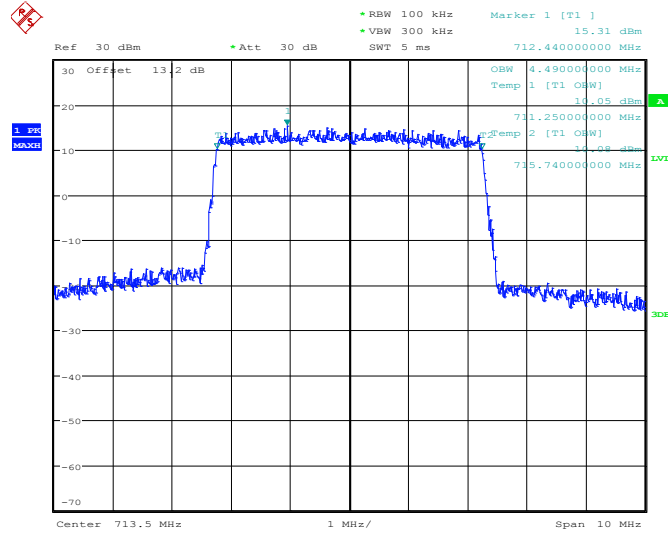
26dB Bandwidth Plot on Channel 23095



Date: 16.DEC.2013 13:00:01

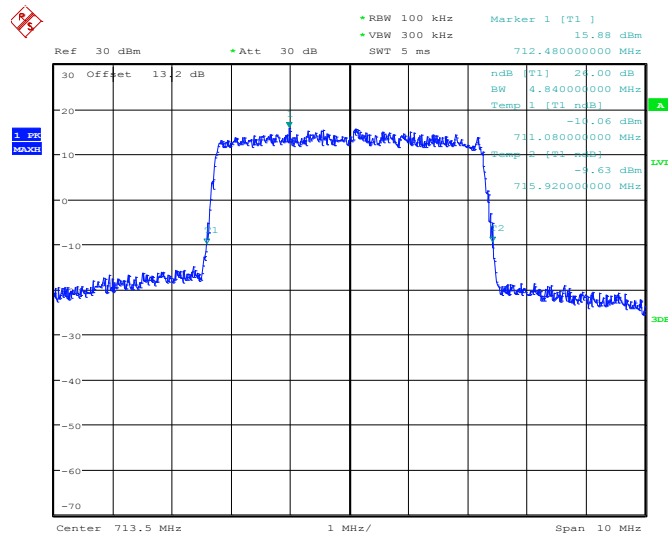


99% Occupied Bandwidth Plot on Channel 23155



Date: 16.DEC.2013 13:02:26

26dB Bandwidth Plot on Channel 23155

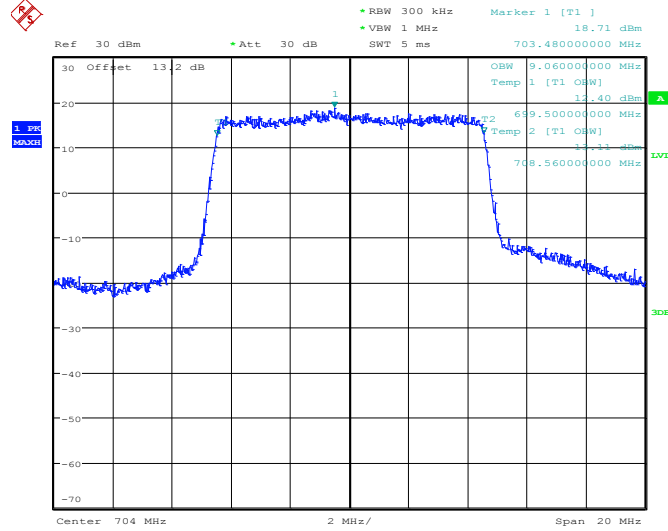


Date: 16.DEC.2013 13:02:35



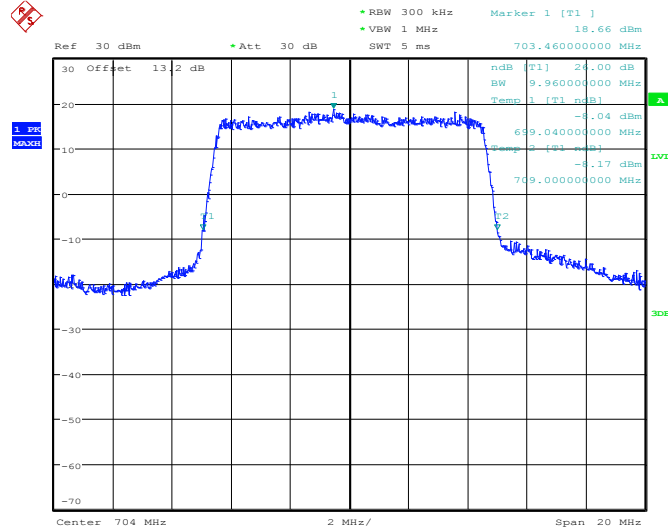
Band :	LTE Band 12	BW / Mod. :	10MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 23060



Date: 16.DEC.2013 13:12:20

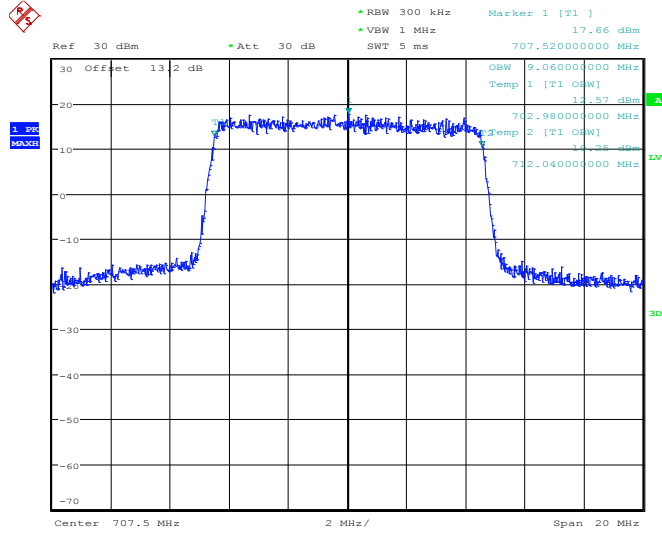
26dB Bandwidth Plot on Channel 23060



Date: 16.DEC.2013 13:12:31

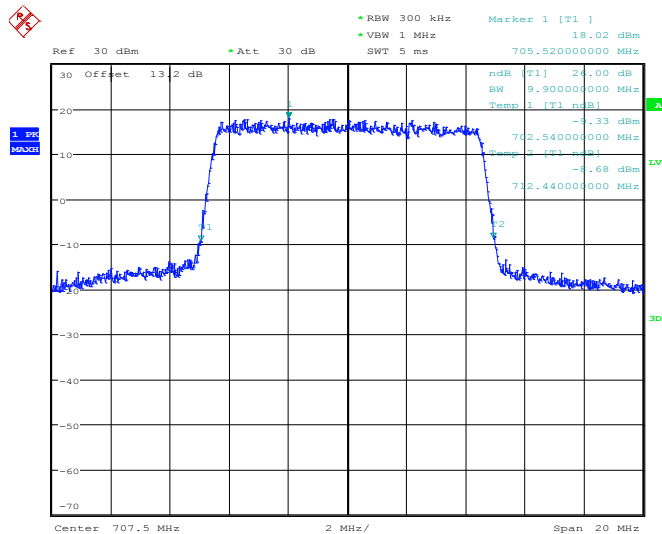


99% Occupied Bandwidth Plot on Channel 23095



Date: 16.DEC.2013 13:24:27

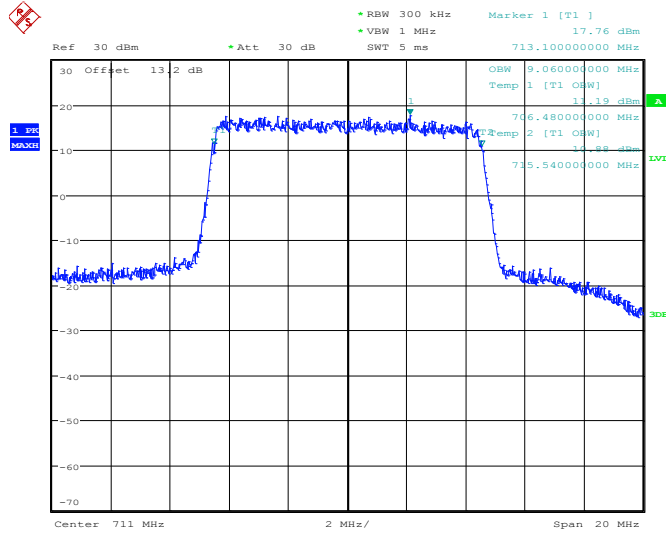
26dB Bandwidth Plot on Channel 23095



Date: 16.DEC.2013 13:24:35

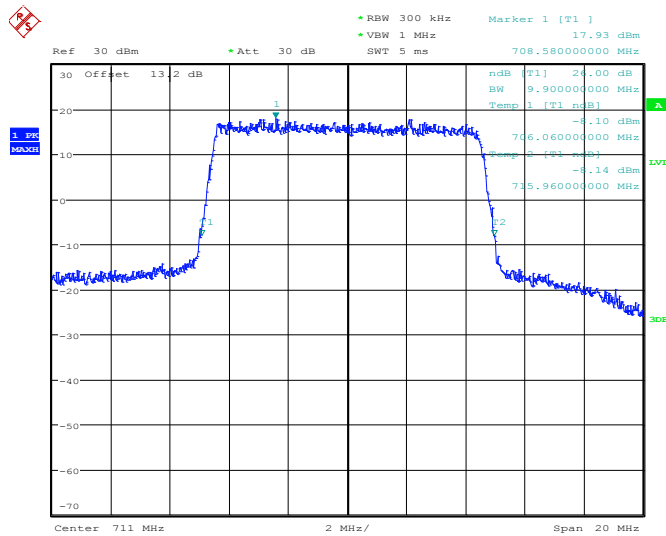


99% Occupied Bandwidth Plot on Channel 23130



Date: 16.DEC.2013 13:37:02

26dB Bandwidth Plot on Channel 23130

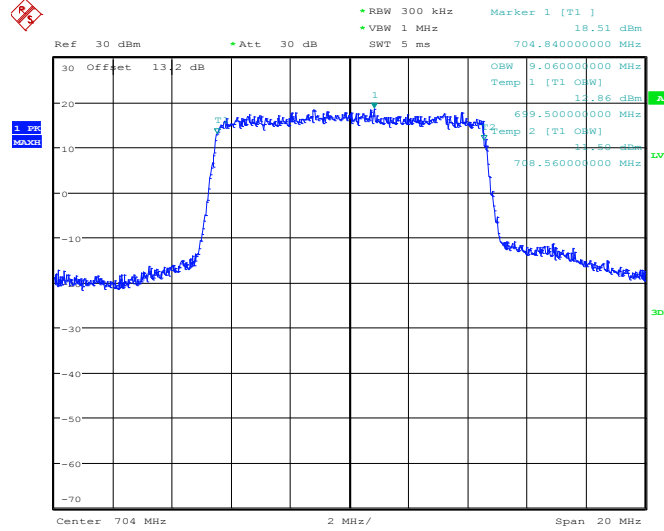


Date: 16.DEC.2013 13:37:10



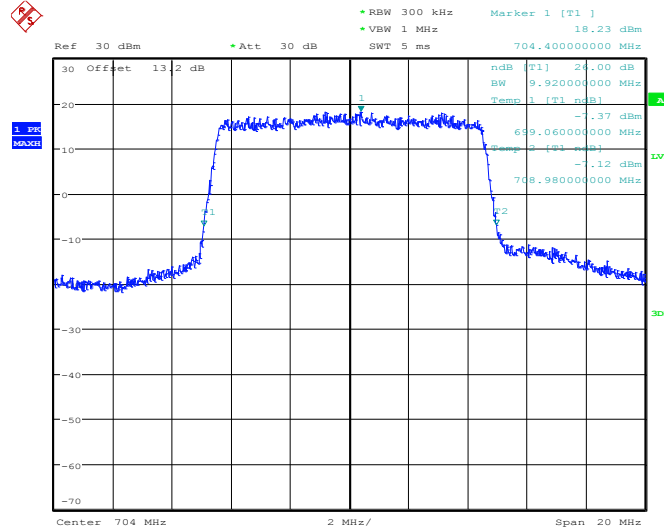
Band :	LTE Band 12	BW / Mod. :	10MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 23060



Date: 16.DEC.2013 13:13:58

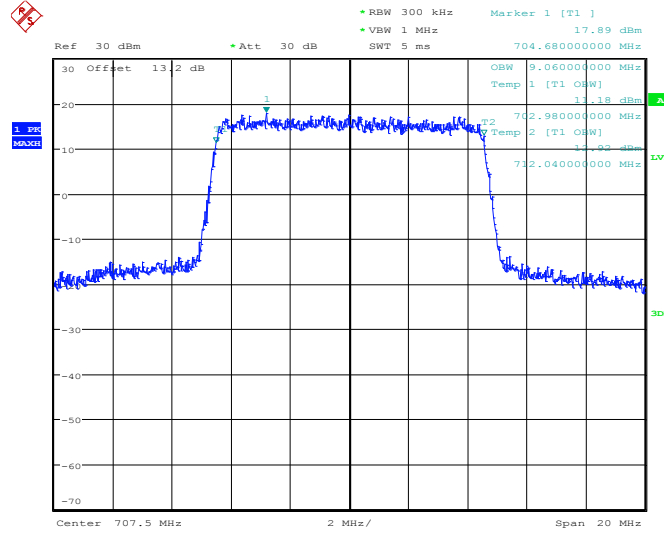
26dB Bandwidth Plot on Channel 23060



Date: 16.DEC.2013 13:14:08

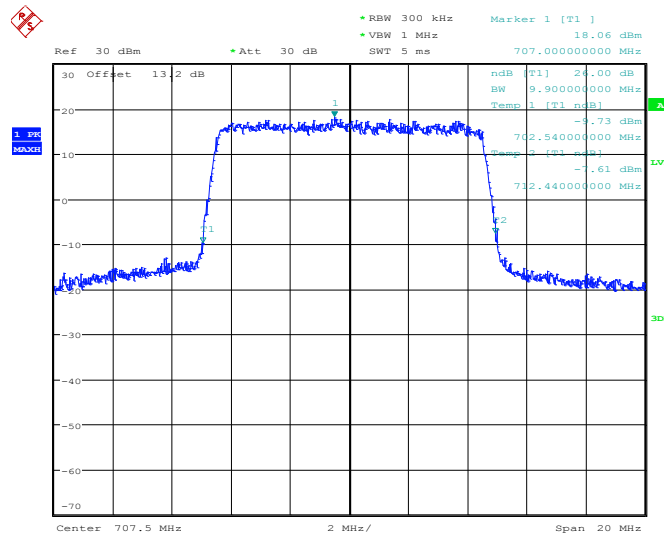


99% Occupied Bandwidth Plot on Channel 23095



Date: 16.DEC.2013 13:22:43

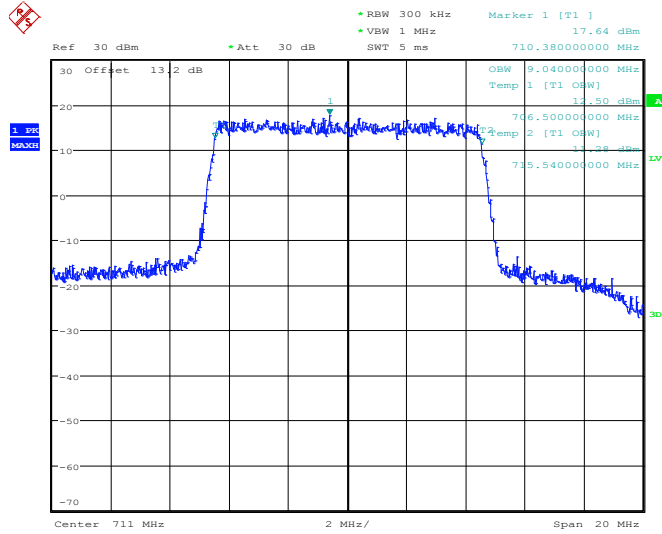
26dB Bandwidth Plot on Channel 23095



Date: 16.DEC.2013 13:22:54

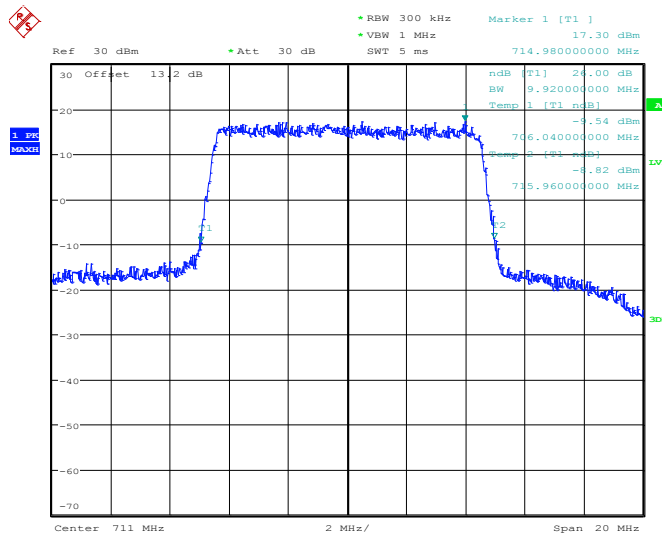


99% Occupied Bandwidth Plot on Channel 23130



Date: 16.DEC.2013 13:38:21

26dB Bandwidth Plot on Channel 23130



Date: 16.DEC.2013 13:38:29