



FCC RF Test Report

APPLICANT : Bullitt Group
EQUIPMENT : Rugged Smart Phone
BRAND NAME : CAT
MODEL NAME : S50
FCC ID : ZL5S50
STANDARD : 47 CFR Part 2, 22(H), 24(E), 27
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)

The product was received on Jun. 30, 2014 and testing was completed on Jul. 31, 2014. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA / EIA-603-C-2004 and the testing has shown the tested sample to be in 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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REVISION HISTORY



SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	§2.1046	RSS-Gen(4.8) RSS-130(4.4) RSS-132 (5.4) RSS-133 (6.4) RSS-139 (6.4) RSS-199 (4.4)	Conducted Output Power	Reporting Only	PASS	-
3.2	§24.232(d)	RSS-130(4.4) RSS-132 (5.4) RSS-133 (6.4) RSS-139 (6.4)	Peak-to-Average Ratio	<13 dB	PASS	-
3.3	§22.913(a)(2)	RSS-132(5.4) SRSP-503(5.1.3)	Effective Radiated Power (Band 5)	ERP < 7 Watt	PASS	-
	§27.50(b)(10) §27.50(c)(10)	N/A	Effective Radiated Power (Band 17)	ERP < 3 Watt		
	N/A	RSS-130(4.4)	Equivalent Isotropic Radiated Power (Band 17)	EIRP < 5 Watt		
	§24.232(c) §27.50(h)(2)	RSS-133 (6.4) SRSP-510(5.1.2) RSS-199 (4.4)	Equivalent Isotropic Radiated Power (Band 2) (Band 7)	EIRP < 2Watt		
	§27.50(d)(4)	RSS-139 (6.4) SRSP-513(5.1.2)	Equivalent Isotropic Radiated Power (Band 4)	EIRP < 1Watt		



Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.4	§2.1049 §22.917(b) §24.238(b) §27.53(h)(3) §27.53(m)(6)	RSS-GEN(4.6.1) RSS-132 (3.1) RSS-133 (3.1) RSS-139 (3.1) RSS-199 (4.2)	Occupied Bandwidth	Reporting Only	PASS	-
3.5	§2.1051 §22.917(a) §24.238(a) §27.53(g) §27.53(h) §27.53(m)(4)	RSS-GEN(4.9) RSS-132 (5.5) RSS-133 (6.5.1) RSS-130(4.6) RSS-139 (6.5) RSS-199 (4.5)	Conducted Band Edge Measurement (Band 2) (Band 4) (Band 5) (Band 17) (Band 7)	< 43+10log ₁₀ (P[Watt])	PASS	-
3.6	§2.1051 §22.917(a) §24.238(a) §27.53(f) §27.53(g) §27.53(h)	RSS-GEN(4.9) RSS-132 (5.5) RSS-133 (6.5.1) RSS-130(4.6) RSS-139 (6.5)	Conducted Spurious Emission (Band 2) (Band 4) (Band 5) (Band 17)	< 43+10log ₁₀ (P[Watts])	PASS	-
	§2.1051 §27.53(m)(4)	RSS-GEN(4.9) RSS-199 (4.5)	Conducted Spurious Emission (Band 7)	< 55+10log ₁₀ (P[Watts])	PASS	-
3.7	§2.1053 §22.917(a) §24.238(a) §27.53(f) §27.53(g) §27.53(h)	RSS-GEN(4.9) RSS-132 (5.5) RSS-133 (6.5.1) RSS-130(4.6) RSS-139 (6.5)	Radiated Spurious Emission (Band 2) (Band 4) (Band 5) (Band 17)	< 43+10log ₁₀ (P[Watts])	PASS	Under limit 0.09 dB at 10260.000 MHz
	§2.1053 §27.53(m)(4)	RSS-GEN(4.9) RSS-199 (4.5)	Radiated Spurious Emission (Band 7)	< 55+10log ₁₀ (P[Watts])	PASS	



Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.8	§2.1055 §22.355 §24.235 §27.54	RSS-GEN(4.7) RSS-132(5.3) RSS-133(6.3) RSS-130(4.3) RSS-139 (6.3) RSS-199 (4.3)	Frequency Stability Temperature & Voltage	< 2.5 ppm	PASS	-



1 General Description

1.1 Applicant

Bullitt Group

No. 4, The Aquarium, King Street, Reading, RG1 2AN United Kingdom

1.2 Manufacturer

Compal Electronics, INC.

No. 385, Yangguang St. Neihu District, Taipei City 11491, Taiwan, R.O.C

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Rugged Smart Phone
Brand Name	CAT
Model Name	S50
FCC ID	ZL5S50
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE/NFC WLAN 11b/g/n HT20 WLAN 11a/n HT20/HT40 Bluetooth v4.0 EDR/LE
HW Version	DVT1
SW Version	LTE_S0201121.0_S50_0.006.00
EUT Stage	Identical Prototype

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 subjective to this standard

Product Specification subjective to this standard	
Tx Frequency	LTE Band 2 : 1850.7 MHz ~ 1909.3 MHz LTE Band 4 : 1710.7 MHz ~ 1754.3 MHz LTE Band 5 : 824.7 MHz ~ 848.3 MHz LTE Band 7 : 2502.5 MHz ~ 2567.5 MHz LTE Band 17 : 706.5 MHz ~ 713.5 MHz
Rx Frequency	LTE Band 2 : 1930.7 MHz ~ 1989.3 MHz LTE Band 4 : 2110.7 MHz ~ 2154.3 MHz LTE Band 5 : 869.7 MHz ~ 893.3 MHz LTE Band 7 : 2622.5MHz ~ 2687.5 MHz LTE Band 17 : 736.5 MHz ~ 743.5 MHz
Bandwidth	LTE Band 2 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 4 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 5 : 1.4MHz / 3MHz / 5MHz / 10MHz LTE Band 7 : 5MHz/ 10MHz / 15MHz / 20MHz LTE Band 17 : 5MHz / 10MHz
Maximum Output Power to Antenna	LTE Band 2 : 23.92 dBm LTE Band 4 : 23.95 dBm LTE Band 5 : 22.99 dBm LTE Band 7 : 23.96 dBm LTE Band 17 : 22.82 dBm
Antenna Type	PIFA Antenna
Type of Modulation	QPSK / 16QAM

1.5 Modification of EUT

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



1.6 Maximum ERP/EIRP Power, Frequency Tolerance, and 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	-	0.070 W
Part 22	LTE Band 5	16QAM	1.4 MHz	1M10D7W	-	0.056 W
Part 22	LTE Band 5	QPSK	3 MHz	2M72G7D	-	0.070 W
Part 22	LTE Band 5	16QAM	3 MHz	2M72D7W	-	0.054 W
Part 22	LTE Band 5	QPSK	5 MHz	4M51G7D	-	0.068 W
Part 22	LTE Band 5	16QAM	5 MHz	4M50D7W	-	0.053 W
Part 22	LTE Band 5	QPSK	10 MHz	9M08G7D	0.0085 ppm	0.068 W
Part 22	LTE Band 5	16QAM	10 MHz	9M06D7W	-	0.053 W
Part 24	LTE Band 2	QPSK	1.4 MHz	1M11G7D	-	0.299 W
Part 24	LTE Band 2	16QAM	1.4 MHz	1M11D7W	-	0.230 W
Part 24	LTE Band 2	QPSK	3 MHz	2M72G7D	-	0.300 W
Part 24	LTE Band 2	16QAM	3 MHz	2M73D7W	-	0.228 W
Part 24	LTE Band 2	QPSK	5 MHz	4M51G7D	-	0.301 W
Part 24	LTE Band 2	16QAM	5 MHz	4M50D7W	-	0.230 W
Part 24	LTE Band 2	QPSK	10 MHz	9M08G7D	0.0034 ppm	0.306 W
Part 24	LTE Band 2	16QAM	10 MHz	9M04D7W	-	0.233 W
Part 24	LTE Band 2	QPSK	15 MHz	13M5G7D	-	0.308 W
Part 24	LTE Band 2	16QAM	15 MHz	13M5D7W	-	0.239 W
Part 24	LTE Band 2	QPSK	20 MHz	18M5G7D	-	0.317 W
Part 24	LTE Band 2	16QAM	20 MHz	18M5D7W	-	0.245 W



FCC Rule	System	Type of Modulation	BW	Emission Designator	Frequency Tolerance (ppm)	Maximum ERP/EIRP
Part 27	LTE Band 4	QPSK	1.4 MHz	1M10G7D	-	0.340 W
Part 27	LTE Band 4	16QAM	1.4 MHz	1M10D7W	-	0.288 W
Part 27	LTE Band 4	QPSK	3 MHz	2M73G7D	-	0.372 W
Part 27	LTE Band 4	16QAM	3 MHz	2M73D7W	-	0.304 W
Part 27	LTE Band 4	QPSK	5MHz	4M50G7D	-	0.372 W
Part 27	LTE Band 4	16QAM	5MHz	4M51D7W	-	0.286 W
Part 27	LTE Band 4	QPSK	10MHz	9M08G7D	0.0058 ppm	0.359 W
Part 27	LTE Band 4	16QAM	10MHz	9M06D7W	-	0.262 W
Part 27	LTE Band 4	QPSK	15MHz	13M5G7D	-	0.359 W
Part 27	LTE Band 4	16QAM	15MHz	13M5D7W	-	0.308 W
Part 27	LTE Band 4	QPSK	20MHz	18M5G7D	-	0.319 W
Part 27	LTE Band 4	16QAM	20MHz	18M5D7W	-	0.262 W
Part 27	LTE Band 17	QPSK	5MHz	4M51G7D	-	0.089 W
Part 27	LTE Band 17	16QAM	5MHz	4M50D7W	-	0.068 W
Part 27	LTE Band 17	QPSK	10MHz	9M12G7D	0.0063 ppm	0.089 W
Part 27	LTE Band 17	16QAM	10MHz	9M06D7W	-	0.067 W
Part 27	LTE Band 7	QPSK	5MHz	4M50G7D	-	0.131 W
Part 27	LTE Band 7	16QAM	5MHz	4M51D7W	-	0.101 W
Part 27	LTE Band 7	QPSK	10MHz	9M08G7D	0.0051 ppm	0.135 W
Part 27	LTE Band 7	16QAM	10MHz	9M04D7W	-	0.105 W
Part 27	LTE Band 7	QPSK	15MHz	13M5G7D	-	0.132 W
Part 27	LTE Band 7	16QAM	15MHz	13M5D7W	-	0.106 W
Part 27	LTE Band 7	QPSK	20MHz	18M5G7D	-	0.135 W
Part 27	LTE Band 7	16QAM	20MHz	18M5D7W	-	0.110 W



1.7 Testing Location

Sportun Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

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.	Sportun Site No.	
	TH02-HY	03CH07-HY

1.8 Applicable 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), 24(E), 27
- ♦ ANSI / TIA / EIA-603-C-2004
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v02r01

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

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v02r01 with maximum output power.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission.

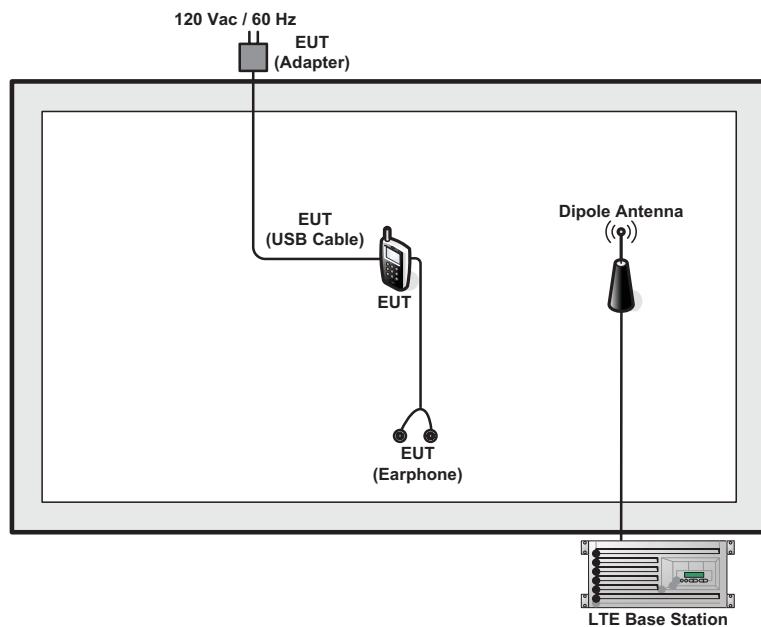
Test Items	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Max. Output Power	2	V	V	V	V	V	V	V	V	V	V	V	V	V	V
	4	V	V	V	V	V	V	V	V	V	V	V	V	V	V
	5	V	V	V	V	-	-	V	V	V	V	V	V	V	V
	7	-	-	V	V	V	V	V	V	V	V	V	V	V	V
	17	-	-	V	V	-	-	V	V	V	V	V	V	V	V
Peak-to-Average Ratio	2							V		V	V		V	V	V
	4							V		V	V		V	V	V
	5				V	-	-		V	V		V	V	V	V
	7	-	-					V		V	V		V	V	V
	17	-	-	V	-	-	-		V	V		V	V	V	V
26dB and 99% Bandwidth	2	V	V	V	V	V	V	V	V				V	V	V
	4	V	V	V	V	V	V	V	V				V	V	V
	5	V	V	V	V	-	-	V	V				V	V	V
	7	-	-	V	V	V	V	V	V				V	V	V
	17	-	-	V	V	-	-	V	V				V	V	V
Conducted Band Edge	2	V	V	V	V	V	V	V	V	V	V		V	V	V
	4	V	V	V	V	V	V	V	V	V	V		V	V	V
	5	V	V	V	V	-	-	V	V	V		V	V		V
	7	-	-	V	V	V	V	V	V	V		V	V		V
	17	-	-	V	V	-	-	V	V	V		V	V		V



Test Items	Band	Bandwidth (MHz)						Modulation		RB #		Test Channel			
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Conducted Spurious Emission	2	v	v	v	v	v	v	v	v				v	v	v
	4	v	v	v	v	v	v	v	v				v	v	v
	5	v	v	v	v	-	-	v	v				v	v	v
	7	-	-	v	v	v	v	v	v				v	v	v
	17	-	-	v	v	-	-	v	v				v	v	v
Frequency Stability	2				v			v				v		v	
	4				v			v				v		v	
	5				v	-	-	v				v		v	
	7	-	-		v			v				v		v	
	17	-	-		v	-	-	v				v		v	
E.R.P/ E.I.R.P.	2	v	v	v	v	v	v	v	v				v	v	v
	4	v	v	v	v	v	v	v	v				v	v	v
	5	v	v	v	v	-	-	v	v				v	v	v
	7	-	-	v	v	v	v	v	v				v	v	v
	17	-	-	v	v	-	-	v	v				v	v	v
Radiated Spurious Emission	2	v	v	v	v	v	v	v		v			v	v	v
	4	v	v	v	v	v	v	v		v			v	v	v
	5	v	v	v	v	-	-	v		v			v	v	v
	7	-	-	v	v	v	v	v		v			v	v	v
	17	-	-	v	v	-	-	v		v			v	v	v
Note	1. The mark "v" means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.														



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.	System Simulator	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 :

$\text{Offset(dB)} = \text{RF cable loss(dB)} + \text{attenuator factor(dB)}$.

$$= 4.2 + 10 = 14.2 \text{ (dB)}$$



3 Test Result

3.1 Conducted Output Power Measurement

3.1.1 Description of the Conducted Output Power Measurement

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

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 the system simulator.
2. Set EUT at maximum power through the system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.

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	22.88	22.99	22.96
10	QPSK	1	24	22.84	22.87	22.95
10	QPSK	1	49	22.86	22.96	22.95
10	QPSK	25	0	21.86	21.91	21.88
10	QPSK	25	12	21.94	21.90	21.98
10	QPSK	25	24	21.93	21.86	22.01
10	QPSK	50	0	22.01	21.92	21.97
10	16QAM	1	0	21.91	21.93	21.92
10	16QAM	1	24	21.90	21.87	21.91
10	16QAM	1	49	21.87	21.92	21.87
10	16QAM	25	0	20.85	21.30	21.26
10	16QAM	25	12	20.93	21.29	21.27
10	16QAM	25	24	20.93	21.29	21.26
10	16QAM	50	0	20.94	20.91	20.90
Channel				20425	20525	20625
Frequency (MHz)				826.5	836.5	846.5
5	QPSK	1	0	22.83	22.96	22.94
5	QPSK	1	12	22.79	22.81	22.87
5	QPSK	1	24	22.82	22.95	22.92
5	QPSK	12	0	21.82	21.82	21.86
5	QPSK	12	6	21.85	21.85	21.92
5	QPSK	12	11	21.88	21.82	21.97
5	QPSK	25	0	21.97	21.89	21.90
5	16QAM	1	0	21.88	21.84	21.86
5	16QAM	1	12	21.83	21.77	21.85
5	16QAM	1	24	21.83	21.83	21.82
5	16QAM	12	0	20.79	21.28	21.26
5	16QAM	12	6	20.88	21.32	21.26
5	16QAM	12	11	20.87	21.26	21.25
5	16QAM	25	0	20.94	20.90	20.82



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	22.84	22.93	22.93
3	QPSK	1	7	22.76	22.84	22.90
3	QPSK	1	14	22.83	22.92	22.90
3	QPSK	8	0	21.80	21.89	21.88
3	QPSK	8	4	21.87	21.90	21.95
3	QPSK	8	7	21.88	21.77	21.96
3	QPSK	15	0	21.95	21.83	21.90
3	16QAM	1	0	21.89	21.90	21.85
3	16QAM	1	7	21.83	21.79	21.83
3	16QAM	1	14	21.86	21.88	21.80
3	16QAM	8	0	20.80	21.28	21.32
3	16QAM	8	4	20.84	21.23	21.26
3	16QAM	8	7	20.93	21.26	21.28
3	16QAM	15	0	20.93	20.84	20.81
Channel				20407	20525	20643
Frequency (MHz)				824.7	836.5	848.3
1.4	QPSK	1	0	22.63	22.62	22.61
1.4	QPSK	1	2	22.60	22.58	22.57
1.4	QPSK	1	5	22.62	22.51	22.58
1.4	QPSK	3	0	21.94	21.96	21.92
1.4	QPSK	3	1	21.93	21.94	21.91
1.4	QPSK	3	2	21.96	21.92	21.97
1.4	QPSK	6	0	21.92	21.91	21.92
1.4	16QAM	1	0	21.62	21.84	21.87
1.4	16QAM	1	2	21.60	21.83	21.82
1.4	16QAM	1	5	21.61	21.82	21.81
1.4	16QAM	3	0	20.93	21.20	21.20
1.4	16QAM	3	1	20.94	21.22	21.22
1.4	16QAM	3	2	20.95	21.28	21.22
1.4	16QAM	6	0	20.88	20.82	20.83



<LTE Band 2 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				18700	18900	19100
Frequency (MHz)				1860	1880	1900
20	QPSK	1	0	23.78	23.92	23.90
20	QPSK	1	49	23.76	23.91	23.78
20	QPSK	1	99	23.74	23.87	23.62
20	QPSK	50	0	22.75	22.86	22.93
20	QPSK	50	24	22.79	22.92	22.88
20	QPSK	50	49	22.73	22.86	22.75
20	QPSK	100	0	22.72	22.92	22.82
20	16QAM	1	0	22.76	22.85	22.83
20	16QAM	1	49	22.75	22.83	22.77
20	16QAM	1	99	22.68	22.80	22.54
20	16QAM	50	0	21.82	21.88	21.85
20	16QAM	50	24	21.88	21.94	21.85
20	16QAM	50	49	21.81	21.89	21.74
20	16QAM	100	0	21.81	22.01	21.86
Channel				18675	18900	19125
Frequency (MHz)				1857.5	1880	1902.5
15	QPSK	1	0	23.74	23.91	23.83
15	QPSK	1	37	23.71	23.90	23.70
15	QPSK	1	74	23.73	23.78	23.61
15	QPSK	36	0	22.72	22.77	22.86
15	QPSK	36	18	22.75	22.89	22.82
15	QPSK	36	37	22.72	22.77	22.69
15	QPSK	75	0	22.70	22.85	22.76
15	16QAM	1	0	22.72	22.79	22.81
15	16QAM	1	37	22.66	22.74	22.67
15	16QAM	1	74	22.67	22.74	22.47
15	16QAM	36	0	21.79	21.83	21.78
15	16QAM	36	18	21.86	21.87	21.83
15	16QAM	36	37	21.75	21.84	21.65
15	16QAM	75	0	21.77	21.97	21.85



BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				18650	18900	19150
Frequency (MHz)				1855	1880	1905
10	QPSK	1	0	23.74	23.82	23.87
10	QPSK	1	24	23.71	23.81	23.78
10	QPSK	1	49	23.73	23.81	23.52
10	QPSK	25	0	22.68	22.82	22.87
10	QPSK	25	12	22.71	22.92	22.81
10	QPSK	25	24	22.71	22.86	22.70
10	QPSK	50	0	22.69	22.90	22.80
10	16QAM	1	0	22.71	22.82	22.78
10	16QAM	1	24	22.68	22.80	22.77
10	16QAM	1	49	22.59	22.78	22.45
10	16QAM	25	0	21.81	21.83	21.80
10	16QAM	25	12	21.80	21.85	21.80
10	16QAM	25	24	21.73	21.83	21.72
10	16QAM	50	0	21.78	21.94	21.83
Channel				18625	18900	19175
Frequency (MHz)				1852.5	1880	1907.5
5	QPSK	1	0	23.73	23.87	23.86
5	QPSK	1	12	23.72	23.86	23.77
5	QPSK	1	24	23.72	23.85	23.52
5	QPSK	12	0	22.74	22.84	22.87
5	QPSK	12	6	22.76	22.90	22.82
5	QPSK	12	11	22.73	22.84	22.74
5	QPSK	25	0	22.66	22.82	22.81
5	16QAM	1	0	22.71	22.83	22.75
5	16QAM	1	12	22.67	22.76	22.72
5	16QAM	1	24	22.64	22.71	22.52
5	16QAM	12	0	21.82	21.86	21.78
5	16QAM	12	6	21.79	21.91	21.82
5	16QAM	12	11	21.78	21.85	21.73
5	16QAM	25	0	21.73	21.96	21.82



BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				18615	18900	19185
Frequency (MHz)				1851.5	1880	1908.5
3	QPSK	1	0	23.72	23.84	23.89
3	QPSK	1	7	23.71	23.83	23.77
3	QPSK	1	14	23.70	23.84	23.62
3	QPSK	8	0	22.70	22.84	22.86
3	QPSK	8	4	22.70	22.84	22.87
3	QPSK	8	7	22.69	22.82	22.69
3	QPSK	15	0	22.67	22.82	22.77
3	16QAM	1	0	22.75	22.85	22.81
3	16QAM	1	7	22.72	22.76	22.69
3	16QAM	1	14	22.63	22.79	22.45
3	16QAM	8	0	21.78	21.78	21.76
3	16QAM	8	4	21.88	21.89	21.78
3	16QAM	8	7	21.75	21.83	21.67
3	16QAM	15	0	21.72	21.96	21.82
Channel				18607	18900	19193
Frequency (MHz)				1850.7	1880	1909.3
1.4	QPSK	1	0	23.60	23.65	23.66
1.4	QPSK	1	2	23.58	23.61	23.65
1.4	QPSK	1	5	23.58	23.60	23.53
1.4	QPSK	3	0	22.93	22.96	22.96
1.4	QPSK	3	1	22.93	22.95	22.97
1.4	QPSK	3	2	22.92	22.95	22.96
1.4	QPSK	6	0	22.64	22.92	22.74
1.4	16QAM	1	0	22.67	22.65	22.63
1.4	16QAM	1	2	22.60	22.60	22.60
1.4	16QAM	1	5	22.62	22.58	22.52
1.4	16QAM	3	0	21.92	21.96	21.96
1.4	16QAM	3	1	21.90	21.95	21.99
1.4	16QAM	3	2	21.91	21.97	21.96
1.4	16QAM	6	0	21.79	21.95	21.78



<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	23.95	23.69	23.53
20	QPSK	1	49	23.94	23.62	23.40
20	QPSK	1	99	23.89	23.52	23.35
20	QPSK	50	0	22.94	22.70	22.55
20	QPSK	50	24	22.93	22.63	22.46
20	QPSK	50	49	22.71	22.53	22.41
20	QPSK	100	0	22.81	22.65	22.44
20	16QAM	1	0	22.72	22.50	22.38
20	16QAM	1	49	22.71	22.49	22.33
20	16QAM	1	99	22.52	22.36	22.26
20	16QAM	50	0	21.71	21.51	21.46
20	16QAM	50	24	21.68	21.51	21.43
20	16QAM	50	49	21.61	21.49	21.39
20	16QAM	100	0	21.79	21.59	21.52
Channel				20025	20175	20325
Frequency (MHz)				1717.5	1732.5	1747.5
15	QPSK	1	0	23.90	23.69	23.43
15	QPSK	1	37	23.89	23.62	23.36
15	QPSK	1	74	23.80	23.48	23.33
15	QPSK	36	0	22.93	22.63	22.47
15	QPSK	36	18	22.84	22.63	22.37
15	QPSK	36	37	22.62	22.44	22.32
15	QPSK	75	0	22.81	22.56	22.44
15	16QAM	1	0	22.64	22.45	22.29
15	16QAM	1	37	22.62	22.43	22.25
15	16QAM	1	74	22.51	22.33	22.23
15	16QAM	36	0	21.66	21.51	21.42
15	16QAM	36	18	21.63	21.44	21.40
15	16QAM	36	37	21.55	21.43	21.29
15	16QAM	75	0	21.71	21.57	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				20000	20175	20350
Frequency (MHz)				1715	1732.5	1750
10	QPSK	1	0	23.92	23.62	23.51
10	QPSK	1	24	23.91	23.61	23.33
10	QPSK	1	49	23.86	23.48	23.28
10	QPSK	25	0	22.94	22.62	22.48
10	QPSK	25	12	22.87	22.53	22.43
10	QPSK	25	24	22.70	22.53	22.36
10	QPSK	50	0	22.77	22.61	22.38
10	16QAM	1	0	22.72	22.49	22.33
10	16QAM	1	24	22.70	22.48	22.29
10	16QAM	1	49	22.50	22.36	22.16
10	16QAM	25	0	21.62	21.50	21.46
10	16QAM	25	12	21.64	21.45	21.43
10	16QAM	25	24	21.56	21.42	21.33
10	16QAM	50	0	21.77	21.53	21.42
Channel				19975	20175	20375
Frequency (MHz)				1712.5	1732.5	1752.5
5	QPSK	1	0	23.93	23.59	23.48
5	QPSK	1	12	23.85	23.57	23.40
5	QPSK	1	24	23.84	23.43	23.32
5	QPSK	12	0	22.85	22.60	22.54
5	QPSK	12	6	22.85	22.57	22.44
5	QPSK	12	11	22.70	22.44	22.37
5	QPSK	25	0	22.78	22.56	22.35
5	16QAM	1	0	22.71	22.48	22.30
5	16QAM	1	12	22.62	22.45	22.29
5	16QAM	1	24	22.44	22.35	22.25
5	16QAM	12	0	21.69	21.45	21.39
5	16QAM	12	6	21.58	21.49	21.40
5	16QAM	12	11	21.61	21.42	21.34
5	16QAM	25	0	21.75	21.52	21.52



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	23.89	23.69	23.44
3	QPSK	1	7	23.85	23.60	23.38
3	QPSK	1	14	23.84	23.42	23.26
3	QPSK	8	0	22.87	22.70	22.48
3	QPSK	8	4	22.93	22.61	22.37
3	QPSK	8	7	22.69	22.43	22.38
3	QPSK	15	0	22.79	22.55	22.38
3	16QAM	1	0	22.69	22.48	22.38
3	16QAM	1	7	22.62	22.48	22.26
3	16QAM	1	14	22.45	22.32	22.25
3	16QAM	8	0	21.65	21.44	21.40
3	16QAM	8	4	21.66	21.42	21.42
3	16QAM	8	7	21.53	21.47	21.31
3	16QAM	15	0	21.69	21.59	21.45
Channel				19957	20175	20393
Frequency (MHz)				1710.7	1732.5	1754.3
1.4	QPSK	1	0	23.60	23.63	23.52
1.4	QPSK	1	2	23.59	23.52	23.39
1.4	QPSK	1	5	23.58	23.50	23.27
1.4	QPSK	3	0	22.95	22.96	22.88
1.4	QPSK	3	1	22.94	22.95	22.87
1.4	QPSK	3	2	22.92	22.94	22.86
1.4	QPSK	6	0	22.81	22.64	22.38
1.4	16QAM	1	0	22.66	22.43	22.36
1.4	16QAM	1	2	22.61	22.41	22.27
1.4	16QAM	1	5	22.48	22.29	22.26
1.4	16QAM	3	0	21.96	21.96	21.88
1.4	16QAM	3	1	21.95	21.95	21.87
1.4	16QAM	3	2	21.94	21.93	21.86
1.4	16QAM	6	0	21.76	21.51	21.51



<LTE Band 17 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				23780	23790	23800
Frequency (MHz)				709	710	711
10	QPSK	1	0	22.81	22.82	22.80
10	QPSK	1	24	22.73	22.75	22.73
10	QPSK	1	49	22.80	22.81	22.78
10	QPSK	25	0	21.80	21.81	21.78
10	QPSK	25	12	21.78	21.82	21.78
10	QPSK	25	24	21.82	21.83	21.85
10	QPSK	50	0	21.85	21.84	21.86
10	16QAM	1	0	21.84	21.83	21.79
10	16QAM	1	24	21.72	21.74	21.71
10	16QAM	1	49	21.83	21.82	21.76
10	16QAM	25	0	20.82	20.81	20.82
10	16QAM	25	12	20.86	20.81	20.86
10	16QAM	25	24	20.87	20.85	20.86
10	16QAM	50	0	20.93	20.85	20.83
Channel				23755	23790	23825
Frequency (MHz)				706.5	710	713.5
5	QPSK	1	0	22.77	22.75	22.71
5	QPSK	1	12	22.70	22.71	22.66
5	QPSK	1	24	22.80	22.74	22.69
5	QPSK	12	0	21.70	21.73	21.76
5	QPSK	12	6	21.77	21.72	21.73
5	QPSK	12	11	21.74	21.81	21.76
5	QPSK	25	0	21.85	21.74	21.80
5	16QAM	1	0	21.82	21.81	21.72
5	16QAM	1	12	21.68	21.67	21.62
5	16QAM	1	24	21.74	21.80	21.71
5	16QAM	12	0	20.78	20.75	20.76
5	16QAM	12	6	20.77	20.73	20.83
5	16QAM	12	11	20.81	20.85	20.80
5	16QAM	25	0	20.86	20.83	20.81



<LTE Band 7 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				20850	21100	21350
Frequency (MHz)				2510	2535	2560
20	QPSK	1	0	23.88	23.96	23.66
20	QPSK	1	49	23.84	23.89	23.65
20	QPSK	1	99	23.87	23.75	23.61
20	QPSK	50	0	20.75	20.85	20.64
20	QPSK	50	24	20.81	20.98	20.67
20	QPSK	50	49	20.81	21.01	20.64
20	QPSK	100	0	20.83	20.94	20.69
20	16QAM	1	0	22.64	22.76	22.53
20	16QAM	1	49	22.65	22.67	22.58
20	16QAM	1	99	22.74	22.66	22.48
20	16QAM	50	0	20.14	20.36	20.20
20	16QAM	50	24	20.34	20.51	20.26
20	16QAM	50	49	20.39	20.52	20.25
20	16QAM	100	0	20.40	20.47	20.22
Channel				20825	21100	21375
Frequency (MHz)				2507.5	2535.0	2562.5
15	QPSK	1	0	23.64	23.71	23.55
15	QPSK	1	37	23.70	23.74	23.58
15	QPSK	1	74	23.86	23.70	23.60
15	QPSK	36	0	20.69	20.84	20.62
15	QPSK	36	18	20.63	20.86	20.55
15	QPSK	36	37	20.86	20.94	20.63
15	QPSK	75	0	20.67	20.86	20.54
15	16QAM	1	0	22.61	22.72	22.53
15	16QAM	1	37	22.57	22.70	22.45
15	16QAM	1	74	22.84	22.71	22.54
15	16QAM	36	0	20.28	20.33	20.07
15	16QAM	36	18	20.24	20.41	20.13
15	16QAM	36	37	20.32	20.40	20.23
15	16QAM	75	0	20.26	20.41	20.14



BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				20800	21100	21400
Frequency (MHz)				2505.0	2535.0	2565.0
10	QPSK	1	0	23.67	23.72	23.62
10	QPSK	1	24	23.77	23.88	23.72
10	QPSK	1	49	23.84	23.95	23.63
10	QPSK	25	0	21.05	21.26	20.86
10	QPSK	25	12	21.08	21.28	20.88
10	QPSK	25	24	20.99	21.28	20.80
10	QPSK	50	0	21.09	21.23	20.86
10	16QAM	1	0	22.63	22.69	22.50
10	16QAM	1	24	22.82	22.77	22.67
10	16QAM	1	49	22.80	22.85	22.60
10	16QAM	25	0	20.64	20.81	20.51
10	16QAM	25	12	20.66	20.76	20.63
10	16QAM	25	24	20.63	20.74	20.51
10	16QAM	50	0	20.61	20.70	20.43
Channel				20775	21100	21425
Frequency (MHz)				2502.5	2535.0	2567.5
5	QPSK	1	0	23.67	23.90	23.72
5	QPSK	1	12	23.77	23.88	23.63
5	QPSK	1	24	23.80	23.86	23.73
5	QPSK	12	0	21.00	21.26	20.96
5	QPSK	12	6	21.06	21.25	20.85
5	QPSK	12	11	21.15	21.26	20.88
5	QPSK	25	0	21.06	21.25	20.92
5	16QAM	1	0	22.71	22.73	22.68
5	16QAM	1	12	22.75	22.74	22.65
5	16QAM	1	24	22.69	22.75	22.59
5	16QAM	12	0	20.67	20.83	20.54
5	16QAM	12	6	20.67	20.84	20.51
5	16QAM	12	11	20.68	20.80	20.52
5	16QAM	25	0	20.65	20.80	20.54

Note: maximum average power for LTE.

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.

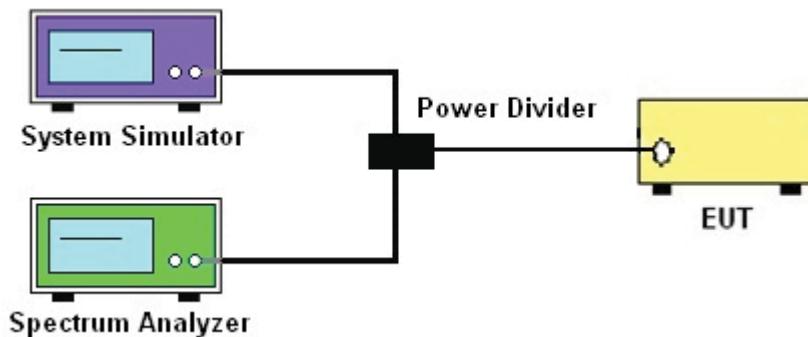
3.2.2 Measuring Instruments

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 and system simulator via a power divider.
2. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
3. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
4. 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	6.15	7.02	6.22
10	16QAM	50	0	6.60	6.44	6.47

LTE Band 2						
BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				18700	18900	19100
Frequency (MHz)				1860	1880	1900
20	16QAM	1	0	5.06	5.83	5.51
20	16QAM	100	0	6.03	6.06	6.03

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	5.54	5.71	5.19
20	16QAM	100	0	6.15	6.09	6.19

LTE Band 7						
BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				20850	21100	21350
Frequency (MHz)				2510.0	2535.0	2560.0
20	16QAM	1	0	5.35	5.38	5.61
20	16QAM	100	0	6.54	6.63	6.44

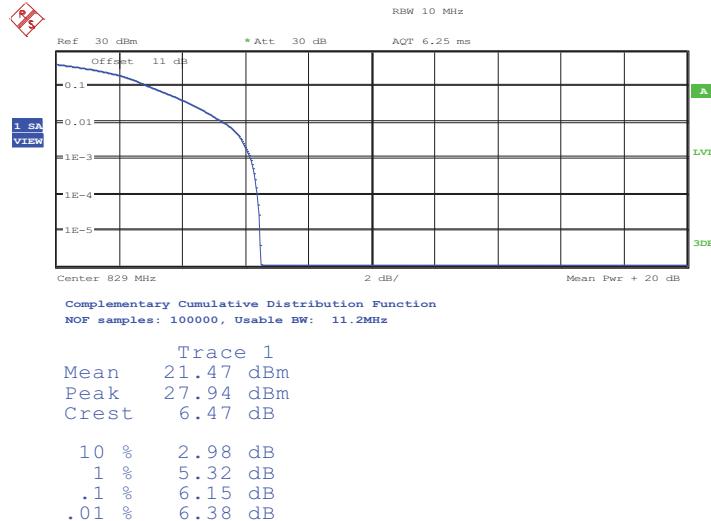
LTE Band 17						
BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				23780	23790	23800
Frequency (MHz)				709	710	711
10	16QAM	1	0	5.80	6.15	5.87
10	16QAM	50	0	6.47	6.44	6.38



3.2.6 Peak to Average Power Ratio

Peak-to-Average Ratio on LTE Band 5

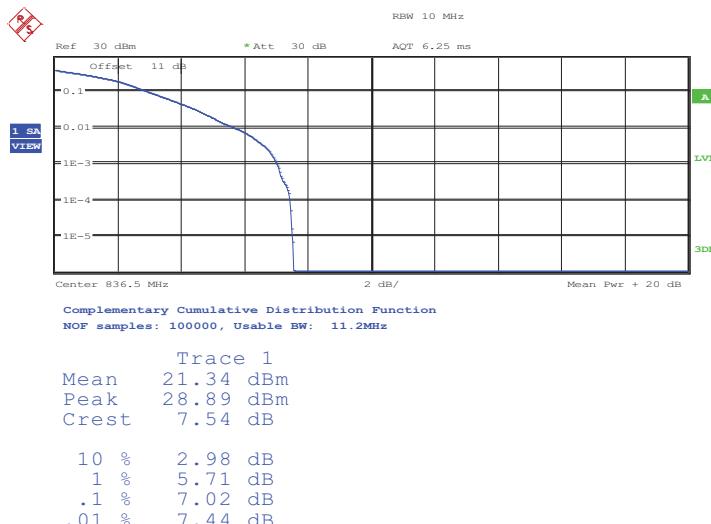
10MHz / 16QAM in Ch. 20450 (1RB Size)



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Peak-to-Average Ratio on LTE Band 5

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

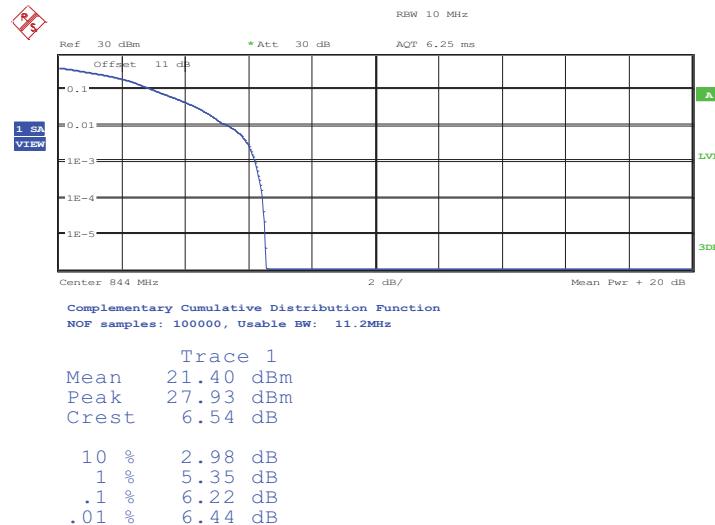


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Peak-to-Average Ratio on LTE Band 5

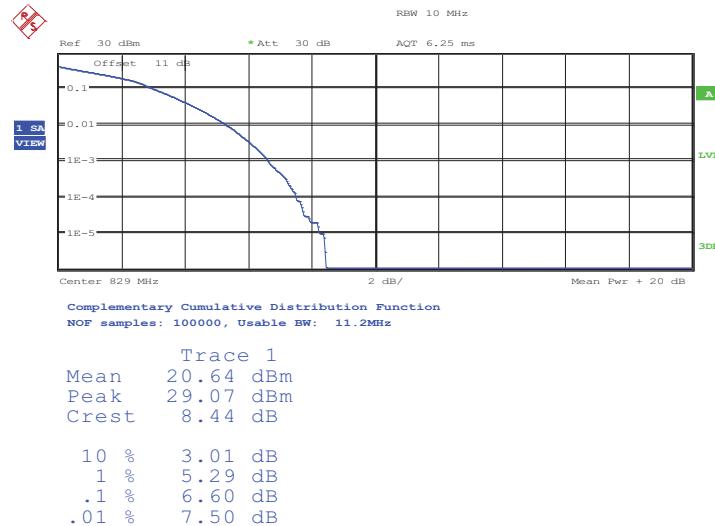
10MHz / 16QAM in Ch. 20600 (1RB Size)



Date: 27.JUL.2014 12:44:38

Peak-to-Average Ratio on LTE Band 5

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

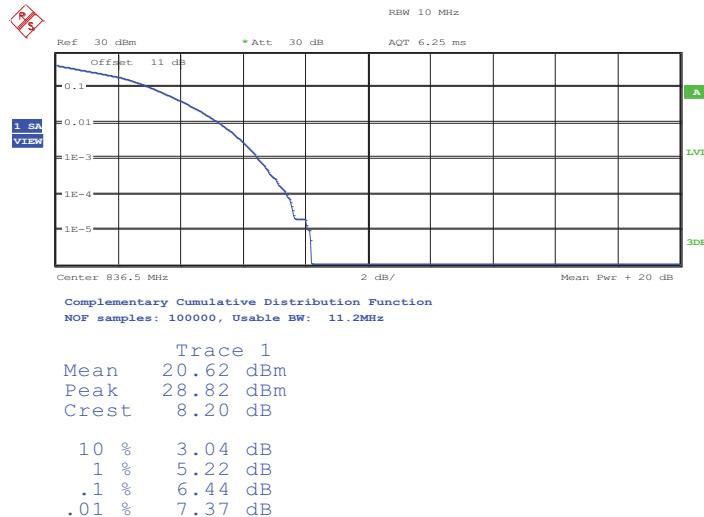


Date: 27.JUL.2014 12:43:52



Peak-to-Average Ratio on LTE Band 5

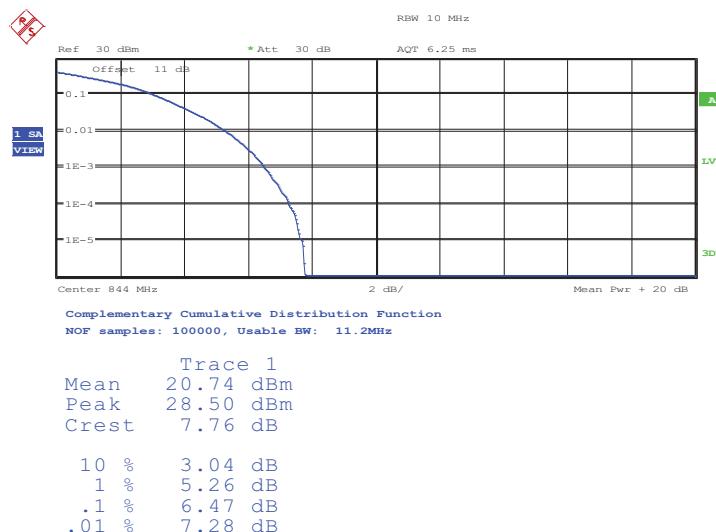
10MHz / 16QAM in Ch. 20525 (50RB Size)



Date: 27.JUL.2014 12:44:26

Peak-to-Average Ratio on LTE Band 5

10MHz / 16QAM in Ch. 20600 (50RB Size)

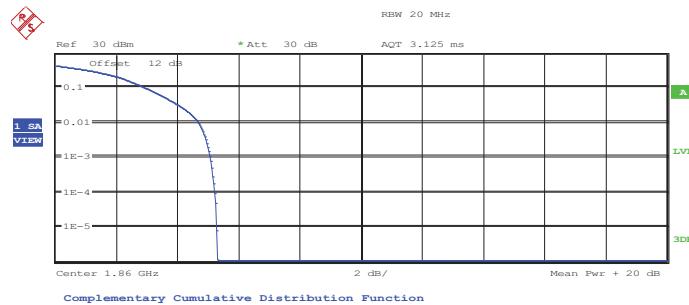


Date: 27.JUL.2014 12:45:05



Peak-to-Average Ratio on LTE Band 2

20MHz / 16QAM in Ch. 18700 (1RB Size)



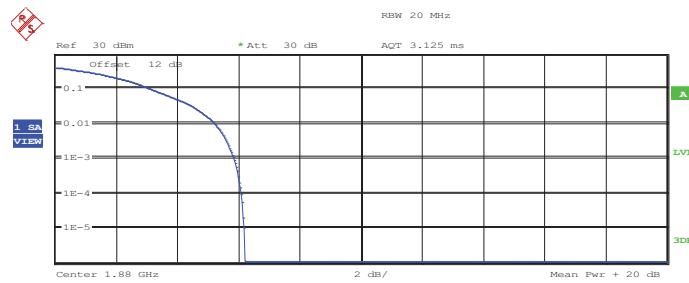
Trace 1
Mean 22.74 dBm
Peak 28.03 dBm
Crest 5.29 dB

10 % 2.95 dB
1 % 4.68 dB
.1 % 5.06 dB
.01 % 5.22 dB

Date: 27.JUL.2014 09:08:13

Peak-to-Average Ratio on LTE Band 2

20MHz / 16QAM in Ch. 18900 (1RB Size)



Trace 1
Mean 22.47 dBm
Peak 28.68 dBm
Crest 6.21 dB

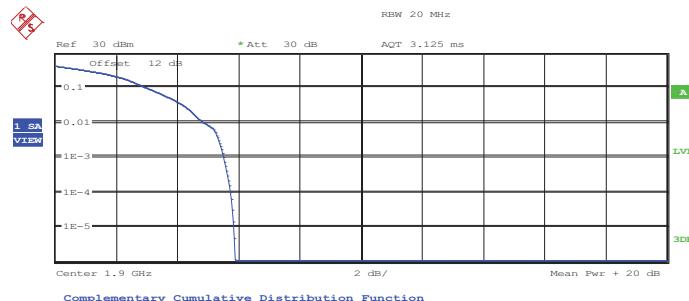
10 % 3.11 dB
1 % 5.19 dB
.1 % 5.83 dB
.01 % 6.09 dB

Date: 27.JUL.2014 09:08:38



Peak-to-Average Ratio on LTE Band 2

20MHz / 16QAM in Ch. 19100 (1RB Size)



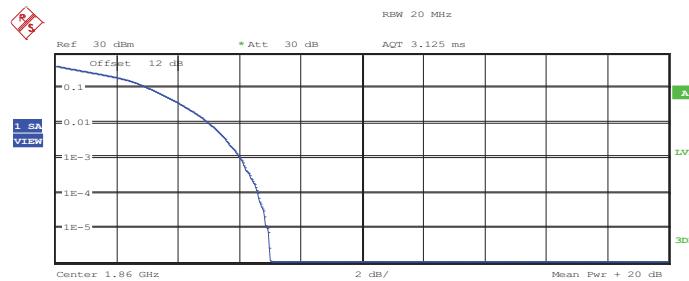
Trace 1
Mean 22.79 dBm
Peak 28.67 dBm
Crest 5.87 dB

10 % 3.01 dB
1 % 4.84 dB
.1 % 5.51 dB
.01 % 5.74 dB

Date: 27.JUL.2014 09:09:03

Peak-to-Average Ratio on LTE Band 2

20MHz / 16QAM in Ch. 18700 (100RB Size)



Trace 1
Mean 22.37 dBm
Peak 29.37 dBm
Crest 6.99 dB

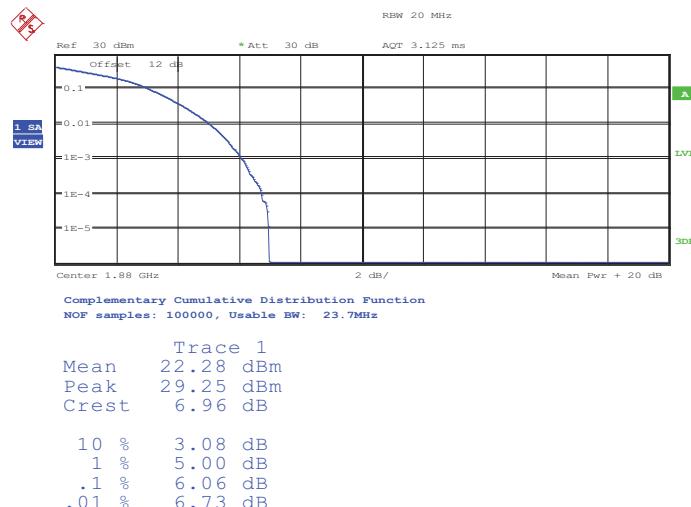
10 % 3.04 dB
1 % 5.00 dB
.1 % 6.03 dB
.01 % 6.60 dB

Date: 27.JUL.2014 09:08:26



Peak-to-Average Ratio on LTE Band 2

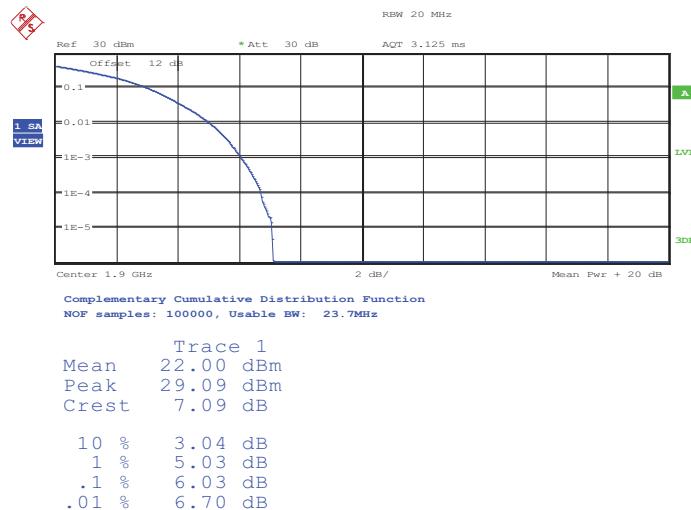
20MHz / 16QAM in Ch. 18900 (100RB Size)



Date: 27.JUL.2014 09:08:50

Peak-to-Average Ratio on LTE Band 2

20MHz / 16QAM in Ch. 19100 (100RB Size)

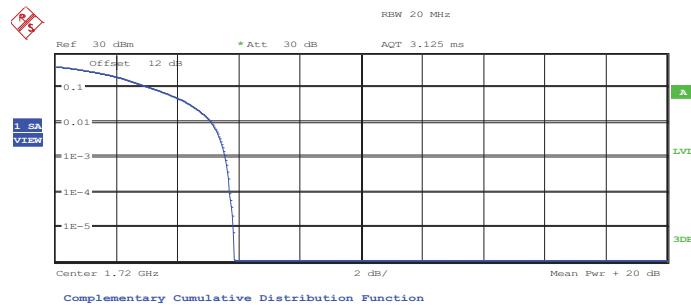


Date: 27.JUL.2014 09:09:18



Peak-to-Average Ratio on LTE Band 4

20MHz / 16QAM in Ch. 20050 (1RB Size)



Trace 1
Mean 22.27 dBm
Peak 28.11 dBm
Crest 5.84 dB

10 % 3.14 dB
1 % 5.10 dB
.1 % 5.54 dB
.01 % 5.71 dB

Date: 27.JUL.2014 10:52:29

Peak-to-Average Ratio on LTE Band 4

20MHz / 16QAM in Ch. 20175 (1RB Size)



Trace 1
Mean 22.02 dBm
Peak 27.99 dBm
Crest 5.98 dB

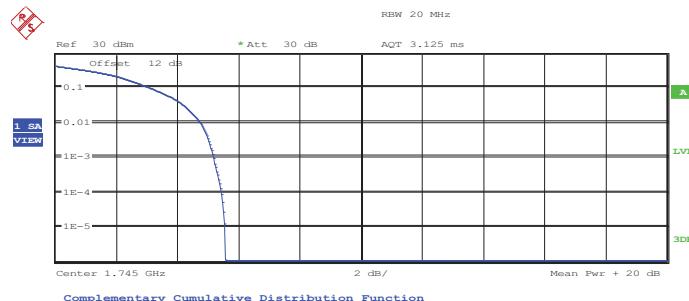
10 % 3.08 dB
1 % 5.13 dB
.1 % 5.71 dB
.01 % 5.87 dB

Date: 27.JUL.2014 10:53:05



Peak-to-Average Ratio on LTE Band 4

20MHz / 16QAM in Ch. 20300 (1RB Size)



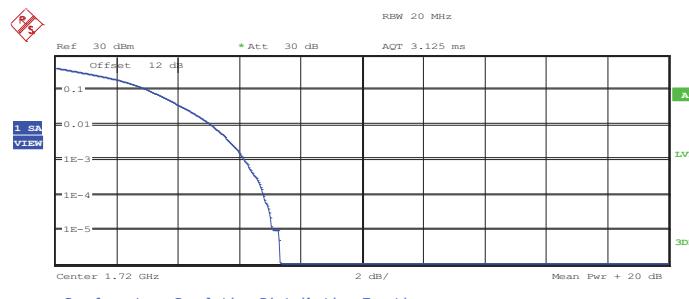
Trace 1
Mean 22.41 dBm
Peak 27.97 dBm
Crest 5.56 dB

10 % 3.11 dB
1 % 4.74 dB
.1 % 5.19 dB
.01 % 5.45 dB

Date: 27.JUL.2014 10:53:33

Peak-to-Average Ratio on LTE Band 4

20MHz / 16QAM in Ch. 20500 (100RB Size)



Trace 1
Mean 21.49 dBm
Peak 28.82 dBm
Crest 7.33 dB

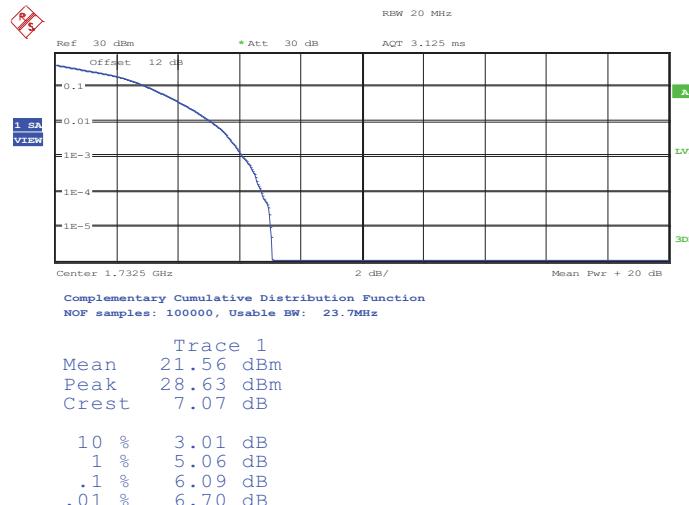
10 % 3.01 dB
1 % 5.06 dB
.1 % 6.15 dB
.01 % 6.79 dB

Date: 27.JUL.2014 10:52:49



Peak-to-Average Ratio on LTE Band 4

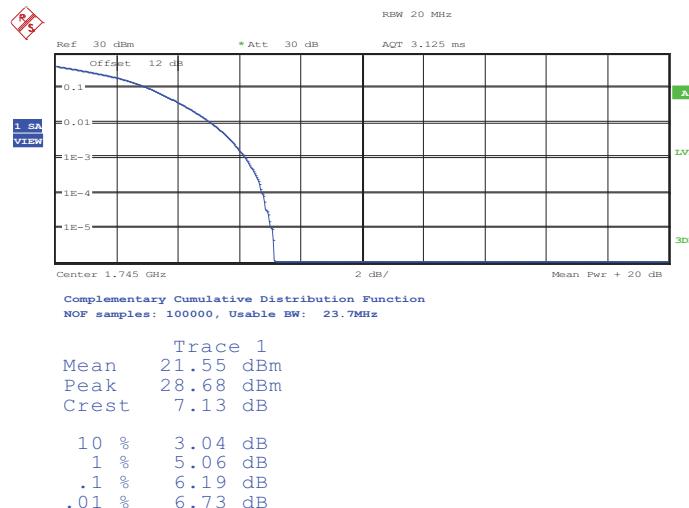
20MHz / 16QAM in Ch. 201750 (100RB Size)



Date: 27.JUL.2014 10:53:19

Peak-to-Average Ratio on LTE Band 4

20MHz / 16QAM in Ch. 20300 (100RB Size)

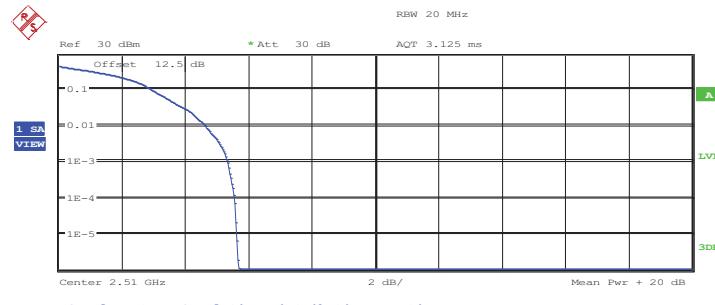


Date: 27.JUL.2014 10:53:46



Peak-to-Average Ratio on LTE Band 7

20MHz / 16QAM in Ch. 20850 (1RB Size)



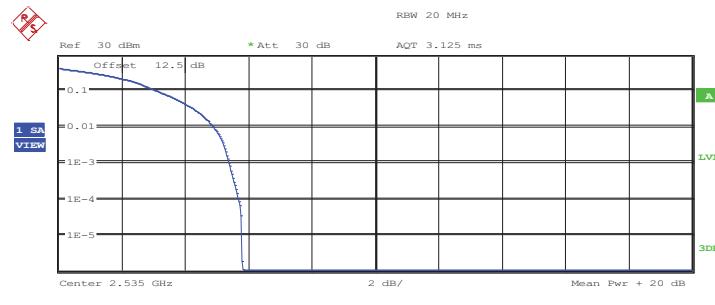
Trace 1
Mean 21.45 dBm
Peak 27.12 dBm
Crest 5.68 dB

10 % 2.95 dB
1 % 4.62 dB
.1 % 5.35 dB
.01 % 5.54 dB

Date: 31.JUL.2014 10:28:28

Peak-to-Average Ratio on LTE Band 7

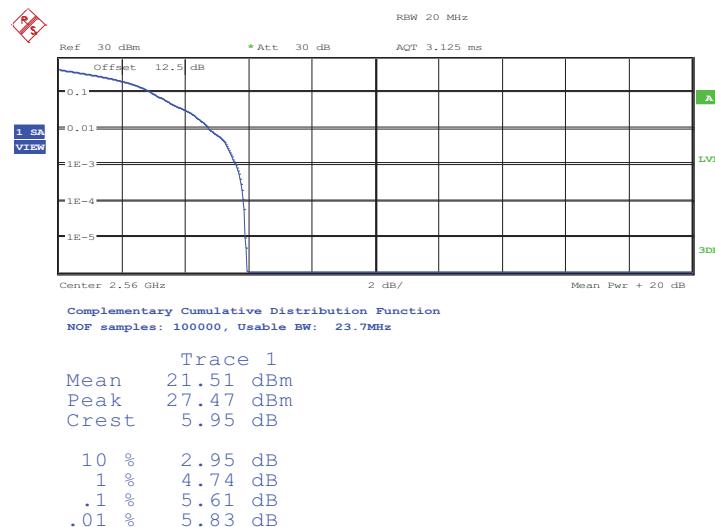
20MHz / 16QAM in Ch. 21100 (1RB Size)



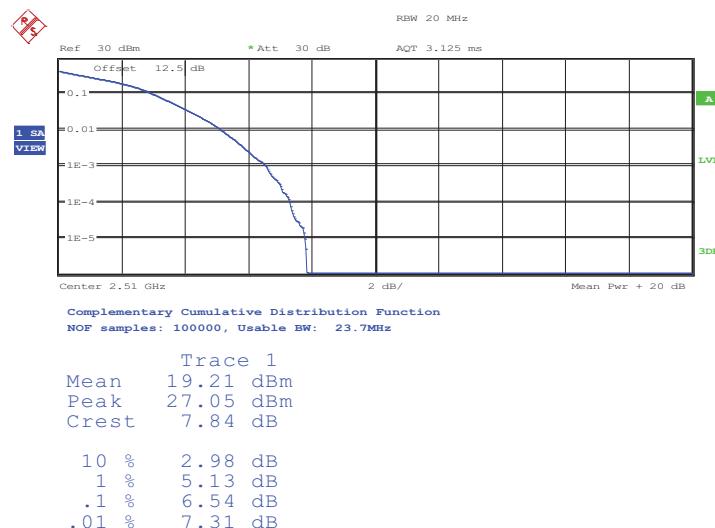
Trace 1
Mean 21.45 dBm
Peak 27.25 dBm
Crest 5.79 dB

10 % 3.11 dB
1 % 4.87 dB
.1 % 5.38 dB
.01 % 5.67 dB

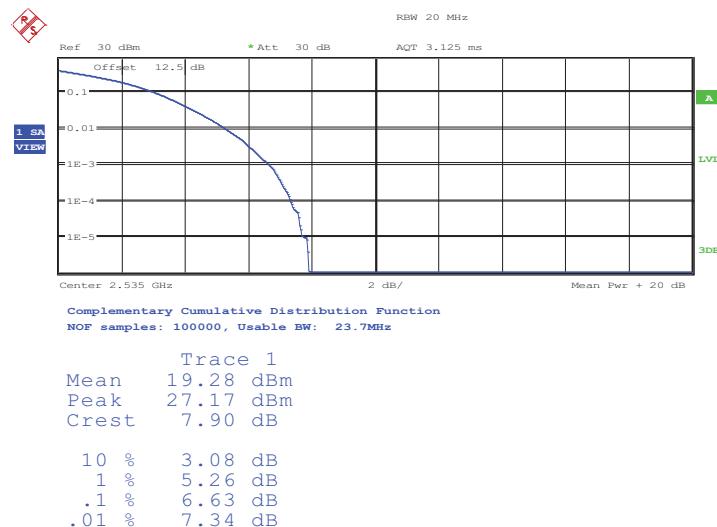
Date: 31.JUL.2014 10:29:00

**Peak-to-Average Ratio on LTE Band 7****20MHz / 16QAM in Ch. 21350 (1RB Size)**

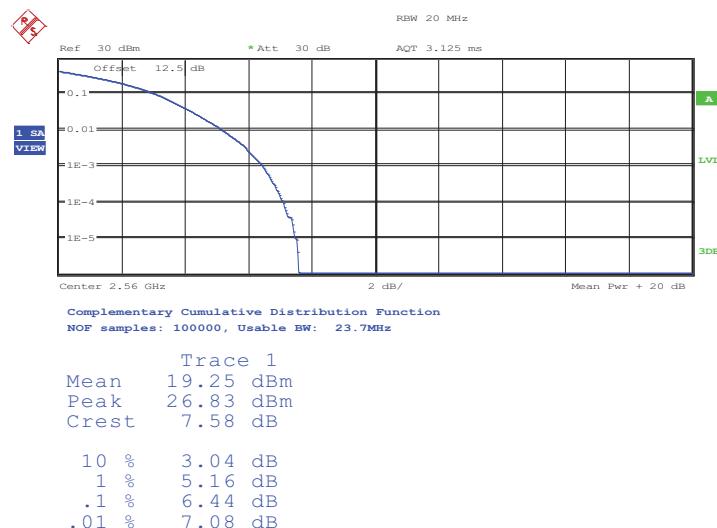
Date: 31.JUL.2014 10:29:52

Peak-to-Average Ratio on LTE Band 7**20MHz / 16QAM in Ch. 20850 (100RB Size)**

Date: 31.JUL.2014 10:31:10

**Peak-to-Average Ratio on LTE Band 7****20MHz / 16QAM in Ch. 21100 (100RB Size)**

Date: 31.JUL.2014 10:29:30

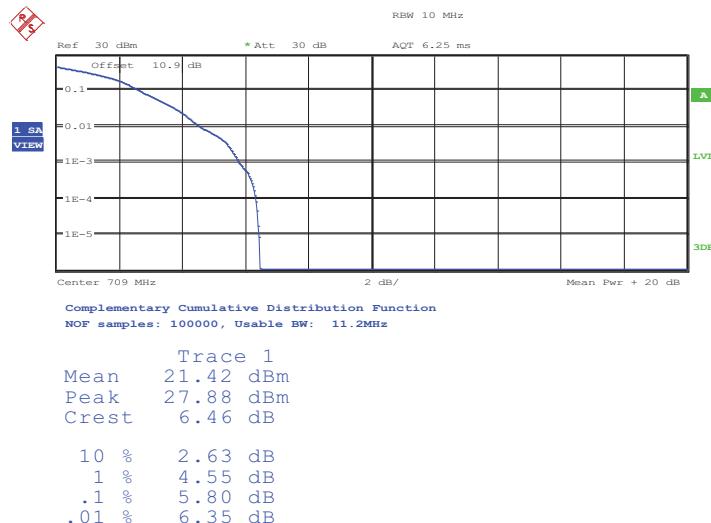
Peak-to-Average Ratio on LTE Band 7**20MHz / 16QAM in Ch. 21350 (100RB Size)**

Date: 31.JUL.2014 10:30:18



Peak-to-Average Ratio on LTE Band 17

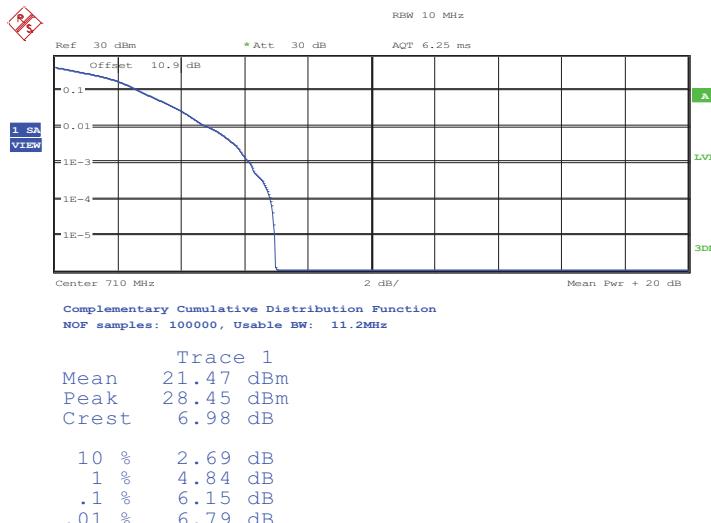
10MHz / 16QAM in Ch. 23780 (1RB Size)



Date: 28.JUL.2014 20:11:47

Peak-to-Average Ratio on LTE Band 17

10MHz / 16QAM in Ch. 23790 (1RB Size)

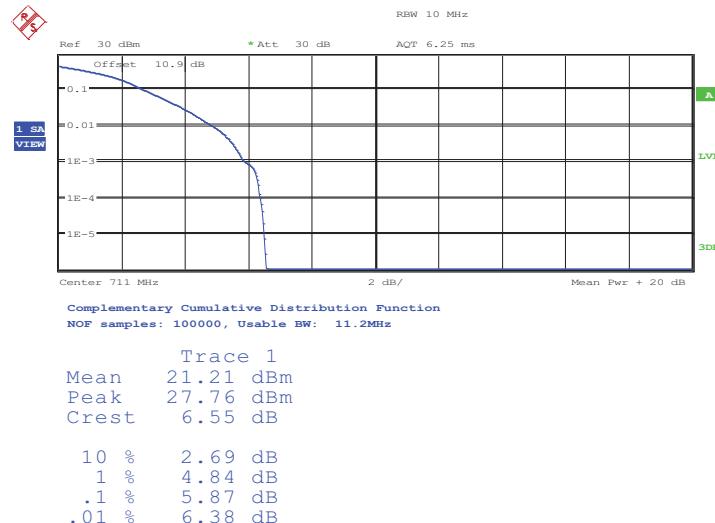


Date: 28.JUL.2014 20:12:13



Peak-to-Average Ratio on LTE Band 17

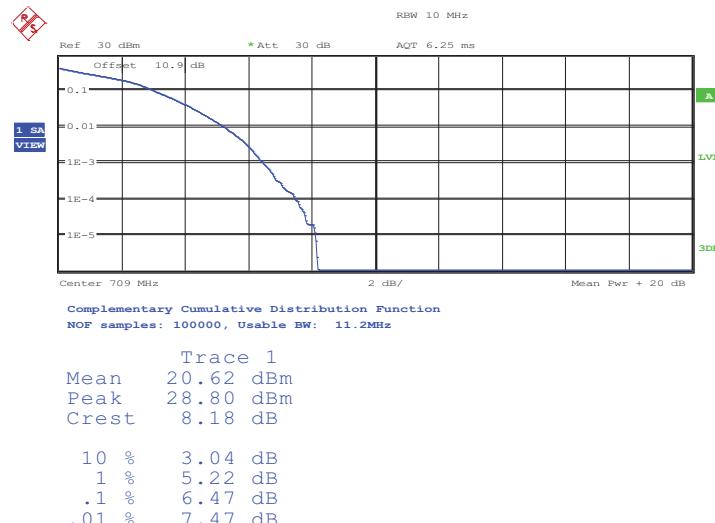
10MHz / 16QAM in Ch. 23800 (1RB Size)



Date: 28.JUL.2014 20:12:44

Peak-to-Average Ratio on LTE Band 17

10MHz / 16QAM in Ch. 23780 (50RB Size)

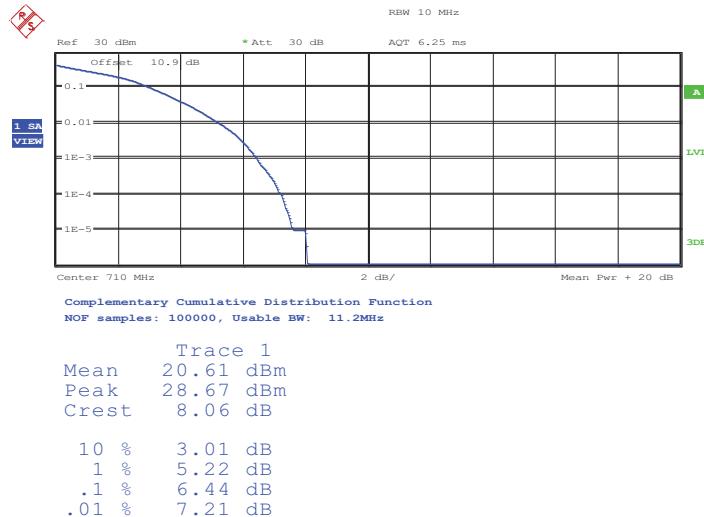


Date: 28.JUL.2014 20:11:59



Peak-to-Average Ratio on LTE Band 17

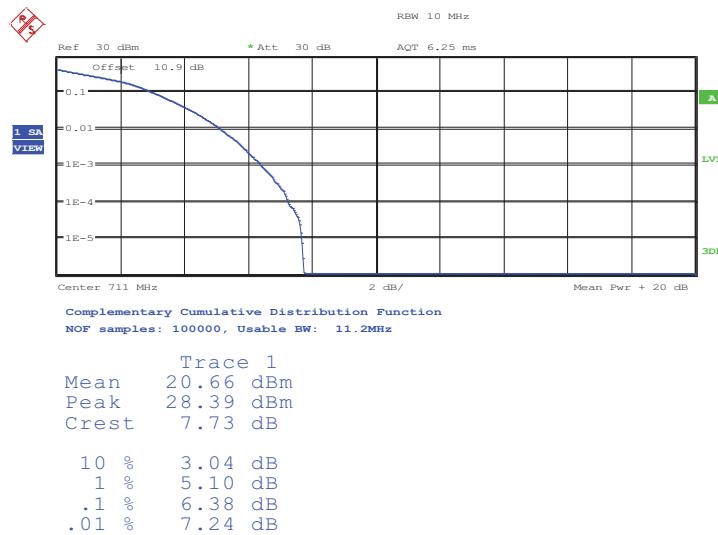
10MHz / 16QAM in Ch. 23790 (50RB Size)



Date: 28.JUL.2014 20:12:25

Peak-to-Average Ratio on LTE Band 17

10MHz / 16QAM in Ch. 23800 (50RB Size)



Date: 28.JUL.2014 20:12:59



3.3 Effective Radiated Power and Equivalent Isotropic Radiated Power Measurement

3.3.1 Description of the ERP/EIRP Measurement

Effective radiated power output measurements by substitution method according to ANSI / TIA / EIA-603-C-2004, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas.

License Digital Systems v02r01. Mobile and portable (hand-held) stations operating are limited to average ERP of 7 watts with LTE band 5 and 3 watts with LTE band 17.

Equivalent isotropic radiated power output measurements by substitution method according to ANSI / TIA / EIA-603-C-2004, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v02r01. Mobile and portable (hand-held) stations operating are limited to average EIRP of 2 watts with LTE band 2 / 7 and 1 watt with LTE band 4.

3.3.2 Measuring Instruments

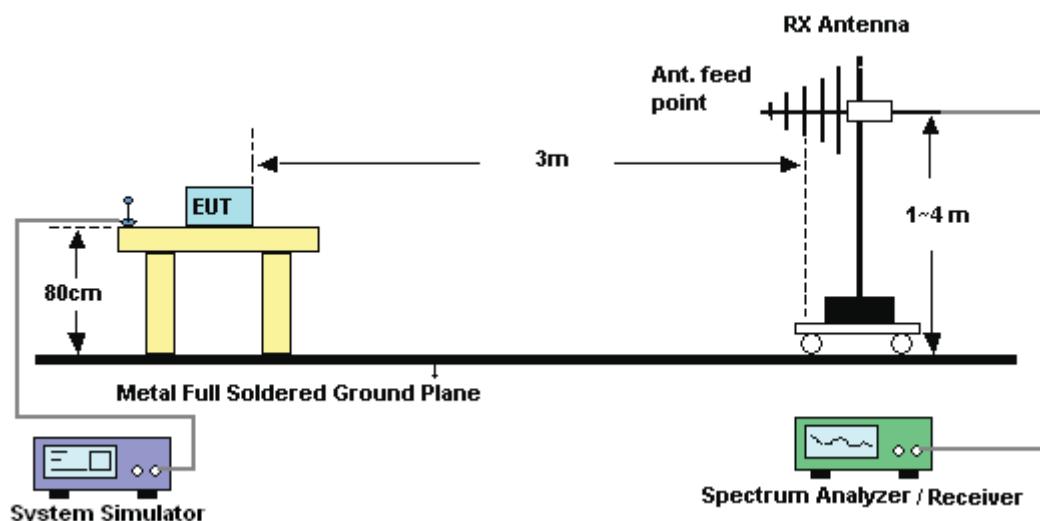
The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

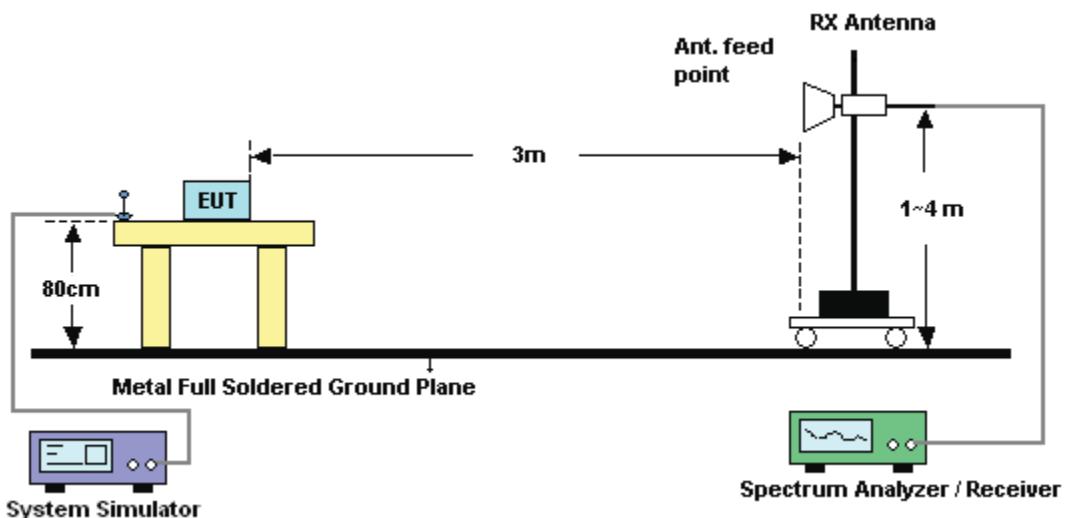
1. The EUT was placed on a non-conductive rotating platform 0.8 meters high in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RMS detector per section 5. of KDB 971168 D01.
2. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power. The maximum emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
3. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by dipole antenna (substitution antenna) at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading. Then the EUT's EIRP was calculated with the correction factor, $EIRP = LVL + \text{Correction factor}$ and $ERP = EIRP - 2.15$.

3.3.4 Test Setup

For Effective Radiated Power



For Equivalent Isotropic Radiated Power





3.3.5 Test Result of ERP/EIRP

LTE Band 5 Radiated Power ERP for BW 1.4MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
824.7	-23.68	31.54	5.71	0.004
836.5	-23.45	32.04	6.44	0.004
848.3	-22.30	32.59	8.14	0.007

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
824.7	-12.31	32.93	18.47	0.070
836.5	-12.99	32.82	17.68	0.059
848.3	-13.08	33.62	18.39	0.069

LTE Band 5 Radiated Power ERP for BW 1.4MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
824.7	-24.76	31.54	4.63	0.003
836.5	-24.44	32.04	5.45	0.004
848.3	-23.33	32.59	7.11	0.005

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
824.7	-13.39	32.93	17.39	0.055
836.5	-14.05	32.82	16.62	0.046
848.3	-13.99	33.62	17.48	0.056

* ERP = LVL (dBm) + Correction Factor (dB) - 2.15



LTE Band 5 Radiated Power ERP for BW 3MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
825.5	-23.65	31.54	5.74	0.004
836.5	-23.40	32.04	6.49	0.005
847.5	-22.60	32.59	7.84	0.006

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
825.5	-12.33	32.93	18.45	0.070
836.5	-12.94	32.82	17.73	0.059
847.5	-13.27	33.62	18.20	0.066

LTE Band 5 Radiated Power ERP for BW 3MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
825.5	-24.63	31.44	4.66	0.003
836.5	-24.54	32.04	5.35	0.003
847.5	-23.66	32.63	6.82	0.005

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
825.5	-13.33	32.78	17.30	0.054
836.5	-14.04	32.82	16.63	0.046
847.5	-14.05	33.4	17.20	0.053

* ERP = LVL (dBm) + Correction Factor (dB) - 2.15



LTE Band 5 Radiated Power ERP for BW 5MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
826.5	-23.61	31.44	5.68	0.004
836.5	-23.45	32.04	6.44	0.004
846.5	-22.79	32.63	7.69	0.006

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
826.5	-12.30	32.78	18.33	0.068
836.5	-12.91	32.82	17.76	0.060
846.5	-13.23	33.4	18.02	0.063

LTE Band 5 Radiated Power ERP for BW 5MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
826.5	-24.69	31.44	4.60	0.003
836.5	-24.61	32.04	5.28	0.003
846.5	-23.88	32.63	6.60	0.005

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
826.5	-13.42	32.78	17.21	0.053
836.5	-14.19	32.82	16.48	0.045
846.5	-14.20	33.4	17.05	0.051

* ERP = LVL (dBm) + Correction Factor (dB) - 2.15



LTE Band 5 Radiated Power ERP for BW 10MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
829	-23.77	31.44	5.52	0.004
836.5	-23.98	32.04	5.91	0.004
844	-23.65	32.63	6.83	0.005

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
829	-12.30	32.78	18.33	0.068
836.5	-12.85	32.82	17.82	0.061
844	-13.52	33.4	17.73	0.059

LTE Band 5 Radiated Power ERP for BW 10MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
829	-24.93	31.44	4.36	0.003
836.5	-24.78	32.04	5.11	0.003
844	-24.54	32.63	5.94	0.004

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
829	-13.39	32.78	17.24	0.053
836.5	-13.89	32.82	16.78	0.048
844	-14.62	33.4	16.63	0.046

* ERP = LVL (dBm) + Correction Factor (dB) - 2.15



LTE Band 2 Radiated Power EIRP for BW 1.4MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1850.7	-23.29	45.68	22.39	0.173
1880.0	-23.68	46.01	22.33	0.171
1909.3	-24.10	45.76	21.66	0.147

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1850.7	-24.49	49.18	24.69	0.294
1880.0	-25.66	50.42	24.76	0.299
1909.3	-24.98	48.94	23.96	0.249

LTE Band 2 Radiated Power EIRP for BW 1.4MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1850.7	-24.34	45.68	21.34	0.136
1880.0	-24.98	46.01	21.03	0.127
1909.3	-25.23	45.76	20.53	0.113

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1850.7	-25.66	49.18	23.52	0.225
1880.0	-26.81	50.42	23.61	0.230
1909.3	-26.05	48.94	22.89	0.195



LTE Band 2 Radiated Power EIRP for BW 3MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1851.5	-23.37	45.76	22.39	0.173
1880.0	-23.75	46.01	22.26	0.168
1908.5	-24.26	45.95	21.69	0.148
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1851.5	-24.38	49.03	24.65	0.292
1880.0	-25.65	50.42	24.77	0.300
1908.5	-24.94	48.86	23.92	0.247

LTE Band 2 Radiated Power EIRP for BW 3MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1851.5	-24.52	45.76	21.24	0.133
1880.0	-25.05	46.01	20.96	0.125
1908.5	-25.34	45.95	20.61	0.115
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1851.5	-25.57	49.03	23.46	0.222
1880.0	-26.85	50.42	23.57	0.228
1908.5	-26.06	48.86	22.80	0.191



LTE Band 2 Radiated Power EIRP for BW 5MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1852.5	-23.79	46.11	22.32	0.171
1880.0	-23.76	46.04	22.28	0.169
1907.5	-24.44	46.14	21.70	0.148
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1852.5	-24.55	49.17	24.62	0.290
1880.0	-25.63	50.42	24.79	0.301
1907.5	-24.76	48.78	24.02	0.252

LTE Band 2 Radiated Power EIRP for BW 5MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1852.5	-24.93	46.11	21.18	0.131
1880.0	-25.12	46.04	20.92	0.124
1907.5	-25.64	46.14	20.50	0.112
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1852.5	-25.79	49.17	23.38	0.218
1880.0	-26.81	50.42	23.61	0.230
1907.5	-25.88	48.78	22.90	0.195



LTE Band 2 Radiated Power EIRP for BW 10MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1855.0	-23.72	46.10	22.38	0.173
1880.0	-23.72	46.01	22.29	0.169
1905.0	-24.28	46.39	22.11	0.163

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1855.0	-25.15	49.73	24.58	0.287
1880.0	-25.56	50.42	24.86	0.306
1905.0	-23.98	48.30	24.32	0.270

LTE Band 2 Radiated Power EIRP for BW 10MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1855.0	-24.87	46.10	21.23	0.133
1880.0	-25.01	46.01	21.00	0.126
1905.0	-25.71	46.39	20.68	0.117

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1855.0	-26.32	49.73	23.41	0.219
1880.0	-26.75	50.42	23.67	0.233
1905.0	-25.18	48.30	23.12	0.205



LTE Band 2 Radiated Power EIRP for BW 15MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1857.5	-24.22	46.24	22.02	0.159
1880.0	-23.87	46.01	22.14	0.164
1902.5	-24.15	46.18	22.03	0.160
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1857.5	-25.13	49.68	24.55	0.285
1880.0	-25.53	50.42	24.89	0.308
1902.5	-23.77	48.20	24.43	0.277

LTE Band 2 Radiated Power EIRP for BW 15MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1857.5	-25.23	46.24	21.01	0.126
1880.0	-24.88	46.01	21.13	0.130
1902.5	-25.28	46.18	20.90	0.123
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1857.5	-26.28	49.68	23.40	0.219
1880.0	-26.64	50.42	23.78	0.239
1902.5	-24.94	48.20	23.26	0.212



LTE Band 2 Radiated Power EIRP for BW 20MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1860.0	-24.77	46.88	22.11	0.163
1880.0	-23.63	46.01	22.38	0.173
1900.0	-24.45	46.57	22.12	0.163
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1860.0	-25.03	49.69	24.66	0.292
1880.0	-25.41	50.42	25.01	0.317
1900.0	-24.50	48.87	24.37	0.274

LTE Band 2 Radiated Power EIRP for BW 20MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1860.0	-25.88	46.88	21.00	0.126
1880.0	-24.78	46.01	21.23	0.133
1900.0	-25.58	46.57	20.99	0.126
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1860.0	-26.14	49.69	23.55	0.227
1880.0	-26.53	50.42	23.89	0.245
1900.0	-25.56	48.87	23.31	0.214



LTE Band 4 Radiated Power EIRP for BW 1.4MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1710.70	-20.82	43.43	22.61	0.182
1732.50	-19.76	43.34	23.58	0.228
1754.30	-19.85	43.65	23.80	0.240

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1710.70	-22.44	46.93	24.49	0.281
1732.50	-20.87	46.19	25.32	0.340
1754.30	-21.60	47.3	25.70	0.372

LTE Band 4 Radiated Power EIRP for BW 1.4MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1710.70	-22.08	43.43	21.35	0.137
1732.50	-21.12	43.34	22.22	0.167
1754.30	-21.11	43.65	22.54	0.180

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1710.70	-23.63	46.93	23.30	0.214
1732.50	-22.35	46.19	23.84	0.242
1754.30	-22.70	47.3	24.60	0.288



LTE Band 4 Radiated Power EIRP for BW 3MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1711.50	-20.73	43.38	22.65	0.184
1732.50	-19.74	43.34	23.60	0.229
1753.50	-19.77	43.51	23.74	0.237

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1711.50	-22.09	46.65	24.56	0.286
1732.50	-20.98	46.19	25.21	0.332
1753.50	-21.94	47.65	25.71	0.372

LTE Band 4 Radiated Power EIRP for BW 3MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1711.50	-22.12	43.38	21.26	0.134
1732.50	-21.03	43.34	22.31	0.170
1753.50	-20.78	43.51	22.73	0.188

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1711.50	-23.44	46.65	23.21	0.209
1732.50	-22.21	46.19	23.98	0.250
1753.50	-22.82	47.65	24.83	0.304



LTE Band 4 Radiated Power EIRP for BW 5MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1712.5	-20.03	42.75	22.72	0.187
1732.5	-20.08	43.34	23.26	0.212
1752.5	-19.67	43.28	23.61	0.230

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1712.5	-21.58	46.26	24.68	0.294
1732.5	-21.13	46.19	25.06	0.321
1752.5	-22.01	47.72	25.71	0.372

LTE Band 4 Radiated Power EIRP for BW 5MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1712.5	-21.19	42.75	21.56	0.143
1732.5	-21.20	43.34	22.14	0.164
1752.5	-20.83	43.28	22.45	0.176

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1712.5	-22.75	46.26	23.51	0.224
1732.5	-22.30	46.19	23.89	0.245
1752.5	-23.16	47.72	24.56	0.286



LTE Band 4 Radiated Power EIRP for BW 10MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1715.0	-19.51	42.22	22.71	0.187
1732.5	-20.07	43.34	23.27	0.212
1750.0	-20.54	44.37	23.83	0.242

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1715.0	-20.99	45.79	24.80	0.302
1732.5	-20.93	46.19	25.26	0.336
1750.0	-21.66	47.21	25.55	0.359

LTE Band 4 Radiated Power EIRP for BW 10MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1715.0	-20.76	42.22	21.46	0.140
1732.5	-21.60	43.34	21.74	0.149
1750.0	-21.87	44.37	22.50	0.178

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1715.0	-22.25	45.79	23.54	0.226
1732.5	-22.45	46.19	23.74	0.237
1750.0	-23.03	47.21	24.18	0.262



LTE Band 4 Radiated Power EIRP for BW 15MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1717.50	-19.96	42.93	22.97	0.198
1732.50	-20.46	43.34	22.88	0.194
1747.50	-19.85	43.58	23.73	0.236

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1717.50	-21.92	46.52	24.60	0.288
1732.50	-21.62	46.19	24.57	0.286
1747.50	-21.53	47.08	25.55	0.359

LTE Band 4 Radiated Power EIRP for BW 15MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1717.50	-21.11	42.93	21.82	0.152
1732.50	-21.35	43.34	21.99	0.158
1747.50	-20.62	43.58	22.96	0.198

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1717.50	-23.04	46.52	23.48	0.223
1732.50	-22.53	46.19	23.66	0.232
1747.50	-22.20	47.08	24.88	0.308



LTE Band 4 Radiated Power EIRP for BW 20MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1720.00	-20.53	43.42	22.89	0.195
1732.50	-20.14	43.34	23.20	0.209
1745.00	-20.31	43.62	23.31	0.214

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1720.00	-21.69	46.18	24.49	0.281
1732.50	-21.39	46.19	24.80	0.302
1745.00	-21.50	46.54	25.04	0.319

LTE Band 4 Radiated Power EIRP for BW 20MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1720.00	-21.70	43.42	21.72	0.149
1732.50	-21.48	43.34	21.86	0.154
1745.00	-21.39	43.62	22.23	0.167

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1720.00	-22.87	46.18	23.31	0.214
1732.50	-22.59	46.19	23.60	0.229
1745.00	-22.36	46.54	24.18	0.262



LTE Band 17 Radiated Power ERP for BW 5MHz / QPSK						
Horizontal Polarization						
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)	EIRP (dBm)	EIRP (W)
706.50	-25.32	30.84	3.37	0.002	5.52	0.004
710.00	-24.80	30.86	3.91	0.003	6.06	0.004
713.50	-24.83	30.81	3.83	0.002	5.98	0.004
Vertical Polarization						
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)	EIRP (dBm)	EIRP (W)
706.50	-13.75	34.59	18.69	0.074	20.84	0.121
710.00	-12.39	34.03	19.49	0.089	21.64	0.146
713.50	-12.27	33.68	19.26	0.084	21.41	0.138

LTE Band 17 Radiated Power ERP for BW 5MHz / 16QAM						
Horizontal Polarization						
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)	EIRP (dBm)	EIRP (W)
706.50	-26.61	30.84	2.08	0.002	4.23	0.003
710.00	-25.90	30.86	2.81	0.002	4.96	0.003
713.50	-25.77	30.81	2.89	0.002	5.04	0.003
Vertical Polarization						
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)	EIRP (dBm)	EIRP (W)
706.50	-14.86	34.59	17.58	0.057	19.73	0.094
710.00	-13.54	34.03	18.34	0.068	20.49	0.112
713.50	-13.18	33.68	18.35	0.068	20.50	0.112

* ERP = LVL (dBm) + Correction Factor (dB) - 2.15



LTE Band 17 Radiated Power ERP for BW 10MHz / QPSK						
Horizontal Polarization						
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)	EIRP (dBm)	EIRP (W)
709.00	-25.62	30.77	3.00	0.002	5.15	0.003
710.00	-25.33	30.86	3.38	0.002	5.53	0.004
711.00	-24.92	30.82	3.75	0.002	5.90	0.004

Vertical Polarization						
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)	EIRP (dBm)	EIRP (W)
709.00	-13.25	34.16	18.76	0.075	20.91	0.123
710.00	-12.79	34.03	19.09	0.081	21.24	0.133
711.00	-12.30	33.94	19.49	0.089	21.64	0.146

LTE Band 17 Radiated Power ERP for BW 10MHz / 16QAM						
Horizontal Polarization						
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)	EIRP (dBm)	EIRP (W)
709.00	-26.82	30.77	1.80	0.002	3.95	0.003
710.00	-26.56	30.86	2.15	0.002	4.30	0.003
711.00	-26.10	30.82	2.57	0.002	4.72	0.003

Vertical Polarization						
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)	EIRP (dBm)	EIRP (W)
709.00	-14.61	34.16	17.40	0.055	19.55	0.090
710.00	-14.10	34.03	17.78	0.060	19.93	0.098
711.00	-13.52	33.94	18.27	0.067	20.42	0.110

* ERP = LVL (dBm) + Correction Factor (dB) - 2.15



LTE Band 7 Radiated Power EIRP for BW 5MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2502.5	-26.25	46.44	20.19	0.105
2535.0	-26.31	46.85	20.54	0.113
2567.5	-26.79	46.93	20.14	0.103
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2502.5	-27.77	48.49	20.72	0.118
2535.0	-26.46	47.50	21.04	0.127
2567.5	-27.10	48.26	21.16	0.131

LTE Band 7 Radiated Power EIRP for BW 5MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2502.5	-27.42	46.44	19.02	0.080
2535.0	-27.52	46.85	19.33	0.086
2567.5	-27.89	46.93	19.04	0.080
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2502.5	-28.88	48.49	19.61	0.091
2535.0	-27.64	47.50	19.86	0.097
2567.5	-28.23	48.26	20.03	0.101



LTE Band 7 Radiated Power EIRP for BW 10MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2505.0	-25.94	46.38	20.44	0.111
2535.0	-26.30	46.85	20.55	0.114
2565.0	-26.53	46.89	20.36	0.109

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2505.0	-27.29	48.26	20.97	0.125
2535.0	-26.53	47.50	20.97	0.125
2565.0	-26.81	48.10	21.29	0.135

LTE Band 7 Radiated Power EIRP for BW 10MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2505.0	-27.13	46.38	19.25	0.084
2535.0	-27.32	46.85	19.53	0.090
2565.0	-27.63	46.89	19.26	0.084

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2505.0	-28.43	48.26	19.83	0.096
2535.0	-27.56	47.50	19.94	0.099
2565.0	-27.87	48.10	20.23	0.105



LTE Band 7 Radiated Power EIRP for BW 15MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2507.5	-26.06	46.51	20.45	0.111
2535.0	-26.13	46.85	20.72	0.118
2562.5	-26.29	46.44	20.15	0.104

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2507.5	-27.06	47.86	20.80	0.120
2535.0	-26.47	47.50	21.03	0.127
2562.5	-26.87	48.09	21.22	0.132

LTE Band 7 Radiated Power EIRP for BW 15MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2507.5	-27.15	46.51	19.36	0.086
2535.0	-27.22	46.85	19.63	0.092
2562.5	-27.34	46.44	19.10	0.081

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2507.5	-28.13	47.86	19.73	0.094
2535.0	-27.49	47.50	20.01	0.100
2562.5	-27.84	48.09	20.25	0.106



LTE Band 7 Radiated Power EIRP for BW 20MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2510.0	-26.50	46.54	20.04	0.101
2535.0	-26.45	46.85	20.40	0.110
2560.0	-26.37	46.49	20.12	0.103

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2510.0	-26.83	47.75	20.92	0.124
2535.0	-26.65	47.50	20.85	0.122
2560.0	-27.14	48.43	21.29	0.135

LTE Band 7 Radiated Power EIRP for BW 20MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2510.0	-27.43	46.54	19.11	0.082
2535.0	-27.55	46.85	19.30	0.085
2560.0	-27.45	46.49	19.04	0.080

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2510.0	-28.00	47.75	19.75	0.094
2535.0	-27.60	47.50	19.90	0.098
2560.0	-28.03	48.43	20.40	0.110



<WPC Charging Mode>

LTE Band 4 Radiated Power EIRP for BW 5MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1712.50	-18.48	42.75	24.27	0.267
1732.50	-18.32	43.34	25.02	0.318
1752.50	-17.98	43.28	25.30	0.339

Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1712.50	-28.73	46.26	17.53	0.057
1732.50	-27.23	46.19	18.96	0.079
1752.50	-29.85	47.72	17.87	0.061

3.4 Occupied Bandwidth

3.4.1 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 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.

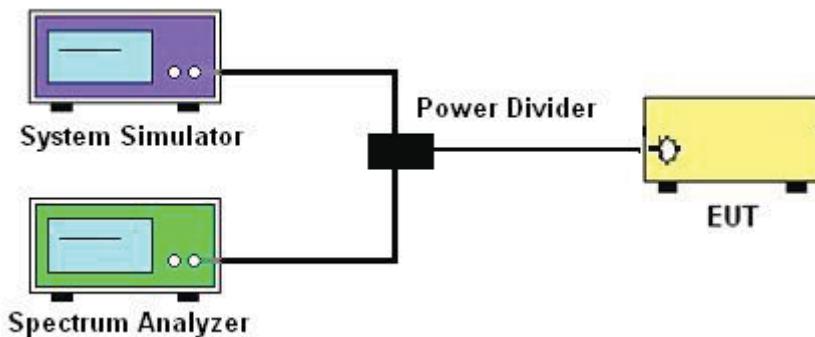
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The 26dB and 99% occupied bandwidth (BW) of the middle channel for the highest RF power with full RB sizes were measured.

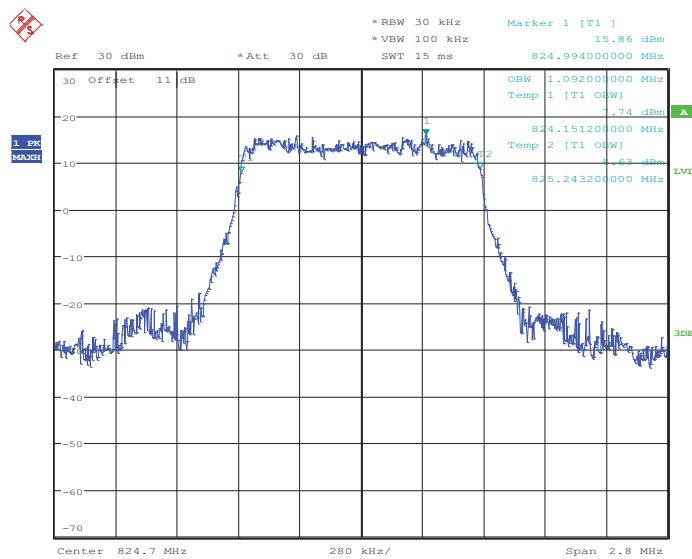
3.4.4 Test Setup



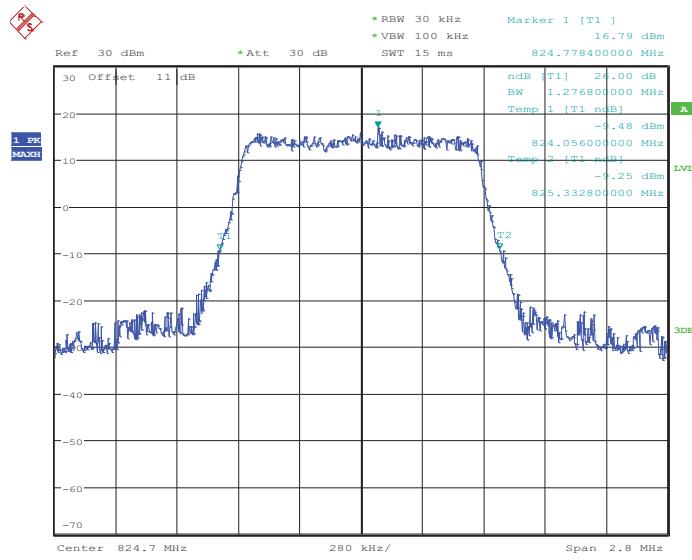


3.4.5 Test Result (Plots) of Occupied Bandwidth

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

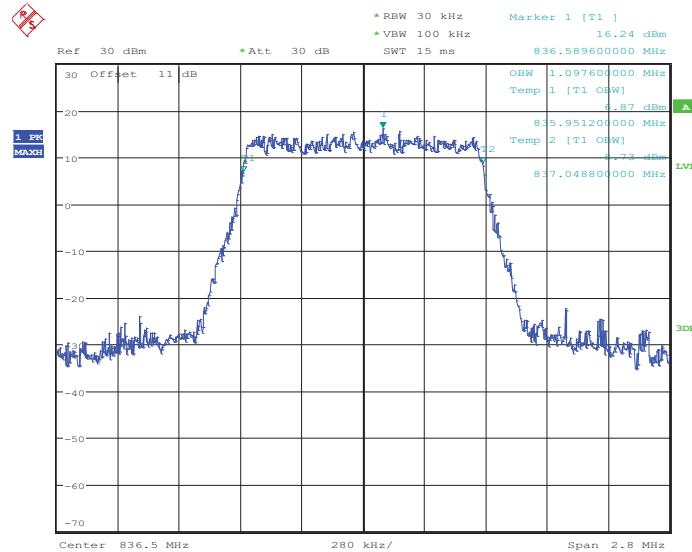
Date: 27.JUL.2014 11:03:05

26dB Bandwidth Plot on Channel 20407

Date: 27.JUL.2014 11:03:51

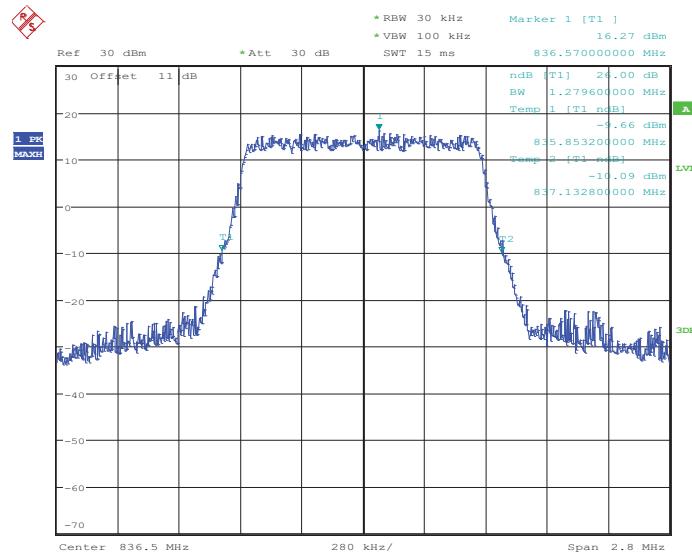


99% Occupied Bandwidth Plot on Channel 20525



Date: 27.JUL.2014 11:09:05

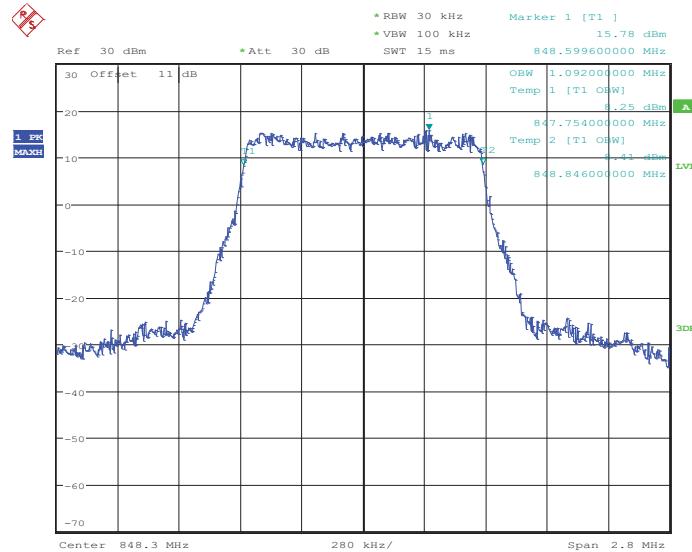
26dB Bandwidth Plot on Channel 20525



Date: 27.JUL.2014 11:09:35

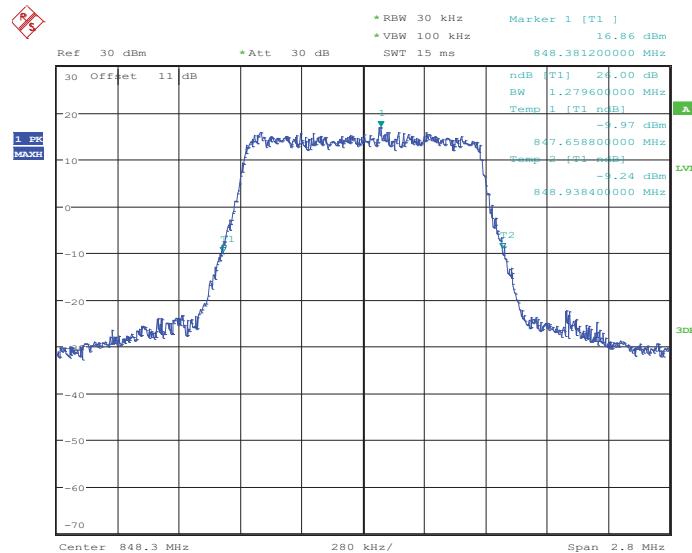


99% Occupied Bandwidth Plot on Channel 20643



Date: 27.JUL.2014 11:12:03

26dB Bandwidth Plot on Channel 20643

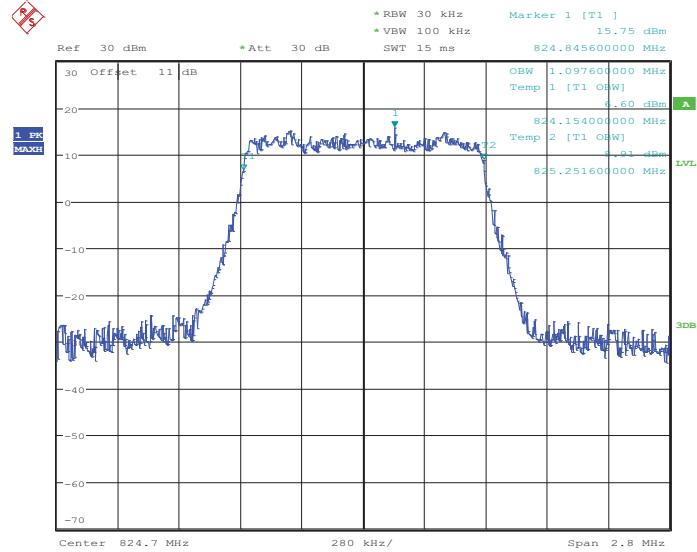


Date: 27.JUL.2014 11:12:33



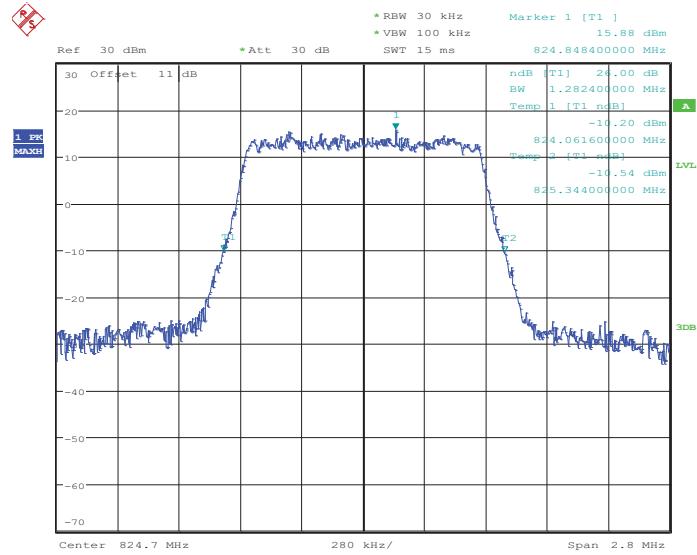
Band :	LTE Band 5	BW / Mod. :	1.4MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20407



Date: 27.JUL.2014 11:03:19

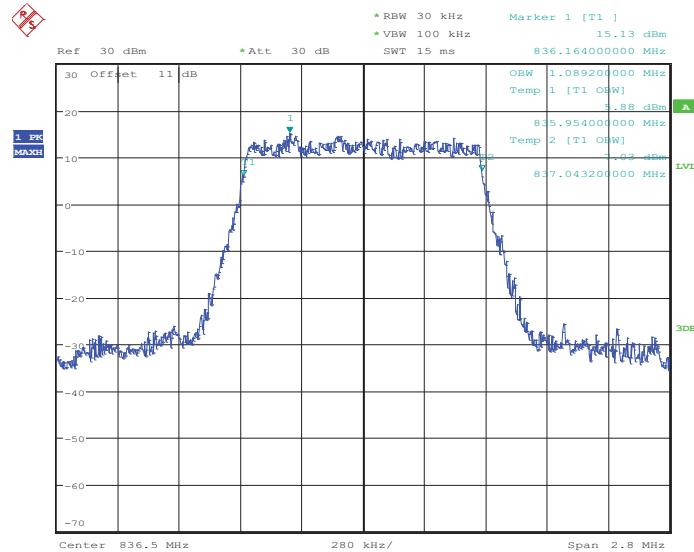
26dB Bandwidth Plot on Channel 20407



Date: 27.JUL.2014 11:03:35

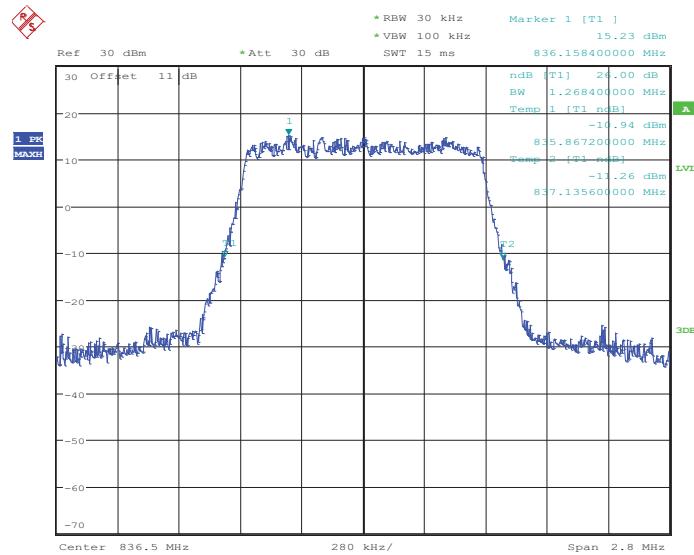


99% Occupied Bandwidth Plot on Channel 20525



Date: 27.JUL.2014 11:09:19

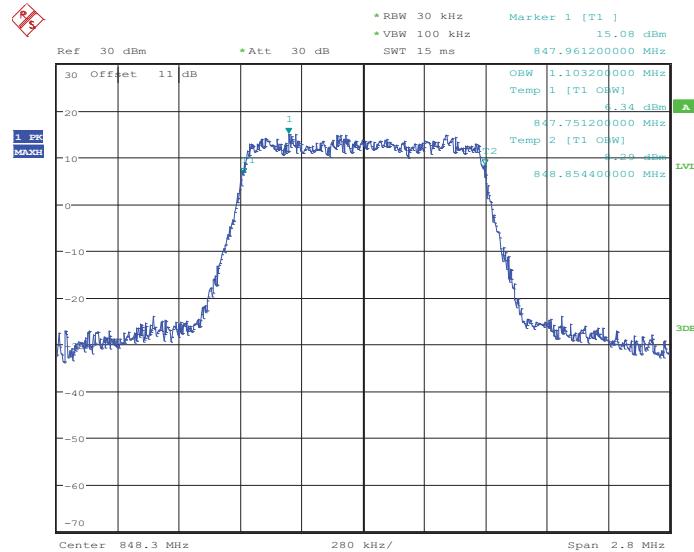
26dB Bandwidth Plot on Channel 20525



Date: 27.JUL.2014 11:09:51

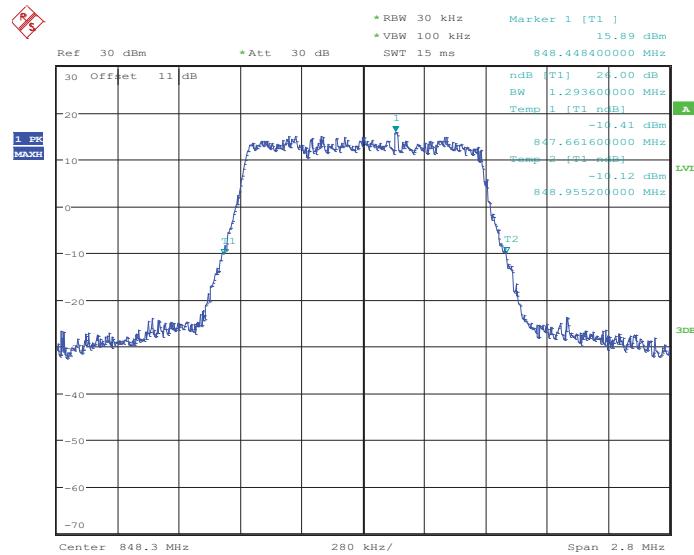


99% Occupied Bandwidth Plot on Channel 20643



Date: 27.JUL.2014 11:12:17

26dB Bandwidth Plot on Channel 20643

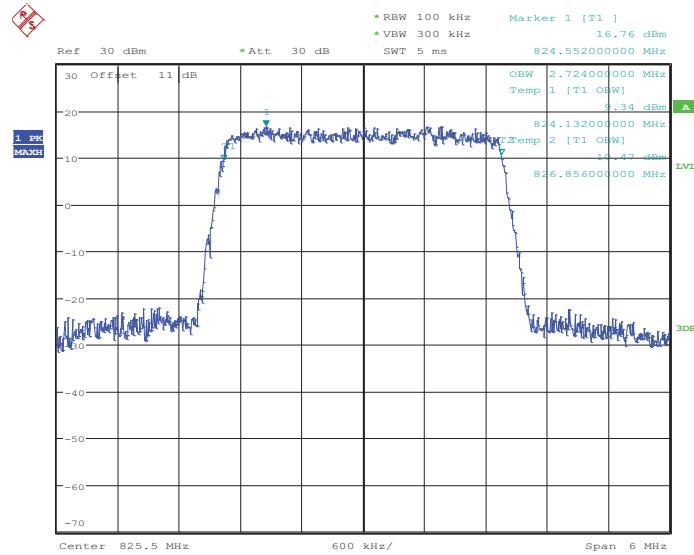


Date: 27.JUL.2014 11:12:49



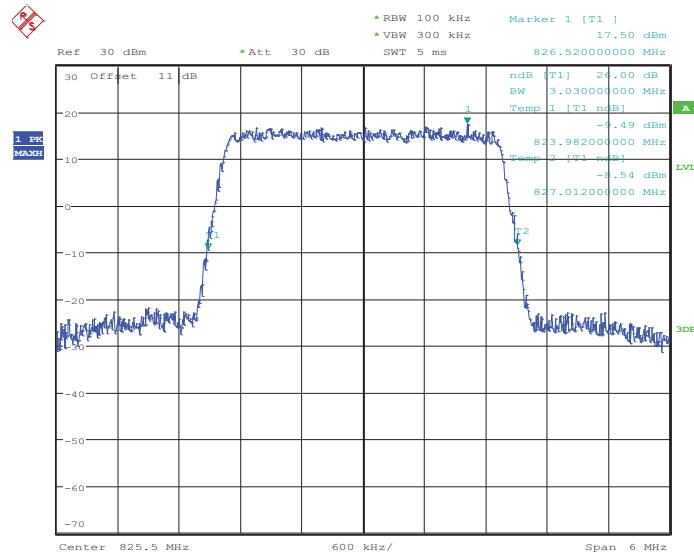
Band :	LTE Band 5	BW / Mod. :	3MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 20415



Date: 27.JUL.2014 11:18:36

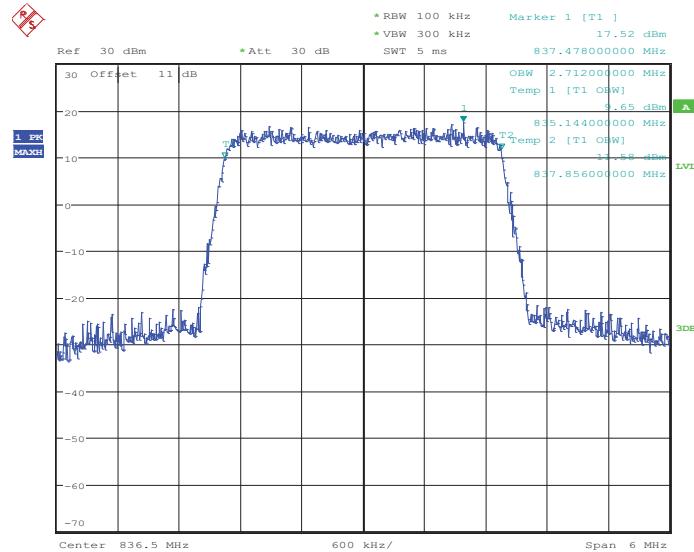
26dB Bandwidth Plot on Channel 20415



Date: 27.JUL.2014 11:19:24

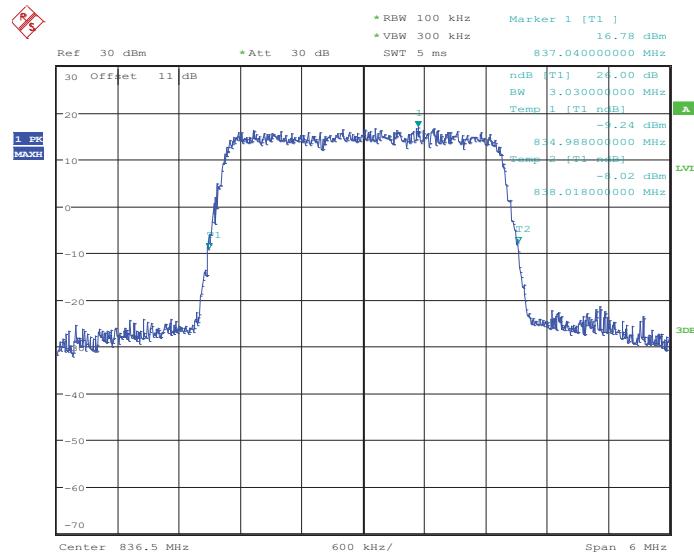


99% Occupied Bandwidth Plot on Channel 20525



Date: 27.JUL.2014 11:27:24

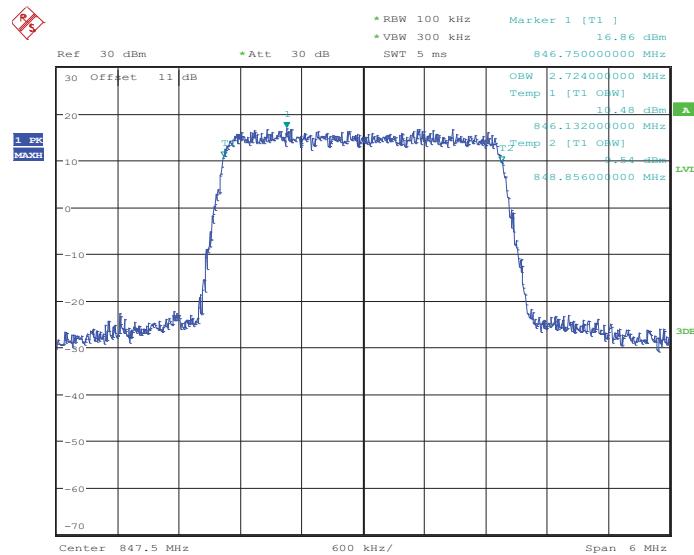
26dB Bandwidth Plot on Channel 20525



Date: 27.JUL.2014 11:27:54

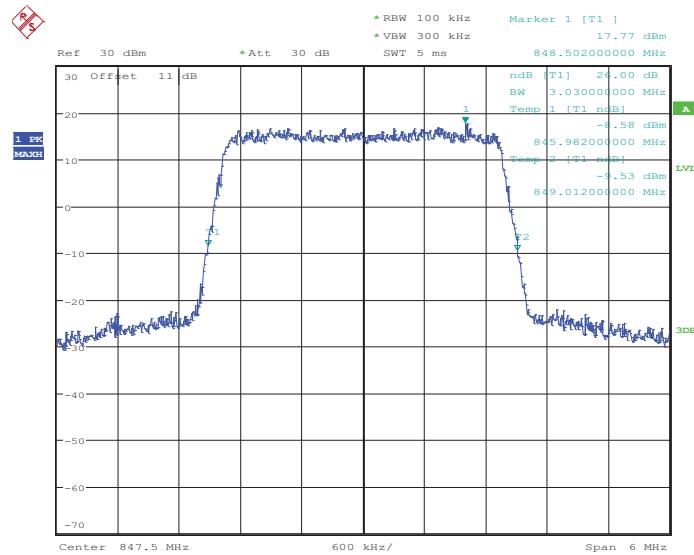


99% Occupied Bandwidth Plot on Channel 20635



Date: 27.JUL.2014 11:30:22

26dB Bandwidth Plot on Channel 20635

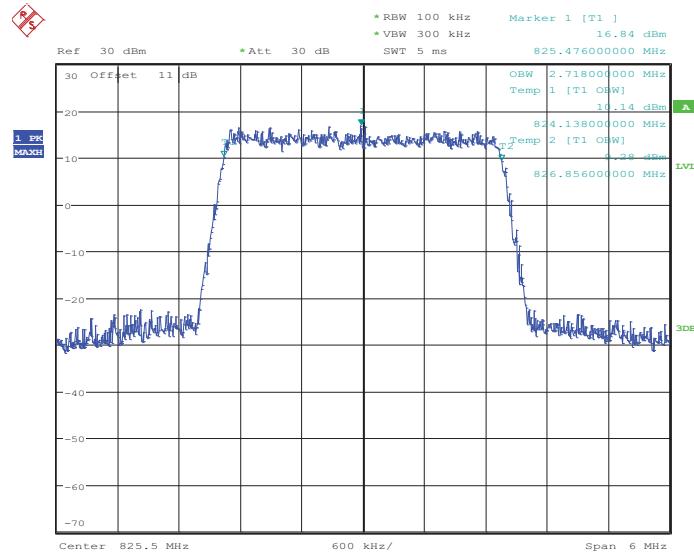


Date: 27.JUL.2014 11:30:52



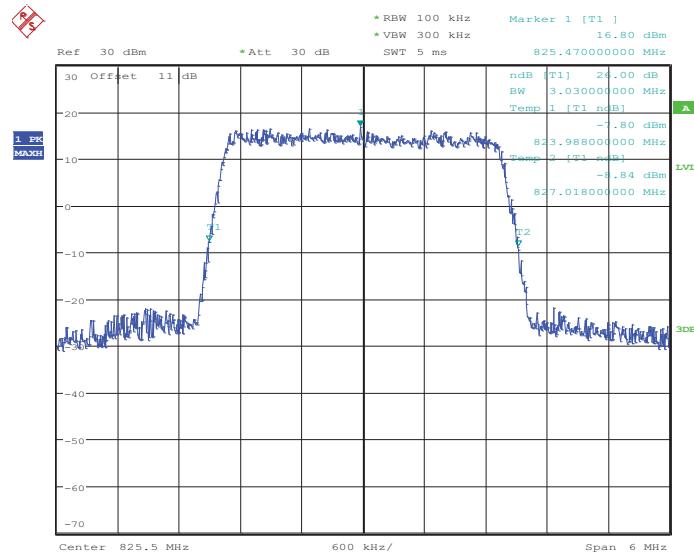
Band :	LTE Band 5	BW / Mod. :	3MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20415



Date: 27.JUL.2014 11:19:07

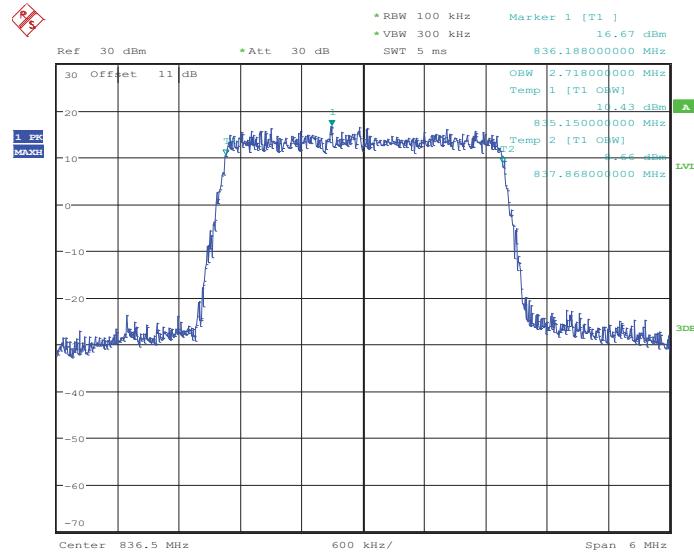
26dB Bandwidth Plot on Channel 20415



Date: 27.JUL.2014 11:19:40

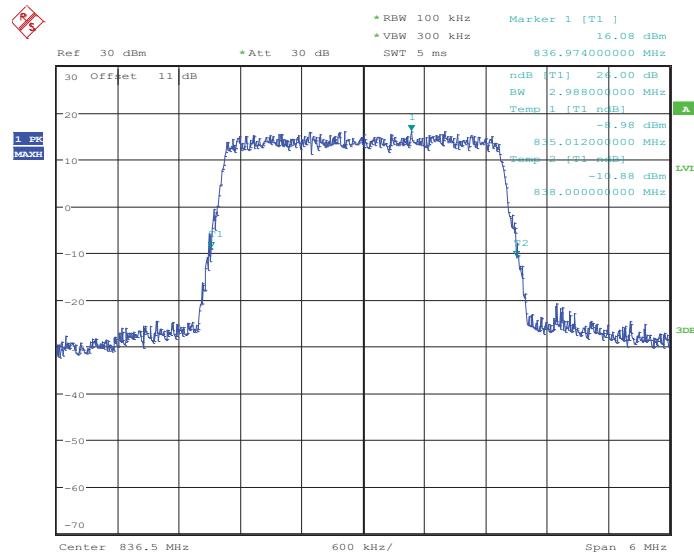


99% Occupied Bandwidth Plot on Channel 20525



Date: 27.JUL.2014 11:27:38

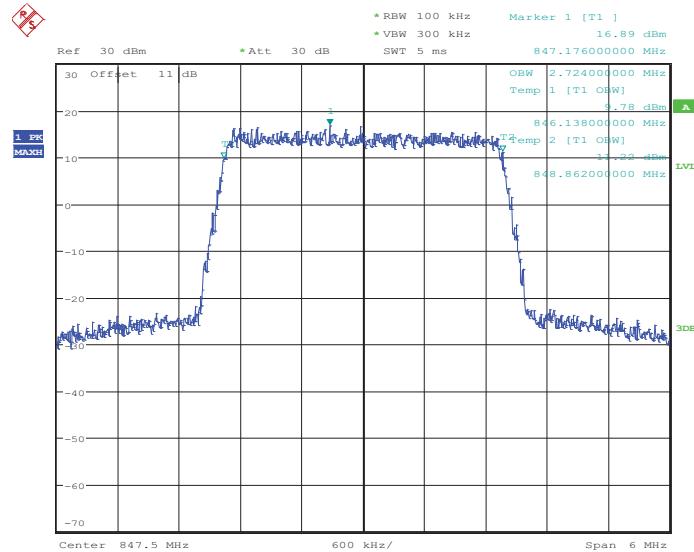
26dB Bandwidth Plot on Channel 20525



Date: 27.JUL.2014 11:28:10

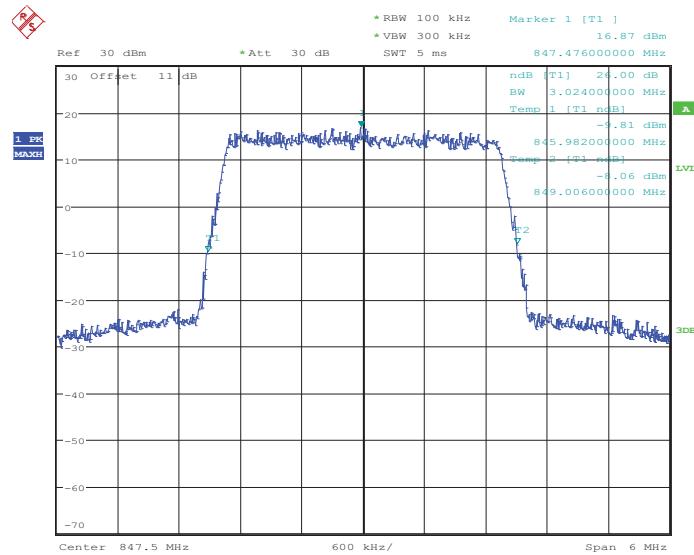


99% Occupied Bandwidth Plot on Channel 20635



Date: 27.JUL.2014 11:30:36

26dB Bandwidth Plot on Channel 20635

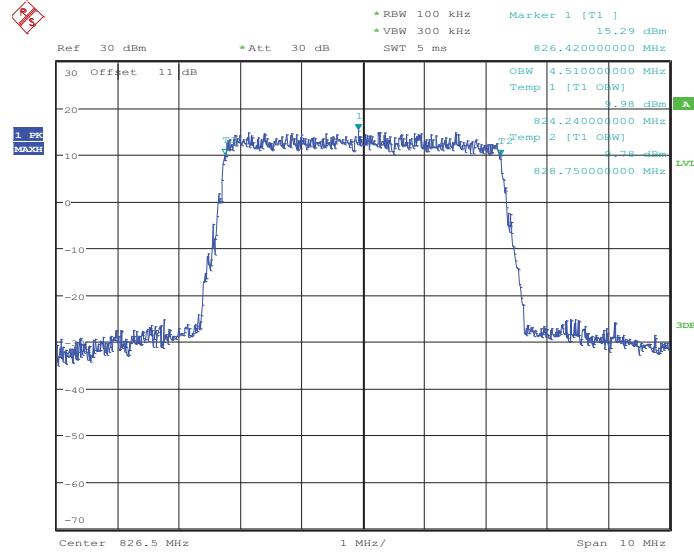


Date: 27.JUL.2014 11:31:08



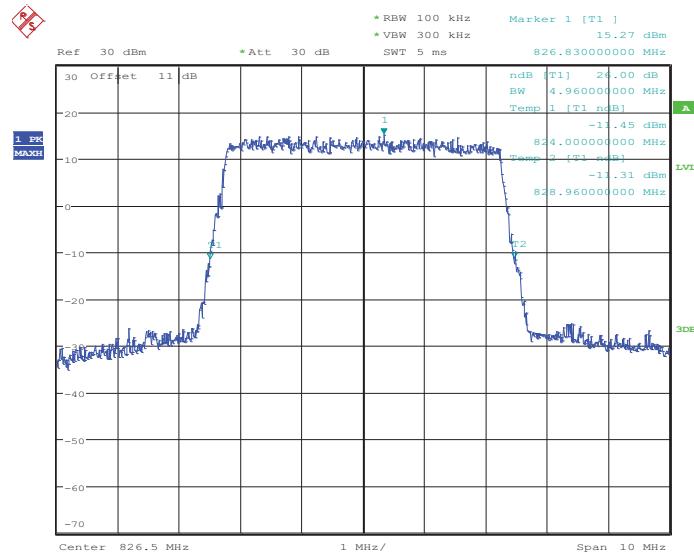
Band :	LTE Band 5	BW / Mod. :	5MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 20425



Date: 27.JUL.2014 11:37:40

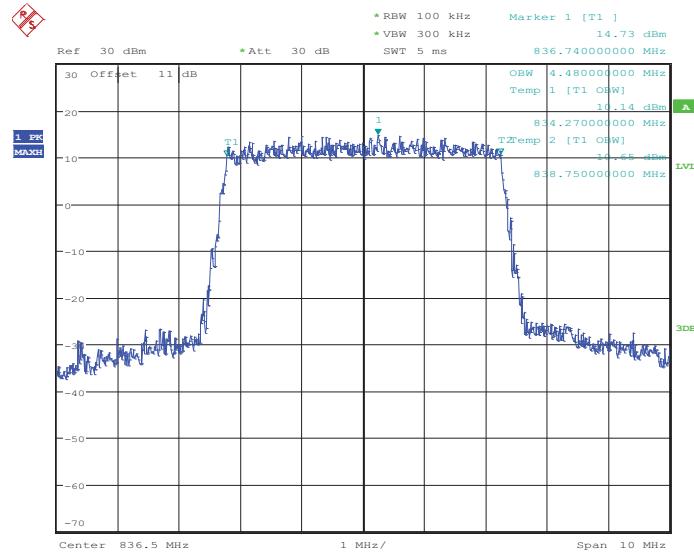
26dB Bandwidth Plot on Channel 20425



Date: 27.JUL.2014 11:38:10

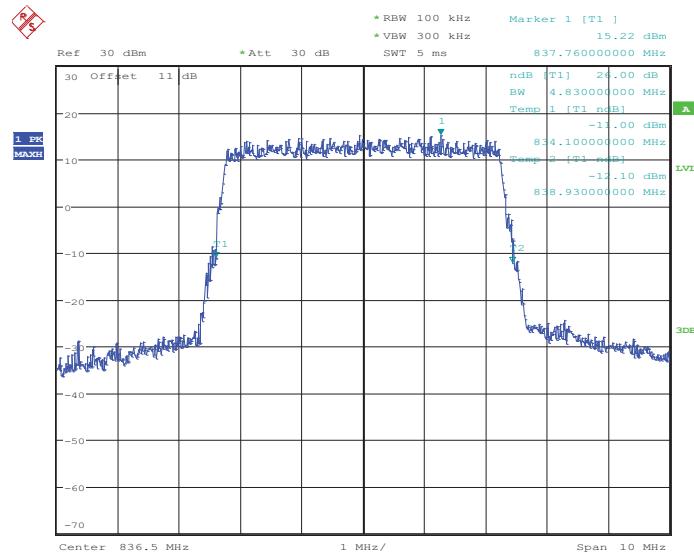


99% Occupied Bandwidth Plot on Channel 20525



Date: 27.JUL.2014 11:43:40

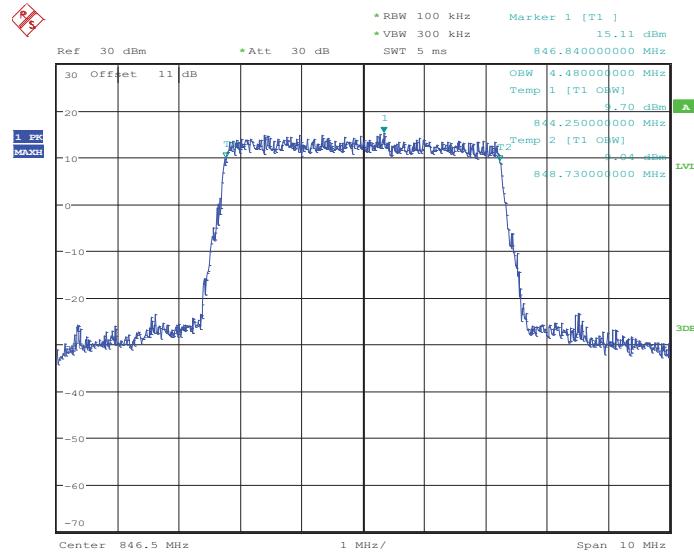
26dB Bandwidth Plot on Channel 20525



Date: 27.JUL.2014 11:44:10

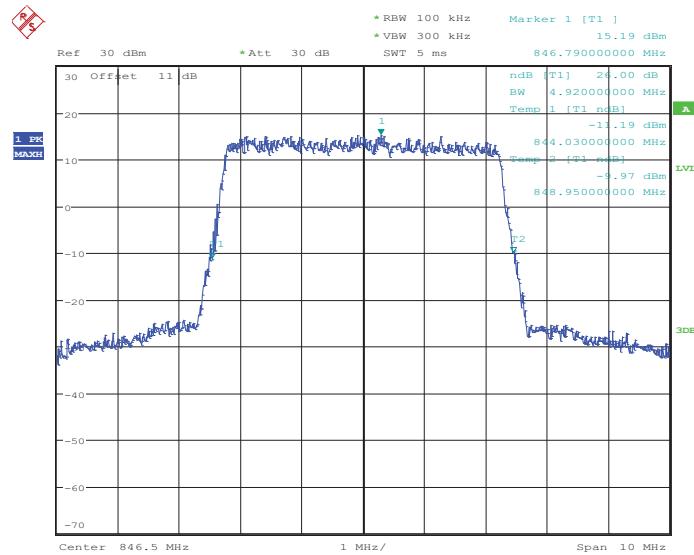


99% Occupied Bandwidth Plot on Channel 20625



Date: 27.JUL.2014 11:46:38

26dB Bandwidth Plot on Channel 20625

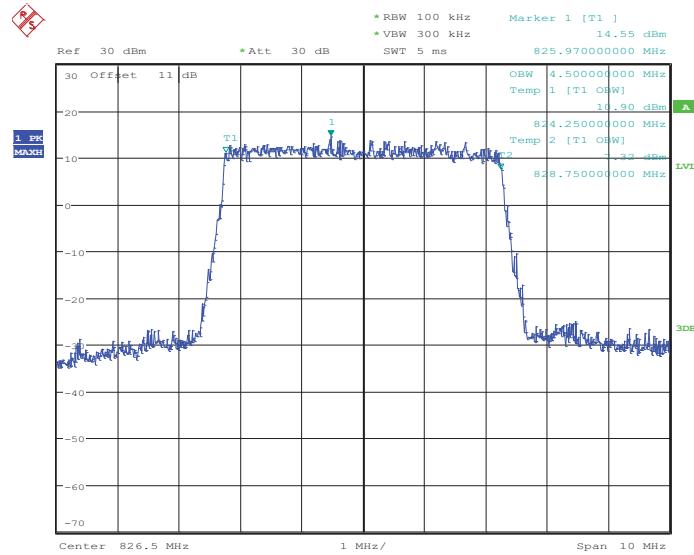


Date: 27.JUL.2014 11:47:08



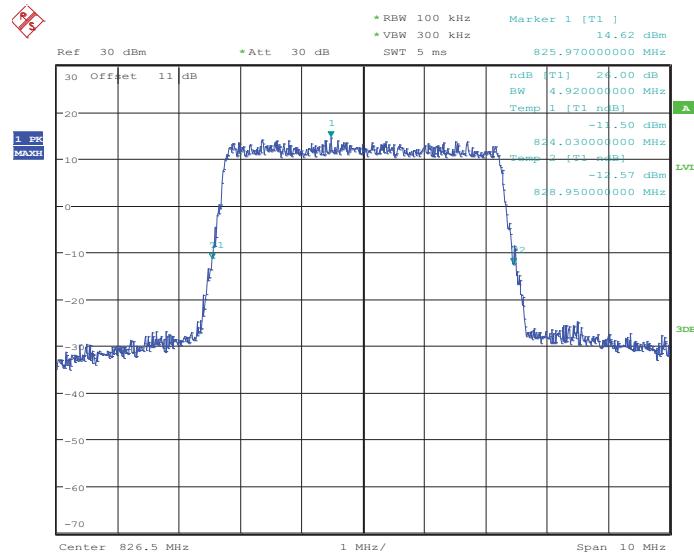
Band :	LTE Band 5	BW / Mod. :	5MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20425



Date: 27.JUL.2014 11:37:54

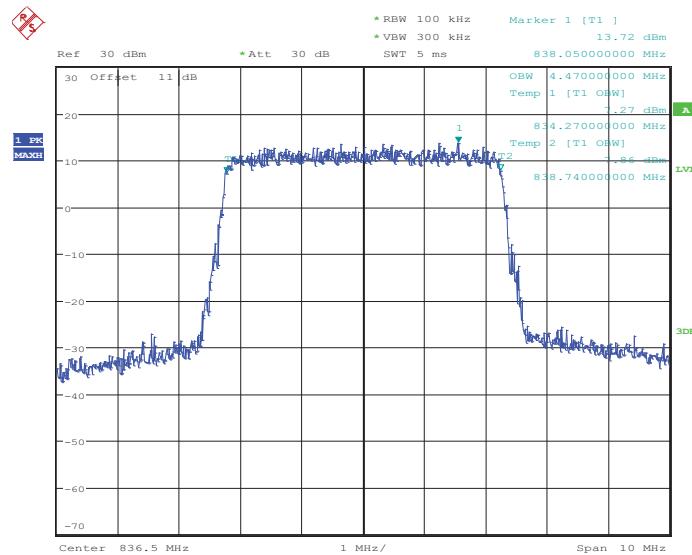
26dB Bandwidth Plot on Channel 20425



Date: 27.JUL.2014 11:38:26

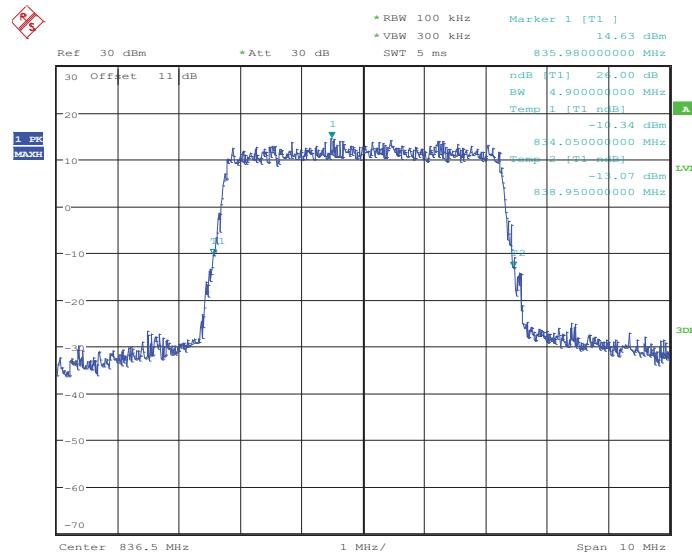


99% Occupied Bandwidth Plot on Channel 20525



Date: 27.JUL.2014 11:43:54

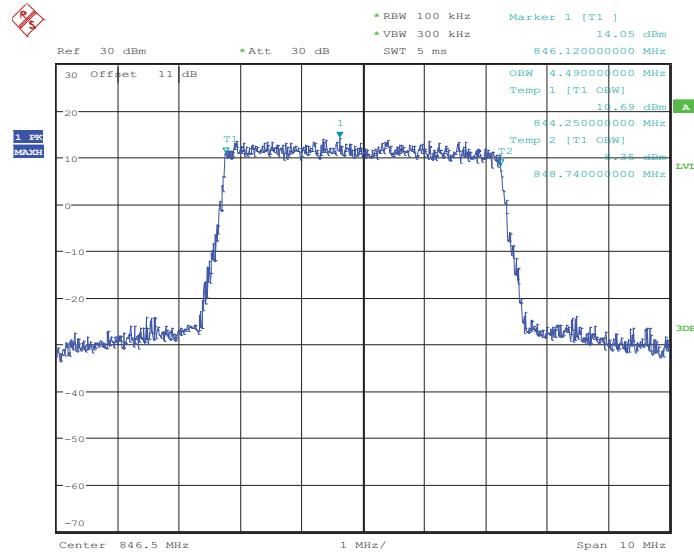
26dB Bandwidth Plot on Channel 20525



Date: 27.JUL.2014 11:44:26

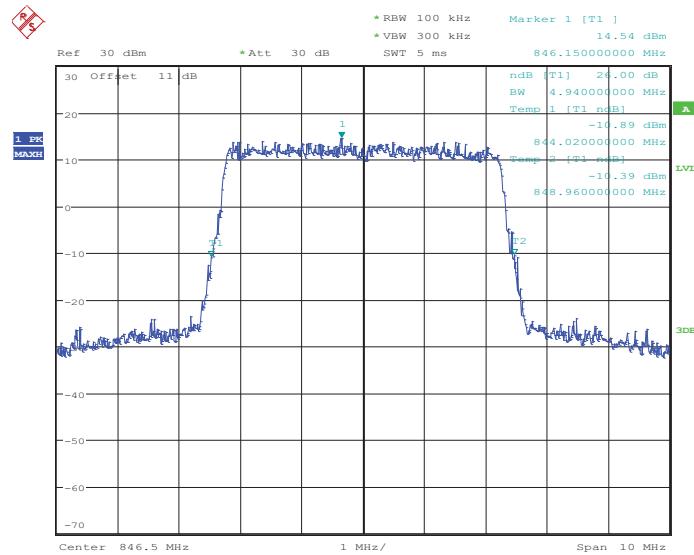


99% Occupied Bandwidth Plot on Channel 20625



Date: 27.JUL.2014 11:46:52

26dB Bandwidth Plot on Channel 20625

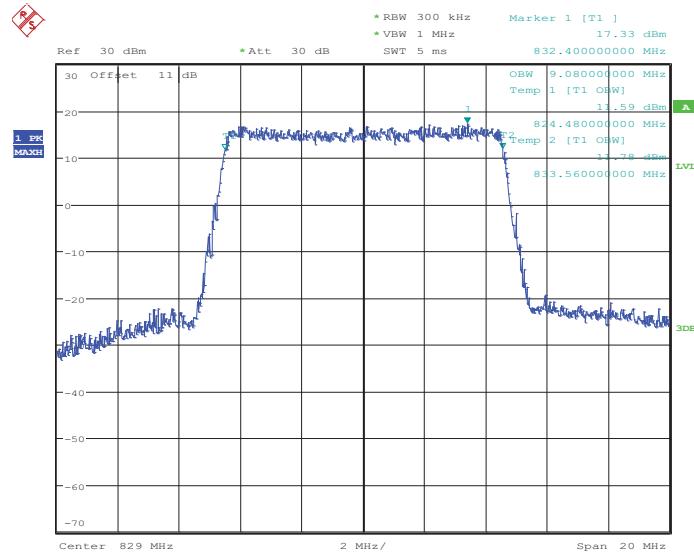


Date: 27.JUL.2014 11:47:24



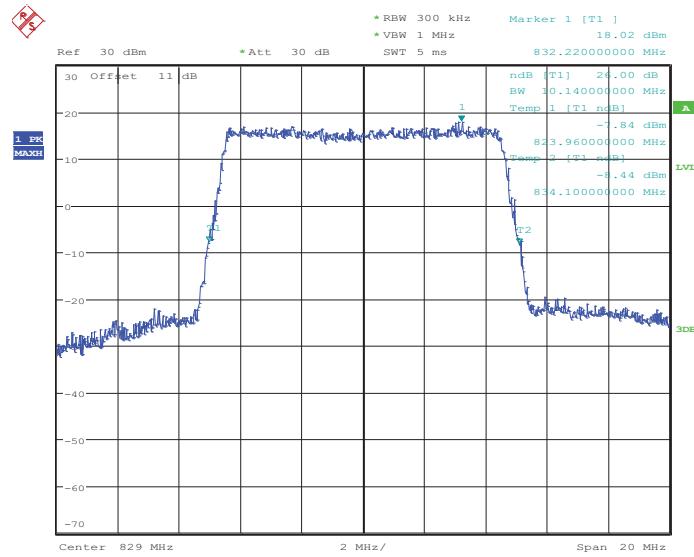
Band :	LTE Band 5	BW / Mod. :	10MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 20450



Date: 27.JUL.2014 11:52:38

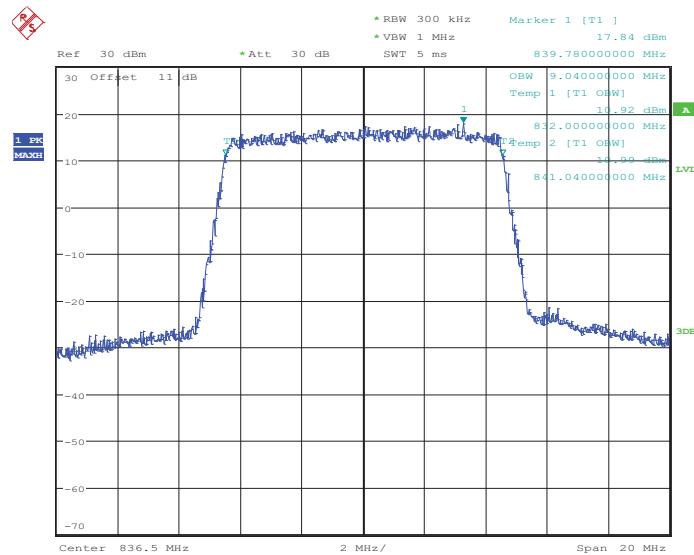
26dB Bandwidth Plot on Channel 20450



Date: 27.JUL.2014 11:53:08

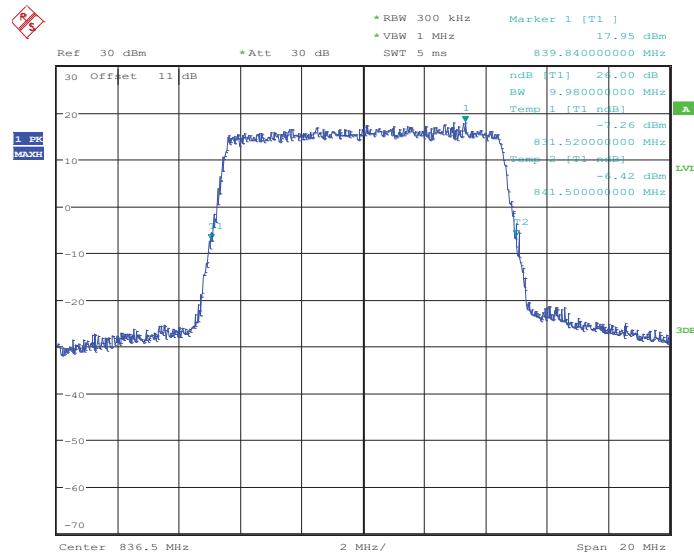


99% Occupied Bandwidth Plot on Channel 20525



Date: 27.JUL.2014 11:58:38

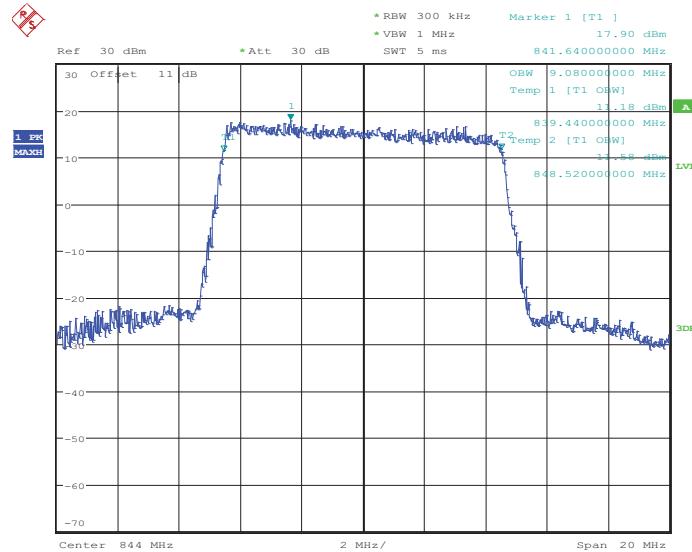
26dB Bandwidth Plot on Channel 20525



Date: 27.JUL.2014 11:59:08

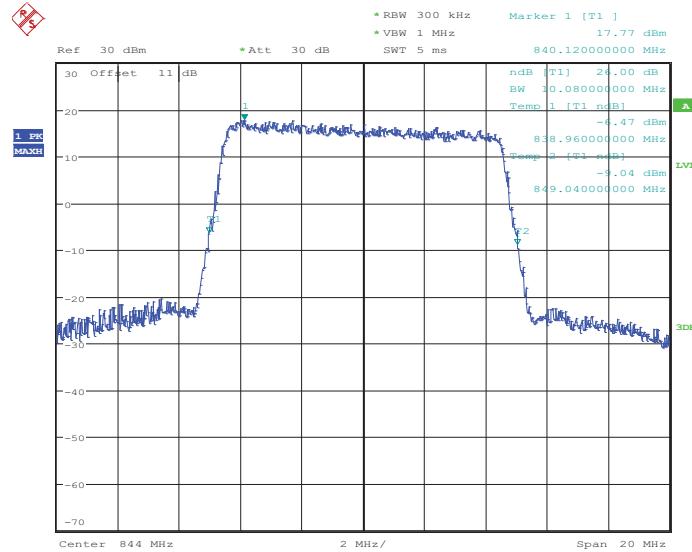


99% Occupied Bandwidth Plot on Channel 20600



Date: 27.JUL.2014 12:01:36

26dB Bandwidth Plot on Channel 20600

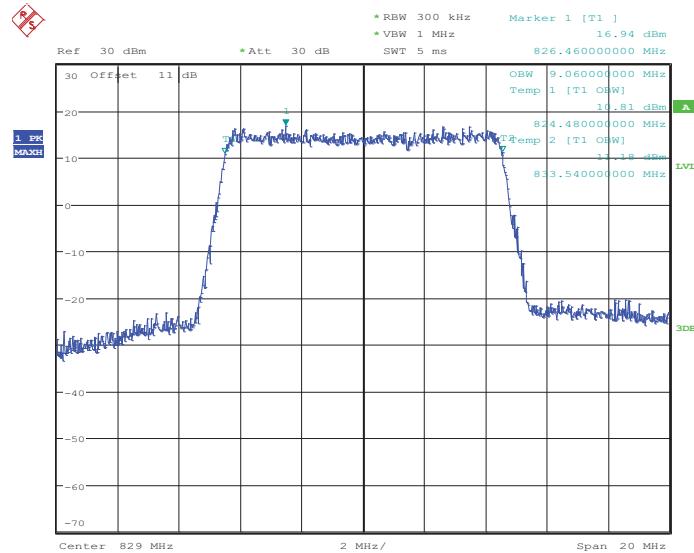


Date: 27.JUL.2014 12:02:06



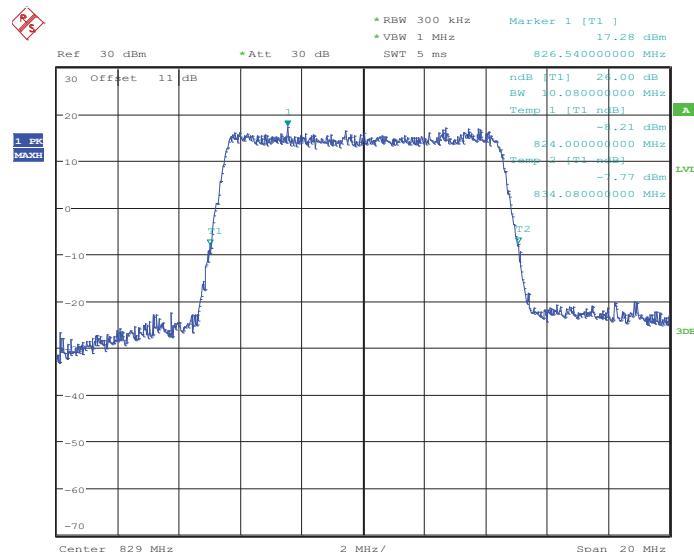
Band :	LTE Band 5	BW / Mod. :	10MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20450



Date: 27.JUL.2014 11:52:52

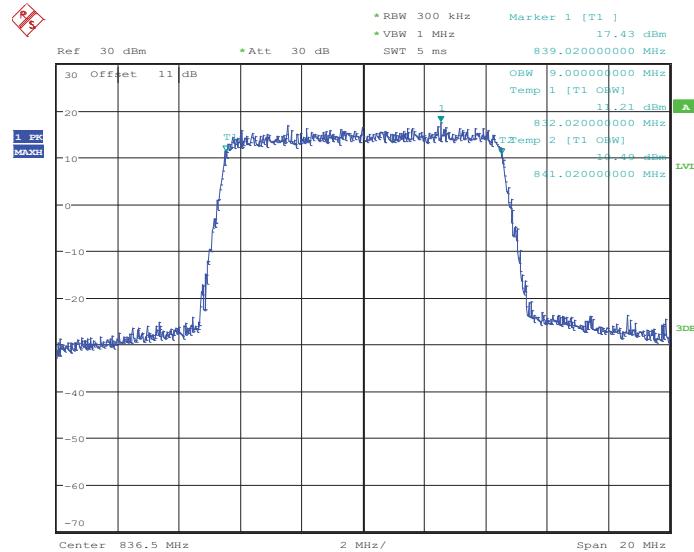
26dB Bandwidth Plot on Channel 20450



Date: 27.JUL.2014 11:53:24

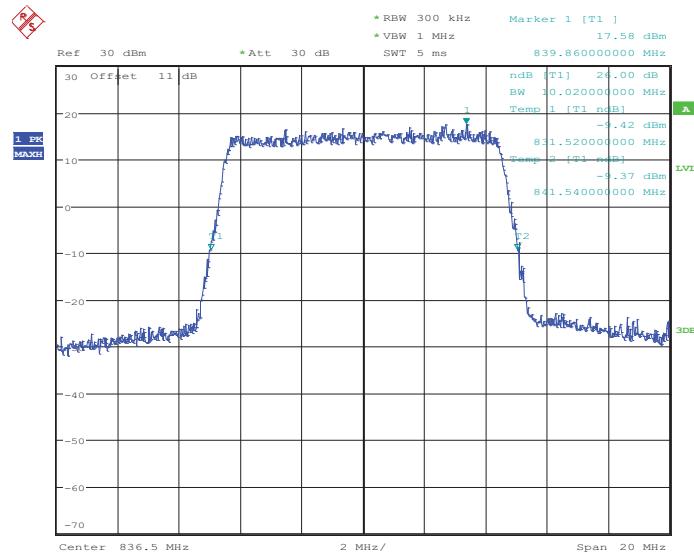


99% Occupied Bandwidth Plot on Channel 20525



Date: 27.JUL.2014 11:58:52

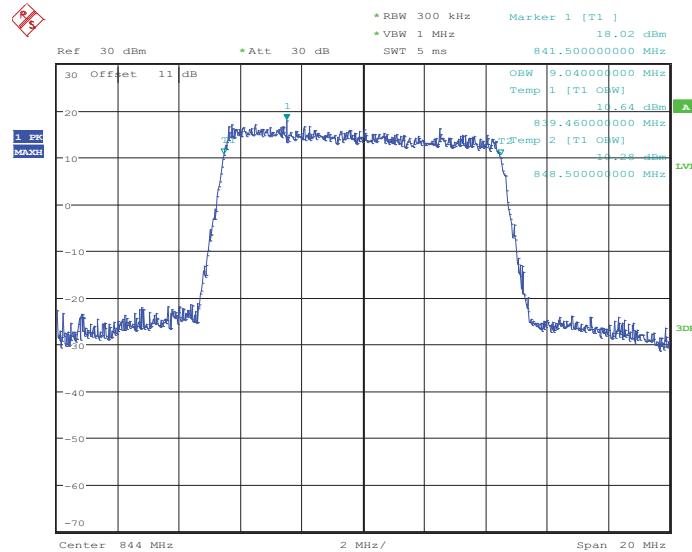
26dB Bandwidth Plot on Channel 20525



Date: 27.JUL.2014 11:59:24

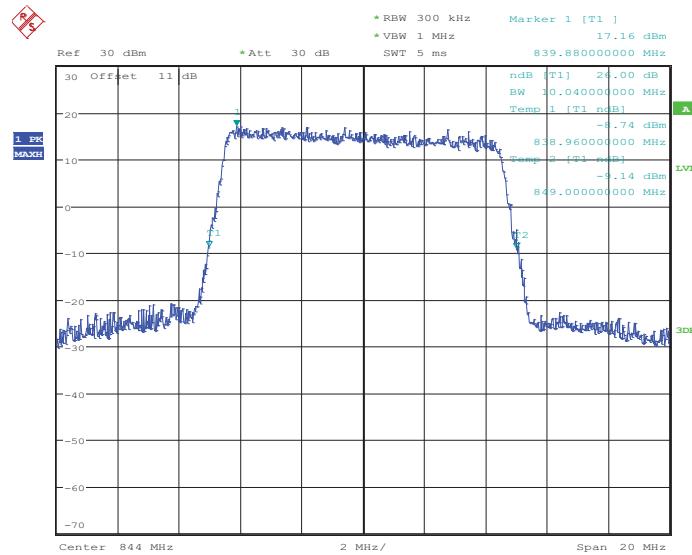


99% Occupied Bandwidth Plot on Channel 20600



Date: 27.JUL.2014 12:01:50

26dB Bandwidth Plot on Channel 20600

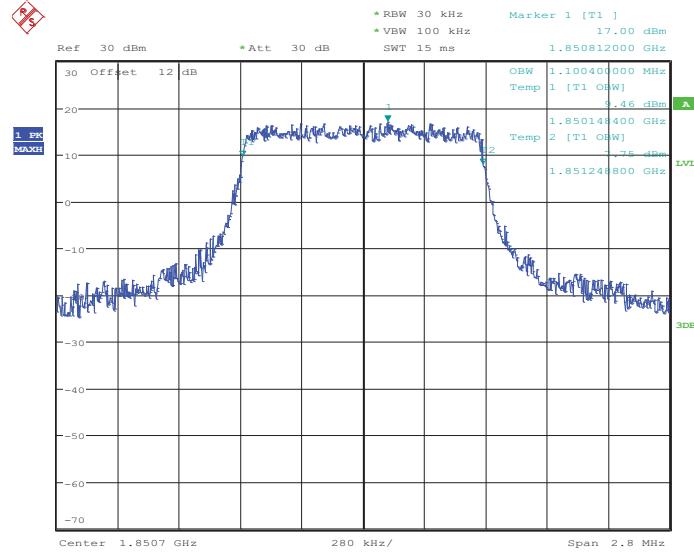


Date: 27.JUL.2014 12:02:22



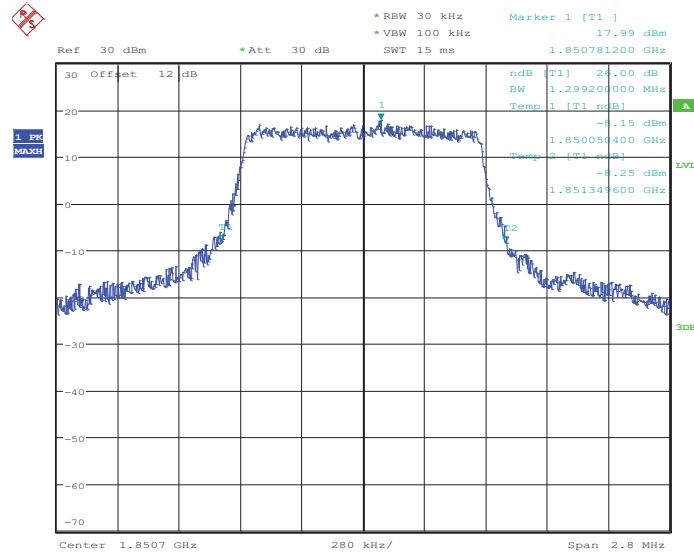
Band :	LTE Band 2	BW / Mod. :	1.4MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 18607



Date: 27.JUL.2014 07:32:14

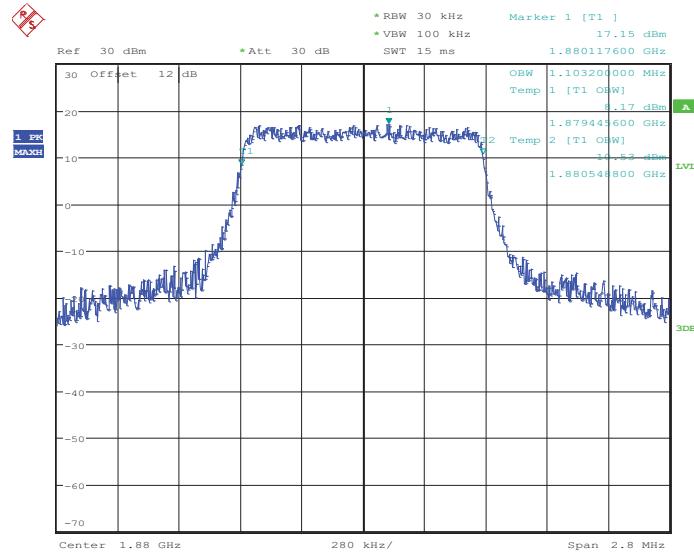
26dB Bandwidth Plot on Channel 18607



Date: 27.JUL.2014 07:32:45

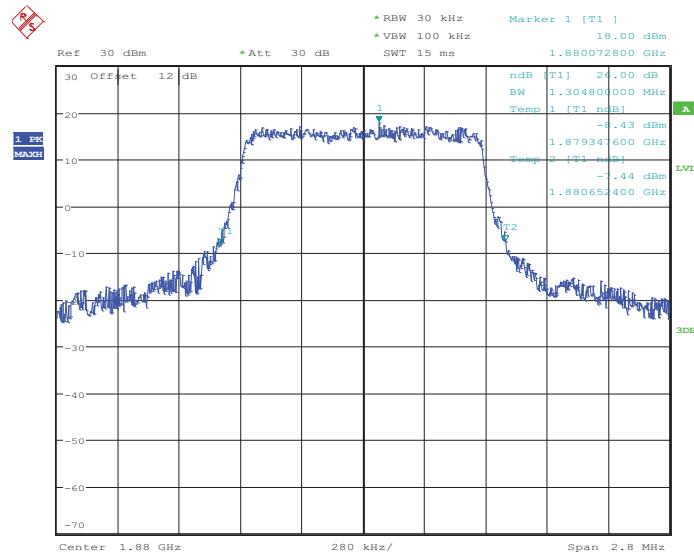


99% Occupied Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 07:38:14

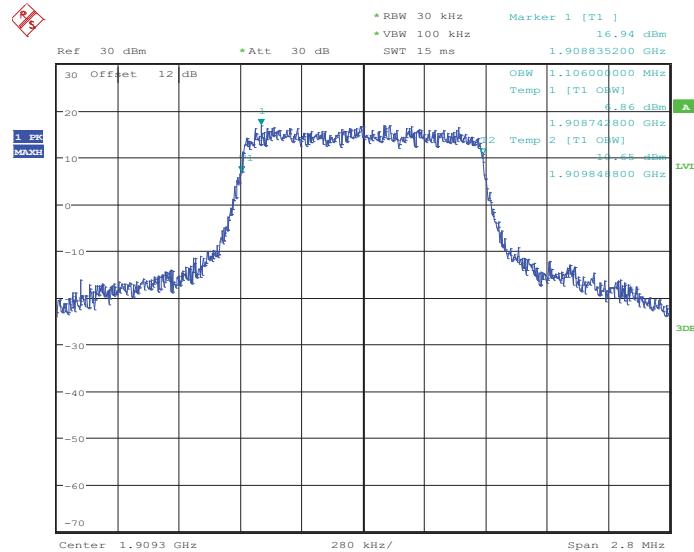
26dB Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 07:38:44

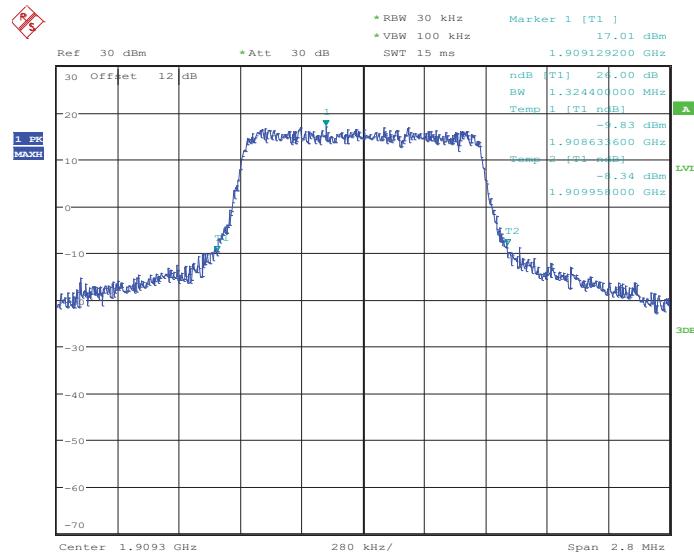


99% Occupied Bandwidth Plot on Channel 19193



Date: 27.JUL.2014 07:41:11

26dB Bandwidth Plot on Channel 19193

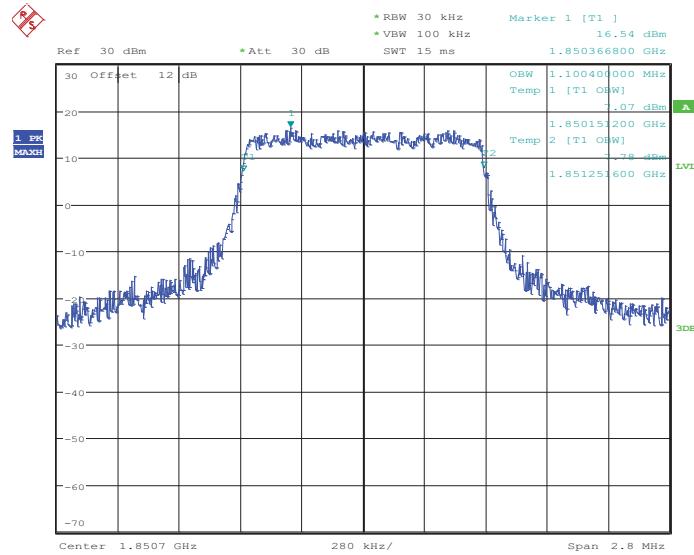


Date: 27.JUL.2014 07:41:41



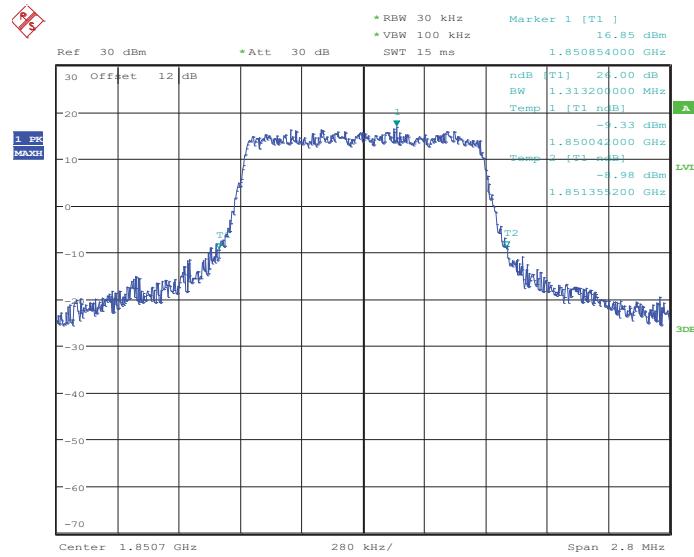
Band :	LTE Band 2	BW / Mod. :	1.4MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 18607



Date: 27.JUL.2014 07:32:29

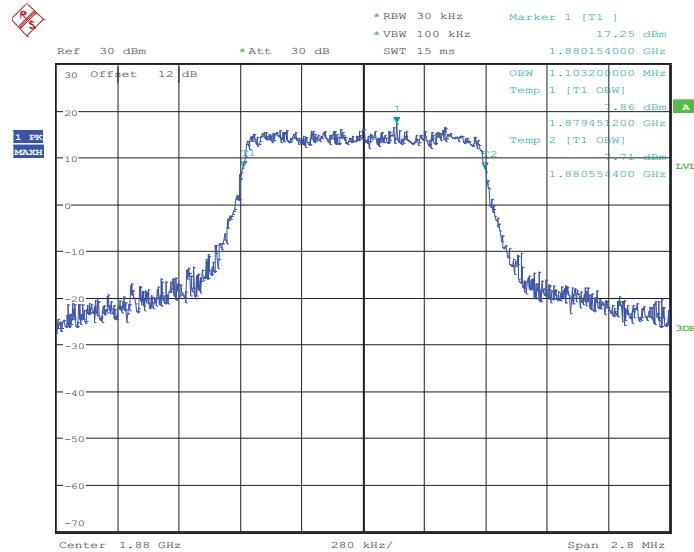
26dB Bandwidth Plot on Channel 18607



Date: 27.JUL.2014 07:33:01

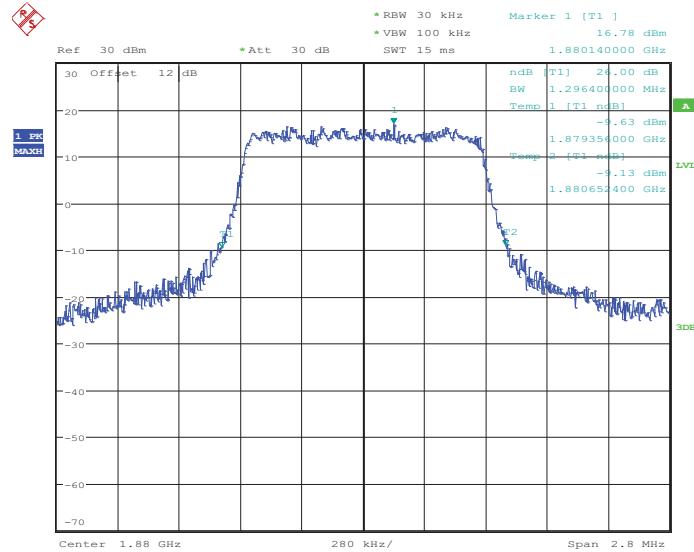


99% Occupied Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 07:38:28

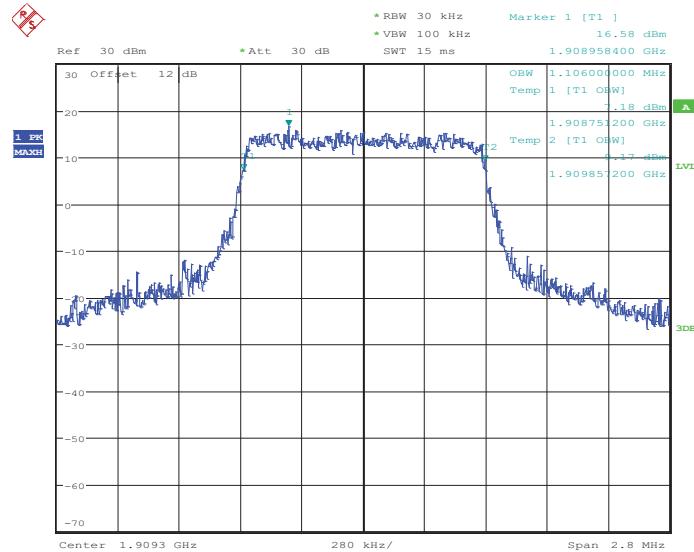
26dB Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 07:39:00

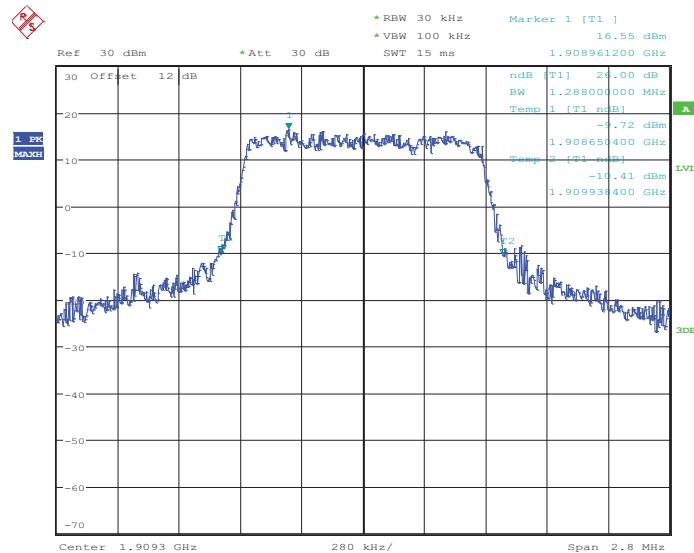


99% Occupied Bandwidth Plot on Channel 19193



Date: 27.JUL.2014 07:41:25

26dB Bandwidth Plot on Channel 19193

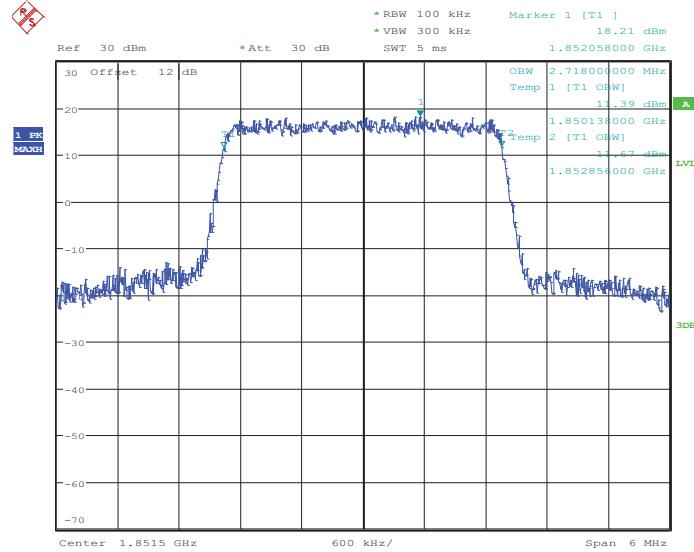


Date: 27.JUL.2014 07:41:57



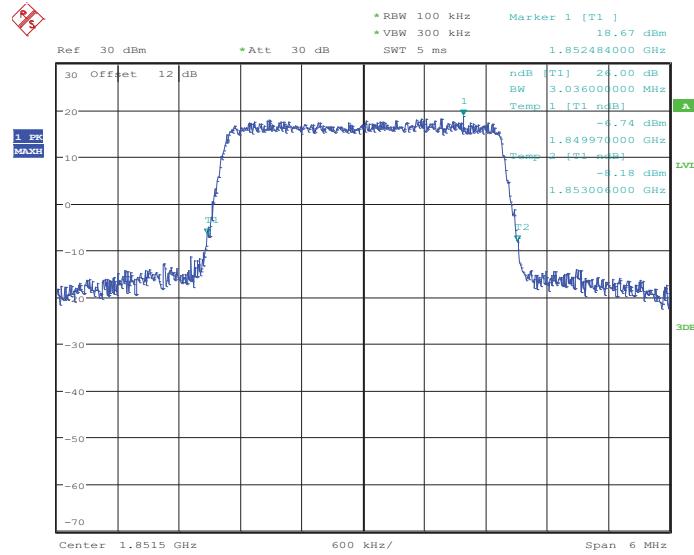
Band :	LTE Band 2	BW / Mod. :	3MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 18615



Date: 27.JUL.2014 07:53:05

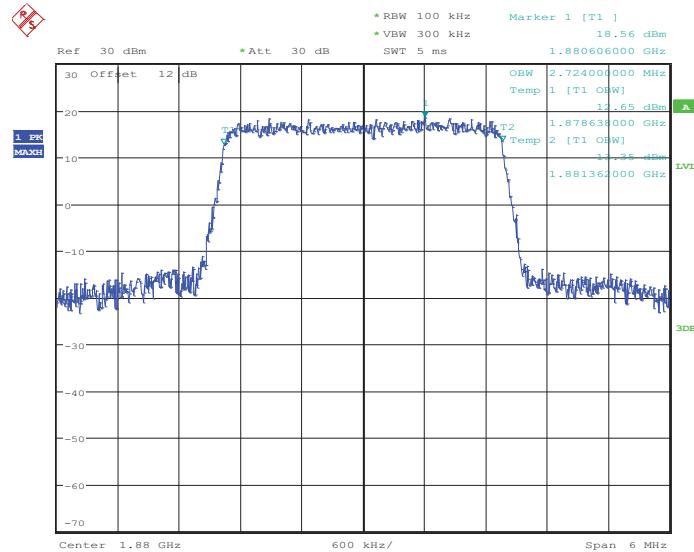
26dB Bandwidth Plot on Channel 18615



Date: 27.JUL.2014 07:53:36

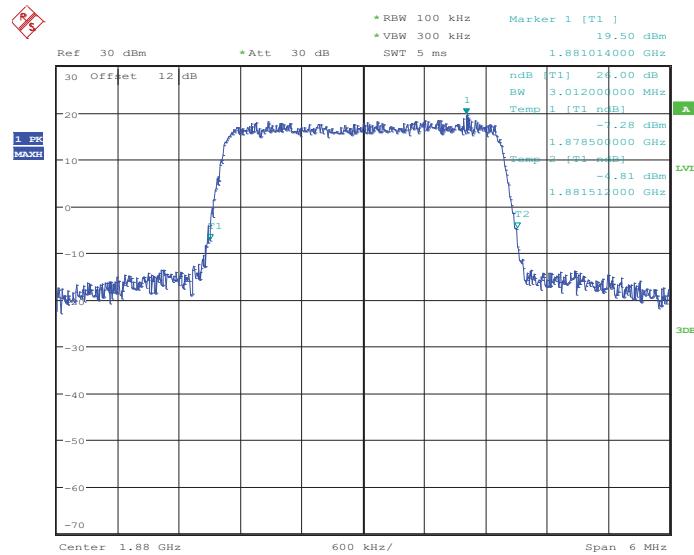


99% Occupied Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 07:59:04

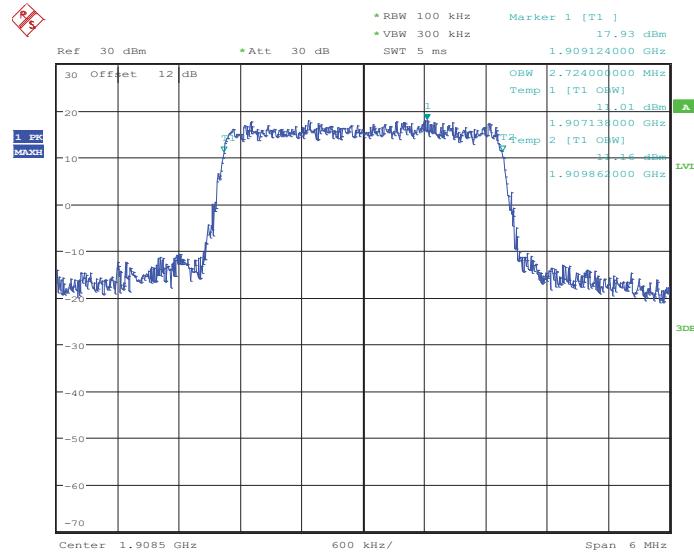
26dB Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 07:59:34

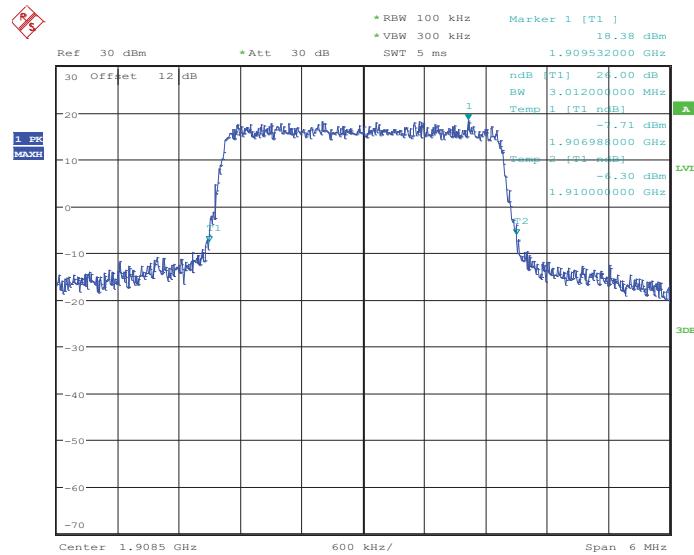


99% Occupied Bandwidth Plot on Channel 19185



Date: 27.JUL.2014 08:02:02

26dB Bandwidth Plot on Channel 19185

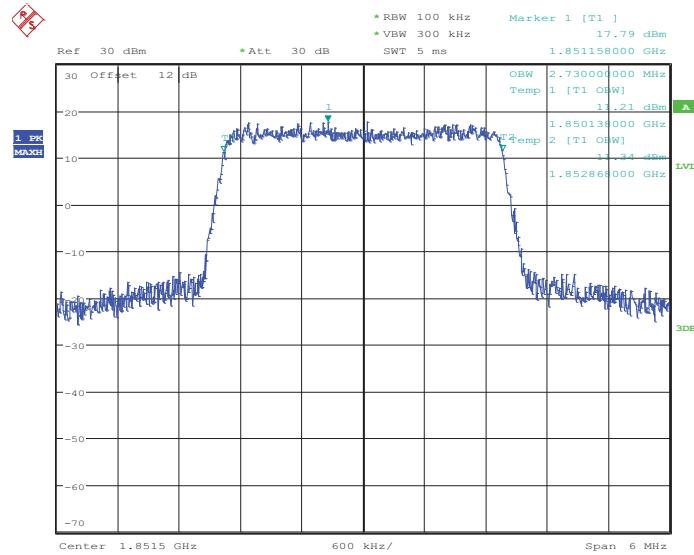


Date: 27.JUL.2014 08:02:32



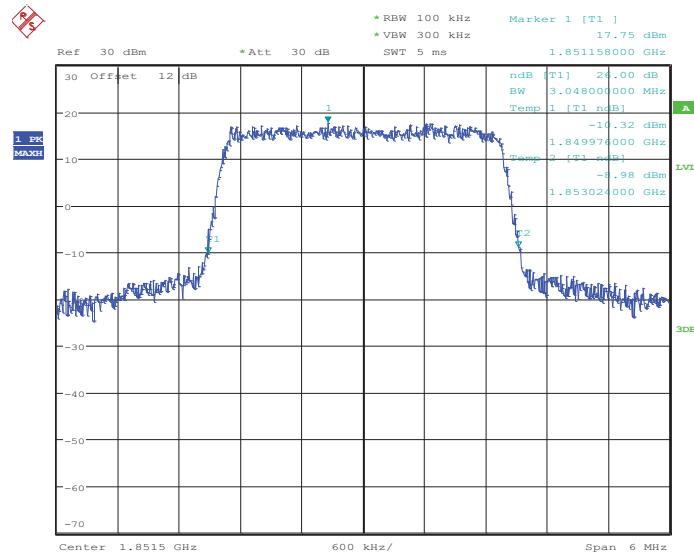
Band :	LTE Band 2	BW / Mod. :	3MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 18615



Date: 27.JUL.2014 07:53:19

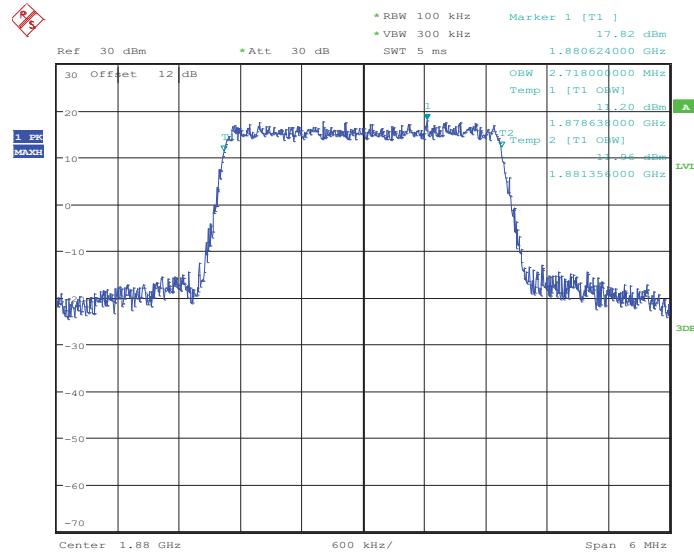
26dB Bandwidth Plot on Channel 18615



Date: 27.JUL.2014 07:53:52

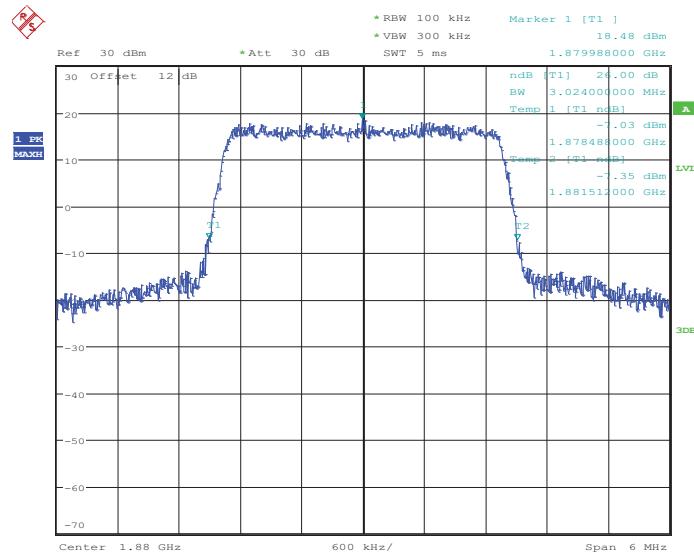


99% Occupied Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 07:59:18

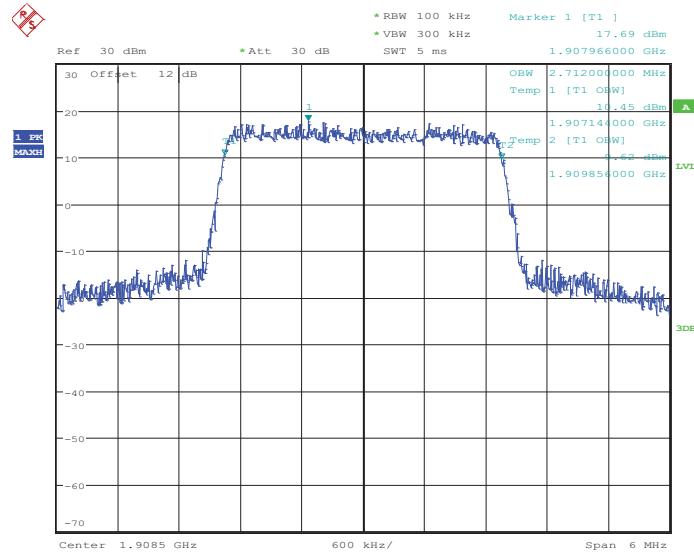
26dB Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 07:59:51

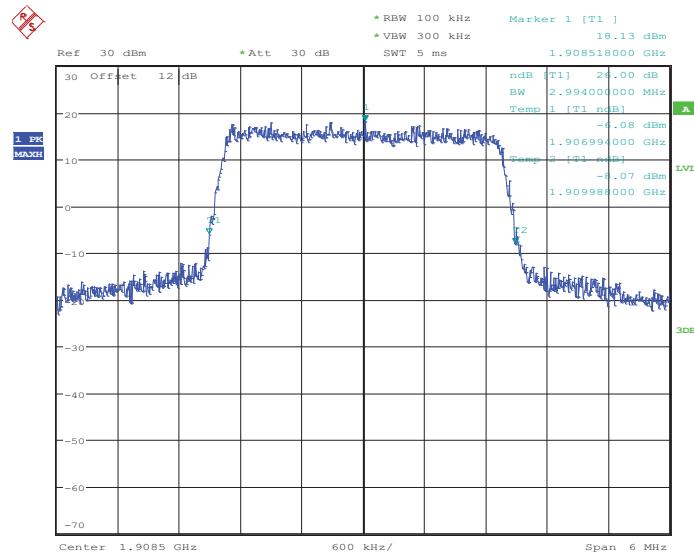


99% Occupied Bandwidth Plot on Channel 19185



Date: 27.JUL.2014 08:02:16

26dB Bandwidth Plot on Channel 19185

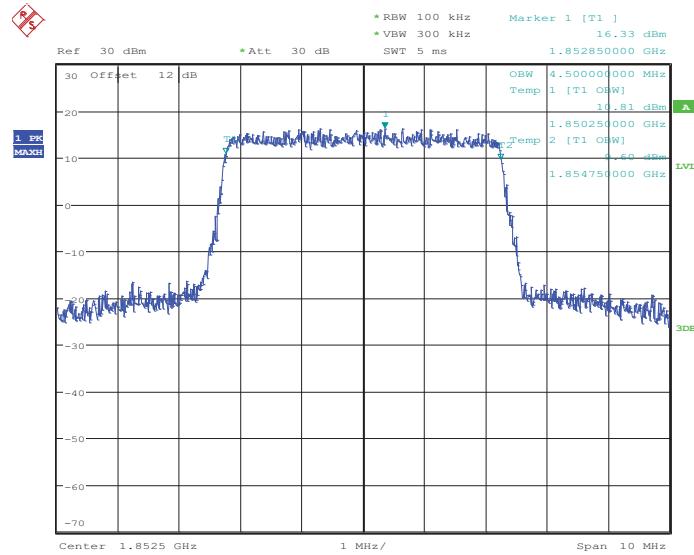


Date: 27.JUL.2014 08:02:48



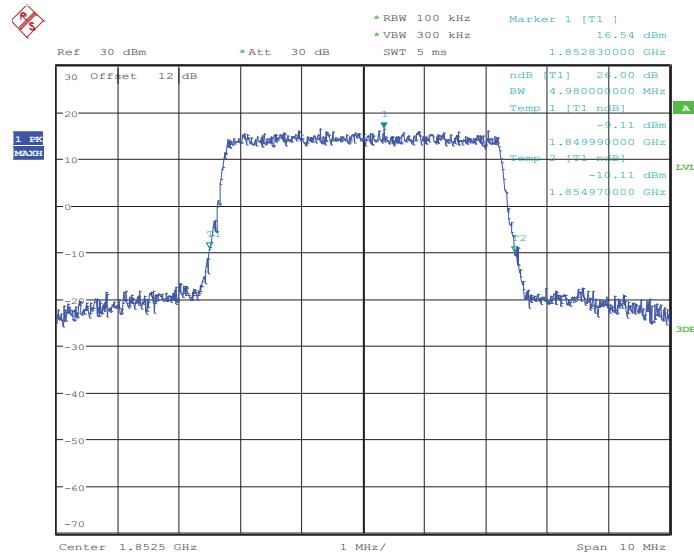
Band :	LTE Band 2	BW / Mod. :	5MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 18625



Date: 27.JUL.2014 08:08:01

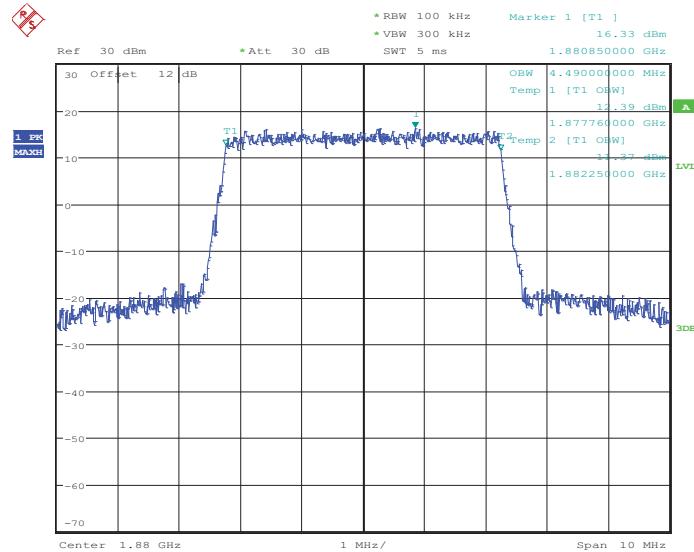
26dB Bandwidth Plot on Channel 18625



Date: 27.JUL.2014 08:08:31

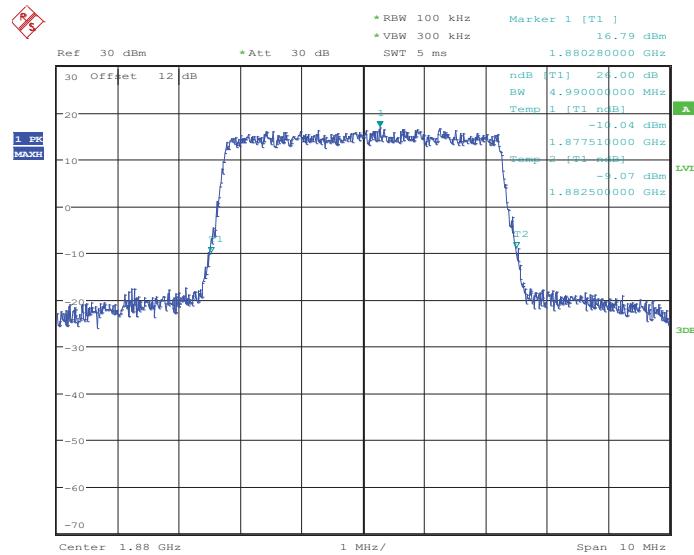


99% Occupied Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 08:14:00

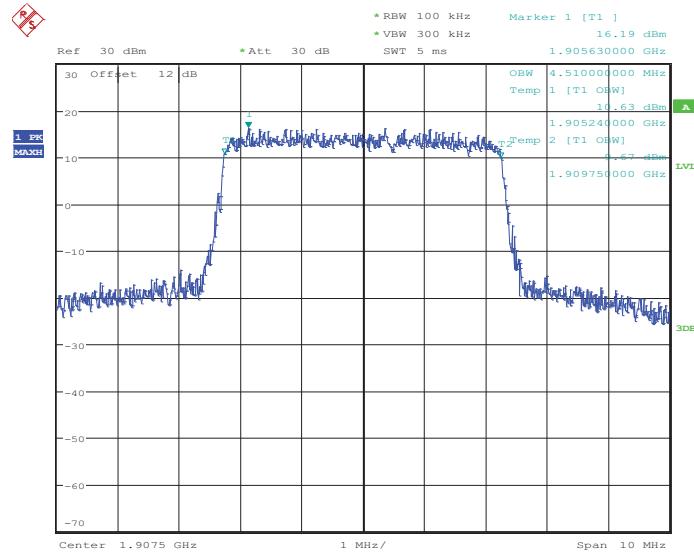
26dB Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 08:14:30

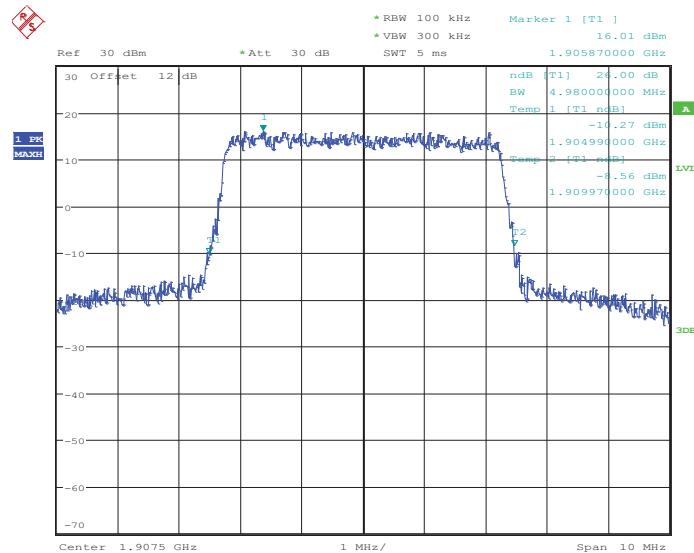


99% Occupied Bandwidth Plot on Channel 19175



Date: 27.JUL.2014 08:16:57

26dB Bandwidth Plot on Channel 19175

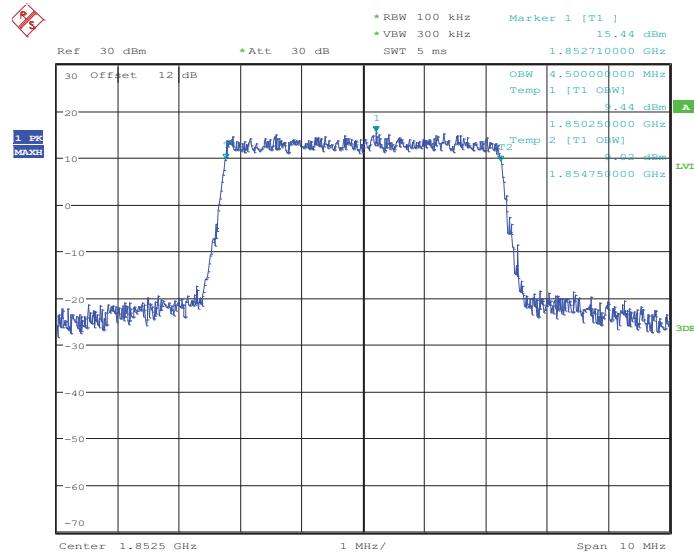


Date: 27.JUL.2014 08:17:27



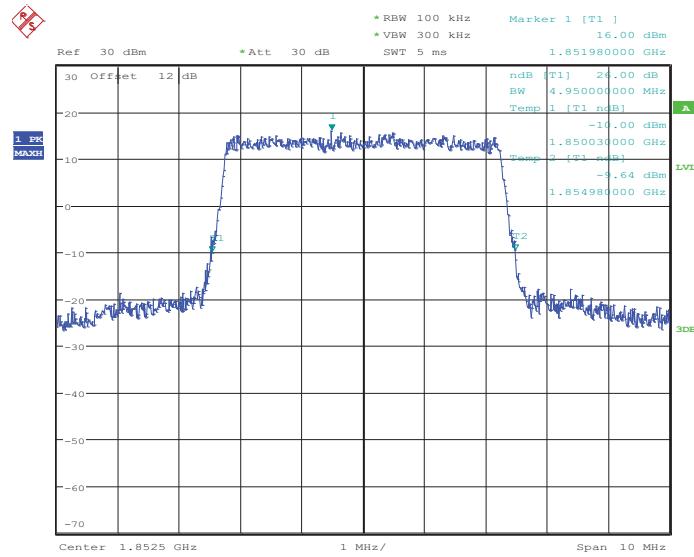
Band :	LTE Band 2	BW / Mod. :	5MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 18625



Date: 27.JUL.2014 08:08:15

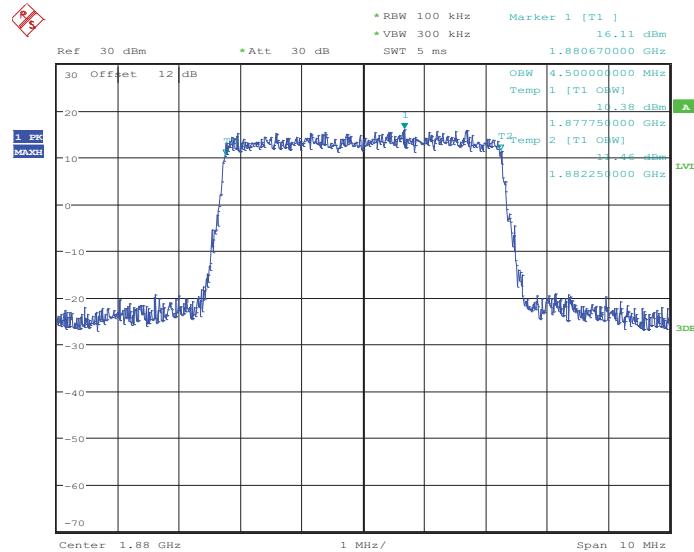
26dB Bandwidth Plot on Channel 18625



Date: 27.JUL.2014 08:08:47

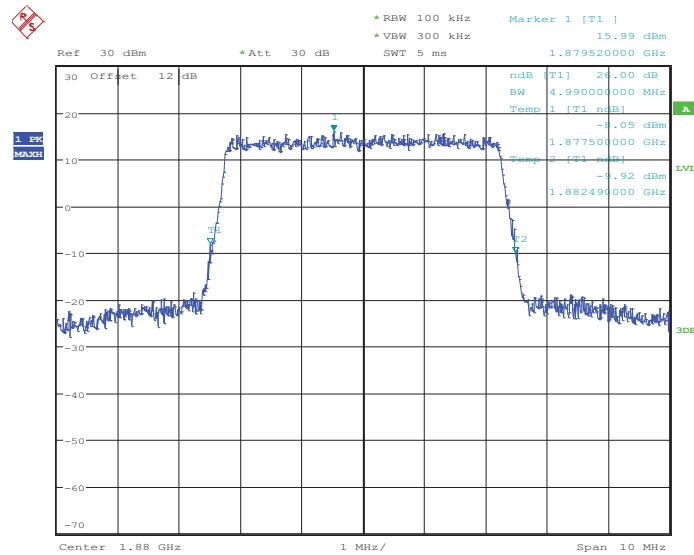


99% Occupied Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 08:14:14

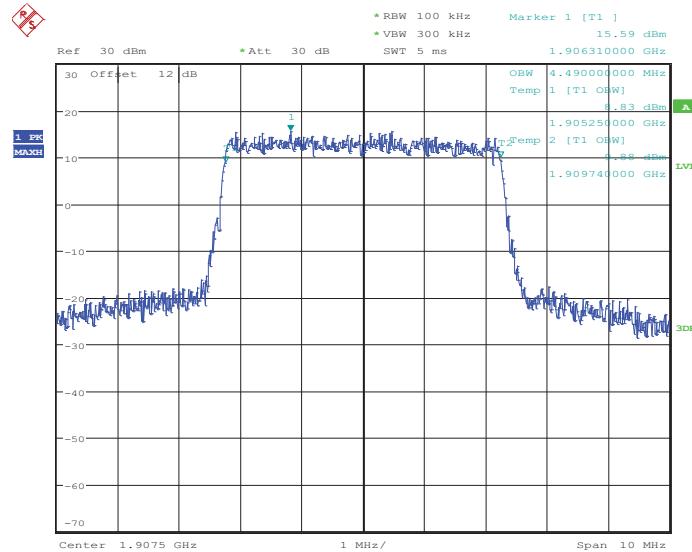
26dB Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 08:14:46

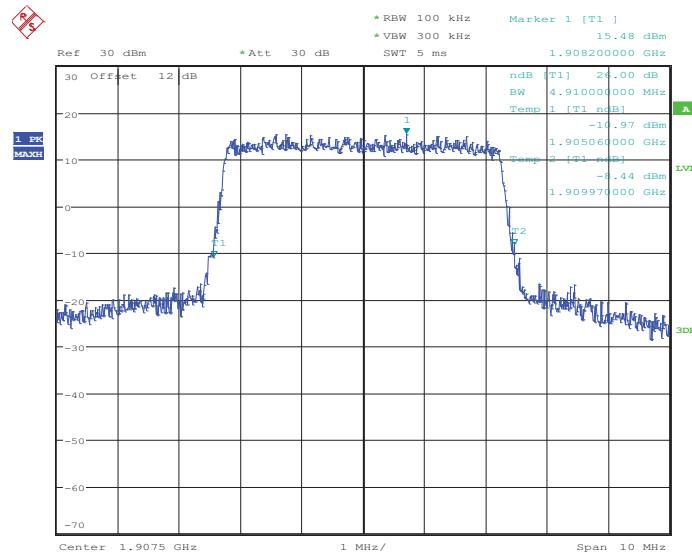


99% Occupied Bandwidth Plot on Channel 19175



Date: 27.JUL.2014 08:17:11

26dB Bandwidth Plot on Channel 19175

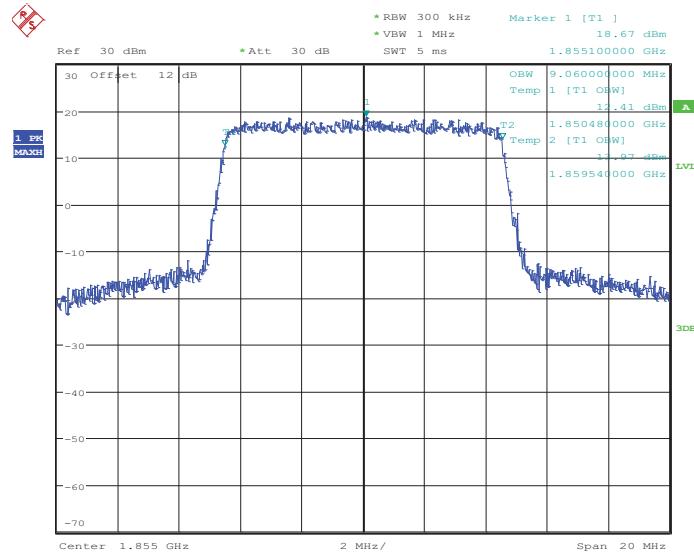


Date: 27.JUL.2014 08:17:43



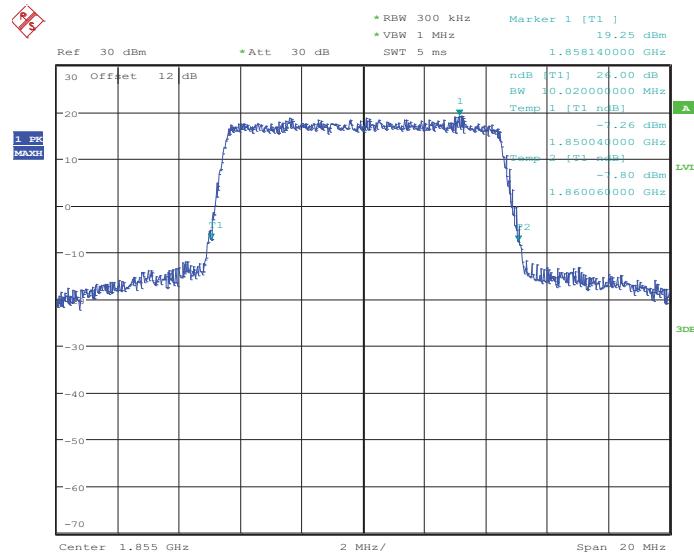
Band :	LTE Band 2	BW / Mod. :	10MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 18650



Date: 27.JUL.2014 08:22:56

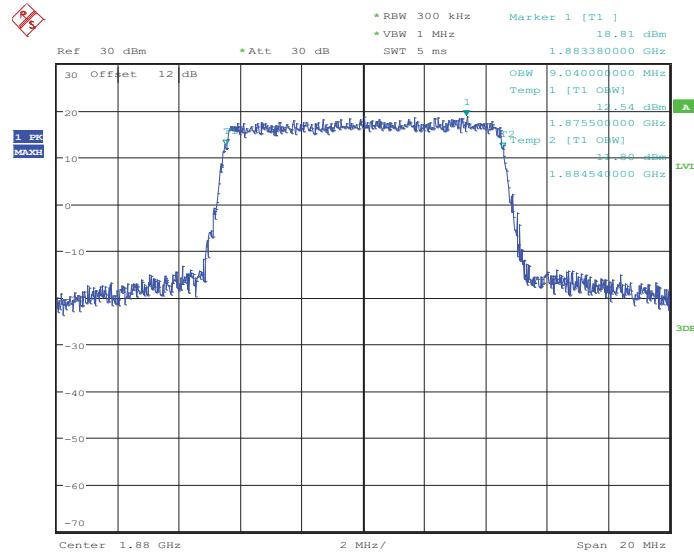
26dB Bandwidth Plot on Channel 18650



Date: 27.JUL.2014 08:23:26

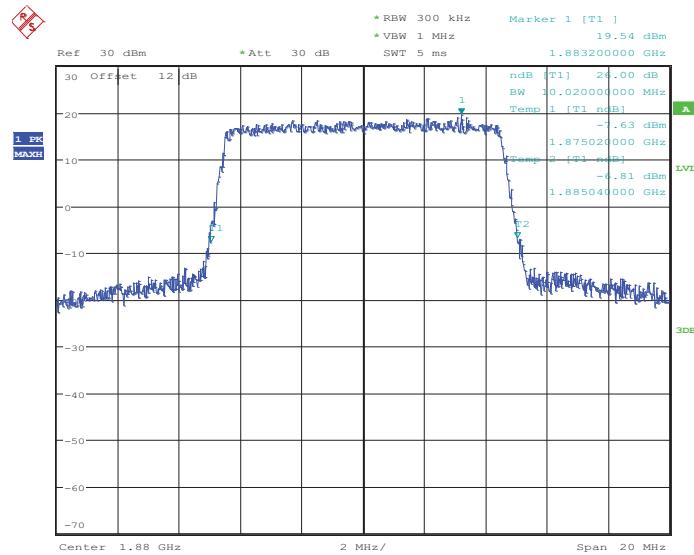


99% Occupied Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 08:28:56

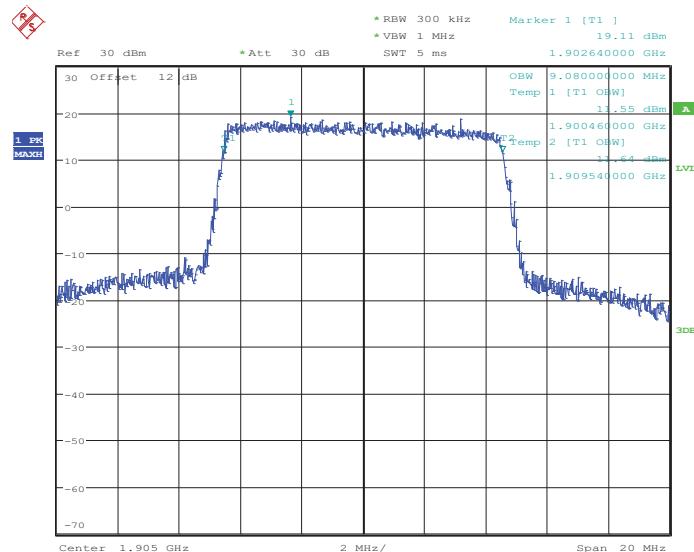
26dB Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 08:29:26

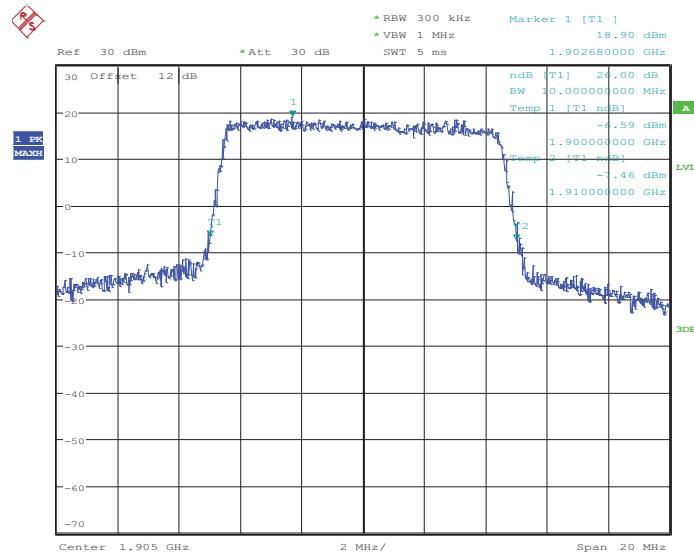


99% Occupied Bandwidth Plot on Channel 19150



Date: 27.JUL.2014 08:31:53

26dB Bandwidth Plot on Channel 19150

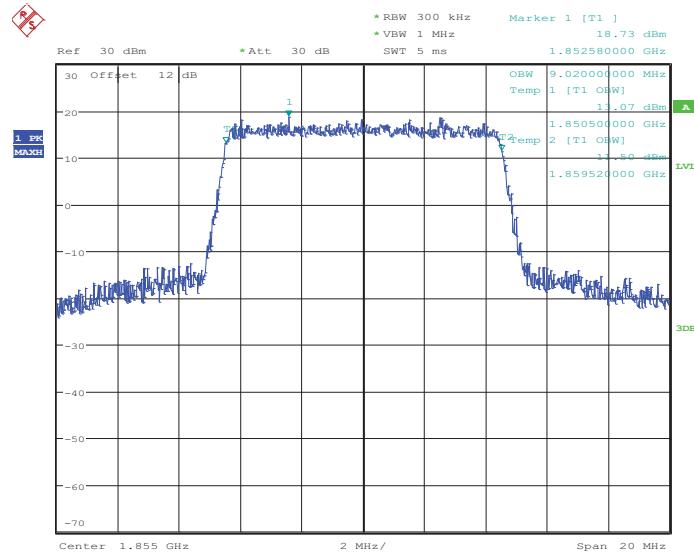


Date: 27.JUL.2014 08:32:23



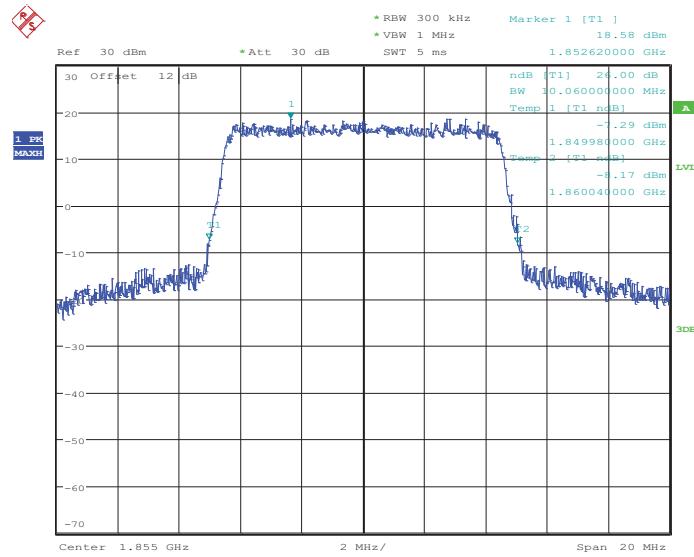
Band :	LTE Band 2	BW / Mod. :	10MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 18650



Date: 27.JUL.2014 08:23:10

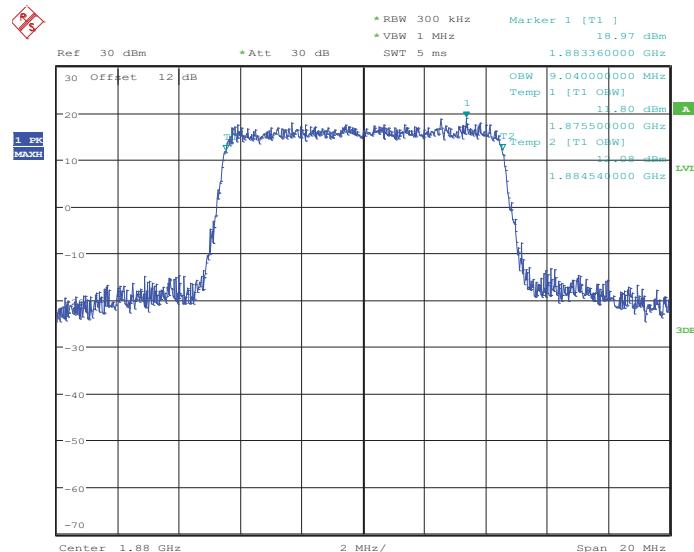
26dB Bandwidth Plot on Channel 18650



Date: 27.JUL.2014 08:23:42

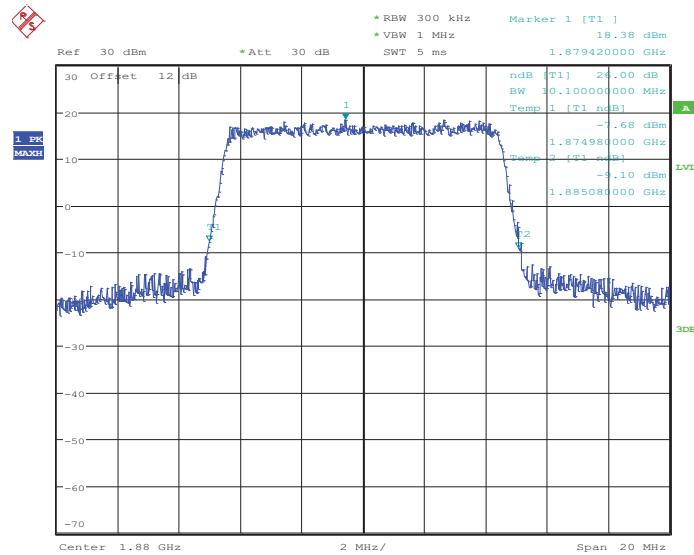


99% Occupied Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 08:29:10

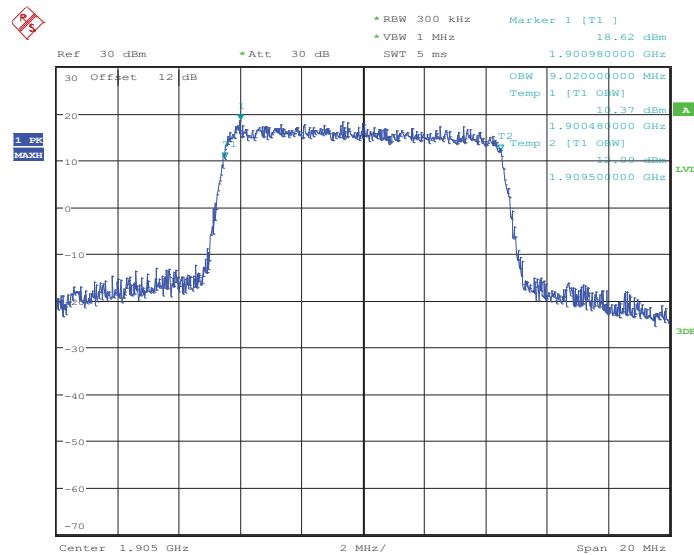
26dB Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 08:29:42

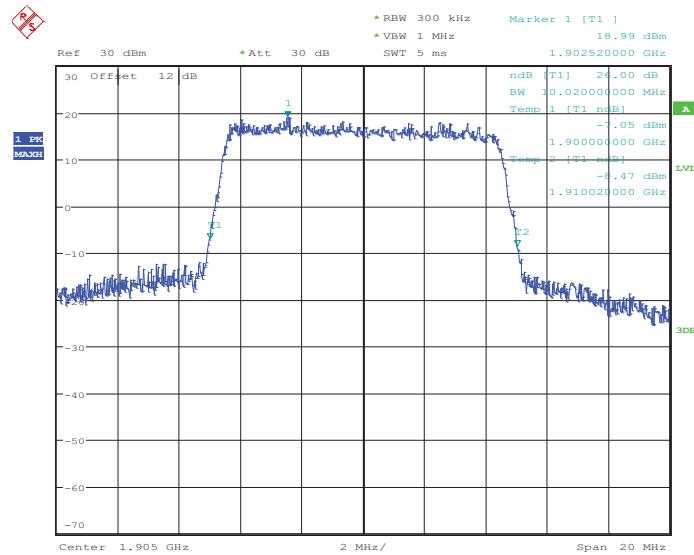


99% Occupied Bandwidth Plot on Channel 19150



Date: 27.JUL.2014 08:32:07

26dB Bandwidth Plot on Channel 19150

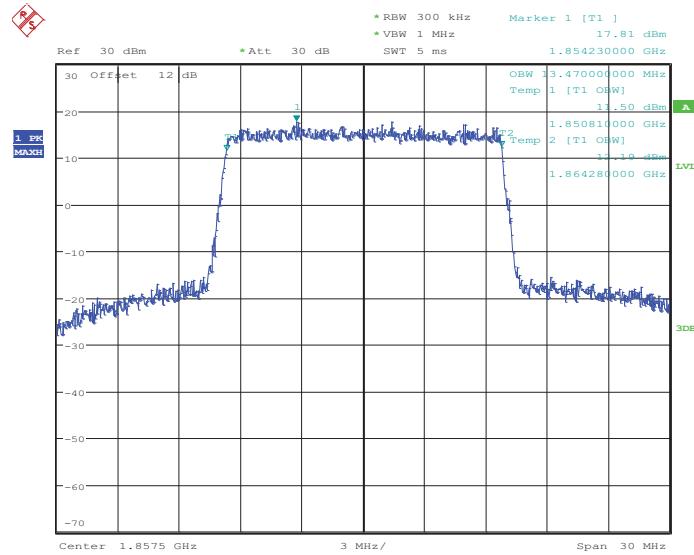


Date: 27.JUL.2014 08:32:39



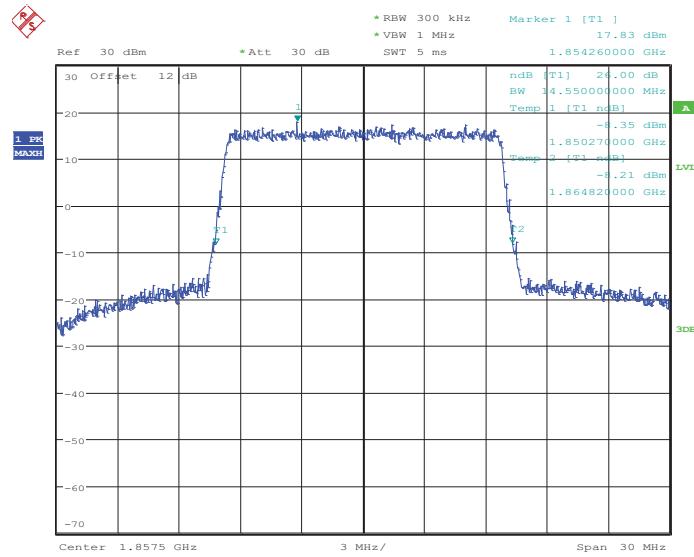
Band :	LTE Band 2	BW / Mod. :	15MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 18675



Date: 27.JUL.2014 08:37:53

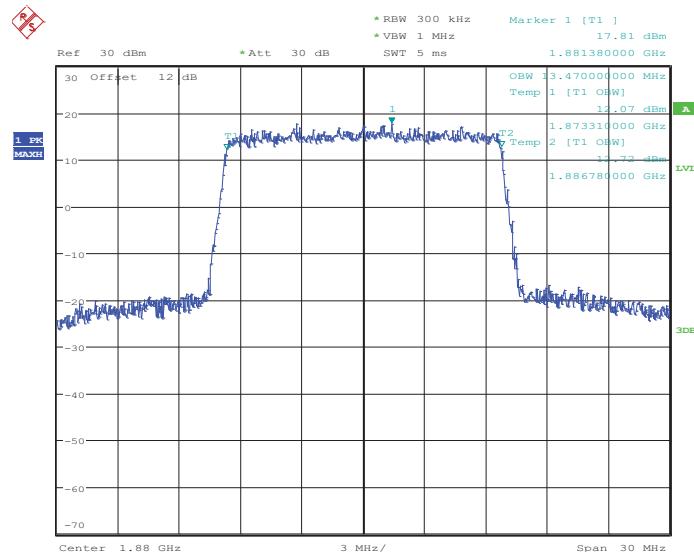
26dB Bandwidth Plot on Channel 18675



Date: 27.JUL.2014 08:38:23

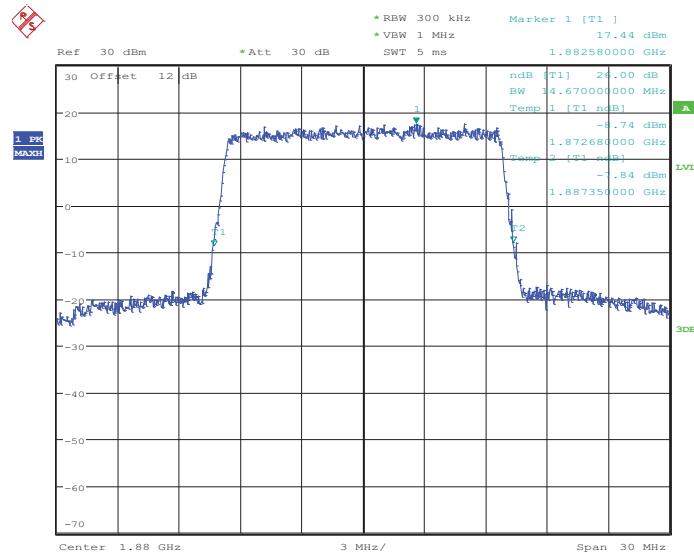


99% Occupied Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 08:43:52

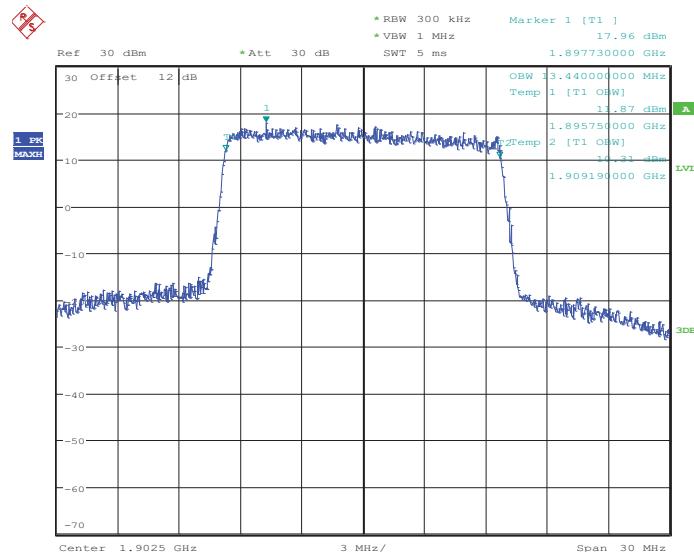
26dB Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 08:44:22

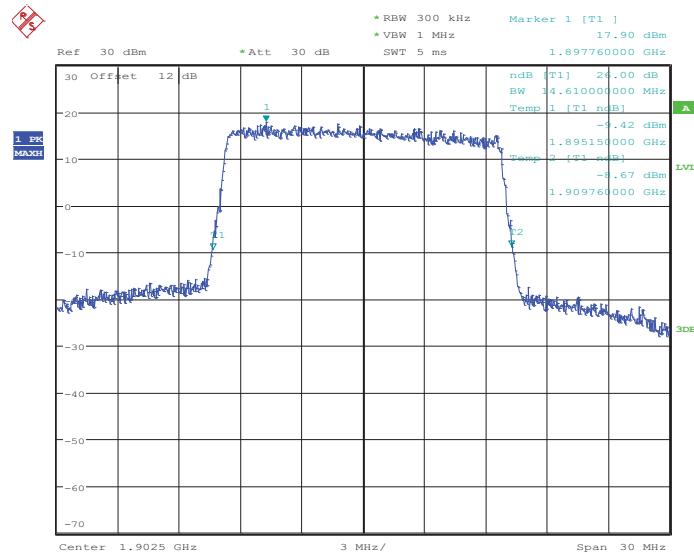


99% Occupied Bandwidth Plot on Channel 19125



Date: 27.JUL.2014 08:46:50

26dB Bandwidth Plot on Channel 19125

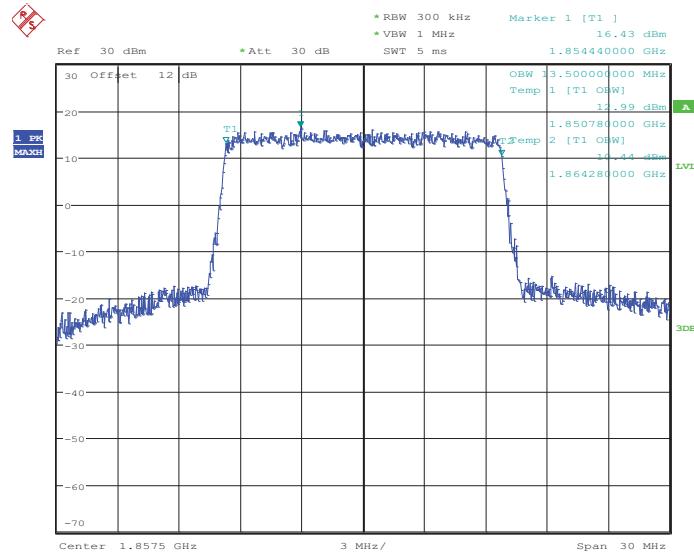


Date: 27.JUL.2014 08:47:20



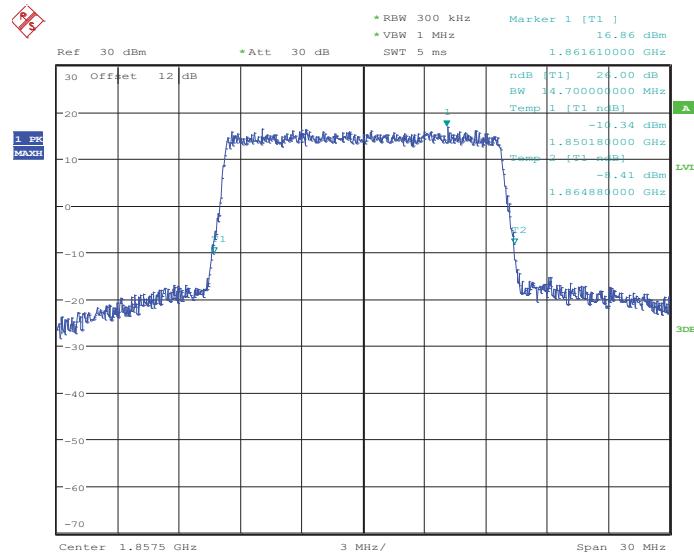
Band :	LTE Band 2	BW / Mod. :	15MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 18675



Date: 27.JUL.2014 08:38:07

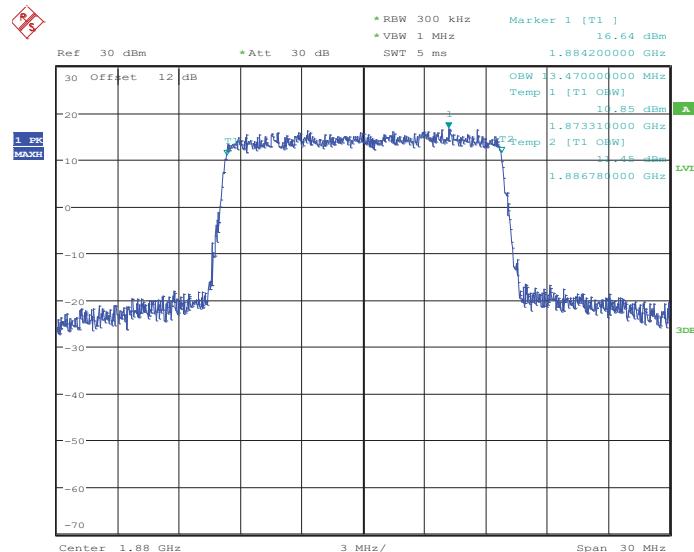
26dB Bandwidth Plot on Channel 18675



Date: 27.JUL.2014 08:38:39

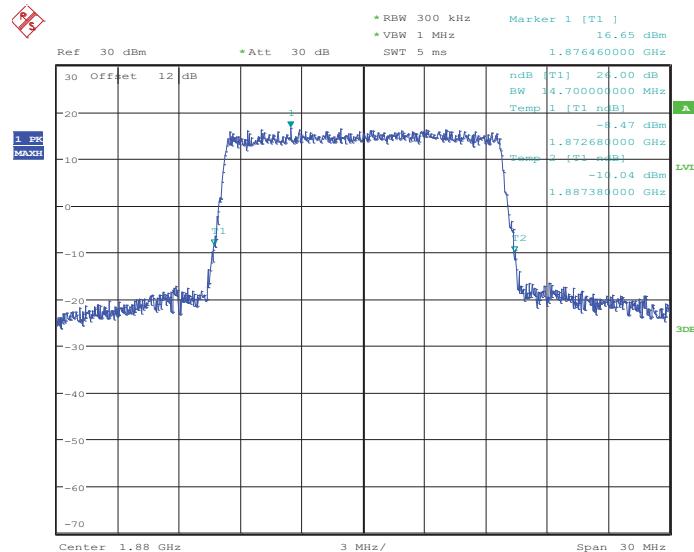


99% Occupied Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 08:44:06

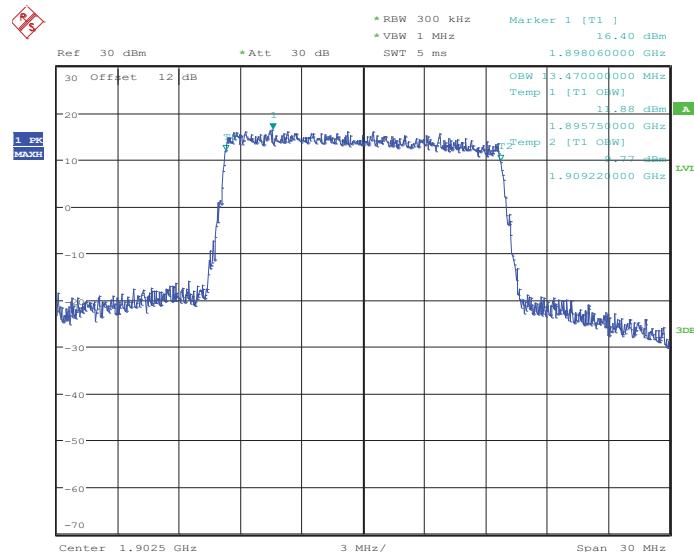
26dB Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 08:44:38

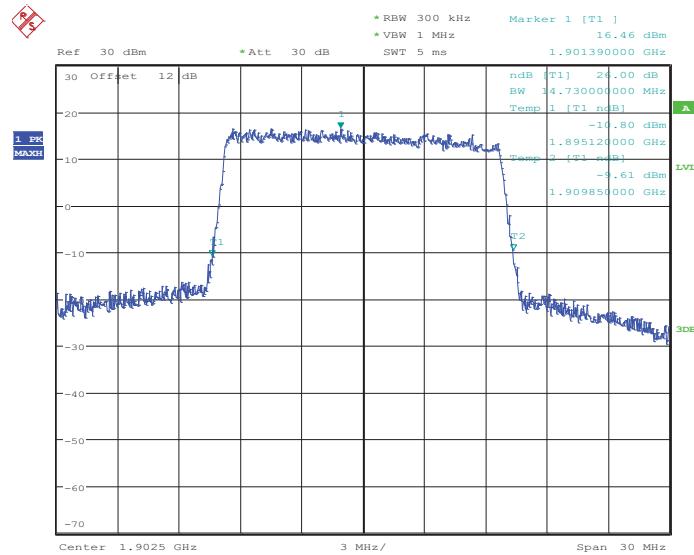


99% Occupied Bandwidth Plot on Channel 19125



Date: 27.JUL.2014 08:47:04

26dB Bandwidth Plot on Channel 19125

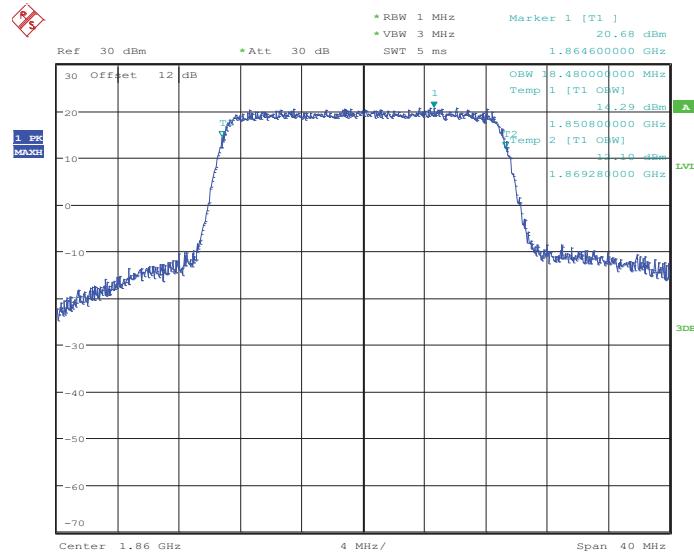


Date: 27.JUL.2014 08:47:36



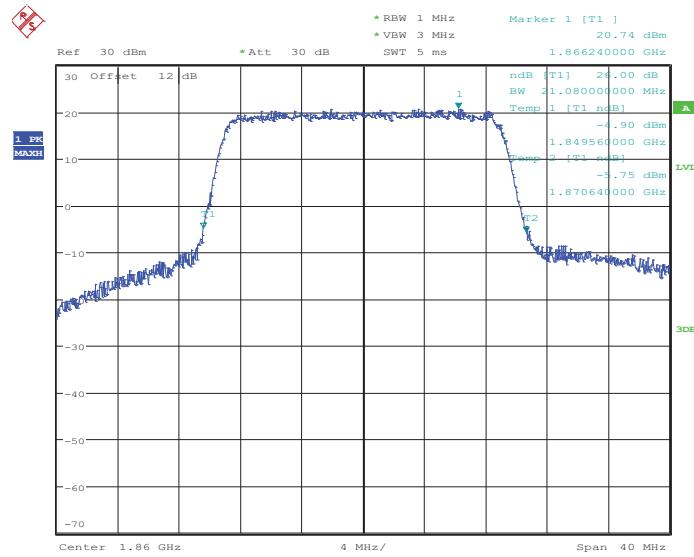
Band :	LTE Band 2	BW / Mod. :	20MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 18700



Date: 27.JUL.2014 08:52:50

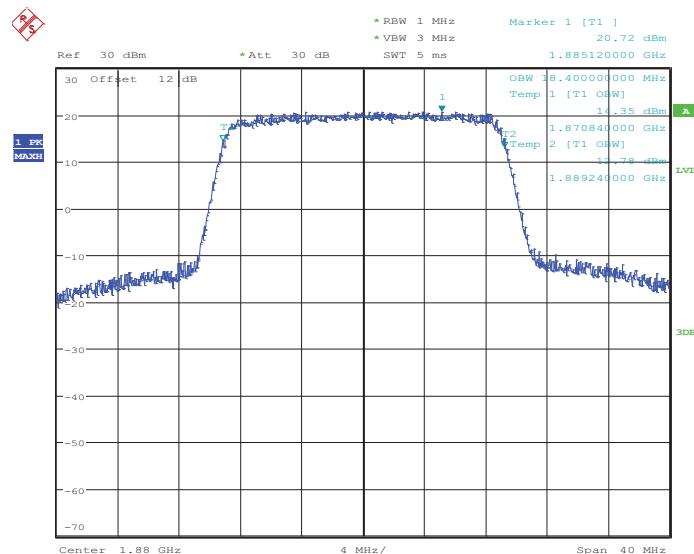
26dB Bandwidth Plot on Channel 18700



Date: 27.JUL.2014 08:53:21

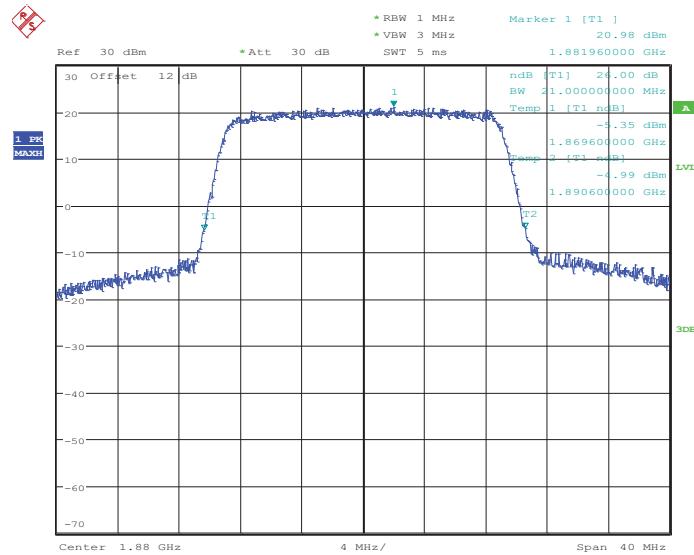


99% Occupied Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 08:58:50

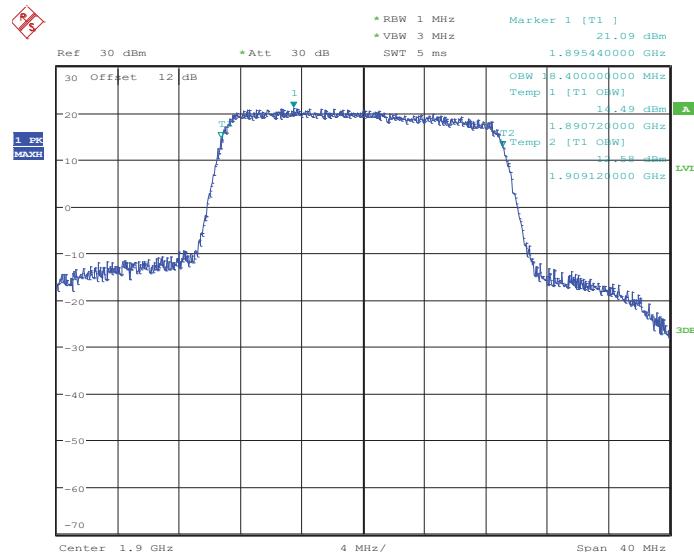
26dB Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 08:59:20

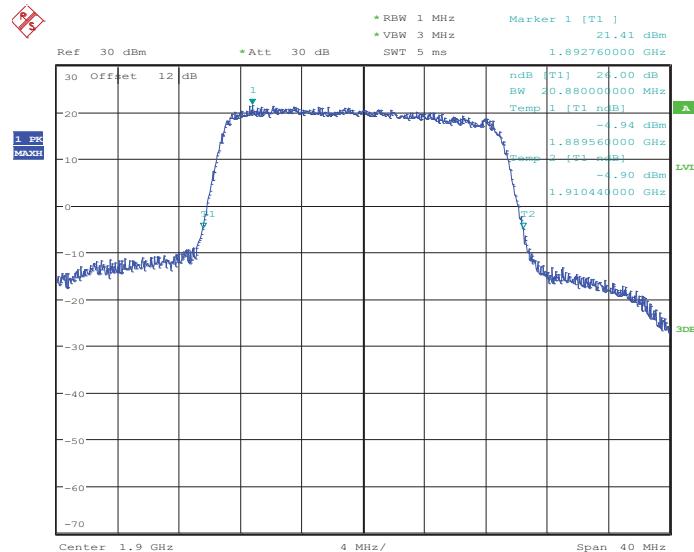


99% Occupied Bandwidth Plot on Channel 19100



Date: 27.JUL.2014 09:01:48

26dB Bandwidth Plot on Channel 19100

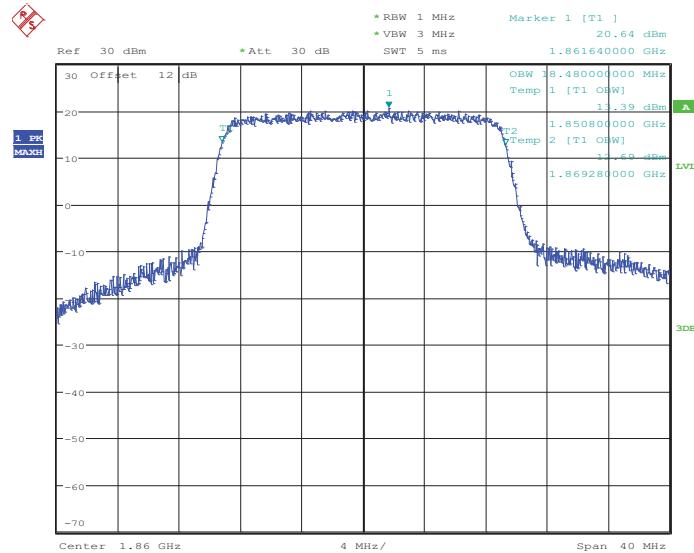


Date: 27.JUL.2014 09:02:18



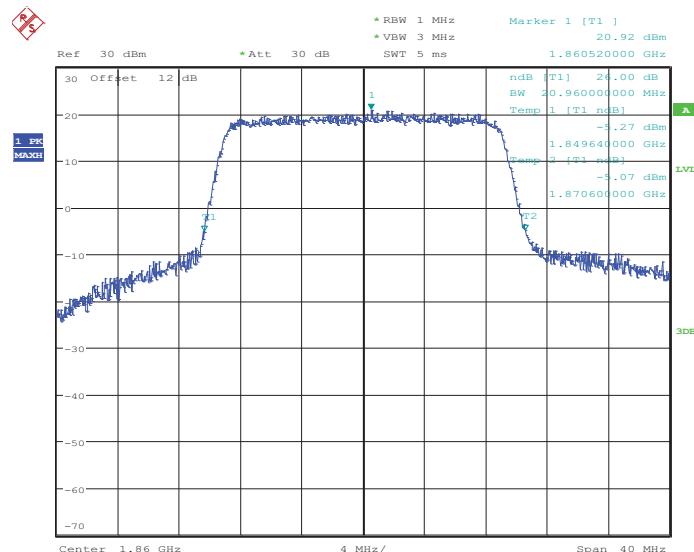
Band :	LTE Band 2	BW / Mod. :	20MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 18700



Date: 27.JUL.2014 08:53:04

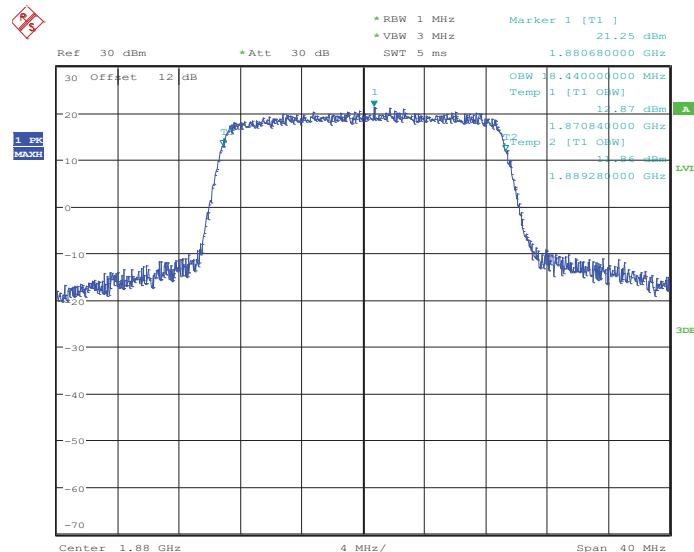
26dB Bandwidth Plot on Channel 18700



Date: 27.JUL.2014 08:53:37

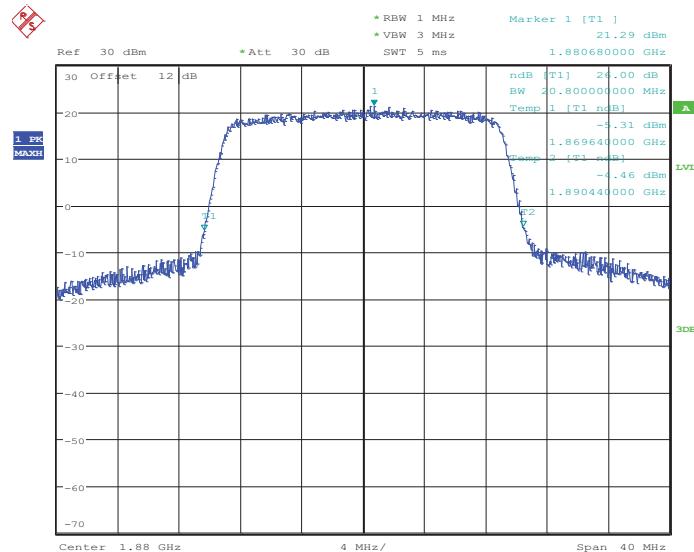


99% Occupied Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 08:59:04

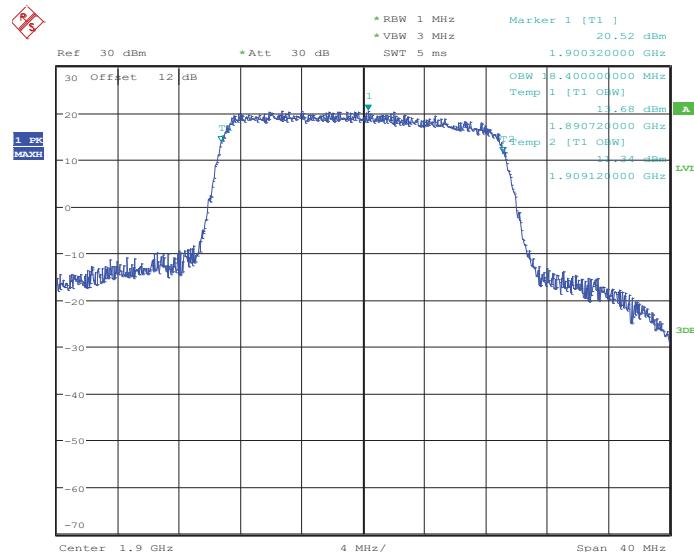
26dB Bandwidth Plot on Channel 18900



Date: 27.JUL.2014 08:59:36

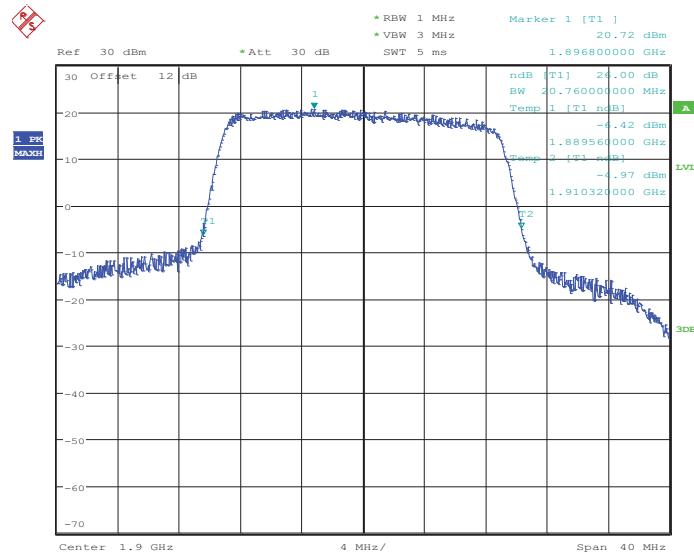


99% Occupied Bandwidth Plot on Channel 19100



Date: 27.JUL.2014 09:02:02

26dB Bandwidth Plot on Channel 19100

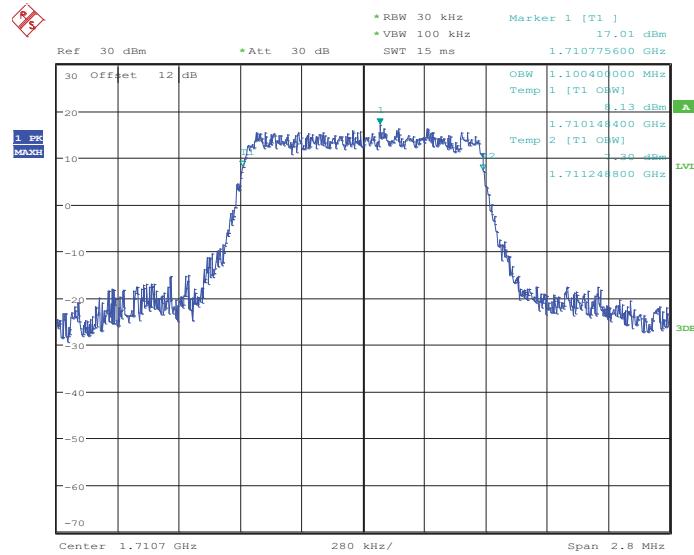


Date: 27.JUL.2014 09:02:37



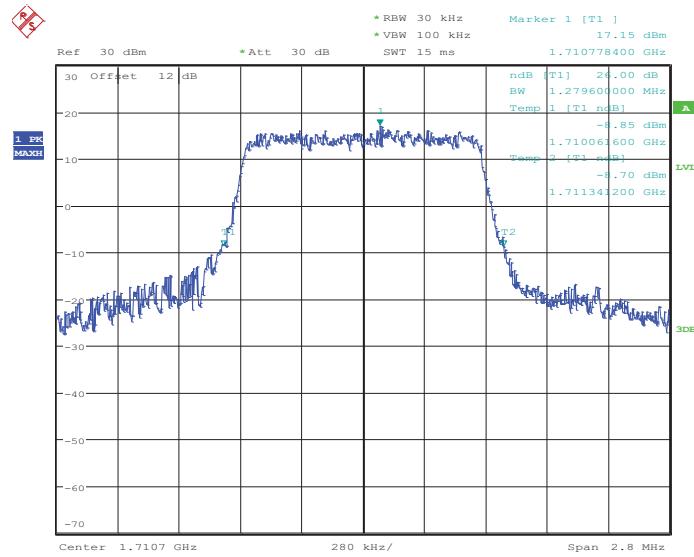
Band :	LTE Band 4	BW / Mod. :	1.4MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 19957



Date: 27.JUL.2014 09:09:58

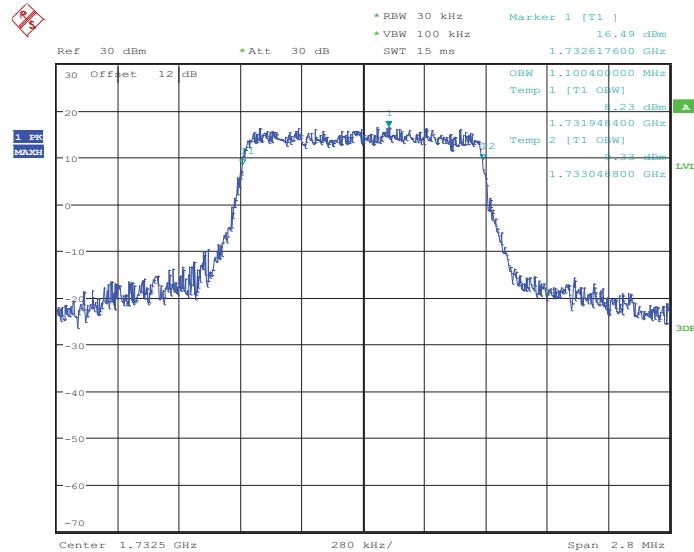
26dB Bandwidth Plot on Channel 19957



Date: 27.JUL.2014 09:10:28

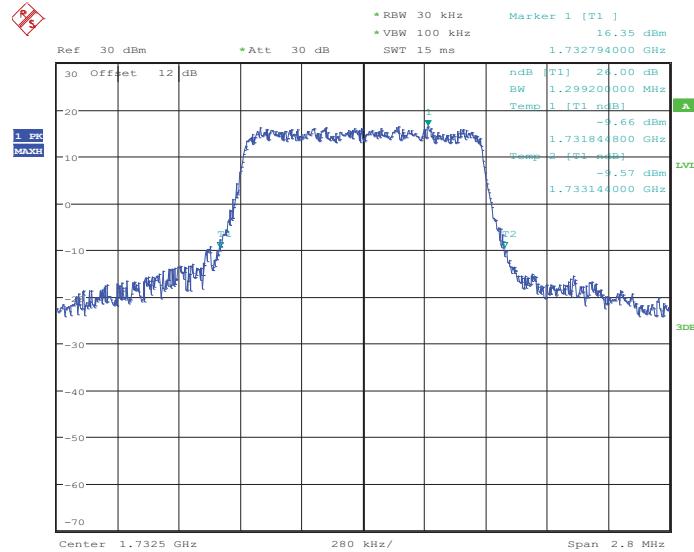


99% Occupied Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 09:15:57

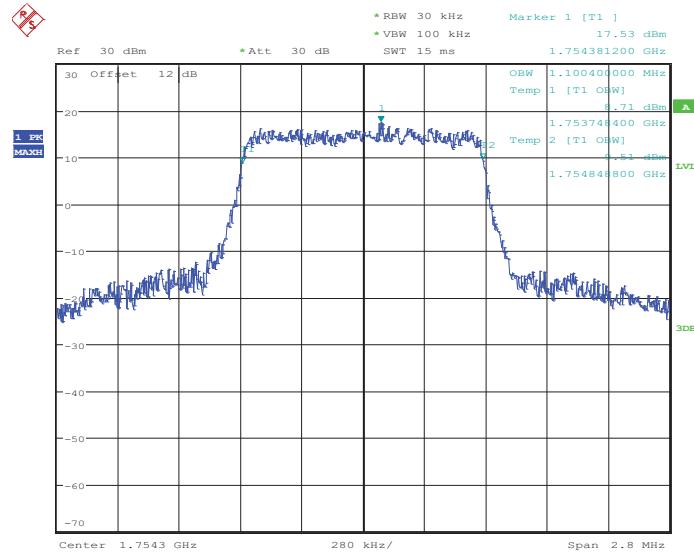
26dB Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 09:16:27

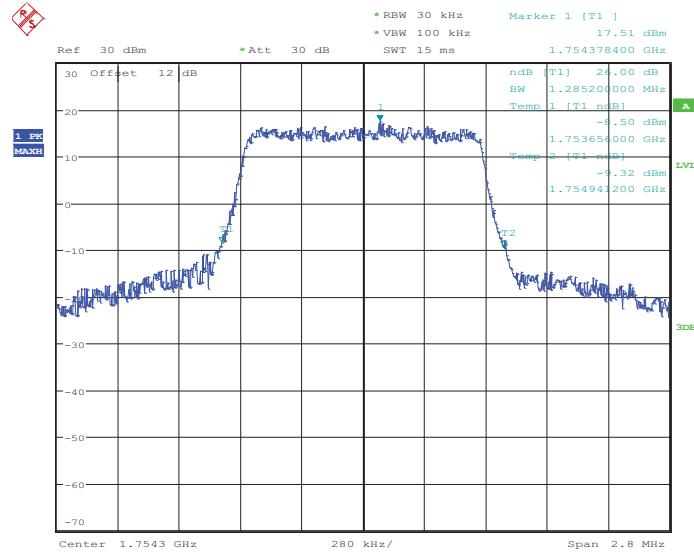


99% Occupied Bandwidth Plot on Channel 20393



Date: 27.JUL.2014 09:18:55

26dB Bandwidth Plot on Channel 20393

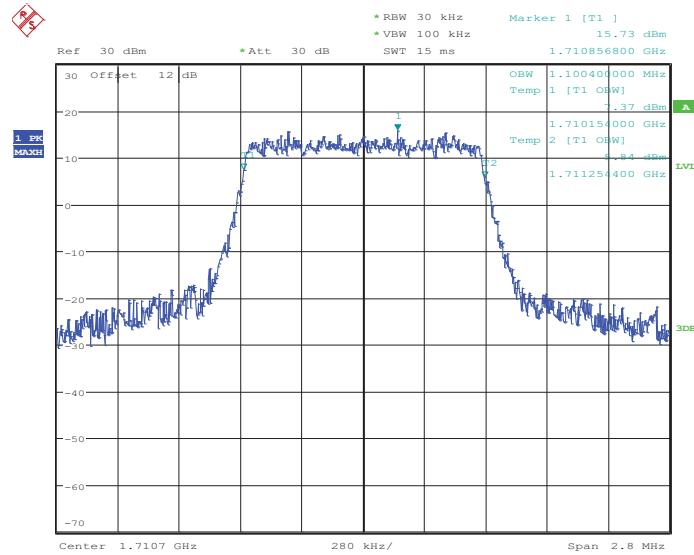


Date: 27.JUL.2014 09:19:25



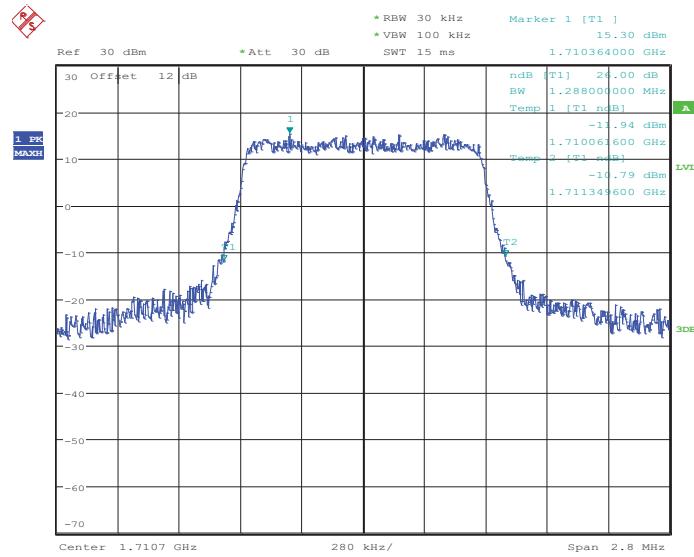
Band :	LTE Band 4	BW / Mod. :	1.4MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 19957



Date: 27.JUL.2014 09:10:12

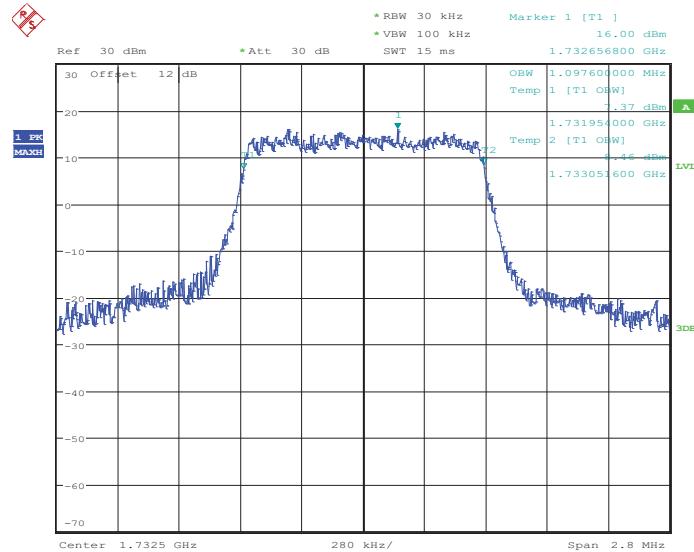
26dB Bandwidth Plot on Channel 19957



Date: 27.JUL.2014 09:10:44

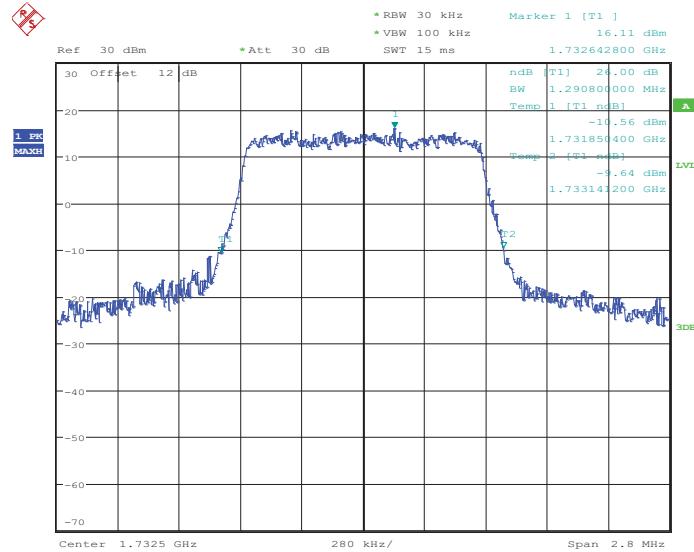


99% Occupied Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 09:16:11

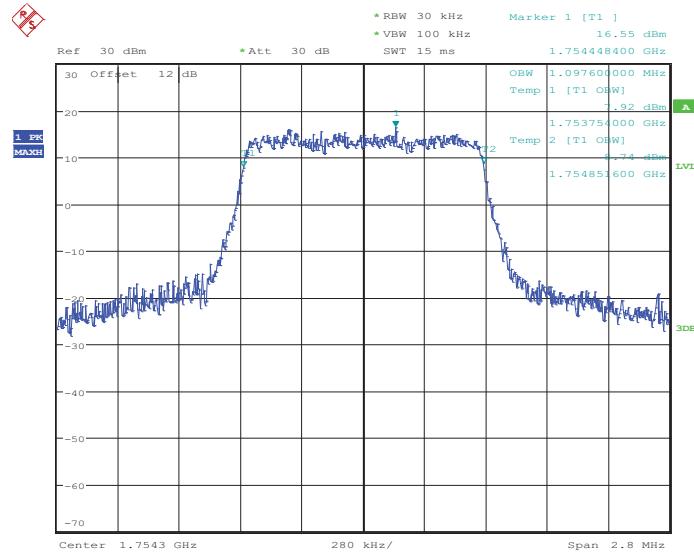
26dB Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 09:16:44

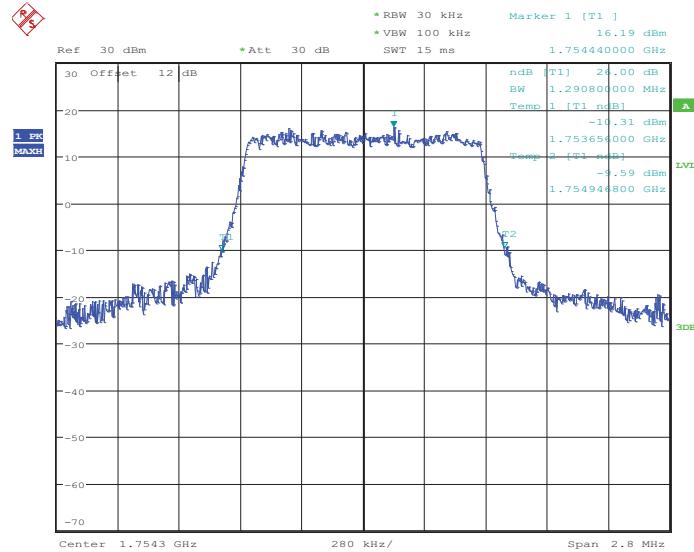


99% Occupied Bandwidth Plot on Channel 20393



Date: 27.JUL.2014 09:19:09

26dB Bandwidth Plot on Channel 20393

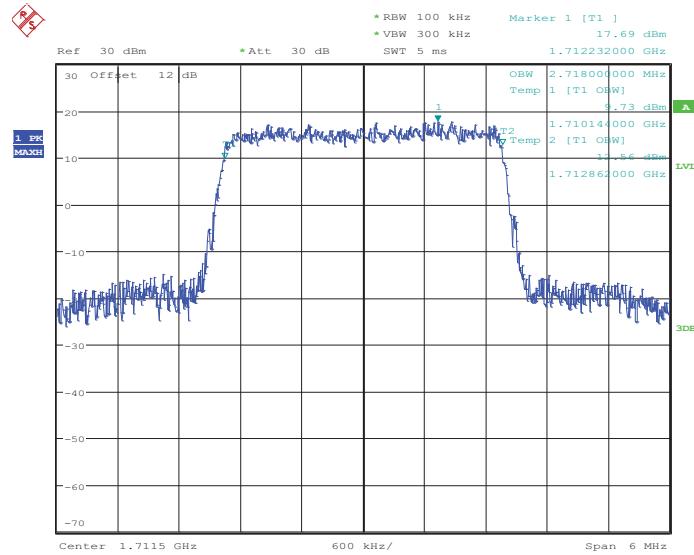


Date: 27.JUL.2014 09:19:41



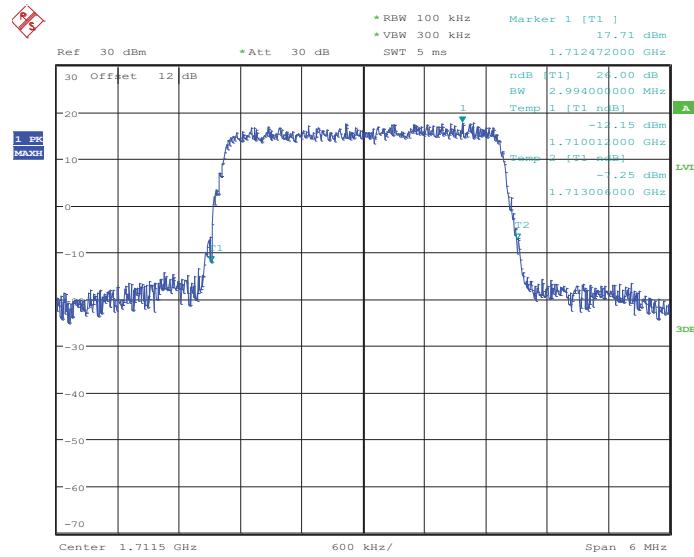
Band :	LTE Band 4	BW / Mod. :	3MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 19965



Date: 27.JUL.2014 09:28:44

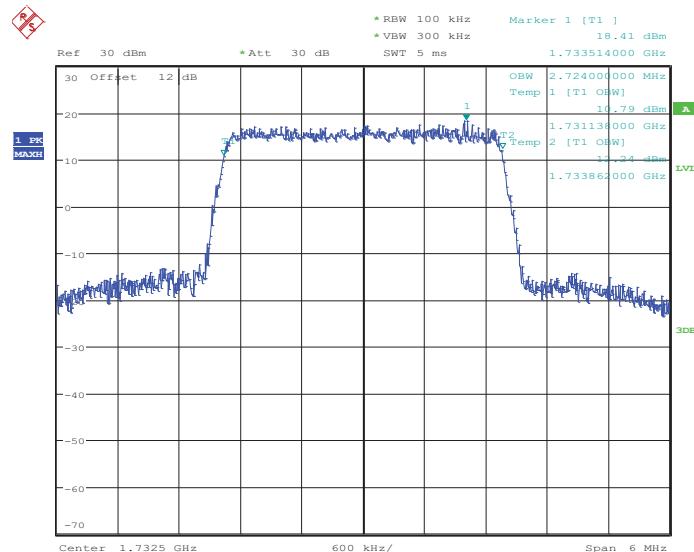
26dB Bandwidth Plot on Channel 19965



Date: 27.JUL.2014 09:29:14

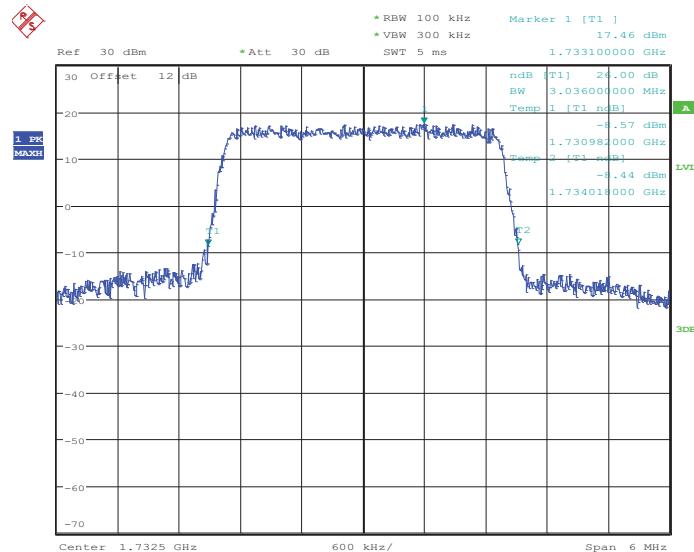


99% Occupied Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 09:34:43

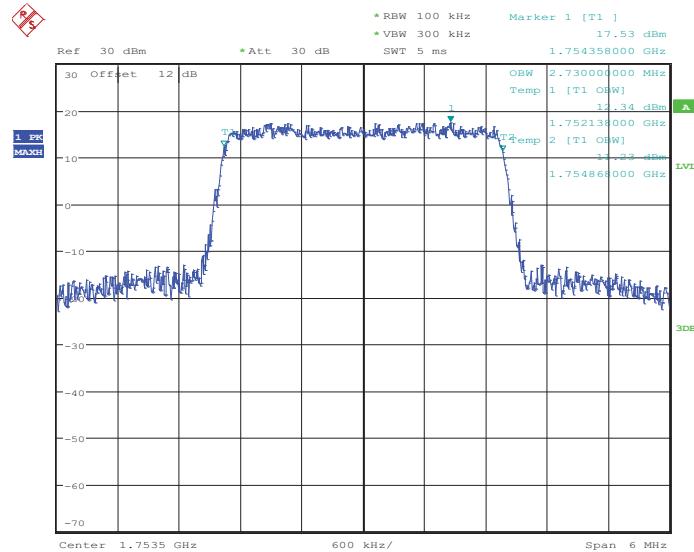
26dB Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 09:35:13

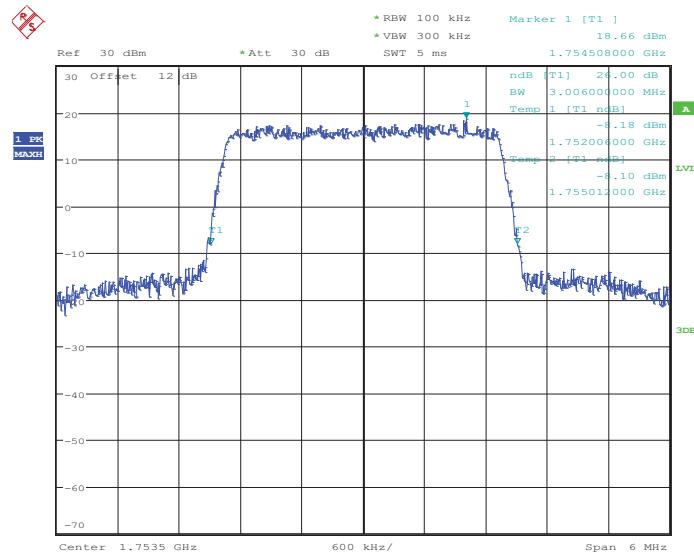


99% Occupied Bandwidth Plot on Channel 20385



Date: 27.JUL.2014 09:37:40

26dB Bandwidth Plot on Channel 20385

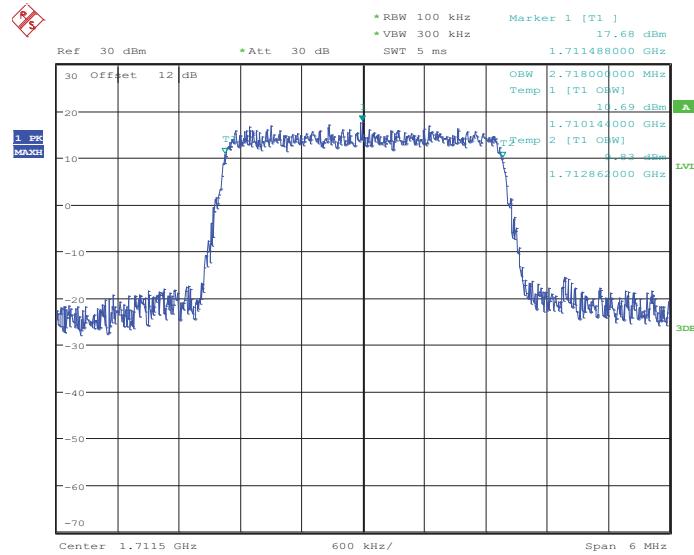


Date: 27.JUL.2014 09:38:11



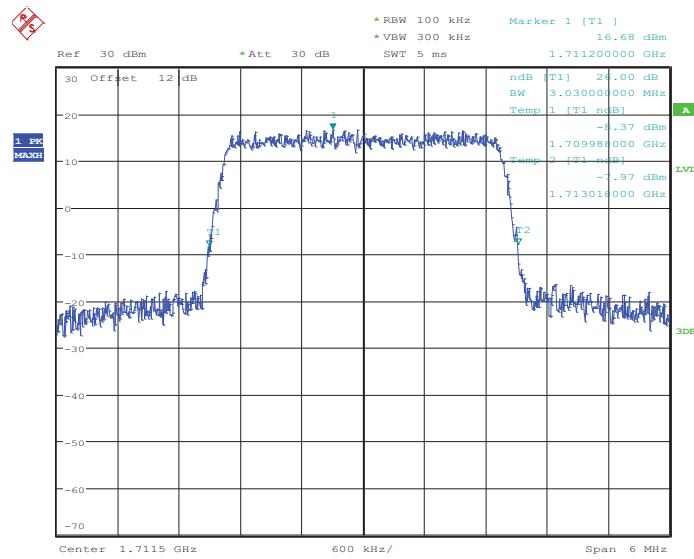
Band :	LTE Band 4	BW / Mod. :	3MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 19965



Date: 27.JUL.2014 09:28:58

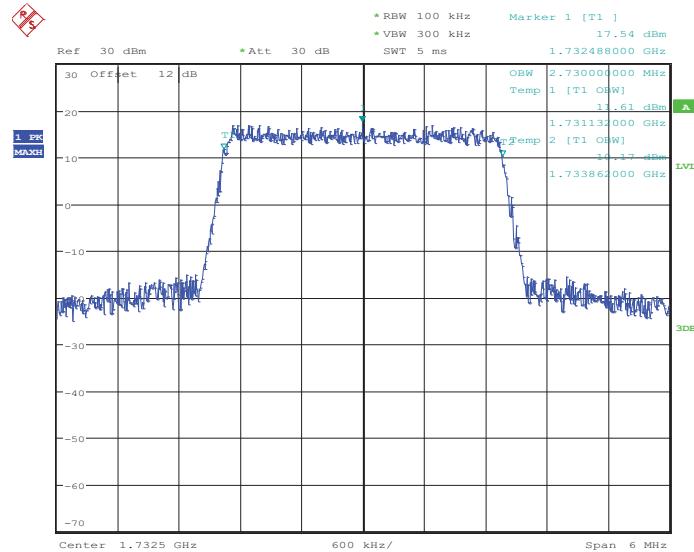
26dB Bandwidth Plot on Channel 19965



Date: 27.JUL.2014 09:29:30

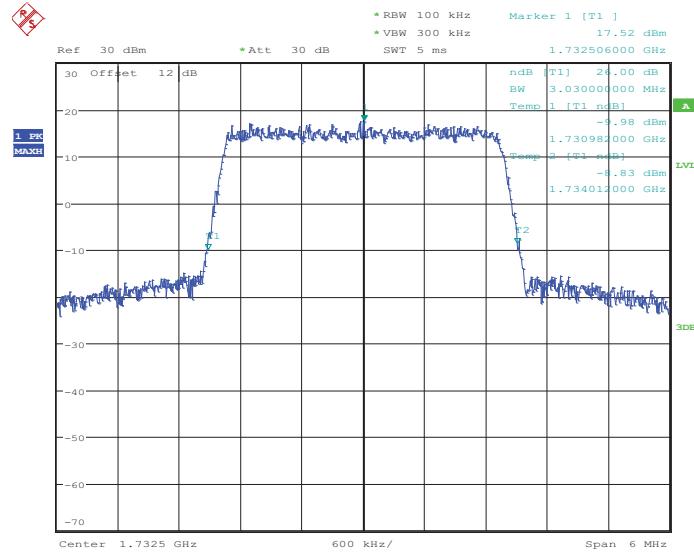


99% Occupied Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 09:34:57

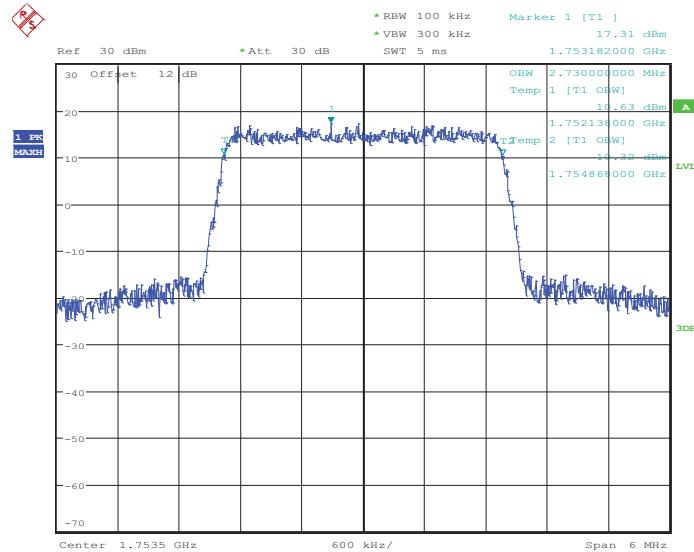
26dB Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 09:35:29

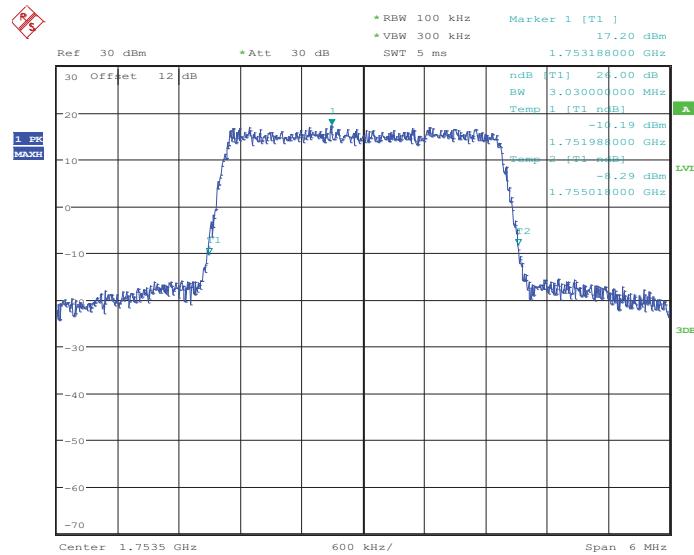


99% Occupied Bandwidth Plot on Channel 20385



Date: 27.JUL.2014 09:37:54

26dB Bandwidth Plot on Channel 20385

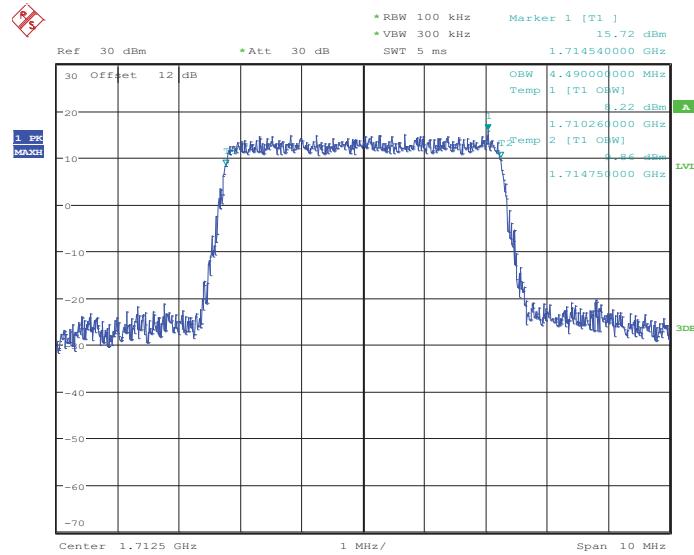


Date: 27.JUL.2014 09:38:27



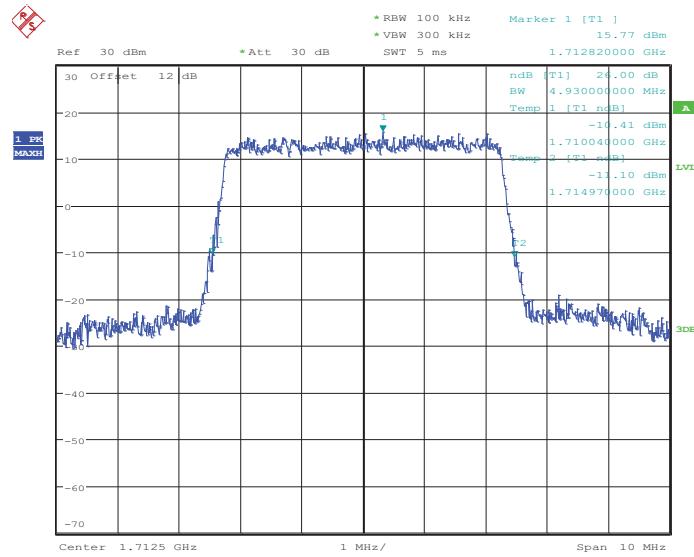
Band :	LTE Band 4	BW / Mod. :	5MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 19975



Date: 27.JUL.2014 09:43:40

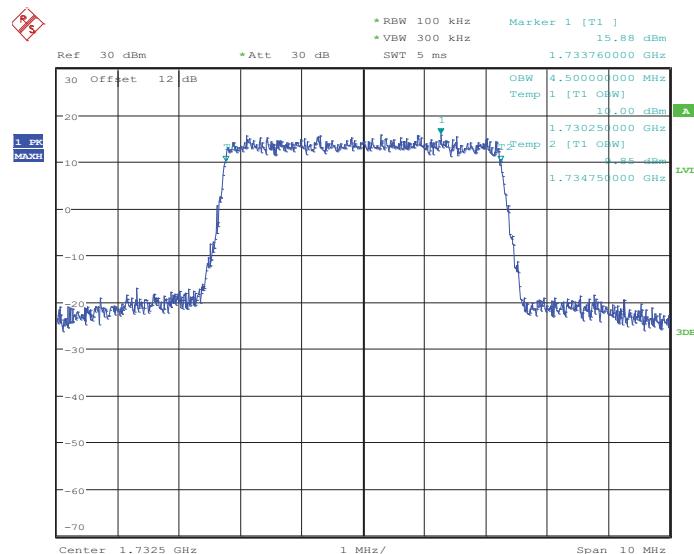
26dB Bandwidth Plot on Channel 19975



Date: 27.JUL.2014 09:44:10

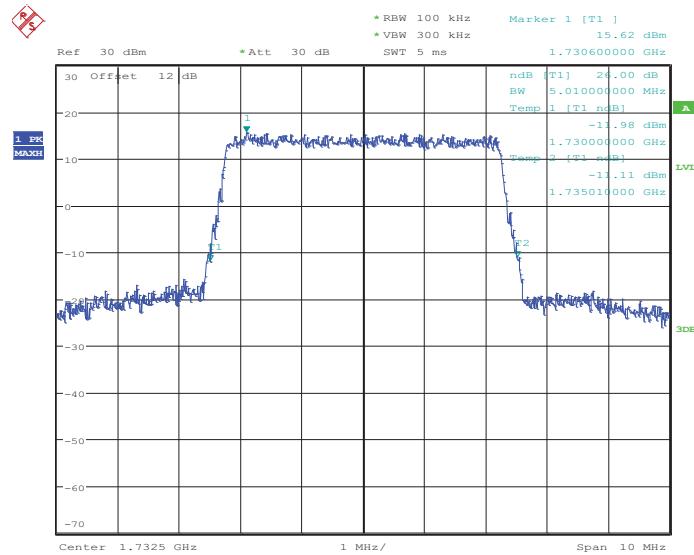


99% Occupied Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 09:49:40

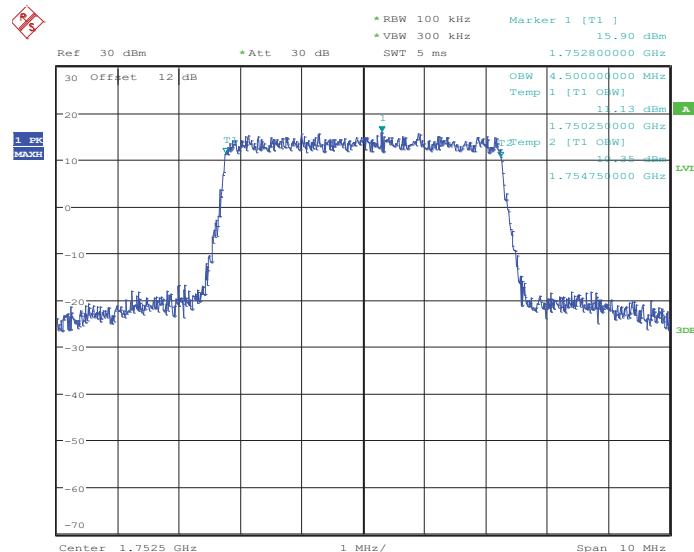
26dB Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 09:50:10

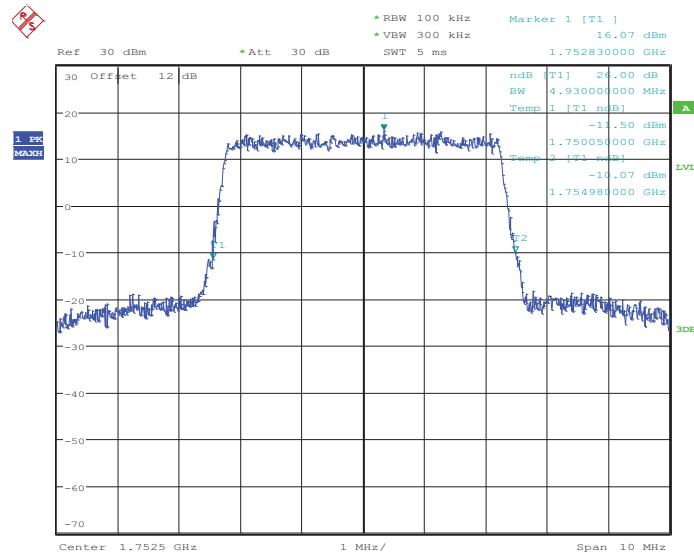


99% Occupied Bandwidth Plot on Channel 20375



Date: 27.JUL.2014 09:52:38

26dB Bandwidth Plot on Channel 20375

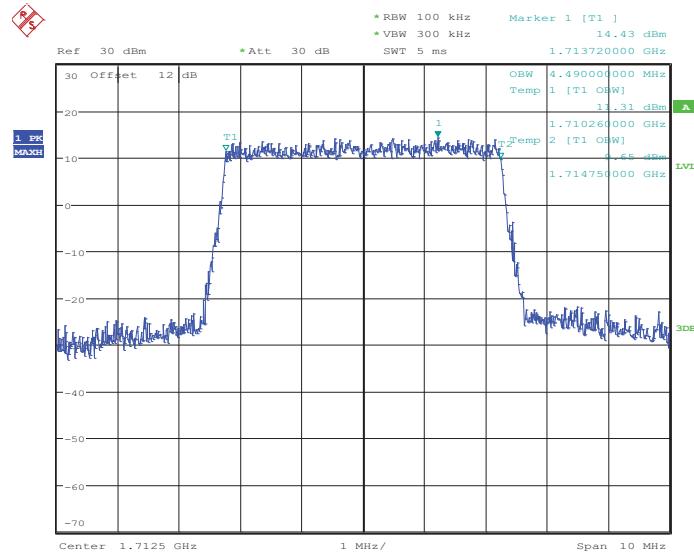


Date: 27.JUL.2014 09:53:08



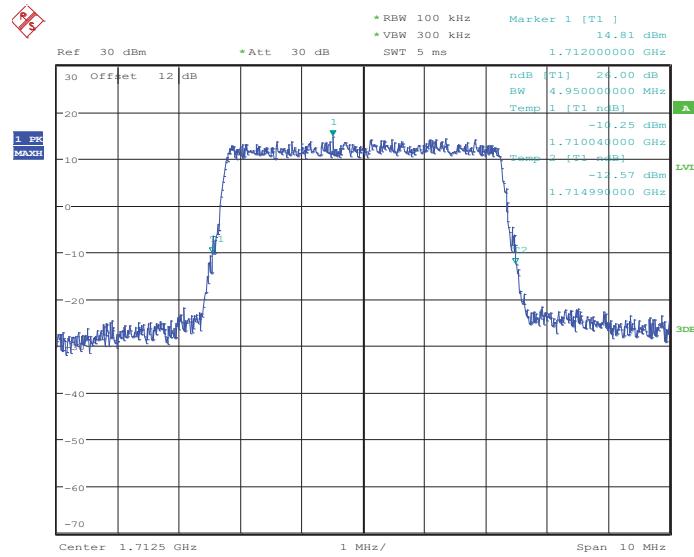
Band :	LTE Band 4	BW / Mod. :	5MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 19975



Date: 27.JUL.2014 09:43:54

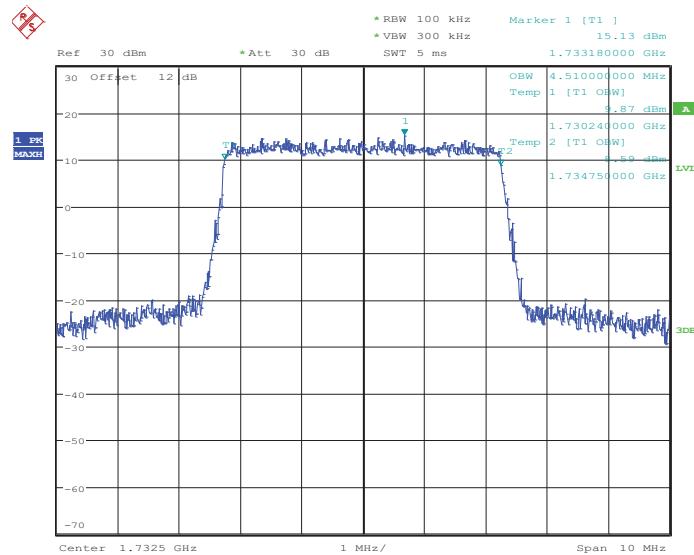
26dB Bandwidth Plot on Channel 19975



Date: 27.JUL.2014 09:44:26

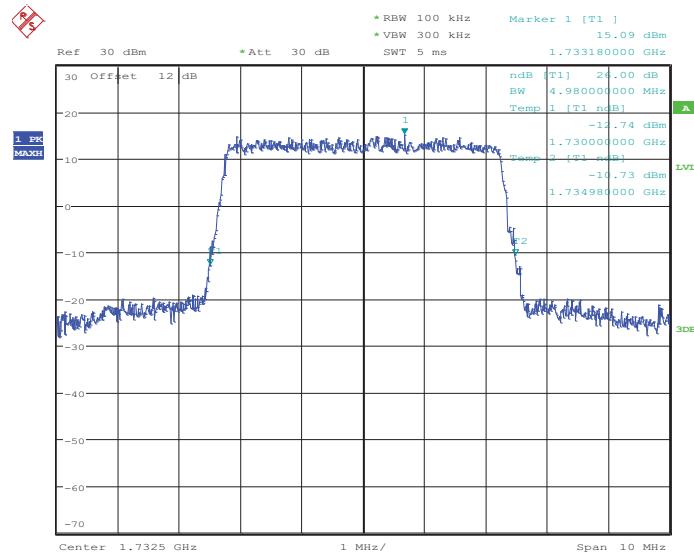


99% Occupied Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 09:49:54

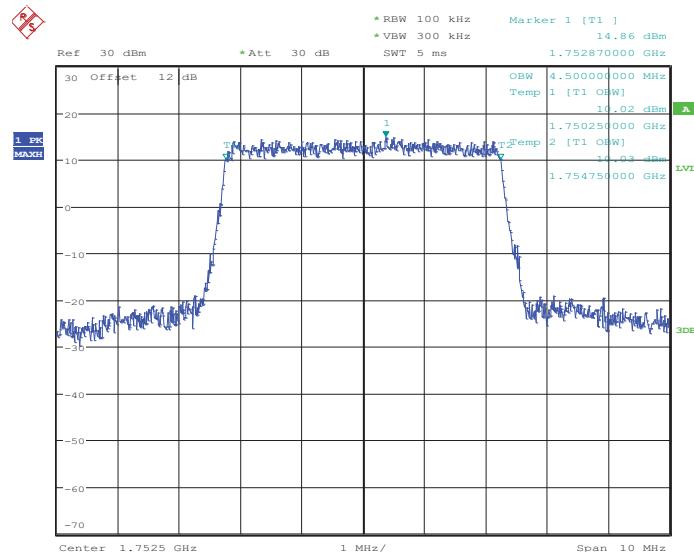
26dB Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 09:50:26

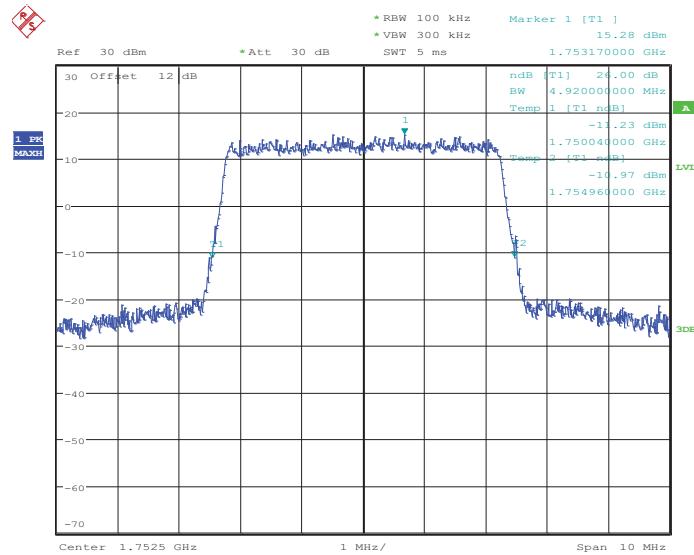


99% Occupied Bandwidth Plot on Channel 20375



Date: 27.JUL.2014 09:52:52

26dB Bandwidth Plot on Channel 20375

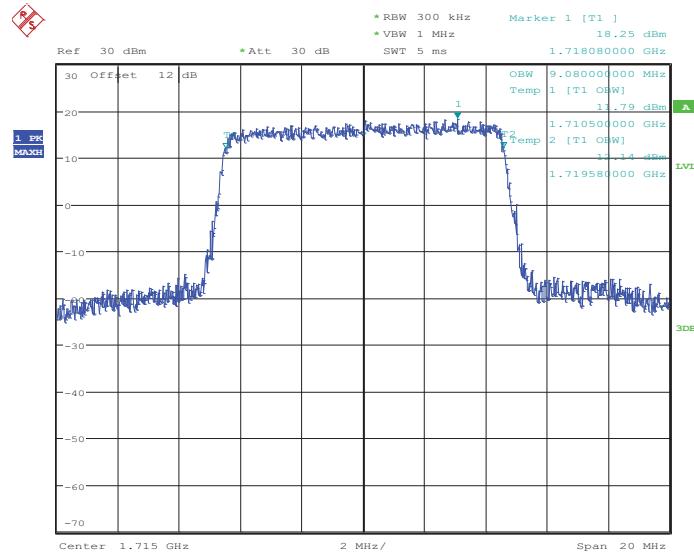


Date: 27.JUL.2014 09:53:24



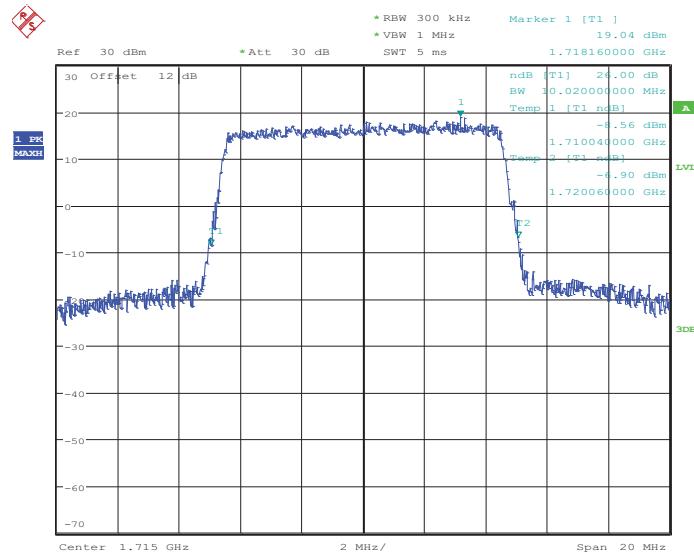
Band :	LTE Band 4	BW / Mod. :	10MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 20000



Date: 27.JUL.2014 10:07:09

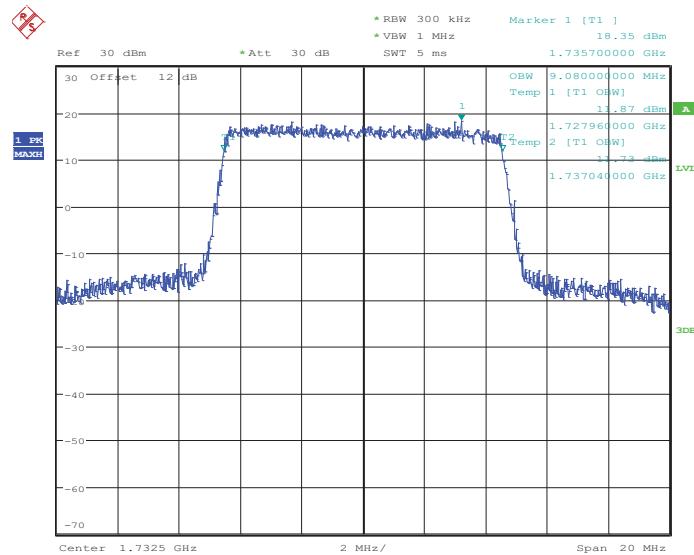
26dB Bandwidth Plot on Channel 20000



Date: 27.JUL.2014 10:07:39

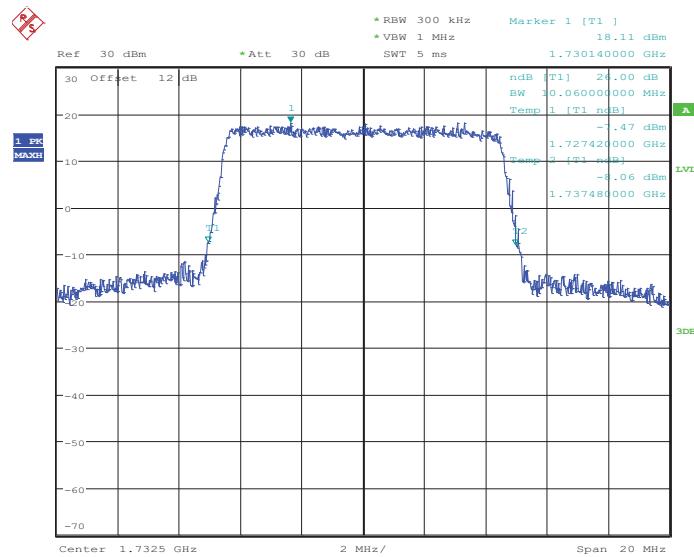


99% Occupied Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 10:13:10

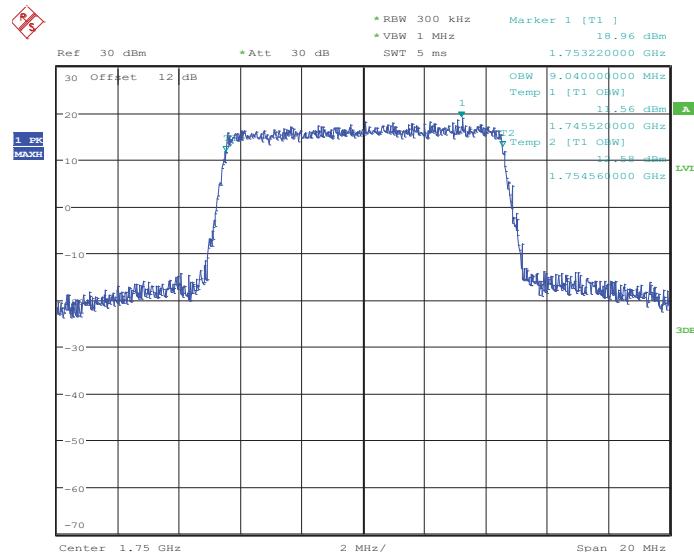
26dB Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 10:13:40

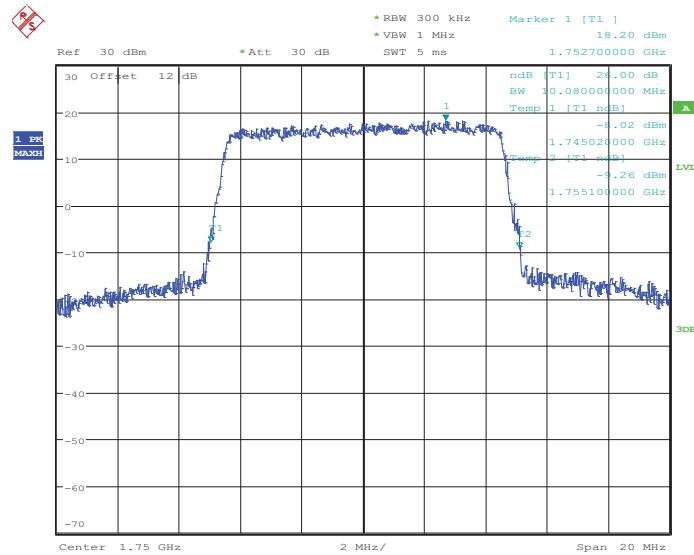


99% Occupied Bandwidth Plot on Channel 20350



Date: 27.JUL.2014 10:16:08

26dB Bandwidth Plot on Channel 20350

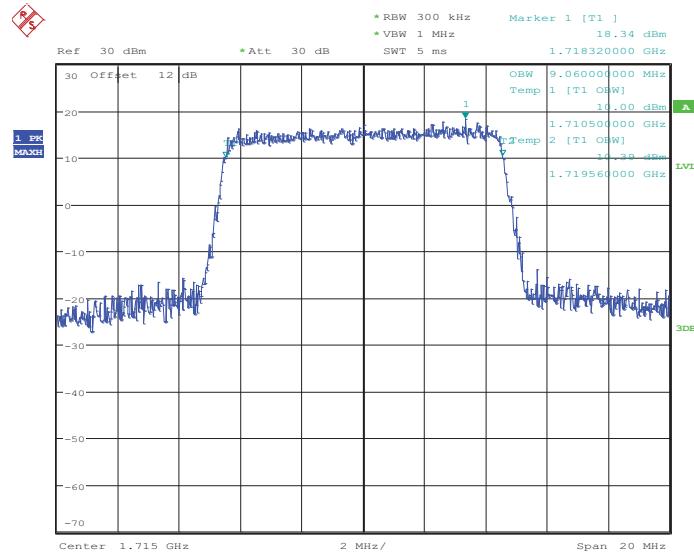


Date: 27.JUL.2014 10:16:38



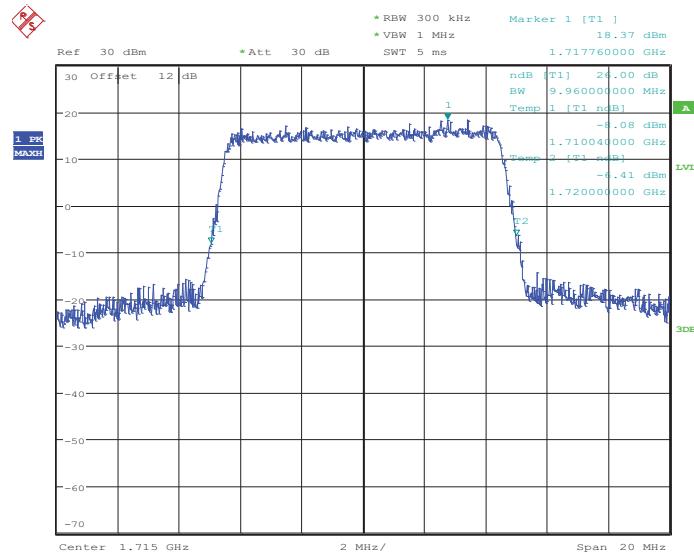
Band :	LTE Band 4	BW / Mod. :	10MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20000



Date: 27.JUL.2014 10:07:23

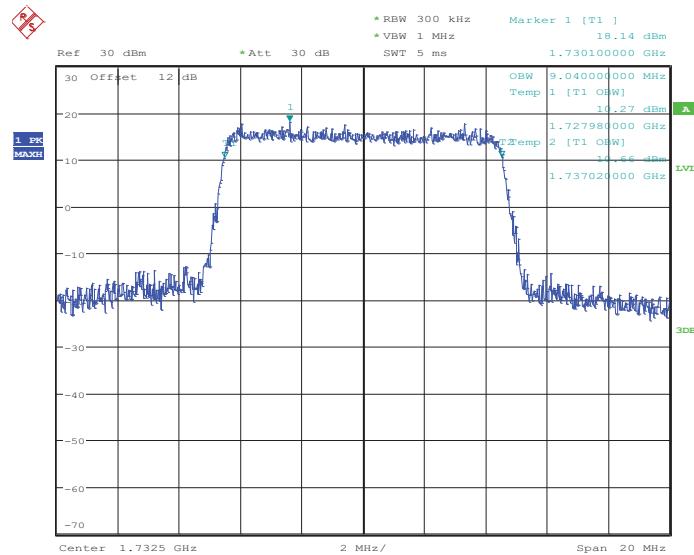
26dB Bandwidth Plot on Channel 20000



Date: 27.JUL.2014 10:07:55

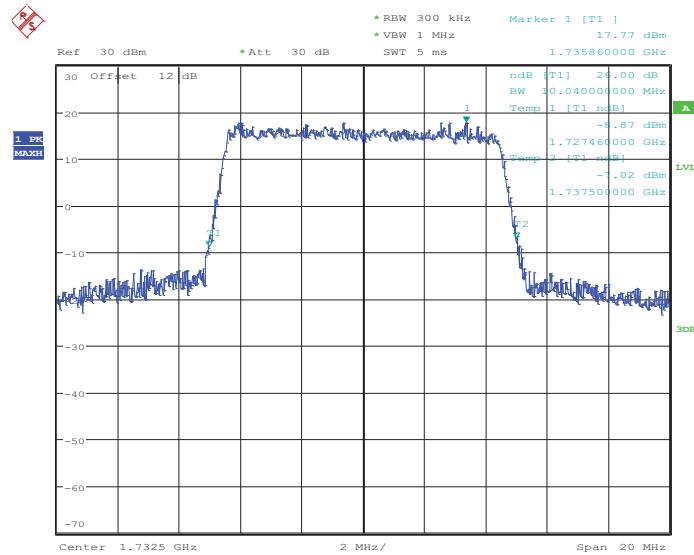


99% Occupied Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 10:13:24

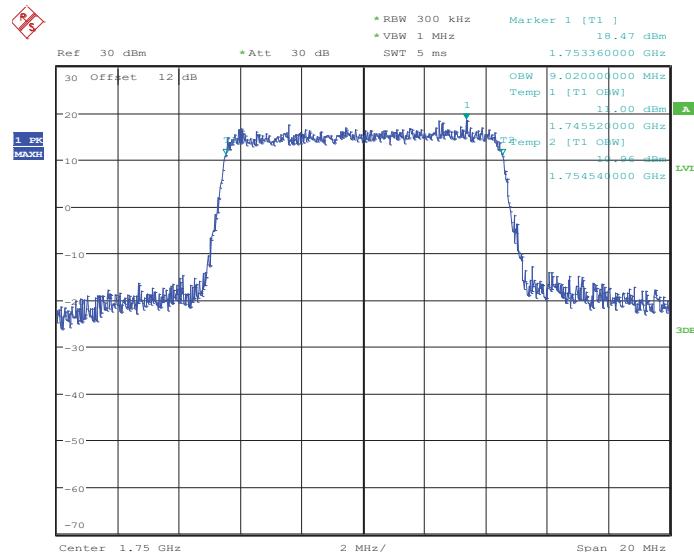
26dB Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 10:13:56

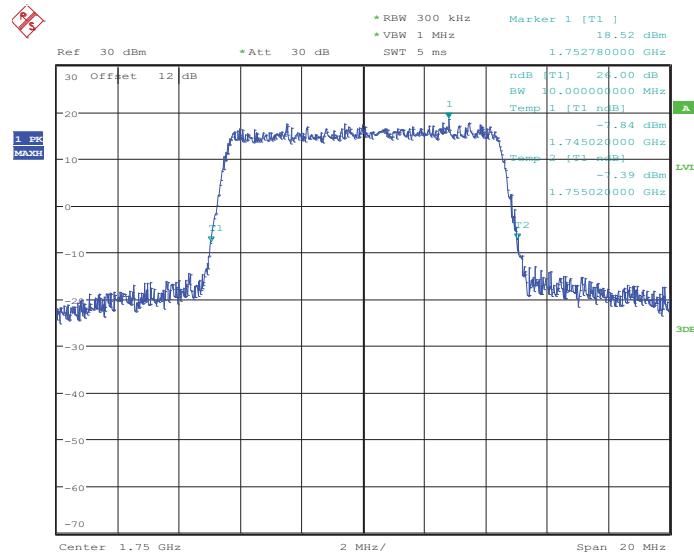


99% Occupied Bandwidth Plot on Channel 20350



Date: 27.JUL.2014 10:16:22

26dB Bandwidth Plot on Channel 20350

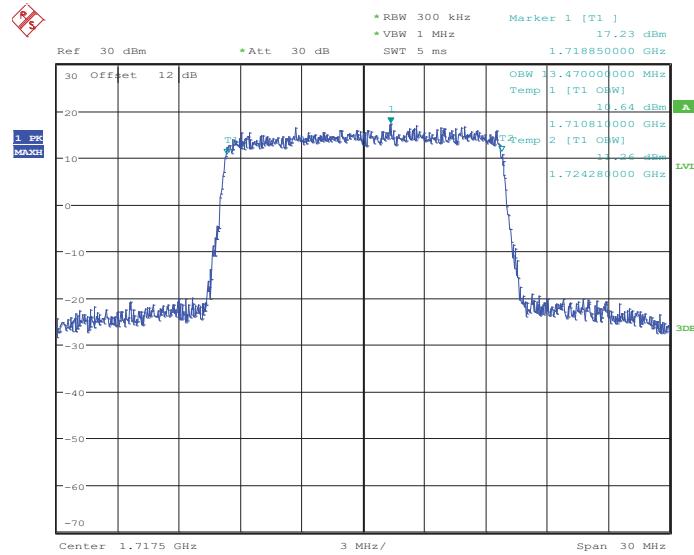


Date: 27.JUL.2014 10:16:54



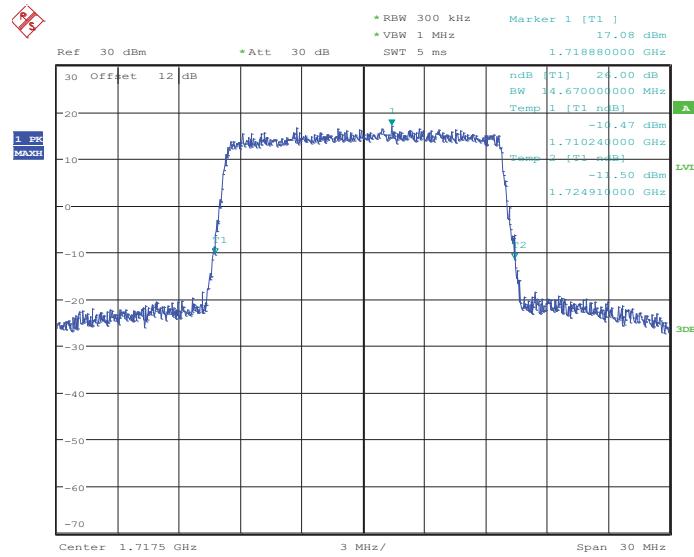
Band :	LTE Band 4	BW / Mod. :	15MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 20025



Date: 27.JUL.2014 10:22:09

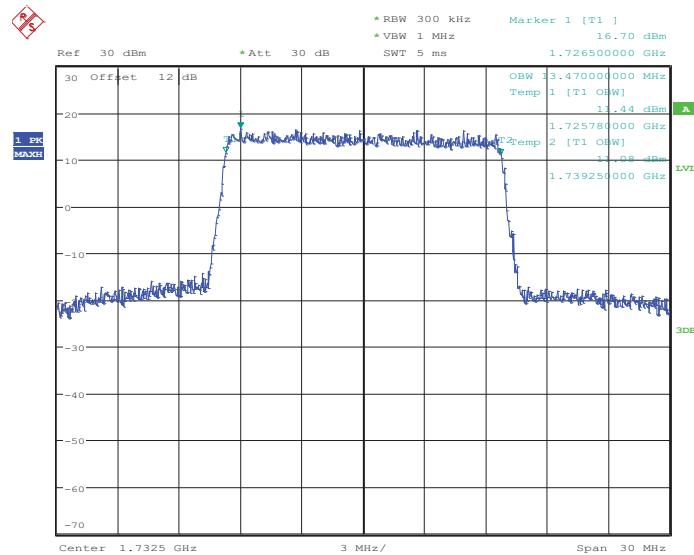
26dB Bandwidth Plot on Channel 20025



Date: 27.JUL.2014 10:22:39

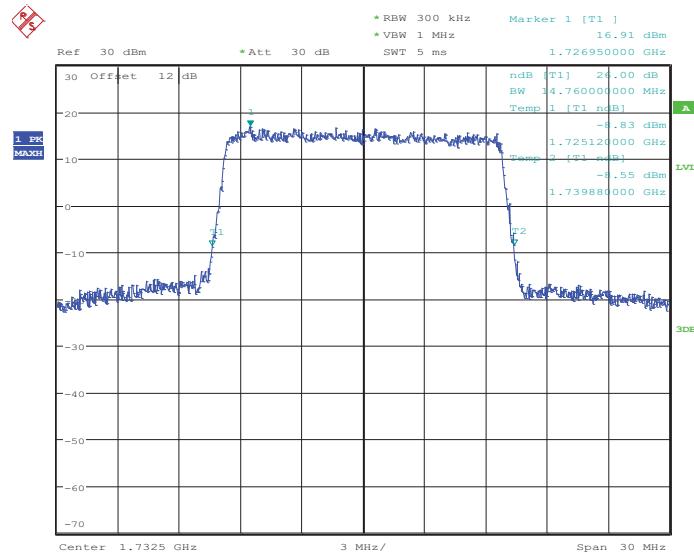


99% Occupied Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 10:28:09

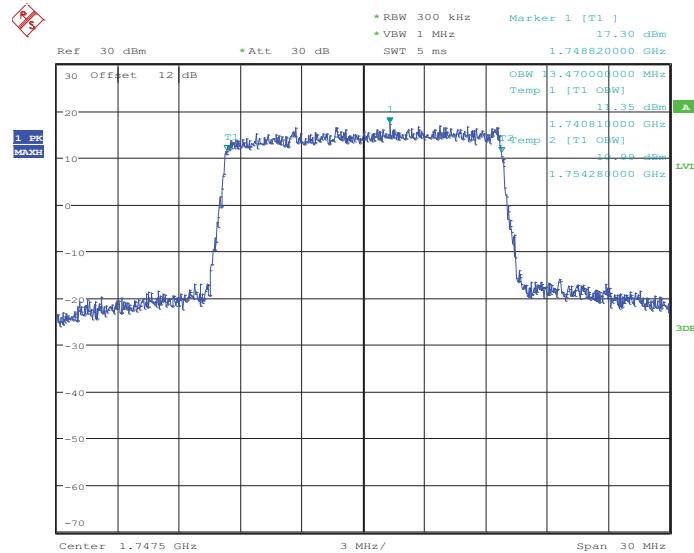
26dB Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 10:28:39

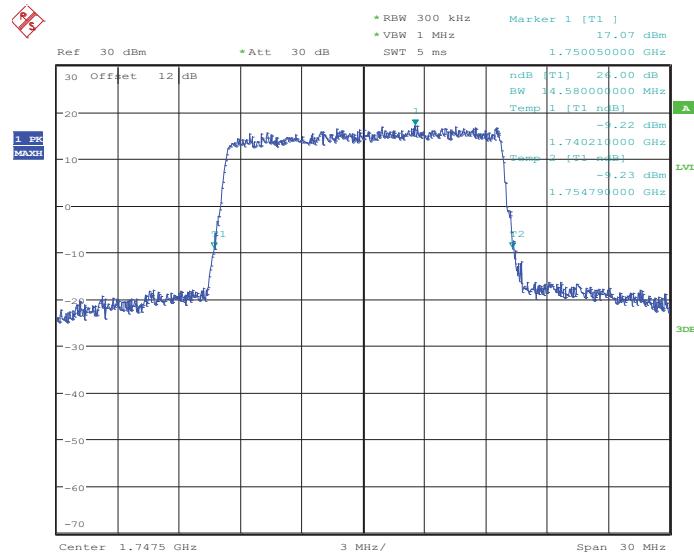


99% Occupied Bandwidth Plot on Channel 20325



Date: 27.JUL.2014 10:31:07

26dB Bandwidth Plot on Channel 20325

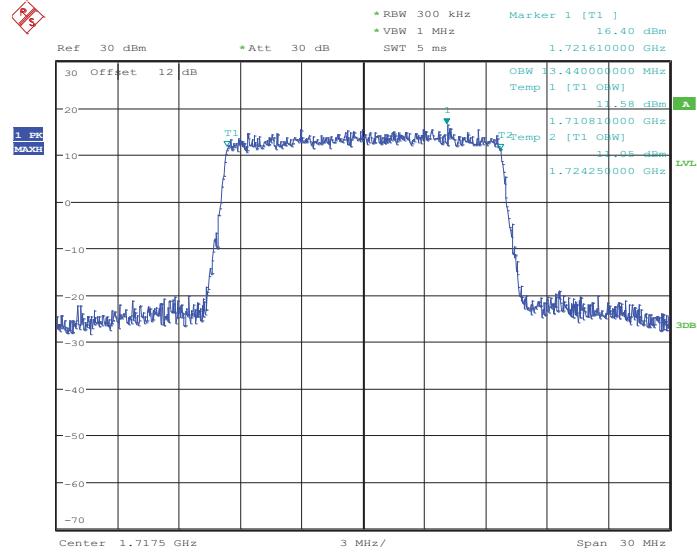


Date: 27.JUL.2014 10:31:37



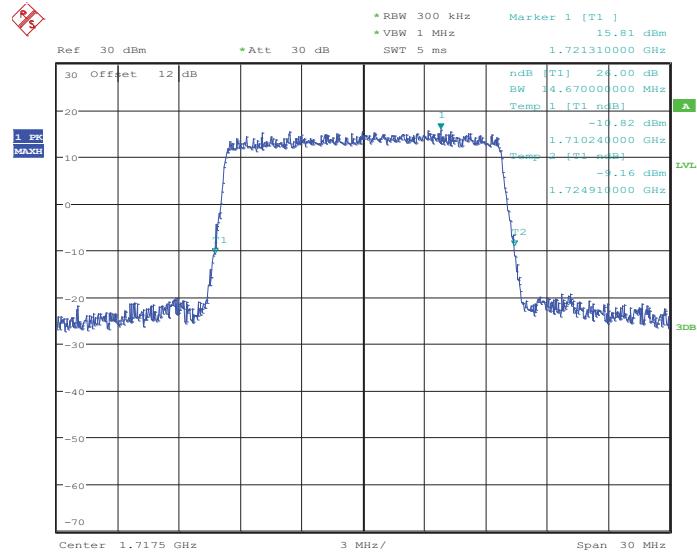
Band :	LTE Band 4	BW / Mod. :	15MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20025



Date: 27.JUL.2014 10:22:23

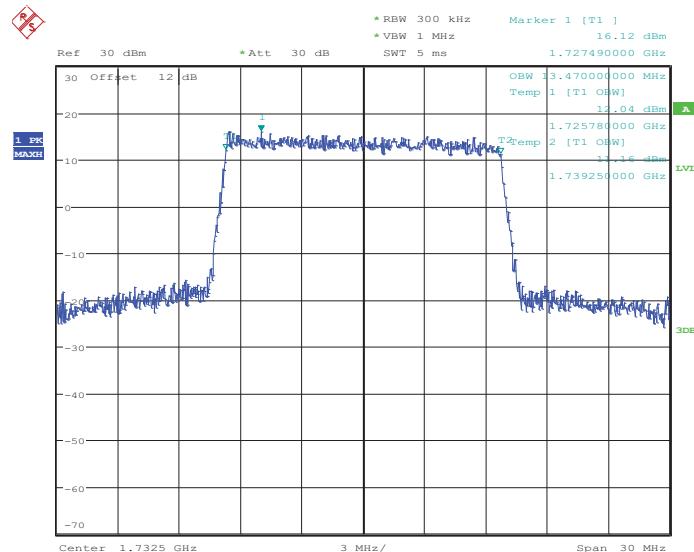
26dB Bandwidth Plot on Channel 20025



Date: 27.JUL.2014 10:22:55

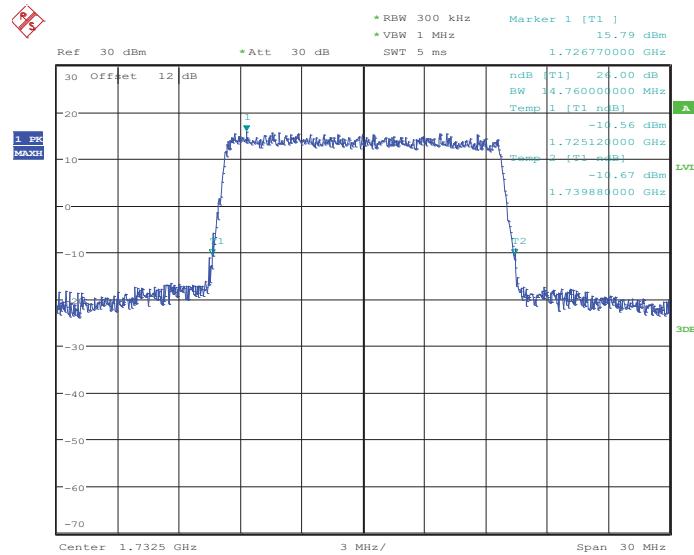


99% Occupied Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 10:28:23

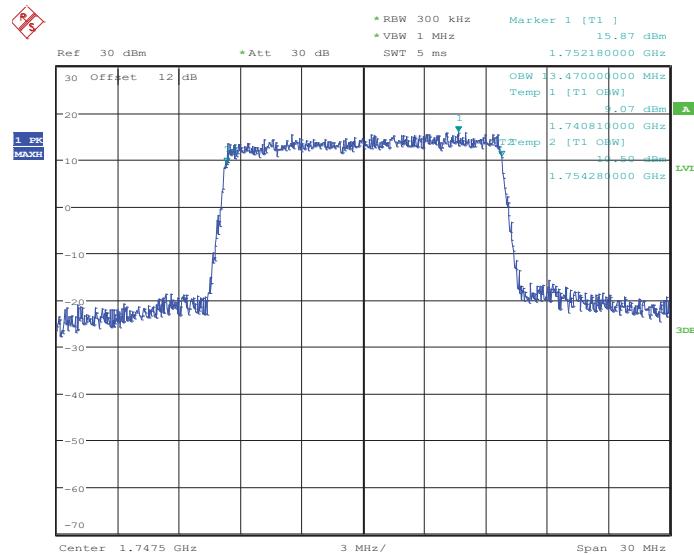
26dB Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 10:28:55

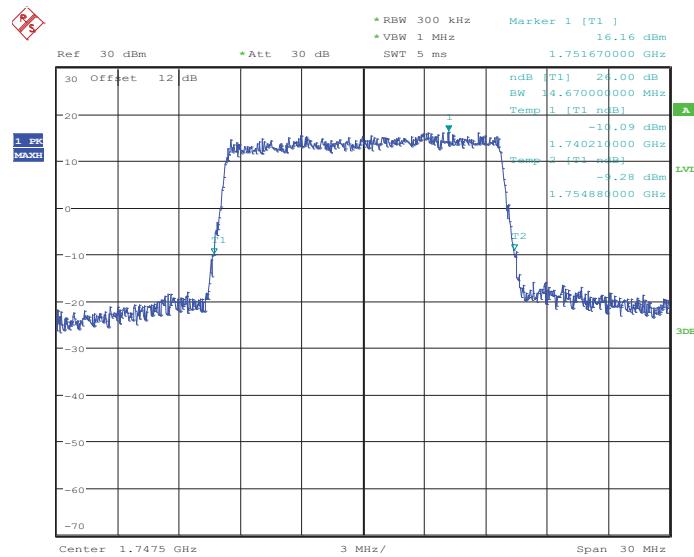


99% Occupied Bandwidth Plot on Channel 20325



Date: 27.JUL.2014 10:31:21

26dB Bandwidth Plot on Channel 20325

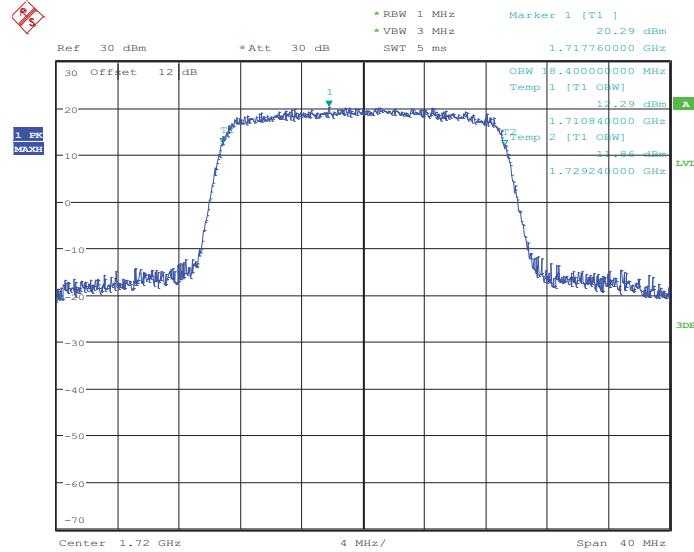


Date: 27.JUL.2014 10:31:53



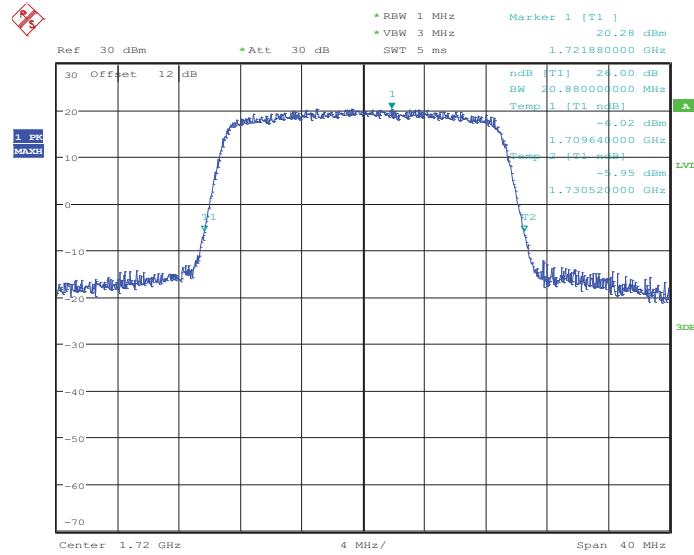
Band :	LTE Band 4	BW / Mod. :	20MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 20050



Date: 27.JUL.2014 10:37:10

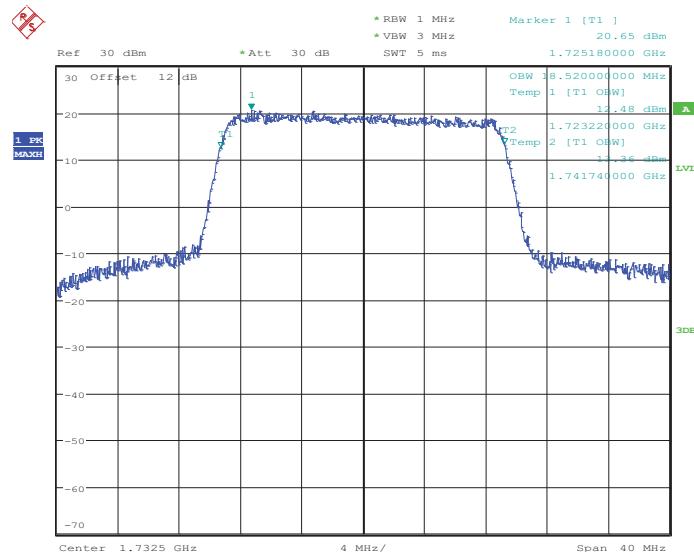
26dB Bandwidth Plot on Channel 20050



Date: 27.JUL.2014 10:37:44

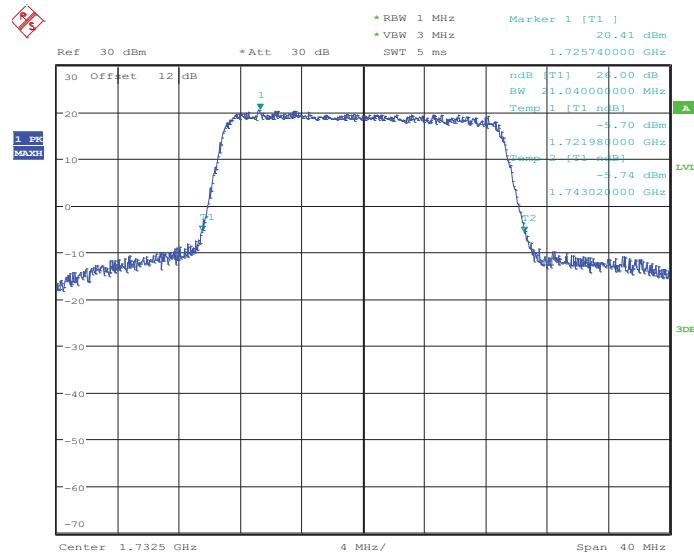


99% Occupied Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 10:43:14

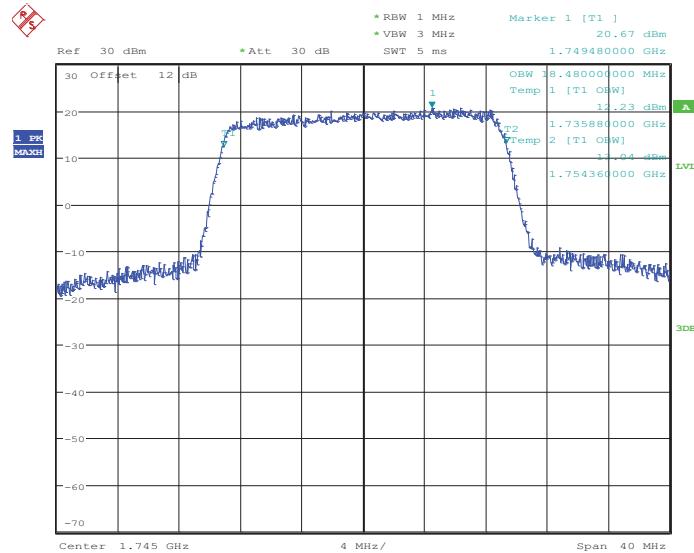
26dB Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 10:43:45

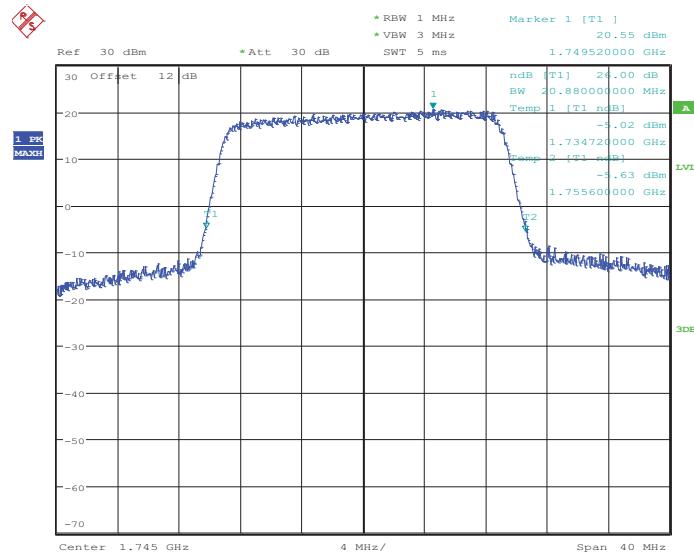


99% Occupied Bandwidth Plot on Channel 20300



Date: 27.JUL.2014 10:46:12

26dB Bandwidth Plot on Channel 20300

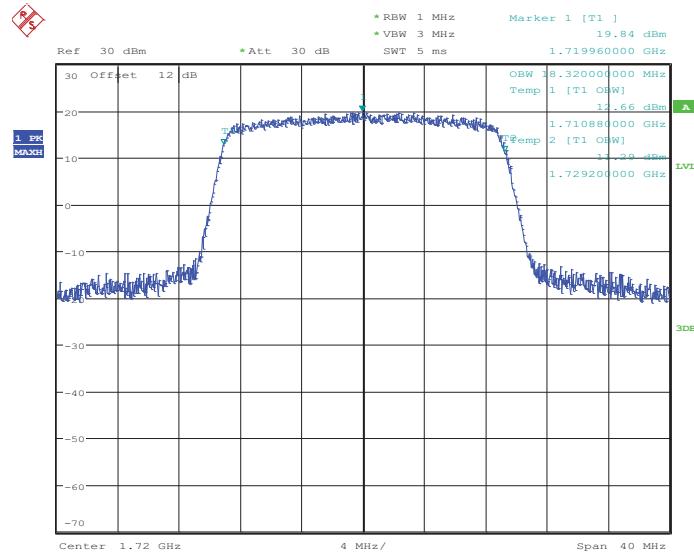


Date: 27.JUL.2014 10:46:42



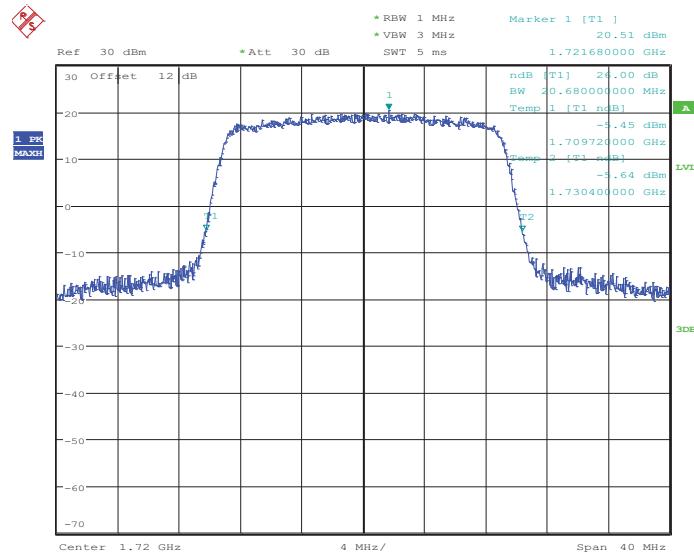
Band :	LTE Band 4	BW / Mod. :	20MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 20050



Date: 27.JUL.2014 10:37:28

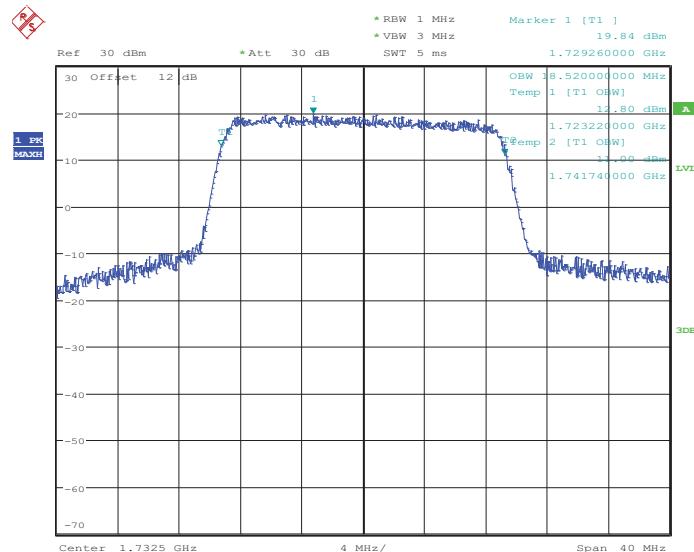
26dB Bandwidth Plot on Channel 20050



Date: 27.JUL.2014 10:38:00

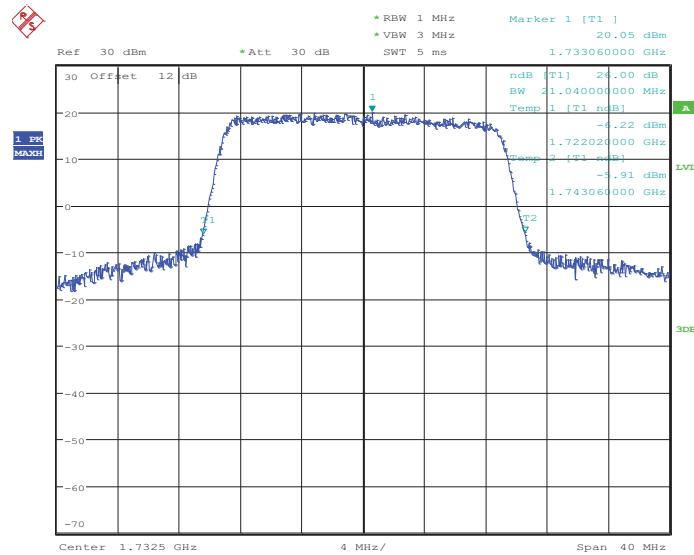


99% Occupied Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 10:43:28

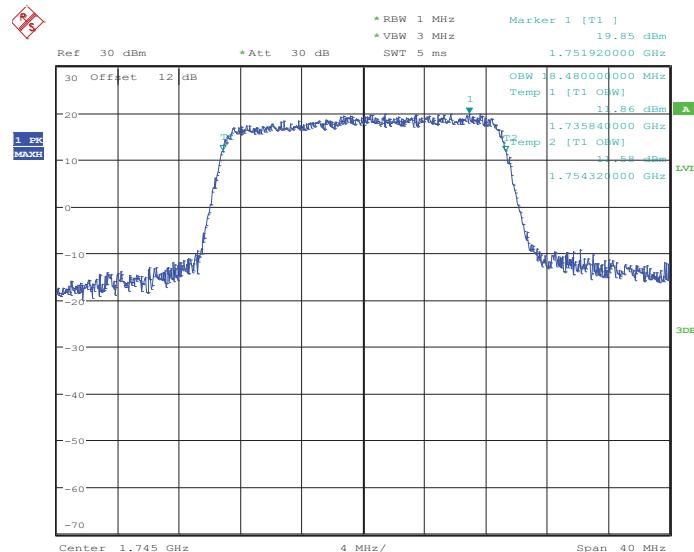
26dB Bandwidth Plot on Channel 20175



Date: 27.JUL.2014 10:44:01

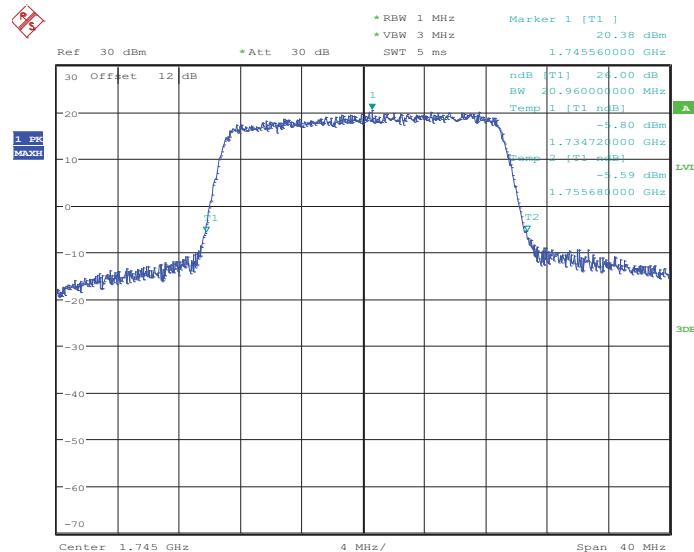


99% Occupied Bandwidth Plot on Channel 20300



Date: 27.JUL.2014 10:46:26

26dB Bandwidth Plot on Channel 20300

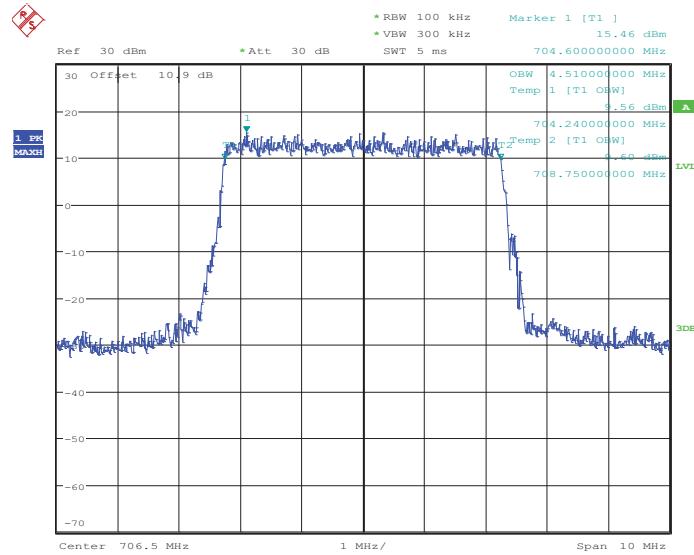


Date: 27.JUL.2014 10:46:58



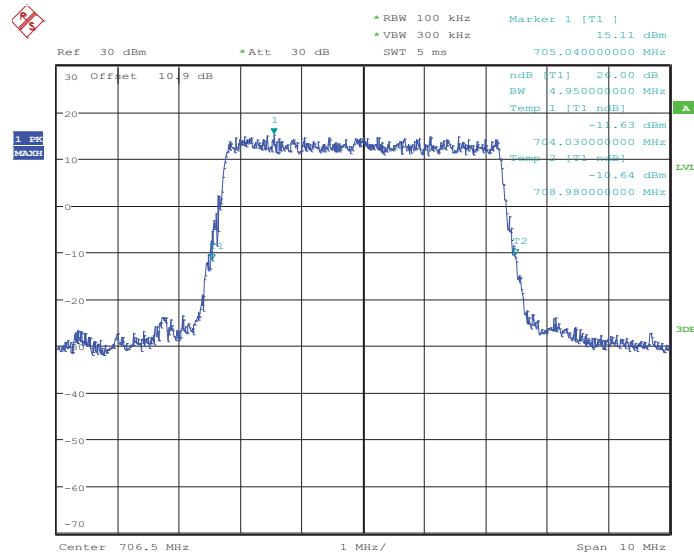
Band :	LTE Band 17	BW / Mod. :	5MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 23755



Date: 28.JUL.2014 19:42:01

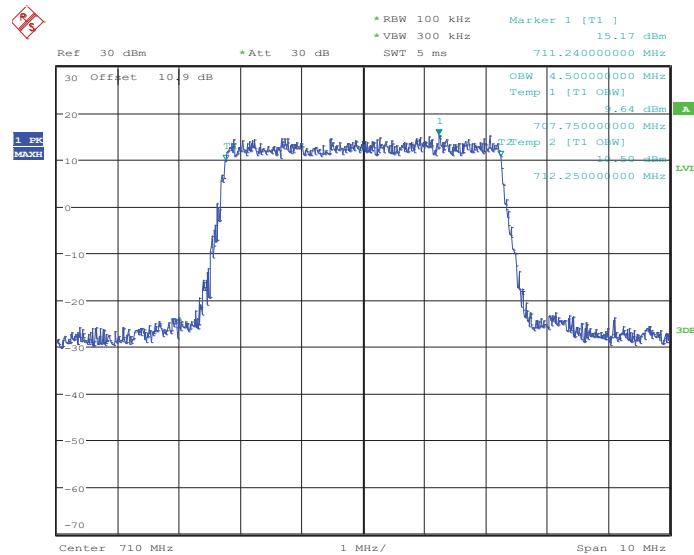
26dB Bandwidth Plot on Channel 23755



Date: 28.JUL.2014 19:42:32

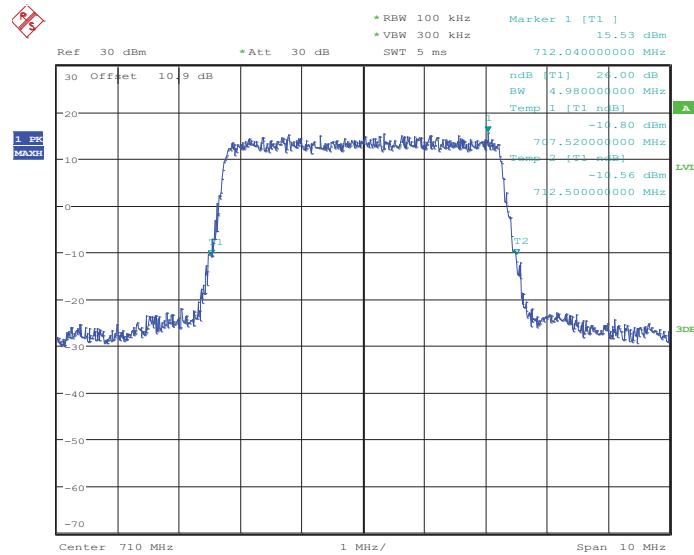


99% Occupied Bandwidth Plot on Channel 23790



Date: 28.JUL.2014 19:47:58

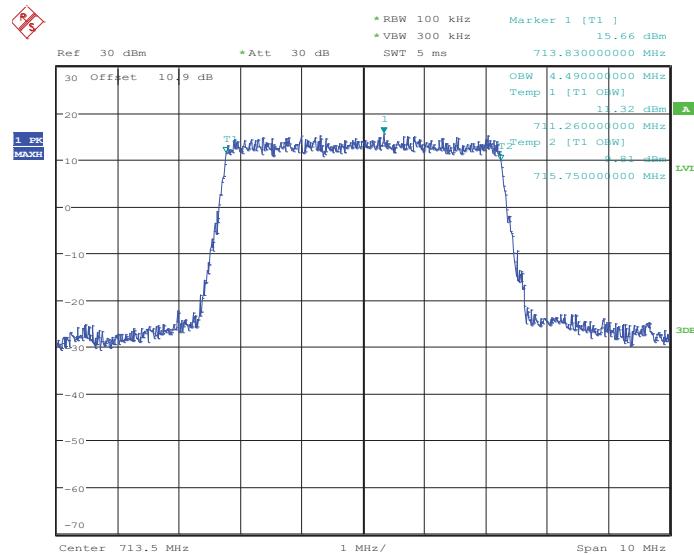
26dB Bandwidth Plot on Channel 23790



Date: 28.JUL.2014 19:48:28

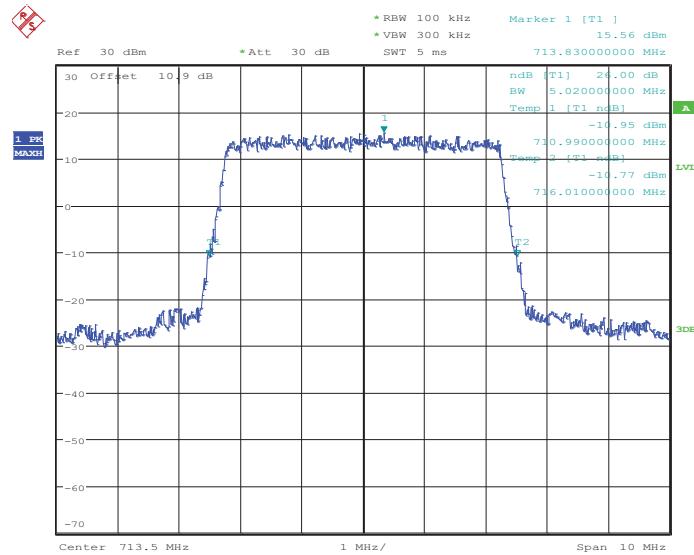


99% Occupied Bandwidth Plot on Channel 23825



Date: 28.JUL.2014 19:50:55

26dB Bandwidth Plot on Channel 23825

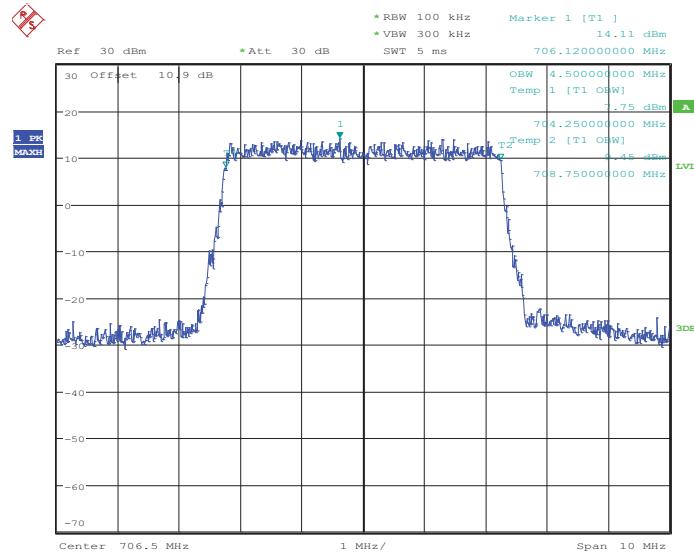


Date: 28.JUL.2014 19:51:26



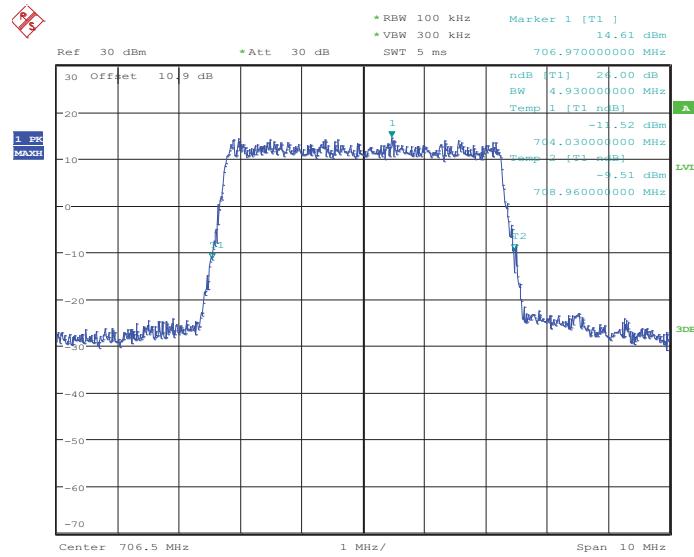
Band :	LTE Band 17	BW / Mod. :	5MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 23755



Date: 28.JUL.2014 19:42:16

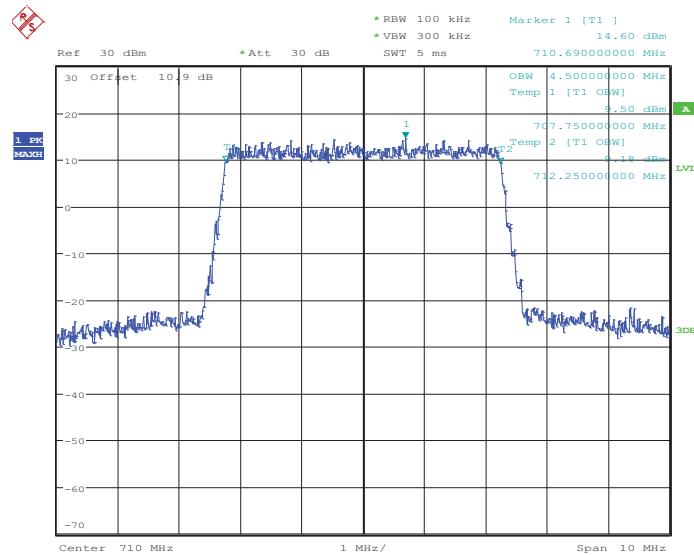
26dB Bandwidth Plot on Channel 23755



Date: 28.JUL.2014 19:42:48

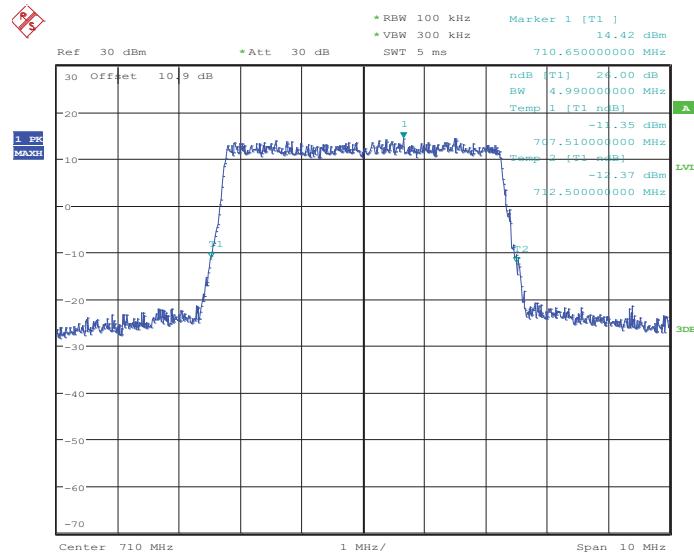


99% Occupied Bandwidth Plot on Channel 23790



Date: 28.JUL.2014 19:48:12

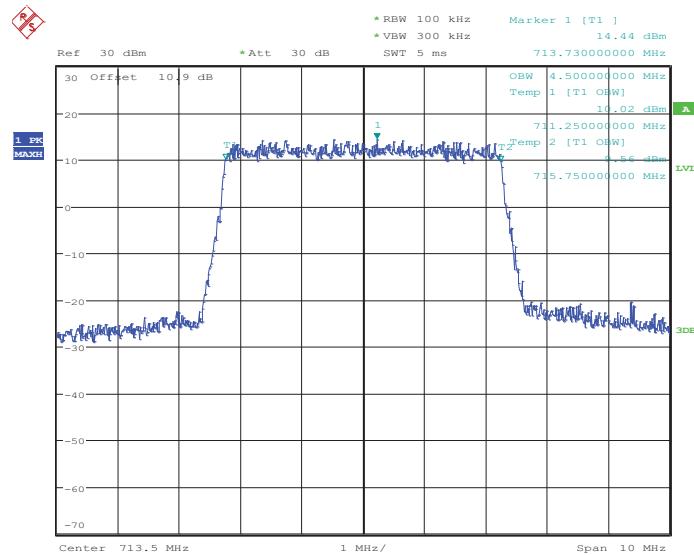
26dB Bandwidth Plot on Channel 23790



Date: 28.JUL.2014 19:48:44

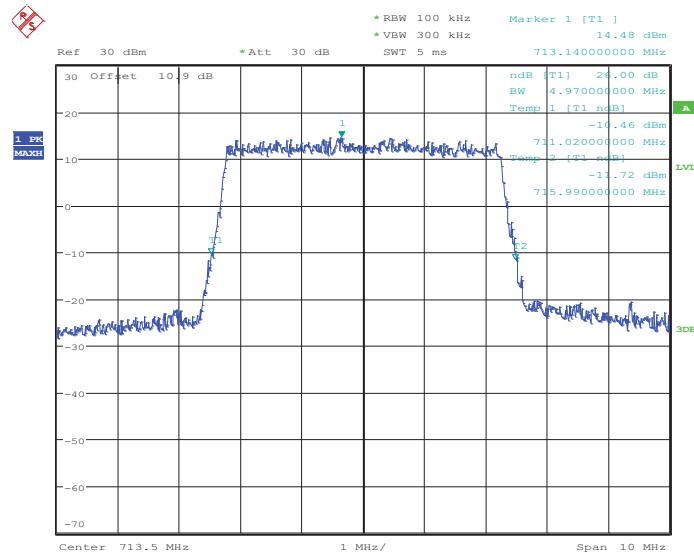


99% Occupied Bandwidth Plot on Channel 23825



Date: 28.JUL.2014 19:51:10

26dB Bandwidth Plot on Channel 23825

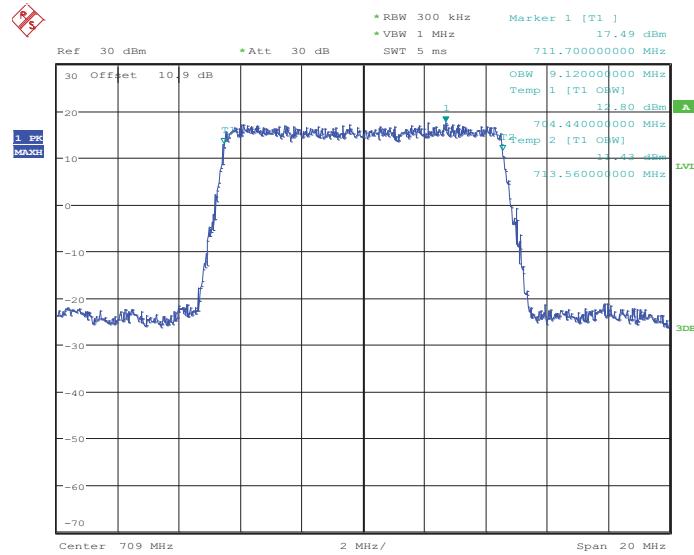


Date: 28.JUL.2014 19:51:42



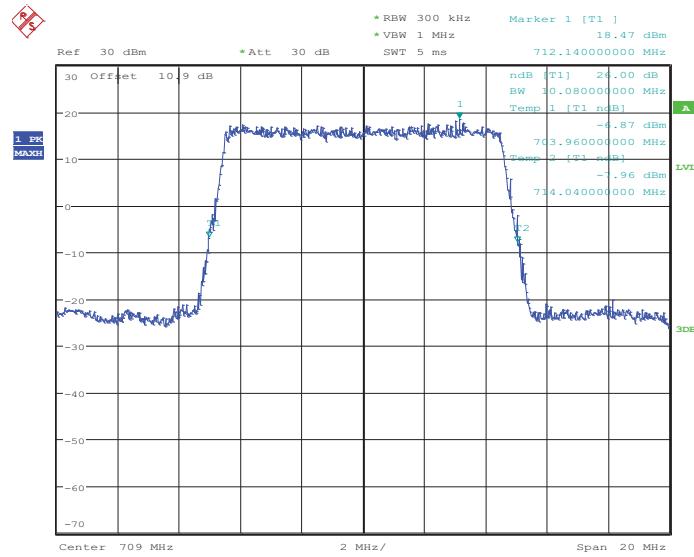
Band :	LTE Band 17	BW / Mod. :	10MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 23780



Date: 28.JUL.2014 19:56:57

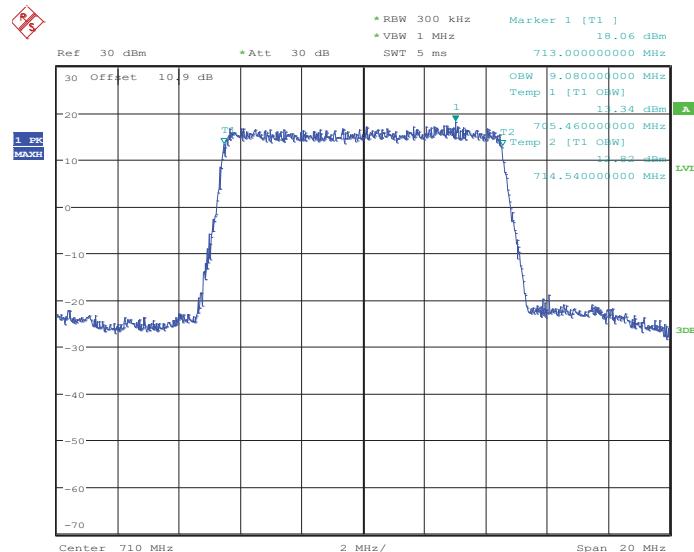
26dB Bandwidth Plot on Channel 23780



Date: 28.JUL.2014 19:57:27

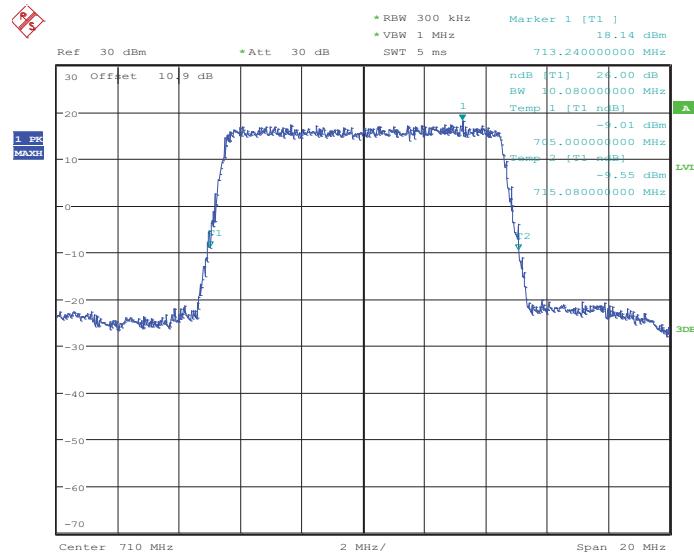


99% Occupied Bandwidth Plot on Channel 23790



Date: 28.JUL.2014 20:02:52

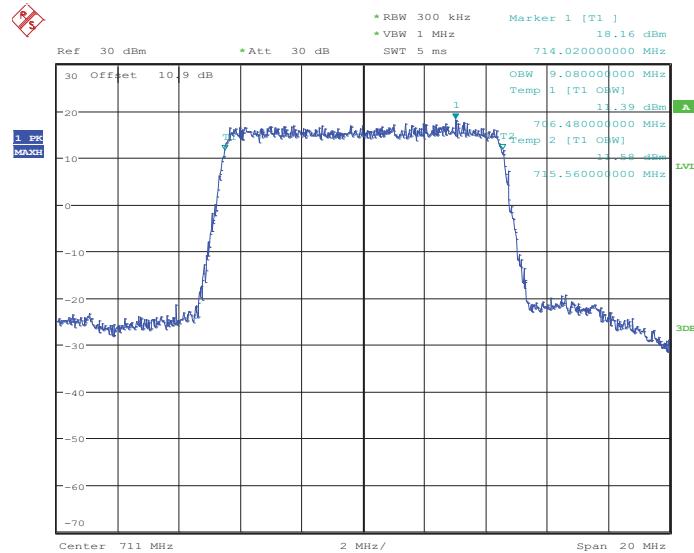
26dB Bandwidth Plot on Channel 23790



Date: 28.JUL.2014 20:03:23

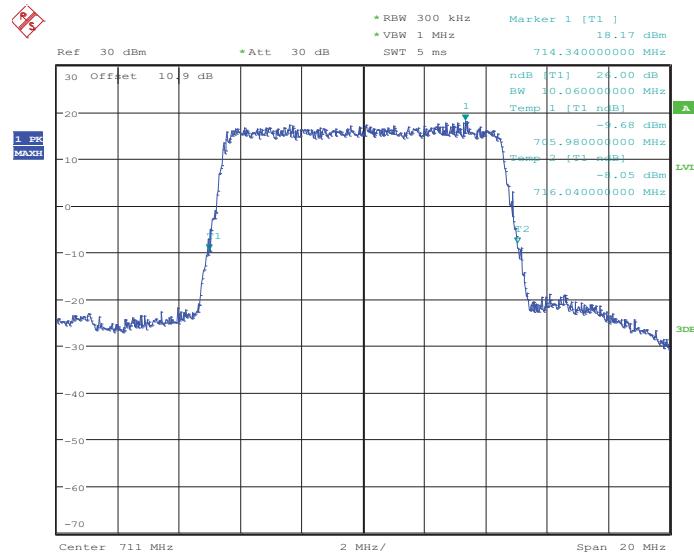


99% Occupied Bandwidth Plot on Channel 23800



Date: 28.JUL.2014 20:05:49

26dB Bandwidth Plot on Channel 23800

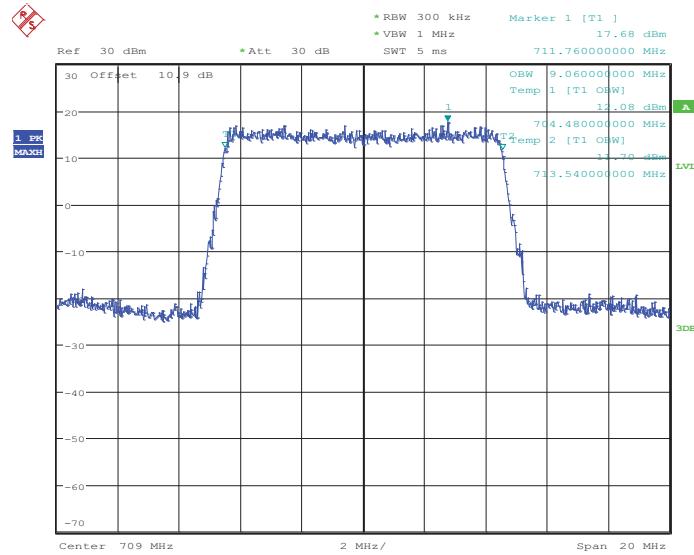


Date: 28.JUL.2014 20:06:19



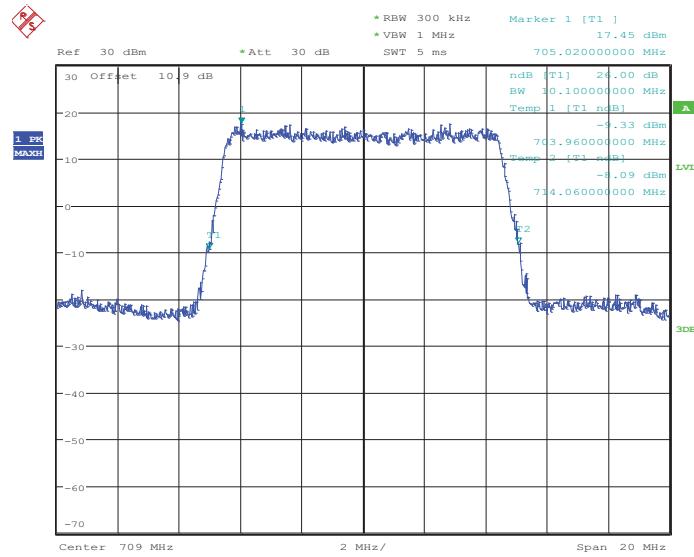
Band :	LTE Band 17	BW / Mod. :	10MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 23780



Date: 28.JUL.2014 19:57:11

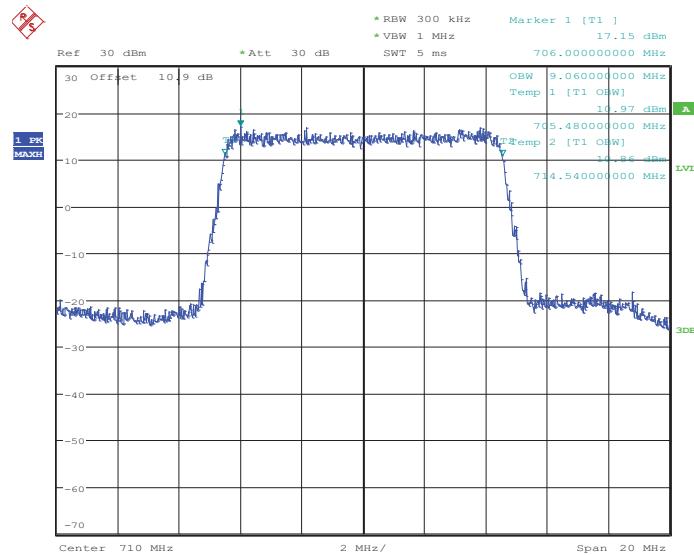
26dB Bandwidth Plot on Channel 23780



Date: 28.JUL.2014 19:57:43

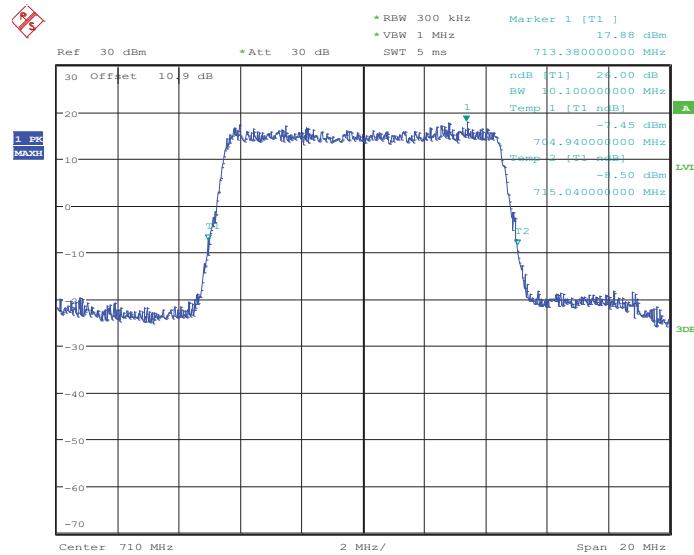


99% Occupied Bandwidth Plot on Channel 23790



Date: 28.JUL.2014 20:03:07

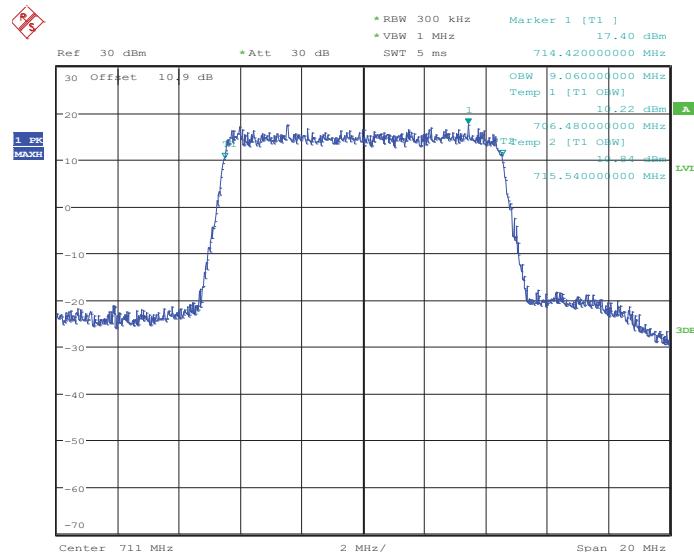
26dB Bandwidth Plot on Channel 23790



Date: 28.JUL.2014 20:03:39

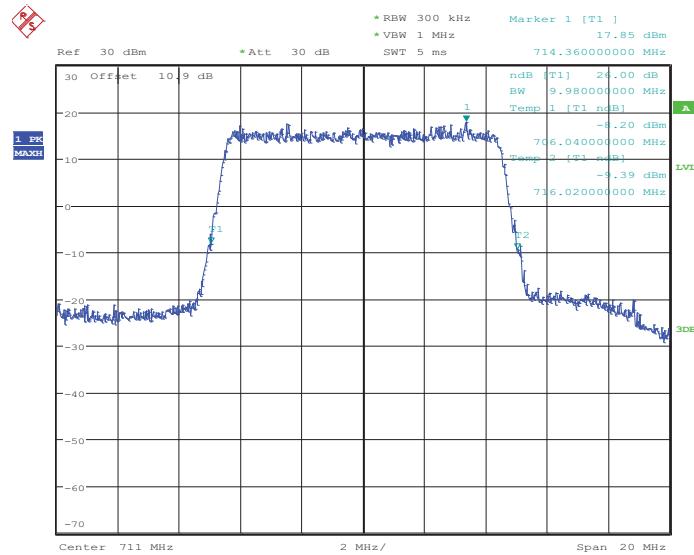


99% Occupied Bandwidth Plot on Channel 23800



Date: 28.JUL.2014 20:06:03

26dB Bandwidth Plot on Channel 23800



Date: 28.JUL.2014 20:06:35