

FCC RF Test Report

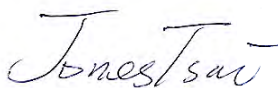
APPLICANT : Acer Incorporated
EQUIPMENT : Smart HandHeld
BRAND NAME : Acer
MODEL NAME : Z410
MARKETING NAME : Liquid Z410
FCC ID : HLZDMZ410
STANDARD : 47 CFR Part 2, 24(E), 27(L), 27(M), 27(H)
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)

The product was received on Oct. 15, 2014 and testing was completed on Jan. 05, 2015. We, SPORTON INTERNATIONAL (KUNSHAN) 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 (KUNSHAN) INC., the test report shall not be reproduced except in full.



Reviewed by: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG4O1525B	Rev. 01	Initial issue of report	Jan. 06, 2015

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-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-133 (6.4) RSS-139 (6.4)	Peak-to-Average Ratio	<13 dB	PASS	-
3.3	§27.50(b)(10) §27.50(c)(10) §27.50(c)(9)	N/A	Effective Radiated Power (Band 17)	ERP < 3 Watt	PASS	-
	§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		
3.4	§2.1049 §24.238(b) §27.53(h)(3) §27.53(m)(6)	RSS-GEN(4.6.1) RSS-130 (3.1) RSS-133 (3.1) RSS-139 (3.1) RSS-199 (4.2)	Occupied Bandwidth & 26dB Bandwidth	Reporting Only	PASS	-

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.5	§2.1051 §24.238(a) §27.53(g) §27.53(h)	RSS-GEN(4.9) RSS-133 (6.5.1) RSS-130(4.6) RSS-139 (6.5)	Conducted Band Edge Measurement (Band 2) (Band 4) (Band 17)	$< 43+10\log_{10}(P[\text{Watt}])$	PASS	-
	§2.1051 §27.53(m)(4)	RSS-GEN(4.9) RSS-199 (4.5)	Conducted Band Edge Measurement (Band 7)	$< 5\text{MHz}: -10 \text{ dBm}$ $5 \text{ MHz} \sim 6\text{MHz} \text{ or } 26\text{dB(BW)}: -13 \text{ dBm}$ $\geq 6\text{MHz} \text{ or } 26\text{dB(BW)}: -25 \text{ dBm}$		
3.6	§2.1051 §24.238(a) §27.53(g) §27.53(h)	RSS-GEN(4.9) RSS-133 (6.5.1) RSS-130(4.6) RSS-139 (6.5)	Conducted Spurious Emission (Band 2) (Band 4) (Band 17)	$< 43+10\log_{10}(P[\text{Watts}])$	PASS	-
	§2.1051 §27.53(m)(4)	RSS-GEN(4.9) RSS-199 (4.5)	Conducted Spurious Emission (Band 7)	$< 55+10\log_{10}(P[\text{Watts}])$		
3.7	§2.1053 §24.238(a) §27.53(g) §27.53(h)	RSS-GEN(4.9) RSS-133 (6.5.1) RSS-130(4.6) RSS-139 (6.5)	Radiated Spurious Emission (Band 2) (Band 4) (Band 17)	$< 43+10\log_{10}(P[\text{Watts}])$	PASS	Under limit 9.26 dB at 10104.000 MHz
	§2.1053 §27.53(m)(4)	RSS-GEN(4.9) RSS-199 (4.5)	Radiated Spurious Emission (Band 7)	$< 55+10\log_{10}(P[\text{Watts}])$		
3.8	§2.1055 §24.235 §27.54	RSS-GEN(4.7) RSS-133(6.3) RSS-130(4.3) RSS-139 (6.3) RSS-199 (4.3)	Frequency Stability Temperature & Voltage	within authorized band	PASS	-

1 General Description

1.1 Applicant

Acer Incorporated

8F., No. 88, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 22181, Taiwan (R.O.C)

1.2 Manufacturer

Shanghai Sunrise Simcom Limited

No. 888, Shengli Rd., Qingpu, Shanghai, P.R.China 201700

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Smart HandHeld
Brand Name	Acer
Model Name	Z410
Marketing Name	Liquid Z410
FCC ID	HLZDMZ410
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/ HSPA+ (Downlink Only)/LTE/ WLAN 2.4GHz 802.11b/g/n HT20/HT40/ Bluetooth v3.0 + EDR/Bluetooth v4.0 LE
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 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 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 7 : 5MHz/ 10MHz / 15MHz / 20MHz LTE Band 17 : 5MHz / 10MHz
Maximum Output Power to Antenna	LTE Band 2 : 21.59 dBm LTE Band 4 : 21.96 dBm LTE Band 7 : 21.66 dBm LTE Band 17 : 22.68 dBm
Antenna Type	IFA 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 24E	LTE Band 2	QPSK	1.4 MHz	1M10G7D	-	0.1916 W
Part 24E	LTE Band 2	16QAM	1.4 MHz	1M10W7D	-	0.1573 W
Part 24E	LTE Band 2	QPSK	3 MHz	2M73G7D	-	0.1830 W
Part 24E	LTE Band 2	16QAM	3 MHz	2M73W7D	-	0.1579 W
Part 24E	LTE Band 2	QPSK	5 MHz	4M52G7D	-	0.1808 W
Part 24E	LTE Band 2	16QAM	5 MHz	4M52W7D	-	0.1601 W
Part 24E	LTE Band 2	QPSK	10 MHz	9M09G7D	0.0058 ppm	0.1776 W
Part 24E	LTE Band 2	16QAM	10 MHz	9M03W7D	-	0.1441 W
Part 24E	LTE Band 2	QPSK	15 MHz	13M5G7D	-	0.1810 W
Part 24E	LTE Band 2	16QAM	15 MHz	13M5W7D	-	0.1416 W
Part 24E	LTE Band 2	QPSK	20 MHz	18M5G7D	-	0.1839 W
Part 24E	LTE Band 2	16QAM	20 MHz	18M5W7D	-	0.1381 W
Part 27L	LTE Band 4	QPSK	1.4 MHz	1M10G7D	-	0.1615 W
Part 27L	LTE Band 4	16QAM	1.4 MHz	1M10W7D	-	0.1327 W
Part 27L	LTE Band 4	QPSK	3 MHz	2M72G7D	-	0.1574 W
Part 27L	LTE Band 4	16QAM	3 MHz	2M72W7D	-	0.1333 W
Part 27L	LTE Band 4	QPSK	5MHz	4M51G7D	-	0.1597 W
Part 27L	LTE Band 4	16QAM	5MHz	4M51W7D	-	0.1345 W
Part 27L	LTE Band 4	QPSK	10MHz	9M07G7D	0.0107 ppm	0.1560 W
Part 27L	LTE Band 4	16QAM	10MHz	9M03W7D	-	0.1324 W
Part 27L	LTE Band 4	QPSK	15MHz	13M5G7D	-	0.1526 W
Part 27L	LTE Band 4	16QAM	15MHz	13M5W7D	-	0.1326 W
Part 27L	LTE Band 4	QPSK	20MHz	18M5G7D	-	0.1553 W
Part 27L	LTE Band 4	16QAM	20MHz	18M5W7D	-	0.1300 W

FCC Rule	System	Type of Modulation	BW	Emission Designator	Frequency Tolerance	Maximum ERP/EIRP
Part 27M	LTE Band 7	QPSK	5MHz	4M51G7D	-	0.1486 W
Part 27M	LTE Band 7	16QAM	5MHz	4M52W7D	-	0.1387 W
Part 27M	LTE Band 7	QPSK	10MHz	9M07G7D	0.0016 ppm	0.1203 W
Part 27M	LTE Band 7	16QAM	10MHz	9M05W7D	-	0.1326 W
Part 27M	LTE Band 7	QPSK	15MHz	13M5G7D	-	0.1203 W
Part 27M	LTE Band 7	16QAM	15MHz	13M5W7D	-	0.1341 W
Part 27M	LTE Band 7	QPSK	20MHz	18M5G7D	-	0.1480 W
Part 27M	LTE Band 7	16QAM	20MHz	18M6W7D	-	0.1215 W
Part 27H	LTE Band 17	QPSK	5MHz	4M52G7D	-	0.0800 W
Part 27H	LTE Band 17	16QAM	5MHz	4M52W7D	-	0.0683 W
Part 27H	LTE Band 17	QPSK	10MHz	9M09G7D	0.0085 ppm	0.0712 W
Part 27H	LTE Band 17	16QAM	10MHz	9M09W7D	-	0.0632 W

1.7 Testing Location

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.		
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	TH01-KS	03CH01-KS	149928/4086E-1

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, 24(E), 27(L), 27(M), 27(H)
- ANSI / TIA / EIA-603-C-2004
- FCC KDB 971168 D01 Power Meas. License Digital Systems v02r01
- IC RSS-130 Issue1
- IC RSS-133 Issue 6
- IC RSS-139 Issue 2
- IC RSS-199 Issue 1
- IC RSS-Gen Issue 3
- NOTICE 2012-DRS0126

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.
3. Per the section 2.2.3 of Notice of 2012-DRS0126, " Receivers Excluded from Industry Canada Requirements", only radiocommunication receivers operating in stand-alone mode within the band 30-960 MHz and scanner receivers are subject to Industry Canada requirements.

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.

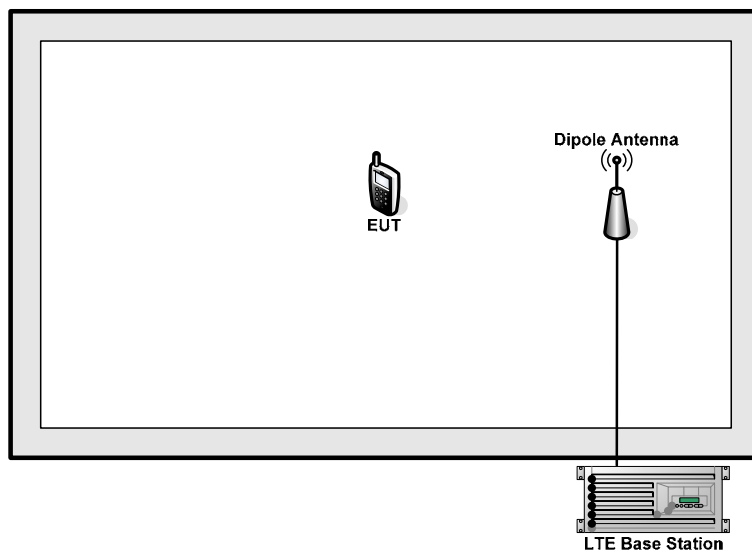
Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission.

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
	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	v	v
	4						v	v	v	v		v	v	v	v
	7	-	-				v	v	v	v		v	v	v	v
	17	-	-		v	-	-	v	v	v		v	v	v	v
26dB and 99% Bandwidth	2	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
	7	-	-	v	v	v	v	v	v			v	v	v	v
	17	-	-	v	v	-	-	v	v			v	v	v	v
Conducted Band Edge	2	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
	7	-	-	v	v	v	v	v	v	v		v	v		v
	17	-	-	v	v	-	-	v	v	v		v	v		v

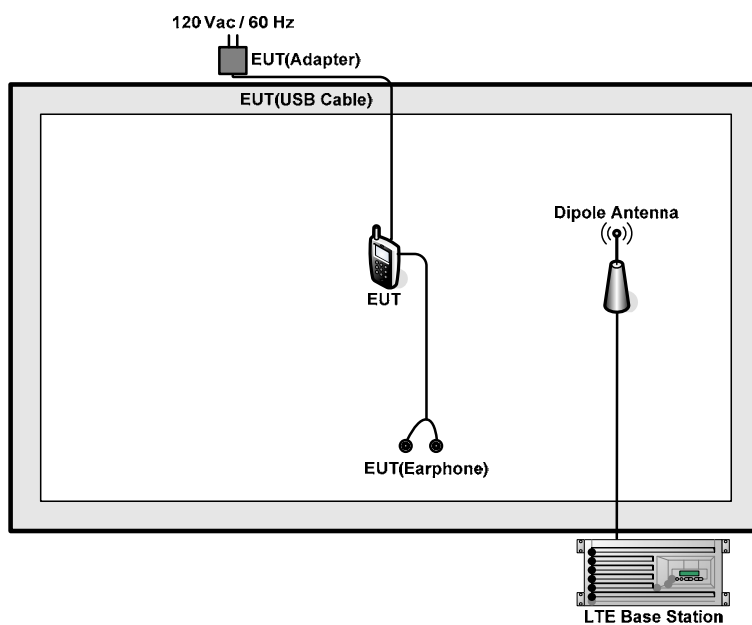
Test Items	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Conducted Spurious Emission	2	v	v	v	v	v	v	v	v	v			v	v	v
	4	v	v	v	v	v	v	v	v	v			v	v	v
	7	-	-	v	v	v	v	v	v	v			v	v	v
	17	-	-	v	v	-	-	v	v	v			v	v	v
Frequency Stability	2				v			v				v		v	
	4				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	v
	4	v	v	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
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
	7	-	-	v	v	v	v	v		v			v	v	v
	17	-	-	v	v	-	-	v		v			v	v	v
Note	- The mark "v" means that this configuration is chosen for testing - The mark "-" means that this bandwidth is not supported. - For E.I.R.P. measurement, the widest bandwidth of each band is chosen for testing due to highest conducted power. Besides, the lowest bandwidth of each band is also measured for reporting only. - 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

For 24(E)



For 27(L)/27(M)/27(H)



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	DC Power Supply	GWINSTEK	GPS-3030D	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 6 dB and 10dB attenuator.

Example :

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 6 + 10 = 16 \text{ (dB)}\end{aligned}$$

3 Test Result

3.1 Conducted Output Power Measurement

3.1.1 Description of the Conducted Output Power Measurement

A LTE base station 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 LTE base station.
2. Set EUT at maximum power through the LTE base station.
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 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	21.44	21.59	21.50
20	QPSK	1	49	21.32	21.46	21.42
20	QPSK	1	99	21.02	21.24	21.09
20	QPSK	50	0	20.37	20.60	20.56
20	QPSK	50	24	20.37	20.54	20.44
20	QPSK	50	49	20.50	20.43	20.43
20	QPSK	100	0	20.36	20.52	20.48
20	16QAM	1	0	20.69	20.68	20.83
20	16QAM	1	49	20.60	20.62	20.73
20	16QAM	1	99	20.32	20.57	20.27
20	16QAM	50	0	19.42	19.49	19.56
20	16QAM	50	24	19.43	19.42	19.53
20	16QAM	50	49	19.40	19.47	19.43
20	16QAM	100	0	19.35	19.47	19.49
Channel				18675	18900	19125
Frequency (MHz)				1857.5	1880	1902.5
15	QPSK	1	0	21.40	21.41	21.43
15	QPSK	1	37	21.27	21.35	21.38
15	QPSK	1	74	21.33	21.37	21.15
15	QPSK	36	0	20.40	20.44	20.46
15	QPSK	36	18	20.38	20.47	20.46
15	QPSK	36	37	20.38	20.46	20.55
15	QPSK	75	0	20.46	20.45	20.41
15	16QAM	1	0	20.62	20.70	20.71
15	16QAM	1	37	20.29	20.65	20.53
15	16QAM	1	74	20.24	20.48	20.45
15	16QAM	36	0	19.33	19.50	19.48
15	16QAM	36	18	19.39	19.46	19.44
15	16QAM	36	37	19.38	19.40	19.50
15	16QAM	75	0	19.37	19.43	19.51

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	21.31	21.44	21.42
10	QPSK	1	24	21.22	21.13	21.21
10	QPSK	1	49	21.28	21.22	21.06
10	QPSK	25	0	20.30	20.47	20.59
10	QPSK	25	12	20.34	20.41	20.44
10	QPSK	25	24	20.37	20.42	20.51
10	QPSK	50	0	20.31	20.50	20.54
10	16QAM	1	0	20.21	20.60	20.76
10	16QAM	1	24	20.49	20.45	20.48
10	16QAM	1	49	20.43	20.36	20.23
10	16QAM	25	0	19.25	19.38	19.54
10	16QAM	25	12	19.32	19.36	19.45
10	16QAM	25	24	19.30	19.36	19.51
10	16QAM	50	0	19.34	19.49	19.48
Channel				18625	18900	19175
Frequency (MHz)				1852.5	1880	1907.5
5	QPSK	1	0	21.28	21.35	21.44
5	QPSK	1	12	21.23	21.34	21.36
5	QPSK	1	24	21.21	21.29	21.32
5	QPSK	12	0	20.33	20.41	20.56
5	QPSK	12	6	20.33	20.40	20.52
5	QPSK	12	11	20.30	20.40	20.49
5	QPSK	25	0	20.34	20.39	20.51
5	16QAM	1	0	20.26	20.35	20.44
5	16QAM	1	12	20.22	20.30	20.37
5	16QAM	1	24	20.20	20.25	20.33
5	16QAM	12	0	19.31	19.41	19.48
5	16QAM	12	6	19.29	19.38	19.48
5	16QAM	12	11	19.30	19.45	19.50
5	16QAM	25	0	19.29	19.32	19.54

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	21.33	21.33	21.43
3	QPSK	1	7	21.30	21.29	21.40
3	QPSK	1	14	21.15	21.27	21.36
3	QPSK	8	0	20.37	20.41	20.44
3	QPSK	8	4	20.36	20.40	20.46
3	QPSK	8	7	20.37	20.39	20.48
3	QPSK	15	0	20.30	20.41	20.52
3	16QAM	1	0	20.25	20.41	20.77
3	16QAM	1	7	20.20	20.29	20.46
3	16QAM	1	14	20.18	20.23	20.70
3	16QAM	8	0	19.35	19.38	19.48
3	16QAM	8	4	19.34	19.37	19.46
3	16QAM	8	7	19.29	19.35	19.50
3	16QAM	15	0	19.31	19.33	19.54
Channel				18607	18900	19193
Frequency (MHz)				1850.7	1880	1909.3
1.4	QPSK	1	0	21.46	21.48	21.57
1.4	QPSK	1	2	21.39	21.36	21.48
1.4	QPSK	1	5	21.35	21.30	21.43
1.4	QPSK	3	0	21.23	21.34	21.41
1.4	QPSK	3	1	21.41	21.43	21.42
1.4	QPSK	3	2	21.40	21.37	21.45
1.4	QPSK	6	0	20.37	20.39	20.49
1.4	16QAM	1	0	20.66	20.73	20.76
1.4	16QAM	1	2	20.39	20.60	20.54
1.4	16QAM	1	5	20.63	20.72	20.66
1.4	16QAM	3	0	20.31	20.39	20.35
1.4	16QAM	3	1	20.29	20.34	20.44
1.4	16QAM	3	2	20.32	20.29	20.26
1.4	16QAM	6	0	19.39	19.38	19.71

<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	21.82	21.96	21.76
20	QPSK	1	49	21.31	21.45	21.52
20	QPSK	1	99	21.41	21.34	21.43
20	QPSK	50	0	20.57	20.59	20.50
20	QPSK	50	24	20.53	20.50	20.55
20	QPSK	50	49	20.41	20.47	20.49
20	QPSK	100	0	20.43	20.46	20.44
20	16QAM	1	0	20.86	20.84	20.97
20	16QAM	1	49	20.76	20.78	20.87
20	16QAM	1	99	20.83	20.80	20.66
20	16QAM	50	0	19.51	19.51	19.50
20	16QAM	50	24	19.45	19.45	19.44
20	16QAM	50	49	19.43	19.46	19.41
20	16QAM	100	0	19.45	19.42	19.49
Channel				20025	20175	20325
Frequency (MHz)				1717.5	1732.5	1747.5
15	QPSK	1	0	21.45	21.49	21.43
15	QPSK	1	37	21.44	21.41	21.35
15	QPSK	1	74	21.36	21.35	21.29
15	QPSK	36	0	20.49	20.49	20.50
15	QPSK	36	18	20.44	20.46	20.47
15	QPSK	36	37	20.40	20.45	20.38
15	QPSK	75	0	20.47	20.46	20.44
15	16QAM	1	0	20.84	20.85	20.83
15	16QAM	1	37	20.56	20.60	20.50
15	16QAM	1	74	20.34	20.35	20.41
15	16QAM	36	0	19.48	19.52	19.47
15	16QAM	36	18	19.49	19.48	19.45
15	16QAM	36	37	19.42	19.45	19.34
15	16QAM	75	0	19.42	19.45	19.40

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	21.38	21.40	21.30
10	QPSK	1	24	21.36	21.38	21.27
10	QPSK	1	49	21.29	21.32	21.29
10	QPSK	25	0	20.40	20.43	20.47
10	QPSK	25	12	20.39	20.42	20.41
10	QPSK	25	24	20.43	20.41	20.35
10	QPSK	50	0	20.44	20.43	20.43
10	16QAM	1	0	20.57	20.86	20.86
10	16QAM	1	24	20.52	20.55	20.76
10	16QAM	1	49	20.42	20.83	20.60
10	16QAM	25	0	19.36	19.38	19.45
10	16QAM	25	12	19.36	19.34	19.34
10	16QAM	25	24	19.35	19.47	19.26
10	16QAM	50	0	19.42	19.42	19.40
Channel				19975	20175	20375
Frequency (MHz)				1712.5	1732.5	1752.5
5	QPSK	1	0	21.27	21.48	21.43
5	QPSK	1	12	21.21	21.32	21.40
5	QPSK	1	24	21.20	21.23	21.31
5	QPSK	12	0	20.42	20.43	20.43
5	QPSK	12	6	20.38	20.42	20.42
5	QPSK	12	11	20.41	20.41	20.40
5	QPSK	25	0	20.45	20.38	20.41
5	16QAM	1	0	20.61	20.79	20.64
5	16QAM	1	12	20.51	20.61	20.60
5	16QAM	1	24	20.48	20.77	20.41
5	16QAM	12	0	19.37	19.36	19.41
5	16QAM	12	6	19.47	19.37	19.41
5	16QAM	12	11	19.55	19.35	19.36
5	16QAM	25	0	19.41	19.34	19.32

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	21.69	21.45	21.56
3	QPSK	1	7	21.34	21.33	21.45
3	QPSK	1	14	21.25	21.27	21.43
3	QPSK	8	0	20.40	20.42	20.40
3	QPSK	8	4	20.36	20.40	20.35
3	QPSK	8	7	20.40	20.44	20.37
3	QPSK	15	0	20.39	20.41	20.36
3	16QAM	1	0	20.45	20.47	20.66
3	16QAM	1	7	20.34	20.43	20.53
3	16QAM	1	14	20.36	20.18	20.35
3	16QAM	8	0	20.19	19.76	19.50
3	16QAM	8	4	20.05	19.56	20.12
3	16QAM	8	7	19.87	19.53	20.06
3	16QAM	15	0	19.85	19.38	19.34
Channel				19957	20175	20393
Frequency (MHz)				1710.7	1732.5	1754.3
1.4	QPSK	1	0	21.72	21.65	21.75
1.4	QPSK	1	2	21.65	21.53	21.39
1.4	QPSK	1	5	21.34	21.64	21.07
1.4	QPSK	3	0	21.63	21.52	21.17
1.4	QPSK	3	1	21.62	21.50	21.30
1.4	QPSK	3	2	21.34	21.55	21.20
1.4	QPSK	6	0	21.29	20.96	20.42
1.4	16QAM	1	0	20.99	21.26	21.11
1.4	16QAM	1	2	20.98	21.23	20.10
1.4	16QAM	1	5	20.23	21.22	21.04
1.4	16QAM	3	0	20.72	20.96	21.06
1.4	16QAM	3	1	20.41	20.12	20.89
1.4	16QAM	3	2	20.76	20.35	20.48
1.4	16QAM	6	0	19.21	19.51	19.10

<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	21.42	21.66	21.55
20	QPSK	1	49	21.34	21.59	21.49
20	QPSK	1	99	21.36	21.58	21.47
20	QPSK	50	0	20.49	20.70	20.61
20	QPSK	50	24	20.51	20.56	20.62
20	QPSK	50	49	20.51	20.68	20.67
20	QPSK	100	0	20.50	20.61	20.58
20	16QAM	1	0	20.71	20.60	20.63
20	16QAM	1	49	20.57	20.55	20.59
20	16QAM	1	99	20.52	20.58	20.55
20	16QAM	50	0	19.48	19.62	19.54
20	16QAM	50	24	19.46	19.53	19.53
20	16QAM	50	49	19.47	19.54	19.51
20	16QAM	100	0	19.41	19.53	19.49
Channel				20825	21100	21375
Frequency (MHz)				2507.5	2535	2562.5
15	QPSK	1	0	21.52	21.55	21.53
15	QPSK	1	37	21.44	21.50	21.49
15	QPSK	1	74	21.46	21.51	21.45
15	QPSK	36	0	20.61	20.64	20.67
15	QPSK	36	18	20.59	20.63	20.63
15	QPSK	36	37	20.57	20.59	20.63
15	QPSK	75	0	20.54	20.62	20.64
15	16QAM	1	0	20.76	20.86	20.85
15	16QAM	1	37	20.63	20.82	20.81
15	16QAM	1	74	20.56	20.83	20.76
15	16QAM	36	0	19.46	19.56	19.44
15	16QAM	36	18	19.43	19.58	19.43
15	16QAM	36	37	19.53	19.55	19.42
15	16QAM	75	0	19.43	19.53	19.42



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	2535	2565
10	QPSK	1	0	21.46	21.58	21.41
10	QPSK	1	24	21.41	21.46	21.36
10	QPSK	1	49	21.42	21.50	21.26
10	QPSK	25	0	20.03	20.51	20.48
10	QPSK	25	12	20.14	20.57	20.44
10	QPSK	25	24	19.90	20.60	20.44
10	QPSK	50	0	20.16	20.53	20.53
10	16QAM	1	0	20.67	20.90	20.70
10	16QAM	1	24	20.53	20.56	20.58
10	16QAM	1	49	20.37	20.50	20.69
10	16QAM	25	0	19.38	19.55	19.37
10	16QAM	25	12	19.17	19.52	19.72
10	16QAM	25	24	19.20	19.56	19.53
10	16QAM	50	0	20.20	19.52	19.71
Channel				20775	21100	21425
Frequency (MHz)				2502.5	2535	2567.5
5	QPSK	1	0	21.35	21.58	21.48
5	QPSK	1	12	21.22	21.43	21.46
5	QPSK	1	24	21.09	21.37	21.21
5	QPSK	12	0	20.39	20.62	20.51
5	QPSK	12	6	20.28	20.62	20.47
5	QPSK	12	11	20.33	20.64	20.52
5	QPSK	25	0	20.28	20.61	20.44
5	16QAM	1	0	20.59	20.55	20.55
5	16QAM	1	12	20.51	20.38	20.43
5	16QAM	1	24	20.39	20.45	20.13
5	16QAM	12	0	19.22	19.55	19.42
5	16QAM	12	6	19.27	19.55	19.36
5	16QAM	12	11	19.21	19.55	19.39
5	16QAM	25	0	19.22	19.50	19.31

<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	22.40	22.41	22.45
10	QPSK	1	24	22.60	22.68	22.66
10	QPSK	1	49	22.55	22.47	22.37
10	QPSK	25	0	21.55	21.56	21.64
10	QPSK	25	12	21.65	21.76	21.71
10	QPSK	25	24	21.73	21.72	21.66
10	QPSK	50	0	21.65	21.68	21.65
10	16QAM	1	0	21.60	21.86	21.67
10	16QAM	1	24	22.09	21.98	22.19
10	16QAM	1	49	21.89	21.66	21.93
10	16QAM	25	0	20.44	20.57	20.62
10	16QAM	25	12	20.63	20.56	20.60
10	16QAM	25	24	20.62	20.67	20.60
10	16QAM	50	0	20.58	20.59	20.59
Channel				23755	23790	23825
Frequency (MHz)				706.5	710	713.5
5	QPSK	1	0	22.30	22.57	22.53
5	QPSK	1	12	22.58	22.63	22.62
5	QPSK	1	24	22.50	22.56	22.18
5	QPSK	12	0	21.54	21.67	21.65
5	QPSK	12	6	21.57	21.72	21.62
5	QPSK	12	11	21.63	21.73	21.55
5	QPSK	25	0	21.54	21.66	21.56
5	16QAM	1	0	21.65	21.93	21.63
5	16QAM	1	12	21.78	22.15	22.01
5	16QAM	1	24	21.76	21.80	21.24
5	16QAM	12	0	20.41	20.68	20.64
5	16QAM	12	6	20.44	20.61	20.52
5	16QAM	12	11	20.53	20.73	20.46
5	16QAM	25	0	20.48	20.61	20.60

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.

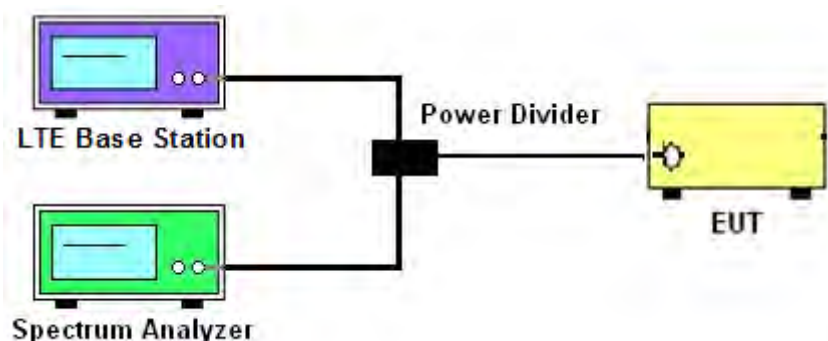
3.2.2 Measuring Instruments

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 LTE base station 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 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	QPSK	1	0	3.71	3.65	3.83
20	QPSK	100	0	4.64	4.67	4.46
20	16QAM	1	0	4.84	4.64	4.49
20	16QAM	100	0	5.54	5.54	5.33

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	QPSK	1	0	4.06	3.97	3.94
20	QPSK	100	0	4.90	5.10	4.90
20	16QAM	1	0	4.90	4.78	5.30
20	16QAM	100	0	5.74	6.03	5.74

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	2535	2560
20	QPSK	1	0	4.00	3.19	3.97
20	QPSK	100	0	4.72	4.41	4.72
20	16QAM	1	0	4.67	4.46	4.70
20	16QAM	100	0	5.71	5.39	5.54

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	QPSK	1	0	4.58	4.61	4.35
10	QPSK	50	0	5.22	5.22	5.28
10	16QAM	1	0	5.42	5.68	5.57
10	16QAM	50	0	6.06	6.14	5.97

3.2.6 Peak to Average Power Ratio

Peak-to-Average Ratio on LTE Band 2
20MHz / QPSK in Ch. 18700 (1RB Size)



Date: 13.DEC.2014 17:10:46

Peak-to-Average Ratio on LTE Band 2
20MHz / QPSK in Ch. 18700 (100RB Size)



Date: 13.DEC.2014 17:11:00

Peak-to-Average Ratio on LTE Band 2
20MHz / QPSK in Ch. 18900 (1RB Size)



Date: 13.DEC.2014 17:11:29

Peak-to-Average Ratio on LTE Band 2
20MHz / QPSK in Ch. 18900 (100RB Size)



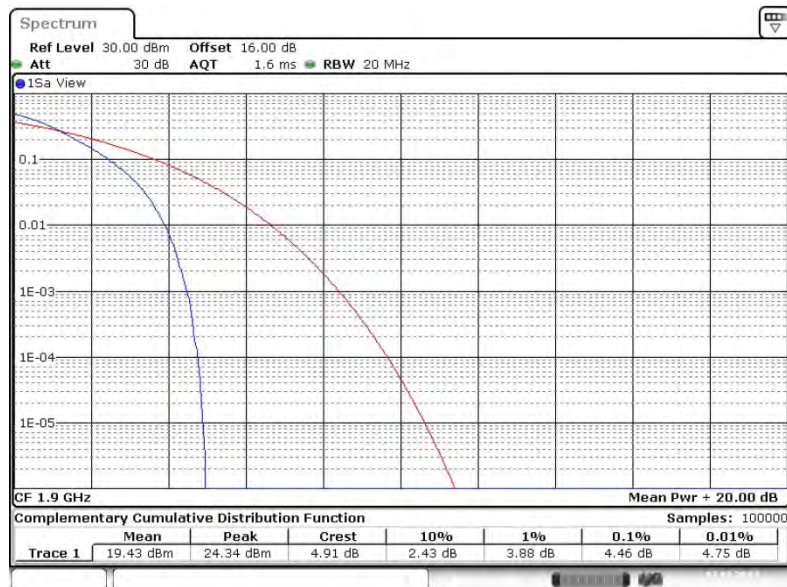
Date: 13.DEC.2014 17:11:14

Peak-to-Average Ratio on LTE Band 2 20MHz / QPSK in Ch. 19100 (1RB Size)



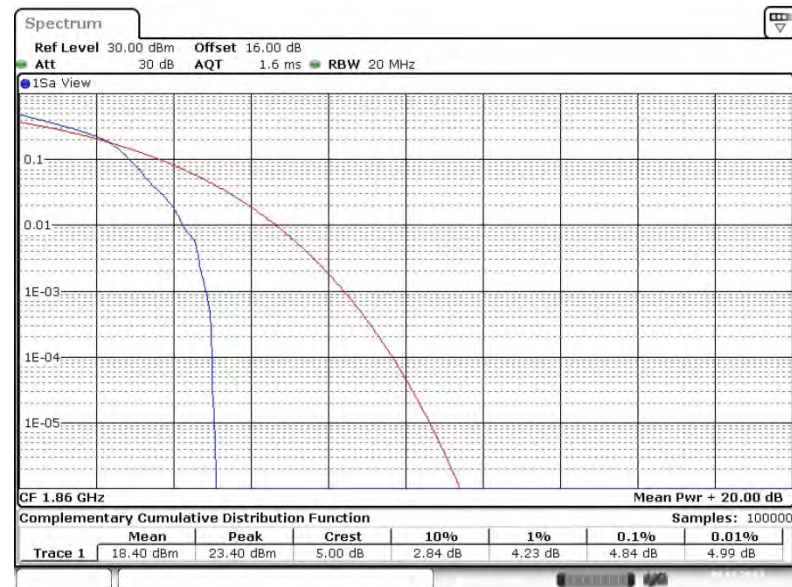
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Peak-to-Average Ratio on LTE Band 2 20MHz / QPSK in Ch. 19100 (100RB Size)



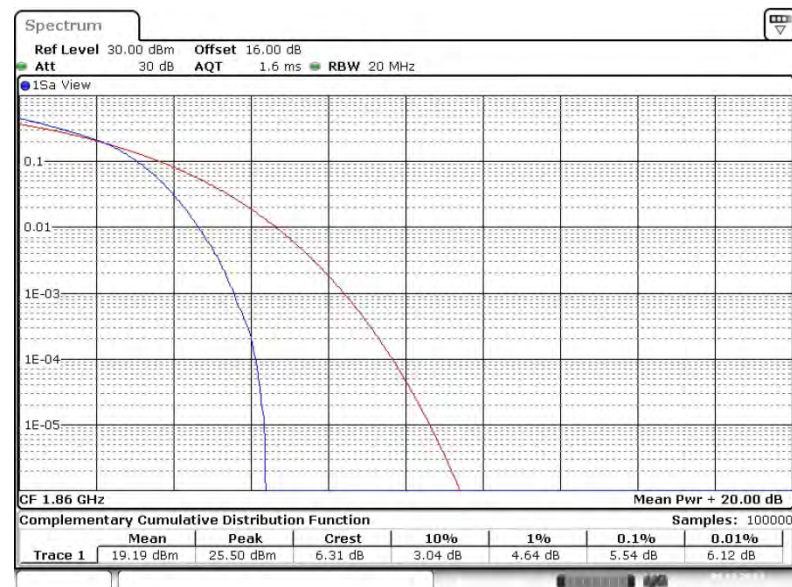
Date: 13.DEC.2014 17:12:09

Peak-to-Average Ratio on LTE Band 2
20MHz / 16QAM in Ch. 18700 (1RB Size)



Date: 9.DEC.2014 17:18:41

Peak-to-Average Ratio on LTE Band 2
20MHz / 16QAM in Ch. 18700 (100RB Size)



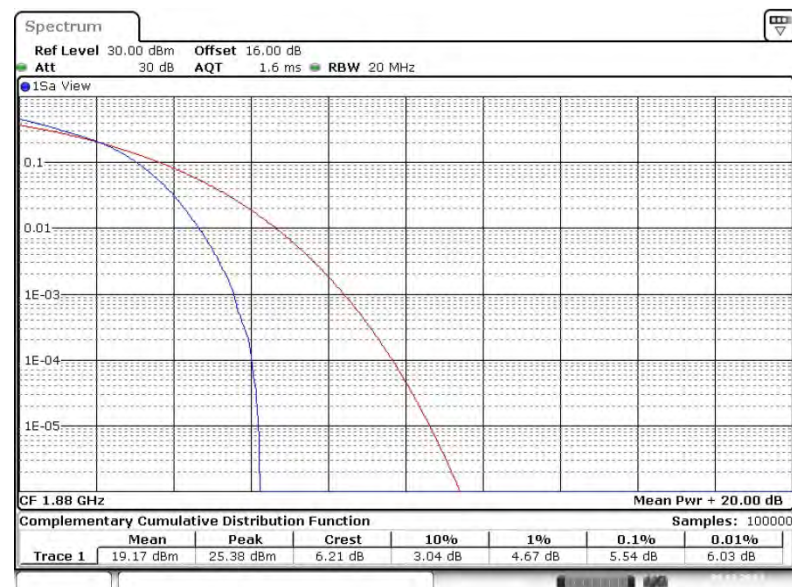
Date: 9.DEC.2014 17:18:52

Peak-to-Average Ratio on LTE Band 2 20MHz / 16QAM in Ch. 18900 (1RB Size)



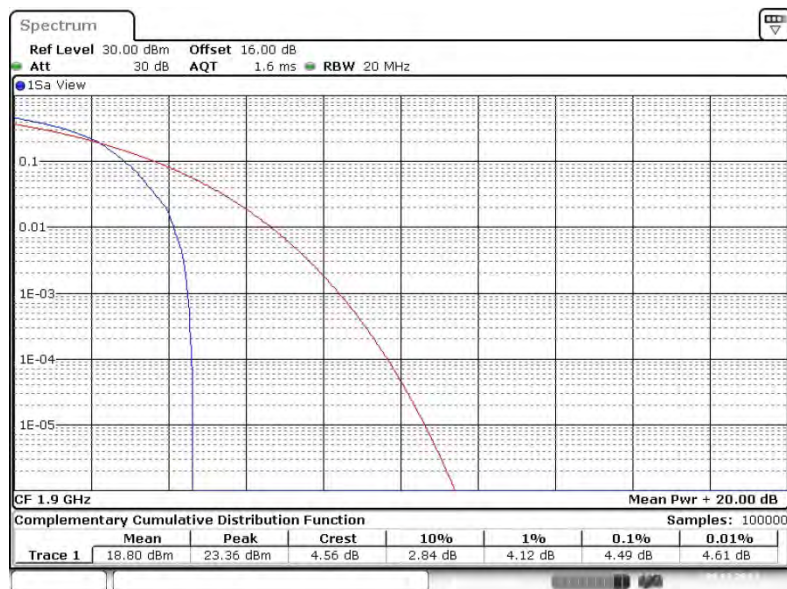
Date: 9.DEC.2014 17:19:04

Peak-to-Average Ratio on LTE Band 2 20MHz / 16QAM in Ch. 18900 (100RB Size)



Date: 9.DEC.2014 17:19:16

Peak-to-Average Ratio on LTE Band 2 20MHz / 16QAM in Ch. 19100 (1RB Size)



Date: 9.DEC.2014 17:19:27

Peak-to-Average Ratio on LTE Band 2 20MHz / 16QAM in Ch. 19100 (100RB Size)



Date: 9.DEC.2014 17:19:39

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



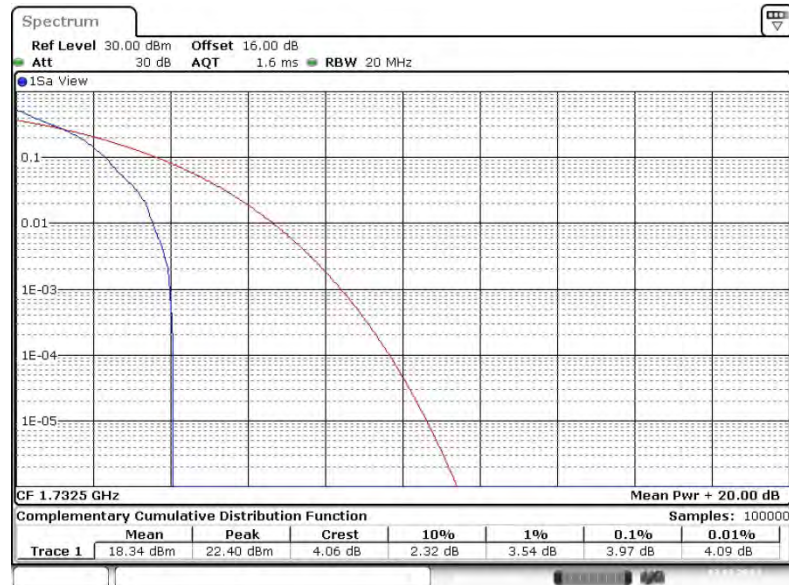
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Peak-to-Average Ratio on LTE Band 4
20MHz / QPSK in Ch. 20050 (100RB Size)



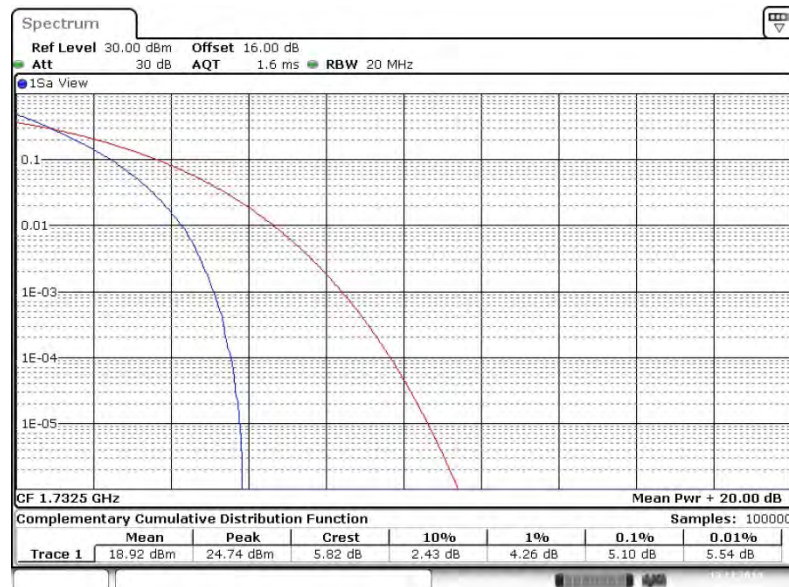
Date: 13.DEC.2014 17:12:47

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



Date: 13.DEC.2014 17:13:22

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



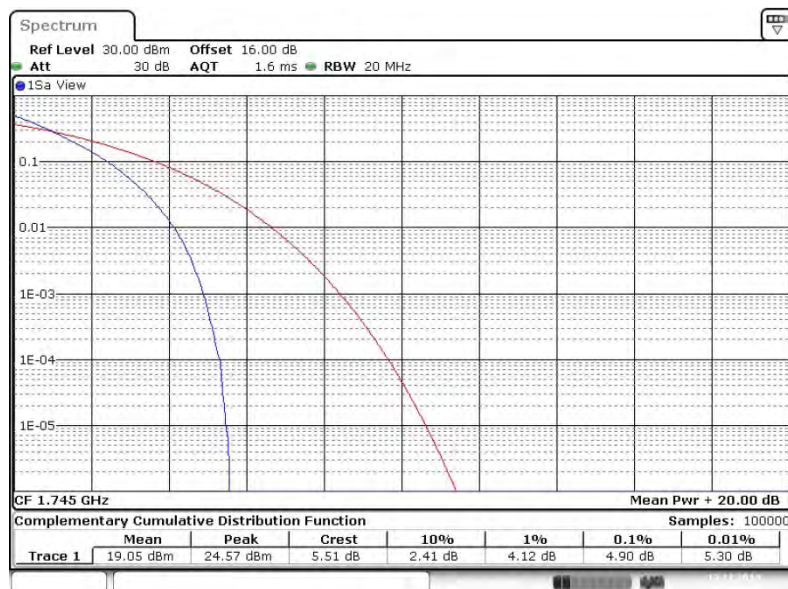
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Peak-to-Average Ratio on LTE Band 4 20MHz / QPSK in Ch. 20300 (1RB Size)



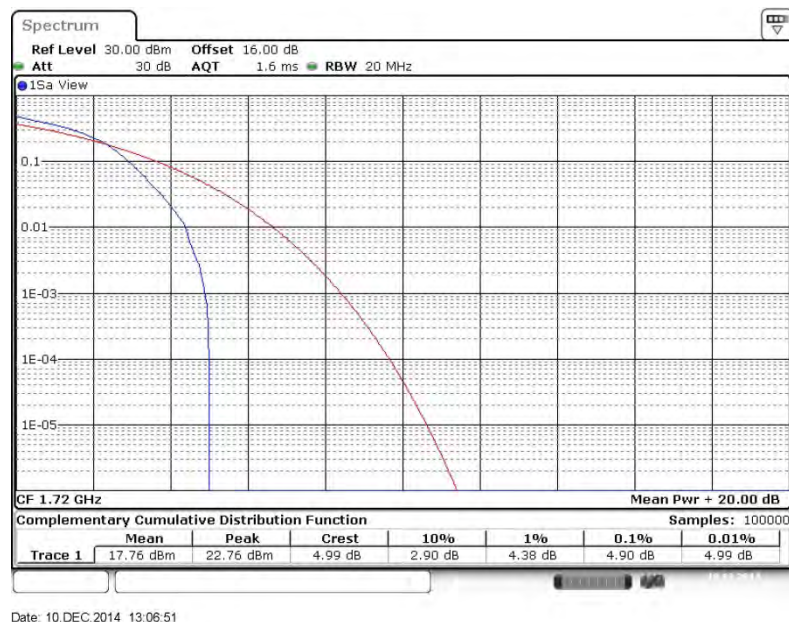
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Peak-to-Average Ratio on LTE Band 4 20MHz / QPSK in Ch. 20300 (100RB Size)



Date: 13.DEC.2014 17:14:01

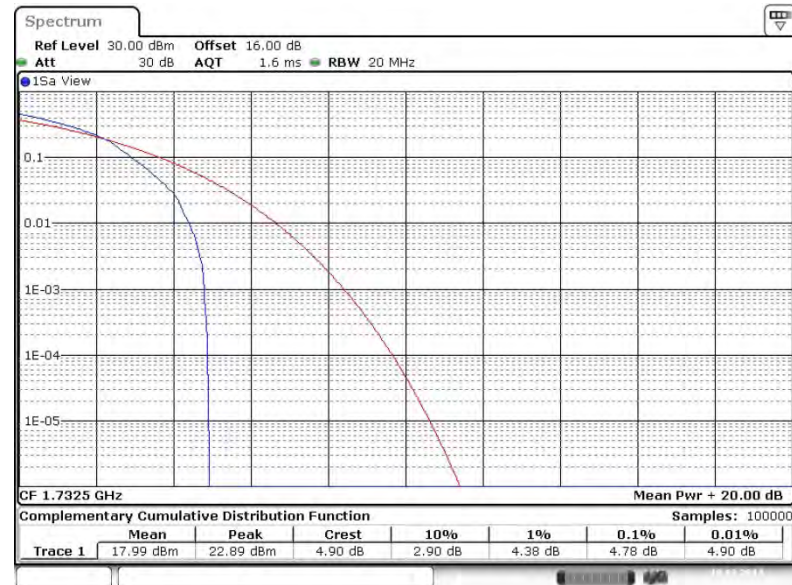
Peak-to-Average Ratio on LTE Band 4
20MHz / 16QAM in Ch. 20050 (1RB Size)



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



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



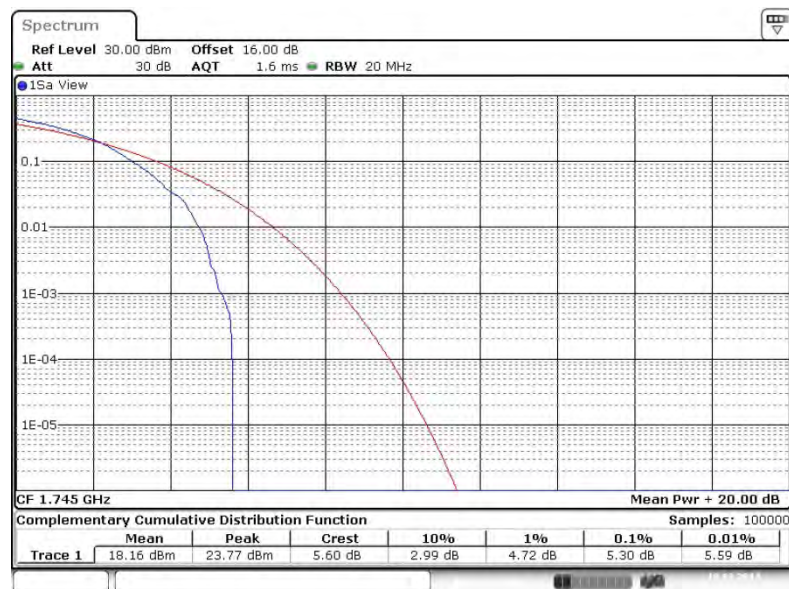
Date: 10.DEC.2014 13:07:13

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



Date: 10.DEC.2014 13:07:25

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

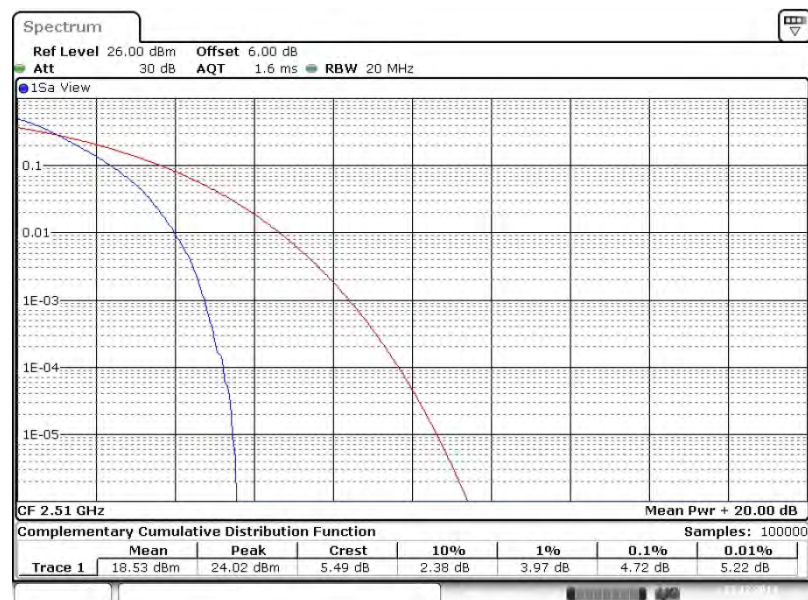


Peak-to-Average Ratio on LTE Band 4
20MHz / 16QAM in Ch. 20300 (100RB Size)

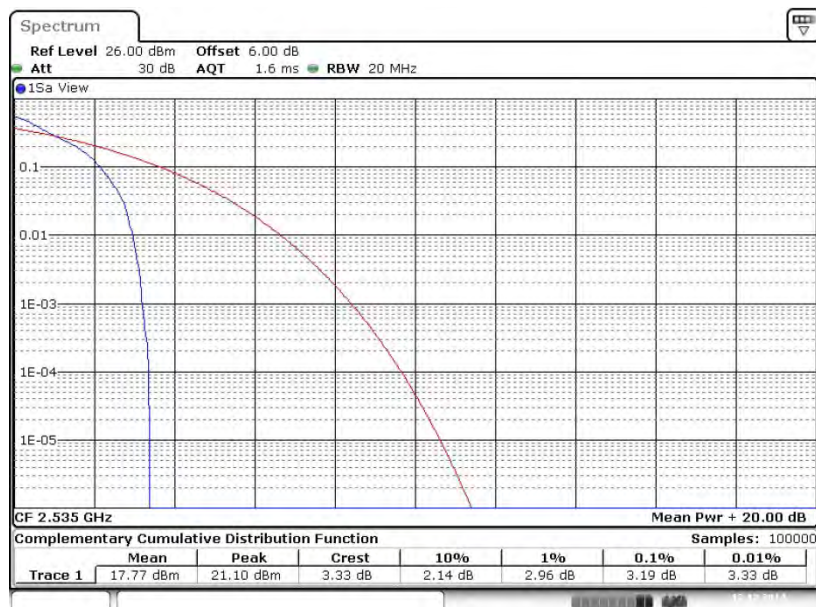


Peak-to-Average Ratio on LTE Band 7
20MHz / QPSK in Ch. 20850 (1RB Size)

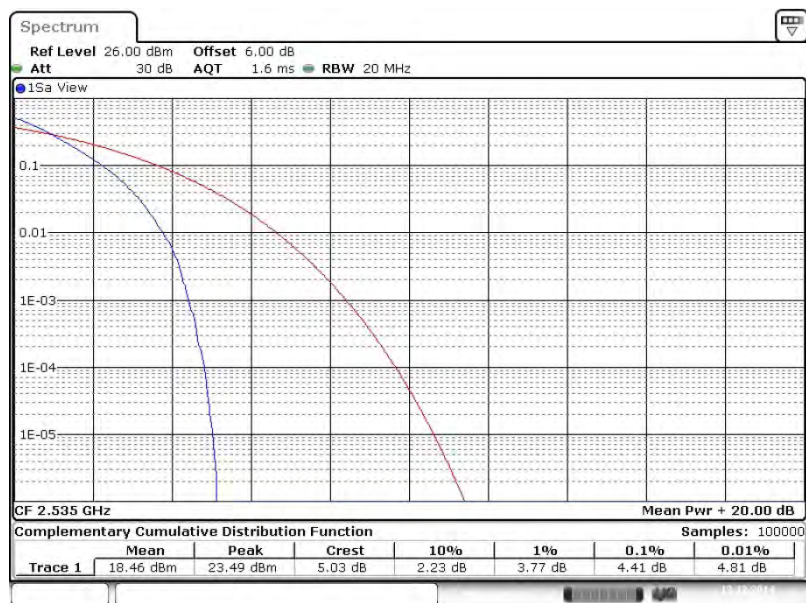

Date: 12.DEC.2014 19:41:11

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


Date: 12.DEC.2014 19:41:01

Peak-to-Average Ratio on LTE Band 7
20MHz / QPSK in Ch. 21100 (1RB Size)


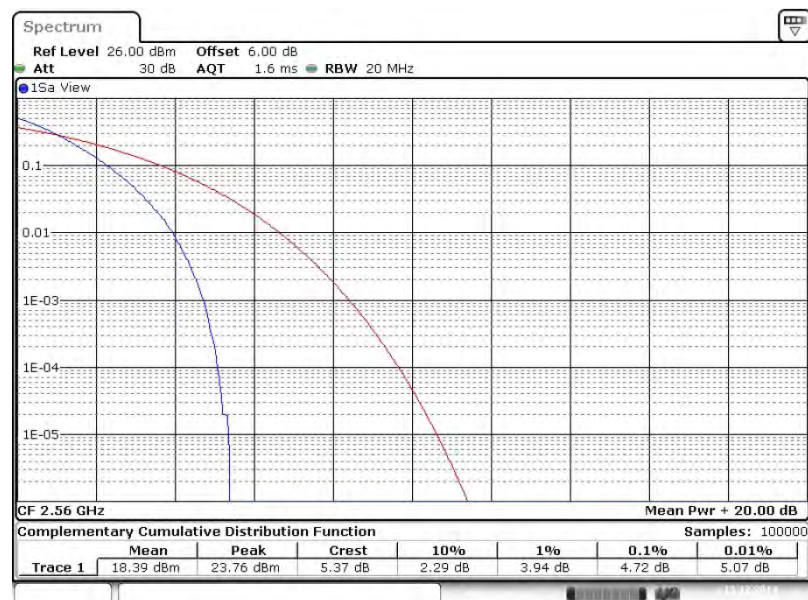
Date: 12.DEC.2014 19:42:32

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


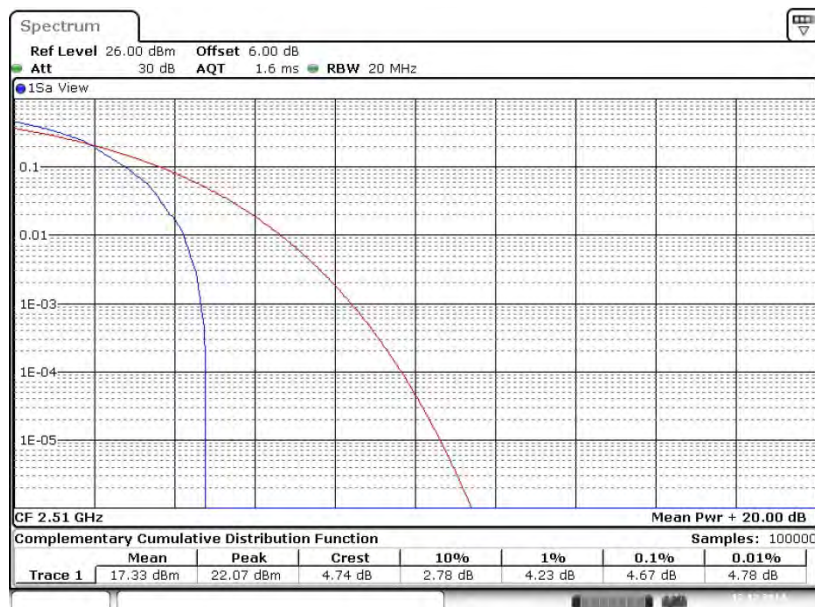
Date: 12.DEC.2014 19:42:21

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

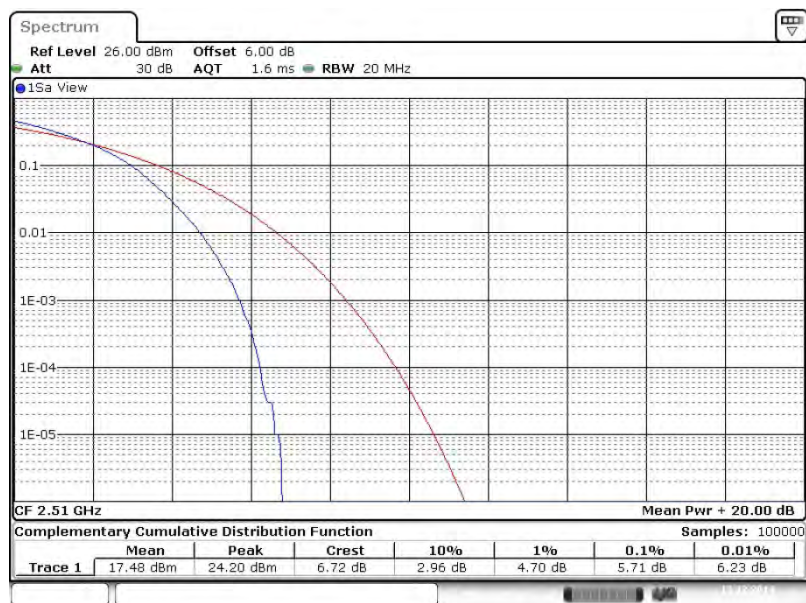

Date: 12.DEC.2014 19:43:34

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


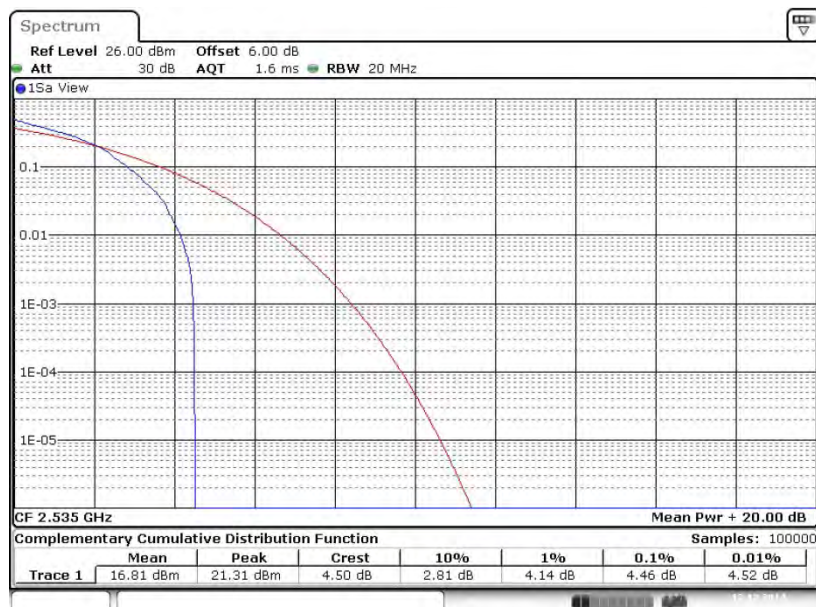
Date: 12.DEC.2014 19:43:21

Peak-to-Average Ratio on LTE Band 7
20MHz / 16QAM in Ch. 20850 (1RB Size)


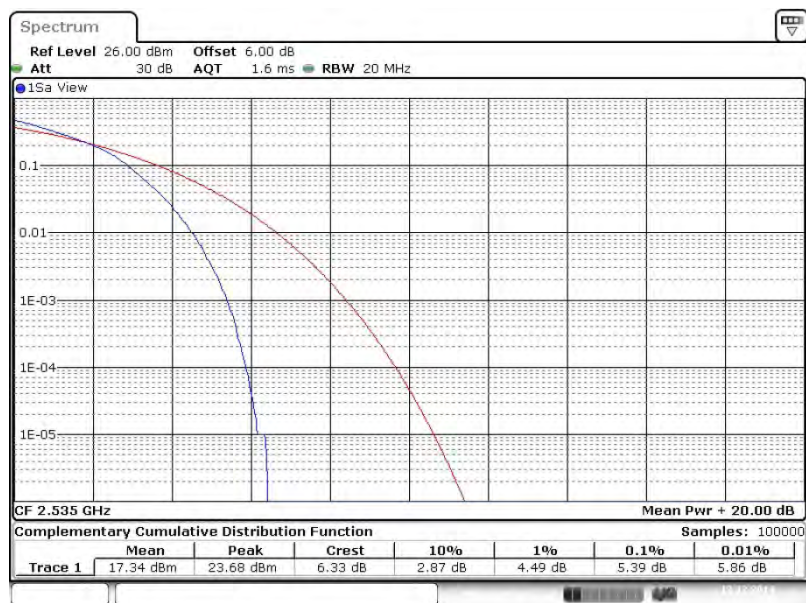
Date: 12.DEC.2014 19:40:37

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


Date: 12.DEC.2014 19:40:51

Peak-to-Average Ratio on LTE Band 7
20MHz / 16QAM in Ch. 21100 (1RB Size)


Date: 12.DEC.2014 19:41:30

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


Date: 12.DEC.2014 19:42:04

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



Date: 12.DEC.2014 19:42:55

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



Date: 12.DEC.2014 19:43:08

Peak-to-Average Ratio on LTE Band 17

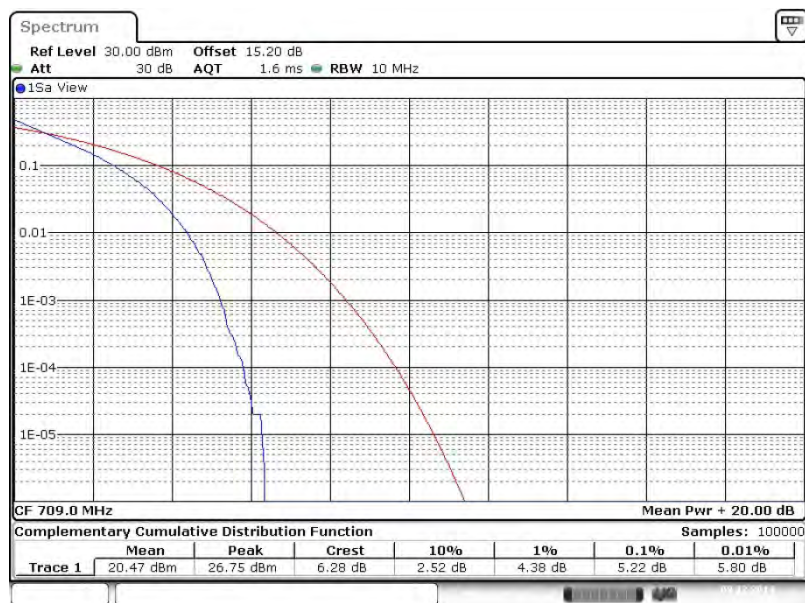
10MHz / QPSK in Ch. 23780 (1RB Size)



Date: 9 DEC. 2014 20:35:41

Peak-to-Average Ratio on LTE Band 17

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



Date: 9 DEC. 2014 20:35:30

Peak-to-Average Ratio on LTE Band 17
10MHz / QPSK in Ch. 23790 (1RB Size)


Date: 9 DEC. 2014 20:35:10

Peak-to-Average Ratio on LTE Band 17
10MHz / QPSK in Ch. 23790 (50RB Size)


Date: 9 DEC. 2014 20:35:20

Peak-to-Average Ratio on LTE Band 17

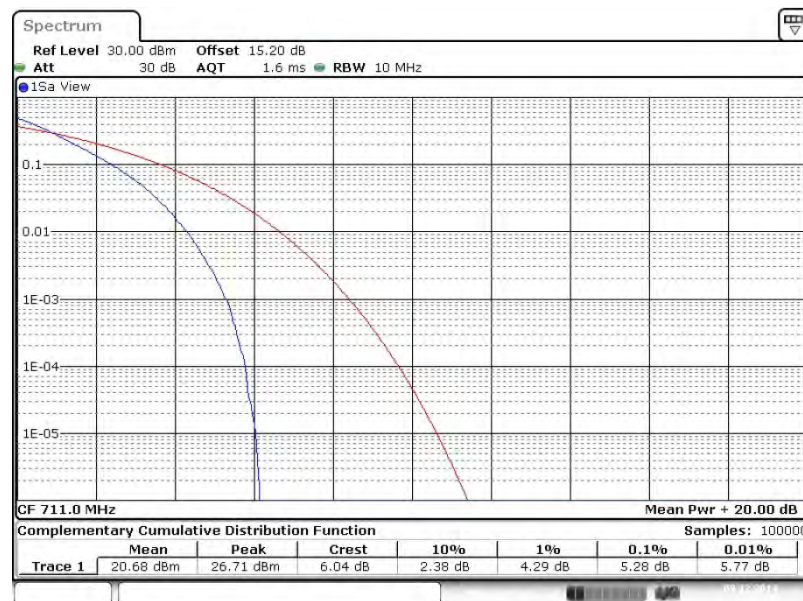
10MHz / QPSK in Ch. 23800 (1RB Size)



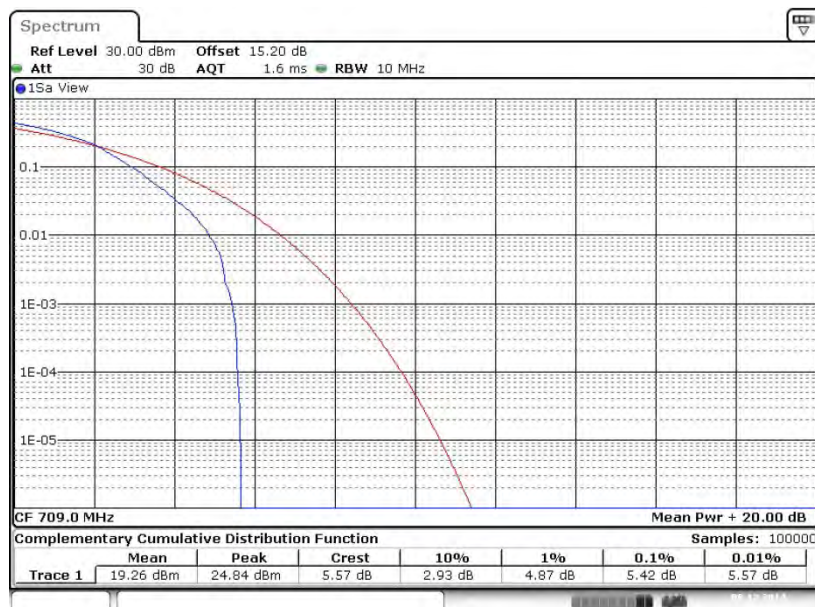
Date: 9 DEC. 2014 20:37:02

Peak-to-Average Ratio on LTE Band 17

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



Date: 9 DEC. 2014 20:36:52

Peak-to-Average Ratio on LTE Band 17
10MHz / 16QAM in Ch. 23780 (1RB Size)


Date: 9 DEC. 2014 20:34:50

Peak-to-Average Ratio on LTE Band 17
10MHz / 16QAM in Ch. 23780 (50RB Size)

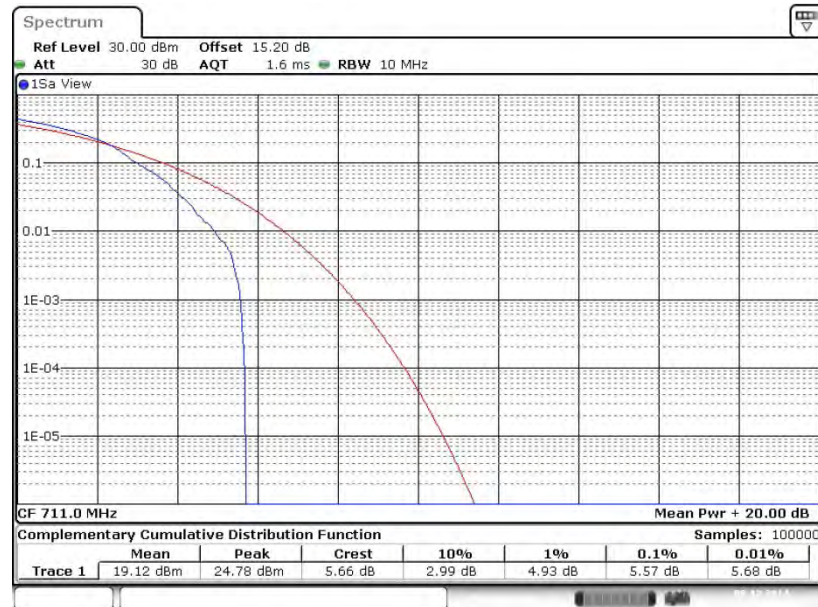

Date: 9 DEC. 2014 20:35:00

Peak-to-Average Ratio on LTE Band 17
10MHz / 16QAM in Ch. 23790 (1RB Size)


Date: 9 DEC. 2014 20:35:51

Peak-to-Average Ratio on LTE Band 17
10MHz / 16QAM in Ch. 23790 (50RB Size)


Date: 9 DEC. 2014 20:36:12

Peak-to-Average Ratio on LTE Band 17
10MHz / 16QAM in Ch. 23800 (1RB Size)


Date: 9 DEC. 2014 20:36:21

Peak-to-Average Ratio on LTE Band 17
10MHz / 16QAM in Ch. 23800 (50RB Size)


Date: 9 DEC. 2014 20:36:33

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 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

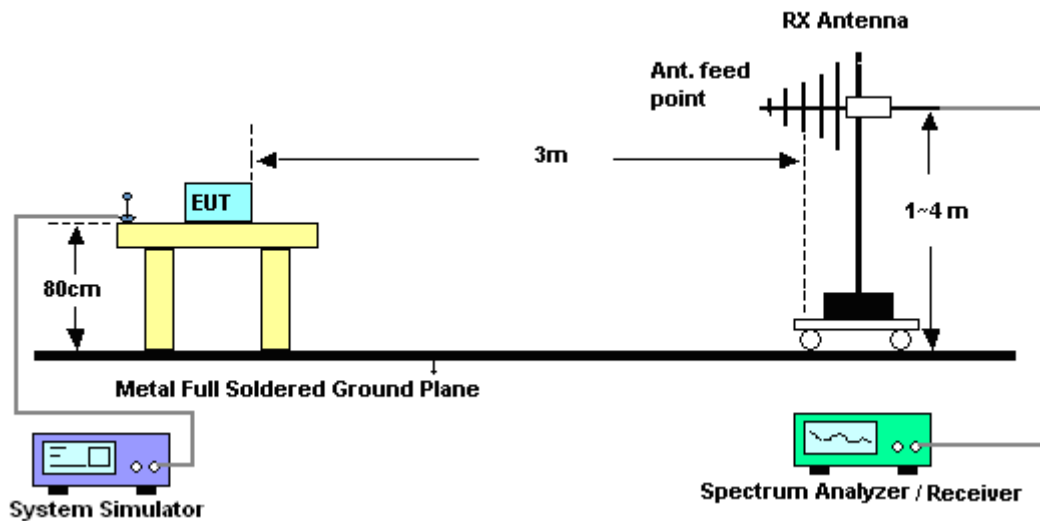
1. The EUT was placed on a non-conductive rotating platform 0.8 meters high in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RMS detector per section 5. of KDB 971168 D01.
2. During the measurement, the 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 $ERP = EIRP - 2.15$.

4. The instrument settings (RBW, VBW, detector) for the ERP/EIRP measurements are as following table:

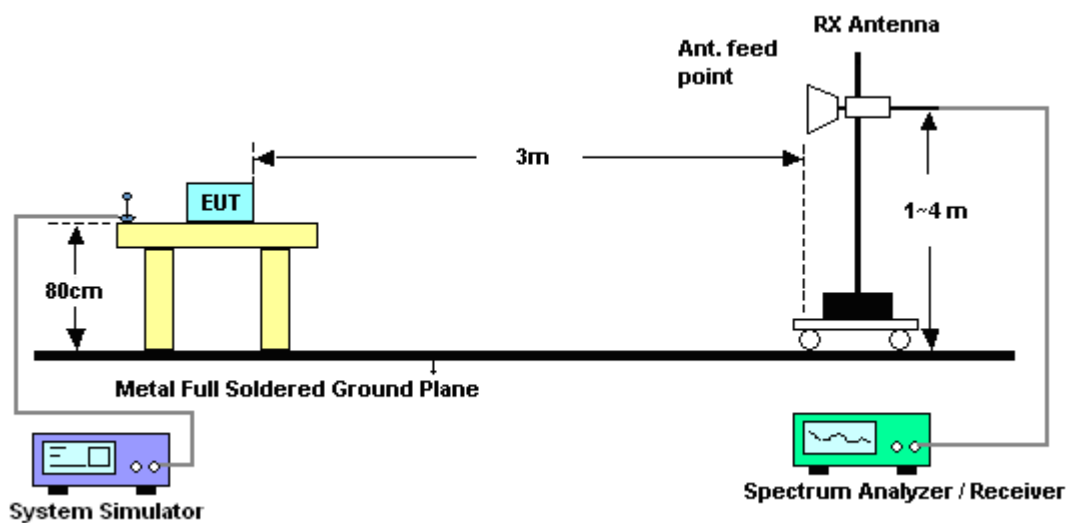
LTE						
LTE BW	1.4M	3M	5M	10M	15M	20M
Span	3MHz	6MHz	10MHz	20MHz	30MHz	40MHz
RBW	30kHz	100kHz	100kHz	300kHz	300kHz	300kHz
VBW	100kHz	300kHz	300kHz	1MHz	1MHz	1MHz
Detector	RMS	RMS	RMS	RMS	RMS	RMS
Trace	Average	Average	Average	Average	Average	Average
Average Type	Power	Power	Power	Power	Power	Power
Sweep Count	100	100	100	100	100	100

3.3.4 Test Setup

For Effective Radiated Power



For Equivalent Isotropic Radiated Power



3.3.5 Test Result of ERP/EIRP

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	-20.32	42.6	22.28	0.1690
1880	-20.36	42.89	22.53	0.1791
1909.3	-19.68	42.16	22.48	0.1771
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1850.7	-19.21	42.03	22.82	0.1916
1880	-19.60	42.35	22.75	0.1886
1909.3	-20.70	43.32	22.62	0.1828

LTE Band 2 Radiated Power EIRP for BW 1.4MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
-21.26	-21.26	42.6	21.34	0.1362
-21.20	-21.20	42.89	21.69	0.1477
-20.19	-20.19	42.16	21.97	0.1573
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1850.7	-20.26	42.03	21.77	0.1503
1880	-20.55	42.35	21.80	0.1513
1909.3	-21.39	43.32	21.93	0.1560

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	-20.64	42.6	21.96	0.1572
1880	-20.67	42.89	22.22	0.1669
1908.5	-19.71	42.16	22.45	0.1759
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1851.5	-19.40	42.03	22.63	0.1830
1880	-19.89	42.35	22.46	0.1764
1908.5	-20.80	43.32	22.52	0.1788

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	-21.23	42.6	21.37	0.1371
1880	-21.15	42.89	21.74	0.1492
1908.5	-20.18	42.16	21.98	0.1579
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1851.5	-20.17	42.03	21.86	0.1534
1880	-20.48	42.35	21.87	0.1539
1908.5	-21.36	43.32	21.96	0.1572

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	-20.68	42.6	21.92	0.1556
1880	-20.75	42.89	22.14	0.1635
1907.5	-19.75	42.16	22.41	0.1741
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1852.5	-19.46	42.03	22.57	0.1808
1880	-19.96	42.35	22.39	0.1735
1907.5	-20.84	43.32	22.48	0.1770

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	-21.14	42.6	21.46	0.1401
1880	-21.05	42.89	21.84	0.1526
1907.5	-20.13	42.16	22.03	0.1597
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1852.5	-20.08	42.03	21.95	0.1568
1880	-20.37	42.35	21.98	0.1576
1907.5	-21.28	43.32	22.04	0.1601

LTE Band 2 Radiated Power EIRP for BW 10MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1855	-20.90	42.6	21.70	0.1480
1880	-21.05	42.89	21.84	0.1528
1905	-19.85	42.16	22.31	0.1700
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1855	-19.67	42.03	22.36	0.1723
1880	-20.10	42.35	22.25	0.1680
1905	-20.82	43.32	22.50	0.1776

LTE Band 2 Radiated Power EIRP for BW 10MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1855	-21.73	42.6	20.88	0.1223
1880	-21.76	42.89	21.13	0.1297
1905	-20.86	42.16	21.30	0.1348
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1855	-20.56	42.03	21.47	0.1404
1880	-20.85	42.35	21.50	0.1413
1905	-21.73	43.32	21.59	0.1441

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	-20.87	42.6	21.73	0.1488
1880	-21.26	42.89	21.63	0.1457
1902.5	-19.87	42.16	22.29	0.1693
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1857.5	-19.76	42.03	22.27	0.1688
1880	-20.27	42.35	22.08	0.1616
1902.5	-20.74	43.32	22.58	0.1810

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	-21.84	42.6	20.76	0.1190
1880	-22.27	42.89	20.62	0.1154
1902.5	-20.96	42.16	21.20	0.1319
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1857.5	-20.68	42.03	21.35	0.1364
1880	-21.24	42.35	21.11	0.1292
1902.5	-21.81	43.32	21.51	0.1416

LTE Band 2 Radiated Power EIRP for BW 20MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1860	-20.89	42.6	21.71	0.1482
1880	-21.24	42.89	21.65	0.1462
1900	-19.82	42.16	22.34	0.1715
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1860	-19.77	42.03	22.26	0.1682
1880	-20.26	42.35	22.09	0.1618
1900	-20.68	43.32	22.64	0.1839

LTE Band 2 Radiated Power EIRP for BW 20MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1860	-21.92	42.6	20.68	0.1170
1880	-22.39	42.89	20.50	0.1122
1900	-21.07	42.16	21.09	0.1285
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1860	-20.76	42.03	21.27	0.1338
1880	-21.38	42.35	20.97	0.1251
1900	-21.92	43.32	21.40	0.1381

LTE Band 4 Radiated Power EIRP for BW 1.4MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1710.7	-19.22	39.98	20.76	0.1191
1732.5	-19.69	40.73	21.05	0.1272
1754.3	-19.32	40.83	21.51	0.1415
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1710.7	-20.20	41.22	21.02	0.1265
1732.5	-19.73	41.41	21.68	0.1471
1754.3	-19.60	41.68	22.08	0.1615

LTE Band 4 Radiated Power EIRP for BW 1.4MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1710.7	-19.94	39.98	20.04	0.1010
1732.5	-20.41	40.73	20.32	0.1077
1754.3	-20.08	40.83	20.75	0.1187
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1710.7	-20.89	41.22	20.33	0.1078
1732.5	-20.53	41.41	20.88	0.1224
1754.3	-20.45	41.68	21.23	0.1327

LTE Band 4 Radiated Power EIRP for BW 3MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1711.5	-19.25	39.98	20.73	0.1184
1732.5	-19.74	40.73	20.99	0.1255
1753.5	-19.45	40.83	21.38	0.1375
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1711.5	-20.22	41.22	21.00	0.1259
1732.5	-19.82	41.41	21.59	0.1444
1753.5	-19.71	41.68	21.97	0.1574

LTE Band 4 Radiated Power EIRP for BW 3MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1711.5	-20.01	39.98	19.97	0.0992
1732.5	-20.46	40.73	20.27	0.1065
1753.5	-20.12	40.83	20.71	0.1178
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1711.5	-20.94	41.22	20.28	0.1067
1732.5	-20.57	41.41	20.84	0.1213
1753.5	-20.43	41.68	21.25	0.1333

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	-19.10	39.98	20.88	0.1225
1732.5	-19.74	40.73	20.99	0.1257
1752.5	-19.42	40.83	21.41	0.1382
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1712.5	-20.05	41.22	21.17	0.1311
1732.5	-19.80	41.41	21.61	0.1450
1752.5	-19.65	41.68	22.03	0.1597

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	-19.91	39.98	20.07	0.1017
1732.5	-20.39	40.73	20.34	0.1081
1752.5	-20.08	40.83	20.75	0.1189
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1712.5	-20.75	41.22	20.47	0.1114
1732.5	-20.50	41.41	20.91	0.1233
1752.5	-20.39	41.68	21.29	0.1345

LTE Band 4 Radiated Power EIRP for BW 10MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1715	-19.28	39.98	20.70	0.1175
1732.5	-19.73	40.73	21.00	0.1260
1750	-19.51	40.83	21.32	0.1356
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1715	-20.09	41.22	21.13	0.1298
1732.5	-19.93	41.41	21.48	0.1407
1750	-19.75	41.68	21.93	0.1560

LTE Band 4 Radiated Power EIRP for BW 10MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1715	-19.94	39.98	20.04	0.1010
1732.5	-20.39	40.73	20.34	0.1082
1750	-20.21	40.83	20.62	0.1153
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1715	-20.77	41.22	20.45	0.1108
1732.5	-20.60	41.41	20.81	0.1205
1750	-20.46	41.68	21.22	0.1324

LTE Band 4 Radiated Power EIRP for BW 15MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1717.5	-19.26	39.98	20.72	0.1179
1732.5	-19.81	40.73	20.92	0.1237
1747.5	-19.64	40.83	21.19	0.1314
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1717.5	-20.10	41.22	21.12	0.1294
1732.5	-20.07	41.41	21.34	0.1360
1747.5	-19.84	41.68	21.84	0.1526

LTE Band 4 Radiated Power EIRP for BW 15MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1717.5	-19.86	39.98	20.12	0.1027
1732.5	-20.43	40.73	20.30	0.1071
1747.5	-20.24	40.83	20.59	0.1145
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1717.5	-20.68	41.22	20.54	0.1131
1732.5	-20.70	41.41	20.71	0.1177
1747.5	-20.45	41.68	21.23	0.1326

LTE Band 4 Radiated Power EIRP for BW 20MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1720	-19.05	39.98	20.93	0.1239
1732.5	-19.88	40.73	20.85	0.1215
1745	-19.61	40.83	21.22	0.1326
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1720	-19.95	41.22	21.27	0.1340
1732.5	-19.98	41.41	21.43	0.1391
1745	-19.77	41.68	21.91	0.1553

LTE Band 4 Radiated Power EIRP for BW 20MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1720	-19.94	39.98	20.04	0.1009
1732.5	-20.62	40.73	20.11	0.1027
1745	-20.31	40.83	20.52	0.1128
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1720	-20.73	41.22	20.49	0.1119
1732.5	-20.75	41.41	20.66	0.1164
1745	-20.54	41.68	21.14	0.1300

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	-23.78	43.58	19.80	0.0955
2535	-22.12	43.84	21.72	0.1486
2567.5	-22.93	43.72	20.79	0.1199
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2502.5	-26.34	45.66	19.32	0.0856
2535	-25.63	46.02	20.39	0.1095
2567.5	-25.75	44.93	19.18	0.0828

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	-24.21	43.58	19.37	0.0866
2535	-23.74	43.84	20.10	0.1022
2567.5	-22.30	43.72	21.42	0.1387
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2502.5	-27.62	45.66	18.04	0.0637
2535	-27.69	46.02	18.33	0.0681
2567.5	-25.70	44.93	19.23	0.0838

LTE Band 7 Radiated Power EIRP for BW 10MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2505	-23.54	43.58	20.04	0.1008
2535	-23.14	43.84	20.70	0.1175
2565	-22.92	43.72	20.80	0.1203
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2505	-26.60	45.66	19.06	0.0806
2535	-26.61	46.02	19.41	0.0873
2565	-25.68	44.93	19.25	0.0841

LTE Band 7 Radiated Power EIRP for BW 10MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2505	-24.07	43.58	19.51	0.0894
2535	-22.78	43.84	21.06	0.1276
2565	-22.49	43.72	21.23	0.1326
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2505	-26.90	45.66	18.76	0.0752
2535	-26.74	46.02	19.28	0.0847
2565	-25.77	44.93	19.16	0.0824

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	-23.38	43.58	20.20	0.1046
2535	-23.13	43.84	20.71	0.1178
2562.5	-22.92	43.72	20.80	0.1203
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2507.5	-26.45	45.66	19.21	0.0835
2535	-26.71	46.02	19.31	0.0853
2562.5	-25.77	44.93	19.16	0.0824

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	-24.09	43.58	19.49	0.0888
2535	-22.85	43.84	20.99	0.1257
2562.5	-22.45	43.72	21.27	0.1341
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2507.5	-27.62	45.66	18.04	0.0637
2535	-26.95	46.02	19.07	0.0807
2562.5	-26.34	44.93	18.59	0.0723

LTE Band 7 Radiated Power EIRP for BW 20MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2510	-23.28	43.58	20.30	0.1071
2535	-22.14	43.84	21.70	0.1480
2560	-22.76	43.72	20.96	0.1248
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2510	-26.38	45.66	19.28	0.0848
2535	-25.86	46.02	20.16	0.1038
2560	-25.63	44.93	19.30	0.0852

LTE Band 7 Radiated Power EIRP for BW 20MHz / 16QMA				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2510	-24.16	43.58	19.42	0.0875
2535	-23.85	43.84	19.99	0.0998
2560	-22.88	43.72	20.84	0.1215
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
2510	-27.65	45.66	18.01	0.0632
2535	-27.65	46.02	18.37	0.0687
2560	-25.98	44.93	18.95	0.0785

LTE Band 17 Radiated Power ERP for BW 5MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
706.5	-6.53	27.37	18.69	0.0740
710	-6.69	27.52	18.68	0.0738
713.5	-6.45	27.63	19.03	0.0800
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
706.5	-24.5	29.71	3.02	0.0020
710	-24.5	29.78	3.12	0.0021
713.5	-24.1	29.95	3.74	0.0024

LTE Band 17 Radiated Power ERP for BW 5MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
706.5	-7.29	27.37	17.93	0.0621
710	-7.54	27.52	17.83	0.0607
713.5	-7.13	27.63	18.35	0.0683
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
706.5	-25.5	29.71	2.09	0.0016
710	-25.5	29.78	2.09	0.0016
713.5	-25.0	29.95	2.84	0.0019

LTE Band 17 Radiated Power ERP for BW 10MHz / QPSK				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
709	-6.69	27.37	18.53	0.0712
710	-7.07	27.52	18.31	0.0677
711	-7.17	27.63	18.31	0.0678
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
709	-24.5	29.71	3.03	0.0020
710	-24.8	29.78	2.86	0.0019
711	-24.9	29.95	2.94	0.0020

LTE Band 17 Radiated Power ERP for BW 10MHz / 16QAM				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
709	-7.21	27.37	18.01	0.0632
710	-7.58	27.52	17.79	0.0601
711	-7.57	27.63	17.91	0.0618
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
709	-25.3	29.71	2.30	0.0017
710	-25.5	29.78	2.08	0.0016
711	-25.6	29.95	2.24	0.0017

3.4 99% Occupied Bandwidth and 26dB Bandwidth Measurement

3.4.1 Description of 99% Occupied Bandwidth and 26dB 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.

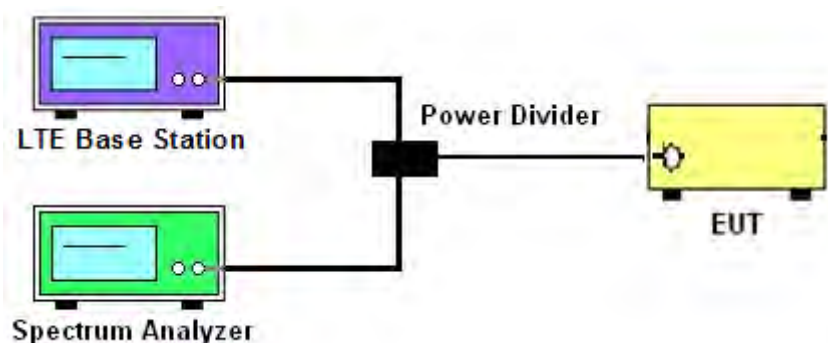
3.4.2 Measuring Instruments

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 LTE base station 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 of 99% Occupied Bandwidth and 26dB Bandwidth

Modes	LTE Band 2											
BW / Mod.	1.4MHz / QPSK			1.4MHz / 16QAM			3MHz / QPSK			3MHz / 16QAM		
	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High
99% OBW (MHz)	1.091	1.097	1.097	1.097	1.097	1.099	2.733	2.721	2.727	2.721	2.721	2.727
26dB BW (MHz)	1.264	1.259	1.276	1.287	1.284	1.290	3.051	3.027	3.063	3.033	3.027	3.039
BW / Mod.	5MHz / QPSK			5MHz / 16QAM			10MHz / QPSK			10MHz / 16QAM		
	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High
99% OBW (MHz)	4.505	4.515	4.515	4.496	4.505	4.515	9.091	9.051	9.071	9.011	9.031	8.991
26dB BW (MHz)	5.105	5.115	5.145	5.075	5.065	5.045	10.030	10.050	10.030	10.010	9.950	10.030
BW / Mod.	15MHz / QPSK			15MHz / 16QAM			20MHz / QPSK			20MHz / 16QAM		
	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High
99% OBW (MHz)	13.487	13.546	13.397	13.487	13.487	13.516	18.462	18.501	18.302	18.422	18.462	18.382
26dB BW (MHz)	14.835	14.925	14.715	14.835	14.835	14.655	20.500	20.380	20.739	20.699	20.300	20.460

Modes	LTE Band 4											
BW / Mod.	1.4MHz / QPSK			1.4MHz / 16QAM			3MHz / QPSK			3MHz / 16QAM		
	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High
99% OBW (MHz)	1.091	1.091	1.097	1.097	1.094	1.097	2.715	2.721	2.721	2.721	2.721	2.721
26dB BW (MHz)	1.256	1.262	1.264	1.276	1.273	1.284	3.015	3.021	3.027	3.015	3.033	3.039
BW / Mod.	5MHz / QPSK			5MHz / 16QAM			10MHz / QPSK			10MHz / 16QAM		
	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High
99% OBW (MHz)	4.505	4.505	4.505	4.505	4.505	4.505	9.031	9.031	9.071	8.991	9.031	9.011
26dB BW (MHz)	5.045	5.085	5.115	5.085	5.085	5.075	10.110	10.050	10.110	9.930	9.990	9.970
BW / Mod.	15MHz / QPSK			15MHz / 16QAM			20MHz / QPSK			20MHz / 16QAM		
	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High
99% OBW (MHz)	13.516	13.516	13.516	13.487	13.487	13.457	18.422	18.422	18.462	18.462	18.382	18.462
26dB BW (MHz)	14.745	14.715	14.745	14.775	14.895	14.715	20.500	20.380	20.539	20.500	20.260	20.420

Modes	LTE Band 7											
BW / Mod.	5MHz / QPSK			5MHz / 16QAM			10MHz / QPSK			10MHz / 16QAM		
	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High
99% OBW (MHz)	4.505	4.505	4.505	4.515	4.505	4.505	9.051	9.071	9.071	9.011	9.051	9.031
26dB BW (MHz)	5.095	5.125	5.115	5.065	5.055	5.065	9.990	10.070	9.970	10.010	9.910	10.090
BW / Mod.	15MHz / QPSK			15MHz / 16QAM			20MHz / QPSK			20MHz / 16QAM		
	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High
99% OBW (MHz)	13.487	13.546	13.487	13.427	13.487	13.457	18.342	18.541	18.262	18.382	18.581	18.422
26dB BW (MHz)	14.745	14.715	14.835	14.685	14.745	14.835	20.300	20.340	20.340	20.619	20.699	20.300

Modes	LTE Band 17											
BW / Mod.	5MHz / QPSK			5MHz / 16QAM			10MHz / QPSK			10MHz / 16QAM		
	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High	Low	Mid.	High
99% OBW (MHz)	4.515	4.515	4.496	4.505	4.515	4.505	9.091	9.091	9.071	9.051	9.091	9.051
26dB BW (MHz)	5.085	5.075	5.065	5.065	5.075	5.035	10.130	10.070	10.070	9.990	9.950	9.970

Note:

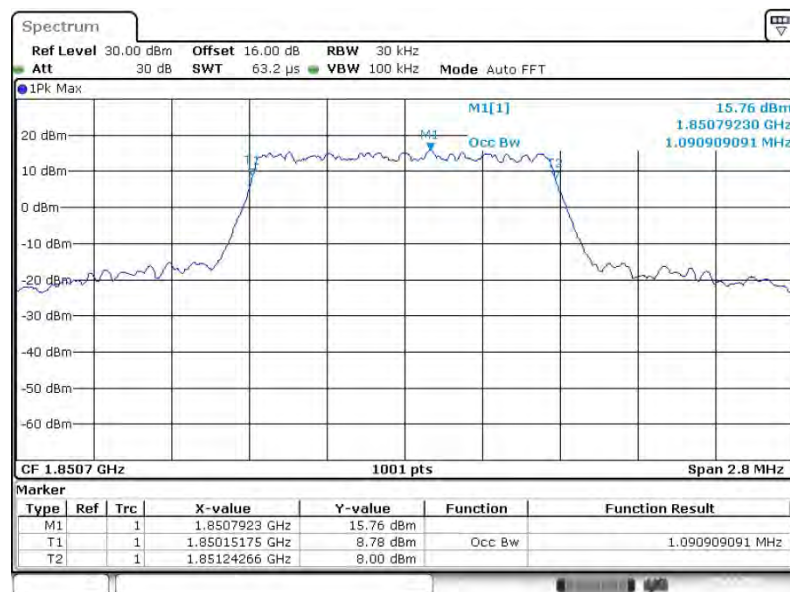
The maximum RB configurations of the 99% Occupied Bandwidth and 26dB Bandwidth summary as below:

- BW1.4MHz RB setting : RB Size 6, RB offset 0
- BW3.0MHz RB setting : RB Size 15, RB offset 0
- BW5.0MHz RB setting : RB Size 25, RB offset 0
- BW10MHz RB setting : RB Size 50, RB offset 0
- BW15MHz RB setting : RB Size 75, RB offset 0
- BW20MHz RB setting : RB Size 100, RB offset 0

3.4.6 Test Result (Plots) of 99% Occupied Bandwidth and 26dB Bandwidth

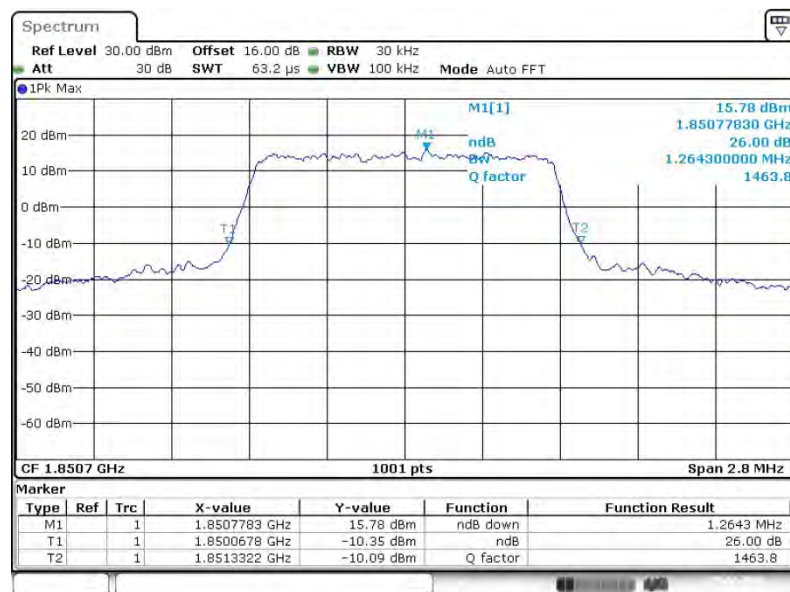
Band :	LTE Band 2	BW / Mod. :	1.4MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 18607



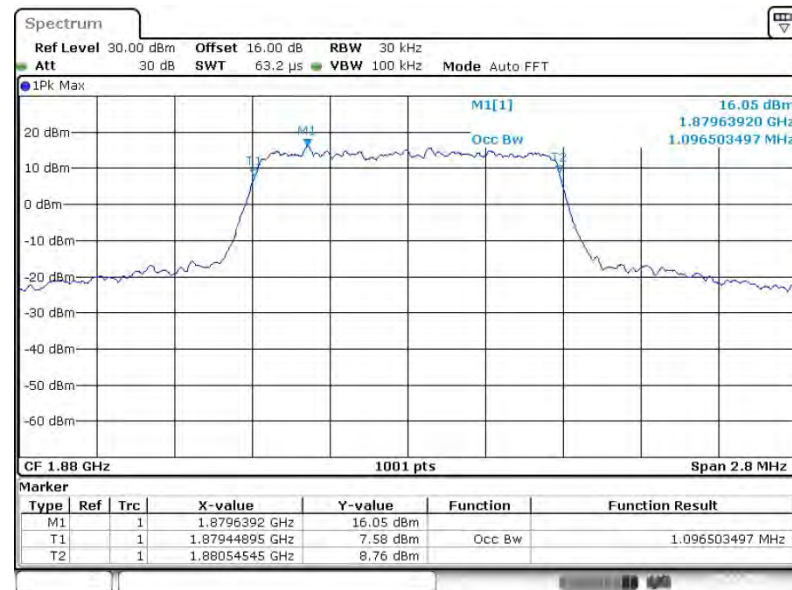
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26dB Bandwidth Plot on Channel 18607



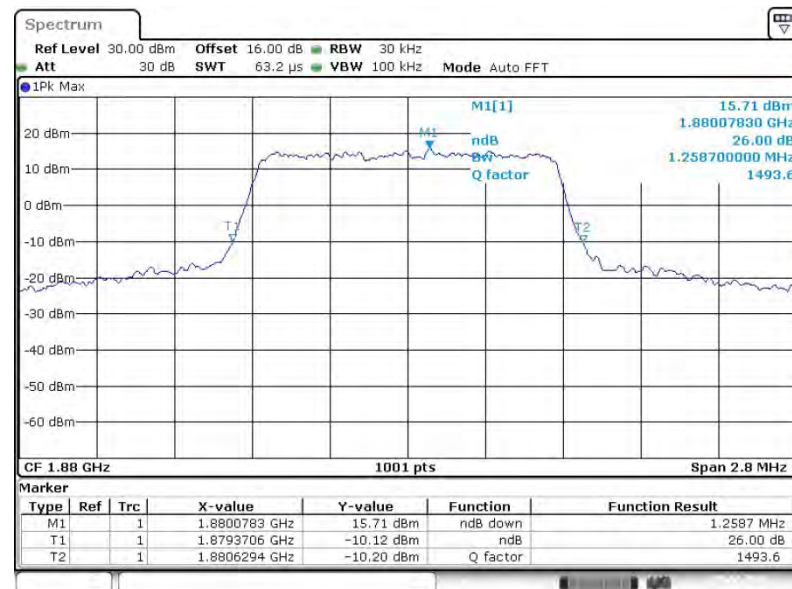
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99% Occupied Bandwidth Plot on Channel 18900



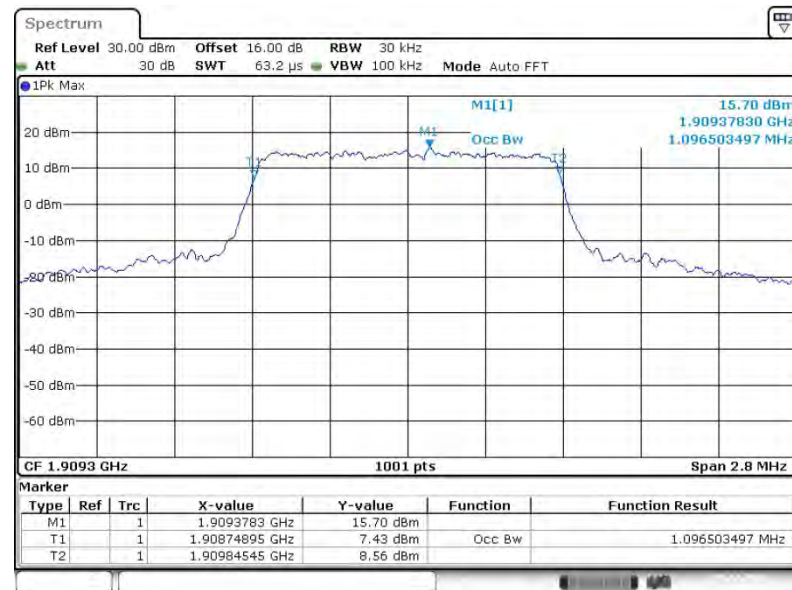
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26dB Bandwidth Plot on Channel 18900



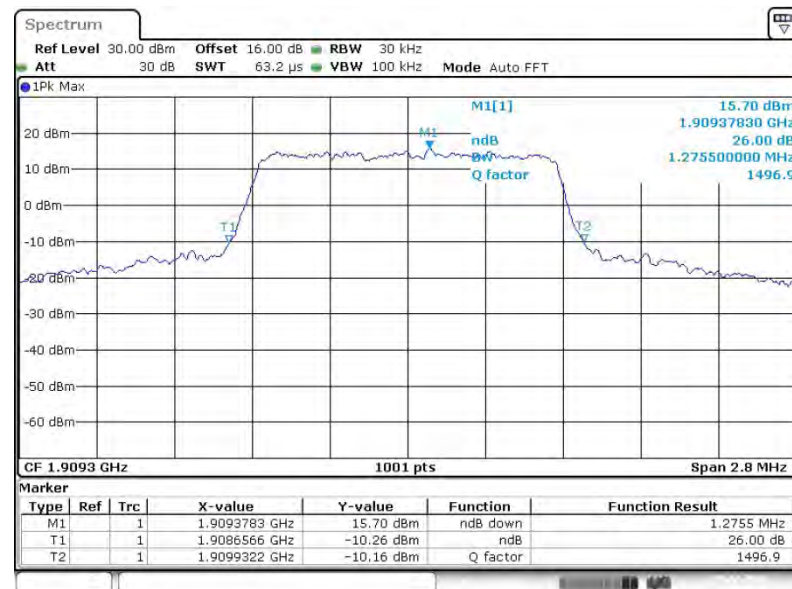
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99% Occupied Bandwidth Plot on Channel 19193



Date: 9 DEC 2014 15:39:50

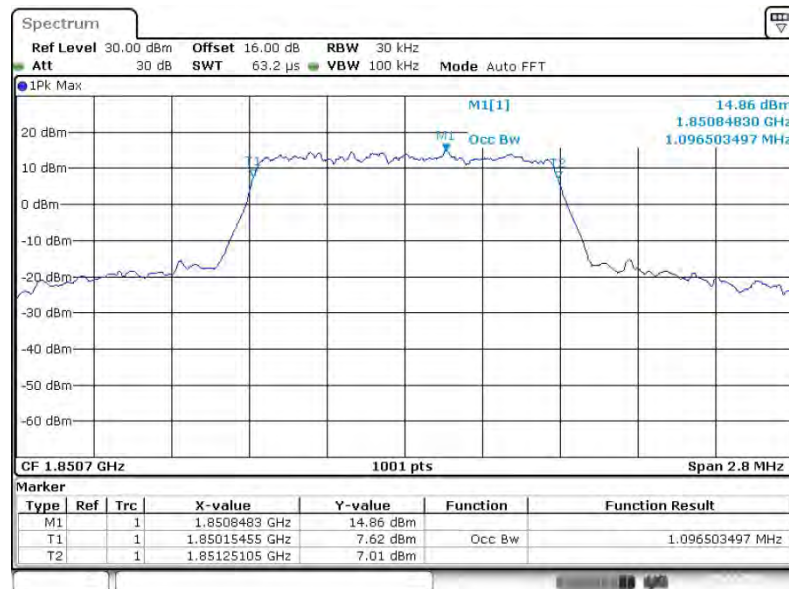
26dB Bandwidth Plot on Channel 19193



Date: 9 DEC 2014 15:40:13

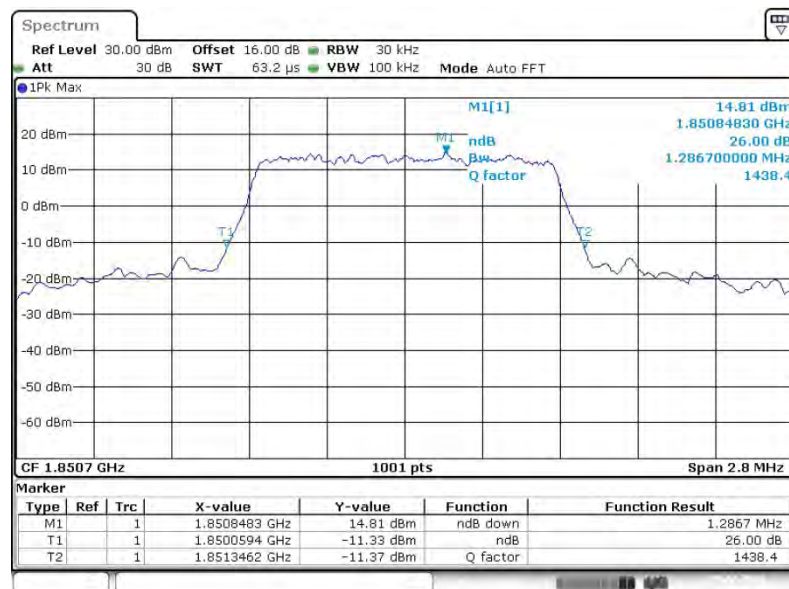
Band :	LTE Band 2	BW / Mod. :	1.4MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 18607

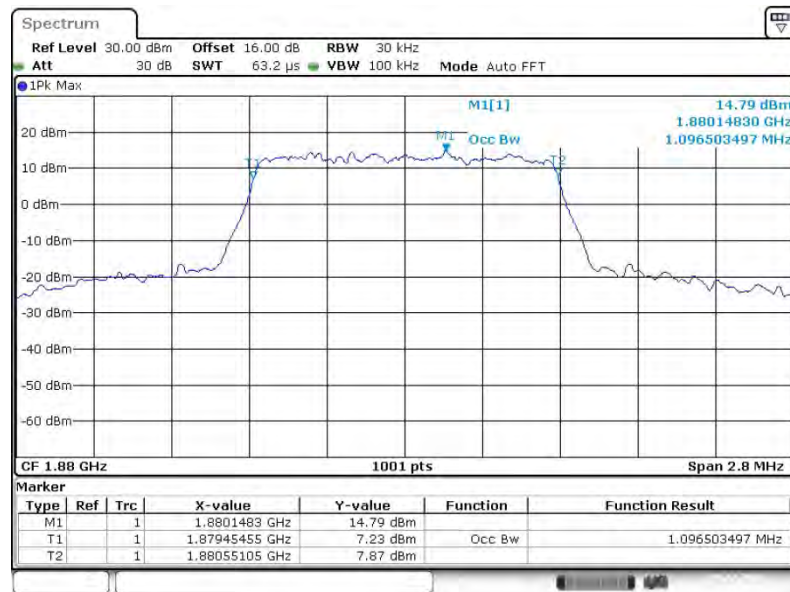


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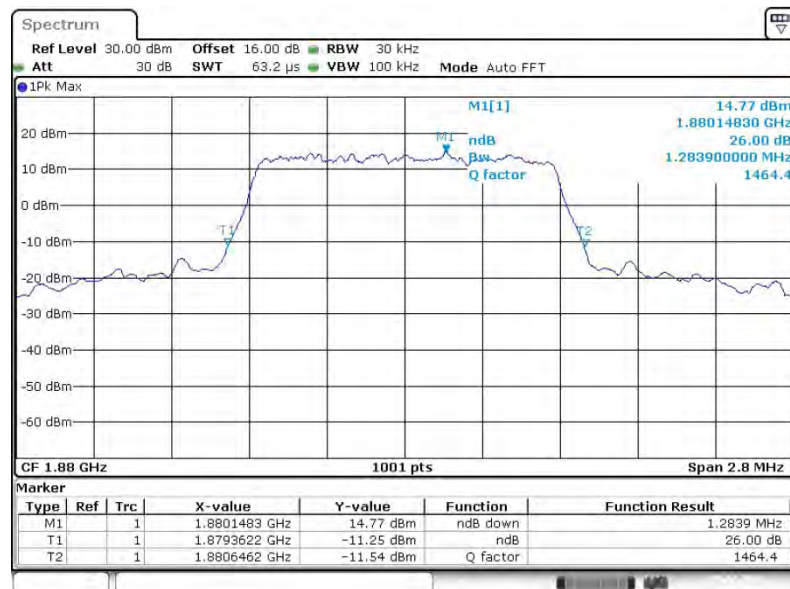
26dB Bandwidth Plot on Channel 18607



Date: 9 DEC 2014 15:29:47

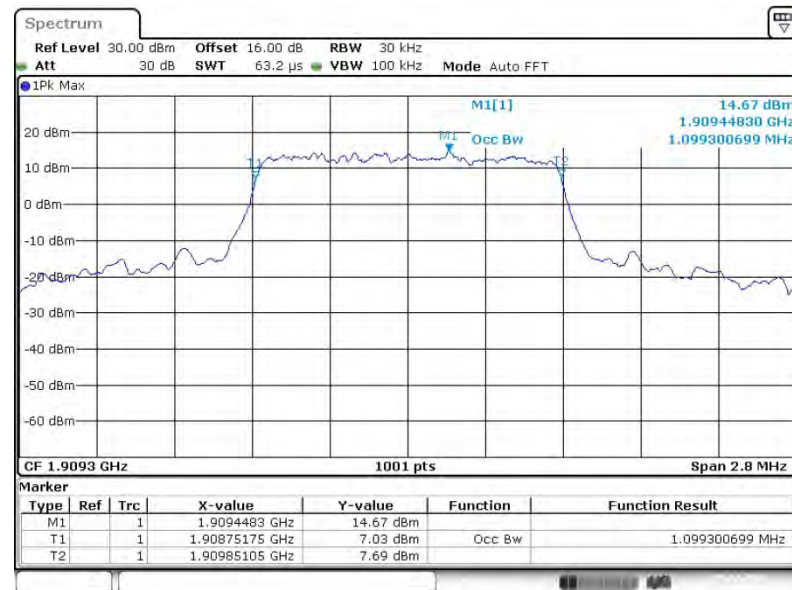
99% Occupied Bandwidth Plot on Channel 18900


Date: 9 DEC 2014 15:36:58

26dB Bandwidth Plot on Channel 18900


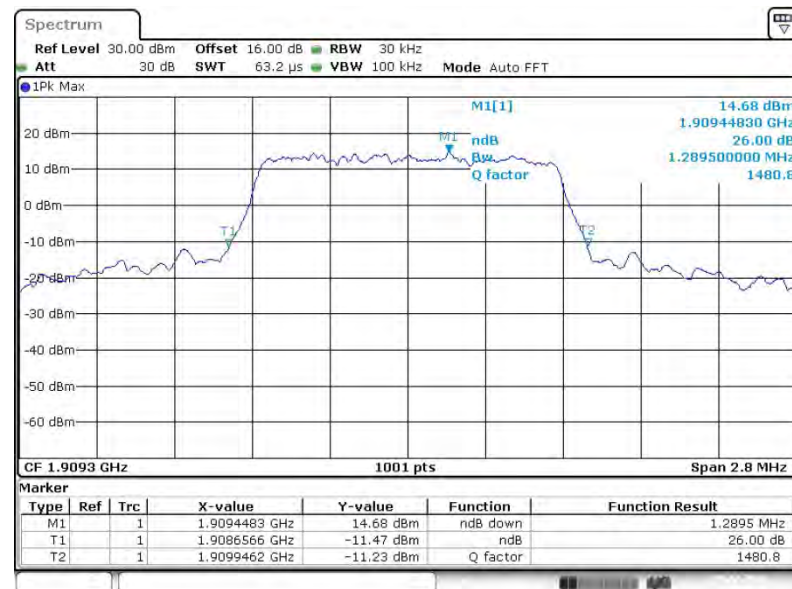
Date: 9 DEC 2014 15:37:23

99% Occupied Bandwidth Plot on Channel 19193



Date: 9 DEC 2014 15:40:01

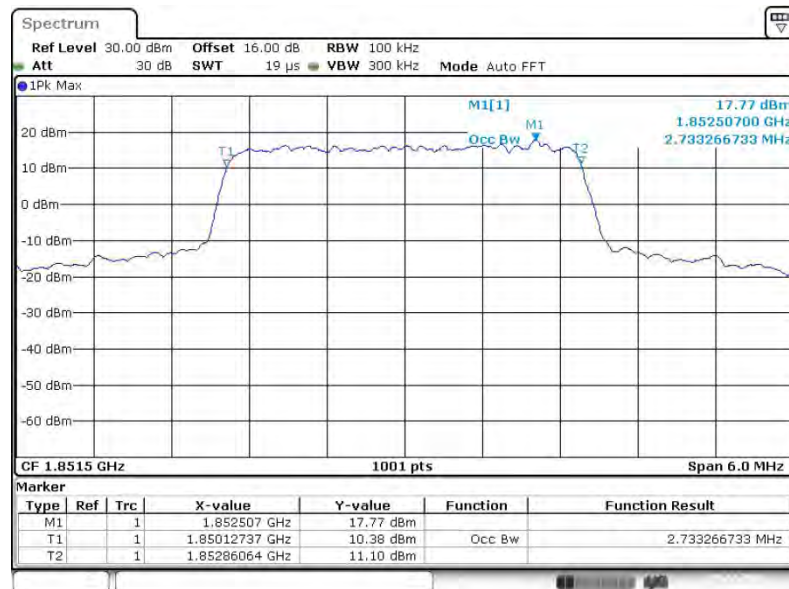
26dB Bandwidth Plot on Channel 19193



Date: 9 DEC 2014 15:40:26

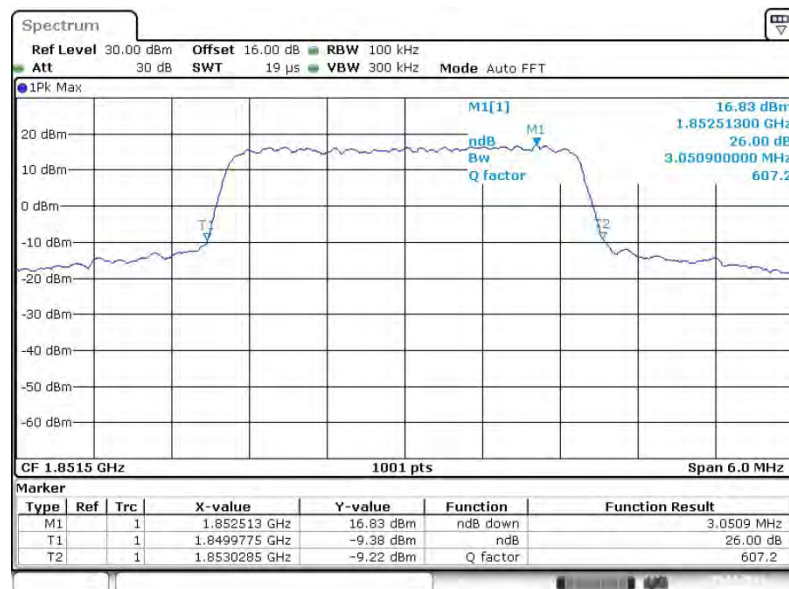
Band :	LTE Band 2	BW / Mod. :	3MHz / QPSK
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99% Occupied Bandwidth Plot on Channel 18615

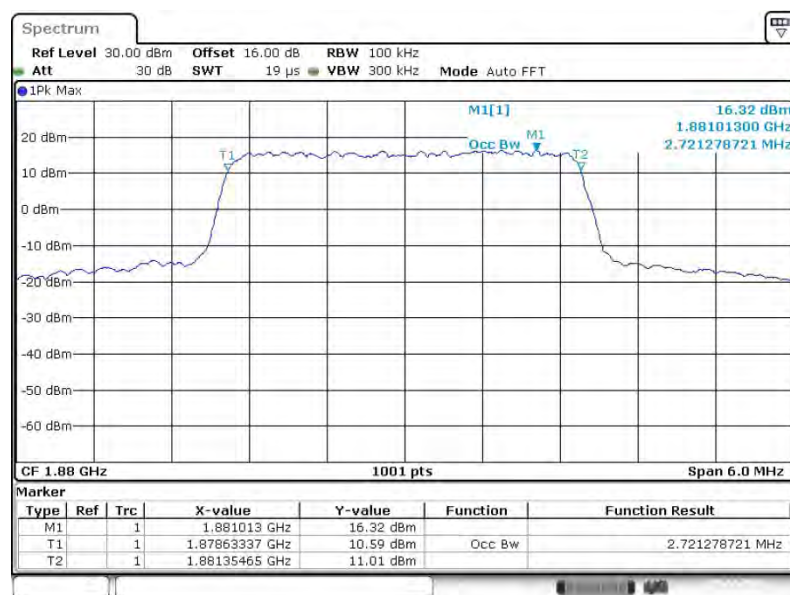


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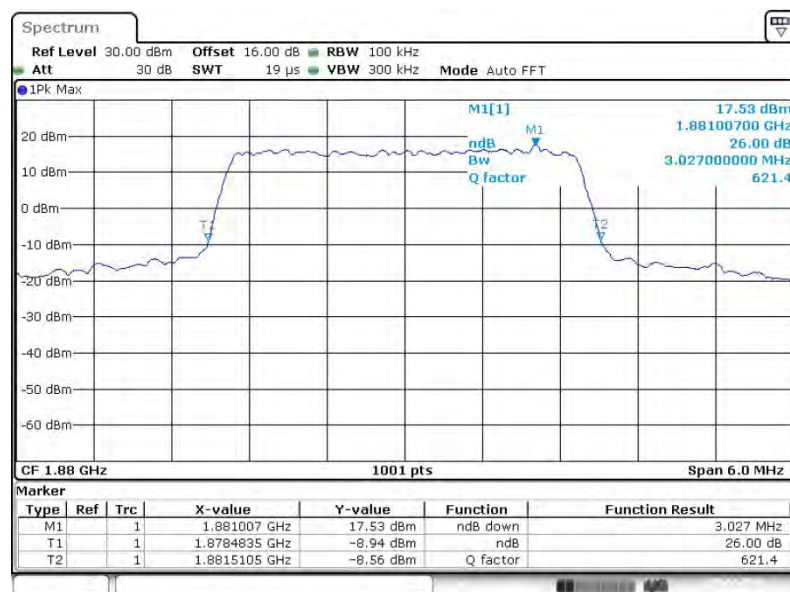
26dB Bandwidth Plot on Channel 18615



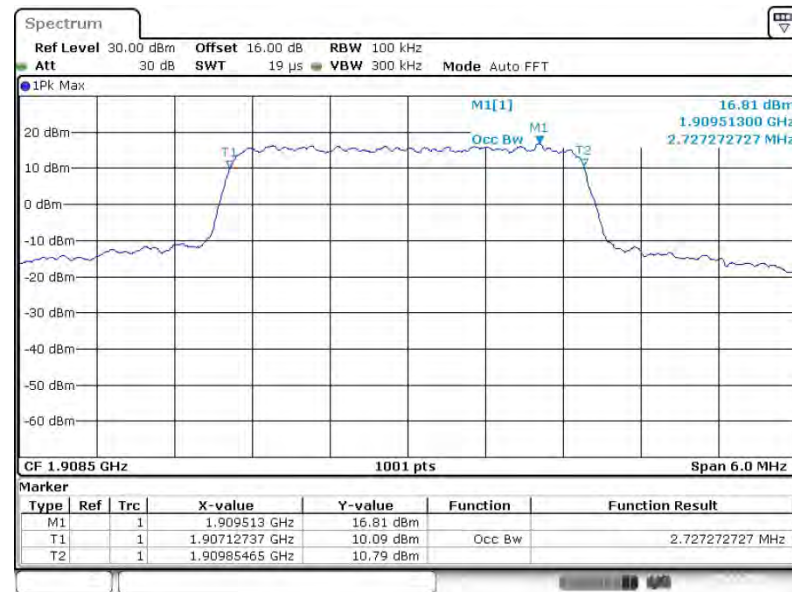
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99% Occupied Bandwidth Plot on Channel 18900


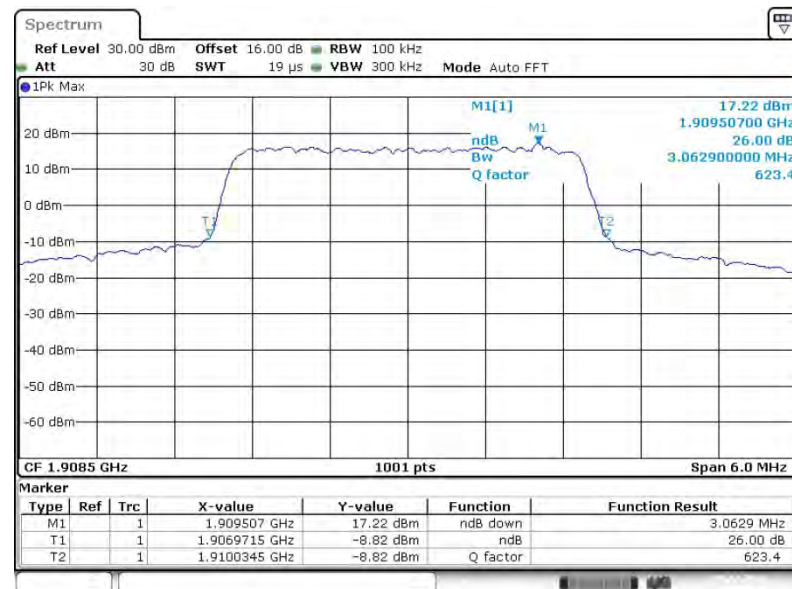
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26dB Bandwidth Plot on Channel 18900


Date: 9 DEC 2014 15:55:25

99% Occupied Bandwidth Plot on Channel 19185


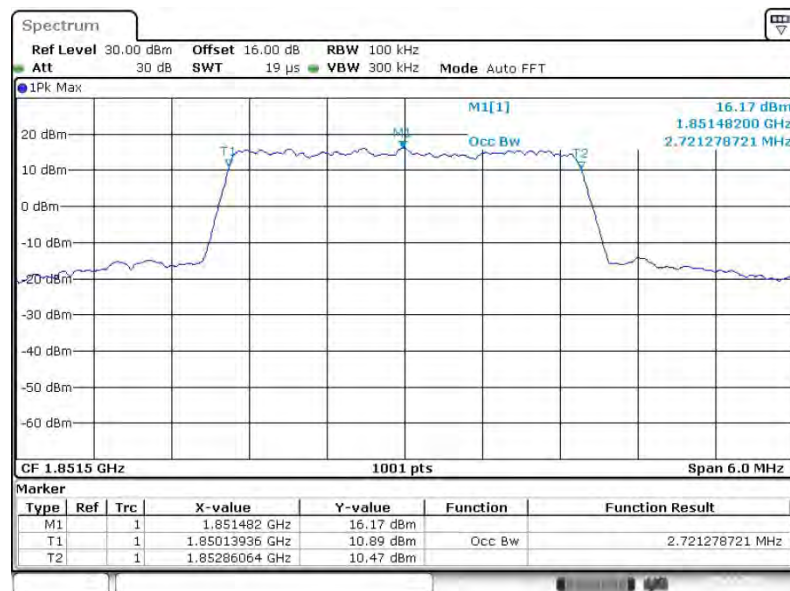
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26dB Bandwidth Plot on Channel 19185


Date: 9 DEC 2014 15:58:28

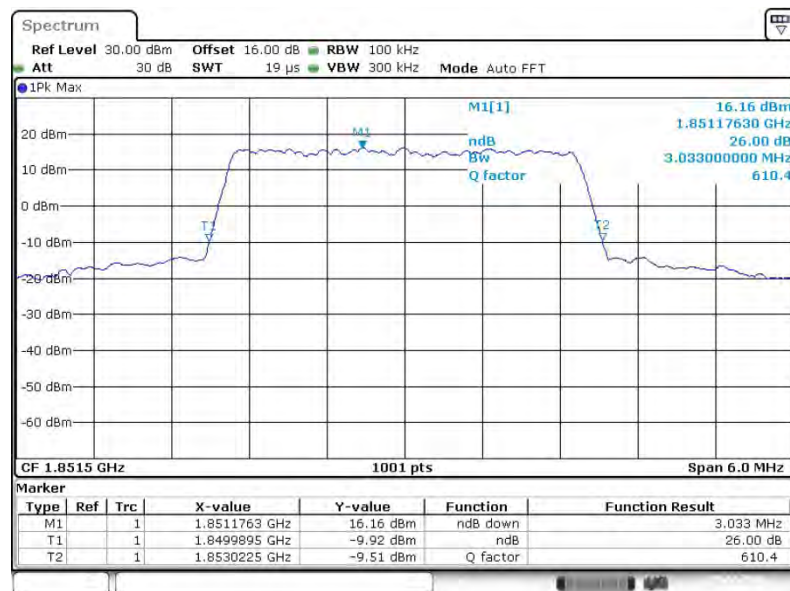
Band :	LTE Band 2	BW / Mod. :	3MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 18615

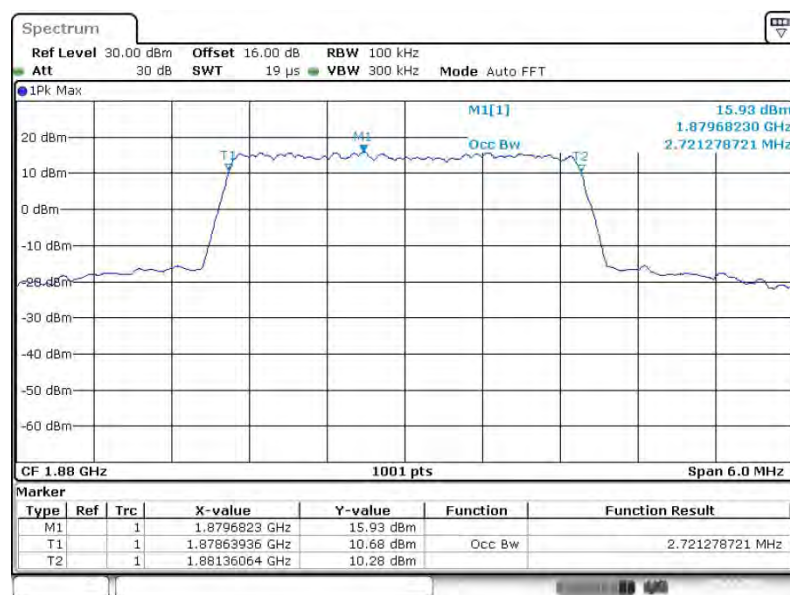


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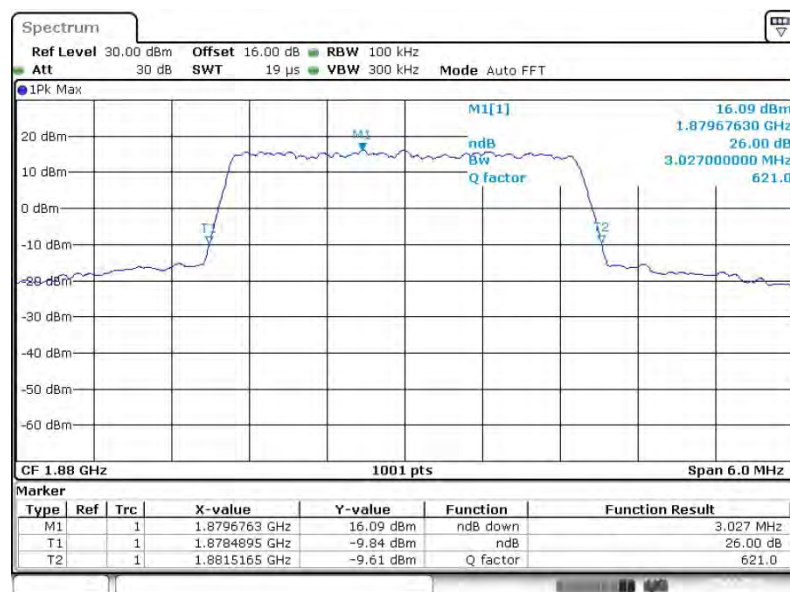
26dB Bandwidth Plot on Channel 18615



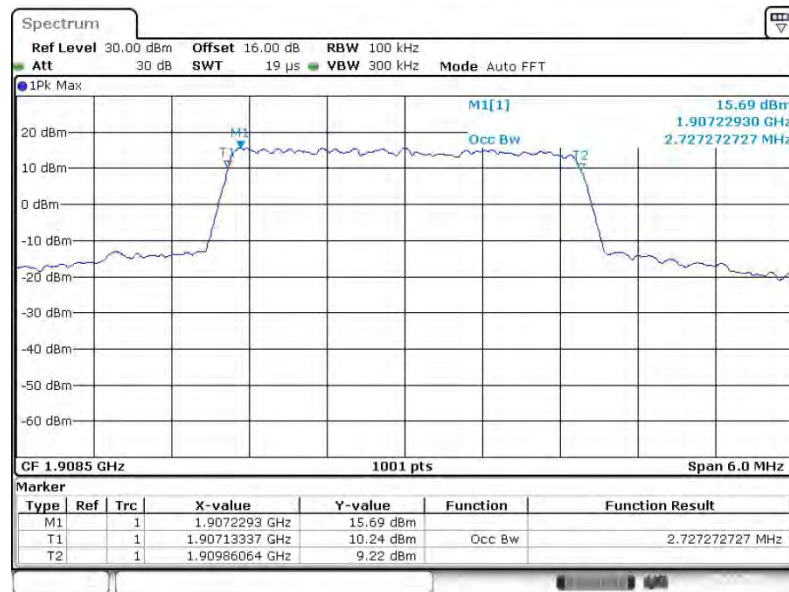
Date: 9 DEC 2014 15:48:02

99% Occupied Bandwidth Plot on Channel 18900


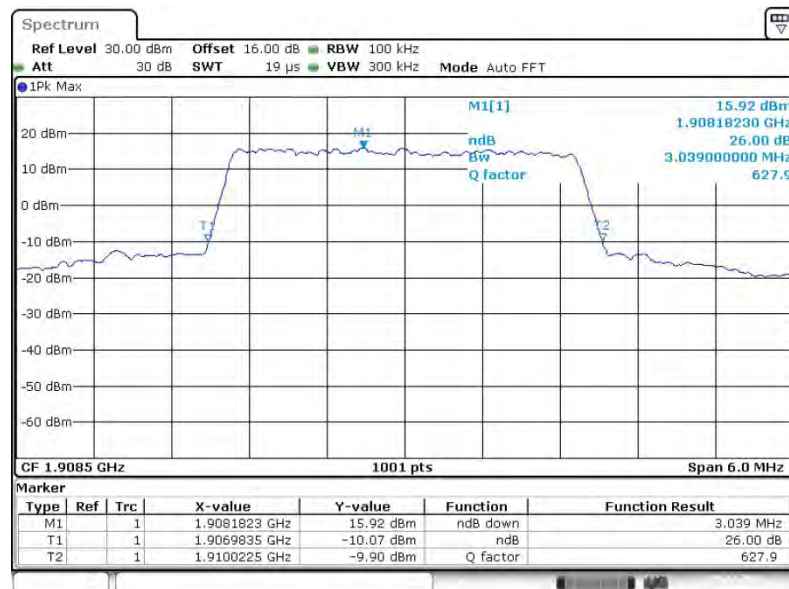
Date: 9 DEC 2014 15:55:12

26dB Bandwidth Plot on Channel 18900


Date: 9 DEC 2014 15:55:37

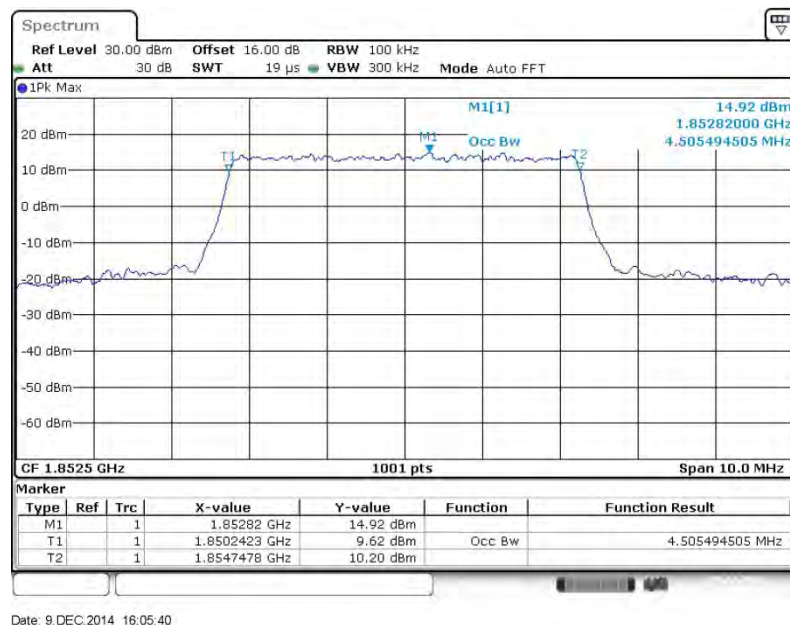
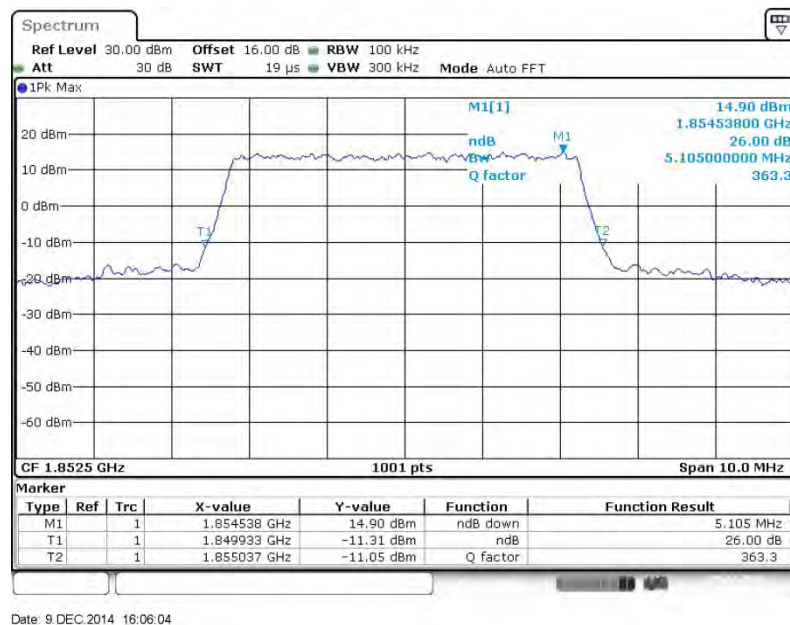
99% Occupied Bandwidth Plot on Channel 19185


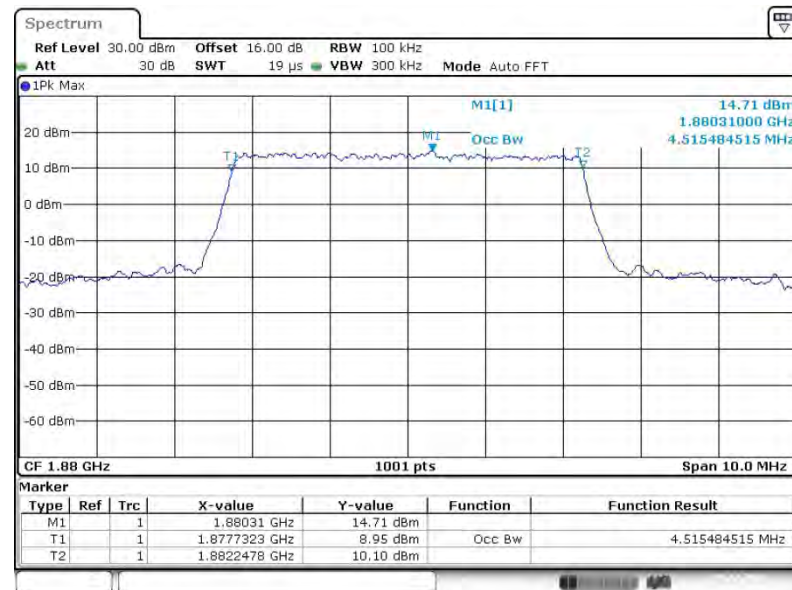
Date: 9 DEC 2014 15:58:15

26dB Bandwidth Plot on Channel 19185


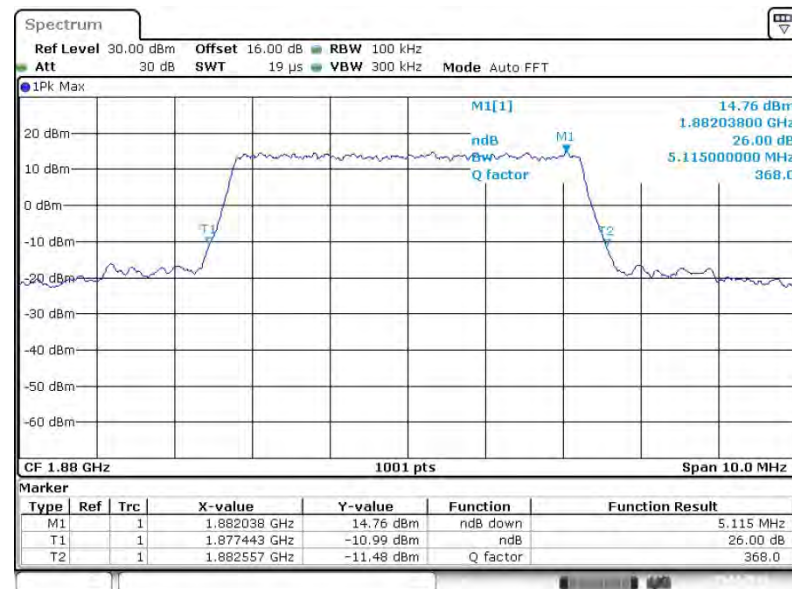
Date: 9 DEC 2014 15:58:40

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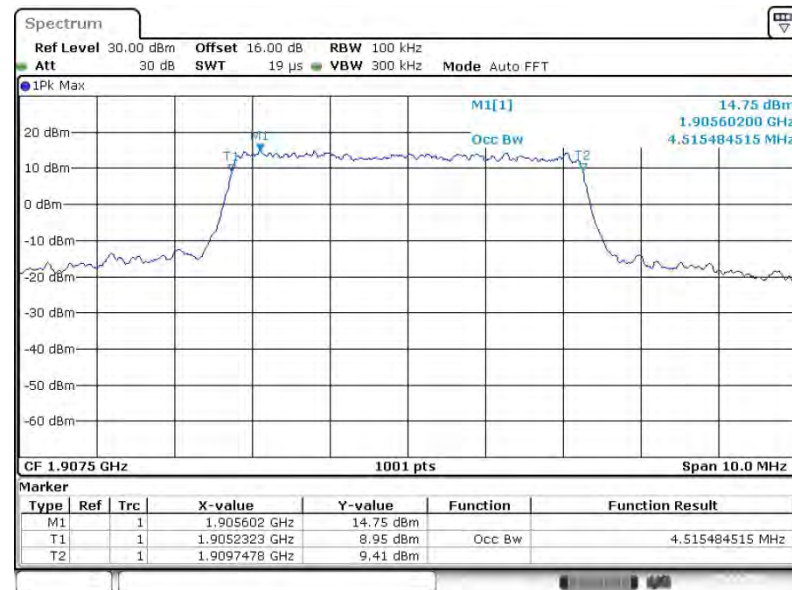
99% Occupied Bandwidth Plot on Channel 18625

26dB Bandwidth Plot on Channel 18625


99% Occupied Bandwidth Plot on Channel 18900


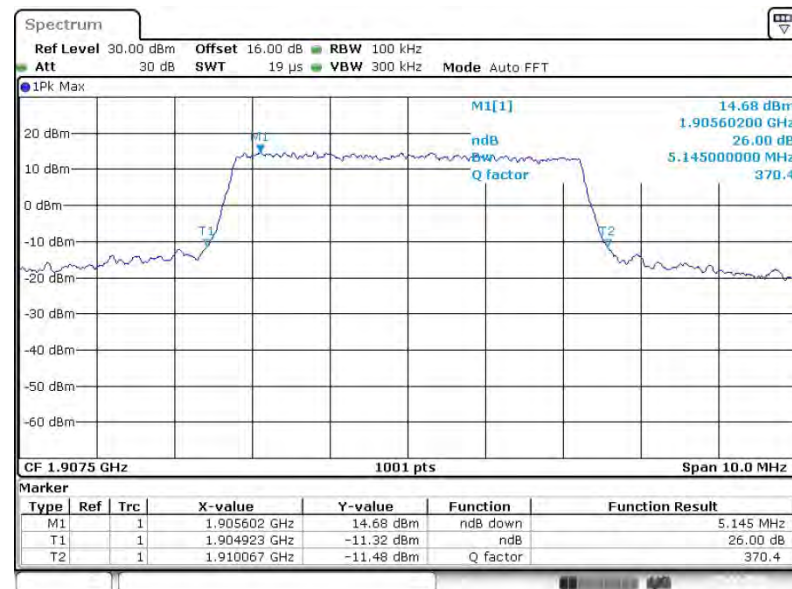
Date: 9 DEC 2014 16:13:16

26dB Bandwidth Plot on Channel 18900


Date: 9 DEC 2014 16:13:39

99% Occupied Bandwidth Plot on Channel 19175


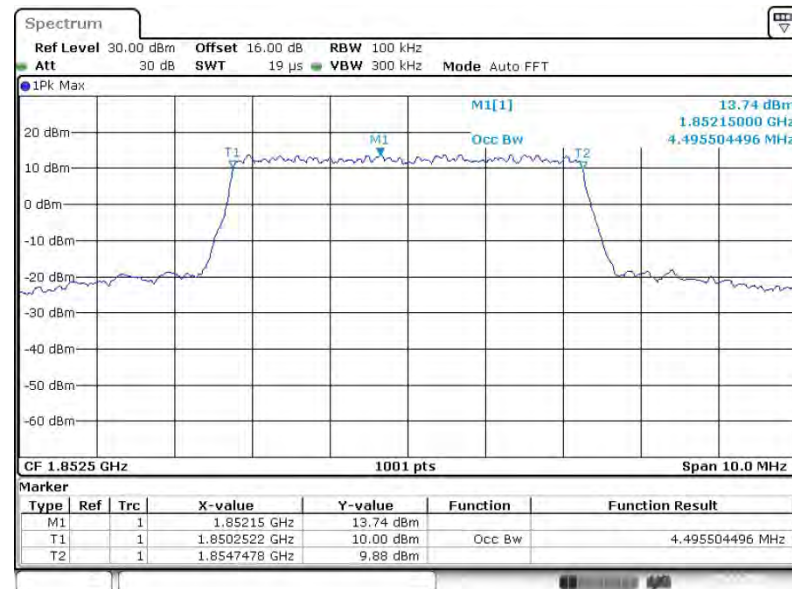
Date: 9 DEC 2014 16:16:19

26dB Bandwidth Plot on Channel 19175


Date: 9 DEC 2014 16:16:42

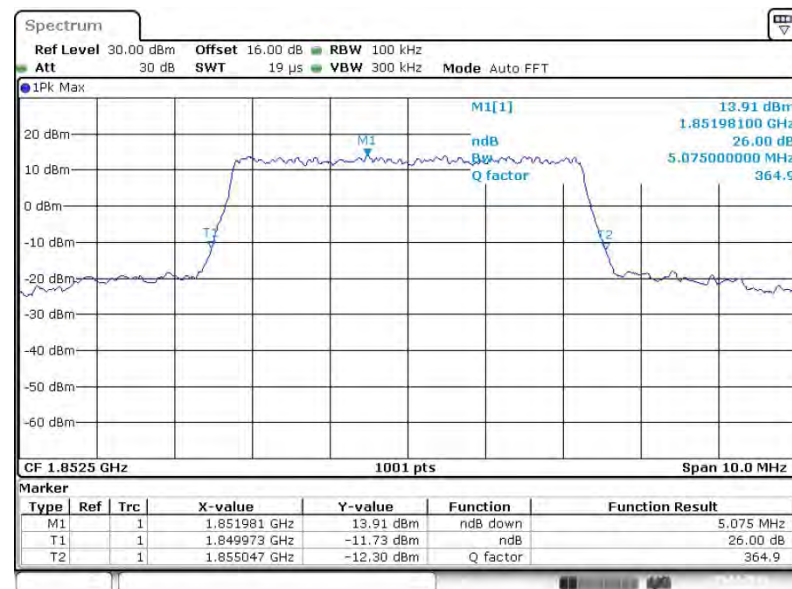
Band :	LTE Band 2	BW / Mod. :	5MHz / 16QAM
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99% Occupied Bandwidth Plot on Channel 18625

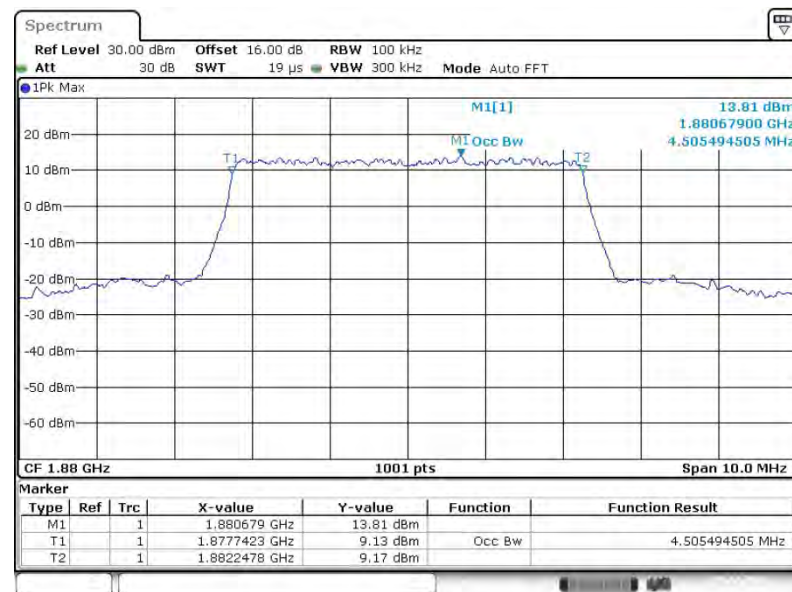


Date: 9 DEC 2014 16:05:51

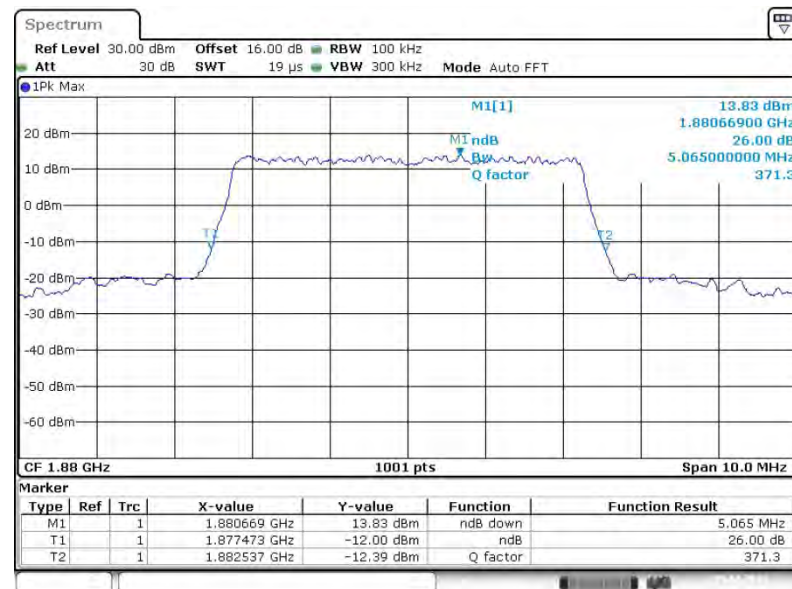
26dB Bandwidth Plot on Channel 18625



Date: 9 DEC 2014 16:06:16

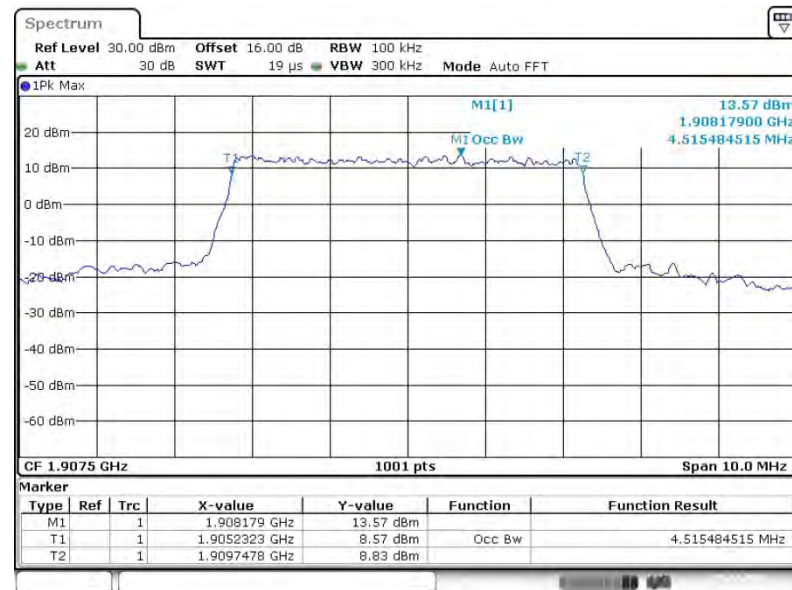
99% Occupied Bandwidth Plot on Channel 18900


Date: 9 DEC 2014 16:13:27

26dB Bandwidth Plot on Channel 18900


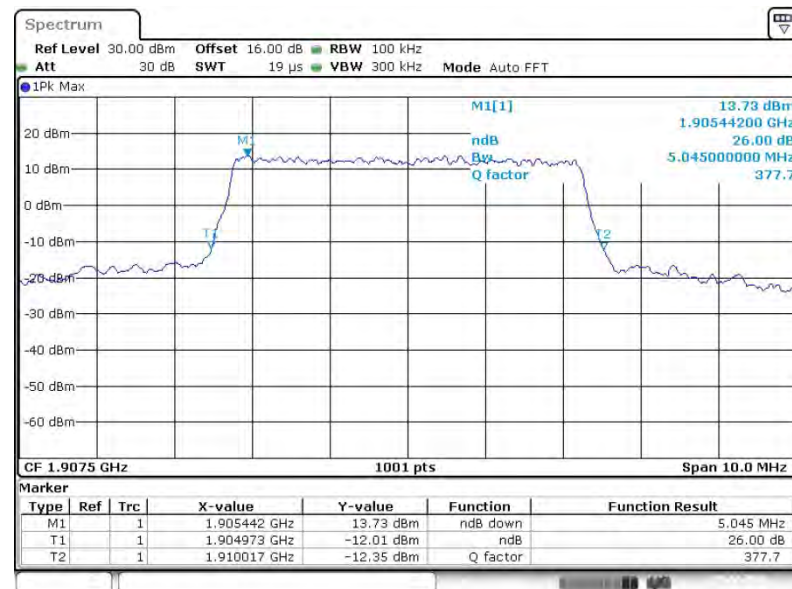
Date: 9 DEC 2014 16:13:52

99% Occupied Bandwidth Plot on Channel 19175



Date: 9 DEC 2014 16:16:30

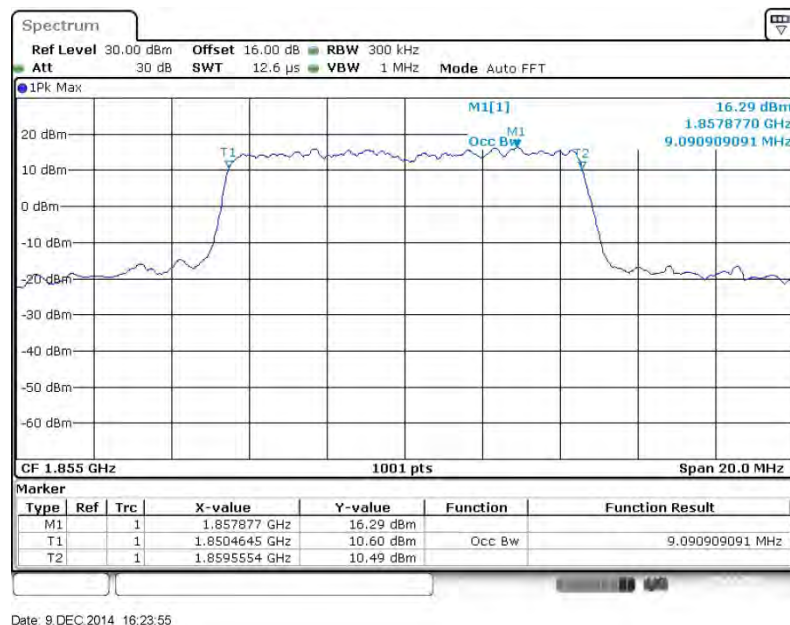
26dB Bandwidth Plot on Channel 19175



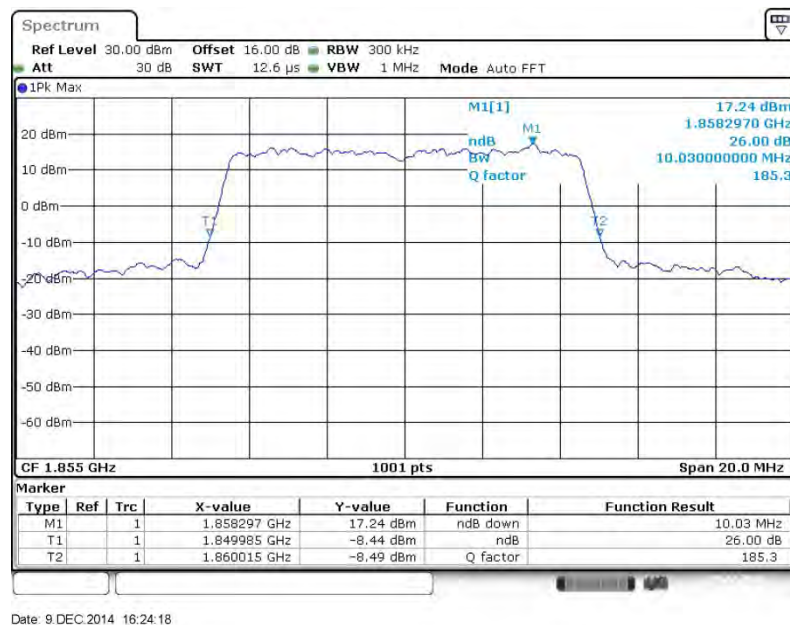
Date: 9 DEC 2014 16:16:55

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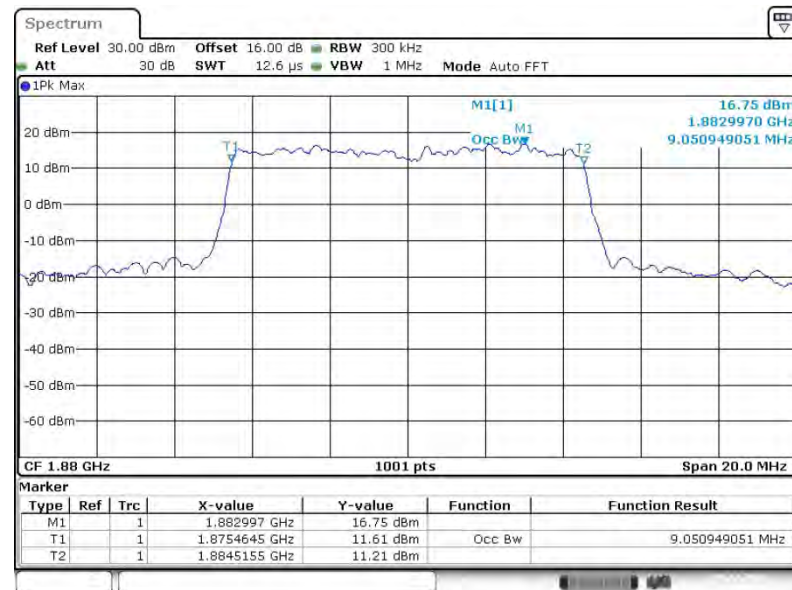
99% Occupied Bandwidth Plot on Channel 18650



26dB Bandwidth Plot on Channel 18650

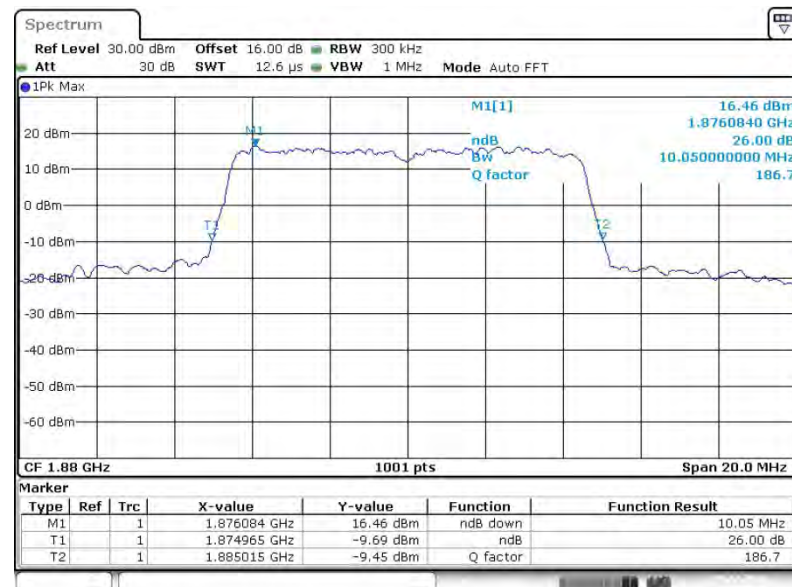


99% Occupied Bandwidth Plot on Channel 18900



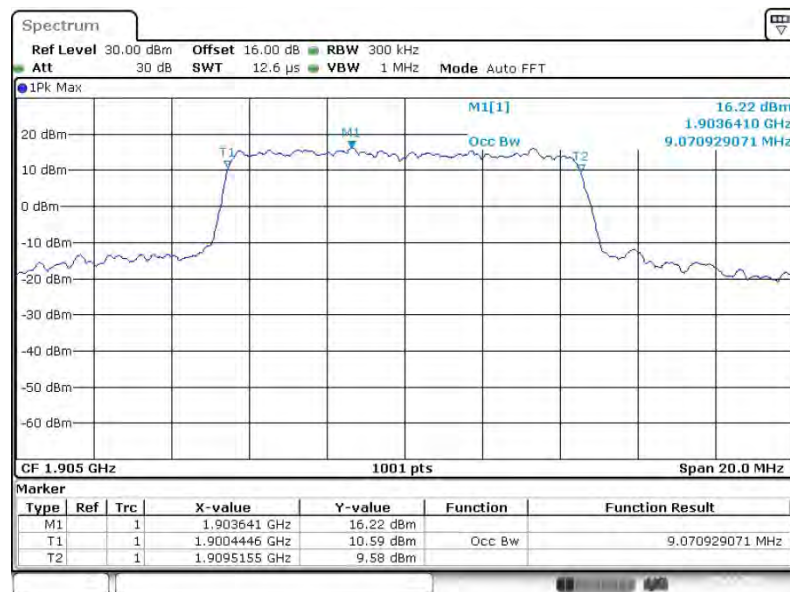
Date: 9 DEC 2014 16:31:30

26dB Bandwidth Plot on Channel 18900



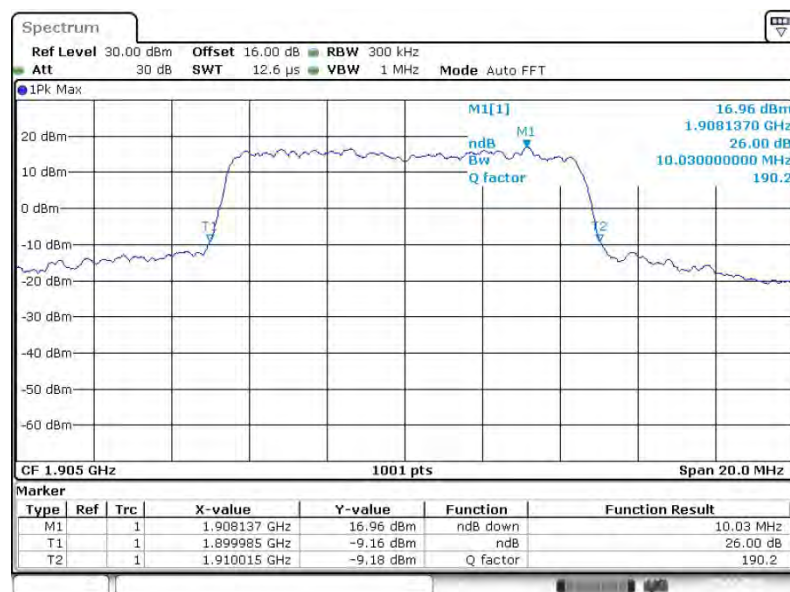
Date: 9 DEC 2014 16:31:53

99% Occupied Bandwidth Plot on Channel 19150



Date: 9 DEC 2014 16:34:33

26dB Bandwidth Plot on Channel 19150



Date: 9 DEC 2014 16:34:56