



FCC RF Test Report

APPLICANT : TCT Mobile Limited
EQUIPMENT : LTE USB Modem/4G AP
BRAND NAME : ALCATEL
onetouch
MODEL NAME : ONE TOUCH Y85000
MARKETING NAME : ALCATEL ONETOUCH LINK Y850
FCC ID : RAD522
STANDARD : 47 CFR Part 2, 22(H), 24(E), 27
CLASSIFICATION : PCS Licensed Transmitter (PCB)

The product was received on Jul. 08, 2014 and testing was completed on Oct. 09, 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.



TABLE OF CONTENTS

REVISION HISTORY.....	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	6
1.1 Applicant.....	6
1.2 Manufacturer.....	6
1.3 Product Feature of Equipment Under Test.....	6
1.4 Product Specification subjective to this standard	7
1.5 Modification of EUT	7
1.6 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator	8
1.7 Testing Location	10
1.8 Applicable Standards.....	10
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	11
2.1 Test Mode.....	11
2.2 Connection Diagram of Test System.....	13
2.3 Support Unit used in test configuration and system	13
2.4 Measurement Results Explanation Example.....	14
3 TEST RESULT	15
3.1 Conducted Output Power Measurement	15
3.2 Peak-to-Average Ratio	27
3.3 Effective Radiated Power and Equivalent Isotropic Radiated Power Measurement.....	44
3.4 Occupied Bandwidth.....	51
3.5 Conducted Band Edge Measurement	184
3.6 Conducted Spurious Emission Measurement	275
3.7 Radiated Spurious Emission Measurement	343
3.8 Frequency Stability Measurement.....	412
4 LIST OF MEASURING EQUIPMENT	417
5 UNCERTAINTY OF EVALUATION	418
APPENDIX A. SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG493052B	Rev. 01	Initial issue of report	Oct. 14, 2014
FG493052B	Rev. 02	Revise the description of LTE Band 7 table title in section 3.3.5.	Oct. 17, 2014

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	§2.1046	Conducted Output Power	Reporting Only	PASS	-
3.2	§24.232(d)	Peak-to-Average Ratio	<13 dB	PASS	-
3.3	§22.913(a)(2)	Effective Radiated Power (Band 5)	ERP < 7 Watt	PASS	-
	§27.50(c)(10)	Effective Radiated Power (Band 17)	ERP < 3 Watt		
	§24.232(c) §27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 2) (Band 7)	EIRP < 2Watt		
	§27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4)	EIRP < 1Watt		
3.4	§2.1049 §22.917(b) §24.238(b) §27.53(h)(3) §27.53(m)(6)	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)	Conducted Band Edge Measurement (Band 2) (Band 4) (Band 5) (Band 17) (Band 7)	< 43+10log10(P[Watt])	PASS	-



Report Section	FCC Rule	Description	Limit	Result	Remark
3.6	§2.1051 §22.917(a) §24.238(a) §27.53(g) §27.53(h)	Conducted Spurious Emission (Band 2) (Band 4) (Band 5) (Band 17)	$< 43 + 10\log_{10}(P[\text{Watts}])$	PASS	-
	§2.1051 §27.53(m)(4)	Conducted Spurious Emission (Band 7)	$< 55 + 10\log_{10}(P[\text{Watts}])$	PASS	-
3.7	§2.1053 §22.917(a) §24.238(a) §27.53(g) §27.53(h)	Radiated Spurious Emission (Band 2) (Band 4) (Band 5) (Band 17)	$< 43 + 10\log_{10}(P[\text{Watts}])$	PASS	Under limit 3.03 dB at 12504.000 MHz
	§2.1053 §27.53(m)(4)	Radiated Spurious Emission (Band 7)	$< 55 + 10\log_{10}(P[\text{Watts}])$	PASS	
3.8	§2.1055 §22.355	Frequency Stability Temperature & Voltage	$< 2.5 \text{ ppm}$	PASS	-
	§2.1055 §24.235 §27.54		within authorized band		



1 General Description

1.1 Applicant

TCT Mobile Limited

5F, C building, No. 232, Liang Jing Road, ZhangJiang High-Tech Park, Pudong Area, Shanghai, P.R. China. 201203

1.2 Manufacturer

TCL COMMUNICATION TECHNOLOGY HOLDINGS LIMITED

70 Huifeng 4rd,ZhongKai Hi-tech Development District ,Huizhou,Guangdong 516006 P.R.China (TCL Mobile Communication Co.,LTD.Huizhou)

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	LTE USB Modem/4G AP
Brand Name	ALCATEL onetouch
Model Name	ONE TOUCH Y850O0
Marketing Name	ALCATEL ONETOUCH LINK Y850
FCC ID	RAD522
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE WLAN 11a/b/g/n HT20/HT40
HW Version	V4.0
SW Version	Y850V_00_01.13_15_20140626
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 : 22.59 dBm LTE Band 4 : 21.26 dBm LTE Band 5 : 22.83 dBm LTE Band 7 : 22.62 dBm LTE Band 17 : 22.77 dBm
Antenna Type	Loop 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	-	0.011 W
Part 22	LTE Band 5	16QAM	1.4 MHz	1M90W7D	-	0.009 W
Part 22	LTE Band 5	QPSK	3 MHz	2M73G7D	-	-
Part 22	LTE Band 5	16QAM	3 MHz	2M72W7D	-	-
Part 22	LTE Band 5	QPSK	5 MHz	4M49G7D	-	-
Part 22	LTE Band 5	16QAM	5 MHz	4M49W7D	-	-
Part 22	LTE Band 5	QPSK	10 MHz	9M09G7D	0.0012 ppm	0.011 W
Part 22	LTE Band 5	16QAM	10 MHz	9M01W7D	-	0.009 W
Part 24	LTE Band 2	QPSK	1.4 MHz	1M11G7D	-	0.030 W
Part 24	LTE Band 2	16QAM	1.4 MHz	1M10W7D	-	0.025 W
Part 24	LTE Band 2	QPSK	3 MHz	2M75G7D	-	-
Part 24	LTE Band 2	16QAM	3 MHz	2M73W7D	-	-
Part 24	LTE Band 2	QPSK	5 MHz	4M55G7D	-	-
Part 24	LTE Band 2	16QAM	5 MHz	4M50W7D	-	-
Part 24	LTE Band 2	QPSK	10 MHz	9M09G7D	0.0176 ppm	-
Part 24	LTE Band 2	16QAM	10 MHz	9M01W7D	-	-
Part 24	LTE Band 2	QPSK	15 MHz	13M5G7D	-	-
Part 24	LTE Band 2	16QAM	15 MHz	13M5W7D	-	-
Part 24	LTE Band 2	QPSK	20 MHz	18M3G7D	-	0.029 W
Part 24	LTE Band 2	16QAM	20 MHz	18M3W7D	-	0.023 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	-	0.059 W
Part 27	LTE Band 4	16QAM	1.4 MHz	1M10W7D	-	0.047 W
Part 27	LTE Band 4	QPSK	3 MHz	2M73G7D	-	-
Part 27	LTE Band 4	16QAM	3 MHz	2M73W7D	-	-
Part 27	LTE Band 4	QPSK	5MHz	4M51G7D	-	-
Part 27	LTE Band 4	16QAM	5MHz	4M50W7D	-	-
Part 27	LTE Band 4	QPSK	10MHz	9M07G7D	0.0029 ppm	-
Part 27	LTE Band 4	16QAM	10MHz	9M01W7D	-	-
Part 27	LTE Band 4	QPSK	15MHz	13M5G7D	-	-
Part 27	LTE Band 4	16QAM	15MHz	13M5W7D	-	-
Part 27	LTE Band 4	QPSK	20MHz	18M4G7D	-	0.058 W
Part 27	LTE Band 4	16QAM	20MHz	18M3W7D	-	0.048 W
Part 27	LTE Band 17	QPSK	5MHz	4M52G7D	-	0.010 W
Part 27	LTE Band 17	16QAM	5MHz	4M51W7D	-	0.009 W
Part 27	LTE Band 17	QPSK	10MHz	9M07G7D	0.0155 ppm	0.010 W
Part 27	LTE Band 17	16QAM	10MHz	9M01W7D	-	0.008 W
Part 27	LTE Band 7	QPSK	5MHz	4M51G7D	-	0.048 W
Part 27	LTE Band 7	16QAM	5MHz	4M50W7D	-	0.039 W
Part 27	LTE Band 7	QPSK	10MHz	9M07G7D	0.0158 ppm	-
Part 27	LTE Band 7	16QAM	10MHz	9M05W7D	-	-
Part 27	LTE Band 7	QPSK	15MHz	13M5G7D	-	-
Part 27	LTE Band 7	16QAM	15MHz	13M5W7D	-	-
Part 27	LTE Band 7	QPSK	20MHz	18M5G7D	-	0.046 W
Part 27	LTE Band 7	16QAM	20MHz	18M4W7D	-	0.037 W

1.7 Testing Location

Sporton 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 (KUNSHAN) INC.
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958
Test Site No.	Sporton Site No. : TH01-KS

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

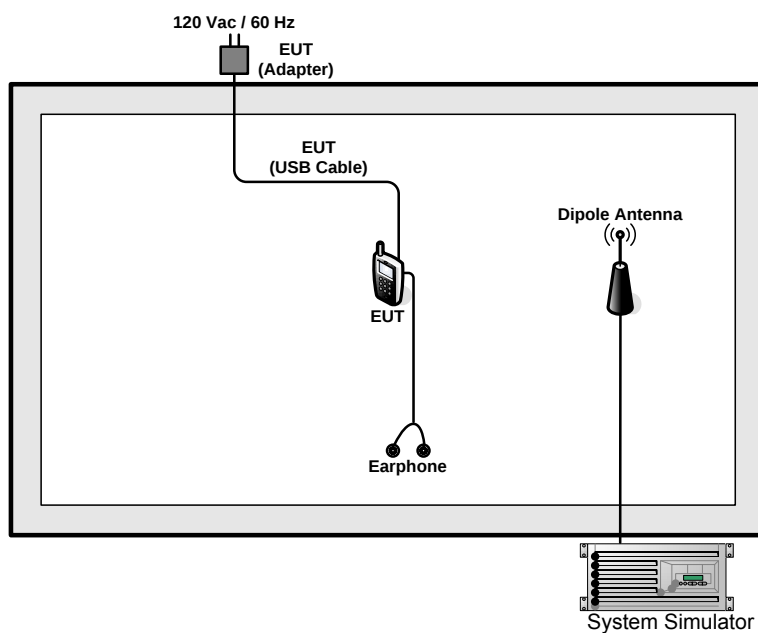
Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission.

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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	5	✓	✓	✓	✓	-	-	✓	✓	✓	✓	✓	✓	✓	✓
	7	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	17	-	-	✓	✓	-	-	✓	✓	✓	✓	✓	✓	✓	✓
Peak-to-Average Ratio	2						✓		✓	✓		✓	✓	✓	✓
	4						✓		✓	✓		✓	✓	✓	✓
	5				✓	-	-		✓	✓		✓	✓	✓	✓
	7	-	-				✓		✓	✓		✓	✓	✓	✓
	17	-	-		✓	-	-		✓	✓		✓	✓	✓	✓
26dB and 99% Bandwidth	2	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	4	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	5	✓	✓	✓	✓	-	-	✓	✓			✓	✓	✓	✓
	7	-	-	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	17	-	-	✓	✓	-	-	✓	✓			✓	✓	✓	✓
Conducted Band Edge	2	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓
	4	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓
	5	✓	✓	✓	✓	-	-	✓	✓	✓		✓	✓		✓
	7	-	-	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓
	17	-	-	✓	✓	-	-	✓	✓	✓		✓	✓		✓



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	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
	5	✓	✓	✓	✓	-	-	✓	✓	✓			✓	✓	✓
	7	-	-	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
	17	-	-	✓	✓	-	-	✓	✓	✓			✓	✓	✓
Frequency Stability	2				✓			✓				✓		✓	
	4				✓			✓				✓		✓	
	5				✓	-	-	✓				✓		✓	
	7	-	-		✓			✓				✓		✓	
	17	-	-		✓	-	-	✓				✓		✓	
E.R.P./ E.I.R.P.	2	✓					✓	✓	✓	✓	✓		✓	✓	✓
	4	✓					✓	✓	✓	✓	✓		✓	✓	✓
	5	✓			✓	-	-	✓	✓	✓			✓	✓	✓
	7	-	-	✓			✓	✓	✓	✓			✓	✓	✓
	17	-	-	✓	✓	-	-	✓	✓	✓			✓	✓	✓
Radiated Spurious Emission	2	✓	✓	✓	✓	✓	✓	✓		✓			✓	✓	✓
	4	✓	✓	✓	✓	✓	✓	✓		✓			✓	✓	✓
	5	✓	✓	✓	✓	-	-	✓		✓			✓	✓	✓
	7	-	-	✓	✓	✓	✓	✓		✓			✓	✓	✓
	17	-	-	✓	✓	-	-	✓		✓			✓	✓	✓
Note	- The mark "✓" means that this configuration is chosen for testing - The mark "-" means that this bandwidth is not supported. - For E.R.P./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



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 :

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

3 Test Result

3.1 Conducted Output Power Measurement

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	22.80	22.44	22.83
10	QPSK	1	24	22.25	22.31	22.52
10	QPSK	1	49	22.20	22.43	22.60
10	QPSK	25	0	21.37	21.10	21.55
10	QPSK	25	12	21.39	21.34	21.69
10	QPSK	25	24	21.32	21.33	21.67
10	QPSK	50	0	21.22	21.16	21.66
10	16QAM	1	0	21.53	20.81	21.77
10	16QAM	1	24	21.10	20.95	21.27
10	16QAM	1	49	21.23	21.28	21.68
10	16QAM	25	0	20.47	20.78	21.23
10	16QAM	25	12	20.18	20.83	21.32
10	16QAM	25	24	20.16	20.79	21.41
10	16QAM	50	0	20.29	20.15	20.72
Channel				20425	20525	20625
Frequency (MHz)				826.5	836.5	846.5
5	QPSK	1	0	22.73	22.32	22.75
5	QPSK	1	12	22.44	22.31	22.71
5	QPSK	1	24	22.16	22.28	22.62
5	QPSK	12	0	21.50	21.16	21.52
5	QPSK	12	6	21.52	21.07	21.62
5	QPSK	12	11	21.30	21.14	22.04
5	QPSK	25	0	21.42	21.09	22.02
5	16QAM	1	0	22.08	21.56	22.30
5	16QAM	1	12	21.90	21.41	22.22
5	16QAM	1	24	21.54	21.49	22.24
5	16QAM	12	0	20.75	20.74	21.33
5	16QAM	12	6	20.49	20.71	21.43
5	16QAM	12	11	20.39	20.75	21.34
5	16QAM	25	0	20.51	20.14	20.93



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	22.71	22.26	22.79
3	QPSK	1	7	22.56	22.17	22.76
3	QPSK	1	14	22.46	22.20	22.69
3	QPSK	8	0	21.96	21.08	21.67
3	QPSK	8	4	21.53	21.29	21.73
3	QPSK	8	7	21.51	21.21	22.06
3	QPSK	15	0	21.54	21.24	22.05
3	16QAM	1	0	22.19	21.34	22.23
3	16QAM	1	7	21.59	21.25	22.21
3	16QAM	1	14	21.85	21.29	22.15
3	16QAM	8	0	20.74	20.57	21.32
3	16QAM	8	4	20.61	20.68	21.29
3	16QAM	8	7	20.39	20.59	21.43
3	16QAM	15	0	20.62	20.12	21.01
Channel				20407	20525	20643
Frequency (MHz)				824.7	836.5	848.3
1.4	QPSK	1	0	22.77	22.28	22.74
1.4	QPSK	1	2	22.76	22.27	22.72
1.4	QPSK	1	5	22.73	22.25	22.71
1.4	QPSK	3	0	22.76	22.26	22.69
1.4	QPSK	3	1	22.71	22.27	22.69
1.4	QPSK	3	2	22.71	22.23	22.72
1.4	QPSK	6	0	21.65	21.22	21.85
1.4	16QAM	1	0	21.97	21.34	21.91
1.4	16QAM	1	2	21.88	21.04	21.83
1.4	16QAM	1	5	21.90	21.11	21.89
1.4	16QAM	3	0	21.88	21.22	21.89
1.4	16QAM	3	1	21.81	21.33	21.75
1.4	16QAM	3	2	21.83	21.30	21.79
1.4	16QAM	6	0	20.82	20.34	20.90

**<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	22.44	22.57	22.43
20	QPSK	1	49	22.42	22.54	22.30
20	QPSK	1	99	22.43	22.48	22.30
20	QPSK	50	0	21.45	21.44	21.25
20	QPSK	50	24	21.62	21.49	21.35
20	QPSK	50	49	21.36	21.32	21.18
20	QPSK	100	0	21.39	21.42	21.22
20	16QAM	1	0	21.16	21.73	21.08
20	16QAM	1	49	21.12	21.67	21.02
20	16QAM	1	99	21.15	21.70	20.97
20	16QAM	50	0	20.34	20.53	20.23
20	16QAM	50	24	20.36	20.57	20.34
20	16QAM	50	49	20.30	20.56	20.15
20	16QAM	100	0	20.38	20.50	20.29
Channel				18675	18900	19125
Frequency (MHz)				1857.5	1880	1902.5
15	QPSK	1	0	22.20	22.53	22.43
15	QPSK	1	37	22.17	22.46	22.35
15	QPSK	1	74	22.13	22.51	22.41
15	QPSK	36	0	21.66	21.58	21.23
15	QPSK	36	18	21.69	21.63	21.16
15	QPSK	36	37	21.60	21.36	21.04
15	QPSK	75	0	21.32	21.44	21.27
15	16QAM	1	0	21.43	21.46	21.41
15	16QAM	1	37	21.34	21.43	21.34
15	16QAM	1	74	21.38	21.27	21.36
15	16QAM	36	0	20.40	20.65	20.37
15	16QAM	36	18	20.41	20.43	20.18
15	16QAM	36	37	20.40	20.40	20.16
15	16QAM	75	0	20.32	20.45	20.19



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	22.44	22.52	22.39
10	QPSK	1	24	22.41	22.48	21.98
10	QPSK	1	49	22.38	22.44	22.35
10	QPSK	25	0	21.58	21.49	21.25
10	QPSK	25	12	21.59	21.44	21.22
10	QPSK	25	24	21.53	21.39	21.19
10	QPSK	50	0	21.53	21.44	21.18
10	16QAM	1	0	21.30	21.68	21.42
10	16QAM	1	24	21.27	21.60	21.24
10	16QAM	1	49	21.05	21.15	21.41
10	16QAM	25	0	20.51	20.47	20.15
10	16QAM	25	12	20.54	20.40	20.10
10	16QAM	25	24	20.47	20.38	20.09
10	16QAM	50	0	20.20	20.48	20.15
Channel				18625	18900	19175
Frequency (MHz)				1852.5	1880	1907.5
5	QPSK	1	0	22.47	22.47	22.27
5	QPSK	1	12	22.42	22.43	22.21
5	QPSK	1	24	22.39	22.40	22.19
5	QPSK	12	0	21.35	21.58	21.27
5	QPSK	12	6	21.59	21.50	21.28
5	QPSK	12	11	21.55	21.41	21.27
5	QPSK	25	0	21.66	21.45	21.22
5	16QAM	1	0	21.49	21.74	21.63
5	16QAM	1	12	21.41	21.70	21.50
5	16QAM	1	24	21.43	21.69	21.61
5	16QAM	12	0	20.32	20.66	20.15
5	16QAM	12	6	20.52	20.65	20.16
5	16QAM	12	11	20.49	20.52	20.05
5	16QAM	25	0	20.43	20.52	20.16



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	22.24	22.56	22.43
3	QPSK	1	7	22.17	22.50	22.28
3	QPSK	1	14	22.19	22.52	22.35
3	QPSK	8	0	21.31	21.58	21.44
3	QPSK	8	4	21.33	21.49	21.26
3	QPSK	8	7	21.31	21.44	21.51
3	QPSK	15	0	21.25	21.50	21.32
3	16QAM	1	0	21.17	21.45	21.53
3	16QAM	1	7	21.08	21.39	21.46
3	16QAM	1	14	20.81	21.41	21.48
3	16QAM	8	0	20.41	20.60	20.20
3	16QAM	8	4	20.42	20.60	20.39
3	16QAM	8	7	20.41	20.47	20.34
3	16QAM	15	0	20.38	20.55	20.43
Channel				18607	18900	19193
Frequency (MHz)				1850.7	1880	1909.3
1.4	QPSK	1	0	22.43	22.59	22.44
1.4	QPSK	1	2	22.30	22.49	22.42
1.4	QPSK	1	5	22.37	22.54	22.42
1.4	QPSK	3	0	22.32	22.53	22.39
1.4	QPSK	3	1	22.35	22.49	22.40
1.4	QPSK	3	2	22.34	22.54	22.40
1.4	QPSK	6	0	21.25	21.55	21.45
1.4	16QAM	1	0	21.43	21.55	21.28
1.4	16QAM	1	2	21.24	21.38	21.41
1.4	16QAM	1	5	21.31	21.32	21.43
1.4	16QAM	3	0	21.41	21.54	21.56
1.4	16QAM	3	1	21.41	21.52	21.58
1.4	16QAM	3	2	21.42	21.53	21.54
1.4	16QAM	6	0	20.29	20.51	20.34



<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	21.26	20.98	20.62
20	QPSK	1	49	21.23	20.80	20.52
20	QPSK	1	99	21.05	20.69	20.39
20	QPSK	50	0	20.16	19.94	19.89
20	QPSK	50	24	20.04	19.89	19.71
20	QPSK	50	49	19.91	19.79	19.50
20	QPSK	100	0	20.04	19.88	19.75
20	16QAM	1	0	20.25	20.07	19.62
20	16QAM	1	49	20.23	19.84	19.60
20	16QAM	1	99	20.06	19.83	19.52
20	16QAM	50	0	19.03	19.19	18.72
20	16QAM	50	24	18.96	18.94	18.72
20	16QAM	50	49	18.81	18.77	18.50
20	16QAM	100	0	18.99	18.84	18.88
Channel				20025	20175	20325
Frequency (MHz)				1717.5	1732.5	1747.5
15	QPSK	1	0	21.00	21.03	20.93
15	QPSK	1	37	21.05	20.86	20.76
15	QPSK	1	74	21.14	20.76	20.39
15	QPSK	36	0	20.04	20.04	19.60
15	QPSK	36	18	20.10	19.83	19.78
15	QPSK	36	37	20.04	19.78	19.59
15	QPSK	75	0	19.91	19.83	19.71
15	16QAM	1	0	20.14	20.19	20.12
15	16QAM	1	37	19.99	19.96	19.98
15	16QAM	1	74	20.22	19.98	19.67
15	16QAM	36	0	19.08	19.04	18.69
15	16QAM	36	18	19.01	19.10	18.73
15	16QAM	36	37	19.12	18.99	18.55
15	16QAM	75	0	19.21	18.92	18.73



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	21.01	20.93	20.53
10	QPSK	1	24	21.15	20.78	20.45
10	QPSK	1	49	21.01	20.80	20.61
10	QPSK	25	0	20.19	19.98	19.66
10	QPSK	25	12	20.07	19.91	19.47
10	QPSK	25	24	19.93	19.82	19.46
10	QPSK	50	0	19.98	19.89	19.47
10	16QAM	1	0	20.11	19.96	19.56
10	16QAM	1	24	20.04	19.87	19.44
10	16QAM	1	49	20.23	19.73	19.89
10	16QAM	25	0	19.08	18.86	18.50
10	16QAM	25	12	18.96	18.87	18.47
10	16QAM	25	24	19.00	18.72	18.38
10	16QAM	50	0	19.15	18.90	18.51
Channel				19975	20175	20375
Frequency (MHz)				1712.5	1732.5	1752.5
5	QPSK	1	0	20.88	20.91	20.56
5	QPSK	1	12	21.14	20.80	20.45
5	QPSK	1	24	20.95	20.80	20.70
5	QPSK	12	0	20.01	19.93	19.59
5	QPSK	12	6	20.06	19.88	19.49
5	QPSK	12	11	20.07	19.78	19.51
5	QPSK	25	0	19.96	19.94	19.42
5	16QAM	1	0	20.13	20.26	19.78
5	16QAM	1	12	20.39	19.92	19.93
5	16QAM	1	24	20.41	20.18	19.90
5	16QAM	12	0	18.94	18.93	18.55
5	16QAM	12	6	19.00	18.89	18.69
5	16QAM	12	11	19.15	18.80	18.39
5	16QAM	25	0	19.07	18.95	18.42



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	20.92	20.89	20.44
3	QPSK	1	7	21.03	20.74	20.54
3	QPSK	1	14	21.19	20.79	20.68
3	QPSK	8	0	20.08	19.96	19.60
3	QPSK	8	4	20.08	19.98	19.64
3	QPSK	8	7	20.06	19.79	19.63
3	QPSK	15	0	20.02	19.93	19.61
3	16QAM	1	0	19.82	19.62	19.32
3	16QAM	1	7	19.77	19.58	19.56
3	16QAM	1	14	19.76	19.56	19.61
3	16QAM	8	0	19.07	18.91	18.52
3	16QAM	8	4	18.96	18.86	18.84
3	16QAM	8	7	19.04	18.84	18.52
3	16QAM	15	0	19.16	18.98	18.51
Channel				19957	20175	20393
Frequency (MHz)				1710.7	1732.5	1754.3
1.4	QPSK	1	0	20.96	20.91	20.84
1.4	QPSK	1	2	21.02	20.93	20.66
1.4	QPSK	1	5	21.07	20.93	20.81
1.4	QPSK	3	0	20.93	20.97	20.41
1.4	QPSK	3	1	20.95	20.92	20.60
1.4	QPSK	3	2	20.95	20.90	20.60
1.4	QPSK	6	0	19.99	20.05	19.57
1.4	16QAM	1	0	20.11	20.16	19.64
1.4	16QAM	1	2	20.13	20.08	19.71
1.4	16QAM	1	5	20.03	19.86	19.97
1.4	16QAM	3	0	19.99	20.12	19.60
1.4	16QAM	3	1	19.98	20.11	19.75
1.4	16QAM	3	2	19.98	20.01	19.74
1.4	16QAM	6	0	18.99	19.13	18.76



<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	22.66	22.77	22.59
10	QPSK	1	24	22.49	22.72	22.47
10	QPSK	1	49	22.59	22.55	22.44
10	QPSK	25	0	21.62	21.65	21.54
10	QPSK	25	12	21.52	21.57	21.52
10	QPSK	25	24	21.46	21.53	21.53
10	QPSK	50	0	21.51	21.42	21.55
10	16QAM	1	0	21.62	21.66	21.47
10	16QAM	1	24	21.55	21.49	21.42
10	16QAM	1	49	21.39	21.61	21.40
10	16QAM	25	0	20.42	20.66	20.56
10	16QAM	25	12	20.47	20.67	20.51
10	16QAM	25	24	20.41	20.52	20.72
10	16QAM	50	0	20.53	20.62	20.59
Channel				23755	23790	23825
Frequency (MHz)				706.5	710	713.5
5	QPSK	1	0	22.67	22.75	22.68
5	QPSK	1	12	22.64	22.50	22.55
5	QPSK	1	24	22.64	22.71	22.62
5	QPSK	12	0	21.57	21.67	21.61
5	QPSK	12	6	21.69	21.51	21.48
5	QPSK	12	11	21.66	21.61	21.63
5	QPSK	25	0	21.65	21.57	21.53
5	16QAM	1	0	21.91	21.81	21.84
5	16QAM	1	12	21.89	21.77	21.77
5	16QAM	1	24	21.72	21.80	21.79
5	16QAM	12	0	20.73	20.59	20.62
5	16QAM	12	6	20.74	20.61	20.60
5	16QAM	12	11	20.81	20.51	20.65
5	16QAM	25	0	20.64	20.49	20.47

**<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	21.94	22.26	21.93
20	QPSK	1	49	22.07	22.35	22.09
20	QPSK	1	99	22.26	22.62	22.11
20	QPSK	50	0	21.06	21.28	21.16
20	QPSK	50	24	21.22	21.21	21.10
20	QPSK	50	49	21.25	21.31	21.17
20	QPSK	100	0	21.24	21.26	21.15
20	16QAM	1	0	20.98	21.32	21.22
20	16QAM	1	49	21.23	21.31	21.23
20	16QAM	1	99	21.48	21.58	21.25
20	16QAM	50	0	20.04	20.43	20.30
20	16QAM	50	24	20.17	20.35	20.25
20	16QAM	50	49	20.30	20.20	20.29
20	16QAM	100	0	20.26	20.31	20.27
Channel				20825	21100	21375
Frequency (MHz)				2507.5	2535.0	2562.5
15	QPSK	1	0	21.92	22.22	22.16
15	QPSK	1	37	22.08	22.31	22.06
15	QPSK	1	74	22.18	22.42	22.30
15	QPSK	36	0	21.15	21.31	21.05
15	QPSK	36	18	21.13	21.28	21.07
15	QPSK	36	37	21.16	21.27	21.12
15	QPSK	75	0	21.08	21.25	21.05
15	16QAM	1	0	21.04	21.41	21.13
15	16QAM	1	37	21.19	21.42	21.41
15	16QAM	1	74	21.36	21.43	21.44
15	16QAM	36	0	20.06	20.33	20.27
15	16QAM	36	18	20.11	20.39	20.28
15	16QAM	36	37	20.08	20.14	20.18
15	16QAM	75	0	19.96	20.27	20.12



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	21.91	22.25	22.00
10	QPSK	1	24	22.01	22.22	22.10
10	QPSK	1	49	22.08	22.29	22.20
10	QPSK	25	0	21.03	21.30	21.06
10	QPSK	25	12	21.03	21.24	21.08
10	QPSK	25	24	20.97	21.26	21.07
10	QPSK	50	0	20.92	21.28	21.01
10	16QAM	1	0	20.79	21.07	20.93
10	16QAM	1	24	20.95	21.11	20.99
10	16QAM	1	49	20.96	21.19	21.00
10	16QAM	25	0	19.98	20.30	20.13
10	16QAM	25	12	20.09	20.25	20.01
10	16QAM	25	24	19.98	20.34	20.14
10	16QAM	50	0	19.85	20.25	20.05
Channel				20775	21100	21425
Frequency (MHz)				2502.5	2535.0	2567.5
5	QPSK	1	0	21.95	22.22	22.08
5	QPSK	1	12	21.92	22.27	22.06
5	QPSK	1	24	22.08	22.33	22.21
5	QPSK	12	0	20.97	21.36	21.18
5	QPSK	12	6	21.00	21.33	21.08
5	QPSK	12	11	21.01	21.32	21.09
5	QPSK	25	0	20.94	21.24	21.14
5	16QAM	1	0	21.11	21.44	21.41
5	16QAM	1	12	21.26	21.46	21.36
5	16QAM	1	24	21.31	21.66	21.42
5	16QAM	12	0	19.99	20.37	20.27
5	16QAM	12	6	20.06	20.33	20.17
5	16QAM	12	11	20.13	20.25	20.30
5	16QAM	25	0	20.09	20.26	20.21

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.

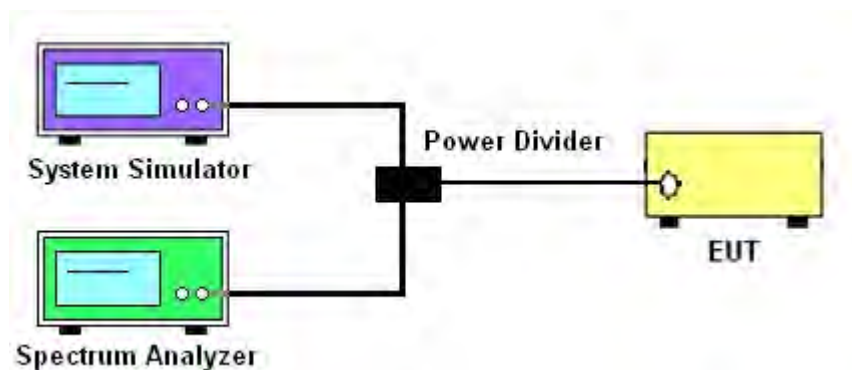
3.2.2 Measuring Instruments

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	6.20	5.28	5.65
10	16QAM	50	0	5.68	5.42	5.33

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	5.83	6.00	6.23
20	16QAM	100	0	5.42	5.45	5.59

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	5.04	4.93	5.62
20	16QAM	100	0	5.16	5.33	5.54

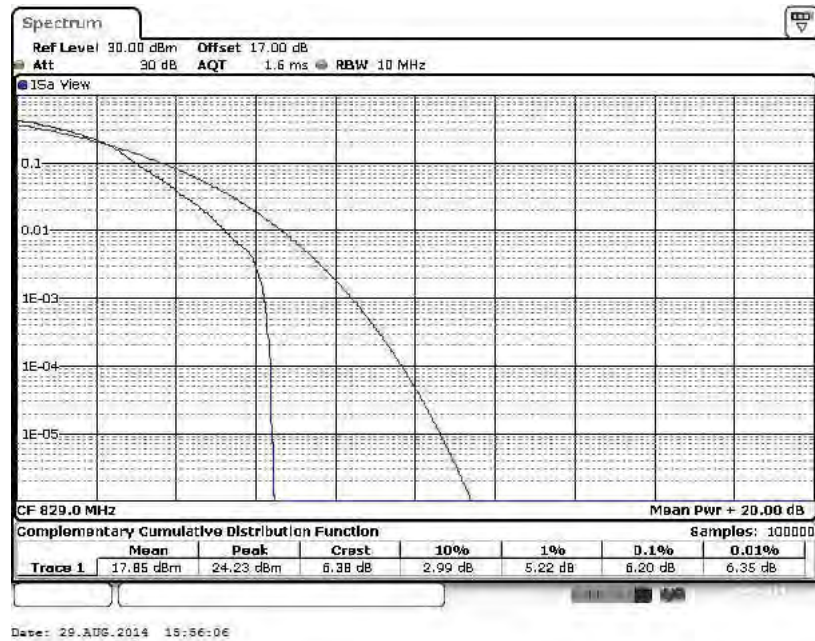
LTE Band 17						
BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				23780	23790	23800
Frequency (MHz)				709	710	711
10	16QAM	1	0	5.88	6.26	5.51
10	16QAM	50	0	6.38	6.23	6.14

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	6.03	6.20	6.64
20	16QAM	100	0	6.09	6.03	5.94

3.2.6 Peak to Average Power Ratio

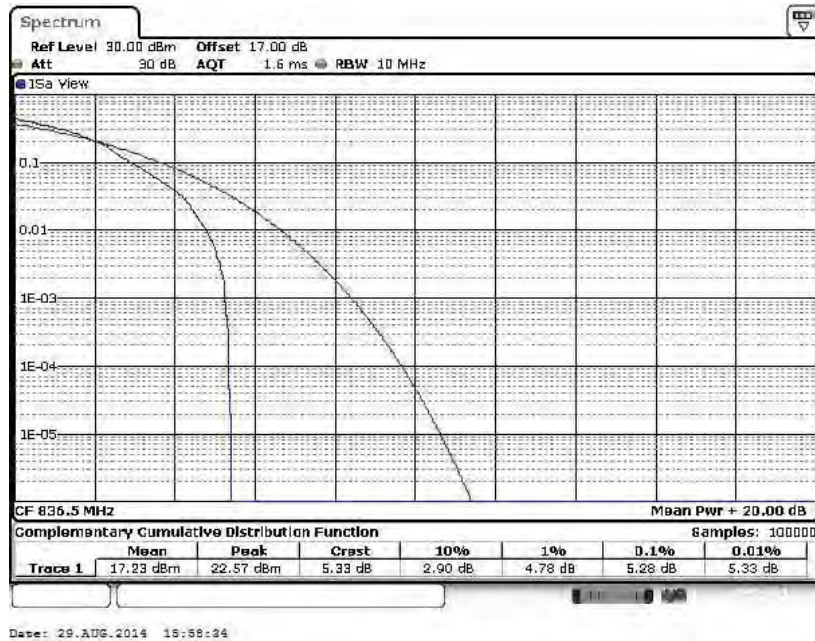
Peak-to-Average Ratio on LTE Band 5

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



Peak-to-Average Ratio on LTE Band 5

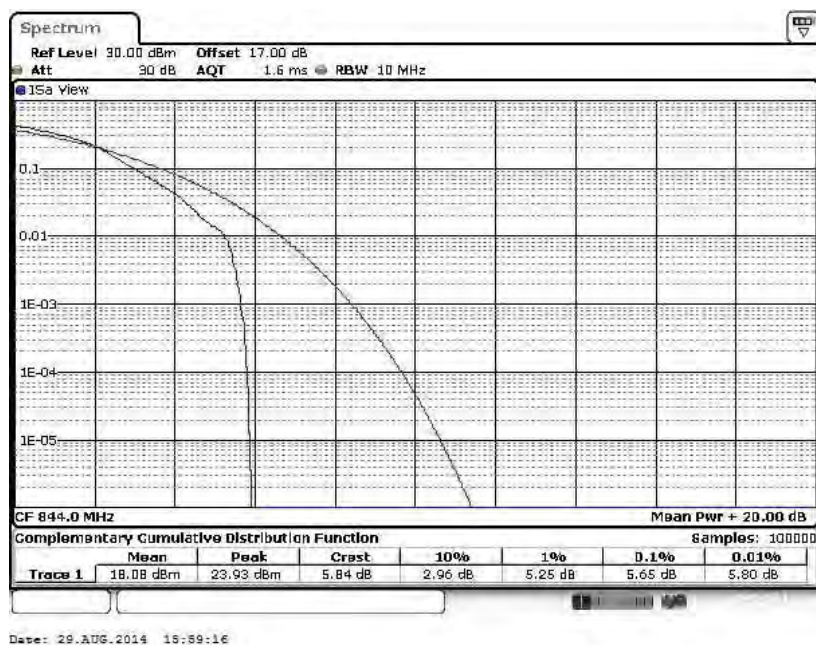
10MHz / 16QAM in Ch. 20525 (1RB Size)





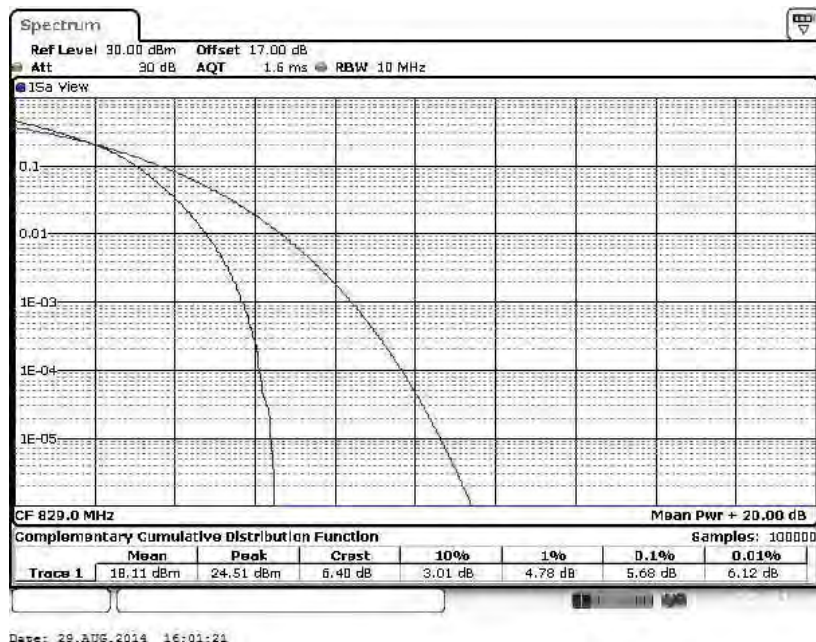
Peak-to-Average Ratio on LTE Band 5

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

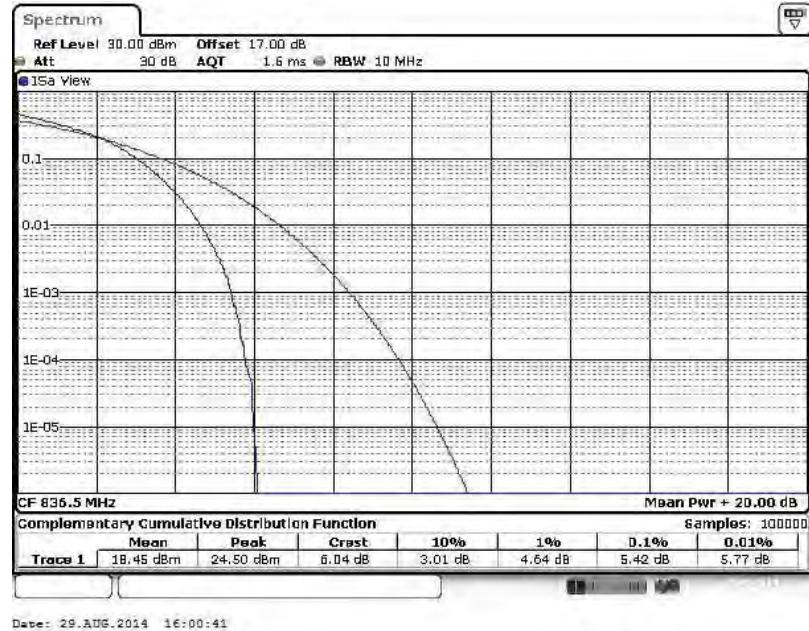


Peak-to-Average Ratio on LTE Band 5

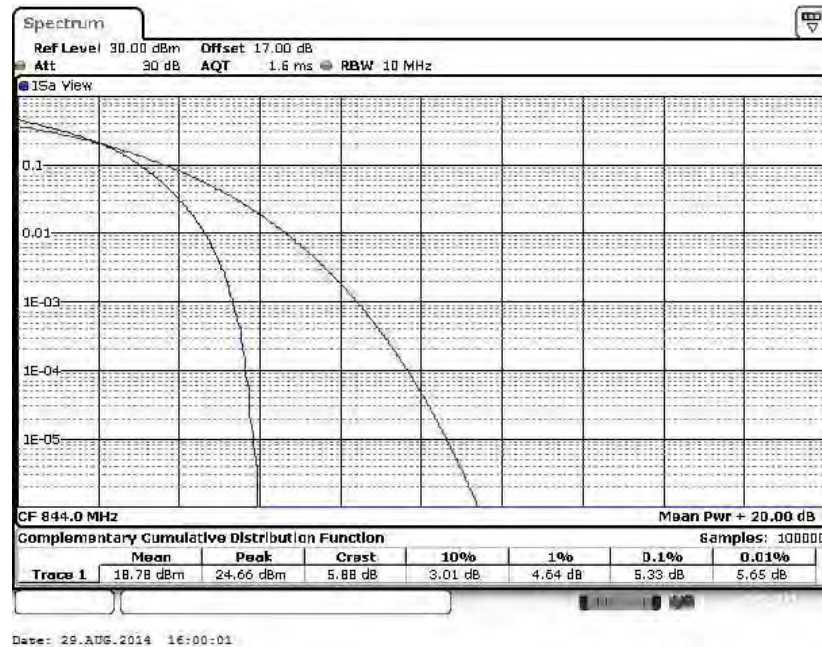
10MHz / 16QAM in Ch. 20450 (50RB Size)



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

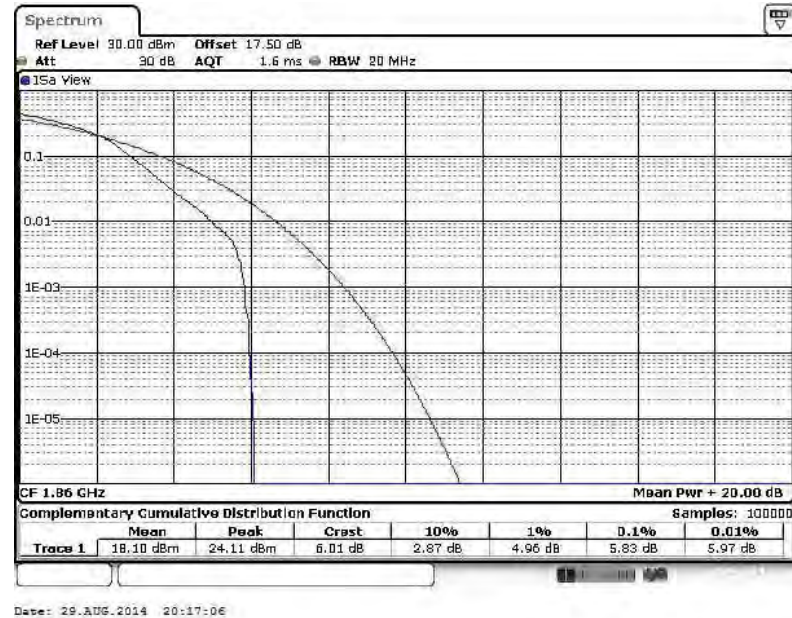


Peak-to-Average Ratio on LTE Band 5
10MHz / 16QAM in Ch. 20600 (50RB Size)

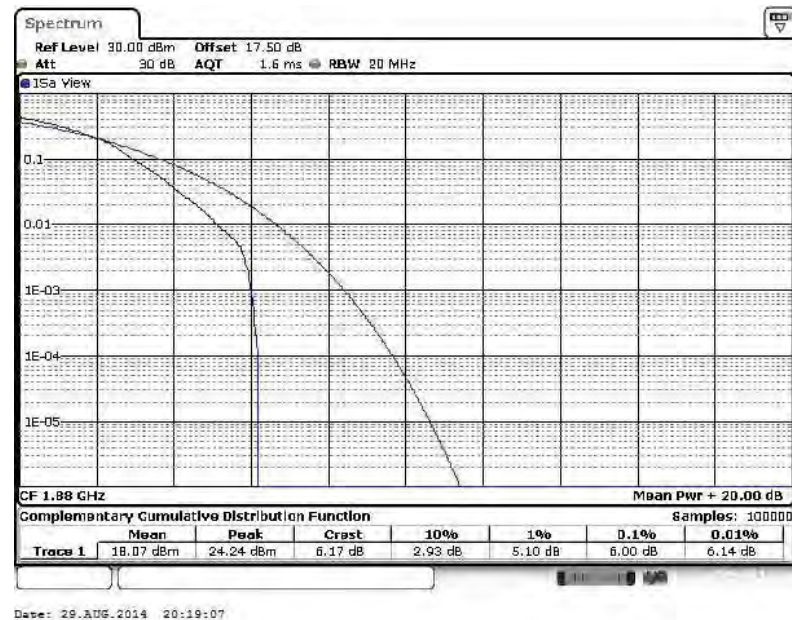




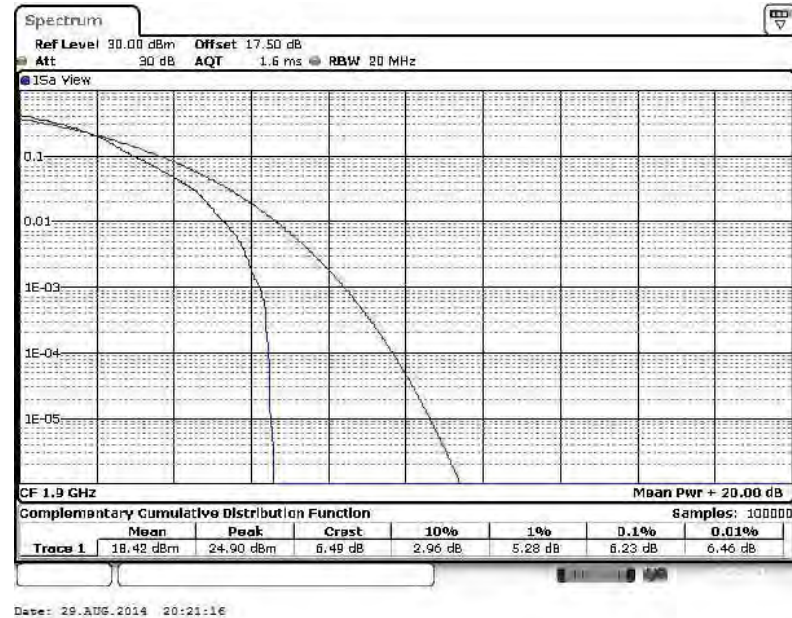
Peak-to-Average Ratio on LTE Band 2
20MHz / 16QAM in Ch. 18700 (1RB Size)



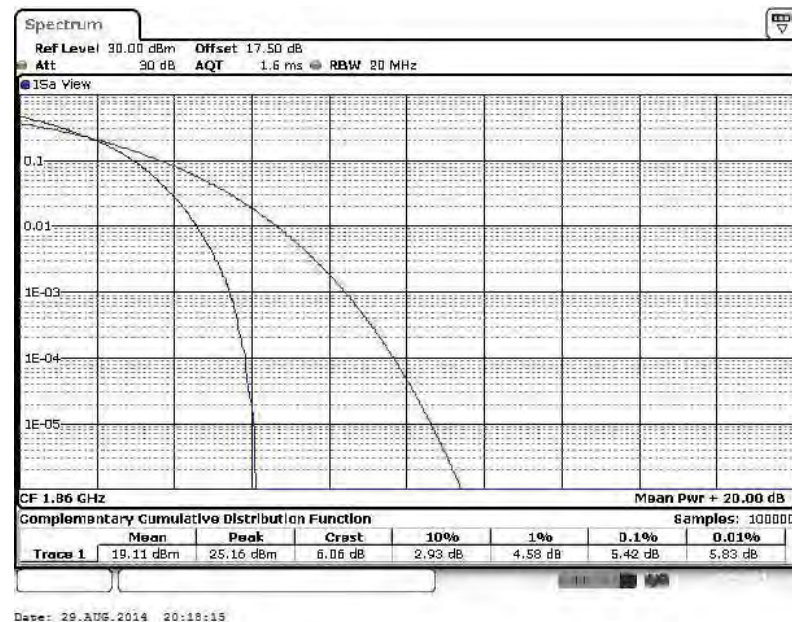
Peak-to-Average Ratio on LTE Band 2
20MHz / 16QAM in Ch. 18900 (1RB Size)



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

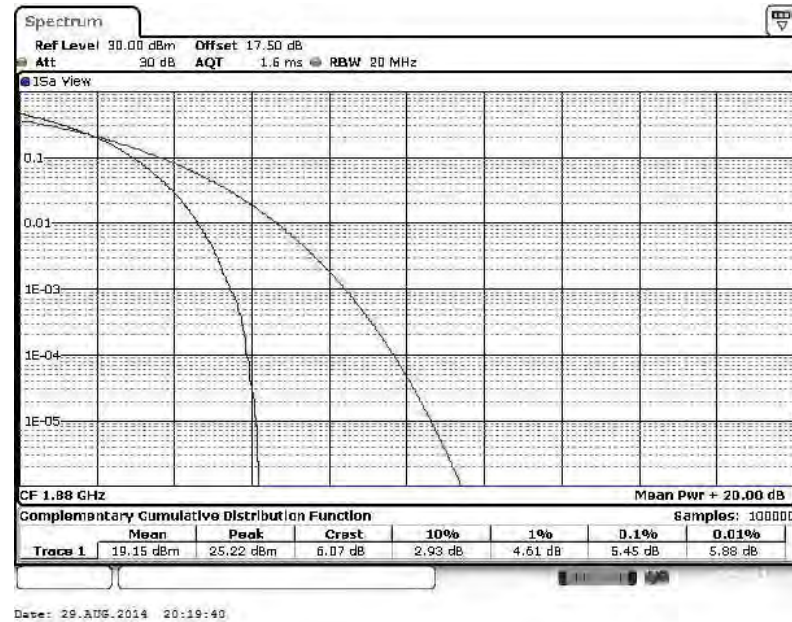


Peak-to-Average Ratio on LTE Band 2
20MHz / 16QAM in Ch. 18700 (100RB Size)

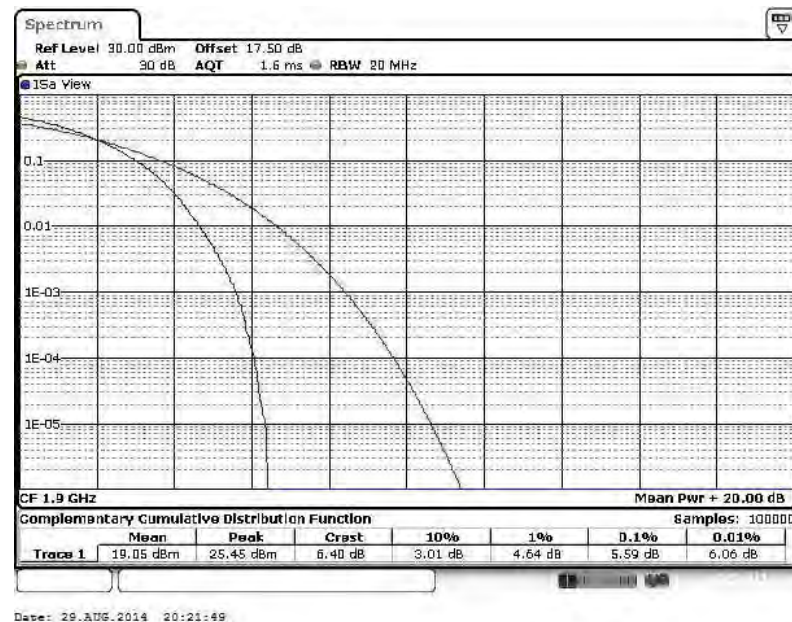




Peak-to-Average Ratio on LTE Band 2
20MHz / 16QAM in Ch. 18900 (100RB Size)

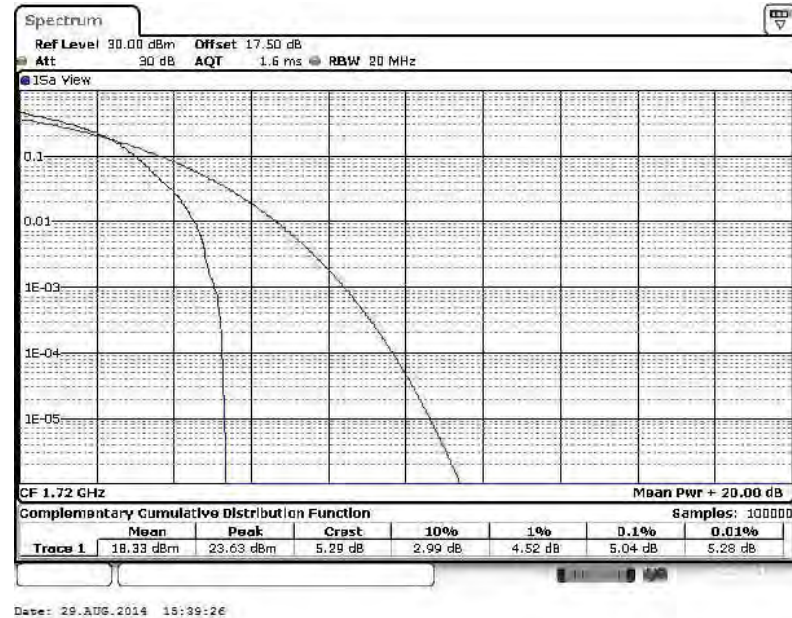


Peak-to-Average Ratio on LTE Band 2
20MHz / 16QAM in Ch. 19100 (100RB Size)

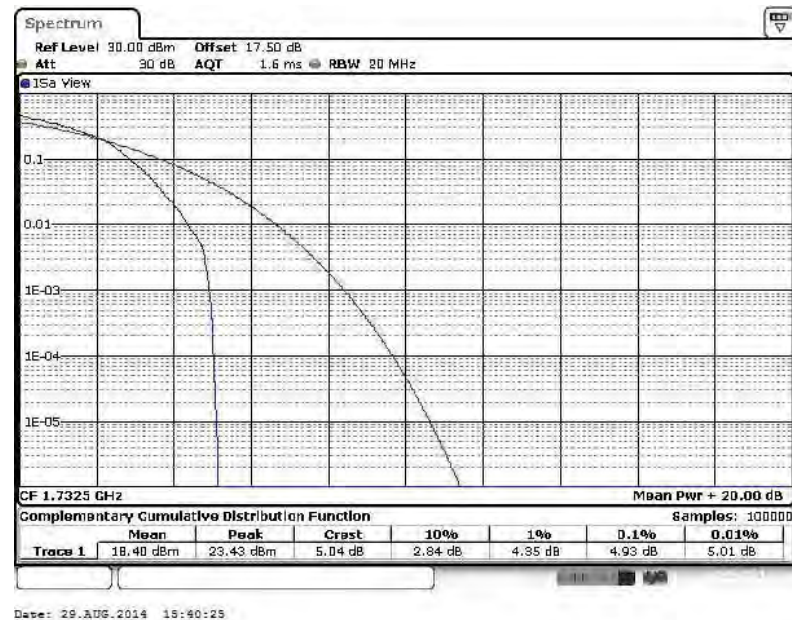




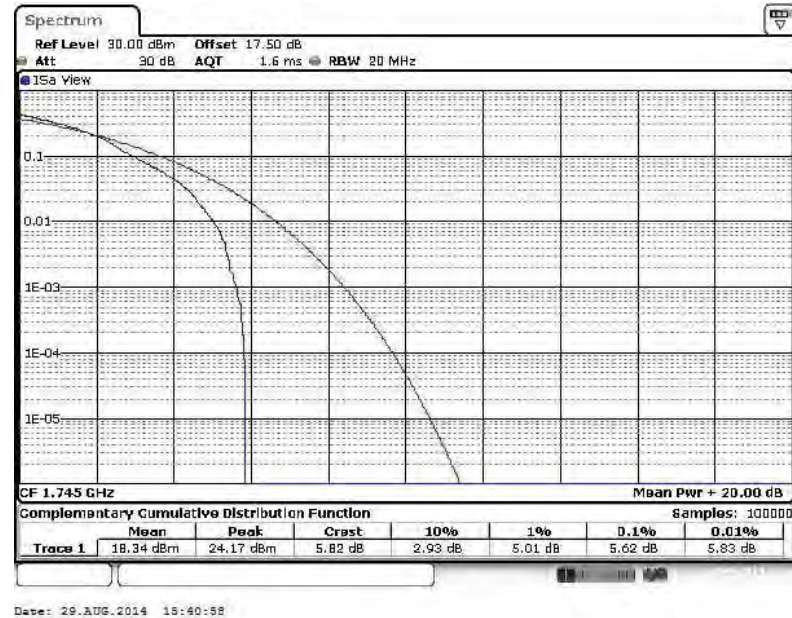
Peak-to-Average Ratio on LTE Band 4
20MHz / 16QAM in Ch. 20050 (1RB Size)



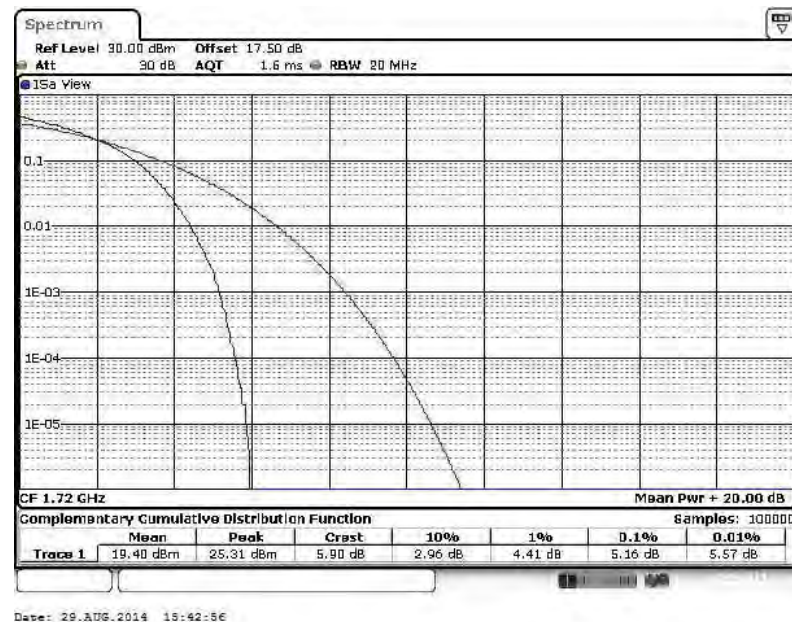
Peak-to-Average Ratio on LTE Band 4
20MHz / 16QAM in Ch. 20175 (1RB Size)



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

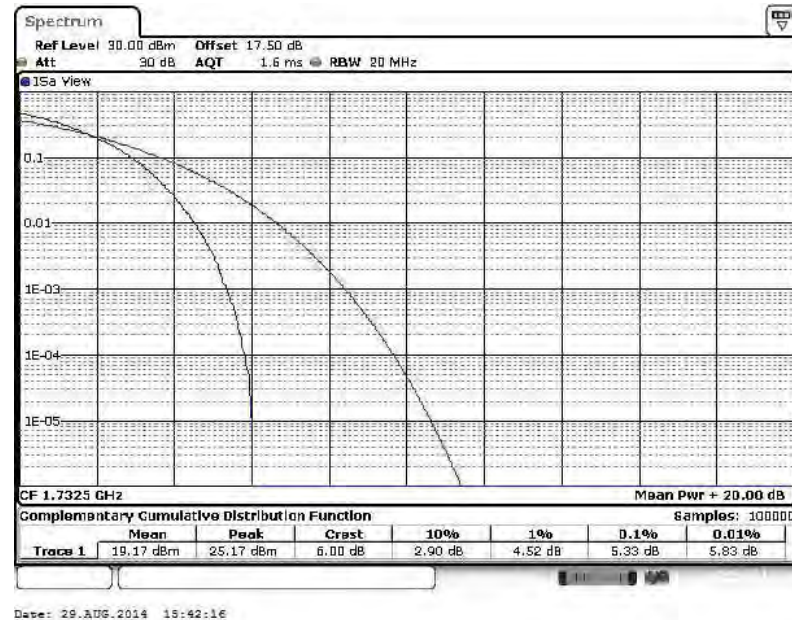


Peak-to-Average Ratio on LTE Band 4
20MHz / 16QAM in Ch. 20500 (100RB Size)

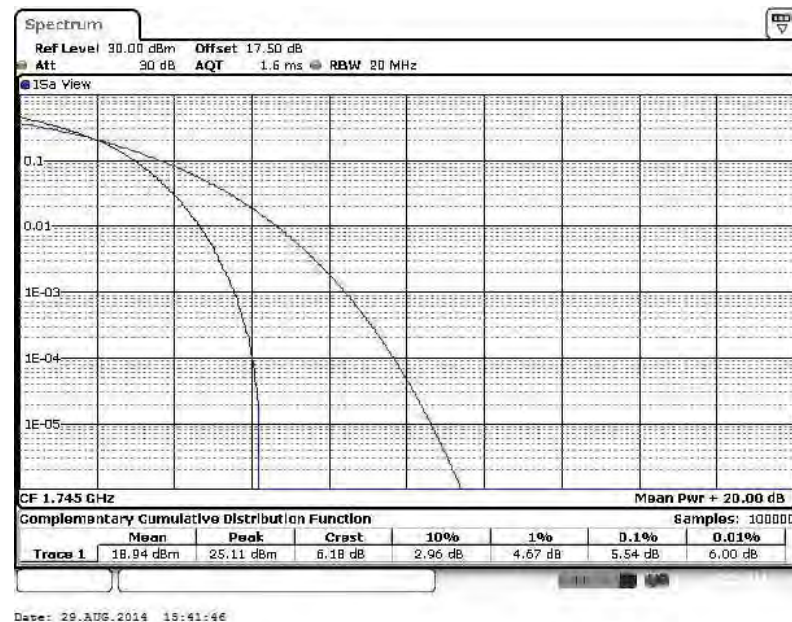




Peak-to-Average Ratio on LTE Band 4
20MHz / 16QAM in Ch. 20175 (100RB Size)



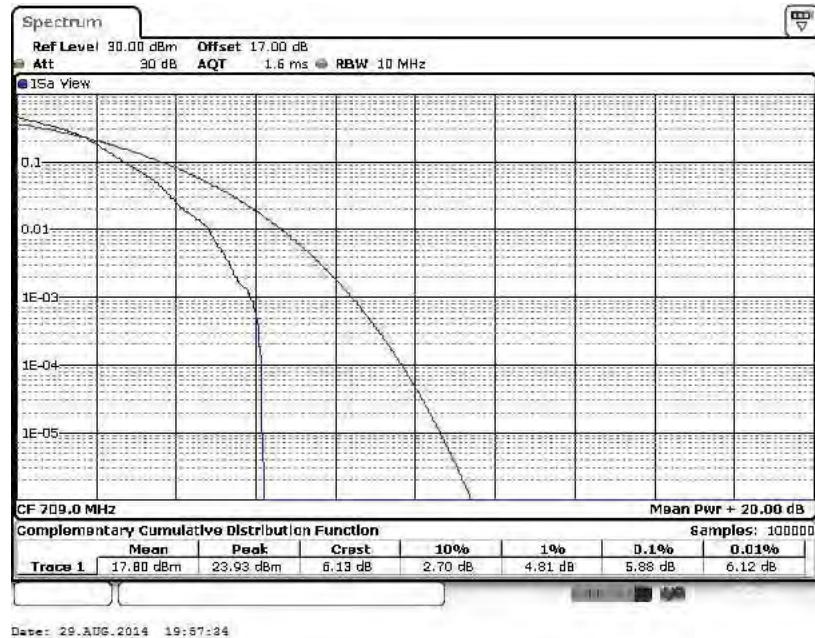
Peak-to-Average Ratio on LTE Band 4
20MHz / 16QAM in Ch. 20300 (100RB Size)





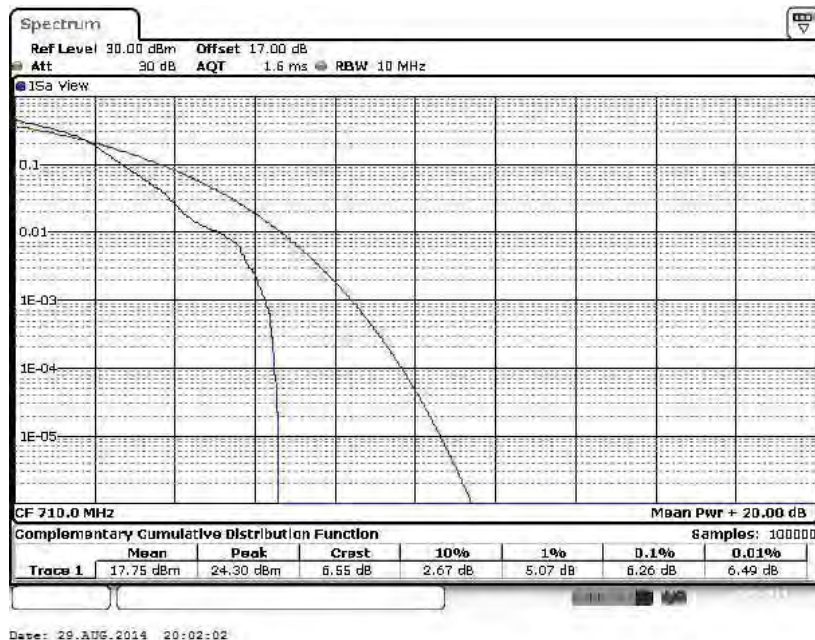
Peak-to-Average Ratio on LTE Band 17

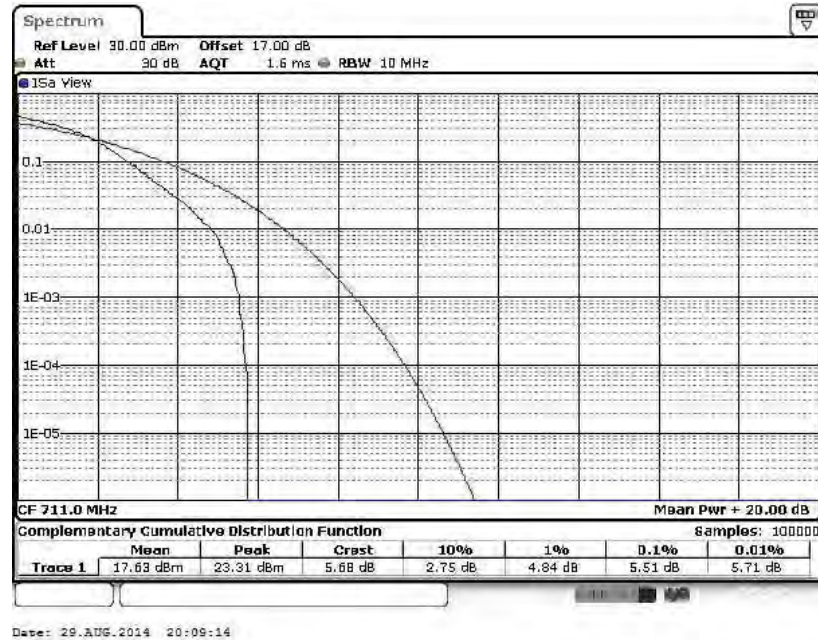
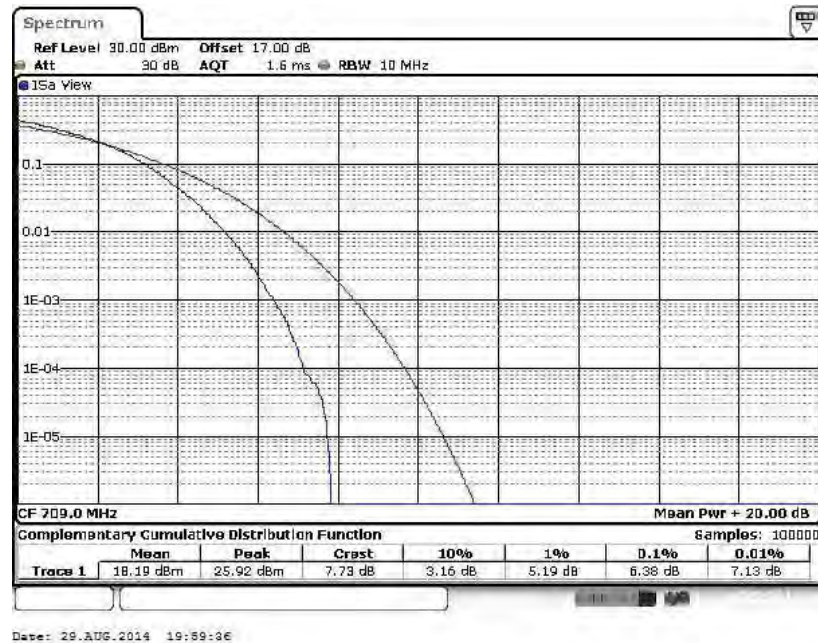
10MHz / 16QAM in Ch. 23780 (1RB Size)



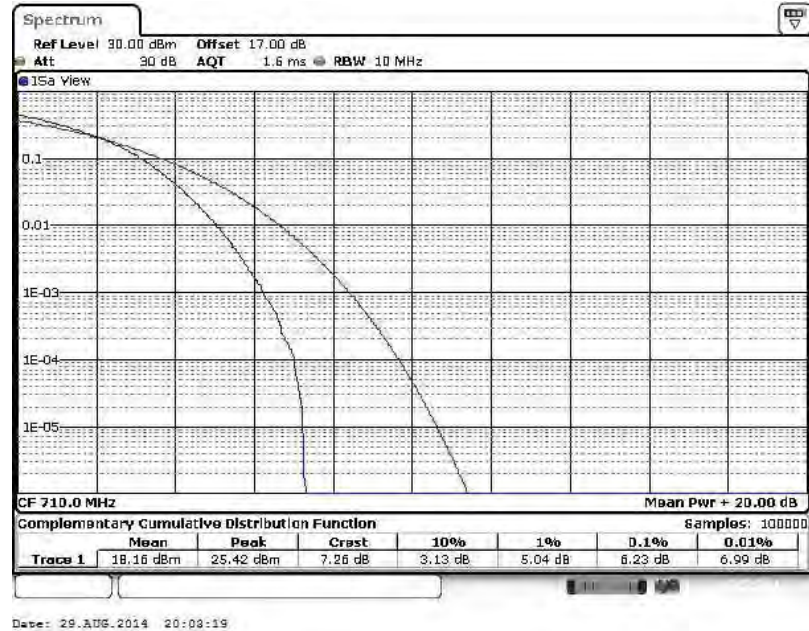
Peak-to-Average Ratio on LTE Band 17

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

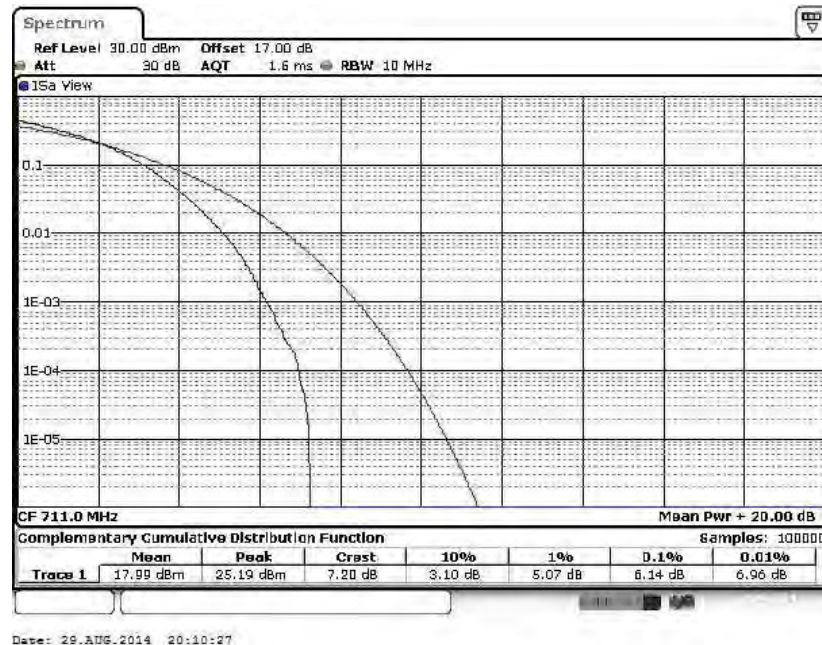


Peak-to-Average Ratio on LTE Band 17
10MHz / 16QAM in Ch. 23800 (1RB Size)

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


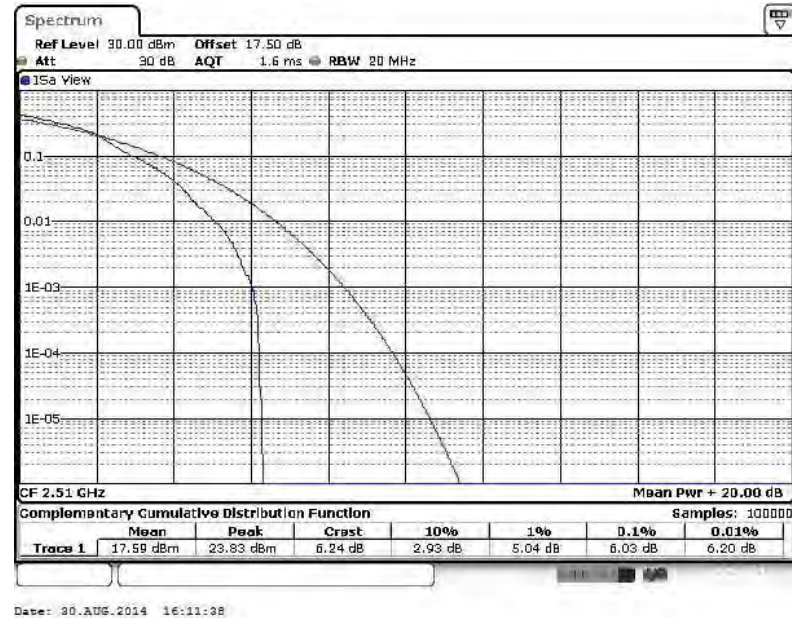
Peak-to-Average Ratio on LTE Band 17
10MHz / 16QAM in Ch. 23790 (50RB Size)



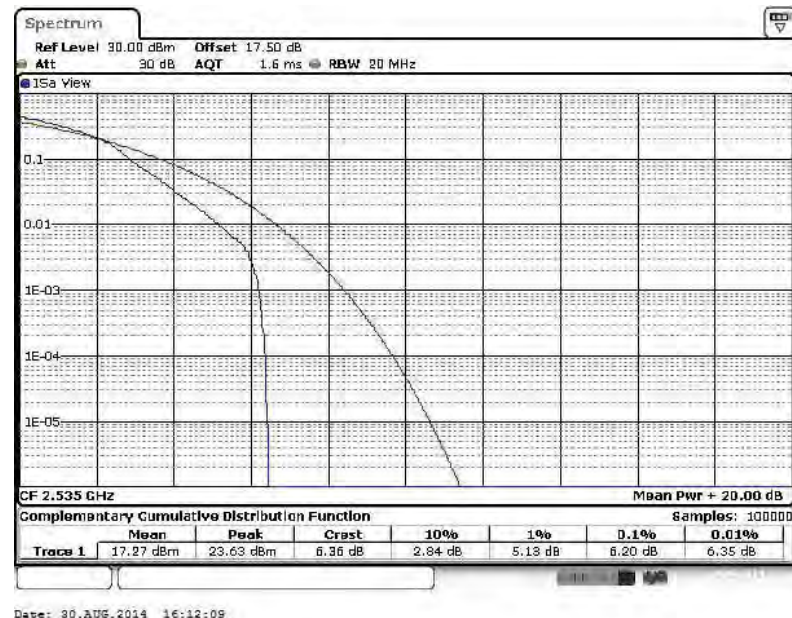
Peak-to-Average Ratio on LTE Band 17
10MHz / 16QAM in Ch. 23800 (50RB Size)



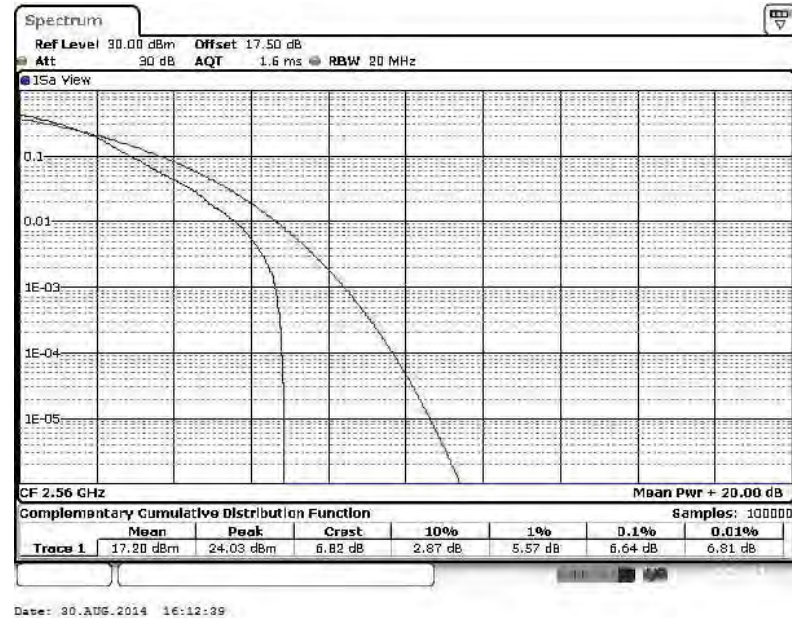
Peak-to-Average Ratio on LTE Band 7
20MHz / 16QAM in Ch. 20850 (1RB Size)



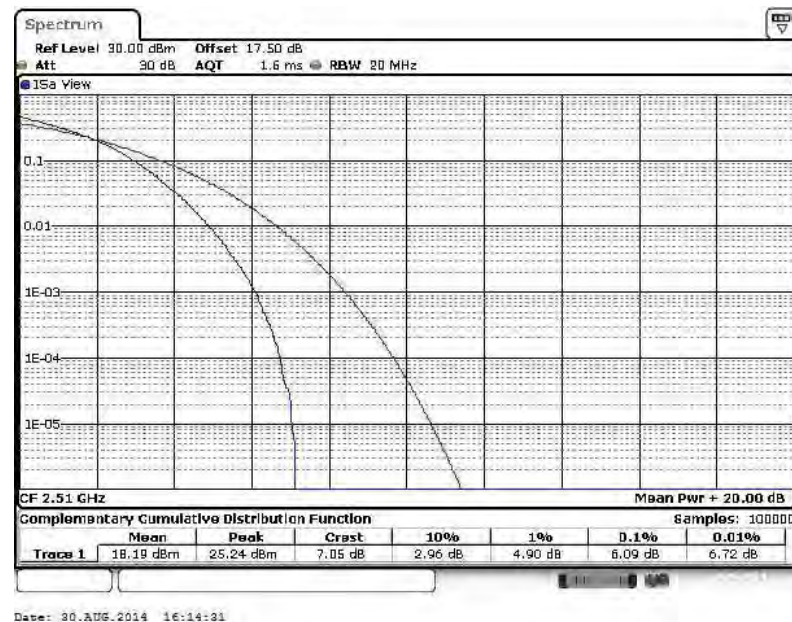
Peak-to-Average Ratio on LTE Band 7
20MHz / 16QAM in Ch. 21100 (1RB Size)



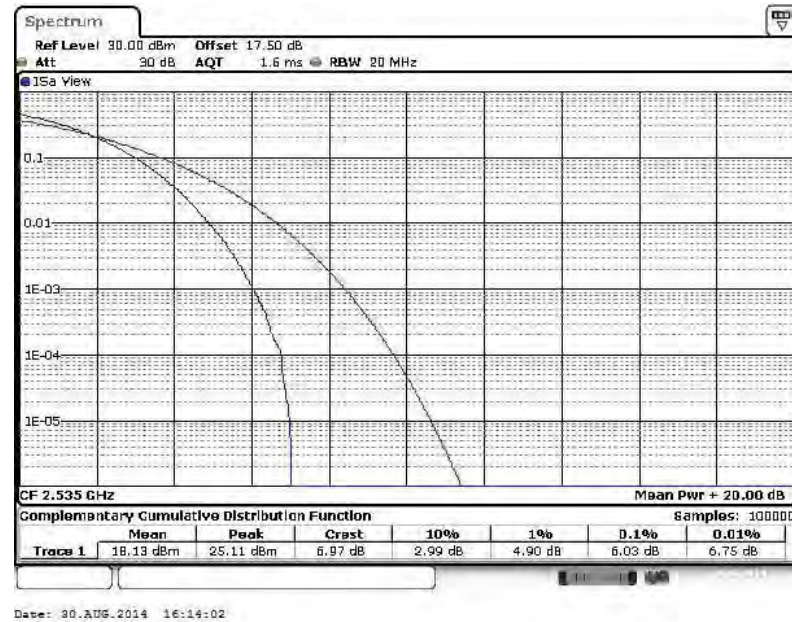
Peak-to-Average Ratio on LTE Band 7
20MHz / 16QAM in Ch. 21350 (1RB Size)



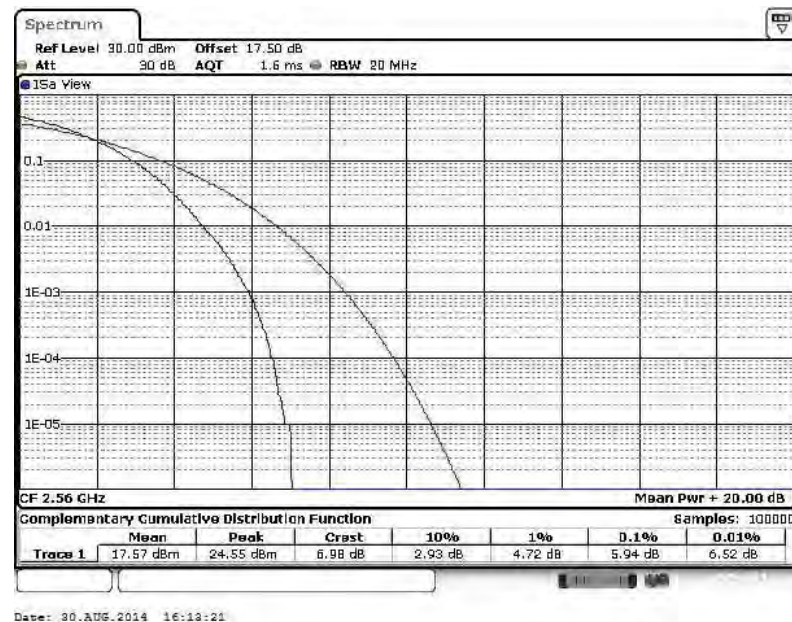
Peak-to-Average Ratio on LTE Band 7
20MHz / 16QAM in Ch. 20850 (100RB Size)



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



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





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

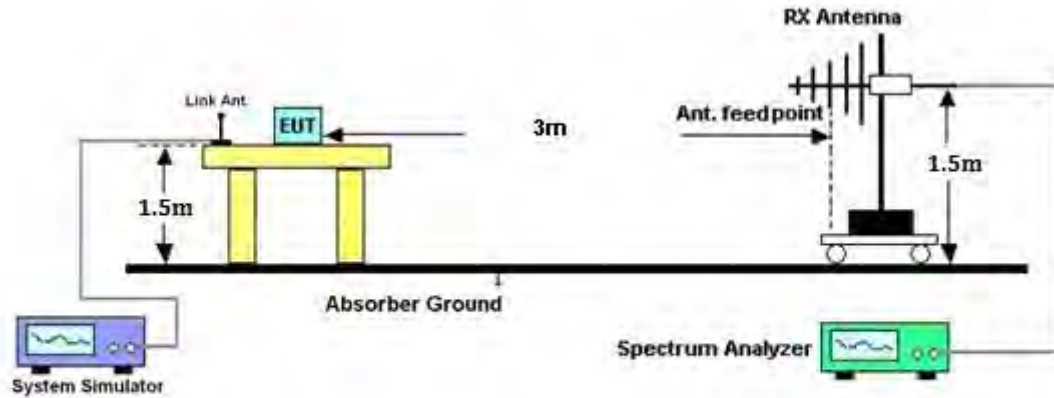
The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

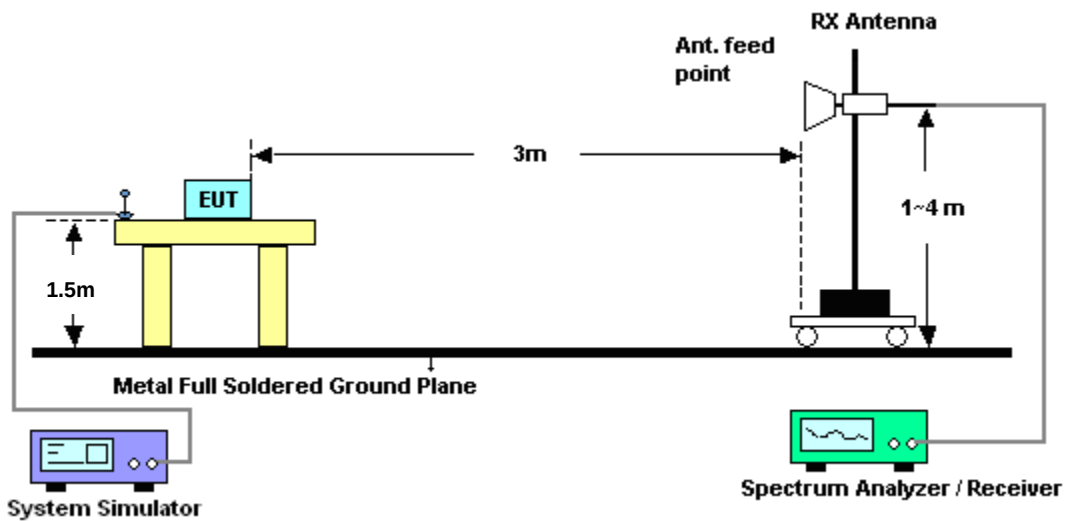
1. The EUT was placed on a non-conductive rotating platform 0.8 meters high in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RMS detector per section 5. of KDB 971168 D01.
2. During the measurement, the 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 2 Radiated Power EIRP								
LTE Band	Channel BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	EIRP (W)	H/V
			RB Size	RB Offset				
2	1.4	QPSK	1	0	1850.7	14.78	0.030	H
2	1.4	QPSK	1	0	1880	14.14	0.026	H
2	1.4	QPSK	1	0	1909.3	14.14	0.026	H
2	1.4	QPSK	1	0	1850.7	8.27	0.007	V
2	1.4	QPSK	1	0	1880	8.98	0.008	V
2	1.4	QPSK	1	0	1909.3	8.98	0.008	V
2	1.4	16QAM	1	0	1850.7	13.94	0.025	H
2	1.4	16QAM	1	0	1880	13.16	0.021	H
2	1.4	16QAM	3	1	1909.3	13.25	0.021	H
2	1.4	16QAM	1	0	1850.7	7.28	0.005	V
2	1.4	16QAM	1	0	1880	8.00	0.006	V
2	1.4	16QAM	3	1	1909.3	8.86	0.008	V
2	20	QPSK	1	0	1860	14.66	0.029	H
2	20	QPSK	1	0	1880	13.95	0.025	H
2	20	QPSK	1	0	1900	13.97	0.025	H
2	20	QPSK	1	0	1860	8.22	0.007	V
2	20	QPSK	1	0	1880	8.44	0.007	V
2	20	QPSK	1	0	1900	9.10	0.008	V
2	20	16QAM	1	0	1860	13.63	0.023	H
2	20	16QAM	1	0	1880	12.99	0.020	H
2	20	16QAM	1	0	1900	12.97	0.020	H
2	20	16QAM	1	0	1860	7.06	0.005	V
2	20	16QAM	1	0	1880	7.35	0.005	V
2	20	16QAM	1	0	1900	7.97	0.006	V



LTE Band 4 Radiated Power EIRP								
LTE Band	Channel BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	EIRP (W)	H/V
			RB Size	RB Offset				
4	1.4	QPSK	1	5	1710.7	17.72	0.059	H
4	1.4	QPSK	3	0	1732.5	17.49	0.056	H
4	1.4	QPSK	1	0	1754.3	16.83	0.048	H
4	1.4	QPSK	1	5	1710.7	7.79	0.006	V
4	1.4	QPSK	3	0	1732.5	8.60	0.007	V
4	1.4	QPSK	1	0	1754.3	8.87	0.008	V
4	1.4	16QAM	1	2	1710.7	16.69	0.047	H
4	1.4	16QAM	1	0	1732.5	16.54	0.045	H
4	1.4	16QAM	1	5	1754.3	16.00	0.040	H
4	1.4	16QAM	1	2	1710.7	6.58	0.005	V
4	1.4	16QAM	1	0	1732.5	7.57	0.006	V
4	1.4	16QAM	1	5	1754.3	8.11	0.007	V
4	20	QPSK	1	0	1720	17.66	0.058	H
4	20	QPSK	1	0	1732.5	17.64	0.058	H
4	20	QPSK	1	0	1745	17.26	0.053	H
4	20	QPSK	1	0	1720	7.85	0.006	V
4	20	QPSK	1	0	1732.5	8.34	0.007	V
4	20	QPSK	1	0	1745	8.49	0.007	V
4	20	16QAM	1	0	1720	16.65	0.046	H
4	20	16QAM	1	0	1732.5	16.77	0.048	H
4	20	16QAM	1	0	1745	16.42	0.044	H
4	20	16QAM	1	0	1720	6.70	0.005	V
4	20	16QAM	1	0	1732.5	7.31	0.005	V
4	20	16QAM	1	0	1745	7.55	0.006	V



LTE Band 5 Radiated Power ERP								
LTE Band	Channel BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	ERP (dBm)	ERP (W)	H/V
			RB Size	RB Offset				
5	1.4	QPSK	1	0	824.7	10.45	0.011	H
5	1.4	QPSK	1	0	836.5	9.33	0.009	H
5	1.4	QPSK	1	0	848.3	9.49	0.009	H
5	1.4	QPSK	1	0	824.7	10.35	0.011	V
5	1.4	QPSK	1	0	836.5	9.21	0.008	V
5	1.4	QPSK	1	0	848.3	9.41	0.009	V
5	1.4	16QAM	1	0	824.7	9.53	0.009	H
5	1.4	16QAM	1	0	836.5	8.29	0.007	H
5	1.4	16QAM	1	0	848.3	8.53	0.007	H
5	1.4	16QAM	1	0	824.7	9.50	0.009	V
5	1.4	16QAM	1	0	836.5	8.00	0.006	V
5	1.4	16QAM	1	0	848.3	8.52	0.007	V
5	10	QPSK	1	0	829	10.38	0.011	H
5	10	QPSK	1	0	836.5	9.32	0.009	H
5	10	QPSK	1	0	844	9.26	0.008	H
5	10	QPSK	1	0	829	10.18	0.010	V
5	10	QPSK	1	0	836.5	9.14	0.008	V
5	10	QPSK	1	0	844	9.04	0.008	V
5	10	16QAM	1	0	829	9.40	0.009	H
5	10	16QAM	1	0	836.5	8.33	0.007	H
5	10	16QAM	1	0	844	8.37	0.007	H
5	10	16QAM	1	0	829	9.18	0.008	V
5	10	16QAM	1	0	836.5	8.21	0.007	V
5	10	16QAM	1	0	844	8.10	0.007	V



LTE Band 7 Radiated Power EIRP								
LTE Band	Channel BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	EIRP (W)	H/V
			RB Size	RB Offset				
7	5	QPSK	1	24	2502.5	16.81	0.048	H
7	5	QPSK	1	24	2535	16.64	0.046	H
7	5	QPSK	1	24	2567.5	15.40	0.035	H
7	5	QPSK	1	24	2502.5	16.73	0.047	V
7	5	QPSK	1	24	2535	16.53	0.045	V
7	5	QPSK	1	24	2567.5	14.43	0.028	V
7	5	16QAM	1	24	2502.5	15.83	0.038	H
7	5	16QAM	1	24	2535	15.86	0.039	H
7	5	16QAM	1	24	2567.5	15.04	0.032	H
7	5	16QAM	1	24	2502.5	15.88	0.039	V
7	5	16QAM	1	24	2535	15.72	0.037	V
7	5	16QAM	1	24	2567.5	13.95	0.025	V
7	20	QPSK	1	99	2510	16.61	0.046	H
7	20	QPSK	1	99	2535	13.88	0.024	H
7	20	QPSK	1	99	2560	14.79	0.030	H
7	20	QPSK	1	99	2510	16.44	0.044	V
7	20	QPSK	1	99	2535	13.84	0.024	V
7	20	QPSK	1	99	2560	13.53	0.023	V
7	20	16QAM	1	99	2510	15.65	0.037	H
7	20	16QAM	1	99	2535	12.98	0.020	H
7	20	16QAM	1	99	2560	14.47	0.028	H
7	20	16QAM	1	99	2510	15.48	0.035	V
7	20	16QAM	1	99	2535	12.82	0.019	V
7	20	16QAM	1	99	2560	13.23	0.021	V



LTE Band 17 Radiated Power ERP								
LTE Band	Channel BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	ERP (dBm)	ERP (W)	H/V
			RB Size	RB Offset				
17	5	QPSK	1	0	706.5	8.95	0.008	H
17	5	QPSK	1	0	710	9.25	0.008	H
17	5	QPSK	1	0	713.5	9.50	0.009	H
17	5	QPSK	1	0	706.5	9.53	0.009	V
17	5	QPSK	1	0	710	10.01	0.010	V
17	5	QPSK	1	0	713.5	10.10	0.010	V
17	5	16QAM	1	0	706.5	7.94	0.006	H
17	5	16QAM	1	0	710	8.35	0.007	H
17	5	16QAM	1	0	713.5	8.65	0.007	H
17	5	16QAM	1	0	706.5	8.60	0.007	V
17	5	16QAM	1	0	710	9.19	0.008	V
17	5	16QAM	1	0	713.5	9.30	0.009	V
17	10	QPSK	1	0	709	8.89	0.008	H
17	10	QPSK	1	0	710	8.76	0.008	H
17	10	QPSK	1	0	711	9.08	0.008	H
17	10	QPSK	1	0	709	9.57	0.009	V
17	10	QPSK	1	0	710	9.46	0.009	V
17	10	QPSK	1	0	711	9.85	0.010	V
17	10	16QAM	1	0	709	7.99	0.006	H
17	10	16QAM	1	0	710	7.99	0.006	H
17	10	16QAM	1	0	711	8.08	0.006	H
17	10	16QAM	1	0	709	8.68	0.007	V
17	10	16QAM	1	0	710	8.65	0.007	V
17	10	16QAM	1	0	711	8.91	0.008	V

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.

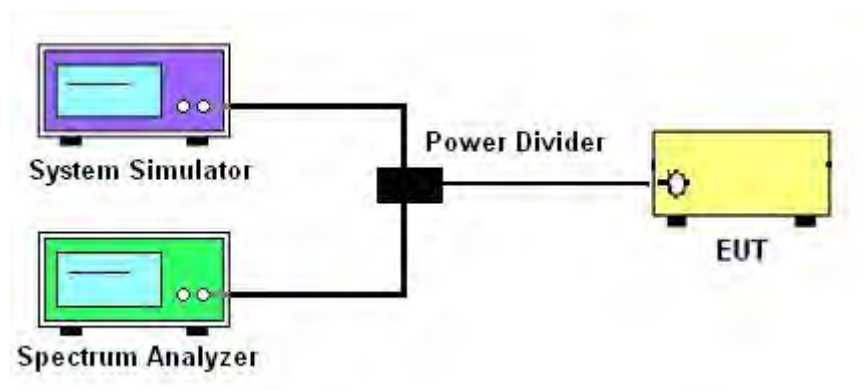
3.4.2 Measuring Instruments

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

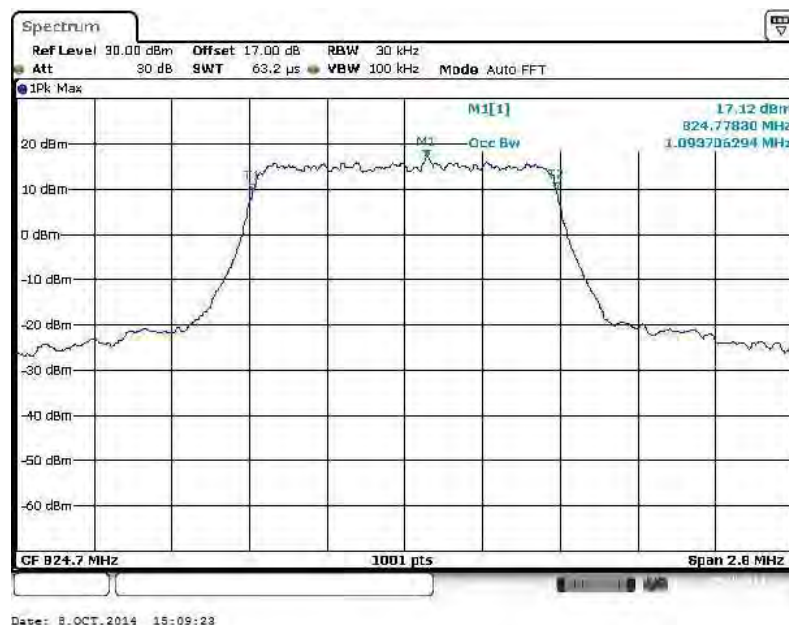




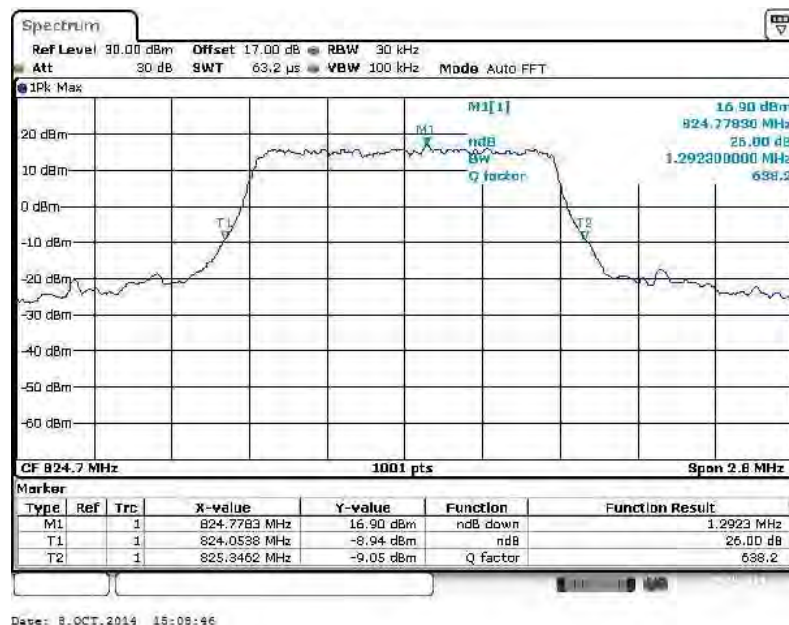
3.4.5 Test Result (Plots) of Occupied Bandwidth

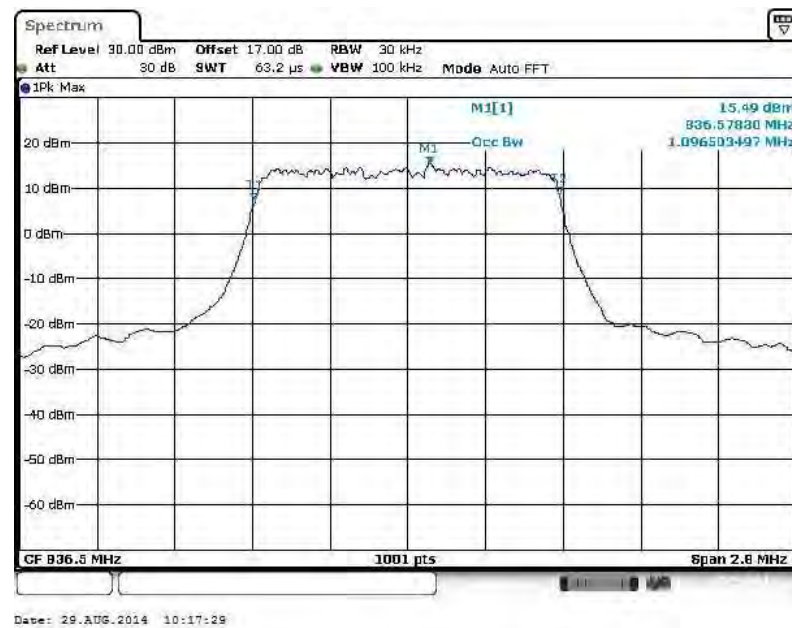
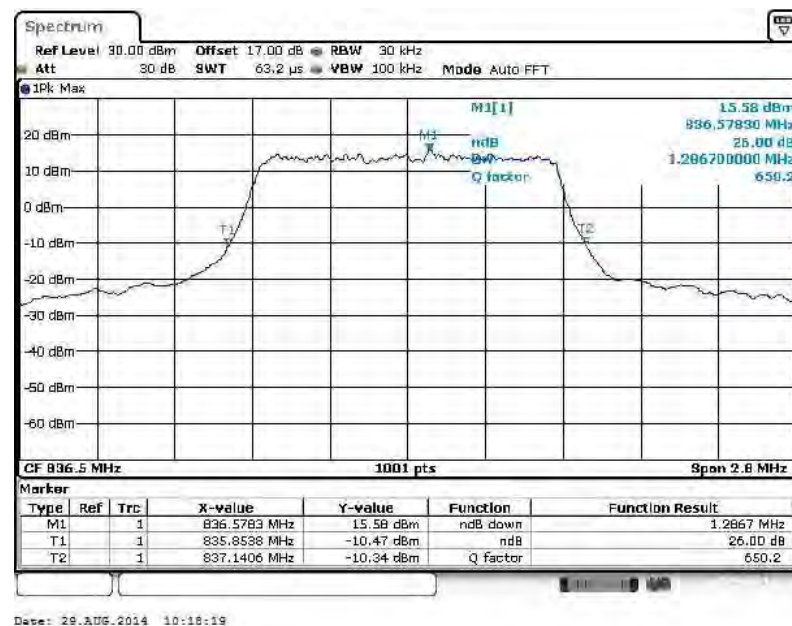
Band :	LTE Band 5	BW / Mod. :	1.4MHz / QPSK
--------	------------	-------------	---------------

99% Occupied Bandwidth Plot on Channel 20407



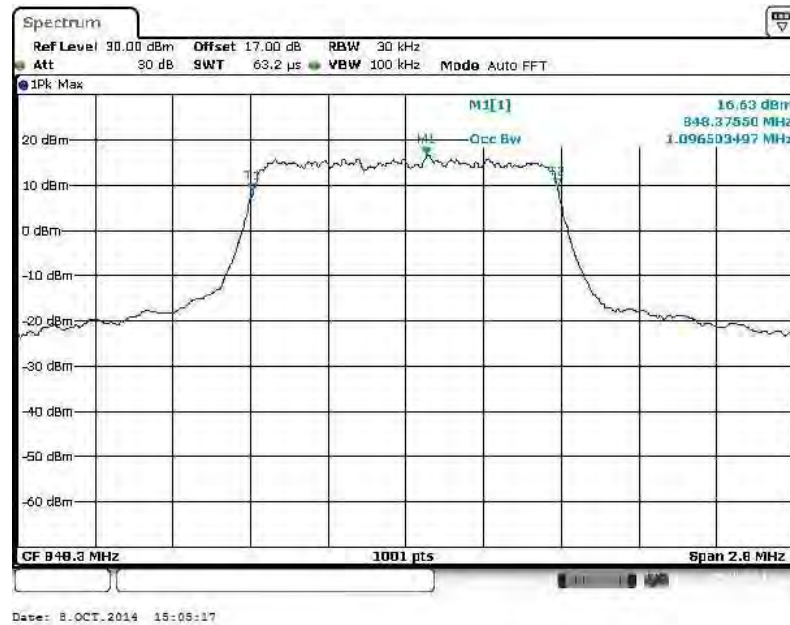
26dB Bandwidth Plot on Channel 20407



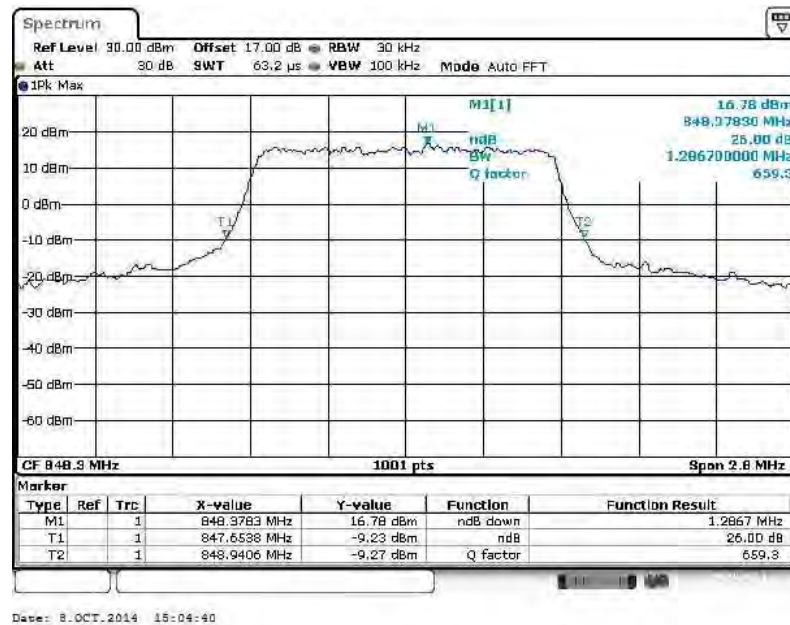
99% Occupied Bandwidth Plot on Channel 20525

26dB Bandwidth Plot on Channel 20525




99% Occupied Bandwidth Plot on Channel 20643



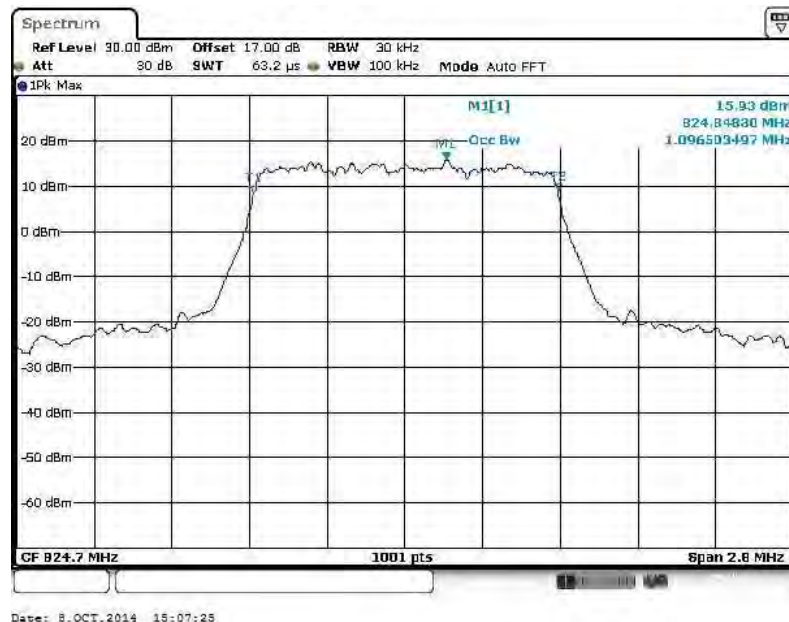
26dB Bandwidth Plot on Channel 20643



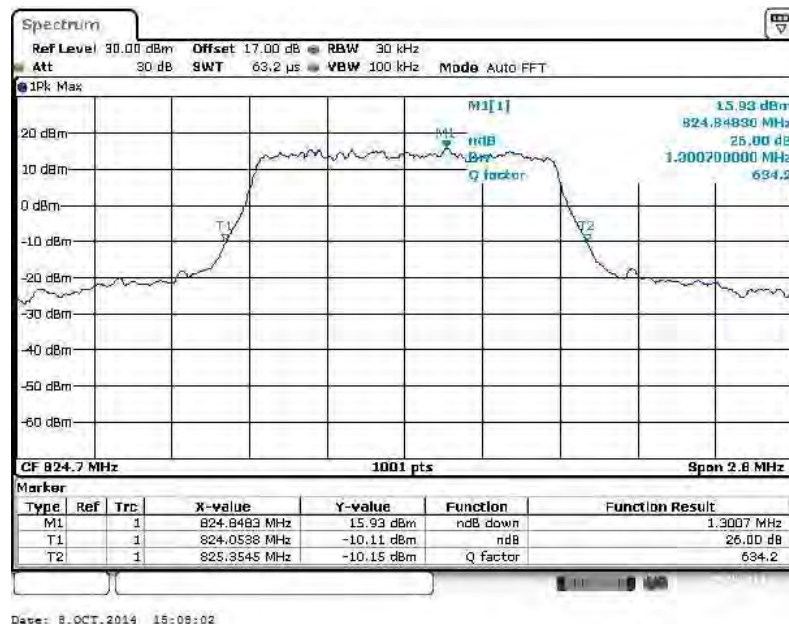


Band :	LTE Band 5	BW / Mod. :	1.4MHz / 16QAM
--------	------------	-------------	----------------

99% Occupied Bandwidth Plot on Channel 20407

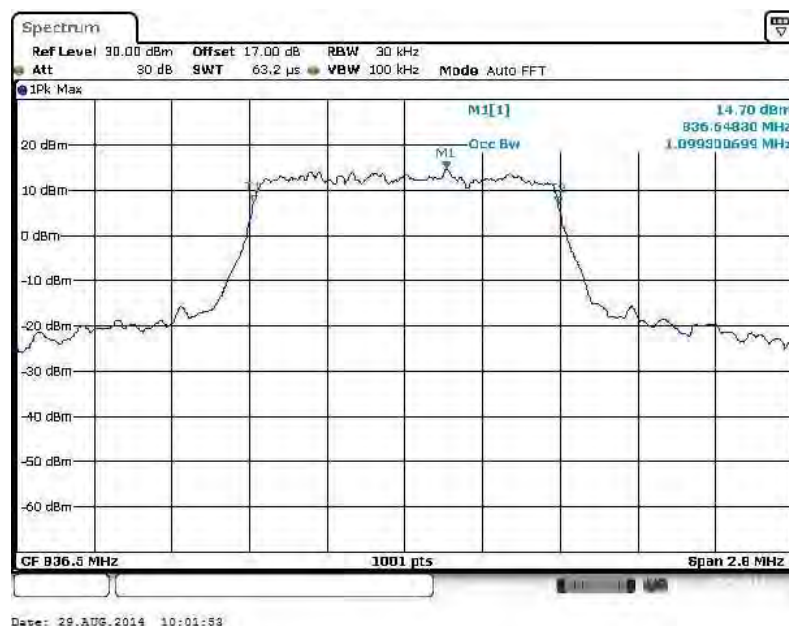


26dB Bandwidth Plot on Channel 20407

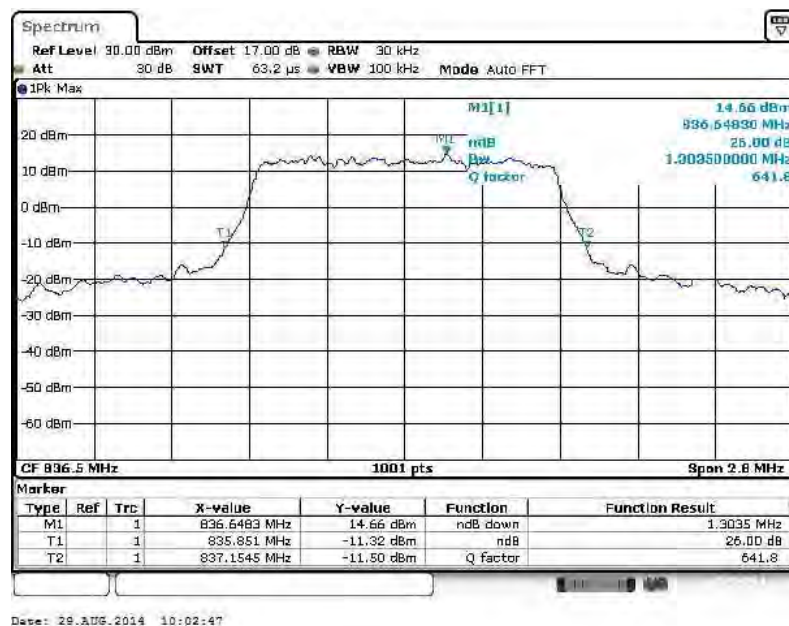




99% Occupied Bandwidth Plot on Channel 20525

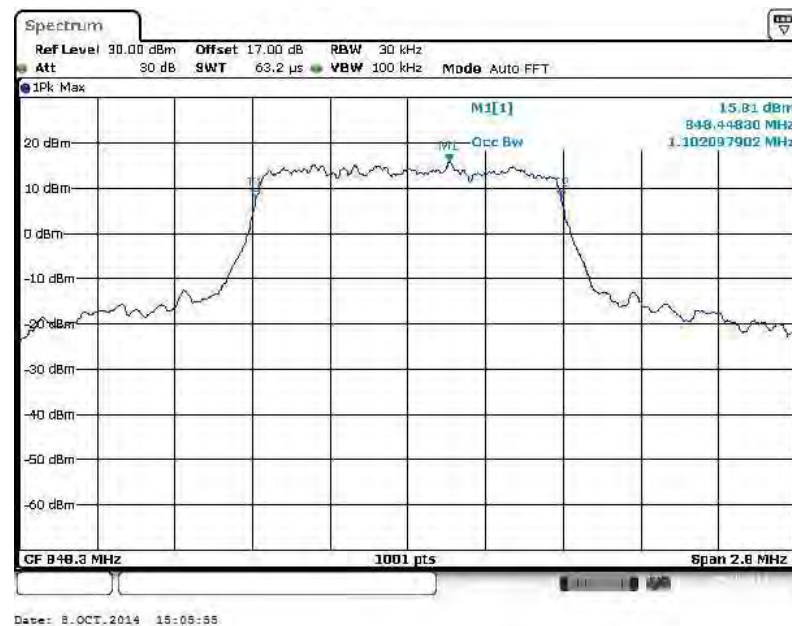


26dB Bandwidth Plot on Channel 20525

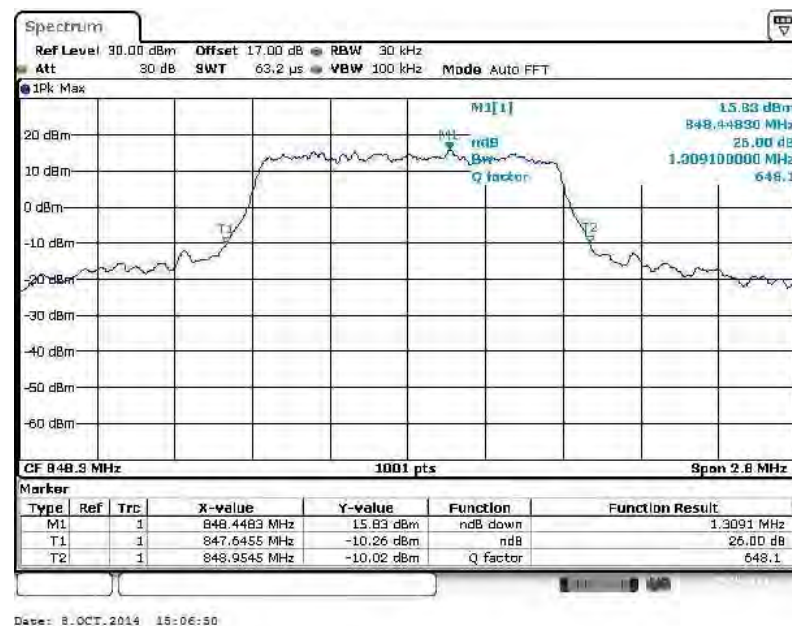




99% Occupied Bandwidth Plot on Channel 20643



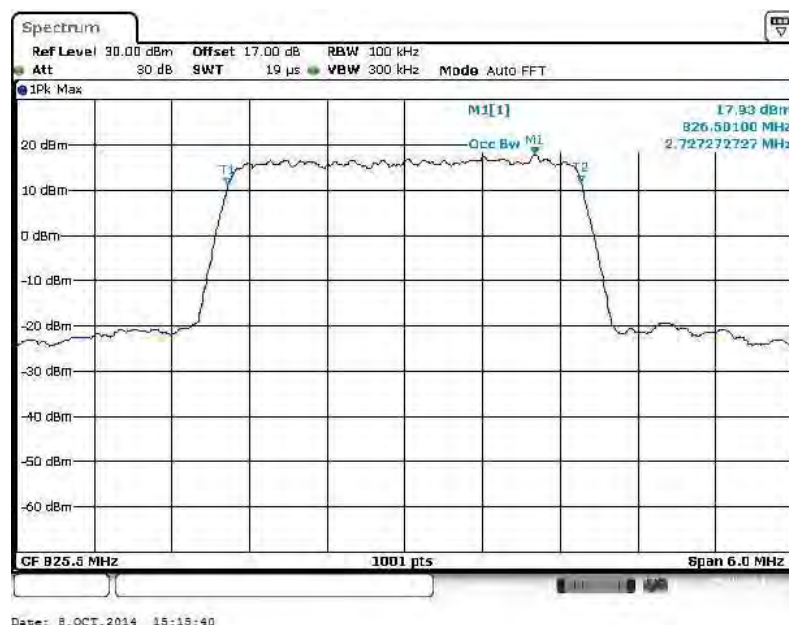
26dB Bandwidth Plot on Channel 20643



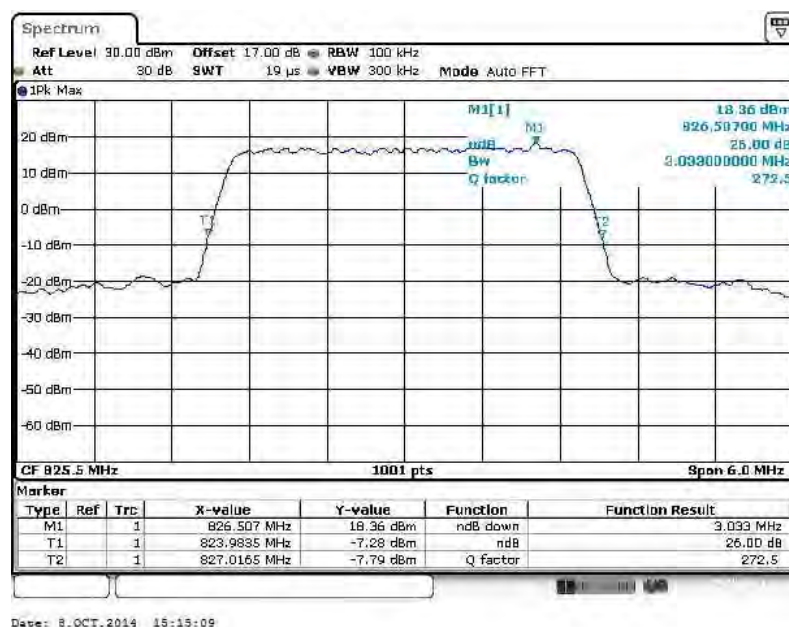


Band :	LTE Band 5	BW / Mod. :	3MHz / QPSK
--------	------------	-------------	-------------

99% Occupied Bandwidth Plot on Channel 20415

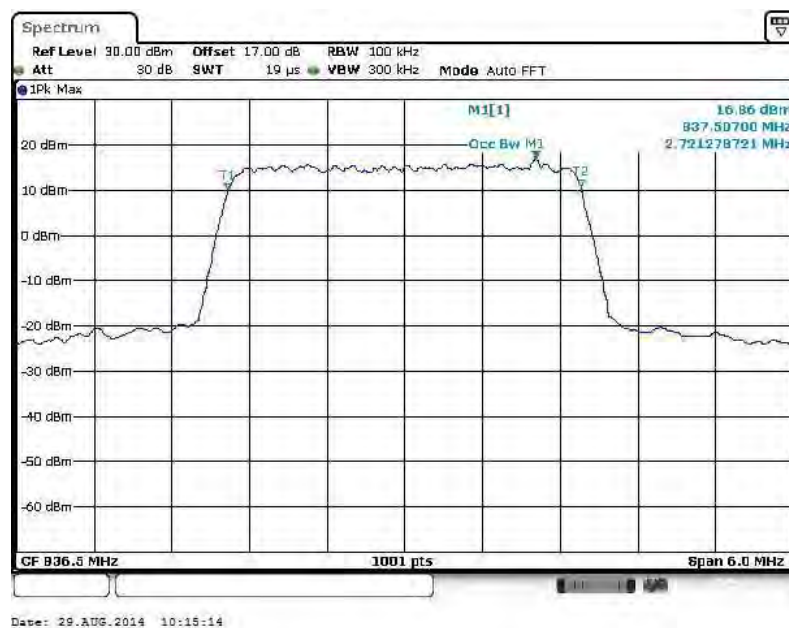


26dB Bandwidth Plot on Channel 20415

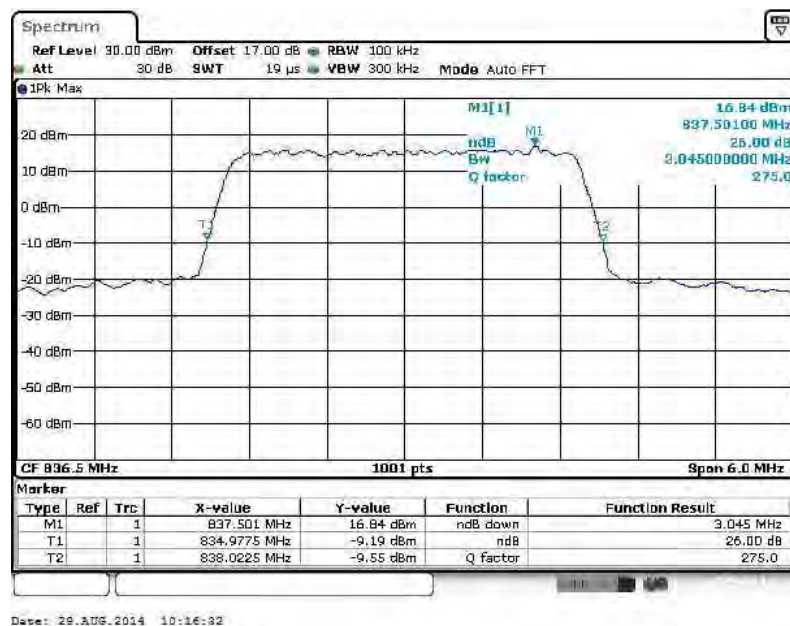




99% Occupied Bandwidth Plot on Channel 20525

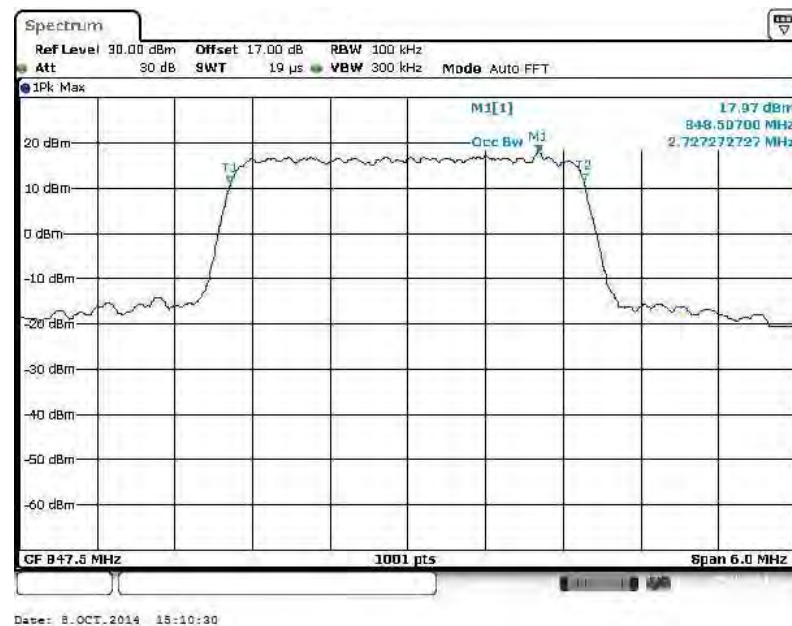


26dB Bandwidth Plot on Channel 20525

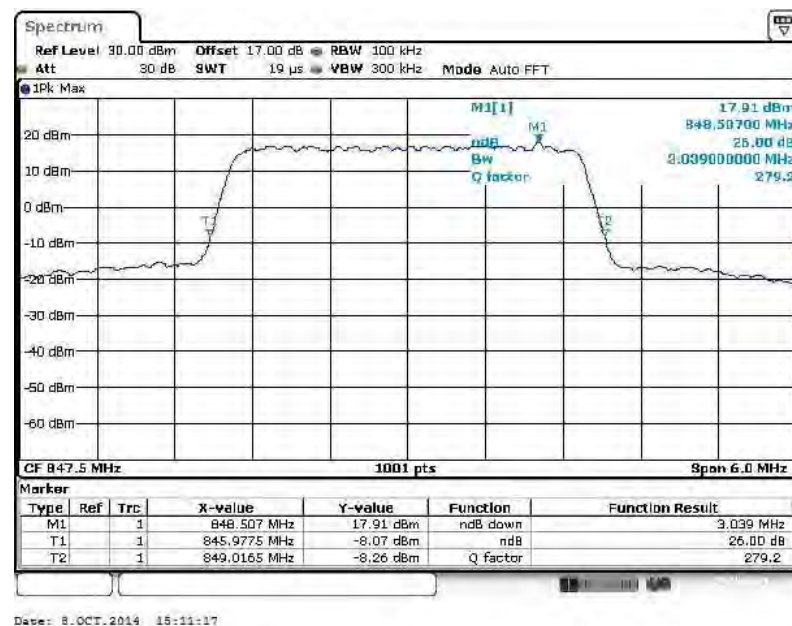




99% Occupied Bandwidth Plot on Channel 20635



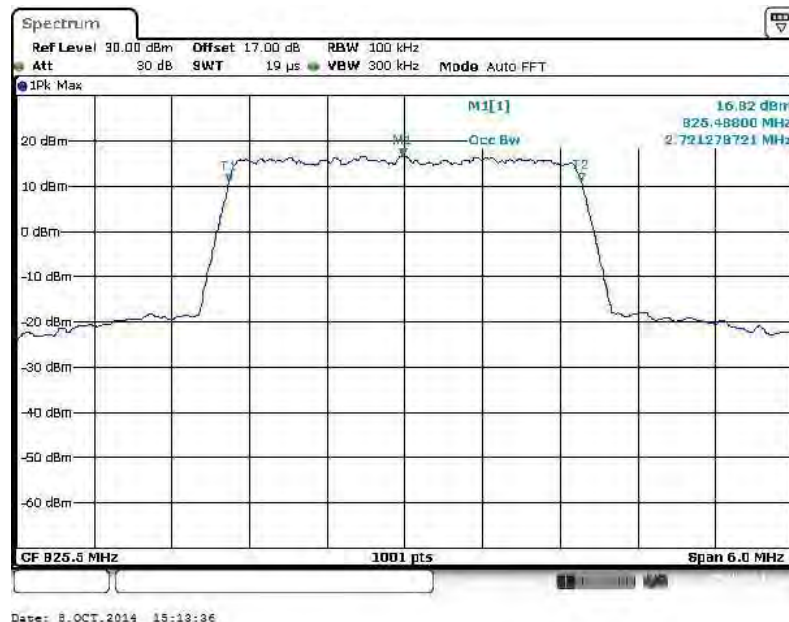
26dB Bandwidth Plot on Channel 20635



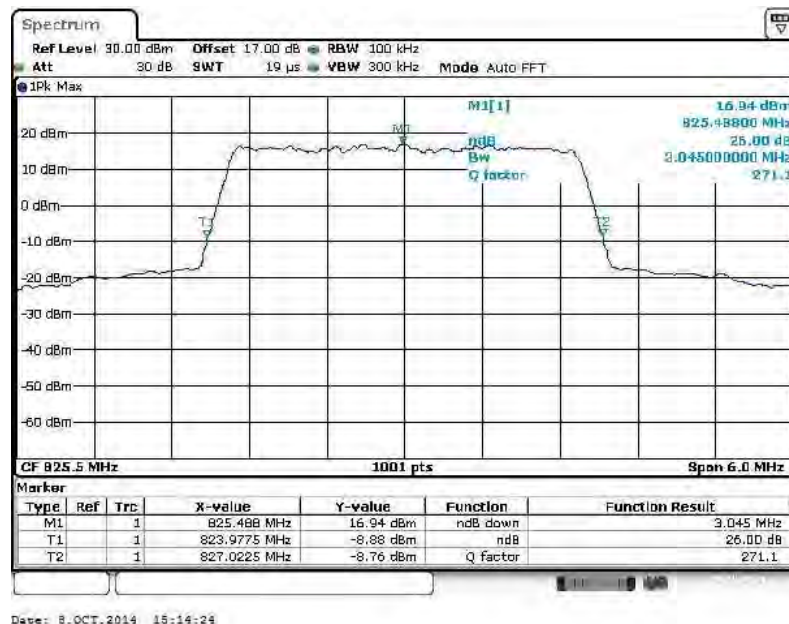


Band :	LTE Band 5	BW / Mod. :	3MHz / 16QAM
--------	------------	-------------	--------------

99% Occupied Bandwidth Plot on Channel 20415

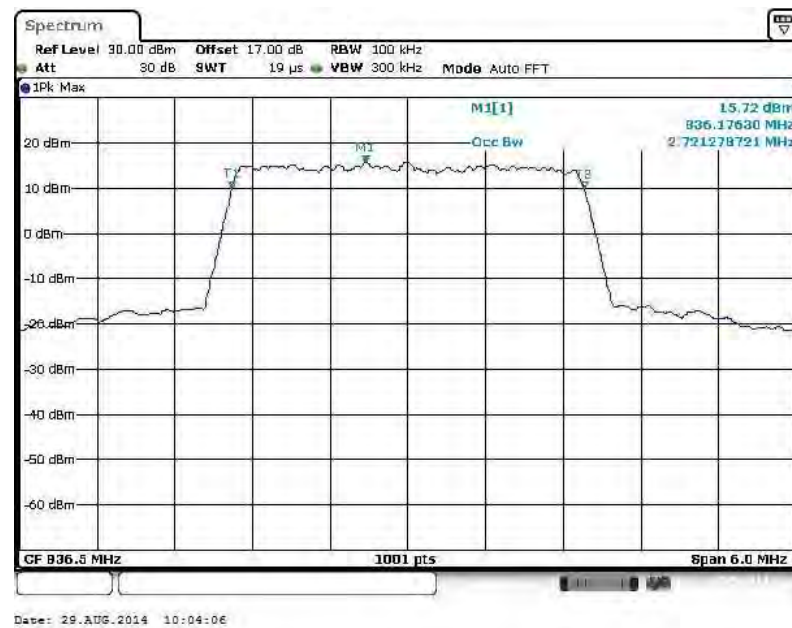


26dB Bandwidth Plot on Channel 20415

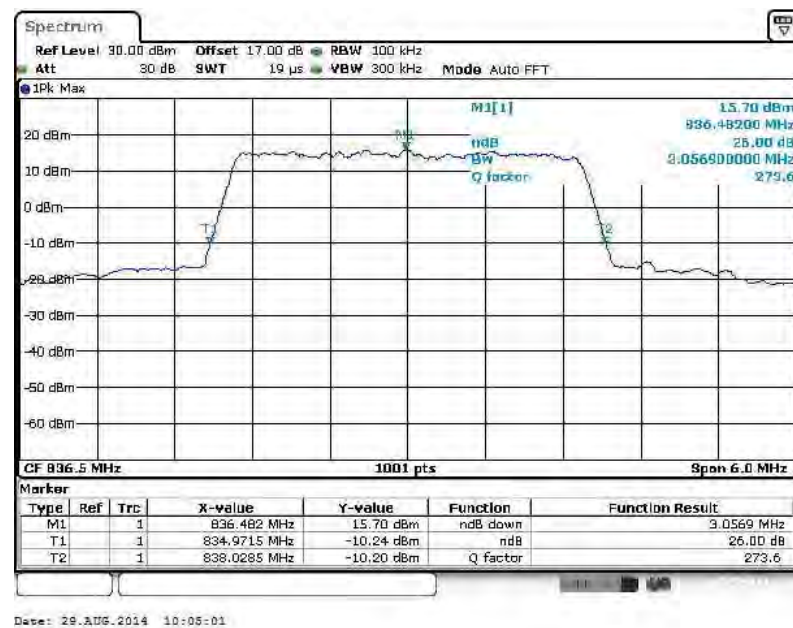




99% Occupied Bandwidth Plot on Channel 20525

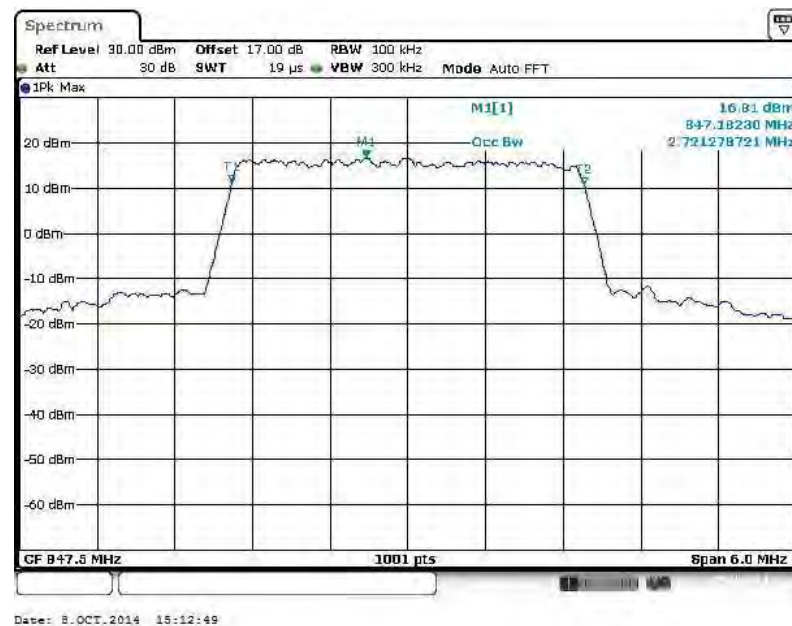


26dB Bandwidth Plot on Channel 20525

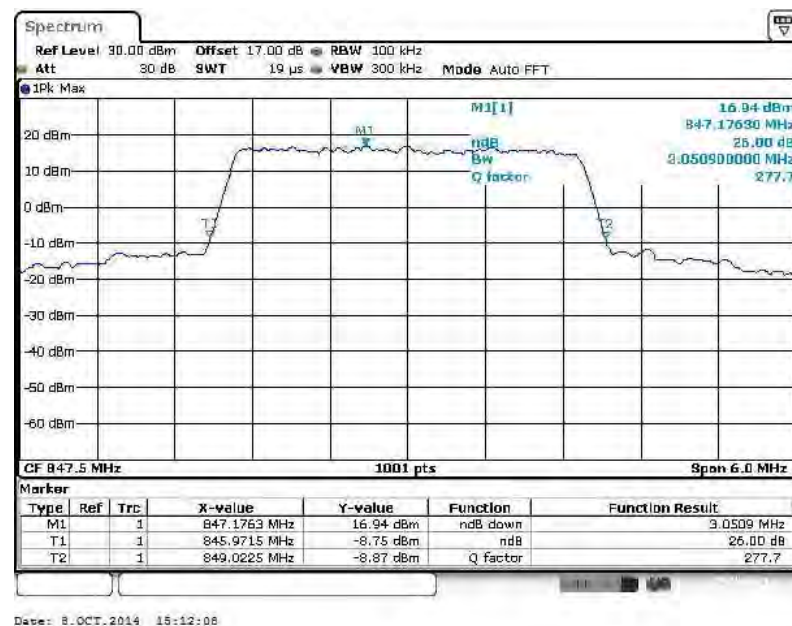




99% Occupied Bandwidth Plot on Channel 20635



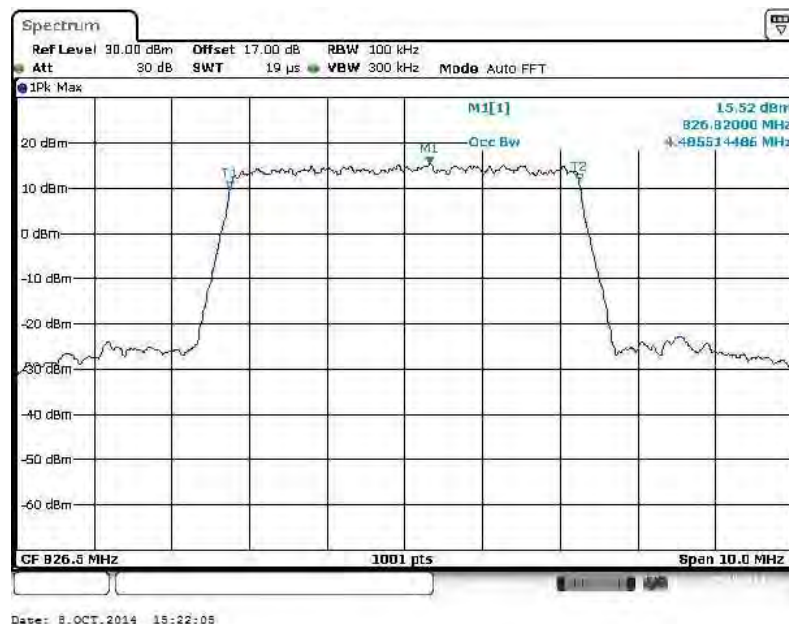
26dB Bandwidth Plot on Channel 20635



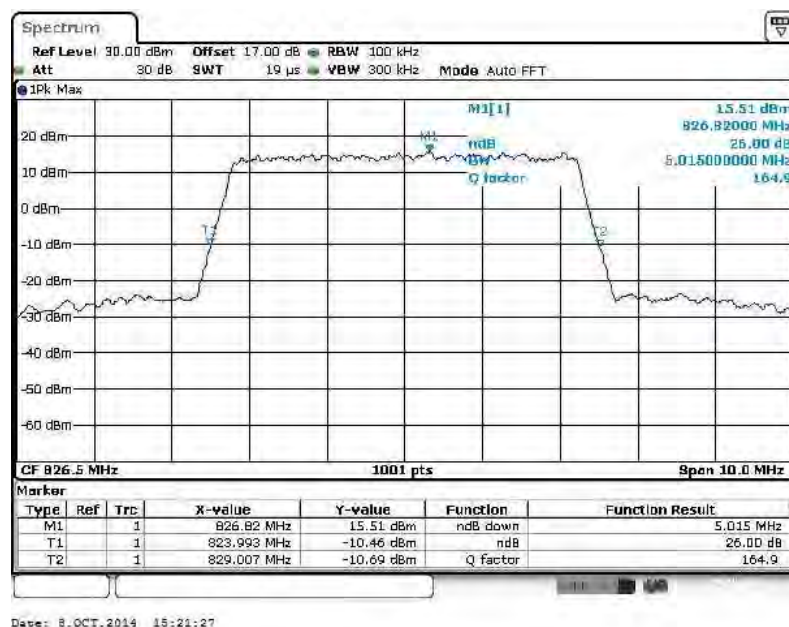


Band :	LTE Band 5	BW / Mod. :	5MHz / QPSK
--------	------------	-------------	-------------

99% Occupied Bandwidth Plot on Channel 20425

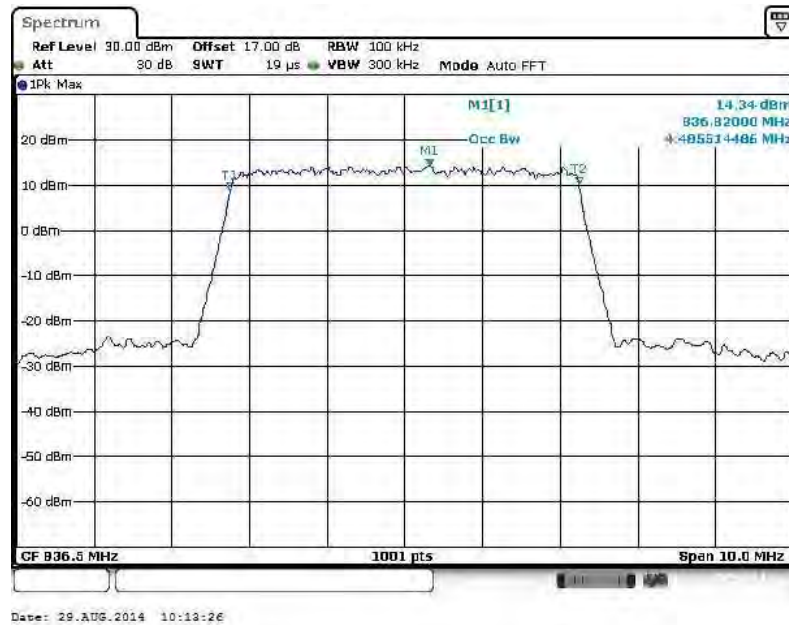


26dB Bandwidth Plot on Channel 20425

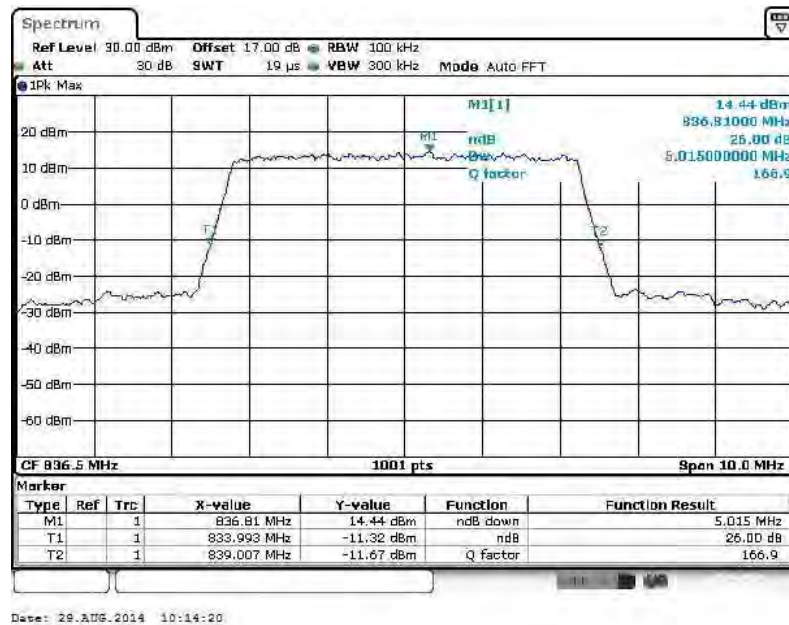




99% Occupied Bandwidth Plot on Channel 20525

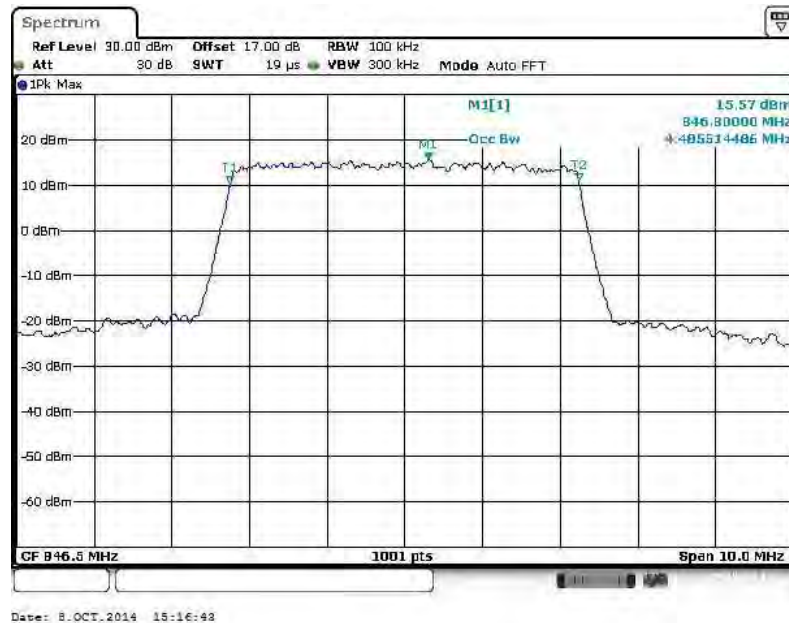


26dB Bandwidth Plot on Channel 20525

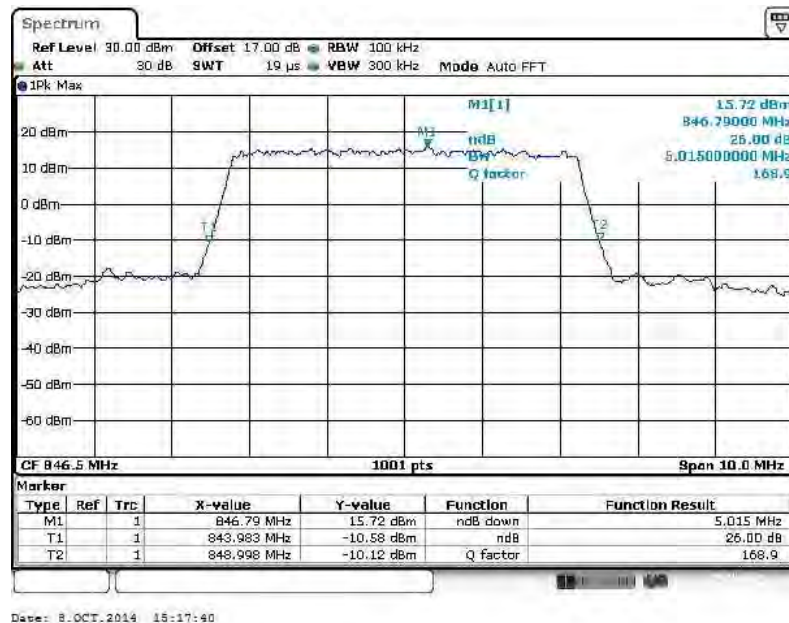




99% Occupied Bandwidth Plot on Channel 20625



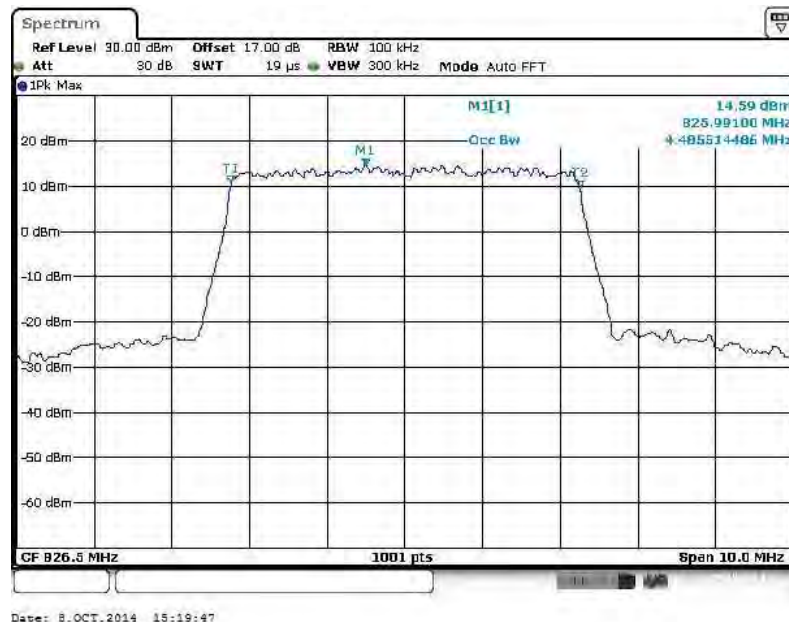
26dB Bandwidth Plot on Channel 20625



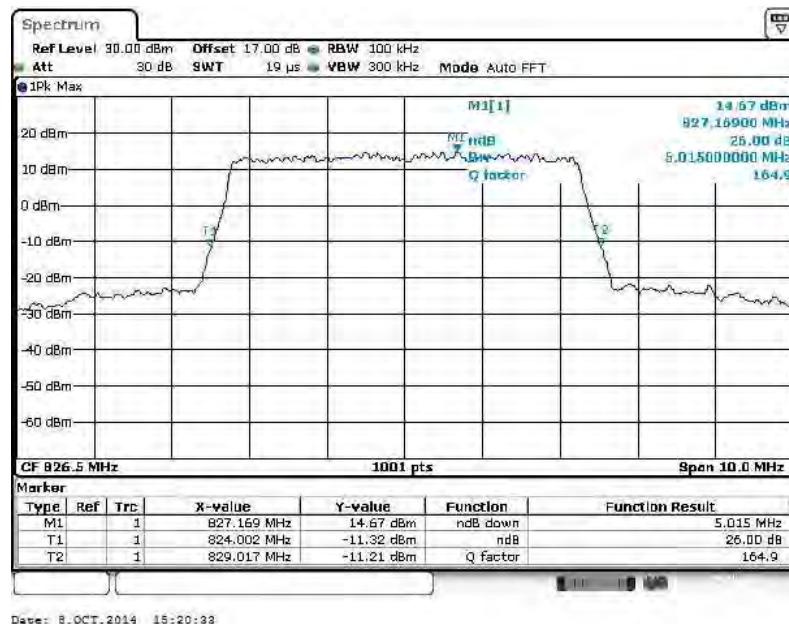


Band :	LTE Band 5	BW / Mod. :	5MHz / 16QAM
--------	------------	-------------	--------------

99% Occupied Bandwidth Plot on Channel 20425

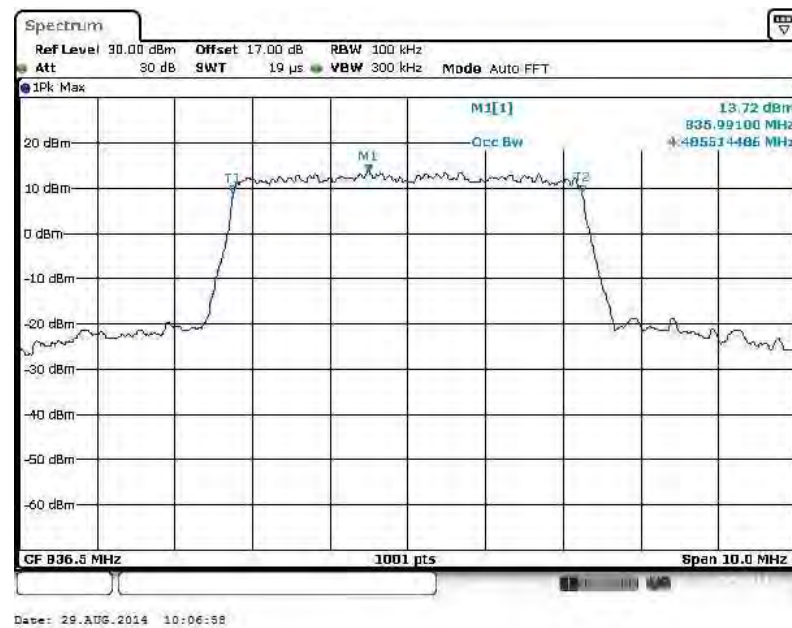


26dB Bandwidth Plot on Channel 20425

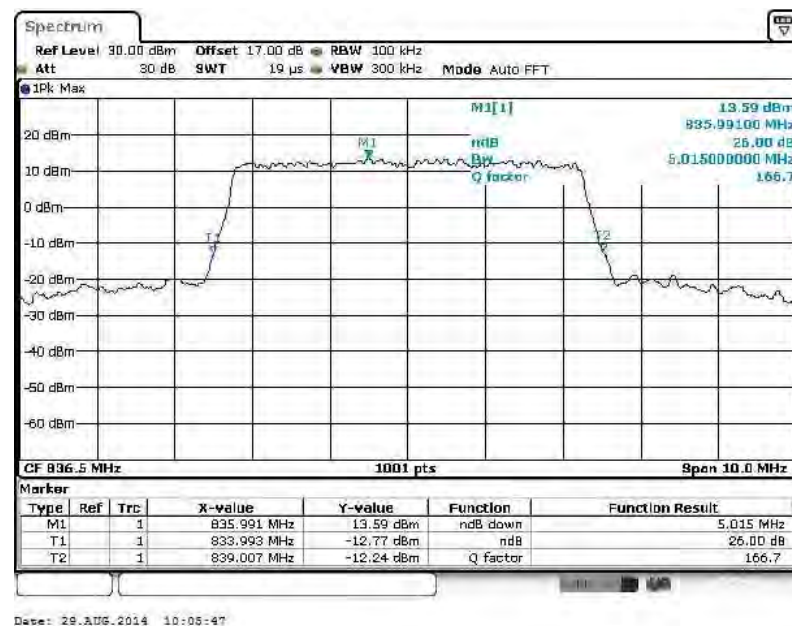




99% Occupied Bandwidth Plot on Channel 20525

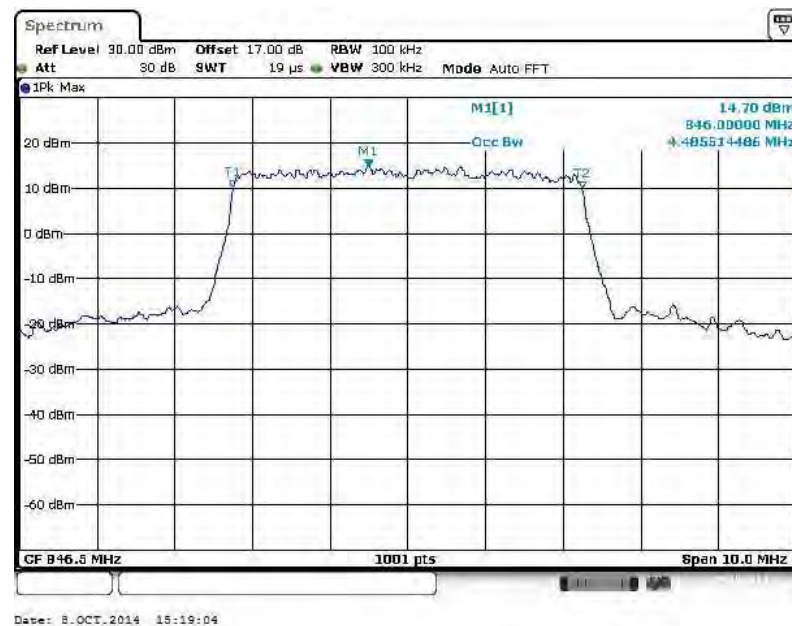


26dB Bandwidth Plot on Channel 20525

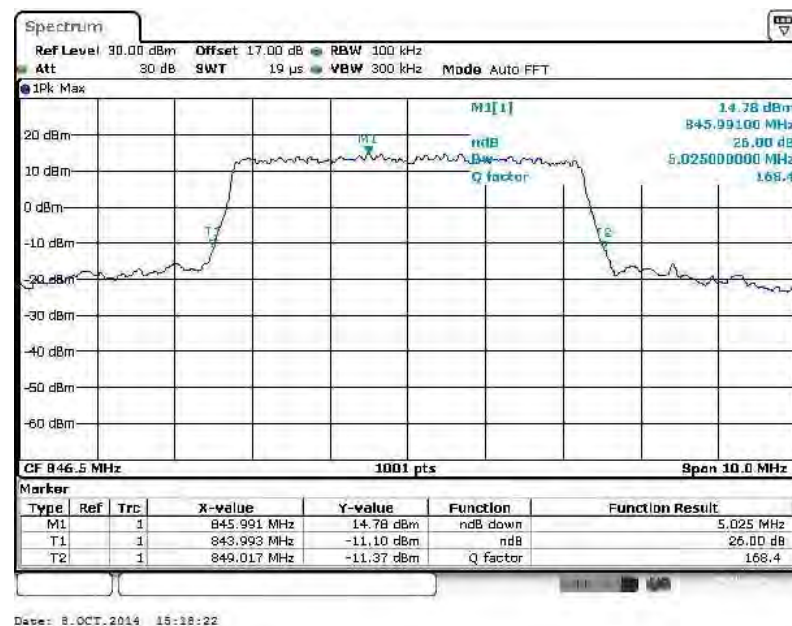




99% Occupied Bandwidth Plot on Channel 20625



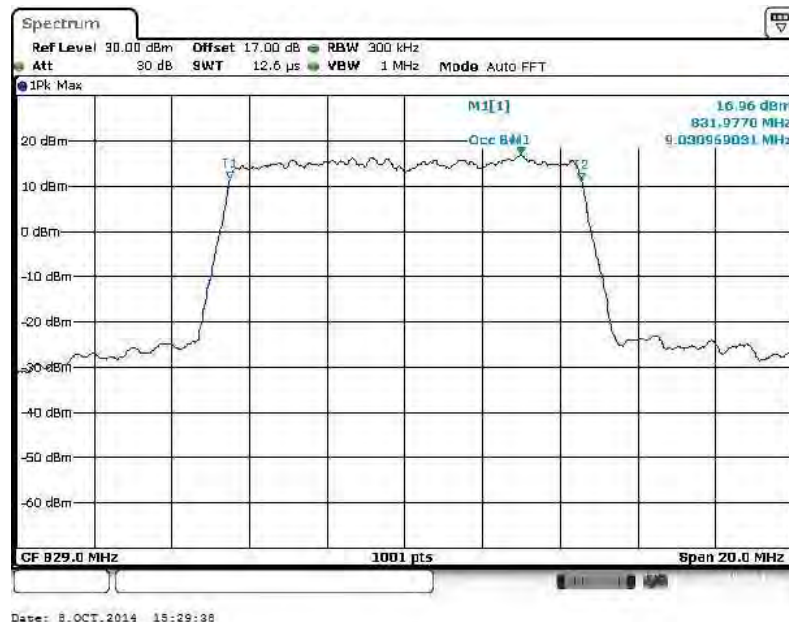
26dB Bandwidth Plot on Channel 20625



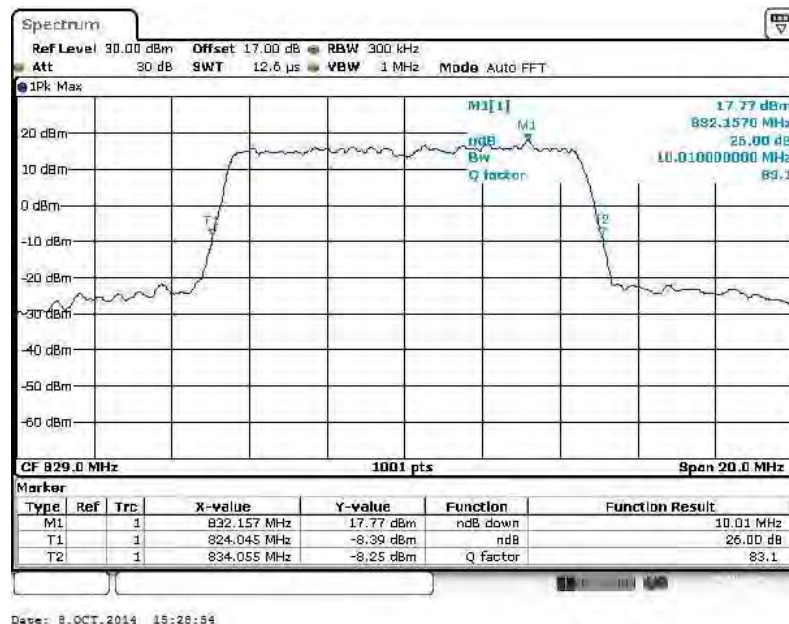


Band :	LTE Band 5	BW / Mod. :	10MHz / QPSK
--------	------------	-------------	--------------

99% Occupied Bandwidth Plot on Channel 20450

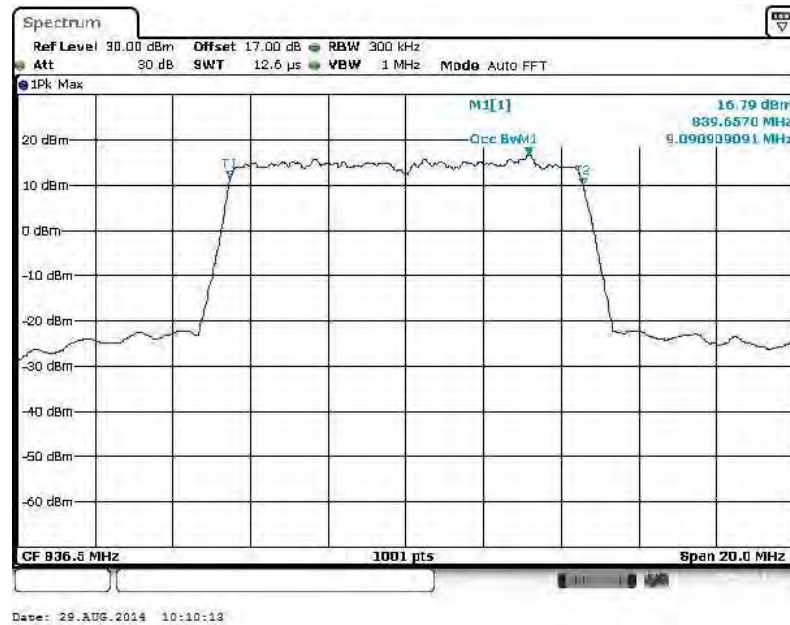


26dB Bandwidth Plot on Channel 20450

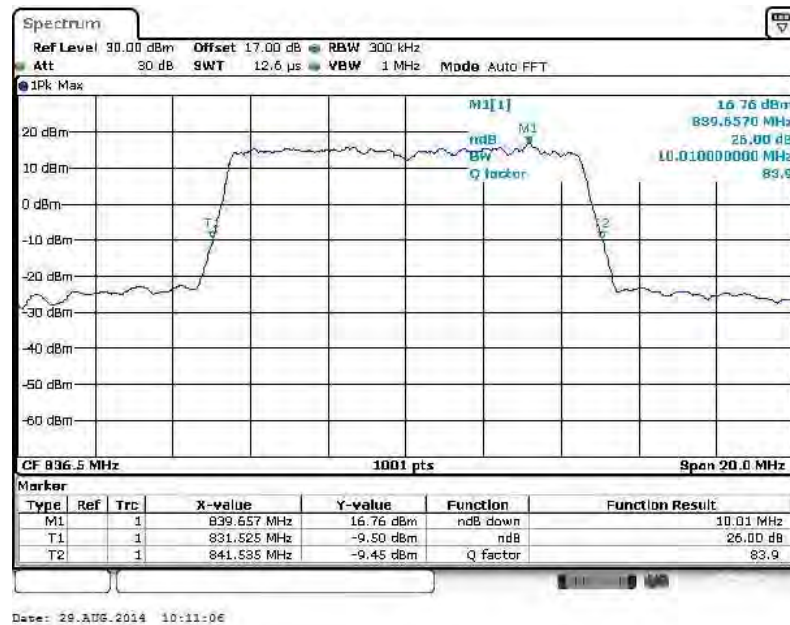




99% Occupied Bandwidth Plot on Channel 20525

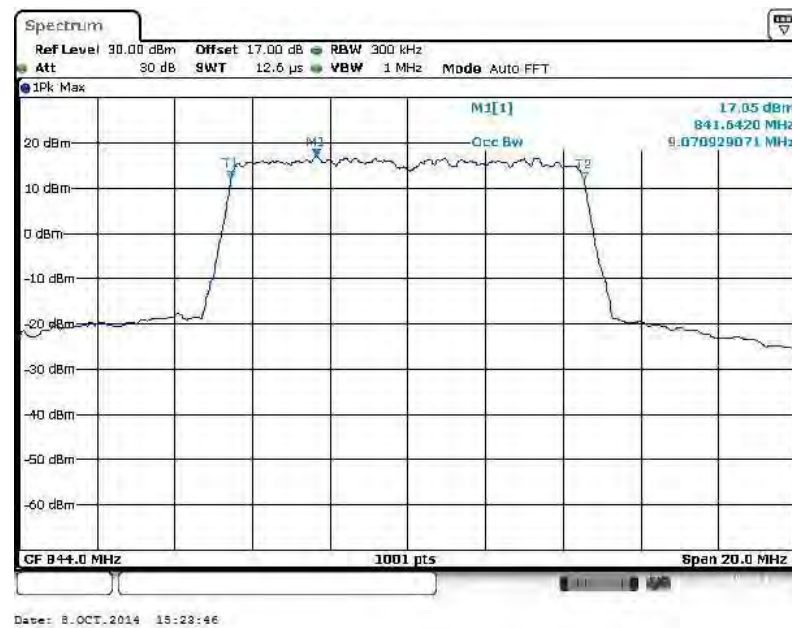


26dB Bandwidth Plot on Channel 20525

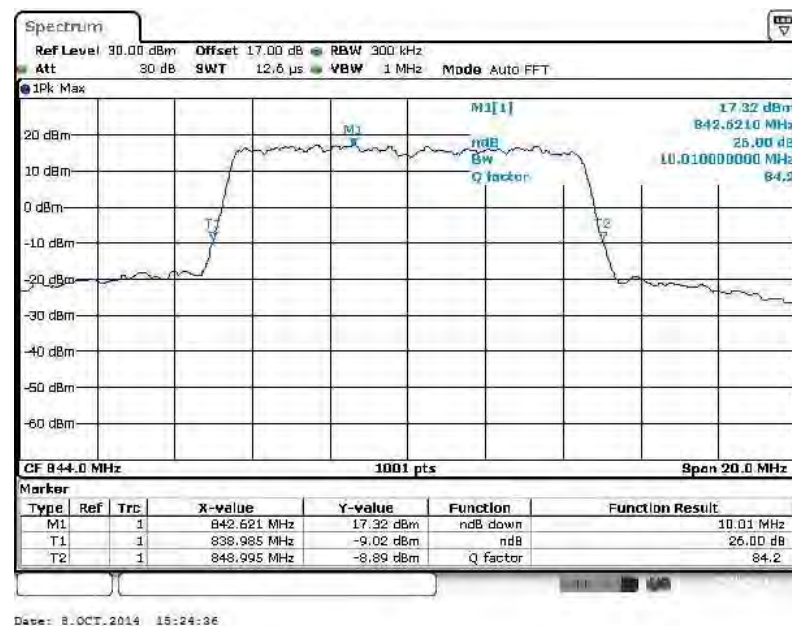




99% Occupied Bandwidth Plot on Channel 20600



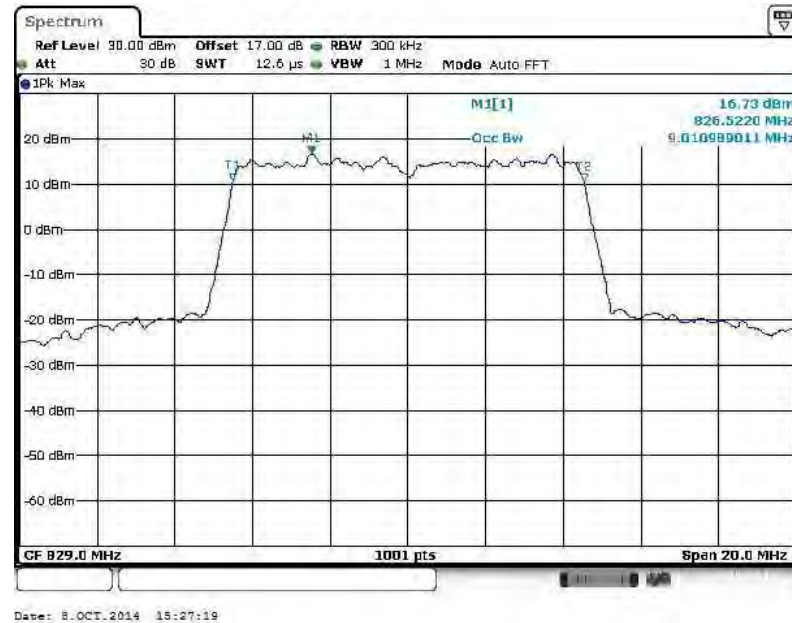
26dB Bandwidth Plot on Channel 20600



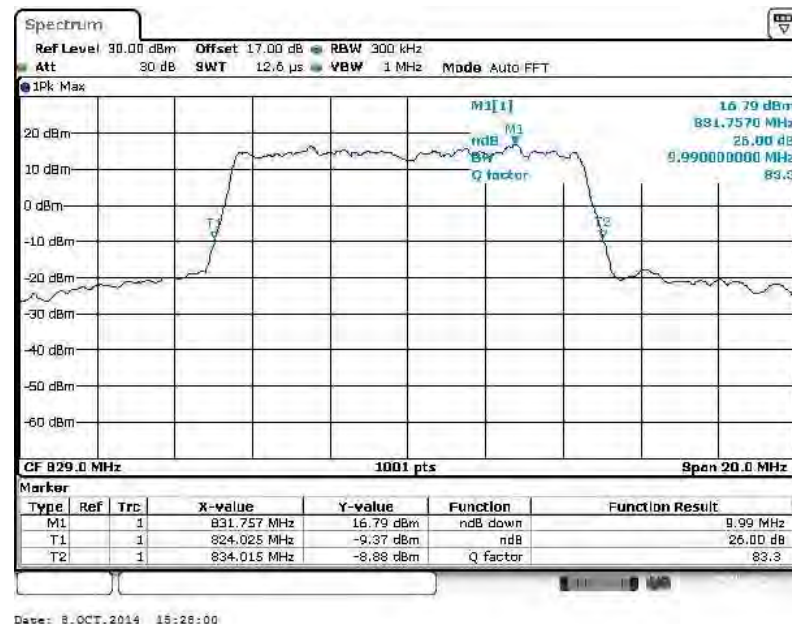


Band :	LTE Band 5	BW / Mod. :	10MHz / 16QAM
--------	------------	-------------	---------------

99% Occupied Bandwidth Plot on Channel 20450

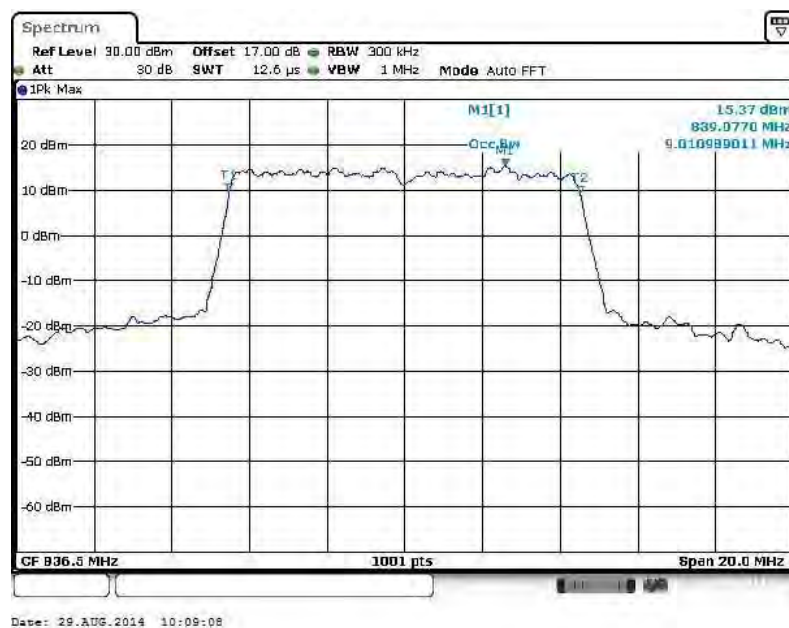


26dB Bandwidth Plot on Channel 20450

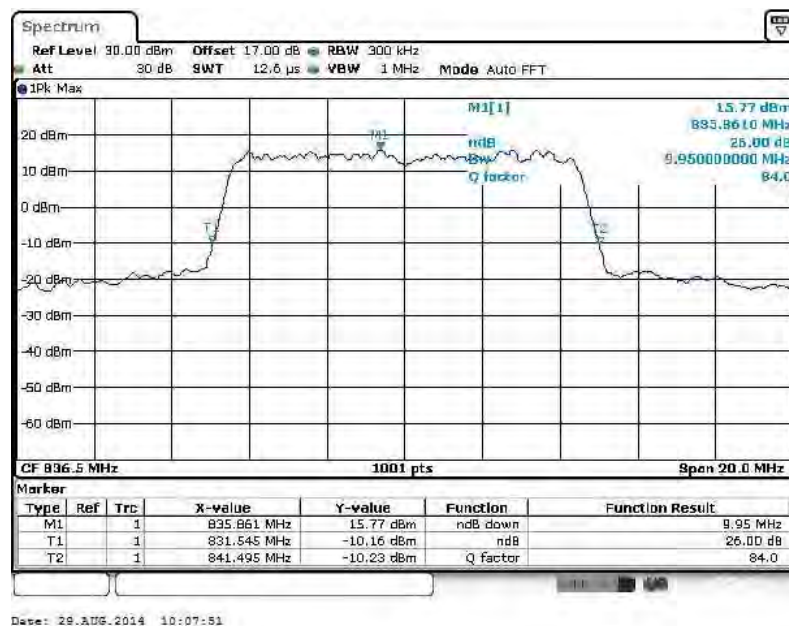




99% Occupied Bandwidth Plot on Channel 20525

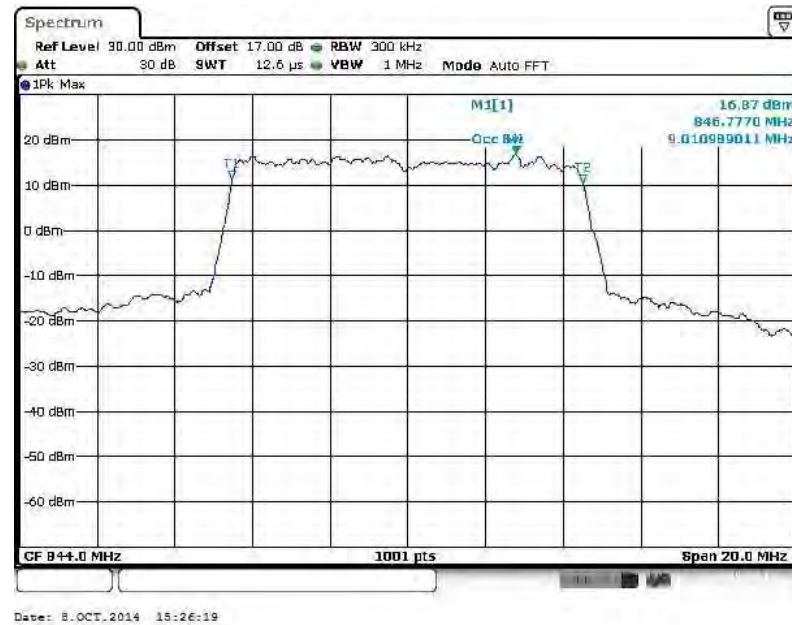


26dB Bandwidth Plot on Channel 20525

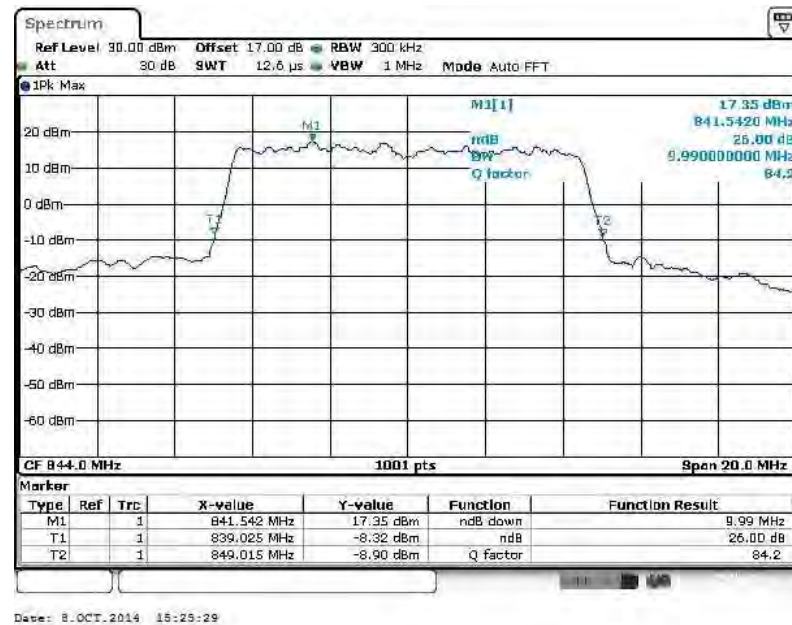




99% Occupied Bandwidth Plot on Channel 20600



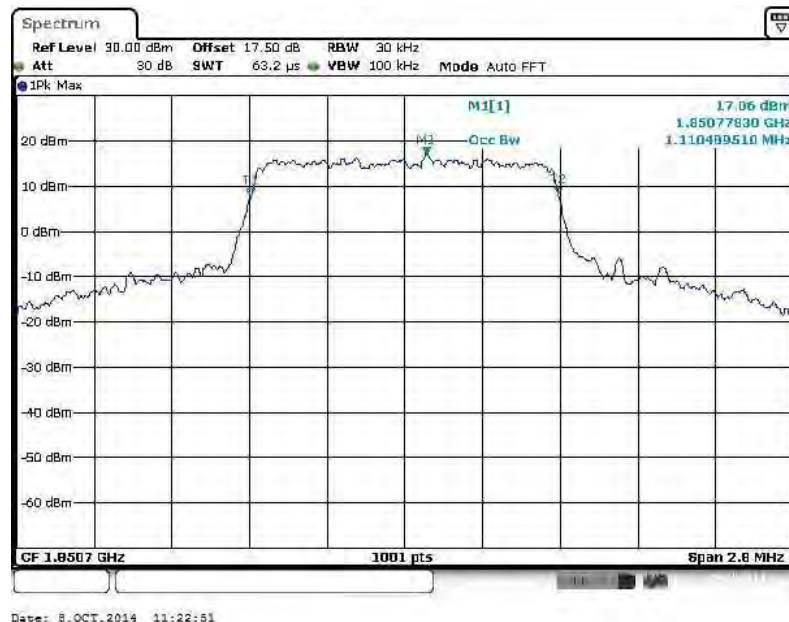
26dB Bandwidth Plot on Channel 20600



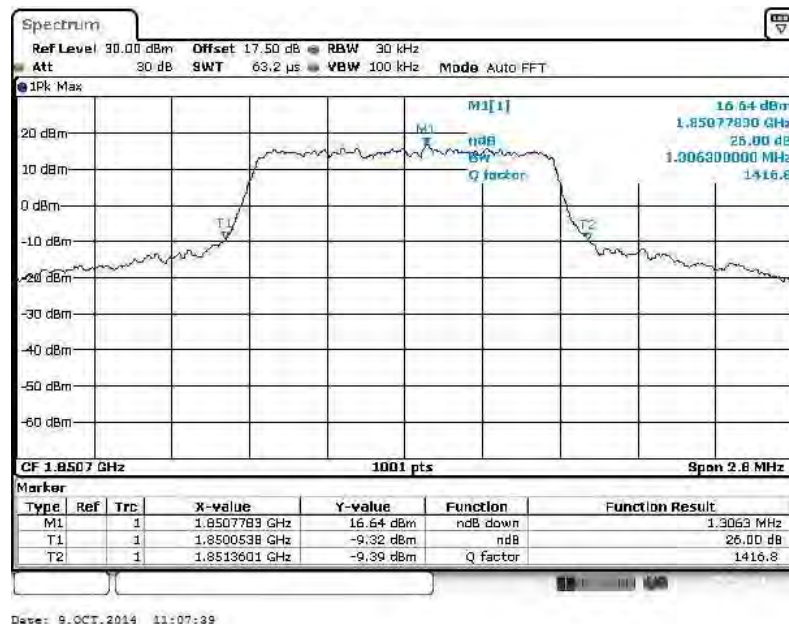


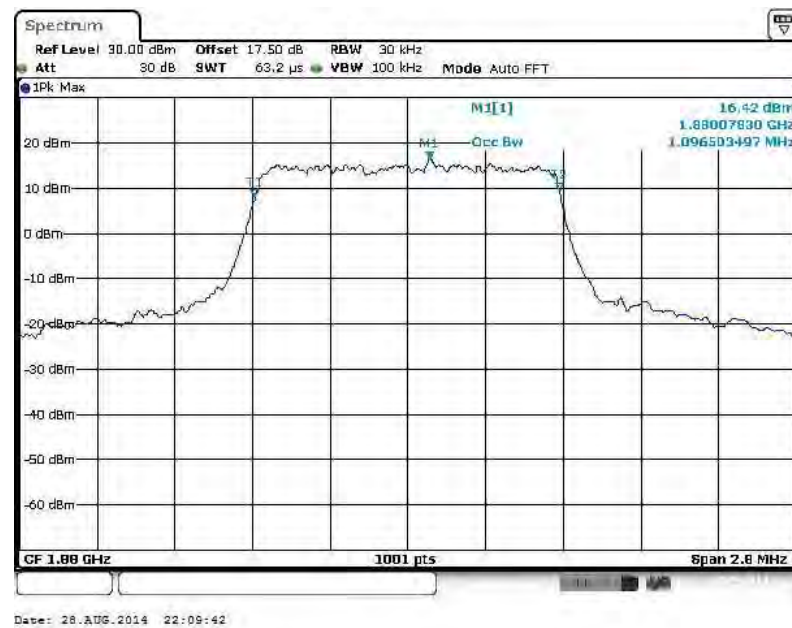
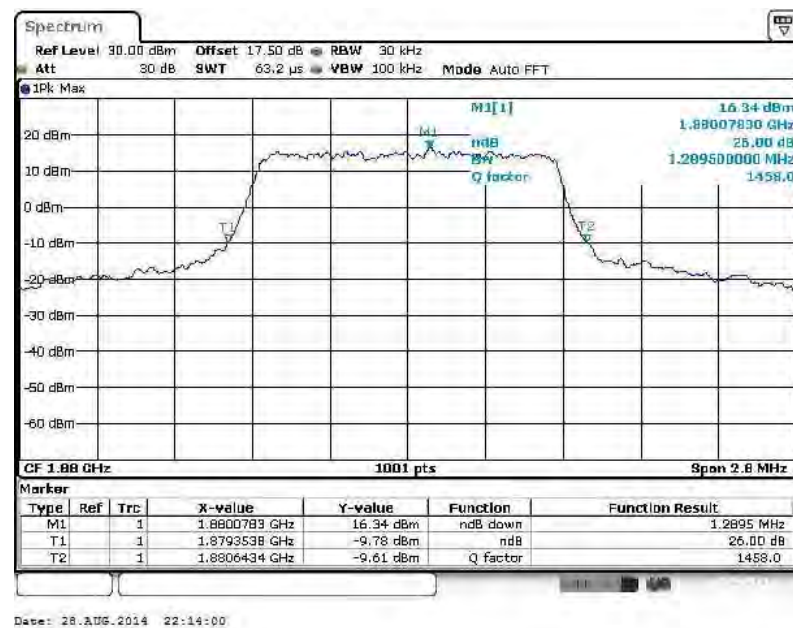
Band :	LTE Band 2	BW / Mod. :	1.4MHz / QPSK
--------	------------	-------------	---------------

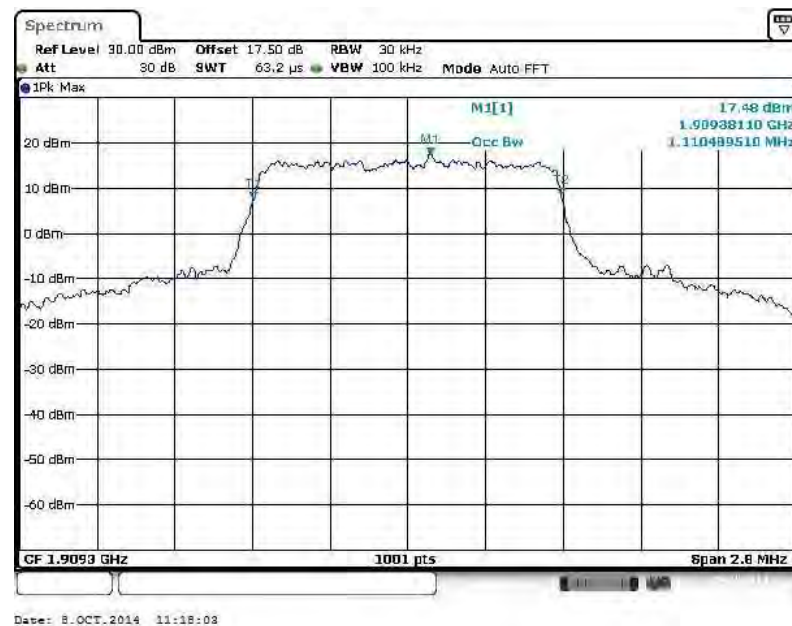
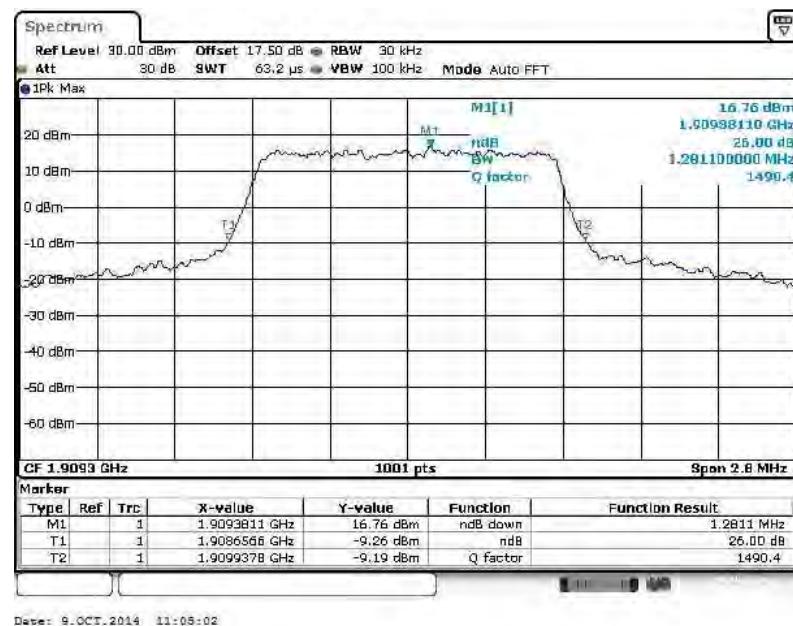
99% Occupied Bandwidth Plot on Channel 18607



26dB Bandwidth Plot on Channel 18607



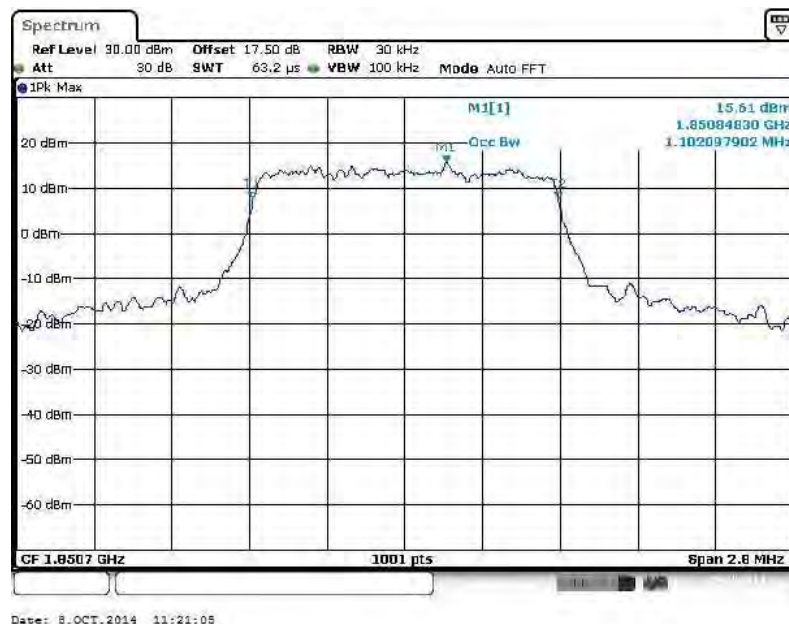
99% Occupied Bandwidth Plot on Channel 18900

26dB Bandwidth Plot on Channel 18900


99% Occupied Bandwidth Plot on Channel 19193

26dB Bandwidth Plot on Channel 19193


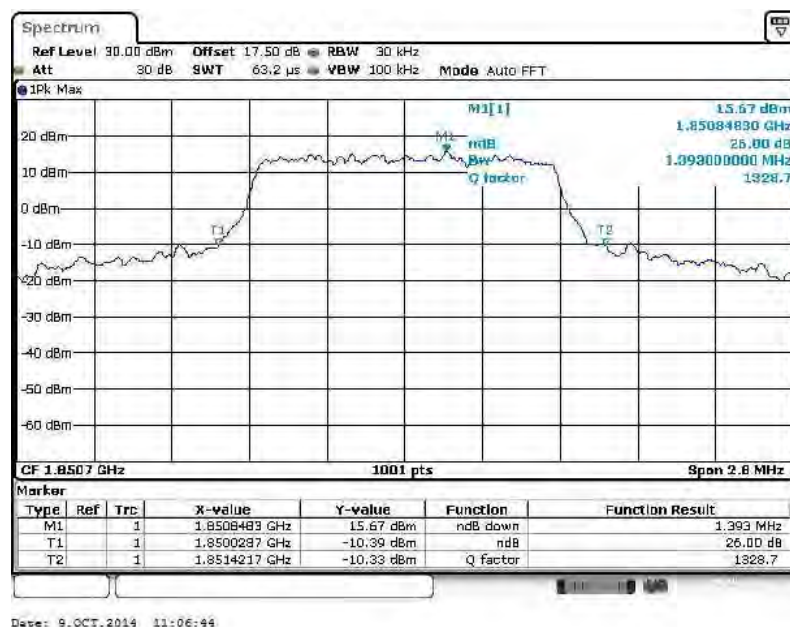


Band :	LTE Band 2	BW / Mod. :	1.4MHz / 16QAM
--------	------------	-------------	----------------

99% Occupied Bandwidth Plot on Channel 18607

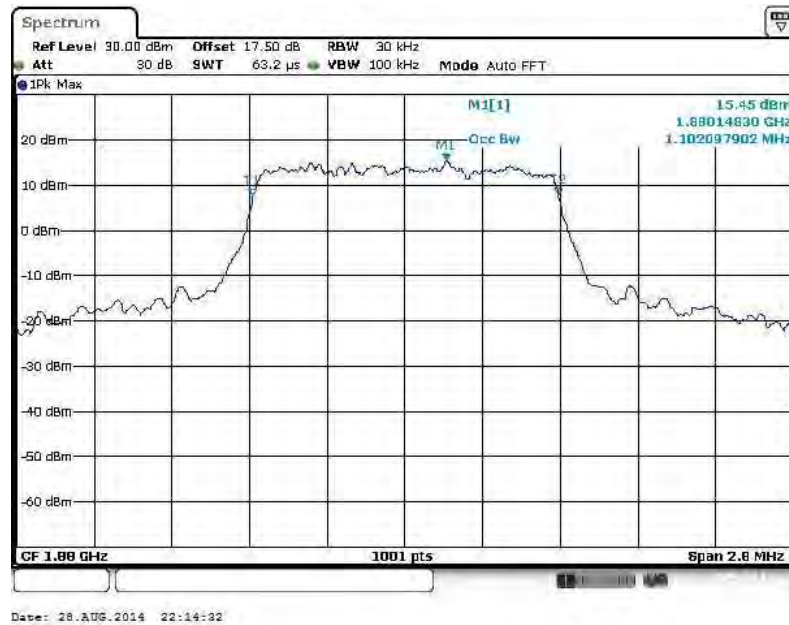


26dB Bandwidth Plot on Channel 18607

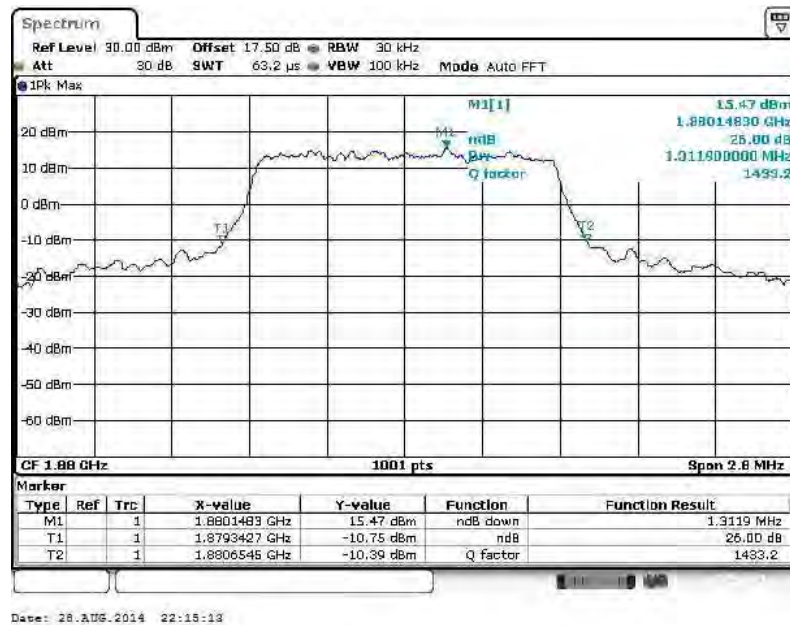




99% Occupied Bandwidth Plot on Channel 18900



26dB Bandwidth Plot on Channel 18900

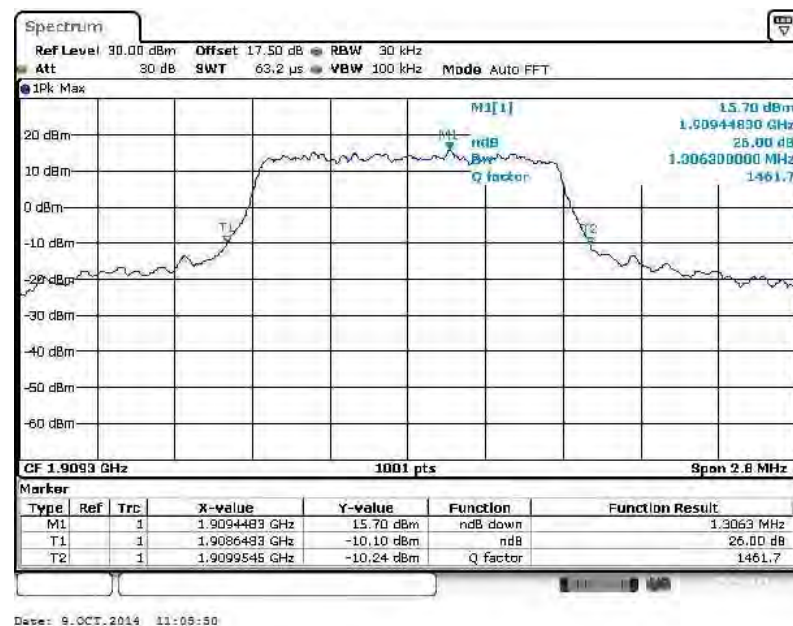




99% Occupied Bandwidth Plot on Channel 19193



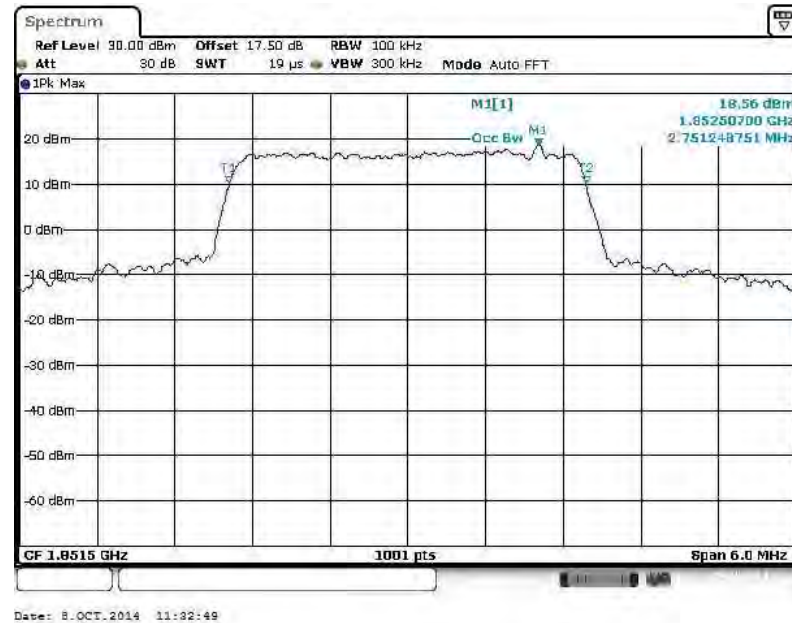
26dB Bandwidth Plot on Channel 19193



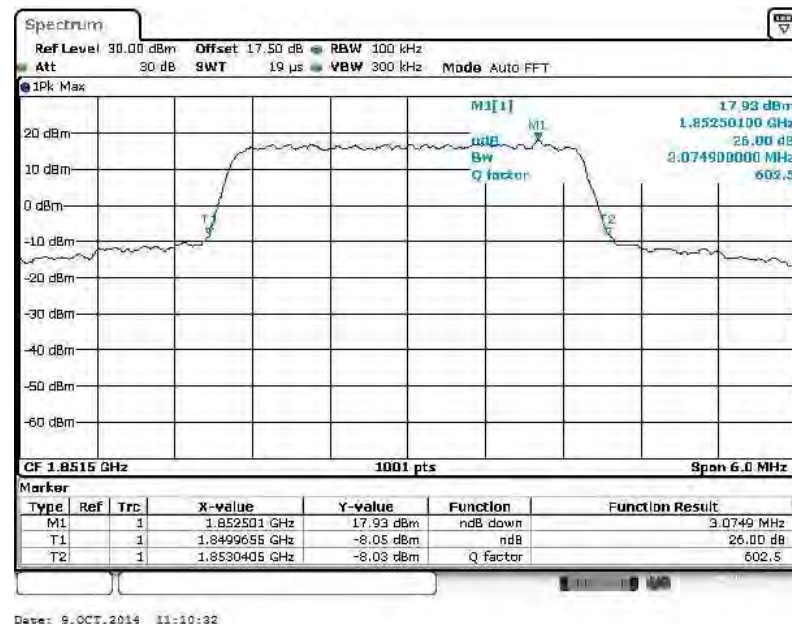


Band :	LTE Band 2	BW / Mod. :	3MHz / QPSK
--------	------------	-------------	-------------

99% Occupied Bandwidth Plot on Channel 18615

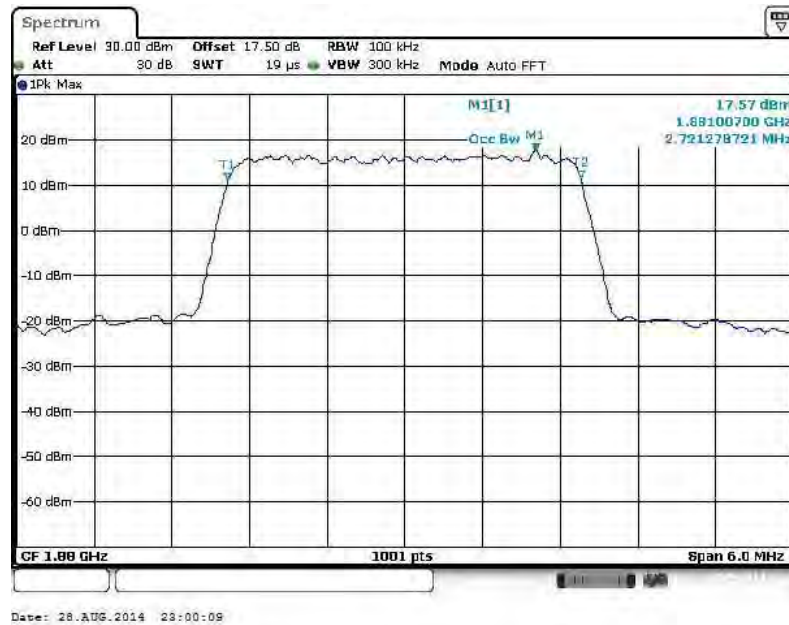


26dB Bandwidth Plot on Channel 18615

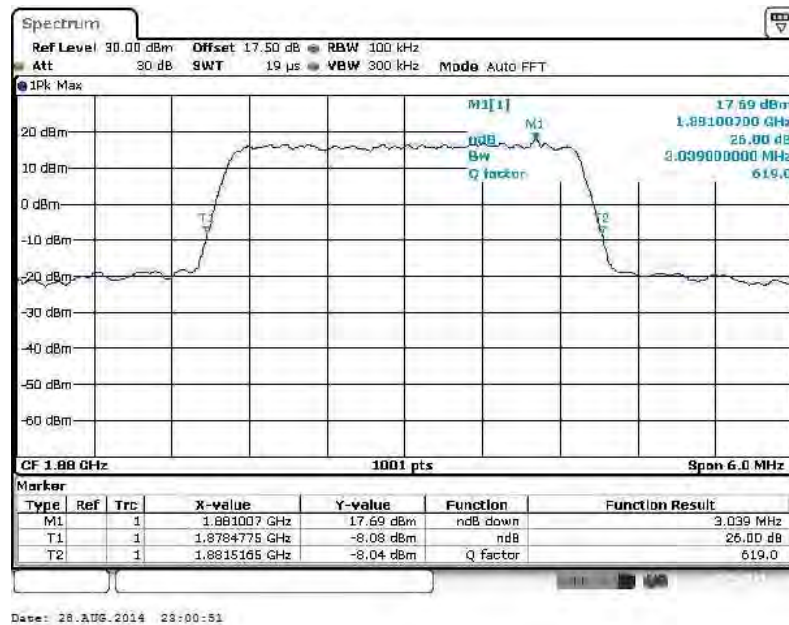




99% Occupied Bandwidth Plot on Channel 18900

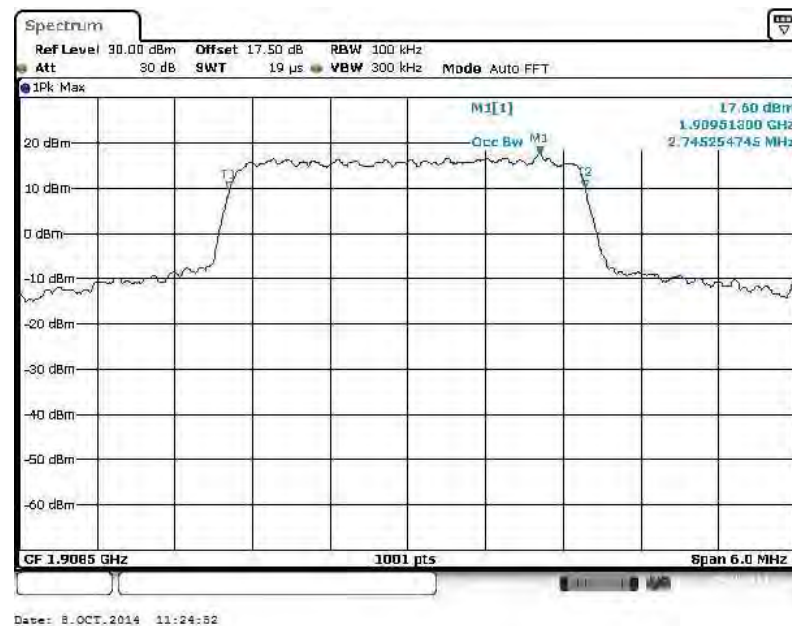


26dB Bandwidth Plot on Channel 18900

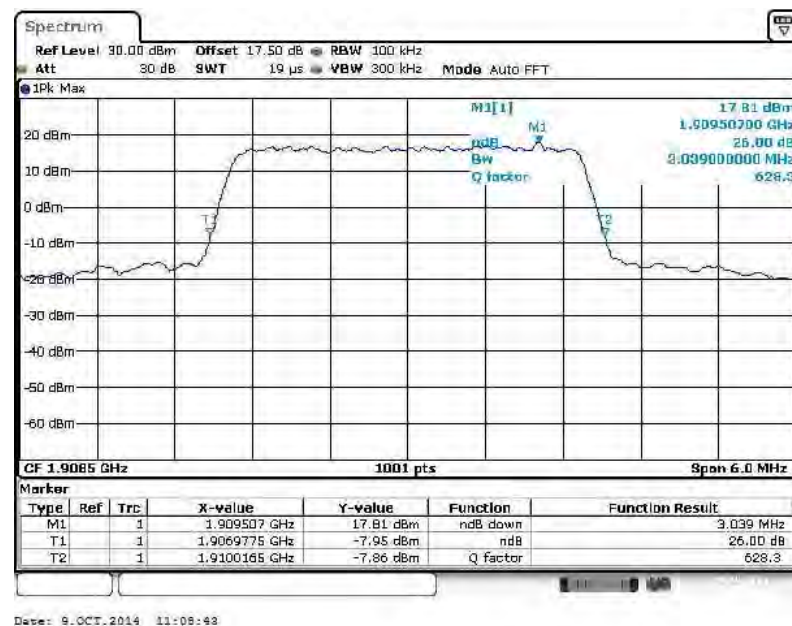




99% Occupied Bandwidth Plot on Channel 19185



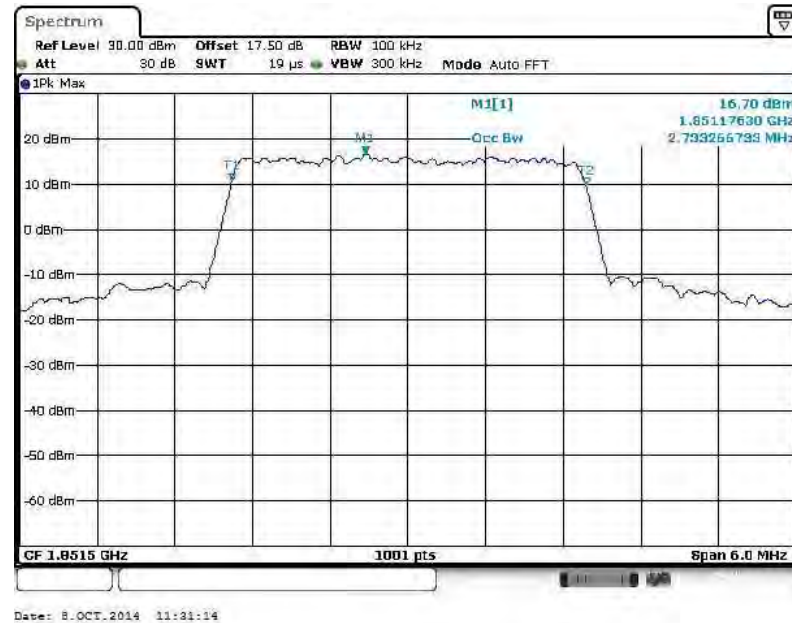
26dB Bandwidth Plot on Channel 19185



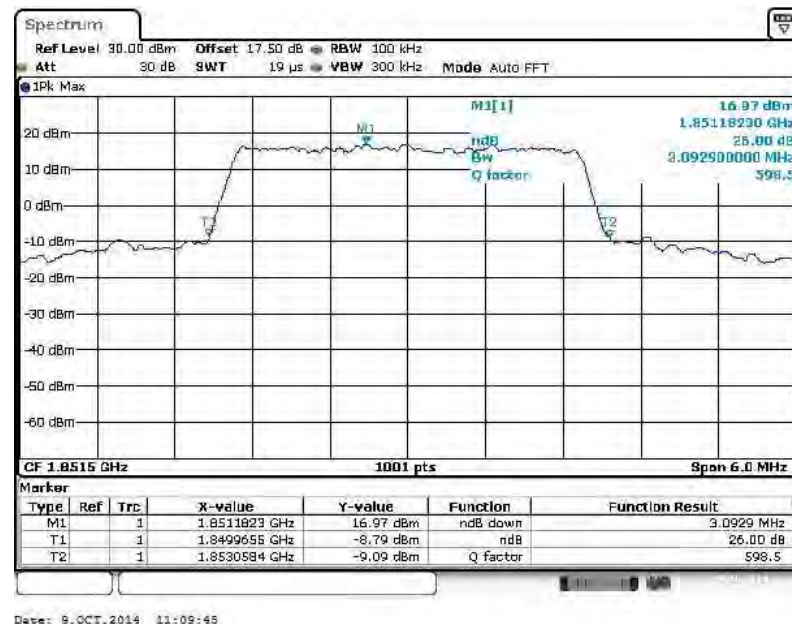


Band :	LTE Band 2	BW / Mod. :	3MHz / 16QAM
--------	------------	-------------	--------------

99% Occupied Bandwidth Plot on Channel 18615

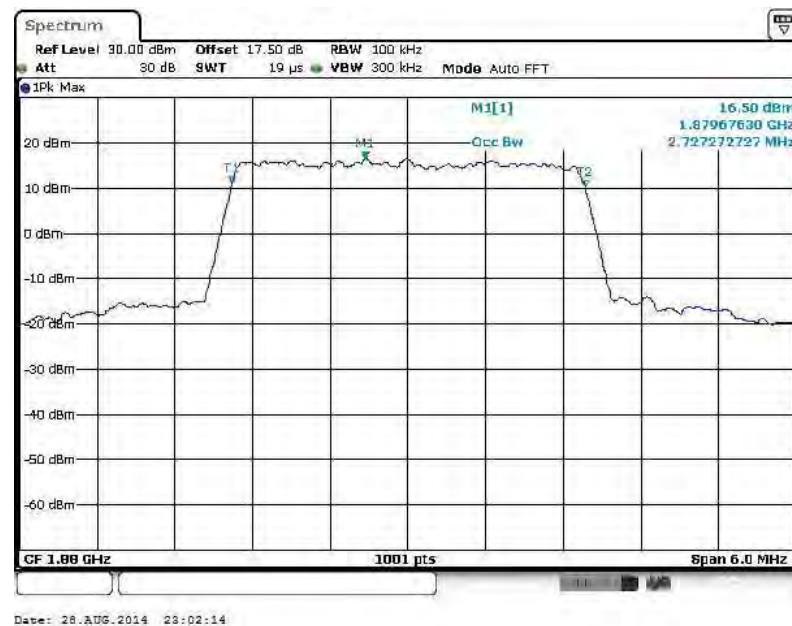


26dB Bandwidth Plot on Channel 18615

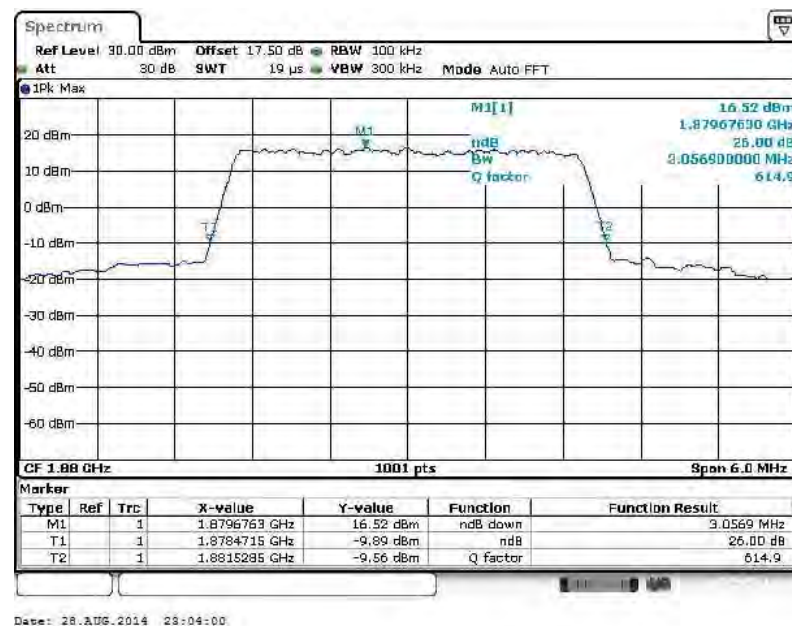




99% Occupied Bandwidth Plot on Channel 18900

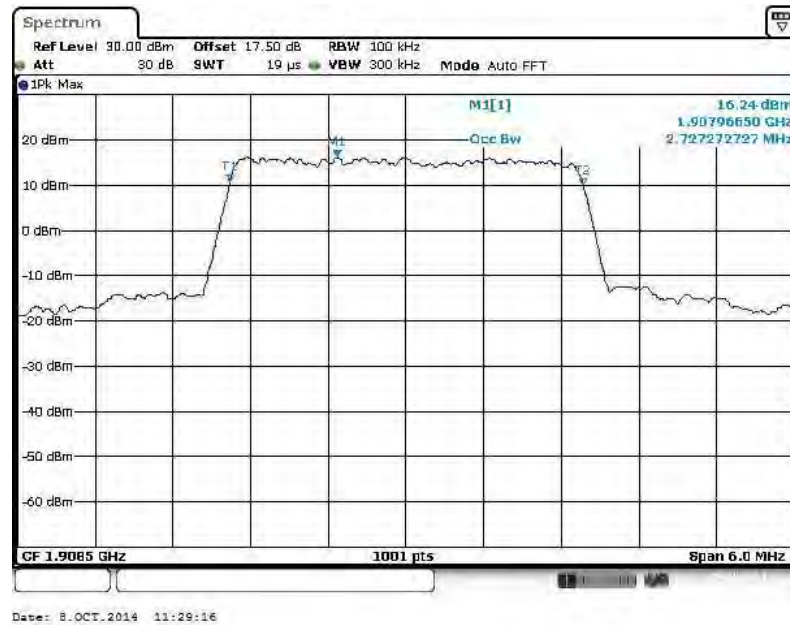


26dB Bandwidth Plot on Channel 18900

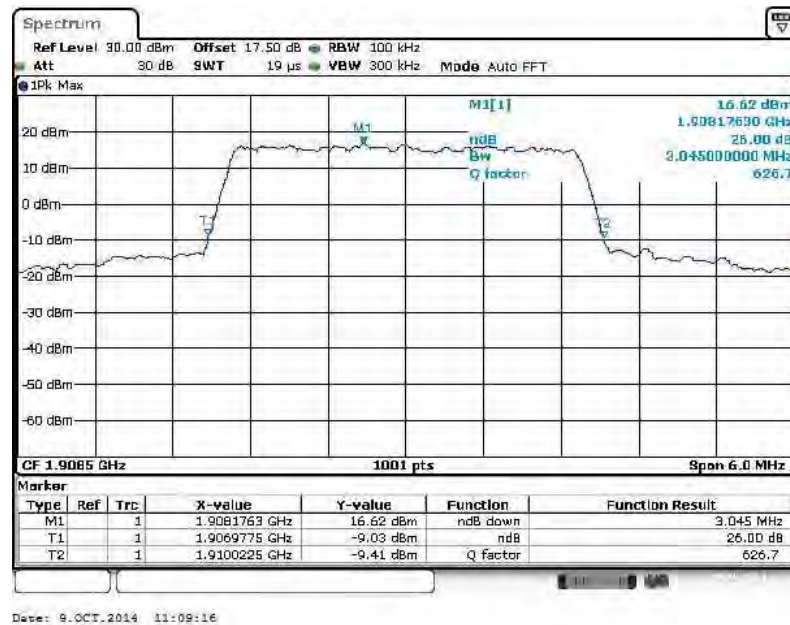




99% Occupied Bandwidth Plot on Channel 19185



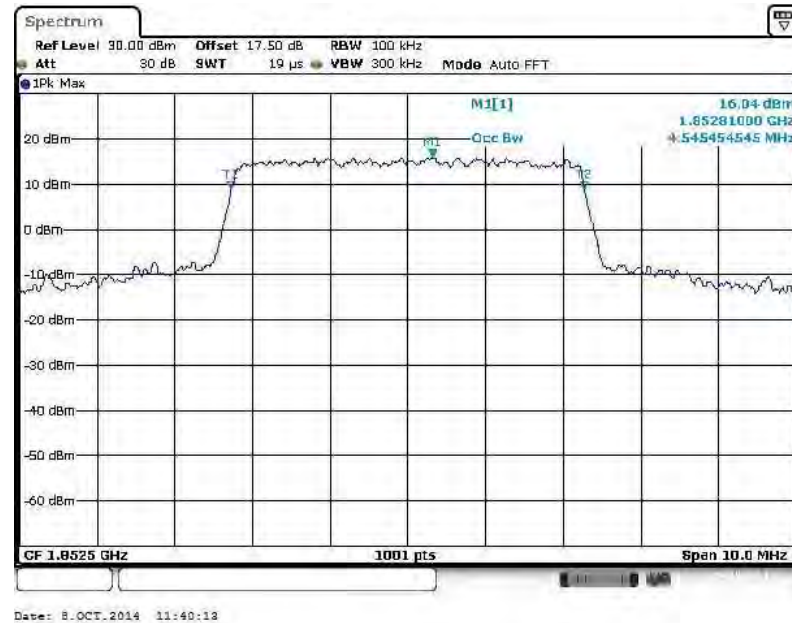
26dB Bandwidth Plot on Channel 19185



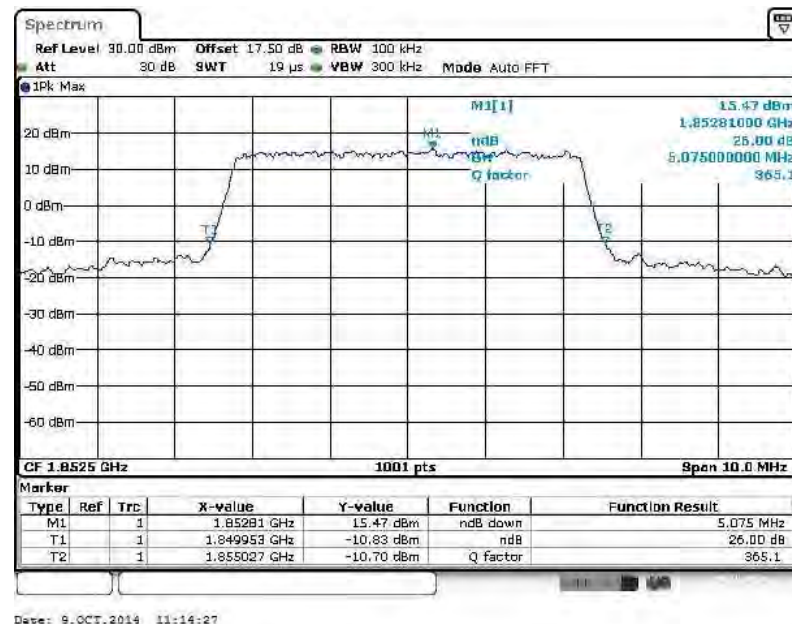


Band :	LTE Band 2	BW / Mod. :	5MHz / QPSK
--------	------------	-------------	-------------

99% Occupied Bandwidth Plot on Channel 18625

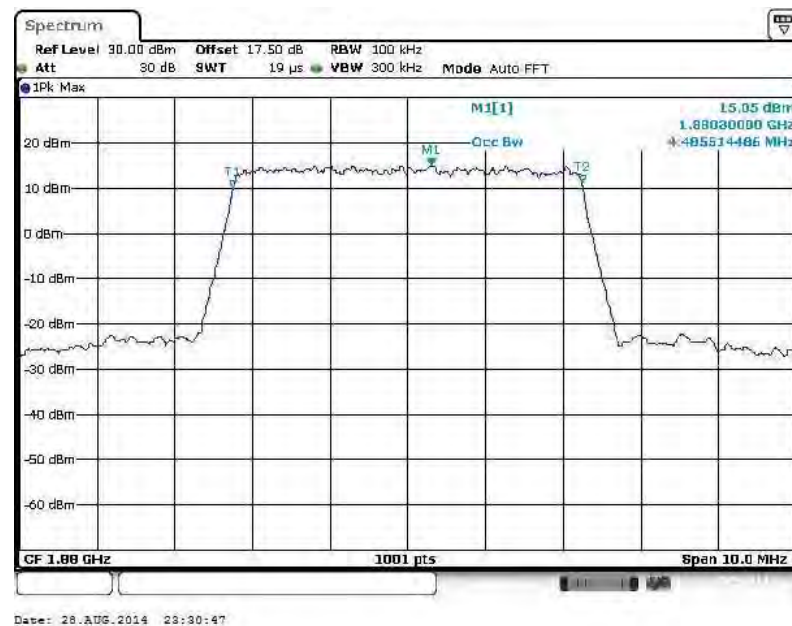


26dB Bandwidth Plot on Channel 18625

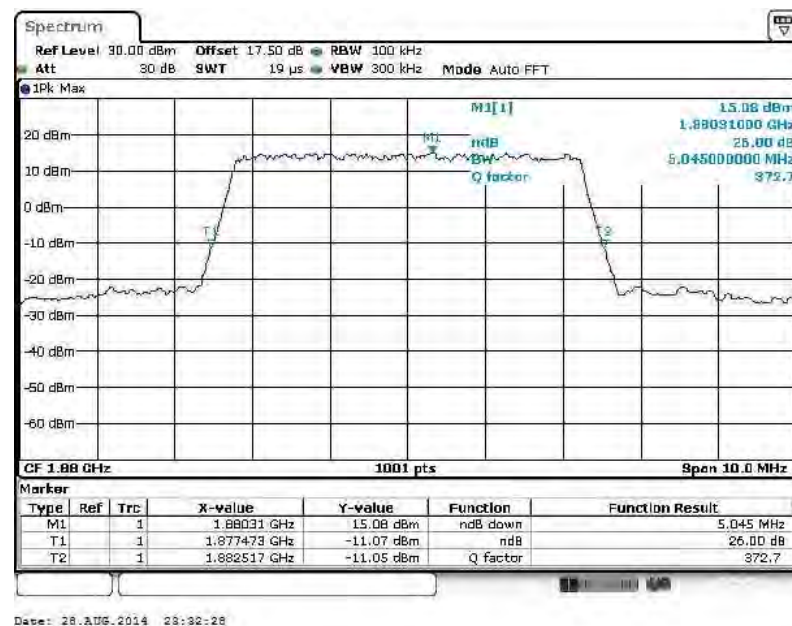




99% Occupied Bandwidth Plot on Channel 18900

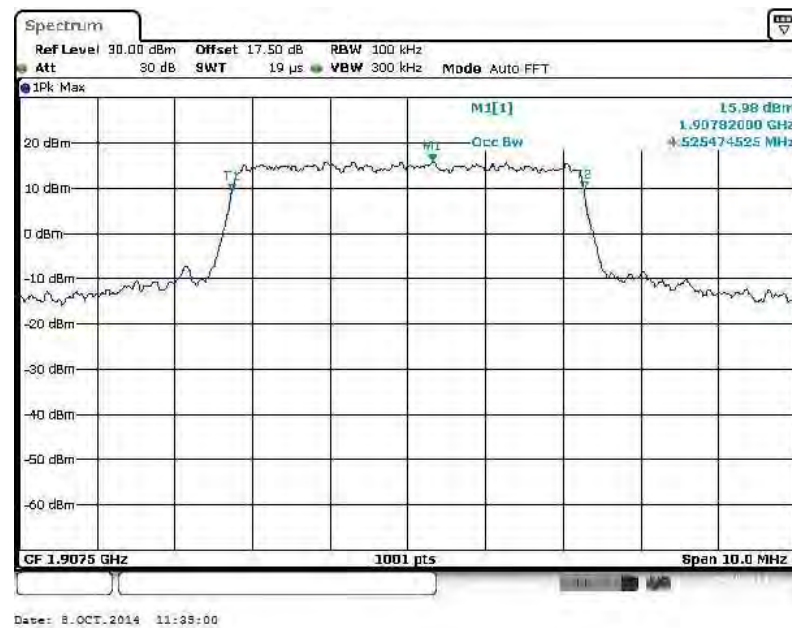


26dB Bandwidth Plot on Channel 18900

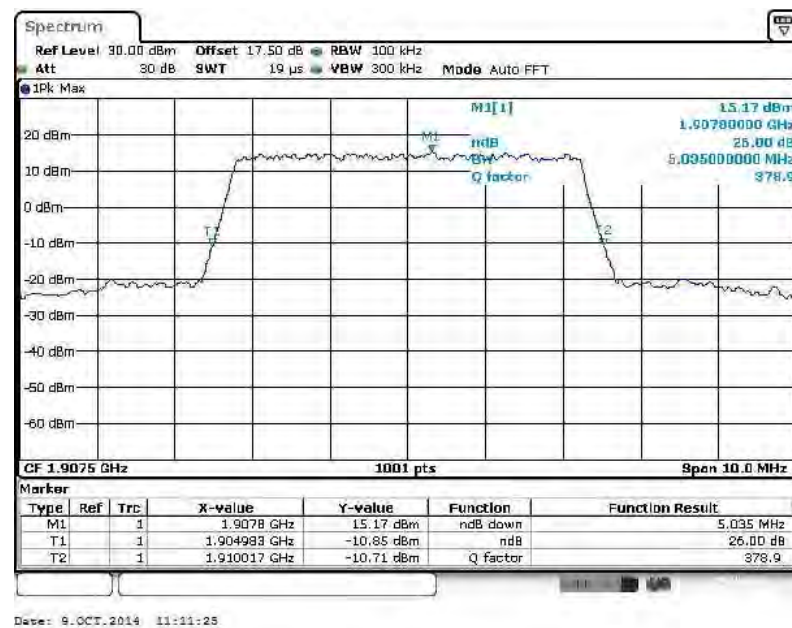




99% Occupied Bandwidth Plot on Channel 19175



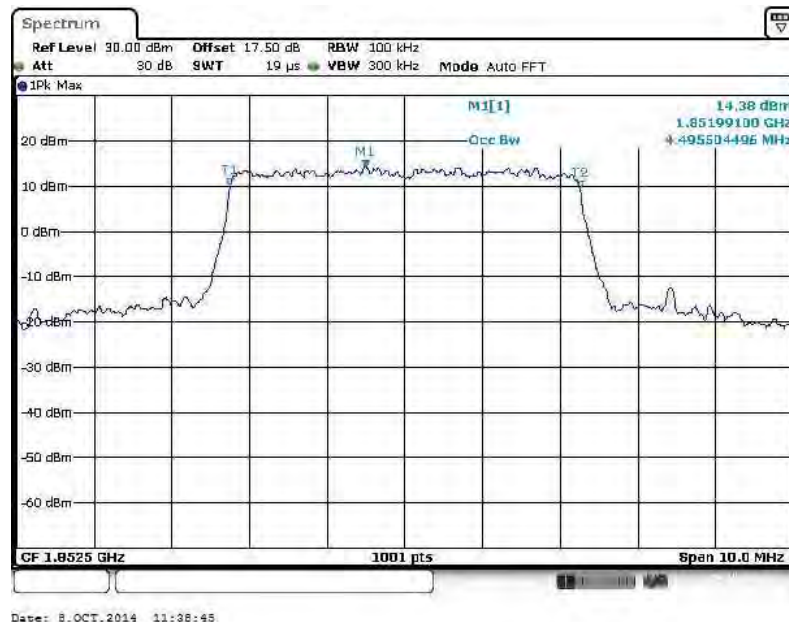
26dB Bandwidth Plot on Channel 19175



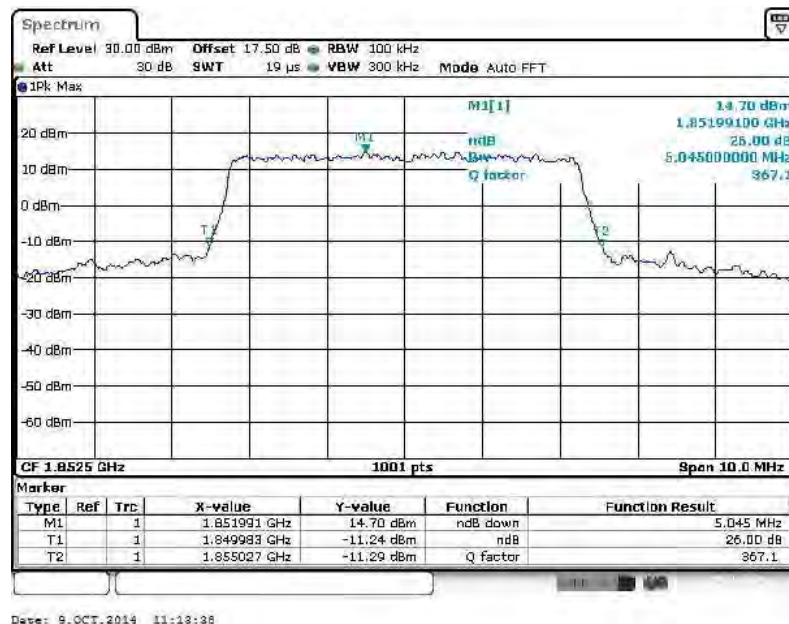


Band :	LTE Band 2	BW / Mod. :	5MHz / 16QAM
--------	------------	-------------	--------------

99% Occupied Bandwidth Plot on Channel 18625

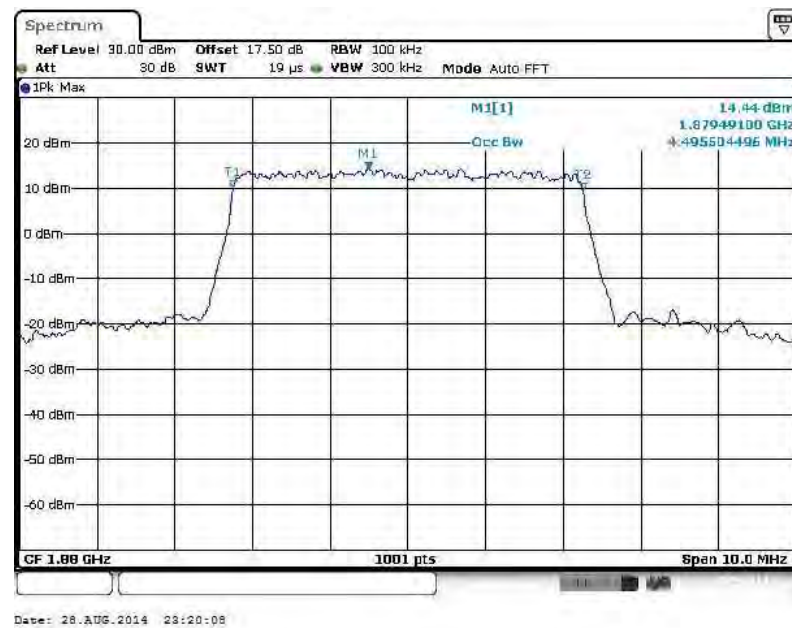


26dB Bandwidth Plot on Channel 18625

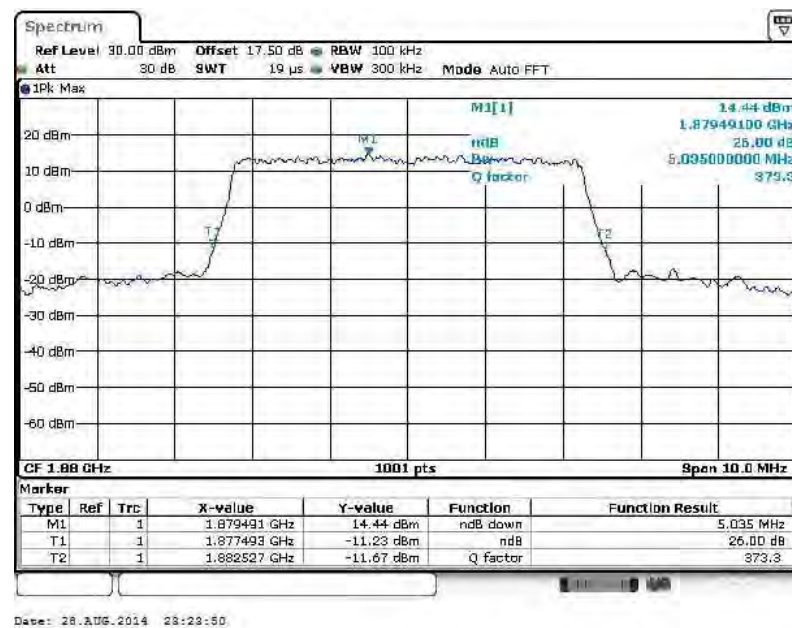




99% Occupied Bandwidth Plot on Channel 18900

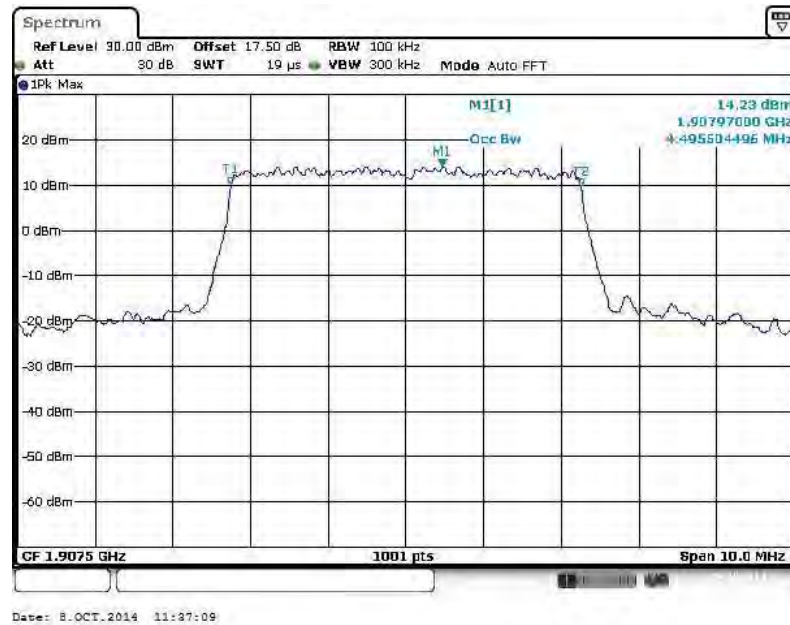


26dB Bandwidth Plot on Channel 18900

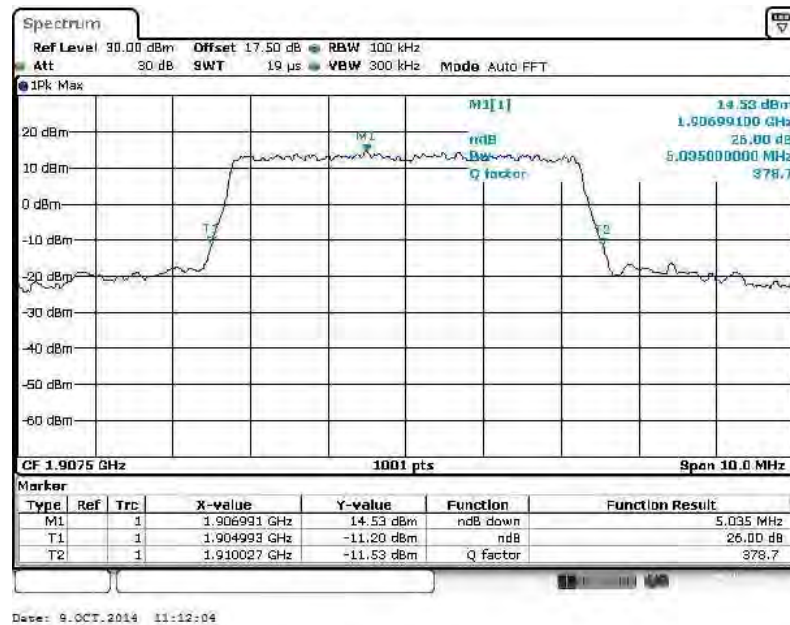




99% Occupied Bandwidth Plot on Channel 19175



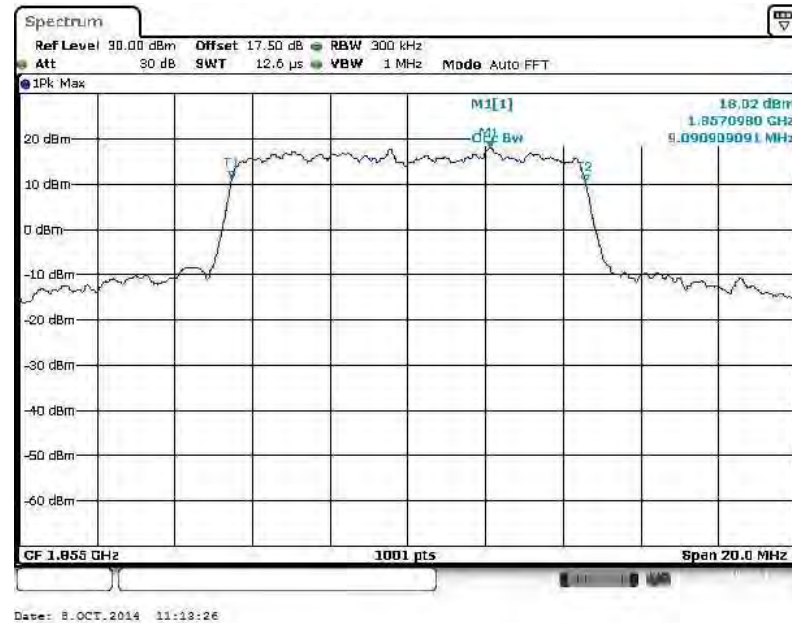
26dB Bandwidth Plot on Channel 19175



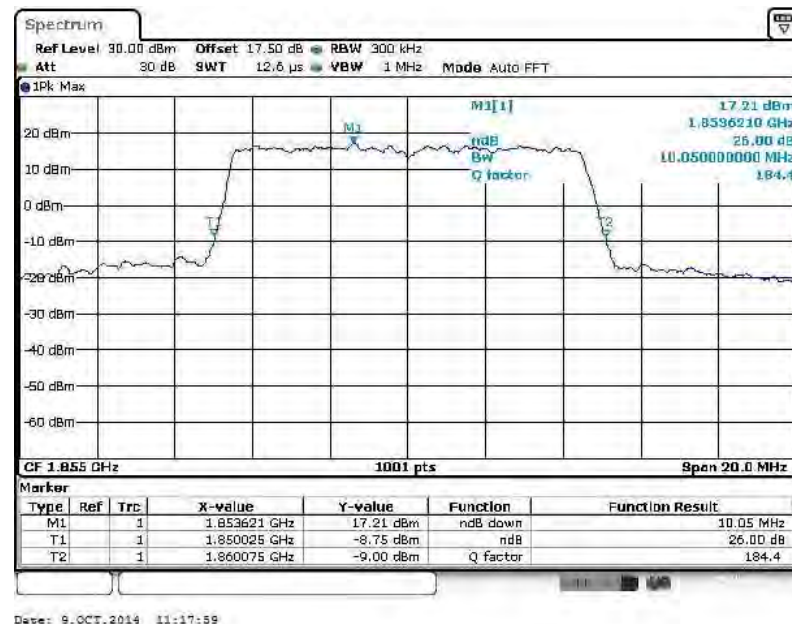


Band :	LTE Band 2	BW / Mod. :	10MHz / QPSK
--------	------------	-------------	--------------

99% Occupied Bandwidth Plot on Channel 18650

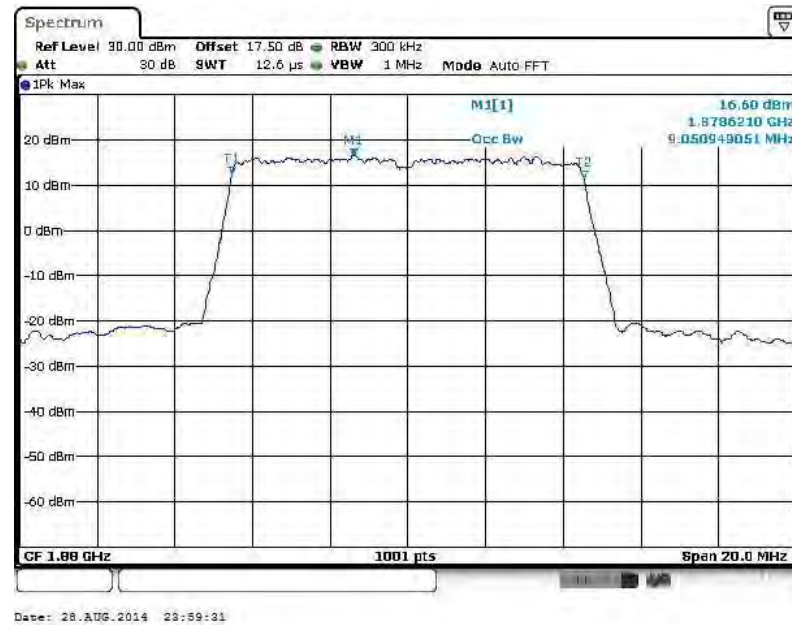


26dB Bandwidth Plot on Channel 18650

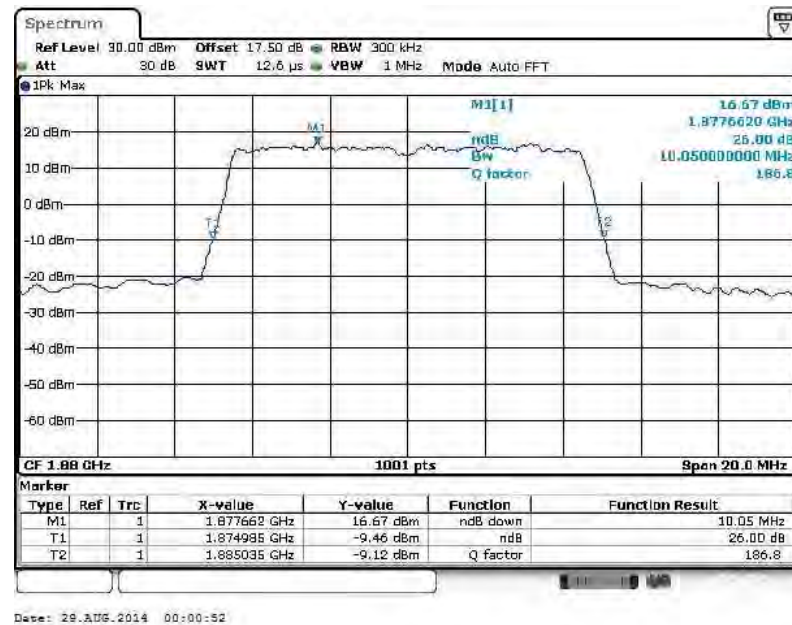




99% Occupied Bandwidth Plot on Channel 18900

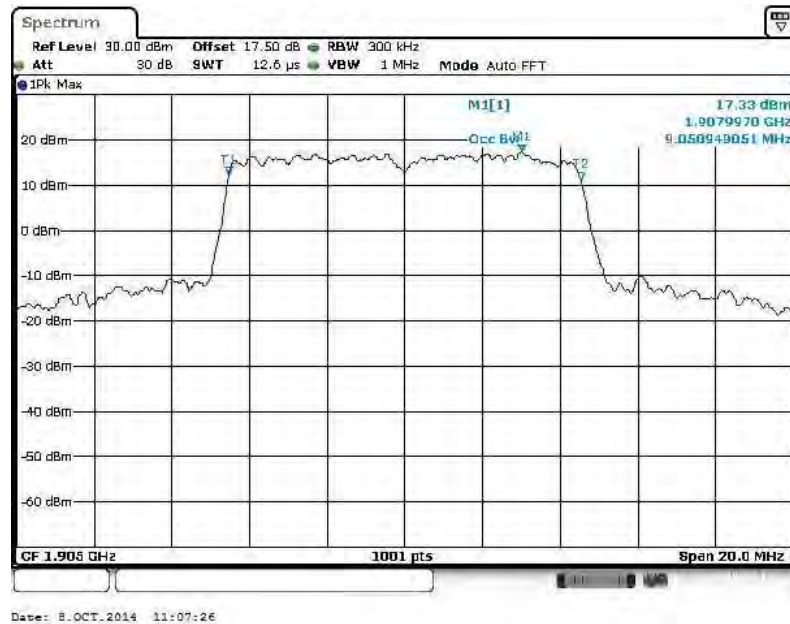


26dB Bandwidth Plot on Channel 18900

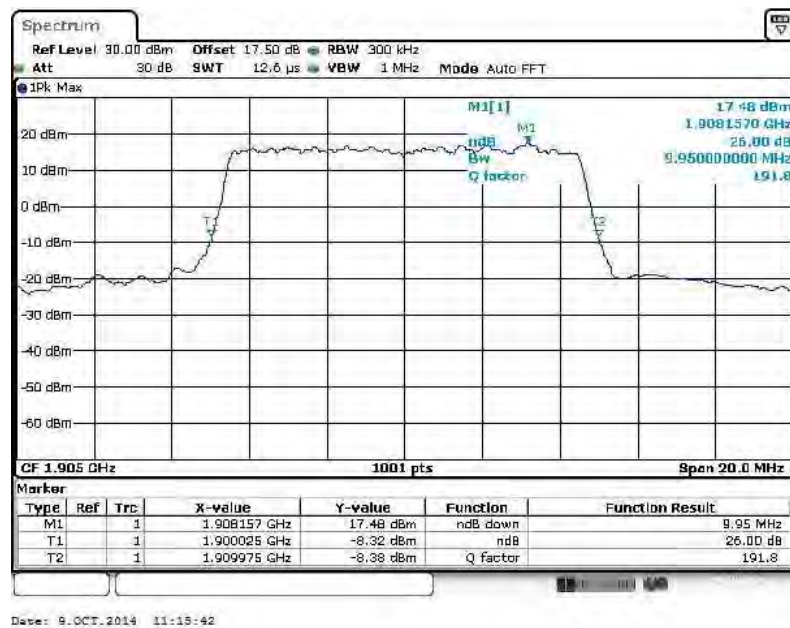




99% Occupied Bandwidth Plot on Channel 19150



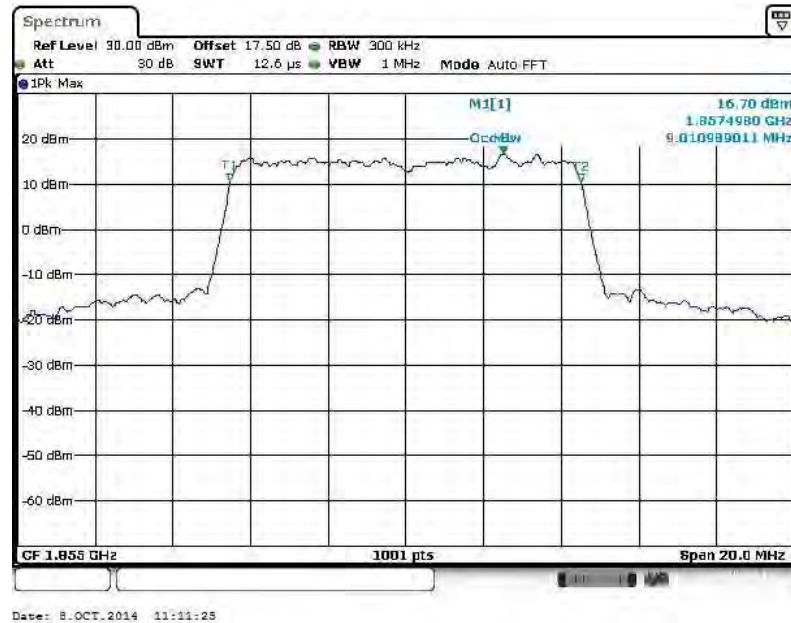
26dB Bandwidth Plot on Channel 19150



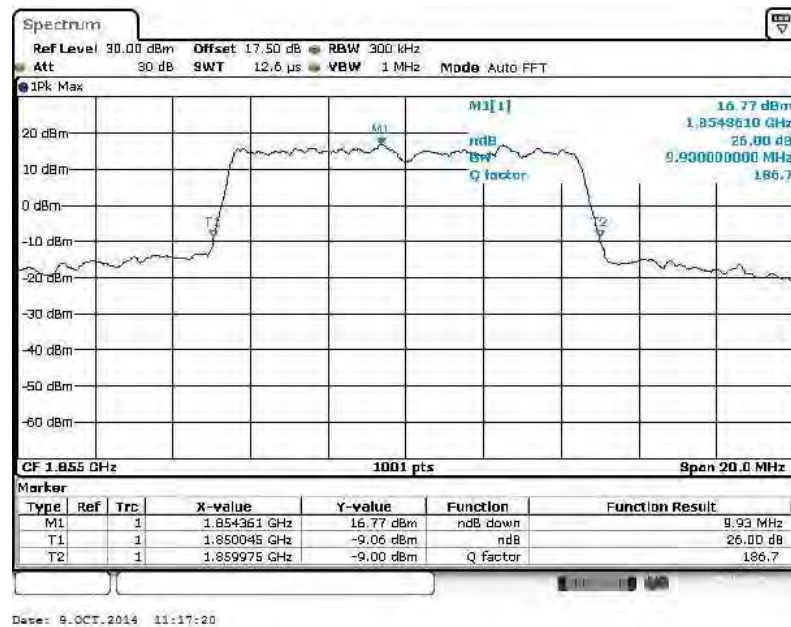


Band :	LTE Band 2	BW / Mod. :	10MHz / 16QAM
--------	------------	-------------	---------------

99% Occupied Bandwidth Plot on Channel 18650

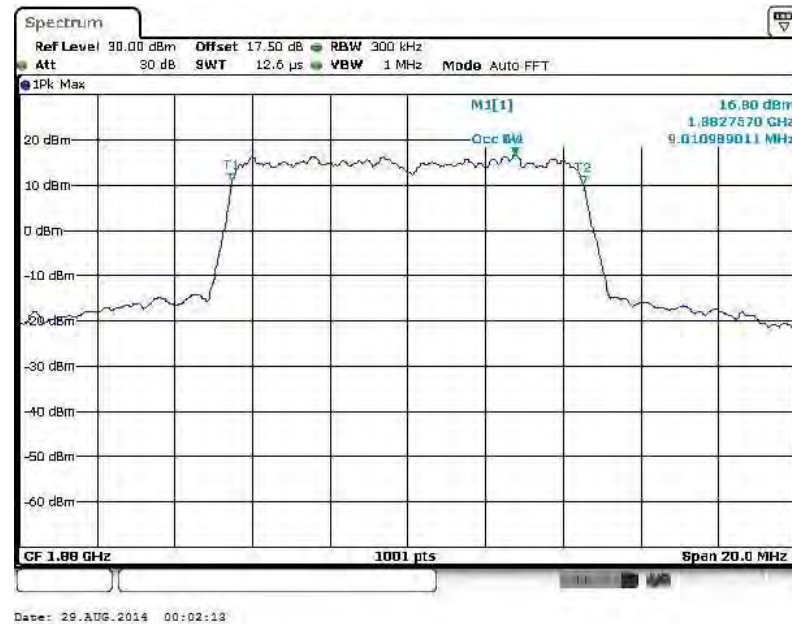


26dB Bandwidth Plot on Channel 18650

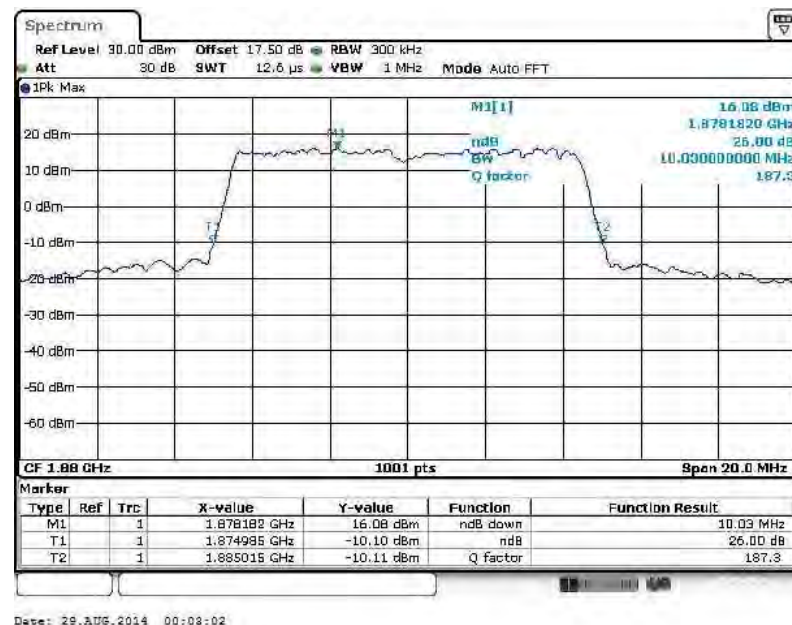




99% Occupied Bandwidth Plot on Channel 18900

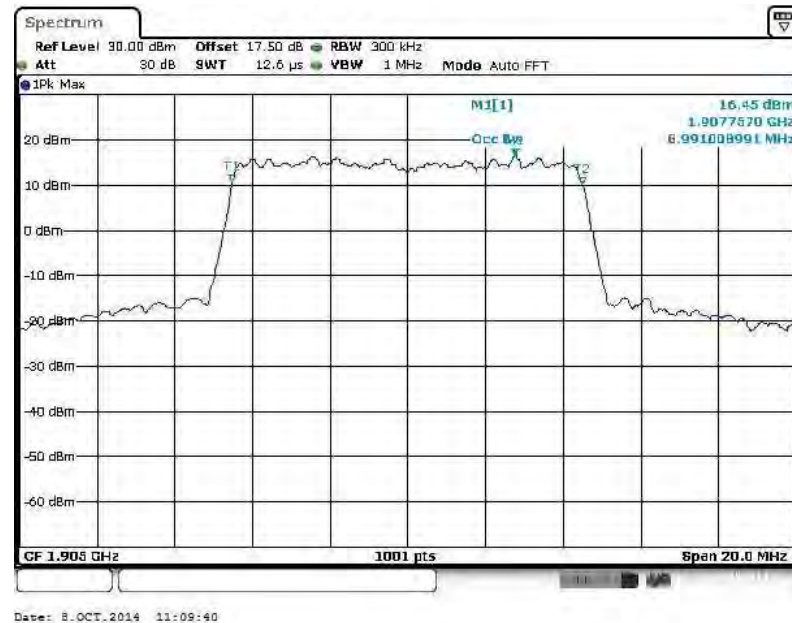


26dB Bandwidth Plot on Channel 18900

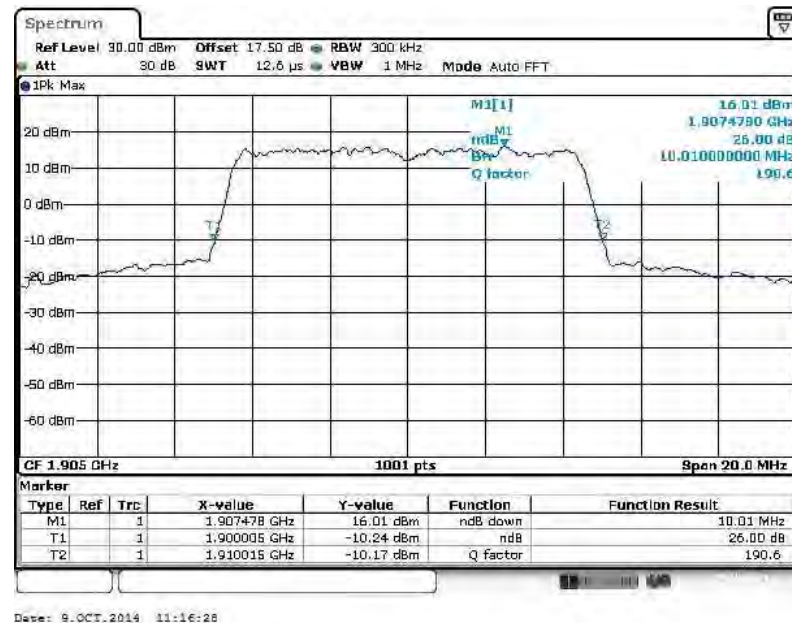




99% Occupied Bandwidth Plot on Channel 19150



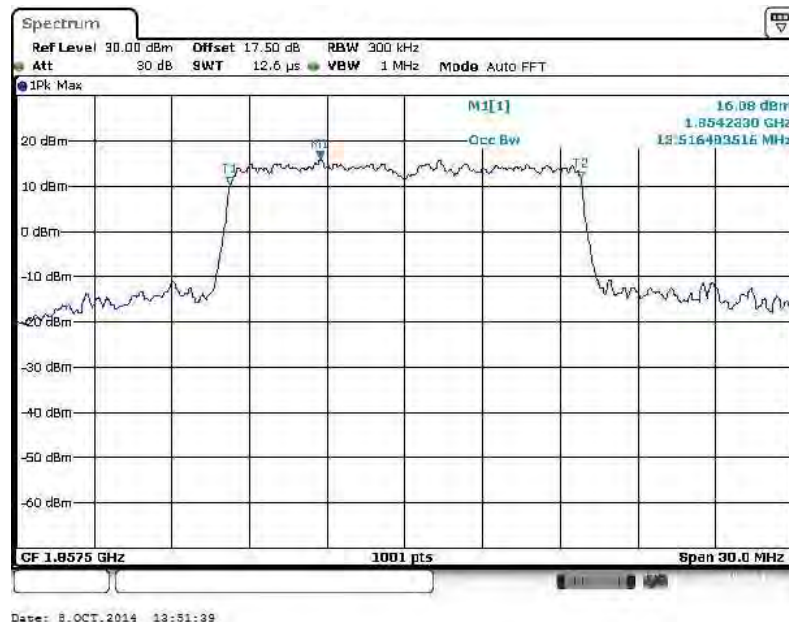
26dB Bandwidth Plot on Channel 19150



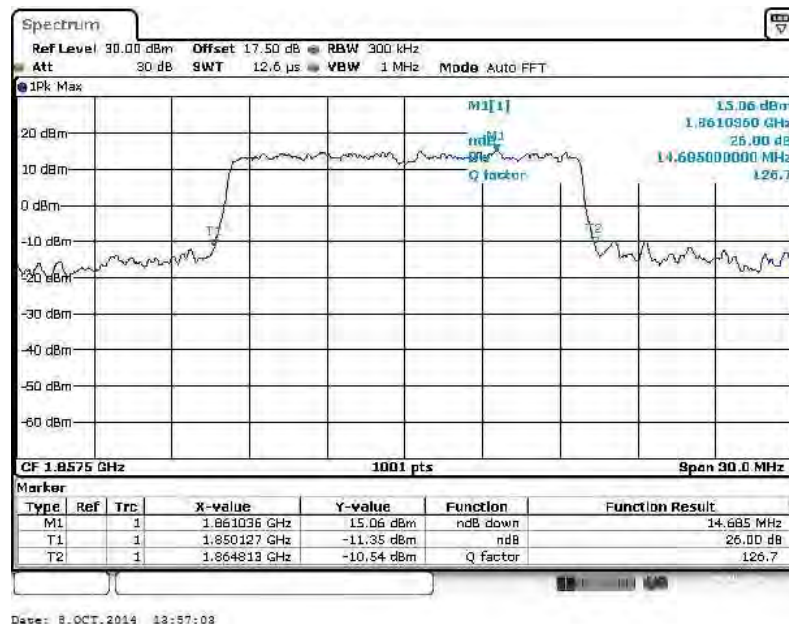


Band :	LTE Band 2	BW / Mod. :	15MHz / QPSK
--------	------------	-------------	--------------

99% Occupied Bandwidth Plot on Channel 18675

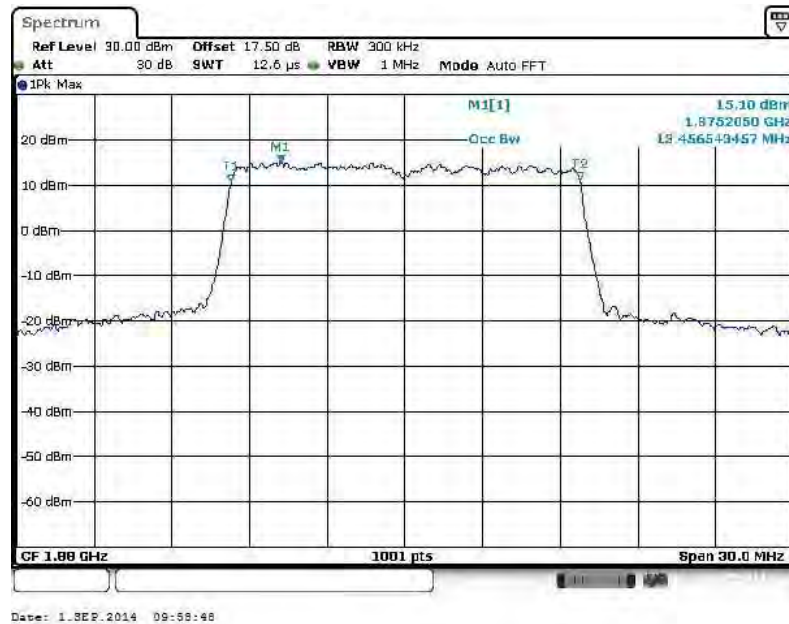


26dB Bandwidth Plot on Channel 18675

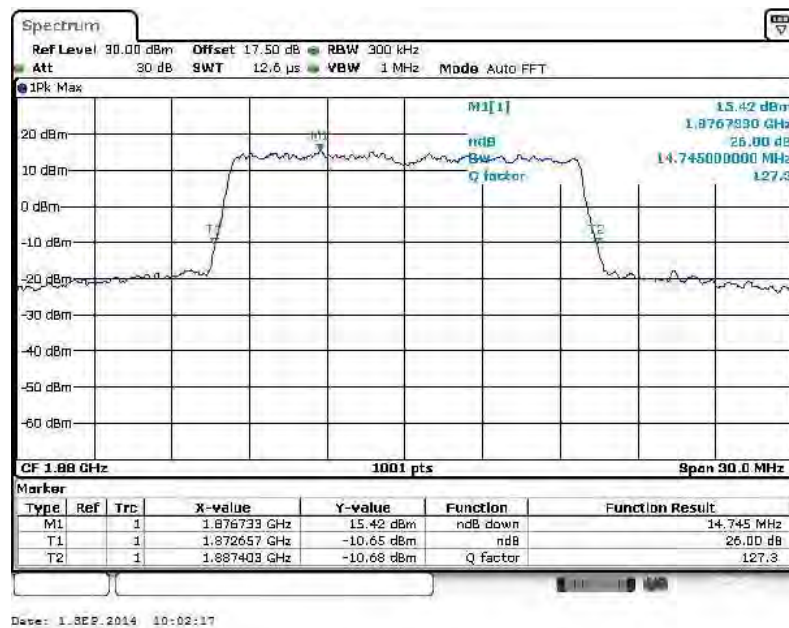




99% Occupied Bandwidth Plot on Channel 18900

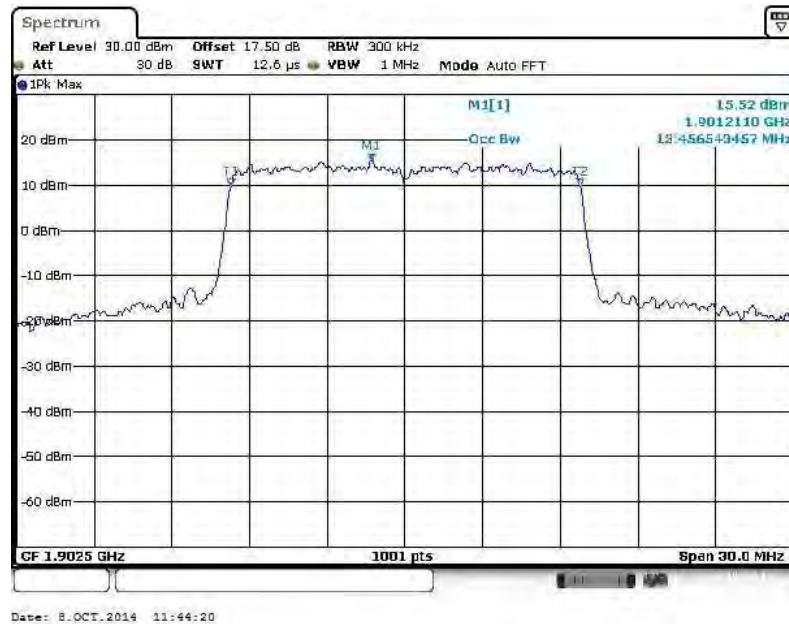


26dB Bandwidth Plot on Channel 18900

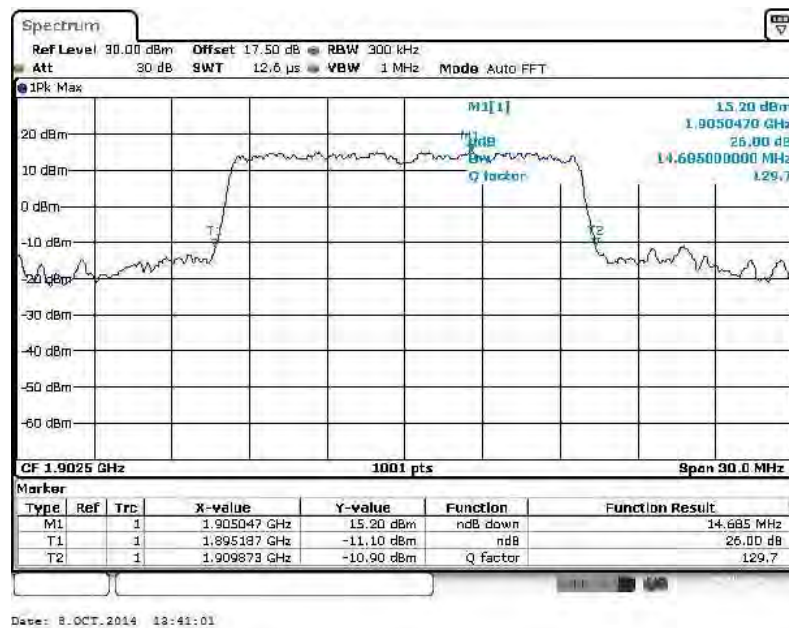




99% Occupied Bandwidth Plot on Channel 19125



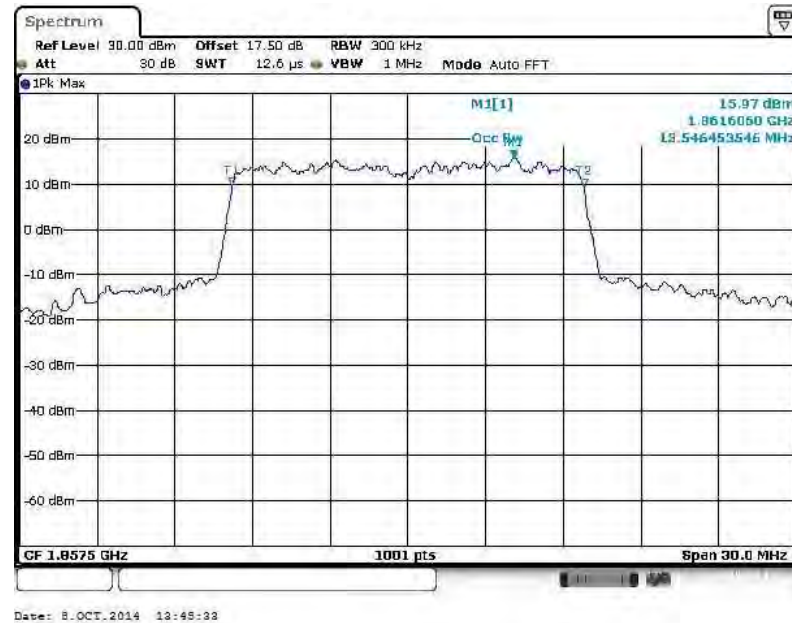
26dB Bandwidth Plot on Channel 19125



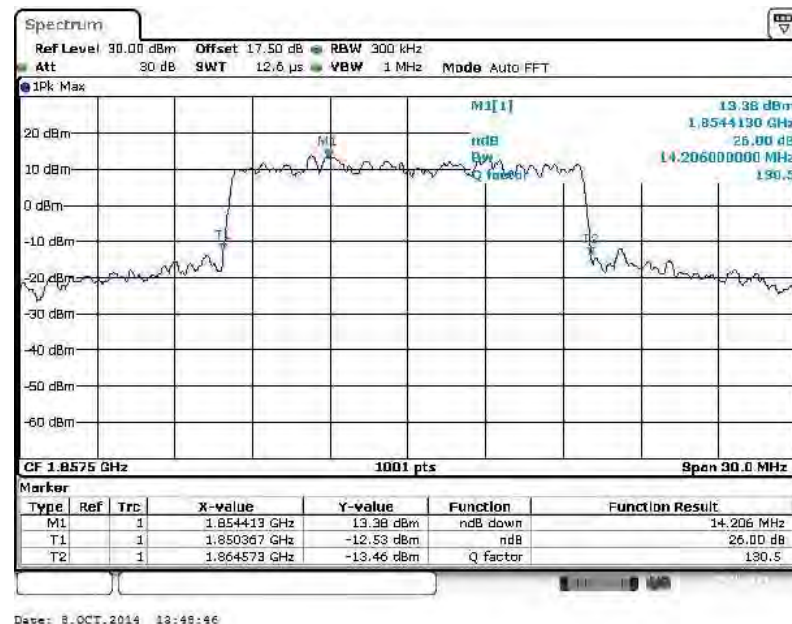


Band :	LTE Band 2	BW / Mod. :	15MHz / 16QAM
--------	------------	-------------	---------------

99% Occupied Bandwidth Plot on Channel 18675

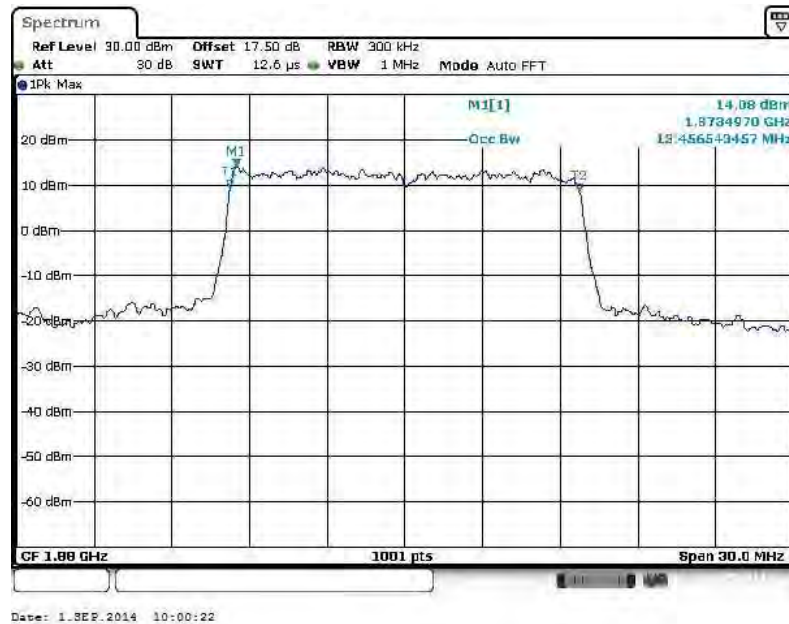


26dB Bandwidth Plot on Channel 18675

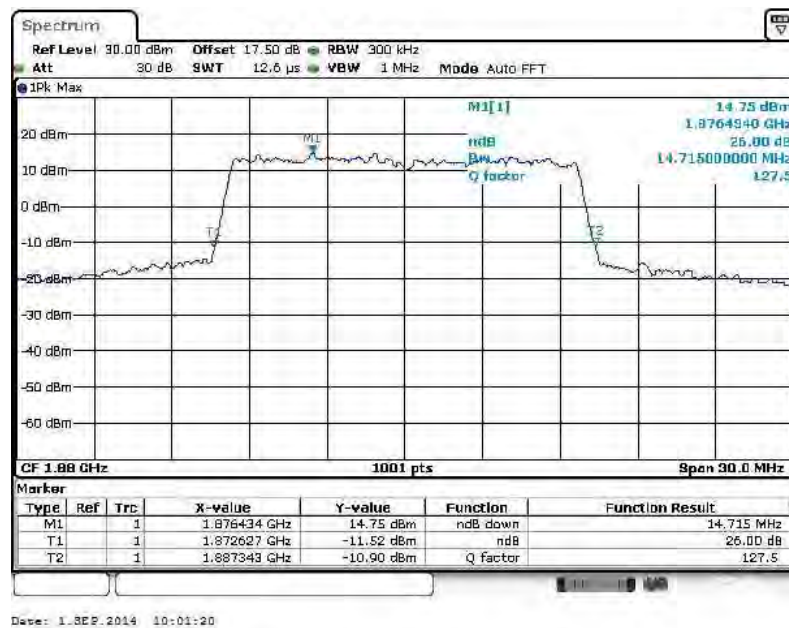




99% Occupied Bandwidth Plot on Channel 18900

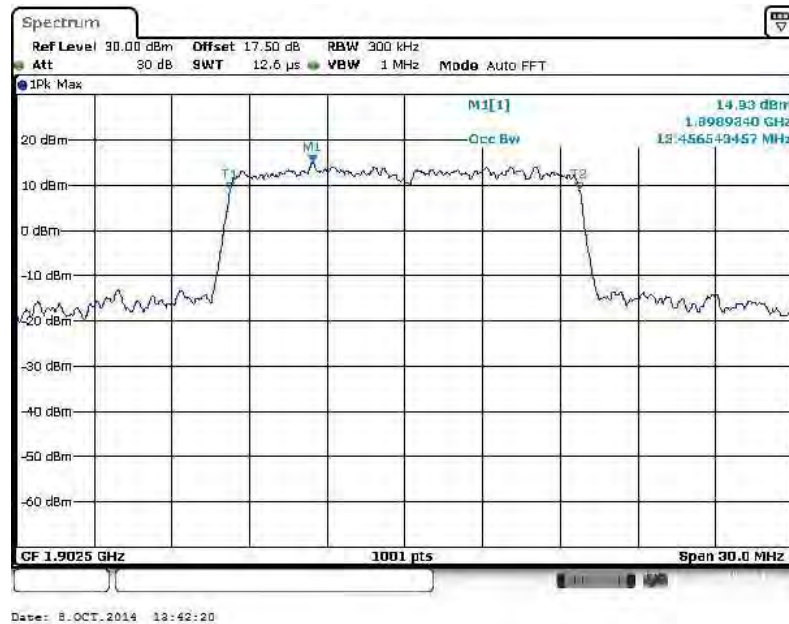


26dB Bandwidth Plot on Channel 18900

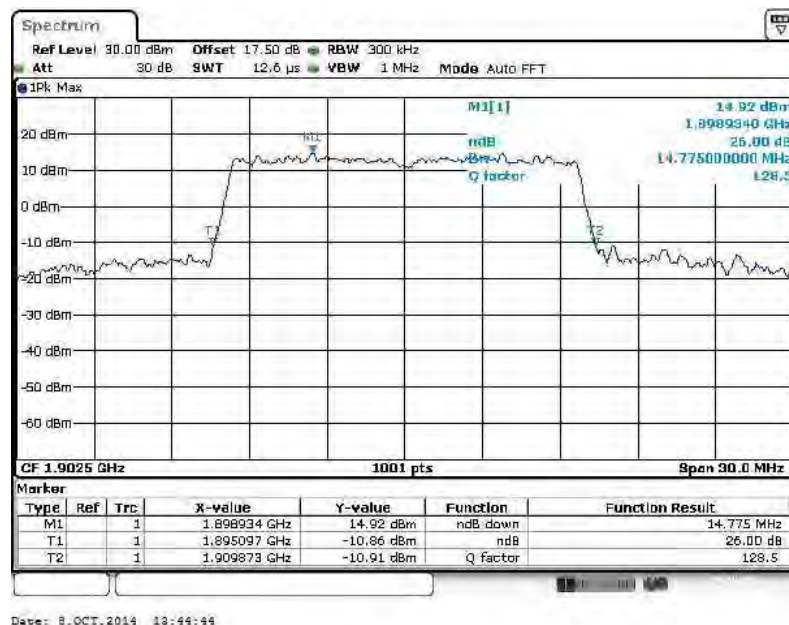




99% Occupied Bandwidth Plot on Channel 19125



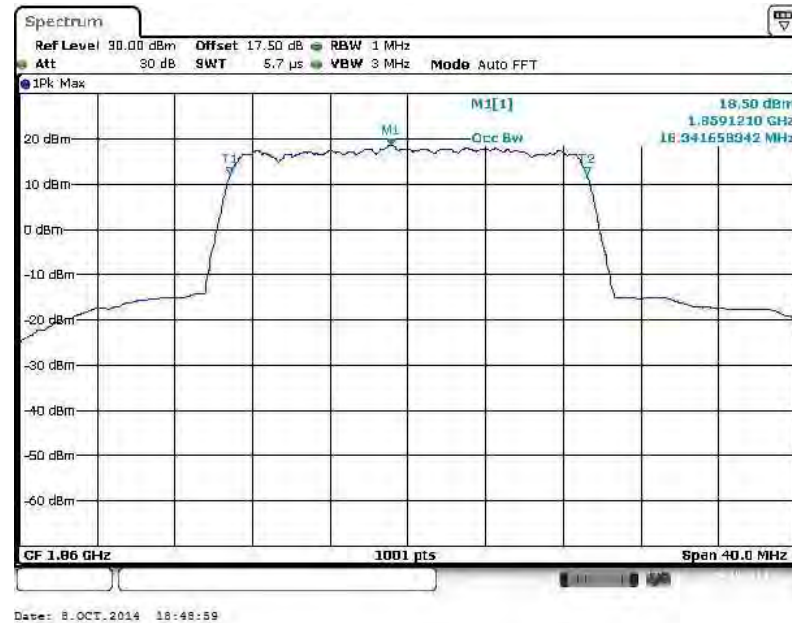
26dB Bandwidth Plot on Channel 19125



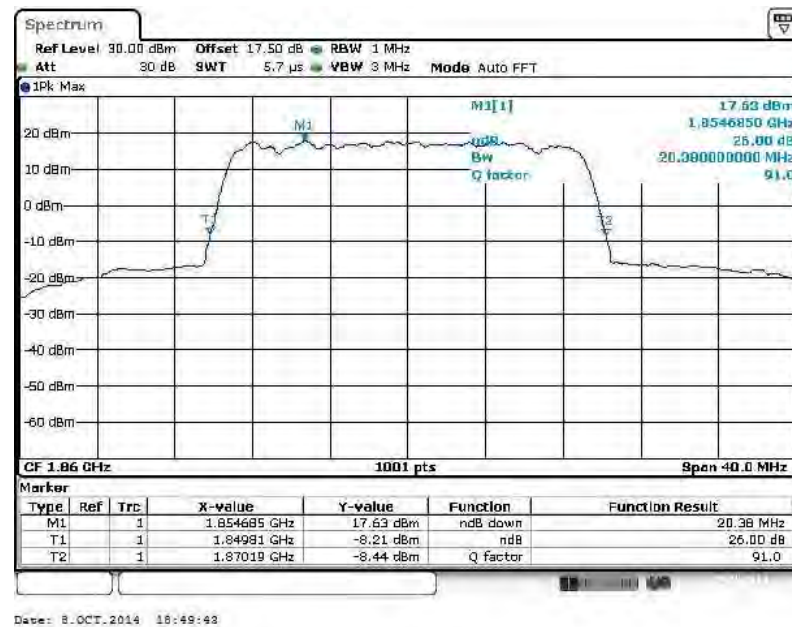


Band :	LTE Band 2	BW / Mod. :	20MHz / QPSK
--------	------------	-------------	--------------

99% Occupied Bandwidth Plot on Channel 18700

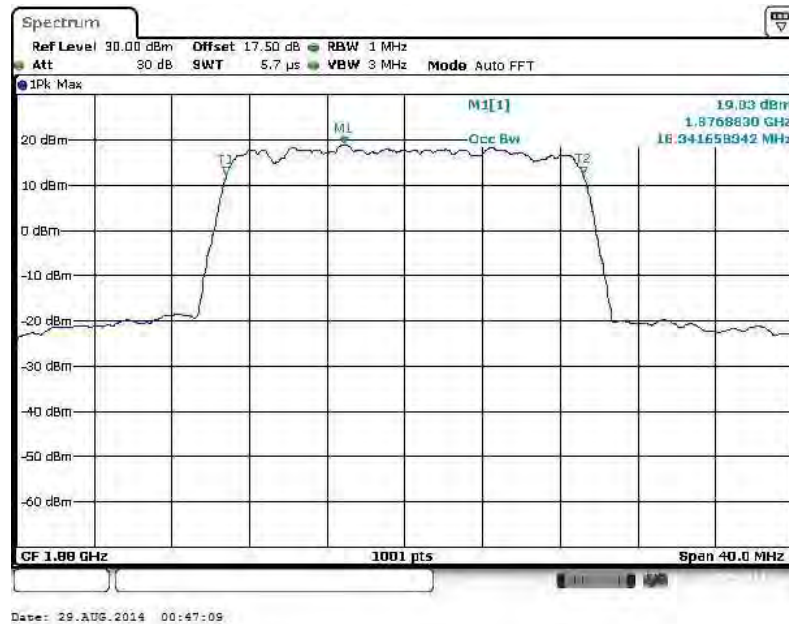


26dB Bandwidth Plot on Channel 18700

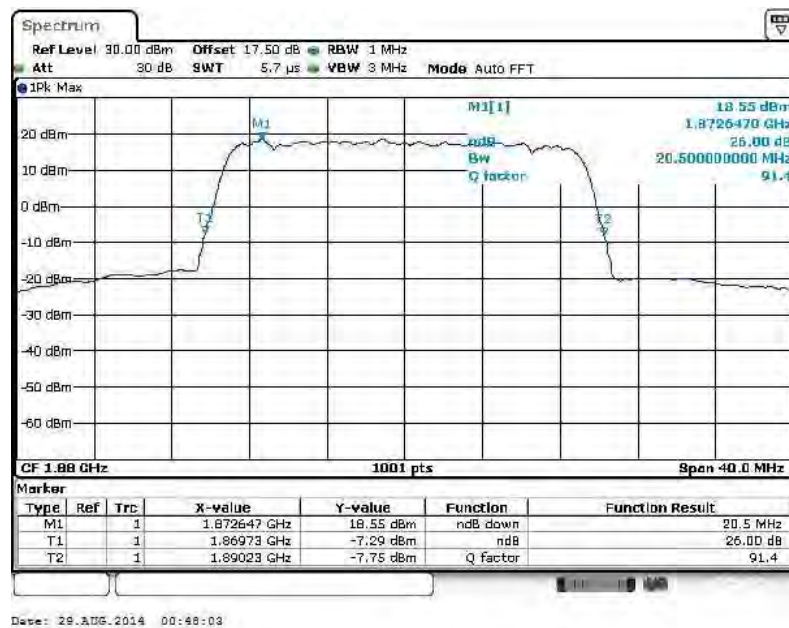




99% Occupied Bandwidth Plot on Channel 18900

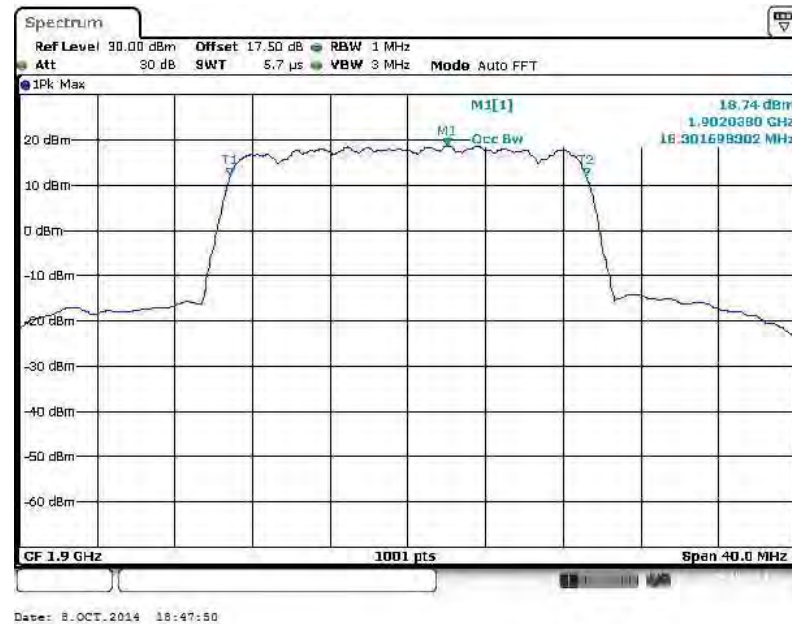


26dB Bandwidth Plot on Channel 18900

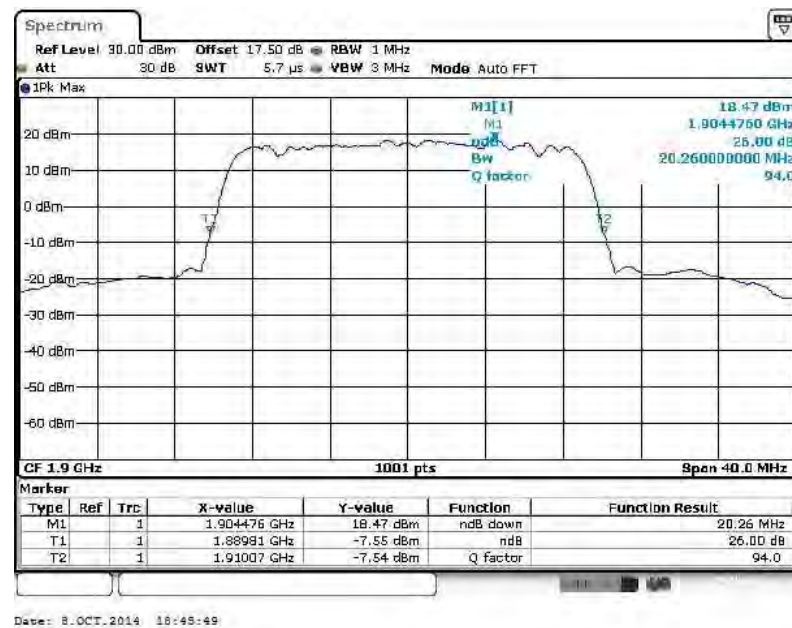




99% Occupied Bandwidth Plot on Channel 19100



26dB Bandwidth Plot on Channel 19100

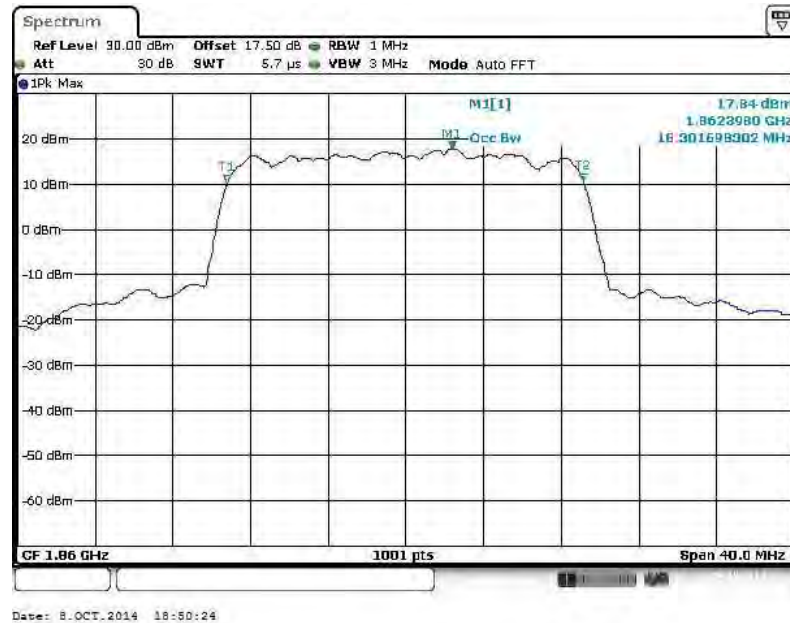




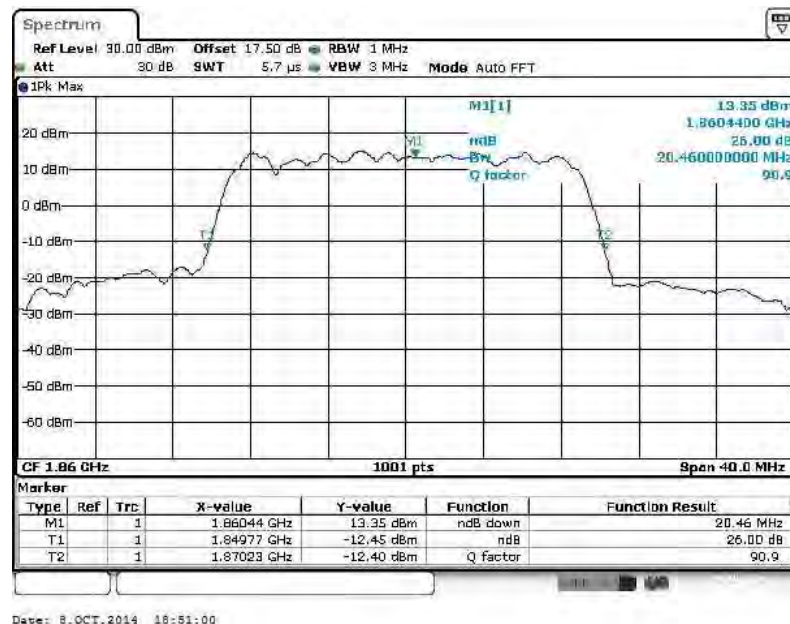
Band : LTE Band 2

BW / Mod. : 20MHz / 16QAM

99% Occupied Bandwidth Plot on Channel 18700

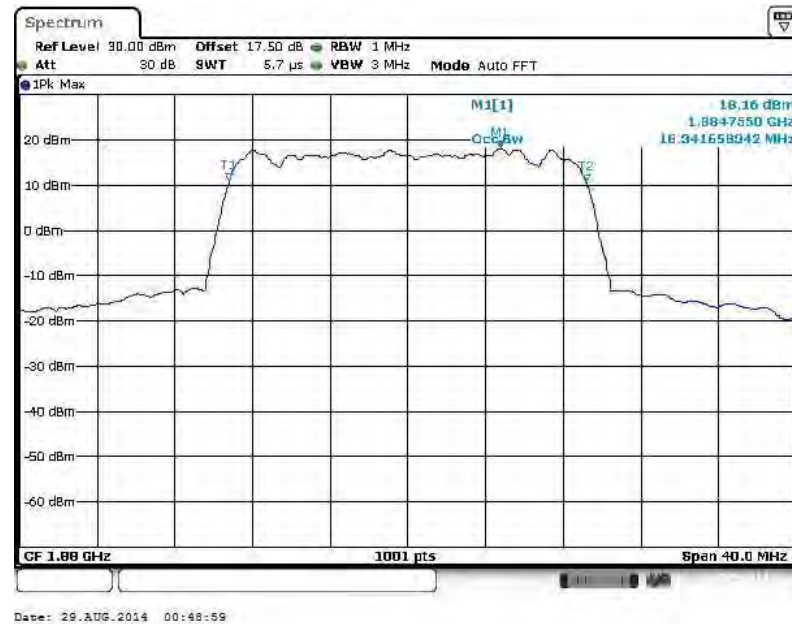


26dB Bandwidth Plot on Channel 18700

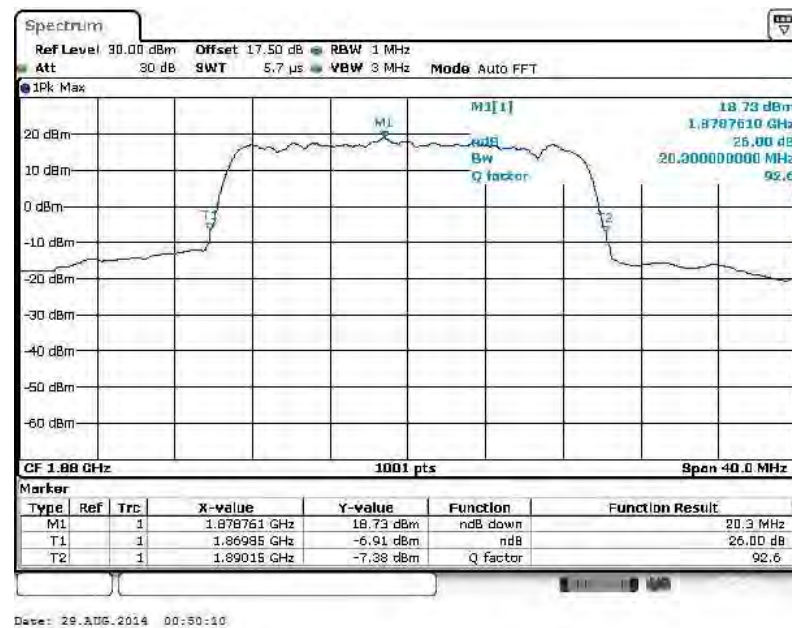




99% Occupied Bandwidth Plot on Channel 18900

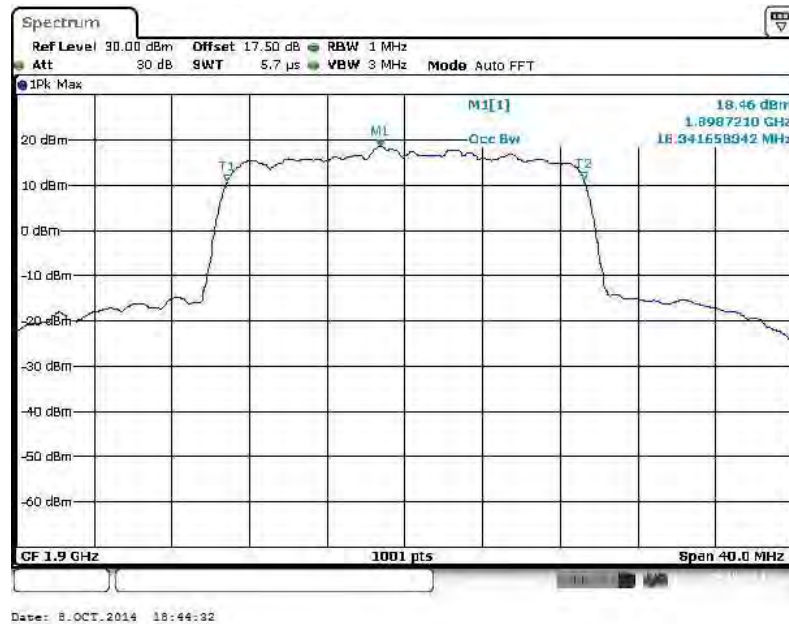


26dB Bandwidth Plot on Channel 18900

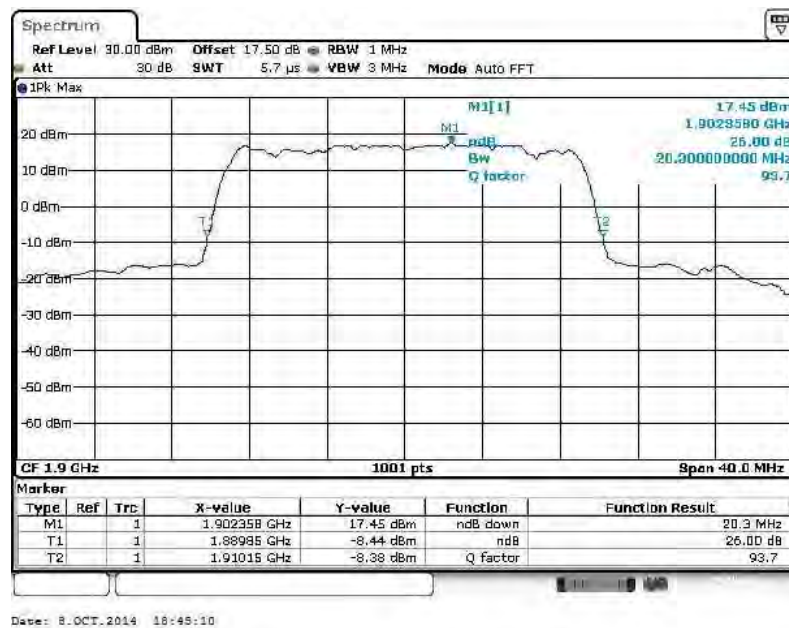




99% Occupied Bandwidth Plot on Channel 19100



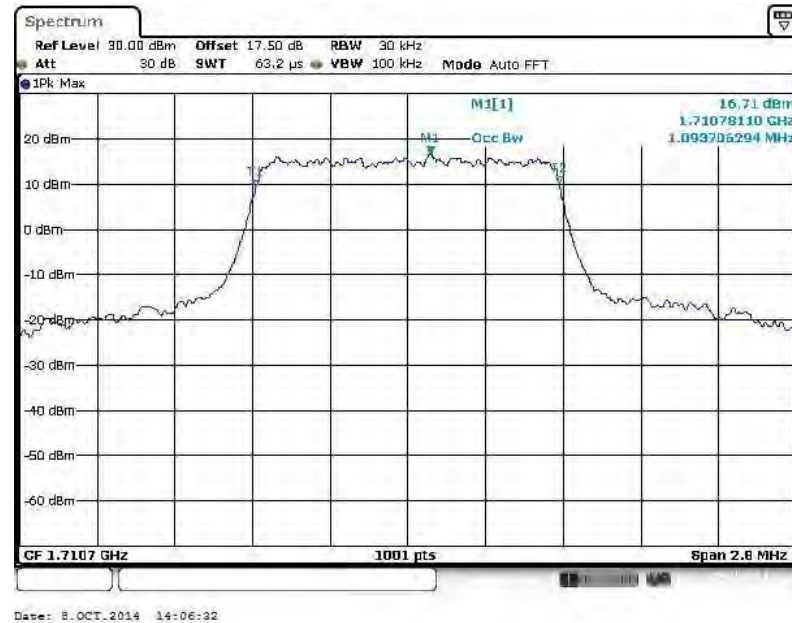
26dB Bandwidth Plot on Channel 19100



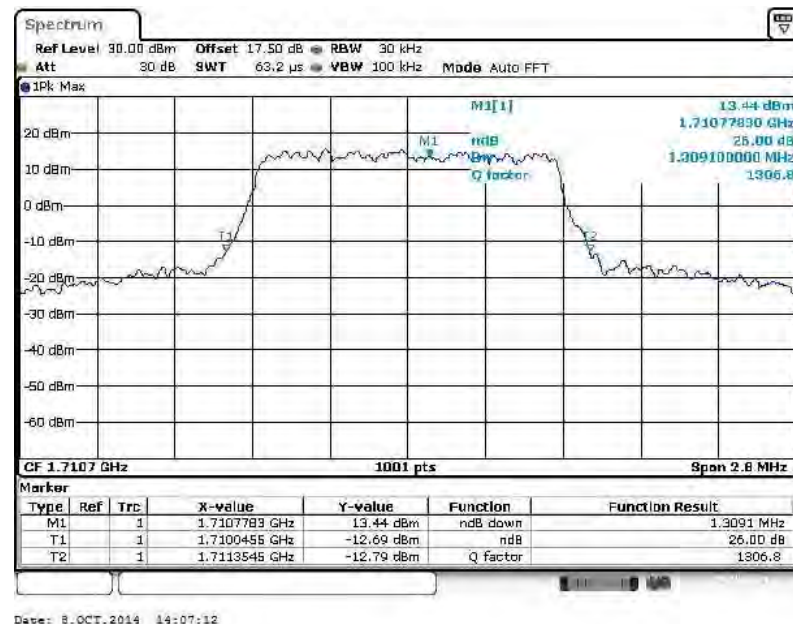


Band :	LTE Band 4	BW / Mod. :	1.4MHz / QPSK
--------	------------	-------------	---------------

99% Occupied Bandwidth Plot on Channel 19957



26dB Bandwidth Plot on Channel 19957

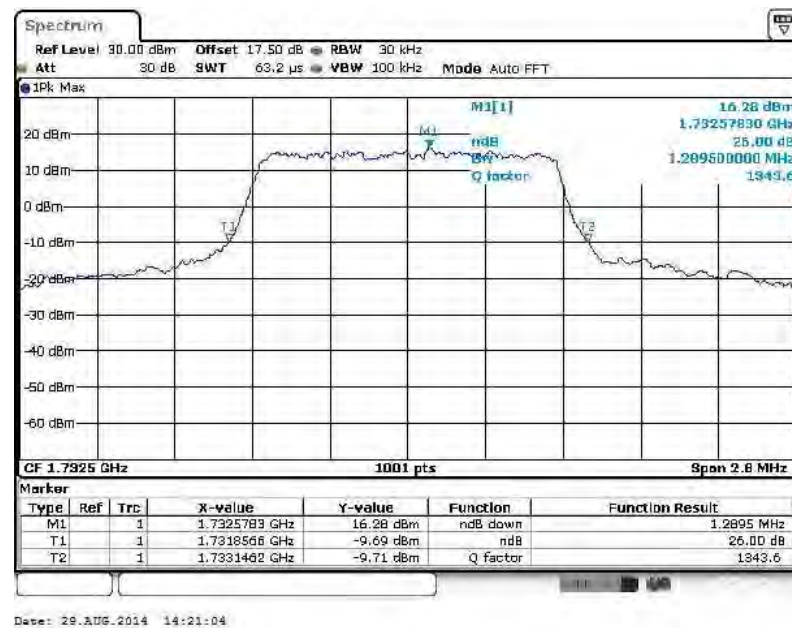




99% Occupied Bandwidth Plot on Channel 20175

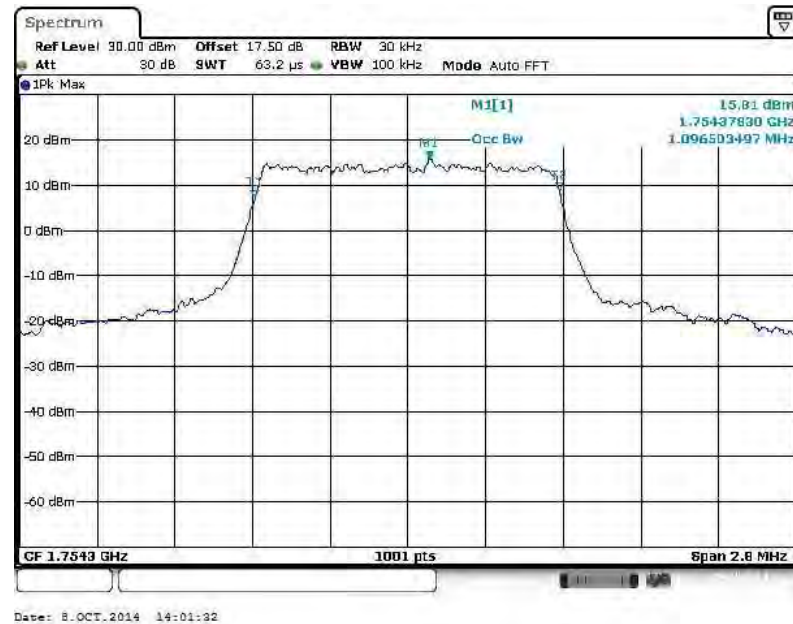


26dB Bandwidth Plot on Channel 20175

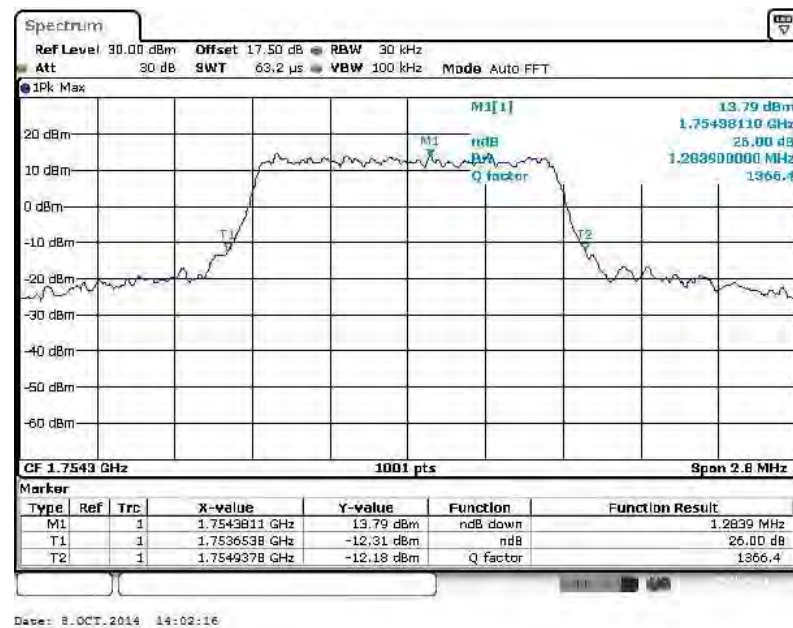




99% Occupied Bandwidth Plot on Channel 20393

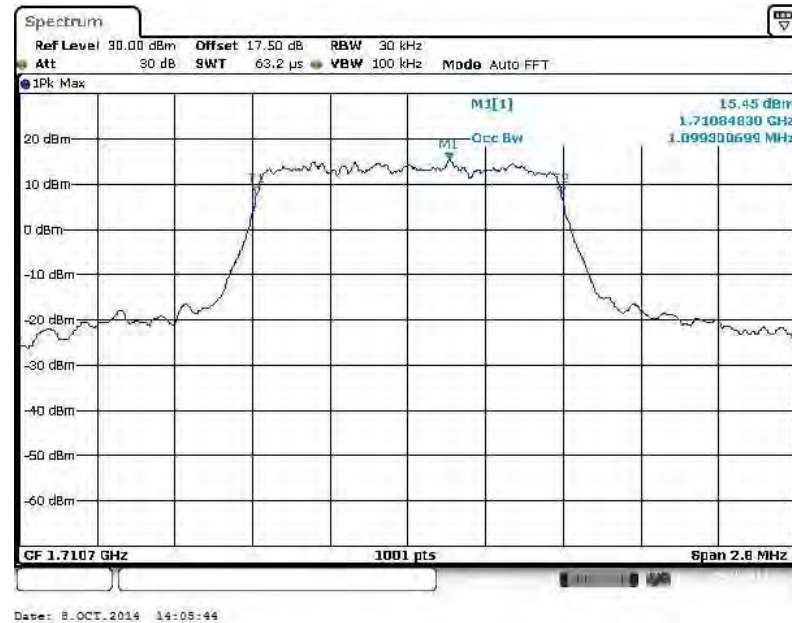


26dB Bandwidth Plot on Channel 20393

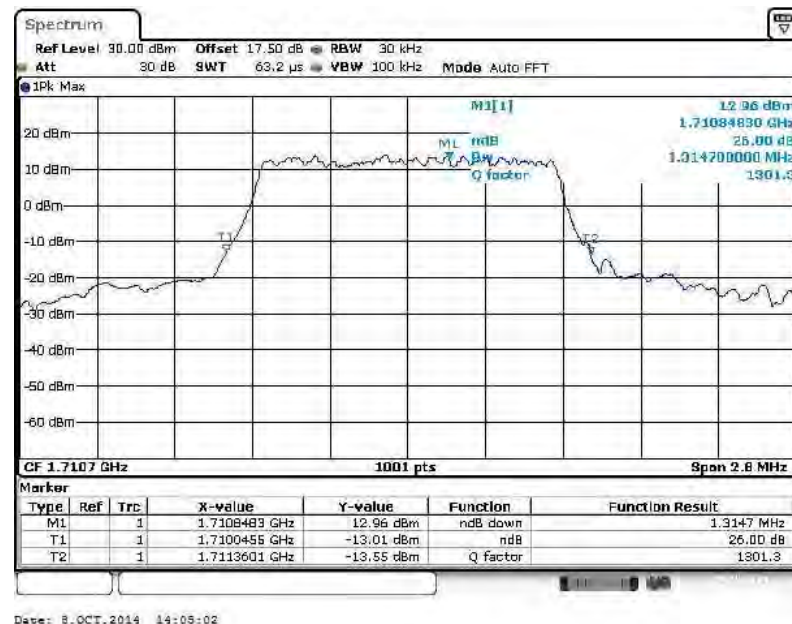


Band :	LTE Band 4	BW / Mod. :	1.4MHz / 16QAM
---------------	------------	--------------------	----------------

99% Occupied Bandwidth Plot on Channel 19957



26dB Bandwidth Plot on Channel 19957

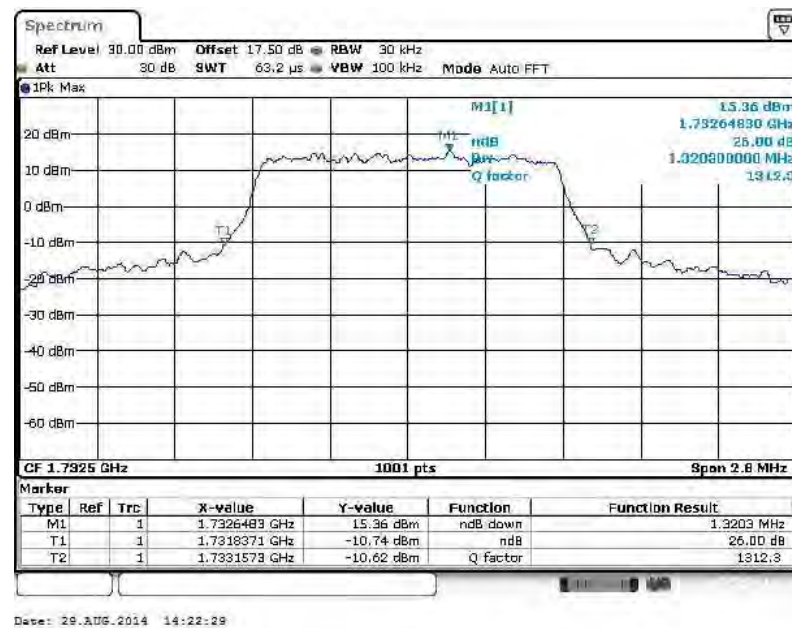




99% Occupied Bandwidth Plot on Channel 20175

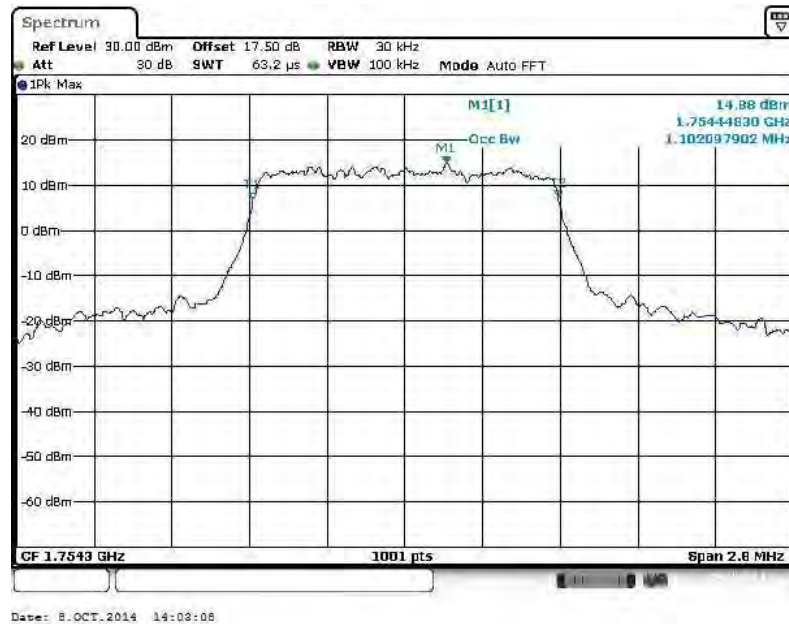


26dB Bandwidth Plot on Channel 20175

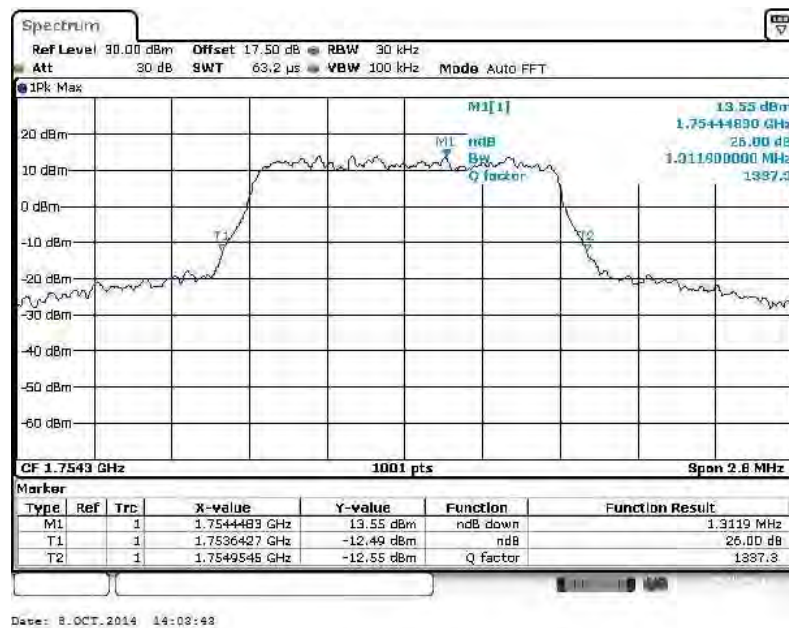




99% Occupied Bandwidth Plot on Channel 20393



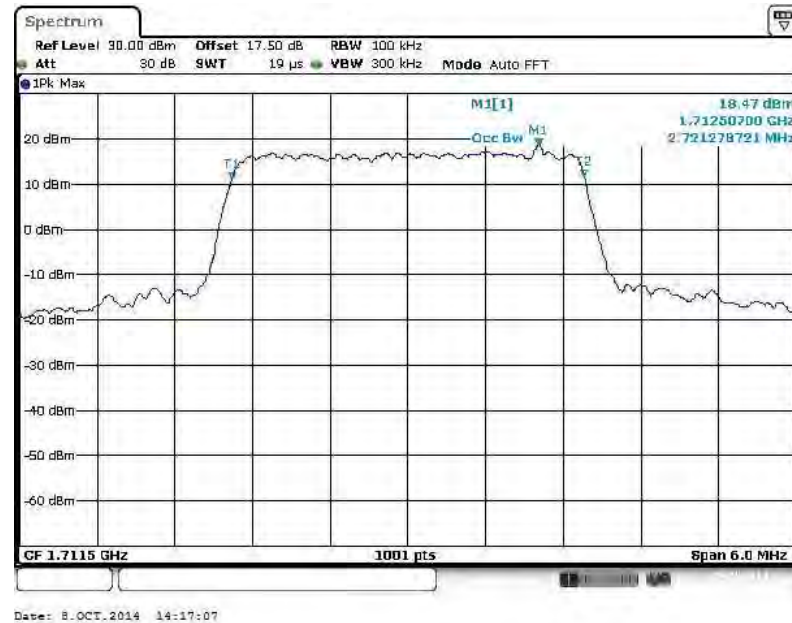
26dB Bandwidth Plot on Channel 20393



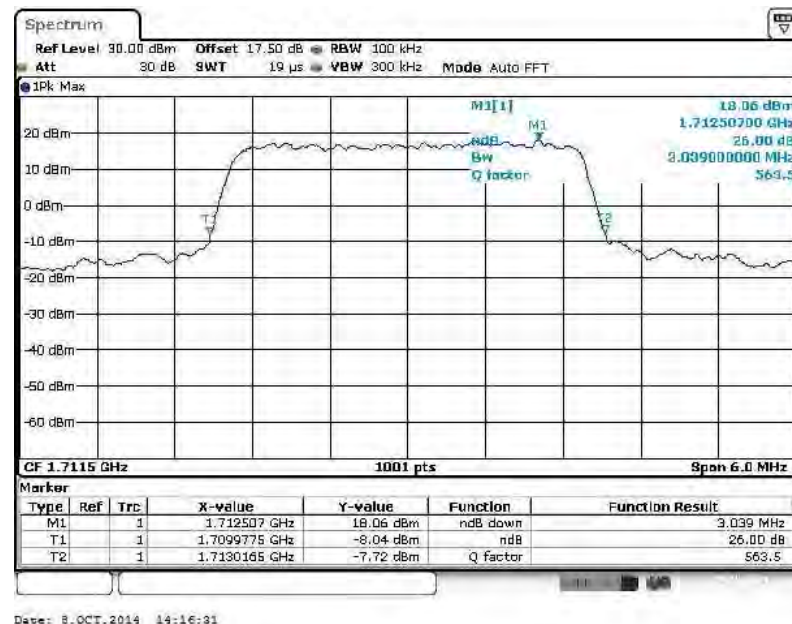


Band :	LTE Band 4	BW / Mod. :	3MHz / QPSK
--------	------------	-------------	-------------

99% Occupied Bandwidth Plot on Channel 19965

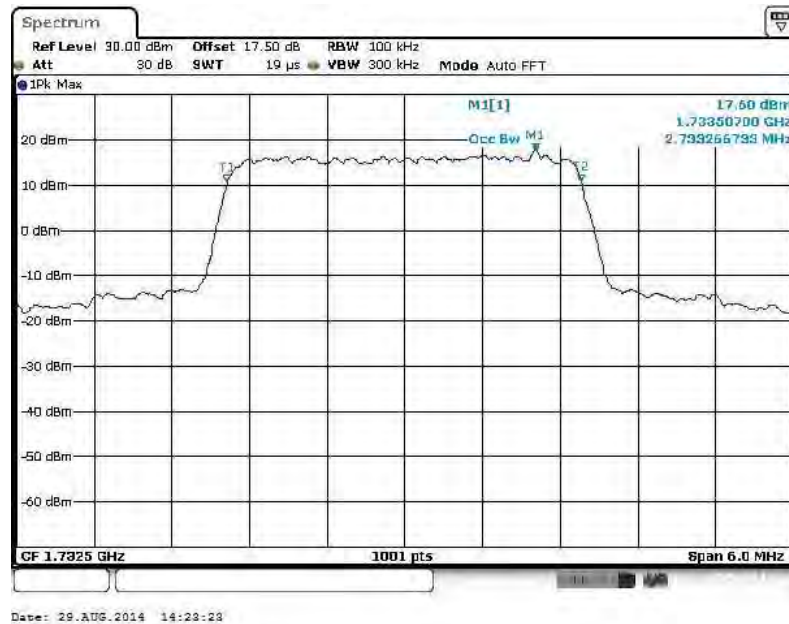


26dB Bandwidth Plot on Channel 19965

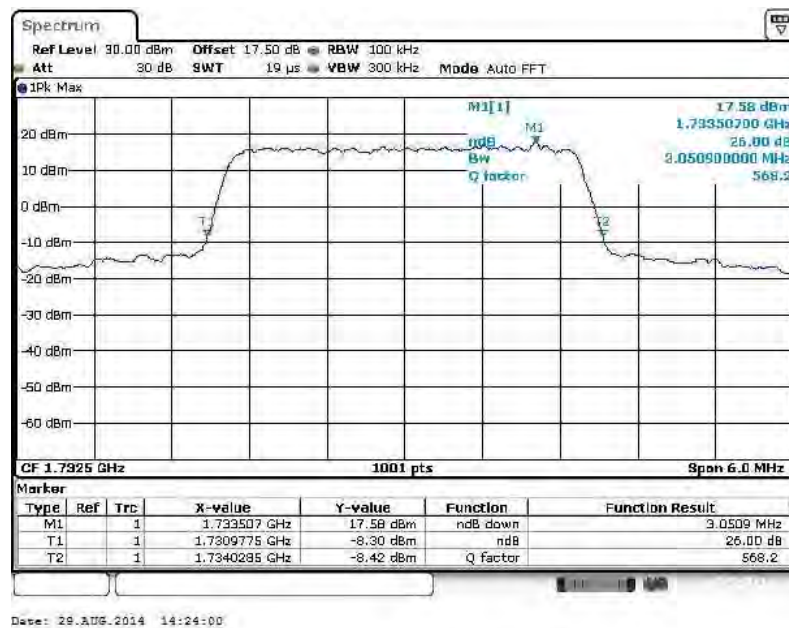




99% Occupied Bandwidth Plot on Channel 20175

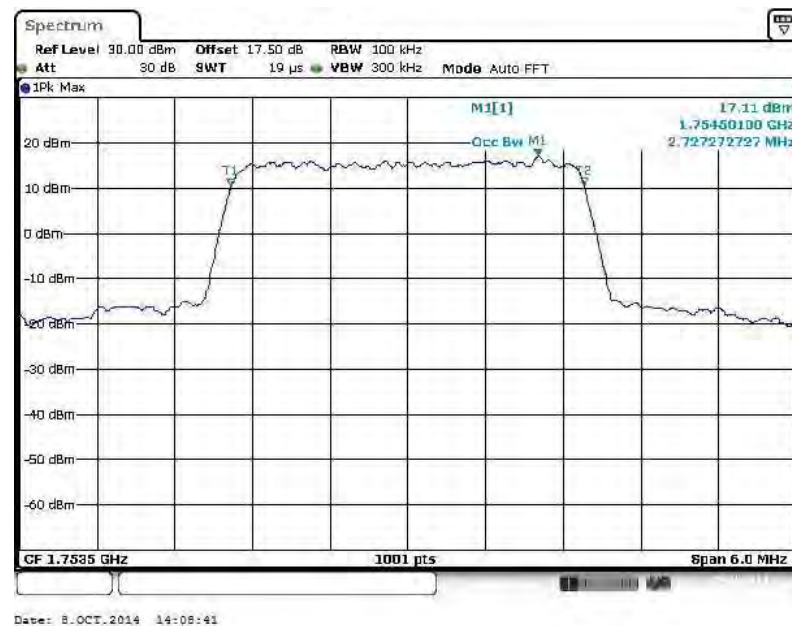


26dB Bandwidth Plot on Channel 20175

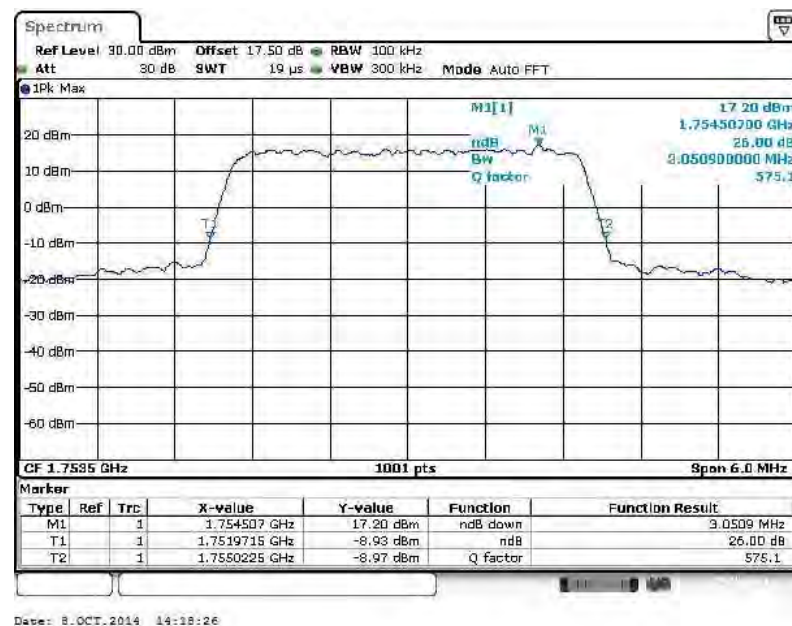




99% Occupied Bandwidth Plot on Channel 20385



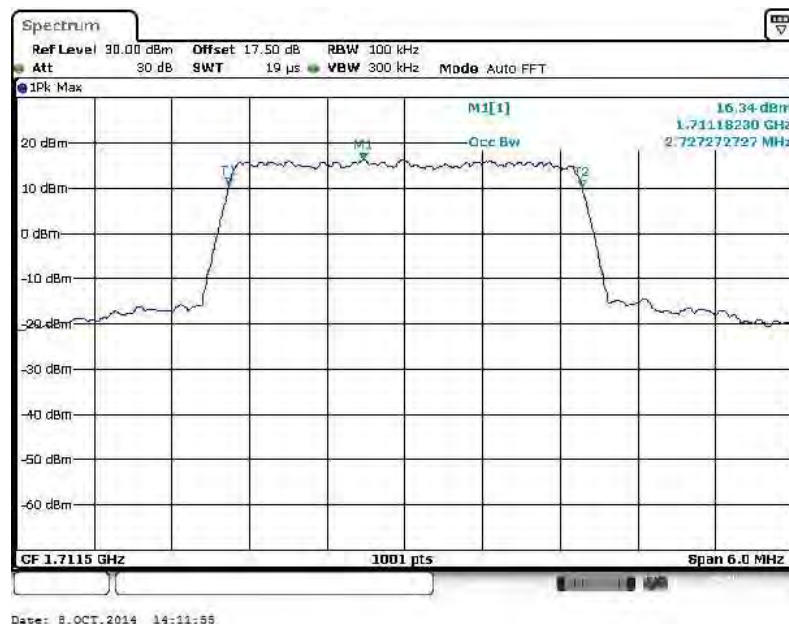
26dB Bandwidth Plot on Channel 20385



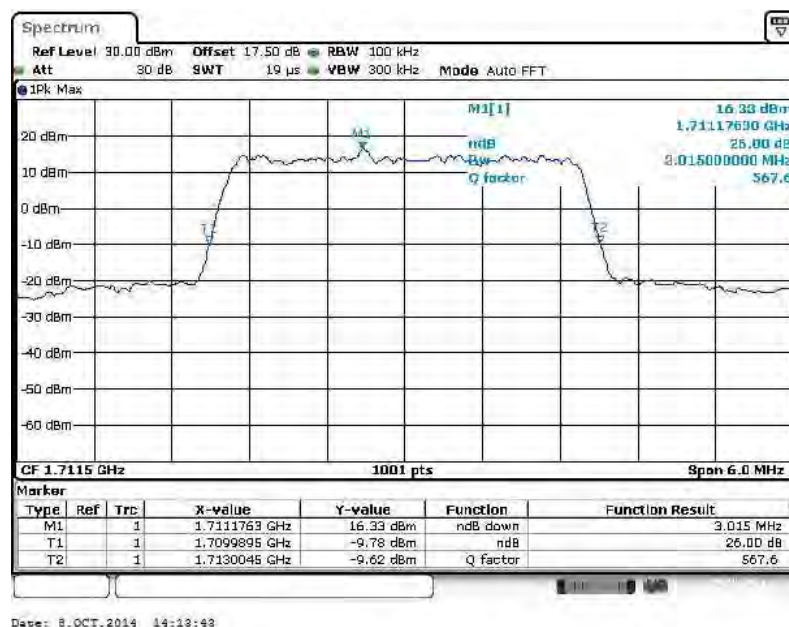


Band :	LTE Band 4	BW / Mod. :	3MHz / 16QAM
--------	------------	-------------	--------------

99% Occupied Bandwidth Plot on Channel 19965

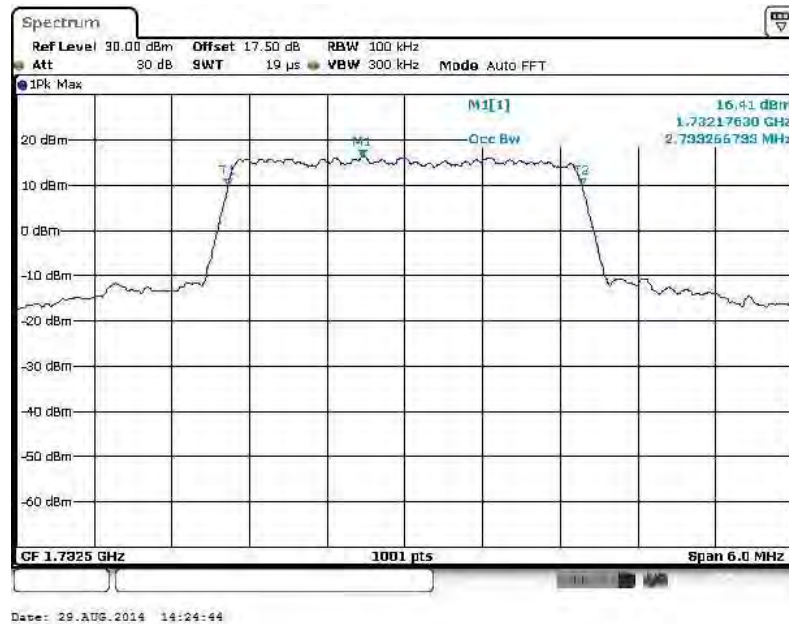


26dB Bandwidth Plot on Channel 19965

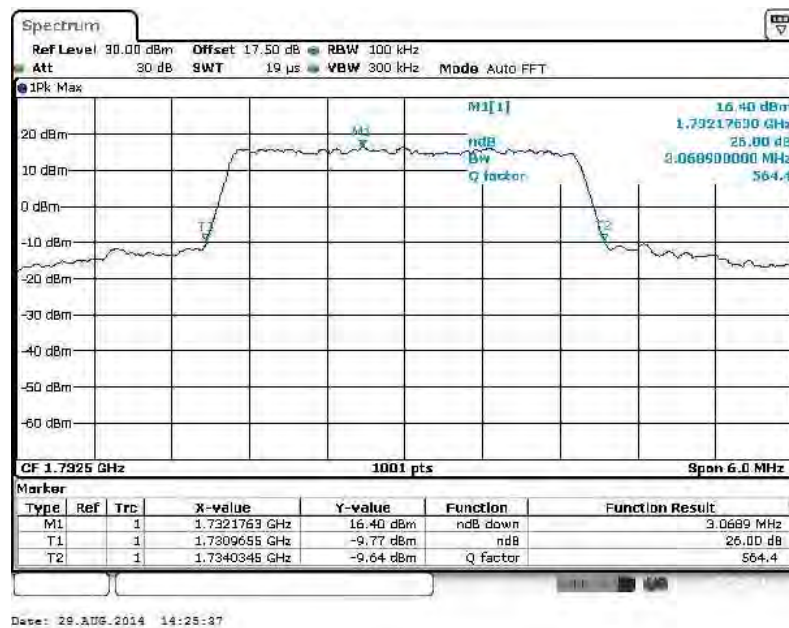




99% Occupied Bandwidth Plot on Channel 20175

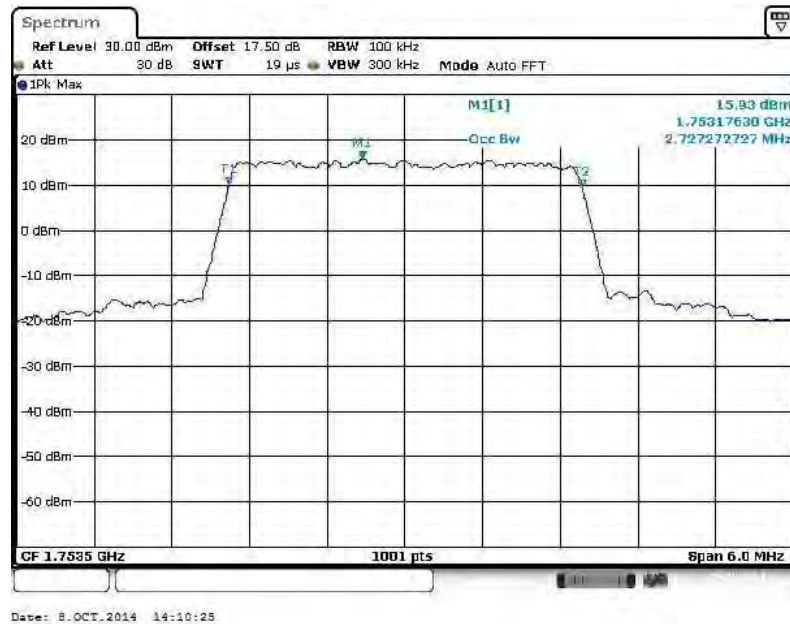


26dB Bandwidth Plot on Channel 20175

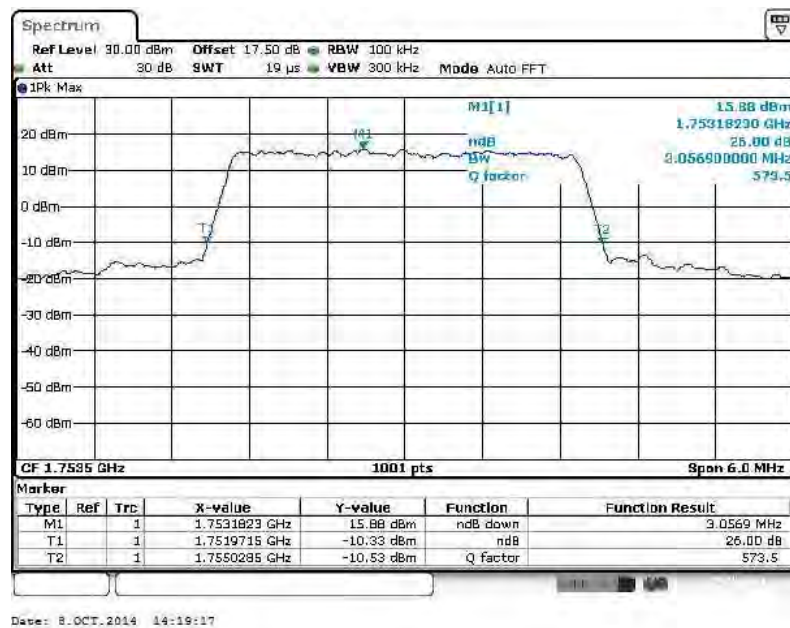




99% Occupied Bandwidth Plot on Channel 20385



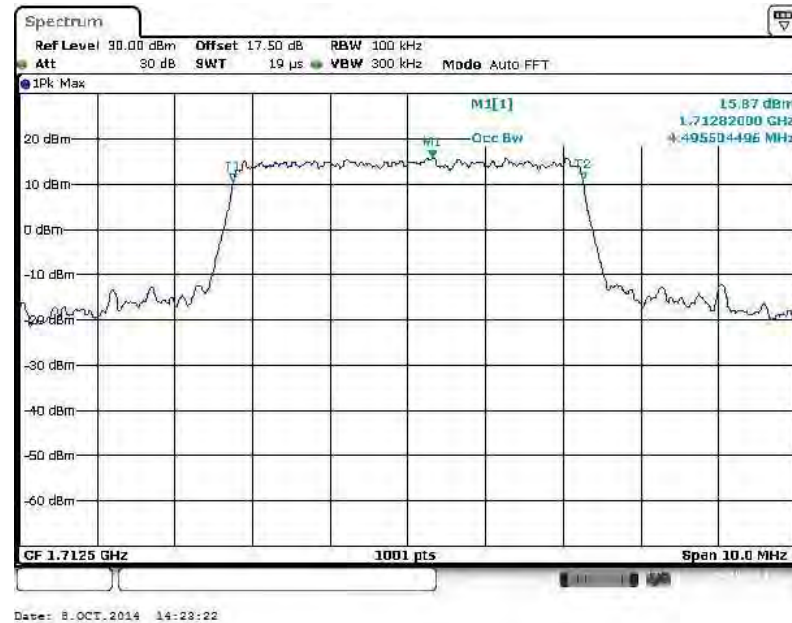
26dB Bandwidth Plot on Channel 20385



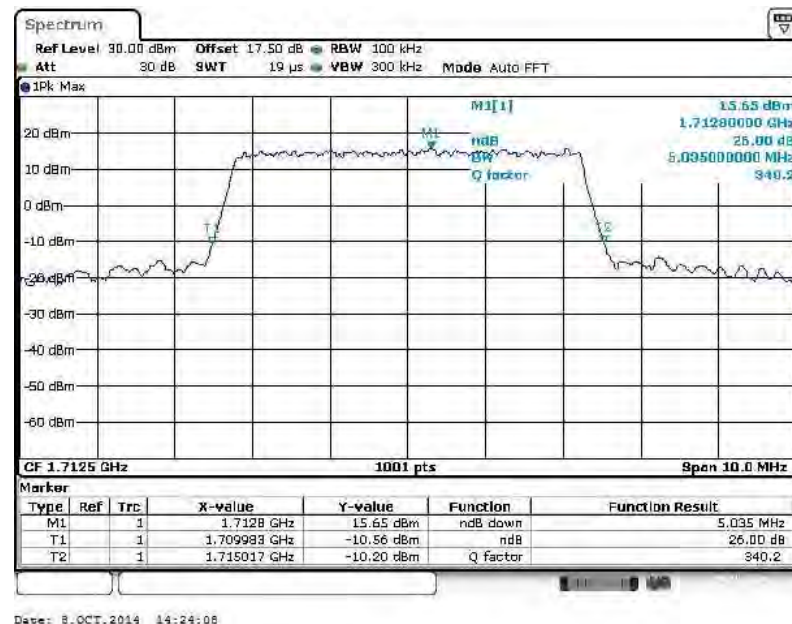


Band :	LTE Band 4	BW / Mod. :	5MHz / QPSK
--------	------------	-------------	-------------

99% Occupied Bandwidth Plot on Channel 19975

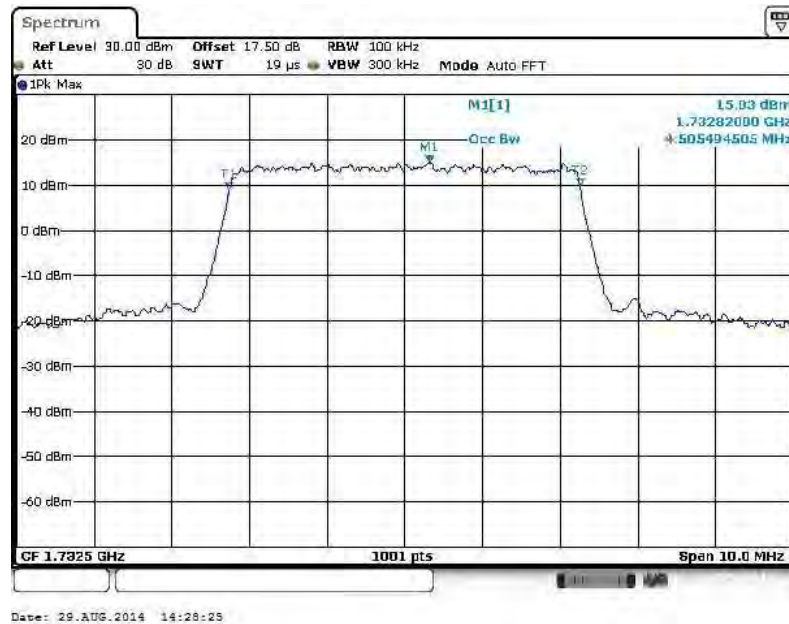


26dB Bandwidth Plot on Channel 19975

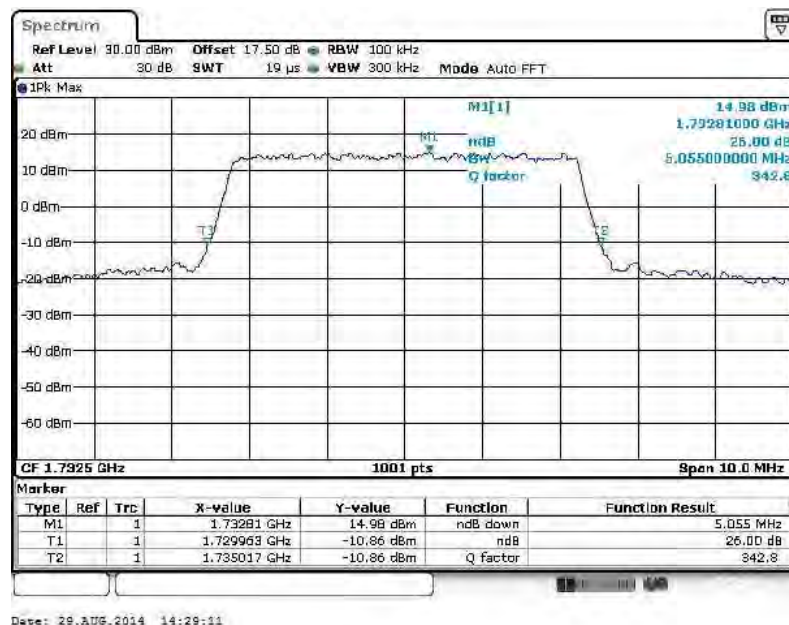




99% Occupied Bandwidth Plot on Channel 20175

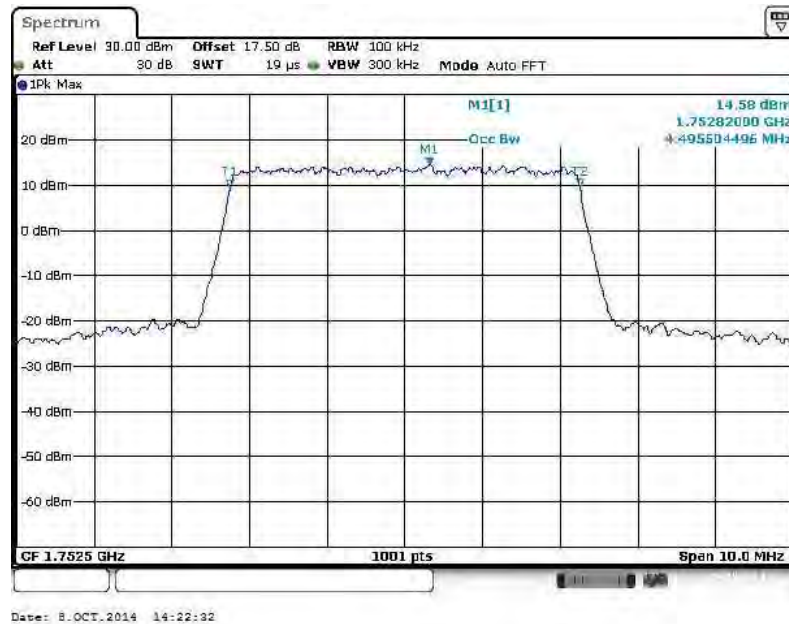


26dB Bandwidth Plot on Channel 20175

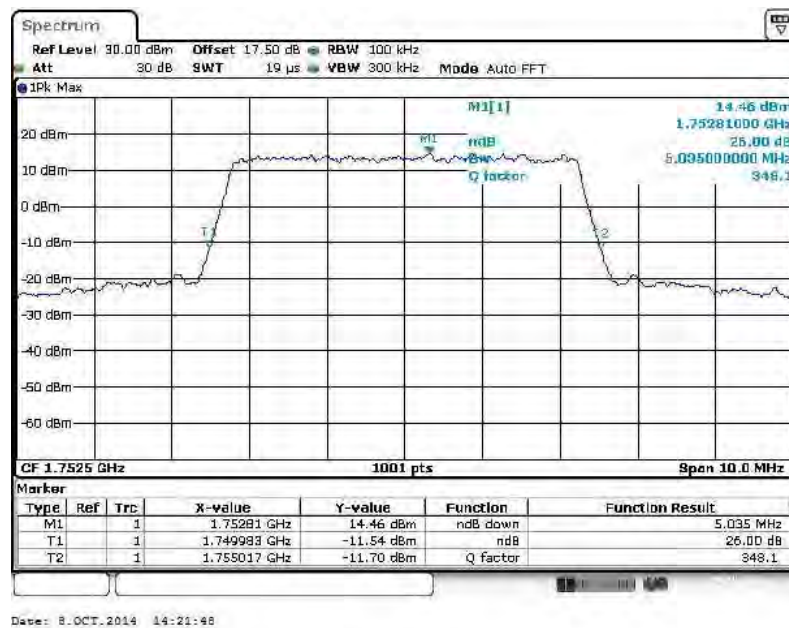




99% Occupied Bandwidth Plot on Channel 20375



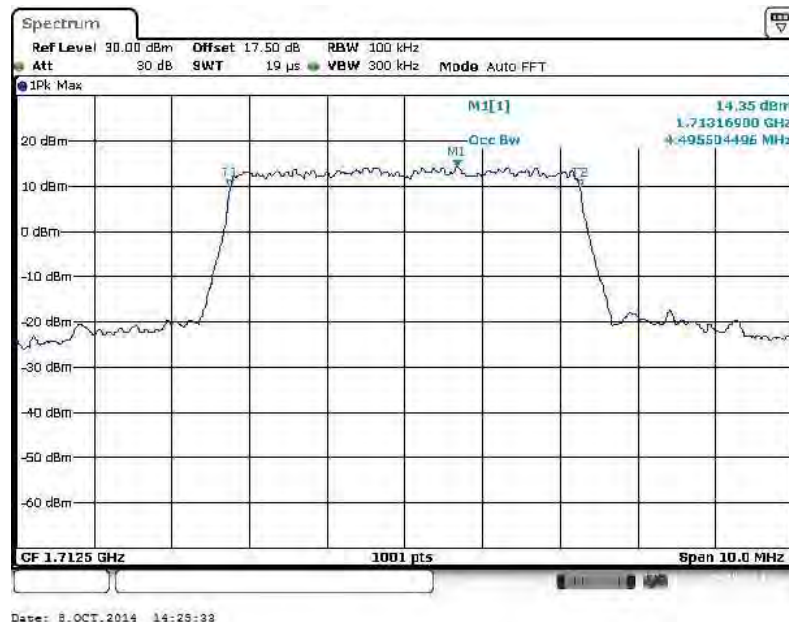
26dB Bandwidth Plot on Channel 20375



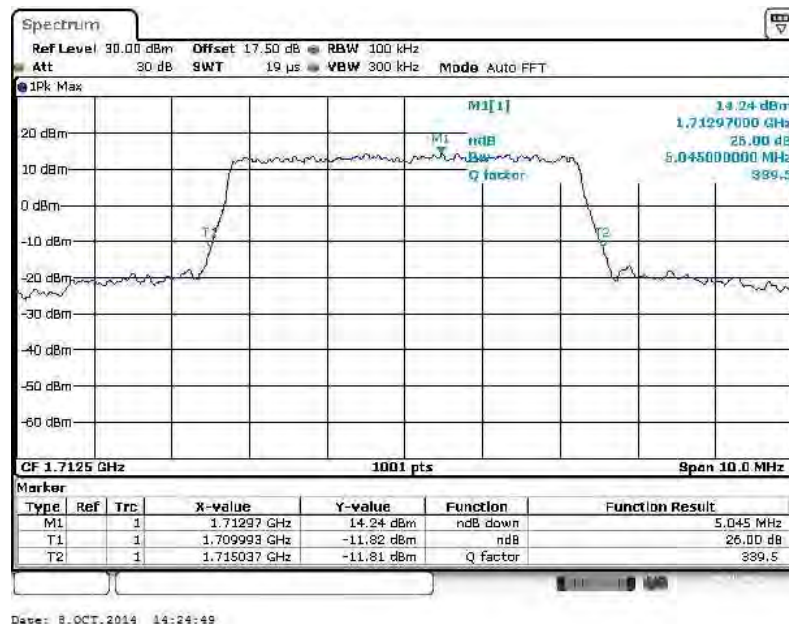


Band :	LTE Band 4	BW / Mod. :	5MHz / 16QAM
--------	------------	-------------	--------------

99% Occupied Bandwidth Plot on Channel 19975

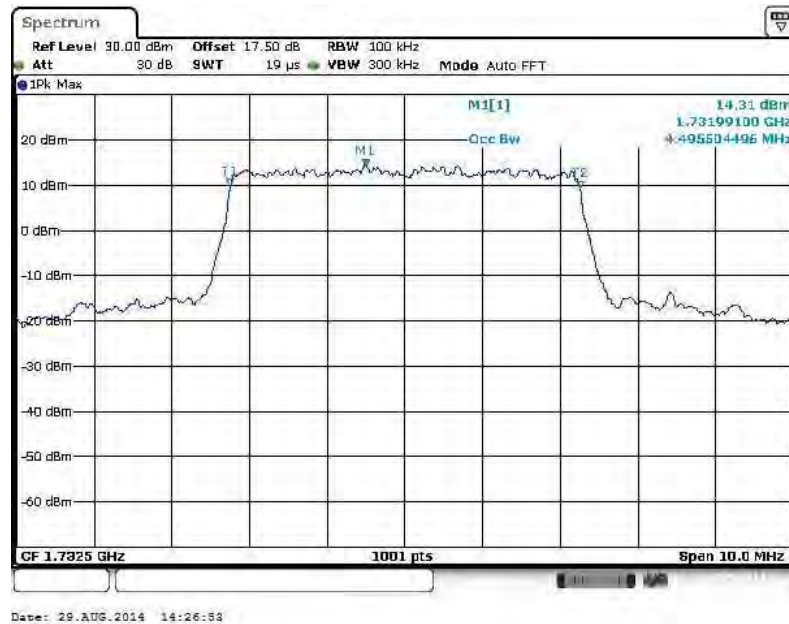


26dB Bandwidth Plot on Channel 19975

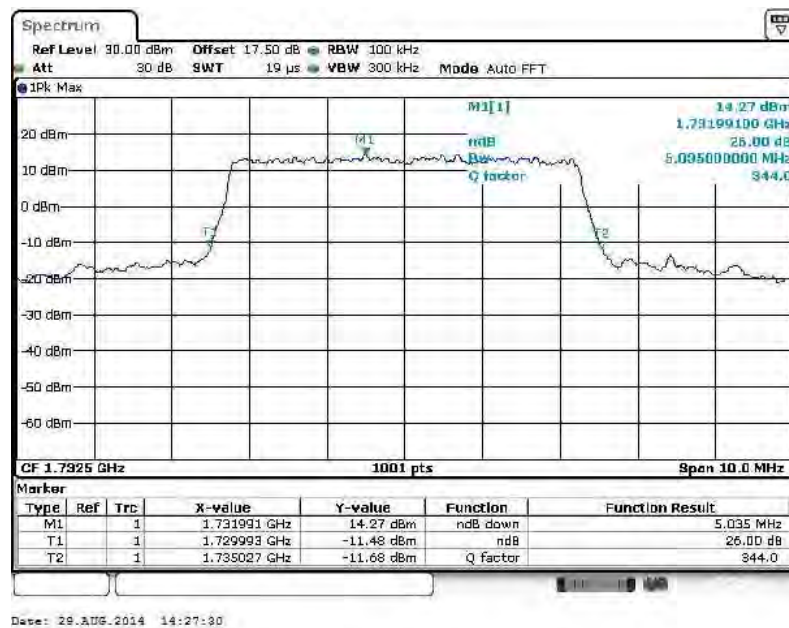




99% Occupied Bandwidth Plot on Channel 20175

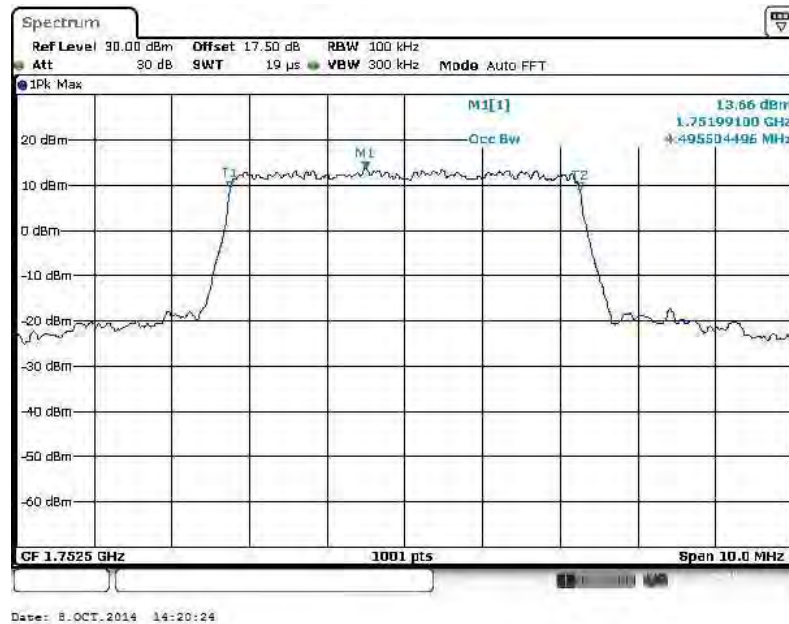


26dB Bandwidth Plot on Channel 20175

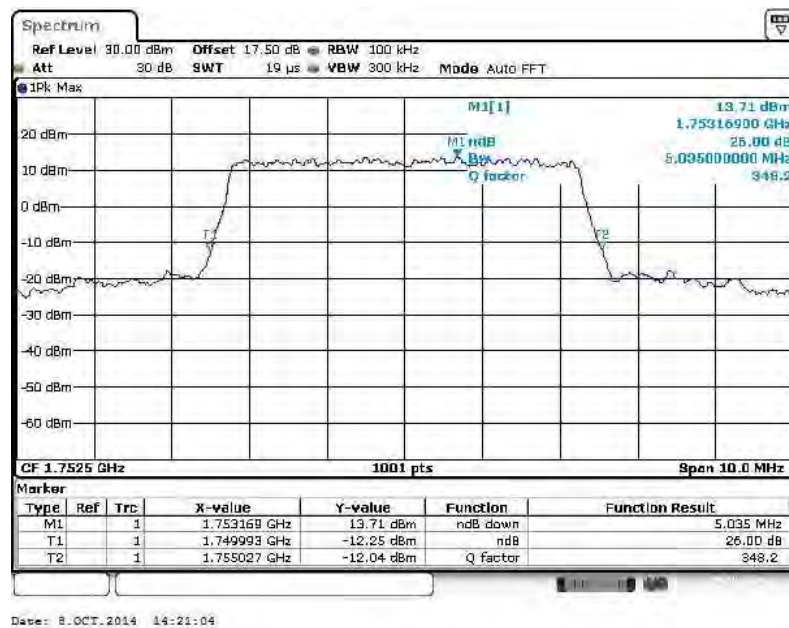




99% Occupied Bandwidth Plot on Channel 20375



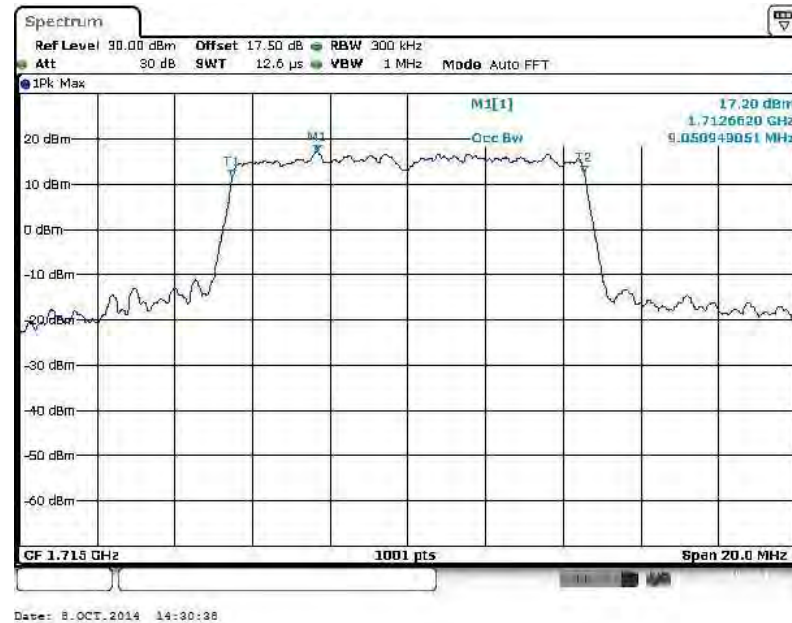
26dB Bandwidth Plot on Channel 20375



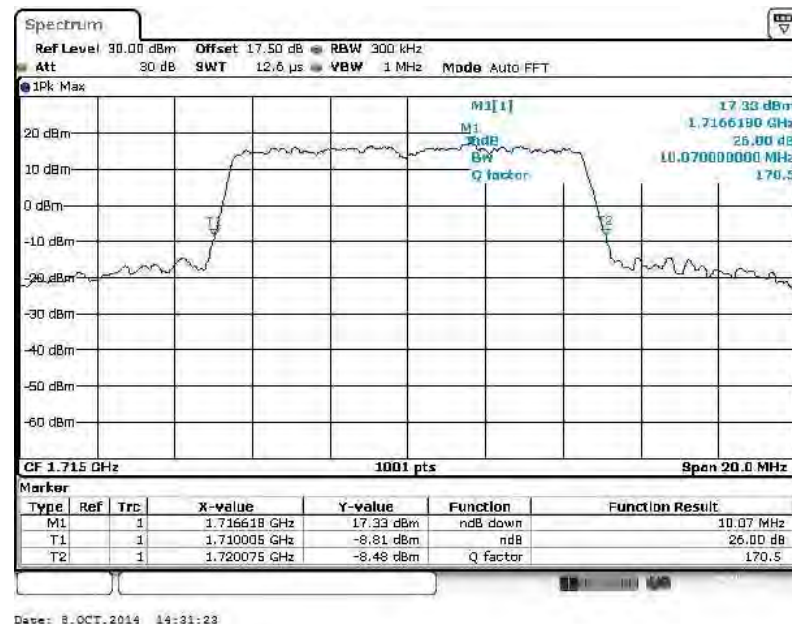


Band :	LTE Band 4	BW / Mod. :	10MHz / QPSK
--------	------------	-------------	--------------

99% Occupied Bandwidth Plot on Channel 20000

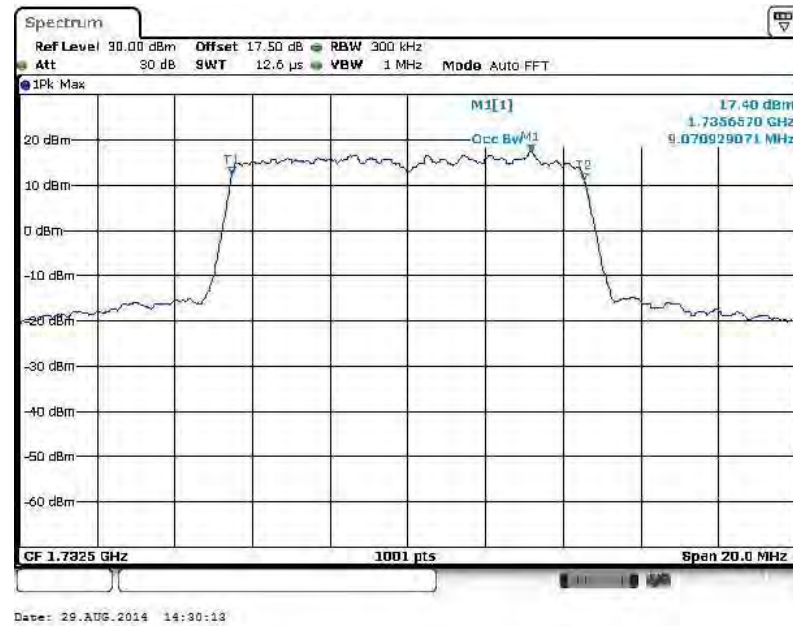


26dB Bandwidth Plot on Channel 20000

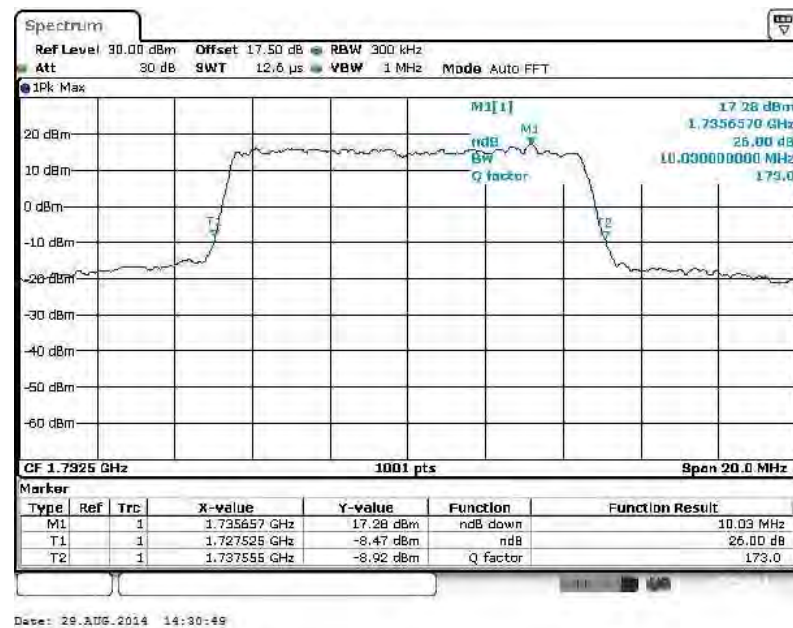




99% Occupied Bandwidth Plot on Channel 20175

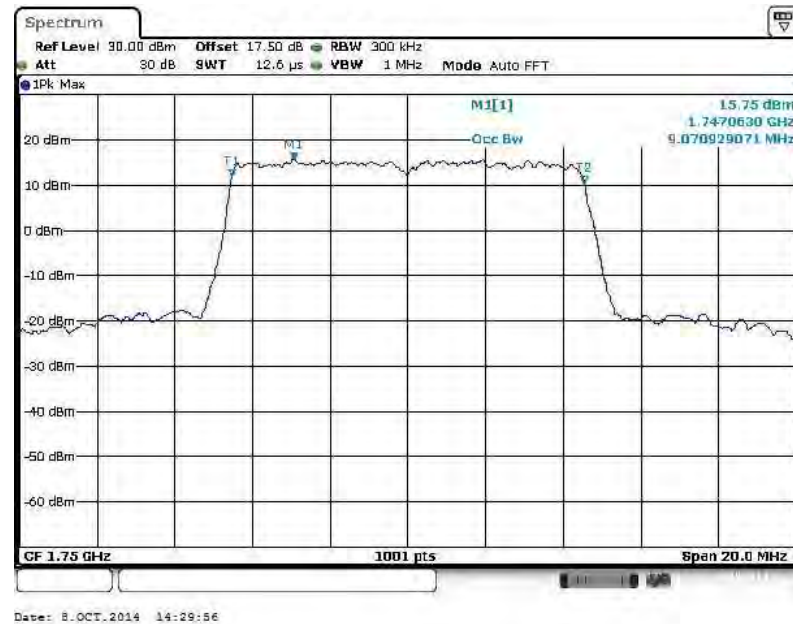


26dB Bandwidth Plot on Channel 20175

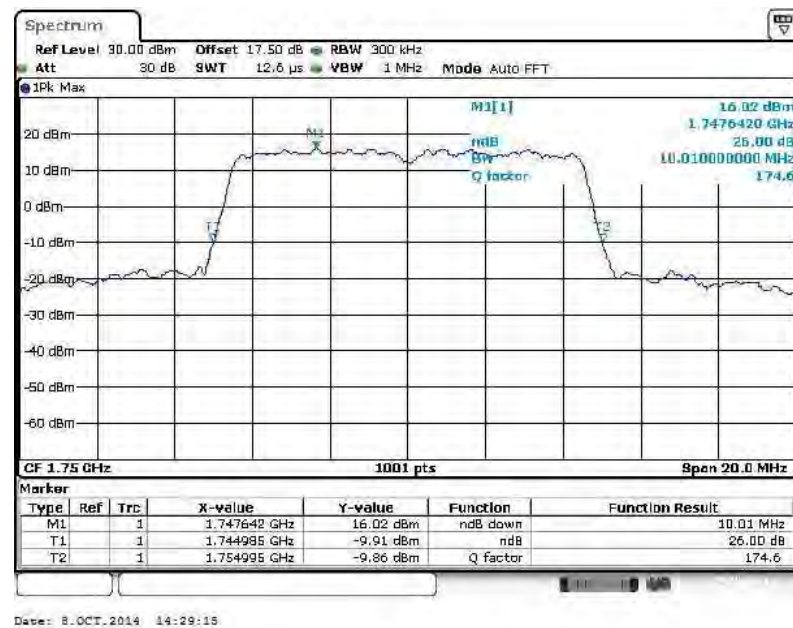




99% Occupied Bandwidth Plot on Channel 20350



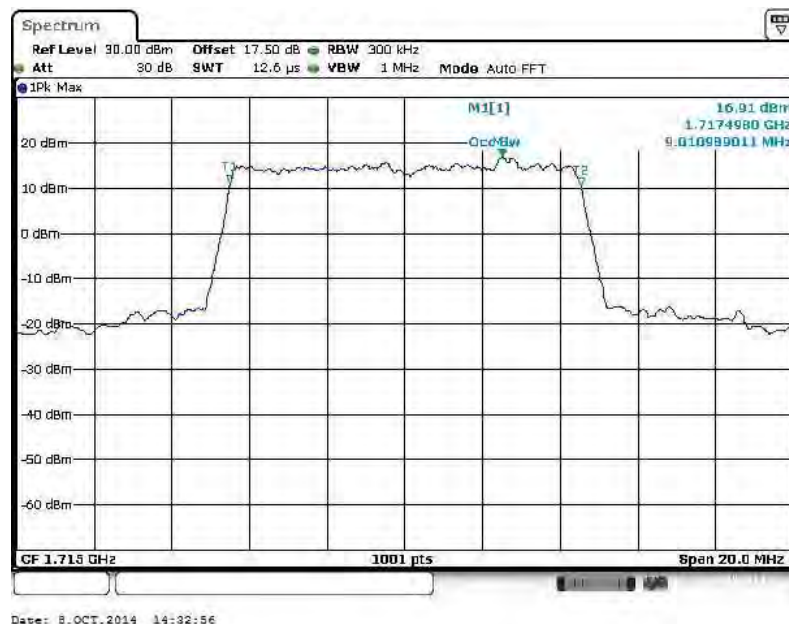
26dB Bandwidth Plot on Channel 20350



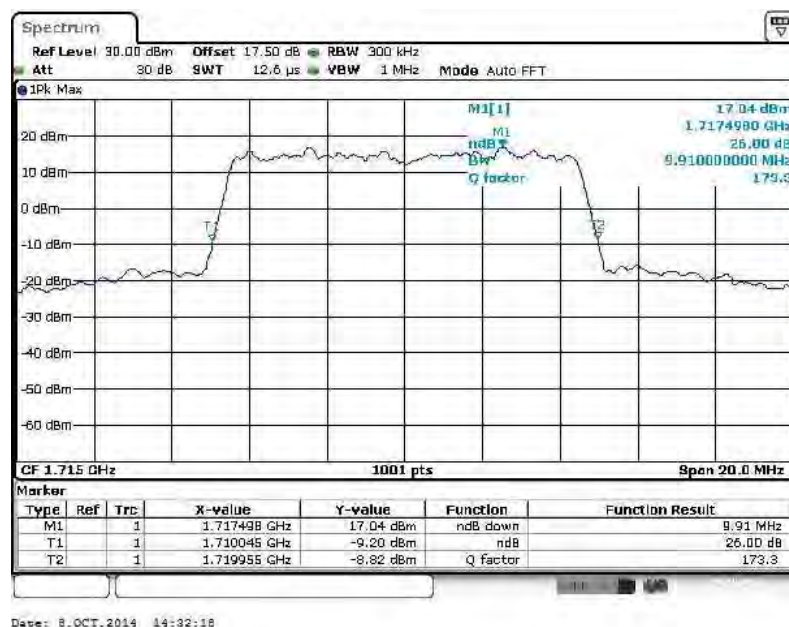


Band :	LTE Band 4	BW / Mod. :	10MHz / 16QAM
--------	------------	-------------	---------------

99% Occupied Bandwidth Plot on Channel 20000

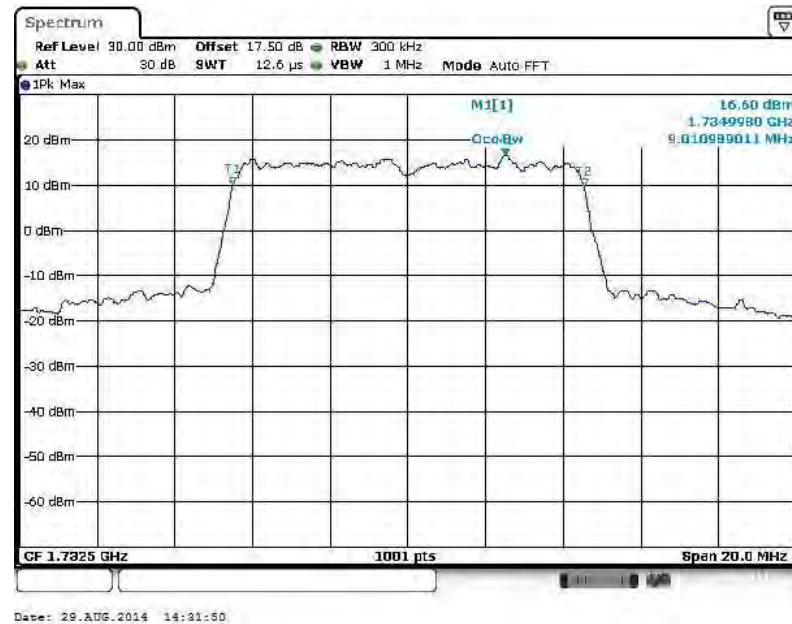


26dB Bandwidth Plot on Channel 20000

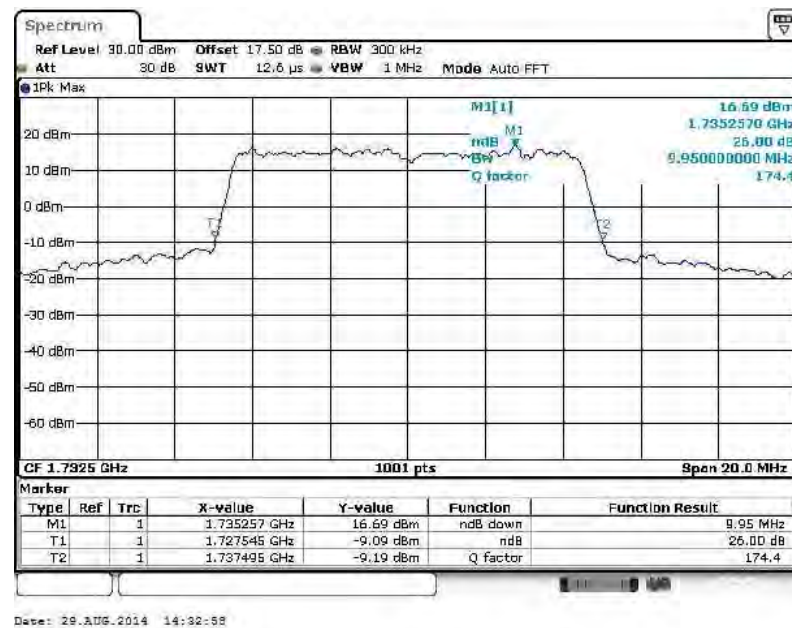




99% Occupied Bandwidth Plot on Channel 20175

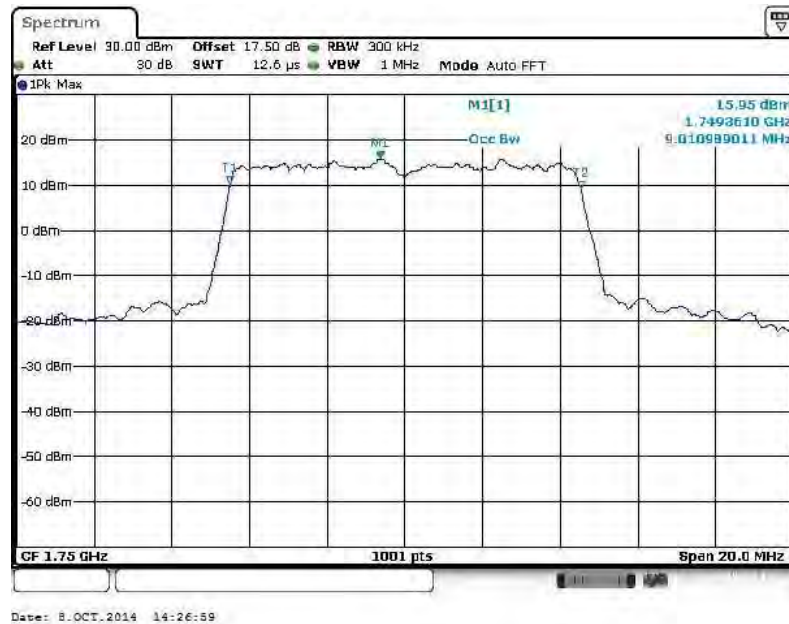


26dB Bandwidth Plot on Channel 20175

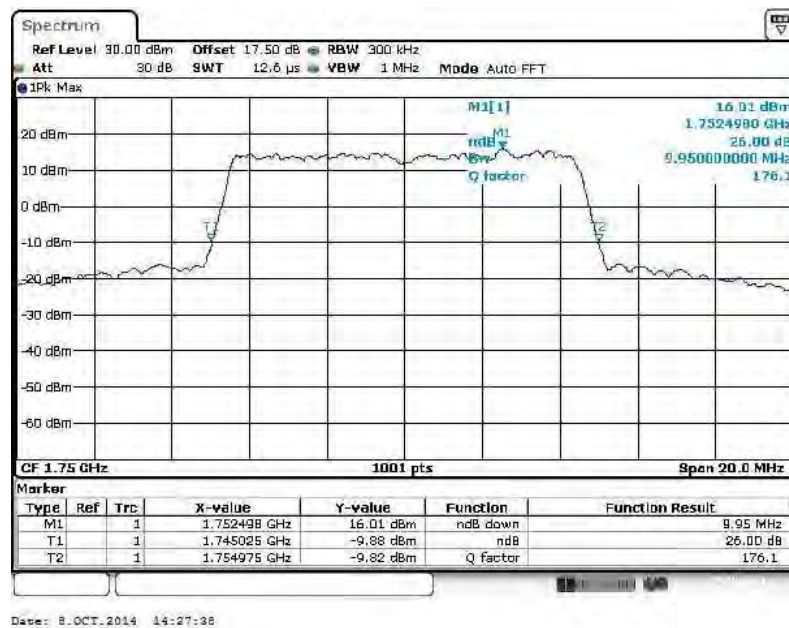




99% Occupied Bandwidth Plot on Channel 20350



26dB Bandwidth Plot on Channel 20350

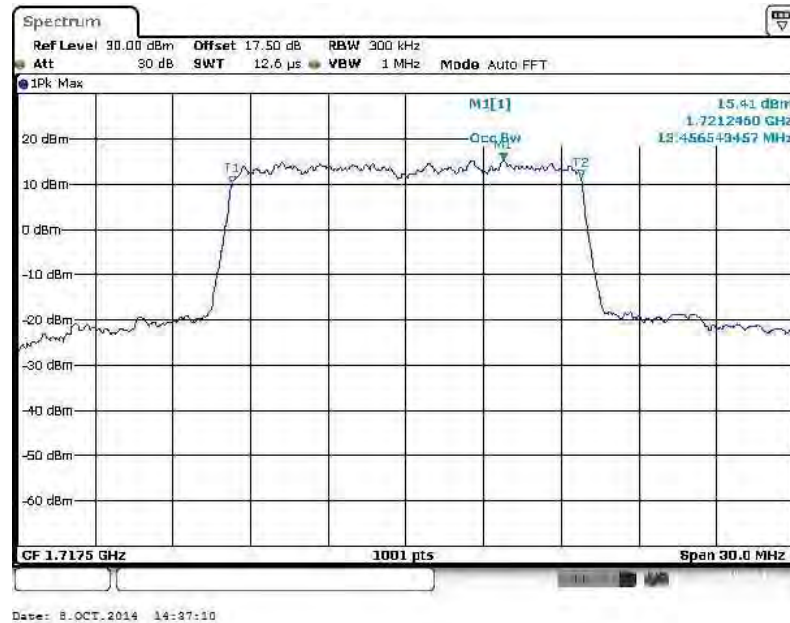




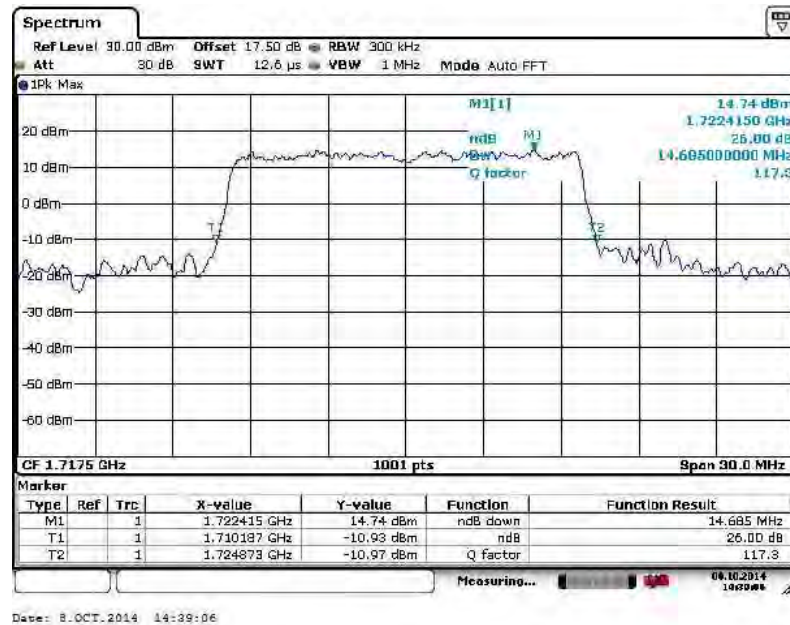
Band : LTE Band 4

BW / Mod. : 15MHz / QPSK

99% Occupied Bandwidth Plot on Channel 20025

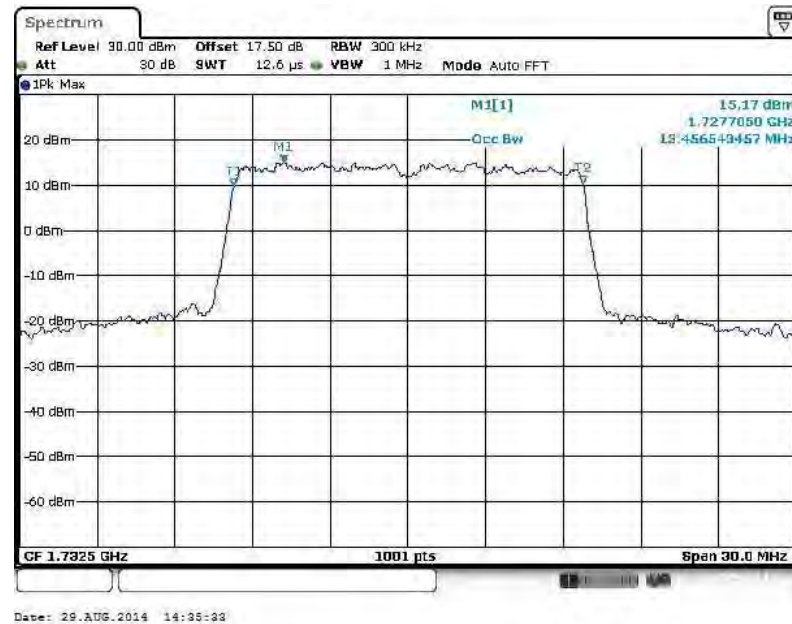


26dB Bandwidth Plot on Channel 20025

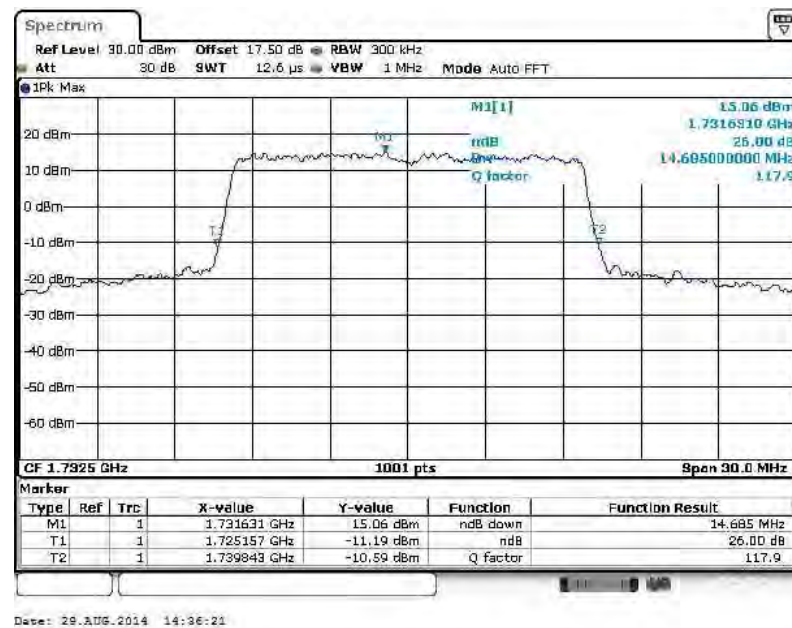




99% Occupied Bandwidth Plot on Channel 20175

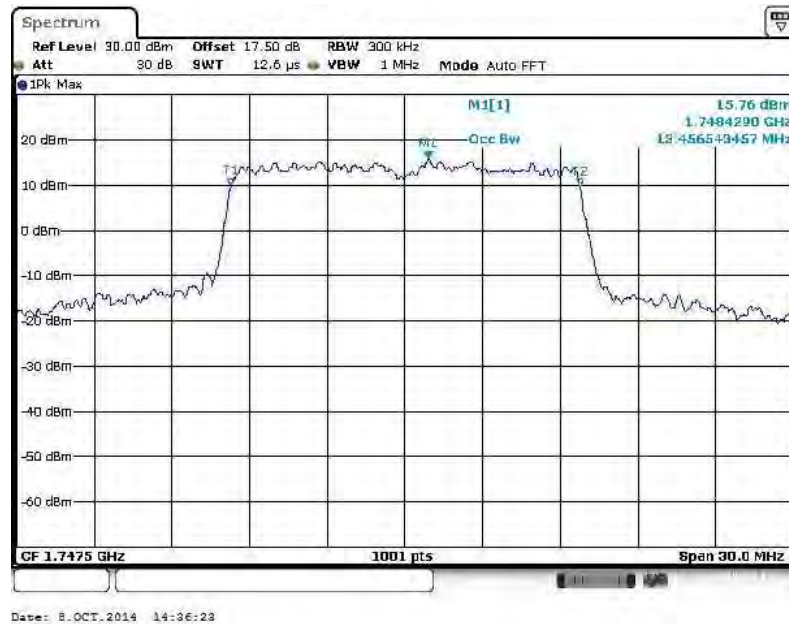


26dB Bandwidth Plot on Channel 20175

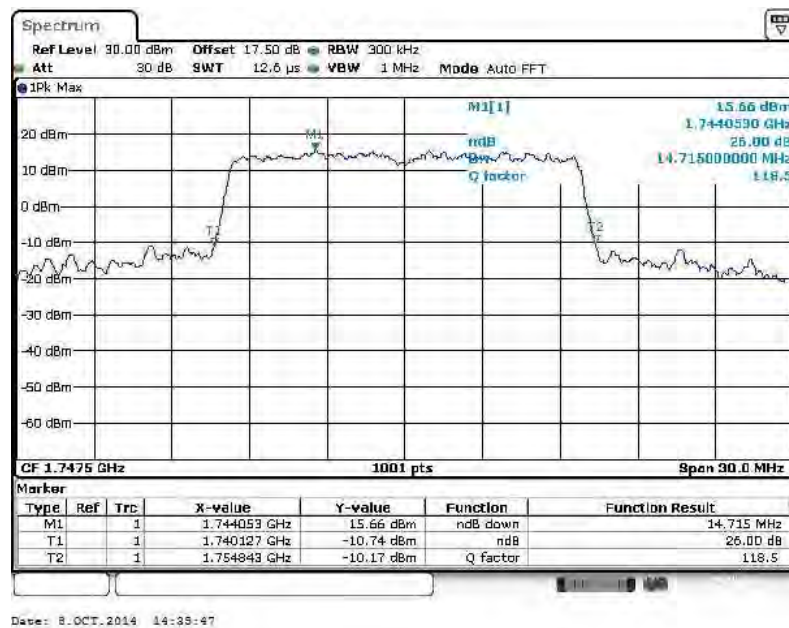




99% Occupied Bandwidth Plot on Channel 20325



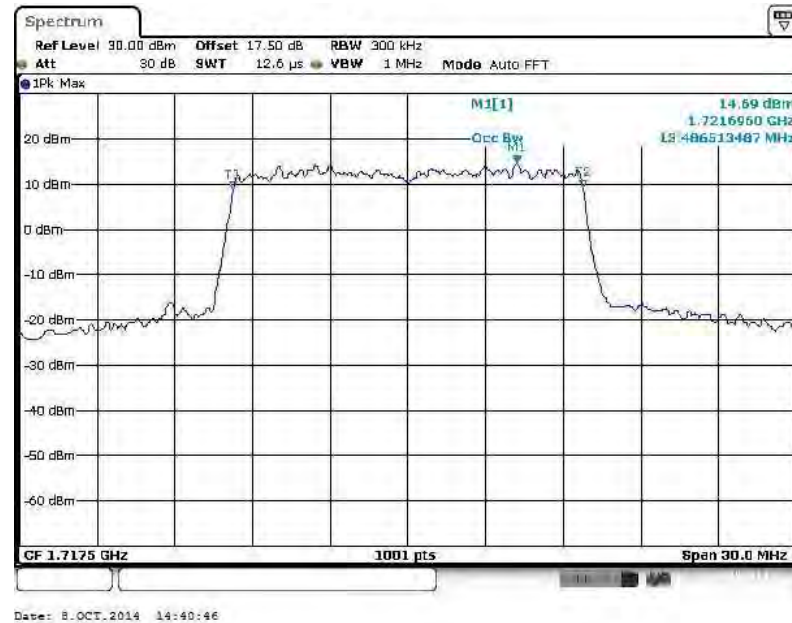
26dB Bandwidth Plot on Channel 20325



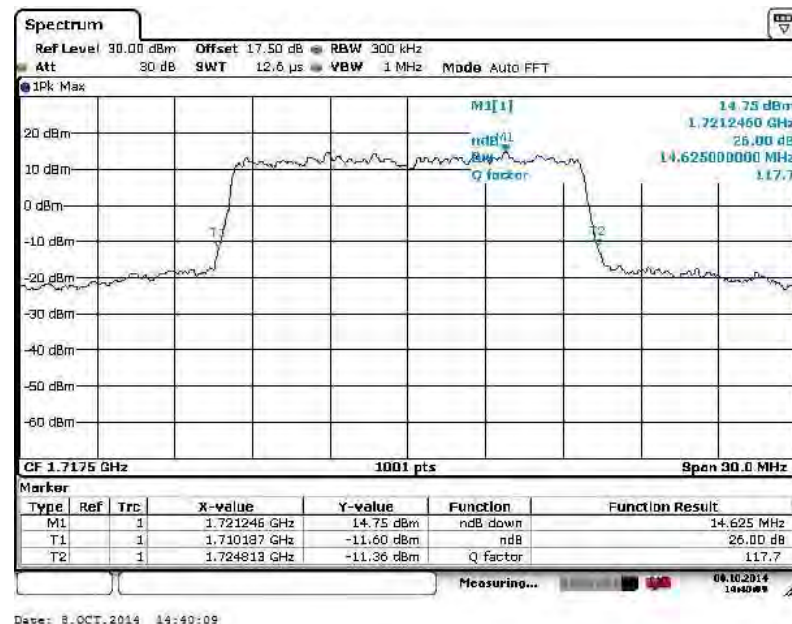


Band :	LTE Band 4	BW / Mod. :	15MHz / 16QAM
--------	------------	-------------	---------------

99% Occupied Bandwidth Plot on Channel 20025

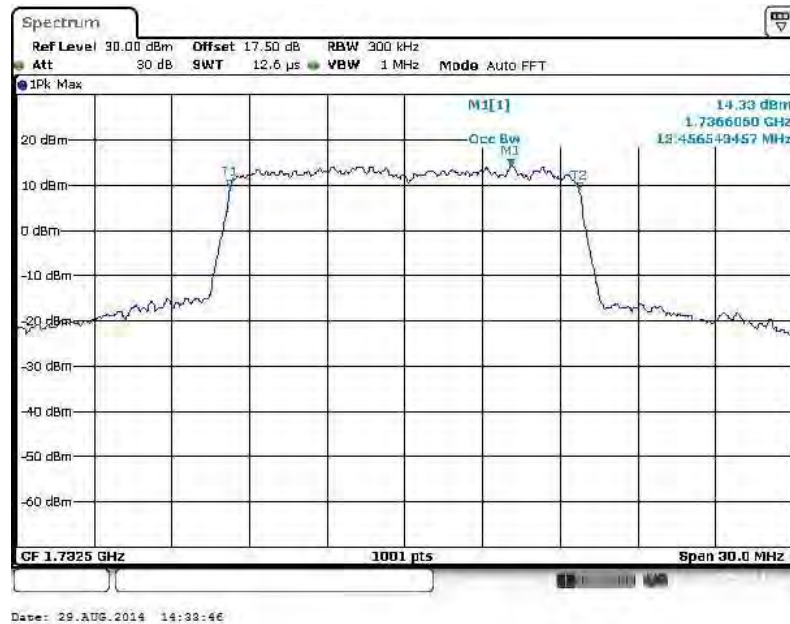


26dB Bandwidth Plot on Channel 20025

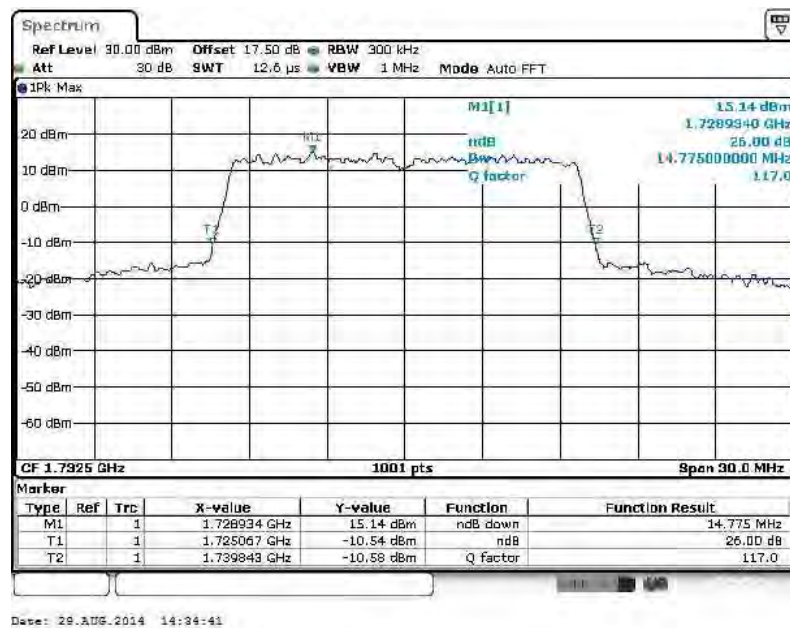




99% Occupied Bandwidth Plot on Channel 20175

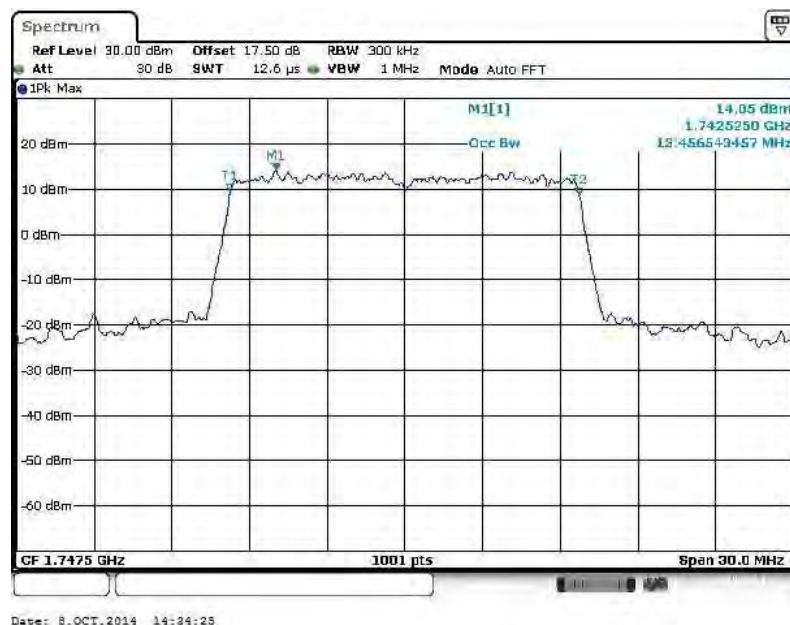


26dB Bandwidth Plot on Channel 20175

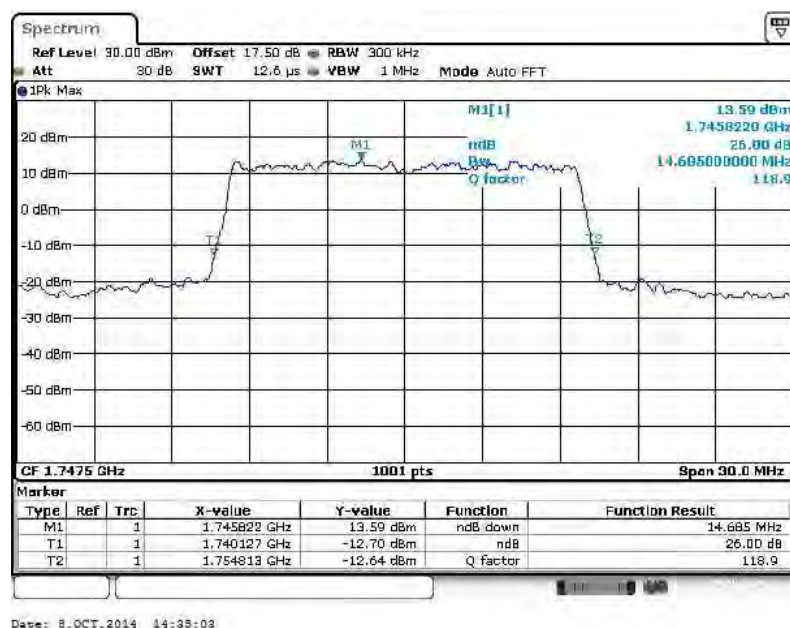




99% Occupied Bandwidth Plot on Channel 20325



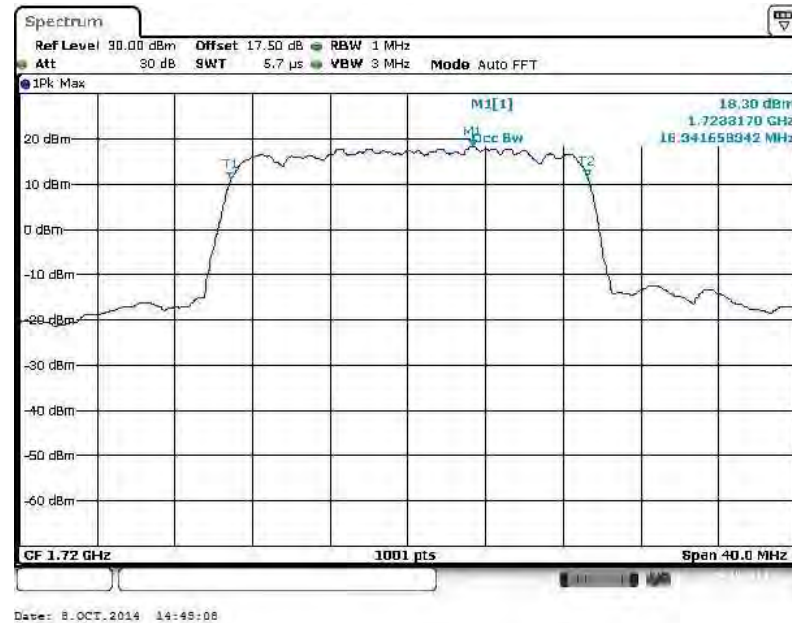
26dB Bandwidth Plot on Channel 20325



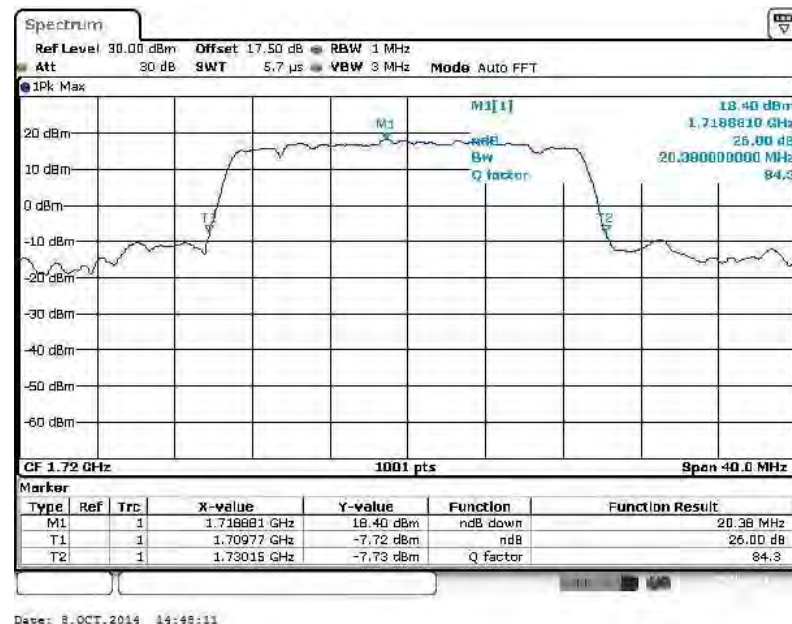


Band :	LTE Band 4	BW / Mod. :	20MHz / QPSK
--------	------------	-------------	--------------

99% Occupied Bandwidth Plot on Channel 20050

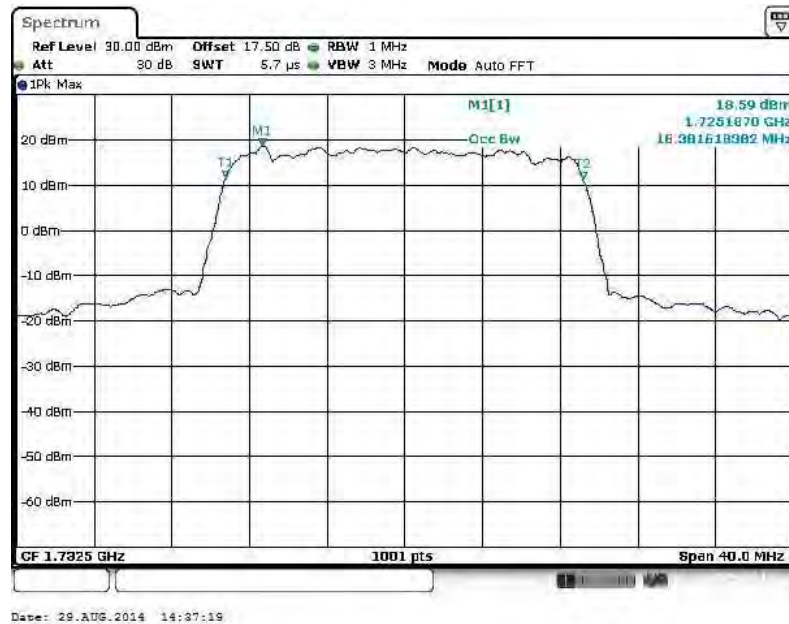


26dB Bandwidth Plot on Channel 20050

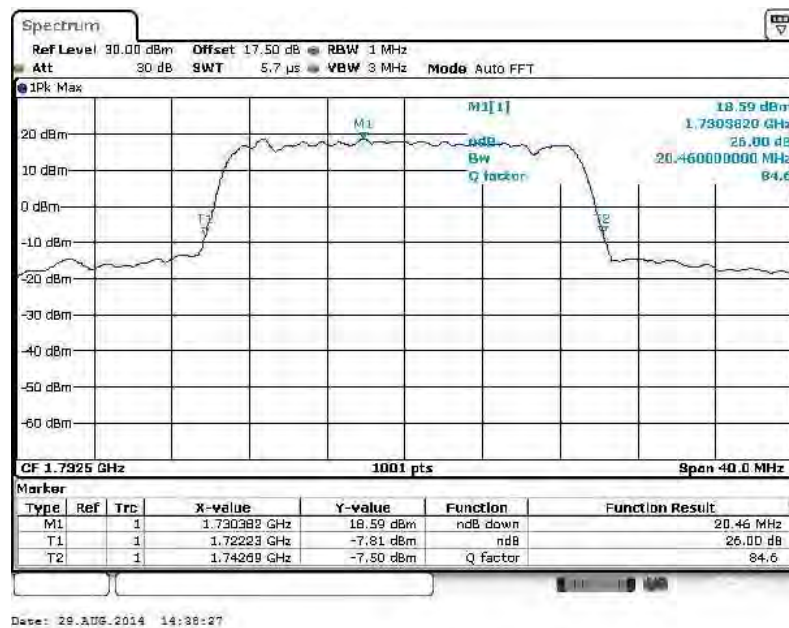




99% Occupied Bandwidth Plot on Channel 20175

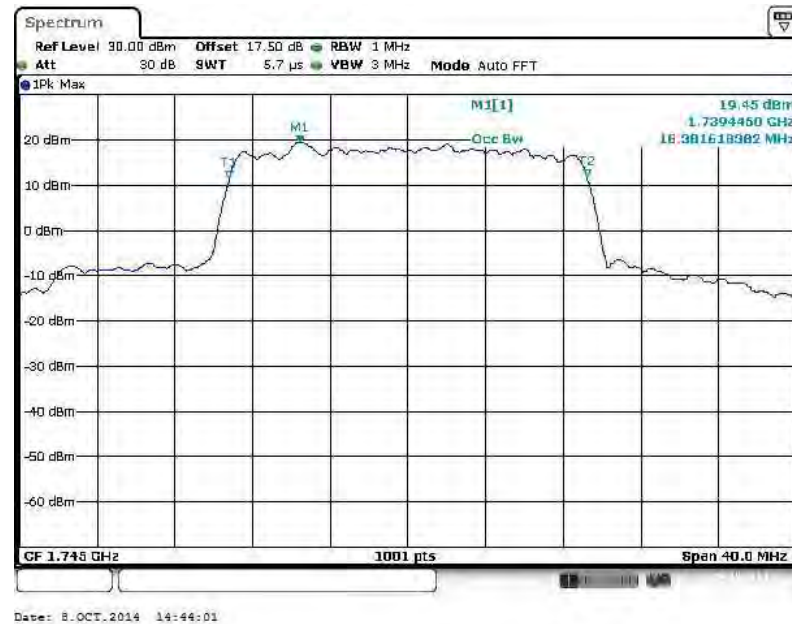


26dB Bandwidth Plot on Channel 20175

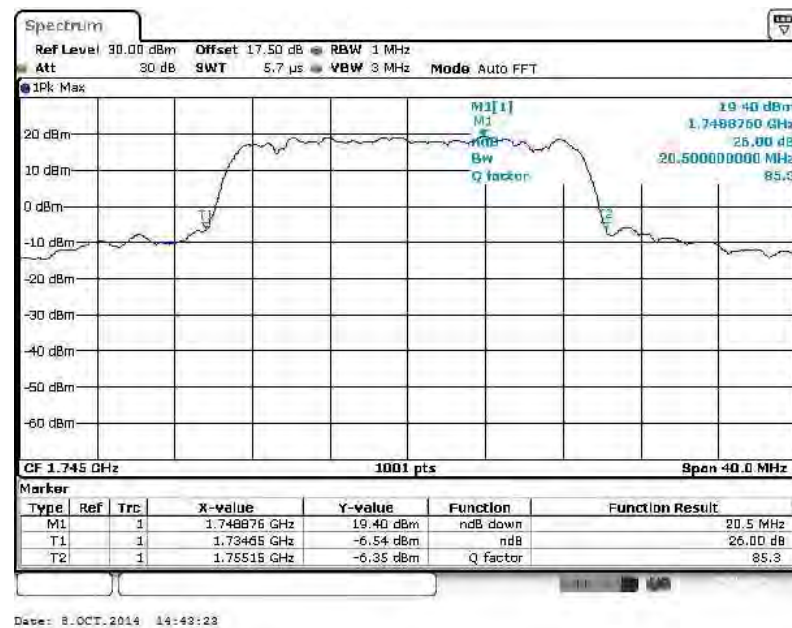




99% Occupied Bandwidth Plot on Channel 20300



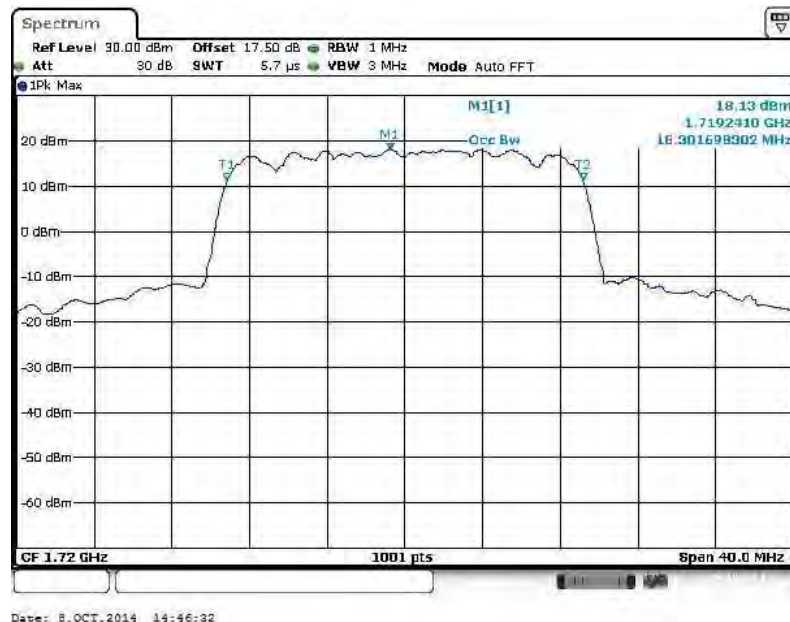
26dB Bandwidth Plot on Channel 20300



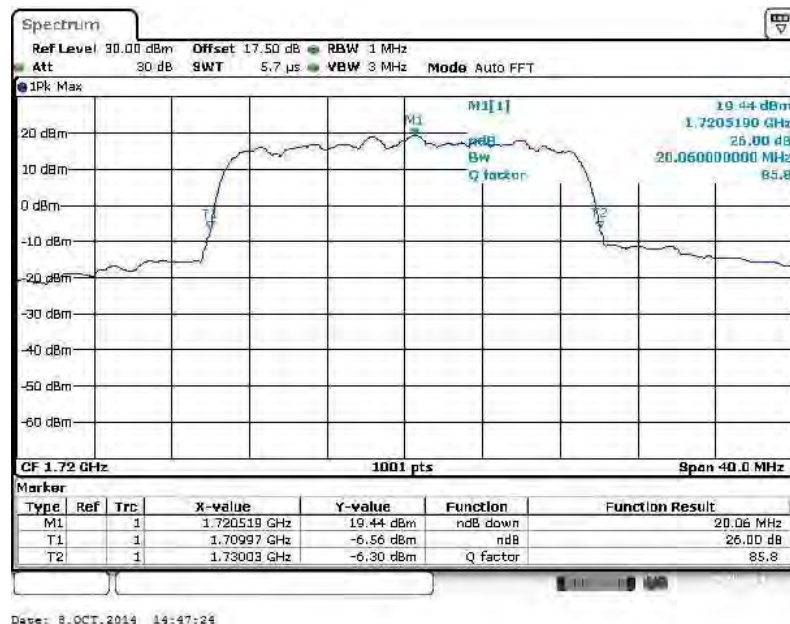


Band :	LTE Band 4	BW / Mod. :	20MHz / 16QAM
--------	------------	-------------	---------------

99% Occupied Bandwidth Plot on Channel 20050

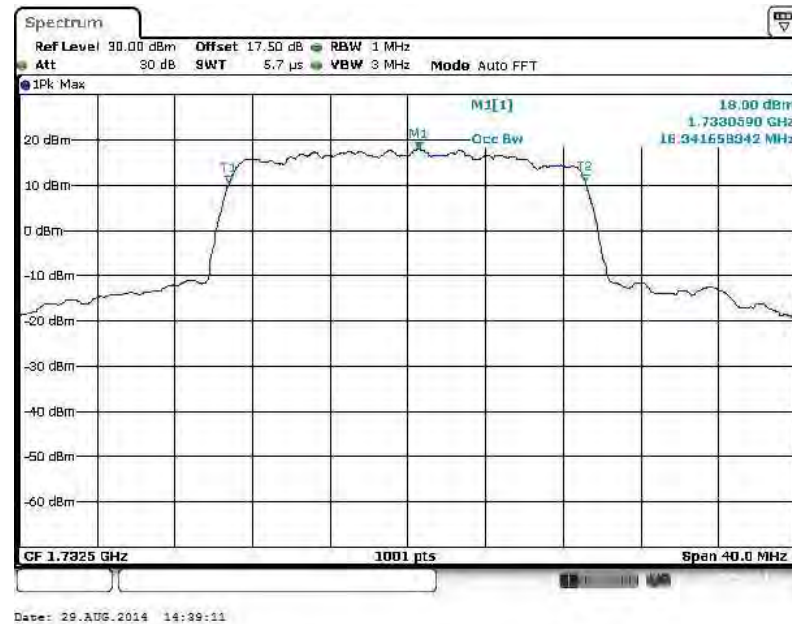


26dB Bandwidth Plot on Channel 20050

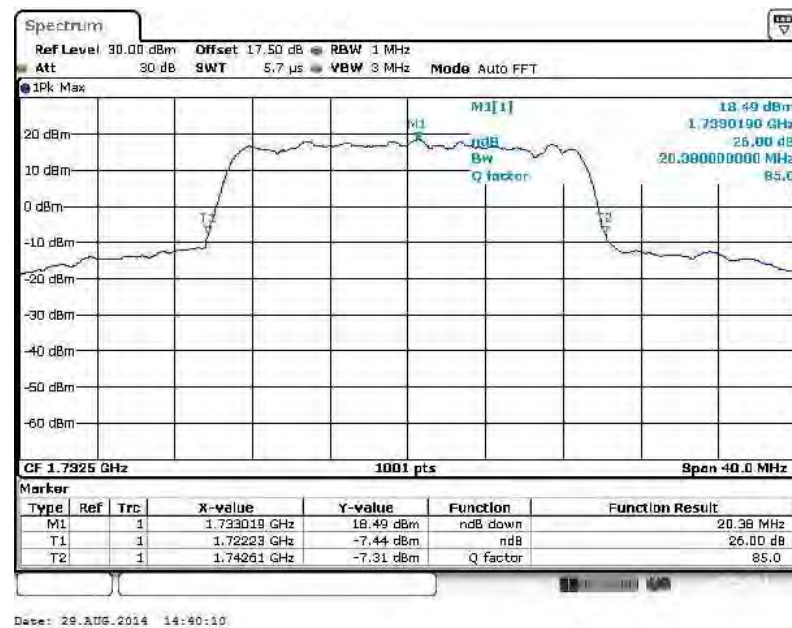




99% Occupied Bandwidth Plot on Channel 20175

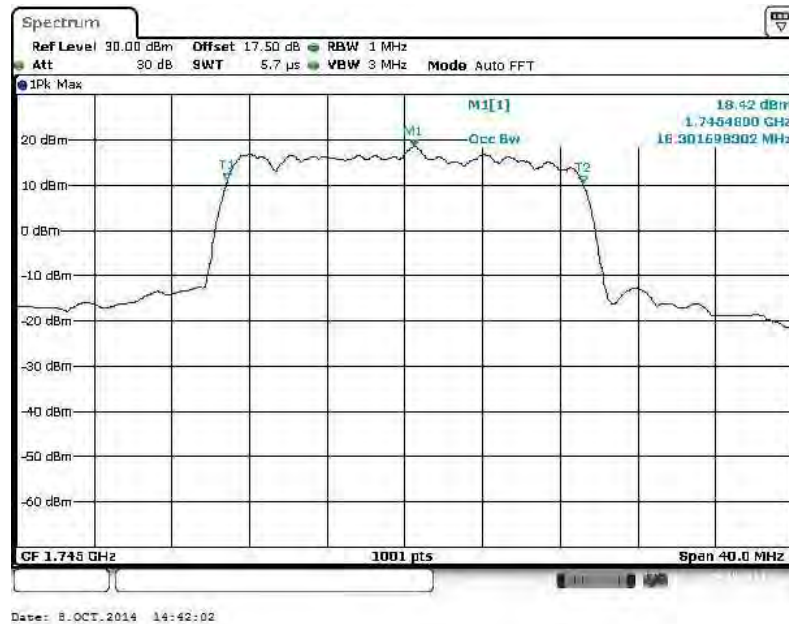


26dB Bandwidth Plot on Channel 20175





99% Occupied Bandwidth Plot on Channel 20300



26dB Bandwidth Plot on Channel 20300

