



FCC/IC Test Report

FOR:

Intel Corporation

Model Number: EP110

Product Description: Smartphone with GSM/GPRS/EDGE, UMTS/HSPA+, LTE, Wi-Fi, BT, and GPS Radios

**FCC ID: O2Z-EP110
IC ID: 1000W – EP110**

47 CFR Part 2, 22, 24, 27, 90 for LTE bands

**RSS-GEN Issue 4, RSS-132 Issue 3, RSS-133 Issue 6, RSS-139 Issue 2, RSS-130 Issue 1,
RSS-199 Issue 2**

**TEST REPORT #: EMC_INTEL_054_14001_FCC22_24_27_LTE_WWAN_rev2_Part1
DATE: 2014-12-16**



FCC:
A2LA Accredited

IC recognized #
3462E-1

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1 Assessment

The following device was evaluated against the applicable criteria specified in FCC rules parts 2, 22, 24 and 27 of Title 47 of the Code of Federal Regulations and in Industry Canada Standards RSS-Gen, RSS-132, RSS-133, RSS -139, RSS-199.

No deviations were ascertained during the course of the tests performed.

Company	Description	Model #
Intel Corp	Intel 4.7-inch Smartphone with GSM,GPRS,EDGE,UMTS,HSPA+,LTE, Wi-Fi, BT and GPS	EP110

Responsible for Testing Laboratory:

2014-12-16	Compliance	Milton Deleon (Lab Manager)	
Date	Section	Name	Signature

Responsible for the Report:

2014-12-16	Compliance	Muhammad Umair Anees (EMC Engineer)	
Date	Section	Name	Signature

The test results of this test report relate exclusively to the test item specified in Section3.
CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM Inc. USA.

2 Administrative Data

1.1 Identification of the Testing Laboratory Issuing the Test Report

Company Name:	CETECOM Inc.
Department:	Compliance
Address:	6370 Nancy Ridge Drive, Suite 101 San Diego, CA 92121 U.S.A.
Telephone:	+1 (858) 362 2400
Fax:	+1 (858) 587 4809
Test Lab Manager:	Milton Deleon

1.2 Identification of the Client

Applicant's Name:	Intel Corporation
Street Address:	2200 Mission College Blvd
City/Zip Code	Santa Clara / 95054
Country	USA
Contact Person:	Christine Ryan
Phone No.	408 300 2167
Fax:	408-765-2336
e-mail:	Christine.m.ryan@intel.com

1.3 Identification of the Manufacturer

Manufacturer's Name:	Same as client.
Manufacturers Address:	
City/Zip Code	
Country	

3 Equipment under Test (EUT)

1.4 Specification of the Equipment under Test

Marketing Name:	Intel 4.7-inch Smartphone
Model Number:	EP110
FCC-ID :	O2Z-EP110
IC ID:	1000W-EP110
Product Description:	Smartphone with GSM,GPRS,EDGE,UMTS,HSPA+,LTE, Wi-Fi, BT and GPS
Operating Frequency Ranges (MHz) / Channels:	LTE Band 17 (700 MHz): 704 -716 MHz LTE Band 13 (700MHz): 777 MHz – 787 MHz LTE Band 26 (800MHz): 814 MHz – 849 MHz LTE Band 5 (850 MHz): 824-849 MHz LTE Band 4 (1700 MHz): 1710 -1755 MHz LTE Band 2 (1900 MHz): 1850-1910 MHz LTE Band 25 (1900MHz): 1850 MHz – 1915 MHz LTE Band 7 (2500MHz): 2500 MHz – 2570 MHz
Type(s) of Modulation:	QPSK, 16 QAM and 64 QAM
Antenna info (antenna presented for testing with the development board):	LTE Band 2 (1900): Antenna gain = -0.73 dBi LTE Band 4 (1700): Antenna gain = -0.87 dBi LTE Band 5 (850): Antenna gain = 1.64 dBi LTE Band 17 (700): Antenna gain = 3.2 dBi LTE Band 7 (2500): Antenna gain = -2.62 dBi LTE Band 13 (700MHz): Antenna gain = 1.47 dBi LTE Band 25 (1900MHz): Antenna gain = -0.73 dBi LTE Band 26 (800MHz): Antenna gain = 1.64 dBi
Rated Operating Voltage Range:	AA lithium battery pack (dedicated) Vmin: 3.6V/ Vnom: 3.8V / Vmax: 4.2V
Rated Operating Temperature Range:	-10°C ~ +55°C
Test Sample Status:	Prototype
Other Radios included:	Intel XMM 7260 Radio Module <ul style="list-style-type: none"> • GSM 850/1900MHz • GPRS / EDGE Multi-slot class 33 operation • WCDMA / HSUPA+ 850/1700/1900 MHz • LTE 700/800/850/900/1700/1800/1900/2600 WLAN 802.11a/ac/b/g/n, BT Basic/EDR/LE (2.4 GHz and 5GHz band of operation) GPS 1575.42 MHz

1.5 Identification of the Equipment under Test (EUT)

EUT #	Serial Number	Sample	HW/SW Version
1	INV141400226	Radiated/Conducted	PR2 Vol D/4.4.4 KTU84P main engineering 53181-dev-keys
2	INV141400717	Radiated/Conducted	PR2 Vol D/4.4.4 KTU84P main engineering 53181-dev-keys
3	INV141401015	BT/WIFI/GPS Radiated/Conducted	PR2 Vol D/4.4.4 KTU84P main engineering 53181-dev-keys

1.6 Identification of Accessory equipment

AE #	Type	Manufacturer	Model	Part Number
1	AC adapter	Salcomp	SC1402	1309500144736

1.7 Environmental conditions during Test

The following environmental conditions were maintained during the course of testing:

Ambient Temperature: 20-25°C

Relative Humidity: 40-60%

1.8 Dates of Testing

07/18/2014 – 09/18/2014

4 Subject of Investigation

The objective of the measurements applied by CETECOM Inc. was to establish compliance of the EUT as described under Ch. 3 of this Test Report, with the applicable criteria specified in

- 47 CFR Part 2: Title 47 of the Code of Federal Regulations: Chapter I-Federal Communications Commission Frequency allocations and radio treaty matters; general rules and regulations.
- 47 CFR Part 22: Title 47 of the Code of Federal Regulations: Chapter I-Federal Communications Commission subchapter B- common carrier services; Part 22- Public mobile services
- 47 CFR Part 24: Title 47 of the Code of Federal Regulations: Chapter I-Federal Communications Commission subchapter B- common carrier services; Part 24- Personal communication services
- 47 CFR Part 27: Title 47 of the Code of Federal Regulations: Chapter I-Federal Communications Commission subchapter B- common carrier services; Part 27-Miscellaneous wireless communication services
- RSS-GEN- Issue 4: General Requirements and Information for the Certification of Radio Apparatus
- RSS-132- Issue 3: Spectrum management and telecommunication policy- Radio Standards Specifications Cellular telephones employing new technologies operating in the bands 824-849MHz and 869-894MHz
- RSS-133- Issue 6: Spectrum management and telecommunication policy- Radio Standards Specifications- 2GHz personal communication services
- RSS-139- Issue 2: Spectrum management and telecommunication policy- Radio Standards Specifications- Advance wireless services equipment operating in the bands 1710-1755MHz and 2110-2155MHz
- RSS-130, Issue 1: Mobile Broadband Services (MBS) Equipment Operating in the Frequency Bands 698-756 MHz and 777-787 MHz
- RSS-199 Issue 2 — Broadband Radio Service (BRS) Equipment Operating in the Band 2500-2690 MHz

This test report is to support a request for new equipment authorization under the FCC ID: **O2Z-EP110** and IC ID **1000W-EP110**.

5 Summary of Measurement Results

5.1 LTE Band 17 (700 MHz):

Specifications	Test Case	Temperature and Voltage Conditions	Mode	Pass	Fail	NA	NP	Result
§2.1046 §27.50(d)(4) RSS-GEN, 6.12 RSS-130(4.4)	RF Output Power	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§27.50(d)(5) RSS-130(4.4)	Peak-to-average Ratio	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1055 §27.54 RSS-GEN, 6.11 RSS-130(4.3)	Frequency Stability	Extreme	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1049 §27.53(h) RSS-Gen, 6.6	Occupied Bandwidth	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1051 §27.53(h) RSS-GEN, 6.13 RSS-130 4.6.1	Band Edge Compliance	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1053 §27.53(h) RSS-GEN, 6.13 RSS-130 4.6.2	Unwanted Emissions	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					

NA= Not Applicable; NP= Not Performed.



5.2 LTE Band 2 (1900 MHz):

Specifications	Test Case	Temperature and Voltage Conditions	Mode	Pass	Fail	NA	NP	Result
§2.1046 §24.232 (a) RSS-GEN, 6.12 RSS-133, 6.4	RF Output Power	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§24.232 (d) RSS-133, 6.4	Peak-to-average Ratio	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1055 §24.235 RSS-GEN, 6.11 RSS-133, 6.3	Frequency Stability	Extreme	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1049 RSS-GEN, 6.6	Occupied Bandwidth	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1051 §24.238 RSS-GEN, 6.13 RSS-133, 6.5	Band Edge Compliance	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1053 §24.238 RSS-GEN, 6.13 RSS-133, 6.5	Unwanted Emissions	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					

Note: NA= Not Applicable; NP= Not Performed.



5.3 LTE Band 4 (1700 MHz):

Specifications	Test Case	Temperature and Voltage Conditions	Mode	Pass	Fail	NA	NP	Result
§2.1046 §27.50(d)(4) RSS-GEN, 6.12 RSS-139(6.4)	RF Output Power	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§27.50(d)(5) RSS-1RSS-139(6.4)	Peak-to-average Ratio	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1055 §27.54 RSS-GEN, 6.11 RSS-139(6.3)	Frequency Stability	Extreme	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1049 §27.53(h) RSS-Gen, 6.6	Occupied Bandwidth	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1051 §27.53(h) RSS-GEN, 6.13 RSS-139 6.5	Band Edge Compliance	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1053 §27.53(h) RSS-GEN, 6.13 RSS-139 6.5	Unwanted Emissions	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					

NA= Not Applicable; NP= Not Performed.

Note1: Radiated test method is used for this test case, RF conducted is not required.

5.4 LTE Band 5 (850 MHz):

Specifications	Test Case	Temperature and Voltage Conditions	Mode	Pass	Fail	NA	NP	Result
§2.1046 §22.913 (a) RSS-GEN, 6.12 RSS-132, 5.4	RF Output Power	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
RSS-132 (5.4)	Peak-to-average Ratio	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1055 §22.355 RSS-GEN, 6.11 RSS-132 5.3	Frequency Stability	Extreme	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1049 §22.917(b) RSS-GEN, 6.6	Occupied Bandwidth	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1051 §22.917 RSS-GEN, 6.13 RSS-132, 5.5	Band Edge Compliance	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1053 §22.917 RSS-GEN, 6.13 RSS-132, 5.5	Unwanted Emissions	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					

Note: NA= Not Applicable; NP= Not Performed.

5.5 LTE Band 7 (2500 MHz):

Specifications	Test Case	Temperature and Voltage Conditions	Mode	Pass	Fail	NA	NP	Result
§2.1046 §27.50(h)(2) RSS-GEN, 6.12 RSS-199, 4.4	RF Output Power	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
27.50(d)(5) RSS-130(4.4)	Peak-to-average Ratio	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1055 §27.54 RSS-GEN, 6.11 RSS-199, 4.3	Frequency Stability	Extreme	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1049 §27.53(h) RSS-GEN, 6.6 RSS-199, 4.2	Occupied Bandwidth	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1051 §27.53(h) RSS-GEN, 6.13 RSS-199, 4.6	Band Edge Compliance	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1053 §27.53(h) RSS-GEN, 6.13 RSS-199, 4.6	Unwanted Emissions	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					

Note: NA= Not Applicable; NP= Not Performed.

5.6 LTE Band 13 (700 MHz):

Specifications	Test Case	Temperature and Voltage Conditions	Mode	Pass	Fail	NA	NP	Result
§2.1046 §27.50(h)(2) RSS-GEN, 6.12 RSS-130, 4.4	RF Output Power	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
27.50(d)(5) RSS-130(4.4)	Peak-to-average Ratio	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1055 §27.54 RSS-GEN, 6.11 RSS-130, 3.4	Frequency Stability	Extreme	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1049 §27.53(h) RSS-GEN, 6.6 RSS-130, 4.2	Occupied Bandwidth	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1051 §27.53(h) RSS-GEN, 6.13 RSS-130, 4.5	Band Edge Compliance	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1053 §27.53(h) RSS-GEN, 6.13 RSS-130, 4.5	Unwanted Emissions	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					

Note: NA= Not Applicable; NP= Not Performed.

5.7 LTE Band 25 (1900 MHz):

Specifications	Test Case	Temperature and Voltage Conditions	Mode	Pass	Fail	NA	NP	Result
§2.1046 §27.50(h)(2) RSS-GEN, 6.12 RSS-133, 4.4	RF Output Power	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
27.50(d)(5) RSS-130(4.4)	Peak-to-average Ratio	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1055 §27.54 RSS-GEN, 6.11 RSS-133, 3.4	Frequency Stability	Extreme	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1049 §27.53(h) RSS-GEN, 6.6 RSS-133, 4.2	Occupied Bandwidth	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1051 §27.53(h) RSS-GEN, 6.13 RSS-133, 4.5	Band Edge Compliance	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1053 §27.53(h) RSS-GEN, 6.13 RSS-133, 4.5	Unwanted Emissions	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					

Note: NA= Not Applicable; NP= Not Performed.

5.8 LTE Band 26 (800 MHz):

Specifications*	Test Case	Temperature and Voltage Conditions	Mode	Pass	Fail	NA	NP	Result
§2.1046 §90.635(b)	RF Output Power	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
27.50(d)(5)	Peak-to-average Ratio	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1055 §90.213	Frequency Stability	Extreme	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1049 §90.209(b)(7)	Occupied Bandwidth	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1051 §90.691	Band Edge Compliance	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					
§2.1053 §90.691	Unwanted Emissions	Nominal	QPSK	■	□	□	□	Complies
			16 QAM					

Note: NA= Not Applicable; NP= Not Performed.

*Band 26 is only relevant for FCC in the frequency range 814-824MHz. Specifications in the range of 824-849 MHz are covered in Band 5.

6 Measurements

6.1 Measurement Uncertainty

For Power Output, Peak-Average Ratio, Band Edge Unwanted Emissions and Radiated Spurious Emissions the measurement uncertainty has been determined to:

	Uncertainty in dB radiated <30MHz	Uncertainty in in dB radiated 30MHz - 1GHz	Uncertainty in dB radiated > 1GHz	Uncertainty in dB Conducted measurement
standard deviation k=1	2.48	1.94	2.16	0.64
95% confidence interval in dB	4.86	3.79	4.24	1.25
95% confidence interval in dB in delta to Result	+/-2.5 dB	+/-2.0 dB	+/- 2.3dB	+/-0.7dB

Assesment from 3-12-2014 including contributions (as applicable) for NSA of chamber, VSWR of chamber, Uncertainty contribution of the antennas, Uncertainty contributions of ESU40, Uncertainty contribution of non-conducting table and all mismatch uncertainties of the involved equipment.

For OBW and Frequency Stability the measurement uncertainty is only determined by the FSU40 receiver. Maximum uncertainty is 2Hz.

6.2 RF Power Output

6.2.1 References

- FCC: CFR Part 2.1046, CFR Part 22.913, CFR Part 24.232, CFR Part 27.50, CFR Part 90.635
- IC: RSS-Gen Section 6.12; RSS-132 Section 5.4; RSS-133 Section 6.4, RSS-139 Section 6.4, RSS-130 Section 4.4, RSS-199 Section 4.4
- 971168 D01 Power Meas License Digital Systems v02r02

6.2.2 Measurement Requirements:

6.2.2.1 FCC 2.1046: RF power output.

Power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on circuit elements as specified. The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.

6.2.3 Limits:

6.2.3.1 Band5 (850MHz)

FCC Part 22.913 (a) & RSS-132 Section 5.4

FCC: Average ERP < 38.45 dBm (7W)

IC: Average EIRP < 40.60 dBm (11.5W)

6.2.3.2 Band2 (1900 MHz)

FCC Part 24.232 (c) (e) & RSS-133 Section 6.4/SRSP-510 Section 5.1.2

FCC: Average EIRP < 33 dBm (2W)

IC: Average EIRP < 33 dBm (2W)

6.2.3.3 Band4 1700 MHz

FCC Part 27.50 (d) (4) (6) & RSS-139 Section 6.4

FCC: Average EIRP < 30 dBm (1W)

IC: Average EIRP < 30 dBm (1W)

6.2.3.4 Band17 (704-716 MHz)

FCC Part 27.50 (c) (10) & RSS-130 Section 4.4

FCC: Average ERP < 34.8 dBm (3W)

IC: Average EIRP < 47 dBm (50W)

6.2.3.5 Band7 (2500 MHz)

FCC Part 27.50 (h) (2)
RSS-199 Section 4.4

FCC: Average EIRP < 33dBm (2W)

IC: Peak EIRP < 33 dBm (2W)

6.2.3.6 Band13 (777-787 MHz)

FCC Part 27.50 (b) (10)
RSS-130 Section 4.4

FCC: Average ERP < 34.8 dBm (3W)

IC: Average EIRP < 47 dBm (50W)

6.2.3.7 Band 25 (1850-1915 MHz)

FCC Part 24.232 (c) (e) & RSS-133 Section 6.4/SRSP-510 Section 5.1.2

FCC: Average EIRP < 33 dBm (2W)

IC: Average EIRP < 33 dBm (2W)

6.2.3.8 Band 26 (814-849 MHz)

Limits are given by two different FCC parts as part 90 is applicable to the frequency range 814-824, and part 22 is applicable to the frequency range 824-849 (same as Band 5)

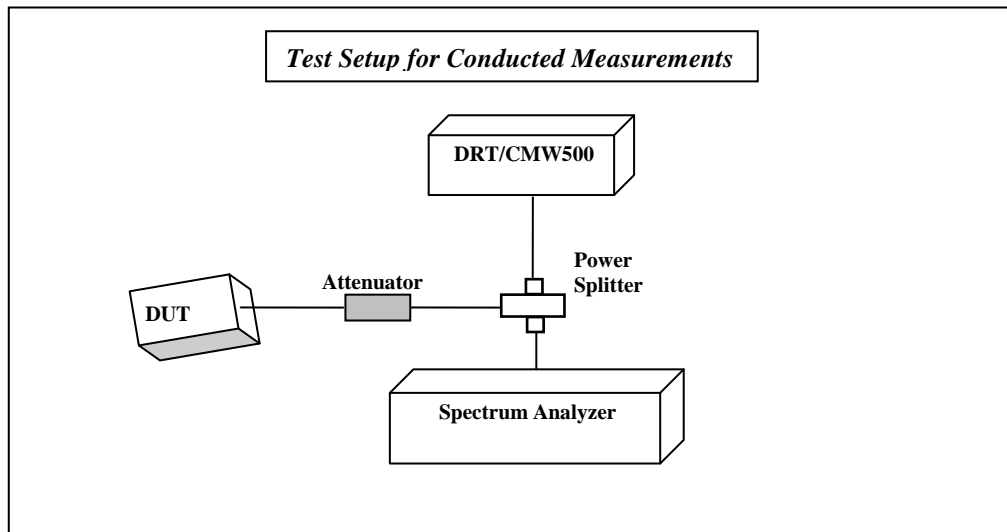
FCC Part 90.635 (b) (814-824 MHz)

FCC: Average ERP < 50 dBm (100W)

FCC Part 22.913 (a) (824-849 MHz)

FCC: Average ERP < 38.45 dBm (7W)

6.2.4 Measurement Procedure:



The DUT is using as much total output power as permissible according to the standards independent of physical bandwidth used. In order to achieve this goal the amplifier gain or baseband signal level inside the DUT is dynamically adjusted when the bandwidth changes. To verify the capability of the DUT to perform this dynamic adjustment it was tested with one single RB and with the full RB configuration for each supported channel bandwidth for each band under test.

Different modulations have different peak to average ratios so 16QAM and QPSK have been tested.

Testing for Low, Mid and High channel is the basic procedure from all radio base standards to catch frequency response over the band.

The power measurements were carried out with the CMW500. It returns peak and average results. Internally it uses a time domain power measurement function for Peak and RMS power. The measurements are including a range of at least 25LTE frames to ensure stable and reproduceable results for peak and average. Per FCC KDB 971168 D01 Power Meas License Digital Systems v02r02 footnote number 1 on page 2, if basestation simulator such as CMW 500 produces consistent results as detailed in section 5 of the KDB, then it's acceptable to use that test equipment for power measurements. A spot check has been carried out comparing the results from CMW 500 with the frequency domain methods described in the referenced KDB yielding results within 0.2dB.

The gains have been taken from the customer documentation. RF cable losses for various LTE bands are calculated and entered into the RF config menu in CMW 500 and as RF level offset for spectrum analyser measurements.

6.2.4.1 Test Conditions:

Tnom: 22°C; Vnom: 3.8 V



6.2.5 Test Results

6.2.5.1 Conducted Output Power LTE Band 17:

LTE Band 17 (704 MHz – 716 MHz)								
RB Size = 1				BW (MHz) = 5				
Modulation: QPSK								
Ch/Frequency (MHz)/RB offset	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	ERP Average (dBm)	ERP/EIRP Average Limit (dBm) FCC/IC	Results
23755/706.5/Low	29.33	23.3	6.03	3.2	26.5	24.35	34.8/47	Pass
23790/710/Mid	28.76	22.72	6.04	3.2	25.92	23.77	34.8/47	Pass
23825/713.5/High	28.09	22.69	5.4	3.2	25.89	23.74	34.8/47	Pass

LTE Band 17 (704 MHz – 716 MHz)								
RB Size = 25				BW (MHz) = 5.0				
Modulation: QPSK								
Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	ERP Average (dBm)	ERP/EIRP Average Limit (dBm) FCC/IC	Results
23755/706.5	29.87	22.55	7.32	3.2	25.75	23.6	34.8/47	Pass
23790/710	28.42	21.99	6.43	3.2	25.19	23.04	34.8/47	Pass
23825/713.5	29.13	22.2	6.93	3.2	25.4	23.25	34.8/47	Pass



LTE Band 17 (704 MHz – 716 MHz)

RB Size = 50

BW (MHz) = 10

Modulation: QPSK

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	ERP Average (dBm)	ERP/EIRP Average Limit (dBm) FCC/IC	Results
23780/709	28.73	22.47	6.26	3.2	25.67	23.52	34.8/47	Pass
23790/710	27.86	22.18	5.68	3.2	25.38	23.23	34.8/47	Pass
23800/711	28.2	22.04	6.16	3.2	25.24	23.09	34.8/47	Pass

LTE Band 17 (704 MHz – 716 MHz)

Resource Block Size = 1

BW (MHz) = 5

Modulation: 16 QAM

Ch/Frequency (MHz)/RB offset	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	ERP Average (dBm)	ERP/EIRP Average Limit (dBm) FCC/IC	Results
23755/706.5/Low	29.7	23.19	6.51	3.2	26.39	24.24	34.8/47	Pass
23790/710/Mid	27.45	22.06	5.39	3.2	25.26	23.11	34.8/47	Pass
23825/713.5/High	28.02	22.75	5.27	3.2	25.95	23.8	34.8/47	Pass

LTE Band 17 (704 MHz – 716 MHz)

Resource Block Size = 25

BW (MHz) = 5.0

Modulation: 16 QAM

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	ERP Average (dBm)	ERP/EIRP Average Limit (dBm) FCC/IC	Results
23755/706.5	28.11	20.52	7.59	3.2	23.72	21.57	34.8/47	Pass
23790/710	28.43	20.8	7.63	3.2	24	21.85	34.8/47	Pass
23825/713.5	28.35	20.63	7.72	3.2	23.83	21.68	34.8/47	Pass

LTE Band 17 (704 MHz – 716 MHz)

Resource Block Size = 50

BW (MHz) = 10

Modulation: 16 QAM

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	ERP Average (dBm)	ERP/EIRP Average Limit (dBm) FCC/IC	Results
23780/709	28.46	20.56	7.9	3.2	23.76	21.61	34.8/47	Pass
23790/710	28.24	20.66	7.58	3.2	23.86	21.71	34.8/47	Pass
23800/711	28.19	20.61	7.58	3.2	23.81	21.66	34.8/47	Pass

6.2.5.2 Conducted Output Power LTE Band 2:

LTE Band 2 (1850 MHz – 1910 MHz)							
RB Size = 1				BW (MHz) = 1.4			
Modulation: QPSK							
Ch/Center Frequency(MHz)/RB offset	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
18607/1850.7/Low	31.43	25.59	5.84	-0.73	24.86	33/33	Pass
18900/1880/Mid	29.86	22.99	6.87	-0.73	22.26	33/33	Pass
19193/1909.3/High	31.51	25.82	5.69	-0.73	25.09	33/33	Pass

LTE Band 2 (1850 MHz – 1910 MHz)							
RB Size = 6				BW (MHz) = 1.4			
Modulation: QPSK							
Ch/Center Frequency(MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
18607/1850.7	28.15	22.78	5.37	-0.73	22.05	33/33	Pass
18900/1880	27.44	21.62	5.82	-0.73	20.89	33/33	Pass
19193/1909.3	27.48	21.49	5.99	-0.73	20.76	33/33	Pass

LTE Band 2 (1850 MHz – 1910 MHz)

RB Size = 15

BW (MHz) = 3.0

Modulation: QPSK

Ch/Center Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
18615/1851.5	28.57	21.97	6.6	-0.73	21.24	33/33	Pass
18900/1880	27.66	21.59	6.07	-0.73	20.86	33/33	Pass
19185/1908.5	28.46	21.76	6.7	-0.73	21.03	33/33	Pass

LTE Band 2 (1850 MHz – 1910 MHz)

RB Size = 25

BW (MHz) = 5.0

Modulation: QPSK

Ch/Center Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
18625/1852.5	28.59	21.57	7.02	-0.73	20.84	33/33	Pass
18900/1880	27.86	21.54	6.32	-0.73	20.81	33/33	Pass
19175/1907.5	28.16	21.59	6.57	-0.73	20.86	33/33	Pass

LTE Band 2 (1850 MHz – 1910 MHz)

RB Size = 50

BW (MHz) = 10.0

Modulation: QPSK

Ch/Center Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
18650/1855	27.99	21.62	6.37	-0.73	20.89	33/33	Pass
18900/1880	27.73	21.6	6.13	-0.73	20.87	33/33	Pass
19150/1905	27.83	21.52	6.31	-0.73	20.79	33/33	Pass

LTE Band 2 (1850 MHz – 1910 MHz)

RB Size = 75

BW (MHz) = 15.0

Modulation: QPSK

Ch/Center Frequency (MHz)/RB	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
18675/1857.5	28.22	21.54	6.68	-0.73	20.81	33/33	Pass
18900/1880	27.95	21.54	6.41	-0.73	20.81	33/33	Pass
19125/1902.5	27.54	21.52	6.02	-0.73	20.79	33/33	Pass



LTE Band 2 (1850 MHz – 1910 MHz)

RB Size = 100

BW (MHz) = 20

Modulation: QPSK

Ch/Center Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
18700/1860	27.82	21.59	6.23	-0.73	20.86	33/33	Pass
18900/1880	27.72	21.62	6.1	-0.73	20.89	33/33	Pass
19100/1900	27.61	21.51	6.1	-0.73	20.78	33/33	Pass



LTE Band 2 (1850 MHz – 1910 MHz)

RB Size = 1

BW (MHz) = 1.4

Modulation: 16 QAM

Ch/Center Frequency (MHz)/RB offset	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
18607/1850.7/Low	27.72	21.62	6.1	-0.73	20.89	33/33	Pass
18900/1880/Mid	27.31	21.56	5.75	-0.73	20.83	33/33	Pass
19193/1909.3/High	26.97	21.79	5.18	-0.73	21.06	33/33	Pass

LTE Band 2 (1850 MHz – 1910 MHz)

RB Size = 6

BW (MHz) = 1.4

Modulation: 16 QAM

Ch/Center Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
18607/1850.7	28.15	22.78	5.37	-0.73	22.05	33/33	Pass
18900/1880	27.44	21.62	5.82	-0.73	20.89	33/33	Pass
19193/1909.3	27.48	21.49	5.99	-0.73	20.76	33/33	Pass



LTE Band 2 (1850 MHz – 1910 MHz)

RB Size = 15

BW (MHz) = 3.0

Modulation: 16 QAM

Ch/Center Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
18615/1851.5	27.8	20.63	7.17	-0.73	19.9	33/33	Pass
18900/1880	27.95	20.48	7.47	-0.73	19.75	33/33	Pass
19185/1908.5	28	20.65	7.35	-0.73	19.92	33/33	Pass

LTE Band 2 (1850 MHz – 1910 MHz)

RB Size = 25

BW (MHz) = 5.0

Modulation: 16 QAM

Ch/Center Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
18625/1852.5	28.05	20.63	7.42	-0.73	19.9	33/33	Pass
18900/1880	27.95	20.48	7.47	-0.73	19.75	33/33	Pass
19175/1907.5	28.24	20.47	7.77	-0.73	19.74	33/33	Pass



LTE Band 2 (1850 MHz – 1910 MHz)

RB Size = 50

BW (MHz) = 10.0

Modulation: 16 QAM

Ch/Center Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
18650/1855	28.29	20.37	7.92	-0.73	19.64	33/33	Pass
18900/1880	27.85	20.52	7.33	-0.73	19.79	33/33	Pass
19150/1905	28.21	20.63	7.58	-0.73	19.9	33/33	Pass

LTE Band 2 (1850 MHz – 1910 MHz)

RB Size = 75

BW (MHz) = 15.0

Modulation: 16 QAM

Ch/Center Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
18675/1857.5	27.88	20.54	7.34	-0.73	19.81	33/33	Pass
18900/1880	27.57	20.46	7.11	-0.73	19.73	33/33	Pass
19125/1902.5	27.33	20.44	6.89	-0.73	19.71	33/33	Pass



LTE Band 2 (1850 MHz – 1910 MHz)

RB Size = 100

BW (MHz) = 20

Modulation: 16 QAM

Ch/Center Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
18700/1860	28.25	20.57	7.68	-0.73	19.84	33/33	Pass
18900/1880	27.7	20.47	7.23	-0.73	19.74	33/33	Pass
19100/1900	27.74	20.51	7.23	-0.73	19.78	33/33	Pass

6.2.5.3 Conducted Output Power LTE Band 4:

LTE Band 4 (1710 MHz – 1755 MHz)							
RB Size = 1				BW (MHz) = 1.4			
Modulation: QPSK							
Ch/Frequency (MHz)/RB offset	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
19957/1710.7/Low	28.27	23.47	4.8	-0.87	22.6	30/30	Pass
20175/1732.5/Mid	28.17	23.2	4.97	-0.87	22.33	30/30	Pass
20393/1754.3/High	27.33	22.79	4.54	-0.87	21.92	30/30	Pass

LTE Band 4 (1710 MHz – 1755 MHz)							
RB Size = 6				BW (MHz) = 1.4			
Modulation: QPSK							
Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBd)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
19957/1710.7	27.98	21.87	6.11	-0.87	21	30/30	Pass
20175/1732.5	27.52	21.76	5.76	-0.87	20.89	30/30	Pass
20393/1754.3	27.59	21.73	5.86	-0.87	20.86	30/30	Pass

LTE Band 4 (1710 MHz – 1755 MHz)

RB Size = 15

BW (MHz) = 3.0

Modulation: QPSK

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBd)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
19965/1711.5	28.49	21.91	6.58	-0.87	21.04	30/30	Pass
20175/1732.5	28.09	21.98	6.11	-0.87	21.11	30/30	Pass
20385/1753.5	28.68	21.87	6.81	-0.87	21	30/30	Pass

LTE Band 4 (1710 MHz – 1755 MHz)

RB Size = 25

BW (MHz) = 5.0

Modulation: QPSK

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBd)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
19975/1712.5	yy	21.8	6.86	-0.87	20.93	30/30	Pass
20175/1732.5	28.3	21.84	6.46	-0.87	20.97	30/30	Pass
20375/1752.5	28.4	21.83	6.57	-0.87	20.96	30/30	Pass

LTE Band 4 (1710 MHz – 1755 MHz)

RB Size = 50

BW (MHz) = 10.0

Modulation: QPSK

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBd)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
20000/1715	27.83	21.55	6.28	-0.87	20.68	30/30	Pass
20175/1732.5	27.97	21.88	6.09	-0.87	21.01	30/30	Pass
20350/1750	28.12	21.86	6.26	-0.87	20.99	30/30	Pass

LTE Band 4 (1710 MHz – 1755 MHz)

RB Size = 75

BW (MHz) = 15.0

Modulation: QPSK

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBd)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
20025/1717.5	28.54	21.67	6.87	-0.87	20.8	30/30	Pass
20175/1732.5	28.41	21.87	6.54	-0.87	21	30/30	Pass
20325/1747.5	27.72	21.7	6.02	-0.87	20.83	30/30	Pass



LTE Band 4 (1710 MHz – 1755 MHz)

RB Size = 100

BW (MHz) = 20

Modulation: QPSK

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
20050/1720	27.77	21.25	6.52	-0.87	20.38	30/30	Pass
20175/1732.5	28.03	21.98	6.05	-0.87	21.11	30/30	Pass
20300/1745	27.65	21.7	5.95	-0.87	20.83	30/30	Pass



LTE Band 4 (1710 MHz – 1755 MHz)

RB Size = 1

BW (MHz) = 1.4

Modulation: 16 QAM

Ch/Frequency (MHz)/RB offset	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBd)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
19957/1710.7/Low	28.4	22.91	5.49	-0.87	22.04	30/30	Pass
20175/1732.5/Mid	27.47	22.61	4.86	-0.87	21.74	30/30	Pass
20393/1754.3/High	27.37	21.85	5.52	-0.87	20.98	30/30	Pass

LTE Band 4 (1710 MHz – 1755 MHz)

RB Size = 6

BW (MHz) = 1.4

Modulation: 16 QAM

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBd)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
19957/1710.7	28.79	21.97	6.82	-0.87	21.1	30/30	Pass
20175/1732.5	28.26	21.47	6.79	-0.87	20.6	30/30	Pass
20393/1754.3	27.69	20.87	6.82	-0.87	20	30/30	Pass

LTE Band 4 (1710 MHz – 1755 MHz)

RB Size = 15

BW (MHz) = 3.0

Modulation: 16 QAM

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBd)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
19965/1711.5	28.22	21.81	6.41	-0.87	20.94	30/30	Pass
20175/1732.5	28.19	21.03	7.16	-0.87	20.16	30/30	Pass
20385/1753.5	27.96	21.27	6.69	-0.87	20.4	30/30	Pass

LTE Band 4 (1710 MHz – 1755 MHz)

RB Size = 25

BW (MHz) = 5.0

Modulation: 16 QAM

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBd)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
19975/1712.5	28.4	21.6	6.8	-0.87	20.73	30/30	Pass
20175/1732.5	28.45	20.9	7.55	-0.87	20.03	30/30	Pass
20375/1752.5	28.27	20.73	7.54	-0.87	19.86	30/30	Pass

LTE Band 4 (1710 MHz – 1755 MHz)

RB Size = 50

BW (MHz) = 10.0

Modulation: 16 QAM

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBd)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
20000/1715	28.18	20.69	7.49	-0.87	19.82	30/30	Pass
20175/1732.5	28.07	20.78	7.29	-0.87	19.91	30/30	Pass
20350/1750	28.47	20.86	7.61	-0.87	19.99	30/30	Pass

LTE Band 4 (1710 MHz – 1755 MHz)

RB Size = 75

BW (MHz) = 15.0

Modulation: 16 QAM

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBd)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
20025/1717.5	27.79	20.26	7.53	-0.87	19.39	30/30	Pass
20175/1732.5	28.24	20.81	7.43	-0.87	19.94	30/30	Pass
20325/1747.5	27.27	20.29	6.98	-0.87	19.42	30/30	Pass



LTE Band 4 (1710 MHz – 1755 MHz)

RB Size = 100

BW (MHz) = 20

Modulation: 16 QAM

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBd)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
20050/1720	28.49	20.69	7.8	-0.87	19.82	30/30	Pass
20175/1732.5	28.36	21.46	6.9	-0.87	20.59	30/30	Pass
20300/1745	27.38	20.80	6.58	-0.87	19.93	30/30	Pass

6.2.5.4 Conducted Output Power LTE Band 5:

LTE Band 5 (824 MHz – 849 MHz)							
RB Size = 1				BW (MHz) = 1.4			
Modulation: QPSK							
Ch/Frequency (MHz)/RB offset	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	ERP Average (dBm)	ERP Average Limit (dBm) FCC/IC	Results
20407/824.7/Low	28.75	22.59	6.16	1.64	22.1	38.45/40.6	Pass
20525/836.5/Mid	28.25	22.54	5.71	1.64	22.0	38.45/40.6	Pass
20643/848.3/High	28.19	22.49	5.7	1.64	22.0	38.45/40.6	Pass

LTE Band 5 (824 MHz – 849 MHz)							
RB Size = 6				BW (MHz) = 1.4			
Modulation: QPSK							
Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	ERP Average (dBm)	ERP Average Limit (dBm) FCC/IC	Results
20407/824.7	28.3	21.65	6.65	1.64	21.1	38.45/40.6	Pass
20525/836.5	27.56	21.65	5.91	1.64	21.1	38.45/40.6	Pass
20643/848.3	27.51	21.4	6.11	1.64	20.9	38.45/40.6	Pass



LTE Band 5 (824 MHz – 849 MHz)

RB Size = 15

BW (MHz) = 3.0

Modulation: QPSK

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	ERP Average (dBm)	ERP Average Limit (dBm) FCC/IC	Results
20415/825.5	28.4	21.61	6.79	1.64	21.1	38.45/40.6	Pass
20525/836.5	27.91	21.62	6.29	1.64	21.1	38.45/40.6	Pass
20635/847.5	28.38	21.38	7	1.64	20.9	38.45/40.6	Pass

LTE Band 5 (824 MHz – 849 MHz)

RB Size = 25

BW (MHz) = 5.0

Modulation: QPSK

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	ERP Average (dBm)	ERP Average Limit (dBm) FCC/IC	Results
20425/826.5	28.76	21.63	7.13	1.64	21.1	38.45/40.6	Pass
20525/836.5	27.93	21.48	6.45	1.64	21.0	38.45/40.6	Pass
20625/846.5	28.61	21.35	7.26	1.64	20.8	38.45/40.6	Pass



LTE Band 5 (824 MHz – 849 MHz)

RB Size = 50

BW (MHz) = 10

Modulation: QPSK

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	ERP Average (dBm)	ERP Average Limit (dBm) FCC/IC	Results
20450/829	27.94	21.48	6.46	1.64	21.0	38.45/40.6	Pass
20525/836.5	28.01	21.47	6.54	1.64	21.0	38.45/40.6	Pass
20600/844	27.57	21.45	6.12	1.64	20.9	38.45/40.6	Pass



LTE Band 5 (824 MHz – 849 MHz)							
RB Size = 1				BW (MHz) = 1.4			
Modulation: 16 QAM							
Ch/Frequency (MHz)/RB offset	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	ERP Average (dBm)	ERP Average Limit (dBm) FCC/IC	Results
20407/824.7/Low	27.8	21.57	6.23	1.64	21.1	38.45/40.6	Pass
20525/836.5/Mid	26.71	21.7	5.01	1.64	21.2	38.45/40.6	Pass
20643/848.3/High	27.32	21.56	5.76	1.64	21.1	38.45/40.6	Pass

LTE Band 5 (824 MHz – 849 MHz)							
RB Size = 6				BW (MHz) = 1.4			
Modulation: 16 QAM							
Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	ERP Average (dBm)	ERP Average Limit (dBm) FCC/IC	Results
20407/824.7	27.8	21.57	6.23	1.64	21.1	38.45/40.6	Pass
20525/836.5	26.71	21.7	5.01	1.64	21.2	38.45/40.6	Pass
20643/848.3	27.32	21.56	5.76	1.64	21.1	38.45/40.6	Pass



LTE Band 5 (824 MHz – 849 MHz)							
RB Size = 15				BW (MHz) = 3.0			
Modulation: 16 QAM							
Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	ERP Average (dBm)	ERP Average Limit (dBm) FCC/IC	Results
20415/825.5	27.75	20.57	7.18	1.64	20.1	38.45/40.6	Pass
20525/836.5	27.46	20.43	7.03	1.64	19.9	38.45/40.6	Pass
20635/847.5	28.05	20.47	7.58	1.64	20.0	38.45/40.6	Pass

LTE Band 5 (824 MHz – 849 MHz)							
RB Size = 25				BW (MHz) = 5.0			
Modulation: 16 QAM							
Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	ERP Average (dBm)	ERP Average Limit (dBm) FCC/IC	Results
20425/826.5	28.03	20.57	7.46	1.64	20.1	38.45/40.6	Pass
20525/836.5	28	20.47	7.53	1.64	20.0	38.45/40.6	Pass
20625/846.5	28.1	20.41	7.69	1.64	19.9	38.45/40.6	Pass

LTE Band 5 (824 MHz – 849 MHz)

RB Size = 50

BW (MHz) = 10

Modulation: 16 QAM

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	ERP Average (dBm)	ERP Average Limit (dBm) FCC/IC	Results
20450/829	28.35	20.37	7.98	1.64	19.9	38.45/40.6	Pass
20525/836.5	28.07	20.56	7.51	1.64	20.1	38.45/40.6	Pass
20600/844	28.4	20.46	7.94	1.64	20.0	38.45/40.6	Pass

6.2.5.5 Conducted Output Power LTE Band 7:

LTE Band 7 (2500 MHz – 2570 MHz)							
RB Size = 1				BW (MHz) = 5			
Modulation: QPSK							
Ch/Frequency (MHz)/RB offset	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
20775/2502.5/Low	27.55	22.41	5.14	-2.62	19.79	33/33	Pass
21100/2535/Mid	27.25	22.2	5.05	-2.62	19.58	33/33	Pass
21425/2567.5/High	28.38	22.7	5.68	-2.62	20.08	33/33	Pass

LTE Band 7 (2500 MHz – 2570 MHz)							
Resource Block Size = 25				BW (MHz) = 5			
Modulation: QPSK							
Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
20775/2502.5	28.17	21.42	6.75	-2.62	18.8	33/33	Pass
21100/2535	27.58	21.22	6.36	-2.62	18.6	33/33	Pass
21425/2567.5	28.26	21.53	6.73	-2.62	18.91	33/33	Pass

LTE Band 7 (2500 MHz – 2570 MHz)

Resource Block Size = 50

BW (MHz) = 10.0

Modulation: QPSK

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
20800/2505	27.71	21.44	6.27	-2.62	18.82	33/33	Pass
21100/2535	27.51	21.34	6.17	-2.62	18.72	33/33	Pass
21400/2565	27.79	21.5	6.29	-2.62	18.88	33/33	Pass

LTE Band 7 (2500 MHz – 2570 MHz)

Resource Block Size = 75

BW (MHz) = 15.0

Modulation: QPSK

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
20825/2507.5	27.63	21.41	6.22	-2.62	18.79	33/33	Pass
21100/2535	27.83	21.23	6.6	-2.62	18.61	33/33	Pass
21375/2562.5	28.2	21.39	6.81	-2.62	18.77	33/33	Pass



LTE Band 7 (2500 MHz – 2570 MHz)

Resource Block Size = 100

BW (MHz) = 20

Modulation: QPSK

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
20850/2510	27.22	21.27	5.95	-2.62	18.65	33/33	Pass
21100/2535	27.6	21.25	6.35	-2.62	18.63	33/33	Pass
21350/2560	27.83	21.39	6.44	-2.62	18.77	33/33	Pass

LTE Band 7 (2500 MHz – 2570 MHz)							
Resource Block Size = 1				BW (MHz) = 5			
Modulation: 16 QAM							
Ch/Frequency (MHz)/RB offset	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
20775/2502.5/Low	26.63	21.28	5.35	2.62	18.66	33/33	Pass
21100/2535/Mid	26.23	21.12	5.11	2.62	18.5	33/33	Pass
21425/2567.5/High	28.31	21.72	6.59	2.62	19.1	33/33	Pass

LTE Band 7 (2500 MHz – 2570 MHz)							
Resource Block Size = 25				BW (MHz) = 5.0			
Modulation: 16 QAM							
Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
20775/2502.5	27.63	20.44	7.19	-2.62	17.82	33/33	Pass
21100/2535	27.58	20.32	7.26	-2.62	17.7	33/33	Pass
21425/2567.5	28.41	20.58	7.83	-2.62	17.96	33/33	Pass

LTE Band 7 (2500 MHz – 2570 MHz)							
Resource Block Size = 50				BW (MHz) = 10.0			
Modulation: 16 QAM							
Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
20800/2505	27.75	20.71	7.04	-2.62	18.09	33/33	Pass
21100/2535	27.43	19.73	7.7	-2.62	17.11	33/33	Pass
21400/2565	28.14	20.87	7.27	-2.62	18.25	33/33	Pass

LTE Band 7 (2500 MHz – 2570 MHz)							
Resource Block Size = 75				BW (MHz) = 15.0			
Modulation: 16 QAM							
Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
20825/2507.5	26.73	19.74	6.99	-2.62	17.12	33/33	Pass
21100/2535	27.02	19.8	7.22	-2.62	17.18	33/33	Pass
21375/2562.5	27.51	19.96	7.55	-2.62	17.34	33/33	Pass



LTE Band 7 (2500 MHz – 2570 MHz)

Resource Block Size = 100

BW (MHz) = 20

Modulation: 16 QAM

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
20850/2510	27.2	20.83	6.37	-2.62	18.21	33/33	Pass
21100/2535	27.23	19.83	7.4	-2.62	17.21	33/33	Pass
21350/2560	27.73	20.01	7.72	-2.62	17.39	33/33	Pass

6.2.5.6 Conducted Output Power LTE Band 13:

LTE Band 13 (777 MHz – 787 MHz)							
RB Size = 1				BW (MHz) = 5			
Modulation: QPSK							
Ch/Frequency (MHz)/RB offset	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	ERP Average (dBm)	ERP Average Limit (dBm) FCC/IC	Results
23205/779.5/Low	28.65	22.9	5.75	1.47	22.2	34.8/47	Pass
23230/782/Mid	28.64	22.28	6.36	1.47	21.6	34.8/47	Pass
23255/784.5/High	27.64	22.63	5.01	1.47	22.0	34.8/47	Pass

LTE Band 13 (777 MHz – 787 MHz)							
RB Size = 1				BW (MHz) = 5			
Modulation: 16 QAM							
Ch/Frequency (MHz)/RB offset	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	ERP Average (dBm)	ERP Average Limit (dBm) FCC/IC	Results
23205/779.5/Low	28.79	22.3	6.49	1.47	21.6	34.8/47	Pass
23230/782/Mid	28.42	21.67	6.75	1.47	21.0	34.8/47	Pass
23255/784.5/High	27.32	21.69	5.63	1.47	21.0	34.8/47	Pass

LTE Band 13 (777 MHz – 787 MHz)

RB Size = 25

BW (MHz) = 5

Modulation: QPSK

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	ERP Average (dBm)	ERP Average Limit (dBm) FCC/IC	Results
23205/779.5	28.09	21.51	6.58	1.47	20.8	34.8/47	Pass
23230/782	28.77	21.7	7.07	1.47	21.0	34.8/47	Pass
23255/784.5	28.53	21.56	6.97	1.47	20.9	34.8/47	Pass

LTE Band 13 (777 MHz – 787 MHz)

RB Size = 25

BW (MHz) = 5

Modulation: 16 QAM

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	ERP Average (dBm)	ERP Average Limit (dBm) FCC/IC	Results
23205/779.5	28.11	20.52	7.59	1.47	19.8	34.8/47	Pass
23230/782	28.43	20.8	7.63	1.47	20.1	34.8/47	Pass
23255/784.5	27.9	20.58	7.32	1.47	19.9	34.8/47	Pass



LTE Band 13 (777 MHz – 787 MHz)

RB Size = 50

BW (MHz) = 10

Modulation: QPSK

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	ERP Average (dBm)	ERP Average Limit (dBm) FCC/IC	Results
23230/782	28.25	21.66	6.59	1.47	21.0	34.8/47	Pass

LTE Band 13 (777 MHz – 787 MHz)

RB Size = 50

BW (MHz) = 10

Modulation: 16 QAM

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	ERP Average (dBm)	ERP Average Limit (dBm) FCC/IC	Results
23230/782	28.32	21.4	6.92	1.47	20.7	34.8/47	Pass

6.2.5.7 Conducted Output Power LTE Band 25:

LTE Band 25 (1850 MHz – 1915 MHz)							
RB Size = 1				BW (MHz) = 1.4			
Modulation: QPSK							
Ch/Frequency (MHz)/RB offset	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
26047/1850.7/Low	27.73	22.45	5.28	-0.73	21.72	33/33	Pass
26365/1882.5/Mid	27.59	22.43	5.16	-0.73	21.7	33/33	Pass
26683/1914.3/High	26.72	22.34	4.38	-0.73	21.61	33/33	Pass

LTE Band 25 (1850 MHz – 1915 MHz)							
Resource Block Size = 25				BW (MHz) = 5.0			
Modulation: QPSK							
Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
26065/1852.5	28.18	21.32	6.86	-0.73	20.59	33/33	Pass
26365/1882.5	27.83	21.21	6.62	-0.73	20.48	33/33	Pass
26665/1912.5	27.29	21.29	6	-0.73	20.56	33/33	Pass



LTE Band 25 (1850 MHz – 1915 MHz)

Resource Block Size = 50

BW (MHz) = 10.0

Modulation: QPSK

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
26090/1855	27.5	21.08	6.42	-0.73	20.35	33/33	Pass
26365/1882.5	27.58	21.23	6.35	-0.73	20.5	33/33	Pass
26640/1910	27.29	21.29	6	-0.73	20.56	33/33	Pass

LTE Band 25 (1850 MHz – 1915 MHz)

Resource Block Size = 75

BW (MHz) = 15.0

Modulation: QPSK

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
26115/1857.5	27.63	20.86	6.77	-0.73	20.13	33/33	Pass
26365/1882.5	27.8	21.18	6.62	-0.73	20.45	33/33	Pass
26615/1907.5	27.49	21.04	6.45	-0.73	20.31	33/33	Pass



LTE Band 25 (1850 MHz – 1915 MHz)

Resource Block Size = 100

BW (MHz) = 20

Modulation: QPSK

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
26140/1860	27.43	21.27	6.16	-0.73	20.54	33/33	Pass
26365/1882.5	27.59	21.24	6.35	-0.73	20.51	33/33	Pass
26590/1905	27.05	20.53	6.52	-0.73	19.8	33/33	Pass



LTE Band 25 (1850 MHz – 1915 MHz)

Resource Block Size = 1

BW (MHz) = 1.4

Modulation: 16 QAM

Ch/Frequency (MHz)/RB offset	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
26047/1850.7/Low	27.52	22.32	5.2	-0.73	21.59	33/33	Pass
26365/1882.5/Mid	26.68	21.63	5.05	-0.73	20.9	33/33	Pass
26683/1914.3/High	26.54	21.28	5.26	-0.73	20.55	33/33	Pass

LTE Band 25 (1850 MHz – 1915 MHz)

Resource Block Size = 25

BW (MHz) = 5.0

Modulation: 16 QAM

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
26065/1852.5	27.82	20.36	7.46	-0.73	19.63	33/33	Pass
26365/1882.5	27.78	20.32	7.46	-0.73	19.59	33/33	Pass
26665/1912.5	27.44	20.16	7.28	-0.73	19.43	33/33	Pass



LTE Band 25 (1850 MHz – 1915 MHz)

Resource Block Size = 50

BW (MHz) = 10.0

Modulation: 16 QAM

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
26090/1855	27.88	20.08	7.8	-0.73	19.35	33/33	Pass
26365/1882.5	27.78	20.22	7.56	-0.73	19.49	33/33	Pass
26640/1910	27.69	20.34	7.35	-0.73	19.61	33/33	Pass

LTE Band 25 (1850 MHz – 1915 MHz)

Resource Block Size = 75

BW (MHz) = 15.0

Modulation: 16 QAM

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
26115/1857.5	27.24	19.84	7.4	-0.73	19.11	33/33	Pass
26365/1882.5	27.55	20.19	7.36	-0.73	19.46	33/33	Pass
26615/1907.5	27.35	20.08	7.27	-0.73	19.35	33/33	Pass



LTE Band 25 (1850 MHz – 1915 MHz)

Resource Block Size = 100

BW (MHz) = 20

Modulation: 16 QAM

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
26140/1860	27.95	20.36	7.59	-0.73	19.63	33/33	Pass
26365/1882.5	27.73	20.3	7.43	-0.73	19.57	33/33	Pass
26590/1905	27.3	20.53	6.77	-0.73	19.8	33/33	Pass

6.2.5.8 Conducted Output Power LTE Band 26:

LTE Band 26 (814-849 MHz)							
RB Size = 1				BW (MHz) = 1.4			
Modulation: QPSK							
Ch/Frequency (MHz)/RB offset	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
26697/814.7/Low	28.85	22.88	5.97	1.64	24.52	50	Pass
26865/831.5/Mid	28.75	23.02	5.73	1.64	24.66	38.45	Pass
27033/848.3/High	27.45	22.12	5.33	1.64	23.76	38.45	Pass

LTE Band 26 (814-849 MHz)							
Resource Block Size = 25				BW (MHz) = 5.0			
Modulation: QPSK							
Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
26715/816.5	28.49	21.23	7.26	1.64	22.87	50	Pass
26865/831.5	27.86	21.31	6.55	1.64	22.95	38.45	Pass
27015/846.5	27.79	21.09	6.7	1.64	22.73	38.45	Pass



LTE Band 26 (814-849 MHz)

Resource Block Size = 50

BW (MHz) = 10.0

Modulation: QPSK

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
26740/819	27.81	21.2	6.61	1.64	22.84	50	Pass
26865/831.5	27.62	21.24	6.38	1.64	22.88	38.45	Pass
26990/844	27.96	21.13	6.83	1.64	22.77	38.45	Pass

LTE Band 26 (814-849 MHz)

Resource Block Size = 75

BW (MHz) = 15.0

Modulation: QPSK

Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
26765/821.5	28.08	21.2	6.88	1.64	22.84	50	Pass
26865/831.5	28.05	21.17	6.88	1.64	22.81	38.45	Pass
26965/841.5	28.14	21.09	7.05	1.64	22.73	38.45	Pass

LTE Band 26 (814-849 MHz)							
Resource Block Size = 1				BW (MHz) = 1.4			
Modulation: 16 QAM							
Ch/Frequency (MHz)/RB offset	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
26697/814.7/Low	28.41	22.03	6.38	1.64	23.67	50	Pass
26865/831.5/Mid	28.81	22.53	6.28	1.64	24.17	38.45	Pass
27033/848.3/High	26.97	21.19	5.78	1.64	22.83	38.45	Pass

LTE Band 26 (814-849 MHz)							
Resource Block Size = 25				BW (MHz) = 5.0			
Modulation: 16 QAM							
Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
26715/816.5	27.85	20.32	7.53	1.64	21.96	50	Pass
26865/831.5	27.83	20.24	7.59	1.64	21.88	38.45	Pass
27015/846.5	28	20.1	7.9	1.64	21.74	38.45	Pass

LTE Band 26 (814-849 MHz)							
Resource Block Size = 50				BW (MHz) = 10.0			
Modulation: 16 QAM							
Ch/Frequency (MHz)/RB	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
26740/819	28.04	20.29	7.75	1.64	21.93	50	Pass
26865/831.5	28.35	20.34	8.01	1.64	21.98	38.45	Pass
26990/844	28.1	20.03	8.07	1.64	21.67	38.45	Pass

LTE Band 26 (814-849 MHz)							
Resource Block Size = 75				BW (MHz) = 15.0			
Modulation: 16 QAM							
Ch/Frequency (MHz)	Conducted Output Power Peak(dBm)	Conducted Output Power Average(dBm)	PAR (limit 13dB)	Antenna Gain (dBi)	EIRP Average (dBm)	EIRP Average Limit (dBm) FCC/IC	Results
26765/821.5	27.4	19.8	7.6	1.64	21.44	50	Pass
26865/831.5	27.25	19.82	7.43	1.64	21.46	38.45	Pass
26965/841.5	27.69	20.22	7.47	1.64	21.86	38.45	Pass

6.2.6 Test Verdict

Pass

6.3 PEAK-AVERAGE Ratio

6.3.1 References

FCC CFR 47 §24.232 (D); FCC CFR 47 §27.50 (D) (5)
RSS-132(5.4); RSS-133(6.4); RSS-130 (4.4); RSS-139(6.4);

6.3.2 Limits:

Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. 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.

6.3.3 Results:

The results are contained in the tables of the previous section under column 'PAR'.

6.3.4 Verdict:

Pass

6.4 Occupied Bandwidth

6.4.1 References

FCC: CFR Part 2.1053, CFR Part 22.917, CFR Part 24.238 (b), CFR Part 27.53 (g), CFR Part 90.209 (b)
IC: RSS-Gen Section 6.6; RSS-132 Section 4.5.1; RSS-133 Section 2.6, RSS-139 Section 6.5, RSS-199 Section 4.2.

6.4.2 Limits

RSS-199 Section 4.2:

The channel bandwidth shall be equal to or greater than 1MHz and shall be reported by the certification applicant.

6.4.3 Measurement Requirements:

The occupied bandwidth in lieu of 99% bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

The 26 dB bandwidth is the width of the emission signal between 2 points, one below the carrier center frequency and one above the carrier frequency, outside of which all emissions are attenuated by 26 dB below the transmitter power.

6.4.4 Test Method:

Measurements for Occupied bandwidth (OBW) are done according to the FCC KDB procedure 971168 D01 Power Meas License Digital Systems v02r02 Section 4.

Section 4.1 for 26dB bandwidth

Section 4.2 for 99% OBW

6.4.5 Test Results / Plots

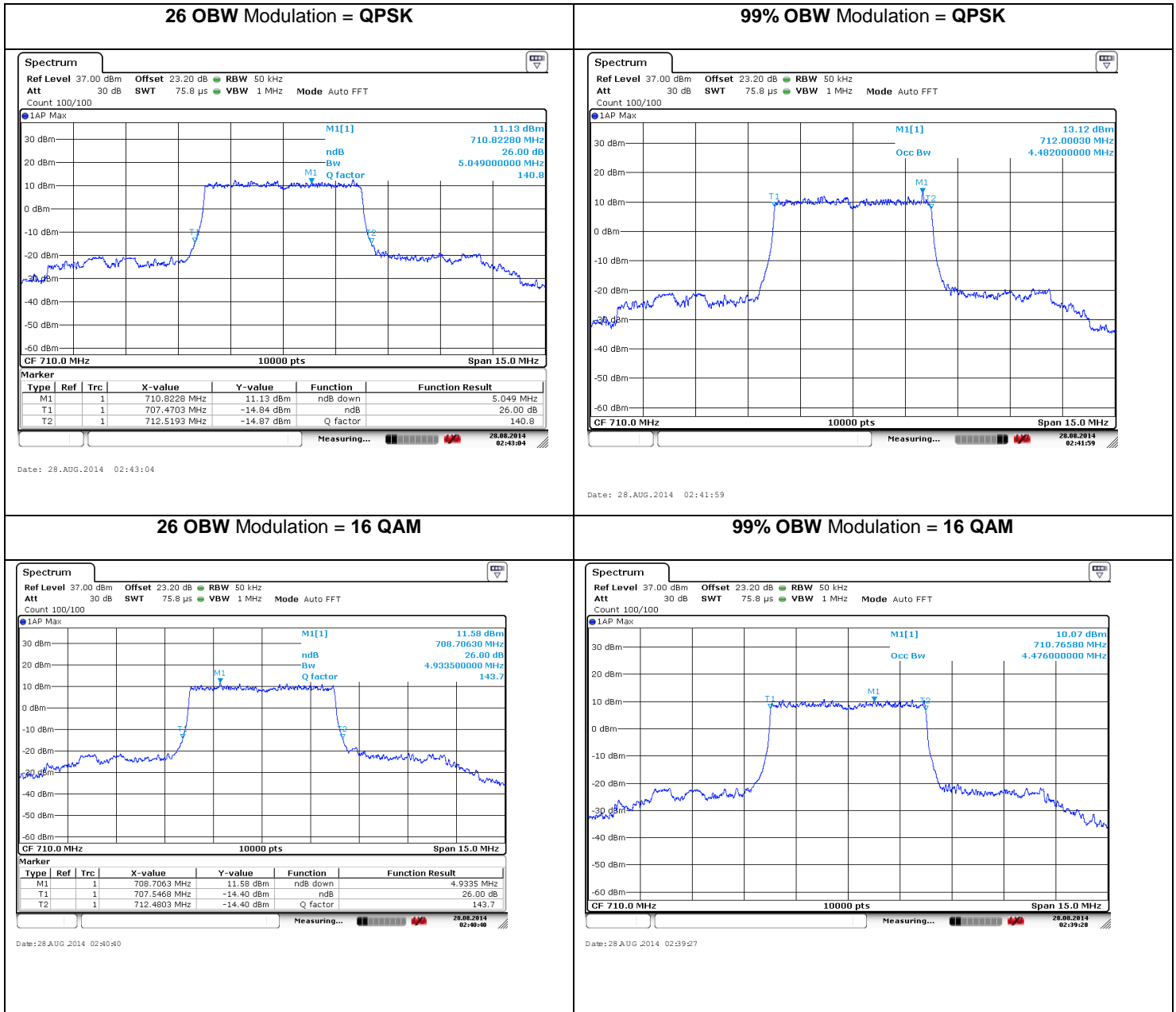
6.4.5.1 OBW LTE FDD Band 17 table:

LTE Band 17 (704 MHz – 716 MHz) - Modulation: QPSK			
Channel No.	Frequency (MHz)	26 dB (MHz)	99% (MHz)
RB Size = 25	RB Offset = 0	BW (MHz) = 5	
23790	710	5.04	4.48
RB Size = 50	RB Offset = 0	BW (MHz) = 10	
23790	710	9.84	8.98

LTE Band 17 (704 MHz – 716 MHz) - Modulation: 16QAM			
Channel No.	Frequency (MHz)	26 dB (MHz)	99% (MHz)
RB Size = 25	RB Offset = 0	BW (MHz) = 5	
23790	710	4.93	4.47
RB Size = 50	RB Offset = 0	BW (MHz) = 10	
23790	710	9.85	8.97

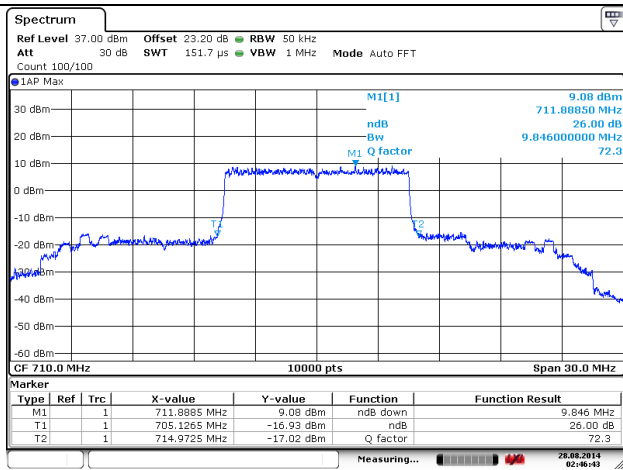
6.4.5.2 OBW LTE FDD Band 17 plots:

LTE Band 17 Channel 23790 (710 MHz) – RB Size = 25; RB Offset = 0; BW = 5 MHz



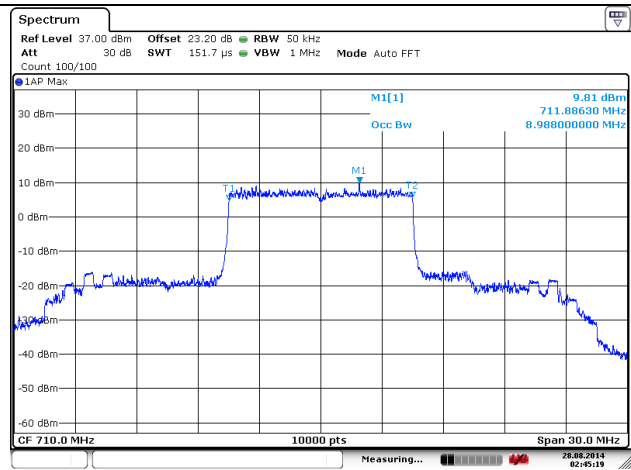
(LTE Band 17) Channel 23790 (710 MHz) – RB Size = 50; RB Offset = 0; BW = 10 MHz

26 OBW Modulation = QPSK



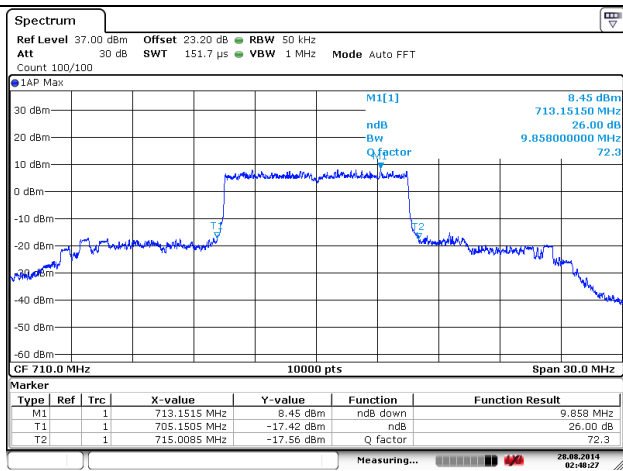
Date: 28 AUG 2014 02:46:43

99% OBW Modulation = QPSK



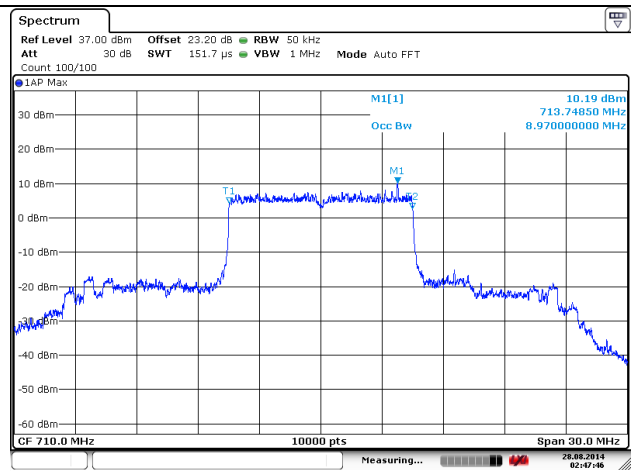
Date: 28 AUG 2014 02:45:19

26 OBW Modulation = 16 QAM



Date: 28 AUG 2014 02:48:27

99% OBW Modulation = 16 QAM



Date: 28 AUG 2014 02:47:46

6.4.5.3 OBW LTE FDD Band 2 table:

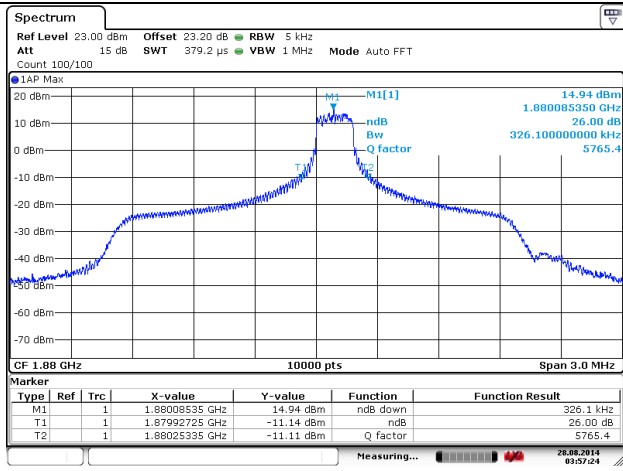
LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: QPSK			
Channel No.	Frequency (MHz)	26 dB (MHz)	99% (MHz)
RB Size = 1	RB Offset = 0		
18900	1880	0.326	0.302
RB Size = 6	RB Offset = 0		BW (MHz) = 1.4
18900	1880	1.83	1.11
RB Size = 15	RB Offset = 0		BW (MHz) = 3
18900	1880	3	2.69
RB Size = 25	RB Offset = 0		BW (MHz) = 5
18900	1880	4.98	4.47
RB Size = 50	RB Offset = 0		BW (MHz) = 10
18900	1880	10.2	8.96
RB Size = 75	RB Offset = 0		BW (MHz) = 15
20175	1732.5	15.38	13.42
RB Size = 100	RB Offset = 0		BW (MHz) = 20
20175	1732.5	19.59	17.88

LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: 16QAM			
Channel No.	Frequency (MHz)	26 dB (MHz)	99% (MHz)
RB Size = 1	RB Offset = 0	BW (MHz) = 0.18	
18900	1880	0.396	0.315
RB Size = 6	RB Offset = 0	BW (MHz) = 1.4	
18900	1880	1.83	1.15
RB Size = 15	RB Offset = 0	BW (MHz) = 3	
18900	1880	3	2.69
RB Size = 25	RB Offset = 0	BW (MHz) = 5	
18900	1880	4.99	4.46
RB Size = 50	RB Offset = 0	BW (MHz) = 10	
18900	1880	9.9	8.94
RB Size = 75	RB Offset = 0	BW (MHz) = 15	
20175	1732.5	14.98	13.42
RB Size = 100	RB Offset = 0	BW (MHz) = 20	
20175	1732.5	19.93	17.87

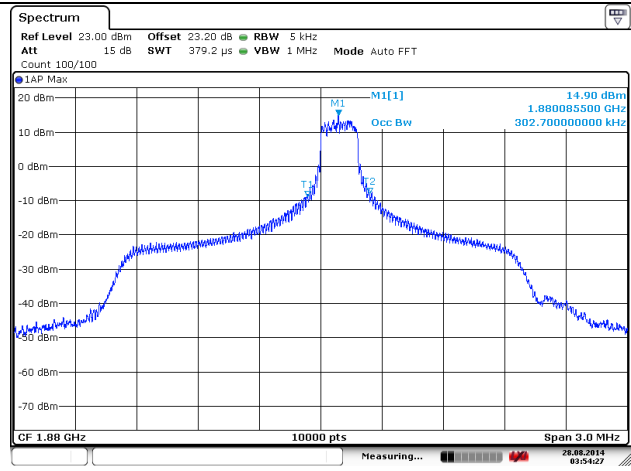
6.4.5.4 OBW LTE FDD Band 2 plots:

Channel 18900 (1880 MHz) – RB Size = 1; RB Offset = 0; BW = 1.4 MHz

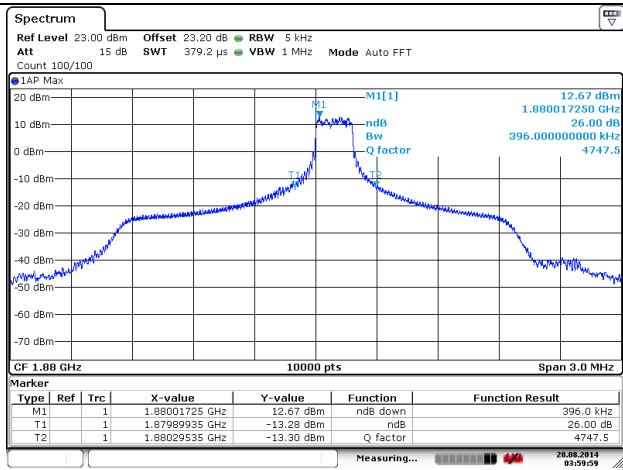
26 OBW Modulation = QPSK



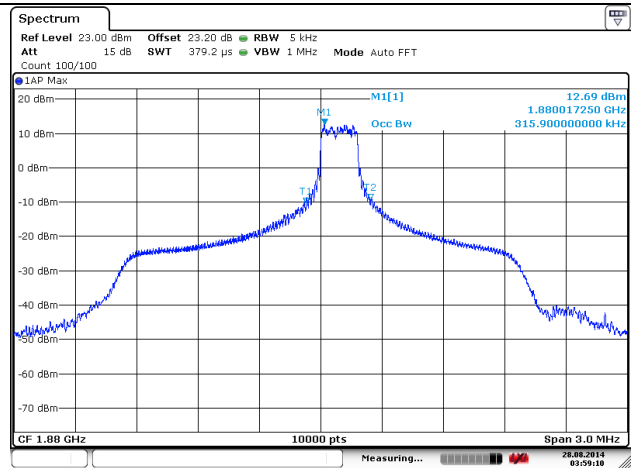
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM

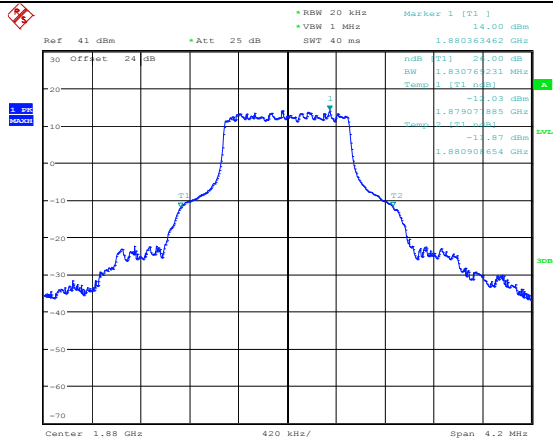


99% OBW Modulation = 16 QAM



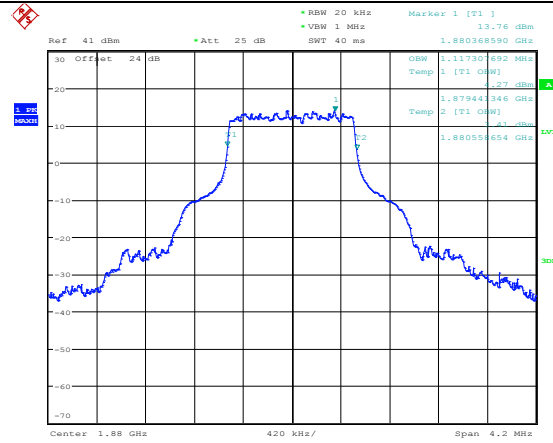
Channel 18900 (1880 MHz) – RB Size = 6; RB Offset = 0; BW = 1.4 MHz

26 OBW Modulation = QPSK



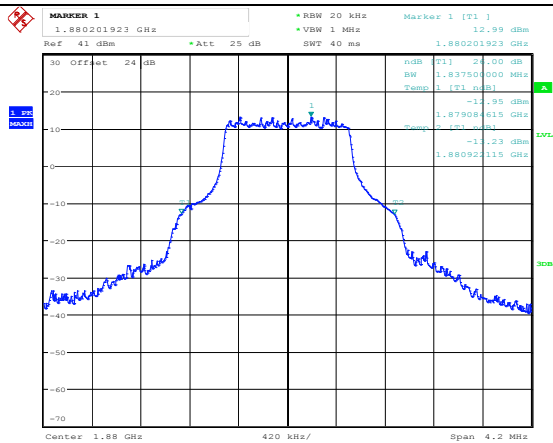
Date: 12.NOV.2014 11:49:42

99% OBW Modulation = QPSK



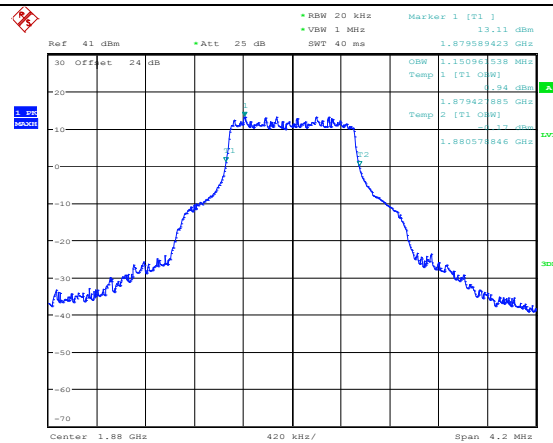
Date: 12.NOV.2014 11:40:07

26 OBW Modulation = 16 QAM



Date: 12.NOV.2014 11:51:15

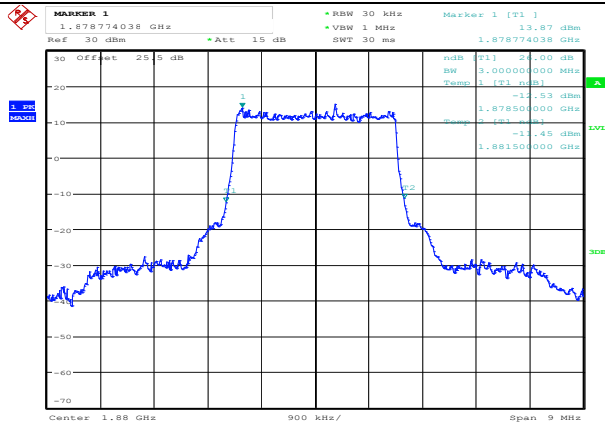
99% OBW Modulation = 16 QAM



Date: 12.NOV.2014 11:52:14

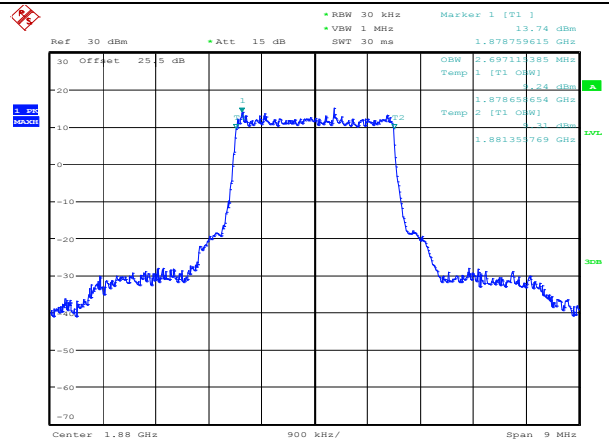
Channel 18900 (1880 MHz) – RB Size = 15; RB Offset = 0; BW = 3 MHz

26 OBW Modulation = QPSK



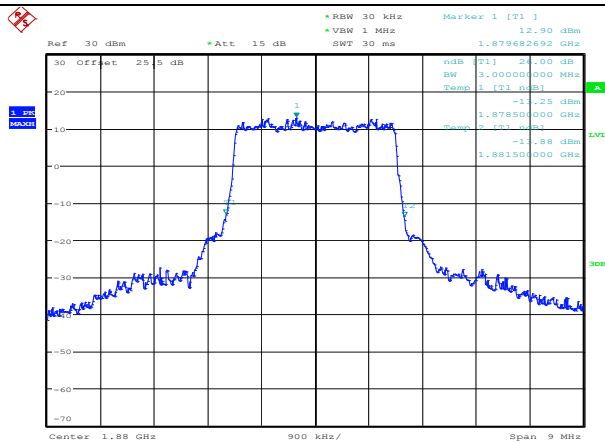
Date: 17.OCT.2014 11:41:12

99% OBW Modulation = QPSK



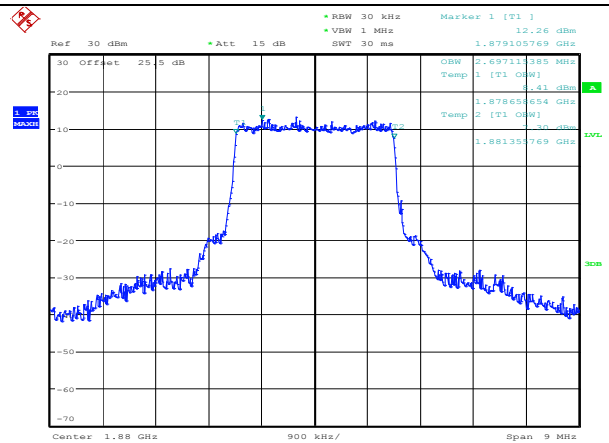
Date: 17.OCT.2014 11:38:55

26 OBW Modulation = 16 QAM



Date: 17.OCT.2014 11:40:29

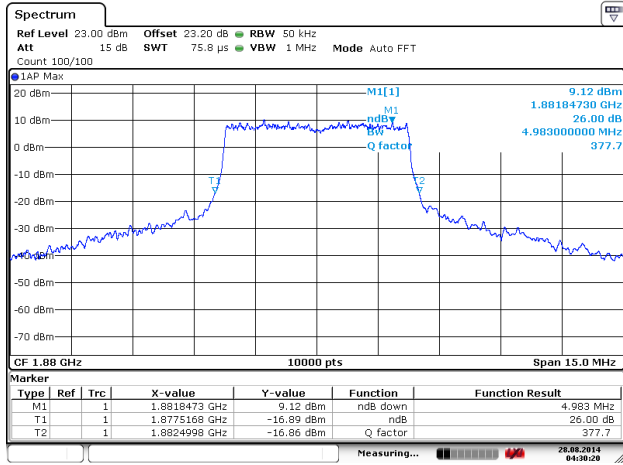
99% OBW Modulation = 16 QAM



Date: 17.OCT.2014 11:39:51

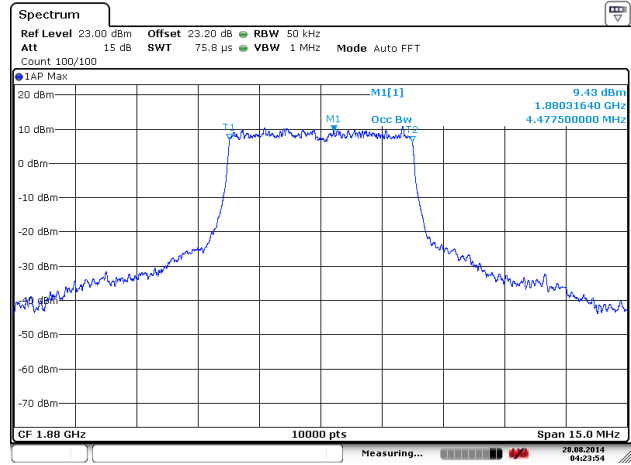
Channel 18900 (1880 MHz) – RB Size = 25; RB Offset = 0; BW = 5 MHz

26 OBW Modulation = QPSK



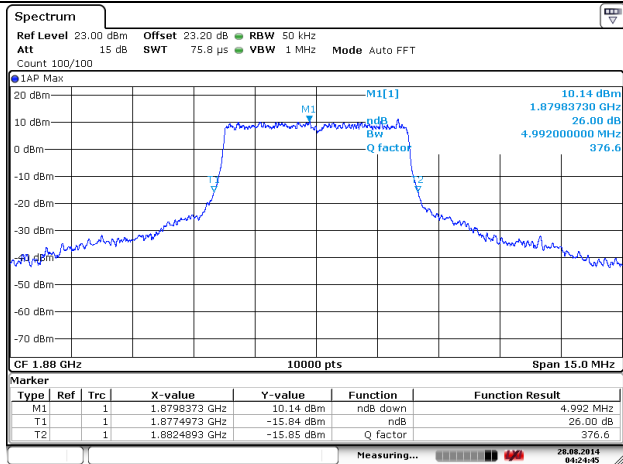
Date: 28 AUG 2014 04:30:20

99% OBW Modulation = QPSK



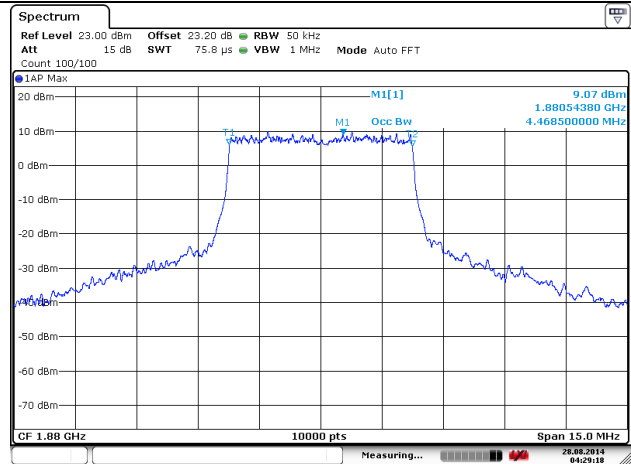
Date: 28 AUG 2014 04:23:55

26 OBW Modulation = 16 QAM



Date: 28 AUG 2014 04:24:45

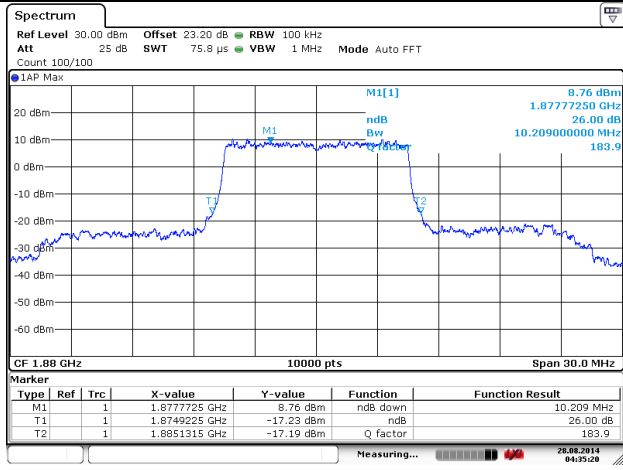
99% OBW Modulation = 16 QAM



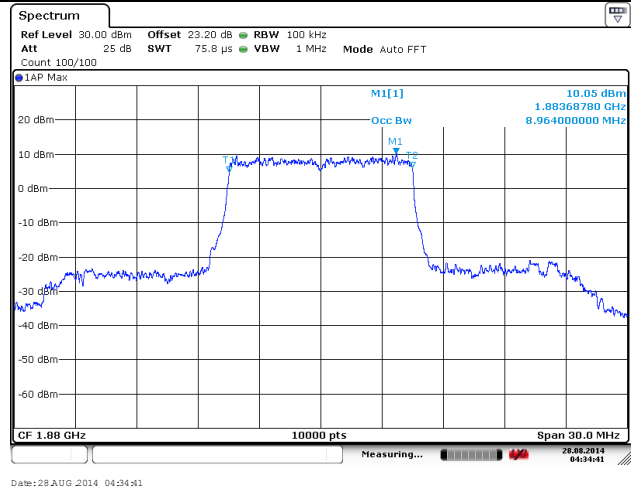
Date: 28 AUG 2014 04:29:18

Channel 18900 (1880 MHz) – RB Size = 50; RB Offset = 0; BW = 10 MHz

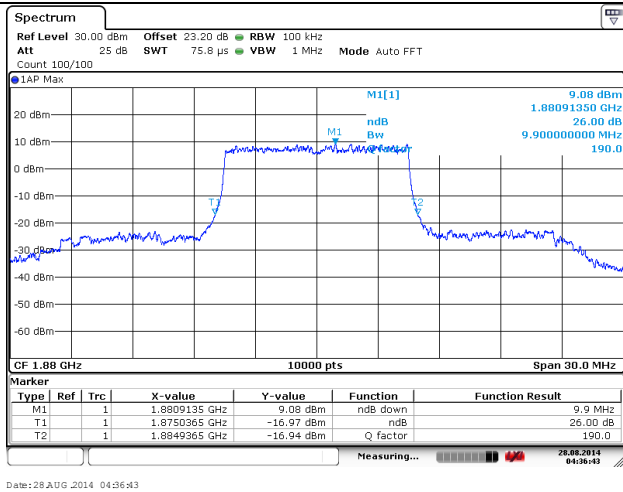
26 OBW Modulation = QPSK



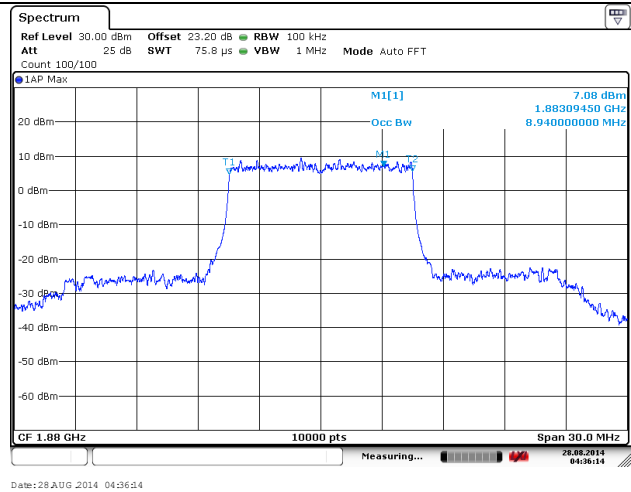
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM

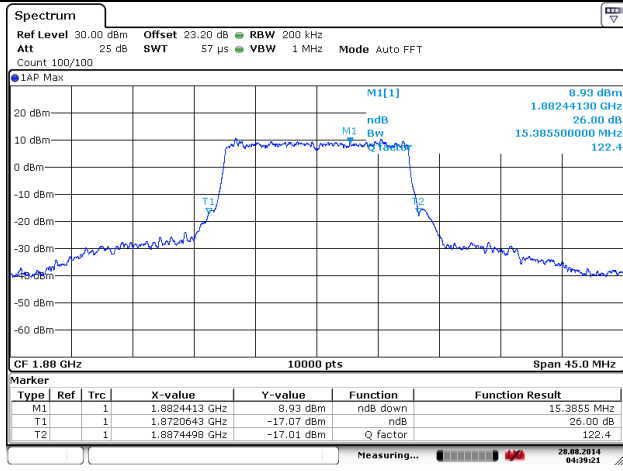


99% OBW Modulation = 16 QAM

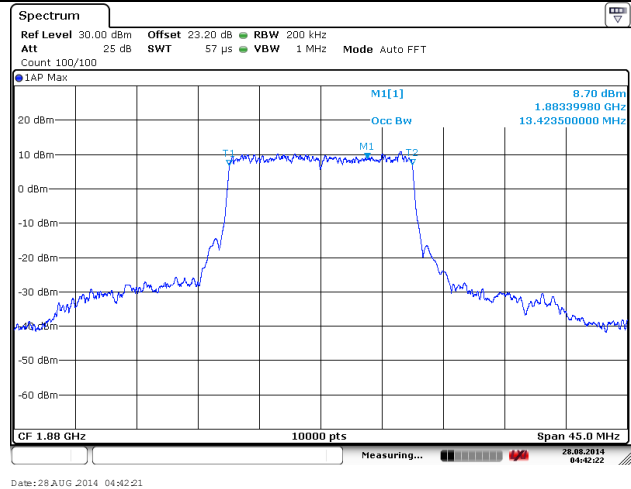


Channel 18900 (1880 MHz) – RB Size = 75; RB Offset = 0; BW = 15 MHz

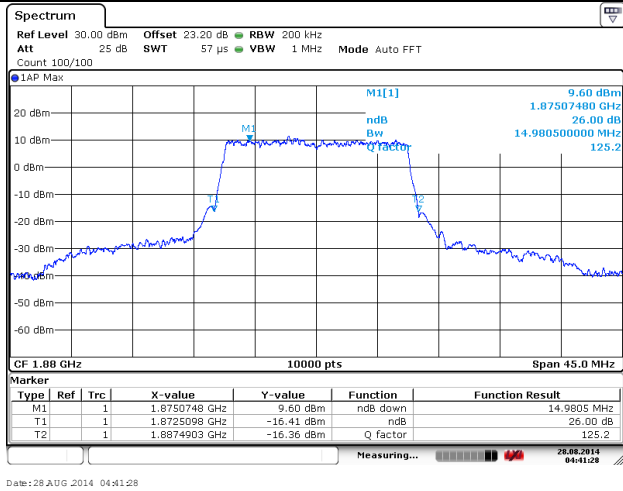
26 OBW Modulation = QPSK



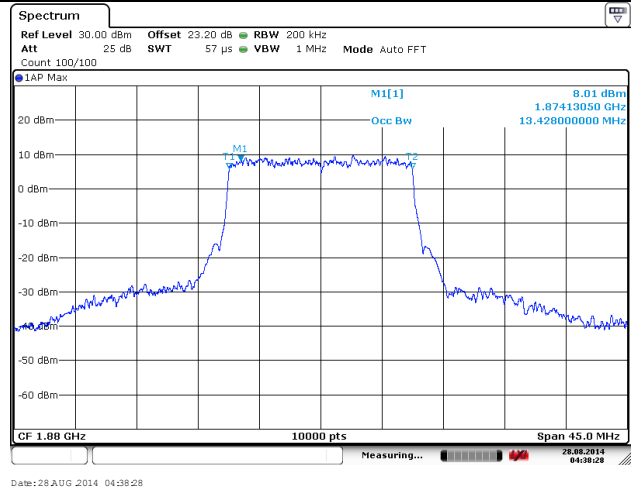
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM

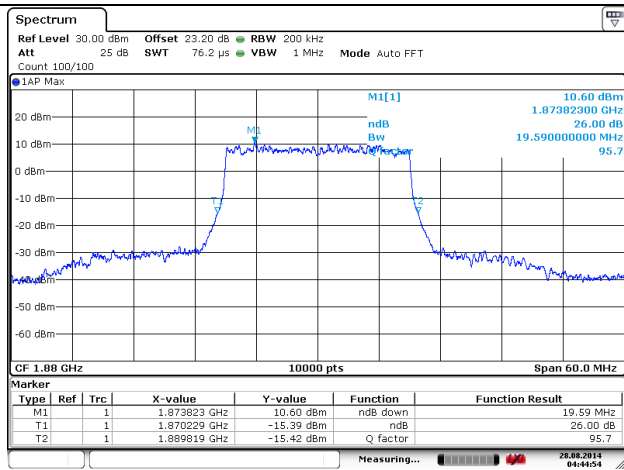


99% OBW Modulation = 16 QAM

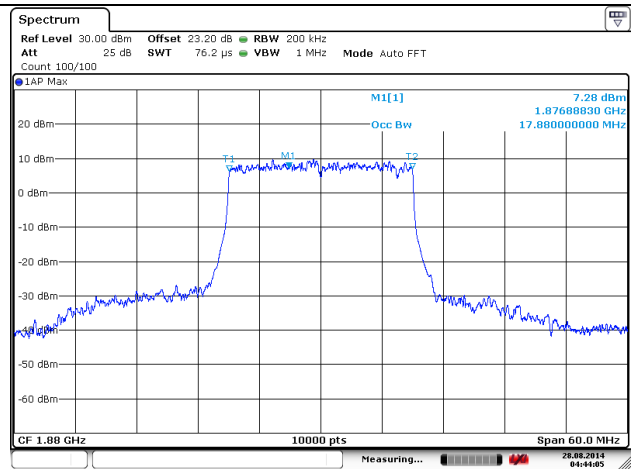


Channel 18900 (1880 MHz) – RB Size = 100; RB Offset = 0; BW = 20 MHz

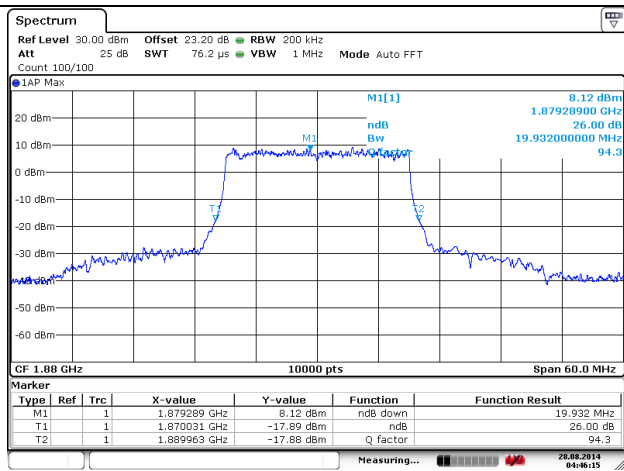
26 OBW Modulation = QPSK



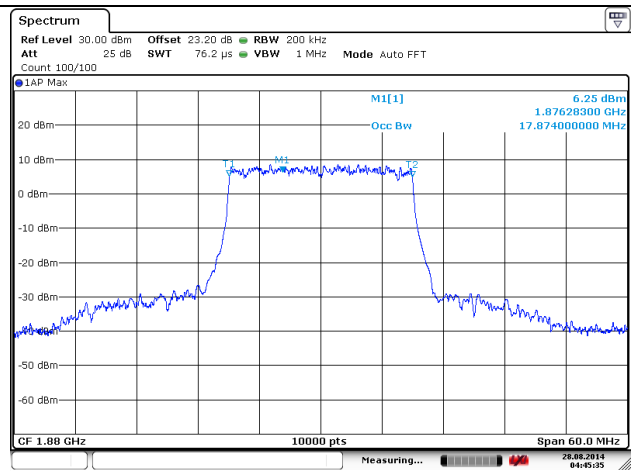
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM



99% OBW Modulation = 16 QAM



6.4.5.5 OBW LTE FDD Band 4 tables:

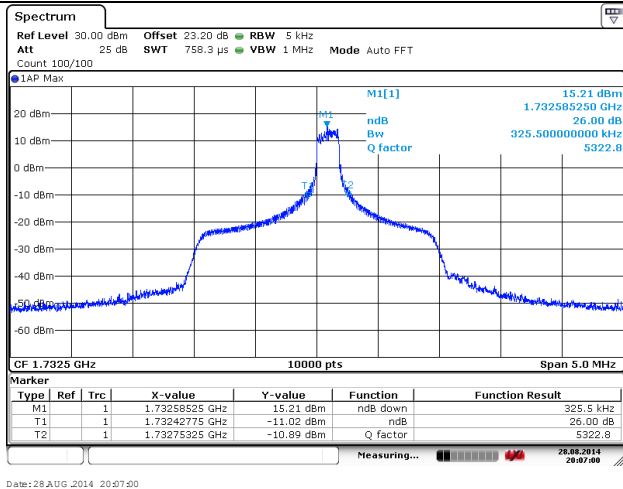
LTE Band 4 (1710 MHz – 1755 MHz) -Modulation: QPSK			
Channel No.	Frequency (MHz)	26 dB (MHz)	99% (MHz)
RB Size =1	RB Offset = 0	BW (MHz) = 0.18	
20175	1732.5	0.325	0.318
RB Size = 6	RB Offset = 0	BW (MHz) = 1.4	
20175	1732.5	1.78	1.1
RB Size = 15	RB Offset = 0	BW (MHz) = 3	
20175	1732.5	2.95	2.68
RB Size = 25	RB Offset = 0	BW (MHz) = 5	
20175	1732.5	4.93	4.47
RB Size = 50	RB Offset = 0	BW (MHz) = 10	
20175	1732.5	9.96	8.97
RB Size = 75	RB Offset = 0	BW (MHz) = 15	
20175	1732.5	14.98	13.53
RB Size = 100	RB Offset = 0	BW (MHz) = 20	
20175	1732.5	20.25	17.94

LTE Band 4 (1710 MHz – 1755 MHz) -Modulation: 16 QAM			
Channel No.	Frequency (MHz)	26 dB (MHz)	99% (MHz)
RB Size = 1	RB Offset = 0	BW (MHz) = 0.18	
20175	1732.5	0.397	0.341
RB Size = 6	RB Offset = 0	BW (MHz) = 1.4	
20175	1732.5	1.81	1.12
RB Size = 15	RB Offset = 0	BW (MHz) = 3	
20175	1732.5	2.96	2.68
RB Size = 25	RB Offset = 0	BW (MHz) = 5	
20175	1732.5	4.95	4.47
RB Size = 50	RB Offset = 0	BW (MHz) = 10	
20175	1732.5	9.8	8.96
RB Size = 75	RB Offset = 0	BW (MHz) = 15	
20175	1732.5	14.89	13.43
RB Size = 100	RB Offset = 0	BW (MHz) = 20	
20175	1732.5	19.98	17.89

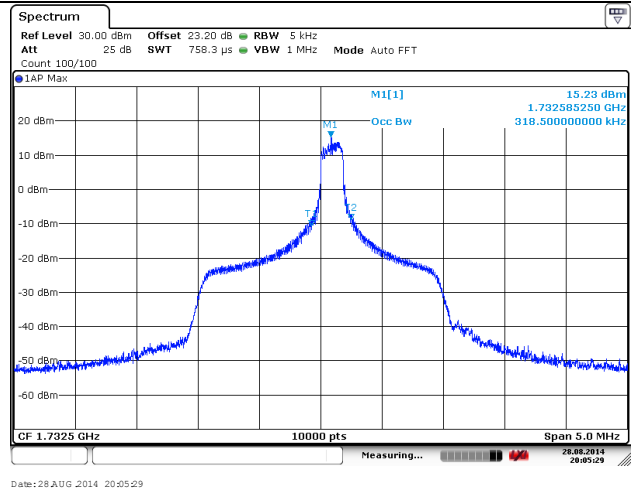
6.4.5.6 OBW LTE FDD Band 4 plots:

Channel 20175 (1732.5 MHz) – RB Size = 1; RB Offset = MID; BW = 1.4 MHz

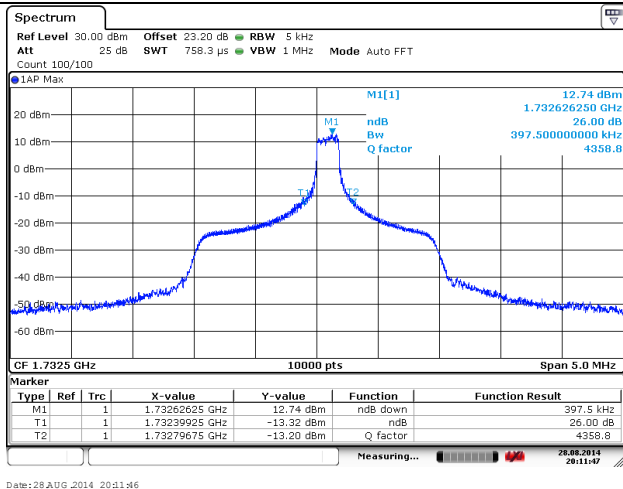
26 OBW Modulation = QPSK



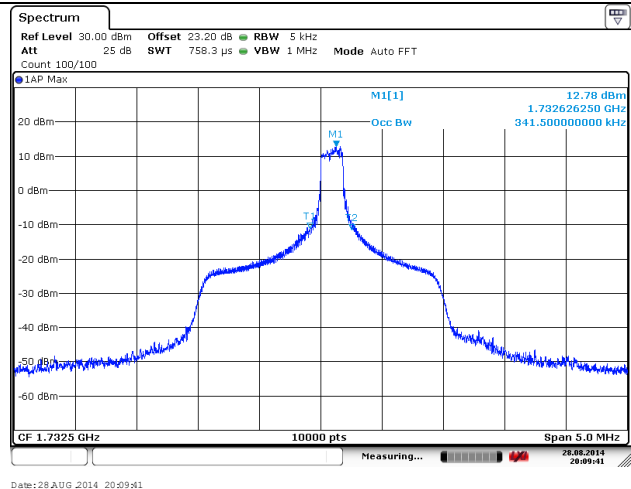
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM

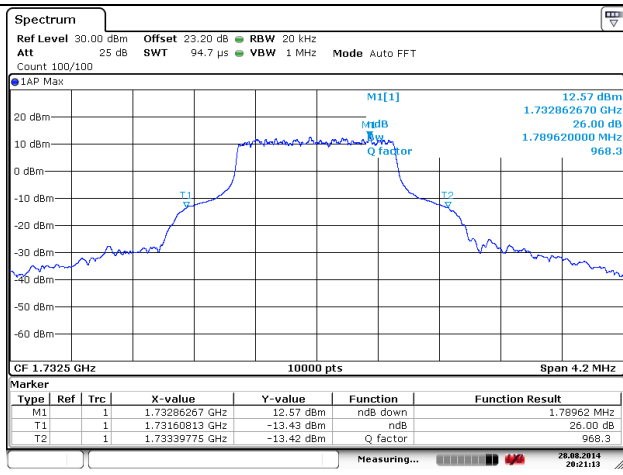


99% OBW Modulation = 16 QAM



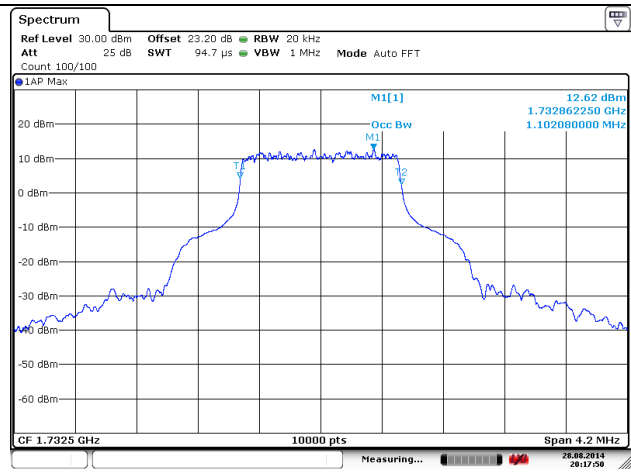
Channel 20175 (1732.5 MHz) – RB Size = 6; RB Offset = 0; BW = 1.4 MHz

26 OBW Modulation = QPSK



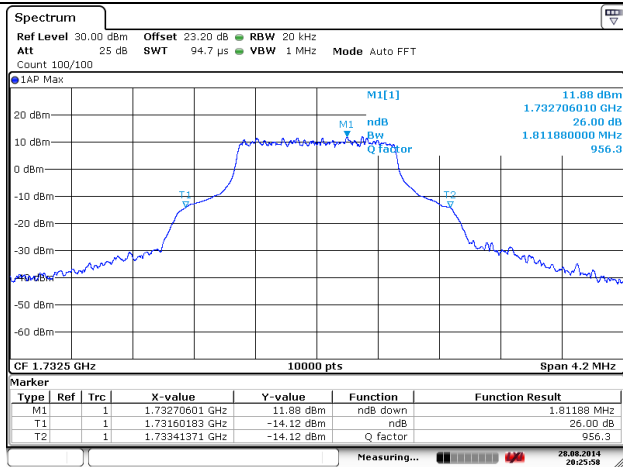
Date: 28 AUG 2014 20:21:13

99% OBW Modulation = QPSK



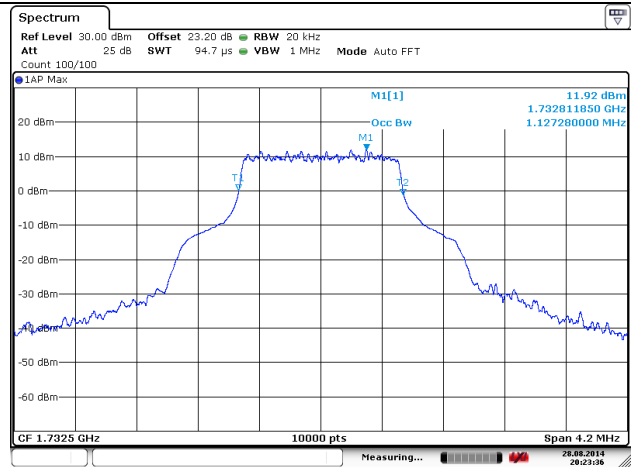
Date: 28 AUG 2014 20:17:50

26 OBW Modulation = 16 QAM



Date: 28 AUG 2014 20:25:58

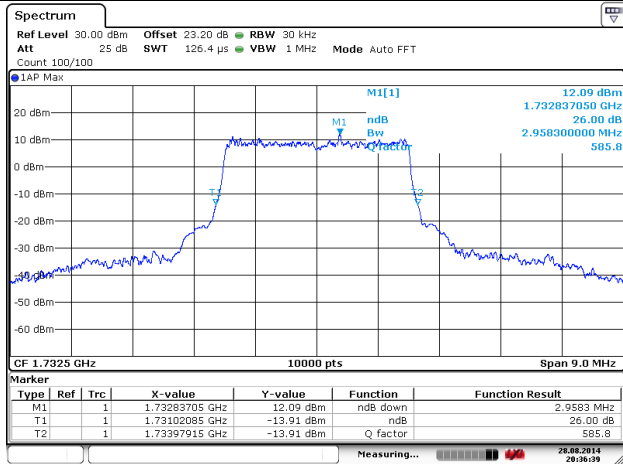
99% OBW Modulation = 16 QAM



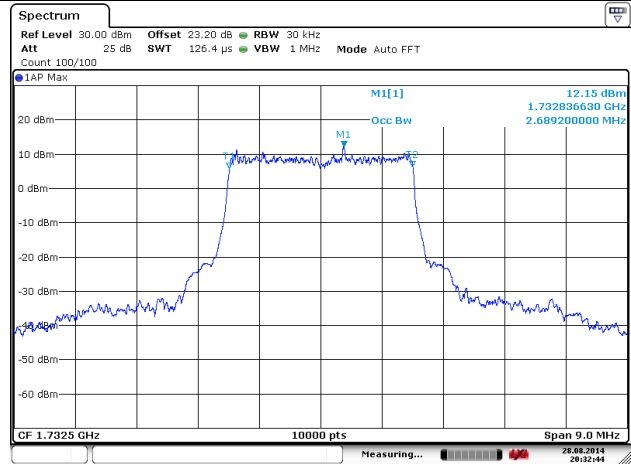
Date: 28 AUG 2014 20:23:36

Channel 20175 (1732.5 MHz) – RB Size = 15; RB Offset = 0; BW = 3.0 MHz

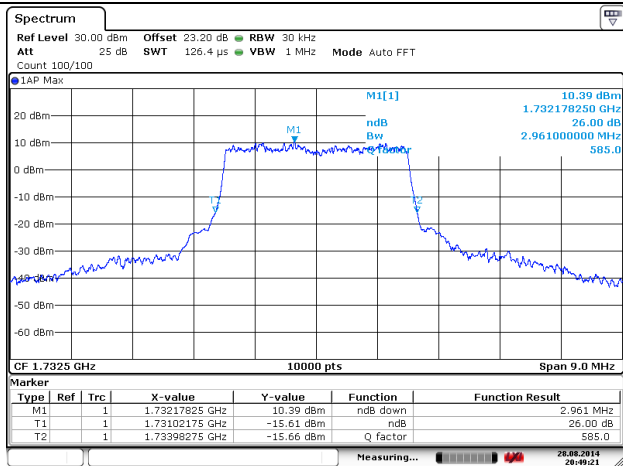
26 OBW Modulation = QPSK



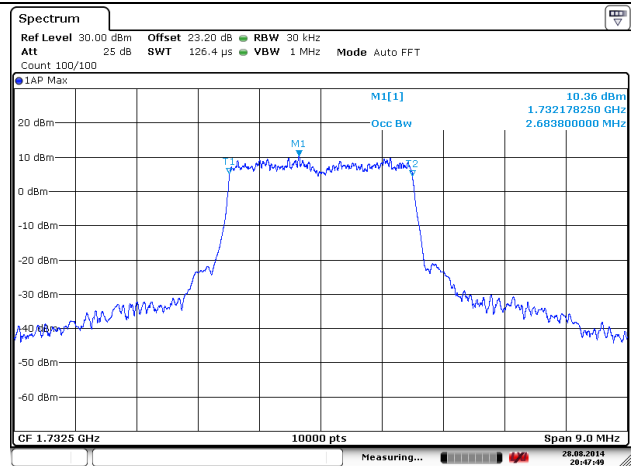
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM

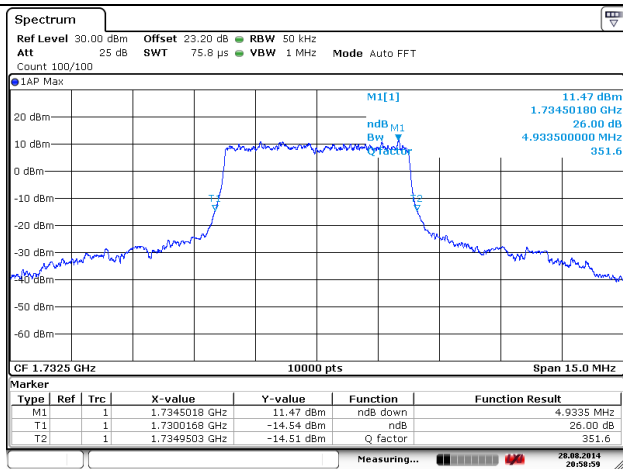


99% OBW Modulation = 16 QAM

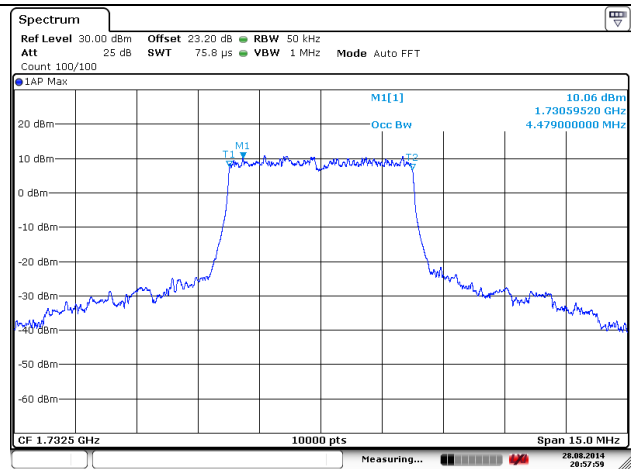


Channel 20175 (1732.5 MHz) – RB Size = 25; RB Offset = 0; BW = 5 MHz

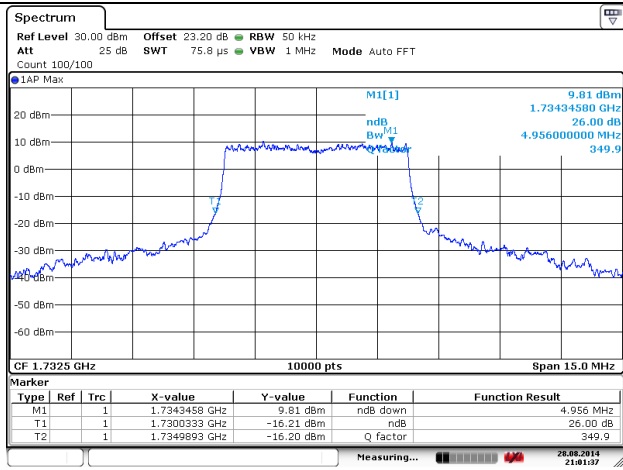
26 OBW Modulation = QPSK



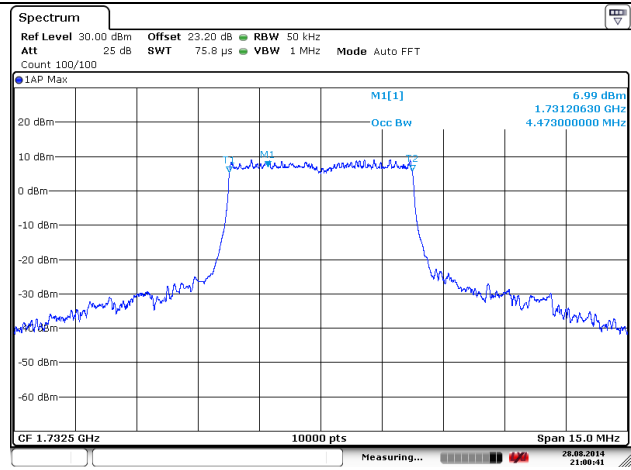
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM

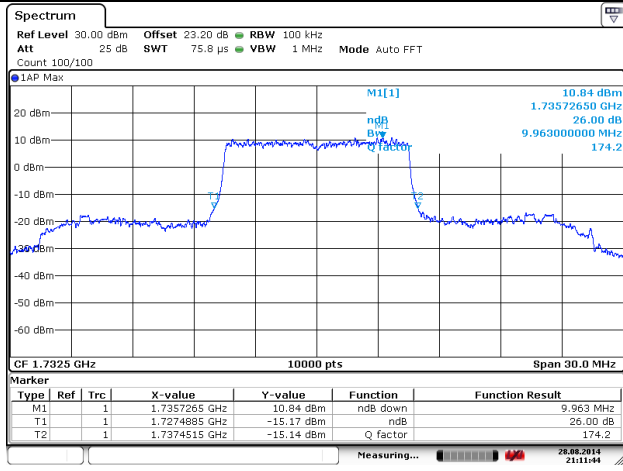


99% OBW Modulation = 16 QAM

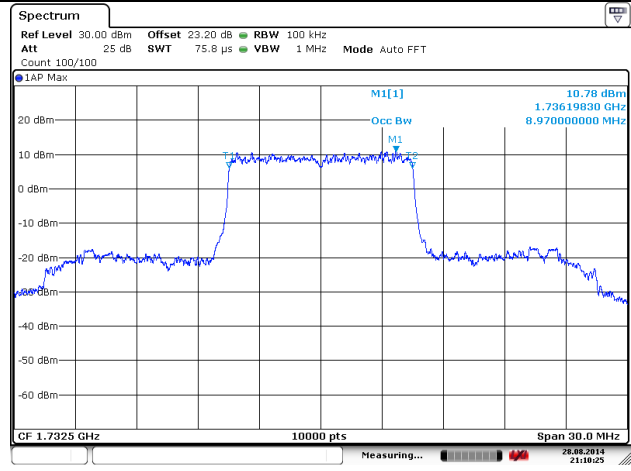


Channel 20175 (1732.5 MHz) – RB Size = 50; RB Offset = 0; BW = 10.0 MHz

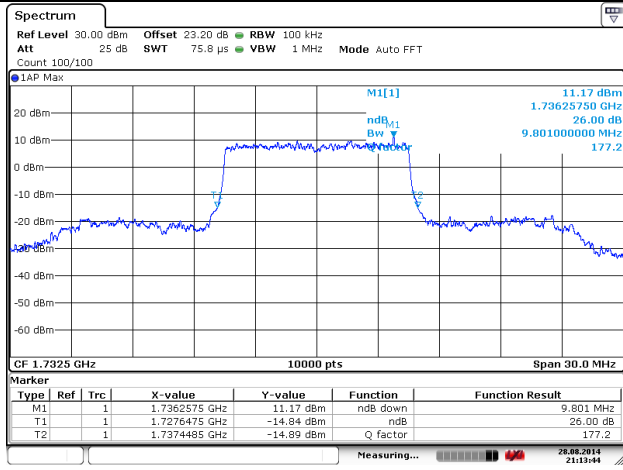
26 OBW Modulation = QPSK



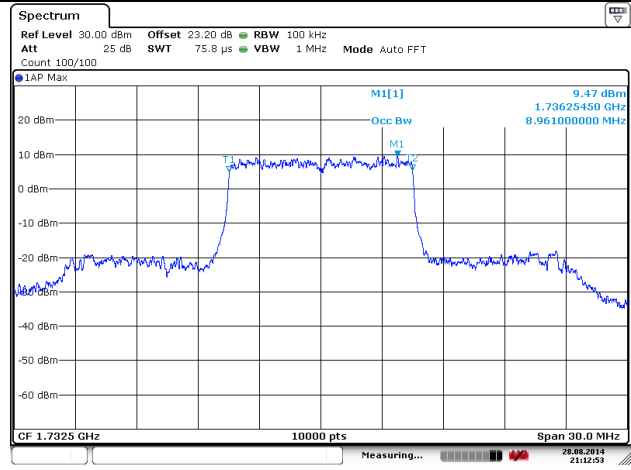
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM

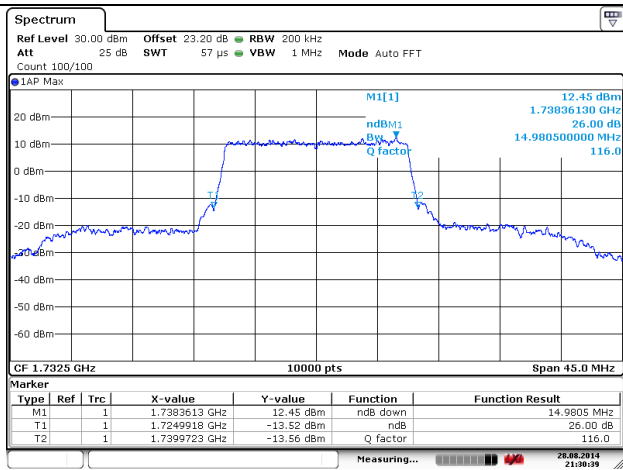


99% OBW Modulation = 16 QAM



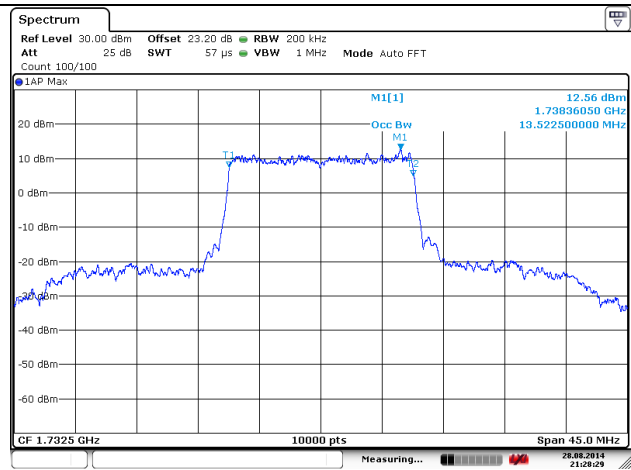
Channel 20175 (1732.5 MHz) – RB Size = 75; RB Offset = 0; BW = 15.0 MHz

26 OBW Modulation = QPSK



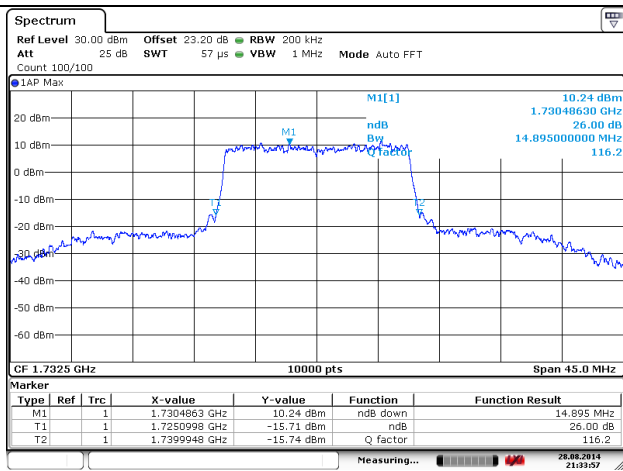
Date: 28 AUG 2014 21:30:39

99% OBW Modulation = QPSK



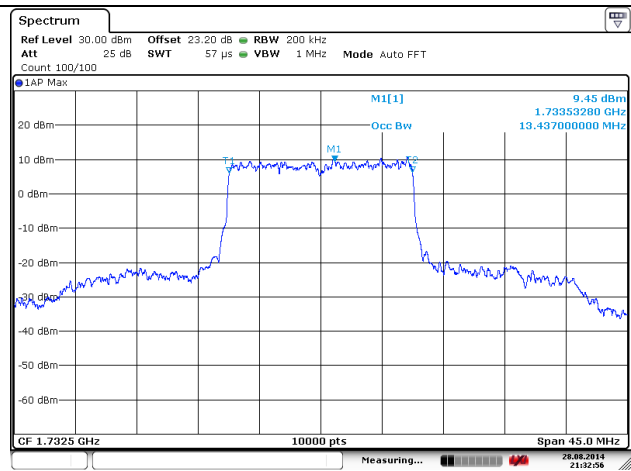
Date: 28 AUG 2014 21:28:29

26 OBW Modulation = 16 QAM



Date: 28 AUG 2014 21:33:57

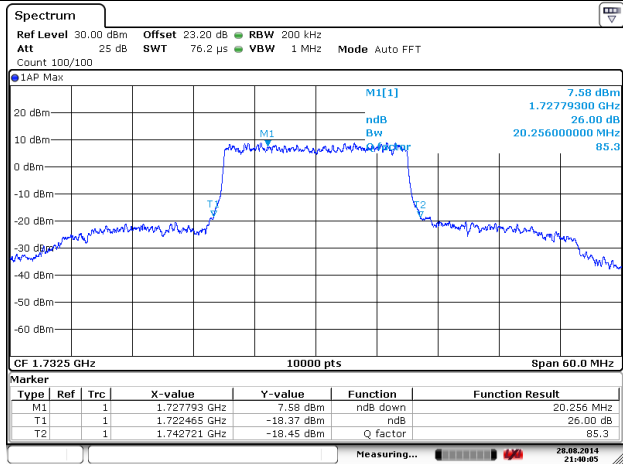
99% OBW Modulation = 16 QAM



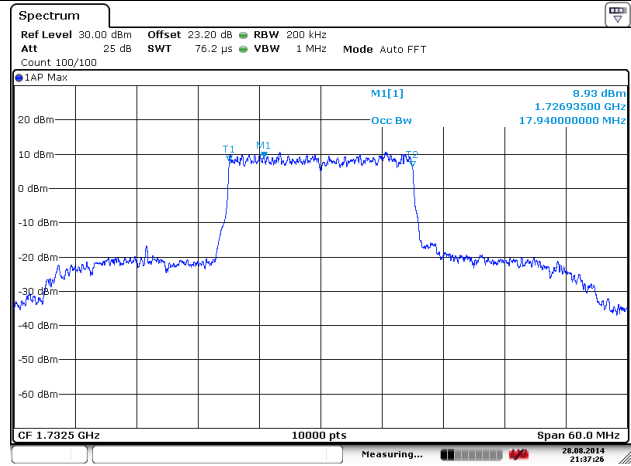
Date: 28 AUG 2014 21:32:56

Channel 20175 (1732.5 MHz) – RB Size = 100; RB Offset = 0; BW = 20.0 MHz

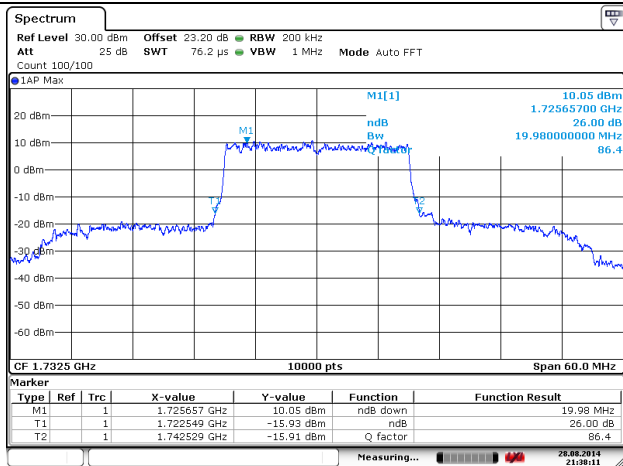
26 OBW Modulation = QPSK



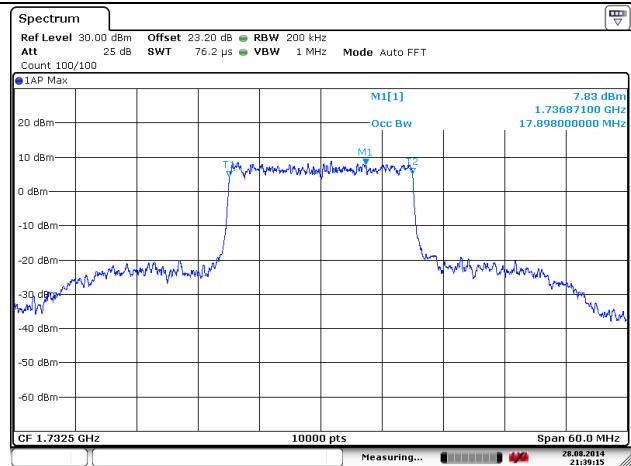
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM



99% OBW Modulation = 16 QAM



6.4.5.7 OBW LTE FDD Band 5 tables:

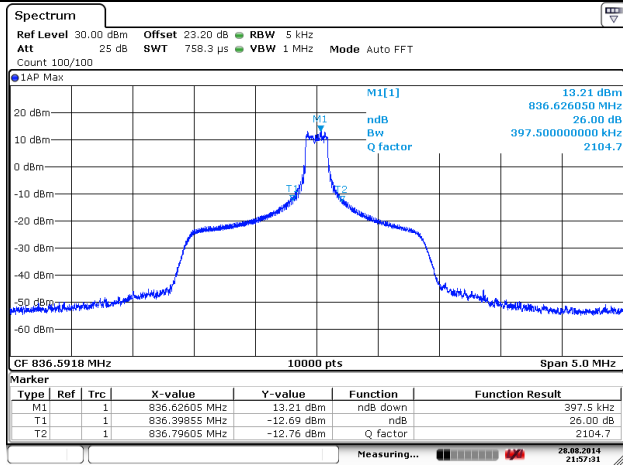
LTE Band 5 (824 MHz – 849 MHz) -Modulation: QPSK			
Channel No.	Frequency (MHz)	26 dB (MHz)	99% (MHz)
RB Size =1	RB Offset = 0	BW (MHz) = 0.18	
20525	836.5	0.397	0.327
RB Size = 6	RB Offset = 0	BW (MHz) = 1.4	
20525	836.5	1.74	1.1
RB Size = 15	RB Offset = 0	BW (MHz) = 3	
20525	836.5	2.96	2.68
RB Size = 25	RB Offset = 0	BW (MHz) = 5	
20525	836.5	4.95	4.47
RB Size = 50	RB Offset = 0	BW (MHz) = 10	
20525	836.5	9.91	8.97

LTE Band 5 (824 MHz – 849 MHz) -Modulation: 16 QAM			
Channel No.	Frequency (MHz)	26 dB (MHz)	99% (MHz)
RB Size =1	RB Offset = 0	BW (MHz) = 0.18	
20525	836.5	0.367	0.352
RB Size = 6	RB Offset = 0	BW (MHz) = 1.4	
20525	836.5	1.8	1.12
RB Size = 15	RB Offset = 0	BW (MHz) = 3	
20525	836.5	2.95	2.68
RB Size = 25	RB Offset = 0	BW (MHz) = 5	
20525	836.5	4.97	4.47
RB Size = 50	RB Offset = 0	BW (MHz) = 10	
20525	836.5	9.91	10.09

6.4.5.8 OBW LTE FDD Band 5 plots:

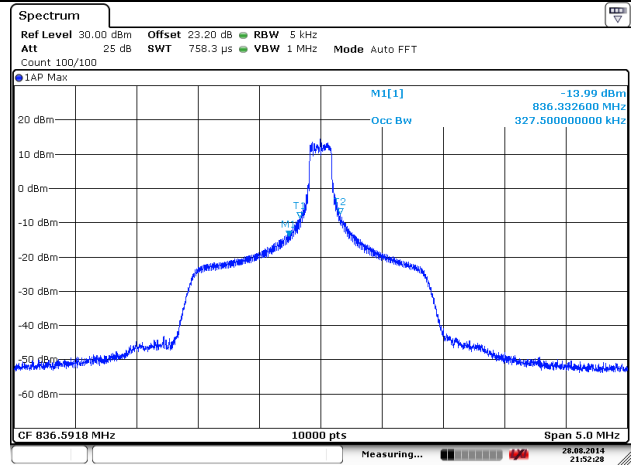
Channel 20525 (836.5 MHz) – RB Size = 1; RB Offset = MID; BW = 1.4 MHz

26 OBW Modulation = QPSK



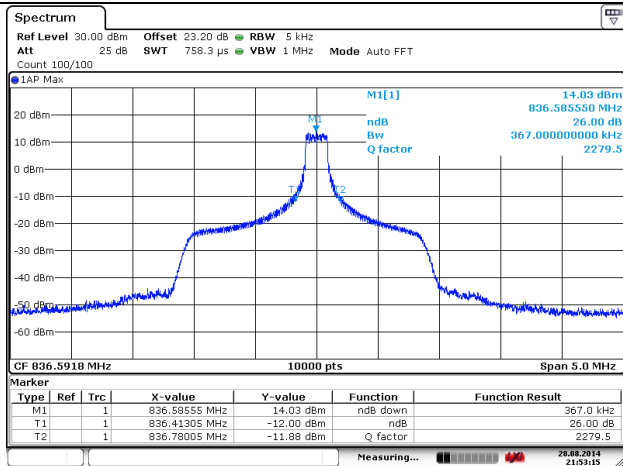
Date: 28 AUG 2014 21:57:30

99% OBW Modulation = QPSK



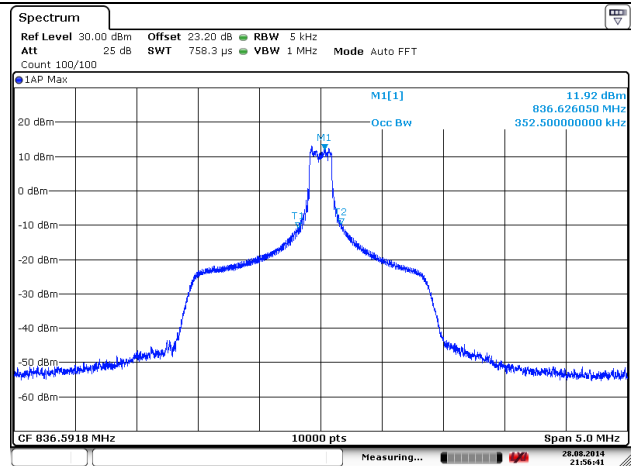
Date: 28 AUG 2014 21:52:28

26 OBW Modulation = 16 QAM



Date: 28 AUG 2014 21:53:15

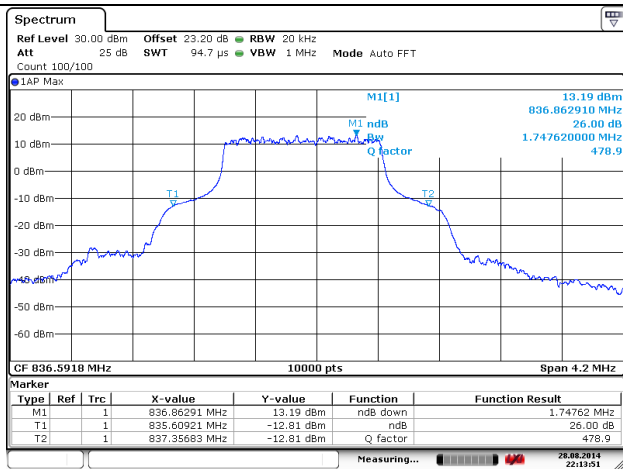
99% OBW Modulation = 16 QAM



Date: 28 AUG 2014 21:56:40

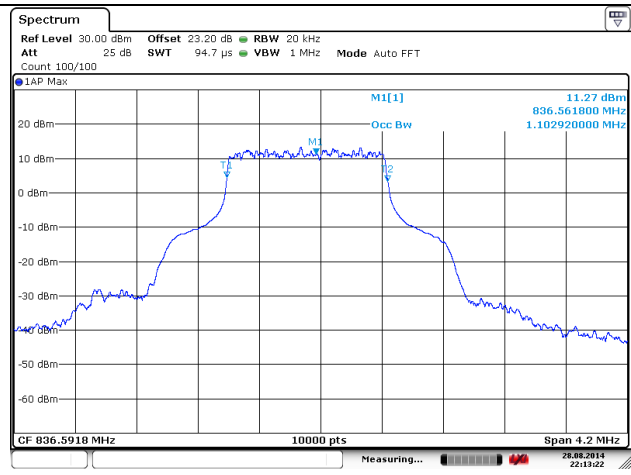
Channel 20525 (836.5 MHz) – RB Size = 6; RB Offset = 0; BW = 1.4 MHz

26 OBW Modulation = QPSK



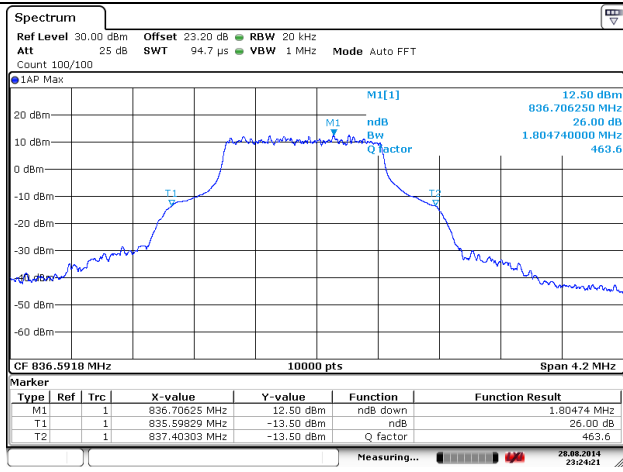
Date: 28 AUG 2014 22:13:51

99% OBW Modulation = QPSK



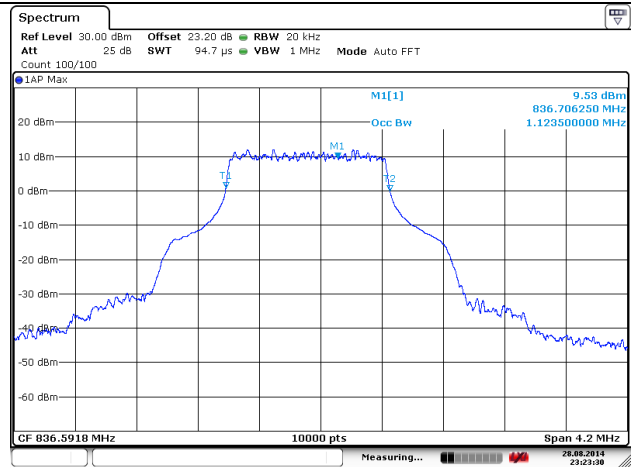
Date: 28 AUG 2014 22:13:21

26 OBW Modulation = 16 QAM



Date: 28 AUG 2014 23:24:21

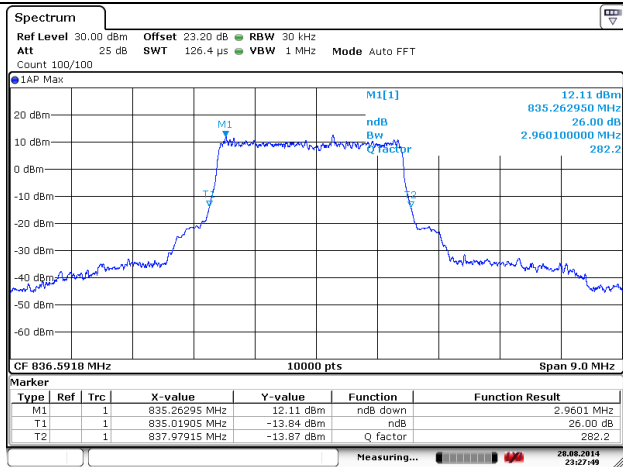
99% OBW Modulation = 16 QAM



Date: 28 AUG 2014 23:23:29

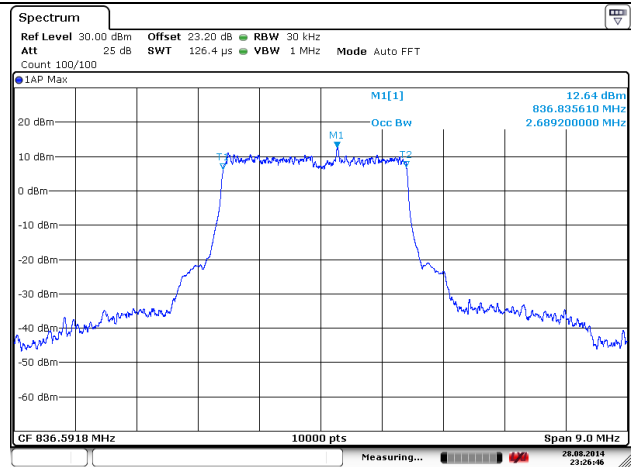
Channel 20525 (836.5 MHz) – RB Size = 15; RB Offset = 0; BW = 3.0 MHz

26 OBW Modulation = QPSK



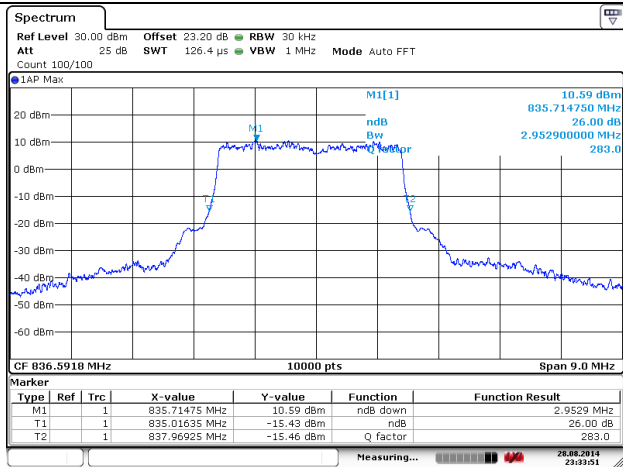
Date: 28 AUG 2014 23:27:49

99% OBW Modulation = QPSK



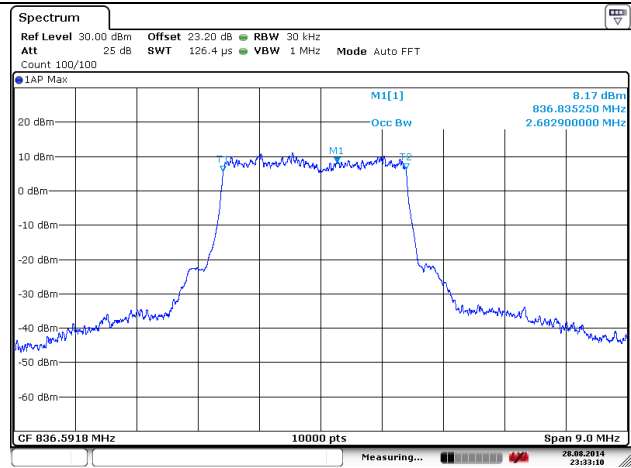
Date: 28 AUG 2014 23:26:46

26 OBW Modulation = 16 QAM



Date: 28 AUG 2014 23:33:51

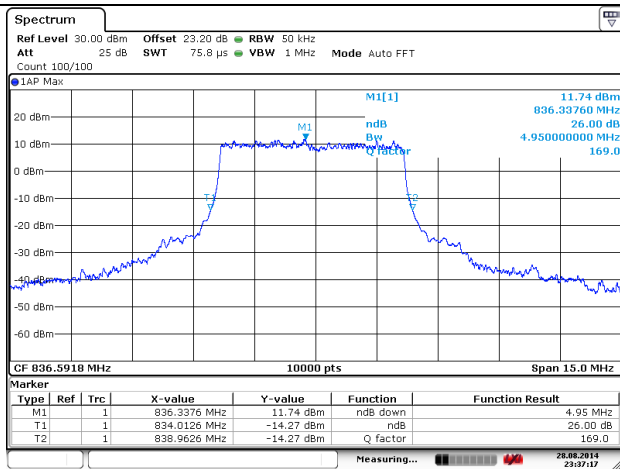
99% OBW Modulation = 16 QAM



Date: 28 AUG 2014 23:33:09

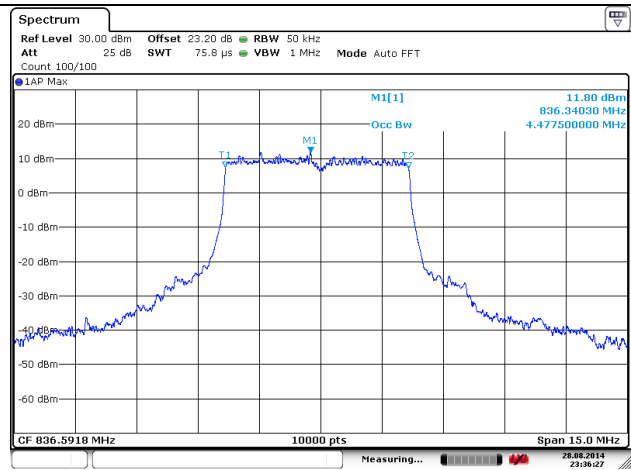
Channel 20525 (836.5 MHz) – RB Size = 25; RB Offset = 0; BW = 5 MHz

26 OBW Modulation = QPSK



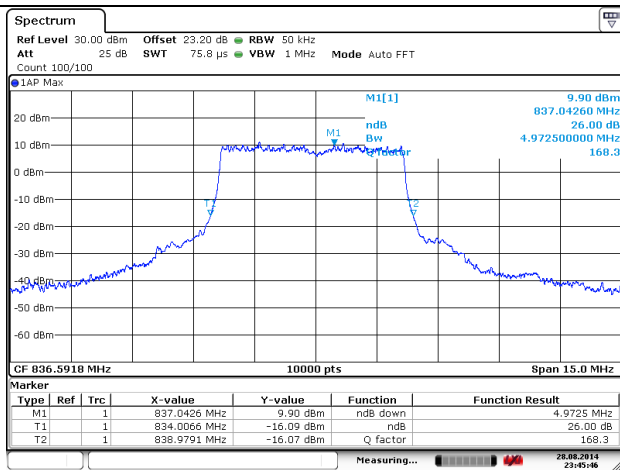
Date: 28.AUG.2014 23:37:17

99% OBW Modulation = QPSK



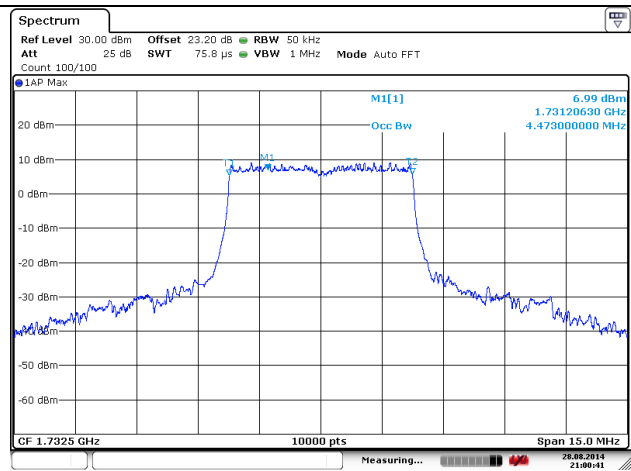
Date: 28.AUG.2014 23:36:27

26 OBW Modulation = 16 QAM



Date: 28.AUG.2014 23:45:46

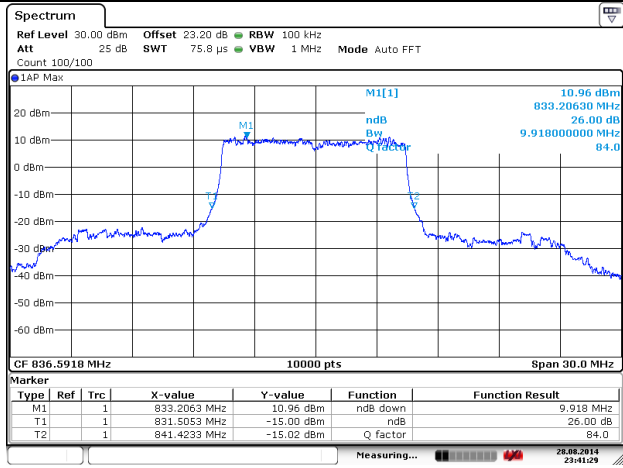
99% OBW Modulation = 16 QAM



Date: 28.AUG.2014 21:50:41

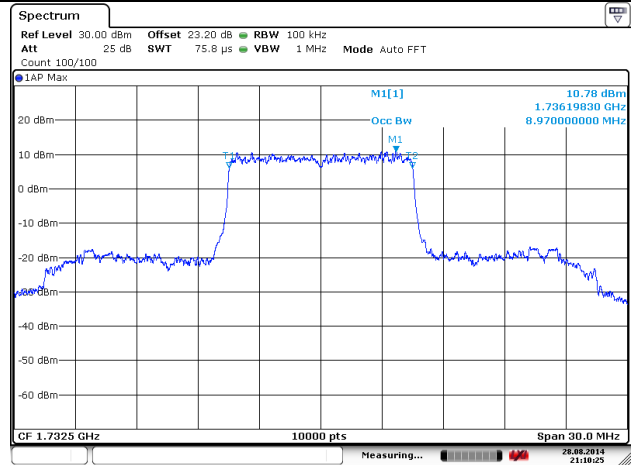
Channel 20525 (836.5 MHz) – RB Size = 50; RB Offset = 0; BW = 10.0 MHz

26 OBW Modulation = QPSK



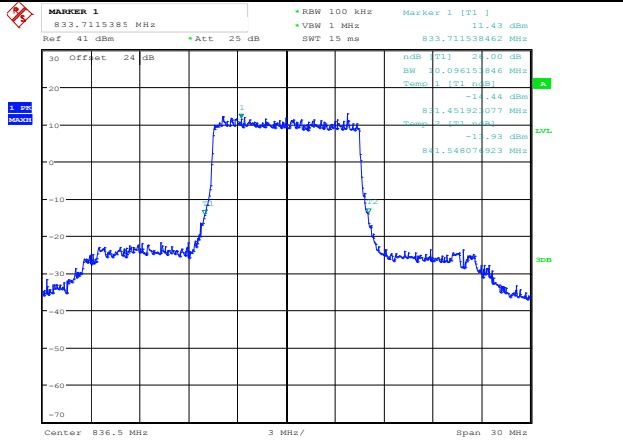
Date: 28 AUG 2014 23:41:28

99% OBW Modulation = QPSK



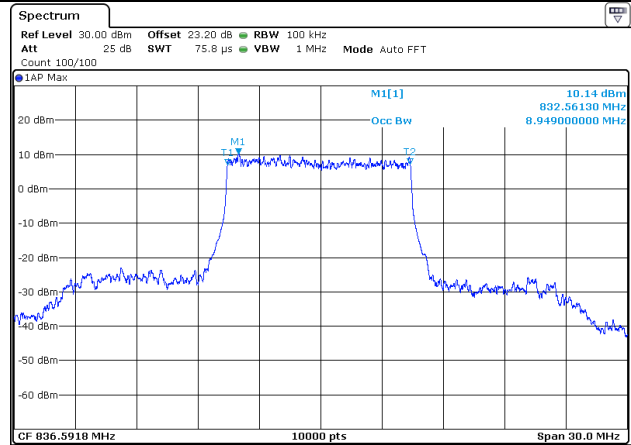
Date: 28 AUG 2014 21:10:25

26 OBW Modulation = 16 QAM



Date: 12 NOV 2014 12:00:25

99% OBW Modulation = 16 QAM



Date: 28 AUG 2014 23:42:13

6.4.5.9 OBW LTE FDD Band 7 tables:

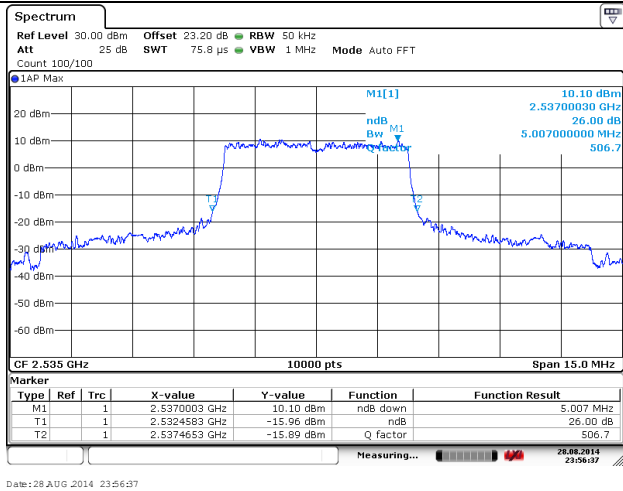
LTE Band 7 (2500 MHz – 2690 MHz) -Modulation: QPSK			
Channel No.	Frequency (MHz)	26 dB (MHz)	99% (MHz)
RB Size = 25	RB Offset = 0	BW (MHz) = 5	
21100	2535	5	4.48
RB Size = 50	RB Offset = 0	BW (MHz) = 10	
21100	2535	10.1	8.97
RB Size = 75	RB Offset = 0	BW (MHz) = 15	
21100	2535	14.69	13.5
RB Size = 100	RB Offset = 0	BW (MHz) = 20	
21100	2535	19.85	17.86

LTE Band 7 (2500 MHz – 2690 MHz) -Modulation: 16QAM			
Channel No.	Frequency (MHz)	26 dB (MHz)	99% (MHz)
RB Size = 25	RB Offset = 0	BW (MHz) = 5	
21100	2535	5.05	4.46
RB Size = 50	RB Offset = 0	BW (MHz) = 10	
21100	2535	10.04	8.96
RB Size = 75	RB Offset = 0	BW (MHz) = 15	
21100	2535	9.85	13.43
RB Size = 100	RB Offset = 0	BW (MHz) = 20	
21100	2535	19.87	17.92

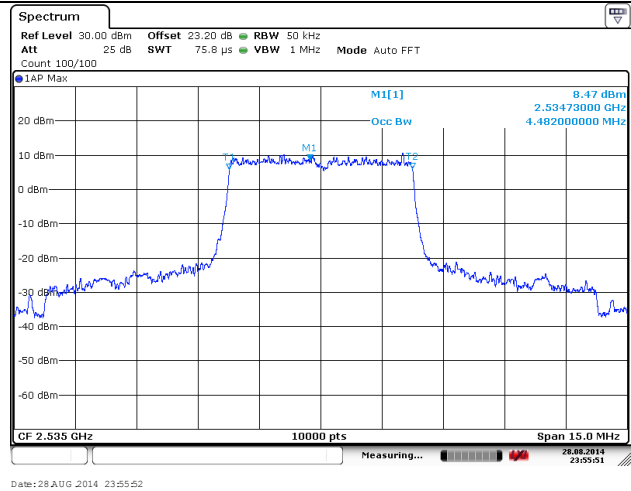
6.4.5.10 OBW LTE FDD Band 7 plots:

Channel 21100 (2535 MHz) – RB Size = 25; RB Offset = 0; BW = 5 MHz

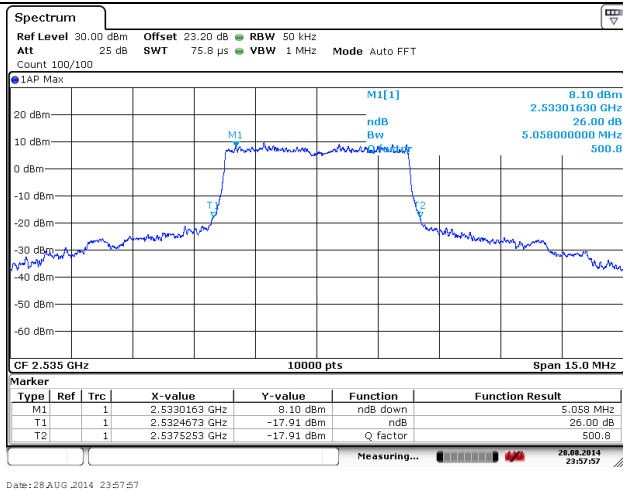
26 OBW Modulation = QPSK



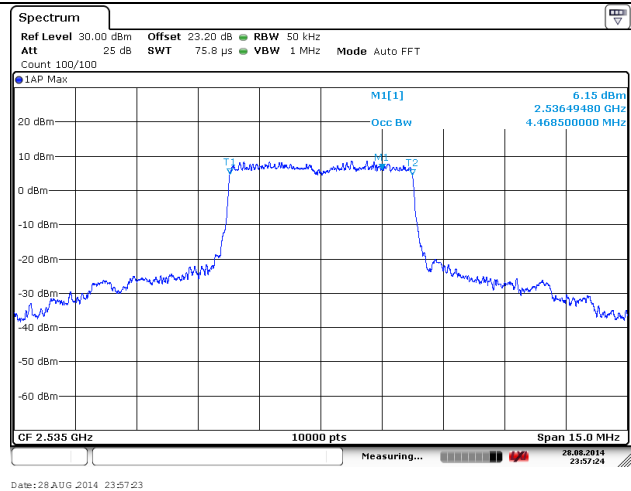
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM

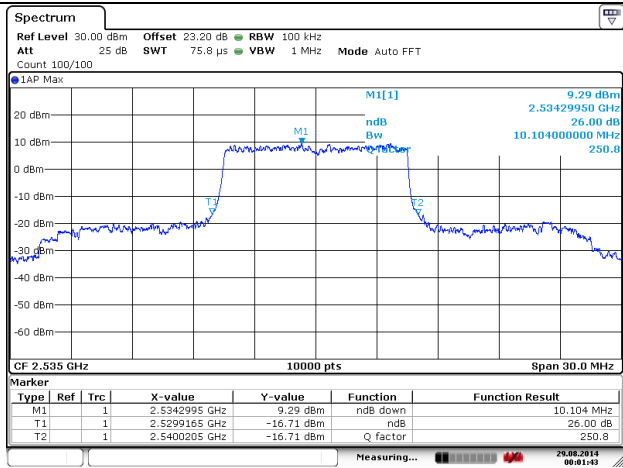


99% OBW Modulation = 16 QAM



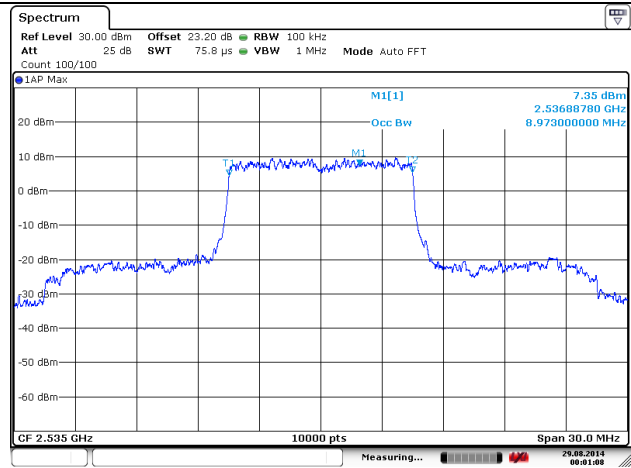
Channel 21100 (2535 MHz) – RB Size = 50; RB Offset = 0; BW = 10 MHz

26 OBW Modulation = QPSK



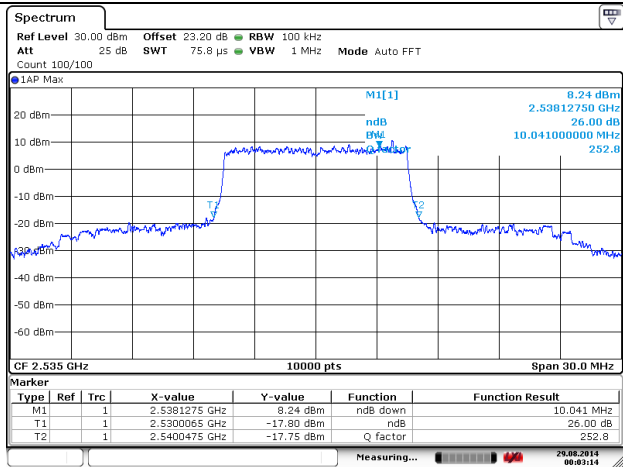
Date: 29.AUG.2014 00:51:44

99% OBW Modulation = QPSK



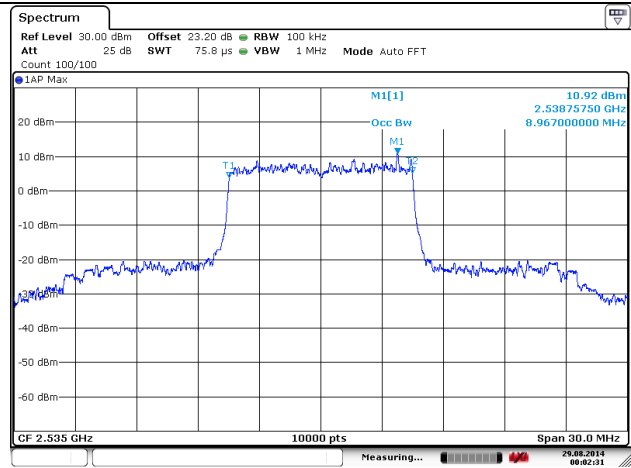
Date: 29.AUG.2014 00:51:58

26 OBW Modulation = 16 QAM



Date: 29.AUG.2014 00:53:13

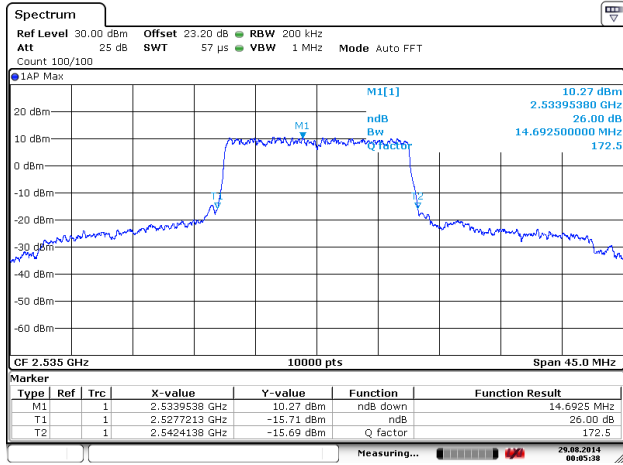
99% OBW Modulation = 16 QAM



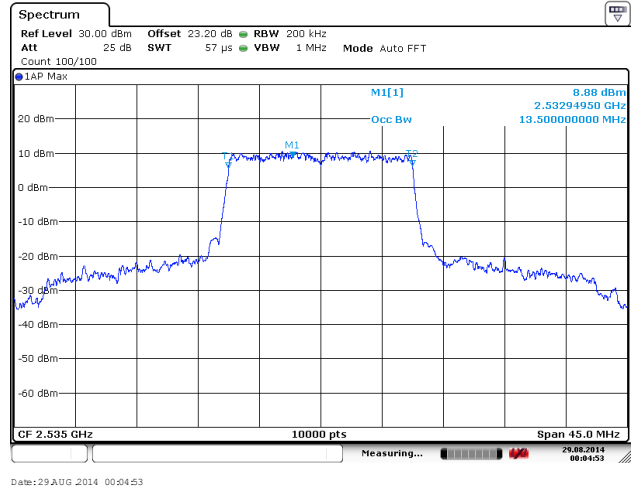
Date: 29.AUG.2014 00:52:31

Channel 21100 (2535 MHz) – RB Size = 75; RB Offset = 0; BW = 15 MHz

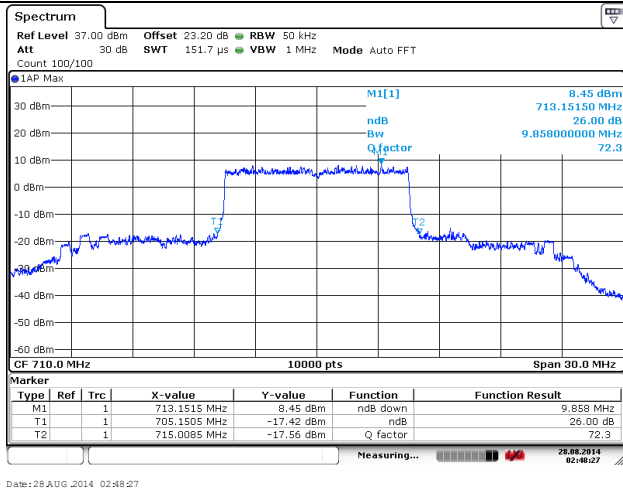
26 OBW Modulation = QPSK



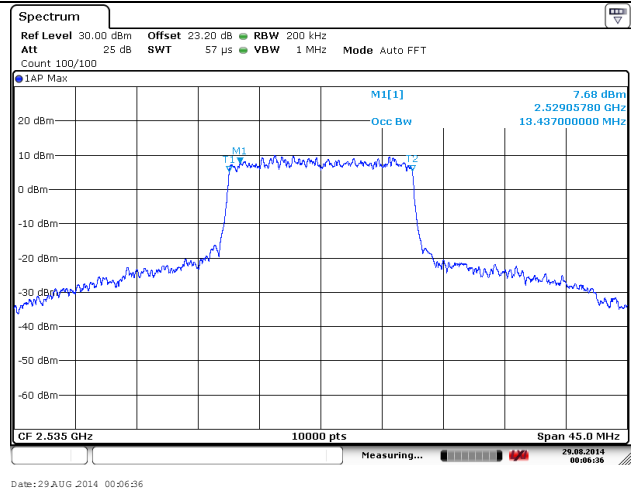
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM

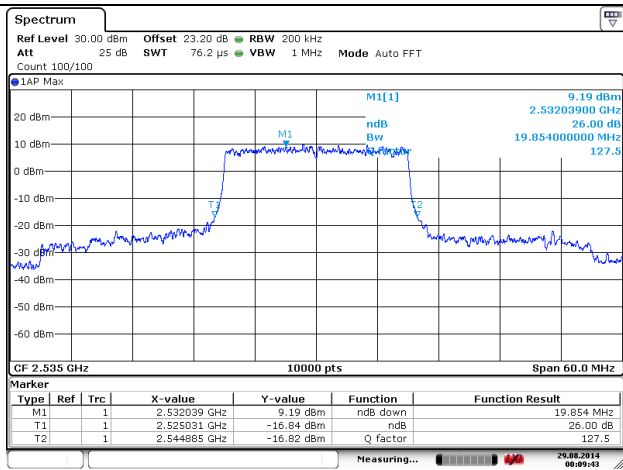


99% OBW Modulation = 16 QAM

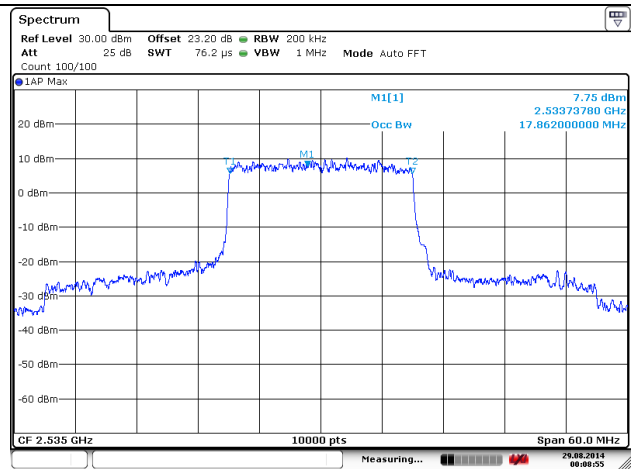


Channel 21100 (2535 MHz) – RB Size = 100; RB Offset = 0; BW = 20 MHz

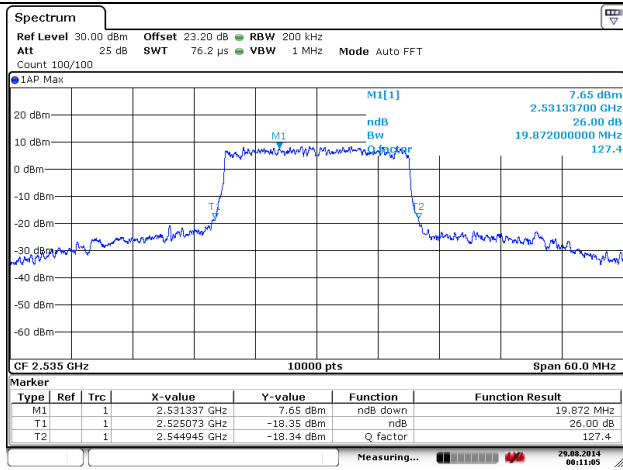
26 OBW Modulation = QPSK



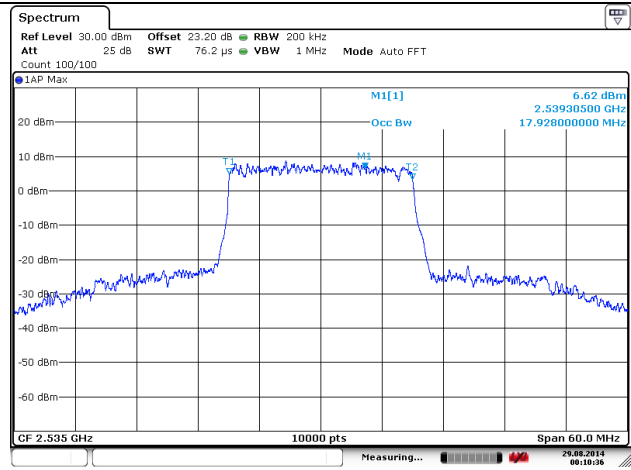
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM



99% OBW Modulation = 16 QAM



6.4.5.11 OBW LTE FDD Band 13 tables:

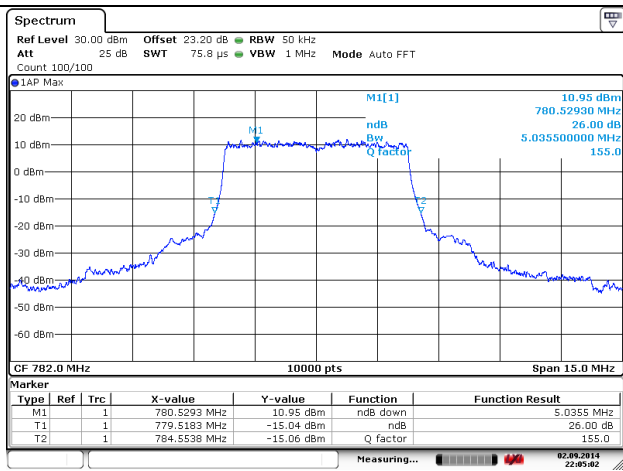
LTE Band 13 (777 MHz – 787 MHz) Modulation QPSK			
Channel No.	Frequency (MHz)	26 dB (MHz)	99% (MHz)
RB Size = 25	RB Offset = 0	BW (MHz) = 5	
23230	782	5.035	4.476
RB Size = 50	RB Offset = 0	BW (MHz) = 10	
23230	782	9.66	8.943

LTE Band 13 (777 MHz – 787 MHz) Modulation 16 QAM			
Channel No.	Frequency (MHz)	26 dB (MHz)	99% (MHz)
RB Size = 25	RB Offset = 0	BW (MHz) = 5	
23230	782	4.971	4.470
RB Size = 50	RB Offset = 0	BW (MHz) = 10	
23230	782	9.726	8.910

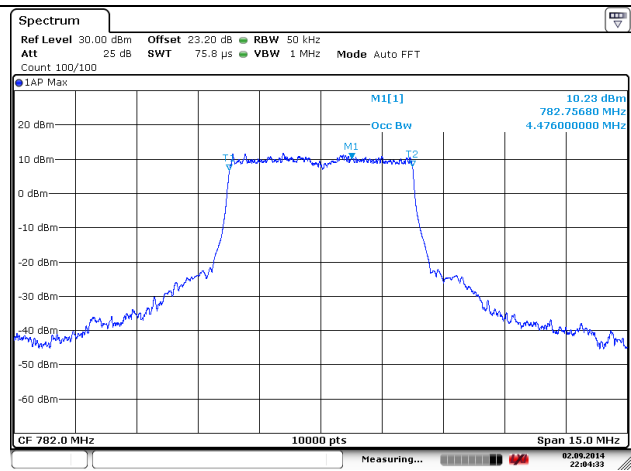
6.4.5.12 OBW LTE FDD Band 13 plots:

Channel 23230 (782 MHz) – RB Size = 25; RB Offset = 0; BW = 5 MHz

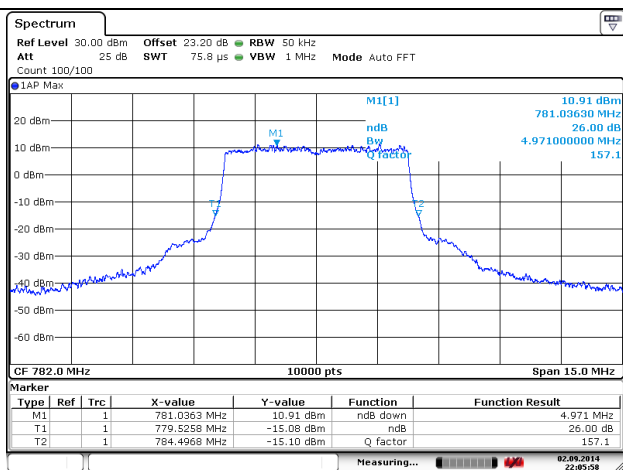
26 OBW Modulation = QPSK



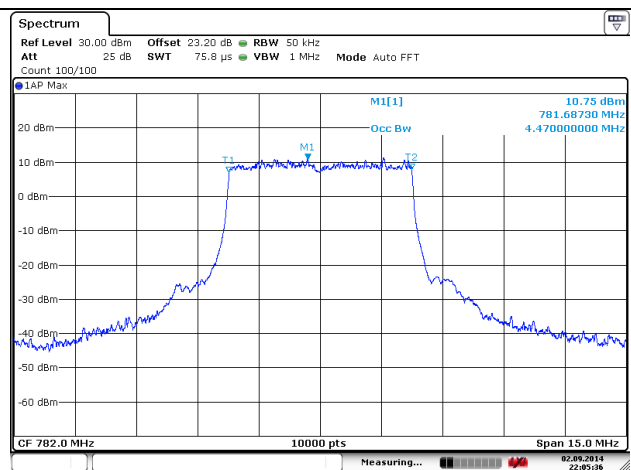
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM

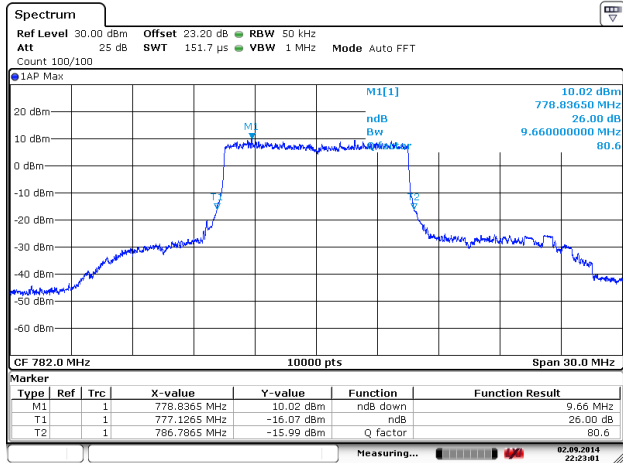


99% OBW Modulation = 16 QAM

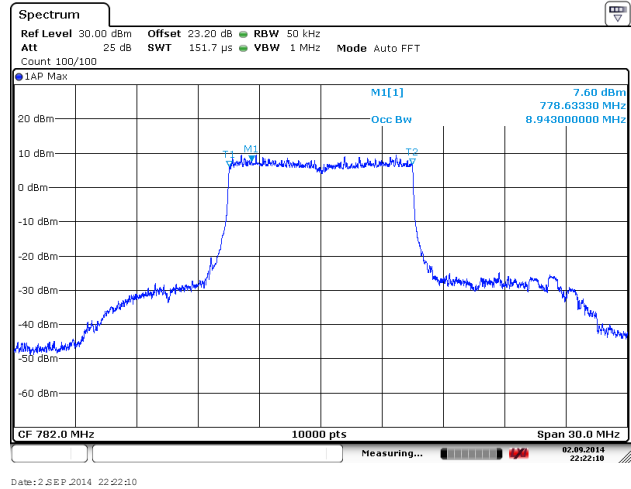


Channel 23230 (782 MHz) – RB Size = 50; RB Offset = 0; BW = 10 MHz

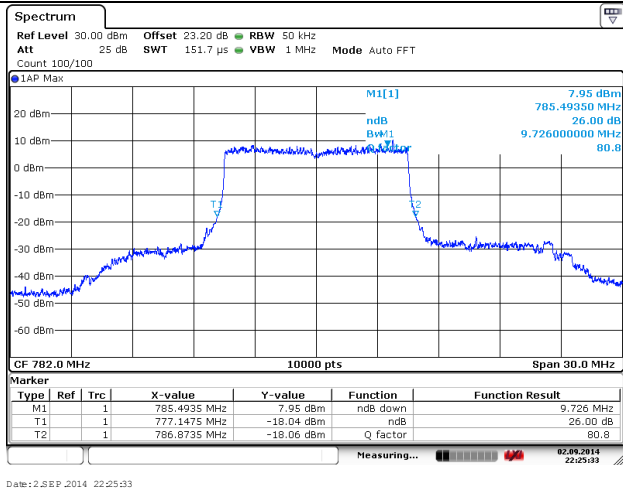
26 OBW Modulation = QPSK



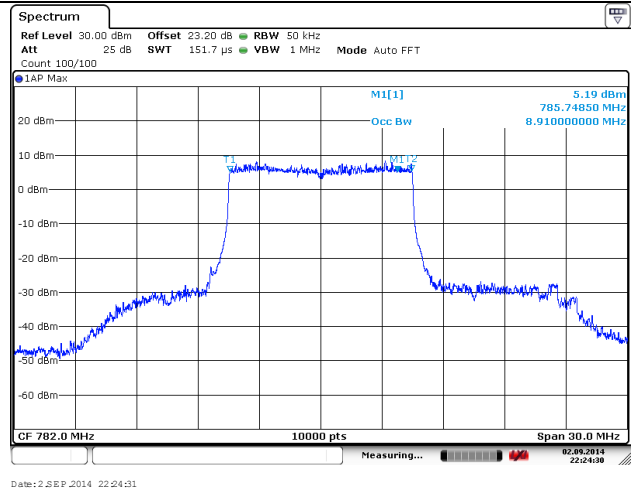
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM



99% OBW Modulation = 16 QAM



6.4.5.13 OBW LTE FDD Band 25 tables:

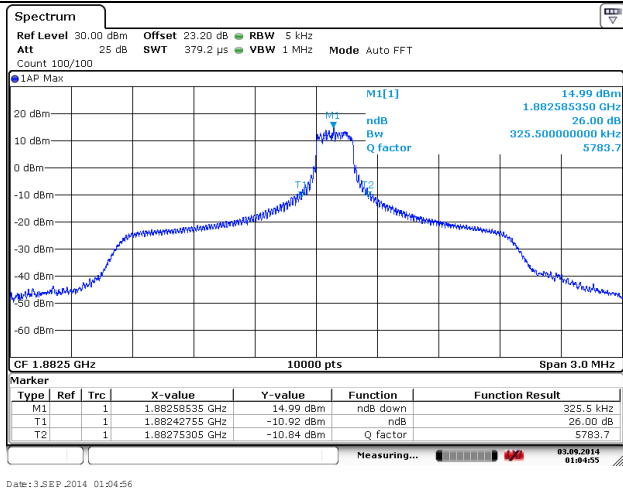
LTE Band 25 (1850 MHz – 1915 MHz) Modulation QPSK			
Channel No.	Frequency (MHz)	26 dB (MHz)	99% (MHz)
RB Size = 1		RB Offset = 3	
BW (MHz) = 0.18			
26365	1882.5	0.325	0.3
RB Size = 6		RB Offset = 0	
BW (MHz) = 1.4			
26365	1882.5	1.37	1.07
RB Size = 15		RB Offset = 0	
BW (MHz) = 3			
26365	1882.5	2.988	2.69
RB Size = 25		RB Offset = 0	
BW (MHz) = 5			
26365	1880	4.986	4.48
RB Size = 50		RB Offset = 0	
BW (MHz) = 10			
26365	1880	10.137	8.955
RB Size = 75		RB Offset = 0	
BW (MHz) = 15			
26365	1732.5	14.832	13.446
RB Size = 100		RB Offset = 0	
BW (MHz) = 20			
26365	1732.5	19.962	17.874

LTE Band 25 (1850 MHz – 1915 MHz) Modulation 16QAM			
Channel No.	Frequency (MHz)	26 dB (MHz)	99% (MHz)
RB Size = 1	RB Offset = 3	BW (MHz) = 0.18	
26365	1882.5	0.397	0.314
RB Size = 6	RB Offset = 0	BW (MHz) = 1.4	
26365	1882.5	1.370	1.077
RB Size = 15	RB Offset = 0	BW (MHz) = 3	
26365	1882.5	2.972	2.685
RB Size = 25	RB Offset = 0	BW (MHz) = 5	
26365	1880	4.99	4.77
RB Size = 50	RB Offset = 0	BW (MHz) = 10	
26365	1880	10.011	8.937
RB Size = 75	RB Offset = 0	BW (MHz) = 15	
26365	1732.5	14.926	13.428
RB Size = 100	RB Offset = 0	BW (MHz) = 20	
26365	1732.5	19.728	17.904

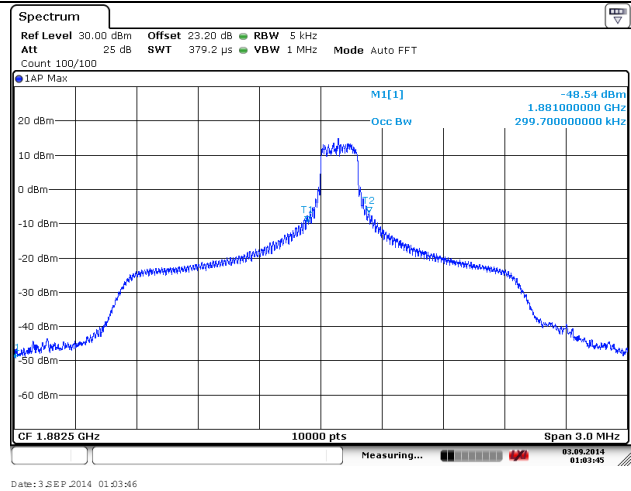
6.4.5.14 OBW LTE FDD Band 25 plots:

Channel 26365 (1882.5 MHz) – RB Size = 1; RB Offset = MID; BW = 1.4 MHz

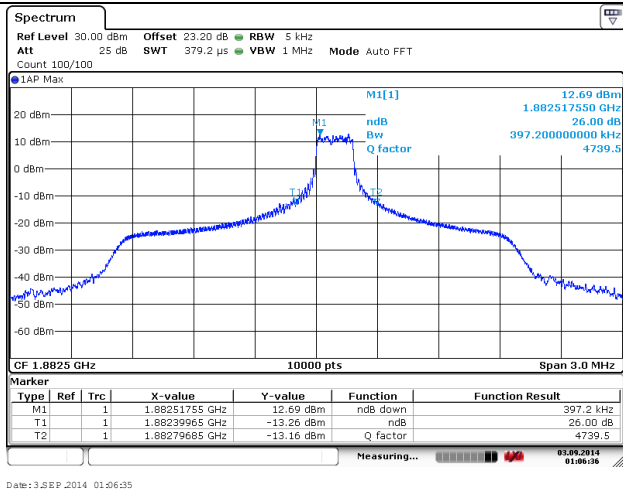
26 OBW Modulation = QPSK



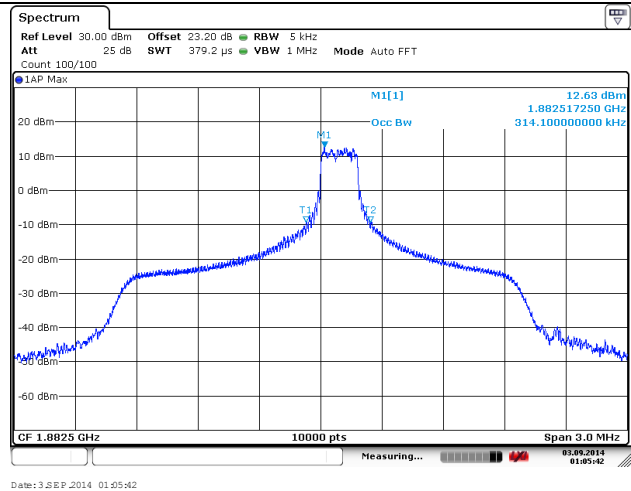
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM

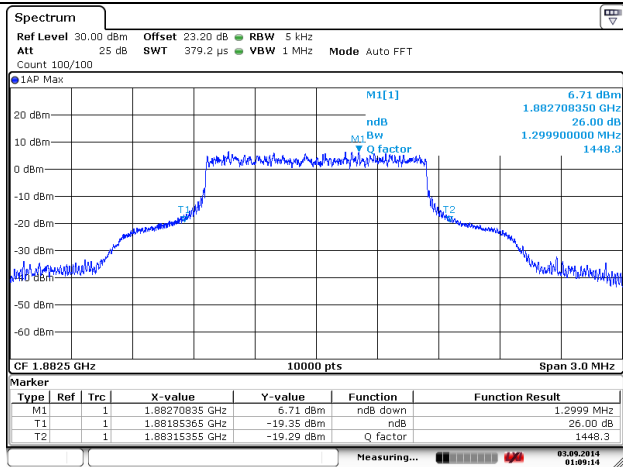


99% OBW Modulation = 16 QAM

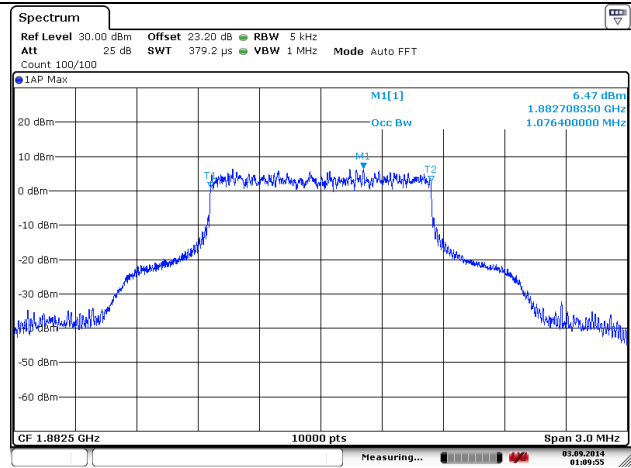


Channel 26365 (1882.5 MHz) – RB Size = 6; RB Offset = 0; BW = 1.4 MHz

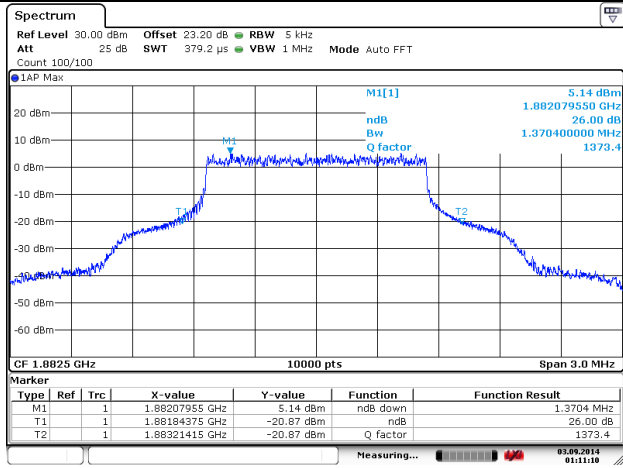
26 OBW Modulation = QPSK



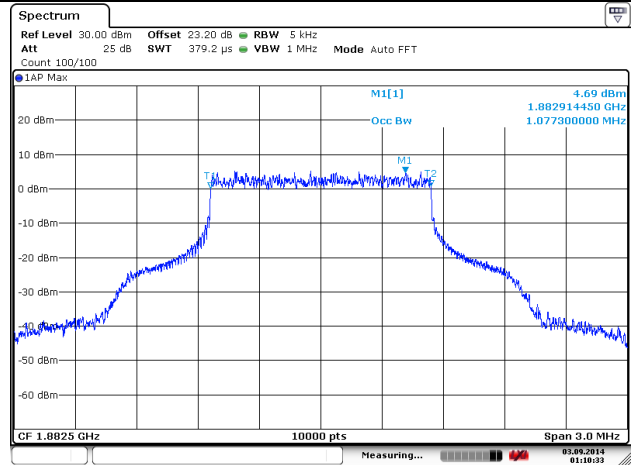
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM

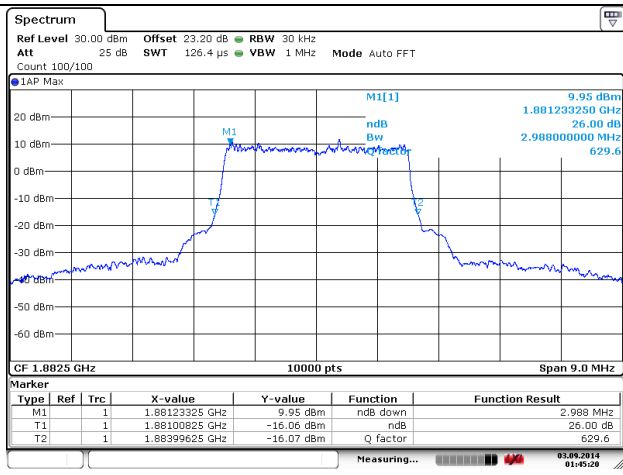


99% OBW Modulation = 16 QAM

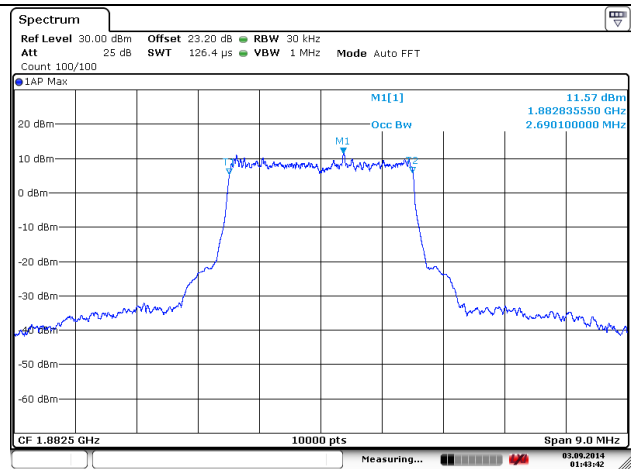


Channel 26365 (1882.5 MHz) – RB Size = 15; RB Offset = 0; BW = 3.0 MHz

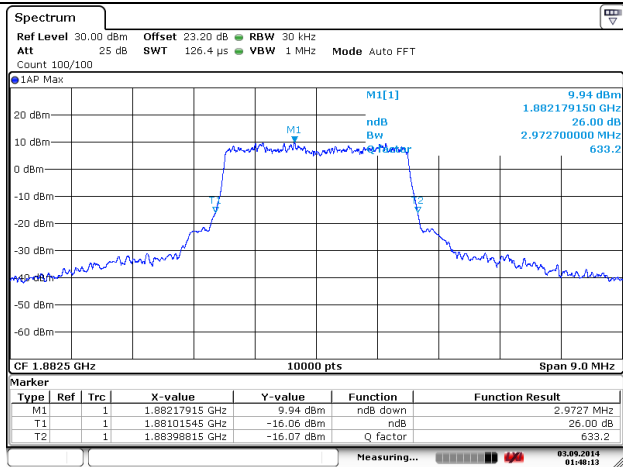
26 OBW Modulation = QPSK



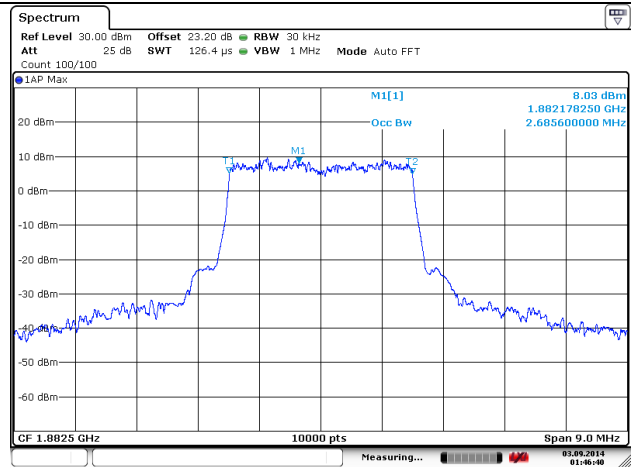
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM

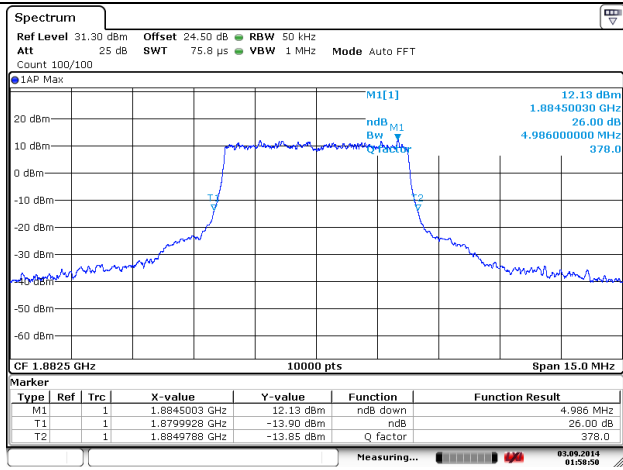


99% OBW Modulation = 16 QAM



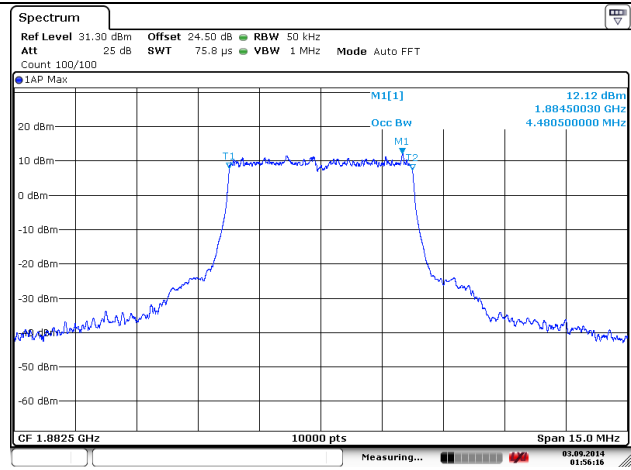
Channel 26365 (1882.5 MHz) – RB Size = 25; RB Offset = 0; BW = 5 MHz

26 OBW Modulation = QPSK



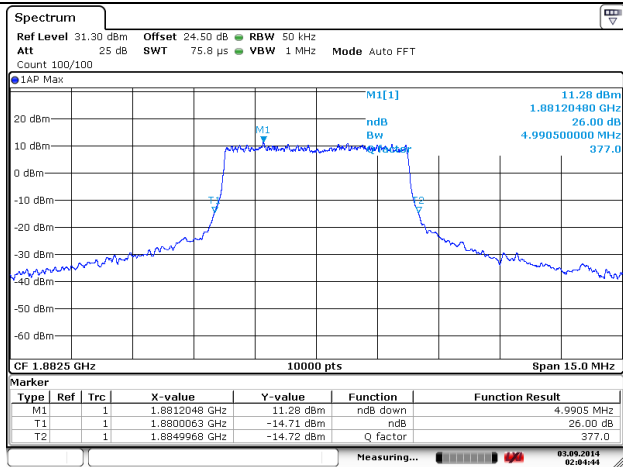
Date: 3 SEP 2014 01:58:50

99% OBW Modulation = QPSK



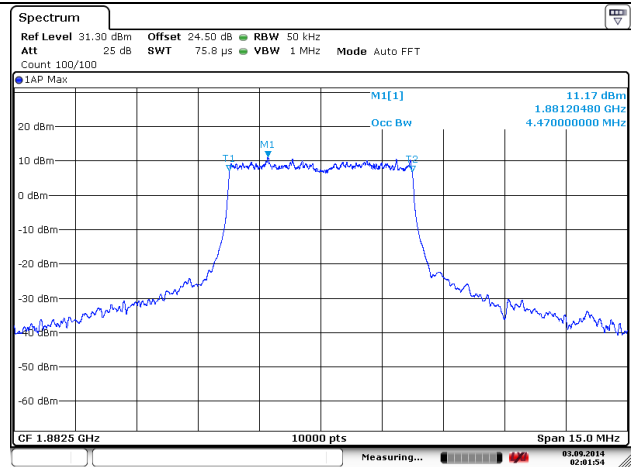
Date: 3 SEP 2014 01:56:16

26 OBW Modulation = 16 QAM



Date: 3 SEP 2014 02:04:44

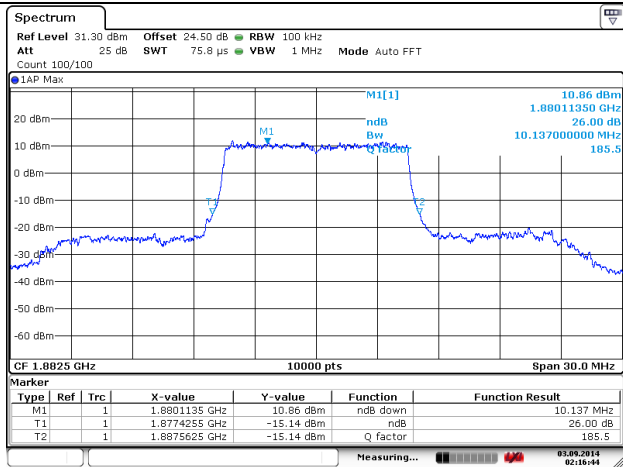
99% OBW Modulation = 16 QAM



Date: 3 SEP 2014 02:01:54

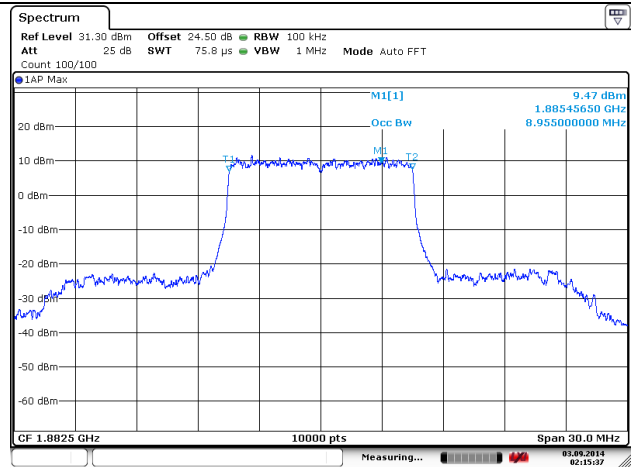
Channel 26365 (1880 MHz) – RB Size = 50; RB Offset = 0; BW = 10.0 MHz

26 OBW Modulation = QPSK



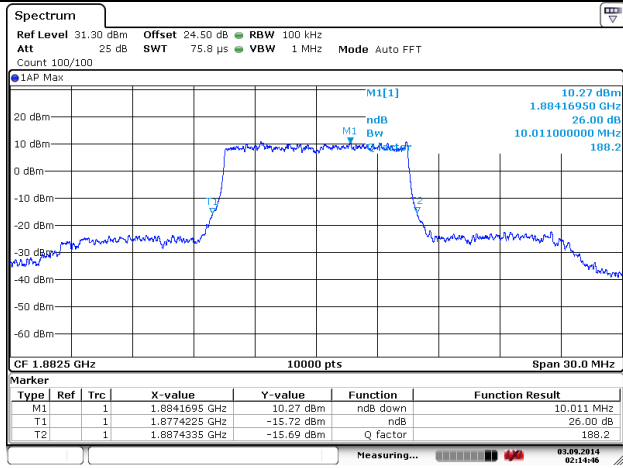
Date: 3 SEP 2014 02:16:43

99% OBW Modulation = QPSK



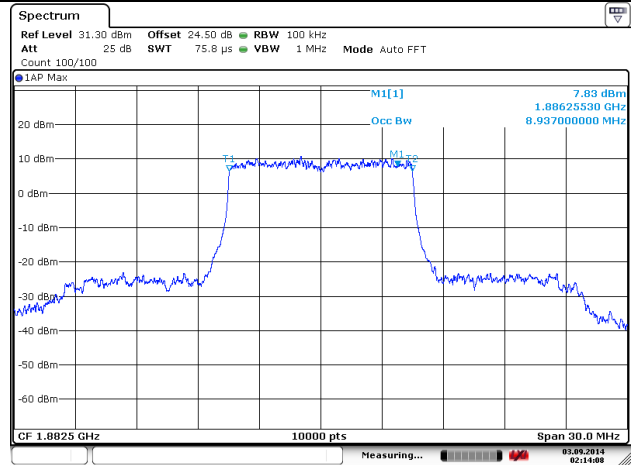
Date: 3 SEP 2014 02:15:36

26 OBW Modulation = 16 QAM



Date: 3 SEP 2014 02:14:46

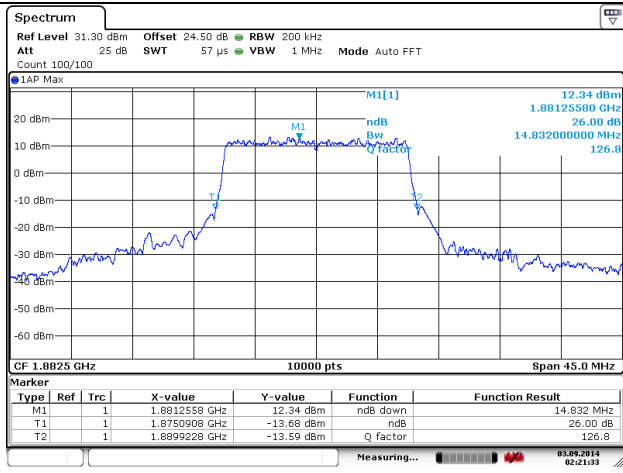
99% OBW Modulation = 16 QAM



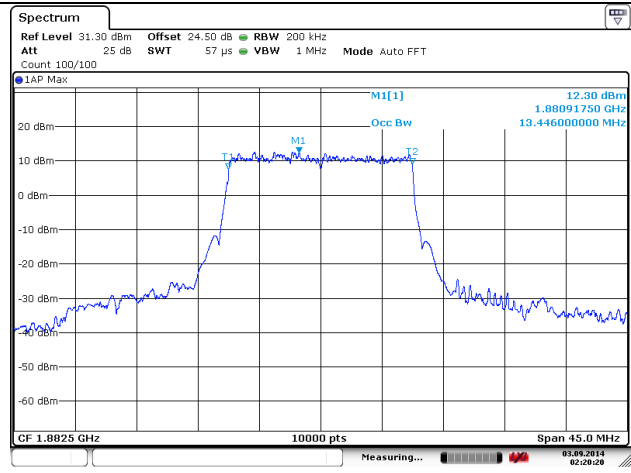
Date: 3 SEP 2014 02:14:08

Channel 26365 (1732.5 MHz) – RB Size = 75; RB Offset = 0; BW = 15.0 MHz

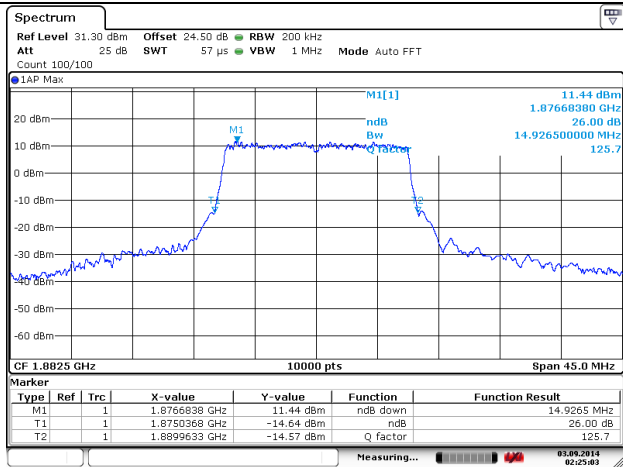
26 OBW Modulation = QPSK



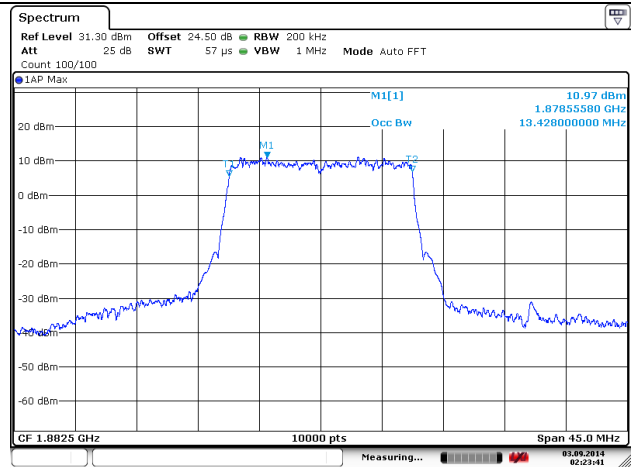
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM

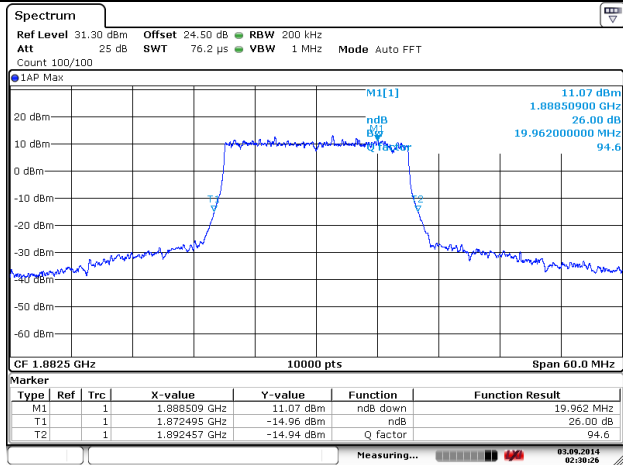


99% OBW Modulation = 16 QAM



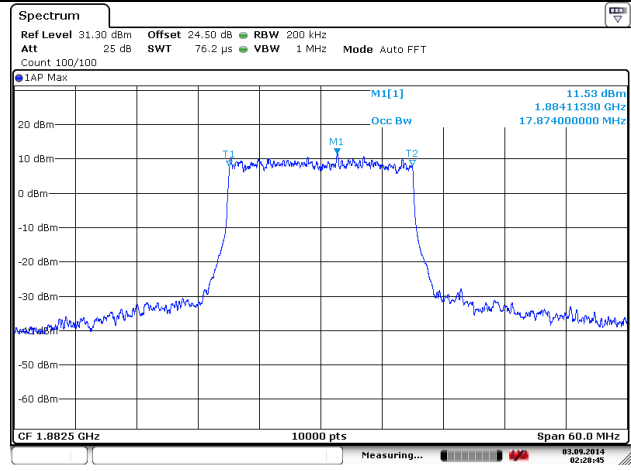
Channel 26365 (1732.5 MHz) – RB Size = 100; RB Offset = 0; BW = 20.0 MHz

26 OBW Modulation = QPSK



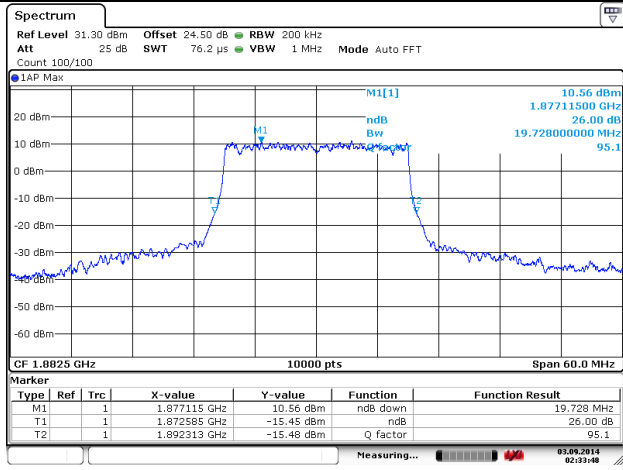
Date: 3 SEP 2014 02:30:26

99% OBW Modulation = QPSK



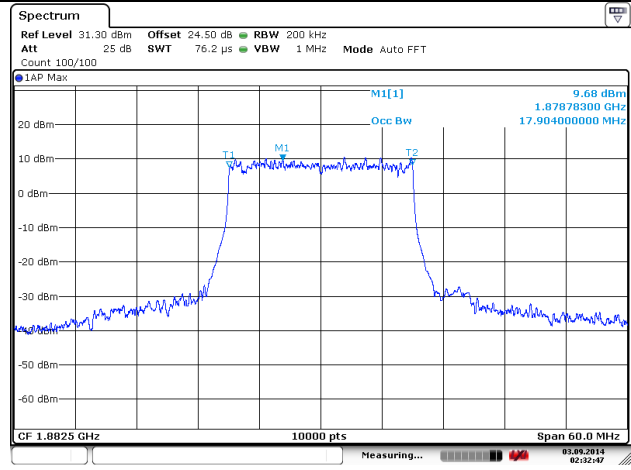
Date: 3 SEP 2014 02:28:45

26 OBW Modulation = 16 QAM



Date: 3 SEP 2014 02:33:48

99% OBW Modulation = 16 QAM



Date: 3 SEP 2014 02:32:47

6.4.5.15 OBW LTE FDD Band 26 tables:

As mentioned in section 6.2.3, LTE band 26 is applicable on two FCC rule parts, part 90 and part 22. So occupied bandwidth (OBW) is measured for two center frequencies, 819MHz and 831.5 MHz. Plots are only shown for 831.5MHz center frequency.

LTE Band 26 (814MHz -849 MHz)Modulation QPSK			
Channel No.	Frequency (MHz)	26 dB (MHz)	99% (MHz)
RB Size =1	RB Offset = 3	BW (MHz) = 0.18	
26740	819	0.375	0.283
RB Size = 6	RB Offset = 0	BW (MHz) = 1.4	
26740	819	1.317	1.076
RB Size = 15	RB Offset = 0	BW (MHz) = 3	
26740	819	3	2.69
RB Size = 25	RB Offset = 0	BW (MHz) = 5	
26740	819	4.93	4.470
RB Size = 50	RB Offset = 0	BW (MHz) = 10	
26740	819	9.67	8.94
RB Size = 75	RB Offset = 0	BW (MHz) = 15	
26740	819	14.08	13.4

LTE Band 26 (814MHz -849 MHz)Modulation 16QAM			
Channel No.	Frequency (MHz)	26 dB (MHz)	99% (MHz)
RB Size = 1	RB Offset = 3	BW (MHz) = 0.18	
26740	819	0.408	0.302
RB Size = 6	RB Offset = 0	BW (MHz) = 1.4	
26740	819	1.403	1.076
RB Size = 15	RB Offset = 0	BW (MHz) = 3	
26740	819	3	2.69
RB Size = 25	RB Offset = 0	BW (MHz) = 5	
26740	819	4.99	4.47
RB Size = 50	RB Offset = 0	BW (MHz) = 10	
26740	819	9.55	8.91
RB Size = 75	RB Offset = 0	BW (MHz) = 15	
26740	819	14.47	13.4

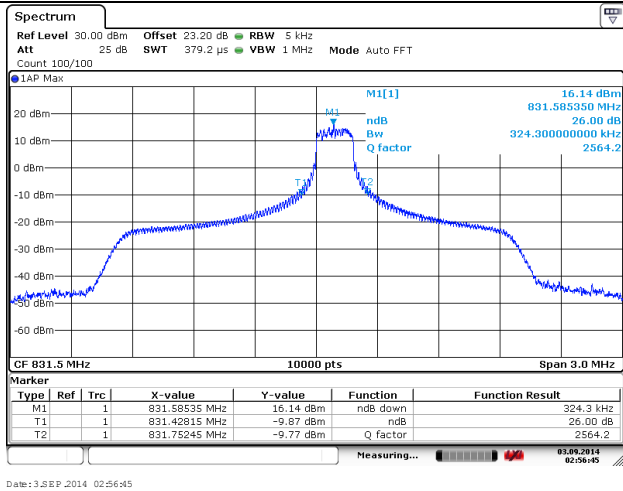
LTE Band 26 (814MHz -849 MHz)Modulation QPSK			
Channel No.	Frequency (MHz)	26 dB (MHz)	99% (MHz)
RB Size =1	RB Offset = 3	BW (MHz) = 0.18	
26865	831.5	0.324	0.284
RB Size = 6	RB Offset = 0	BW (MHz) = 1.4	
26865	831.5	1.299	1.076
RB Size = 15	RB Offset = 0	BW (MHz) = 3	
26865	831.5	2.946	2.69
RB Size = 25	RB Offset = 0	BW (MHz) = 5	
26865	831.5	4.992	4.474
RB Size = 50	RB Offset = 0	BW (MHz) = 10	
26865	831.5	10.008	8.967
RB Size = 75	RB Offset = 0	BW (MHz) = 15	
26865	831.5	14.953	13.41

LTE Band 26 (814MHz -849 MHz)Modulation 16QAM			
Channel No.	Frequency (MHz)	26 dB (MHz)	99% (MHz)
RB Size =1	RB Offset = 3	BW (MHz) = 0.18	
26865	831.5	0.371	0.303
RB Size = 6	RB Offset = 0	BW (MHz) = 1.4	
26865	831.5	1.377	1.076
RB Size = 15	RB Offset = 0	BW (MHz) = 3	
26865	831.5	2.975	2.685
RB Size = 25	RB Offset = 0	BW (MHz) = 5	
26865	831.5	4.978	4.470
RB Size = 50	RB Offset = 0	BW (MHz) = 10	
26865	831.5	9.82	8.937
RB Size = 75	RB Offset = 0	BW (MHz) = 15	
26865	831.5	14.778	13.423

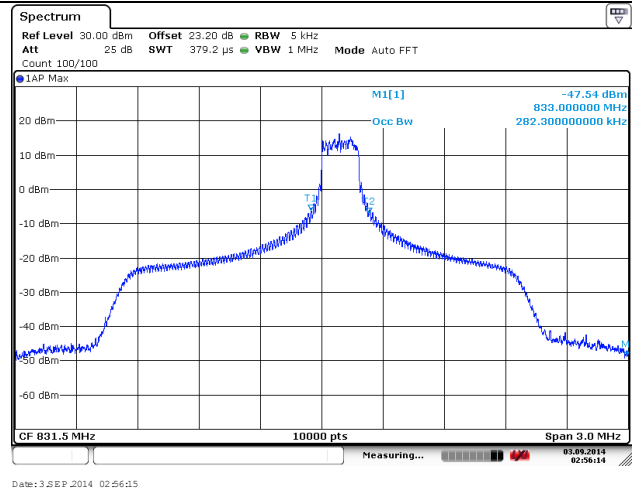
6.4.5.16 OBW LTE FDD Band 26 plots:

Channel 26865 (831.5 MHz) – RB Size = 1; RB Offset = MID; BW = 1.4 MHz

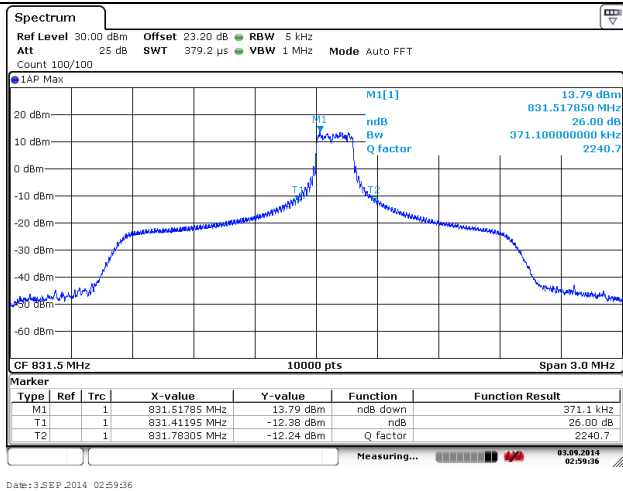
26 OBW Modulation = QPSK



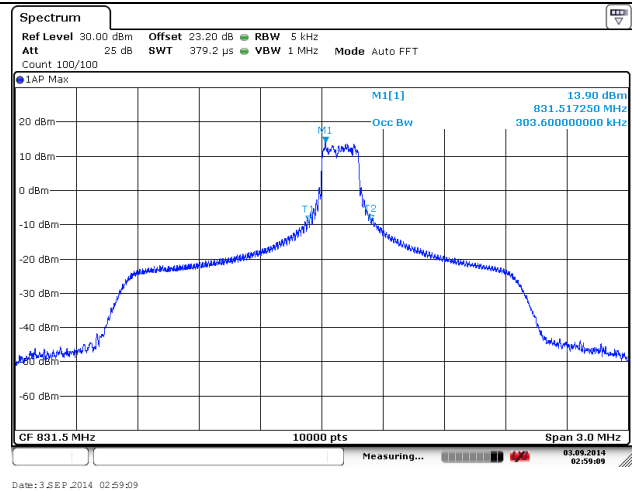
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM

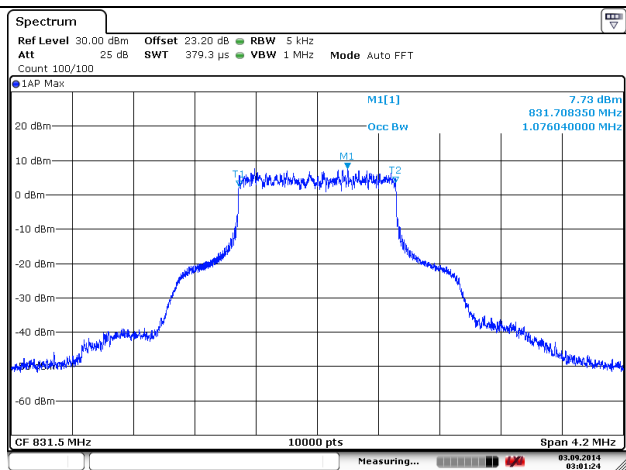


99% OBW Modulation = 16 QAM

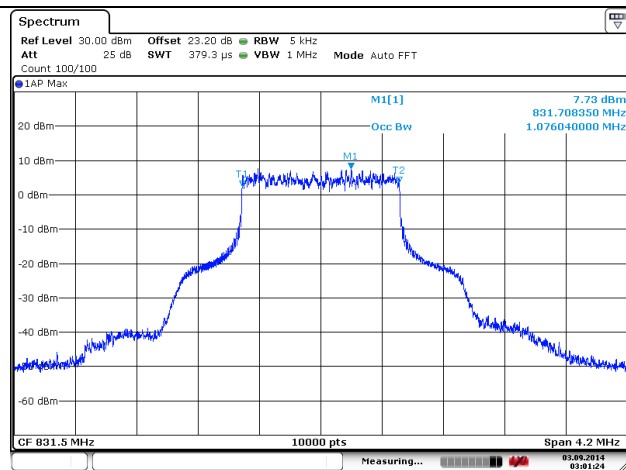


Channel 26865 (831.5 MHz) – RB Size = 6; RB Offset = 0; BW = 1.4 MHz

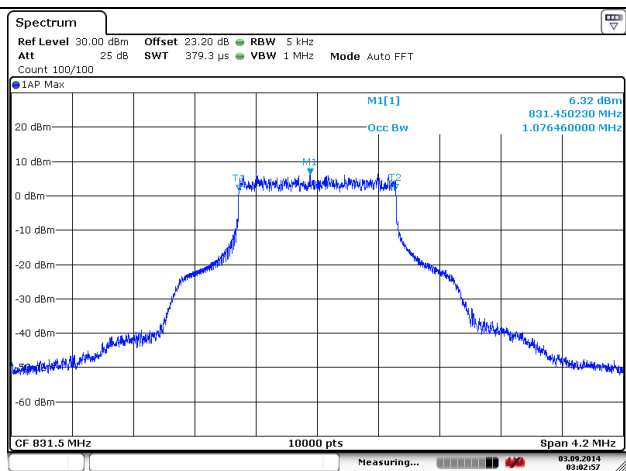
26 OBW Modulation = QPSK



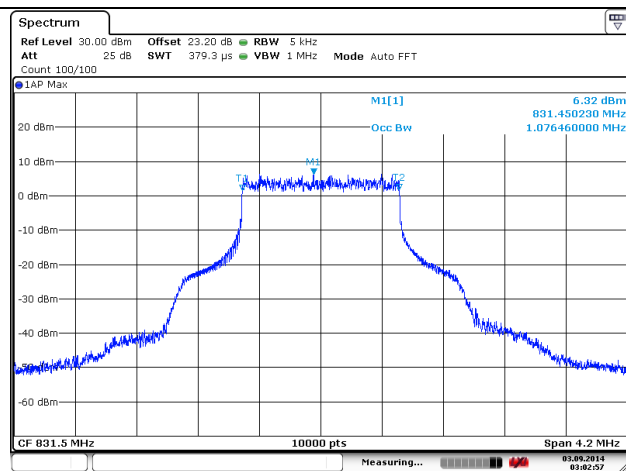
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM

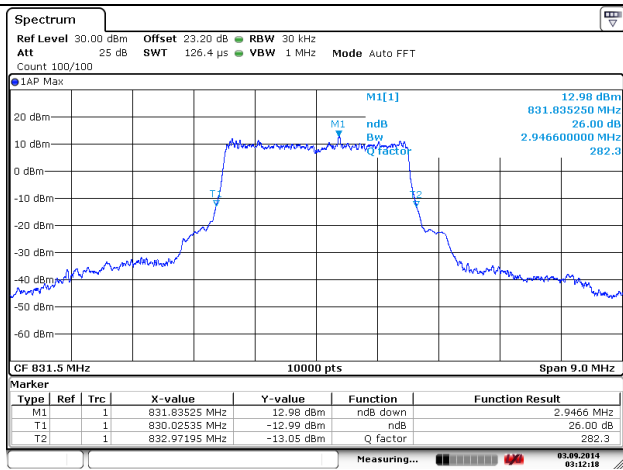


99% OBW Modulation = 16 QAM

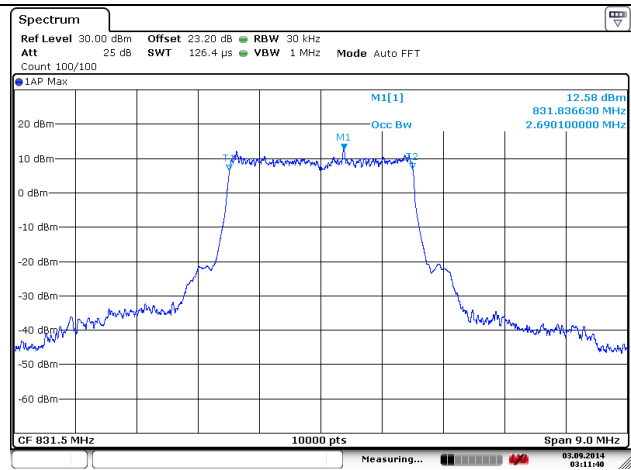


Channel 26865 (831.5 MHz) – RB Size = 15; RB Offset = 0; BW = 3.0 MHz

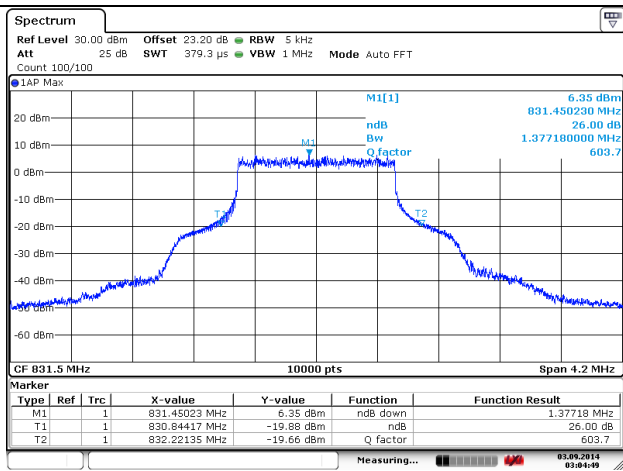
26 OBW Modulation = QPSK



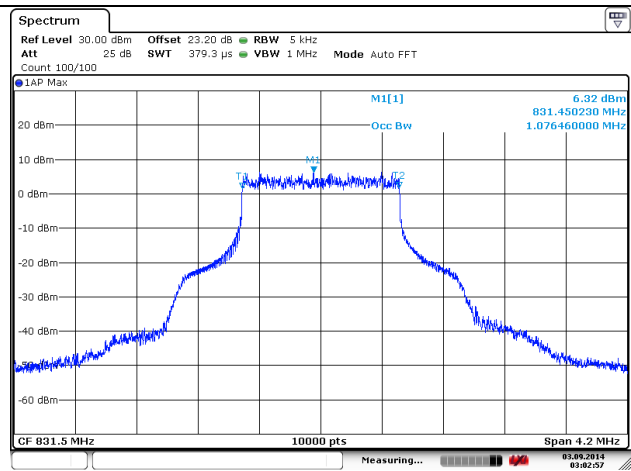
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM

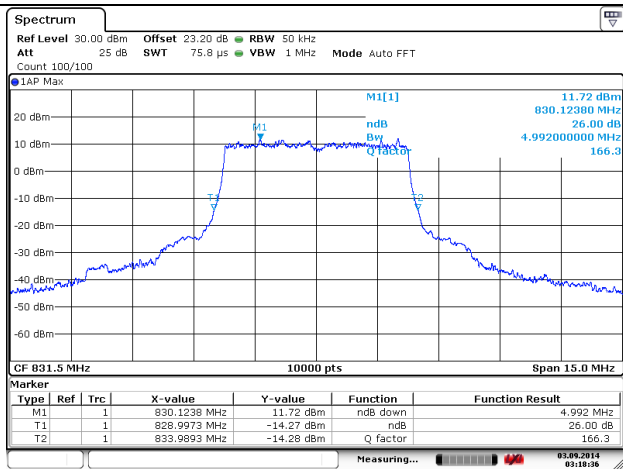


99% OBW Modulation = 16 QAM



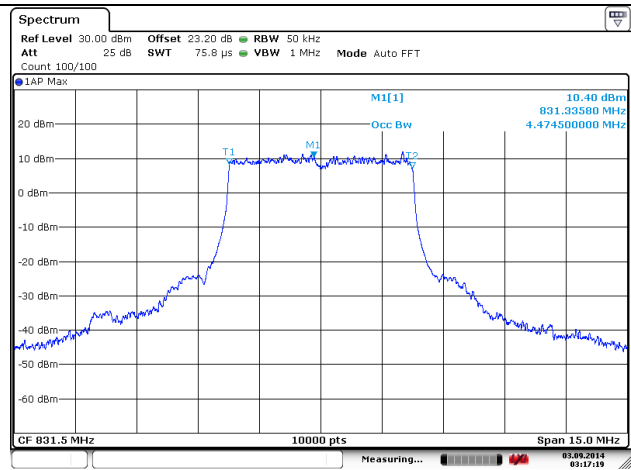
Channel 26865 (831.5 MHz) – RB Size = 25; RB Offset = 0; BW = 5 MHz

26 OBW Modulation = QPSK



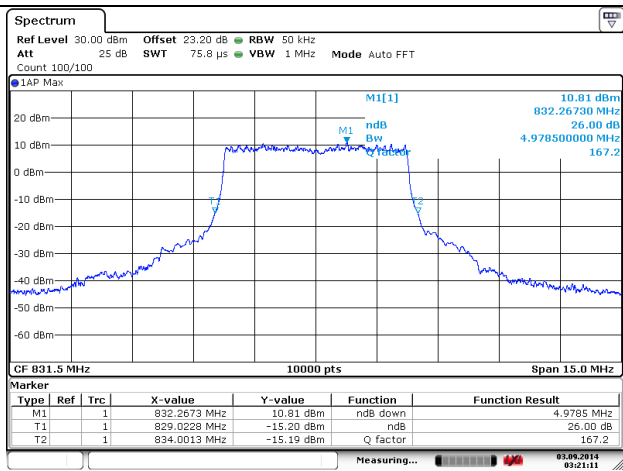
Date: 3 SEP 2014 03:18:26

99% OBW Modulation = QPSK



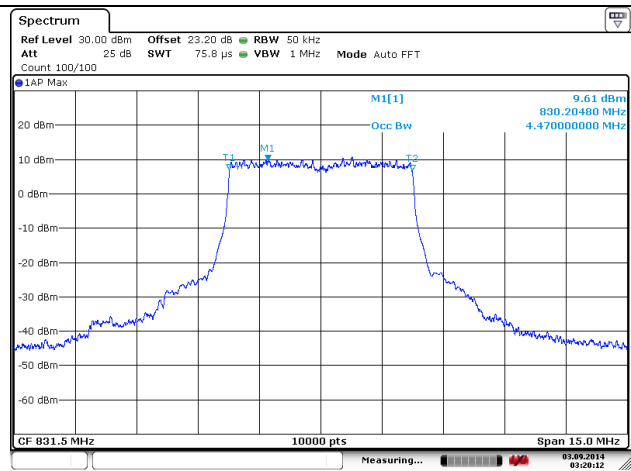
Date: 3 SEP 2014 03:27:19

26 OBW Modulation = 16 QAM



Date: 3 SEP 2014 03:21:11

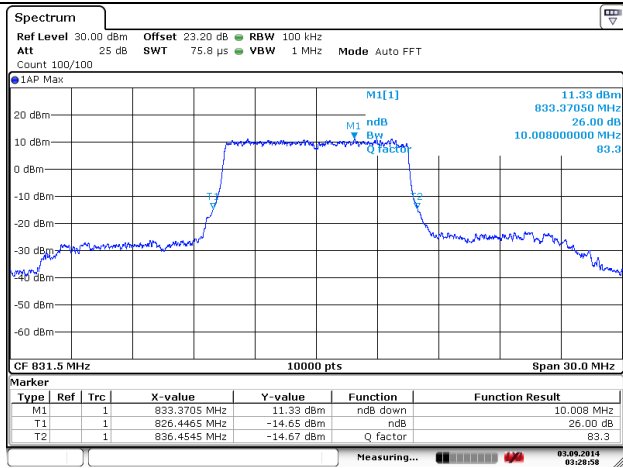
99% OBW Modulation = 16 QAM



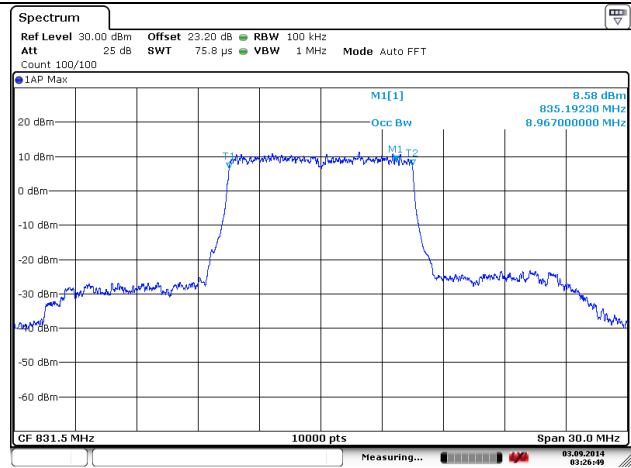
Date: 3 SEP 2014 03:20:13

Channel 26865 (831.5 MHz) – RB Size = 50; RB Offset = 0; BW = 10.0 MHz

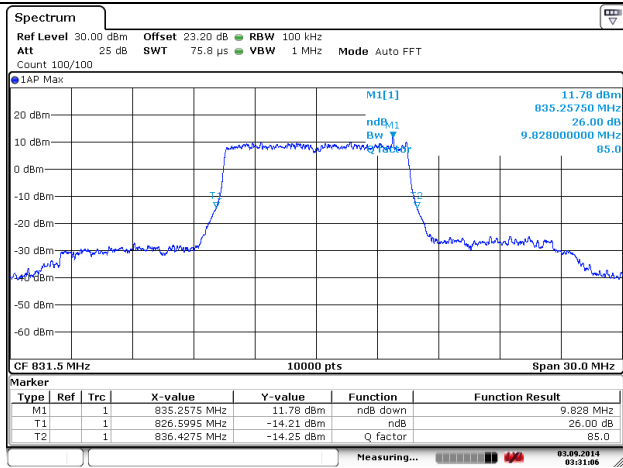
26 OBW Modulation = QPSK



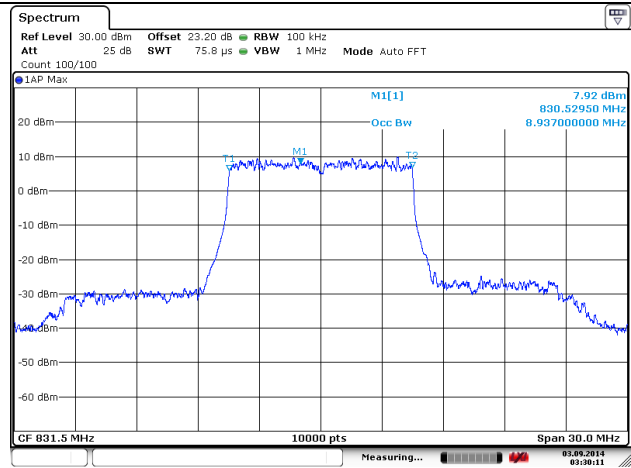
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM

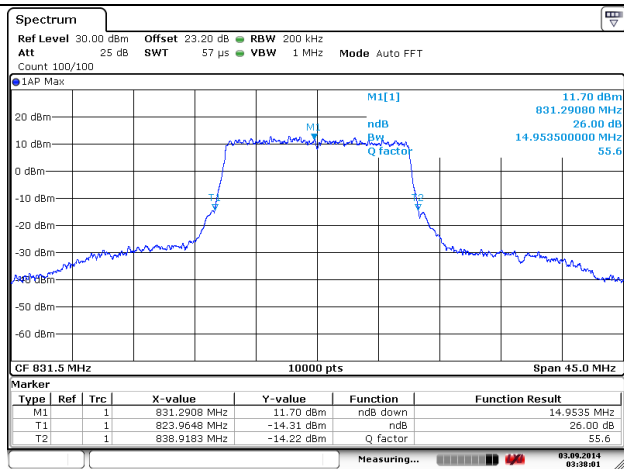


99% OBW Modulation = 16 QAM

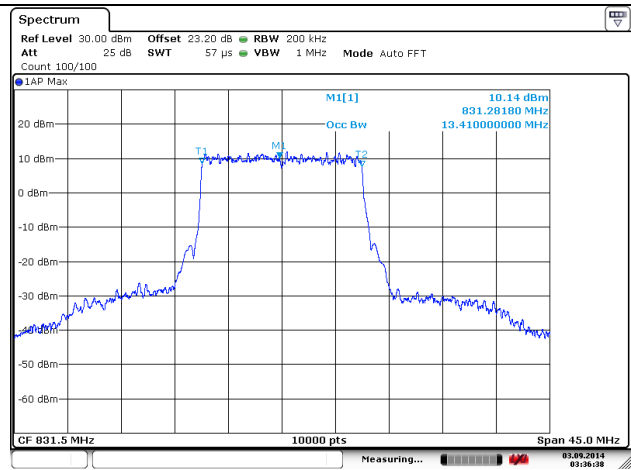


Channel 26865 (831.5 MHz) – RB Size = 75; RB Offset = 0; BW = 15.0 MHz

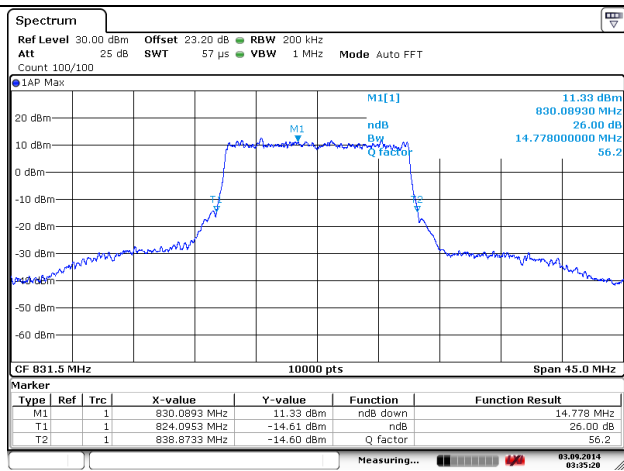
26 OBW Modulation = QPSK



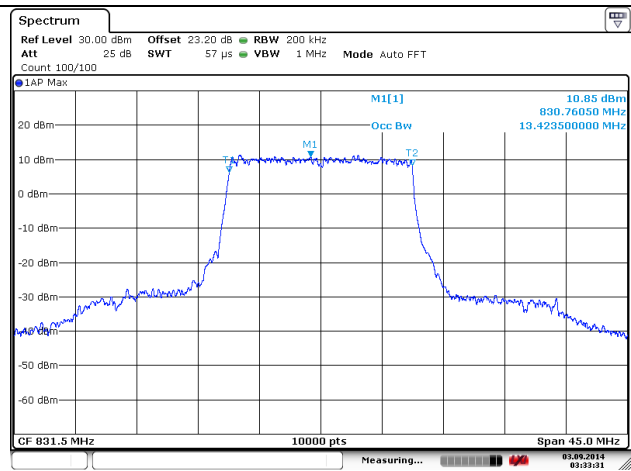
99% OBW Modulation = QPSK



26 OBW Modulation = 16 QAM



99% OBW Modulation = 16 QAM



6.5 Frequency Stability

6.5.1 References

FCC: CFR Part 2.1055, CFR Part 22.355, CFR Part 24.235, CFR Part 27.54

IC: RSS-Gen Section 6.11; RSS 132 Section 4.3; RSS 133 Section 6.3, RSS-139 Section 6.3, RSS-199 Section 4.3

6.5.2 Measurement requirements:

Frequency stability is a measure of frequency drift due to temperature and supply voltage variations with reference to the frequency measured at an appropriate reference temperature and the rated supply voltage. A hand-held device that is only capable of operating using internal batteries shall be tested using a new battery without any further requirement to vary the supply voltage. Alternatively, an external supply voltage can be used and set at the battery nominal voltage, and again at the battery operating end point voltage which shall be specified by the equipment manufacturer.

6.5.3 Limits

NOTE: Freq. Error (ppm) = Freq. Error (Hz) / Declared Freq (MHz)

Limit is +/- 1.5ppm for base stations

Limit is +/- 2.5ppm for mobile devices

For Hand carried battery powered equipment:

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235/22.355 Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of between 3.6VDC and 4.2VDC, with a nominal voltage of 3.8VDC. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress. These voltages represent a tolerance of – 5.0% and +10.5%. For the purposes of measuring frequency stability these voltage limits are to be used.



6.5.4 Test Data:

6.5.4.1 LTE FDD Band 17

Mode: LTE (Band 17), Mid Channel		
Modulation = QPSK		
BW = 10MHz		
Channel No. 23800	Frequency: 711 MHz	
	Freq. Error (Hz)	Freq. Error (ppm)
Min. voltage = 3.6 Vdc	7.14	0.010
Max. voltage = 4.2 Vdc	7.87	0.011
Battery End Point:	3.5 Vdc	

Channel No. 23800	Frequency: 711MHz	Nom Vol: 3.8V
Temperature (°C)	Freq. Error (Hz)	Freq. Error (ppm)
-10	7.08	0.010
0	7.2	0.010
+10	6.9	0.010
+20	7.67	0.011
+30	7.7	0.011
+40	7	0.010
+50	7.81	0.011

6.5.4.2 LTE FDD Band 2

Mode: LTE (Band 2), Mid Channel		
Modulation = QPSK		
BW=10MHz		
Channel No. 18900	Frequency: 1880 MHz	
	Freq. Error (Hz)	Freq. Error (ppm)
Min. voltage = 3.6 Vdc	13.8	0.007
Max. voltage = 4.2 Vdc	12.97	0.007
Battery End Point: = 3.4 Vdc		

Channel No. 18900	Frequency:1880 MHz	Nom Vol: 3.8V
Temperature (°C)	Freq. Error (Hz)	Freq. Error (ppm)
-10	13	0.007
0	12	0.006
+10	12.4	0.007
+20	12.8	0.007
+30	12.8	0.007
+40	11.3	0.006
+50	13.55	0.007

6.5.4.3 LTE FDD Band 4

Mode: LTE (Band 4), Mid Channel		
Modulation = QPSK		
BW=10MHz		
Channel No. 20175	1732.5 MHz	
	Freq. Error (Hz)	Freq. Error (ppm)
Min. voltage = 3.6 Vdc	-13.82	-0.007
Max. voltage = 4.2 Vdc	-13.05	-0.007
Battery End Point:	3.4 Vdc	

Channel No. 20175	1732.5 MHz	Nom Vol: 3.8V
Temperature (°C)	Freq. Error (Hz)	Freq. Error (ppm)
-10	-14.55	-0.008
0	-14.2	-0.008
+10	-13	-0.008
+20	-14.81	-0.009
+30	-15.5	-0.009
+40	-14.9	-0.009
+50	-15.85	-0.009

6.5.4.4 LTE FDD Band 5

Mode: LTE (Band 5), Mid Channel		
Modulation = QPSK		
BW=10MHz		
Channel No. 20450	Frequency: 829 MHz	
	Freq. Error (Hz)	Freq. Error (ppm)
Min. voltage = 3.6 Vdc	7.05	0.008
Max. voltage = 4.2 Vdc	7.71	0.009
Battery End Point: =	3.4 Vdc	

Channel No. 20450	Frequency: 829 MHz	Nom Vol: 3.8V
Temperature (°C)	Freq. Error (Hz)	Freq. Error (ppm)
-10	7.15	0.009
0	7.7	0.009
+10	7.3	0.009
+20	7.62	0.009
+30	7.87	0.009
+40	7.5	0.009
+50	8.04	0.010

6.5.4.5 LTE FDD Band 7

Mode: LTE (Band 7), Mid Channel		
Modulation = QPSK		
BW=10MHz		
Channel No. 21100	Frequency: 2535 MHz	
	Freq. Error (Hz)	Freq. Error (ppm)
Min. voltage = 3.6 Vdc	-22.7	-0.009
Max. voltage = 4.2 Vdc	-21.4	-0.008
Battery End Point: =	3.4 Vdc	

Channel No. 21100	Frequency: 2535 MHz	Nom Vol: 3.8V
Temperature (°C)	Freq. Error (Hz)	Freq. Error (ppm)
-10	-22.3	-0.009
0	-19.8	-0.008
+10	-17	-0.007
+20	18.5	0.007
+30	19.2	0.008
+40	-20	-0.008
+50	-21.5	-0.008



6.5.4.6 LTE FDD Band 13

Mode: LTE (Band 7), Mid Channel		
Modulation = QPSK		
BW=10MHz		
Channel No. 21100	Frequency: 2535 MHz	
	Freq. Error (Hz)	Freq. Error (ppm)
Min. voltage = 3.6 Vdc	7.7	0.010
Max. voltage = 4.2 Vdc	7.5	0.010
Battery End Point: =	3.4 Vdc	

Channel No. 21100	Frequency: 2535 MHz	Nom Vol: 3.8V
Temperature (°C)	Freq. Error (Hz)	Freq. Error (ppm)
-10	7.91	0.010
0	7.5	0.010
+10	7.6	0.010
+20	7.6	0.010
+30	7.7	0.010
+40	7.2	0.009
+50	7	0.009

6.5.4.7 LTE FDD Band 25

Mode: LTE (Band 7), Mid Channel		
Modulation = QPSK		
BW=10MHz		
Channel No. 21100	Frequency: 2535 MHz	
	Freq. Error (Hz)	Freq. Error (ppm)
Min. voltage = 3.6 Vdc	14.28	0.008
Max. voltage = 4.2 Vdc	12.96	0.007
Battery End Point: =	3.4 Vdc	

Channel No. 21100	Frequency: 2535 MHz	Nom Vol: 3.8V
Temperature (°C)	Freq. Error (Hz)	Freq. Error (ppm)
-10	13.76	0.007
0	13.2	0.007
+10	13.5	0.007
+20	13.03	0.007
+30	14.6	0.008
+40	14.3	0.008
+50	14.88	0.008

6.5.4.8 LTE FDD Band 26

Mode: LTE (Band 7), Mid Channel		
Modulation = QPSK		
BW=10MHz		
Channel No. 21100	Frequency: 2535 MHz	
	Freq. Error (Hz)	Freq. Error (ppm)
Min. voltage = 3.6 Vdc	6.74	0.008
Max. voltage = 4.2 Vdc	8.31	0.010
Battery End Point: =	3.4 Vdc	

Channel No. 21100	Frequency: 2535 MHz	Nom Vol: 3.8V
Temperature (°C)	Freq. Error (Hz)	Freq. Error (ppm)
-10	7.58	0.009
0	7.4	0.009
+10	8.77	0.011
+20	9.8	0.012
+30	7.9	0.010
+40	7.4	0.009
+50	7.07	0.009

6.5.5 Test Verdict:

Pass