

FCC RF Test Report

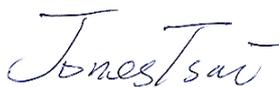
APPLICANT : ZTE CORPORATION
EQUIPMENT : 4G Wireless Router
BRAND NAME : ZTE
MODEL NAME : MF253
FCC ID : SRQMF253
STANDARD : 47 CFR Part 2, 27(L)
CLASSIFICATION : PCS Licensed Transmitter (PCB)

The product testing was completed on Feb. 12, 2014. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI / TIA / EIA-603-C-2004 and shown compliance with the applicable technical standards.

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



Reviewed by: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL (KUNSHAN) INC.
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.



TABLE OF CONTENTS

REVISION HISTORY..... 3

SUMMARY OF TEST RESULT 4

1 GENERAL DESCRIPTION 5

 1.1 Applicant..... 5

 1.2 Manufacturer..... 5

 1.3 Feature of Equipment Under Test 5

 1.4 Product Specification of Equipment Under Test..... 5

 1.5 Modification of EUT 6

 1.6 Maximum EIRP Power, Frequency Tolerance, and Emission Designator 6

 1.7 Testing Site..... 7

 1.8 Applied Standards 7

2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST 8

 2.1 Test Mode..... 8

 2.2 Connection Diagram of Test System..... 9

 2.3 Support Unit used in test configuration and system..... 9

 2.4 Measurement Results Explanation Example..... 10

3 TEST RESULT..... 11

 3.1 Conducted Output Power Measurement 11

 3.2 Peak-to-Average Ratio 15

 3.3 Equivalent Isotropic Radiated Power Measurement 23

 3.4 99% Occupied Bandwidth and 26dB Bandwidth Measurement..... 28

 3.5 Conducted Band Edge Measurement 42

 3.6 Conducted Spurious Emission Measurement 67

 3.7 Radiated Spurious Emission Measurement 105

 3.8 Frequency Stability Measurement..... 119

4 LIST OF MEASURING EQUIPMENT 125

5 UNCERTAINTY OF EVALUATION 127

APPENDIX A. SETUP PHOTOGRAPHS



SUMMARY OF TEST RESULT

| Report Section | FCC Rule | Description | Limit | Result | Remark |
|----------------|-------------------------|--|-------------------------------------|--------|--|
| 3.1 | §2.1046 | Conducted Output Power | Reporting Only | PASS | - |
| 3.2 | 27.53(d)(5) | Peak-to-Average Ratio | <13 dB | PASS | - |
| 3.3 | §27.50(d)(4) | Equivalent Isotropic Radiated Power | EIRP < 1Watt | PASS | - |
| 3.4 | §2.1049 §27.53(h)(3) | 99% Occupied Bandwidth and 26dB Bandwidth | Reporting Only | PASS | - |
| 3.5 | §2.1049 §27.53 (h) | Conducted Band Edge Measurement | < 43+10log ₁₀ (P[Watts]) | PASS | - |
| 3.6 | §2.1051 §27.53 (h) | Conducted Spurious Emission | < 43+10log ₁₀ (P[Watts]) | PASS | - |
| 3.7 | §2.1053 §27.53 (h) | Radiated Spurious Emission | < 43+10log ₁₀ (P[Watts]) | PASS | Under limit 17.95 dB at 8554.000 MHz |
| 3.8 | §2.1055 §27.54 | Frequency Stability Temperature & Voltage | < 2.5 ppm | PASS | |

1 General Description

1.1 Applicant

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

1.2 Manufacturer

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

1.3 Feature of Equipment Under Test

| Product Feature | |
|---------------------------------|--|
| Equipment | 4G Wireless Router |
| Brand Name | ZTE |
| Model Name | MF253 |
| FCC ID | SRQMF253 |
| EUT supports Radios application | GPRS/WCDMA/HSPA/HSPA+/DC-HSDPA/LTE WLAN2.4GHz 802.11bgn HT20/HT40 |
| HW Version | d68A |
| SW Version | EN_ZTE_MF253V1.0.0B05 |
| EUT Stage | Identical Prototype |

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

1.4 Product Specification of Equipment Under Test

| Product Specification subjective to this standard | |
|---|--|
| Tx Frequency | 1710.7MHz ~ 1754.3 MHz |
| Rx Frequency | 2110.7 MHz ~ 2154.3 MHz |
| Bandwidth | 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz |
| Maximum Output Power to Antenna | 21.51 dBm |
| Antenna Type | Monopole Antenna |
| Type of Modulation | QPSK / 16QAM |

1.5 Modification of EUT

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

1.6 Maximum EIRP Power, Frequency Tolerance, and Emission Designator

| FCC Rule | System | Type of Modulation | BW | Maximum EIRP (W) | Frequency Tolerance (% , Hz, ppm) | Emission Designator |
|----------|------------|--------------------|--------|------------------|-----------------------------------|---------------------|
| Part 27L | LTE Band 4 | QPSK | 1.4MHz | 0.5754 W | 0.006 ppm | 1M10G7D |
| Part 27L | LTE Band 4 | 16QAM | 1.4MHz | 0.4446 W | 0.006 ppm | 1M10D7W |
| Part 27L | LTE Band 4 | QPSK | 3MHz | 0.5610 W | 0.006 ppm | 2M74G7D |
| Part 27L | LTE Band 4 | 16QAM | 3MHz | 0.4227 W | 0.006 ppm | 2M74D7W |
| Part 27L | LTE Band 4 | QPSK | 5MHz | 0.5623 W | 0.005 ppm | 4M52G7D |
| Part 27L | LTE Band 4 | 16QAM | 5MHz | 0.4227 W | 0.006 ppm | 4M52D7W |
| Part 27L | LTE Band 4 | QPSK | 10MHz | 0.5508 W | 0.006 ppm | 9M08G7D |
| Part 27L | LTE Band 4 | 16QAM | 10MHz | 0.4285 W | 0.006 ppm | 9M16D7W |
| Part 27L | LTE Band 4 | QPSK | 15MHz | 0.5236 W | 0.007 ppm | 13M5G7D |
| Part 27L | LTE Band 4 | 16QAM | 15MHz | 0.4111 W | 0.006 ppm | 13M6D7W |
| Part 27L | LTE Band 4 | QPSK | 20MHz | 0.5188 W | 0.005 ppm | 18M6G7D |
| Part 27L | LTE Band 4 | 16QAM | 20MHz | 0.4102 W | 0.006 ppm | 18M6D7W |



1.7 Testing Site

| | | | | |
|---------------------------|--|-----------|----------|-----------------------------|
| Test Site | SPORTON INTERNATIONAL (KUNSHAN) INC. | | | |
| Test Site Location | No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958 | | | |
| Test Site No. | Sporton Site No. | | | FCC Registration No. |
| | TH01-KS | 03CH01-KS | OTA01-KS | 149928 |

1.8 Applied Standards

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

- ♦ 47 CFR Part 2, 27(L)
- ♦ ANSI / TIA / EIA-603-C-2004
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v02r01

Remark:

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

2 Test Configuration of Equipment Under Test

2.1 Test Mode

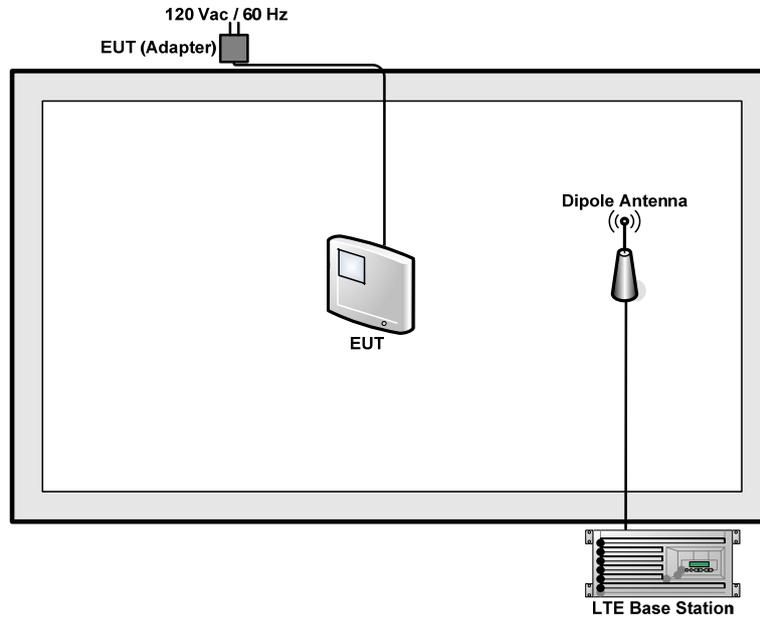
During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

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

| Test Modes | | |
|---------------|---|---|
| Band | Radiated TCs | Conducted TCs |
| LTE Band 4 | BW 1.4MHz ■ LTE (RB Size 1, RB Offset 0) QPSK Link | ■ LTE (RB Size 1) Link ■ LTE (RB Size 3) Link ■ LTE (RB Size 6) Link |
| | BW 3MHz ■ LTE (RB Size 1, RB Offset 0) QPSK Link | ■ LTE (RB Size 1) Link ■ LTE (RB Size 8) Link ■ LTE (RB Size 15) Link |
| | BW 5MHz ■ LTE (RB Size 1, RB Offset 0) QPSK Link | ■ LTE (RB Size 1) Link ■ LTE (RB Size 12) Link ■ LTE (RB Size 25) Link |
| | BW 10MHz ■ LTE (RB Size 1, RB Offset 0) QPSK Link | ■ LTE (RB Size 1) Link ■ LTE (RB Size 25) Link ■ LTE (RB Size 50) Link |
| | BW 15MHz ■ LTE (RB Size 1, RB Offset 0) QPSK Link | ■ LTE (RB Size 1) Link ■ LTE (RB Size 36) Link ■ LTE (RB Size 75) Link |
| | BW 20MHz ■ LTE (RB Size 1, RB Offset 0) QPSK Link | ■ LTE (RB Size 1) Link ■ LTE (RB Size 50) Link ■ LTE (RB Size 100) Link |

Note: The spurious emission was performed by conducted and radiated methods. From conducted spurious emission measurement (QPSK and 16QAM), the modulation related spurious emission out of the band was not identified and the radiated spurious emissions results on 16QAM were not worse than QSPK mode during exploratory test.

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

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



2.4 Measurement Results Explanation Example

For all conducted test items:

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

Example:

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

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 6 dB and 10dB attenuator.

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

3 Test Result

3.1 Conducted Output Power Measurement

3.1.1 Description of the Conducted Output Power Measurement

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

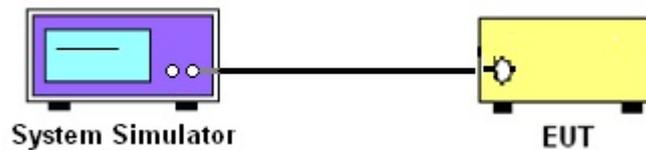
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

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

3.1.4 Test Setup





3.1.5 Test Result of Conducted Output Power

| BW [MHz] | Modulation | RB Size | RB Offset | Power (dBm) Low Ch. / Freq. | Power (dBm) Middle Ch. / Freq. | Power (dBm) High Ch. / Freq. |
|------------------------|------------|---------|-----------|-----------------------------|--------------------------------|------------------------------|
| Channel | | | | 20050 | 20175 | 20300 |
| Frequency (MHz) | | | | 1720 | 1732.5 | 1745 |
| 20 | QPSK | 1 | 0 | 21.47 | 21.19 | 21.13 |
| 20 | QPSK | 1 | 49 | 21.25 | 21.13 | 21.30 |
| 20 | QPSK | 1 | 99 | 20.86 | 21.18 | 21.04 |
| 20 | QPSK | 50 | 0 | 20.02 | 19.76 | 20.15 |
| 20 | QPSK | 50 | 24 | 19.90 | 19.76 | 20.17 |
| 20 | QPSK | 50 | 49 | 19.77 | 19.89 | 20.07 |
| 20 | QPSK | 100 | 0 | 19.93 | 19.84 | 20.14 |
| 20 | 16QAM | 1 | 0 | 20.54 | 20.37 | 20.05 |
| 20 | 16QAM | 1 | 49 | 20.33 | 20.06 | 20.64 |
| 20 | 16QAM | 1 | 99 | 20.14 | 20.17 | 20.00 |
| 20 | 16QAM | 50 | 0 | 18.99 | 18.72 | 19.10 |
| 20 | 16QAM | 50 | 24 | 18.83 | 18.77 | 19.10 |
| 20 | 16QAM | 50 | 49 | 18.92 | 18.96 | 19.03 |
| 20 | 16QAM | 100 | 0 | 18.92 | 18.94 | 19.05 |
| Channel | | | | 20025 | 20175 | 20325 |
| Frequency (MHz) | | | | 1717.5 | 1732.5 | 1747.5 |
| 15 | QPSK | 1 | 0 | 21.45 | 21.19 | 21.34 |
| 15 | QPSK | 1 | 37 | 21.22 | 21.12 | 21.29 |
| 15 | QPSK | 1 | 74 | 21.05 | 21.26 | 20.97 |
| 15 | QPSK | 36 | 0 | 20.17 | 19.89 | 20.28 |
| 15 | QPSK | 36 | 18 | 19.98 | 19.91 | 20.17 |
| 15 | QPSK | 36 | 37 | 19.94 | 19.99 | 19.99 |
| 15 | QPSK | 75 | 0 | 19.99 | 19.87 | 20.08 |
| 15 | 16QAM | 1 | 0 | 20.39 | 20.35 | 20.18 |
| 15 | 16QAM | 1 | 37 | 20.04 | 20.18 | 20.13 |
| 15 | 16QAM | 1 | 74 | 20.13 | 20.49 | 20.31 |
| 15 | 16QAM | 36 | 0 | 19.19 | 18.74 | 19.33 |
| 15 | 16QAM | 36 | 18 | 19.02 | 18.83 | 19.14 |
| 15 | 16QAM | 36 | 37 | 18.88 | 19.01 | 19.09 |
| 15 | 16QAM | 75 | 0 | 19.00 | 18.75 | 19.03 |



| BW [MHz] | Modulation | RB Size | RB Offset | Power (dBm) Low Ch. / Freq. | Power (dBm) Middle Ch. / Freq. | Power (dBm) High Ch. / Freq. |
|------------------------|------------|---------|-----------|-----------------------------|--------------------------------|------------------------------|
| Channel | | | | 20000 | 20175 | 20350 |
| Frequency (MHz) | | | | 1715 | 1732.5 | 1750 |
| 10 | QPSK | 1 | 0 | 21.45 | 21.00 | 21.24 |
| 10 | QPSK | 1 | 24 | 21.00 | 21.09 | 21.34 |
| 10 | QPSK | 1 | 49 | 21.05 | 21.14 | 20.74 |
| 10 | QPSK | 25 | 0 | 20.12 | 19.85 | 20.14 |
| 10 | QPSK | 25 | 12 | 20.05 | 19.94 | 20.17 |
| 10 | QPSK | 25 | 24 | 19.98 | 19.94 | 19.92 |
| 10 | QPSK | 50 | 0 | 19.94 | 19.82 | 19.89 |
| 10 | 16QAM | 1 | 0 | 20.67 | 20.19 | 20.27 |
| 10 | 16QAM | 1 | 24 | 20.09 | 20.31 | 20.08 |
| 10 | 16QAM | 1 | 49 | 20.00 | 20.34 | 19.80 |
| 10 | 16QAM | 25 | 0 | 19.12 | 18.82 | 19.07 |
| 10 | 16QAM | 25 | 12 | 18.95 | 18.82 | 19.11 |
| 10 | 16QAM | 25 | 24 | 18.99 | 18.99 | 18.83 |
| 10 | 16QAM | 50 | 0 | 18.98 | 18.90 | 18.99 |
| Channel | | | | 19975 | 20175 | 20375 |
| Frequency (MHz) | | | | 1712.5 | 1732.5 | 1752.5 |
| 5 | QPSK | 1 | 0 | 21.38 | 21.02 | 21.20 |
| 5 | QPSK | 1 | 12 | 21.21 | 20.91 | 20.97 |
| 5 | QPSK | 1 | 24 | 21.21 | 21.04 | 20.66 |
| 5 | QPSK | 12 | 0 | 20.38 | 20.02 | 20.18 |
| 5 | QPSK | 12 | 6 | 20.31 | 20.03 | 20.06 |
| 5 | QPSK | 12 | 11 | 20.26 | 19.96 | 19.91 |
| 5 | QPSK | 25 | 0 | 20.13 | 19.96 | 19.92 |
| 5 | 16QAM | 1 | 0 | 20.00 | 19.88 | 20.56 |
| 5 | 16QAM | 1 | 12 | 20.12 | 19.73 | 20.31 |
| 5 | 16QAM | 1 | 24 | 20.45 | 19.64 | 20.04 |
| 5 | 16QAM | 12 | 0 | 19.36 | 19.02 | 19.16 |
| 5 | 16QAM | 12 | 6 | 19.37 | 19.00 | 19.04 |
| 5 | 16QAM | 12 | 11 | 19.32 | 18.88 | 19.11 |
| 5 | 16QAM | 25 | 0 | 19.10 | 18.85 | 18.95 |



| BW [MHz] | Modulation | RB Size | RB Offset | Power (dBm) Low Ch. / Freq. | Power (dBm) Middle Ch. / Freq. | Power (dBm) High Ch. / Freq. |
|------------------------|------------|---------|-----------|-----------------------------|--------------------------------|------------------------------|
| Channel | | | | 19965 | 20175 | 20385 |
| Frequency (MHz) | | | | 1711.5 | 1732.5 | 1753.5 |
| 3 | QPSK | 1 | 0 | 21.51 | 20.99 | 20.79 |
| 3 | QPSK | 1 | 7 | 21.39 | 20.90 | 20.91 |
| 3 | QPSK | 1 | 14 | 21.36 | 21.01 | 20.54 |
| 3 | QPSK | 8 | 0 | 20.33 | 20.09 | 19.80 |
| 3 | QPSK | 8 | 4 | 20.34 | 20.10 | 19.96 |
| 3 | QPSK | 8 | 7 | 20.33 | 20.06 | 19.85 |
| 3 | QPSK | 15 | 0 | 20.23 | 20.12 | 19.78 |
| 3 | 16QAM | 1 | 0 | 20.48 | 20.01 | 20.07 |
| 3 | 16QAM | 1 | 7 | 20.57 | 19.93 | 19.67 |
| 3 | 16QAM | 1 | 14 | 20.20 | 19.67 | 19.77 |
| 3 | 16QAM | 8 | 0 | 19.27 | 18.95 | 18.93 |
| 3 | 16QAM | 8 | 4 | 19.38 | 18.99 | 18.99 |
| 3 | 16QAM | 8 | 7 | 19.40 | 18.91 | 18.87 |
| 3 | 16QAM | 15 | 0 | 19.42 | 19.04 | 18.88 |
| Channel | | | | 19957 | 20175 | 20393 |
| Frequency (MHz) | | | | 1710.7 | 1732.5 | 1754.3 |
| 1.4 | QPSK | 1 | 0 | 21.34 | 20.97 | 20.69 |
| 1.4 | QPSK | 1 | 2 | 21.23 | 21.06 | 20.70 |
| 1.4 | QPSK | 1 | 5 | 21.26 | 21.01 | 20.59 |
| 1.4 | QPSK | 3 | 0 | 21.25 | 21.04 | 20.58 |
| 1.4 | QPSK | 3 | 1 | 21.25 | 21.03 | 20.63 |
| 1.4 | QPSK | 3 | 2 | 21.22 | 21.05 | 20.52 |
| 1.4 | QPSK | 6 | 0 | 20.35 | 20.09 | 19.64 |
| 1.4 | 16QAM | 1 | 0 | 20.08 | 20.17 | 19.71 |
| 1.4 | 16QAM | 1 | 2 | 20.36 | 20.07 | 20.12 |
| 1.4 | 16QAM | 1 | 5 | 20.45 | 19.80 | 19.97 |
| 1.4 | 16QAM | 3 | 0 | 20.07 | 20.07 | 19.83 |
| 1.4 | 16QAM | 3 | 1 | 20.40 | 20.04 | 19.51 |
| 1.4 | 16QAM | 3 | 2 | 20.25 | 20.05 | 19.89 |
| 1.4 | 16QAM | 6 | 0 | 19.40 | 19.09 | 18.79 |

Note: Maximum average power for LTE.

3.2 Peak-to-Average Ratio

3.2.1 Description of the PAR Measurement

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

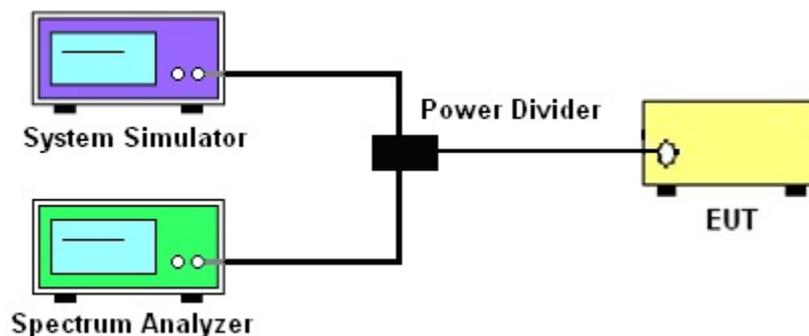
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

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

3.2.4 Test Setup



3.2.5 Test Result of Peak-to-Average Ratio

| Modes | LTE Band 4 | | | |
|----------------------------|---------------|----------------|--------------|---------------|
| BW / Mod. | 1.4MHz / QPSK | 1.4MHz / 16QAM | 3MHz / QPSK | 3MHz / 16QAM |
| Peak-to-Average Ratio (dB) | 4.96 | 5.96 | 4.80 | 6.16 |
| BW / Mod. | 5MHz / QPSK | 5MHz / 16QAM | 10MHz / QPSK | 10MHz / 16QAM |
| Peak-to-Average Ratio (dB) | 5.00 | 6.00 | 5.20 | 6.08 |
| BW / Mod. | 15MHz / QPSK | 15MHz / 16QAM | 20MHz / QPSK | 20MHz / 16QAM |
| Peak-to-Average Ratio (dB) | 5.04 | 5.32 | 4.80 | 4.88 |

Note:

The maximum RB configurations of the PAPR summary as below:

BW1.4MHz RB setting : RB Size 6, RB offset 0

BW3.0MHz RB setting : RB Size 15, RB offset 0

BW5.0MHz RB setting : RB Size 25, RB offset 0

BW10MHz RB setting : RB Size 50, RB offset 0

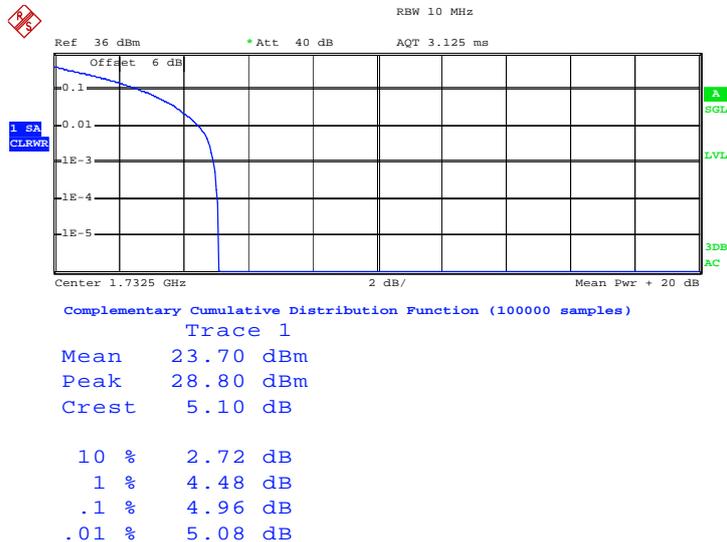
BW15MHz RB setting : RB Size 75, RB offset 0

BW20MHz RB setting : RB Size 100, RB offset 0



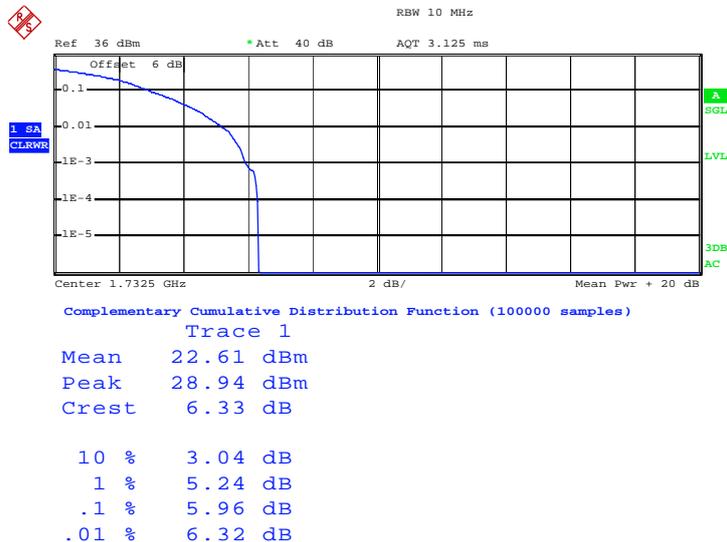
3.2.6 Peak to Average Power Ratio

Peak-to-Average Ratio on LTE Band 4 1.4MHz / QPSK



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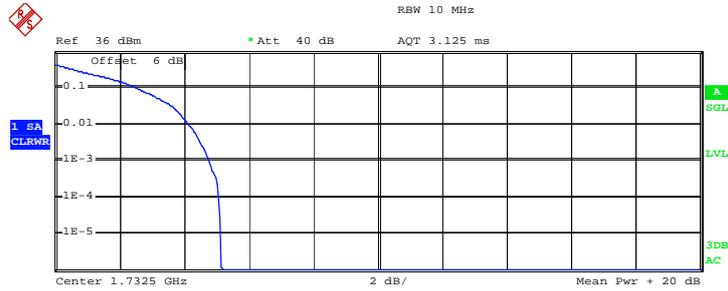
Peak-to-Average Ratio on LTE Band 4 1.4MHz / 16QAM



Date: 7.FEB.2014 10:54:23



Peak-to-Average Ratio on LTE Band 4 3MHz / QPSK



Complementary Cumulative Distribution Function (100000 samples)

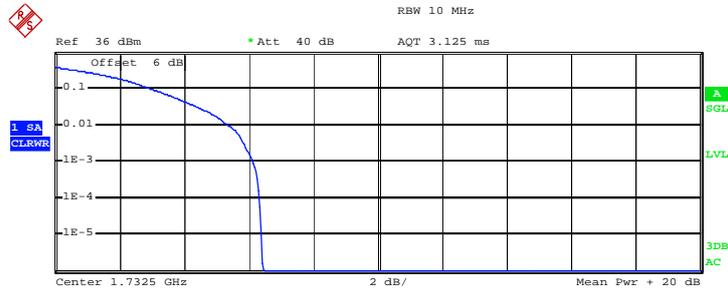
Trace 1

Mean 23.58 dBm
 Peak 28.73 dBm
 Crest 5.15 dB

10 % 2.60 dB
 1 % 4.16 dB
 .1 % 4.80 dB
 .01 % 5.08 dB

Date: 7.FEB.2014 10:56:10

Peak-to-Average Ratio on LTE Band 4 3MHz / 16QAM



Complementary Cumulative Distribution Function (100000 samples)

Trace 1

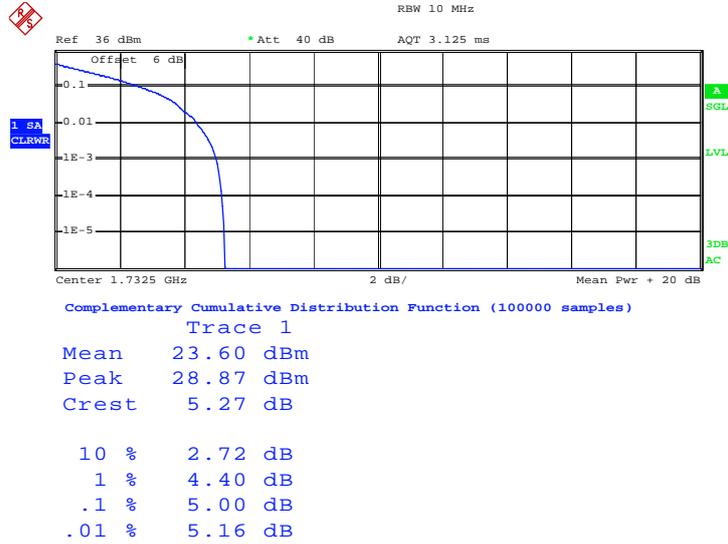
Mean 22.58 dBm
 Peak 29.01 dBm
 Crest 6.43 dB

10 % 3.08 dB
 1 % 5.40 dB
 .1 % 6.16 dB
 .01 % 6.36 dB

Date: 7.FEB.2014 10:55:52

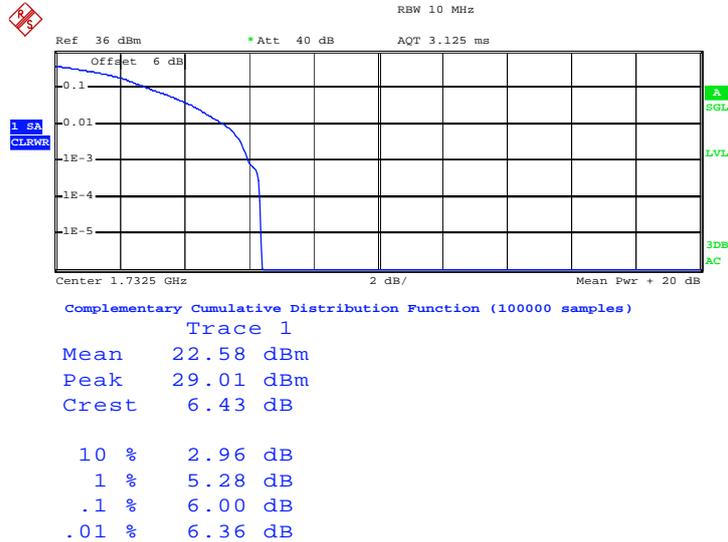


Peak-to-Average Ratio on LTE Band 4 5MHz / QPSK



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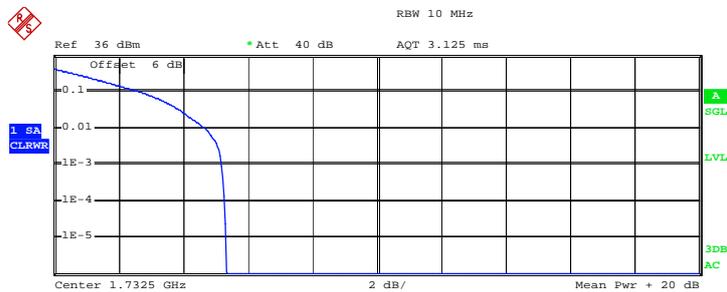
Peak-to-Average Ratio on LTE Band 4 5MHz / 16QAM



Date: 7.FEB.2014 10:57:00



Peak-to-Average Ratio on LTE Band 4 10MHz / QPSK



Complementary Cumulative Distribution Function (100000 samples)

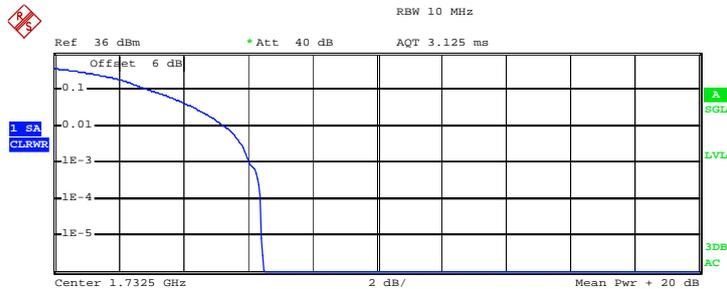
Trace 1

Mean 21.15 dBm
 Peak 26.47 dBm
 Crest 5.32 dB

10 % 2.76 dB
 1 % 4.68 dB
 .1 % 5.20 dB
 .01 % 5.28 dB

Date: 7.FEB.2014 10:57:54

Peak-to-Average Ratio on LTE Band 4 10MHz / 16QAM



Complementary Cumulative Distribution Function (100000 samples)

Trace 1

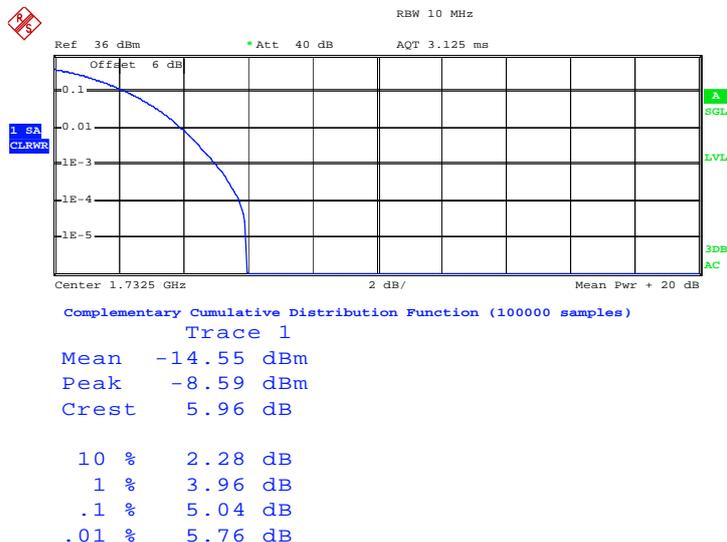
Mean 20.19 dBm
 Peak 26.68 dBm
 Crest 6.49 dB

10 % 3.04 dB
 1 % 5.28 dB
 .1 % 6.08 dB
 .01 % 6.40 dB

Date: 7.FEB.2014 10:57:36

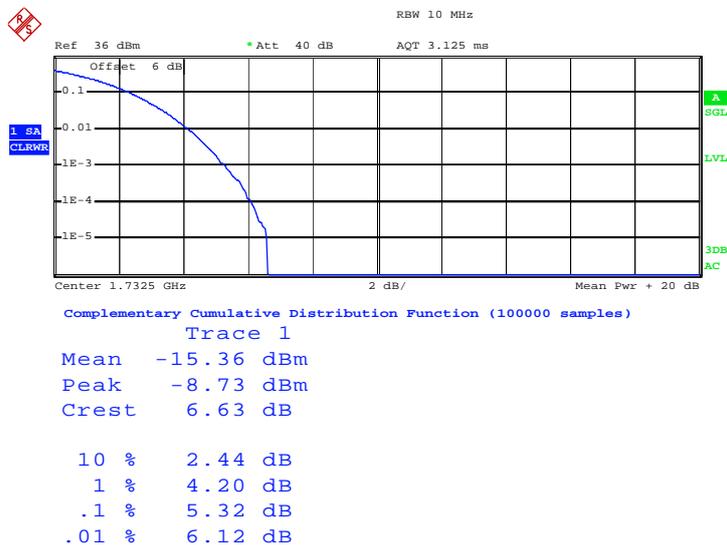


Peak-to-Average Ratio on LTE Band 4 15MHz / QPSK



Date: 7.FEB.2014 11:04:11

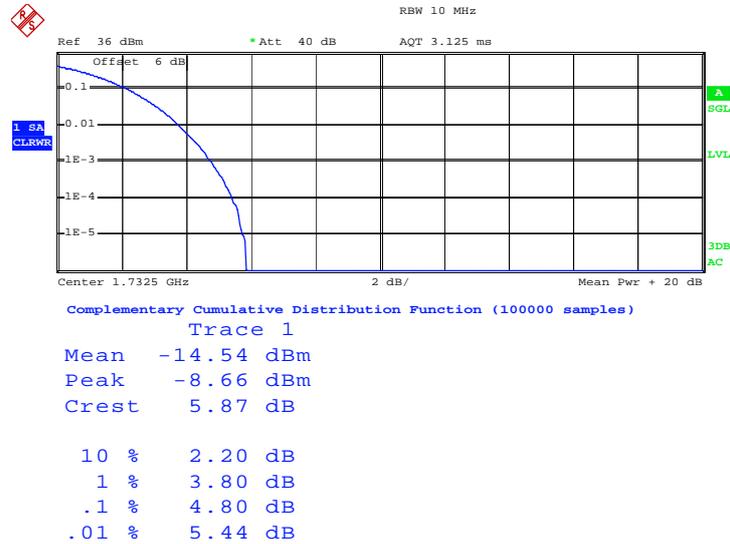
Peak-to-Average Ratio on LTE Band 4 15MHz / 16QAM



Date: 7.FEB.2014 11:04:29

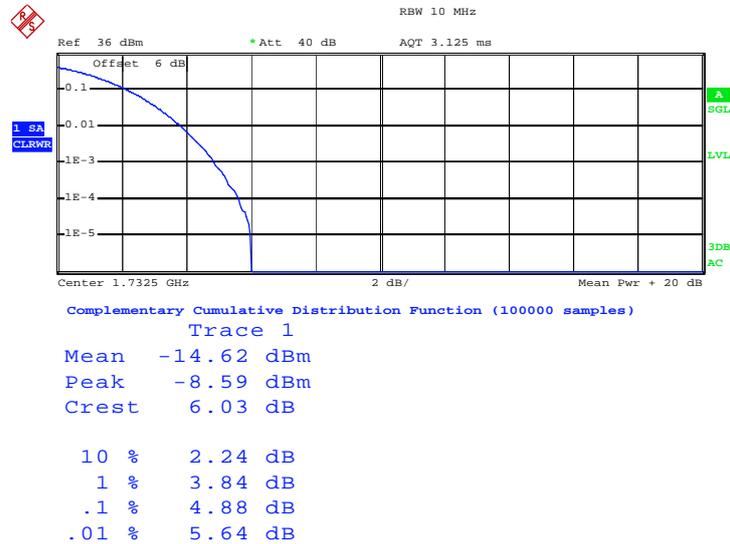


Peak-to-Average Ratio on LTE Band 4 20MHz / QPSK



Date: 7.FEB.2014 11:04:57

Peak-to-Average Ratio on LTE Band 4 20MHz / 16QAM



Date: 7.FEB.2014 11:05:14

3.3 Equivalent Isotropic Radiated Power Measurement

3.3.1 Description of the EIRP Measurement

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

3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

1. The EUT was placed on a turntable with 1.5 meter height in a fully anechoic chamber.
2. The EUT was set at 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer which used a channel power option across EUT's signal bandwidth per section 4.0 of KDB 971168 D01.
4. The table was rotated 360 degrees to determine the position of the highest radiated power.
5. The height of the receiving antenna is adjusted to look for the maximum EIRP.
6. Taking the record of maximum EIRP.
7. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
8. The conducted power at the terminal of the dipole antenna is measured.
9. Repeat step 3 to step 5 to get the maximum EIRP of the substitution antenna.
10. $EIRP = P_s + E_t - E_s + G_s = P_s + R_t - R_s + G_s$

P_s (dBm) : Input power to substitution antenna.

G_s (dBi or dBd) : Substitution antenna Gain.

$E_t = R_t + AF$

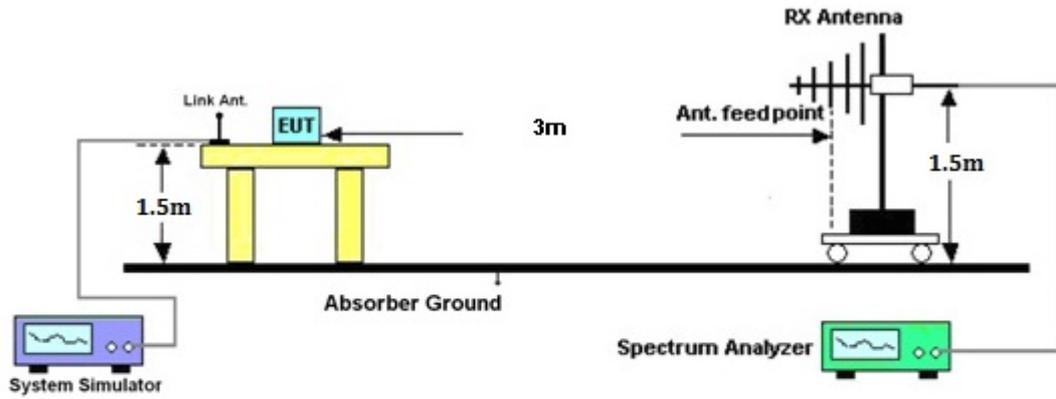
$E_s = R_s + AF$

AF (dB/m) : Receive antenna factor

R_t : The highest received signal in spectrum analyzer for EUT.

R_s : The highest received signal in spectrum analyzer for substitution antenna.

3.3.4 Test Setup





3.3.5 Test Result of EIRP

| LTE Band 4 Radiated Power EIRP | | | | | | | | |
|--------------------------------|------------------|------------|------------------|-----------|-------------|------------|----------|-----|
| LTE Band | Channel BW (MHz) | Modulation | RB Configuration | | Freq. (MHz) | EIRP (dBm) | EIRP (W) | H/V |
| | | | RB Size | RB Offset | | | | |
| 4 | 1.4 | QPSK | 1 | 0 | 1710.7 | 27.46 | 0.5572 | H |
| 4 | 1.4 | QPSK | 1 | 2 | 1732.5 | 27.60 | 0.5754 | H |
| 4 | 1.4 | QPSK | 1 | 2 | 1754.3 | 25.16 | 0.3281 | H |
| 4 | 1.4 | QPSK | 1 | 0 | 1710.7 | 26.59 | 0.4560 | V |
| 4 | 1.4 | QPSK | 1 | 2 | 1732.5 | 26.95 | 0.4955 | V |
| 4 | 1.4 | QPSK | 1 | 2 | 1754.3 | 25.13 | 0.3258 | V |
| 4 | 1.4 | 16QAM | 1 | 5 | 1710.7 | 26.10 | 0.4074 | H |
| 4 | 1.4 | 16QAM | 1 | 0 | 1732.5 | 26.48 | 0.4446 | H |
| 4 | 1.4 | 16QAM | 1 | 2 | 1754.3 | 24.27 | 0.2673 | H |
| 4 | 1.4 | 16QAM | 1 | 5 | 1710.7 | 25.24 | 0.3342 | V |
| 4 | 1.4 | 16QAM | 1 | 0 | 1732.5 | 25.84 | 0.3837 | V |
| 4 | 1.4 | 16QAM | 1 | 2 | 1754.3 | 24.19 | 0.2624 | V |
| 4 | 3 | QPSK | 1 | 0 | 1711.5 | 27.30 | 0.5370 | H |
| 4 | 3 | QPSK | 1 | 14 | 1732.5 | 27.49 | 0.5610 | H |
| 4 | 3 | QPSK | 1 | 7 | 1753.5 | 25.14 | 0.3266 | H |
| 4 | 3 | QPSK | 1 | 0 | 1711.5 | 26.45 | 0.4416 | V |
| 4 | 3 | QPSK | 1 | 14 | 1732.5 | 27.04 | 0.5058 | V |
| 4 | 3 | QPSK | 1 | 7 | 1753.5 | 25.02 | 0.3177 | V |
| 4 | 3 | 16QAM | 1 | 7 | 1711.5 | 26.12 | 0.4093 | H |
| 4 | 3 | 16QAM | 1 | 0 | 1732.5 | 26.26 | 0.4227 | H |
| 4 | 3 | 16QAM | 1 | 0 | 1753.5 | 24.31 | 0.2698 | H |
| 4 | 3 | 16QAM | 1 | 7 | 1711.5 | 25.29 | 0.3381 | V |
| 4 | 3 | 16QAM | 1 | 0 | 1732.5 | 25.84 | 0.3837 | V |
| 4 | 3 | 16QAM | 1 | 0 | 1753.5 | 24.11 | 0.2576 | V |



| LTE Band 4 Radiated Power EIRP | | | | | | | | |
|--------------------------------|------------------|------------|------------------|-----------|-------------|------------|----------|-----|
| LTE Band | Channel BW (MHz) | Modulation | RB Configuration | | Freq. (MHz) | EIRP (dBm) | EIRP (W) | H/V |
| | | | RB Size | RB Offset | | | | |
| 4 | 5 | QPSK | 1 | 0 | 1712.5 | 27.30 | 0.5370 | H |
| 4 | 5 | QPSK | 1 | 24 | 1732.5 | 27.50 | 0.5623 | H |
| 4 | 5 | QPSK | 1 | 0 | 1752.5 | 25.51 | 0.3556 | H |
| 4 | 5 | QPSK | 1 | 0 | 1712.5 | 26.43 | 0.4395 | V |
| 4 | 5 | QPSK | 1 | 24 | 1732.5 | 27.12 | 0.5152 | V |
| 4 | 5 | QPSK | 1 | 0 | 1752.5 | 25.29 | 0.3381 | V |
| 4 | 5 | 16QAM | 1 | 24 | 1712.5 | 25.77 | 0.3776 | H |
| 4 | 5 | 16QAM | 1 | 0 | 1732.5 | 26.26 | 0.4227 | H |
| 4 | 5 | 16QAM | 1 | 0 | 1752.5 | 24.56 | 0.2858 | H |
| 4 | 5 | 16QAM | 1 | 24 | 1712.5 | 24.86 | 0.3062 | V |
| 4 | 5 | 16QAM | 1 | 0 | 1732.5 | 25.75 | 0.3758 | V |
| 4 | 5 | 16QAM | 1 | 0 | 1752.5 | 24.40 | 0.2754 | V |
| 4 | 10 | QPSK | 1 | 0 | 1715 | 27.23 | 0.5284 | H |
| 4 | 10 | QPSK | 1 | 49 | 1732.5 | 27.41 | 0.5508 | H |
| 4 | 10 | QPSK | 1 | 24 | 1750 | 25.62 | 0.3648 | H |
| 4 | 10 | QPSK | 1 | 0 | 1715 | 26.35 | 0.4315 | V |
| 4 | 10 | QPSK | 1 | 49 | 1732.5 | 27.23 | 0.5284 | V |
| 4 | 10 | QPSK | 1 | 24 | 1750 | 25.45 | 0.3508 | V |
| 4 | 10 | 16QAM | 1 | 0 | 1715 | 26.22 | 0.4188 | H |
| 4 | 10 | 16QAM | 1 | 49 | 1732.5 | 26.32 | 0.4285 | H |
| 4 | 10 | 16QAM | 1 | 0 | 1750 | 24.70 | 0.2951 | H |
| 4 | 10 | 16QAM | 1 | 0 | 1715 | 25.33 | 0.3412 | V |
| 4 | 10 | 16QAM | 1 | 49 | 1732.5 | 26.25 | 0.4217 | V |
| 4 | 10 | 16QAM | 1 | 0 | 1750 | 25.05 | 0.3199 | V |



| LTE Band 4 Radiated Power EIRP | | | | | | | | |
|--------------------------------|------------------|------------|------------------|-----------|-------------|------------|----------|-----|
| LTE Band | Channel BW (MHz) | Modulation | RB Configuration | | Freq. (MHz) | EIRP (dBm) | EIRP (W) | H/V |
| | | | RB Size | RB Offset | | | | |
| 4 | 15 | QPSK | 1 | 0 | 1717.5 | 27.19 | 0.5236 | H |
| 4 | 15 | QPSK | 1 | 74 | 1732.5 | 27.04 | 0.5058 | H |
| 4 | 15 | QPSK | 1 | 0 | 1747.5 | 26.71 | 0.4688 | H |
| 4 | 15 | QPSK | 1 | 0 | 1717.5 | 26.31 | 0.4276 | V |
| 4 | 15 | QPSK | 1 | 74 | 1732.5 | 26.95 | 0.4955 | V |
| 4 | 15 | QPSK | 1 | 0 | 1747.5 | 26.76 | 0.4742 | V |
| 4 | 15 | 16QAM | 1 | 0 | 1717.5 | 26.14 | 0.4111 | H |
| 4 | 15 | 16QAM | 1 | 74 | 1732.5 | 26.14 | 0.4111 | H |
| 4 | 15 | 16QAM | 1 | 74 | 1747.5 | 25.09 | 0.3228 | H |
| 4 | 15 | 16QAM | 1 | 0 | 1717.5 | 25.26 | 0.3357 | V |
| 4 | 15 | 16QAM | 1 | 74 | 1732.5 | 25.91 | 0.3899 | V |
| 4 | 15 | 16QAM | 1 | 74 | 1747.5 | 24.83 | 0.3041 | V |
| 4 | 20 | QPSK | 1 | 0 | 1720 | 27.15 | 0.5188 | H |
| 4 | 20 | QPSK | 1 | 0 | 1732.5 | 26.80 | 0.4786 | H |
| 4 | 20 | QPSK | 1 | 49 | 1745 | 26.05 | 0.4027 | H |
| 4 | 20 | QPSK | 1 | 0 | 1720 | 26.22 | 0.4188 | V |
| 4 | 20 | QPSK | 1 | 0 | 1732.5 | 26.11 | 0.4083 | V |
| 4 | 20 | QPSK | 1 | 49 | 1745 | 26.06 | 0.4036 | V |
| 4 | 20 | 16QAM | 1 | 0 | 1720 | 26.13 | 0.4102 | H |
| 4 | 20 | 16QAM | 1 | 0 | 1732.5 | 25.69 | 0.3707 | H |
| 4 | 20 | 16QAM | 1 | 49 | 1745 | 25.11 | 0.3243 | H |
| 4 | 20 | 16QAM | 1 | 0 | 1720 | 25.21 | 0.3319 | V |
| 4 | 20 | 16QAM | 1 | 0 | 1732.5 | 25.05 | 0.3199 | V |
| 4 | 20 | 16QAM | 1 | 49 | 1745 | 25.26 | 0.3357 | V |

3.4 99% Occupied Bandwidth and 26dB Bandwidth Measurement

3.4.1 Description of 99% Occupied Bandwidth and 26dB Bandwidth Measurement

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

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

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

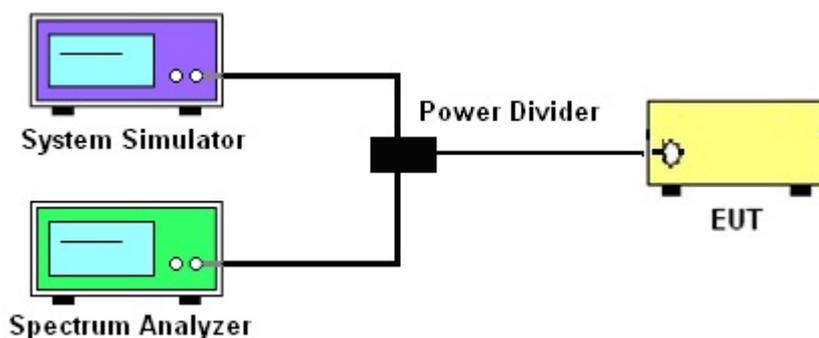
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

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

3.4.4 Test Setup



3.4.5 Test Result of 99% Occupied Bandwidth and 26dB Bandwidth

| Modes | LTE Band 4 | | | |
|---------------|---------------|----------------|--------------|---------------|
| BW / Mod. | 1.4MHz / QPSK | 1.4MHz / 16QAM | 3MHz / QPSK | 3MHz / 16QAM |
| 99% OBW (MHz) | 1.0976 | 1.1032 | 2.7360 | 2.7360 |
| 26dB BW (MHz) | 1.3048 | 1.3048 | 3.0720 | 3.0840 |
| BW / Mod. | 5MHz / QPSK | 5MHz / 16QAM | 10MHz / QPSK | 10MHz / 16QAM |
| 99% OBW (MHz) | 4.5200 | 4.5200 | 9.0800 | 9.1600 |
| 26dB BW (MHz) | 4.9800 | 5.0400 | 10.0800 | 10.0400 |
| BW / Mod. | 15MHz / QPSK | 15MHz / 16QAM | 20MHz / QPSK | 20MHz / 16QAM |
| 99% OBW (MHz) | 13.5000 | 13.5600 | 18.6400 | 18.6400 |
| 26dB BW (MHz) | 14.6400 | 14.7600 | 21.1200 | 21.3600 |

Note:

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

BW1.4MHz RB setting : RB Size 6, RB offset 0

BW3.0MHz RB setting : RB Size 15, RB offset 0

BW5.0MHz RB setting : RB Size 25, RB offset 0

BW10MHz RB setting : RB Size 50, RB offset 0

BW15MHz RB setting : RB Size 75, RB offset 0

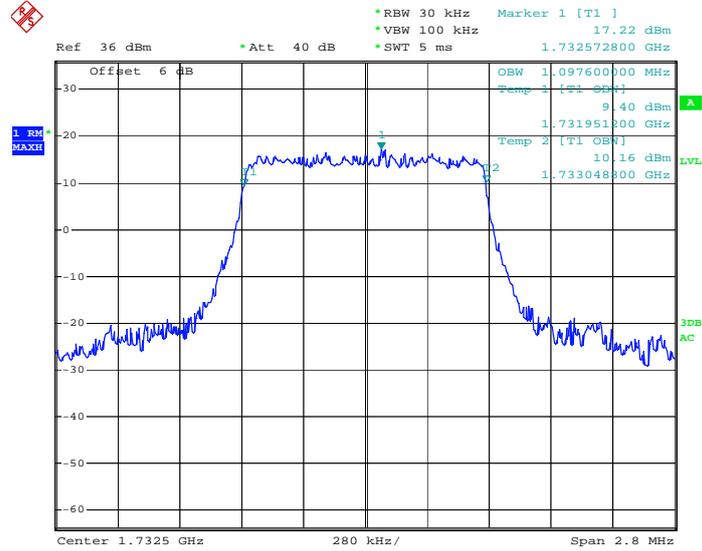
BW20MHz RB setting : RB Size 100, RB offset 0



3.4.6 Test Plots of 99% Occupied Bandwidth and 26dB Bandwidth

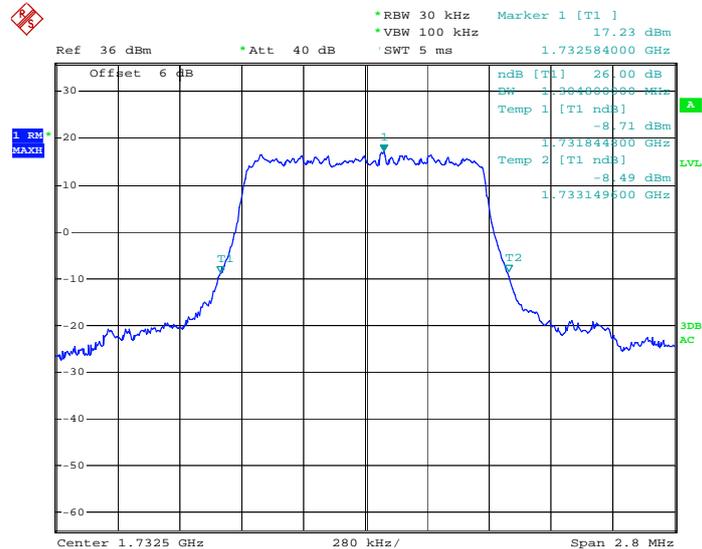
| | | | |
|--------|------------|-------------|---------------|
| Band : | LTE Band 4 | BW / Mod. : | 1.4MHz / QPSK |
|--------|------------|-------------|---------------|

99% Occupied Bandwidth Plot on Channel 20175



Date: 7.FEB.2014 09:39:03

26dB Bandwidth Plot on Channel 20175

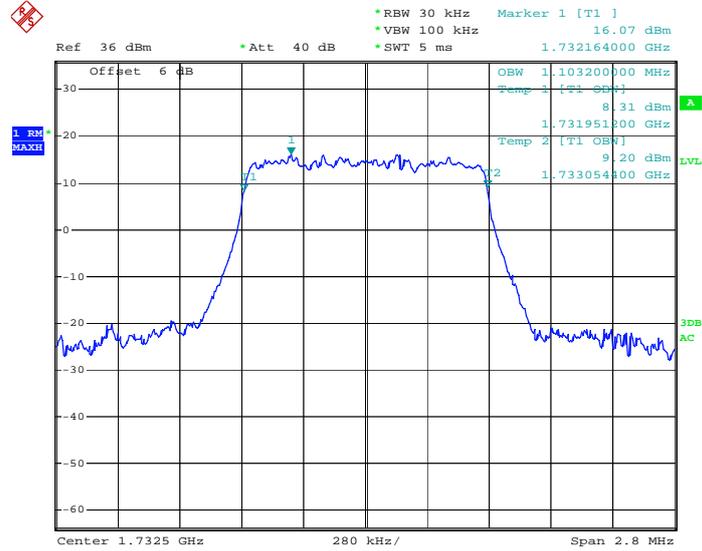


Date: 7.FEB.2014 09:21:57



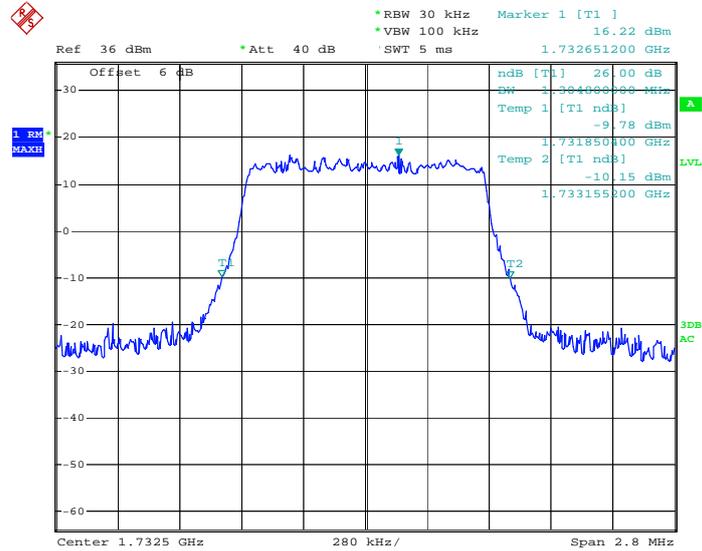
| | | | |
|---------------|------------|--------------------|----------------|
| Band : | LTE Band 4 | BW / Mod. : | 1.4MHz / 16QAM |
|---------------|------------|--------------------|----------------|

99% Occupied Bandwidth Plot on Channel 20175



Date: 7.FEB.2014 09:40:09

26dB Bandwidth Plot on Channel 20175

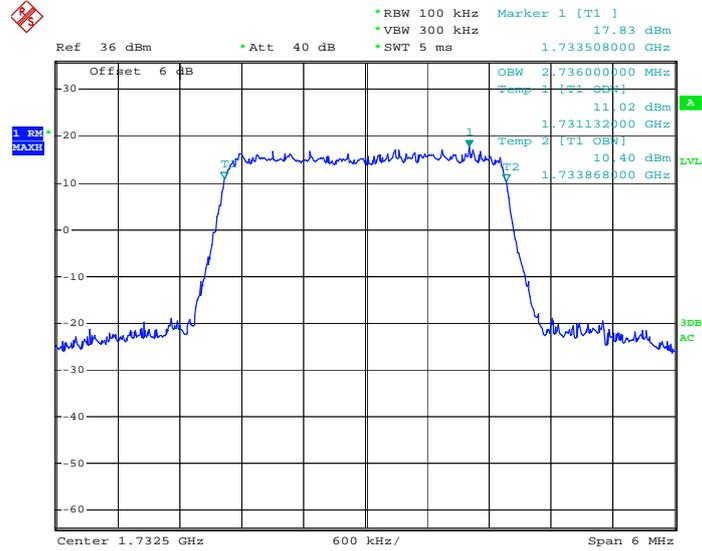


Date: 7.FEB.2014 09:22:20



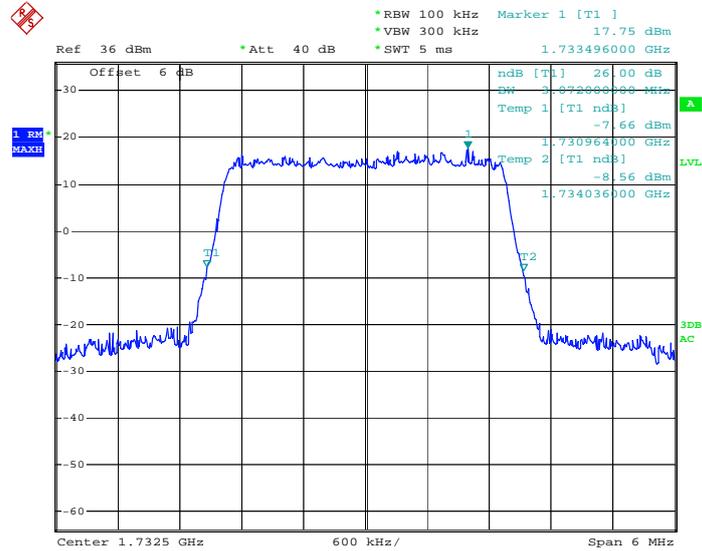
| | | | |
|---------------|------------|--------------------|-------------|
| Band : | LTE Band 4 | BW / Mod. : | 3MHz / QPSK |
|---------------|------------|--------------------|-------------|

99% Occupied Bandwidth Plot on Channel 20175



Date: 7.FEB.2014 09:45:34

26dB Bandwidth Plot on Channel 20175

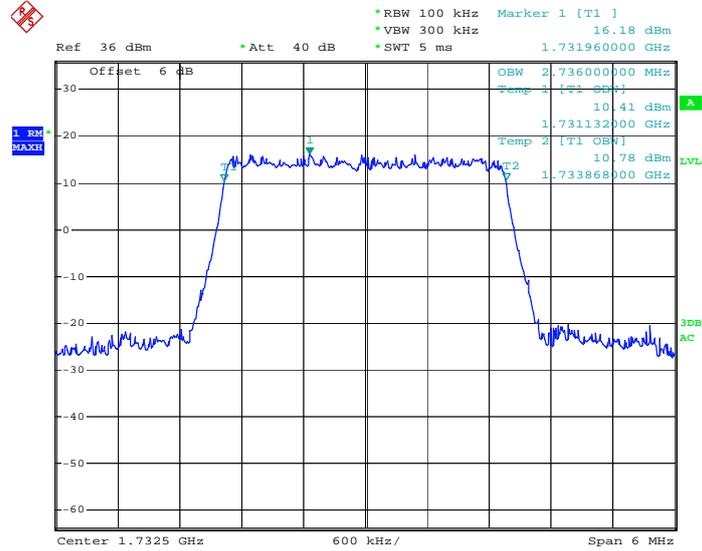


Date: 7.FEB.2014 09:23:27



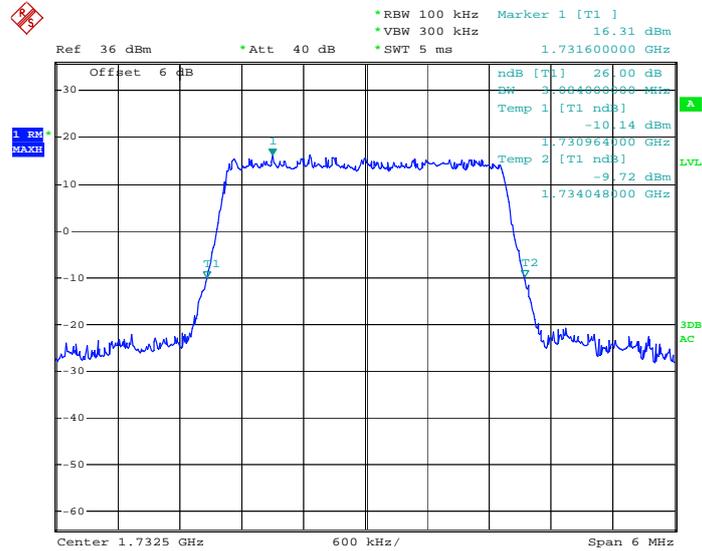
| | | | |
|---------------|------------|--------------------|--------------|
| Band : | LTE Band 4 | BW / Mod. : | 3MHz / 16QAM |
|---------------|------------|--------------------|--------------|

99% Occupied Bandwidth Plot on Channel 20175



Date: 7.FEB.2014 09:44:55

26dB Bandwidth Plot on Channel 20175

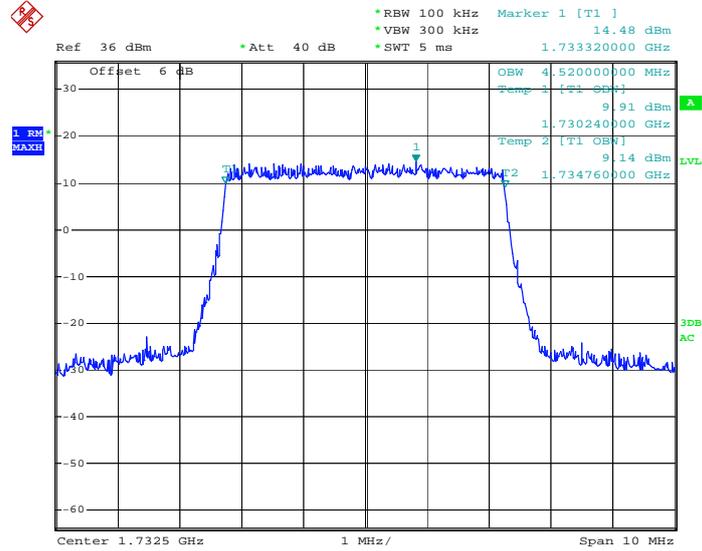


Date: 7.FEB.2014 09:23:04



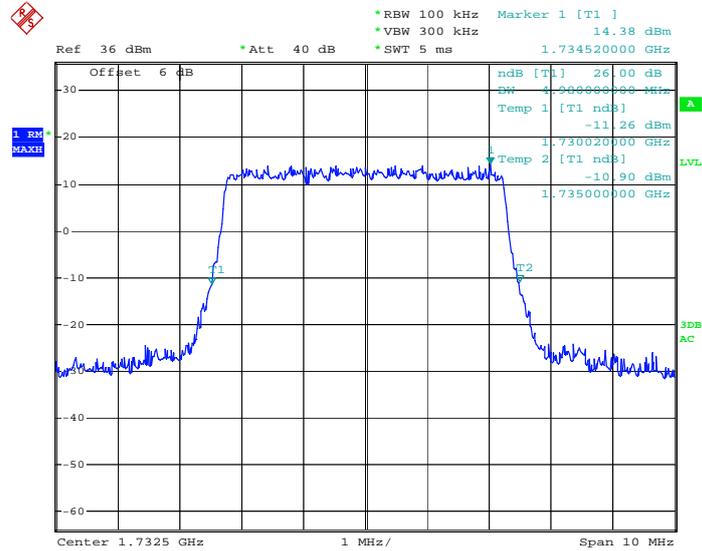
| | | | |
|---------------|------------|--------------------|-------------|
| Band : | LTE Band 4 | BW / Mod. : | 5MHz / QPSK |
|---------------|------------|--------------------|-------------|

99% Occupied Bandwidth Plot on Channel 20175



Date: 7.FEB.2014 09:51:28

26dB Bandwidth Plot on Channel 20175

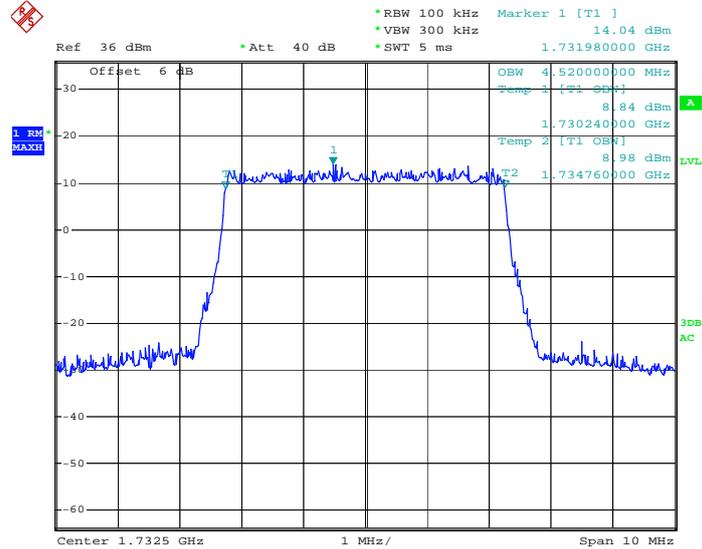


Date: 7.FEB.2014 09:23:53



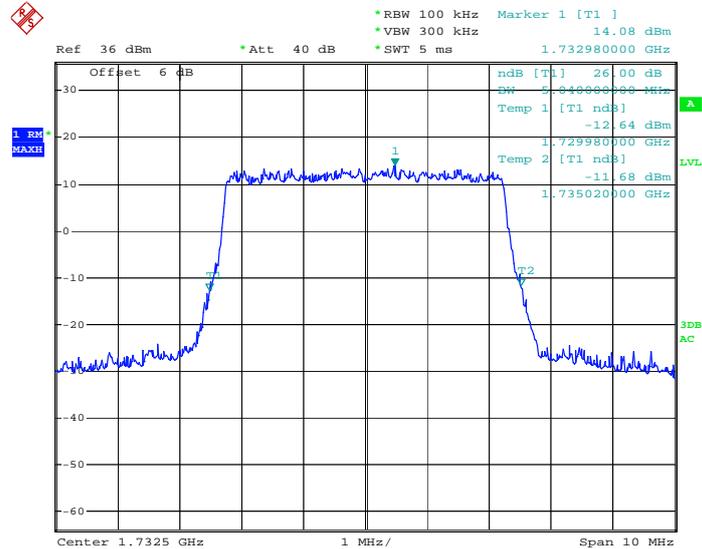
| | | | |
|---------------|------------|--------------------|--------------|
| Band : | LTE Band 4 | BW / Mod. : | 5MHz / 16QAM |
|---------------|------------|--------------------|--------------|

99% Occupied Bandwidth Plot on Channel 20175



Date: 7.FEB.2014 09:51:15

26dB Bandwidth Plot on Channel 20175

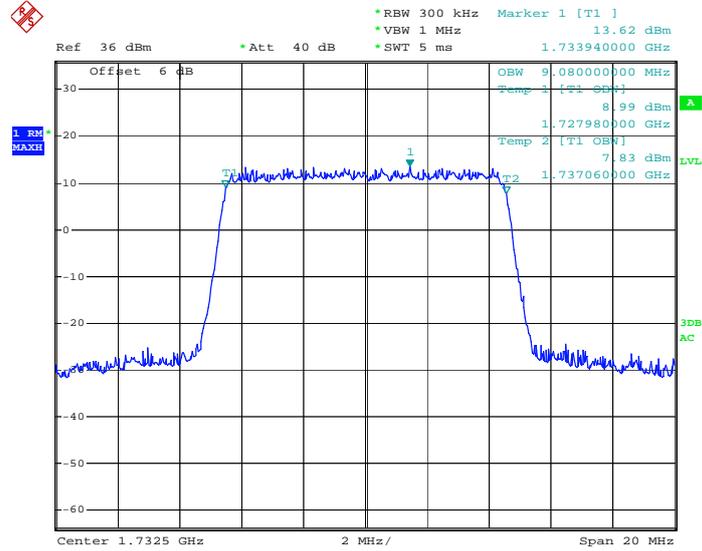


Date: 7.FEB.2014 09:24:16



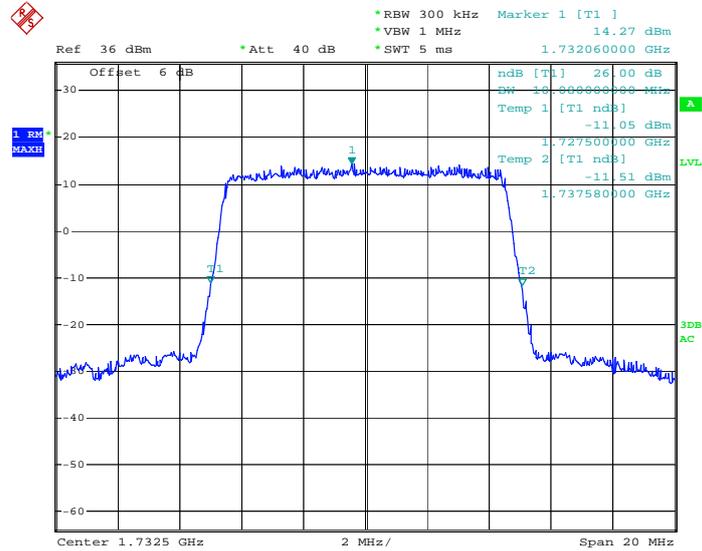
| | | | |
|---------------|------------|--------------------|--------------|
| Band : | LTE Band 4 | BW / Mod. : | 10MHz / QPSK |
|---------------|------------|--------------------|--------------|

99% Occupied Bandwidth Plot on Channel 20175



Date: 7.FEB.2014 10:37:12

26dB Bandwidth Plot on Channel 20175

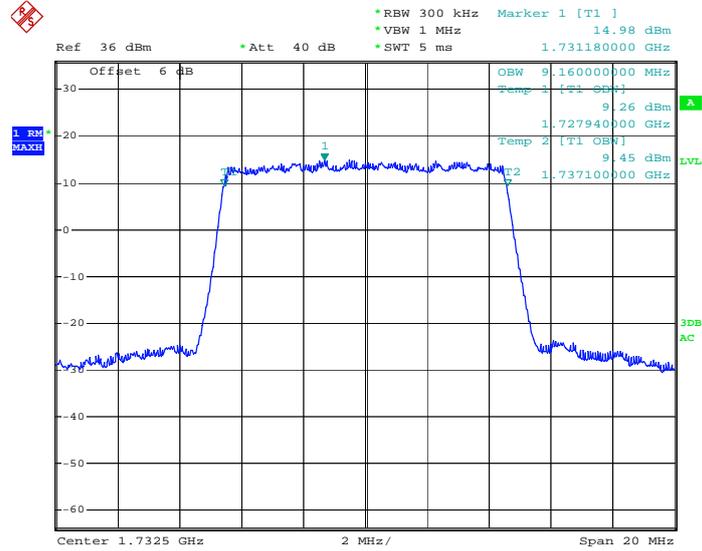


Date: 7.FEB.2014 09:25:15



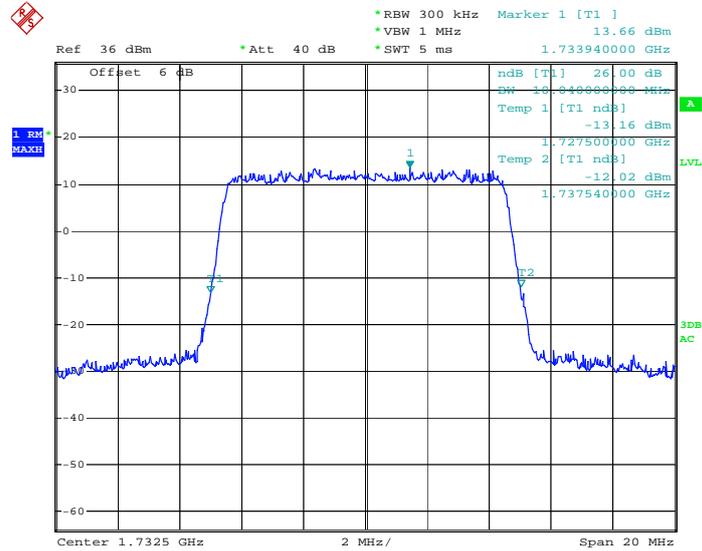
| | | | |
|---------------|------------|--------------------|---------------|
| Band : | LTE Band 4 | BW / Mod. : | 10MHz / 16QAM |
|---------------|------------|--------------------|---------------|

99% Occupied Bandwidth Plot on Channel 20175



Date: 7.FEB.2014 10:36:55

26dB Bandwidth Plot on Channel 20175

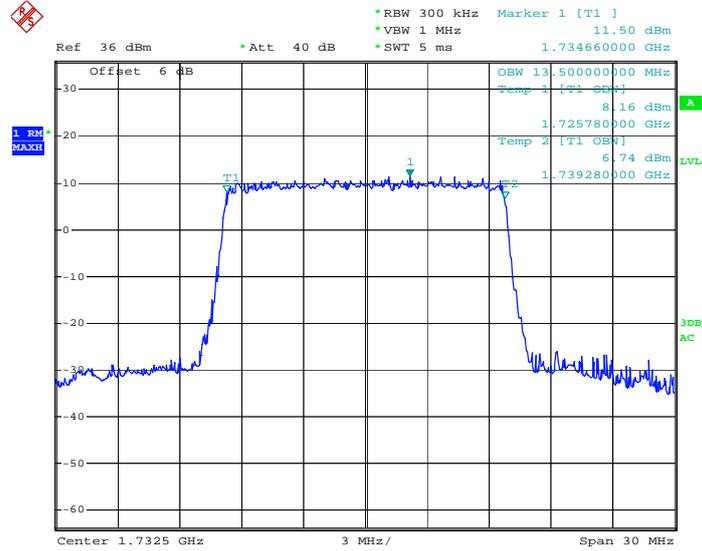


Date: 7.FEB.2014 09:24:58



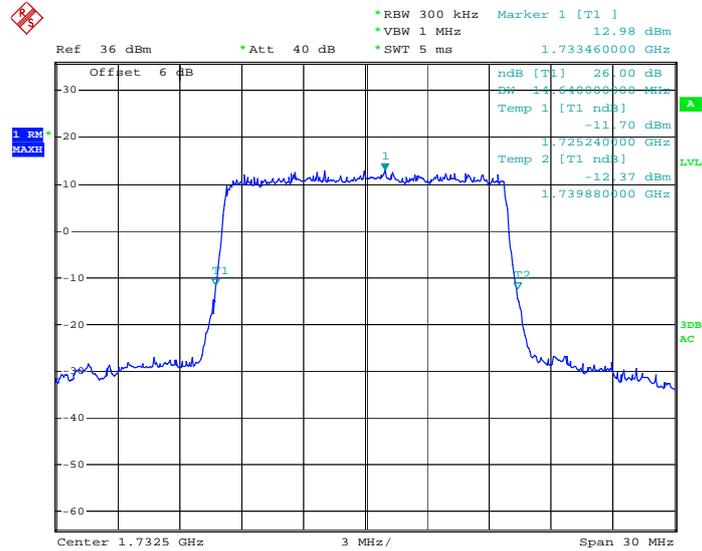
| | | | |
|---------------|------------|--------------------|--------------|
| Band : | LTE Band 4 | BW / Mod. : | 15MHz / QPSK |
|---------------|------------|--------------------|--------------|

99% Occupied Bandwidth Plot on Channel 20175



Date: 7.FEB.2014 10:13:46

26dB Bandwidth Plot on Channel 20175

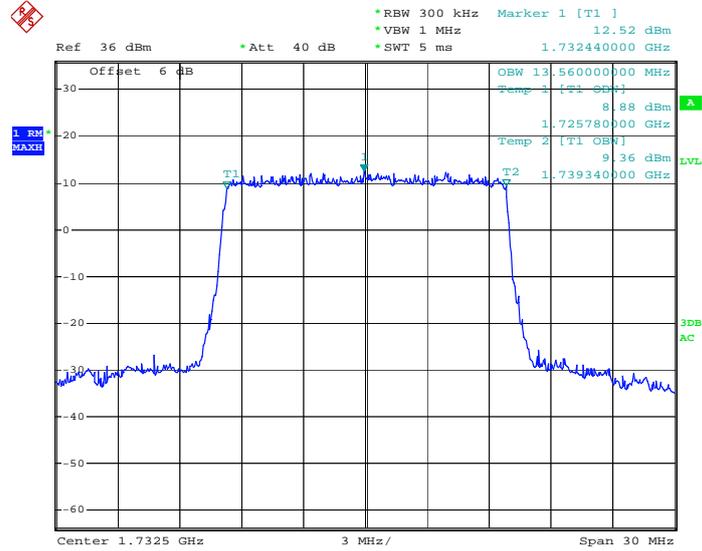


Date: 7.FEB.2014 09:25:49



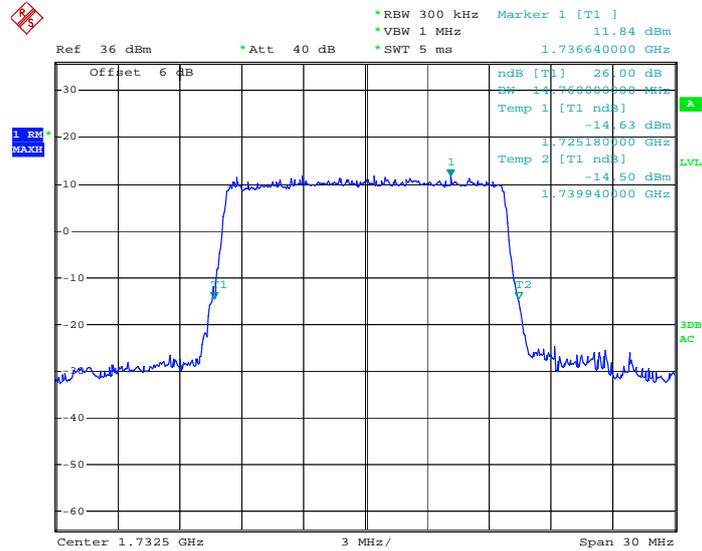
| | | | |
|--------|------------|-------------|---------------|
| Band : | LTE Band 4 | BW / Mod. : | 15MHz / 16QAM |
|--------|------------|-------------|---------------|

99% Occupied Bandwidth Plot on Channel 20175



Date: 7.FEB.2014 10:13:58

26dB Bandwidth Plot on Channel 20175

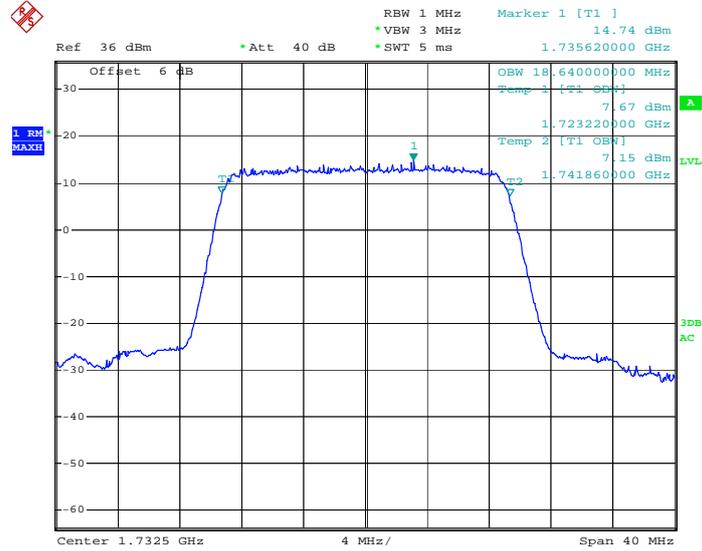


Date: 7.FEB.2014 09:26:30



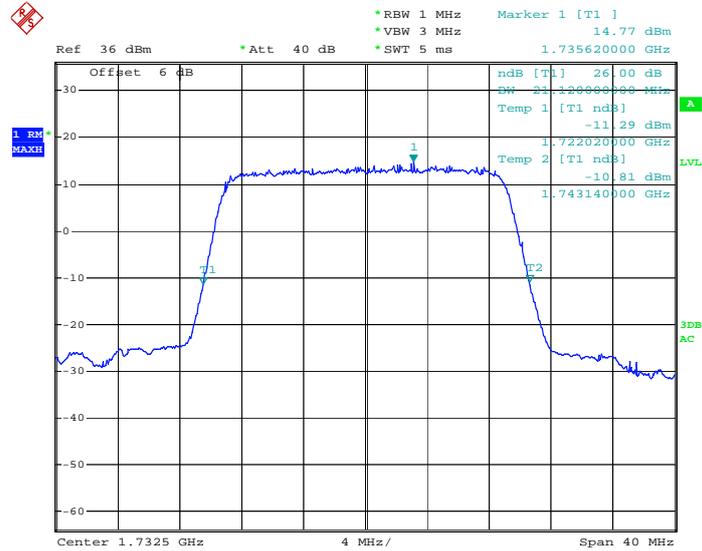
| | | | |
|--------|------------|-------------|--------------|
| Band : | LTE Band 4 | BW / Mod. : | 20MHz / QPSK |
|--------|------------|-------------|--------------|

99% Occupied Bandwidth Plot on Channel 20175



Date: 7.FEB.2014 10:01:47

26dB Bandwidth Plot on Channel 20175

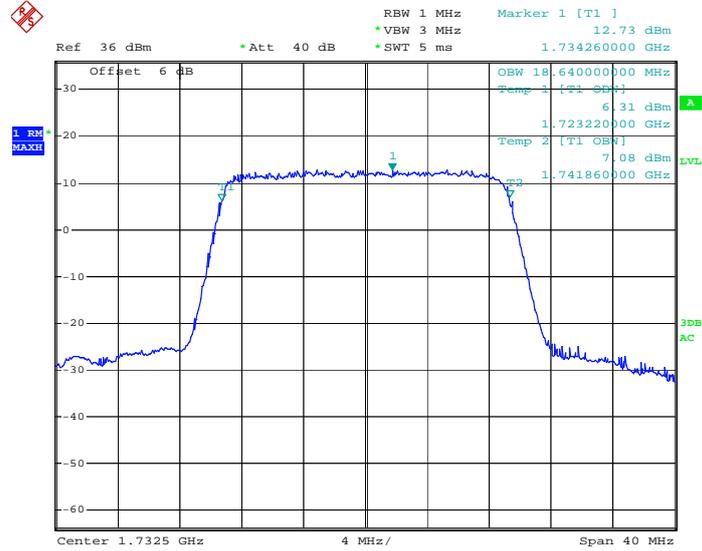


Date: 7.FEB.2014 09:27:14



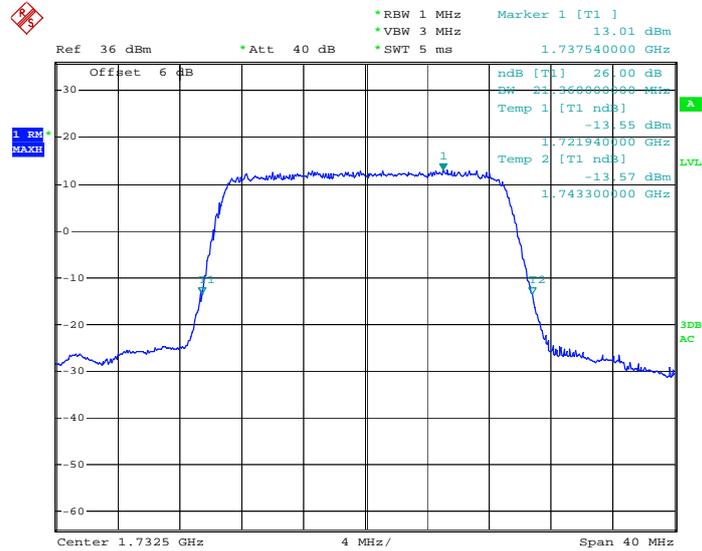
| | | | |
|---------------|------------|--------------------|---------------|
| Band : | LTE Band 4 | BW / Mod. : | 20MHz / 16QAM |
|---------------|------------|--------------------|---------------|

99% Occupied Bandwidth Plot on Channel 20175



Date: 7.FEB.2014 10:01:58

26dB Bandwidth Plot on Channel 20175



Date: 7.FEB.2014 09:27:01

3.5 Conducted Band Edge Measurement

3.5.1 Description of Conducted Band Edge Measurement

For operations in the 1710 – 1755 MHz band, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power $P(\text{Watts})$ in a 1 MHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

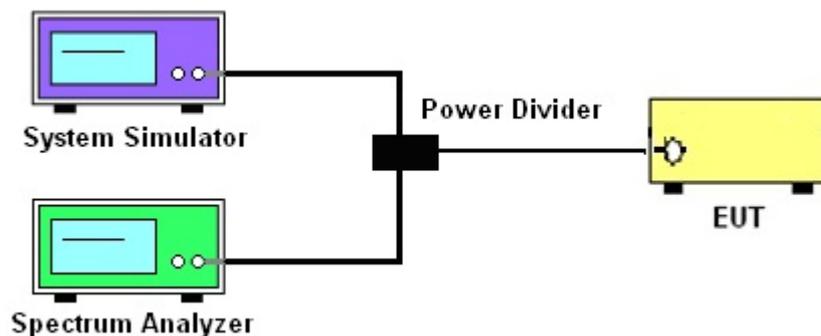
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The band edges of low and high channels for the highest RF powers were measured. Setting $RBW \geq 1\%$ EBW, and measuring bandwidth = 1MHz.
3. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

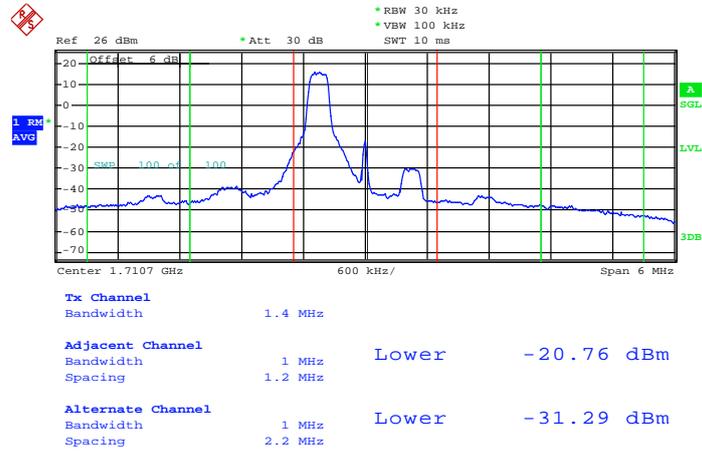
3.5.4 Test Setup



3.5.5 Test Result (Plots) of Conducted Band Edge

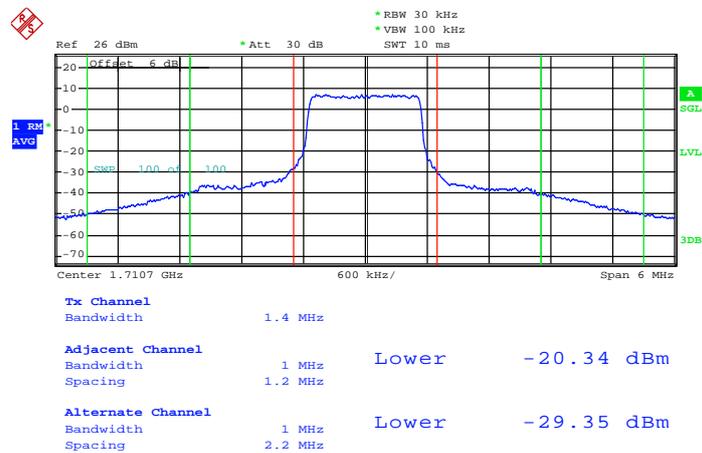
| | | | |
|--------|------------|--------------|---------------|
| Band : | LTE Band 4 | Band Width : | 1.4MHz / QPSK |
|--------|------------|--------------|---------------|

Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 8.FEB.2014 18:01:24

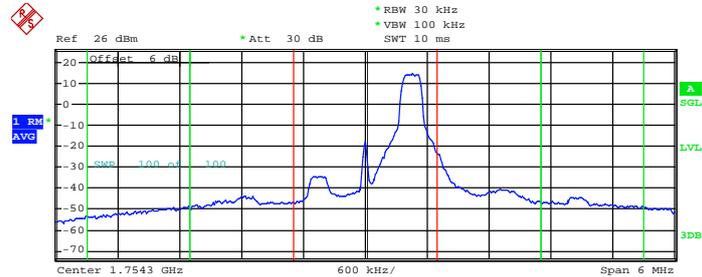
Lower Band Edge Plot for QPSK-RB Size 6, RB Offset 0



Date: 8.FEB.2014 18:01:48



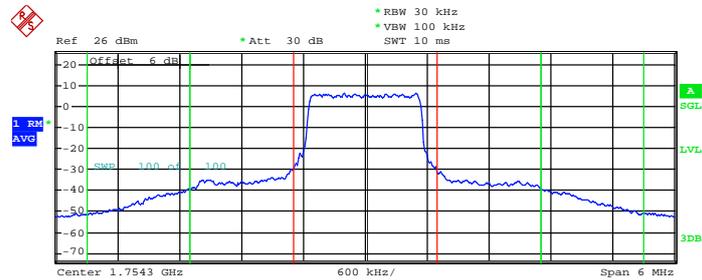
Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 5



| | | | |
|--------------------------|---------|-------|------------|
| Tx Channel | | | |
| Bandwidth | 1.4 MHz | | |
| Adjacent Channel | | | |
| Bandwidth | 1 MHz | | |
| Spacing | 1.2 MHz | Upper | -20.60 dBm |
| Alternate Channel | | | |
| Bandwidth | 1 MHz | | |
| Spacing | 2.2 MHz | Upper | -32.25 dBm |

Date: 8.FEB.2014 18:03:31

Higher Band Edge Plot for QPSK-RB Size 6, RB Offset 0



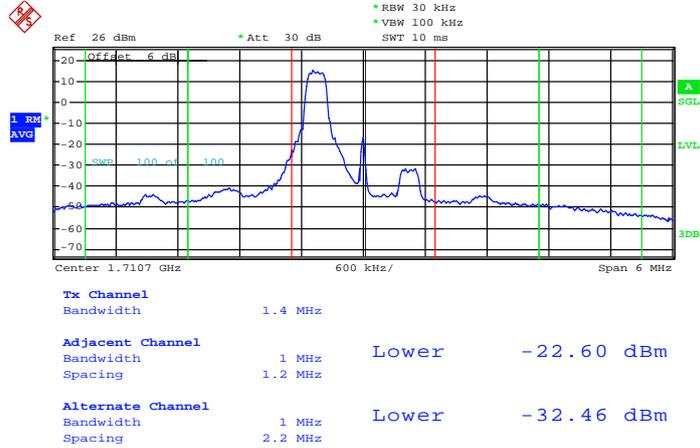
| | | | |
|--------------------------|---------|-------|------------|
| Tx Channel | | | |
| Bandwidth | 1.4 MHz | | |
| Adjacent Channel | | | |
| Bandwidth | 1 MHz | | |
| Spacing | 1.2 MHz | Upper | -20.92 dBm |
| Alternate Channel | | | |
| Bandwidth | 1 MHz | | |
| Spacing | 2.2 MHz | Upper | -28.94 dBm |

Date: 8.FEB.2014 18:04:24



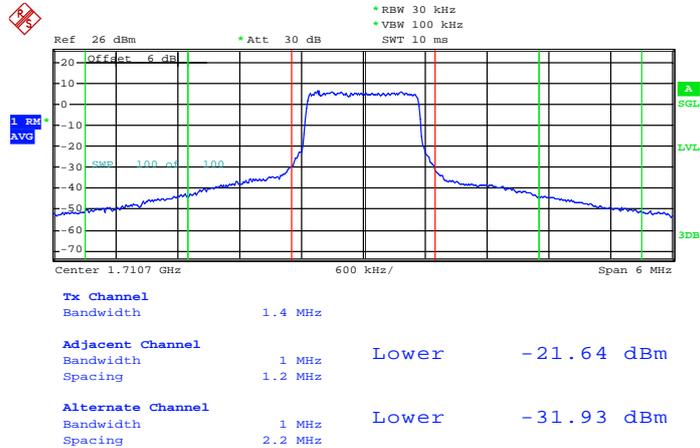
| | | | |
|---------------|------------|---------------------|----------------|
| Band : | LTE Band 4 | Band Width : | 1.4MHz / 16QAM |
|---------------|------------|---------------------|----------------|

Lower Band Edge Plot for 16QAM -RB Size 1, RB Offset 0



Date: 8.FEB.2014 18:01:13

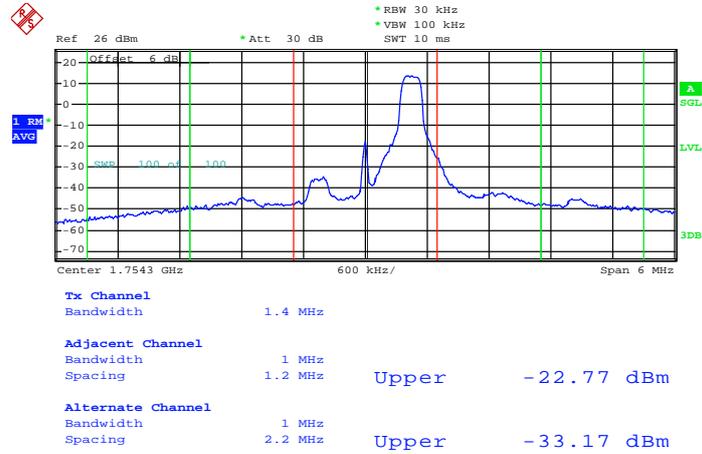
Lower Band Edge Plot for 16QAM-RB Size 6, RB Offset 0



Date: 8.FEB.2014 18:02:02

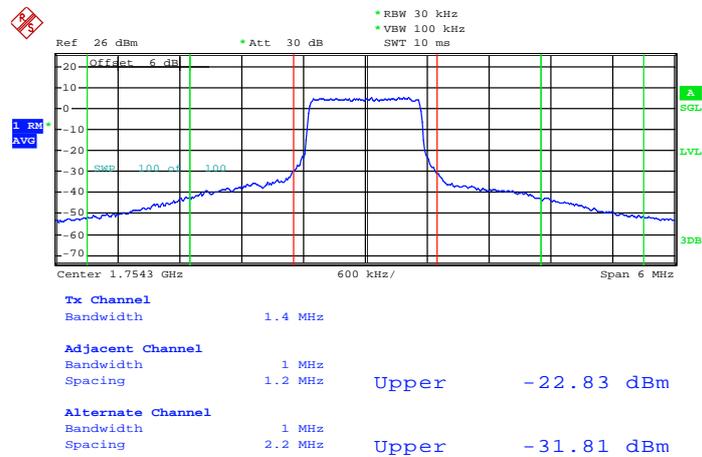


Higher Band Edge Plot for 16QAM-RB Size 1, RB Offset 5



Date: 8.FEB.2014 18:03:04

Higher Band Edge Plot for 16QAM-RB Size 6, RB Offset 0

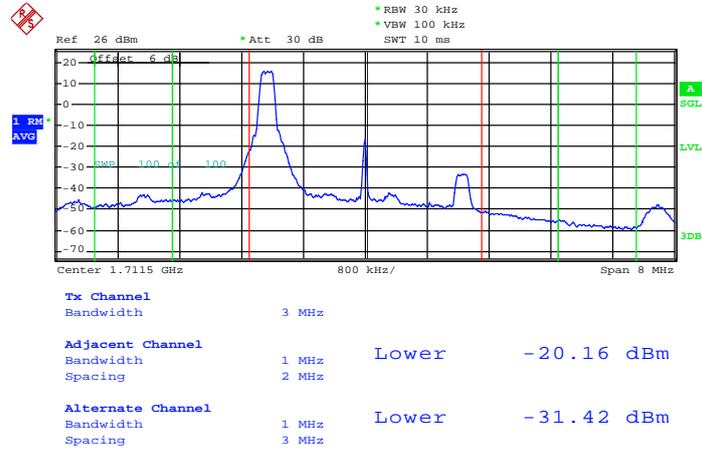


Date: 8.FEB.2014 18:04:09



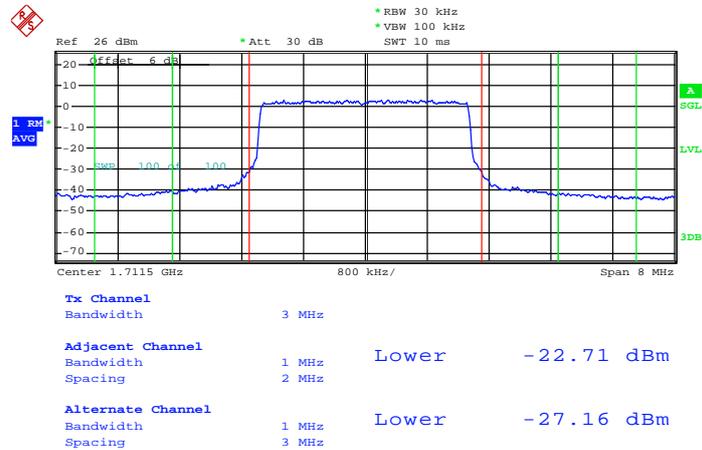
| | | | |
|---------------|------------|---------------------|-------------|
| Band : | LTE Band 4 | Band Width : | 3MHz / QPSK |
|---------------|------------|---------------------|-------------|

Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 8.FEB.2014 18:06:27

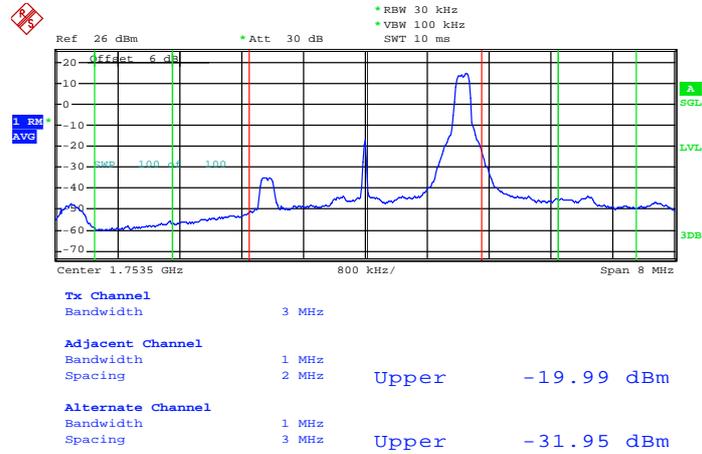
Lower Band Edge Plot for QPSK-RB Size 15, RB Offset 0



Date: 8.FEB.2014 18:07:08

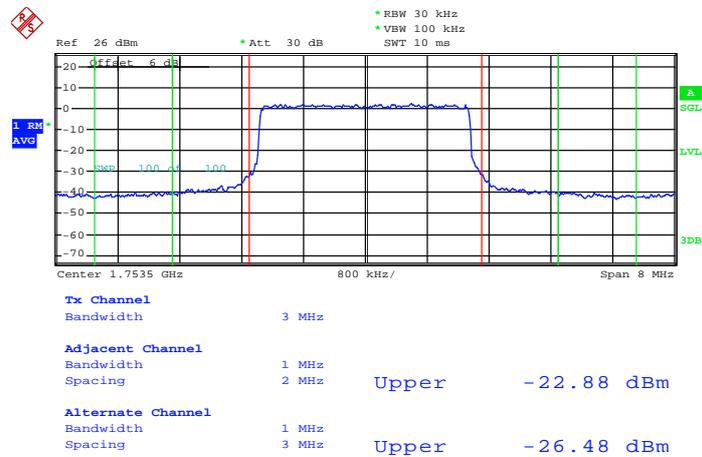


Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 14



Date: 8.FEB.2014 18:08:19

Higher Band Edge Plot for QPSK-RB Size 15, RB Offset 0

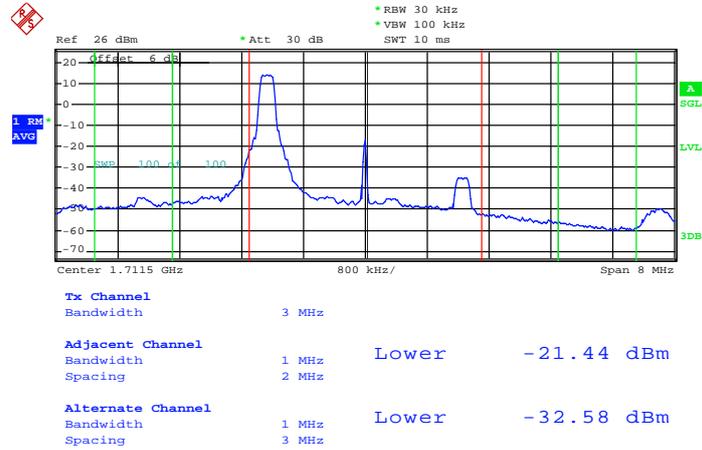


Date: 8.FEB.2014 18:08:59



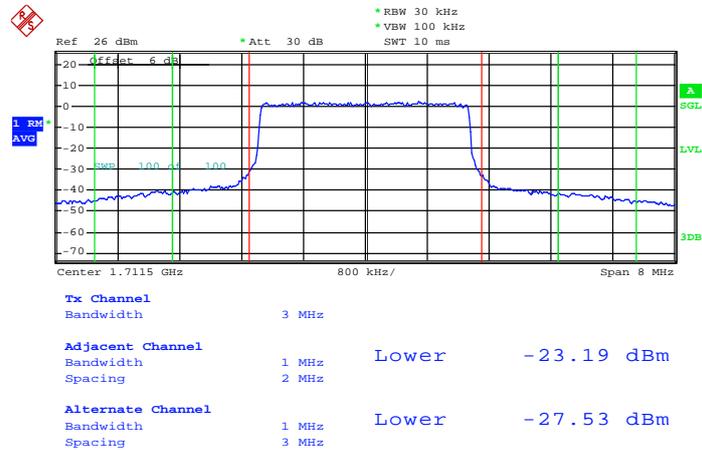
| | | | |
|---------------|------------|---------------------|--------------|
| Band : | LTE Band 4 | Band Width : | 3MHz / 16QAM |
|---------------|------------|---------------------|--------------|

Lower Band Edge Plot for 16QAM-RB Size 1, RB Offset 0



Date: 8.FEB.2014 18:06:39

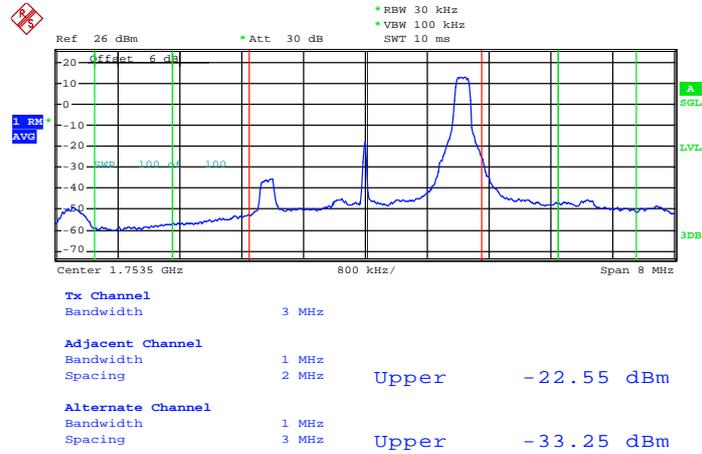
Lower Band Edge Plot for 16QAM-RB Size 15, RB Offset 0



Date: 8.FEB.2014 18:06:56

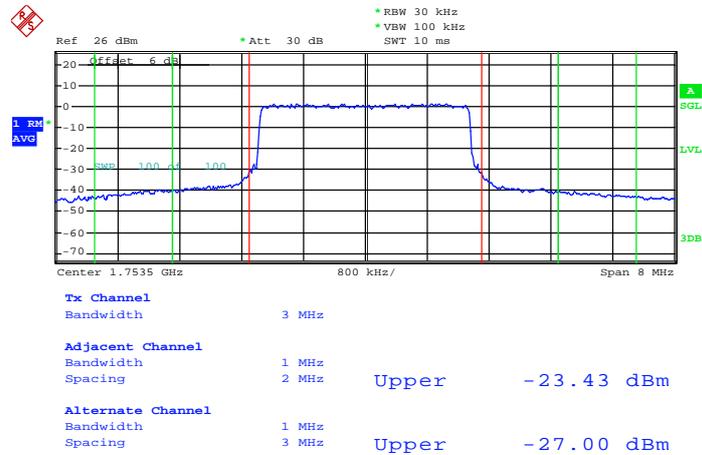


Higher Band Edge Plot for 16QAM-RB Size 1, RB Offset 14



Date: 8.FEB.2014 18:08:31

Higher Band Edge Plot for 16QAM-RB Size 15, RB Offset 0

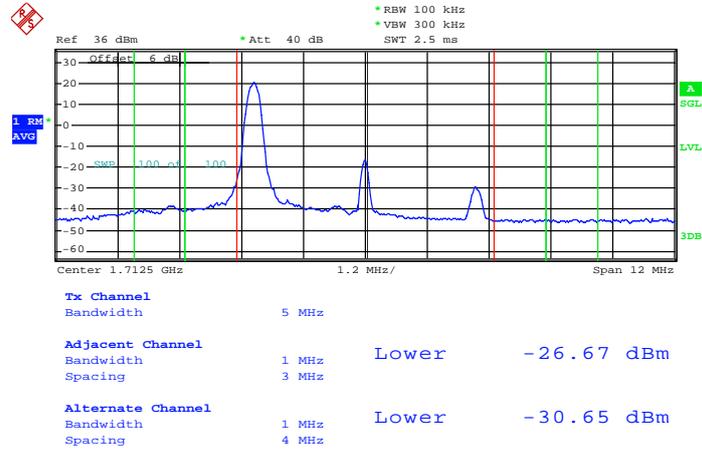


Date: 8.FEB.2014 18:08:45



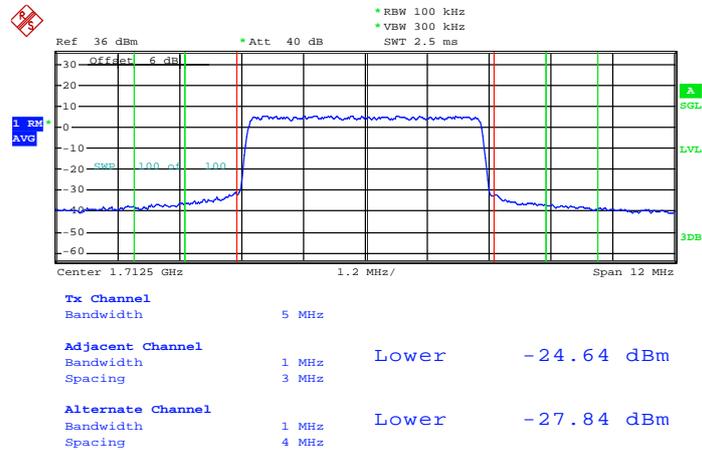
| | | | |
|---------------|------------|---------------------|-------------|
| Band : | LTE Band 4 | Band Width : | 5MHz / QPSK |
|---------------|------------|---------------------|-------------|

Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 8.FEB.2014 18:14:49

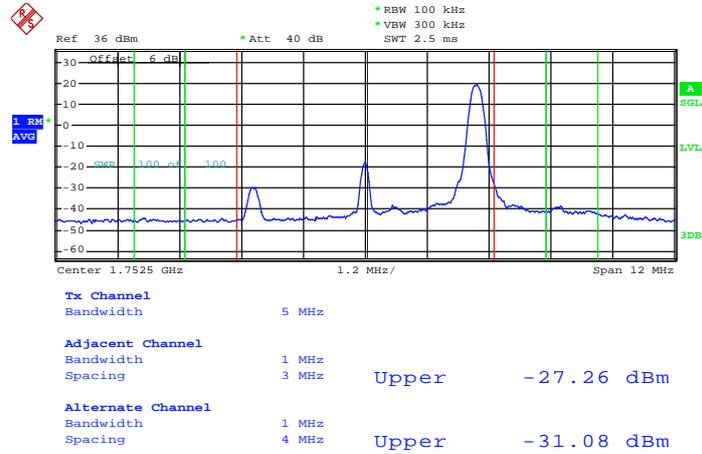
Lower Band Edge Plot for QPSK-RB Size 25, RB Offset 0



Date: 8.FEB.2014 18:15:08

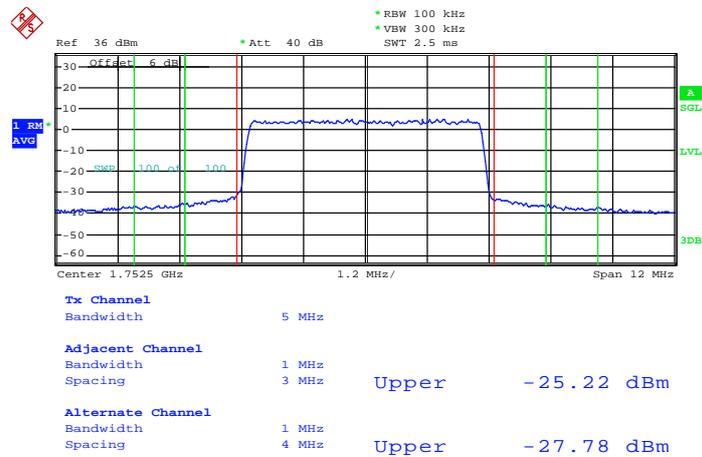


Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 24



Date: 8.FEB.2014 18:16:47

Higher Band Edge Plot for QPSK-RB Size 25, RB Offset 0

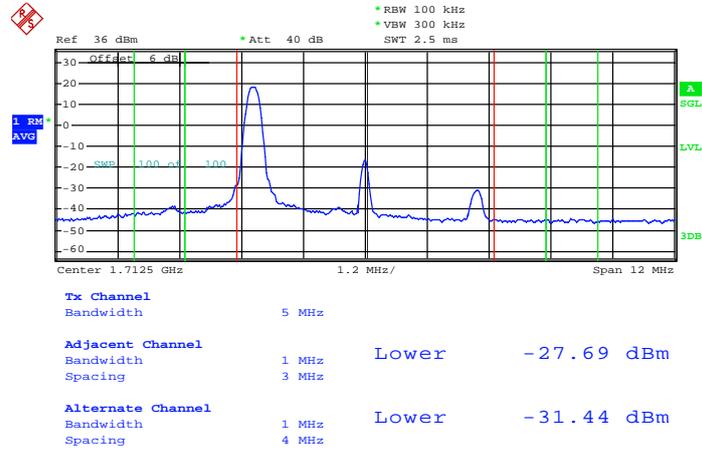


Date: 8.FEB.2014 18:17:29



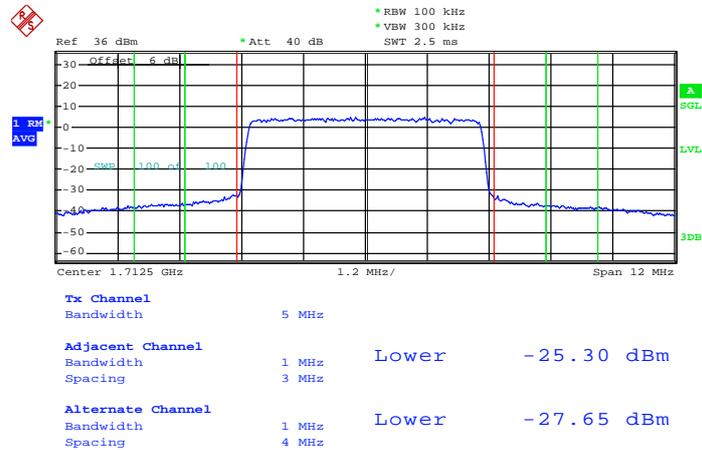
| | | | |
|---------------|------------|---------------------|--------------|
| Band : | LTE Band 4 | Band Width : | 5MHz / 16QAM |
|---------------|------------|---------------------|--------------|

Lower Band Edge Plot for 16QAM-RB Size 1, RB Offset 0



Date: 8.FEB.2014 18:14:39

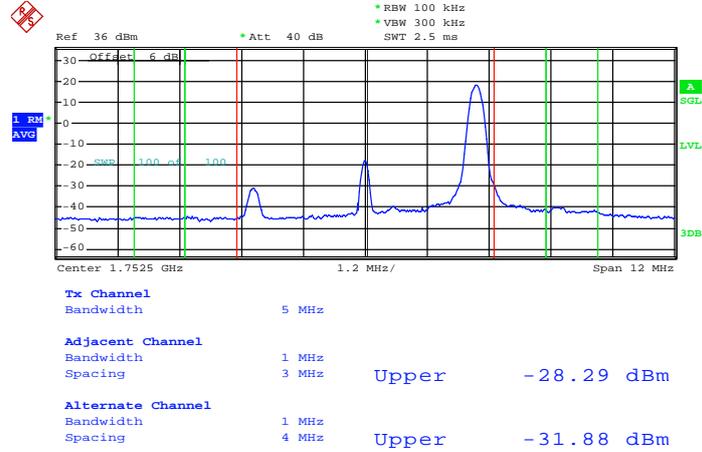
Lower Band Edge Plot for 16QAM-RB Size 25, RB Offset 0



Date: 8.FEB.2014 18:15:26

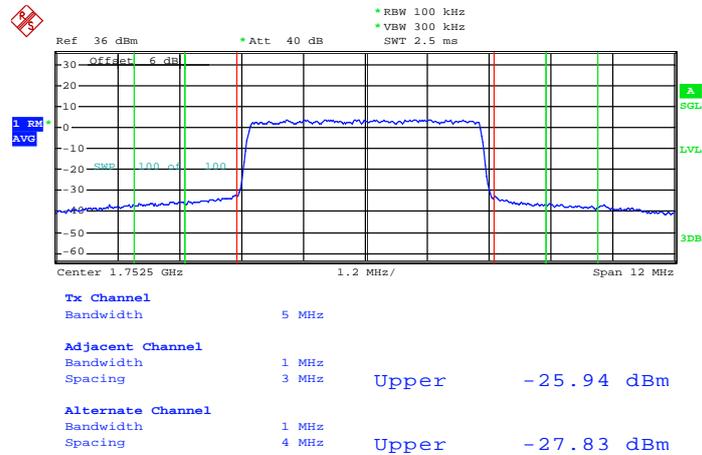


Higher Band Edge Plot for 16QAM-RB Size 1, RB Offset 24



Date: 8.FEB.2014 18:16:36

Higher Band Edge Plot for 16QAM-RB Size 25, RB Offset 0

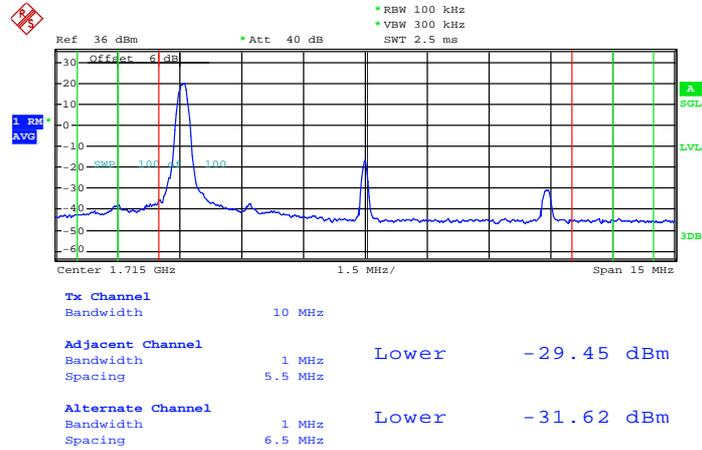


Date: 8.FEB.2014 18:17:39



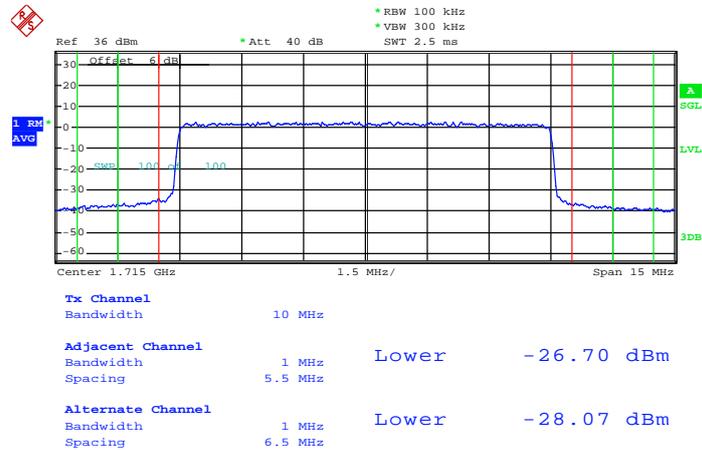
| | | | |
|---------------|------------|---------------------|--------------|
| Band : | LTE Band 4 | Band Width : | 10MHz / QPSK |
|---------------|------------|---------------------|--------------|

Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 8.FEB.2014 18:19:15

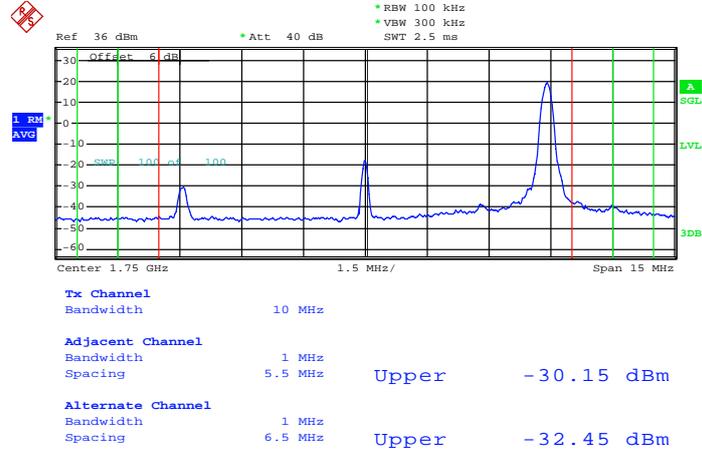
Lower Band Edge Plot for QPSK-RB Size 50, RB Offset 0



Date: 8.FEB.2014 18:19:36

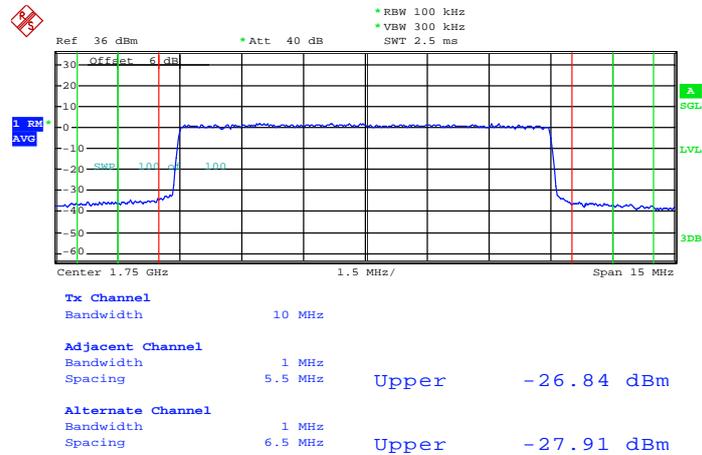


Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 49



Date: 8.FEB.2014 18:20:53

Higher Band Edge Plot for QPSK-RB Size 50, RB Offset 0

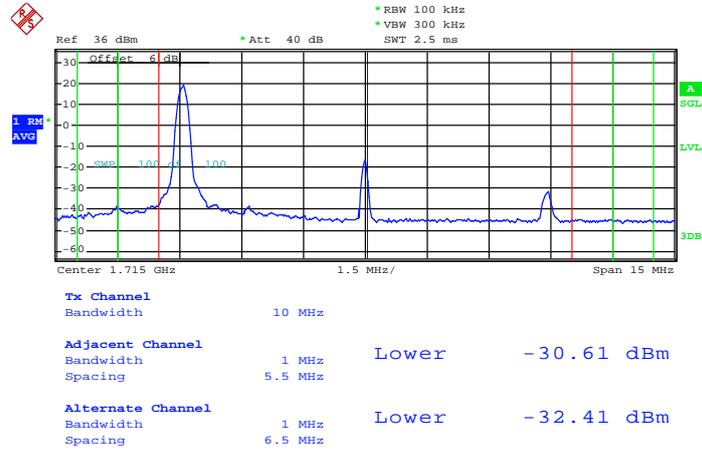


Date: 8.FEB.2014 18:21:09



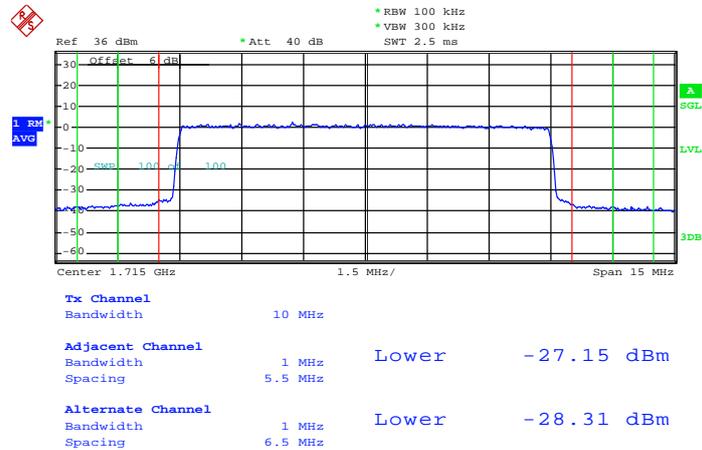
| | | | |
|---------------|------------|---------------------|---------------|
| Band : | LTE Band 4 | Band Width : | 10MHz / 16QAM |
|---------------|------------|---------------------|---------------|

Lower Band Edge Plot for 16QAM-RB Size 1, RB Offset 0



Date: 8.FEB.2014 18:19:06

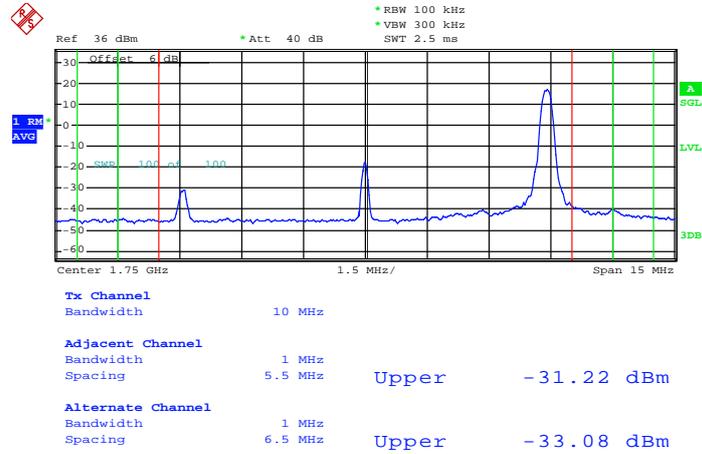
Lower Band Edge Plot for 16QAM-RB Size 50, RB Offset 0



Date: 8.FEB.2014 18:19:48

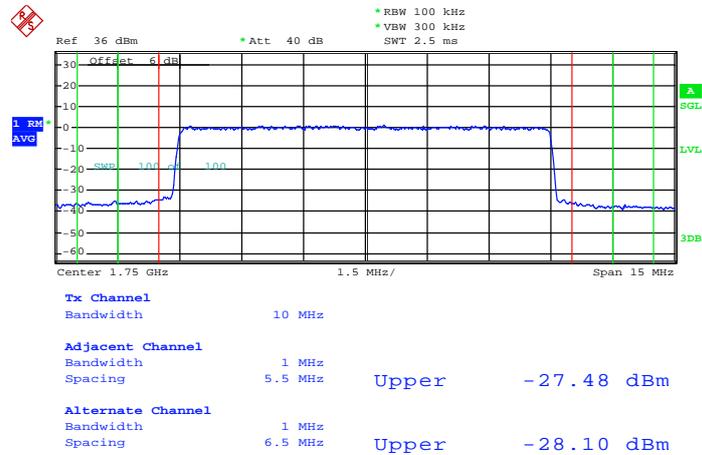


Higher Band Edge Plot for 16QAM-RB Size 1, RB Offset 49



Date: 8.FEB.2014 18:20:35

Higher Band Edge Plot for 16QAM-RB Size 50, RB Offset 0

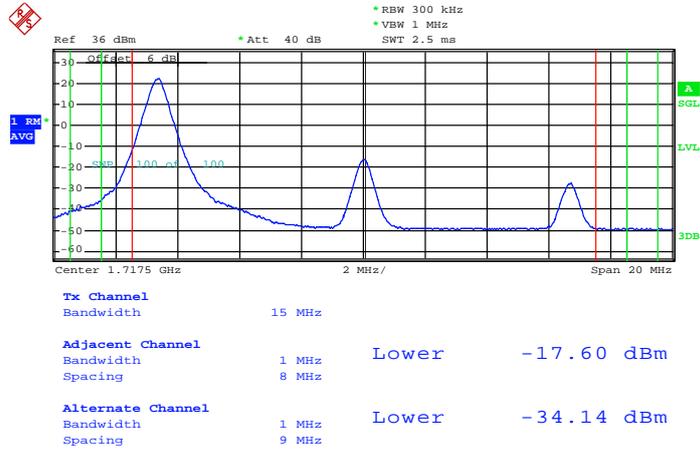


Date: 8.FEB.2014 18:21:20



| | | | |
|---------------|------------|---------------------|--------------|
| Band : | LTE Band 4 | Band Width : | 15MHz / QPSK |
|---------------|------------|---------------------|--------------|

Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 8.FEB.2014 18:25:59

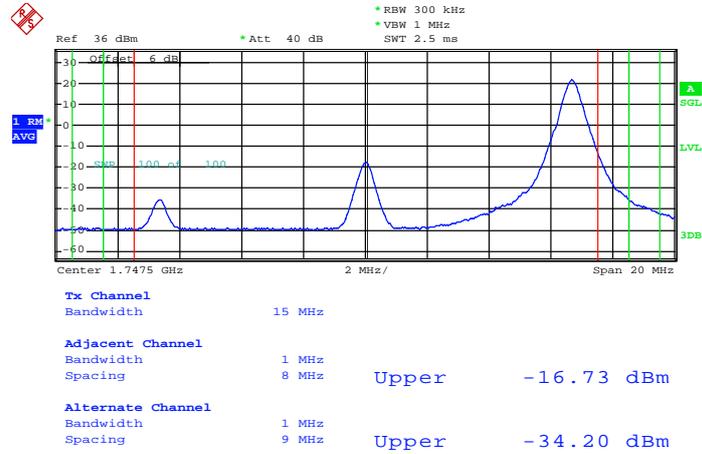
Lower Band Edge Plot for QPSK-RB Size 75, RB Offset 0



Date: 8.FEB.2014 18:26:18

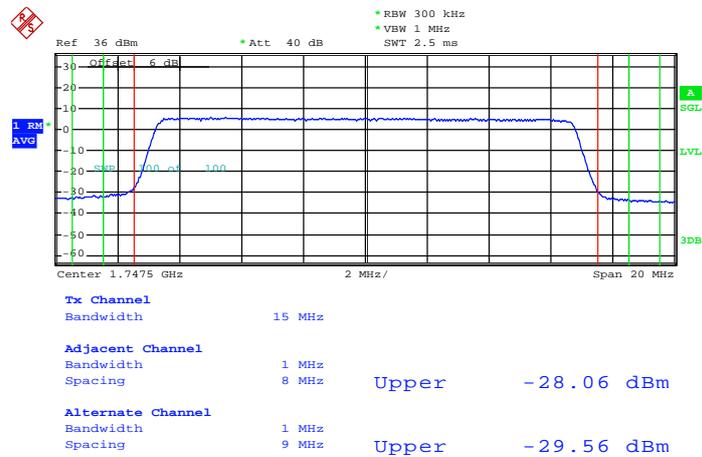


Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 74



Date: 8.FEB.2014 18:30:00

Higher Band Edge Plot for QPSK-RB Size 75, RB Offset 0

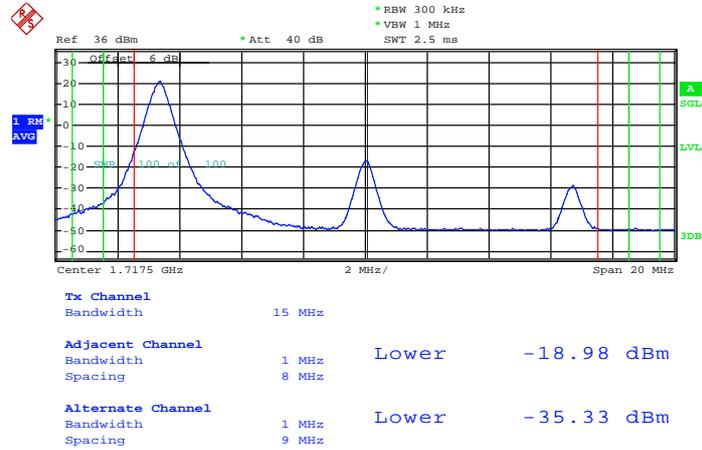


Date: 8.FEB.2014 18:30:14



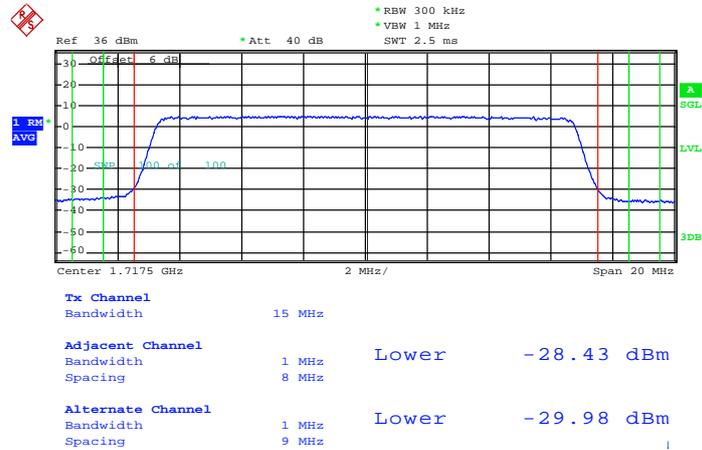
| | | | |
|---------------|------------|---------------------|---------------|
| Band : | LTE Band 4 | Band Width : | 15MHz / 16QAM |
|---------------|------------|---------------------|---------------|

Lower Band Edge Plot for 16QAM-RB Size 1, RB Offset 0



Date: 8.FEB.2014 18:25:50

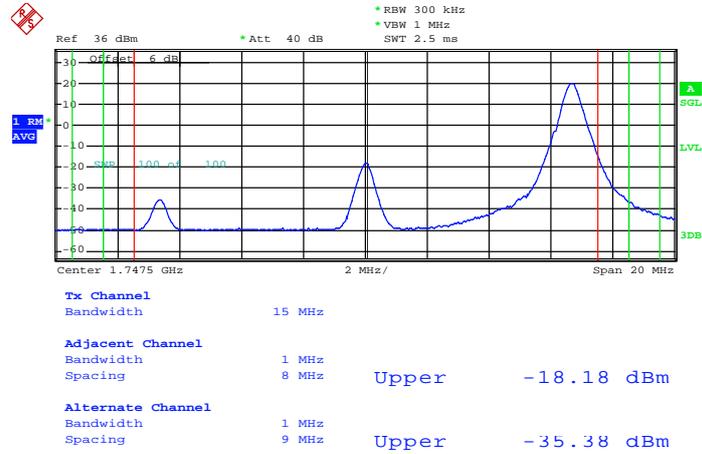
Lower Band Edge Plot for 16QAM-RB Size 75, RB Offset 0



Date: 8.FEB.2014 18:26:34

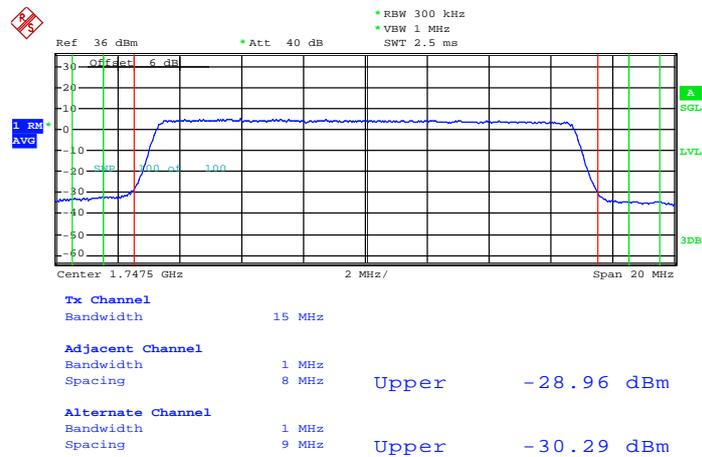


Higher Band Edge Plot for 16QAM-RB Size 1, RB Offset 74



Date: 8.FEB.2014 18:29:47

Higher Band Edge Plot for 16QAM-RB Size 75, RB Offset 0

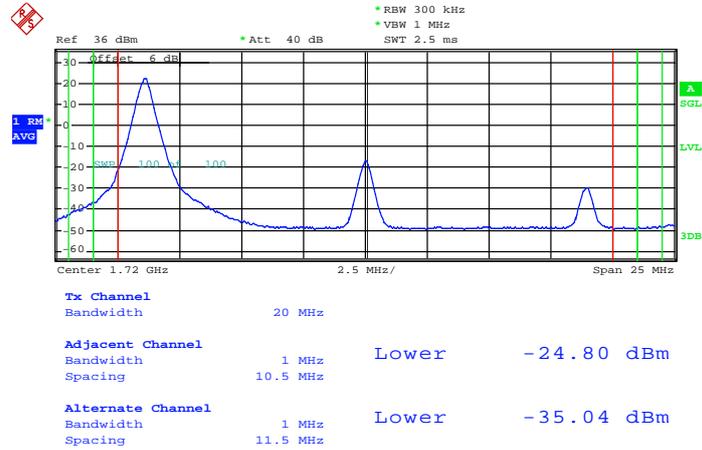


Date: 8.FEB.2014 18:30:54



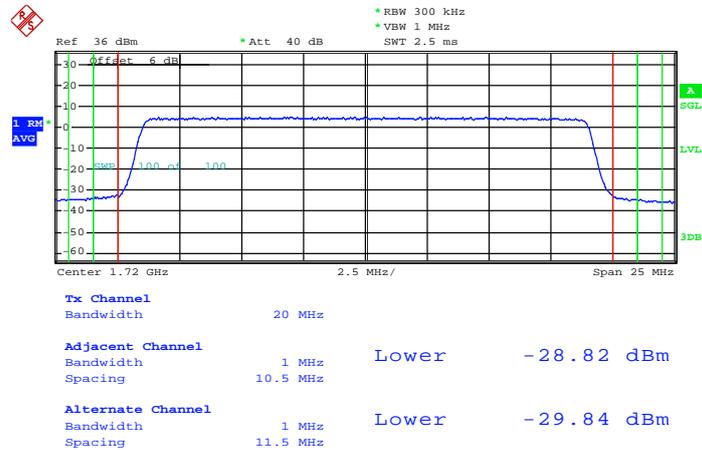
| | | | |
|---------------|------------|---------------------|--------------|
| Band : | LTE Band 4 | Band Width : | 20MHz / QPSK |
|---------------|------------|---------------------|--------------|

Lower Band Edge Plot for QPSK-RB Size 1, RB Offset 0



Date: 8.FEB.2014 18:33:04

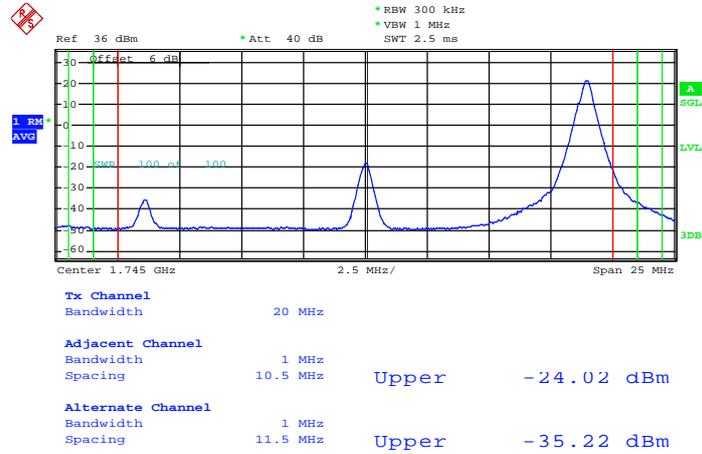
Lower Band Edge Plot for QPSK-RB Size 100, RB Offset 0



Date: 8.FEB.2014 18:33:20

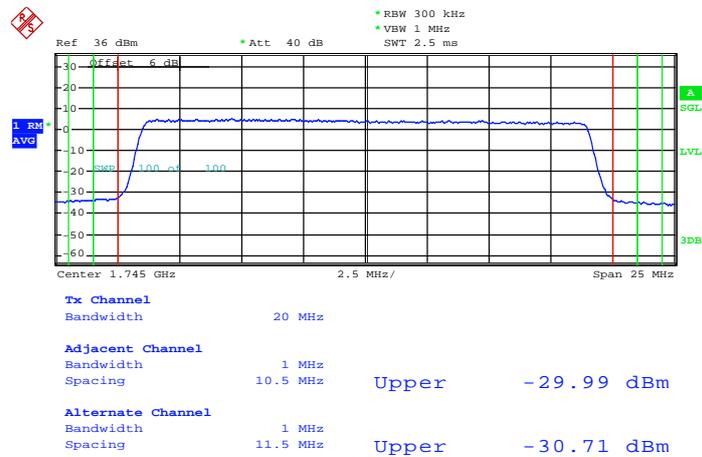


Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 99



Date: 8.FEB.2014 18:34:38

Higher Band Edge Plot for QPSK-RB Size 100, RB Offset 0

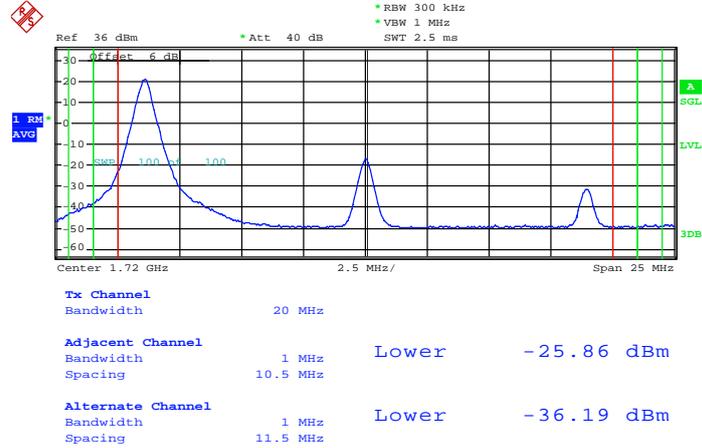


Date: 8.FEB.2014 18:34:50



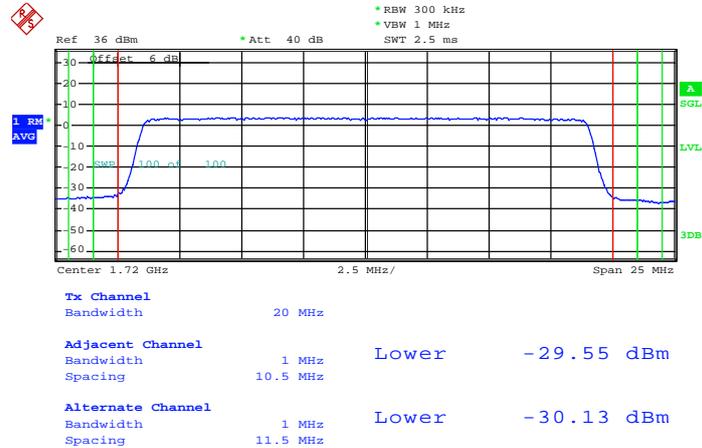
| | | | |
|---------------|------------|---------------------|---------------|
| Band : | LTE Band 4 | Band Width : | 20MHz / 16QAM |
|---------------|------------|---------------------|---------------|

Lower Band Edge Plot for 16QAM-RB Size 1, RB Offset 0



Date: 8.FEB.2014 18:32:52

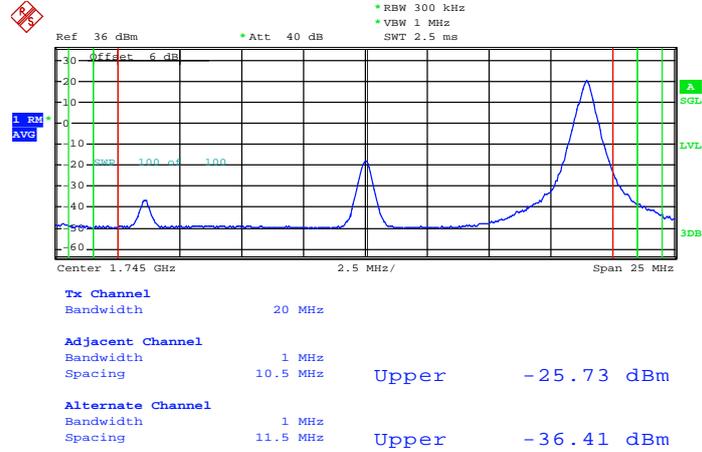
Lower Band Edge Plot for 16QAM-RB Size 100, RB Offset 0



Date: 8.FEB.2014 18:33:46

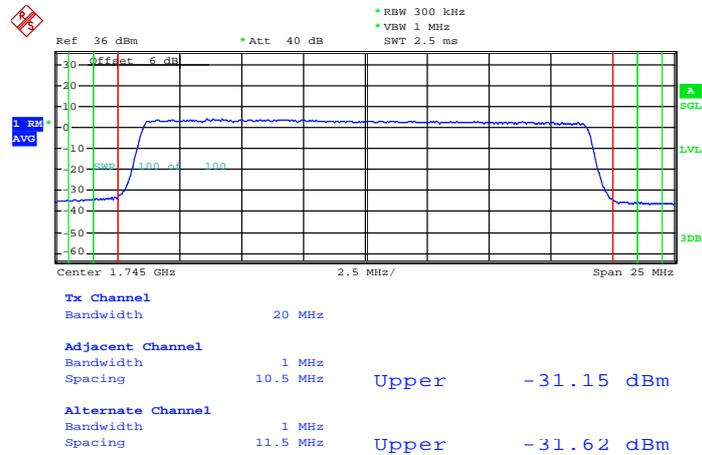


Higher Band Edge Plot for 16QAM-RB Size 1, RB Offset 99



Date: 8.FEB.2014 18:34:27

Higher Band Edge Plot for 16QAM-RB Size 100, RB Offset 0



Date: 8.FEB.2014 18:35:05

3.6 Conducted Spurious Emission Measurement

3.6.1 Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 9 kHz up to a frequency including its 10th harmonic.

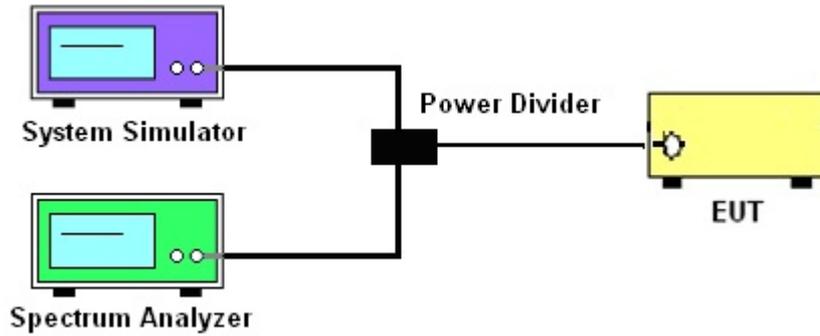
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

1. The EUT was connected to spectrum analyzer and base station via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The middle channel for the highest RF power within the transmitting frequency was measured.
4. The conducted spurious emission for the whole frequency range was taken.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band
7. The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
= $P(W) - [43 + 10\log(P)]$ (dB)
= $[30 + 10\log(P)]$ (dBm) - $[43 + 10\log(P)]$ (dB)
= -13dBm.

3.6.4 Test Setup

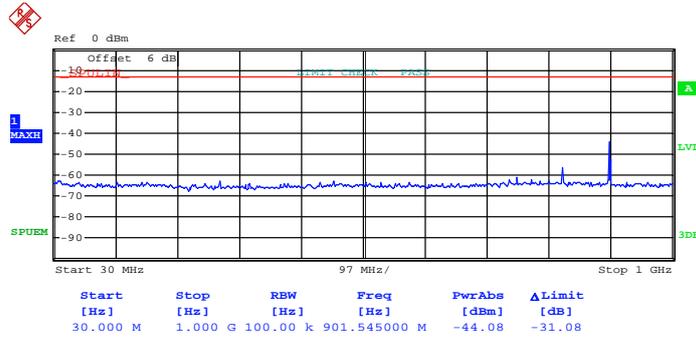




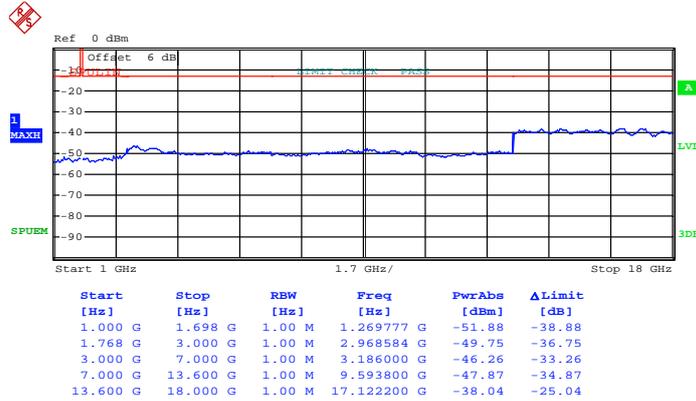
3.6.5 Test Result (Plots) of Conducted Spurious Emission

| | | | |
|--------------|------------|-----------|---------------|
| Band : | LTE Band 4 | Channel : | CH19957 (Low) |
| Band Width : | 1.4MHz | | |

QPSK (RB Size 1, RB Offset 0)



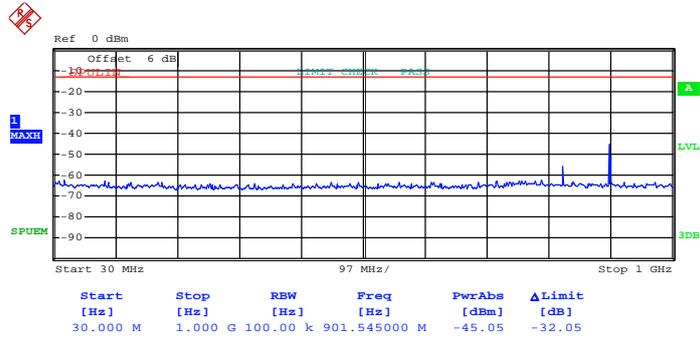
Date: 7.FEB.2014 20:04:44



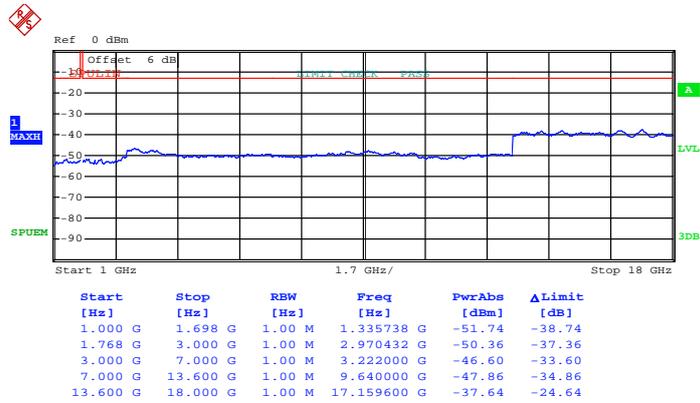
Date: 7.FEB.2014 20:06:07



16QAM (RB Size 1, RB Offset 5)



Date: 7.FEB.2014 20:05:02

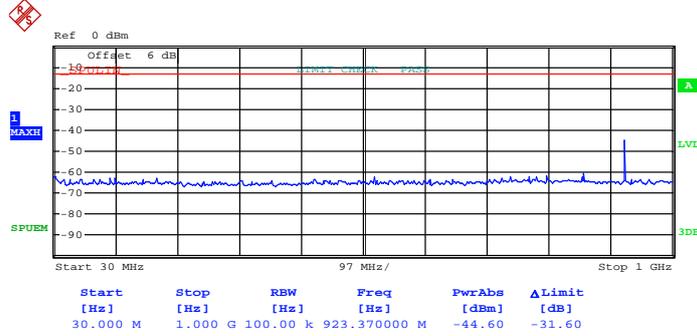


Date: 7.FEB.2014 20:05:46

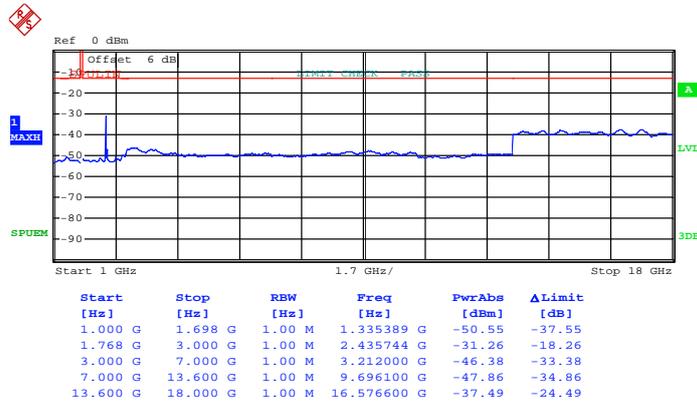


| | | | |
|--------------|------------|-----------|------------------|
| Band : | LTE Band 4 | Channel : | CH20175 (Middle) |
| Band Width : | 1.4MHz | | |

QPSK (RB Size 1, RB Offset 2)



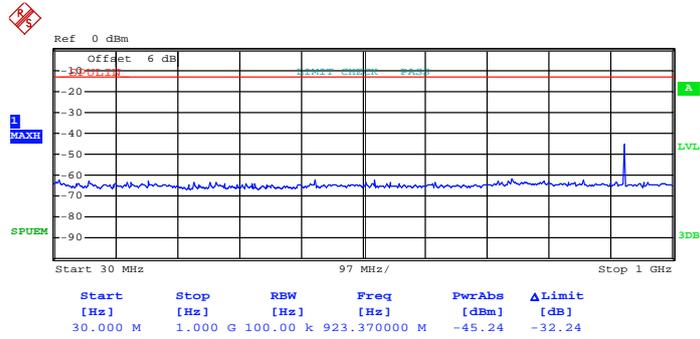
Date: 7.FEB.2014 20:08:57



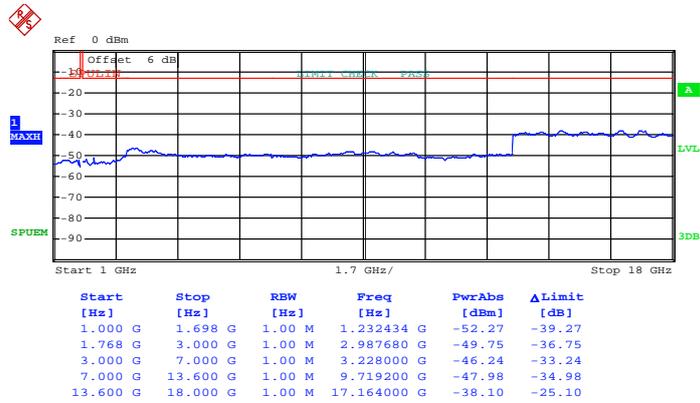
Date: 7.FEB.2014 20:07:59



16QAM (RB Size 1, RB Offset 0)



Date: 7.FEB.2014 20:08:43

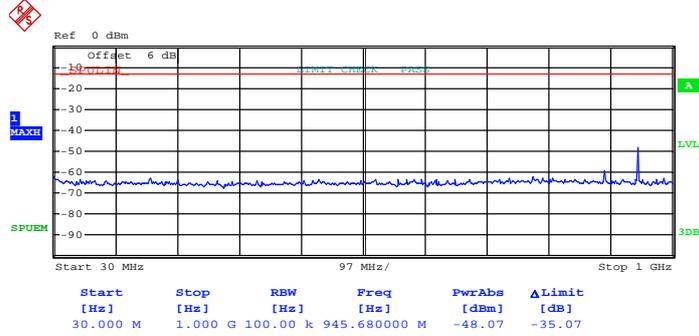


Date: 7.FEB.2014 20:08:19

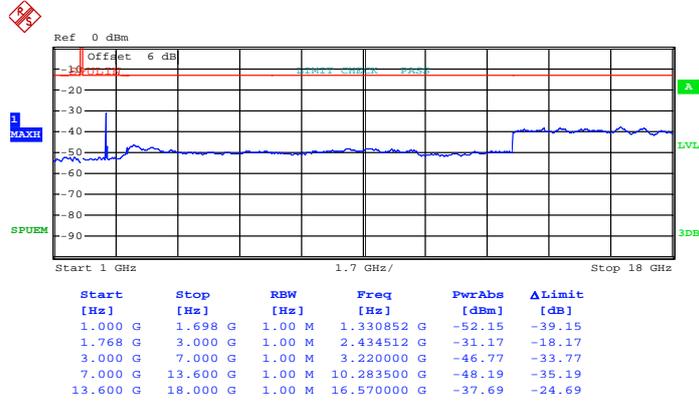


| | | | |
|--------------|------------|-----------|----------------|
| Band : | LTE Band 4 | Channel : | CH20393 (High) |
| Band Width : | 1.4MHz | | |

QPSK (RB Size 1, RB Offset 2)



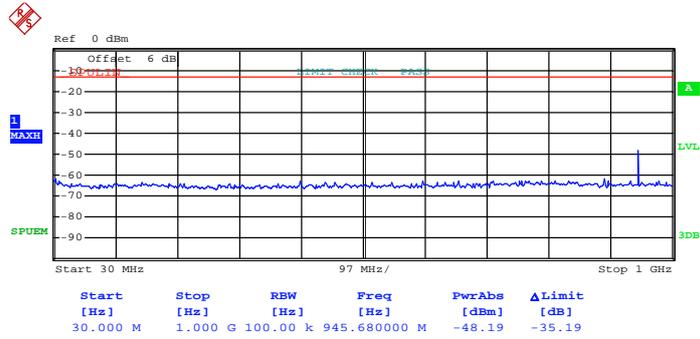
Date: 7.FEB.2014 20:09:40



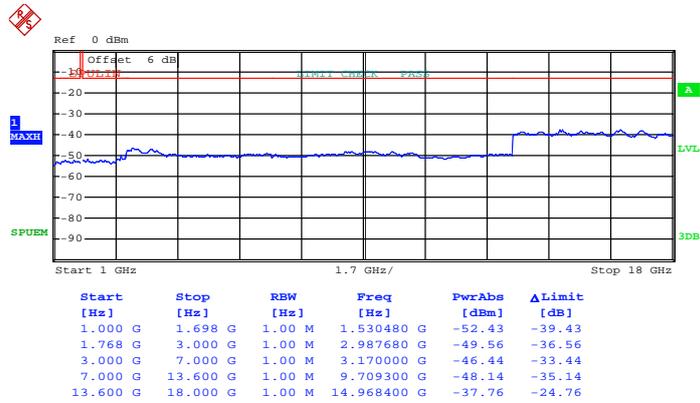
Date: 7.FEB.2014 20:10:41



16QAM (RB Size 1, RB Offset 2)



Date: 7.FEB.2014 20:09:57

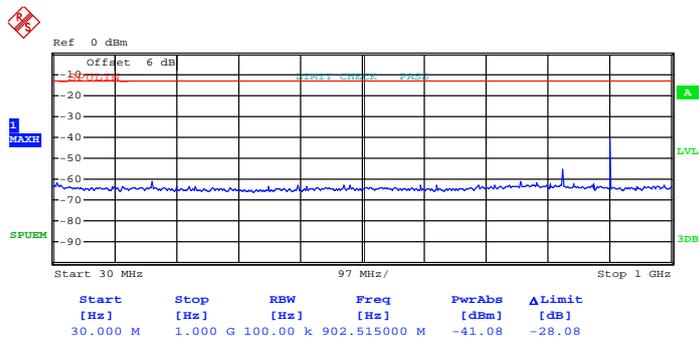


Date: 7.FEB.2014 20:10:23



| | | | |
|--------------|------------|-----------|---------------|
| Band : | LTE Band 4 | Channel : | CH19965 (Low) |
| Band Width : | 3MHz | | |

QPSK (RB Size 1, RB Offset 0)



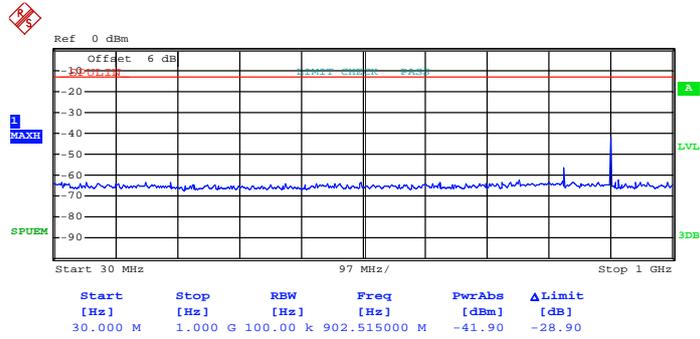
Date: 7.FEB.2014 20:50:17



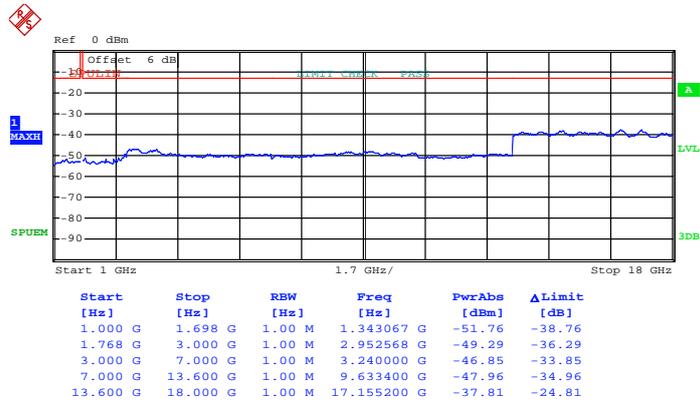
Date: 7.FEB.2014 20:13:33



16QAM (RB Size 1, RB Offset 7)



Date: 7.FEB.2014 20:49:54

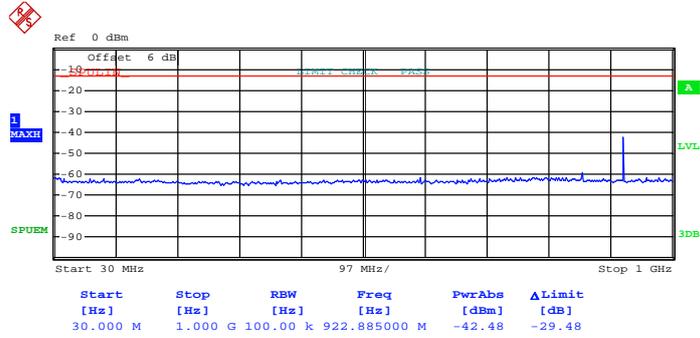


Date: 7.FEB.2014 20:13:14

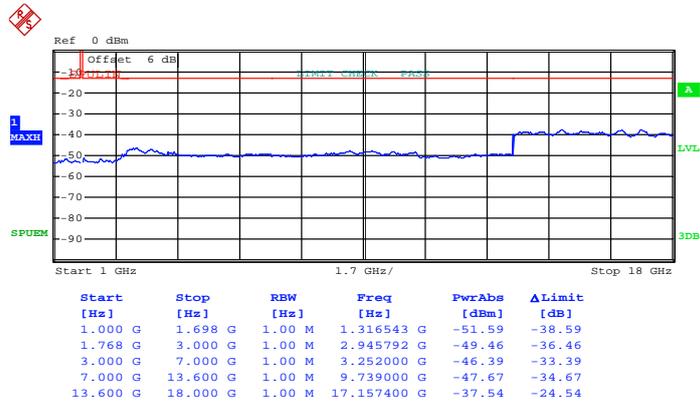


| | | | |
|--------------|------------|-----------|------------------|
| Band : | LTE Band 4 | Channel : | CH20175 (Middle) |
| Band Width : | 3MHz | | |

QPSK (RB Size 1, RB Offset 14)



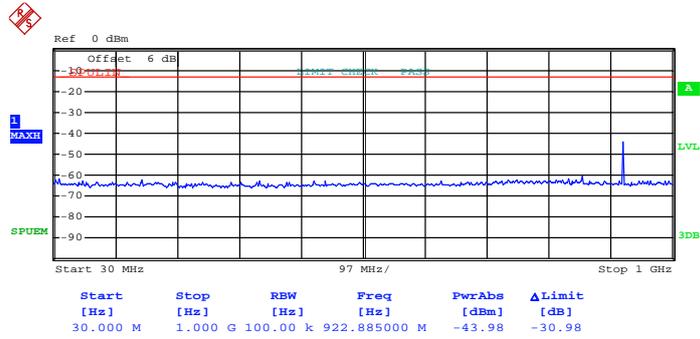
Date: 7.FEB.2014 20:18:43



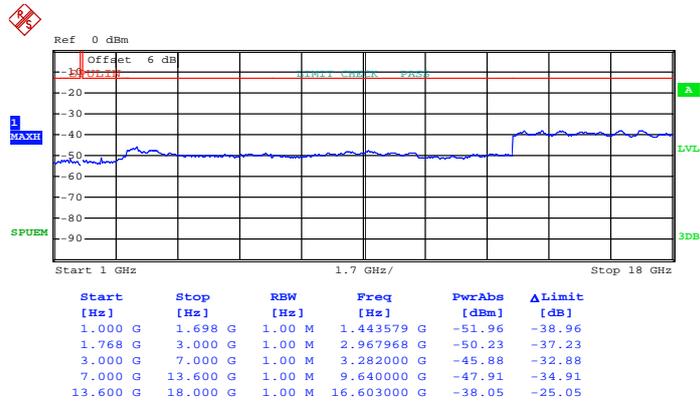
Date: 7.FEB.2014 20:16:17



16QAM (RB Size 1, RB Offset 0)



Date: 7.FEB.2014 20:17:09

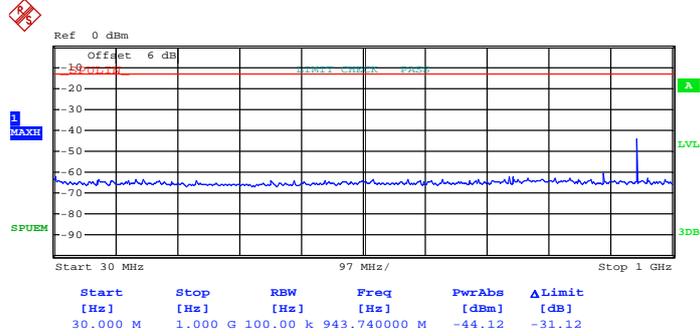


Date: 7.FEB.2014 20:16:39

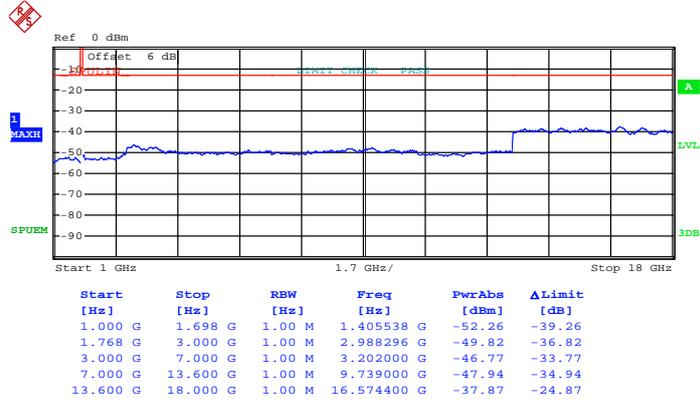


| | | | |
|--------------|------------|-----------|----------------|
| Band : | LTE Band 4 | Channel : | CH20385 (High) |
| Band Width : | 3MHz | | |

QPSK (RB Size 1, RB Offset 7)



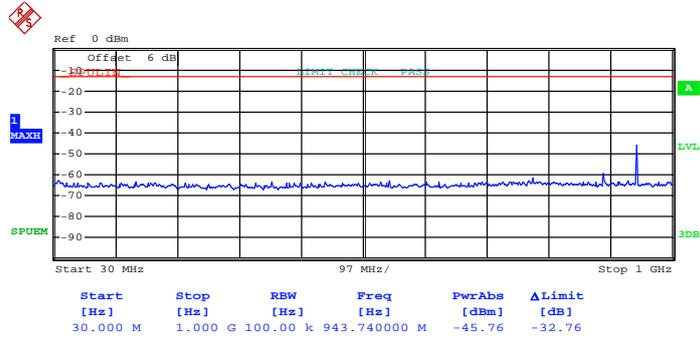
Date: 7.FEB.2014 20:21:02



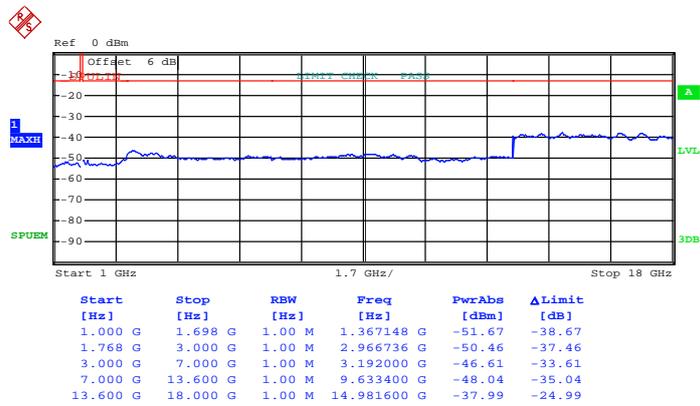
Date: 7.FEB.2014 20:23:27



16QAM (RB Size 1, RB Offset 0)



Date: 7.FEB.2014 20:21:17

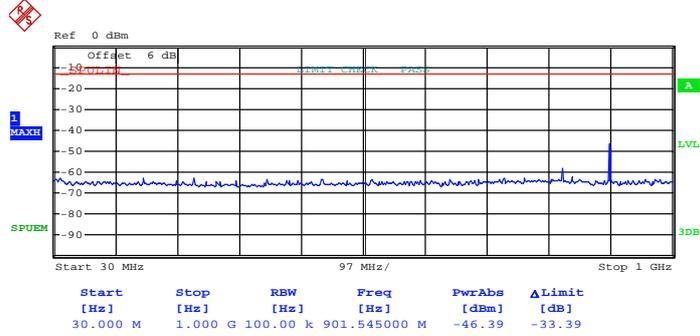


Date: 7.FEB.2014 20:24:31

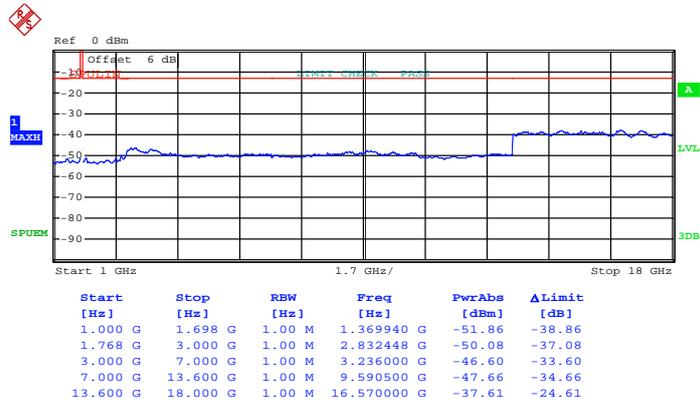


| | | | |
|--------------|------------|-----------|---------------|
| Band : | LTE Band 4 | Channel : | CH19975 (Low) |
| Band Width : | 5MHz | | |

QPSK (RB Size 1, RB Offset 0)



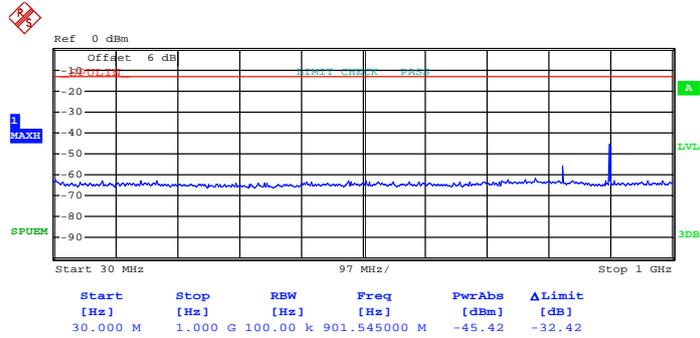
Date: 7.FEB.2014 20:27:49



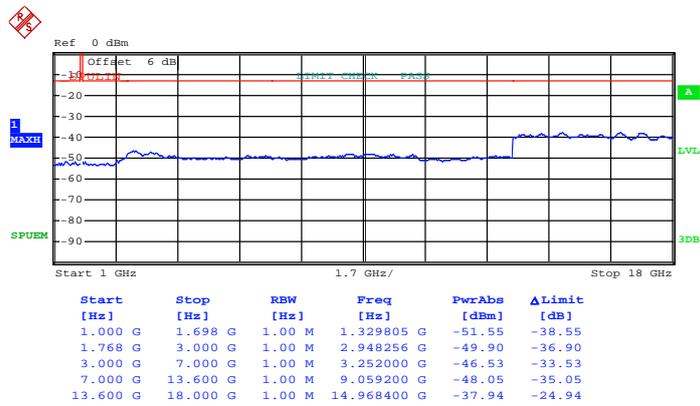
Date: 7.FEB.2014 20:26:58



16QAM (RB Size 1, RB Offset 24)



Date: 7.FEB.2014 20:28:13

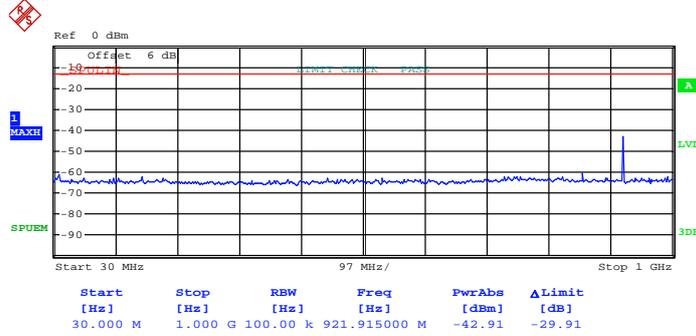


Date: 7.FEB.2014 20:26:34

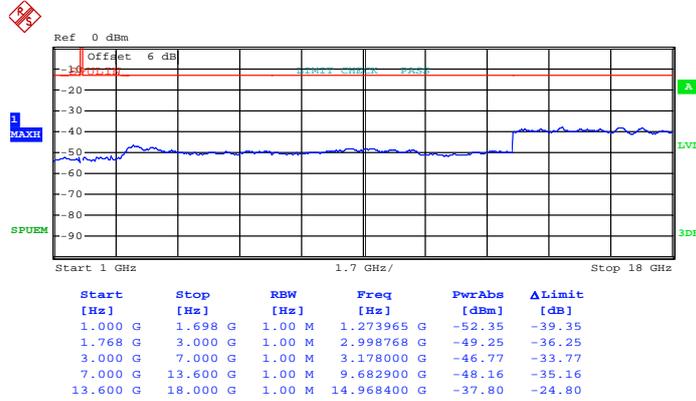


| | | | |
|--------------|------------|-----------|------------------|
| Band : | LTE Band 4 | Channel : | CH20175 (Middle) |
| Band Width : | 5MHz | | |

QPSK (RB Size 1, RB Offset 24)



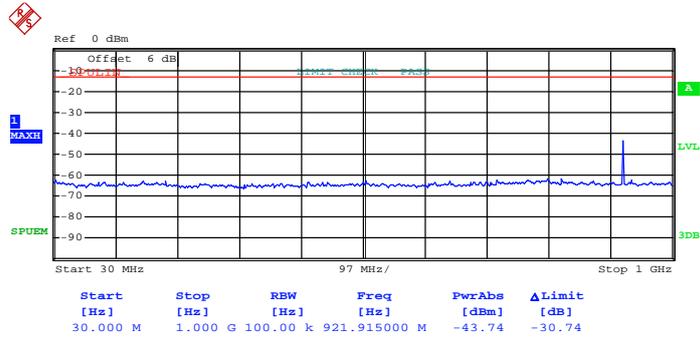
Date: 7.FEB.2014 20:29:23



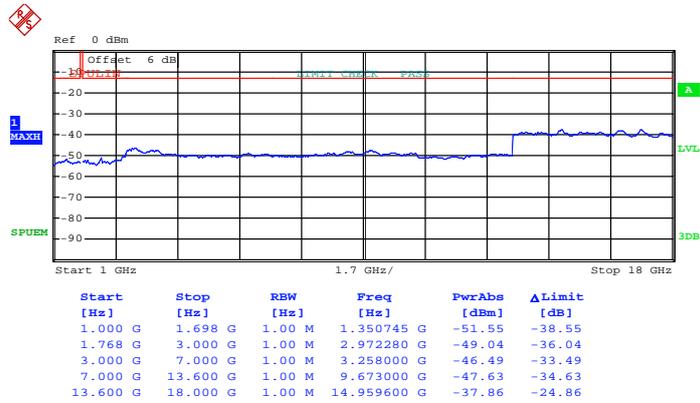
Date: 7.FEB.2014 20:29:55



16QAM (RB Size 1, RB Offset 0)



Date: 7.FEB.2014 20:28:54

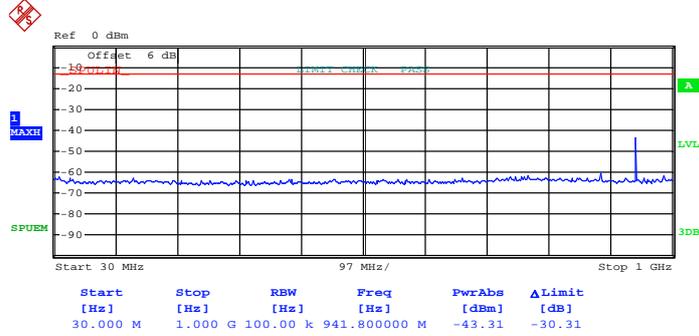


Date: 7.FEB.2014 20:30:17

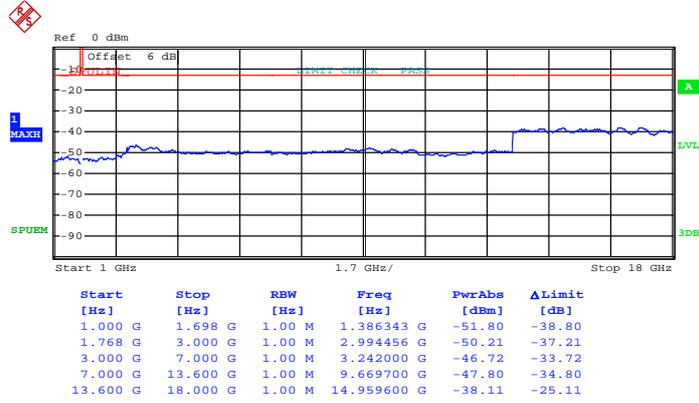


| | | | |
|--------------|------------|-----------|----------------|
| Band : | LTE Band 4 | Channel : | CH20375 (High) |
| Band Width : | 5MHz | | |

QPSK (RB Size 1, RB Offset 0)



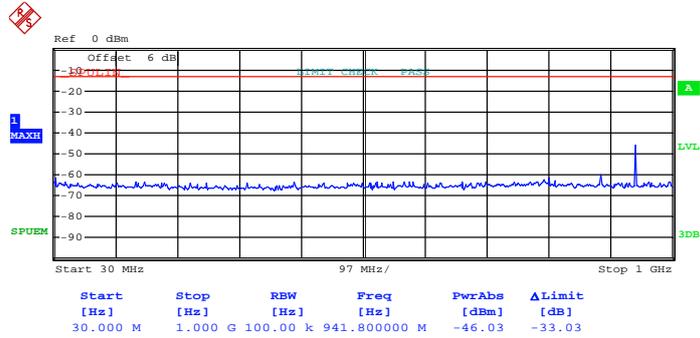
Date: 7.FEB.2014 20:32:55



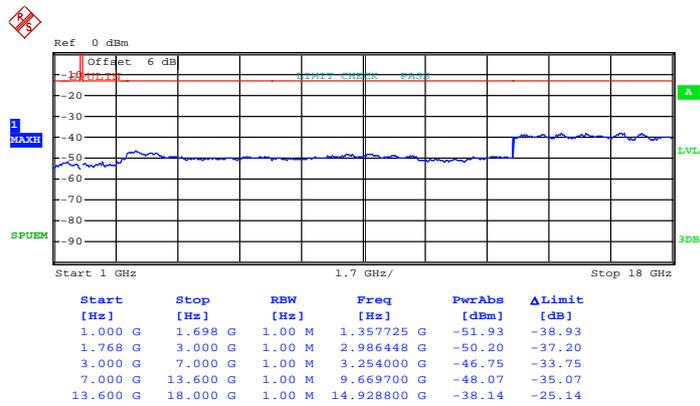
Date: 7.FEB.2014 20:32:11



16QAM (RB Size 1, RB Offset 0)



Date: 7.FEB.2014 20:33:10

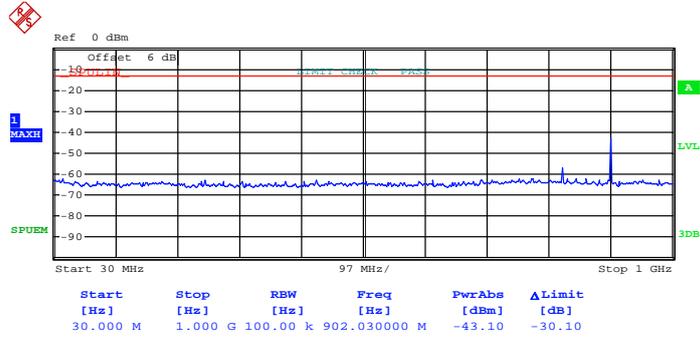


Date: 7.FEB.2014 20:31:49

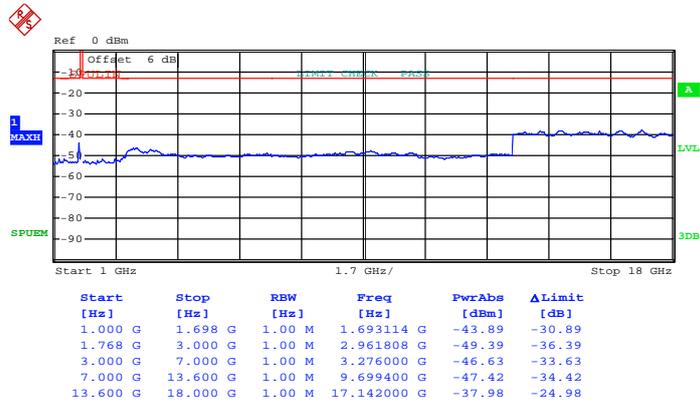


| | | | |
|--------------|------------|-----------|---------------|
| Band : | LTE Band 4 | Channel : | CH20000 (Low) |
| Band Width : | 10MHz | | |

QPSK (RB Size 1, RB Offset 0)



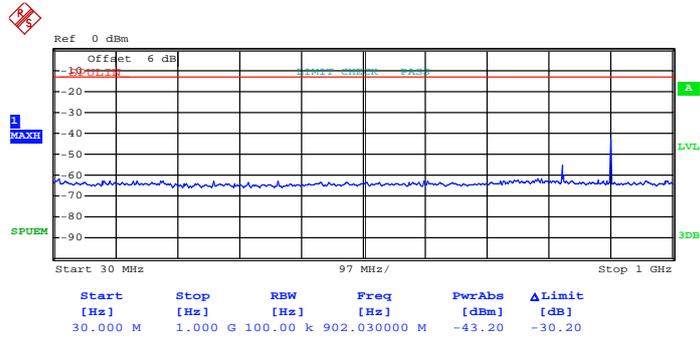
Date: 7.FEB.2014 20:34:31



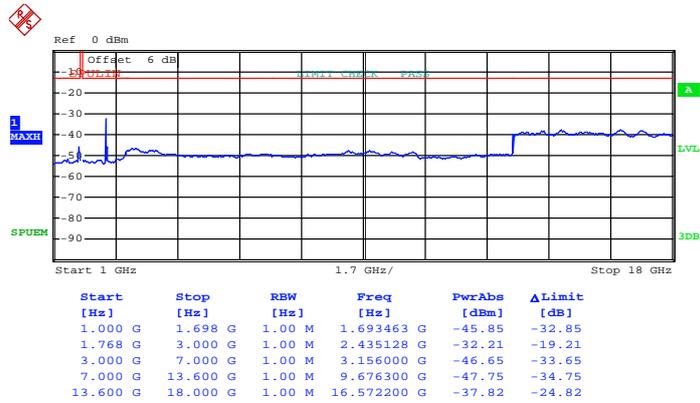
Date: 7.FEB.2014 20:35:03



16QAM (RB Size 1, RB Offset 0)



Date: 7.FEB.2014 20:34:15

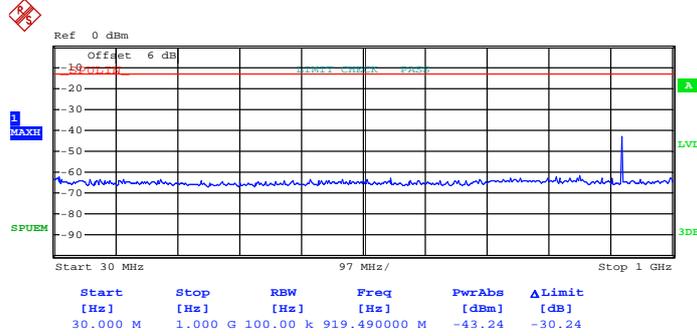


Date: 7.FEB.2014 20:35:39

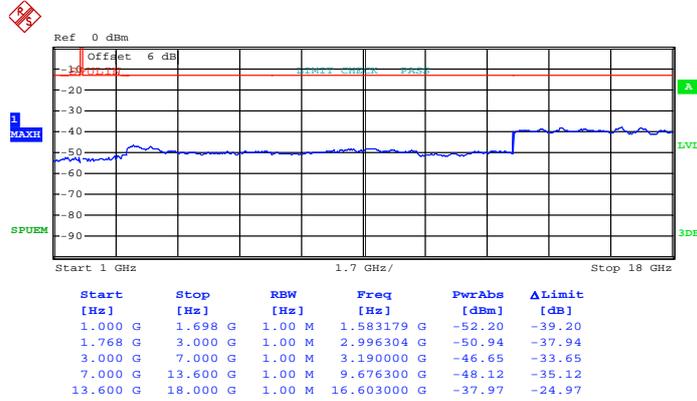


| | | | |
|--------------|------------|-----------|------------------|
| Band : | LTE Band 4 | Channel : | CH20175 (Middle) |
| Band Width : | 10MHz | | |

QPSK (RB Size 1, RB Offset 49)



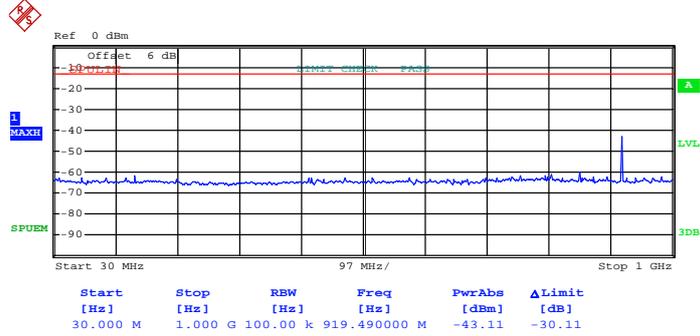
Date: 7.FEB.2014 20:37:10



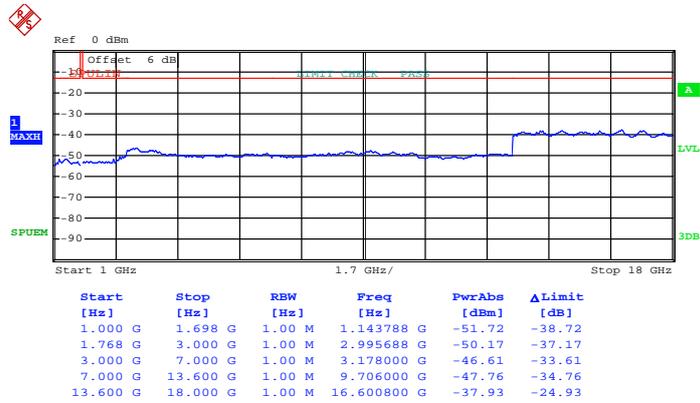
Date: 7.FEB.2014 20:36:49



16QAM (RB Size 1, RB Offset 49)



Date: 7.FEB.2014 20:37:30

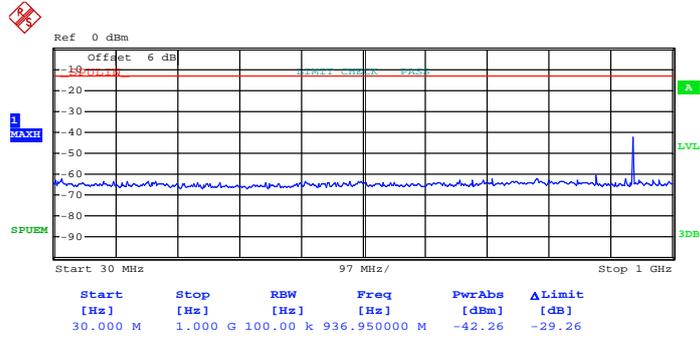


Date: 7.FEB.2014 20:36:31

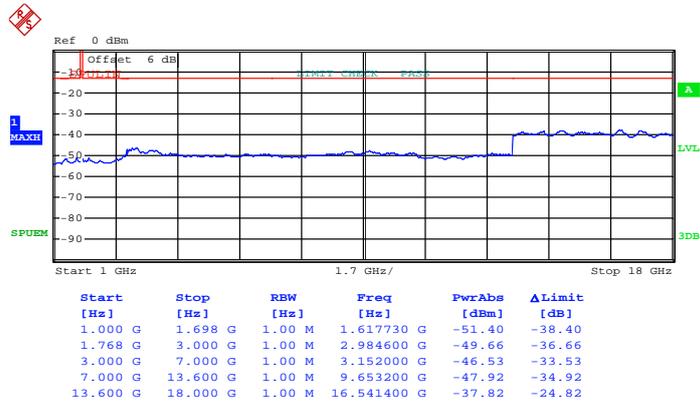


| | | | |
|--------------|------------|-----------|----------------|
| Band : | LTE Band 4 | Channel : | CH20350 (High) |
| Band Width : | 10MHz | | |

QPSK (RB Size 1, RB Offset 24)



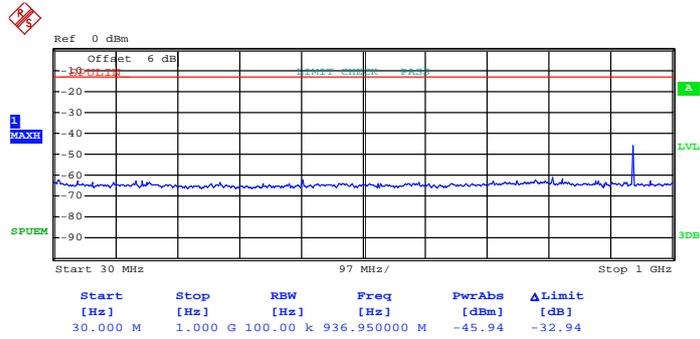
Date: 7.FEB.2014 20:38:39



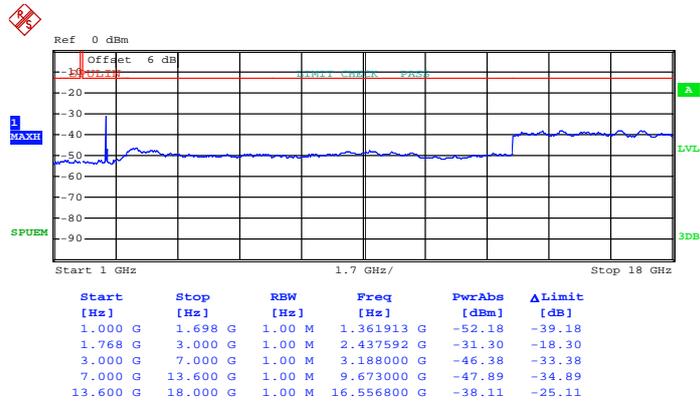
Date: 7.FEB.2014 20:39:16



16QAM (RB Size 1, RB Offset 0)



Date: 7.FEB.2014 20:38:24

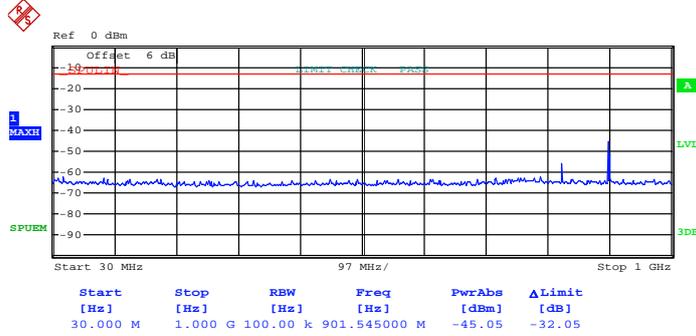


Date: 7.FEB.2014 20:39:34

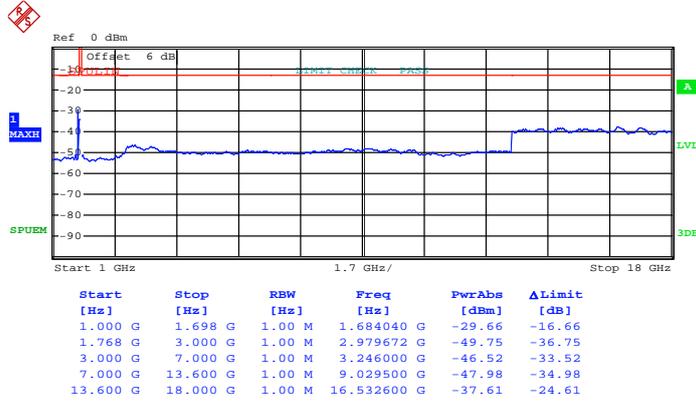


| | | | |
|--------------|------------|-----------|---------------|
| Band : | LTE Band 4 | Channel : | CH20025 (Low) |
| Band Width : | 15MHz | | |

QPSK (RB Size 1, RB Offset 0)



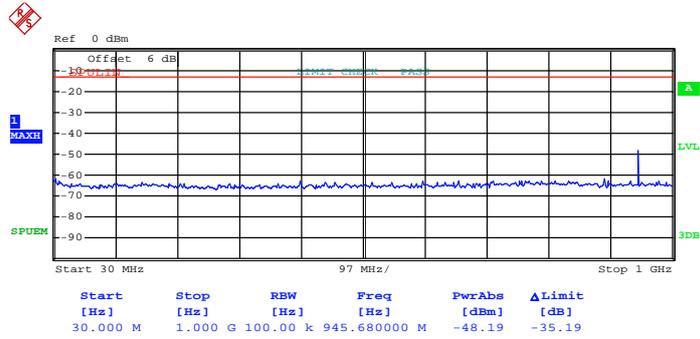
Date: 7.FEB.2014 20:05:02



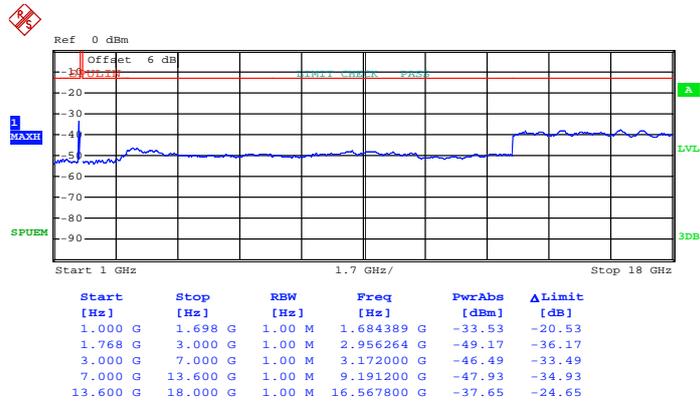
Date: 7.FEB.2014 20:43:12



16QAM (RB Size 1, RB Offset 0)



Date: 7.FEB.2014 20:09:57

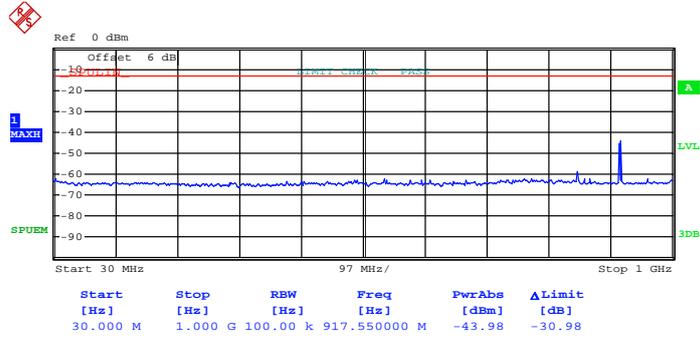


Date: 7.FEB.2014 20:43:38

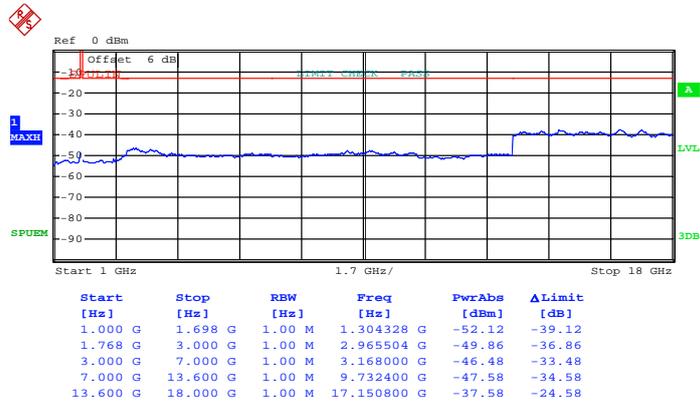


| | | | |
|--------------|------------|-----------|------------------|
| Band : | LTE Band 4 | Channel : | CH20175 (Middle) |
| Band Width : | 15MHz | | |

QPSK (RB Size 1, RB Offset 74)



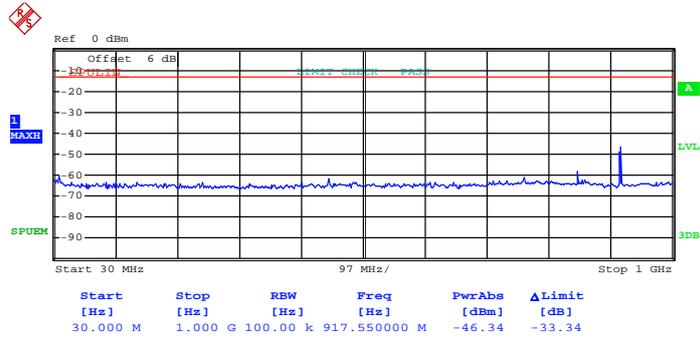
Date: 7.FEB.2014 20:46:02



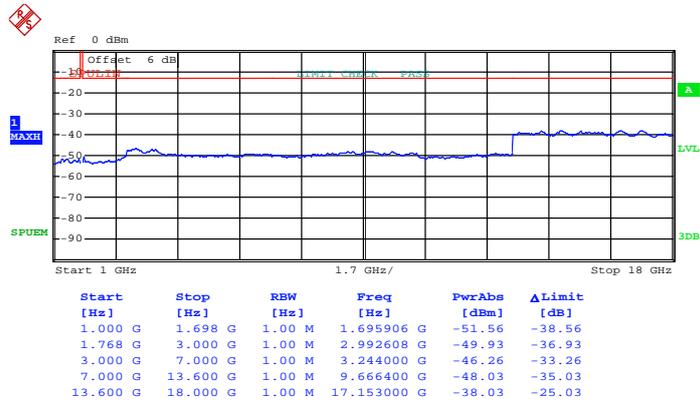
Date: 7.FEB.2014 20:45:18



16QAM (RB Size 1, RB Offset 74)



Date: 7.FEB.2014 20:46:22

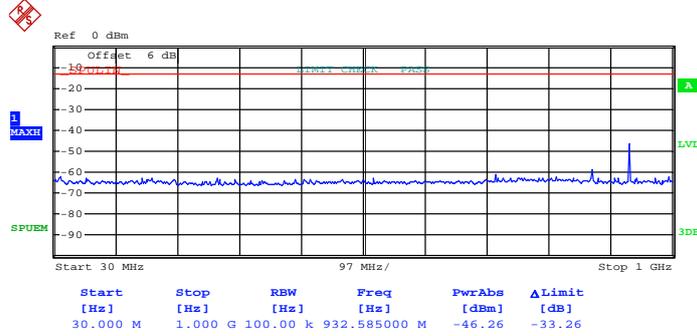


Date: 7.FEB.2014 20:44:52

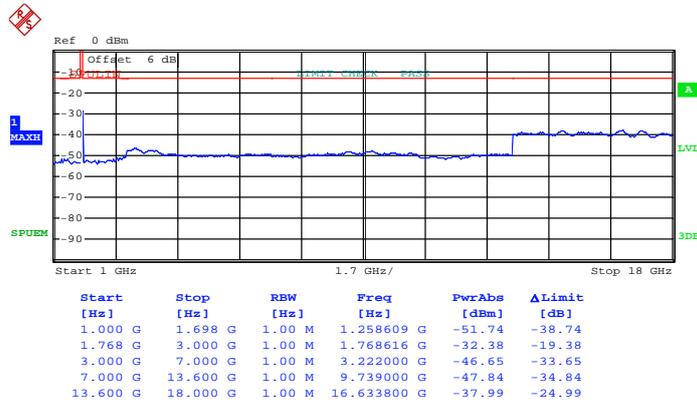


| | | | |
|--------------|------------|-----------|----------------|
| Band : | LTE Band 4 | Channel : | CH20325 (High) |
| Band Width : | 15MHz | | |

QPSK (RB Size 1, RB Offset 0)



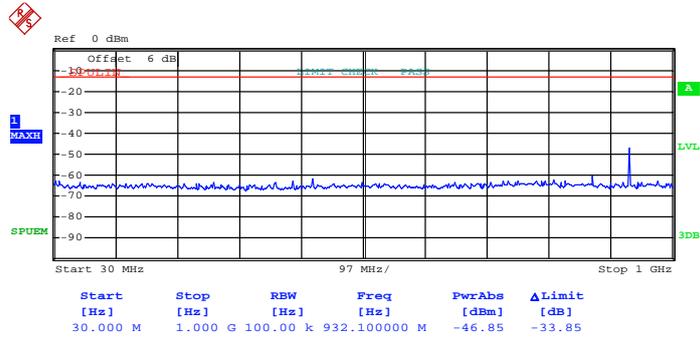
Date: 7.FEB.2014 20:47:24



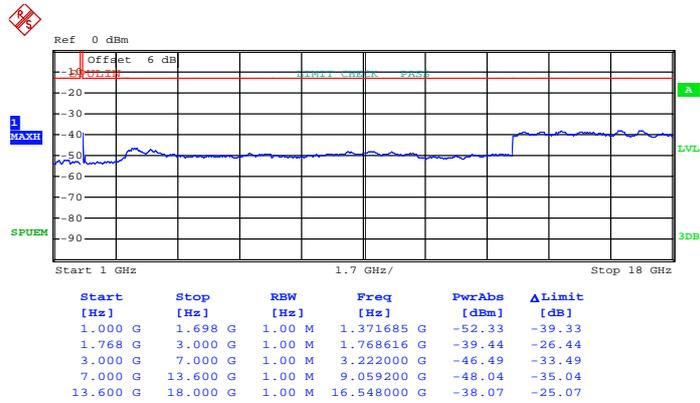
Date: 7.FEB.2014 20:47:59



16QAM (RB Size 1, RB Offset 74)



Date: 7.FEB.2014 20:48:57

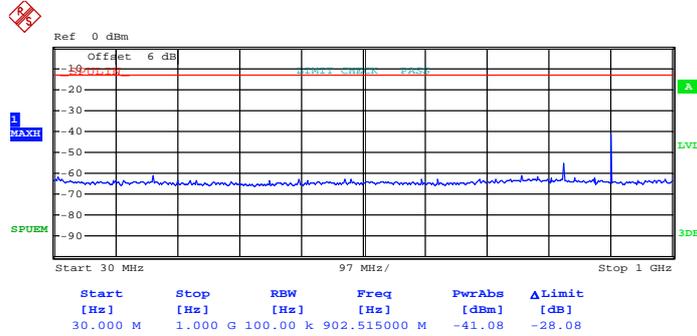


Date: 7.FEB.2014 20:48:16

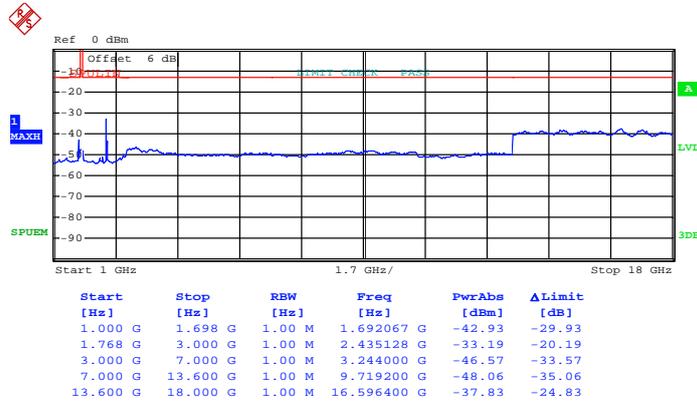


| | | | |
|--------------|------------|-----------|---------------|
| Band : | LTE Band 4 | Channel : | CH20050 (Low) |
| Band Width : | 20MHz | | |

QPSK (RB Size 1, RB Offset 0)



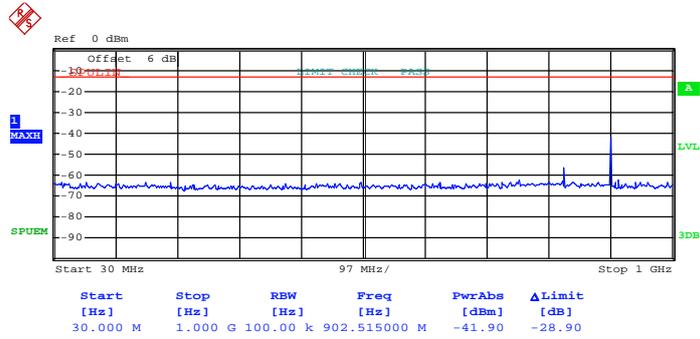
Date: 7.FEB.2014 20:50:17



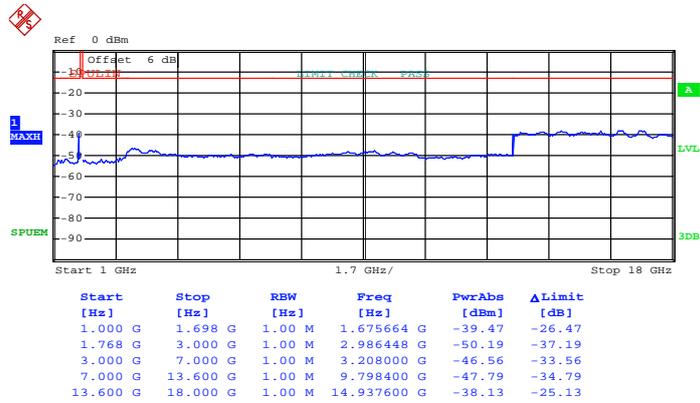
Date: 7.FEB.2014 20:50:46



16QAM (RB Size 1, RB Offset 0)



Date: 7.FEB.2014 20:49:54

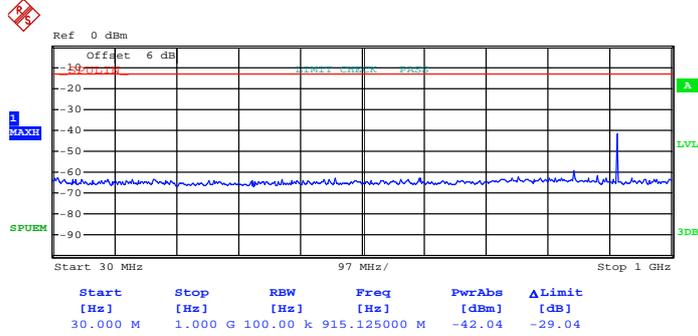


Date: 7.FEB.2014 20:51:06

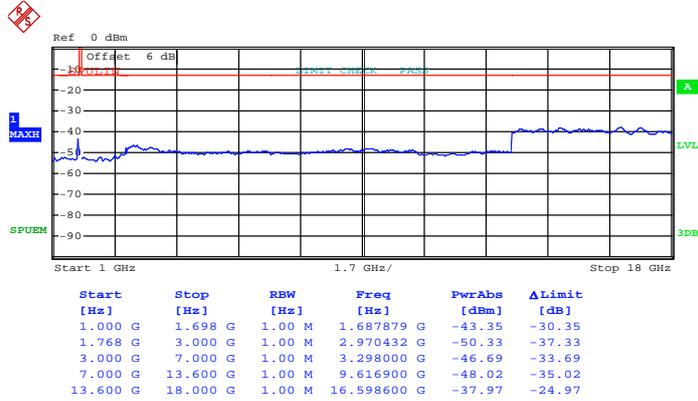


| | | | |
|--------------|------------|-----------|------------------|
| Band : | LTE Band 4 | Channel : | CH20175 (Middle) |
| Band Width : | 20MHz | | |

QPSK (RB Size 1, RB Offset 0)



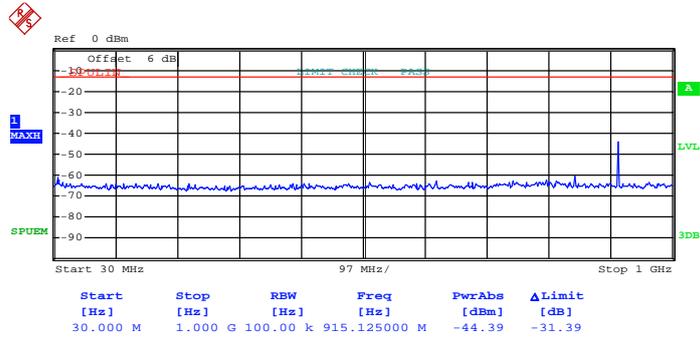
Date: 7.FEB.2014 20:52:20



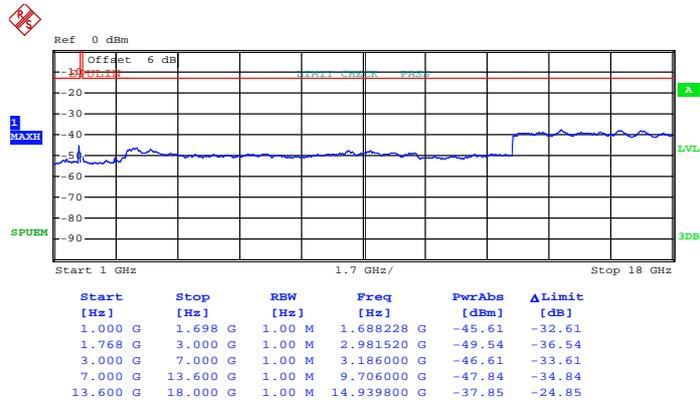
Date: 7.FEB.2014 20:51:59



16QAM (RB Size 1, RB Offset 0)



Date: 7.FEB.2014 20:52:34

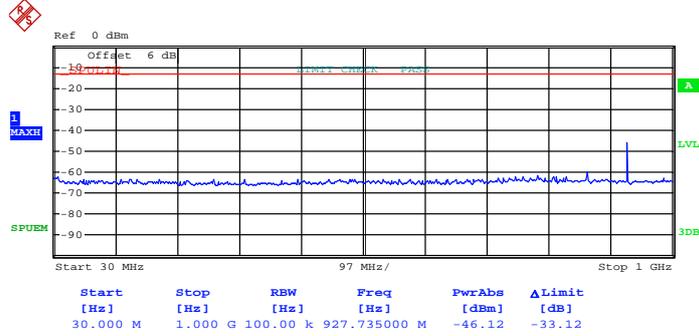


Date: 7.FEB.2014 20:51:38

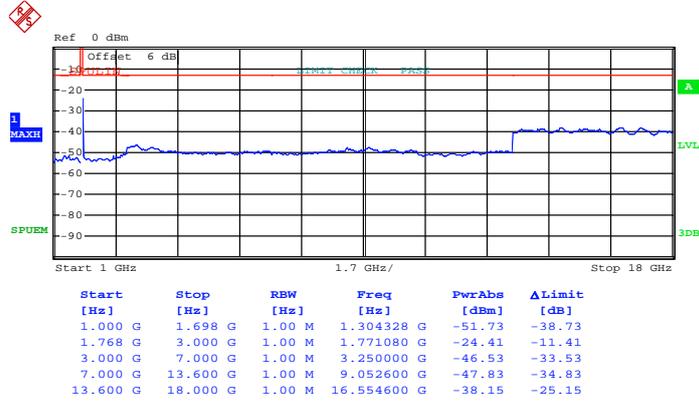


| | | | |
|--------------|------------|-----------|----------------|
| Band : | LTE Band 4 | Channel : | CH20300 (High) |
| Band Width : | 20MHz | | |

QPSK (RB Size 1, RB Offset 49)



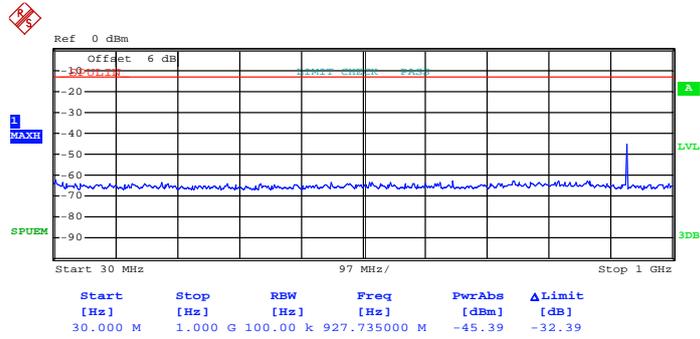
Date: 7.FEB.2014 20:53:20



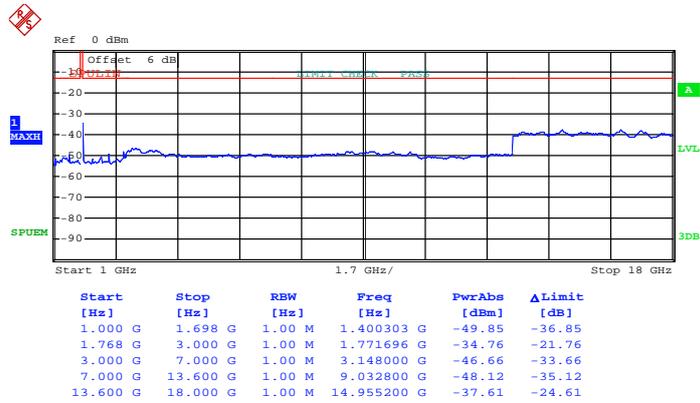
Date: 7.FEB.2014 20:53:51



16QAM (RB Size 1, RB Offset 49)



Date: 7.FEB.2014 20:53:02



Date: 7.FEB.2014 20:54:10

3.7 Radiated Spurious Emission Measurement

3.7.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI / TIA / EIA-603-C-2004.

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

3.7.2 Measuring Instruments

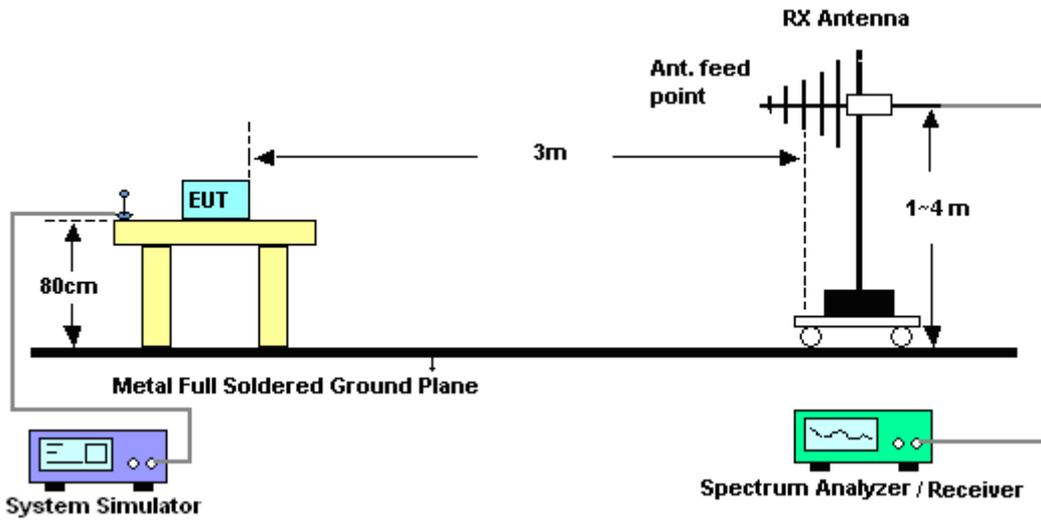
Measuring equipment is listed in the section 4 of this test report.

3.7.3 Test Procedures

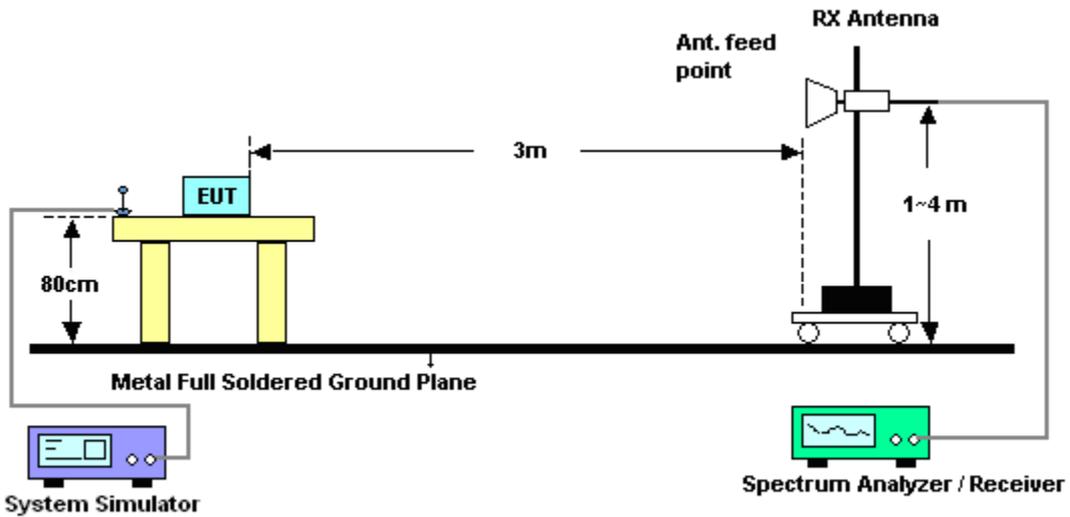
1. The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
11. $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
12. $ERP \text{ (dBm)} = EIRP - 2.15$

3.7.4 Test Setup

For radiated emissions from 30MHz to 1GHz



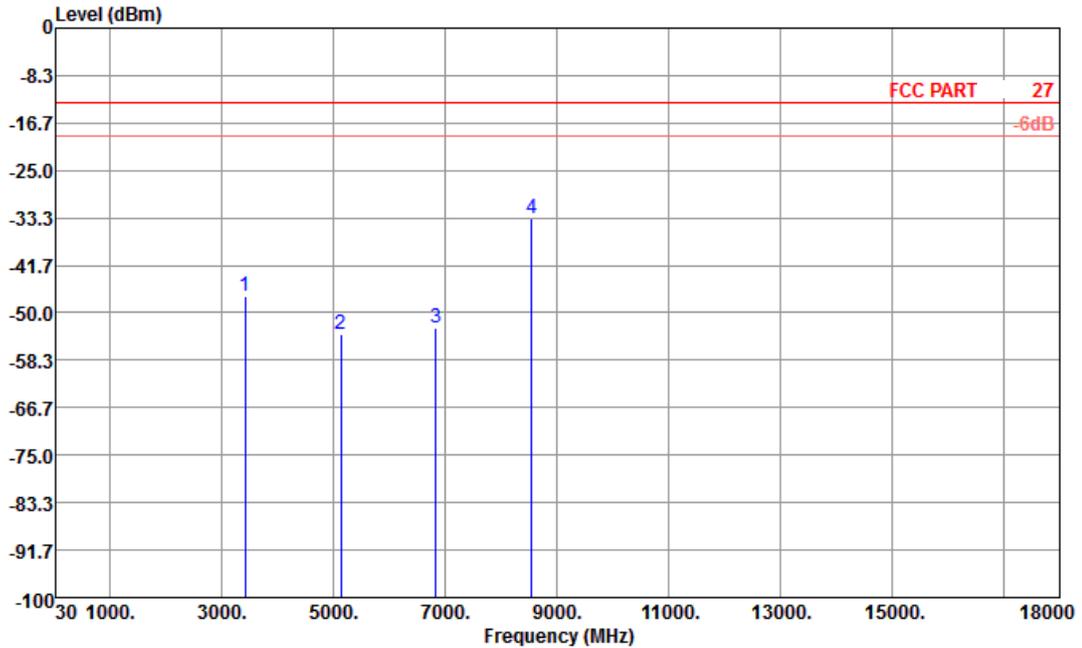
For radiated emissions above 1GHz





3.7.5 Test Result of Field Strength of Spurious Radiated

| | | | |
|------------------------|--|----------------------------|------------|
| Band : | LTE Band 4 | Temperature : | 23~24°C |
| Test Mode : | 1.4MHz QPSK RB Size 1 Offset 0 | Relative Humidity : | 43~44% |
| Test Engineer : | Stone Gu | Polarization : | Horizontal |
| Remark : | Spurious emissions within 30-10th harmonic were found more than 20dB below limit line. | | |

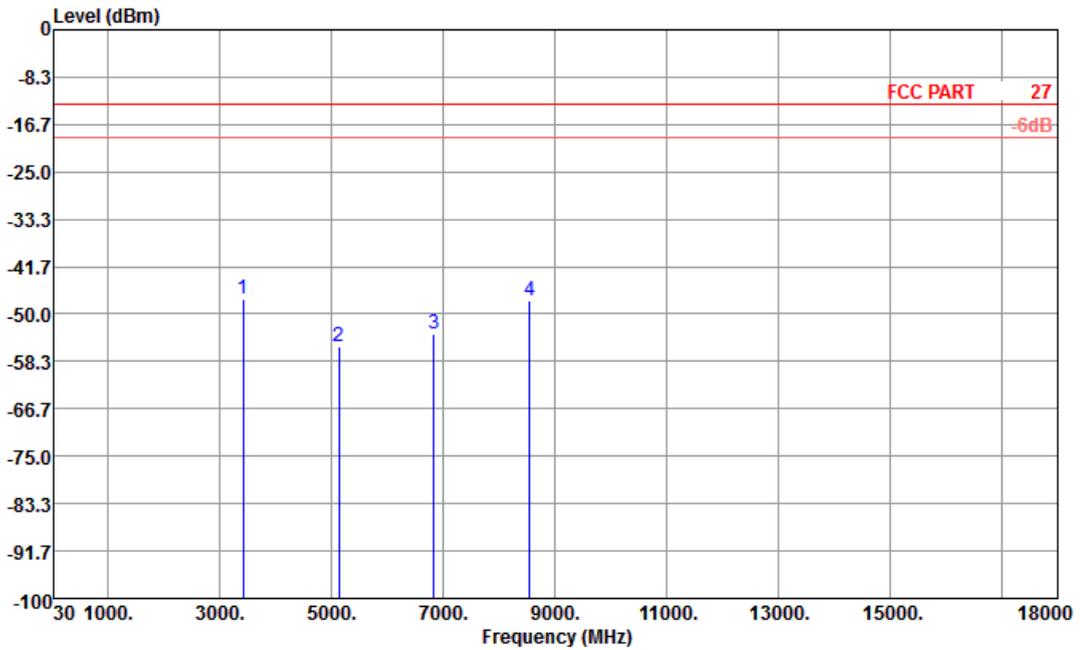


Site : 03CH01-KS
 Condition : FCC PART 27 HF_EIRP_FACTOR130726 HORIZONTAL

| Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|-----------------|------------|-------------|-----------------|-------------------|------------------|--------------------|-----------------------|--------------------|--------|
| 3420 | -47.03 | -13 | -34.03 | -53.92 | -52.43 | 2.2 | 7.60 | H | Pass |
| 5130 | -53.86 | -13 | -40.86 | -63.84 | -60.64 | 3.12 | 9.90 | H | Pass |
| 6842 | -52.63 | -13 | -39.63 | -61.72 | -60.52 | 2.98 | 10.87 | H | Pass |
| 8552 | -33.32 | -13 | -20.32 | -51.11 | -42.81 | 2.97 | 12.46 | H | Pass |



| | | | |
|------------------------|--|----------------------------|----------|
| Band : | LTE Band 4 | Temperature : | 23~24°C |
| Test Mode : | 1.4MHz QPSK RB Size 1 Offset 0 | Relative Humidity : | 43~44% |
| Test Engineer : | Stone Gu | Polarization : | Vertical |
| Remark : | Spurious emissions within 30-10th harmonic were found more than 20dB below limit line. | | |

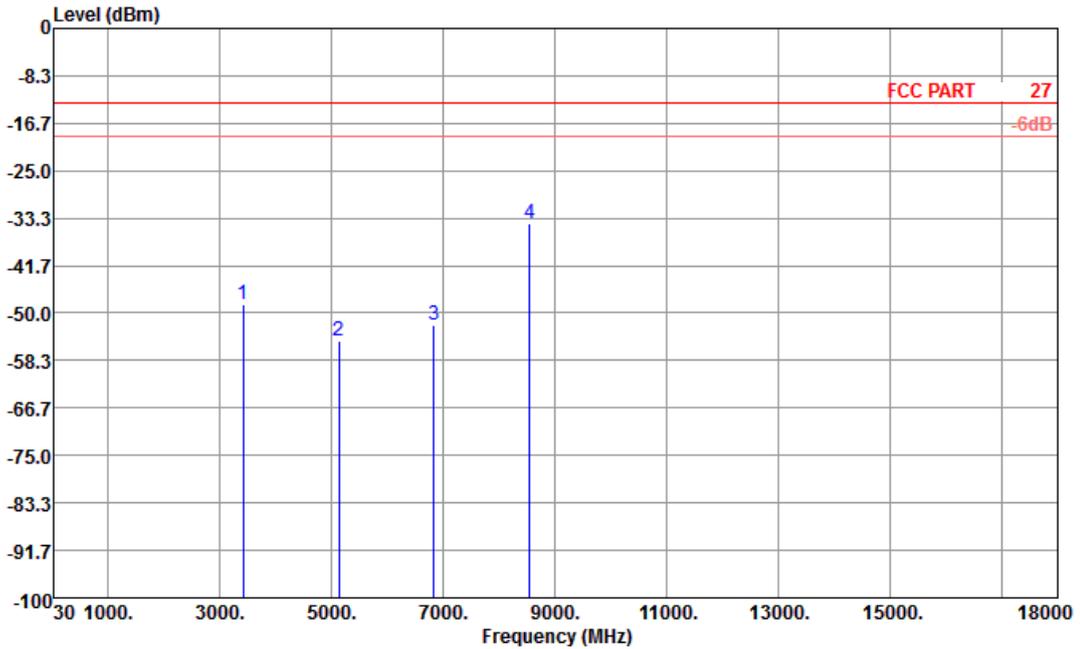


Site : 03CH01-KS
 Condition : FCC PART 27 HF_EIRP_FACTOR130726 VERTICAL

| Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|----------------------|-----------------|------------------|-------------------------|---------------------------|--------------------------|----------------------------|-------------------------------|-------------------------|--------|
| 3420 | -47.39 | -13 | -34.39 | -54.11 | -52.79 | 2.2 | 7.6 | V | Pass |
| 5130 | -55.66 | -13 | -42.66 | -63.63 | -62.44 | 3.12 | 9.9 | V | Pass |
| 6842 | -53.36 | -13 | -40.36 | -63.88 | -61.25 | 2.98 | 10.87 | V | Pass |
| 8552 | -47.60 | -13 | -34.60 | -59.86 | -57.09 | 2.97 | 12.46 | V | Pass |



| | | | |
|------------------------|--|----------------------------|------------|
| Band : | LTE Band 4 | Temperature : | 23~24°C |
| Test Mode : | 3MHz QPSK RB Size 1 Offset 0 | Relative Humidity : | 43~44% |
| Test Engineer : | Stone Gu | Polarization : | Horizontal |
| Remark : | Spurious emissions within 30-10th harmonic were found more than 20dB below limit line. | | |

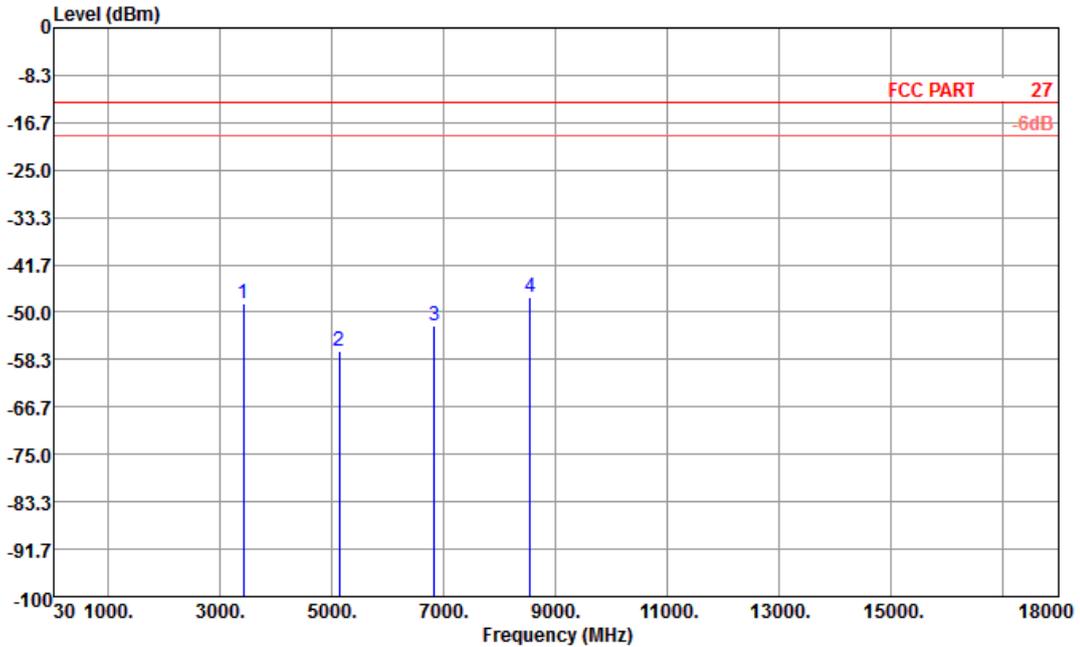


Site : 03CH01-KS
 Condition : FCC PART 27 HF_EIRP_FACTOR130726 HORIZONTAL

| Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|-----------------|------------|-------------|-----------------|-------------------|------------------|--------------------|-----------------------|--------------------|--------|
| 3420 | -48.50 | -13 | -35.50 | -54.84 | -53.90 | 2.2 | 7.60 | H | Pass |
| 5130 | -54.82 | -13 | -41.82 | -64.69 | -61.60 | 3.12 | 9.90 | H | Pass |
| 6842 | -52.00 | -13 | -39.00 | -61.65 | -59.89 | 2.98 | 10.87 | H | Pass |
| 8552 | -34.39 | -13 | -21.39 | -52.10 | -43.88 | 2.97 | 12.46 | H | Pass |



| | | | |
|------------------------|--|----------------------------|----------|
| Band : | LTE Band 4 | Temperature : | 23~24°C |
| Test Mode : | 3MHz QPSK RB Size 1 Offset 0 | Relative Humidity : | 43~44% |
| Test Engineer : | Stone Gu | Polarization : | Vertical |
| Remark : | Spurious emissions within 30-10th harmonic were found more than 20dB below limit line. | | |

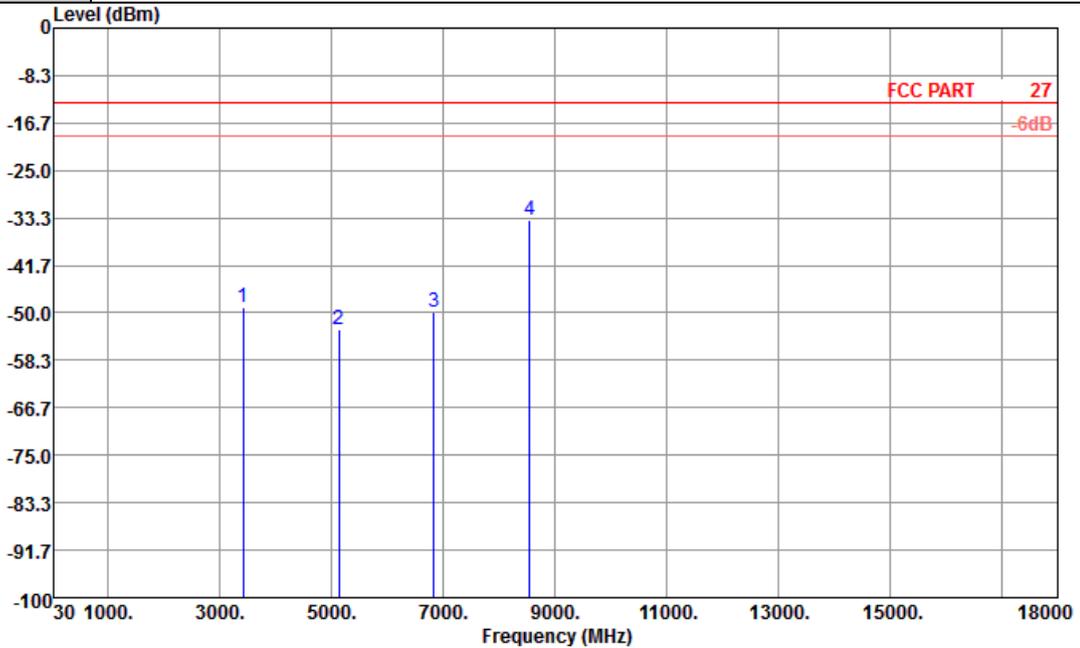


Site : 03CH01-KS
 Condition : FCC PART 27 HF_EIRP_FACTOR130726 VERTICAL

| Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|----------------------|-----------------|------------------|-------------------------|---------------------------|--------------------------|----------------------------|-------------------------------|-------------------------|--------|
| 3420 | -48.40 | -13 | -35.40 | -54.82 | -53.80 | 2.2 | 7.6 | V | Pass |
| 5130 | -56.77 | -13 | -43.77 | -64.74 | -63.55 | 3.12 | 9.9 | V | Pass |
| 6842 | -52.24 | -13 | -39.24 | -62.76 | -60.13 | 2.98 | 10.87 | V | Pass |
| 8552 | -47.26 | -13 | -34.26 | -59.62 | -56.75 | 2.97 | 12.46 | V | Pass |



| | | | |
|------------------------|--|----------------------------|------------|
| Band : | LTE Band 4 | Temperature : | 23~24°C |
| Test Mode : | 5MHz QPSK RB Size 1 Offset 0 | Relative Humidity : | 43~44% |
| Test Engineer : | Stone Gu | Polarization : | Horizontal |
| Remark : | Spurious emissions within 30-10th harmonic were found more than 20dB below limit line. | | |



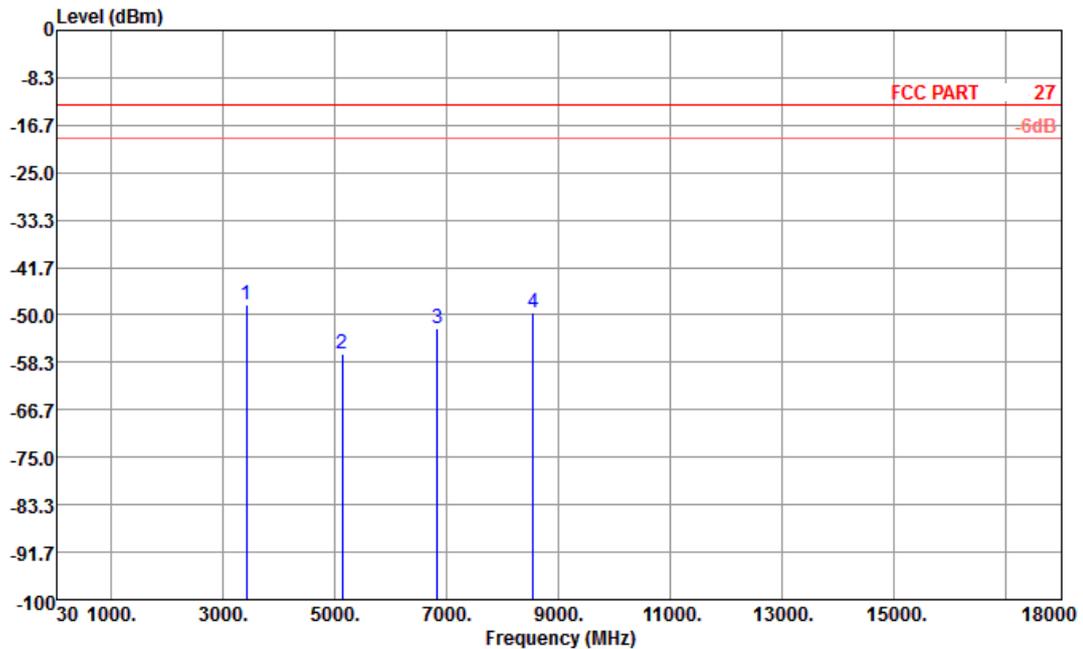
Site : 03CH01-KS

Condition : FCC PART 27 HF_EIRP_FACTOR130726 HORIZONTAL

| Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|-----------------|------------|-------------|-----------------|-------------------|------------------|--------------------|-----------------------|--------------------|--------|
| 3420 | -49.15 | -13 | -36.15 | -55.27 | -54.55 | 2.2 | 7.60 | H | Pass |
| 5130 | -52.90 | -13 | -39.90 | -63.64 | -59.68 | 3.12 | 9.90 | H | Pass |
| 6842 | -49.88 | -13 | -36.88 | -60.91 | -57.77 | 2.98 | 10.87 | H | Pass |
| 8552 | -33.58 | -13 | -20.58 | -51.37 | -43.07 | 2.97 | 12.46 | H | Pass |



| | | | |
|------------------------|--|----------------------------|----------|
| Band : | LTE Band 4 | Temperature : | 23~24°C |
| Test Mode : | 5MHz QPSK RB Size 1 Offset 0 | Relative Humidity : | 43~44% |
| Test Engineer : | Stone Gu | Polarization : | Vertical |
| Remark : | Spurious emissions within 30-10th harmonic were found more than 20dB below limit line. | | |

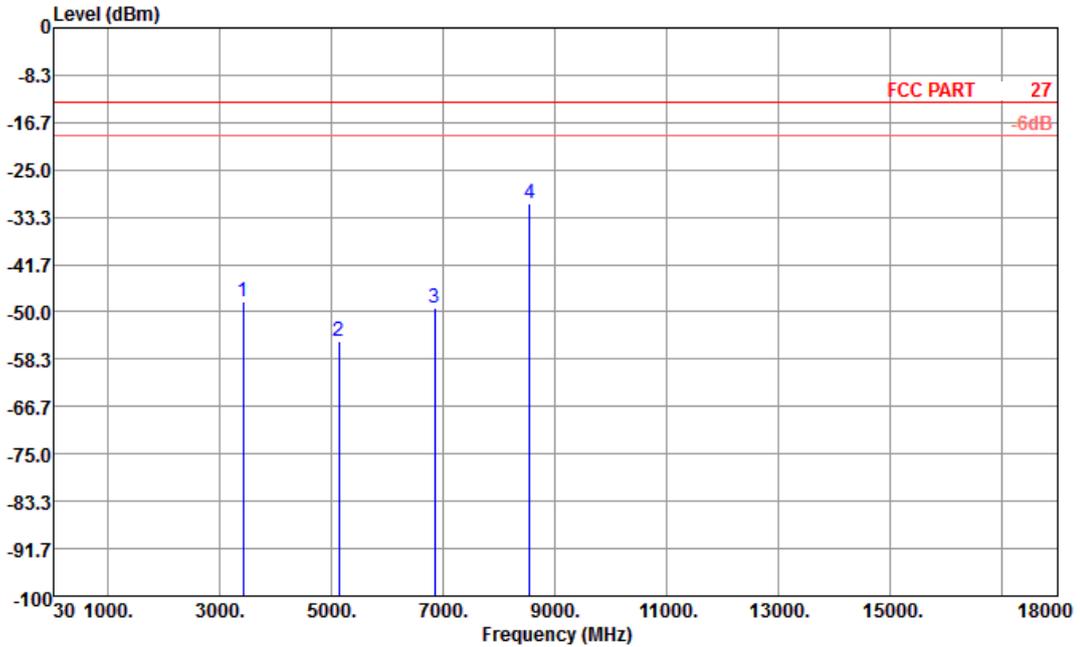


Site : 03CH01-KS
 Condition : FCC PART 27 HF_EIRP_FACTOR130726 VERTICAL

| Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|-----------------|------------|-------------|-----------------|-------------------|------------------|--------------------|-----------------------|--------------------|--------|
| 3420 | -48.31 | -13 | -35.31 | -54.75 | -53.71 | 2.2 | 7.6 | V | Pass |
| 5130 | -56.73 | -13 | -43.73 | -64.7 | -63.51 | 3.12 | 9.9 | V | Pass |
| 6842 | -52.49 | -13 | -39.49 | -63.01 | -60.38 | 2.98 | 10.87 | V | Pass |
| 8552 | -49.47 | -13 | -36.47 | -60.9 | -58.96 | 2.97 | 12.46 | V | Pass |



| | | | |
|------------------------|--|----------------------------|------------|
| Band : | LTE Band 4 | Temperature : | 23~24°C |
| Test Mode : | 10MHz QPSK RB Size 1 Offset 0 | Relative Humidity : | 43~44% |
| Test Engineer : | Stone Gu | Polarization : | Horizontal |
| Remark : | Spurious emissions within 30-10th harmonic were found more than 20dB below limit line. | | |

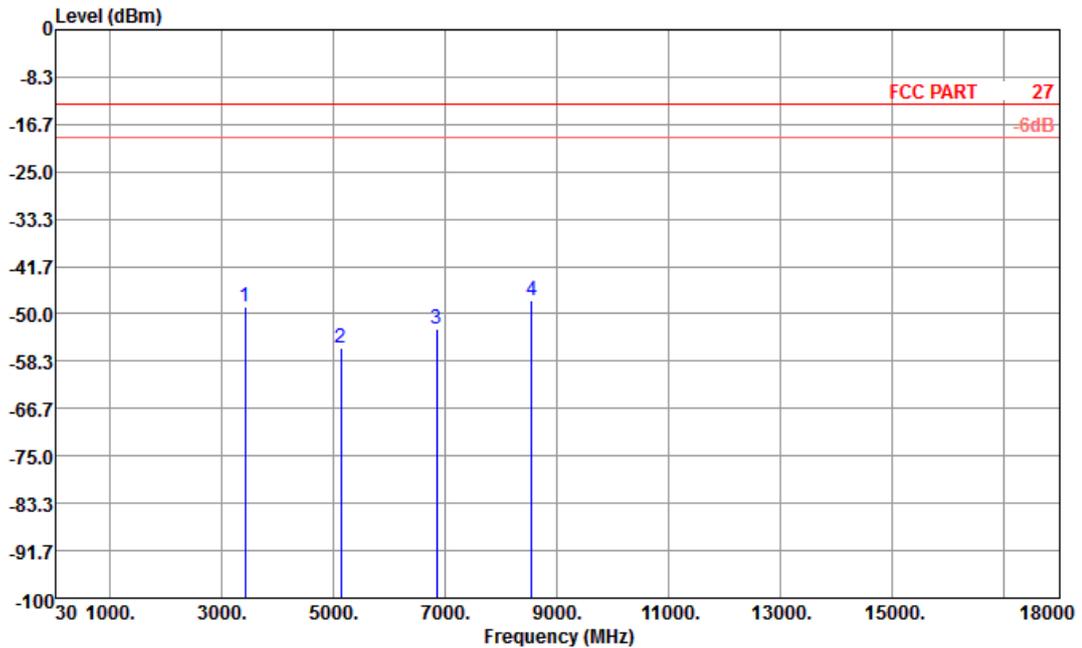


Site : 03CH01-KS
 Condition : FCC PART 27 HF_EIRP_FACTOR130726 HORIZONTAL

| Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|-----------------|------------|-------------|-----------------|-------------------|------------------|--------------------|-----------------------|--------------------|--------|
| 3420 | -48.22 | -13 | -35.22 | -54.66 | -53.62 | 2.2 | 7.60 | H | Pass |
| 5130 | -55.18 | -13 | -42.18 | -65.05 | -61.96 | 3.12 | 9.90 | H | Pass |
| 6844 | -49.32 | -13 | -36.32 | -60.57 | -57.21 | 2.98 | 10.87 | H | Pass |
| 8554 | -30.95 | -13 | -17.95 | -49.33 | -40.44 | 2.97 | 12.46 | H | Pass |



| | | | |
|------------------------|--|----------------------------|----------|
| Band : | LTE Band 4 | Temperature : | 23~24°C |
| Test Mode : | 10MHz QPSK RB Size 1 Offset 0 | Relative Humidity : | 43~44% |
| Test Engineer : | Stone Gu | Polarization : | Vertical |
| Remark : | Spurious emissions within 30-10th harmonic were found more than 20dB below limit line. | | |

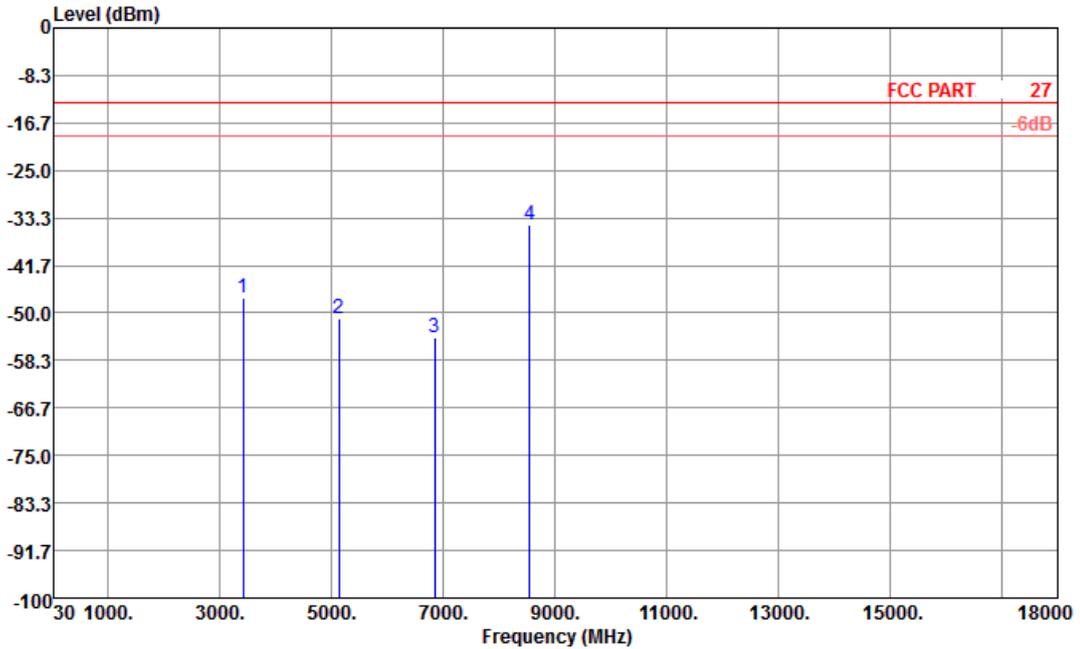


Site : 03CH01-KS
 Condition : FCC PART 27 HF_EIRP_FACTOR130726 VERTICAL

| Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|-----------------|------------|-------------|-----------------|-------------------|------------------|--------------------|-----------------------|--------------------|--------|
| 3420 | -48.81 | -13 | -35.81 | -55.15 | -54.21 | 2.2 | 7.6 | V | Pass |
| 5130 | -55.94 | -13 | -42.94 | -63.91 | -62.72 | 3.12 | 9.9 | V | Pass |
| 6844 | -52.78 | -13 | -39.78 | -63.3 | -60.67 | 2.98 | 10.87 | V | Pass |
| 8554 | -47.71 | -13 | -34.71 | -59.94 | -57.20 | 2.97 | 12.46 | V | Pass |



| | | | |
|------------------------|--|----------------------------|------------|
| Band : | LTE Band 4 | Temperature : | 23~24°C |
| Test Mode : | 15MHz QPSK RB Size 1 Offset 0 | Relative Humidity : | 43~44% |
| Test Engineer : | Stone Gu | Polarization : | Horizontal |
| Remark : | Spurious emissions within 30-10th harmonic were found more than 20dB below limit line. | | |

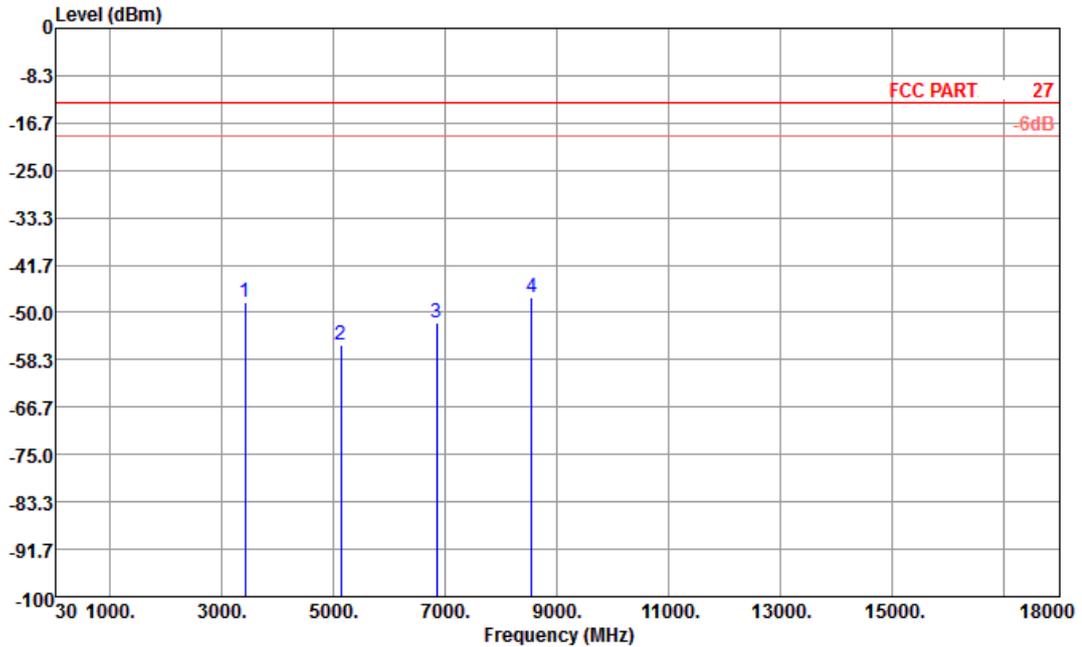


Site : 03CH01-KS
 Condition : FCC PART 27 HF_EIRP_FACTOR130726 HORIZONTAL

| Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|-------------------|--------------|---------------|-------------------|---------------------|--------------------|----------------------|-------------------------|----------------------|--------|
| 3422 | -47.41 | -13 | -34.41 | -54.16 | -52.81 | 2.2 | 7.60 | H | Pass |
| 5132 | -51.08 | -13 | -38.08 | -62.59 | -57.86 | 3.12 | 9.90 | H | Pass |
| 6844 | -54.26 | -13 | -41.26 | -62.55 | -62.15 | 2.98 | 10.87 | H | Pass |
| 8556 | -34.53 | -13 | -21.53 | -52.21 | -44.02 | 2.97 | 12.46 | H | Pass |



| | | | |
|------------------------|--|----------------------------|----------|
| Band : | LTE Band 4 | Temperature : | 23~24°C |
| Test Mode : | 15MHz QPSK RB Size 1 Offset 0 | Relative Humidity : | 43~44% |
| Test Engineer : | Stone Gu | Polarization : | Vertical |
| Remark : | Spurious emissions within 30-10th harmonic were found more than 20dB below limit line. | | |

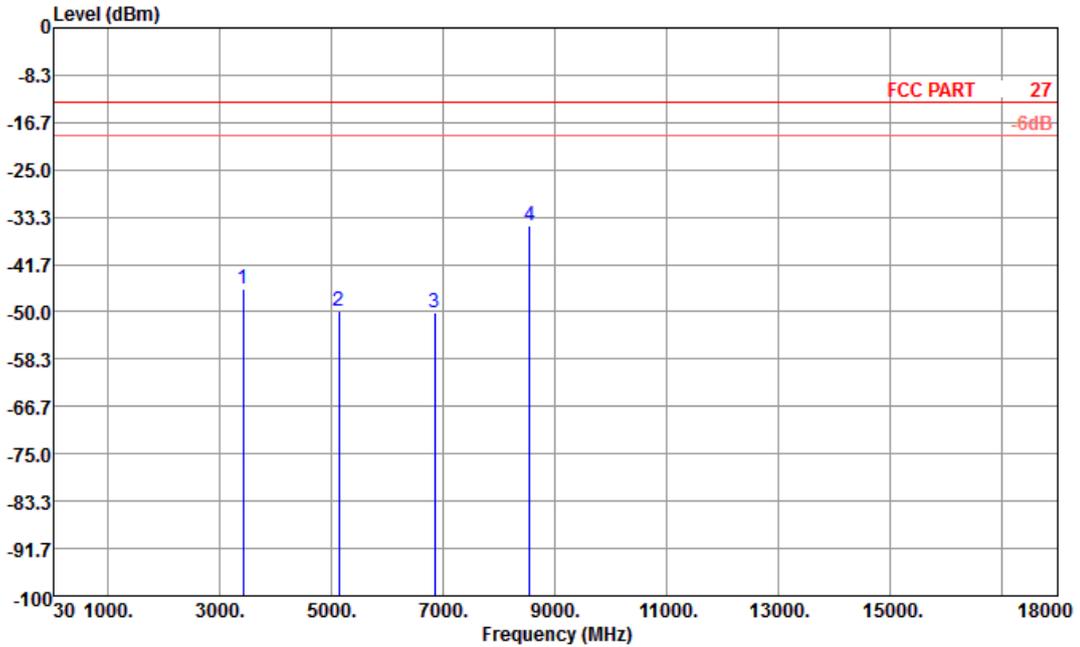


Site : 03CH01-KS
 Condition : FCC PART 27 HF_EIRP_FACTOR130726 VERTICAL

| Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|----------------------|-----------------|------------------|-------------------------|---------------------------|--------------------------|----------------------------|-------------------------------|-------------------------|--------|
| 3420 | -48.07 | -13 | -35.07 | -54.56 | -53.47 | 2.2 | 7.6 | V | Pass |
| 5132 | -55.67 | -13 | -42.67 | -63.64 | -62.45 | 3.12 | 9.9 | V | Pass |
| 6844 | -51.84 | -13 | -38.84 | -62.36 | -59.73 | 2.98 | 10.87 | V | Pass |
| 8556 | -47.24 | -13 | -34.24 | -59.6 | -56.73 | 2.97 | 12.46 | V | Pass |



| | | | |
|------------------------|--|----------------------------|------------|
| Band : | LTE Band 4 | Temperature : | 23~24°C |
| Test Mode : | 20MHz QPSK RB Size 1 Offset 0 | Relative Humidity : | 43~44% |
| Test Engineer : | Stone Gu | Polarization : | Horizontal |
| Remark : | Spurious emissions within 30-10th harmonic were found more than 20dB below limit line. | | |

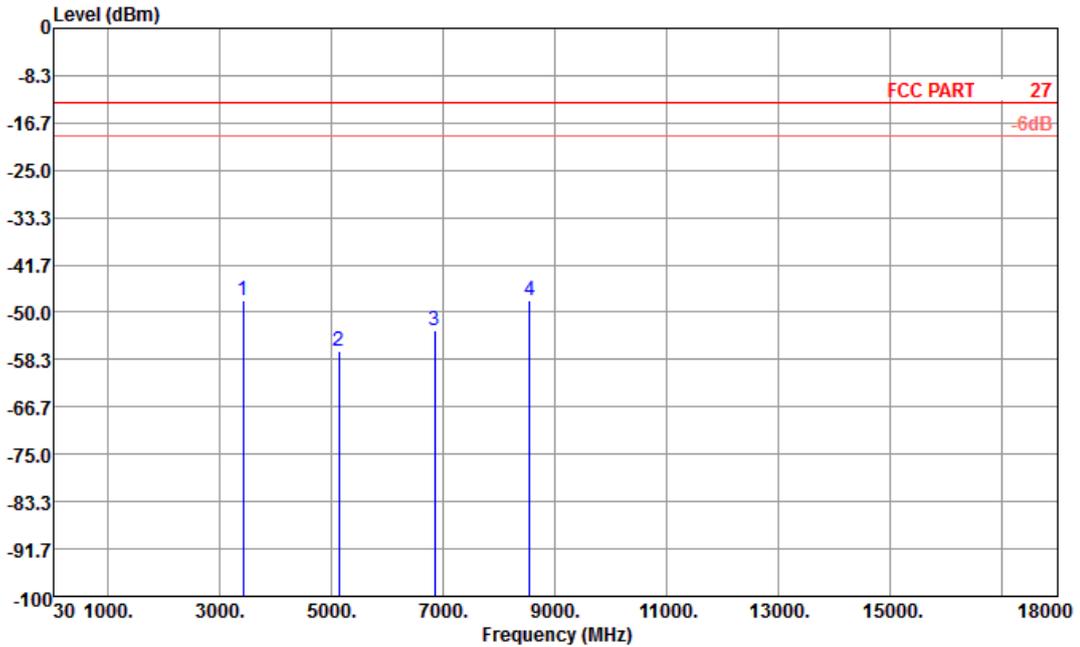


Site : 03CH01-KS
 Condition : FCC PART 27 HF_EIRP_FACTOR130726 HORIZONTAL

| Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|-------------------|--------------|---------------|-------------------|---------------------|--------------------|----------------------|-------------------------|----------------------|--------|
| 3422 | -45.98 | -13 | -32.98 | -53.18 | -51.38 | 2.2 | 7.60 | H | Pass |
| 5132 | -49.94 | -13 | -36.94 | -62.44 | -56.72 | 3.12 | 9.90 | H | Pass |
| 6846 | -50.25 | -13 | -37.25 | -61.10 | -58.14 | 2.98 | 10.87 | H | Pass |
| 8556 | -34.76 | -13 | -21.76 | -52.40 | -44.25 | 2.97 | 12.46 | H | Pass |



| | | | |
|------------------------|--|----------------------------|----------|
| Band : | LTE Band 4 | Temperature : | 23~24°C |
| Test Mode : | 20MHz QPSK RB Size 1 Offset 0 | Relative Humidity : | 43~44% |
| Test Engineer : | Stone Gu | Polarization : | Vertical |
| Remark : | Spurious emissions within 30-10th harmonic were found more than 20dB below limit line. | | |



Site : 03CH01-KS
 Condition : FCC PART 27 HF_EIRP_FACTOR130726 VERTICAL

| Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|-----------------|------------|-------------|-----------------|-------------------|------------------|--------------------|-----------------------|--------------------|--------|
| 3422 | -47.82 | -13 | -34.82 | -54.39 | -53.22 | 2.2 | 7.6 | V | Pass |
| 5134 | -56.83 | -13 | -43.83 | -64.8 | -63.61 | 3.12 | 9.9 | V | Pass |
| 6846 | -53.16 | -13 | -40.16 | -63.68 | -61.05 | 2.98 | 10.87 | V | Pass |
| 8556 | -47.84 | -13 | -34.84 | -60.03 | -57.33 | 2.97 | 12.46 | V | Pass |

3.8 Frequency Stability Measurement

3.8.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) of the center frequency.

3.8.2 Measuring Instruments

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

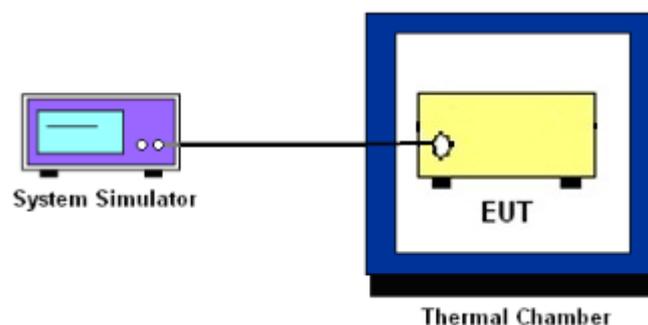
3.8.3 Test Procedures for Temperature Variation

1. The EUT was set up in the thermal chamber and connected with the base station.
2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power OFF, the temperature was raised in 10°C step up to 50°C . The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.8.4 Test Procedures for Voltage Variation

1. The EUT was placed in a temperature chamber at $25\pm 5^{\circ}\text{C}$ and connected with the base station.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

3.8.5 Test Setup



3.8.6 Test Result of Temperature Variation

| Band : | LTE Band 4 (QPSK) | | Limit (ppm) : | 2.5 | |
|------------------|-------------------|-----------------|-----------------|-----------------|--------|
| Temperature (°C) | BW 1.4MHz | | BW 3MHz | | Result |
| | Freq. Dev. (Hz) | Deviation (ppm) | Freq. Dev. (Hz) | Deviation (ppm) | |
| -30 | -2.3 | -0.001 | 5.6 | +0.003 | PASS |
| -20 | -3.6 | -0.002 | 8.9 | +0.005 | |
| -10 | -8.5 | -0.005 | 9.5 | +0.005 | |
| 0 | 11.2 | +0.006 | 11.2 | +0.006 | |
| 10 | -8.7 | -0.005 | -8.7 | -0.005 | |
| 20 | 5.6 | +0.003 | 5.6 | +0.003 | |
| 30 | -9.0 | -0.005 | -3.3 | -0.002 | |
| 40 | 4.8 | +0.003 | -2.3 | -0.001 | |
| 50 | -5.7 | -0.003 | -6.5 | -0.004 | |

| Band : | LTE Band 4 (QPSK) | | Limit (ppm) : | 2.5 | |
|------------------|-------------------|-----------------|-----------------|-----------------|--------|
| Temperature (°C) | BW 5MHz | | BW 10MHz | | Result |
| | Freq. Dev. (Hz) | Deviation (ppm) | Freq. Dev. (Hz) | Deviation (ppm) | |
| -30 | -8.1 | -0.005 | -7.1 | -0.004 | PASS |
| -20 | -9.2 | -0.005 | -9.8 | -0.006 | |
| -10 | -7.5 | -0.004 | -6.9 | -0.004 | |
| 0 | -6.9 | -0.004 | -5.3 | -0.003 | |
| 10 | 5.6 | +0.003 | -2.9 | -0.002 | |
| 20 | 8.3 | +0.005 | -8.7 | -0.005 | |
| 30 | 3.6 | +0.002 | -4.5 | -0.003 | |
| 40 | 4.0 | +0.002 | -5.6 | -0.003 | |
| 50 | -5.9 | -0.003 | -8.0 | -0.005 | |



| Band : | LTE Band 4 (QPSK) | | Limit (ppm) : | 2.5 | |
|------------------|-------------------|-----------------|-----------------|-----------------|--------|
| Temperature (°C) | BW 15MHz | | BW 20MHz | | Result |
| | Freq. Dev. (Hz) | Deviation (ppm) | Freq. Dev. (Hz) | Deviation (ppm) | |
| -30 | 8.9 | +0.005 | 5.6 | +0.003 | PASS |
| -20 | 9.5 | +0.005 | -3.5 | -0.002 | |
| -10 | 11.2 | +0.006 | 4.5 | +0.003 | |
| 0 | -8.7 | -0.005 | -8.5 | -0.005 | |
| 10 | 4.5 | +0.003 | -6.3 | -0.004 | |
| 20 | -9.8 | -0.006 | -3.2 | -0.002 | |
| 30 | 6.6 | +0.004 | 1.8 | +0.001 | |
| 40 | 4.5 | +0.003 | 7.5 | +0.004 | |
| 50 | -8.4 | -0.005 | 4.5 | +0.003 | |

| Band : | LTE Band 4 (16QAM) | | Limit (ppm) : | 2.5 | |
|------------------|--------------------|-----------------|-----------------|-----------------|--------|
| Temperature (°C) | BW 1.4MHz | | BW 3MHz | | Result |
| | Freq. Dev. (Hz) | Deviation (ppm) | Freq. Dev. (Hz) | Deviation (ppm) | |
| -30 | 8.8 | +0.005 | -9.8 | -0.006 | PASS |
| -20 | 9.4 | +0.005 | -4.5 | -0.003 | |
| -10 | -3.6 | -0.002 | -3.8 | -0.002 | |
| 0 | -5.5 | -0.003 | 10.8 | +0.006 | |
| 10 | -6.9 | -0.004 | -6.8 | -0.004 | |
| 20 | -8.7 | -0.005 | -5.4 | -0.003 | |
| 30 | 5.6 | +0.003 | -9.8 | -0.006 | |
| 40 | 5.2 | +0.003 | -5.7 | -0.003 | |
| 50 | 3.6 | +0.002 | -5.4 | -0.003 | |



| Band : | LTE Band 4 (16QAM) | | Limit (ppm) : | 2.5 | |
|------------------|--------------------|-----------------|-----------------|-----------------|--------|
| Temperature (°C) | BW 5MHz | | BW 10MHz | | Result |
| | Freq. Dev. (Hz) | Deviation (ppm) | Freq. Dev. (Hz) | Deviation (ppm) | |
| -30 | 5.7 | +0.003 | -5.8 | -0.003 | PASS |
| -20 | 6.2 | +0.004 | -7.8 | -0.005 | |
| -10 | 1.5 | +0.001 | -9.5 | -0.005 | |
| 0 | 4.5 | +0.003 | -6.8 | -0.004 | |
| 10 | 8.2 | +0.005 | -6.2 | -0.004 | |
| 20 | 6.9 | +0.004 | -3.5 | -0.002 | |
| 30 | -8.2 | -0.005 | -4.7 | -0.003 | |
| 40 | -5.7 | -0.003 | -6.8 | -0.004 | |
| 50 | -8.5 | -0.005 | -5.4 | -0.003 | |

| Band : | LTE Band 4 (16QAM) | | Limit (ppm) : | 2.5 | |
|------------------|--------------------|-----------------|-----------------|-----------------|--------|
| Temperature (°C) | BW 15MHz | | BW 20MHz | | Result |
| | Freq. Dev. (Hz) | Deviation (ppm) | Freq. Dev. (Hz) | Deviation (ppm) | |
| -30 | 5.8 | +0.003 | 5.7 | +0.003 | PASS |
| -20 | -9.8 | -0.006 | -9.8 | -0.006 | |
| -10 | 6.8 | +0.004 | -5.7 | -0.003 | |
| 0 | 5.5 | +0.003 | -6.2 | -0.004 | |
| 10 | -6.5 | -0.004 | -3.5 | -0.002 | |
| 20 | -7.8 | -0.005 | -4.7 | -0.003 | |
| 30 | -9.0 | -0.005 | 5.9 | +0.003 | |
| 40 | 5.0 | +0.003 | -8.5 | -0.005 | |
| 50 | 6.3 | +0.004 | -6.8 | -0.004 | |



3.8.7 Test Result of Voltage Variation

| Band | Bandwidth | Voltage (Volt) | Freq. Dev. (Hz) | Deviation (ppm) | Limit (ppm) | Result |
|-------------------|-----------|----------------|-----------------|-----------------|-------------|--------|
| LTE Band 4 (QPSK) | 1.4M | 240 | 5.6 | +0.003 | 2.5 | PASS |
| | | 204 | 8.7 | +0.005 | | |
| | | 276 | -5.5 | -0.003 | | |
| | 3M | 240 | -5.7 | -0.003 | | |
| | | 204 | -6.8 | -0.004 | | |
| | | 276 | -7.8 | -0.005 | | |
| | 5M | 240 | -5.1 | -0.003 | | |
| | | 204 | -2.3 | -0.001 | | |
| | | 276 | -3.6 | -0.002 | | |
| | 10M | 240 | -8.5 | -0.005 | | |
| | | 204 | 11.2 | +0.006 | | |
| | | 276 | 3.6 | +0.002 | | |
| | 15M | 240 | 8.7 | +0.005 | | |
| | | 204 | -10.5 | -0.006 | | |
| | | 276 | -11.8 | -0.007 | | |
| | 20M | 240 | -8.5 | -0.005 | | |
| | | 204 | -7.1 | -0.004 | | |
| | | 276 | -8.9 | -0.005 | | |



| Band | Bandwidth | Voltage (Volt) | Freq. Dev. (Hz) | Deviation (ppm) | Limit (ppm) | Result |
|-----------------------|-----------|----------------|-----------------|-----------------|-------------|--------|
| LTE Band 4 (16QAM) | 1.4M | 240 | -9.8 | -0.006 | 2.5 | PASS |
| | | 204 | 6.6 | +0.004 | | |
| | | 276 | 4.5 | +0.003 | | |
| | 3M | 240 | -9.8 | -0.006 | | |
| | | 204 | -8.9 | -0.005 | | |
| | | 276 | -7.8 | -0.005 | | |
| | 5M | 240 | 5.8 | +0.003 | | |
| | | 204 | 7.1 | +0.004 | | |
| | | 276 | 11.2 | +0.006 | | |
| | 10M | 240 | 10.3 | +0.006 | | |
| | | 204 | 9.5 | +0.005 | | |
| | | 276 | -8.7 | -0.005 | | |
| | 15M | 240 | -5.6 | -0.003 | | |
| | | 204 | -9.8 | -0.006 | | |
| | | 276 | -4.5 | -0.003 | | |
| | 20M | 240 | -3.8 | -0.002 | | |
| | | 204 | -7.2 | -0.004 | | |
| | | 276 | -5.2 | -0.003 | | |



4 List of Measuring Equipment

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|---------------------------|--------------|-----------|------------|-----------------|------------------|---------------------------------|---------------|--------------------------|
| Spectrum Analyzer | R&S | FSP40 | 100319 | 9kHz~40GHz | Dec. 28, 2013 | Feb. 07, 2014~ Feb. 08, 2014 | Dec. 27, 2014 | Conducted (TH01-KS) |
| Pulse Power Sensor | Anritsu | MA2411B | 0917070 | N/A | Feb. 28, 2013 | Feb. 07, 2014~ Feb. 08, 2014 | Feb. 27, 2014 | Conducted (TH01-KS) |
| Power Meter | Anritsu | ML2495A | 1005002 | N/A | Feb. 28, 2013 | Feb. 07, 2014~ Feb. 08, 2014 | Feb. 27, 2014 | Conducted (TH01-KS) |
| Thermal Chamber | Ten Billion | TTC-B3S | TBN-960502 | N/A | Dec. 28, 2013 | Feb. 07, 2014~ Feb. 08, 2014 | Dec. 27, 2014 | Conducted (TH01-KS) |
| EMI Test Receiver | R&S | ESCI | 100534 | 9kHz~3GHz | Nov. 07, 2013 | Feb. 12, 2014 | Nov. 06, 2014 | Radiation (03CH01-KS) |
| Spectrum Analyzer | R&S | FSP30 | 101399 | 9kHz~30GHz | May 23, 2013 | Feb. 12, 2014 | May 22, 2014 | Radiation (03CH01-KS) |
| Bilog Antenna | SCHAFFNER | CBL6112D | 23182 | 25MHz~2GHz | Dec. 07, 2013 | Feb. 12, 2014 | Dec. 06, 2014 | Radiation (03CH01-KS) |
| Double Ridge Horn Antenna | EMCO | 3117 | 75959 | 1GHz~18GHz | Dec. 07, 2013 | Feb. 12, 2014 | Dec. 06, 2014 | Radiation (03CH01-KS) |
| Amplifier | com-power | PA-103A | 161069 | 1MHz~1GHz | May 23, 2013 | Feb. 12, 2014 | May 22, 2014 | Radiation (03CH01-KS) |
| Amplifier | Agilent | 8449B | 3008A02370 | 1GHz~26.5GHz | Dec. 28, 2013 | Feb. 12, 2014 | Dec. 27, 2014 | Radiation (03CH01-KS) |
| Active Horn Antenna | com-power | AHA-118 | 701023 | 1GHz~18GHz | Nov. 06, 2013 | Feb. 12, 2014 | Nov. 05, 2014 | Radiation (03CH01-KS) |
| SHF-EHF Horn | Schwarzbeck | BBHA 9170 | BBHA170249 | 15GHz~40GHz | Nov. 23, 2013 | Feb. 12, 2014 | Nov. 22, 2014 | Radiation (03CH01-KS) |
| Turn Table | MF | MF7802 | N/A | 0 ~ 360 degree | N/A | Feb. 12, 2014 | N/A | Radiation (03CH01-KS) |
| Antenna Mast | MF | MF7802 | N/A | 1 m - 4 m | N/A | Feb. 12, 2014 | N/A | Radiation (03CH01-KS) |



| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|------------------------------|--------------|-----------|------------|------------------------|------------------|---------------|--------------|-----------------|
| Spectrum Analyzer | R&S | FSP 7 | 100819 | 9kHz~7GHz | May 23, 2013 | Feb. 07, 2014 | May 22, 2014 | EIRP (OTA01-KS) |
| Switch Control Manframe | Agilent | 3499A | MY42005452 | N/A | N/A | Feb. 07, 2014 | N/A | EIRP (OTA01-KS) |
| Dual 1-to-6(4) MW MUX | Agilent | N2276A | MY42000841 | N/A | N/A | Feb. 07, 2014 | N/A | EIRP (OTA01-KS) |
| Microwave Switch | Agilent | 44476A | MY42002573 | N/A | N/A | Feb. 07, 2014 | N/A | EIRP (OTA01-KS) |
| Microwave Switch | Agilent | 44476A | MY42002586 | N/A | N/A | Feb. 07, 2014 | N/A | EIRP (OTA01-KS) |
| Diagonal Dual Polarized Horn | ETS-Lindgren | 3164-04 | 00066993 | 700MHz~6GHz | N/A | Feb. 07, 2014 | N/A | EIRP (OTA01-KS) |
| Multi-Devices Controller | ETS-Lindgren | 2090-OPT1 | 00066604 | N/A | N/A | Feb. 07, 2014 | N/A | EIRP (OTA01-KS) |
| Conical Log Spiral (Small) | ETS-Lindgren | 3102 | 00066951 | 1~10GHz | N/A | Feb. 07, 2014 | N/A | EIRP (OTA01-KS) |
| Turn Table | ETS-Lindgren | 2088 | N/A | Resolution : 0.1degree | N/A | Feb. 07, 2014 | N/A | EIRP (OTA01-KS) |
| Limiting Amplifier | ETS-lindgren | 109643 | 920326 | 10MHz~2.5GHz | N/A | Feb. 07, 2014 | N/A | EIRP (OTA01-KS) |
| EMQuest | ETS-Lindgren | EMQ-100 | 1125 | N/A | N/A | Feb. 07, 2014 | N/A | EIRP (OTA01-KS) |
| Medium Duty Holder | ETS-Lindgren | 2015 | N/A | N/A | N/A | Feb. 07, 2014 | N/A | EIRP (OTA01-KS) |



5 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

| | |
|---|------|
| Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$) | 2.54 |
|---|------|