# Variant FCC RF Test Report

| | | |
|---|---|---|
| **APPLICANT** | **:** | **Acer Incorporated** |
| **EQUIPMENT** | **:** | **Smart HandHeld** |
| **BRAND NAME** | **:** | **Acer** |
| **MODEL NAME** | **:** | **S57** |
| **MARKETING NAME** | **:** | **Liquid Jade Z** |
| **FCC ID** | **:** | **HLZDMS57** |
| **STANDARD** | **:** | **47 CFR Part 2, 24(E), 27(L), 27(M), 27(H)** |
| **CLASSIFICATION** | **:** | **PCS Licensed Transmitter Held to Ear (PCE)** |

**This is a variant report which is only valid together with the original test report. The product was received on Jan. 13, 2015 and testing was completed on Mar. 04, 2015. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA / EIA-603-C-2004 and the testing has shown the tested sample to be in compliance with the applicable technical standards.**

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

**Reviewed by: Joseph Lin / Supervisor**

**Approved by: Jones Tsai / Manager**

Testing Laboratory 2627

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

# TABLE OF CONTENTS

# REVISION HISTORY

| REPORT NO. | VERSION | DESCRIPTION | ISSUED DATE |
|---|---|---|---|
| FG511349B | Rev. 01 | This is a variant report for S57. The difference between previous and current is as following:<br>1. changed Model name from “S56” to “S57”,<br>2. changed marketing name from “Liquid Jade S” to “Liquid Jade Z”<br>3. changed CPU from “MT6752M” to “MT6732”<br>4. changed earphone from model name “HF-AC09W-02” to “HC.00211.008”.<br>Based on the similarity between two models, only the conducted power and Conducted Spurious Emission test for middle channel were verified, all other test datas are leverage from original test report (Sporton Report Number FG492402B with FCC ID: HLZDMS56). | Mar. 10, 2015 |
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# SUMMARY OF TEST RESULT

| Report Section | FCC Rule | IC Rule | Description | Limit | Result | Remark |
|---|---|---|---|---|---|---|
| 3.1 | §2.1046 | RSS-Gen(4.8)<br>RSS-130(4.4)<br>RSS-133 (6.4)<br>RSS-139 (6.4)<br>RSS-199 (4.4) | Conducted Output Power | Reporting Only | PASS | - |
| 3.2 | §2.1051<br>§24.238(a)<br>§27.53(g)<br>§27.53(h) | RSS-GEN(4.9)<br>RSS-133 (6.5.1)<br>RSS-130(4.6)<br>RSS-139 (6.5) | Conducted Spurious Emission<br>(Band 2) (Band 4)<br>(Band 17) | < $43+10\log_{10}$(P[Watts]) | PASS | - |
| | §2.1051<br>§27.53(m)(4) | RSS-GEN(4.9)<br>RSS-199 (4.5) | Conducted Spurious Emission (Band 7) | < 55+10log10(P[Watts]) | | |

# 1 General Description

## 1.1 Applicant

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

## 1.2 Manufacturer

**Shanghai Sunrise Simcom Limited**
No. 888, Shengli Rd., Qingpu, Shanghai, P.R.China 201700

## 1.3 Product Feature of Equipment Under Test

| Product Feature | |
|---|---|
| **Equipment** | Smart HandHeld |
| **Brand Name** | Acer |
| **Model Name** | S57 |
| **Marketing Name** | Liquid Jade Z |
| **FCC ID** | HLZDMS57 |
| **EUT supports Radios application** | GSM/GPRS/EGPRS/WCDMA/HSPA/HSPA+(Downlink Only)/ LTE/WLAN 2.4GHz 802.11b/g/n HT20/HT40/ Bluetooth v3.0 + EDR/Bluetooth v4.0 LE |
| **EUT Stage** | Identical Prototype |

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

## 1.4 Product Specification subjective to this standard

| Product Specification subjective to this standard | |
|---|---|
| **Tx Frequency** | LTE Band 2 : 1850.7 MHz ~ 1909.3 MHz<br>LTE Band 4 : 1710.7 MHz ~ 1754.3 MHz<br>LTE Band 7 : 2502.5 MHz ~ 2567.5 MHz<br>LTE Band 17 : 706.5 MHz ~ 713.5 MHz |
| **Rx Frequency** | LTE Band 2 : 1930.7 MHz ~ 1989.3 MHz<br>LTE Band 4 : 2110.7 MHz ~ 2154.3 MHz<br>LTE Band 7 : 2622.5MHz ~ 2687.5 MHz<br>LTE Band 17 : 736.5 MHz ~ 743.5 MHz |
| **Bandwidth** | LTE Band 2 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz<br>LTE Band 4 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz<br>LTE Band 7 : 5MHz/ 10MHz / 15MHz / 20MHz<br>LTE Band 17 : 5MHz / 10MHz |
| **Antenna Type** | PIFA Antenna |
| **Type of Modulation** | QPSK / 16QAM |

## 1.5 Modification of EUT

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

## 1.6 Testing Location

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

## 1.7 Applicable Standards

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

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

**Remark:**

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.
3. Per the section 2.2.3 of Notice of 2012-DRS0126, " Receivers Excluded from Industry Canada Requirements", only radiocommunication receivers operating in stand-alone mode within the band 30-960 MHz and scanner receivers are subject to Industry Canada requirements.

# 2 Test Configuration of Equipment Under Test

## 2.1 Test Mode

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

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

| Test Items | Band | Bandwidth (MHz) | | | | | | Modulation | | RB # | | | Test Channel | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1.4 | 3 | 5 | 10 | 15 | 20 | QPSK | 16QAM | 1 | Half | Full | L | M | H |
| Max. Output Power | 2 | v | v | v | v | v | v | v | v | v | v | v | | v | |
| | 4 | v | v | v | v | v | v | v | v | v | v | v | | v | |
| | 7 | - | - | v | v | v | v | v | v | v | v | v | | v | |
| | 17 | - | - | v | v | - | - | v | v | v | v | v | | v | |
| Conducted Spurious Emission | 2 | v | | | | | | v | v | v | | | v | v | v |
| | 4 | | | | v | | | v | v | v | | | v | v | v |
| | 7 | - | - | | | v | | v | v | v | | | v | v | v |
| | 17 | - | - | v | | - | - | v | v | v | | | v | v | v |
| Note | 1. The mark “v” means that this configuration is chosen for testing<br>2. The mark “-” means that this bandwidth is not supported. | | | | | | | | | | | | | | |

## 2.2 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 |

## 2.3 Measurement Results Explanation Example

**For all conducted test items:**

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

The spectrum analyzer offset is derived from RF cable loss.

*Offset = RF cable loss.*

Following shows an offset computation example with cable loss 5.5 dB.

Example :

*Offset(dB) = RF cable loss(dB)* = 5.5 (dB)

# 3 Test Result

## 3.1 Conducted Output Power Measurement

### 3.1.1 Description of the Conducted Output Power Measurement

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

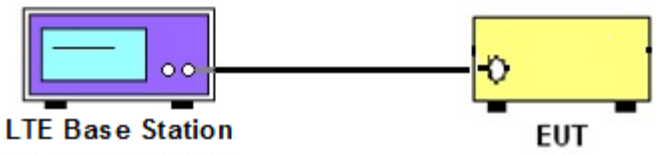
### 3.1.2 Measuring Instruments

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

### 3.1.3 Test Procedures

1. The transmitter output port was connected to the LTE base station.
2. Set EUT at maximum power through the LTE base station.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.

### 3.1.4 Test Setup



## 3.1.5 Test Result of Conducted Output Power

**<LTE Band 2 Conducted Power>**

| BW [MHz] | Modulation | RB Size | RB Offset | Power (dBm) Middle Ch. / Freq. |
|---|---|---|---|---|
| **Channel** | | | | **18900** |
| **Frequency (MHz)** | | | | **1880** |
| 20 | QPSK | 1 | 0 | 21.29 |
| 20 | QPSK | 1 | 49 | 21.11 |
| 20 | QPSK | 1 | 99 | 21.22 |
| 20 | QPSK | 50 | 0 | 21.26 |
| 20 | QPSK | 50 | 24 | 21.23 |
| 20 | QPSK | 50 | 49 | 21.24 |
| 20 | QPSK | 100 | 0 | 21.21 |
| 20 | 16QAM | 1 | 0 | 20.77 |
| 20 | 16QAM | 1 | 49 | 20.81 |
| 20 | 16QAM | 1 | 99 | 20.65 |
| 20 | 16QAM | 50 | 0 | 19.26 |
| 20 | 16QAM | 50 | 24 | 19.31 |
| 20 | 16QAM | 50 | 49 | 19.28 |
| 20 | 16QAM | 100 | 0 | 19.26 |
| **Channel** | | | | **18900** |
| **Frequency (MHz)** | | | | **1880** |
| 15 | QPSK | 1 | 0 | 21.23 |
| 15 | QPSK | 1 | 37 | 21.28 |
| 15 | QPSK | 1 | 74 | 21.15 |
| 15 | QPSK | 36 | 0 | 21.27 |
| 15 | QPSK | 36 | 18 | 21.28 |
| 15 | QPSK | 36 | 37 | 21.26 |
| 15 | QPSK | 75 | 0 | 21.23 |
| 15 | 16QAM | 1 | 0 | 20.28 |
| 15 | 16QAM | 1 | 37 | 20.52 |
| 15 | 16QAM | 1 | 74 | 20.39 |
| 15 | 16QAM | 36 | 0 | 19.36 |
| 15 | 16QAM | 36 | 18 | 19.28 |
| 15 | 16QAM | 36 | 37 | 19.32 |
| 15 | 16QAM | 75 | 0 | 19.30 |

| BW [MHz] | Modulation | RB Size | RB Offset | Power (dBm) Middle Ch. / Freq. |
|---|---|---|---|---|
| Channel | | | | 18900 |
| Frequency (MHz) | | | | 1880 |
| 10 | QPSK | 1 | 0 | 21.24 |
| 10 | QPSK | 1 | 24 | 21.24 |
| 10 | QPSK | 1 | 49 | 21.16 |
| 10 | QPSK | 25 | 0 | 21.23 |
| 10 | QPSK | 25 | 12 | 21.24 |
| 10 | QPSK | 25 | 24 | 21.23 |
| 10 | QPSK | 50 | 0 | 21.25 |
| 10 | 16QAM | 1 | 0 | 20.66 |
| 10 | 16QAM | 1 | 24 | 20.42 |
| 10 | 16QAM | 1 | 49 | 20.26 |
| 10 | 16QAM | 25 | 0 | 19.21 |
| 10 | 16QAM | 25 | 12 | 19.31 |
| 10 | 16QAM | 25 | 24 | 19.30 |
| 10 | 16QAM | 50 | 0 | 19.25 |
| Channel | | | | 18900 |
| Frequency (MHz) | | | | 1880 |
| 5 | QPSK | 1 | 0 | 21.19 |
| 5 | QPSK | 1 | 12 | 21.14 |
| 5 | QPSK | 1 | 24 | 21.28 |
| 5 | QPSK | 12 | 0 | 21.25 |
| 5 | QPSK | 12 | 6 | 21.26 |
| 5 | QPSK | 12 | 11 | 21.26 |
| 5 | QPSK | 25 | 0 | 21.20 |
| 5 | 16QAM | 1 | 0 | 20.17 |
| 5 | 16QAM | 1 | 12 | 20.81 |
| 5 | 16QAM | 1 | 24 | 20.38 |
| 5 | 16QAM | 12 | 0 | 19.30 |
| 5 | 16QAM | 12 | 6 | 19.31 |
| 5 | 16QAM | 12 | 11 | 19.34 |
| 5 | 16QAM | 25 | 0 | 19.29 |

| BW [MHz] | Modulation | RB Size | RB Offset | Power (dBm) Middle Ch. / Freq. |
|---|---|---|---|---|
| **Channel** | | | | **18900** |
| **Frequency (MHz)** | | | | **1880** |
| 3 | QPSK | 1 | 0 | 21.07 |
| 3 | QPSK | 1 | 7 | 21.15 |
| 3 | QPSK | 1 | 14 | 21.20 |
| 3 | QPSK | 8 | 0 | 21.22 |
| 3 | QPSK | 8 | 4 | 21.26 |
| 3 | QPSK | 8 | 7 | 21.24 |
| 3 | QPSK | 15 | 0 | 21.19 |
| 3 | 16QAM | 1 | 0 | 20.40 |
| 3 | 16QAM | 1 | 7 | 20.43 |
| 3 | 16QAM | 1 | 14 | 20.72 |
| 3 | 16QAM | 8 | 0 | 19.37 |
| 3 | 16QAM | 8 | 4 | 19.34 |
| 3 | 16QAM | 8 | 7 | 19.38 |
| 3 | 16QAM | 15 | 0 | 19.34 |
| **Channel** | | | | **18900** |
| **Frequency (MHz)** | | | | **1880** |
| 1.4 | QPSK | 1 | 0 | 21.20 |
| 1.4 | QPSK | 1 | 2 | 21.26 |
| 1.4 | QPSK | 1 | 5 | 21.17 |
| 1.4 | QPSK | 3 | 0 | 21.15 |
| 1.4 | QPSK | 3 | 1 | 21.21 |
| 1.4 | QPSK | 3 | 2 | 21.23 |
| 1.4 | QPSK | 6 | 0 | 21.22 |
| 1.4 | 16QAM | 1 | 0 | 20.15 |
| 1.4 | 16QAM | 1 | 2 | 20.81 |
| 1.4 | 16QAM | 1 | 5 | 20.23 |
| 1.4 | 16QAM | 3 | 0 | 20.30 |
| 1.4 | 16QAM | 3 | 1 | 20.33 |
| 1.4 | 16QAM | 3 | 2 | 20.30 |
| 1.4 | 16QAM | 6 | 0 | 19.43 |

**<LTE Band 4 Conducted Power>**

| BW [MHz] | Modulation | RB Size | RB Offset | Power (dBm) Middle Ch. / Freq. |
|---|---|---|---|---|
| **Channel** | | | | **20175** |
| **Frequency (MHz)** | | | | **1732.5** |
| 20 | QPSK | 1 | 0 | 21.48 |
| 20 | QPSK | 1 | 49 | 21.31 |
| 20 | QPSK | 1 | 99 | 21.16 |
| 20 | QPSK | 50 | 0 | 21.43 |
| 20 | QPSK | 50 | 24 | 21.41 |
| 20 | QPSK | 50 | 49 | 21.40 |
| 20 | QPSK | 100 | 0 | 21.42 |
| 20 | 16QAM | 1 | 0 | 20.41 |
| 20 | 16QAM | 1 | 49 | 20.98 |
| 20 | 16QAM | 1 | 99 | 20.45 |
| 20 | 16QAM | 50 | 0 | 19.46 |
| 20 | 16QAM | 50 | 24 | 19.41 |
| 20 | 16QAM | 50 | 49 | 19.35 |
| 20 | 16QAM | 100 | 0 | 19.39 |
| **Channel** | | | | **20175** |
| **Frequency (MHz)** | | | | **1732.5** |
| 15 | QPSK | 1 | 0 | 21.42 |
| 15 | QPSK | 1 | 37 | 21.30 |
| 15 | QPSK | 1 | 74 | 21.33 |
| 15 | QPSK | 36 | 0 | 21.51 |
| 15 | QPSK | 36 | 18 | 21.42 |
| 15 | QPSK | 36 | 37 | 21.43 |
| 15 | QPSK | 75 | 0 | 21.44 |
| 15 | 16QAM | 1 | 0 | 20.90 |
| 15 | 16QAM | 1 | 37 | 20.93 |
| 15 | 16QAM | 1 | 74 | 20.36 |
| 15 | 16QAM | 36 | 0 | 19.50 |
| 15 | 16QAM | 36 | 18 | 19.42 |
| 15 | 16QAM | 36 | 37 | 19.41 |
| 15 | 16QAM | 75 | 0 | 19.45 |

| BW [MHz] | Modulation | RB Size | RB Offset | Power (dBm) Middle Ch. / Freq. |
|---|---|---|---|---|
| **Channel** | | | | **20175** |
| **Frequency (MHz)** | | | | **1732.5** |
| 10 | QPSK | 1 | 0 | 21.46 |
| 10 | QPSK | 1 | 24 | 21.36 |
| 10 | QPSK | 1 | 49 | 21.24 |
| 10 | QPSK | 25 | 0 | 21.42 |
| 10 | QPSK | 25 | 12 | 21.37 |
| 10 | QPSK | 25 | 24 | 21.35 |
| 10 | QPSK | 50 | 0 | 21.41 |
| 10 | 16QAM | 1 | 0 | 20.70 |
| 10 | 16QAM | 1 | 24 | 20.46 |
| 10 | 16QAM | 1 | 49 | 20.81 |
| 10 | 16QAM | 25 | 0 | 19.40 |
| 10 | 16QAM | 25 | 12 | 19.38 |
| 10 | 16QAM | 25 | 24 | 19.43 |
| 10 | 16QAM | 50 | 0 | 19.43 |
| **Channel** | | | | **20175** |
| **Frequency (MHz)** | | | | **1732.5** |
| 5 | QPSK | 1 | 0 | 21.45 |
| 5 | QPSK | 1 | 12 | 21.32 |
| 5 | QPSK | 1 | 24 | 21.39 |
| 5 | QPSK | 12 | 0 | 21.42 |
| 5 | QPSK | 12 | 6 | 21.39 |
| 5 | QPSK | 12 | 11 | 21.43 |
| 5 | QPSK | 25 | 0 | 21.39 |
| 5 | 16QAM | 1 | 0 | 20.83 |
| 5 | 16QAM | 1 | 12 | 20.59 |
| 5 | 16QAM | 1 | 24 | 20.92 |
| 5 | 16QAM | 12 | 0 | 19.44 |
| 5 | 16QAM | 12 | 6 | 19.45 |
| 5 | 16QAM | 12 | 11 | 19.41 |
| 5 | 16QAM | 25 | 0 | 19.34 |

| BW [MHz] | Modulation | RB Size | RB Offset | Power (dBm) Middle Ch. / Freq. |
|---|---|---|---|---|
| **Channel** | | | | **20175** |
| **Frequency (MHz)** | | | | **1732.5** |
| 3 | QPSK | 1 | 0 | 21.32 |
| 3 | QPSK | 1 | 7 | 21.36 |
| 3 | QPSK | 1 | 14 | 21.21 |
| 3 | QPSK | 8 | 0 | 21.41 |
| 3 | QPSK | 8 | 4 | 21.42 |
| 3 | QPSK | 8 | 7 | 21.38 |
| 3 | QPSK | 15 | 0 | 21.39 |
| 3 | 16QAM | 1 | 0 | 20.77 |
| 3 | 16QAM | 1 | 7 | 20.27 |
| 3 | 16QAM | 1 | 14 | 20.86 |
| 3 | 16QAM | 8 | 0 | 19.45 |
| 3 | 16QAM | 8 | 4 | 19.54 |
| 3 | 16QAM | 8 | 7 | 19.47 |
| 3 | 16QAM | 15 | 0 | 19.41 |
| **Channel** | | | | **20175** |
| **Frequency (MHz)** | | | | **1732.5** |
| 1.4 | QPSK | 1 | 0 | 21.36 |
| 1.4 | QPSK | 1 | 2 | 21.38 |
| 1.4 | QPSK | 1 | 5 | 21.36 |
| 1.4 | QPSK | 3 | 0 | 21.36 |
| 1.4 | QPSK | 3 | 1 | 21.41 |
| 1.4 | QPSK | 3 | 2 | 21.35 |
| 1.4 | QPSK | 6 | 0 | 21.39 |
| 1.4 | 16QAM | 1 | 0 | 20.64 |
| 1.4 | 16QAM | 1 | 2 | 20.99 |
| 1.4 | 16QAM | 1 | 5 | 20.52 |
| 1.4 | 16QAM | 3 | 0 | 20.45 |
| 1.4 | 16QAM | 3 | 1 | 20.42 |
| 1.4 | 16QAM | 3 | 2 | 20.36 |
| 1.4 | 16QAM | 6 | 0 | 19.44 |

**<LTE Band 7 Conducted Power>**

| BW [MHz] | Modulation | RB Size | RB Offset | Power (dBm) Middle Ch. / Freq. |
|---|---|---|---|---|
| **Channel** | | | | **21100** |
| **Frequency (MHz)** | | | | **2535** |
| 20 | QPSK | 1 | 0 | 21.26 |
| 20 | QPSK | 1 | 49 | 21.77 |
| 20 | QPSK | 1 | 99 | 21.74 |
| 20 | QPSK | 50 | 0 | 21.09 |
| 20 | QPSK | 50 | 24 | 21.07 |
| 20 | QPSK | 50 | 49 | 21.08 |
| 20 | QPSK | 100 | 0 | 21.27 |
| 20 | 16QAM | 1 | 0 | 20.62 |
| 20 | 16QAM | 1 | 49 | 20.72 |
| 20 | 16QAM | 1 | 99 | 20.85 |
| 20 | 16QAM | 50 | 0 | 20.18 |
| 20 | 16QAM | 50 | 24 | 20.43 |
| 20 | 16QAM | 50 | 49 | 20.60 |
| 20 | 16QAM | 100 | 0 | 20.30 |
| **Channel** | | | | **21100** |
| **Frequency (MHz)** | | | | **2535** |
| 15 | QPSK | 1 | 0 | 21.22 |
| 15 | QPSK | 1 | 37 | 21.11 |
| 15 | QPSK | 1 | 74 | 21.05 |
| 15 | QPSK | 36 | 0 | 21.27 |
| 15 | QPSK | 36 | 18 | 21.36 |
| 15 | QPSK | 36 | 37 | 21.33 |
| 15 | QPSK | 75 | 0 | 21.34 |
| 15 | 16QAM | 1 | 0 | 20.59 |
| 15 | 16QAM | 1 | 37 | 20.51 |
| 15 | 16QAM | 1 | 74 | 20.46 |
| 15 | 16QAM | 36 | 0 | 19.56 |
| 15 | 16QAM | 36 | 18 | 19.96 |
| 15 | 16QAM | 36 | 37 | 20.45 |
| 15 | 16QAM | 75 | 0 | 20.42 |

| BW [MHz] | Modulation | RB Size | RB Offset | Power (dBm) Middle Ch. / Freq. |
|---|---|---|---|---|
| **Channel** | | | | **21100** |
| **Frequency (MHz)** | | | | **2535** |
| 10 | QPSK | 1 | 0 | 21.30 |
| 10 | QPSK | 1 | 24 | 21.28 |
| 10 | QPSK | 1 | 49 | 21.29 |
| 10 | QPSK | 25 | 0 | 21.33 |
| 10 | QPSK | 25 | 12 | 21.31 |
| 10 | QPSK | 25 | 24 | 21.31 |
| 10 | QPSK | 50 | 0 | 21.32 |
| 10 | 16QAM | 1 | 0 | 20.54 |
| 10 | 16QAM | 1 | 24 | 20.52 |
| 10 | 16QAM | 1 | 49 | 20.51 |
| 10 | 16QAM | 25 | 0 | 19.63 |
| 10 | 16QAM | 25 | 12 | 19.61 |
| 10 | 16QAM | 25 | 24 | 19.62 |
| 10 | 16QAM | 50 | 0 | 19.75 |
| **Channel** | | | | **21100** |
| **Frequency (MHz)** | | | | **2535** |
| 5 | QPSK | 1 | 0 | 21.29 |
| 5 | QPSK | 1 | 12 | 21.29 |
| 5 | QPSK | 1 | 24 | 21.27 |
| 5 | QPSK | 12 | 0 | 21.35 |
| 5 | QPSK | 12 | 6 | 21.31 |
| 5 | QPSK | 12 | 11 | 21.32 |
| 5 | QPSK | 25 | 0 | 21.29 |
| 5 | 16QAM | 1 | 0 | 20.53 |
| 5 | 16QAM | 1 | 12 | 20.56 |
| 5 | 16QAM | 1 | 24 | 20.52 |
| 5 | 16QAM | 12 | 0 | 19.66 |
| 5 | 16QAM | 12 | 6 | 19.63 |
| 5 | 16QAM | 12 | 11 | 19.62 |
| 5 | 16QAM | 25 | 0 | 19.60 |

**<LTE Band 17 Conducted Power>**

| BW [MHz] | Modulation | RB Size | RB Offset | Power (dBm) Middle Ch. / Freq. |
|---|---|---|---|---|
| **Channel** | | | | **23790** |
| **Frequency (MHz)** | | | | **710** |
| 10 | QPSK | 1 | 0 | 21.57 |
| 10 | QPSK | 1 | 24 | 21.40 |
| 10 | QPSK | 1 | 49 | 21.41 |
| 10 | QPSK | 25 | 0 | 21.49 |
| 10 | QPSK | 25 | 12 | 21.51 |
| 10 | QPSK | 25 | 24 | 21.51 |
| 10 | QPSK | 50 | 0 | 21.34 |
| 10 | 16QAM | 1 | 0 | 21.04 |
| 10 | 16QAM | 1 | 24 | 20.73 |
| 10 | 16QAM | 1 | 49 | 20.80 |
| 10 | 16QAM | 25 | 0 | 19.58 |
| 10 | 16QAM | 25 | 12 | 19.50 |
| 10 | 16QAM | 25 | 24 | 19.50 |
| 10 | 16QAM | 50 | 0 | 19.59 |
| **Channel** | | | | **23790** |
| **Frequency (MHz)** | | | | **710** |
| 5 | QPSK | 1 | 0 | 21.45 |
| 5 | QPSK | 1 | 12 | 21.39 |
| 5 | QPSK | 1 | 24 | 21.43 |
| 5 | QPSK | 12 | 0 | 21.55 |
| 5 | QPSK | 12 | 6 | 21.54 |
| 5 | QPSK | 12 | 11 | 21.54 |
| 5 | QPSK | 25 | 0 | 21.51 |
| 5 | 16QAM | 1 | 0 | 20.78 |
| 5 | 16QAM | 1 | 12 | 20.96 |
| 5 | 16QAM | 1 | 24 | 20.92 |
| 5 | 16QAM | 12 | 0 | 19.71 |
| 5 | 16QAM | 12 | 6 | 19.69 |
| 5 | 16QAM | 12 | 11 | 19.65 |
| 5 | 16QAM | 25 | 0 | 19.60 |

## 3.2 Conducted Spurious Emission Measurement

### 3.2.1 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.

For Band 7

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 55 + 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 $10^{th}$ harmonic.

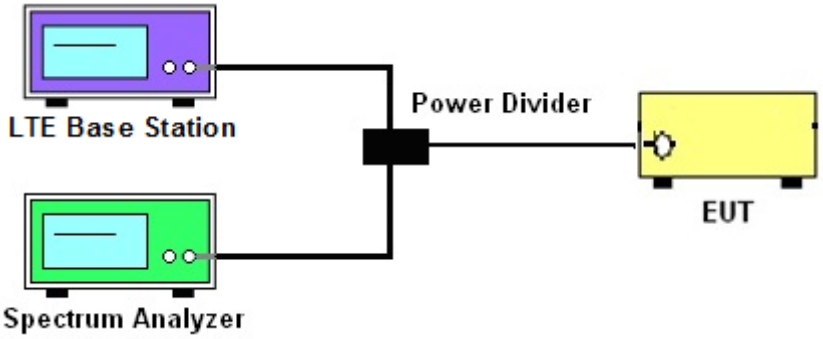
### 3.2.2 Measuring Instruments

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

### 3.2.3 Test Procedures

1. The EUT was connected to spectrum analyzer and LTE base station via a 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 + 10log(P)dB below the transmitter power P(Watts)
   = P(W)- [43 + 10log(P)] (dB)
   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
   = -13dBm.
   For Band 7
   The limit line is derived from 55 + 10log(P)dB below the transmitter power P(Watts)
   = P(W)- [55 + 10log(P)] (dB)
   = [30 + 10log(P)] (dBm) - [55 + 10log(P)] (dB)
   = -25dBm.

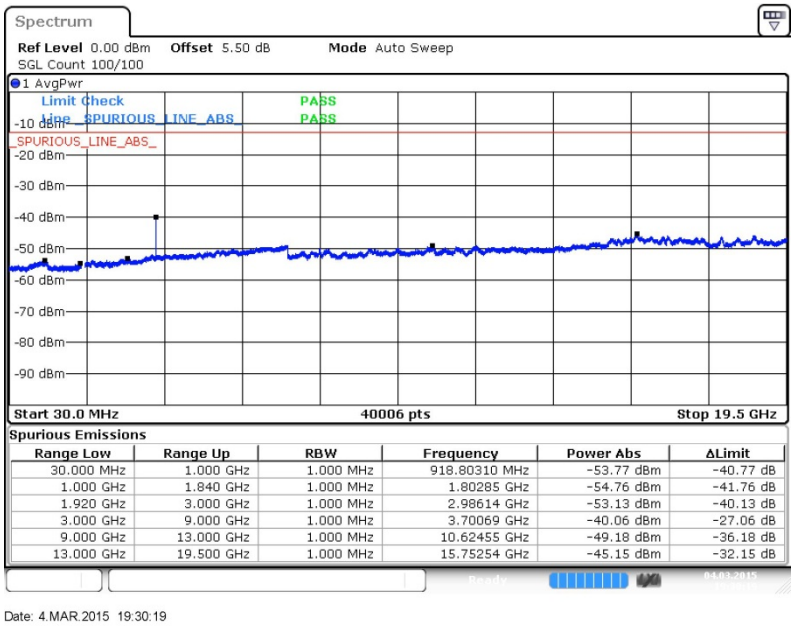
### 3.2.4 Test Setup



## 3.2.5 Test Result (Plots) of Conducted Spurious Emission

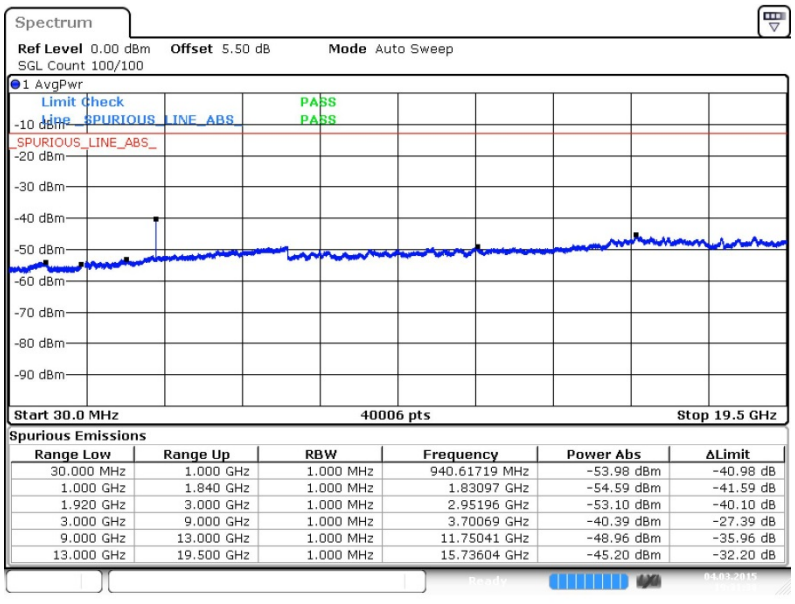
| **Band :** | LTE Band 2 | **Channel :** | CH18607 (Low) |
|---|---|---|---|
| **Band Width :** | 1.4MHz | | |

**QPSK (RB Size 1, RB Offset 0)**




Date: 4.MAR.2015 19:30:19

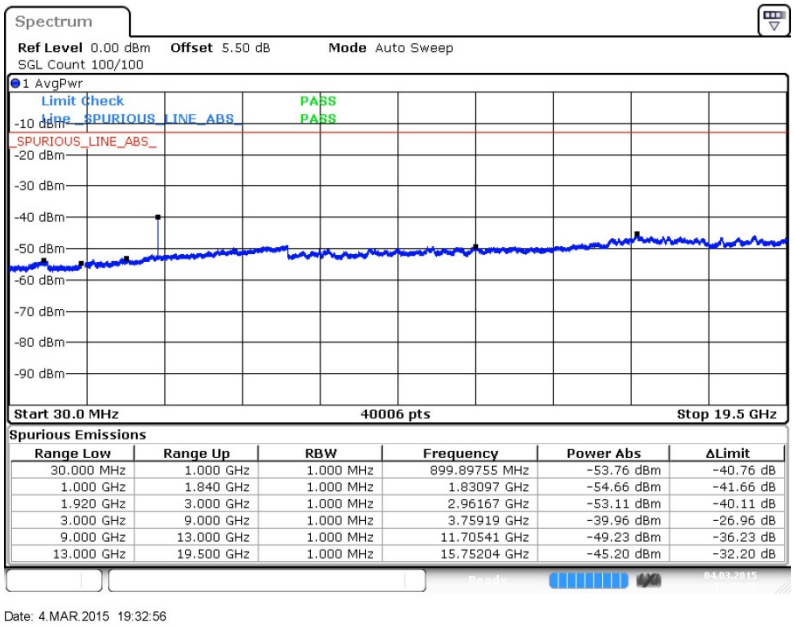
**16QAM (RB Size 1, RB Offset 0)**




Date: 4.MAR.2015 19:31:37

| **Band :** | LTE Band 2 | **Channel :** | CH18900 (Middle) |
|---|---|---|---|
| **Band Width :** | 1.4MHz | | |

**QPSK (RB Size 1, RB Offset 0)**

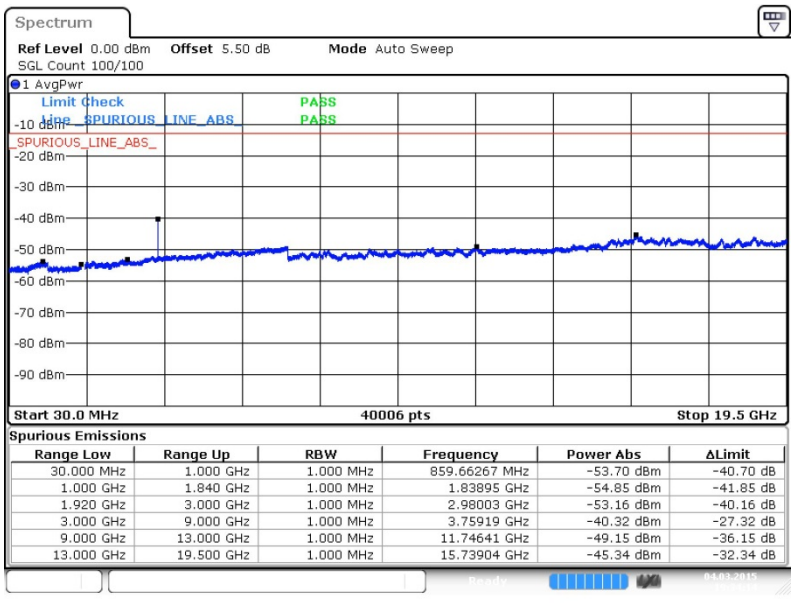



Spurious Emissions

| Range Low | Range Up | RBW | Frequency | Power Abs | ΔLimit |
|---|---|---|---|---|---|
| 30.000 MHz | 1.000 GHz | 1.000 MHz | 899.89755 MHz | -53.76 dBm | -40.76 dB |
| 1.000 GHz | 1.840 GHz | 1.000 MHz | 1.83097 GHz | -54.66 dBm | -41.66 dB |
| 1.920 GHz | 3.000 GHz | 1.000 MHz | 2.96167 GHz | -53.11 dBm | -40.11 dB |
| 3.000 GHz | 9.000 GHz | 1.000 MHz | 3.75919 GHz | -39.96 dBm | -26.96 dB |
| 9.000 GHz | 13.000 GHz | 1.000 MHz | 11.70541 GHz | -49.23 dBm | -36.23 dB |
| 13.000 GHz | 19.500 GHz | 1.000 MHz | 15.75204 GHz | -45.20 dBm | -32.20 dB |

Date: 4.MAR.2015 19:32:56

**16QAM (RB Size 1, RB Offset 0)**



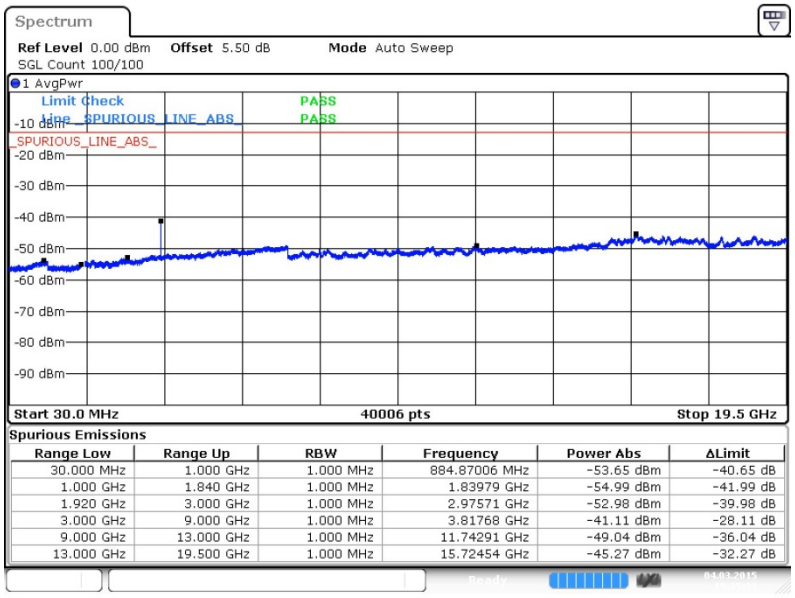

Spurious Emissions

| Range Low | Range Up | RBW | Frequency | Power Abs | ΔLimit |
|---|---|---|---|---|---|
| 30.000 MHz | 1.000 GHz | 1.000 MHz | 859.66267 MHz | -53.70 dBm | -40.70 dB |
| 1.000 GHz | 1.840 GHz | 1.000 MHz | 1.83895 GHz | -54.85 dBm | -41.85 dB |
| 1.920 GHz | 3.000 GHz | 1.000 MHz | 2.98003 GHz | -53.16 dBm | -40.16 dB |
| 3.000 GHz | 9.000 GHz | 1.000 MHz | 3.75919 GHz | -40.32 dBm | -27.32 dB |
| 9.000 GHz | 13.000 GHz | 1.000 MHz | 11.74641 GHz | -49.15 dBm | -36.15 dB |
| 13.000 GHz | 19.500 GHz | 1.000 MHz | 15.73904 GHz | -45.34 dBm | -32.34 dB |

Date: 4.MAR.2015 19:34:14

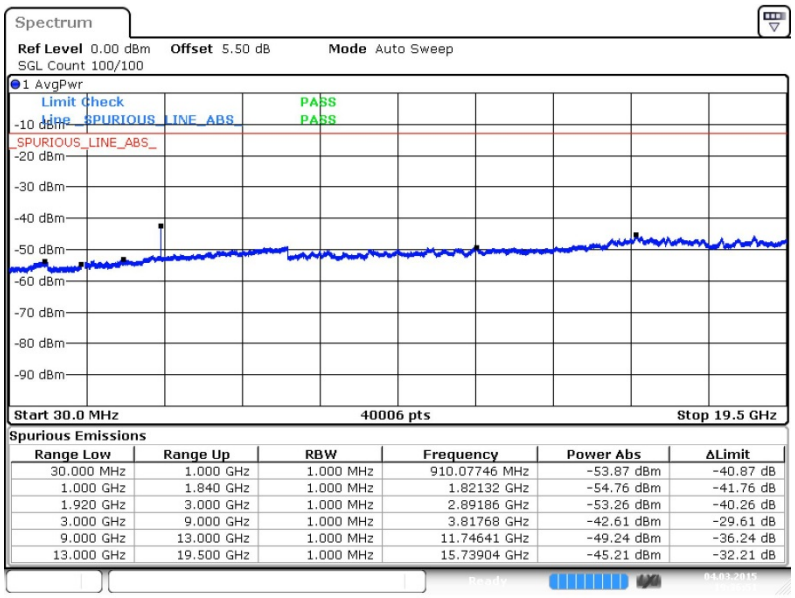
| **Band :** | LTE Band 2 | **Channel :** | CH19193 (High) |
|---|---|---|---|
| **Band Width :** | 1.4MHz | | |

**QPSK (RB Size 1, RB Offset 0)**




Date: 4.MAR.2015 19:35:33

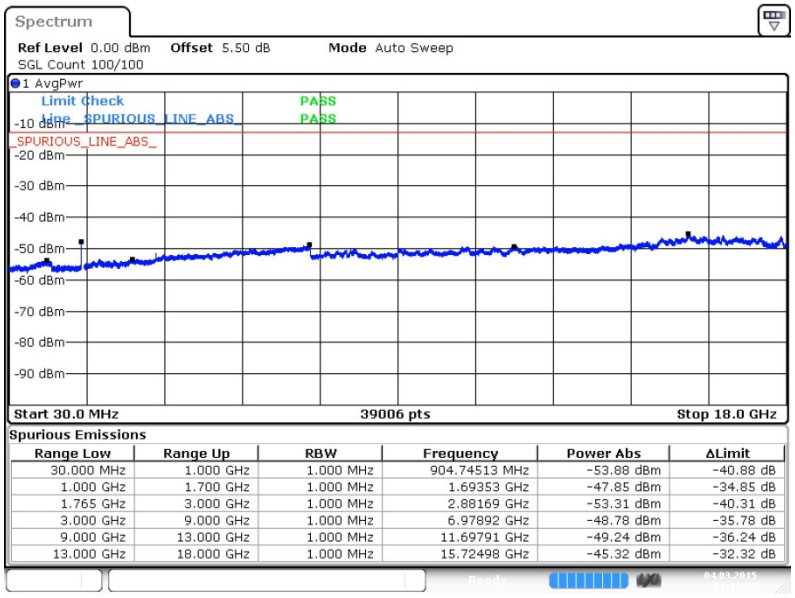
**16QAM (RB Size 1, RB Offset 0)**




Date: 4.MAR.2015 19:36:51

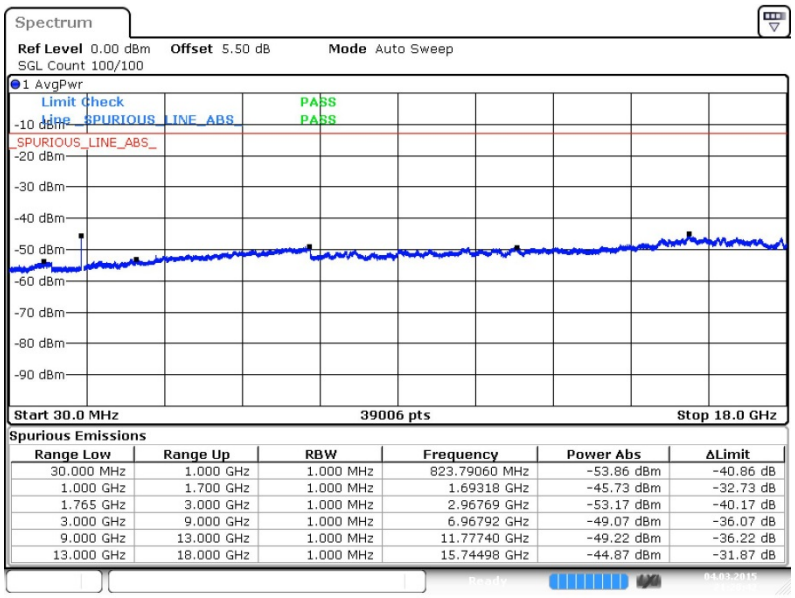
| **Band :** | LTE Band 4 | **Channel :** | CH20000 (Low) |
|---|---|---|---|
| **Band Width :** | 10MHz | | |

**QPSK (RB Size 1, RB Offset 0)**




Date: 4.MAR.2015 21:19:55

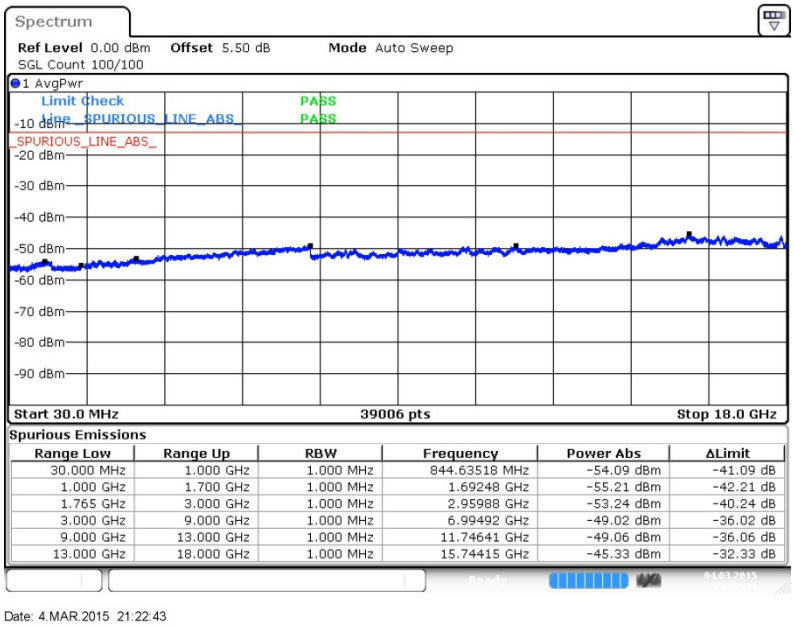
**16QAM (RB Size 1, RB Offset 0)**




Date: 4.MAR.2015 21:20:42

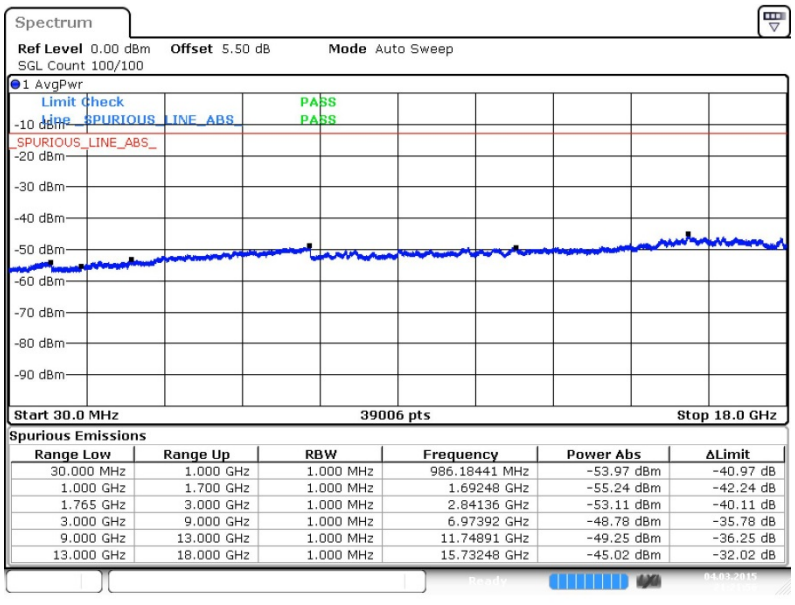
| **Band :** | LTE Band 4 | **Channel :** | CH20175 (Middle) |
|---|---|---|---|
| **Band Width :** | 10MHz | | |

**QPSK (RB Size 1, RB Offset 0)**




Date: 4.MAR.2015 21:22:43

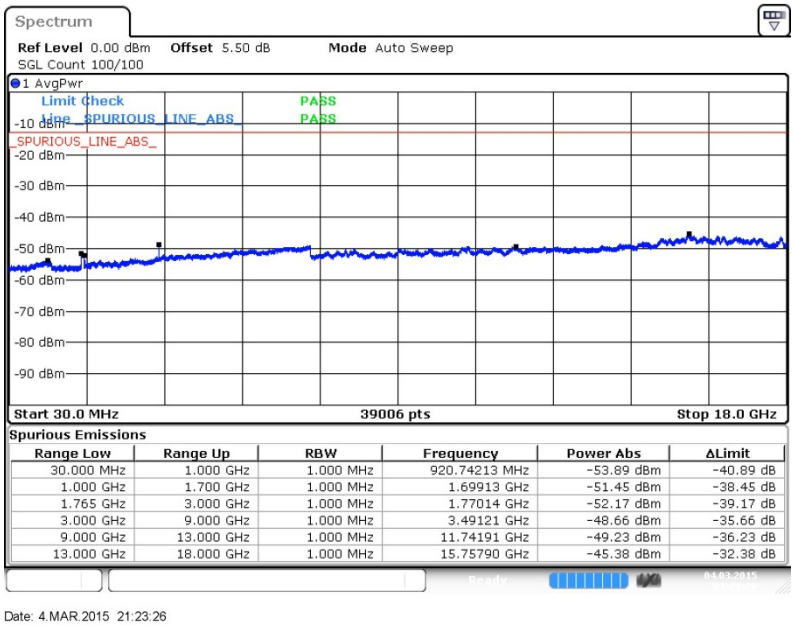
**16QAM (RB Size 1, RB Offset 0)**




Date: 4.MAR.2015 21:21:57

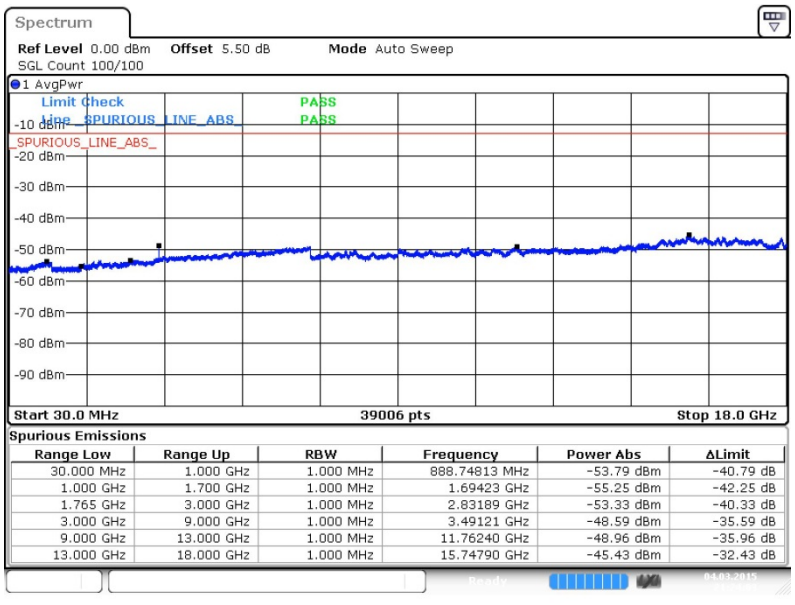
| **Band :** | LTE Band 4 | **Channel :** | CH20350 (High) |
|---|---|---|---|
| **Band Width :** | 10MHz | | |

**QPSK (RB Size 1, RB Offset 0)**




Date: 4.MAR.2015 21:23:26

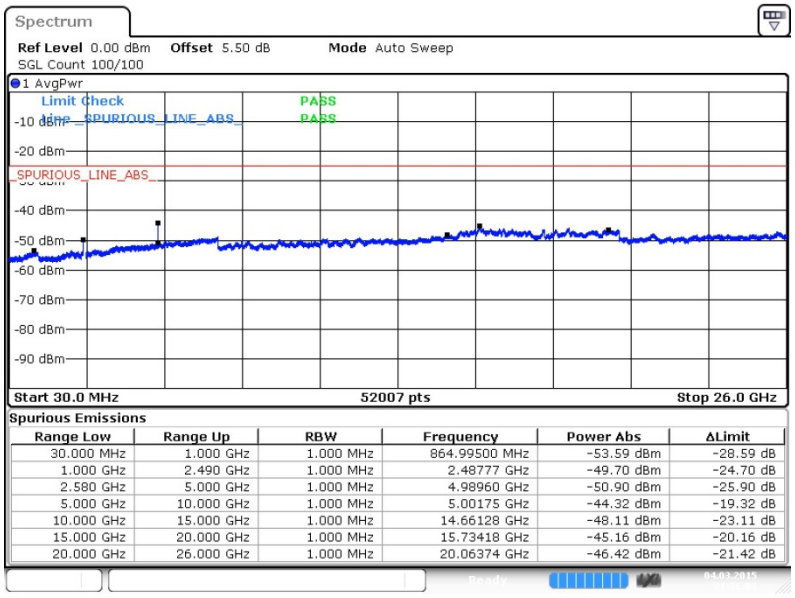
**16QAM (RB Size 1, RB Offset 0)**




Date: 4.MAR.2015 21:24:03

| Band : | LTE Band 7 | Channel : | CH20825 (Low) |
|---|---|---|---|
| Band Width : | 15MHz | | |

**QPSK (RB Size 1, RB Offset 0)**

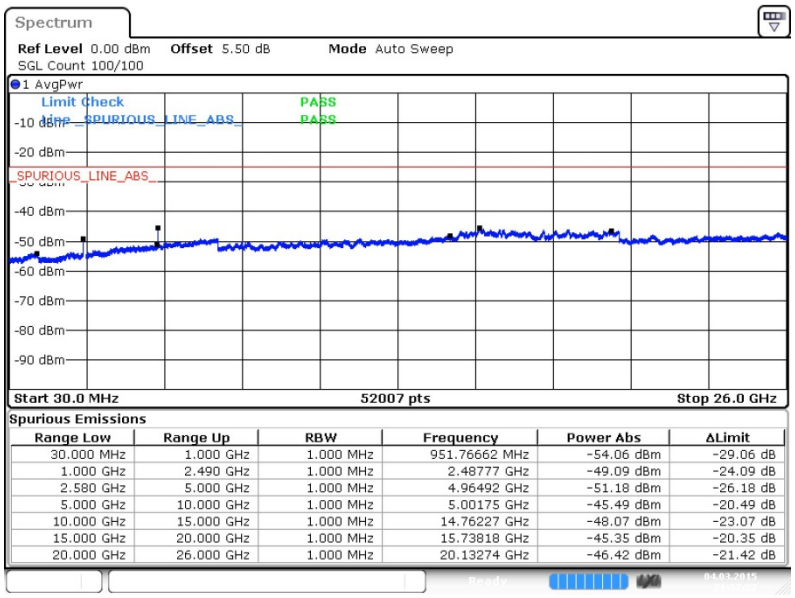



Spurious Emissions

| Range Low | Range Up | RBW | Frequency | Power Abs | ΔLimit |
|---|---|---|---|---|---|
| 30.000 MHz | 1.000 GHz | 1.000 MHz | 864.99500 MHz | -53.59 dBm | -28.59 dB |
| 1.000 GHz | 2.490 GHz | 1.000 MHz | 2.48777 GHz | -49.70 dBm | -24.70 dB |
| 2.580 GHz | 5.000 GHz | 1.000 MHz | 4.98960 GHz | -50.90 dBm | -25.90 dB |
| 5.000 GHz | 10.000 GHz | 1.000 MHz | 5.00175 GHz | -44.32 dBm | -19.32 dB |
| 10.000 GHz | 15.000 GHz | 1.000 MHz | 14.66128 GHz | -48.11 dBm | -23.11 dB |
| 15.000 GHz | 20.000 GHz | 1.000 MHz | 15.73418 GHz | -45.16 dBm | -20.16 dB |
| 20.000 GHz | 26.000 GHz | 1.000 MHz | 20.06374 GHz | -46.42 dBm | -21.42 dB |

Date: 4.MAR.2015 21:56:03

**16QAM (RB Size 1, RB Offset 0)**



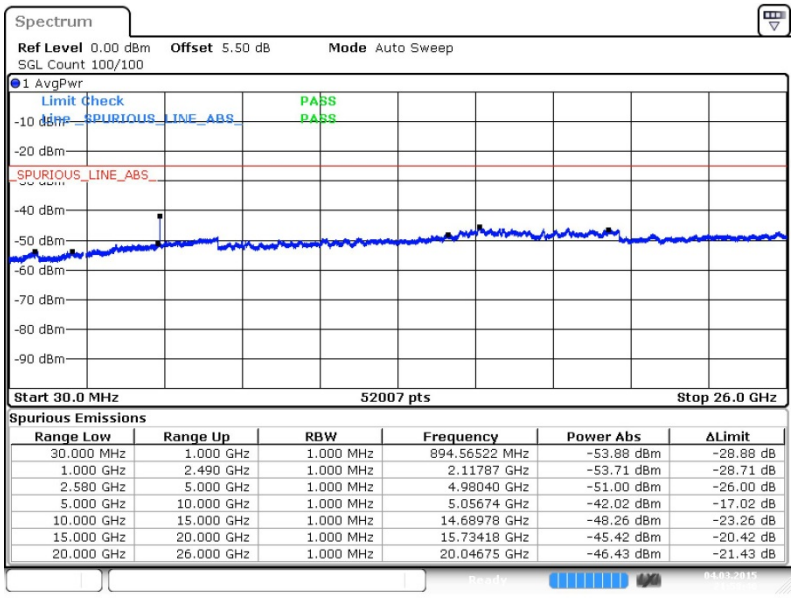

Spurious Emissions

| Range Low | Range Up | RBW | Frequency | Power Abs | ΔLimit |
|---|---|---|---|---|---|
| 30.000 MHz | 1.000 GHz | 1.000 MHz | 951.76662 MHz | -54.06 dBm | -29.06 dB |
| 1.000 GHz | 2.490 GHz | 1.000 MHz | 2.48777 GHz | -49.09 dBm | -24.09 dB |
| 2.580 GHz | 5.000 GHz | 1.000 MHz | 4.96492 GHz | -51.18 dBm | -26.18 dB |
| 5.000 GHz | 10.000 GHz | 1.000 MHz | 5.00175 GHz | -45.49 dBm | -20.49 dB |
| 10.000 GHz | 15.000 GHz | 1.000 MHz | 14.76227 GHz | -48.07 dBm | -23.07 dB |
| 15.000 GHz | 20.000 GHz | 1.000 MHz | 15.73818 GHz | -45.35 dBm | -20.35 dB |
| 20.000 GHz | 26.000 GHz | 1.000 MHz | 20.13274 GHz | -46.42 dBm | -21.42 dB |

Date: 4.MAR.2015 21:57:21

| Band : | LTE Band 7 | Channel : | CH21100 (Middle) |
|---|---|---|---|
| Band Width : | 15MHz | | |

**QPSK (RB Size 1, RB Offset 0)**

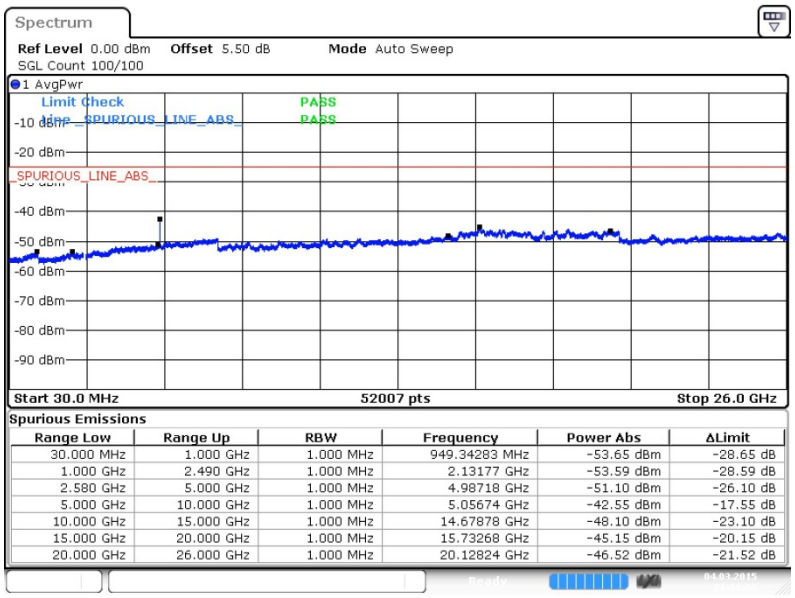



Spurious Emissions

| Range Low | Range Up | RBW | Frequency | Power Abs | ΔLimit |
|---|---|---|---|---|---|
| 30.000 MHz | 1.000 GHz | 1.000 MHz | 894.56522 MHz | -53.88 dBm | -28.88 dB |
| 1.000 GHz | 2.490 GHz | 1.000 MHz | 2.11787 GHz | -53.71 dBm | -28.71 dB |
| 2.580 GHz | 5.000 GHz | 1.000 MHz | 4.98040 GHz | -51.00 dBm | -26.00 dB |
| 5.000 GHz | 10.000 GHz | 1.000 MHz | 5.05674 GHz | -42.02 dBm | -17.02 dB |
| 10.000 GHz | 15.000 GHz | 1.000 MHz | 14.68978 GHz | -48.26 dBm | -23.26 dB |
| 15.000 GHz | 20.000 GHz | 1.000 MHz | 15.73418 GHz | -45.42 dBm | -20.42 dB |
| 20.000 GHz | 26.000 GHz | 1.000 MHz | 20.04675 GHz | -46.43 dBm | -21.43 dB |

Date: 4.MAR.2015 21:58:40

**16QAM (RB Size 1, RB Offset 0)**



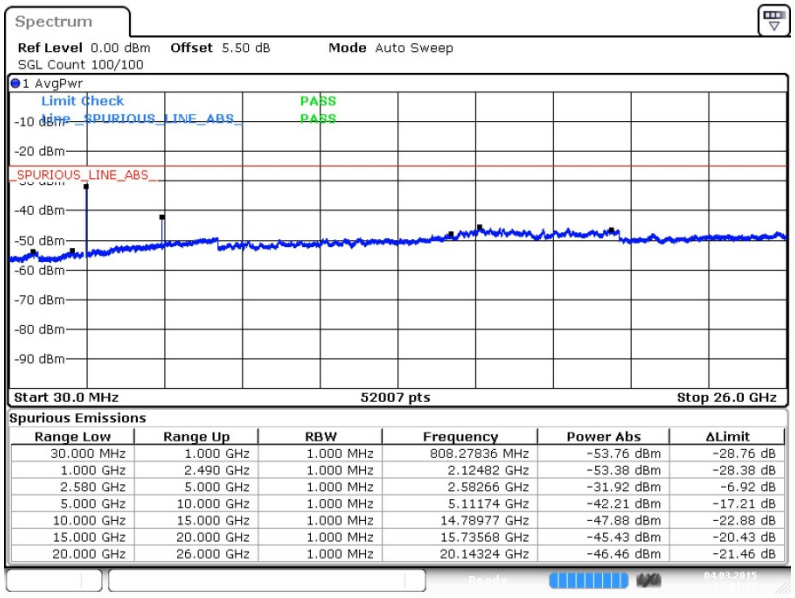

Spurious Emissions

| Range Low | Range Up | RBW | Frequency | Power Abs | ΔLimit |
|---|---|---|---|---|---|
| 30.000 MHz | 1.000 GHz | 1.000 MHz | 949.34283 MHz | -53.65 dBm | -28.65 dB |
| 1.000 GHz | 2.490 GHz | 1.000 MHz | 2.13177 GHz | -53.59 dBm | -28.59 dB |
| 2.580 GHz | 5.000 GHz | 1.000 MHz | 4.98718 GHz | -51.10 dBm | -26.10 dB |
| 5.000 GHz | 10.000 GHz | 1.000 MHz | 5.05674 GHz | -42.55 dBm | -17.55 dB |
| 10.000 GHz | 15.000 GHz | 1.000 MHz | 14.67878 GHz | -48.10 dBm | -23.10 dB |
| 15.000 GHz | 20.000 GHz | 1.000 MHz | 15.73268 GHz | -45.15 dBm | -20.15 dB |
| 20.000 GHz | 26.000 GHz | 1.000 MHz | 20.12824 GHz | -46.52 dBm | -21.52 dB |

Date: 4.MAR.2015 21:59:58

| **Band :** | LTE Band 7 | **Channel :** | CH21375 (High) |
|---|---|---|---|
| **Band Width :** | 15MHz | | |

**QPSK (RB Size 1, RB Offset 0)**

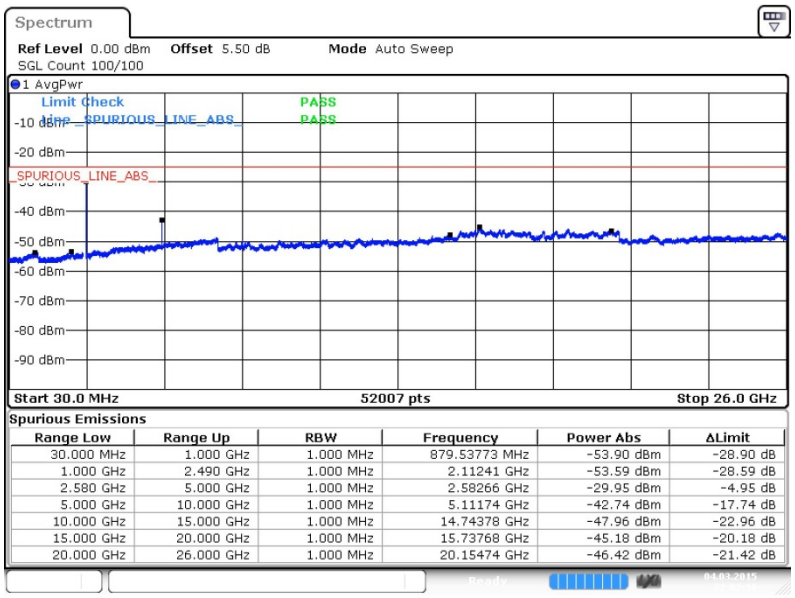



Spurious Emissions

| Range Low | Range Up | RBW | Frequency | Power Abs | ΔLimit |
|---|---|---|---|---|---|
| 30.000 MHz | 1.000 GHz | 1.000 MHz | 808.27836 MHz | -53.76 dBm | -28.76 dB |
| 1.000 GHz | 2.490 GHz | 1.000 MHz | 2.12482 GHz | -53.38 dBm | -28.38 dB |
| 2.580 GHz | 5.000 GHz | 1.000 MHz | 2.58266 GHz | -31.92 dBm | -6.92 dB |
| 5.000 GHz | 10.000 GHz | 1.000 MHz | 5.11174 GHz | -42.21 dBm | -17.21 dB |
| 10.000 GHz | 15.000 GHz | 1.000 MHz | 14.78977 GHz | -47.88 dBm | -22.88 dB |
| 15.000 GHz | 20.000 GHz | 1.000 MHz | 15.73568 GHz | -45.43 dBm | -20.43 dB |
| 20.000 GHz | 26.000 GHz | 1.000 MHz | 20.14324 GHz | -46.46 dBm | -21.46 dB |

Date: 4.MAR.2015 22:01:17

**16QAM (RB Size 1, RB Offset 0)**



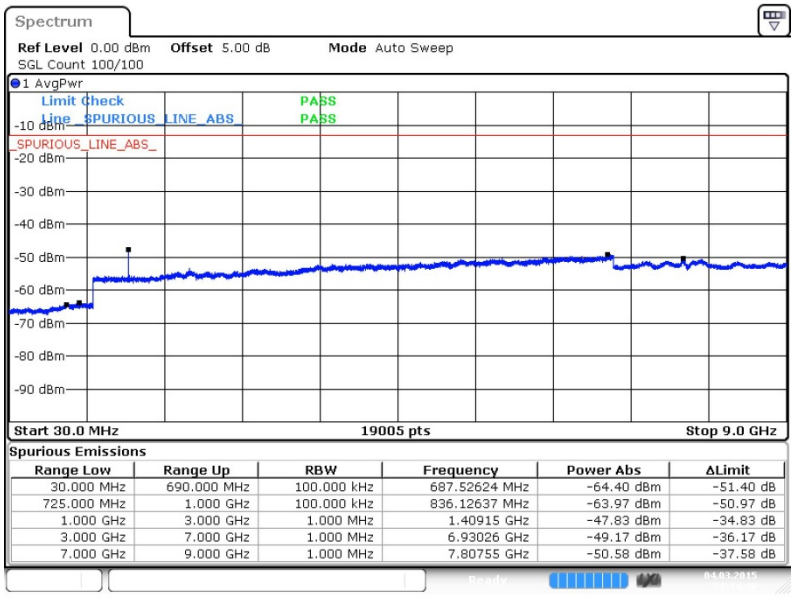

Spurious Emissions

| Range Low | Range Up | RBW | Frequency | Power Abs | ΔLimit |
|---|---|---|---|---|---|
| 30.000 MHz | 1.000 GHz | 1.000 MHz | 879.53773 MHz | -53.90 dBm | -28.90 dB |
| 1.000 GHz | 2.490 GHz | 1.000 MHz | 2.11241 GHz | -53.59 dBm | -28.59 dB |
| 2.580 GHz | 5.000 GHz | 1.000 MHz | 2.58266 GHz | -29.95 dBm | -4.95 dB |
| 5.000 GHz | 10.000 GHz | 1.000 MHz | 5.11174 GHz | -42.74 dBm | -17.74 dB |
| 10.000 GHz | 15.000 GHz | 1.000 MHz | 14.74378 GHz | -47.96 dBm | -22.96 dB |
| 15.000 GHz | 20.000 GHz | 1.000 MHz | 15.73768 GHz | -45.18 dBm | -20.18 dB |
| 20.000 GHz | 26.000 GHz | 1.000 MHz | 20.15474 GHz | -46.42 dBm | -21.42 dB |

Date: 4.MAR.2015 22:02:36

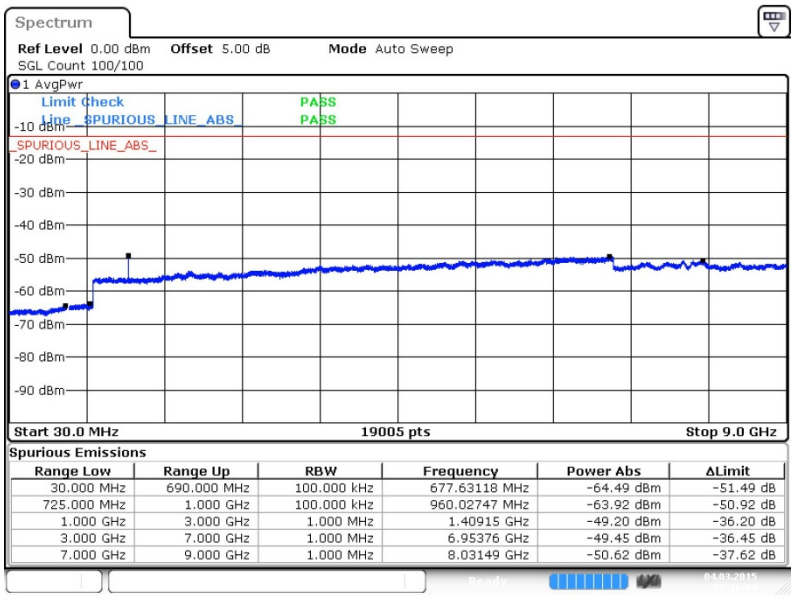
| Band : | LTE Band 17 | Channel : | CH23755 (Low) |
|---|---|---|---|
| Band Width : | 5MHz | | |

**QPSK (RB Size 1, RB Offset 0)**




Date: 4.MAR.2015 22:14:47

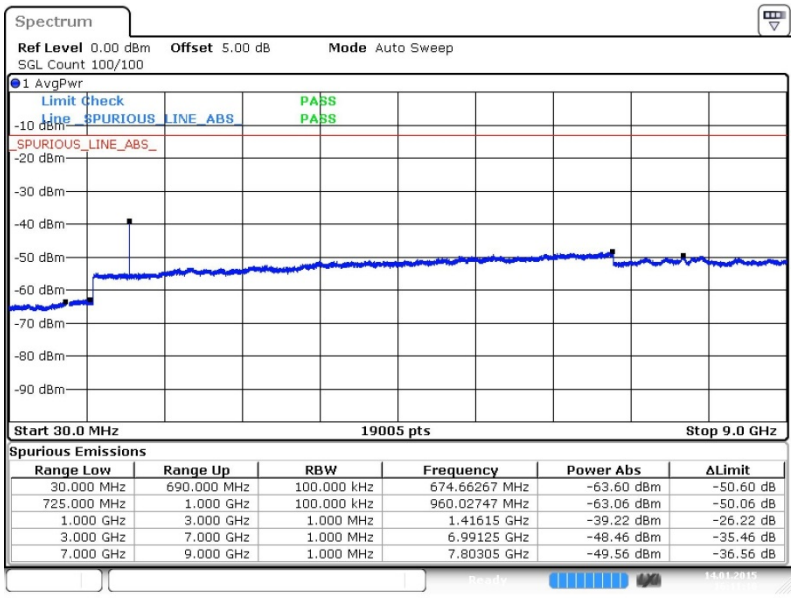
**16QAM (RB Size 1, RB Offset 0)**




Date: 4.MAR.2015 22:16:05

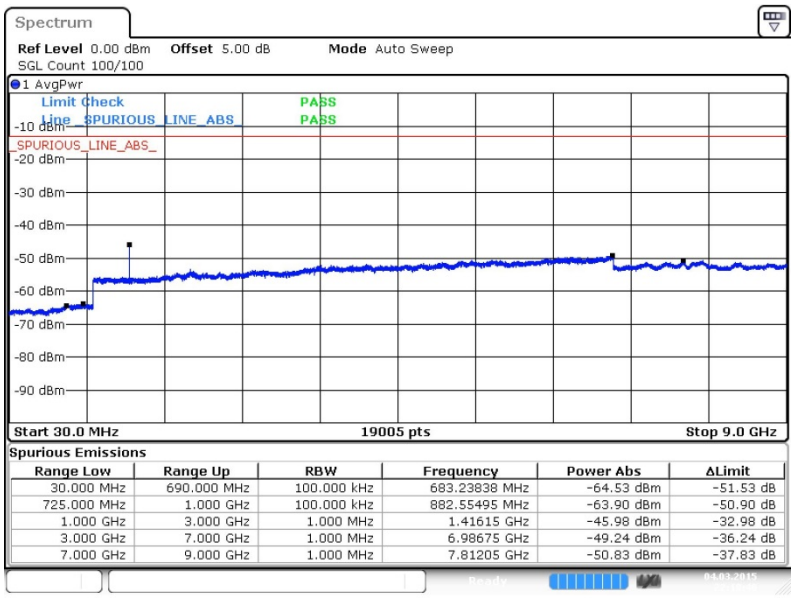
| **Band :** | LTE Band 17 | **Channel :** | CH23790 (Middle) |
|---|---|---|---|
| **Band Width :** | 5MHz | | |

**QPSK (RB Size 1, RB Offset 0)**




Date: 4.MAR.2015 22:17:23

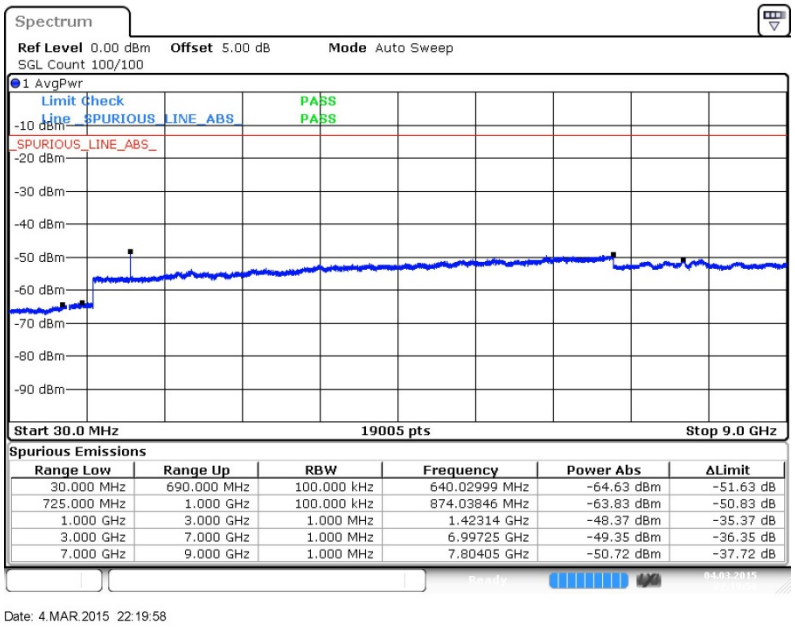
**16QAM (RB Size 1, RB Offset 0)**




Date: 4.MAR.2015 22:18:40

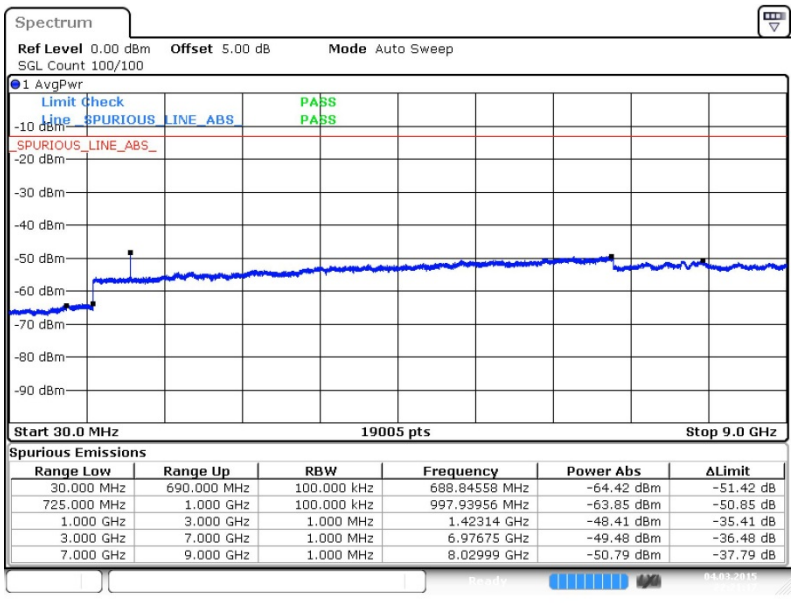
| Band : | LTE Band 17 | Channel : | CH23825 (High) |
|---|---|---|---|
| Band Width : | 5MHz | | |

**QPSK (RB Size 1, RB Offset 0)**




Date: 4.MAR.2015 22:19:58

**16QAM (RB Size 1, RB Offset 0)**




Date: 4.MAR.2015 22:21:16

# 4 List of Measuring Equipment

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|---|---|---|---|---|---|---|---|---|
| Spectrum Analyzer | R&S | FSV30 | 101338 | 9kHz~30GHz | May 04, 2014 | Mar. 04, 2015 | May 03, 2015 | Conducted (TH01-KS) |