

# Variant FCC RF Test Report

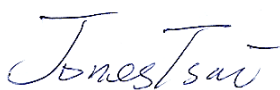
APPLICANT : Acer Incorporated  
EQUIPMENT : Smart HandHeld  
BRAND NAME : Acer  
MODEL NAME : S57  
MARKETING NAME : Liquid Jade Z  
FCC ID : HLZDMS57  
STANDARD : 47 CFR Part 2, 24(E), 27(L), 27(M), 27(H)  
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)

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



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

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## REVISION HISTORY

| REPORT NO. | VERSION | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ISSUED DATE   |
|------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| FG511349B  | Rev. 01 | <p>This is a variant report for S57. The difference between previous and current is as following:</p> <ol style="list-style-type: none"> <li>1. changed Model name from "S56" to "S57",</li> <li>2. changed marketing name from "Liquid Jade S" to "Liquid Jade Z"</li> <li>3. changed CPU from "MT6752M" to "MT6732"</li> <li>4. changed earphone from model name "HF-AC09W-02" to "HC.00211.008".</li> </ol> <p>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).</p> | Mar. 10, 2015 |
|            |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |
|            |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |
|            |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |
|            |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |
|            |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |
|            |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |
|            |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |
|            |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |
|            |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |
|            |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |
|            |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |
|            |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |

## 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) | $< 43+10\log_{10}(P[\text{Watts}])$ | PASS   | -      |
|                | §2.1051<br>§27.53(m)(4)                         | RSS-GEN(4.9)<br>RSS-199 (4.5)                                                   | Conducted Spurious Emission (Band 7)                          | $< 55+10\log_{10}(P[\text{Watts}])$ |        |        |

# 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)/<br>LTE/WLAN 2.4GHz 802.11b/g/n HT20/HT40/<br>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 |                                                                                                                                                                                                   |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tx Frequency</b>                               | 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                                       |
| <b>Rx Frequency</b>                               | 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                                        |
| <b>Bandwidth</b>                                  | 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 |
| <b>Antenna Type</b>                               | PIFA Antenna                                                                                                                                                                                      |
| <b>Type of Modulation</b>                         | 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 |                 |   |   |    |    |    |            |       |      |      |      |              |   |   |
|                             | 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.

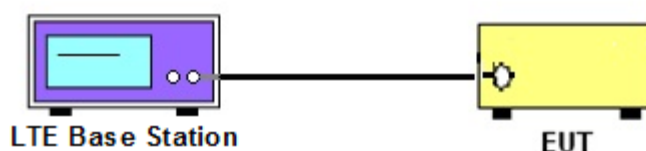
##### 3.1.2 Measuring Instruments

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)<br>Middle<br>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<br>[MHz]     | Modulation | RB<br>Size | RB<br>Offset | Power (dBm)<br>Middle<br>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<br>[MHz]     | Modulation | RB<br>Size | RB<br>Offset | Power (dBm)<br>Middle<br>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)<br>Middle<br>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<br>[MHz]     | Modulation | RB<br>Size | RB<br>Offset | Power (dBm)<br>Middle<br>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<br>[MHz]     | Modulation | RB<br>Size | RB<br>Offset | Power (dBm)<br>Middle<br>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<br>[MHz]     | Modulation | RB<br>Size | RB<br>Offset | Power (dBm)<br>Middle<br>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<br>[MHz]     | Modulation | RB<br>Size | RB<br>Offset | Power (dBm)<br>Middle<br>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<br>[MHz]     | Modulation | RB<br>Size | RB<br>Offset | Power (dBm)<br>Middle<br>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<sup>th</sup> harmonic.

### 3.2.2 Measuring Instruments

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

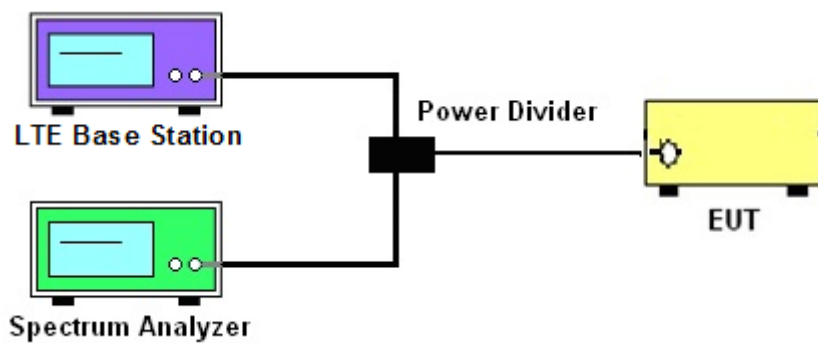
### 3.2.3 Test Procedures

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  $43 + 10\log(P)$ dB below the transmitter power P(Watts)  
 $= P(W) - [43 + 10\log(P)]$  (dB)  
 $= [30 + 10\log(P)]$  (dBm) -  $[43 + 10\log(P)]$  (dB)  
 $= -13$ dBm.

For Band 7

The limit line is derived from  $55 + 10\log(P)$ dB below the transmitter power P(Watts)  
 $= P(W) - [55 + 10\log(P)]$  (dB)  
 $= [30 + 10\log(P)]$  (dBm) -  $[55 + 10\log(P)]$  (dB)  
 $= -25$ dBm.

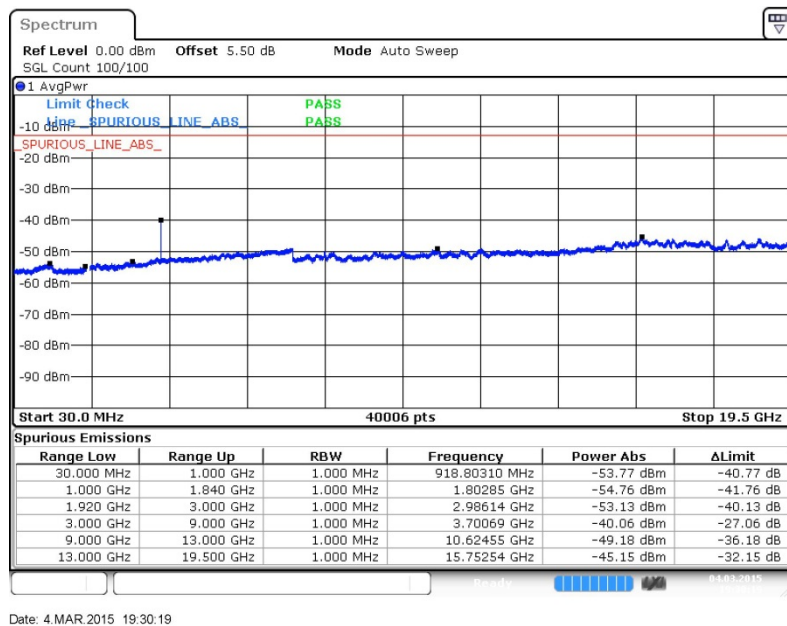
### 3.2.4 Test Setup



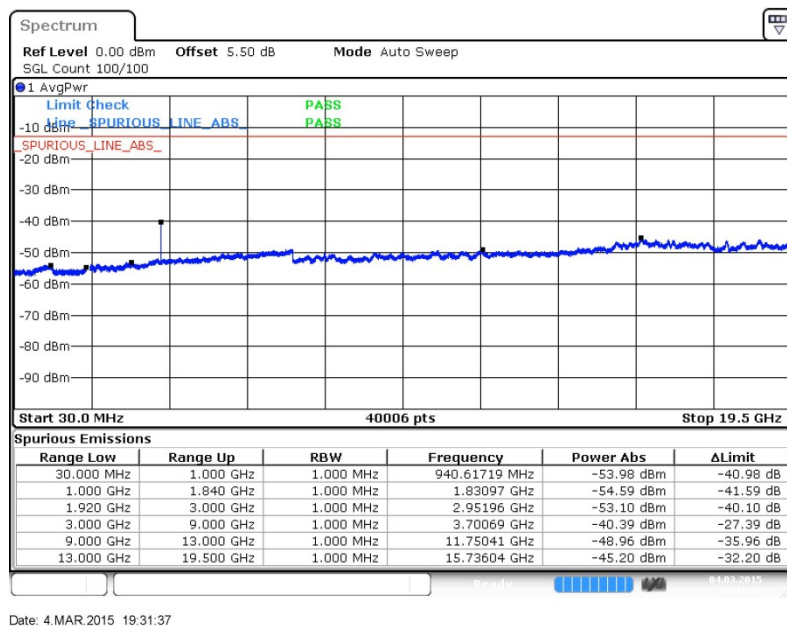
### 3.2.5 Test Result (Plots) of Conducted Spurious Emission

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

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

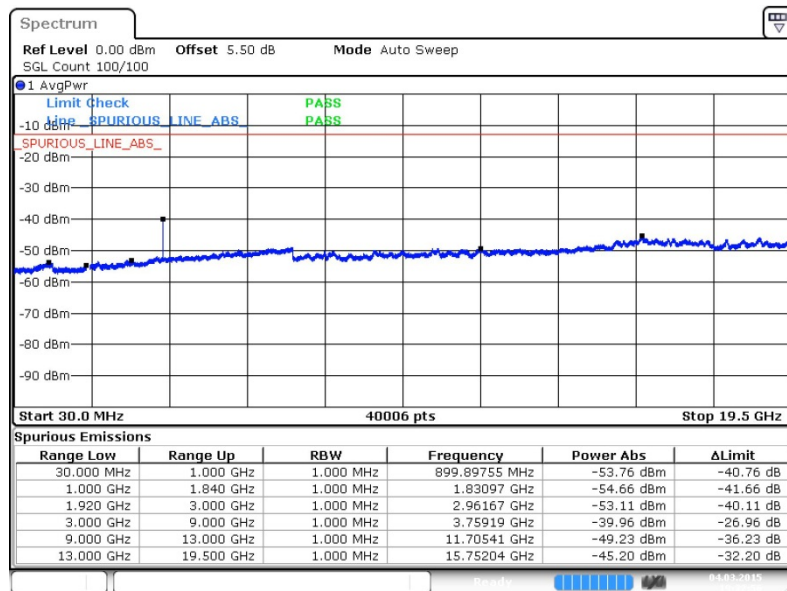


#### 16QAM (RB Size 1, RB Offset 0)

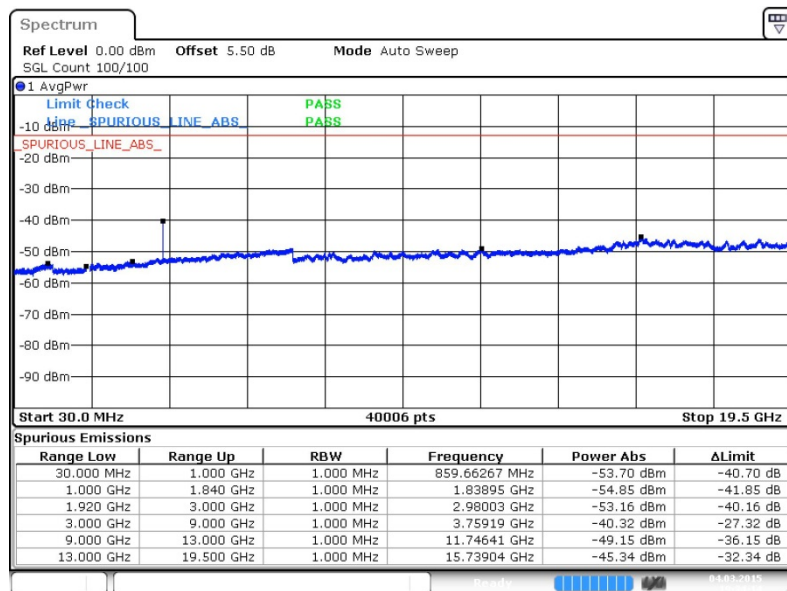




|                     |            |                  |                  |
|---------------------|------------|------------------|------------------|
| <b>Band :</b>       | LTE Band 2 | <b>Channel :</b> | CH18900 (Middle) |
| <b>Band Width :</b> | 1.4MHz     |                  |                  |

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

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

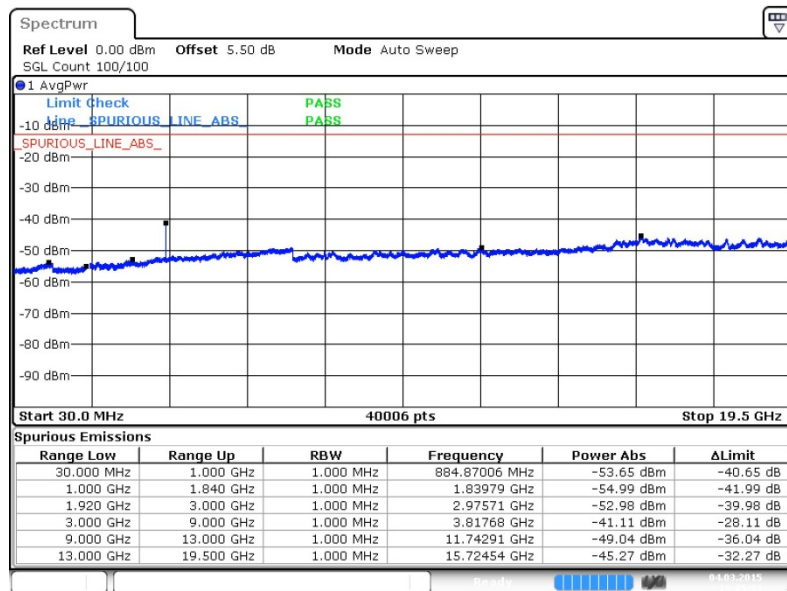
**16QAM (RB Size 1, RB Offset 0)**

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



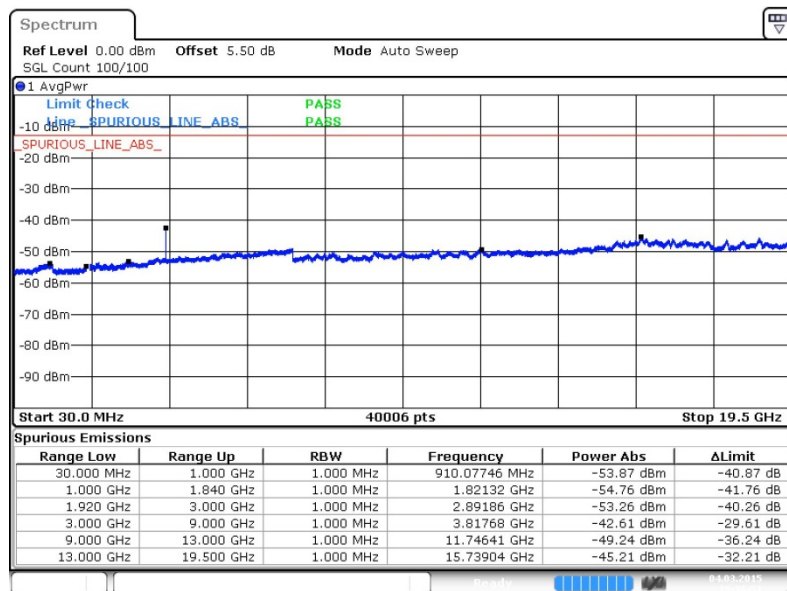
|              |            |           |                |
|--------------|------------|-----------|----------------|
| Band :       | LTE Band 2 | Channel : | CH19193 (High) |
| Band Width : | 1.4MHz     |           |                |

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



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

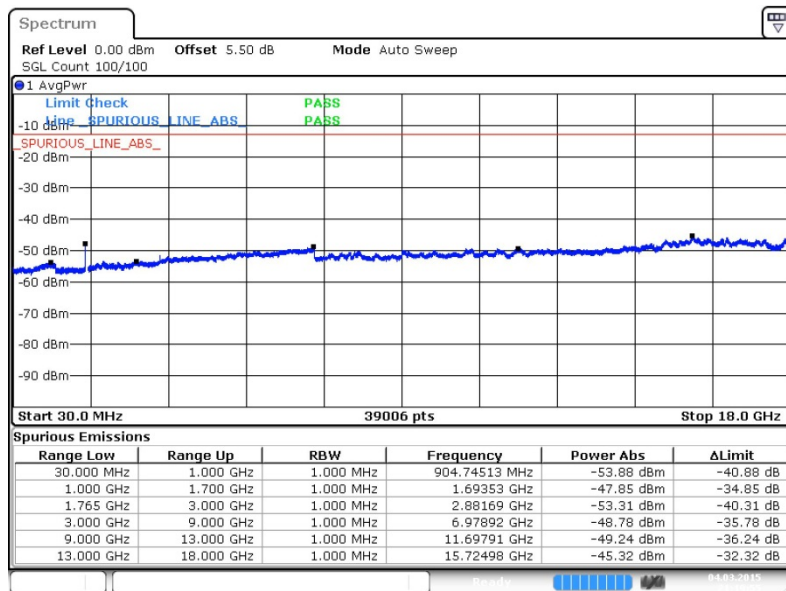
## 16QAM (RB Size 1, RB Offset 0)



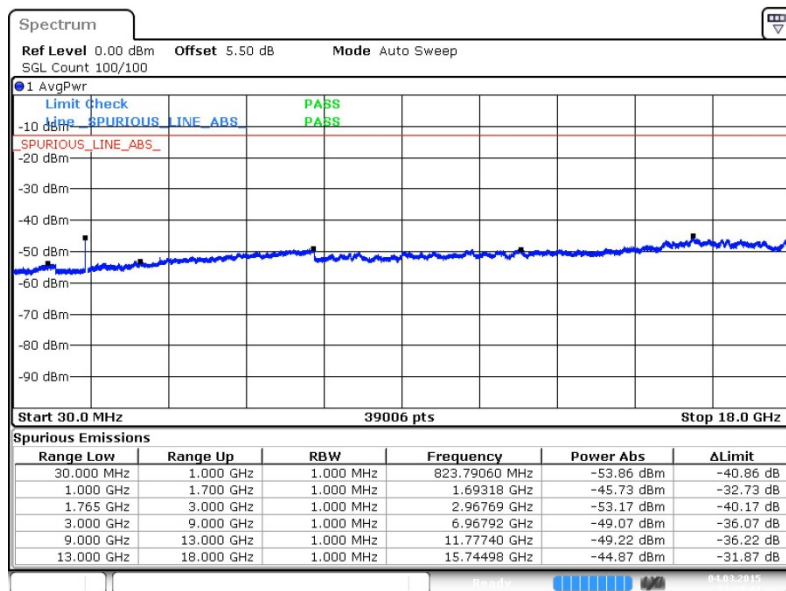
Date: 4.MAR.2015 19:36:51



|                     |            |                  |               |
|---------------------|------------|------------------|---------------|
| <b>Band :</b>       | LTE Band 4 | <b>Channel :</b> | CH20000 (Low) |
| <b>Band Width :</b> | 10MHz      |                  |               |

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

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

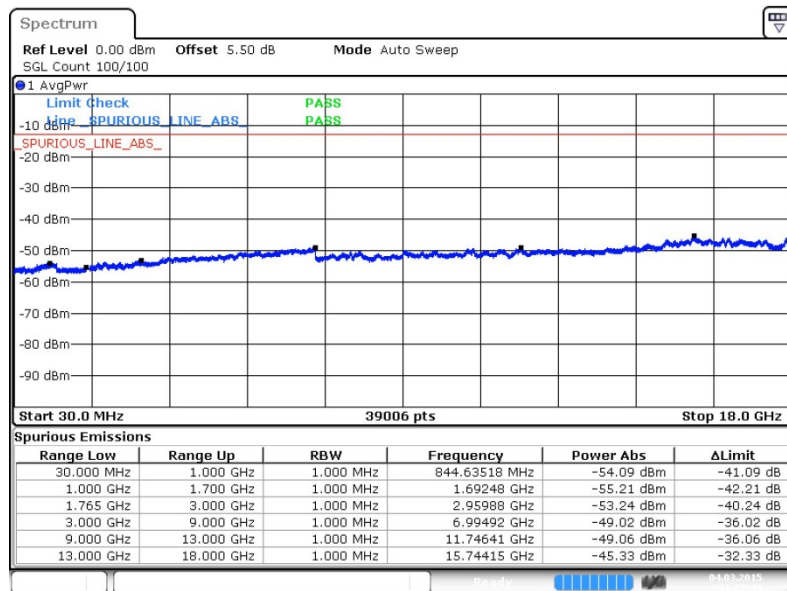
**16QAM (RB Size 1, RB Offset 0)**

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



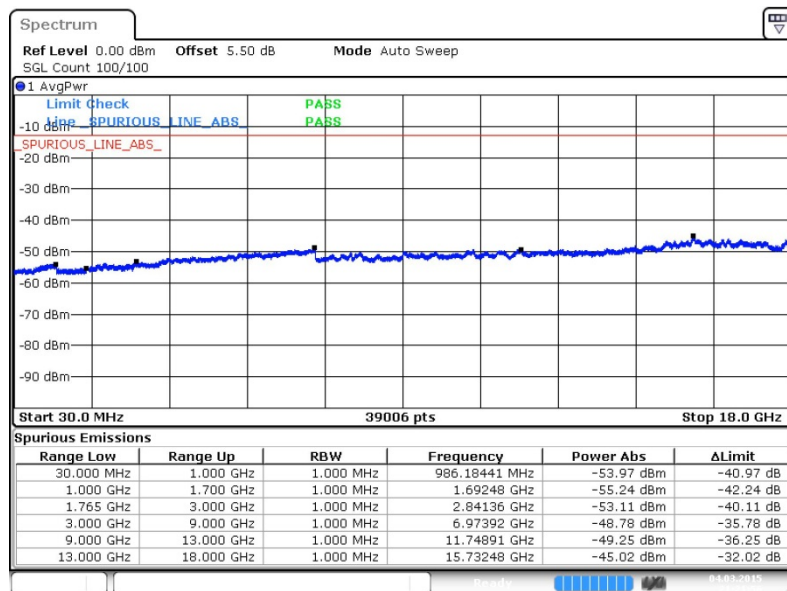
|              |            |           |                  |
|--------------|------------|-----------|------------------|
| Band :       | LTE Band 4 | Channel : | CH20175 (Middle) |
| Band Width : | 10MHz      |           |                  |

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



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

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

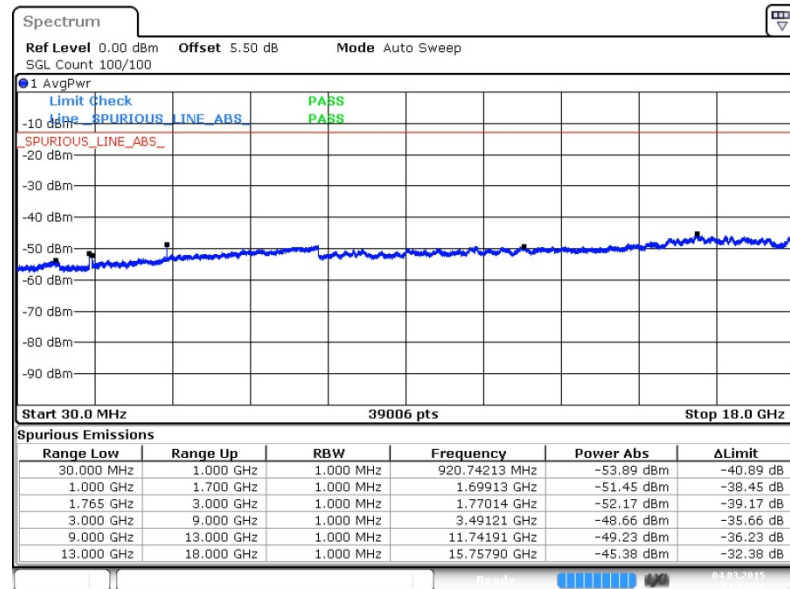


Date: 4.MAR.2015 21:21:57

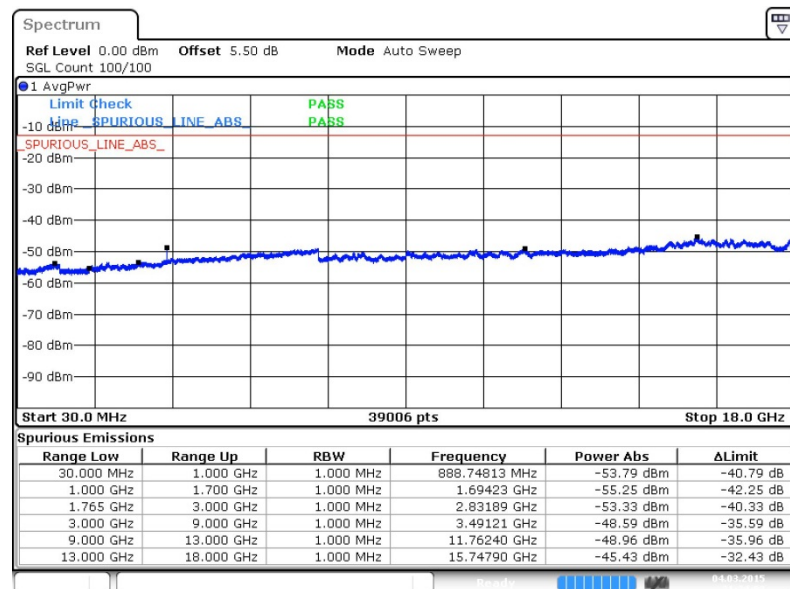


|              |            |           |                |
|--------------|------------|-----------|----------------|
| Band :       | LTE Band 4 | Channel : | CH20350 (High) |
| Band Width : | 10MHz      |           |                |

QPSK (RB Size 1, RB Offset 0)



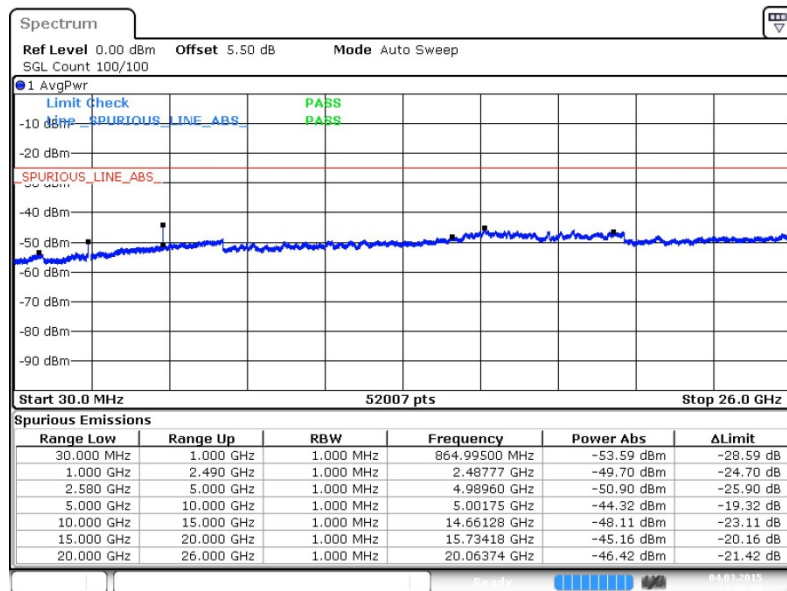
16QAM (RB Size 1, RB Offset 0)





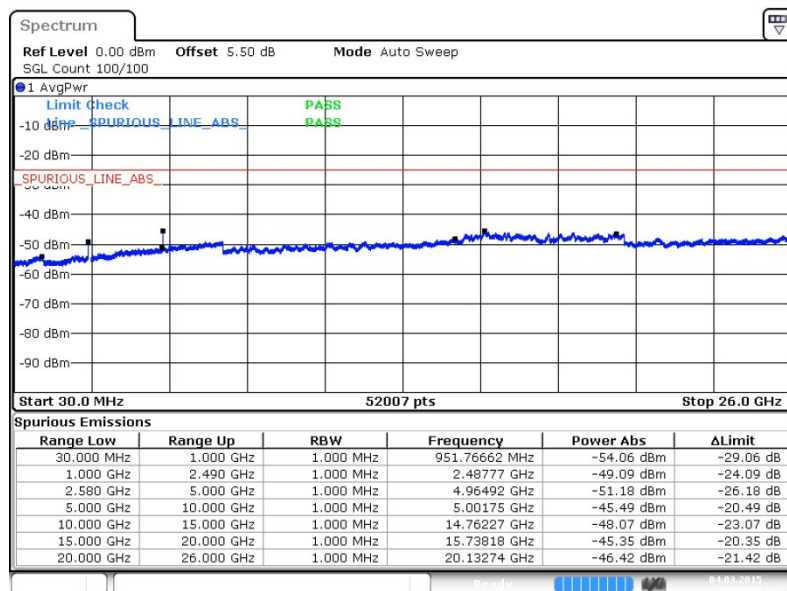
|              |            |           |               |
|--------------|------------|-----------|---------------|
| Band :       | LTE Band 7 | Channel : | CH20825 (Low) |
| Band Width : | 15MHz      |           |               |

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



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

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

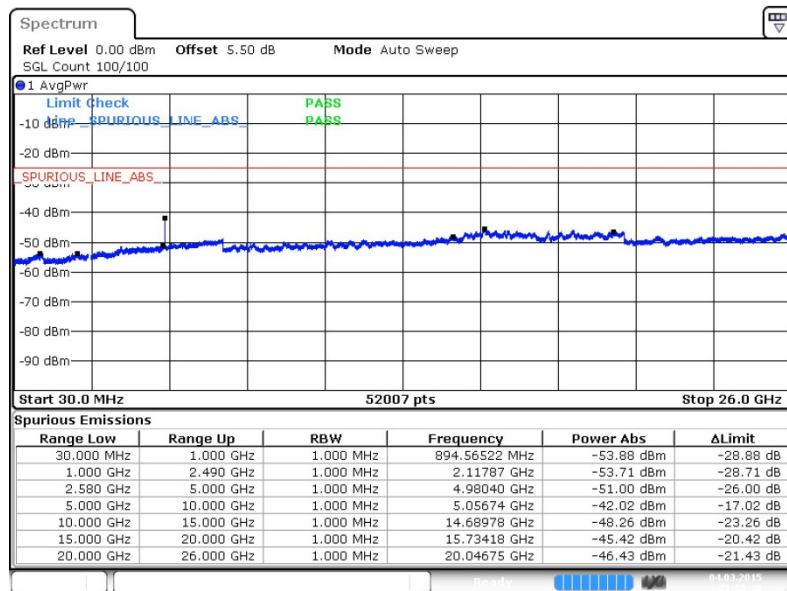


Date: 4.MAR.2015 21:57:21



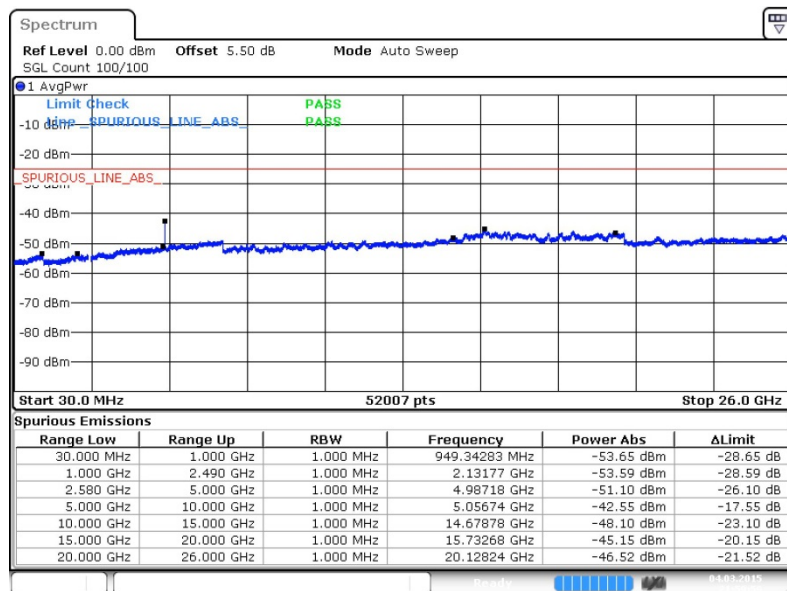
|              |            |           |                  |
|--------------|------------|-----------|------------------|
| Band :       | LTE Band 7 | Channel : | CH21100 (Middle) |
| Band Width : | 15MHz      |           |                  |

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



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

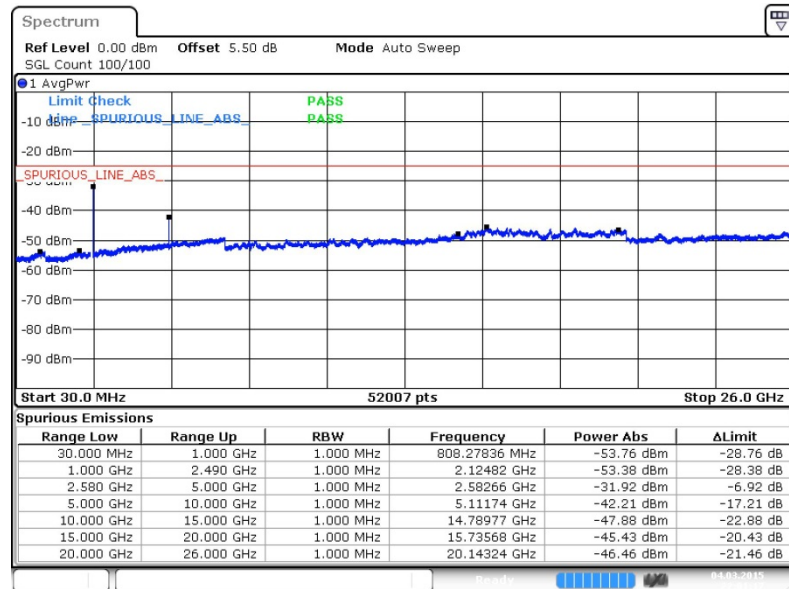
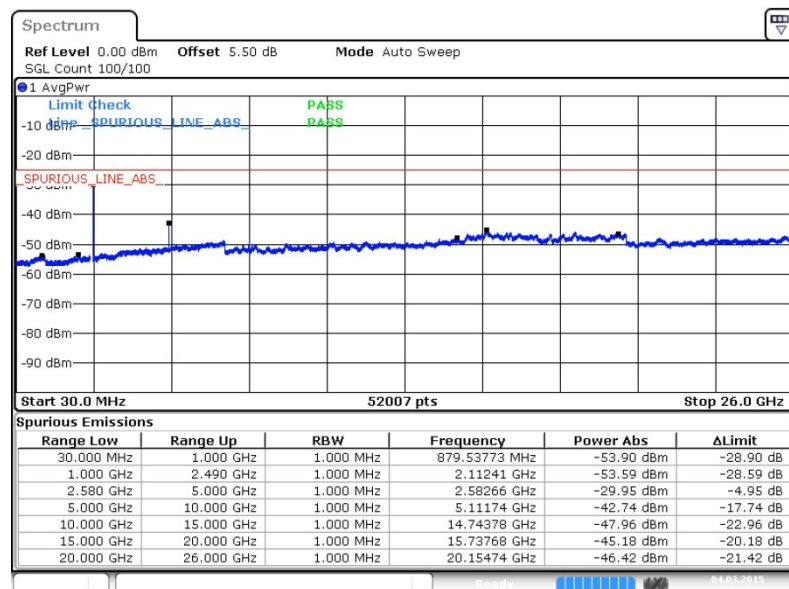
## 16QAM (RB Size 1, RB Offset 0)



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



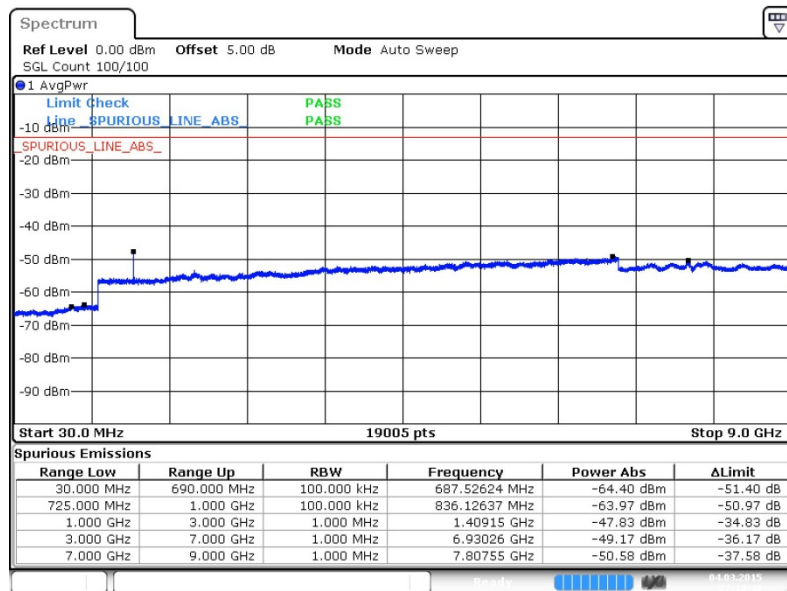
|                     |            |                  |                |
|---------------------|------------|------------------|----------------|
| <b>Band :</b>       | LTE Band 7 | <b>Channel :</b> | CH21375 (High) |
| <b>Band Width :</b> | 15MHz      |                  |                |

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

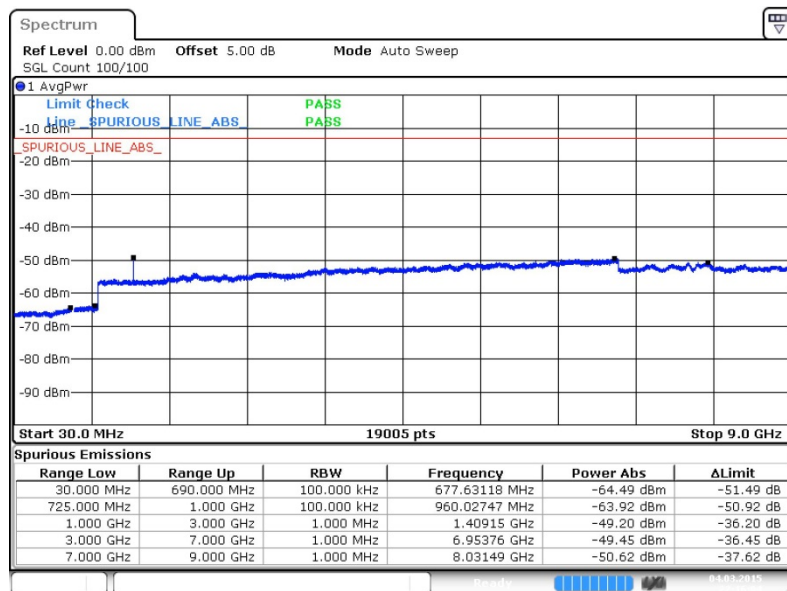


|              |             |           |               |
|--------------|-------------|-----------|---------------|
| Band :       | LTE Band 17 | Channel : | CH23755 (Low) |
| Band Width : | 5MHz        |           |               |

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

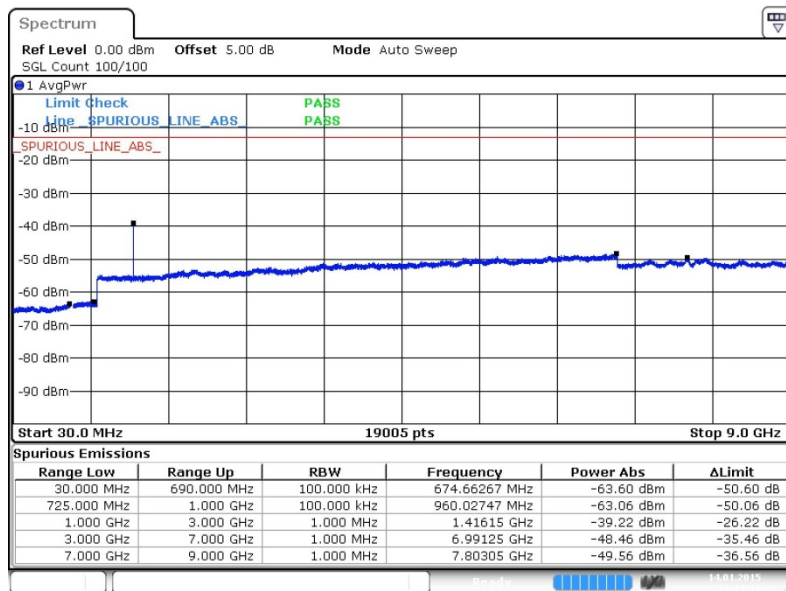


## 16QAM (RB Size 1, RB Offset 0)

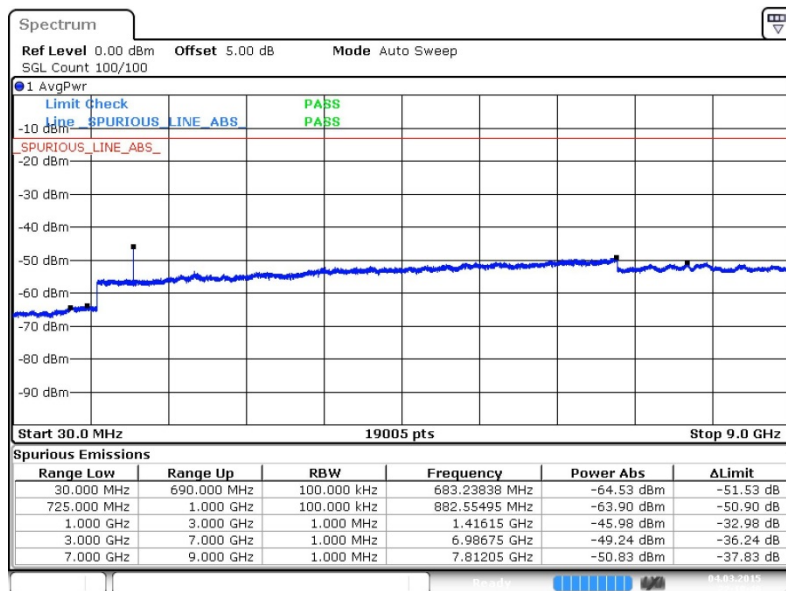




|                     |             |                  |                  |
|---------------------|-------------|------------------|------------------|
| <b>Band :</b>       | LTE Band 17 | <b>Channel :</b> | CH23790 (Middle) |
| <b>Band Width :</b> | 5MHz        |                  |                  |

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

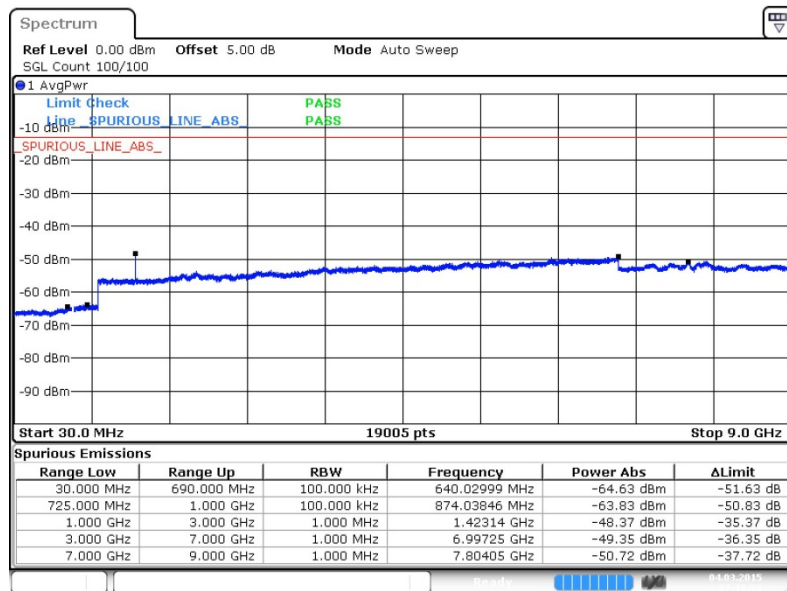
Date: 4.MAR.2015 22:17:23

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

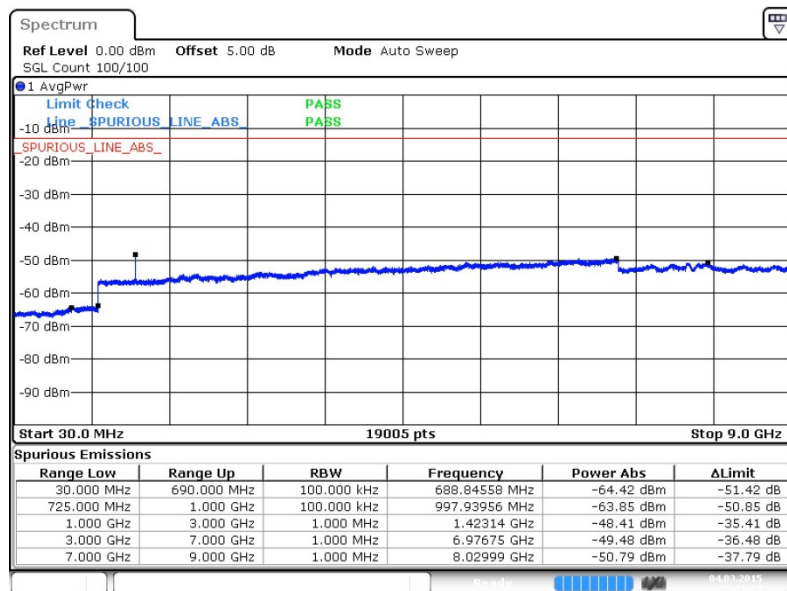
Date: 4.MAR.2015 22:18:40



|                     |             |                  |                |
|---------------------|-------------|------------------|----------------|
| <b>Band :</b>       | LTE Band 17 | <b>Channel :</b> | CH23825 (High) |
| <b>Band Width :</b> | 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) |