



## FCC PART 22/24 TEST REPORT

### FCC Part 22 /Part 24

Report Reference No. .... : TRE1307013001 R/C: 89493

FCC ID. .... : XZOIO-10C

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Date of issue. .... : Feb 28, 2014

Testing Laboratory Name ..... : Shenzhen Huatongwei International Inspection Co., Ltd

Address. .... : Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China

Applicant's name ..... : i-Mobile Technology Corporation

Address. .... : 3F #8 Alley 15 Lane 120 Sec.1 Neihu Road Neihu District, Taipei City 114, Taiwan

Test specification ..... :

Standard ..... : FCC Part 22: PUBLIC MOBILE SERVICES

..... : FCC Part 24: PERSONAL COMMUNICATIONS SERVICES

TRF Originator ..... : Shenzhen Huatongwei International Inspection CO., Ltd

Master TRF ..... : Dated 2006-06

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Test item description ..... : Tablet PC

Trade Mark ..... : @MOBILE

Manufacturer ..... : i-Mobile Technology Corporation

Model/Type reference ..... : IO-10C

Listed Models ..... : IC-10

Ratings ..... : DC 7.40V

Modulation ..... : GMSK(GPRS/EDGE)/8PSK(EDGE)

GPRS/EDGE Class ..... : 12

GPRS operation mode ..... : Class B

Hardware version ..... : Rev.C

Software version ..... : Rev.B

Window version ..... : Window 7

Frequency Band ..... : GSM850/PCS1900

Result ..... : **PASS**

**TEST REPORT**

|                          |                      |               |
|--------------------------|----------------------|---------------|
| <b>Test Report No. :</b> | <b>TRE1307013001</b> | Feb 28, 2014  |
|                          |                      | Date of issue |

Equipment under Test : Tablet PC

Model /Type : IO-10C

Listed Models : IC-10

**Applicant** : **i-Mobile Technology Corporation**

Address : 3F #8 Alley 15 Lane 120 Sec.1 Neihu Road Neihu District,  
Taipei City 114, Taiwan

**Manufacturer** : **i-Mobile Technology Corporation**

Address : 3F #8 Alley 15 Lane 120 Sec.1 Neihu Road Neihu District,  
Taipei City 114, Taiwan

|                    |             |
|--------------------|-------------|
| <b>Test Result</b> | <b>PASS</b> |
|--------------------|-------------|

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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## 1. TEST STANDARDS

The tests were performed according to following standards:

[FCC Part 22 \(10-1-12 Edition\)](#): PRIVATE LAND MOBILE RADIO SERVICES.

[FCC Part 24\(10-1-12 Edition\)](#): PUBLIC MOBILE SERVICES

[TIA/EIA 603 D June 2010](#): Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

[47 CFR FCC Part 15 Subpart B](#): - Unintentional Radiators

[FCC Part 2](#): FREQUENCY ALLOCA-TIONS AND RADIO TREATY MAT-TERS; GENERAL RULES AND REG-ULATIONS

[KDB971168 D01:201](#): Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems

[ANSI C63.4:2009](#): Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

## 2. SUMMARY

### 2.1. General Remarks

|                                |   |               |
|--------------------------------|---|---------------|
| Date of receipt of test sample | : | June 04, 2013 |
|                                |   |               |
| Testing commenced on           | : | June 04, 2013 |
|                                |   |               |
| Testing concluded on           | : | Feb 28,2014   |

### 2.2. Product Description

The **i-Mobile Technology Corporation's** Model:IO-10C or the "EUT" as referred to in this report; more general information as follows, for more details, refer to the user's manual of the EUT.

|                                        |                                                               |
|----------------------------------------|---------------------------------------------------------------|
| Name of EUT                            | Tablet PC                                                     |
| Model Number                           | IO-10C,IC-10                                                  |
| WCDMA Power Class                      | Power Class 3                                                 |
| Modulation Type                        | QPSK for WCDMA/GMSK for EDGE/GPRS,8PSK for EDGE               |
| Antenna Type                           | Internal                                                      |
| WCDMA Operation Frequency Band         | FDD WCDMA Band II &FDD WCDMA Band V                           |
| Hardware version                       | Rev.C                                                         |
| Software version                       | Rev.C                                                         |
| Window version                         | Window 7                                                      |
| HSDPA Release Version                  | Release 10                                                    |
| HSUPA Release Version                  | Release 6                                                     |
| DC-HSUPA Release Version               | Not Supported                                                 |
| WCDMA Release Version                  | R99                                                           |
| GPS function                           | Support                                                       |
| WLAN                                   | Supported 802.11b/802.11g/802.11n                             |
| Bluetooth                              | Supported                                                     |
| GSM/EDGE/GPRS                          | Supported EDGE/GPRS                                           |
| GSM/EDGE/GPRS Power Class              | GPRS850:Power Class 4/PCS1900:Power Class 1                   |
| GSM/EDGE/GPRS Operation Frequency      | GSM850/EDGE850:824MHz-849MHz/PCS1800/EDGE1900:1850MHz-1910MHz |
| GSM/EDGE/GPRS Operation Frequency Band | GPRS850/GPRS1900/EDGE850/EDGE1900                             |
| GSM Release Version                    | R99                                                           |
| GPRS/EDGE Multislot Class              | GPRS/EGPRS: Multi-slot Class 12                               |

### 2.3. Equipment under Test

#### Power supply system utilised

|                      |   |                                                                   |                                   |
|----------------------|---|-------------------------------------------------------------------|-----------------------------------|
| Power supply voltage | : | <input type="radio"/> 120V / 60 Hz                                | <input type="radio"/> 115V / 60Hz |
|                      |   | <input type="radio"/> 12 V DC                                     | <input type="radio"/> 24 V DC     |
|                      |   | <input checked="" type="radio"/> Other (specified in blank below) |                                   |

DC 7.40 V

#### Test frequency list

| Modulation Type | Test Channel | Channel Number | Test Frequency |
|-----------------|--------------|----------------|----------------|
| GPRS850/GSM850  | Low          | 128            | 824.20 MHz     |
|                 | Middle       | 188            | 836.60 MHz     |
|                 | High         | 251            | 848.80 MHz     |
| GPRS1900/GSM850 | Low          | 512            | 1850.20 MHz    |
|                 | Middle       | 661            | 1880.00 MHz    |
|                 | High         | 810            | 1909.80 MHz    |

## 2.4. Short description of the Equipment under Test (EUT)

The Equipment Under Test (EUT) is a Tablet PC with

WCDMA/HSUPA/HSDPA/GPRS/EDGE,WLAN and Bluetooth function and integrated antenna. Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the Client.

## 2.5. Internal Identification of AE used during the test

| AE ID* | Description |
|--------|-------------|
| AE1    | Adapter     |

AE1:

Model: STD-16040

Input: 100-240V~50/60Hz 1.4A Max

Output: OUTPUT: 16.0V DC 4.0A

◇ Shielded      ◆ Unshielded

\*AE ID: is used to identify the test sample in the lab internally.

## 2.6. Normal Accessory setting

Fully charged battery was used during the test.

## 2.7. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

|   |             |                |   |
|---|-------------|----------------|---|
| ○ | Power Cable | Length (m) :   | / |
|   |             | Shield :       | / |
|   |             | Detachable :   | / |
| ○ | Multimeter  | Manufacturer : | / |
|   |             | Model No. :    | / |

## 2.8. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: XZOIO-10C** filing to comply with FCC Part 22 and Part 24 Rules

## 2.9. Modifications

No modifications were implemented to meet testing criteria.

## 2.10. Note

- The EUT is a Tablet PC with WCDMA/HSDPA/HSUPA/EDGE/GPRS/WLAN/Bluetooth/RFID function, The functions of the EUT listed as below:

|                   | Test Standards          | Reference Report |
|-------------------|-------------------------|------------------|
| GSM/GPRS/EGPRS    | FCC Part 22/FCC Part 24 | TRE1307013001    |
| WCDMA/HSUPA/HSDPA | FCC Part 22/FCC Part 24 | TRE1307013002    |
| SAR               | FCC Part 2 §2.1093      | TRE1307013003    |

### **3. TEST ENVIRONMENT**

#### **3.1. Address of the test laboratory**

Shenzhen Huatongwei International Inspection Co., Ltd  
Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China  
Phone: 86-755-26715686 Fax: 86-755-26748089

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2009) and CISPR Publication 22.

#### **3.2. Test Facility**

The test facility is recognized, certified, or accredited by the following organizations:

##### **CNAS-Lab Code: L1225**

Shenzhen Huatongwei International Inspection Co., Ltd has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: Mar 01, 2012. Valid time is until Feb 28, 2015.

##### **A2LA-Lab Cert. No. 2243.01**

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is until Sept 30, 2015.

##### **FCC-Registration No.: 662850**

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 662850, Renewal date June 01, 2015.

##### **IC-Registration No.: 5377**

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377 on Jan 25, 2011. Valid time is until Jan 24, 2014

##### **ACA**

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

##### **VCCI**

The 3m Semi-anechoic chamber (12.2m×7.95m×6.7m) and Shielded Room (8m×4m×3m) of Shenzhen Huatongwei International Inspection Co., Ltd has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2484. Date of Registration: December 20, 2009. Valid time is until December 19, 2013.

Main Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-2726. Date of Registration: December 20, 2009. Valid time is until December 19, 2013.

##### **DNV**

Shenzhen Huatongwei International Inspection Co Ltd has been found to comply with the requirements of DNV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Directives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups according to relevant parts of ISO/IEC Guide 17025(2005), in accordance with the requirements of the DNV Laboratory Quality Manual towards subcontractors. Valid time is until Aug 24, 2016.

### 3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

|                       |              |
|-----------------------|--------------|
| Temperature:          | 15-35 ° C    |
|                       |              |
| Humidity:             | 30-60 %      |
|                       |              |
| Atmospheric pressure: | 950-1050mbar |

### 3.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

| Test Items                                 | Measurement Uncertainty | Notes |
|--------------------------------------------|-------------------------|-------|
| Frequency stability                        | 25 Hz                   | (1)   |
| Transmitter power conducted                | 0.57 dB                 | (1)   |
| Transmitter power Radiated                 | 2.20 dB                 | (1)   |
| Conducted spurious emission 9KHz-12.75 GHz | 1.60 dB                 | (1)   |
| Conducted Emission 9KHz-30MHz              | 3.39 dB                 | (1)   |
| Radiated Emission 30~1000MHz               | 4.24 dB                 | (1)   |
| Radiated Emission 1~18GHz                  | 5.16 dB                 | (1)   |
| Radiated Emission 18-40GHz                 | 5.54 dB                 | (1)   |
| Occupied Bandwidth                         | -----                   | (1)   |
| Emission Mask                              | -----                   | (1)   |
| Modulation Characteristic                  | -----                   | (1)   |
| Transmitter Frequency Behavior             | -----                   | (1)   |

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

### 3.5. Test Description

| Test Items                  | Clause in FCC rules  | Verdict |
|-----------------------------|----------------------|---------|
| Conducted Emission          | 15.107/15.207        | PASS    |
| Output Power                | 22.913(a)/24.232(c)  | PASS    |
| Radiated Spurious Emission  | 2.1051/22.917/24.238 | PASS    |
| Frequency Stability         | 2.1055/24.235        | PASS    |
| Occupied Bandwidth          | 2.1049(h)(i)         | PASS    |
| Emission Bandwidth          | 22.917(b)/24.238(b)  | PASS    |
| Band Edge Compliance        | 22.917(b)/24.238(b)  | PASS    |
| Conducted Spurious Emission | 2.1057/22.917/24.238 | PASS    |

Remark:

1. The measurement uncertainty is not included in the test result.



### 3.6. Equipments Used during the Test

| AC Power Conducted Emission |                               |               |             |            |            |
|-----------------------------|-------------------------------|---------------|-------------|------------|------------|
| No.                         | Equipment                     | Manufacturer  | Model No.   | Serial No. | Last Cal.  |
| 1                           | Artificial Mains              | Rohde&Schwarz | ESH2-Z5     | 100028     | 2013/10/26 |
| 2                           | EMI Test Receiver             | Rohde&Schwarz | ESCS 30     | 100038     | 2013/10/26 |
| 3                           | Pulse Limiter                 | Rohde&Schwarz | ESHSZ2      | 100044     | 2013/10/26 |
| 4                           | EMI Test Software             | Rohde&Schwarz | ES-K1 V1.71 | N/A        | N/         |
| 5                           | UNIVERSAL RADIO COMMUNICATION | Rohde&Schwarz | CMU200      | 112012     | 2013/10/26 |

| Output Power(Conducted) & Occupied Bandwidth & Emission Bandwidth & Band Edge Compliance & Conducted Spurious Emission |                               |               |           |            |            |
|------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------|-----------|------------|------------|
| No.                                                                                                                    | Equipment                     | Manufacturer  | Model No. | Serial No. | Last Cal.  |
| 1                                                                                                                      | UNIVERSAL RADIO COMMUNICATION | Rohde&Schwarz | CMU200    | 112012     | 2013/10/26 |
| 2                                                                                                                      | Spectrum Analyzer             | Rohde&Schwarz | FSU26     | 201141     | 2013/10/26 |
| 3                                                                                                                      | Splitter                      | Mini-Circuit  | ZAPD-4    | 400059     | 2013/10/26 |

| Frequency Stability |                               |               |           |            |            |
|---------------------|-------------------------------|---------------|-----------|------------|------------|
| No.                 | Equipment                     | Manufacturer  | Model No. | Serial No. | Last Cal.  |
| 1                   | UNIVERSAL RADIO COMMUNICATION | Rohde&Schwarz | CMU200    | 112012     | 2013/10/26 |
| 2                   | Spectrum Analyzer             | Rohde&Schwarz | FSU26     | 201141     | 2013/10/26 |
| 3                   | Climate Chamber               | ESPEC         | EL-10KA   | 05107008   | 2013/10/26 |
| 4                   | Splitter                      | Mini-Circuit  | ZAPD-4    | 400059     | 2013/10/26 |

| Output Power (Radiated) & Radiated Spurious Emission |                               |                              |           |              |            |
|------------------------------------------------------|-------------------------------|------------------------------|-----------|--------------|------------|
| No.                                                  | Equipment                     | Manufacturer                 | Model No. | Serial No.   | Last Cal.  |
| 1                                                    | UNIVERSAL RADIO COMMUNICATION | Rohde&Schwarz                | CMU200    | 112012       | 2013/10/26 |
| 2                                                    | Spectrum Analyzer             | Rohde&Schwarz                | FSU26     | 201141       | 2013/10/26 |
| 3                                                    | HORN ANTENNA                  | ShwarzBeck                   | 9120D     | 1012         | 2013/10/26 |
| 4                                                    | HORN ANTENNA                  | ShwarzBeck                   | 9120D     | 1011         | 2013/10/26 |
| 5                                                    | Ultra-Broadband Antenna       | ShwarzBeck                   | VULB9163  | 538          | 2013/10/26 |
| 6                                                    | Ultra-Broadband Antenna       | ShwarzBeck                   | VULB9163  | 539          | 2013/10/26 |
| 7                                                    | TURNTABLE                     | MATURO                       | TT2.0     | ----         | N/A        |
| 8                                                    | ANTENNA MAST                  | MATURO                       | TAM-4.0-P | ----         | N/A        |
| 9                                                    | EMI Test Software             | Audix                        | E3        | N/A          | N/A        |
| 10                                                   | EMI Test Receiver             | Rohde&Schwarz                | ESIB 26   | 100009       | 2013/10/26 |
| 11                                                   | RF Test Panel                 | Rohde&Schwarz                | TS / RSP  | 335015/ 0017 | N/A        |
| 12                                                   | High pass filter              | Compliance Direction systems | BSU-6     | 34202        | 2013/10/26 |
| 13                                                   | Splitter                      | Mini-Circuit                 | ZAPD-4    | 400059       | 2013/10/26 |
| 14                                                   | Horn Antenna                  | SCHWARZBECK                  | BBHA9170  | 25841        | 2013/10/26 |
| 15                                                   | Horn Antenna                  | SCHWARZBECK                  | BBHA9170  | 25842        | 2013/10/26 |
| 16                                                   | Preamplifier                  | ShwarzBeck                   | BBV 9718  | BBV 9718     | 2013/10/26 |
| 17                                                   | Broadband Preamplifier        | ShwarzBeck                   | BBV743    | 9743-0079    | 2013/10/26 |
| 18                                                   | Signal Generator              | Rohde&Schwarz                | SMF100A   | 101932       | 2013/10/26 |
| 19                                                   | Amplifier                     | Compliance Direction systems | PAP1-4060 | 120          | 2013/10/26 |
| 20                                                   | TURNTABLE                     | ETS                          | 2088      | 2149         | N/A        |
| 21                                                   | ANTENNA MAST                  | ETS                          | 2075      | 2346         | N/A        |
| 22                                                   | HORN ANTENNA                  | Rohde&Schwarz                | HF906     | 100068       | 2013/10/26 |
| 23                                                   | HORN ANTENNA                  | Rohde&Schwarz                | HF906     | 100039       | 2013/10/26 |

The calibration interval was one year.

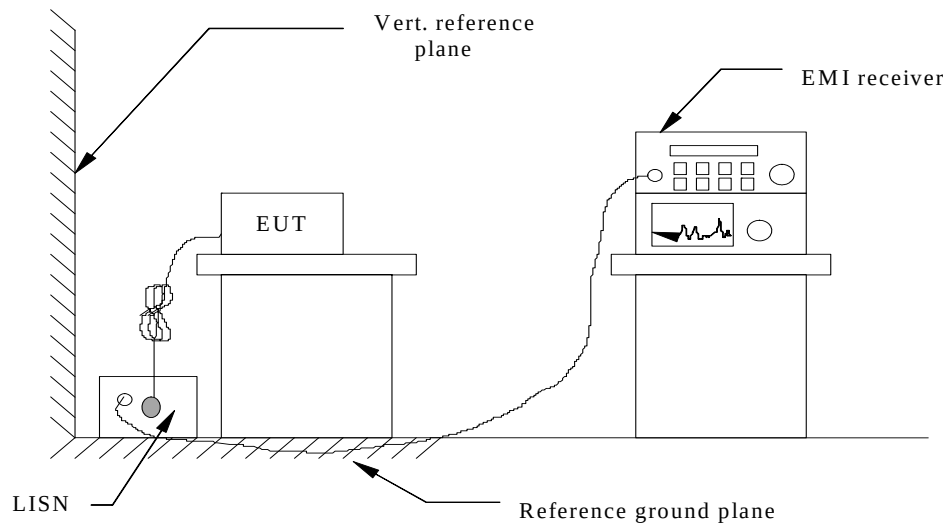
## 4. TEST CONDITIONS AND RESULTS

### 4.1. Conducted Emissions Test

#### TEST APPLICABLE

The EUT was tested according to ANSI C63.4 - 2009. The frequency spectrum from 0.15 MHz to 30 MHz was investigated. The LISN used was 50 ohm / 50 u Henry as specified by section 5.1 of ANSI C63.4 - 2009. Cables and peripherals were moved to find the maximum emission levels for each frequency.

#### TEST CONFIGURATION



#### TEST PROCEDURE

- 1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4-2009.
- 2 Support equipment, if needed, was placed as per ANSI C63.4-2009.
- 3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4-2009.
- 4 If EUT received DC power from the adapter, the adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5 All support equipments received AC power from a second LISN, if any.
- 6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
- 8 During the above scans, the emissions were maximized by cable manipulation.

#### Conducted Power Line Emission Limit

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following:

| Frequency<br>(MHz) | Maximum RF Line Voltage (dBμV) |      |         |        |
|--------------------|--------------------------------|------|---------|--------|
|                    | CLASS A                        |      | CLASS B |        |
|                    | Q.P.                           | Ave. | Q.P.    | Ave.   |
| 0.15 - 0.50        | 79                             | 66   | 66-56*  | 56-46* |
| 0.50 - 5.00        | 73                             | 60   | 56      | 46     |
| 5.00 - 30.0        | 73                             | 60   | 60      | 50     |

\* Decreasing linearly with the logarithm of the frequency

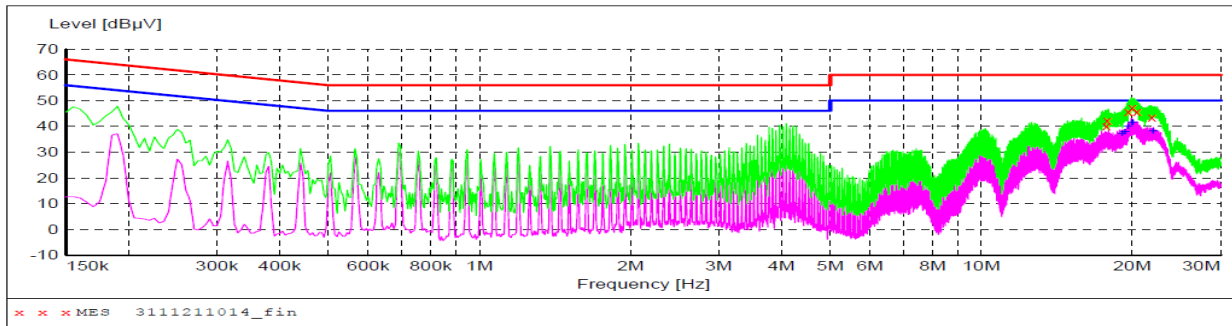
For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

## TEST RESULTS

### GSM850 -AE1

#### SCAN TABLE: "Voltage (150K-30M) FIN"

Short Description: 150K-30M Voltage



#### MEASUREMENT RESULT: "3111211014\_fin"

7/12/2013 11:44

| Frequency MHz | Level dBμV | Transd dB | Limit dBμV | Margin dB | Detector | Line | PE  |
|---------------|------------|-----------|------------|-----------|----------|------|-----|
| 17.740000     | 40.20      | 10.7      | 60         | 19.8      | QP       | L1   | GND |
| 17.805000     | 42.50      | 10.7      | 60         | 17.5      | QP       | L1   | GND |
| 19.630000     | 45.60      | 10.7      | 60         | 14.4      | QP       | L1   | GND |
| 20.005000     | 47.40      | 10.7      | 60         | 12.6      | QP       | L1   | GND |
| 20.440000     | 45.60      | 10.7      | 60         | 14.4      | QP       | L1   | GND |
| 21.885000     | 43.60      | 10.7      | 60         | 16.4      | QP       | L1   | GND |

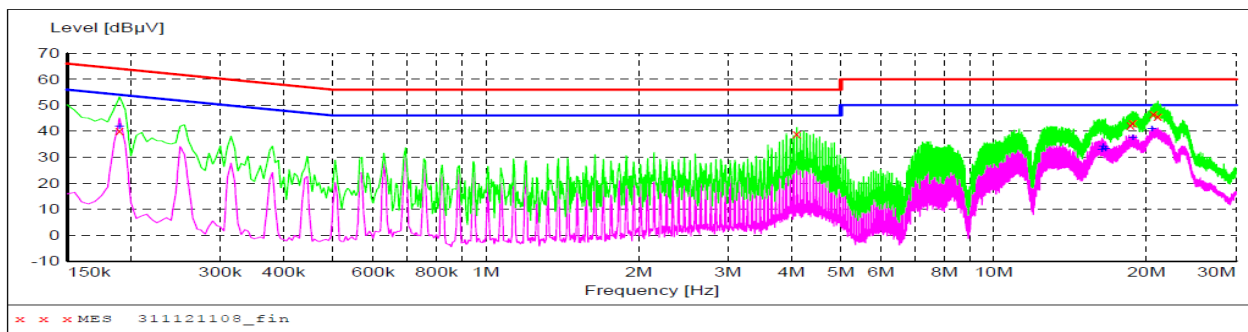
#### MEASUREMENT RESULT: "3111211014\_fin2"

7/12/2013 11:44

| Frequency MHz | Level dBμV | Transd dB | Limit dBμV | Margin dB | Detector | Line | PE  |
|---------------|------------|-----------|------------|-----------|----------|------|-----|
| 19.060000     | 37.40      | 10.7      | 50         | 12.6      | AV       | L1   | GND |
| 19.315000     | 37.90      | 10.7      | 50         | 12.1      | AV       | L1   | GND |
| 19.565000     | 40.10      | 10.7      | 50         | 9.9       | AV       | L1   | GND |
| 19.940000     | 41.80      | 10.7      | 50         | 8.2       | AV       | L1   | GND |
| 20.005000     | 41.70      | 10.7      | 50         | 8.3       | AV       | L1   | GND |
| 21.955000     | 38.50      | 10.7      | 50         | 11.5      | AV       | L1   | GND |

#### SCAN TABLE: "Voltage (150K-30M) FIN"

Short Description: 150K-30M Voltage



#### MEASUREMENT RESULT: "311121108\_fin"

7/12/2013 11:29

| Frequency MHz | Level dBμV | Transd dB | Limit dBμV | Margin dB | Detector | Line | PE  |
|---------------|------------|-----------|------------|-----------|----------|------|-----|
| 0.190000      | 40.10      | 11.7      | 64         | 23.9      | QP       | N    | GND |
| 4.095000      | 39.00      | 10.4      | 56         | 17.0      | QP       | N    | GND |
| 18.600000     | 42.50      | 10.7      | 60         | 17.5      | QP       | N    | GND |
| 18.785000     | 43.30      | 10.7      | 60         | 16.7      | QP       | N    | GND |
| 20.615000     | 46.60      | 10.7      | 60         | 13.4      | QP       | N    | GND |
| 21.060000     | 45.70      | 10.7      | 60         | 14.3      | QP       | N    | GND |

#### MEASUREMENT RESULT: "311121108\_fin2"

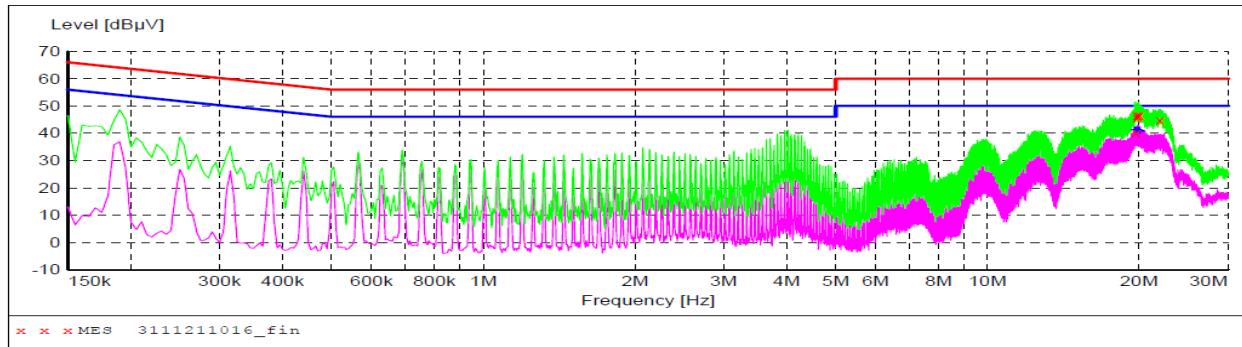
7/12/2013 11:29

| Frequency MHz | Level dBμV | Transd dB | Limit dBμV | Margin dB | Detector | Line | PE  |
|---------------|------------|-----------|------------|-----------|----------|------|-----|
| 0.190000      | 41.90      | 11.7      | 54         | 12.1      | AV       | N    | GND |
| 16.330000     | 33.00      | 10.8      | 50         | 17.0      | AV       | N    | GND |
| 16.390000     | 34.40      | 10.8      | 50         | 15.6      | AV       | N    | GND |
| 16.580000     | 33.50      | 10.8      | 50         | 16.5      | AV       | N    | GND |
| 18.785000     | 37.60      | 10.7      | 50         | 12.4      | AV       | N    | GND |
| 20.485000     | 41.20      | 10.7      | 50         | 8.8       | AV       | N    | GND |

## PCS1900-AE1

## SCAN TABLE: "Voltage (150K-30M) FIN"

Short Description: 150K-30M Voltage



## MEASUREMENT RESULT: "3111211016\_fin"

7/12/2013 11:53

| Frequency<br>MHz | Level<br>dBuV | Transd<br>dB | Limit<br>dBuV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 19.735000        | 40.10         | 10.7         | 60            | 19.9         | QP       | L1   | GND |
| 19.785000        | 45.60         | 10.7         | 60            | 14.4         | QP       | L1   | GND |
| 19.795000        | 46.70         | 10.7         | 60            | 13.3         | QP       | L1   | GND |
| 19.860000        | 46.30         | 10.7         | 60            | 13.7         | QP       | L1   | GND |
| 20.045000        | 46.70         | 10.7         | 60            | 13.3         | QP       | L1   | GND |
| 21.995000        | 44.70         | 10.7         | 60            | 15.3         | QP       | L1   | GND |

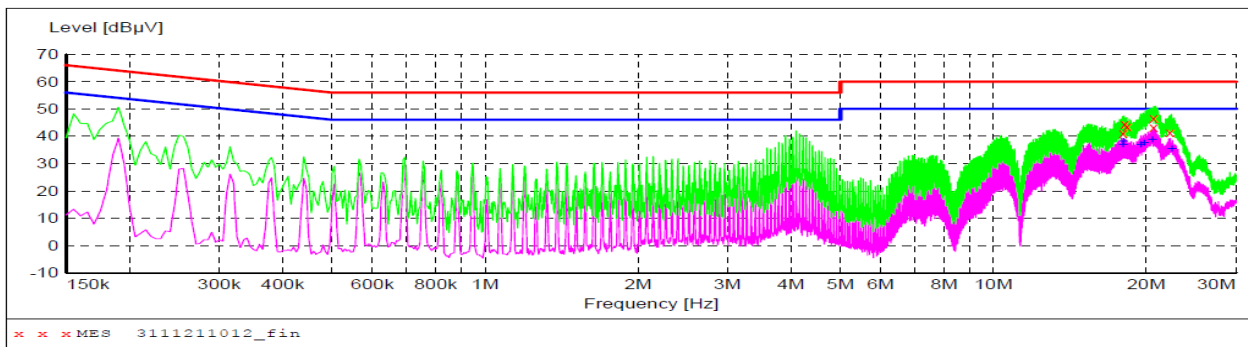
## MEASUREMENT RESULT: "3111211016\_fin2"

7/12/2013 11:53

| Frequency<br>MHz | Level<br>dBuV | Transd<br>dB | Limit<br>dBuV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 19.605000        | 41.40         | 10.7         | 50            | 8.6          | AV       | L1   | GND |
| 19.665000        | 41.50         | 10.7         | 50            | 8.5          | AV       | L1   | GND |
| 19.730000        | 41.40         | 10.7         | 50            | 8.6          | AV       | L1   | GND |
| 19.855000        | 41.30         | 10.7         | 50            | 8.7          | AV       | L1   | GND |
| 19.980000        | 41.00         | 10.7         | 50            | 9.0          | AV       | L1   | GND |
| 20.045000        | 40.70         | 10.7         | 50            | 9.3          | AV       | L1   | GND |

## SCAN TABLE: "Voltage (150K-30M) FIN"

Short Description: 150K-30M Voltage



## MEASUREMENT RESULT: "3111211012\_fin"

7/12/2013 11:36

| Frequency<br>MHz | Level<br>dBuV | Transd<br>dB | Limit<br>dBuV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 18.010000        | 41.20         | 10.7         | 60            | 18.8         | QP       | N    | GND |
| 18.135000        | 44.40         | 10.7         | 60            | 15.6         | QP       | N    | GND |
| 18.325000        | 43.70         | 10.7         | 60            | 16.3         | QP       | N    | GND |
| 20.650000        | 46.70         | 10.7         | 60            | 13.3         | QP       | N    | GND |
| 20.660000        | 43.20         | 10.7         | 60            | 16.8         | QP       | N    | GND |
| 22.225000        | 41.40         | 10.8         | 60            | 18.6         | QP       | N    | GND |

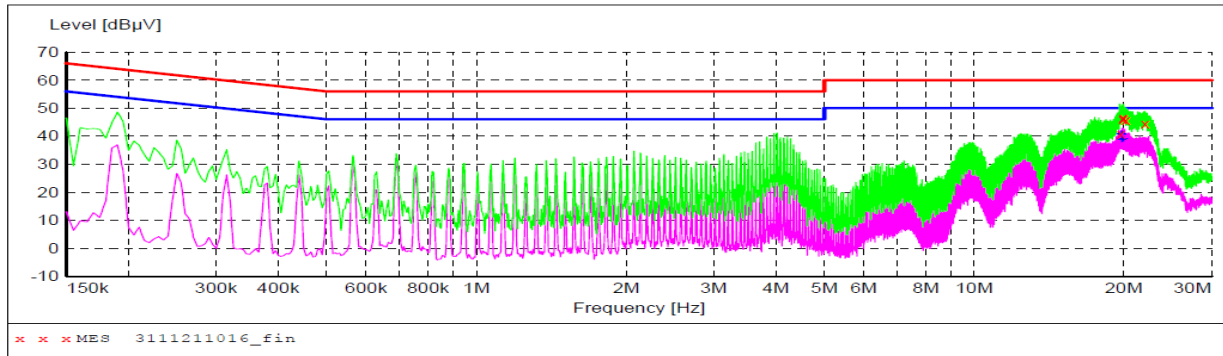
## MEASUREMENT RESULT: "3111211012\_fin2"

7/12/2013 11:36

| Frequency<br>MHz | Level<br>dBuV | Transd<br>dB | Limit<br>dBuV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 17.950000        | 37.10         | 10.7         | 50            | 12.9         | AV       | N    | GND |
| 18.010000        | 38.50         | 10.7         | 50            | 11.5         | AV       | N    | GND |
| 19.460000        | 37.20         | 10.7         | 50            | 12.8         | AV       | N    | GND |
| 19.775000        | 37.70         | 10.7         | 50            | 12.3         | AV       | N    | GND |
| 20.530000        | 39.10         | 10.7         | 50            | 10.9         | AV       | N    | GND |
| 22.415000        | 35.60         | 10.8         | 50            | 14.4         | AV       | N    | GND |

**MP3-AE1****SCAN TABLE: "Voltage (150K-30M) FIN"**

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT: "3111211016\_fin"**

7/12/2013 11:55

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 19.720000        | 40.70         | 10.7         | 60            | 19.3         | QP       | L1   | GND |
| 19.855000        | 46.20         | 10.7         | 60            | 13.8         | QP       | L1   | GND |
| 19.915000        | 46.60         | 10.7         | 60            | 13.4         | QP       | L1   | GND |
| 19.975000        | 46.30         | 10.7         | 60            | 13.7         | QP       | L1   | GND |
| 20.165000        | 45.70         | 10.7         | 60            | 14.3         | QP       | L1   | GND |
| 22.055000        | 44.50         | 10.7         | 60            | 15.5         | QP       | L1   | GND |

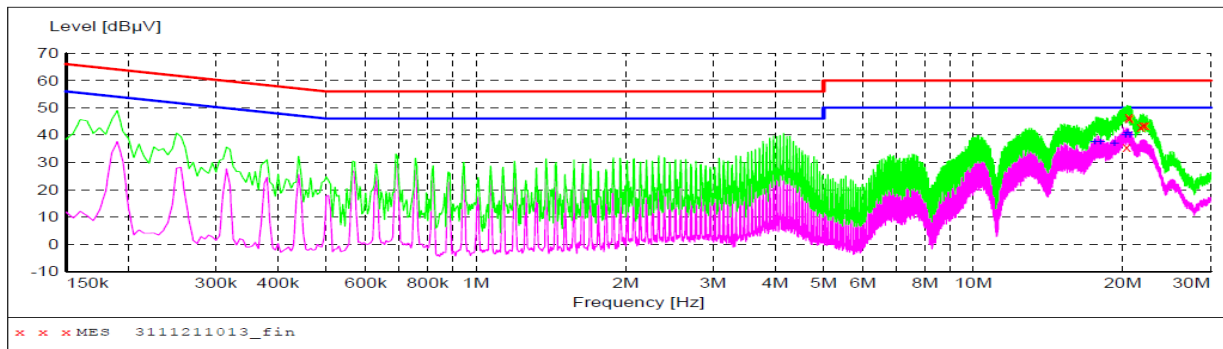
**MEASUREMENT RESULT: "3111211016\_fin2"**

7/12/2013 11:55

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 19.725000        | 41.00         | 10.7         | 50            | 9.0          | AV       | L1   | GND |
| 19.790000        | 40.80         | 10.7         | 50            | 9.2          | AV       | L1   | GND |
| 19.795000        | 39.10         | 10.7         | 50            | 10.9         | AV       | L1   | GND |
| 19.920000        | 39.20         | 10.7         | 50            | 10.8         | AV       | L1   | GND |

**SCAN TABLE: "Voltage (150K-30M) FIN"**

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT: "3111211013\_fin"**

7/12/2013 11:39

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 20.330000        | 35.60         | 10.7         | 60            | 24.4         | QP       | N    | GND |
| 20.520000        | 46.80         | 10.7         | 60            | 13.2         | QP       | N    | GND |
| 20.585000        | 46.20         | 10.7         | 60            | 13.8         | QP       | N    | GND |
| 21.720000        | 43.00         | 10.7         | 60            | 17.0         | QP       | N    | GND |
| 21.970000        | 43.50         | 10.7         | 60            | 16.5         | QP       | N    | GND |
| 22.155000        | 43.60         | 10.8         | 60            | 16.4         | QP       | N    | GND |

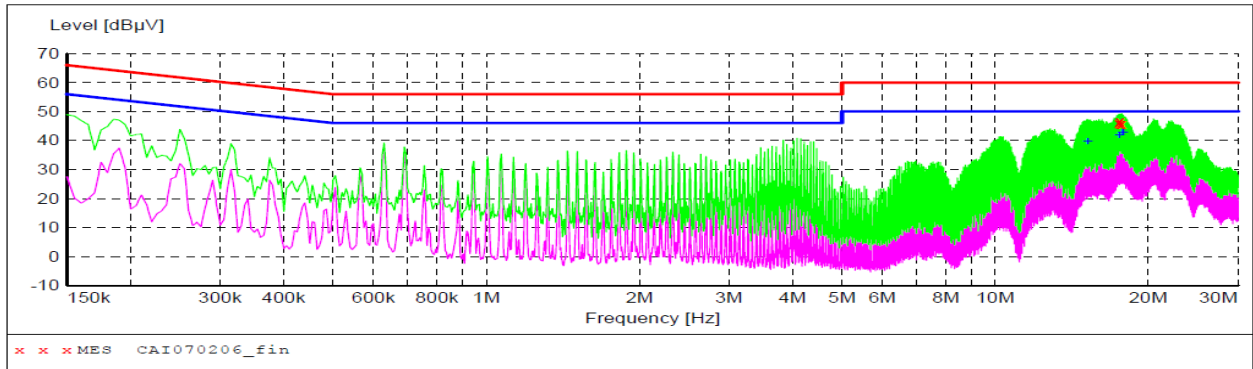
**MEASUREMENT RESULT: "3111211013\_fin2"**

7/12/2013 11:39

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 17.560000        | 37.80         | 10.8         | 50            | 12.2         | AV       | N    | GND |
| 18.000000        | 37.80         | 10.7         | 50            | 12.2         | AV       | N    | GND |
| 19.200000        | 37.20         | 10.7         | 50            | 12.8         | AV       | N    | GND |
| 20.210000        | 40.10         | 10.7         | 50            | 9.9          | AV       | N    | GND |
| 20.395000        | 41.10         | 10.7         | 50            | 8.9          | AV       | N    | GND |
| 20.645000        | 40.20         | 10.7         | 50            | 9.8          | AV       | N    | GND |

**CAMERA-AE1****SCAN TABLE: "Voltage (150K-30M) FIN"**

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT: "CAI070206\_fin"**

7/12/2013 16:57

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 17.465000        | 46.10         | 10.8         | 60            | 13.9         | QP       | L1   | GND |
| 17.535000        | 46.70         | 10.8         | 60            | 13.3         | QP       | L1   | GND |
| 17.595000        | 46.80         | 10.8         | 60            | 13.2         | QP       | L1   | GND |
| 17.600000        | 45.70         | 10.7         | 60            | 14.3         | QP       | L1   | GND |
| 17.725000        | 45.80         | 10.7         | 60            | 14.2         | QP       | L1   | GND |

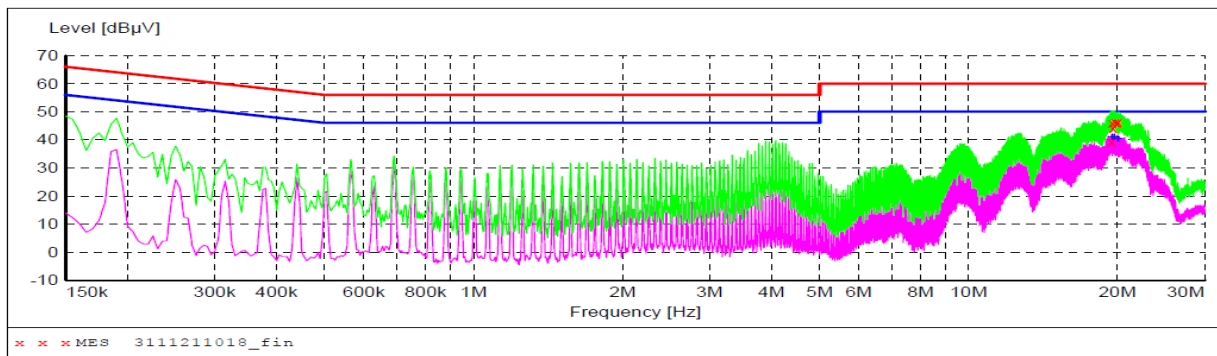
**MEASUREMENT RESULT: "CAI070206\_fin2"**

7/12/2013 16:57

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 15.210000        | 39.80         | 10.8         | 50            | 10.2         | AV       | L1   | GND |
| 17.535000        | 42.00         | 10.8         | 50            | 8.0          | AV       | L1   | GND |
| 17.785000        | 43.00         | 10.7         | 50            | 7.0          | AV       | L1   | GND |
| 17.845000        | 43.10         | 10.7         | 50            | 6.9          | AV       | L1   | GND |

**SCAN TABLE: "Voltage (150K-30M) FIN"**

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT: "3111211018\_fin"**

7/12/2013 11:58

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 19.475000        | 39.20         | 10.7         | 60            | 20.8         | QP       | N    | GND |
| 19.530000        | 46.00         | 10.7         | 60            | 14.0         | QP       | N    | GND |
| 19.605000        | 44.20         | 10.7         | 60            | 15.8         | QP       | N    | GND |
| 19.785000        | 46.40         | 10.7         | 60            | 13.6         | QP       | N    | GND |
| 19.970000        | 46.00         | 10.7         | 60            | 14.0         | QP       | N    | GND |
| 20.035000        | 46.30         | 10.7         | 60            | 13.7         | QP       | N    | GND |

**MEASUREMENT RESULT: "3111211018\_fin2"**

7/12/2013 11:58

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 19.470000        | 41.10         | 10.7         | 50            | 8.9          | AV       | N    | GND |
| 19.660000        | 41.20         | 10.7         | 50            | 8.8          | AV       | N    | GND |
| 19.975000        | 40.50         | 10.7         | 50            | 9.5          | AV       | N    | GND |
| 20.035000        | 40.60         | 10.7         | 50            | 9.4          | AV       | N    | GND |

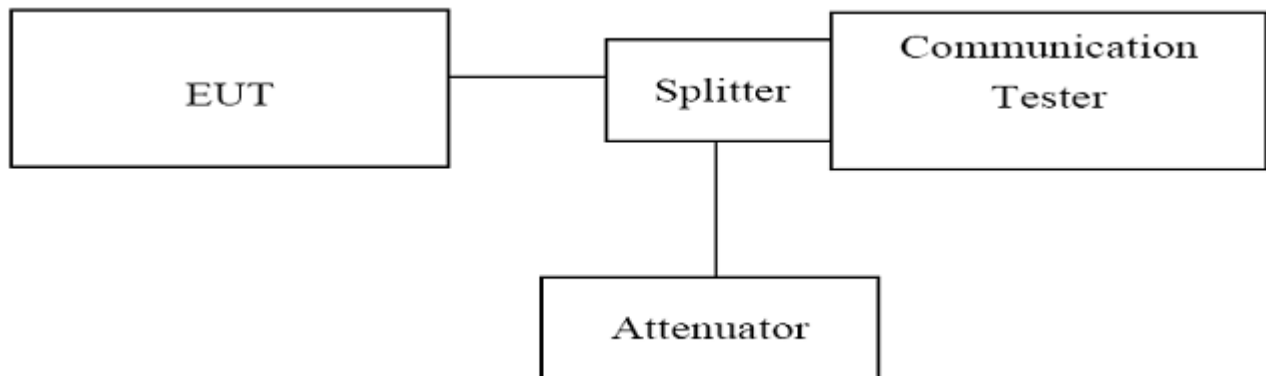
## 4.2. OUTPUT POWER

### TEST APPLICABLE

During the process of testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication tester (CMU-200) to ensure max power transmission and proper modulation. This result contains output power and EIRP measurements for the EUT. In all cases, output power is within the specified limits.

#### 4.2.1. Conducted Output Power

### TEST CONFIGURATION



### TEST PROCEDURE

1. The EUT was set up for the max output power with pseudo random data modulation.
2. The power was measured with Rhode & Schwarz Spectrum Analyzer FSU (peak)
3. These measurements were done at 3 frequencies, 1850.20 MHz, 1880.00 MHz and 1909.80 MHz for PCS1900 band; 824.20 MHz, 836.60 MHz and 848.80 MHz for GSM850 band. (low, middle and high of operational frequency range).

### TEST CONDITION

| RBW  | VBW  | Sweep Time | Span  |
|------|------|------------|-------|
| 1MHz | 3MHz | 300ms      | 10MHz |

| GSM850     |            |                                 |                         |                 |
|------------|------------|---------------------------------|-------------------------|-----------------|
| Function   | Power step | Nominal Peak output power (dBm) | Power & Multislot class | Operation class |
| GPRS(GMSK) | 3          | 33dBm(2W)                       | 12                      | B               |
| EDGE(GMSK) | 3          | 33dBm(2W)                       | 12                      | B               |
| EDGE(8PSK) | E2         | 27dBm(0.5W)                     | 12                      | B               |

| PCS1900    |            |                                 |                         |                 |
|------------|------------|---------------------------------|-------------------------|-----------------|
| Function   | Power step | Nominal Peak output power (dBm) | Power & Multislot class | Operation class |
| GPRS(GMSK) | 0          | 30dBm(1W)                       | 1                       | /               |
| EDGE(GMSK) | 3          | 30dBm(1W)                       | 12                      | B               |
| EDGE(8PSK) | E2         | 26dBm(0.4W)                     | 12                      | B               |

### TEST RESULTS

| GPRS850(GMSK,1Slot) |            |                    |
|---------------------|------------|--------------------|
| Frequency (MHz)     | Power Step | Output Power (dBm) |
| 824.20              | 3          | 32.03              |
| 836.60              | 3          | 32.11              |
| 848.80              | 3          | 32.20              |

| EGPRS850(GMSK,1Slot) |            |                    |
|----------------------|------------|--------------------|
| Frequency (MHz)      | Power Step | Output Power (dBm) |
| 824.20               | 3          | 31.92              |
| 836.60               | 3          | 32.05              |
| 848.80               | 3          | 32.11              |

| EGPRS850(8PSK,1Slot) |            |                    |
|----------------------|------------|--------------------|
| Frequency (MHz)      | Power Step | Output Power (dBm) |
| 824.20               | E2         | 26.03              |
| 836.60               | E2         | 26.16              |
| 848.80               | E2         | 26.34              |

| GPRS1900(GMSK,1Slot) |            |                    |
|----------------------|------------|--------------------|
| Frequency (MHz)      | Power Step | Output Power (dBm) |
| 1850.20              | 3          | 29.15              |
| 1880.00              | 3          | 29.33              |
| 1909.80              | 3          | 28.86              |

| EGPRS1900(GMSK,1Slot) |            |                    |
|-----------------------|------------|--------------------|
| Frequency (MHz)       | Power Step | Output Power (dBm) |
| 1850.20               | 3          | 29.08              |
| 1880.00               | 3          | 29.24              |
| 1909.80               | 3          | 28.79              |

| EGPRS1900(8PSK,1Slot) |            |                    |
|-----------------------|------------|--------------------|
| Frequency (MHz)       | Power Step | Output Power (dBm) |
| 1850.20               | 3          | 25.88              |
| 1880.00               | 3          | 26.03              |
| 1909.80               | 3          | 25.71              |

**Remark:**

1. GPRS and EDGE(GMSK) adopt same modulation,we only test GPRS mode according to TS 51.010 V11.2.0 for other test items this report.
2. EDGE support 8PSK uplink mode,we tested EDGE only at 8PSK mode for other test items this report.

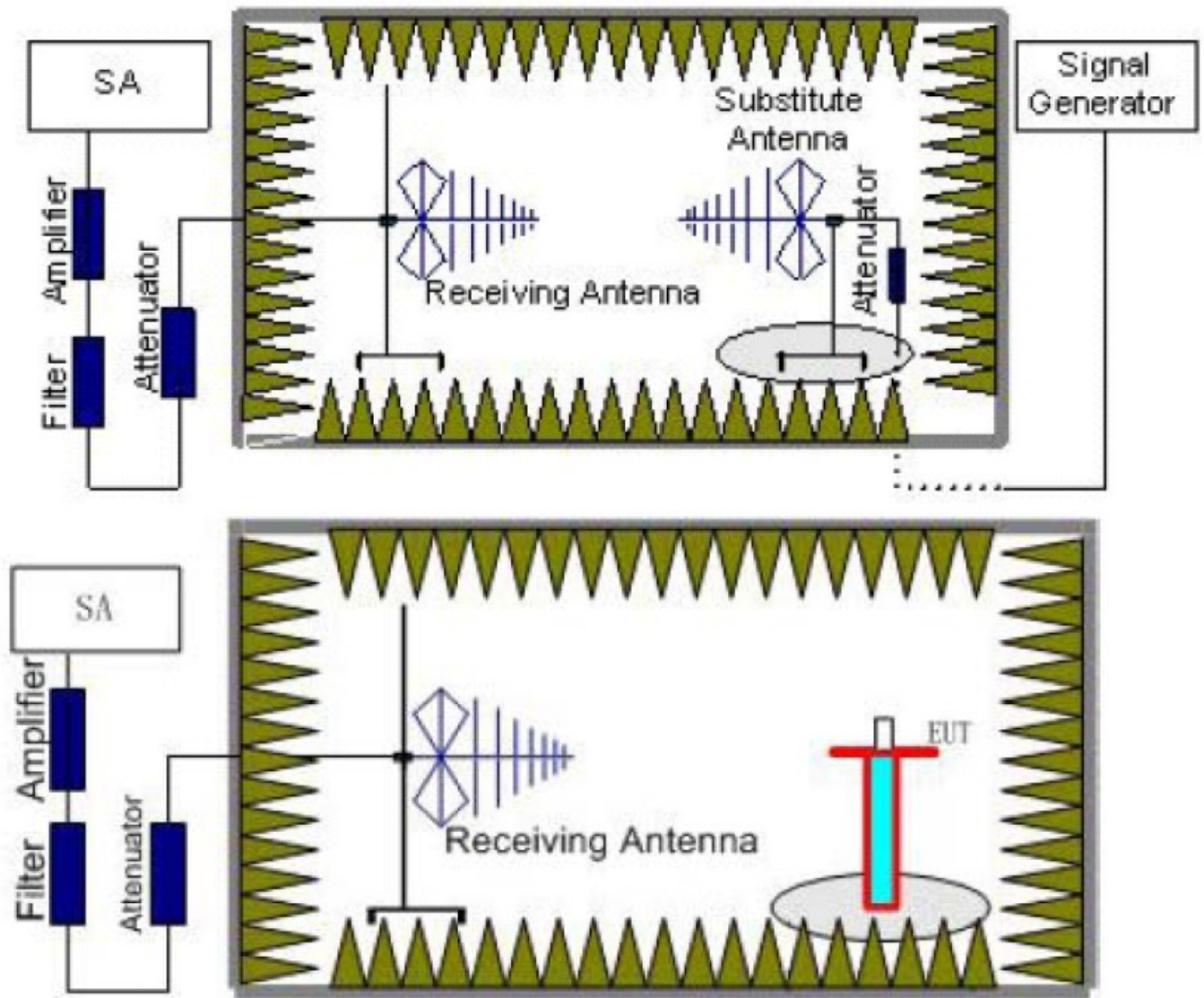
**4.2.2. Radiated Output Power****TEST DESCRIPTION**

This is the test for the maximum radiated power from the EUT.

Rule Part 24.232(c) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power" and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage." Rule Part 22.913(a) specifies "The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts."

**TEST CONFIGURATION**





## **TEST PROCEDURE**

1. EUT was placed on a 1.50 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.50m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.
2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
3. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=1MHz, VBW=3MHz, And the maximum value of the receiver should be recorded as ( $P_r$ ).
4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power ( $P_{Mea}$ ) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded ( $P_r$ ). The power of signal source ( $P_{Mea}$ ) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
5. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss ( $P_{cl}$ ), the Substitution Antenna Gain ( $G_a$ ) and the Amplifier Gain ( $P_{Ag}$ ) should be recorded after test. The measurement results are obtained as described below:

$$\text{Power(EIRP)} = P_{\text{Mea}} - P_{\text{Ag}} - P_{\text{cl}} + G_a$$

We used SMF100A microwave signal generator which signal level can up to 33dBm, so we not used power Amplifier for substitution test; The measurement results are amend as described below:

$$\text{Power(EIRP)} = P_{\text{Mea}} - P_{\text{cl}} + G_a$$

6. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
7. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi.

### TEST LIMIT

According to 22.913(a) and 24.232(c), the ERP should be not exceed following table limits:

| GSM850(GPRS850,EDGE850) |            |                      |
|-------------------------|------------|----------------------|
| Function                | Power Step | Burst Peak ERP (dBm) |
| GPRS(GMSK)              | 3          | ≤38.45dBm (7W)       |
| EDGE(GMSK)              | 3          | ≤38.45dBm (7W)       |
| EDGE(8PSK)              | E2         | ≤38.45dBm (7W)       |

| PCS1900(GPRS1900,EDGE1900) |            |                       |
|----------------------------|------------|-----------------------|
| Function                   | Power Step | Burst Peak EIRP (dBm) |
| GPRS(GMSK)                 | 3          | ≤33dBm (2W)           |
| EDGE(GMSK)                 | 3          | ≤33dBm (2W)           |
| EDGE(8PSK)                 | E2         | ≤33dBm (2W)           |

### TEST RESULTS

| GPRS850(GMSK)   |                        |                      |                                  |                 |           |              |
|-----------------|------------------------|----------------------|----------------------------------|-----------------|-----------|--------------|
| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain (dB) | Correction (dB) | ERP (dBm) | Polarization |
| 824.20          | 26.38                  | 1.56                 | 8.45                             | 2.15            | 31.12     | H            |
| 836.60          | 27.61                  | 1.50                 | 8.45                             | 2.15            | 32.41     | H            |
| 848.80          | 26.46                  | 1.67                 | 8.39                             | 2.15            | 31.03     | H            |
| 824.20          | 27.01                  | 1.56                 | 8.45                             | 2.15            | 31.75     | V            |
| 836.60          | 27.87                  | 1.50                 | 8.45                             | 2.15            | 32.67     | V            |
| 848.80          | 27.32                  | 1.67                 | 8.39                             | 2.15            | 31.89     | V            |

| EGPRS850(GMSK)  |                        |                      |                                  |                 |           |              |
|-----------------|------------------------|----------------------|----------------------------------|-----------------|-----------|--------------|
| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain (dB) | Correction (dB) | ERP (dBm) | Polarization |
| 824.20          | 26.25                  | 1.56                 | 8.45                             | 2.15            | 30.99     | H            |
| 836.60          | 26.83                  | 1.50                 | 8.45                             | 2.15            | 31.63     | H            |
| 848.80          | 26.01                  | 1.67                 | 8.39                             | 2.15            | 30.58     | H            |
| 824.20          | 26.73                  | 1.56                 | 8.45                             | 2.15            | 31.47     | V            |
| 836.60          | 27.14                  | 1.50                 | 8.45                             | 2.15            | 31.94     | V            |
| 848.80          | 26.31                  | 1.67                 | 8.39                             | 2.15            | 30.88     | V            |

| EGPRS850(8PSK)  |                        |                      |                                  |                 |           |              |
|-----------------|------------------------|----------------------|----------------------------------|-----------------|-----------|--------------|
| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain (dB) | Correction (dB) | ERP (dBm) | Polarization |
| 824.20          | 22.13                  | 1.56                 | 8.45                             | 2.15            | 26.87     | H            |
| 836.60          | 22.44                  | 1.50                 | 8.45                             | 2.15            | 27.24     | H            |
| 848.80          | 21.83                  | 1.67                 | 8.39                             | 2.15            | 26.40     | H            |
| 824.20          | 22.55                  | 1.56                 | 8.45                             | 2.15            | 27.29     | V            |
| 836.60          | 23.09                  | 1.50                 | 8.45                             | 2.15            | 27.89     | V            |
| 848.80          | 22.37                  | 1.67                 | 8.39                             | 2.15            | 26.94     | V            |

| GPRS1900(GMSK)  |                        |                      |                                  |                 |            |              |
|-----------------|------------------------|----------------------|----------------------------------|-----------------|------------|--------------|
| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain (dB) | Correction (dB) | EIRP (dBm) | Polarization |
| 1850.20         | 25.29                  | 3.52                 | 8.35                             | 2.15            | 30.12      | H            |
| 1880.00         | 26.66                  | 3.61                 | 8.29                             | 2.15            | 31.34      | H            |
| 1909.80         | 25.11                  | 3.67                 | 8.37                             | 2.15            | 29.81      | H            |
| 1850.20         | 25.84                  | 3.52                 | 8.35                             | 2.15            | 30.67      | V            |
| 1880.00         | 27.12                  | 3.61                 | 8.29                             | 2.15            | 31.80      | V            |
| 1909.80         | 25.86                  | 3.67                 | 8.37                             | 2.15            | 30.56      | V            |

| EGPRS1900(GMSK) |                        |                      |                                  |                 |            |              |
|-----------------|------------------------|----------------------|----------------------------------|-----------------|------------|--------------|
| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain (dB) | Correction (dB) | EIRP (dBm) | Polarization |
| 1850.20         | 25.22                  | 3.52                 | 8.35                             | 2.15            | 30.05      | H            |
| 1880.00         | 26.52                  | 3.61                 | 8.29                             | 2.15            | 31.20      | H            |
| 1909.80         | 24.97                  | 3.67                 | 8.37                             | 2.15            | 29.67      | H            |
| 1850.20         | 25.68                  | 3.52                 | 8.35                             | 2.15            | 30.51      | V            |
| 1880.00         | 26.95                  | 3.61                 | 8.29                             | 2.15            | 31.63      | V            |
| 1909.80         | 25.67                  | 3.67                 | 8.37                             | 2.15            | 30.37      | V            |

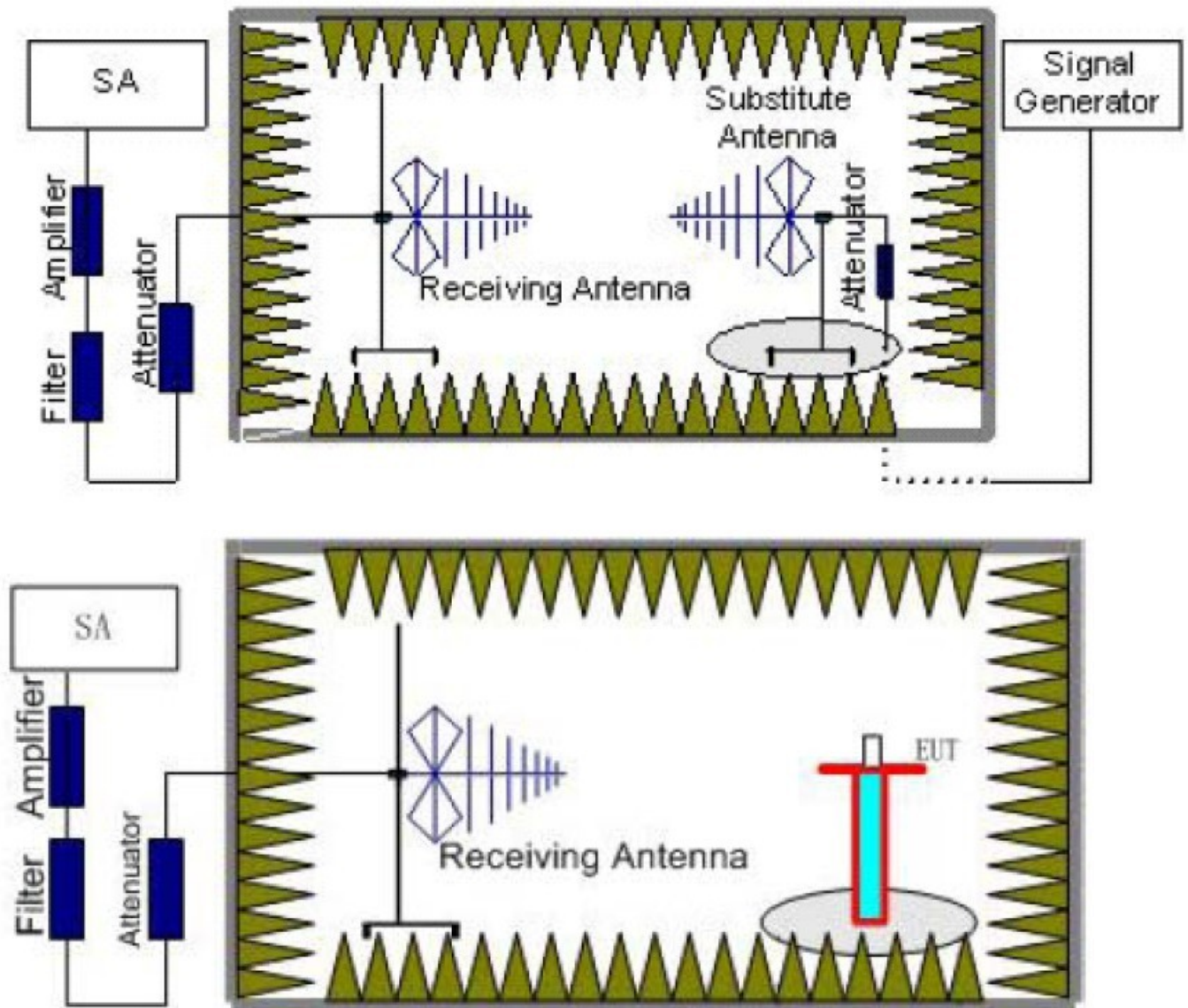
| EGPRS1900(8PSK) |                        |                      |                                  |                 |            |              |
|-----------------|------------------------|----------------------|----------------------------------|-----------------|------------|--------------|
| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain (dB) | Correction (dB) | EIRP (dBm) | Polarization |
| 1850.20         | 21.38                  | 3.52                 | 8.35                             | 2.15            | 26.21      | H            |
| 1880.00         | 22.39                  | 3.61                 | 8.29                             | 2.15            | 27.07      | H            |
| 1909.80         | 21.46                  | 3.67                 | 8.37                             | 2.15            | 26.16      | H            |
| 1850.20         | 22.05                  | 3.52                 | 8.35                             | 2.15            | 26.88      | V            |
| 1880.00         | 22.95                  | 3.61                 | 8.29                             | 2.15            | 27.63      | V            |
| 1909.80         | 22.09                  | 3.67                 | 8.37                             | 2.15            | 26.79      | V            |

### 4.3. Radiated Spurious Emission

#### TEST APPLICABLE

According to the TIA/EIA 603D:2010 test method, The Receiver or Spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier that can be as high as 1910 MHz. The resolution bandwidth is set as outlined in Part 24.238 and Part 22.917. The spectrum is scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of PCS1900 and GSM850.

#### TEST CONFIGURATION



#### TEST PROCEDURE

1. EUT was placed on a 1.50 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.50m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.
2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.



3. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=1MHz, VBW=3MHz, And the maximum value of the receiver should be recorded as ( $P_r$ ).
4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power ( $P_{Mea}$ ) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded ( $P_r$ ). The power of signal source ( $P_{Mea}$ ) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
5. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss ( $P_{cl}$ ), the Substitution Antenna Gain ( $G_a$ ) and the Amplifier Gain ( $P_{Ag}$ ) should be recorded after test.  
The measurement results are obtained as described below:  
 $Power(EIRP) = P_{Mea} - P_{Ag} - P_{cl} + G_a$
6. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
7. ERP can be calculated from EIRP by subtracting the gain of the dipole,  $ERP = EIRP - 2.15dBi$ .
8. In order to make sure test results more clearly, we set frequency range and sweep time for difference frequency range as follows table:

| Working Frequency | Subrange (GHz) | RBW    | VBW    | Sweep time (s) |
|-------------------|----------------|--------|--------|----------------|
| 850MHz            | 0.03~1         | 100KHz | 300KHz | 10             |
|                   | 1-2            | 1 MHz  | 3 MHz  | 2              |
|                   | 2~5            | 1 MHz  | 3 MHz  | 3              |
|                   | 5~8            | 1 MHz  | 3 MHz  | 3              |
|                   | 8~10           | 1 MHz  | 3 MHz  | 3              |
| 1900MHz           | 0.03~1         | 100KHz | 300KHz | 10             |
|                   | 1-2            | 1 MHz  | 3 MHz  | 2              |
|                   | 2~5            | 1 MHz  | 3 MHz  | 3              |
|                   | 5~8            | 1 MHz  | 3 MHz  | 3              |
|                   | 8~11           | 1 MHz  | 3 MHz  | 3              |
|                   | 11~14          | 1 MHz  | 3 MHz  | 3              |
|                   | 14~18          | 1 MHz  | 3 MHz  | 3              |
|                   | 18~20          | 1 MHz  | 3 MHz  | 2              |

## TEST LIMITS

According to 24.238 and 22.917 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

The specification that emissions shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log(P)$  dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

| Frequency   | Channel | Frequency Range | Verdict |
|-------------|---------|-----------------|---------|
| GSM 850MHz  | Low     | 30MHz-10GHz     | PASS    |
|             | Middle  | 30MHz-10GHz     | PASS    |
|             | High    | 30MHz-10GHz     | PASS    |
| GSM 1900MHz | Low     | 30MHz-20GHz     | PASS    |
|             | Middle  | 30MHz-20GHz     | PASS    |
|             | High    | 30MHz-20GHz     | PASS    |

| GPRS850(GMSK)       |                        |           |              |                            |               |             |              |
|---------------------|------------------------|-----------|--------------|----------------------------|---------------|-------------|--------------|
| Channel Number: 128 |                        |           |              | Test Frequency: 824.20 MHz |               |             |              |
| Frequency (MHz)     | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Correction (dB)            | Peak ERP(dBm) | Limit (dBm) | Polarization |
| 2472.87             | -51.66                 | 4.32      | 6.77         | 2.15                       | -51.36        | -13.00      | H            |
| 3294.65             | -55.82                 | 4.55      | 12.25        | 2.15                       | -50.27        | -13.00      | H            |
| 4942.95             | -52.96                 | 4.70      | 12.92        | 2.15                       | -46.89        | -13.00      | H            |
| 2472.87             | -49.97                 | 4.32      | 6.77         | 2.15                       | -49.67        | -13.00      | V            |
| 3294.65             | -53.88                 | 4.55      | 12.25        | 2.15                       | -48.33        | -13.00      | V            |
| 4115.97             | -50.16                 | 4.59      | 12.76        | 2.15                       | -44.14        | -13.00      | V            |

| GPRS850(GMSK)       |                        |           |              |                            |               |             |              |
|---------------------|------------------------|-----------|--------------|----------------------------|---------------|-------------|--------------|
| Channel Number: 190 |                        |           |              | Test Frequency: 836.60 MHz |               |             |              |
| Frequency (MHz)     | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Correction (dB)            | Peak ERP(dBm) | Limit (dBm) | Polarization |
| 3342.30             | -51.56                 | 4.55      | 12.25        | 2.15                       | -46.01        | -13.00      | H            |
| 4183.00             | -50.80                 | 4.59      | 12.76        | 2.15                       | -44.78        | -13.00      | H            |
| 5014.44             | -51.34                 | 4.78      | 12.88        | 2.15                       | -45.39        | -13.00      | H            |
| 3342.30             | -49.10                 | 4.55      | 12.25        | 2.15                       | -43.55        | -13.00      | V            |
| 4183.00             | -48.13                 | 4.59      | 12.76        | 2.15                       | -42.11        | -13.00      | V            |
| 5014.44             | -49.59                 | 4.78      | 12.88        | 2.15                       | -43.64        | -13.00      | V            |

| GPRS850(GMSK)       |                        |           |              |                            |               |             |              |
|---------------------|------------------------|-----------|--------------|----------------------------|---------------|-------------|--------------|
| Channel Number: 251 |                        |           |              | Test Frequency: 848.80 MHz |               |             |              |
| Frequency (MHz)     | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Correction (dB)            | Peak ERP(dBm) | Limit (dBm) | Polarization |
| 2547.31             | -45.05                 | 4.29      | 6.83         | 2.15                       | -44.66        | -13.00      | H            |
| 3390.64             | -51.98                 | 4.58      | 12.59        | 2.15                       | -46.12        | -13.00      | H            |
| 4232.50             | -51.30                 | 4.59      | 12.76        | 2.15                       | -45.28        | -13.00      | H            |
| 2547.31             | -42.16                 | 4.29      | 6.83         | 2.15                       | -41.77        | -13.00      | V            |
| 3390.64             | -49.08                 | 4.58      | 12.59        | 2.15                       | -43.22        | -13.00      | V            |
| 4232.50             | -50.00                 | 4.59      | 12.76        | 2.15                       | -43.98        | -13.00      | V            |

| GPRS850(8PSK)       |                        |           |              |                            |               |             |              |
|---------------------|------------------------|-----------|--------------|----------------------------|---------------|-------------|--------------|
| Channel Number: 128 |                        |           |              | Test Frequency: 824.20 MHz |               |             |              |
| Frequency (MHz)     | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Correction (dB)            | Peak ERP(dBm) | Limit (dBm) | Polarization |
| 2472.87             | -54.95                 | 4.32      | 6.77         | 2.15                       | -54.65        | -13.00      | H            |
| 3294.65             | -58.44                 | 4.55      | 12.25        | 2.15                       | -52.89        | -13.00      | H            |
| 4942.95             | -54.51                 | 4.70      | 12.92        | 2.15                       | -48.44        | -13.00      | H            |
| 2472.87             | -52.38                 | 4.32      | 6.77         | 2.15                       | -52.08        | -13.00      | V            |
| 3294.65             | -55.55                 | 4.55      | 12.25        | 2.15                       | -50.00        | -13.00      | V            |
| 4115.97             | -52.14                 | 4.59      | 12.76        | 2.15                       | -46.12        | -13.00      | V            |

| GPRS850(8PSK)       |                        |           |              |                            |               |             |              |
|---------------------|------------------------|-----------|--------------|----------------------------|---------------|-------------|--------------|
| Channel Number: 190 |                        |           |              | Test Frequency: 836.60 MHz |               |             |              |
| Frequency (MHz)     | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Correction (dB)            | Peak ERP(dBm) | Limit (dBm) | Polarization |
| 3342.30             | -53.89                 | 4.55      | 12.25        | 2.15                       | -48.34        | -13.00      | H            |
| 4183.00             | -53.09                 | 4.59      | 12.76        | 2.15                       | -47.07        | -13.00      | H            |
| 5014.44             | -54.16                 | 4.78      | 12.88        | 2.15                       | -48.21        | -13.00      | H            |
| 3342.30             | -51.48                 | 4.55      | 12.25        | 2.15                       | -45.93        | -13.00      | V            |
| 4183.00             | -51.16                 | 4.59      | 12.76        | 2.15                       | -45.14        | -13.00      | V            |
| 5014.44             | -51.70                 | 4.78      | 12.88        | 2.15                       | -45.75        | -13.00      | V            |

| GPRS850(8PSK)       |                        |           |              |                            |               |             |              |
|---------------------|------------------------|-----------|--------------|----------------------------|---------------|-------------|--------------|
| Channel Number: 251 |                        |           |              | Test Frequency: 848.80 MHz |               |             |              |
| Frequency (MHz)     | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Correction (dB)            | Peak ERP(dBm) | Limit (dBm) | Polarization |
| 2547.31             | -56.21                 | 4.29      | 6.83         | 2.15                       | -55.82        | -13.00      | H            |
| 3390.64             | -59.97                 | 4.58      | 12.59        | 2.15                       | -54.11        | -13.00      | H            |
| 4232.50             | -56.08                 | 4.59      | 12.76        | 2.15                       | -50.06        | -13.00      | H            |
| 2547.31             | -53.73                 | 4.29      | 6.83         | 2.15                       | -53.34        | -13.00      | V            |
| 3390.64             | -58.48                 | 4.58      | 12.59        | 2.15                       | -52.62        | -13.00      | V            |
| 4232.50             | -54.87                 | 4.59      | 12.76        | 2.15                       | -48.85        | -13.00      | V            |

| GPRS1900(GMSK)      |                        |           |              |                             |               |             |              |
|---------------------|------------------------|-----------|--------------|-----------------------------|---------------|-------------|--------------|
| Channel Number: 512 |                        |           |              | Test Frequency: 1850.20 MHz |               |             |              |
| Frequency (MHz)     | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Correction (dB)             | Peak ERP(dBm) | Limit (dBm) | Polarization |
| 3701.56             | -56.88                 | 4.55      | 12.34        | 2.15                        | -51.24        | -13.00      | H            |
| 5550.38             | -60.14                 | 5.05      | 13.53        | 2.15                        | -53.81        | -13.00      | H            |
| 7402.45             | -57.96                 | 4.64      | 11.60        | 2.15                        | -53.15        | -13.00      | H            |
| 3701.56             | -54.97                 | 4.55      | 12.34        | 2.15                        | -49.33        | -13.00      | V            |
| 5550.38             | -57.97                 | 5.05      | 13.53        | 2.15                        | -51.64        | -13.00      | V            |
| 7402.45             | -56.59                 | 4.64      | 11.60        | 2.15                        | -51.78        | -13.00      | V            |

| GPRS1900(GMSK)      |                        |           |              |                             |               |             |              |
|---------------------|------------------------|-----------|--------------|-----------------------------|---------------|-------------|--------------|
| Channel Number: 661 |                        |           |              | Test Frequency: 1880.00 MHz |               |             |              |
| Frequency (MHz)     | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Correction (dB)             | Peak ERP(dBm) | Limit (dBm) | Polarization |
| 3761.81             | -51.96                 | 4.55      | 12.40        | 2.15                        | -46.26        | -13.00      | H            |
| 5642.58             | -55.63                 | 4.96      | 13.60        | 2.15                        | -49.14        | -13.00      | H            |
| 7522.26             | -57.08                 | 4.71      | 11.89        | 2.15                        | -52.05        | -13.00      | H            |
| 3761.81             | -50.03                 | 4.55      | 12.40        | 2.15                        | -44.33        | -13.00      | V            |
| 5642.58             | -53.38                 | 4.96      | 13.60        | 2.15                        | -46.89        | -13.00      | V            |
| 7522.26             | -54.78                 | 4.71      | 11.89        | 2.15                        | -49.75        | -13.00      | V            |

| GPRS1900(GMSK)      |                        |           |              |                             |               |             |              |
|---------------------|------------------------|-----------|--------------|-----------------------------|---------------|-------------|--------------|
| Channel Number: 810 |                        |           |              | Test Frequency: 1909.80 MHz |               |             |              |
| Frequency (MHz)     | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Correction (dB)             | Peak ERP(dBm) | Limit (dBm) | Polarization |
| 3820.48             | -53.43                 | 4.51      | 12.43        | 2.15                        | -47.66        | -13.00      | H            |
| 5731.86             | -55.06                 | 4.90      | 13.61        | 2.15                        | -48.50        | -13.00      | H            |
| 7638.55             | -55.21                 | 4.78      | 12.00        | 2.15                        | -50.14        | -13.00      | H            |
| 3820.48             | -51.10                 | 4.51      | 12.43        | 2.15                        | -45.33        | -13.00      | V            |
| 5731.86             | -52.68                 | 4.90      | 13.61        | 2.15                        | -46.12        | -13.00      | V            |
| 7638.55             | -52.99                 | 4.78      | 12.00        | 2.15                        | -47.92        | -13.00      | V            |

| GPRS1900(8PSK)      |                        |           |              |                             |               |             |              |
|---------------------|------------------------|-----------|--------------|-----------------------------|---------------|-------------|--------------|
| Channel Number: 512 |                        |           |              | Test Frequency: 1850.20 MHz |               |             |              |
| Frequency (MHz)     | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Correction (dB)             | Peak ERP(dBm) | Limit (dBm) | Polarization |
| 3701.56             | -60.67                 | 4.55      | 12.34        | 2.15                        | -55.03        | -13.00      | H            |
| 5550.38             | -62.31                 | 5.05      | 13.53        | 2.15                        | -55.98        | -13.00      | H            |
| 7402.45             | -56.95                 | 4.64      | 11.60        | 2.15                        | -52.14        | -13.00      | H            |
| 3701.56             | -58.10                 | 4.55      | 12.34        | 2.15                        | -52.46        | -13.00      | V            |
| 5550.38             | -59.91                 | 5.05      | 13.53        | 2.15                        | -53.58        | -13.00      | V            |
| 7402.45             | -55.47                 | 4.64      | 11.60        | 2.15                        | -50.66        | -13.00      | V            |

| GPRS1900(8PSK)      |                        |           |              |                             |               |             |              |
|---------------------|------------------------|-----------|--------------|-----------------------------|---------------|-------------|--------------|
| Channel Number: 661 |                        |           |              | Test Frequency: 1880.00 MHz |               |             |              |
| Frequency (MHz)     | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Correction (dB)             | Peak ERP(dBm) | Limit (dBm) | Polarization |
| 3761.81             | -55.61                 | 4.55      | 12.40        | 2.15                        | -49.91        | -13.00      | H            |
| 5642.58             | -57.76                 | 4.96      | 13.60        | 2.15                        | -51.27        | -13.00      | H            |
| 7522.26             | -58.71                 | 4.71      | 11.89        | 2.15                        | -53.68        | -13.00      | H            |
| 3761.81             | -53.78                 | 4.55      | 12.40        | 2.15                        | -48.08        | -13.00      | V            |
| 5642.58             | -55.63                 | 4.96      | 13.60        | 2.15                        | -49.14        | -13.00      | V            |
| 7522.26             | -56.00                 | 4.71      | 11.89        | 2.15                        | -50.97        | -13.00      | V            |

| GPRS1900(8PSK)      |                        |           |              |                             |               |             |              |
|---------------------|------------------------|-----------|--------------|-----------------------------|---------------|-------------|--------------|
| Channel Number: 810 |                        |           |              | Test Frequency: 1909.80 MHz |               |             |              |
| Frequency (MHz)     | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Correction (dB)             | Peak ERP(dBm) | Limit (dBm) | Polarization |
| 3820.48             | -56.08                 | 4.51      | 12.43        | 2.15                        | -50.31        | -13.00      | H            |
| 5731.86             | -57.78                 | 4.90      | 13.61        | 2.15                        | -51.22        | -13.00      | H            |
| 7638.55             | -59.25                 | 4.78      | 12.00        | 2.15                        | -54.18        | -13.00      | H            |
| 3820.48             | -58.01                 | 4.51      | 12.43        | 2.15                        | -52.24        | -13.00      | V            |
| 5731.86             | -60.36                 | 4.90      | 13.61        | 2.15                        | -53.80        | -13.00      | V            |
| 7638.55             | -60.12                 | 4.78      | 12.00        | 2.15                        | -55.05        | -13.00      | V            |

Note: 1. In general, the worse case attenuation requirement shown above was applied.

3. \*\*\* means that the emission level is too low to be measured or at least 20 dB down than the limit.

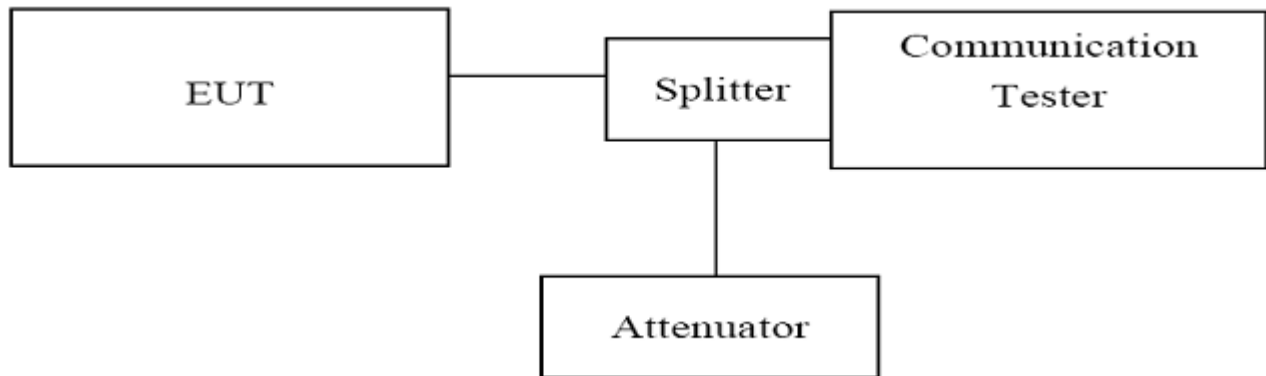


#### 4.4. OCCUPIED BANDWIDTH

##### TEST APPLICABLE

Similar to conducted emissions; occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of PCS1900 band and GSM850 band. The table below lists the measured 99% BW.

##### TEST CONFIGURATION



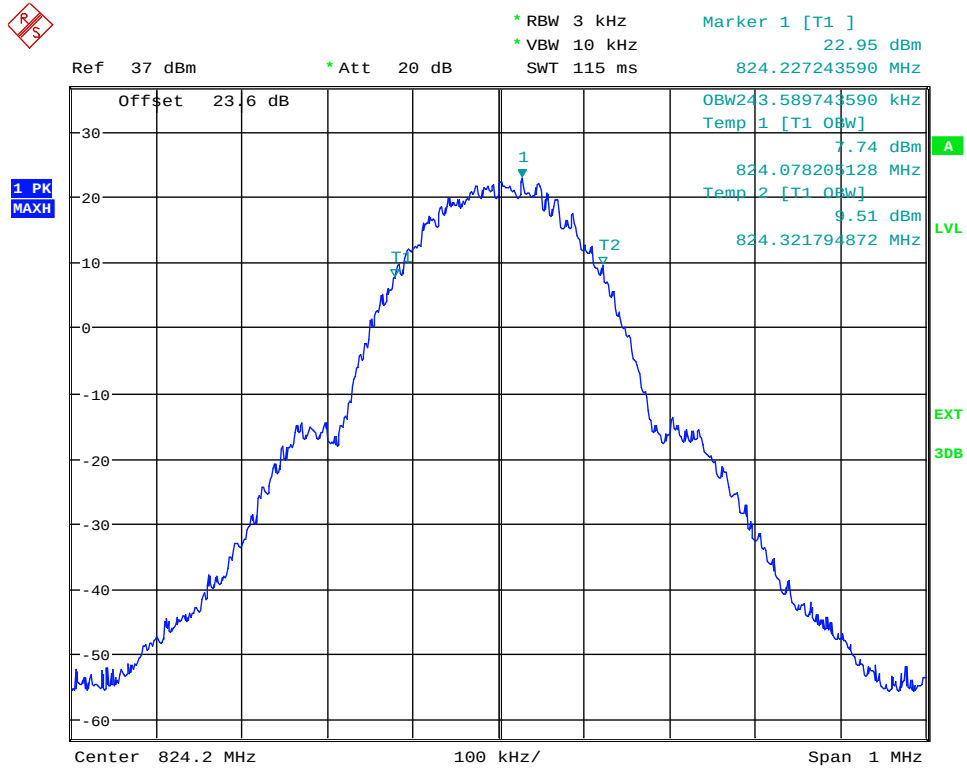
##### TEST PROCEDURE

1. The EUT was set up for the max output power with pseudo random data modulation;
2. The Occupied bandwidth was measured with Rhode & Schwarz Spectrum Analyzer FSU (peak);
3. Set RBW=3KHz,VBW=10KHz,Span=1MHz,SWT=115ms;
4. Set SPA Max hold. Mark peak, Set 99% Occupied Bandwidth
5. These measurements were done at 3 frequencies, 1850.20 MHz, 1880.00 MHz and 1909.80 MHz for PCS1900 band; 824.20MHz, 836.60 MHz and 848.80 MHz for GSM850 band. (low, middle and high of operational frequency range).

##### TEST RESULTS

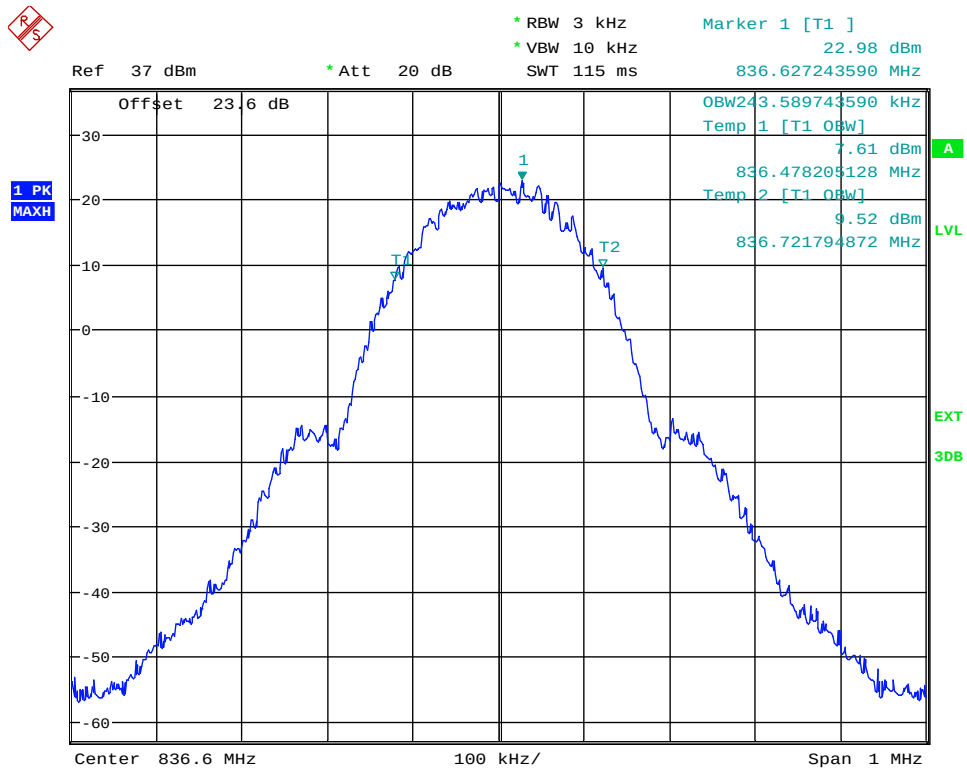
| GPRS850(GMSK)  |                 |                                    |               |         |
|----------------|-----------------|------------------------------------|---------------|---------|
| Channel Number | Frequency (MHz) | Occupied Bandwidth (99% BW) ( kHz) | Refer to Plot | Verdict |
| 128            | 824.20          | 243.59                             | Plot 4.4.1 A  | PASS    |
| 190            | 836.60          | 243.59                             | Plot 4.4.1 B  | PASS    |
| 251            | 848.80          | 243.59                             | Plot 4.4.1 C  | PASS    |

| EGPRS850(8PSK) |                 |                                    |               |         |
|----------------|-----------------|------------------------------------|---------------|---------|
| Channel Number | Frequency (MHz) | Occupied Bandwidth (99% BW) ( kHz) | Refer to Plot | Verdict |
| 128            | 824.20          | 291.67                             | Plot 4.4.2 A  | PASS    |
| 190            | 836.60          | 291.67                             | Plot 4.4.2 B  | PASS    |
| 251            | 848.80          | 291.67                             | Plot 4.4.2 C  | PASS    |



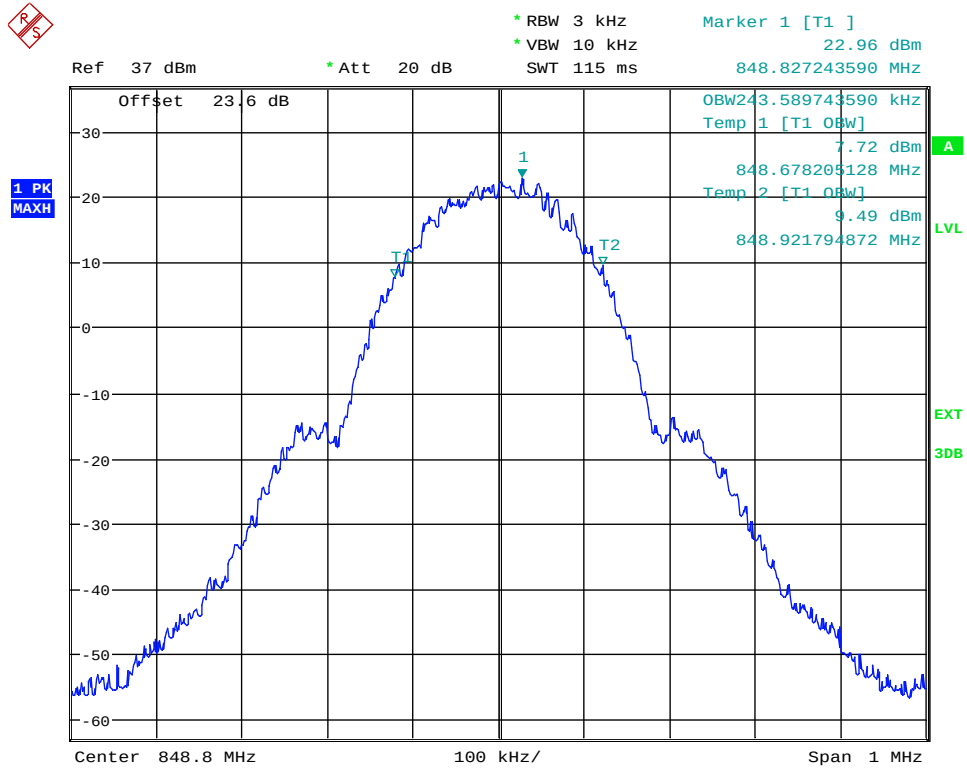
Date: 26.FEB.2014 15:22:37

(Plot 4.4.1 A: Channel 128: 824.20MHz @ GRPS850)



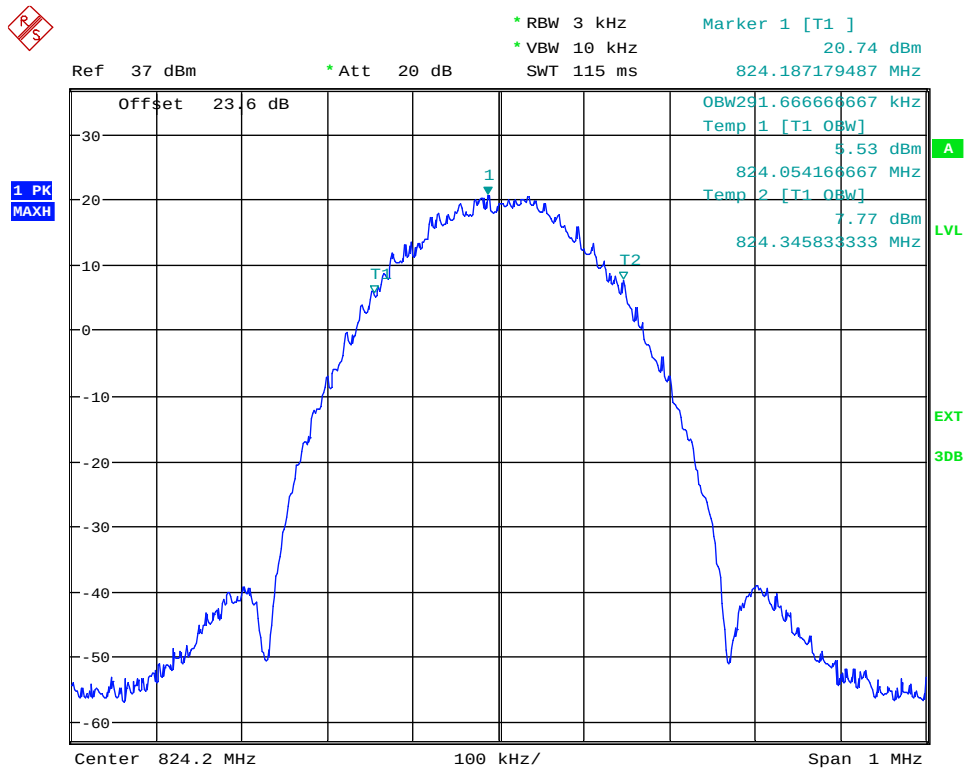
Date: 26.FEB.2014 15:22:57

(Plot 4.4.1 B: Channel 190: 836.60MHz @ GPRS850)



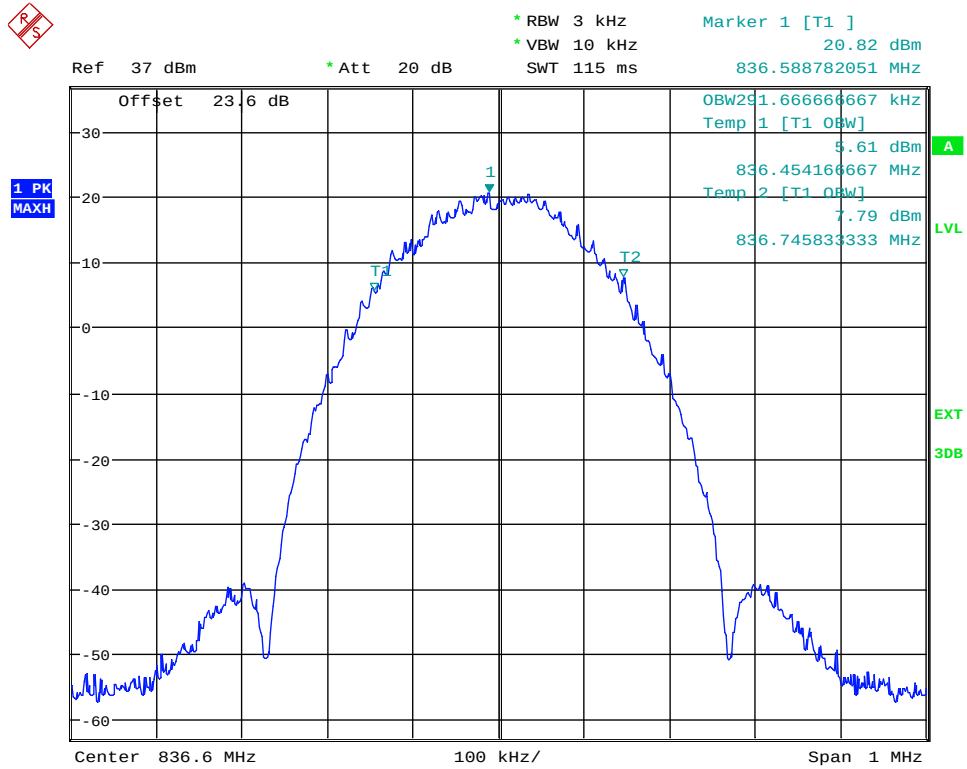
Date: 26.FEB.2014 15:23:11

(Plot 4.4.1 C: Channel 251: 848.80MHz @ GPRS850)



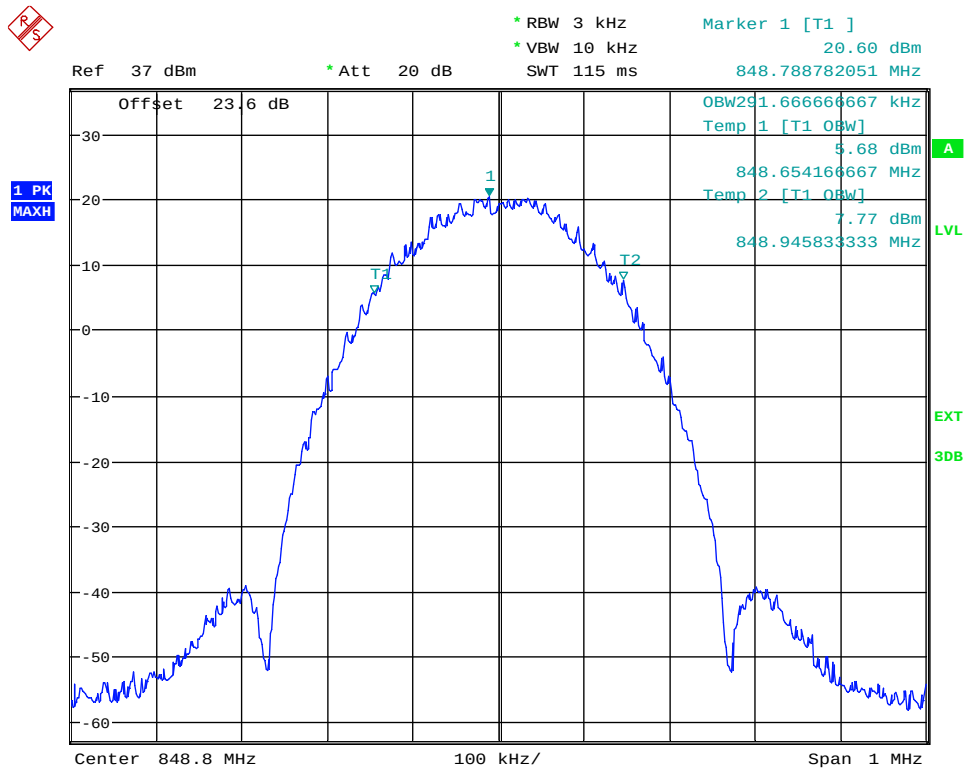
Date: 26.FEB.2014 15:12:21

(Plot 4.4.2 A: Channel 128: 824.20MHz @ EGPRS850)



Date: 26.FEB.2014 15:12:45

(Plot 4.4.2 B: Channel 190: 836.60MHz @ EGPRS850)

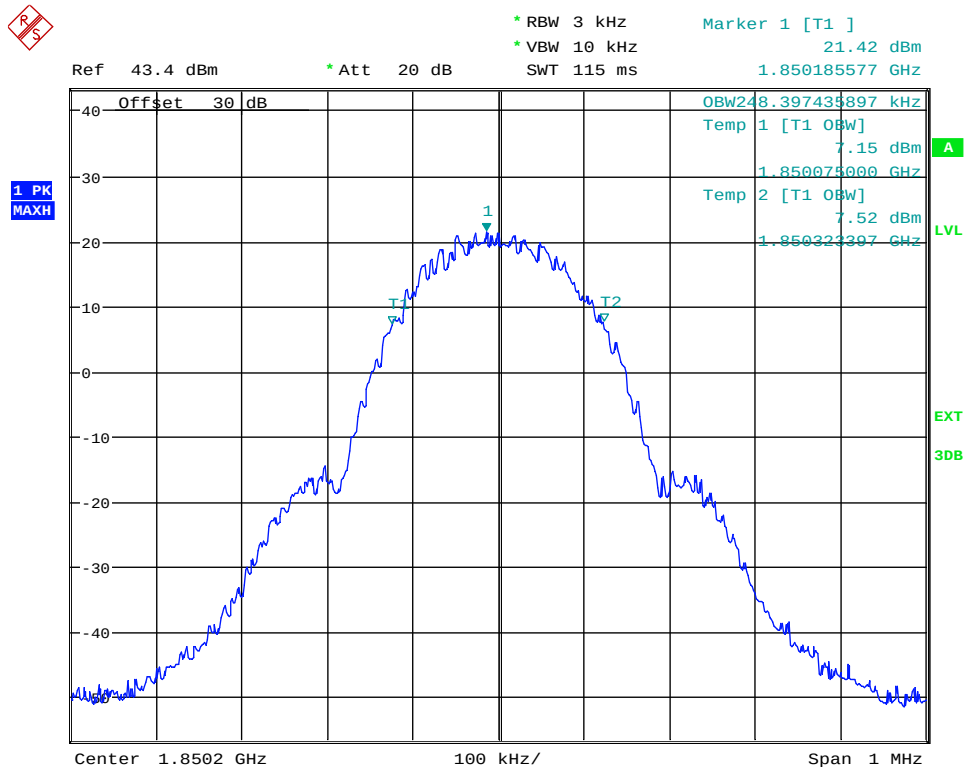


Date: 26.FEB.2014 15:13:01

(Plot 4.4.2 C: Channel 251: 848.80MHz @ EGPRS850)

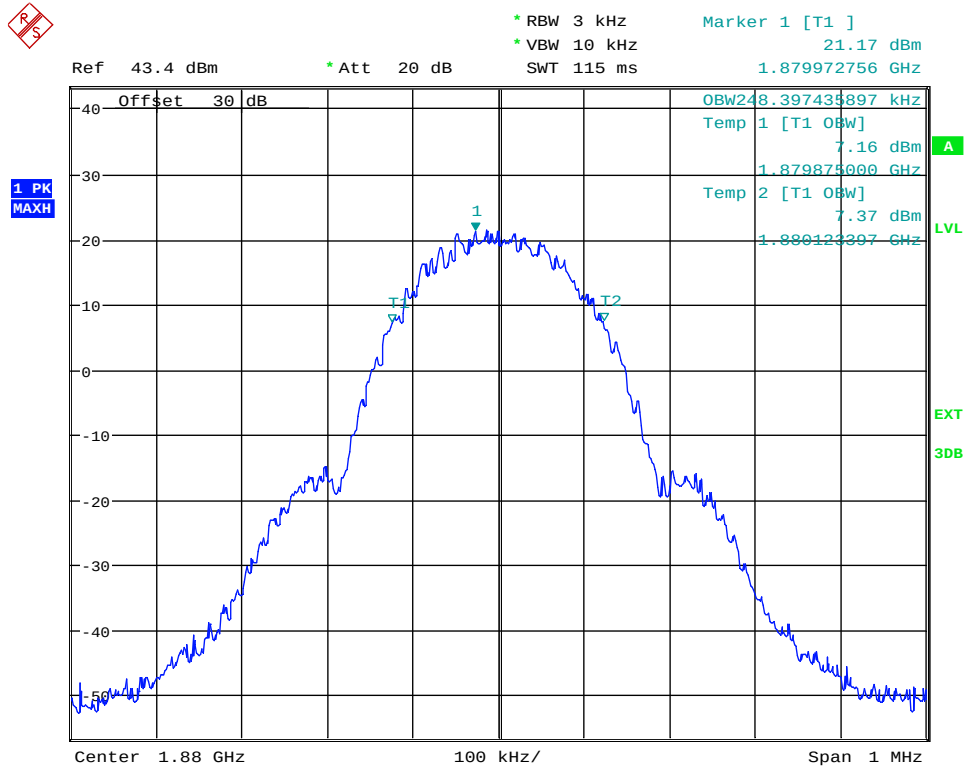
| GPRS1900(GMSK) |                 |                                    |               |         |
|----------------|-----------------|------------------------------------|---------------|---------|
| Channel Number | Frequency (MHz) | Occupied Bandwidth (99% BW) ( kHz) | Refer to Plot | Verdict |
| 512            | 1850.20         | 248.40                             | Plot 4.4.3 A  | PASS    |
| 661            | 1880.00         | 248.40                             | Plot 4.4.3 B  | PASS    |
| 810            | 1909.80         | 248.40                             | Plot 4.4.3 C  | PASS    |

| EGPRS1900(8PSK) |                 |                                    |               |         |
|-----------------|-----------------|------------------------------------|---------------|---------|
| Channel Number  | Frequency (MHz) | Occupied Bandwidth (99% BW) ( kHz) | Refer to Plot | Verdict |
| 512             | 1850.20         | 291.67                             | Plot 4.4.4 A  | PASS    |
| 661             | 1880.00         | 291.67                             | Plot 4.4.4 B  | PASS    |
| 810             | 1909.80         | 291.67                             | Plot 4.4.4 C  | PASS    |



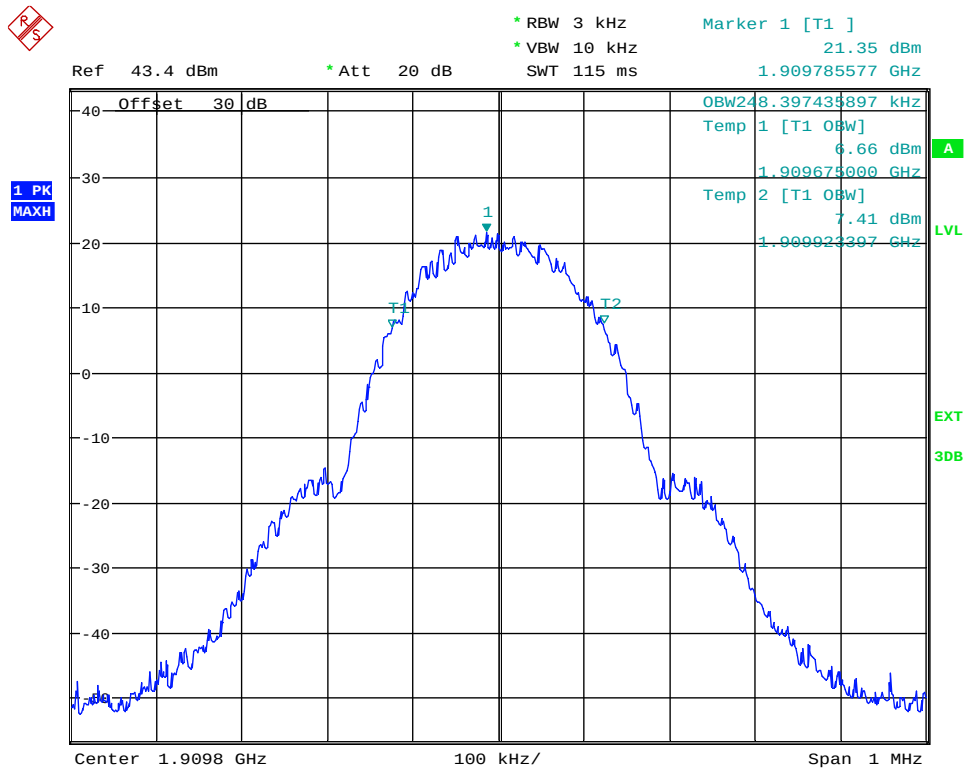
Date: 26.FEB.2014 15:34:54

(Plot 4.4.3 A: Channel 512:1850.20MHz @ GPRS1900)



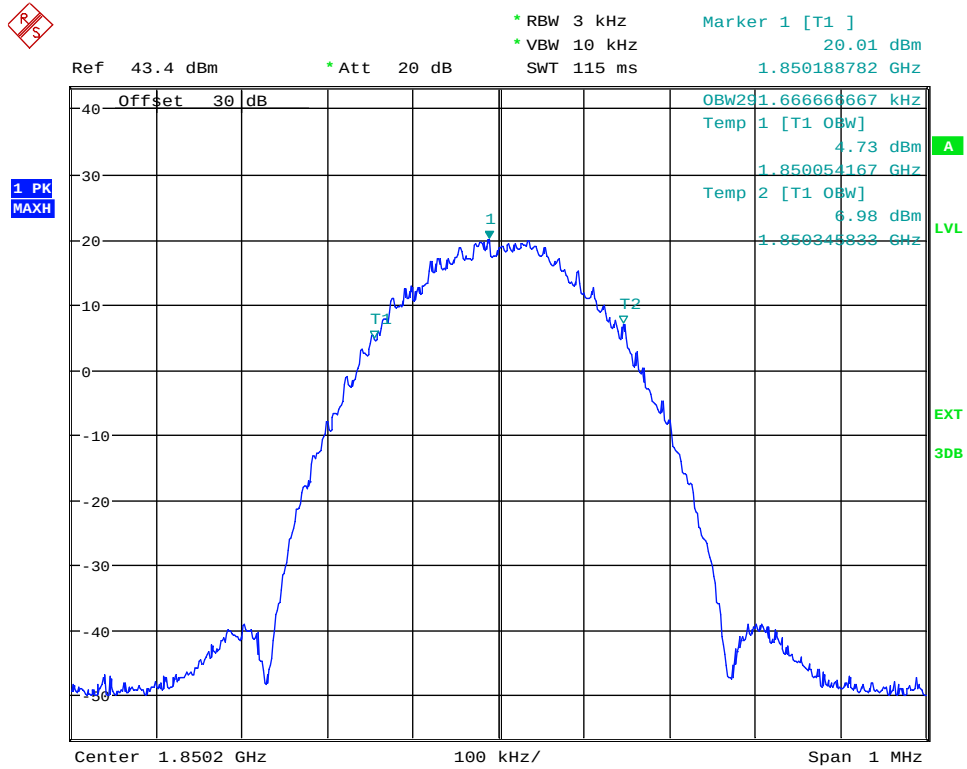
Date: 26.FEB.2014 15:35:09

(Plot 4.4.3 B: Channel 661:1880.00MHz @ GPRS1900)



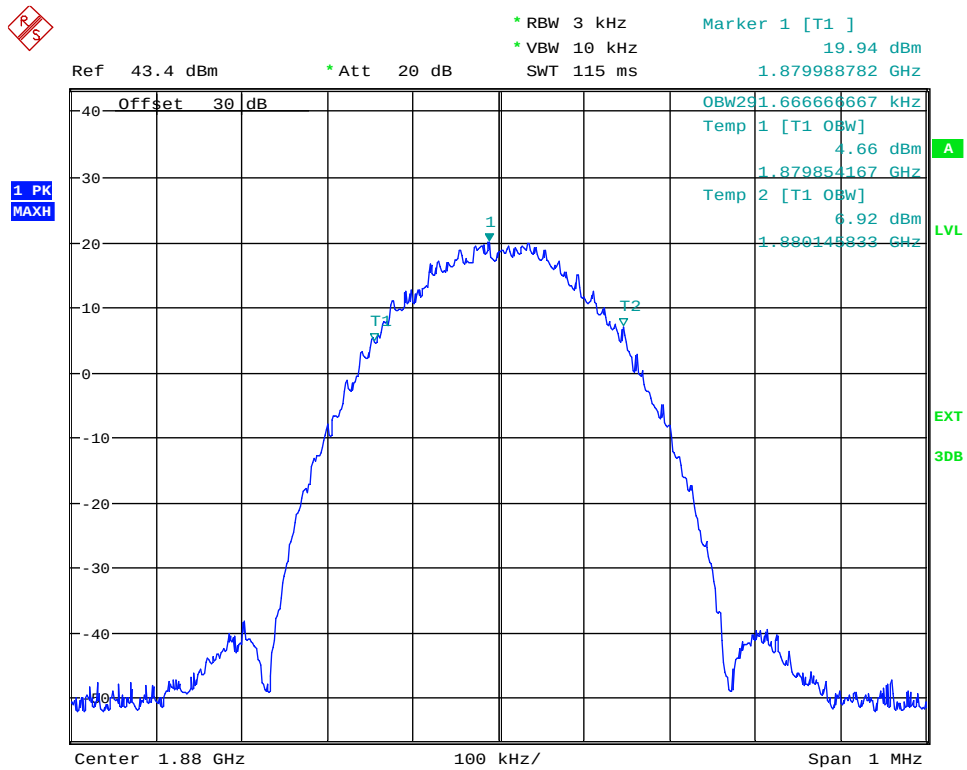
Date: 26.FEB.2014 15:35:31

(Plot 4.4.3 C: Channel 810:1909.80MHz @ GPRS1900)



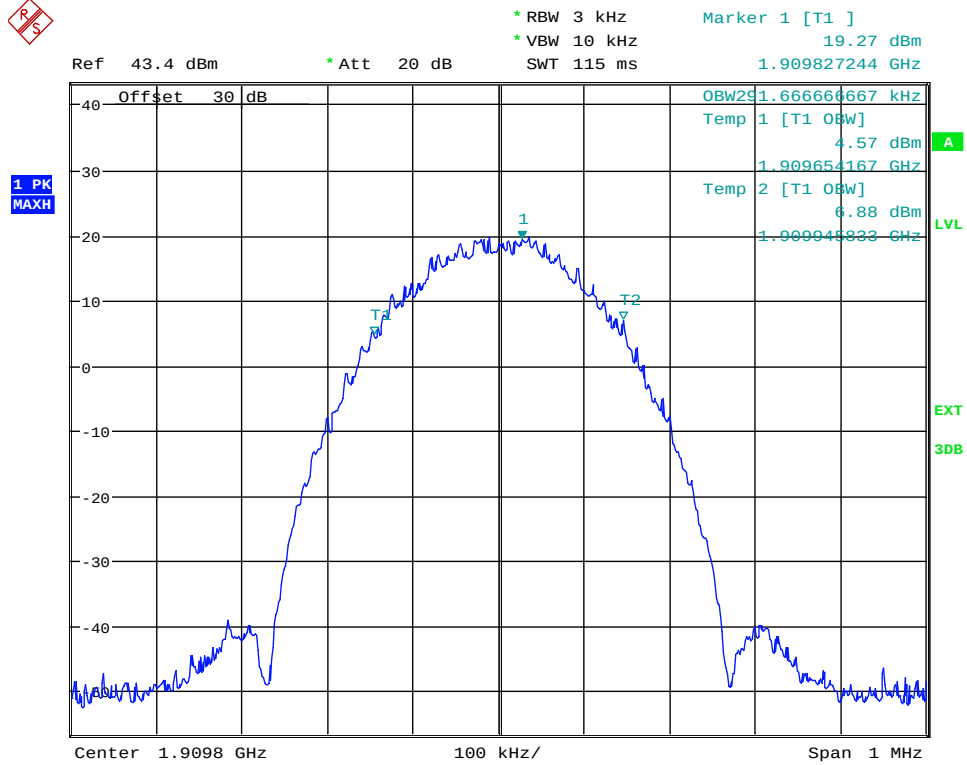
Date: 26.FEB.2014 15:41:31

(Plot 4.4.4 A: Channel 512:1820.20MHz @ EGPRS1900)



Date: 26.FEB.2014 15:42:00

(Plot 4.4.4 B: Channel 661:1880.00MHz @ EGPRS1900)



Date: 26.FEB.2014 15:42:20

(Plot 4.4.4 C: Channel 810:1909.80MHz @ EGPRS1900)

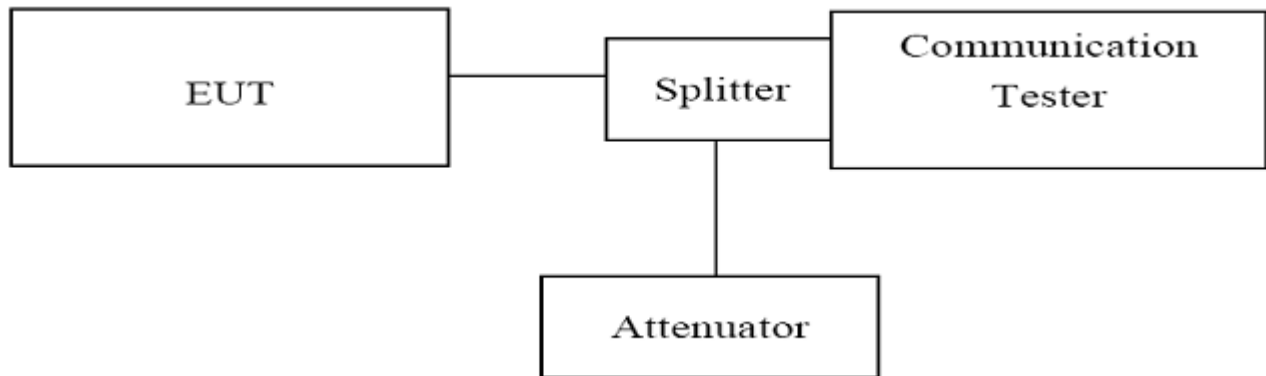


## 4.5. EMISSION BANDWIDTH

### TEST APPLICABLE

Similar to conducted emissions; occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of PCS1900 band and GSM850 band. The table below lists the measured -26dBc BW.

### TEST CONFIGURATION



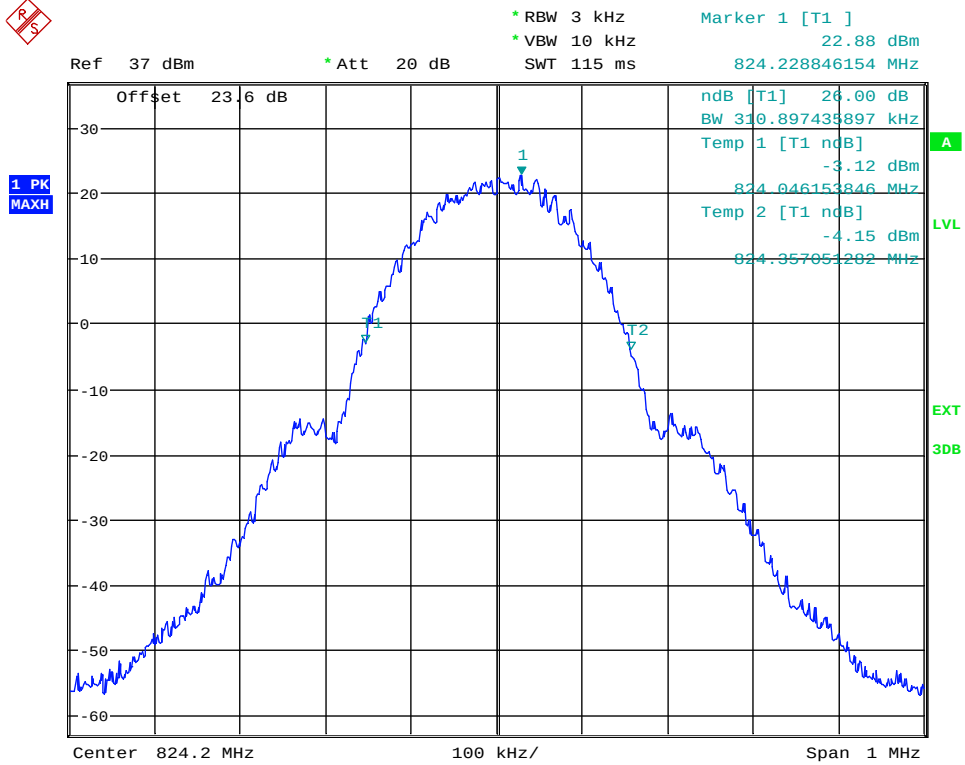
### TEST PROCEDURE

1. The EUT was set up for the max output power with pseudo random data modulation;
2. The Occupied bandwidth was measured with Rhode & Schwarz Spectrum Analyzer FSU (peak);
3. Set RBW=3KHz,VBW=10KHz,Span=1MHz,SWT=115ms;
4. Set SPA Max hold. Mark peak, Set -26dBc Occupied Bandwidth
5. These measurements were done at 3 frequencies, 1850.20 MHz, 1880.00 MHz and 1909.80 MHz for PCS1900 band; 824.20MHz, 836.60 MHz and 848.80 MHz for GSM850 band. (bottom, middle and top of operational frequency range).

### TEST RESULTS

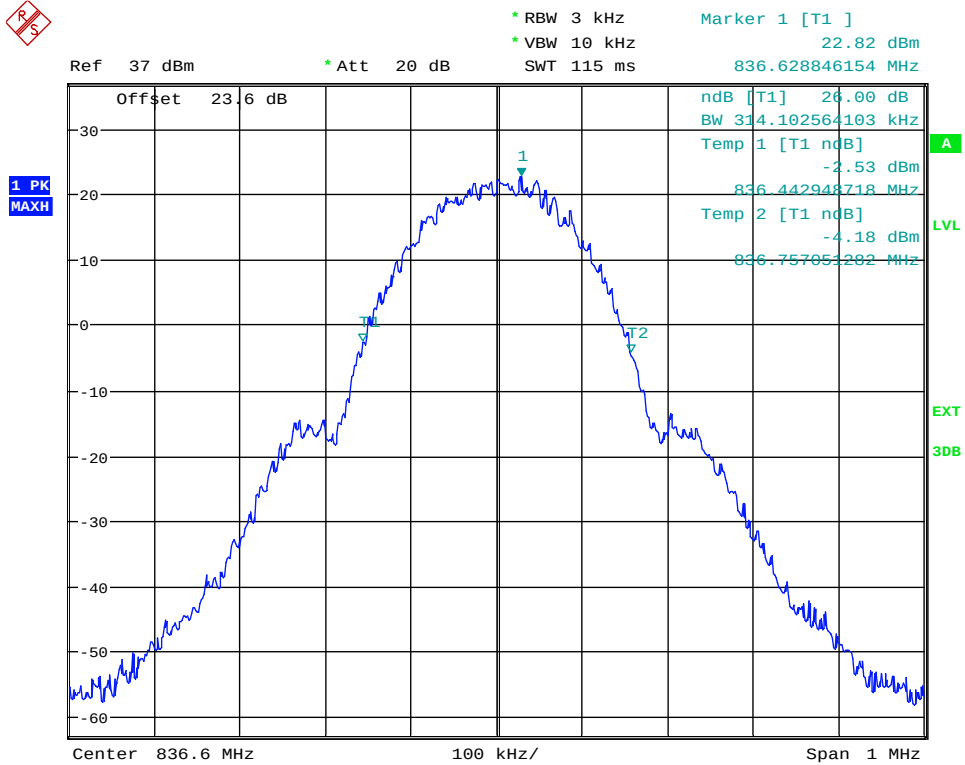
| GPRS850(GMSK)  |                 |                                       |               |         |
|----------------|-----------------|---------------------------------------|---------------|---------|
| Channel Number | Frequency (MHz) | Occupied Bandwidth (-26dBc BW) ( kHz) | Refer to Plot | Verdict |
| 128            | 824.20          | 310.90                                | Plot 4.5.1 A  | PASS    |
| 190            | 836.60          | 314.10                                | Plot 4.5.1 B  | PASS    |
| 251            | 848.80          | 310.90                                | Plot 4.5.1 C  | PASS    |

| EGPRS850(8PSK) |                 |                                       |               |         |
|----------------|-----------------|---------------------------------------|---------------|---------|
| Channel Number | Frequency (MHz) | Occupied Bandwidth (-26dBc BW) ( kHz) | Refer to Plot | Verdict |
| 128            | 824.20          | 373.40                                | Plot 4.5.2 A  | PASS    |
| 190            | 836.60          | 375.00                                | Plot 4.5.2 B  | PASS    |
| 251            | 848.80          | 371.79                                | Plot 4.5.2 C  | PASS    |



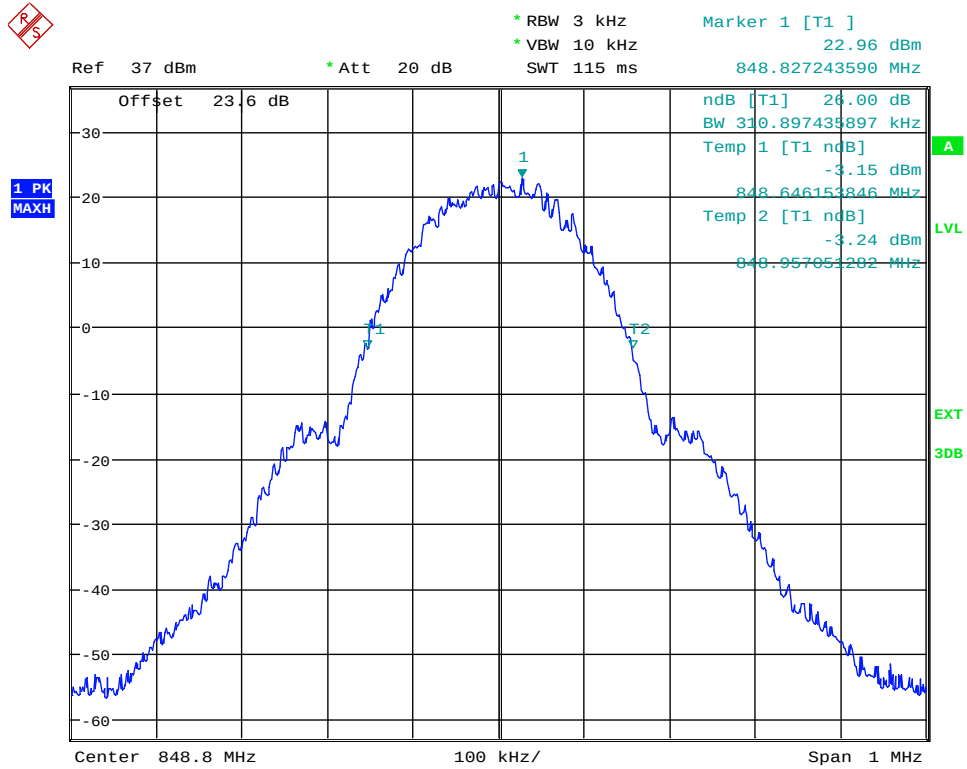
Date: 26.FEB.2014 15:23:56

(Plot 4.5.1 A: Channel 128: 824.20MHz @ GPRS850)



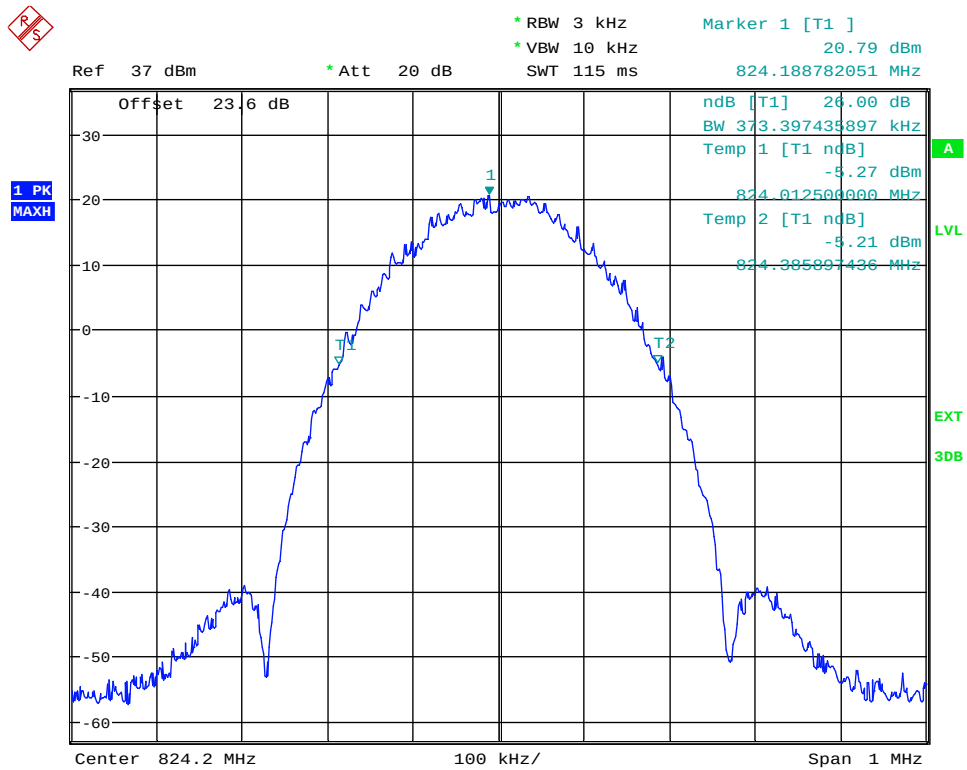
Date: 26.FEB.2014 15:23:41

(Plot 4.5.1 B: Channel 190: 836.60MHz @ GPRS850)



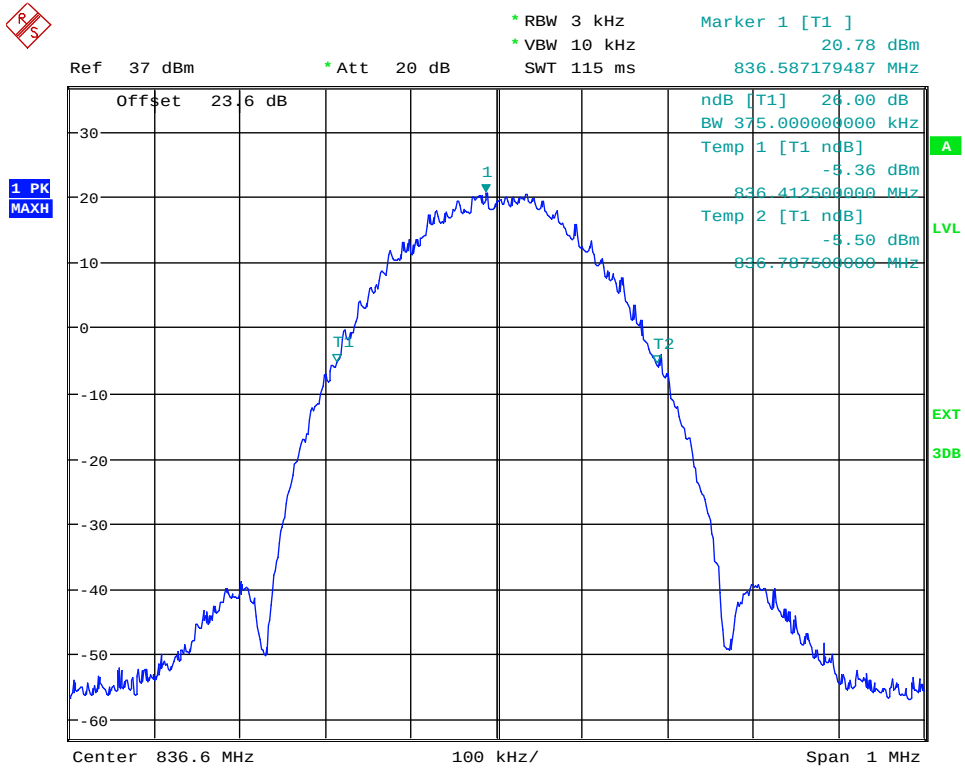
Date: 26.FEB.2014 15:23:28

(Plot 4.5.1 C: Channel 251: 848.80MHz @ GPRS850)



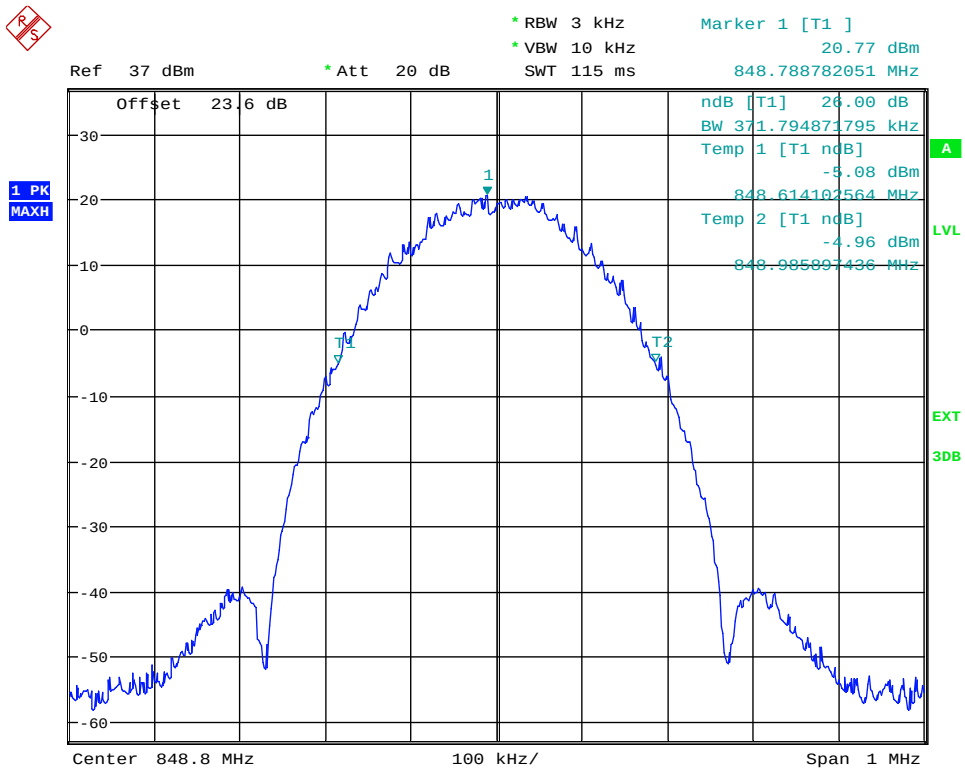
Date: 26.FEB.2014 15:14:00

(Plot 4.5.2 A: Channel 128: 824.20MHz @ EGPRS850)



Date: 26.FEB.2014 15:13:42

(Plot 4.5.2 B: Channel 190: 836.60MHz @ EGPRS850)

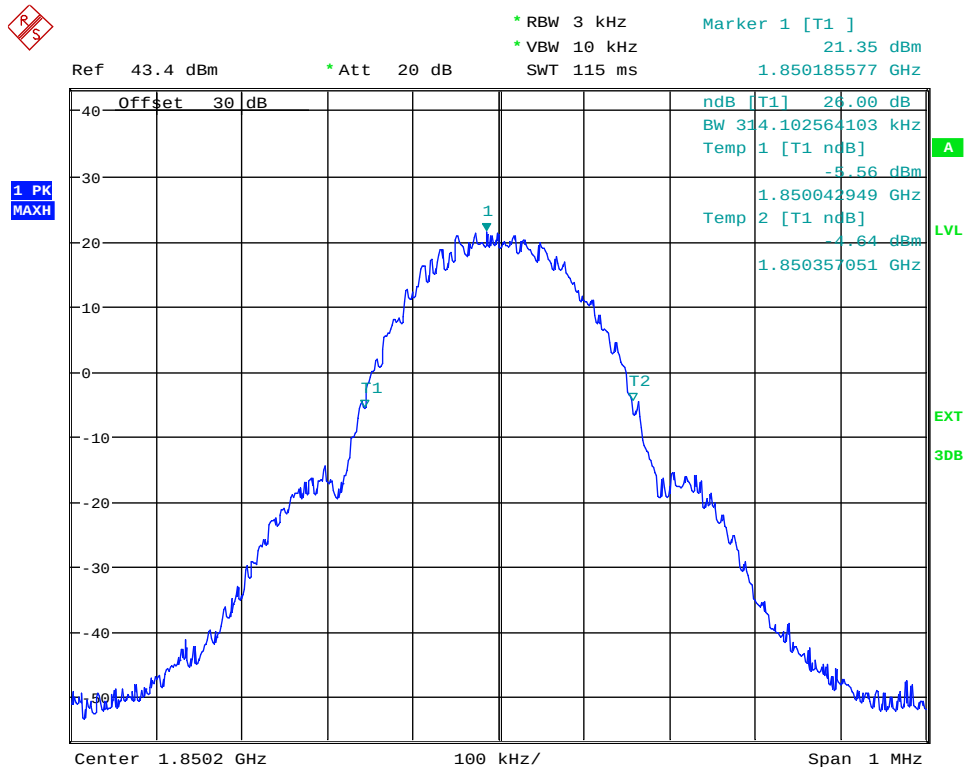


Date: 26.FEB.2014 15:13:21

(Plot 4.5.2 C: Channel 251: 848.80MHz @ EGPRS850)

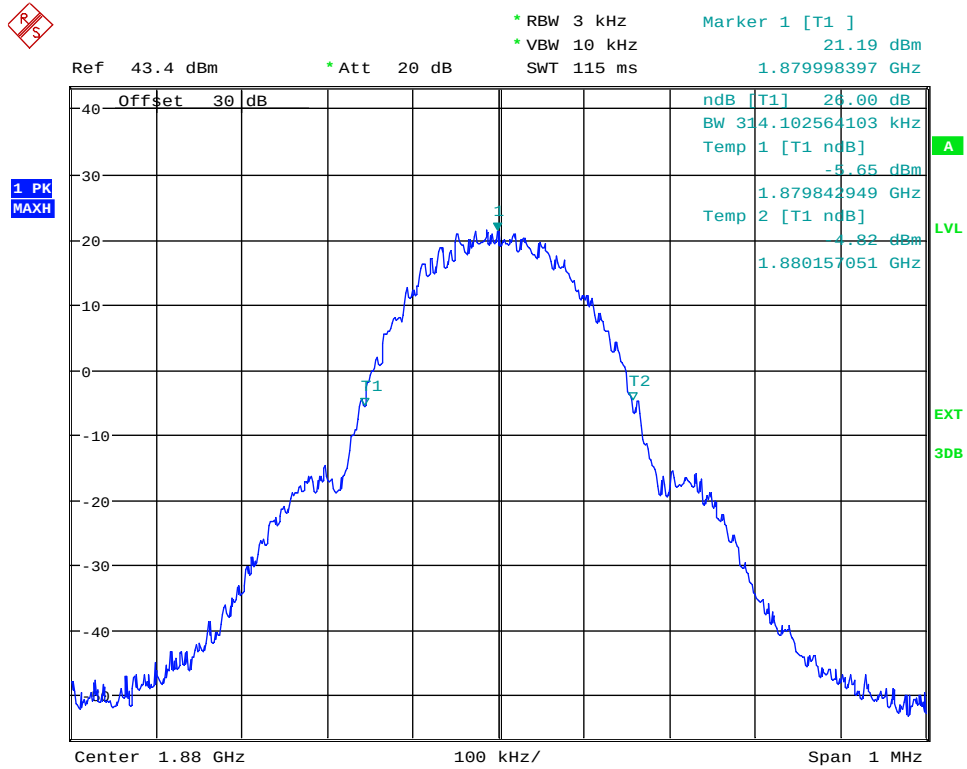
| GPRS1900(GMSK) |                 |                                       |               |         |
|----------------|-----------------|---------------------------------------|---------------|---------|
| Channel Number | Frequency (MHz) | Occupied Bandwidth (-26dBc BW) ( kHz) | Refer to Plot | Verdict |
| 512            | 1850.20         | 314.10                                | Plot 4.5.3 A  | PASS    |
| 661            | 1880.00         | 314.10                                | Plot 4.5.3 B  | PASS    |
| 810            | 1909.80         | 314.10                                | Plot 4.5.3 C  | PASS    |

| EGPRS1900(8PSK) |                 |                                       |               |         |
|-----------------|-----------------|---------------------------------------|---------------|---------|
| Channel Number  | Frequency (MHz) | Occupied Bandwidth (-26dBc BW) ( kHz) | Refer to Plot | Verdict |
| 512             | 1850.20         | 373.40                                | Plot 4.5.4 A  | PASS    |
| 661             | 1880.00         | 375.00                                | Plot 4.5.4 B  | PASS    |
| 810             | 1909.80         | 373.40                                | Plot 4.5.4 C  | PASS    |



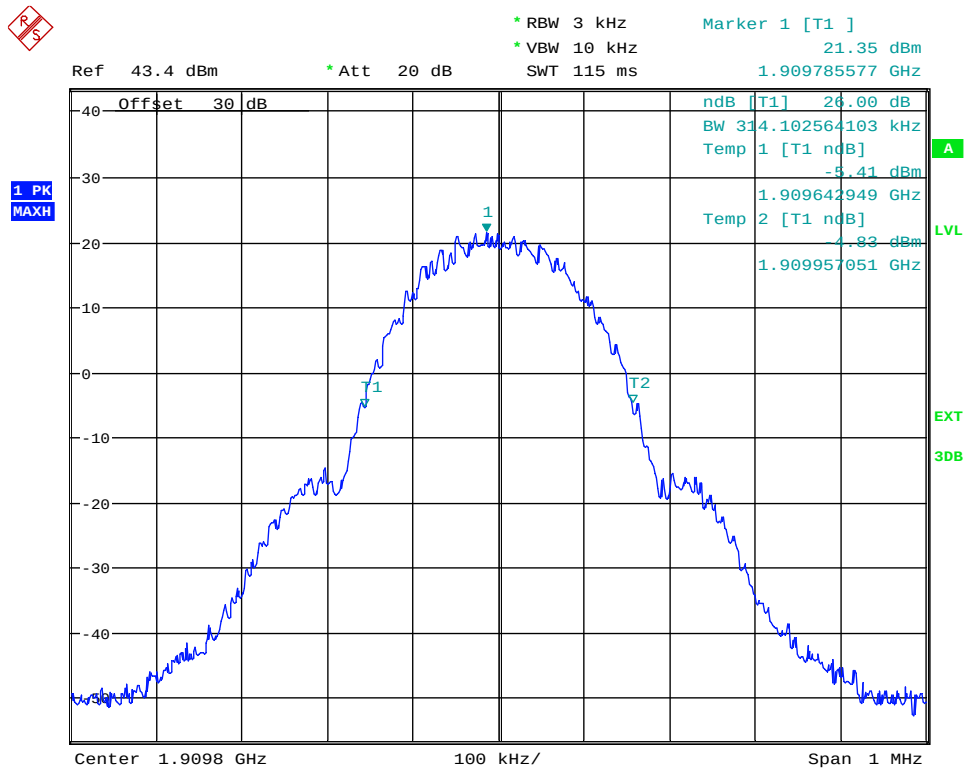
Date: 26.FEB.2014 15:36:18

(Plot 4.5.3 A: Channel 512:1850.20MHz @ GPRS1900)



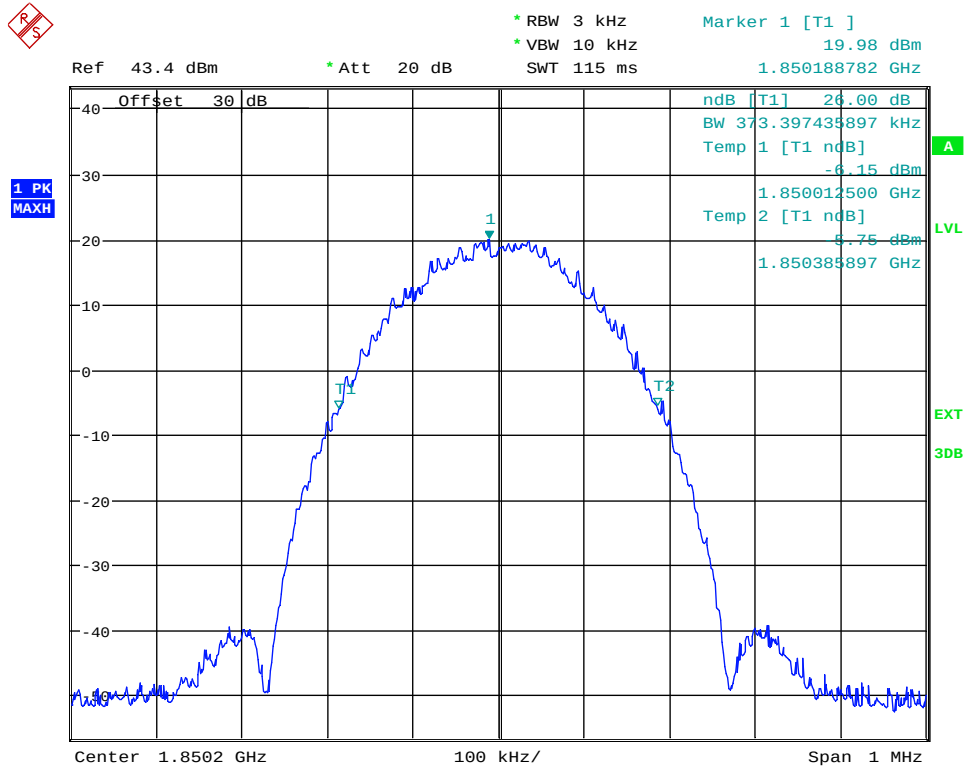
Date: 26.FEB.2014 15:36:02

(Plot 4.5.3 B: Channel 661:1880.00MHz @ GPRS1900)



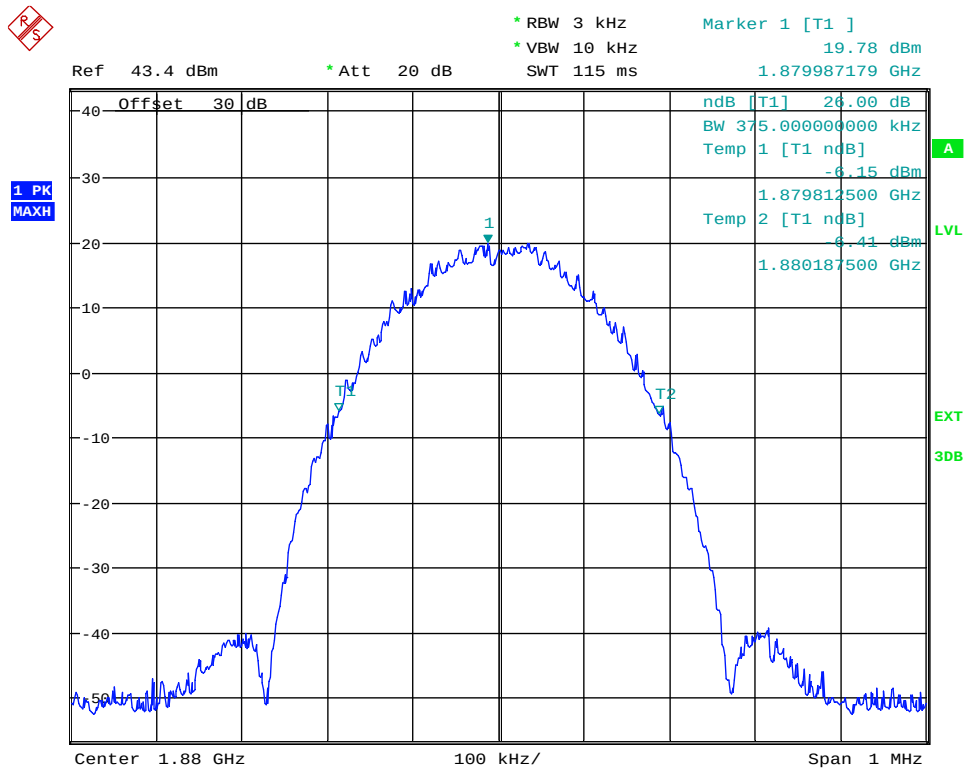
Date: 26.FEB.2014 15:35:48

(Plot 4.5.3 C: Channel 810:1909.80MHz @ GPRS1900)



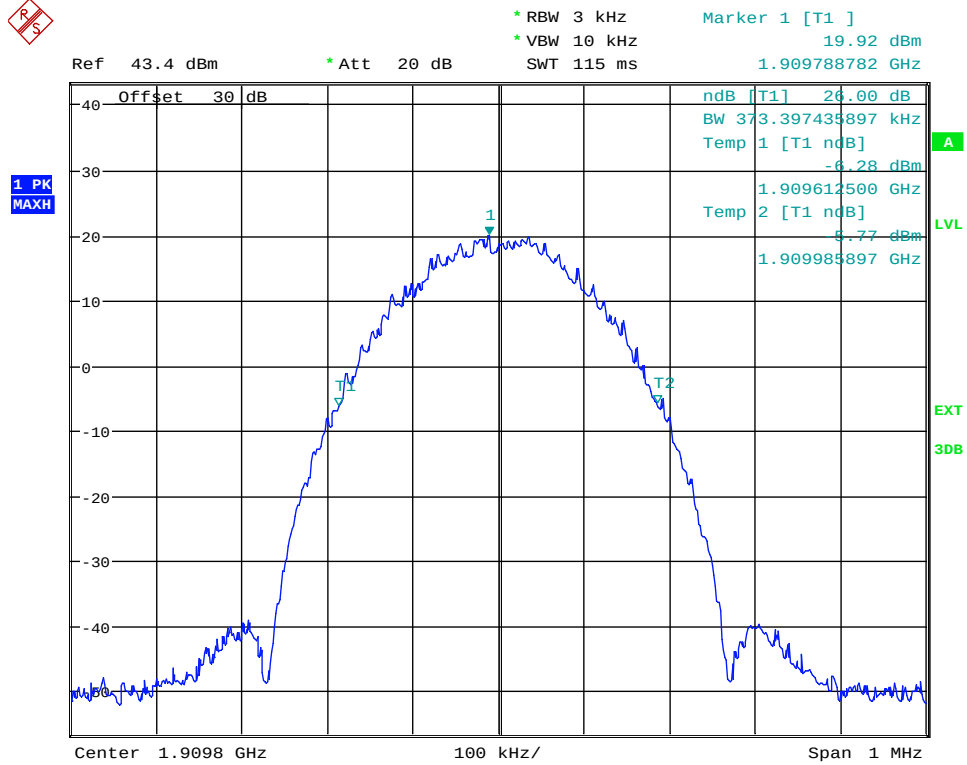
Date: 26.FEB.2014 15:43:18

(Plot 4.5.4 A: Channel 512:1820.20MHz @ EGPRS1900)



Date: 26.FEB.2014 15:44:19

(Plot 4.5.4 B: Channel 661:1880.00MHz @ EGPRS1900)



Date: 26.FEB.2014 15:42:34

(Plot 4.5.4 C: Channel 810:1909.80MHz @ EGPRS1900)

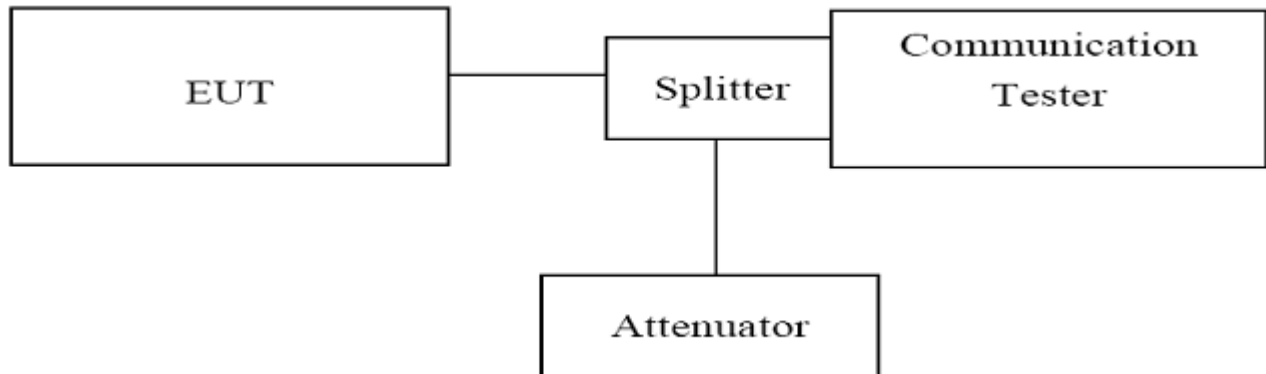


## 4.6. BAND EDGE COMPLIANCE

### TEST APPLICABLE

During the process of testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication tester (CMU-200) to ensure max power transmission and proper modulation.

### TEST CONFIGURATION



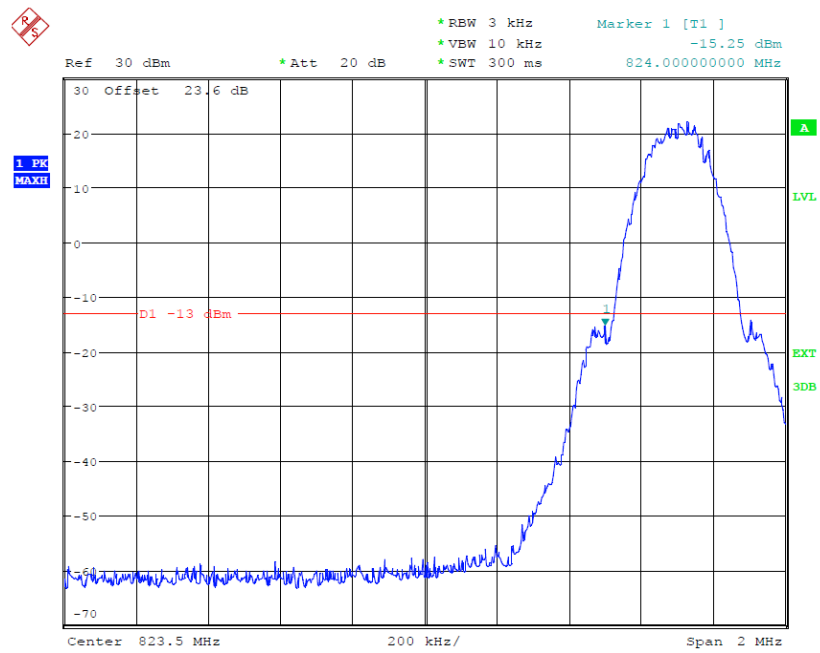
### TEST PROCEDURE

1. The EUT was set up for the max output power with pseudo random data modulation;
2. The power was measured with Rhode & Schwarz Spectrum Analyzer FSU (peak);
3. Set RBW=5KHz,VBW=50KHz,Span=1MHz,SWT=300ms;
4. These measurements were done at 3 frequencies, 1850.20 MHz, 1880.00 MHz and 1909.80 MHz for PCS1900 band; 824.20 MHz, 836.60 MHz and 848.80 MHz for GSM850 band. (low, middle and high of operational frequency range).

### TEST RESULTS

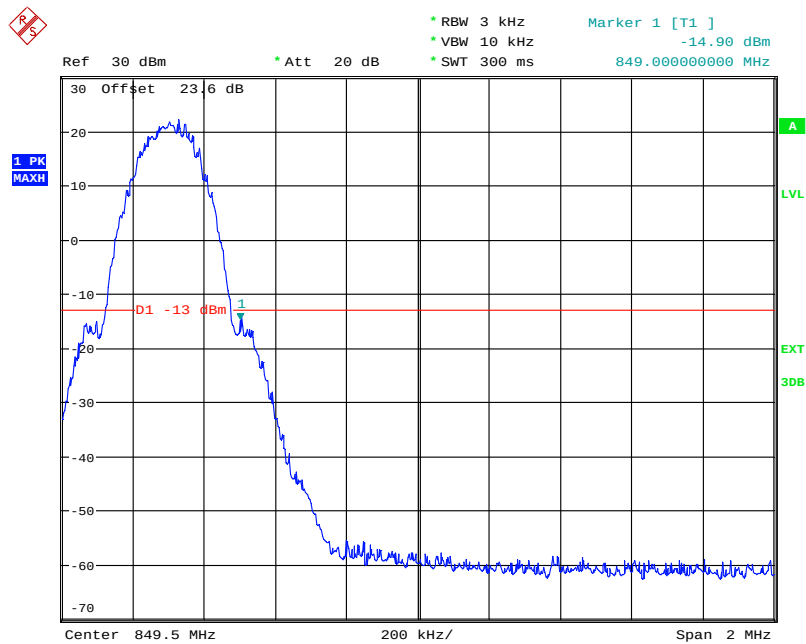
| GPRS850(GMSK)  |                 |                     |              |             |               |         |
|----------------|-----------------|---------------------|--------------|-------------|---------------|---------|
| Channel Number | Frequency (MHz) | Measurement Results |              | Limit (dBm) | Refer to Plot | Verdict |
|                |                 | Frequency (MHz)     | Values (dBm) |             |               |         |
| 128            | 824.20          | 824.00              | -15.25       | -13.00      | Plot 4.6.1 A  | PASS    |
| 251            | 848.80          | 849.00              | -14.90       | -13.00      | Plot 4.6.1 B  | PASS    |

| EGPRS850(8PSK) |                 |                     |              |             |               |         |
|----------------|-----------------|---------------------|--------------|-------------|---------------|---------|
| Channel Number | Frequency (MHz) | Measurement Results |              | Limit (dBm) | Refer to Plot | Verdict |
|                |                 | Frequency (MHz)     | Values (dBm) |             |               |         |
| 128            | 824.20          | 823.97              | -19.20       | -13.00      | Plot 4.6.2 A  | PASS    |
| 251            | 848.80          | 849.92              | -17.63       | -13.00      | Plot 4.6.2 B  | PASS    |



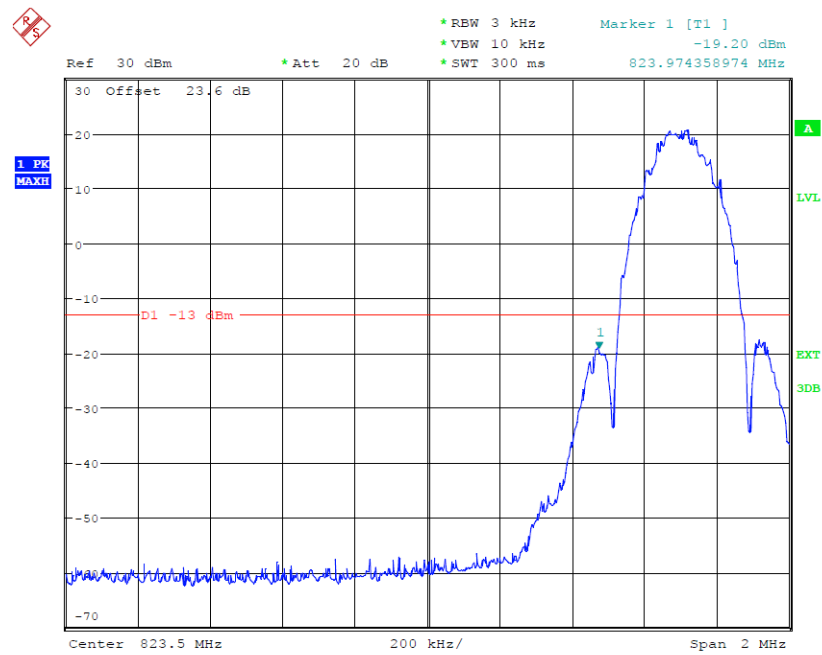
Date: 25.APR.2014 16:10:29

(Plot 4.6.1 A: Channel 128: 824.20MHz @ GPRS850)



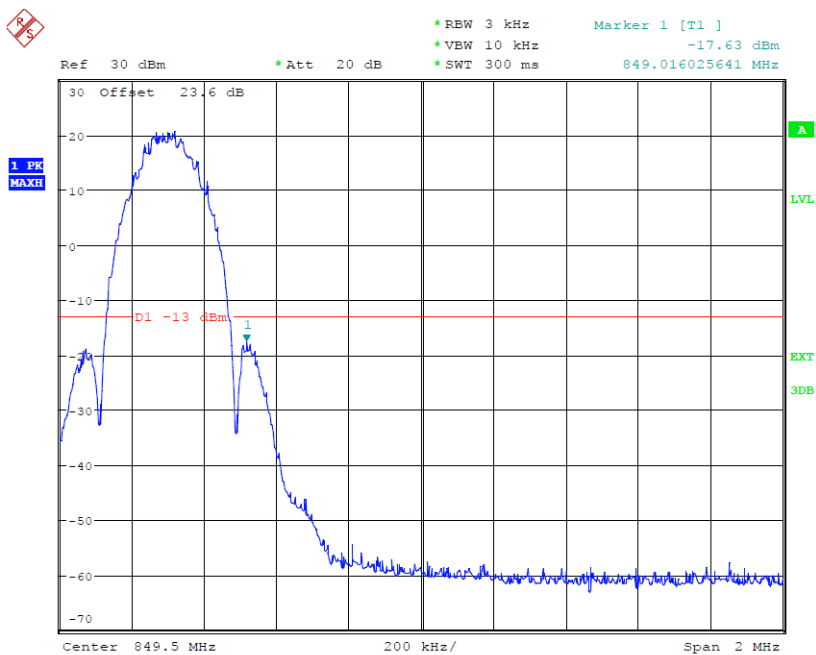
Date: 25.APR.2014 16:12:34

(Plot 4.6.1 B: Channel 251: 848.80MHz @ GPRS850)



Date: 25.APR.2014 16:24:12

(Plot 4.6.2 A: Channel 128: 824.20MHz @ EGPRS850)

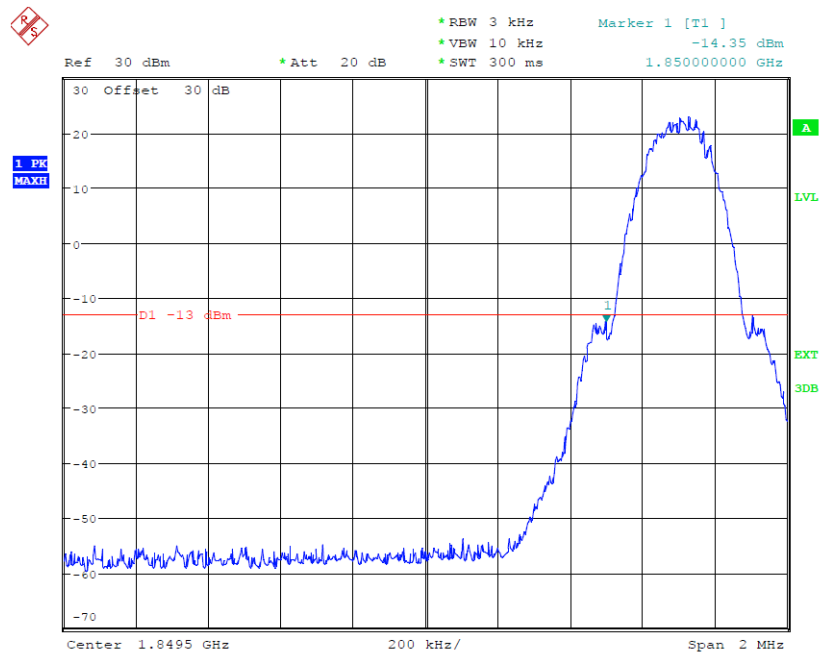


Date: 25.APR.2014 16:19:35

(Plot 4.6.2 B: Channel 251: 848.80MHz @ EGPRS850)

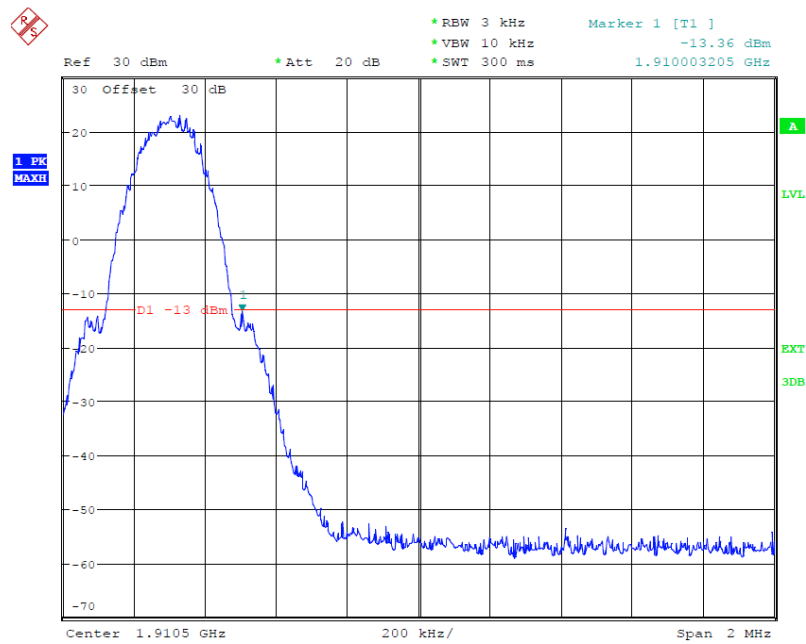
| GPRS1900(GMSK) |                 |                     |              |             |               |         |
|----------------|-----------------|---------------------|--------------|-------------|---------------|---------|
| Channel Number | Frequency (MHz) | Measurement Results |              | Limit (dBm) | Refer to Plot | Verdict |
|                |                 | Frequency (MHz)     | Values (dBm) |             |               |         |
| 512            | 1850.20         | 1850.00             | -14.35       | -13.00      | Plot 4.6.3 A  | PASS    |
| 810            | 1909.80         | 1910.00             | -13.36       | -13.00      | Plot 4.6.3 B  | PASS    |

| EGPRS1900(8PSK) |                 |                     |              |             |               |         |
|-----------------|-----------------|---------------------|--------------|-------------|---------------|---------|
| Channel Number  | Frequency (MHz) | Measurement Results |              | Limit (dBm) | Refer to Plot | Verdict |
|                 |                 | Frequency (MHz)     | Values (dBm) |             |               |         |
| 512             | 1850.20         | 1849.97             | -16.93       | -13.00      | Plot 4.6.4 A  | PASS    |
| 810             | 1909.80         | 1910.02             | -15.74       | -13.00      | Plot 4.6.4 B  | PASS    |



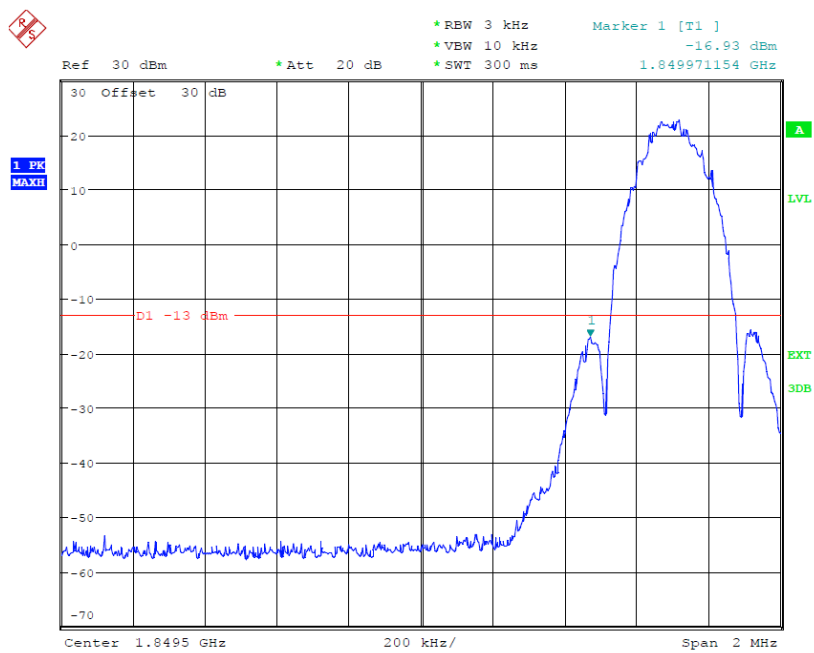
Date: 25.APR.2014 16:35:22

(Plot 4.6.3 A: Channel 512: 1850.20MHz @ GPRS1900)



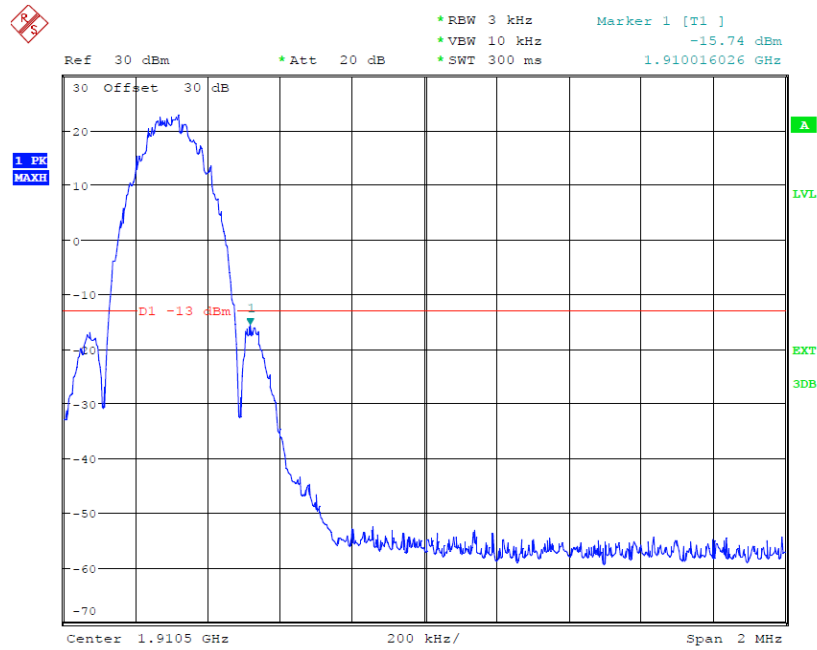
Date: 25.APR.2014 16:32:36

(Plot 4.6.3 B: Channel 810: 1909.80MHz @ GPRS1900)



Date: 25.APR.2014 16:28:05

(Plot 4.6.4 A: Channel 512: 1850.20MHz @ EGPRS1900)



Date: 25.APR.2014 16:30:27

(Plot 4.6.4 B: Channel 810: 1909.80MHz @ EGPRS1900)

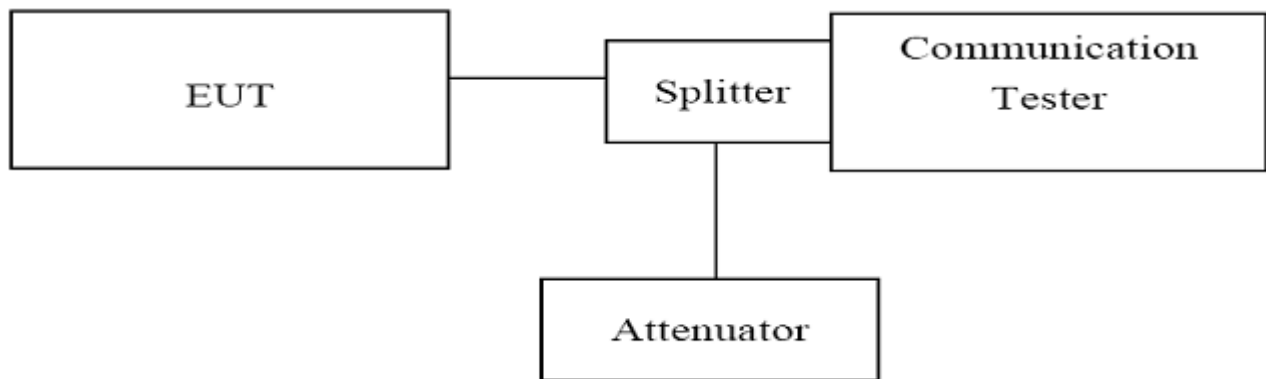
## 4.7. Spurious Emission on Antenna Port

### TEST APPLICABLE

The following steps outline the procedure used to measure the conducted emissions from the EUT.

1. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency. For the equipment of PCS1900 band, this equates to a frequency range of 30 MHz to 19.1 GHz, data taken from 30 MHz to 20 GHz. For GSM850, data taken from 30 MHz to 10 GHz.
2. The sweep time is set automatically by instrument itself. That should be the optimal sweep time for the span and the RBW. If the sweep time is too short, that is sweep is too fast, the sweep result is not accurate; if the sweep time is too long, that is sweep is too low, some frequency components may be lost. The instrument will give a optimal sweep time according the selected span and RBW.
3. The procedure to get the conducted spurious emission is as follows:  
The trace mode is set to MaxHold to get the highest signal at each frequency;  
Wait 25 seconds;  
Get the result.
4. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.

### TEST CONFIGURATION



### TEST PROCEDURE

1. The EUT was set up for the max output power with pseudo random data modulation;
2. The power was measured with Rhode & Schwarz Spectrum Analyzer FSU (peak);
3. These measurements were done at 3 frequencies, 1850.20 MHz, 1880.00 MHz and 1909.80 MHz for PCS1900 band; 824.20 MHz, 836.60 MHz and 848.80 MHz for GSM850 band. (low, middle and high of operational frequency range).

### TEST LIMIT

Part 24.238 and Part 22.917 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

The specification that emissions shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log(P)$  dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

### TEST RESULTS

| GPRS850(GMSK)         |                      |                            |              |             |                    |         |
|-----------------------|----------------------|----------------------------|--------------|-------------|--------------------|---------|
| Channel Number: 128   |                      | Test Frequency: 824.20 MHz |              |             | Test Mode: Traffic |         |
| Start Frequency (MHz) | Stop Frequency (MHz) | Measurement Results        |              | Limit (dBm) | Refer to Plot      | Verdict |
|                       |                      | Frequency (MHz)            | Values (dBm) |             |                    |         |
| 30                    | 1000                 | ***                        | ***          | -13.00      | Plot 4.7.1 A1      | PASS    |
| 1000                  | 2500                 | 1649.04                    | -32.52       | -13.00      | Plot 4.7.1 A2      | PASS    |
| 2500                  | 7500                 | 3589.74                    | -32.73       | -13.00      | Plot 4.7.1 A3      | PASS    |
| 7500                  | 10000                | 9171.68                    | -34.51       | -13.00      | Plot 4.7.1 A4      | PASS    |

| GPRS850(GMSK)         |                      |                            |              |             |                    |         |
|-----------------------|----------------------|----------------------------|--------------|-------------|--------------------|---------|
| Channel Number: 190   |                      | Test Frequency: 836.60 MHz |              |             | Test Mode: Traffic |         |
| Start Frequency (MHz) | Stop Frequency (MHz) | Measurement Results        |              | Limit (dBm) | Refer to Plot      | Verdict |
|                       |                      | Frequency (MHz)            | Values (dBm) |             |                    |         |
| 30                    | 1000                 | ***                        | ***          | -13.00      | Plot 4.7.2 A1      | PASS    |
| 1000                  | 2500                 | 1673.07                    | -32.60       | -13.00      | Plot 4.7.2 A2      | PASS    |
| 2500                  | 7500                 | 3381.73                    | -32.57       | -13.00      | Plot 4.7.2 A3      | PASS    |
| 7500                  | 10000                | 8517.62                    | -34.61       | -13.00      | Plot 4.7.2 A4      | PASS    |

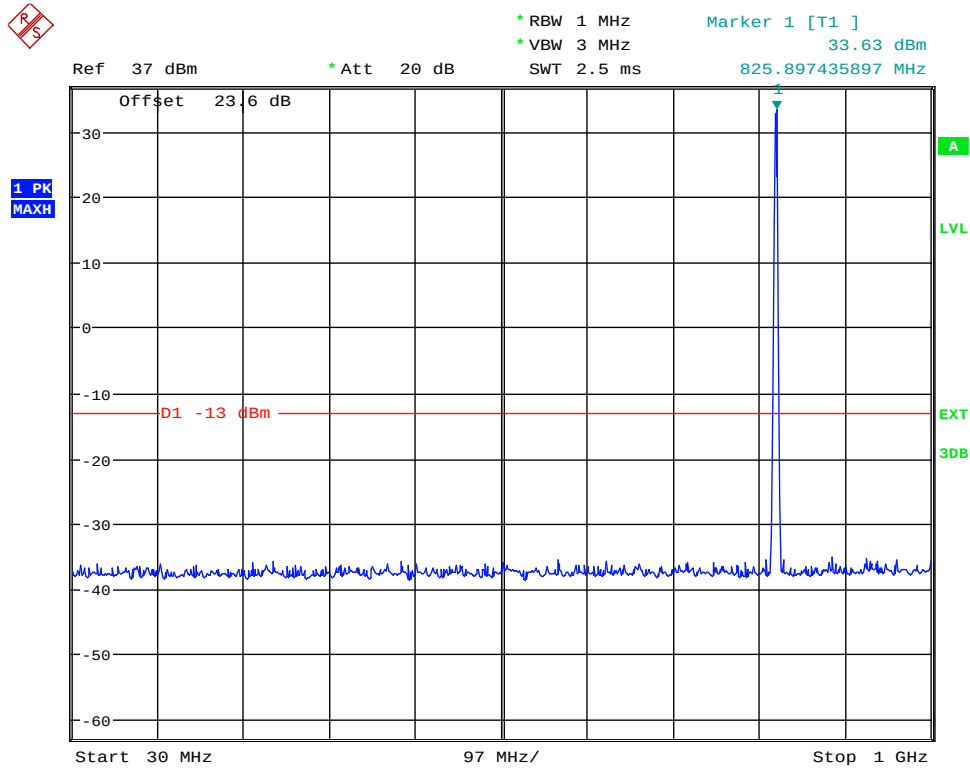
| GPRS850(GMSK)         |                      |                            |              |             |                    |         |
|-----------------------|----------------------|----------------------------|--------------|-------------|--------------------|---------|
| Channel Number: 251   |                      | Test Frequency: 848.80 MHz |              |             | Test Mode: Traffic |         |
| Start Frequency (MHz) | Stop Frequency (MHz) | Measurement Results        |              | Limit (dBm) | Refer to Plot      | Verdict |
|                       |                      | Frequency (MHz)            | Values (dBm) |             |                    |         |
| 30                    | 1000                 | ***                        | ***          | -13.00      | Plot 4.7.3 A1      | PASS    |
| 1000                  | 2500                 | 2466.34                    | -32.72       | -13.00      | Plot 4.7.3 A2      | PASS    |
| 2500                  | 7500                 | 2589.74                    | -32.50       | -13.00      | Plot 4.7.3 A3      | PASS    |
| 7500                  | 10000                | 9146.63                    | -34.27       | -13.00      | Plot 4.7.3 A4      | PASS    |

| GPRS850(GMSK)         |                      |                     |              |             |               |         |
|-----------------------|----------------------|---------------------|--------------|-------------|---------------|---------|
| Test Mode: Idle       |                      |                     |              |             |               |         |
| Start Frequency (MHz) | Stop Frequency (MHz) | Measurement Results |              | Limit (dBm) | Refer to Plot | Verdict |
|                       |                      | Frequency (MHz)     | Values (dBm) |             |               |         |
| 30                    | 1000                 | 572.52              | -35.75       | -13.00      | Plot 4.7.4 A1 | PASS    |
| 1000                  | 2500                 | 2295.67             | -33.71       | -13.00      | Plot 4.7.4 A2 | PASS    |
| 2500                  | 7500                 | 2604.16             | -32.95       | -13.00      | Plot 4.7.4 A3 | PASS    |
| 7500                  | 10000                | 9114.58             | -34.18       | -13.00      | Plot 4.7.4 A4 | PASS    |

Note: 1. In general, the worse case attenuation requirement shown above was applied.

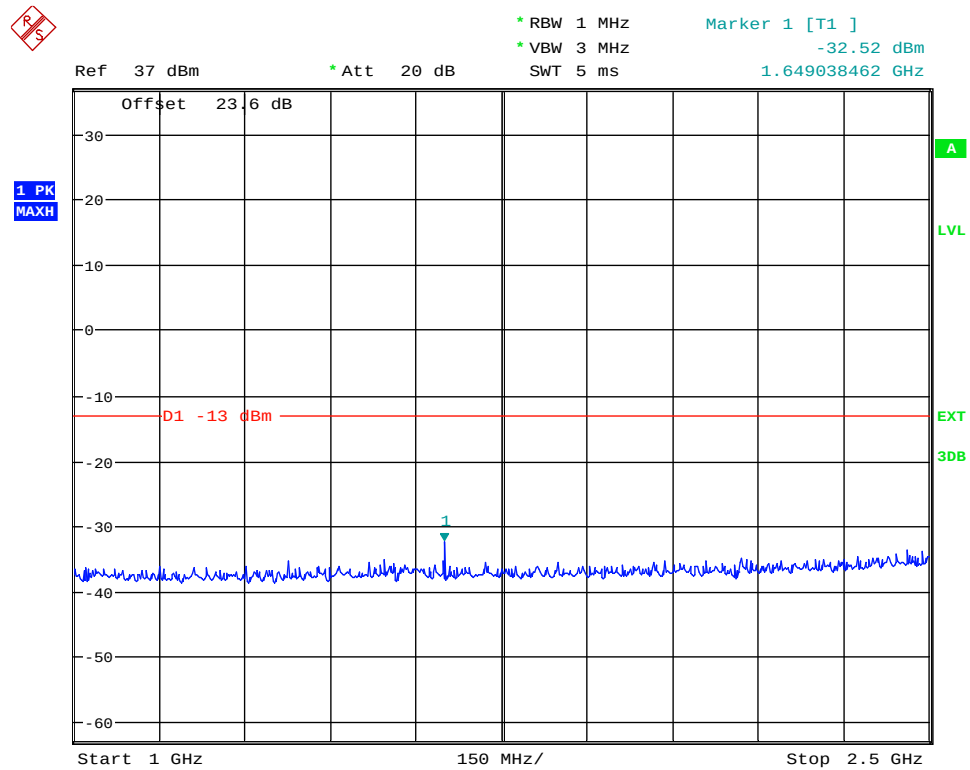
2. \*\*\* means that the emission level is too low to be measured or at least 20 dB down than the limit.





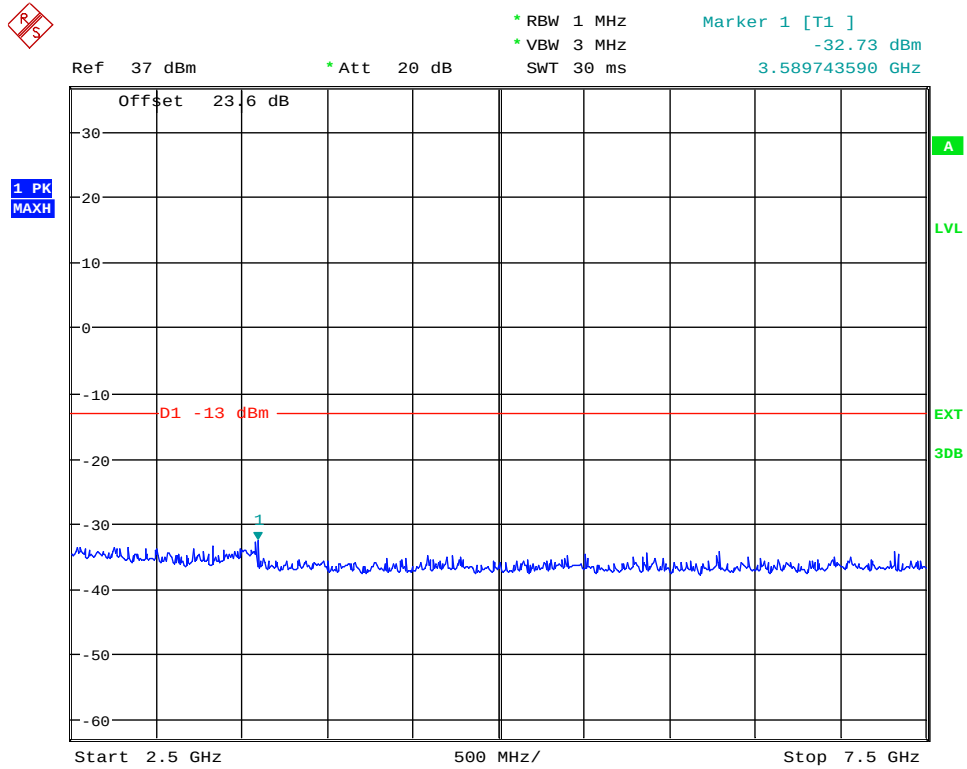
Date: 11.OCT.2013 19:04:42

(Plot 4.7.1 A1: Channel 128: 824.20MHz @ Traffic @ GPRS850)



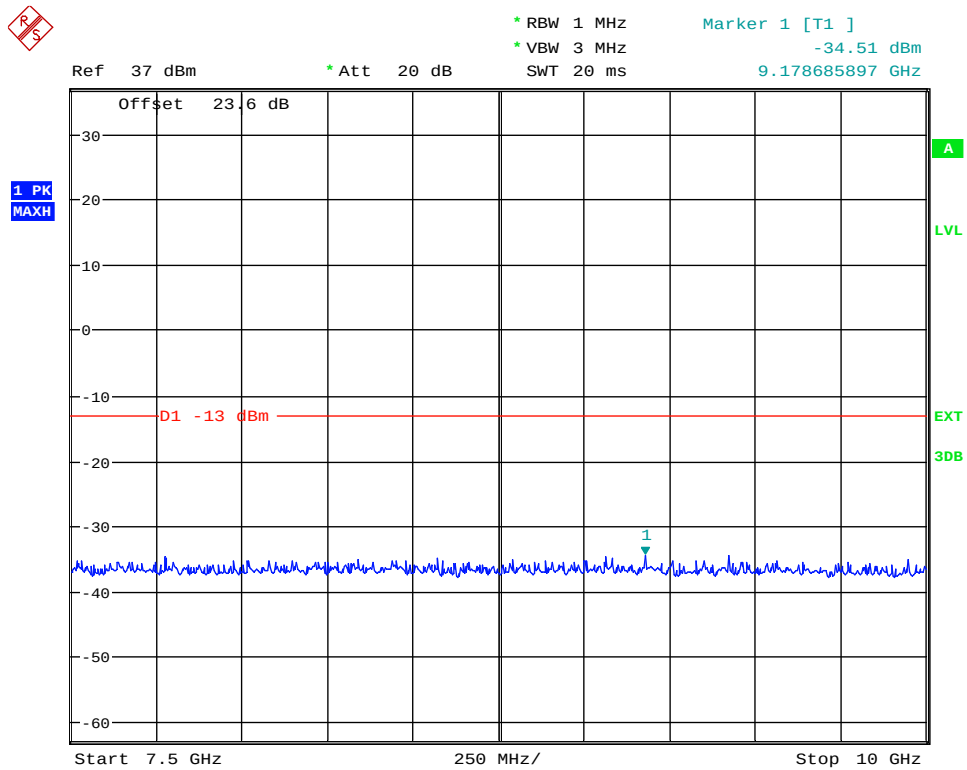
Date: 11.OCT.2013 19:05:01

(Plot 4.7.1 A2: Channel 128: 824.20MHz @ Traffic @ GPRS850)



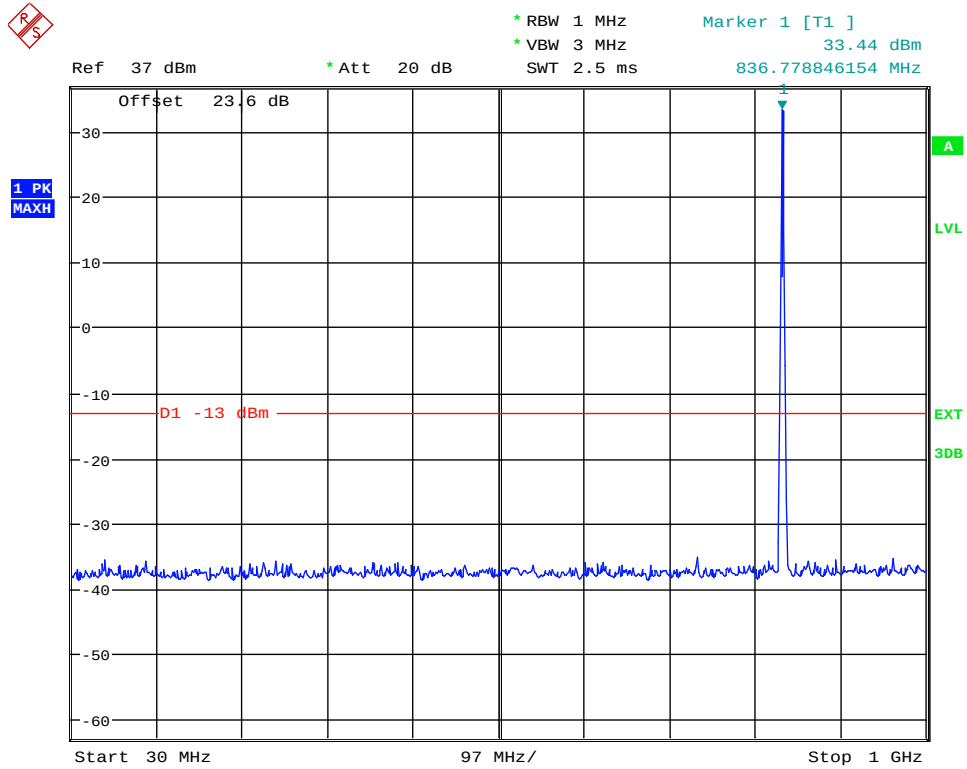
Date: 11.OCT.2013 19:05:14

(Plot 4.7.1 A3: Channel 128: 824.20MHz @ Traffic @ GPRS850)



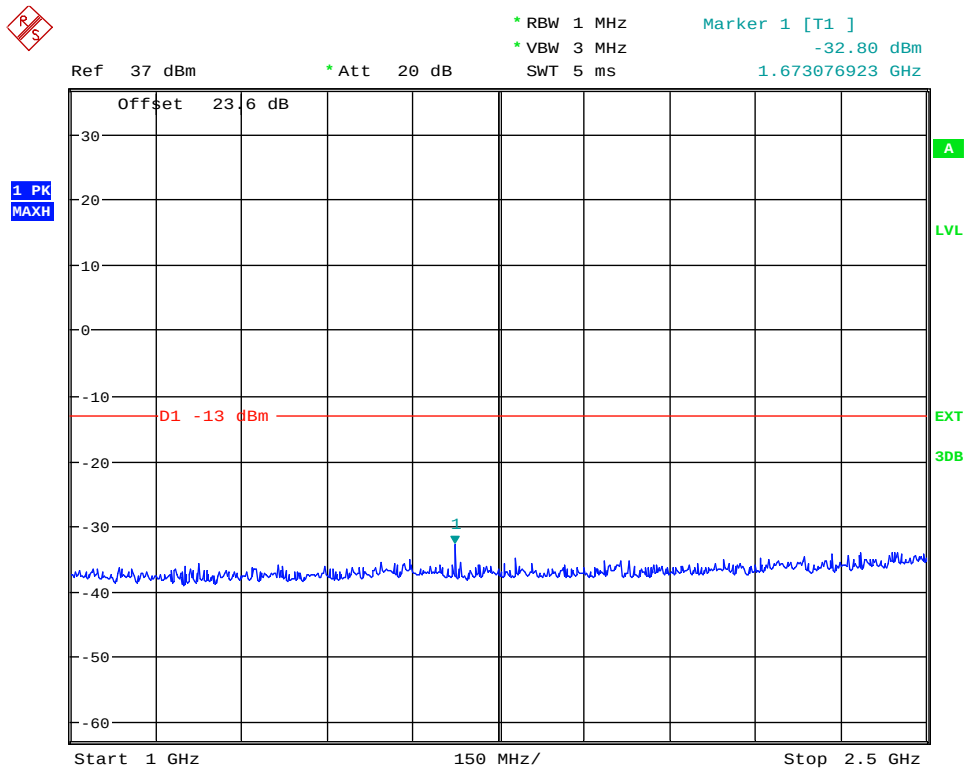
Date: 11.OCT.2013 19:05:31

(Plot 4.7.1 A4: Channel 128: 824.20MHz @ Traffic @ GPRS850)



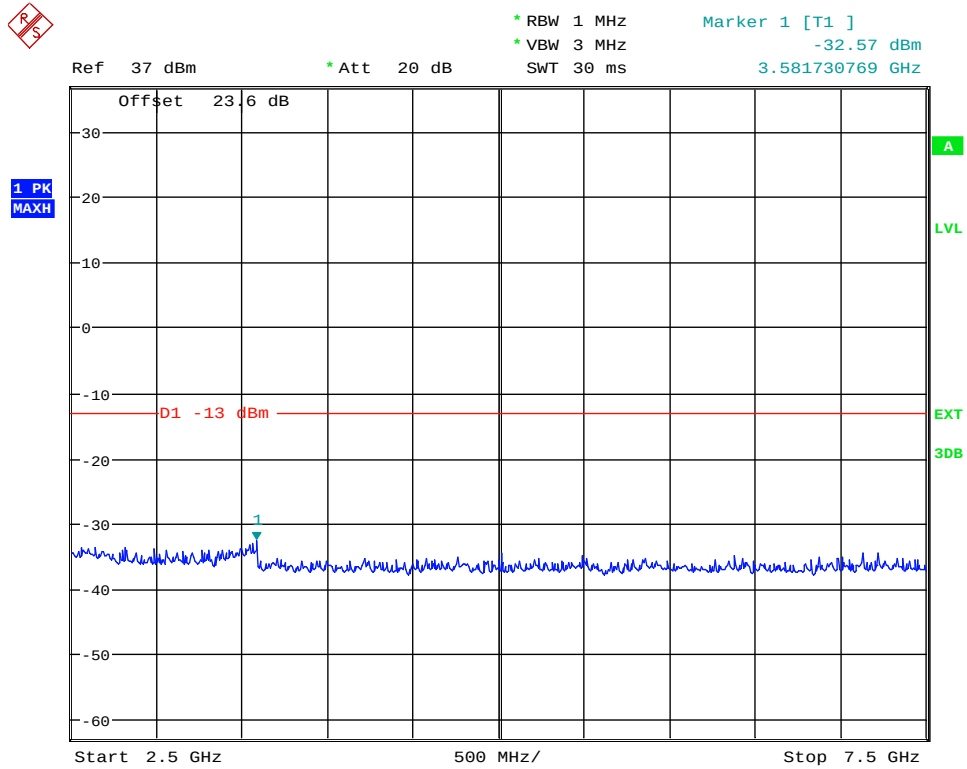
Date: 11.OCT.2013 19:10:48

(Plot 4.7.2 A1: Channel 190: 836.60MHz @ Traffic @ GPRS850)



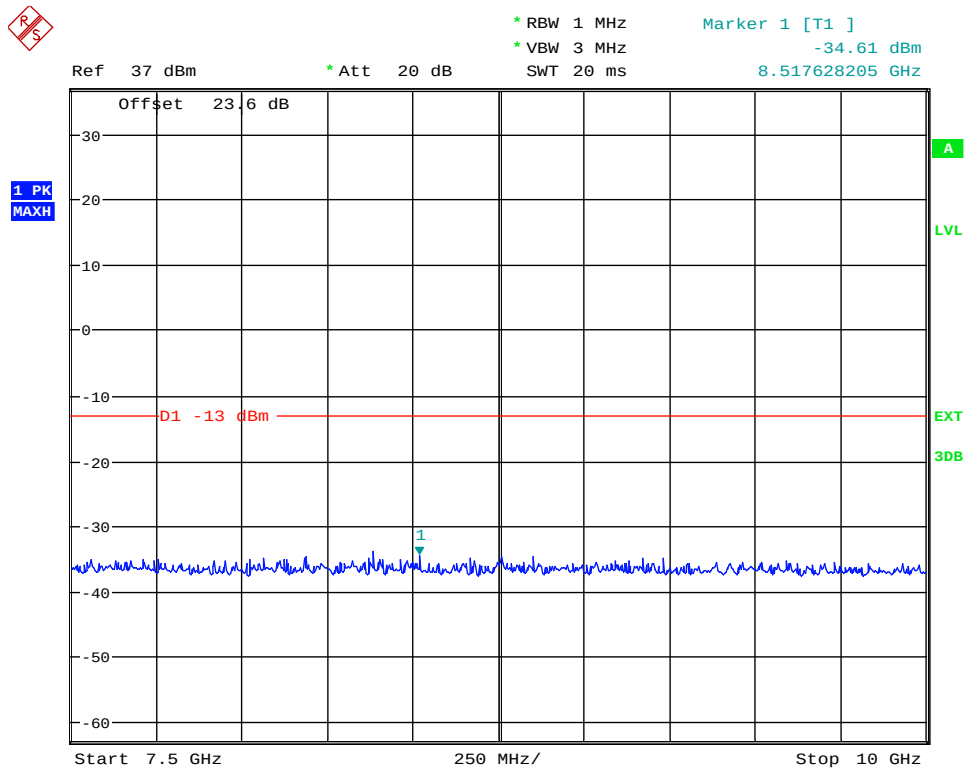
Date: 11.OCT.2013 19:11:02

(Plot 4.7.2 A2: Channel 190: 836.60MHz @ Traffic @ GPRS850)



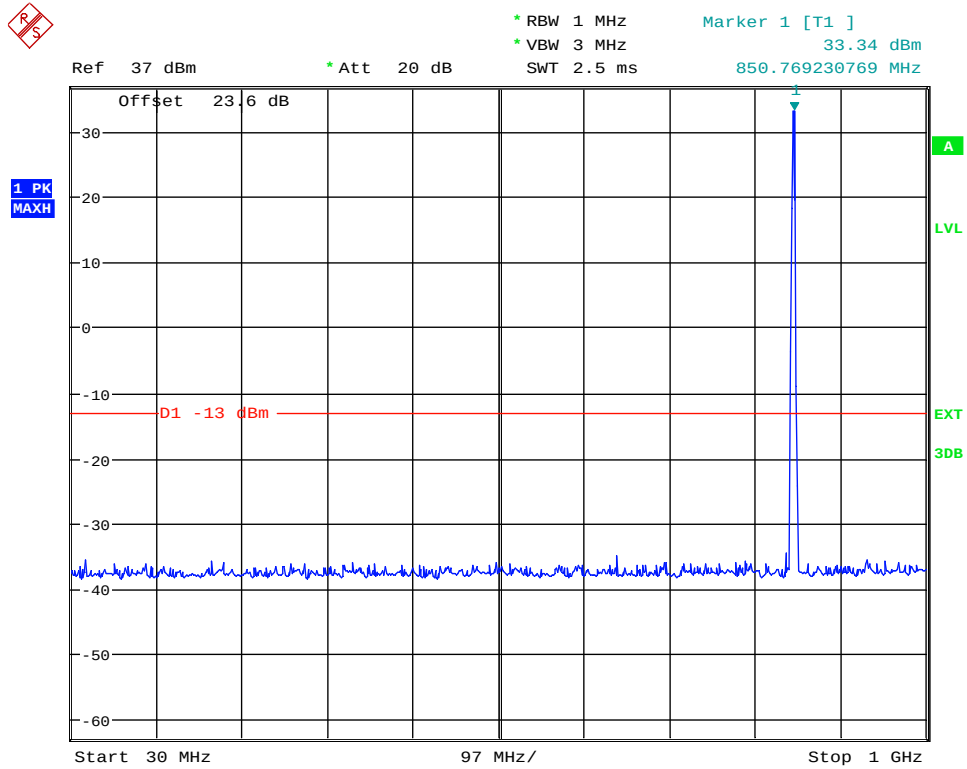
Date: 11.OCT.2013 19:11:14

(Plot 4.7.2 A3: Channel 190: 836.60MHz @ Traffic @ GPRS850)



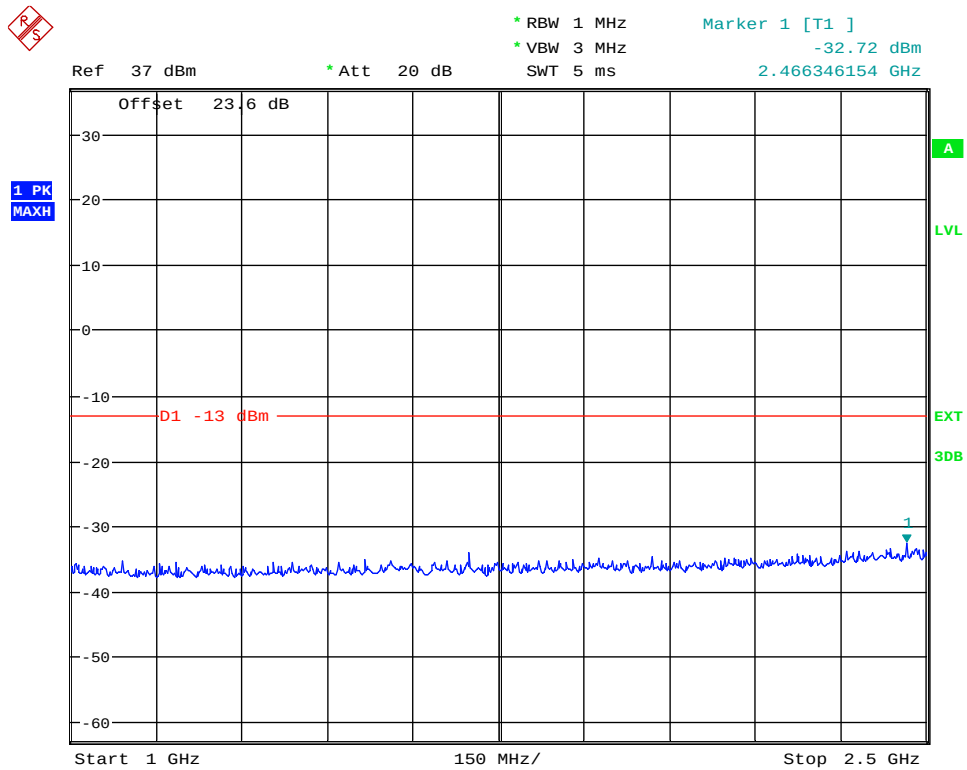
Date: 11.OCT.2013 19:11:27

(Plot 4.7.2 A4: Channel 190: 836.60MHz @ Traffic @ GPRS850)



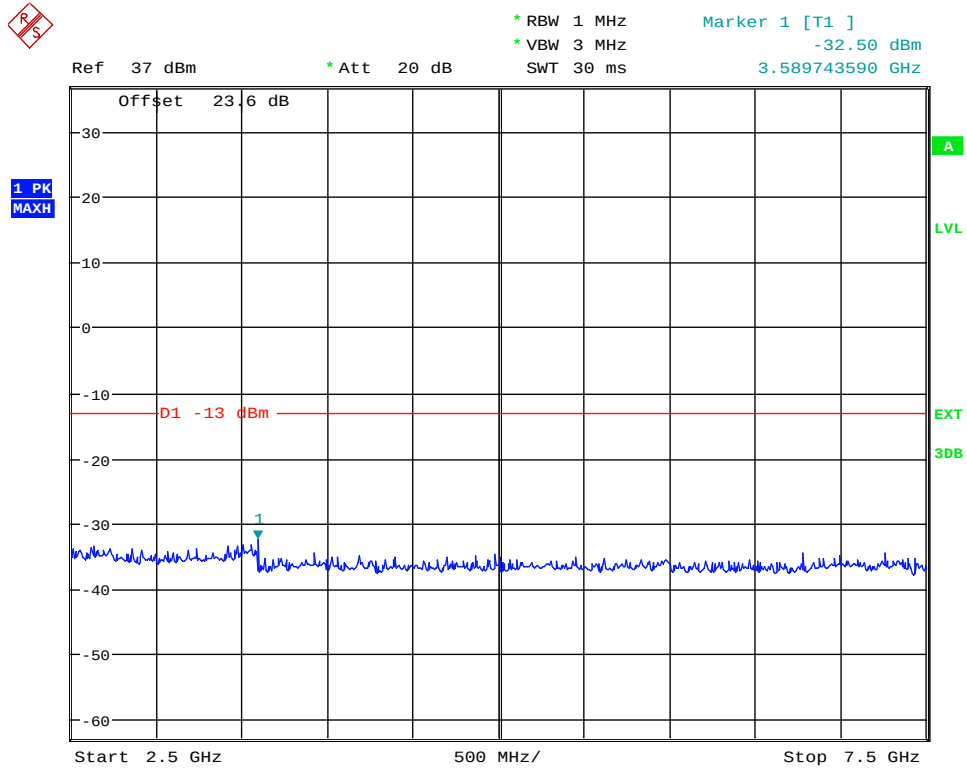
Date: 11.OCT.2013 19:12:07

(Plot 4.7.3 A1: Channel 251: 848.80MHz @ Traffic @ GPRS850)



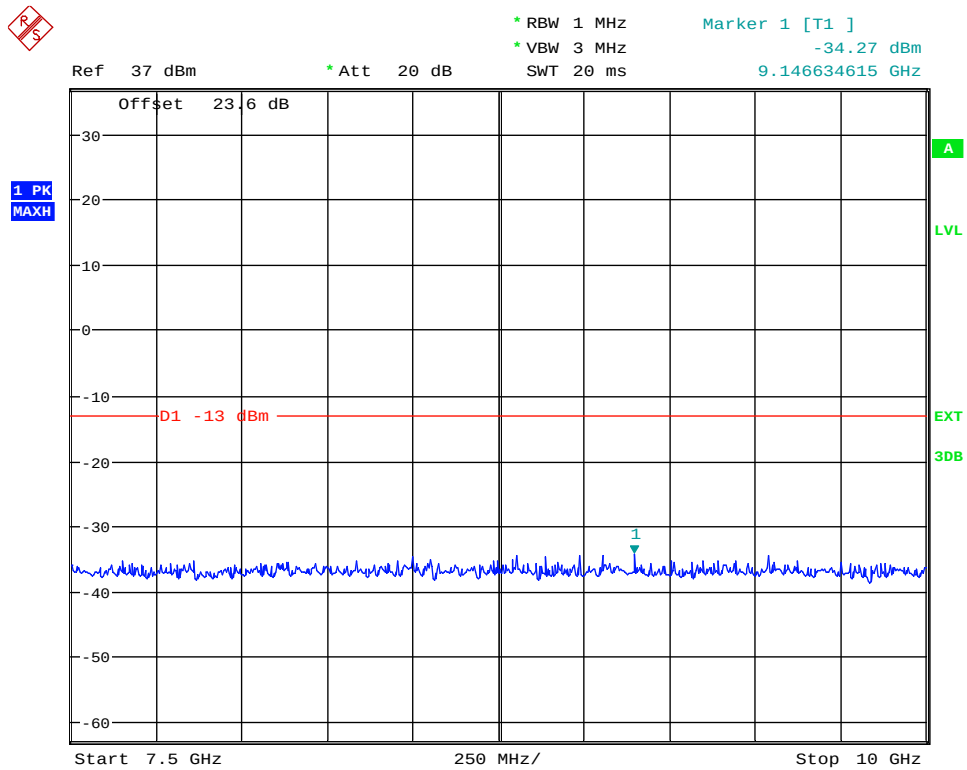
Date: 11.OCT.2013 19:12:35

(Plot 4.7.3 A2: Channel 251: 848.80MHz @ Traffic @ GPRS850)



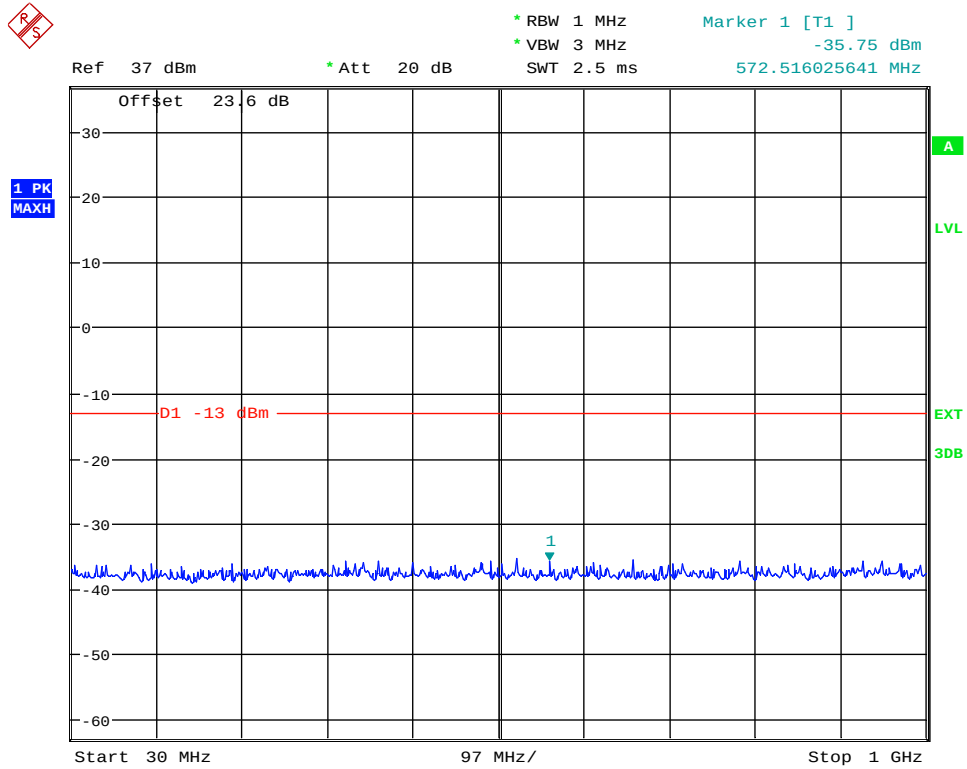
Date: 11.OCT.2013 19:12:53

(Plot 4.7.3 A3: Channel 251: 848.80MHz @ Traffic @ GPRS850)



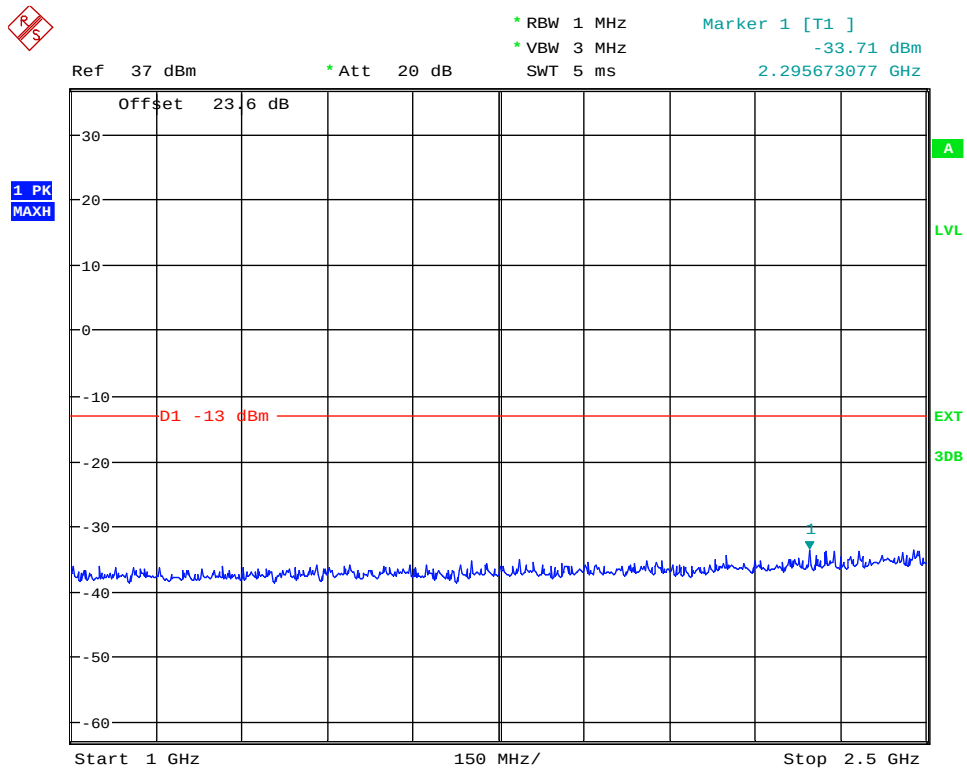
Date: 11.OCT.2013 19:13:04

(Plot 4.7.3 A4: Channel 251: 848.80MHz @ Traffic @ GPRS850)



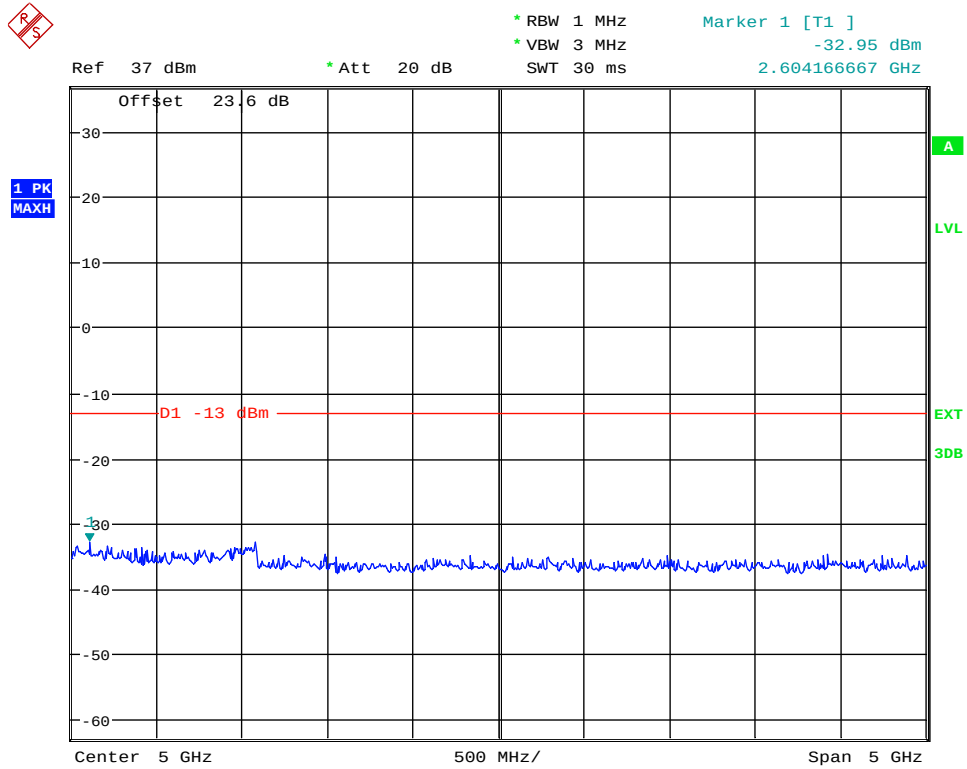
Date: 11.OCT.2013 19:06:03

(Plot 4.7.4 A1: Idle @ GPRS850)



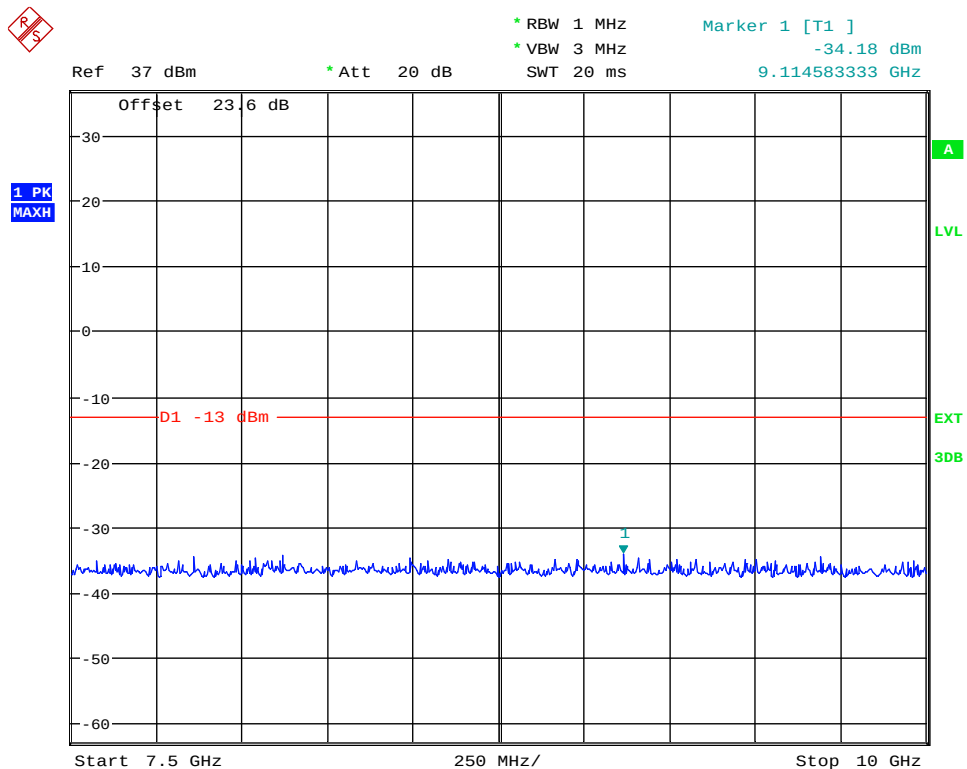
Date: 11.OCT.2013 19:07:34

(Plot 4.7.4 A2: Idle @ GPRS850)



Date: 11.OCT.2013 19:08:25

(Plot 4.7.4 A3: Idle @ GPRS850)



Date: 11.OCT.2013 19:08:35

(Plot 4.7.4 A4: Idle @ GPRS850)



| EGPRS850(8PSK)        |                      |                            |              |             |                    |         |
|-----------------------|----------------------|----------------------------|--------------|-------------|--------------------|---------|
| Channel Number: 128   |                      | Test Frequency: 824.20 MHz |              |             | Test Mode: Traffic |         |
| Start Frequency (MHz) | Stop Frequency (MHz) | Measurement Results        |              | Limit (dBm) | Refer to Plot      | Verdict |
|                       |                      | Frequency (MHz)            | Values (dBm) |             |                    |         |
| 30                    | 1000                 | ***                        | ***          | -13.00      | Plot 4.7.5 A1      | PASS    |
| 1000                  | 2500                 | 1649.04                    | -30.85       | -13.00      | Plot 4.7.5 A2      | PASS    |
| 2500                  | 7500                 | 3541.67                    | -33.64       | -13.00      | Plot 4.7.5 A3      | PASS    |
| 7500                  | 10000                | 9142.63                    | -34.98       | -13.00      | Plot 4.7.5 A4      | PASS    |

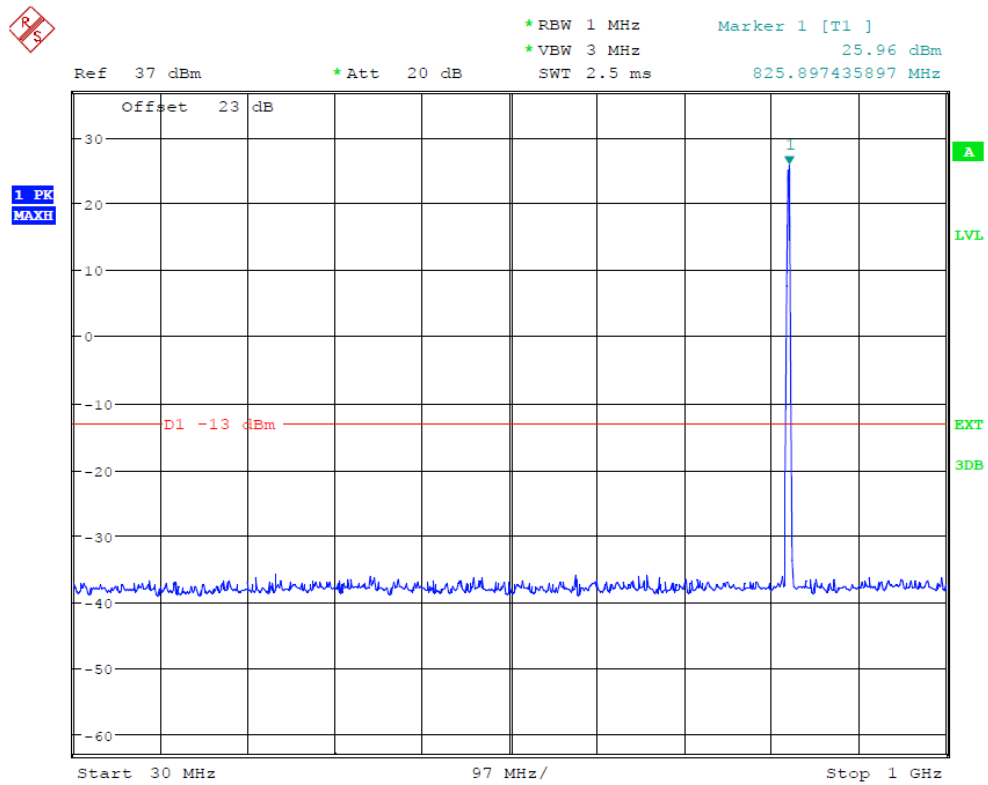
| EGPRS850(8PSK)        |                      |                            |              |             |                    |         |
|-----------------------|----------------------|----------------------------|--------------|-------------|--------------------|---------|
| Channel Number: 190   |                      | Test Frequency: 836.60 MHz |              |             | Test Mode: Traffic |         |
| Start Frequency (MHz) | Stop Frequency (MHz) | Measurement Results        |              | Limit (dBm) | Refer to Plot      | Verdict |
|                       |                      | Frequency (MHz)            | Values (dBm) |             |                    |         |
| 30                    | 1000                 | ***                        | ***          | -13.00      | Plot 4.7.6 A1      | PASS    |
| 1000                  | 2500                 | 1670.77                    | -31.87       | -13.00      | Plot 4.7.6 A2      | PASS    |
| 2500                  | 7500                 | 2548.08                    | -33.98       | -13.00      | Plot 4.7.6 A3      | PASS    |
| 7500                  | 10000                | 8629.81                    | -34.65       | -13.00      | Plot 4.7.6 A4      | PASS    |

| EGPRS850(8PSK)        |                      |                            |              |             |                    |         |
|-----------------------|----------------------|----------------------------|--------------|-------------|--------------------|---------|
| Channel Number: 251   |                      | Test Frequency: 848.80 MHz |              |             | Test Mode: Traffic |         |
| Start Frequency (MHz) | Stop Frequency (MHz) | Measurement Results        |              | Limit (dBm) | Refer to Plot      | Verdict |
|                       |                      | Frequency (MHz)            | Values (dBm) |             |                    |         |
| 30                    | 1000                 | ***                        | ***          | -13.00      | Plot 4.7.7 A1      | PASS    |
| 1000                  | 2500                 | 1697.12                    | -31.01       | -13.00      | Plot 4.7.7 A2      | PASS    |
| 2500                  | 7500                 | 3589.74                    | -33.77       | -13.00      | Plot 4.7.7 A3      | PASS    |
| 7500                  | 10000                | 9475.16                    | -33.84       | -13.00      | Plot 4.7.7 A4      | PASS    |

| EGPRS850(8PSK)        |                      |                     |              |             |               |         |
|-----------------------|----------------------|---------------------|--------------|-------------|---------------|---------|
| Test Mode: Idle       |                      |                     |              |             |               |         |
| Start Frequency (MHz) | Stop Frequency (MHz) | Measurement Results |              | Limit (dBm) | Refer to Plot | Verdict |
|                       |                      | Frequency (MHz)     | Values (dBm) |             |               |         |
| 30                    | 1000                 | 608.27              | -35.22       | -13.00      | Plot 4.7.8 A1 | PASS    |
| 1000                  | 2500                 | 2384.62             | -33.93       | -13.00      | Plot 4.7.8 A2 | PASS    |
| 2500                  | 7500                 | 2660.26             | -32.68       | -13.00      | Plot 4.7.8 A3 | PASS    |
| 7500                  | 10000                | 7732.37             | -35.17       | -13.00      | Plot 4.7.8 A4 | PASS    |

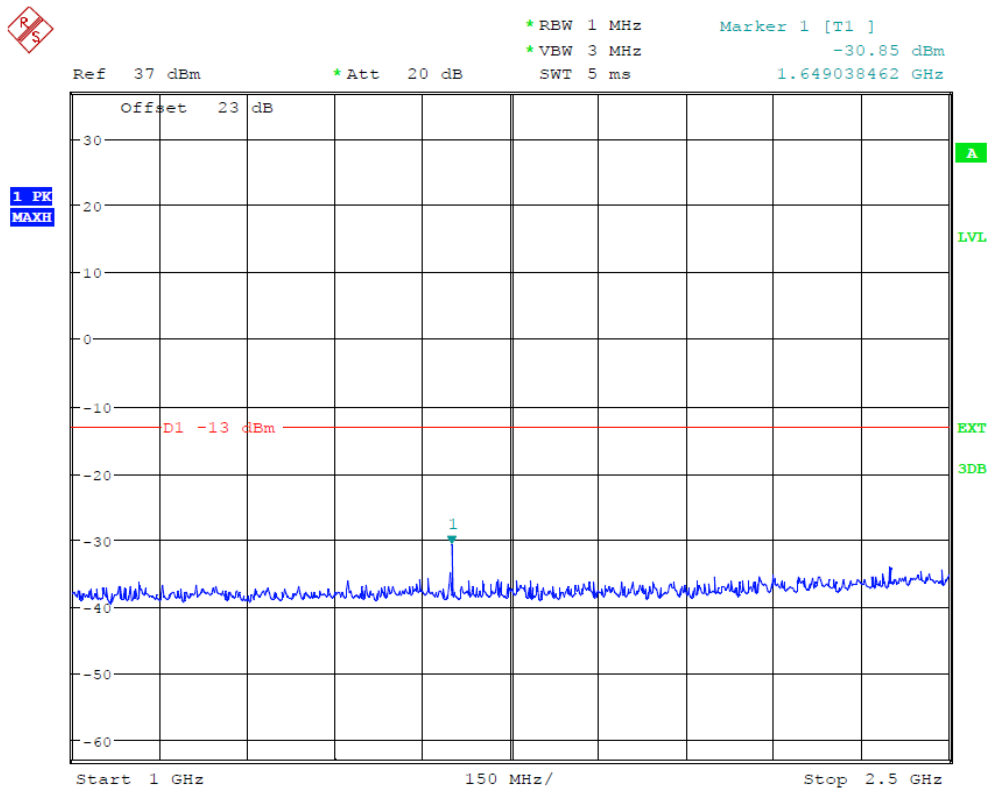
Note: 1. In general, the worse case attenuation requirement shown above was applied.

2. \*\*\* means that the emission level is too low to be measured or at least 20 dB down than the limit.



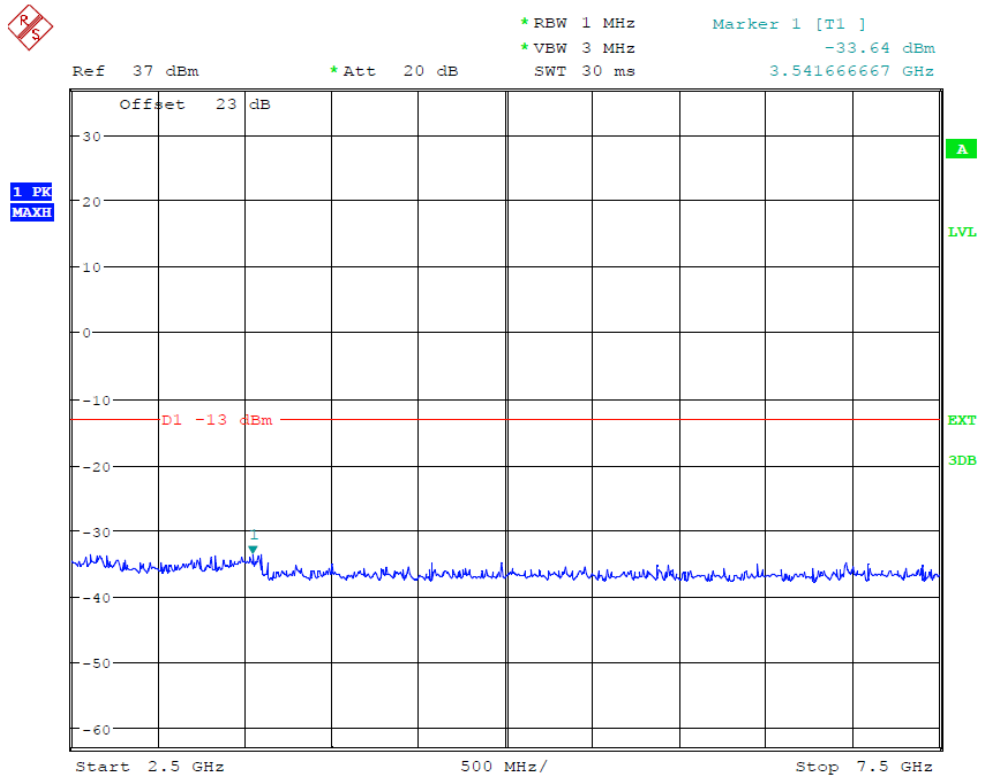
Date: 12.OCT.2013 14:41:55

(Plot 4.7.5 A1: Channel 128: 824.20MHz @ Traffic @ EGPRS850)



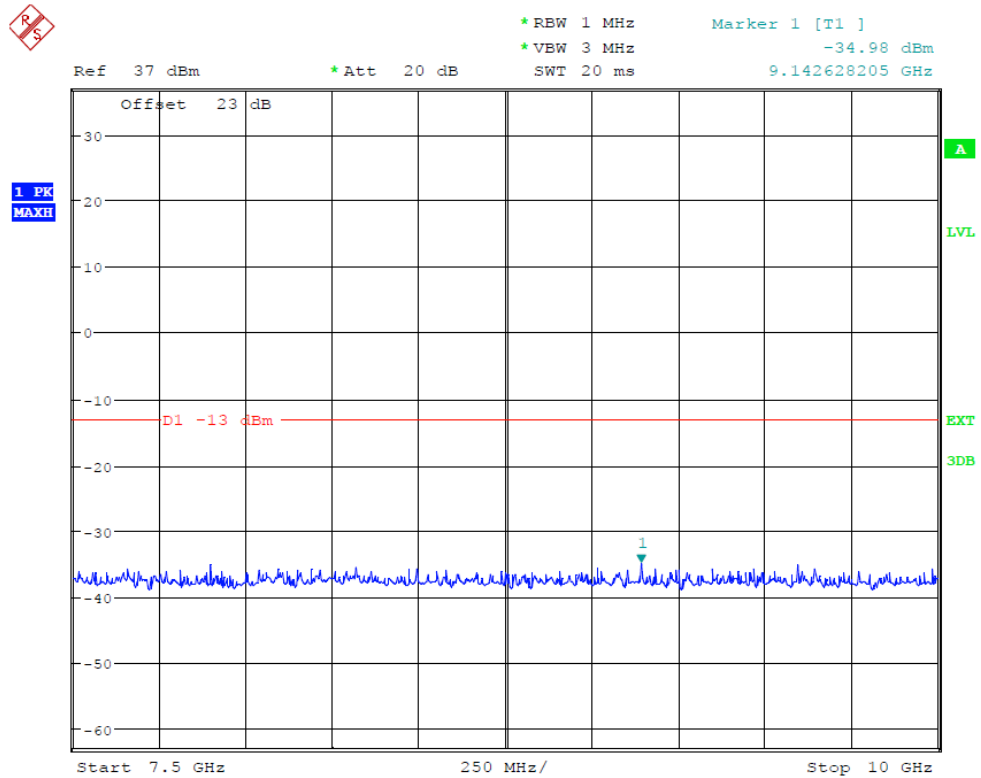
Date: 12.OCT.2013 14:42:08

(Plot 4.7.5 A2: Channel 128: 824.20MHz @ Traffic @ EGPRS850)



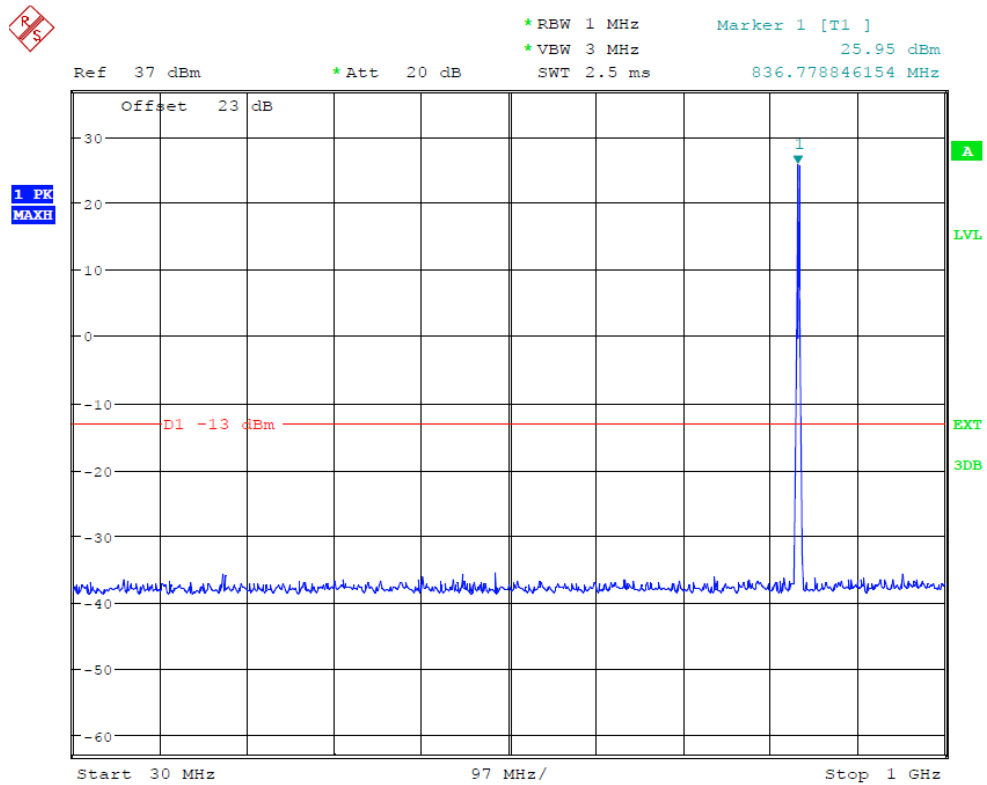
Date: 12.OCT.2013 14:42:33

(Plot 4.7.5 A3: Channel 128: 824.20MHz @ Traffic @ EGPRS850)



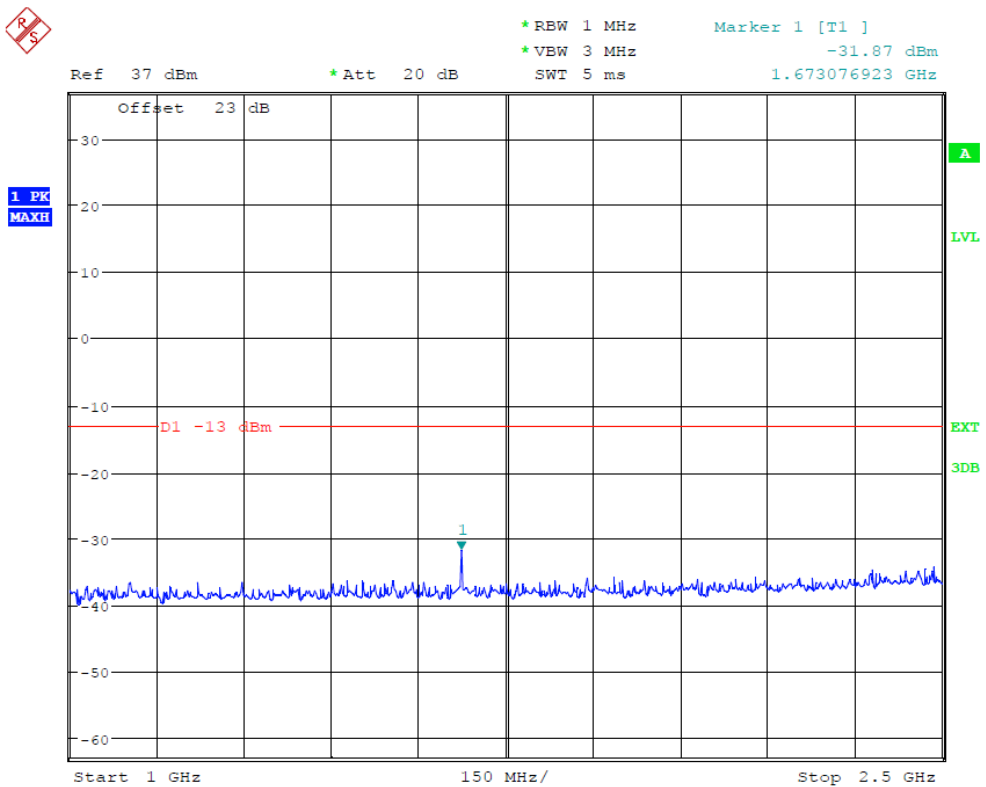
Date: 12.OCT.2013 14:42:43

(Plot 4.7.5 A4: Channel 128: 824.20MHz @ Traffic @ EGPRS850)



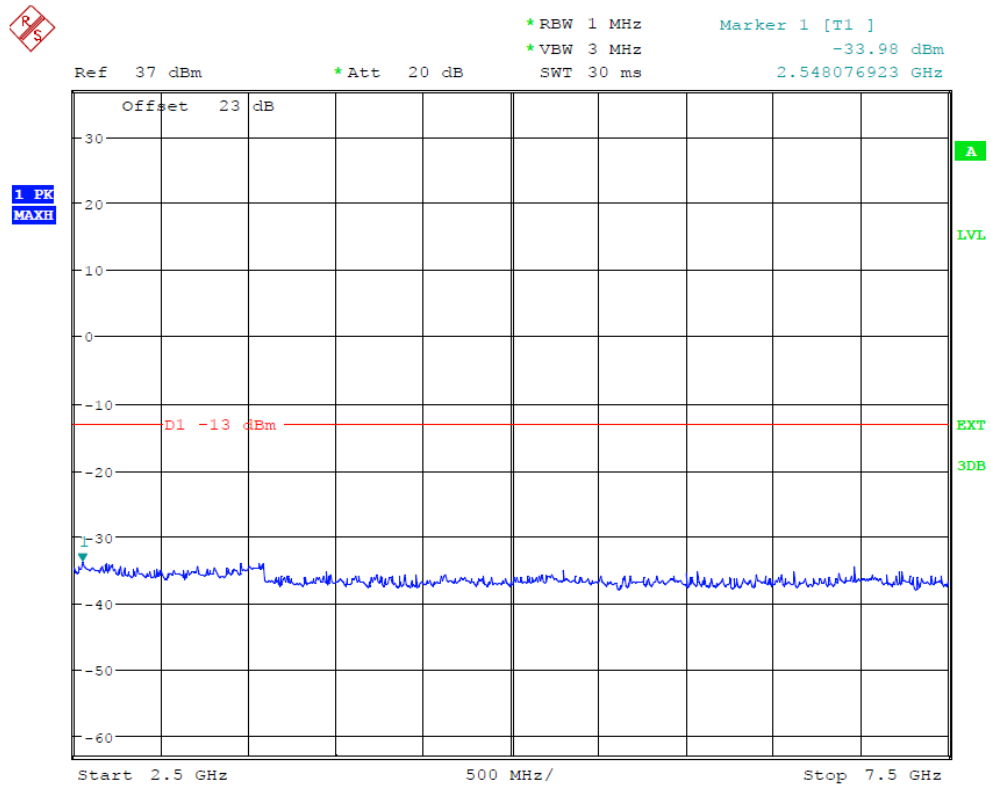
Date: 12.OCT.2013 14:43:17

(Plot 4.7.6 A1: Channel 190: 836.60MHz @ Traffic @ EGPRS850)



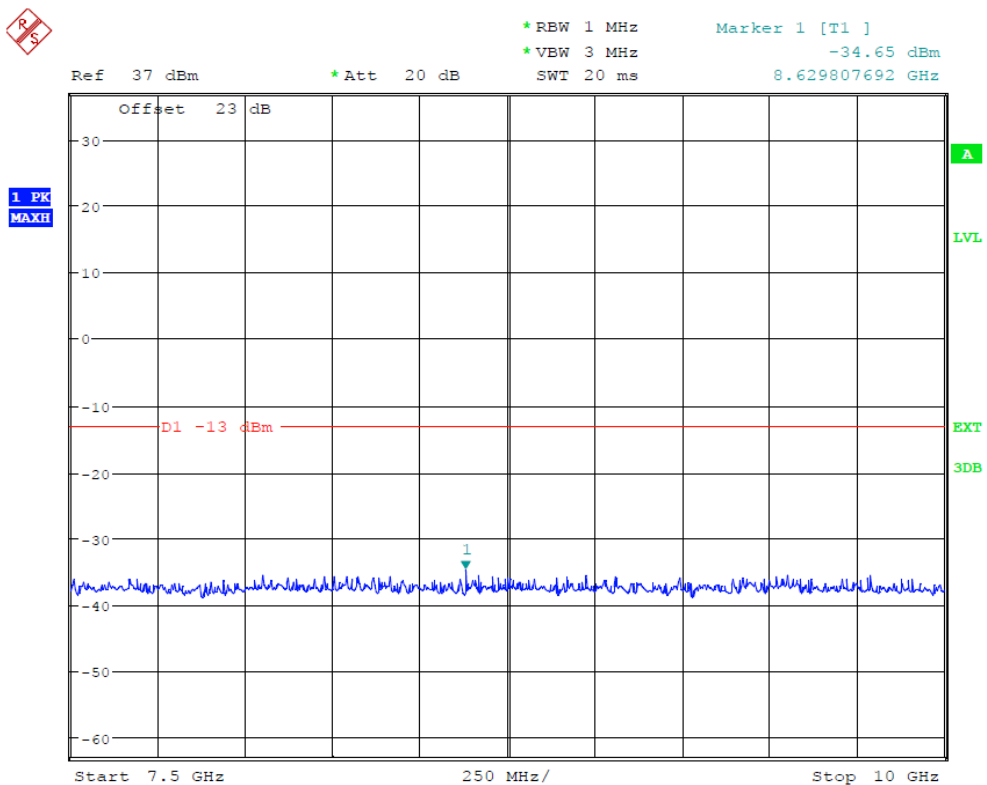
Date: 12.OCT.2013 14:43:28

(Plot 4.7.6 A2: Channel 190: 836.60MHz @ Traffic @ EGPRS850)



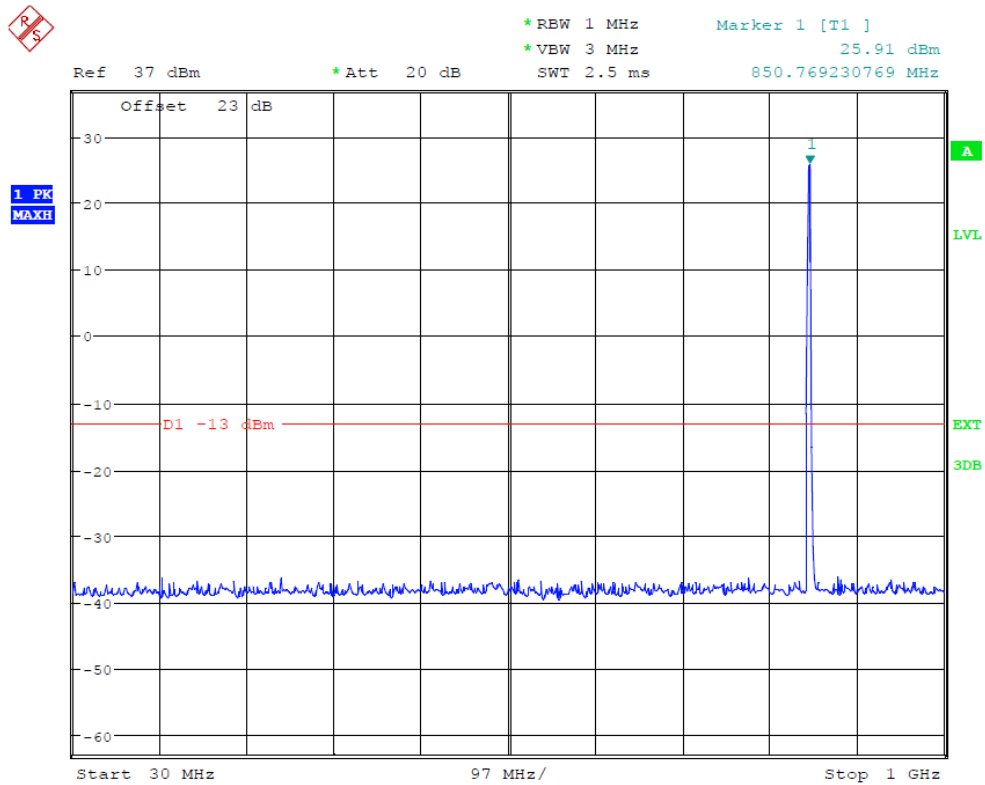
Date: 12.OCT.2013 14:43:51

(Plot 4.7.6 A3: Channel 190: 836.60MHz @ Traffic @ EGPRS850)



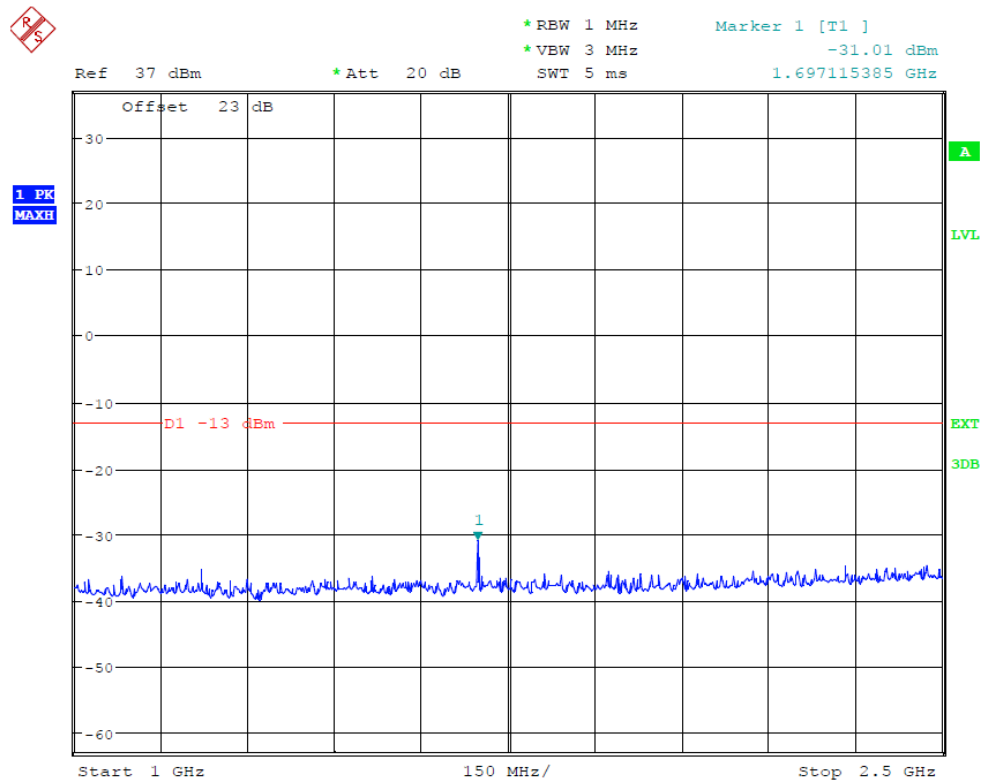
Date: 12.OCT.2013 14:44:02

(Plot 4.7.6 A4: Channel 190: 836.60MHz @ Traffic @ EGPRS850)



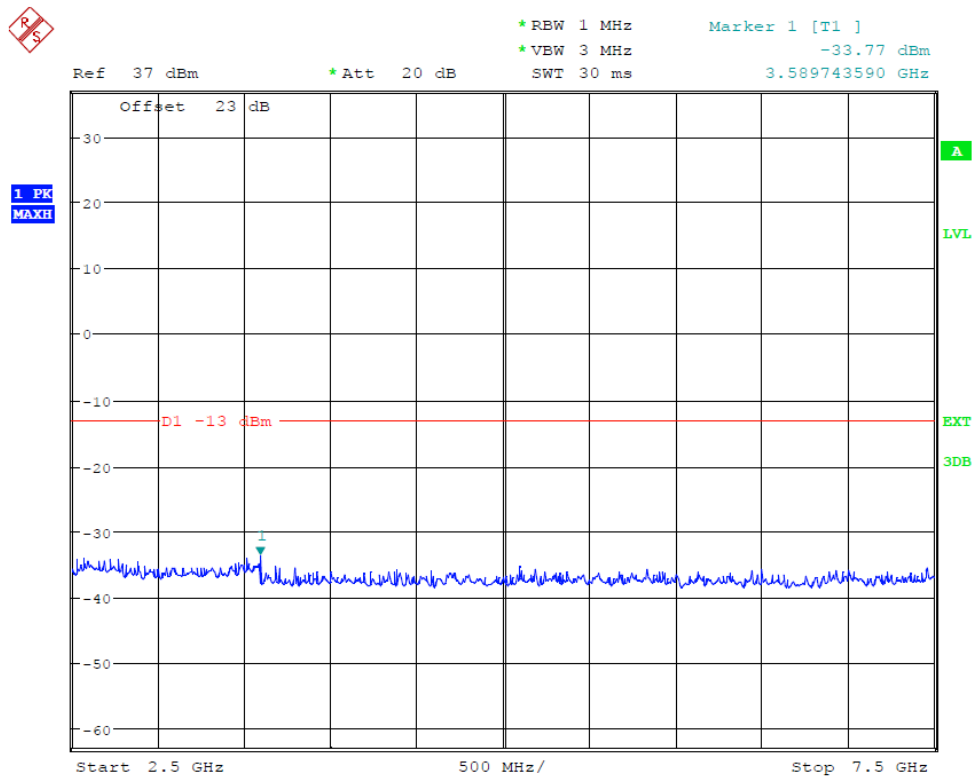
Date: 12.OCT.2013 14:44:25

(Plot 4.7.7 A1: Channel 251: 848.80MHz @ Traffic @ EGPRS850)



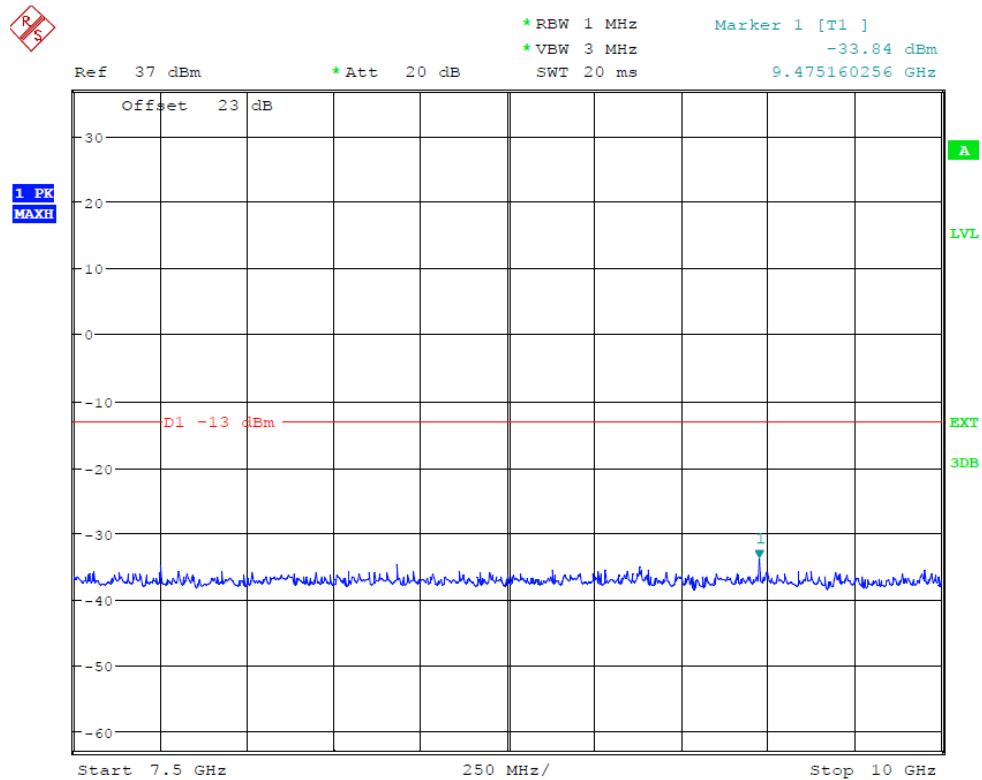
Date: 12.OCT.2013 14:44:36

(Plot 4.7.7 A2: Channel 251: 848.80MHz @ Traffic @ EGPRS850)



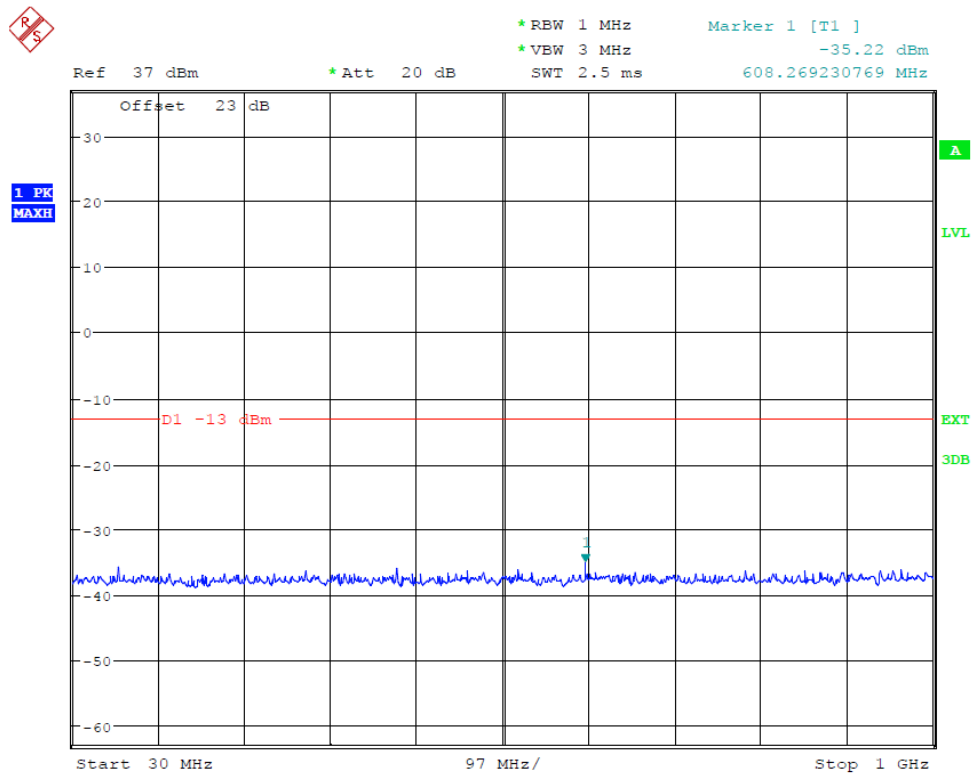
Date: 12.OCT.2013 14:45:00

(Plot 4.7.7 A3: Channel 251: 848.80MHz @ Traffic @ EGPRS850)



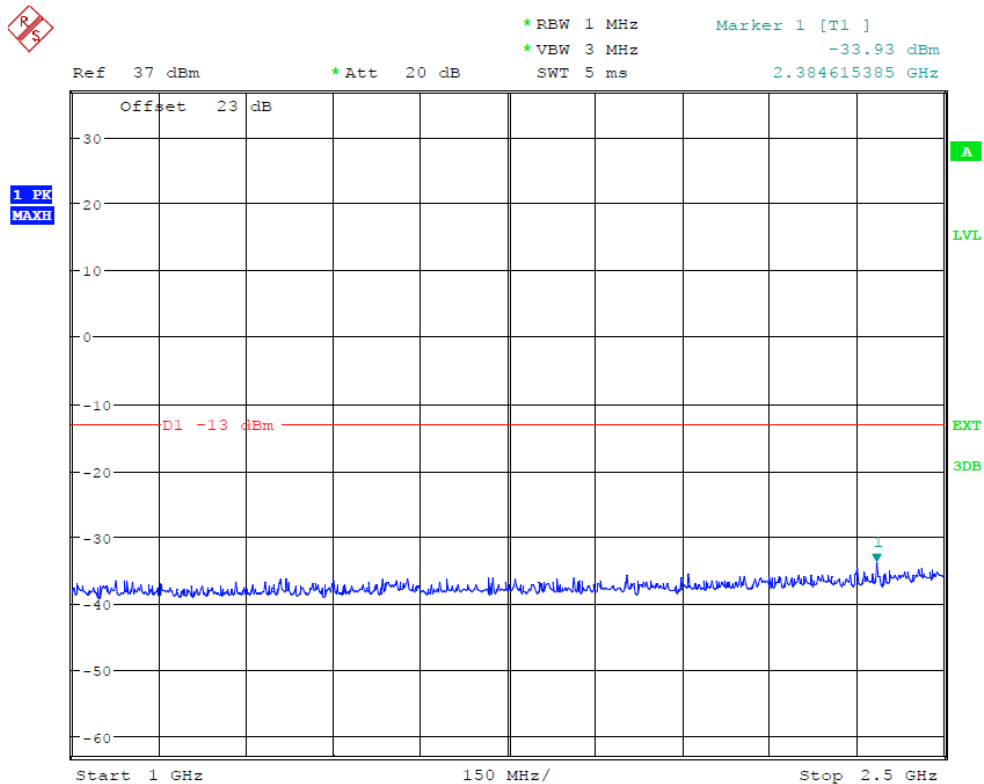
Date: 12.OCT.2013 14:45:19

(Plot 4.7.7 A4: Channel 251: 848.80MHz @ Traffic @ EGPRS850)



Date: 12.OCT.2013 14:45:59

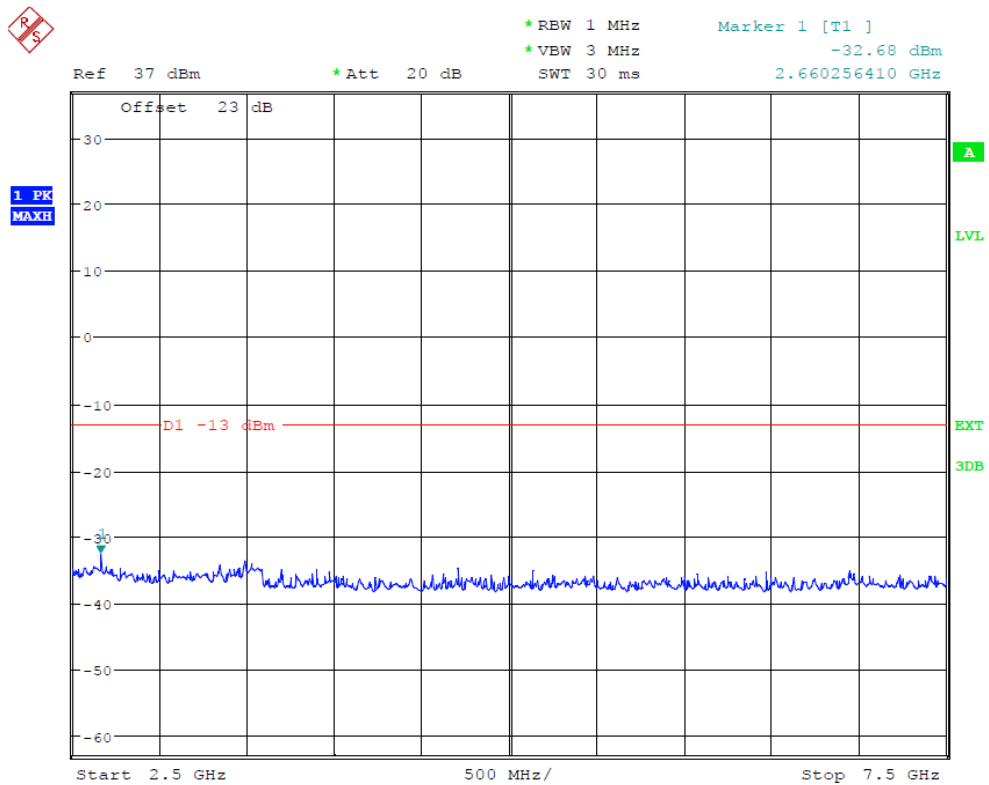
(Plot 4.7.8 A1: Idle @ EGPRS850)



Date: 12.OCT.2013 14:46:13

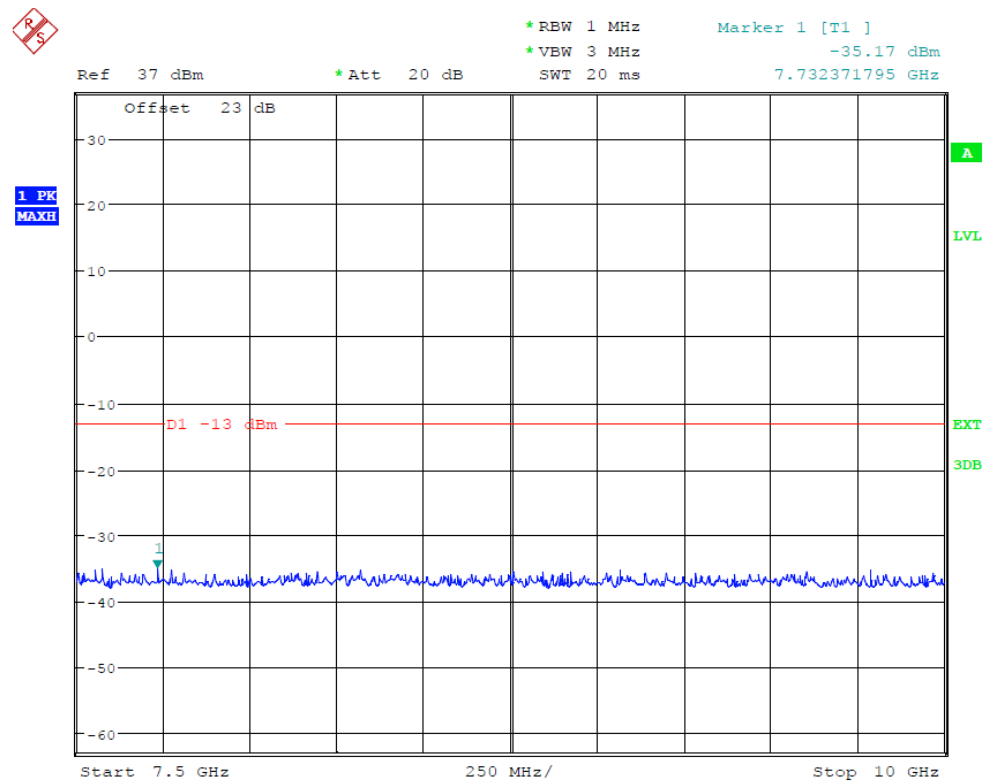
(Plot 4.7.8 A2: Idle @ EGPRS850)





Date: 12.OCT.2013 14:46:27

(Plot 4.7.8 A3: Idle @ EGPRS850)



Date: 12.OCT.2013 14:46:43

(Plot 4.7.8 A4: Idle @ EGPRS850)

| GPRS1900(GMSK)        |                      |                             |              |             |                    |         |
|-----------------------|----------------------|-----------------------------|--------------|-------------|--------------------|---------|
| Channel Number: 512   |                      | Test Frequency: 1850.20 MHz |              |             | Test Mode: Traffic |         |
| Start Frequency (MHz) | Stop Frequency (MHz) | Measurement Results         |              | Limit (dBm) | Refer to Plot      | Verdict |
|                       |                      | Frequency (MHz)             | Values (dBm) |             |                    |         |
| 30                    | 1000                 | 934.71                      | -31.14       | -13.00      | Plot 4.7.9 A1      | PASS    |
| 1000                  | 2500                 | ***                         | ***          | -13.00      | Plot 4.7.9 A2      | PASS    |
| 2500                  | 7500                 | 3525.24                     | -27.88       | -13.00      | Plot 4.7.9 A3      | PASS    |
| 7500                  | 10000                | 9439.10                     | -29.34       | -13.00      | Plot 4.7.9 A4      | PASS    |
| 10000                 | 15000                | 13602.77                    | -29.22       | -13.00      | Plot 4.7.9 A5      | PASS    |
| 15000                 | 20000                | 18229.16                    | -30.45       | -13.00      | Plot 4.7.9 A6      | PASS    |

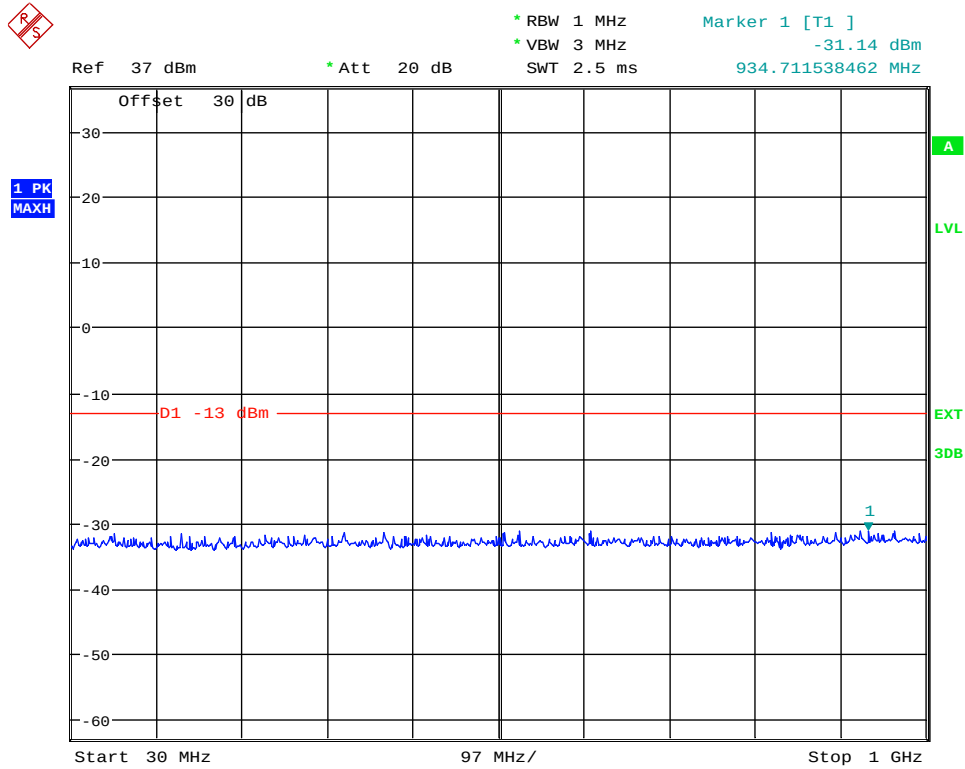
| GPRS1900(GMSK)        |                      |                             |              |             |                    |         |
|-----------------------|----------------------|-----------------------------|--------------|-------------|--------------------|---------|
| Channel Number: 661   |                      | Test Frequency: 1880.00 MHz |              |             | Test Mode: Traffic |         |
| Start Frequency (MHz) | Stop Frequency (MHz) | Measurement Results         |              | Limit (dBm) | Refer to Plot      | Verdict |
|                       |                      | Frequency (MHz)             | Values (dBm) |             |                    |         |
| 30                    | 1000                 | 420.18                      | -33.52       | -13.00      | Plot 4.7.10 A1     | PASS    |
| 1000                  | 2500                 | ***                         | ***          | -13.00      | Plot 4.7.10 A2     | PASS    |
| 2500                  | 7500                 | 3421.47                     | -27.86       | -13.00      | Plot 4.7.10 A3     | PASS    |
| 7500                  | 10000                | 8076.92                     | -29.04       | -13.00      | Plot 4.7.10 A4     | PASS    |
| 10000                 | 15000                | 111158.34                   | -29.03       | -13.00      | Plot 4.7.10 A5     | PASS    |
| 15000                 | 20000                | 18123.01                    | -27.94       | -13.00      | Plot 4.7.10 A6     | PASS    |

| GPRS1900(GMSK)        |                      |                             |              |             |                    |         |
|-----------------------|----------------------|-----------------------------|--------------|-------------|--------------------|---------|
| Channel Number: 810   |                      | Test Frequency: 1909.80 MHz |              |             | Test Mode: Traffic |         |
| Start Frequency (MHz) | Stop Frequency (MHz) | Measurement Results         |              | Limit (dBm) | Refer to Plot      | Verdict |
|                       |                      | Frequency (MHz)             | Values (dBm) |             |                    |         |
| 30                    | 1000                 | 914.50                      | -30.33       | -13.00      | Plot 4.7.11 A1     | PASS    |
| 1000                  | 2500                 | ***                         | ***          | -13.00      | Plot 4.7.11 A2     | PASS    |
| 2500                  | 7500                 | 2532.08                     | -27.98       | -13.00      | Plot 4.7.11 A3     | PASS    |
| 7500                  | 10000                | 7684.29                     | -29.18       | -13.00      | Plot 4.7.11 A4     | PASS    |
| 10000                 | 15000                | 14294.87                    | -29.42       | -13.00      | Plot 4.7.11 A5     | PASS    |
| 15000                 | 20000                | 19078.52                    | -28.77       | -13.00      | Plot 4.7.11 A6     | PASS    |

| GPRS1900(GMSK)        |                      |                     |              |             |                |         |
|-----------------------|----------------------|---------------------|--------------|-------------|----------------|---------|
| Test Mode: Idle       |                      |                     |              |             |                |         |
| Start Frequency (MHz) | Stop Frequency (MHz) | Measurement Results |              | Limit (dBm) | Refer to Plot  | Verdict |
|                       |                      | Frequency (MHz)     | Values (dBm) |             |                |         |
| 30                    | 1000                 | 953.37              | -30.72       | -13.00      | Plot 4.7.12 A1 | PASS    |
| 1000                  | 2500                 | 2257.21             | -28.92       | -13.00      | Plot 4.7.12 A2 | PASS    |
| 2500                  | 7500                 | 2716.34             | -28.04       | -13.00      | Plot 4.7.12 A3 | PASS    |
| 7500                  | 10000                | 9170.67             | -29.30       | -13.00      | Plot 4.7.12 A4 | PASS    |
| 10000                 | 15000                | 10128.26            | -29.20       | -13.00      | Plot 4.7.12 A5 | PASS    |
| 15000                 | 20000                | 19789.67            | -28.29       | -13.00      | Plot 4.7.12 A6 | PASS    |

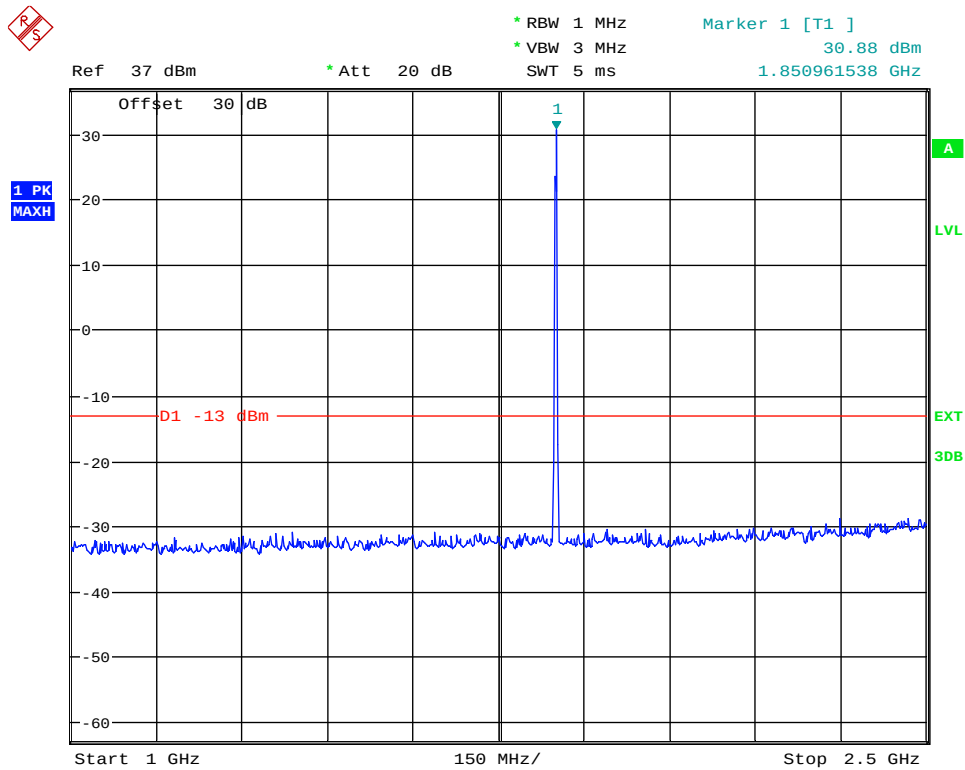
Note: 1. In general, the worse case attenuation requirement shown above was applied.

2. \*\*\* means that the emission level is too low to be measured or at least 20 dB down than the limit.



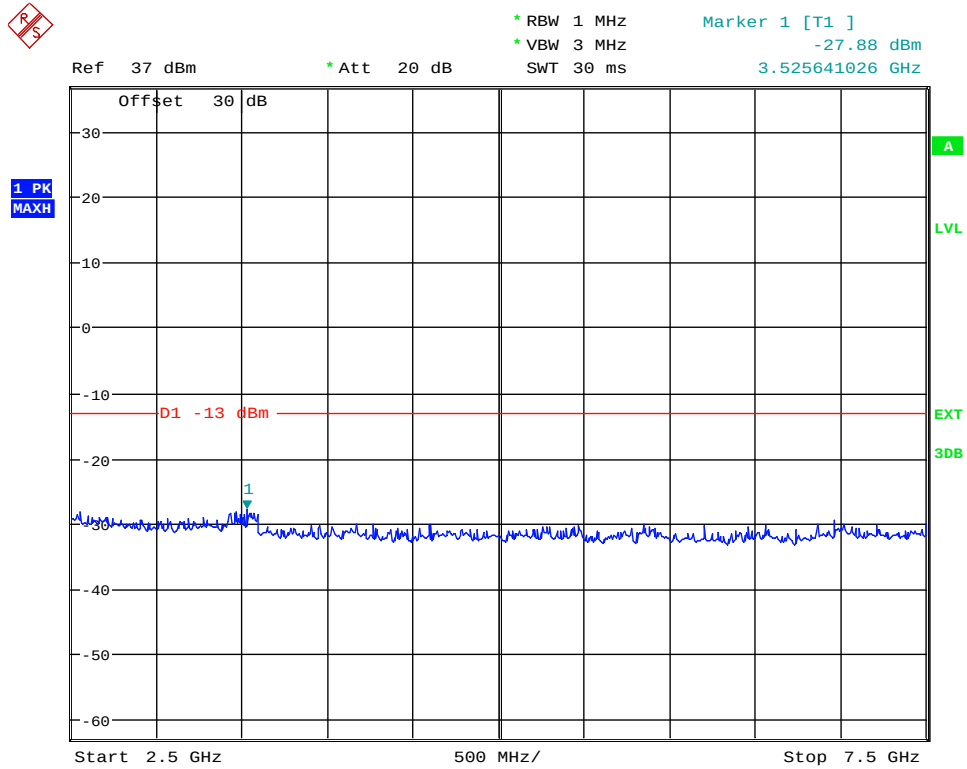
Date: 11.OCT.2013 19:59:21

(Plot 4.7.9 A1: Channel 512: 1850.20MHz @ Traffic @ GPRS1900)



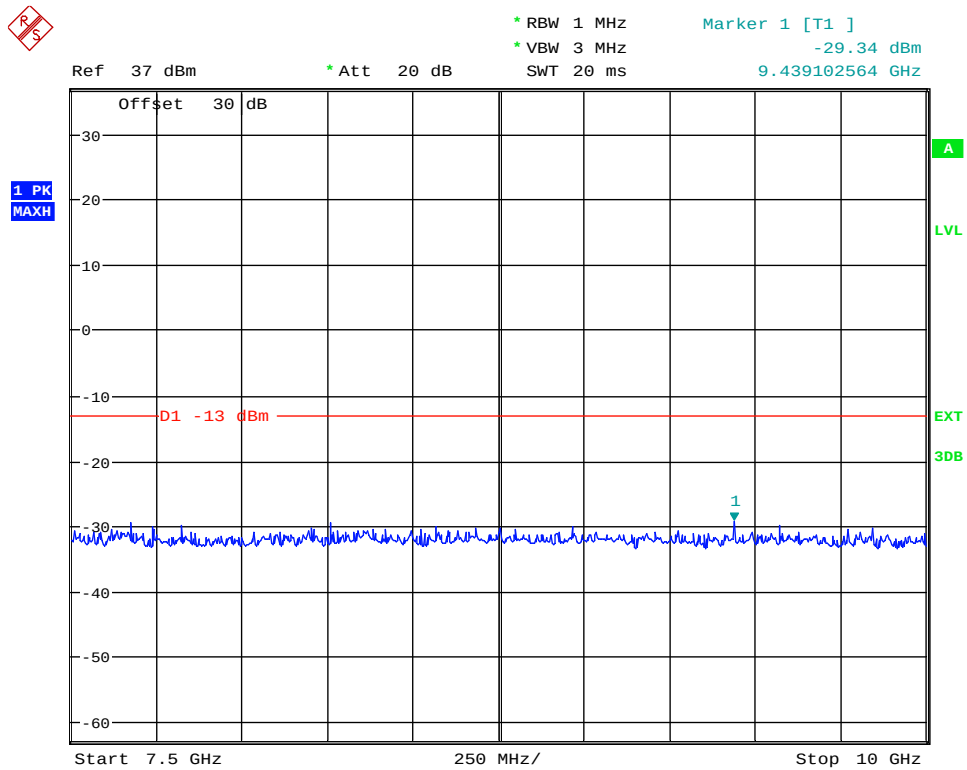
Date: 11.OCT.2013 20:00:44

(Plot 4.7.9 A2: Channel 512: 1850.20MHz @ Traffic @ GPRS1900)



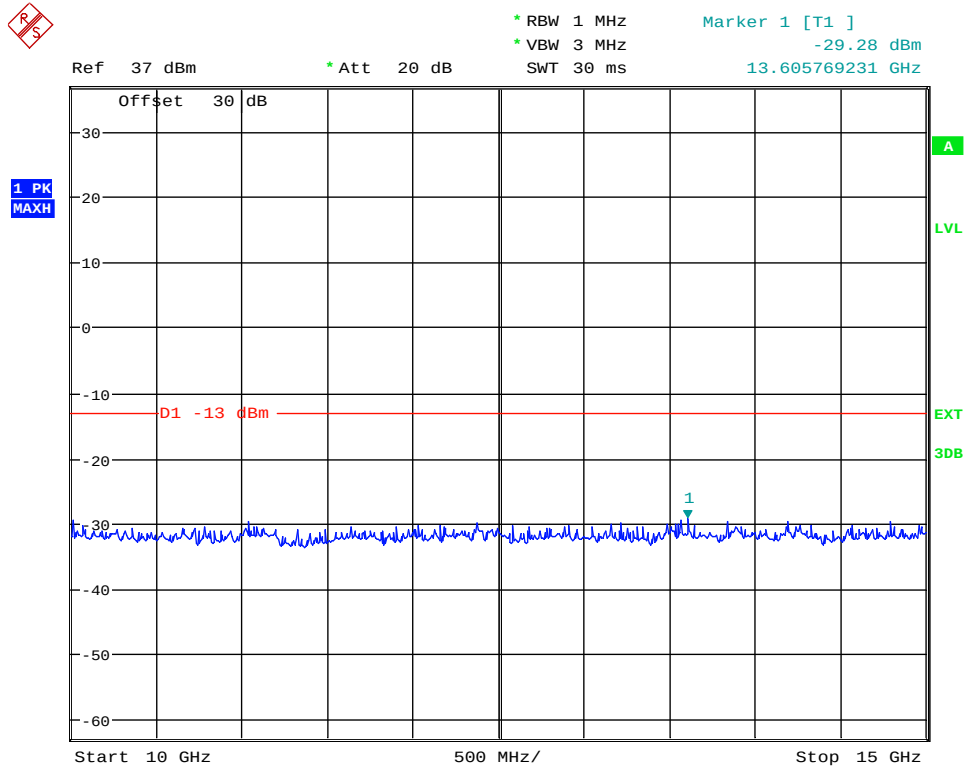
Date: 11.OCT.2013 20:00:58

(Plot 4.7.9 A3: Channel 512: 1850.20MHz @ Traffic @ GPRS1900)



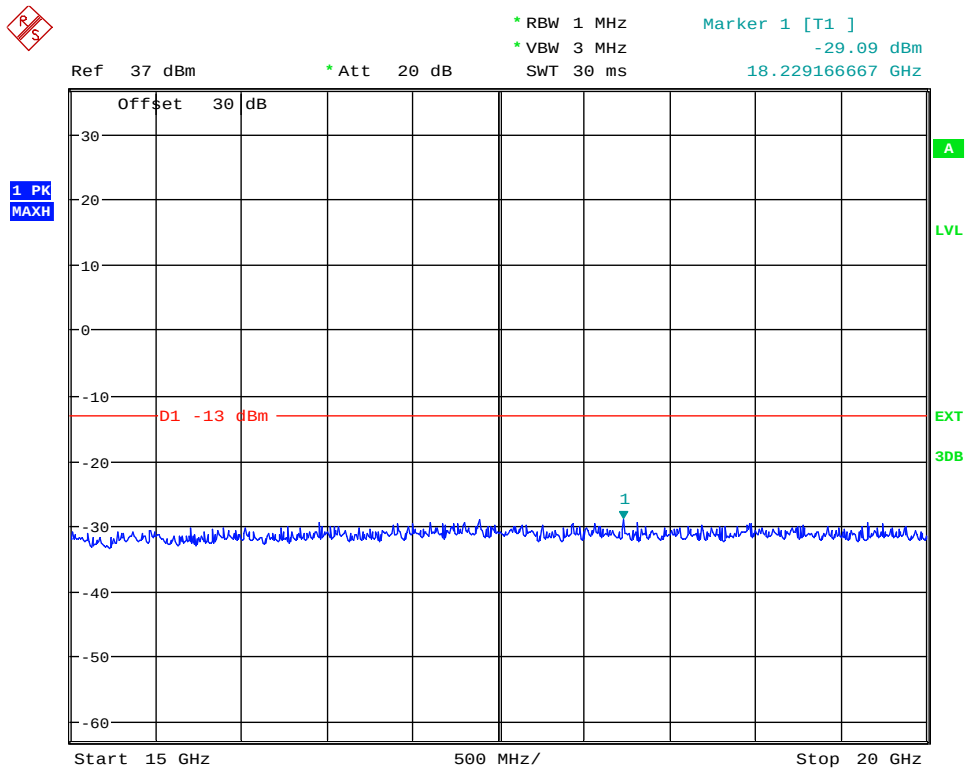
Date: 11.OCT.2013 20:02:06

(Plot 4.7.9 A4: Channel 512: 1850.20MHz @ Traffic @ GPRS1900)



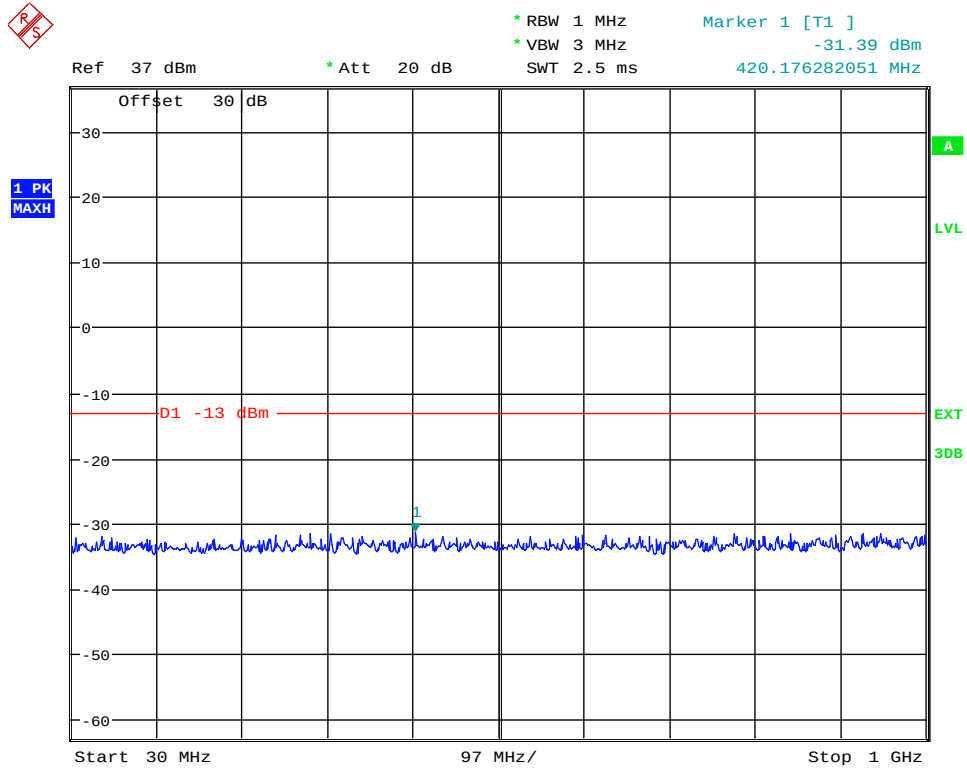
Date: 11.OCT.2013 20:02:20

(Plot 4.7.9 A5: Channel 512: 1850.20MHz @ Traffic @ GPRS1900)



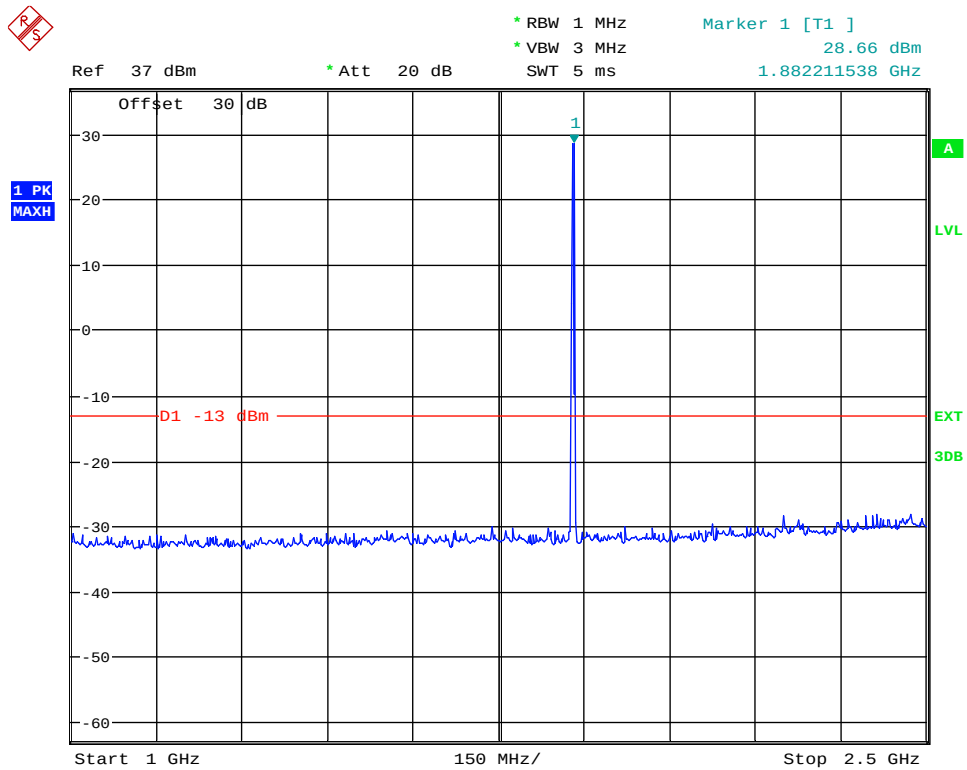
Date: 11.OCT.2013 20:04:01

(Plot 4.7.9 A6: Channel 512: 1850.20MHz @ Traffic @ GPRS1900)



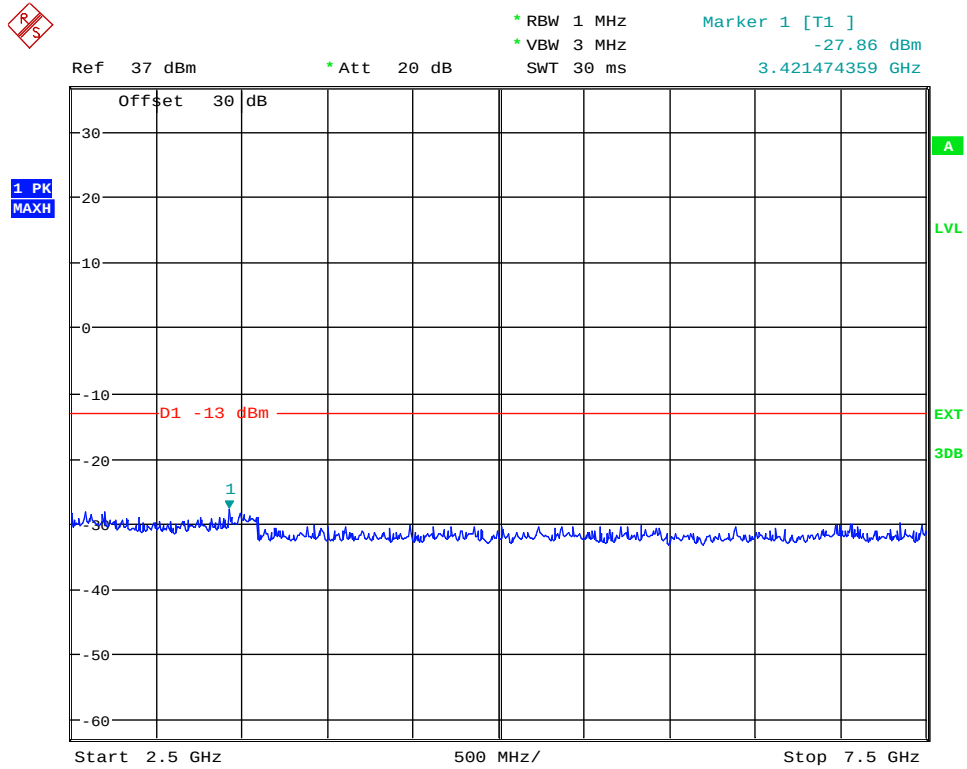
Date: 11.OCT.2013 20:05:03

(Plot 4.7.10 A1: Channel 661: 1880.00MHz @ Traffic @ GPRS1900)



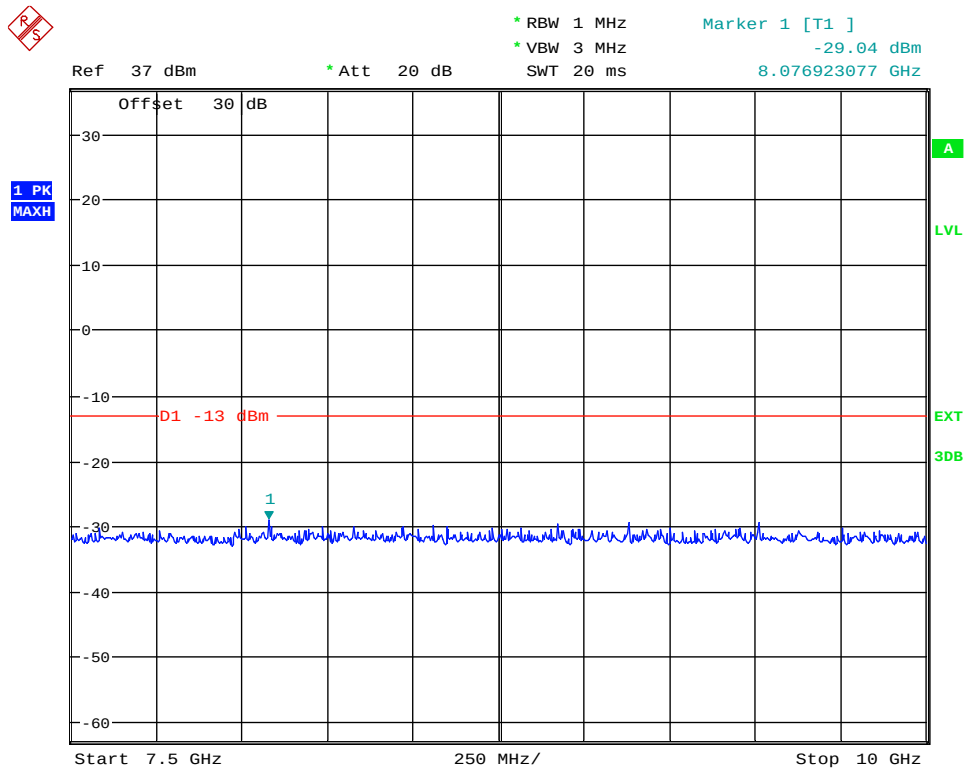
Date: 11.OCT.2013 20:05:27

(Plot 4.7.10 A2: Channel 661: 1880.00MHz @ Traffic @ GPRS1900)



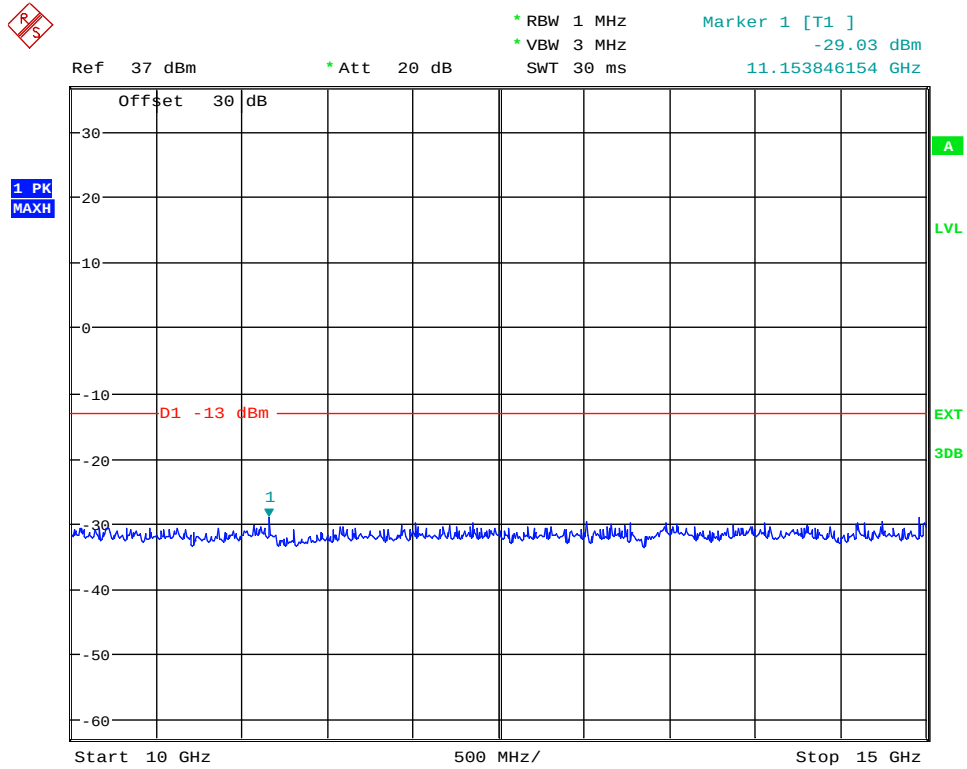
Date: 11.OCT.2013 20:06:41

(Plot 4.7.10 A3: Channel 661: 1880.00MHz @ Traffic @ GPRS1900)



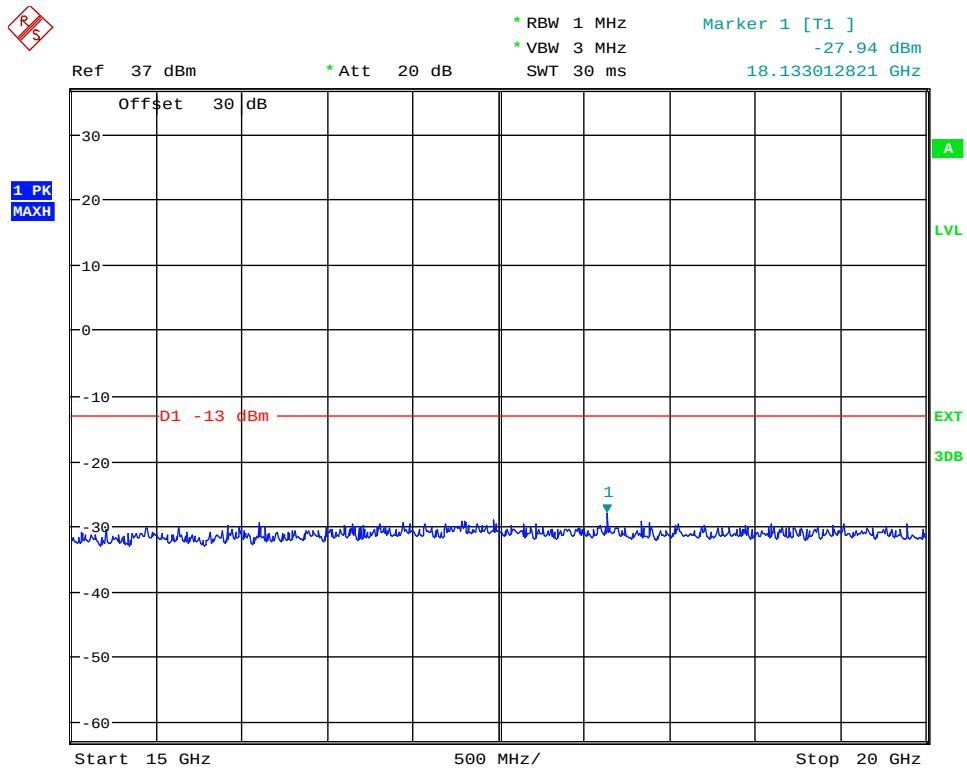
Date: 11.OCT.2013 20:06:52

(Plot 4.7.10 A4: Channel 661: 1880.00MHz @ Traffic @ GPRS1900)



Date: 11.OCT.2013 20:07:44

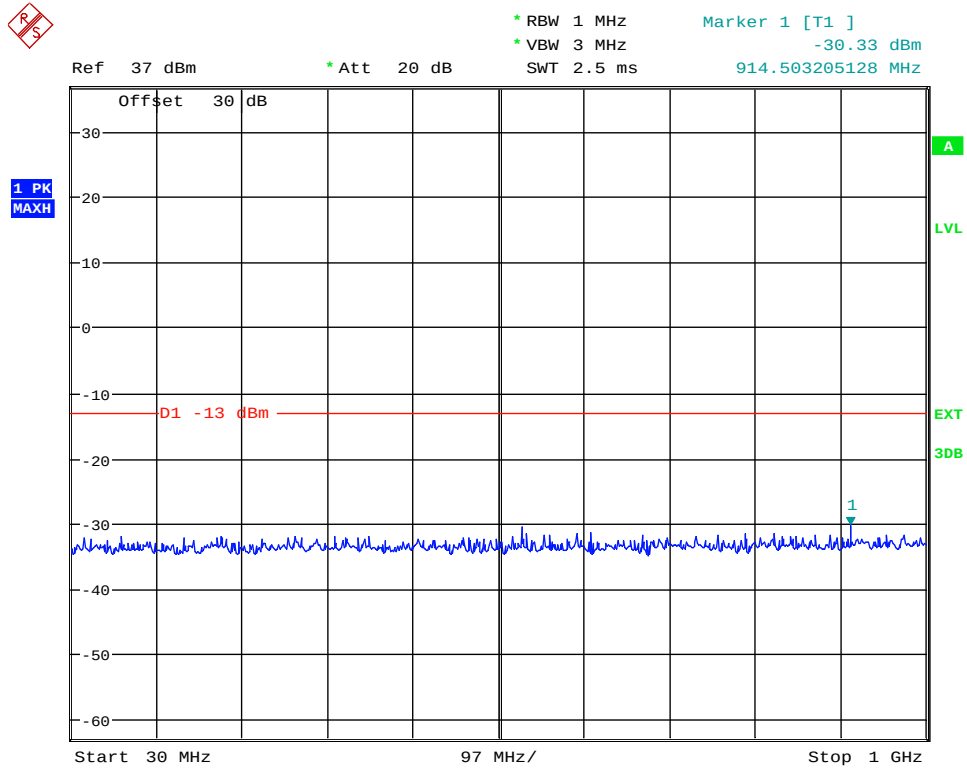
(Plot 4.7.10 A5: Channel 661: 1880.00MHz @ Traffic @ GPRS1900)



Date: 11.OCT.2013 20:07:55

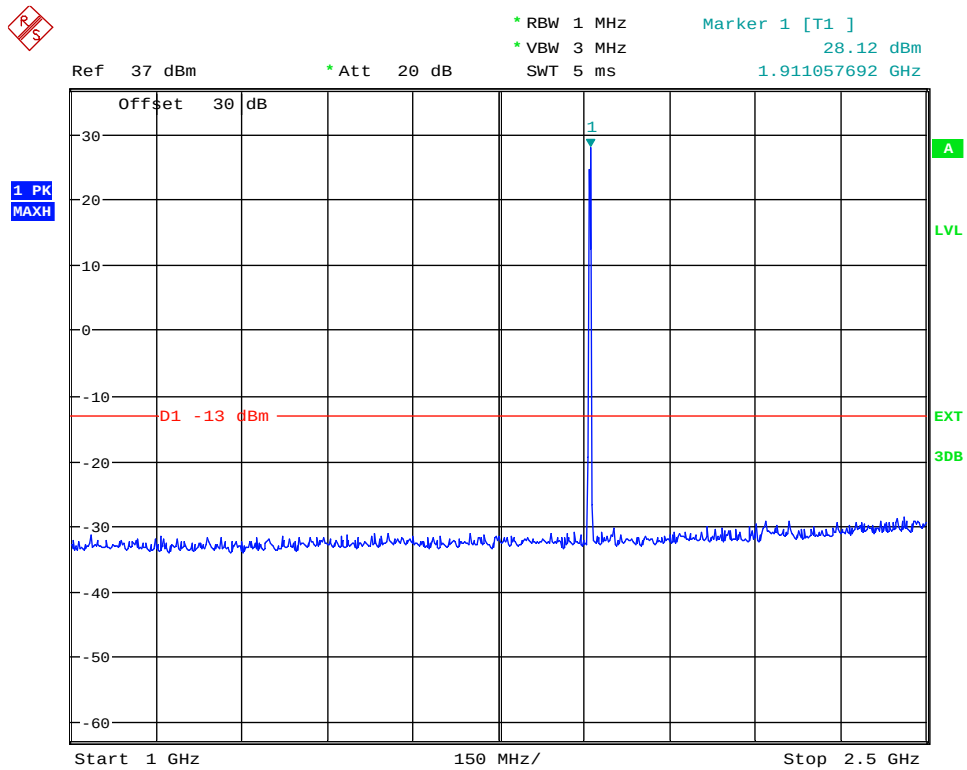
(Plot 4.7.10 A6: Channel 661: 1880.00MHz @ Traffic @ GPRS1900)





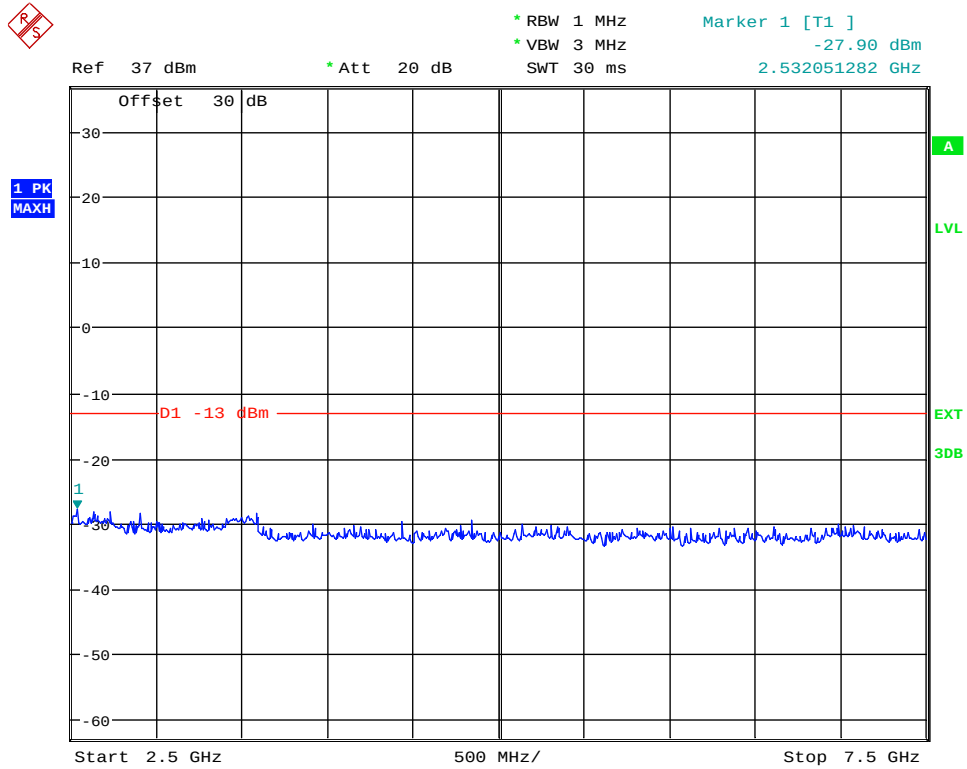
Date: 11.OCT.2013 20:08:42

(Plot 4.7.11 A1: Channel 810: 1909.80MHz @ Traffic @ GPRS1900)



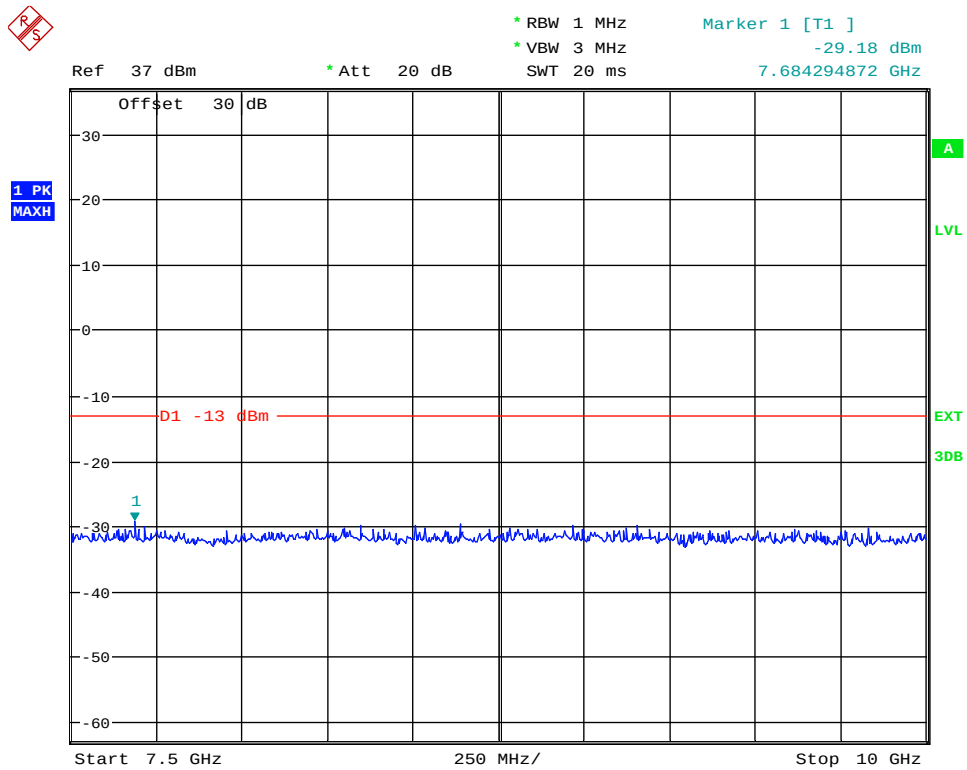
Date: 11.OCT.2013 20:10:22

(Plot 4.7.11 A2: Channel 810: 1909.80MHz @ Traffic @ GPRS1900)



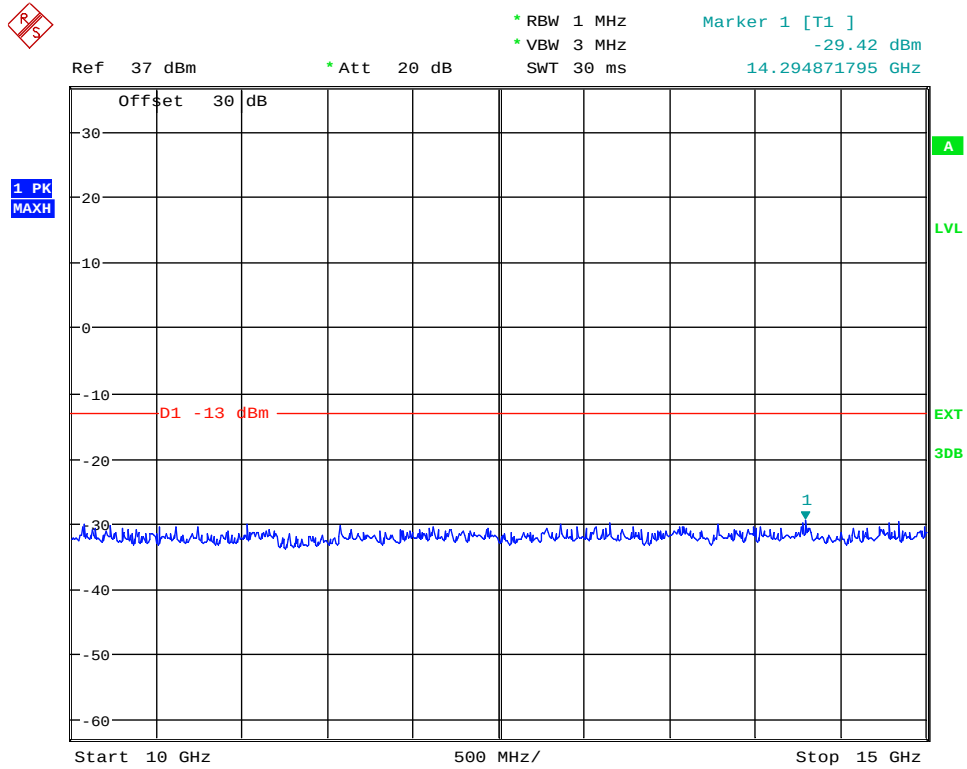
Date: 11.OCT.2013 20:10:58

(Plot 4.7.11 A3: Channel 810: 1909.80MHz @ Traffic @ GPRS1900)



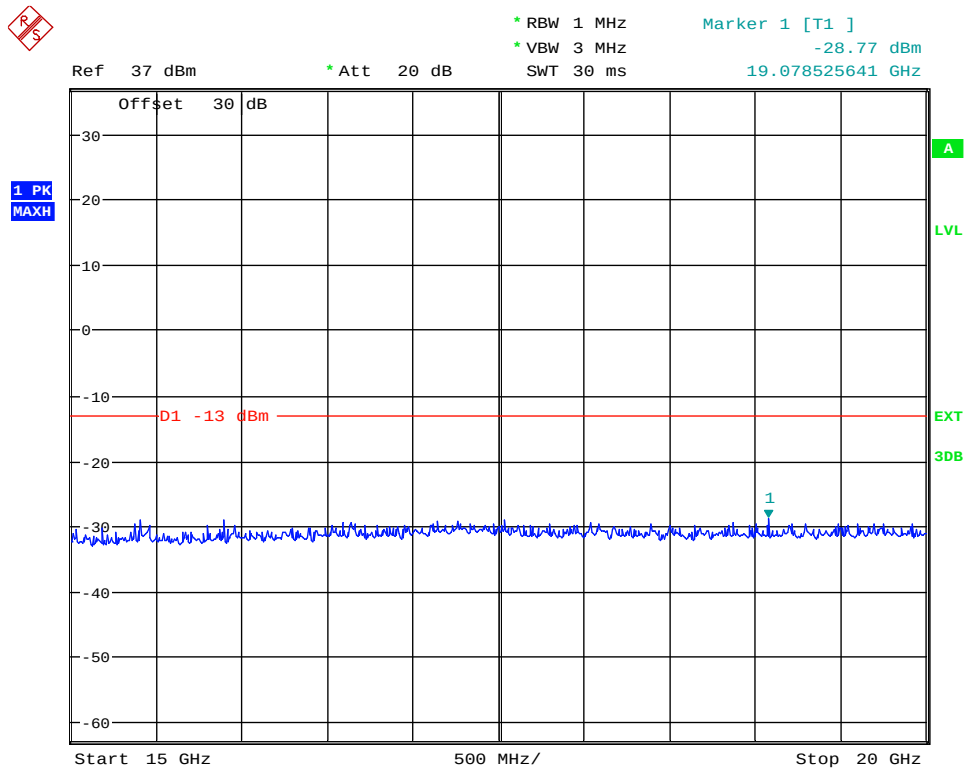
Date: 11.OCT.2013 20:11:11

(Plot 4.7.11 A4: Channel 810: 1909.80MHz @ Traffic @ GPRS1900)



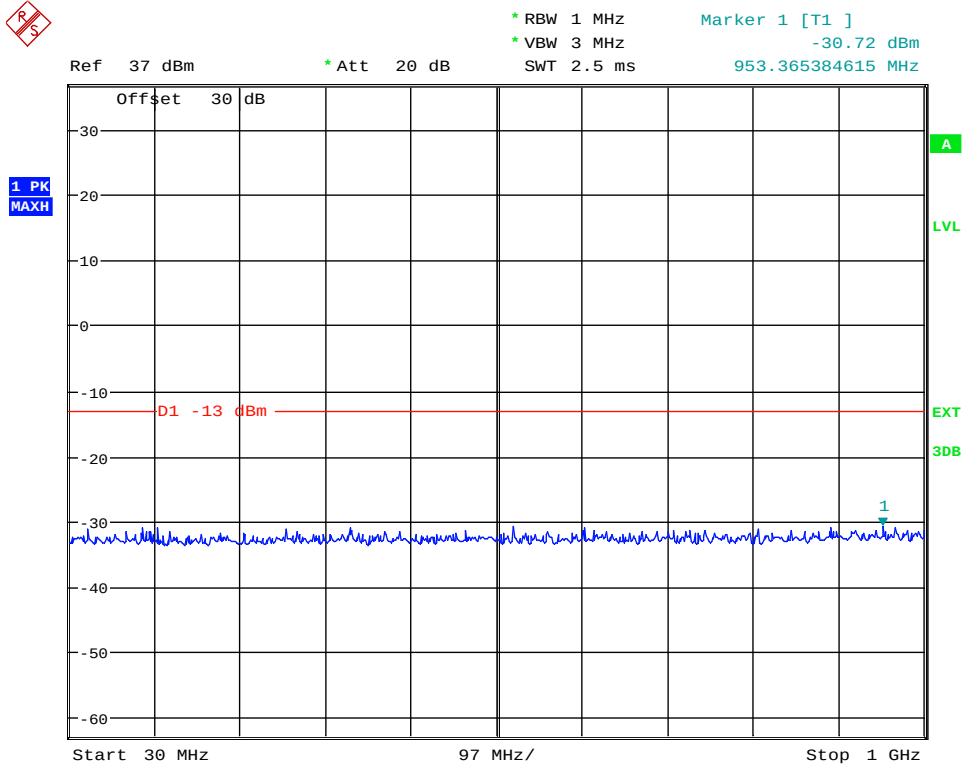
Date: 11.OCT.2013 20:12:02

(Plot 4.7.11 A5: Channel 810: 1909.80MHz @ Traffic @ GPRS1900)



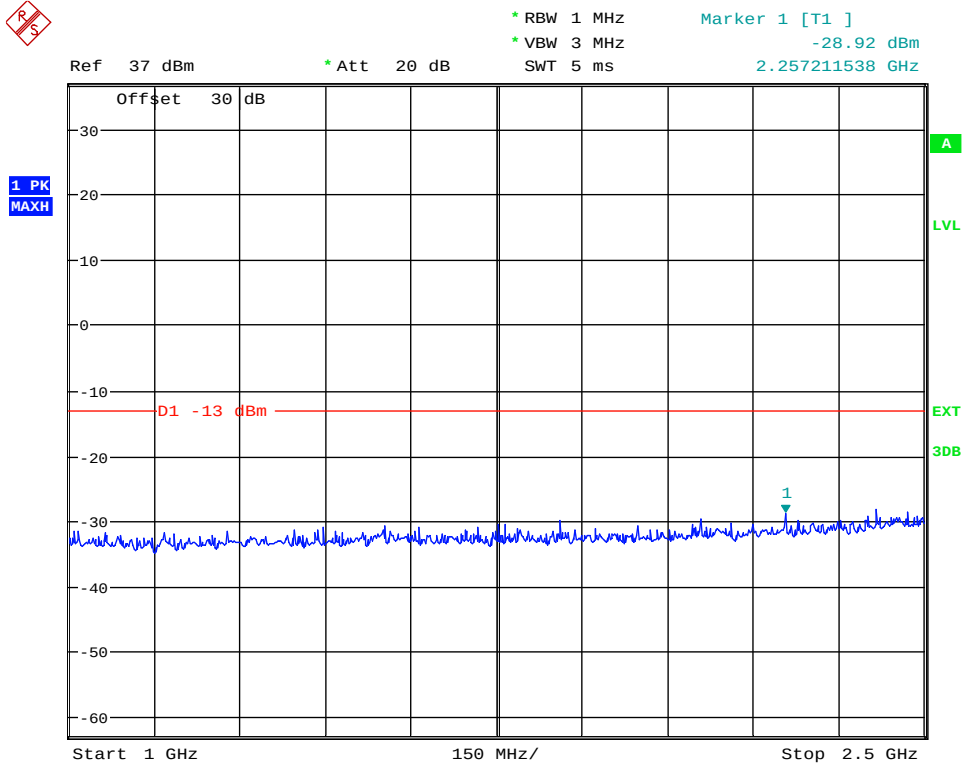
Date: 11.OCT.2013 20:12:14

(Plot 4.7.11 A6: Channel 810: 1909.80MHz @ Traffic @ GPRS1900)



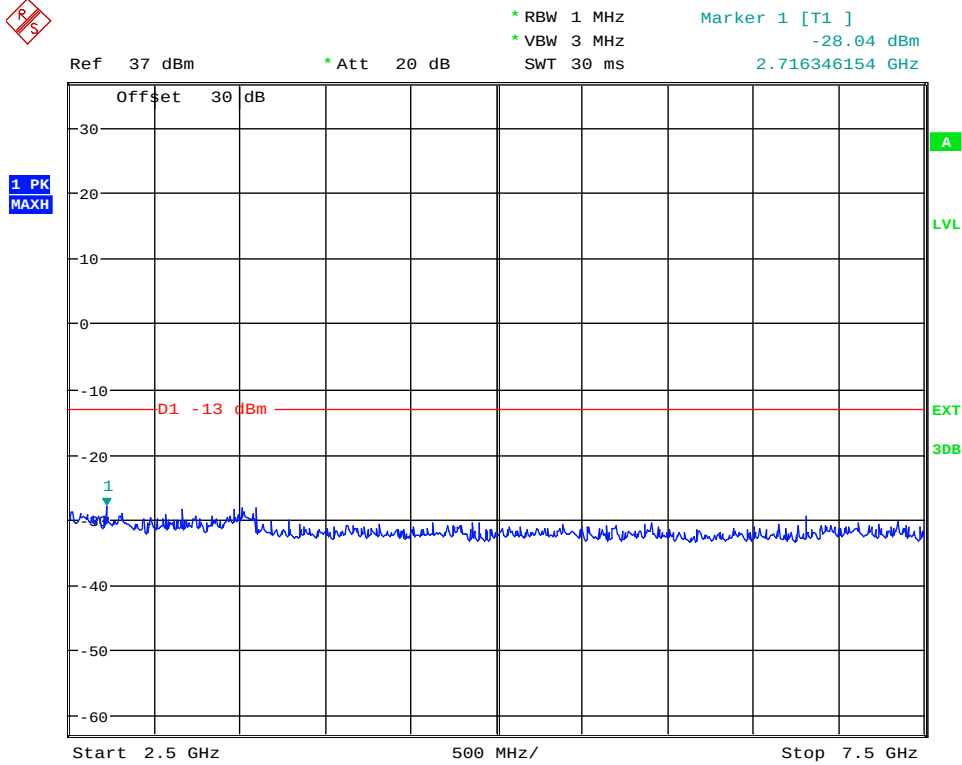
Date: 11.OCT.2013 20:13:28

(Plot 4.7.12 A1: Idle @ GPRS1900)



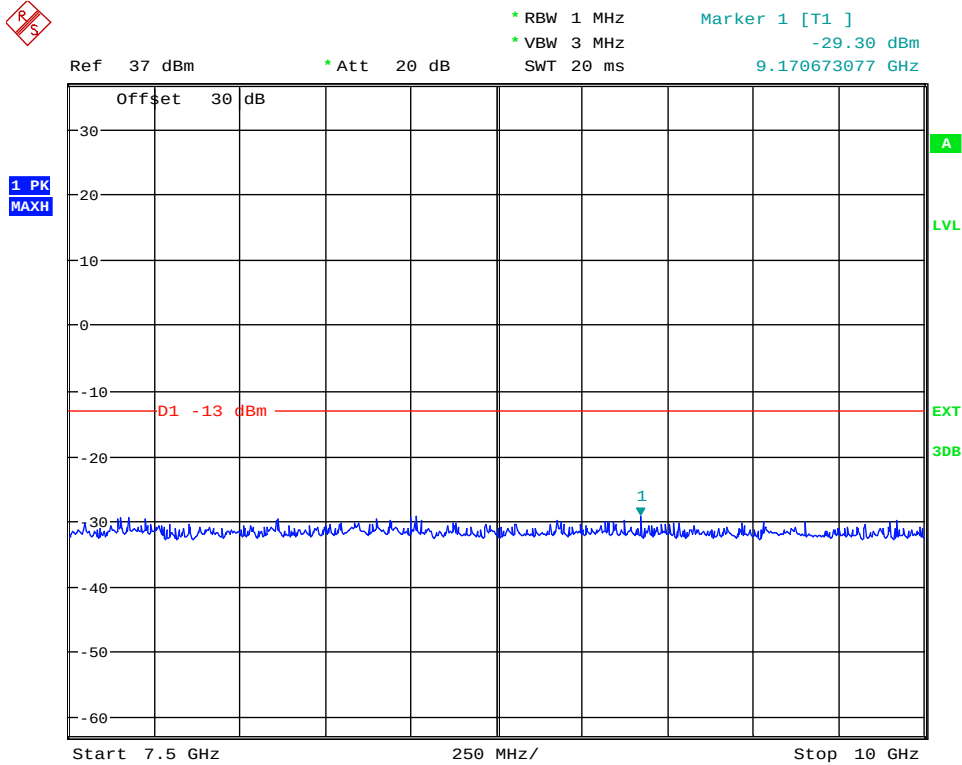
Date: 11.OCT.2013 20:14:21

(Plot 4.7.12 A2: Idle @ GPRS1900)



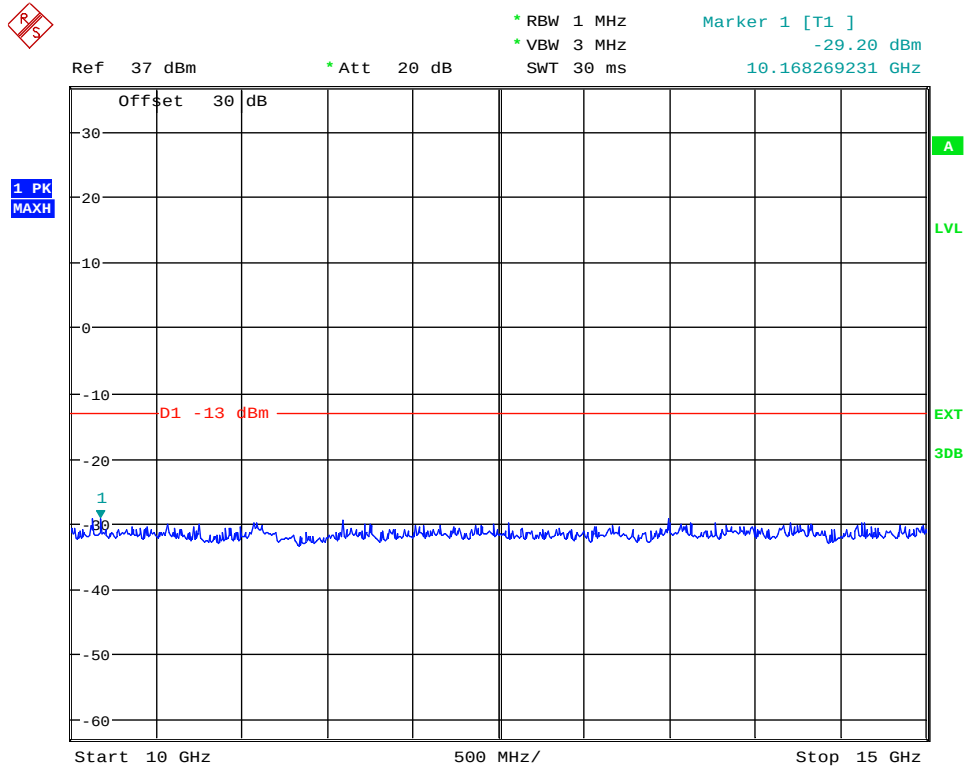
Date: 11.OCT.2013 20:14:32

(Plot 4.7.12 A3: Idle @ GPRS1900)



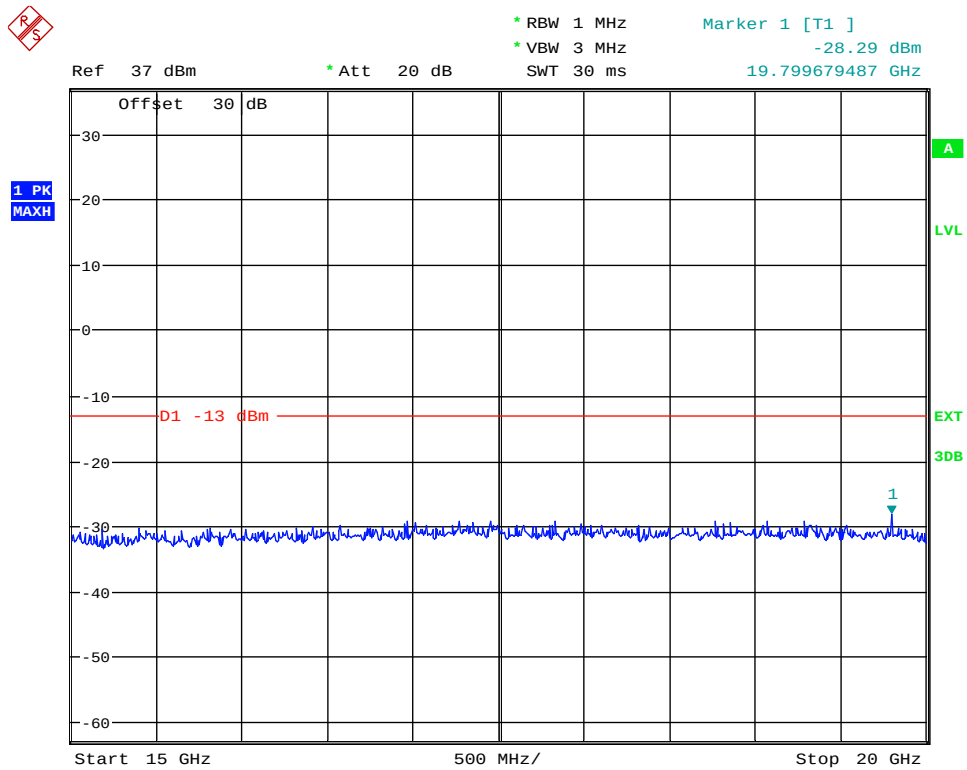
Date: 11.OCT.2013 20:15:20

(Plot 4.7.12 A4: Idle @ GPRS1900)



Date: 11.OCT.2013 20:15:36

(Plot 4.7.12 A5: Idle @ GPRS1900)



Date: 11.OCT.2013 20:16:28

(Plot 4.7.12 A6: Idle @ GPRS1900)

| EGPRS1900(8PSK)       |                      |                             |              |             |                    |         |
|-----------------------|----------------------|-----------------------------|--------------|-------------|--------------------|---------|
| Channel Number: 512   |                      | Test Frequency: 1850.20 MHz |              |             | Test Mode: Traffic |         |
| Start Frequency (MHz) | Stop Frequency (MHz) | Measurement Results         |              | Limit (dBm) | Refer to Plot      | Verdict |
|                       |                      | Frequency (MHz)             | Values (dBm) |             |                    |         |
| 30                    | 1000                 | 737.29                      | -32.84       | -13.00      | Plot 4.7.13 A1     | PASS    |
| 1000                  | 2500                 | ***                         | ***          | -13.00      | Plot 4.7.13 A2     | PASS    |
| 2500                  | 7500                 | 3701.92                     | -28.14       | -13.00      | Plot 4.7.13 A3     | PASS    |
| 7500                  | 10000                | 7672.28                     | -31.65       | -13.00      | Plot 4.7.13 A4     | PASS    |
| 10000                 | 15000                | 12924.68                    | -31.52       | -13.00      | Plot 4.7.13 A5     | PASS    |
| 15000                 | 20000                | 17636.22                    | -30.55       | -13.00      | Plot 4.7.13 A6     | PASS    |

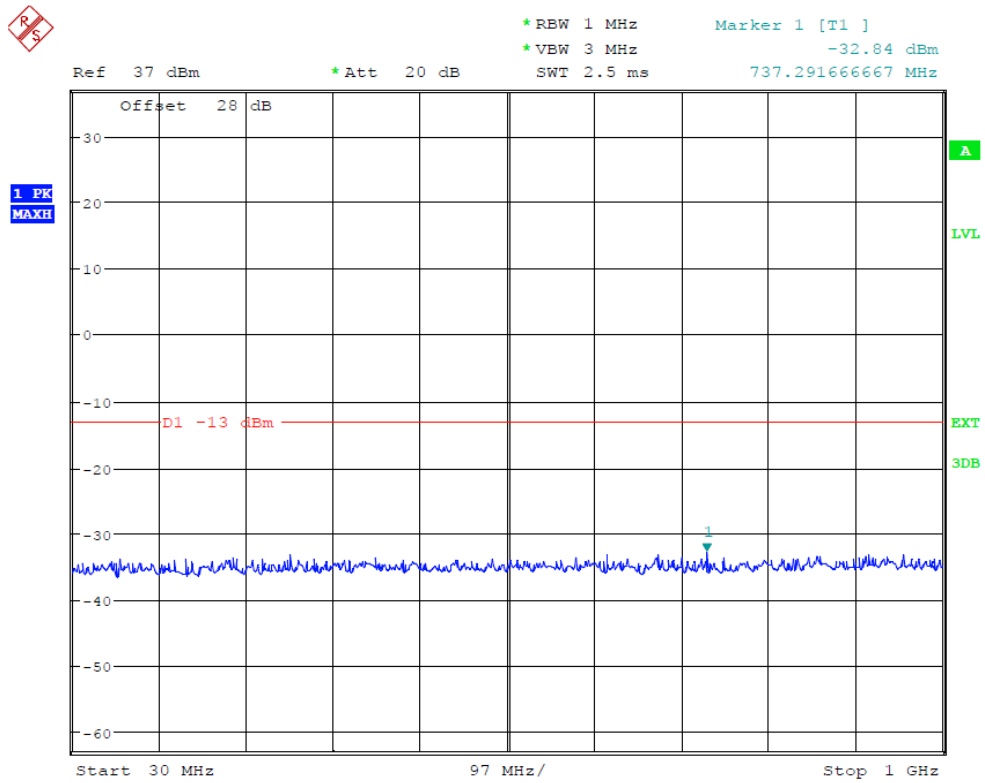
| EGPRS1900(8PSK)       |                      |                             |              |             |                    |         |
|-----------------------|----------------------|-----------------------------|--------------|-------------|--------------------|---------|
| Channel Number: 661   |                      | Test Frequency: 1880.00 MHz |              |             | Test Mode: Traffic |         |
| Start Frequency (MHz) | Stop Frequency (MHz) | Measurement Results         |              | Limit (dBm) | Refer to Plot      | Verdict |
|                       |                      | Frequency (MHz)             | Values (dBm) |             |                    |         |
| 30                    | 1000                 | 644.02                      | -32.32       | -13.00      | Plot 4.7.14 A1     | PASS    |
| 1000                  | 2500                 | ***                         | ***          | -13.00      | Plot 4.7.14 A2     | PASS    |
| 2500                  | 7500                 | 3758.01                     | -25.59       | -13.00      | Plot 4.7.14 A3     | PASS    |
| 7500                  | 10000                | 8822.12                     | -31.91       | -13.00      | Plot 4.7.14 A4     | PASS    |
| 10000                 | 15000                | 10320.51                    | -31.73       | -13.00      | Plot 4.7.14 A5     | PASS    |
| 15000                 | 20000                | 16834.94                    | -30.56       | -13.00      | Plot 4.7.14 A6     | PASS    |

| EGPRS1900(8PSK)       |                      |                             |              |             |                    |         |
|-----------------------|----------------------|-----------------------------|--------------|-------------|--------------------|---------|
| Channel Number: 810   |                      | Test Frequency: 1909.80 MHz |              |             | Test Mode: Traffic |         |
| Start Frequency (MHz) | Stop Frequency (MHz) | Measurement Results         |              | Limit (dBm) | Refer to Plot      | Verdict |
|                       |                      | Frequency (MHz)             | Values (dBm) |             |                    |         |
| 30                    | 1000                 | 731.07                      | -33.27       | -13.00      | Plot 4.7.15 A1     | PASS    |
| 1000                  | 2500                 | ***                         | ***          | -13.00      | Plot 4.7.15 A2     | PASS    |
| 2500                  | 7500                 | 3814.10                     | -29.88       | -13.00      | Plot 4.7.15 A3     | PASS    |
| 7500                  | 10000                | 8806.09                     | -31.53       | -13.00      | Plot 4.7.15 A4     | PASS    |
| 10000                 | 15000                | 13165.06                    | -31.19       | -13.00      | Plot 4.7.15 A5     | PASS    |
| 15000                 | 20000                | 17948.72                    | -30.54       | -13.00      | Plot 4.7.15 A6     | PASS    |

| EGPRS1900(8PSK)       |                      |                     |              |             |                |         |
|-----------------------|----------------------|---------------------|--------------|-------------|----------------|---------|
| Test Mode: Idle       |                      |                     |              |             |                |         |
| Start Frequency (MHz) | Stop Frequency (MHz) | Measurement Results |              | Limit (dBm) | Refer to Plot  | Verdict |
|                       |                      | Frequency (MHz)     | Values (dBm) |             |                |         |
| 30                    | 1000                 | 672.00              | -33.29       | -13.00      | Plot 4.7.16 A1 | PASS    |
| 1000                  | 2500                 | 2461.54             | -31.21       | -13.00      | Plot 4.7.16 A2 | PASS    |
| 2500                  | 7500                 | 3157.63             | -29.91       | -13.00      | Plot 4.7.16 A3 | PASS    |
| 7500                  | 10000                | 8449.52             | -31.79       | -13.00      | Plot 4.7.16 A4 | PASS    |
| 10000                 | 15000                | 14551.28            | -31.52       | -13.00      | Plot 4.7.16 A5 | PASS    |
| 15000                 | 20000                | 16065.71            | -31.01       | -13.00      | Plot 4.7.16 A6 | PASS    |

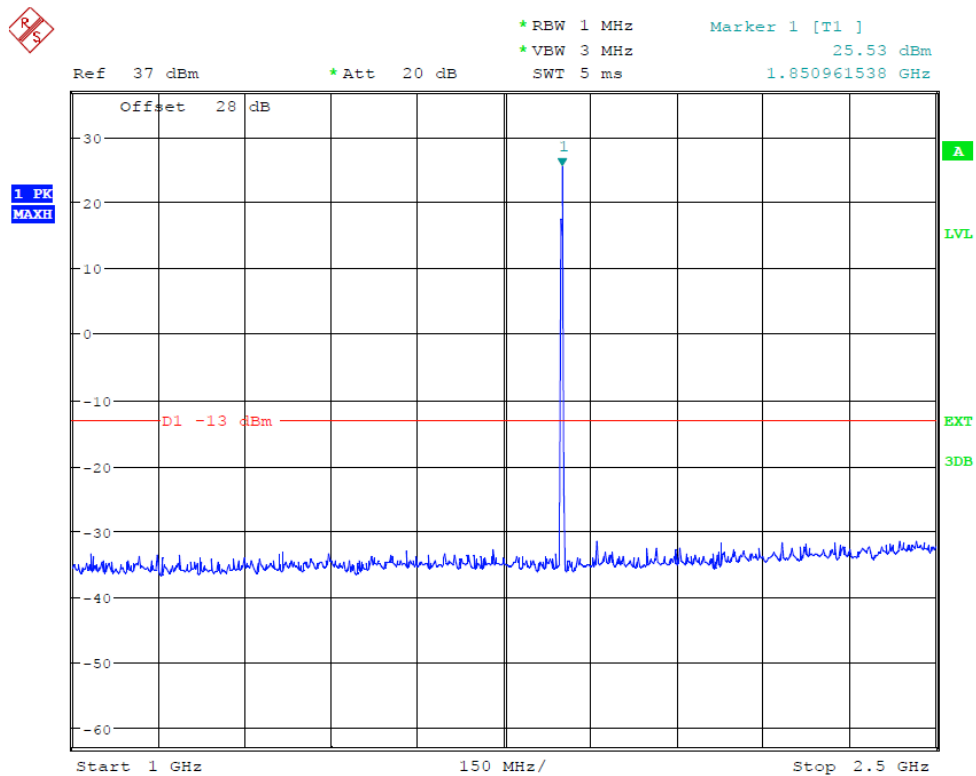
Note: 1. In general, the worse case attenuation requirement shown above was applied.

2. \*\*\* means that the emission level is too low to be measured or at least 20 dB down than the limit.



Date: 12.OCT.2013 15:01:53

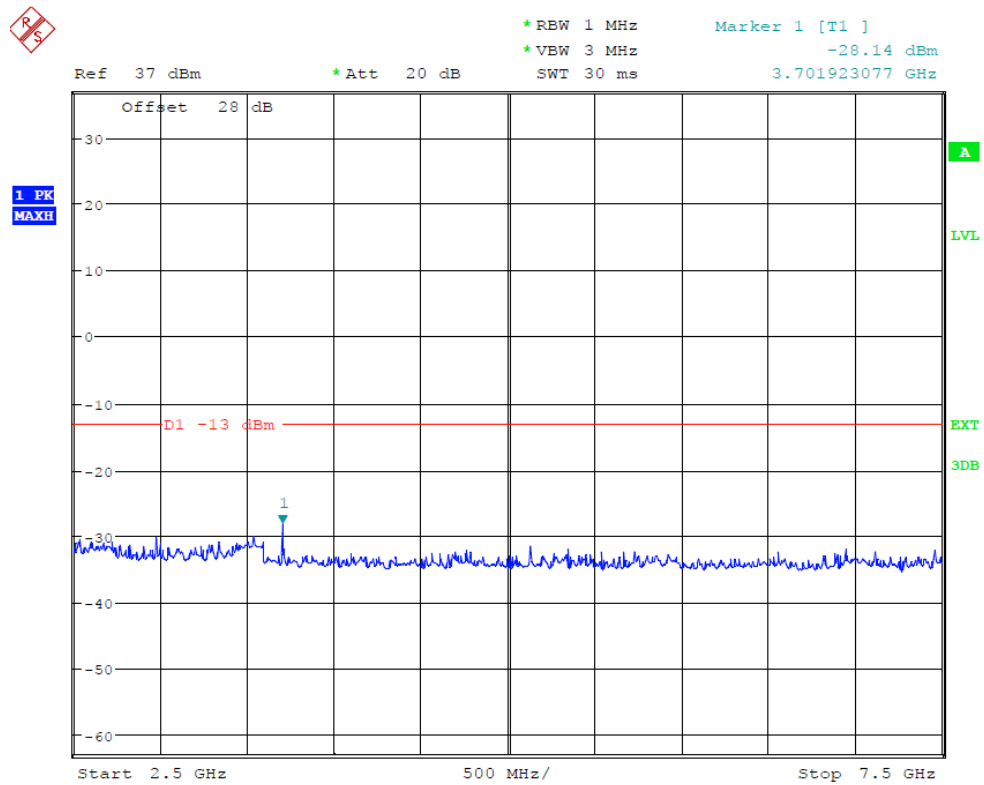
(Plot 4.7.13 A1: Channel 512: 1850.20MHz @ Traffic @ EGPRS1900)



Date: 12.OCT.2013 15:02:01

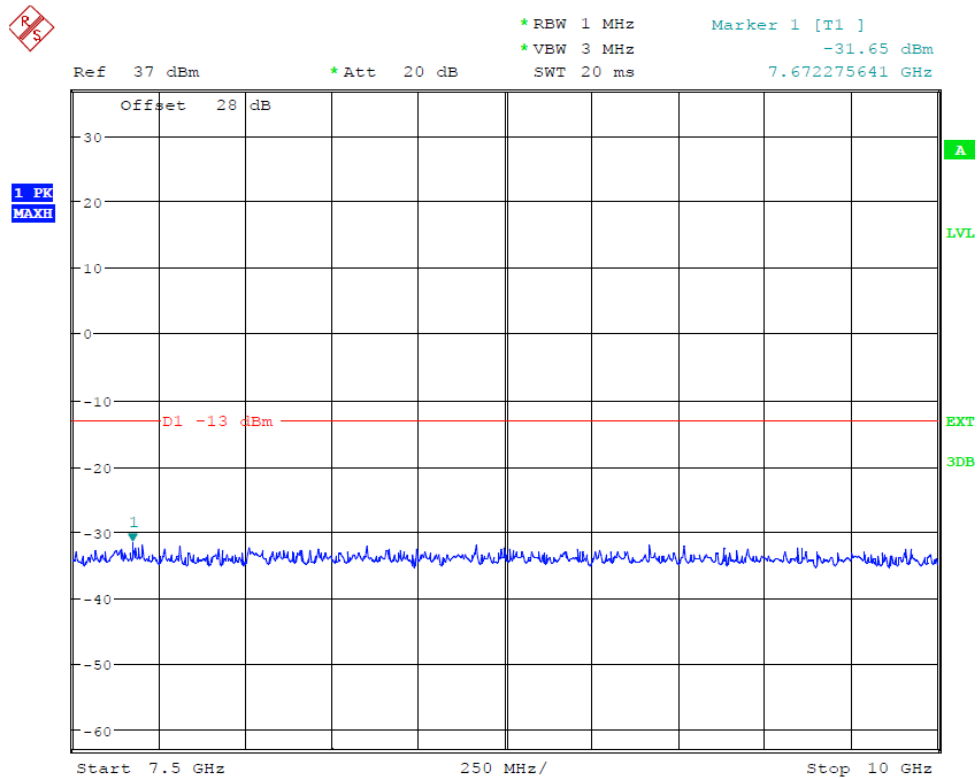
(Plot 4.7.13 A2: Channel 512: 1850.20MHz @ Traffic @ EGPRS1900)





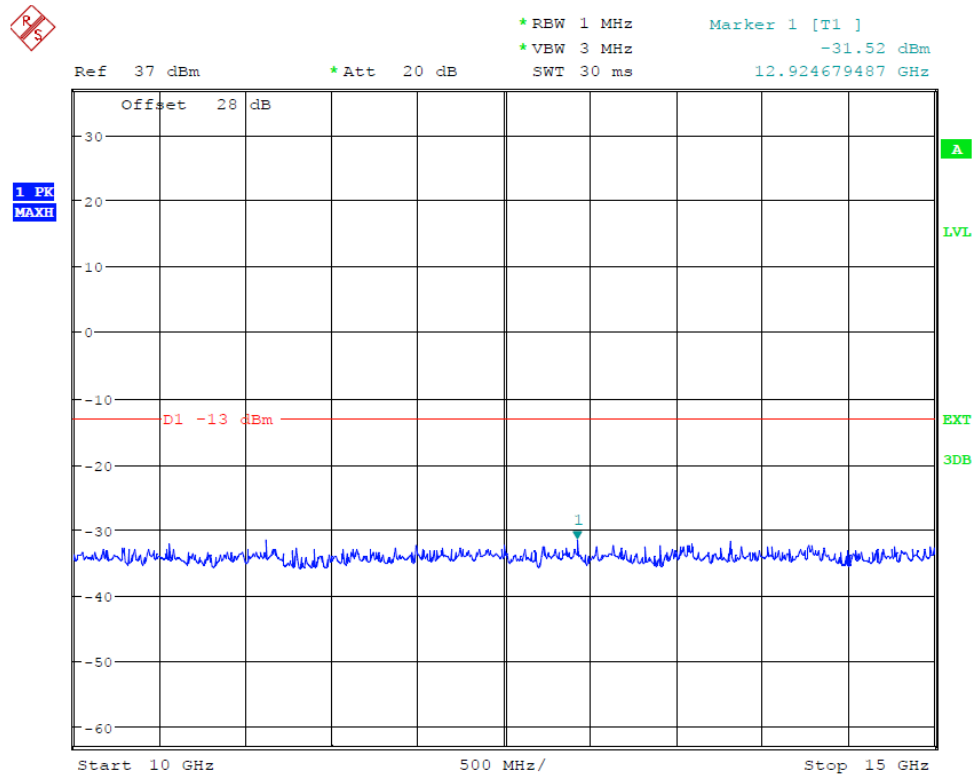
Date: 12.OCT.2013 15:02:13

(Plot 4.7.13 A3: Channel 512: 1850.20MHz @ Traffic @ EGPRS1900)



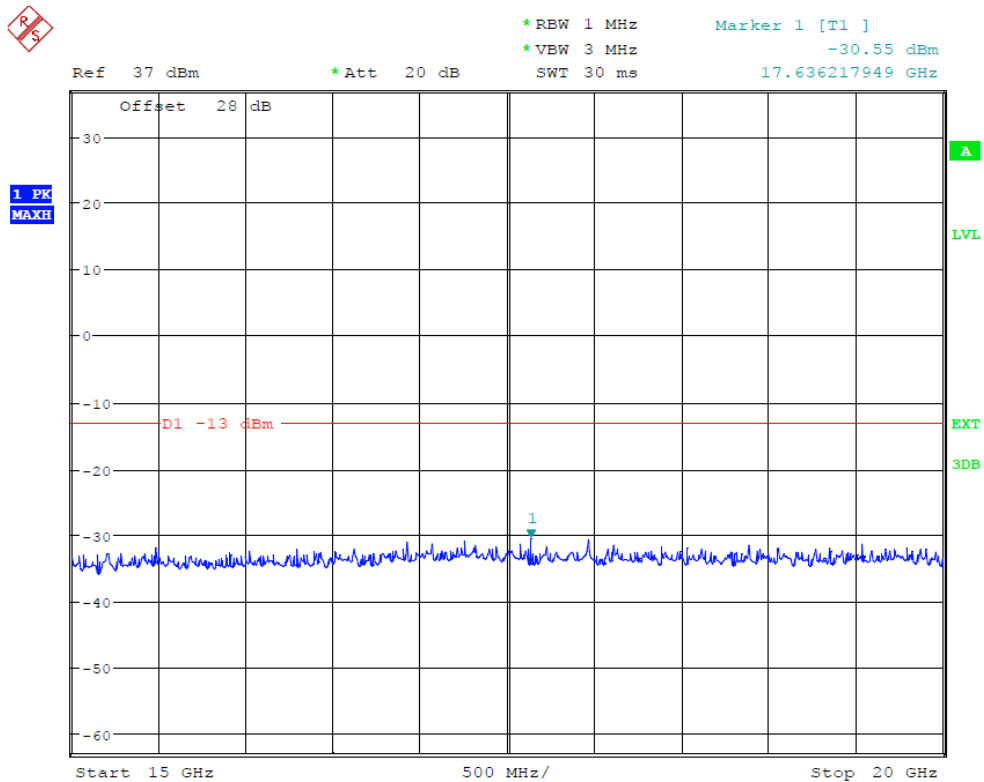
Date: 12.OCT.2013 15:02:23

(Plot 4.7.13 A4: Channel 512: 1850.20MHz @ Traffic @ EGPRS1900)



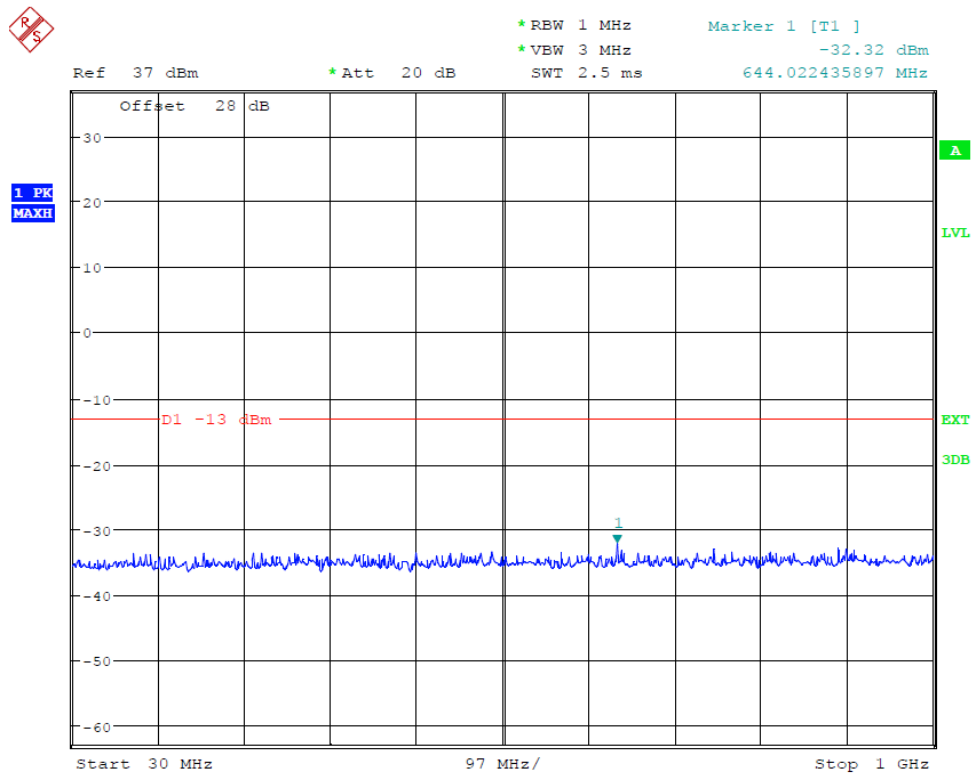
Date: 12.OCT.2013 15:02:32

(Plot 4.7.13 A5: Channel 512: 1850.20MHz @ Traffic @ EGPRS1900)



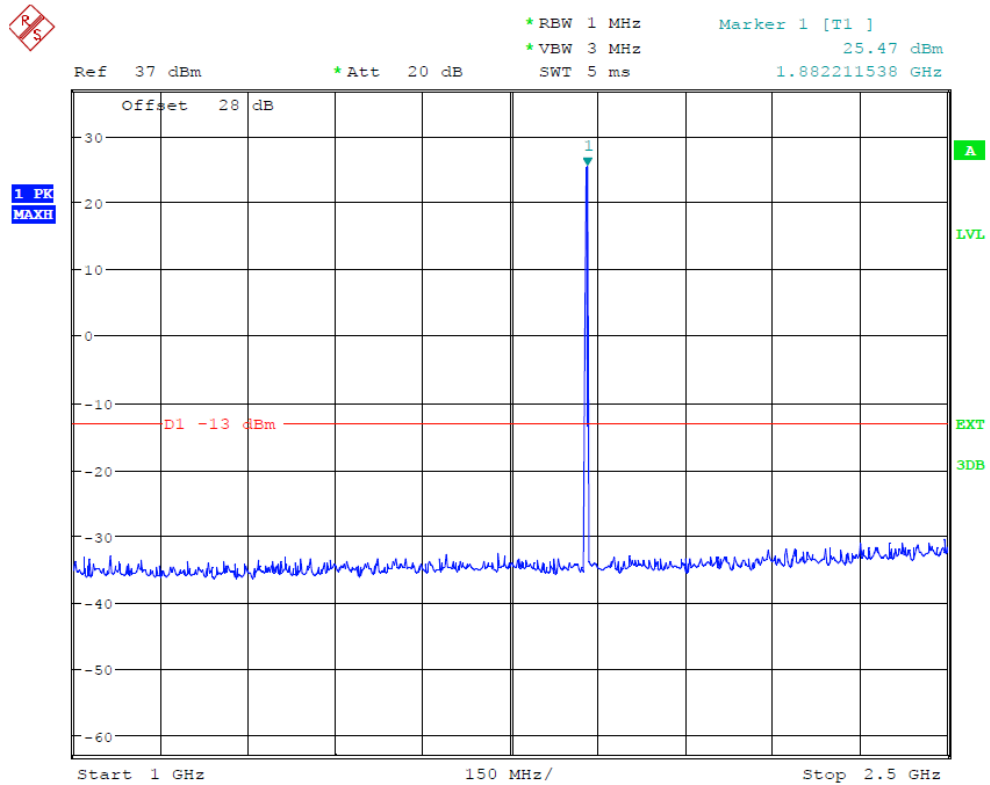
Date: 12.OCT.2013 15:02:40

(Plot 4.7.13 A6: Channel 512: 1850.20MHz @ Traffic @ EGPRS1900)



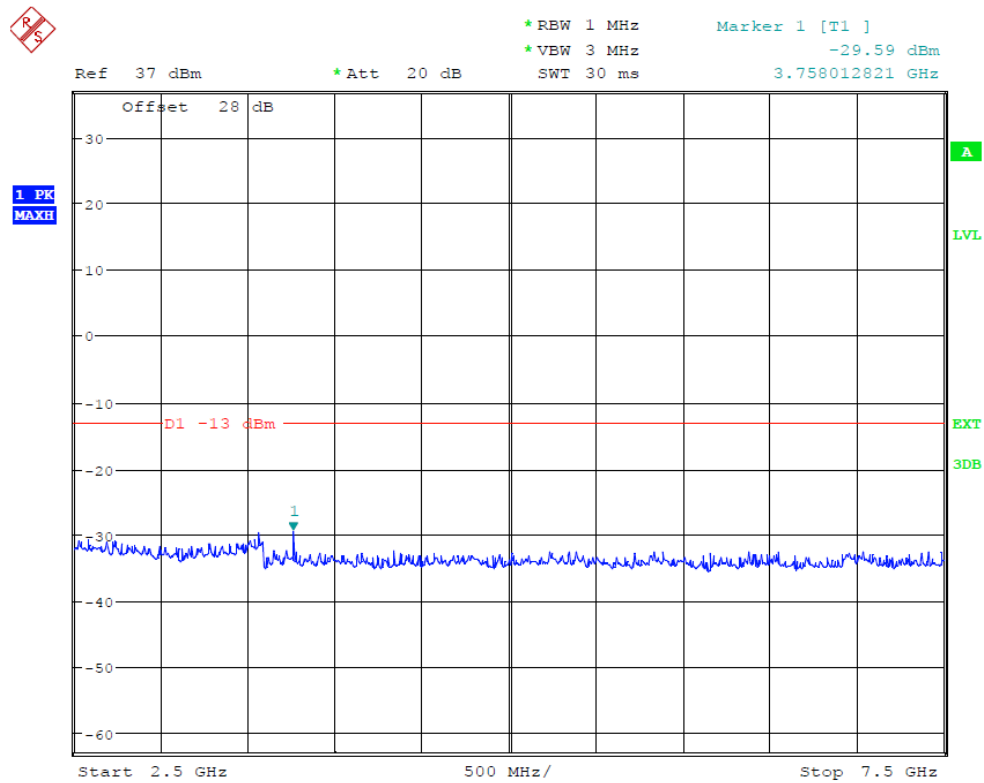
Date: 12.OCT.2013 15:00:21

(Plot 4.7.14 A1: Channel 661: 1880.00MHz @ Traffic @ EGPRS1900)



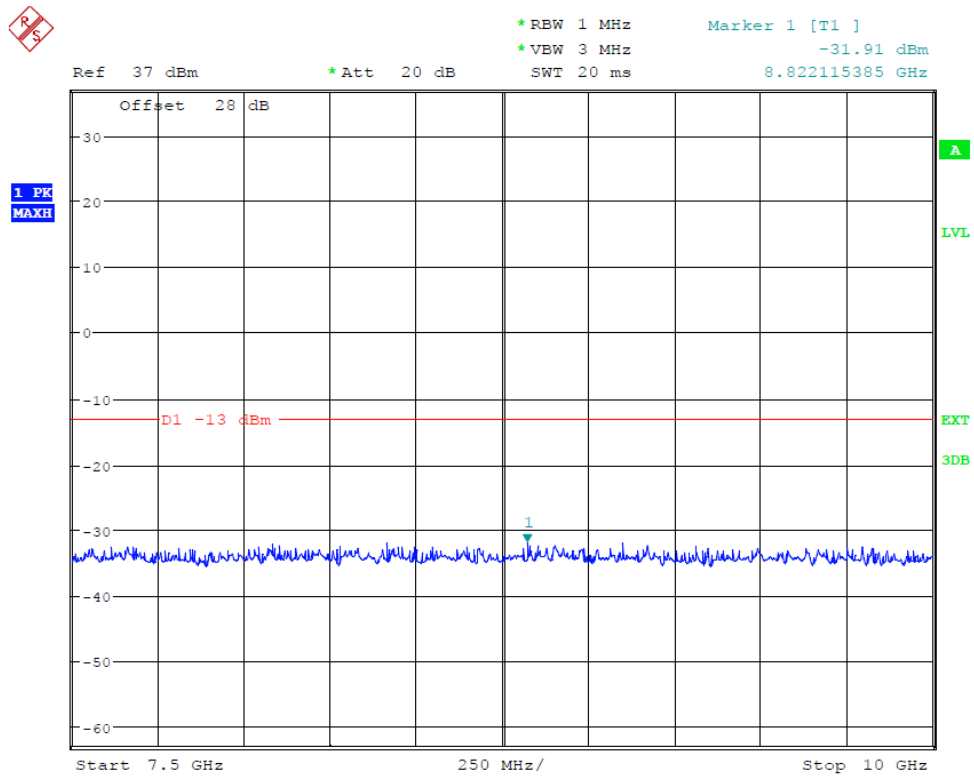
Date: 12.OCT.2013 15:00:35

(Plot 4.7.14 A2: Channel 661: 1880.00MHz @ Traffic @ EGPRS1900)



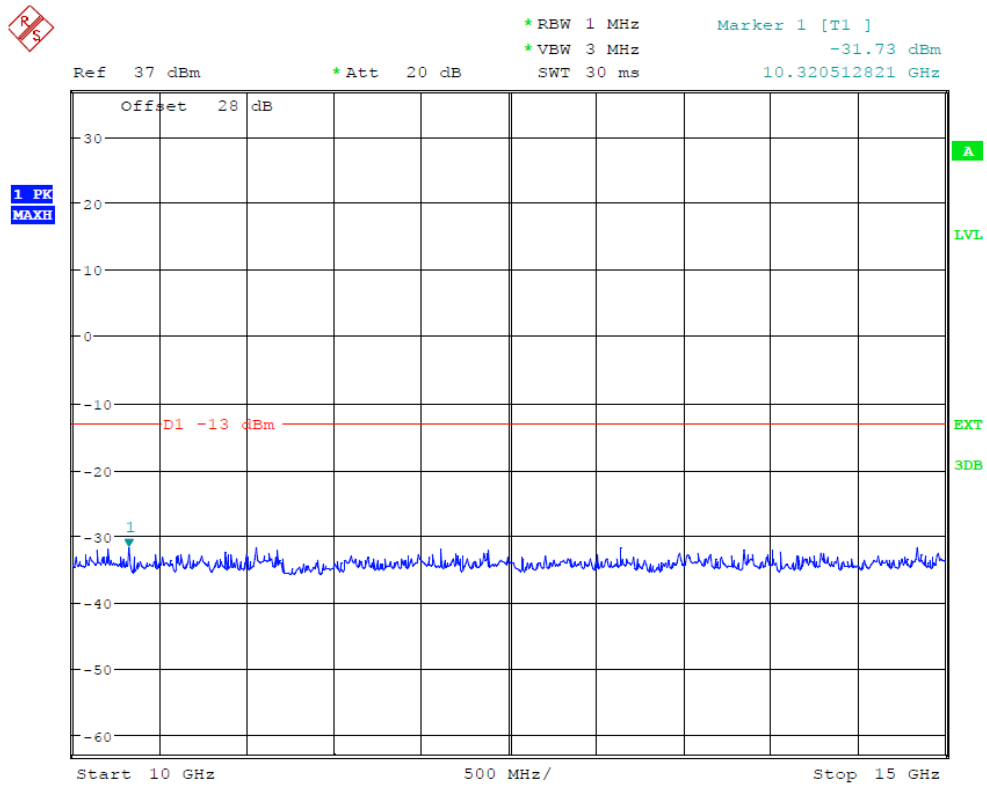
Date: 12.OCT.2013 15:00:45

(Plot 4.7.14 A3: Channel 661: 1880.00MHz @ Traffic @ EGPRS1900)



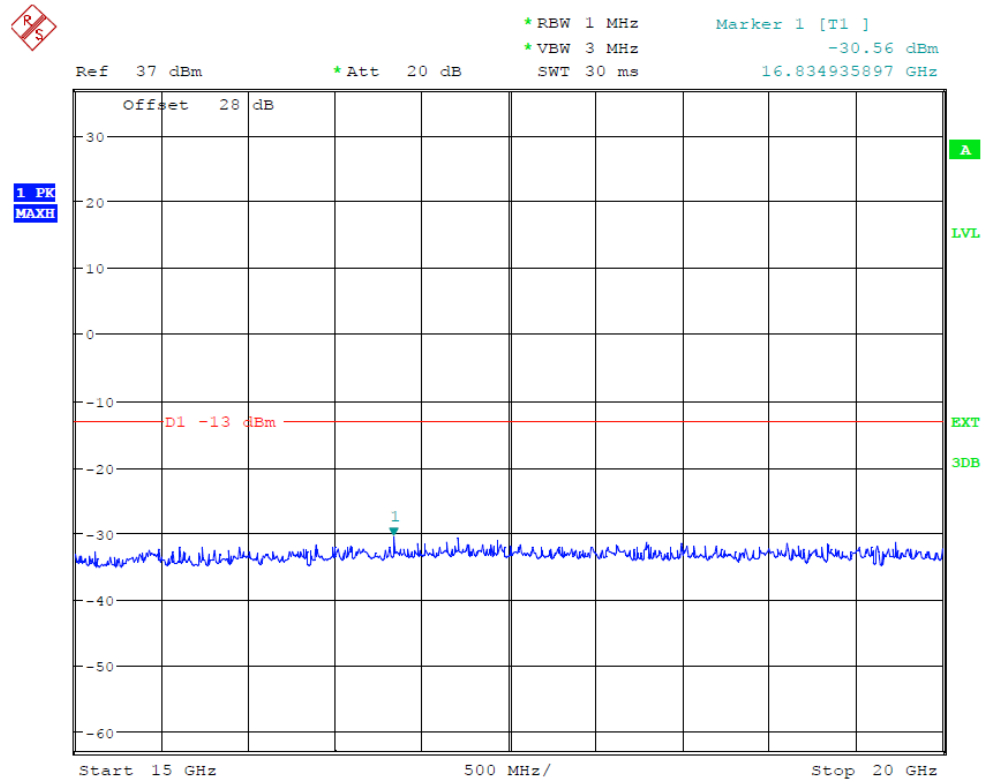
Date: 12.OCT.2013 15:01:00

(Plot 4.7.14 A4: Channel 661: 1880.00MHz @ Traffic @ EGPRS1900)



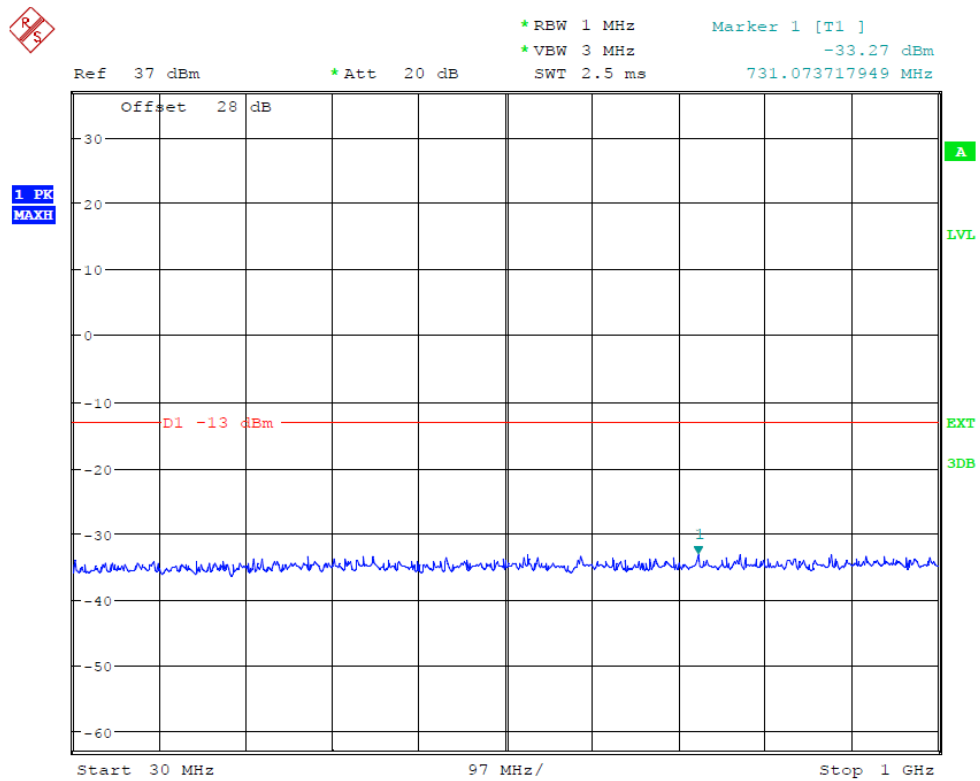
Date: 12.OCT.2013 15:01:10

(Plot 4.7.14 A5: Channel 661: 1880.00MHz @ Traffic @ EGPRS1900)



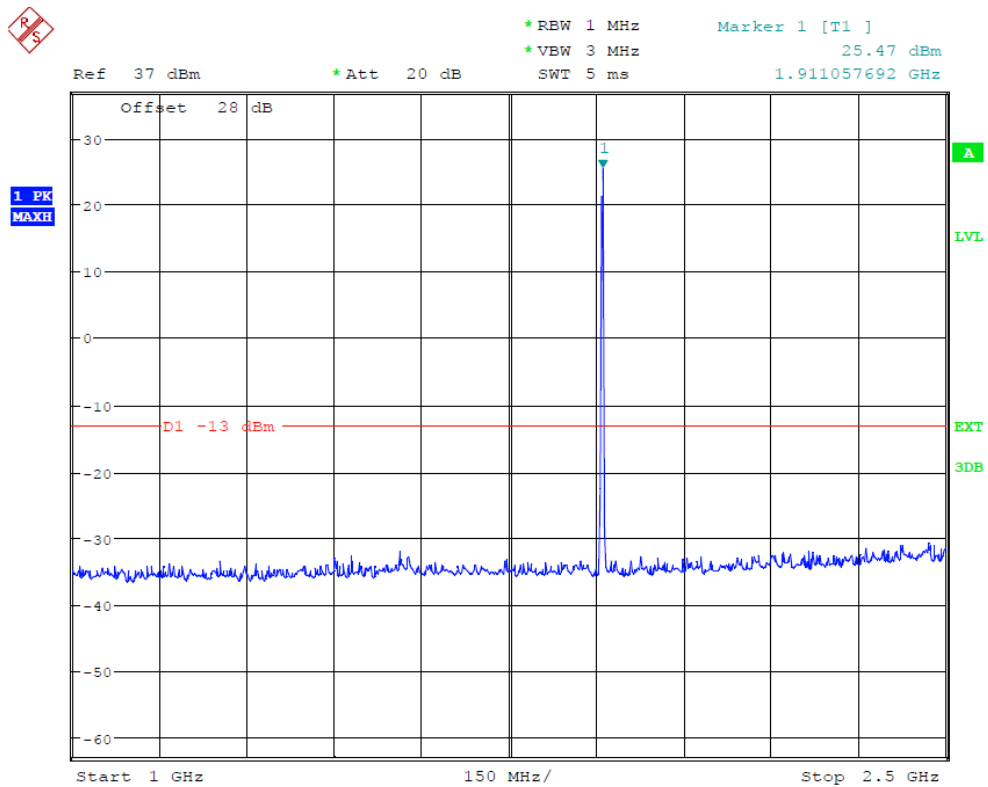
Date: 12.OCT.2013 15:01:20

(Plot 4.7.14 A6: Channel 661: 1880.00MHz @ Traffic @ EGPRS1900)



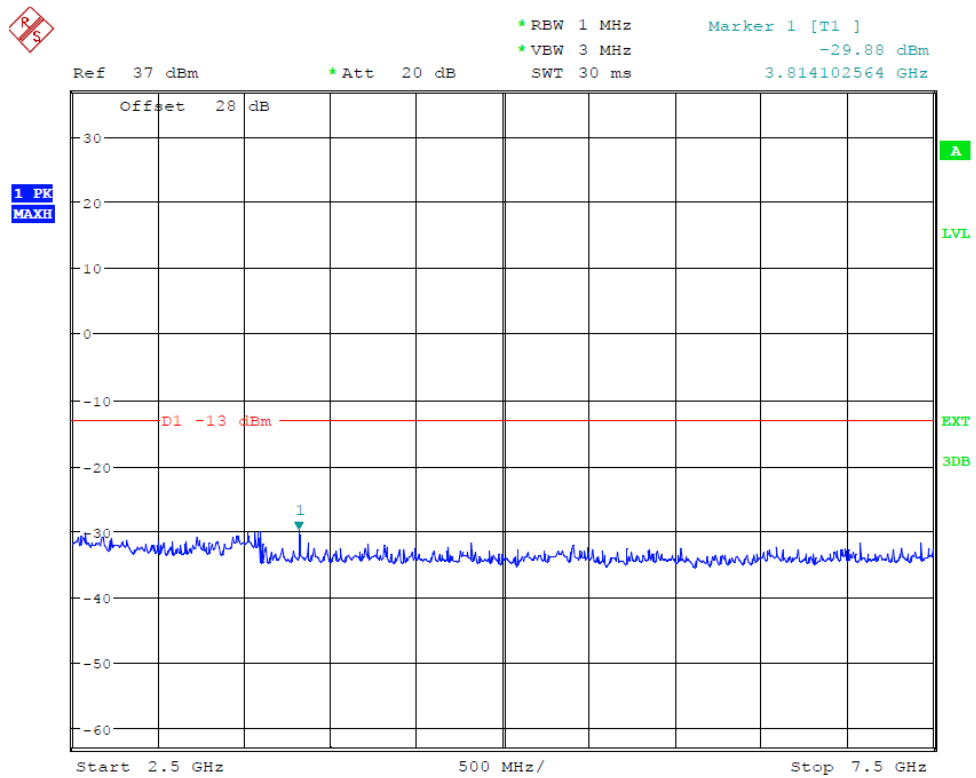
Date: 12.OCT.2013 14:58:41

(Plot 4.7.15 A1: Channel 810: 1909.80MHz @ Traffic @ EGPRS1900)



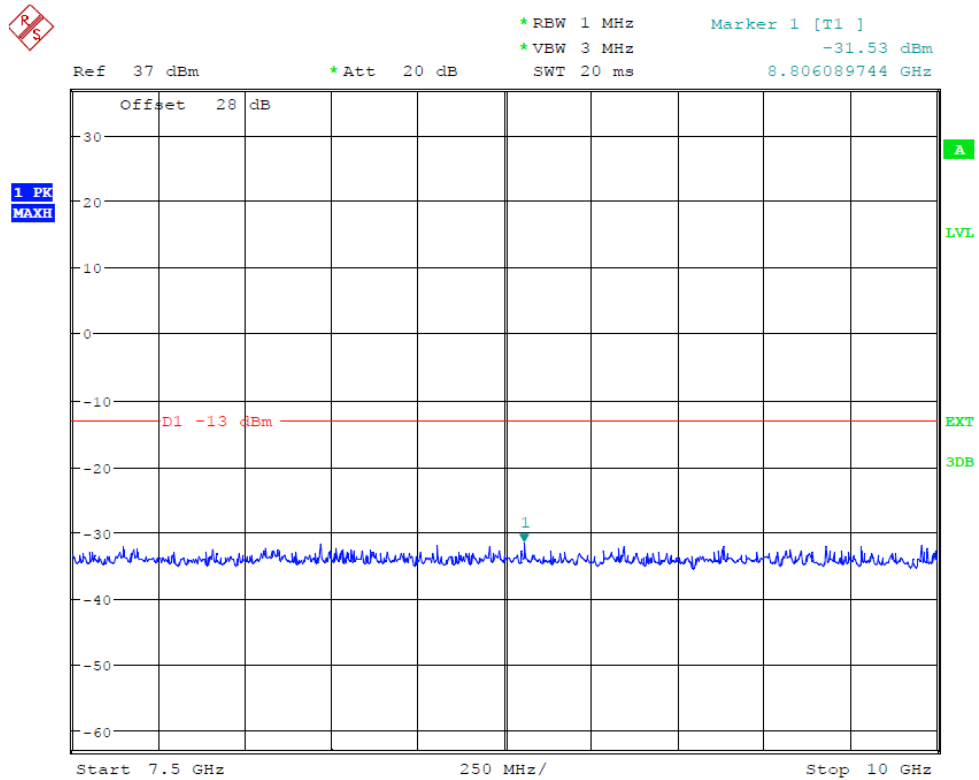
Date: 12.OCT.2013 14:58:52

(Plot 4.7.15 A2: Channel 810: 1909.80MHz @ Traffic @ EGPRS1900)



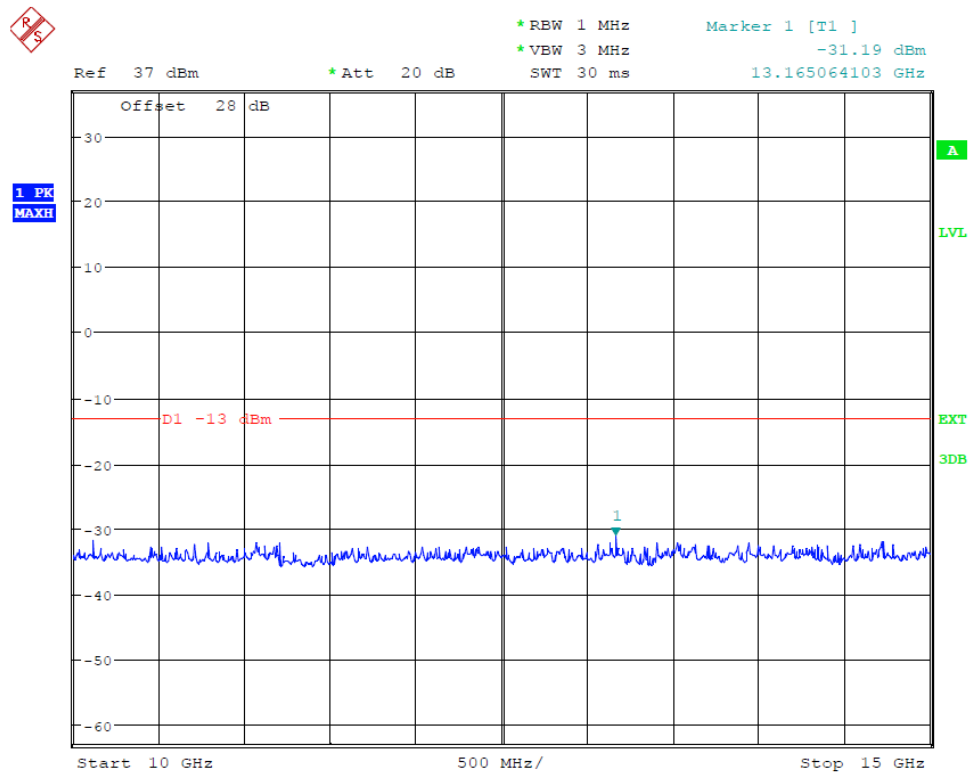
Date: 12.OCT.2013 14:59:02

(Plot 4.7.15 A3: Channel 810: 1909.80MHz @ Traffic @ EGPRS1900)



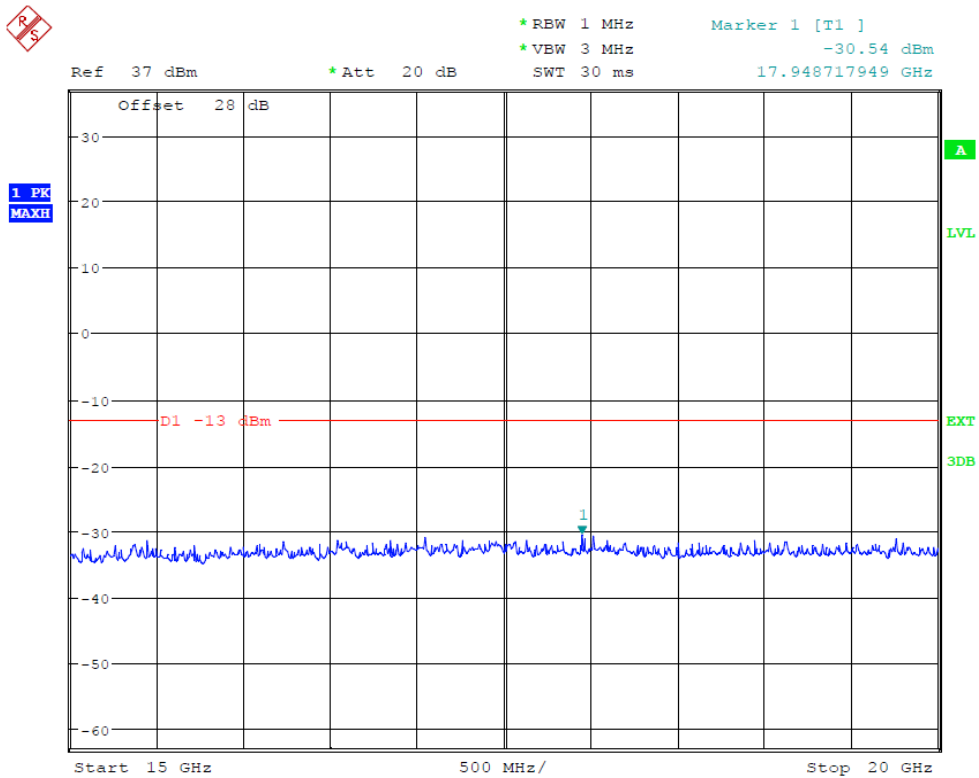
Date: 12.OCT.2013 14:59:20

(Plot 4.7.15 A4: Channel 810: 1909.80MHz @ Traffic @ EGPRS1900)



Date: 12.OCT.2013 14:59:29

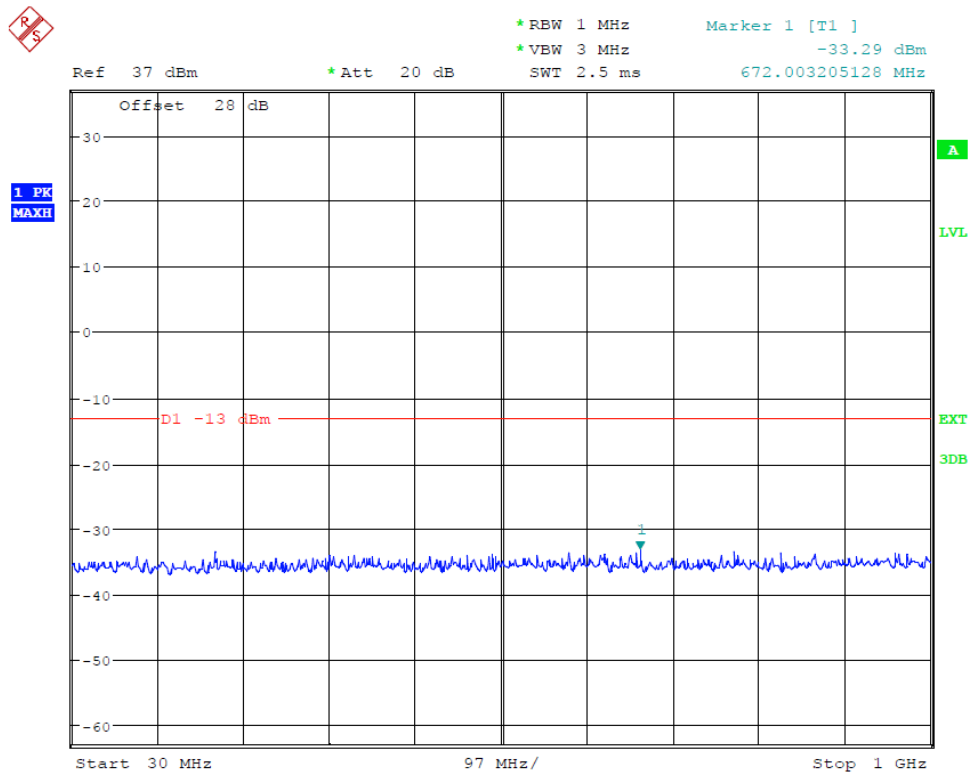
(Plot 4.7.15 A5: Channel 810: 1909.80MHz @ Traffic @ EGPRS1900)



Date: 12.OCT.2013 14:59:42

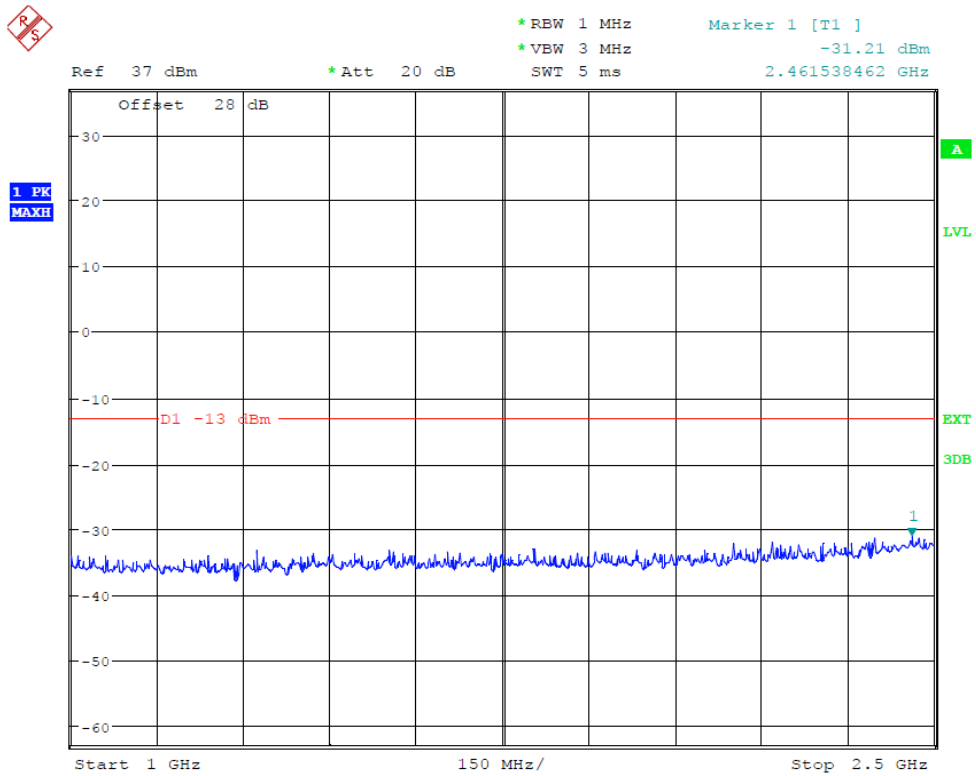
(Plot 4.7.15 A6: Channel 810: 1909.80MHz @ Traffic @ EGPRS1900)





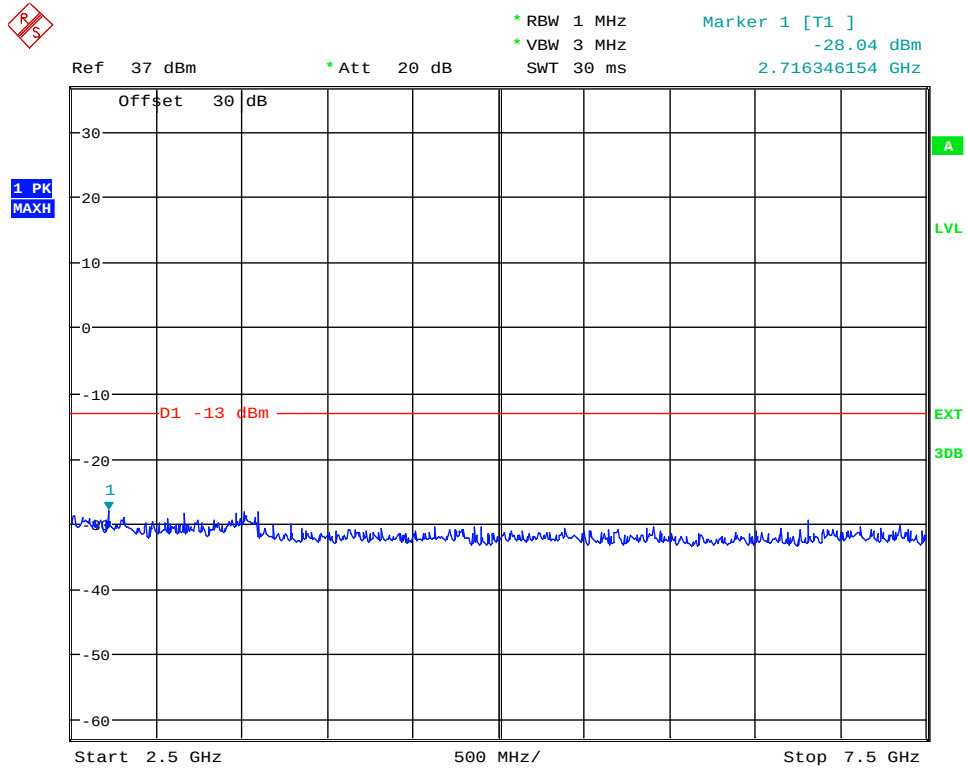
Date: 12.OCT.2013 15:02:59

(Plot 4.7.16 A1: Idle @ EGPRS1900)



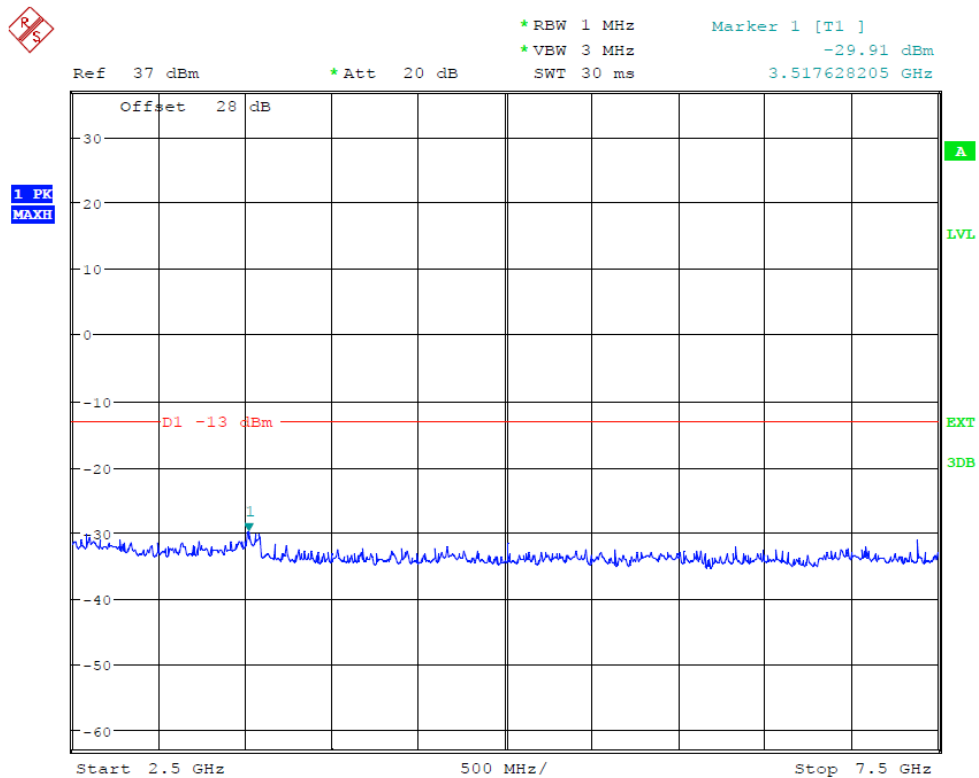
Date: 12.OCT.2013 15:03:06

(Plot 4.7.16 A2: Idle @ EGPRS1900)



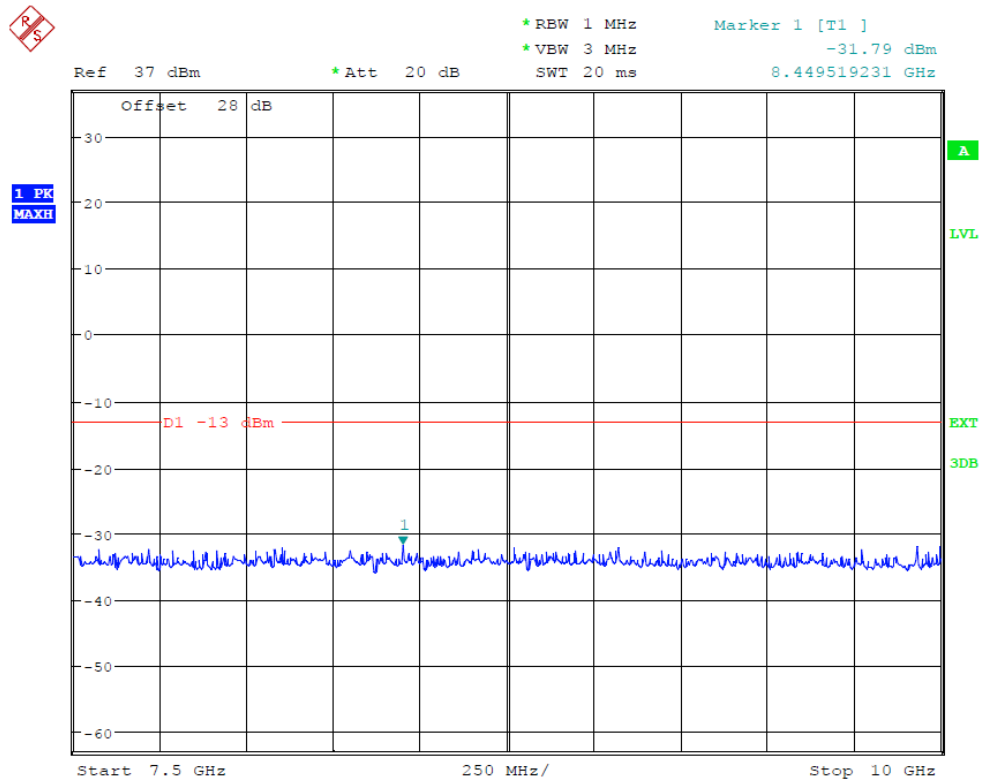
Date: 11.OCT.2013 20:14:32

(Plot 4.7.16 A3: Idle @ EGPRS1900)



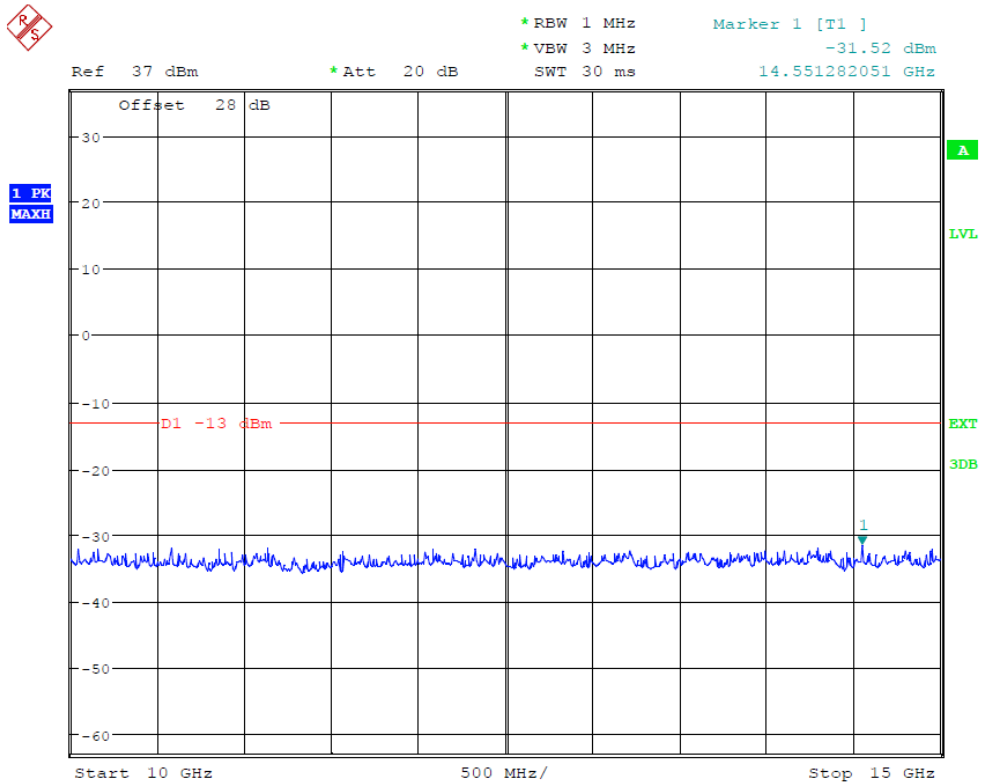
Date: 12.OCT.2013 15:03:21

(Plot 4.7.16 A4: Idle @ EGPRS1900)



Date: 12.OCT.2013 15:03:30

(Plot 4.7.16 A5: Idle @ EGPRS1900)



Date: 12.OCT.2013 15:03:39

(Plot 4.7.16 A6: Idle @ EGPRS1900)

## 4.8. Frequency Stability Test

### TEST APPLICABLE

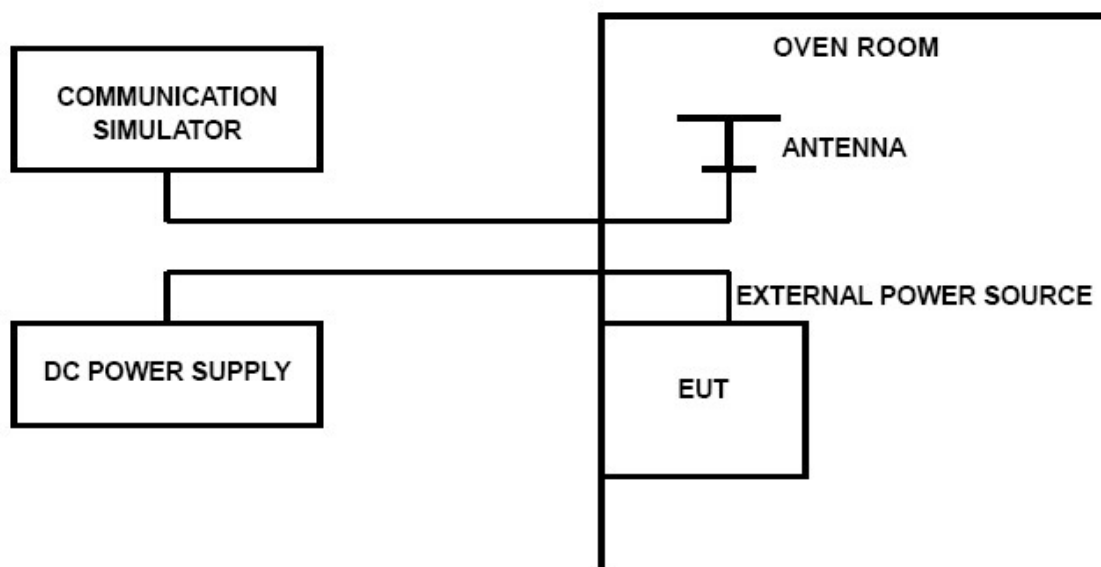
1. According to FCC Part 2 Section 2.1055 (a)(1), the frequency stability shall be measured with variation of ambient temperature from -30°C to +50°C centigrade.
2. According to FCC Part 2 Section 2.1055 (a) (2), for battery powered equipment, the frequency stability shall be measured with reducing primary supply voltage to the battery operating end point, which is specified by the manufacture.
3. Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried voltage equipment.

### TEST PROCEDURE

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a "call mode". This is accomplished with the use of R&S CMU200 DIGITAL RADIO COMMUNICATION TESTER.

1. Measure the carrier frequency at room temperature;
2. Subject the EUT to overnight soak at -30°C;
3. With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on middle channel of PCS 1900 and GSM850, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming;
4. Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 0.5 hours at each temperature, unpowered, before making measurements;
5. Remeasure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments remeasuring carrier frequency at each voltage. Pause at nominal voltage for 0.5 hours unpowered, to allow any self-heating to stabilize, before continuing;
6. Subject the EUT to overnight soak at +50°C;
7. With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming;
8. Repeat the above measurements at 10°C increments from +50°C to -30°C. Allow at least 0.5 hours at each temperature, unpowered, before making measurements;
9. At all temperature levels hold the temperature to +/- 0.5°C during the measurement procedure;

### TEST CONFIGURATION



### TEST LIMITS

#### ***For Hand carried battery powered equipment***

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability.

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of between 6.29 VDC and 8.51 VDC, with a nominal voltage of 7.40DC. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress. These voltages represent a tolerance of -10 % and +12.5 %. For the purposes of measuring frequency stability these voltage limits are to be used.

***For equipment powered by primary supply voltage***

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. For this EUT section 2.1055(d)(1) applies. This requires varying primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

**TEST RESULTS**

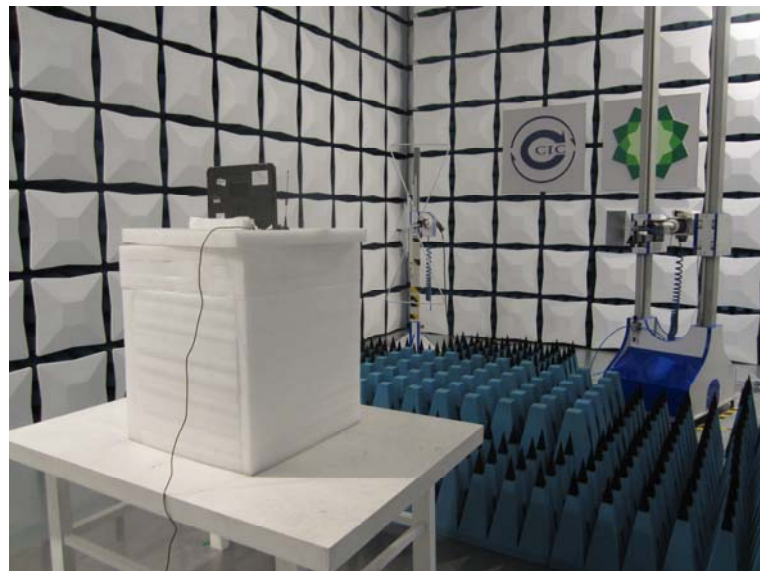
| GPRS850(GMSK) |                  |                     |                      |             |         |
|---------------|------------------|---------------------|----------------------|-------------|---------|
| DC Power      | Temperature (°C) | Frequency error(Hz) | Frequency error(ppm) | Limit (ppm) | Verdict |
| 6.29          | 25               | 31                  | 0.037                | 0.10        | PASS    |
| 7.40          | 25               | 29                  | 0.035                | 0.10        | PASS    |
| 8.51          | 25               | 29                  | 0.035                | 0.10        | PASS    |
| 7.40          | -30              | 35                  | 0.042                | 0.10        | PASS    |
| 7.40          | -20              | -21                 | 0.025                | 0.10        | PASS    |
| 7.40          | -10              | -30                 | 0.036                | 0.10        | PASS    |
| 7.40          | 0                | -27                 | 0.032                | 0.10        | PASS    |
| 7.40          | 10               | -24                 | 0.029                | 0.10        | PASS    |
| 7.40          | 20               | 19                  | 0.023                | 0.10        | PASS    |
| 7.40          | 30               | 16                  | 0.019                | 0.10        | PASS    |
| 7.40          | 40               | -22                 | 0.026                | 0.10        | PASS    |
| 7.40          | 50               | -18                 | 0.022                | 0.10        | PASS    |

| EGPRS850(8PSK) |                  |                     |                      |             |         |
|----------------|------------------|---------------------|----------------------|-------------|---------|
| DC Power       | Temperature (°C) | Frequency error(Hz) | Frequency error(ppm) | Limit (ppm) | Verdict |
| 6.29           | 25               | 32                  | 0.021                | 0.10        | PASS    |
| 7.40           | 25               | 32                  | 0.021                | 0.10        | PASS    |
| 8.51           | 25               | 32                  | 0.021                | 0.10        | PASS    |
| 7.40           | -30              | 38                  | 0.018                | 0.10        | PASS    |
| 7.40           | -20              | -26                 | 0.017                | 0.10        | PASS    |
| 7.40           | -10              | -22                 | 0.014                | 0.10        | PASS    |
| 7.40           | 0                | -26                 | 0.011                | 0.10        | PASS    |
| 7.40           | 10               | -20                 | 0.009                | 0.10        | PASS    |
| 7.40           | 20               | 25                  | 0.020                | 0.10        | PASS    |
| 7.40           | 30               | 21                  | 0.018                | 0.10        | PASS    |
| 7.40           | 40               | -27                 | 0.012                | 0.10        | PASS    |
| 7.40           | 50               | -21                 | 0.010                | 0.10        | PASS    |

| GPRS1900(GMSK) |                  |                     |                      |             |         |
|----------------|------------------|---------------------|----------------------|-------------|---------|
| DC Power       | Temperature (°C) | Frequency error(Hz) | Frequency error(ppm) | Limit (ppm) | Verdict |
| 6.29           | 20               | -41                 | 0.022                | 0.10        | PASS    |
| 7.40           | 20               | -38                 | 0.020                | 0.10        | PASS    |
| 8.51           | 20               | -41                 | 0.022                | 0.10        | PASS    |
| 7.40           | -30              | -35                 | 0.019                | 0.10        | PASS    |
| 7.40           | -20              | -36                 | 0.019                | 0.10        | PASS    |
| 7.40           | -10              | 25                  | 0.013                | 0.10        | PASS    |
| 7.40           | 0                | 21                  | 0.011                | 0.10        | PASS    |
| 7.40           | 10               | -11                 | 0.006                | 0.10        | PASS    |
| 7.40           | 20               | -20                 | 0.011                | 0.10        | PASS    |
| 7.40           | 30               | -38                 | 0.020                | 0.10        | PASS    |
| 7.40           | 40               | 24                  | 0.013                | 0.10        | PASS    |
| 7.40           | 50               | 29                  | 0.015                | 0.10        | PASS    |

| EGPRS1900(8PSK) |                  |                     |                      |             |         |
|-----------------|------------------|---------------------|----------------------|-------------|---------|
| DC Power        | Temperature (°C) | Frequency error(Hz) | Frequency error(ppm) | Limit (ppm) | Verdict |
| 6.29            | 20               | -41                 | 0.022                | 0.10        | PASS    |
| 7.40            | 20               | -41                 | 0.022                | 0.10        | PASS    |
| 8.51            | 20               | -41                 | 0.022                | 0.10        | PASS    |
| 7.40            | -30              | -31                 | 0.016                | 0.10        | PASS    |
| 7.40            | -20              | -36                 | 0.019                | 0.10        | PASS    |
| 7.40            | -10              | 29                  | 0.015                | 0.10        | PASS    |
| 7.40            | 0                | 26                  | 0.014                | 0.10        | PASS    |
| 7.40            | 10               | -17                 | 0.009                | 0.10        | PASS    |
| 7.40            | 20               | -28                 | 0.015                | 0.10        | PASS    |
| 7.40            | 30               | -38                 | 0.020                | 0.10        | PASS    |
| 7.40            | 40               | 22                  | 0.012                | 0.10        | PASS    |
| 7.40            | 50               | 25                  | 0.013                | 0.10        | PASS    |

## 5. Test Setup Photos of the EUT







## 6. External and Internal Photos of the EUT

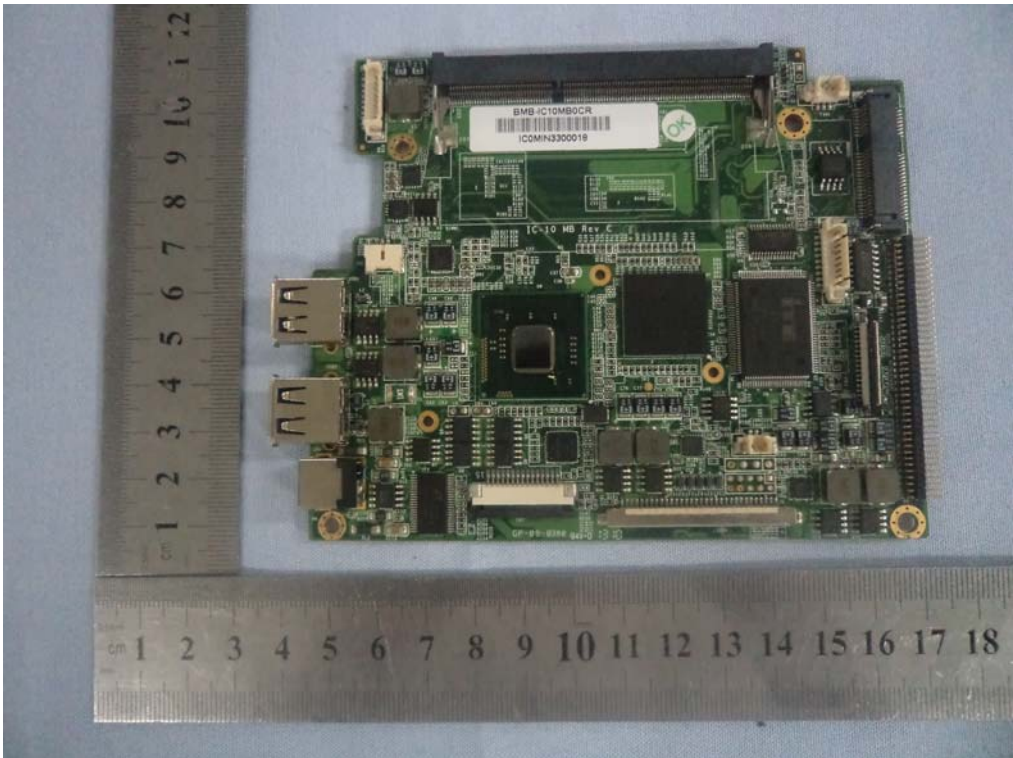
### External Photos



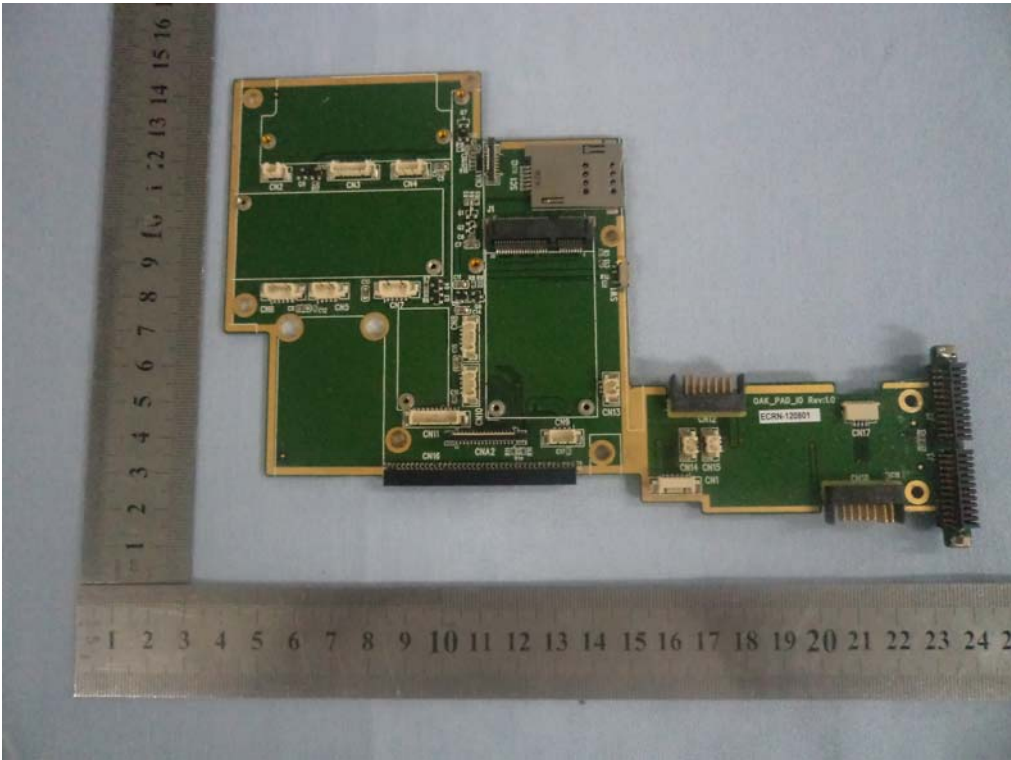
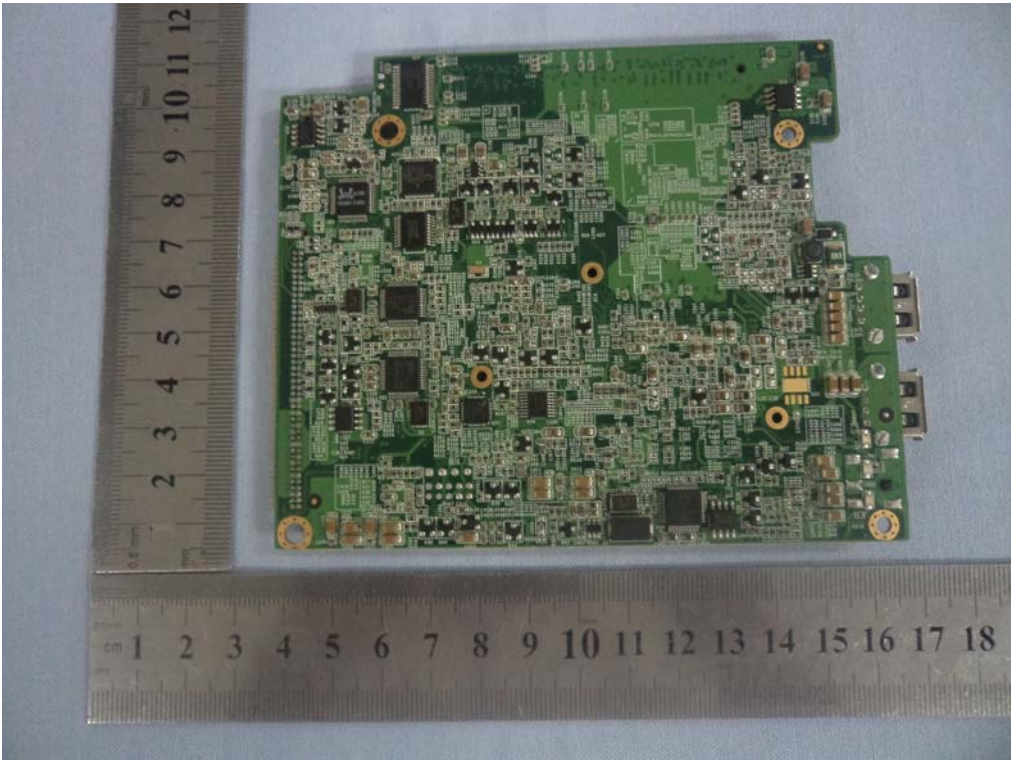


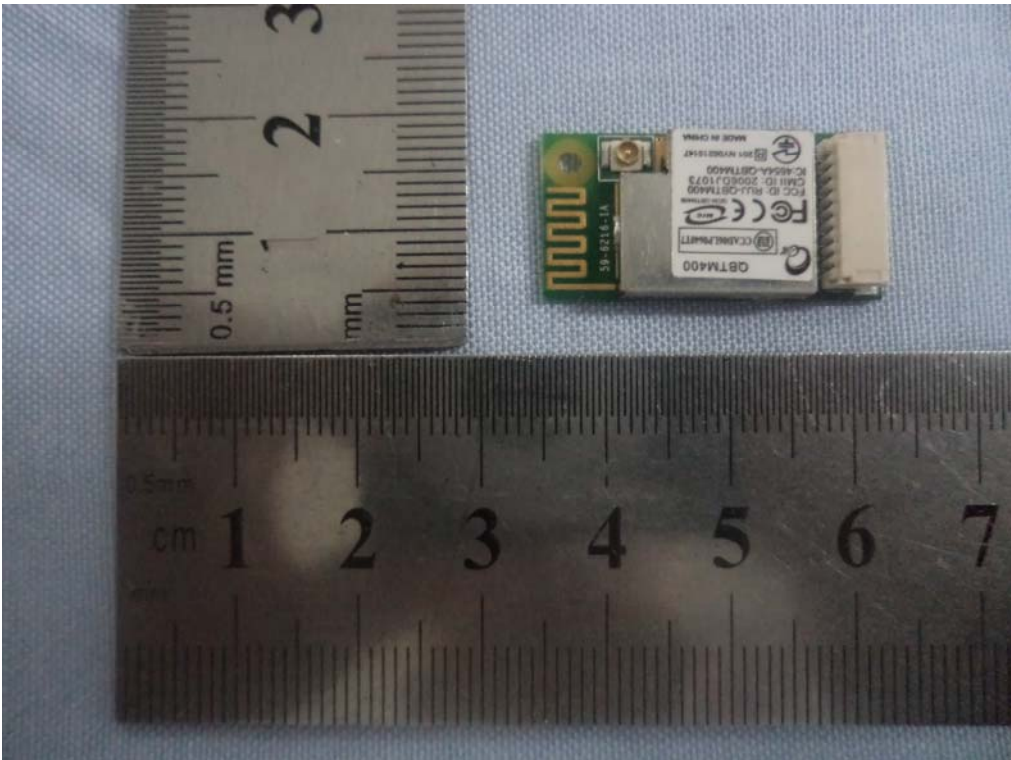
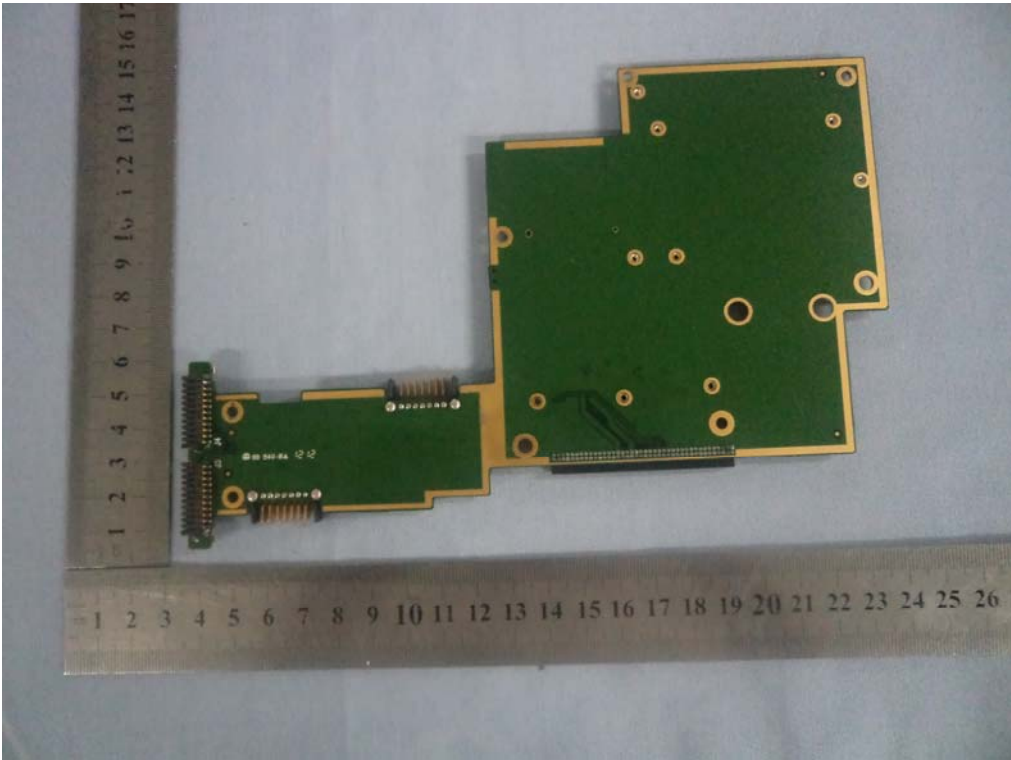
Internal Photos

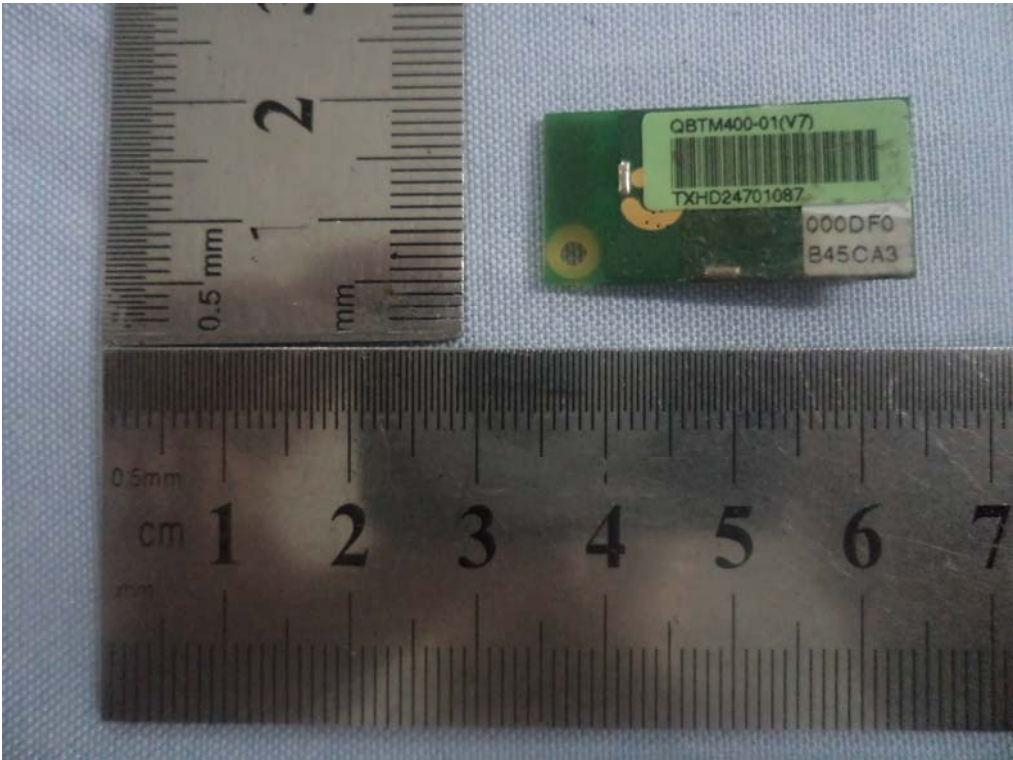
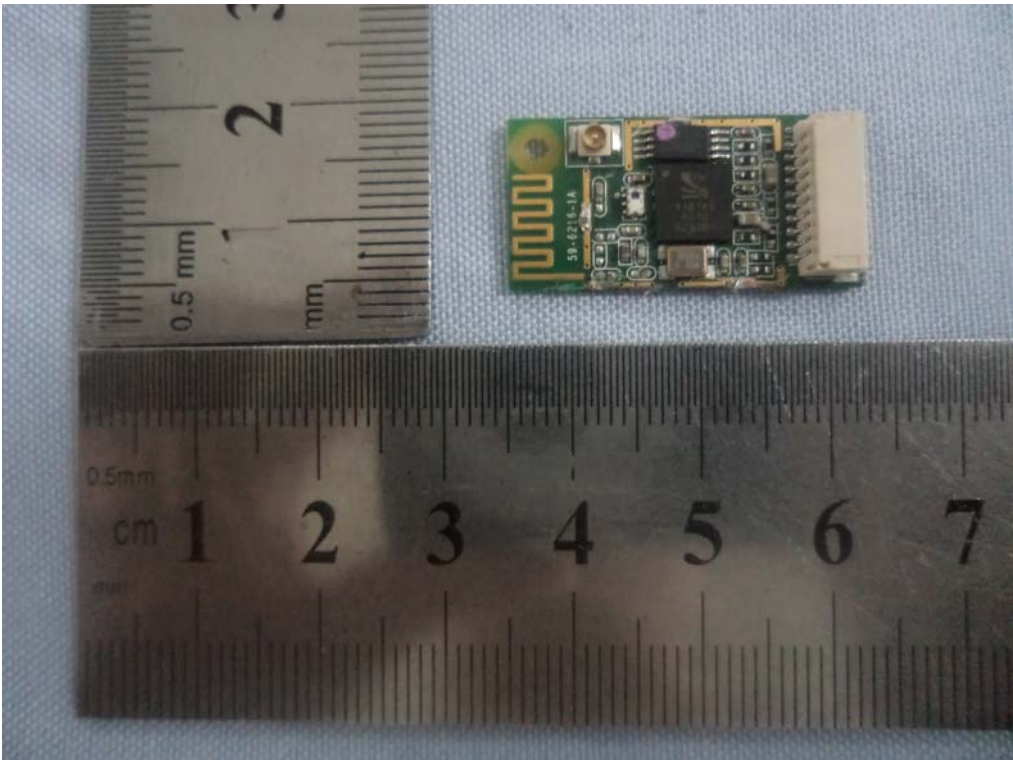




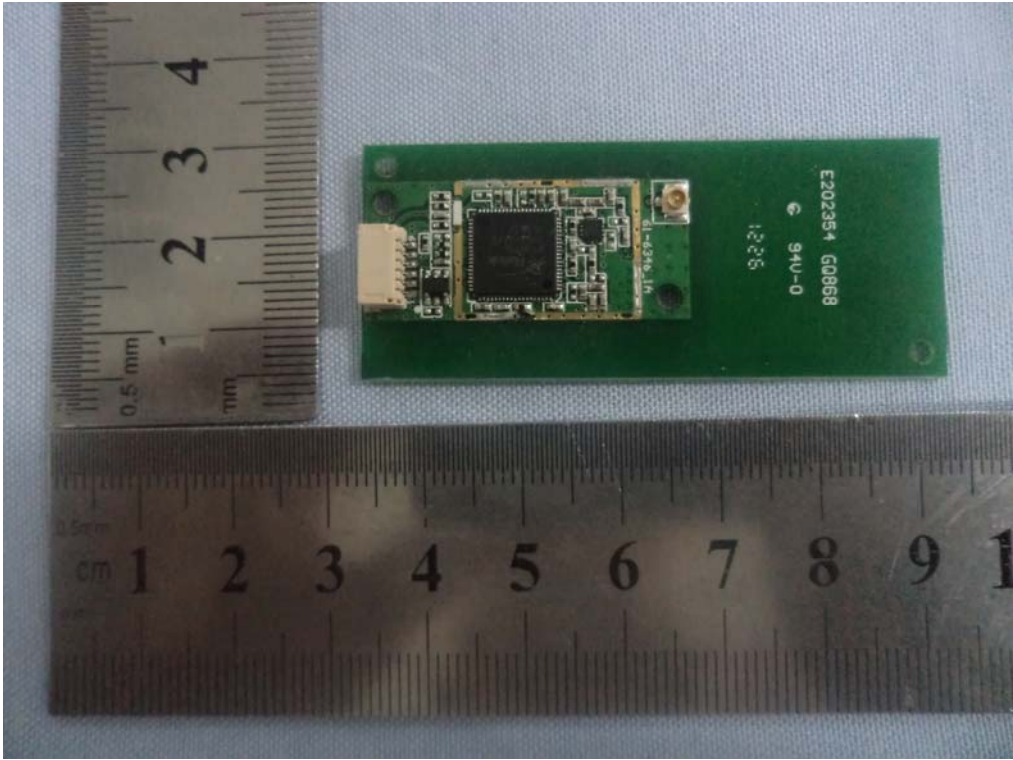
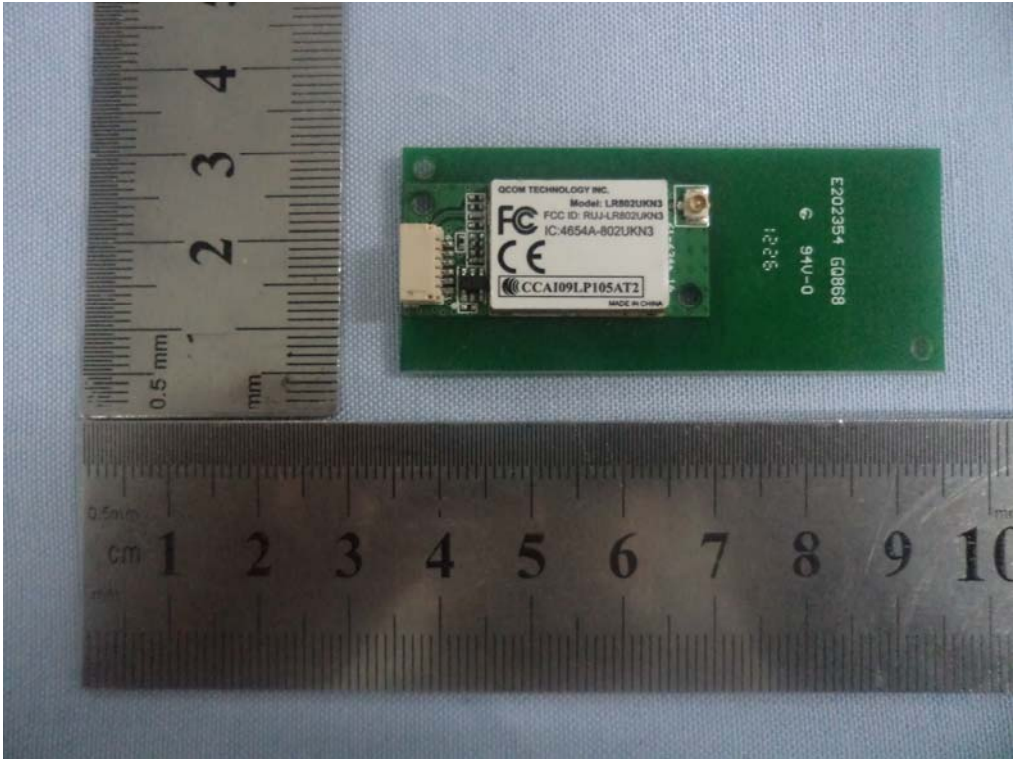




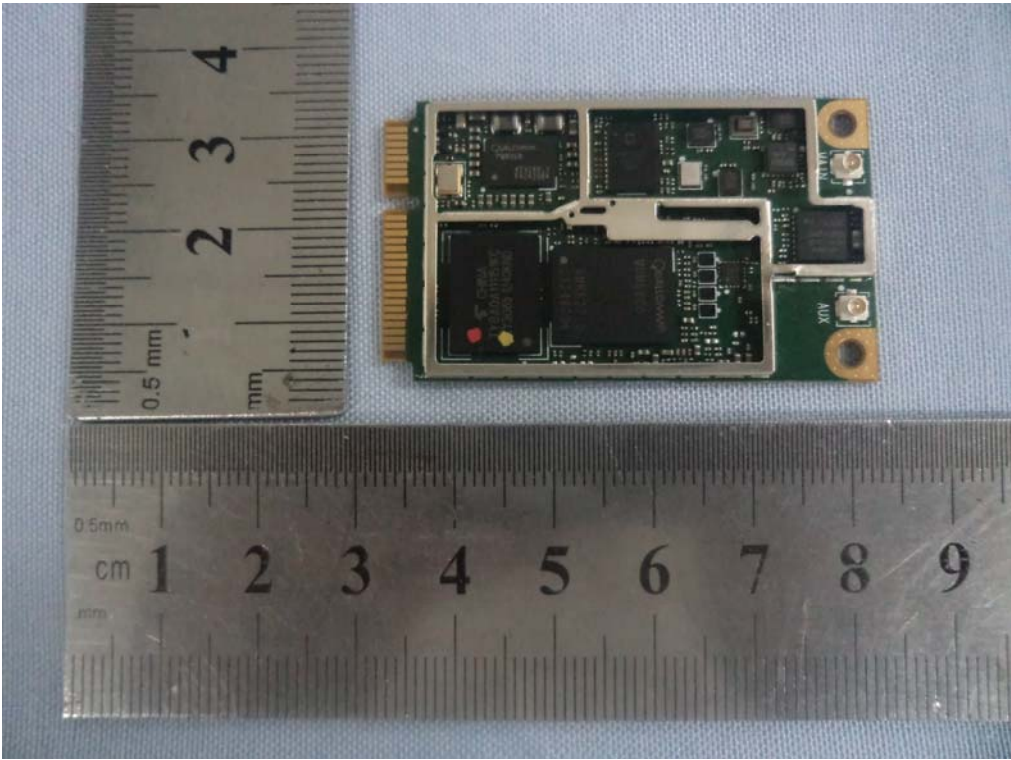


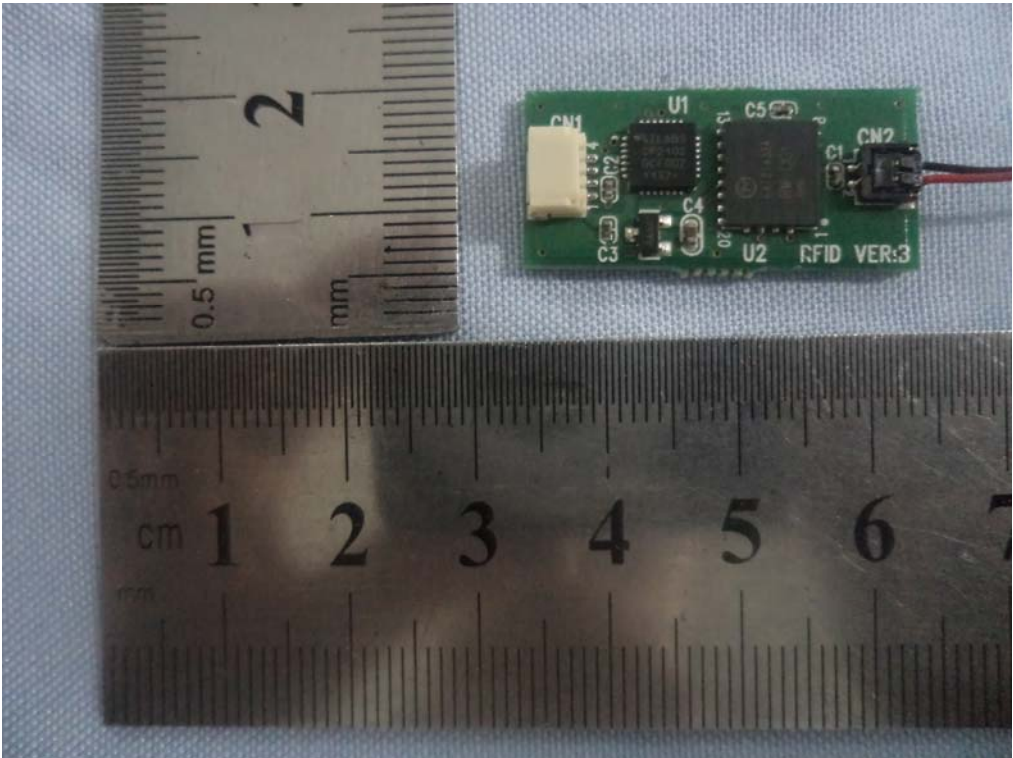
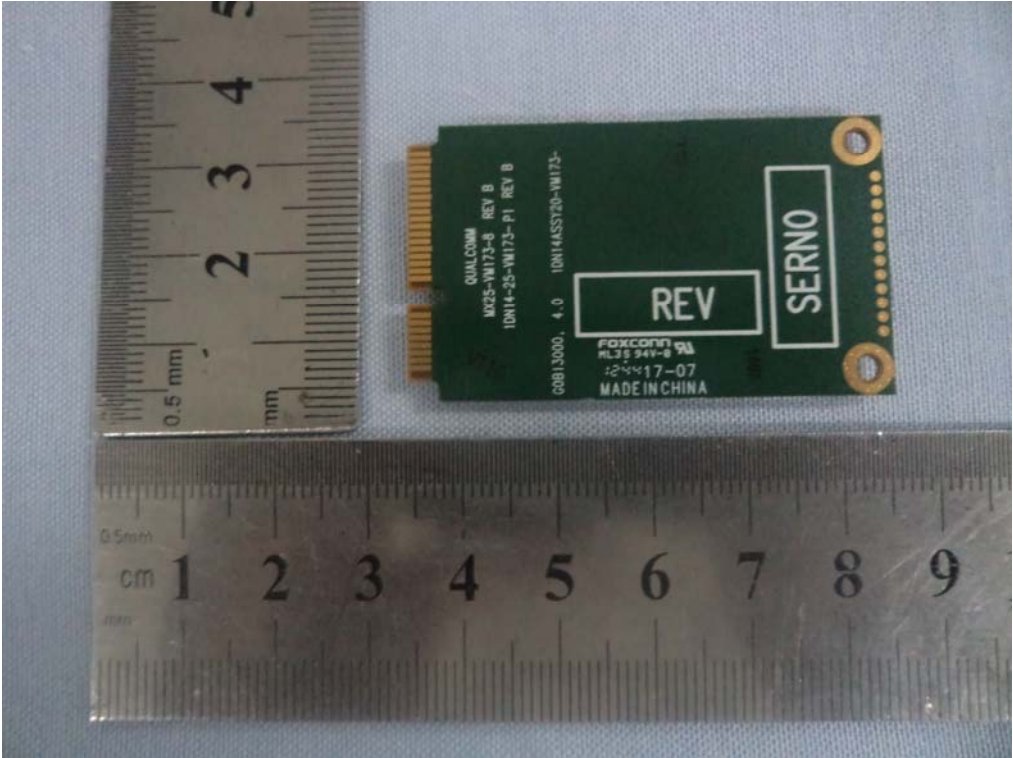




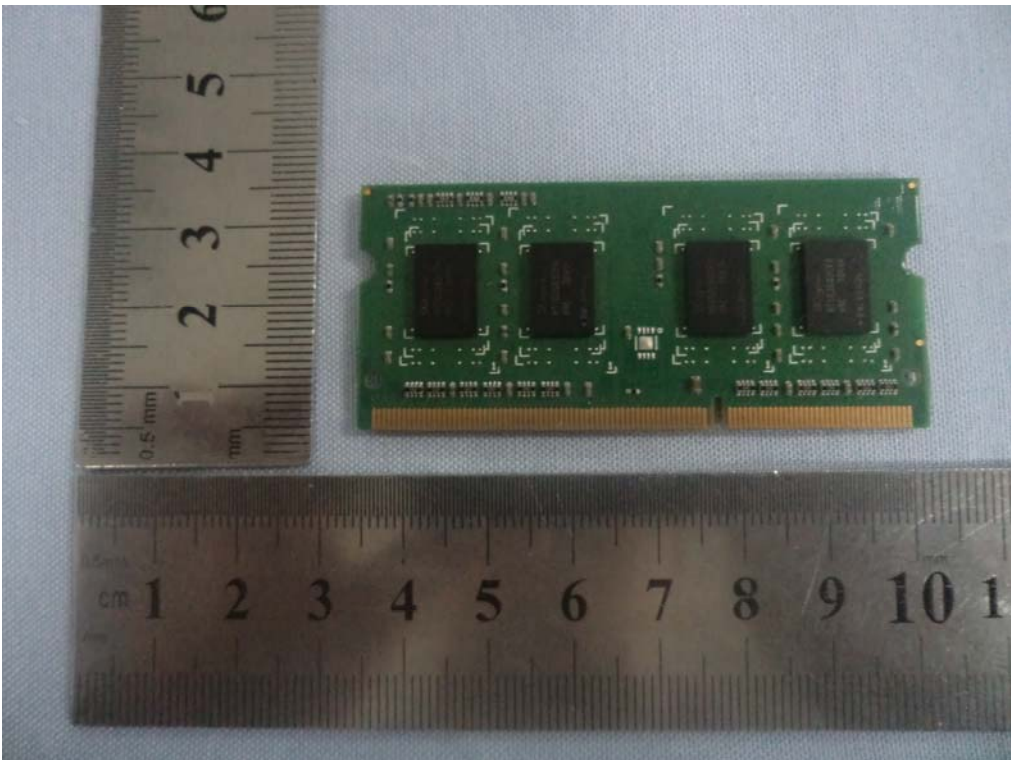
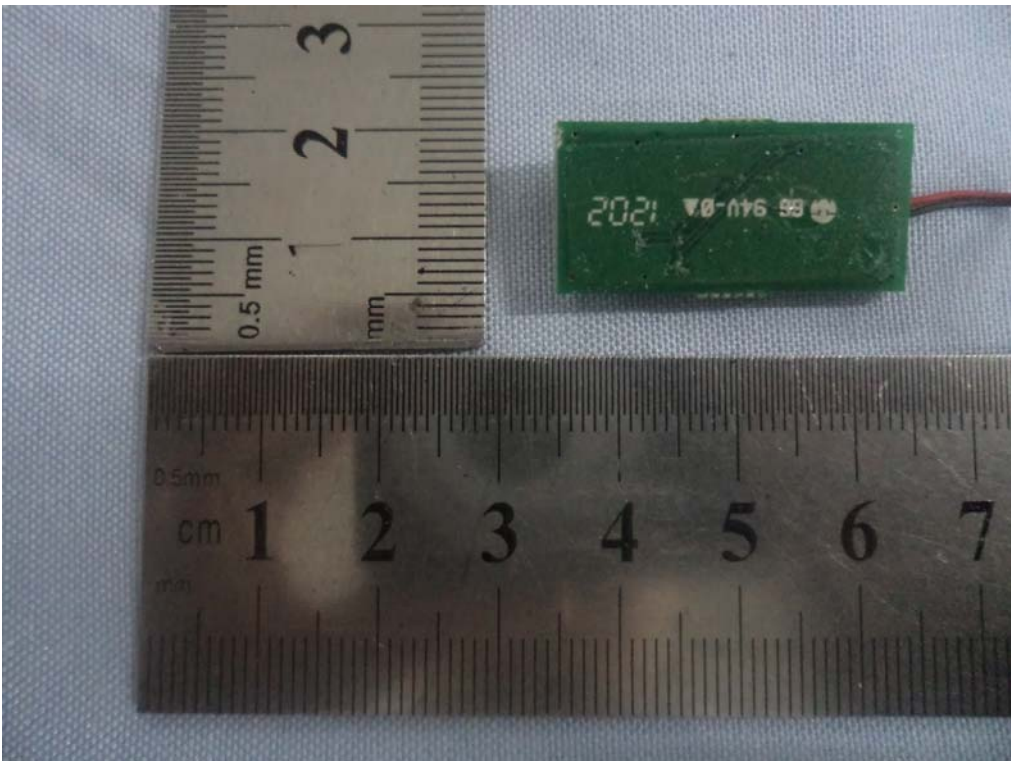


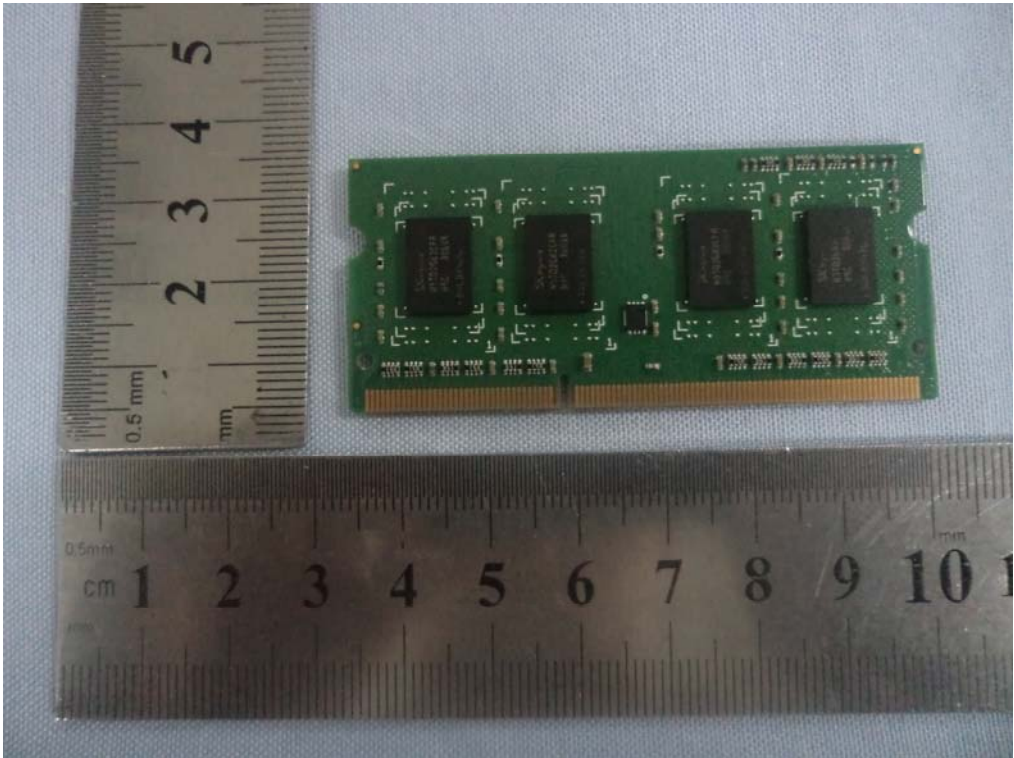
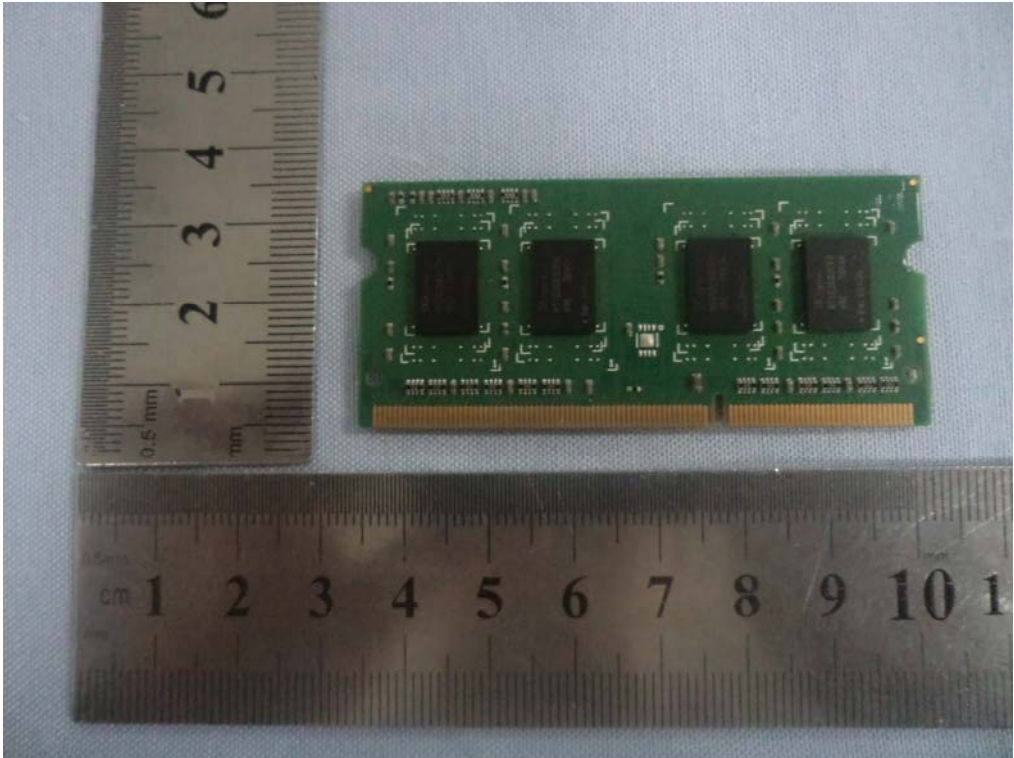




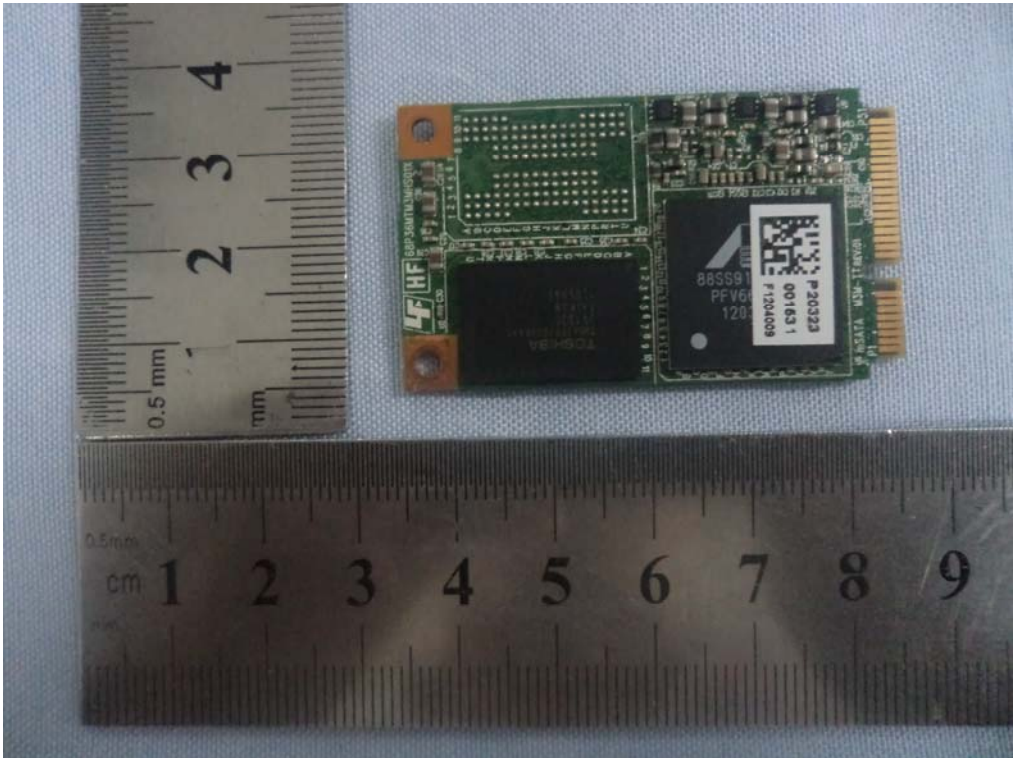
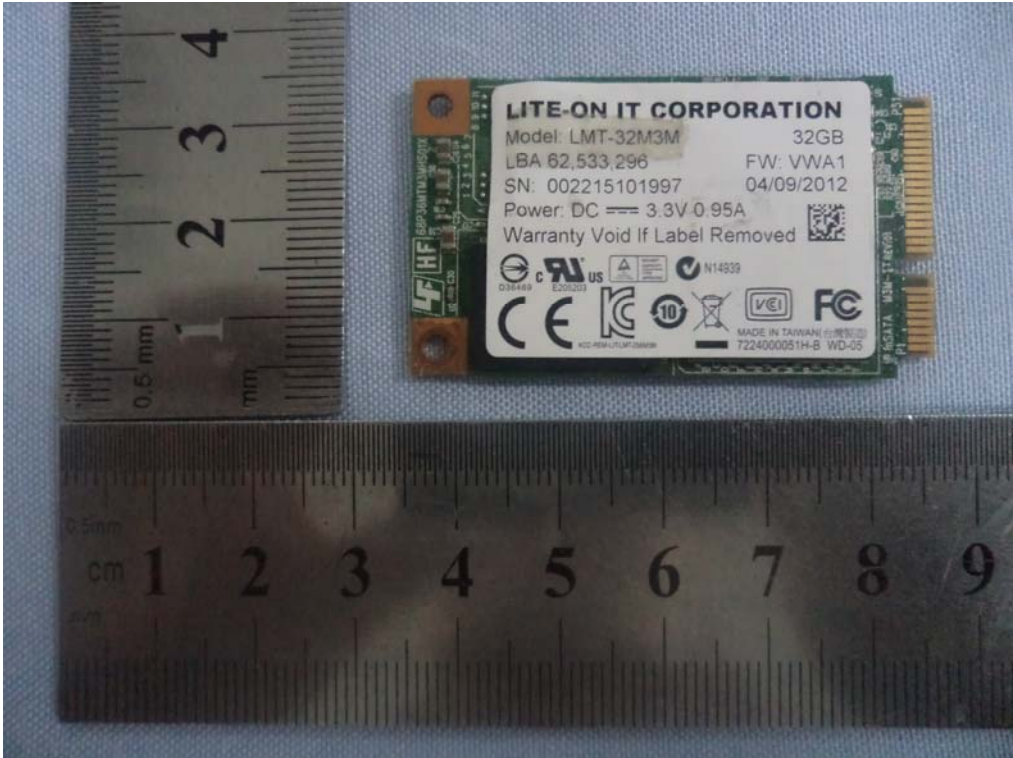


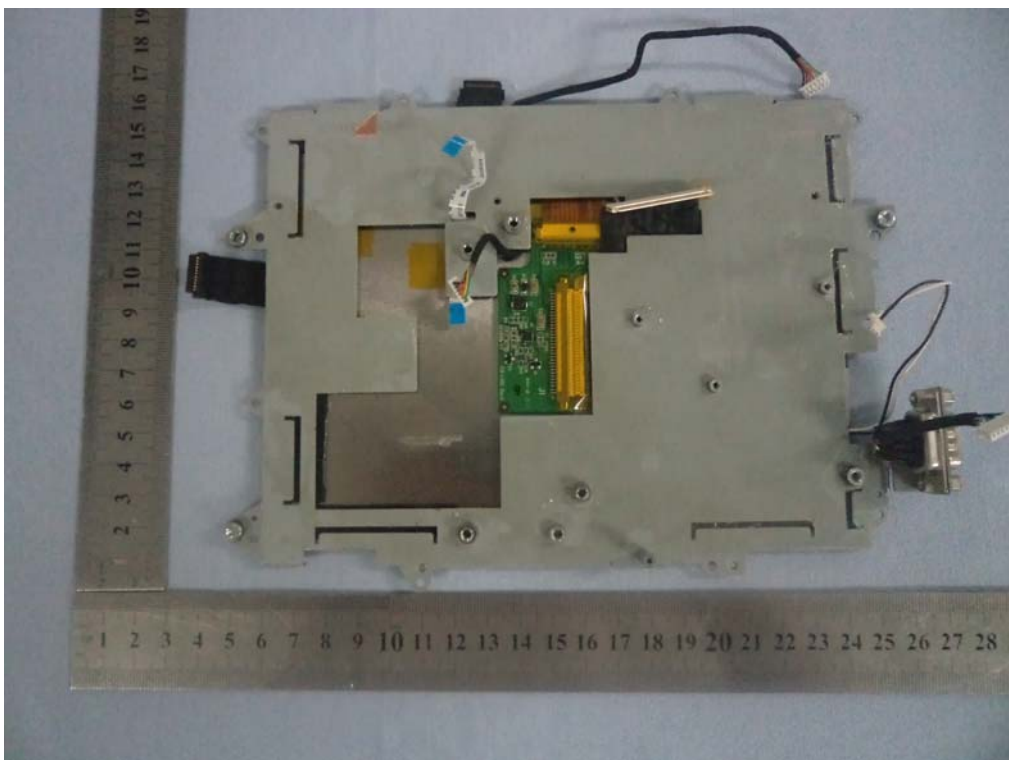
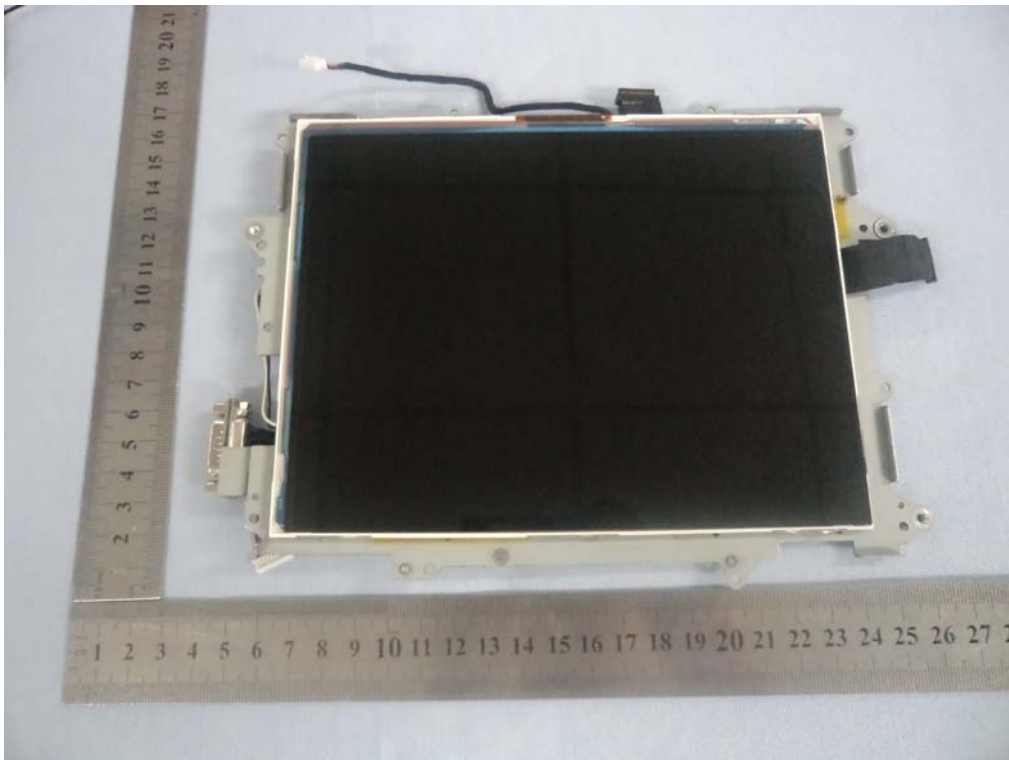












.....End of Report.....