# FCC RF Test Report

| | | |
|---|---|---|
| APPLICANT | : | HTC Corporation |
| EQUIPMENT | : | Smartphone |
| MODEL NAME | : | PM35110 |
| FCC ID | : | NM8PM35110 |
| STANDARD | : | FCC 47 CFR Part 2, 22(H), 24(E) |
| CLASSIFICATION | : | PCS Licensed Transmitter Held to Ear (PCE) |

**The product was received on Aug. 14, 2012 and completely tested on Sep. 11, 2012. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI / TIA / EIA-603-C-2004 and shown compliance with the applicable technical standards.**

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

**Reviewed by:**

Jones Tsai

**Jones Tsai / Manager**

***SPORTON INTERNATIONAL INC.***
***No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.***

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# REVISION HISTORY

| REPORT NO. | VERSION | DESCRIPTION | ISSUED DATE |
|---|---|---|---|
| FG280818-01 | Rev. 01 | Initial issue of report | Sep. 24, 2012 |
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# SUMMARY OF TEST RESULT

| Report Section | FCC Rule | IC Rule | Description | Limit | Result | Remark |
|---|---|---|---|---|---|---|
| 3.1 | §2.1046 | N/A | Conducted Output Power | N/A | PASS | - |
| 3.2 | §24.232(d) | N/A | Peak-to-Average Ratio | < 13 dB | PASS | - |
| 3.3 | §22.913(a)(2) | RSS-132(4.4) SRSP-503(5.1.3) | Effective Radiated Power | < 7 Watts | PASS | - |
| 3.3 | §24.232(c) | RSS-133 (6.4) SRSP-510(5.1.2) | Equivalent Isotropic Radiated Power | < 2 Watts | PASS | - |
| 3.4 | §2.1049 §22.917(a) §24.238(a) | N/A | Occupied Bandwidth | N/A | PASS | - |
| 3.5 | §2.1051 §22.917(a) §24.238(a) | RSS-132 (4.5.1) RSS-133 (6.5.1) | Band Edge Measurement | < $43+10\log_{10}$(P[Watts]) | PASS | - |
| 3.6 | §2.1051 §22.917(a) §24.238(a) | RSS-132 (4.5.1) RSS-133 (6.5.1) | Conducted Spurious Emission | < $43+10\log_{10}$(P[Watts]) | PASS | - |
| 3.7 | §2.1053 §22.917(a) §24.238(a) | RSS-132 (4.5.1) RSS-133 (6.5.1) | Field Strength of Spurious Radiation | < $43+10\log_{10}$(P[Watts]) | PASS | Under limit 16.26 dB at 5640.000 MHz |
| 3.8 | §2.1055 §22.355 §24.235 | RSS-132(4.3) RSS-133(6.3) | Frequency Stability for Temperature & Voltage | < 2.5 ppm | PASS | - |

# 1 General Description

## 1.1 Applicant

**HTC Corporation**

No. 23, Xinghua Rd., Taoyuan City, Taoyuan County 330, Taiwan

## 1.2 Manufacturer

**HTC Corporation**

No. 23, Xinghua Rd., Taoyuan City, Taoyuan County 330, Taiwan

## 1.3 Feature of Equipment Under Test

| Product Feature | |
|---|---|
| **Equipment** | Smartphone |
| **Model Name** | PM35110 |
| **FCC ID** | NM8PM35110 |
| **Sample 1** | EUT with LCM 1, Camera Front 1, Camera Main 1, DDR Memory 1 and Battery 1 |
| **Sample 2** | EUT with LCM 2, Camera Front 1, Camera Main 2, DDR Memory 2 and Battery 2 |
| **Sample 3** | EUT with LCM 1, Camera Front 1, Camera Main 1, DDR Memory 3 and Battery 1 |
| **Sample 4** | EUT with LCM 2, Camera Front 2, Camera Main 2, DDR Memory 3 and Battery 2 |
| **EUT supports Radios application** | GSM/ EGPRS/ WCDMA/ HSPA/<br>WLAN 11abgn/ Bluetooth/ NFC |
| **EUT Stage** | Production Unit |

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

| Product Specification subjective to this standard | |
|---|---|
| **Tx Frequency** | GSM850: 824.2 MHz ~ 848.8 MHz<br>GSM1900: 1850.2 MHz ~ 1909.8MHz<br>WCDMA Band V: 826.4 MHz ~ 846.6 MHz<br>WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz |
| **Rx Frequency** | GSM850: 869.2 MHz ~ 893.8 MHz<br>GSM1900: 1930.2 MHz ~ 1989.8 MHz<br>WCDMA Band V: 871.4 MHz ~ 891.6 MHz<br>WCDMA Band II: 1932.4 MHz ~ 1987.6 MHz |
| **Maximum Output Power to Antenna** | GSM850 : 32.79 dBm<br>GSM1900 : 30.30 dBm<br>WCDMA Band V : 23.58 dBm<br>WCDMA Band II : 23.46 dBm |
| **Antenna Type** | PIFA Antenna |
| **Type of Modulation** | GSM: GMSK<br>GPRS: GMSK<br>EDGE: 8PSK<br>WCDMA: QPSK (Uplink)<br>HSDPA: QPSK (Uplink)<br>HSUPA: QPSK (Uplink) |

## 1.4 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator

| FCC Rule | System | Type of Modulation | Maximum ERP/EIRP (W) | Frequency Tolerance (%, Hz, ppm) | Emission Designator |
|---|---|---|---|---|---|
| Part 22 | GSM850 GSM | GMSK | 0.4624 | 0.03 ppm | 248KGXW |
| Part 22 | GSM850 EDGE 8 | GMSK / 8PSK | 0.0964 | 0.02 ppm | 248KG7W |
| Part 22 | WCDMA Band V RMC 12.2Kbps | QPSK | 0.0484 | 0.02 ppm | 4M12F9W |
| Part 24 | GSM1900 GSM | GMSK | 0.9333 | 0.02 ppm | 250KGXW |
| Part 24 | GSM1900 EDGE 8 | GMSK / 8PSK | 0.2812 | 0.03 ppm | 248KG7W |
| Part 24 | WCDMA Band II RMC 12.2Kbps | QPSK | 0.1585 | 0.01 ppm | 4M08F9W |

## 1.5 Testing Site

| Test Site | SPORTON INTERNATIONAL INC. | | |
|---|---|---|---|
| Test Site Location | No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park,<br>Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.<br>TEL: +886-3-327-3456<br>FAX: +886-3-328-4978 | | |
| Test Site No. | Sporton Site No. | | FCC/IC Registration No. |
| | TH02-HY | 03CH05-HY | 722060/4086B-1 |

## 1.6 Applied Standards

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

- Preliminary Guidance for Receiving Applications for Certification of 3G Device. May 9, 2006.
- FCC 47 CFR Part 2, 22(H), 24(E)
- ANSI / TIA / EIA-603-C-2004
- FCC KDB 971168 D01 Power Meas. License Digital Systems v01
- IC RSS-132 Issue 2
- IC RSS-133 Issue 5

**Remark:**

**1.** All test items were verified and recorded according to the standards and without any deviation during the test.

**2.** This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

## 1.7 Ancillary Equipment List

| Item | Equipment | Trade Name | Model No. | FCC ID | Data Cable | Power Cord |
|---|---|---|---|---|---|---|
| 1. | System Simulator | R&S | CMU200 | N/A | N/A | Unshielded, 1.8 m |

# 2 Test Configuration of Equipment Under Test

## 2.1 Test Mode

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

Frequency range investigated for radiated emission is as follows:

1. 30 MHz to 9000 MHz for GSM850 and WCDMA Band V.
2. 30 MHz to 19000 MHz for GSM1900 and WCDMA Band II.

| Test Modes | | |
|---|---|---|
| **Band** | **Radiated TCs** | **Conducted TCs** |
| **GSM 850** | ■ GSM Link for Sample 1<br>■ EDGE 8 Link for Sample 1<br>■ GSM Link for Sample 2 | ■ GSM Link for Sample 1<br>■ EDGE 8 Link for Sample 1 |
| **GSM 1900** | ■ GSM Link for Sample 1<br>■ EDGE 8 Link for Sample 1<br>■ GSM Link for Sample 2 | ■ GSM Link for Sample 1<br>■ EDGE 8 Link for Sample 1 |
| **WCDMA Band V** | ■ RMC 12.2Kbps Link for Sample 1 | ■ RMC 12.2Kbps Link for Sample 1 |
| **WCDMA Band II** | ■ RMC 12.2Kbps Link for Sample 1 | ■ RMC 12.2Kbps Link for Sample 1 |

**Note:**

**1.** The maximum power levels are GSM mode for GMSK link, EDGE multi-slot class 8 mode for 8PSK link, RMC 12.2Kbps mode for WCDMA band V, and RMC 12.2Kbps mode for WCDMA band II, only these modes were used for all tests.

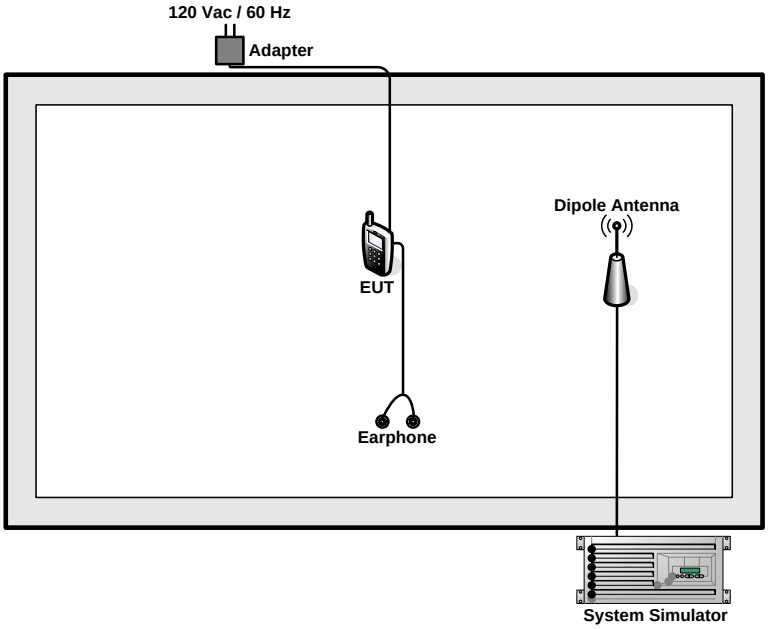
**2.** Because there are individual antennas for each WWAN, WLAN, and Bluetooth, the co-location test modes are not required.

**The conducted power tables are as follows:**

| Conducted Power (*Unit: dBm) | | | | | | |
|---|---|---|---|---|---|---|
| **Band** | **GSM850** | | | **GSM1900** | | |
| **Channel** | **128** | **189** | **251** | **512** | **661** | **810** |
| **Frequency** | **824.2** | **836.4** | **848.8** | **1850.2** | **1880.0** | **1909.8** |
| **GSM** | **32.79** | 32.78 | 32.76 | 30.29 | 30.29 | **30.30** |
| **GPRS 8** | 32.78 | 32.78 | 32.78 | 30.28 | 30.28 | 30.29 |
| **GPRS 10** | 31.53 | 31.52 | 31.52 | 29.03 | 29.05 | 29.06 |
| **GPRS 12** | 29.54 | 29.53 | 29.52 | 27.52 | 27.53 | 27.55 |
| **EGPRS 8** | **26.21** | 26.20 | 26.19 | 25.04 | 25.03 | **25.05** |
| **EGPRS 10** | 25.35 | 25.36 | 25.34 | 24.13 | 24.13 | 24.15 |
| **EGPRS 12** | 23.56 | 23.53 | 23.51 | 22.06 | 22.05 | 22.07 |

| Conducted Power (*Unit: dBm) | | | | | | |
|---|---|---|---|---|---|---|
| **Band** | **WCDMA Band V** | | | **WCDMA Band II** | | |
| **Channel** | **4132** | **4182** | **4233** | **9262** | **9400** | **9538** |
| **Frequency** | **826.4** | **836.4** | **846.6** | **1852.4** | **1880.0** | **1907.6** |
| **RMC 12.2K** | **23.58** | 23.44 | 23.46 | **23.46** | 23.35 | 23.30 |
| **HSDPA Subtest-1** | 23.37 | 23.20 | 23.21 | 23.26 | 23.11 | 23.09 |
| **HSDPA Subtest-2** | 22.35 | 22.16 | 22.18 | 22.22 | 22.11 | 22.06 |
| **HSDPA Subtest-3** | 22.10 | 21.90 | 21.94 | 21.97 | 21.90 | 21.87 |
| **HSDPA Subtest-4** | 21.87 | 21.70 | 21.71 | 21.71 | 21.65 | 21.56 |
| **HSUPA Subtest-1** | 22.40 | 22.16 | 22.25 | 22.36 | 22.28 | 22.27 |
| **HSUPA Subtest-2** | 20.86 | 20.67 | 20.78 | 20.77 | 20.68 | 20.61 |
| **HSUPA Subtest-3** | 21.13 | 20.96 | 21.00 | 21.15 | 21.06 | 21.05 |
| **HSUPA Subtest-4** | 20.79 | 20.68 | 20.71 | 20.69 | 20.62 | 20.59 |
| **HSUPA Subtest-5** | 22.47 | 22.34 | 22.36 | 22.45 | 22.40 | 22.39 |

## 2.2 Connection Diagram of Test System



# 3 Test Result

## 3.1 Conducted Output Power Measurement

### 3.1.1 Description of the Conducted Output Power Measurement

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

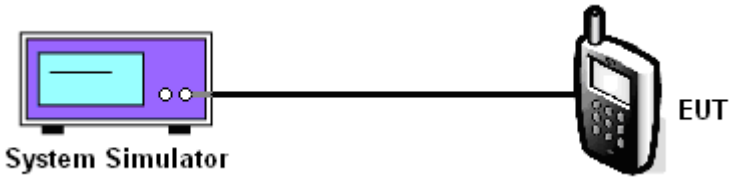
### 3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.1.3 Test Procedures

1. The transmitter output port was connected to base station.
2. Set EUT at maximum power through base station.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Compare each band and different modulation combination to show the worst data rate.

### 3.1.4 Test Setup



### 3.1.5 Test Result of Conducted Output Power

| Cellular Band | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Modes | GSM850 (GSM) | | | GSM850 (EDGE 8) | | | WCDMA Band V (RMC 12.2Kbps) | | |
| Channel | 128 (Low) | 189 (Mid) | 251 (High) | 128 (Low) | 189 (Mid) | 251 (High) | 4132 (Low) | 4182 (Mid) | 4233 (High) |
| Frequency (MHz) | 824.2 | 836.4 | 848.8 | 824.2 | 836.4 | 848.8 | 826.4 | 836.4 | 846.6 |
| Conducted Power (dBm) | 32.79 | 32.78 | 32.76 | 26.21 | 26.20 | 26.19 | 23.58 | 23.44 | 23.46 |
| Conducted Power (Watts) | 1.90 | 1.90 | 1.89 | 0.42 | 0.42 | 0.42 | 0.23 | 0.22 | 0.22 |

| PCS Band | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Modes | GSM1900 (GSM) | | | GSM1900 (EDGE 8) | | | WCDMA Band II (RMC 12.2Kbps) | | |
| Channel | 512 (Low) | 661 (Mid) | 810 (High) | 512 (Low) | 661 (Mid) | 810 (High) | 9262 (Low) | 9400 (Mid) | 9538 (High) |
| Frequency (MHz) | 1850.2 | 1880 | 1909.8 | 1850.2 | 1880 | 1909.8 | 1852.4 | 1880 | 1907.6 |
| Conducted Power (dBm) | 30.29 | 30.29 | 30.30 | 25.04 | 25.03 | 25.05 | 23.46 | 23.35 | 23.30 |
| Conducted Power (Watts) | 1.07 | 1.07 | 1.07 | 0.32 | 0.32 | 0.32 | 0.22 | 0.22 | 0.21 |

**Note:** maximum burst average power for GSM, and maximum average power for WCDMA.

## 3.2 Peak-to-Average Ratio

### 3.2.1 Description of the PAR Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. The following guidelines are offered for performing a CCDF measurement.

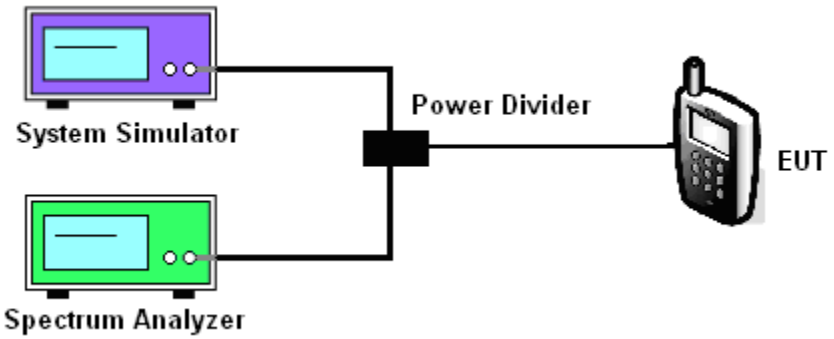
### 3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.2.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The CCDF (Complementary Cumulative Distribution Function) of the middle channel for the highest RF powers were measured.

### 3.2.4 Test Setup



### 3.2.5 Test Result of Peak-to-Average Ratio

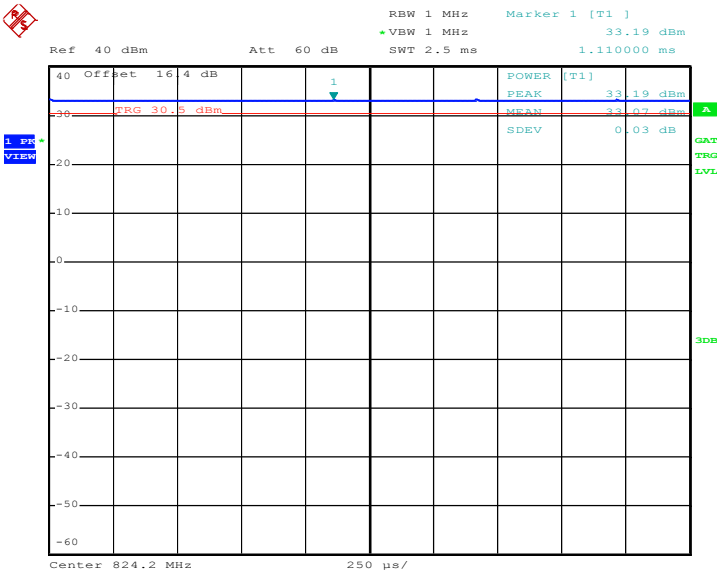
| Cellular Band | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Modes | GSM850 (GSM) | | | GSM850 (EDGE 8) | | | WCDMA Band V (RMC 12.2Kbps) | | |
| Channel | 128 (Low) | 189 (Mid) | 251 (High) | 128 (Low) | 189 (Mid) | 251 (High) | 4132 (Low) | 4182 (Mid) | 4233 (High) |
| Frequency (MHz) | 824.2 | 836.4 | 848.8 | 824.2 | 836.4 | 848.8 | 826.4 | 836.4 | 846.6 |
| Peak-to-Average Ratio (dB) | 0.12 | 0.14 | 0.10 | 0.43 | 0.41 | 0.43 | 2.44 | 2.80 | 2.84 |

| PCS Band | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Modes | GSM1900 (GSM) | | | GSM1900 (EDGE 8) | | | WCDMA Band II (RMC 12.2Kbps) | | |
| Channel | 512 (Low) | 661 (Mid) | 810 (High) | 512 (Low) | 661 (Mid) | 810 (High) | 9262 (Low) | 9400 (Mid) | 9538 (High) |
| Frequency (MHz) | 1850.2 | 1880 | 1909.8 | 1850.2 | 1880 | 1909.8 | 1852.4 | 1880 | 1907.6 |
| Peak-to-Average Ratio (dB) | 0.12 | 0.05 | 0.11 | 0.42 | 0.41 | 0.38 | 2.88 | 3.12 | 2.84 |

## 3.2.6 Test Result (Plots) of Peak-to-Average Ratio

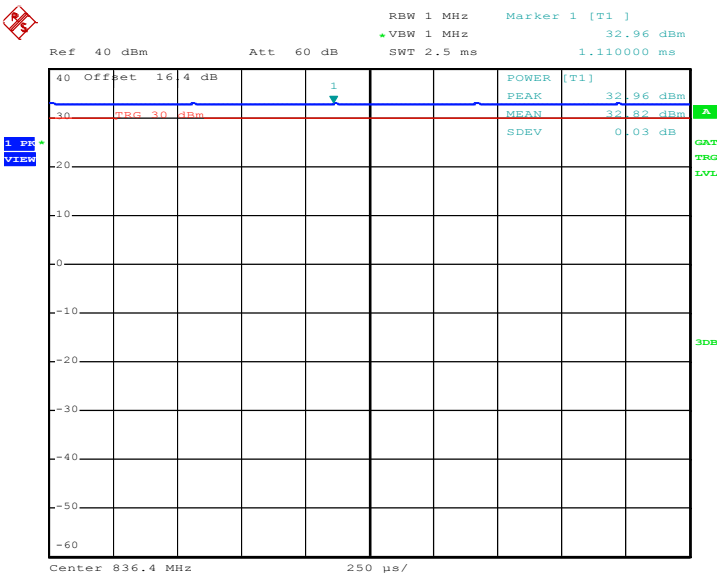
| Band : | GSM 850 | Test Mode : | GSM Link |
|---|---|---|---|

**Peak-to-Average Ratio on Channel 128 (824.2 MHz)**



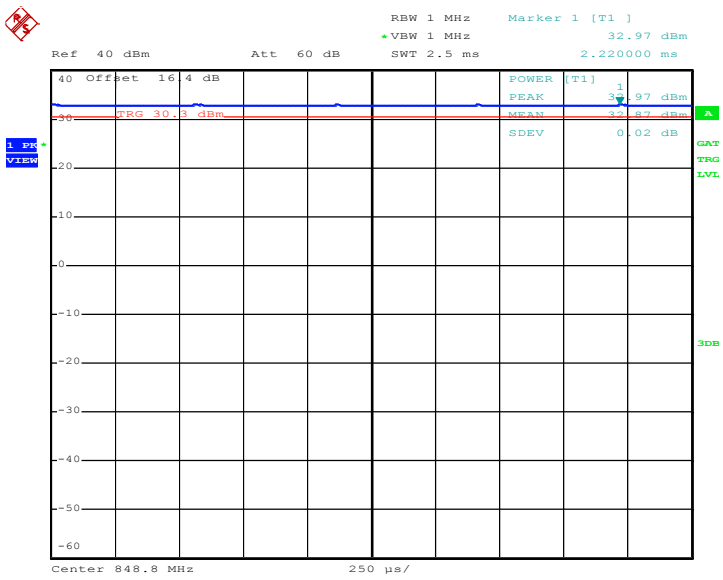

Date: 23.AUG.2012 20:43:48

**Peak-to-Average Ratio on Channel 189 (836.4 MHz)**




Date: 23.AUG.2012 20:29:53

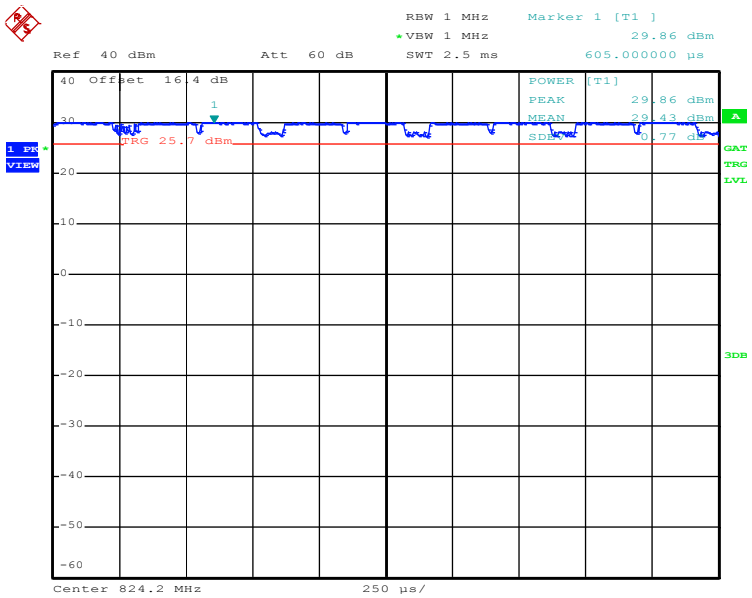
**Peak-to-Average Ratio on Channel 251 (848.8 MHz)**




Date: 23.AUG.2012 20:30:49

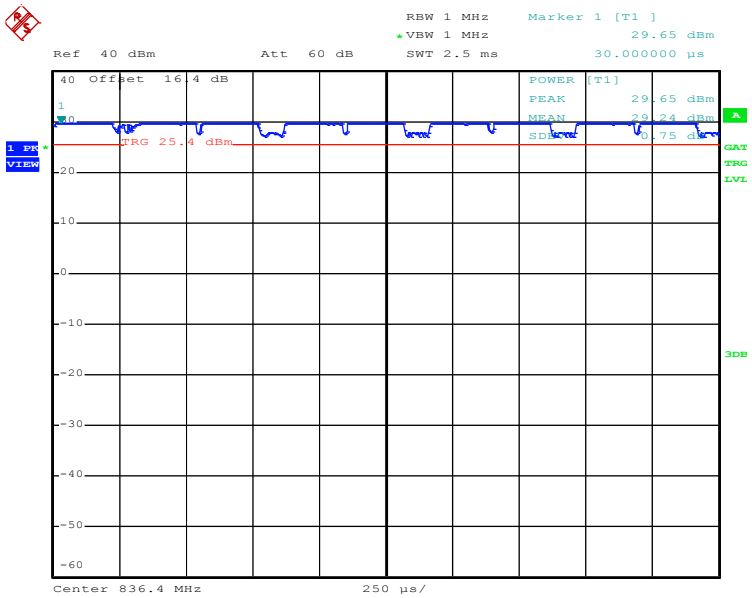
| Band : | GSM 850 | Test Mode : | EDGE 8 Link |
|---|---|---|---|

**Peak-to-Average Ratio on Channel 128 (824.2 MHz)**



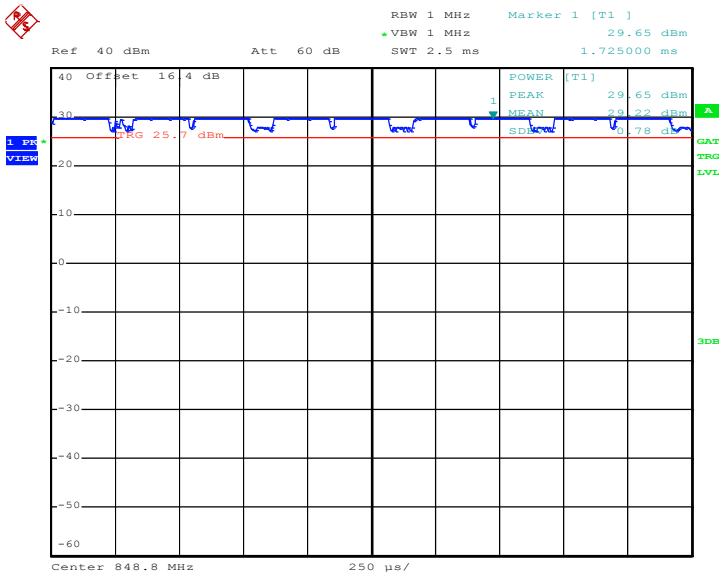

Date: 23.AUG.2012 20:59:18

**Peak-to-Average Ratio on Channel 189 (836.4 MHz)**




Date: 23.AUG.2012 20:58:43

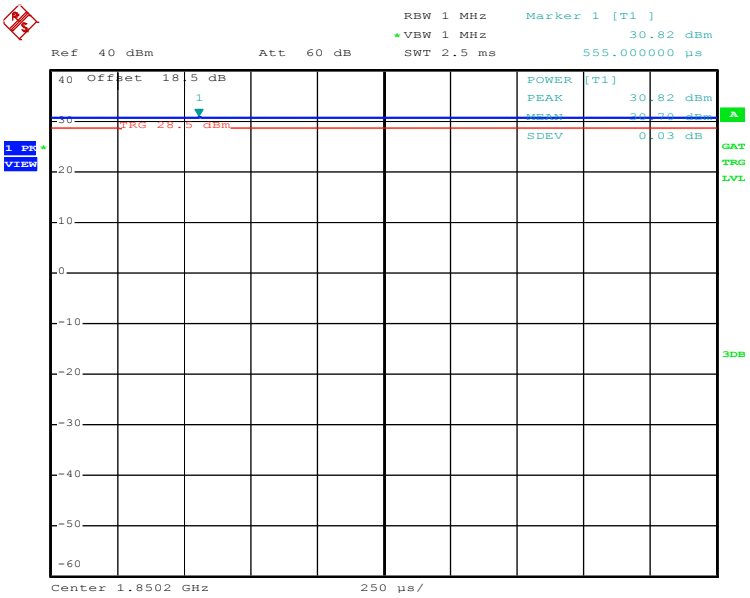
**Peak-to-Average Ratio on Channel 251 (848.8 MHz)**




Date: 23.AUG.2012 20:59:40

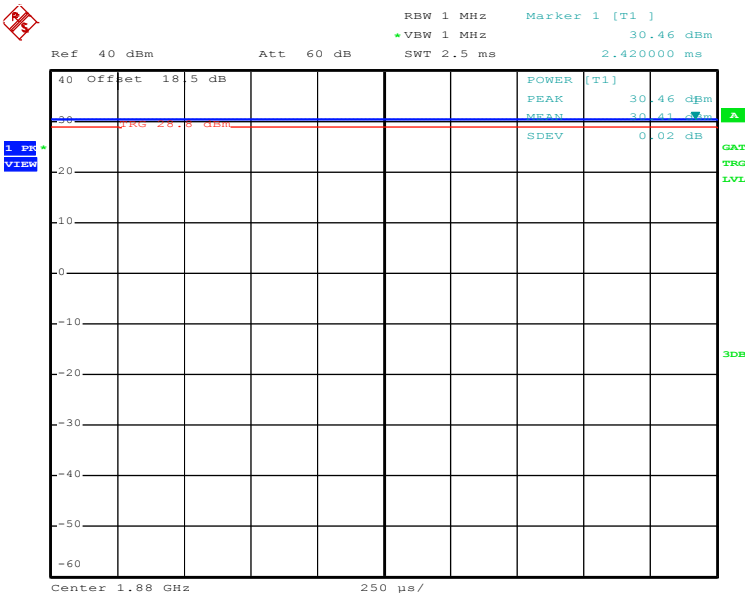
| Band : | GSM 1900 | Test Mode : | GSM Link |
|---|---|---|---|

**Peak-to-Average Ratio on Channel 512 (1850.2 MHz)**



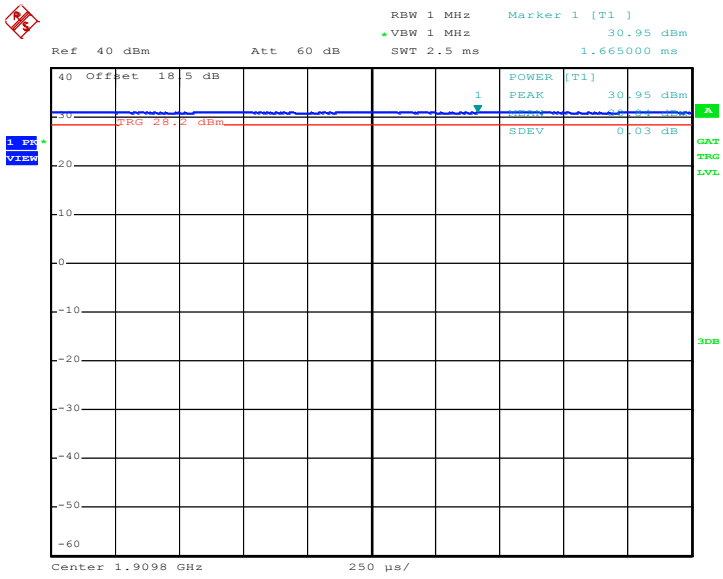

Date: 23.AUG.2012 20:46:17

**Peak-to-Average Ratio on Channel 661 (1880.0 MHz)**




Date: 23.AUG.2012 20:45:52

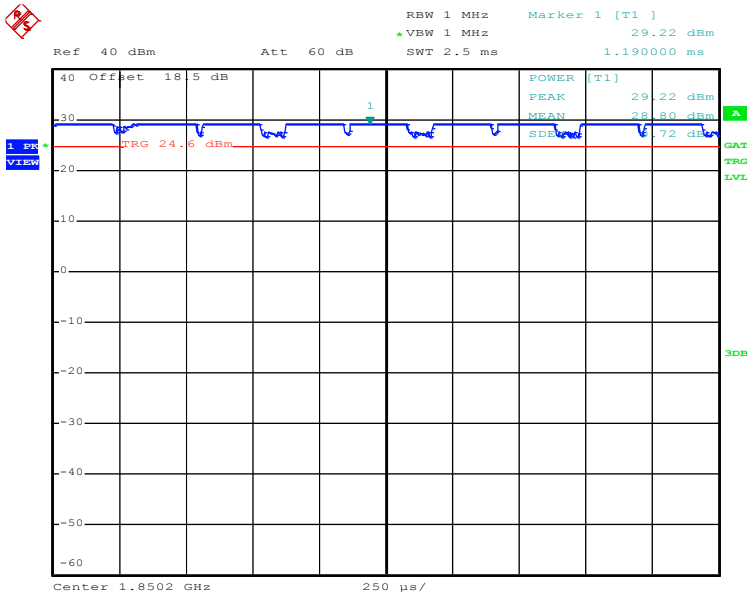
**Peak-to-Average Ratio on Channel 810 (1909.8 MHz)**




Date: 23.AUG.2012 20:46:40

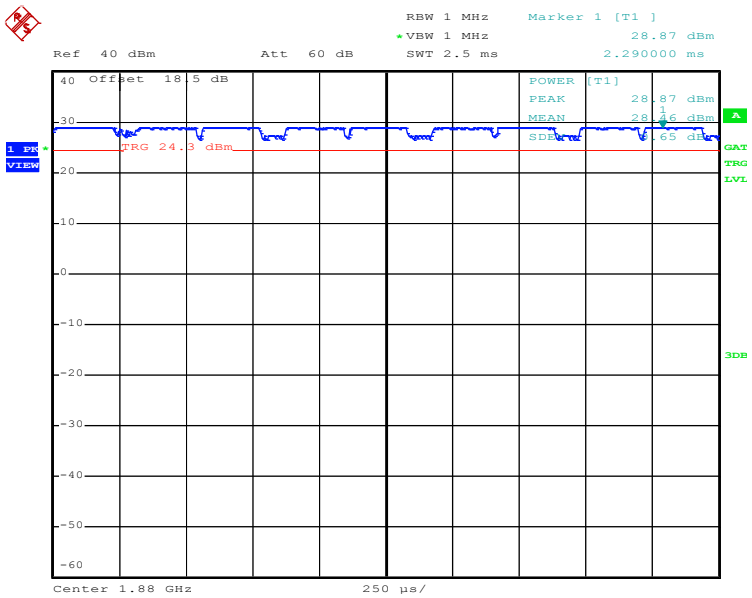
| Band : | GSM 1900 | Test Mode : | EDGE 8 Link |
|---|---|---|---|

**Peak-to-Average Ratio on Channel 512 (1850.2 MHz)**



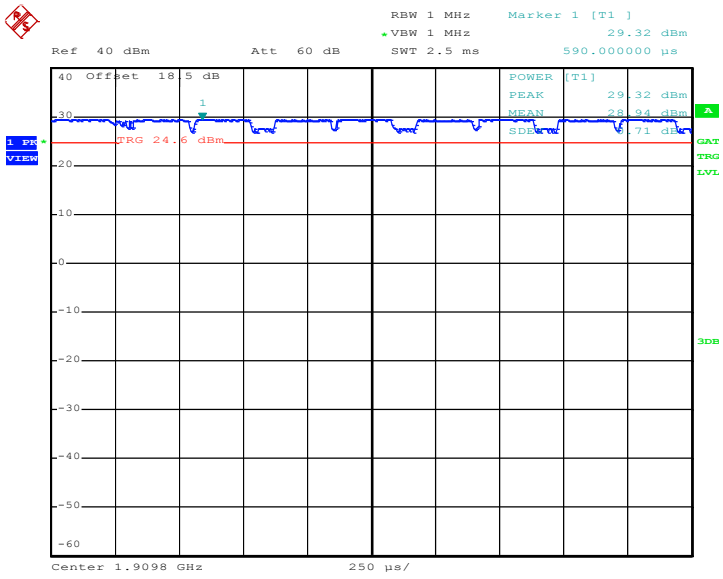

Date: 23.AUG.2012 22:00:54

**Peak-to-Average Ratio on Channel 661 (1880.0 MHz)**




Date: 23.AUG.2012 22:00:27

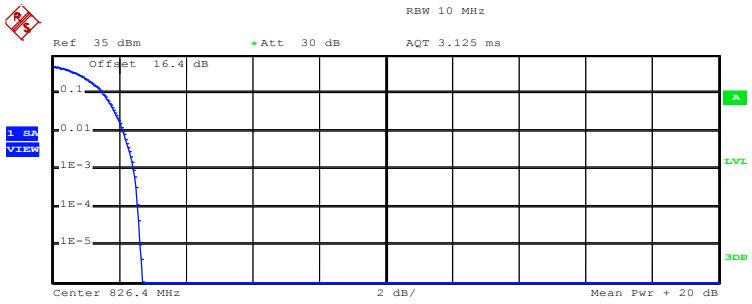
**Peak-to-Average Ratio on Channel 810 (1909.8 MHz)**




Date: 23.AUG.2012 22:01:26

| Band : | WCDMA Band V | Test Mode : | RMC 12.2Kbps Link |
|---|---|---|---|

**Peak-to-Average Ratio on Channel 4132 (826.4 MHz)**

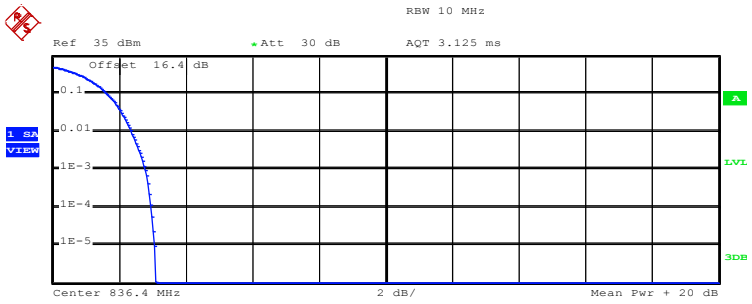



Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 19.85 dBm |
| Peak | 22.55 dBm |
| Crest | 2.71 dB |
| 10 % | 1.52 dB |
| 1 % | 2.12 dB |
| .1 % | 2.44 dB |
| .01 % | 2.56 dB |

Date: 23.AUG.2012 22:54:35

**Peak-to-Average Ratio on Channel 4182 (836.4 MHz)**

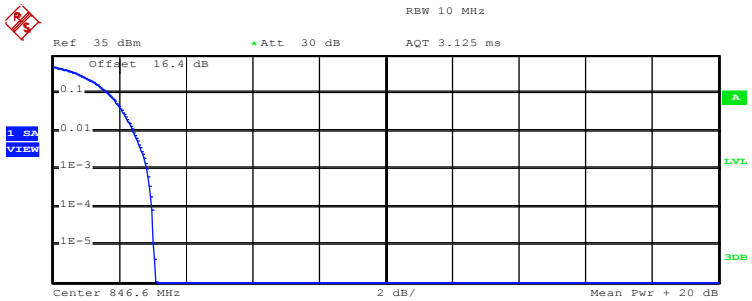



Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 20.50 dBm |
| Peak | 23.61 dBm |
| Crest | 3.11 dB |
| 10 % | 1.64 dB |
| 1 % | 2.40 dB |
| .1 % | 2.80 dB |
| .01 % | 2.96 dB |

Date: 23.AUG.2012 22:54:55

**Peak-to-Average Ratio on Channel 4233 (846.6 MHz)**



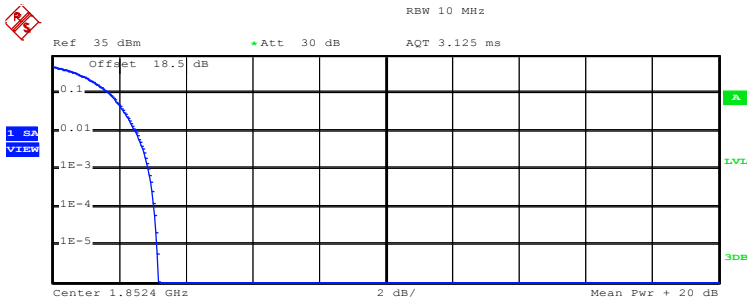

Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 20.65 dBm |
| Peak | 23.75 dBm |
| Crest | 3.11 dB |
| 10 % | 1.68 dB |
| 1 % | 2.44 dB |
| .1 % | 2.84 dB |
| .01 % | 3.00 dB |

Date: 23.AUG.2012 22:55:12

| Band : | WCDMA Band II | Test Mode : | RMC 12.2Kbps Link |
|---|---|---|---|

**Peak-to-Average Ratio on Channel 9262 (1852.4 MHz)**

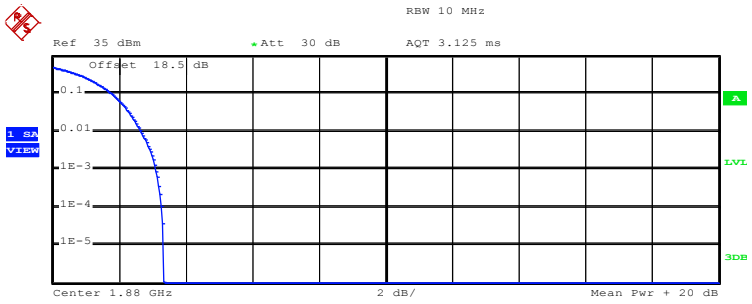



Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 23.41 dBm |
| Peak | 26.58 dBm |
| Crest | 3.17 dB |
| 10 % | 1.72 dB |
| 1 % | 2.52 dB |
| .1 % | 2.88 dB |
| .01 % | 3.04 dB |

Date: 23.AUG.2012 22:43:35

**Peak-to-Average Ratio on Channel 9400 (1880.0 MHz)**

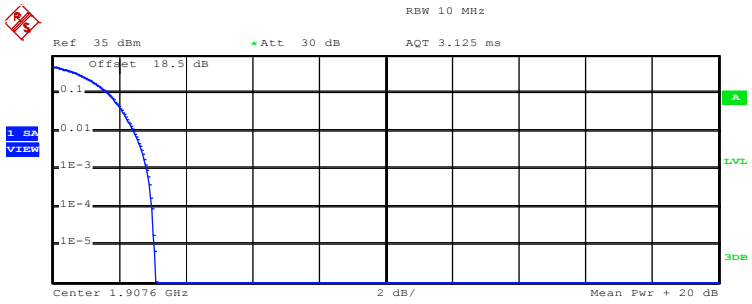



Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 23.38 dBm |
| Peak | 26.72 dBm |
| Crest | 3.33 dB |
| 10 % | 1.80 dB |
| 1 % | 2.68 dB |
| .1 % | 3.12 dB |
| .01 % | 3.28 dB |

Date: 23.AUG.2012 22:44:08

**Peak-to-Average Ratio on Channel 9538 (1907.6 MHz)**




Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 23.69 dBm |
| Peak | 26.79 dBm |
| Crest | 3.10 dB |
| 10 % | 1.68 dB |
| 1 % | 2.44 dB |
| .1 % | 2.84 dB |
| .01 % | 3.00 dB |

Date: 23.AUG.2012 22:44:48

## 3.3 Effective Radiated Power and Effective Isotropic Radiated Power Measurement

### 3.3.1 Description of the ERP/EIRP Measurement

The substitution method, in ANSI / TIA / EIA-603-C-2004, was used for ERP/EIRP measurement, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v01. The ERP of mobile transmitters must not exceed 7 Watts and the EIRP of mobile transmitters are limited to 2 Watts.

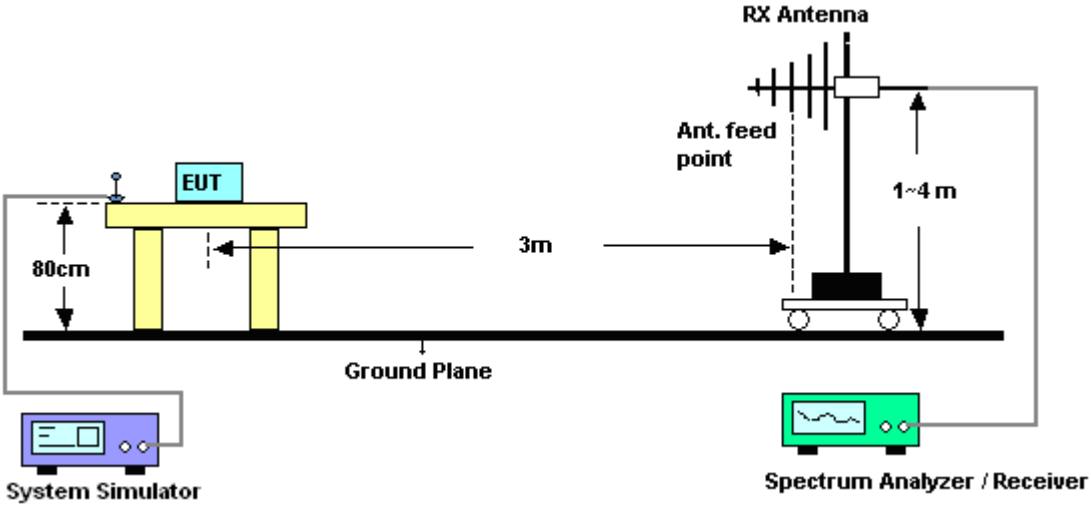
### 3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.3.3 Test Procedures

1. The EUT was placed on an non-conductive rotating platform with 0.8 meter height in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RBW= 1MHz, VBW= 3MHz for GSM, RBW= 300KHz, VBW= 1MHz for WCDMA, and RMS detector settings per section 4.0 of KDB 971168 D01.
2. During the measurement, the EUT was enforced in maximum power and linked with a base station. The highest emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
3. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by dipole antenna (substitution antenna) at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading. Then the EUT's EIRP was calculated with the correction factor, EIRP= LVL + Correction factor and ERP = EIRP – 2.15 .

### 3.3.4 Test Setup



### 3.3.5 Test Result of ERP

**<Sample 1>**

| GSM850 (GSM) Radiated Power ERP | | | | |
|---|---|---|---|---|
| Horizontal Polarization | | | | |
| **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **ERP (dBm)** | **ERP (W)** |
| 824.2 | -3.39 | 30.99 | 25.45 | 0.3508 |
| 836.4 | -2.09 | 30.89 | 26.65 | 0.4624 |
| 848.8 | -2.55 | 31.22 | 26.52 | 0.4487 |
| Vertical Polarization | | | | |
| **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **ERP (dBm)** | **ERP (W)** |
| 824.2 | -11.40 | 34.67 | 21.12 | 0.1294 |
| 836.4 | -11.38 | 34.88 | 21.35 | 0.1365 |
| 848.8 | -11.35 | 34.74 | 21.24 | 0.1330 |

* ERP = LVL (dBm) + Correction Factor (dB) – 2.15

| GSM850 (EDGE 8) Radiated Power ERP | | | | |
|---|---|---|---|---|
| Horizontal Polarization | | | | |
| **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **ERP (dBm)** | **ERP (W)** |
| 824.2 | -10.81 | 30.99 | 18.03 | 0.0635 |
| 836.4 | -10.01 | 30.89 | 18.73 | 0.0746 |
| 848.8 | -9.23 | 31.22 | 19.84 | 0.0964 |
| Vertical Polarization | | | | |
| **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **ERP (dBm)** | **ERP (W)** |
| 824.2 | -18.50 | 34.67 | 14.02 | 0.0252 |
| 836.4 | -17.25 | 34.88 | 15.48 | 0.0353 |
| 848.8 | -16.91 | 34.74 | 15.68 | 0.0370 |

* ERP = LVL (dBm) + Correction Factor (dB) – 2.15

| WCDMA Band V (RMC 12.2Kbps) Radiated Power ERP | | | | |
|---|---|---|---|---|
| Horizontal Polarization | | | | |
| **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **ERP (dBm)** | **ERP (W)** |
| 826.40 | -12.48 | 30.74 | 16.11 | 0.0408 |
| 836.40 | -12.64 | 30.89 | 16.10 | 0.0407 |
| 846.60 | -12.29 | 31.29 | 16.85 | 0.0484 |
| Vertical Polarization | | | | |
| **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **ERP (dBm)** | **ERP (W)** |
| 826.40 | -20.40 | 34.94 | 12.39 | 0.0173 |
| 836.40 | -20.20 | 34.88 | 12.53 | 0.0179 |
| 846.60 | -20.39 | 34.67 | 12.13 | 0.0163 |

* ERP = LVL (dBm) + Correction Factor (dB) – 2.15

**<Sample 2>**

| GSM850 (GSM) Radiated Power ERP | | | | |
|---|---|---|---|---|
| Horizontal Polarization | | | | |
| **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **ERP (dBm)** | **ERP (W)** |
| 824.2 | -5.04 | 30.99 | 23.80 | 0.2399 |
| 836.4 | -3.94 | 30.89 | 24.80 | 0.3020 |
| 848.8 | -4.32 | 31.22 | 24.75 | 0.2985 |
| Vertical Polarization | | | | |
| **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **ERP (dBm)** | **ERP (W)** |
| 824.2 | -16.13 | 34.67 | 16.39 | 0.0436 |
| 836.4 | -15.02 | 34.88 | 17.71 | 0.0590 |
| 848.8 | -14.69 | 34.74 | 17.90 | 0.0617 |

* ERP = LVL (dBm) + Correction Factor (dB) – 2.15

### 3.3.6 Test Result of EIRP

**<Sample 1>**

| GSM1900 (GSM) Radiated Power EIRP | | | | |
|---|---|---|---|---|
| Horizontal Polarization | | | | |
| **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **EIRP (dBm)** | **EIRP (W)** |
| 1850.2 | -13.33 | 40.70 | 27.37 | 0.5458 |
| 1880.0 | -13.19 | 41.91 | 28.72 | 0.7447 |
| 1909.8 | -13.32 | 41.73 | 28.41 | 0.6934 |
| Vertical Polarization | | | | |
| **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **EIRP (dBm)** | **EIRP (W)** |
| 1850.2 | -22.06 | 42.78 | 20.72 | 0.1180 |
| 1880.0 | -22.62 | 43.75 | 21.13 | 0.1297 |
| 1909.8 | -22.84 | 43.06 | 20.22 | 0.1052 |

* EIRP = LVL (dBm) + Correction Factor (dB)

| GSM1900 (EDGE 8) Radiated Power EIRP | | | | |
|---|---|---|---|---|
| Horizontal Polarization | | | | |
| **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **EIRP (dBm)** | **EIRP (W)** |
| 1850.2 | -16.61 | 40.70 | 24.09 | 0.2564 |
| 1880.0 | -17.50 | 41.91 | 24.41 | 0.2761 |
| 1909.8 | -17.24 | 41.73 | 24.49 | 0.2812 |
| Vertical Polarization | | | | |
| **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **EIRP (dBm)** | **EIRP (W)** |
| 1850.2 | -24.32 | 42.78 | 18.46 | 0.0701 |
| 1880.0 | -25.62 | 43.75 | 18.13 | 0.0650 |
| 1909.8 | -25.55 | 43.06 | 17.51 | 0.0564 |

* EIRP = LVL (dBm) + Correction Factor (dB)

| WCDMA Band II (RMC 12.2Kbps) Radiated Power EIRP | | | | |
|---|---|---|---|---|
| Horizontal Polarization | | | | |
| **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **EIRP (dBm)** | **EIRP (W)** |
| 1852.40 | -19.08 | 40.40 | 21.32 | 0.1355 |
| 1880.00 | -19.91 | 41.91 | 22.00 | 0.1585 |
| 1907.60 | -19.72 | 41.59 | 21.87 | 0.1538 |
| Vertical Polarization | | | | |
| **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **EIRP (dBm)** | **EIRP (W)** |
| 1852.40 | -27.47 | 42.69 | 15.22 | 0.0333 |
| 1880.00 | -26.53 | 43.75 | 17.22 | 0.0527 |
| 1907.60 | -27.05 | 43.02 | 15.97 | 0.0395 |

* EIRP = LVL (dBm) + Correction Factor (dB)

**<Sample 2>**

| GSM1900 (GSM) Radiated Power EIRP | | | | |
|---|---|---|---|---|
| Horizontal Polarization | | | | |
| **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **EIRP (dBm)** | **EIRP (W)** |
| 1850.2 | -12.01 | 40.70 | 28.69 | 0.7396 |
| 1880.0 | -12.27 | 41.91 | 29.64 | 0.9204 |
| 1909.8 | -12.03 | 41.73 | 29.70 | 0.9333 |
| Vertical Polarization | | | | |
| **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **EIRP (dBm)** | **EIRP (W)** |
| 1850.2 | -19.71 | 42.78 | 23.07 | 0.2028 |
| 1880.0 | -20.30 | 43.75 | 23.45 | 0.2213 |
| 1909.8 | -21.03 | 43.06 | 22.03 | 0.1596 |

* EIRP = LVL (dBm) + Correction Factor (dB)

## 3.4 Occupied Bandwidth and 26dB Bandwidth Measurement

### 3.4.1 Description of Occupied Bandwidth and 26dB Bandwidth Measurement

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

The emission bandwidth is defined as the width of the signal between two points, located at the 2 sides of the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

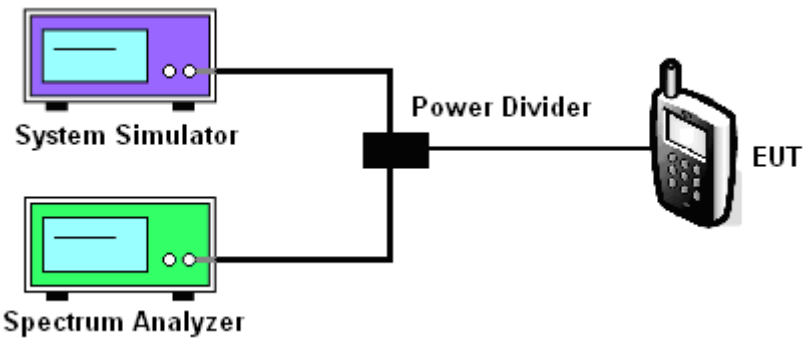
### 3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.4.3 Test Procedures

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

### 3.4.4 Test Setup



### 3.4.5 Test Result of Occupied Bandwidth and 26dB Bandwidth

| Cellular Band | | | | | | |
|---|---|---|---|---|---|---|
| Modes | GSM850 (GSM) | | | GSM850 (EDGE 8) | | |
| Channel | 128 (Low) | 189 (Mid) | 251 (High) | 128 (Low) | 189 (Mid) | 251 (High) |
| Frequency (MHz) | 824.2 | 836.4 | 848.8 | 824.2 | 836.4 | 848.8 |
| 99% OBW (KHz) | 246.00 | 248.00 | 248.00 | 244.00 | 248.00 | 244.00 |
| 26dB BW (KHz) | 312.00 | 286.00 | 304.00 | 306.00 | 306.00 | 306.00 |

| PCS Band | | | | | | |
|---|---|---|---|---|---|---|
| Modes | GSM1900 (GSM) | | | GSM1900 (EDGE 8) | | |
| Channel | 512 (Low) | 661 (Mid) | 810 (High) | 512 (Low) | 661 (Mid) | 810 (High) |
| Frequency (MHz) | 1850.2 | 1880 | 1909.8 | 1850.2 | 1880 | 1909.8 |
| 99% OBW (KHz) | 250.00 | 240.00 | 248.00 | 248.00 | 248.00 | 248.00 |
| 26dB BW (KHz) | 304.00 | 310.00 | 304.00 | 306.00 | 310.00 | 312.00 |

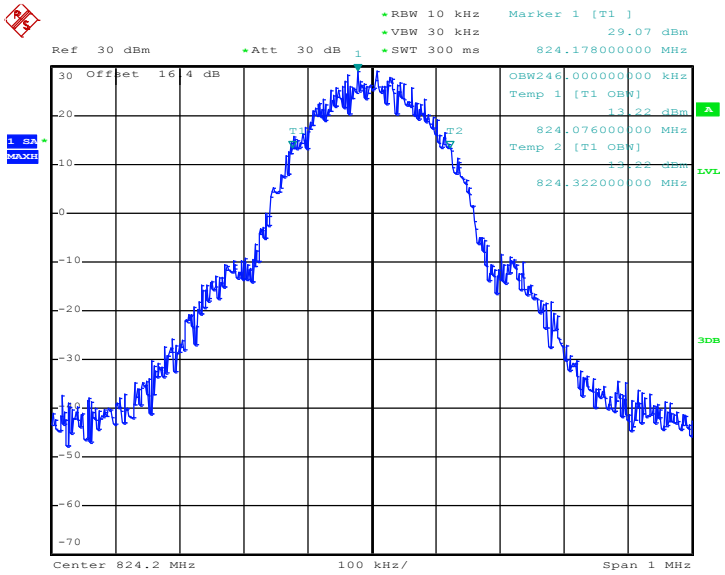
| Cellular Band | | | |
|---|---|---|---|
| Modes | WCDMA Band V (RMC 12.2Kbps) | | |
| Channel | 4132 (Low) | 4182 (Mid) | 4233 (High) |
| Frequency (MHz) | 826.4 | 836.4 | 846.6 |
| 99% OBW (MHz) | 4.12 | 4.08 | 4.08 |
| 26dB BW (MHz) | 4.68 | 4.64 | 4.64 |

| PCS Band | | | |
|---|---|---|---|
| Modes | WCDMA Band II (RMC 12.2Kbps) | | |
| Channel | 9262 (Low) | 9400 (Mid) | 9538 (High) |
| Frequency (MHz) | 1852.4 | 1880 | 1907.6 |
| 99% OBW (MHz) | 4.06 | 4.06 | 4.08 |
| 26dB BW (MHz) | 4.64 | 4.62 | 4.64 |

## 3.4.6 Test Result (Plots) of Occupied Bandwidth and 26dB Bandwidth

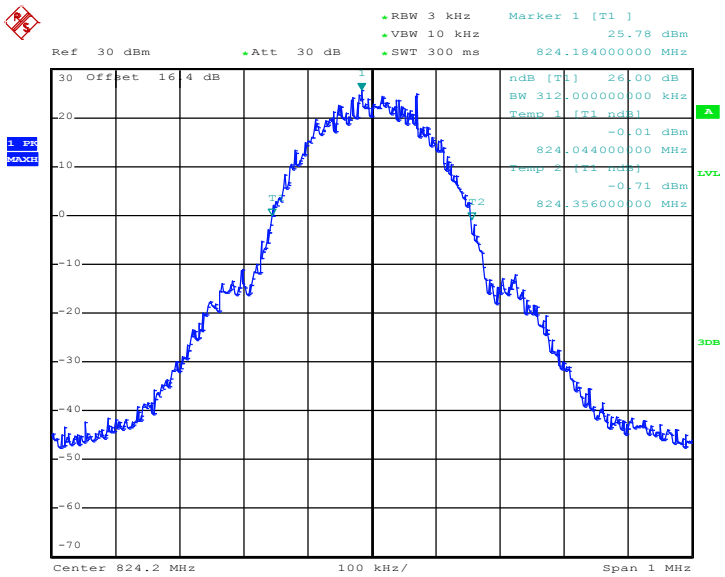
| Band : | GSM 850 | Test Mode : | GSM Link |
|---|---|---|---|

**99% Occupied Bandwidth Plot on Channel 128 (824.2 MHz)**



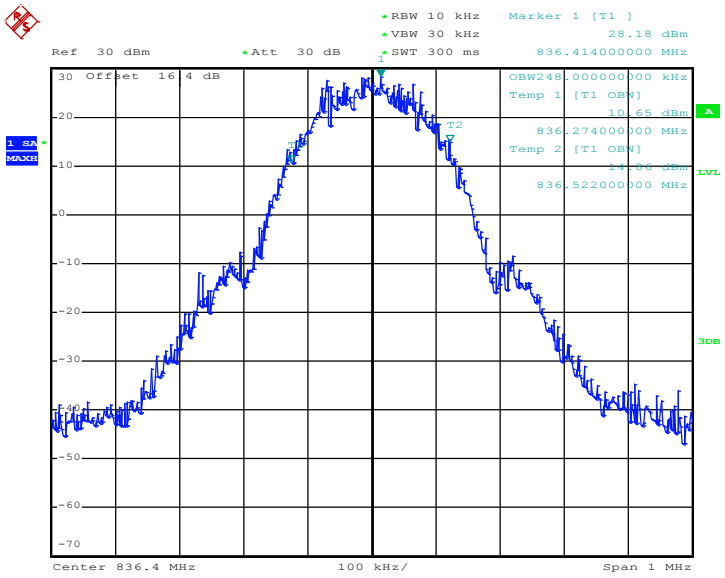

Date: 23.AUG.2012 20:34:24

**26dB Bandwidth Plot on Channel 128 (824.2 MHz)**



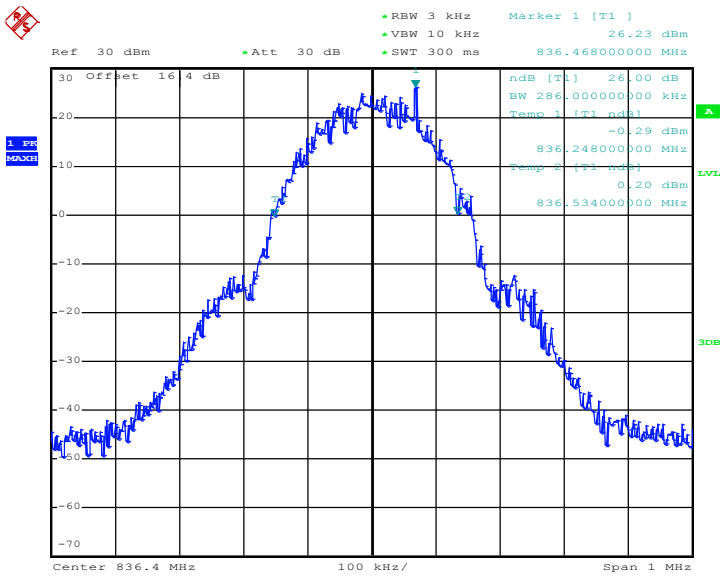

Date: 23.AUG.2012 20:33:06

### 99% Occupied Bandwidth Plot on Channel 189 (836.4 MHz)



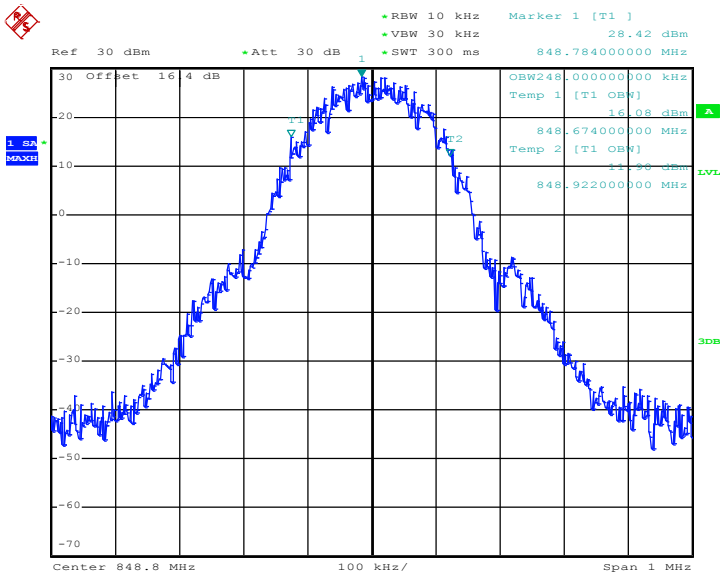

Date: 23.AUG.2012 20:34:50

### 26dB Bandwidth Plot on Channel 189 (836.4 MHz)



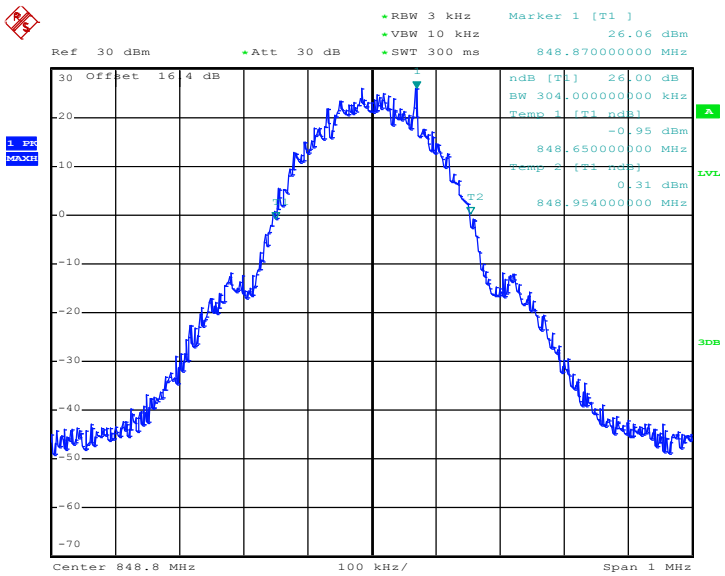

Date: 23.AUG.2012 20:33:32

## 99% Occupied Bandwidth Plot on Channel 251 (848.8 MHz)




Date: 23.AUG.2012 20:35:16

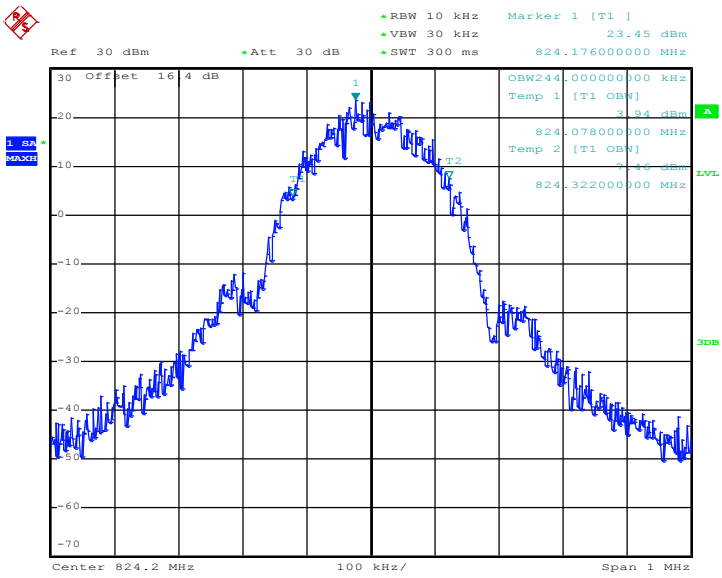
## 26dB Bandwidth Plot on Channel 251 (848.8 MHz)




Date: 23.AUG.2012 20:33:58

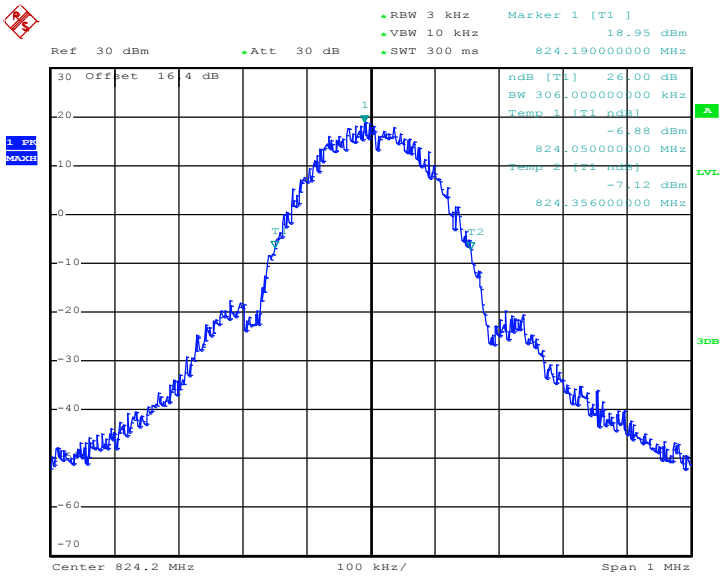
| Band : | GSM 850 | Test Mode : | EDGE 8 Link |
|---|---|---|---|

**99% Occupied Bandwidth Plot on Channel 128 (824.2 MHz)**



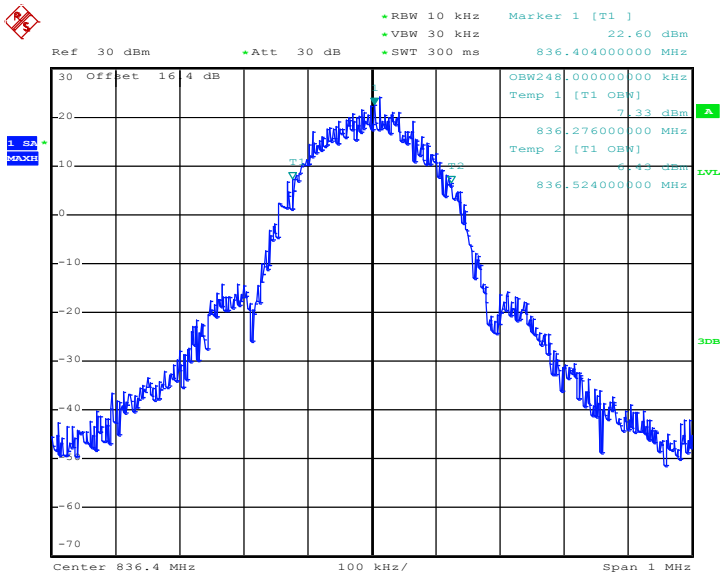

Date: 23.AUG.2012 21:07:49

**26dB Bandwidth Plot on Channel 128 (824.2 MHz)**



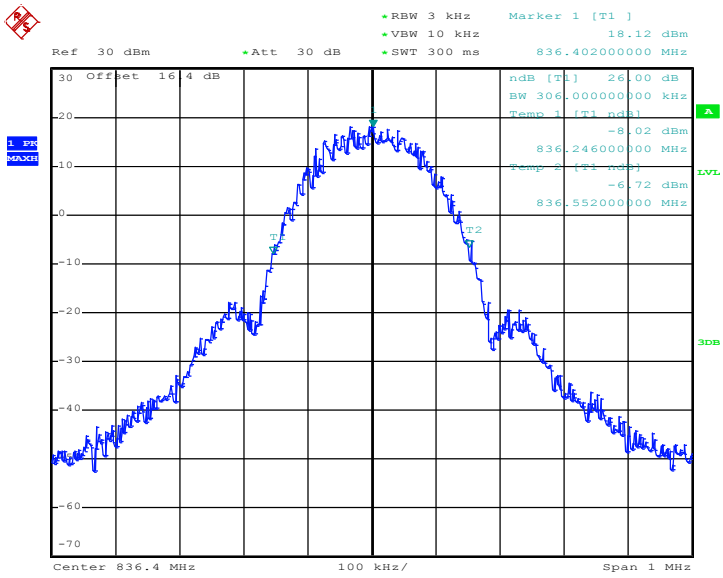

Date: 23.AUG.2012 21:06:31

## 99% Occupied Bandwidth Plot on Channel 189 (836.4 MHz)



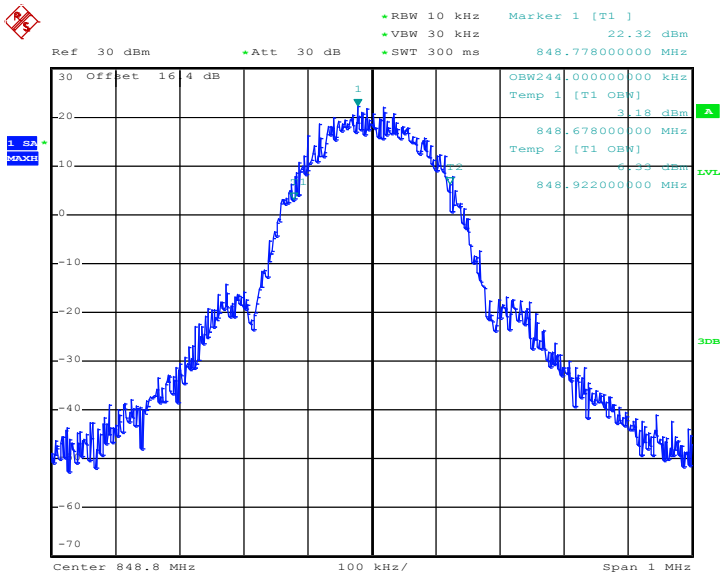

Date: 23.AUG.2012 21:08:15

## 26dB Bandwidth Plot on Channel 189 (836.4 MHz)



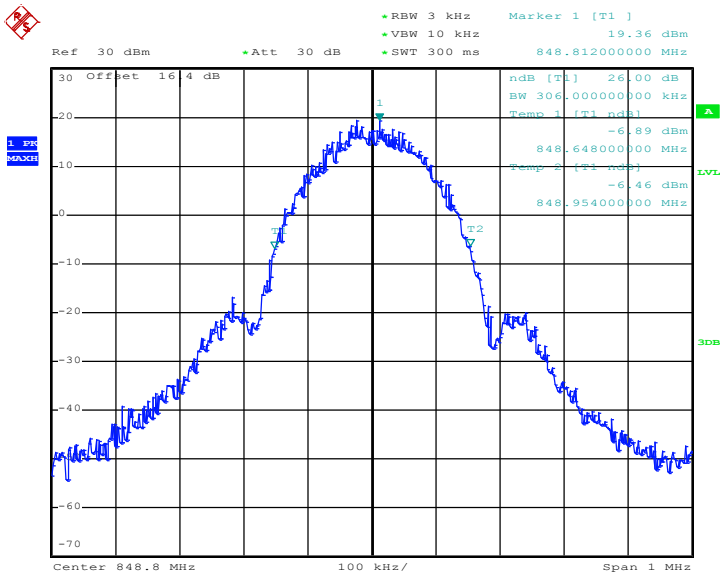

Date: 23.AUG.2012 21:06:57

## 99% Occupied Bandwidth Plot on Channel 251 (848.8 MHz)




Date: 23.AUG.2012 21:08:41

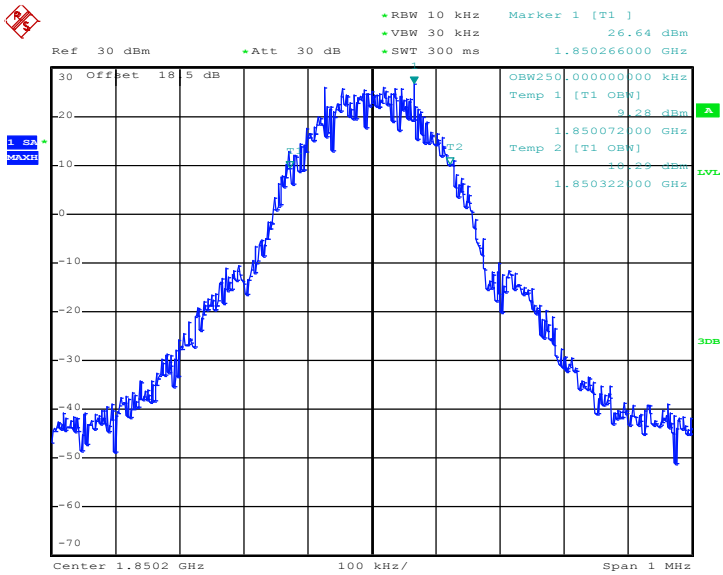
## 26dB Bandwidth Plot on Channel 251 (848.8 MHz)




Date: 23.AUG.2012 21:07:23

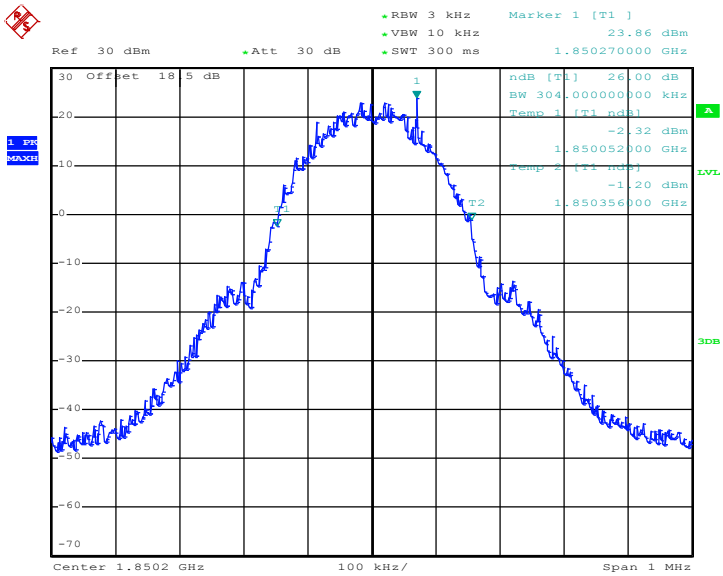
| Band : | GSM 1900 | Test Mode : | GSM Link |
|---|---|---|---|

**99% Occupied Bandwidth Plot on Channel 512 (1850.2 MHz)**



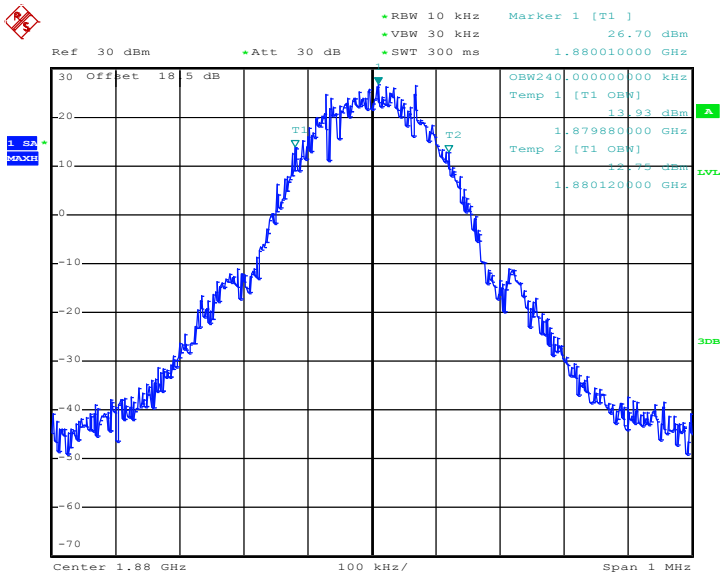

Date: 23.AUG.2012 20:51:05

**26dB Bandwidth Plot on Channel 512 (1850.2 MHz)**



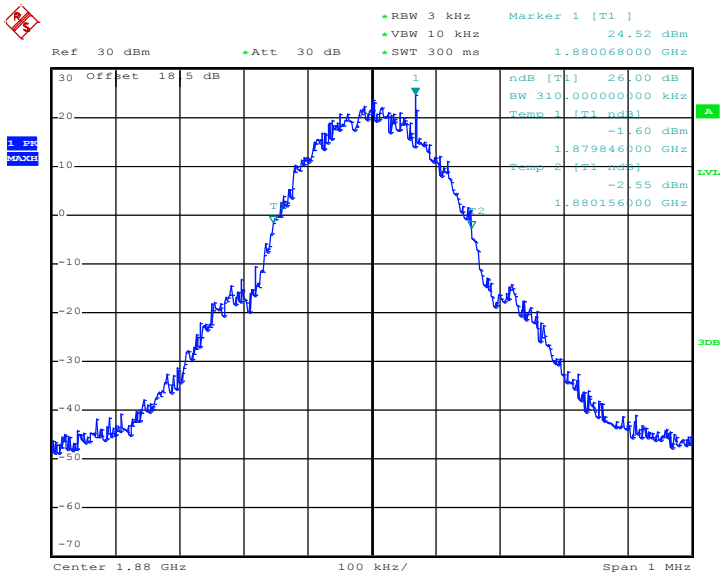

Date: 23.AUG.2012 20:49:46

### 99% Occupied Bandwidth Plot on Channel 661 (1880.0 MHz)



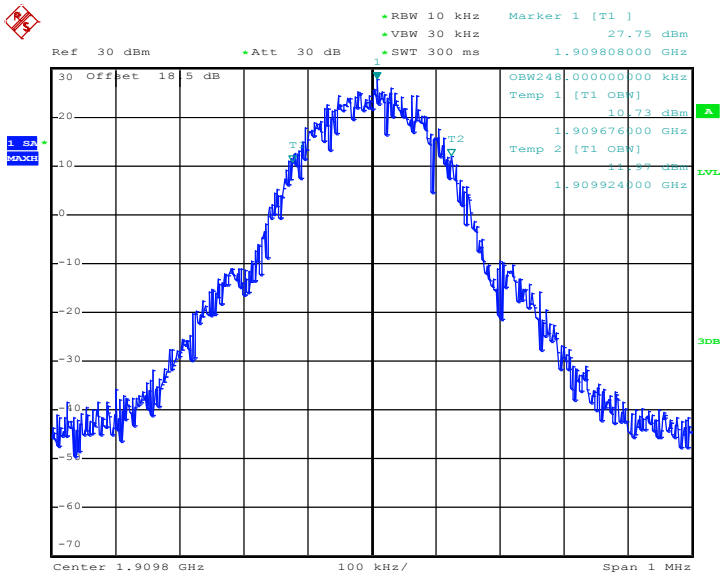

Date: 23.AUG.2012 20:51:31

### 26dB Bandwidth Plot on Channel 661 (1880.0 MHz)



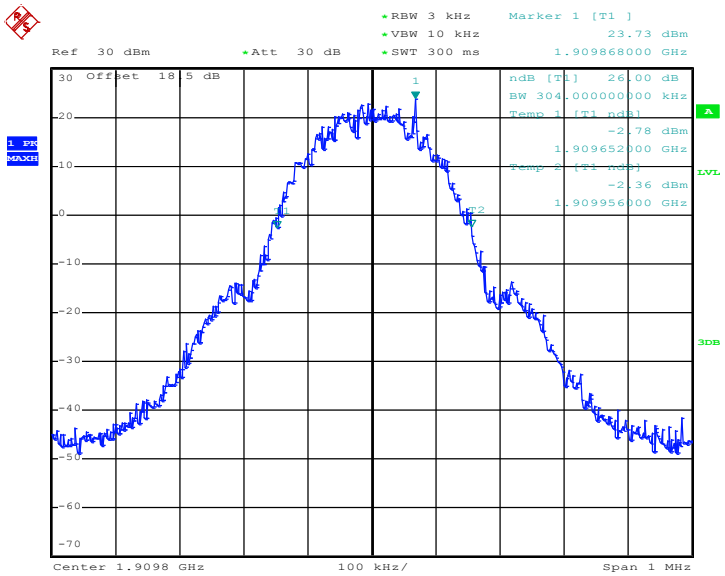

Date: 23.AUG.2012 20:50:12

### 99% Occupied Bandwidth Plot on Channel 810 (1909.8 MHz)




Date: 23.AUG.2012 20:51:57

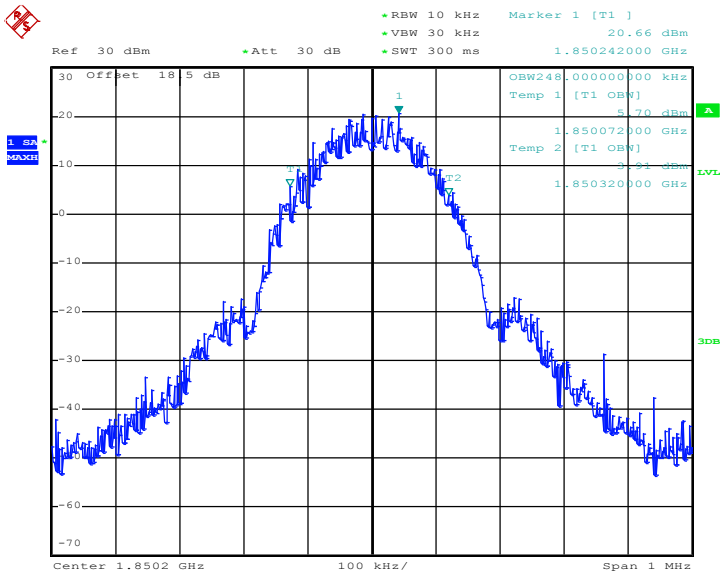
### 26dB Bandwidth Plot on Channel 810 (1909.8 MHz)




Date: 23.AUG.2012 20:50:39

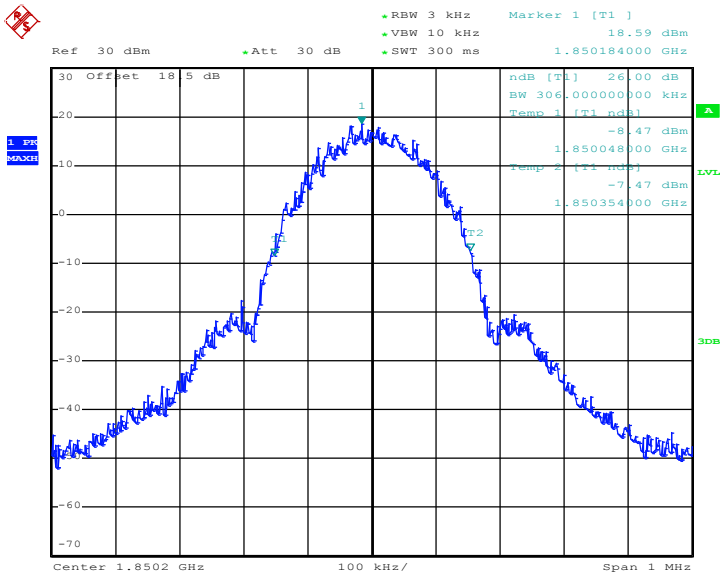
| Band : | GSM 1900 | Test Mode : | EDGE 8 Link |
|---|---|---|---|

**99% Occupied Bandwidth Plot on Channel 512 (1850.2 MHz)**



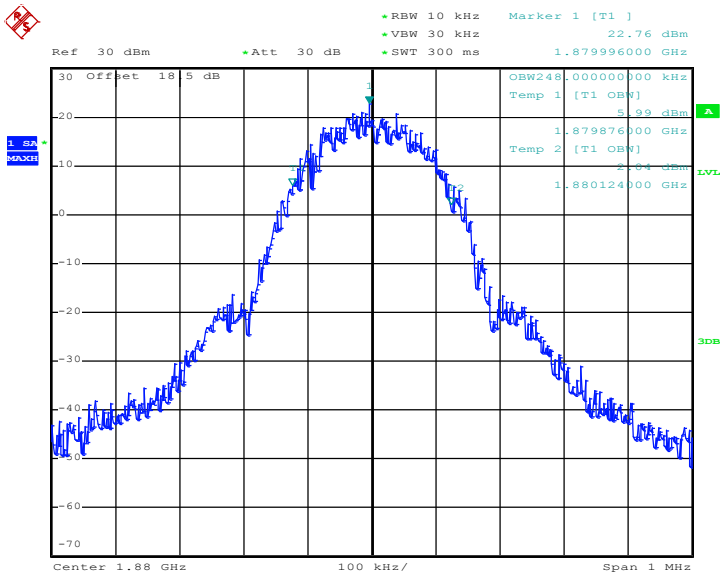

Date: 23.AUG.2012 22:06:35

**26dB Bandwidth Plot on Channel 512 (1850.2 MHz)**



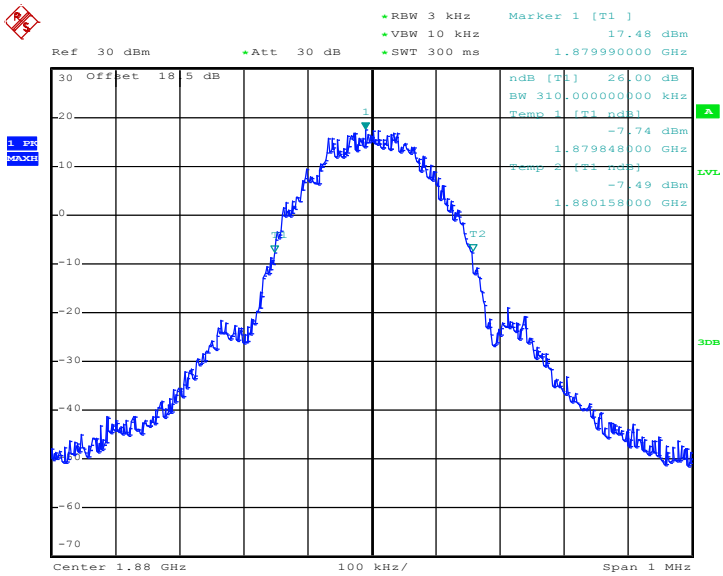

Date: 23.AUG.2012 22:05:16

## 99% Occupied Bandwidth Plot on Channel 661 (1880.0 MHz)



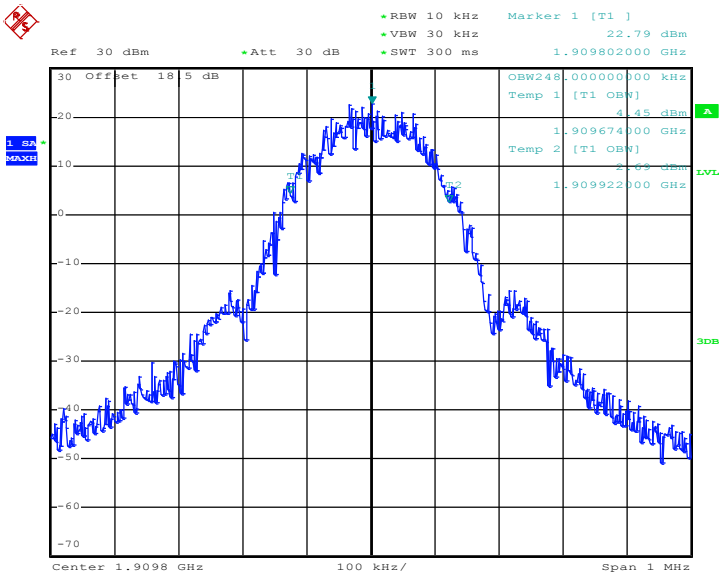

Date: 23.AUG.2012 22:07:01

## 26dB Bandwidth Plot on Channel 661 (1880.0 MHz)



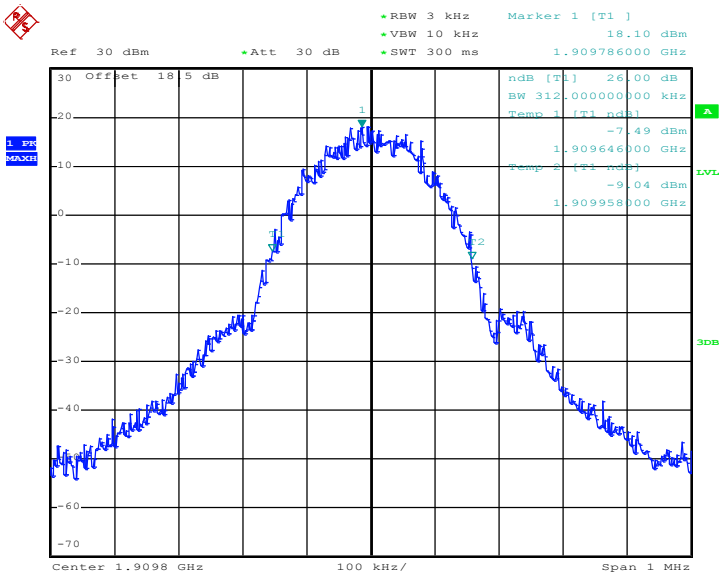

Date: 23.AUG.2012 22:05:42

## 99% Occupied Bandwidth Plot on Channel 810 (1909.8 MHz)




Date: 23.AUG.2012 22:07:27

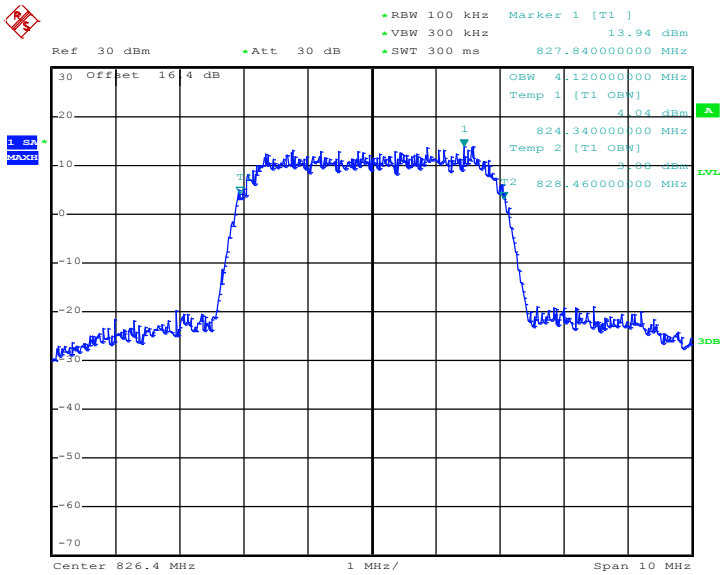
## 26dB Bandwidth Plot on Channel 810 (1909.8 MHz)




Date: 23.AUG.2012 22:06:08

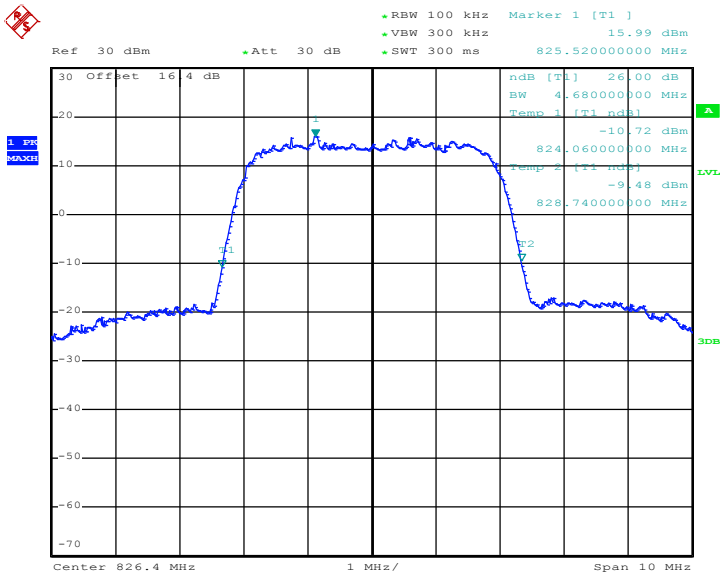
| Band : | WCDMA Band V | Test Mode : | RMC 12.2Kbps Link |
|---|---|---|---|

**99% Occupied Bandwidth Plot on Channel 4132 (826.4 MHz)**



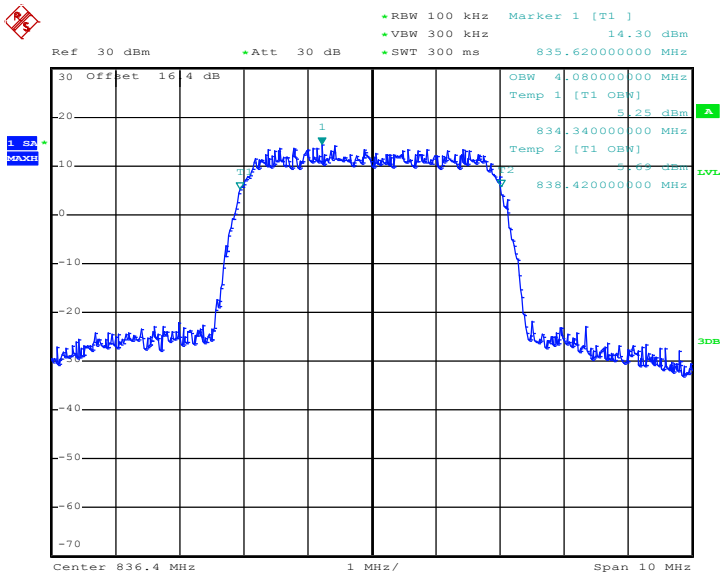

Date: 23.AUG.2012 23:01:57

**26dB Bandwidth Plot on Channel 4132 (826.4 MHz)**



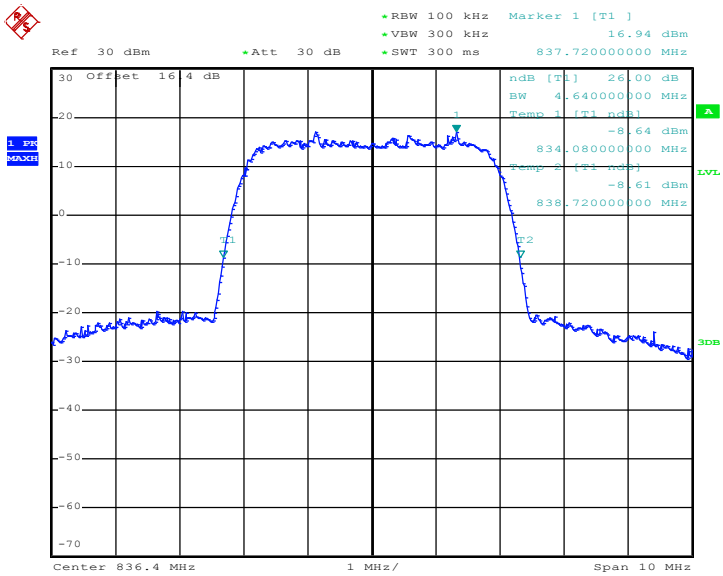

Date: 23.AUG.2012 23:00:38

## 99% Occupied Bandwidth Plot on Channel 4182 (836.4 MHz)



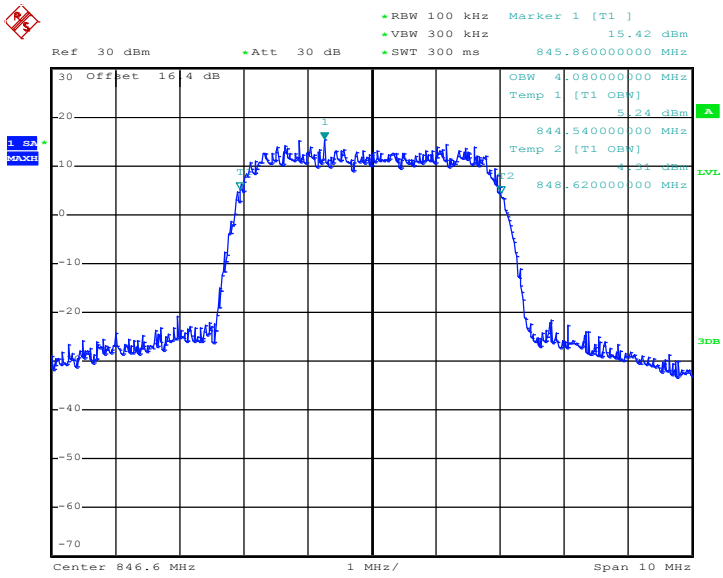

Date: 23.AUG.2012 23:02:22

## 26dB Bandwidth Plot on Channel 4182 (836.4 MHz)



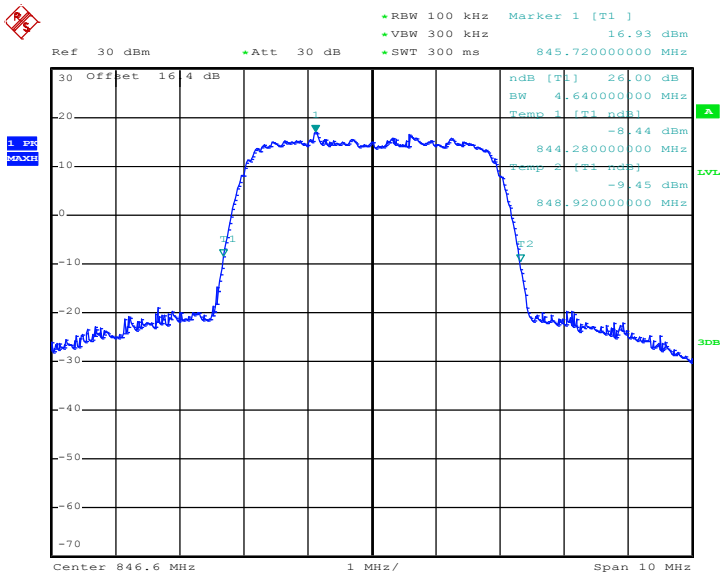

Date: 23.AUG.2012 23:01:04

## 99% Occupied Bandwidth Plot on Channel 4233 (846.6 MHz)




Date: 23.AUG.2012 23:02:48

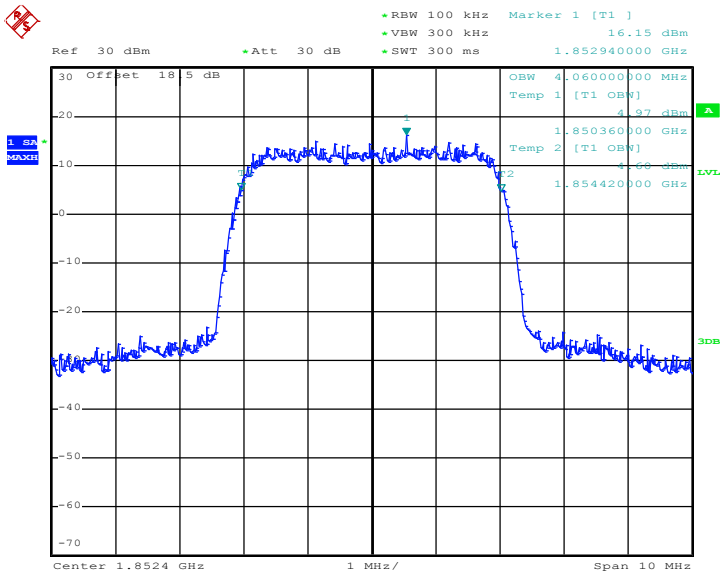
## 26dB Bandwidth Plot on Channel 4233 (846.6 MHz)




Date: 23.AUG.2012 23:01:30

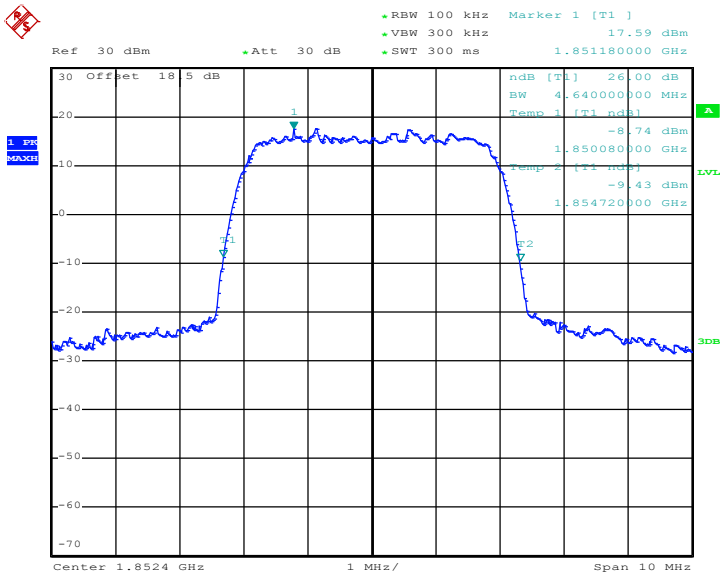
| Band : | WCDMA Band II | Test Mode : | RMC 12.2Kbps Link |
|---|---|---|---|

**99% Occupied Bandwidth Plot on Channel 9262 (1852.4 MHz)**



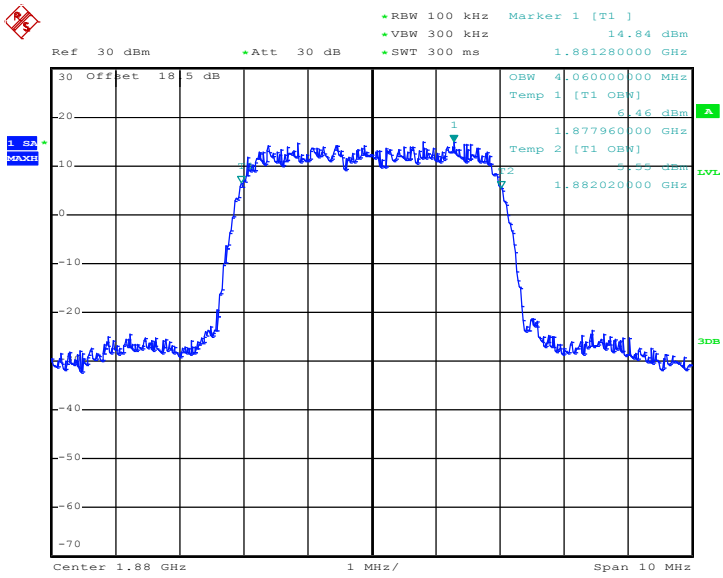

Date: 23.AUG.2012 22:48:24

**26dB Bandwidth Plot on Channel 9262 (1852.4 MHz)**



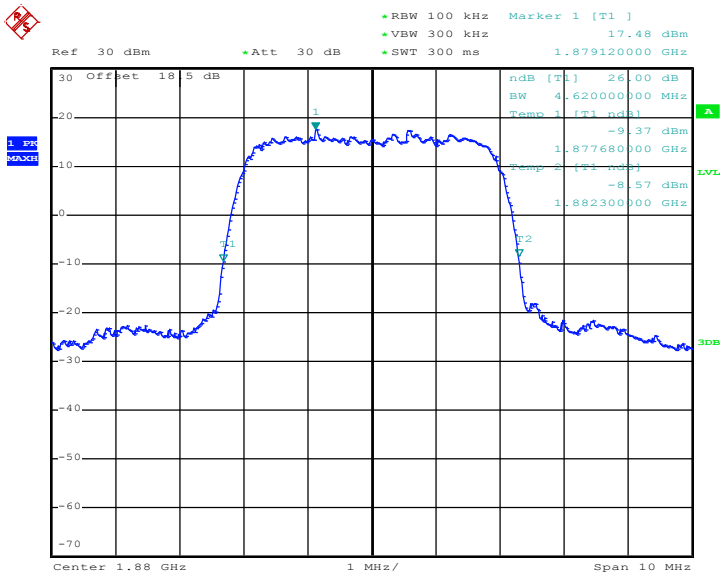

Date: 23.AUG.2012 22:47:06

## 99% Occupied Bandwidth Plot on Channel 9400 (1880.0 MHz)



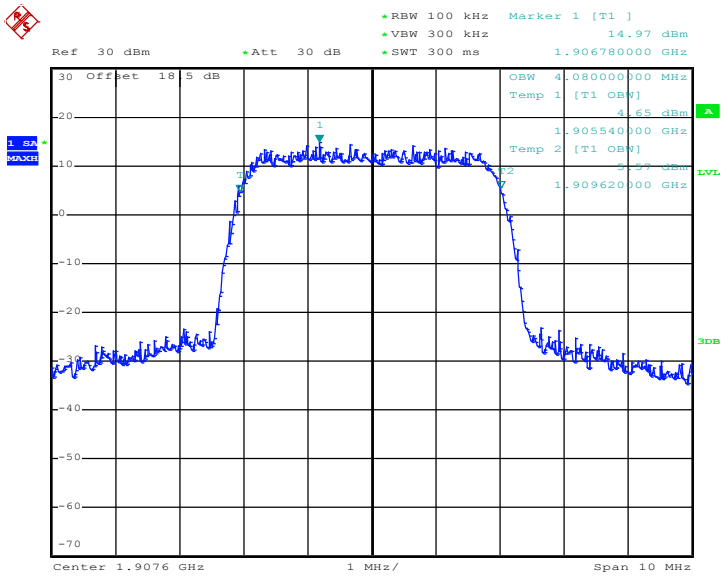

Date: 23.AUG.2012 22:48:50

## 26dB Bandwidth Plot on Channel 9400 (1880.0 MHz)

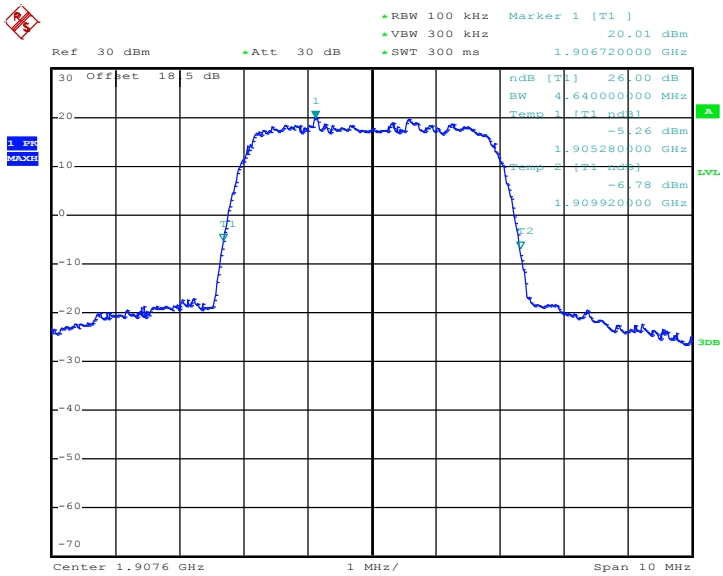



Date: 23.AUG.2012 22:47:32

## 99% Occupied Bandwidth Plot on Channel 9538 (1907.6 MHz)




## 26dB Bandwidth Plot on Channel 9538 (1907.6 MHz)



## 3.5 Band Edge Measurement

### 3.5.1 Description of Band Edge Measurement

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

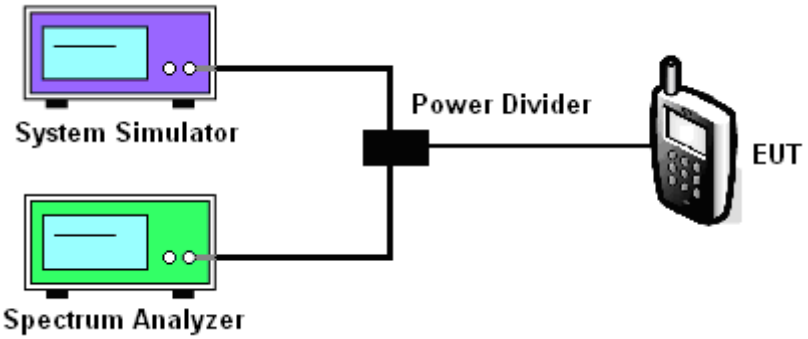
### 3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.5.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The band edges of low and high channels for the highest RF powers were measured. Setting RBW as roughly BW/100.

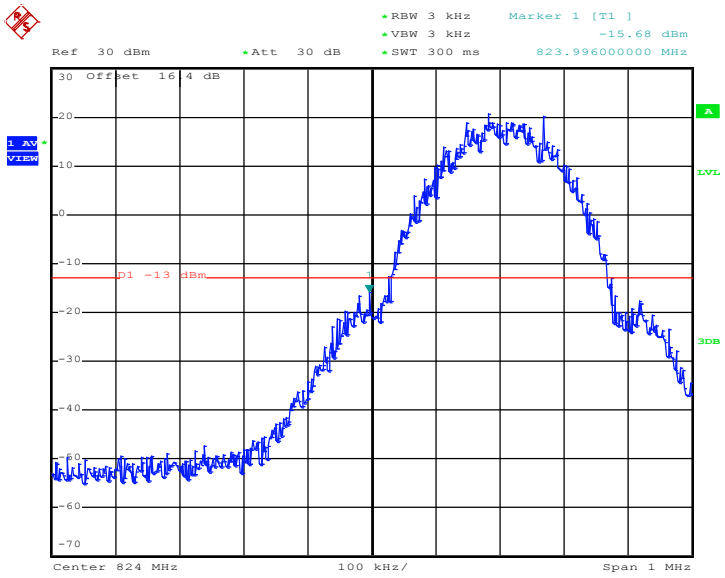
### 3.5.4 Test Setup



### 3.5.5 Test Result (Plots) of Conducted Band Edge

| Band : | GSM850 | Test Mode : | GSM Link |
|---|---|---|---|
| Correction Factor : | 0.17dB | Maximum 26dB Bandwidth : | 0.312MHz |
| Band Edge : | -15.51dBm | Measurement Value : | -15.68dBm |

**Lower Band Edge Plot on Channel 128 (824.2 MHz)**



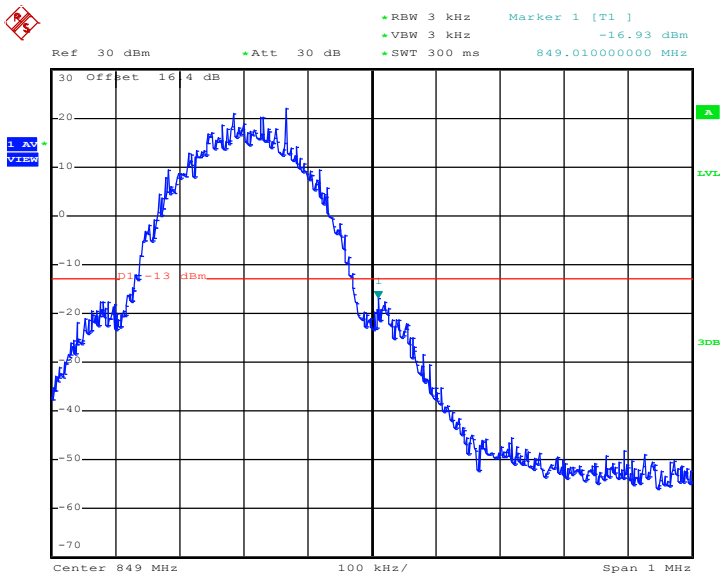

*1. Correction Factor(dB)= 10log(1% Emission BW/RBW)*

*2. Band Edge= Measurement Value + Correction Factor(dB)*

*For example, -15.68dBm + 0.17dB = -15.51dBm*

| Band : | GSM850 | Test Mode : | GSM Link |
|---|---|---|---|
| Correction Factor : | 0.17dB | Maximum 26dB Bandwidth : | 0.312MHz |
| Band Edge : | -16.76dBm | Measurement Value : | -16.93dBm |

**Higher Band Edge Plot on Channel 251 (848.8 MHz)**



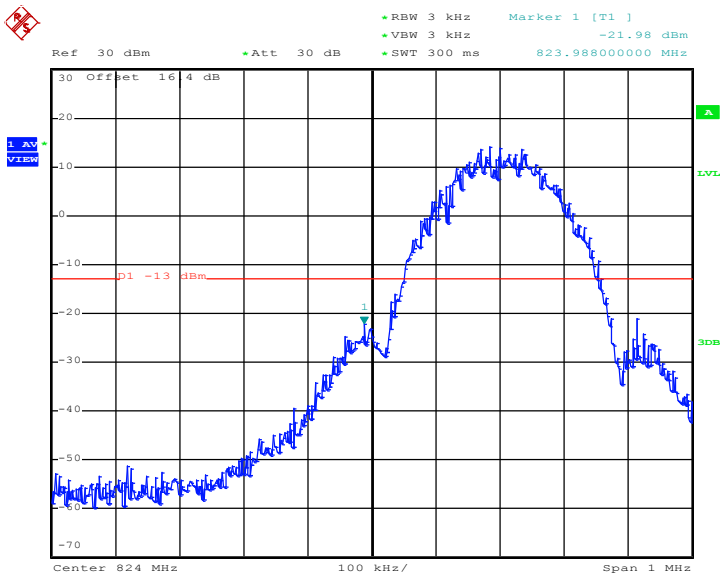

Date: 23.AUG.2012 20:37:08

*1. Correction Factor(dB)= 10log(1% Emission BW/RBW)*

*2. Band Edge= Measurement Value + Correction Factor(dB)*

| Band : | GSM850 | Test Mode : | EDGE 8 Link |
|---|---|---|---|
| Correction Factor : | 0.09dB | Maximum 26dB Bandwidth : | 0.306MHz |
| Band Edge : | -21.89dBm | Measurement Value : | -21.98dBm |

**Lower Band Edge Plot on Channel 128 (824.2 MHz)**



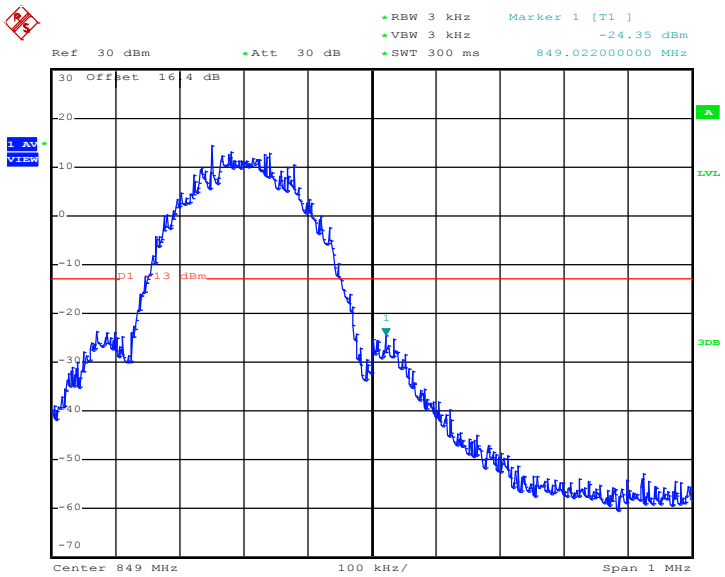

Date: 23.AUG.2012 21:10:07

*1. Correction Factor(dB)= 10log(1% Emission BW/RBW)*

*2. Band Edge= Measurement Value + Correction Factor(dB)*

| Band : | GSM850 | Test Mode : | EDGE 8 Link |
|---|---|---|---|
| Correction Factor : | 0.09dB | Maximum 26dB Bandwidth : | 0.306MHz |
| Band Edge : | -24.26dBm | Measurement Value : | -24.35dBm |

**Higher Band Edge Plot on Channel 251 (848.8 MHz)**



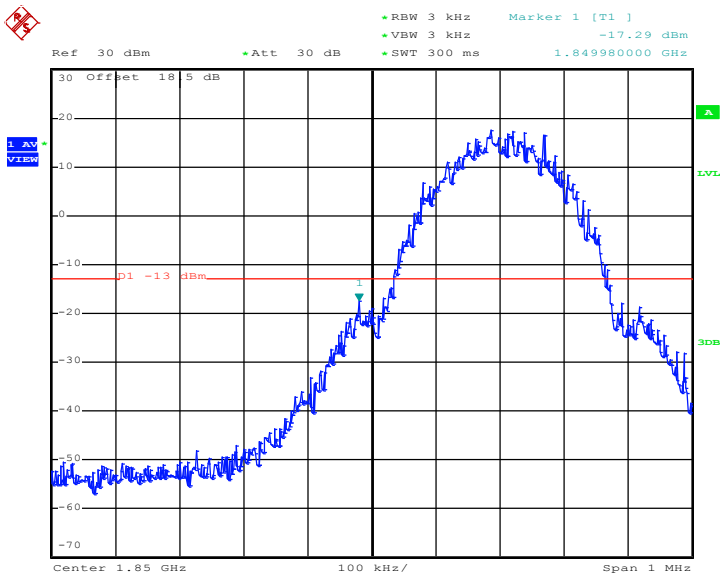

Date: 23.AUG.2012 21:10:33

*1. Correction Factor(dB)= 10log(1% Emission BW/RBW)*

*2. Band Edge= Measurement Value + Correction Factor(dB)*

| Band : | GSM1900 | Test Mode : | GSM Link |
|---|---|---|---|
| Correction Factor : | 0.14dB | Maximum 26dB Bandwidth : | 0.310MHz |
| Band Edge : | -17.15dBm | Measurement Value : | -17.29dBm |

**Lower Band Edge Plot on Channel 512 (1850.2 MHz)**

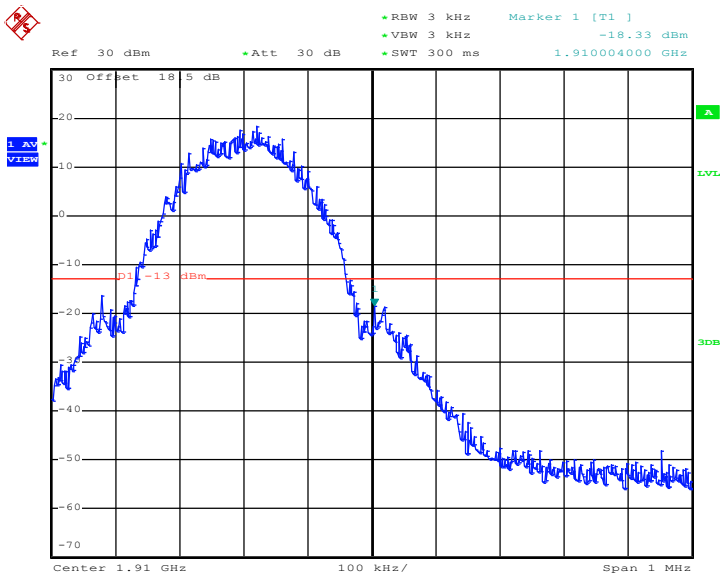



*1. Correction Factor(dB)= 10log(1% Emission BW/RBW)*

*2. Band Edge= Measurement Value + Correction Factor(dB)*

| Band : | GSM1900 | Test Mode : | GSM Link |
|---|---|---|---|
| Correction Factor : | 0.14dB | Maximum 26dB Bandwidth : | 0.310MHz |
| Band Edge : | -18.19dBm | Measurement Value : | -18.33dBm |

**Higher Band Edge Plot on Channel 810 (1909.8 MHz)**

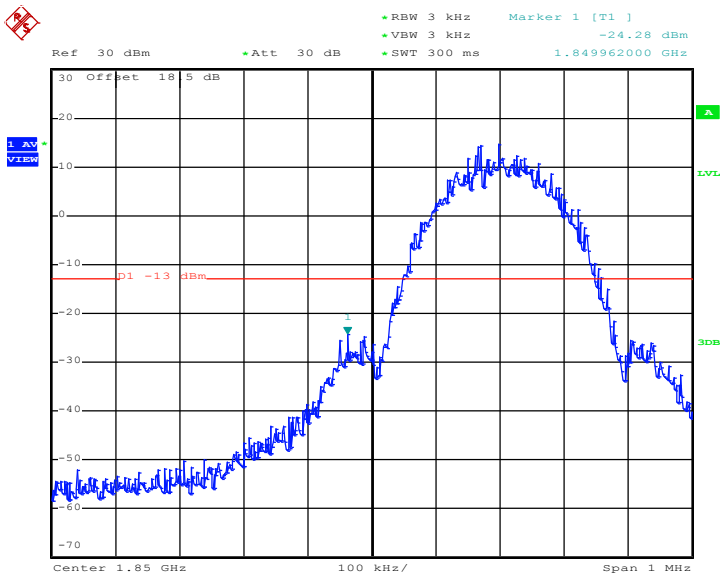



*1. Correction Factor(dB)= 10log(1% Emission BW/RBW)*

*2. Band Edge= Measurement Value + Correction Factor(dB)*

| Band : | GSM1900 | Test Mode : | EDGE 8 Link |
|---|---|---|---|
| Correction Factor : | 0.17dB | Maximum 26dB Bandwidth : | 0.312MHz |
| Band Edge : | -24.11dBm | Measurement Value : | -24.28dBm |

**Lower Band Edge Plot on Channel 512 (1850.2 MHz)**



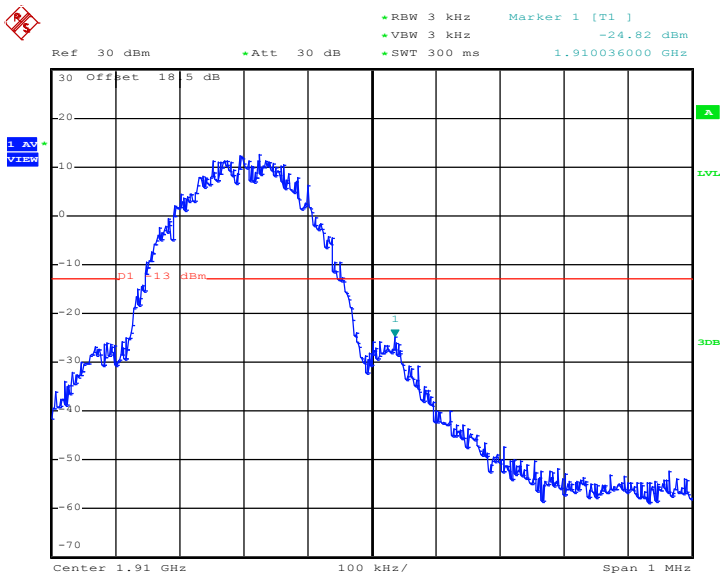

Date: 23.AUG.2012 22:08:52

*1. Correction Factor(dB)= 10log(1% Emission BW/RBW)*

*2. Band Edge= Measurement Value + Correction Factor(dB)*

| Band : | GSM1900 | Test Mode : | EDGE 8 Link |
|---|---|---|---|
| Correction Factor : | 0.17dB | Maximum 26dB Bandwidth : | 0.312MHz |
| Band Edge : | -24.65dBm | Measurement Value : | -24.82dBm |

**Higher Band Edge Plot on Channel 810 (1909.8 MHz)**



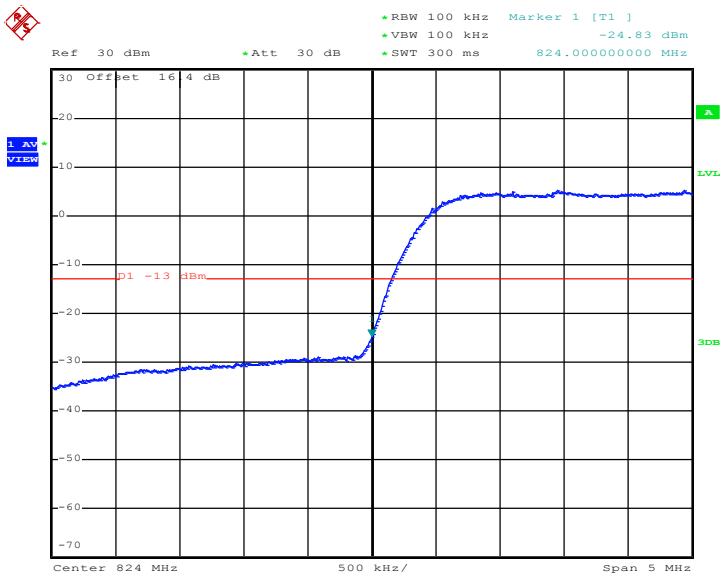

Date: 23.AUG.2012 22:09:18

*1. Correction Factor(dB)= 10log(1% Emission BW/RBW)*

*2. Band Edge= Measurement Value + Correction Factor(dB)*

| Band : | WCDMA Band V | Test Mode : | RMC 12.2Kbps Link |
|---|---|---|---|
| Correction Factor : | -3.30dB | Maximum 26dB Bandwidth : | 4.68MHz |
| Band Edge : | -28.13dBm | Measurement Value : | -24.83dBm |

**Lower Band Edge Plot on Channel 4132 (826.4 MHz)**



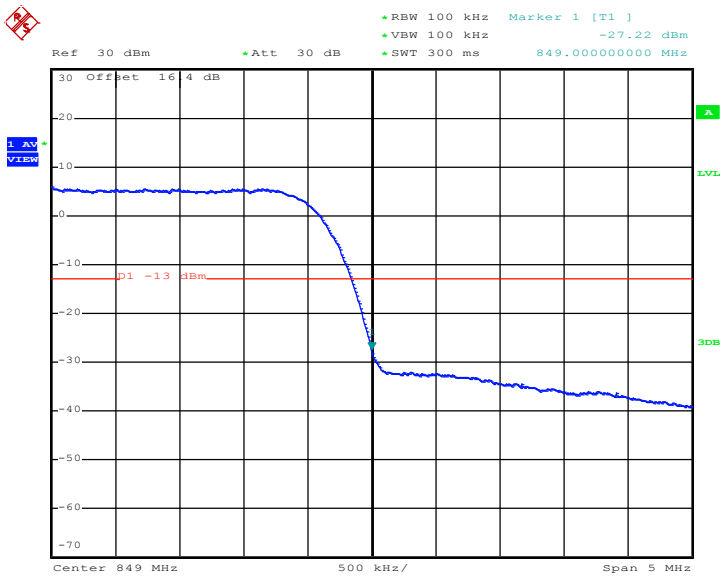

Date: 23.AUG.2012 22:58:21

*1. Correction Factor(dB)= 10log(1% Emission BW/RBW)*

*2. Band Edge= Measurement Value + Correction Factor(dB)*

| Band : | WCDMA Band V | Test Mode : | RMC 12.2Kbps Link |
|---|---|---|---|
| Correction Factor : | -3.30dB | Maximum 26dB Bandwidth : | 4.68MHz |
| Band Edge : | -30.52dBm | Measurement Value : | -27.22dBm |

**Higher Band Edge Plot on Channel 4233 (846.6 MHz)**



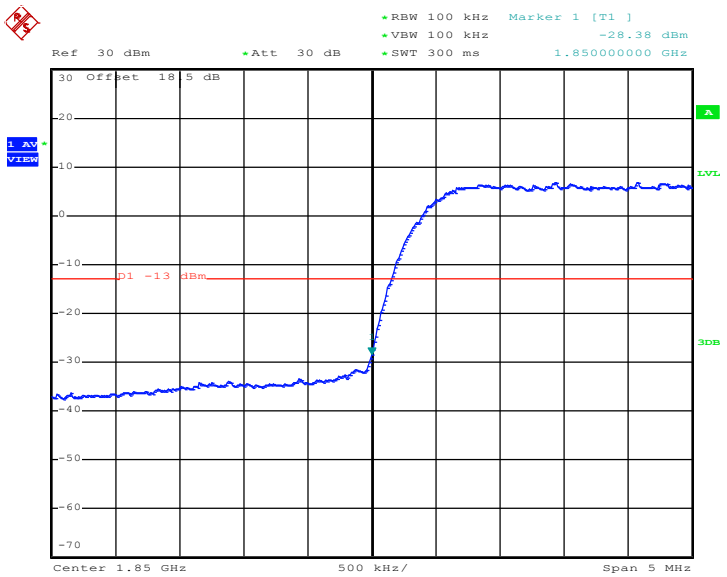

Date: 23.AUG.2012 22:58:48

*1. Correction Factor(dB)= 10log(1% Emission BW/RBW)*

*2. Band Edge= Measurement Value + Correction Factor(dB)*

| Band : | WCDMA Band II | Test Mode : | RMC 12.2Kbps Link |
|---|---|---|---|
| Correction Factor : | -3.33dB | Maximum 26dB Bandwidth : | 4.64MHz |
| Band Edge : | -31.71dBm | Measurement Value : | -28.38dBm |

**Lower Band Edge Plot on Channel 9262 (1852.4 MHz)**



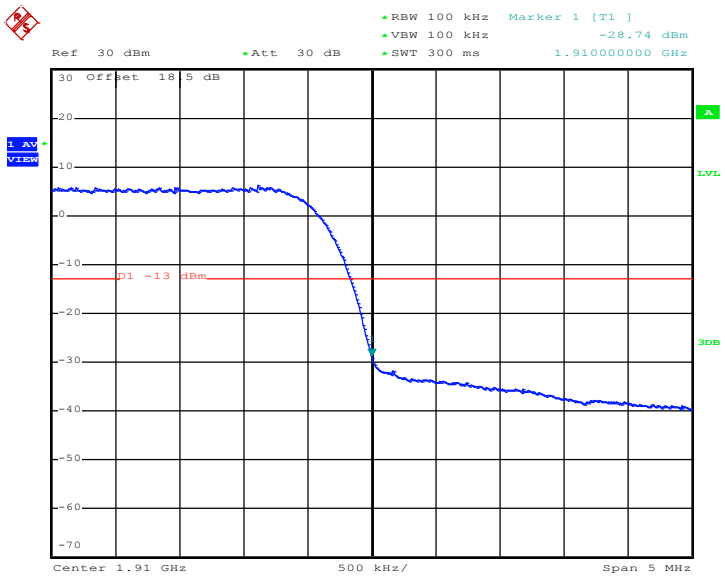

Date: 23.AUG.2012 22:51:35

*1. Correction Factor(dB)= 10log(1% Emission BW/RBW)*

*2. Band Edge= Measurement Value + Correction Factor(dB)*

| Band : | WCDMA Band II | Test Mode : | RMC 12.2Kbps Link |
|---|---|---|---|
| Correction Factor : | -3.33dB | Maximum 26dB Bandwidth : | 4.64MHz |
| Band Edge : | -32.07dBm | Measurement Value : | -28.74dBm |

**Higher Band Edge Plot on Channel 9538 (1907.6 MHz)**




Date: 23.AUG.2012 22:52:02

*1. Correction Factor(dB)= 10log(1% Emission BW/RBW)*

*2. Band Edge= Measurement Value + Correction Factor(dB)*

# 3.6 Conducted Spurious Emission Measurement

## 3.6.1 Description of Conducted Spurious Emission Measurement

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

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10$^{th}$ harmonic.

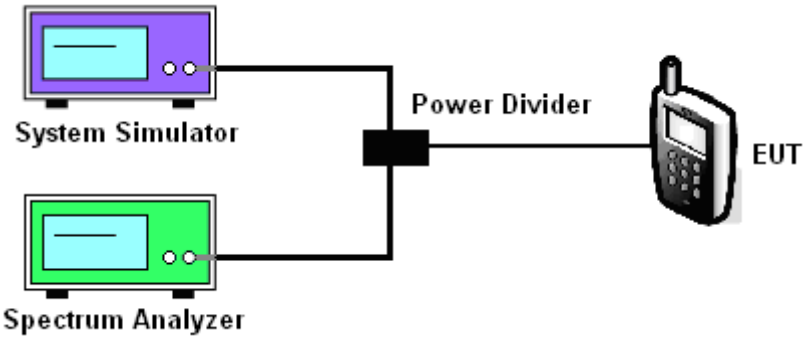
## 3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

## 3.6.3 Test Procedures

1. The EUT was connected to spectrum analyzer and base station via power divider.
2. The middle channel for the highest RF power within the transmitting frequency was measured.
3. The conducted spurious emission for the whole frequency range was taken.

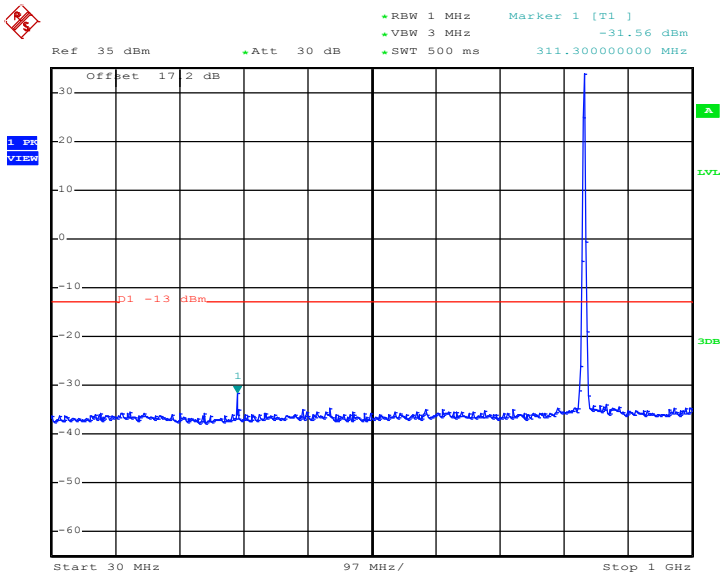
## 3.6.4 Test Setup



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

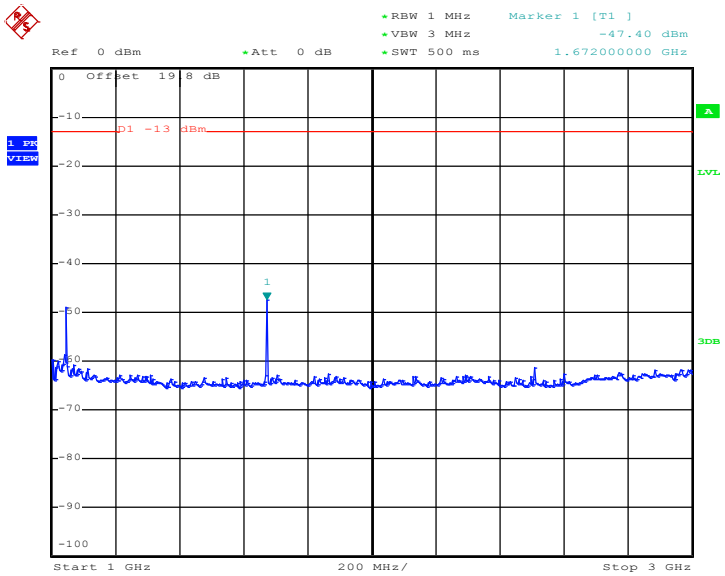
| Band : | GSM850 | Channel : | CH189 |
|---|---|---|---|
| Test Mode : | GSM Link | Frequency : | 836.4 MHz |

**Conducted Spurious Emission Plot between 30MHz ~ 1GHz**



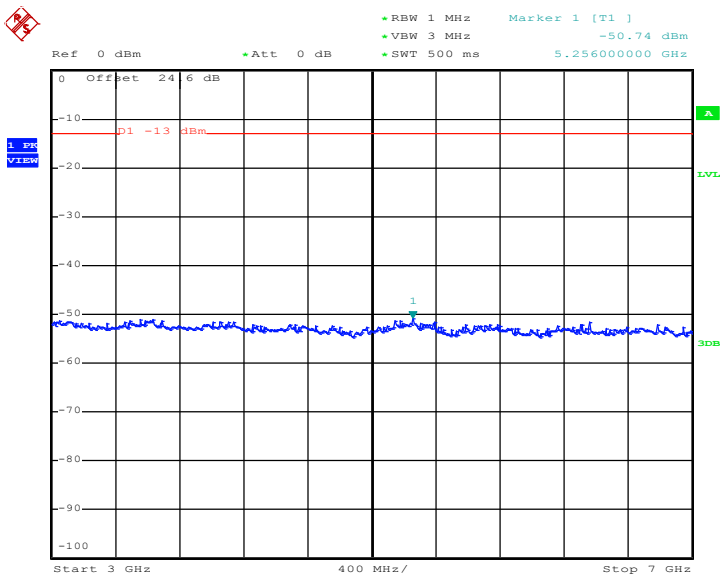

Date: 23.AUG.2012 20:31:41

**Conducted Spurious Emission Plot between 1GHz ~ 3GHz**



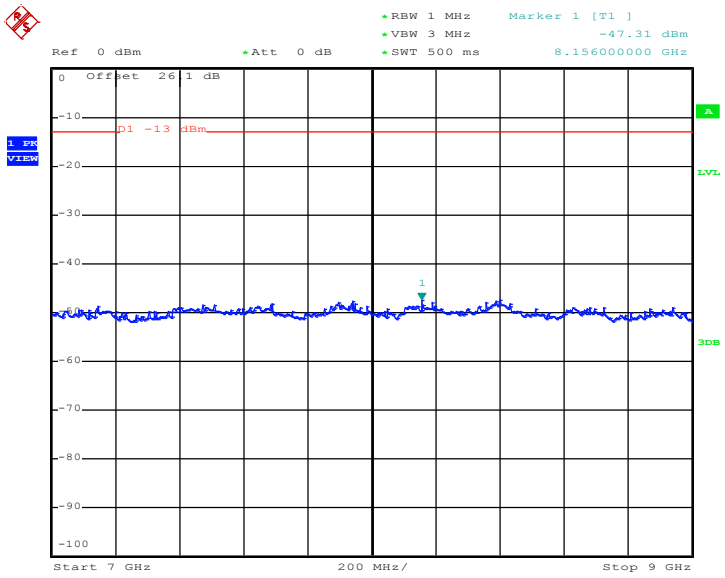

Date: 23.AUG.2012 20:31:59

## Conducted Spurious Emission Plot between 3GHz ~ 7GHz




Date: 23.AUG.2012 20:32:11

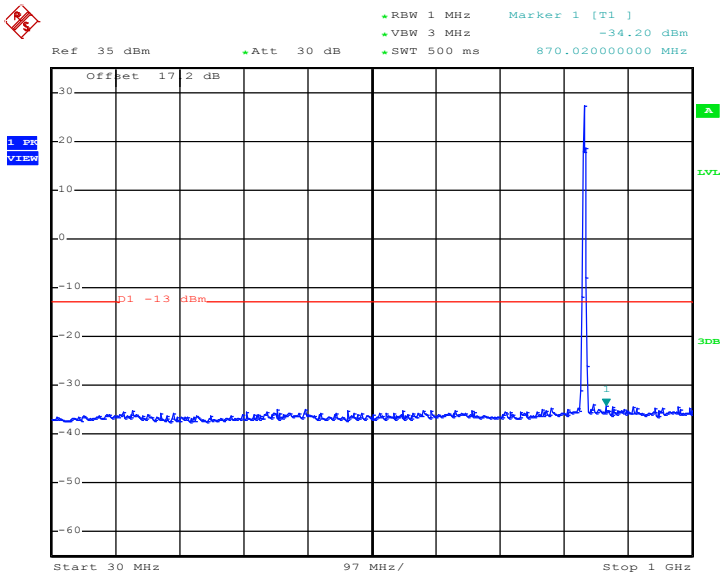
## Conducted Spurious Emission Plot between 7GHz ~ 9GHz




Date: 23.AUG.2012 20:32:24

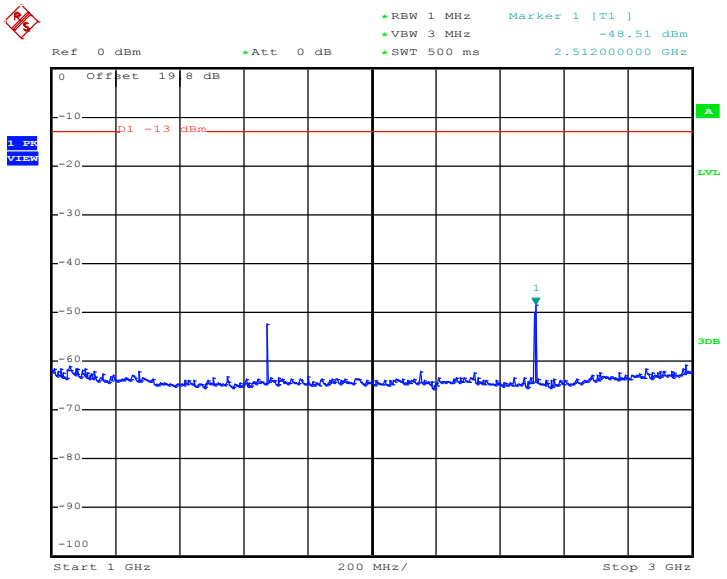
| Band : | GSM850 | Channel : | CH189 |
|---|---|---|---|
| Test Mode : | EDGE 8 Link | Frequency : | 836.4 MHz |

**Conducted Spurious Emission Plot between 30MHz ~ 1GHz**



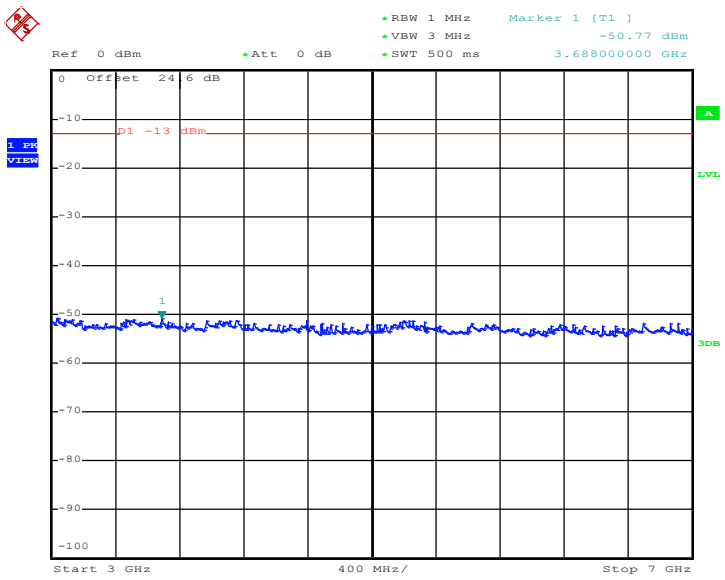

Date: 23.AUG.2012 21:04:27

**Conducted Spurious Emission Plot between 1GHz ~ 3GHz**



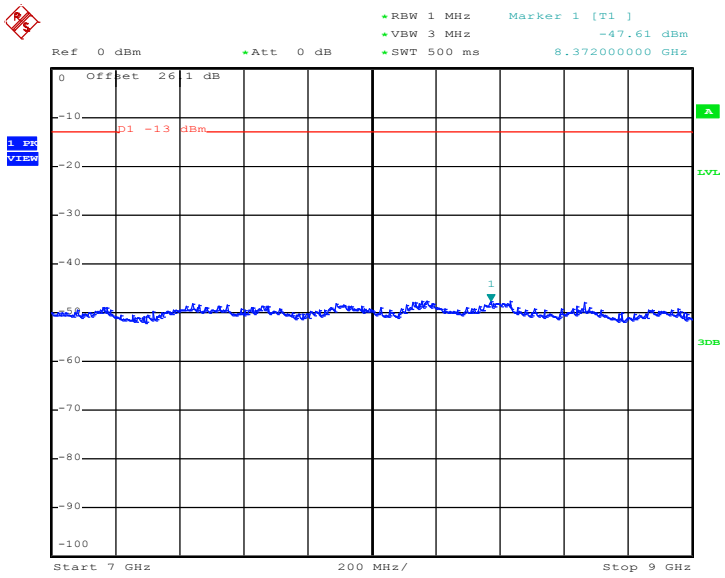

Date: 23.AUG.2012 21:05:04

## Conducted Spurious Emission Plot between 3GHz ~ 7GHz




Date: 23.AUG.2012 21:05:16

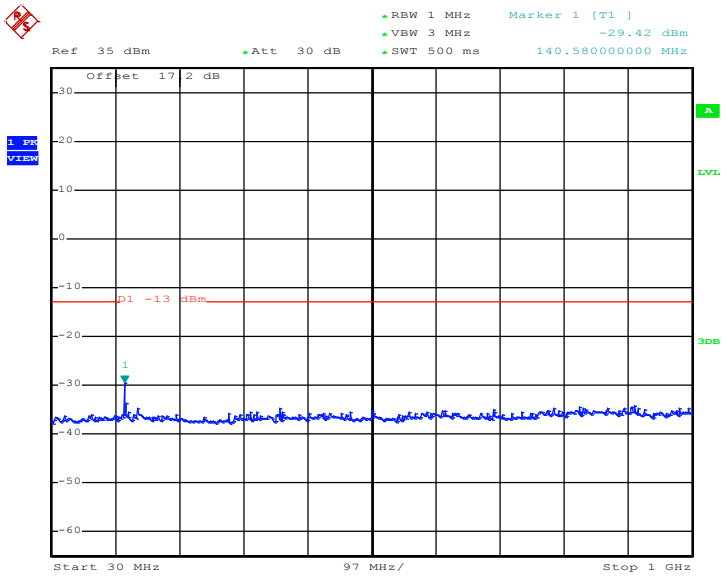
## Conducted Spurious Emission Plot between 7GHz ~ 9GHz




Date: 23.AUG.2012 21:05:29

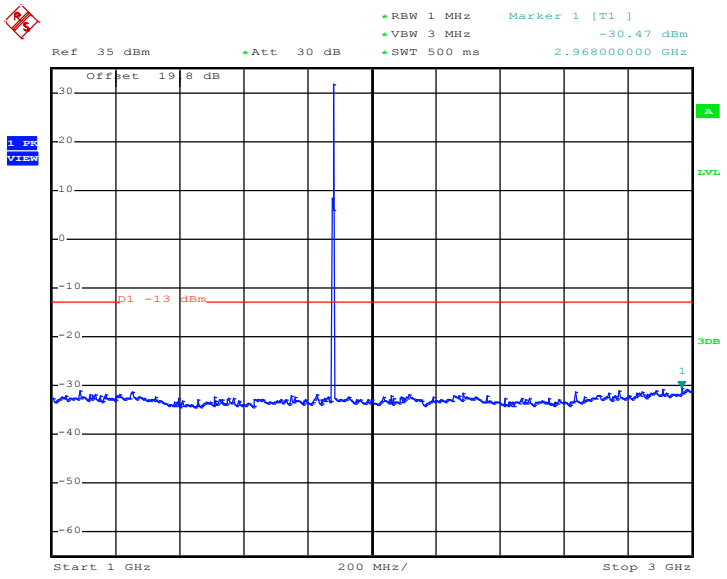
| Band : | GSM1900 | Channel : | CH661 |
|---|---|---|---|
| Test Mode : | GSM Link | Frequency : | 1880.0 MHz |

**Conducted Spurious Emission Plot between 30MHz ~ 1GHz**



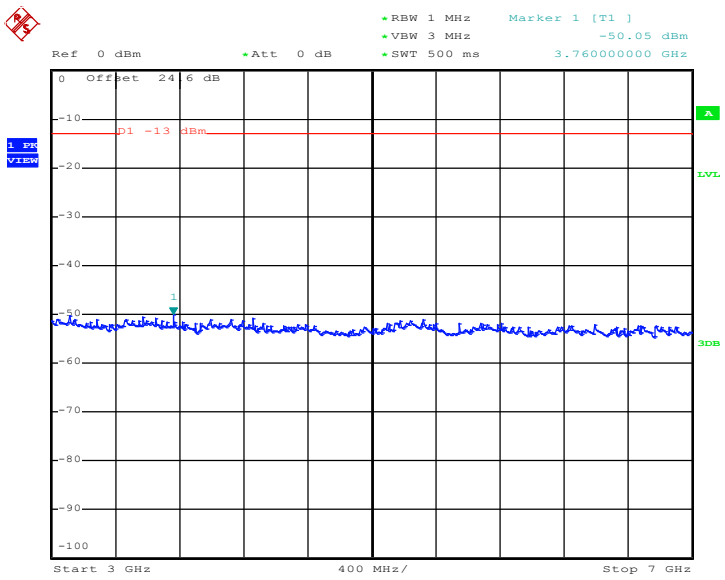

Date: 23.AUG.2012 20:48:06

**Conducted Spurious Emission Plot between 1GHz ~ 3GHz**



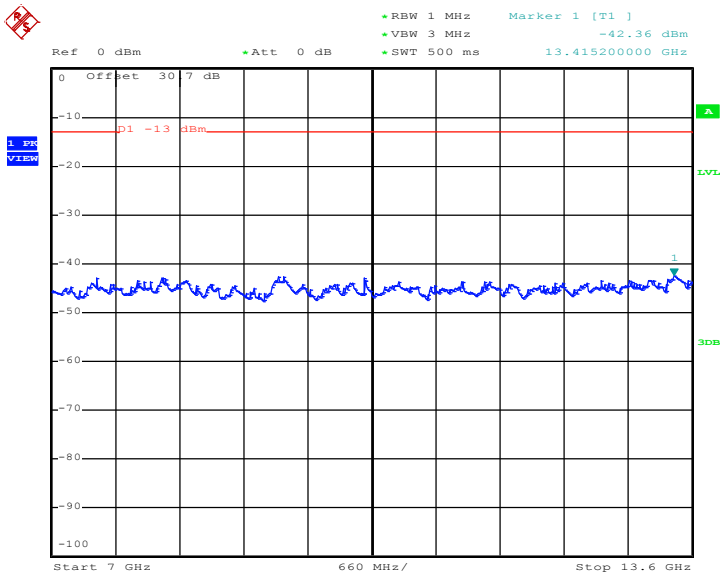

Date: 23.AUG.2012 20:48:19

## Conducted Spurious Emission Plot between 3GHz ~ 7GHz



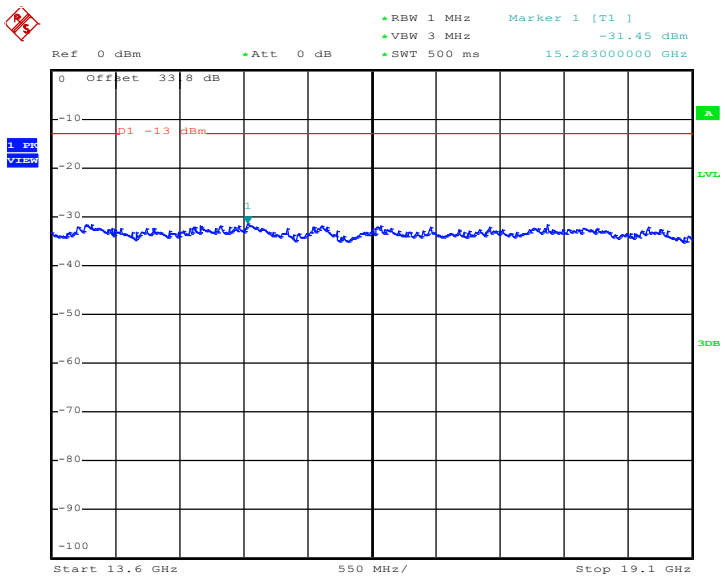

Date: 23.AUG.2012 20:48:36

## Conducted Emission Plot between 7GHz ~ 13.6GHz




Date: 23.AUG.2012 20:48:48

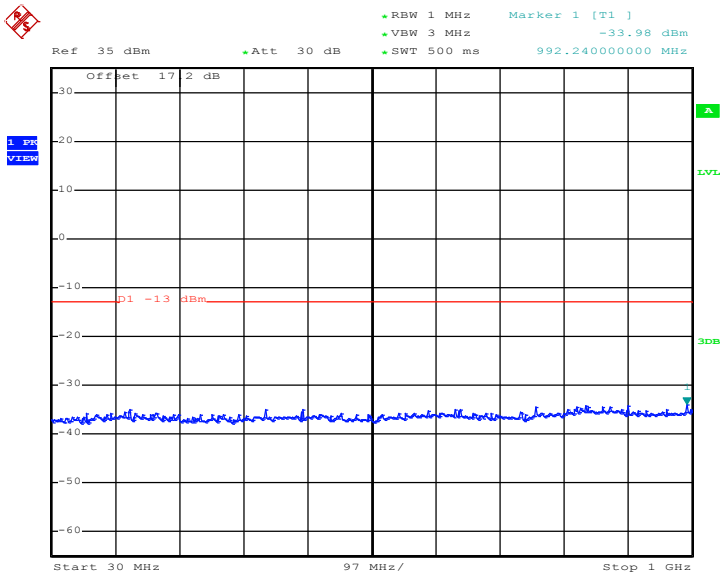
## Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz




Date: 23.AUG.2012 20:49:01

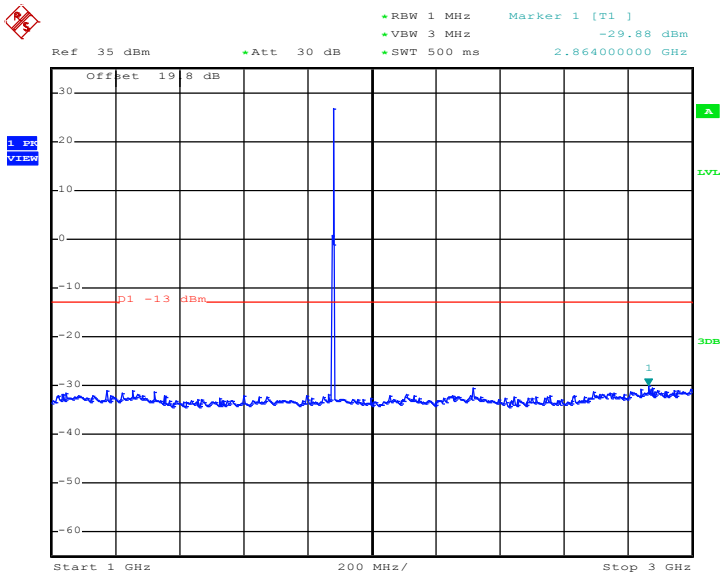
| Band : | GSM1900 | Channel : | CH661 |
|---|---|---|---|
| Test Mode : | EDGE 8 Link | Frequency : | 1880.0 MHz |

**Conducted Spurious Emission Plot between 30MHz ~ 1GHz**



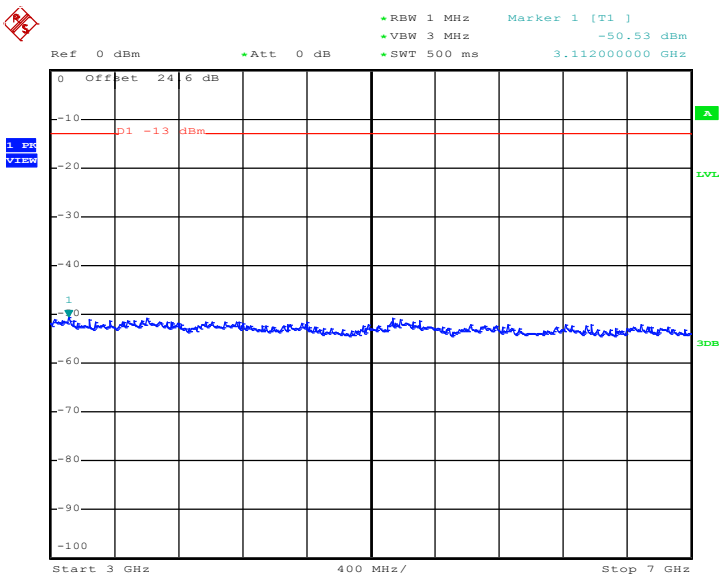

Date: 23.AUG.2012 22:02:05

**Conducted Spurious Emission Plot between 1GHz ~ 3GHz**



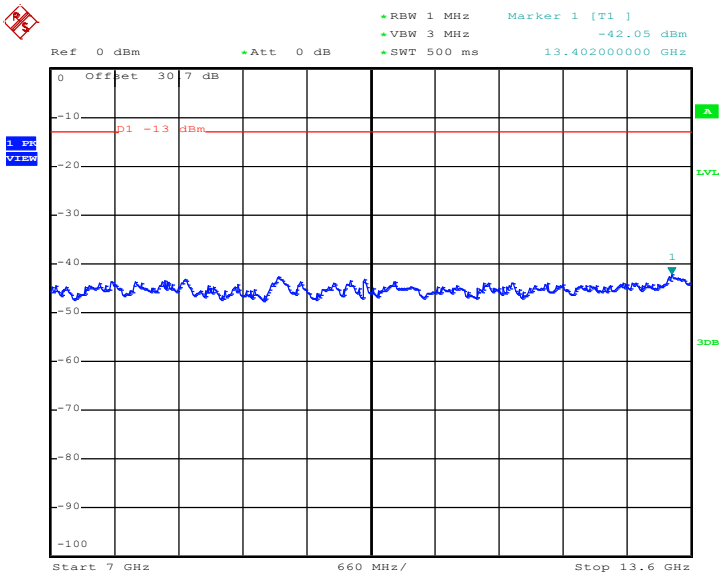

Date: 23.AUG.2012 22:03:33

## Conducted Spurious Emission Plot between 3GHz ~ 7GHz



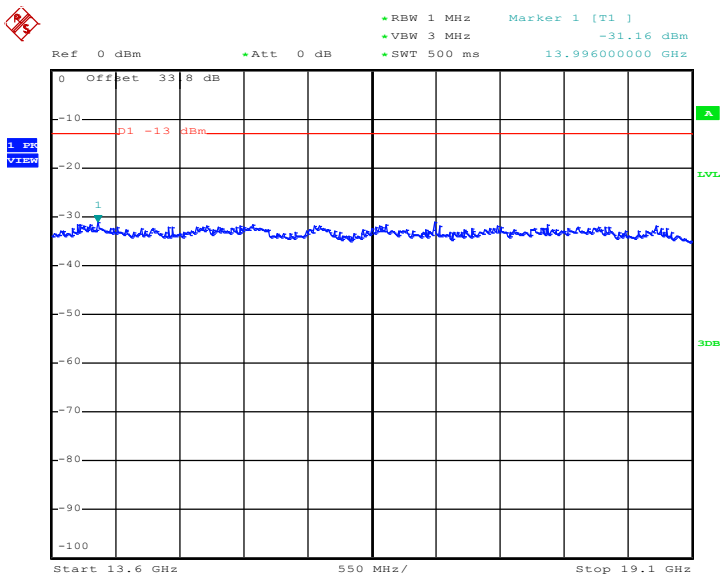

Date: 23.AUG.2012 22:04:06

## Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz




Date: 23.AUG.2012 22:04:18

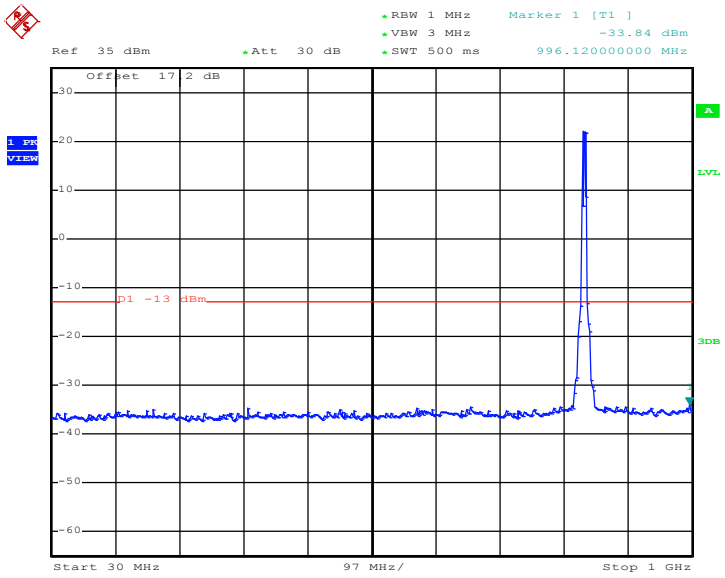
## Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz




Date: 23.AUG.2012 22:04:31

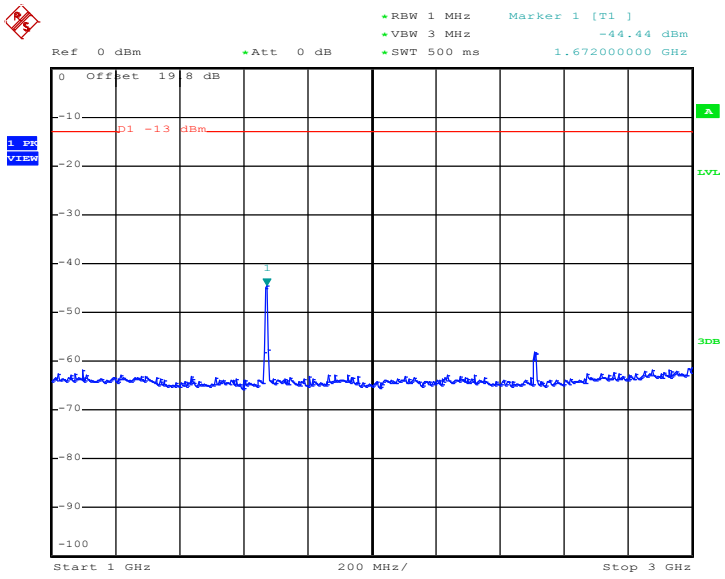
| Band : | WCDMA Band V | Channel : | CH4182 |
|---|---|---|---|
| Test Mode : | RMC 12.2Kbps Link | Frequency : | 836.4 MHz |

**Conducted Spurious Emission Plot between 30MHz ~ 1GHz**



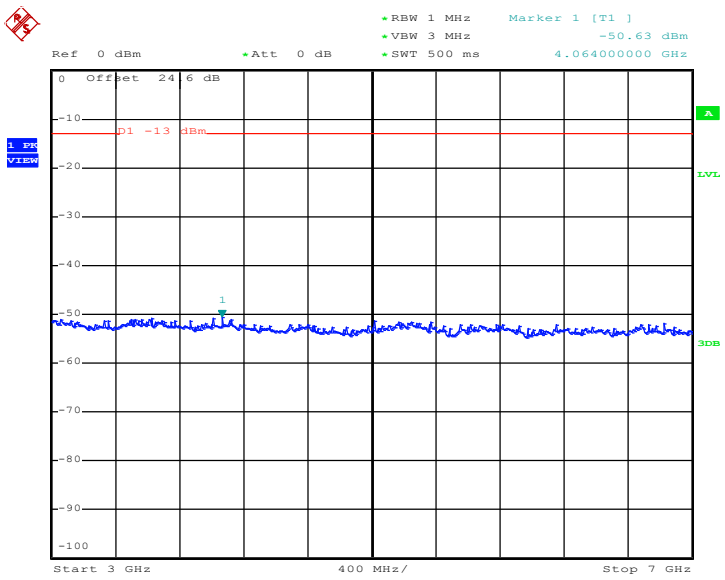

Date: 23.AUG.2012 23:05:11

**Conducted Spurious Emission Plot between 1GHz ~ 3GHz**



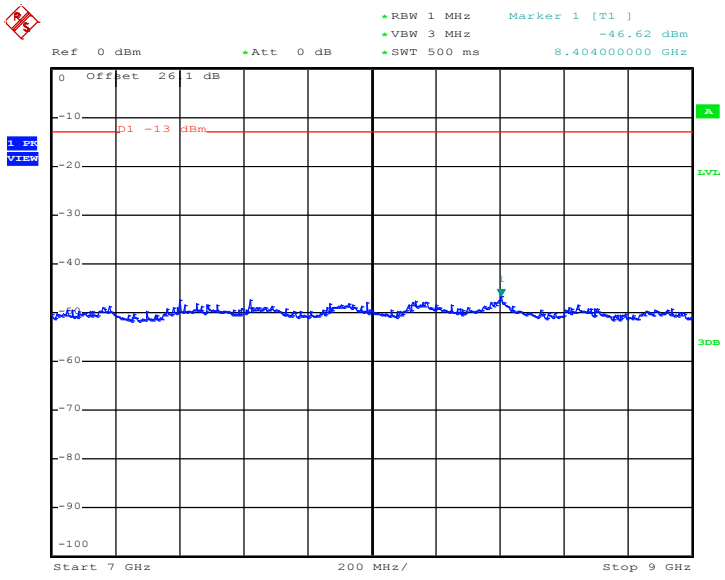

Date: 23.AUG.2012 23:05:28

## Conducted Spurious Emission Plot between 3GHz ~ 7GHz




Date: 23.AUG.2012 23:05:40

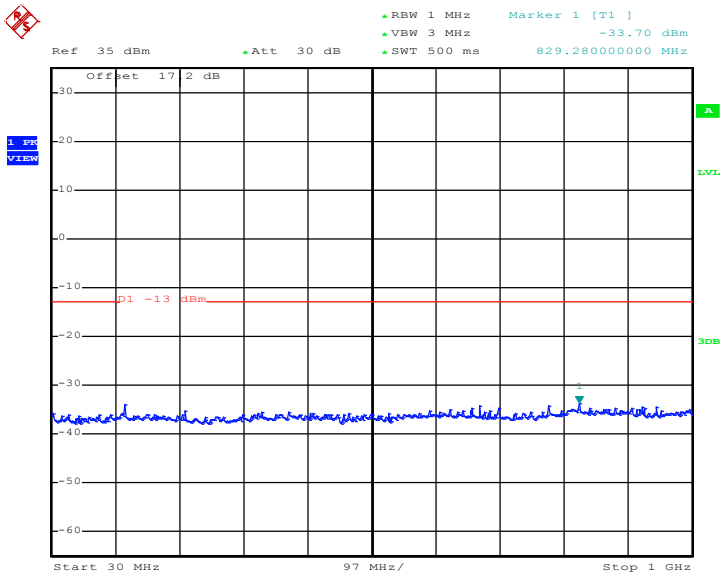
## Conducted Spurious Emission Plot between 7GHz ~ 9GHz




Date: 23.AUG.2012 23:05:53

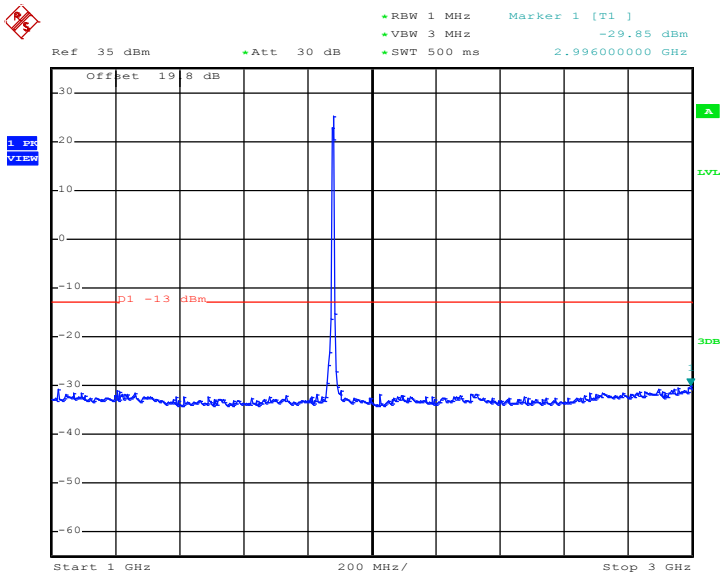
| Band : | WCDMA Band II | Channel : | CH9400 |
|---|---|---|---|
| Test Mode : | RMC 12.2Kbps Link | Frequency : | 1880.0 MHz |

**Conducted Spurious Emission Plot between 30MHz ~ 1GHz**



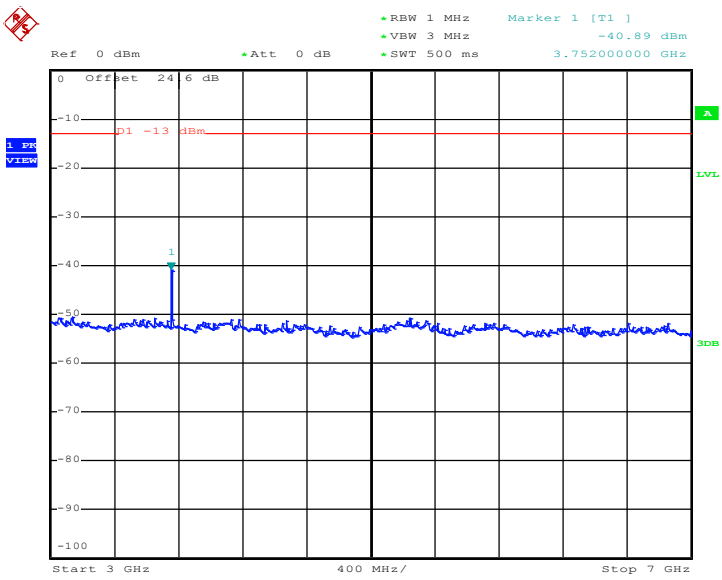

Date: 23.AUG.2012 22:45:14

**Conducted Spurious Emission Plot between 1GHz ~ 3GHz**



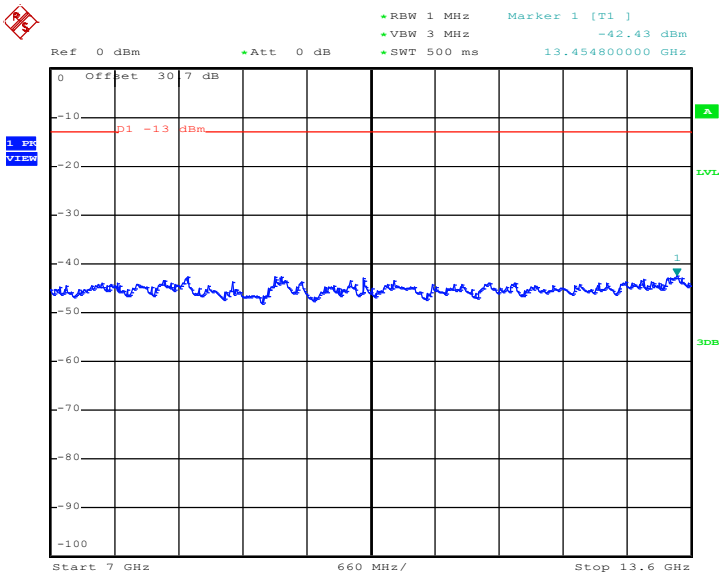

Date: 23.AUG.2012 22:45:26

## Conducted Spurious Emission Plot between 3GHz ~ 7GHz



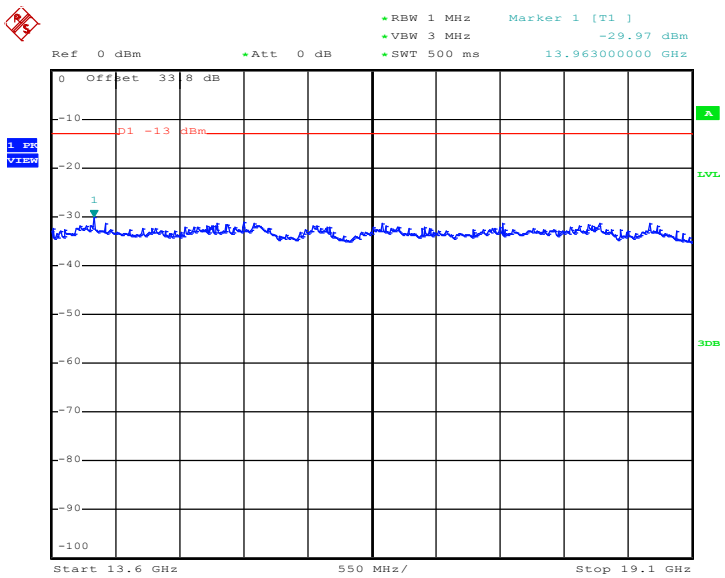

Date: 23.AUG.2012 22:45:46

## Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz




Date: 23.AUG.2012 22:45:58

## Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz




Date: 23.AUG.2012 22:46:11

# 3.7 Field Strength of Spurious Radiation Measurement

## 3.7.1 Description of Field Strength of Spurious Radiated Measurement

The radiated spurious emission was measured by substitution method according to ANSI / TIA / EIA-603-C-2004. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

## 3.7.2 Measuring Instruments

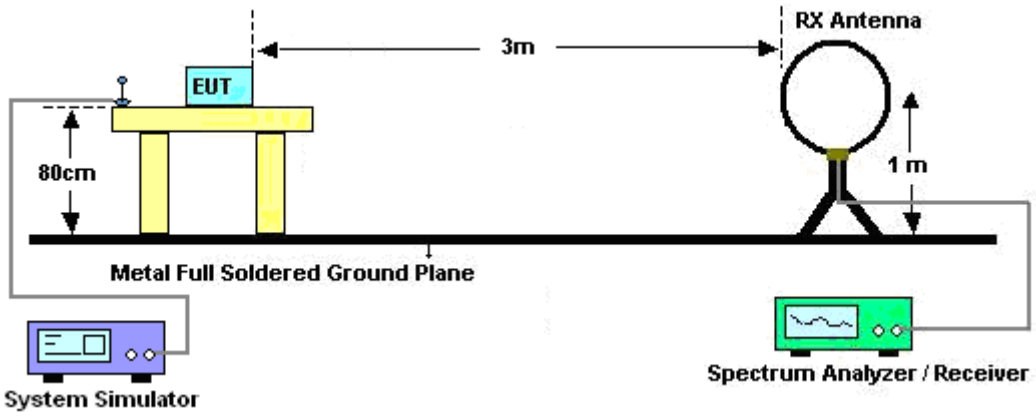
See list of measuring instruments of this test report.

## 3.7.3 Test Procedures

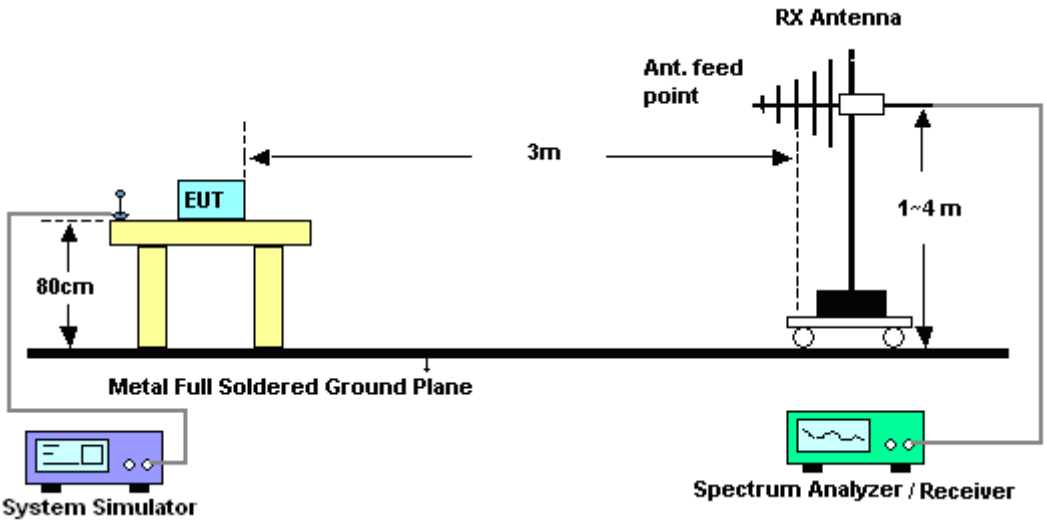
1. The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving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

### 3.7.4 Test Setup

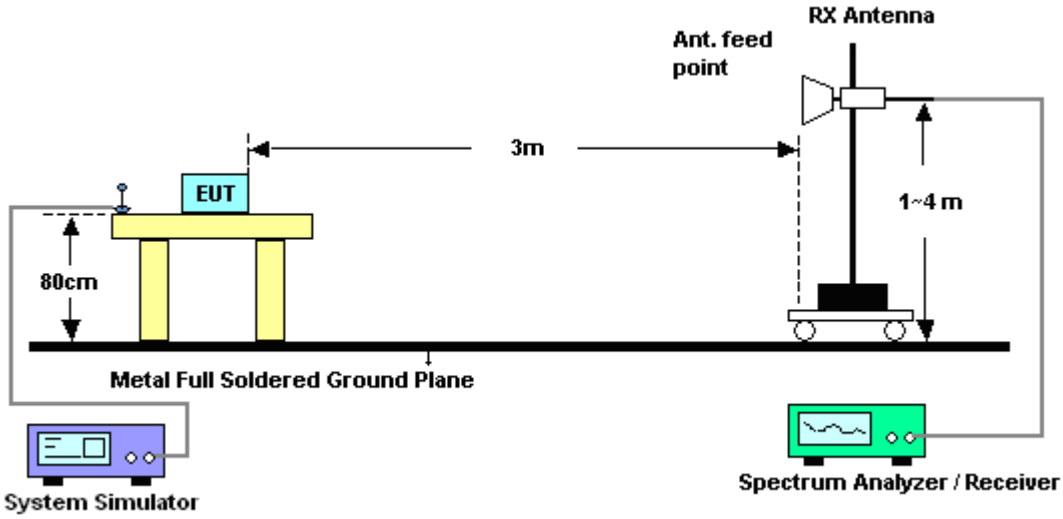
**For radiated emissions below 30MHz**




**For radiated emissions from 30MHz to 1GHz**



**For radiated emissions above 1GHz**

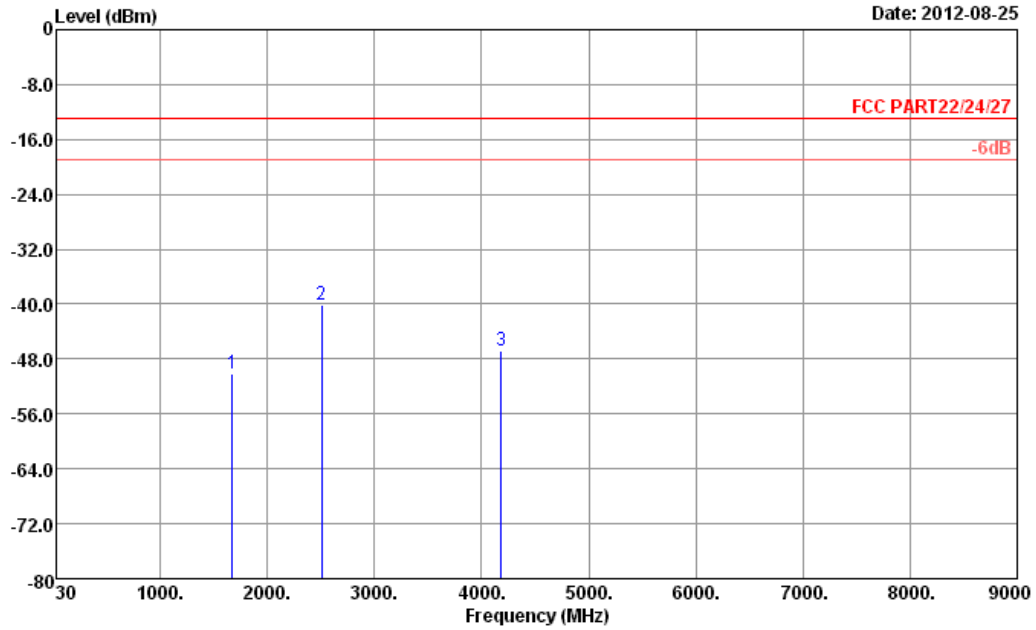



## 3.7.5 Test Results of Radiated Emissions (9 KHz ~ 30 MHz)

The low frequency, which started from 9 KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

### 3.7.6 Test Result of Field Strength of Spurious Radiated

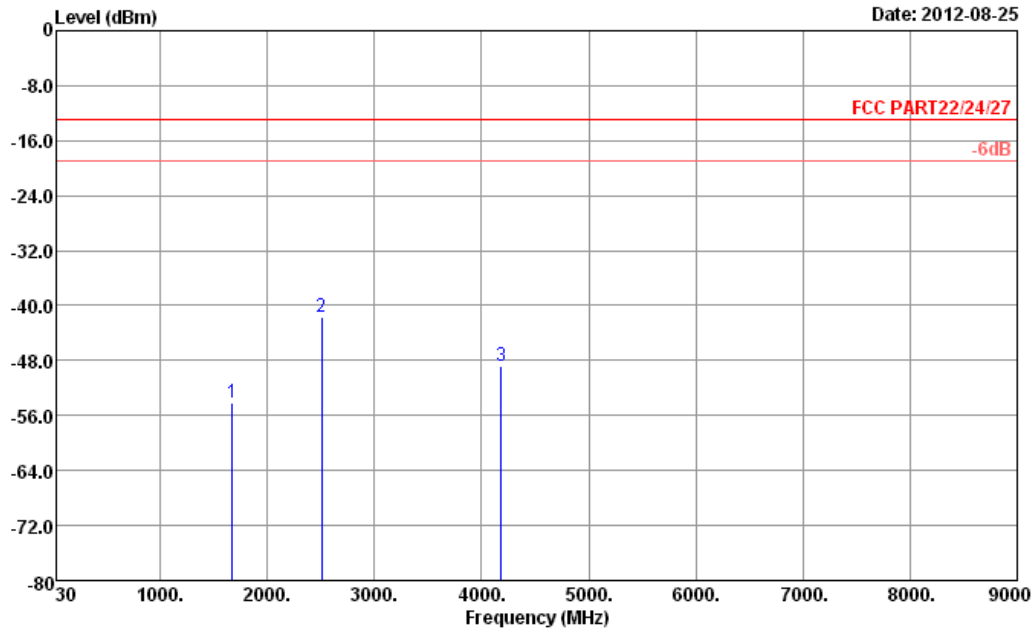
| | | | |
|---|---|---|---|
| **Band :** | GSM850 | **Temperature :** | 22~24°C |
| **Test Mode :** | GSM Link for Sample 1 | **Relative Humidity :** | 50~52% |
| **Test Engineer :** | David Yang | **Polarization :** | Horizontal |
| **Remark :** | Spurious emissions within 30-1000MHz were found more than 20dB below limit line. | | |




Site : 03CH05-HY
Condition : FCC PART22/24/27 HF_EIRP_101221 HORIZONTAL
Project : FG 280818-01

| Frequency ( MHz ) | ERP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | SPA Reading (dBm) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|---|---|---|---|---|---|---|---|---|---|
| 1672 | -50.24 | -13 | -37.24 | -56.86 | -52 | 1.35 | 5.25 | H | Pass |
| 2509 | -40.22 | -13 | -27.22 | -49.5 | -42.6 | 1.58 | 6.11 | H | Pass |
| 4182 | -46.86 | -13 | -33.86 | -62.1 | -51.9 | 1.96 | 9.15 | H | Pass |

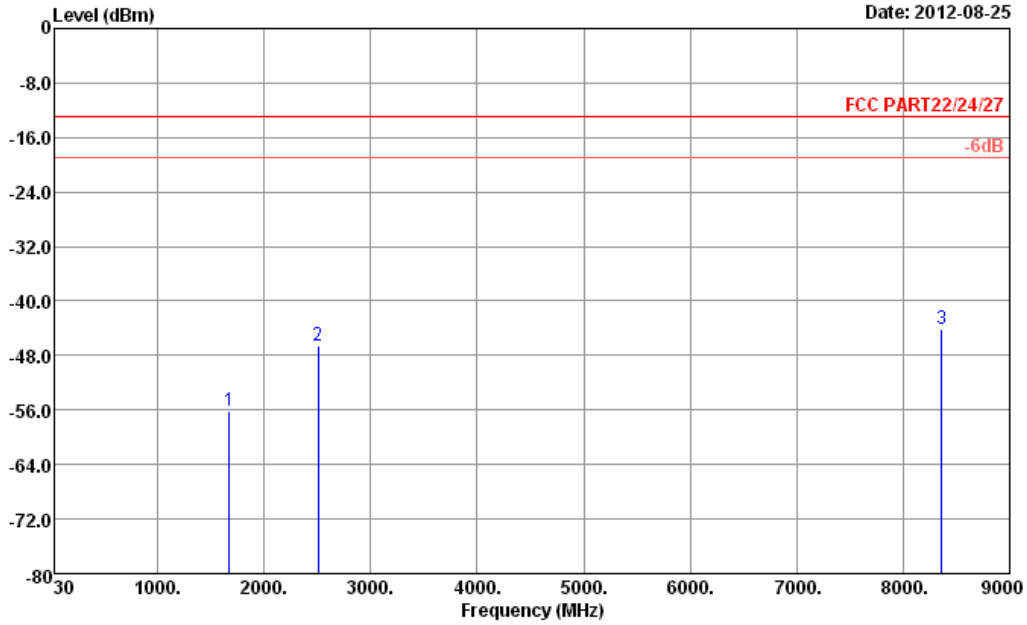
| Band : | GSM850 | Temperature : | 22~24°C |
|---|---|---|---|
| Test Mode : | GSM Link for Sample 1 | Relative Humidity : | 50~52% |
| Test Engineer : | David Yang | Polarization : | Vertical |
| Remark : | Spurious emissions within 30-1000MHz were found more than 20dB below limit line. | | |




Site : 03CH05-HY
Condition : FCC PART22/24/27 HF_EIRP_101221 VERTICAL
Project : FG 280818-01

| Frequency ( MHz ) | ERP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | SPA Reading (dBm) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|---|---|---|---|---|---|---|---|---|---|
| 1672 | -54.24 | -13 | -41.24 | -60.73 | -56 | 1.35 | 5.25 | V | Pass |
| 2509 | -41.62 | -13 | -28.62 | -51.11 | -44 | 1.58 | 6.11 | V | Pass |
| 4182 | -48.76 | -13 | -35.76 | -64.05 | -53.8 | 1.96 | 9.15 | V | Pass |

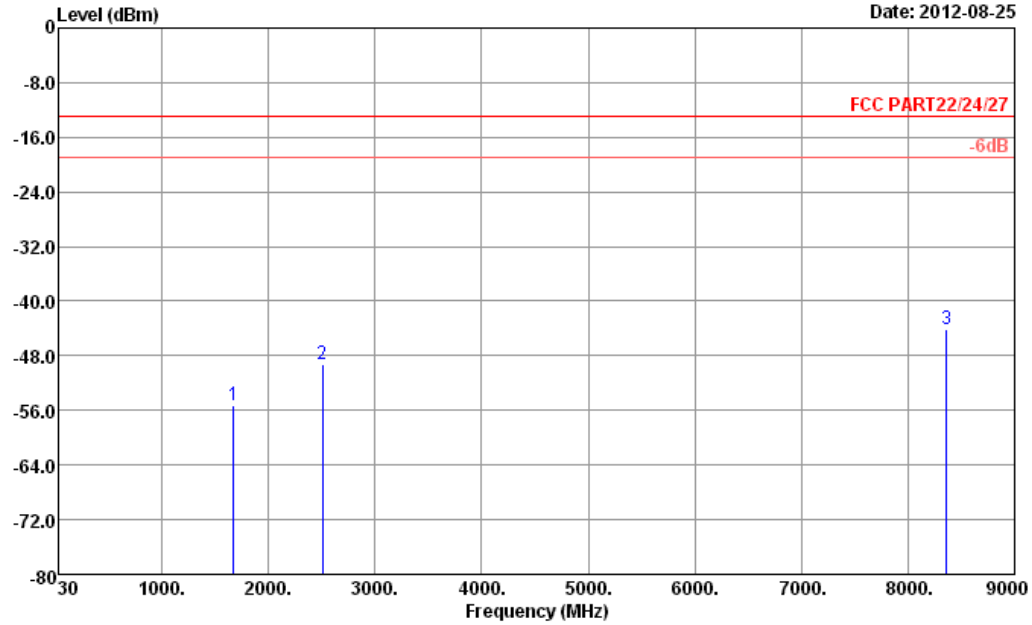
| Band : | GSM850 | Temperature : | 22~24°C |
|---|---|---|---|
| Test Mode : | EDGE 8 Link for Sample 1 | Relative Humidity : | 50~52% |
| Test Engineer : | David Yang | Polarization : | Horizontal |
| Remark : | Spurious emissions within 30-1000MHz were found more than 20dB below limit line. | | |




Site : 03CH05-HY
Condition : FCC PART22/24/27 HF_EIRP_101221 HORIZONTAL
Project : FG 280818-01

| Frequency ( MHz ) | ERP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | SPA Reading (dBm) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|---|---|---|---|---|---|---|---|---|---|
| 1672 | -56.24 | -13 | -43.24 | -62.17 | -58 | 1.35 | 5.25 | H | Pass |
| 2509 | -46.62 | -13 | -33.62 | -55.88 | -49 | 1.58 | 6.11 | H | Pass |
| 8364 | -44.12 | -13 | -31.12 | -67.43 | -52.2 | 2.67 | 12.89 | H | Pass |

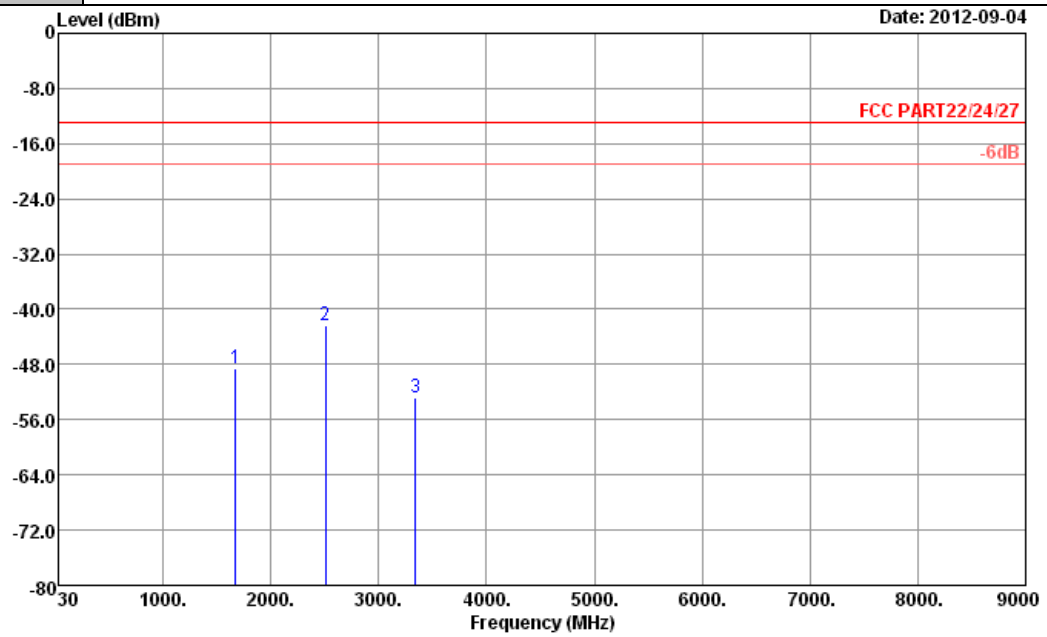
| | | | |
|---|---|---|---|
| **Band :** | GSM850 | **Temperature :** | 22~24°C |
| **Test Mode :** | EDGE 8 Link for Sample 1 | **Relative Humidity :** | 50~52% |
| **Test Engineer :** | David Yang | **Polarization :** | Vertical |
| **Remark :** | Spurious emissions within 30-1000MHz were found more than 20dB below limit line. | | |




Site : 03CH05-HY
Condition : FCC PART22/24/27 HF_EIRP_101221 VERTICAL
Project : FG 280818-01

| Frequency ( MHz ) | ERP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | SPA Reading (dBm) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|---|---|---|---|---|---|---|---|---|---|
| 1672 | -55.24 | -13 | -42.24 | -61.55 | -57 | 1.35 | 5.25 | V | Pass |
| 2509 | -49.22 | -13 | -36.22 | -58.49 | -51.6 | 1.58 | 6.11 | V | Pass |
| 8364 | -44.02 | -13 | -31.02 | -67.23 | -52.1 | 2.67 | 12.89 | V | Pass |

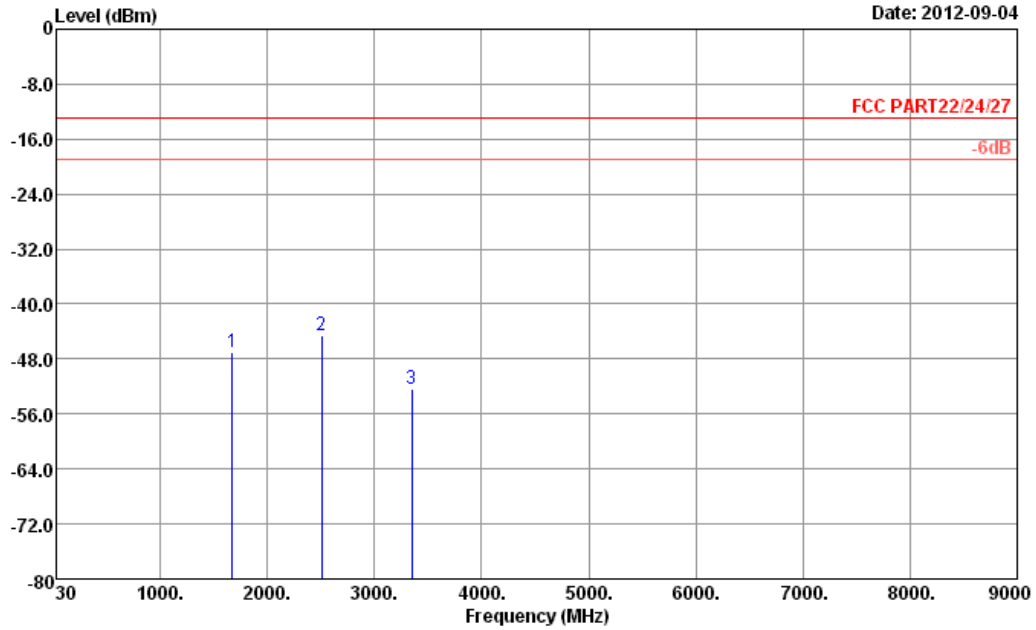
| | | | |
|---|---|---|---|
| **Band :** | GSM850 | **Temperature :** | 22~24°C |
| **Test Mode :** | GSM Link for Sample 2 | **Relative Humidity :** | 50~52% |
| **Test Engineer :** | David Yang | **Polarization :** | Horizontal |
| **Remark :** | Spurious emissions within 30-1000MHz were found more than 20dB below limit line. | | |




Site : 03CH05-HY
Condition : FCC PART22/24/27 HF_EIRP_101221 HORIZONTAL
Project : FG 280818-01

| Frequency ( MHz ) | ERP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | SPA Reading (dBm) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|---|---|---|---|---|---|---|---|---|---|
| 1672 | -48.66 | -13 | -35.66 | -55.88 | -50.42 | 1.35 | 5.25 | H | Pass |
| 2509 | -42.31 | -13 | -29.31 | -52.2 | -44.69 | 1.58 | 6.11 | H | Pass |
| 3343 | -52.89 | -13 | -39.89 | -64.11 | -56.74 | 1.94 | 7.94 | H | Pass |

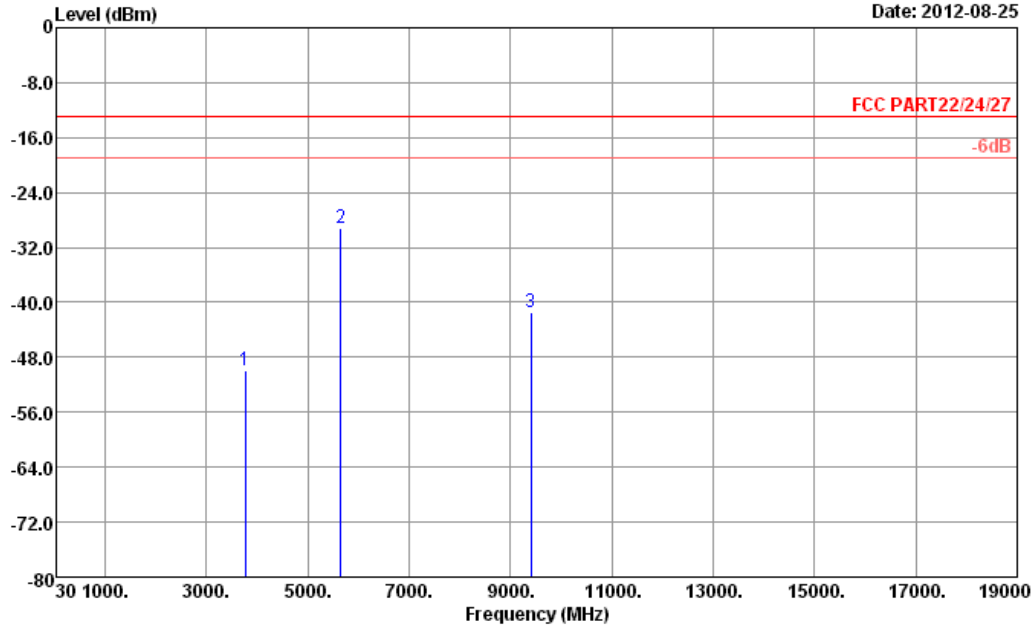
| Band : | GSM850 | Temperature : | 22~24°C |
|---|---|---|---|
| Test Mode : | GSM Link for Sample 2 | Relative Humidity : | 50~52% |
| Test Engineer : | David Yang | Polarization : | Vertical |
| Remark : | Spurious emissions within 30-1000MHz were found more than 20dB below limit line. | | |




Site : 03CH05-HY
Condition : FCC PART22/24/27 HF_EIRP_101221 VERTICAL
Project : FG 280818-01

| Frequency ( MHz ) | ERP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | SPA Reading (dBm) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|---|---|---|---|---|---|---|---|---|---|
| 1672 | -47.01 | -13 | -34.01 | -53.44 | -48.77 | 1.35 | 5.25 | V | Pass |
| 2509 | -44.47 | -13 | -31.47 | -53.77 | -46.85 | 1.58 | 6.11 | V | Pass |
| 3346 | -52.46 | -13 | -39.46 | -64.01 | -56.31 | 1.94 | 7.94 | V | Pass |

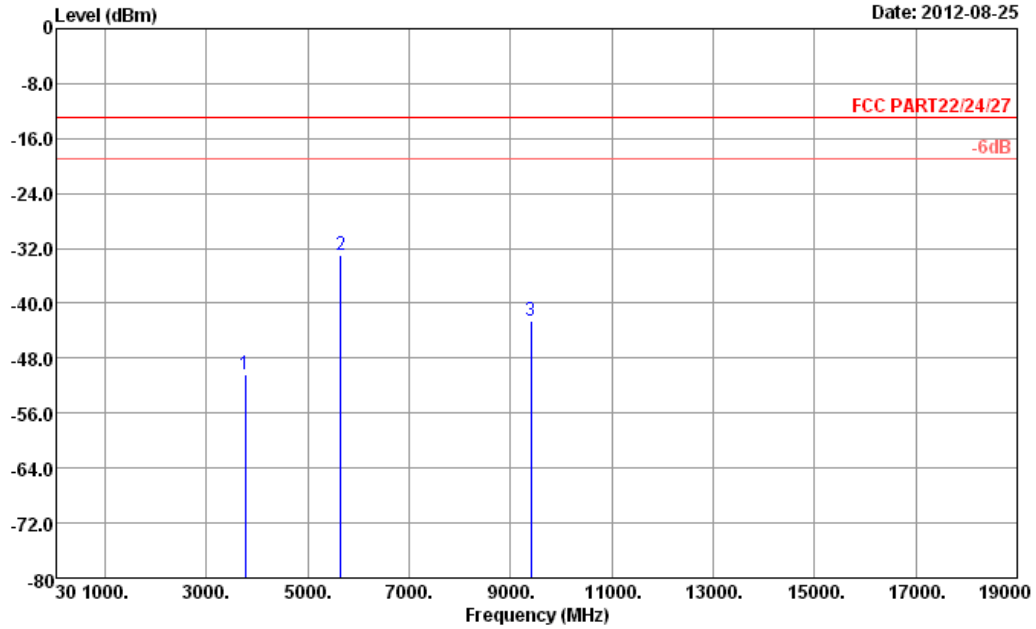
| Band : | GSM1900 | Temperature : | 22~24°C |
|---|---|---|---|
| Test Mode : | GSM Link for Sample 1 | Relative Humidity : | 50~52% |
| Test Engineer : | David Yang | Polarization : | Horizontal |
| Remark : | Spurious emissions within 30-1000MHz were found more than 20dB below limit line. | | |




Site : 03CH05-HY
Condition : FCC PART22/24/27 HF_EIRP_101221 HORIZONTAL
Project : FG 280818-01

| Frequency ( MHz ) | EIRP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | SPA Reading (dBm) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|---|---|---|---|---|---|---|---|---|---|
| 3760 | -49.99 | -13 | -36.99 | -63.46 | -56.7 | 2.00 | 8.71 | H | Pass |
| 5640 | -29.26 | -13 | -16.26 | -48.05 | -37.9 | 2.13 | 10.77 | H | Pass |
| 9400 | -41.49 | -13 | -28.49 | -65.85 | -52 | 2.87 | 13.38 | H | Pass |

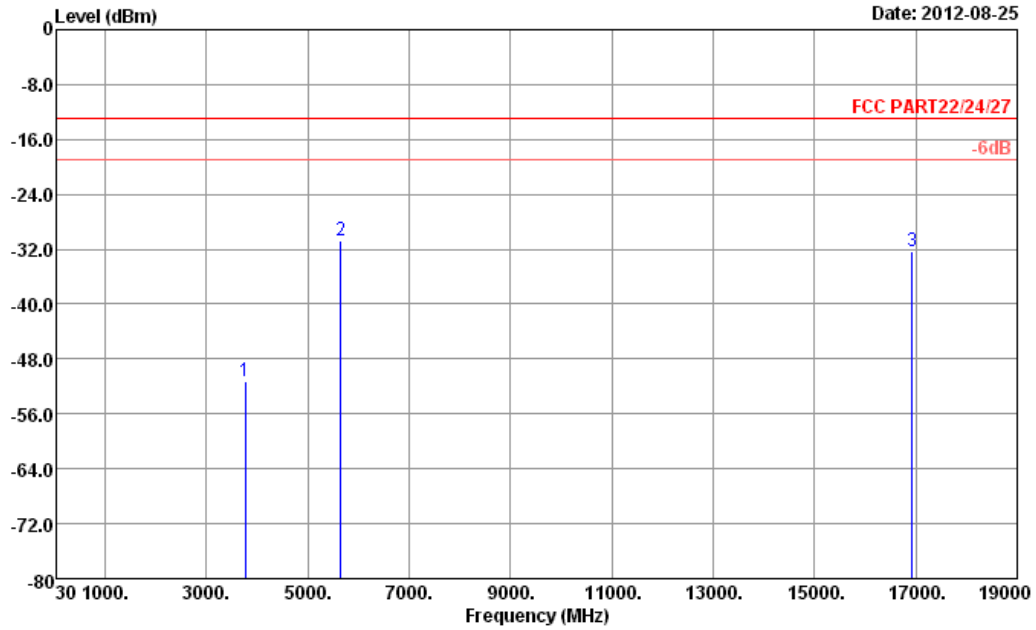
| Band : | GSM1900 | Temperature : | 22~24°C |
|---|---|---|---|
| Test Mode : | GSM Link for Sample 1 | Relative Humidity : | 50~52% |
| Test Engineer : | David Yang | Polarization : | Vertical |
| Remark : | Spurious emissions within 30-1000MHz were found more than 20dB below limit line. | | |




Site : 03CH05-HY
Condition : FCC PART22/24/27 HF_EIRP_101221 VERTICAL
Project : FG 280818-01

| Frequency ( MHz ) | EIRP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | SPA Reading (dBm) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|---|---|---|---|---|---|---|---|---|---|
| 3760 | -50.29 | -13 | -37.29 | -64.1 | -57 | 2.00 | 8.71 | V | Pass |
| 5640 | -32.96 | -13 | -19.96 | -51.85 | -41.6 | 2.13 | 10.77 | V | Pass |
| 9400 | -42.49 | -13 | -29.49 | -66.68 | -53 | 2.87 | 13.38 | V | Pass |

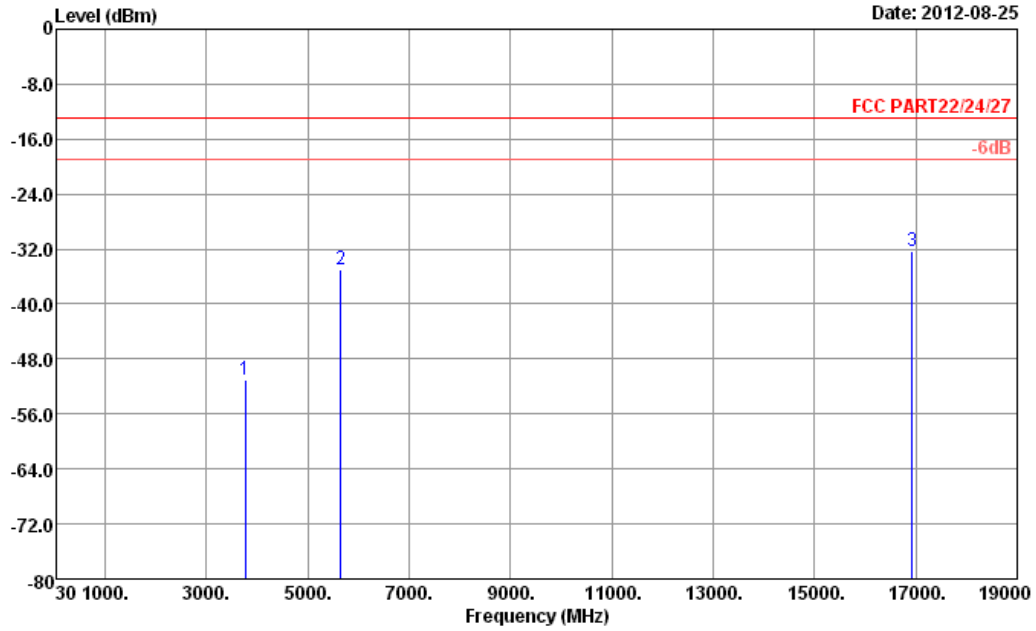
| Band : | GSM1900 | Temperature : | 22~24°C |
|---|---|---|---|
| Test Mode : | EDGE 8 Link for Sample 1 | Relative Humidity : | 50~52% |
| Test Engineer : | David Yang | Polarization : | Horizontal |
| Remark : | Spurious emissions within 30-1000MHz were found more than 20dB below limit line. | | |




Site : 03CH05-HY
Condition : FCC PART22/24/27 HF_EIRP_101221 HORIZONTAL
Project : FG 280818-01

| Frequency ( MHz ) | EIRP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | SPA Reading (dBm) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|---|---|---|---|---|---|---|---|---|---|
| 3760 | -51.29 | -13 | -38.29 | -64.9 | -58 | 2.00 | 8.71 | H | Pass |
| 5640 | -30.86 | -13 | -17.86 | -49.72 | -39.5 | 2.13 | 10.77 | H | Pass |
| 16920 | -32.38 | -13 | -19.38 | -68.69 | -42 | 3.82 | 13.45 | H | Pass |

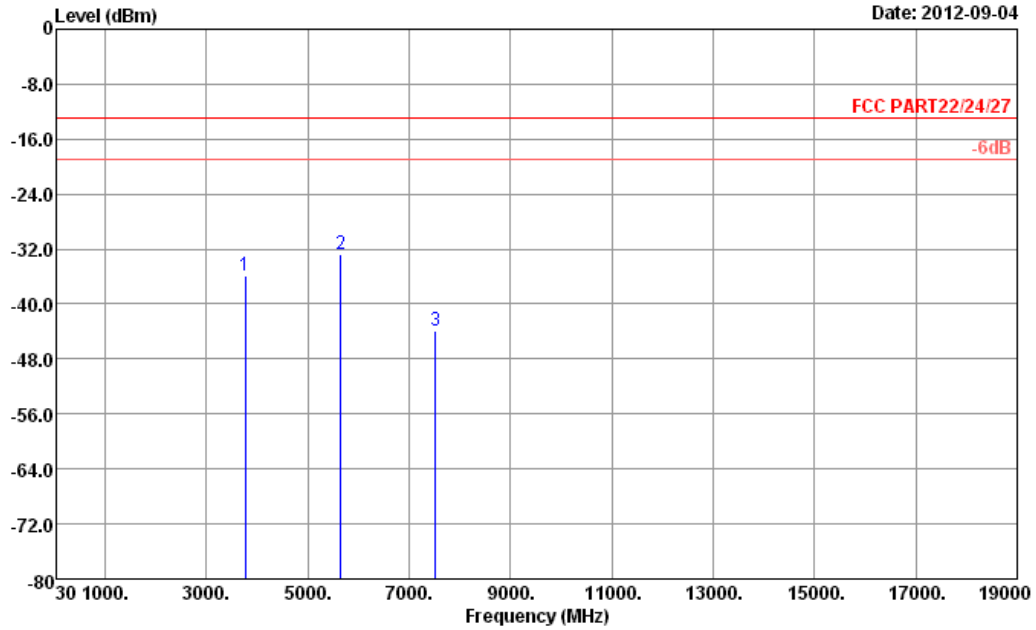
| Band : | GSM1900 | Temperature : | 22~24°C |
|---|---|---|---|
| Test Mode : | EDGE 8 Link for Sample 1 | Relative Humidity : | 50~52% |
| Test Engineer : | David Yang | Polarization : | Vertical |
| Remark : | Spurious emissions within 30-1000MHz were found more than 20dB below limit line. | | |




Site : 03CH05-HY
Condition : FCC PART22/24/27 HF_EIRP_101221 VERTICAL
Project : FG 280818-01

| Frequency ( MHz ) | EIRP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | SPA Reading (dBm) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|---|---|---|---|---|---|---|---|---|---|
| 3760 | -51.09 | -13 | -38.09 | -64.55 | -57.8 | 2.00 | 8.71 | V | Pass |
| 5640 | -35.06 | -13 | -22.06 | -54.02 | -43.7 | 2.13 | 10.77 | V | Pass |
| 16920 | -32.38 | -13 | -19.38 | -68.31 | -42 | 3.82 | 13.45 | V | Pass |

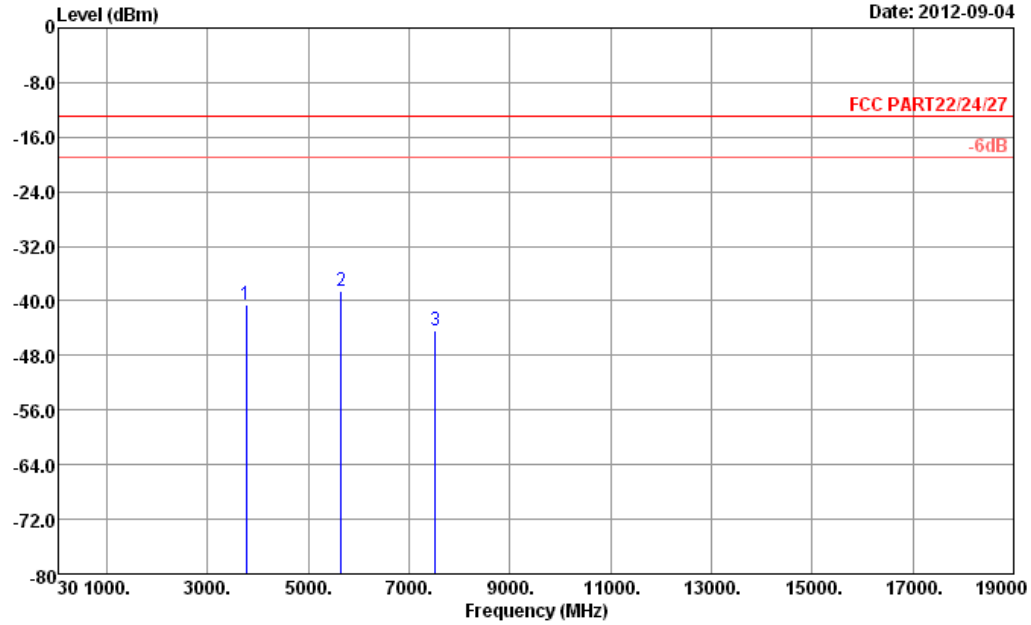
| Band : | GSM1900 | Temperature : | 22~24°C |
|---|---|---|---|
| Test Mode : | GSM Link for Sample 2 | Relative Humidity : | 50~52% |
| Test Engineer : | David Yang | Polarization : | Horizontal |
| Remark : | Spurious emissions within 30-1000MHz were found more than 20dB below limit line. | | |




Site : 03CH05-HY
Condition : FCC PART22/24/27 HF_EIRP_101221 HORIZONTAL
Project : FG 280818-01

| Frequency ( MHz ) | EIRP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | SPA Reading (dBm) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|---|---|---|---|---|---|---|---|---|---|
| 3760 | -35.94 | -13 | -22.94 | -49.43 | -42.65 | 2.00 | 8.71 | H | Pass |
| 5640 | -32.84 | -13 | -19.84 | -51.05 | -41.48 | 2.13 | 10.77 | H | Pass |
| 7524 | -43.82 | -13 | -30.82 | -65.83 | -53.36 | 2.68 | 12.22 | H | Pass |

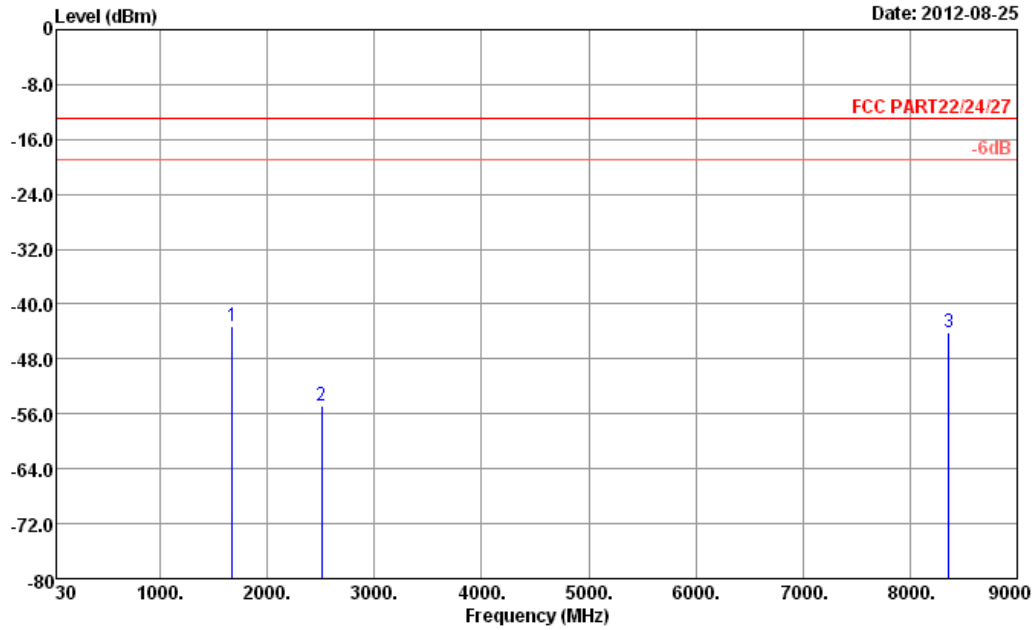
| | | | |
|---|---|---|---|
| **Band :** | GSM1900 | **Temperature :** | 22~24°C |
| **Test Mode :** | GSM Link for Sample 2 | **Relative Humidity :** | 50~52% |
| **Test Engineer :** | David Yang | **Polarization :** | Vertical |
| **Remark :** | Spurious emissions within 30-1000MHz were found more than 20dB below limit line. | | |




Site : 03CH05-HY
Condition : FCC PART22/24/27 HF_EIRP_101221 VERTICAL
Project : FG 280818-01

| Frequency ( MHz ) | EIRP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | SPA Reading (dBm) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|---|---|---|---|---|---|---|---|---|---|
| 3760 | -40.50 | -13 | -27.50 | -53.83 | -47.21 | 2.00 | 8.71 | V | Pass |
| 5640 | -38.55 | -13 | -25.55 | -57.84 | -47.19 | 2.13 | 10.77 | V | Pass |
| 7520 | -44.33 | -13 | -31.33 | -66.19 | -53.87 | 2.68 | 12.22 | V | Pass |

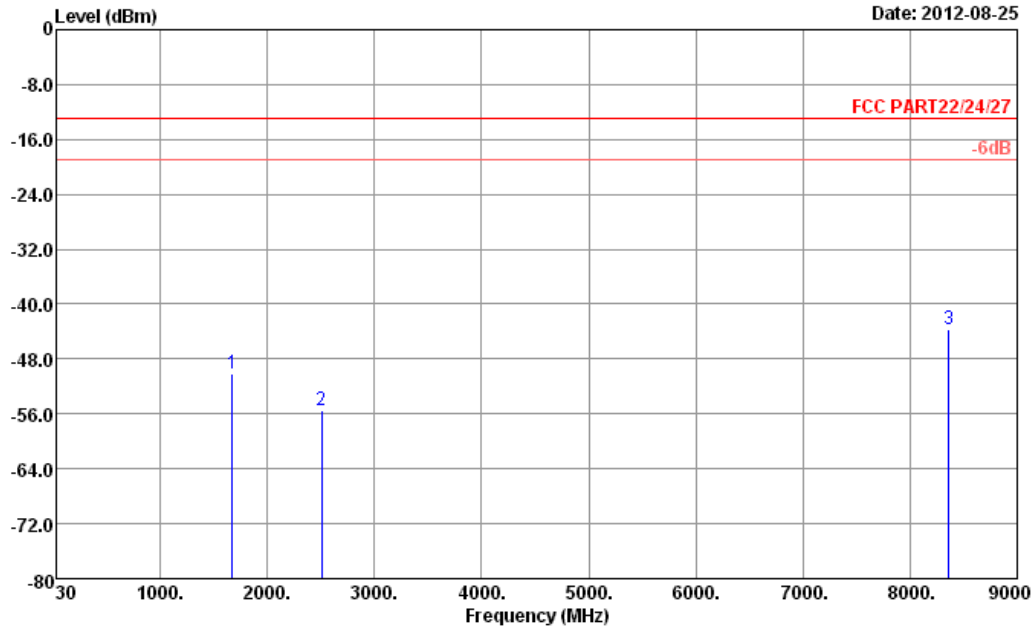
| Band : | WCDMA Band V | Temperature : | 22~24°C |
|---|---|---|---|
| Test Mode : | RMC 12.2Kbps Link for Sample 1 | Relative Humidity : | 50~52% |
| Test Engineer : | David Yang | Polarization : | Horizontal |
| Remark : | Spurious emissions within 30-1000MHz were found more than 20dB below limit line. | | |




Site : 03CH05-HY
Condition : FCC PART22/24/27 HF_EIRP_101221 HORIZONTAL
Project : FG 280818-01

| Frequency ( MHz ) | ERP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | SPA Reading (dBm) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|---|---|---|---|---|---|---|---|---|---|
| 1672 | -43.24 | -13 | -30.24 | -49.7 | -45 | 1.35 | 5.25 | H | Pass |
| 2509 | -54.92 | -13 | -41.92 | -64.25 | -57.3 | 1.58 | 6.11 | H | Pass |
| 8364 | -44.22 | -13 | -31.22 | -67.4 | -52.3 | 2.67 | 12.89 | H | Pass |

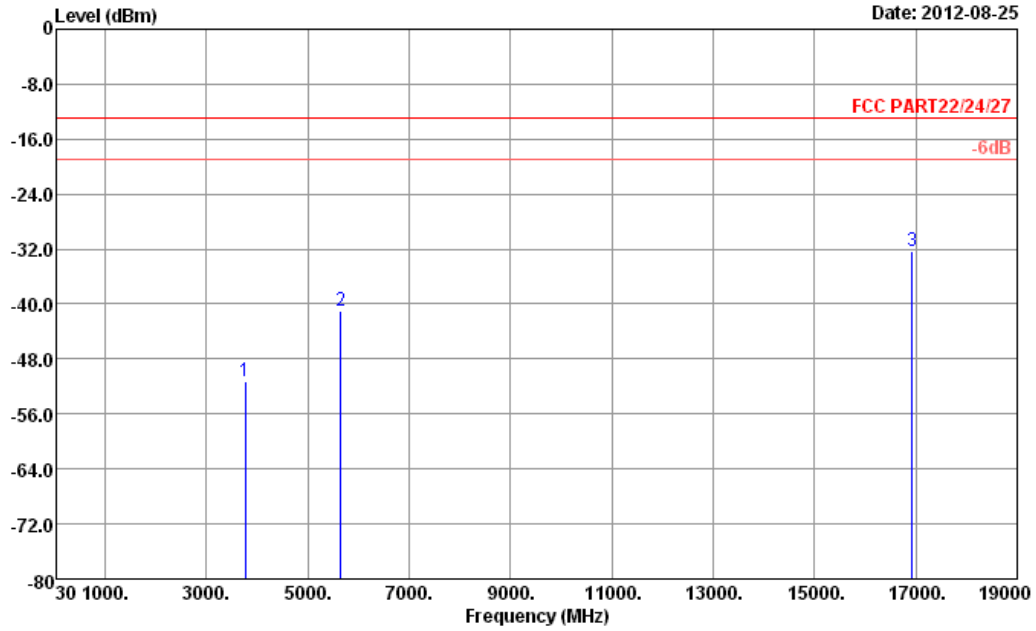
| Band : | WCDMA Band V | Temperature : | 22~24°C |
|---|---|---|---|
| Test Mode : | RMC 12.2Kbps Link for Sample 1 | Relative Humidity : | 50~52% |
| Test Engineer : | David Yang | Polarization : | Vertical |
| Remark : | Spurious emissions within 30-1000MHz were found more than 20dB below limit line. | | |




Site : 03CH05-HY
Condition : FCC PART22/24/27 HF_EIRP_101221 VERTICAL
Project : FG 280818-01

| Frequency ( MHz ) | ERP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | SPA Reading (dBm) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|---|---|---|---|---|---|---|---|---|---|
| 1672 | -50.24 | -13 | -37.24 | -56.62 | -52 | 1.35 | 5.25 | V | Pass |
| 2509 | -55.52 | -13 | -42.52 | -64.79 | -57.9 | 1.58 | 6.11 | V | Pass |
| 8364 | -43.72 | -13 | -30.72 | -66.89 | -51.8 | 2.67 | 12.89 | V | Pass |

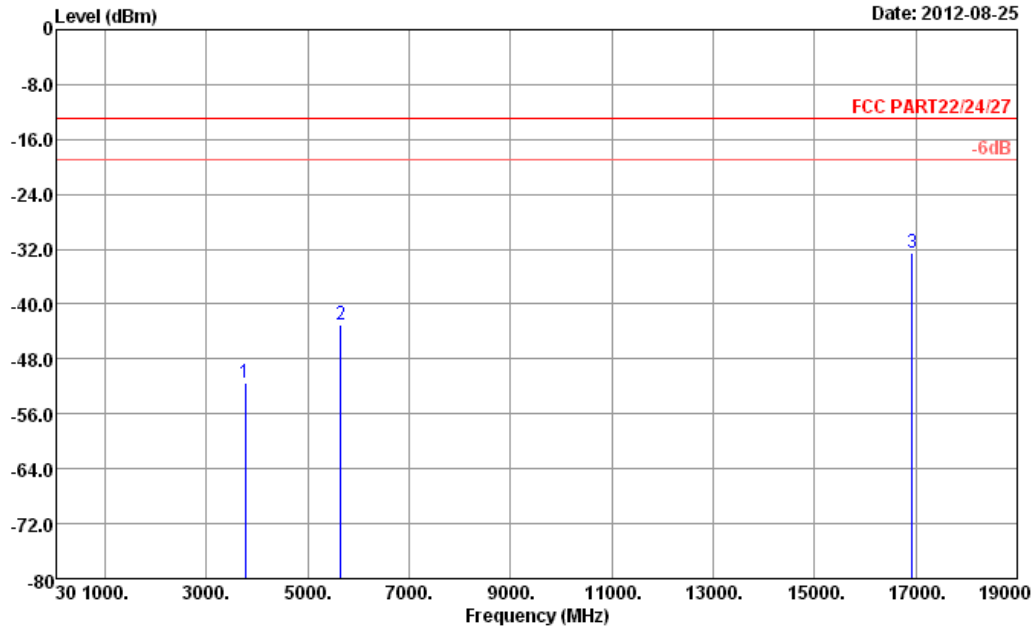
| Band : | WCDMA Band II | Temperature : | 22~24°C |
|---|---|---|---|
| Test Mode : | RMC 12.2Kbps Link for Sample 1 | Relative Humidity : | 50~52% |
| Test Engineer : | David Yang | Polarization : | Horizontal |
| Remark : | Spurious emissions within 30-1000MHz were found more than 20dB below limit line. | | |




Site : 03CH05-HY
Condition : FCC PART22/24/27 HF_EIRP_101221 HORIZONTAL
Project : FG 280818-01

| Frequency ( MHz ) | EIRP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | SPA Reading (dBm) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|---|---|---|---|---|---|---|---|---|---|
| 3760 | -51.29 | -13 | -38.29 | -65.38 | -58 | 2.00 | 8.71 | H | Pass |
| 5640 | -41.06 | -13 | -28.06 | -59.99 | -49.7 | 2.13 | 10.77 | H | Pass |
| 16920 | -32.38 | -13 | -19.38 | -68.87 | -42 | 3.82 | 13.45 | H | Pass |

| Band : | WCDMA Band II | Temperature : | 22~24°C |
|---|---|---|---|
| Test Mode : | RMC 12.2Kbps Link for Sample 1 | Relative Humidity : | 50~52% |
| Test Engineer : | David Yang | Polarization : | Vertical |
| Remark : | Spurious emissions within 30-1000MHz were found more than 20dB below limit line. | | |




Site : 03CH05-HY
Condition : FCC PART22/24/27 HF_EIRP_101221 VERTICAL
Project : FG 280818-01

| Frequency ( MHz ) | EIRP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | SPA Reading (dBm) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) | Result |
|---|---|---|---|---|---|---|---|---|---|
| 3760 | -51.49 | -13 | -38.49 | -65.2 | -58.2 | 2.00 | 8.71 | V | Pass |
| 5640 | -43.06 | -13 | -30.06 | -61.95 | -51.7 | 2.13 | 10.77 | V | Pass |
| 16920 | -32.48 | -13 | -19.48 | -68.44 | -42.1 | 3.82 | 13.45 | V | Pass |

# 3.8 Frequency Stability Measurement

## 3.8.1 Description of Frequency Stability Measurement

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

## 3.8.2 Measuring Instruments

See list of measuring instruments of this test report.

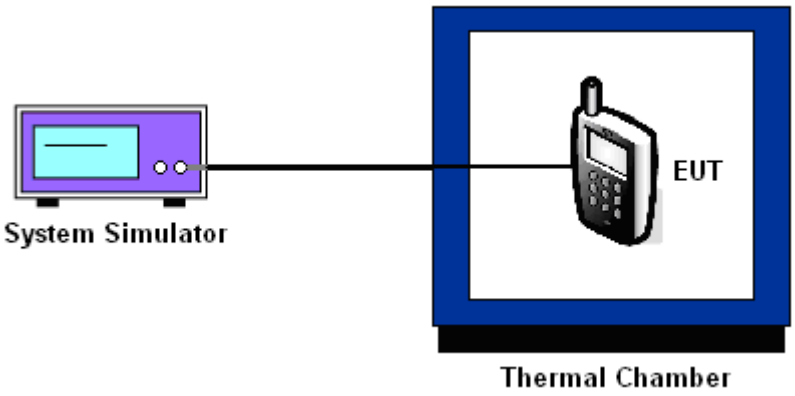
## 3.8.3 Test Procedures for Temperature Variation

1. The EUT was set up in the thermal chamber and connected with the base station.
2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.
4. If the EUT cannot be turned on at -30°C, the testing lowest temperature will be raised in 10°C step until the EUT can be turned on.

## 3.8.4 Test Procedures for Voltage Variation

1. The EUT was placed in a temperature chamber at 25±5° C and connected with the base station.
2. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

### 3.8.5 Test Setup



### 3.8.6 Test Result of Temperature Variation

| Band : | GSM 850 | Channel : | 189 |
|---|---|---|---|
| Limit (ppm) : | 2.5 | Frequency : | 836.4 MHz |

| Temperature (°C) | GSM | | EDGE 8 | | Result |
|---|---|---|---|---|---|
| | Freq. Dev. (Hz) | Deviation (ppm) | Freq. Dev. (Hz) | Deviation (ppm) | |
| -30 | 13 | 0.02 | -16 | -0.02 | PASS |
| -20 | 17 | 0.02 | -18 | -0.02 | |
| -10 | 29 | 0.03 | -15 | -0.02 | |
| 0 | 23 | 0.03 | -12 | -0.01 | |
| 10 | 24 | 0.03 | -14 | -0.02 | |
| 20 | 21 | 0.02 | -16 | -0.02 | |
| 30 | 16 | 0.02 | -18 | -0.02 | |
| 40 | 17 | 0.02 | -20 | -0.02 | |
| 50 | 27 | 0.03 | -10 | -0.01 | |

| Band : | GSM 1900 | Channel : | 661 |
|---|---|---|---|
| Limit (ppm) : | 2.5 | Frequency : | 1880.0 MHz |

| Temperature (°C) | GSM | | EDGE 8 | | Result |
|---|---|---|---|---|---|
| | Freq. Dev. (Hz) | Deviation (ppm) | Freq. Dev. (Hz) | Deviation (ppm) | |
| -30 | -33 | -0.02 | -55 | -0.03 | PASS |
| -20 | -25 | -0.01 | -52 | -0.03 | |
| -10 | -40 | -0.02 | -66 | -0.03 | |
| 0 | -38 | -0.02 | -37 | -0.02 | |
| 10 | -44 | -0.02 | -38 | -0.02 | |
| 20 | 20 | 0.01 | -28 | -0.01 | |
| 30 | 34 | 0.02 | -43 | -0.02 | |
| 40 | -25 | -0.01 | -38 | -0.02 | |
| 50 | -43 | -0.02 | -31 | -0.02 | |

| Band : | WCDMA Band V | Channel : | 4182 |
|---|---|---|---|
| Limit (ppm) : | 2.5 | Frequency : | 836.4 MHz |

| Temperature (°C) | RMC 12.2Kbps | | Result |
|---|---|---|---|
| | Freq. Dev. (Hz) | Deviation (ppm) | |
| -30 | -12 | -0.01 | PASS |
| -20 | -6 | -0.01 | |
| -10 | -9 | -0.01 | |
| 0 | -5 | -0.01 | |
| 10 | -9 | -0.01 | |
| 20 | -7 | -0.01 | |
| 30 | 7 | 0.01 | |
| 40 | -8 | -0.01 | |
| 50 | -10 | -0.01 | |

| Band : | WCDMA Band II | Channel : | 9400 |
|---|---|---|---|
| Limit (ppm) : | 2.5 | Frequency : | 1880.0 MHz |

| Temperature (°C) | RMC 12.2Kbps | | Result |
|---|---|---|---|
| | Freq. Dev. (Hz) | Deviation (ppm) | |
| -30 | -13 | -0.01 | PASS |
| -20 | -11 | -0.01 | |
| -10 | -17 | -0.01 | |
| 0 | 11 | 0.01 | |
| 10 | -11 | -0.01 | |
| 20 | -13 | -0.01 | |
| 30 | 14 | 0.01 | |
| 40 | -10 | -0.01 | |
| 50 | -16 | -0.01 | |

### 3.8.7 Test Result of Voltage Variation

| Band & Channel | Mode | Voltage (Volt) | Freq. Dev. (Hz) | Deviation (ppm) | Limit (ppm) | Result |
|---|---|---|---|---|---|---|
| GSM 850 CH189 | GSM | 3.8 | 10 | 0.01 | 2.5 | PASS |
| | | BEP | 20 | 0.02 | | |
| | | 4.2 | 14 | 0.02 | | |
| | EDGE 8 | 3.8 | -13 | -0.02 | | |
| | | BEP | -15 | -0.02 | | |
| | | 4.2 | -14 | -0.02 | | |
| GSM 1900 CH661 | GSM | 3.8 | -23 | -0.01 | | |
| | | BEP | -33 | -0.02 | | |
| | | 4.2 | -21 | -0.01 | | |
| | EDGE 8 | 3.8 | -16 | -0.01 | | |
| | | BEP | -22 | -0.01 | | |
| | | 4.2 | -20 | -0.01 | | |
| WCDMA Band V CH4182 | RMC 12.2Kbps | 3.8 | 11 | 0.01 | | |
| | | BEP | 13 | 0.02 | | |
| | | 4.2 | 16 | 0.02 | | |
| WCDMA Band II CH9400 | RMC 12.2Kbps | 3.8 | -14 | -0.01 | | |
| | | BEP | -16 | -0.01 | | |
| | | 4.2 | -17 | -0.01 | | |

**Note:**

1. Normal Voltage = 3.8V.
2. Battery End Point (BEP) = 3.4 V.

# 4 List of Measuring Equipment

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|---|---|---|---|---|---|---|---|---|
| System Simulator | R&S | CMU200 | 117995 | N/A | Jul. 30, 2012 | Aug. 23, 2012 | Jul. 29, 2013 | Conducted (TH02-HY) |
| Spectrum Analyzer | R&S | FSP40 | 100055 | 9kHz~40GHz | Jun. 06, 2012 | Aug. 23, 2012 | Jun. 05, 2013 | Conducted (TH02-HY) |
| Thermal Chamber | Ten Billion | TTH-D3SP | TBN-930701 | N/A | Jul. 23, 2012 | Aug. 23, 2012 | Jul. 22, 2013 | Conducted (TH02-HY) |
| Spectrum Analyzer | R&S | ESU26 | 100390 | 20Hz ~ 26.5GHz | Dec. 22, 2011 | Aug. 25, 2012 ~ Sep. 11, 2012 | Dec. 21, 2012 | Radiation (03CH05-HY) |
| Bilog Antenna | SCHAFFNER | CBL6111C | 2725 | 30MHz ~ 2GHz | Oct. 22, 2011 | Aug. 25, 2012 ~ Sep. 11, 2012 | Oct. 21, 2012 | Radiation (03CH05-HY) |
| Turn Table | HD | Deis HD 2000 | 420/611 | 0 ~ 360 degree | N/A | Aug. 25, 2012 ~ Sep. 11, 2012 | N/A | Radiation (03CH05-HY) |
| Antenna Mast | HD | MA 240 | 240/666 | 1 m ~ 4 m | N/A | Aug. 25, 2012 ~ Sep. 11, 2012 | N/A | Radiation (03CH05-HY) |
| Horn Antenna | ESCO | 3117 | 66584 | 1GHz~18GHz | Aug. 10, 2012 | Aug. 25, 2012 ~ Sep. 11, 2012 | Aug. 09, 2013 | Radiation (03CH05-HY) |
| Pre Amplifier | Agilent | 8449B | 3008A01917 | 1GHz~26.5GHz | Aug. 30, 2011 | Aug. 25, 2012 ~ Aug. 28, 2012 | Aug. 29, 2012 | Radiation (03CH05-HY) |
| Pre Amplifier | Agilent | 8449B | 3008A02665 | 1GHz~26.5GHz | Aug. 28, 2012 | Aug. 28, 2012 ~ Sep. 11, 2012 | Aug. 27, 2013 | Radiation (03CH05-HY) |
| SHF-EHF Horn Antenna | SCHWARZBECK | BBHA 9170 | BBHA9170251 | 15GHz ~ 40GHz | Oct. 21, 2011 | Aug. 25, 2012 ~ Sep. 11, 2012 | Oct. 20, 2012 | Radiation (03CH05-HY) |
| Loop Antenna | R&S | HFH2-Z2 | 860004/001 | 9KHz ~ 30MHz | Jul. 03, 2012 | Aug. 25, 2012 ~ Sep. 11, 2012 | Jul. 02, 2014 | Radiation (03CH05HY) |
| Spectrum Analyzer | R&S | FSP30 | 101067 | 9KHz ~ 30GHz | Dec. 06, 2011 | Aug. 25, 2012 ~ Sep. 11, 2012 | Dec. 05, 2012 | Radiation (03CH05HY) |
| System Simulator | R&S | CMU200 | 117997 | N/A | Aug. 22, 2011 | Aug. 25, 2012 ~ Sep. 11, 2012 | Aug. 21, 2013 | Radiation (03CH05-HY) |

# 5 Uncertainty of Evaluation

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

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

**Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)**

| | |
|---|---|
| **Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))** | **4.72** |