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Recognized by the
Federal Communications Commission
**Anechoic chamber registration no.: 90462 (FCC)**
**Anechoic chamber registration no.: IC 3462C-1**
TCB ID: DE 0001

Accredited by the
German Accreditation Council
DAR–Registration Number
DAT-P-176/94-D1

# Accredited Bluetooth® Test Facility (BQTF)

| | | |
|---|---|---|
| **Test report No.** | **:** | **1-1210-01-03/09** |
| **Applicant** | **:** | **RADIO FREQUENCY SYSTEMS** |
| **Type** | **:** | **ClearFillStar1-CDMA** |
| **Test Standard** | **:** | **FCC Part 22**<br>**FCC Part 24**<br>**RSS-131 Issue 2** |
| **FCC ID** | **:** | **IWD-W1000220** |
| **Certification No. IC** | **:** | **1634B-W1000220** |

# Table of contents

# 1 General information

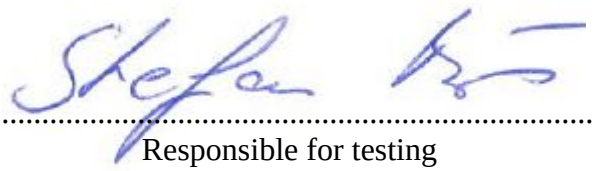
## 1.1. Administrative data of the test facility

### 1.1.1 Identification of the testing laboratory

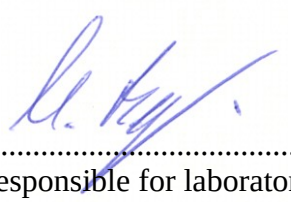
| | |
|---|---|
| Company name: | Cetecom ICT Services GmbH |
| Address: | Untertürkheimerstr. 6-10<br>D-66117 Saarbruecken<br>Germany |
| Laboratory accreditation: | DAR-Registration No. DAT-P-176/94-D1<br>Bluetooth Qualification Test Facility (BQTF)<br>Federal Communications Commission (FCC)<br>Identification/Registration No : 90462 |
| Responsible for testing laboratory: | Stefan Bös<br>Phone: +49 681 598 0<br>Fax: +49 681 598 9075<br>email: info@ict.cetecom.de |

## 1.2. Notes

The test results of this test report relate exclusively to the test item specified in 1.5. The CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM ICT Services GmbH.



.....
Responsible for testing
(Stefan Bös)



.....
Responsible for laboratory
(Michael Berg)

## 1.3 Details of Applicant

| | | |
|---|---|---|
| Name | : | Radio Frequency Systems |
| Address | : | Kabelkamp 20 |
| City | : | D-30179 Hannover |
| Country | : | Germany |
| Phone | : | +49 511 676 3149 |
| Fax | : | +49 511 676 2188 |
| Contact | : | Mr. Ulrich Doberts |
| Phone | : | +49 511 676 3149 |
| Fax | : | +49 511 676 2188 |
| e-mail | : | ulrich.doberts@rfsworld.com |

## 1.4 Application Details

| | | |
|---|---|---|
| Date of receipt of application | : | 2009-06-03 |
| Date of receipt of test item | : | 2009-06-03 |
| Date(s) of test | : | 2009-06-03 to 2009-07-01 |
| Date of report | : | 2009-07-01 |

## 1.5 Additional EUT information for IC Canada (appendix 2)

| | | | |
|---|---|---|---|
| Type of equipment | : | CDMA repeater | |
| Type name | : | CFS-RRH-819-1 (RRH) | |
| Manufacturer | : | RADIO FREQUENCY SYSTEMS | |
| Address | : | Kabelkamp 20 | |
| City | : | D-30179 Hannover | |
| Country | : | Germany | |
| Frequency | : | 850 MHz band: | Up link 824 to 849 MHz<br>Down link 869 to 894 MHz |
| | | 1900 MHz band: | Up link 1850-1910 MHz<br>Down link 1930-1990 MHz |
| Type of modulation | : | F9W (CDMA) | |
| Number of channels | : | -.- | |
| Antenna Type | : | SMA-connector | |
| Power supply (normal) | : | 115V AC | |
| | | Single Channel (Peak) | Multi Channel (2)(Peak) |
| **850 MHz - band:** | | | |
| Output power Up link / CDMA | : | Not applicable | Not applicable |
| Output power Down link / CDMA | : | 17.9 dBm | Not applicable |
| **1900 MHz - band** | | | |
| Output power Up link / CDMA | : | Not applicable | Not applicable |
| Output power Down link / CDMA | : | 16.9 dBm | Not applicable |
| Transmitter Spurious (worst case) | | 0.13µW / -38.90 dBm | |
| Receiver Spurious (worst case) | | -.- µV/m @ 3 m | |
| FCC ID | : | IWD-W1000220 | |
| Certification No. IC | : | 1634B-W1000220 | |
| Open Area Test Site IC No. | : | IC 3462C-1 | |
| IC Standards | : | RSS131, Issue 2 | |

**ATTESTATION:**
**DECLARATION OF COMPLIANCE:**
I declare that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned Industry Canada standard(s); and that the equipment identified in this application has been subjected to all the applicable test conditions specified in the Industry Canada standards and all of the requirements of the standard have been met.

**Laboratory Manager :**

| 2009-07-01 | Stefan Bös | |
|---|---|---|
| Date | Name | Signature |

## 1.6 Test Setup

Hardware : -
Software : -

The EUT was supplied by a PoE-connection (PoE: Power over Ethernet). The used ambient equipment was:

| | | |
|---|---|---|
| BSI: | CFS-BSI-2S-819-1 | Ser.Nr. 110917000058 |
| Switch: | 12 Gigabit L2 managed Switch with PoE | Ser.Nr. 07BDSP12/048 |

The settings of the EUT and the connected BSI were IP-controlled. The following settings for the internal gains were:

TX-Power: 14 for EUT (RRH)
0 for BSI
RX-Gain: 56 for EUT (RRH)
0 for BSI
Nominal Input Power:
Downlink: -57 dBm
Uplink: -65 dBm

For the measurements an input power of -30 dBm was selected to simulate worst case conditions.

Photo 1: (settings for BSI – here for 1900 MHz band)

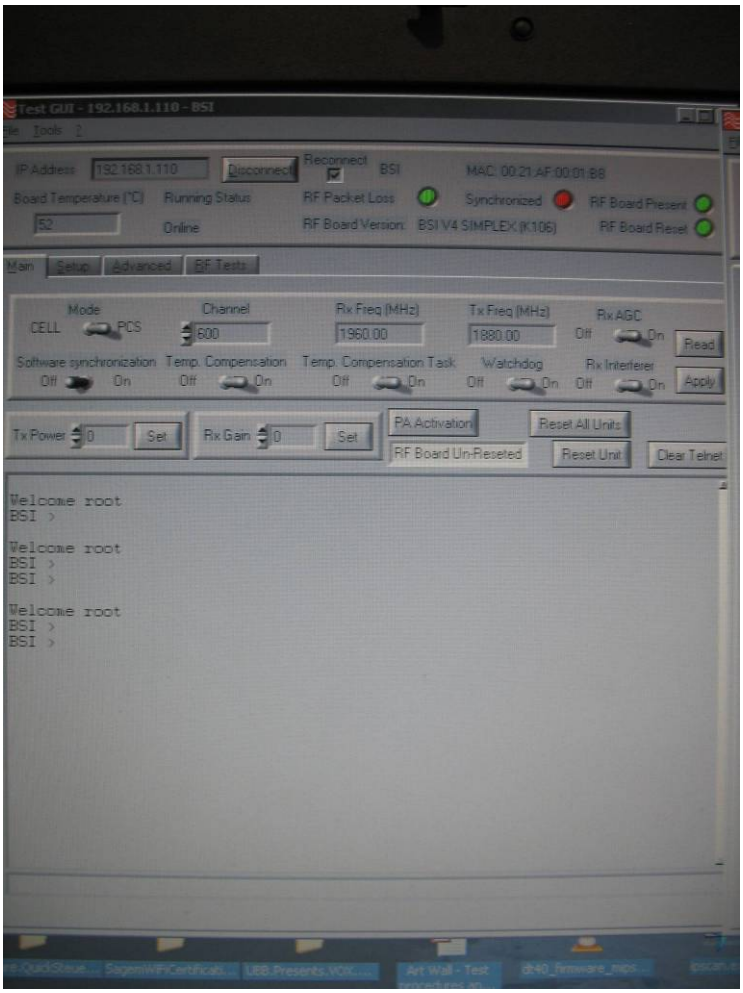
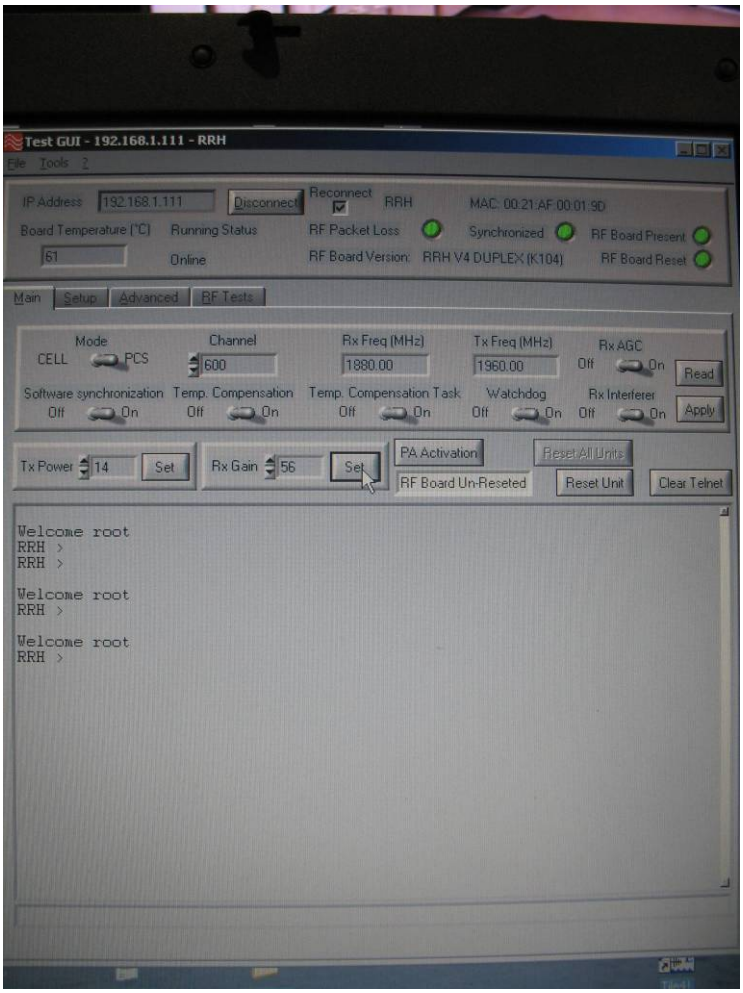


Photo 2: (settings for RRH – here for 1900 MHz band)



## 1.7 Test Standards

| | | |
|---|---|---|
| **47 CFR Part 2** | **2006-10** | **Title 47 of the Code of Federal Regulations; Chapter I- Federal Communications Commission<br>Frequency allocations and radio treaty matters; general rules and regulations** |
| **47 CFR Part 22** | **2006-10** | **Title 47 of the Code of Federal Regulations; Chapter I- Federal Communications Commission<br>subchapter B - common carrier services, Part 22-Public mobile services** |
| **47 CFR Part 24** | **2006-10** | **Title 47 of the Code of Federal Regulations; Chapter I- Federal Communications Commission<br>subchapter B - common carrier services, Part 24-Personal communications services** |
| **RSS - 132 Issue 2** | **2005-09** | **Spectrum Management and Telecommunications Policy - Radio Standards Specifications<br>Cellular Telephones Employing New Technologies Operating in the Bands 824-849 MHz and 869-894 MHz** |
| **RSS - 133 Issue 5** | **2009-02** | **Spectrum Management and Telecommunications Policy - Radio Standards Specifications<br>2 GHz Personal Communication Services** |

| | |
|---|---|
| **FCC:** | **FCC 2-11-04/EAB/RF Amplifier, Booster and Repeater Reminder Sheet** |
| **IC:** | **RSS 131, Issue 2** |

# 2 Statement of Compliance

No deviations from the technical specification(s) were ascertained in the course of the tests performed.

## 2.1 Summary of Measurement Results

| Section in this Report | Test Name | Verdict |
|---|---|---|
| 3.1.1 | RF Exposure FCC §1.1307, §2.1091/ RSS-131 §5.5 | pass |
| 3.1.2 | RF Power Output FCC §2.1046, § 22.913, § 24.232 / IC RSS-131 §6.2 | pass |
| 3.1.3 | Radiated Emissions FCC § 2.1053, § 22.917, § 24.238 / IC RSS-131 §6.4 | pass |
| 3.1.4 | Conducted Spurious Emissions FCC § 2.1051, §22.917, § 24.238 / IC RSS-131 §6.3 | pass |
| 3.1.5 | Block Edge Compliance FCC §2.1051, § 22.917, § 24.238 / IC RSS-131 §6.4 | pass |
| 3.1.6 | Occupied Bandwidth FCC §2.1049, § 22.917, § 24.238 / IC RSS-131 §6.5 | pass |
| 3.1.7 | Intermodulation Tests FCC § 2.1051, §22.917, § 24.238 / IC RSS-131 §6.3 | pass |
| 3.1.8 | Out of Band Rejection | Not limited |
| 3.1.9 | Conducted Emissions <30 MHz FCC§15.107 | pass |

# 3 Measurements and results

For Part 24/22/90 we use the substitution method ( TIA/EIA 603).
All measurements in this report are done in CDMA mode.

## 3.1 CDMA

### 3.1.1 RF Exposure

| | |
|---|---|
| FCC: | FCC §1.1307, §2.1091 |
| IC: | RSS-131 §5.5 |

**MPE calculation**

These equations are generally accurate in the far field of an antenna but will over predict power density in the near field, where they could be used for making a "worst case" prediction.

$$S = PG/4\pi R^2$$

where S = power density ( in appropriate units, e.g. $mW/cm^2$)
P = power input to the antenna (in appropriate units e.g. mW)
G = power gain of the antenna in the direction of interest relative to the isotropic radiator
R = distance to the center of radiation of the antenna (appropriate units e.g. cm)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density ($mW/cm^2$) | Averaging time (minutes) |
|---|---|---|---|---|
| **(A) Limits for Occupational/Controlled Exposures** | | | | |
| 0.3–3.0 | 614 | 1.63 | *(100) | 6 |
| 3.0–30 | 1842/f | 4.89/f | *(900/$f^2$) | 6 |
| 30–300 | 61.4 | 0.163 | 1.0 | 6 |
| 300–1500 | | | f/300 | 6 |
| 1500–100,000 | | | 5 | 6 |
| **(B) Limits for General Population/Uncontrolled Exposure** | | | | |
| 0.3–1.34 | 614 | 1.63 | *(100) | 30 |
| 1.34–30 | 824/f | 2.19/f | *(180/$f^2$) | 30 |
| 30–300 | 27.5 | 0.073 | 0.2 | 30 |
| 300–1500 | | | f/1500 | 30 |

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density ($mW/cm^2$) | Averaging time (minutes) |
|---|---|---|---|---|
| 1500–100,000 | | | 1.0 | 30 |

f = frequency in MHz
* = Plane-wave equivalent power density
NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.
NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

**Antenna gain Worst case calculations: ($G=S*4\pi R^2 / P$)**

**850 MHz-band:**

Downlink:
Maximum peak output power at antenna input terminal (dBm): 17.9
Maximum peak output power at antenna input terminal (mW): 61.7
Prediction distance (cm): 20
Prediction frequency (MHz): 882
MPE limit for uncontrolled exposure at predication frequency (mW/cm ): 0.588
Maximum Antenna Gain (numeric): 47.9
Antenna Gain, typical (dBi): 16.8

Uplink:
Not applicable

## Test result:

The device is compliant with the requirement MPE limit for uncontrolled exposure at predication frequency 0.588 mW/cm. The maximum allowed antenna gain for a distance of 20 cm is 16.8 dBi .

**1900 MHz-band:**

Downlink:
Maximum peak output power at antenna input terminal (dBm): 16.9
Maximum peak output power at antenna input terminal (mW): 49.0
Prediction distance (cm): 20
Prediction frequency (MHz): 1931.25
MPE limit for uncontrolled exposure at predication frequency (mW/cm ): 1.0
Maximum Antenna Gain (numeric): 102.6
Antenna Gain, typical (dBi): 20.1

Uplink:
Not applicable

## Test result:

The device is compliant with the requirement MPE limit for uncontrolled exposure at predication frequency 1mW/cm. The maximum allowed antenna gain for a distance of 20 cm is 20.1 dBi .

### 3.1.2 RF Power Output

**Reference**

| | |
|---|---|
| FCC: | CFR Part 24.232, 2.1046 |
| IC: | IC RSS-131 §4.3 and 6.2 |

**Method of Measurements:**

The booster was set up for the max. output power with pseudo random data modulation.
The power was measured with R&S Signal Analyzer FSIQ 26
This measurements were done at 3 frequencies (bottom, middle and top of operational frequency range).in uplink and downlink.

**Limits:**

| | Nominal Peak Output Power (dBm) | Tolerance (dB) |
|---|---|---|
| | +31 | ± 2 |

**Test Results: Output Power (conducted)**

Downlink

| CDMA 850 MHz Band (dBm) | | | | |
|---|---|---|---|---|
| Channel | Frequency | Modulation | Output Power Single Channel | Output Power 2 Channels |
| Low | 870.03 | CDMA | 17.2 | Not supported |
| Middle | 882.00 | | 17.9 | Not supported |
| High | 892.62 | | 17.9 | Not supported |

Uplink

**Uplink Data is converted in packed data and transferred to the interface BSI via LAN-connection. The unit doesn´t transmit any RF-Uplink-signal.**

Downlink

| CDMA 1900 MHz Band (dBm) | | | | |
|---|---|---|---|---|
| Channel | Frequency | Modulation | Output Power Single Channel | Output Power 2 Channels |
| Low | 1931.25 | CDMA | 16.9 | Not supported |
| Middle | 1960.00 | | 16.6 | Not supported |
| High | 1988.75 | | 15.8 | Not supported |

Uplink

**Uplink Data is converted in packed data and transferred to the interface BSI via LAN-connection. The unit doesn´t transmit any RF-Uplink-signal.**

### 3.1.3 Radiated Emissions

**Measuring the EIRP of Spurious/Harmonic Emissions using Substitution Method**

(a) Set the EMI Receiver (for measuring E-Field) and Receiver #2 (for measuring EIRP) as follows:
Center Frequency : equal to the signal source
Resolution BW : 10 kHz
Video BW : same
Detector Mode : positive
Average : off
Span : 3 x the signal bandwidth
(b) Load an appropriate correction factors file in EMI Receiver for correcting the field strength reading level
Total Correction Factor recorded in the EMI Receiver = Cable Loss + Antenna Factor
E (dBuV/m) = Reading (dBuV) + Total Correction Factor (dB/m)
(c) Select the frequency and E-field levels for ERP/EIRP measurements.
(d) Substitute the EUT by a signal generator and one of the following transmitting antenna (substitution antenna):
DIPOLE antenna for frequency from 30-1000 MHz or .HORN antenna for frequency above 1 GHz }.
(e) Mount the transmitting antenna at 1.5 meter high from the ground plane.
(f) Use one of the following antenna as a receiving antenna: .DIPOLE antenna for frequency from 30-1000 MHz or .HORN antenna for frequency above 1 GHz }.
(g) If the DIPOLE antenna is used, tune it's elements to the frequency as specified in the calibration manual.
(h) Adjust both transmitting and receiving antenna in a VERTICAL polarization.
(i) Tune the EMI Receivers to the test frequency.
(j) Lower or raise the test antenna from 1 to 4 meters until the maximum signal level was detected.
(k) The transmitter was rotated through 360 o about a vertical axis until a higher maximum signal was received.
(l) Lower or raise the test antenna from 1 to 4 meters until the maximum signal level was detected.
(m) Adjust input signal to the substitution antenna until an equal or a known related level to that detected from the transmitter was obtained in the test receiver.
(n) Record the power level read from the Average Power Meter and calculate the ERP/EIRP as follows:
P = P1 - L1 = (P2 + L2) – L1 = P3 + A + L2 - L1
EIRP = P + G1 = P3 + L2 - L1 + A + G1
ERP = EIRP – 2.15 dB
Total Correction factor in EMI Receiver # 2 = L2 – L1 + G1
Where: P: Actual RF Power fed into the substitution antenna port after corrected.
P1: Power output from the signal generator
P2: Power measured at attenuator A input
P3: Power reading on the Average Power Meter
EIRP: EIRP after correction
ERP: ERP after correction
(o) Adjust both transmitting and receiving antenna in a HORIZONTAL polarization, then repeat step (k) to (o)
(p) Repeat step (d) to (o) for different test frequency
(q) Repeat steps (c) to (j) with the substitution antenna oriented in horizontal polarization.
(r) Actual gain of the EUT's antenna is the difference of the measured EIRP and measured RF power at the RF port. Correct the antenna gain if necessary.

**Sample Calculation:**

| Freq | SA Reading | SG Setting | Ant. gain | Dipol gain | Cable loss | EIRP Result | | | |
|---|---|---|---|---|---|---|---|---|---|
| MHz | dBµV | dBm | dBi | dBd | dB | dBm | | | |
| 1850.2 | 133.7 | 36.2 | 8.4 | 0.0 | 3.3 | 31.1 | | | |

EIRP = SG (dBm) - Cable Loss (dB) + Ant. gain (dBi)

**Reference**

| | |
|---|---|
| FCC: | CFR Part 24.238, CFR Part 22.917, 2.1053 |
| IC: | RSS 131, Issue 2, Section 4.4 and 6.4 |

**Measurement Procedure:**

**All spurious emissions tests were measured with the two-tone method**

The following steps outline the procedure used to measure the radiated emissions from the mobile station. The site is constructed in accordance with ANSI C63.4:2003 requirements and is recognized by the FCC to be in compliance for a 3 and a 10 meter site. The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier that can be as high as 1910 MHz. This was rounded up to 20 GHz. The resolution bandwidth is set as outlined in Part 24.238. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of the USPCS band.

The final open field emission ( here 10m semi-anechoic chamber listed by FCC) test procedure is as follows:

a) The test item was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna.
b) The antenna output was terminated in a 50 ohm load.
c) A double ridged waveguide antenna was placed on an adjustable height antenna mast 3 meters from the test item for emission measurements.
d) Detected emissions were maximized at each frequency by rotating the test item and adjusting the receive antenna height and polarization. The maximum meter reading was recorded. The radiated emission measurements of the harmonics of the transmit frequency through the 10th harmonic were measured with peak detector and I MHz bandwidth. If the harmonic could not be detected above the noise floor, the ambient level was recorded.
e) Now each detected emissions were substituted by the Substitution method, in accordance with the TIA/EIA 603.

**Measurement Limit:**

Sec. 22.917 Emission Limits.
(a) On any frequency outside a licensee' s frequency block (e.g. A, D, B, etc.) within the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log(P) dB.
The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

Sec. 24.238 Emission Limits.
(a) On any frequency outside a licensee' s frequency block (e.g. A, D, B, etc.) within the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log(P) dB.
The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

**Measurement Results: Radiated Emissions**

Radiated emissions measurements were made only at the upper, center, and lower carrier frequencies of the USPCS band (in uplink and downlink). It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the USPCS band into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

The final open field radiated levels are presented on the next table.

All measurements were done in horizontal and vertical polarization, the plots show the worst case.
As can be seen from this data, the emissions from the test item were within the specification limit.

Downlink 850 MHz-band

| Harmonic | Tx ch.-128 Freq. (MHz) | Level (dBm) | Tx ch.-189 Freq. (MHz) | Level (dBm) | Tx ch.-251 Freq. (MHz) | Level (dBm) |
|---|---|---|---|---|---|---|
| 2 | 1648.4 | - | 1672.8 | - | 1697.6 | - |
| 3 | 2472.6 | - | 2509.2 | - | 2546.4 | - |
| 4 | 3296.8 | - | 3345.6 | - | 3395.2 | - |
| 5 | 4121.0 | - | 4182.0 | - | 4244.0 | - |
| 6 | 4945.2 | - | 5018.4 | - | 5092.8 | - |
| 7 | 5769.4 | - | 5854.8 | - | 5941.6 | - |
| 8 | 6593.6 | - | 6691.2 | - | 6790.4 | - |
| 9 | 7417.8 | - | 7527.6 | - | 7639.2 | - |
| 10 | 8242.0 | - | 8364.0 | - | 8488.0 | - |

Downlink 1900 MHz-band

| Harmonic | Tx ch.-512 Freq. (MHz) | Level (dBm) | Tx ch.-661 Freq. (MHz) | Level (dBm) | Tx ch.-810 Freq.(MHz) | Level (dBm) |
|---|---|---|---|---|---|---|
| 2 | 3860.4 | - | 3920.0 | - | 3979.6 | - |
| 3 | 5790.6 | - | 5880.0 | - | 5969.4 | - |
| 4 | 7720.8 | - | 7840.0 | - | 7959.2 | - |
| 5 | 9651.0 | - | 9800.0 | - | 9949.0 | - |
| 6 | 11581.2 | - | 11760.0 | - | 11938.8 | - |
| 7 | 13511.4 | - | 13720.0 | - | 13928.6 | - |
| 8 | 15441.6 | - | 15680.0 | - | 15918.4 | - |
| 9 | 17371.8 | - | 17640.0 | - | 17908.2 | - |
| 10 | 19302.0 | - | 19600.0 | - | 19898.0 | - |

**No peaks found < 20 dB below limit.**

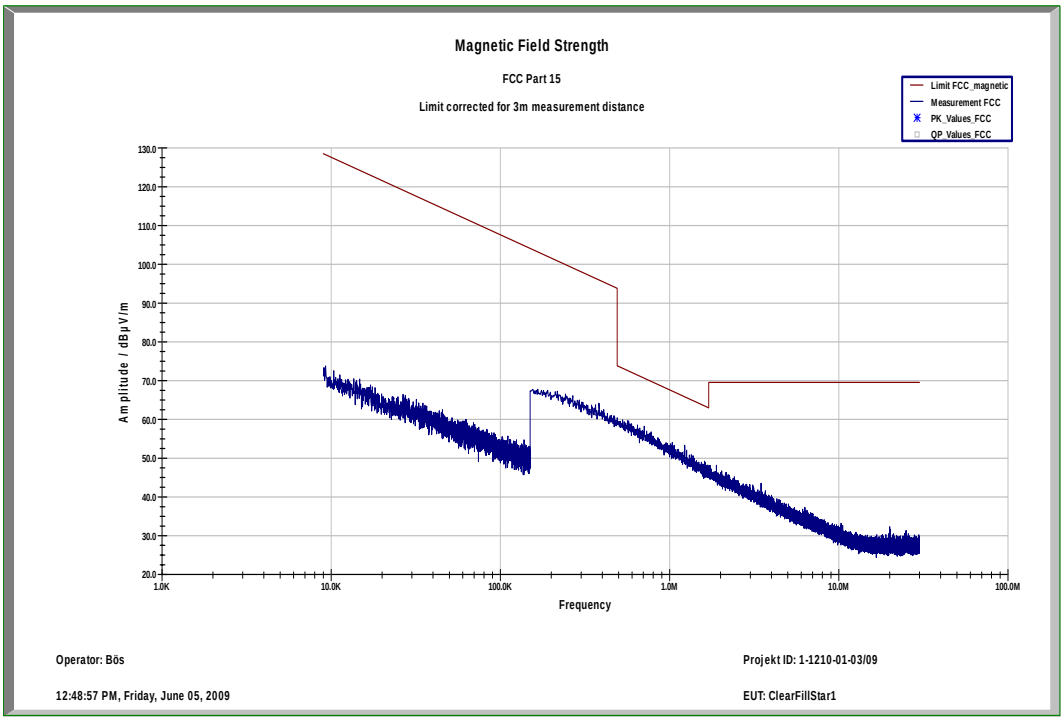
**Sample calculation:**

| Freq | SA Reading | SG Setting | Ant. gain | Dipol gain | Cable loss | EIRP Result | | | |
|---|---|---|---|---|---|---|---|---|---|
| MHz | dBµV | dBm | dBi | dBd | dB | dBm | | | |
| 1880.0 | 122.5 | 24.9 | 8.4 | 0.0 | 3.33 | 30 | | | |

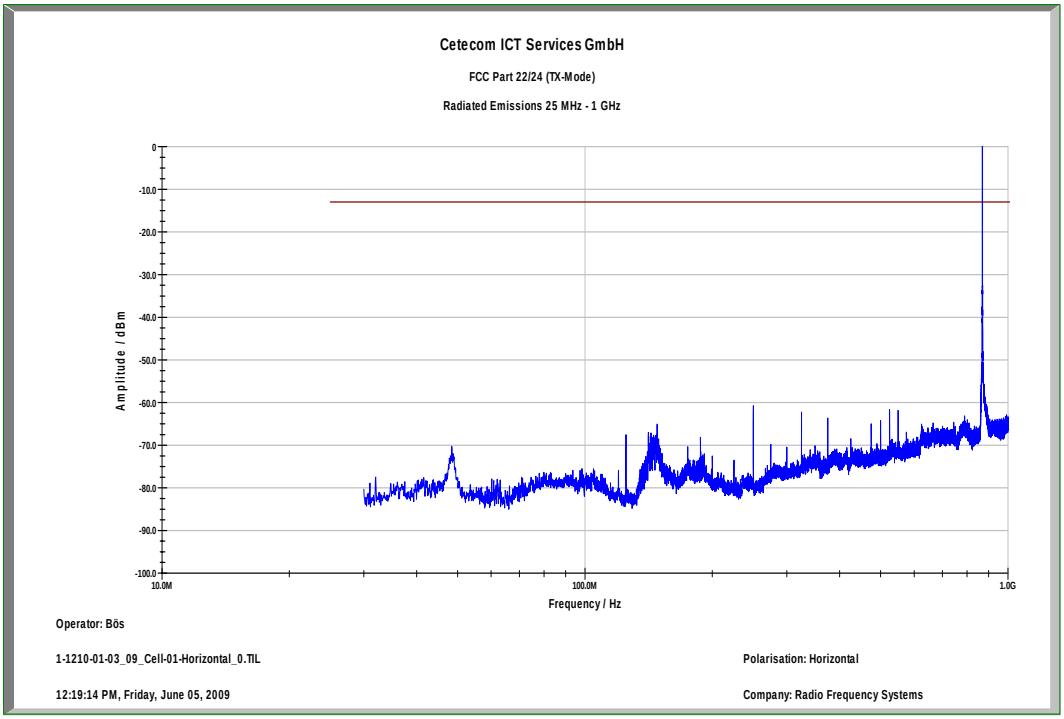
EIRP = SG (dBm) - Cable Loss (dB) + Ant. gain (dBi)

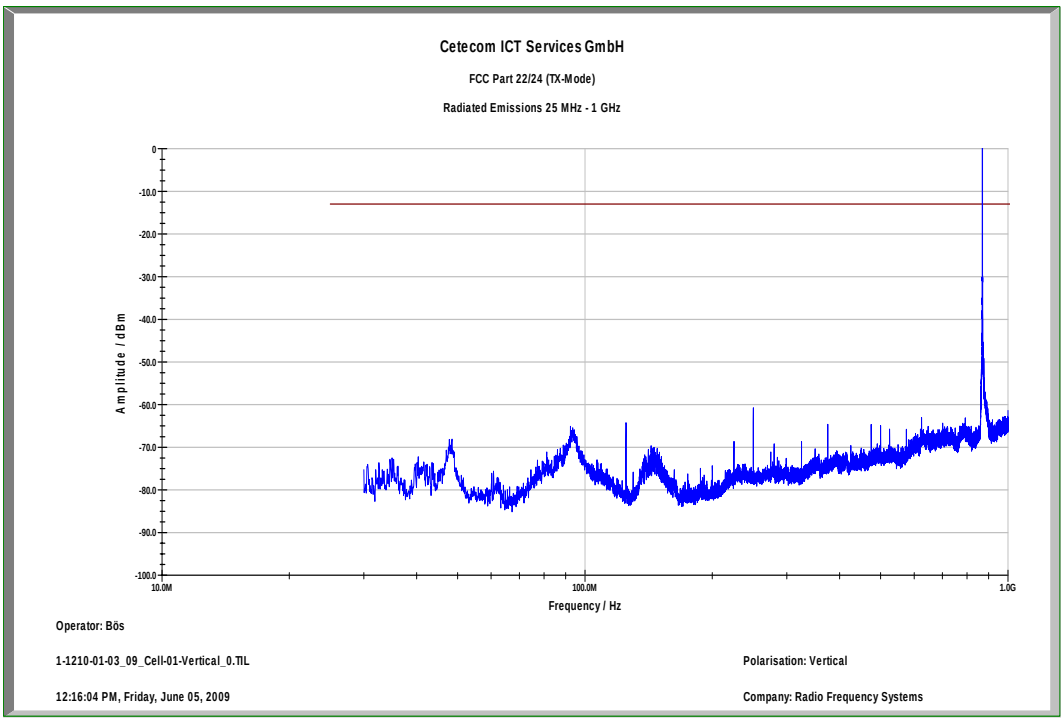
## 850 MHz-Band

**Downlink up to 30 MHz (Valid for all 3 channels)**



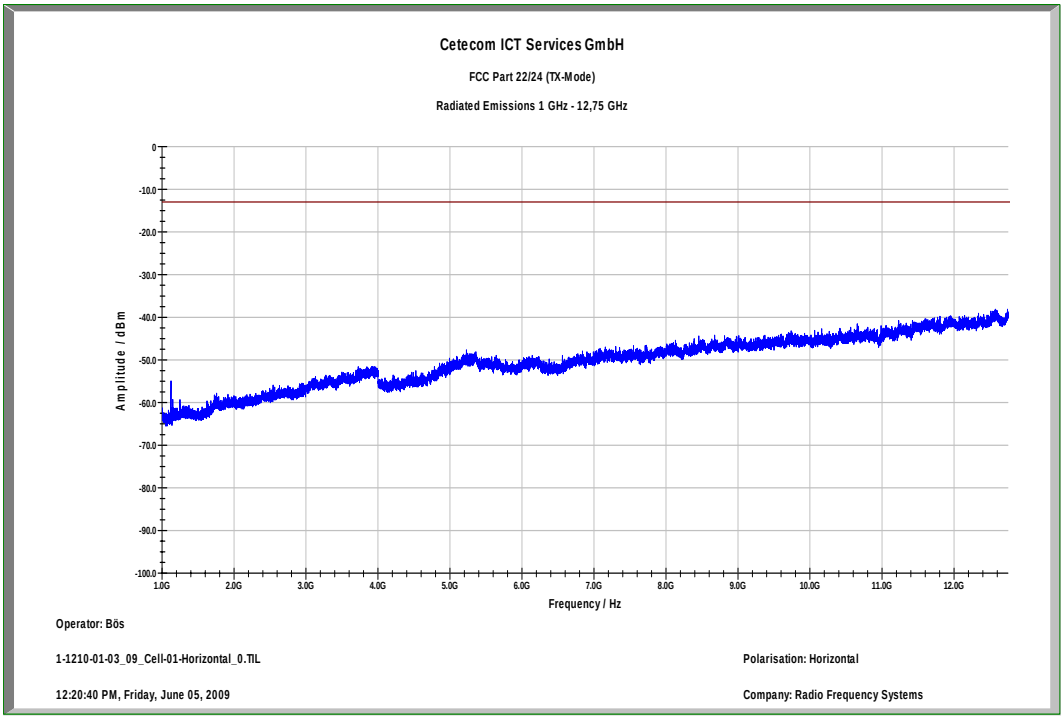
**Downlink 870.03 MHz (30 MHz - 1 GHz)**

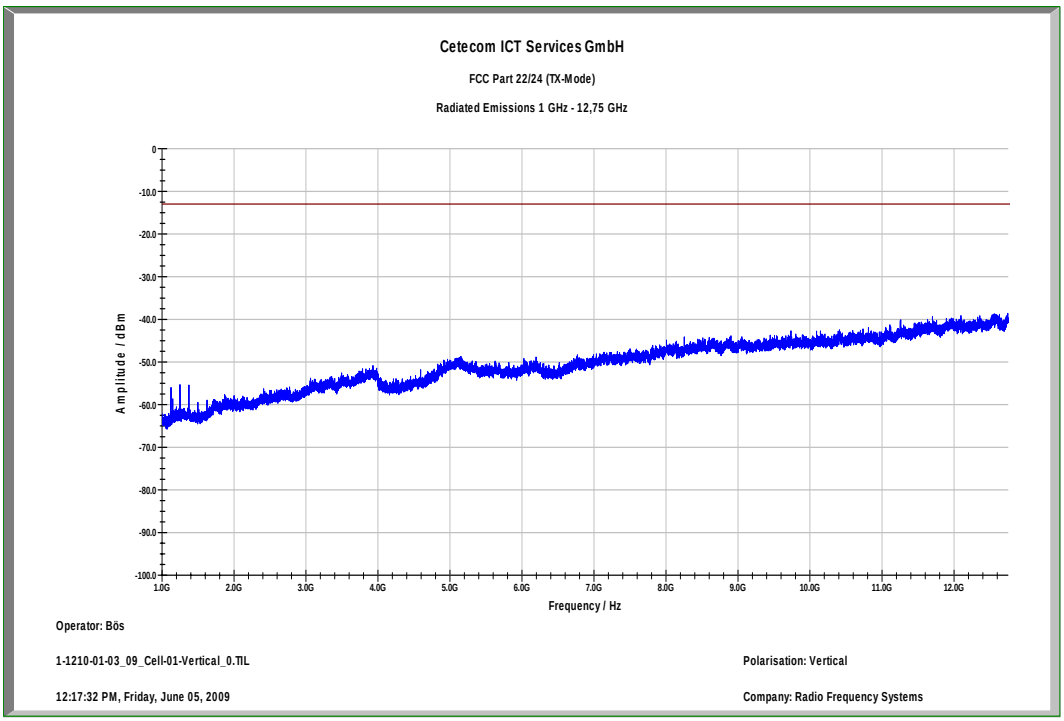



f < 1 GHz : RBW/VBW: 100 kHz

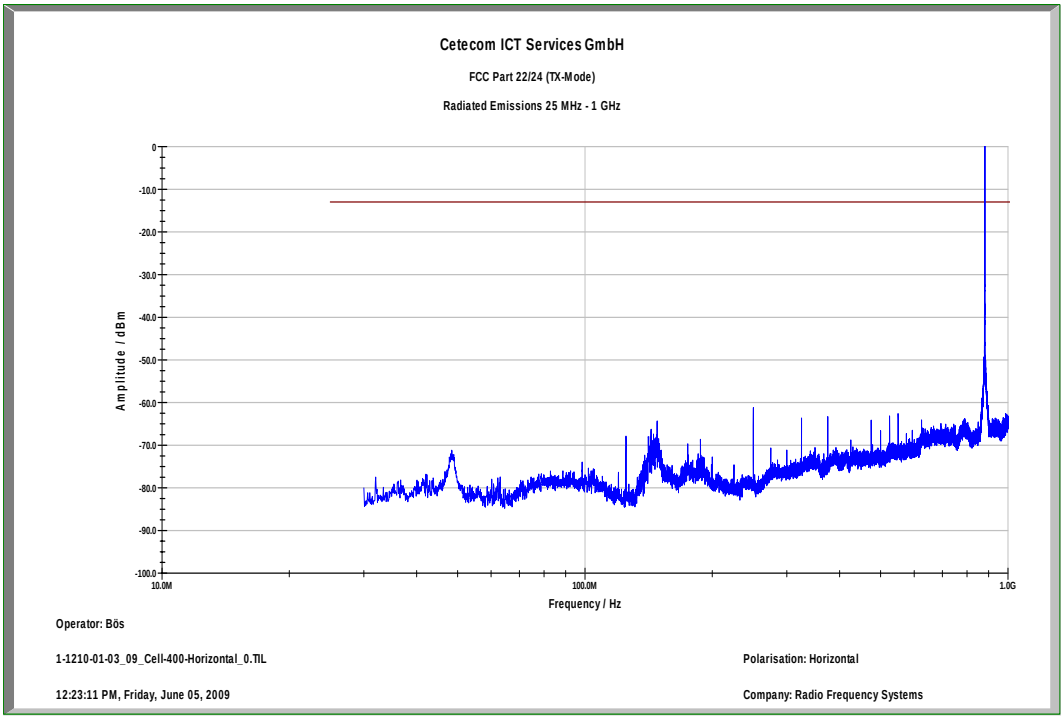
**Downlink 870.03 MHz (1 GHz – 12.75 GHz)**

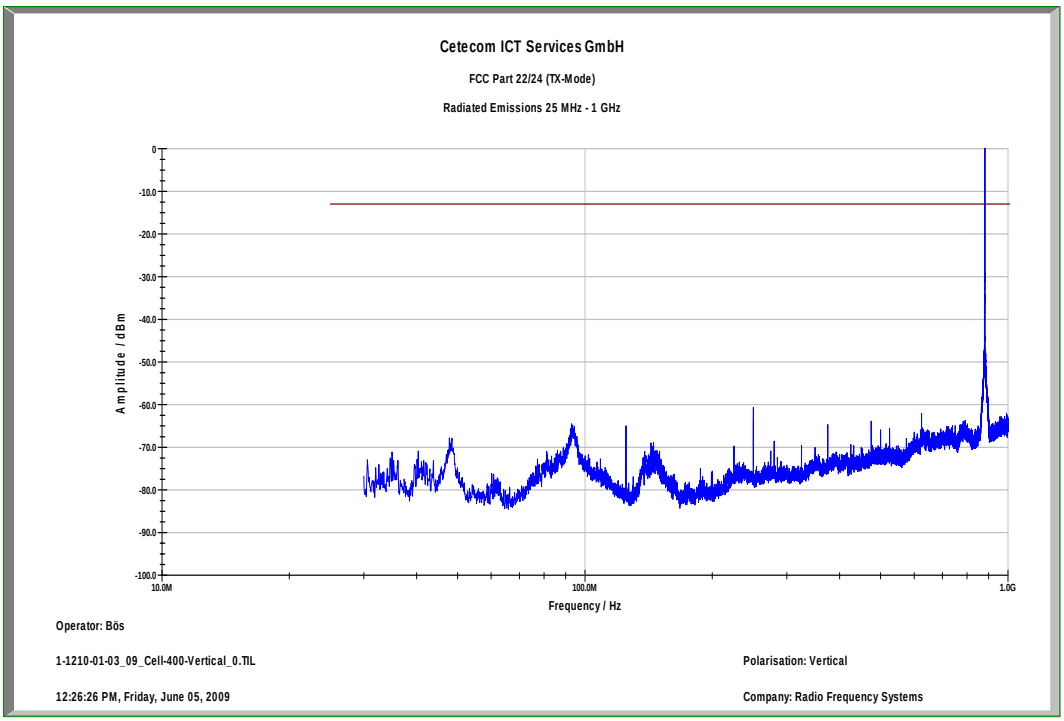



f ≥ 1GHz : RBW / VBW 1 MHz

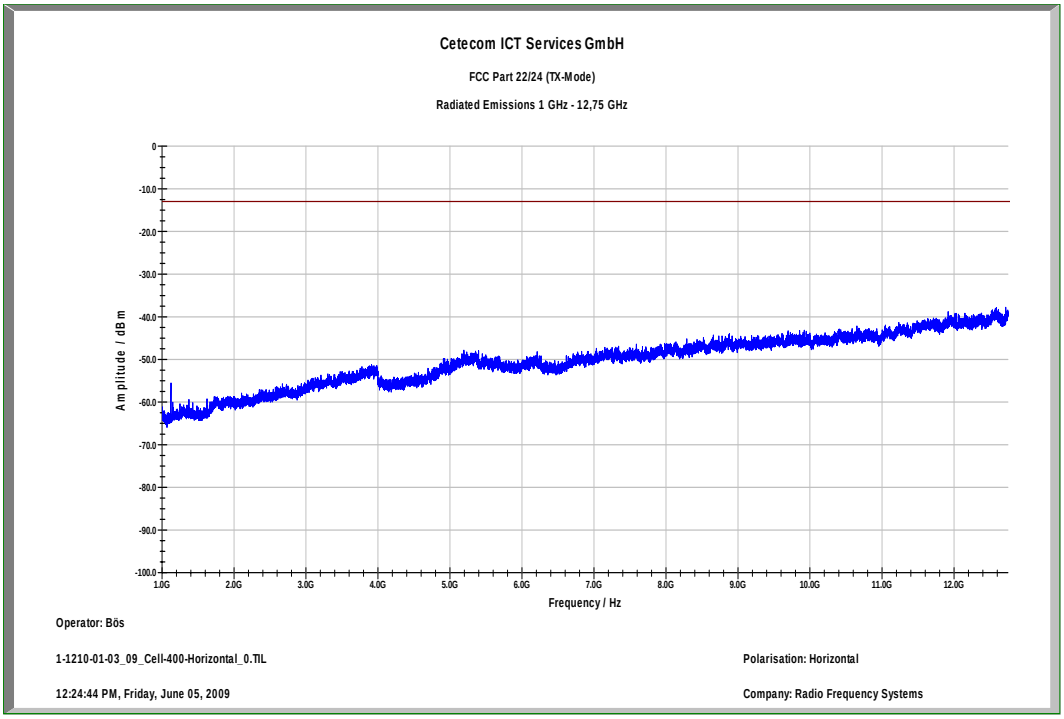
**Downlink 882.0 MHz (30 MHz - 1 GHz)**

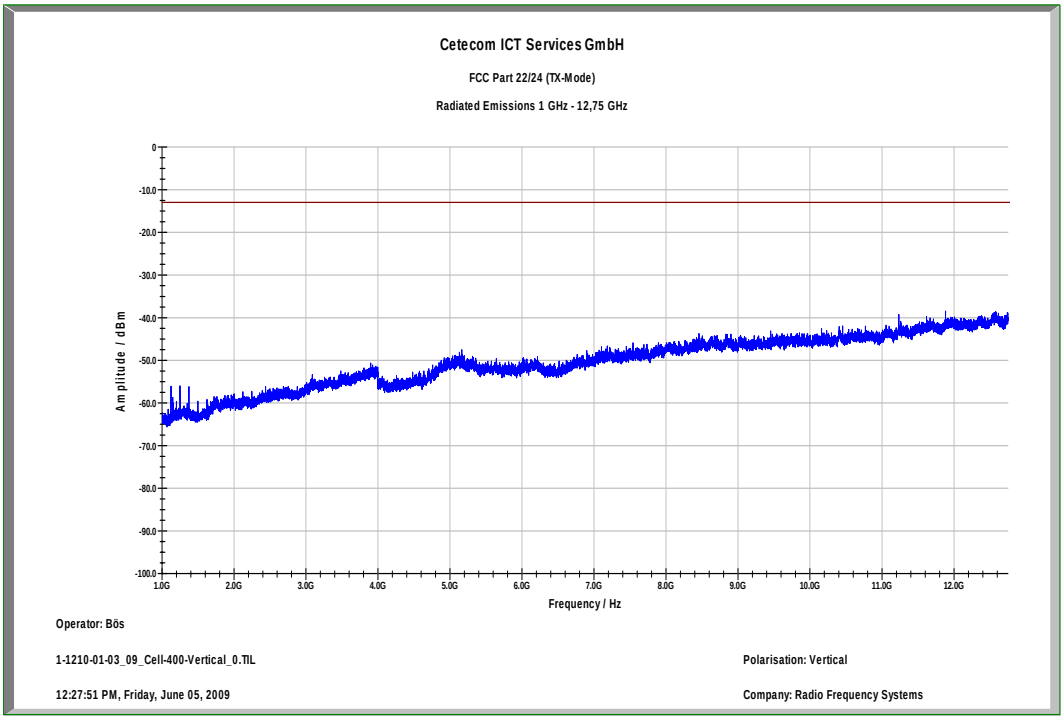



f < 1 GHz : RBW/VBW: 100 kHz

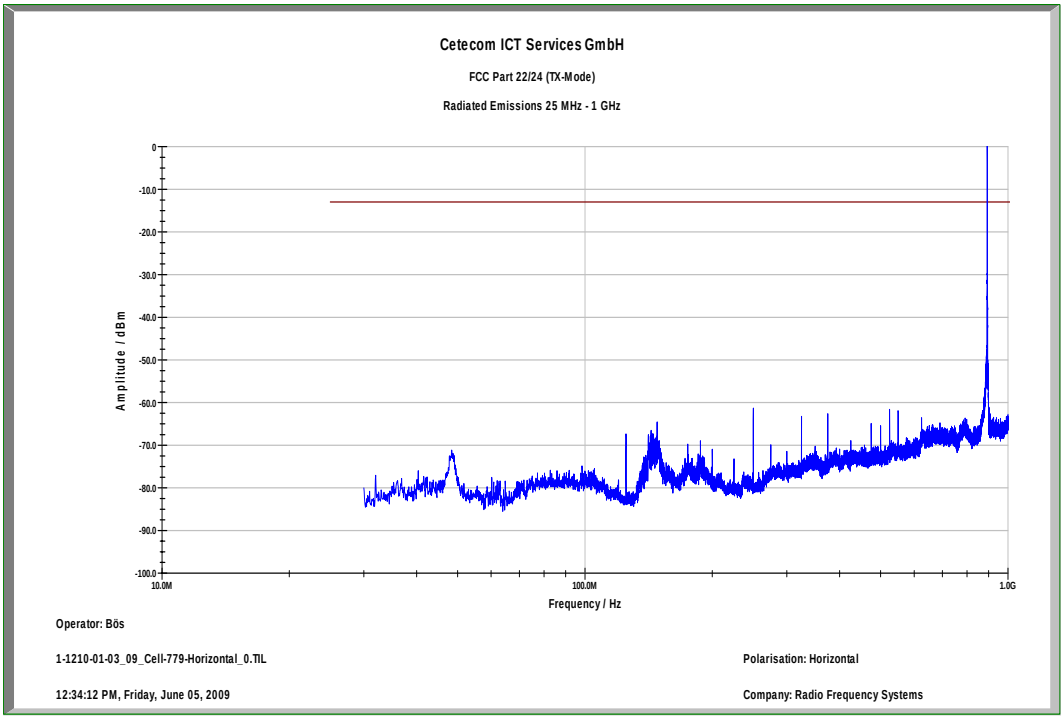
**Downlink 882.0 MHz (1 GHz – 12.5 GHz)**

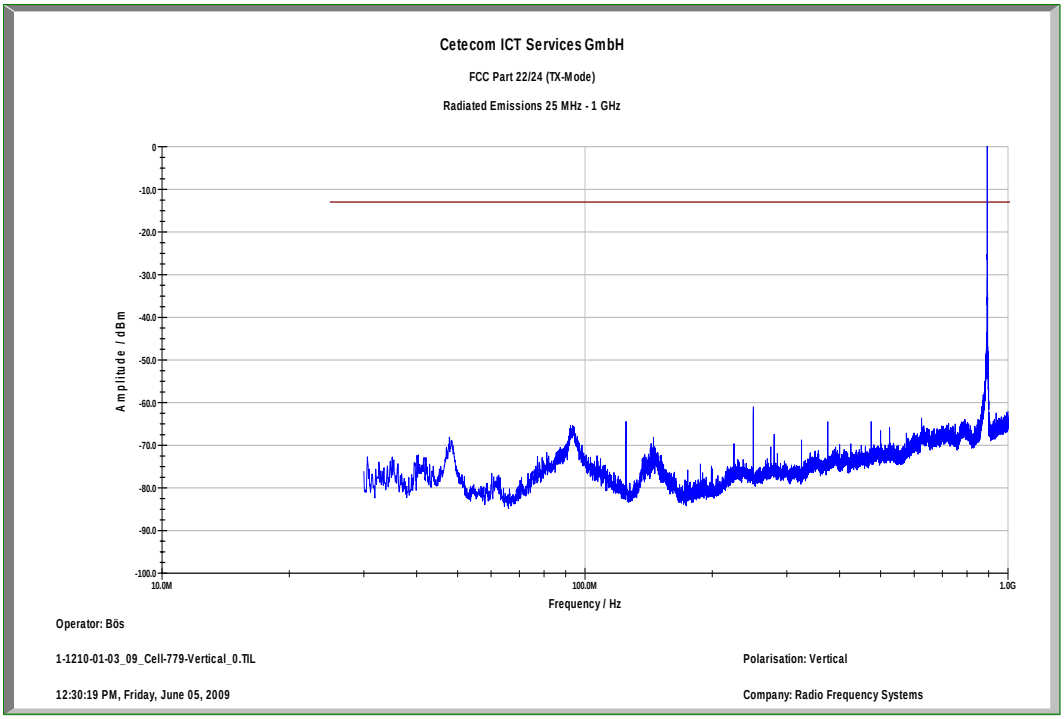



f ≥ 1GHz : RBW / VBW 1 MHz

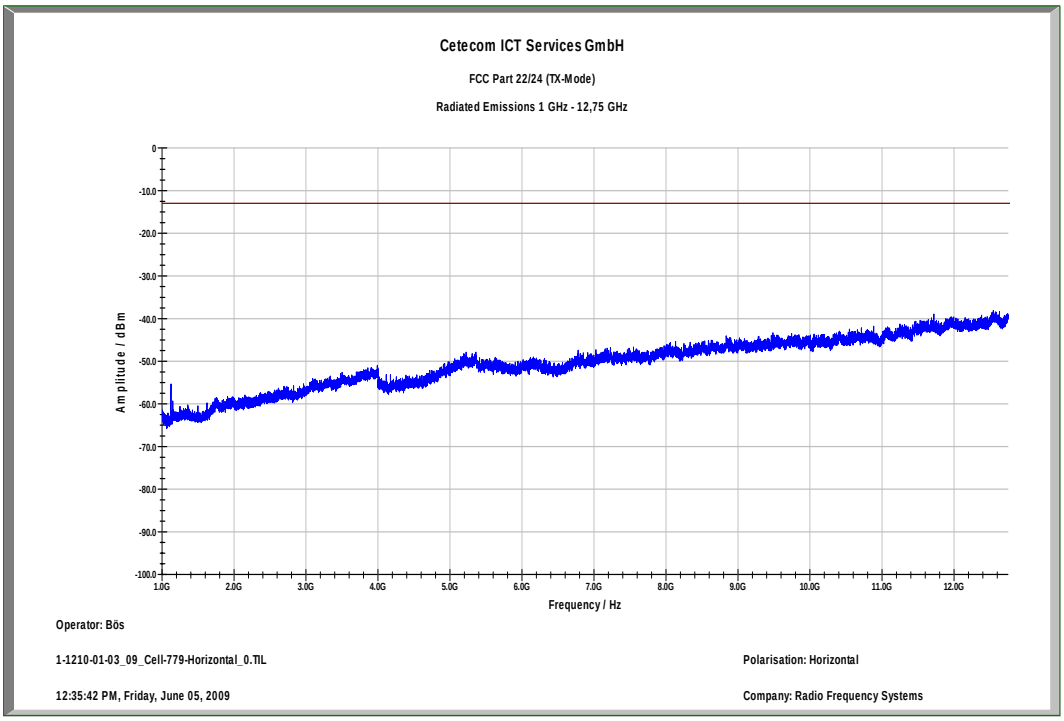
**Downlink 892.62 MHz (30 MHz - 1 GHz)**

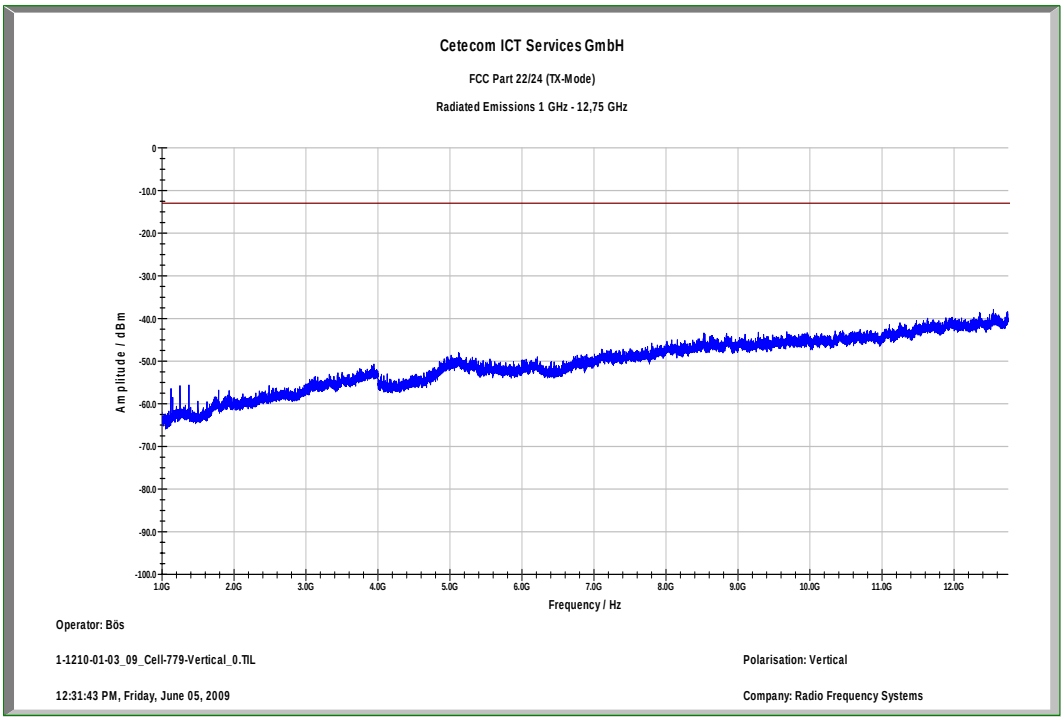



f < 1 GHz : RBW/VBW: 100 kHz

**Downlink 892.62 MHz (1 GHz – 12.5 GHz)**

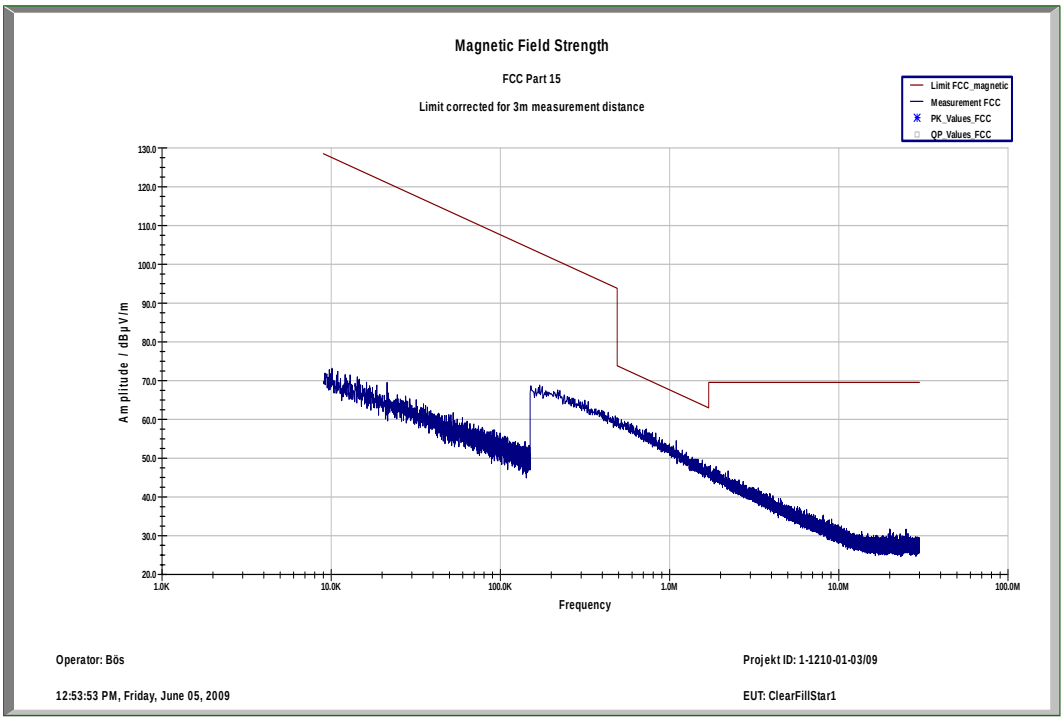


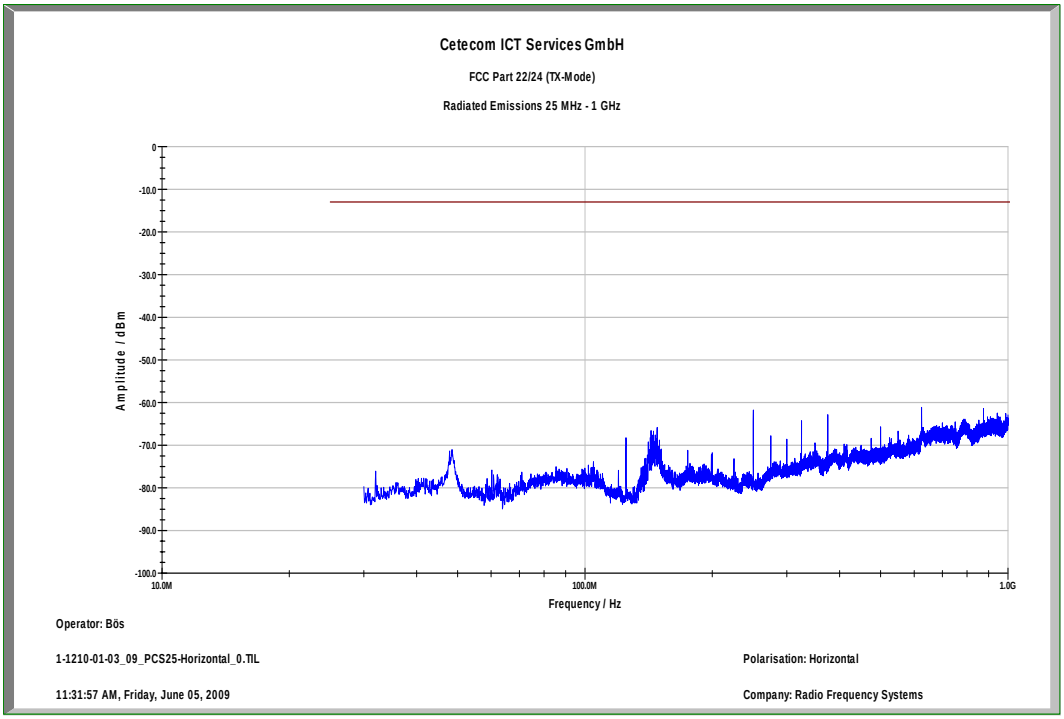

f ≥ 1GHz : RBW / VBW 1 MHz

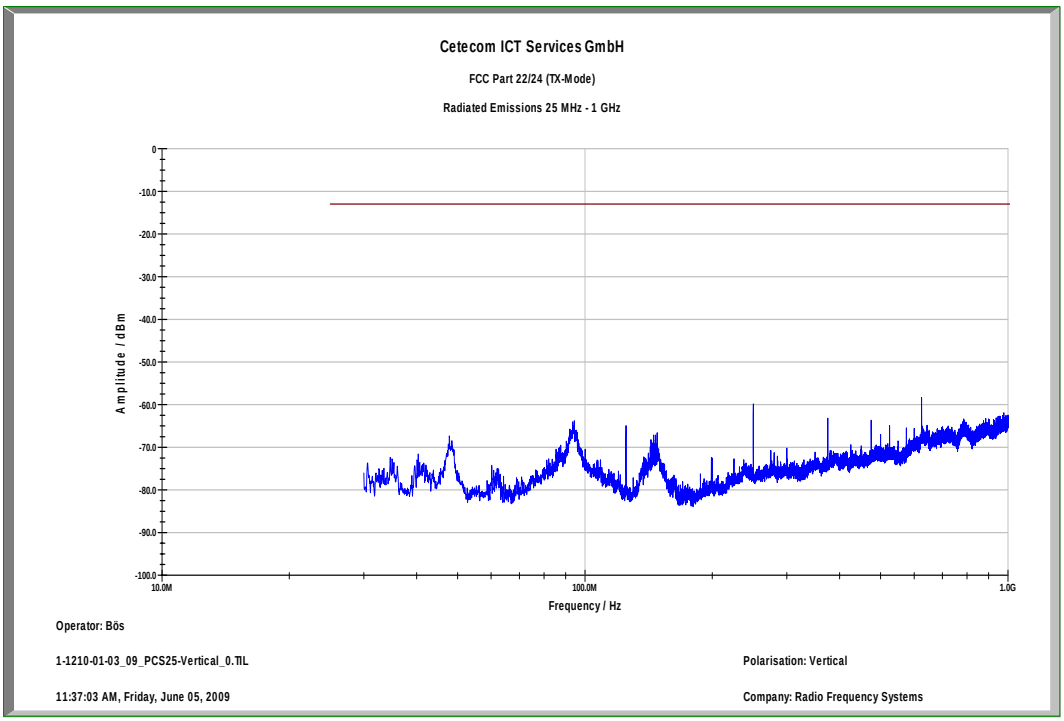
## 850 MHz-Band

**Downlink up to 30 MHz (Valid for all 3 channels)**



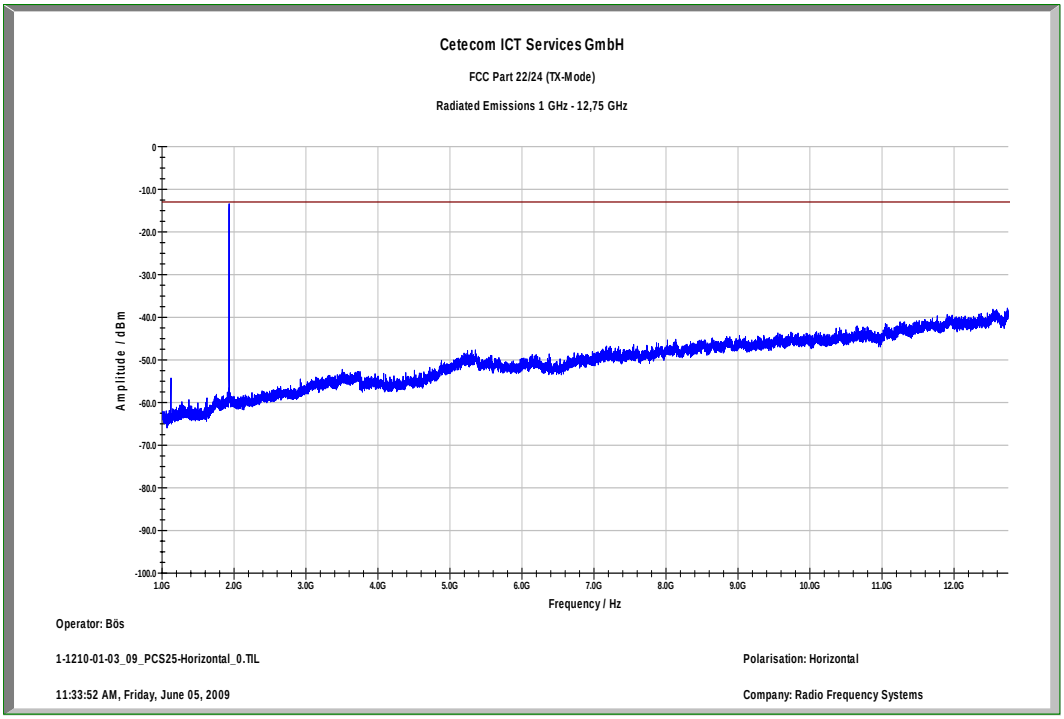
**Downlink 1930.2 MHz (30 MHz - 1 GHz)**

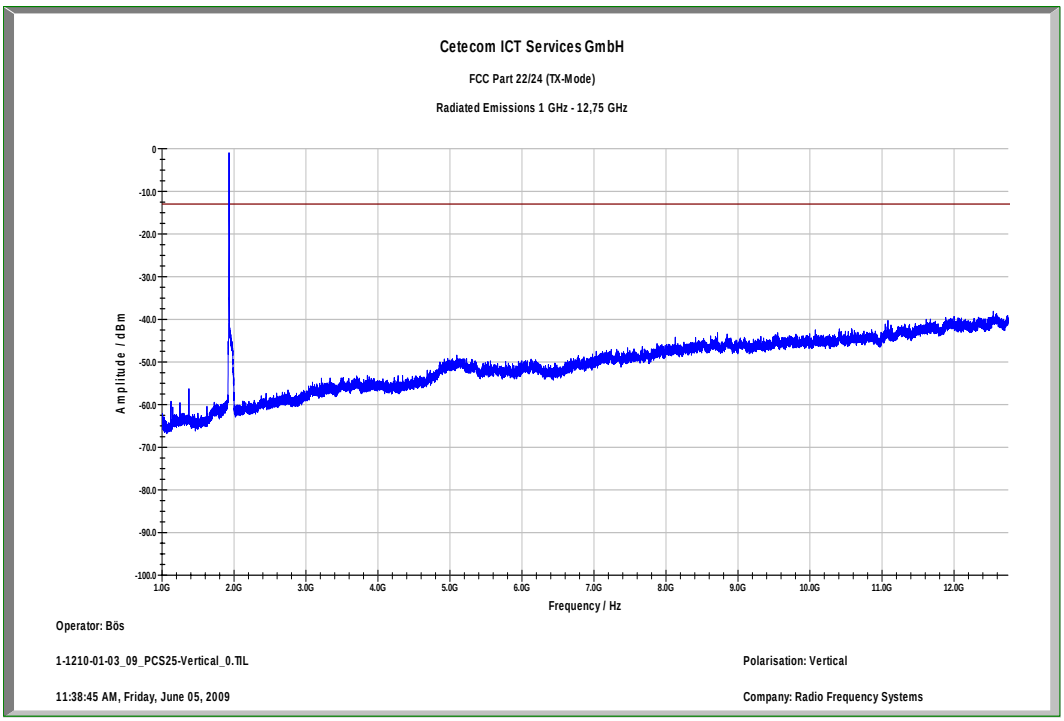



f < 1 GHz : RBW/VBW: 100 kHz

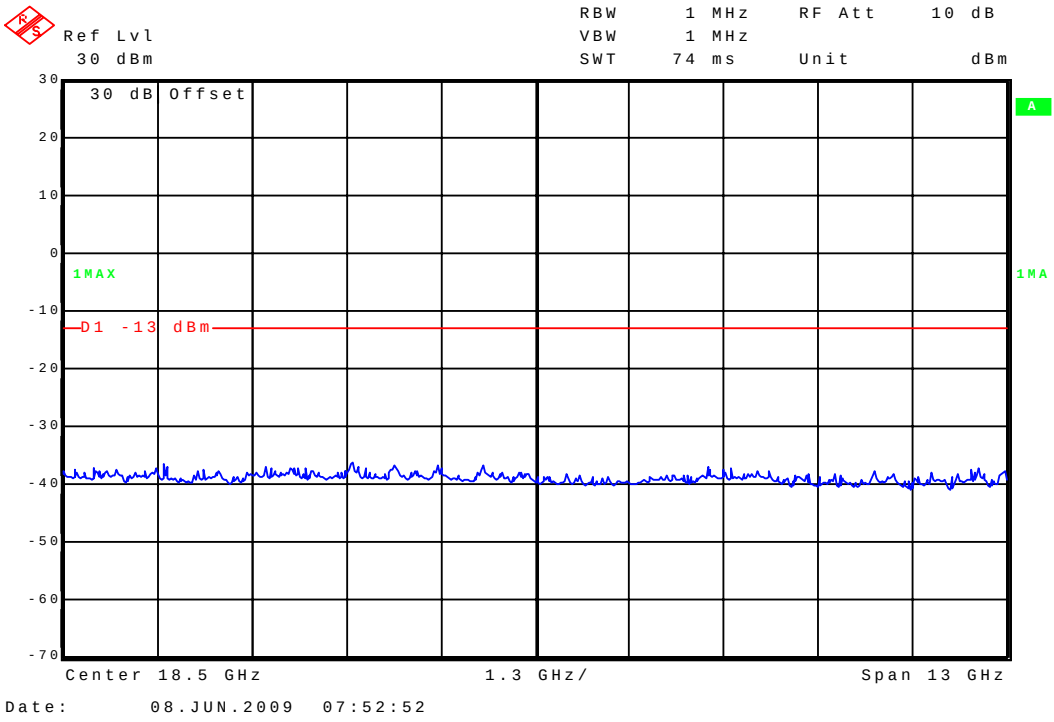
**Downlink 1930.2 MHz (1 GHz – 12.75 GHz)**



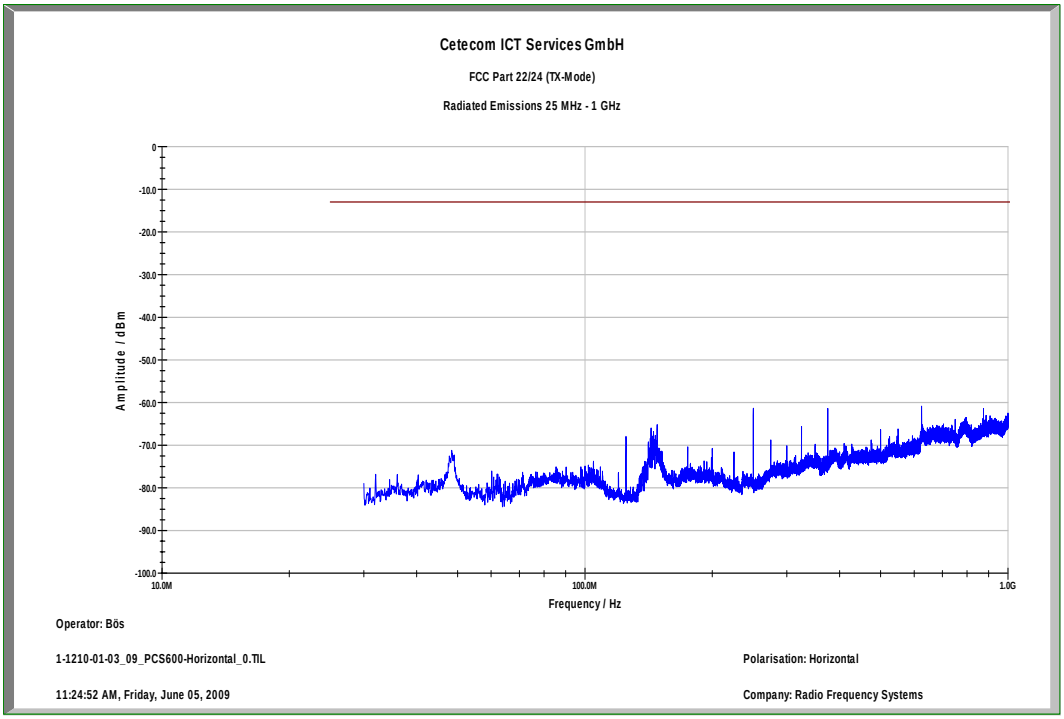



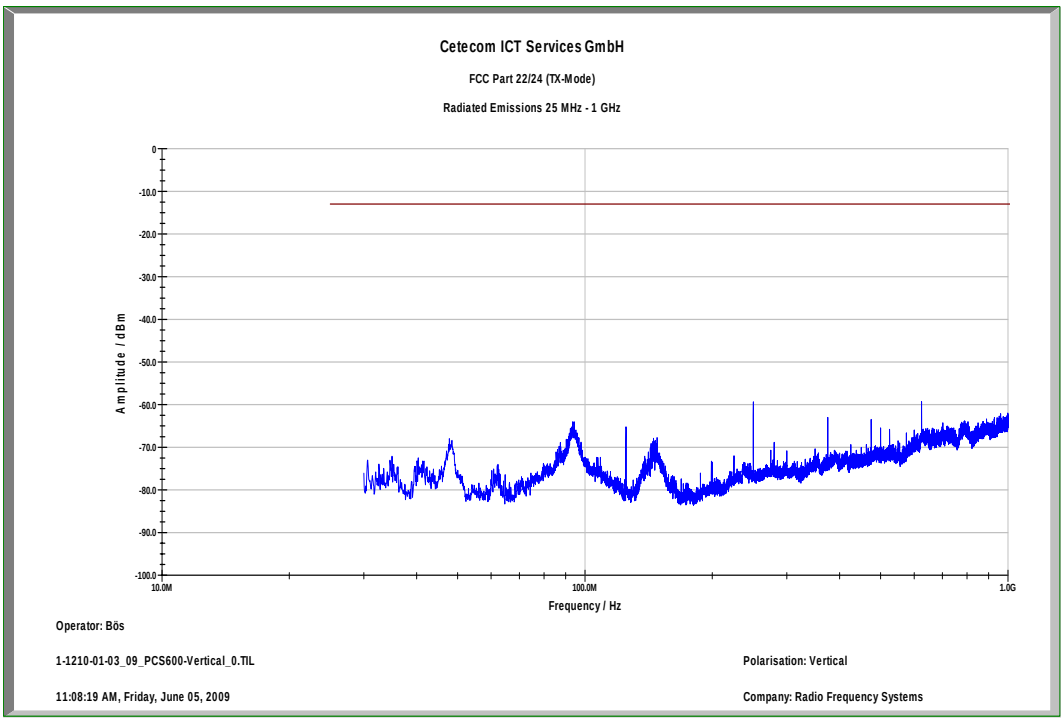

f ≥ 1GHz : RBW / VBW 1 MHz
Carrier suppressed with a rejection filter

**Downlink (12 GHz - 25 GHz) valid for all 3 channels**



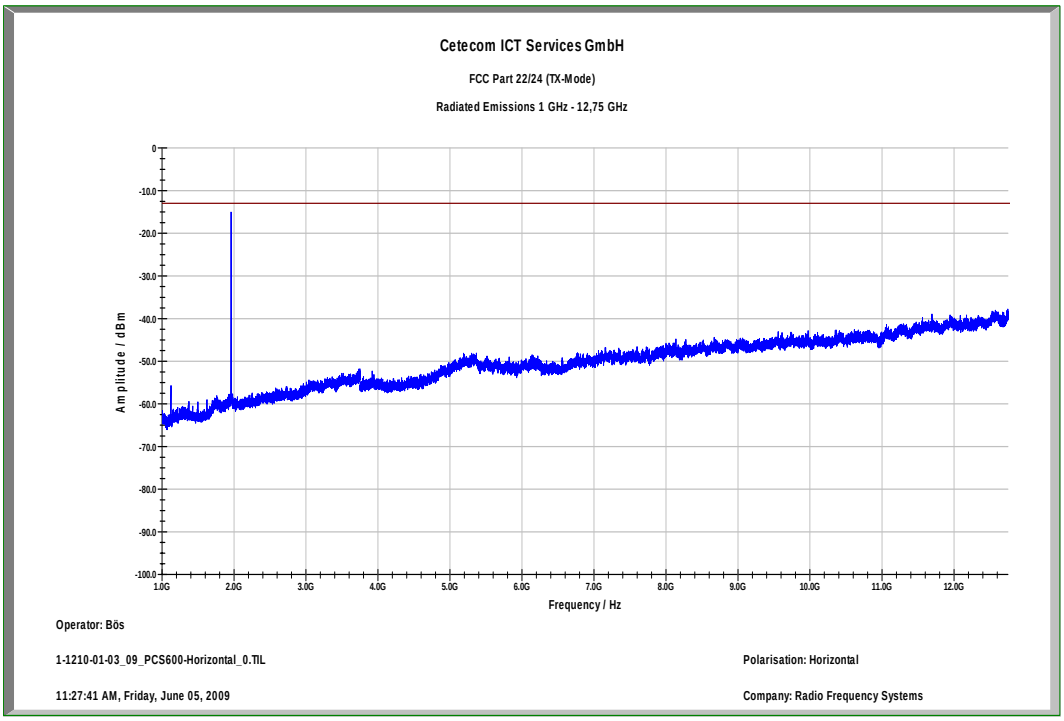
**Downlink 1960 MHz (30 MHz - 1 GHz)**

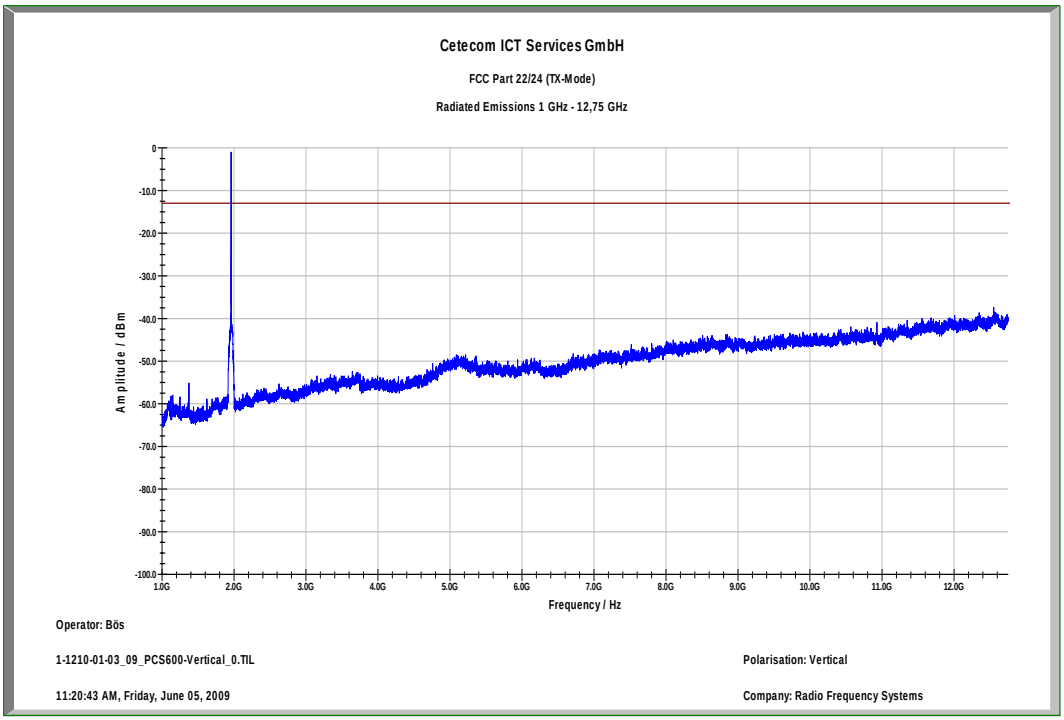



f < 1 GHz : RBW/VBW: 100 kHz

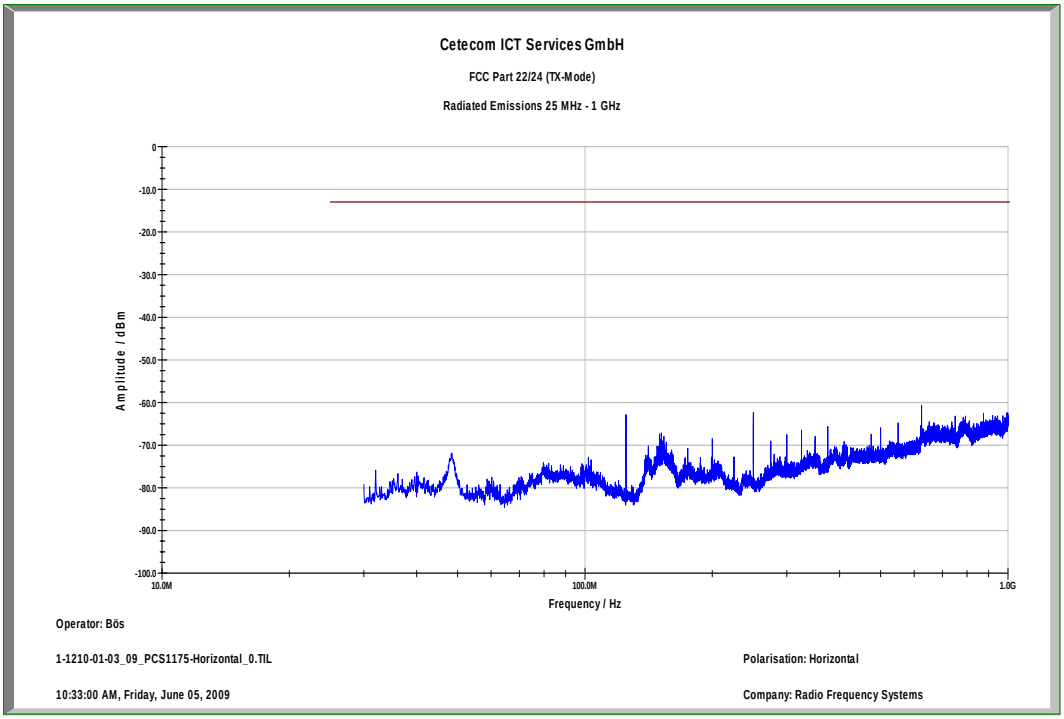
**Downlink 1960 MHz (1 GHz – 12.5 GHz)**

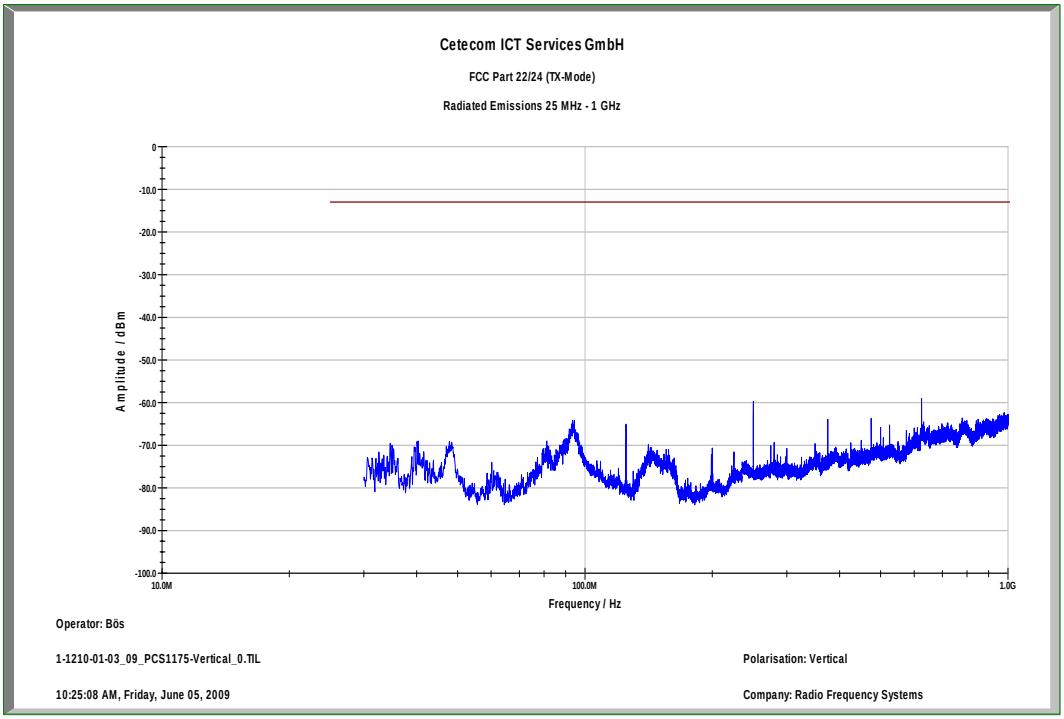



f ≥ 1GHz : RBW / VBW 1 MHz
Carrier suppressed with a rejection filter

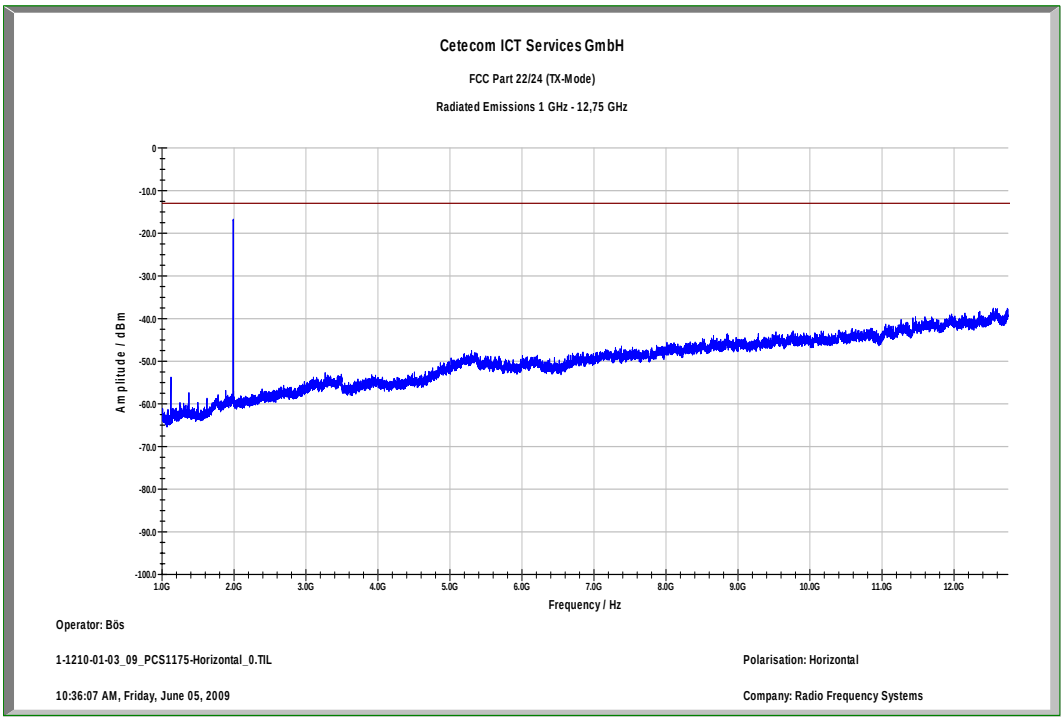
**Downlink 1989.2 MHz (30 MHz - 1 GHz)**

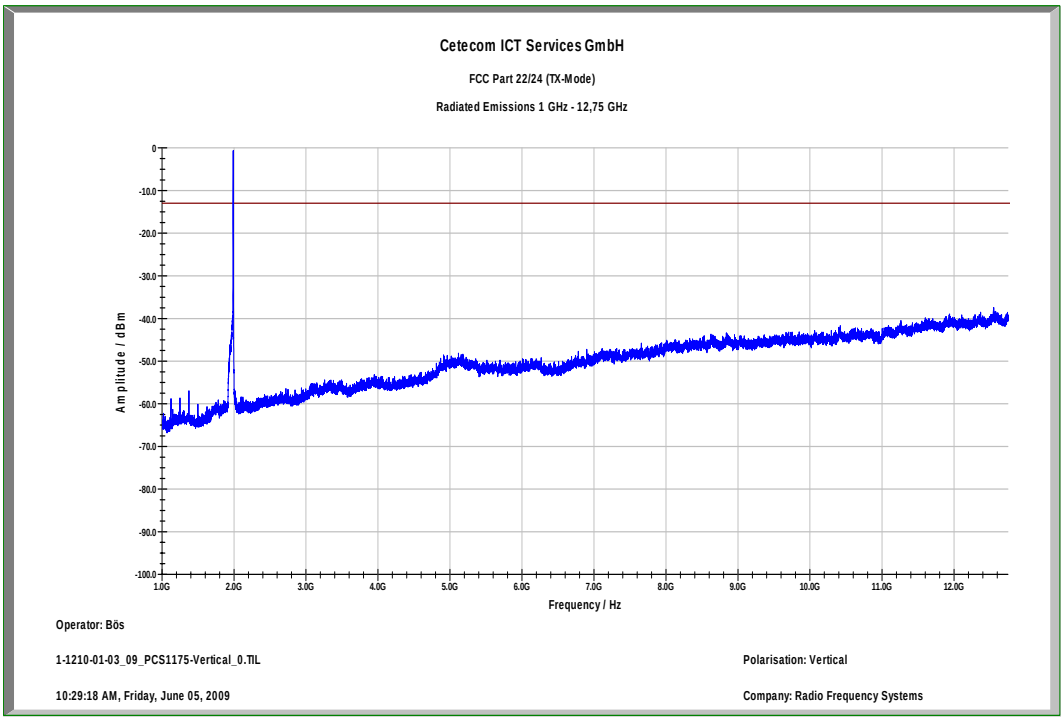



f < 1 GHz : RBW/VBW: 100 kHz

**Downlink 1989.2 MHz (1 GHz – 12.5 GHz)**




f ≥ 1GHz : RBW / VBW 1 MHz
Carrier suppressed with a rejection filter

### 3.1.4 Conducted Spurious Emissions

**Reference**

| | |
|---|---|
| FCC: | CFR Part 22.917, 24.238, 2.1051 |
| IC: | RSS 131, Issue 2, Section 4.4 and 6.4 |

**Measurement Procedure:**

The following steps outline the procedure used to measure the conducted emissions from the mobile station.
1. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency.
For the mobile station equipment tested, this equates to a frequency range of 13 MHz to 19.1 GHz, data taken from 10 MHz to 20 GHz.
2. Determine mobile station transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.

**Measurement Limit:**

(a) On any frequency outside frequency band of the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log(P) dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

**Measurement Results:**
Downlink 850 MHz-band

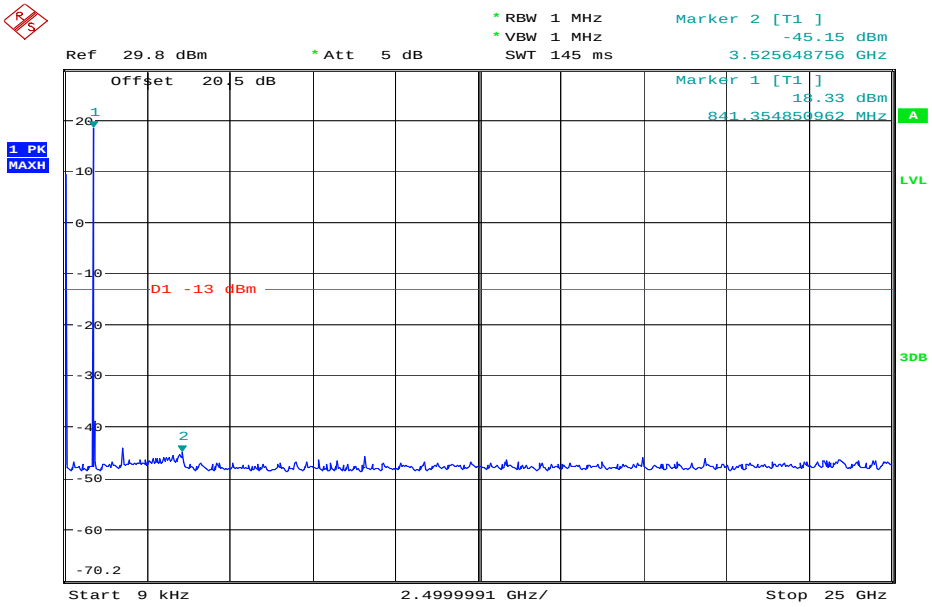
| Harmonic | Tx ch.-128 Freq. (MHz) | Level (dBm) | Tx ch.-189 Freq. (MHz) | Level (dBm) | Tx ch.-251 Freq. (MHz) | Level (dBm) |
|---|---|---|---|---|---|---|
| 2 | 1648.4 | - | 1672.8 | - | 1697.6 | - |
| 3 | 2472.6 | - | 2509.2 | - | 2546.4 | - |
| 4 | 3296.8 | - | 3345.6 | - | 3395.2 | - |
| 5 | 4121.0 | - | 4182.0 | - | 4244.0 | - |
| 6 | 4945.2 | - | 5018.4 | - | 5092.8 | - |
| 7 | 5769.4 | - | 5854.8 | - | 5941.6 | - |
| 8 | 6593.6 | - | 6691.2 | - | 6790.4 | - |
| 9 | 7417.8 | - | 7527.6 | - | 7639.2 | - |
| 10 | 8242.0 | - | 8364.0 | - | 8488.0 | - |

Downlink 1900 MHz-band

| Harmonic | Tx ch.-512 Freq. (MHz) | Level (dBm) | Tx ch.-661 Freq. (MHz) | Level (dBm) | Tx ch.-810 Freq.(MHz) | Level (dBm) |
|---|---|---|---|---|---|---|
| 2 | 3860.4 | - | 3920.0 | - | 3979.6 | - |
| 3 | 5790.6 | - | 5880.0 | - | 5969.4 | - |
| 4 | 7720.8 | - | 7840.0 | - | 7959.2 | - |
| 5 | 9651.0 | - | 9800.0 | - | 9949.0 | - |
| 6 | 11581.2 | - | 11760.0 | - | 11938.8 | - |
| 7 | 13511.4 | - | 13720.0 | - | 13928.6 | - |
| 8 | 15441.6 | - | 15680.0 | - | 15918.4 | - |
| 9 | 17371.8 | - | 17640.0 | - | 17908.2 | - |
| 10 | 19302.0 | - | 19600.0 | - | 19898.0 | - |

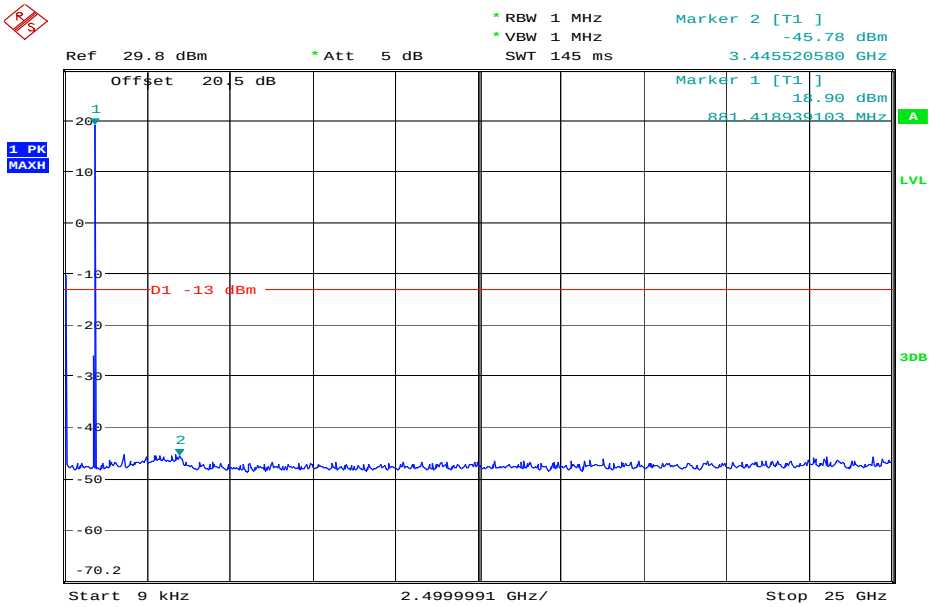
## 850 MHz-band (CDMA)

### Downlink Low Channel



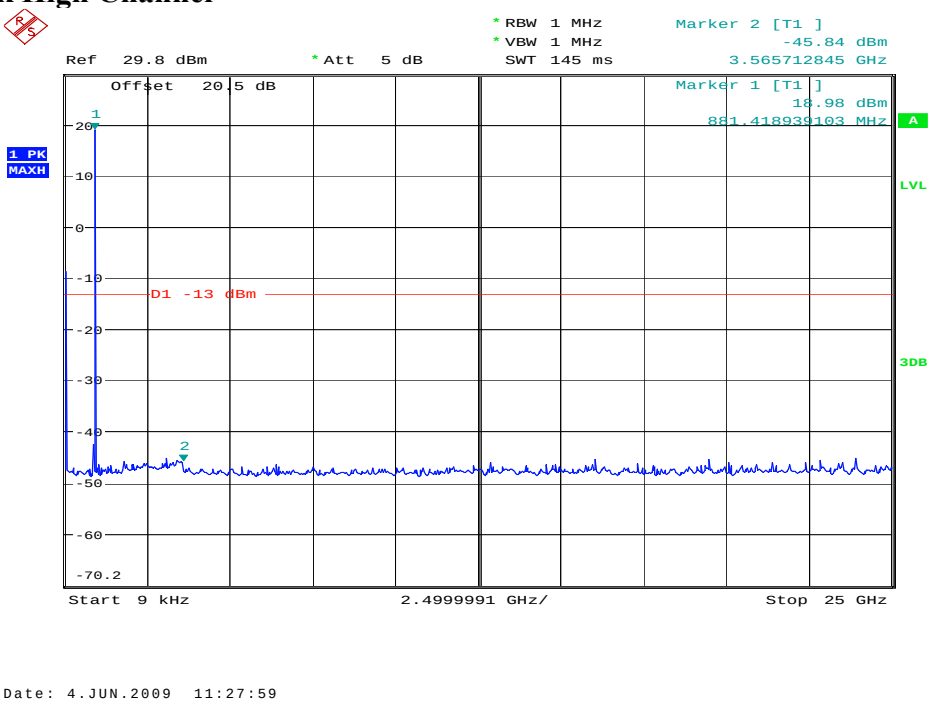

Date: 4.JUN.2009 11:32:24

### Downlink Middle Channel



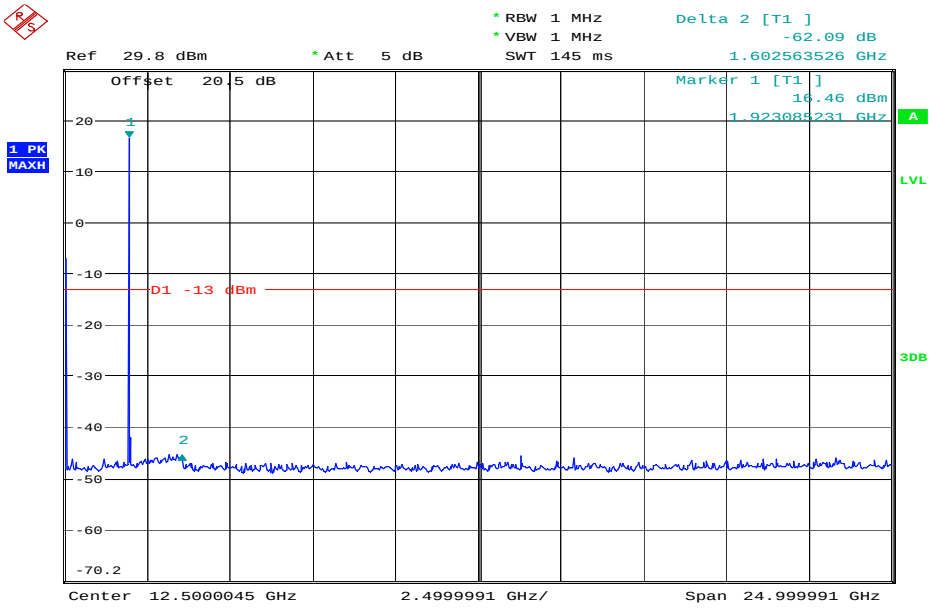

Date: 4.JUN.2009 11:30:20

## Downlink High Channel



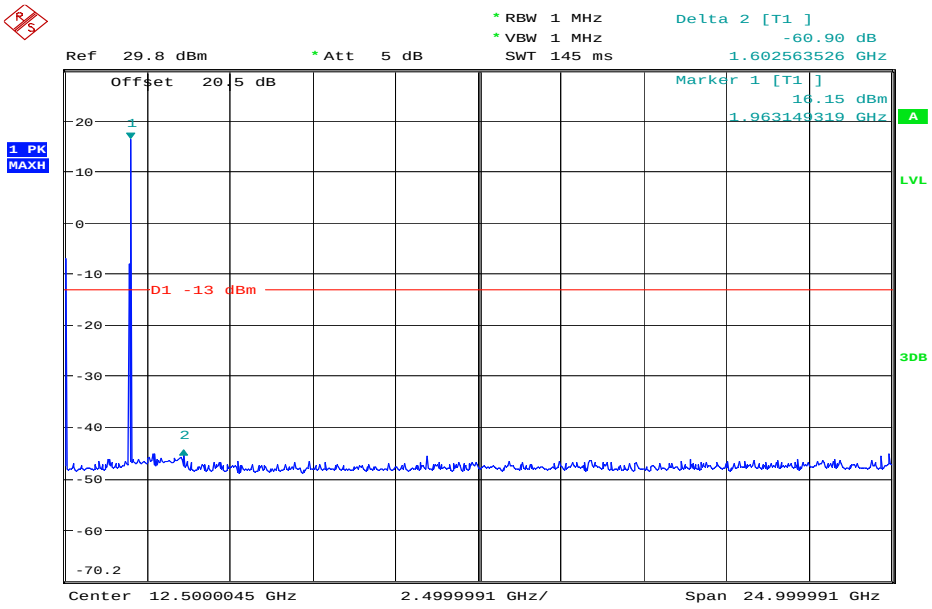
## 1900 MHz-band (CDMA)

### Downlink Low Channel



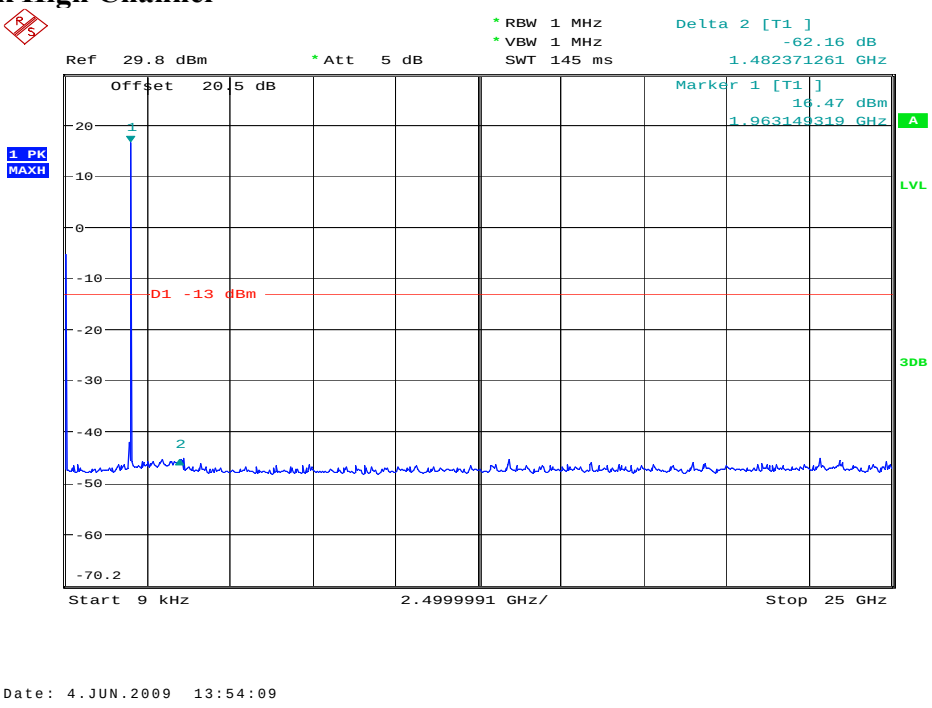

Date: 4.JUN.2009 13:58:29

### Downlink Middle Channel




Date: 4.JUN.2009 13:56:21

## Downlink High Channel




Date: 4.JUN.2009 13:54:09

### 3.1.5 Block Edge Compliance

**Reference**

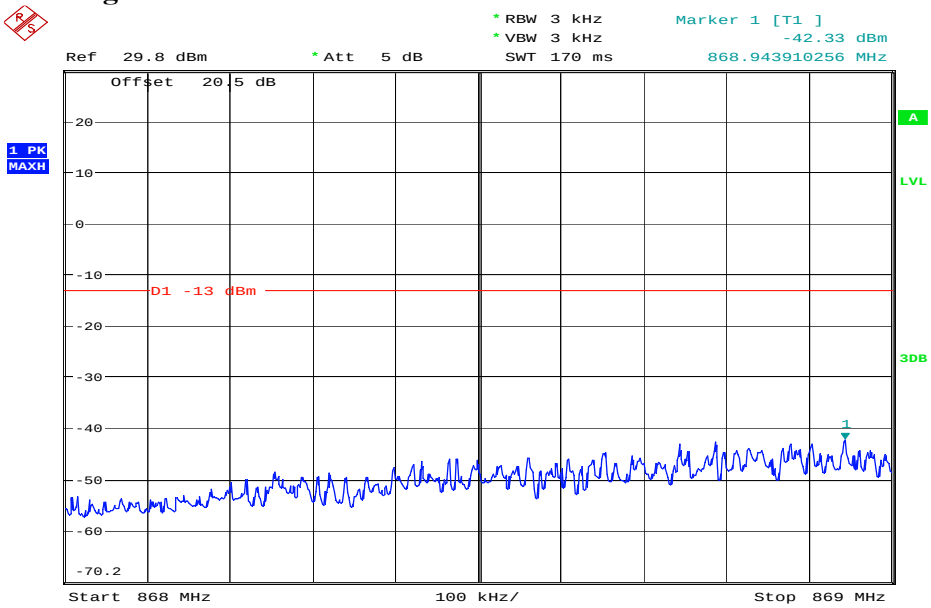
| | |
|---|---|
| FCC: | CFR Part 24.238, 22.917 |
| IC: | RSS 131, Issue 2, Section 4.4 and 6.4 |

**Measurement Limit:**
Part 24.238: Emission Limits
(a) On any frequency outside frequency band of the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log(P) dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

Part 22.917: Emission Limits
(a) On any frequency outside frequency band of the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log(P) dB. For all power levels +33 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

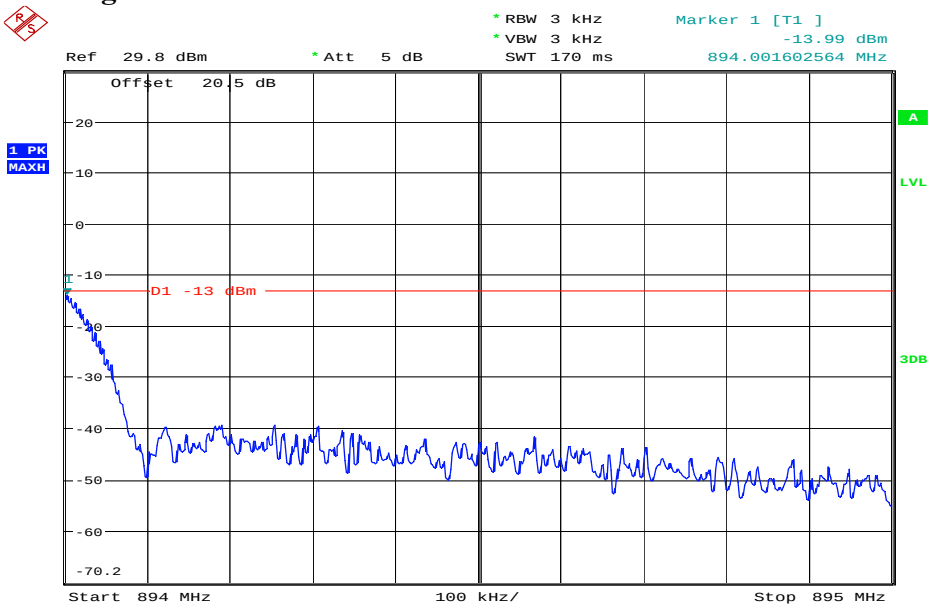
## 850 MHz band (CDMA Downlink)

### Lower Block Edge




Date: 4.JUN.2009 11:34:00

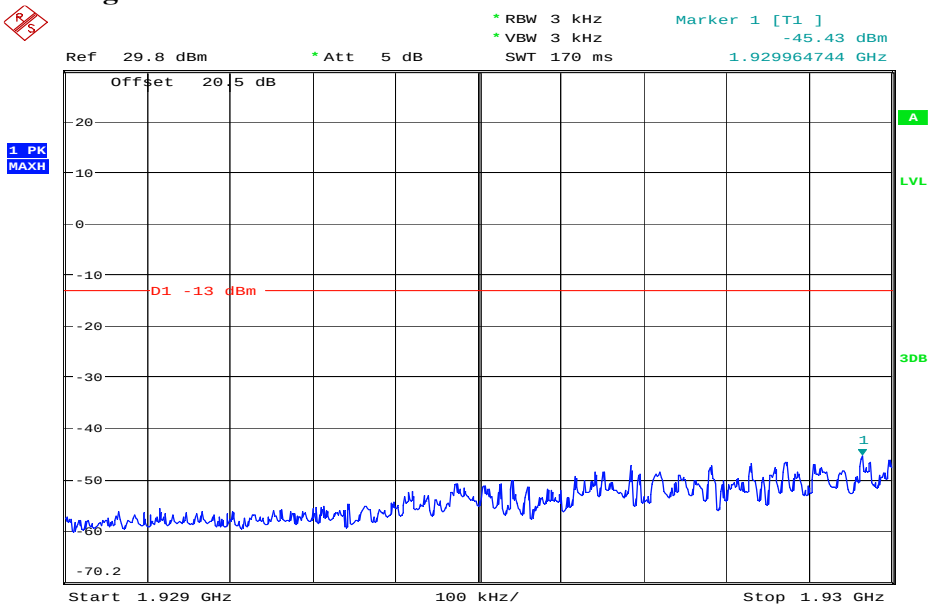
### Upper Block Edge




Date: 4.JUN.2009 11:40:42

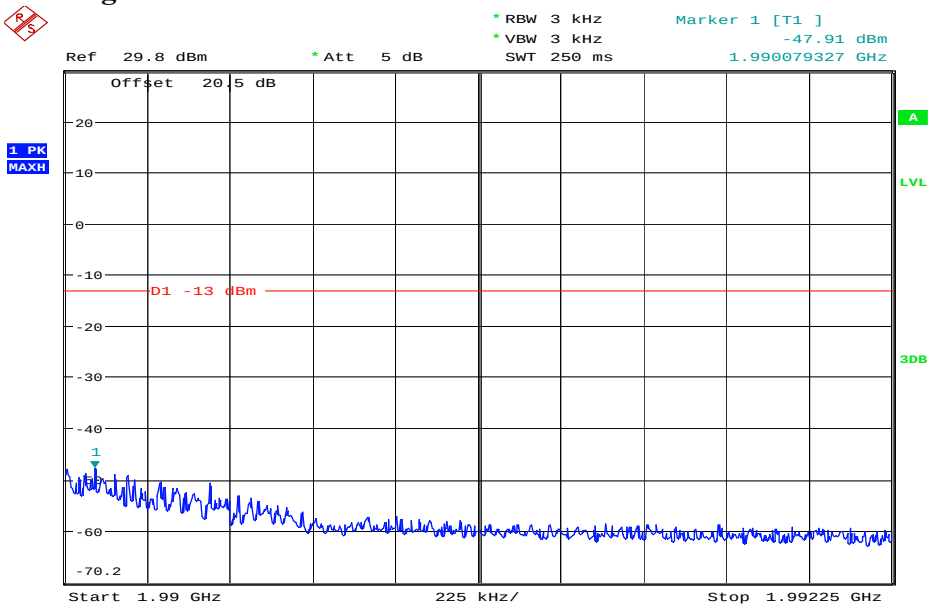
## 1900 MHz-band (CDMA Downlink)

### Lower Block Edge




Date: 4.JUN.2009 14:00:12

### Upper Block Edge




Date: 4.JUN.2009 14:03:15

### 3.1.6 Occupied Bandwidth

**Reference**

| | |
|---|---|
| FCC: | CFR Part 24.238, 22.863, 2.1049 |
| IC: | RSS 131, Issue 2, Section 4.2 |

**Occupied Bandwidth Results**

Similar to conducted emissions, occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the USPCS frequency band. Table 8.2 below lists the measured 99% occupied bandwidths. Spectrum analyzer plots are included on the following pages.

Part 24.238 (a) requires a measurement bandwidth of at least 1% of the occupied bandwidth. For ca. 1300 kHz, this equates to a resolution bandwidth of at least 13 kHz. For this testing, a resolution bandwidth 30 kHz was used.

Analyzer Settings:

| | | | |
|---|---|---|---|
| CDMA 850: | RBW 30 kHz | VBW 300 KHz | Span : 3MHz |
| CDMA 1900: | RBW 30 kHz | VBW 300 KHz | Span : 3 MHz |

## Test results OBW Input / Output

**850 MHz-band**
Downlink

| CDMA PCS Band (MHz) | | | | |
|---|---|---|---|---|
| Channel | Frequency | Input | Output | |
| Low | 869.73 | 1.26923 | 1.25962 | |
| Middle | 882.00 | 1.26923 | 1.25962 | |
| High | 892.62 | 1.26923 | 1.25962 | |

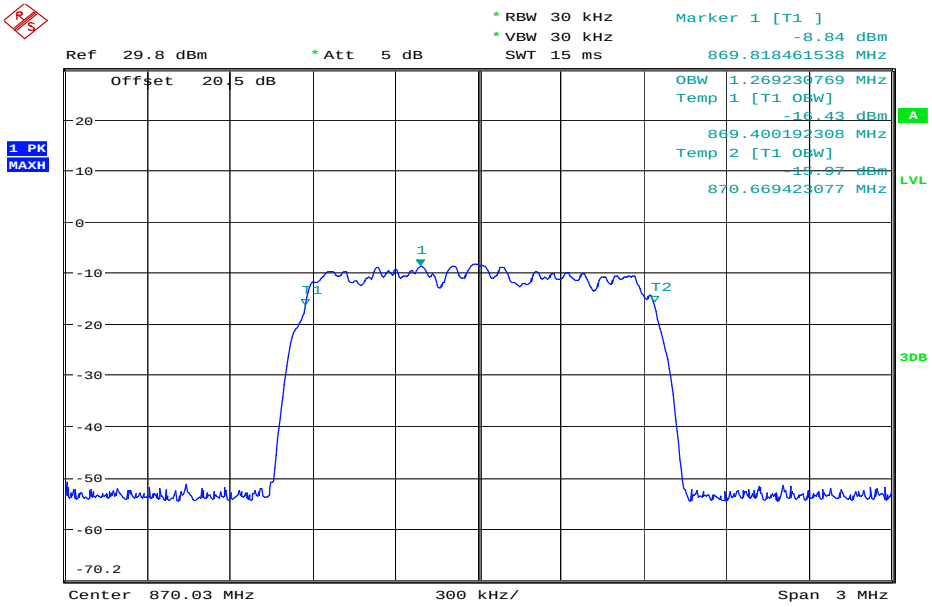
**1900 MHz-band**
Downlink

| CDMA PCS Band (MHz) | | | | |
|---|---|---|---|---|
| Channel | Frequency | Input | Output | |
| Low | 1931.25 | 1.27404 | 1.27596 | |
| Middle | 1960.00 | 1.27404 | 1.27596 | |
| High | 1988.75 | 1.27404 | 1.27596 | |

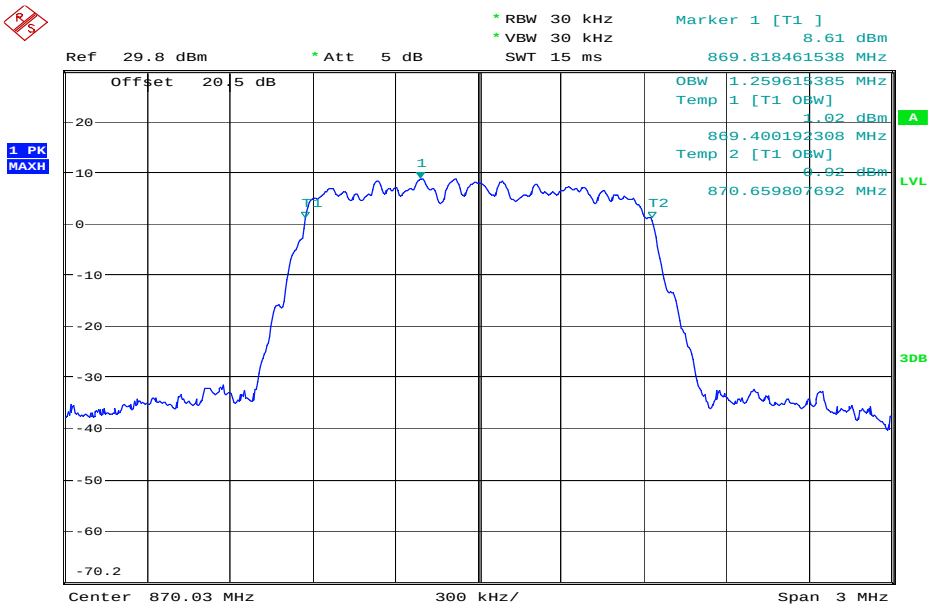
**Plots of measurement**
**The plots show in the upper part the input signal and in the lower part the output signal**

## 850 MHz-band (CDMA)

### Downlink Low Channel

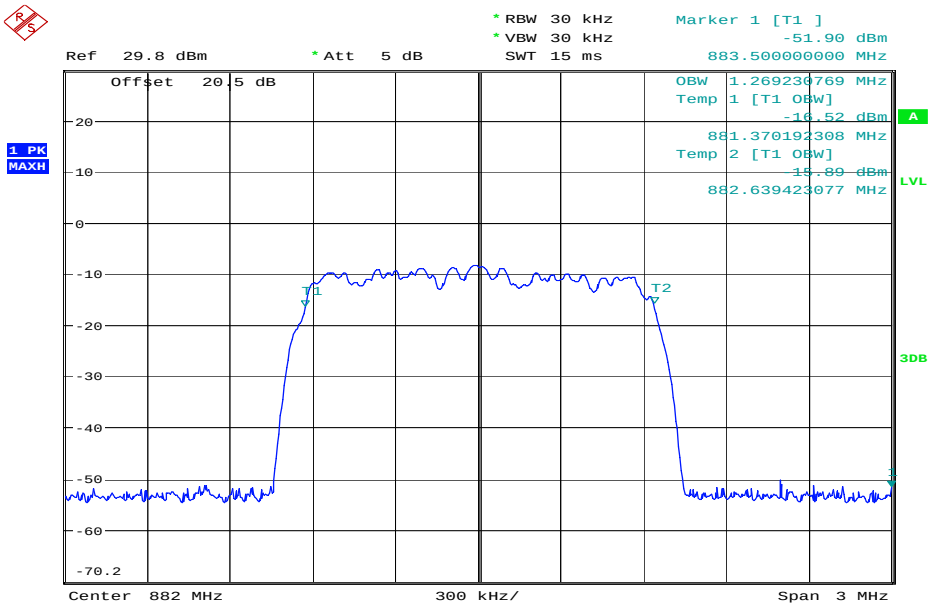



Date: 4.JUN.2009 12:00:07

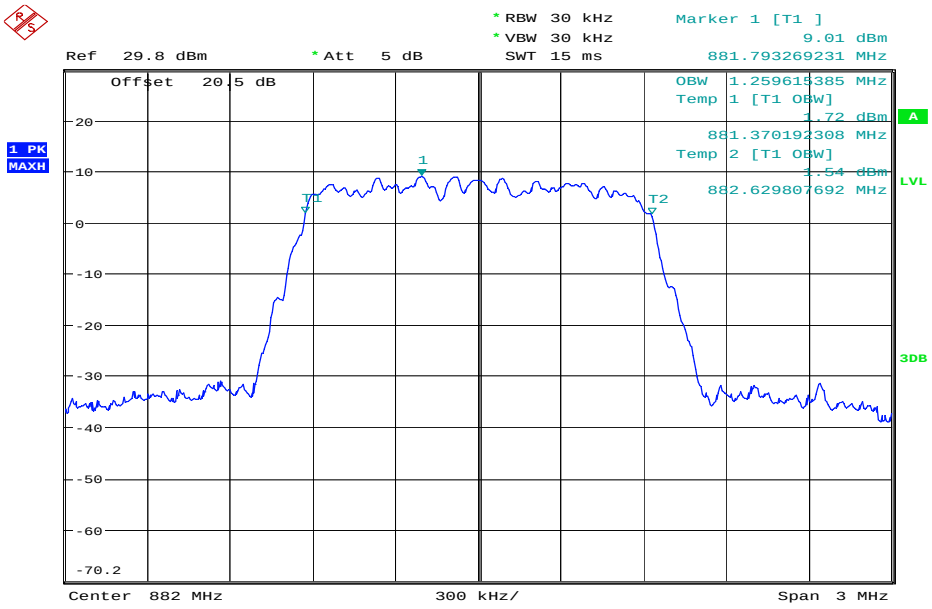



Date: 4.JUN.2009 11:59:01

## Downlink Middle Channel

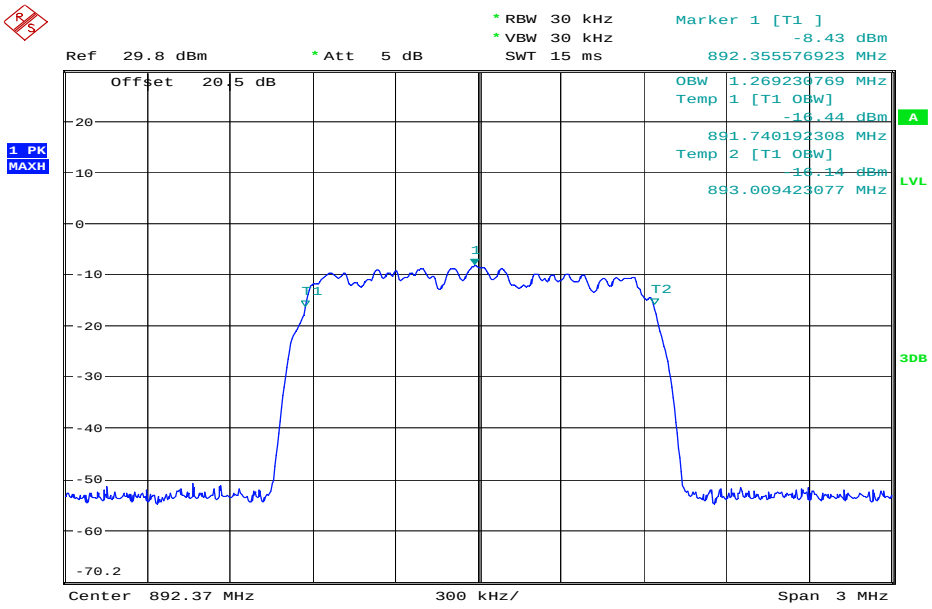



Date: 4.JUN.2009 11:54:39

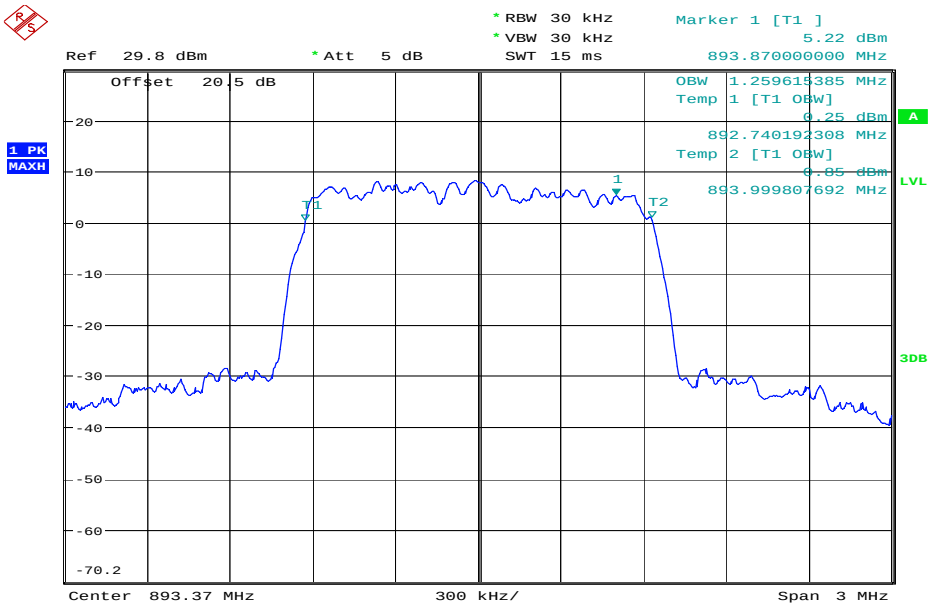



Date: 4.JUN.2009 11:56:58

## Downlink High Channel



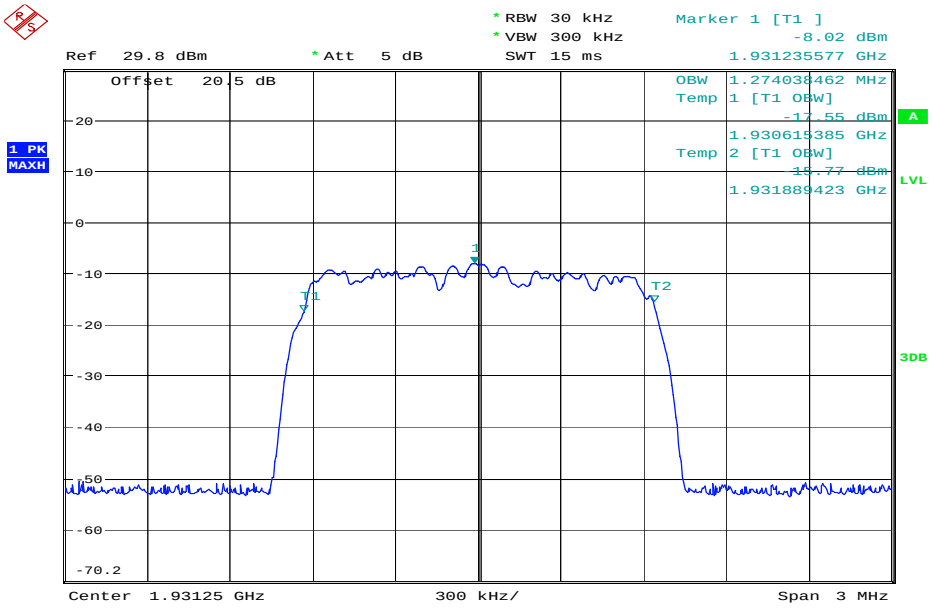

Date: 4.JUN.2009 12:00:55



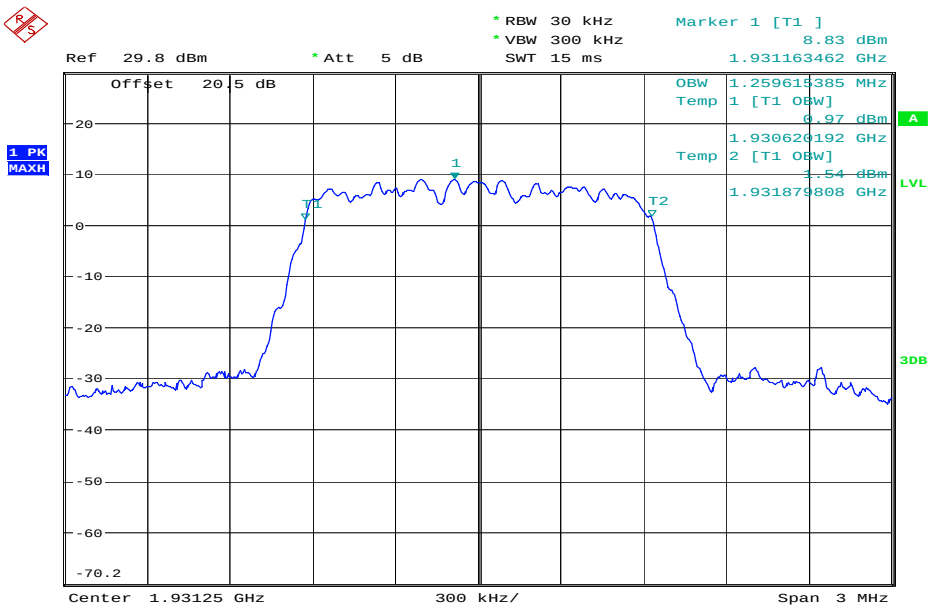

Date: 4.JUN.2009 11:52:22

## 1900 MHz-band (CDMA)

### Downlink Low Channel

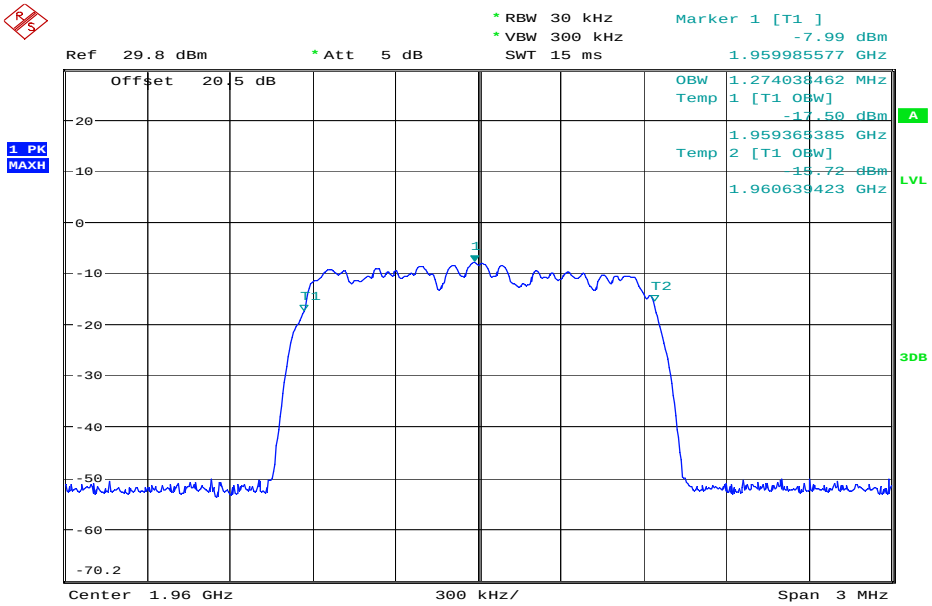



Date: 4.JUN.2009 14:22:57

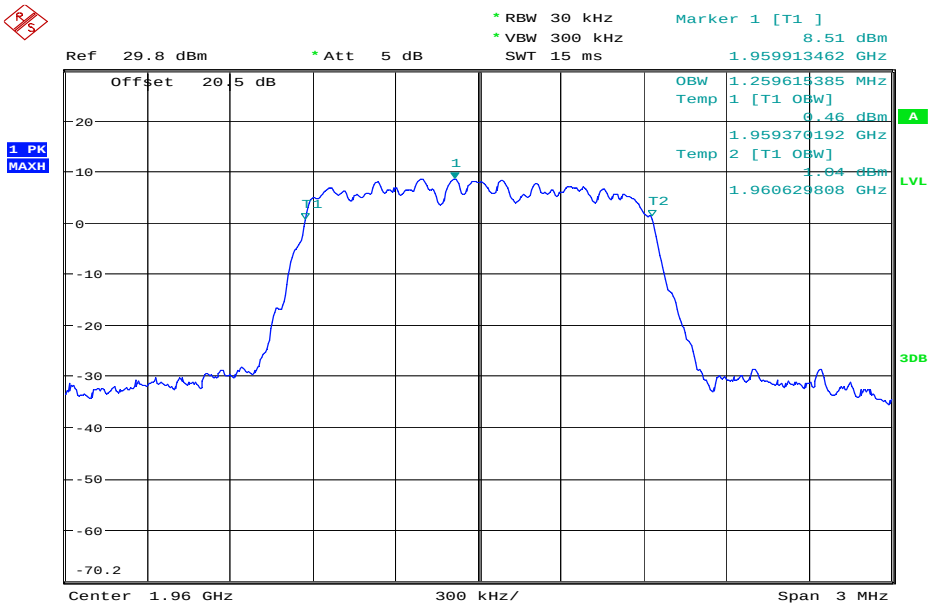



Date: 4.JUN.2009 14:21:42

## Downlink Middle Channel

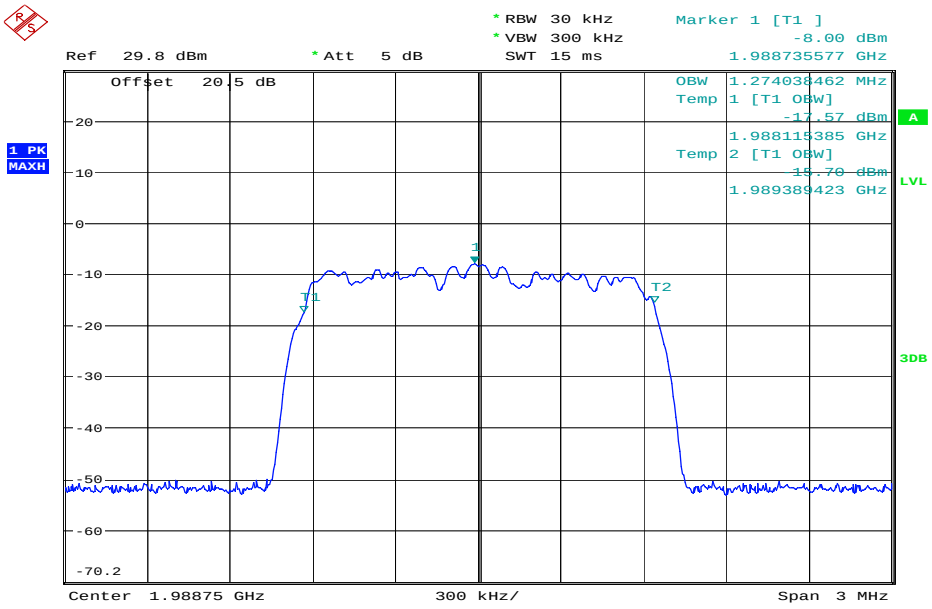



Date: 4.JUN.2009 14:18:00

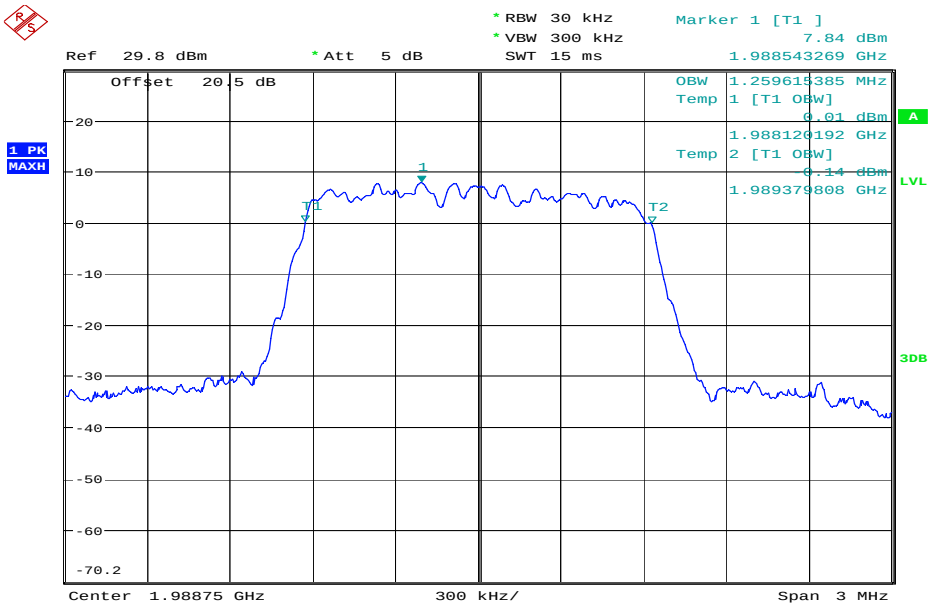



Date: 4.JUN.2009 14:19:17

## Downlink High Channel




Date: 4.JUN.2009 14:13:49




Date: 4.JUN.2009 14:11:44

### 3.1.7 Intermodulation Tests

**Not applicable**

**The system cannot transmit more than one channel simultaneously.**

**Reference**

| | |
|---|---|
| FCC: | FCC § 2.1051, CFR Part §24.238, CFR Part §22.917 |
| IC: | IC RSS-131 §6.3 |

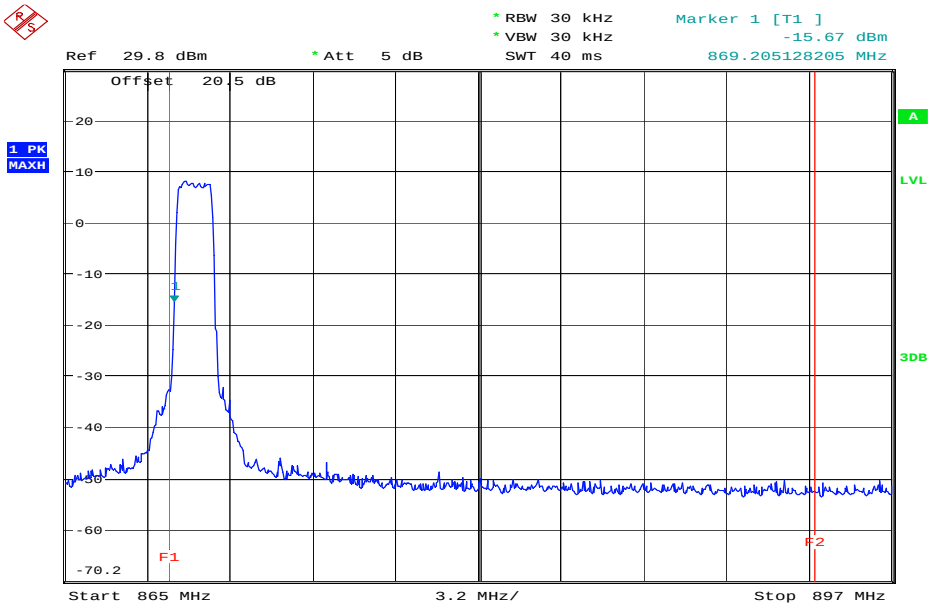
**Method of Measurement:**

Two RF signals set as inputs. The frequencies of both RF signals shall be within the repeater's operating band. The spacing between both RF signals shall be the minimum possible spacing applied in a network. The level of both RF input signals shall be increased, until the maximum rated output power per channel, as declared by the manufacturer, is reached.

### 3.1.8 Out of Band Rejection

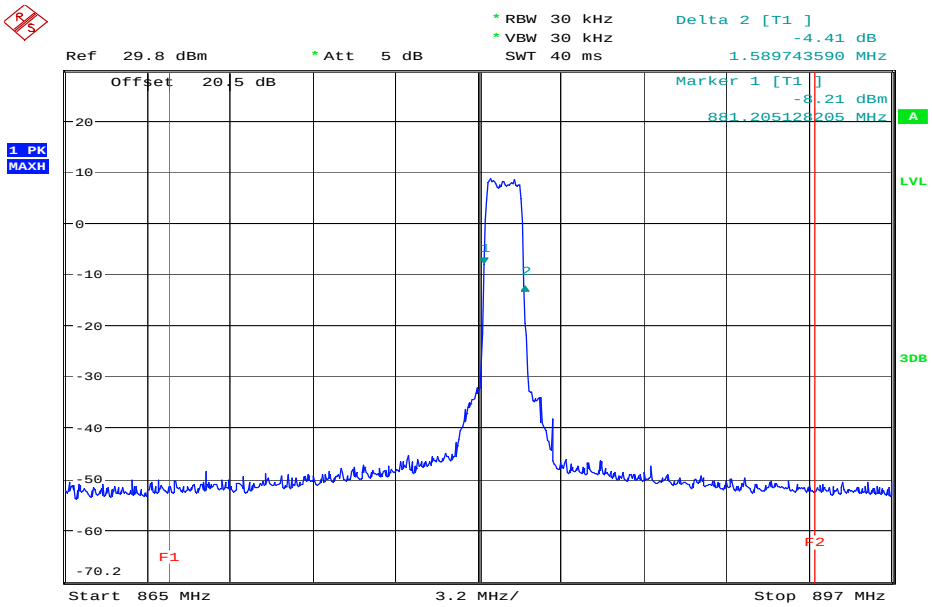
## 850 MHz-band

**Down link Band Pass**
**Low**



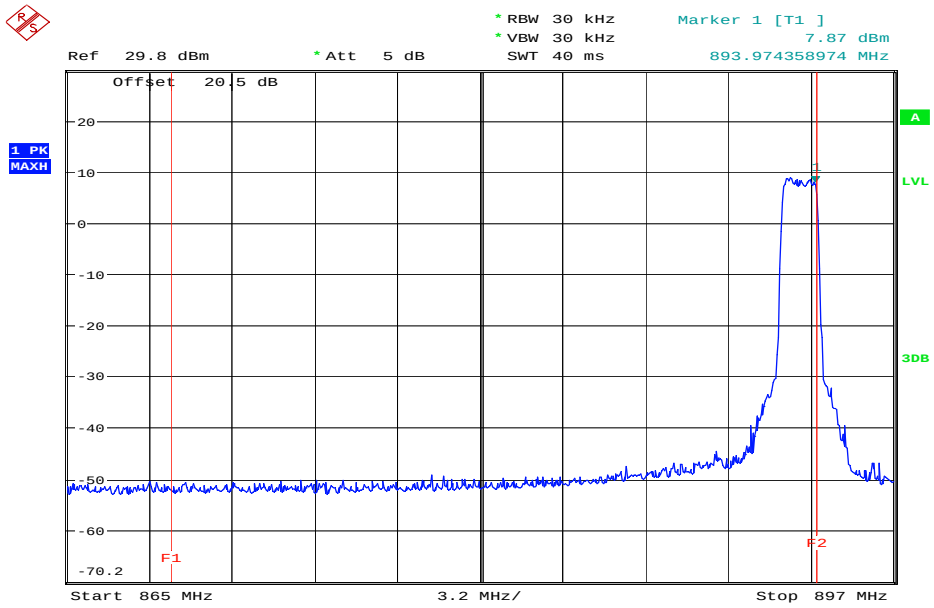

Date: 4.JUN.2009 12:09:39

**Middle**




Date: 4.JUN.2009 12:13:18

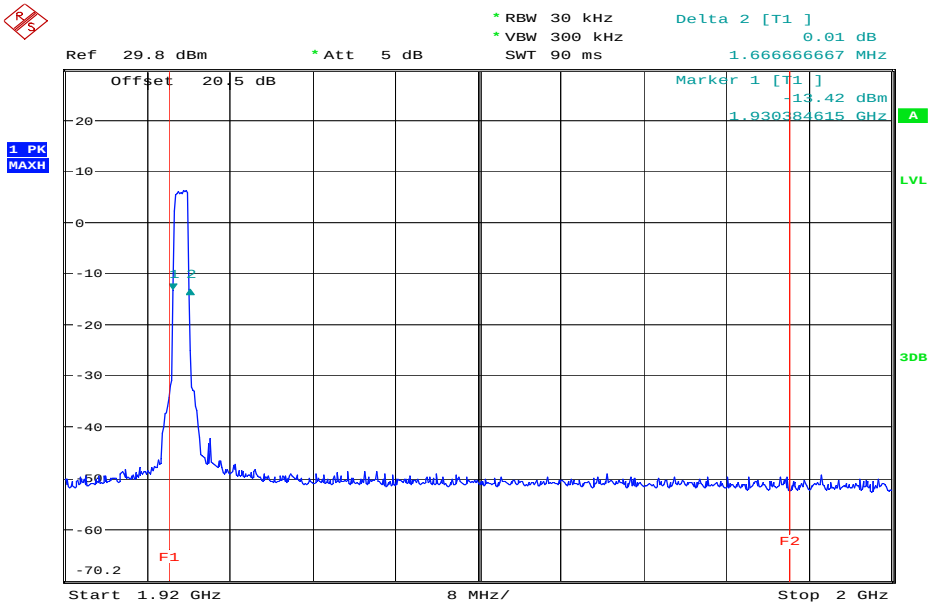
**High**




Date: 4.JUN.2009 12:17:33

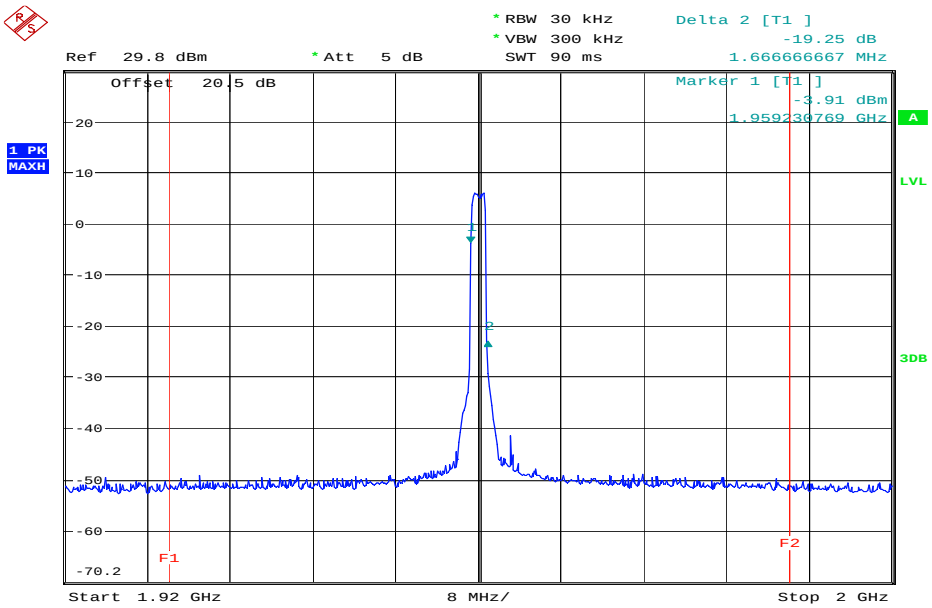
## 1900 MHz-band

### Down link Band Pass
### Low



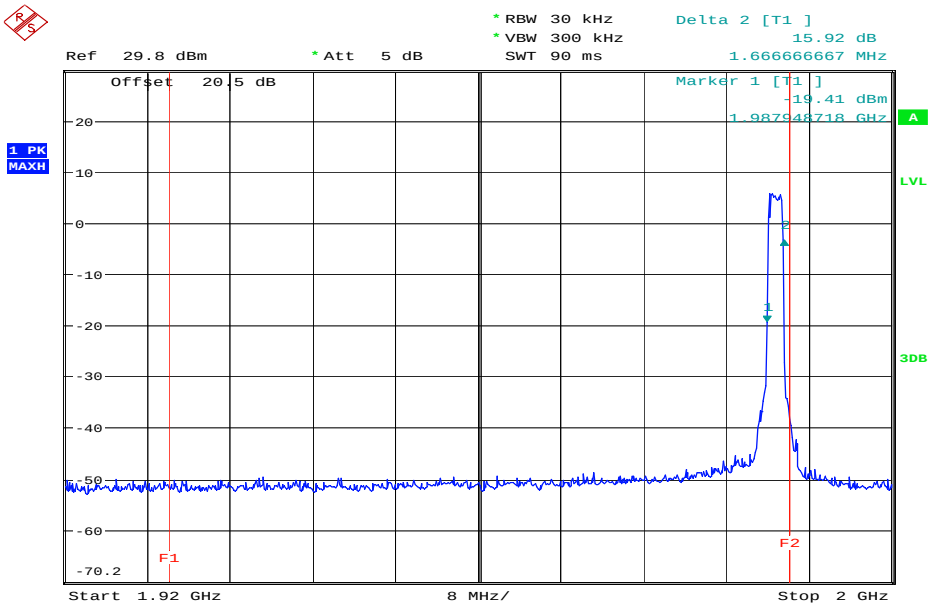

Date: 4.JUN.2009 14:26:33

### Middle




Date: 4.JUN.2009 14:29:26

**High**




Date: 4.JUN.2009 14:32:20

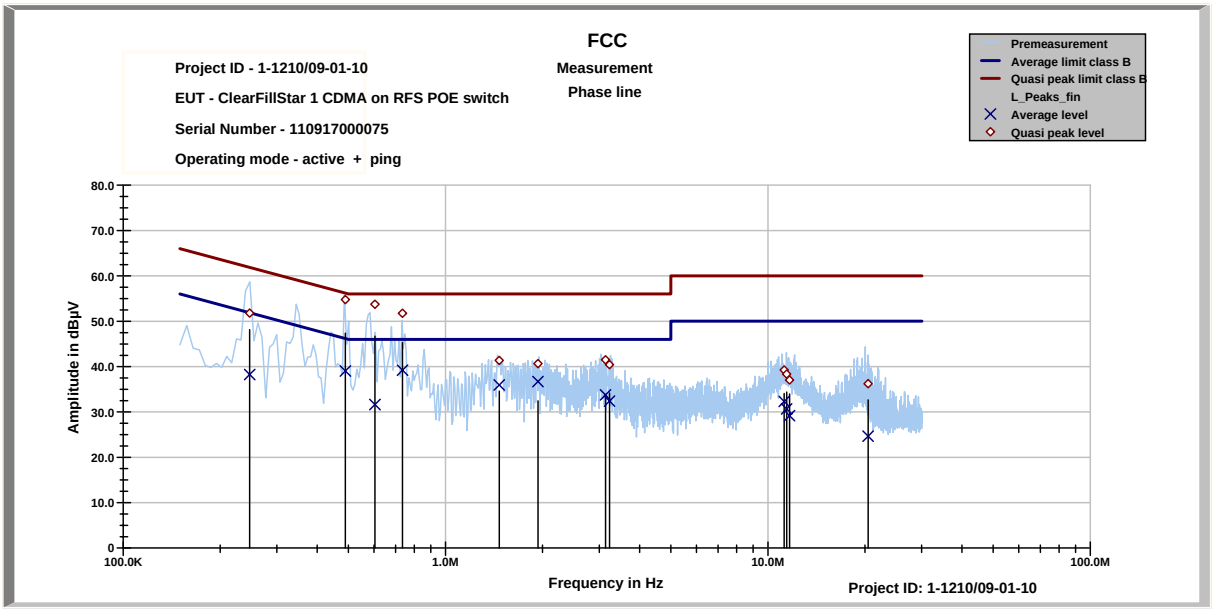
### 3.1.9 Conducted Emissions <30 MHz §15.107/207

**Valid for all bands**

**(measured with 115V AC power)**

**Normal operating mode (downlink in transmit mode)**

Plot 1: CISPR 22

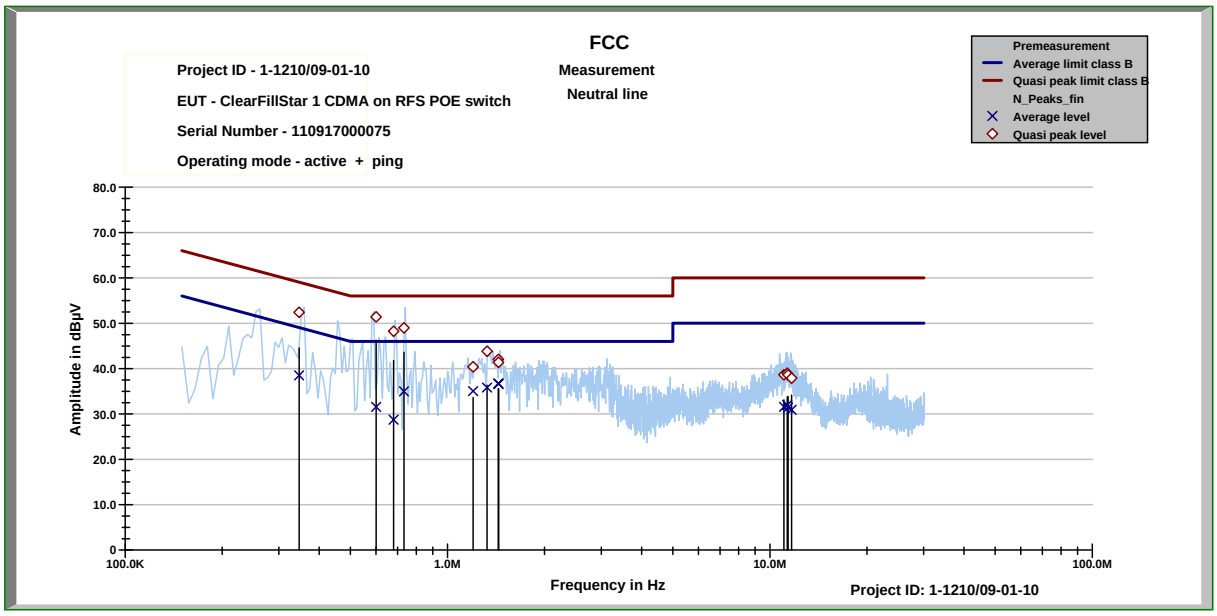



FCC
Phase line tbl

03:21:28 PM, Wednesday, June 03, 2009

| Frequency | Quasi peak level | Margin quasi peak | Average level | Margin average |
|---|---|---|---|---|
| MHz | dBµV | dBµV | dBµV | dBµV |
| 0.24681 | 51.79 | 10.07 | 38.24 | 15.00 |
| 0.48901 | 54.77 | 1.42 | 39.02 | 7.29 |
| 0.60412 | 53.74 | 2.26 | 31.62 | 14.38 |
| 0.73501 | 51.75 | 4.25 | 39.19 | 6.81 |
| 1.4664 | 41.33 | 14.67 | 35.93 | 10.07 |
| 1.9345 | 40.64 | 15.36 | 36.69 | 9.31 |
| 3.1346 | 41.48 | 14.52 | 33.75 | 12.25 |
| 3.2254 | 40.41 | 15.59 | 32.37 | 13.63 |
| 11.2256 | 39.22 | 20.78 | 32.29 | 17.71 |
| 11.4252 | 38.33 | 21.67 | 30.66 | 19.34 |
| 11.6582 | 37.05 | 22.95 | 29.15 | 20.85 |
| 20.442 | 36.22 | 23.78 | 24.65 | 25.35 |

EUT - ClearFillStar 1 CDMA on RFS POE switch
Serial Number - 110917000075
Operating mode - active + ping




FCC
Neutral line tbl

03:21:28 PM, Wednesday, June 03, 2009

| Frequency | Quasi peak level | Margin quasi peak | Average level | Margin average |
|---|---|---|---|---|
| MHz | dBµV | dBµV | dBµV | dBµV |
| 0.34638 | 52.40 | 6.65 | 38.51 | 11.88 |
| 0.60031 | 51.39 | 4.61 | 31.54 | 14.46 |
| 0.68026 | 48.24 | 7.76 | 28.74 | 17.26 |
| 0.73215 | 48.97 | 7.03 | 34.99 | 11.01 |
| 1.20016 | 40.37 | 15.63 | 35.02 | 10.98 |
| 1.3264 | 43.82 | 12.18 | 35.80 | 10.20 |
| 1.437 | 42.01 | 13.99 | 36.74 | 9.26 |
| 1.4388 | 41.37 | 14.63 | 36.60 | 9.40 |
| 11.0497 | 38.64 | 21.36 | 31.53 | 18.47 |
| 11.3086 | 38.97 | 21.03 | 31.98 | 18.02 |
| 11.3735 | 38.60 | 21.40 | 31.40 | 18.60 |
| 11.665 | 37.90 | 22.10 | 30.91 | 19.09 |

EUT - ClearFillStar 1 CDMA on RFS POE switch
Serial Number - 110917000075
Operating mode - active + ping

We measured L1 and N floating and grounded, max value was hold.

Limits :

| | |
|---|---|
| Under normal test conditions only | 0.15 to 0.5 MHz, 66-56 dbµV QP, 56-46 dBµV AV<br>0.5 to 5.0 MHz, 56 dBµV QP, 46 dBµV AV<br>5.0 to 30 MHz, 60 dBµV QP, 50 dBµV AV |

# 4 Test equipment and ancillaries used for tests

To simplify the identification on each page of the test equipment used, on each page of the test report, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory, below.

All reported calibration intervals are calibrations according to the EN/ISO/IEC 17025 standard. These calibrations were performed from an accredited external calibration laboratory.
Additional to these calibrations the laboratory performed comparison measurements with other calibrated systems and performed a weekly chamber inspection.
All used devices are connected with a 10 MHz external reference.
According to the manufacturers' instruction is it possible to establish a calibration interval for the FSP unit of 24 month, if the device has an external 10 MHz reference.

***Anechoic chamber A:***

| No. | Instrument/Ancillary | Manufacturer | Type | Serial-No. | Internal identification |
|---|---|---|---|---|---|
| | **Radiated emission in chamber A** | | | | |
| A-1 | Spectrum Analyzer | Rohde & Schwarz | ESU26 | 100037 | 300003555 |
| A-2 | Signal Generator | Rohde & Schwarz | SMR20B11 | 1104.0002.20 | 300003593 |
| A-3 | RF System Panel | Rohde & Schwarz | TS RSP | --- | 300003556 |
| A-4 | Relais Matrix | Rohde & Schwarz | PSN | 860673/009 | 300001385 |
| A-5 | Horn Antenna | EMCO | 3115 | 9709-5290 | 300000212 |
| A-6 | Bilog.-Log. Antenna | Schwarzbeck | VULB 9163 | *02/00* | 300003696 |
| A-7 | Notch Filter GSM 900 | *Wainwright* | WRCD 901.9/903.1EE | *9* | --- |
| A-8 | Notch Filter GSM 1800 | *Wainwright* | WRCD 1747/1748-5EE | *1* | --- |
| A-9 | Notch Filter GSM 1900 | *Wainwright* | *WRCB 1879.5/1880.5EE* | *9* | --- |
| A-10 | Notch Filter GSM 850 | *Wainwright* | *WRCT 837-0.2/50-8EE* | *1* | --- |
| A-11 | Notch Filter UMTS | *Wainwright* | *WRCD 1800/2000-0.2/40-5EEK* | *2* | --- |
| A-12 | Notch Filter ISM 2400 | *Wainwright* | *WRCG 2400/ 2483-2375/ 2505-50/10SS* | *26* | --- |
| A-13 | *High Pass Filter 1.1 GHz* | *Wainwright* | *WHK 1.1/15G-10SS* | --- | --- |
| A-14 | *High Pass Filter 2.6 GHz* | *Wainwright* | *WHKX 2.6/18G-12SS* | --- | --- |
| A-15 | *High Pass Filter 7 GHz* | *Wainwright* | *WHKX 7.0/18G-8SS* | --- | --- |
| A-14 | *Amplifier* | *Miteq* | *AFS4-00201800-15-10P-6* | *US42-0050 2650-28-5A* | 300003204 |
| A-16 | *Controller* | *Inn co* | *CO 2000* | *2020507* | --- |
| A-17 | *DC Power Supply* | *Hewlet Packard* | *HP6632A* | --- | 300000924 |
| A-18 | *Computer* | *F+W* | --- | --- | 300003303 |

***Signalling Units:***

| No | Equipment/Type | Manuf. | Serial Nr. | Inv. No. Cetecom | Last Calibration | Frequency (months) | Next Calibration |
|---|---|---|---|---|---|---|---|
| 1 | CBT | R&S | 100313 | 300003516 | 03.09.2008 | 24 | 03.09.2010 |
| 2 | CBT | R&S | 100185 | 300003416 | 27.08.2008 | 24 | 27.08.2010 |
| 3 | CMU-200 | R&S | 103992 | 300003231 | 04.06.2008 | 12 | 04.06.2009 |
| 4 | CMU-200 | R&S | 106240 | 300003321 | 27.08.2008 | 24 | 27.08.2010 |
| 5 | CMU-200 | R&S | 832221/0055 | 300002862 | 20.03.2008 | 24 | 20.03.2010 |

***Climatic Box:***

| No | Equipment/Type | Manuf. | Serial Nr. | Inv. No. Cetecom | Last Calibration | Frequency (months) | Next Calibration |
|---|---|---|---|---|---|---|---|
| 1 | Climatic box VT 4002 | Heraeus Vötsch | 58566046820010 | 300003019 | 11.05.2007 | 24 | 11.05.2009 |
| 2 | Climatic box CTS T-40/50 | CTS | 064023 | 300003540 | 03.01.2007 | 24 | 03.01.2009 |

***SRD Laboratory Room 002:***

| No | Equipment/Type | Manuf. | Serial Nr. | Inv. No. Cetecom | Last Calibration | Frequency (months) | Next Calibration |
|---|---|---|---|---|---|---|---|
| 1 | System Controller PSM 12 | R&S | 835259/007 | 3000002681-00xx | n.a. | | |
| 2 | Memory Extension PSM-K10 | R&S | To 1 | 3000002681 | n.a. | | |
| 3 | Operating Software PSM-B2 | R&S | To 1 | 3000002681 | n.a. | | |
| 4 | 19'' Monitor | | 22759020-ED | 3000002681 | n.a. | | |
| 5 | Mouse | | LZE 0095/6639 | 3000002681 | n.a. | | |
| 6 | Keyboard | | G00013834L461 | 3000002681 | n.a. | | |
| 7 | Spectrum Analyser FSIQ 26 | R&S | 835540/018 | 3000002681-0005 | 10.01.2008 | 24 | 10.01.2010 |
| 8 | Tracking Generator FSIQ-B10 | R&S | 835107/015 | 3000002681 | s.No.7 | | |
| 10 | RF-Generator SMIQ03 (B1 Signal) | R&S | 835541/056 | 3000002681-0002 | 26.08.2008 | 36 | 26.08.2011 |
| 11 | Modulation Coder SMIQ-B20 | R&S | To 10 | 3000002681 | s.No.10 | | |
| 12 | Data Generator SMIQ-B11 | R&S | To 10 | 3000002681 | s.No.10 | | |
| 13 | RF Rear Connection SMIQ-B19 | R&S | To 10 | 3000002681 | s.No.10 | | |
| 14 | Broadband horn antenna (1-18 GHz) | EMCO | 9107-3696 | 300001604 | 16.04.2008 | 24 | 16.04.2010 |
| 15 | Broadband horn antenna (1-18 GHz) | EMCO | 9107-3697 | 300001605 | 21.08.2008 | 24 | 21.08.2010 |
| 16 | Std gain horn antenna (18-26.5 GHz) | Narda | Model no. 638 | 3000000486 | n.a. | | |
| 17 | Std gain horn antenna (18-26.5 GHz) | Narda | Model no. 638 | 3000000487 | n.a. | | |
| 18 | Sleeve dipole antenna Model 3126-880 | ETS-Lindgren | 00040887 | 3000000 | n.a. | | |
| 19 | Fast CPU SM-B50 | R&S | To 10 | 3000002681 | s.No.10 | | |
| 20 | FM Modulator SM-B5 | R&S | 835676/033 | 3000002681 | s.No.10 | | |
| 21 | RF-Generator SMIQ03 (B2 Signal) | R&S | 835541/055 | 3000002681-0001 | 25.08.2008 | 36 | 25.08.2011 |
| 22 | Modulation Coder SMIQ-B20 | R&S | To 16 | 3000002681 | s.No.16 | | |
| 23 | Data Generator SMIQ-B11 | R&S | To 16 | 3000002681 | s.No.16 | | |
| 24 | RF Rear Connection SMIQ-B19 | R&S | To 16 | 3000002681 | s.No.16 | | |
| 25 | Fast CPU SM-B50 | R&S | To 16 | 3000002681 | s.No.16 | | |
| 26 | FM Modulator SM-B5 | R&S | 836061/022 | 3000002681 | s.No.16 | | |
| 27 | RF-Generator SMP03 (B3 Signal) | R&S | 835133/011 | 3000002681-0003 | 26.08.2008 | 36 | 26.08.2011 |
| 28 | Attenuator SMP-B15 | R&S | 835136/014 | 3000002681 | S.No.22 | | |
| 29 | RF Rear Connection SMP-B19 | R&S | 834745/007 | 3000002681 | S.No.22 | | |
| 30 | Power Meter NRVD | R&S | 835430/044 | 3000002681-0004 | 26.08.2008 | 24 | 26.08.2010 |
| 31 | Power Sensor NRVD-Z1 | R&S | 833894/012 | 3000002681-0013 | 26.08.2008 | 24 | 26.08.2010 |
| 32 | Power Sensor NRVD-Z1 | R&S | 833894/011 | 3000002681-0010 | 26.08.2008 | 24 | 26.08.2010 |
| 33 | Rubidium Standard RUB | R&S | | 3000002681-0009 | 27.08.2008 | 24 | 27.08.2010 |
| 34 | Switching and Signal Conditioning Unit SSCU | R&S | 338864/003 | 3000002681-0006 | Verified with path compensation | | |
| 35 | Laser Printer HP Deskjet 2100 | HP | N/A | 3000002681-0011 | n.a. | | |
| 36 | 19'' Rack | R&S | 11138363000004 | 3000002681 | n.a. | | |
| 37 | RF-cable set | R&S | N/A | 3000002681 | n.a. | | |
| 39 | IEEE-cables | R&S | N/A | 3000002681 | n.a. | | |
| 40 | Sampling System FSIQ-B70 | R&S | 835355/009 | 3000002681 | s.No.7 | | |
| 41 | RSP programmable attenuator | R&S | 834500/010 | 3000002681-0007 | 26.08.2008 | 24 | 26.08.2010 |
| 42 | Signalling Unit | R&S | 838312/011 | 3000002681 | n.a. | | |
| 43 | NGPE programmable Power Supply for EUT | R&S | 192.033.41 | 3000002681 | | | |
| 44 | Power Splitter 6005-3 | Inmet Corp. | none | 300002841 | 23.12.2006 | 24 | 23.12.2008 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 45 | SMA Cables SPS-1151-985-SPS | Insulated Wire | different | different | n.a. | | |
| 46 | CBT32 with EDR Signaling Unit | R&S | | | | | |
| 47 | Coupling unit | Narda | N/A | -- | n.a. | | |
| 48 | 2xSwitch Matrix PSU | R&S | 872584/021 | 300001329 | n.a. | | |
| 49 | RF-cable set | R&S | N/A | different | n.a. | | |
| 50 | IEEE-cables | R&S | N/A | -- | n.a. | | |

Note: 3000002681-00xx inventoried as a system

***Anechoic chamber F:***

| No | Equipment/Type | Manuf. | Serial Nr. | Inv. No. Cetecom | Last Calibration | Frequency (months) | Next Calibration |
|---|---|---|---|---|---|---|---|
| 1 | Control Computer | F+W | FW0502032 | 300003303 | -/- | -/- | -/- |
| 2 | Trilog Antenna VULB 9163 | Schwarzbeck | 295 | 300003787 | 01.04.2008 | 24 | 01.04.2010 |
| 3 | Amplifier - 0518C-138 | Veritech Micro-wave Inc. | -/- | -/- | -/- | -/- | -/- |
| 4 | Switch - 3488A | HP | | 300000368 | -/- | -/- | -/- |
| 5 | EMI Test receiver - ESCI | R&S | 100083 | 300003312 | 31.01.2007 | 24 | 31.01.2009 |
| 6 | Turntable Controller - 1061 3M | EMCO | 1218 | 300000661 | -/- | -/- | -/- |
| 7 | Tower Controller 1051 Controller | EMCO | 1262 | 300000625 | -/- | -/- | -/- |
| 8 | Tower - 1051 | EMCO | 1262 | 300000625 | -/- | -/- | -/- |
| 10 | Ultra Notch-Filter Rejected band Ch. 62 | WRCD | 9 | -/- | -/- | -/- | -/- |

# 5 Photographs of Test Set-up

Photo 1: Radiated Emissions

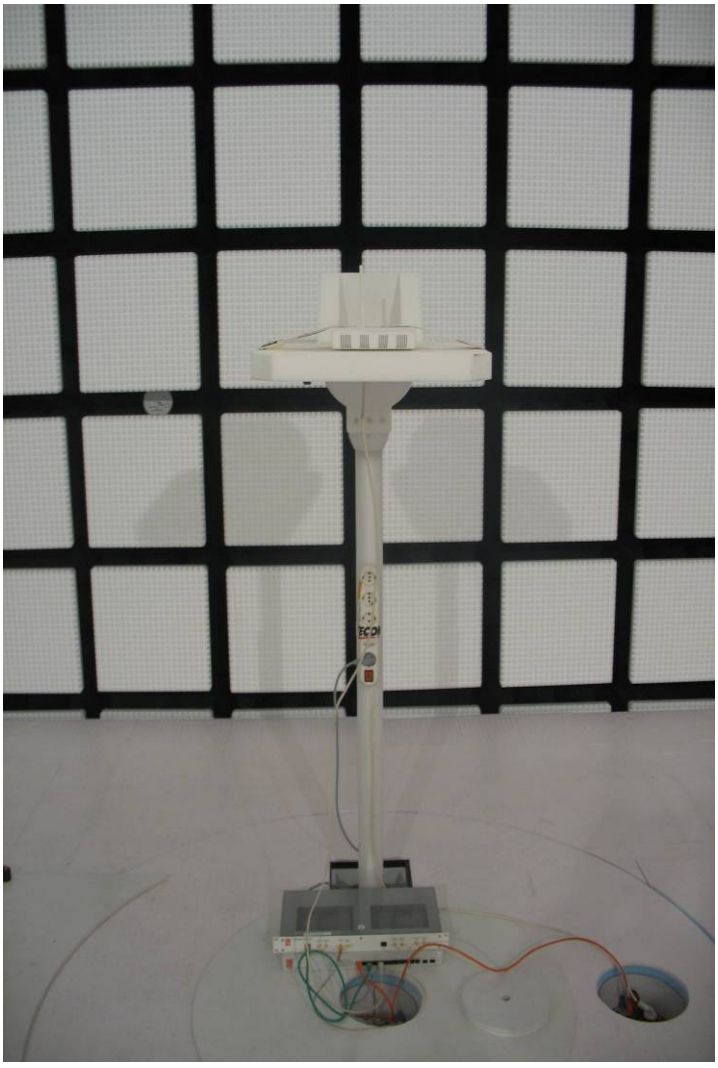


Photo 2: Radiated Emissions

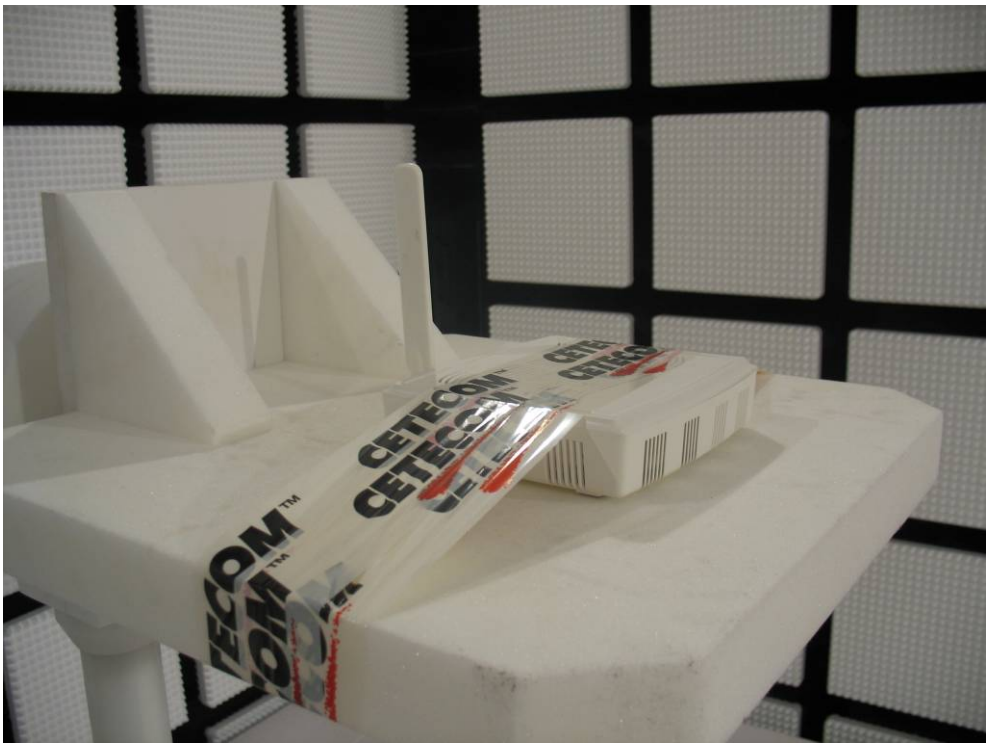



Photo 3: Radiated Emissions

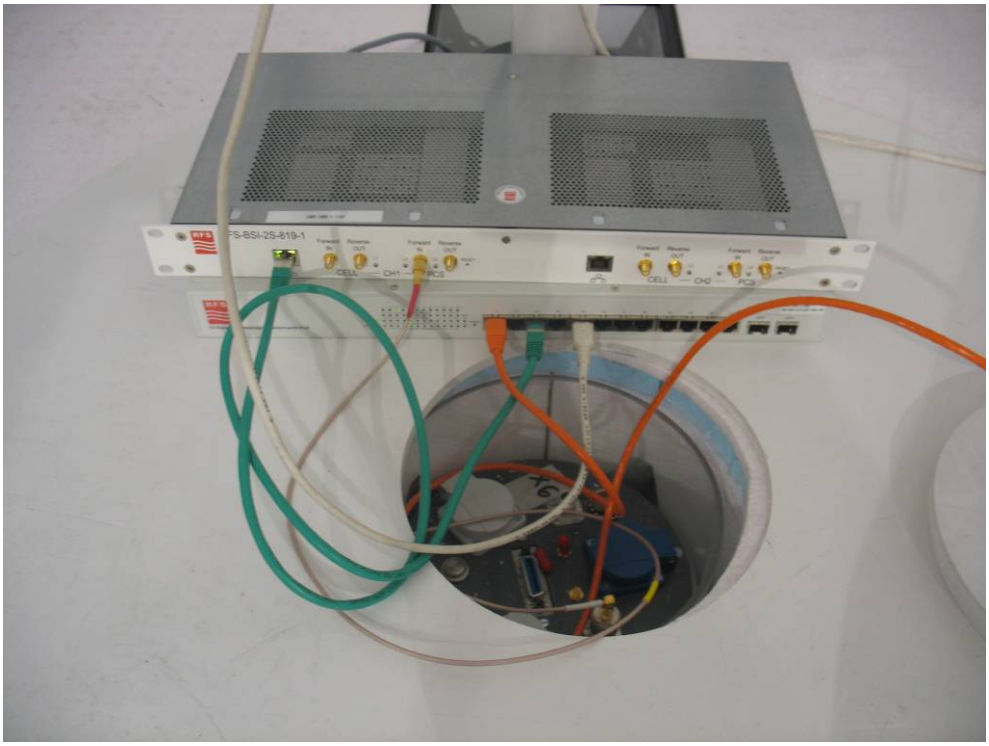
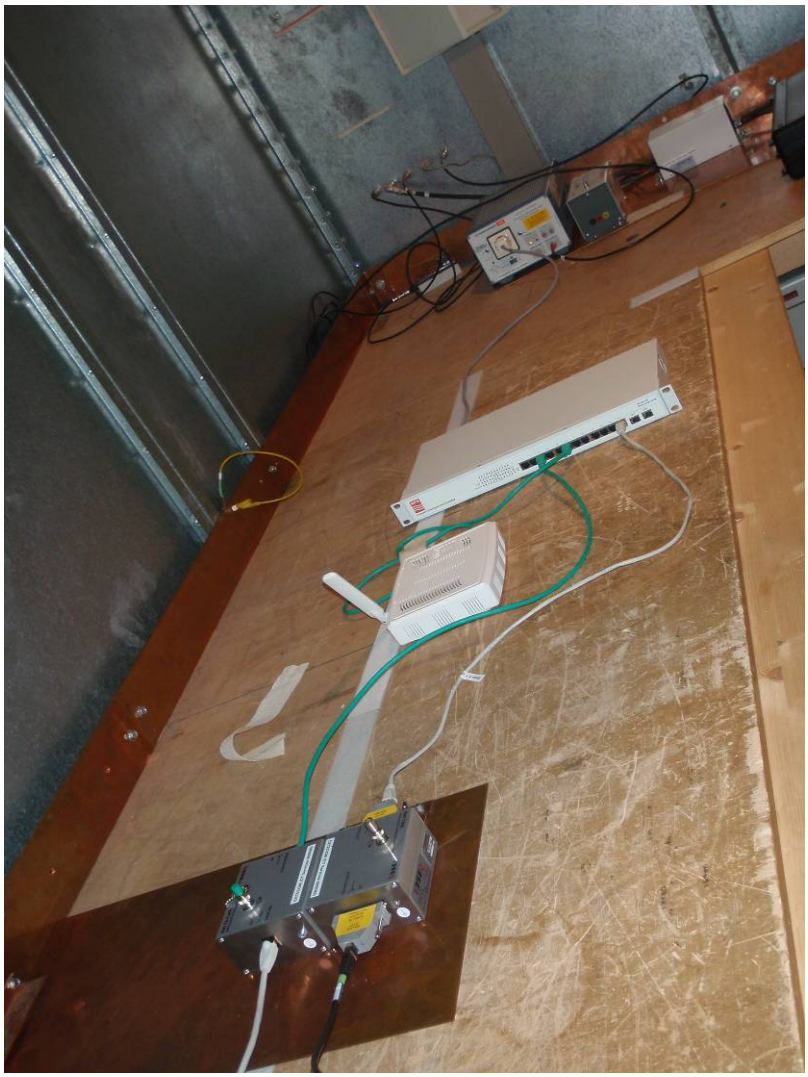


Photo 4: Radiated Emissions

Photo 5: Radiated Emissions

Photo 6: Conducted Emissions



# 6 Photographs of EUT

## 6.1 External Photos

Photo 1:


Photo 2:

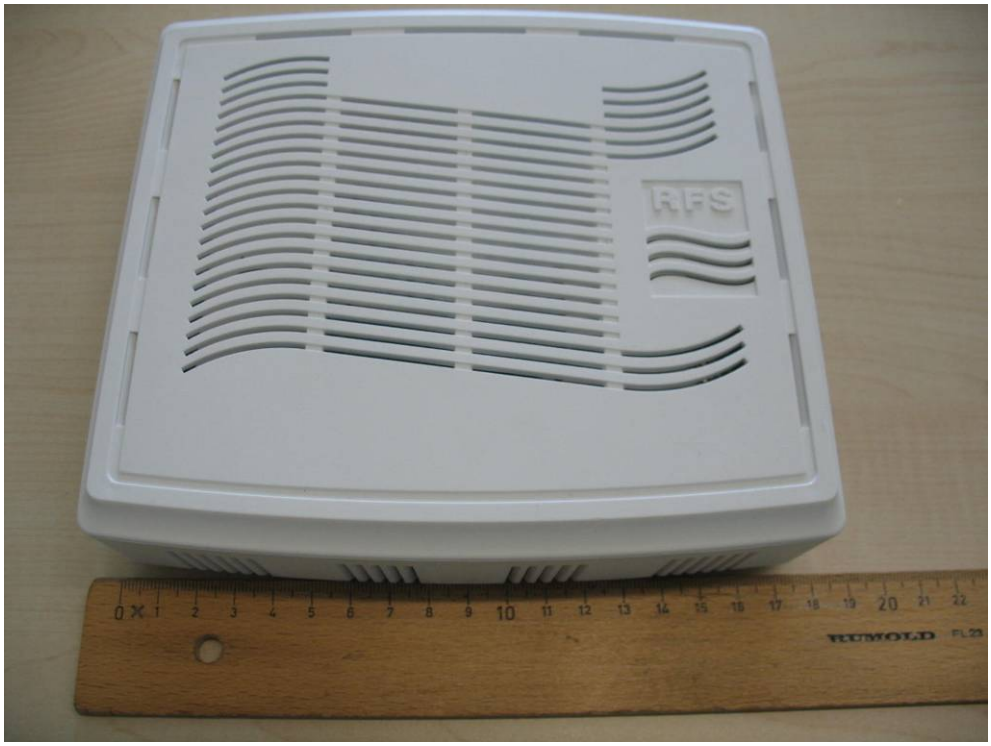


Photo 3:

Photo 4:

Photo 5:

Photo 6:

Photo 7:

## 6.2 Internal Photos

Photo 1:

Photo 2:

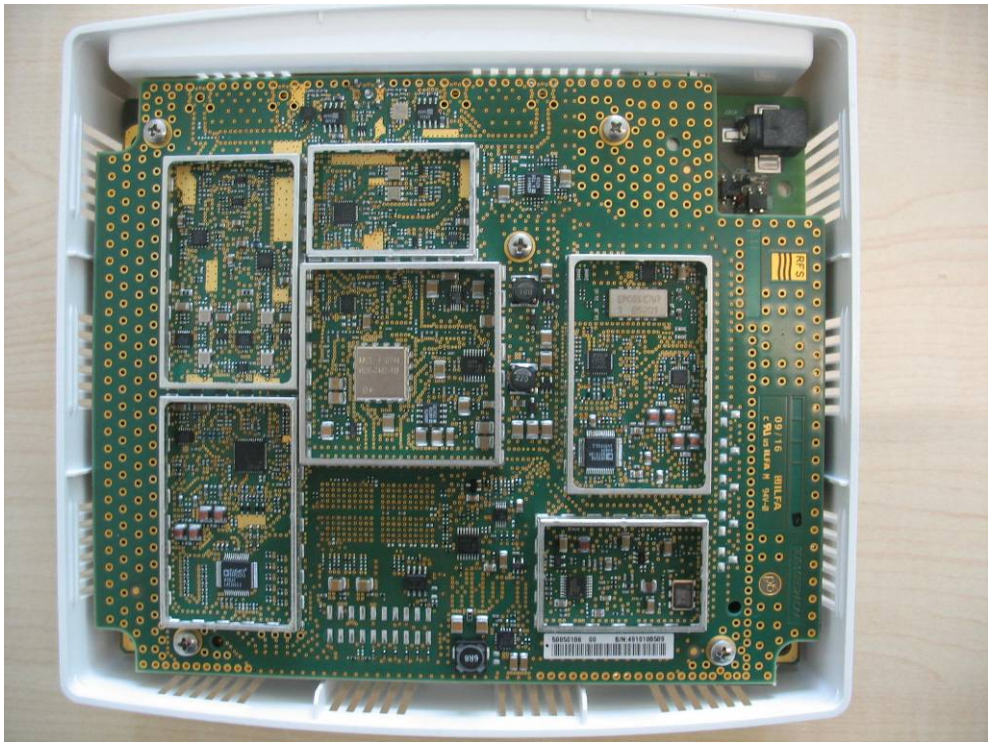


Photo 3:

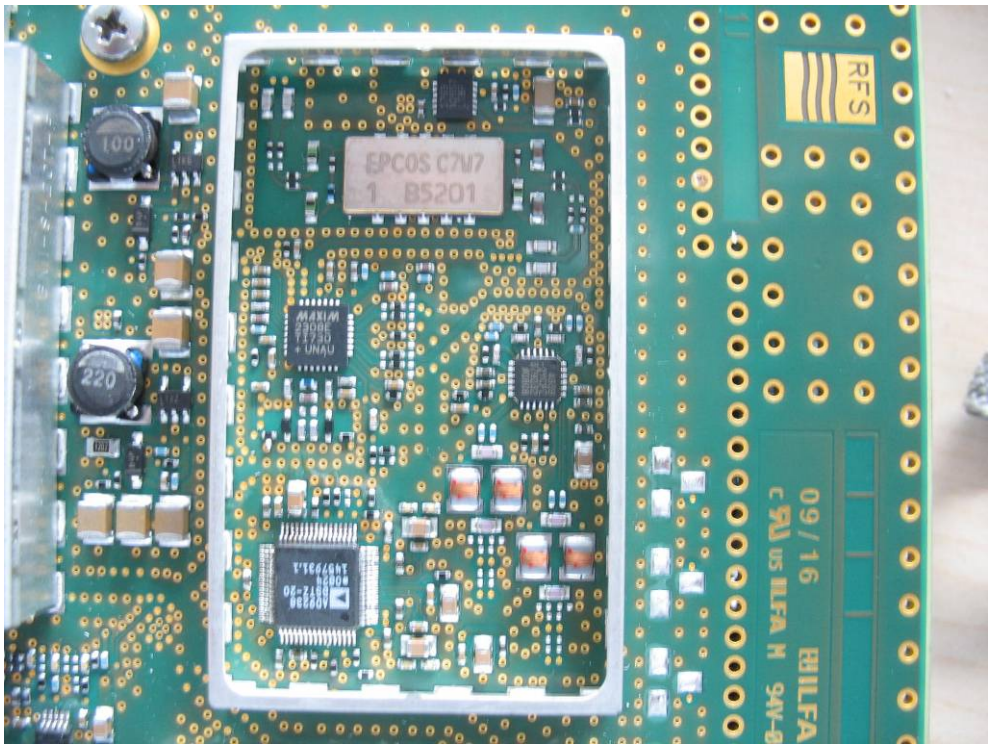



Photo 4:

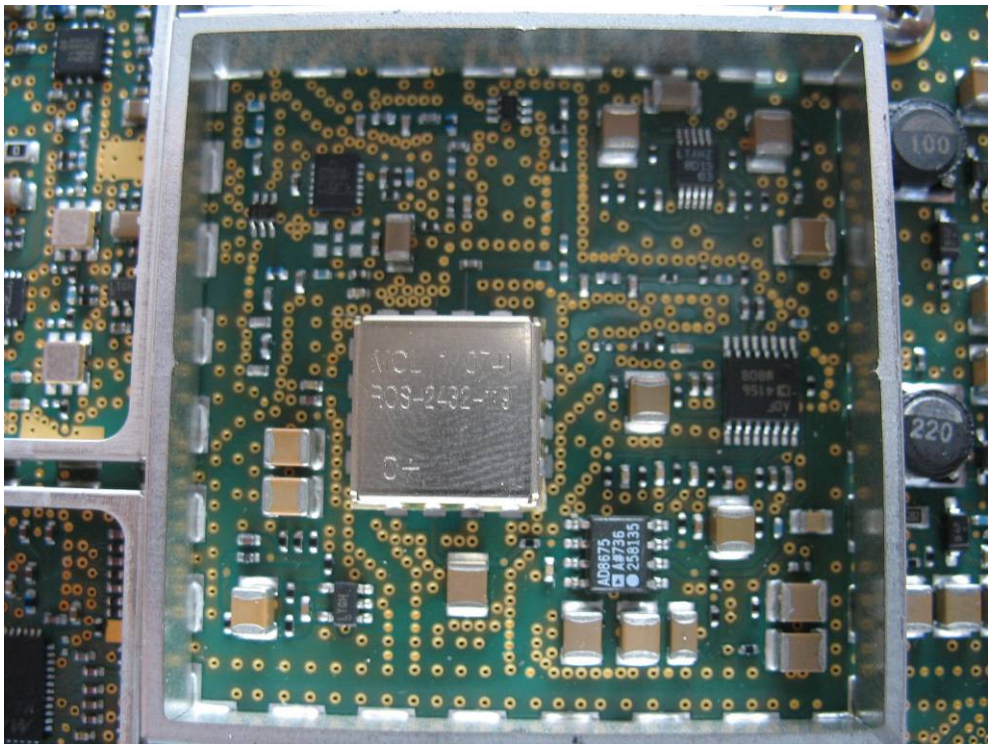


Photo 5:

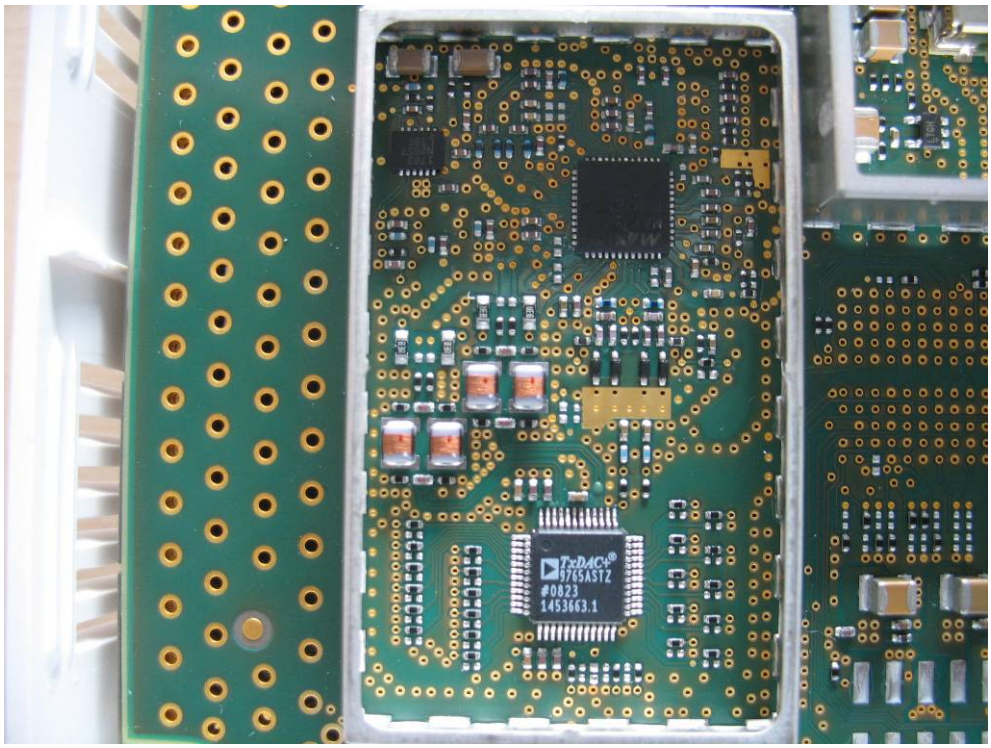



Photo 6:

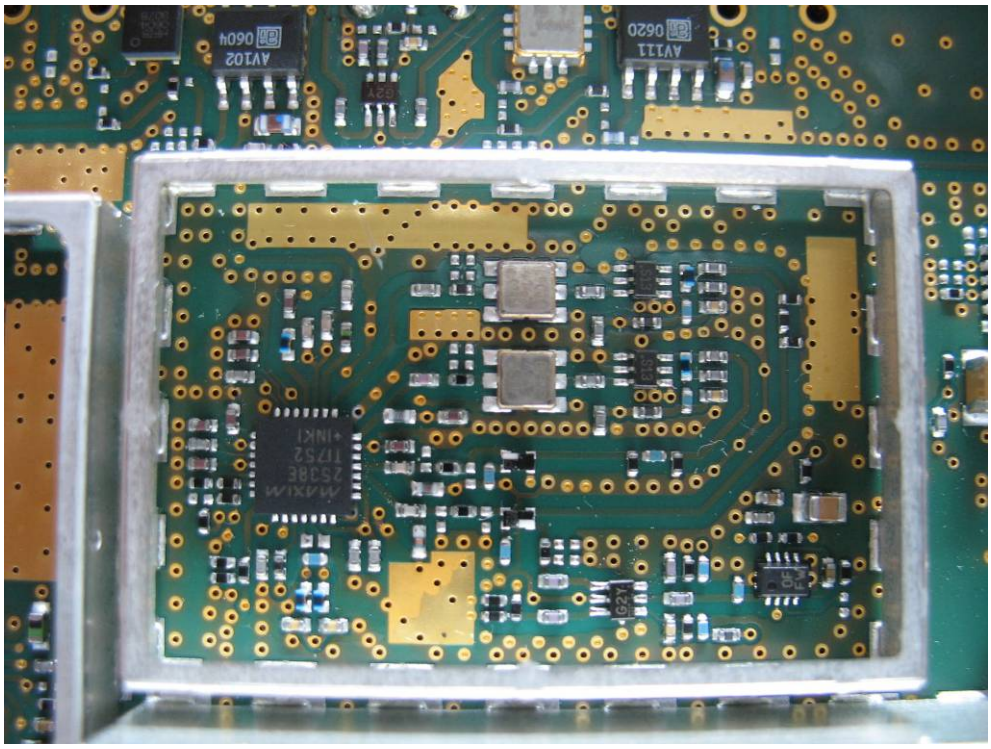


Photo 7:

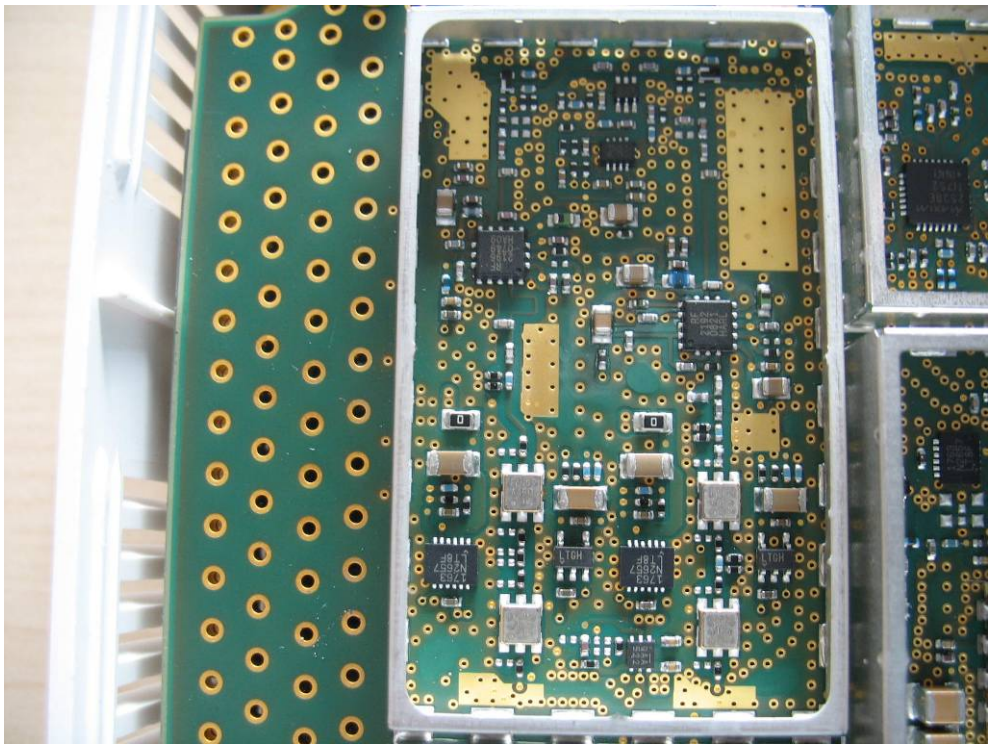


Photo 8:

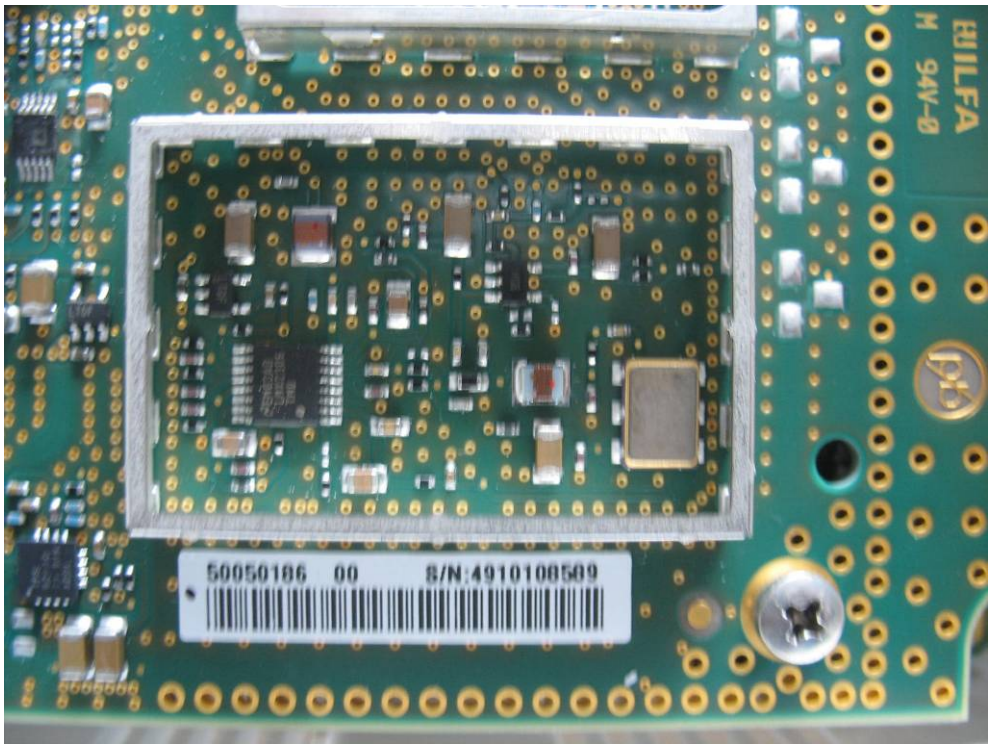


Photo 9:

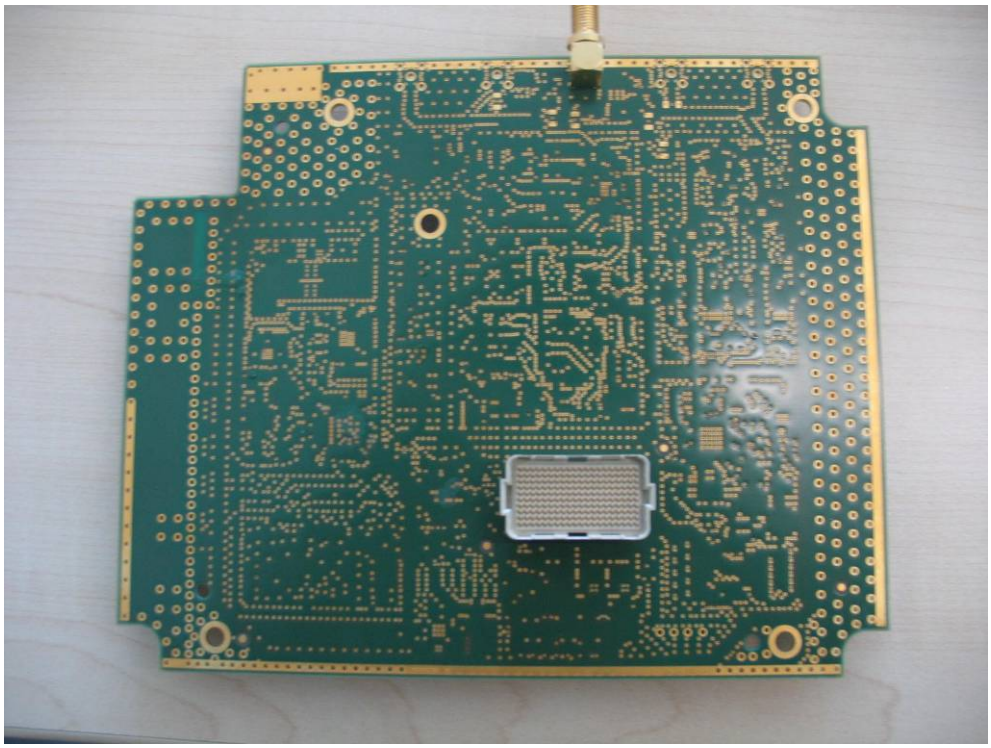


Photo 10:

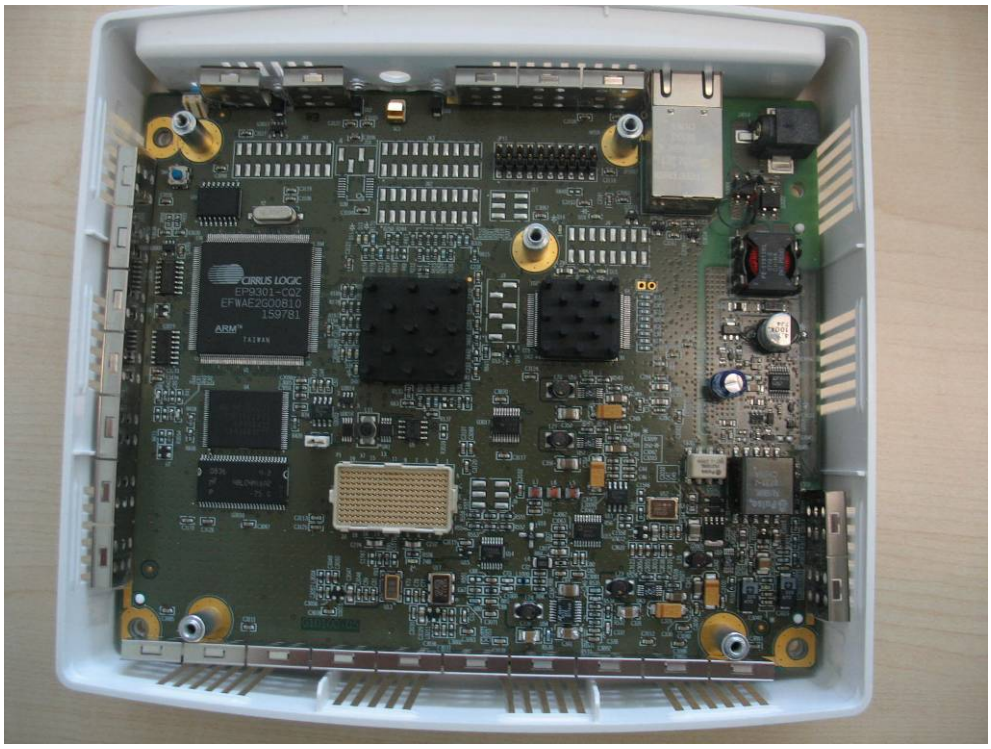


Photo 11: