# TEST REPORT

| | | | |
|---|---|---|---|
| **Report No.:** | **EM201100418-10** | **Application No.:** | **ZJ00010987** |
| **Client:** | Mobile Devices Ingenierie | | |
| **Address:** | 100 avenue de Stalingrad VILLEJUIF-France | | |
| **Sample Description:** | MUNIC | | |
| **Model:** | D4M 35MD02 | | |
| **Test Location:** | **EMC Laboratory of Guangzhou GRG Metrology and Test Technology Co., Ltd** | | |
| **Test Specification:** | **FCC Part 22;FCC PART 24** | | |
| **Issue Date:** | 2011-12-09 | | |
| **Test Result:** | *Pass.* | | |

| **Tested By:** | **Reviewed By:** | **Approved By:** |
|---|---|---|
| Shi Gang/ Test Engineer | Angel Liu / Technical Support | Gavin Wu / Manager |
| Shi Gang | Angel Liu | Gavin Wu |
| Date:2011-12-09 | Date:2011-12-09 | Date:2011-12-09 |

**Other Aspects:**

**Abbreviations:** *ok / P = passed; fail / F = failed; n.a. / N = not applicable*

# DIRECTIONS OF TEST

1. This station carries out test task according to the national regulation of verifications which can be traced to National Primary Standards and BIPM.

2. The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

3. If there is any objection concerning the test, the client should inform the laboratory within 15 days from the date of receiving the test report.

# Table of Contents

# 1. TEST RESULT SUMMARY

| FCC Part 22；FCC Part 24 | | | |
|---|---|---|---|
| **Standard** | **Item** | **Limit / Severity** | **Result** |
| FCC Part 22,<br>FCC Part 24 | RF Exposure3 | §1.1037, §2.109 | N/A |
| | RF Output Power | §2.1046;<br>§ 22.913 (a)<br>§ 24.232 (c) | PASS |
| | 99% & -26 dB Occupied Bandwidth | § 2.1049<br>§ 22.905<br>§ 22.917<br>§ 24.238 | PASS |
| | Spurious Emissions at Antenna Terminal | § 2.1051,<br>§ 22.917 (a)<br>§ 24.238 (a) | PASS |
| | Field Strength of Spurious Radiation | § 2.1053<br>§ 22.917 (a)<br>§ 24.238 (a) | PASS |
| | Out of band emission, Band Edge | § 22.917 (a)<br>§ 24.238 (a) | PASS |
| | Frequency stability vs. temperature<br>Frequency stability vs. voltage | § 2.1055<br>§ 22.355<br>§ 24.235 | PASS |

**Note:** The EUT only has GPRS function; these tests were not applicable for EUT.

# 2. GENERAL DESCRIPTION OF EUT

## 2.1 APPLICANT

Name: Mobile Devices Ingenierie

Address: 100 avenue de Stalingrad VILLEJUIF-France

## 2.2 MANUFACTURER

Name: Mobile Devices Ingenierie

Address: 100 avenue de Stalingrad VILLEJUIF-France

## 2.3 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment: MUNIC

Model No.: D4M 35MD02

Adding Model /

Trade Name:

Power Supply: DC 5V,2000mA MAX,7.5W

Frequency Range: Bluetooth: 2402MHz~2480MHz
GPRS: TX:824.2MHz ~ 848.8MHz;RX: 869.2MHz ~ 893.8MHz
TX:1850.2MHz ~ 1909.8MHz;RX: 1930.2MHz ~ 1989.8MHz
FM Transmitter: 88.1-107.9MHz
GPS: 1575.42MHz

Type of emission: FHSS;GPRS;FM

Note: The Bluetooth part test refer to report: EM201100418-8
The FM part test refer to report: EM201100418-9

## 2.4 LOCAL SUPPORTIVE INSTRUMENTS

| Cable Description | Length (M) | From/Port | To |
|---|---|---|---|
| DC Cable 1 | 1.5 | DC Power supply | EUT |
| DC Cable 2 | 1.4 | Power source | DC Power supply |
| Serial Cable | 1.2 | PC | EUT |

| Name of Equipment | Manufacturer | Model | Serial Number |
|---|---|---|---|
| PC | Lenovo | E46L | EB22867264 |

# 3. LABORATORY AND ACCREDITATIONS

## 3.1 LABORATORY

The tests and measurements refer to this report were performed by EMC Laboratory of Guangzhou GRG Metrology and Test Technology CO., LTD.

Add. : 163 Pingyun Rd, West of Huangpu Ave, Guangzhou, 510656, P. R. China

Telephone: +86-20-38699959, 38699960, 38699961

Fax : +86-20-38695185

## 3.2 ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

| | |
|---|---|
| **USA** | FCC Listed Lab (No. 688188) |
| **China** | CNAS （No.L0446） |
| **China** | DILAC (No.DL175) |
| **Canada** | Registration No.:8355A-1 |

## 3.3 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| **Measurement** | | **Frequency** | **Uncertainty** |
|---|---|---|---|
| Radiated Emission | Horizontal | 30MHz～1000MHz | 4.2dB |
| | | 1GHz～12.75GHz | 4.2dB |
| | Vertical | 30MHz～1000MHz | 4.4dB |
| | | 1GHz～12.75GHz | 4.4dB |

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 3.4 LIST OF USED TEST EQUIPMENT AT GRGT

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|---|---|---|---|---|
| **RF OUTPUT POWER** | | | | |
| Biconical Log-periodic Antenna | ETS.LINDGREN | 3142C | 00075971 | 2012-07-31 |
| Signal Generator | R&S | SML03 | 103002 | 2012-09-02 |
| Receiver | R&S | ESU40 | 100106 | 2012-09-26 |
| Biconical antenna | ELECTRO-METRICS | BIA-30S | 166 | 2012-10-14 |
| log-periodical antenna | ELECTRO-METRICS | LPA-30 | 383 | 2012-07-30 |
| Horn antenna | ETS.LINDGREN | 3117 | 00075824 | 2012-08-20 |
| Horn antenna | SCHWARZBECK | BBHA9120D | D752 | 2013-10-14 |
| 8960 | Agilent | E5115C | MY48360795 | 2012-5-25 |
| Decentest | ShijiDeceng | DC7120EMB | DC5DC76614269 | 2012-10-24 |
| **OCCUPIED BANDWIDTH** | | | | |
| 8960 | Agilent | E5115C | MY48360795 | 2012-5-25 |
| Receiver | R&S | ESU40 | 100106 | 2012-09-26 |
| **SPURIOUS EMISSIONS AT ANTENNA TERMINALS** | | | | |
| 8960 | Agilent | E5115C | MY48360795 | 2012-5-25 |
| Receiver | R&S | ESU40 | 100106 | 2012-09-26 |
| **CONDUCTED SPURIOUS EMISSIONS – MS ALLOCATED A CHANNEL** | | | | |
| Receiver | R&S | ESU40 | 100106 | 2012-9-26 |
| 8960 | Agilent | E5115C | MY48360795 | 2012-5-25 |
| Decentest | ShijiDeceng | DC7120EMB | DC5DC76614269 | 2012-10-24 |
| **SPURIOUS RADIATED EMISSIONS** | | | | |
| Biconical Log-periodic Antenna | ETS.LINDGREN | 3142C | 00075971 | 2012-07-31 |
| Signal Generator | R&S | SML03 | 103002 | 2012-09-02 |
| Receiver | R&S | ESU40 | 100106 | 2012-09-26 |
| Biconical antenna | ELECTRO-METRICS | BIA-30S | 166 | 2012-10-14 |
| log-periodical antenna | ELECTRO-METRICS | LPA-30 | 383 | 2012-07-30 |
| Horn antenna | ETS.LINDGREN | 3117 | 00075824 | 2012-08-20 |
| Horn antenna | SCHWARZBECK | BBHA9120D | D752 | 2013-10-14 |
| Constant temperature&mimidity chamber | CEPREI | CEEC-MSJ-60BE | 11015 | 2012-05-15 |

| | | | | |
|---|---|---|---|---|
| DC power supply | HuaiAn | B32-10R | 437041 | 2012-07-12 |
| 8960 | Agilent | E5115C | MY48360795 | 2012-5-25 |
| Decentest | ShijiDeceng | DC7120EMB | DC5DC76614269 | 2012-10-24 |
| **BAND EDGES** | | | | |
| 8960 | Agilent | E5115C | MY48360795 | 2012-5-25 |
| Receiver | R&S | ESU40 | 100106 | 2012-09-26 |
| **FREQUENCY STABILITY** | | | | |
| 8960 | Agilent | E5115C | MY48360795 | 2012-5-25 |
| Receiver | R&S | ESU40 | 100106 | 2012-09-26 |
| Constant temperature&mimidity chamber | CEPREI | CEEC-MSJ-60BE | 11015 | 2012-05-15 |

**NOTE:** The calibration interval of the above test instruments is 12 months.

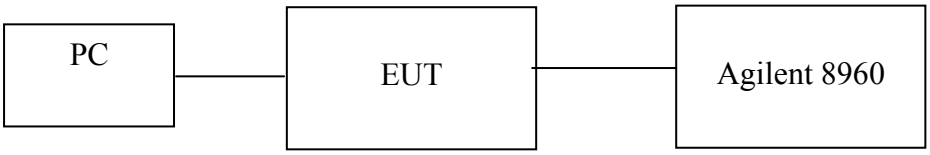
# 4. RF OUTPUT POWER

## 4.1 LIMITS

According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.
According to FCC §2.1046 and §24.232 (C), in no case may the peak output power of a base station transmitter exceed 2 watt EIRP.

## 4.2 TEST PROCEDURE (Conducted method)

**Test Method:**
TIA-603-C-2004 ; §2.1046;§ 22.913 (a);§ 24.232 (c)
Conducted method:
The RF output of the transmitter was connected to the wireless test set and the spectrum analyzer through sufficient attenuation.
**Test setup:**
The EUT was tested for GPRS mode. The PC is use software to control the EUT into GPRS test mode. The GPRS conducted output power were measured at the Agilent 8960




## 4.3 TEST RESULTS

**GPRS Conducted test**

| γ (Power control level) | Channel | | | Limit (dBm) | Result |
|---|---|---|---|---|---|
| | 824.2 (MHz) | 836.6 (MHz) | 848.8 (MHz) | | |
| 5 | 32.57 | 32.62 | 32.93 | 38.45 | Pass |

**Note:** The GPRS multi Slot Class 8.so it has one slot in uplink assignment

| γ (Power control level) | Channel | | | Limit (dBm) | Result |
|---|---|---|---|---|---|
| | 1850.2 (MHz) | 1880.0 (MHz) | 1909.8 (MHz) | | |
| 0 | 29.12 | 29.50 | 29.25 | 33 | Pass |

**Note:** The GPRS multi Slot Class 8.so it has one slot in uplink assignment

## 4.4 TEST PROCEDURE (Radiated method)

**Test Method:**

TIA-603-C-2004 ; §2.1046;§ 22.913 (a);§ 24.232 (c)

Radiated method:

a) Initially the test antenna is closely coupled to the MS and any spurious emission radiated by the MS is detected by the test antenna and receiver in the range 30 MHz to 4 GHz.

NOTE 1: This is a qualitative step to identify the frequency and presence of spurious emissions which are to be measured in subsequent steps.

b) The test antenna separation is set to the appropriate measurement distance and at each frequency at which an emission has been detected, the MS shall be rotated to obtain maximum response and the effective radiated power of the emission determined by a substitution measurement. In case of an anechoic shielded chamber pre-calibration may be used instead of a substitution measurement.

c) The measurement bandwidth, based on a 5 pole synchronously tuned filter, is set according to table 6. The power indication is the peak power detected by the measuring system.

The measurement on any frequency shall be performed for at least one TDMA frame period, with the exception of the idle frame.

NOTE 2: This ensures that both the active times (MS transmitting) and the quiet times are measured.

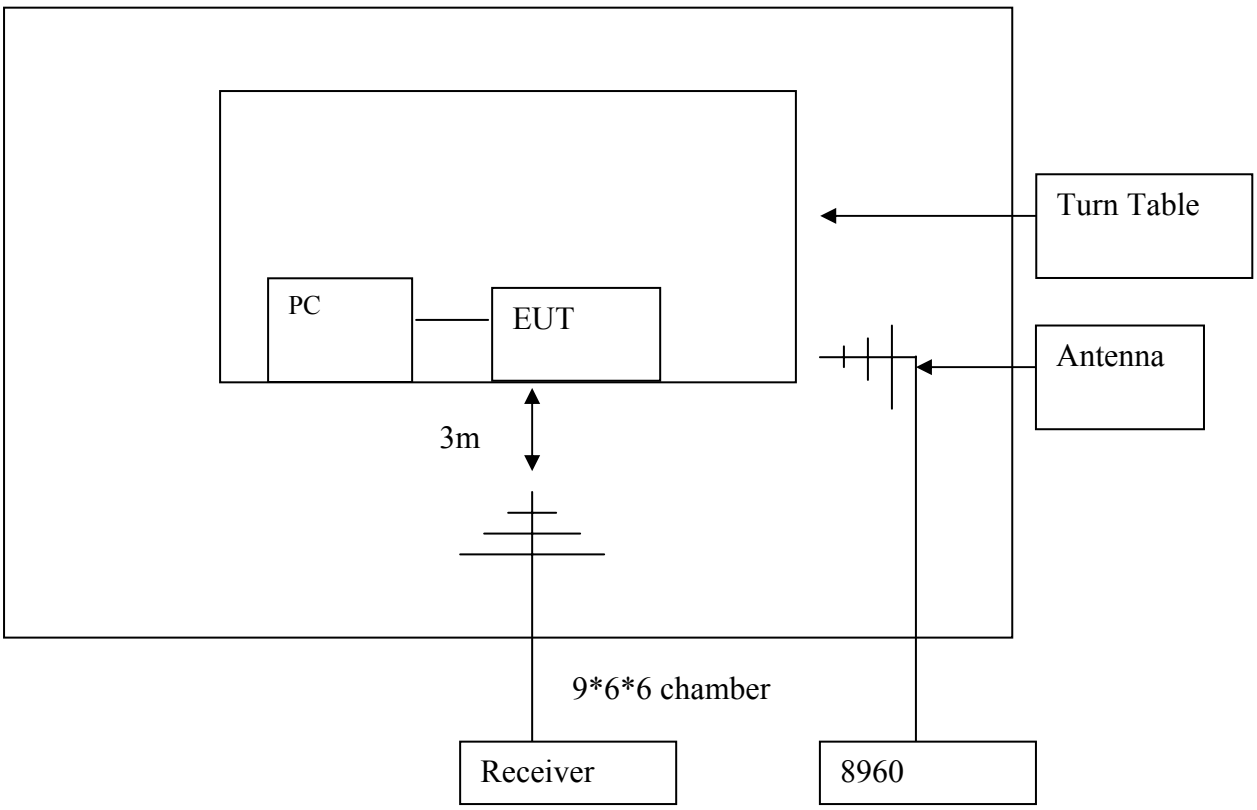
NOTE 3: For these filter bandwidths some difficulties may be experienced with noise floor above required measurement limit. This will depend on the gain of the test antenna, and adjustment of the measuring system bandwidth is permissible. Alternatively, for test frequencies above 900 MHz, the test antenna separation from the MS may be reduced to 1 meter.

d) The measurements are repeated with the test antenna in the orthogonal polarization plane.

| Frequency range | Filter bandwidth | Video bandwidth |
|---|---|---|
| 30 MHz to 50 MHz | 10 kHz | 30 kHz |
| 50 MHz to 4 GHz | 100 kHz | 300 kHz |

**Test setup:**

The EUT was tested for GPRS mode. The PC is use software to control the EUT into GPRS test mode.Agilent 8960 use like base station simulator to connect to the EUT. The test measured by the receiver or spectrum analyzer.



## 4.5 TEST RESULTS

GPRS 850MHz Radiated test:

| Maximum Frequency | polarization and Level | | Limit | Test Result |
|---|---|---|---|---|
| MHz | polarization | dBm | dBm | |
| Low channel | | | | Pass |
| 824.2 | Vertical | 29.4 | 38.45 | |
| 824.2 | Horizontal | 26.5 | 38.45 | |
| Middle channel | | | | |
| 836.6 | Vertical | 29.2 | 38.45 | |
| 836.6 | Horizontal | 27.6 | 38.45 | |
| High channel | | | | |
| 848.8 | Vertical | 29.7 | 38.45 | |
| 848.8 | Horizontal | 27.2 | 38.45 | |

**Note:** The GPRS multi Slot Class 8.so it has one slot in uplink assignment
According conducted test power. The power control level 5 is the max output power, so the record is power control level 5 mode test data

GPRS 1900MHz Radiated test:

| Maximum Frequency | polarization and Level | | Limit | Test Result |
|---|---|---|---|---|
| MHz | polarization | dBm | dBm | |
| Low channel | | | | Pass |
| 1850.2 | Vertical | 28.3 | 33 | |
| 1850.2 | Horizontal | 21.9 | 33 | |
| Middle channel | | | | |
| 1880 | Vertical | 28.5 | 33 | |
| 1880 | Horizontal | 22.5 | 33 | |
| High channel | | | | |
| 1909.8 | Vertical | 28.6 | 33 | |
| 1909.8 | Horizontal | 22.8 | 33 | |

**Note:** The GPRS multi Slot Class 8.so it has one slot in uplink assignment
According conducted test power. The power control level 0 is the max output power, so the record is power control level 0 mode test data

## 5. OCCUPIED BANDWIDTH

### 5.1 LIMITS

FCC §2.1049, §22.917, §22.905 and §24.238.

### 5.2 TEST INSTRUMENTS

**Test Method:**

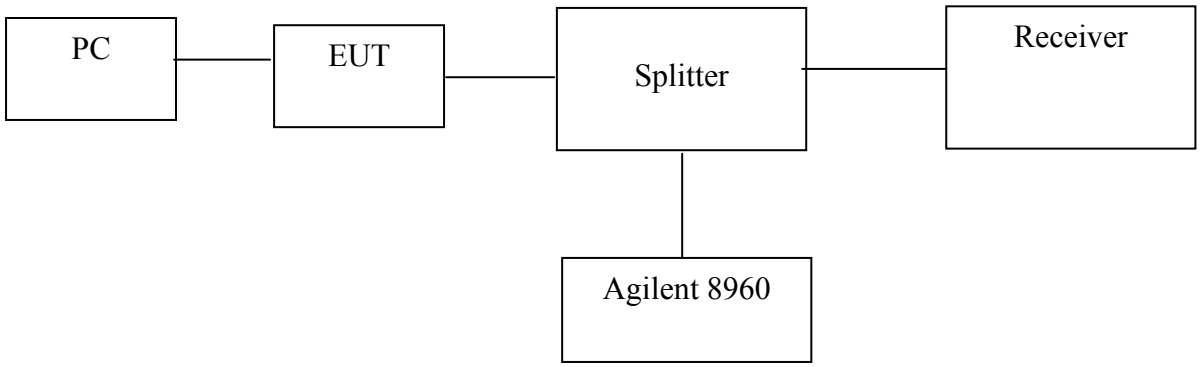
TIA-603-C-2004 ; FCC § 2.1049; § 22.905; § 22.917; § 24.238

The RF output of the transmitter was connected to the simulator and the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at 30 kHz (Cellular /PCS) and the 26 dB & 99% bandwidth was recorded.

**Test setup:**

The EUT was tested for GPRS mode. The PC is use software to control the EUT into GPRS test mode.Agilent 8960 use like base station simulator to connect to the EUT. The test measured by the receiver or spectrum analyzer.

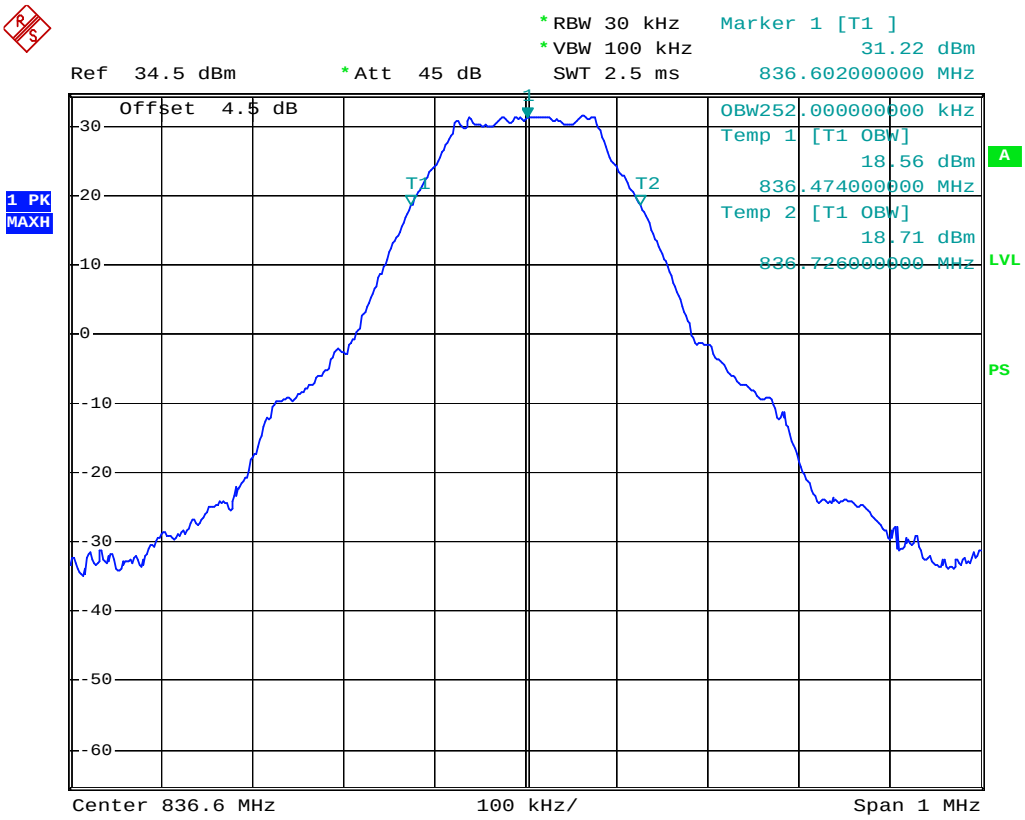


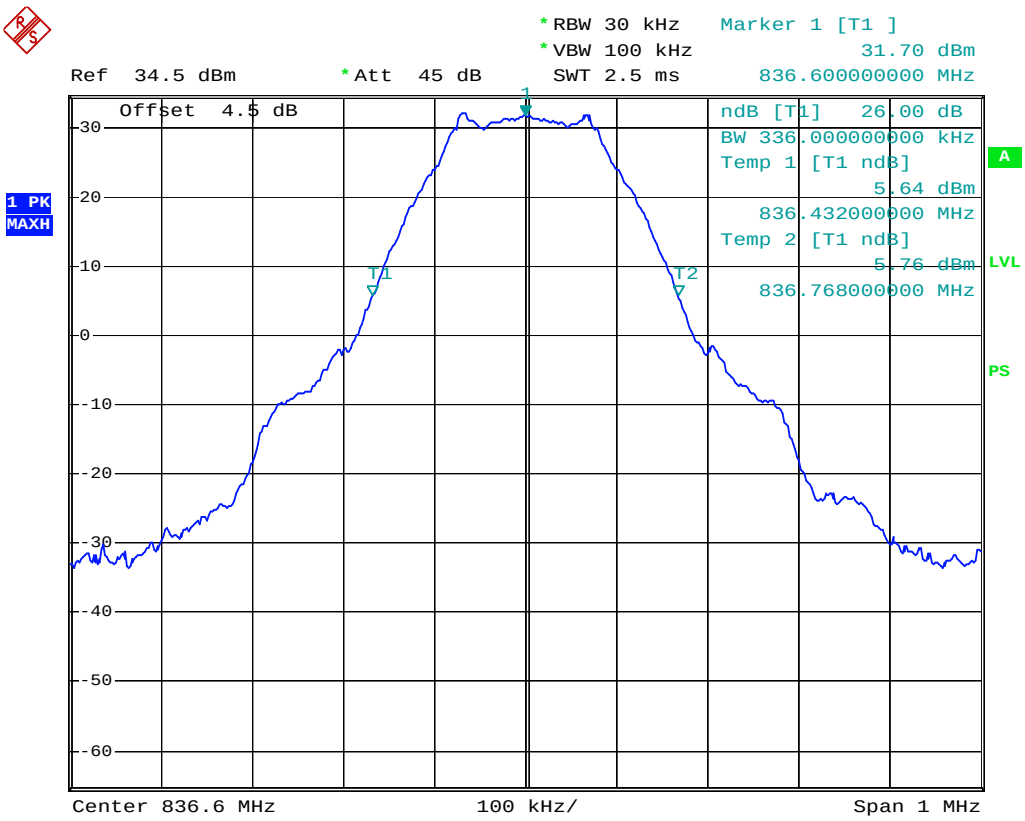
## 5.3 TEST RESULTS

For GPRS 850

| Channel | Channel frequency (MHz) | 99% Power Bandwidth (kHz) | 26 dB Bandwidth (kHz) |
|---|---|---|---|
| Channel 190 | 836.6 | 252.0 | 336.0 |

Please refer to the following plots.

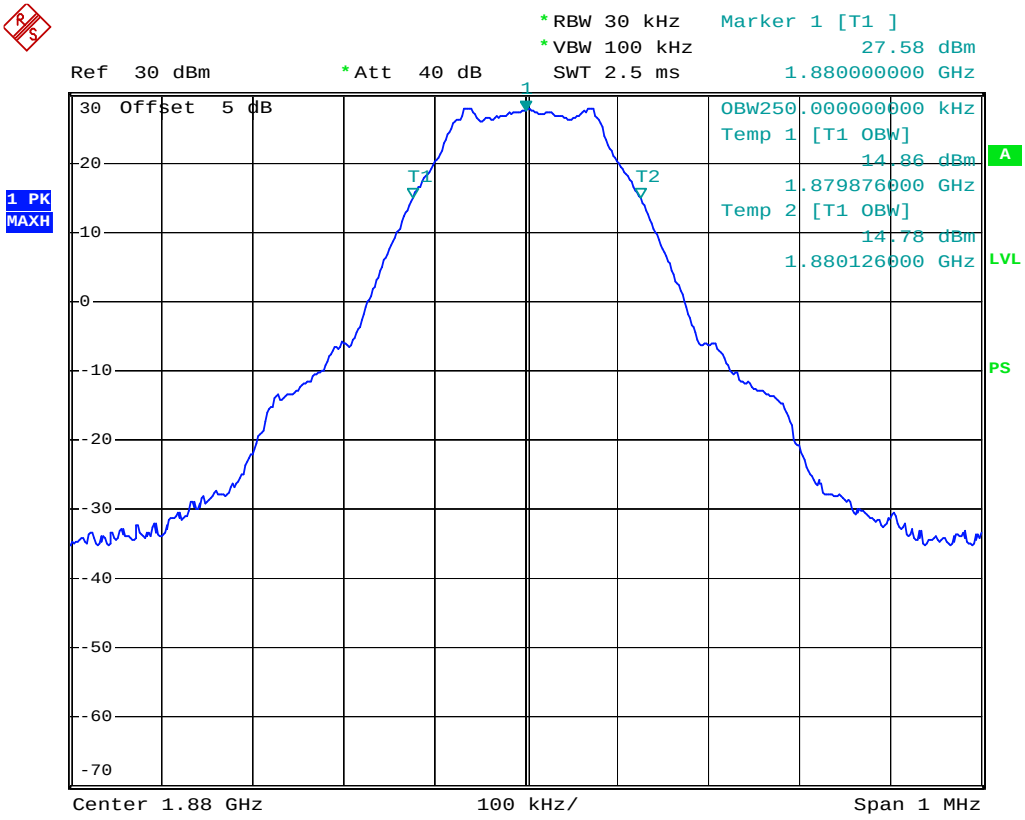


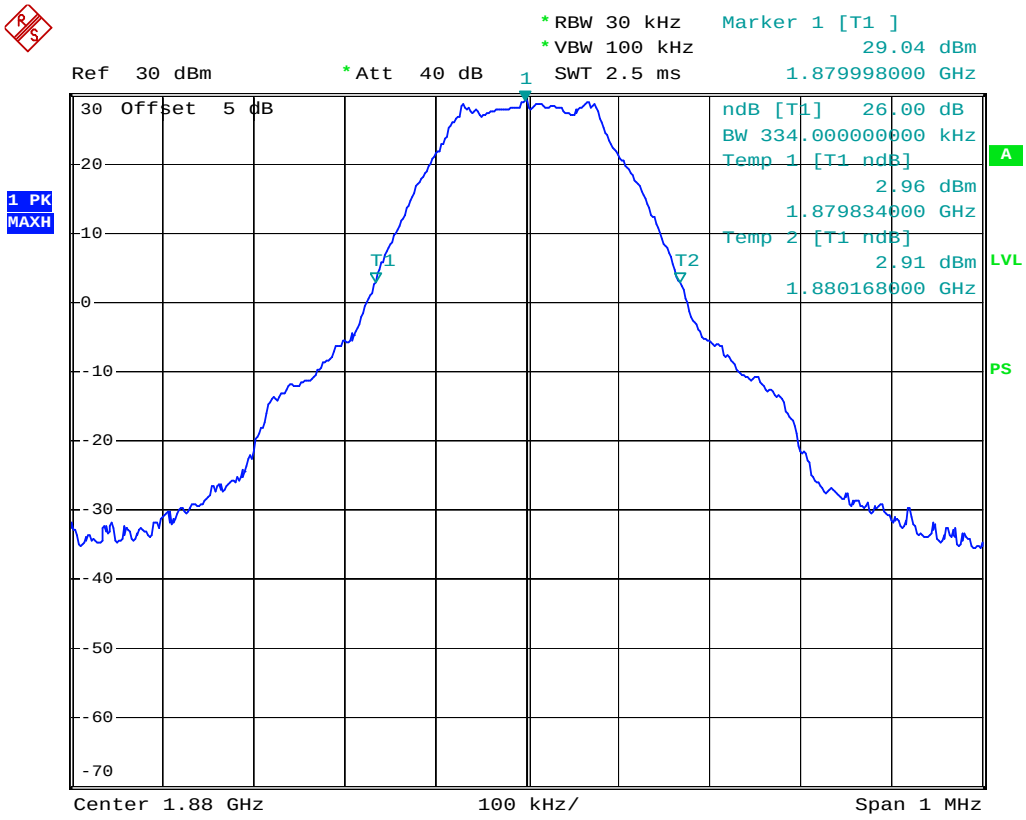

*RBW 30 kHz
*VBW 100 kHz
SWT 2.5 ms
Marker 1 [T1 ]
31.70 dBm
836.600000000 MHz
Ref 34.5 dBm
*Att 45 dB
Offset 4.5 dB
ndB [T1] 26.00 dB
BW 336.000000000 kHz
Temp 1 [T1 ndB]
5.64 dBm
836.432000000 MHz
Temp 2 [T1 ndB]
5.76 dBm
836.768000000 MHz
1 PK
MAXH
A
LVL
PS
T1
T2
30
20
10
0
-10
-20
-30
-40
-50
-60
Center 836.6 MHz
100 kHz/
Span 1 MHz

For GPRS 1900

| Channel | Channel frequency (MHz) | 99% Power Bandwidth (kHz) | 26 dB Bandwidth (kHz) |
|---|---|---|---|
| Channel 661 | 1880.0 | 250.0 | 334.0 |

Please refer to the following plots.




*RBW 30 kHz
*VBW 100 kHz
Ref 30 dBm
*Att 40 dB
SWT 2.5 ms
Marker 1 [T1 ]
29.04 dBm
1.879998000 GHz
30 Offset 5 dB
ndB [T1] 26.00 dB
BW 334.000000000 kHz
Temp 1 [T1 ndB]
2.96 dBm
1.879834000 GHz
Temp 2 [T1 ndB]
2.91 dBm
1.880168000 GHz
1 PK
MAXH
A
LVL
PS
T1
T2
20
10
0
-10
-20
-30
-40
-50
-60
-70
Center 1.88 GHz
100 kHz/
Span 1 MHz

## 6. SPURIOUS EMISSIONS AT ANTENNA TERMINALS

### 6.1 LIMITS

CFR 47 §2.1051, §22.917(a) and §4.238(a).
The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1051.

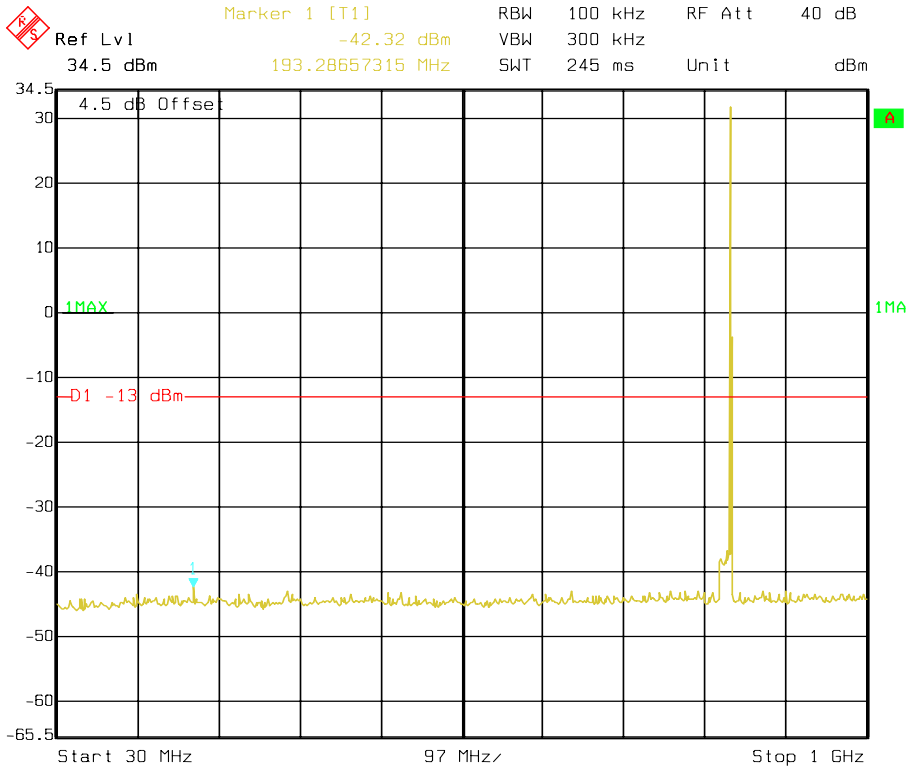
### 6.2 TEST INSTRUMENTS

**Test Method:**
TIA-603-C-2004 ; FCC §2.1051, §22.917(a) ; §4.238(a).
The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz. Sufficient scans were taken to show any out of band emissions up to $10^{th}$ harmonic.
**Test setup:**
See section 5.2 test setup

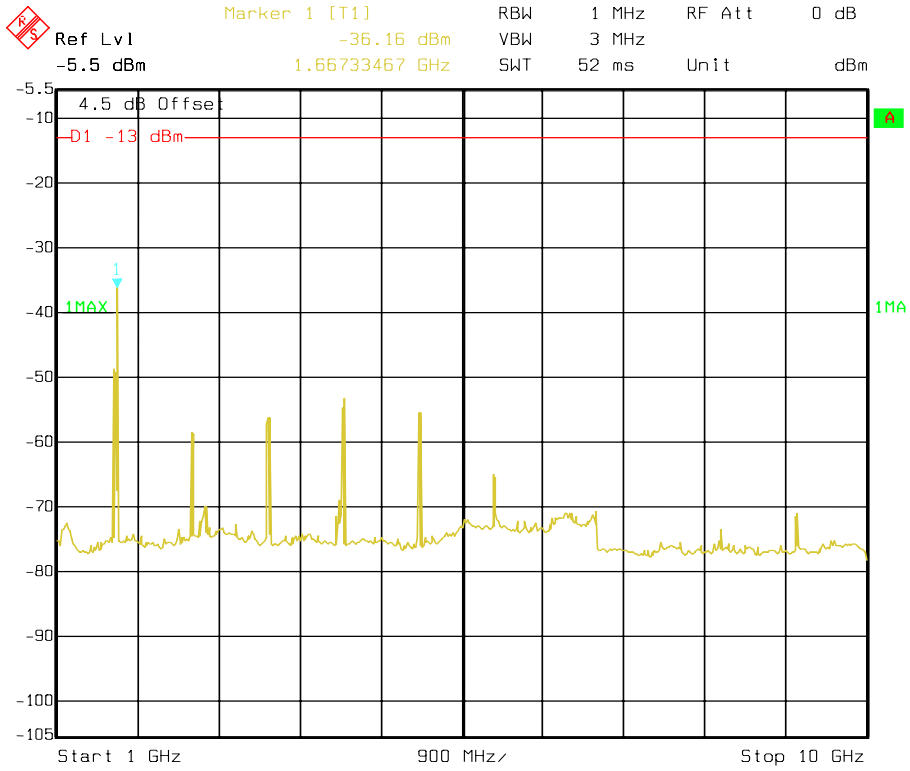
## 6.3 TEST RESULTS

### For GPRS 850

**30MHz-1000MHz - Middle Channel**

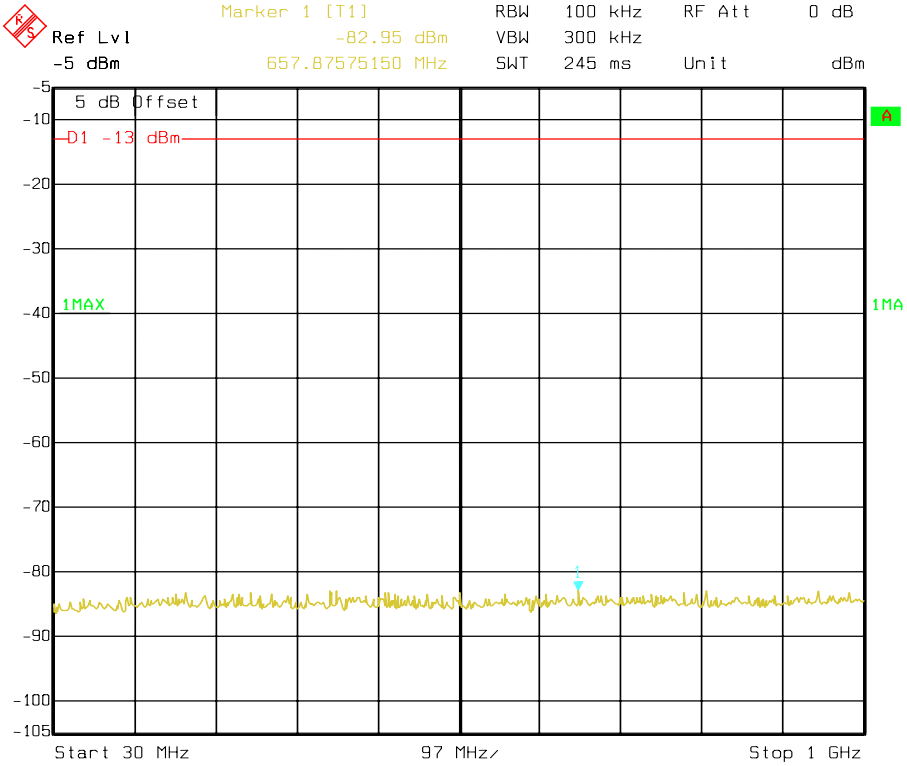



**1GHz-10GHz - Middle Channel**

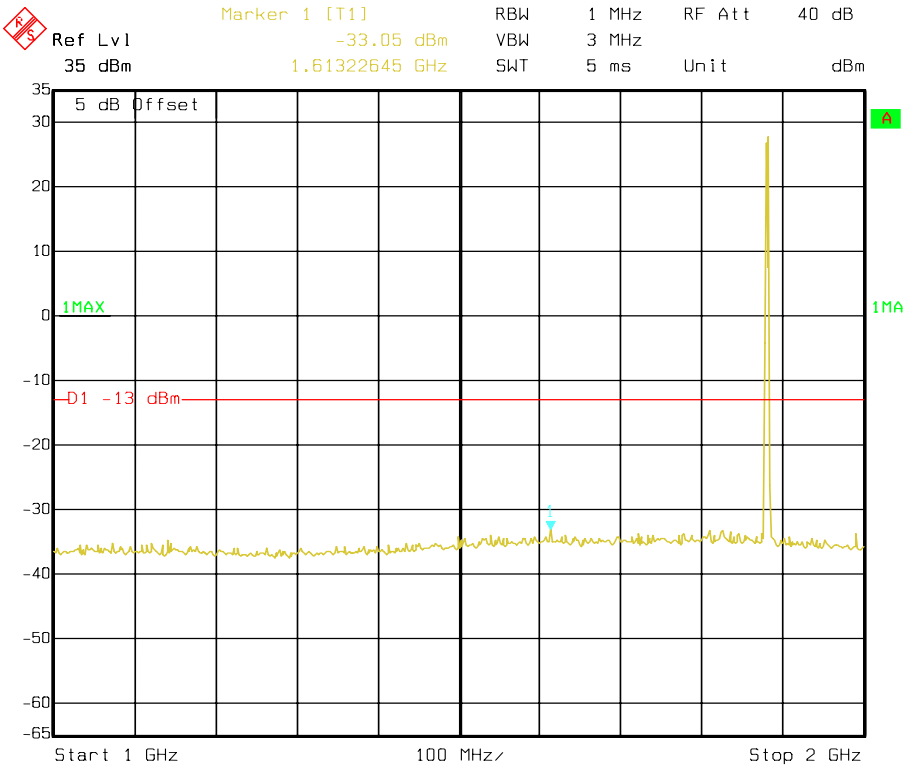


**For GPRS 1900**

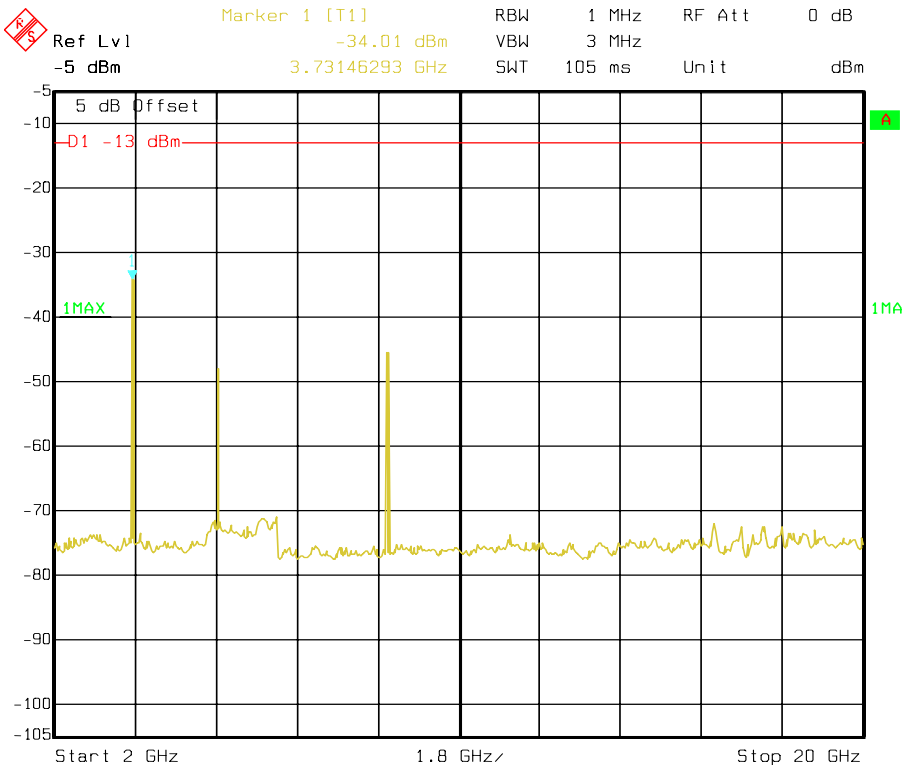
**30MHz-1000MHz - Middle Channel**




**1GHz-2GHz - Middle Channel**



## 2GHz-20GHz - Middle Channel



## 7. SPURIOUS RADIATED EMISSIONS

### 7.1 LIMITS

CFR 47 § 2.1053, 22.917 and § 24.238.

### 7.2 TEST PROCEDURE

**Test Method:**
TIA-603-C-2004 ; FCC § 2.1053, 22.917 and § 24.238.
The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.
The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
The frequency range up to tenth harmonic of the fundamental frequency was investigated.
Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.
Spurious emissions in dB = 10 lg (TXpwr in Watts/0.001) – the absolute level
Spurious attenuation limit in dB = 43 + 10 $Log_{10}$ (power out in Watts)
**Test setup:**
See section 4.4 setup

## 7.3 TEST RESULTS

**GPRS 850**

| Middle Channel | | | | |
|---|---|---|---|---|
| **Maximum Frequency** | **Spurious Emission polarization and Level** | | **Limit** | **Test Result** |
| **MHz** | **polarization** | **dBm** | **dBm** | |
| 32.63 | Vertical | -70 | -13 | Pass |
| 1673.2 | V | -37.5 | -13 | |
| 2509.8 | V | -43.1 | -13 | |
| 3346.4 | V | -60.0 | -13 | |
| 30.76 | Horizontal | -70 | -13 | |
| 1673.2 | H | -38.2 | -13 | |
| 2509.8 | H | -42.1 | -13 | |
| 3346.4 | H | -60.0 | -13 | |

Remark:
- –70dBm was the minimum level which could be detected by measuring facility when below 1GHz, -60dBm at over 1GHz.

**GPRS 1900**

| Middle Channel | | | | |
|---|---|---|---|---|
| **Maximum Frequency** | **Spurious Emission polarization and Level** | | **Limit** | **Test Result** |
| **MHz** | **polarization** | **dBm** | **dBm** | |
| 33.20 | Vertical | -70 | -13 | Pass |
| 3760 | V | -43.5 | -13 | |
| 5640 | V | -49.2 | -13 | |
| 7520 | V | -60.0 | -13 | |
| 32.61 | Horizontal | -70 | -13 | |
| 3760 | H | -42.2 | -13 | |
| 5640 | H | -46.1 | -13 | |
| 7520 | H | -60.0 | -13 | |

Remark:
- –70dBm was the minimum level which could be detected by measuring facility when below 1GHz, -60dBm at over 1GHz.

## 8. BAND EDGES

### 8.1 LIMITS

According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

### 8.2 TEST PROCEDURE

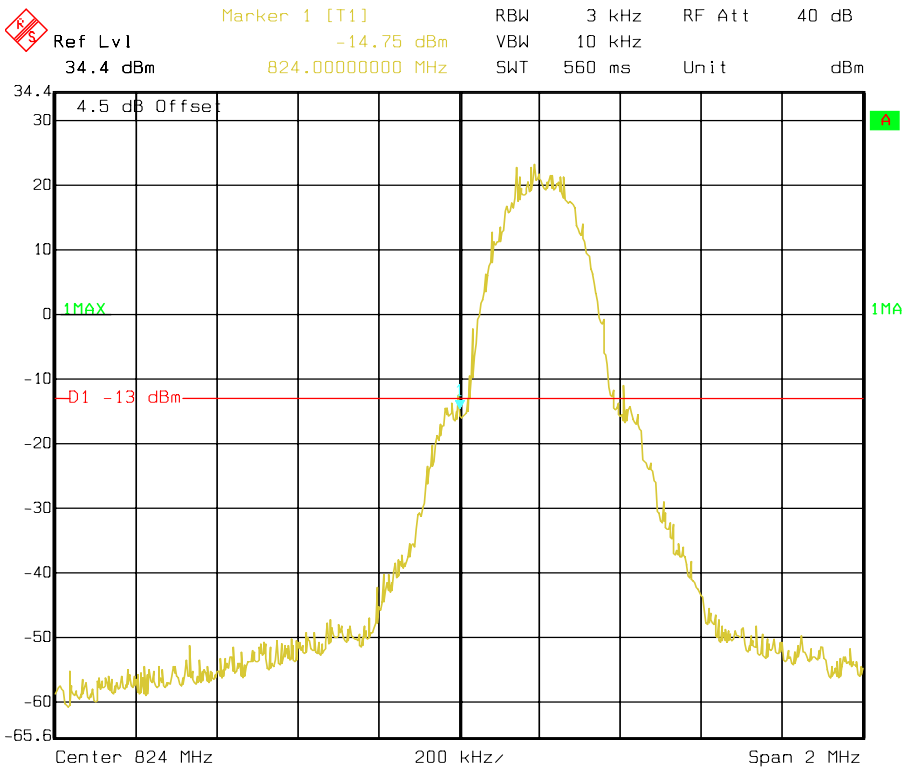
**Test Method:**
TIA-603-C-2004 ; FCC § 22.917(a); § 24.238(a)
The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

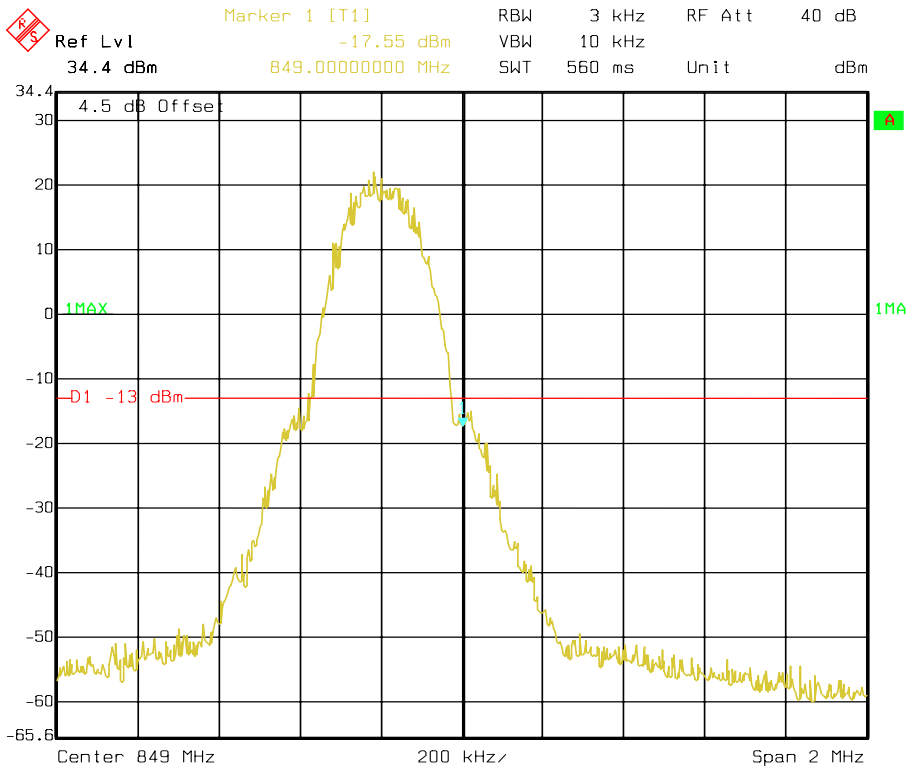
The center of the spectrum analyzer was set to block edge frequency, RBW set to 10 kHz.
**Test setup:**
See section 5.2 test setup

## 8.3 TEST RESULTS

For GPRS (850 MHz)

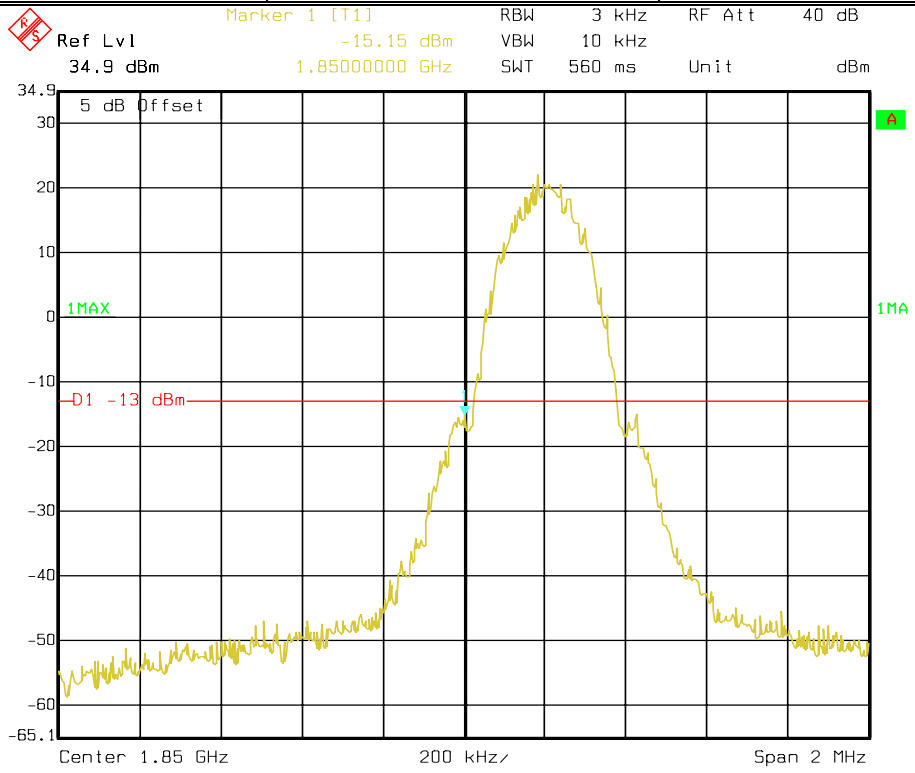
| Frequency (MHz) | Emission (dBm) | Limit (dBm) |
|---|---|---|
| 824 | -14.75 | -13 |
| 849 | -17.55 | -13 |

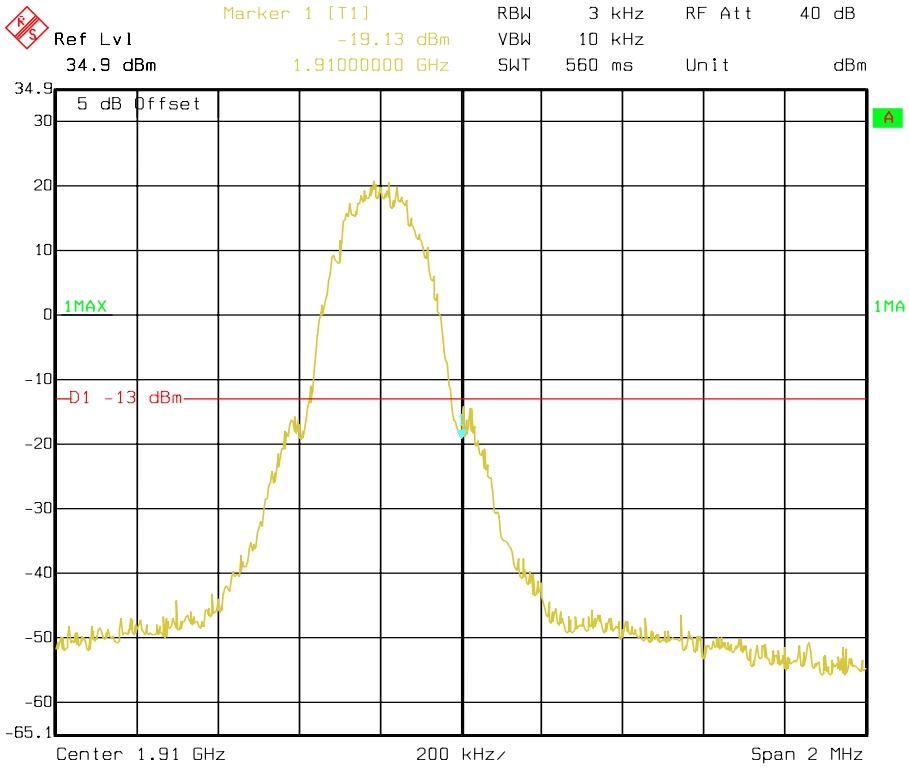



Marker 1 [T1]
Ref Lvl
34.4 dBm
-17.55 dBm
849.00000000 MHz
RBW 3 kHz
VBW 10 kHz
SWT 560 ms
RF Att 40 dB
Unit dBm
4.5 dB Offset
1MAX
D1 -13 dBm
1MA
A
34.4
30
20
10
0
-10
-20
-30
-40
-50
-60
-65.6
Center 849 MHz
200 kHz/
Span 2 MHz

For GPRS (1900 MHz)

| Frequency (MHz) | Emission (dBm) | Limit (dBm) |
|---|---|---|
| 1850 | -15.15 | -13 |
| 1910 | -19.13 | -13 |



## 9. FREQUENCY STABILITY

### 9.1 LIMITS

CFR47 § 2.1055 (a), § 2.1055 (d), §22.355, §24.235
According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:
Frequency Tolerance for Transmitters in the Public Mobile Services

| Frequency Range (MHz) | Base, fixed (ppm) | Mobile ≤ 3 watts (ppm) | Mobile ≤ 3 watts (ppm) |
|---|---|---|---|
| 25 to 50 | 20.0 | 20.0 | 50.0 |
| 50 to 450 | 5.0 | 5.0 | 50.0 |
| 450 to 512 | 2.5 | 5.0 | 5.0 |
| 821 to 896 | 1.5 | 2.5 | 2.5 |
| 928 to 929. | 5.0 | N/A | N/A |
| 929 to 960. | 1.5 | N/A | N/A |
| 2110 to 2220 | 10.0 | N/A | N/A |

According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

### 9.2 TEST PROCEDURE

**Test Method:**
TIA-603-C-2004 ; § 2.1055 (a), § 2.1055 (d), §22.355, §24.235
Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the battery end point. The output frequency was recorded for each battery voltage.
**Test setup:**
See section 5.2 test setup

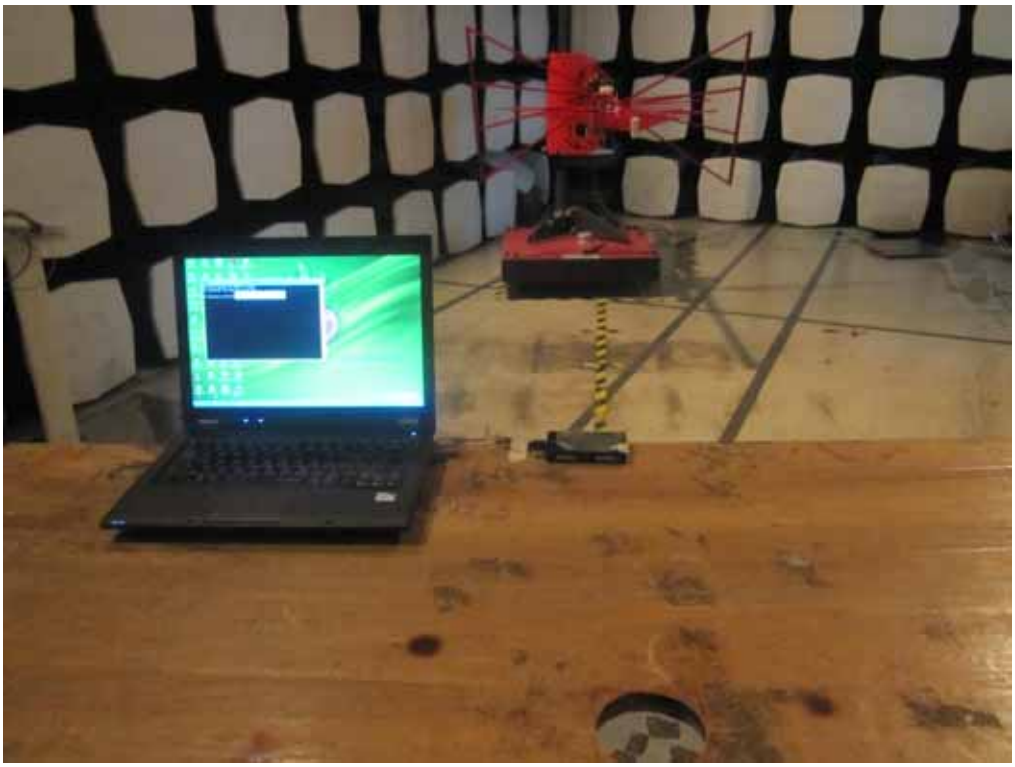
## 9.3 TEST RESULTS

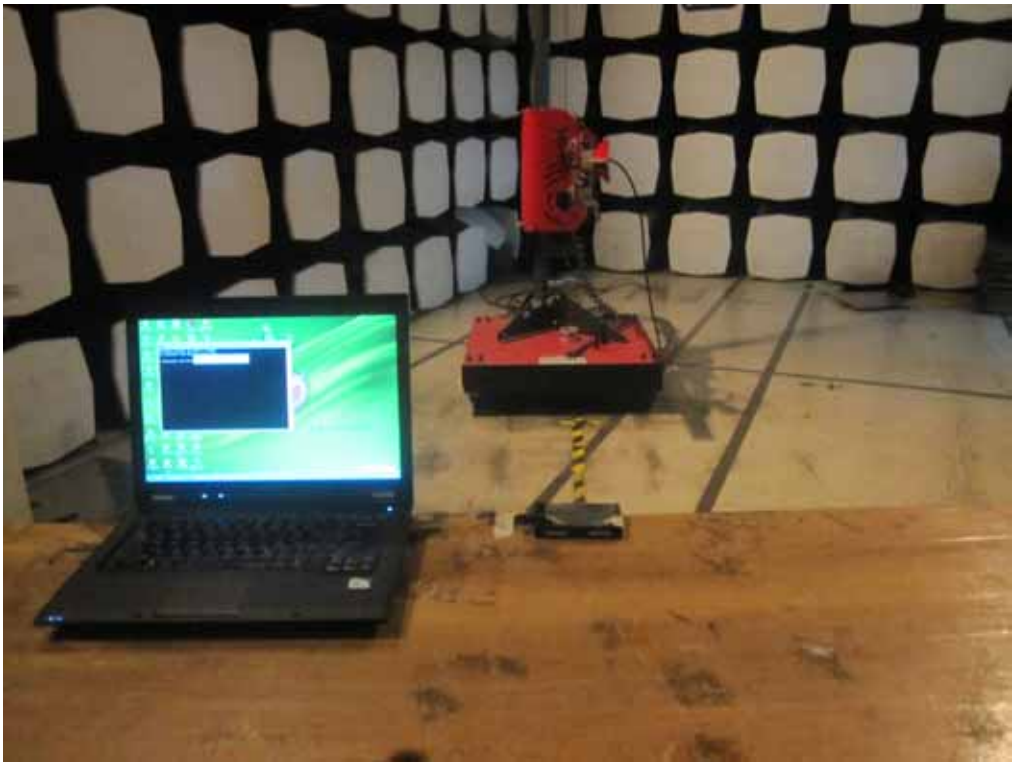
| Low channel, fo =824.2MHz | | | | |
|---|---|---|---|---|
| Temperature (℃) | Power Supplied (V) | Frequency Error (Hz) | Error (ppm) | Limit (ppm) |
| -15 | 3.70 | -21 | -0.0251 | 2.5 |
| | 3.50 | -24 | -0.0287 | 2.5 |
| -5 | 3.70 | -21 | -0.0251 | 2.5 |
| | 3.50 | -27 | -0.0323 | 2.5 |
| 5 | 3.70 | -23 | -0.0275 | 2.5 |
| | 3.50 | -23 | -0.0275 | 2.5 |
| 15 | 3.70 | -32 | -0.0383 | 2.5 |
| | 3.50 | -25 | -0.0299 | 2.5 |
| 25 | 3.70 | -28 | -0.0335 | 2.5 |
| | 3.50 | -37 | -0.0442 | 2.5 |
| 35 | 3.70 | -59 | -0.0705 | 2.5 |
| | 3.50 | -27 | -0.0323 | 2.5 |
| 45 | 3.70 | -70 | -0.0837 | 2.5 |
| | 3.50 | -41 | -0.0490 | 2.5 |
| 55 | 3.70 | -72 | -0.0861 | 2.5 |
| | 3.50 | -34 | -0.0406 | 2.5 |

PCS Band:

| Middle channel, fo =848.8MHz | | | | |
|---|---|---|---|---|
| Temperature (℃) | Power Supplied (V) | Frequency Error (Hz) | Error (ppm) | Limit (ppm) |
| -15 | 3.70 | -16 | -0.0085 | 2.5 |
| | 3.50 | -15 | -0.0080 | 2.5 |
| -5 | 3.70 | -18 | -0.0096 | 2.5 |
| | 3.50 | -8 | -0.0043 | 2.5 |
| 5 | 3.70 | -18 | -0.0096 | 2.5 |
| | 3.50 | -17 | -0.0090 | 2.5 |
| 15 | 3.70 | -14 | -0.0074 | 2.5 |
| | 3.50 | -15 | -0.0080 | 2.5 |
| 25 | 3.70 | -21 | -0.0112 | 2.5 |
| | 3.50 | -22 | -0.0117 | 2.5 |
| 35 | 3.70 | -26 | -0.0138 | 2.5 |
| | 3.50 | -24 | -0.0128 | 2.5 |
| 45 | 3.70 | -31 | -0.0165 | 2.5 |
| | 3.50 | -28 | -0.0149 | 2.5 |
| 55 | 3.70 | -28 | -0.0149 | 2.5 |
| | 3.50 | -29 | -0.0154 | 2.5 |

# APPENDIX A: PHOTOGRAPH OF THE TEST ARRANGEMENT

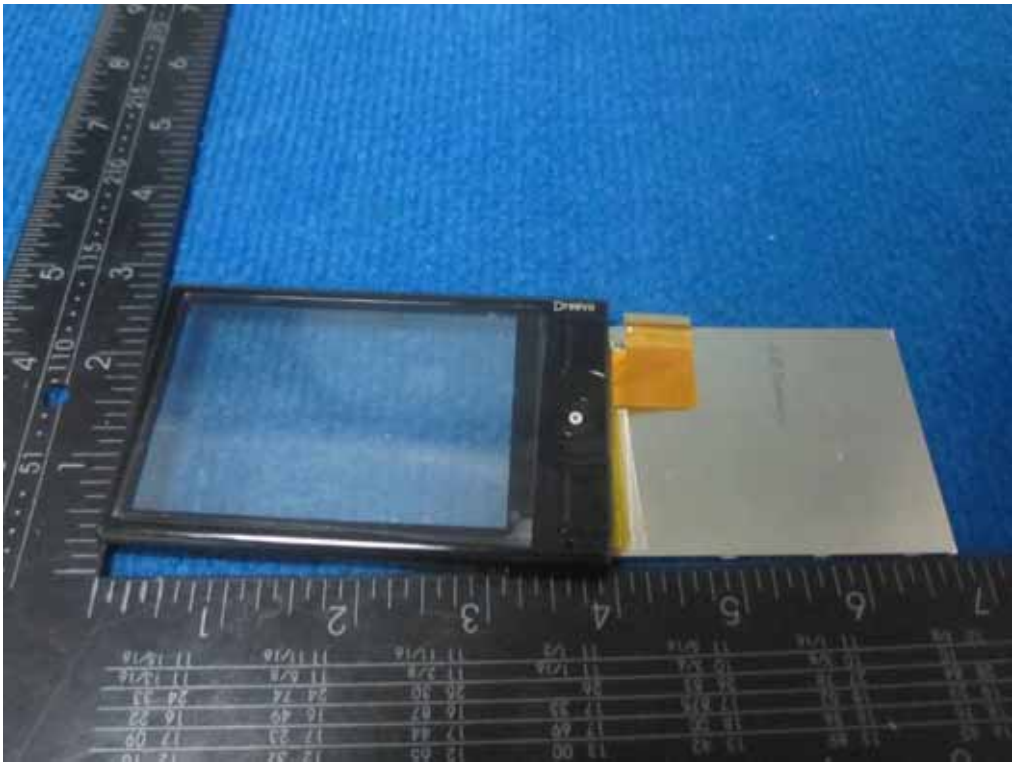




# APPENDIX B: PHOTOGRAPH OF THE EUT


Dreevo
micro


Dreevo



**----------This is the last page of the report. ----------**