# TEST REPORT
# FROM
# RFI GLOBAL SERVICES LTD

Test of: Softbank 940P

To: FCC Part 24: 2008 Subpart E

**Test Report Serial No:**
RFI/RPT2/RP76194JD05A

**Supersedes Test Report Serial No:**
RFI/RPT1/RP76194JD05A

| | |
|---|---|
| **This Test Report Is Issued Under The Authority Of Brian Watson, Operations Director:** | pp R. Graham |
| **Checked By:** | R. Graham |
| **Signature:** | R. Graham |
| **Date of Issue:** | 02 November 2009 |

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## Table of Contents

# 1. Customer Information

| | |
|---|---|
| **Company Name:** | Panasonic Mobile Communications Development of Europe Ltd |
| **Address:** | Panasonic House<br>Willoughby Road<br>Bracknell<br>Berkshire RG12 8FP<br>United Kingdom |

# 2. Summary of Testing

## 2.1. General Information

| | |
|---|---|
| **Specification Reference:** | 47CFR24 |
| **Specification Title:** | Code of Federal Regulations Volume 47 (Telecommunications) 2008: Part 24 Subpart E (Personal Communication Services) |
| **Site Registration:** | FCC: 209735 |
| **Location of Testing:** | RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire RG24 8AH, United Kingdom |
| **Test Dates:** | 12 October 2009 to 14 October 2009 |

## 2.2. Summary of Test Results

| FCC Reference (CFR 47) | Measurement | Port Type | Result |
|---|---|---|---|
| Part 15.107 | Idle Mode AC Conducted Spurious Emissions | AC Mains | ✓ |
| Part 15.109 | Idle Mode Radiated Spurious Emissions | Enclosure | ✓ |
| Part 15.207 | Transmitter AC Conducted Spurious Emissions | AC Mains | ✓ |
| Part 24.232 | Transmitter Effective Isotropic Radiated Power (EIRP) | Antenna | ✓ |
| Part 24.235 | Transmitter Frequency Stability (Temperature & Voltage Variation) | Antenna | ✓ |
| Part 2.1049/24.238 | Transmitter Occupied Bandwidth | Antenna | ✓ |
| Part 2.1053/24.238 | Transmitter Out of Band Radiated Emissions | Antenna | ✓ |
| Part 2.1053/24.238 | Transmitter Band Edge Radiated Emissions | Antenna | ✓ |

**Key to Results**

✓ = Complied ✗ = Did not comply

## 2.3. Methods and Procedures

| | |
|---|---|
| **Reference:** | ANSI/TIA-603-C-2004 |
| **Title:** | Land Mobile Communications Equipment, Measurements and performance Standards |
| **Reference:** | ANSI C63.4 (2003) |
| **Title:** | American National Standard Methods of Measurement of Electromagnetic Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz. |

## 2.4. Deviations from the Test Specification

For the measurements contained within this test report, there were no deviations from, additions to, or exclusions from the test specification identified above.

# 3. Equipment Under Test (EUT)

## 3.1. Identification of Equipment Under Test (EUT)

| | |
|---|---|
| **Brand Name:** | SoftBank |
| **Model Name or Number:** | 940P |
| **IMEI Number:** | 004401220872242 |
| **Hardware Version Number:** | Rev C |
| **Software Version Number:** | 940PVA12 |
| **FCC ID Number:** | UCE209020A |

| | |
|---|---|
| **Description:** | AC Charger |
| **Brand Name:** | Softbank |
| **Model Name or Number:** | ZTDAA1 |

| | |
|---|---|
| **Description:** | Personal Hands Free |
| **Brand Name:** | SoftBank |
| **Model Name or Number:** | ZTCK01 |

| | |
|---|---|
| **Description:** | Personal Hands Free converter |
| **Brand Name:** | SoftBank |
| **Model Name or Number:** | PMLAJI |

| | |
|---|---|
| **Description:** | DC Charger |
| **Brand Name:** | SoftBank |
| **Model Name or Number:** | PMJAA1 |

| | |
|---|---|
| **Description:** | Micro-SD Memory Card |
| **Brand Name:** | None Stated |
| **Model Name or Number:** | None Stated |

| | |
|---|---|
| **Description:** | USB Data Cable |
| **Brand Name:** | SoftBank |
| **Model Name or Number:** | ZTFE01 |

| | |
|---|---|
| **Description:** | Battery |
| **Brand Name:** | SoftBank |
| **Model Name or Number:** | PMBAS1 |

## 3.2. Description of EUT

The equipment under test was a dual mode UMTS/GSM cellular handset with *Bluetooth* and RFID, with a retractable antenna.

## 3.3. Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

## 3.4. Additional Information Related to Testing

| | | | |
|---|---|---|---|
| **Technology Tested:** | PCS1900 | | |
| **Type of Radio Device:** | Transceiver | | |
| **Mode:** | GSM/GPRS | | |
| **Modulation Type:** | GMSK | | |
| **Channel Spacing:** | 200 kHz | | |
| **Power Supply Requirement(s):** | Nominal | 3.7 V | |
| | Minimum | 3.4 V | |
| | Maximum | 4.2 V | |
| **Maximum Output Power (EIRP):** | GSM | 32.3 dBm | |
| | GPRS | 30.0 dBm | |
| **Transmit Frequency Range:** | 1850 to 1910 MHz | | |
| **Transmit Channels Tested:** | **Channel ID** | **Channel Number** | **Channel Frequency (MHz)** |
| | Bottom | 512 | 1850.2 |
| | Middle | 660 | 1879.8 |
| | Top | 810 | 1909.8 |
| **Receive Frequency Range:** | 1930 to 1990 MHz | | |
| **Receive Channels Tested:** | **Channel ID** | **Channel Number** | **Channel Frequency (MHz)** |
| | Bottom | 512 | 1930.2 |
| | Middle | 660 | 1959.8 |
| | Top | 810 | 1989.8 |

## 3.5. Support Equipment

The following support equipment was used to exercise the EUT during testing:

| | |
|---|---|
| **Description:** | Dummy battery |
| **Model Name or Number:** | Not stated |
| **Serial Number:** | Not stated |

# 4. Operation and Monitoring of the EUT during Testing

## 4.1. Operating Modes

The EUT was tested in the following operating mode(s):

- Idle mode.
- Constantly transmitting at full power on bottom, centre and top channels as required.
- Occupied bandwidth, EIRP and band edge tests were performed with the EUT in GSM single timeslot circuit switched and GPRS Multislot Class 10 with the unit transmitting on two timeslots in the uplink.
- Transmitter radiated spurious emissions were checked in all modes during pre-scans. Circuit switched voice was found to be the worst case and all final measurements were performed with the EUT in this mode.

## 4.2. Configuration and Peripherals

The EUT was tested in the following configuration(s):

- Connected to a GSM/GPRS system simulator, operating in transceiver mode
- Idle mode and transmitter mode radiated spurious emissions tests were performed with the mains charger connected to the EUT via 120 V AC 60 Hz supply with the retractable antenna extended, as this was found to be the worst case during pre-scans. All accessories were individually connected and measurements made during pre-scans to determine the worst case combination.
- EIRP was measured with the retractable antenna extended, as this was found to give the highest output level.
- The Micro-SD card was present in the EUT during all tests.

# 5. Measurements, Examinations and Derived Results

## 5.1. General Comments

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate *coverage factor to* provide a statistical confidence level of approximately 95%. Please refer to Section 6 Measurement Uncertainty *for* details.

## 5.2. Test Results

### 5.2.1. Idle Mode AC Conducted Spurious Emissions

**Test Summary:**

| | |
|---|---|
| **FCC Part:** | 15.107(a) |
| **Test Method Used:** | As detailed in ANSI C63.4 Section 7 and relevant annexes |

**Environmental Conditions:**

| | |
|---|---|
| **Temperature (°C):** | 25 |
| **Relative Humidity (%):** | 27 |

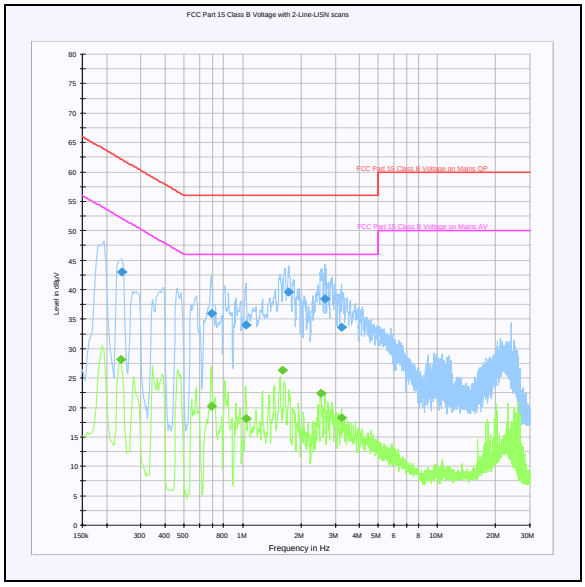
**Results: Quasi Peak Detector Measurements**

| Frequency (MHz) | Line | Quasi Peak Level (dBμV) | Limit (dBμV) | Margin (dB) | Result |
|---|---|---|---|---|---|
| 0.240000 | Neutral | 43.1 | 62.1 | 19.0 | Complied |
| 0.690000 | Neutral | 35.9 | 56.0 | 20.1 | Complied |
| 1.036500 | Neutral | 34.0 | 56.0 | 22.0 | Complied |
| 1.725000 | Neutral | 39.6 | 56.0 | 16.4 | Complied |
| 2.647500 | Neutral | 38.4 | 56.0 | 17.6 | Complied |
| 3.228000 | Neutral | 33.7 | 56.0 | 22.3 | Complied |

**Results: Average Detector Measurements**

| Frequency (MHz) | Line | Average Level (dBμV) | Limit (dBμV) | Margin (dB) | Result |
|---|---|---|---|---|---|
| 0.235500 | Live | 28.2 | 52.3 | 24.1 | Complied |
| 0.690000 | Neutral | 20.2 | 46.0 | 25.8 | Complied |
| 1.036500 | Neutral | 18.2 | 46.0 | 27.8 | Complied |
| 1.603500 | Live | 26.3 | 46.0 | 19.7 | Complied |
| 2.535000 | Neutral | 22.4 | 46.0 | 23.6 | Complied |
| 3.228000 | Neutral | 18.2 | 46.0 | 27.8 | Complied |

## Idle Mode AC Conducted Spurious Emissions (continued)




*Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.*

## 5.2.2. Idle Mode Radiated Spurious Emissions

### Test Summary:

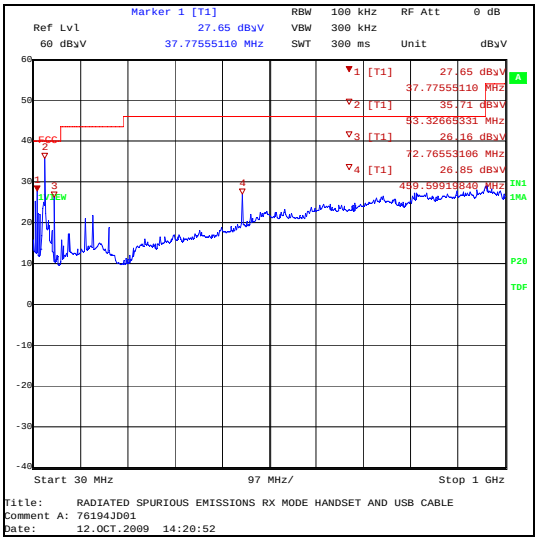
| | |
|---|---|
| **FCC Part:** | 15.109 |
| **Frequency Range:** | 30 MHz to 1000 MHz |
| **Test Method Used:** | As detailed in ANSI C63.4 Section 8 and relevant annexes |

### Environmental Conditions:

| | |
|---|---|
| **Temperature (°C):** | 27 |
| **Relative Humidity (%):** | 27 |

### Results:

| Frequency (MHz) | Antenna Polarity | Level (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Result |
|---|---|---|---|---|---|
| 37.203 | Horizontal | 29.3 | 40.0 | 10.7 | Complied |
| 53.222 | Horizontal | 37.9 | 40.0 | 2.1 | Complied |
| 72.486 | Vertical | 29.4 | 40.0 | 10.6 | Complied |
| 458.782 | Horizontal | 31.4 | 46.0 | 14.6 | Complied |




*Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.*

## Idle Mode Radiated Spurious Emissions (continued)

### Test Summary:

| | |
|---|---|
| **FCC Part:** | 15.109 |
| **Frequency Range:** | 1 GHz to 12.75 GHz |
| **Test Method Used:** | As detailed in ANSI C63.4 Section 8 and relevant annexes |

### Environmental Conditions:

| | |
|---|---|
| **Temperature (°C):** | 27 |
| **Relative Humidity (%):** | 27 |

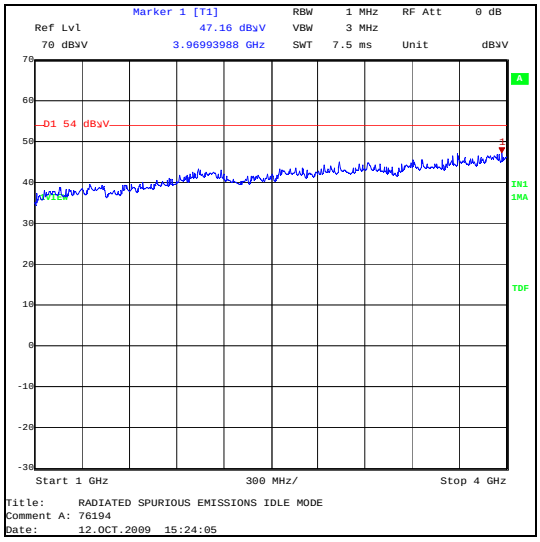
### Results:

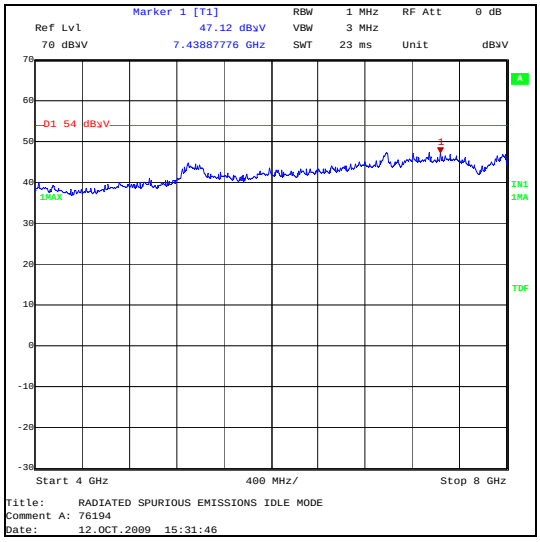
| Frequency (MHz) | Antenna Polarity | Peak Level (dBµV/m) | Average Limit (dBµV/m) | Margin (dB) | Result |
|---|---|---|---|---|---|
| 3.969940 | Horizontal | 47.2 | 54.0 | 6.8 | Complied |

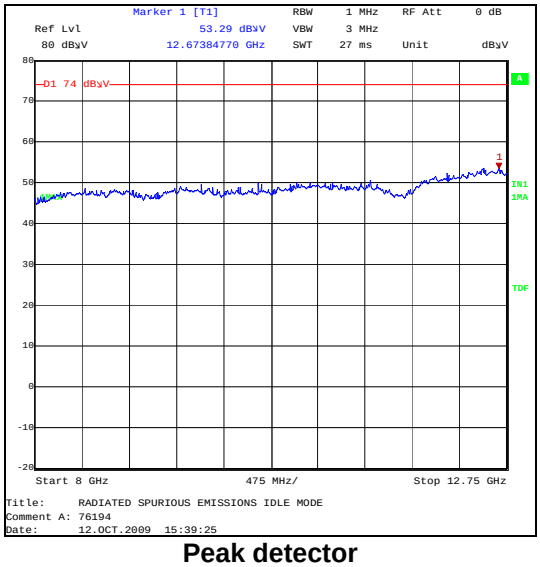
### Note(s):

1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above. The peak level was compared to the average limit as opposed to being compared to the peak limit because this is the more onerous limit.
2. All pre-scans were performed with a peak detector against the average limit apart from measurements made in the range of 8 to 12.75 GHz where pre-scans were performed with peak and average detectors and the applicable limit applied. This was due to the noise floor exceeding the average limit when using a peak detector.

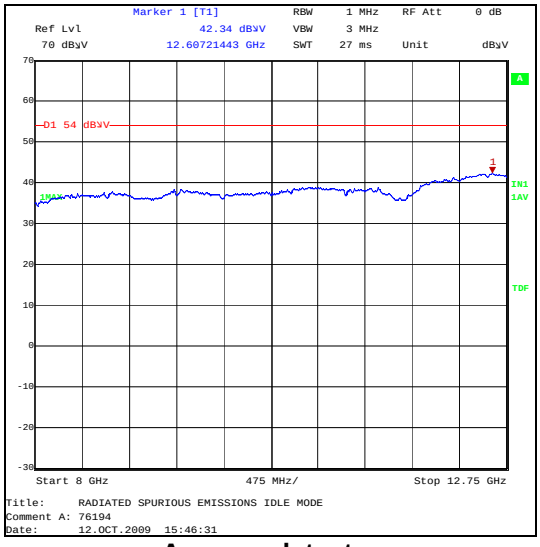
## Idle Mode Radiated Spurious Emissions (continued)




**Peak detector**




**Average detector**

## 5.2.3. Transmitter AC Conducted Spurious Emissions

### Test Summary:

| | |
|---|---|
| **FCC Part:** | 15.207 |
| **Test Method Used:** | As detailed in ANSI C63.4 Section 7 and relevant annexes |

### Environmental Conditions:

| | |
|---|---|
| **Temperature (°C):** | 25 |
| **Relative Humidity (%):** | 27 |

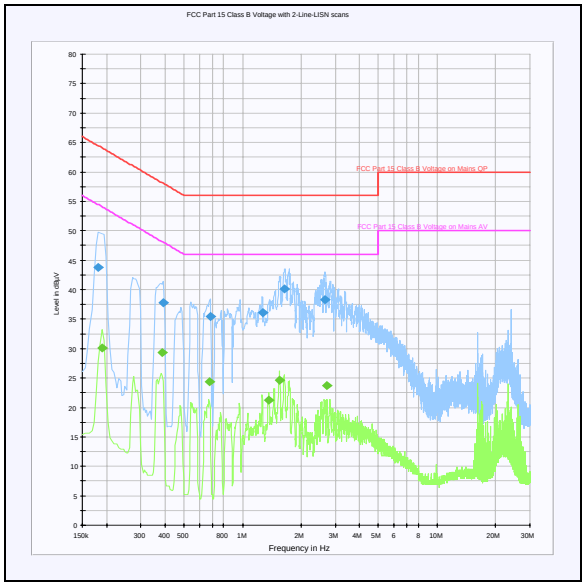
### Results: Quasi Peak Detector Measurements

| Frequency (MHz) | Line | Quasi Peak Level (dBµV) | Limit (dBµV) | Margin (dB) | Result |
|---|---|---|---|---|---|
| 0.181500 | Live | 43.8 | 64.4 | 20.6 | Complied |
| 0.388500 | Live | 37.8 | 58.1 | 20.3 | Complied |
| 0.681000 | Live | 35.5 | 56.0 | 20.5 | Complied |
| 1.266000 | Live | 36.1 | 56.0 | 19.9 | Complied |
| 1.639500 | Live | 40.1 | 56.0 | 15.9 | Complied |
| 2.638500 | Neutral | 38.2 | 56.0 | 17.8 | Complied |

### Results: Average Detector Measurements

| Frequency (MHz) | Line | Average Level (dBµV) | Limit (dBµV) | Margin (dB) | Result |
|---|---|---|---|---|---|
| 0.190500 | Live | 30.1 | 54.0 | 23.9 | Complied |
| 0.384000 | Live | 29.3 | 48.2 | 18.9 | Complied |
| 0.676500 | Live | 24.4 | 46.0 | 21.6 | Complied |
| 1.356000 | Live | 21.2 | 46.0 | 24.8 | Complied |
| 1.549500 | Live | 24.6 | 46.0 | 21.4 | Complied |
| 2.710500 | Neutral | 23.8 | 46.0 | 22.2 | Complied |

## Transmitter AC Conducted Spurious Emissions (continued)




*Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.*

## 5.2.4. Transmitter Effective Isotropic Radiated Power (EIRP)

### Test Summary:

| | |
|---|---|
| **FCC Part:** | 24.232 |
| **Test Method Used:** | As detailed in ANSI TIA-603-C-2004 Section 2.2.17.2 |

### Environmental Conditions:

| | |
|---|---|
| **Temperature (°C):** | 26 |
| **Relative Humidity (%):** | 29 |

### Results: GSM

| Channel | Frequency (MHz) | Antenna Polarity | EIRP (dBm) | Limit (dBm) | Margin (dBm) | Result |
|---|---|---|---|---|---|---|
| Bottom | 1850.2 | Horizontal | 29.4 | 33.0 | 3.6 | Complied |
| Middle | 1879.8 | Horizontal | 30.3 | 33.0 | 2.7 | Complied |
| Top | 1909.8 | Horizontal | 32.3 | 33.0 | 0.7 | Complied |

### Results: GPRS

| Channel | Frequency (MHz) | Antenna Polarity | EIRP (dBm) | Limit (dBm) | Margin (dBm) | Result |
|---|---|---|---|---|---|---|
| Bottom | 1850.2 | Horizontal | 27.8 | 33.0 | 5.2 | Complied |
| Middle | 1879.8 | Horizontal | 28.6 | 33.0 | 4.4 | Complied |
| Top | 1909.8 | Horizontal | 30.0 | 33.0 | 3.0 | Complied |

### Note(s):

1. The retractable antenna was in an extended position, as this was found to give the highest EIRP.

## 5.2.5. Transmitter Frequency Stability (Temperature)

### Test Summary:

| | |
|---|---|
| **FCC Part:** | 24.235 |
| **Test Method Used:** | As detailed in ANSI TIA-603-C-2004 Section 2.2.2 referencing FCC CFR Part 2.1055 |

### Environmental Conditions:

| | |
|---|---|
| **Temperature (°C):** | 27 |
| **Relative Humidity (%):** | 27 |

### Results: Bottom Channel (1850.2 MHz)

| Temperature (°C) | Frequency Error (Hz) | Measured Frequency (MHz) | Lower Band Edge Limit (MHz) | Margin (MHz) | Result |
|---|---|---|---|---|---|
| -30 | 18 | 1850.200018 | 1850.0 | 0.200018 | Complied |
| -20 | 26 | 1850.200026 | 1850.0 | 0.200026 | Complied |
| -10 | 21 | 1850.200021 | 1850.0 | 0.200021 | Complied |
| 0 | 19 | 1850.200019 | 1850.0 | 0.200019 | Complied |
| 10 | 29 | 1850.200029 | 1850.0 | 0.200029 | Complied |
| 20 | 28 | 1850.200028 | 1850.0 | 0.200028 | Complied |
| 30 | 38 | 1850.200038 | 1850.0 | 0.200038 | Complied |
| 40 | 40 | 1850.200040 | 1850.0 | 0.200040 | Complied |
| 50 | 35 | 1850.200035 | 1850.0 | 0.200035 | Complied |

### Results: Top Channel (1909.8 MHz)

| Temperature (°C) | Frequency Error (Hz) | Measured Frequency (MHz) | Upper Band Edge Limit (MHz) | Margin (MHz) | Result |
|---|---|---|---|---|---|
| -30 | 33 | 1909.800033 | 1910.0 | 0.199967 | Complied |
| -20 | 15 | 1909.800015 | 1910.0 | 0.199985 | Complied |
| -10 | 25 | 1909.800025 | 1910.0 | 0.199975 | Complied |
| 0 | 23 | 1909.800023 | 1910.0 | 0.199977 | Complied |
| 10 | 26 | 1909.800026 | 1910.0 | 0.199974 | Complied |
| 20 | 32 | 1909.800032 | 1910.0 | 0.199968 | Complied |
| 30 | 39 | 1909.800039 | 1910.0 | 0.199961 | Complied |
| 40 | 37 | 1909.800037 | 1910.0 | 0.199963 | Complied |
| 50 | 36 | 1909.800036 | 1910.0 | 0.199964 | Complied |

## 5.2.6. Transmitter Frequency Stability (Voltage Variation)

### Test Summary:

| | |
|---|---|
| **FCC Part:** | 24.235 |
| **Test Method Used:** | As detailed in ANSI TIA-603-C-2004 Section 2.2.2 referencing FCC CFR Part 2.1055 |

### Environmental Conditions:

| | |
|---|---|
| **Temperature (°C):** | 27 |
| **Relative Humidity (%):** | 29 |

### Results: Bottom Channel (1850.2 MHz)

| Supply Voltage (V) | Frequency Error (Hz) | Measured Frequency (MHz) | Lower Band Edge Limit (MHz) | Margin (MHz) | Result |
|---|---|---|---|---|---|
| 3.145 | -29 | 1850.199971 | 1850.0 | 0.199971 | Complied |
| 4.255 | -23 | 1850.199977 | 1850.0 | 0.199977 | Complied |

### Results: Top Channel (1909.8 MHz)

| Supply Voltage (V) | Frequency Error (Hz) | Measured Frequency (MHz) | Upper Band Edge Limit (MHz) | Margin (MHz) | Result |
|---|---|---|---|---|---|
| 3.145 | -34 | 1909.799966 | 1910.0 | 0.200034 | Complied |
| 4.255 | -31 | 1909.799969 | 1910.0 | 0.200031 | Complied |

## 5.2.7. Transmitter Occupied Bandwidth

### Test Summary:

| | |
|---|---|
| **FCC Part:** | 24.238 |
| **Test Method Used:** | As detailed in ANSI C63.4 Section13.1.7 and relevant annexes referencing FCC CFR Part 2.1049 (see note below) |
| **Modulation:** | GSM Circuit Switched |

### Environmental Conditions:

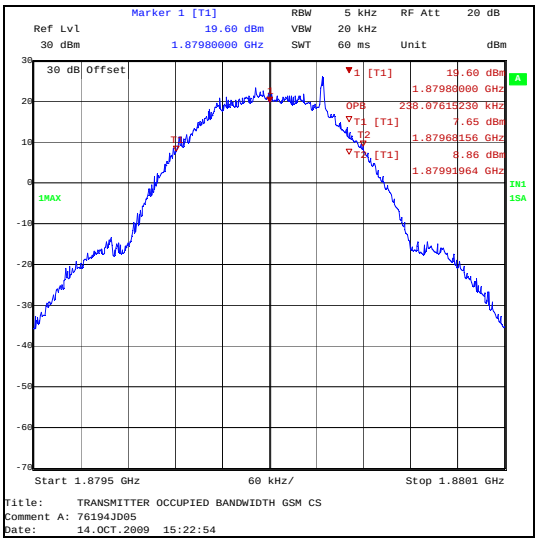
| | |
|---|---|
| **Temperature (°C):** | 28 |
| **Relative Humidity (%):** | 29 |

### Results:

| Channel | Frequency (MHz) | Occupied Bandwidth (kHz) |
|---|---|---|
| Middle | 1879.8 | 238.076 |

### Note(s):

2. In lieu of the test method detailed in ANSI C63.4 Section 13.1.7 the 99% occupied bandwidth was measured using the Occupied Bandwidth function of the spectrum analyser.



## Transmitter Occupied Bandwidth (continued)

## Test Summary:

| | |
|---|---|
| **FCC Part:** | 24.238 |
| **Test Method Used:** | As detailed in ANSI C63.4 Section13.1.7 and relevant annexes referencing FCC CFR Part 2.1049 (see note below) |
| **Modulation:** | GPRS |

## Environmental Conditions:

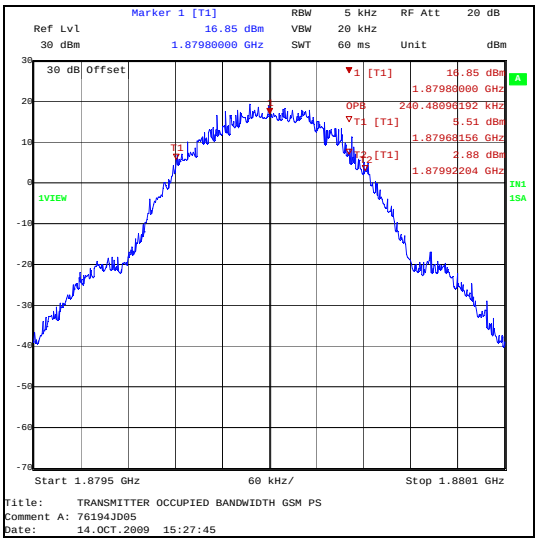
| | |
|---|---|
| **Temperature (°C):** | 28 |
| **Relative Humidity (%):** | 29 |

## Results:

| Channel | Frequency (MHz) | Occupied Bandwidth (kHz) |
|---|---|---|
| Middle | 1879.8 | 240.481 |

## Note(s):

1. In lieu of the test method detailed in ANSI C63.4 Section 13.1.7 the 99% occupied bandwidth was measured using the Occupied Bandwidth function of the spectrum analyser.



## 5.2.8. Transmitter Out of Band Radiated Emissions

### Test Summary:

| | |
|---|---|
| **FCC Part:** | 2.1053 & 24.238 |
| **Frequency Range:** | 30 MHz to 20 GHz |
| **Test Method Used:** | As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Parts 2.1053 and 24.238 |

### Environmental Conditions:

| | |
|---|---|
| **Temperature (°C):** | 27 |
| **Relative Humidity (%):** | 36 |

### Results: Bottom Channel

| Frequency (MHz) | Peak Emission Level (dBm) | Limit (dBm) | Margin (dBm) | Result |
|---|---|---|---|---|
| 3700.410 | -38.4 | -13.0 | 25.4 | Complied |
| 5550.327 | -38.6 | -13.0 | 25.6 | Complied |
| 7400.798 | -24.6 | -13.0 | 11.6 | Complied |
| 9250.759 | -26.9 | -13.0 | 13.9 | Complied |

### Results: Middle Channel

| Frequency (MHz) | Peak Emission Level (dBm) | Limit (dBm) | Margin (dBm) | Result |
|---|---|---|---|---|
| 3759.434 | -37.2 | -13.0 | 24.2 | Complied |
| 5639.173 | -33.5 | -13.0 | 20.5 | Complied |
| 7519.352 | -24.0 | -13.0 | 11.0 | Complied |
| 9399.195 | -25.2 | -13.0 | 12.2 | Complied |

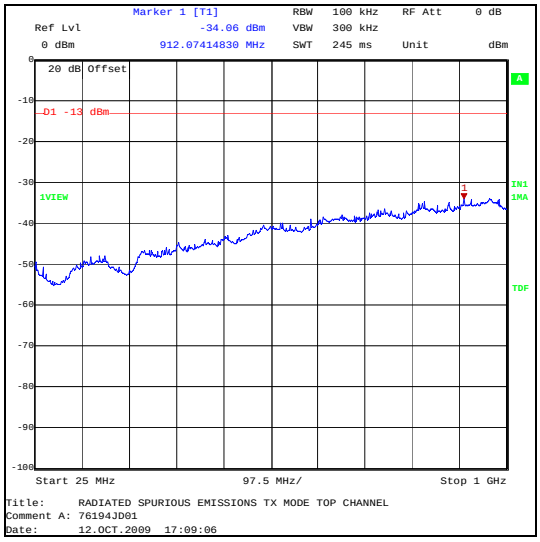
### Results: Top Channel

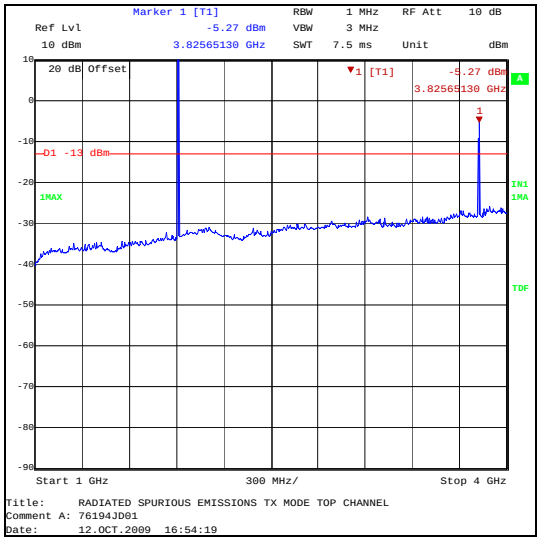
| Frequency (MHz) | Peak Emission Level (dBm) | Limit (dBm) | Margin (dBm) | Result |
|---|---|---|---|---|
| 3819.618 | -36.8 | -13.0 | 23.8 | Complied |
| 5729.619 | -34.9 | -13.0 | 21.9 | Complied |
| 7638.828 | -26.1 | -13.0 | 13.1 | Complied |
| 9548.767 | -24.4 | -13.0 | 11.4 | Complied |

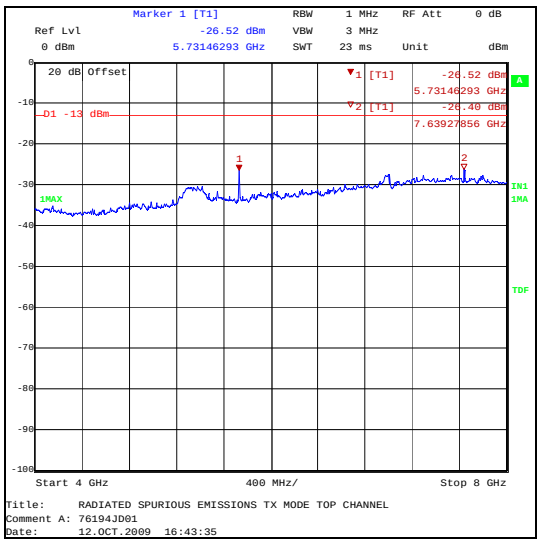
### Note(s):

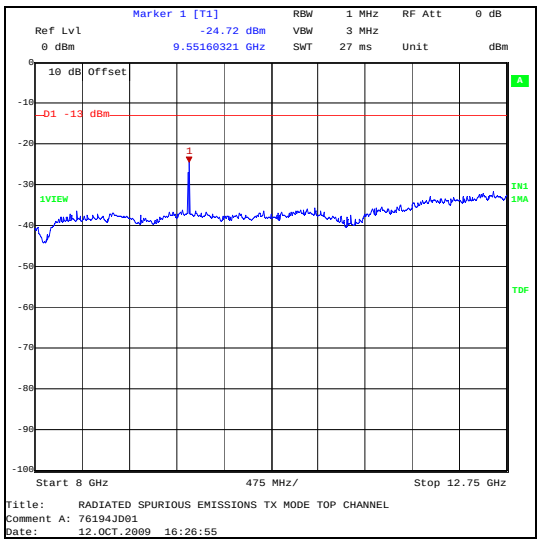
1. The transmitter fundamental is shown on the 1 GHz to 4 GHz pre-scan plot at approximately 1908 MHz.
2. The test antenna was rotated in the horizontal and vertical planes. The highest levels were recorded in the above table.
3. The high level of the 2nd harmonic (at 3.8256 GHz on the 1 GHz to 4 GHz plot) is caused by distortion in the preamplifier used during pre-scans. The final measurement of this harmonic emission was measured using an appropriate filter.

## Transmitter Out of Band Radiated Emissions (continued)

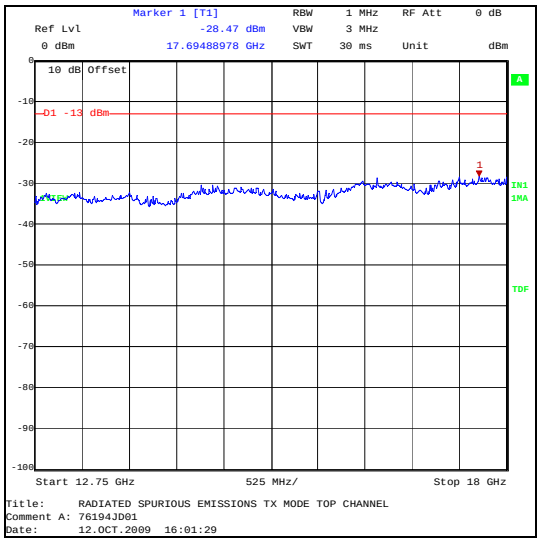


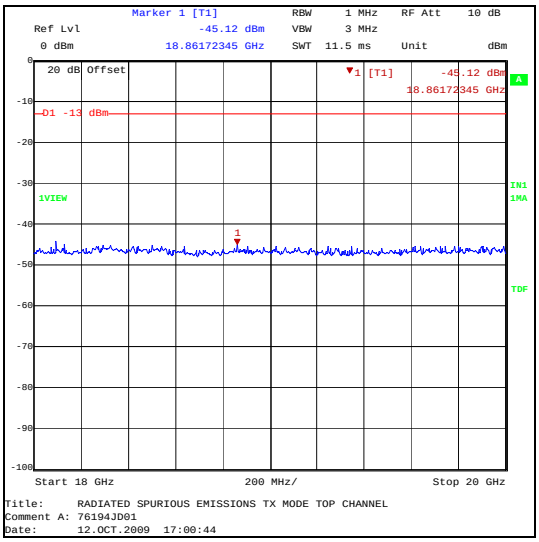



## Transmitter Out of Band Radiated Emissions (continued)




*Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.*

## 5.2.9. Transmitter Radiated Emissions at Band Edges

### Test Summary:

| | |
|---|---|
| **FCC Part:** | 2.1053 & 24.238 |
| **Test Method Used:** | As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Parts 2.1053 and 24.238 |
| **Modulation:** | GSM |

### Environmental Conditions:

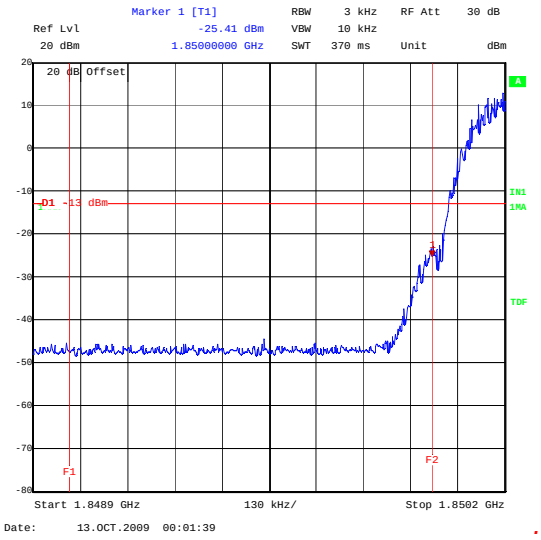
| | |
|---|---|
| **Temperature (°C):** | 26 |
| **Relative Humidity (%):** | 32 |

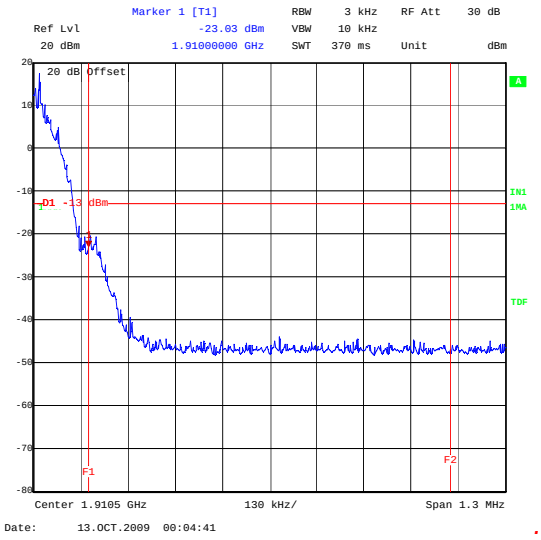
### Results: Bottom Band Edge

| Frequency (MHz) | Peak Emission Level (dBm) | Limit (dBm) | Margin (dBm) | Result |
|---|---|---|---|---|
| 1850.0 | -25.4 | -13.0 | 12.4 | Complied |

### Results: Top Band Edge

| Frequency (MHz) | Peak Emission Level (dBm) | Limit (dBm) | Margin (dBm) | Result |
|---|---|---|---|---|
| 1910.0 | -23.0 | -13.0 | 10.0 | Complied |



## Transmitter Radiated Emissions at Band Edges (continued)

## Test Summary:

| | |
|---|---|
| **FCC Part:** | 2.1053 & 24.238 |
| **Test Method Used:** | As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Parts 2.1053 and 24.238 |
| **Modulation:** | GPRS |

## Environmental Conditions:

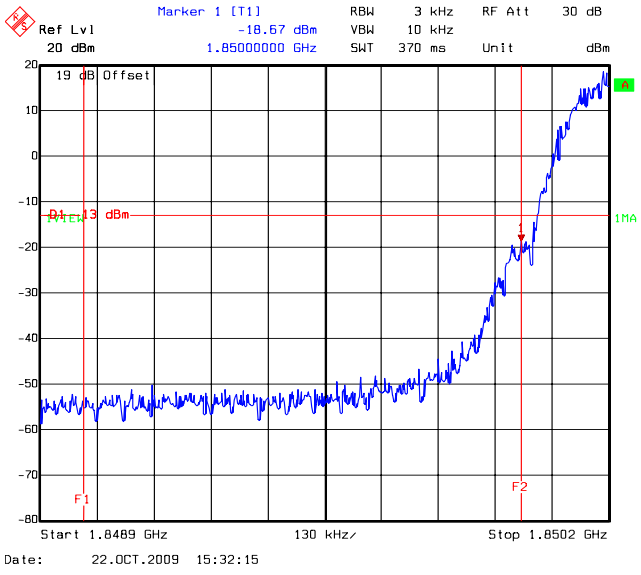
| | |
|---|---|
| **Temperature (°C):** | 26 |
| **Relative Humidity (%):** | 33 |

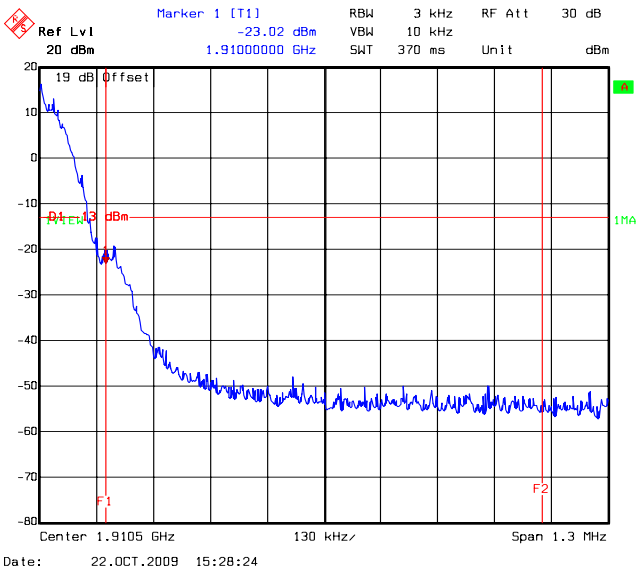
## Results: Bottom Band Edge

| Frequency (MHz) | Peak Emission Level (dBm) | Limit (dBm) | Margin (dBm) | Result |
|---|---|---|---|---|
| 1850 | -18.7 | -13.0 | 5.7 | Complied |

## Results: Top Band Edge

| Frequency (MHz) | Peak Emission Level (dBm) | Limit (dBm) | Margin (dBm) | Result |
|---|---|---|---|---|
| 1910 | -23.0 | -13.0 | 10.0 | Complied |



## 6. Measurement Uncertainty

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor such that a confidence level of approximately 95% is maintained. For the purposes of this document “approximately” is interpreted as meaning “effectively” or “for most practical purposes”.

| Measurement Type | Range | Confidence Level (%) | Calculated Uncertainty |
|---|---|---|---|
| AC Conducted Spurious Emissions | 0.15 MHz to 30 MHz | 95% | ±3.72 dB |
| Effective Isotropic Radiated Power (EIRP) | Not applicable | 95% | ±2.94 dB |
| Frequency Stability | Not applicable | 95% | ±0.92 ppm |
| Occupied Bandwidth | Not applicable | 95% | ±0.92 ppm |
| Radiated Spurious Emissions | 30 MHz to 26 GHz | 95% | ±2.94 dB |

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty the published guidance of the appropriate accreditation body is followed.

# Appendix 1. Test Equipment Used

| RFI No. | Instrument | Manufacturer | Type No. | Serial No. | Date Last Calibrated | Cal. Interval (Months) |
|---|---|---|---|---|---|---|
| A1141 | Directional Coupler | Hewlett Packerd | 11691D | 1212A02494 | Calibrated before use | - |
| A1391 | Attenuator | Huber + Suhner | 757987 | 6810.17.B | Calibrated before use | - |
| A1392 | Attenuator | Huber + Suhner | 757456 | 6820.17.B | Calibrated before use | - |
| A1394 | Attenuator | Huber + Suhner | 753459 | 6806.17.B | Calibrated before use | - |
| A1534 | Pre Amplifier | Hewlett Packard | 8449B OPT H02 | 3008A00405 | Calibrated before use | - |
| A1818 | Antenna | EMCO | 3115 | 00075692 | 25 Oct 2008 | 12 |
| A1830 | Pulse Limiter | Rhode & Schwarz | ESH3-Z2 | 100668 | 05 Jan 2009 | 12 |
| A1931 | High Pass Filter | AtlanTecRF | AFH-02000 | 20r-JFBD04-001 | Calibrated before use | - |
| A1975 | High Pass Filter | AtlanTecRF | AFH-03000 | 090424010 | Calibrated before use | - |
| A288 | Antenna | Chase | CBL6111A | 1589 | 13 Mar 2009 | 12 |
| A649 | LISN | Rohde & Schwarz | ESH3-Z5 | 825562/008 | 19 Mar 2009 | 12 |
| E013 | Environmental Chamber | Sanyo | ATMOS chamber | None | Calibrated before use | - |
| K0002 | 3m RSE Chamber | Rainford EMC | N/A | N/A | 01 Sep 2009 | 12 |
| L0990 | CMU 200 | R&S | CMU 200 | S220447 | 18 Feb 2009 | 12 |
| M1124 | Spectrum Analyser | Rohde & Schwarz | ESIB26 | 100046K | 09 Mar 2009 | 12 |
| M1263 | Test Receiver | Rohde & Schwarz | ESIB7 | 100265 | 22 Apr 2009 | 12 |
| M1269 | Multimeter | Fluke | 179 | 90250210 | 23 Jun 2009 | 12 |
| M1379 | Test Receiver | Rohde & Schwarz | ESIB7 | 100330 | 20 Aug 2009 | 12 |
| M208 | Thermometer | RS Components | RS212-124 | N/A | 30 Apr 2009 | 12 |
| S021 | DC Power Supply | Thurlby Thandar | CPX200 | 061034 | Calibrated before use | - |

**NB** In accordance with UKAS requirements all the measurement equipment is on a calibration schedule.