



TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: SoftBank 842P

To: FCC Part 24: 2009 Subpart E

Test Report Serial No:
RFI-RPT-RP77281JD03A_V2.0

Version 2.0 supersedes all previous versions

| | | |
|--|--|--|
| This Test Report Is Issued Under The Authority Of Brian Watson, COO Payments and Consultancy: | |  |
| Checked By: | Tony Henriques | |
| Signature: |  | |
| Date of Issue: | 14 May 2010 | |

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1. Customer Information











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

2. Summary of Testing

2.1. General Information

| | |
|---------------------------------|--|
| Specification Reference: | 47CFR24 |
| Specification Title: | Code of Federal Regulations Volume 47 (Telecommunications) 2009: Part 24 Subpart E (Personal Communication Services) |
| Site Registration: | 209735 |
| Location of Testing: | RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH. |
| Test Dates: | 23 April 2010 to 28 April 2010 |

2.2. Summary of Test Results

| FCC Reference (47CFR) | Measurement | Result |
|--|---|---|
| Part 15.107 | Receiver/Idle Mode AC Conducted Spurious Emissions |  |
| Part 15.109 | Receiver/Idle Mode Radiated Spurious Emissions |  |
| Part 15.207 | Transmitter AC Conducted Spurious Emissions |  |
| Part 24.232 | Transmitter Effective Isotropic Radiated Power (EIRP) and Conducted Average Power |  |
| Part 24.235 | Transmitter Frequency Stability (Temperature & Voltage Variation) |  |
| Part 2.1049, 24.238 | Transmitter Occupied Bandwidth |  |
| Part 2.1053, 24.238 | Transmitter Out of Band Radiated Emissions |  |
| Part 2.1053, 24.238 | Transmitter Band Edge Radiated Emissions |  |
| 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 (2009) |
| Title: | American National Standard for Methods of Measurement of Radio-Noise 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 842P |
| Model Name or Number: | EB-3226 |
| IMEI Number: | 004401220943530 (<i>Radiated Sample</i>); 004401220943464 (<i>Conducted RF Port Sample</i>); |
| Hardware Version Number: | Rev B |
| Software Version Number: | 842PVA08 |
| FCC ID Number: | UCE210029A |

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

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

| | |
|------------------------------|---------------------|
| Description: | Personal Hands-free |
| Brand Name: | SoftBank |
| Model Name or Number: | ZTBBA1 |

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

3.2. Description of EUT

The equipment under test was a dual mode (W-CDMA FDD1/GSM900/1800/1900MHz) cellular mobile telephone with RFID.

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: | PCS 1900 | | |
| 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) Radiated: | GSM | 29.2 dBm | |
| | GPRS | 27.6 dBm | |
| Maximum Output Power Conducted | GSM | 29.5 dBm | |
| | GPRS | 27.5 dBm | |
| Transmit Frequency Range: | 1850 MHz 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 MHz 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: | Micro-SD memory card |
| Brand Name: | Not Stated |
| Model Name or Number: | Not Stated |

| | |
|------------------------------|---------------|
| Description: | Dummy Battery |
| Brand Name: | Not Stated |
| Model Name or Number: | Not Stated |

| | |
|------------------------------|---------|
| Description: | USB HUB |
| Brand Name: | Buffalo |
| Model Name or Number: | BSH3U01 |

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 measurements were performed with the EUT in GSM, single timeslot, circuit switched mode and also in GPRS mode transmitting packet data 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.
- The sample with IMEI 004401220943464 was used for frequency stability measurements. The sample with IMEI 004401220943530 was used for all other measurements.
- The SDRAM card was present in the EUT during all testing.
- The dummy battery was fitted for frequency stability measurements.
- Radiated emissions were performed with the Personal Hands Free connected to the EUT. All supplied accessories were initially tested and the EUT was found to radiate the highest level emissions with the Personal Hands Free connected.

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. Receiver/Idle Mode AC Conducted Spurious Emissions****Test Summary:**

| | |
|--------------------------|----------------------|
| FCC Part: | 15.107 |
| Test Method Used: | ANSI C63.4 Section 7 |

Environmental Conditions:

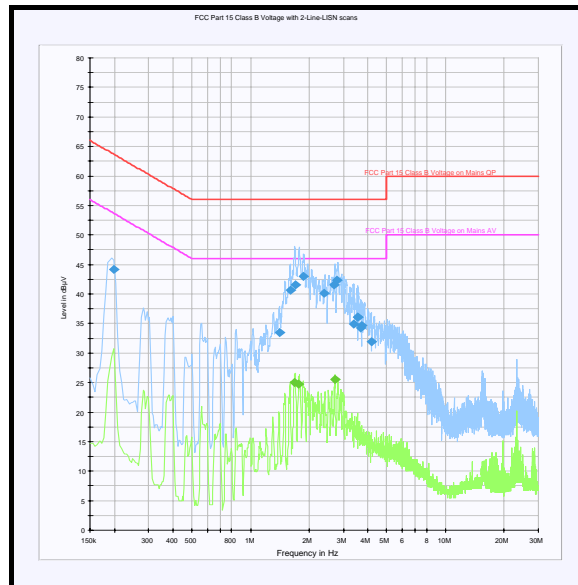
| | |
|-------------------------------|----|
| Temperature (°C): | 27 |
| Relative Humidity (%): | 25 |

Results: Quasi Peak Detector Measurements

| Frequency (MHz) | Line | Quasi Peak Level (dBμV) | Limit (dBμV) | Margin (dB) | Result |
|-----------------|---------|-------------------------|--------------|-------------|----------|
| 0.199500 | Live | 44.1 | 63.6 | 19.5 | Complete |
| 1.405500 | Neutral | 33.5 | 56.0 | 22.5 | Complete |
| 1.599000 | Neutral | 40.7 | 56.0 | 15.3 | Complete |
| 1.693500 | Neutral | 41.5 | 56.0 | 14.5 | Complete |
| 1.869000 | Neutral | 43.0 | 56.0 | 13.0 | Complete |
| 2.395500 | Neutral | 40.1 | 56.0 | 15.9 | Complete |
| 2.692500 | Neutral | 41.6 | 56.0 | 14.4 | Complete |
| 2.787000 | Neutral | 42.3 | 56.0 | 13.7 | Complete |
| 3.381000 | Neutral | 34.9 | 56.0 | 21.1 | Complete |
| 3.534000 | Neutral | 36.1 | 56.0 | 19.9 | Complete |
| 3.543000 | Neutral | 36.1 | 56.0 | 19.9 | Complete |
| 3.687000 | Neutral | 34.3 | 56.0 | 21.7 | Complete |
| 3.714000 | Neutral | 34.6 | 56.0 | 21.4 | Complete |
| 4.155000 | Neutral | 31.9 | 56.0 | 24.1 | Complete |

Results: Average Detector Measurements

| Frequency (MHz) | Line | Average Level (dBμV) | Limit (dBμV) | Margin (dB) | Result |
|-----------------|---------|----------------------|--------------|-------------|----------|
| 1.671000 | Neutral | 25.0 | 46.0 | 21.0 | Complete |
| 1.765500 | Neutral | 24.7 | 46.0 | 21.3 | Complete |
| 2.697000 | Neutral | 25.6 | 46.0 | 20.4 | Complete |

Receiver/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. Receiver/Idle Mode Radiated Spurious Emissions**Test Summary:**

| | |
|-------------------|----------------------|
| FCC Part: | 15.109 |
| Frequency Range: | 30 MHz to 1000 MHz |
| Test Method Used: | ANSI C63.4 Section 8 |

Environmental Conditions:

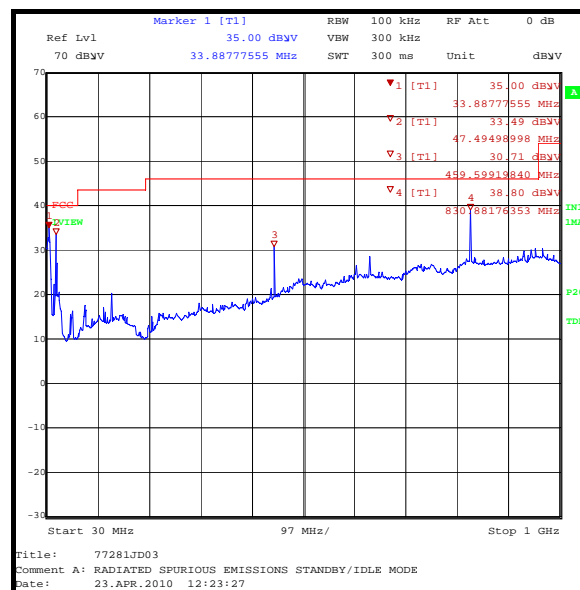
| | |
|------------------------|----|
| Temperature (°C): | 26 |
| Relative Humidity (%): | 17 |

Results:

| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 34.579 | Vertical | 28.8 | 40.0 | 11.2 | Complied |
| 50.089 | Vertical | 25.1 | 40.0 | 14.9 | Complied |
| 458.781 | Vertical | 27.0 | 46.0 | 19.0 | Complied |
| 615.239 | Horizontal | 28.8 | 46.0 | 17.2 | Complied |
| 639.214 | Vertical | 29.1 | 46.0 | 16.9 | Complied |
| 753.606 | Horizontal | 29.3 | 46.0 | 16.7 | Complied |
| 831.243 | Horizontal | 31.3 | 46.0 | 14.7 | Complied |

Note(s):

1. Measurements were performed with the test antenna in the vertical and horizontal planes and the EUT in the X, Y and Z planes. The highest level was recorded

Receiver/Idle Mode Radiated Spurious Emissions (continued)

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

Receiver/Idle Mode Radiated Spurious Emissions (continued)**Test Summary:**

| | |
|-------------------|----------------------|
| FCC Part: | 15.109 |
| Frequency Range: | 1 GHz to 12.75 GHz |
| Test Method Used: | ANSI C63.4 Section 7 |

Environmental Conditions:

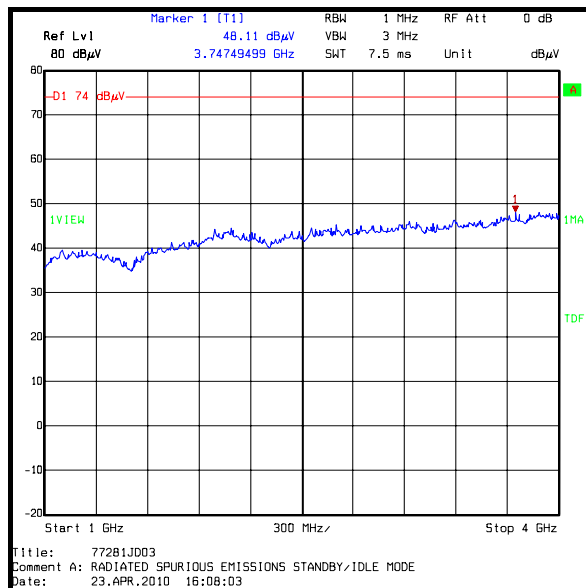
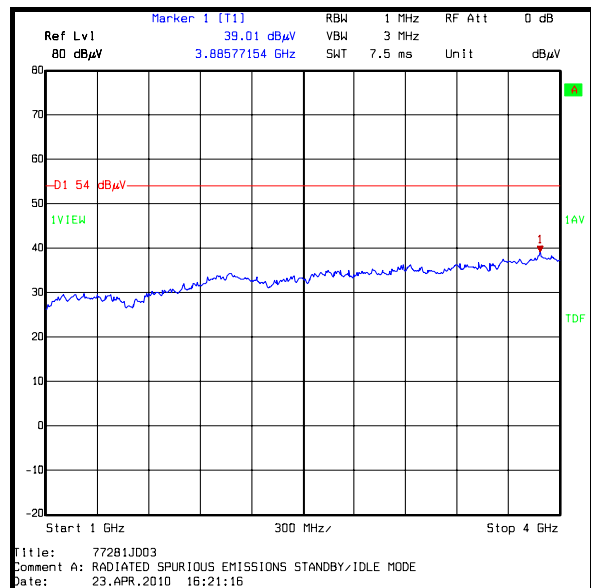
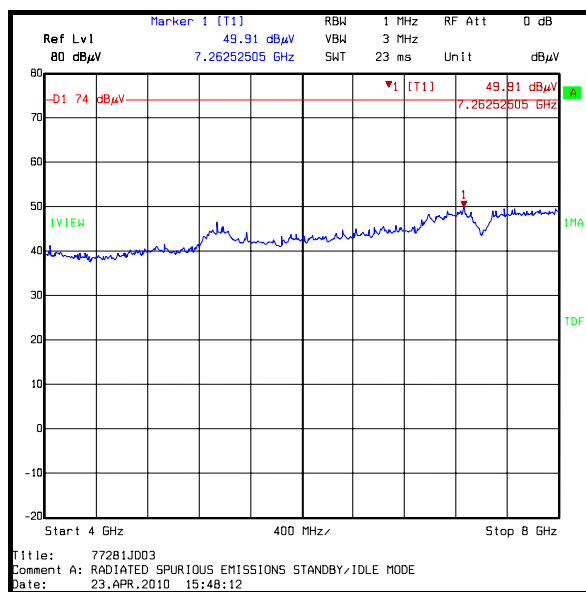
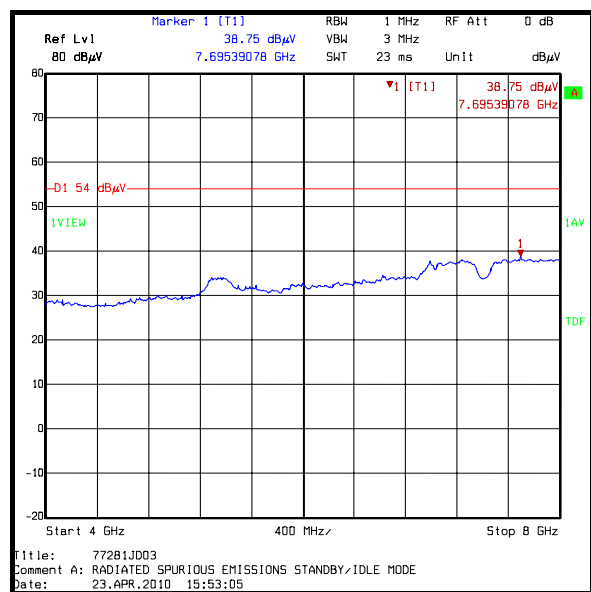
| | |
|------------------------|----|
| Temperature (°C): | 27 |
| Relative Humidity (%): | 14 |

Results: Peak

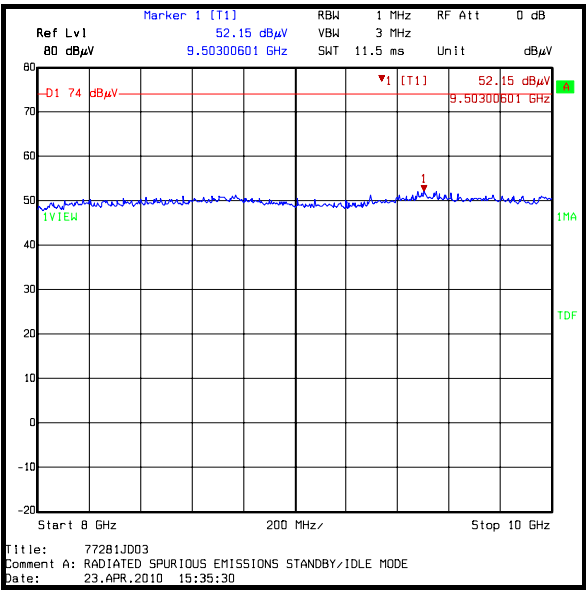
| Frequency (MHz) | Antenna Polarity | Peak Level (dB μ V/m) | Average Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|---------------------------|------------------------------|-------------|----------|
| 9503.006 | Vertical | 52.2 | 54.0 | 1.8 | Complied |

Note(s):

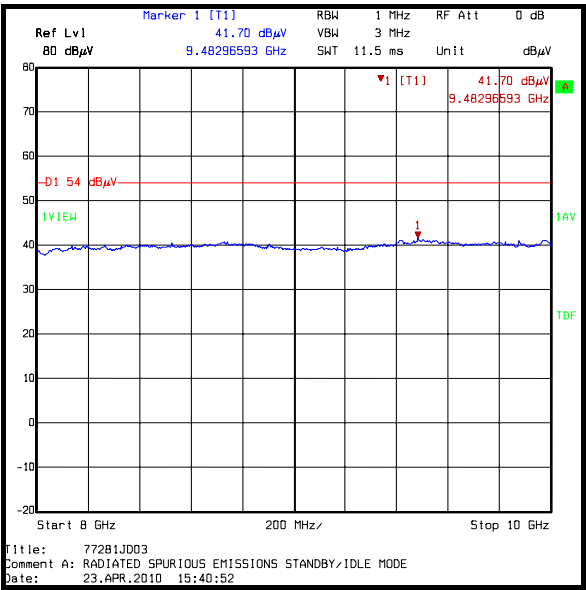
1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above. The peak level was compared to the average limit as this is the more onerous limit.
2. Measurements were performed with the test antenna in the vertical and horizontal planes and the EUT in the X, Y and Z planes. The highest level was recorded.

Receiver/Idle Mode Radiated Spurious Emissions (continued)**Peak Detector****Average Detector****Peak Detector****Average Detector**

Receiver/Idle Mode Radiated Spurious Emissions (continued)



Peak Detector



Average Detector

5.2.3. Transmitter AC Conducted Spurious Emissions**Test Summary:**

| | |
|--------------------------|----------------------|
| FCC Part: | 15.207(a) |
| Test Method Used: | ANSI C63.4 Section 7 |

Environmental Conditions:

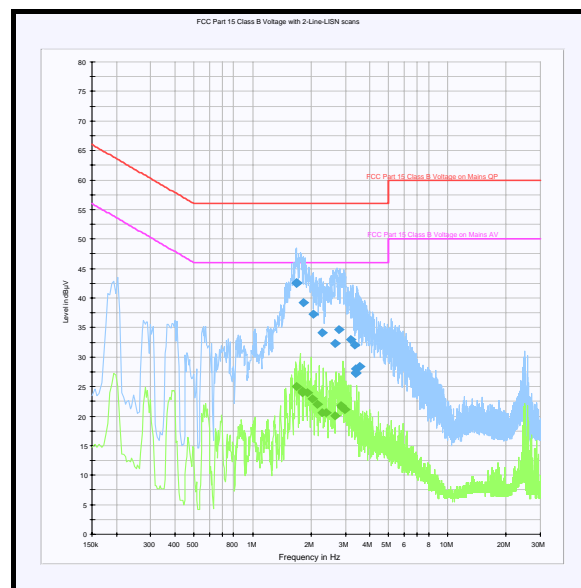
| | |
|-------------------------------|----|
| Temperature (°C): | 28 |
| Relative Humidity (%): | 25 |

Results: Quasi Peak Detector Measurements

| Frequency (MHz) | Line | Quasi Peak Level (dBμV) | Limit (dBμV) | Margin (dB) | Result |
|------------------------|-------------|---|------------------------------------|--------------------|---------------|
| 1.671000 | Neutral | 42.6 | 56.0 | 13.4 | Complied |
| 1.680000 | Neutral | 42.5 | 56.0 | 13.5 | Complied |
| 1.815000 | Neutral | 39.3 | 56.0 | 16.7 | Complied |
| 2.040000 | Neutral | 37.3 | 56.0 | 18.7 | Complied |
| 2.278500 | Neutral | 34.2 | 56.0 | 21.8 | Complied |
| 2.656500 | Neutral | 32.3 | 56.0 | 23.7 | Complied |
| 2.773500 | Neutral | 34.6 | 56.0 | 21.4 | Complied |
| 3.210000 | Neutral | 33.0 | 56.0 | 23.0 | Complied |
| 3.363000 | Neutral | 32.1 | 56.0 | 23.9 | Complied |
| 3.367500 | Neutral | 27.3 | 56.0 | 28.7 | Complied |
| 3.381000 | Neutral | 27.2 | 56.0 | 28.8 | Complied |
| 3.385500 | Neutral | 28.1 | 56.0 | 27.9 | Complied |
| 3.561000 | Neutral | 28.5 | 56.0 | 27.5 | Complied |

Transmitter AC Conducted Spurious Emissions (continued)**Results: Average Detector Measurements**

| Frequency (MHz) | Line | Average Level (dB μ V) | Limit (dB μ V) | Margin (dB) | Result |
|-----------------|---------|----------------------------|--------------------|-------------|----------|
| 1.680000 | Neutral | 25.0 | 46.0 | 21.0 | Complied |
| 1.797000 | Neutral | 23.9 | 46.0 | 22.1 | Complied |
| 1.801500 | Neutral | 24.3 | 46.0 | 21.7 | Complied |
| 1.918500 | Neutral | 24.0 | 46.0 | 22.0 | Complied |
| 2.022000 | Neutral | 23.0 | 46.0 | 23.0 | Complied |
| 2.157000 | Neutral | 22.1 | 46.0 | 23.9 | Complied |
| 2.269500 | Neutral | 20.6 | 46.0 | 25.4 | Complied |
| 2.395500 | Neutral | 20.6 | 46.0 | 25.4 | Complied |
| 2.643000 | Neutral | 20.1 | 46.0 | 25.9 | Complied |
| 2.854500 | Neutral | 21.7 | 46.0 | 24.3 | Complied |
| 2.872500 | Neutral | 21.5 | 46.0 | 24.5 | Complied |
| 2.985000 | Neutral | 21.1 | 46.0 | 24.9 | Complied |



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) and Conducted Average Power Test Summary:

| | |
|--------------------------|------------------------------------|
| FCC Part: | 24.232 |
| Test Method Used: | ANSI TIA-603-C-2004 Section 2.2.17 |

Environmental Conditions:

| | |
|-------------------------------|----|
| Temperature (°C): | 25 |
| Relative Humidity (%): | 26 |

Results: EIRP Peak GSM Circuit Switched

| Channel | Measured Frequency (MHz) | Antenna Polarity | Measured Level (dBm) | Limit (dBm) | Margin (dBm) | Result |
|---------|--------------------------|------------------|----------------------|-------------|--------------|----------|
| Bottom | 1850.2 | Horizontal | 28.9 | 33.0 | 4.1 | Complied |
| Middle | 1879.8 | Horizontal | 29.0 | 33.0 | 4.0 | Complied |
| Top | 1909.8 | Horizontal | 29.2 | 33.0 | 3.8 | Complied |

Results: Conducted Average Power GSM Circuit Switched

| Channel | Measured Frequency (MHz) | Antenna Polarity | Measured Level (dBm) | Limit (dBm) | Margin (dBm) | Result |
|---------|--------------------------|------------------|----------------------|-------------|--------------|----------|
| Bottom | 1850.2 | Horizontal | 29.5 | 33.0 | 3.5 | Complied |
| Middle | 1879.8 | Horizontal | 29.3 | 33.0 | 3.7 | Complied |
| Top | 1909.8 | Horizontal | 28.7 | 33.0 | 4.3 | Complied |

Results: EIRP Peak GPRS Packet Switched

| Channel | Measured Frequency (MHz) | Antenna Polarity | Measured Level (dBm) | Limit (dBm) | Margin (dBm) | Result |
|---------|--------------------------|------------------|----------------------|-------------|--------------|----------|
| Bottom | 1850.2 | Horizontal | 27.1 | 33.0 | 5.9 | Complied |
| Middle | 1879.8 | Horizontal | 27.5 | 33.0 | 5.5 | Complied |
| Top | 1909.8 | Horizontal | 27.6 | 33.0 | 5.4 | Complied |

Results: Conducted Average Power GPRS Packet Switched

| Channel | Measured Frequency (MHz) | Antenna Polarity | Measured Level (dBm) | Limit (dBm) | Margin (dBm) | Result |
|---------|--------------------------|------------------|----------------------|-------------|--------------|----------|
| Bottom | 1850.2 | Horizontal | 27.5 | 33.0 | 5.5 | Complied |
| Middle | 1879.8 | Horizontal | 27.3 | 33.0 | 5.7 | Complied |
| Top | 1909.8 | Horizontal | 26.6 | 33.0 | 6.4 | Complied |

Note(s):

1. EIRP Measurements takes into consideration the EUT antenna gain and includes this in the measurements.

5.2.5. Transmitter Frequency Stability (Temperature Variation)**Test Summary:**

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

Environmental Conditions:

| | |
|---------------------------------------|----|
| Ambient Temperature (°C): | 28 |
| Ambient Relative Humidity (%): | 30 |

Results: Bottom Channel (1850.2 MHz)

| Temperature (°C) | Frequency Error (Hz) | Measured Frequency (MHz) | Lower Band Edge Limit (MHz) | Margin (MHz) | Result |
|------------------|----------------------|--------------------------|-----------------------------|--------------|----------|
| -30 | 59 | 1850.199941 | 1850.0 | 0.199941 | Complied |
| -20 | 43 | 1850.199957 | 1850.0 | 0.199957 | Complied |
| -10 | 47 | 1850.199953 | 1850.0 | 0.199953 | Complied |
| 0 | 37 | 1850.200037 | 1850.0 | 0.200037 | Complied |
| 10 | 41 | 1850.199959 | 1850.0 | 0.199959 | Complied |
| 20 | 42 | 1850.199958 | 1850.0 | 0.199958 | Complied |
| 30 | 40 | 1850.199960 | 1850.0 | 0.199960 | Complied |
| 40 | 41 | 1850.199959 | 1850.0 | 0.199959 | Complied |
| 50 | 32 | 1850.199968 | 1850.0 | 0.199968 | Complied |

Results: Top Channel (1909.8 MHz)

| Temperature (°C) | Frequency Error (Hz) | Measured Frequency (MHz) | Upper Band Edge Limit (MHz) | Margin (MHz) | Result |
|------------------|----------------------|--------------------------|-----------------------------|--------------|----------|
| -30 | 56 | 1909.799944 | 1910.0 | 0.200056 | Complied |
| -20 | 46 | 1909.799954 | 1910.0 | 0.200046 | Complied |
| -10 | 48 | 1909.799952 | 1910.0 | 0.200048 | Complied |
| 0 | 38 | 1909.799962 | 1910.0 | 0.200038 | Complied |
| 10 | 36 | 1909.799964 | 1910.0 | 0.200036 | Complied |
| 20 | 40 | 1909.799960 | 1910.0 | 0.200040 | Complied |
| 30 | 46 | 1909.799954 | 1910.0 | 0.200046 | Complied |
| 40 | 42 | 1909.799958 | 1910.0 | 0.200042 | Complied |
| 50 | 33 | 1909.799967 | 1910.0 | 0.200033 | Complied |

Transmitter Frequency Stability (Temperature Variation) (continued)**Note(s):**

1. Frequency error was measured using the PCS 1900 modulation test on a calibrated Rohde & Schwarz CMU 200 Universal Radio Communications Tester in accordance with current Rohde & Schwarz application notes. The EUT was placed in a temperature chamber and connected by suitable RF cables to the CMU 200 outside the chamber. A bidirectional communications link was established on the centre channel between the EUT and the CMU 200. The frequency meter value was recorded.
2. Temperature was monitored throughout the test with a calibrated digital thermometer
3. A dummy battery was placed on the EUT and the dummy battery cables connected to a bench power supply.

5.2.6. Transmitter Frequency Stability (Voltage Variation)**Test Summary:**

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

Environmental Conditions:

| | |
|---------------------------------------|----|
| Ambient Temperature (°C): | 29 |
| Ambient Relative Humidity (%): | 30 |

Results: Bottom Channel (1850.2 MHz)

| Supply Voltage (V) | Frequency Error (Hz) | Measured Frequency (MHz) | Lower Band Edge Limit (MHz) | Margin (MHz) | Result |
|--------------------|----------------------|--------------------------|-----------------------------|--------------|----------|
| 3.4 | 36 | 1850.199964 | 1850.0 | 0.199964 | Complied |
| 4.2 | 33 | 1850.199967 | 1850.0 | 0.199967 | Complied |

Results: Top Channel (1909.8 MHz)

| Supply Voltage (V) | Frequency Error (Hz) | Measured Frequency (MHz) | Upper Band Edge Limit (MHz) | Margin (MHz) | Result |
|--------------------|----------------------|--------------------------|-----------------------------|--------------|----------|
| 3.4 | 42 | 1909.799958 | 1910.0 | 0.200042 | Complied |
| 4.2 | 31 | 1909.799969 | 1910.0 | 0.200031 | Complied |

Note(s):

1. A dummy battery was placed on the EUT and the dummy battery cables connected to a bench power supply.
2. Frequency error was measured using the PCS 1900 modulation test on a calibrated Rohde & Schwarz CMU 200 Universal Radio Communications Tester in accordance with current Rohde & Schwarz application notes. The EUT was connected by suitable RF cables to the CMU 200. A bidirectional communications link was established on the centre channel between the EUT and the CMU 200. The frequency meter value was recorded.
1. Voltage was monitored throughout the test with a calibrated digital voltmeter.

5.2.7. Transmitter Occupied Bandwidth**Test Summary:**

| | |
|--------------------------|---|
| FCC Part: | 24.238 |
| Test Method Used: | ANSI C63.4 Section 13.1.7 and relevant annexes referencing FCC CFR Part 2.1049 (see note below) |

Environmental Conditions:

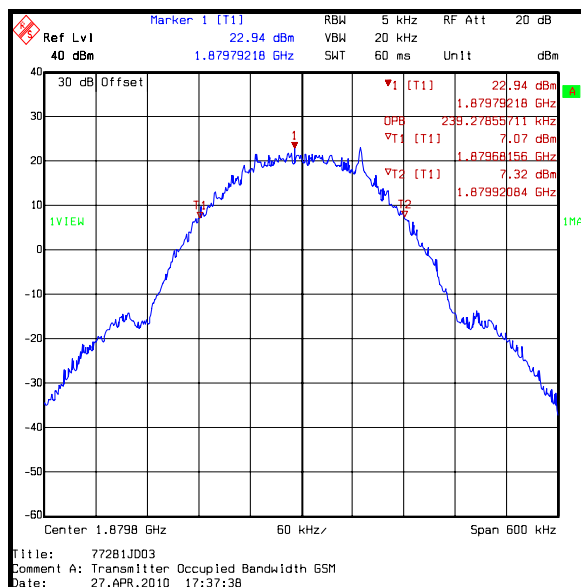
| | |
|-------------------------------|----|
| Temperature (°C): | 27 |
| Relative Humidity (%): | 26 |

Note(s):

- 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.

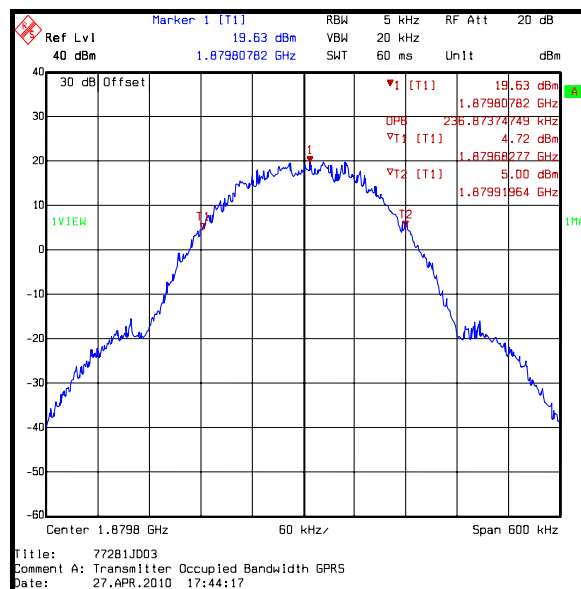
Results: GSM

| Channel | Frequency (MHz) | Occupied Bandwidth (kHz) |
|---------|-----------------|--------------------------|
| Middle | 1879.8 | 239.279 |



Transmitter Occupied Bandwidth (continued)**Results: GPRS**

| Channel | Frequency (MHz) | Occupied Bandwidth (kHz) |
|---------|-----------------|--------------------------|
| Middle | 1879.8 | 236.874 |



5.2.8. Transmitter Out of Band Radiated Emissions**Test Summary:**

| | |
|--------------------------|--|
| FCC Part: | 2.1053 & 24.238 |
| Test Method Used: | 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 (%): | 21 |

Results: Bottom Channel

| Frequency (MHz) | Peak Emission Level (dBm) | Limit (dBm) | Margin (dBm) | Result |
|-----------------|---------------------------|-------------|--------------|----------|
| 3700.350 | -32.7 | -13.0 | 19.7 | Complied |
| 5550.590 | -32.5 | -13.0 | 19.5 | Complied |
| 9251.066 | -19.5 | -13.0 | 6.5 | Complied |

Results: Middle Channel

| Frequency (MHz) | Peak Emission Level (dBm) | Limit (dBm) | Margin (dBm) | Result |
|-----------------|---------------------------|-------------|--------------|----------|
| 3759.910 | -32.1 | -13.0 | 19.1 | Complied |
| 7519.130 | -28.8 | -13.0 | 15.8 | Complied |
| 9398.936 | -21.0 | -13.0 | 8.0 | Complied |

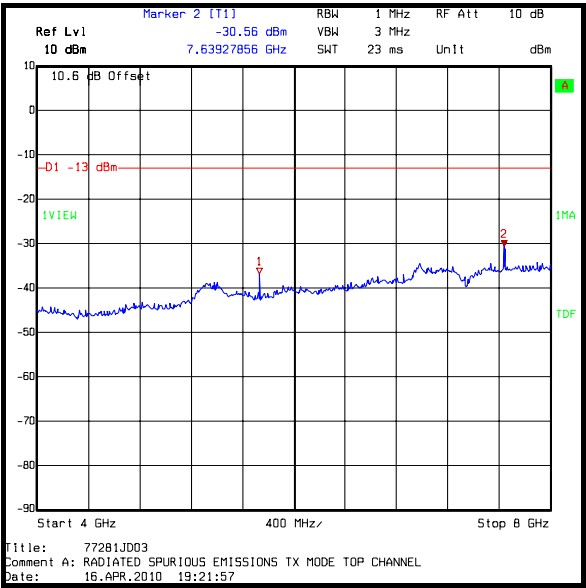
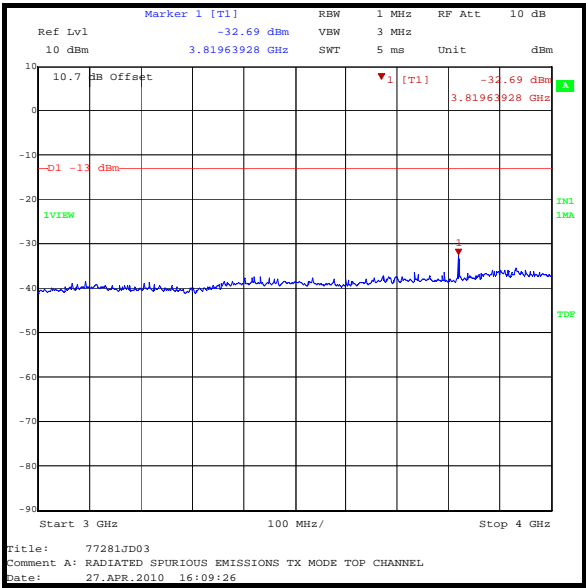
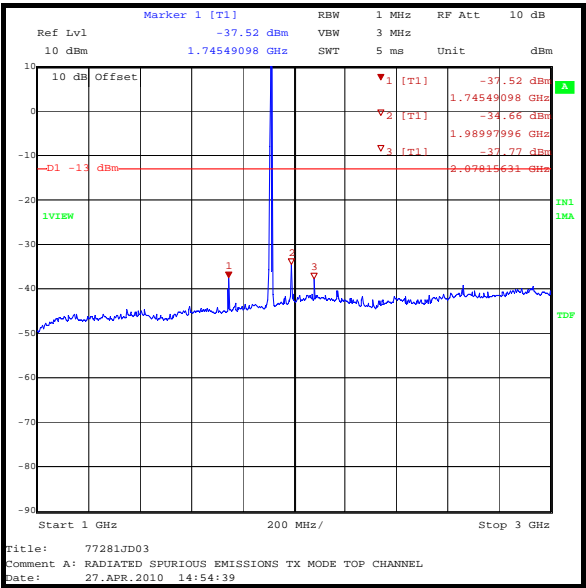
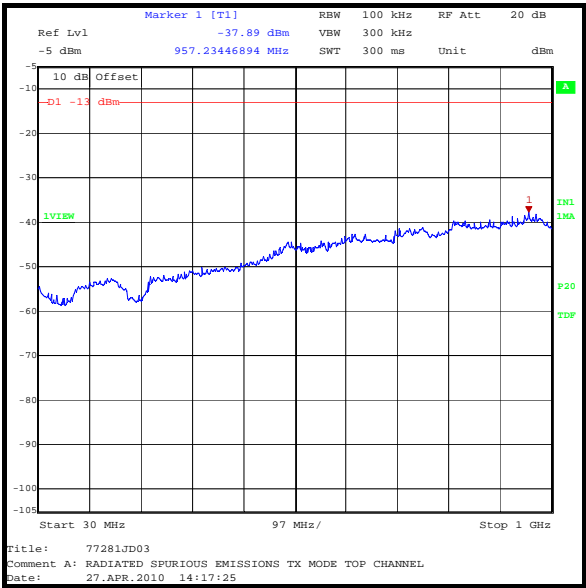
Results: Top Channel

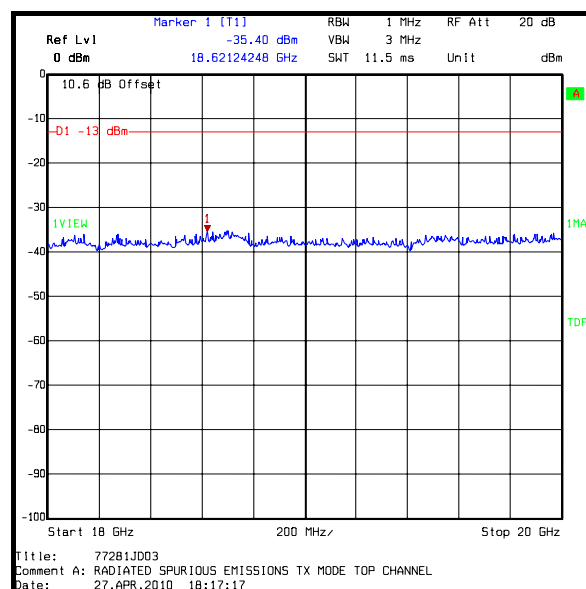
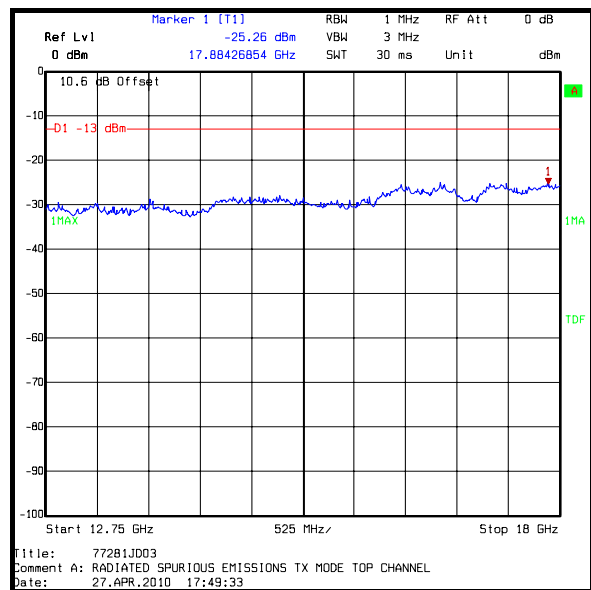
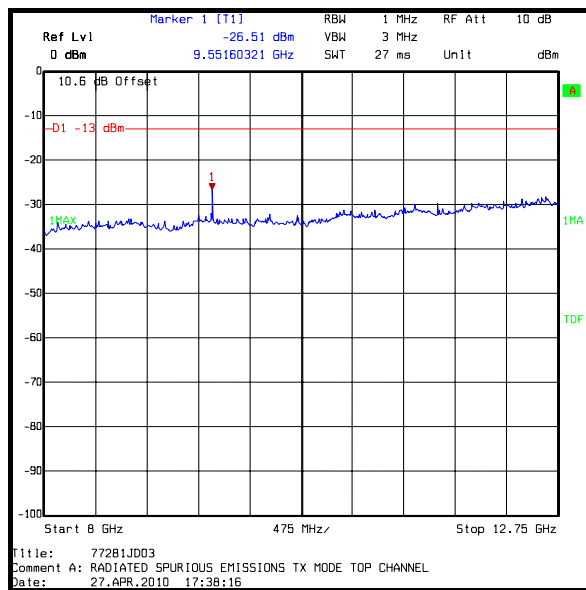
| Frequency (MHz) | Peak Emission Level (dBm) | Limit (dBm) | Margin (dBm) | Result |
|-----------------|---------------------------|-------------|--------------|----------|
| 3819.570 | -31.6 | -13.0 | 18.6 | Complied |
| 7639.189 | -28.9 | -13.0 | 15.9 | Complied |
| 9549.024 | -24.9 | -13.0 | 11.9 | Complied |

Note(s):

1. Pre-scans were performed with the EUT in circuit switched and GPRS modes with the EUT transmitting at maximum power on the top channel. The highest level emissions were observed in circuit switched mode. All final measurements were performed in circuit switched mode.
2. Pre-scans were performed on the top channel, final measurements were performed on the bottom, middle and top channels using appropriate RF attenuators and filters where required.
3. The transmitter fundamental is shown on the 1 GHz to 4 GHz plot at approximately 1909.8 MHz.
4. The emission at approximately 1989.98 MHz was identified as the downlink signal from the support equipment.
5. All other emissions were investigated and found to be >20 dB below the applicable limit.

Transmitter Out of Band Radiated Emissions (continued)



Transmitter Out of Band Radiated Emissions (continued)

5.2.9. Transmitter Radiated Emissions at Band Edges**Test Summary:**

| | |
|--------------------------|--|
| FCC Part: | 2.1053 & 24.238 |
| Test Method Used: | 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 (%): | 22 |

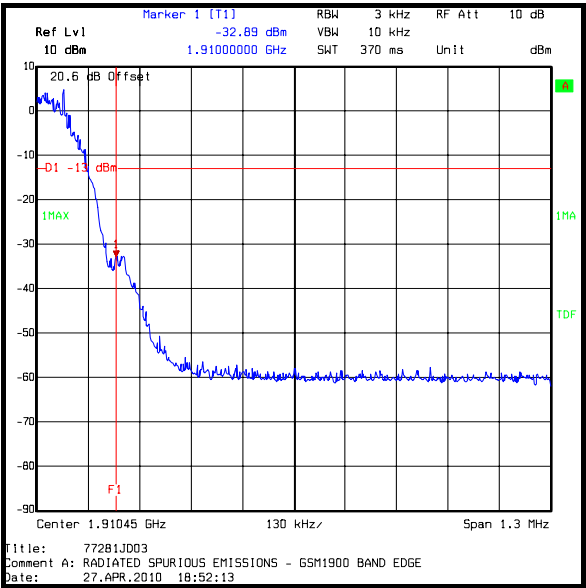
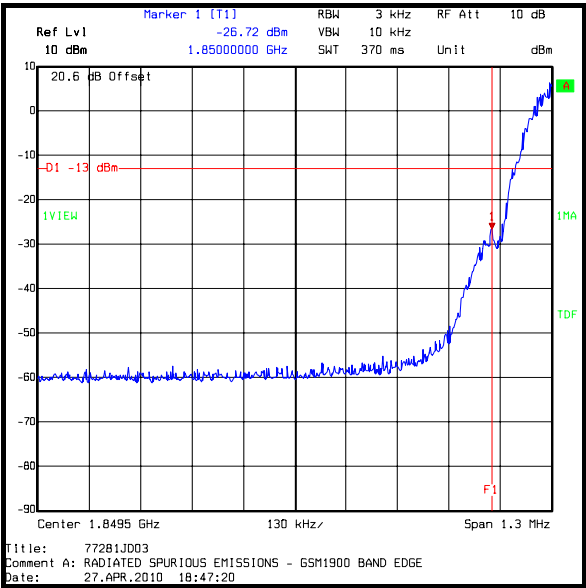
Results: GSM - Bottom Band Edge

| Frequency (MHz) | Peak Emission Level (dBm) | Limit (dBm) | Margin (dBm) | Result |
|------------------------|----------------------------------|--------------------|---------------------|---------------|
| 1850.0 | -26.7 | -13.0 | 13.7 | Complied |

Results: GSM - Top Band Edge

| Frequency (MHz) | Peak Emission Level (dBm) | Limit (dBm) | Margin (dBm) | Result |
|------------------------|----------------------------------|--------------------|---------------------|---------------|
| 1910.0 | -32.9 | -13.0 | 19.9 | Complied |

Transmitter Radiated Emissions at Band Edges (continued)



Transmitter Radiated Emissions at Band Edges (continued)**Test Summary:**

| | |
|--------------------------|--|
| FCC Part: | 2.1053 & 24.238 |
| Test Method Used: | 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 (%): | 22 |

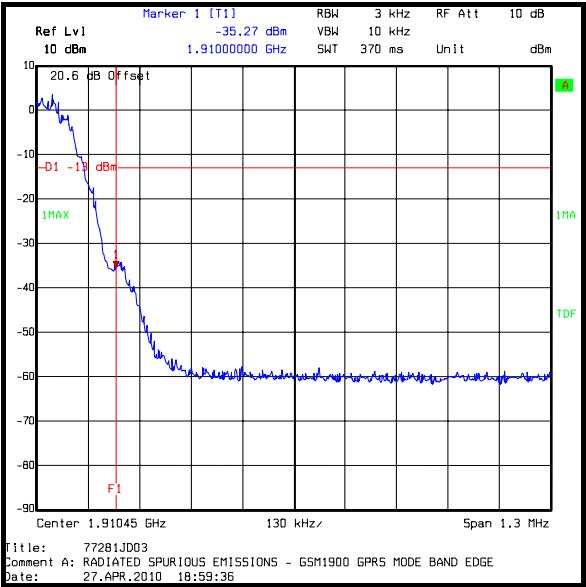
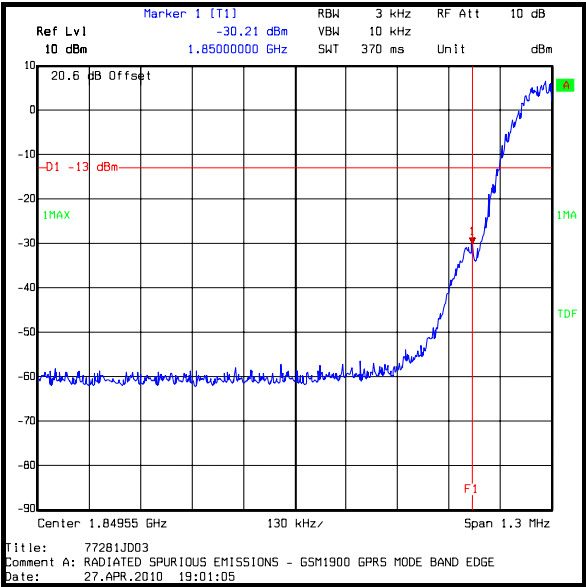
Results: GPRS - Bottom Band Edge

| Frequency (MHz) | Peak Emission Level (dBm) | Limit (dBm) | Margin (dBm) | Result |
|------------------------|----------------------------------|--------------------|---------------------|---------------|
| 1850 | -30.2 | -13.0 | 17.2 | Complied |

Results: GPRS - Top Band Edge

| Frequency (MHz) | Peak Emission Level (dBm) | Limit (dBm) | Margin (dBm) | Result |
|------------------------|----------------------------------|--------------------|---------------------|---------------|
| 1910 | -35.3 | -13.0 | 22.3 | Complied |

Transmitter Radiated Emissions at Band Edges (continued)



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% | ±3.25 dB |
| Effective Isotropic Radiated Power (EIRP) | 1850 MHz to 1910 MHz | 95% | ±2.94 dB |
| Frequency Stability | 1850 MHz to 1910 MHz | 95% | ±0.92 ppm |
| Occupied Bandwidth | 1850 MHz to 1910 MHz | 95% | ±0.92 ppm |
| Radiated Spurious Emissions | 30 MHz to 20 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) |
|----------------|-----------------------|---------------------|-----------------|-------------------|-----------------------------|-------------------------------|
| A067 | LISN | Rohde & Schwarz | ESH3-Z5 | 890603/002 | 03 Jun 2009 | 12 |
| A1392 | Attenuator | Huber + Suhner | 757456 | 6820.17.B | Calibrated before use | - |
| A1396 | Attenuator | Huber + Suhner | 757987 | 6810.17.B | Calibrated before use | - |
| A1399 | Attenuator | Weinschel | WA46-10 | A126 | Calibrated before use | - |
| A1516 | Comms Tester | Rohde & Schwarz | CMU200 | 835687/011 | 15 Mar 2010 | 12 |
| A1534 | Pre Amplifier | Hewlett Packard | 8449B | 3008A00405 | Calibrated before use | - |
| A1537 | Directional Coupler | Hewlett Packard | 778D | 1144A05122 | Calibrated before use | - |
| A1818 | Antenna | EMCO | 3115 | 00075692 | 27 Nov 2009 | 12 |
| A1830 | Pulse Limiter | Rhode & Schwarz | ESH3-Z2 | 100668 | 01 Mar 2010 | 12 |
| A1975 | High Pass Filter | AtlanTecRF | AFH-03000 | 090424010 | 19 Jan 2010 | 12 |
| A288 | Antenna | Chase | CBL6111 A | 1589 | 16 Mar 2010 | 12 |
| E0516 | Environmental Chamber | TAS | LT1000 | 23880706 | Calibrated before use | - |
| K0002 | 3m RSE Chamber | Rainford EMC | N/A | N/A | 01 Sep 2009 | 12 |
| M1242 | Spectrum Analyser | Rohde & Schwarz | FSEM30 | 845986/022 | 18 Mar 2010 | 12 |
| M1249 | Thermometer | Fluke | 52II | 88800049 | 01 Jul 2009 | 12 |
| M127 | Spectrum Analyser | Rohde & Schwarz | FSEB 30 | 842 659/016 | 10 Jul 2009 | 12 |
| M1273 | Test Receiver | Rhode & Schwarz | ESIB 26 | 100275 | 08 Apr 2010 | 12 |
| M1346 | Digital Multimeter | Fluke | 73III | 90770264 | 17 Jul 2009 | 12 |
| M1379 | Test Receiver | Rhode & Schwarz | ESIB7 | 100330 | 20 Aug 2009 | 12 |
| S0536 | Dual Power Supply | TTI | EL302D | 249944 | Calibrated before use | - |

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