

# 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:**



<b>Checked By:</b>	Tony Henriques
<b>Signature:</b>	
<b>Date of Issue:</b>	14 May 2010

This report is issued in Adobe Acrobat portable document format (PDF). It is only a valid copy of the report if it is being viewed in PDF format with the following security options not allowed: Changing the document, Selecting text and graphics, Adding or changing notes and form fields.

This report may not be reproduced other than in full, except with the prior written approval of RFI Global Services Ltd. The results in this report apply only to the sample(s) tested.

This page has been left intentionally blank.

**Table of Contents**

1. Customer Information .....	4
2. Summary of Testing .....	5
3. Equipment Under Test (EUT) .....	6
4. Operation and Monitoring of the EUT during Testing .....	9
5. Measurements, Examinations and Derived Results .....	10
6. Measurement Uncertainty .....	33
Appendix 1. Test Equipment Used.....	34

## **1. Customer Information**

<b>Company Name:</b>	Panasonic Mobile Communications Development of Europe Ltd
<b>Address:</b>	Panasonic House Willoughby Road Bracknell Berkshire RG12 8FP United Kingdom

## 2. Summary of Testing

### 2.1. General Information

<b>Specification Reference:</b>	47CFR24
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications) 2009: Part 24 Subpart E (Personal Communication Services)
<b>Site Registration:</b>	209735
<b>Location of Testing:</b>	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.
<b>Test Dates:</b>	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

<b>Reference:</b>	ANSI/TIA-603-C-2004
<b>Title:</b>	Land Mobile Communications Equipment, Measurements and performance Standards
<b>Reference:</b>	ANSI C63.4 (2009)
<b>Title:</b>	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)**

<b>Brand Name:</b>	SoftBank 842P
<b>Model Name or Number:</b>	EB-3226
<b>IMEI Number:</b>	004401220943530 ( <i>Radiated Sample</i> ); 004401220943464 ( <i>Conducted RF Port Sample</i> );
<b>Hardware Version Number:</b>	Rev B
<b>Software Version Number:</b>	842PVA08
<b>FCC ID Number:</b>	UCE210029A

<b>Description:</b>	AC Charger
<b>Brand Name:</b>	SoftBank
<b>Model Name or Number:</b>	ZTDA1

<b>DC Charger</b>	DC Charger
<b>Brand Name:</b>	SoftBank
<b>Model Name or Number:</b>	PMJAA1

<b>Description:</b>	Personal Hands-free
<b>Brand Name:</b>	SoftBank
<b>Model Name or Number:</b>	ZTBBA1

<b>Description:</b>	USB Data Cable
<b>Brand Name:</b>	SoftBank
<b>Model Name or Number:</b>	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**

<b>Technology Tested:</b>	PCS 1900		
<b>Type of Radio Device:</b>	Transceiver		
<b>Mode:</b>	GSM/GPRS		
<b>Modulation Type:</b>	GMSK		
<b>Channel Spacing:</b>	200 kHz		
<b>Power Supply Requirement(s):</b>	Nominal	3.7 V	
	Minimum	3.4 V	
	Maximum	4.2 V	
<b>Maximum Output Power (EIRP) Radiated:</b>	GSM	29.2 dBm	
	GPRS	27.6 dBm	
<b>Maximum Output Power Conducted</b>	GSM	29.5 dBm	
	GPRS	27.5 dBm	
<b>Transmit Frequency Range:</b>	1850 MHz to 1910 MHz		
<b>Transmit Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	Bottom	512	1850.2
	Middle	660	1879.8
	Top	810	1909.8
<b>Receive Frequency Range:</b>	1930 MHz to 1990 MHz		
<b>Receive Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	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:

<b>Description:</b>	Micro-SD memory card
<b>Brand Name:</b>	Not Stated
<b>Model Name or Number:</b>	Not Stated

<b>Description:</b>	Dummy Battery
<b>Brand Name:</b>	Not Stated
<b>Model Name or Number:</b>	Not Stated

<b>Description:</b>	USB HUB
<b>Brand Name:</b>	Buffalo
<b>Model Name or Number:</b>	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:**

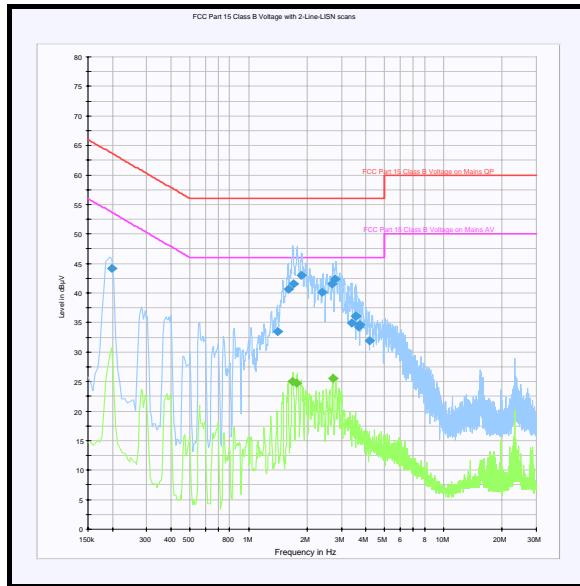
Temperature (°C):	27
Relative Humidity (%):	25

#### **Results: Quasi Peak Detector Measurements**

Frequency (MHz)	Line	Quasi Peak Level (dB $\mu$ V)	Limit (dB $\mu$ V)	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 (dB $\mu$ V)	Limit (dB $\mu$ V)	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

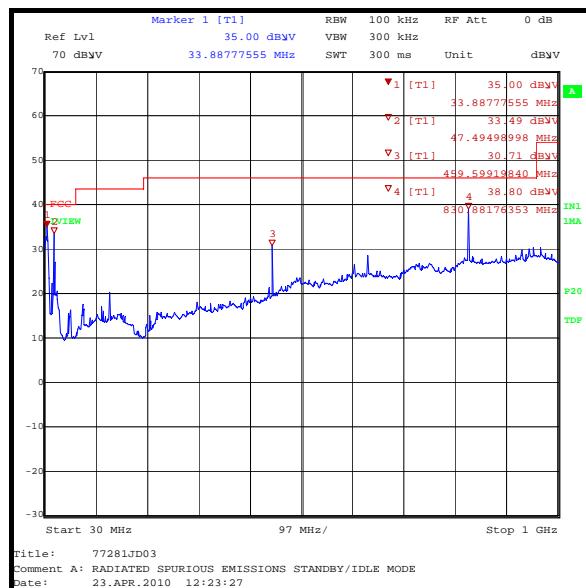
**Results:**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ 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

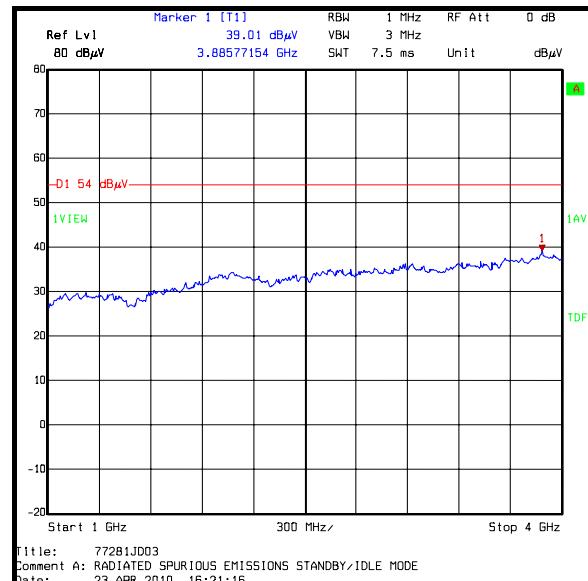
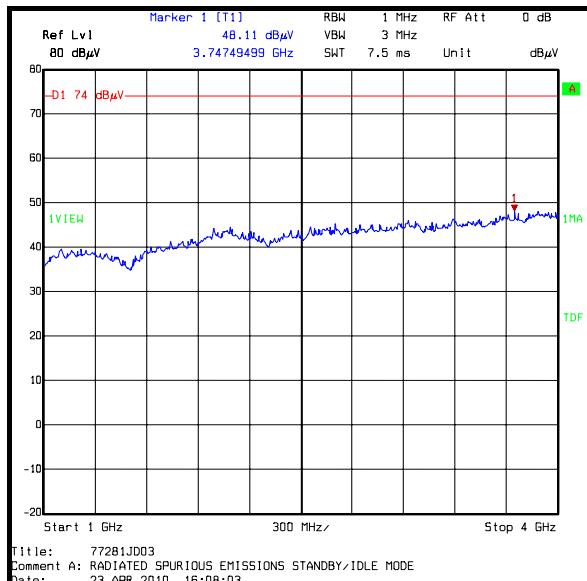
**Results: Peak**

Frequency (MHz)	Antenna Polarity	Peak Level (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Margin (dB)	Result
9503.006	Vertical	52.2	54.0	1.8	Complied

**Note(s):**

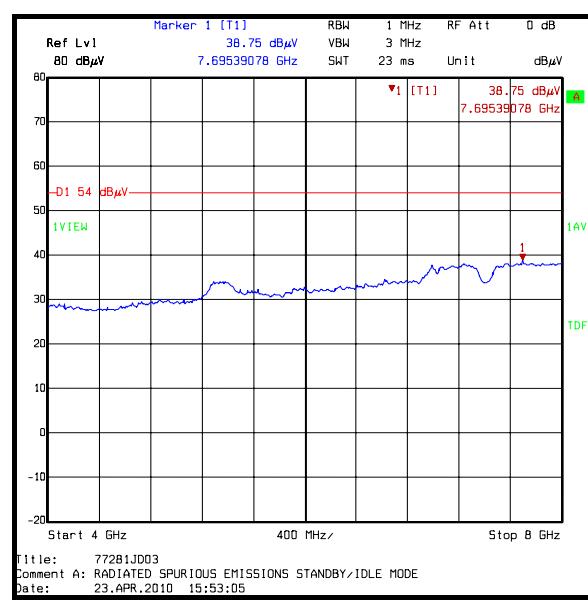
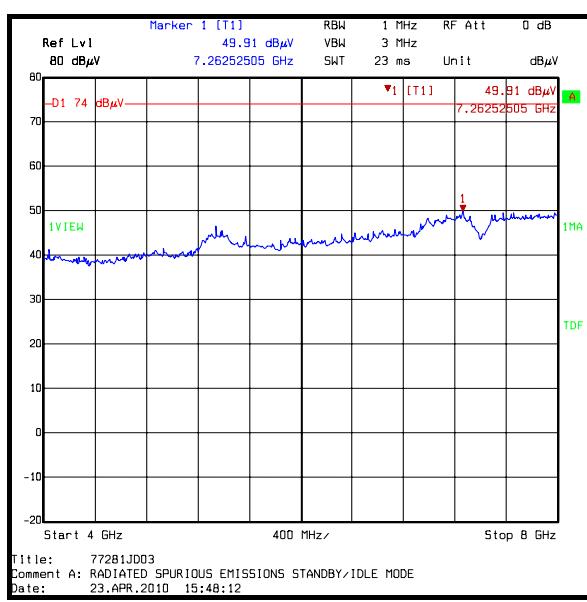
1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above. The peak level was compared to the average limit as this is the more onerous limit.
2. Measurements 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

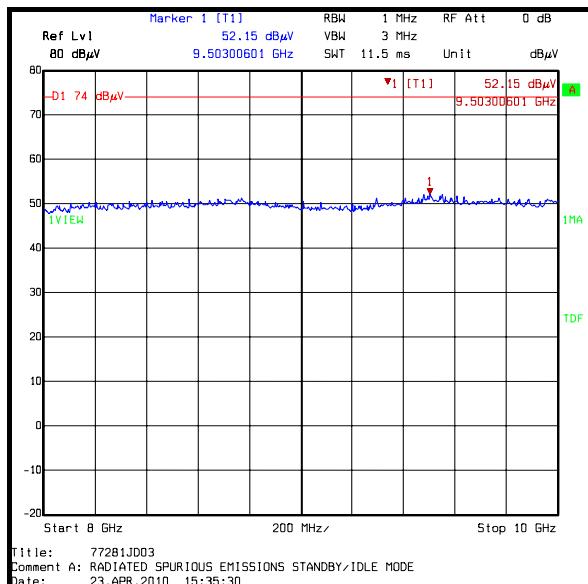
Average Detector



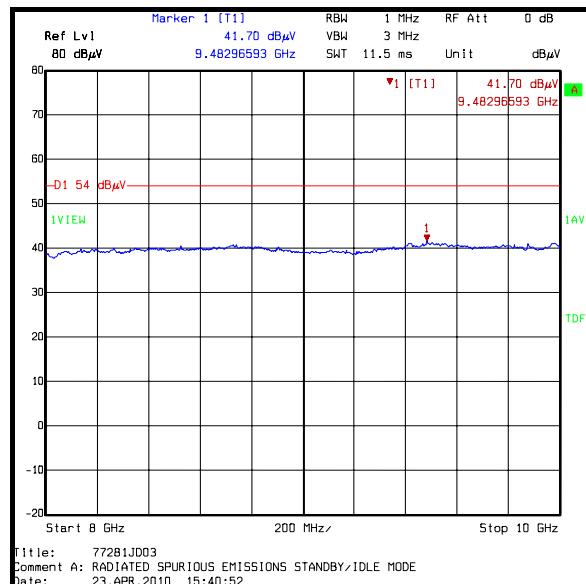
Peak Detector

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:**

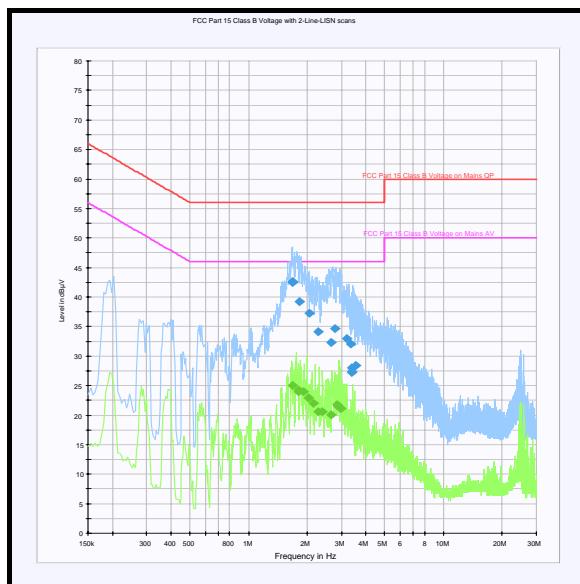
Temperature (°C):	28
Relative Humidity (%):	25

**Results: Quasi Peak Detector Measurements**

Frequency (MHz)	Line	Quasi Peak Level (dB $\mu$ V)	Limit (dB $\mu$ V)	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 $\mu$ V)	Limit (dB $\mu$ 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:**

<b>FCC Part:</b>	24.235
<b>Test Method Used:</b>	ANSI TIA-603-C-2004 Section 2.2.2 referencing FCC CFR Part 2.1055

**Environmental Conditions:**

<b>Ambient Temperature (°C):</b>	29
<b>Ambient Relative Humidity (%):</b>	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:**

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

#### **Environmental Conditions:**

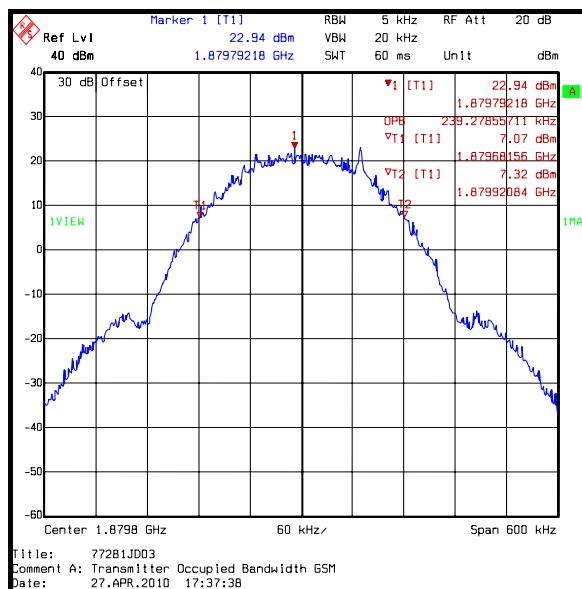
<b>Temperature (°C):</b>	27
<b>Relative Humidity (%):</b>	26

#### **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.

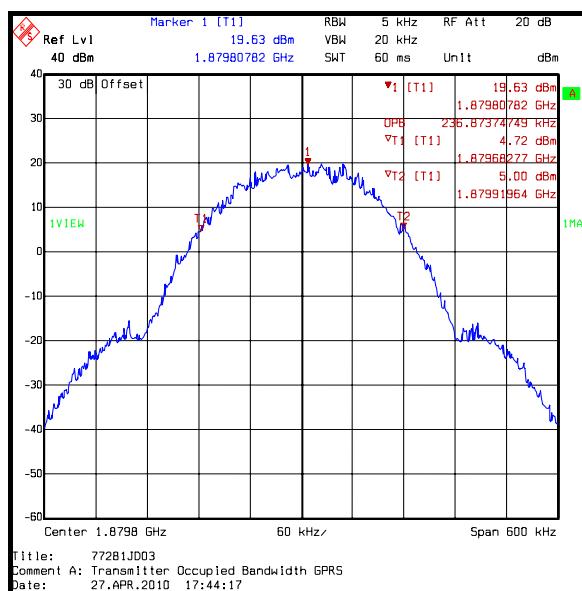
#### **Results: GSM**

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:**

<b>FCC Part:</b>	2.1053 & 24.238
<b>Test Method Used:</b>	ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Parts 2.1053 and 24.238

**Environmental Conditions:**

<b>Temperature (°C):</b>	27
<b>Relative Humidity (%):</b>	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

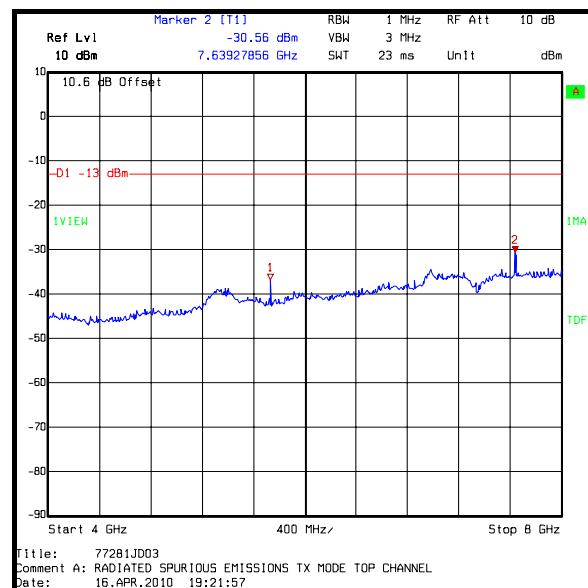
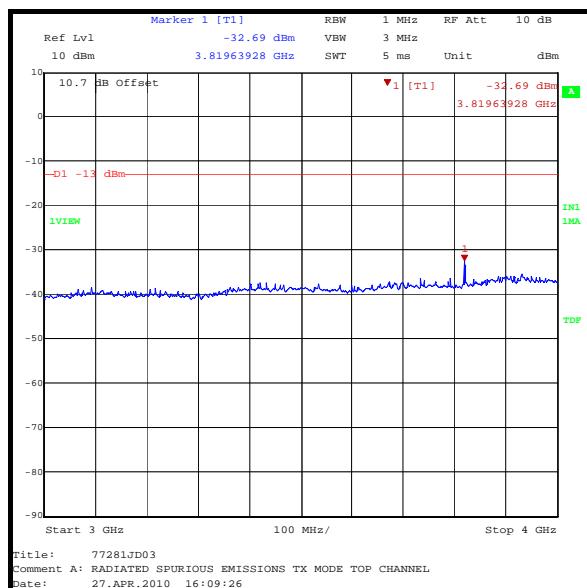
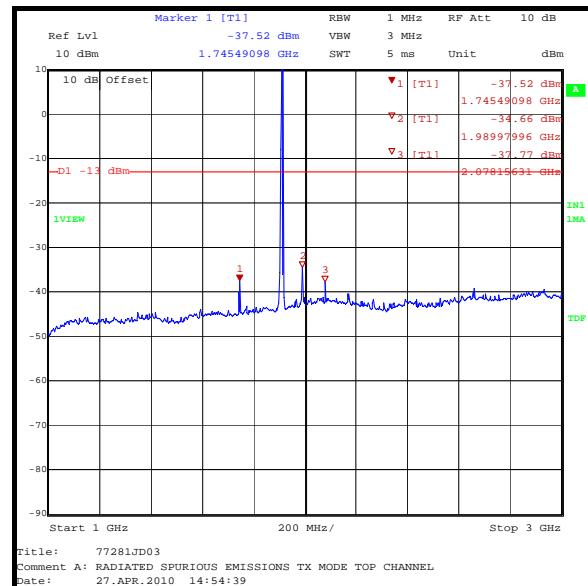
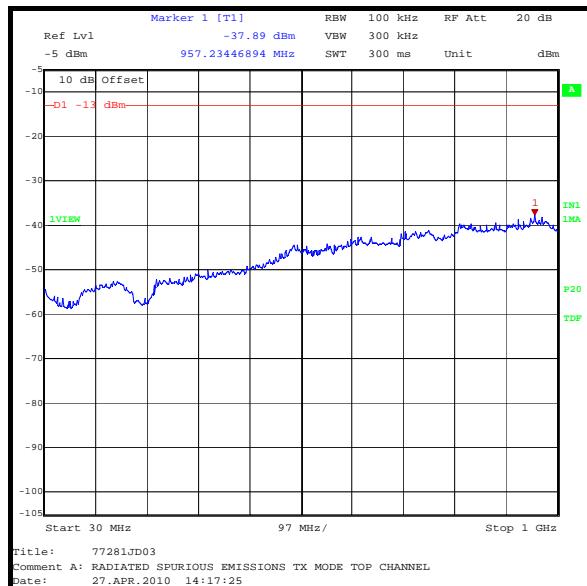
**Results: Top Channel**

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

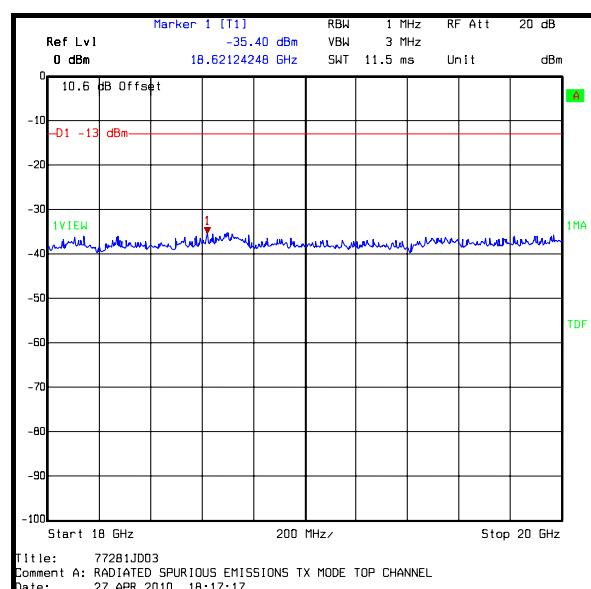
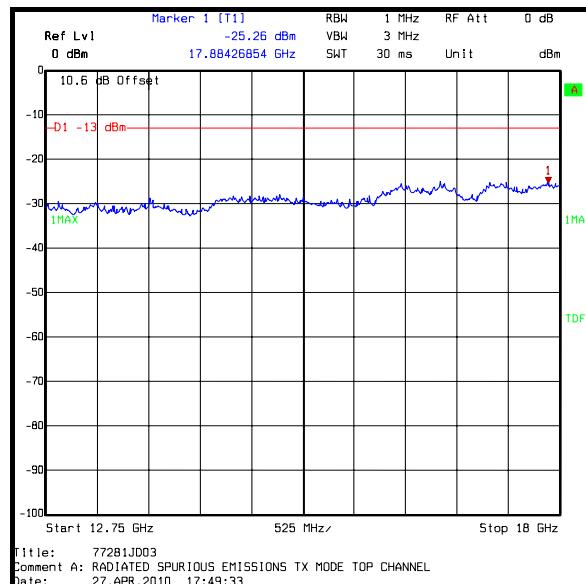
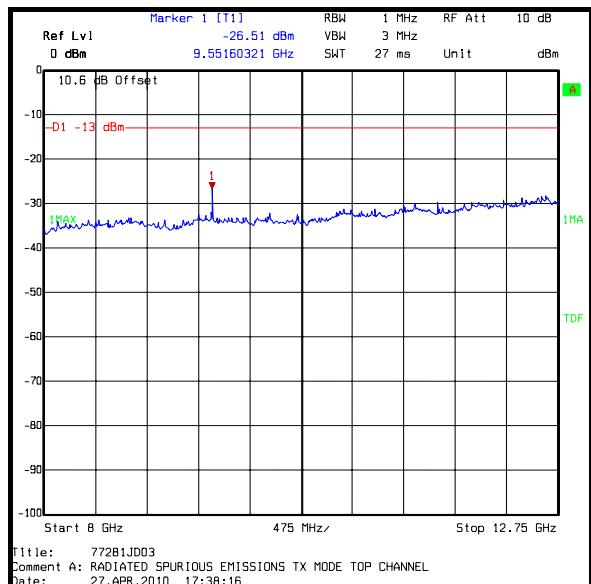
**Note(s):**

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

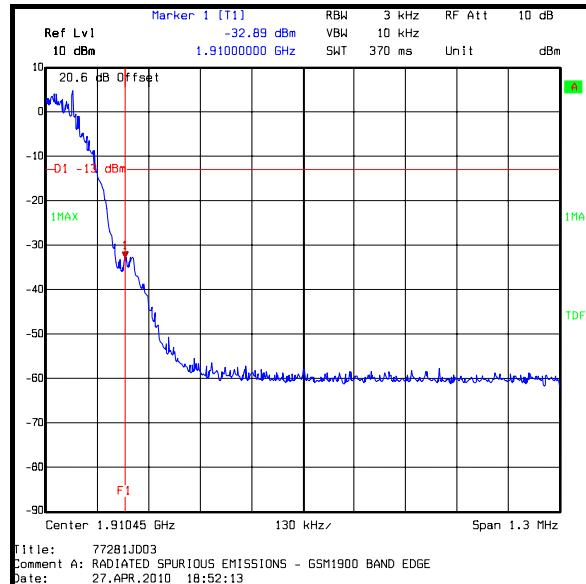
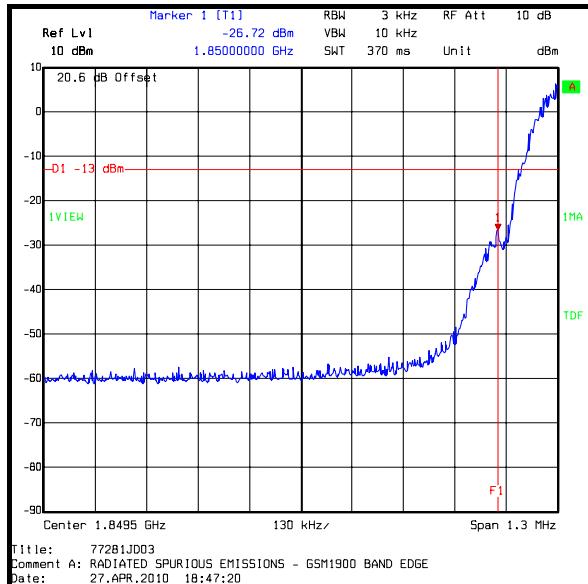
**Results: GSM - Bottom Band Edge**

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:**

<b>FCC Part:</b>	2.1053 & 24.238
<b>Test Method Used:</b>	ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Parts 2.1053 and 24.238

**Environmental Conditions:**

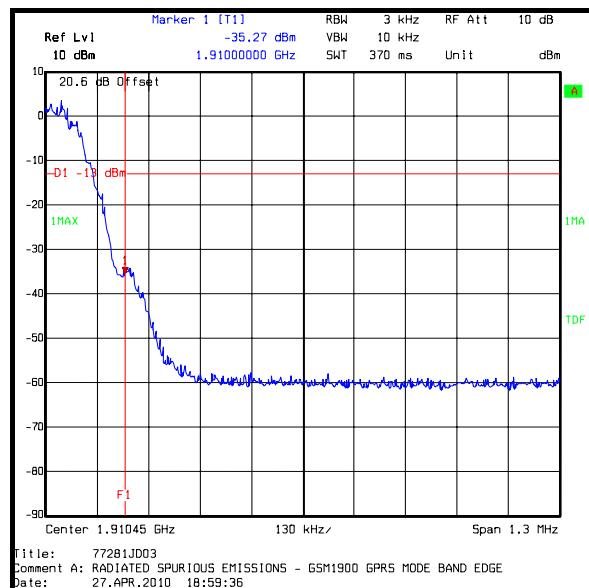
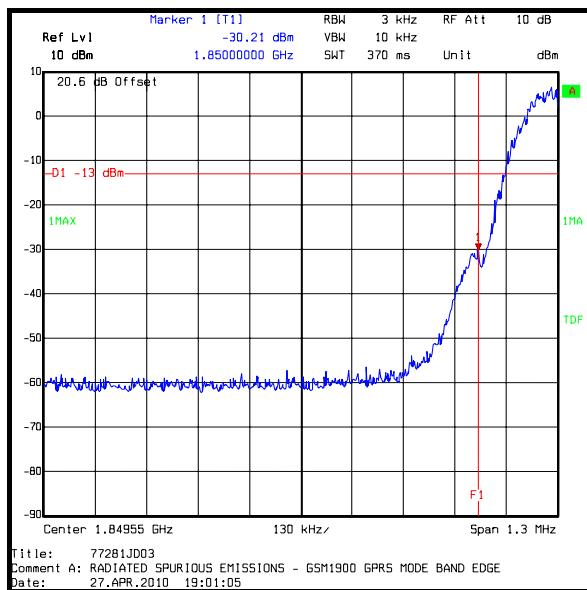
<b>Temperature (°C):</b>	27
<b>Relative Humidity (%):</b>	22

**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.