TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: SoftBank 942P

To: FCC Part 24: 2009 Subpart E

Test Report Serial No:
RFI-RPT-RP77768JD03A

This Test Report Is Issued Under The Authority Of Brian Watson, COO Payments and Consultancy: 	
Checked By:	A. Henriques
Signature: 	
Date of Issue:	08 June 2010

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Table of Contents

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:	12 May 2010 to 21 May 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 24.232	Transmitter Effective Isotropic Radiated Power (EIRP)	✓
Part 2.1046	Transmitter Conducted Average Output Power	Note 1
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

Note 1: The measurement was performed to support SAR tests.

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 Methods of Measurement of Electromagnetic Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

2.3. 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:	942P
IMEI Number:	004401220967141 (*Radiated Sample*) 004401220967158 *(Conducted Sample)*
Hardware Version Number:	Rev C
Software Version Number:	942PVA15
FCC ID Number:	UCE210030A

Description:	Battery
Brand Name:	Softbank
Model Name or Number:	PMBAY1

Description:	AC Charger
Brand Name:	Softbank
Model Name or Number:	ZTDAA1

Description:	DC Charger
Brand Name:	Softbank
Model Name or Number:	PMJAA1

Description:	USB Data Cable
Brand Name:	Softbank
Model Name or Number:	ZTFE01

Description:	Personal Hands-Free
Brand Name:	Softbank
Model Name or Number:	ZTCK01

Description:	Personal Hands-Free Converter
Brand Name:	Softbank
Model Name or Number:	PMLAJ1

Description:	USB Hub
Brand Name:	Buffalo
Model Name or Number:	BSH3U01

Description:	Micro SD memory card
Brand Name:	Not Stated
Model Name or Number:	Not Stated

3.2. Description of EUT

The equipment under test was a dual mode cellular mobile telephone with Bluetooth, WLAN and 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:	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	26.3 dBm	
	GPRS	25.0 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
Brand Name:	Not stated
Model Name or 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 USB data cable connected to the EUT as this was found to be the worst case during prescans. The USB cable was terminated into a USB hub supplied by the client. All accessories were individually connected and measurements made during prescans to determine the worst case combination.

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(a)
Test Method Used:	As detailed in ANSI C63.4 Section 7 and relevant annexes

Environmental Conditions:

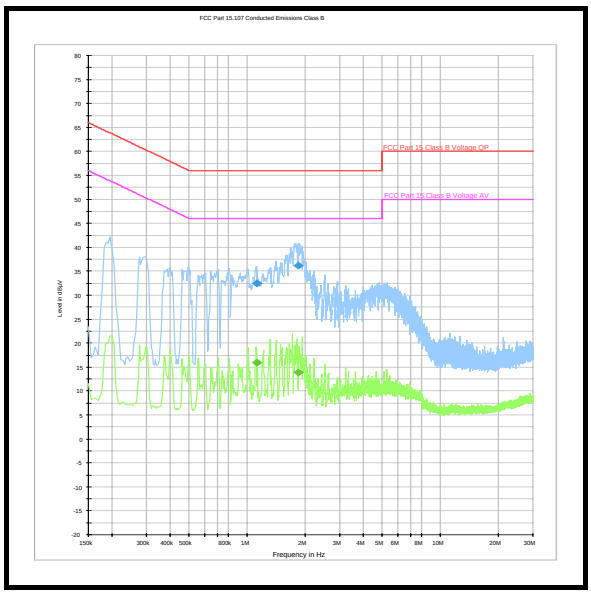
Temperature (°C):	27
Relative Humidity (%):	31

Results: Quasi Peak Detector Measurements

Frequency (MHz)	Line	Quasi Peak Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
1.113000	Neutral	32.4	56.0	23.6	Complied
1.833000	Live	36.1	56.0	19.9	Complied

Results: Average Detector Measurements

Frequency (MHz)	Line	Average Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
1.113000	15.9	Neutral	46.0	30.1	Complied
1.833000	13.8	Live	46.0	32.2	Complied



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:

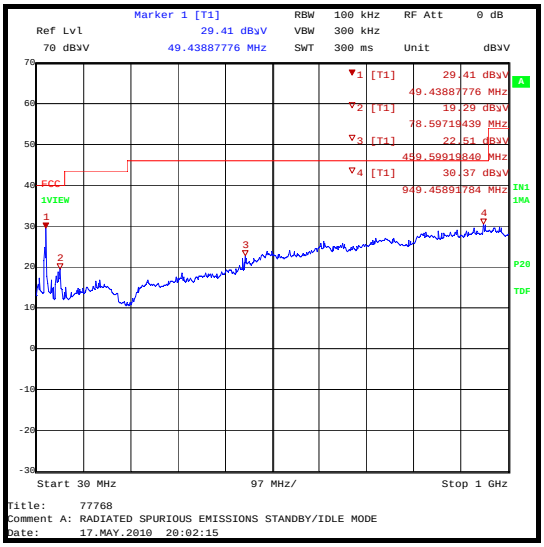
FCC Part:	15.109
Frequency Range:	30 MHz to 1000 MHz
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	22

Results:

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
50.114	Vertical	29.3	10.7	40.0	Complied
79.993	Horizontal	17.7	22.3	40.0	Complied
458.785	Vertical	24.4	21.6	46.0	Complied
949.329	Vertical	28.2	17.8	46.0	Complied



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

Receiver/Idle Mode Radiated Spurious Emissions (continued)

Test Summary:

FCC Part:	15.109
Frequency Range:	1 GHz to 10 GHz
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	22

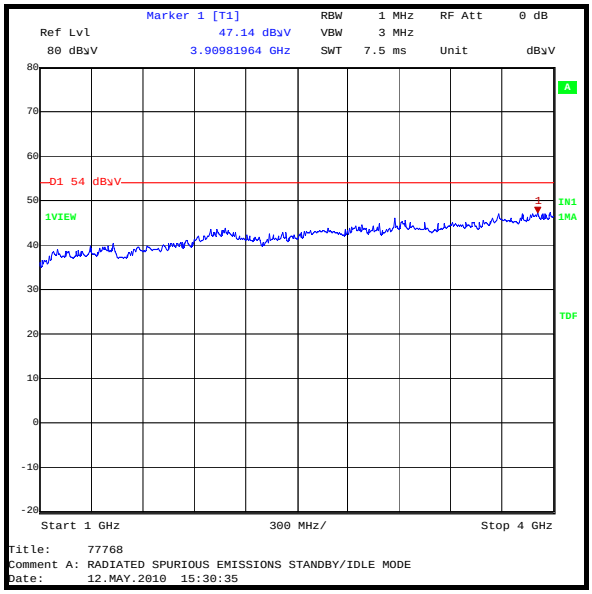
Results:

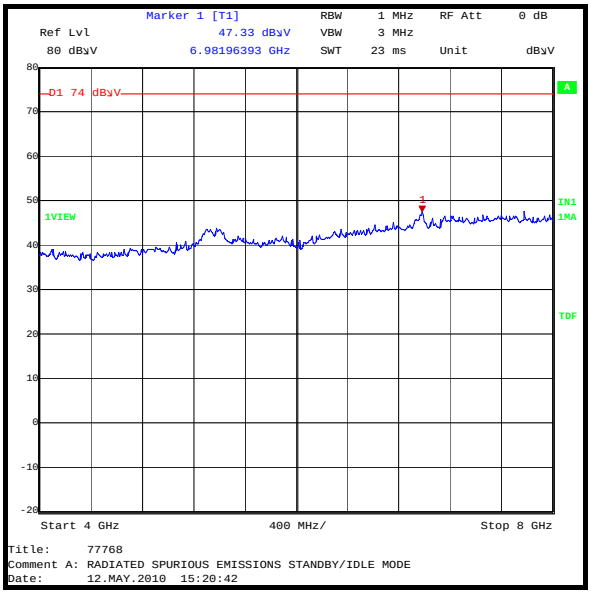
Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
3909.820	Vertical	47.1	54.0	6.9	Complied

Note(s):

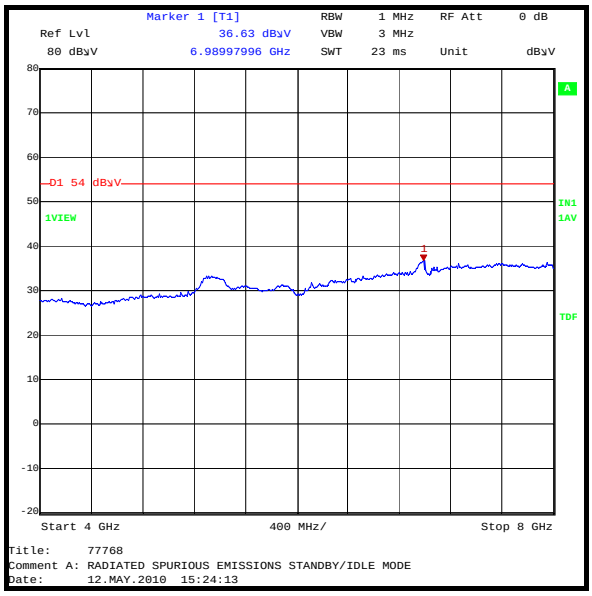
1. No spurious emissions were detected above the noise floor of the measuring receiver therefore the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above. The peak level was compared to the average limit as opposed to being compared to the peak limit because this is the more onerous limit.
2. All pre-scans were performed with the peak detector against average limits apart from measurements made in the ranges 4 GHz to 10 GHz where pre-scans were performed with peak and average detector and the applicable limit applied. This was due to the noise floor being close to the average limit when using the peak detector.

Receiver/Idle Mode Radiated Spurious Emissions (continued)

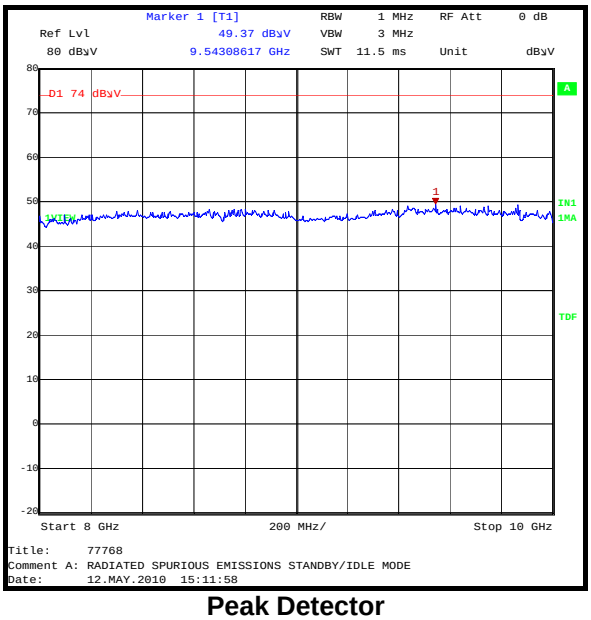




Peak Detector

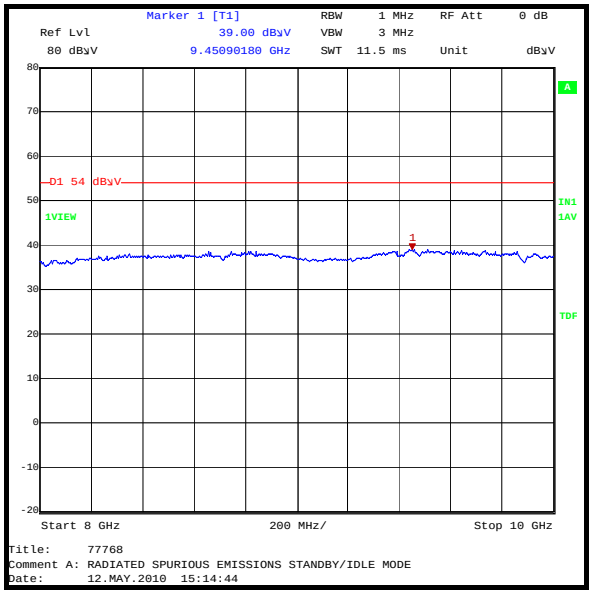


Average Detector



Peak Detector

Receiver/Idle Mode Radiated Spurious Emissions (continued)



Average Detector

5.2.3. 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):	27
Relative Humidity (%):	32

Results: GSM Circuit Switched

Channel	Measured Frequency (MHz)	Antenna Polarity	Maximum Transmitter (dBm)	Limit (dBm)	Margin (dBm)	Result
Bottom	1850.2	Vertical	25.6	33.0	7.4	Complied
Middle	1879.8	Vertical	25.8	33.0	7.2	Complied
Top	1909.8	Vertical	26.3	33.0	6.7	Complied

Results: GPRS

Channel	Measured Frequency (MHz)	Antenna Polarity	Maximum Transmitter (dBm)	Limit (dBm)	Margin (dBm)	Result
Bottom	1850.2	Vertical	24.1	33.0	8.9	Complied
Middle	1879.8	Vertical	24.8	33.0	8.2	Complied
Top	1909.8	Vertical	25.0	33.0	8.0	Complied

5.2.4. Transmitter Conducted Average Output Power

Test Summary:

FCC Part:	2.1046
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.1

Environmental Conditions:

Temperature (°C):	27
Relative Humidity (%):	32

Results: GSM Circuit Switched

Channel	Frequency (MHz)	Maximum Peak Conducted Power (dBm)	Maximum Average Conducted Power (dBm)
Bottom	1850.2	28.3	28.2
Middle	1879.8	28.7	28.5
Top	1909.8	28.7	28.6

Results: GPRS

Channel	Frequency (MHz)	Maximum Peak Conducted Power (dBm)	Maximum Average Conducted Power (dBm)
Bottom	1850.2	26.3	26.2
Middle	1879.8	26.5	26.4
Top	1909.8	27.8	26.7

Note(s):

1. Conducted power tests were performed to support SAR tests.

5.2.5. Transmitter Frequency Stability (Temperature 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:

Ambient Temperature (°C):	26 to 28
Ambient Relative Humidity (%):	31 to 36

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	-31	1850.199969	1850.0	0.199969	Complied
-10	-32	1850.199968	1850.0	0.199968	Complied
0	12	1850.200012	1850.0	0.200012	Complied
10	-18	1850.199982	1850.0	0.199982	Complied
20	-11	1850.199989	1850.0	0.199989	Complied
30	-29	1850.199971	1850.0	0.199971	Complied
40	-35	1850.199965	1850.0	0.199965	Complied
50	-30	1850.199970	1850.0	0.199970	Complied

Results: Top Channel (1909.8 MHz)

Temperature (°C)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
-30	46	1909.800046	1910.0	0.199954	Complied
-20	-40	1909.799960	1910.0	0.200040	Complied
-10	-41	1909.799959	1910.0	0.200041	Complied
0	11	1909.800011	1910.0	0.199989	Complied
10	-25	1909.799975	1910.0	0.200025	Complied
20	-15	1909.799985	1910.0	0.200015	Complied
30	-32	1909.799968	1910.0	0.200032	Complied
40	-47	1909.799953	1910.0	0.200047	Complied
50	-40	1909.799960	1910.0	0.200040	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:

Ambient Temperature (°C):	26
Ambient Relative Humidity (%):	36

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	-30	1850.199970	1850.0	0.199970	Complied
4.2	-34	1850.199966	1850.0	0.199966	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	-27	1909.799973	1910.0	0.200027	Complied
4.2	-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)

Environmental Conditions:

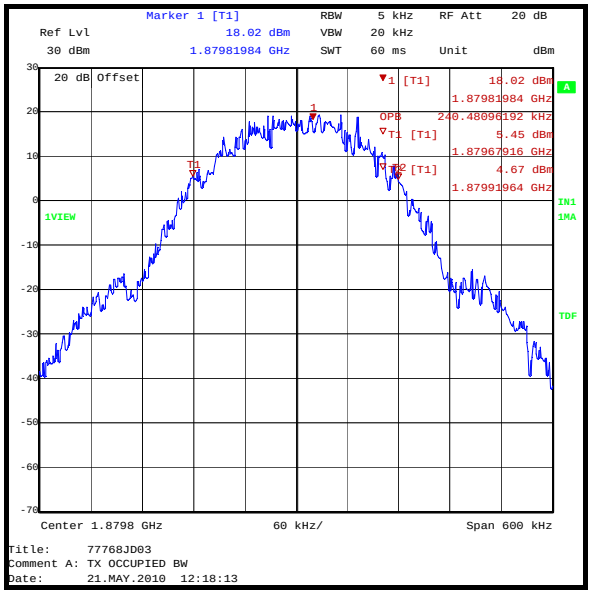
Temperature (°C):	29
Relative Humidity (%):	29

Results: GSM

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 Section13.1.7 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)

Environmental Conditions:

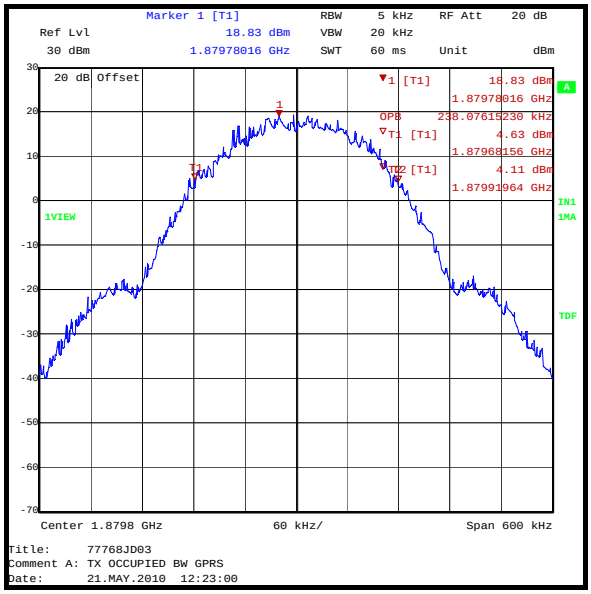
Temperature (°C):	29
Relative Humidity (%):	29

Results: GPRS

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

Note(s):

1. In lieu of the test method detailed in ANSI C63.4 Section13.1.7 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):	26
Relative Humidity (%):	24

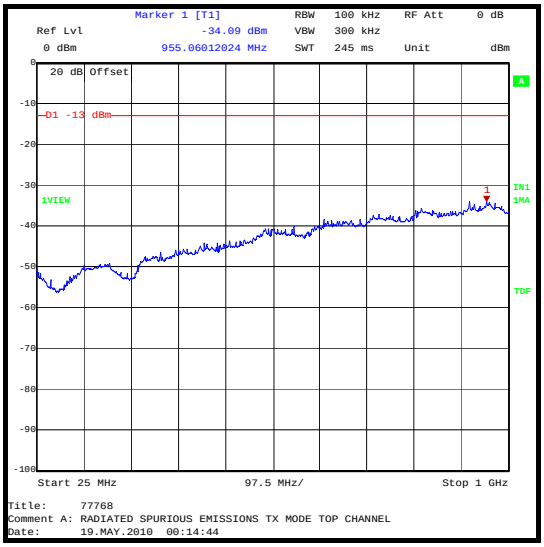
Results:

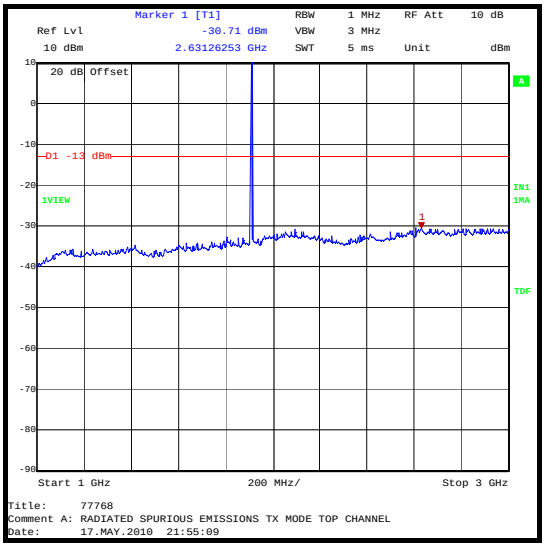
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
17473.948	-28.1	-13.0	15.1	Complied

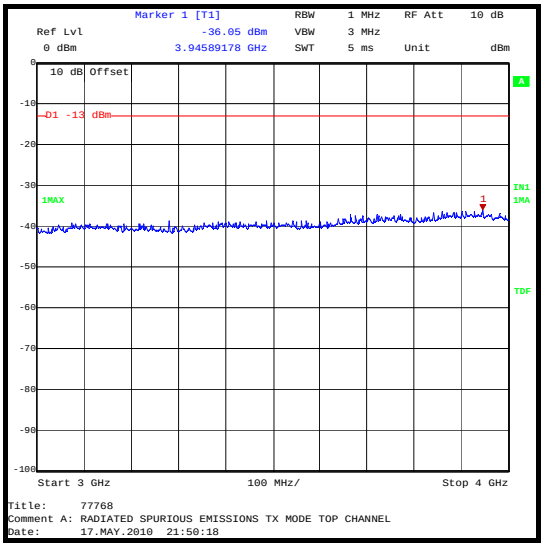
Note(s):

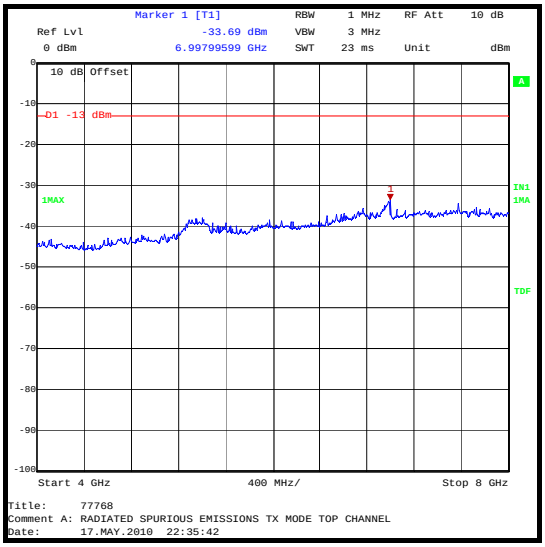
1. No spurious emissions were detected above the noise floor of the measuring receiver; the highest peak noise floor reading of the measuring receiver was recorded.
2. The transmitter fundamental is shown on the 1 GHz to 3 GHz plot at 1909 MHz

Transmitter Out of Band Radiated Emissions (continued)

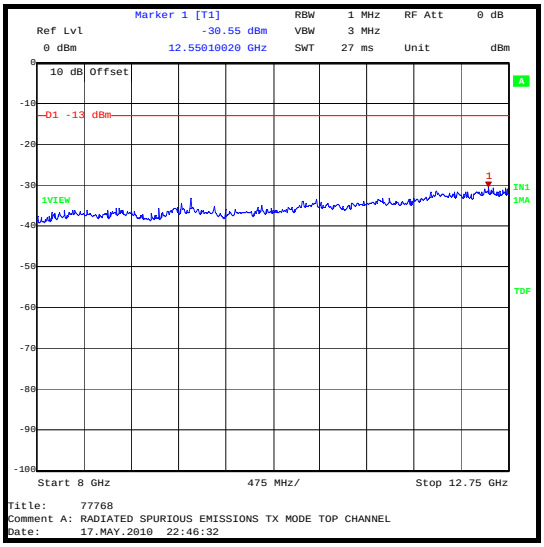


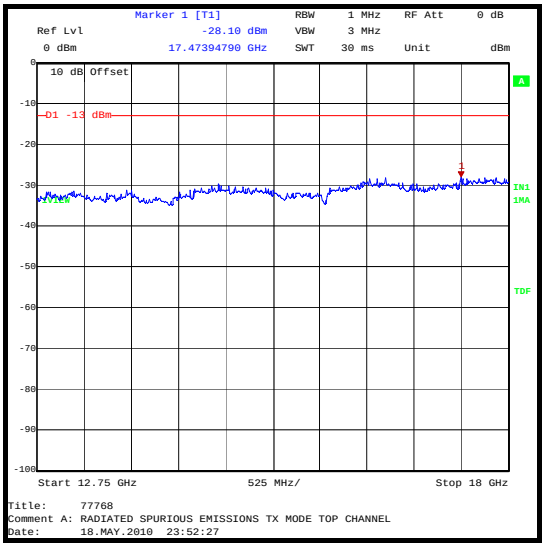


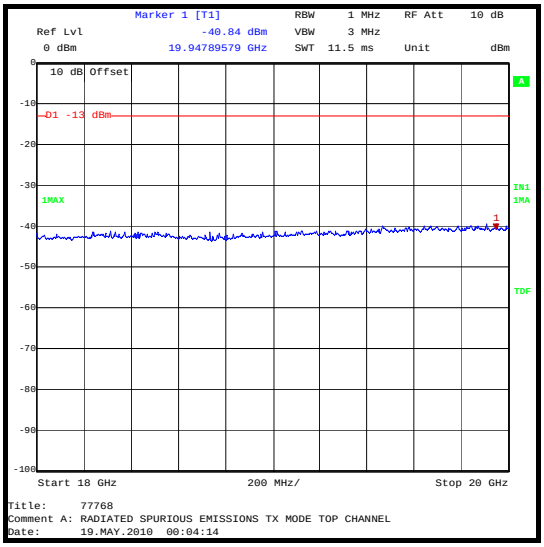




Transmitter Out of Band Radiated Emissions (continued)







5.2.9. Transmitter Radiated Emissions at Band Edges

Test Summary:

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

Environmental Conditions:

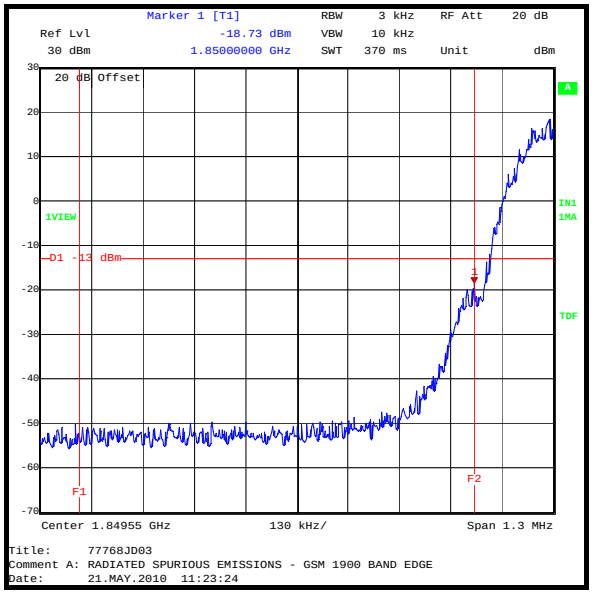
Temperature (°C):	29
Relative Humidity (%):	29

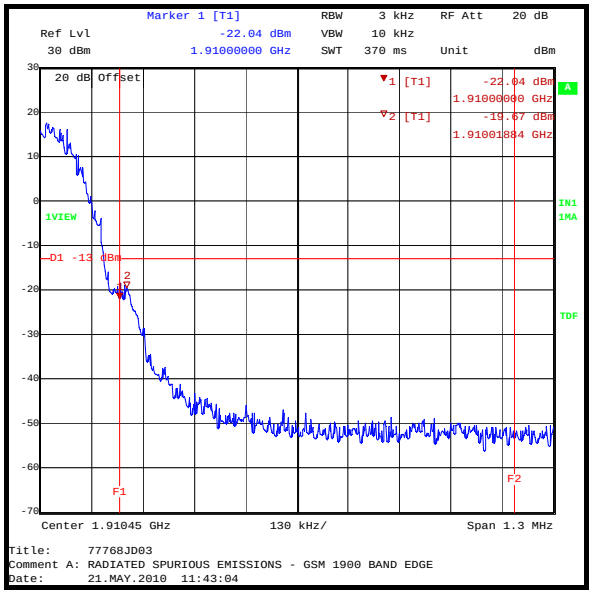
Results: GSM - Bottom Band Edge

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

Results: GSM - Top Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
1910	-22.0	-13.0	9.0	Complied
1910.019	-19.7	-13.0	6.7	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

Environmental Conditions:

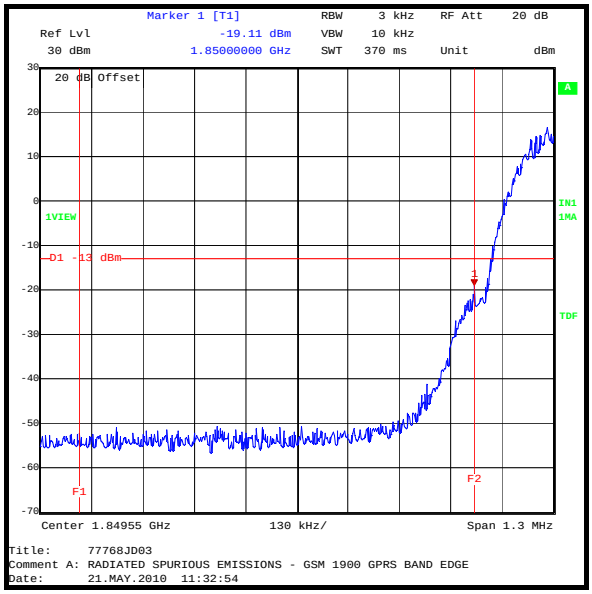
Temperature (°C):	29
Relative Humidity (%):	29

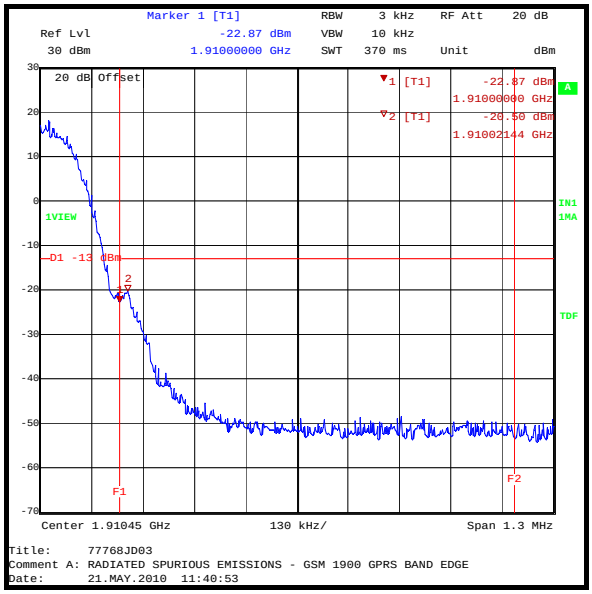
Results: GPRS - Bottom Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
1850	-19.1	-13.0	6.1	Complied

Results: GPRS - Top Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
1910	-22.9	-13.0	9.9	Complied
1910.021	-20.5	-13.0	7.5	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%	±3.25 dB
Effective Isotropic Radiated Power (EIRP)	Not applicable	95%	±2.94 dB
Frequency Stability	Not applicable	95%	±0.92 ppm
Occupied Bandwidth	1850 to 1910 MHz	95%	±0.92 ppm
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	±3.53 dB
Radiated Spurious Emissions	1 GHz 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
A1392	Attenuator	Huber + Suhner	757456	6820.17.B	Calibrated before use	-
A1396	Attenuator	Huber + Suhner	757987	6810.17.B	Calibrated before use	-
A1534	Pre Amplifier	Hewlett Packard	8449B OPT H02	3008A00405	Calibrated before use	-
A1818	Antenna	EMCO	3115	00075692	27 Nov 2009	12
A288	Antenna	Chase	CBL6111A	1589	16 Mar 2010	12
A649	LISN	Rohde & Schwarz	ESH3-Z5	825562/008	16 Mar 2010	12
A1830	Pulse Limiter	Rhode & Schwarz	ESH3-Z2	100668	01 Mar 2010	12
E013	Environmental Chamber	Sanyo	ATMOS chamber	None	Calibrated before use	-
K0001	5m Semi-Anechoic Chamber	Rainford EMC	N/A	N/A	25 Apr 2010	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	01 Sep 2009	12
L1001	Test Receiver	Rohde & Schwarz	ESU26	100239	28 Jan 2010	12
L1005	Comms Test Set	Rohde & Schwarz	CMU200	116284	Calibration not required	-
M1068	Thermometer	Iso-tech	RS55	93102884	10 Oct 2009	12
M1068	Multimeter	Fluke	179	90250210	23 Jun 2009	12
M1124	Test Receiver	Rohde & Schwarz	ESI26	100046K	07 May 2010	12
M1269	Test Receiver	Rhode & Schwarz	ESIB 26	100275	08 Apr 2010	12
S0520	DC Power Supply	GW instek	GPC-3030	E835141	Calibrated before use	-

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