TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: SoftBank 832P

To: FCC Part 24: 2008 Subpart E

Test Report Serial No:
RFI/RPT2/RP74674JD03A
Supersedes Test Report Serial No:
RFI/RPT1/RP74674JD03A

This Test Report Is Issued Under The Authority Of Brian Watson, Operations Director: 	
Checked By: 	**Report Copy No: PDF01**
Issue Date: 12 March 2009	**Test Dates: 10 February to 11 February 2009**

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Registered in England and Wales. Company number:2117901

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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 England

2. Equipment Under Test (EUT)

2.1. Identification of Equipment Under Test (EUT)

Brand Name:	SoftBank 832P
Model Name or Number:	EB-VS86JZA
Hardware Version:	Rev B
Software Version:	832PVA04
IMEI Number:	004401220707604 004401220707547
FCC ID Number:	UCE209016A

Description:	128 MB Micro-SD Memory Card
Brand Name:	Not stated
Model Name or Number:	Not stated

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

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

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 Data cable
Brand Name:	SoftBank
Model Name or Number:	ZTFE01

2.2. Description of EUT

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

2.3. Modifications Incorporated in EUT

During the course of testing the EUT was not modified.

2.4. 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

2.5. Additional Information Related to Testing

Technology Tested:	PCS1900		
Type of Unit:	Transceiver		
Mode:	GSM/GPRS		
Modulation:	GMSK		
Channel Spacing:	200 kHz		
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
Power Supply Requirement:	Nominal Voltage	3.7	(V)
	Minimum Voltage	3.4	(V)
	Maximum Voltage	4.2	(V)
Maximum Output Power (EIRP) dBm:	GSM	32.8	
	GPRS	31.5	

3. Test Specification, Methods and Procedures

Reference:	FCC Part 24: 2008 Subpart E (Broadband PCS)
Title:	Code of Federal Regulations, Part 24 (47CFR24) Personal Communication Services.

3.1. Methods and Procedures

The methods and procedures used were as detailed in:

ANSI/TIA-603-B-2003
Land Mobile Communications Equipment, Measurements and performance Standards

ANSI C63.2 (1987)
Title: American National Standard for Instrumentation - Electromagnetic noise and field strength.

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.

ANSI C63.5 (1988)
Title: American National Standard for the Calibration of antennas used for Radiated Emission measurements in Electromagnetic Interference (EMI) control.

ANSI C63.7 (1988)
Title: American National Standard Guide for Construction of Open Area Test Sites for performing Radiated Emission Measurements.

CISPR 16-1: (1999)
Title: Specification For Radio Disturbance and Immunity Measuring Apparatus and Methods. Part 1: Radio Disturbance and Immunity Measuring Apparatus.

3.2. Definition of Measurement Equipment

The measurement equipment used complied with the requirements of the standards referenced in the methods & procedures Section above. Appendix 1 contains a list of the test equipment used.

4. Deviations from the Test Specification

There were no deviations from the test specification.

5. Operation of the EUT during Testing

5.1. Operating Modes

The EUT was tested in the following operating modes, unless otherwise stated:

- 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 prescans. Circuit switched voice was found to be the worst case and all final measurements were performed with the EUT in this mode.

5.2. Configuration and Peripherals

The EUT was tested in the following configuration unless otherwise stated:

- Connected to a GSM/GPRS system simulator, operating in transceiver mode.
- The Micro SD card was installed during all tests.
- Idle mode and transmitter mode radiated spurious emissions tests were performed with the mains charger connected to the EUT and 120VAC 60 Hz supply as this was found to be the worst case during prescans. All accessories were individually connected and measurements made during prescans to determine the worst case combination.
- The dummy battery was fitted during frequency measurement tests. This was connected to a bench power supply and the DC voltage level adjusted and monitored accordingly.

6. Summary of Test Results

Range of Measurements	Specification Reference	Port Type	Result
Idle Mode AC Conducted Spurious Emissions	FCC Part 15: Section 15.107	AC Mains	Complied
Idle Mode Radiated Spurious Emissions	FCC Part 15: Section 15.109	Enclosure	Complied
Transmitter AC Conducted Spurious Emissions	FCC Part 15: Section 15.207	AC Mains	Complied
Transmitter Effective Isotropic Radiated Power (EIRP)	FCC Part 24: Section 24.232	Antenna	Complied
Transmitter Frequency Stability (Temperature & Voltage Variation)	FCC Part 24: Section 24.235	Antenna	Complied
Transmitter Occupied Bandwidth	FCC Part 24: Section 24.238	Antenna	Complied
Transmitter Out of Band Radiated Emissions	FCC Part 24: Section 2.1053/24.238	Antenna	Complied
Transmitter Band Edge Radiated Emissions	FCC Part 2: Section 2.1053/24.238	Antenna	Complied

6.1. Location of Tests

All the measurements described in this report were performed at the premises of RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.

6.2. Site Registration Numbers

FCC: 209735

7. Measurements, Examinations and Derived Results

7.1. General Comments

This Section contains test results only.

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 8 for details of measurement uncertainties.

7.2. Test Results

7.3. 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:

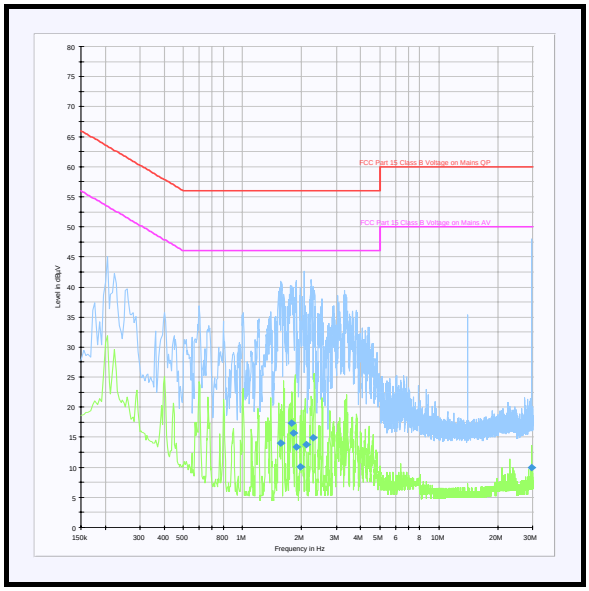
Temperature (°C):	21
Relative Humidity (%):	36

Results: Quasi-Peak Detector Measurements

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
1.567500	Live	14.1	56.0	42.0	Complied
1.783500	Live	17.4	56.0	38.6	Complied
1.824000	Live	15.6	56.0	40.4	Complied
1.878000	Live	13.4	56.0	42.6	Complied
1.972500	Live	10.1	56.0	45.9	Complied
2.098500	Live	13.8	56.0	42.2	Complied
2.278500	Live	14.9	56.0	41.1	Complied
29.562000	Live	10.0	60.0	50.0	Complied

Note(s):

1. Average detector measurements were all at least 20 dB below the relevant specification limit.



7.4. Idle Mode Radiated Spurious Emissions

Test Summary:

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

Environmental Conditions:

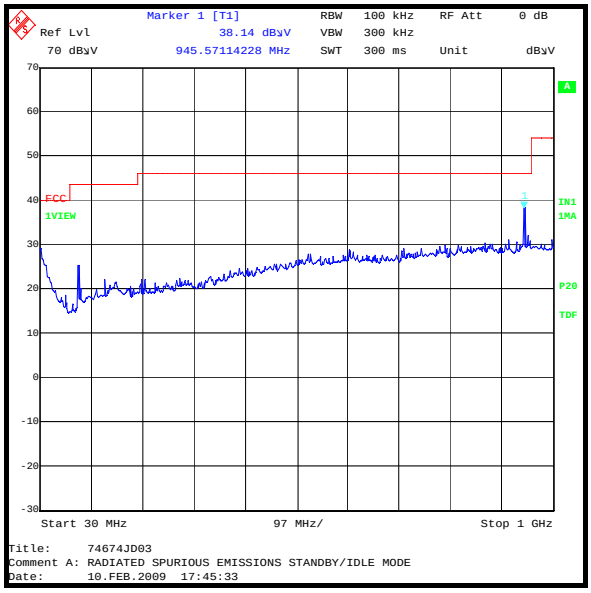
Temperature (°C):	23
Relative Humidity (%):	25

Results: Electric Field Strength Measurements

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
945.571	Horizontal	38.1	46.0	7.9	Complied

Note(s):

1. The emission at approximately 945.571 MHz was investigated and found to be ambient. All other emissions were either ambients or >20 dB below the applicable limit or below the level of the noise floor.



Idle Mode Radiated Spurious Emissions (continued)

Test Summary:

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

Environmental Conditions:

Temperature (°C):	21
Relative Humidity (%):	23

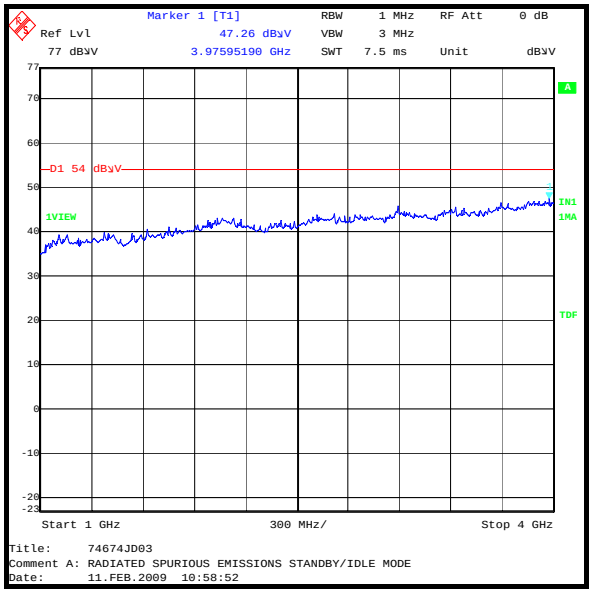
Results: Electric Field Strength Measurements - Highest Peak Level

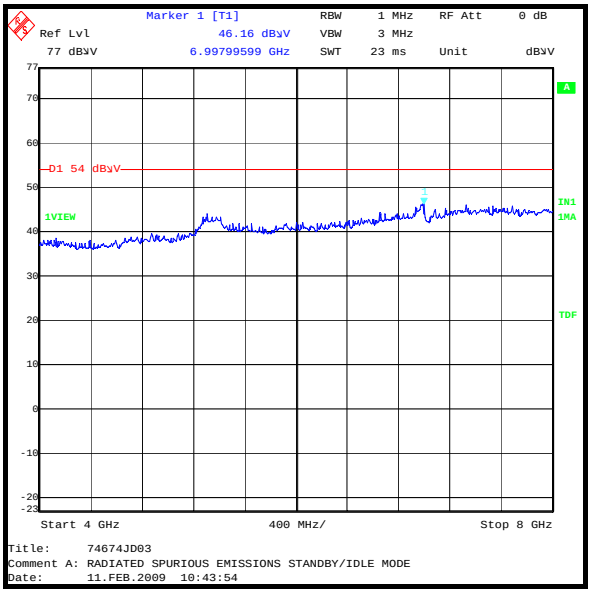
Frequency (GHz)	Antenna Polarity	Detector Level (dBµV)	Transducer Factor (dB)	Peak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
12.645	Vertical	38.0	13.0	51.0	54.0	3.0	Complied

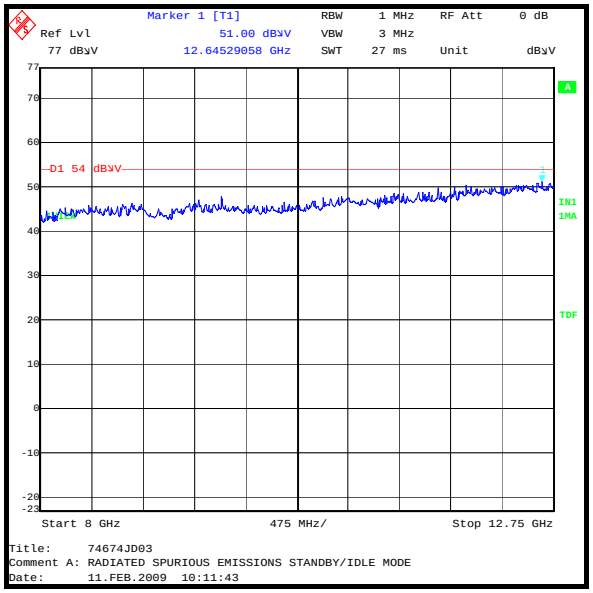
Note(s):

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.

Idle Mode Radiated Spurious Emissions (continued)







7.4.1. Transmitter AC Conducted Spurious Emissions

Test Summary:

FCC Part:	15.207(a)
Test Method Used:	As detailed in ANSI C63.4 Section 7 and relevant annexes

Environmental Conditions:

Temperature (°C):	21
Relative Humidity (%):	36

Results: Quasi-Peak Detector Measurements

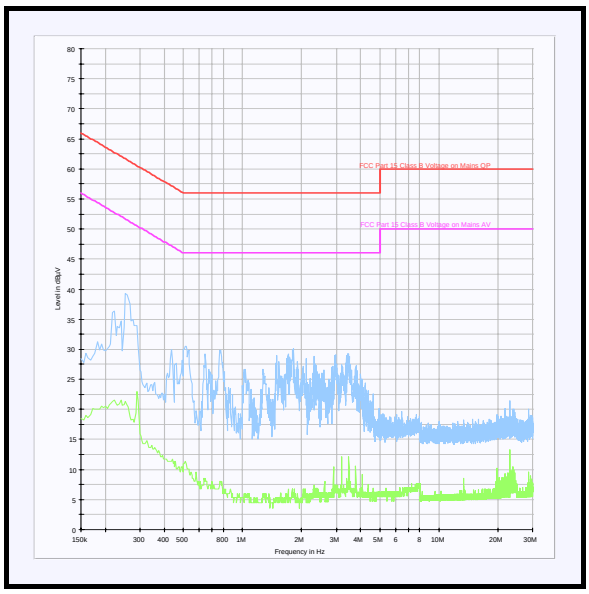
Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
Refer to Note 1					Complied

Results: Average Detector Measurements

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
Refer to Note 1					Complied

Note(s):

1. All emissions were at least 20 dB below the respective specification limit.



7.4.2. 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):	23
Relative Humidity (%):	24

Results: GSM

Channel	Measured Frequency (MHz)	Antenna Polarity	Maximum Transmitter EIRP (dBm)	Limit EIRP (dBm)	Margin (dB)	Result
Bottom	1850.2	Horizontal	32.2	33.0	0.8	Complied
Middle	1879.8	Horizontal	32.8	33.0	0.2	Complied
Top	1909.8	Horizontal	30.4	33.0	2.6	Complied

Results: GPRS

Channel	Measured Frequency (MHz)	Antenna Polarity	Maximum Transmitter EIRP (dBm)	Limit EIRP (dBm)	Margin (dB)	Result
Bottom	1850.2	Vertical	30.8	33.0	2.2	Complied
Middle	1879.8	Horizontal	31.5	33.0	1.5	Complied
Top	1909.8	Vertical	29.0	33.0	4.0	Complied

7.4.3. 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:

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

Results: Bottom Channel (1850.2 MHz)

Temperature (ºC)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
-30	-32	1850.199968	1850.0	0.199968	Complied
-20	-51	1850.199949	1850.0	0.199949	Complied
-10	-31	1850.199969	1850.0	0.199969	Complied
0	-23	1850.199977	1850.0	0.199977	Complied
10	-21	1850.199979	1850.0	0.199979	Complied
20	-26	1850.199974	1850.0	0.199974	Complied
30	-30	1850.199970	1850.0	0.199970	Complied
40	-37	1850.199963	1850.0	0.199963	Complied
50	-41	1850.199959	1850.0	0.199959	Complied

Results: Top Channel (1909.8 MHz)

Temperature (ºC)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
-30	-41	1909.799959	1910.0	0.200041	Complied
-20	-35	1909.799965	1910.0	0.200035	Complied
-10	-47	1909.799953	1910.0	0.200047	Complied
0	-21	1909.799979	1910.0	0.200021	Complied
10	-29	1909.799971	1910.0	0.200029	Complied
20	-40	1909.799960	1910.0	0.200040	Complied
30	-36	1909.799964	1910.0	0.200036	Complied
40	-51	1909.799949	1910.0	0.200051	Complied
50	-47	1909.799953	1910.0	0.200047	Complied

7.4.4. 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):	26
Relative Humidity (%):	27

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	-32	1850.199968	1850.0	0.199968	Complied
4.2	-42	1850.199958	1850.0	0.199958	Complied

Top Channel (1909.8 MHz)

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
3.4	-45	1909.799955	1910.0	0.200045	Complied
4.2	-40	1909.799960	1910.0	0.200040	Complied

7.4.5. 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:

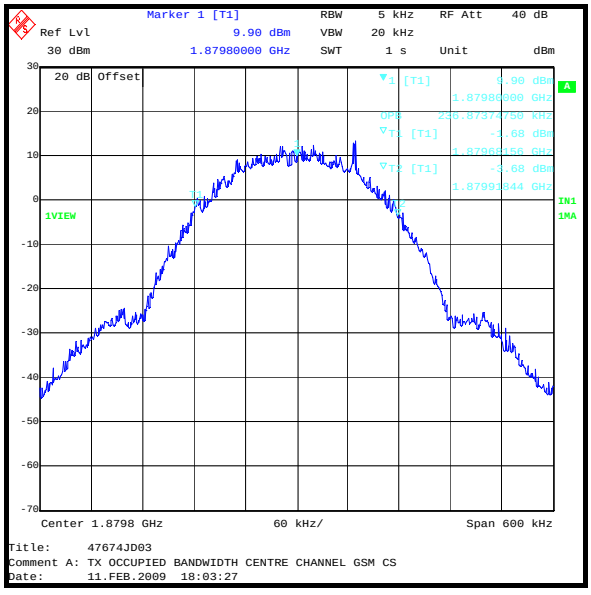
Temperature (°C):	24
Relative Humidity (%):	23

Results: GSM

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

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



7.4.6. 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:

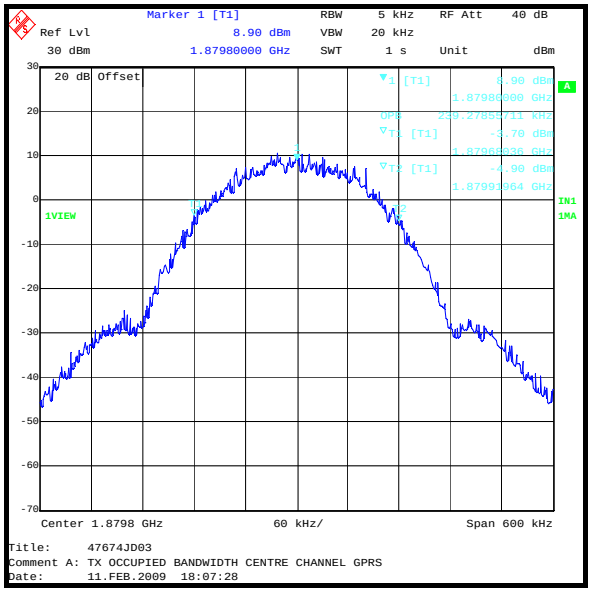
Temperature (°C):	23
Relative Humidity (%):	24

Results: GPRS

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

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



7.4.7. Transmitter Out of Band Radiated Emissions

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 Part 2.1053

Environmental Conditions:

Temperature (°C):	21
Relative Humidity (%):	32

Results: Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1689.208	-33.4	-13.0	20.4	Complied
5550.589	-21.0	-13.0	8.0	Complied
7400.800	-27.3	-13.0	14.3	Complied
9251.073	-30.1	-13.0	17.1	Complied

Results: Middle Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1716.362	-31.9	-13.0	18.9	Complied
5639.258	-26.9	-13.0	13.9	Complied
7519.157	-24.9	-13.0	11.9	Complied
9399.069	-37.9	-13.0	24.9	Complied

Results: Top Channel

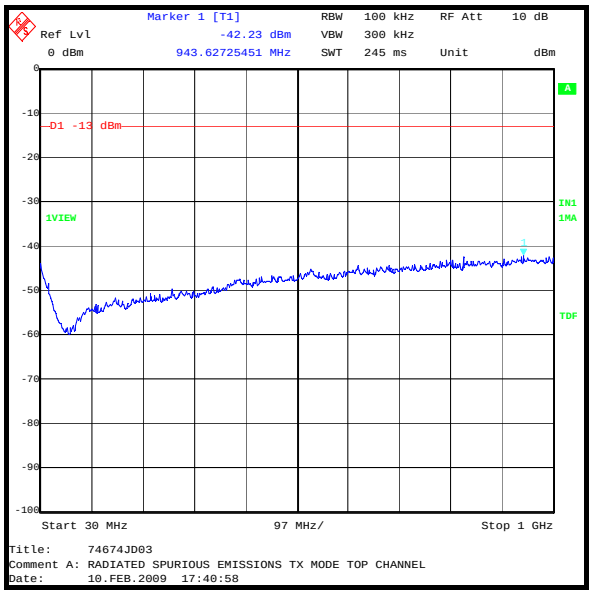
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1743.717	-30.7	-13.0	17.7	Complied
5729.406	-25.4	-13.0	12.4	Complied
7639.190	-24.5	-13.0	11.5	Complied
9548.898	-37.2	-13.0	24.2	Complied

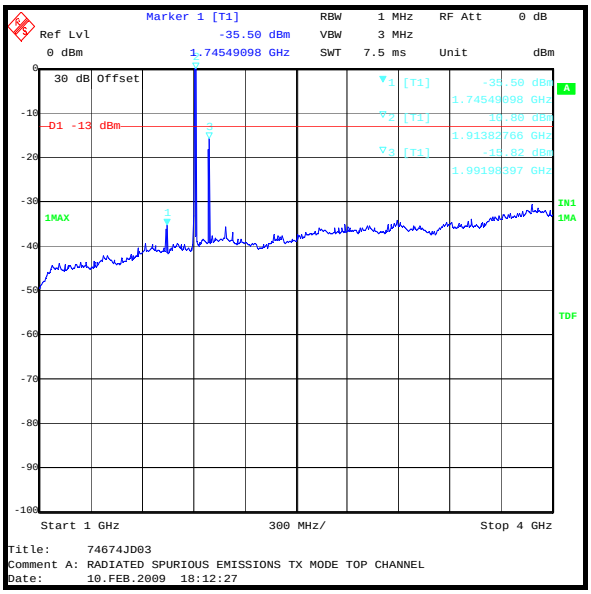
Note(s):

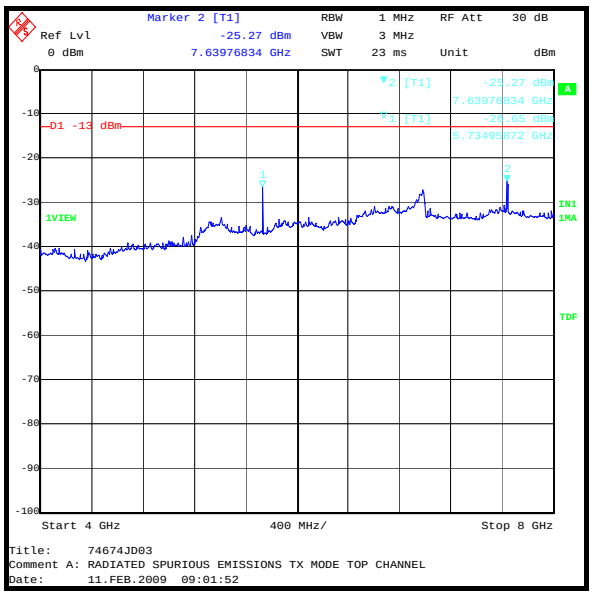
1. The uplink and downlink traffic channels are present on the 1 to 4 GHz plot at approximately 1913 MHz and 1991 MHz.

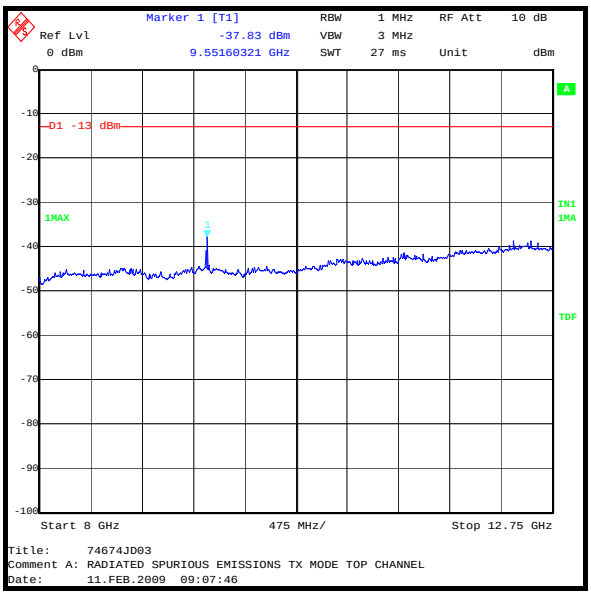
Test of: SoftBank 832P
To: FCC Part 24: 2008 Subpart E

Transmitter Out of Band Radiated Emissions: (continued)

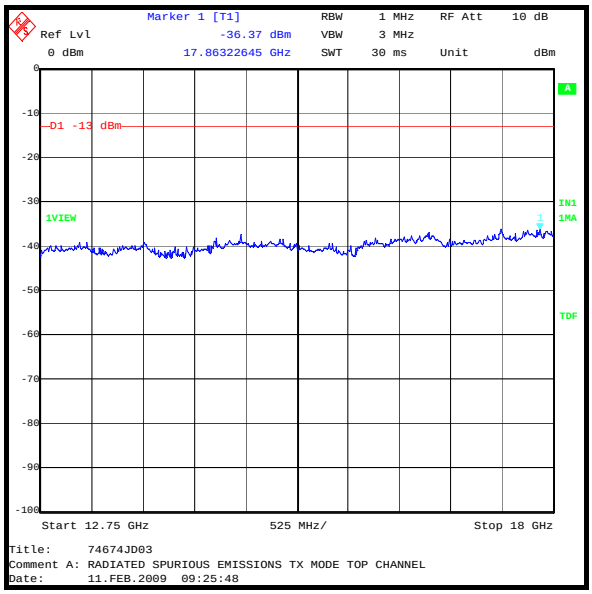


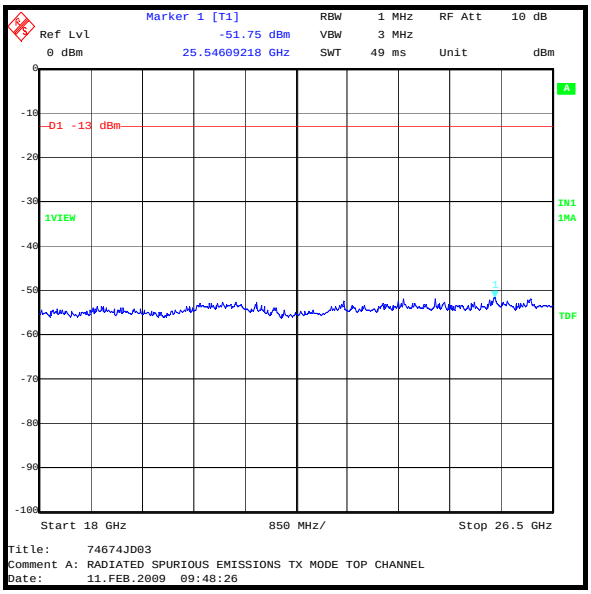






Transmitter Out of Band Radiated Emissions: (continued)





7.4.8. 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:

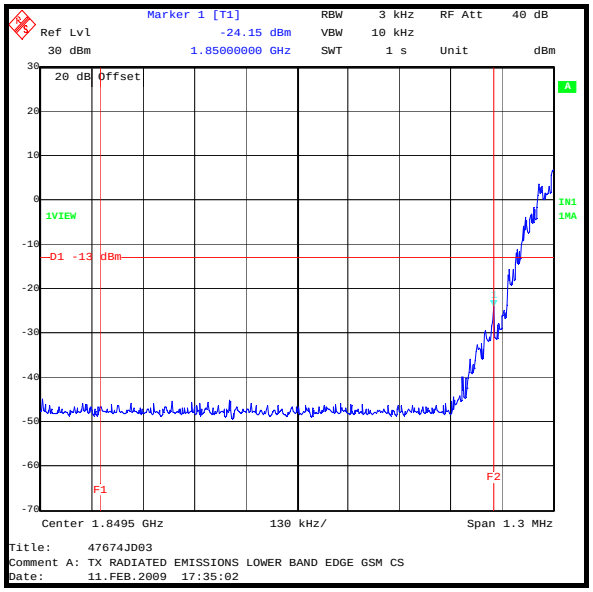
Temperature (°C):	23
Relative Humidity (%):	24

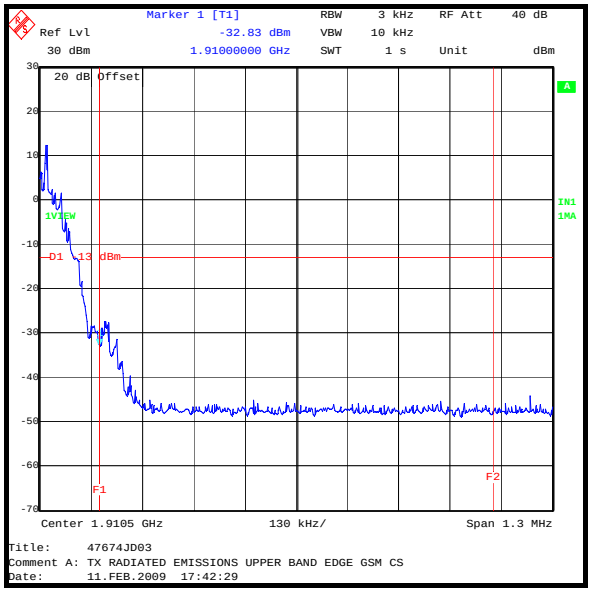
Results: GSM - Bottom Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1850	-24.2	-13.0	11.2	Complied

Results: GSM - Top Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1910	-32.8	-13.0	19.8	Complied





7.4.9. 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:

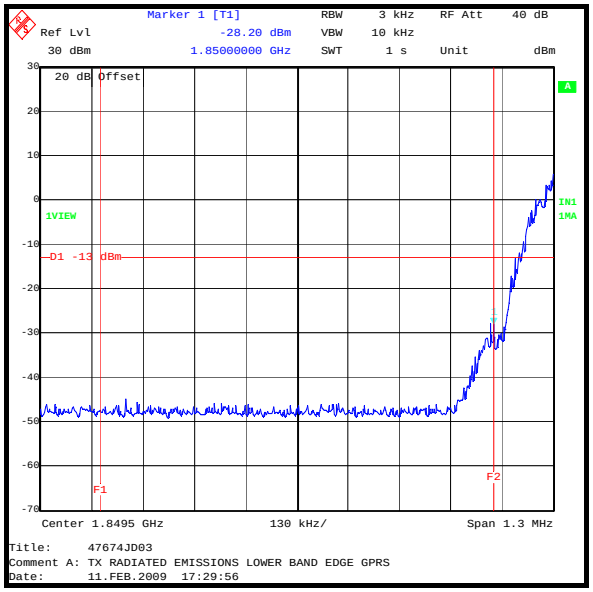
Temperature (°C):	23
Relative Humidity (%):	24

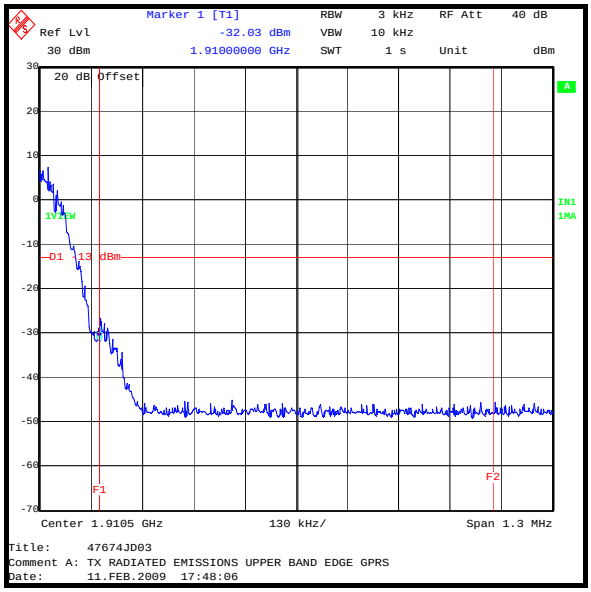
Results: GPRS - Bottom Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1850	-28.2	-13.0	15.2	Complied

Results: GPRS - Top Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1910	-32.0	-13.0	19.0	Complied





8. 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 to 1910 MHz	95%	±2.94 dB
Frequency Stability	1850 to 1910 MHz	95%	±11.4 ppm
Occupied Bandwidth	1850 to 1910 MHz	95%	±11.4 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)
A004	LISN	Rohde & Schwarz	ESH3-Z5	890604/027	19 May 2008	12
A1299	Antenna	Schaffner	CBL6143	5094	28 Jul 2008	12
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
A436	Antenna	Flann	20240-20	330	24 Apr 2006	36
E013	Environmental Chamber	Sanyo	ATMOS chamber	None	Calibrated before use	-
K0002	3m RSE chamber	Rainford EMC	N/A	N/A	26 Aug 2008	12
M1068	Thermometer	Iso-Tech	RS55	93102884	09 Jul 2008	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	19 Feb 2008	12
M1138	CMU 200	Rohde & Schwarz	CMU200	836202/093	02 Jan 2009	12
M1242	Spectrum Analyser	Rohde & Schwarz	FSEM30	845986/022	09 Dec 2008	12
M1269	Multimeter	Fluke	179	90250210	09 Apr 2008	12
M1379	Test Receiver	Rohde & Schwarz	ESIB7	100330	14 Aug 2008	12
S0520	DC Power Supply Unit	GW instek	GPC-3030	E835141	Calibrated before use	-

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