



TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: SoftBank 931P

To: FCC Part 24: 2008 Subpart E

Test Report Serial No:
RFI/RPT2/RP75018JD05A

Supersedes Test Report Serial No:
RFI/RPT1/RP75081JD05A

This Test Report Is Issued Under The Authority Of Brian Watson, Operations Director:		
Checked By:	A. HENRIQUES	
Signature:		
Date of Issue:	11 May 2009	

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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

2. Summary of Testing

2.1. General Information

Specification Reference:	FCC Part 24: 2008 Subpart E (Broadband PCS)
Specification Title:	Code of Federal Regulations, Part 24 (CFR47) Personal Communication Services
Site Registration:	FCC: 209735
Location of Testing:	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.
Test Dates:	24 April to 01 May 2009

2.2. Summary of Test Results

FCC Reference (CFR 47)	Measurement	Port Type	Result
Part 15.107	Idle Mode AC Conducted Spurious Emissions	AC Mains	
Part 15.109	Idle Mode Radiated Spurious Emissions	Enclosure	
Part 15.207	Transmitter AC Conducted Spurious Emissions	AC Mains	
Part 24.232	Transmitter Effective Isotropic Radiated Power (EIRP)	Antenna	
Part 24.235	Transmitter Frequency Stability (Temperature & Voltage Variation)	Antenna	
Part 2.1049/24.238	Transmitter Occupied Bandwidth	Antenna	
Part 2.1053/24.238	Transmitter Out of Band Radiated Emissions	Antenna	
Part 2.1053/24.238	Transmitter Band Edge Radiated Emissions	Antenna	
Key to Results  = Complied  = Did not comply			

2.3. Methods and Procedures

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

2.4. Deviations from the Test Specification

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

3. Equipment Under Test (EUT)

3.1. Identification of Equipment Under Test (EUT)

Brand Name:	SoftBank 931P
Model Name or Number:	EB-VS94JZA
Hardware Version:	Rev B
Software Version:	931PVA15
IMEI Number(s):	004401220733253 & 004401220733303
FCC ID Number:	UCE209017A

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:	Micro-SD Memory Card
Brand Name:	None stated
Model Name or Number:	None stated

Description:	Personal hands-free
Brand Name:	SoftBank
Model Name or Number:	ZTCK01

Description:	Hands-free Converter
Brand Name:	SoftBank
Model Name or Number:	PMLAJ1

Description:	Battery 3.7V 800 mAh
Brand Name:	SoftBank
Model Name or Number:	PMBAP1

3.2. Description of EUT

The equipment under test was a dual mode (W-CDMA FDDI/GSM900/1800/1900MHz) Cellular Mobile Telephone with Bluetooth 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	28.9 dBm	
	GPRS	28.7 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
Serial Number:	Not stated

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

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

- Idle mode.
- Constantly transmitting at full power on bottom, centre and top channels as required.
- Occupied bandwidth, EIRP and band edge tests were performed with the EUT in GSM single timeslot circuit switched and GPRS Multislot Class 10 with the unit transmitting on two timeslots in the uplink.
- Transmitter radiated spurious emissions were checked in all modes during prescans. 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 Micro SD card was installed during all tests.
- Idle mode and transmitter mode radiated spurious emissions test were performed with the mains charger connected to the EUT and 120VAC 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.

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**5.3. 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
EUT Tested (IMEI):	004401220733253

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	33

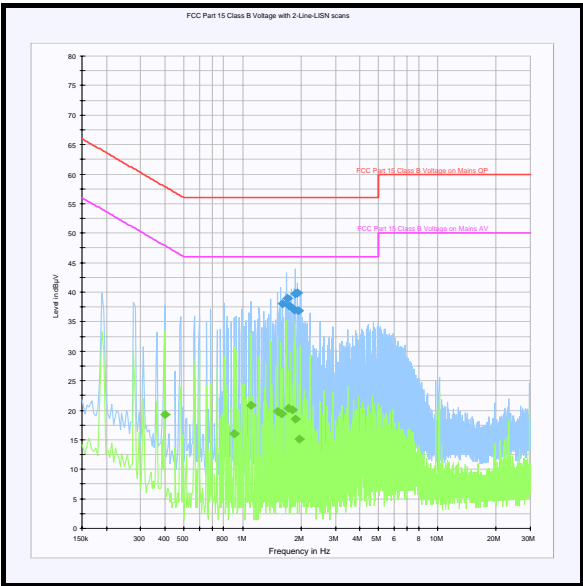
Results: Quasi Peak Detector Measurements

Frequency (MHz)	Line	Quasi Peak Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
1.608000	Neutral	38.0	56.0	18.0	Complied
1.702500	Neutral	39.0	56.0	17.0	Complied
1.747500	Live	37.6	56.0	18.4	Complied
1.837500	Live	36.9	56.0	19.1	Complied
1.860000	Neutral	39.8	56.0	16.2	Complied
1.914000	Live	39.8	56.0	16.2	Complied
1.936500	Neutral	36.9	56.0	19.1	Complied

Results: Average Detector Measurements

Frequency (MHz)	Line	Average Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.402000	Neutral	19.3	47.8	28.5	Complied
0.906000	Neutral	16.1	46.0	29.9	Complied
1.108500	Neutral	20.9	46.0	25.1	Complied
1.509000	Neutral	19.8	46.0	26.2	Complied
1.590000	Neutral	19.4	46.0	26.6	Complied
1.711500	Neutral	20.3	46.0	25.7	Complied
1.810500	Live	20.1	46.0	25.9	Complied
1.869000	Neutral	18.4	46.0	27.6	Complied
1.950000	Neutral	15.1	46.0	30.9	Complied

Idle Mode AC Conducted Spurious Emissions (continued)



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

5.4. 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 MHz to 1 GHz
EUT Tested (IMEI):	004401220733253

Environmental Conditions:

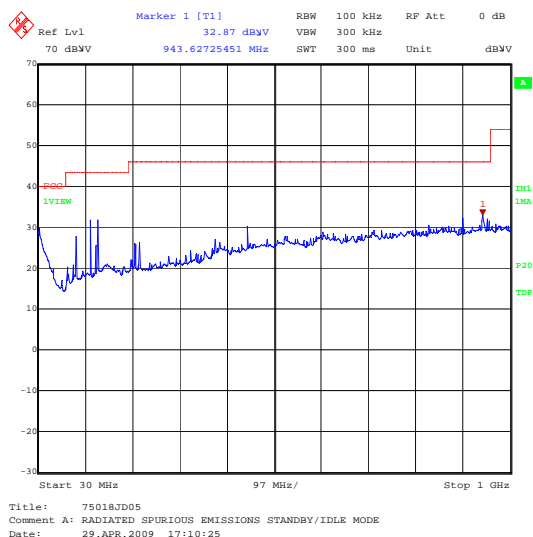
Temperature (°C):	25
Relative Humidity (%):	30

Results:

Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
149.051	Horizontal	25.2	43.5	18.3	Complied
238.481	Vertical	29.1	46.0	16.9	Complied
342.827	Horizontal	27.2	46.0	18.8	Complied

Note(s):

- All other emissions was investigated and found to be ambient and still present with the EUT removed from the test chamber.



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

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 GHz to 12.75 GHz
EUT Tested (IMEI):	004401220733253

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	30

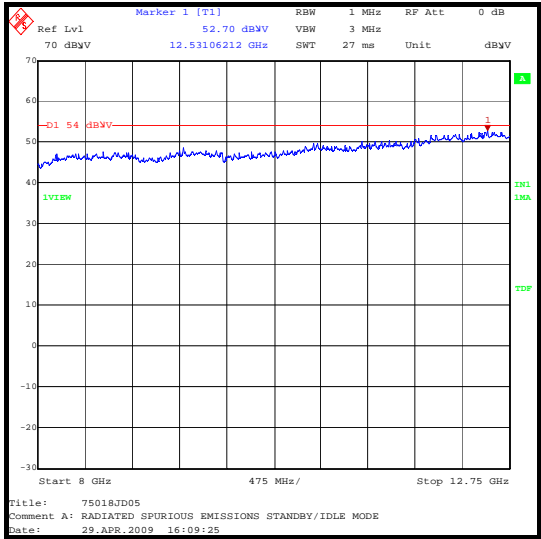
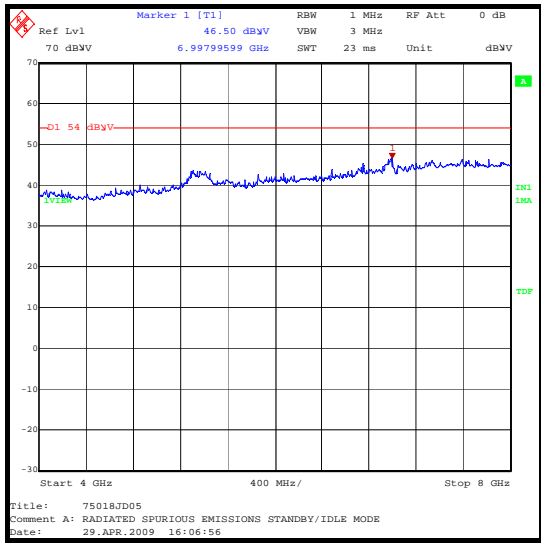
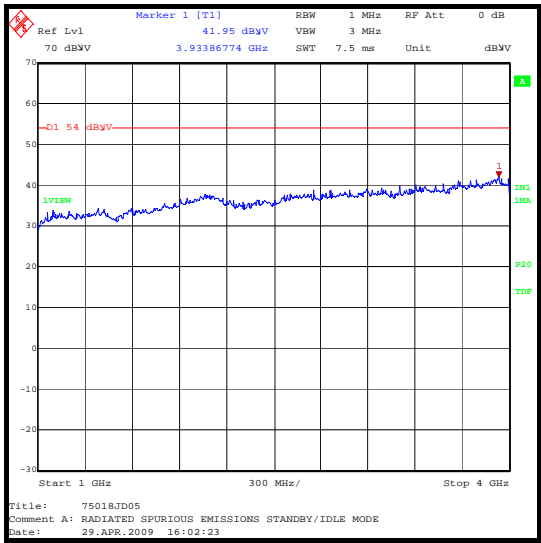
Results:

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Peak Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
12.531	Vertical	39.9	12.8	52.7	54.0	1.3	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)



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

5.5. 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
EUT Tested (IMEI):	004401220733253

Environmental Conditions:

Temperature (°C):	20
Relative Humidity (%):	30

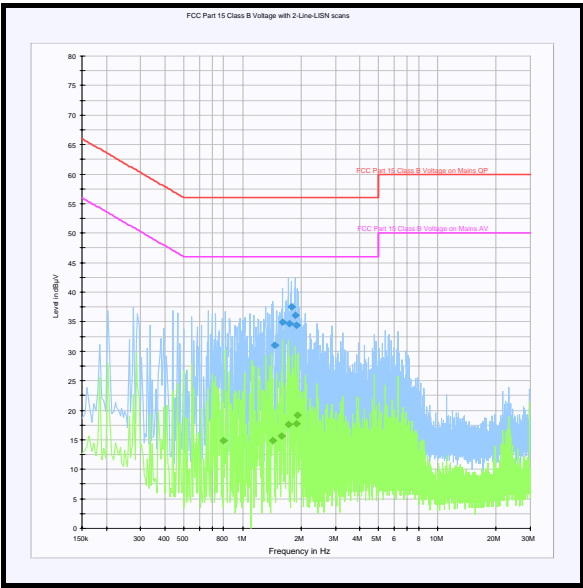
Results: Quasi Peak Detector Measurements

Frequency (MHz)	Line	Quasi Peak Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
1.459500	Neutral	31.1	56.0	25.0	Complied
1.612500	Neutral	34.9	56.0	21.1	Complied
1.743000	Neutral	34.6	56.0	21.4	Complied
1.774500	Live	37.5	56.0	18.5	Complied
1.864500	Live	36.1	56.0	19.9	Complied
1.878000	Neutral	34.4	56.0	21.6	Complied

Results: Average Detector Measurements

Frequency (MHz)	Line	Average Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.793500	Neutral	14.9	46.0	31.1	Complied
1.423500	Neutral	14.9	46.0	31.1	Complied
1.576500	Neutral	15.6	46.0	30.4	Complied
1.725000	Neutral	17.5	46.0	28.5	Complied
1.882500	Live	17.8	46.0	28.2	Complied
1.909500	Neutral	19.1	46.0	26.9	Complied

Transmitter AC Conducted Spurious Emissions (continued)



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

5.6. 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
EUT Tested (IMEI):	004401220733253

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	30

Results: GSM Circuit Switched

Channel	Measured Frequency (MHz)	Antenna Polarity	Maximum Transmitter (dBm)	Limit (dBm)	Margin (dBm)	Result
Bottom	1850.2	Vertical	26.6	33.0	6.4	Complied
Middle	1879.8	Vertical	28.9	33.0	4.1	Complied
Top	1909.8	Vertical	27.9	33.0	5.1	Complied

Results: GPRS

Channel	Measured Frequency (MHz)	Antenna Polarity	Maximum Transmitter (dBm)	Limit (dBm)	Margin (dBm)	Result
Bottom	1850.2	Vertical	26.8	33.0	6.2	Complied
Middle	1879.8	Vertical	28.7	33.0	4.3	Complied
Top	1909.8	Vertical	28.1	33.0	4.9	Complied

5.7. 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
EUT Tested (IMEI):	004401220733303

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	29

Results: Bottom Channel (1850.2 MHz)

Temperature (°C)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
-30	-31	1850.199969	1850.0	0.199969	Complied
-20	-44	1850.199956	1850.0	0.199956	Complied
-10	-41	1850.199959	1850.0	0.199959	Complied
0	-30	1850.199970	1850.0	0.199970	Complied
10	-29	1850.199971	1850.0	0.199971	Complied
20	-24	1850.199976	1850.0	0.199976	Complied
30	-43	1850.199957	1850.0	0.199957	Complied
40	-47	1850.199953	1850.0	0.199953	Complied
50	-45	1850.199955	1850.0	0.199955	Complied

Results: Top Channel (1909.8 MHz)

Temperature (°C)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
-30	-41	1909.799959	1910.0	0.200041	Complied
-20	-61	1909.799939	1910.0	0.200061	Complied
-10	-43	1909.799957	1910.0	0.200043	Complied
0	-32	1909.799968	1910.0	0.200032	Complied
10	-26	1909.799974	1910.0	0.200026	Complied
20	-18	1909.799982	1910.0	0.200018	Complied
30	-39	1909.799961	1910.0	0.200039	Complied
40	-47	1909.799953	1910.0	0.200047	Complied
50	-43	1909.799957	1910.0	0.200043	Complied

5.8. 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
EUT Tested (IMEI):	004401220733303

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	29

Results: Bottom Channel (1850.2 MHz)

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
3.4	-31	1850.199969	1850.0	0.199969	Complied
4.2	-27	1850.199973	1850.0	0.199973	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	-37	1909.799963	1910.0	0.200037	Complied
4.2	-33	1909.799967	1910.0	0.200033	Complied

5.9. Transmitter Occupied Bandwidth

Test Summary:

FCC Part:	24.238
Test Method Used:	As detailed in ANSI C63.4 Section 13.1.7 and relevant annexes referencing FCC CFR Part 2.1049 (see note below)
Modulation:	GSM
EUT Tested (IMEI):	004401220733253

Environmental Conditions:

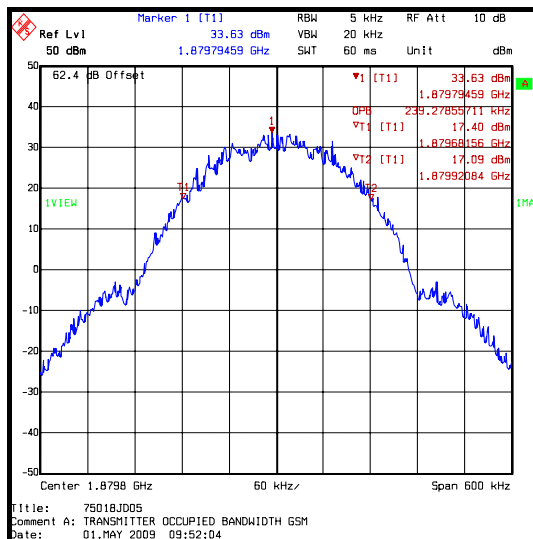
Temperature (°C):	24
Relative Humidity (%):	34

Results:

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

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.



Transmitter Occupied Bandwidth (continued)**Test Summary:**

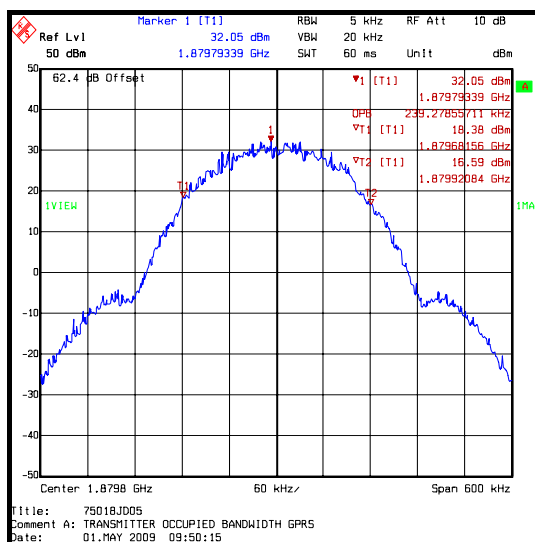
FCC Part:	24.238
Test Method Used:	As detailed in ANSI C63.4 Section 13.1.7 and relevant annexes referencing FCC CFR Part 2.1049 (see note below)
Modulation:	GPRS
EUT Tested (IMEI):	004401220733253

Results:

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

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.



5.10. 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
EUT Tested (IMEI):	004401220733253

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	30

Results: Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
5550.567	-24.7	-13.0	11.7	Complied
7400.631	-23.4	-13.0	10.4	Complied
9250.882	-22.0	-13.0	9.0	Complied

Results: Middle Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
5639.415	-30.0	-13.0	17.0	Complied
7519.120	-22.9	-13.0	9.9	Complied
9398.934	-23.3	-13.0	10.3	Complied

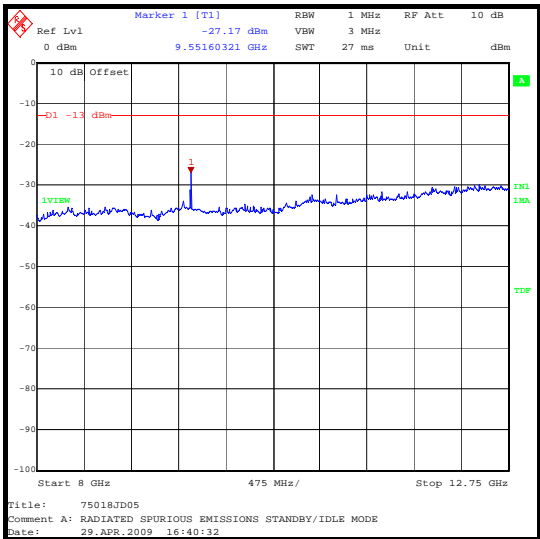
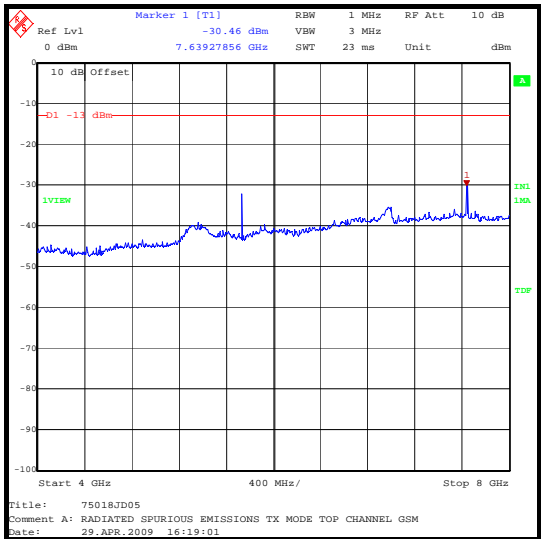
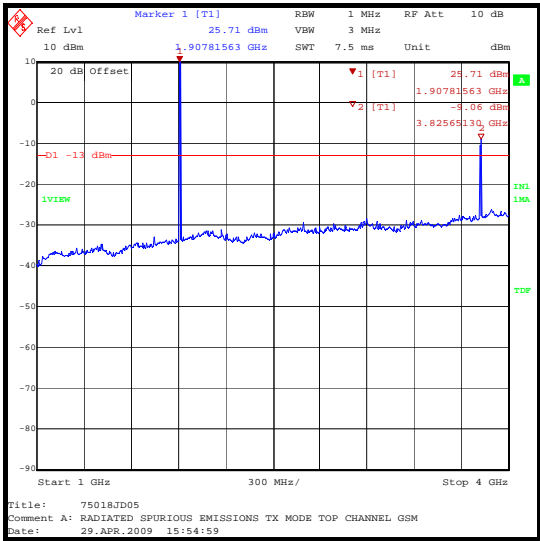
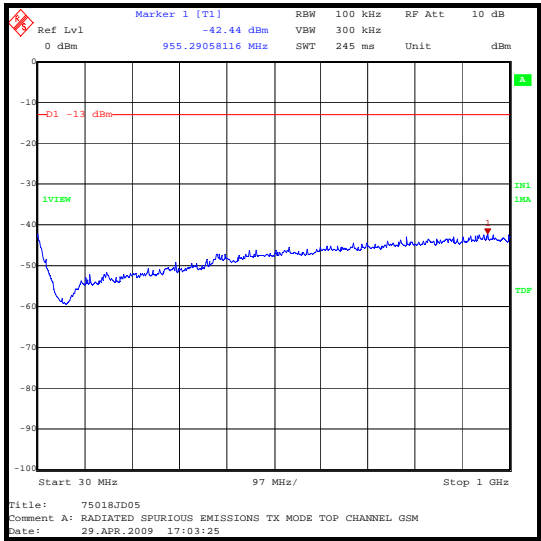
Results: Top Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
5729.469	-31.7	-13.0	18.7	Complied
7639.261	-26.7	-13.0	13.7	Complied
9548.794	-25.4	-13.0	12.4	Complied

Note(s):

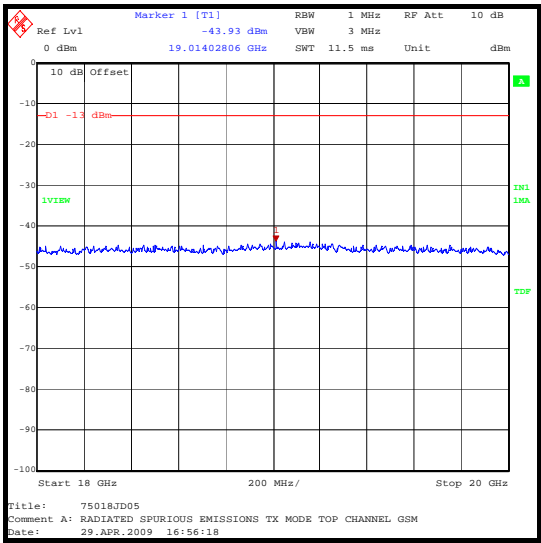
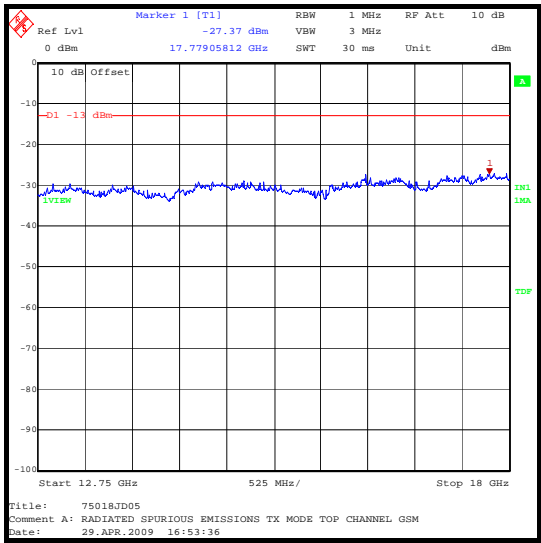
1. The uplink traffic channel is shown on the 1 GHz to 4 GHz plot at approximately 1909 MHz.
2. The emission at 3.8256 GHz on the 1 GHz to 4 GHz plot is caused by distortion in the preamplifier used during pre-scans. The final measurement of this emission was measured using an appropriate filter and the emission level was found to be below the level of the noise floor.

Transmitter Out of Band Radiated Emissions (continued)



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

Transmitter Out of Band Radiated Emissions (continued)



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

5.11. Transmitter Radiated Emissions at Band Edges

Test Summary:

FCC Part:	2.1053 & 24.238
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Parts 2.1053 and 24.238
Modulation:	GSM
EUT Tested (IMEI):	004401220733253

Environmental Conditions:

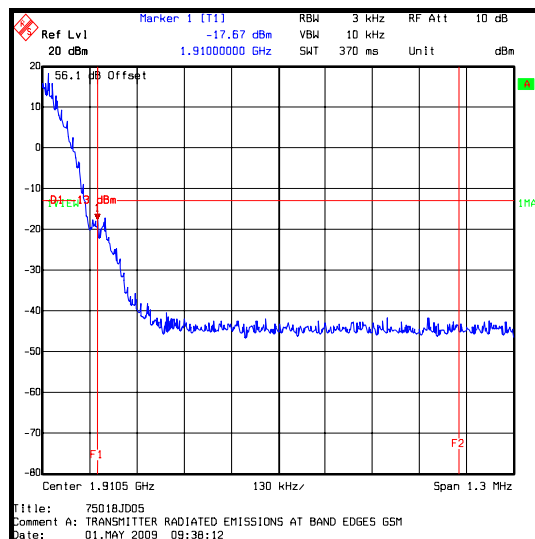
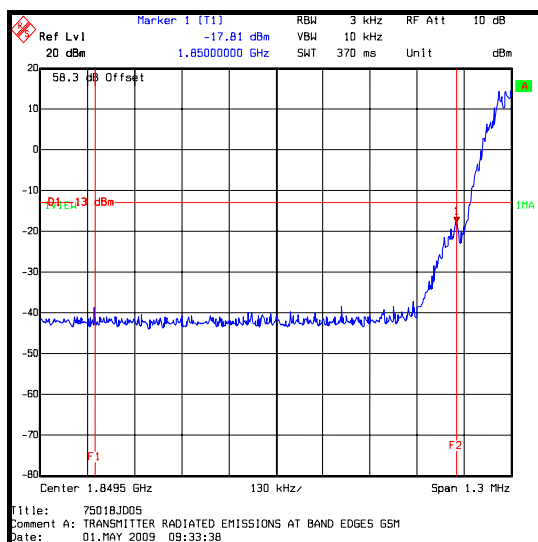
Temperature (°C):	24
Relative Humidity (%):	34

Results: Bottom Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
1850	-17.8	-13.0	4.8	Complied

Results: Top Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
1910	-17.7	-13.0	4.7	Complied



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

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

FCC Part:	2.1053 & 24.238
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Parts 2.1053 and 24.238
Modulation:	GPRS
EUT Tested (IMEI):	004401220733253

Environmental Conditions:

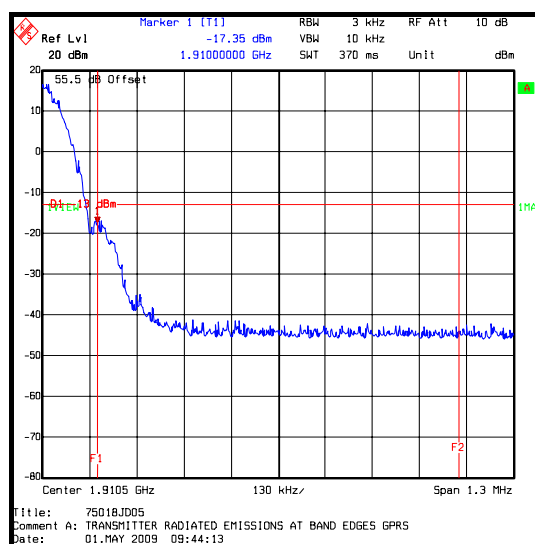
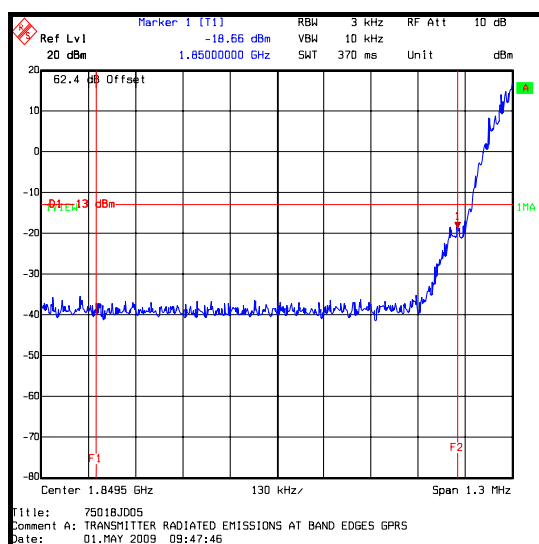
Temperature (°C):	24
Relative Humidity (%):	34

Results: Bottom Band Edge

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

Results: Top Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
1910	-17.4	-13.0	4.4	Complied



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

6. Measurement Uncertainty

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

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

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

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

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95%	±3.72 dB
Effective Isotropic Radiated Power (EIRP)	Not applicable	95%	±2.94 dB
Frequency Stability	Not applicable	95%	±0.92 ppm
Occupied Bandwidth	1850 to 1910 MHz	95%	±0.92 ppm
Radiated Spurious Emissions	30 MHz to 26 GHz	95%	±2.94 dB

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

Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
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
A1933	High Pass Filter	AtlanTEC RF	AFH-03000	30R-JFBN07	14 Oct 2008	12
A390	Attenuator	Suhner	6830.17.B	None	01 Nov 2008	12
A649	LISN	Rohde & Schwarz	ESH3-Z5	825562/008	19 Mar 2009	12
E013	Environmental Chamber	Sanyo	ATMOS chamber	None	Calibrated before use	-
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	26 Aug 2008	12
L0990	Comms Test Set	R&S	CMU 200	S220447	18 Feb 2009	12
M1068	Thermometer	Iso-Tech	RS55	93102884	09 Jul 2008	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	09 Mar 2009	12
M1229	Digital Multimeter	Fluke	179	87640015	09 May 2008	12
M1242	Spectrum Analyser	Rohde & Schwarz	FSEM30	845986/022	09 Dec 2008	12
M1379	Test Receiver	Rohde & Schwarz	ESIB7	100330	14 Aug 2008	12
S0520	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.