TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: Softbank 101P

FCC ID: UCE211043A

To: FCC Part 15.225: 2010 Subpart C

Test Report Serial No:
RFI-RPT-RP83554JD01B V2.0

Version 2.0 Supersedes All Previous Versions

This Test Report Is Issued Under The Authority Of Chris Guy, Head of Global Approvals: 	
Checked By:	Ian Watch
Signature:	
Date of Issue:	19 October 2011

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.

RFI Global Services Ltd
Pavilion A, Ashwood Park, Ashwood Way, Basingstoke, Hampshire RG23 8BG
Telephone: +44 (0)1256 312000 Facsimile: +44 (0)1256 312001
Email: info@rfi-global.com Website: www.rfi-global.com

Registered in England and Wales. Company number:2117901

This page has been left intentionally blank.

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:	47CFR15.225
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2010: Part 15 Subpart C (Radio Frequency Devices) - Section 15.225
Specification Reference:	47CFR15.107 and 47CFR15.109
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2010: Part 15 Subpart B (Radio Frequency Devices) - Sections 15.107 and 15.109
Specification Reference:	47CFR15.209
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2010: Part 15 Subpart C (Intentional Radiators) - Section 15.209
Site Registration:	209735
Location of Testing:	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.
Test Dates:	22 September 2011 to 27 September 2011

2.2. Summary of Test Results

FCC Reference (47CFR)	Measurement	Result
Part 15.107(a)	Receiver/Idle Mode AC Conducted Spurious Emissions	✓
Part 15.109	Receiver/Idle Mode Radiated Spurious Emissions	✓
Part 15.225(a)(b)(c)(d)	Transmitter Fundamental Field Strength	✓
Part 15.209(a), 15.225(d)	Transmitter Radiated Spurious Emissions	✓
Part 15.209(a), 15.225(c)(d)	Transmitter Band Edge Radiated Emissions	✓
Part 2.1049	Transmitter 20 dB Bandwidth	✓
Part 15.225(e)	Transmitter Frequency Stability (Temperature & Voltage Variation)	✓

Key to Results

✓ = Complied ✗ = Did not comply

2.3. Methods and Procedures

Reference:	ANSI C63.4 (2009)
Title:	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
Reference:	ANSI C63.10 (2009)
Title:	American National Standard for Testing Unlicensed Wireless Devices

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
Model Name or Number:	101P
IMEI:	004401221130061
Hardware Version Number:	Revision C
Software Version Number:	ACPU: totoro-ginger-sbm-07-0319 CCPU: R1D_EC01
FCC ID:	UCE211043A

Brand Name:	Softbank
Description:	Battery
Model Name or Number:	PMBBE1

Brand Name:	Softbank
Description:	AC Charger
Model Name or Number:	PMCBD1

Brand Name:	Softbank
Description:	Desktop Charger
Model Name or Number:	PMEBE1

Brand Name:	Softbank
Description:	Charge/USB Data cable
Model Name or Number:	PMCBD1

Brand Name:	Softbank
Description:	Personal Hands-Free
Model Name or Number:	PMLBD1

3.2. Description of EUT

The equipment under test was a Dual mode UMTS/GSM cellular handset with BT, WLAN & RFID

3.3. Modifications Incorporated in the EUT

The customer stated that the final software version is ACPU: sbm-07-0363 CCPU: R1D_EC01

Initial software version ACPU: sbm-07-0319 CCPU: R1D_EC01 was installed in the EUT. The customer stated this version was to enable operation of WLAN therefore allowing WLAN test cases to be performed. Otherwise this software is identical to the final software version and has no impact on the test results contained within this test report.

3.4. Additional Information Related to Testing

Tested Technology:	RFID	
Category of Equipment:	Transceiver	
Channel Spacing:	Single channel device	
Transmit Frequency Range:	13.56 MHz	
Receive Frequency Range:	13.56 MHz	
Power Supply Requirement:	Nominal	3.7 V
	Minimum	3.4 V
	Maximum	4.2 V
Tested Temperature Range:	Minimum	-20°C
	Maximum	50°C

3.5. Support Equipment

The following support equipment was used to exercise the EUT during testing:

Description:	Laptop PC
Brand Name:	Panasonic
Model Name or Number:	Toughbook CF-74

Brand Name:	Not marked
Description:	Micro SD Memory Card
Model Name or Number:	Not marked

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

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

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

- Receiver/Idle mode
- Constantly transmitting at full power with a modulated carrier in RFID test mode.

4.2. Configuration and Peripherals

The EUT was tested in the following configuration(s):

- The RFID transmitter test mode was enabled using a USIM card in conjunction with a bespoke software application on a laptop PC provided by the Customer.
- Receiver Idle/standby mode radiated spurious emission tests were performed with the Desktop Charger connected to the EUT as this was found to be the worst case during pre-scans. All accessories were individually connected and measurements made during pre-scans to determine the worst case combination.
- Transmitter radiated spurious emission tests were performed with the Desktop Charger connected to the EUT as this was found to be the worst case during pre-scans. All appropriate accessories were individually connected and measurements made during pre-scans to determine the worst case combination.
- As the EUT is not capable of transmitting while charging, no AC Mains conducted emissions (150 kHz to 30 MHz) test were performed in transmit mode.

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 Uncertainties* for details.

5.2. Test Results

5.2.1. Receiver/Idle Mode AC Conducted Spurious Emissions

Test Summary:

Test Engineer:	Patrick Jones	**Test Date:**	22 September 2011
Test Sample IMEI:	004401221130061		

FCC Part:	15.107(a)
Test Method Used:	As detailed in ANSI C63.10 Section 6.2 referencing ANSI C63.4

Environmental Conditions:

Temperature (℃):	26
Relative Humidity (%):	30

Results: Live / Quasi Peak

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.249000	Live	46.5	61.8	15.3	Complied
0.420000	Live	45.4	57.4	12.0	Complied
0.501000	Live	44.0	56.0	12.0	Complied
0.501000	Live	44.1	56.0	11.9	Complied
0.631500	Live	39.6	56.0	16.4	Complied
0.672000	Live	39.7	56.0	16.3	Complied
0.874500	Live	39.9	56.0	16.1	Complied
1.365000	Live	41.4	56.0	14.6	Complied
1.423500	Live	43.2	56.0	12.8	Complied
1.617000	Live	55.2	56.0	0.8	Complied

Results: Live / Average

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.415500	Live	30.3	47.5	17.2	Complied
0.415500	Live	30.3	47.5	17.2	Complied
0.496500	Live	27.2	46.1	18.9	Complied
0.541500	Live	24.6	46.0	21.4	Complied
1.284000	Live	28.4	46.0	17.6	Complied
1.738500	Live	40.7	46.0	5.3	Complied

Receiver/Idle Mode AC Conducted Spurious Emissions (continued)

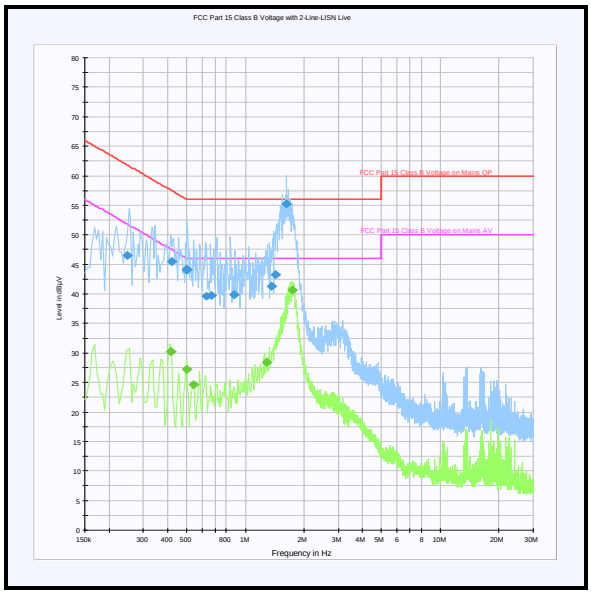
Results: Neutral / Quasi Peak

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.415500	Neutral	50.3	57.5	7.2	Complied
0.420000	Neutral	48.1	57.4	9.3	Complied
0.501000	Neutral	47.2	56.0	8.8	Complied
0.541500	Neutral	43.8	56.0	12.2	Complied
0.591000	Neutral	41.8	56.0	14.2	Complied
1.644000	Neutral	50.5	56.0	5.5	Complied

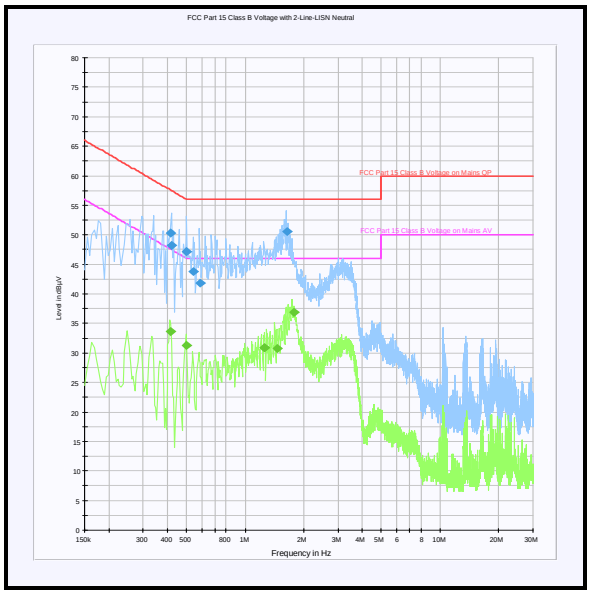
Results: Neutral / Average

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.415500	Neutral	33.6	47.5	13.9	Complied
0.496500	Neutral	31.3	46.1	14.8	Complied
1.252500	Neutral	30.9	46.0	15.1	Complied
1.257000	Neutral	30.9	46.0	15.1	Complied
1.455000	Neutral	30.7	46.0	15.3	Complied
1.774500	Neutral	36.8	46.0	9.2	Complied

Receiver/Idle Mode AC Conducted Spurious Emissions (continued)



Live



Neutral

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

5.2.2. Receiver/Idle Mode Radiated Spurious Emissions

Test Summary:

Test Engineer:	Patrick Jones & Andrew Edwards	**Test Date:**	23 September 2011 & 27 September 2011
Test Sample IMEI:	004401221130061		

FCC Part:	15.109
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3, 6.4 and 6.5 referencing ANSI C63.4
Frequency Range:	9 kHz to 1000 MHz

Environmental Conditions:

Temperature (°C):	28
Relative Humidity (%):	30

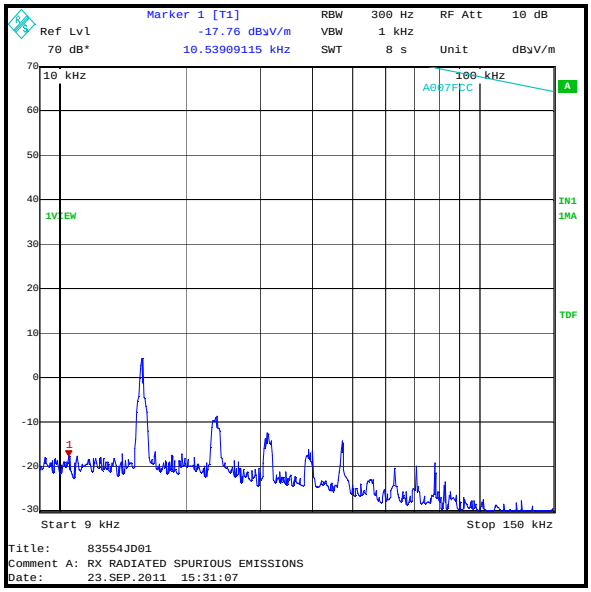
Results: Quasi Peak

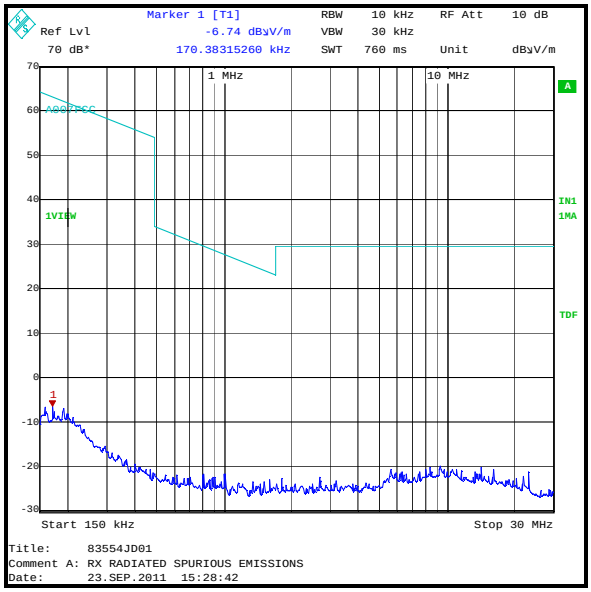
Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
32.907	Vertical	23.0	40.0	17.0	Complied
45.276	Vertical	20.4	40.0	19.6	Complied
61.991	Vertical	18.6	40.0	21.4	Complied
86.945	Vertical	23.5	40.0	16.5	Complied
100.513	Vertical	21.3	43.5	22.2	Complied

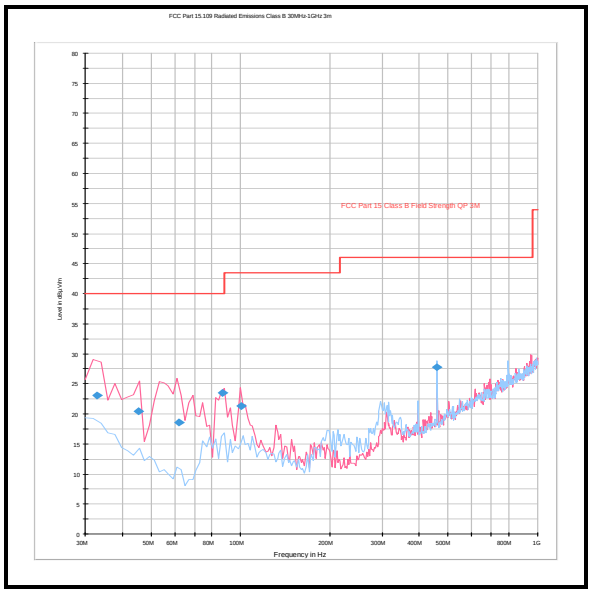
Note(s):

1. Limits below 30 MHz are specified at a test distance of 30 metres, whilst below 0.49 MHz they are specified at a test distance of 300 metres. However, as specified by FCC Section 15.31 (f)(2), measurements may be performed at a closer distance and the measured level corrected to the specified measurement distance by using the square of an inverse linear distance extrapolation factor (40dB/decade).
2. A transducer factor on the measuring instrument was used to extrapolate the results at 3 metres to a distance of 30 metres where required. A distance extrapolation factor of 40 dB was used.
3. Final measurement values include corrections for antenna factor and cable losses.
4. All emissions on the 9 kHz to 150 kHz plot were investigated and found to be radiating from the test site turntable.
5. All other emissions shown on the pre-scan plots were investigated and found to be >20 dB below the applicable limit or below the measurement system noise floor.
6. Measurements in the range 30 MHz to 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres

Receiver/Idle Mode Radiated Spurious Emissions (continued)







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

5.2.3. Transmitter Fundamental Field Strength

Test Summary:

Test Engineer:	Patrick Jones	**Test Date:**	23 September 2011
Test Sample IMEI:	004401221130061		

FCC Part:	15.225(a)(b)(c)(d)
Test Method Used:	ANSI C63.10 Section 6.4

Environmental Conditions:

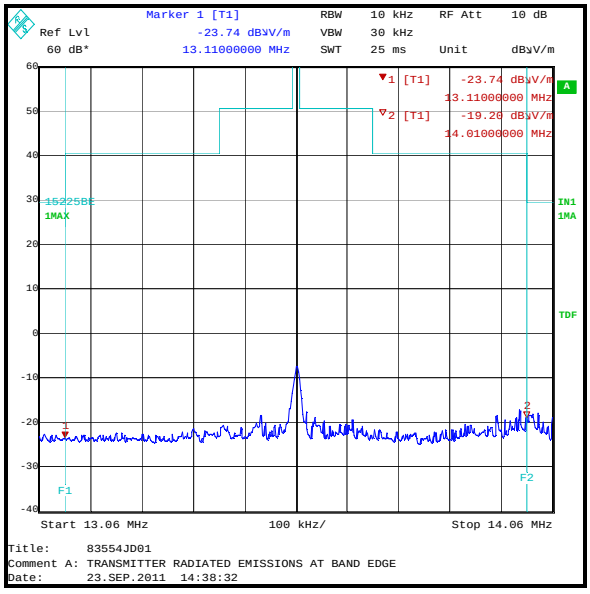
Temperature (℃):	29
Relative Humidity (%):	30

Results: Quasi Peak

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit at 30 m (dBµV/m)	Margin (dB)	Result
13.56	90°to EUT	-9.3	84.0	93.3	Complied

Note(s):

1. The limit is specified at a test distance of 30 metres. However, as specified by FCC Section 15.31 (f)(2), measurements may be performed at a closer distance and the measured level corrected to the specified measurement distance by using the square of an inverse linear distance extrapolation factor (40dB/decade).
2. A transducer factor on the measuring instrument was used to extrapolate the results at 3 metres to a distance of 30 metres. A distance extrapolation factor of 40 dB was used.



5.2.4. Transmitter Radiated Spurious Emissions

Test Summary:

Test Engineer:	Patrick Jones & Andrew Edwards	**Test Date:**	23 September 2011& 27 September 2011
Test Sample IMEI:	004401221130061		

FCC Part:	15.225(d) & 15.209(a)
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3, 6.4 and 6.5 referencing ANSI C63.4
Frequency Range:	9 kHz to 1000 MHz

Environmental Conditions:

Temperature (℃):	28
Relative Humidity (%):	30

Results: Quasi Peak

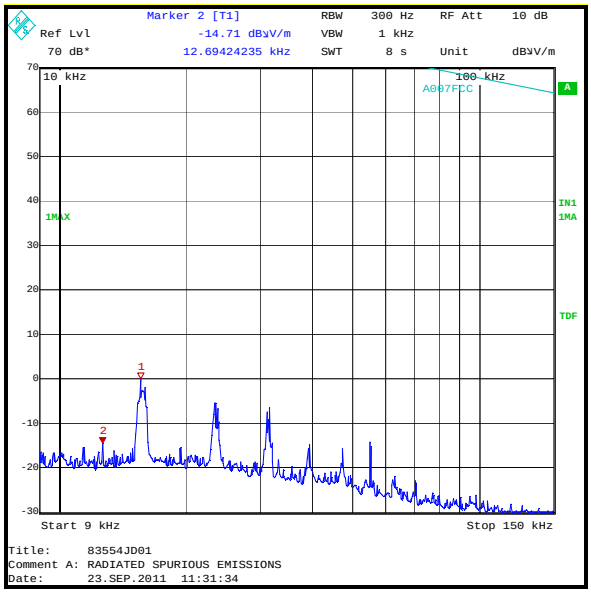
Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
35.191	Vertical	14.1	40.0	25.9	Complied
393.223	Vertical	29.8	46.0	16.2	Complied
420.351	Vertical	36.9	46.0	9.1	Complied
458.805	Horizontal	29.3	46.0	16.7	Complied
718.670	Vertical	31.9	46.0	14.1	Complied
732.220	Vertical	33.1	46.0	12.9	Complied
745.798	Vertical	32.3	46.0	13.7	Complied
759.338	Vertical	32.0	46.0	14.0	Complied
786.485	Vertical	30.9	46.0	15.1	Complied
813.565	Vertical	30.4	46.0	15.6	Complied

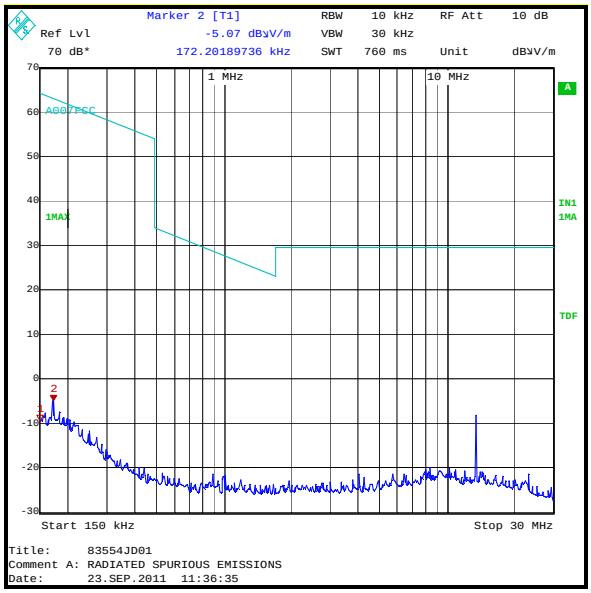
Transmitter Radiated Spurious Emissions (continued)

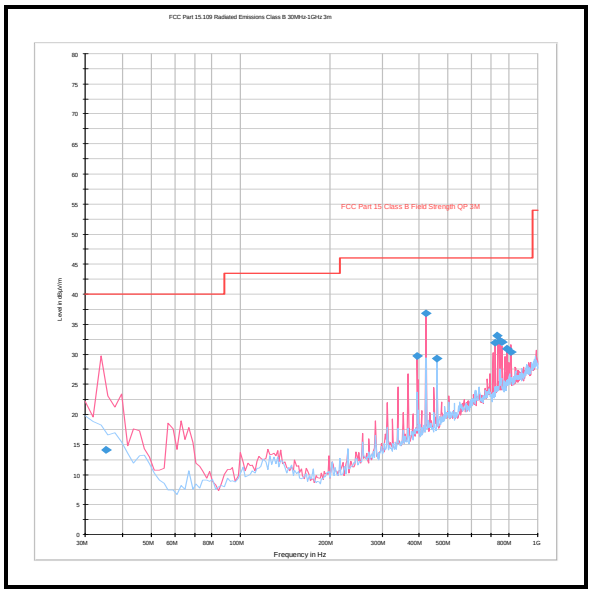
Note(s):

1. Limits below 30 MHz are specified at a test distance of 30 metres, whilst below 0.49 MHz they are specified at a test distance of 300 metres. However, as specified by FCC Section 15.31 (f)(2), measurements may be performed at a closer distance and the measured level corrected to the specified measurement distance by using the square of an inverse linear distance extrapolation factor (40dB/decade).
2. A transducer factor on the measuring instrument was used to extrapolate the results at 3 metres to a distance of 30 metres where required. A distance extrapolation factor of 40 dB was used.
3. Final measurement values include corrections for antenna factor and cable losses.
4. The emission shown at approximately 13.56 MHz is the fundamental.
5. All emissions on the 9 kHz to 150 kHz plot were investigated and found to be radiating from the test site turntable.
6. All other emissions shown on the pre-scan plots were investigated and found to be >20 dB below the applicable limit or below the measurement system noise floor.
7. Measurements in the range 30 MHz to 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.

Transmitter Radiated Spurious Emissions (continued)







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

5.2.5. Transmitter Band Edge Radiated Emissions

Test Summary:

Test Engineer:	Patrick Jones	**Test Date:**	23 September 2011
Test Sample IMEI:	004401221130061		

FCC Part:	15.225(c)(d) & 15.209(a)
Test Method Used:	As detailed in ANSI C63.10 Section 6.9.2

Environmental Conditions:

Temperature (°C):	29
Relative Humidity (%):	30

Results: Quasi Peak Lower Band Edge

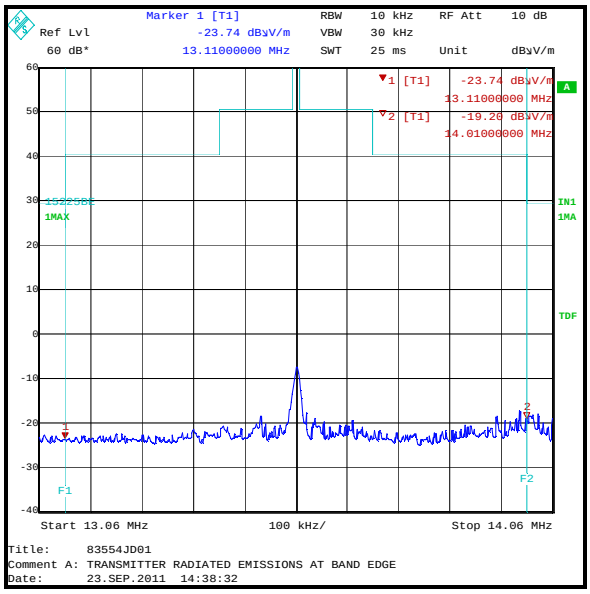
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
13.11	-23.7	29.5	53.2	Complied

Results: Quasi Peak Upper Band Edge

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
14.01	-19.2	29.5	48.7	Complied

Note(s):

1. A transducer factor on the measuring instrument was used to extrapolate the results at 3 metres to a distance of 30 metres where required. A distance extrapolation factor of 40 dB was used.



5.2.6. Transmitter 20 dB Bandwidth

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	26 September 2011
Test Sample IMEI:	004401221130061		

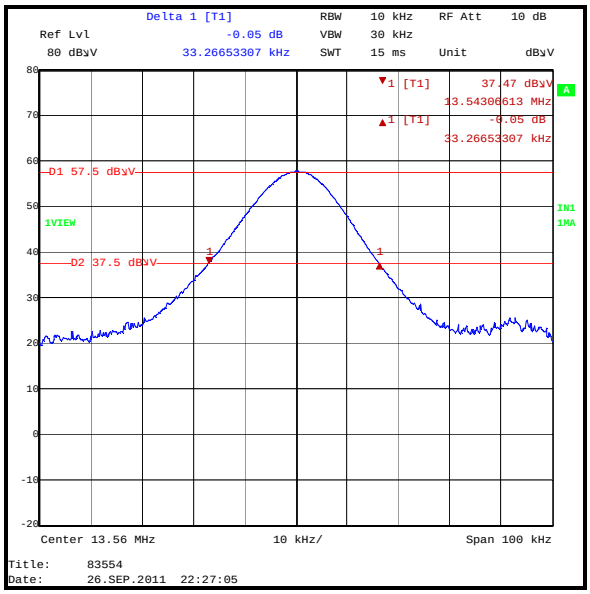
FCC Part:	2.1049
Test Method Used:	As detailed in ANSI C63.10 Section 6.9.1

Environmental Conditions:

Temperature (°C):	29
Relative Humidity (%):	30

Results:

20 dB Bandwidth (kHz)
33.267



5.2.7. Transmitter Frequency Stability (Temperature & Voltage Variation)

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	26 September 2011
Test Sample IMEI:	004401221130061		

FCC Part:	15.225(e)
Test Method Used:	As detailed in ANSI C63.10 Section 6.8.1 and 6.8.2

Environmental Conditions:

Temperature (℃):	28
Relative Humidity (%):	30

Results: Maximum frequency error of the EUT with variations in ambient temperature

Temperature (°C)	Time after Start-up			
	0 minutes	**2 minutes**	**5 minutes**	**10 minutes**
-20	13.560065 MHz	13.560068 MHz	13.560071 MHz	13.560071 MHz
20	13.559955 MHz	13.559956 MHz	13.559963 MHz	13.559966 MHz
50	13.559895 MHz	13.559884 MHz	13.559877 MHz	13.559875 MHz

Frequency with Worst Case Deviation (MHz)	Frequency Error (Hz)	Frequency Error (%)	Limit (%)	Margin (%)	Result
13.559875 MHz	125	0.000922	0.01	0.009078	Complied

Results: Maximum frequency error of the EUT with variations in nominal operating voltage at an ambient temperature of 20°C

Supply Voltage (V)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (%)	Limit (%)	Margin (%)	Result
3.4	13.56	13.559965	35	0.000258	0.01	0.00742	Complied
3.7	13.56	13.559966	34	0.000251	0.01	0.00749	Complied
4.2	13.56	13.559967	33	0.000243	0.01	0.00757	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
20 dB Bandwidth	13 MHz to 14 MHz	95%	±0.92 ppm
Frequency Stability	13 MHz to 14 MHz	95%	±0.92 ppm
Radiated Spurious Emissions	9 kHz to 30 MHz	95%	±3.53 dB
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	±2.94 dB
Transmitter Fundamental Field Strength	13 MHz to 14 MHz	95%	±3.53 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 Calibration Due	Cal. Interval (Months)
M1568	Antenna	Rohde & Schwarz	HFH2-Z2	879284/2	27 Jan 2012	12
A649	LISN	Rohde & Schwarz	ESH3-Z5	825562/008	05 Apr 2012	12
A1830	Pulse Limiter	Rhode & Schwarz	ESH3-Z2	100668	05 Mar 2012	12
A1834	Attenuator	Hewlett Packard	8491B	10444	26 Jul 2012	12
A553	Antenna	Chase	CBL6111A	1593	26 Mar 2012	12
E013	Environmental Chamber	Sanyo	ATMOS chamber	None	Calibrated before use	-
K0001	5m Semi-Anechoic Chamber	Rainford EMC	N/A	N/A	29 May 2012	12
M1068	Thermometer	Iso-Tech	RS55	93102884	10 Nov 2011	12
M1229	Multimeter	Fluke	179	87640015	21 Jun 2012	12
M1242	Spectrum Analyser	Rohde & Schwarz	FSEM30	845986/022	03 Dec 2011	12
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	13 Jul 2012	12
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	04 Feb 2012	12
S011	DC Power Supply	INSTEK	PR-3010H	9401270	Calibrated before use	-

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