




# TEST REPORT


**Test Report No. :** UL-RPT-RP10640830JD02A

**Manufacturer** : Panasonic Mobile Communications Development of Europe Ltd  
**Model No.** : SoftBank 401PM  
**FCC ID** : UCE215063A  
**Technology** : PCS1900  
**Test Standard(s)** : FCC Part 24

1. This test report shall not be reproduced in full or partial, without the written approval of UL VS LTD.
2. The results in this report apply only to the sample(s) tested.
3. The sample tested is in compliance with the above standard(s).
4. The test results in this report are traceable to the national or international standards.
5. Version 1.0

**Date of Issue:** 19 March 2015

**Checked by:**   
Sarah Williams  
Engineer, Radio Laboratory

**Issued by :**   
pp  
John Newell  
Quality Manager,  
UL VS LTD



This laboratory is accredited by UKAS.  
The tests reported herein have been  
performed in accordance with its terms  
of accreditation.

---

## UL VS LTD

Pavilion A, Ashwood Park, Ashwood Way, Basingstoke, Hampshire, RG23 8BG, UK  
Telephone: +44 (0)1256 312000  
Facsimile: +44 (0)1256 312001

This page has been left intentionally blank.

**Table of Contents**

<b>1. Customer Information.....</b>	<b>4</b>
<b>2. Summary of Testing.....</b>	<b>5</b>
2.1. General Information	5
2.2. Summary of Test Results	5
2.3. Methods and Procedures	5
2.4. Deviations from the Test Specification	5
<b>3. Equipment Under Test (EUT) .....</b>	<b>6</b>
3.1. Identification of Equipment Under Test (EUT)	6
3.2. Description of EUT	6
3.3. Modifications Incorporated in the EUT	7
3.4. Additional Information Related to Testing	7
3.5. Support Equipment	7
<b>4. Operation and Monitoring of the EUT during Testing .....</b>	<b>8</b>
4.1. Operating Modes	8
4.2. Configuration and Peripherals	8
<b>5. Measurements, Examinations and Derived Results.....</b>	<b>9</b>
5.1. General Comments	9
5.2. Test Results	10
5.2.1. Transmitter Output Power (EIRP)	10
5.2.2. Transmitter Frequency Stability (Temperature Variation)	12
5.2.3. Transmitter Frequency Stability (Voltage Variation)	14
5.2.4. Transmitter Occupied Bandwidth	16
5.2.5. Transmitter Out of Band Radiated Emissions	20
5.2.6. Transmitter Band Edge Radiated Emissions	24
<b>6. Measurement Uncertainty .....</b>	<b>27</b>
<b>7. Report Revision History .....</b>	<b>28</b>

**1. Customer Information**








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

## **2. Summary of Testing**

### **2.1. General Information**

<b>Specification Reference:</b>	47CFR24
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications): Part 24 Subpart E (Personal Communication Services)
<b>Site Registration:</b>	209735
<b>Location of Testing:</b>	UL VS LTD, Unit 3 Horizon, Wade Road, Kingsland Business Park, Basingstoke, Hampshire, RG24 8AH, United Kingdom
<b>Test Dates:</b>	04 March 2015 to 19 March 2015

### **2.2. Summary of Test Results**

<b>FCC Reference (47CFR)</b>	<b>Measurement</b>	<b>Result</b>
Part 24.232(c)	Transmitter Output Power (EIRP)	
Part 2.1055/24.235	Transmitter Frequency Stability (Temperature and Voltage Variation)	
Part 2.1049	Transmitter Occupied Bandwidth	
Part 2.1053/24.238	Transmitter Out of Band Radiated Emissions	
Part 2.1053/24.238	Transmitter Band Edge Radiated Emissions	
<b>Key to Results</b>  = Complied  = Did not comply		

### **2.3. Methods and Procedures**

<b>Reference:</b>	ANSI/TIA-603-C-2004
<b>Title:</b>	Land Mobile Communications Equipment, Measurements and performance Standards
<b>Reference:</b>	FCC KDB 971168 D01 v02r02, October 17 2014
<b>Title:</b>	Measurement Guidance for Certification of Licensed Digital Transmitters

### **2.4. Deviations from the Test Specification**

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

### **3. Equipment Under Test (EUT)**

#### **3.1. Identification of Equipment Under Test (EUT)**

<b>Brand Name:</b>	SoftBank
<b>Model Name or Number:</b>	401PM
<b>Test Sample IMEI:</b>	004401221425149 ( <i>Radiated sample</i> )
<b>Hardware Version Number:</b>	Rev C
<b>Software Version Number:</b>	ACPU: B-S51CS1-10.01.002 CCPU: S51CS1_Cv62010101
<b>FCC ID:</b>	UCE215063A

<b>Brand Name:</b>	SoftBank
<b>Model Name or Number:</b>	401PM
<b>Test Sample IMEI:</b>	004401221425198 ( <i>Conducted sample</i> )
<b>Hardware Version Number:</b>	Rev C
<b>Software Version Number:</b>	ACPU: B-S51CS1-10.01.002 CCPU: S51CS1_Cv62010101
<b>FCC ID:</b>	UCE215063A

<b>Brand Name:</b>	SoftBank
<b>Description:</b>	AC Adaptor
<b>Model Name or Number:</b>	Type ZTDAA1

<b>Brand Name:</b>	SoftBank
<b>Description:</b>	Stereo Headset
<b>Model Name or Number:</b>	Type ZTBBA1

<b>Brand Name:</b>	SoftBank
<b>Description:</b>	USB Data Cable
<b>Model Name or Number:</b>	ZTFE01

<b>Brand Name:</b>	SoftBank
<b>Description:</b>	Rechargeable Li-ion Battery Pack
<b>Model Name or Number:</b>	PMBBH2

#### **3.2. Description of EUT**

The equipment under test was a Dual Mode GSM/UTRA Mobile Phone with Bluetooth.

### **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 VDC	
	Minimum	3.4 VDC	
	Maximum	4.2 VDC	
Maximum Output Power (EIRP):	GSM	31.4 dBm	
	GPRS	31.4 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

### **3.5. Support Equipment**

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

<b>Description:</b>	Micro SD Card
<b>Brand Name:</b>	Panasonic
<b>Model Name or Number:</b>	Not marked or stated
<b>Serial Number:</b>	Not marked or stated

<b>Description:</b>	Dummy Battery
<b>Brand Name:</b>	Not marked or stated
<b>Model Name or Number:</b>	Not marked or stated
<b>Serial Number:</b>	Not marked or stated

## **4. Operation and Monitoring of the EUT during Testing**

### **4.1. Operating Modes**

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

- Constantly transmitting at full power on bottom, middle 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 one timeslot in the uplink. The EUT output power was initially checked when transmitting at maximum power on one and two timeslots. The highest power was observed when transmitting on one timeslot.
- 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.
- Transmitter radiated spurious emissions tests were performed with the AC Charger connected to the EUT, as this was found to be the worst case during pre-scans. All the accessories were individually connected and measurements made during the pre-scans to determine the worst case combination. The micro SD card was fitted during all tests.
- The customer supplied a dummy battery which was fitted for all conducted measurements.
- The conducted sample with IMEI 004401221425198 was used for frequency stability, conducted power and occupied bandwidth measurements.
- The radiated sample with IMEI 004401221425149 was used for all radiated measurements.



## **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.

In accordance with UKAS requirements all the measurement equipment is on a calibration schedule. All equipment was within the calibration period on the date of testing.

**5.2. Test Results****5.2.1. Transmitter Output Power (EIRP)****Test Summary:**

<b>Test Engineer:</b>	David Doyle	<b>Test Date:</b>	04 March 2015
<b>Test Sample IMEI:</b>	004401221425198		

<b>FCC Reference:</b>	Part 24.232(c)
<b>Test Method Used:</b>	As detailed in KBD 971168 Section 5.1.1

**Environmental Conditions:**

<b>Temperature (°C):</b>	23
<b>Relative Humidity (%):</b>	30

**Note(s):**

1. The signal analyser was connected to the RF port on the EUT using suitable attenuation and RF cable. An RF level offset was entered on the signal analyser to compensate for the loss of the attenuator and RF cable.
2. The customer stated a maximum antenna gain of 2.5 dBi.
3. The antenna gain was added to the conducted output power to obtain the EIRP.

**Transmitter Output Power (EIRP) (continued)****Results: GSM Circuit Switched**

Channel	Frequency (MHz)	Conducted Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	28.9	2.5	31.4	33.0	1.6	Complied
Middle	1879.8	28.7	2.5	31.2	33.0	1.8	Complied
Top	1909.8	28.6	2.5	31.1	33.0	1.9	Complied

**Results: GPRS**

Channel	Frequency (MHz)	Conducted Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	28.9	2.5	31.4	33.0	1.6	Complied
Middle	1879.8	28.8	2.5	31.3	33.0	1.7	Complied
Top	1909.8	28.6	2.5	31.1	33.0	1.9	Complied

**Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1659	Thermohygrometer	JM Handelspunkt	30.5015.13	None stated	14 Mar 2015	12
A1096	Directional Coupler	Midisco	MDC6223 W20	None stated	Calibrated before use	-
A2507	Attenuator	AtlanTecRF	AN18-10	821846#2	Calibrated before use	-
M1835	Signal Analyser	Rohde & Schwarz	FSV30	103050	18 Feb 2016	12
M1251	Multimeter	Fluke	175	89170179	19 May 2015	12
S0558	DC Power Supply	TTI	EL303R	395825	Calibrated before use	-

**5.2.2. Transmitter Frequency Stability (Temperature Variation)****Test Summary:**

<b>Test Engineer:</b>	David Doyle	<b>Test Date:</b>	05 March 2015
<b>Test Sample IMEI:</b>	004401221425198		

<b>FCC Reference:</b>	Parts 2.1055 & 24.235
<b>Test Method Used:</b>	As detailed in KDB 971168 Section 9.0 referencing ANSI TIA-603-C-2004 Section 2.2.2 and FCC Part 2.1055
<b>Test Mode:</b>	GPRS

**Environmental Conditions:**

<b>Ambient Temperature (°C):</b>	22
<b>Ambient Relative Humidity (%):</b>	33

**Note(s):**

1. A dummy battery was placed on the EUT and the dummy battery cables connected to a bench power supply.
2. Frequency error was measured using a calibrated Rohde & Schwarz CMW 500 Universal Radio Communications Tester in accordance with current Rohde & Schwarz application notes. The EUT was connected by suitable RF cables to the CMW 500. A bi-directional communications link was established between the EUT and CMW 500. The frequency meter value was recorded.
3. Temperature was monitored throughout the test with a calibrated digital thermometer.

**Transmitter Frequency Stability (Temperature Variation) (continued)****Results: Bottom Channel (1850.2 MHz)**

Temperature (°C)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
-10	18	1850.200018	1850.0	0.200018	Complied
0	14	1849.199986	1850.0	0.199986	Complied
10	14	1849.199986	1850.0	0.199986	Complied
20	10	1850.200010	1850.0	0.200010	Complied
30	14	1850.200014	1850.0	0.200014	Complied
40	11	1850.200011	1850.0	0.200011	Complied
50	10	1849.199990	1850.0	0.199990	Complied
55	23	1849.199977	1850.0	0.199977	Complied

**Results: Top Channel (1909.8 MHz)**

Temperature (°C)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
-10	15	1909.800015	1910.0	0.199985	Complied
0	10	1909.799990	1910.0	0.200010	Complied
10	20	1909.799980	1910.0	0.200020	Complied
20	11	1909.799989	1910.0	0.200011	Complied
30	15	1909.800015	1910.0	0.199985	Complied
40	14	1909.799986	1910.0	0.200014	Complied
50	15	1909.799985	1910.0	0.200015	Complied
55	14	1909.799986	1910.0	0.200014	Complied

**Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1659	Thermohygrometer	JM Handelspunkt	30.5015.13	None stated	14 Mar 2015	12
M1859	Wideband Radio Comms Tester	Rohde & Schwarz	CMW500	145920	09 May 2015	12
E0513	Environmental Chamber	TAS	LT600 Series 3	23900506	Calibrated before use	-
M1642	Thermometer	Fluke	52II	18890119	07 Apr 2015	12
M1251	Multimeter	Fluke	175	89170179	19 May 2015	12
S0558	DC Power Supply	TTI	EL303R	395825	Calibrated before use	-

**5.2.3. Transmitter Frequency Stability (Voltage Variation)****Test Summary:**

<b>Test Engineer:</b>	David Doyle	<b>Test Date:</b>	05 March 2015
<b>Test Sample IMEI:</b>	004401221425198		

<b>FCC Reference:</b>	Parts 2.1055 & 24.235
<b>Test Method Used:</b>	As detailed in KDB 971168 Section 9.0 referencing ANSI TIA-603-C-2004 Section 2.2.2 and FCC Part 2.1055
<b>Test Mode:</b>	GPRS

**Environmental Conditions:**

<b>Temperature (°C):</b>	22
<b>Relative Humidity (%):</b>	33

**Note(s):**

1. A dummy battery was placed on the EUT and the dummy battery cables connected to a bench power supply.
2. Frequency error was measured using a calibrated Rohde & Schwarz CMW 500 Universal Radio Communications Tester in accordance with current Rohde & Schwarz application notes. The EUT was connected by suitable RF cables to the CMW 500. A bi-directional communications link was established between the EUT and CMW 500. The frequency meter value was recorded.
3. Voltage was monitored throughout the test with a calibrated digital voltmeter.

**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	21	1849.199979	1850.0	0.199979	Complied
4.2	15	1849.199985	1850.0	0.199985	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	13	1909.799987	1910.0	0.200013	Complied
4.2	13	1909.800013	1910.0	0.199987	Complied

**Transmitter Frequency Stability (Voltage Variation) (continued)****Test Equipment Used:**

<b>Asset No.</b>	<b>Instrument</b>	<b>Manufacturer</b>	<b>Type No.</b>	<b>Serial No.</b>	<b>Date Calibration Due</b>	<b>Cal. Interval (Months)</b>
M1659	Thermohygrometer	JM Handelspunkt	30.5015.13	None stated	14 Mar 2015	12
M1859	Wideband Radio Comms Tester	Rohde & Schwarz	CMW500	145920	09 May 2015	12
M1251	Multimeter	Fluke	175	89170179	19 May 2015	12
S0558	DC Power Supply	TTI	EL303R	395825	Calibrated before use	-

**5.2.4. Transmitter Occupied Bandwidth****Test Summary:**

<b>Test Engineer:</b>	David Doyle	<b>Test Date:</b>	19 March 2015
<b>Test Sample IMEI:</b>	004401221425198		

<b>FCC Reference:</b>	Part 2.1049
<b>Test Method Used:</b>	As detailed in KBD 971168 Section 4.2

**Environmental Conditions:**

<b>Temperature (°C):</b>	23
<b>Relative Humidity (%):</b>	29

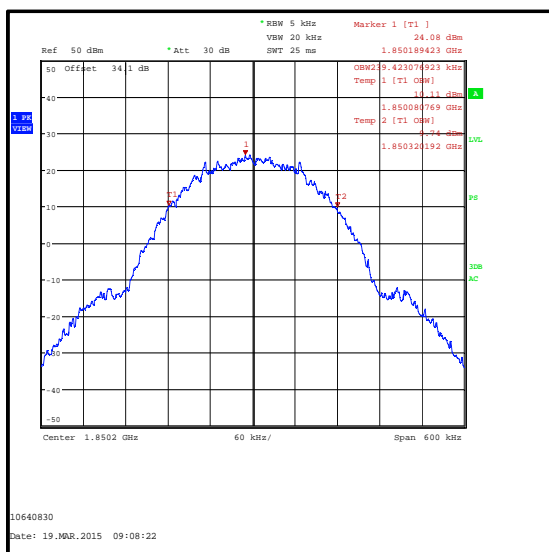
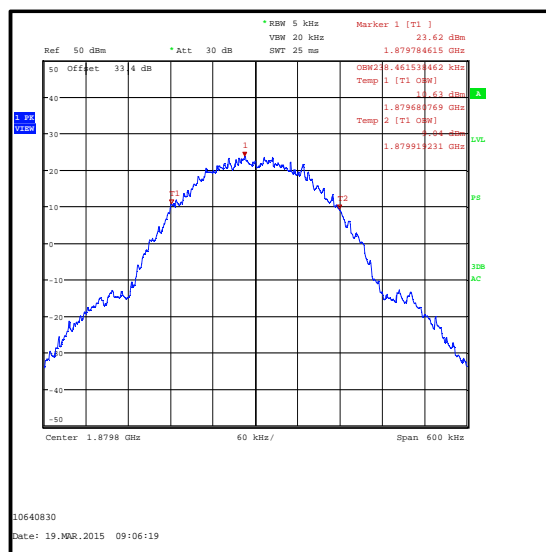
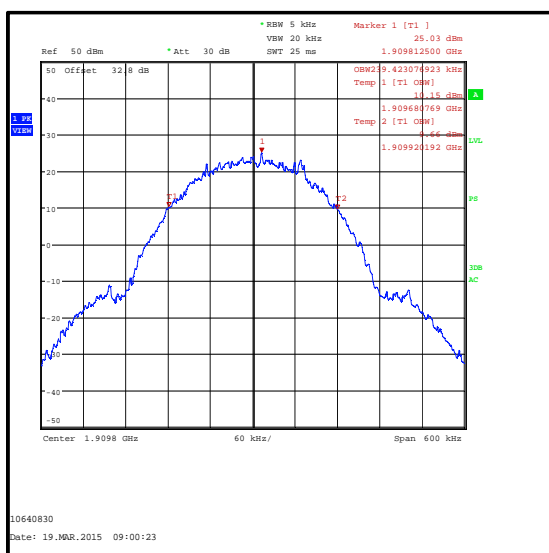
**Note(s):**

1. The signal analyser was connected to the RF port on the EUT using suitable attenuation and RF cable.



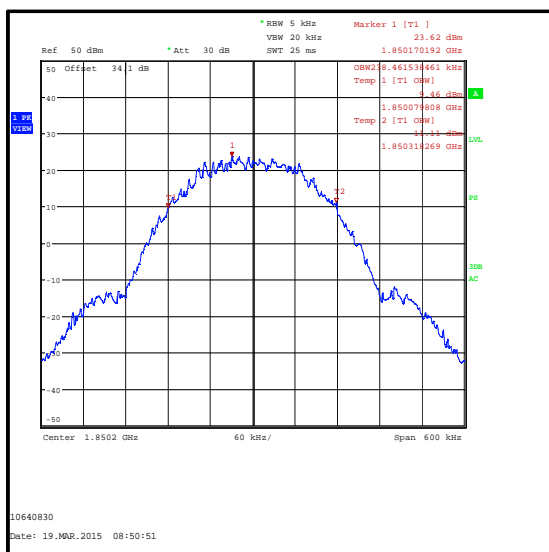
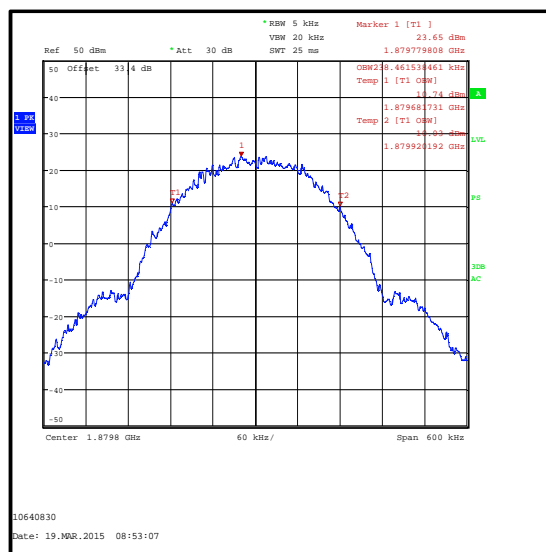
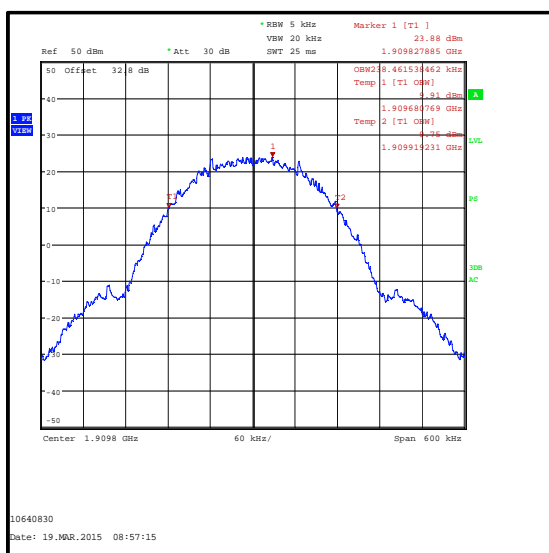
**Transmitter Occupied Bandwidth (continued)****Results: GSM Circuit Switched**

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Bottom	1850.2	239.423
Middle	1879.8	238.462
Top	1909.8	239.423

**Bottom Channel****Middle Channel****Top Channel**

**Transmitter Occupied Bandwidth (continued)****Results: GPRS**

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Bottom	1850.2	238.462
Middle	1879.8	238.462
Top	1909.8	238.462

**Bottom Channel****Middle Channel****Top Channel**

**Transmitter Occupied Bandwidth (continued)****Test Equipment Used:**

<b>Asset No.</b>	<b>Instrument</b>	<b>Manufacturer</b>	<b>Type No.</b>	<b>Serial No.</b>	<b>Date Calibration Due</b>	<b>Cal. Interval (Months)</b>
M1782	Thermohygrometer	JM Handelspunkt	30.5015.10	None stated	21 Mar 2015	12
A1096	Directional Coupler	Midisco	MDC6223 W20	None stated	Calibrated before use	-
A2507	Attenuator	AtlanTecRF	AN18-10	821846#2	Calibrated before use	-
M1874	Signal Analyser	Rohde & Schwarz	ESU26	100553	13 May 2015	12
M1251	Multimeter	Fluke	175	89170179	19 May 2015	12
S0558	DC Power Supply	TTI	EL303R	395825	Calibrated before use	-

**5.2.5. Transmitter Out of Band Radiated Emissions****Test Summary:**

<b>Test Engineer:</b>	Andrew Edwards	<b>Test Date:</b>	05 March 2015
<b>Test Sample IMEI:</b>	004401221425149		

<b>FCC Reference:</b>	Parts 2.1053 & 24.238
<b>Test Method Used:</b>	As detailed in KDB 971168 Section 6.1 referencing FCC Part 2.1053
<b>Frequency Range:</b>	30 MHz to 20 GHz
<b>Configuration:</b>	GSM Circuit Switched

**Environmental Conditions:**

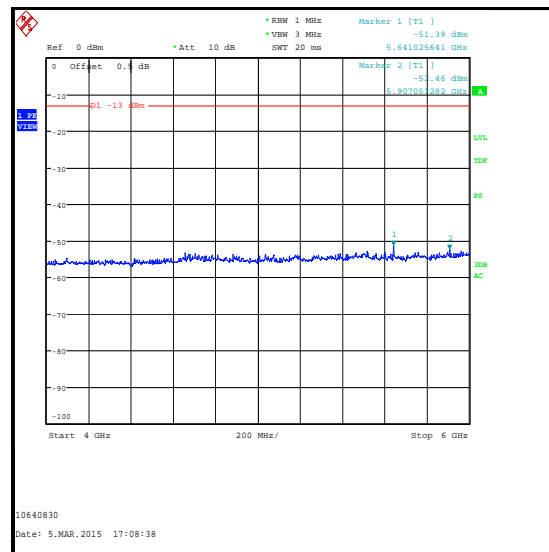
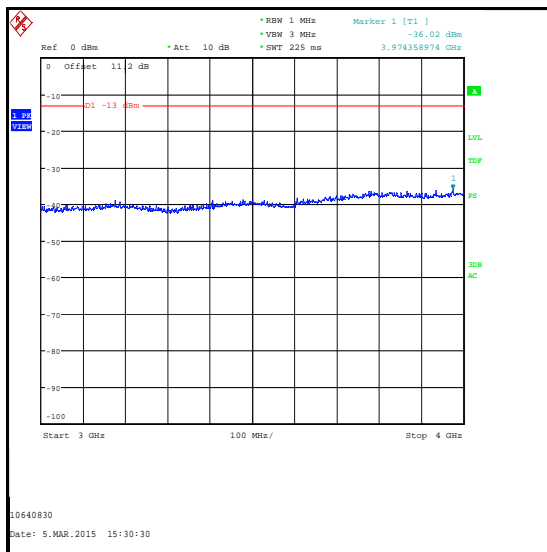
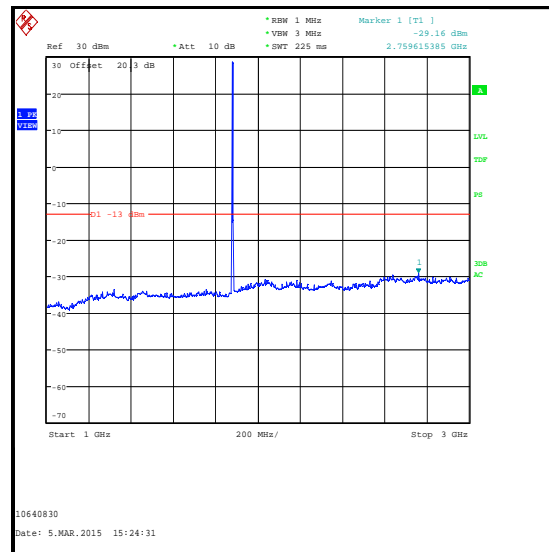
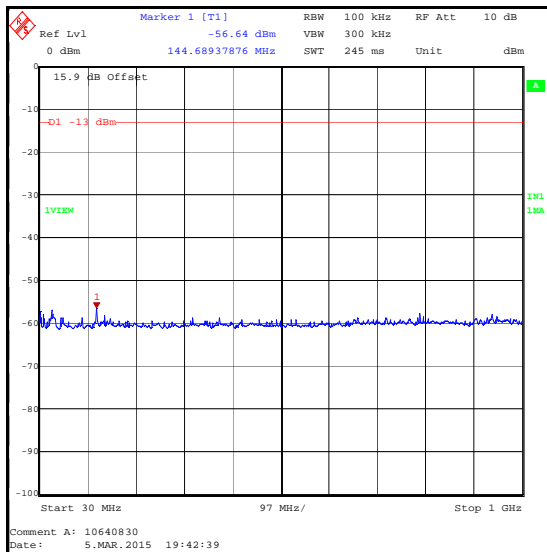
<b>Temperature (°C):</b>	23
<b>Relative Humidity (%):</b>	31

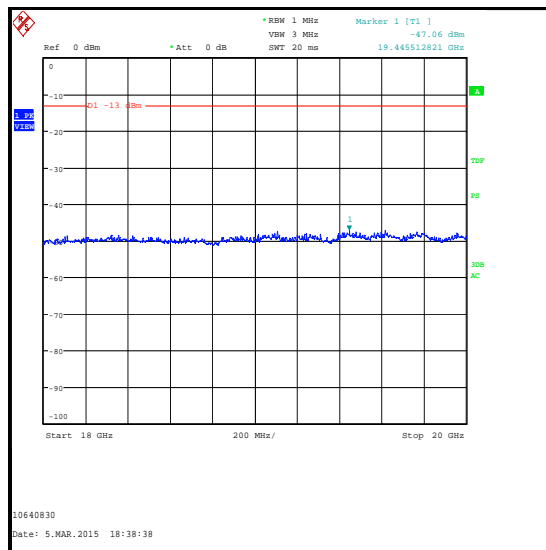
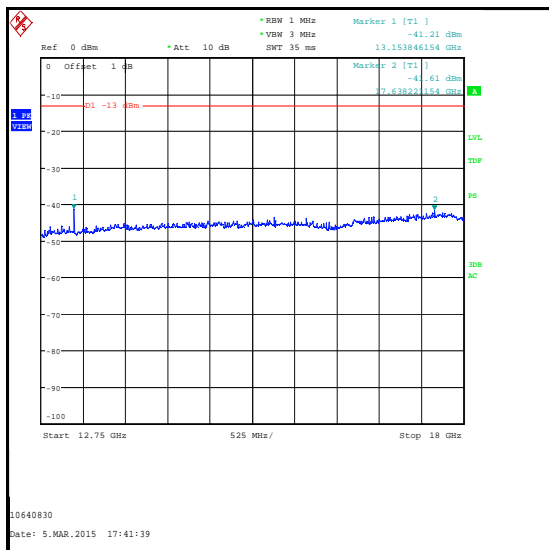
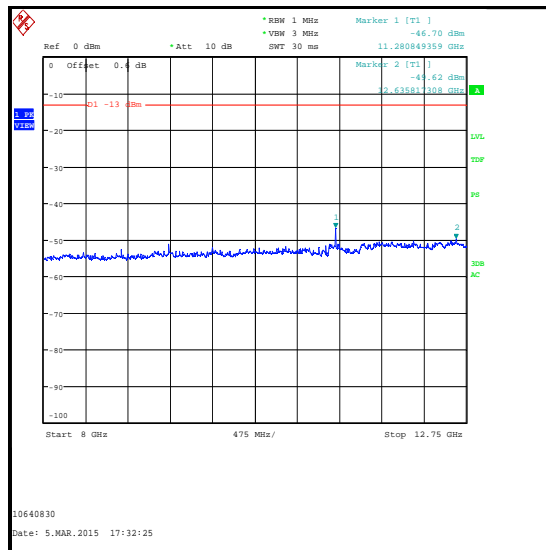
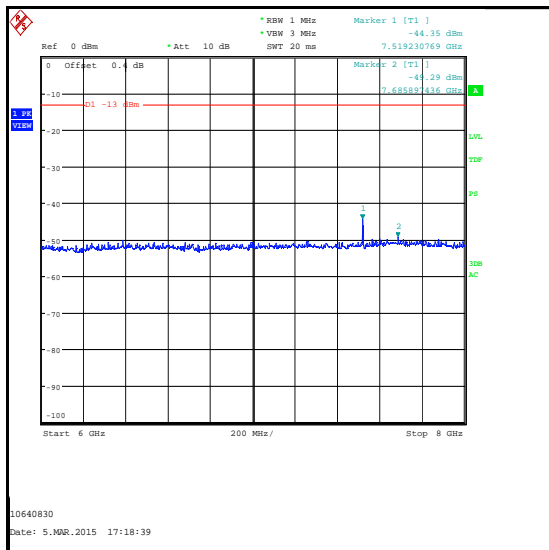
**Note(s):**

1. The uplink traffic channel is shown on the 1 GHz to 3 GHz plot.
2. All emissions shown on the pre-scan plots were investigated. Final measurements were made using appropriate RF filters and attenuators where required. All emissions shown on the pre-scan plots were found to be below the measurement system noise floor or ambient, therefore the highest peak noise floor reading of the measuring receiver was recorded in the table below.
3. Measurements below 1 GHz were performed in a semi-anechoic chamber (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.
4. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0002) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. Final measurements above 1 GHz were performed in a semi-anechoic chamber (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.

**Results: Middle Channel**

<b>Frequency (MHz)</b>	<b>Peak Level (dBm)</b>	<b>Limit (dBm)</b>	<b>Margin (dB)</b>	<b>Result</b>
2759.615	-29.2	-13.0	16.2	Complied

**Transmitter Out of Band Radiated Emissions (continued)**

**Transmitter Out of Band Radiated Emissions (continued)**

**Transmitter Out of Band Radiated Emissions (continued)****Test Equipment Used:**

<b>Asset No.</b>	<b>Instrument</b>	<b>Manufacturer</b>	<b>Type No.</b>	<b>Serial No.</b>	<b>Date Calibration Due</b>	<b>Cal. Interval (Months)</b>
M1624	Thermohygrometer	JM Handelspunkt	30.5015.10	0	07 Jan 2016	12
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	26 Mar 2015	12
M1124	Test Receiver	Rohde & Schwarz	ESIB26	100046K	06 Oct 2015	12
A490	Antenna	Chase	CBL6111A	1590	29 Apr 2015	12
G0543	Amplifier	Sonoma	310N	230801	05 Jun 2015	3
A1834	Attenuator	Hewlett Packard	8491B	10444	05 Mar 2016	12
M1656	Thermohygrometer	JM Handelspunkt	30.5015.13	Not stated	14 Mar 2015	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	31 Mar 2015	12
M1630	Test Receiver	Rohde & Schwarz	ESU40	100233	20 Feb 2016	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	21 Dec 2015	12
A1818	Antenna	EMCO	3115	00075692	20 Dec 2015	12
A253	Antenna	Flann Microwave	12240-20	128	20 Dec 2015	12
A254	Antenna	Flann Microwave	14240-20	139	20 Dec 2015	12
A255	Antenna	Flann Microwave	16240-20	519	20 Dec 2015	12
A256	Antenna	Flann Microwave	18240-20	400	20 Dec 2015	12
A436	Antenna	Flann Microwave	20240-20	330	21 Dec 2015	12
A2140	Attenuator	AtlanTecRF	AN18-10	090918-14	25 Apr 2015	12
A2143	Attenuator	AtlanTecRF	AN18-20	081120-23	Calibrated before use	-
A1975	High Pass Filter	AtlanTecRF	AFH-03000	090424010	12 Apr 2015	12
A2176	High Pass Filter	AtlanTecRF	AFH-07000	800980	12 Apr 2015	12

**5.2.6. Transmitter Band Edge Radiated Emissions****Test Summary:**

<b>Test Engineer:</b>	Andrew Edwards	<b>Test Date:</b>	05 March 2015
<b>Test Sample IMEI:</b>	004401221425149		

<b>FCC Reference:</b>	Parts 2.1053 & 24.238
<b>Test Method Used:</b>	As detailed in KDB 971168 Section 6.1 referencing FCC Part 24.238

**Environmental Conditions:**

<b>Temperature (°C):</b>	23
<b>Relative Humidity (%):</b>	33

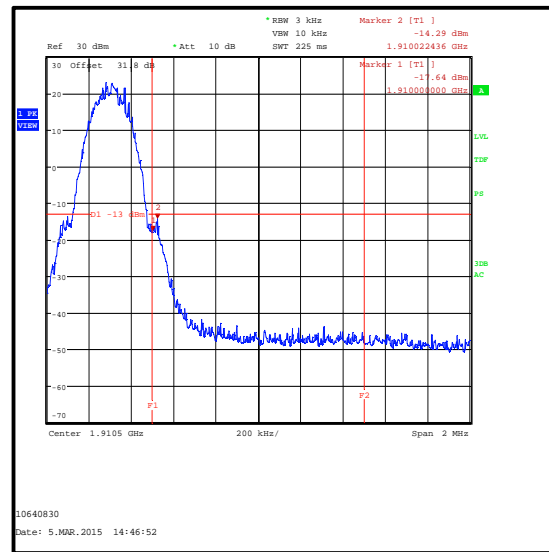
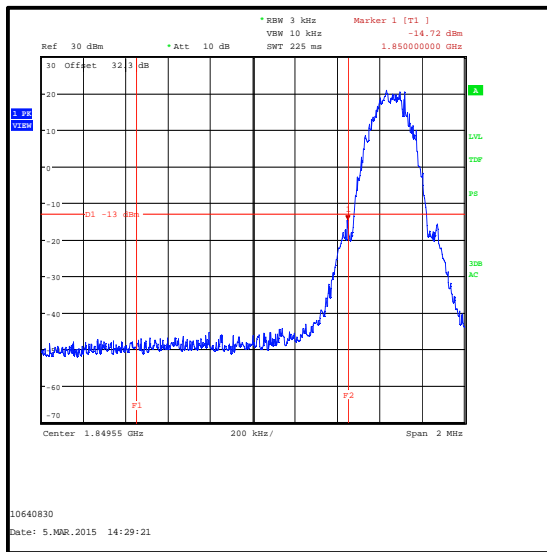
**Note(s):**

1. Measurements were performed in a fully anechoic chamber (Asset Number K0002) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. The measurement antenna was placed at a fixed height of 1.5 metres above the test chamber floor in line with the EUT. In the first 1.0 MHz immediately outside and adjacent to the operating band, the test receiver resolution bandwidth was set to 3 kHz (1% of 300 kHz, the 26 dB emission bandwidth) and video bandwidth 10 kHz (as close to three times the resolution bandwidth as the test receiver allowed). Sweep time was set to auto and a peak detector with a trace mode of Max Hold was used.



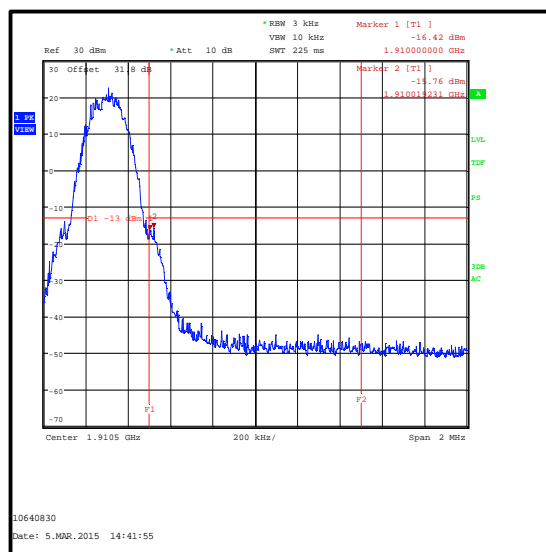
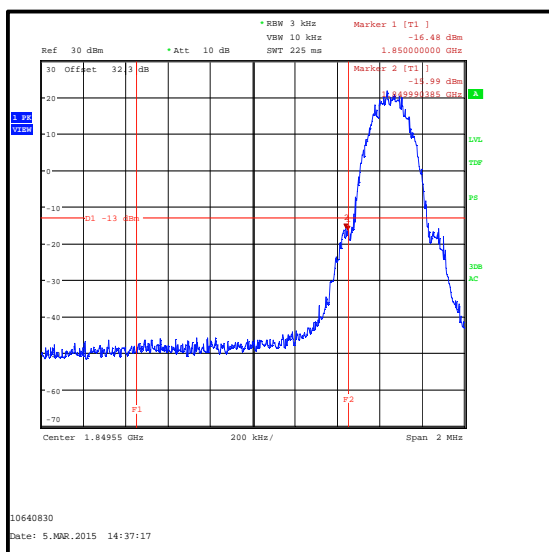
**Transmitter Band Edge Radiated Emissions (continued)****Results: GSM Circuit Switched**

Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
1850	-14.7	-13.0	1.7	Complied
1910	-17.6	-13.0	4.6	Complied
1910.002	-14.3	-13.0	1.3	Complied



**Transmitter Band Edge Radiated Emissions (continued)****Results: GPRS**

Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
1849.990	-16.0	-13.0	3.0	Complied
1850	-16.5	-13.0	3.5	Complied
1910	-16.4	-13.0	3.4	Complied
1910.002	-15.8	-13.0	2.8	Complied

**Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1656	Thermohygrometer	JM Handelpunkt	30.5015.13	Not stated	14 Mar 2015	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	31 Mar 2015	12
M1630	Test Receiver	Rohde & Schwarz	ESU40	100233	20 Feb 2016	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	21 Dec 2015	12
A1818	Antenna	EMCO	3115	00075692	20 Dec 2015	12
A2000	Attenuator	Huber & Suhner	6830.17.B	301623	12 Apr 2015	12

## **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".

<b>Measurement Type</b>	<b>Range</b>	<b>Confidence Level (%)</b>	<b>Calculated Uncertainty</b>
Conducted Output Power	1850 to 1910 MHz	95%	$\pm 1.13$ dB
Frequency Stability	1850 to 1910 MHz	95%	$\pm 23$ Hz
Occupied Bandwidth	1850 to 1910 MHz	95%	$\pm 3.92$ %
Radiated Spurious Emissions	30 MHz to 1 GHz	95%	$\pm 5.65$ dB
Radiated Spurious Emissions	1 GHz to 20 GHz	95%	$\pm 2.54$ 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.

**7. Report Revision History**

Version Number	Revision Details		
	Page No(s)	Clause	Details
1.0	-	-	Initial Version

--- END OF REPORT ---