



# TEST REPORT

**Test Report No. : UL-RPT-RP10295149JD03B V2.0**

**Manufacturer** : Sony Mobile Communications Inc.

**FCC ID** : PY7PM-0803

**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 2.0 supersedes all previous versions.

**Date of Issue:** 04 August 2014

**Checked by:**

Sarah Williams  
Engineer, Radio Laboratory

**Issued by :**

pp

John Newell  
Group Quality Manager  
Basingstoke,  
UL VS LTD



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

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**1. Customer Information**

<b>Company Name:</b>	Sony Mobile Communications Inc.
<b>Address:</b>	Nya Vattentornet Mobilvägen 10 Lund 22188 Sweden

## **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>	23 June 2014 to 25 June 2014

### **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 v02r01, 7 June 2013
<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>	Sony
<b>IMEI:</b>	004402452687712 <i>(Radiated sample)</i>
<b>Test Sample Serial Number:</b>	CB5A1ZCDH6
<b>Hardware Version Number:</b>	A
<b>Software Version Number:</b>	23.0.C.0.114
<b>FCC ID:</b>	PY7PM-0803

<b>Brand Name:</b>	Sony
<b>IMEI:</b>	004402452690526 <i>(Conducted sample with RF port #1)</i>
<b>Test Sample Serial Number:</b>	CB5A1ZCDDT
<b>Hardware Version Number:</b>	A
<b>Software Version Number:</b>	23.0.C.0.114
<b>FCC ID:</b>	PY7PM-0803

<b>Brand Name:</b>	Sony
<b>IMEI:</b>	004402452690518 <i>(Conducted sample with RF port #2)</i>
<b>Test Sample Serial Number:</b>	CB5A1ZCDE2
<b>Hardware Version Number:</b>	A
<b>Software Version Number:</b>	23.0.C.0.114
<b>FCC ID:</b>	PY7PM-0803

<b>Brand Name:</b>	Sony
<b>Description:</b>	AC Charger
<b>Model Name or Number:</b>	EP880

<b>Brand Name:</b>	Generic
<b>Description:</b>	MHL Cable
<b>Model Name or Number:</b>	Not marked

<b>Brand Name:</b>	Sony
<b>Description:</b>	MHL Adaptor
<b>Model Name or Number:</b>	IM750

**Identification of Equipment Under Test (EUT) (continued)**

<b>Brand Name:</b>	Sony
<b>Description:</b>	USB Cable
<b>Model Name or Number:</b>	EC803

<b>Brand Name:</b>	Sony
<b>Description:</b>	Deskstand
<b>Model Name or Number:</b>	DK43

<b>Brand Name:</b>	Sony
<b>Description:</b>	PHF
<b>Model Name or Number:</b>	MH410c

**3.2. Description of EUT**

The equipment under test (EUT) was a GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n/ac + NFC & ANT+.

**3.3. Modifications Incorporated in the EUT**

No modifications were applied to the EUT during testing.

**3.4. Additional Information Related to Testing**

<b>Technology Tested:</b>	PCS1900		
<b>Type of Radio Device:</b>	Transceiver		
<b>Mode:</b>	GSM/GPRS/EGPRS		
<b>Modulation Type:</b>	GMSK / 8PSK		
<b>Channel Spacing:</b>	200 kHz		
<b>Power Supply Requirement(s):</b>	Nominal	3.8 V	
	Minimum	3.42 V	
	Maximum	4.18 V	
<b>Maximum Output Power (EIRP):</b>	GSM	31.7dBm	
	GPRS	31.7 dBm	
	EGPRS	31.2 dBm	
<b>Transmit Frequency Range:</b>	1850 to 1910 MHz		
<b>Transmit Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	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>	2 GB Micro SD Card
<b>Brand Name:</b>	SanDisk
<b>Model Name or Number:</b>	Not marked

<b>Description:</b>	22" High Definition Television
<b>Brand Name:</b>	Logik
<b>Model Name or Number:</b>	L22FE12A
<b>Serial Number:</b>	1309020661

<b>Description:</b>	Voltage variation jig
<b>Brand Name:</b>	Not marked
<b>Model Name or Number:</b>	Not marked
<b>Serial Number:</b>	Not marked

## **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/EGPRS Multislot Class 33 with the unit transmitting on one timeslot in the uplink. The EUT output power was initially checked when transmitting at maximum power on one, two, three and four timeslots. The highest power was observed when transmitting on one timeslot.
- EGPRS tests were performed with the EUT using MCS5 (8PSK modulation).
- 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/EGPRS system simulator, operating in transceiver mode.
- Transmitter radiated spurious emission tests were performed with the following configurations, employing all available accessories:
  - Configuration 1 – Handset with the AC charger, USB Cable, MHL cable (terminated in to a television), MHL adaptor and PHF.
  - Configuration 2 – Handset with the AC charger, USB Cable, Deskstand and PHF.

Pre-scans below 1 GHz were performed in both configurations 1 and 2, with final measurements limited to the configuration which provided worst case results. Pre-scans above 1 GHz were performed in the configuration that employed the most accessories (Configuration 1), with any final measurements being performed in both configurations.

- Testing at temperature and voltage extremes was performed using a voltage variation jig and adaptor supplied by the customer. The adaptor plugs onto the handset in place of the battery connector.
- The voltage variation jig and adaptor were used for conducted measurements set at the nominal voltage.
- The conducted sample with IMEI 004402452690518 was used for frequency stability measurements.
- The conducted sample with IMEI 004402452690526 was used for conducted power and occupied bandwidth measurements.
- The radiated sample with IMEI 004402452687712 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>	23 June 2014
<b>Test Sample IMEI:</b>	004402452690526		

<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>	24
<b>Relative Humidity (%):</b>	40

#### **Note(s):**

1. The spectrum analyser was connected to the RF port on the EUT using suitable attenuation and RF cable. An RF level offset was entered on the spectrum analyser to compensate for the loss of the attenuator and RF cable.
2. The customer stated a maximum antenna gain of 2.1 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)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	29.6	2.1	31.7	33.0	1.3	Complied
Middle	1879.8	29.6	2.1	31.7	33.0	1.3	Complied
Top	1909.8	29.6	2.1	31.7	33.0	1.3	Complied

**Results: GPRS**

Channel	Frequency (MHz)	Conducted Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	29.6	2.1	31.7	33.0	1.3	Complied
Middle	1879.8	29.6	2.1	31.7	33.0	1.3	Complied
Top	1909.8	29.6	2.1	31.7	33.0	1.3	Complied

**Results: EGPRS / MCS5**

Channel	Frequency (MHz)	Conducted Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	29.1	2.1	31.2	33.0	1.8	Complied
Middle	1879.8	28.9	2.1	31.0	33.0	2.0	Complied
Top	1909.8	28.9	2.1	31.0	33.0	2.0	Complied

**Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1656	Thermohygrometer	JM Handelspunkt	30.5015.13	None stated	14 Mar 2015	12
A2533	Directional Coupler	Atlan TecRF	CDC-003060-20	14041701717	Calibrated before use	-
A2525	Attenuator	Atlan TecRF	AN18W5-10	832827#3	Calibrated before use	-
L1138	Signal Analyser	Rohde & Schwarz	FSV13.6	101389	17 Apr 2015	12
M1269	Multimeter	Fluke	179	90250210	19 May 2015	12
S0523	DC Power Supply	TTI	PL320	224235	Calibrated before use	-

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

<b>Test Engineer:</b>	Mark Percival	<b>Test Dates:</b>	23 June 2014 & 24 June 2014
<b>Test Sample IMEI:</b>	004402452690518		

<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

**Environmental Conditions:**

<b>Ambient Temperature (°C):</b>	22 to 24
<b>Ambient Relative Humidity (%):</b>	38 to 55

**Note(s):**

1. A voltage variation jig was connected to the EUT which was powered via a bench power supply at the nominal voltage of 3.8V.
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
-30	77	1850.200077	1850.0	0.200077	Complied
-20	72	1850.200072	1850.0	0.200072	Complied
-10	65	1850.200065	1850.0	0.200065	Complied
0	60	1850.200060	1850.0	0.200060	Complied
10	61	1850.200061	1850.0	0.200061	Complied
20	55	1850.200055	1850.0	0.200055	Complied
30	53	1850.200053	1850.0	0.200053	Complied
40	59	1850.200059	1850.0	0.200059	Complied
50	60	1850.200060	1850.0	0.200060	Complied

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

Temperature (°C)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
-30	77	1909.800077	1910.0	0.199923	Complied
-20	75	1909.800075	1910.0	0.199925	Complied
-10	61	1909.800061	1910.0	0.199939	Complied
0	56	1909.800056	1910.0	0.199944	Complied
10	59	1909.800059	1910.0	0.199941	Complied
20	63	1909.800063	1910.0	0.199937	Complied
30	55	1909.800055	1910.0	0.199945	Complied
40	51	1909.800051	1910.0	0.199949	Complied
50	54	1909.800054	1910.0	0.199946	Complied

**Transmitter Frequency Stability (Temperature 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 Handelpunkt	30.5015.13	None stated	14 Mar 2015	12
M1870	Wideband Radio Comms Tester	Rohde & Schwarz	CMW500	145919	05 May 2015	12
E0513	Environmental Chamber	TAS	LT600 Series 3	23900506	Calibrated before use	-
M1249	Thermometer	Fluke	52II	88800049	02 May 2015	12
S021	Dual DC power supply	TTi	CPX200	061034	Calibrated before use	-
M1251	Multimeter	Fluke	175	89170179	19 May 2015	12

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

<b>Test Engineer:</b>	Mark Percival	<b>Test Date:</b>	23 June 2014
<b>Test Sample IMEI:</b>	004402452690518		

<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

**Environmental Conditions:**

<b>Temperature (°C):</b>	24
<b>Relative Humidity (%):</b>	38

**Note(s):**

1. A voltage variation jig was connected to the EUT which was powered via 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
3.42	55	1850.200055	1850.0	0.200055	Complied
4.18	54	1850.200054	1850.0	0.200054	Complied

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

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
3.42	57	1909.800057	1910.0	0.199943	Complied
4.18	51	1909.800051	1910.0	0.199949	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
M1870	Wideband Radio Comms Tester	Rohde & Schwarz	CMW500	145919	05 May 2015	12
S021	Dual DC power supply	Tti	CPX200	061034	Calibrated before use	-
M1251	Multimeter	Fluke	175	89170179	19 May 2015	12

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

<b>Test Engineer:</b>	David Doyle	<b>Test Date:</b>	23 June 2014
<b>Test Sample IMEI:</b>	004402452690526		

<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>	24
<b>Relative Humidity (%):</b>	40

**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	243.126
Middle	1879.8	243.126
Top	1909.8	243.994



**Bottom Channel**



**Middle Channel**



**Top Channel**

**Transmitter Occupied Bandwidth (continued)**

**Results: GPRS**

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Bottom	1850.2	243.126
Middle	1879.8	243.994
Top	1909.8	243.994



**Bottom Channel**



**Middle Channel**

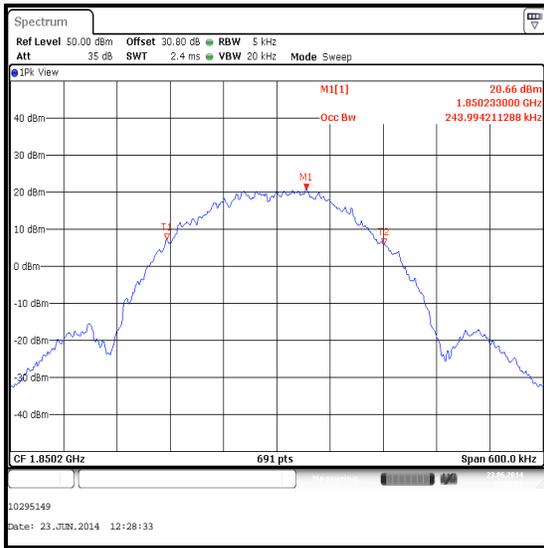


**Top Channel**

**Transmitter Occupied Bandwidth (continued)**

**Results: EGPRS / MCS5**

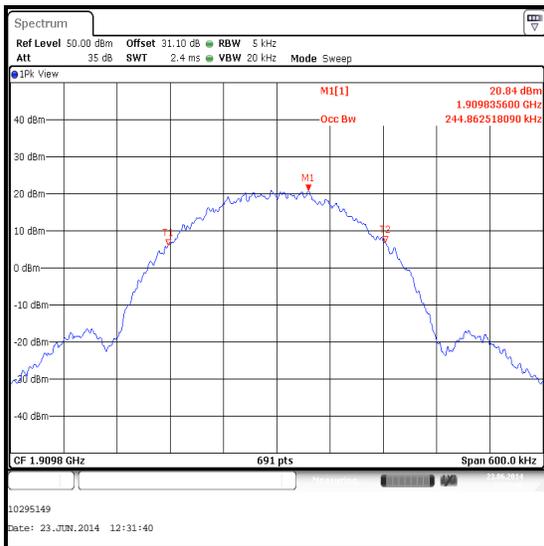
Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Bottom	1850.2	243.994
Middle	1879.8	244.863
Top	1909.8	244.863



**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>
M1656	Thermohygrometer	JM Handelpunkt	30.5015.13	None stated	14 Mar 2015	12
A2533	Directional Coupler	Atlan TecRF	CDC-003060-20	14041701717	Calibrated before use	-
A2525	Attenuator	Atlan TecRF	AN18W5-10	832827#3	Calibrated before use	-
L1138	Signal Analyser	Rohde & Schwarz	FSV13.6	101389	17 Apr 2015	12
M1269	Multimeter	Fluke	179	90250210	19 May 2015	12
S0523	DC Power Supply	TTI	PL320	224235	Calibrated before use	-

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

<b>Test Engineers:</b>	David Doyle & Andrew Edwards	<b>Test Date:</b>	25 June 2014
<b>Test Sample IMEI:</b>	004402452687712		

<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>	22
<b>Relative Humidity (%):</b>	39

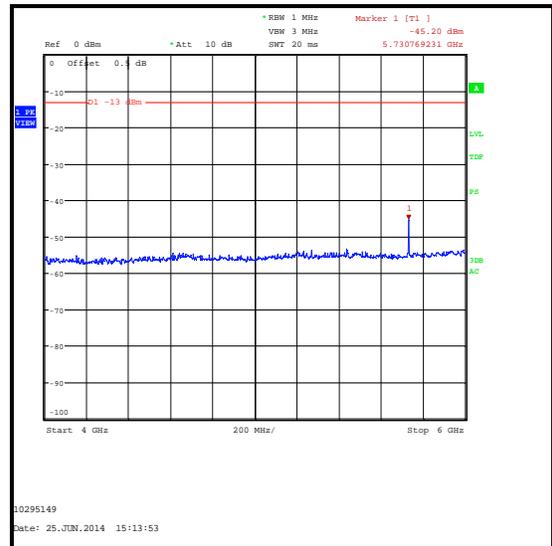
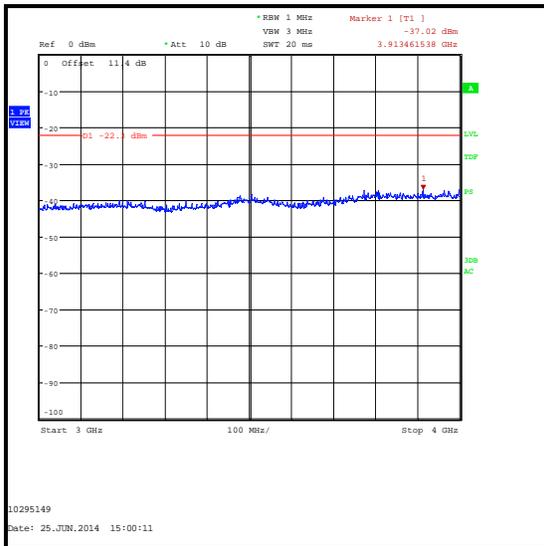
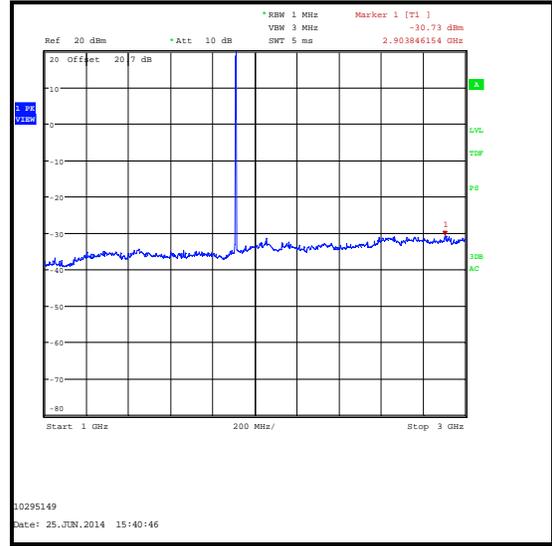
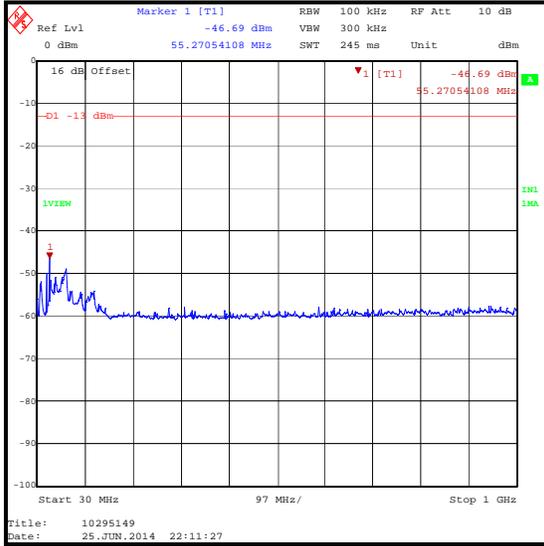
**Note(s):**

- The uplink traffic channel is shown on the 1 GHz to 3 GHz plot.
- 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.
- 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.
- 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.

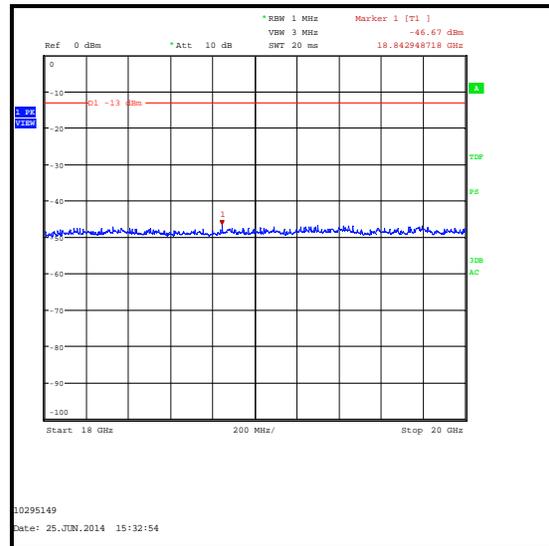
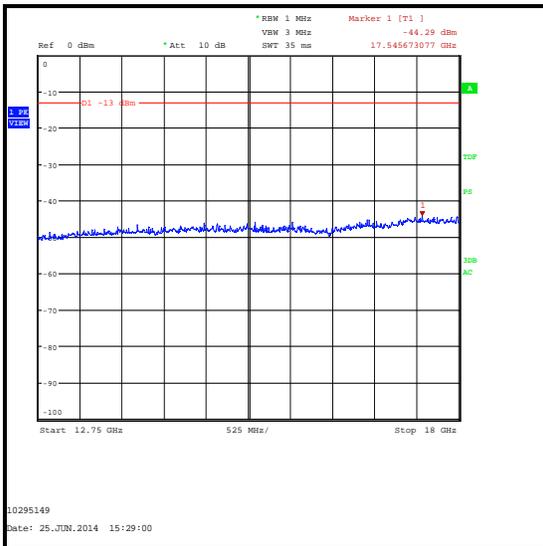
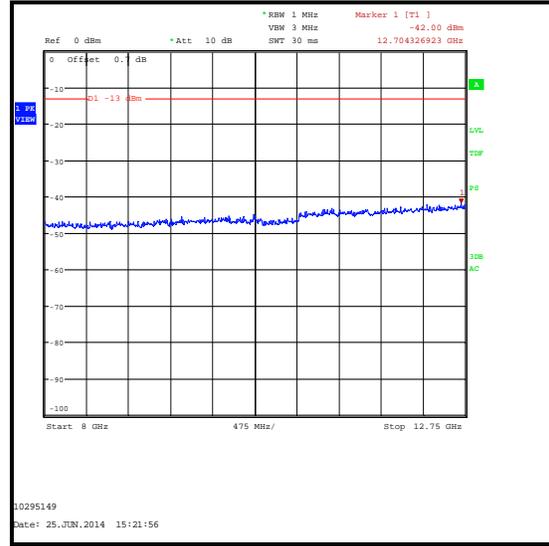
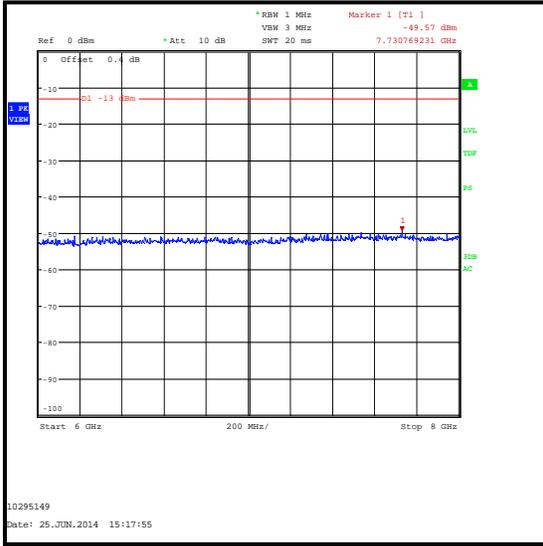
**Results: Top Channel**

<b>Frequency (MHz)</b>	<b>Peak Level (dBm)</b>	<b>Limit (dBm)</b>	<b>Margin (dB)</b>	<b>Result</b>
2903.846	-30.7	-13.0	17.7	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:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1622	Thermohygrometer	JM Handelspunkt	30.5015.06	None stated	31 Dec 2014	12
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	26 Nov 2014	12
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	15 Feb 2015	12
G0543	Amplifier	Sonoma	310N	230801	19 Aug 2014	3
A490	Antenna	Chase	CBL6111A	1590	29 Apr 2015	12
A1834	Attenuator	Hewlett Packard	8491B	10444	15 Nov 2014	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	14 Nov 2014	12
M1874	EMI Test Receiver	Rohde & Schwarz	ESU 26	100553	13 May 2015	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	18 May 2015	12
A1396	Attenuator	Huber & Suhner	6810.17.B	757987	02 May 2015	12
A1393	Attenuator	Huber & Suhner	6820.17.B	757456	02 May 2015	12
A1975	High Pass Filter	AtlanTechRF	AFH-03000	090424010	12 Apr 2015	12
A1818	Antenna	EMCO	3115	00075692	14 Nov 2014	12
A253	Antenna	Flann Microwave	12240-20	128	14 Nov 2014	12
A254	Antenna	Flann Microwave	14240-20	139	14 Nov 2014	12
A255	Antenna	Flann Microwave	16240-20	519	14 Nov 2014	12
A256	Antenna	Flann Microwave	18240-20	400	14 Nov 2014	12
A436	Antenna	Flann Microwave	20240-20	330	14 Nov 2014	12
M1656	Thermohygrometer	JM Handelspunkt	30.5015.13	None stated	14 Mar 2015	12

**5.2.6. Transmitter Band Edge Radiated Emissions**

**Test Summary:**

<b>Test Engineer:</b>	David Doyle	<b>Test Date:</b>	25 June 2014
<b>Test Sample IMEI:</b>	004402452687712		

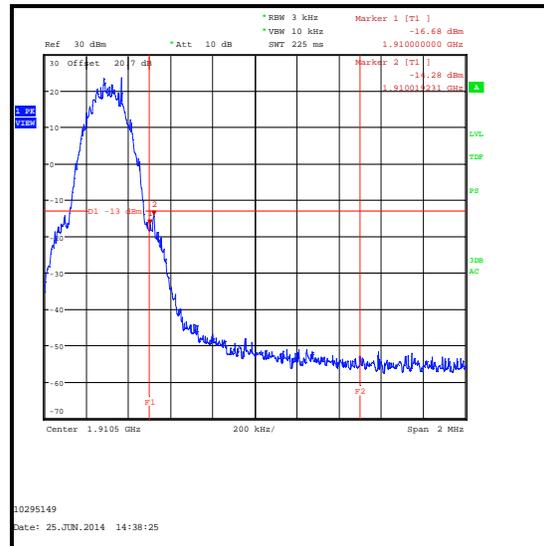
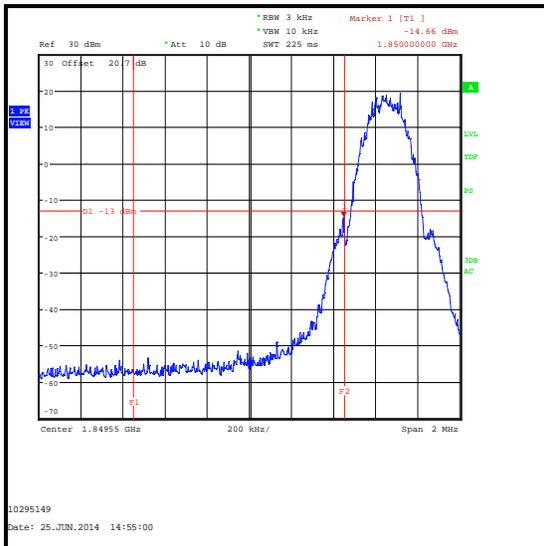
<b>FCC Reference:</b>	Parts 2.1053 & 24.238
<b>Test Method Used:</b>	As detailed in KDB 971168 Section 6.1 referencing FCC Part 24.238

**Environmental Conditions:**

<b>Temperature (°C):</b>	22
<b>Relative Humidity (%):</b>	39

**Results: GSM Circuit Switched**

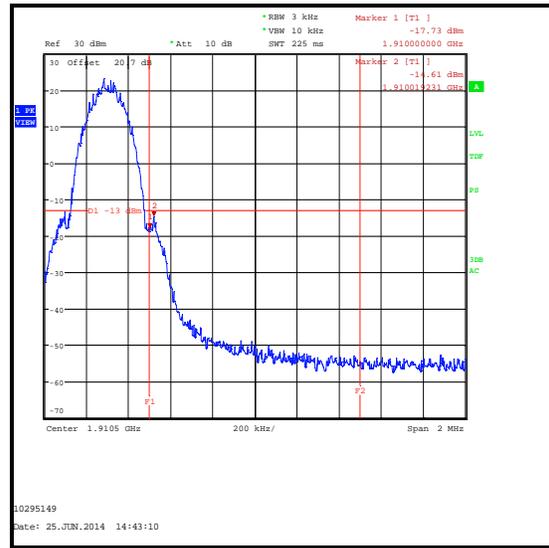
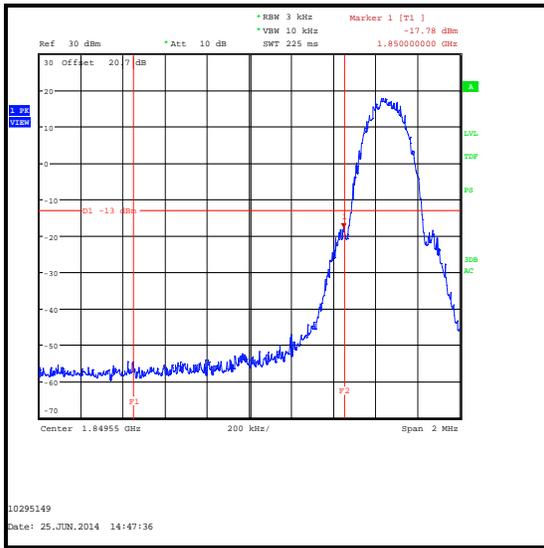
Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
1850	-14.7	-13.0	1.7	Complied
1910	-16.7	-13.0	3.7	Complied
1910.019	-14.3	-13.0	1.3	Complied



**Transmitter Band Edge Radiated Emissions (continued)**

**Results: GPRS**

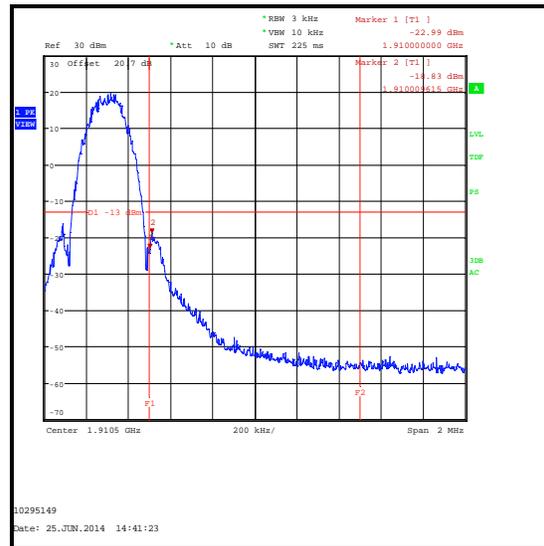
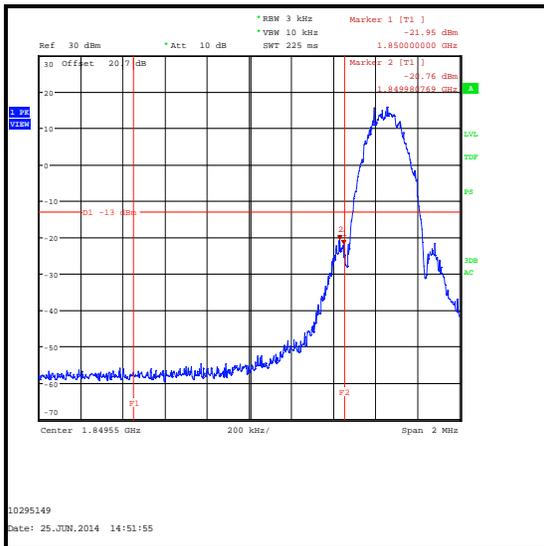
Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
1850	-17.8	-13.0	4.8	Complied
1910	-17.7	-13.0	4.7	Complied
1910.019	-14.6	-13.0	1.6	Complied



**Transmitter Band Edge Radiated Emissions (continued)**

**Results: EGPRS / MCS5**

Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
1849.981	-20.8	-13.0	7.8	Complied
1850	-22.0	-13.0	9.0	Complied
1910	-23.0	-13.0	10.0	Complied
1910.010	-18.8	-13.0	5.8	Complied



**Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1656	Thermohyrometer	JM Handlungspunkt	30.5015.13	None stated	14 Mar 2015	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	14 Nov 2014	12
M1874	Test Receiver	Rohde & Schwarz	ESU26	100553	13 May 2015	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	18 May 2015	12
A1818	Antenna	EMCO	3115	00075692	14 Nov 2014	12
A1393	Attenuator	Huber & Suhner	6820.17.B	757456	02 May 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%	±1.13 dB
Frequency Stability	1850 to 1910 MHz	95%	±23 Hz
Occupied Bandwidth	1850 to 1910 MHz	95%	±3.92 %
Radiated Spurious Emissions	30 MHz to 1 GHz	95%	±5.65 dB
Radiated Spurious Emissions	1 GHz to 20 GHz	95%	±2.94 dB

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

## **7. Report Revision History**

<b>Version Number</b>	<b>Revision Details</b>		
	<b>Page No(s)</b>	<b>Clause</b>	<b>Details</b>
1.0	-	-	Initial Version
2.0	-	-	EUT Description update

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