



# TEST REPORT

**Test Report No. : UL-RPT-RP10014945JD07A V2.0**

**Manufacturer** : Sony Mobile Communications AB

**Type No.** : PM-0460-BV

**FCC ID** : PY7PM-0460

**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:** 17 July 2013

**Checked by:**

Sarah Williams  
WiSE Laboratory Engineer

**Issued by :**

pp

John Newell  
Group Quality Manager, WiSE  
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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**UL VS LTD**

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**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	7
3.3. Modifications Incorporated in the EUT	7
3.4. Additional Information Related to Testing	8
3.5. Support Equipment	8
<b>4. Operation and Monitoring of the EUT during Testing .....</b>	<b>9</b>
4.1. Operating Modes	9
4.2. Configuration and Peripherals	9
<b>5. Measurements, Examinations and Derived Results .....</b>	<b>10</b>
5.1. General Comments	10
5.2. Test Results	11
5.2.1. Transmitter Output Power (EIRP)	11
5.2.2. Transmitter Frequency Stability (Temperature Variation)	13
5.2.3. Transmitter Frequency Stability (Voltage Variation)	16
5.2.4. Transmitter Occupied Bandwidth	18
5.2.5. Transmitter Out of Band Radiated Emissions	23
5.2.6. Transmitter Band Edge Radiated Emissions	27
<b>6. Measurement Uncertainty .....</b>	<b>30</b>
<b>7. Report Revision History .....</b>	<b>31</b>

**1. Customer Information**








<b>Company Name:</b>	Sony Mobile Communications AB
<b>Address:</b>	Nya Vattentorget Lund SE-221 88 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>	25 June 2013 to 10 July 2013

### **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>	ANSI C63.4 (2009)
<b>Title:</b>	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.
<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>	004402451263820 ( <i>Radiated sample</i> )
<b>Serial Number:</b>	CB5124U6EF
<b>Hardware Version Number:</b>	AP2
<b>Software Version Number:</b>	14.1.G.1.241
<b>FCC ID:</b>	PY7PM-0460

<b>Brand Name:</b>	Sony
<b>IMEI:</b>	004402451256097 ( <i>Conducted sample #1</i> )
<b>Serial Number:</b>	CB5124TWQ9
<b>Hardware Version Number:</b>	AP2
<b>Software Version Number:</b>	14.1.G.1.241
<b>FCC ID:</b>	PY7PM-0460

<b>Brand Name:</b>	Sony
<b>IMEI:</b>	004402451254886 ( <i>Conducted sample #2</i> )
<b>Serial Number:</b>	CB5124TWLF
<b>Hardware Version Number:</b>	AP2
<b>Software Version Number:</b>	14.1.G.1.241
<b>FCC ID:</b>	PY7PM-0460

<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 or stated

<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>	Magnetic Plug
<b>Model Name or Number:</b>	EC801

<b>Brand Name:</b>	Sony
<b>Description:</b>	USB cable
<b>Model Name or Number:</b>	EC21

<b>Brand Name:</b>	Sony
<b>Description:</b>	PHF
<b>Model Name or Number:</b>	MH750

**3.2. Description of EUT**

The equipment under test (EUT) is a model of GSM/UMTS/LTE mobile phone with integrated antenna and inbuilt Li-Polymer battery.

The EUT supports GSM 850/900/1800/1900MHz bands, WCDMA FDD bands 1/2/4/5/8 and LTE FDD bands 1/2/3/4/5/7/8/17. It also supports GPRS service with multi-slots class 33 and EGPRS service with multi-slots class 33 too. The HSDPA and HSUPA features are also supported. It has MP3, camera, FM radio, USB memory, GPS receiver, NFC, Mobile High-Definition Link (MHL), Bluetooth (EDR and Bluetooth 4.0), WLAN (802.11 a/b/g/n/ac) and Wi-Fi hotspot functions.

**3.3. Modifications Incorporated in the EUT**

No modifications were applied to the EUT during testing.

**3.4. Additional Information Related to Testing**

Type of Radio Device:	Transceiver		
Mode:	GSM/GPRS/EGPRS		
Modulation Type:	GMSK / 8PSK		
Channel Spacing:	200 kHz		
Power Supply Requirement(s):	Nominal	3.8 V	
	Minimum	3.6 V	
	Maximum	4.2 V	
Technology Tested:	PCS1900		
Maximum Output Power (EIRP):	GSM	29.0 dBm	
	GPRS	29.0 dBm	
	EGPRS	28.5 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>Brand Name:</b>	Generic
<b>Description:</b>	2 GB Micro SD Card
<b>Model Name or Number:</b>	Not marked or stated

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

<b>Brand Name:</b>	Not marked or stated
<b>Description:</b>	Voltage variation jig
<b>Model Name or Number:</b>	Not marked or stated
<b>Serial Number:</b>	310119



## **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, Magnetic plug 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 004402451254886 was used for frequency stability measurements.
- The conducted sample with IMEI 004402451256097 was used for occupied bandwidth and EIRP measurements.
- The radiated sample with IMEI 004402451263820 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>	05 July 2013
<b>Test Sample IMEI:</b>	004402451256097		

<b>FCC Reference:</b>	Part 24.232(c)
<b>Test Method Used:</b>	As detailed in KBD 971168 D01 Section 5.1.1

**Environmental Conditions:**

<b>Temperature (°C):</b>	22
<b>Relative Humidity (%):</b>	41

**Note(s):**

1. The test receiver was connected to the RF port on the EUT using suitable attenuation and RF cable. An RF level offset was entered on the test receiver to compensate for the loss of the attenuator and RF cable.
2. The Customer stated a maximum antenna gain of -1.1 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	30.1	-1.1	29.0	33.0	4.0	Complied
Middle	1879.8	30.0	-1.1	28.9	33.0	4.1	Complied
Top	1909.8	30.0	-1.1	28.9	33.0	4.1	Complied

**Results: GPRS**

Channel	Frequency (MHz)	Conducted Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	30.1	-1.1	29.0	33.0	4.0	Complied
Middle	1879.8	30.0	-1.1	28.9	33.0	4.1	Complied
Top	1909.8	30.0	-1.1	28.9	33.0	4.1	Complied

**Results: EGPRS / MCS5**

Channel	Frequency (MHz)	Conducted Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	29.6	-1.1	28.5	33.0	4.5	Complied
Middle	1879.8	29.2	-1.1	28.1	33.0	4.9	Complied
Top	1909.8	29.2	-1.1	28.1	33.0	4.9	Complied

**Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1659	Thermometer / Hygrometer station	JM Handelspunkt	30.5015.13	None stated	24 May 2014	12
A1100	Directional Coupler	Hewlett Packard	HP87300C	3239A01058	Calibrated before use	-
A2140	Attenuator	Atlan TecRF	AN18-10	090918-14	Calibrated before use	-
M1630	Test Receiver	Rohde & Schwarz	ESU40	100233	07 Feb 2014	12
M1269	Multimeter	Fluke	179	90250210	30 Jul 2013	12
S0537	DC Power Supply	TTI	EL302D	249928	Calibrated before use	-

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

<b>Test Engineers:</b>	Ahmed Ali & Nick Steele	<b>Test Dates:</b>	09 July 2013 & 10 July 2013
<b>Test Sample IMEI:</b>	004402451254886		

<b>FCC Reference:</b>	Parts 2.1055 & 24.235
<b>Test Method Used:</b>	As detailed in ANSI TIA-603-C-2004 Section 2.2.2 referencing FCC CFR Part 2.1055

**Environmental Conditions:**

<b>Ambient Temperature (°C):</b>	23
<b>Ambient Relative Humidity (%):</b>	42

**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 Wideband Radio Communications Tester in accordance with current Rohde & Schwarz application notes. The EUT was connected by suitable RF cables to the CMW 500. A bidirectional 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	34	1850.199966	1850.0	0.199966	Complied
-20	27	1850.199973	1850.0	0.199973	Complied
-10	21	1850.199979	1850.0	0.199979	Complied
0	24	1850.199976	1850.0	0.199976	Complied
10	26	1850.199974	1850.0	0.199974	Complied
20	20	1850.199980	1850.0	0.199980	Complied
30	22	1850.199978	1850.0	0.199978	Complied
40	22	1850.199978	1850.0	0.199978	Complied
50	23	1850.199977	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
-30	26	1909.799974	1910.0	0.200026	Complied
-20	26	1909.799974	1910.0	0.200026	Complied
-10	24	1909.799976	1910.0	0.200024	Complied
0	23	1909.799977	1910.0	0.200023	Complied
10	23	1909.799977	1910.0	0.200023	Complied
20	21	1909.799979	1910.0	0.200021	Complied
30	23	1909.799977	1910.0	0.200023	Complied
40	17	1909.799983	1910.0	0.200017	Complied
50	16	1909.799984	1910.0	0.200016	Complied

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

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1659	Thermometer / Hygrometer station	JM Handelspunkt	30.5015.13	None stated	24 May 2014	12
M1752	Radio Comms Tester	Rohde & Schwarz	CMW 500	139551	19 Jun 2014	12
E0513	Environmental Chamber	TAS	LT600 Series 3	23900506	Calibrated before use	-
M1642	Thermometer	Fluke	52II	18890119	19 Mar 2014	12
S0557	DC power supply	TTI	EL303R	395819	Calibrated before use	-
M1269	Multimeter	Fluke	179	90250210	30 Jul 2013	12

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

<b>Test Engineers:</b>	Ahmed Ali & Nick Steele	<b>Test Dates:</b>	09 July 2013 & 10 July 2013
<b>Test Sample IMEI:</b>	004402451254886		

<b>FCC Reference:</b>	Parts 2.1055 & 24.235
<b>Test Method Used:</b>	As detailed in ANSI TIA-603-C-2004 Section 2.2.2 referencing FCC CFR Part 2.1055

**Environmental Conditions:**

<b>Temperature (°C):</b>	23
<b>Relative Humidity (%):</b>	42

**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 Wideband Radio Communications Tester in accordance with current Rohde & Schwarz application notes. The EUT was connected by suitable RF cables to the CMW 500. A bidirectional 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
3.6	21	1850.199979	1850.0	0.199979	Complied
4.2	21	1850.199979	1850.0	0.199979	Complied

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

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
3.6	22	1909.799978	1910.0	0.200022	Complied
4.2	24	1909.799976	1910.0	0.200024	Complied



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

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1659	Thermometer / Hygrometer station	JM Handelspunkt	30.5015.13	None stated	24 May 2014	12
M1752	Radio Comms Tester	Rohde & Schwarz	CMW 500	139551	19 Jun 2014	12
S0557	DC power supply	TTI	EL303R	395819	Calibrated before use	-
M1269	Multimeter	Fluke	179	90250210	30 Jul 2013	12

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

<b>Test Engineer:</b>	David Doyle	<b>Test Date:</b>	05 July 2013
<b>Test Sample IMEI:</b>	004402451256097		

<b>FCC Reference:</b>	Part 2.1049
<b>Test Method Used:</b>	As detailed in KBD 971168 D01 Section 4.2

**Environmental Conditions:**

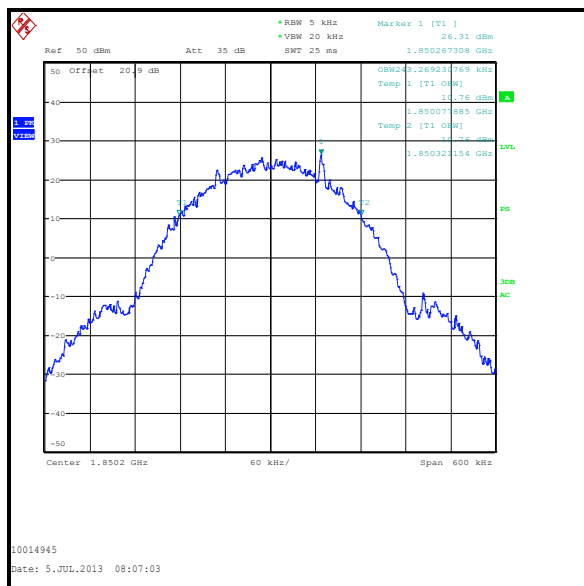
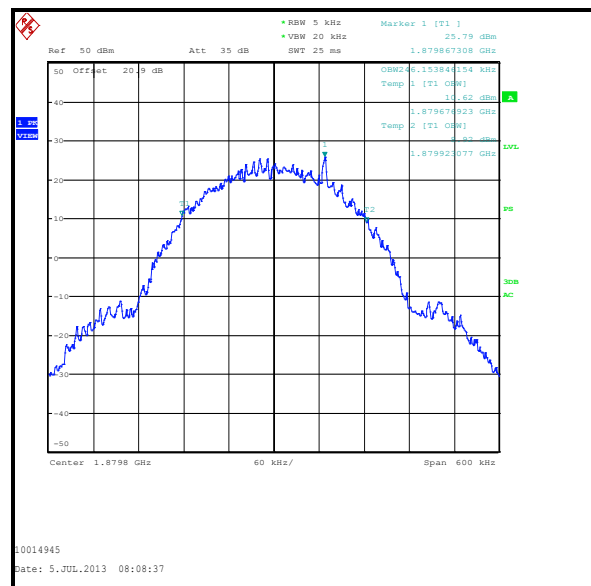
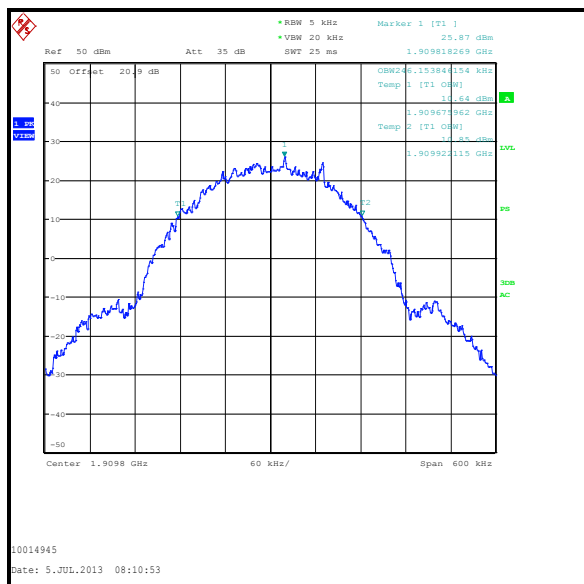
<b>Temperature (°C):</b>	22
<b>Relative Humidity (%):</b>	41

**Note(s):**

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

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

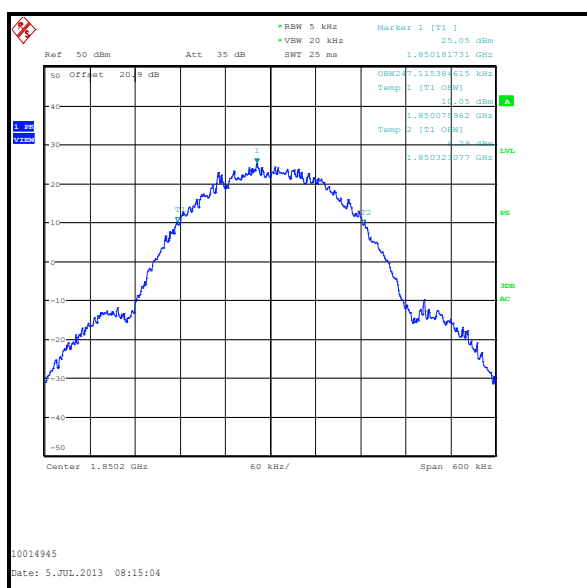
Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Bottom	1850.2	243.269
Middle	1879.8	246.154
Top	1909.8	246.154

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

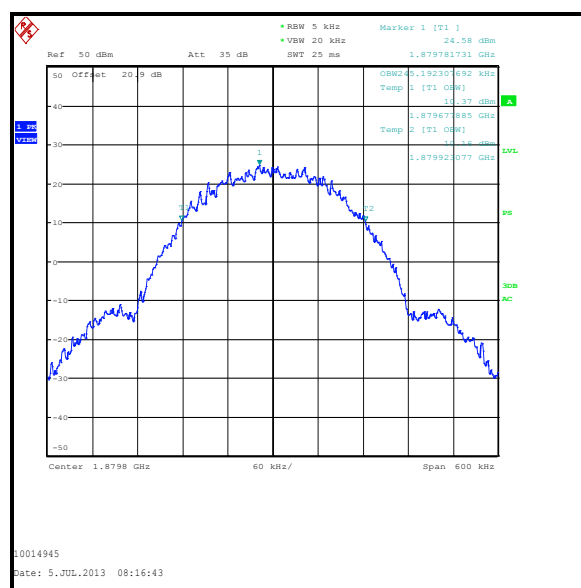
### **Transmitter Occupied Bandwidth (continued)**

## Results: GPRS

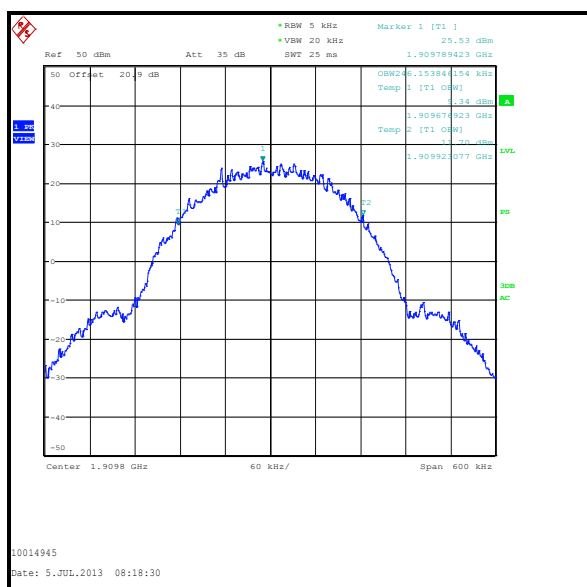
Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Bottom	1850.2	247.115
Middle	1879.8	245.192
Top	1909.8	246.154



### Bottom Channel



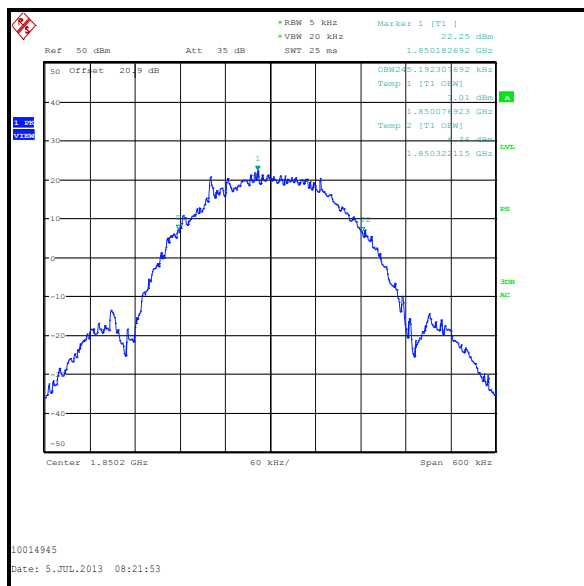
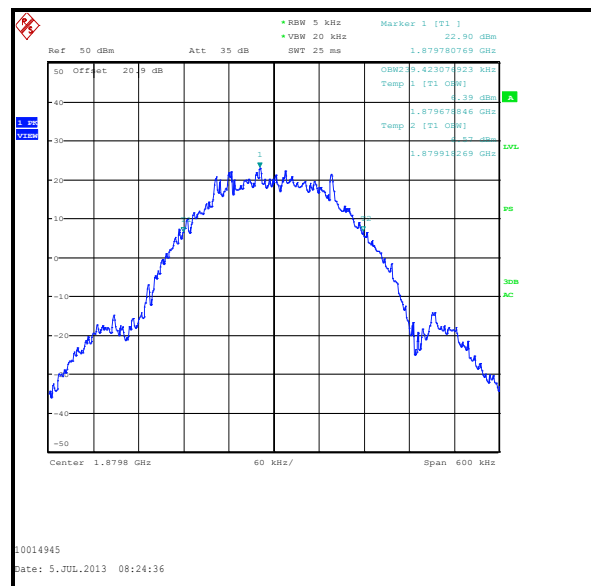
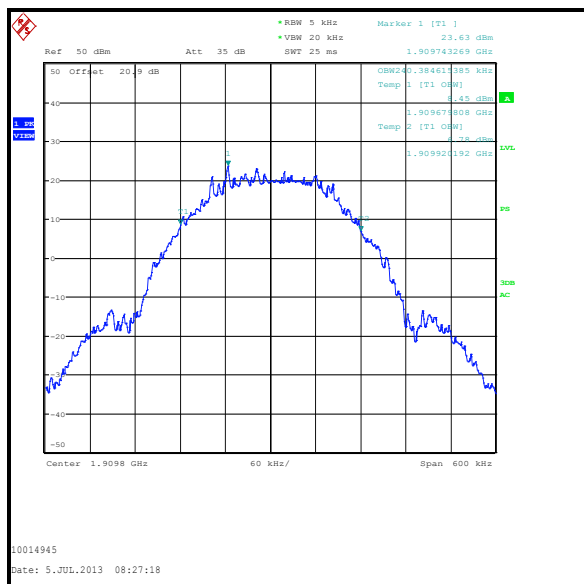
## Middle Channel



## Top Channel

**Transmitter Occupied Bandwidth (continued)****Results: EGPRS / MCS5**

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Bottom	1850.2	245.192
Middle	1879.8	239.423
Top	1909.8	240.385

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

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

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1659	Thermometer / Hygrometer station	JM Handelspunkt	30.5015.13	None stated	24 May 2014	12
A1100	Directional Coupler	Hewlett Packard	HP87300C	3239A01058	Calibrated before use	-
A2140	Attenuator	Atlan TecRF	AN18-10	090918-14	Calibrated before use	-
M1630	Test Receiver	Rohde & Schwarz	ESU40	100233	07 Feb 2014	12
M1269	Multimeter	Fluke	179	90250210	30 Jul 2013	12
S0537	DC Power Supply	TTI	EL302D	249928	Calibrated before use	-

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

<b>Test Engineers:</b>	Mark Percival & Andrew Edwards	<b>Test Dates:</b>	25 June 2013 & 27 June 2013
<b>Test Sample IMEI:</b>	004402451263820		

<b>FCC Reference:</b>	Parts 2.1053 & 24.238
<b>Test Method Used:</b>	As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Parts 2.1053 and 24.238
<b>Frequency Range:</b>	30 MHz to 20 GHz
<b>Configuration:</b>	GSM Circuit Switched

**Environmental Conditions:**

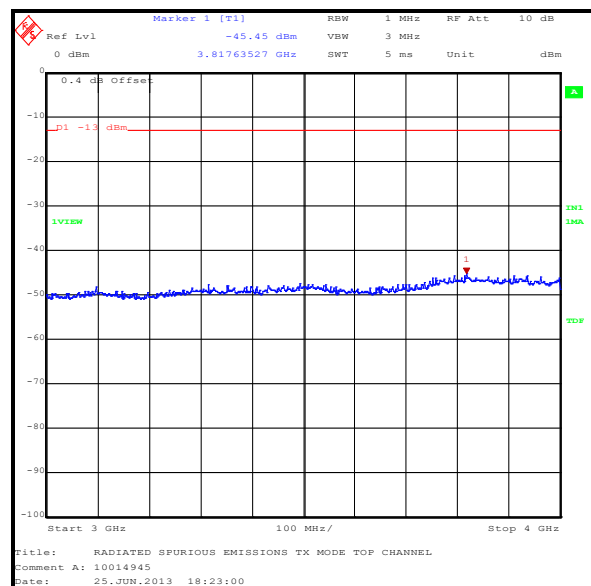
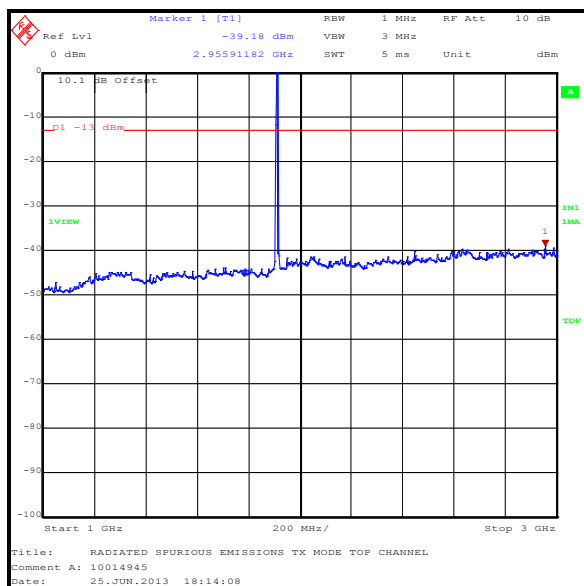
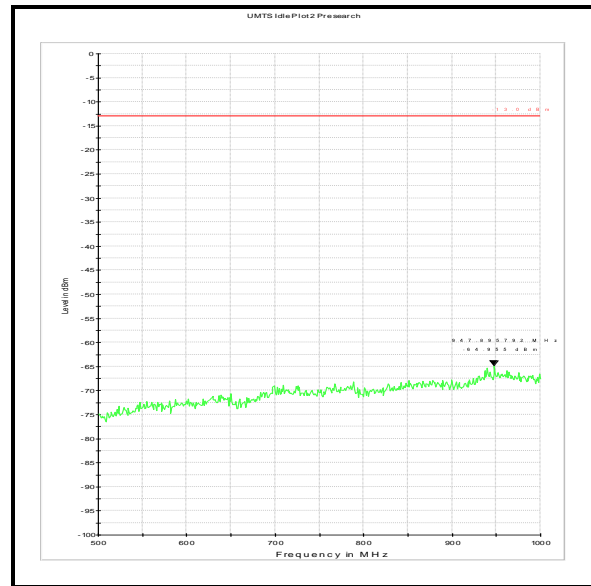
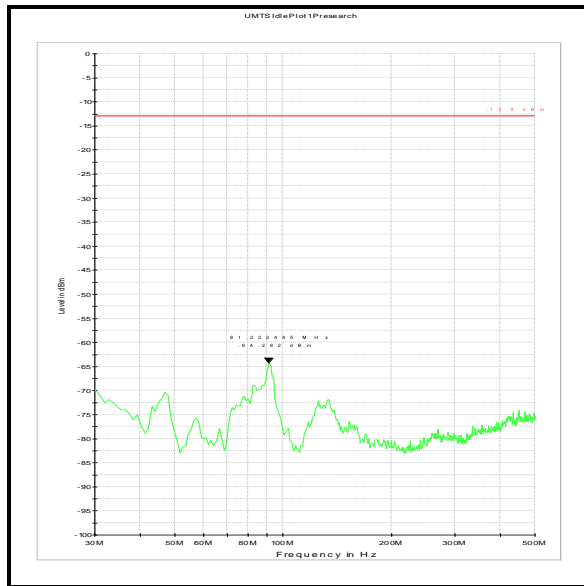
<b>Temperature (°C):</b>	22 to 25
<b>Relative Humidity (%):</b>	40 to 44

**Note(s):**

1. All emissions shown on the pre-scan plots were investigated and found to be ambient, or >20 dB below the applicable limit or below the measurement system noise floor. Therefore the highest peak noise floor reading of the measuring receiver was recorded in the table below.
2. The uplink traffic channel is shown on the 1 GHz to 3 GHz plot.
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.

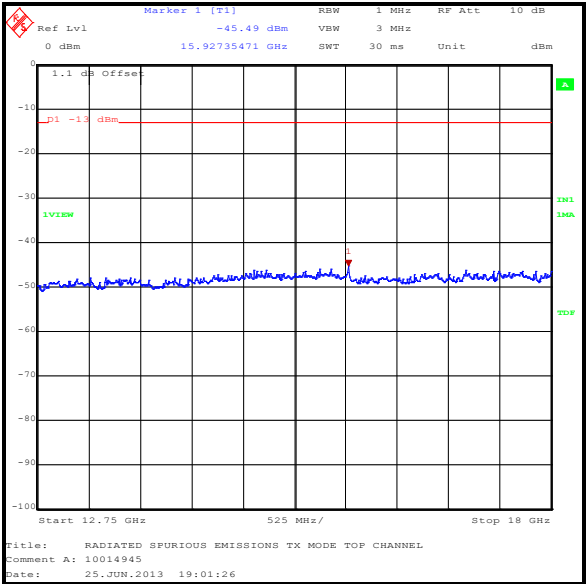
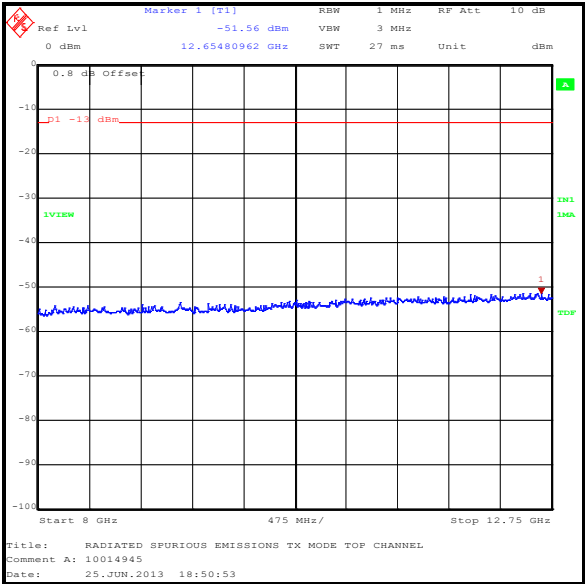
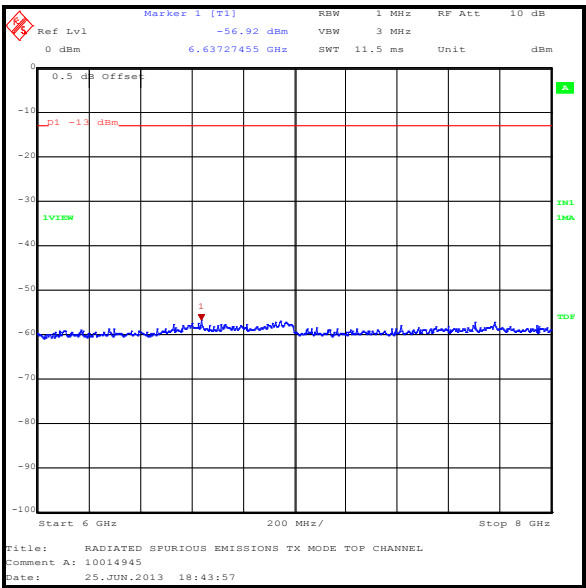
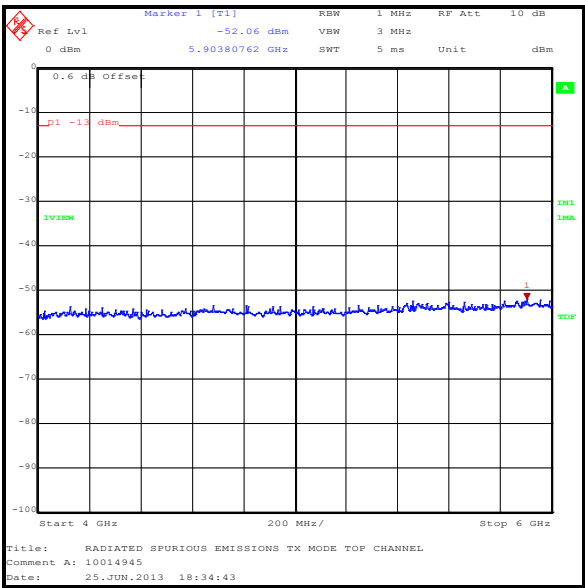
**Results:**

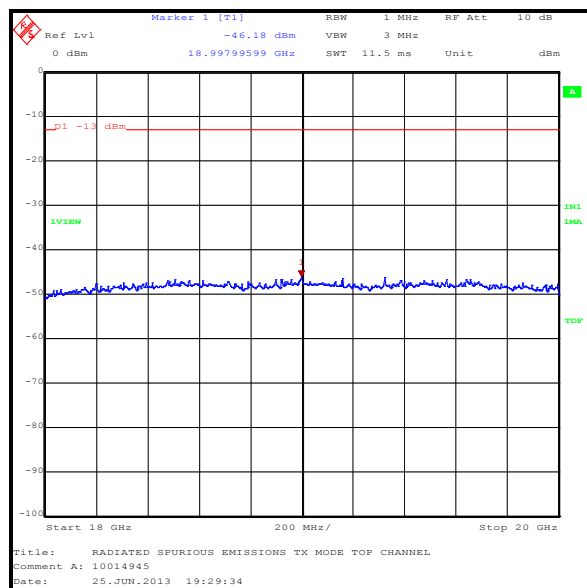
<b>Frequency (MHz)</b>	<b>Peak Level (dBm)</b>	<b>Limit (dBm)</b>	<b>Margin (dB)</b>	<b>Result</b>
2955.912	-39.2	-13.0	26.2	Complied

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



Transmitter Out of Band Radiated Emissions (continued)



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

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1622	Thermometer / Hygrometer station	JM Handelspunkt	30.5015.13	None stated	24 May 2014	12
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	24 Oct 2013	12
G0543	Amplifier	Sonoma	310N	230801	04 Jul 2013	3
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	07 Feb 2014	12
A1834	Attenuator	Hewlett Packard	8491B	10444	27 Jan 2014	12
A490	Antenna	Chase	CBL6111A	1590	18 Apr 2014	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	04 Nov 2013	12
M1656	Thermometer / Hygrometer station	JM Handelspunkt	30.5015.13	None stated	24 May 2014	12
M1124	Test Receiver	Rohde & Schwarz	ESIB 26	100046K	14 Aug 2013	12
A1534	Pre-Amplifier	Hewlett Packard	8449B	3008A00405	04 Nov 2013	12
A1396	Attenuator	Huber & Suhner	6810.17.B	757987	10 May 2014	12
A1975	High Pass Filter	AtlanTecRF	AFH-03000	090424010	19 Apr 2014	12
A1818	Antenna	EMCO	3115	00075692	04 Nov 2013	12
A253	Antenna	Flann	12240-20	128	04 Nov 2013	12
A254	Antenna	Flann	14240-20	139	04 Nov 2013	12
A255	Antenna	Flann	16240-20	519	04 Nov 2013	12
A256	Antenna	Flann	18240-20	400	04 Nov 2013	12
A436	Antenna	Flann	20240-20	20240-20	04 Nov 2013	12

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

<b>Test Engineer:</b>	Mark Percival	<b>Test Date:</b>	25 June 2013
<b>Test Sample IMEI:</b>	004402451263820		

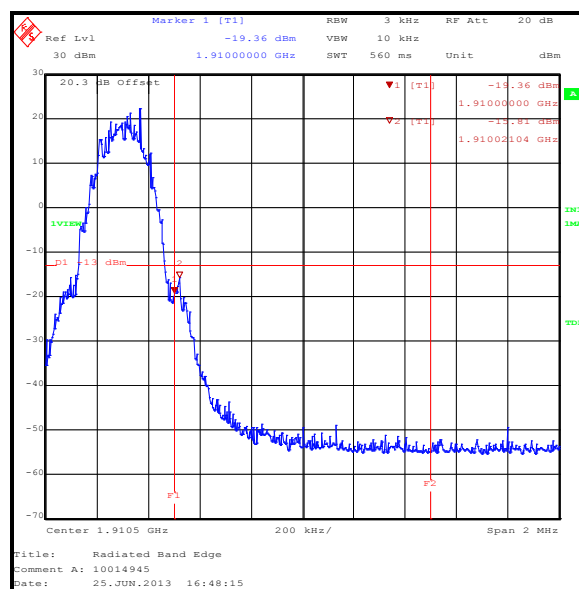
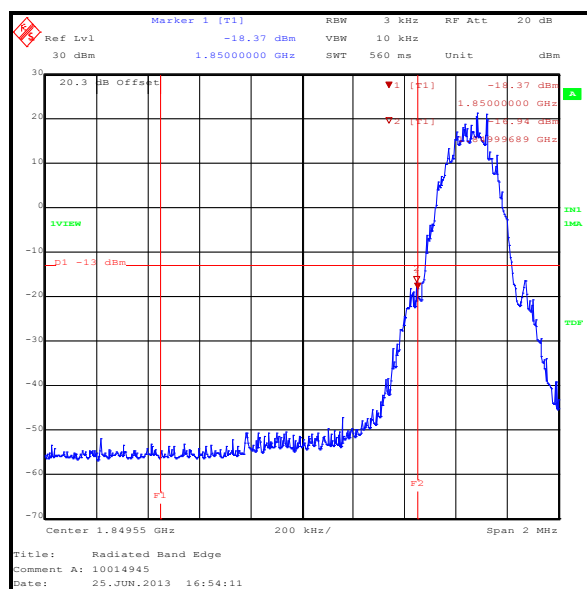
<b>FCC Reference:</b>	Parts 2.1053 & 24.238
<b>Test Method Used:</b>	As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Parts 2.1053 and 24.238

**Environmental Conditions:**

<b>Temperature (°C):</b>	25
<b>Relative Humidity (%):</b>	40

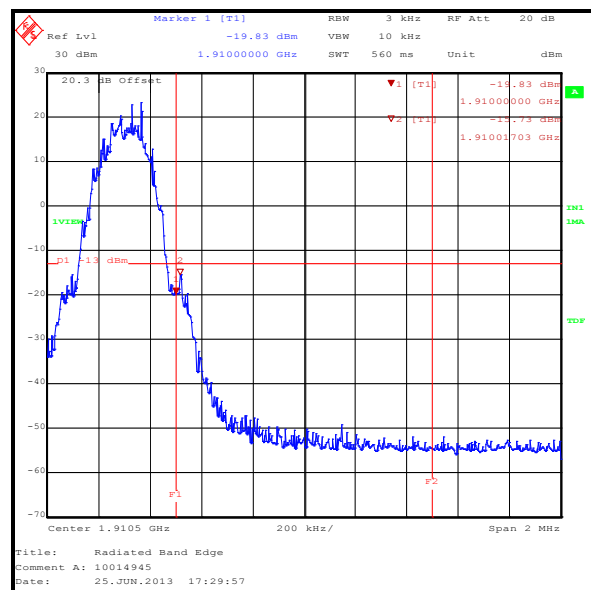
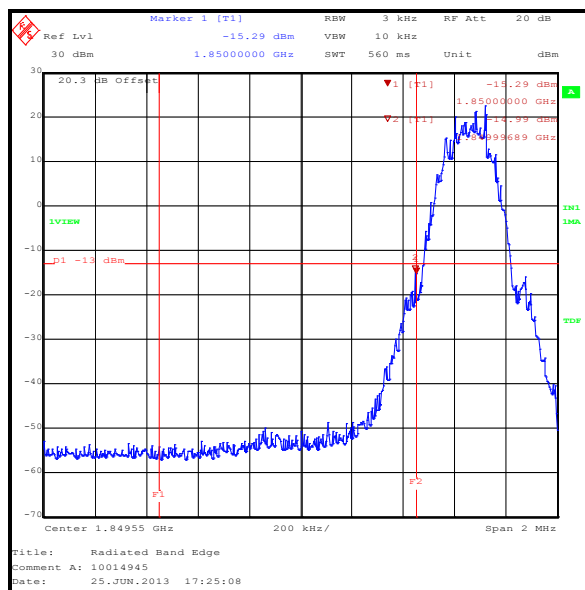
**Results: GSM Circuit Switched**

Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
1849.997	-16.9	-13.0	3.9	Complied
1850	-18.4	-13.0	5.4	Complied
1910	-19.4	-13.0	6.4	Complied
1910.021	-15.8	-13.0	2.8	Complied



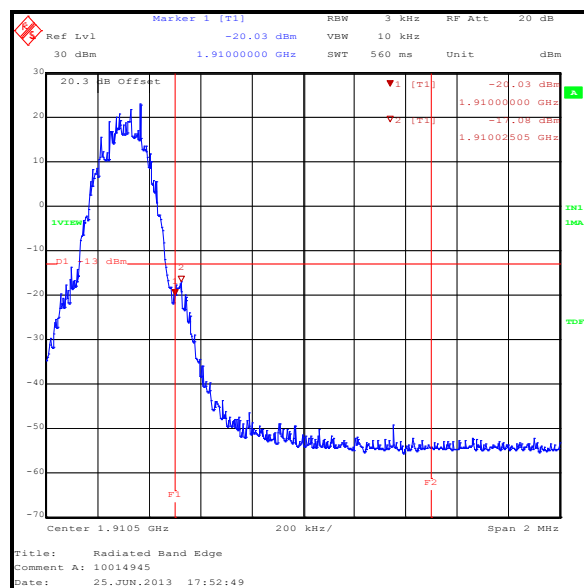
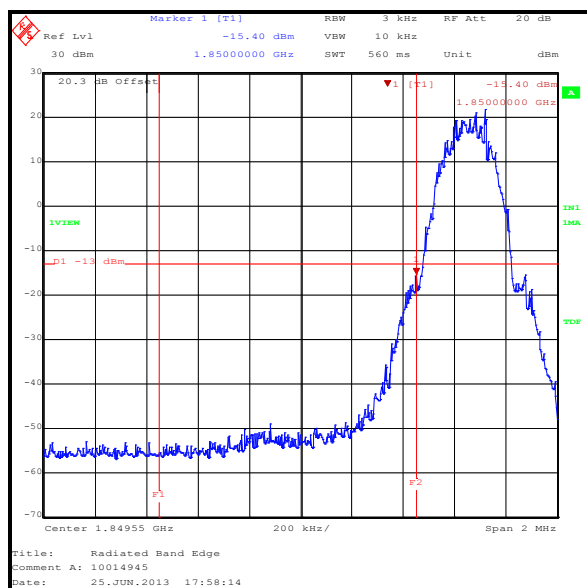
**Transmitter Band Edge Radiated Emissions (continued)****Results: GPRS**

Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
1849.997	-15.0	-13.0	2.0	Complied
1850	-15.3	-13.0	2.3	Complied
1910	-19.8	-13.0	6.8	Complied
1910.017	-15.7	-13.0	2.7	Complied



**Transmitter Band Edge Radiated Emissions (continued)****Results: EGPRS / MCS5**

Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
1850	-15.4	-13.0	2.4	Complied
1910	-20.0	-13.0	7.0	Complied
1910.025	-17.1	-13.0	4.1	Complied

**Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	04 Nov 2013	12
M1656	Thermometer / Hygrometer station	JM Handelspunkt	30.5015.13	None stated	24 May 2014	12
M1124	Test Receiver	Rohde & Schwarz	ESIB 26	100046K	14 Aug 2013	12
A1534	Pre-Amplifier	Hewlett Packard	8449B	3008A00405	04 Nov 2013	12
A1393	Attenuator	Huber & Suhner	6820.17.B	757456	10 May 2014	12
A1818	Antenna	EMCO	3115	00075692	04 Nov 2013	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%	±0.92 ppm
Occupied Bandwidth	1850 to 1910 MHz	95%	±0.92 ppm
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**

Version Number	Revision Details		
	Page No(s)	Clause	Details
1.0	-	-	Initial Version
2.0	-	-	Model No. removed