



# TEST REPORT

**Test Report No. : UL-RPT-RP10014929JD25A**

**Manufacturer** : Sony Mobile Communications AB  
**Type No.** : PM-0470-BV  
**FCC ID** : PY7PM-0470  
**Technology** : *Bluetooth – Low Energy*  
**Test Standard(s)** : FCC Parts 15.207, 15.209(a) & 15.247

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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:** 29 July 2013

**Checked by:**

Sarah Williams  
WiSE Laboratory Engineer

**Issued by :**

pp

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



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## **1. Customer Information**

<b>Company Name:</b>	Sony Mobile Communications AB
<b>Address:</b>	Nya Vattentornet Lund SE-221 88 Sweden

## 2. Summary of Testing

### 2.1. General Information

<b>Specification Reference:</b>	47CFR15.247
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart C (Intentional Radiators) - Section 15.247
<b>Specification Reference:</b>	47CFR15.207 and 47CFR15.209
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart C (Intentional Radiators) - Sections 15.207 and 15.209
<b>Site Registration:</b>	FCC: 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>	09 July 2013 to 16 July 2013

### 2.2. Summary of Test Results

FCC Reference (47CFR)	Measurement	Result
Part 15.207	Transmitter AC Conducted Emissions	✓
Part 15.247(a)(2)	Transmitter Minimum 6 dB Bandwidth	✓
Part 15.35(c)	Transmitter Duty Cycle	Note 1
Part 15.247(e)	Transmitter Power Spectral Density	Note 2
Part 15.247(b)(3)	Transmitter Maximum Peak Output Power	✓
Part 15.247(d)/15.209(a)	Transmitter Radiated Emissions	✓
Part 15.247(d)/15.209(a)	Transmitter Band Edge Radiated Emissions	✓

**Key to Results**

✓ = Complied    ✘ = Did not comply

#### Note(s):

1. This measurement was performed to assist in the calculation of the level in any emissions.
2. In accordance with FCC KDB 558074 Section 10.1, PSD is not required if the maximum conducted output power is less than the PSD limit of 8 dBm / 3 kHz. The PSD level is therefore deemed to be equal to the measured total output power.

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

<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>	ANSI C63.10 (2009)
<b>Title:</b>	American National Standard for Testing Unlicensed Wireless Devices
<b>Reference:</b>	KDB 558074 D01 v03r01 April 9, 2013
<b>Title:</b>	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247

### **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>	004402451245652 ( <i>Radiated sample</i> )
<b>Serial Number:</b>	CB5124VVNP
<b>Hardware Version Number:</b>	AP2
<b>Software Version Number:</b>	14.1.C.0.130
<b>FCC ID:</b>	PY7PM-0470

<b>Brand Name:</b>	Sony
<b>IMEI:</b>	004402451246239 ( <i>Conducted sample</i> )
<b>Serial Number:</b>	CB5124VVM7
<b>Hardware Version Number:</b>	AP2
<b>Software Version Number:</b>	14.1.C.0.130
<b>FCC ID:</b>	PY7PM-0470

<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

<b>Brand Name:</b>	Sony
<b>Description:</b>	Magnetic Plug
<b>Model Name or Number:</b>	EC21

<b>Brand Name:</b>	Sony
<b>Description:</b>	USB cable
<b>Model Name or Number:</b>	EC801

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

<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 850/900/1800/1900 MHz bands, WCDMA FDD bands 1/2/5 and LTE FDD bands 1/3. 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**

<b>Technology Tested:</b>	Bluetooth Low Energy (Digital Transmission System)				
<b>Type of Unit:</b>	Transceiver				
<b>Channel Spacing:</b>	2 MHz				
<b>Modulation:</b>	GFSK				
<b>Data Rate:</b>	1 Mbps				
<b>Power Supply Requirement(s):</b>	Nominal	3.8 V			
<b>Maximum Conducted Output Power:</b>	0.7 dBm				
<b>Peak Antenna Gain:</b>	-4.7 dBi				
<b>Transmit Frequency Range:</b>	2402 MHz to 2480 MHz				
<b>Transmit Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>		
	Bottom	0	2402		
	Middle	19	2440		
	Top	39	2480		

### **3.5. Support Equipment**

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

<b>Description:</b>	Laptop PC
<b>Brand Name:</b>	Dell
<b>Model Name or Number:</b>	Latitude E5400
<b>Serial Number:</b>	00788

<b>Description:</b>	2 GB Micro SD card
<b>Brand Name:</b>	Generic
<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

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

### **4.1. Operating Modes**

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

- Transmitting at maximum power in *Bluetooth* mode with modulation, maximum possible data length available, with a pay load set to set Pseudorandom Bit Sequence 9.

### **4.2. Configuration and Peripherals**

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

- Transmit tests: The laptop PC with the Customers' test application was used to place the EUT into *Bluetooth* LE test mode. Operating channels were selected in the test 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.

- AC conducted emissions was tested with the EUT transmitting on middle channel as this mode was found to transmit the highest power. Both configurations were tested and configuration 2 was found to be the worst case.
- The EUT conducted sample with IMEI 004402451246239 was used for 6 dB bandwidth, conducted output power and duty cycle tests.
- The radiated sample with IMEI 004402451245652 was used for AC conducted emissions and radiated spurious emissions tests.

## **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 AC Conducted Spurious Emissions**

#### **Test Summary:**

<b>Test Engineer:</b>	Mark Percival	<b>Test Date:</b>	16 July 2013
<b>Test Sample IMEI:</b>	004402451245652		

<b>FCC Reference:</b>	Part 15.207
<b>Test Method Used:</b>	As detailed in ANSI C63.10 Section 6.2 referencing ANSI C63.4

#### **Environmental Conditions:**

<b>Temperature (°C):</b>	22
<b>Relative Humidity (%):</b>	38

#### **Results: Live / Quasi Peak**

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
0.181	Live	35.2	64.4	29.2	Complied
0.469	Live	39.3	56.5	17.2	Complied
1.392	Live	41.5	56.0	14.5	Complied
3.349	Live	34.5	56.0	21.5	Complied

#### **Results: Live / Average**

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
0.460	Live	27.3	46.7	19.4	Complied
1.401	Live	28.7	46.0	17.3	Complied
3.178	Live	26.4	46.0	19.6	Complied
17.758	Live	23.6	50.0	26.4	Complied

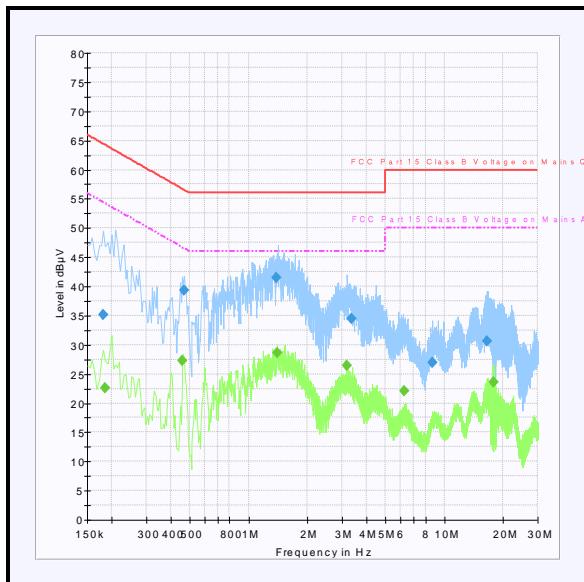
**Transmitter AC Conducted Spurious Emissions (continued)****Results: Neutral / Quasi Peak**

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
0.478	Neutral	33.1	56.4	23.3	Complied
1.464	Neutral	34.5	56.0	21.5	Complied
3.205	Neutral	30.4	56.0	25.6	Complied
16.278	Neutral	30.0	60.0	30.0	Complied

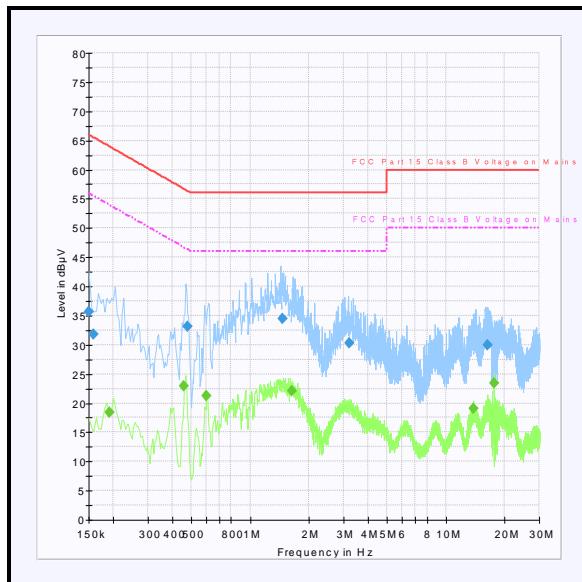
**Results: Neutral / Average**

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
0.460	Neutral	22.9	46.7	23.8	Complied
0.600	Neutral	21.3	46.0	24.7	Complied
1.644	Neutral	22.1	46.0	23.9	Complied
17.682	Neutral	23.4	50.0	26.6	Complied

### Transmitter AC Conducted Spurious Emissions (continued)



Live



Neutral

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

### Test Equipment Used:

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1625	Thermometer / Hygrometer station	JM Handelspunkt	30.5015.13	None stated	09 Jan 2014	12
A004	LISN	Rohde & Schwarz	ESH3-Z5	890604/027	30 Oct 2013	12
A1830	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100668	19 Feb 2014	12
M1020	Test Receiver	Rohde & Schwarz	SME-03	834617/030	14 Dec 2013	12

**5.2.2. Transmitter Minimum 6 dB Bandwidth****Test Summary:**

<b>Test Engineer:</b>	Sandeep Bharat	<b>Test Date:</b>	09 July 2013
<b>Test Sample IMEI:</b>	004402451246239		

<b>FCC Reference:</b>	Part 15.247(a)(2)
<b>Test Method Used:</b>	As detailed in FCC KDB 558074 Section 8.1 Option 1

**Environmental Conditions:**

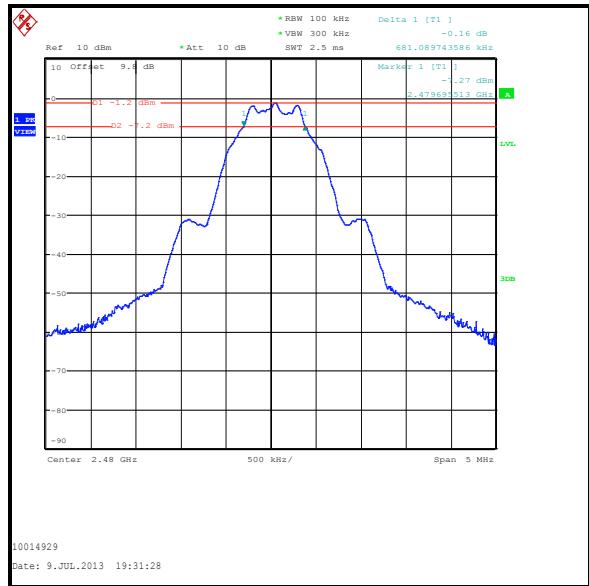
<b>Temperature (°C):</b>	25
<b>Relative Humidity (%):</b>	34

**Note(s):**

1. Transmitter minimum 6 dB bandwidth tests were performed using a spectrum analyser in accordance with FCC KDB 558074 Section 8.1 Option 1 measurement procedure.
2. The spectrum analyser was connected to the RF port on the EUT using suitable attenuation and RF cable.

**Results:**

Channel	6 dB Bandwidth (kHz)	Limit (kHz)	Margin (kHz)	Result
Bottom	689.103	≥500	189.103	Complied
Middle	689.103	≥500	189.103	Complied
Top	681.090	≥500	181.090	Complied

**Transmitter Minimum 6 dB Bandwidth (continued)****Results:****Bottom Channel****Middle Channel****Top Channel****Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1659	Thermometer / Hygrometer station	JM Handelpunkt	30.5015.13	None stated	24 May 2014	12
L1076	Spectrum Analyser	Rohde & Schwarz	FSU 8	101349	29 May 2014	12
G088	Power Supply Unit	Thurlby Thandar	CPX200	100700	Calibrated before use	-
M1269	Multimeter	Fluke	179	90250210	30 Jul 2013	12
A2139	Attenuator	Atlan TecRF	AN18-10	090918-04	10 May 2014	12

### **5.2.3. Transmitter Duty Cycle**

#### **Test Summary:**

<b>Test Engineer:</b>	Sandeep Bharat	<b>Test Date:</b>	09 July 2013
<b>Test Sample IMEI:</b>	004402451246239		

<b>FCC Reference:</b>	Part 15.35(c)
<b>Test Method Used:</b>	As detailed in FCC KDB 558074 Section 6.0

#### **Environmental Conditions:**

<b>Temperature (°C):</b>	25
<b>Relative Humidity (%):</b>	34

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

1. In order to assist with the determination of the average level of fundamental and spurious emissions field strength, measurements were made of duty cycle to determine the transmission duration and the silent period time of the transmitter. The transmitter duty cycle was measured using a spectrum analyser in the time domain and calculated by using the following calculation:

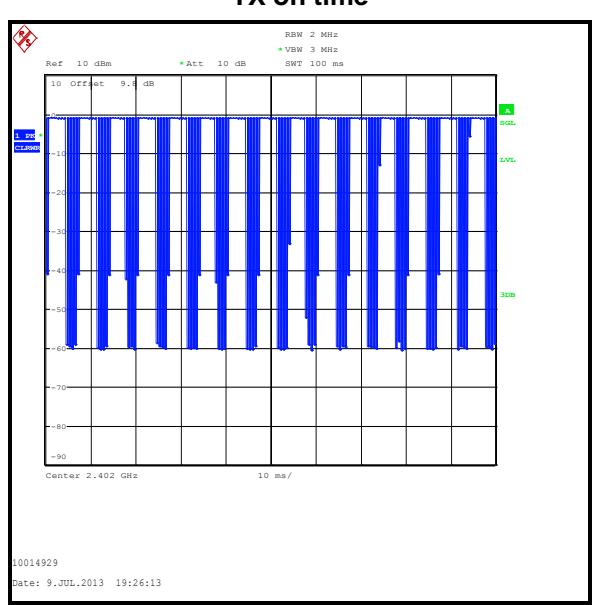
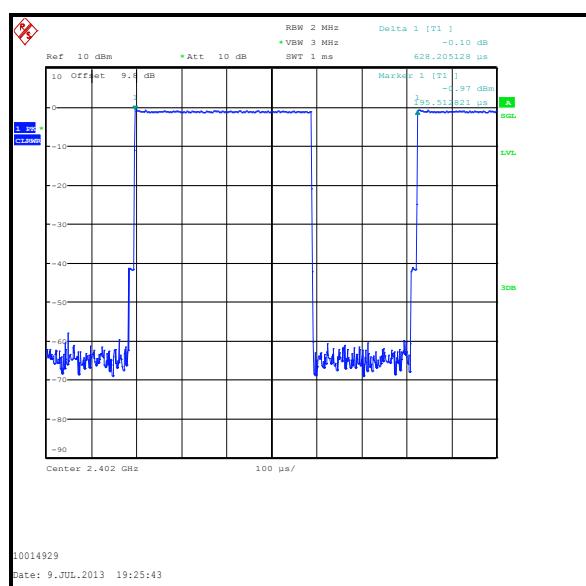
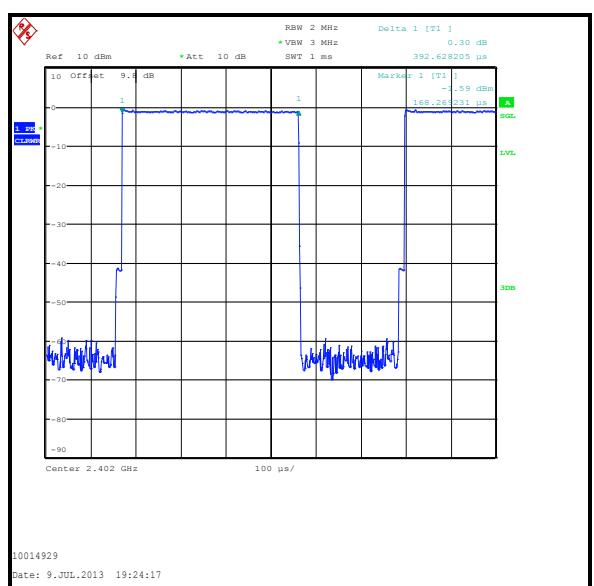
$$10 \log (1 / (\text{On Time} / \text{Period}))$$

$$10 \log (1 / (392.628 \mu\text{s} / 628.205 \mu\text{s})) = 2.0 \text{ dB}$$

**Transmitter Duty Cycle (continued)****Results:**

Pulse Duration ( $\mu$ s)	Duty Cycle Correction (dB)
392.628	2.0

Period ( $\mu$ s)
628.205



**Transmitter Duty Cycle (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
L1076	Spectrum Analyser	Rohde & Schwarz	FSU 8	101349	29 May 2014	12
G088	Power Supply Unit	Thurlby Thandar	CPX200	100700	Calibrated before use	-
M1269	Multimeter	Fluke	179	90250210	30 Jul 2013	12
A2139	Attenuator	Atlan TecRF	AN18-10	090918-04	10 May 2014	12

**5.2.4. Transmitter Maximum Peak Output Power****Test Summary:**

<b>Test Engineer:</b>	Sandeep Bharat	<b>Test Date:</b>	09 July 2013
<b>Test Sample IMEI:</b>	004402451246239		

<b>FCC Reference:</b>	Part 15.247(b)(3)
<b>Test Method Used:</b>	As detailed in FCC KDB 558074 Section 9.1.1

**Environmental Conditions:**

<b>Temperature (°C):</b>	25
<b>Relative Humidity (%):</b>	34

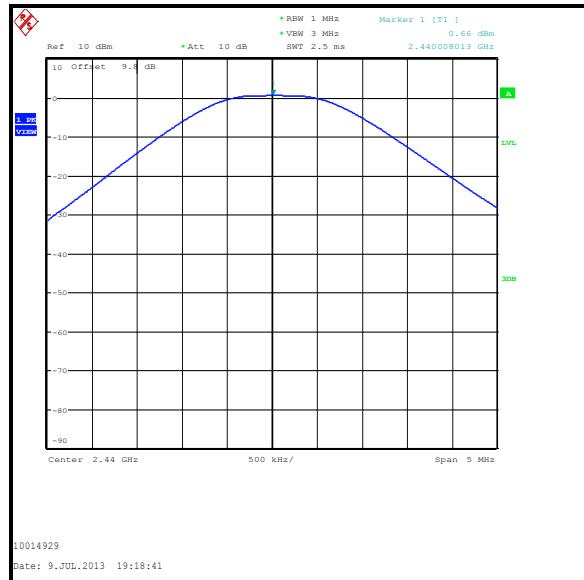
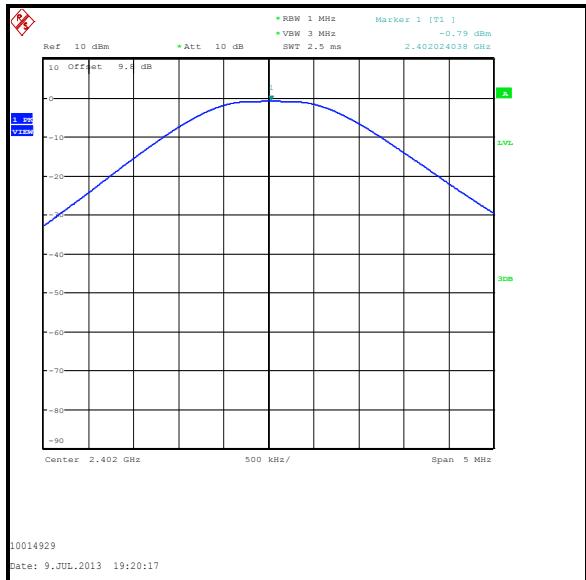
**Note(s):**

- Conducted power tests were performed using a spectrum analyser in accordance with FCC KDB 558074 Section 9.1.1 with the RBW > DTS Bandwidth.
- 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.

**Results:**

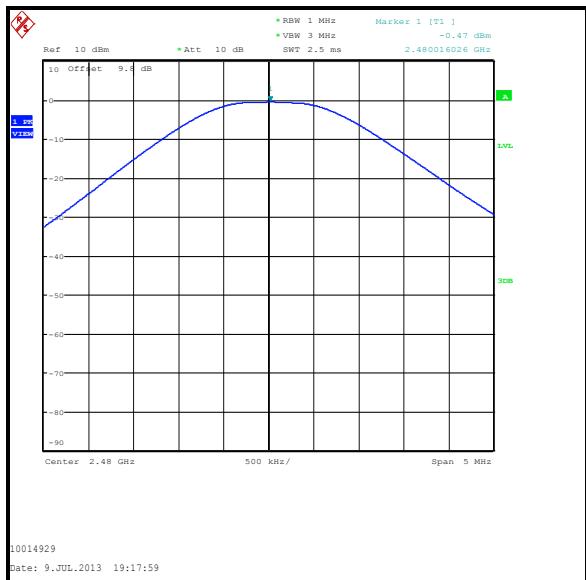
Channel	Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	-0.8	-4.7	-5.5	36.0	41.5	Complied
Middle	0.7	-4.7	-4.0	36.0	40.0	Complied
Top	-0.5	-4.7	-5.2	36.0	41.2	Complied

## Transmitter Maximum Peak Output Power (continued)



Bottom Channel

Middle Channel



Top Channel

## Test Equipment Used:

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1659	Thermometer / Hygrometer station	JM Handelpunkt	30.5015.13	None stated	24 May 2014	12
L1076	Spectrum Analyser	Rohde & Schwarz	FSU 8	101349	29 May 2014	12
G088	Power Supply Unit	Thurlby Thandar	CPX200	100700	Calibrated before use	-
M1269	Multimeter	Fluke	179	90250210	30 Jul 2013	12
A2139	Attenuator	Atlan TecRF	AN18-10	090918-04	10 May 2014	12

### **5.2.5. Transmitter Radiated Emissions**

#### **Test Summary:**

<b>Test Engineer:</b>	Andrew Edwards	<b>Test Date:</b>	16 July 2013
<b>Test Sample IMEI:</b>	004402451245652		

<b>FCC Reference:</b>	Parts 15.247(d) & 15.209(a)
<b>Test Method Used:</b>	As detailed in ANSI C63.10 Sections 6.3 and 6.5 referencing ANSI C63.4
<b>Frequency Range</b>	30 MHz to 1000 MHz

#### **Environmental Conditions:**

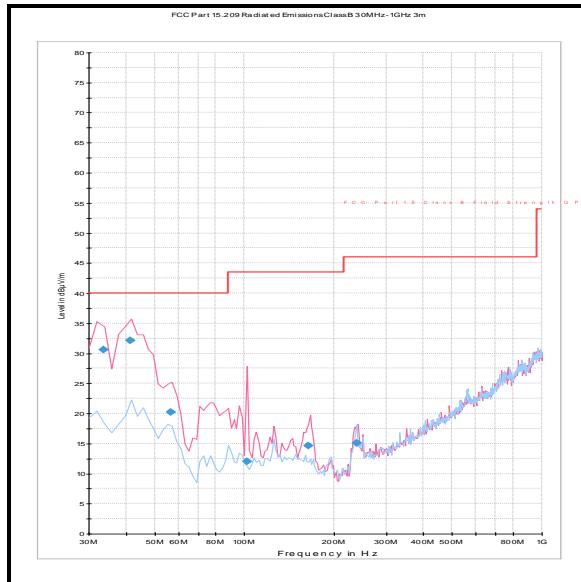
<b>Temperature (°C):</b>	22
<b>Relative Humidity (%):</b>	39

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

1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
2. The preliminary scans showed similar emission levels below 1 GHz, for each channel of operation. Therefore final radiated emissions measurements were performed with the EUT set to the top channel only.
3. All other 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.
4. 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.

#### **Results:**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
164.057	Vertical	14.7	43.5	28.8	Complied

**Transmitter Radiated Emissions (continued)**

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

**Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
A490	Antenna	Chase	CBL6111A	1590	09 Apr 2014	12
A1834	Attenuator	Hewlett Packard	8491B	10444	27 Jan 2014	12
G0543	Pre-Amplifier	Sonoma	310N	230801	05 Oct 2013	3
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	24 Oct 2013	12
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	07 Feb 2014	12
M1622	Thermometer / Hygrometer station	JM Handelspunkt	30.5015.13	Not stated	24 May 2014	12

**Transmitter Radiated Emissions (continued)****Test Summary:**

<b>Test Engineer:</b>	Mark Percival	<b>Test Date:</b>	15 July 2013
<b>Test Sample IMEI:</b>	004402451245652		

<b>FCC Reference:</b>	Parts 15.247(d) & 15.209(a)
<b>Test Method Used:</b>	As detailed in ANSI C63.10 Sections 6.3 and 6.6 referencing ANSI C63.4
<b>Frequency Range</b>	1 GHz to 25 GHz

**Environmental Conditions:**

<b>Temperature (°C):</b>	21
<b>Relative Humidity (%):</b>	39

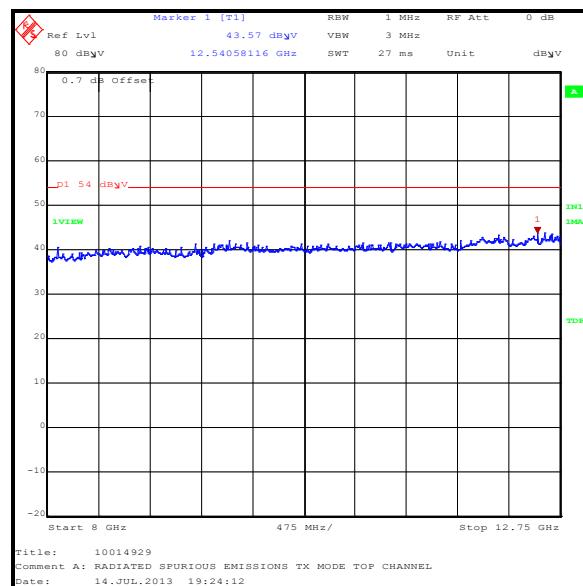
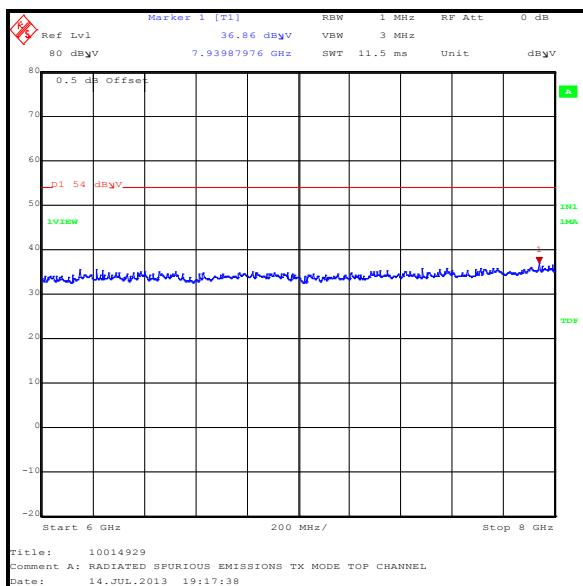
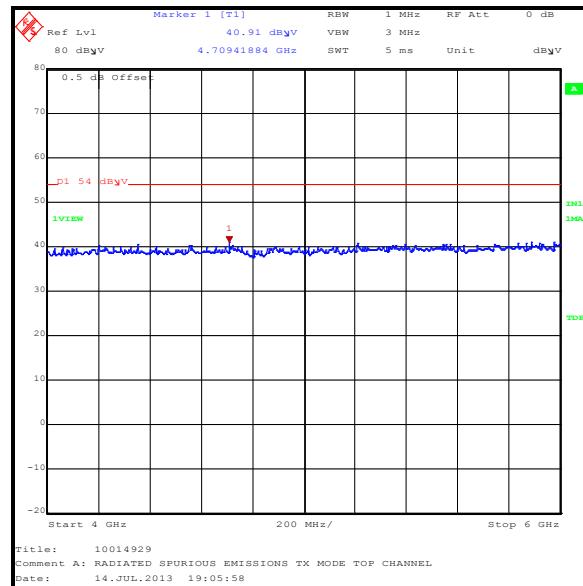
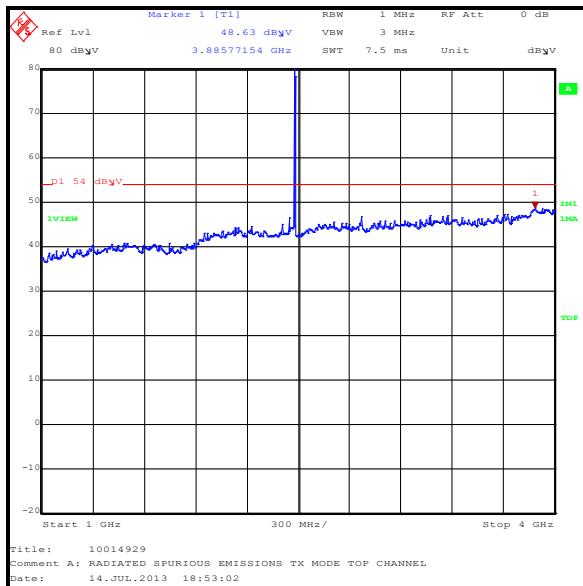
**Note(s):**

1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
2. No spurious emissions were detected above the noise floor of the measuring receiver therefore the highest peak noise floor reading of the measuring receiver was recorded as shown in the table below. The peak level was compared to the average limit as opposed to being compared to the peak limit because this is the more onerous limit.
3. The emission shown on the 1 GHz to 4 GHz plot is the EUT fundamental.
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.

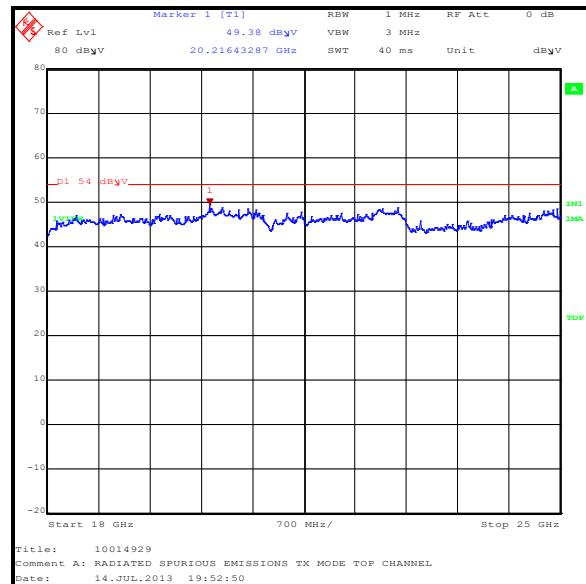
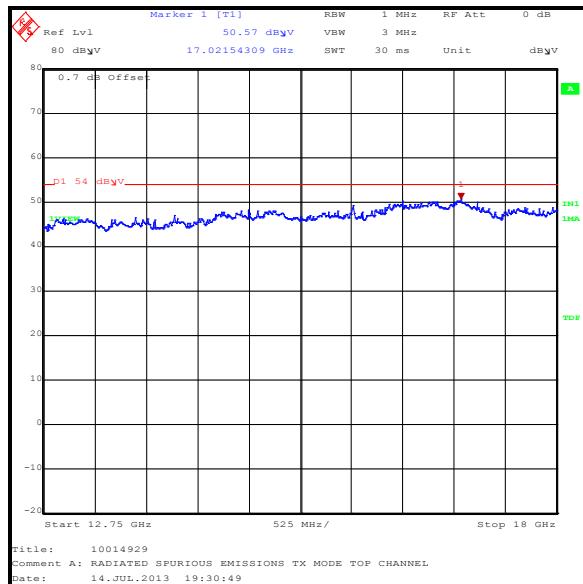
**Results:**

Frequency (MHz)	Antenna Polarity	Peak Level (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Margin (dB)	Result
17021.543	Vertical	50.6	54.0	3.4	Complied

## Transmitter Radiated Emissions (continued)



## Transmitter Radiated Emissions (continued)



## Test Equipment Used:

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
A253	Antenna	Flann Microwave	12240-20	128	04 Nov 2013	12
A254	Antenna	Flann Microwave	14240-20	139	04 Nov 2013	12
A255	Antenna	Flann Microwave	16240-20	519	04 Nov 2013	12
A256	Antenna	Flann Microwave	18240-20	400	04 Nov 2013	12
A436	Antenna	Flann Microwave	20240-20	330	04 Nov 2013	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	04 Nov 2013	12
A1818	Antenna	EMCO	3115	00075692	04 Nov 2013	12
A1975	High Pass Filter	AtlanTecRF	AFH-03000	090424010	19 Apr 2014	12
A2130	High Pass Filter	AtlanTecRF	AFH-08000	80rJFBD06-002	26 Apr 2014	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	04 Nov 2013	12
M1124	Test Receiver	Rohde & Schwarz	ESIB 26	100046K	14 Aug 2013	12
M1656	Thermometer / Hygrometer station	JM Handelpunkt	30.5015.13	Not stated	24 May 2014	12

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

<b>Test Engineer:</b>	Mark Percival	<b>Test Date:</b>	15 July 2013
<b>Test Sample IMEI:</b>	004402451245652		

<b>FCC Reference:</b>	Parts 15.247(d) & 15.209(a)
<b>Test Method Used:</b>	As detailed in FCC KDB 558074 Section 13.0 referencing ANSI C63.10 Section 6.9.2

**Environmental Conditions:**

<b>Temperature (°C):</b>	21
<b>Relative Humidity (%):</b>	39

**Note(s):**

1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
2. Peak conducted output power was previously measured therefore in accordance with FCC KDB 558074 Section 11.1(a), the lower band edge measurement was performed with a peak detector and the -20 dBc limit was applied.
3. \* -20 dBc limit.

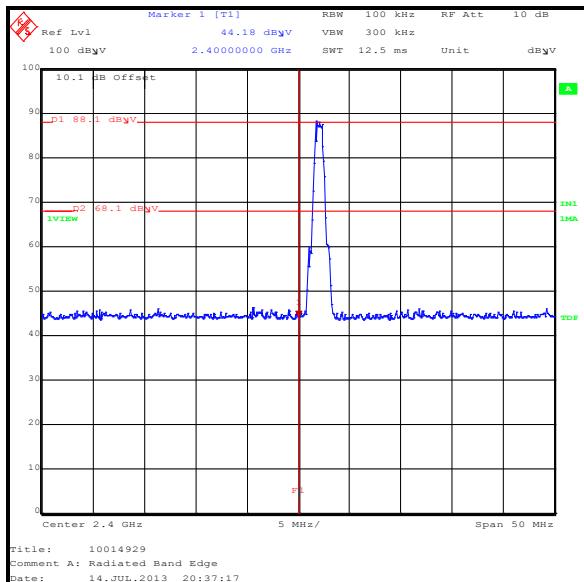
**Results: Peak**

Frequency (MHz)	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
2400	44.2	68.1*	23.9	Complied
2483.5	54.5	74.0	19.5	Complied

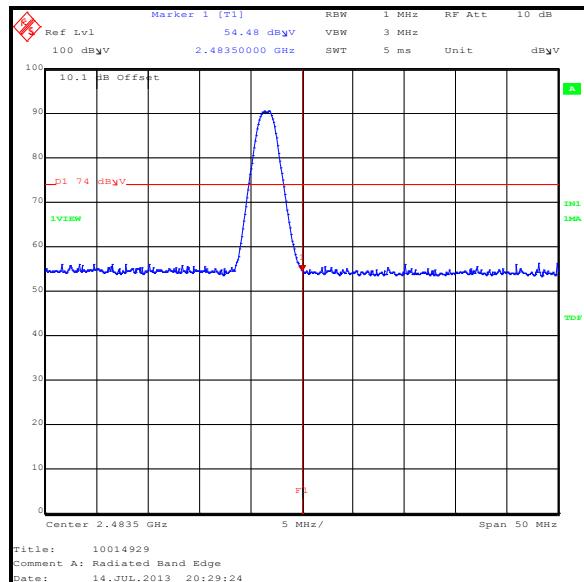
**Results: Average**

Frequency (MHz)	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
2483.5	42.6	54.0	11.4	Complied

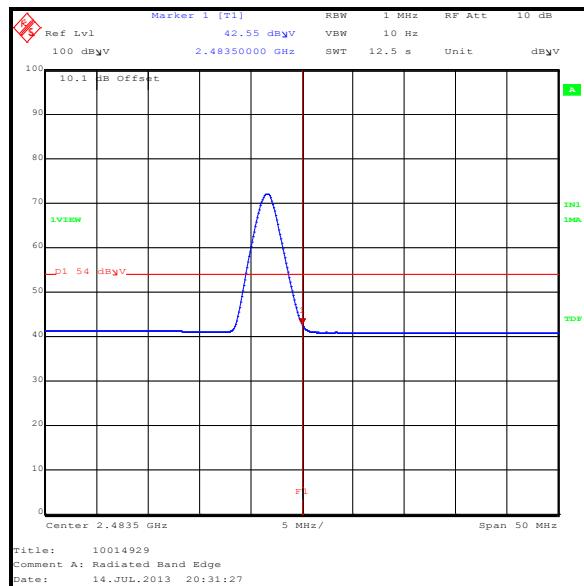
## Transmitter Band Edge Radiated Emissions (continued)



Lower Band Edge Peak Measurement



Upper Band Edge Peak Measurement



Upper Band Edge Average Measurement

## Test Equipment Used:

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
A1396	Attenuator	Huber & Suhner	6810.17.B	757987	10 May 2014	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	04 Nov 2013	12
A1818	Antenna	EMCO	3115	00075692	04 Nov 2013	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	04 Nov 2013	12
M1124	Test Receiver	Rohde & Schwarz	ESIB 26	100046K	14 Aug 2013	12
M1656	Thermometer / Hygrometer station	JM Handelspunkt	30.5015.13	Not stated	24 May 2014	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".

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95%	±4.69 dB
Conducted Maximum Output Power	2.4 GHz to 2.4835 GHz	95%	±1.13 dB
Minimum 6 dB Bandwidth	2.4 GHz to 2.4835 GHz	95%	±0.92 ppm
Radiated Spurious Emissions	30 MHz to 1 GHz	95%	±5.65 dB
Radiated Spurious Emissions	1 GHz to 26.5 GHz	95%	±2.94 dB
Duty Cycle	2.4 GHz to 2.4835 GHz	95%	±0.3 ns

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