



# TEST REPORT

**Test Report No. :** UL-RPT-RP10014948JD13A V3.0

**Manufacturer** : Sony Mobile Communications AB  
**Type No.** : PM-0450-BV  
**FCC ID** : PY7PM-0450  
**Technology** : ANT+  
**Test Standard(s)** : FCC Part 15.249 Subpart C

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 3.0 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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**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>	47CFR15.249
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart C (Intentional Radiators) - Section 15.249
<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>	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>	26 June 2013 to 05 July 2013

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

<b>FCC Reference (47CFR)</b>	<b>Measurement</b>	<b>Result</b>
Part 15.207	Transmitter AC Conducted Emissions	
Part 15.249(a)(e)	Transmitter Fundamental Field Strength	
Part 15.35	Duty cycle	Note 1
Part 2.1049	Transmitter 20 dB Bandwidth	
Part 15.249(d)(e)/15.209(a)	Transmitter Radiated Emissions	
Part 15.249(d)/15.209(a)	Transmitter Band Edge Radiated Emissions	
<b>Key to Results</b>		
 = Complied  = Did not comply		

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

1. The measurements were performed to assist in the calculation of average Fundamental Field Strength and radiated emissions as the EUT was not constantly transmitting

### **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

### **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>	004402451217271 ( <i>Radiated sample</i> )
<b>Serial Number:</b>	CB5124TU1X
<b>Hardware Version Number:</b>	AP2
<b>Software Version Number:</b>	14.1.G.1.184
<b>FCC ID:</b>	PY7PM-0450

<b>Brand Name:</b>	Sony
<b>IMEI:</b>	004402451215432 ( <i>Conducted sample</i> )
<b>Serial Number:</b>	CB5124TU4P
<b>Hardware Version Number:</b>	AP2
<b>Software Version Number:</b>	14.1.G.1.184
<b>FCC ID:</b>	PY7PM-0450

<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>	EC801

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

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

<b>Brand Name:</b>	Sony
<b>Description:</b>	Personal Hands-Free
<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 1/2/3/4/5/7/8/20. 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>Tested Technology:</b>	ANT+		
<b>Power Supply Requirement:</b>	Nominal	3.8 V	
<b>Type of Unit:</b>	Transceiver		
<b>Modulation:</b>	GFSK		
<b>Transmit Frequency Range:</b>	2400 to 2483.5 MHz		
<b>Transmit Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	Bottom	0	2402
	Middle	39	2441
	Top	78	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):

- Transmit Mode: transmitting with a GFSK modulated signal on the bottom, middle and top channels as required.

### **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 ANT+ 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.

- The conducted sample with IMEI 004402451215432 was used for the 20 dB bandwidth test.
- The radiated sample with IMEI 004402451217271 was used for all other 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:**

Test Engineer:	Mark Percival	Test Date:	01 July 2013
Test Sample IMEI:	004402451217271		

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

**Environmental Conditions:**

Temperature (°C):	21
Relative Humidity (%):	56

**Results: Live Quasi Peak**

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
0.460	Live	37.0	56.7	19.7	Complied
1.126	Live	38.2	56.0	17.8	Complied
1.743	Live	35.7	56.0	20.3	Complied
17.776	Live	36.6	60.0	23.4	Complied
18.127	Live	36.8	60.0	23.2	Complied

**Results: Live Average**

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
0.460	Live	26.3	46.7	20.4	Complied
0.591	Live	25.0	46.0	21.0	Complied
1.392	Live	28.0	46.0	18.0	Complied
18.181	Live	30.7	50.0	19.3	Complied

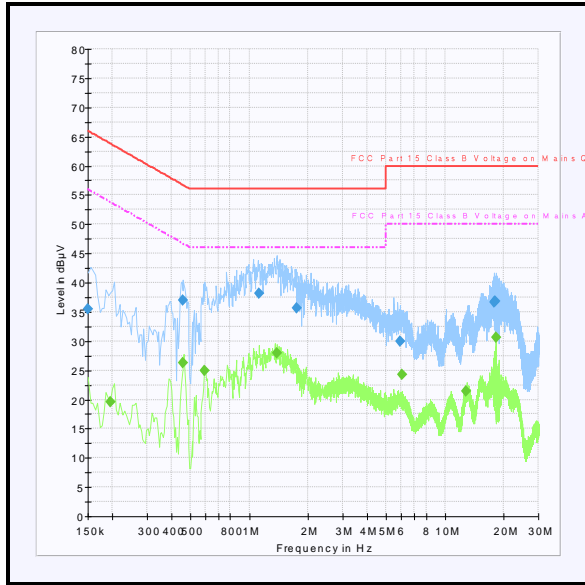
**Transmitter AC Conducted Spurious Emissions (continued)****Results: Quasi Peak**

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
0.465	Neutral	33.4	56.6	23.2	Complied
1.167	Neutral	33.1	56.0	22.9	Complied
2.971	Neutral	27.9	56.0	28.1	Complied
17.857	Neutral	32.4	60.0	27.6	Complied

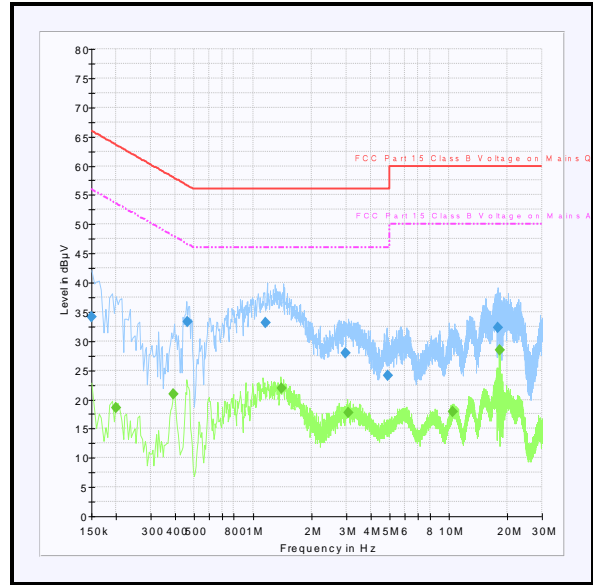
**Results: Average**

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
0.393	Neutral	20.9	48.0	27.1	Complied
1.396	Neutral	22.0	46.0	24.0	Complied
3.057	Neutral	17.7	46.0	28.3	Complied
18.163	Neutral	28.4	50.0	21.6	Complied

**Transmitter AC Conducted Spurious Emissions (continued)**



**Live**



**Neutral**

Note: This plot is a pre-scan 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 Fundamental Field Strength****Test Summary:**

<b>Test Engineer:</b>	Andrew Edwards	<b>Test Date:</b>	27 June 2013
<b>Test Sample IMEI:</b>	004402451217271		

<b>FCC Reference:</b>	Part 15.249(a)(e)
<b>Test Method Used:</b>	As detailed in ANSI C63.10 Section 6.6

**Environmental Conditions:**

<b>Temperature (°C):</b>	24
<b>Relative Humidity (%):</b>	37

**Note(s):**

1. The final measured value in the tables below incorporates the calibrated antenna factor and cable loss.
2. The average level was obtained by subtracting the duty cycle correction (26.0 dB) from the peak level measured as the EUT was not constantly transmitting.

**Results: Bottom Channel / Peak**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
2402	Horizontal	92.1	114.0	21.9	Complied

**Results: Bottom Channel / Average**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
2402	Horizontal	66.1	94.0	27.9	Complied

**Results: Middle Channel / Peak**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
2441	Vertical	93.5	114.0	20.5	Complied

**Results: Middle Channel / Average**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
2441	Horizontal	67.5	94.0	26.5	Complied

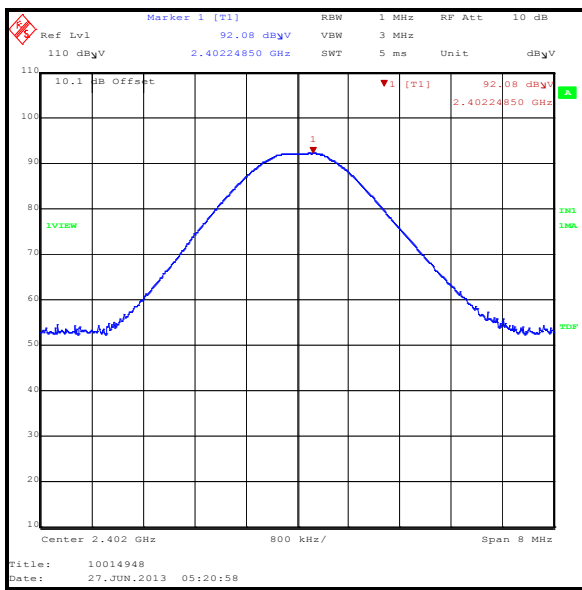
**Transmitter Fundamental Field Strength (continued)**

**Results: Top Channel / Peak**

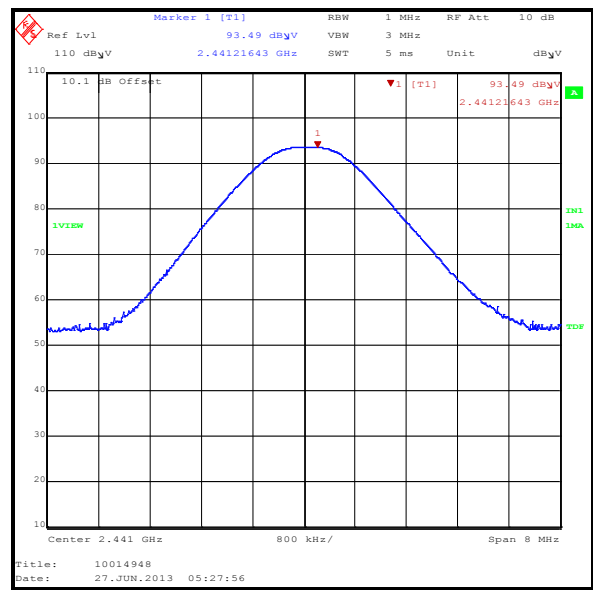
Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
2480	Horizontal	85.1	114.0	28.9	Complied

**Results: Top Channel / Average**

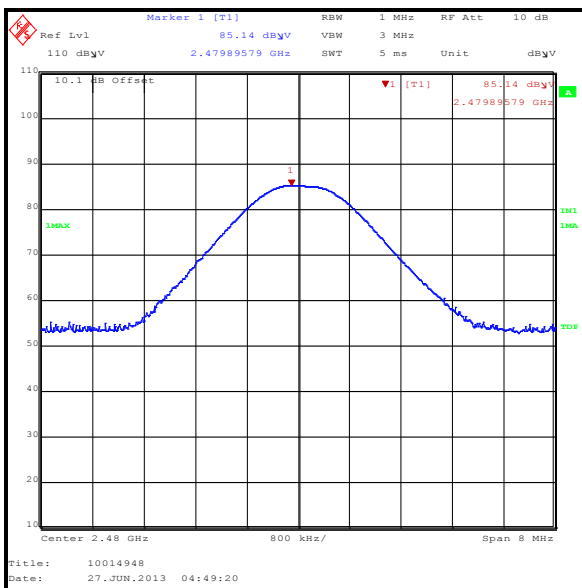
Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
2480	Horizontal	59.1	94.0	34.9	Complied



**Bottom Channel**



**Middle Channel**



**Top Channel**

**Transmitter Fundamental Field Strength (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>
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



**5.2.3. Transmitter Duty Cycle****Test Summary:**

<b>Test Engineer:</b>	Andrew Edwards	<b>Test Date:</b>	27 June 2013
<b>Test Sample IMEI:</b>	004402451217271		

<b>FCC Reference:</b>	Part 15.35(c)
<b>Test Method Used:</b>	As detailed in ANSI C63.10 Section 7.5

**Environmental Conditions:**

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

**Note(s):**

- 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  $20 \log(\text{On Time} / [\text{Period or } 100 \text{ ms whichever is the lesser}]$

$$\text{Duty cycle} = 20 \text{ Log } ((190.381 \mu\text{s}) / (3.758 \text{ ms}))$$

$$\text{Duty cycle} = 20 \text{ Log } (0.05)$$

$$\text{Duty cycle} = 26 \text{ dB}$$

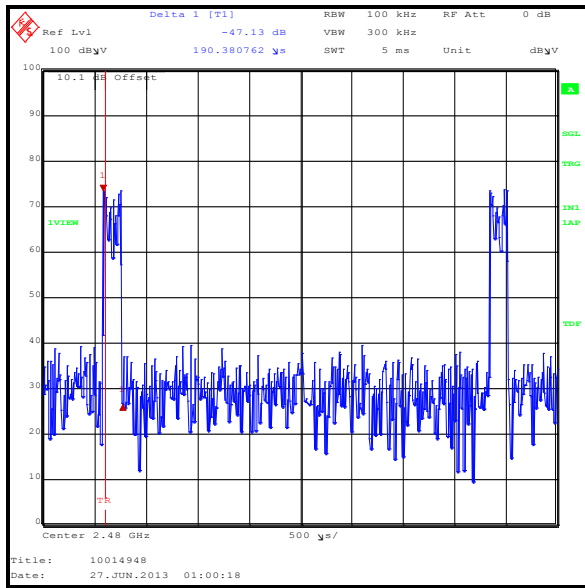
- The measurement was performed using a radiated sample in a fully anechoic chamber (Asset Number K0002) at a distance of 3 metres.

**Results:**

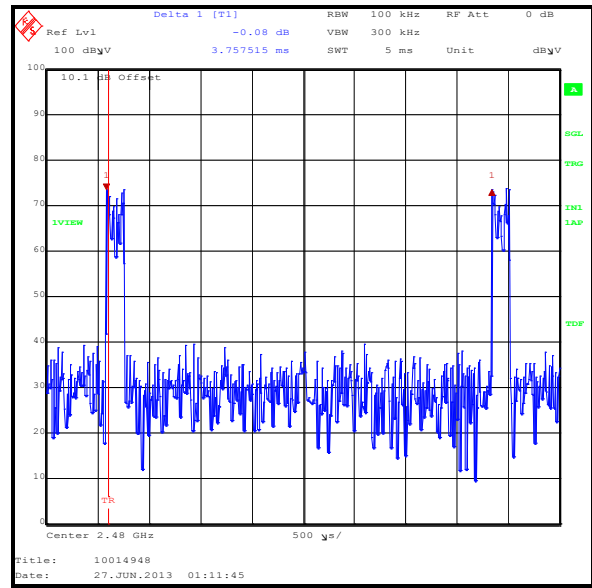
<b>Pulse Duration (<math>\mu\text{s}</math>)</b>	<b>Duty Cycle (dB)</b>
190.381	26.0

<b>Period (ms)</b>
3.758

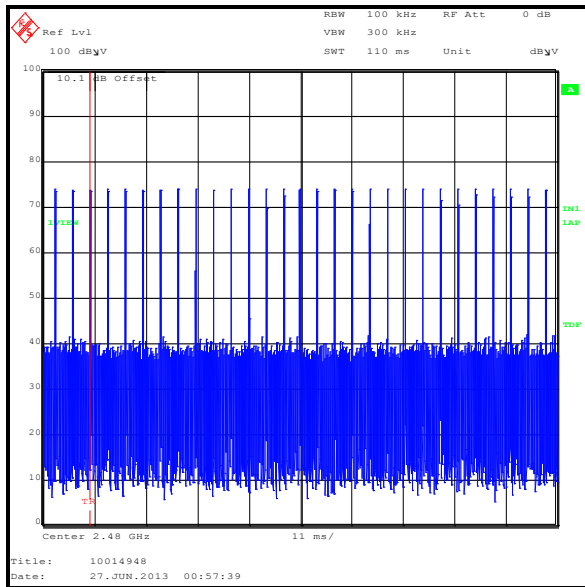
**Transmitter Duty Cycle (continued)**



**Tx on**



**Tx on+off**



**Tx on 100 ms**

**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

**5.2.4. Transmitter 20 dB Bandwidth****Test Summary:**

<b>Test Engineer:</b>	Nick Steele	<b>Test Date:</b>	05 July 2013
<b>Test Sample IMEI:</b>	004402451215432		

<b>FCC Reference:</b>	Part 2.1049
<b>Test Method Used:</b>	As detailed in ANSI C63.10 Section 6.9.1

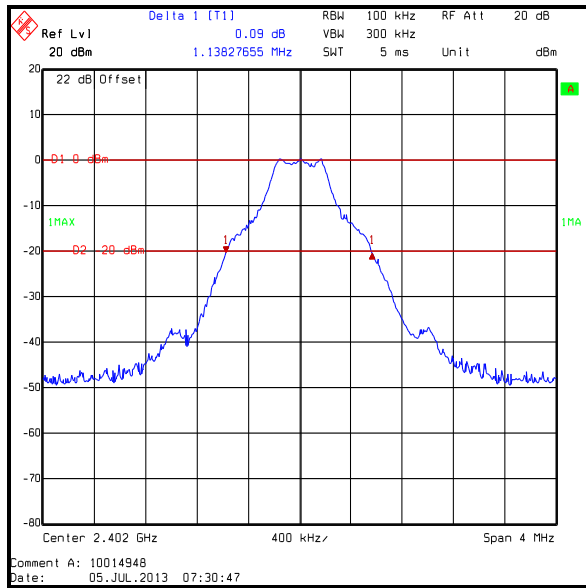
**Environmental Conditions:**

<b>Temperature (°C):</b>	21
<b>Relative Humidity (%):</b>	40

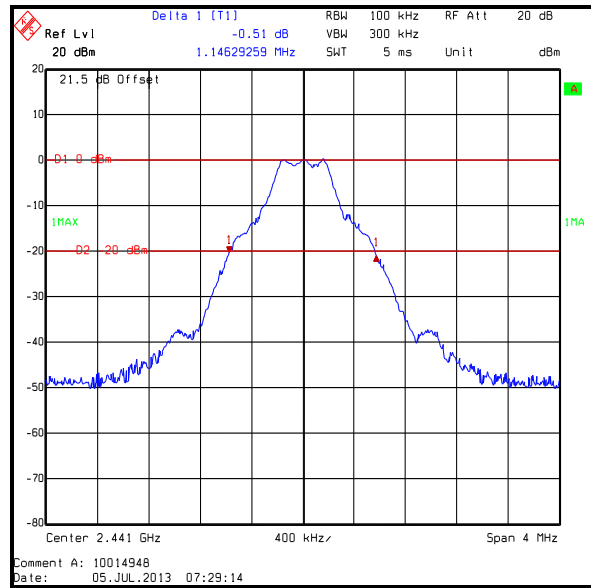
**Results:**

<b>Channel</b>	<b>20dB Bandwidth (kHz)</b>
Bottom	1138.277
Middle	1146.293
Top	1154.309

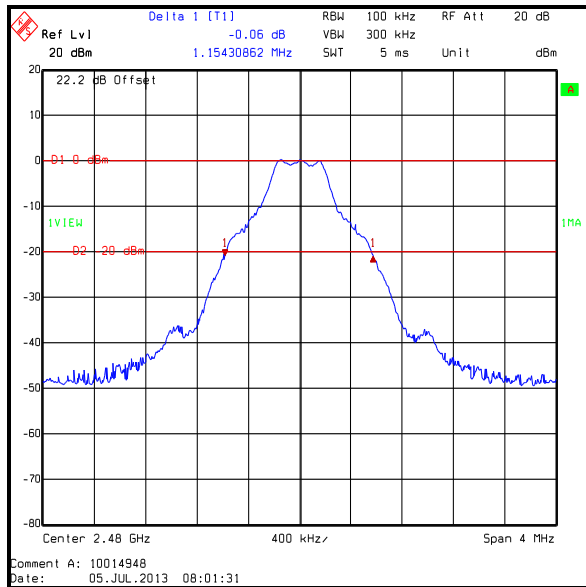
**Transmitter 20 dB Bandwidth (continued)**



**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
M127	Spectrum Analyser	Rohde & Schwarz	FSEB 30	842 659/016	13 Aug 2013	12
A1999	Attenuator	Huber + Suhner	6820.17.B	07101	05 Apr 2014	12
M1269	Multimeter	Fluke	179	90250210	30 Jul 2013	12
S0520	DC Power Supply	GW Instek	GPC-3030	E835141	Calibrated before use	-

**5.2.5. Transmitter Radiated Emissions****Test Summary:**

<b>Test Engineer:</b>	Andrew Edwards	<b>Test Date:</b>	26 June 2013
<b>Test Sample IMEI:</b>	004402451217271		

<b>FCC Reference:</b>	Parts 15.249(d)(e) & 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>	23
<b>Relative Humidity (%):</b>	47

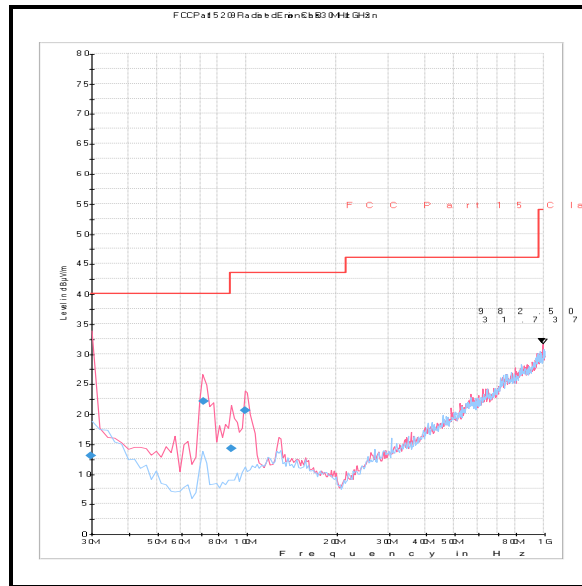
**Note(s):**

1. The final measured value, for the given emission, in the table above 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 plot 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: Quasi-Peak**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
982.505	Vertical	31.7	54.0	22.3	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	18 Apr 2014	12
A1834	Attenuator	Hewlett Packard	8491B	10444	27 Jan 2014	12
G0543	Amplifier	Sonoma	310N	230801	04 Jul 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>	Andrew Edwards	<b>Test Date:</b>	28 June 2013
<b>Test Sample IMEI:</b>	004402451217271		

<b>FCC Reference:</b>	Parts 15.249(d)(e) & 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>	25
<b>Relative Humidity (%):</b>	41

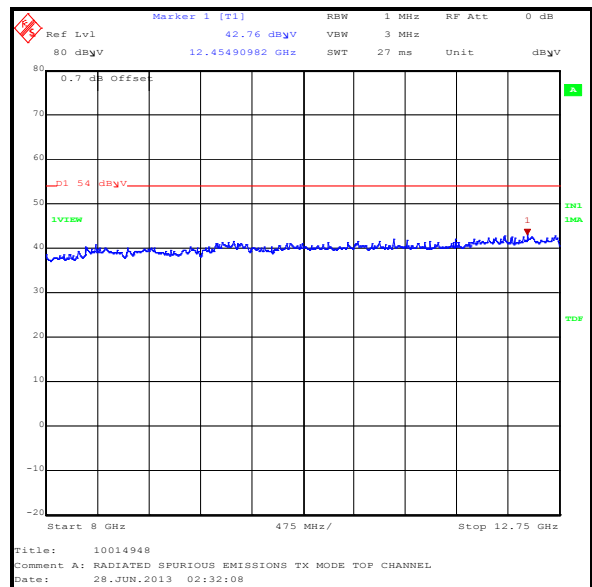
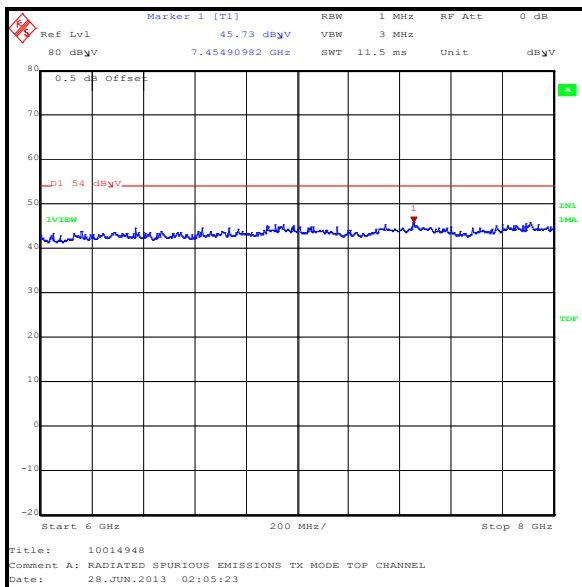
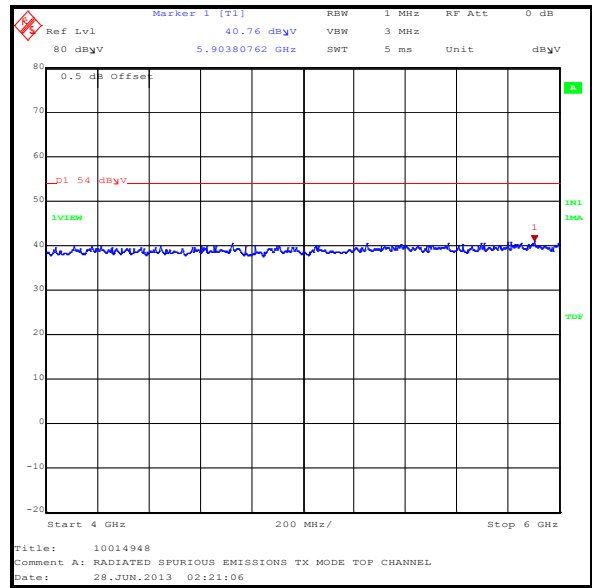
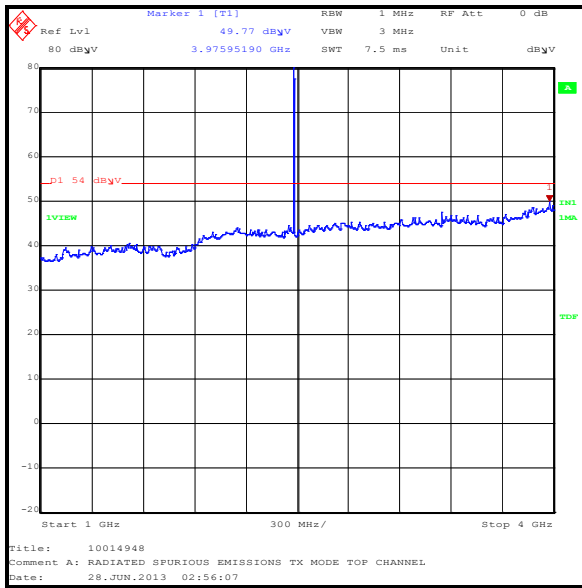
**Note(s):**

1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss
2. The emission shown on the 1 GHz to 4 GHz plot is the EUT fundamental at 2480 MHz.
3. 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.
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: Top Channel**

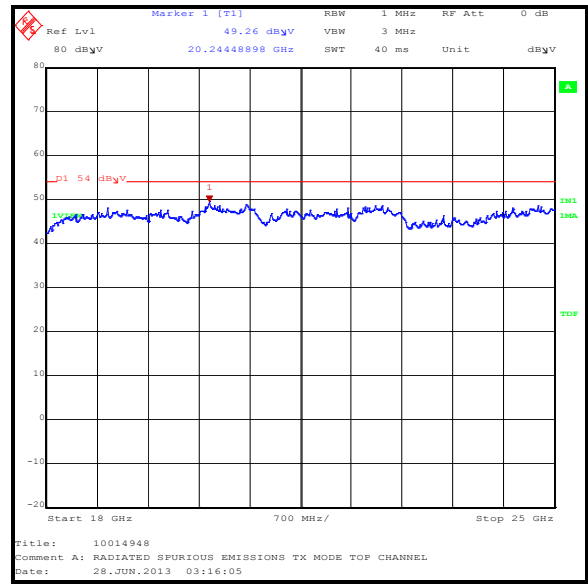
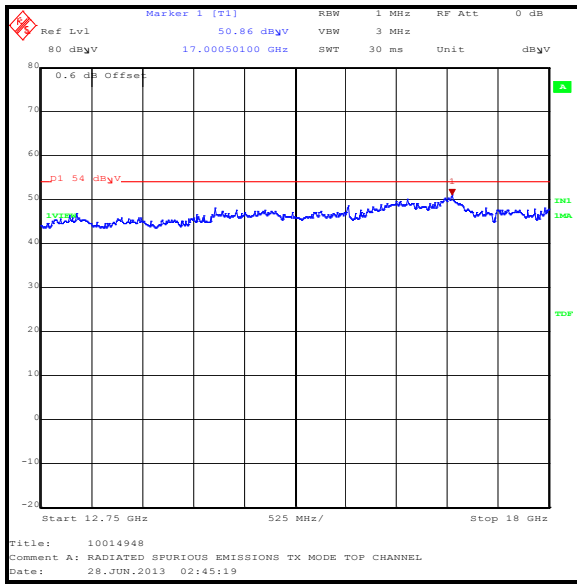
<b>Frequency (MHz)</b>	<b>Antenna Polarity</b>	<b>Peak Level (dB<math>\mu</math>V/m)</b>	<b>Average Limit (dB<math>\mu</math>V/m)</b>	<b>Margin (dB)</b>	<b>Result</b>
17000.501	Vertical	50.9	54.0	3.1	Complied

### 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	Atlan TecRF	AFH-03000	090424010	19 Apr 2014	12
A2130	High Pass Filter	Atlan TecRF	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 Handelspunkt	30.5015.13	Not stated	24 May 2014	12

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

<b>Test Engineer:</b>	Andrew Edwards	<b>Test Date:</b>	27 June 2013
<b>Test Sample IMEI:</b>	004402451217271		

<b>FCC Reference:</b>	Parts 15.249(d) & 15.209
<b>Test Method Used:</b>	As detailed in ANSI C63.10 Section 6.9.2

**Environmental Conditions:**

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

**Note(s):**

1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss.
2. The average level was obtained by subtracting the duty cycle correction (26.0 dB) from the peak level measured.
3. \*-20 dBc

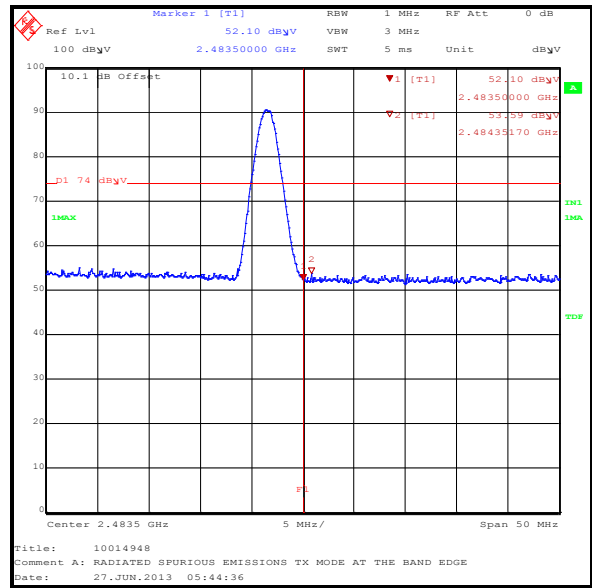
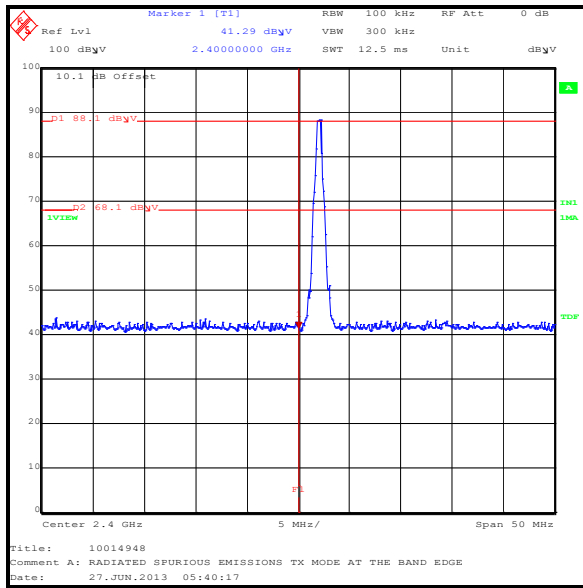
**Results: Peak**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
2400	Horizontal	41.3	68.1*	26.8	Complied
2483.5	Vertical	52.1	74.0	21.9	Complied
2484.352	Vertical	53.6	74.0	20.4	Complied

**Results: Average**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
2483.5	Vertical	26.1	54.0	27.9	Complied

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



**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 Handelpunkt	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".

<b>Measurement Type</b>	<b>Range</b>	<b>Confidence Level (%)</b>	<b>Calculated Uncertainty</b>
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95%	±4.69 dB
Fundamental Field Strength	2.4 GHz to 2.4835 GHz	95%	±2.94 dB
Occupied 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 25 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	-	-	Type No. added to front page
3.0	-	-	Model No. removed