TEST REPORT

Test Report No. : UL-RPT-RP10014935JD04A

Manufacturer	:	Sony Mobile Communications AB
Type No.	:	PM-0440-BV
FCC ID	:	PY7PM-0440
IC Certification No.	:	4170B-PM0440
Test Standard(s)	:	FCC Parts 15.107 & 15.109 & ICES – 003 Issue 5

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.

Date of Issue: 31 July 2013

Checked by:

Steven White
WiSE Project Lead

Issued by :

pp

John Newell
Group Quality Manager, WiSE
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0644

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

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

2. Summary of Testing

2.1. General Information

Specification Reference:	47CFR15.107 and 47CFR15.109
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart B (Unintentional Radiators) – Sections 15.107 and 15.109
Specification Reference:	ICES-003 Issue 5
Specification Title:	Information Technology Equipment (ITE) – Limits and methods of measurement
Site Registration FCC:	209735
Site Registration IC:	3245B-2
Location of Testing:	UL VS LTD, Unit 3 Horizon, Wade Road, Kingsland Business Park, Basingstoke, Hampshire, RG24 8AH, United Kingdom
Test Dates:	16 July 2013 to 29 July 2013

2.2. Summary of Test Results

FCC (47CFR) / ICE003	Measurement	Result
Part 15.107(a) / 6.1	Receiver/Idle Mode AC Conducted Spurious Emissions	✓
Part 15.109 / 6.2	Receiver/Idle Mode Radiated Spurious Emissions	✓

Key to Results

✓ = Complied ✗ = Did not comply

2.3. Methods and Procedures

Reference:	ANSI C63.4 (2009)
Title:	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.

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)

Brand Name:	Sony
Type Number:	PM-0440-BV
IMEI:	004402540812223
Serial Number:	CB5124UMBE
Hardware Version Number:	AP2
Software Version Number:	14.1.H.0.239
FCC ID:	PY7PM-0440
IC Certification No:	4170B-PM0440

Brand Name:	Sony
Description:	AC Charger
Model Name or Number:	EP880

Brand Name:	Monoprice
Description:	MHL cable
Model Name or Number:	LL84201-F4

Brand Name:	Sony
Description:	MHL Adaptor
Model Name or Number:	IM750

Brand Name:	Sony
Description:	USB Cable
Model Name or Number:	EC801

Brand Name:	Sony
Description:	PHF
Model Name or Number:	MH750

Brand Name:	Sony
Description:	Magnetic Plug
Model Name or Number:	EC21

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 band 1/5 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

Type of Radio Device:	Transceiver	
Power Supply Requirement(s):	Nominal	120 VAC 60 Hz

3.5. Support Equipment

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

Brand Name:	Not stated
Description:	2 GB Micro SD Card
Model Name or Number:	Not marked or stated
Serial Number:	Not marked or stated

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

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

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

- Receiver/Idle mode.

4.2. Configuration and Peripherals

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

- Config 1- Handset with the AC charger, USB Cable, MHL adaptor, MHL Cable, SD card and PHF.
- Config 2 – Handset with the AC charger, magnetic Plug, SD card and PHF.
- Receiver/Idle mode radiated spurious emissions pre-scans were performed below 1 GHz in both configurations with configuration 2 providing worst case results. Configuration 2 was then used for measurements above 1 GHz.
- AC conducted emissions pre-scans were also performed in both configurations, with configuration 2 providing worst case results and being used for final measurements.
- During testing the handset display was set to it maximum brightness, all power saving settings were disabled and the MHL adaptor/PHF and handset were exercised by playing an mp4 file.

  The radiated sample with IMEI 004402540812223 was used for all 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. Receiver/Idle Mode AC Conducted Spurious Emissions

Test Engineer:	Nick Jones	**Test Date:**	18th July 2013
Test Sample IMEI:	004402540812223		

FCC/IC Reference:	Part 15.107 / ICES 003 Section 6.1
Test Method Used:	ANSI C63.4-2009

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	52

Results: Live / Quasi Peak

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.150	Live	46.3	66.0	19.7	Complied
0.159	Live	45.4	65.5	20.1	Complied
0.177	Live	43.0	64.6	21.6	Complied
0.910	Live	36.4	56.0	19.6	Complied
1.302	Live	38.7	56.0	17.3	Complied
1.936	Live	33.3	56.0	22.7	Complied
2.188	Live	32.7	56.0	23.3	Complied
2.485	Live	32.1	56.0	23.9	Complied
2.818	Live	32.6	56.0	23.4	Complied

Results: Live / Average

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
1.230	Live	27.5	46.0	18.5	Complied
1.369	Live	27.1	46.0	18.9	Complied
18.091	Live	27.8	50.0	22.2	Complied

Receiver/Idle Mode AC Conducted Spurious Emissions (continued)

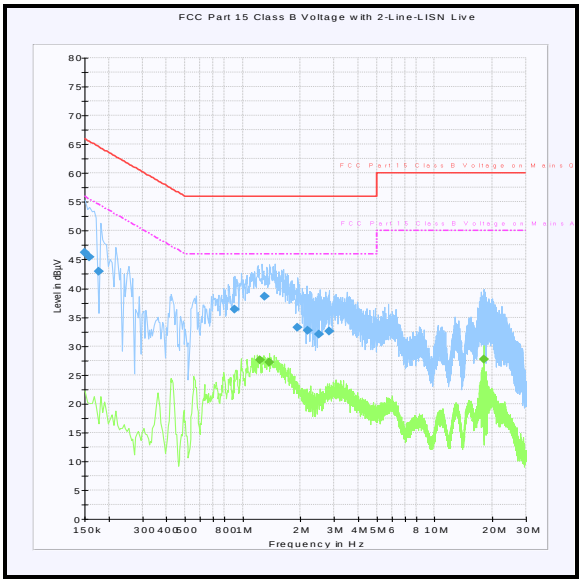
Results: Neutral / Quasi Peak

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.150	Neutral	47.8	66.0	18.2	Complied
0.483	Neutral	32.4	56.3	23.9	Complied
0.951	Neutral	26.3	56.0	29.7	Complied
1.252	Neutral	27.0	56.0	29.0	Complied

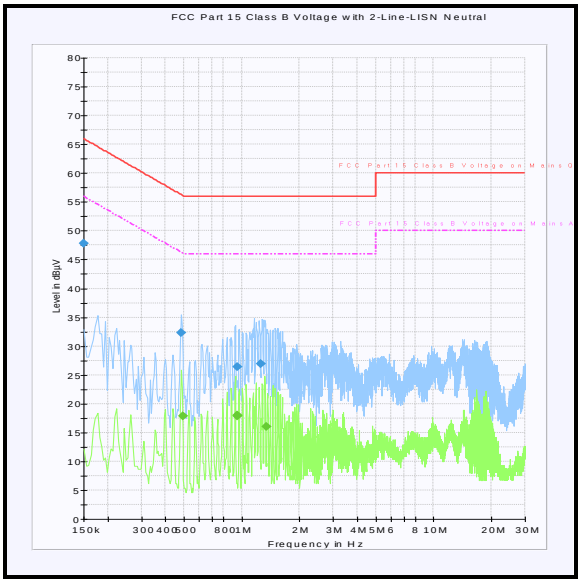
Results: Neutral / Average

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.492	Neutral	17.8	46.1	28.3	Complied
0.951	Neutral	17.9	46.0	28.1	Complied
0.951	Neutral	18.1	46.0	27.9	Complied
1.342	Neutral	16.0	46.0	30.0	Complied

Receiver/Idle Mode 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 2014	12
A1830	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100668	19 Feb 2014	12
MI263	EMI Test Receiver	Rohde & Schwarz	ESIB7	100265	09 Aug 2014	12

5.2.2. Receiver/Idle Mode Radiated Spurious Emissions

Test Summary:

Test Engineer:	Ahmed Ali	**Test Date:**	29th July 2013
Test Sample IMEI:	004402540812223		

FCC/ IC Reference:	Part 15.109 / ICES 003 Section 6.2
Test Method Used:	ANSI C63.4-2009
Frequency Range:	30 MHz to 1000 MHz

Environmental Conditions:

Temperature (°C):	22.6
Relative Humidity (%):	40

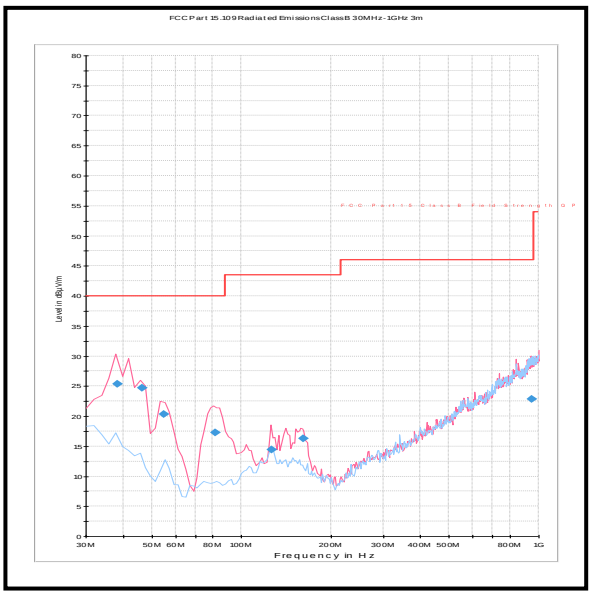
Note(s):

1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
2. Measurements 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 (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
38.347	Vertical	25.3	40.0	14.7	Complied
46.258	Vertical	24.7	40.0	15.3	Complied
54.938	Vertical	20.3	40.0	19.7	Complied
81.565	Vertical	17.3	40.0	22.7	Complied
126.428	Vertical	14.4	43.5	29.1	Complied
161.495	Vertical	16.3	43.5	27.2	Complied
945.815	Vertical	22.9	46.0	23.1	Complied

Receiver/Idle Mode Radiated Spurious Emissions (continued)



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

Receiver/Idle Mode Radiated Spurious Emissions (continued)

Test Summary:

Test Engineer:	Nick Jones	**Test Date:**	16th July 2013
Test Sample IMEI:	004402540812223		

FCC Reference:	Part 15.109
Test Method Used:	As detailed in ANSI C63.4 Section 8
Frequency Range:	1 GHz to 5 GHz

Environmental Conditions:

Temperature (°C):	22.6
Relative Humidity (%):	40

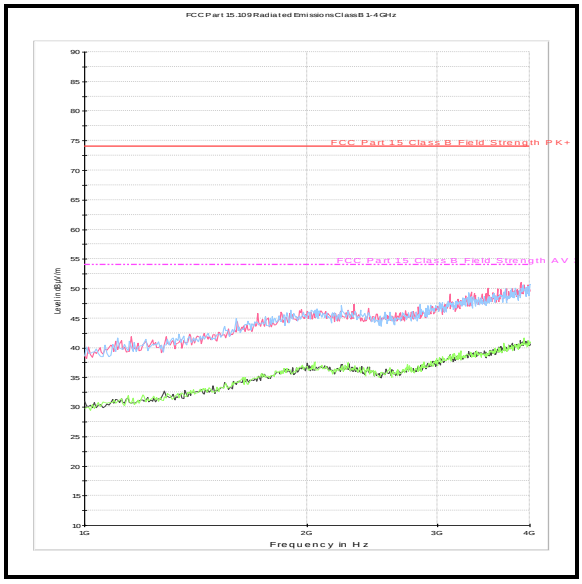
Note(s):

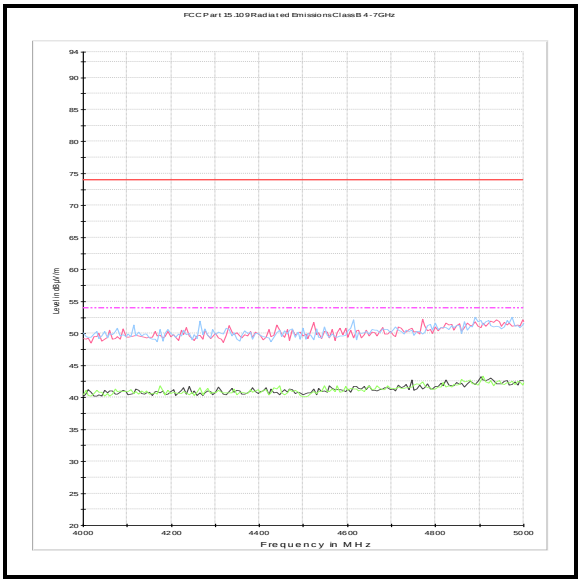
1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
2. No spurious emissions were detected above the noise floor of the measuring receiver therefore the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above. The peak level was compared to the average limit as opposed to being compared to the peak limit.
3. Measurements 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 (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
4769.539	Vertical	52.3	54.0	1.7	Complied

Receiver/Idle Mode Radiated Spurious 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 2014	12
G0543	Amplifier	Sonoma	310N	230801	05 Oct 2013	12
A1834	Attenuator	Hewlett Packard	8491B	10444	27 Jan 2014	12
A490	Antenna	Chase	CBL6111A	1590	18 Apr 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
Radiated Spurious Emissions	30 MHz to 1 GHz	95%	±5.65 dB
Radiated Spurious Emissions	1 GHz to 5 GHz	95%	±4.37 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