

# Equipment List, Electrical

Applicable for S500, W580

## Contents

<b>1</b>	<b>General .....</b>	<b>2</b>
<b>2</b>	<b>Column Definitions.....</b>	<b>2</b>
	Description Columns .....	2
	Process Columns .....	2
<b>3</b>	<b>Repair Equipment.....</b>	<b>3</b>
3.1	Repair Equipment orderable from Sony Ericsson.....	3
3.2	Repair Equipment that should be obtained from local Suppliers .....	7
3.3	Lead-free Solder Equipment.....	18
<b>4</b>	<b>Revision History .....</b>	<b>21</b>

## 1 General

This document describes the equipment needed, in addition to the equipment listed in the Mechanical Equipment List, to upgrade the applicable product's software, functional test and to repair the product(s) at an Electrical Repair Level. The first section is equipment that can be purchased from a Sony Ericsson Parts and Tools warehouse. The second section is equipment that must be purchased from other vendors.

## 2 Column Definitions

### Description Columns

- Description = The name of the equipment.
- Part Number = The Sony Ericsson part number to use when ordering from a Sony Ericsson Parts and Tools warehouse.
- Comments = Additional information that helps to specify or clarify the equipment.
- Picture

### Process Columns

These columns show which processes use the equipment. An "X" in a column indicates that the equipment must be used, and a "Z" in a column indicates that the use of that equipment is optional.

Customization: Equipment necessary to perform a Customization/Activation.

Go/No Go test: Equipment necessary for Go/No Go testing.

Calibration with SERP: Equipment necessary to perform a calibration with SERP.



**NOTE: Calibration can only be done by authorized repair centers.**




Repair: Equipment necessary for replacing soldered components.




### 3 Repair Equipment




Some of the required equipment will be orderable from Sony Ericsson and some equipment has to be sourced locally. The following sections are structured based on whether equipment is obtained from Sony Ericsson or from a local supplier.

#### 3.1 Repair Equipment orderable from Sony Ericsson

				Customization	Go/No Go Test	Calibration in SERP	Repair
Description	Part Number	Comments	Picture				
Sony Ericsson Programming Interface (SEPI)	LTN 214 1484	The Sony Ericsson Programming Interface (SEPI) is used in conjunction with the SEPI interface cable, the USB computer cable and battery charger to perform calibration on this product.				X	
Sony Ericsson Programming Interface (SEPI) cable	KRY 101 1119/1	A battery charger needs to be connected to this cable during calibration.				X	

				Customization	Go/No Go Test	Calibration in SERP	Repair
Description	Part Number	Comments	Picture				
RF Cable	RPM 119 855				X	X	
Battery Eliminator	1208-5627	If using the Battery Eliminator to power the handset during the GNG Test or Calibration routine you must use a high quality DC source.		Z	Z	Z	
Rework Fixture for PCB	LTD 260 273	Used to hold the PCB during repair.					X

				Customization	Go/No Go Test	Calibration in SERP	Repair
Description	Part Number	Comments	Picture				
RF Probe	SXA 109 7057	Used together with the RF Holder and RF Cable.			Z	X	
RF Holder	NTZ 112 580	Used together with RF probe and RF cable.			Z	X	
USB Activation Dongle	NTZ 112 1071	Used for Activation in EMMA III		X			

				Customization	Go/No Go Test	Calibration in SERP	Repair
Description	Part Number	Comments	Picture				
DCU-60/USB Cable	KRY 101 1413	This cable is needed for loading ITP software and customization/activation.		X			
USB Smartcard Reader and CD	LZY 213 1191	This USB Smartcard Reader provides the means for reading a Service Card. This is required for Activation and Flashing offline in EMMA III.		X			
Service Card	LZY 213 595	The Service Card is required for Activation and Flashing offline in EMMA III		X			

### 3.2 Repair Equipment that should be obtained from local Suppliers

		Customization	Go/No Go Test	Calibration in SERP	Repair
Description	Comments				
<p>RF Shield Package</p> <p><b>Rohde&amp;Schwarz RF Shield Package</b></p> <ul style="list-style-type: none"> <li>CMU-Z10 – Antenna Coupler (Partnr: 1150.0801.10)</li> <li>CMU-Z11 – RF Shield Cover (Partnr. 1150.1008.02)</li> </ul>	<p>Using an RF shield package is one of the options for testing the applicable product(s). Testing of the applicable product(s) can also be performed by using the combination of an RF Probe and an RF cable.</p> <p><i>Spare parts for mobile phone fixation for R&amp;S CMU-Z10 are available for purchase from Rohde&amp;Schwarz:</i></p> <ul style="list-style-type: none"> <li>Grid Positioning Plate – 1158.9789.00</li> <li>L-shaped bracket – 1158.9808.00</li> <li>Stabilizing pieces – 1158.9820.00</li> </ul> <p><b>NOTE: The Rohde &amp; Schwarz package will require the use of a precision N-type male to SMA female RF adapter to mate with the SEMC RF cable.</b></p> <p><b>NOTE: If you are using a different RF Shield Package than Rohde &amp; Schwartz, special attenuation factors for Go/No-Go test are required.</b></p>		Z		

		Customization	Go/No Go Test	Calibration in SERP	Repair
Description	Comments				
RF adapter for RF shield box <ul style="list-style-type: none"> <li>The adapter for a Rohde &amp; Schwarz Shield box must be a <b>precision</b> N-type male to SMA female adapter.</li> </ul>	This adapter is used to connect the RF shield box to the RF cable and is only required if a shield package is going to be used for testing.  Recommended source: <ul style="list-style-type: none"> <li>Pasternack Enterprises – (949) 261-1920 or <a href="http://www.pasternack.com">www.pasternack.com</a></li> </ul> Part number: PE9430		Z		
Battery Charger (Standard SEMC charger applicable for S500)	The battery charger needs to be connected to the Sony Ericsson Programming Interface Cable during calibration. Also used for Charger Test.			X	
USB Computer Cable	Type A to Type B USB cable.  This is part of the hardware needed for performing calibration. This cable connects the computer to the SEPI.			X	



		Customization	Go/No Go Test	Calibration in SERP	Repair
Description	Comments				
<p>Test and Calibration Instrument (Chose one of the following.)</p> <p><b>Anritsu MT 8801B</b> Required Components:</p> <ul style="list-style-type: none"> <li>• MT8801B (Radio Com. Analyser)</li> <li>• MT8801B-02 (SG-local)</li> <li>• MX880115A (GSM Measurement Software)</li> </ul> <p>Required Software:</p> <ul style="list-style-type: none"> <li>• Main 4.02</li> <li>• System 4.05</li> </ul>	<p>If it is preferred to use a test instrument for GNG that is not specified, the test script must be written according to 2/1524-2/FEA 209 544/603 and approval of the test script <b><u>must</u></b> be obtained from Sony Ericsson.</p> <p>Note: This instrument does not support the calibration routine for the S500 or W580.</p> <p>Note: It is strongly recommended that the instrument vendor be contacted before ordering this setup to ensure that the options stated are still valid or that no part numbers have changed.</p>		X		
<p><b>Anritsu MT 8801C</b> Required Components:</p> <ul style="list-style-type: none"> <li>• MT8801C (Radio Com. Analyser)</li> <li>• MX880115A (GSM Measurement Software)</li> </ul> <p>Required Software:</p> <ul style="list-style-type: none"> <li>• Main 4.02</li> <li>• System 4.05</li> </ul>	<p>Note: This instrument does not support the calibration routine for the S500 or W580.</p> <p>Note: It is strongly recommended that the instrument vendor be contacted before ordering this setup to ensure that the options stated are still valid or that no part numbers have changed.</p>		X		

		Customization	Go/No Go Test	Calibration in SERP	Repair
Description	Comments				
<b>Anritsu MT 8802A</b> Required Components: <ul style="list-style-type: none"> <li>• MT8802A (Radio Com. Analyser)</li> <li>• MX880215A (GSM Measurement Software)</li> </ul> Required Software: <ul style="list-style-type: none"> <li>• Main 1.11</li> <li>• System 2.07</li> </ul>	<p>Note: This instrument does not support the calibration routine for the S500 or W580.</p> <p>Note: It is strongly recommended that the instrument vendor be contacted before ordering this setup to ensure that the options stated are still valid or that no part numbers have changed.</p>		X		
<b>Agilent 8960</b> Required Components: <ul style="list-style-type: none"> <li>• E5515C (8960 Series 10 Mainframe)</li> <li>• Option E5515C-002 (2<sup>nd</sup> RF source)</li> </ul> Required Software <ul style="list-style-type: none"> <li>• E1968A-101 GSM and E1968A-103 EGPRS Test Application or</li> <li>• E1968A-202 GSM/GPRS/EGPRS Test Application</li> </ul>	<p>Some older versions of the 8960 Series 10 mainframes may need to have a hardware upgrade in order to have EDGE capabilities. See your local Agilent representative for details</p> <p>E1968A-103 is not necessary for Go/No Go testing only Calibration.</p> <p>Note: It is strongly recommended that the instrument vendor be contacted before ordering this setup to ensure that the options stated are still valid or that no part numbers have changed.</p>		X	X	

		Customization	Go/No Go Test	Calibration in SERP	Repair
Description	Comments				
<b>Willtek 4403/4405/4407</b>  Required Components: <ul style="list-style-type: none"> <li>• Option 4460 (GSM System)</li> <li>• Option 4468 (EDGE System)</li> <li>• Option 4477 (OCXO)</li> <li>• Firmware 4.24 or greater</li> <li>• The 4403 instrument needs to have option # M897163 installed.</li> </ul>	<p>Note: It is strongly recommended that the instrument vendor be contacted before ordering this setup to ensure that the options stated are still valid or that no part numbers have changed.</p>		X	X	
<b>Willtek 4202</b> Required Components: <ul style="list-style-type: none"> <li>• M101302 - 4202S Mainframe</li> <li>• M 248 418 - GSM 850 option</li> <li>• Firmware 5.50 or greater</li> </ul>	<p>This instrument is only capable of running a stand alone Go/No Go test. (SERP not required.)</p> <p>Note: This instrument does not support the calibration routine.</p> <p>Note: It is strongly recommended that the instrument vendor be contacted before ordering this setup to ensure that the options stated are still valid or that no part numbers have changed.</p>		X		

		Customization	Go/No Go Test	Calibration in SERP	Repair
Description	Comments				
<b>Rohde &amp; Schwarz CMU200</b> Required Components <ul style="list-style-type: none"> <li>• CMU200 mainframe (Base Unit)</li> <li>• Options CMU-B11, CMU-B21, CMU-B52, CMU-B54</li> <li>• Required SW package: CMU-PK20</li> </ul>	<p><b>Note:</b> It is strongly recommended that the instrument vendor be contacted before ordering this setup to ensure that the options stated are still valid or that no part numbers have changed.</p>		X	X	
Power Supply (w/digital readout)  <p><b>NOTE!</b>            If using the Power Supply in conjunction with the Battery Eliminator (Dummy Battery) to power the phone during the GNG test or Calibration routine a high quality DC source that meets the following requirements <u>must</u> be used.</p>	Device Requirements: <ul style="list-style-type: none"> <li>• Output Voltage: 0-5 volt minimum.</li> <li>• Output Current: 0-2 amps minimum.</li> <li>• Transient response time: &lt; 100 <math>\mu</math>s</li> </ul> Some examples of Power Supplies that meet these requirements are as follows: <ul style="list-style-type: none"> <li>• Agilent 66xx ser</li> <li>• Agilent 663x series</li> </ul>	Z	Z	Z	


		Customization	Go/No Go Test	Calibration in SERP	Repair
Description	Comments				
Small Convection (Hot Air) Device	Device Requirements: <ul style="list-style-type: none"> <li>The device should allow variable adjustment over a temperature range.</li> <li>The device should be capable of reaching an upper temperature of 426.7°C (800°F) or more.</li> </ul> The range of airflow the device is capable of generating should fall under 20 litre/minute.				X
Large Convection (Hot Air) Device	Use this device for large parts, shield cans, and BGA-type components. <ul style="list-style-type: none"> <li>The device should allow variable temperature adjustment and be capable of reaching an upper temperature of 426.7°C (800°F) or more.</li> </ul> The range of airflow the device is capable of generating should be above 20 litre/minute.				X
Nozzles for Large Convection (Hot Air) Device	NOTE: Only necessary if you have a large convection device.				X
Temperature Probes (Thermocouples)	Used to measure temperatures on the board when replacing parts with the Large Convection Device or creating temperature profiles.				X
Digital Multi-meter	Used for troubleshooting failures.				Z
Microscope	Minimum magnification required is 10x.				X

		Customization	Go/No Go Test	Calibration in SERP	Repair
Description	Comments				
GPIB Card	<p>National Instruments or Keithley</p> <p>NOTES:</p> <ul style="list-style-type: none"> <li>Drivers are required and should be supplied with a card.</li> </ul> <p>A GPIB card is not required if testing is being performed using the Willtek 420x instrument.</p>		Z	X	
GPIB Cable	This cable is only required if a GPIB card is used.		Z	X	
Power cable – Red  <b>NOTE: Only necessary if using the Battery Eliminator (Dummy Battery).</b>	<p>Cable Requirements:</p> <ul style="list-style-type: none"> <li>Minimum cross sectional area of conductor = 1.2mm<sup>2</sup></li> <li>Maximum length = 1.5 m</li> <li>One end of cable must have a male banana-type connector to be able to interface with the battery eliminator.</li> </ul> <p>The other end of the cable needs whatever connection is necessary to connect to the power supply that you have.</p>	Z	Z	Z	

		Customization	Go/No Go Test	Calibration in SERP	Repair
Description	Comments				
Power cable – Black  <b>NOTE: Only necessary if using the Battery Eliminator (Dummy Battery).</b>	Cable Requirements: <ul style="list-style-type: none"> <li>• Minimum cross sectional area of conductor = 1.2mm<sup>2</sup></li> <li>• Maximum length = 1.5 m</li> <li>• One end of cable must have a male banana-type connector to be able to interface with the battery eliminator.</li> </ul> The other end of the cable needs whatever connection is necessary to connect to the power supply that you have.	Z	Z	Z	
Component baking oven	Temperature requirements: 125°C +5°C/-0°C Required for drying moisture sensitive components.  Below are links to several companies that sell convection ovens. <a href="http://www.cascadetek.com/forcedlist.php">http://www.cascadetek.com/forcedlist.php</a>  <a href="http://www.wisoven.com/lab1.htm">http://www.wisoven.com/lab1.htm</a>  <a href="http://www.shellab.com/products.html">http://www.shellab.com/products.html</a>  <a href="http://www.terrauniversal.com/products/tempcontrol/ovens/imperiaivmechcon.php">http://www.terrauniversal.com/products/tempcontrol/ovens/imperiaivmechcon.php</a>  <a href="http://www.labsynergy.com/products_laboratoryovens.asp?keyword=*laboratoryovens">http://www.labsynergy.com/products_laboratoryovens.asp?keyword=*laboratoryovens</a>				X



		Customization	Go/No Go Test	Calibration in SERP	Repair
Description	Comments				
FLUX	Lead-free solder does not require a special flux. The "No Clean" flux used with leaded products is acceptable. Although some manufacturers are developing fluxes specially made for use with lead-free solder (higher evaporation temperatures, less smoke, etc.), these are not required.				X
Low Static Heat Protection Tape	This tape is required to protect adjacent components from hot air.				X
Computer	<p>One of the following operating systems must be used:</p> <ul style="list-style-type: none"> <li>Windows 2000 with service pack 2 or higher</li> <li>Windows XP</li> </ul> <p>Minimum Requirements:</p> <ul style="list-style-type: none"> <li>One unused PCI slot for GPIB card</li> <li>3 USB Ports</li> </ul> <p>The processor and RAM of the computer should at least meet the the minimum requirements specified by the operating system's manufacturer.</p>	X	Z	X	
Test SIM	According to your Instrument supplier		X		
Printer	<b>Optional, but recommended</b>		Z		








		Customization	Go/No Go Test	Calibration in SERP	Repair
Description	Comments				
Metal Cutters	<p>Use these to trim shield can fences when they obstruct access to parts.</p> <p>Cutters should be small enough to cut fences without damaging parts on the board.</p> <p>Cutters should be sharp enough to cut fences without twisting or pulling the fence.</p> <p>Recommended cutters available at <a href="http://www.MSCDirect.com">www.MSCDirect.com</a>:</p> <p>Knipex (left) - <b>Mfr Part #:</b> KN7803-5, <b>MSC #:</b> 32997462</p> <p>Xuron (right) - <b>Mfr Part #:</b> 2175AS, <b>MSC #:</b> 88356431</p> 				X

### 3.3 Lead-free Solder Equipment

The items in this table, and any other soldering tools or material that make physical contact with the solder, must remain lead-free. They must be adequately labelled to make their lead-free status clearly and easily recognized.

				Test	Repair
Pos	Description	Comments	Picture		
	Lead-free Solder  Note: The solder must be composed of Tin, Silver, and Copper, and nothing else. The exact composition ratio may vary, but it must be Tin, Silver, and Copper only. This composition may also be known as SnAgCu or SAC.	Manufacturers of LF Solder: - Tamura ( <a href="http://www.tamura-kaken.co.jp">www.tamura-kaken.co.jp</a> ) Part # TLF-206-93F - Multicore ( <a href="http://www.multicore.com">www.multicore.com</a> ) Part # 96SC - Senju ( <a href="http://www.senju-m.co.jp">www.senju-m.co.jp</a> ) Part # M705			X
	Lead-free labels (sheet of 24)  SEMC Part # SVF9301379 (These labels are available from the Sony Ericsson Parts and Tools Warehouse.)	Required for labeling all soldering tools and materials that contact the solder.			X

				Test	Repair
Pos	Description	Comments	Picture		
	Soldering Tips				X
	Soldering Iron If one work bench is divided to accommodate both leaded and lead-free solder, then each side of the bench should have its own iron.	<ul style="list-style-type: none"> <li>The device should allow variable temperature adjustment and be capable of reaching an upper temperature of 426.7oC (800oF) or more.</li> </ul>			X
	Wicking Tape				X

				Test	Repair
Pos	Description	Comments	Picture		
	Tip Tinner				Z
	Tip Cleaner (steel wool)				Z

## 4 Revision History

Rev.	Date	Changes / Comments
1	2007-05-10	Initial release
2	2007-07-18	Added usage note to large hot air device. Added temperature probes. Added metal cutters.
3	2007-08-28	Updated Sony Ericsson Programming Interface (SEPI) cable part number - Section 3.1 Updated Link for Component baking oven - Section 3.2
4	2008-07-22	Updated Battery Eliminator part number Section 3.1