

# Equipment List, Electrical

Applicable for W302 and S302

## 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 ..... | 6         |
| 3.3      | Lead-free Solder Equipment.....                                     | 16        |
| <b>4</b> | <b>Revision History .....</b>                                       | <b>19</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 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. (GSM Calibration only)  |  |               |               | X                   |        |

|                           |             |   |   | Customization | Go/No Go Test | Calibration in SERP | Repair |
|---------------------------|-------------|---|---|---------------|---------------|---------------------|--------|
| Description               | Part Number | Comments  | Picture   |               |               |                     |        |
| RF Test Cable Flexible 1M | RPM 119 855 |   |    |               | X             | X                   |        |
| Battery Eliminator        | NTZ 112 533 | 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 6356 | Used together with the RF Cable.   |    |               | Z             | X                   |        |
| USB Activation Dongle | NTZ 112 1071 | Used for Activation in EMMA<br><b>NOTE: cannot be ordered via the standard ordering process, To order contact your Regional Representative</b> |   | X             |               |                     |        |
| PCB Repair Fixture    | 1208-3331    |  |  |               |               |                     |        |

## 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             | Z                   |        |

|  |  | Customization | Go/No Go Test | Calibration in SERP | Repair |
|--|--|---------------|---------------|---------------------|--------|
| Description  | Comments   |               |               |                     |        |
| RF adapter for RF shield box<br><br><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.<br><br>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             |                     |        |
| <b>Willtek 4921 Shield Enclosure</b><br><br>With modified rear panel and N terminator <ul style="list-style-type: none"> <li>248718 (Wiltek Part Number)</li> </ul>                                  | Used for WCDMA or GSM Calibration. A Service Tool Test Interface (1206-9888) is also required.   |               |               | X                   |        |
| <b>Modified rear panel and N terminator</b><br><br><b>Willtek</b> <ul style="list-style-type: none"> <li>300872 (Wiltek Part Number)</li> </ul>  | Used with existing Willtek Shield boxes<br>Replace rear panel with modified rear panel and place N terminator on RF connection.<br>Remove RF coupler. A Service Test Tool Interface (1206-9888) is also required.  |               |               | X                   |        |
| Battery Charger<br>(Standard SEMC charger applicable for W890)   | The battery charger needs to be connected to the Sony Ericsson Programming Interface Cable during calibration. Also used for Charger Test.   |               |               | X                   |        |

|   |   | Customization | Go/No Go Test | Calibration in SERP | Repair |
|---|---|---------------|---------------|---------------------|--------|
| Description   | Comments  |               |               |                     |        |
| USB Computer Cable  | Type A to Type B USB cable.<br><br>This is part of the hardware needed for performing calibration. This cable connects the computer to the SEPI.  |               |               | X                   |        |
| <b>Agilent 8960</b><br>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> <li>• Option E5515C-003 WCDMA HW Option</li> </ul> Required Software <ul style="list-style-type: none"> <li>• E1985B or E1987A TA Fast Switching</li> <li>• E1963A WCDMA Test Application</li> <li>• E1968A-101 GSM Test Application</li> <li>• E1968A-410 Application <b>required for GSM Calibration</b></li> </ul> | <b><i>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.</i></b> |               | X             | X                   |        |



|   |   | Customization | Go/No Go Test | Calibration in SERP | Repair |
|---|---|---------------|---------------|---------------------|--------|
| Description   | Comments  |               |               |                     |        |
| <b>Rohde &amp; Schwarz CMU200</b><br>Required Components <ul style="list-style-type: none"> <li>• CMU200 mainframe (Base Unit)</li> <li>• Options CMU-B11, CMU-B21, CMU-B52, CMU-B54, CMU-B56, CMU-B68, CMU-B95 and CMU-U65</li> <li>• Required SW package: CMU-PK100</li> </ul>                      | <b>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.</b>  |               | X             | X                   |        |
| Power Supply (w/digital readout)<br><br><b>NOTE!</b><br><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.</b> | 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  | National Instruments or Keithley<br><br>NOTES: <ul style="list-style-type: none"> <li>Drivers are required and should be supplied with a card.</li> </ul>   |               | X             | X                   |        |
| GPIB Cable   | This cable is only required if a GPIB card is used.   |               | X             | X                   |        |
| Power cable – Red<br><br><b><i>NOTE: Only necessary if using the Battery Eliminator (Dummy Battery).</i></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                   |        |

|  |   | Customization | Go/No Go Test | Calibration in SERP | Repair |
|--|---|---------------|---------------|---------------------|--------|
| Description  | Comments  |               |               |                     |        |
| Power cable – Black<br><br><b><i>NOTE: Only necessary if using the Battery Eliminator (Dummy Battery).</i></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                   |        |



|                                 |  | Customization | Go/No Go Test | Calibration in SERP | Repair |
|---------------------------------|--|---------------|---------------|---------------------|--------|
| Description                     | Comments   |               |               |                     |        |
| Component baking oven           | <p>Temperature requirements: 125°C +5°C/-0°C<br/>Required for drying moisture sensitive components.</p> <p>Below are links to several companies that sell convection ovens.</p> <p><a href="http://www.cascadetek.com/forcedlist.php">http://www.cascadetek.com/forcedlist.php</a></p> <p><a href="http://www.wisoven.com/lab1.htm">http://www.wisoven.com/lab1.htm</a></p> <p><a href="http://www.shellab.com/products.html">http://www.shellab.com/products.html</a></p> <p><a href="http://www.terrauniversal.com/products/tempcontrol/ovens/imperiaivmechcon.php">http://www.terrauniversal.com/products/tempcontrol/ovens/imperiaivmechcon.php</a></p> <p><a href="http://www.labsynergy.com/products_laboratoryovens.asp?keyword=*laboratoryovens">http://www.labsynergy.com/products_laboratoryovens.asp?keyword=*laboratoryovens</a></p> |               |               |                     | X      |
| FLUX                            | <p>Lead-free solder does not require a special flux. The "No Clean" flux used with leaded products is acceptable.</p> <p>Although some manufacturers are developing fluxes specially made for use with lead-free solder (higher evaporation temperatures, less smoke, etc.), these are not required.</p>   |               |               |                     | X      |
| Low Static Heat Protection Tape | This tape is required to protect adjacent components from hot air.   |               |               |                     | X      |

|             |   | Customization | Go/No Go Test | Calibration in SERP | Repair |
|-------------|---|---------------|---------------|---------------------|--------|
| Description | Comments  |               |               |                     |        |
| 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>2 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             | X             | X                   |        |
| Test USIM   | According to your Instrument supplier   | X             | X             |                     |        |
| Printer     | <b>Optional, but recommended</b>  |               | Z             |                     |        |

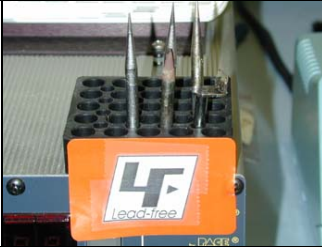


|               |   | Customization | Go/No Go Test | Calibration in SERP | Repair |
|---------------|---|---------------|---------------|---------------------|--------|
| Description   | Comments  |               |               |                     |        |
| Metal Cutters | <p>Use these to trim 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<br><br>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:<br>- Tamura ( <a href="http://www.tamura-kaken.co.jp">www.tamura-kaken.co.jp</a> )<br>Part # TLF-206-93F<br>- Multicore ( <a href="http://www.multicore.com">www.multicore.com</a> )<br>Part # 96SC<br>- Senju ( <a href="http://www.senju-m.co.jp">www.senju-m.co.jp</a> )<br>Part # M705 |   |      | X      |
|     | Lead-free labels<br>(sheet of 24)<br><br>SEMC Part # SVF9301379<br>(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<br>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    | 2008-09-17 | First release      |