

# Equipment List, Electrical

Applicable for T303

## Contents

|          |  |           |
|----------|--|-----------|
| <b>1</b> | <b>General .....</b>                         | <b>2</b>  |
| <b>2</b> | <b>Column Definitions.....</b>               | <b>2</b>  |
| <b>3</b> | <b>Repair Equipment.....</b>                 | <b>3</b>  |
| 3.1      | Sony Ericsson Provided Repair Equipment..... | 3         |
| 3.2      | Equipment Provided by Other Supplier .....   | 5         |
| 3.3      | Lead-free Solder Equipment.....              | 17        |
| <b>4</b> | <b>Revision History .....</b>                | <b>19</b> |

## 1 General

This document describes the minimum required equipments for the Electrical Repair Process of the R300 mobile phone.  
Equipment listed without a part number is not orderable from Sony Ericsson and must be bought locally.

## 2 Column Definitions

The matrix in the end of the equipment tables describe where the actual equipment is needed (marked with an X) or may be needed/optional (marked with a Z).

Flash upgrade: Equipment for downloading software to the unit, both signalling and test-program.

Manual test: Equipment necessary to perform a manual test.

Repair: Equipment necessary for replacing components.

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

Calibration with SERP: Not applicable for this product!



The column that assist a specifying and/or clarifying the equipment needed are considered description type columns.



- Description The name of the equipment
- Part Number The Sony Ericsson part number to use when ordering from Sony Ericsson.
- Description Additional information that helps to specify the equipment.

### 3 Repair Equipment

Some of the required equipment will be provided by Sony Ericsson and some equipment has to be sourced locally. This chapter will separate these equipments.


#### 3.1 Sony Ericsson Provided Repair Equipment

| Description                 | Part Number  | Comments  | Picture   | Flash Upgrade | Manual Test | Trouble Shoot | Repair | Go/No Go test |
|-----------------------------|--------------|---|---|---------------|-------------|---------------|--------|---------------|
|                             |              |   |   |               |             |               |        |               |
| USB Smartcard Reader and CD | LZY 213 1191 | <p>This USB Smartcard Reader provides the means for reading a Service Card.</p> <p>This item is required for using the LabelMake II application and flashing offline.</p> |   |               |             |               | Z      |               |
| Service Card                | LZY 213 595  | <p>This item is required for using the LabelMake II application and flashing offline.</p>   |  |               |             |               | Z      |               |

| Description          | Part Number   | Comments  | Picture  | Flash Upgrade | Manual Test | Trouble Shoot | Repair | Go/No Go test |
|----------------------|---------------|---|--|---------------|-------------|---------------|--------|---------------|
|                      |               |   |  |               |             |               |        |               |
| Zebra Printer Ribbon | LZK 102 734/1 | This is the ribbon that should be used in the Zebra printer when generating labels for this product.  |   |               |             |               | Z      |               |
| Dummy Battery        | 1200-0725     | This item, also known as a “Battery Eliminator”, can be used in the place of the battery when it is used in conjunction with the power supply and the power cables. |  | Z             | Z           |               |        | Z             |

## 3.2 Equipment Provided by Other Supplier

This is the list of equipments provided by other suppliers than Sony Ericsson

| Pos | Description  | Comments   | Picture  | Test | Repair |
|-----|--|--|--|------|--------|
|     |  |  |  |      |        |
| 27  | Battery Charger<br>(Standard SEMC charger applicable for R300) | The battery charger needs to be connected to the Sony Ericsson Programming Interface Cable during calibration. |  |      | X      |
| 43  | USB Computer Cable   | Type A to Type B USB cable.<br><br>This is part of the hardware needed for performing calibration.             |  |      | X      |

| Pos | Description  | Comments   | Picture | Test | Repair |
|-----|--|--|---------|------|--------|
|     |  |  |         |      |        |
| 77  | Power Supply<br>(w/digital readout)<br><br><b>NOTE!</b><br>If using the Power Supply in conjunction with the Battery Eliminator (Dummy Battery) to power the phone during the GNG test routine a high quality DC source that meets the following requirements <u>must</u> be used. | 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 series</li> <li>• Agilent 663x series</li> </ul> |         | Z    | Z      |
| 78  | 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      |

| Pos | Description                                   | Comments  | Picture | Test | Repair |
|-----|---|---|---------|------|--------|
|     |   |   |         |      |        |
| 79  | Large Convection (Hot Air) Device             | <b>Certain components on the parts list can only be replaced using this device. These parts are specified in the parts list.</b> <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> <li>The range of airflow the device is capable of generating should be above 20 litre/minute.</li> </ul> |         |      | X      |
| 80  | Nozzles for Large Convection (Hot Air) Device | NOTE: Only necessary if you have a large convection device.   |         |      | X      |
| 81  | Digital Multi-meter                           | Used for troubleshooting failures   |         |      | Z      |
| 82  | Microscope                                    | Minimum magnification required is 10x   |         |      | X      |

| Pos | Description   | Comments   | Picture | Test | Repair |
|-----|---|--|---------|------|--------|
|     |   |  |         |      |        |
| 88  | Power cable – Red<br><br><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> <li>• The other end of the cable needs whatever connection is necessary to connect to the power supply that you have.</li> </ul> |         | Z    | Z      |




| Pos | Description   | Comments   | Picture | Test | Repair |
|-----|---|--|---------|------|--------|
|     |   |  |         |      |        |
| 89  | Power cable – Black<br><br><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> <li>• The other end of the cable needs whatever connection is necessary to connect to the power supply that you have.</li> </ul> |         | Z    | Z      |

| Pos | Description   | Comments   | Picture | Test | Repair |
|-----|---|--|---------|------|--------|
|     |   |  |         |      |        |
| 91  | <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    |        |


| Pos | Description                     | Comments   | Picture | Test | Repair |
|-----|---------------------------------|--|---------|------|--------|
|     |                                 |  |         |      |        |
| 92  | 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      |
| 93  | Low Static Heat Protection Tape | This tape is required to protect adjacent components from hot air.   |         |      | X      |

| Pos | Description | Comments  | Picture | Test | Repair |
|-----|-------------|---|---------|------|--------|
|     |             |   |         |      |        |
| 96  | 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> <li>• The processor and RAM of the computer should at least meet the the minimum requirements specified by the operating system's manufacturer.</li> </ul> |         | Z    | X      |
| 109 | Printer     | <b>Optional, but recommended</b>  |         | Z    | Z      |

| Pos | Description   | Comments  | Picture   | Test | Repair |
|-----|---|---|---|------|--------|
|     |   |   |   |      |        |
| 110 | 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.<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> <li>Part number: PE9430</li> </ul> |  | Z    |        |
| 111 | Cutting Pliers  |   |   |      | Z      |
| 112 | ESD Gloves  |   |   |      | Z      |
| 113 | ESD Wristband   |   |   |      | Z      |
| 114 | Nylon Pointer   |   |   |      | Z      |

| Pos | Description   | Comments  | Picture | Test | Repair |
|-----|---------------|---|---------|------|--------|
| 115 | Zebra Printer | <b>Current Model Options:</b> <ul style="list-style-type: none"> <li>• <b>110XIIIPlus</b> or <b>Z4Mplus</b></li> </ul> These models use a DB9 Male-DB9 Female Null Modem<br><br><b>Discontinued Model Options:</b><br><b>NOTE – The following models may also be used, but Zebra has discontinued selling them.</b> <ul style="list-style-type: none"> <li>• 90xi Series</li> <li>• Z4M</li> <li>• Z4000 deluxe</li> </ul> These models use a DB25 Male-DB9 Female Null Modem |         |      | Z      |




| Pos | Description      | Comments  | Picture | Test | Repair |
|-----|------------------|---|---------|------|--------|
| 116 | Null Modem Cable | <p>This cable connects the Zebra printer to the computer. Two companies that carry this type of cable are CDW (<a href="http://www.cdw.com">www.cdw.com</a>) and QVS (<a href="http://www.qvs.com">www.qvs.com</a>). Part numbers for the <b>DB9 Male-DB9 Female version:</b><br/> <b>CDW – 361875</b> (6 Feet Long)</p> <p>Part numbers for the <b>DB25 Male-DB9 Female version:</b><br/> <b>CDW – 375939</b> (6 Feet Long)<br/> <b>QVS – CC314-06</b> (6 Feet Long)<br/> <b>QVS – CC314-10</b> (10 Feet Long)</p> |         |      | Z      |





| Pos | Description   | Comments   | Picture  | Test | Repair |
|-----|---------------|--|--|------|--------|
| 119 | Metal Cutters | <p>Use these to trim shield can fences when they obstruct access to parts.<br/> Cutters should be small enough to cut fences without damaging parts on the board.<br/> Cutters should be sharp enough to cut fences without twisting or pulling the fence.<br/> Recommended cutters available at <a href="http://www.MSCDirect.com">www.MSCDirect.com</a>:<br/> Knipex (left) - <b>Mfr Part #:</b> KN7803-5, <b>MSC #:</b> 32997462<br/> Xuron (right) - <b>Mfr Part #:</b> 2175AS, <b>MSC #:</b> 88356431</p> |  |      | Z      |



### 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.

| Pos | Description  | Comments   | Picture   | Test | Repair |
|-----|--|--|---|------|--------|
|     |  |  |   |      |        |
|     | <b>Lead-free Solder</b><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      |
|     | <b>Lead-free labels</b><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      |
|     | <b>Soldering Tips</b>  |  |  |      | X      |

| Pos | Description  | Comments  | Picture   | Test | Repair |
|-----|--|---|---|------|--------|
|     |  |   |   |      |        |
|     | <b>Soldering Iron</b><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 426.7°C (800°F) or more.</li> </ul> |    |      | X      |
|     | <b>Wicking Tape</b>  |   |    |      | X      |
|     | <b>Tip Tinner</b>  |   |   |      | X      |
|     | <b>Tip Cleaner (steel wool)</b>  |   |  |      | X      |

## 4 Revision History

| Rev. | Date       | Changes / Comments      |
|------|------------|-------------------------|
| 1    | 2008-07-10 | 1 <sup>st</sup> version |