

# Trouble Shooting Guide, Mechanical

Applicable for W960

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# 1 General

This document outlines the mechanical repairs that should be made in an attempt to fix the common failures that are seen in the field. To gain a complete understanding of how to test and repair a specific failure, this document should be used in conjunction with the Test Instructions, Mechanical and the Working Instructions, Mechanical.

## 1.1 Service functions in the software

The service menu will be accessed with the following key combination. Use the joystick.

Press the sequence **↑\*↓↓\*↓\*** with the Jog Dial (**➡**), and (**\***) on the keyboard.

They are as follows:

**Service information**

**Service tests**

**Format internal disk**

Under the “**Service tests**” option, the phone’s software has a built in service functionality that allows you to test some of the phones functions. It looks like this:

**Display**

**Camera**

**Touch screen**

**Illumination**

**LED’s**

**Keyboard**

**Vibrator**

**Speaker’s**

**Microphone**

**FM Radio**

**NOTE: Different names may occur depending on language setting and customization.**

## 1.2 Misuse and other no warranty issues





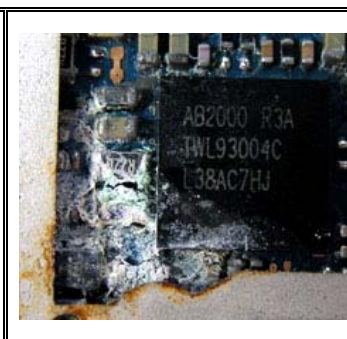
Misuse is not covered by warranty. This chapter will explain what's not covered by warranty. Phones that have been exposed to misuse will not be covered by warranty.


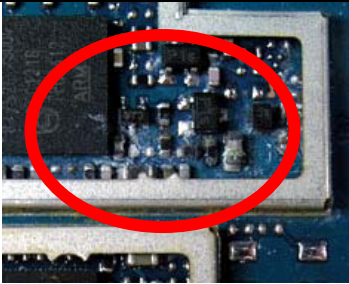
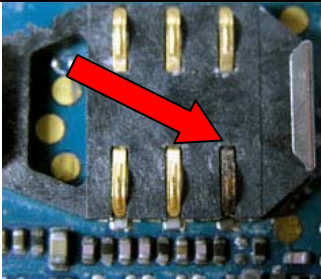
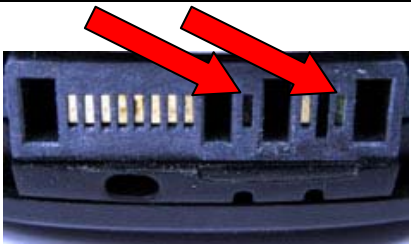
This means: if it is possible to repair the phone, the customer will have to pay for the repair. SEMC will not allow any of these phones to be claimed into WCMS. Some local perspectives may interfere with this. Please reference to local directives.

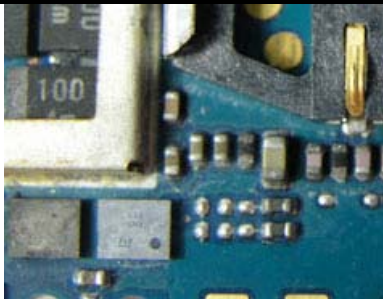
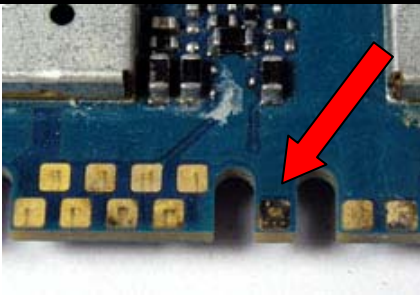
### 1.2.1 Action

Make a general visual inspection for misuse.

Below are some **examples** of what is not covered by warranty.

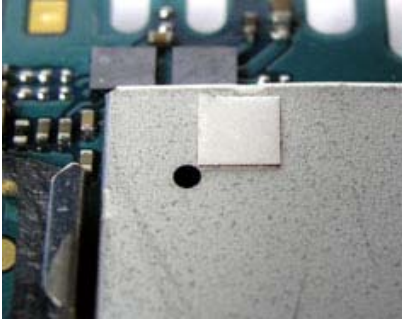
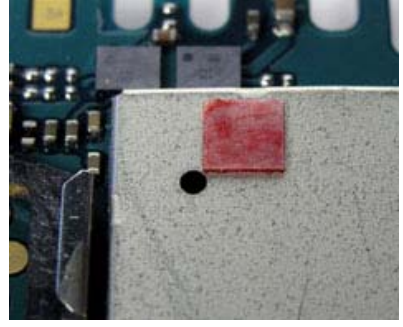
|   |   |  |   |   |
|---|---|--|---|---|
|  |  |  |  |  |
| Front window broken due to misuse.  | LCD cracked due to drop.  | Clear scratches  | Mark after drop   | Corrosion components on the PCB.  |

|   |   |   |   |
|---|---|---|---|
|  |  |  |  |
| Corrosion components on the PCB.  | Corrosion components on the PCB.  | SIM reader damaged by liquid.   | System connector damaged by liquid  |

|   |   |
|---|---|
|  |  |
| Components around system connector damaged by liquid                              | System connector pad(s) damaged by liquid   |

## 1.2.2 Liquid damage sticker

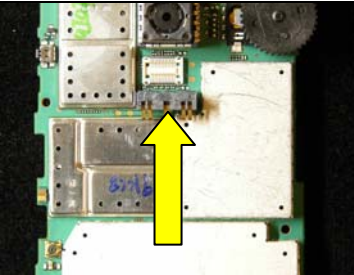
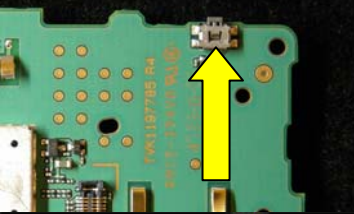
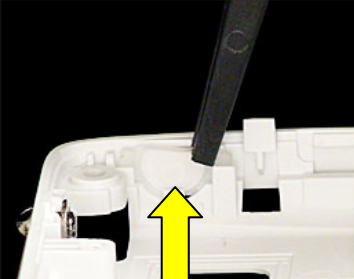
On the pictures below you will see the different between a sticker that has been in contact with liquid (Fig. 1.2.2) and with one that hasn't (Fig. 1.2.1).

| This sticker is ok  | This sticker <u>is not</u> ok  |  |
|---|--|--|
|  |  | <p>The white sticker that has been in contact with liquid turns into a red or pink sticker. In this case you should check the phone for liquid damage.</p> <p>Note: There must be clear marks after liquid on the PCB before rejecting the phone for repair.</p> |
| Fig. 1.2.1  | Fig. 1.2.2   |  |

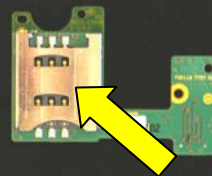
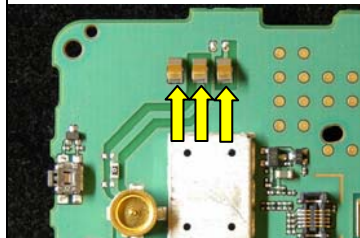
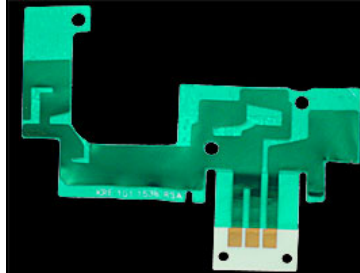
## 1.2.3 Action

Make a general visual inspection for misuse, corrosion or oxidation from liquid damage. No further action should be taken for a liquid damaged phone. Handle the unit according to local directives.

## 2 Power Problems

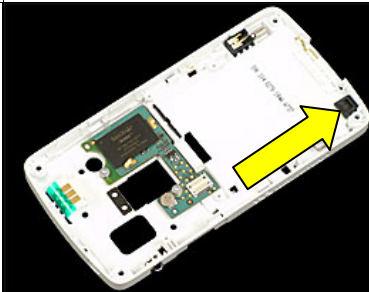

| Problem Area           | Items to Inspect   | Repair Action  | Inspection Reference  |
|------------------------|--|--|---|
| Unit will not Power On | Check whether the keyboard illuminates 15 to 20 seconds after pressing the power key | If illumination of the keyboard is detected, refer to the "Display Problems" section   |   |
|                        | Inspect battery connector  | <ul style="list-style-type: none"> <li>If dirty or oxidized – Clean</li> <li>If damaged – Send to an electrical repair location</li> </ul>   |    |
|                        | Inspect the power key and the power key's switch                                     | <ul style="list-style-type: none"> <li>Make sure the power key is properly positioned in the phone.</li> <li>If dirt or debris is detected – Clean both the key and the switch</li> <li>If the key is damaged – Replace it</li> <li>If the switch is damaged – Escalate to an electrical repair level</li> </ul> | <br> |
|                        | If the issue is still not resolved→  | <ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>   |   |

### 3 Network/Signal Problems

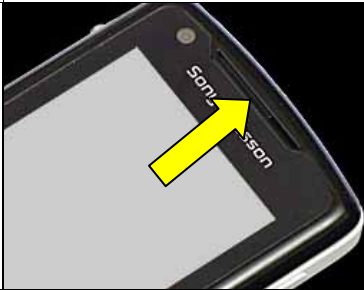
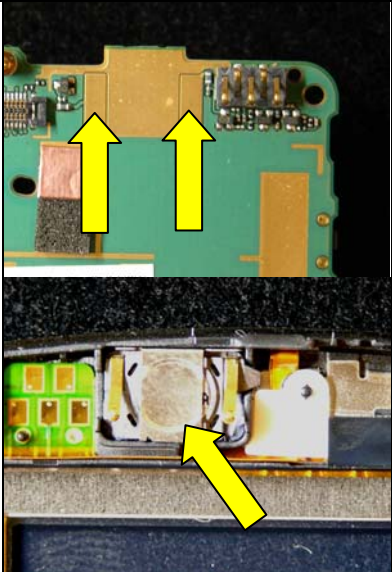
| Problem Area             | Items to Inspect                    | Repair Action   | Inspection Reference  |
|--------------------------|-------------------------------------|---|---|
| No Signal or Poor Signal | Inspect SIM holder                  | <ul style="list-style-type: none"> <li>If dirty or oxidized – Clean</li> <li>If damaged – replace the PCB Sub Asm</li> </ul>              |    |
|                          | If the issue has not been resolved→ | <ul style="list-style-type: none"> <li>Clean the antenna-to-board connectors on the circuit board and replace the antenna flex</li> </ul> | <br> |
|                          | If the issue is still not resolved→ | <ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>  |   |


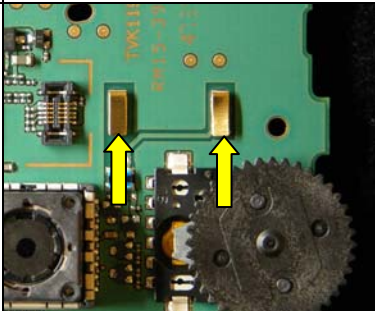



## 4 Audio Problems

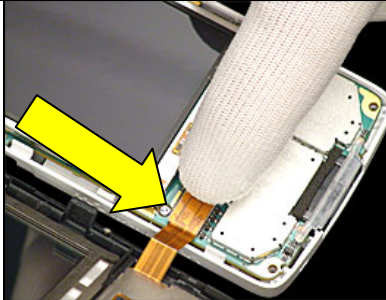
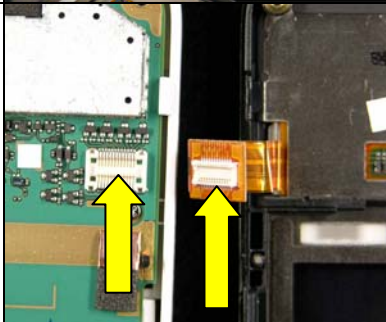
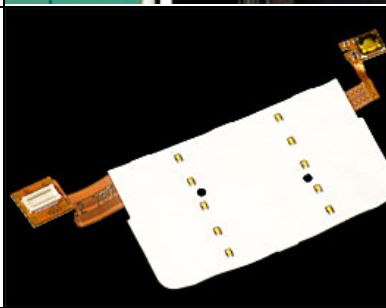
| Problem Area       | Items to Inspect  | Repair Action  | Inspection Reference   |
|--------------------|---|--|--|
| <b>Microphone:</b> | Before proceeding →<br><br>Inspect the microphone's external port | <ul style="list-style-type: none"> <li>Perform a setting reset</li> <li>If clogged - Clean microphone gasket mounted on frame inside.</li> </ul> |   |
|                    | Visually inspect the microphone grommet                           | <ul style="list-style-type: none"> <li>If improperly mounted - Secure properly connection</li> <li>If damaged. Replace it</li> </ul>             |  |
|                    | If the issue is still not resolved→                               | <ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>   |  |



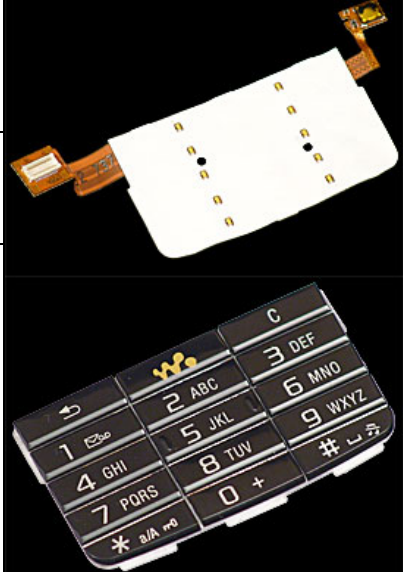
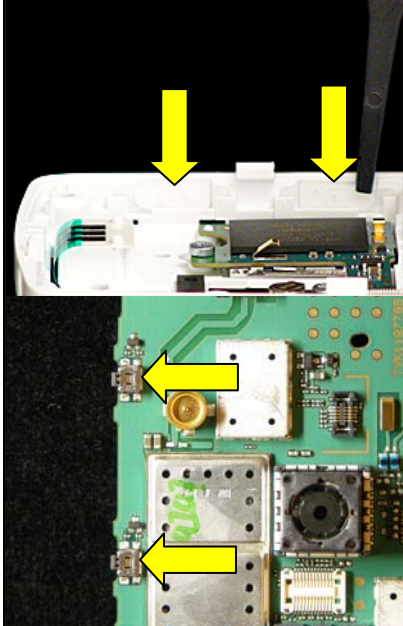
| Problem Area   | Items to Inspect  | Repair Action   | Inspection Reference   |
|--|---|---|--|
| <b>Receiver:</b><br>No sound or poor quality sound         | Before proceeding →<br><br>Check if the receiver's external ports are clogged | <ul style="list-style-type: none"><li>• Perform a setting reset</li><li>• If clogged – Clean the external ports in the front cover complete or replace the front assy and/or earspeaker as determined necessary</li></ul> |   |
| <b>Receiver:</b><br>No sound or poor quality sound (Cont.) | If the issue has not been resolved→   | Clean the receiver's contact pads on the circuit board and replace receiver   |  |
|  | If the issue is still not resolved→   | <ul style="list-style-type: none"><li>• Escalate to an electrical repair level</li></ul>  |  |

| Problem Area   | Items to Inspect  | Repair Action   | Inspection Reference  |
|--|---|---|---|
| <b>Rear Speaker:</b><br><br>No sound or poor quality sound | Before proceeding →   | <ul style="list-style-type: none"> <li>Perform a setting reset</li> </ul>   |    |
|  | Inspect whether the rear speaker's external ports are clogged | <ul style="list-style-type: none"> <li>If clogged – Clean out the rear speaker's external ports and replace the Antenna lid</li> </ul>  |   |
|  | If the issue has not been resolved→                           | <ul style="list-style-type: none"> <li>Check if spring clips are depressed, re-elevate the springs if needed</li> <li>Clean the rear speaker's contact pads on the circuit board and replace Acoustic box.</li> </ul> | <br> |
|  | If the issue is still not resolved→                           | <ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>  |   |

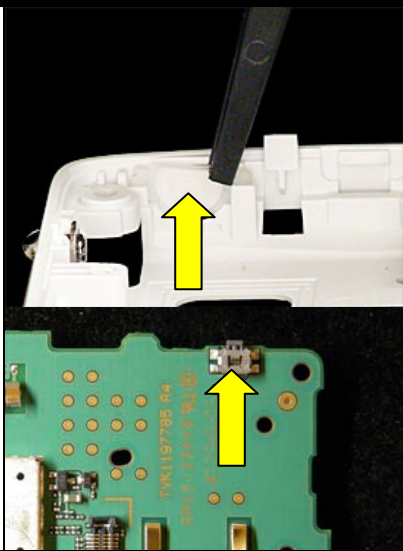
## 5 Key Problems

| Problem Area  | Items to Inspect  | Repair Action  | Inspection Reference  |
|---|---|--|---|
| <b>Keyboard:</b><br>None of the keys on the keyboard are functioning (excluding the navigation key) | Inspect whether the keyfoil assembly is properly connected to the circuit board | <ul style="list-style-type: none"> <li>If improperly connected - Reestablish proper connection</li> </ul>  |    |
|   | Inspect each half of the keyfoil to circuit board connection                    | <ul style="list-style-type: none"> <li>If dirty or oxidized – Clean both halves of the connection</li> <li>If the portion of the connection on the key foil complete is damaged - Replace the key foil complete</li> <li>If the portion of the connection on the circuit board is damaged – Send to an electrical repair location</li> </ul> |   |
|   | If the issue has not been resolved →  | <ul style="list-style-type: none"> <li>Replace the key foil complete, if it has not already been replaced</li> </ul>   |  |
|   | If the issue is still not resolved→   | <ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>   |   |

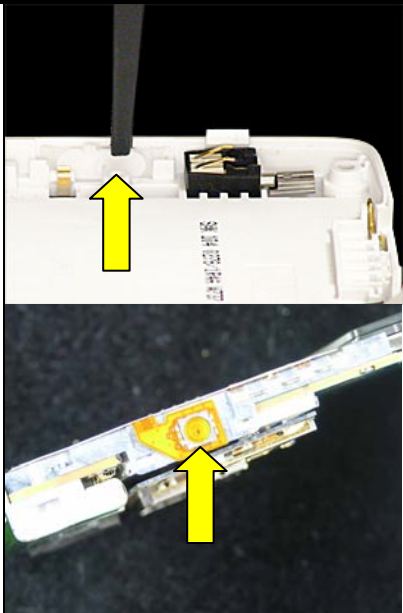
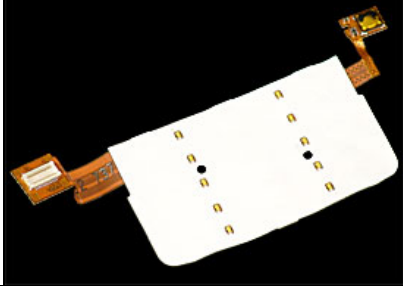


| Problem Area  | Items to Inspect  | Repair Action   | Inspection Reference   |
|---|---|---|--|
| <b>Numeric Keyboard:</b><br>A key on the numeric keyboard is not functioning or is intermittent | Inspect for debris between and/or damage to the numeric keyboard and the corresponding portion of the keyfoil assembly. | <ul style="list-style-type: none"> <li>If debris is found – Clean both parts</li> <li>If damage is seen – Replace the numeric keyboard and/or the key foil complete as necessary</li> </ul>   |   |
|   | If the issue has not been resolved →  | <ul style="list-style-type: none"> <li>Replace the numeric keyboard and the key foil complete, if they have not already been replaced</li> </ul>  |  |
|   | If the issue is still not resolved→   | <ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>  |  |
| <b>Volume key:</b><br>A direction of the key is not functioning or is intermittent              | Inspect the portion of the volume key that is not functioning and its corresponding switch.                             | <ul style="list-style-type: none"> <li>Make sure the volume key is properly positioned in the Antenna assembly.</li> <li>If dirt or debris is detected – Clean the volume key and both switches</li> <li>If the key is damaged – Replace it</li> <li>If the switch is damaged – Escalate to an electrical repair level</li> </ul> |  |



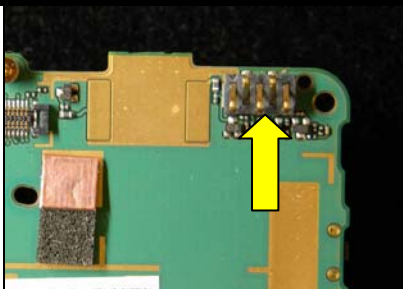
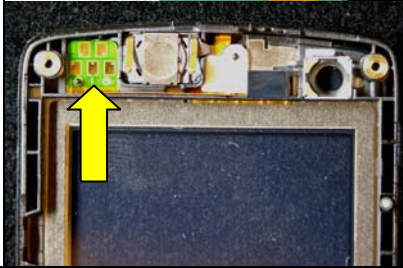

| Problem Area      | Items to Inspect                                 | Repair Action  | Inspection Reference  |
|-------------------|--|--|---|
|                   | If the issue has not been resolved →             | <ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>   |   |
|                   |  | <ul style="list-style-type: none"> <li></li> </ul>   |   |
|                   |  | <ul style="list-style-type: none"> <li></li> </ul>   |   |
| <b>Power Key:</b> | Inspect the power key and the power key's switch | <ul style="list-style-type: none"> <li>Make sure the power key is properly positioned in the phone.</li> <li>If dirt or debris is detected – Clean both the key and the switch</li> <li>If the key is damaged – Replace it</li> <li>If the switch is damaged – Escalate to an electrical repair level</li> </ul> |  |
|                   | If the issue has not been resolved →             | <ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>   |   |



| Problem Area | Items to Inspect                      | Repair Action  | Inspection Reference   |
|--------------|---------------------------------------|--|--|
| Camera Key:  | Inspect the camera key and its switch | <ul style="list-style-type: none"><li>• Make sure the camera key is properly positioned in the front cover.</li><li>• Make sure the camera switch is properly positioned in the Frame assy.</li><li>• If dirt or debris is detected – Clean both the camera key and its switch</li><li>• If the camera key is damaged – Replace it</li></ul> |   |
|              | If the issue has not been resolved →  | <ul style="list-style-type: none"><li>• Replace the key foil complete</li></ul>  |  |
|              | If the issue is still not resolved→   | <ul style="list-style-type: none"><li>• Escalate to an electrical repair level</li></ul>   |  |

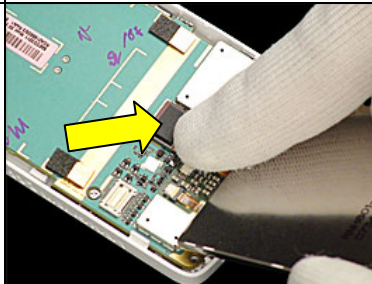
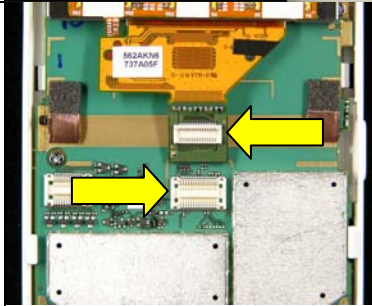
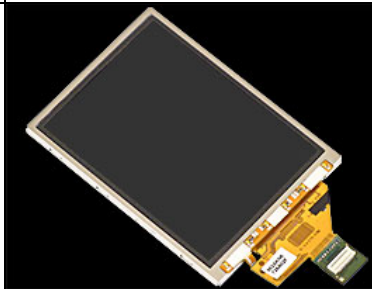


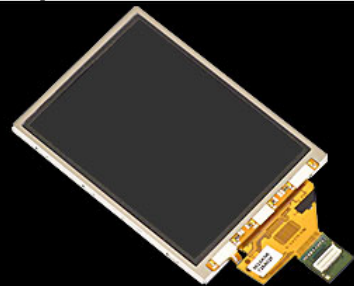


|               |  |  |  |
|---------------|--|--|--|
| Touch screen: | Inspect the Touch screen contact pin on the circuit board. | <ul style="list-style-type: none"><li>• Clean the Touch screen contact pin on the circuit board.</li><li>• Clean the Touch screen contact pad on the Front</li></ul> |   |
|               | If the issue has not been resolved →                       | <ul style="list-style-type: none"><li>• Replace the Front</li></ul>  |   |
|               | If the issue is still not resolved→                        | <ul style="list-style-type: none"><li>• Escalate to an electrical repair level</li></ul>   |  |

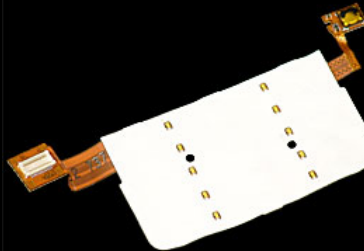
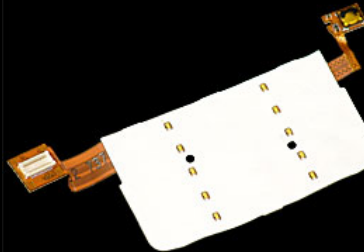
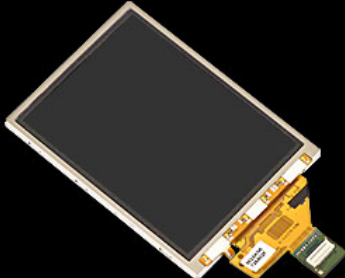


## 6 Display Problems



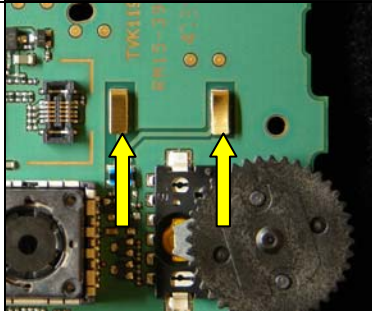

| Problem Area                    | Items to Inspect  | Repair Action   | Inspection Reference  |
|---------------------------------|---|---|---|
| If a display is not functioning | Check whether the keyboard illuminates 15 to 20 seconds after pressing the power key    | <ul style="list-style-type: none"> <li>If the keyboard <b>does not illuminate</b>, refer to the “Power Problems” section</li> </ul>   |   |
|                                 | Inspect whether the LCD assembly's flex film is properly connected to the circuit board | <ul style="list-style-type: none"> <li>If improperly connected - Reestablish proper connection</li> </ul>   |    |
|                                 | Inspect each half of the LCD to circuit board connection                                | <ul style="list-style-type: none"> <li>If dirty or oxidized – Clean both halves of the connection</li> <li>If the portion of the connector on the LCD is damaged - Replace the LCD</li> <li>If the portion of the connector on the circuit board is damaged – Escalate to an electrical repair level</li> </ul> |   |
|                                 | If the issue has not been resolved →  | <ul style="list-style-type: none"> <li>Replace the LCD if it has not been replaced</li> </ul>   |  |
|                                 | If the issue is still not resolved →  | <ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>  |   |

| Problem Area                             | Items to Inspect                     | Repair Action  | Inspection Reference  |
|--|--------------------------------------|--|---|
| If a display has lines or missing pixels | Perform the following action →       | <ul style="list-style-type: none"> <li>Replace the LCD</li> </ul>                        |  |
|  | If the issue is still not resolved → | <ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul> |   |

## 7 Illumination Problems

| Problem Area   | Items to Inspect                     | Repair Action  | Inspection Reference   |
|--|--------------------------------------|--|--|
| <b>Keyboard Illumination:</b><br>If the numeric keyboard illuminates                   | Perform the following action →       | <ul style="list-style-type: none"> <li>Replace the key foil complete</li> </ul>          |   |
|  | If the issue is still not resolved→  | <ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul> |  |
| <b>Keyboard Illumination:</b><br>A portion of the numeric keyboard does not illuminate | Perform the following action →       | <ul style="list-style-type: none"> <li>Replace the key foil complete</li> </ul>          |   |
|  | If the issue is still not resolved→  | <ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul> |  |
| <b>Display Illumination:</b>   | Before proceeding →                  | <ul style="list-style-type: none"> <li>Perform a setting reset</li> </ul>                |  |
|  | Perform the following action →       | <ul style="list-style-type: none"> <li>Replace the LCD</li> </ul>                        |  |
|  | If the issue is still not resolved → | <ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul> |  |

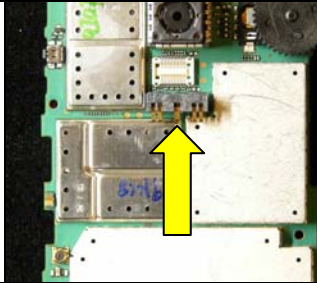
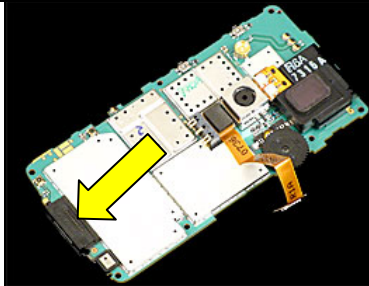
## 8 Alert Problems

| Problem Area   | Items to Inspect   | Repair Action   | Inspection Reference   |
|--|--|---|--|
| <b>Rear speaker:</b><br>No sound or poor quality sound | Before proceeding →<br>Inspect whether the rear speaker's external port is clogged | <ul style="list-style-type: none"> <li>Perform a setting reset</li> <li>If clogged – Clean out the rear speaker's external ports and replace the rear speaker cloth</li> </ul>                        |      |
|  | If the issue has not been resolved→  | <ul style="list-style-type: none"> <li>Re-elevate the connector springs if they are depressed</li> <li>Clean the rear speaker's contact pads on the circuit board and replace Acoustic box</li> </ul> |   |

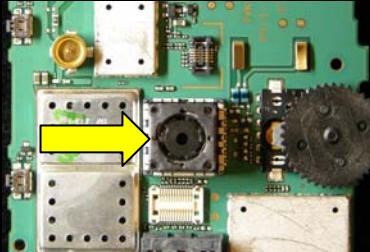
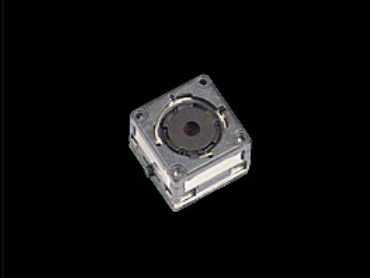


| Problem Area | Items to Inspect                    | Repair Action  | Inspection Reference |
|--------------|-------------------------------------|--|----------------------|
|              | If the issue is still not resolved→ | <ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul> |                      |

## 9 Charging/Capacity Problems

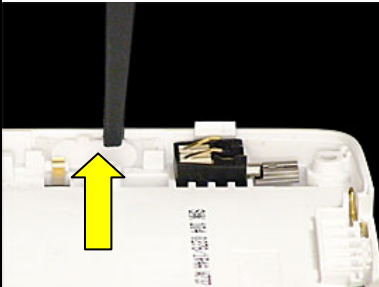
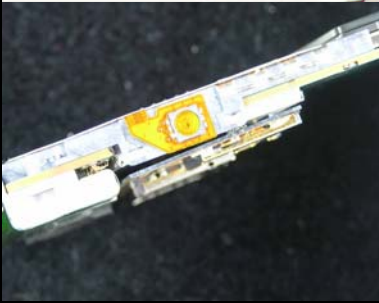
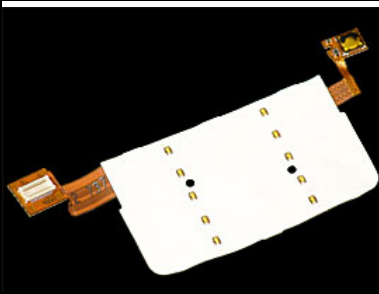
| Problem Area                   | Items to Inspect                     | Repair Action  | Inspection Reference  |
|--------------------------------|--------------------------------------|--|---|
| Phone is not charging properly | Inspect the battery connector        | <ul style="list-style-type: none"> <li>If dirty or oxidized – Clean</li> <li>If damaged – Send to an electrical repair location</li> </ul> |  |
|                                | If the issue has not been resolved → | <ul style="list-style-type: none"> <li>Replace the system connector</li> </ul>   |  |
|                                | If the issue is still not resolved → | <ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>   |   |

## 10 Rear Camera Problems

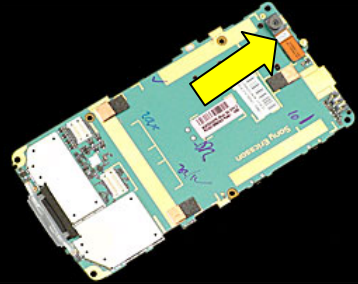
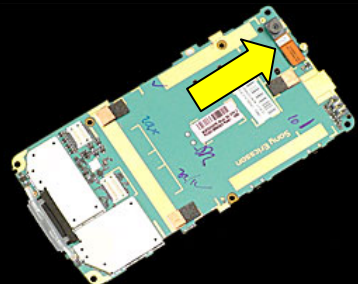
| Problem Area              | Items to Inspect                        | Repair Action   | Inspection Reference  |
|---------------------------|---|---|---|
| Lines or marks in picture | Visually inspect the rear camera's lens | <ul style="list-style-type: none"> <li>If dirty – Clean the camera's lens</li> <li>If scratched or damaged – Replace the camera module</li> </ul> |  |
|                           | If the issue has not been resolved →    | <ul style="list-style-type: none"> <li>Replace the rear camera module, if it has not yet been replaced</li> </ul>                                 |  |
|                           | If the issue is still not resolved →    | <ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>  |   |

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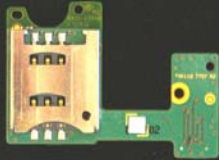
| Problem Area   | Items to Inspect                      | Repair Action  | Inspection Reference   |
|--|---------------------------------------|--|--|
| Will not capture an image when pressing the camera key | Inspect the camera key and its switch | <ul style="list-style-type: none"><li>• Make sure the camera key is properly positioned in the front cover.</li><li>• Make sure the camera switch is properly positioned in the board frame.</li><li>• If dirt or debris is detected – Clean both the camera key and its switch</li><li>• If the key is damaged – Replace it</li></ul> | <br> |
|  | If the issue has not been resolved →  | <ul style="list-style-type: none"><li>• Replace the key foil complete</li></ul>  |    |
|  | If the issue is still not resolved →  | <ul style="list-style-type: none"><li>• Escalate to an electrical repair level</li></ul>   |  |

## 11 Video Call Camera Problems

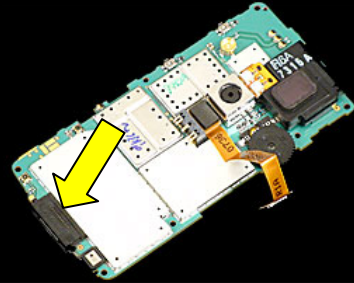

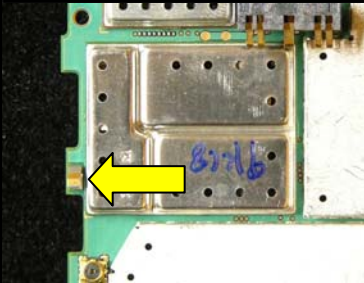
| Problem Area                             | Items to Inspect                       | Repair Action   | Inspection Reference  |
|--|--|---|---|
| Lines or marks in picture                | Visually inspect the VGA camera window | <ul style="list-style-type: none"> <li>• If dirty – Clean the VGA camera window</li> <li>• If scratched – Replace VGA camera window</li> <li>• If damaged – Replace VGA Camera</li> </ul> |  |
|  | If the issue has not been resolved →   | <ul style="list-style-type: none"> <li>• Escalate to an electrical repair level</li> </ul>  |   |
| Do not see image when in video call mode | Perform the following action →         | <ul style="list-style-type: none"> <li>• Replace VGA Camera</li> </ul>  |  |
|  | If the issue has not been resolved →   | <ul style="list-style-type: none"> <li>• Escalate to an electrical repair level</li> </ul>  |   |



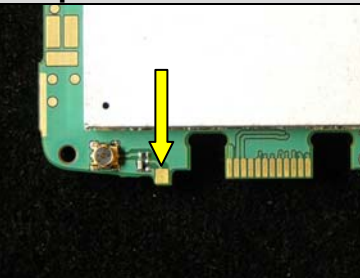

## 12 SIM Problems

| Problem Area                                 | Items to Inspect  | Repair Action  | Inspection Reference  |
|--|---|--|---|
| SIM undetected                               | Inspect SIM holder<br>Inspect BTB flex + connectors   | <ul style="list-style-type: none"> <li>If dirty or oxidized – Clean</li> <li>If damaged – replace the PCB Sub Asm</li> </ul> |  |
|  | If the issue has not been resolved →  | <ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>                                     |   |
| Unit indicates the incorrect SIM is inserted | Check whether the phone is locked to a particular carrier and whether the correct carrier's SIM is being used | <ul style="list-style-type: none"> <li>Use correct carrier SIM or test SIM</li> </ul>  |   |
|  | If the issue has not been resolved →  | <ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>                                     |   |

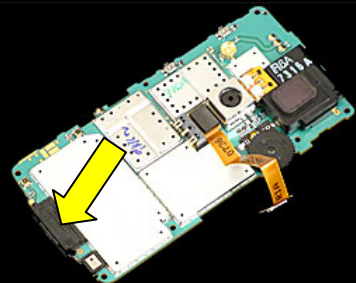
## 13 Data Transfer Problems using a Data Cable

| Problem Area  | Items to Inspect                     | Repair Action  | Inspection Reference  |
|---|--------------------------------------|--|---|
| Problem transferring data using a direct connection | Perform the following action →       | <ul style="list-style-type: none"> <li>Replace the system connector</li> </ul>   |    |
|   | If the issue has not been resolved → | <ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>   |   |
| Will not connect with a functional WLAN device      | Visually inspect WLAN antenna        | <ul style="list-style-type: none"> <li>If damaged. Replace Frame Sub Asm.</li> <li>Check and clean contact pad on PCB</li> </ul> | <br> |
|   | If the issue has not been resolved → | <ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>   |   |

## 14 Bluetooth Problems

| Problem Area  | Items to Inspect  | Repair Action  | Inspection Reference  |
|---|---|--|---|
| Will not connect with a functional Bluetooth device | Inspect the Bluetooth antenna's contact pads on the circuit board | <ul style="list-style-type: none"> <li>If dirty – Clean</li> </ul>                               |  |
|   | Inspect the spring fingers of Bluetooth antenna                   | <ul style="list-style-type: none"> <li>If bent or damaged – Replace the Frame Sub Asm</li> </ul> |  |
|   | If the issue has not been resolved →                              | <ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>         |   |

## 15 Hands-Free Problems

| Problem Area             | Items to Inspect                    | Repair Action   | Inspection Reference  |
|--------------------------|-------------------------------------|---|---|
| Hands-free will not work | Perform the following action →      | <ul style="list-style-type: none"> <li>• Replace the system connector</li> <li>• Check connector pads on PWB, clean if necessary</li> </ul> |  |
|                          | If the issue has not been resolved→ | <ul style="list-style-type: none"> <li>• Escalate to an electrical repair level</li> </ul>  |   |

## 16 Revision History

| Rev. | Date       | Changes / Comments |
|------|------------|--------------------|
| 1    | 2007-11-29 | Initial Release    |