

# Trouble Shooting Guide, Mechanical

Applicable for T650 and T658

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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.

⇒\*←←\*←\*

They are as follows:

**Service info**

**Service tests**

**Text labels**

The phones software has a built in service functionality that allows you to test some of the phones functions. *(See point 2 above)* It looks like this:

**Main display**

**LED/illumination**

**Keyboard**

**Speaker**

**Earphone**

**Microphone**

**Vibrator**

**Camera**

**Video call camera**

**Flash LED**

**Memory Stick**

**FM radio (You need a headset to test)**

**Real time clock**

**Total call time**

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

## 1.2 Misuse and other no warranty issues





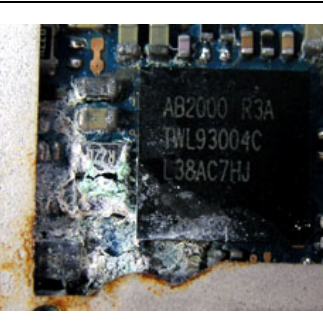
Misuse is not covered by warranty. This chapter will explain what's not covered by warranty. Phones that have been exposed to misuse will not be covered by warranty.

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.


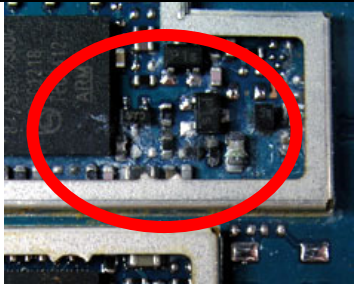
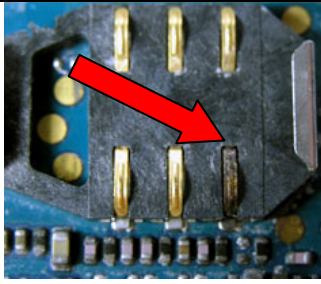
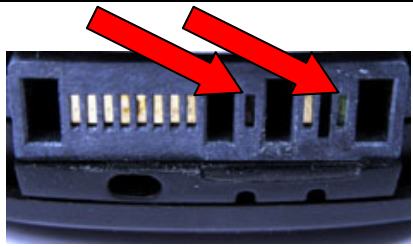
### 1.2.1 Action

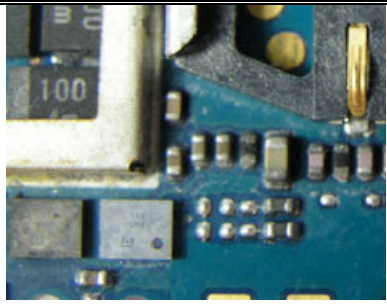
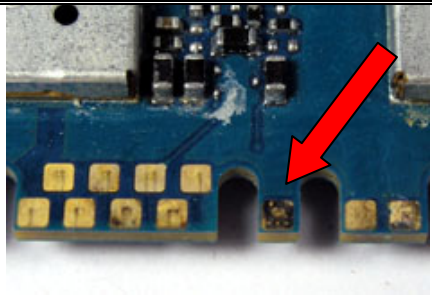
Make a general visual inspection for misuse.

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

				
<p>Front window broken due to misuse.</p>	<p>LCD cracked due to drop.</p>	<p>Clear scratches</p>	<p>Mark after drop</p>	<p>Corrosion components on the PCB.</p>

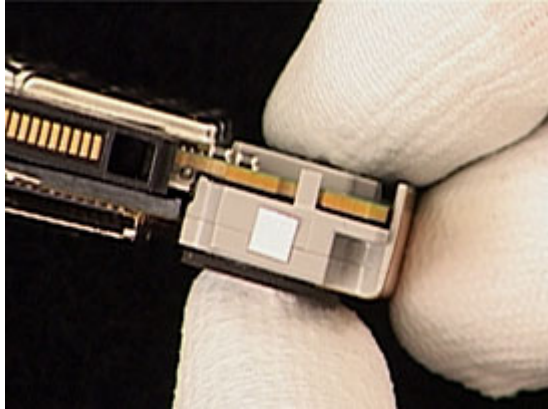



			
Corrosion components on the PCB.	Corrosion components on the PCB.	SIM reader damaged by liquid.	System connector damaged by liquid

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

## 1.2.2 Liquid damage sticker

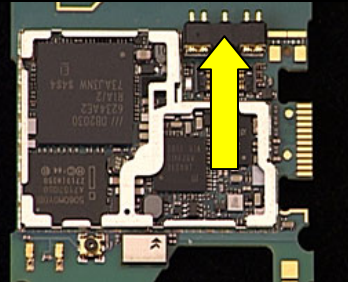
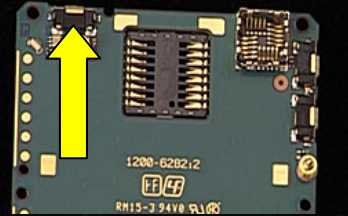
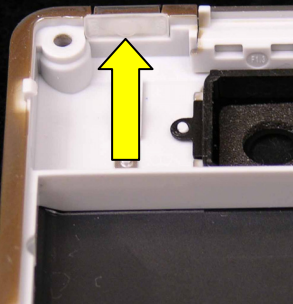
On the pictures below you will see the different between a sticker that has been in contact with liquid (Fig. 1.2.2) and with one that hasn't (Fig. 1.2.1).

This sticker is ok	This sticker <u>is not</u> ok	
		<i>Text</i>
<b>Fig. 1.2.1</b>	<b>Fig. 1.2.2</b>	

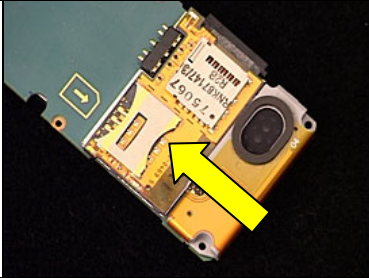
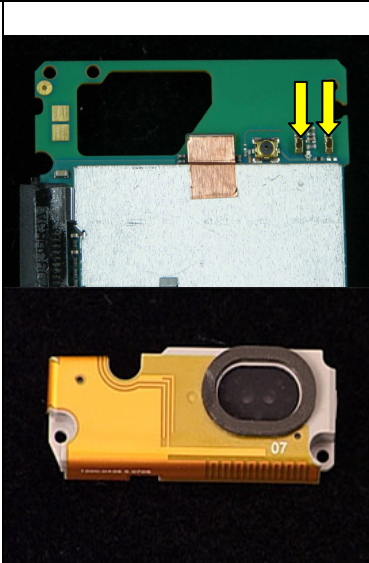
## 1.2.3 Action

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

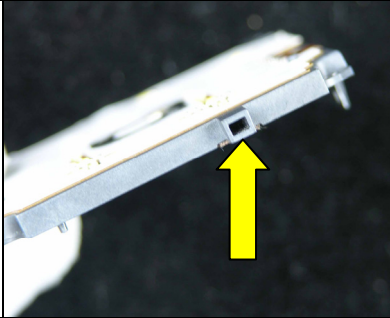
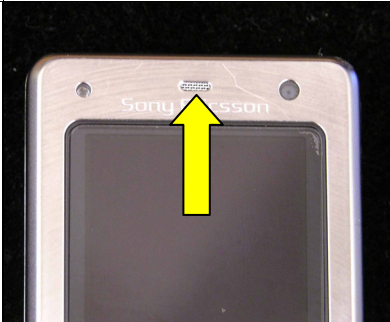
Problem Area	Items to Inspect	Repair Action	Inspection Reference
Unit will not Power On	Check whether the keyboard illuminates 15 to 20 seconds after pressing the power key	If illumination of the keyboard is detected, refer to the “Display Problems” section	
	Inspect battery connector	<ul style="list-style-type: 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>	
	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

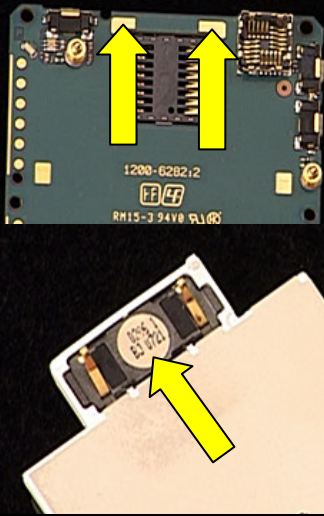
Problem Area	Items to Inspect	Repair Action	Inspection Reference
No Signal or Poor Signal	Inspect SIM holder	<ul style="list-style-type: none"> <li>• If dirty or oxidized – Clean</li> <li>• If damaged – replace the Holder M2 and SIM assy</li> </ul>	
	If the issue has not been resolved→	<ul style="list-style-type: none"> <li>• Clean the antenna-to-board connectors on the circuit board and replace the antenna/speaker box assembly</li> </ul>	
	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 →	<ul style="list-style-type: none"> <li>Perform a setting reset</li> </ul>	
	Inspect the microphone's external port	<ul style="list-style-type: none"> <li>If clogged – Clean the microphone port in the board frame or replace the Frame assy as determined necessary.</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>Receiver:</b> No sound or poor quality sound	Before proceeding →	<ul style="list-style-type: none"> <li>Perform a setting reset</li> </ul>	
	Check if the receiver's external ports are clogged	<ul style="list-style-type: none"> <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>	

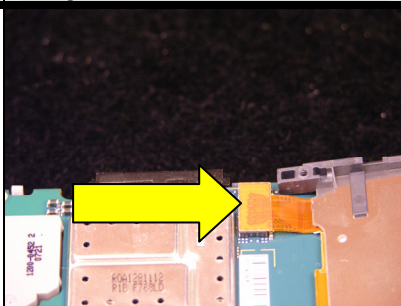
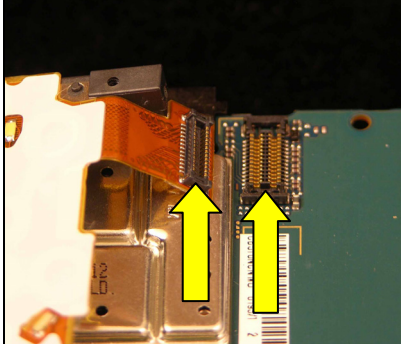
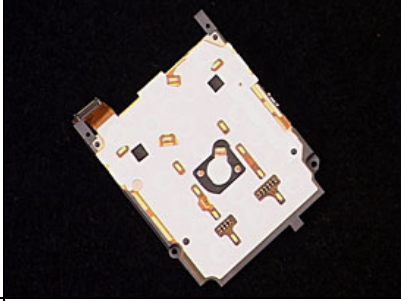


Problem Area	Items to Inspect	Repair Action	Inspection Reference
<b>Receiver:</b> No sound or poor quality sound (Cont.)	If the issue has not been resolved→	<ul style="list-style-type: none"><li>• Clean the receiver's contact pads on the circuit board and replace receiver</li></ul>	
	If the issue is still not resolved→	<ul style="list-style-type: none"><li>• Escalate to an electrical repair level</li></ul>	

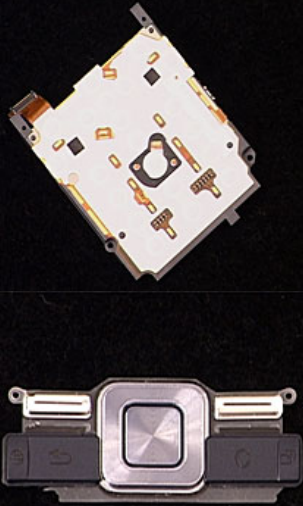
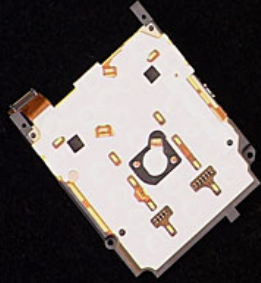


Problem Area	Items to Inspect	Repair Action	Inspection Reference
<b>Rear Speaker:</b> No sound or poor quality sound	Before proceeding → Inspect whether the rear speaker's external ports are clogged	<ul style="list-style-type: none"> <li>Perform a setting reset</li> <li>If clogged – Clean out the rear speaker's external ports and replace the rear cover</li> </ul>	
	If the issue has not been resolved→	<ul style="list-style-type: none"> <li>Clean the rear speaker's contact pads on the circuit board and replace antenna/speaker box assembly</li> </ul>	
	If the issue is still not resolved→	<ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>	

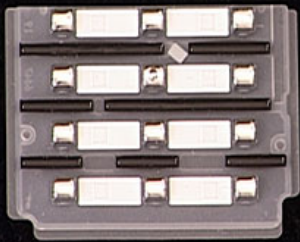
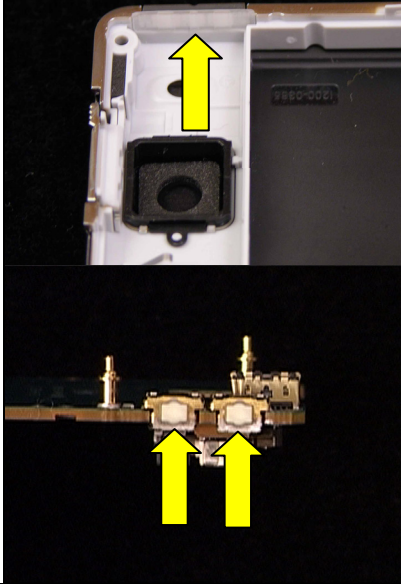
## 5 Key Problems

Problem Area	Items to Inspect	Repair Action	Inspection Reference
<b>Keyboard:</b> 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>	

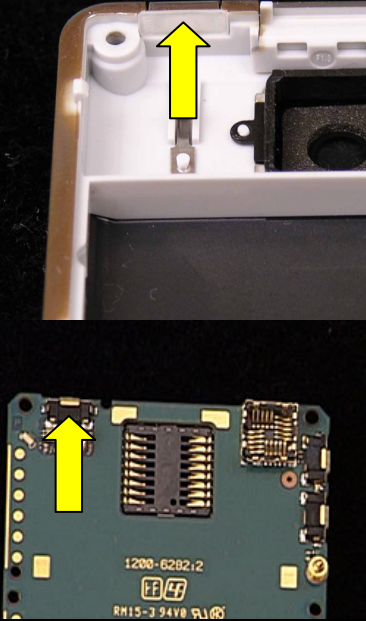


Problem Area	Items to Inspect	Repair Action	Inspection Reference	
<b>Functional Keyboard:</b> A key on the functional keyboard is not functioning or is intermittent	Inspect for debris between and/or damage to the functional keyboard and the corresponding portion of the keyfoil assembly.	<ul style="list-style-type: none"> <li>• If debris is found – Clean both parts</li> <li>• If damage is seen – Replace the functional 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 functional 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>Navigation Key:</b>	Perform the following action →	Escalate to an electrical repair level		
<b>Numeric Keyboard:</b> 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>		
		<ul style="list-style-type: none"> <li>•</li> </ul>		

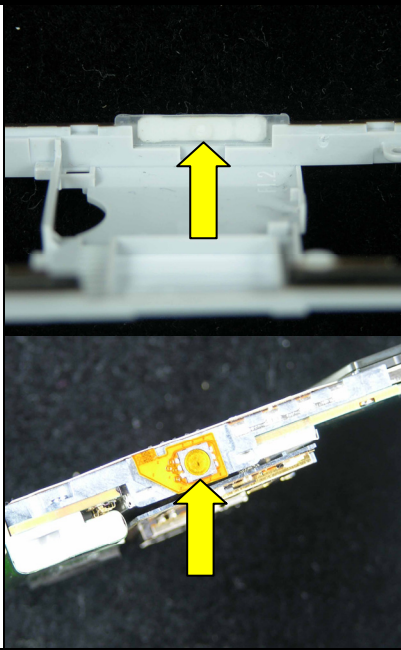
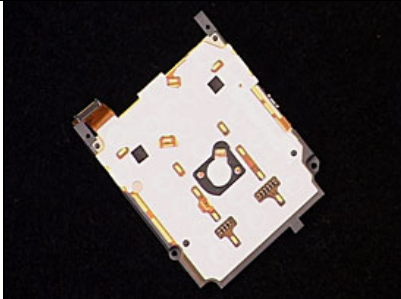


Problem Area	Items to Inspect	Repair Action	Inspection Reference
	If the issue is still not resolved →	<ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>	
<p><b>Volume key:</b> A direction of the key is not functioning or is intermittent</p>	Inspect the portion of 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>	
	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>	



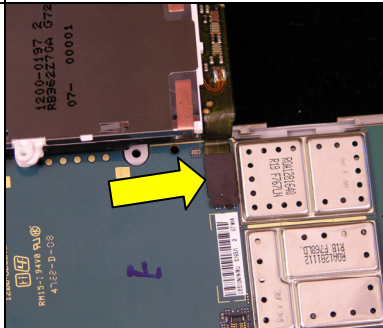
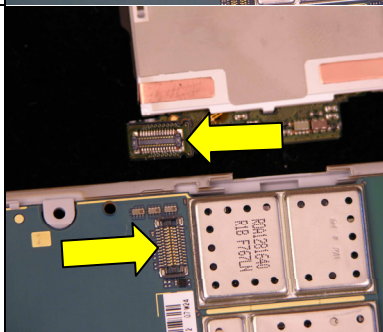
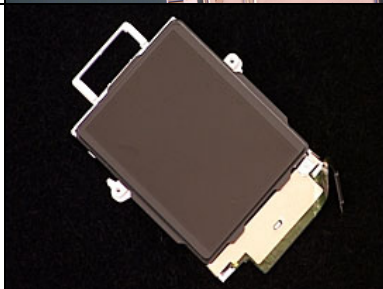
Problem Area	Items to Inspect	Repair Action	Inspection Reference
<b>Power Key:</b>	Inspect the power key and the power key's switch	<ul style="list-style-type: none"> <li>• Make sure the power key is properly positioned in the phone.</li> <li>• If dirt or debris is detected – Clean both the key and the 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
<b>Camera Key:</b>	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>	



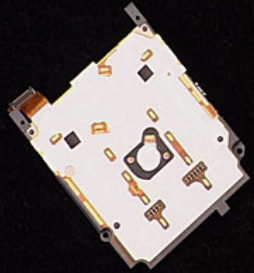
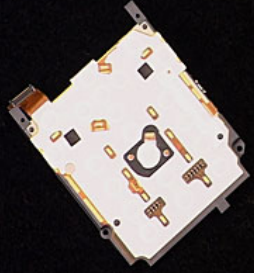
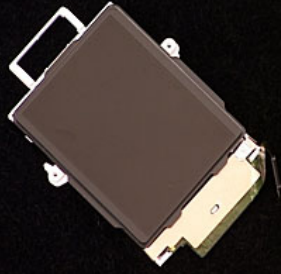
## 6 Display Problems

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>	

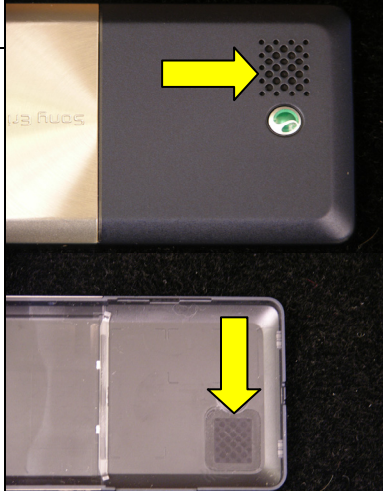
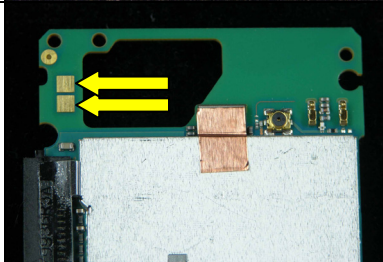



Problem Area	Items to Inspect	Repair Action	Inspection Reference
If a display has lines or missing pixels	Perform the following action →	<ul style="list-style-type: none"><li>• Replace the LCD</li></ul>	
	If the issue is still not resolved →	<ul style="list-style-type: none"><li>• Escalate to an electrical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

## 7 Illumination Problems

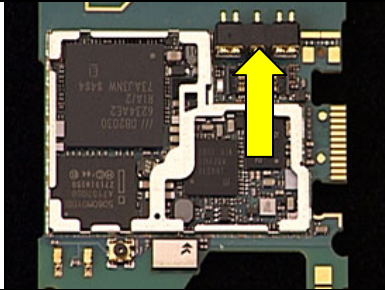
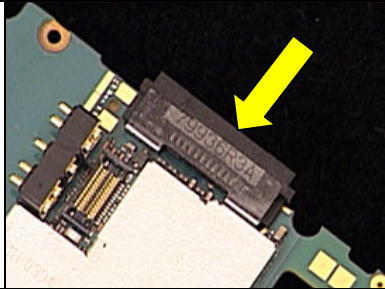
Problem Area	Items to Inspect	Repair Action	Inspection Reference
<b>Keyboard Illumination:</b> Neither the numeric or the functional keyboard illuminates	Perform the following action →	<ul style="list-style-type: none"> <li>Replace the key foil complete</li> </ul>	
	If the issue is still not resolved→	<ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>	
<b>Keyboard Illumination:</b> A portion of the numeric or functional 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>Navigation Key Illumination:</b>	Refer to the “ <b>Keyboard</b> ” sections under “ <b>Illumination Problems</b> ”		
<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

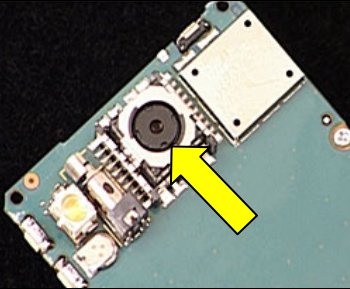

Problem Area	Items to Inspect	Repair Action	Inspection Reference
<b>Rear speaker:</b> No sound or poor quality sound	Before proceeding →	<ul style="list-style-type: none"> <li>Perform a setting reset</li> </ul>	
	Inspect whether the rear speaker's external port is clogged	<ul style="list-style-type: none"> <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>Clean the rear speaker's contact pads on the circuit board and replace antenna/speaker box assembly</li> </ul>	
	If the issue is still not resolved→	<ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>	



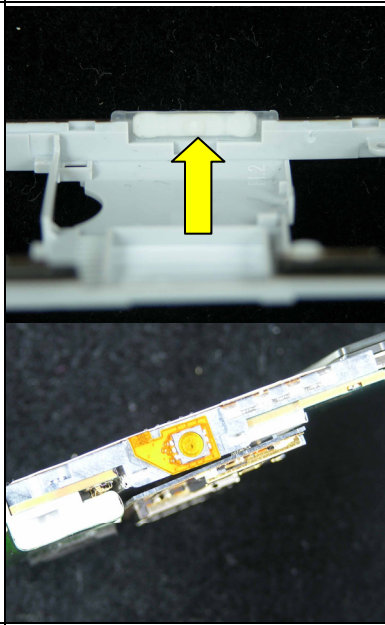
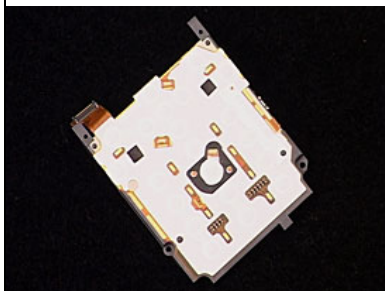
## 9 Charging/Capacity Problems

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>	

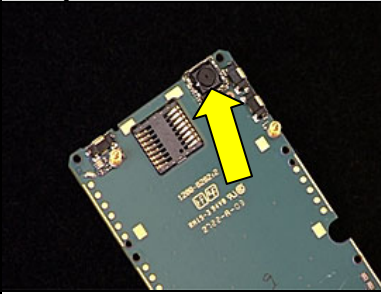
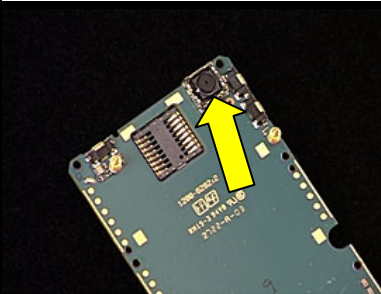


Problem Area	Items to Inspect	Repair Action	Inspection Reference
Will not capture an image when pressing the camera key	To determine whether or not the problem is with the camera button, try capturing an image by pressing the navigation key	<ul style="list-style-type: none"> <li>• If pressing the navigation key <b>does not take a picture</b> - Send to an electrical repair location</li> <li>• If pressing the navigation key <b>does take a picture</b> – Perform the remaining inspect/repair procedures in this section</li> </ul>	
	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>	
	If the issue has not been resolved →	<ul style="list-style-type: none"> <li>• Replace the key foil complete</li> </ul>	



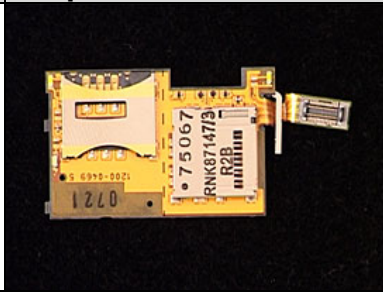
Problem Area	Items to Inspect	Repair Action	Inspection Reference
	If the issue is still not resolved →	<ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>	

## 11 Video Call Camera Problems – T650 Only

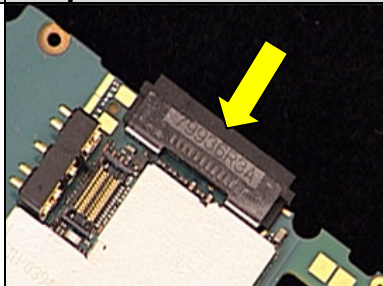
Problem Area	Items to Inspect	Repair Action	Inspection Reference
Lines or marks in picture	Visually inspect the VGA camera window	<ul style="list-style-type: none"> <li>If dirty – Clean the VGA camera window</li> <li>If scratched – Replace VGA camera window</li> <li>If damaged – Replace VGA Camera</li> </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	<ul style="list-style-type: none"> <li>If dirty or oxidized – Clean</li> <li>If damaged – replace the Holder M2 and SIM assy</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>	

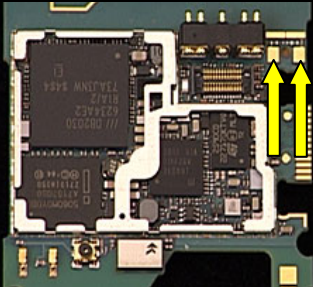

## 13 Data Transfer Problems using a Data Cable

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>	
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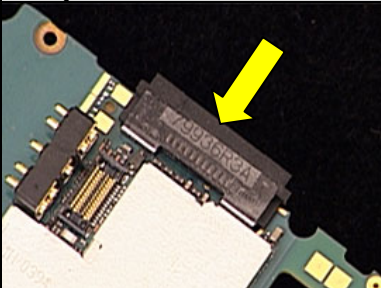
## 14 Bluetooth Problems

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 Holder M2 and SIM assy</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 Memory Stick Problems

Problem Area	Items to Inspect	Repair Action	Inspection Reference
Phone does not detect memory stick	Perform the following action →	<ul style="list-style-type: none"> <li>Escalate to an electrical repair level</li> </ul>	

## 16 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> </ul>	
	If the issue has not been resolved→	<ul style="list-style-type: none"> <li>• Escalate to an electrical repair level</li> </ul>	

## 17 Revision History

Rev.	Date	Changes / Comments
A	2007-08-16	Initial Release