



Trouble Shooting Guide, Electrical

Applicable for T650 and T658

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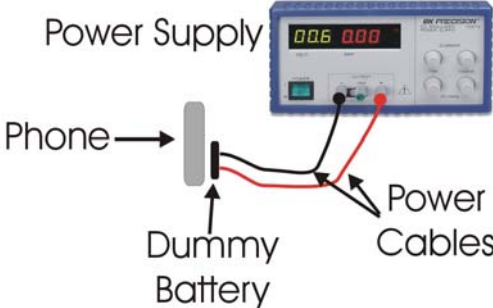



1 General


The purpose of this document is to indicate the electrical level repair actions associated with the different failure symptoms.

For symptoms that have multiple repair actions, the repair actions are listed in order of their probability of creating a successful repair. The first action has the highest probability, and subsequent actions have lower probabilities. The intention is for the repair technician to implement the first repair action and then retest the phone. If the phone continues to fail the same test, then the technician should continue to the second repair action. If the phone continues to fail the same test after all of the repair actions are exhausted, then the phone will be considered not reparable at this level. This document should be used only after the actions from the Mechanical Trouble Shooting Guide have been exhausted for the specific symptom.

Voltage, current, and resistance information is provided for some symptoms to enable faster repairs. Perform current measurements using a dummy battery and power supply with digital current display. The phone should be fully assembled. Perform voltage and resistance measurements with a multimeter. Purchasing this equipment and performing these measurements is optional but recommended.

| | |
|---|---|
| <p>Measure Current in Milliamps (mA)</p>  <p>Power Supply</p> <p>Phone</p> <p>Dummy Battery</p> <p>Power Cables</p> | <p>Perform current measurements using a dummy battery and power supply with digital current display. The phone should be fully assembled.</p> |
| <p>Measure Diode Voltage (VDC →)</p>  <p>Multimeter</p> | <p>Perform voltage measurements with a multimeter.</p> |



| | |
|---|---|
| <p>Measure Resistance in Ohms (Ω)</p>  <p>Multimeter</p> | <p>Perform resistance measurements with a multimeter.</p> |
|---|---|



2 Repair Actions for Manual Test Failures

| Failure | Failure Symptom | Repair Action |
|---|---|---|
| 2.1 Power On / Off | Current draw greater than 300 m Amps | <ul style="list-style-type: none"> • N2000 • N8000 – Approved Centers Only |
| | Current draw when powered off | <ul style="list-style-type: none"> • N8000 – Approved Centers Only |
| | Hangs at gray display. Constant vibration. Will not power off. | <ul style="list-style-type: none"> • B2100 |
| | Draws current when pushing power key, returns to zero | <ul style="list-style-type: none"> • D2200 |
| | Powers on by itself after installing battery. Will not power off. | <ul style="list-style-type: none"> • Replace S8503 if damaged • V2504 |
| | No response when pushing power key (no current change) | <ul style="list-style-type: none"> • Replace S8503 if damaged • N2000 |
| | Phone hang when Bluetooth is turned on. If you can't recreate the phone hang problem, you should check that Bluetooth is switched on to eliminate this possibility | <ul style="list-style-type: none"> • N8020 |
| 2.2 Software Flash | Other symptoms | <ul style="list-style-type: none"> • Replace X8500 if damaged • N2000 |
| | USB icon does not flash Error message "USB device not recognized" | <ul style="list-style-type: none"> • N8506 • D2304 • V2201 |
| | No response from computer or phone | <ul style="list-style-type: none"> • V2201 • N8506 |
| 2.3 Charging | Other symptoms | <ul style="list-style-type: none"> • D2304 |
| | Charging from power outlet | <ul style="list-style-type: none"> • V2204 if short circuit • V2202 • V2203 • N2000 |
| | Charging from computer via USB | <ul style="list-style-type: none"> • V2201 • N8506 • N2000 |
| 2.4 Charging indicator (RED LED) | | <ul style="list-style-type: none"> • V8503 • N2000 |
| 2.5 Hands-Free connection (PHF) | | <ul style="list-style-type: none"> • V2305 if short circuit • N4202 • N2000 |
| 2.6 SIM | | <ul style="list-style-type: none"> • Replace X8503 if damaged • N2000 |



| Failure | Failure Symptom | Repair Action |
|--|---|--|
| 2.7 Display | | <ul style="list-style-type: none"> • Replace X8502 if damaged • Z3100 • Z3101 • Z3102 |
| 2.8 Display /Keypad LED Illumination | Display and keys work, but they are dark. | <ul style="list-style-type: none"> • N3101 • N2000 |
| | Key light works, but display are dark | <ul style="list-style-type: none"> • Replace X8502 if damaged |
| | Display light works, but keys are dark | <ul style="list-style-type: none"> • Replace X8501 if damaged • V8100 • N8100 |
| 2.9 Keypad Keys | | <ul style="list-style-type: none"> • Replace X8501 if damaged |
| 2.10 Volume Down/Up Keys | | <ul style="list-style-type: none"> • Replace S8501 if damaged • Replace S8502 if damaged |
| 2.11 Camera Key | | <ul style="list-style-type: none"> • Replace X8501 if damaged |
| 2.12 On/Off key | | <ul style="list-style-type: none"> • Replace S8503 if damaged |
| 2.13 Navigation Key | | <ul style="list-style-type: none"> • Replace X8501 if damaged |
| 2.14 Vibrator | | <ul style="list-style-type: none"> • B8500 • N2000 |
| 2.15 Earphone (Speaker, Receiver) | | <ul style="list-style-type: none"> • N2000 |
| 2.16 Polyphonic Speaker (Alert, Speakerphone) | | <ul style="list-style-type: none"> • C4126 if short circuit • N4100 • N2000 • L4102 if more than 1 Ohm • L4103 if more than 1 Ohm • L8502 if more than 1 Ohm • L8503 if more than 1 Ohm |
| 2.17 Backup Battery | | <ul style="list-style-type: none"> • C8528 |
| 2.18 Microphone | | <ul style="list-style-type: none"> • B8200 • N4202 • N2000 |
| 2.19 Real Time Clock | | <ul style="list-style-type: none"> • B2100 |
| 2.20 Camera (Large, Rear) | | <ul style="list-style-type: none"> • Replace X8504 if damaged • N8503 • D8500 • N8500 if illumination problems |
| 2.21 VGA Camera (Small, Front) | | <ul style="list-style-type: none"> • Replace X8505 if damaged • D8500 |
| 2.22 Camera Flash | | <ul style="list-style-type: none"> • V8100 • N8100 |
| 2.23 Bluetooth | | <ul style="list-style-type: none"> • N8020 • N2000 |



| Failure | Failure Symptom | Repair Action |
|------------------|-----------------|--|
| 2.24 FM Radio | | <ul style="list-style-type: none">• N8020• N2000 |
| 2.25 Memory Card | | <ul style="list-style-type: none">• Replace X8503 if damaged |

3 Repair Actions for Go/No Go Test Failures

| Failure | Repair Action |
|---|---|
| Fails any part of Go/No Go testing | <ul style="list-style-type: none">• run the calibration routine |
| | <ul style="list-style-type: none">• replace the antenna• Replace X8000 if damaged• Replace X8001 if damaged• Replace X8507 front GND if damaged• rerun the phone through Go/No Go testing |
| Fails Go/No Go test, but passes calibration | |
| Fails Go/No Go test after passing calibration | <ul style="list-style-type: none">• change X6000 and retest |

4 Repair Actions for Calibration Failures

4.1 T650

| Failure | Repair Action |
|---|--|
| Fails any part of the calibration routine | <ul style="list-style-type: none">• Replace X6000 if damaged• N8000 GSM – Approved Centers Only |

4.2 T658

| Failure | Repair Action |
|---|---|
| Fails any part of the calibration routine | <ul style="list-style-type: none">• Replace X6000 if damaged• N8000 GSM – Approved Centers Only• N8010 GSM– Approved Centers Only |



5 Revision History

| Rev. | Date | Changes / Comments |
|------|------------|---|
| A | 2007-08-16 | Initial release |
| B | 2007-09-03 | Removed V8102 |
| C | 2008-05-27 | Changes in Chapter 2.2, 2.3 |
| 4 | 2009-02-18 | Added L4102,L4103,L8502,L8503 in Chapter 2.16 |