

# Trouble Shooting Guide, Electrical

Applicable for P1

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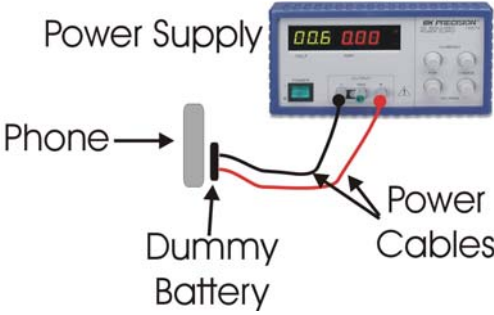


# 1 General

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 repairable 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 (<math>\Omega</math>)</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 | <i>Current draw greater than 300 mAmps</i>   | <ul style="list-style-type: none"> <li>• <b>V4001</b> if short circuit</li> <li>• <b>D2665</b> if getting hot</li> <li>• <b>D1100</b> if getting hot<br/>Marlin- Approved Centers Only</li> <li>• <b>N1400</b> if getting hot<br/>Ray - Approved Centers Only</li> <li>• <b>N2000</b></li> </ul> |
|                  | <i>Current draw when powered off</i>   | <ul style="list-style-type: none"> <li>• <b>V4001</b> if short circuit</li> <li>• <b>D1100</b> if getting hot<br/>Marlin- Approved Centers Only</li> <li>• <b>N1400</b> if getting hot<br/>Ray - Approved Centers Only</li> <li>• <b>N2000</b></li> </ul>  |
|                  | <i>Current draw when powered off. The phone is using 9mA after the phone is switch on and off. The dummy battery need to be connected when on and off switch is performed.</i> | <ul style="list-style-type: none"> <li>• <b>D2500</b></li> </ul>   |
|                  | <i>Using no current when On/Off button is pressed and will not start Start up when connected to charger</i>  | <ul style="list-style-type: none"> <li>• <b>S2125</b></li> </ul>   |
|                  | <i>The phone can not start, only the vibrator start up process is working and the units is using 30mA.</i>   | <ul style="list-style-type: none"> <li>• <b>B2500</b></li> </ul>   |
|                  | <i>The phone can not start, only the vibrator start up process is working and the units is using 30mA.</i>   | <ul style="list-style-type: none"> <li>• <b>B2510</b></li> </ul>   |
|                  | <i>The phone can not start, only the vibrator start up process is working and the units is using 50mA.</i>   | <ul style="list-style-type: none"> <li>• <b>D2500</b></li> </ul>   |
|                  | <i>Draws current when pushing On/Off key, returns to zero</i>  | <ul style="list-style-type: none"> <li>• <b>N2000</b></li> <li>• <b>N4030</b></li> <li>• <b>N4021</b></li> <li>• <b>N4040</b></li> <li>• <b>N4050</b></li> <li>• <b>D2501</b></li> </ul>   |
|                  | <i>Other symptoms</i>  | <ul style="list-style-type: none"> <li>• <b>X4000</b> if damaged</li> </ul>  |



| Failure                                | Failure Symptom                                  | Repair Action   |
|--|--|---|
| 2.2 Software Flash                     |  | <ul style="list-style-type: none"> <li>• <b>N2662</b><br/>if pin 10 or pin11 at <b>X2665</b><br/><b>System connector</b> is short circuit to pin 9 GND</li> <li>• <b>D2665</b></li> <li>• <b>D2663</b></li> </ul> |
| 2.3 USB Data                           |  | <ul style="list-style-type: none"> <li>• <b>N2662</b><br/>if pin 10 or pin11 at <b>X2665</b><br/>short circuit to pin 9 GND</li> <li>• <b>D2663</b></li> <li>• <b>D6000</b></li> </ul>                            |
| 2.4 Charging                           | Charging from power outlet                       | <ul style="list-style-type: none"> <li>• <b>V2663</b> if short circuit</li> <li>• <b>V4001</b><br/>if Charging alien battery only</li> <li>• <b>N2000</b></li> </ul>  |
|  | Charging from computer via USB                   | <ul style="list-style-type: none"> <li>• <b>D2665</b><br/>if pin 1 at <b>X2665</b> is short circuit to pin 9 GND</li> <li>• <b>V4004</b></li> <li>• <b>N2000</b></li> </ul>                                       |
| 2.5 Hands-Free connection              | Phone stuck in PHF mode when PHF is not attached | <ul style="list-style-type: none"> <li>• <b>D2665</b></li> </ul>  |
| 2.6 SIM                                |  | <ul style="list-style-type: none"> <li>• <b>Replace sub PCB</b></li> <li>• <b>N2000</b></li> </ul>  |
| 2.7 Vibrator                           |  | <ul style="list-style-type: none"> <li>• <b>N2000</b></li> </ul>  |
| 2.8 Charging indicator (RED/GREEN LED) |  | <ul style="list-style-type: none"> <li>• <b>V2181</b></li> <li>• <b>V2191</b></li> <li>• <b>N2000</b> if no light at all</li> </ul>   |
| 2.9 Display                            |  | <ul style="list-style-type: none"> <li>• <b>X2820</b> if damaged</li> </ul>   |
| 2.10 TOUCHSCREEN                       |  | <ul style="list-style-type: none"> <li>• <b>X2820</b></li> <li>• <b>D2500</b></li> </ul>  |
| 2.11 Display Illumination              |  | <ul style="list-style-type: none"> <li>• <b>X2820</b> if damaged</li> <li>• <b>N4070</b></li> <li>• <b>N4071</b></li> </ul>   |



| Failure                                      | Failure Symptom  | Repair Action  |
|--|--|--|
| 2.12 Keyboard Illumination                   |  | <ul style="list-style-type: none"> <li>• <i>X2821 if damaged</i></li> </ul>  |
| 2.13 Keyboard                                |  | <ul style="list-style-type: none"> <li>• <i>X2821 if damaged</i></li> <li>• <i>D2500</i></li> </ul>                                      |
| 2.14 On/Off Key                              |  | <ul style="list-style-type: none"> <li>• <i>S2125</i></li> <li>• <i>V2125</i></li> <li>• <i>N2000</i></li> </ul>                         |
| 2.15 Operator Key                            |  | <ul style="list-style-type: none"> <li>• <i>S2821</i></li> <li>• <i>D2500</i></li> </ul>   |
| 2.16 JOG Dial                                |  | <ul style="list-style-type: none"> <li>• <i>S2820</i></li> <li>• <i>D2500</i></li> </ul>   |
| 2.17 Real Time clock                         | <i>The clock has to be set after the battery has been detached</i>   | <ul style="list-style-type: none"> <li>• <i>Replace sub PCB</i></li> </ul>   |
|  | <i>The clock stops when the phone is powering down, after powering up the clock start the same time is has been powered down</i> | <ul style="list-style-type: none"> <li>• <i>B2000</i></li> </ul>   |
| 2.18 Back Speaker (Loudspeaker, Bas Speaker) |  | <ul style="list-style-type: none"> <li>• <i>N5505</i></li> <li>• <i>D2500</i></li> </ul>   |
| 2.19 Ear Speaker                             |  | <ul style="list-style-type: none"> <li>• <i>V5000</i></li> <li>• <i>V5001</i></li> <li>• <i>N2000</i></li> </ul>                         |
| 2.20 Hands-Free (PHF) Aux Earphone           |  | <ul style="list-style-type: none"> <li>• <i>N5500</i></li> <li>• <i>N5010</i></li> <li>• <i>N2000</i></li> <li>• <i>D2500</i></li> </ul> |
| 2.21 Microphone                              |  | <ul style="list-style-type: none"> <li>• <i>D5001</i></li> <li>• <i>N2000</i></li> </ul>   |
| 2.22 Hands-Free (PHF) Aux Microphone         |  | <ul style="list-style-type: none"> <li>• <i>N5010</i></li> <li>• <i>N2000</i></li> </ul>   |
| 2.23 Camera Mega pixel                       |  | <ul style="list-style-type: none"> <li>• <i>X2743 if damaged</i></li> <li>• <i>D2500</i></li> </ul>                                      |
| 2.24 Camera Flash                            |  | <ul style="list-style-type: none"> <li>• <i>X2742 if damaged</i></li> </ul>  |



| Failure           | Failure Symptom | Repair Action  |
|-------------------|-----------------|--|
| 2.25 VGA Camera   |                 | <ul style="list-style-type: none"><li>• <i>X2741 if damaged</i></li><li>• <i>D2500</i></li></ul>   |
| 2.26 WLAN         |                 | <ul style="list-style-type: none"><li>• <i>X6000 if only short distance</i></li><li>• <i>X6001 if only short distance</i></li><li>• <i>B6000</i></li><li>• <i>N6000</i></li><li>• <i>D2500</i></li></ul> |
| 2.27 Memory stick |                 | <ul style="list-style-type: none"><li>• <i>Replace sub PCB</i></li></ul>   |
| 2.28 Bluetooth    |                 | <ul style="list-style-type: none"><li>• <i>X3001 if only short distance</i></li><li>• <i>N3001</i></li><li>• <i>D2500</i></li></ul>  |
| 2.29 Fm Radio     |                 | <ul style="list-style-type: none"><li>• <i>N5508</i></li></ul>   |
| 2.30 IRDA         |                 | <ul style="list-style-type: none"><li>• <i>H2660</i></li></ul>   |



### 3 Repair Actions for Go/No Go Test Failures

| Failure  | Repair Action  |
|--|--|
| <i>Fails any part of Go/No Go testing</i>            | <ul style="list-style-type: none"><li>• Run the calibration routine</li></ul>  |
| <i>Fails Go/No Go test, but passes calibration</i>   | <ul style="list-style-type: none"><li>• Replace the <b>antenna</b> if damaged</li><li>• Check <b>X1010, X1011 and X1012</b> for damage and replace if necessary</li><li>• Rerun the phone through Go/No Go testing</li></ul> |
| <i>Fails Go/No Go test after passing calibration</i> | <ul style="list-style-type: none"><li>• Change <b>X1001</b> and retest</li></ul>   |

### 4 Repair Actions for Calibration Routine Failures

| Failure   | Repair Action   |
|---|---|
| <i>Fails any part of the GSM calibration routine</i>  | <ul style="list-style-type: none"><li>• Replace <b>X1001</b> if damaged</li><li>• <b>D1100</b> Marlin – Approved Centers Only</li><li>• <b>N2000</b></li></ul>  |
| <i>Fails any part of the UMTS calibration routine</i> | <ul style="list-style-type: none"><li>• Replace <b>X1001</b> if damaged</li><li>• <b>N1400</b> Ray – Approved Centers Only</li><li>• <b>D2005</b></li><li>• <b>D1100</b> Marlin – Approved Centers Only</li></ul> |

## 5 Revision History

| Rev. | Date       | Changes / Comments  |
|------|------------|---|
| A    | 2007-07-11 | Initial release   |
| B    | 2007-07-23 | Graphical edited  |
| C    | 2007-10-15 | Added N4071, B2000, B2510, B2500, Y2500                             |
| D    | 2007-10-18 | Removed some components   |
| E    | 2007-10-31 | New Trouble Shooting Guide  |
| F    | 2007-11-22 | Added V5000, V5001, N4021, N4040, N4030, N4050, X2821, X2741, X2820 |
| 7    | 2008-03-26 | Added a new Failure Symptom under On/off problem                    |