



MOTOROLA

Motorola GmbH, CSS Center, Mobile Devices

Doc. No: TSG_V360

Version: Draft

Date: 22.03.2006

Title: Troubleshooting-Guide V360

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V360 Debug-Guide





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1.0 Preamble

This document was created to assist analyzers when fixing problems on Motorola GSM Phones. All information was collected during the repair in the Repairentitlement Group Flensburg.



2.0 Some basic tips

2.1 CE Connector

- clean the contacts of the CE-connector before checking the phone. Charging-problems and trouble during the software-upgrade may be avoided.

2.2 Software upgrade

- always use the latest Software available for the phone (Software-bugs are excluded)

2.3 Visual inspection

- use a microscope
- check for liquid damage (water indicator)
- check for missing, broken or unsoldered parts
- check for mechanical damage (board twisted, tracks defect etc.)

2.4 Cross check

- before beginning to replace/change parts or soldering anything try to consider the failure from all sides.

2.5 Solder process

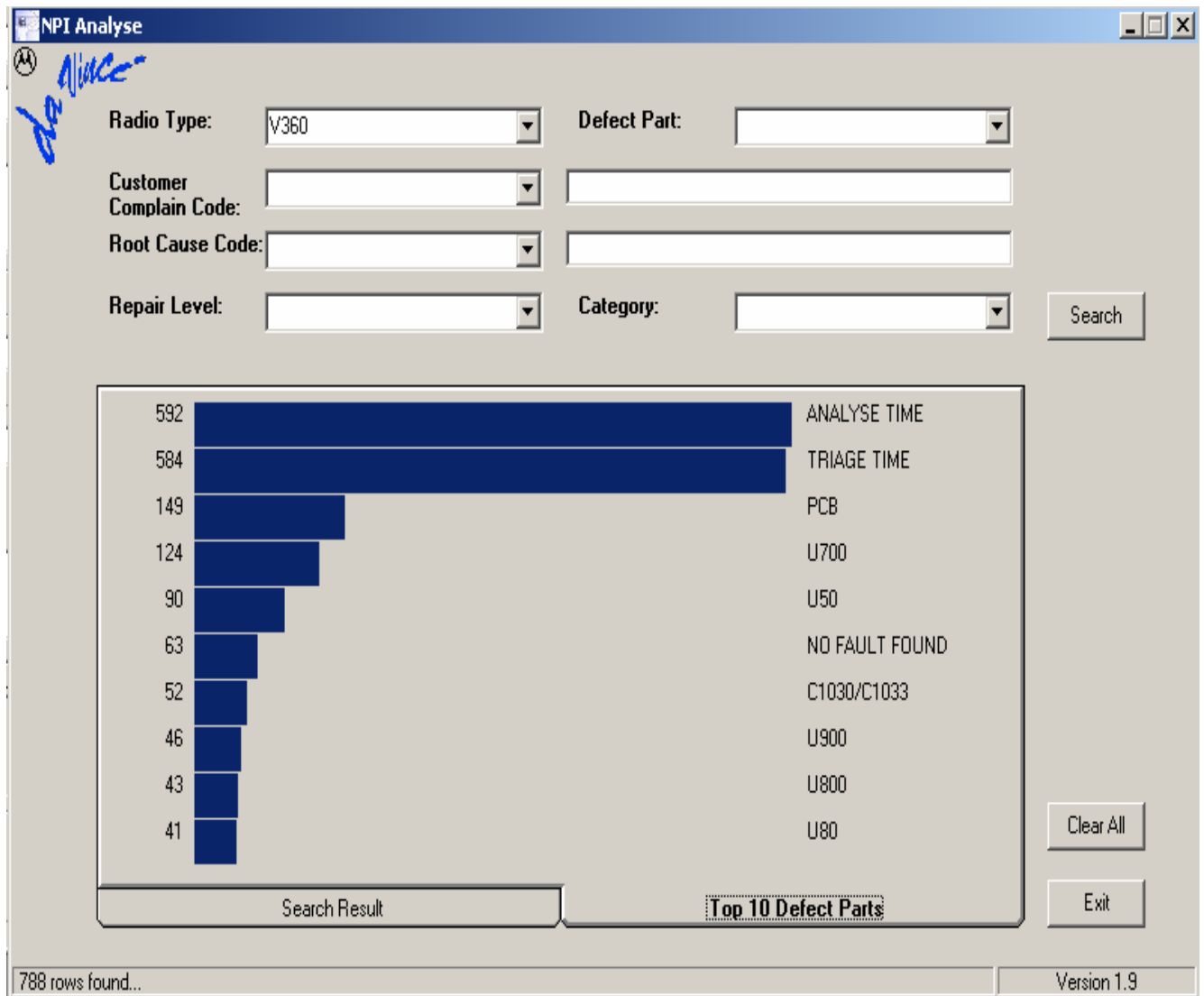
- the soldering process of lead-free products always must be done with the aid of a bottom-heater and flux for lead-free soldering
- always cover sensitive parts with shields
- remove the RTC Battery, before soldering

2.6 Power Supply

- The voltage via USB must be 5.1V



Top 10 Defect Parts from V360

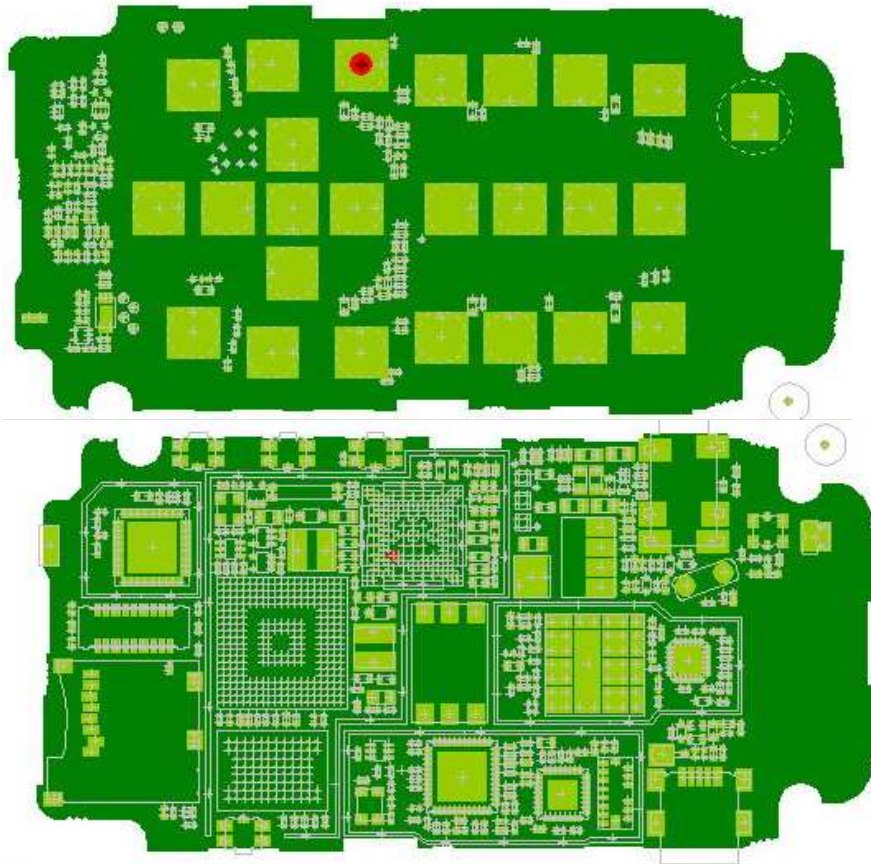




Most frequent failure-codes - root causes

TON00:

Phone is starting up via Mini-USB, but doesn't start via battery



There is only the **ON1B** connection between On/Off Button (S514) and Atlas (U900)

Defective Part: U900

**TON00:**

- started without any problem with EMUcable and/ or battery
- flexed factory flex ...test passed
- after flashing the 1.FF customer file it has not been detected by the RepairStudio

Reason:

MISC/ setup in the Repairstudio gives you the opportunity to choose between RSDlite and an internal USB provider.

If RSD lite is not able to detect the phone, try internal build USB provider.

Note: If is not possible to flash with the internal build version!

With the internal version, the phone was detected and after switching back to RSDlite it was also detected !

TON03:

Phone switch itself off in standby. Check the RTC clock (32 kHz) at Y900. Is the signal unstable, replace Y900. (Panicdata in the Repairstudio is : DSM_MEASUREMENT_ERROR.

**TON01**

The phone draws current 230mA and makes an USB device failure (Device Manager display it.) Replace U800 and U700 (U700 has to be replaced due to Onetime IMEI).

LEVEL4 repair!

The phone draws current 230mA and is in flash-mode, try at first a reflash, when it doesn't resolve the failure, replace U700. **LEVEL4 repair!**

The phone draws current 14mA, replace U700. **LEVEL4 repair!**

Check the RTC clock (32 kHz) at Y900, if there is no signal replace Y900, if there is still no signal, replace U900 (Atlas). When the clock is present, then replace U700.

LEVEL4 repair!

The phone draws current 230mA and drops down to 14mA, check the RTC clock (32kHz) at Y900, if there is no signal replace Y900, if there is still no signal replace U900.

The phone draws current 1,5A and U900 gets hot, replace U900.

It is permitted to use a heating protection shield for U301 (Bluetooth chip) and for S529/S532/S533 (SideButtons).

If you have to solder U800/U700/U900/Y900 etc. and don't use protection shields, the Bluetooth chip U301 could be damaged by the heat and the PCB will draw a maximum current (TON01).



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CPR01:

Manualtest failed at **GSM 850 PA Phase PS06**

min 30dBm
max 36dBm
result 14.31021dBm

TX-Signal at U50 IN	good
TX-Signal at U50 OUT	good
TX-Signal at U80 IN	good
TX-Signal at U80 OUT	bad/low

Defective Part: U80



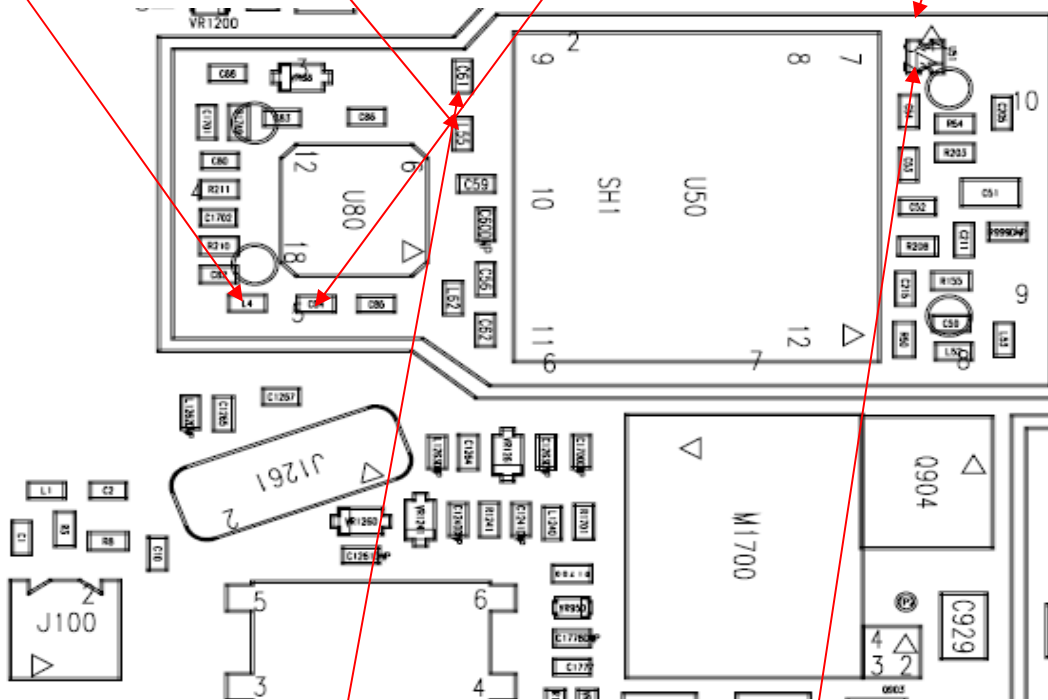
CPR01

Input TX V80 (Antenna switch)

Output TX U80

L4

Click Shild SH1



Output U50 (PA)

Input U50 (PA)

For more detailed measurement, we permit the FLview in addition with the Blockdiagram of your phone.



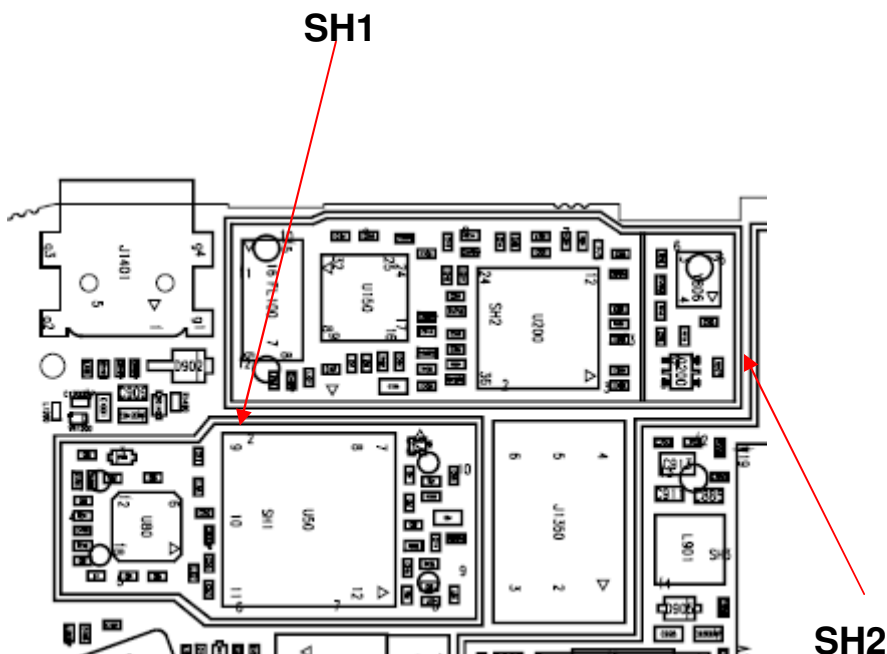
CPR00

Phone can't make calls. Tx VCO U200 oscillates. Remove "click-shields (SH1, SH2), for detailed measurements (see picture below). At M1730 (antenna connector) no Tx signal, at L4 Tx signal ok, replace J100 (see picture above).

Phone can't make calls. Tx VCO U200 oscillates. At M1730 (antenna connector) no Tx signal, at L4 (behind U80) also no signal, at L55 (input U80) Tx signal ok, replace U80.

Phone can't make calls. Tx VCO U200 oscillates. At M1703 (antenna connector) no Tx signal, at L4 (behind U80) no signal, at L55 (input U80) no signal, at C61 (output PA) also no signal, at U51 (input PA) Tx signal present, replace U50.

Phone can't make calls, Tx VCO U200 doesn't oscillates, replace U200.



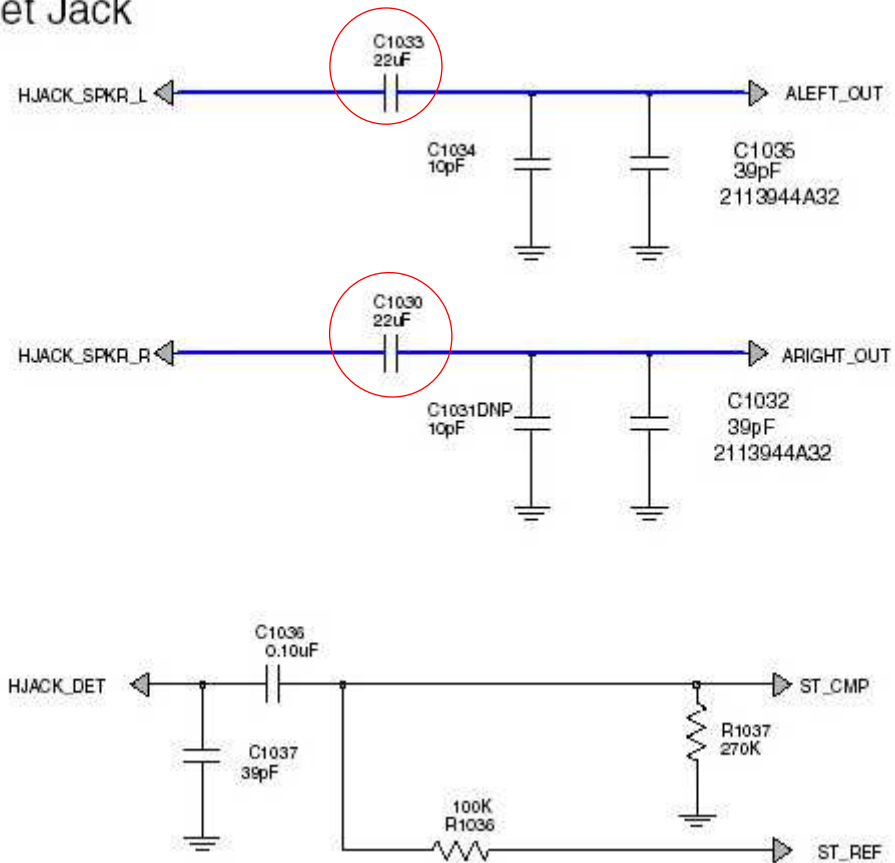
Tip: See field Service Bulletin BJCCFSB2005-233



CPR00

- no MIC or SPKR
- sounds in multimedia menu don't start
- no audio in call

Headset Jack



C1033/C1030 defect



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ALT01

- with CIT in RepairStudio ringer is working
- sounds in multimedia menu don't start (title is shown but doesn't start)
- incoming call has no ringer but vibrator is active
- audio in a call ok

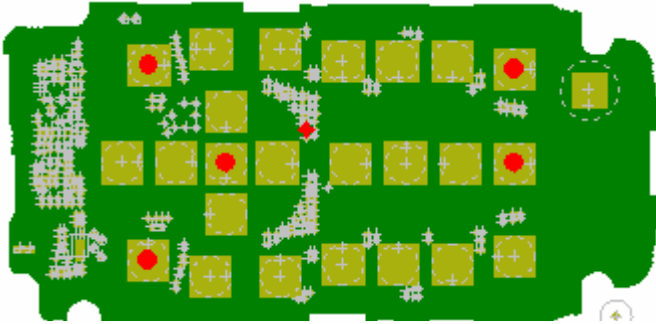
first try was the Neptune (DSP or BB_SAP...) but failed

second try was ATLAS U900 and ringer was working again

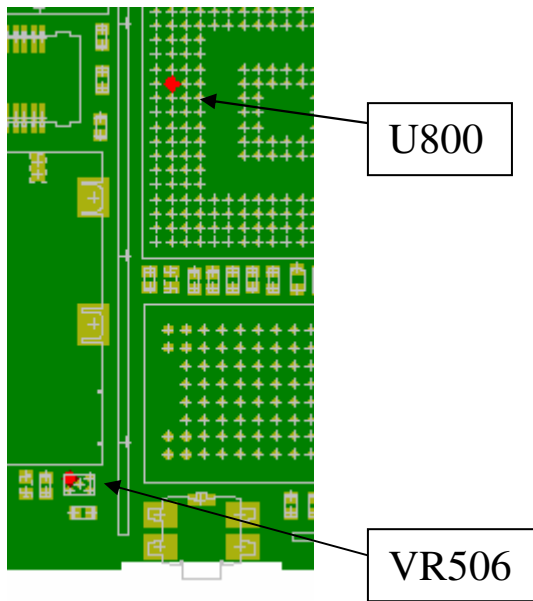


MKP00

The shown keys didn't work:



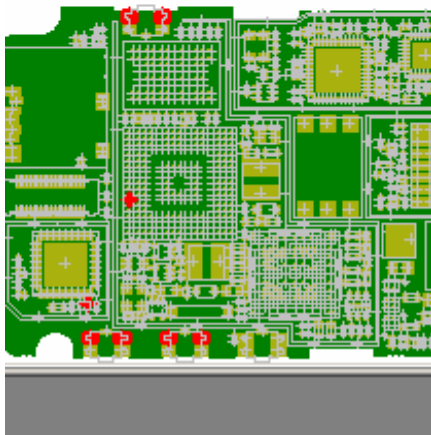
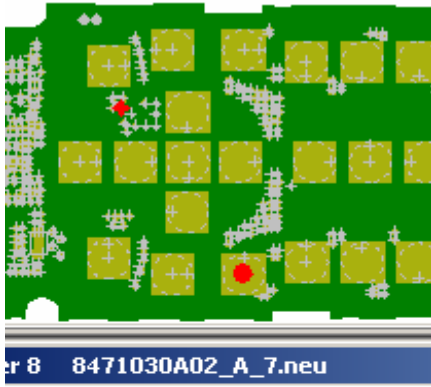
VR 506 was broken. It is connected to U800 pin H2 and the keys shown above.



MKP00

Level 4 keypad problem

- following keys are affected (shown with FL View):



- they all have KBR05 in common, VR508 is not placed , VR505 should be ok, because KBR0/KBR4...are ok
- U800 is defect

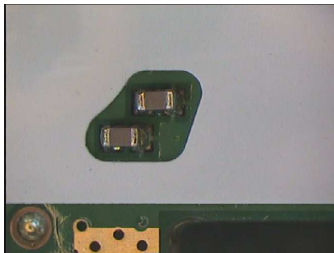


mylar tape „problem“

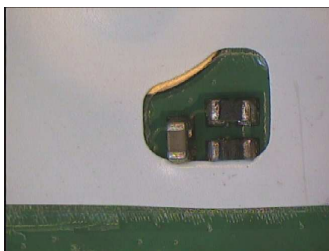
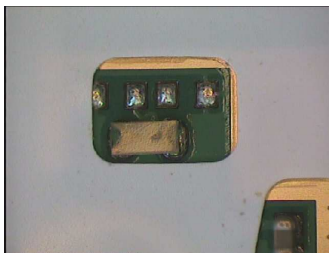
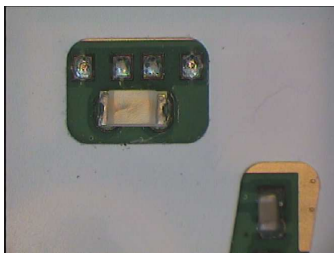
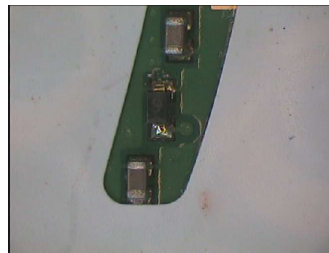
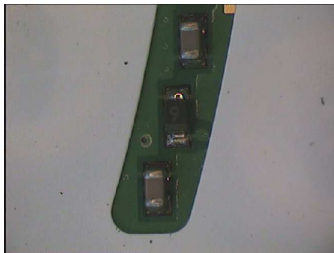
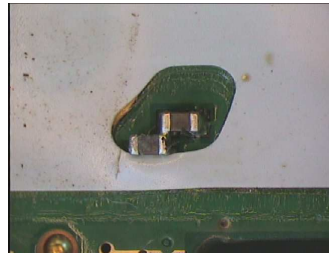
While soldering on the top side of the pcb, the mylar tape on the other side could shrink and move some parts:

examples:

good



bad



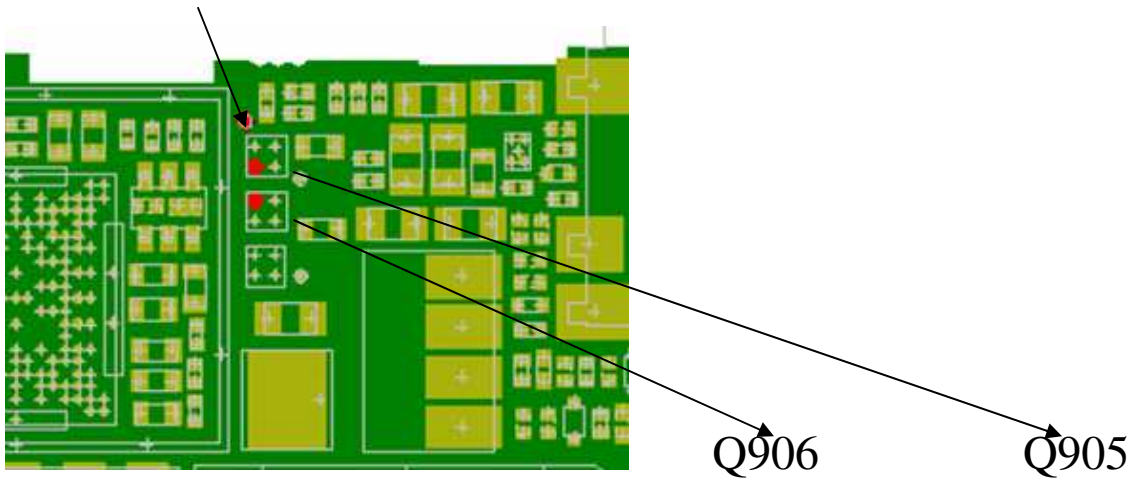
CHG00

Testresult



FLX_BATT	Store battery phasing table	0	0	0 err	P
BATTLCCR	Battery Meter Low Current	-2000	11,60865	2000 mA	P
CHG_LCCR	Charger Supply Low Current	128	38,892625	234 mA	F
BATT_LOW	Battery Meter Low DAC	975	1004	1015 DAC	P
BATTHCCR	Battery Meter High Current	-2000	11,5687	2000 mA	P
CHG_HCCR	Charger Supply High Current	718	36,145725	1073 mA	F
BATT_HI	Battery Meter High DAC	820	1003,8125	896 DAC	F
BATMGAIN	BATTERY METER SLOPE	110	5	146 DAC	F
BATTMOFS	BATTERY METER OFFSET	-10	3	30 DAC	P
BATTPHSE	BATTERY METER PHASE	-20	0900390625	20 N/A	P
BAT_STAT	BATTERY PHASING STATUS	0	1	0 N/A	F
BAT_SENS	Main Battery Sense read back Voltage wit	.1	1,767890625	2,25 volt	P

affected parts shown with FL View:
 testpoint(TP7/4.2V) , connection Q905 drain(pin 4) to Q906 (pin 4)
 drain



Q905 was skewed part. Pin 3 was on the position of pin 4 and shortened the line.

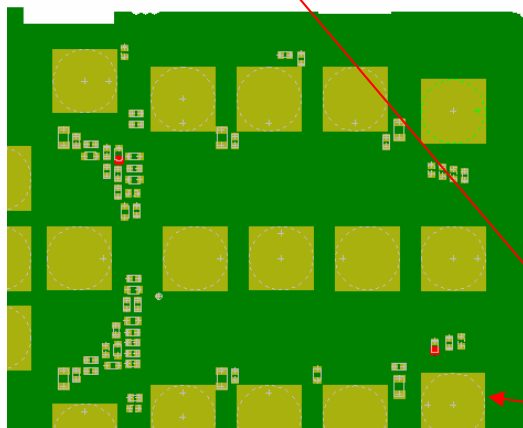
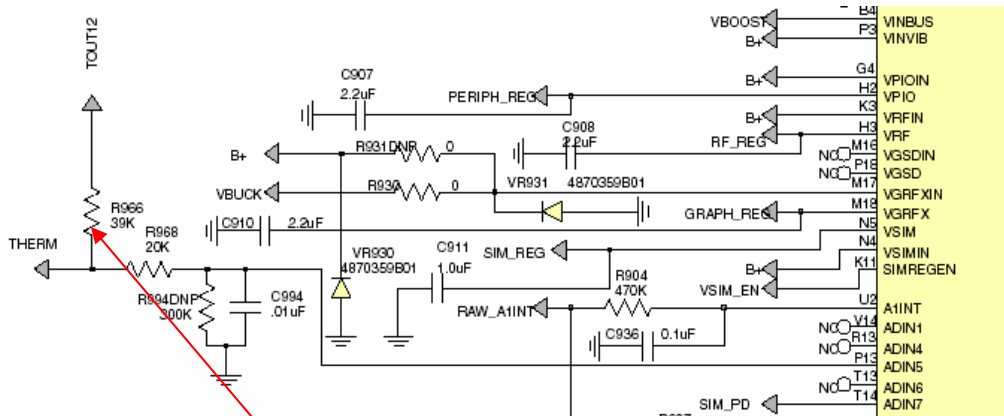


CHG00

- connect charger : „unable to charge“
- 2.8V on pin2 and pin3 of battery connector is ok (this bias voltage is supplied by U800 TOUT12 at pin U10)
- Gate passed because BATT_THERM is not implemented, but failed NexTest with

HON_THRM	Batt Therm Hi batt Chrg On	125	47	178 DAC	F
FLX_BATT	Store battery phasing table	0	1	0 err	F
HON_THRM	Batt Therm Hi batt Chrg On	125	34	178 DAC	F

- found an unsoldered resistor in the thermistor line R968 :

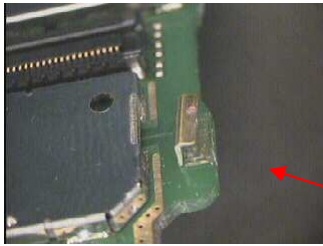


R968 (THERM) located the keyboard side of the pcb



Bluetooth

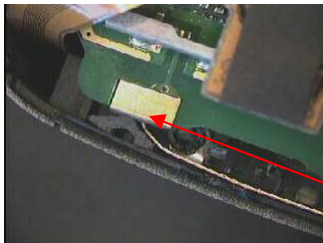
Some bluetooth antennas are torn off the pcb or bend after wrong assembly.
Failure : BT receive, transmit and BT audio problems



bad ~~example~~ for bend antenna



good



bad assembly



good assembly