Troubleshooting Guide MotoRAZR maxx V6
Level 3

Revision History

Date	Version	Comment
2007-07-23	1.0	Initial release of document

Contents

Introduction

Audience

This document aids service personnel in testing and repairing V6 telephones. Service personnel should be familiar with electronic assembly, testing, and troubleshooting methods, and with the operation and use of associated test equipment.

Requirements

Follow the current Technical Requirements for servicing Motorola products as described in the Requirement List for Motorola Authorized Service Centers.

About this Troubleshooting Guide

This document was created to assist analyzers troubleshooting problems on Motorola 3G Phones. All information was collected during the repair in the Repair Entitlement Group Flensburg.

Related Documents

V6 Level 1&2 Service Manual

V6 mechanical Overview

V6 Disassembly Video

V6 Assembly Video

Basic information on troubleshooting Motorola 3G phones

Make sure on any problem, that it is not a software related one by simply doing a 1FF reflash with a Master Reset/Master Clear afterwards. In many cases a simple Master Reset can already fix the problem.

Make sure all contacts are clean.
Use newest approved Software.
Do a visual inspection on customer abuse/liquid contamination.

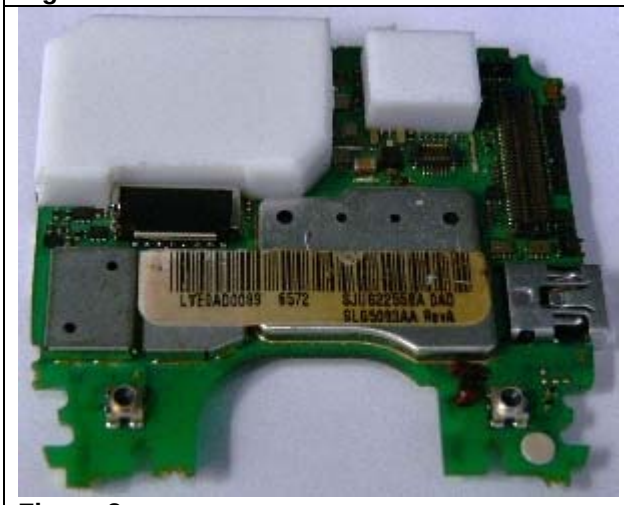
Tools

Required Tools

Main Lens Press Fixture http://md-service.corp.mot.com/Bulletins/PPreview.aspx?Key=1827
Keypad Tab Bent Fixture http://md-service.corp.mot.com/Bulletins/PPreview.aspx?Key=1830

Additional Tools

Following passive and active cooling devices are available at www.multitast.de.

 **Figure 1**	V6 Shield Direktkühlung POP-Processor Artikelnummer: 946071
 **Figure 2**	V6 Shield Direktkühlung Atlas Artikelnummer: 946072
 **Figure 3**	V6 Teflon shield-Set (3pcs) Artikelnummer: 946073

Troubleshooting Level 2

No speaker audio

Probable cause:

a) Transceiver board assembly defective

Verification: Temporarily replace the flip assembly with a known good flip assembly. If the fault has not been cleared, it is because of a defective transceiver board assembly. Forward to an authorized Level 3 Service Center or proceed to level 3 troubleshooting.

b) Speaker bad soldered/defective

Remove flip cover and visually inspect soldered contacts at speaker. If not ok, resolder speaker. Otherwise replace speaker with a new one.

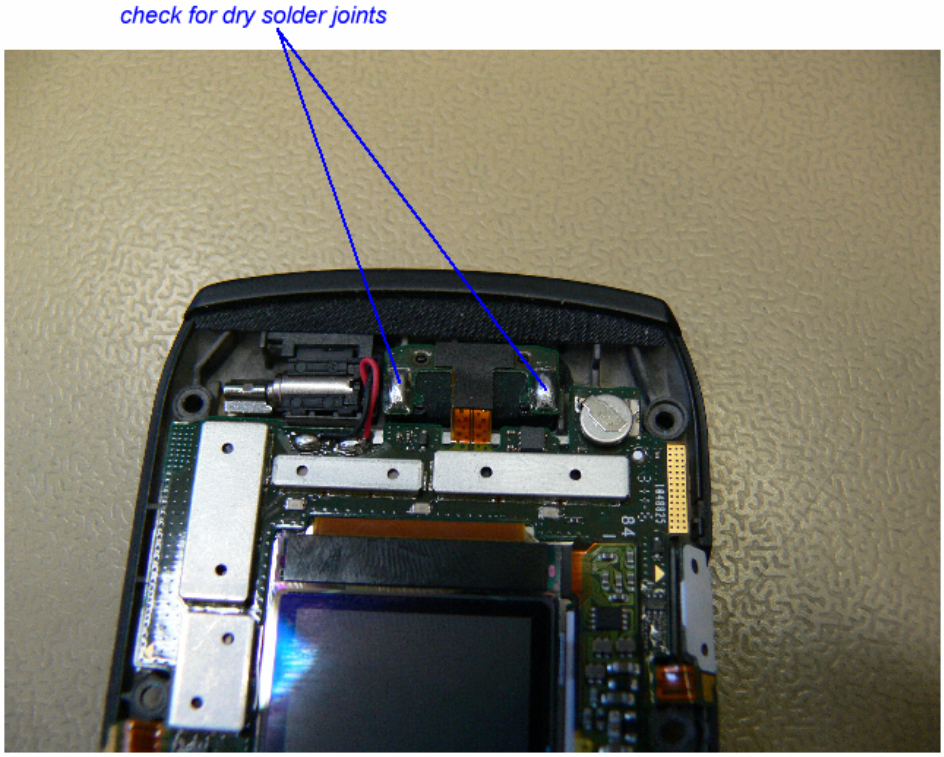


Figure 4

c) Keyboard flex assy defective

Remove flip cover. Unseat the display module assembly flex connector from its socket and temporarily connect the display module assembly and transceiver board assembly with a known good keyboard flex assy as shown on Figure 3. Check speaker function by turning on a 1 kHz test tone via RepairStudio/Radiocomm. If the fault has been cleared, reassemble flip assy with new keyboard flex assy.

Figure 5

d) Flip PCB defective

If the fault has not been cleared with one of the previous steps a), b) or c), it is most likely a defective Flip PCB.

No microphone audio

Probable cause:

a) Dust/Foreign particles on microphone

Gain access to the transceiver board assembly and make sure that no dust/foreign particles are on microphone/speaking hole in flip assembly

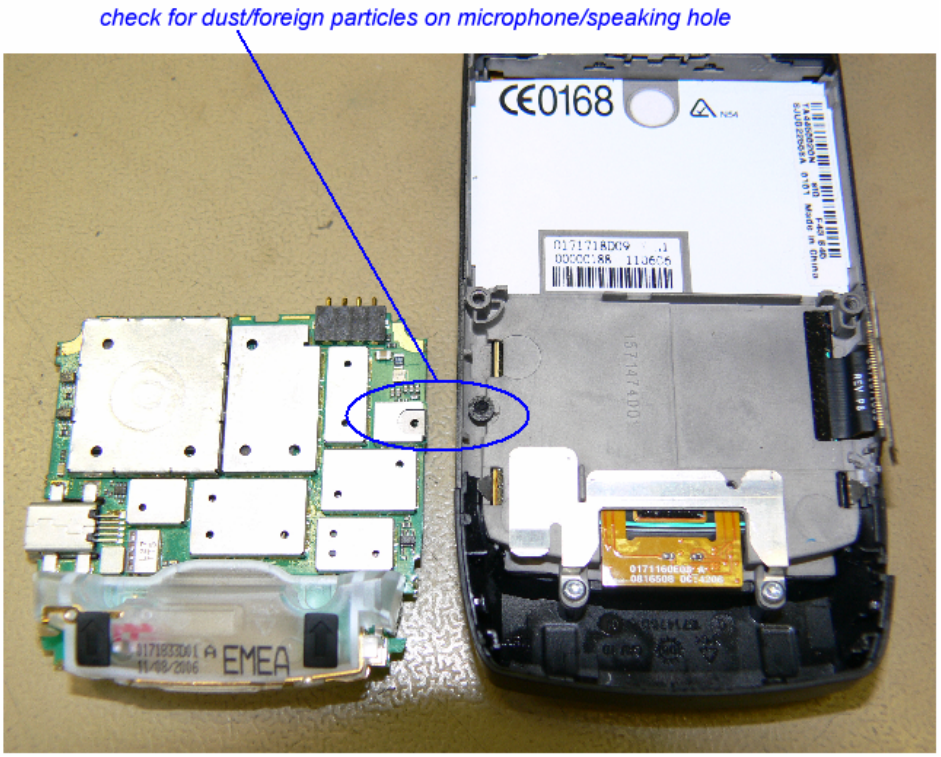


Figure 6

b) Transceiver board assembly defective

Forward to an authorized Level 3 Service Center or proceed to level 3 troubleshooting.

No ring tone/alert function

Probable cause:

a) Faulty alert speaker (part of rear housing assy)

Verification: Remove rear housing assy and temporarily replace the rear housing assy with a known good one. If the fault has been cleared, reassemble with new rear housing assy.

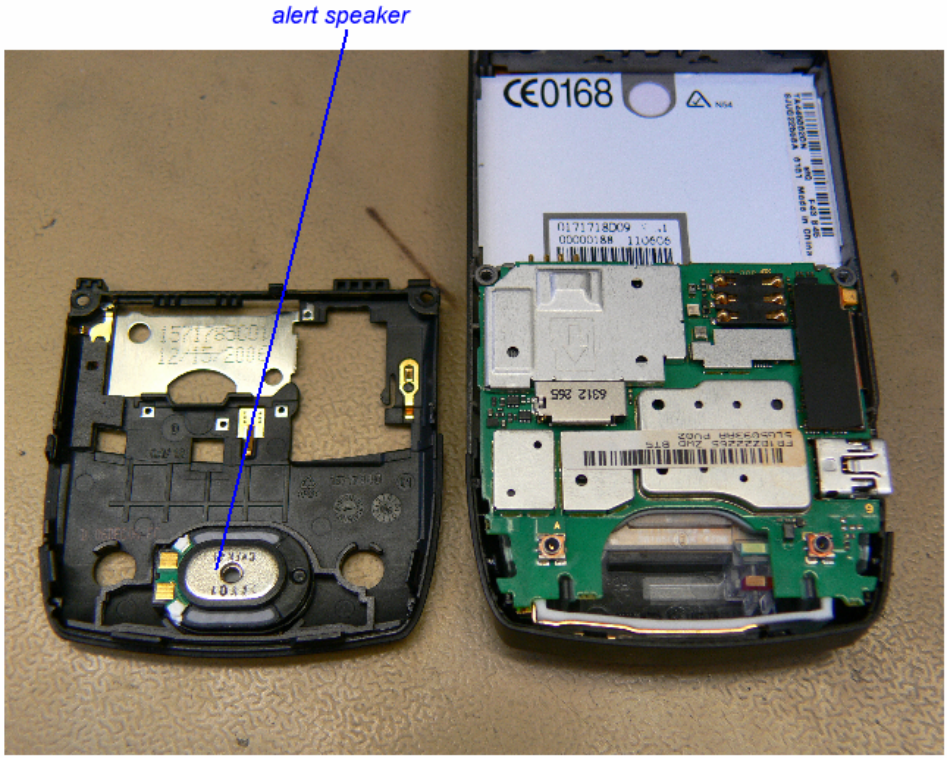


Figure 7

b) Faulty connection transceiver board assembly to alert speaker

Remove antenna assembly and check contacts. Temporarily replace antenna assy with a known good one. If the fault has been cleared, reassemble with a new antenna assy.

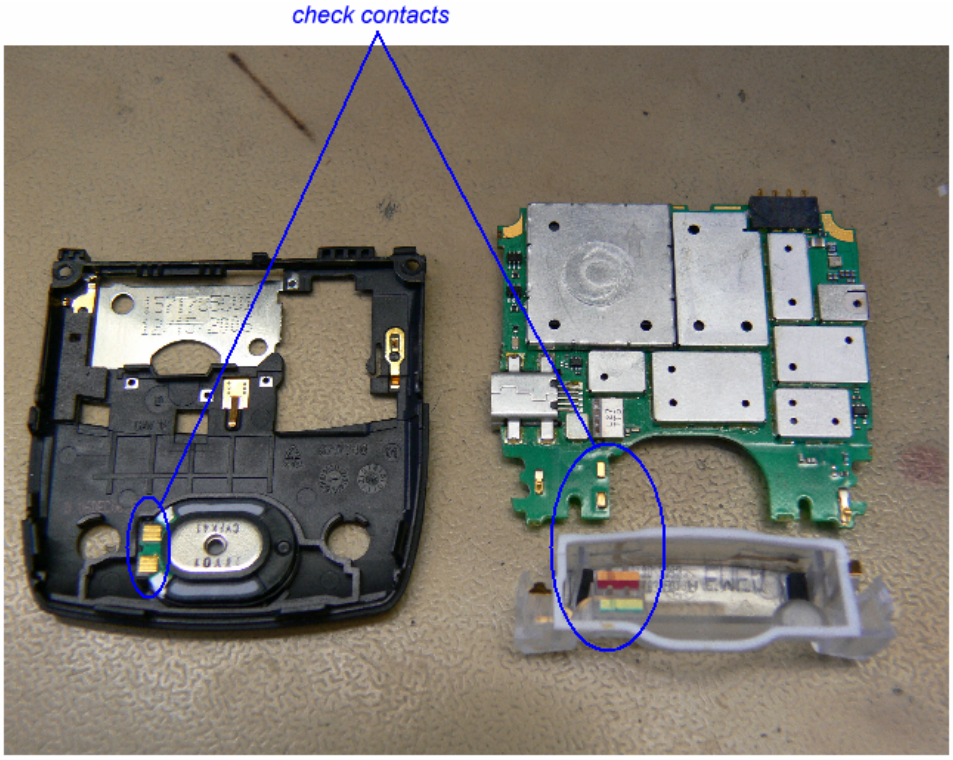


Figure 8

c) Faulty transceiver board assembly

Verification: temporarily replace the transceiver board assembly with a known good one. f the fault has been cleared, forward to an authorized Level 3 Service Center or proceed to level 3 troubleshooting.

No vibrator function

Probable cause:

a) Transceiver board assembly defective

Verification: Temporarily replace the flip assembly with a known good flip assembly. If the fault has not been cleared, it is because of a defective transceiver board assembly. Forward to an authorized Level 3 Service Center or proceed to level 3 troubleshooting.

b) Vibrator bad soldered/defective

Remove flip cover and visually inspect soldered contacts at vibrator. If not ok, resolder vibrator. Otherwise replace vibrator with a new one.

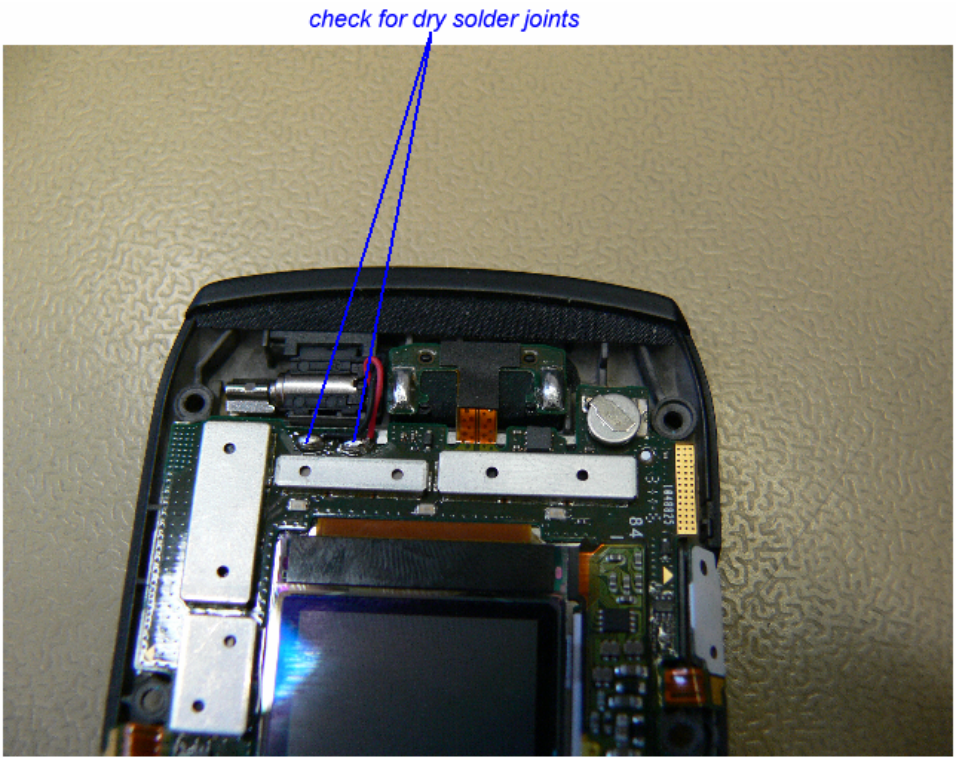


Figure 9

c) Keyboard flex assy defective

Remove flip cover. Unseat the display module assembly flex connector from its socket and temporarily connect the display module assembly and transceiver board assembly with a known good keyboard flex assy as shown on Figure 8. Check vibrator function by turning on vibrator via RepairStudio/Radiocomm. If the fault has been cleared, reassemble flip assy with new keyboard flex assy.

Figure 10

d) Flip PCB defective

If the fault has not been cleared with one of the previous steps a), b) or c), it is most likely a defective Flip PCB.

No display/-backlight/poor picture quality

Probable cause:

a) Transceiver board assembly defective

Verification: Temporarily replace the flip assembly with a known good flip assembly. If the fault has not been cleared, it is because of a defective transceiver board assembly. Forward to an authorized Level 3 Service Center or proceed to level 3 troubleshooting.

b) Transceiver board connections faulty

Remove rear housing assy from unit and check general condition of flexible printed cable (keyboard flex assy). If the flex is good, check that the flex connector is fully pressed down.

c) Keyboard flex assy defective

Remove flip cover. Unseat the display module assembly flex connector from its socket and temporarily connect the display module assembly and transceiver board assembly with a known good keyboard flex assy as shown on Figure 9. Check function of both displays. If the fault has been cleared, reassemble flip assy with new keyboard flex assy.

Figure 11

d) Main display or CLI display faulty

Check function of both displays. If just one of them has no function, most likely that display itself is defective

e) Flip PCB defective

If the fault has not been cleared with one of the previous steps a), b), c) or d), it is most likely a defective Flip PCB.

Keypad/ side keys – no function

Probable cause:

a) Transceiver board assembly defective

Verification: Temporarily replace the flip assembly with a known good flip assembly. If the fault has not been cleared, it is because of a defective transceiver board assembly. Forward to an authorized level 3 service center or proceed to level 3 troubleshooting.

b) Keyboard flex assy defective

Remove flip cover. Unseat the display module assembly flex connector from its socket and temporarily connect the display module assembly and transceiver board assembly with a known good keyboard flex assy as shown on Figure 10. Check function of keyboard. If the fault has been cleared, reassemble flip assy with new keyboard flex assy.

Figure 12

c) Flip PCB defective

If the fault has not been cleared with one of the previous steps a) or b), it is most likely a defective Flip PCB.

Telephone will not turn on or stay on

Probable cause:

a) Battery either discharged or defective

Try to switch on telephone with a known good battery. If the telephone turns on, make sure that the phone is able to charge the battery. If ok, replace battery with a new one. If the phone does not charge the battery, forward to Level 3 Service Center or proceed to level 3 troubleshooting.

b) Battery contacts open or misaligned

Visually inspect the battery connectors on both the battery and the telephone. Realign and clean contacts, if necessary. For battery connector replacement forward to an authorized Level 3 Service Center.

c) Keyboard flex assy defective

If the telephone turns on via EMU USB cable and is unable to power down after pressing the ON/OFF button, it could be because of a faulty keyboard flex assy. For verification reassemble the unit with a known good flip assy. If the fault has been cleared, replace keyboard flex assy with a new one.

d) Software corrupt

If the telephone shows a bootloader menu as shown in Figure 10 or is able to enter the bootloader menu by holding "*" + "#" keys while turning on, the phone software possibly can be recovered by a 1FF software reflash. Proceed to recovering flash memory in forced flash mode.

Figure 13

e) Transceiver board assembly defective

If none of the previous issues fixed the problem it is most likely a defect on the transceiver board assembly – forward to an authorized Level 3 Service Center or proceed to level 3 troubleshooting.

Can't make voice call/no service

Probable cause:

a) Antenna assembly defective

Check to make sure that the antenna contacts are properly connected to the antenna contacts on the transceiver board assembly. If connected properly, substitute a known good antenna. If the fault is still present, proceed to b).

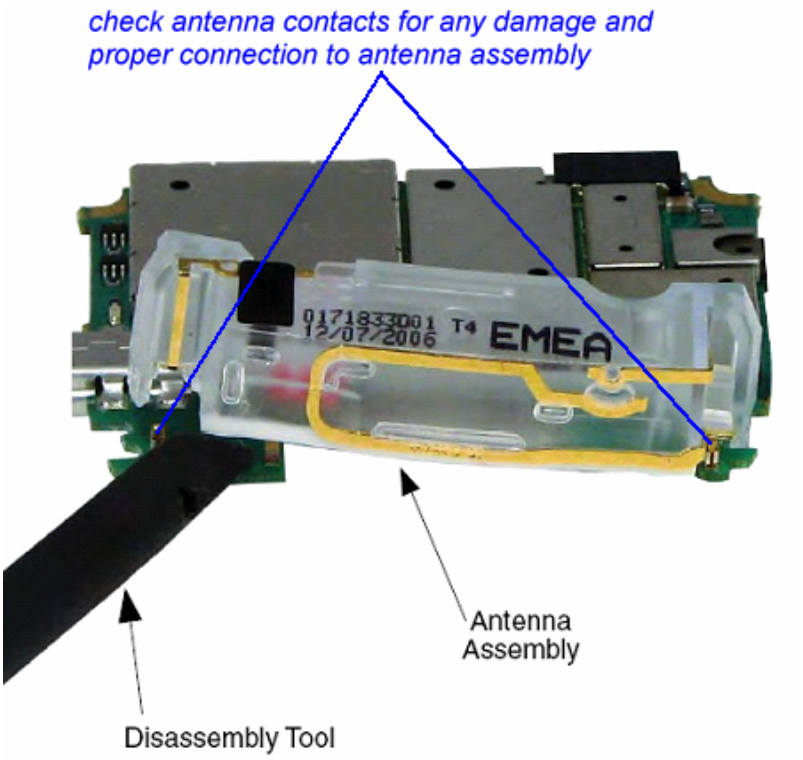


Figure 14

b) Transceiver board assembly defective

Forward to an authorized Level 3 Service Center or proceed to level 3 troubleshooting.

Troubleshooting Level3

Audio problems

First step on every audio related problem is to identify which audio paths are affected. If audio signals in loop are ok, there could be an audio problem in a network call. Then it is most likely a problem with the ARGON – forward to an authorized level 4 service center.

No speaker audio

Check EAR_SP+ at C2303-1 and EAR_SP- at C2304-1, both should have around 1.5Vdc offset voltage, if audio loop is switched on, and additional up to 3Vpp at 1 kHz, if test tone is switched on via RepairStudio/Radiocomm.

- if not: check J2300/C2303/C2304 and Resistors R4000/R4001 (both 10 Ohm)
- if ok: change ATLAS IC U3000

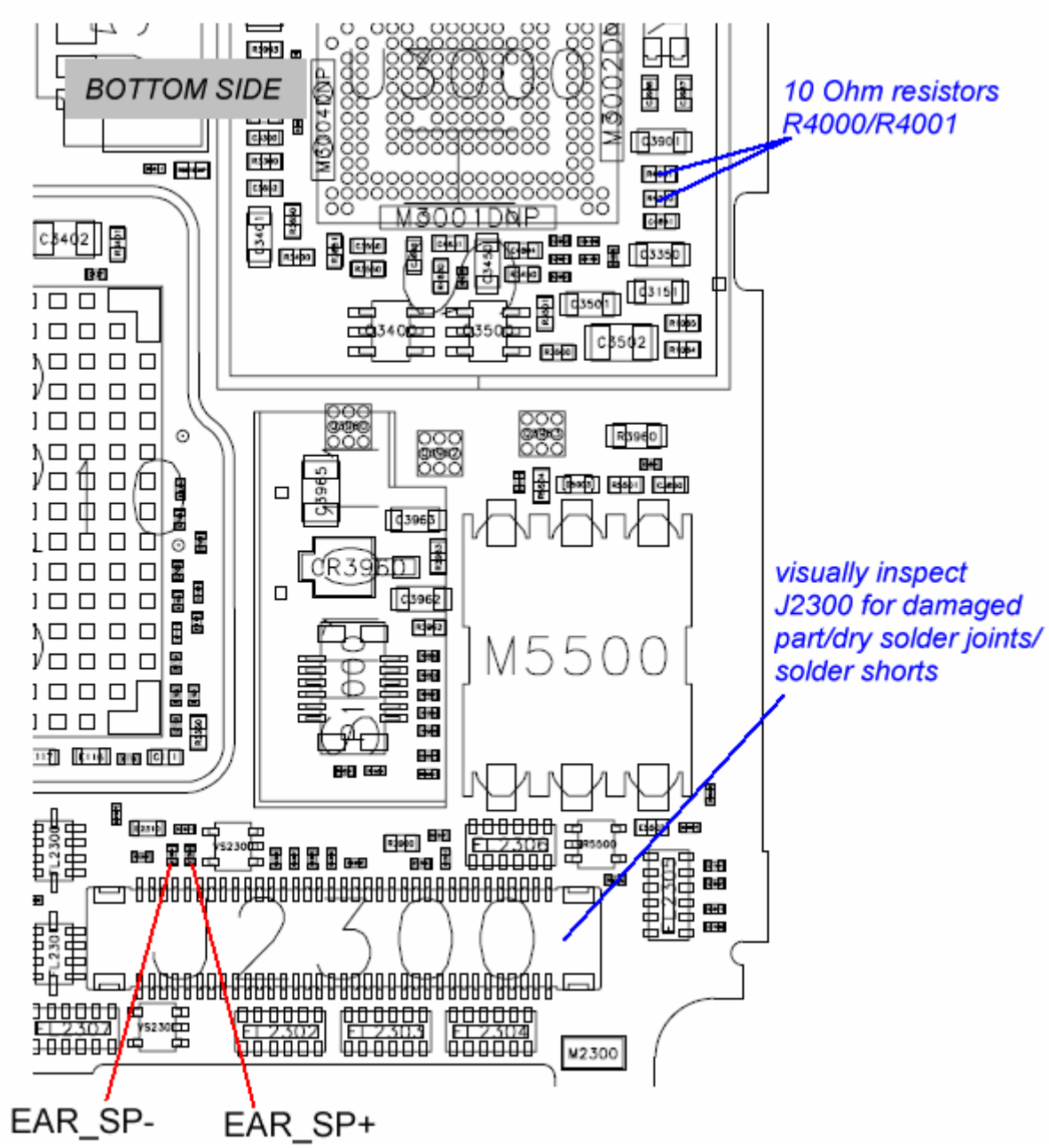


Figure 15

No microphone audio

Set radio in audio loop via RepairStudio/Radiocomm.

Check MIC_BIAS at C4107-1 – should be around 2.1Vdc. If not, check R4105/C4106/C4107 for misplaced part/ low resistance to GND – if they are ok, replace ATLAS IC U3000.

If MIC_BIAS is ok, check MIC_INPUT at C4102-1 while blowing into the microphone to see the audio signal caused by the blowing. If there is no audio signal visible, replace microphone MK1. If there is an audio signal visible, replace ATLAS IC U3000.

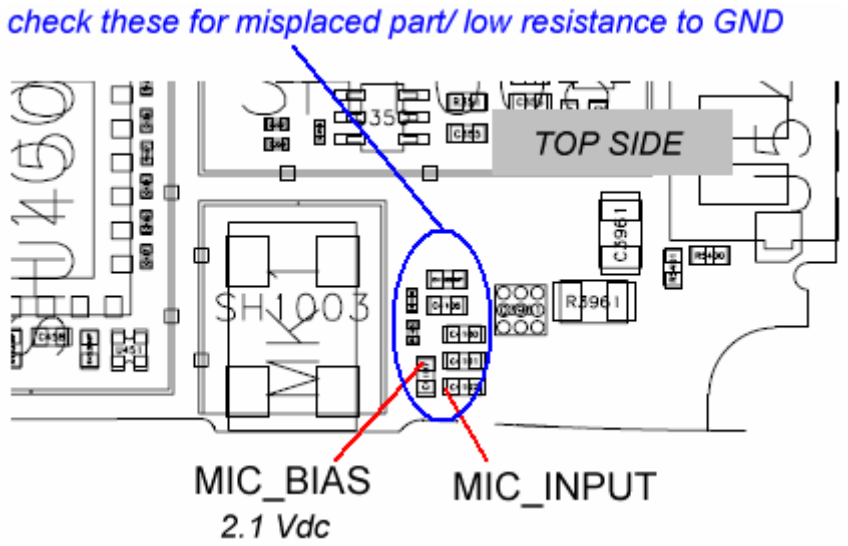


Figure 16

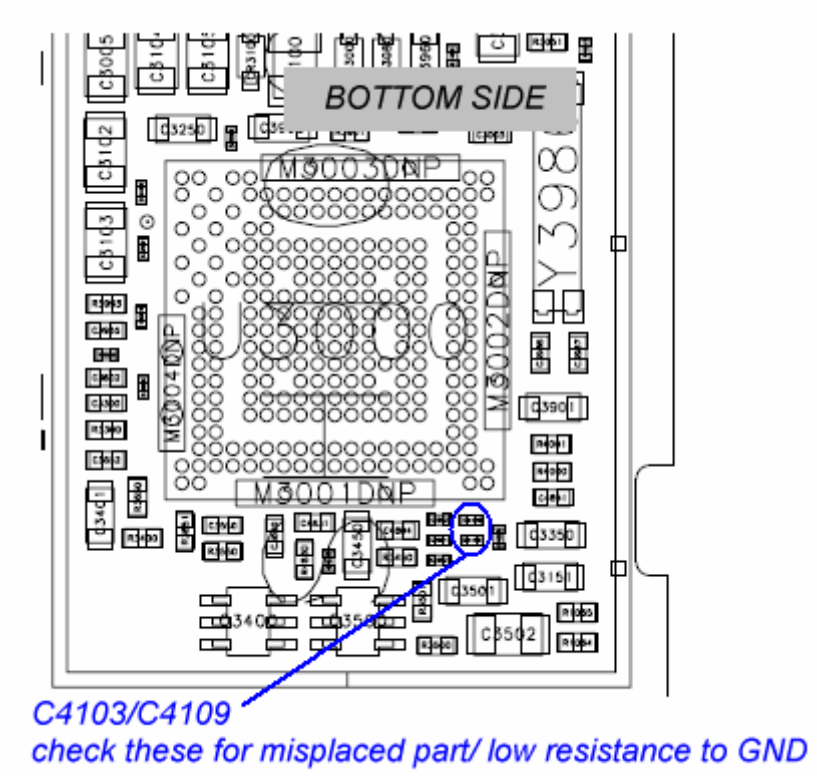


Figure 17

No ring tone/alert function

Check LOUD_SPM (M4000) and LOUD_SPP (M4001), both should have around 2.2Vdc.

- If not, check FL4100, VS4001 and capacitors C4104, C4502, C4501, C4108 for misplaced/ defective parts.
- If ok, change ATLAS IC U3000.

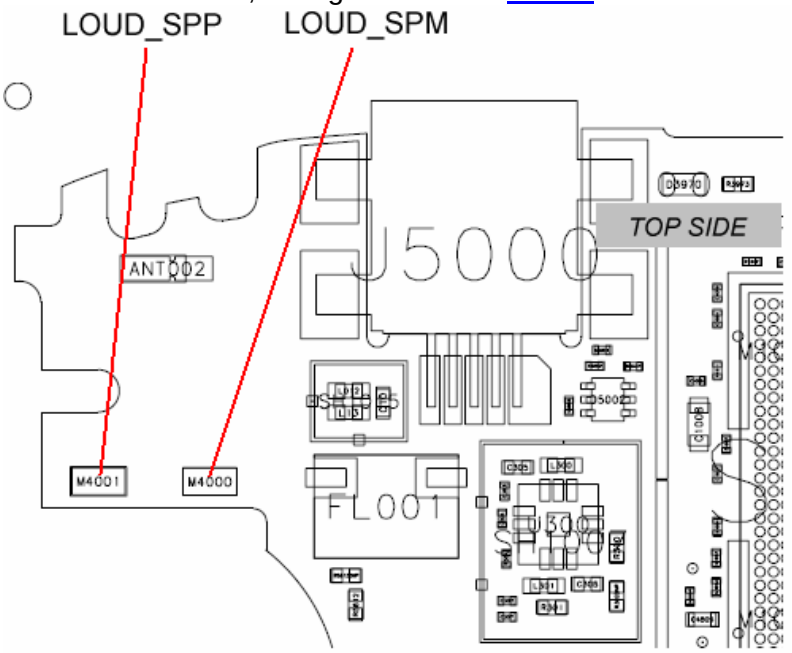


Figure 18

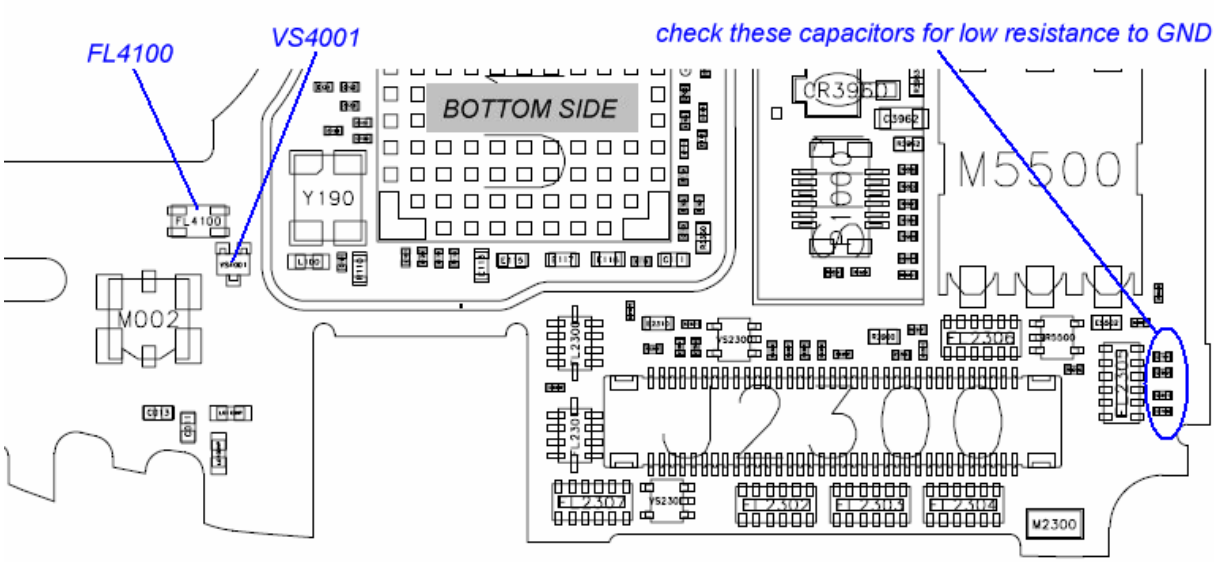


Figure 19

The alert signal is amplified by the ATLAS IC and generated by the ARGON IC. If the ATLAS alert audio path is ok, there could be a problem with the ARGON not generating the alert signals – forward to authorized level 4 service center.

No vibrator function

Turn on vibrator via RepairStudio/Radiocomm. Measure VVIB_1_3V at J2300-19, it should be 3Vdc.

- If ok check J2300 for defective part/ dry solder joints
- If not ok, change ATLAS IC U3000.

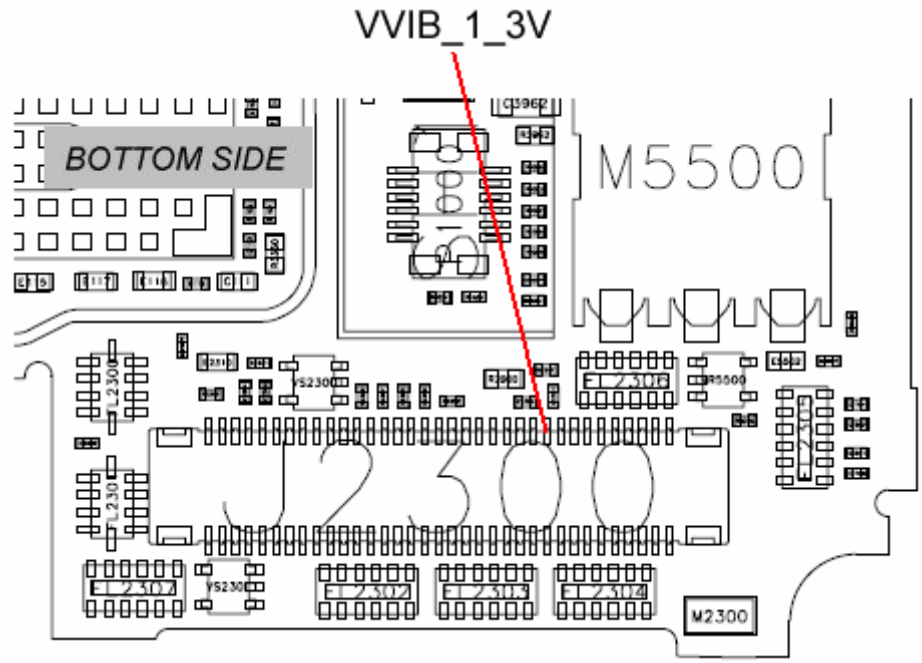


Figure 20

No display/-backlight/poor picture quality

Make sure that the problem is not located in the flip assembly, by testing PCB with a good one and do a visual check of J2300.

The following supply voltages for the flip assembly should be present:

- B+
- VCAM
- VGPU_CORE_1_5V
- VLVIO_1_8V
- VHVIO_2_775V

The voltages can be ok without a flip connected, but can break down, if a flip is plugged in, although the flip is ok! Additionally check the clock signal:

- APPS_CLK at E2310 (should be 26Mhz)
  only present the first seconds after power on!

If ok check:

- Filters FL2300, FL2301, FL2302, FL2303, FL2304

You can check the function of these parts by using an Ohm Meter to check the resistance to GND for verification, which line is affected. By using MotoPCB, it can be tracked which filter the signal passes until it reaches the ARGON.

If all of these are ok, it should most likely be a problem with the ARGON U1000 – forward to an authorized level 4 service center.

We have seen some phones with the symptom: After a few seconds after turn on the display seems to loose synchronization as shown on Figure 19. In most cases this issue was caused by a skewed E2310. In some cases the PCB was damaged because of lifted pads. It seems to be damaged by a poor disassembly process.

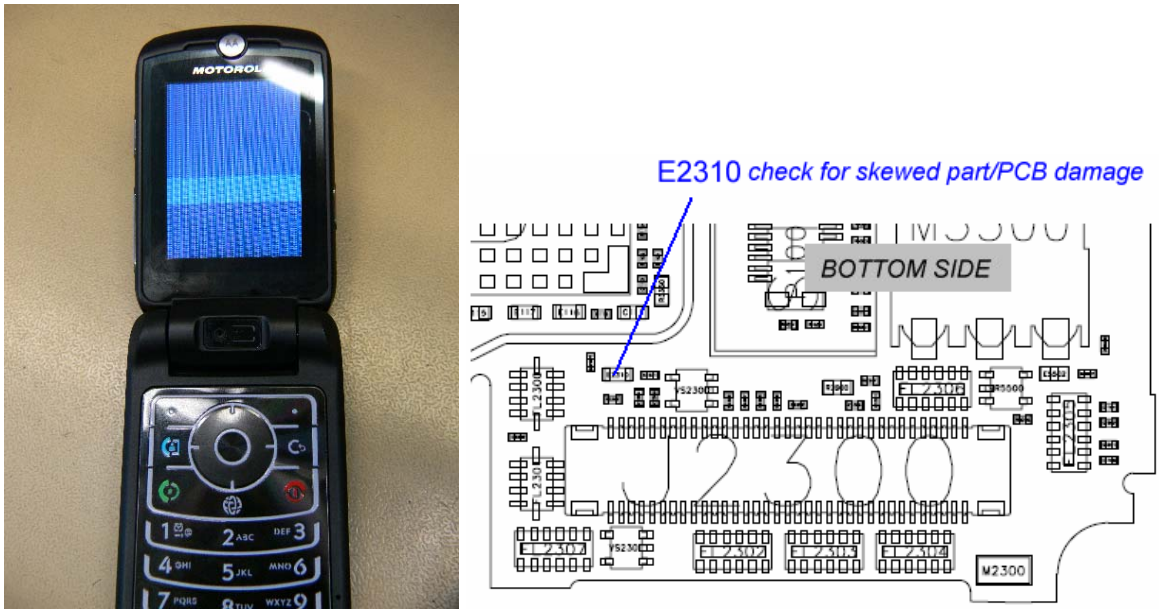


Figure 21

Flip detect problem

Units with a flip detect problem will show following symptoms:

- no power on via battery
- no main display via EMU connector supply
- CLI display is not switching on open/close flip
- No keypad function

Check FLIP_DETECT_F at R2316-2 – should be 1.8Vdc (High signal), if it is low check VIPU_1_8V at R2316-1. If 1.8Vdc are present check J2300/FL2306 for dry solder joints/solder shorts/defective part – if ok it is most likely a problem with the ARGON U1000 – forward to an authorized level 4 service center.

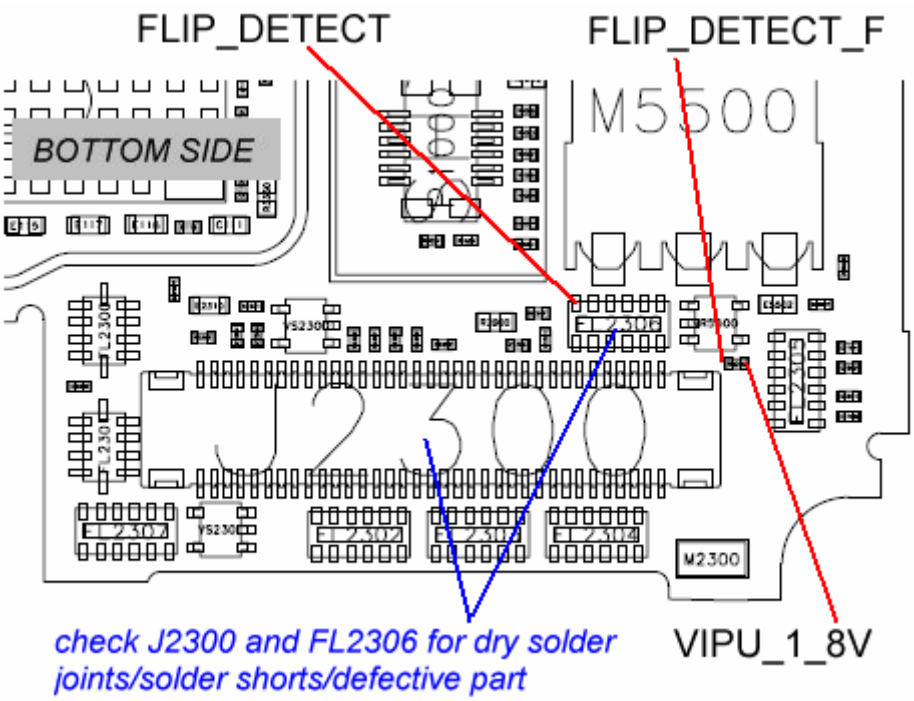


Figure 22

Keypad/side keys – no function/hangs

Due to the keypad matrix architecture with 8 rows in 8 columns it is quite useful to verify which keys (if not all) are affected. By knowing which keys are not working, it is possible to find out which row or column is affected. You can use an Ohm Meter to check the resistance to GND for verification, which line is affected. By using the MotoPCB it can be tracked which filters the signal passes until it reaches the ARGON.

	Row 7	Row 6	Row 5	Row 4	Row 3	Row 2	Row 1	Row 0
Col 0					*	#		9
Col 1	Left Soft	Back/Clear	Right Soft	Browser	Video Call Send	Voice Call Send		7
Col 2	Vol. Up		Smart	Vol. Down	Camera			1
Col 3	Nav. Center	Nav. Up	Nav. Down	Nav. Left	Nav. Right	3		6
Col 4								5
Col 5								8
Col 6							4	2
Col 7								0

Figure 23

In practice the defective part can very often be found by doing a visual inspection. Check:

- J2300
- FL2305
- FL2306
- FL2307 for solder shorts/dry solder joints/defective part.

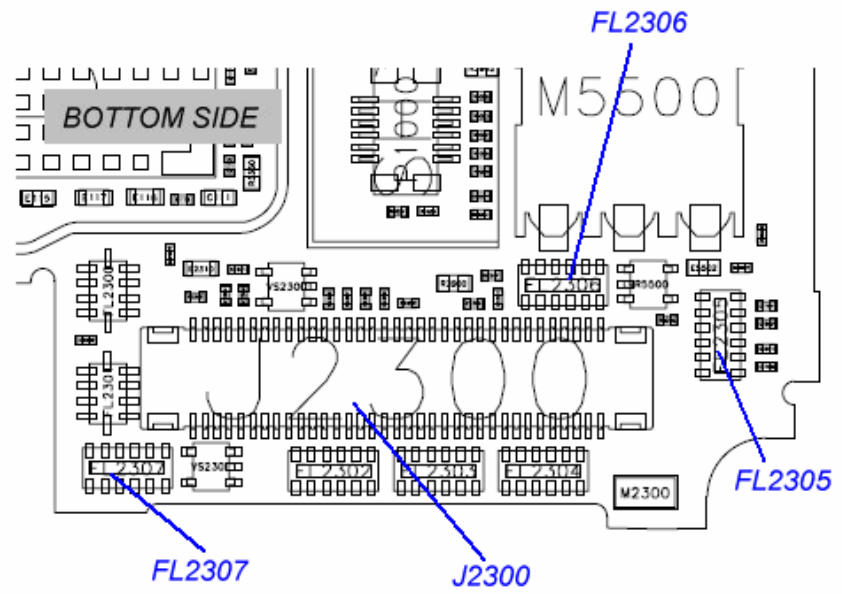


Figure 24

If the keypad connector/filters are ok, it's most likely a problem with the ARGON – forward to an authorized level 4 service center.

On/Off switch not working

The On/Off button function can easily be checked by attaching a known good flip assembly to the PCB. By inserting an EMU Bus USB cable the phone should turn on. Check ON_OFF_END_B at FL2307-8. It should be a HIGH signal of 2.8Vdc and LOW signal if Button is pressed.

- If signal is at HIGH level and not switching down when On/Off button is pressed, check J2300 and FL2307.
- If signal is always at LOW level or down (below 2.8Vdc), check R3993/C3955. If they are ok, it is most likely a problem with the ATLAS IC U3000.

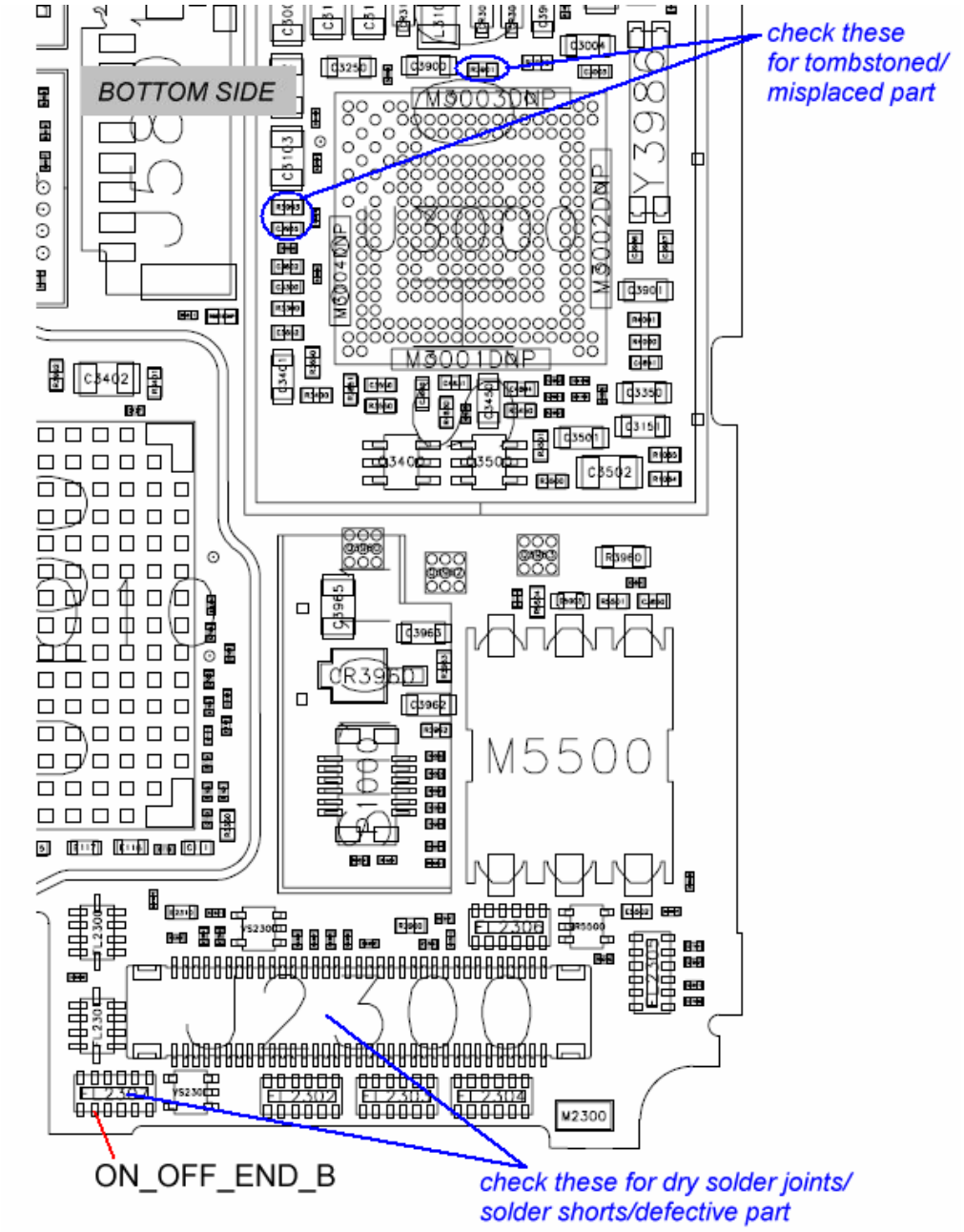


Figure 25

No keypad backlight

Keypad lighting is done by EL. The EL driver is located on the keyboard PCB. Turn on keypad backlight via RepairStudio/Radiocomm. Check ELEN1,

- if ELEN1 is HIGH, check J2300
- If ELEN1 is LOW, it is most likely a problem with the ARGON U1000 – forward to an authorized level 4 service center.

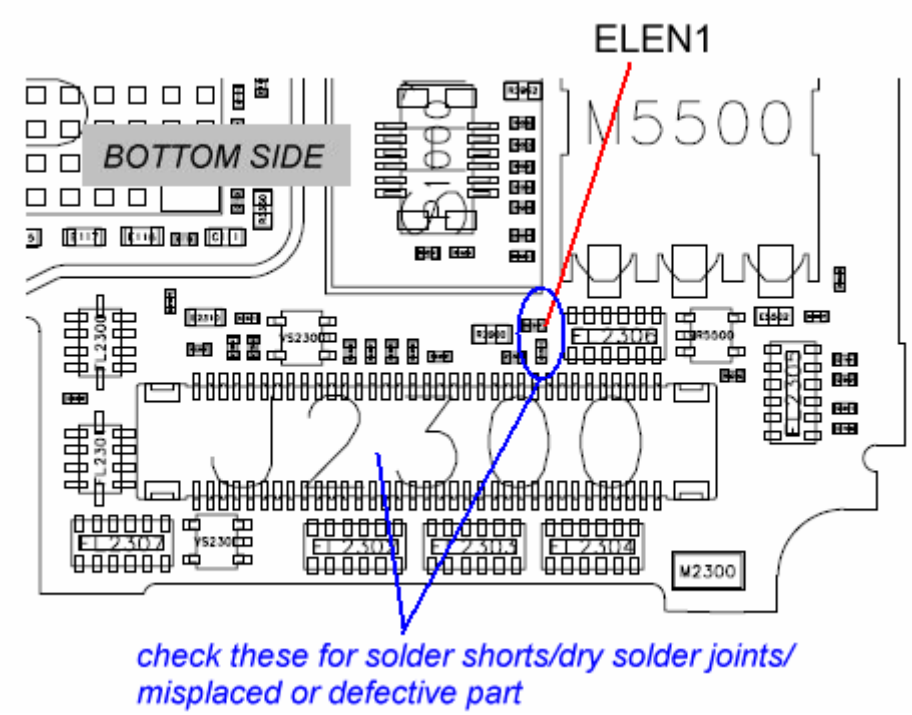


Figure 26

SIM card – check card/insert SIM

Measurement on the SIM interface is a little bit difficult, as not all signals will be present until a SIM card and a battery are inserted. As far as we know, there is still no SIM feature implementation in RepairStudio or Radiocomm. In the most cases it should be possible to figure out which part is defective by simply using an Ohm Meter to measure the following signals to GND:

- VSIM at M5500-3, M5500-5

If far less than 30 kOhm to GND, it could be a defective ATLAS IC U3000.

- USIM_CLK_1 at M5500-1
- USIM_RST_1 at M5500-2
- USIM_IO_1 at M5500-6

If any of these has far less than 30 kOhm to GND, it could be a defective ARGON IC U1000 – forward to an authorized level 4 service center.

Before replacing the ATLAS IC U3000 or the ARGON U1000, make sure that none of the associated capacitors/diodes have low resistance to GND.

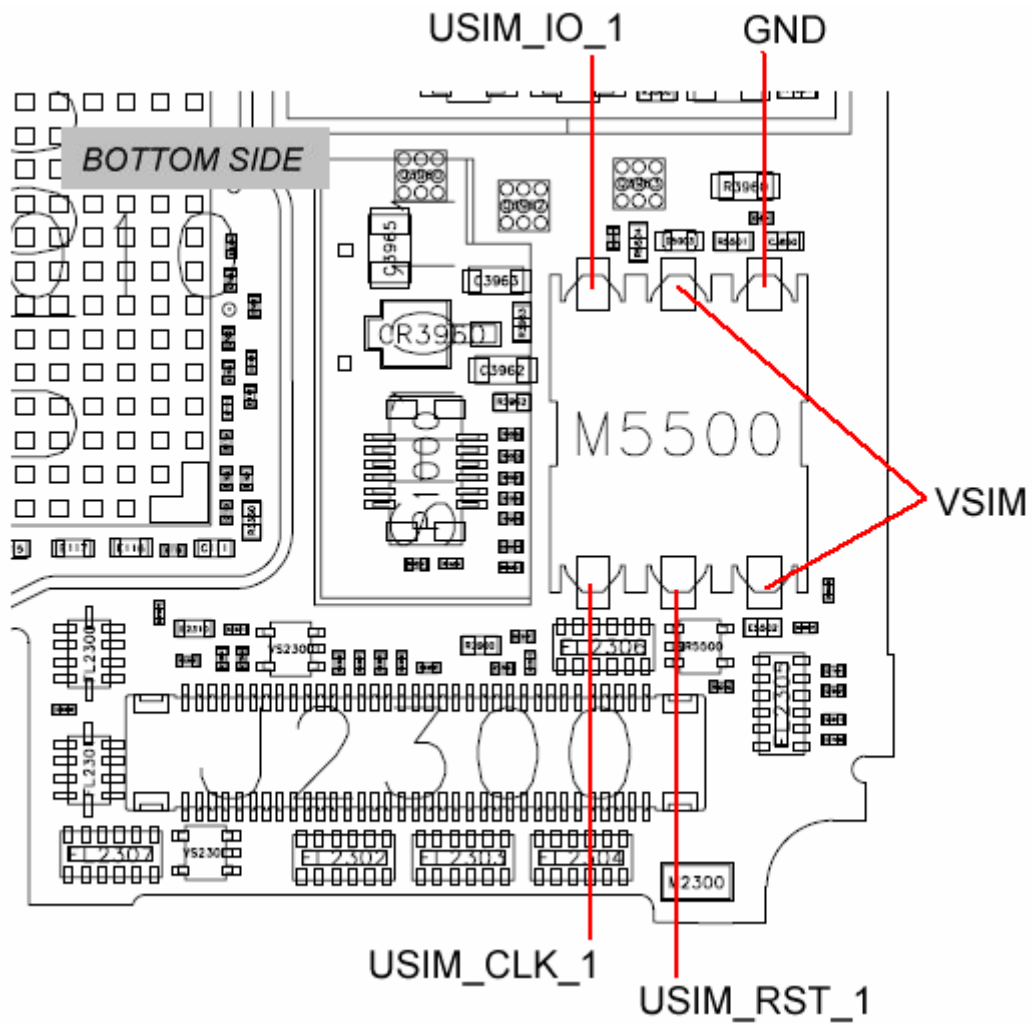


Figure 27

TransFlash Memory Card – no function

Insert a known good TransFlash card.

Under ***Menu – Settings – Phone Status – Storage Devices*** the Memory Card should appear next to the internal phone memory.

If not, disassemble the phone and do a visual inspection of the TransFlash Connector J5801 itself. If there are any visible damages/bent contacts/solder shorts or dry joints, change it.

Check SD1_DET_B at R5811-1:

- Without TransFlash card inserted there should be a HIGH signal of 1.9Vdc, if not check R5811 for dry solder joints/tombstoned part.
- With TransFlash card inserted the signal should change to LOW signal (0V)

If SD1_DET_B without TransFlash card inserted is ok (HIGH/1.9Vdc), but is not switching down to 0V with inserted TransFlash card, replace TransFlash connector J5801.

Check VMMC_2_9V at R5801-1 (2.9Vdc). If low, check VR5801 for internal short to GND. If ok, it is probably a problem with the ARGON U1000 – forward to an authorized level 4 service center.

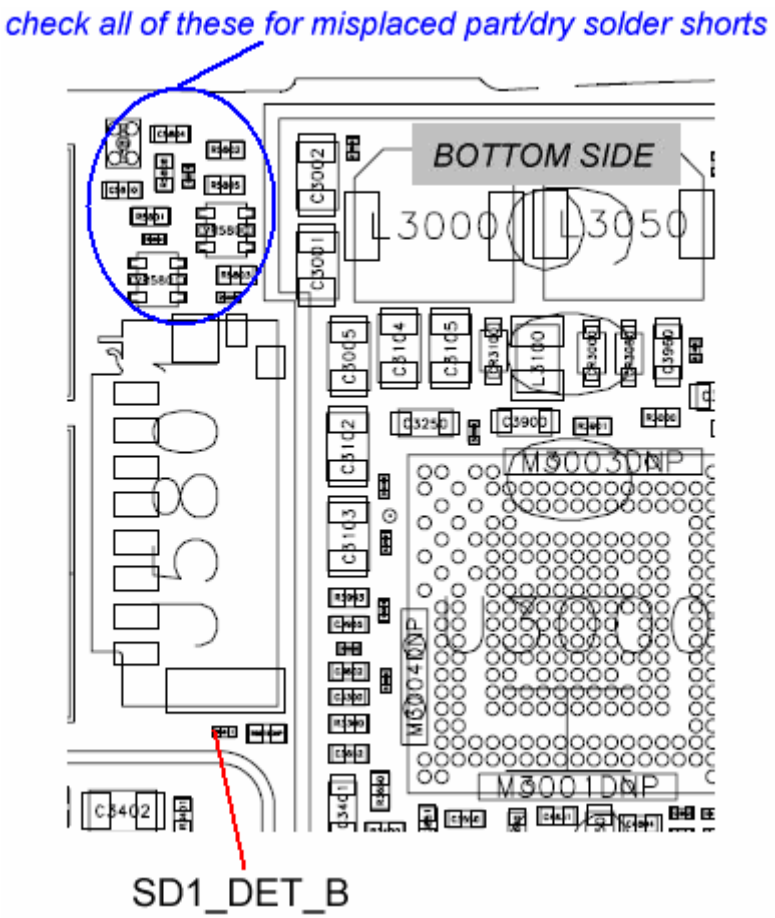


Figure 28

No turn on

Verify if radio doesn't turn on (assembled with display). If it does, but doesn't enumerate via EMU-Connector at RSD/RepairStudio there should be a problem with the USB connection.

In some cases a 1FF SW reflash in FORCED FLASH MODE (by connecting EMU-Connector to radio while "*" and "#" are pressed) can fix this issue.

- If not, visually check EMU-Connector J5000 for mechanical defects or contamination on contacts, bad soldered pins or solder shorts
- Check D5002/C5001/C5002 for internal short to GND, R3650/R3651 (22 Ohm)
- If ok, change ATLAS IC U3000

If the problem remains, it could be a problem with the ARGON IC U1000 – forward to an authorized level 4 service center.

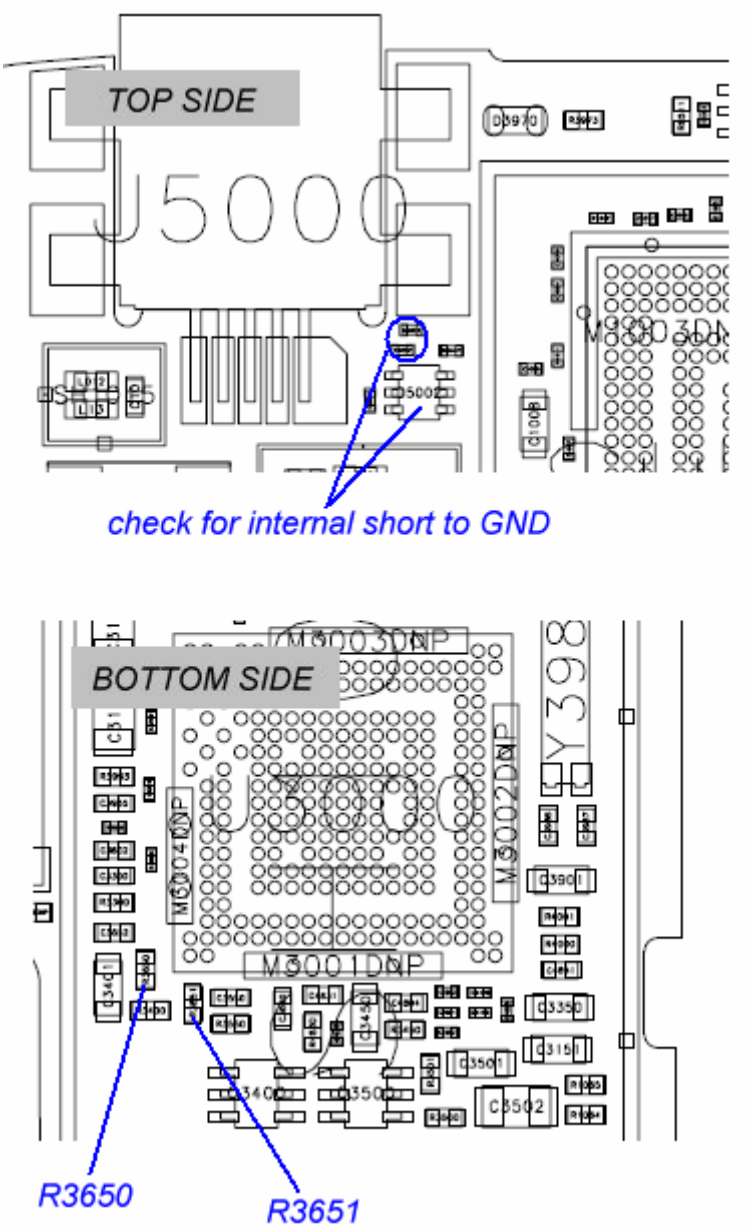


Figure 29

If radio doesn't turn on, but draws high current (>500 mA)

- Please follow troubleshooting instructions as described in the Battery life short/Charging problems/No turn on due to excessive current drain section of this document.

If radio draws no current it's most likely a problem with the 32.768 KHz clock generated by Y3986.

- Change crystal Y3986. (It might be difficult replacing Y3986 without damaging the underfilled ATLAS IC U3000. Wherever possible try using a solder iron instead of the heatgun)
- If unsuccessful change ATLAS IC U3000.

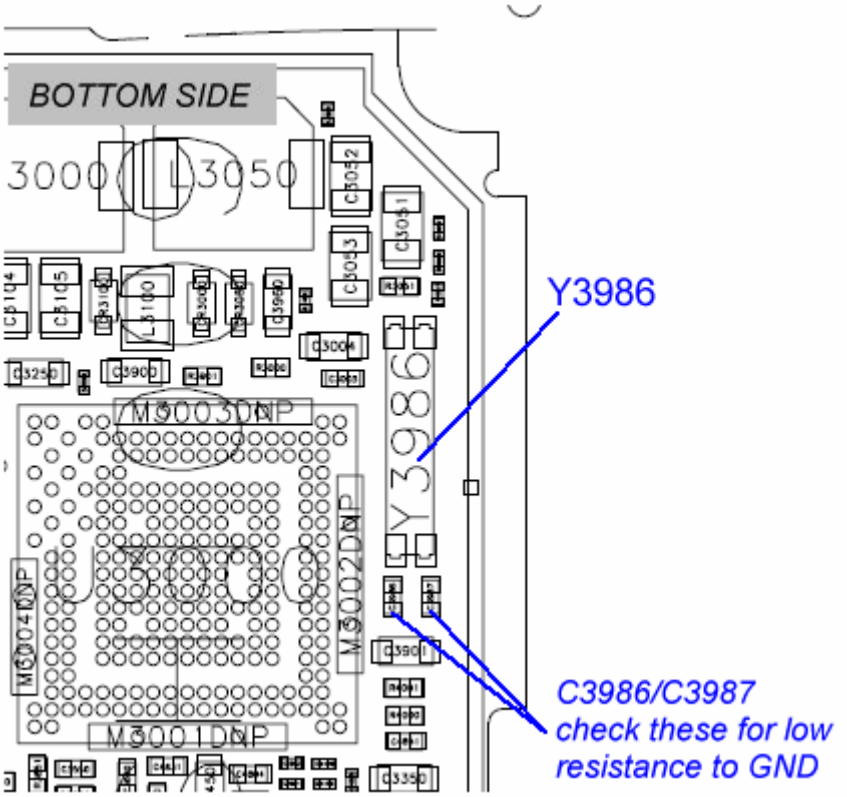


Figure 30

If the current consumption is in normal range (40mA to 300mA), try doing a 1FF SW reflash in FORCED FLASH MODE. If radio enters the forced flash mode or starts in flash mode by itself the main supply voltages for the logic section should be ok. Most likely the trouble can be found in the logic section (ARGON/Flash Memory) – forward to an authorized level 4 service center.

If the radio won't give any sign of life with a current consumption of about 160 to 170mA for less than a second, dropping to ~ 12mA it is a problem with the ARGON U1000 – forward to an authorized level 4 service center.

Turn off – powers down in standby

If radio stores panic: DSM_MEASUREMENT_ERROR there is most likely a problem with the 32.768 KHz clock, on which the radio is running while entering the deep sleep mode.

- Change Y3986 and test radio with a network SIM card and let radio entering the deep sleep mode
- If radio still powers down, change ATLAS IC U3000

If radio soft resets/power cycles and turns on again (possibly with a blank/white screen) try doing a software upgrade with latest operator approved software. If the trouble remains, it could be a problem with the ATLAS IC U3000 or with the ARGON U1000 – forward to an authorized level 4 service center.

Battery life short/charging problems/no turn on due to excessive current drain

In probably most cases these problems are caused by an off current. Start with verifying, whether there is an off current. If there is an off current, it should be checked whether the radio draws current via battery and/or via external power supply (USB).

In case of an off current via battery there should be a low resistance (less than ~200 Ohm)/ or a short from BATT+_RAW (J5400-1) to GND.

To localize the defective part causing the short/low resistance a simple but effective way is to freeze the board with a coolant spray, supply a battery voltage from a power supply using micro clamp-type test probes, and see which parts are getting warm. **This is a very basic and essential method to troubleshoot off current/ high current consumption failures.**

The power supply (for BATT+_RAW) should be set to 3.8Vdc with current limitation set to 2A. We recommend using the Power Supply Unit current drain meter to check the current drain of the PCB.

Shields covering suspected parts should be removed before freezing the PCB.

The PCB should be handled with care. After removing the shields the PCB should be given some time to cool down slowly before freezing it to far below zero to avoid physical stress to the multilayer PCB with lead free soldered parts.

In some cases the part, which is getting warm has an internal short itself. After removing this part, the off current should be fixed. For verification, check off current or measure resistance BATT+_RAW (J5400-1) to GND. A new part can be placed.

If the short/ low resistance remains after replacing the part which was getting warm, it should be checked which signals/ voltages this part provides. In most cases this part will provide a supply voltage to other parts which can also get warm due to an internal short.

Does not charge

If the phone seems to charge, but battery meter stays at low level, check whether there is a high current consumption or an off current via battery. If so, follow troubleshooting as described in the Battery life short/charging problems/no turn on due to excessive current drain section of this document.

If there is no off current, check the whole path for the charging current. Make a battery/charger phasing to see, if only the charger current or additionally the battery phasing is affected. For a charger current problem only:

- Check the whole charger path for misplaced parts/solder shorts/defective parts
- If ok, replace ATLAS IC U3000

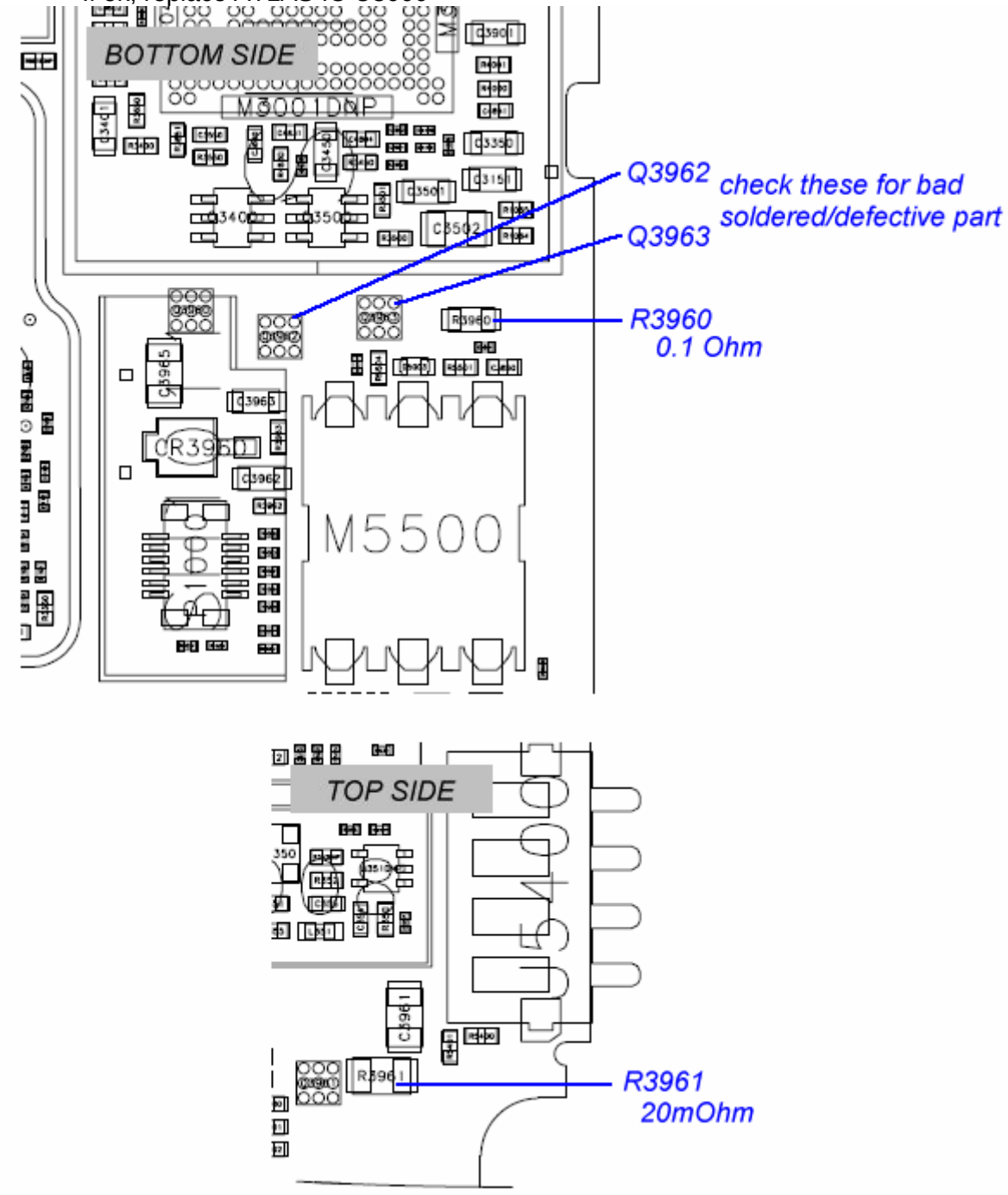


Figure 31

Invalid Battery

Check R5400/R5401 for misplaced part.

Verify BATT_DAT at J5400-2 while PCB is connected via EMU USB cable. It should be 2.775V. If it is low, check BATT_DAT at R5400-2, if it is 2.775V here, change/resolder J5400.

In any other case it is most likely a problem with the ARGON U1000 – forward to an authorized level 4 service center.

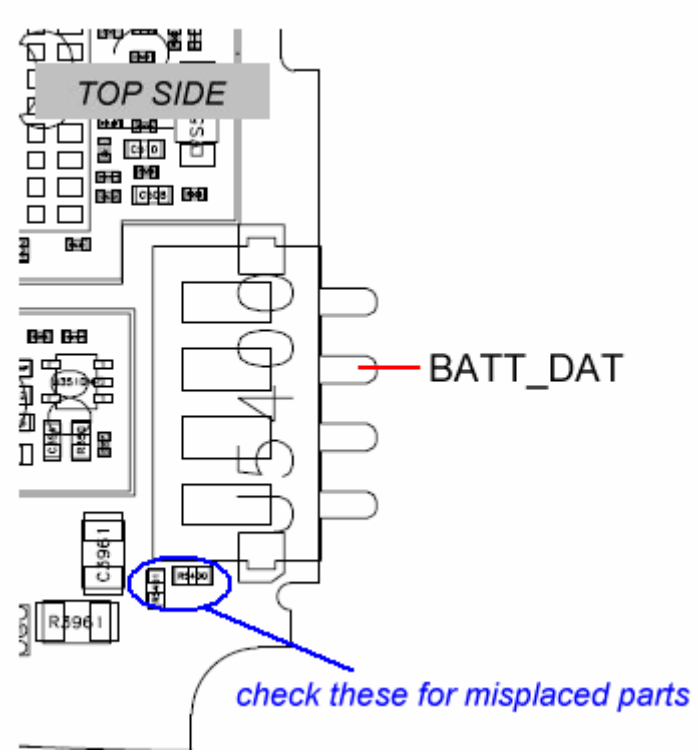


Figure 32

Battery Thermistor problem

Because the signals which could be measured are not accessible without removing the ATLAS shield SH1009 (which would damage the underfilled ATLAS IC U3000), it is probably the best way to start with replacing the battery connector J5400. If the trouble remains replace additionally the ATLAS IC U3000.

For replacement of the battery connector J5400 the air cooling device for protecting the ATLAS IC should be used.

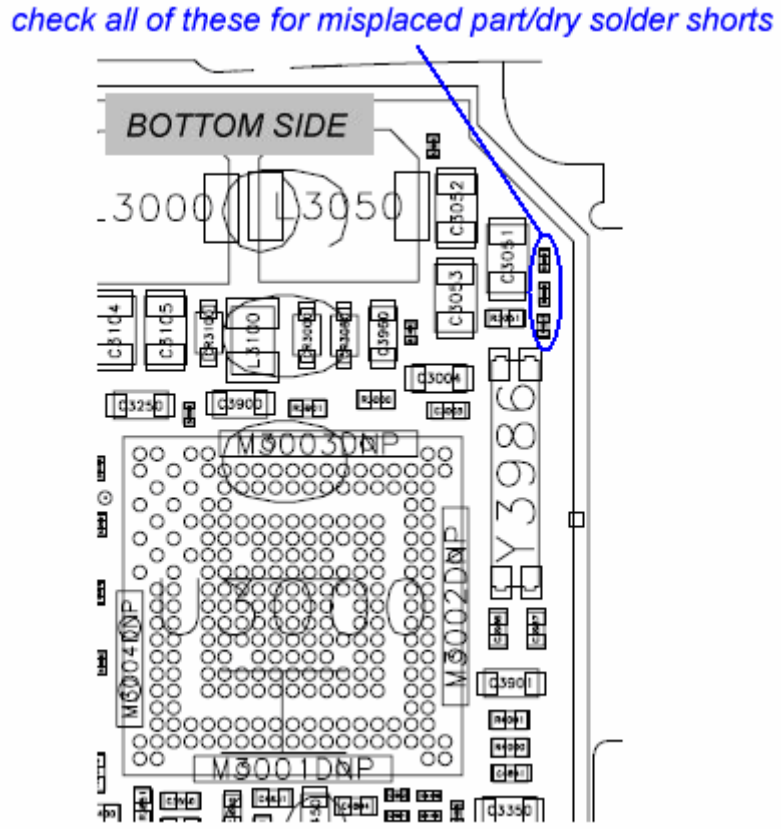


Figure 33

Accessory detection problem

Some phones do not detect connected accessories (Charger/Headset). Those phones will turn on if connected to a charger (instead of entering charging mode). If so

- check USB_ID (J5000-4) to GND with an ohmmeter
- If less than 1MOhm D5002 should be removed.
- If still less than 1MOhm it should be because of a defective ATLAS IC, replace U3000.

*A new diode array **D5002** has to be placed after successful repair.*

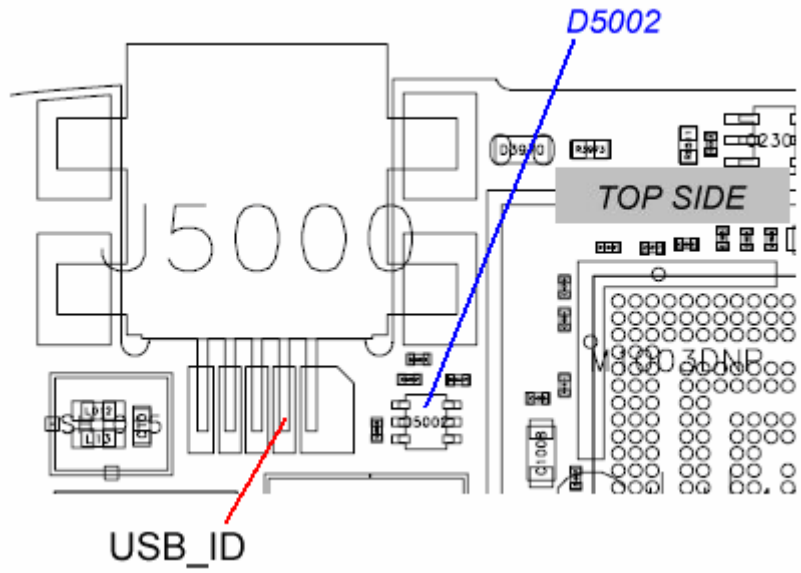


Figure 34

Can't make voice call/no service

First step in every call related problem should be to figure out whether there is a receiving problem or a transmitting problems and which bands are affected.

Make sure that the RF connectors M001/M002 are cleaned (with cleaner or alcohol) before making a phasing/call processing test or if the test fails.

No or low TX output power in GSM

Check the connection to the antenna to ensure it is properly plugged. Prior to remove any shields for measurements, visually inspect the antenna circuit for skewed/misplaced parts.

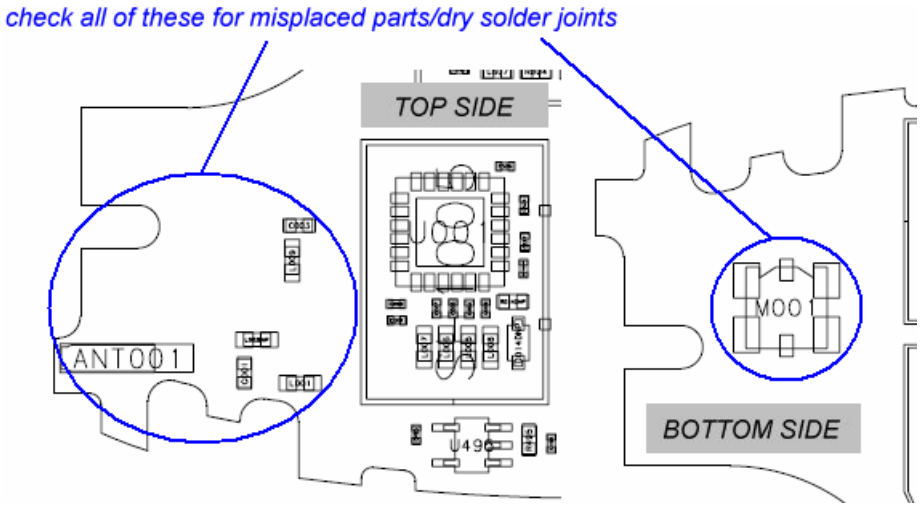


Figure 35

Let radio transmit on GSM900 using RepairStudio/Radiocomm. Make sure to provide a battery voltage via micro clamp-type test probes to battery contacts J5400.

Measure the power at the output of the GSM PA U800 at R804-1.

If output power EGSM_OUT from PA is low

- Check to see if PA U800 is soldered down properly
- Check the input power TX_LB_IN to the PA from TransAAM at C841-1

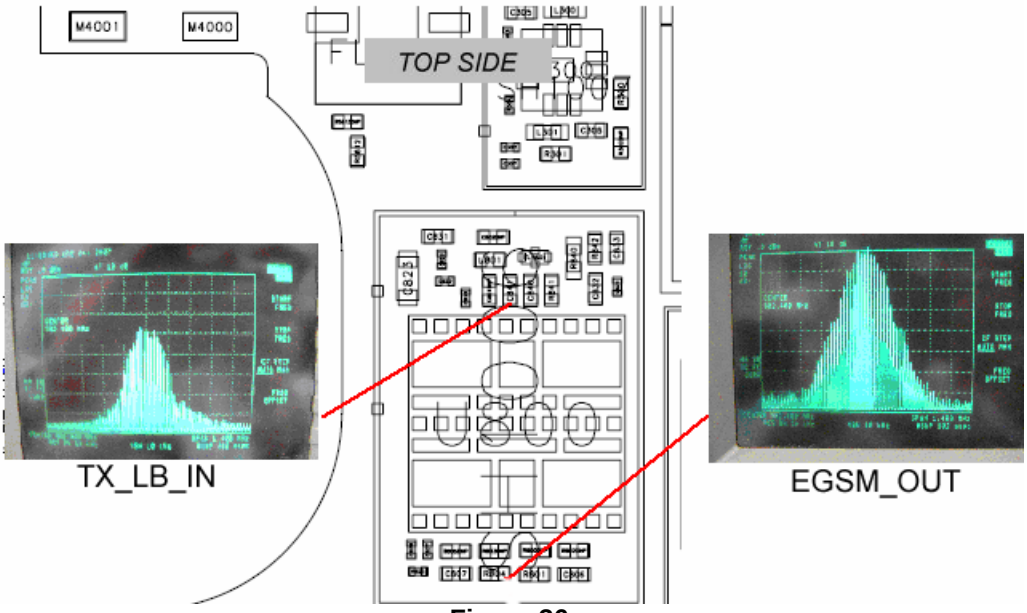


Figure 36

- If input power to PA is low it is most likely a problem with the TransAAM U500.
- If input power to PA is ok it is most likely a problem with the PA U800 itself.

If output power EGSM_OUT from PA is good the trouble is most likely related to a bad FEM U001 (do a visual check for misplaced parts around FEM U001).

GSM TX signals:

- TX_LB_IN and TX_HB_IN: modulated input TX signal from TransAAM
- IPC_BCM: mode switch between GMSK and EDGE. Currently BCM is associated with GMSK mode and should be logic 0. In EDGE mode, IPC mode is selected and should be logic 1:
- TX_LB_HB_IN: mode switch between LB and HB. LB is logic 0 and HB logic 1
- VRAMP: voltage that controls PA operation. If probed with an oscilloscope, you will see signals close to a rectangular pulse of value 1.8V to 2.2V for max power output
- PAC_DET: power detector with voltage reading corresponds to VRAMP value
- TX_EN: logic signal that enables the PA
- GSM_TCXO: 26MHz clock for TransAAM

TX Supply voltages

- VRF_TX_2_775V
- BATT+
- LVDD
- JVDD
- QVDD_1_8
- VDDA_2_7
- VDDA_CP_2_7
- VDD_ACE_2_7
- VDD_TXRX_2_7

No or low TX output power in WCDMA

Let radio transmit on WCDMA using RepairStudio/Radiocomm. Make sure to provide a battery voltage via micro clamp-type tests probes to battery contacts J5400.

Measure the power at the output of the WCDMA PA U400 at R400-1.

If output power PA_2100_RF_OUT from WCDMA PA is low

- Check to see if PA U400 is soldered down properly
- Check the input power TX_WB_2100 to the PA from SYMPHONY at C408-1

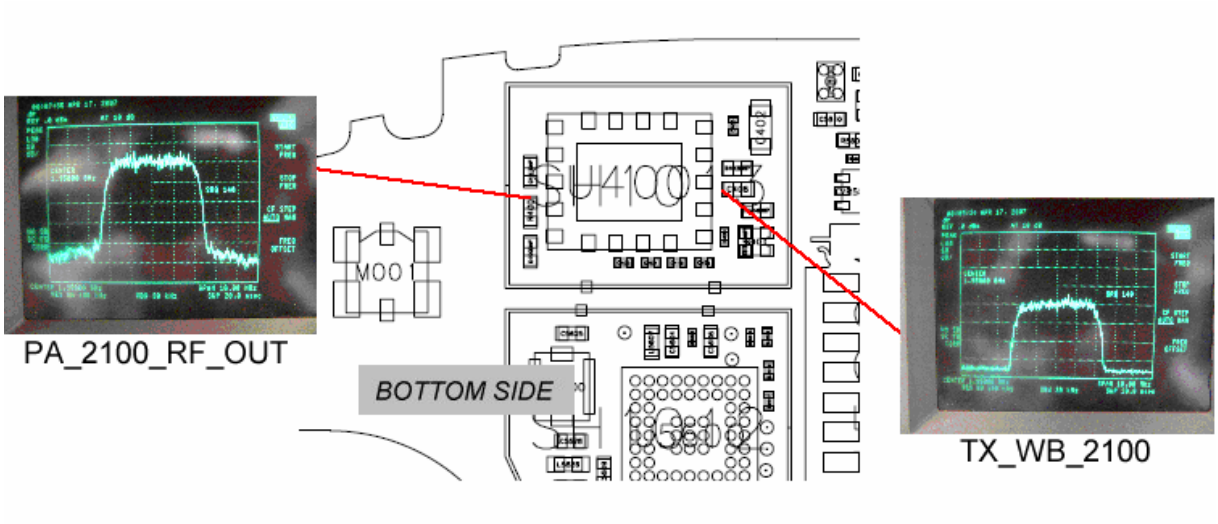


Figure 37

- If input power to PA is low it is most likely a problem with the SYMPHONY U100.
- If input power to PA is ok it is most likely a problem with the PA U400 itself.

If output power PA_2100_RF_OUT from PA is good the trouble is most likely related to a bad FEM U001 (do a visual check for misplaced parts around FEM U001).

WCDMA TX signals

- TX_WB_2100: modulated input TX signal from SYMPHONY
- PA_2100_EN: logic signal that enables the WCDMA PA
- PA_VBA: controls the gain of the WCDMA PA
- PA_VDET: power detect signal
- PASSKEY_VLD: determines two modes of operation: - Hi Power Mode/Low Power Mode

WCDMA TX supply voltages

- VRF_TX_2_775V
- BATT+
- VRFCP_2_775V
- VHVIO_2_2_775V
- VRF_LVIO_1_875V
- VMELODY_CORE
- VRF_RX_2_775VV

No RX GSM

Inject a RF from Test Set. The power level should be set to max power. Check ANT_FEM at antenna switch M001-1. Check for presence of GSM_RX_IN at C524-2.

- If not ok replace FEM U001
- If ok there is most likely a problem with the SAW Filter FL500, the TransAAM U500 or the ARGON U1000 – forward to an authorized level 4 service center.

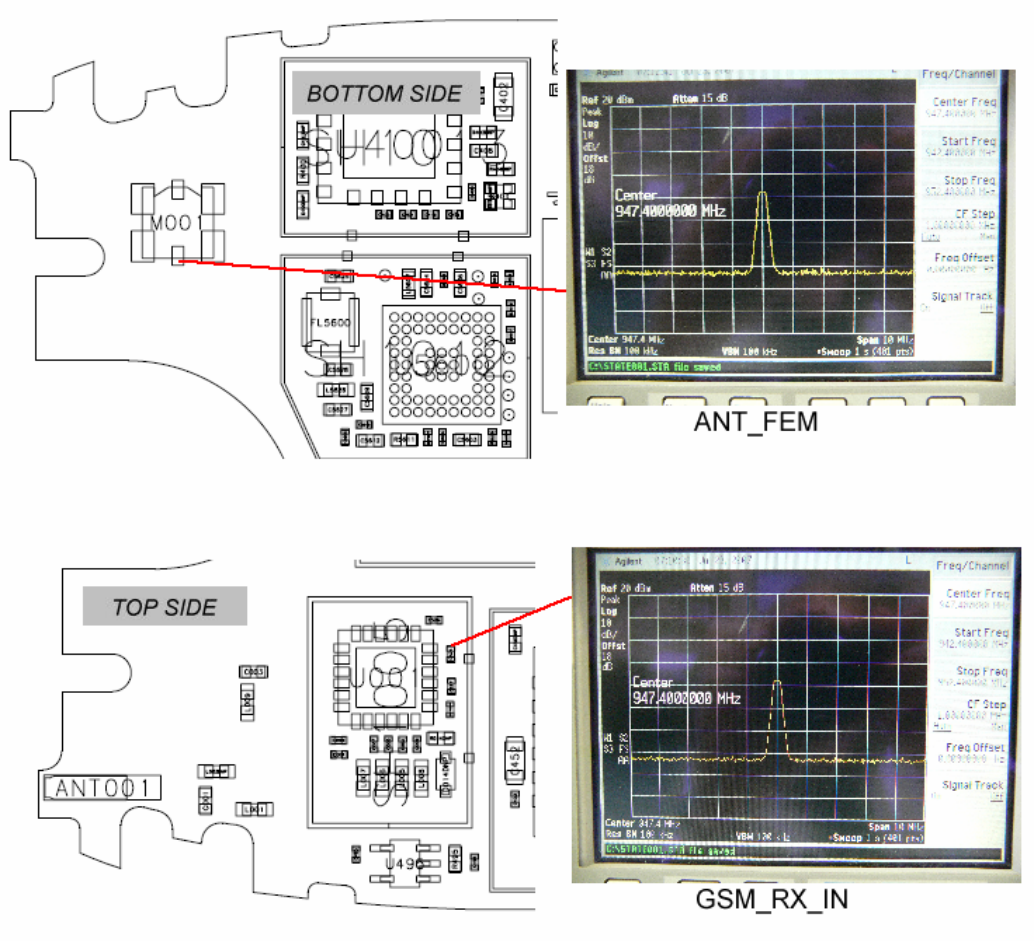


Figure 38

Note: *For AFC phasing the receiver is used. So, if there is any RX fail, the AFC phasing on that frequency band also fails. If the RX phasing is ok, but only AFC phasing fails, a bad crystal is the most likely cause – replace Y190.*

In addition the FEM state after FEM logic table can be checked. If one of them is missing, it is most likely a problem with the ARGON U1000 – forward to an authorized level 4 service center.

BAND SELECTED	FE1	FE2	FE3
WB2100 Tx & GSM900 Rx	1	1	1
GSM850 / GSM900 Tx	0	1	1
WB850Tx Rx/GSM850 Rx & WB1900 Tx Rx/GSM1900 Rx	0	1	0
GSM1800 / GSM1900 Tx	1	1	0
GSM1800 Rx	1	0	0
N/A	1	0	1
N/A	0	0	1
SHUT OFF MODE	0	0	0

Figure 39

No RX WCDMA

WCDMA RX is diplexed with Bluetooth TX/RX and uses the secondary antenna M002.

The diplexer performance is dependent on both the WCDMA RX and Bluetooth sides of the circuit. Bluetooth components (FL5600, C5627, C5628 and L5628) must all be properly placed for the WCDMA RX to function properly. Visually inspect these components when presented with a WCDMA RX front-end failure.

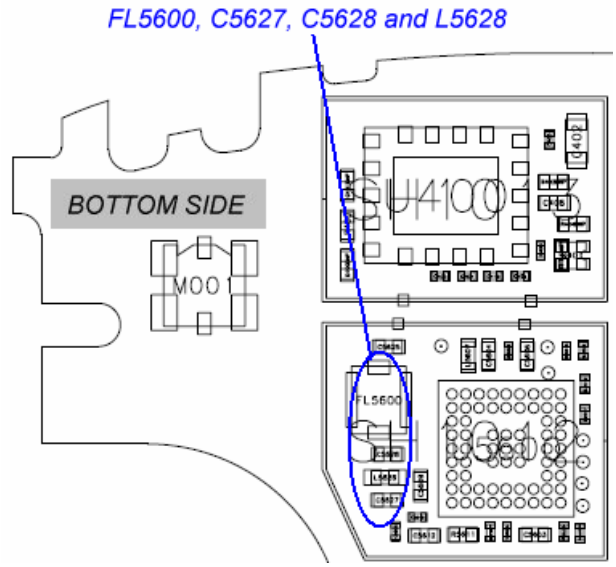


Figure 40

Visually inspect WCDMA diplexer components (L012, L13 and C10)

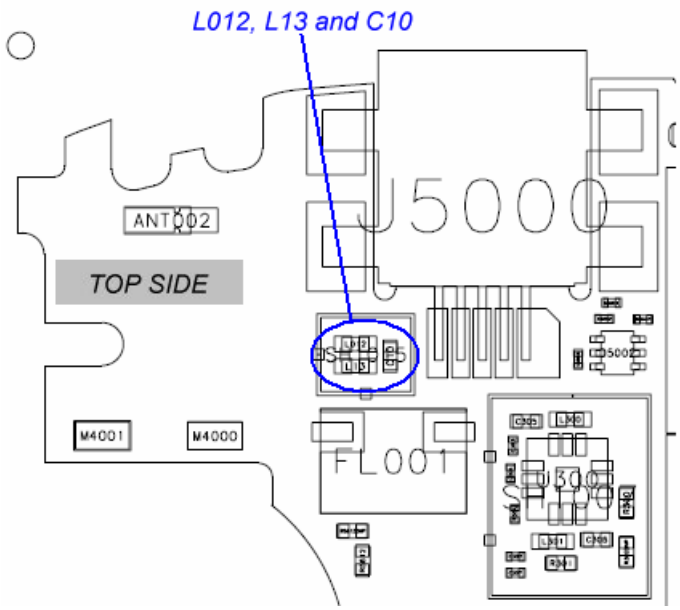


Figure 41

If a unit passes performance testing at 12.2k but fails at a higher data rate, the issue is typically caused by the SYMPHONY U100 or the ARGON U1000 – forward to an authorized level 4 service center.

Check RX signal path from connector M002 to SYMPHONY inputs, look for misplaced parts. If ok, suspect SYMPHONY. Also check 26MHz TCXO and surrounding components.

Inject a RF from Test Set. The power level should be set to max power. Check BT_RF_IN at antenna switch M002-1.

- If bad, replace M002
- Check for presence of 2100_PREFILT_OUT at FL001-1, if bad replace FL001
- Check RX_WB_2100_NEG/RX_WB_2100_POS at R305, if ok in size and form (if unsure compare with a known good PCB) suspect the SYMPHONY U100
- If RX_WB_2100_NEG/RX_WB_2100_POS are not ok, check VRF_RX_2_775V at R304, if ok check/replace U300/FL300

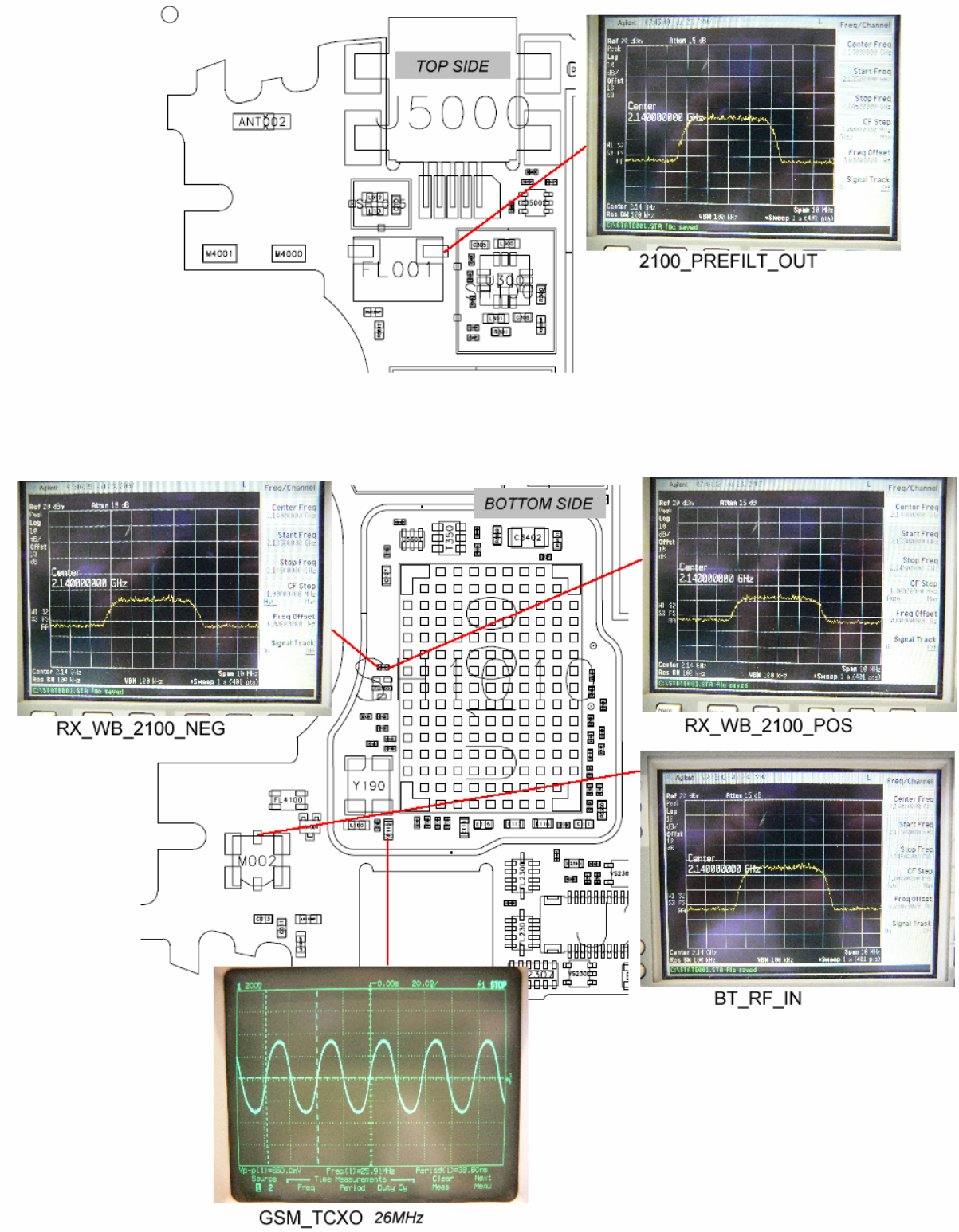


Figure 42

Flash procedures

Note: It is very important to do a restart after every flash process! Otherwise the phone may start in flash mode again.

Software update

Following steps are necessary to update the Software to latest approved Software:

- unlock phone (if subsidy locked)
- flash customer specific 1FF superfile (example: **DC One File Flash:** R26117LD_U_98.20.33BR_LP0039_DRM1003_VSTU_207_0C_JPUK_R26117VOLANSVF_03_USVOLANSVFUKR26117062_1FF.sbf)
- after restart:
- take out of “In Factory” – if necessary
- do Master Reset/Master Clear

Recovering Flash Memory in Forced Flash Mode

If the phone doesn’t start because of corrupted software it might be possible to recover it:

- connect phone to EMU-cable while pressing “*” and “#”

The phone should start in flash mode now: *S Flash Argon.*

- flash 1FF superfile (example: **DC One File Flash:** R26117LD_U_98.20.33BR_LP0039_DRM1003_VSTU_207_0C_JPUK_R26117VOLANSVF_03_USVOLANSVFUKR26117062_1FF.sbf)
- after restart:
- do Master Reset/Master Clear

If the phone doesn’t start in flash mode, there is a problem – proceed to level 3 troubleshooting.