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Motorola GmbH, CSS Center Flensburg, Mobile Devices

Title: Troubleshooting-Guide **C975 / C980**

Doc. No: TSG_C9xx

Version: 0.9e

Date: 23.08.2005

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C975 / C980





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Modified	Date	By



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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

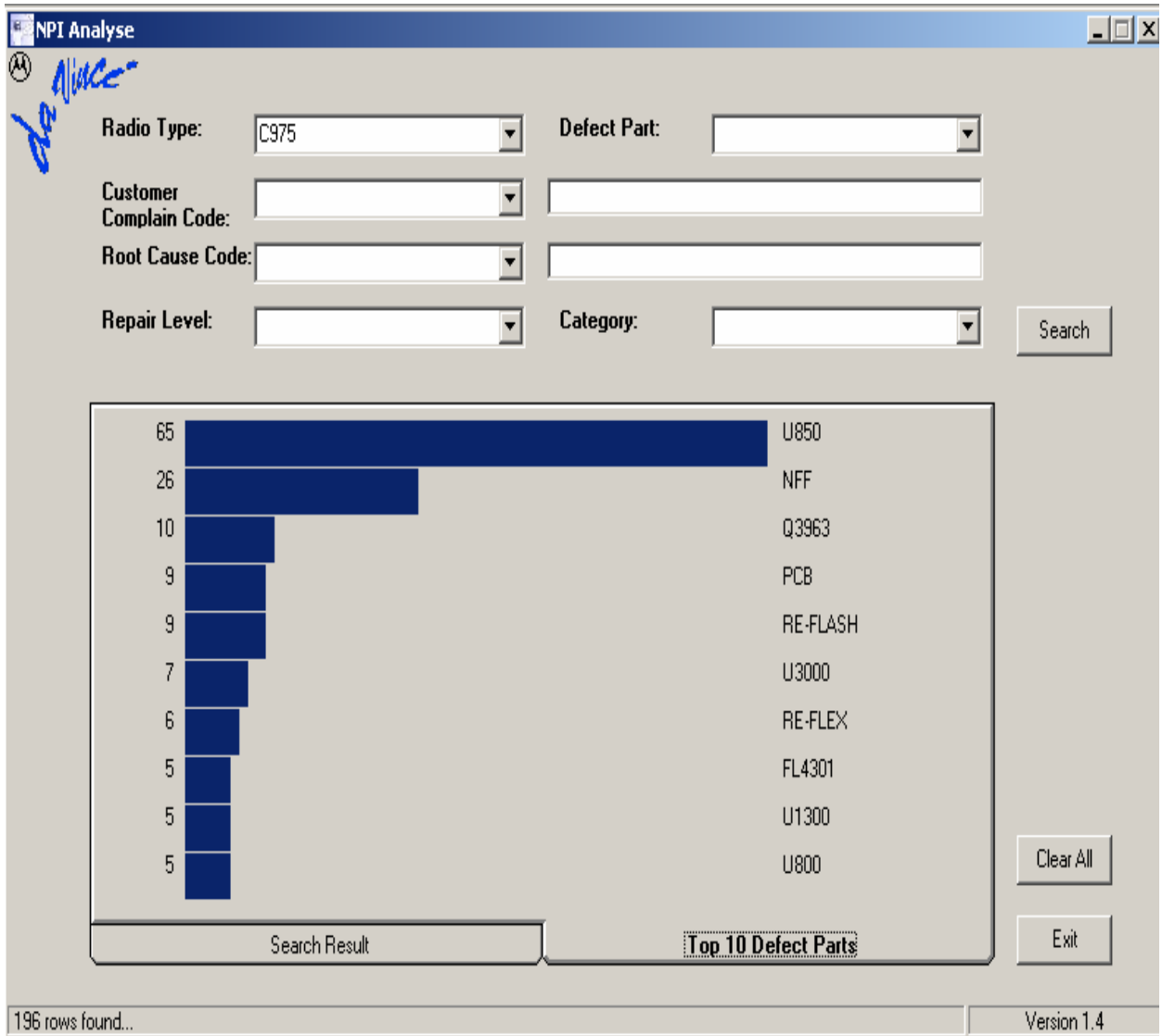
- before beginning to replace/change parts or soldering anything try to consider the failure from all sides.

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

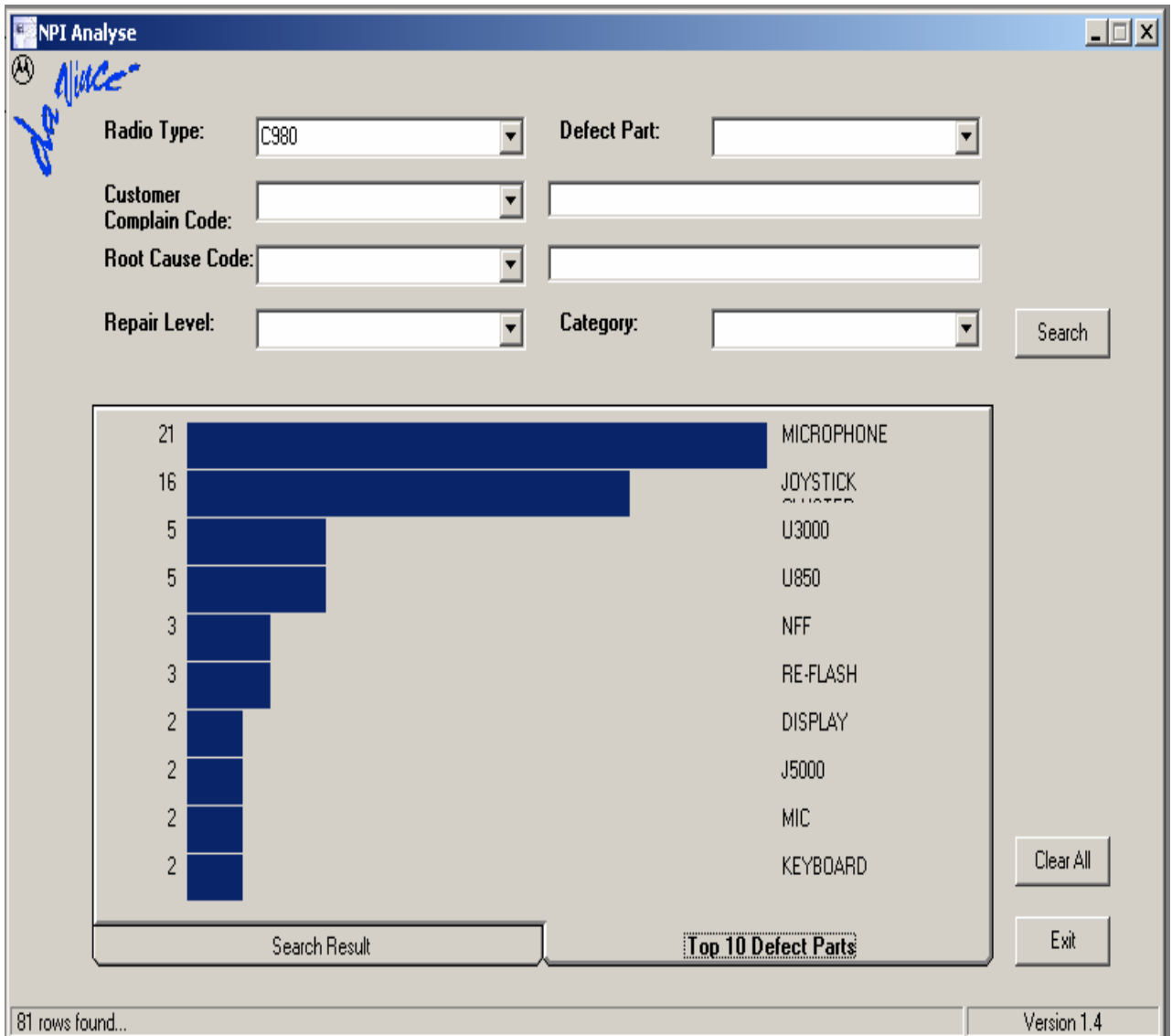


3.0 Top 10 Defect Parts from C975





3.1 Top 10 Defect Parts from C980





4.0 Software (Level 2 & 3)

For flexing and software updates it is important to have a Service Link account and access to FASTT (Flex and Software Tracking Tool).

Reflash SW at C975 /C980 in the following order

Clean the CE-Connector before reflashing the phone,.

1. connect the phone with the USB-Cable

(If the phone was not identified force the phone into FLASH-MODE by connecting to a **USB FLASH-Cable**)

2. reflash 1FF file (includes software, language, kajava, package)

example:R24_U_80.2F.63I_LP0039_DRM0103_JPPT_Games_R24_8
0.2F.63I_SE4946AXXK3110_1FF)

3. unlook phone

4. flex FactoryFlex (UIC975FACT01R24_03D.hs)

5. make a Test (example: **WinGate**).

6. revert “ In Factory “ status

7. make a CIT

8. Perform a “ MasterReset ” and “MasterClear” to all Clear Customer informations (Multimedia as pictures, video) !!!

The PCB will switch off after flash process and restart after a short time. The Delta-Flash-Software needs a restart after the flash process otherwise the phone start up in FLASH-MODE again!!!



4.1 Software (Level 4)

For flexing and software updates it is important to have Service Link account and access to FASTT (Flex and Software Tracking Tool).

Flash your blank C975 /C980 in the following order

- 1. Load IMAGE-file** (example: R24_U_80.2B.1BI_monster-rom_UCI975FACT01R2403B_P4B_hardware_v2). If there is no IMAGE-file for your chosen SW, then take an image of a lower SW-Version. It is possible to erase the flash part (must be without IMEI No.). Look under E1000 Blank select E1000 micron_eraser or E1000 tyax_eraser
- 2. Write the following Information into C975 / C980**
 - save IMEI-Number, Jobnumber and Serial No.
 - Factory Tracking Info (SEEM element 22)
 - save Primary Subsidy, Secondary Subsidy and Service Password
- 3. Make a Test** (example: **WinGate**). If the test was faulty try with FactoryFlex (UIC975FACT01R24_03D.hs)
- 4. Flash 1FF file** (include Software, Language, Kajava, Package) (example:R24_U_80.2F.63I_LP0039_DRM0103_JPPT_Games_R24_80.2F.63I_SE4946AXXK3110_1FF)
- 5. Take the Phone out of “ In Factory “**
- 6. Make a CIT-Test**
- 7. Perform a “ MasterReset ” and “MasterClear”** to all Clear Customer informations (Multimedia as pictures, video) !!!

The PCB will switch off after flash process and restart after a short time. The Delta-Flash-Software needs a restart after the flash process otherwise the phone start up in FLASH-MODE again!

5.0 Special feature: C975 Tyax Refresh

Transfer from Micron memory component (2 MB internal user memory) to Tyax memory component (16 MB internal user memory)

The phone works with other hardware (only one FLASH) and other software (example:R24_U_80.3F.A2I)

The 3F number in the software show us, that we work with Tyax chip set.



6.0 Quick Troubleshooting Guide C975 / C980

Fault Code

Defect Part

TON01 (Turn on/off - No Turn On)	U850/ Q3963/ U3000/ U800/ U1310/ U1000/ U1300/ REFLASH
MKP1 (Main Keypad-No function/hangs)	FL4301/ FL4302/ U1000/Joystick
AUD00 (Audio- No Detail Provided)	U3000
AUD07 (Audio-Mic, No)	Microphone
AUD13 (Audio-Mic, Noisy at strong signal)	Microphone Contacts
CHG01 (Charging - Does Not Charge)	U850
BAT02 (Battery – Battery life short)	U850
CPR00 (Voice Call – No Detail Provided)	U500

After changing the GSM PA (U800) we had some issues with defective Rattler ICs (U200). In these cases there could be an off current or high standby and trouble with TX power in WCDMA.



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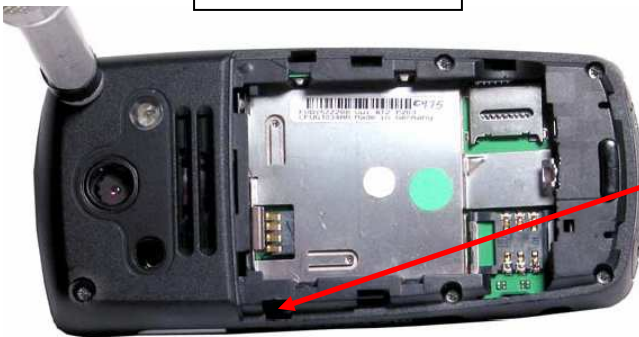
7.0 Defective Part: 1. Q3963

Attention:

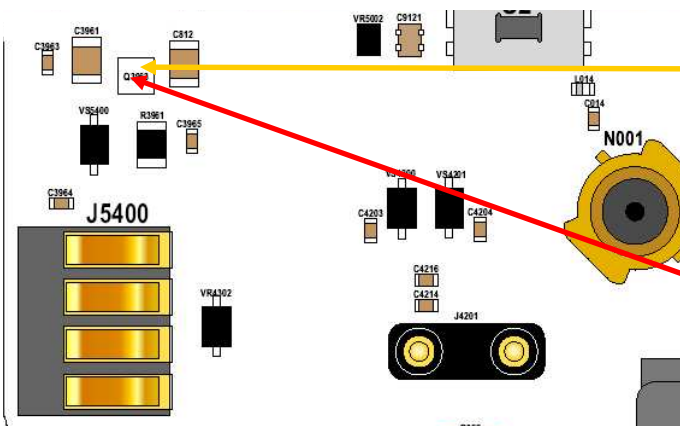
- Q3963 could be damaged during the disassembly process
- Q3963 is placed near the rear housing latches



Housing Latch



Attention :
Place work be careful
in this area



**No power on with
battery !
Please refer to
"Defective Part 2. Q3963 "**

**Part Q3963 could be
damaged during the
disassembly process**



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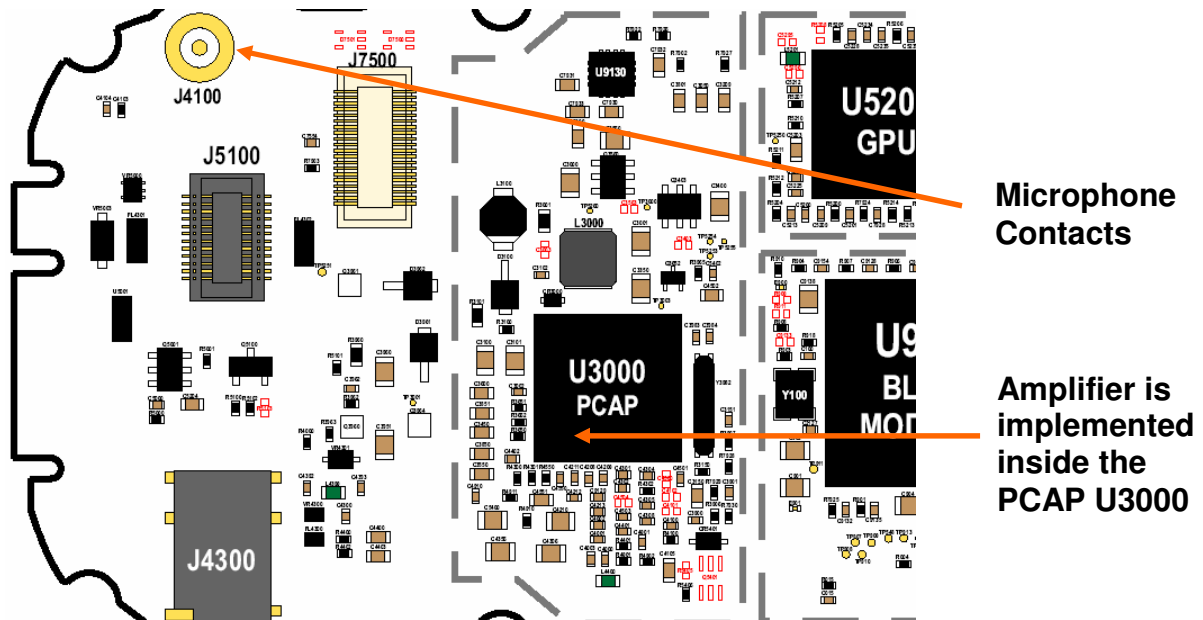
7.1 Defective Part: Microphone (Level 2)

**Fault code from customer: AUD07 (Audio-Mic, No)
AUD12 (Audio-Mic, Noisy at Unknown Cond)
AUD13 (Audio-Mic, Noisy at strong signal)**

Crackling mic audio, no microphone audio or intermittent microphone audio

1. Check audio loop (**AUD12/AUD13**)
 - crackling microphone audio or intermittent microphone audio
 - check if Mic contact are in good condition
 - clean microphone contacts
2. Check audio loop (**AUD07**)
 - no microphone audio or intermittent microphone audio
 - change microphone

**Distortion on alert audio, crackling audio or no audio.
Take new microphone, speaker and alert. Ensure good connection.
Please refer to "Defective Part U3000"**

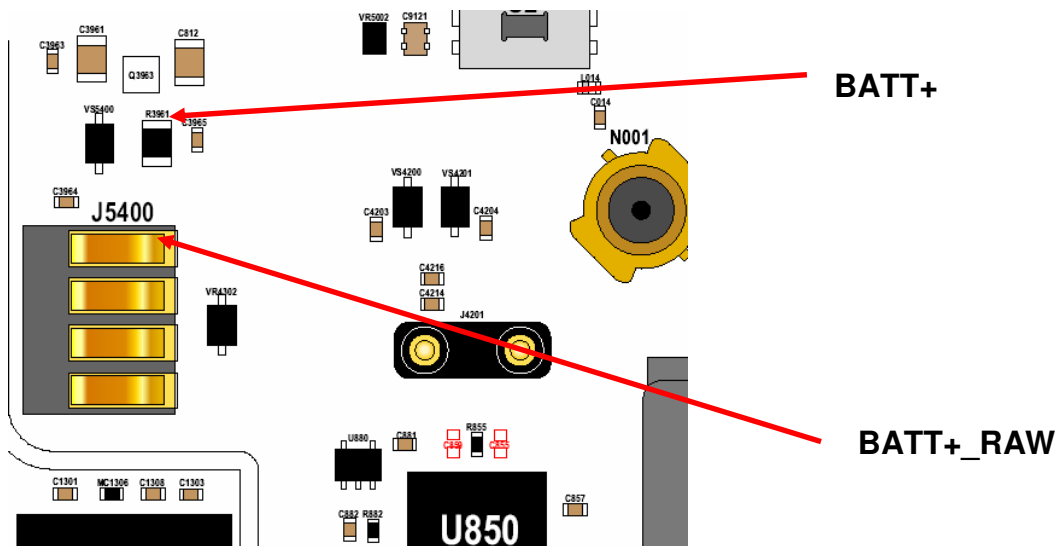




7.2 Defective Part: U850 (Level 3)

**Fault code from customer: TON01 (Turn on/off - No Turn On)
CHG01 (Charging - Does Not Charge)
BAT02 (Battery – Battery life short)**

1. Check BATT+ _RAW (PIN 4 from J5400 Battery Connector)
 - if you can measure a short to Ground disassembly the phone
 - phone draws high current (2 A) BATT+ to Ground
2. Check BATT+ on R3961
 - if you can measure a short to Ground...
 - remove SH1 (Shield from UMTS-PA U850)
 - remove U850
3. Check BATT+ on R3961
 - no short to Ground
 - replace U850



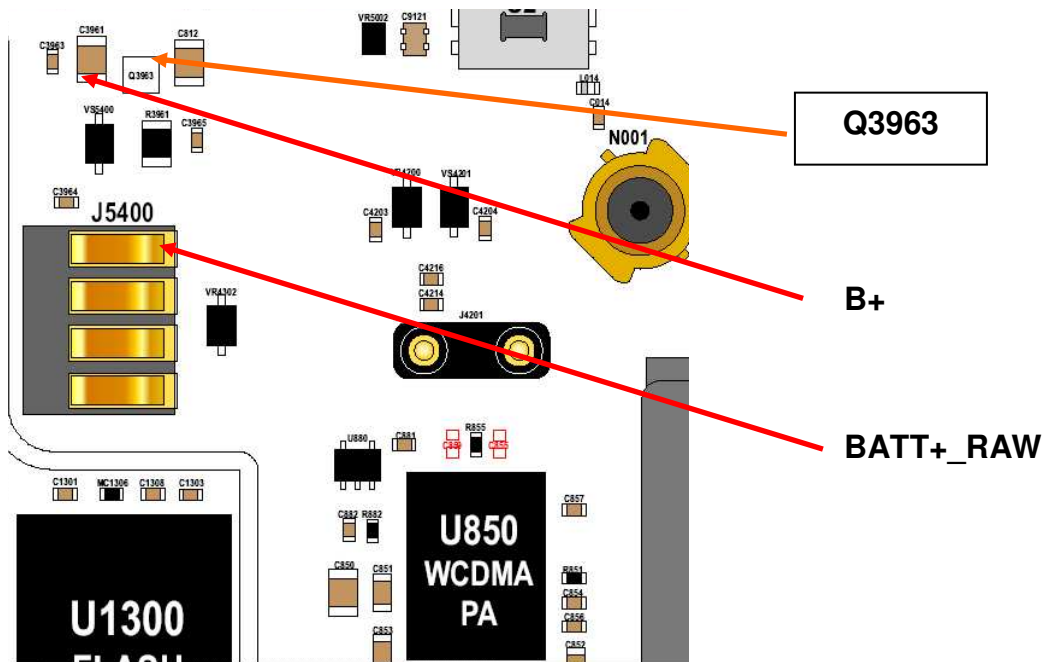
4. If you remove U850 and the short to Ground is present
 - change U800
5. Most of the defect PA`s get hot !!
 - change the PA under the warm / hot shield first



7.3 Defective Part: 2. Q3963 (Level 3)

Fault code from customer: TON01 (Turn on/off - No Turn On)

1. No power on with battery
 - phone turn on with USB-Cable
 - check Battery
 - check Battery Connector J5400 for twisted PIN
 - check BATT+ _RAW (PIN 4 from J5400 Battery Connector) !!
2. Check BATT+ and B+
 - connect Power (4,4 V) to PIN 4 from J5400
 - measure 4,4V on R3961 (BATT +)
 - measure 4,4V on C3961 (B +)
 - if the power(B+) is not present check Q3963
3. Check Q3963
 - visual inspection (broken, missing)
 - Q3963 was often damaged during the disassembly process





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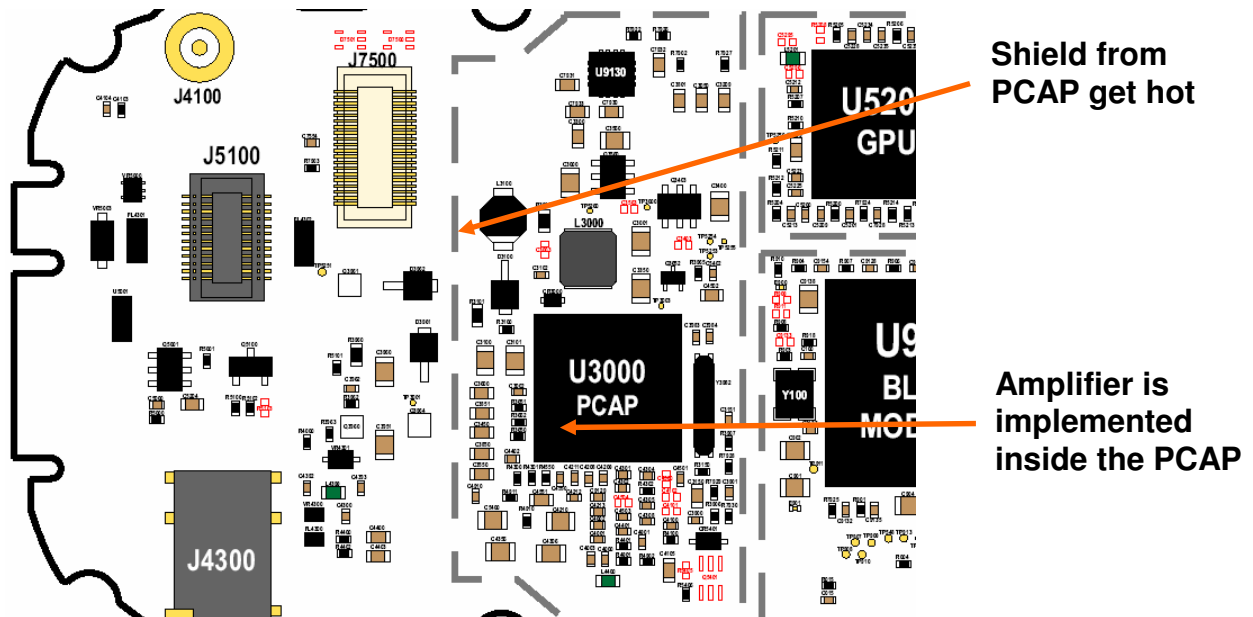
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7.4 Defective Part: U3000 (Level 3)

Fault code from customer: **TON01 (Turn on/off - No Turn On)**
AUD00 (Audio- No Detail Provided)

1. Check turn on with USB-CABLE and with battery (**TON01**)
 - with battery PCB took 190 mA
 - with USB-CABLE PCB took first 700 mA and went then up to 900 mA
2. Check U3000 (**TON01**)
 - U3000 area (Shield get warm)
 - replace Shield SH 2
 - turn on with USB-Cable ..U3000 get hot
 - change U3000
3. Distortion on alert audio, crackling audio or no audio (**AUD00**)
 - try with new alert, microphone and speaker. Ensure good connection.
 - amplifier (audio) is implemented in the PCAP
 - change U3000





7.5 Defective Part: FL4301 / FL4302 (Level 3)

Fault code from customer: MKP1 (Main Keypad - No function/hangs)

Just some keys have no function, or no keypad function at all

1. Visual Inspection

- look for missing, broken or damaged part
(FL4301 / FL4302 / J5100/ SW1 / SW2 / SW5 / VR5001 / VR5002)
- check key function with a new keyboard

2. Check resistance of keypad lines

Keys "2" and "7" have no function

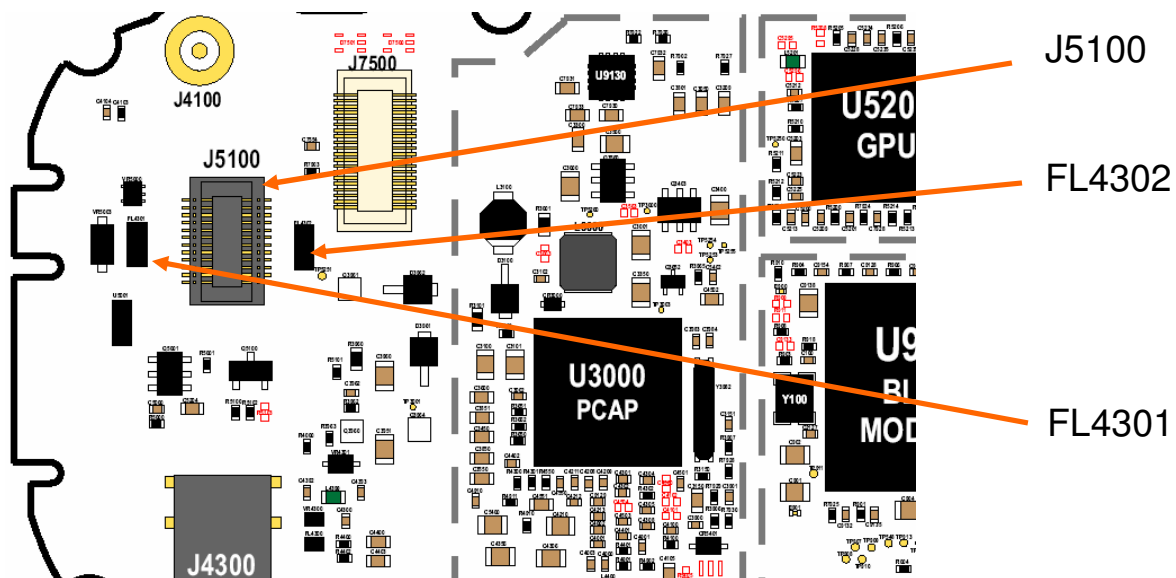
- check resistance of keypad lines to Ground -> "KEY8" is open
- line is connected with FL4302
- change FL4302

Keys "2", "up" and "left" have no function

- check resistance of keypad lines to Ground -> "KEY5" is open
- line is connected with FL4301
- change FL4301

3. No keys are working

- check for short or open keypad lines to Ground
- tried Factory-Flex
- also take a look under "Defective Part" Page 16 and Page 18





7.6 Defective Part: U1300/U1310 (Level 4)

Fault code from customer: **TON01 (Turn on/off - No Turn On)**
Phone went into FLASH-MODE or phone was not identified !!

1. Visual Inspection

- look for missing, unsolder and damaged part...clean the CE-Connector

2. Check current, voltage and clock (32,678kHz)

3. Connect the Phone with **USB-Cable...Phone went into FLASH-MODE**

- reflash 1FF file

example:R24_U_80.2F.63I_LP0039_DRM0103_JPPT_Games_R24_8
0.2F.63I_SE4946AXXK3110_1FF)

-if radio starts in flash mode after 1FF reflash again

check OPT1 / OPT2 for short... (J5000 Pin 13/14 / U5000)

4. Phone was not identified... get in FLASH-MODE with **USB FLASH-CABLE.**

- reflash 1FF file

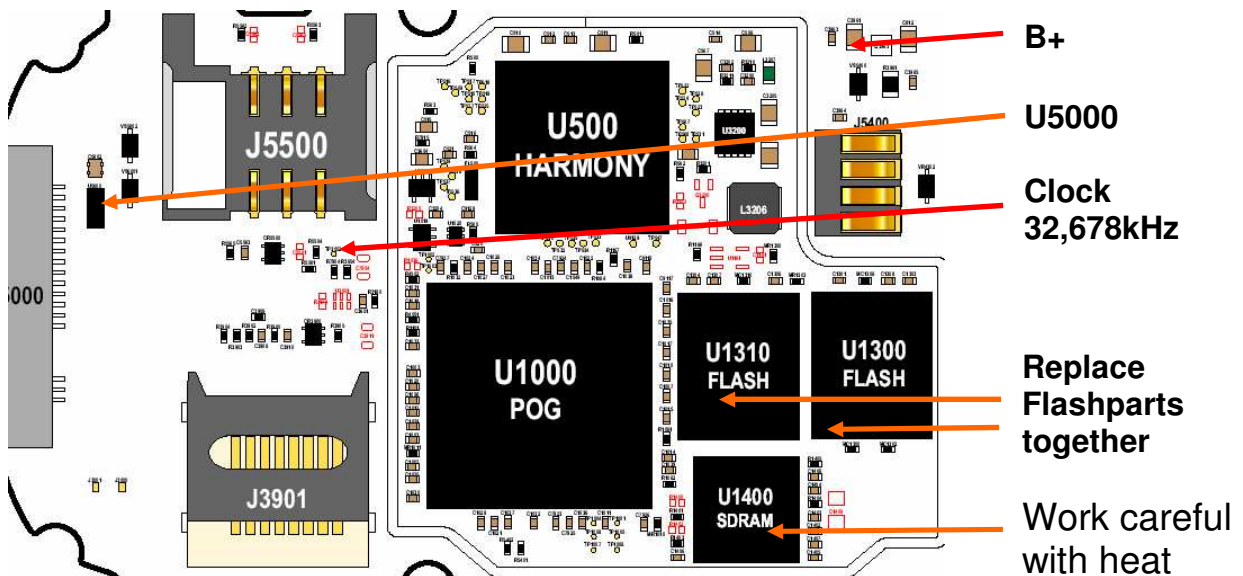
If the reflash process was unsuccessful (example: FLASH/RESET faulty)

- replace Shield SH3, U1300 and U1310

- work careful with heat at U1400 (RAM) area

- always change both Flashparts (U1300/U1310) !!

- look under " Software Level 4 " ... Page 7





7.7 Defective Part: U1000 (Level 4)

Fault code from customer: **TON01 (Turn on/off - No Turn On)**
MKP1 (Main Keypad - No function/hangs)

Draws 140 mA for 10sec and powers down / No keys are working

Visual Inspection

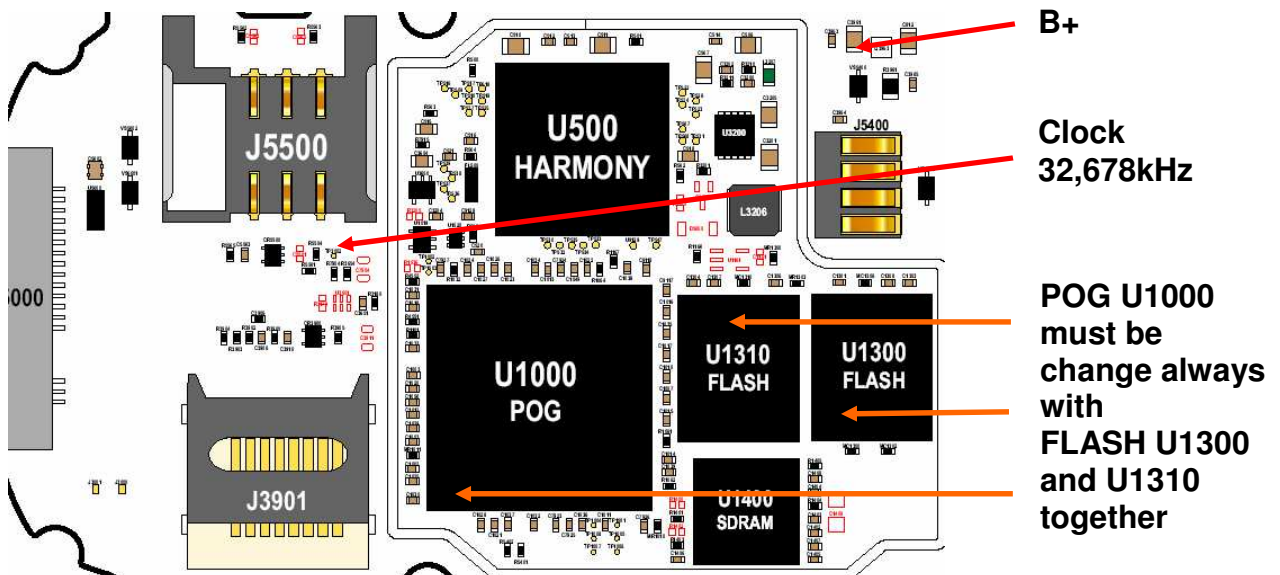
- look for missing, unsolder and damaged part...clean the CE-Connector

Draws 140 mA for 10sec and powers down (TON01)

- connect the phone with FLASH-CABLE...Phone went into FLASH-MODE
- reflash 1FF file
- phone took software but no RESTART or FLASH / RESET failed
- changing U1300 and U1310 was unsuccessful
- change U1000

No keys are working (MKP1)

- visual inspection (FL4301 / FL4302 / J5100/ SW1 / SW2 / SW5 / VR5001 / VR5002)
- check for short or open keypad lines to Ground
- try factory-flex
- place check first "Defective Part" Page 14 and Page 18
- change U1000





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7.8 Defective Part: U500 (Level 3)

Fault code from customer: **CPR00 (Voice Call – No Detail Provided)**

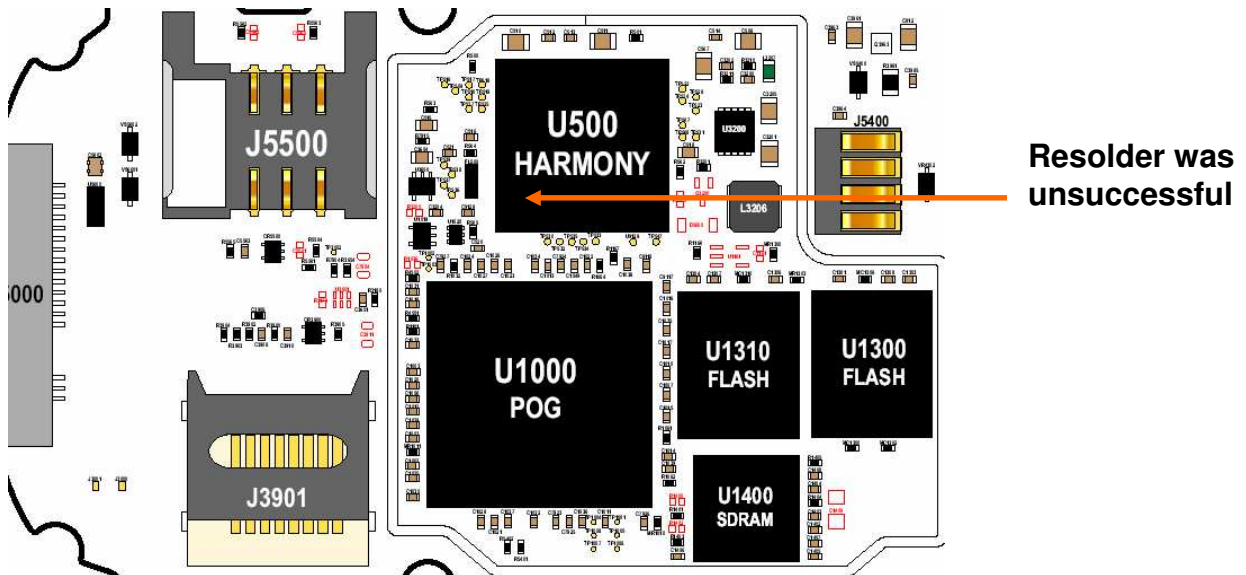
Visual Inspection

- look for missing, unsolder and damaged part...clean the CE-Connector

Phone turns on but failed with SUSPEND MODE (Test: WINGATE)

TEST MODE not possible (RepairStudio / RadioComm)

- change U500





7.9 Defective Part: Joystick (Level 2)

Fault code from customer: MKP1 (Main Keypad - No function/hangs)

Joystick: Left, Right, Up or Down have no function or no Joystick function

1. Visual Inspection

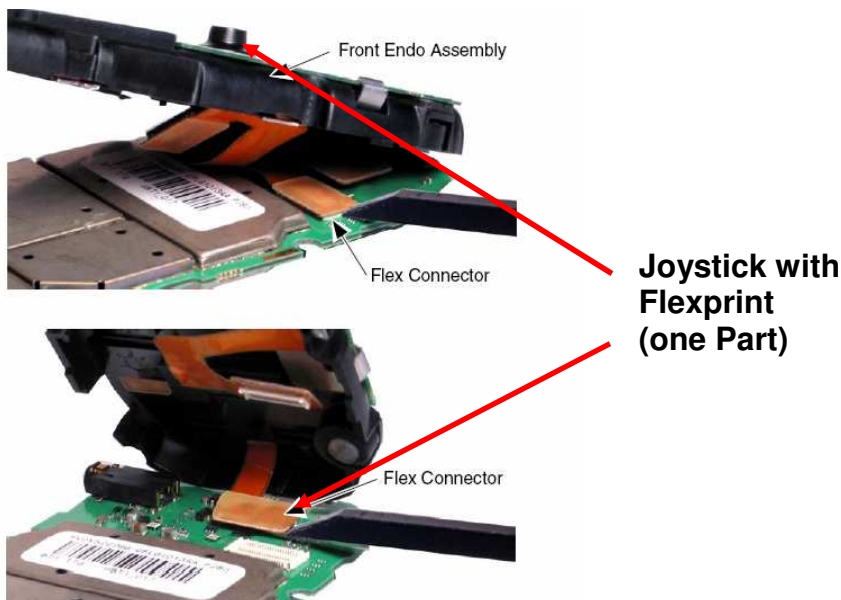
- look for FL4301, FL4302, J5100, SW1, SW2, SW5, VR5001 and VR5002
- look for damaged and unsolder part (Joystick, J5100, Joystick-Flexprint)

2. Check Joystick

- take a new Joystick (Joystick and Flexprint is one Part)

3. New Joystick

- Joystick faulty again
- look under "Defective Part FL4301 / FL4302" on Page 14
- look under "Defective Part U1000 " on Page 16





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8.0 Differences between C975 and C980

C975

- Mass Market targeted to H3 and other customers

C980

- Mass Market product exclusively for Vodafone

ENDO

- Internal structure for C975 and C980 is identical
- Electrical design based on E1000

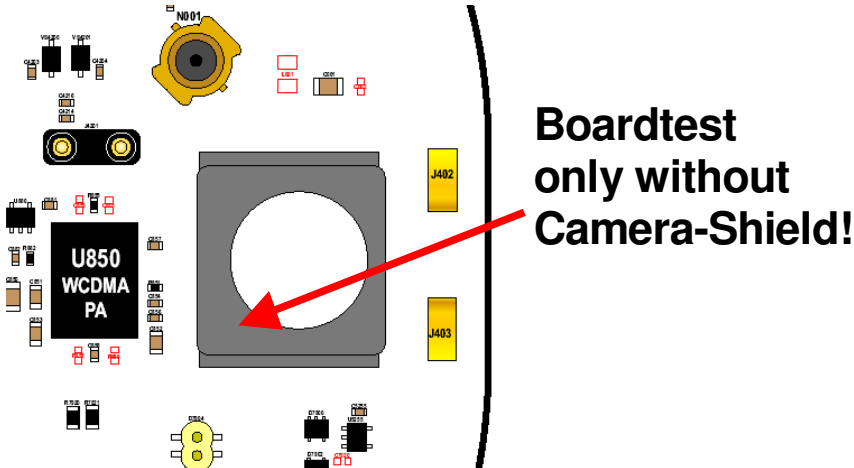
Differences between C975 and C980

- Front Housing
- Rear Housing
- Battery cover
- Keypad
- Branding materials
- Customer-specific software



Boardtest INFO C975 / C980 (RunNexTest)

1. Disassembly Camera-Shield



2. Put the FactoryFlex (UIC975FACT01R24-03D.hs) into the PCB

3. Software

- if it is necessary take latest approved software (HEADSET_DETECT failed)

Testno.: 10 und BATTSTT1 / Testno.:11.....BATTmCUR1

- Check Q3963 / Q3960 (Part broken or missing).... current 0mA
- Check U850 and U800 (PA get hot) current 2A

Testno.:57 HEADSET_DETECT_INSERTION

- New software (Test with old Software: R24_U_80_2E.2A.01P)

Testno.:72.... CE_CTS_LINE_LO

- clean CE connector
- check J5000 (mechanical damaged / unsolder)

Testno.:82.... CE_RI_LINE_HI

- check J5000, U5000 and U5001 (mechanical damaged / unsolder)

Testno.: 1149.. CALL_CHLG originate-call-G_MaxPwr_LoChan

- test with customer software could make problems, make a new test with Factory Flex: UIC975FACT01R24-03D.hs