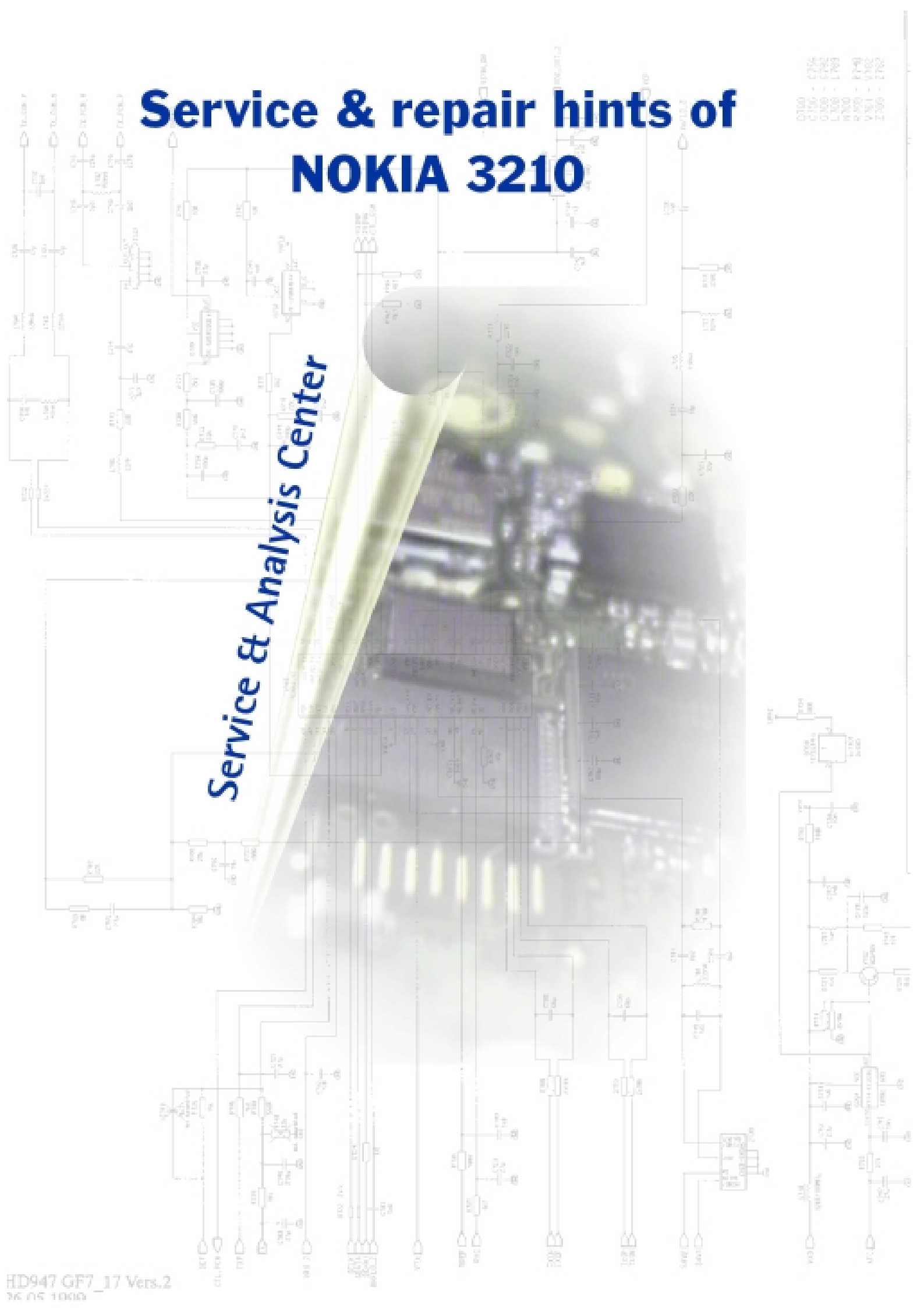
Service & repair hints of NOKIA 3210



HD947 GF7_17 Vers.2
26.05.1999

Introduction

IMPORTANT:
This document is intended for use by authorized NOKIA service centers only.

The purpose of this document is to provide some further service information for NOKIA 3210 phones.
It contains a lot of collected tips and hints, to find failures and repair solutions easily.
I will also give support to the inexperienced technicians.
Saving process time and improving the repair quality is the aim of using this document.
We have build it up based on fault symptoms (listed in "Contents") followed by detailed description for further analysis.
It is to be used additionally to the service manual and other service information
like Service Bulletins, for that reason it doesn't contain any circuit descriptions or schematics.

All measurements are made with using of following equipment:

Nokia repair SW	: Wintesla Version 6.10
DLL version	: NSE8/9 version 2.41.05
Nokia Module Jig	: MJS-13
Digital multimeter	: Fluke 73
Oscilloscope	: Hitachi V-1565; Fluke PM 3380A
Spectrum Analyzer	: Advantest R3361C with an analogue probe
RF-Generator / GSM Tester	: Rohde & Schwarz CMD 53

While every endeavour has been made to ensure the accuracy of this document, some errors may exist. If any errors are found by the reader, NOKIA should be notified in writing, using following procedure:

Please state:
Title of the Document + Issue Number/Date of publication
Page(s) and/or Figure(s) in error

Please send to:

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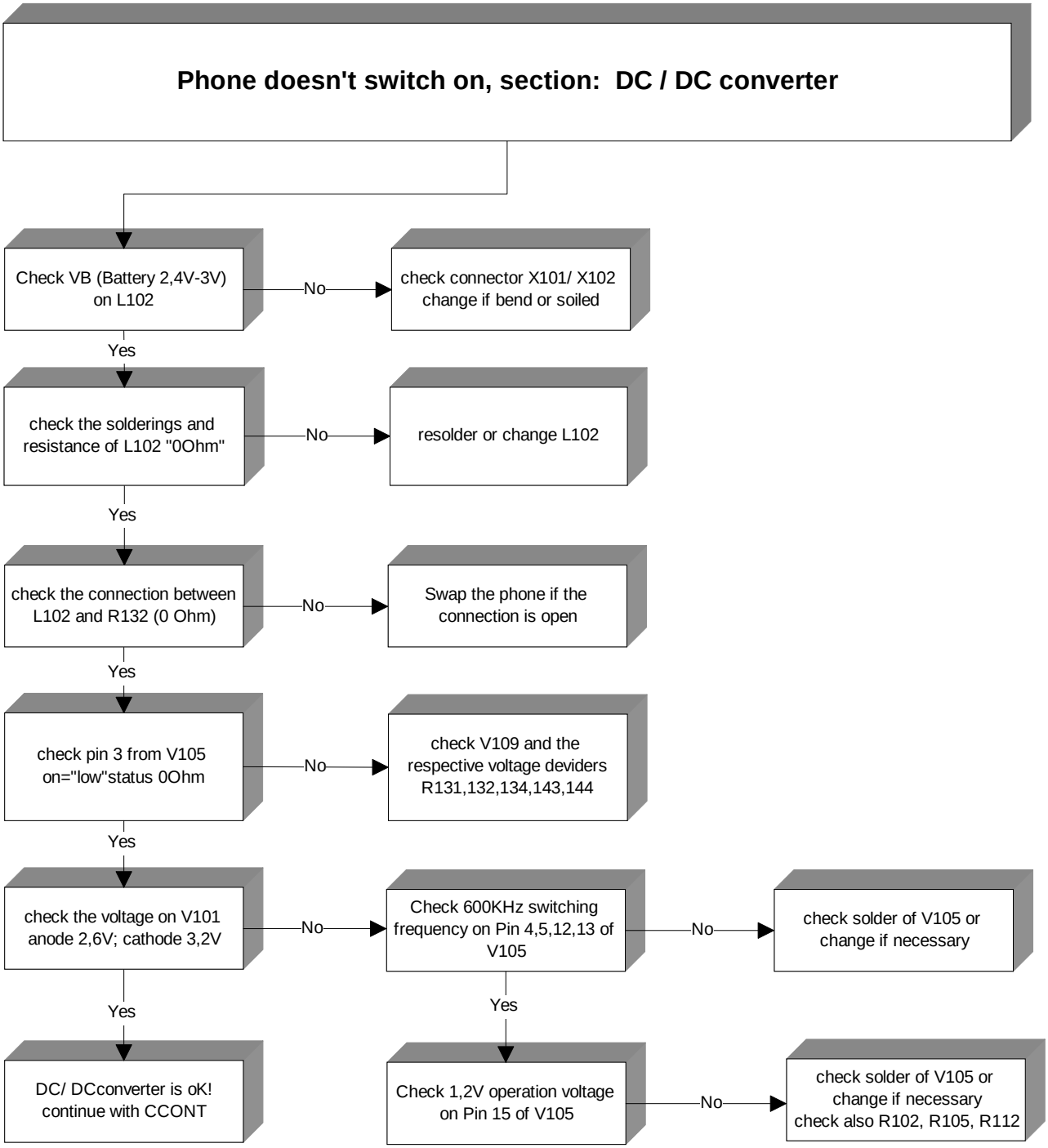
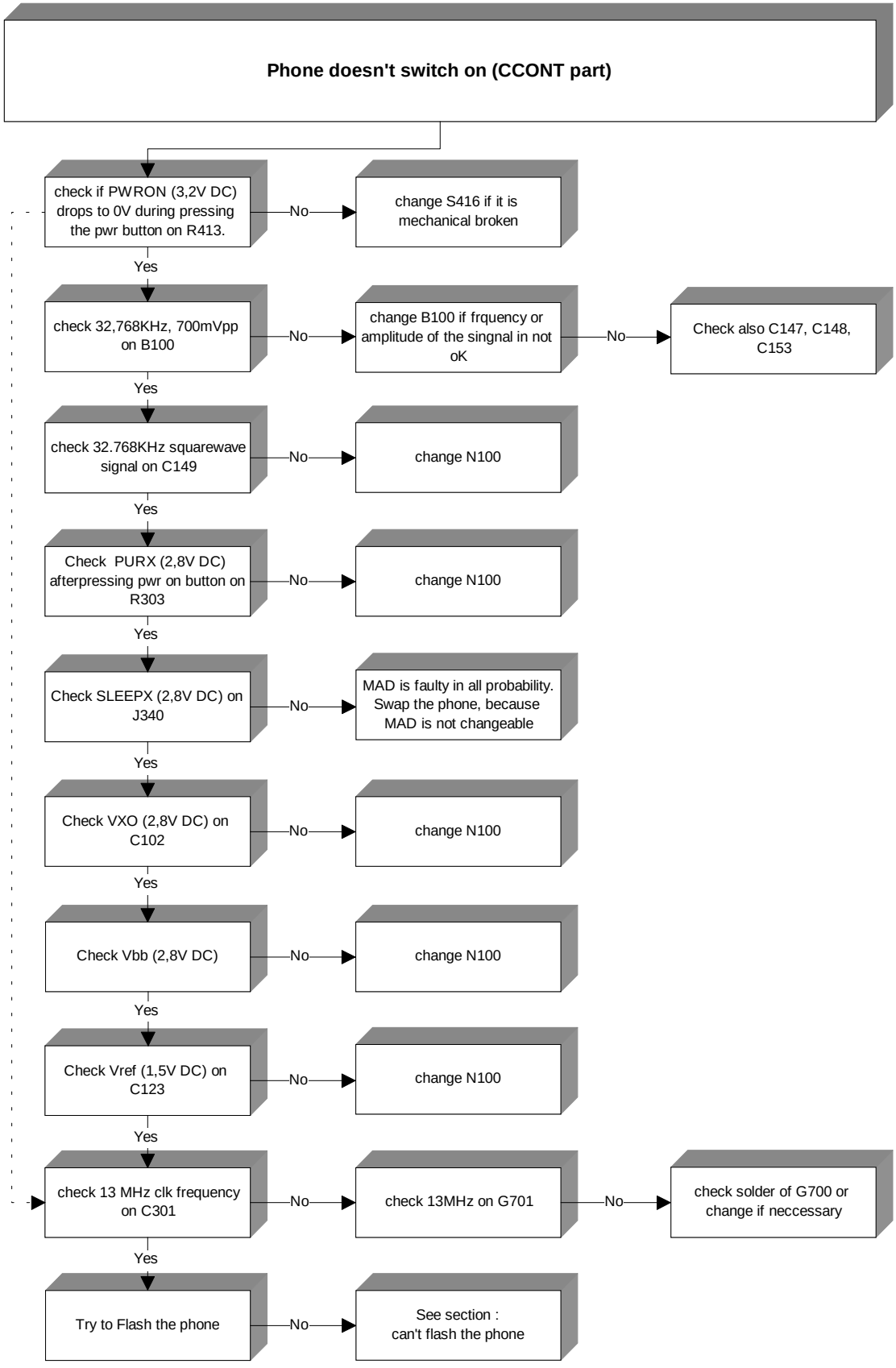
Contents

Doesn't Switch on




Phone doesn't switch on (CCONT part)
check if PWRON (3,2V DC) drops to 0V during pressing the pwr button on R413.
No
change S416 if it is mechanical broken
Yes
check 32,768KHz, 700mVpp on B100
No
change B100 if frquency or amplitude of the singnal in not oK
No
Check also C147, C148, C153
Yes
check 32.768KHz squarewave signal on C149
No
change N100
Yes
Check PURX (2,8V DC) afterpressing pwr on button on R303
No
change N100
Yes
Check SLEEPX (2,8V DC) on J340
No
MAD is faulty in all probability. Swap the phone, because MAD is not changeable
Yes
Check VXO (2,8V DC) on C102
No
change N100
Yes
Check Vbb (2,8V DC)
No
change N100
Yes
Check Vref (1,5V DC) on C123
No
change N100
Yes
check 13 MHz clk frequency on C301
No
check 13MHz on G701
No
check solder of G700 or change if neccessary
Yes
Try to Flash the phone
No
See section : can't flash the phone

Battery connectors X101/ X102 / bend out dirty

- Check if VBATT and Gnd are connected

Power on/off switch S416 faulty/ mechanical broken

- Check if 3,2V on R413 drops of 0V during pressing the Power on button

L102 poor soldering

- Check the soldering of L102
- Check the resistance in "off mode=0Ω"
- Resolder L102 or change it

N100 CCONT faulty

- Check if 3,2V on R413 drops of 0V during pressing the Power on button
- Check if there is a 32.768 kHz square wave on C149
- Check if PURX on R303 goes up to 2.8 V DC
- Check if VXO on C102 goes up to 2.8 V DC
- Check if VBB on C117 goes to 2,8V DC
- Check if Vref on C123 goes to 1,5V DC

B100 faulty 32,768KHz

- Check 32.768 KHz ; 700mVpp clock signal on B100
- Check also C147, C148, C153

G701 faulty 13 MHz

- Check VCC 2,8V DC on G701
- Check 13 MHz output frequency; 1,2 Vpp on the output pin

VB to R132 board faulty

- Check the battery voltage 2,6V on L102
- Check the same voltage on R132
- Check if the connection from R132 to L102 are 0Ω
- Don't forget to put the additional label on the PCB, it save the layer (see Service Bulletin 11)

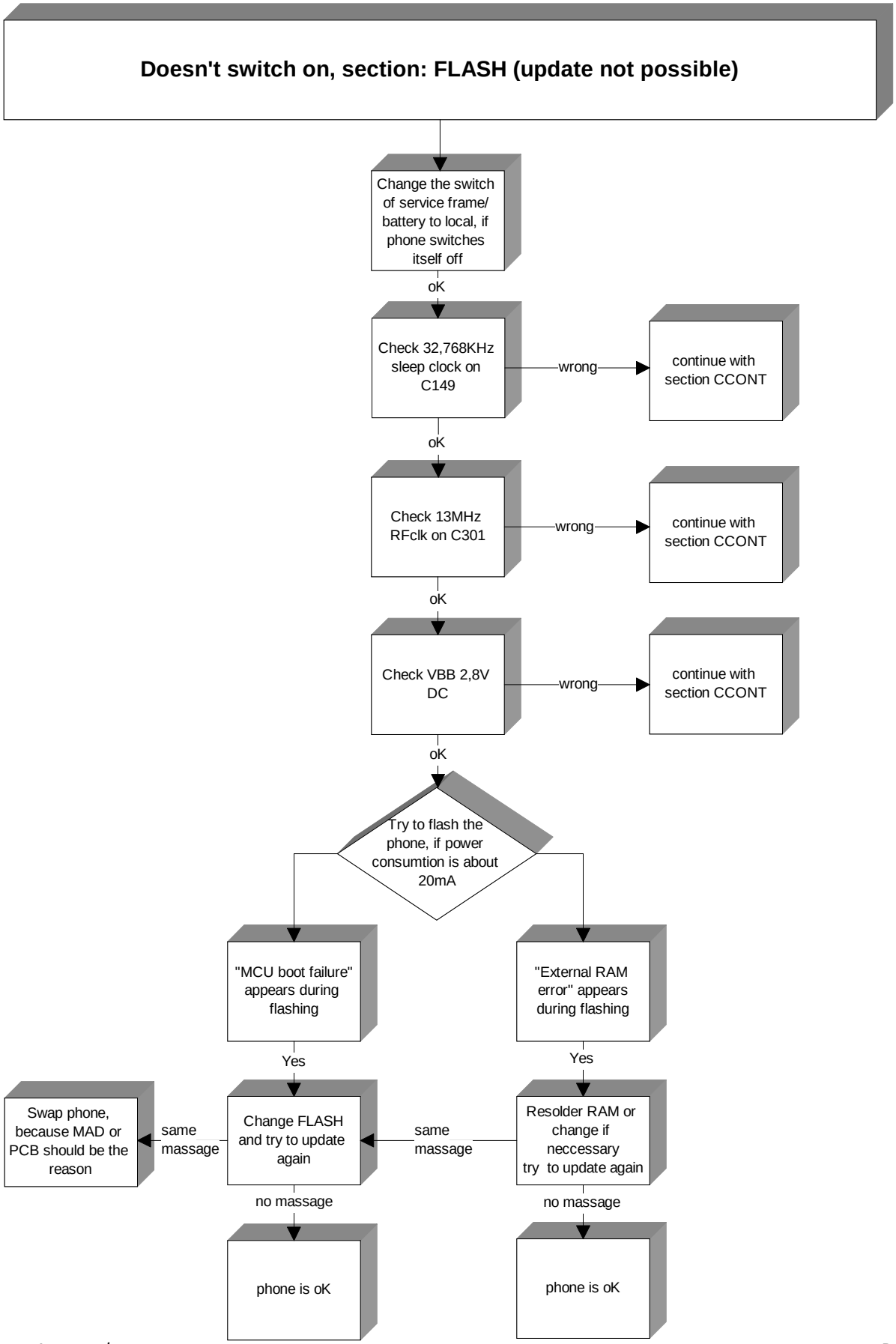
D200 MAD faulty

- Check if there is a 32,768 KHz square wave on C149
- Check the 13MHz main clock oscillator on C301 800mVpp
- Check VBB 2,8 V DC on C117
- Check PURX 2,8 V DC on R303 (comes from CCONT)
- Check SLEEPX 2,8 V DC On measurement point J 340
- MAD are probable faulty
- MAD are not interchangeable swap the handset

V105 DC/DC converter faulty

- Check the voltage difference on the diode V101 Anode: 2,6V DC, cathode: 3,2V DC
- Check the 600KHz switching frequency on pin 4, 5, 12, 13 from V105
- Check the 1,2V operation voltage on pin 15 from V105
- Check if pin 3 from V105 have low status ≈0V, if not check V109 and the respective voltage dividers R131, R132, R134, R143, R144
- Change the V105

No flash update possible/ Doesn't switch on



D301 Flash faulty

- If the handset switches it self off, change the switch of the service frame to local mode
- Check the 32,768KHz Sleep clock signal on C149
- Check the 13MHz main clock oscillator on C301 800mVpp
- Check the VBB voltage on C117
- If power consumption is approximately 20mA try to flash the phone
- If you get a error message during the flashing process, change the flash and try it again

D302 RAM faulty/ poor soldering

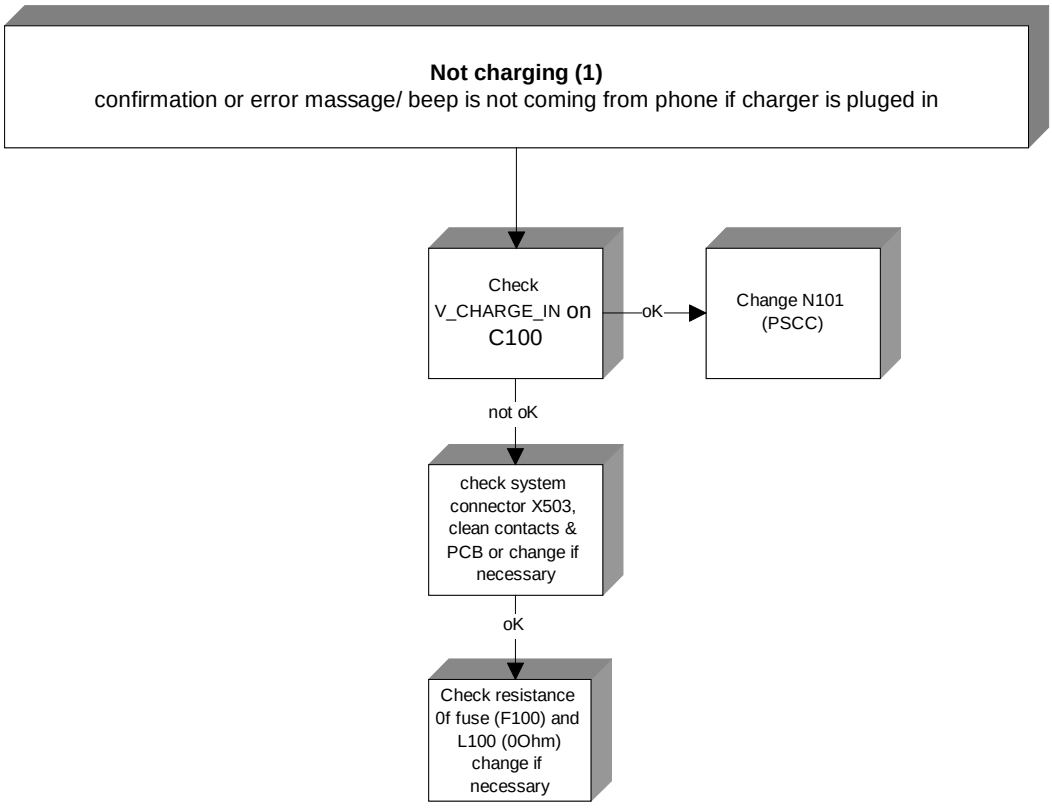
- Check if the handset current consumption is approx. 20mA
- Check the 32,768KHz Sleep clock signal on C149
- Check the 13MHz main clock oscillator on C301 800mVpp
- Check the VBB voltage on C117
- Resolder RAM
- Try to flash the handset
- Change the RAM if you get a error message during the flash procedure "external RAM error"

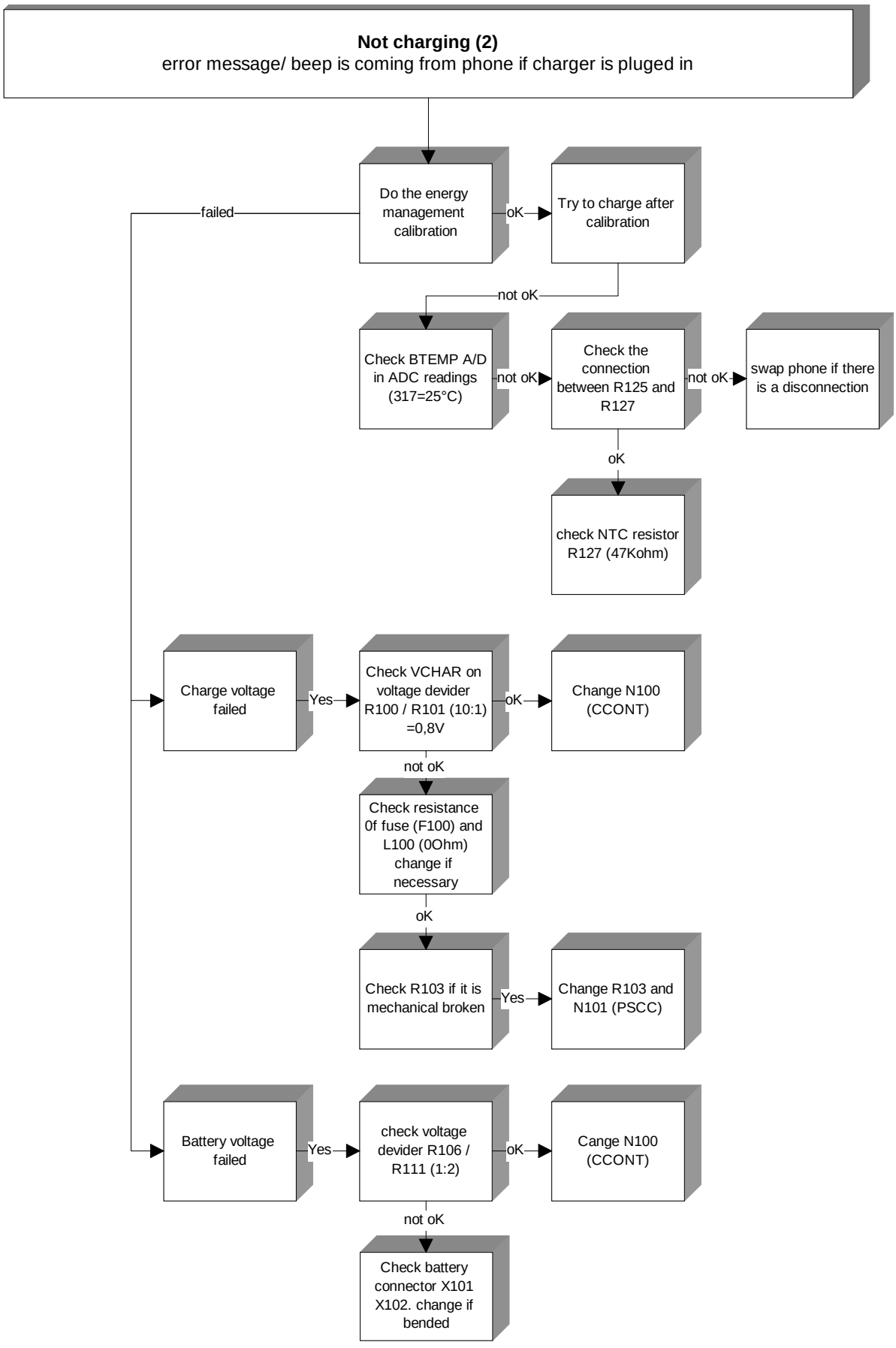
Intermittent doesn't switch on

D301 FLASH faulty

- Check if the handset switches on after reflashing the memory
- D301 Flash internal fail or poor soldering balls

Not charging




Not charging (2)
error message/ beep is coming from phone if charger is pluged in
Do the energy management calibration
failed
oK
Try to charge after calibration
not oK
Check BTEMP A/D in ADC readings (317=25°C)
not oK
Check the connection between R125 and R127
not oK
swap phone if there is a disconnection
oK
check NTC resistor R127 (47Kohm)
Charge voltage failed
Yes
Check VCHAR on voltage devider R100 / R101 (10:1) =0,8V
oK
Change N100 (CCONT)
not oK
Check resistance 0f fuse (F100) and L100 (0Ohm) change if necessary
oK
Check R103 if it is mechanical broken
Yes
Change R103 and N101 (PSCC)
Battery voltage failed
Yes
check voltage devider R106 / R111 (1:2)
oK
Cange N100 (CCONT)
not oK
Check battery connector X101 X102. change if bended

If you are using wintesla NSE8/9 DLL 2.41.03 or lower version the error message "current calibration fail" will appear in every charge tuning calibration test! See Service manual chapter "service software instructions" page 19 (Energy Management Calibration)

X503 System connector faulty

- Check the mechanical appearance of the connector
- Clean the contacts on the board or change the connector if necessary

F100 faulty

- Check resistance of F100 (0Ω)
- Check the resistance V_charge line to ground (OK=10KΩ)

N100 CCONT faulty/ poor soldering

- Check if any A/D values are out of limit but the corresponding DC voltages is OK (wintesla/ local mode/ Testing/ ADC Readings...)
- If DC voltages are wrong, check corresponding voltage dividers (R100, R101)
- Check PWMOUT on R117 or R142 (1 Hz standard / 32 Hz fast)

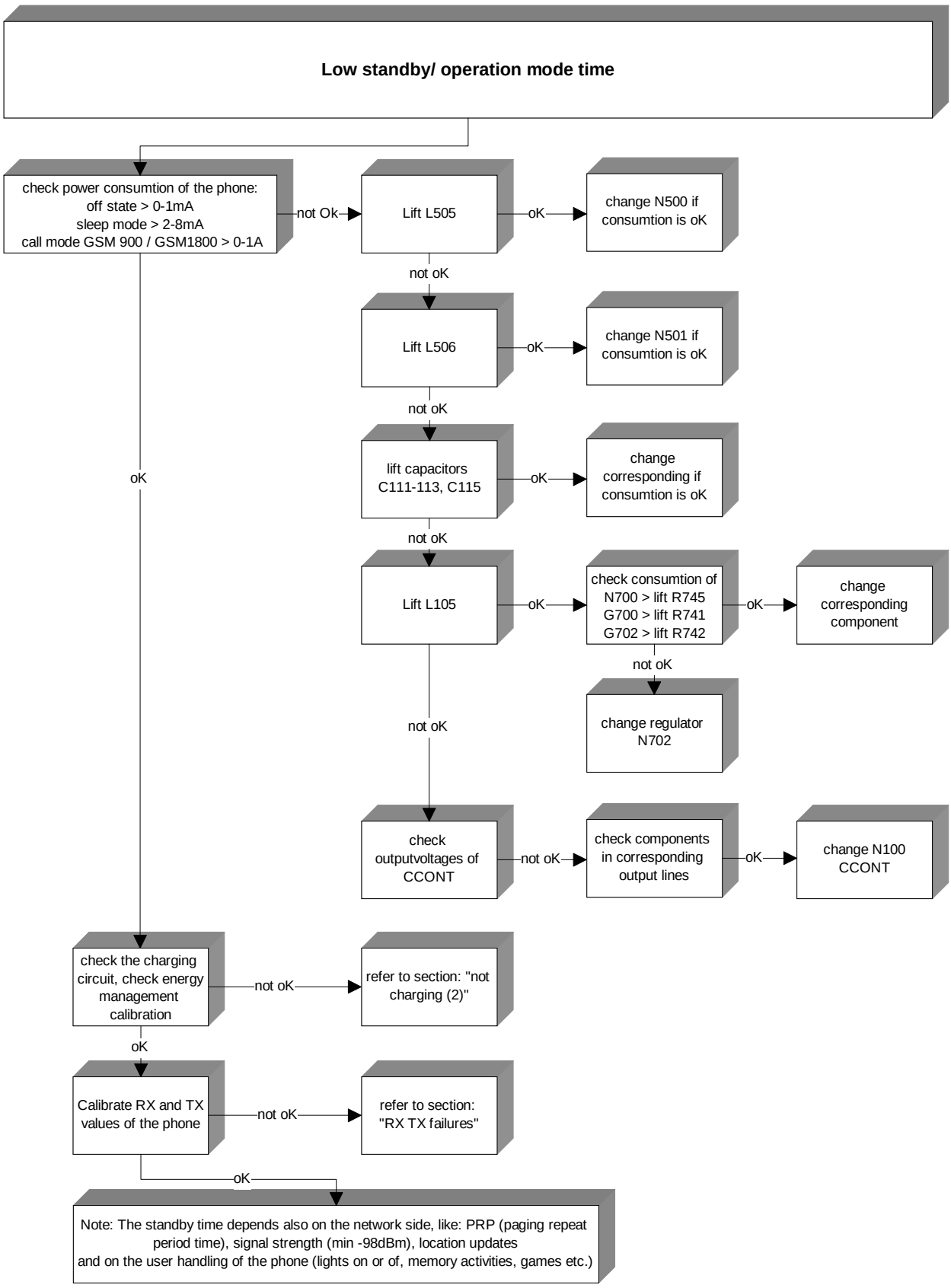
R103 broken and N101 PSCC electrical faulty

- Check if the handset doesn't charge with the ACP-9 fast charger
- Check the mechanical appearance of the varistor R103
- If it's broken change it, in this case change also N101 PSCC

R125 and R127 connection faulty

- Check if any A/D value is out of limit special BTEMP (317≅25°)
- Check the connection between R125 and R127
- Check the NTC resistor R127 47KΩ

Low stand by time/ operation time



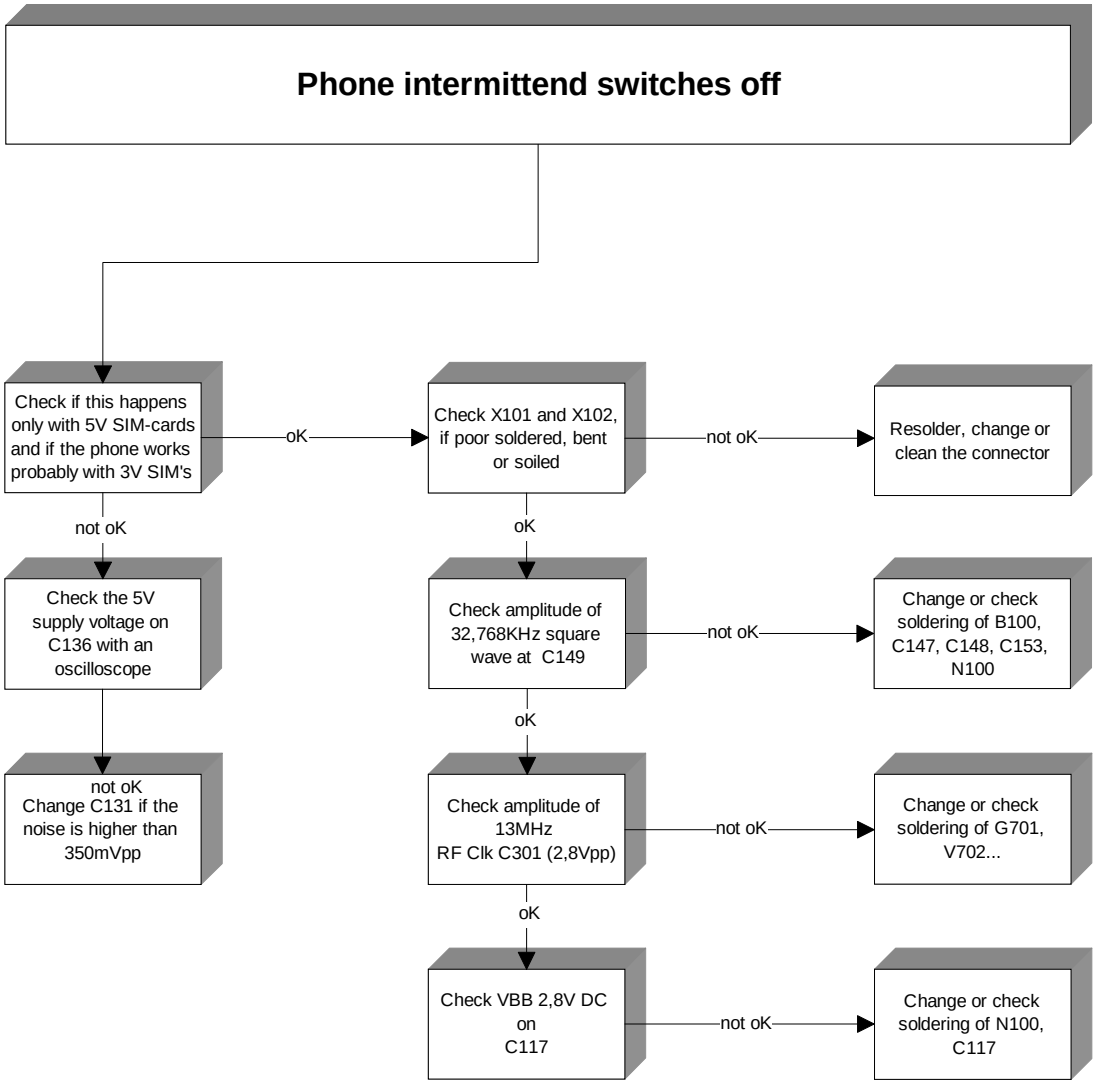
C111, C115, C113 faulty

- Check the current consumption in different operation modes (refer to the table below)
- Check if the high current consumption comes from the VB, Vout or output voltages of CCONT
- Disconnect coil by coil L105 (→N702) L505, L506 (→PA's) and check consumption again
- Check and disolder C111, C115 and C113
- calibrate Battery value if charging stops to early or battery is to hot after charging (see also chapter "Not charging)

Figure 1: current consumption values

Function mode	Minimum current in mA	Maximum current in mA
Off state	0	1
Sleep mode	2	8
Call mode GSM 900	0	1000
Call mode GSM 1800	0	1000

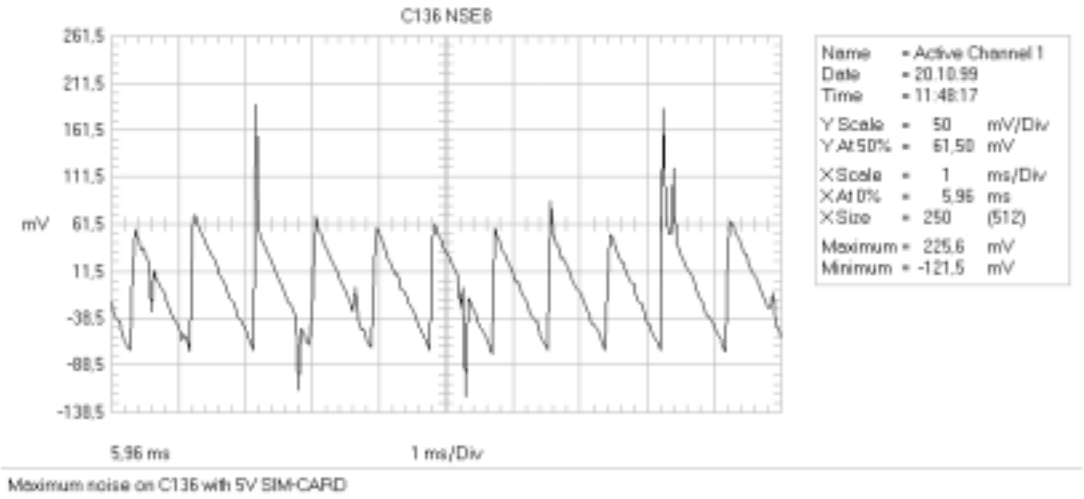
Phone switch it self off



C136 10µF/10V

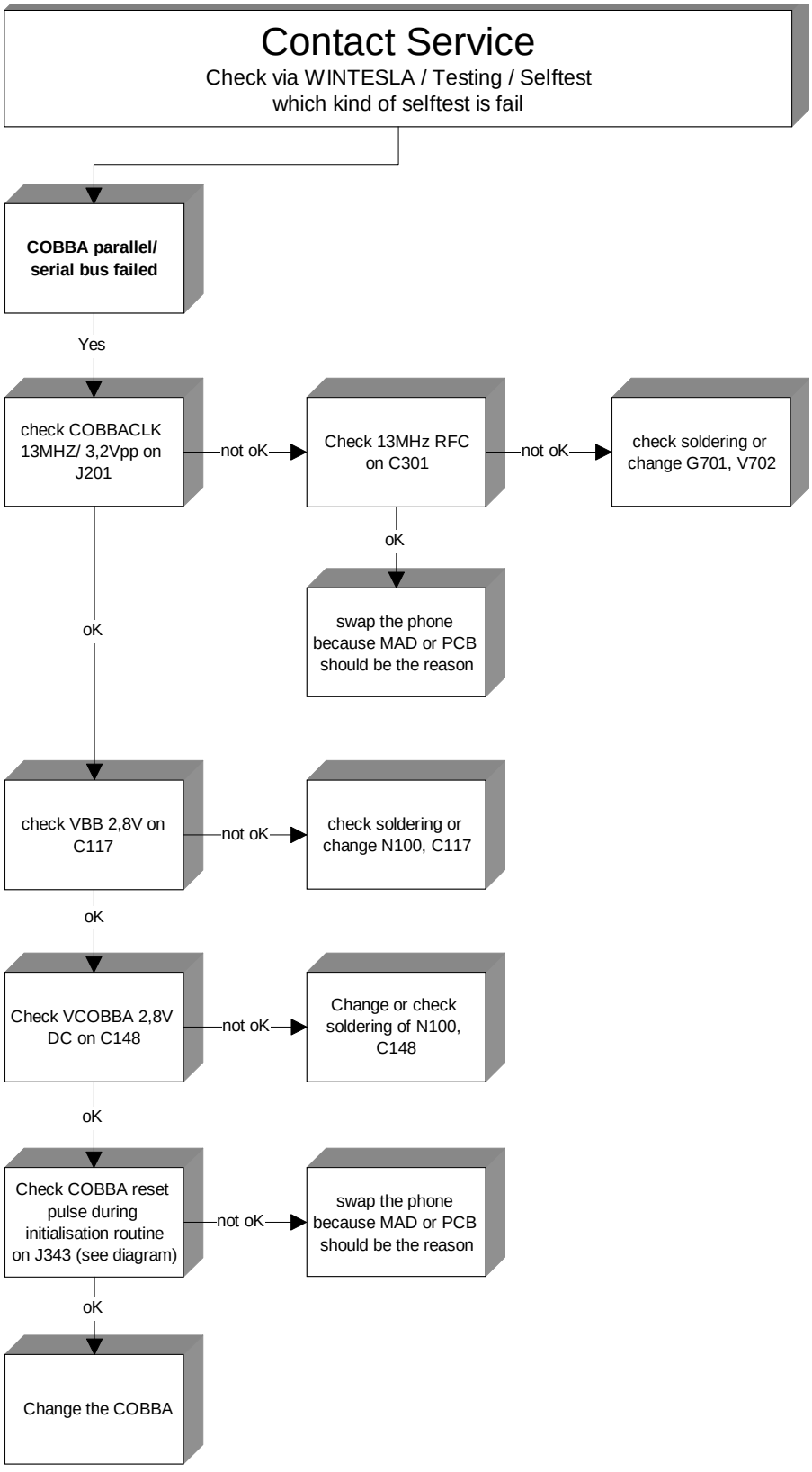
- Check, if the handset doesn't switch off with 3V SIM-Cards
- Check that the 5V VSIM voltage on the capacitor C136 is approximately 4,8V-5,2V with maximal 350mVpp noise overlap (view the diagram below)

Figure 2: Measurement point J343 COBBA RESET



Maximum noise on C136 with 5V SIM-CARD

Contact service COBBA parallel /serial bus fail



N200 COBBA faulty /solder balls broken

- Check VBB 2,8V DC on C117 near to CCONT
- Check VCOBBA 2,8V DC C148 near to COBBA
- Check COBBACKL 13MHz 3,2Vpp on J 201 (see the diagram below)
- Check COBBA reset impulse during the initialisation routine on J343 (see the diagram below)
- Change COBBA and write the IMEI and SIM-LOC DATA back to the phone
- If the error persist, the MAD or the Board should be the reason
- SWAP the handset because MAD is not changeable

Note! Rewrite SIMLOCK and IMEI entries with use of the Nokia security SW (SSSW) and make a SW-update or send this phones to the SACE, if this procedure is not permitted to you

Figure 3: 13MHz Clock signal for the COBBA

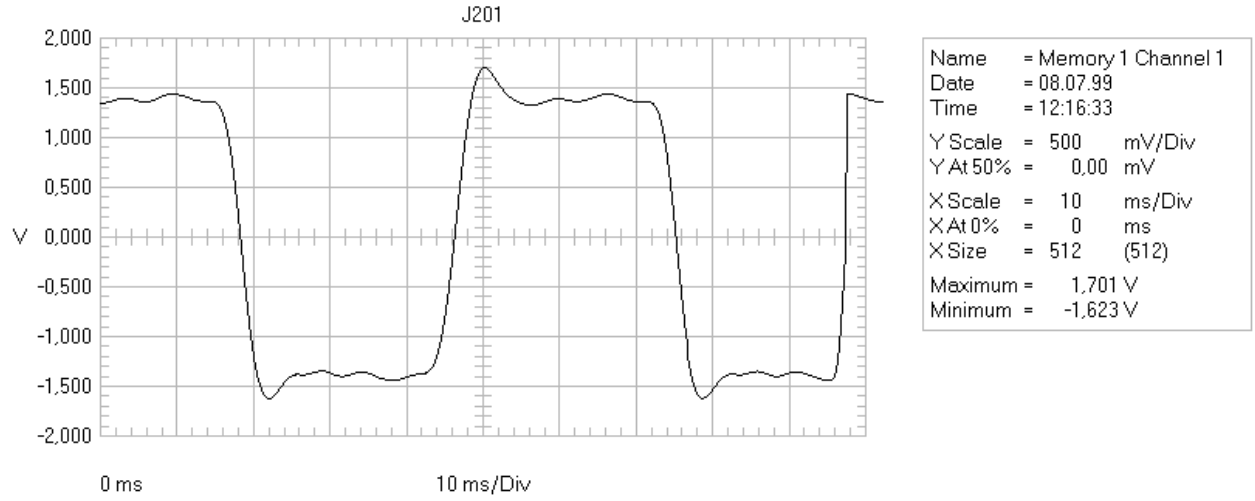
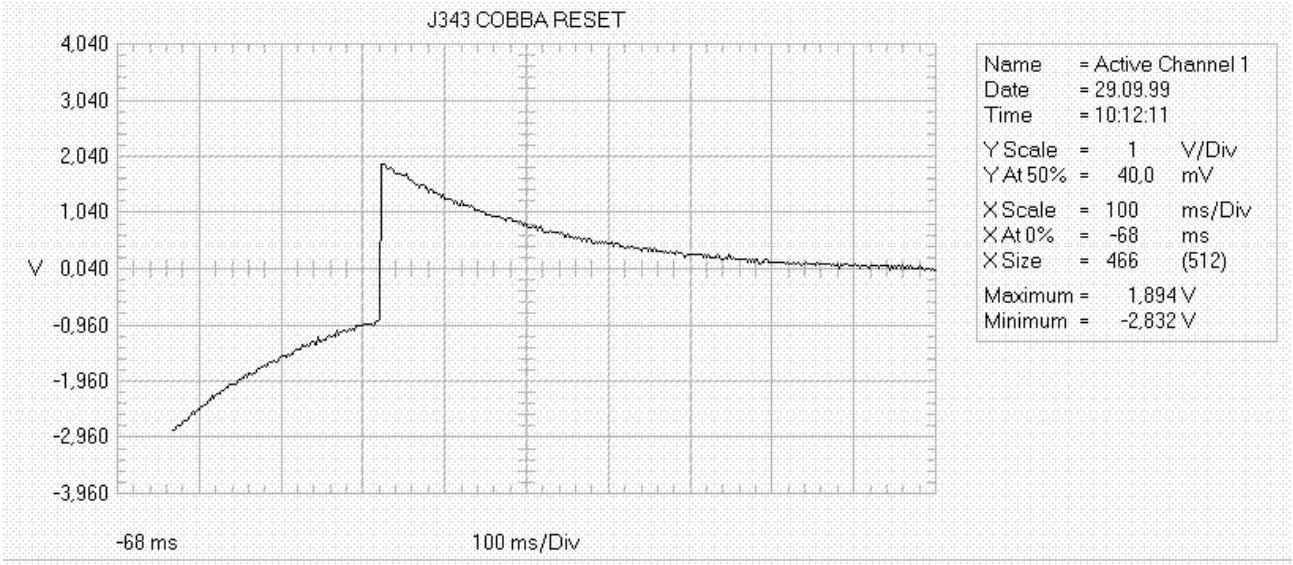
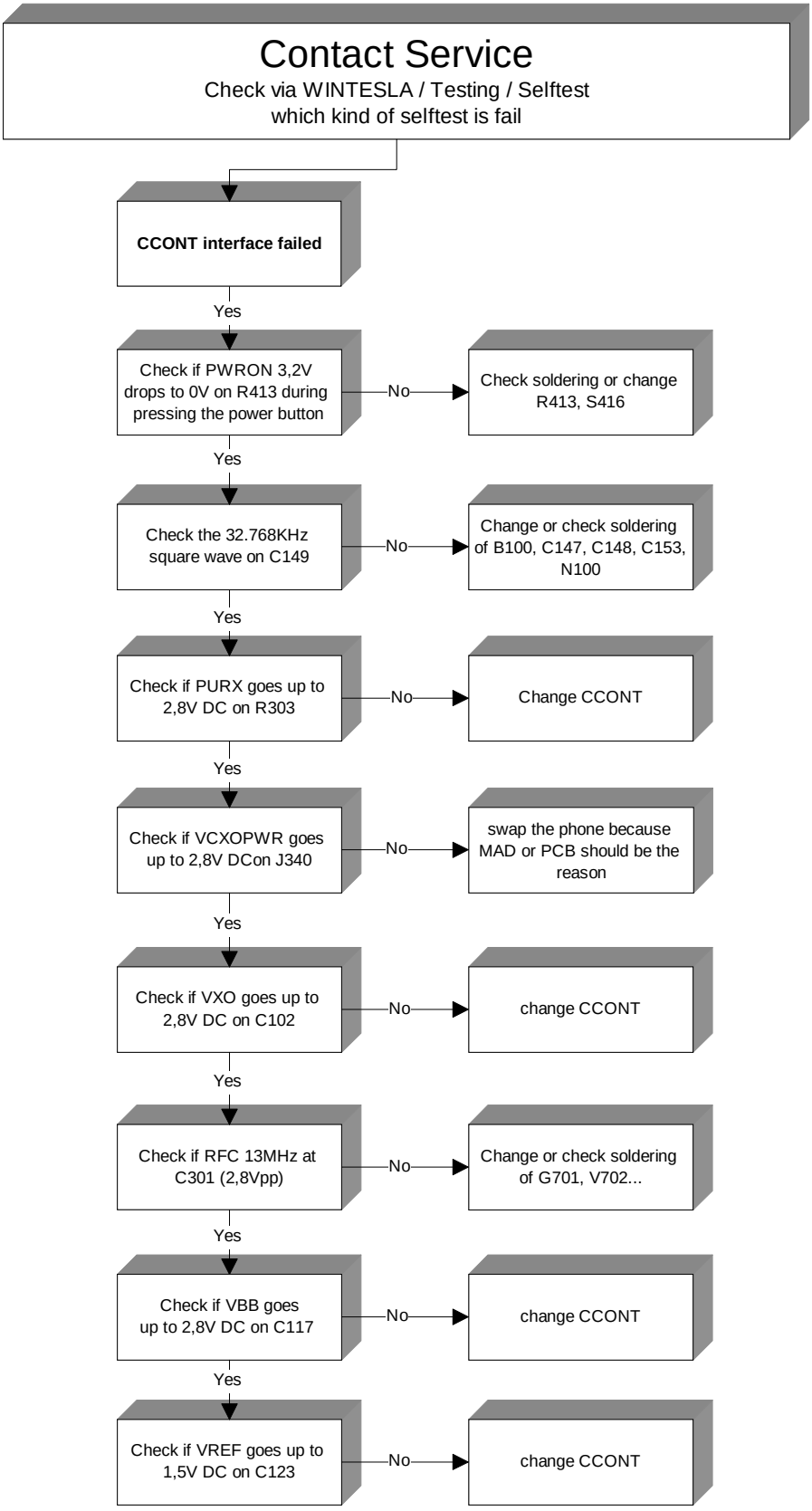


Figure 4 Measurement point J343 COBBA RESET



COBBA RESET DURING THE INITIALISATION ROUTINE

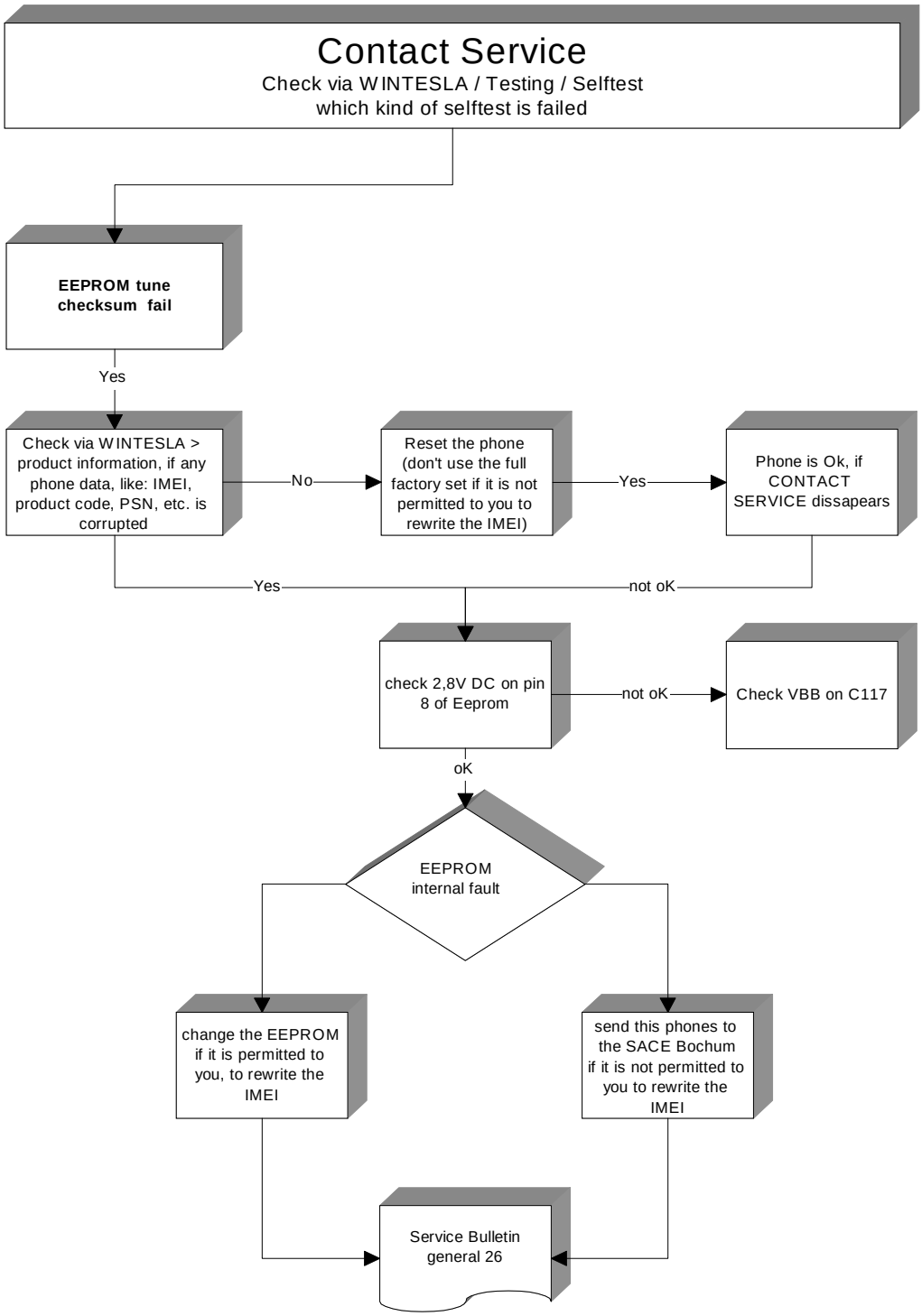
Contact Service-CCONT interface fail



N100 CCONT Faulty

- Check if 3,2V on R413 drops to 0V during pressing the Power on button
- Check if there is a 32.768 kHz square wave on C149
- Check if PURX on R303 goes up to 2.8 V DC
- Check if VXO on C102 goes up to 2.8 V DC
- Check if VBB on C117 goes to 2,8V DC
- Check if Vref on C123 goes to 1,5V DC
- Change the CCONT

Contact service – Eeprom checksum fail

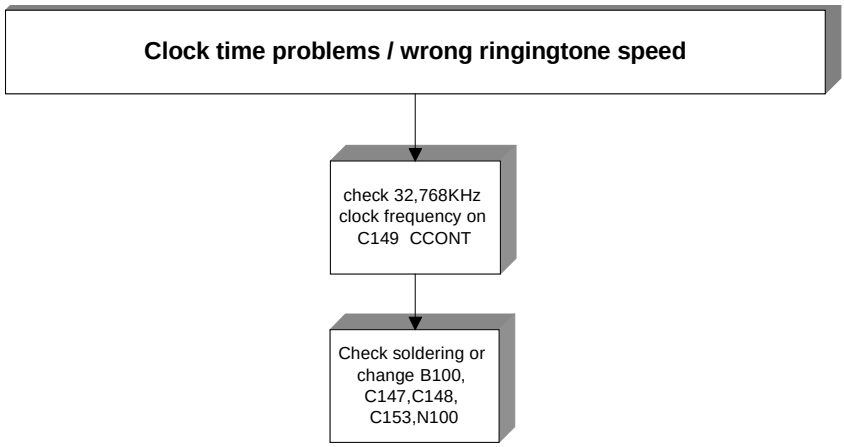


D303 Eeprom faulty

- Check with wintesla if IMEI or product data are corrupted
- Check 2,8V DC on pin 8 of Eeprom
- Don't use the "Full factory set" with wintesla, otherwise the Original IMEI will be change to "65656565..."
- Change the Eeprom if it's permitted to you and write all ID data (IMEI, product code...) back
- If you aren't allowed to change the Eeprom and the IMEI is missing, write a note with a little comment, and send it together with the phone to the SACE

Note! Rewrite SIMLOCK and IMEI entries with use of the Nokia security SW (SSSW) and make a SW-update or send this phones to the SACE, if this procedure is not permitted to you

Clock time or user settings problems

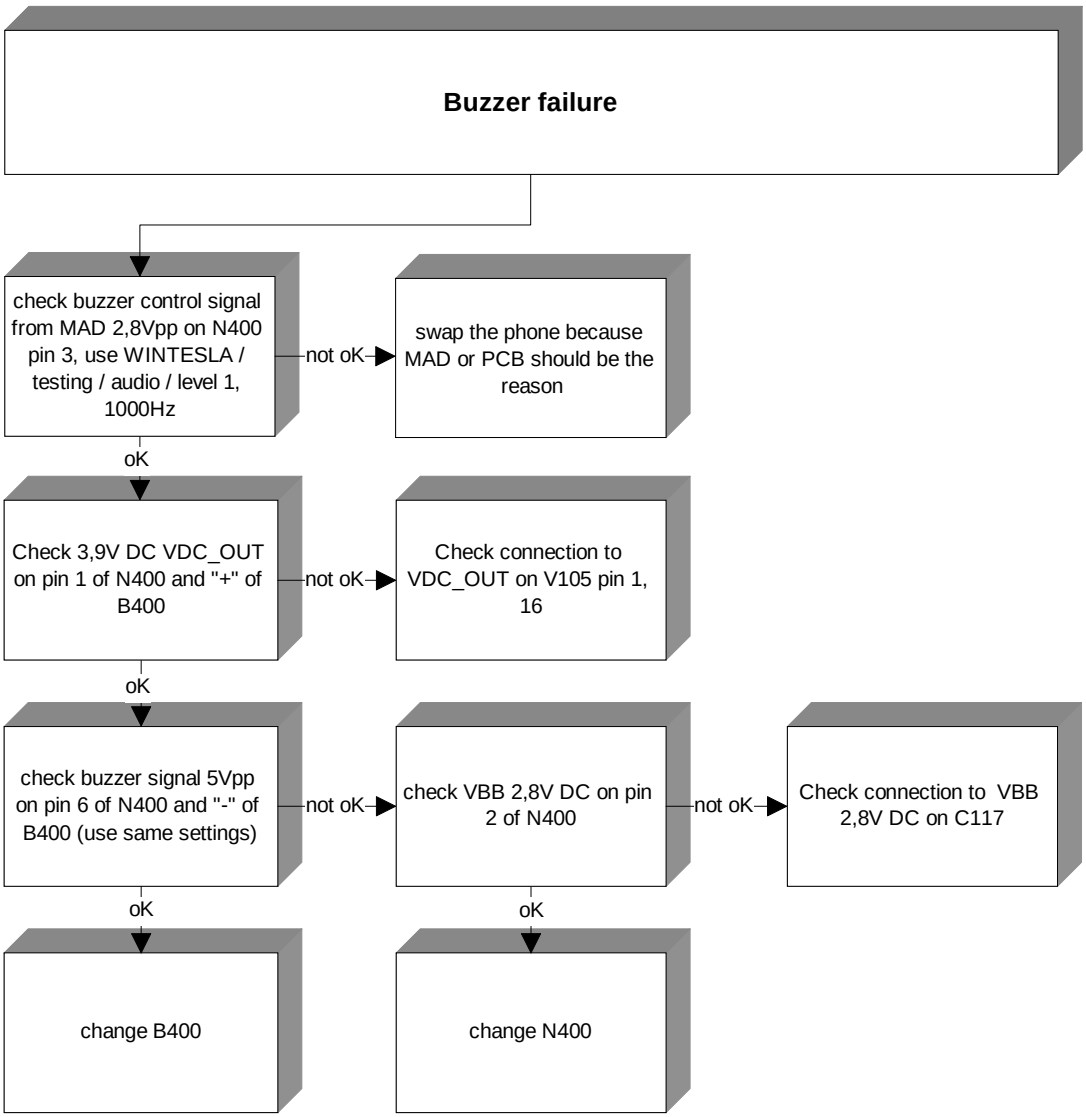


Clock time / Ringing tone is to fast or to slowly

32,786KHz Sleep oscillator B100

- Check that the sleepclk 32.768KHz square wave frequency on pin C149 isn't higher or lower
- Check the crystal B100, C147, C148, C153, N100
- View also the Service Bulletin 017 (capacitors C148, C153 change the value)

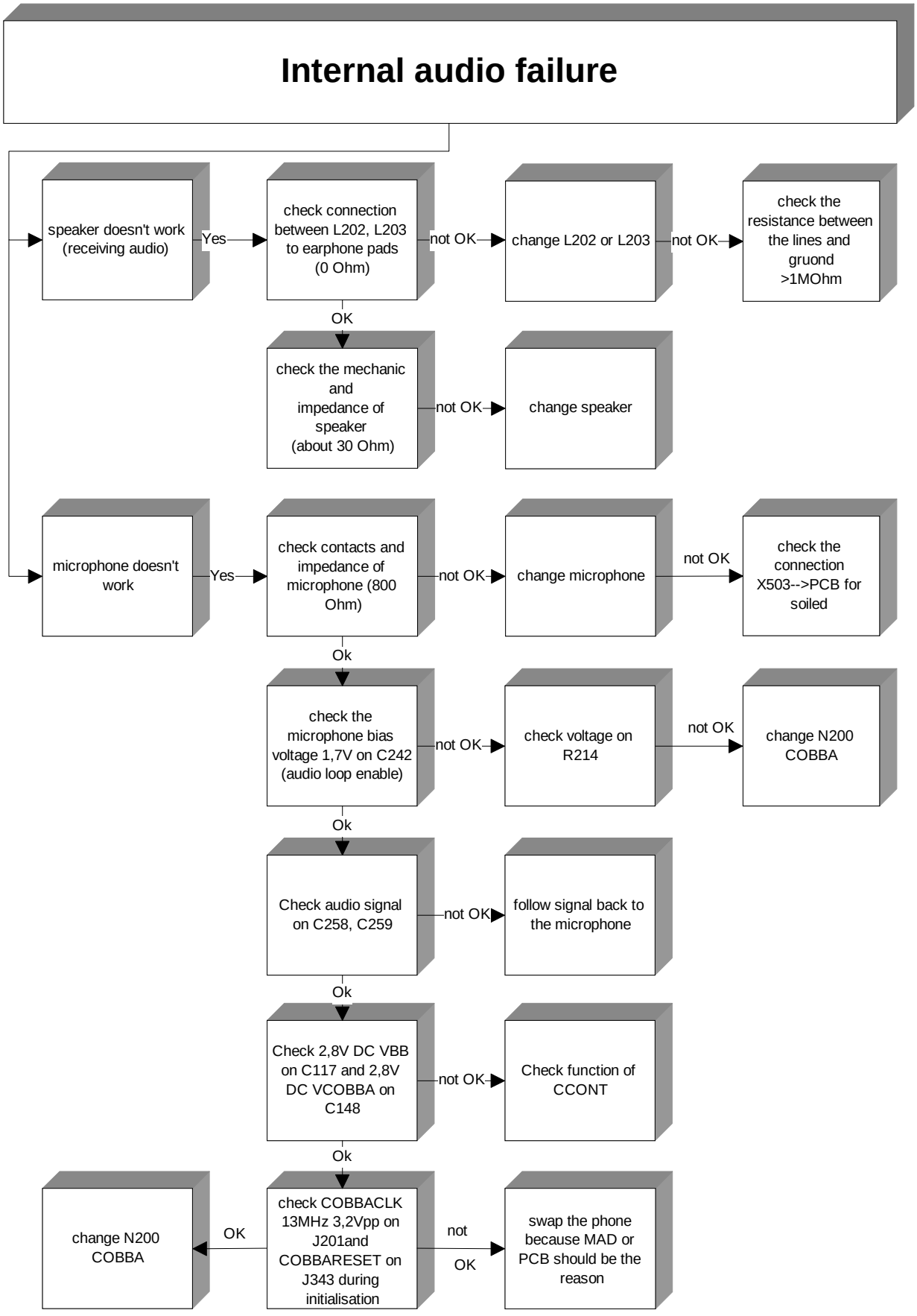
Buzzer failures



B400 / board connections broken

- Check the buzzer control signal from the MAD on pin 3 of N400 2,8Vpp 1KHz (use WINTESLA / testing / audio Level 1, 1000Hz)
- Check VDC_OUT 3,9V DC pin 1 N400 and "+" of buzzer
- Check VBB 2,8V DC on pin 2 N400
- Check the buzzer Signal on "-" of buzzer ≈ 5Vpp 1KHz
- Check the board connection pin 6 of N400 to "-" of buzzer
- Change the buzzer

Internal audio failures



L202, L203 faulty

- Check resistance from L202, L203 to the earphone pads normal 0Ω
- Check the resistance also from L202,L203 to ground and between both lines (normal high resistance >1MΩ)

Speaker

No / quiet / distorted receiving audio signal

- Check the mechanic of speaker, contacts, membrane, soiling
- Check resistance of speaker (about 30Ω)

Microphone

No / quiet / distorted transmitting audio signal

- Check contacts of microphone
  Check resistance of microphone (about 800Ω)
- Check the microphone voltage 1,7V DC on C242 (wintesla/ Testing/ Audio/ internal/ Loop on)
- Check the audio signal on C258 and C259

X503

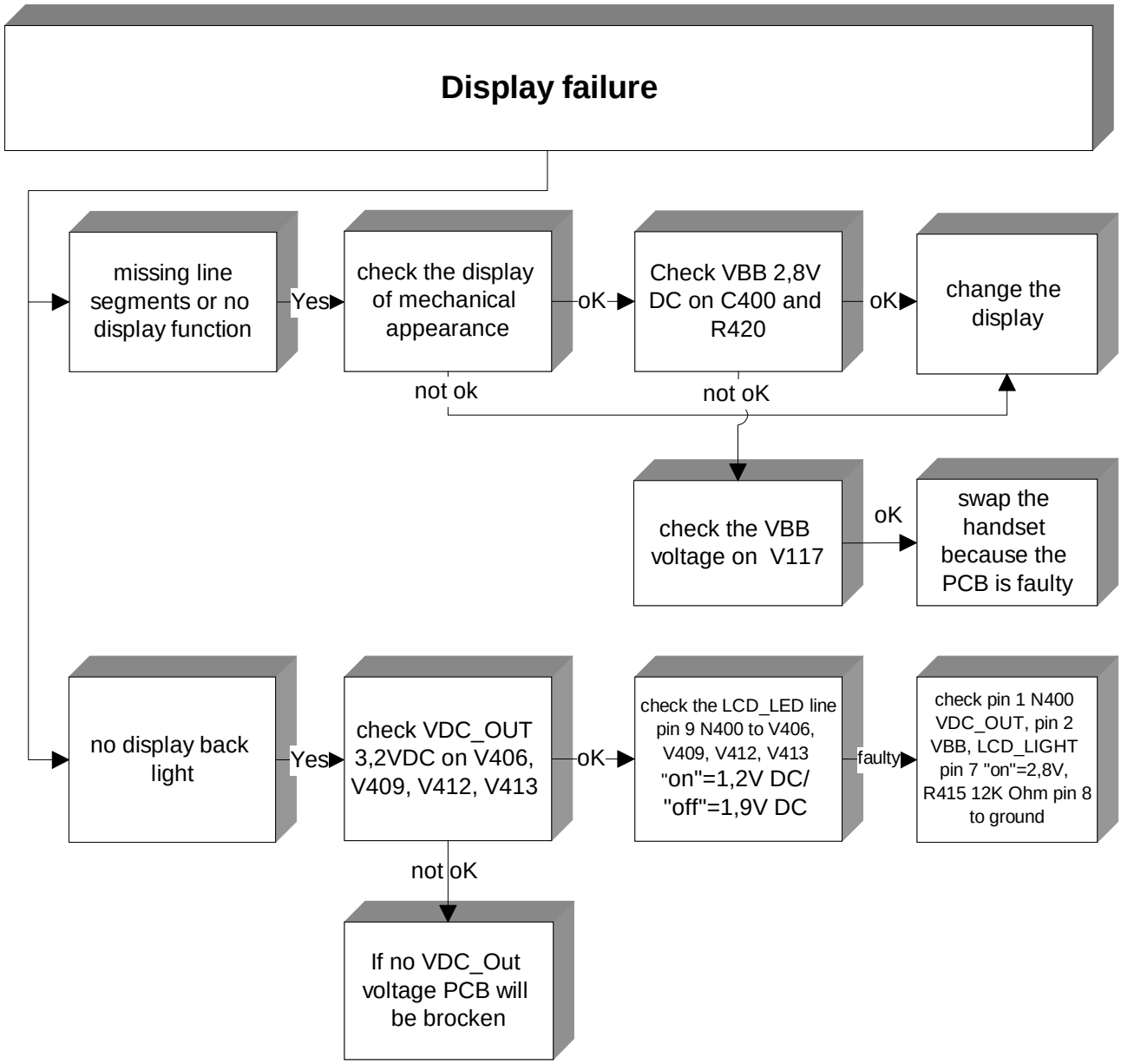
- Check microphone spring contacts
- Check spring contacts to the board (change connector if bent)
- Clean the contact pads on the board

N200 COBBA faulty

- Check VBB 2,8V DC on C117 near to CCONT
- Check VCOBBA 2,8V DC C148 near to COBBA
- Check COBBACKL 13MHz 3,2Vpp on J 201
- Check COBBA reset impulse during the initialisation routine on J343 (see the diagram "CONBBA RESET")
- Change COBBA and write the IMEI and SIM-LOC DATA back to the phone
- If the error persist the MAD or the Board (PCB) should be the reason
- SWAP the handset because MAD is not changeable

Note! Rewrite SIMLOCK and IMEI entries with use of the Nokia security SW (SSSW) and make a SW-update or send this phones to the SACE, if this procedure is not permitted to you

Display failures



Black lines on the display or no display function

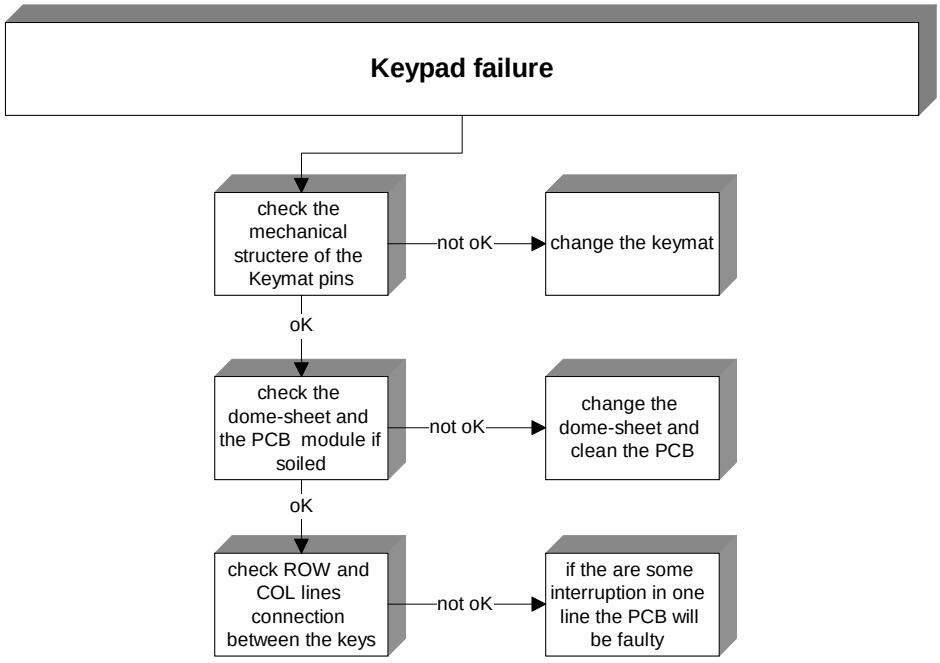
- Check if the display have some mechanical breaks around the corners
- Check VBB 2,8V DC on C400 and R420
- Change the Display

Figure 5: Faulty display

No display back light

- Check VDC_OUT 3,2V DC on V406, V409, V412, V413
- Check the LCD line pin 9 of N400 and cathode of V406, V409, V412, V413 Light "on"=1,2V DC ; "off"=1,9V DC. (Use Wintesla/ Testing/ userinterface/ 1.Test Pattern "on")
- Check the LCD_light enable line on pin 7 / N400, LCD_LIGHT "on"=2,8V DC
- Check the resistor R415 12KΩ pin 8 / N400 to ground

Keypad failure



Keymat mechanical faulty

- Check the bottom of the keymat if no pins are broken or mechanical damaged

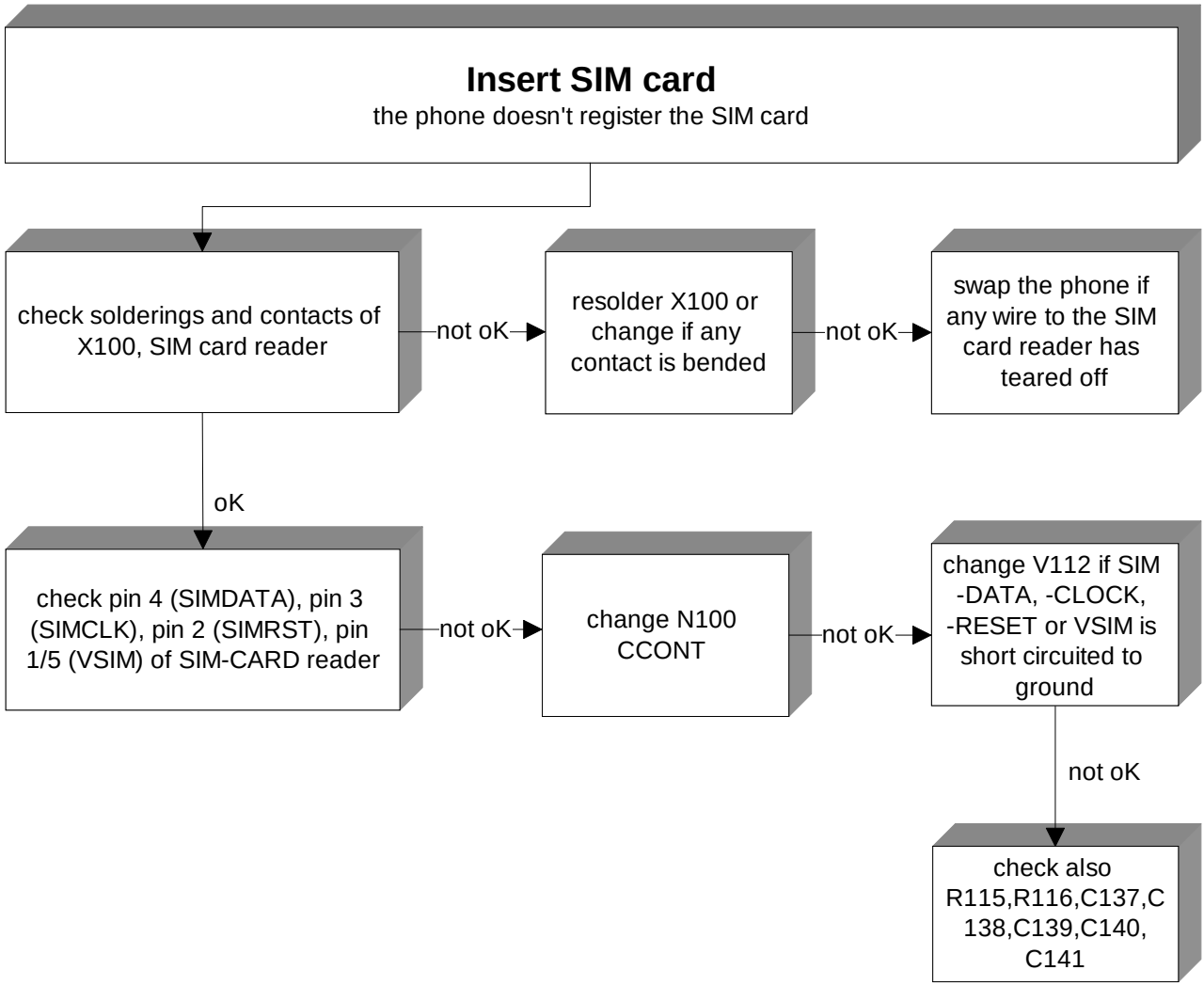
Board / Dome-sheet soiled

- If there are only one or two keys without function, check and clean the board and dome-sheet if soiled

Board failure

- If there are four keys without function and all of them are on them same ROW or COL line, check the connections between the keys and ground
- If any line is interrupted between the Keys, swap the handset because PCB is faulty

Insert SIM CARD



X100, SIM card reader

- Check soldering
- Check contacts (change connector if bent)

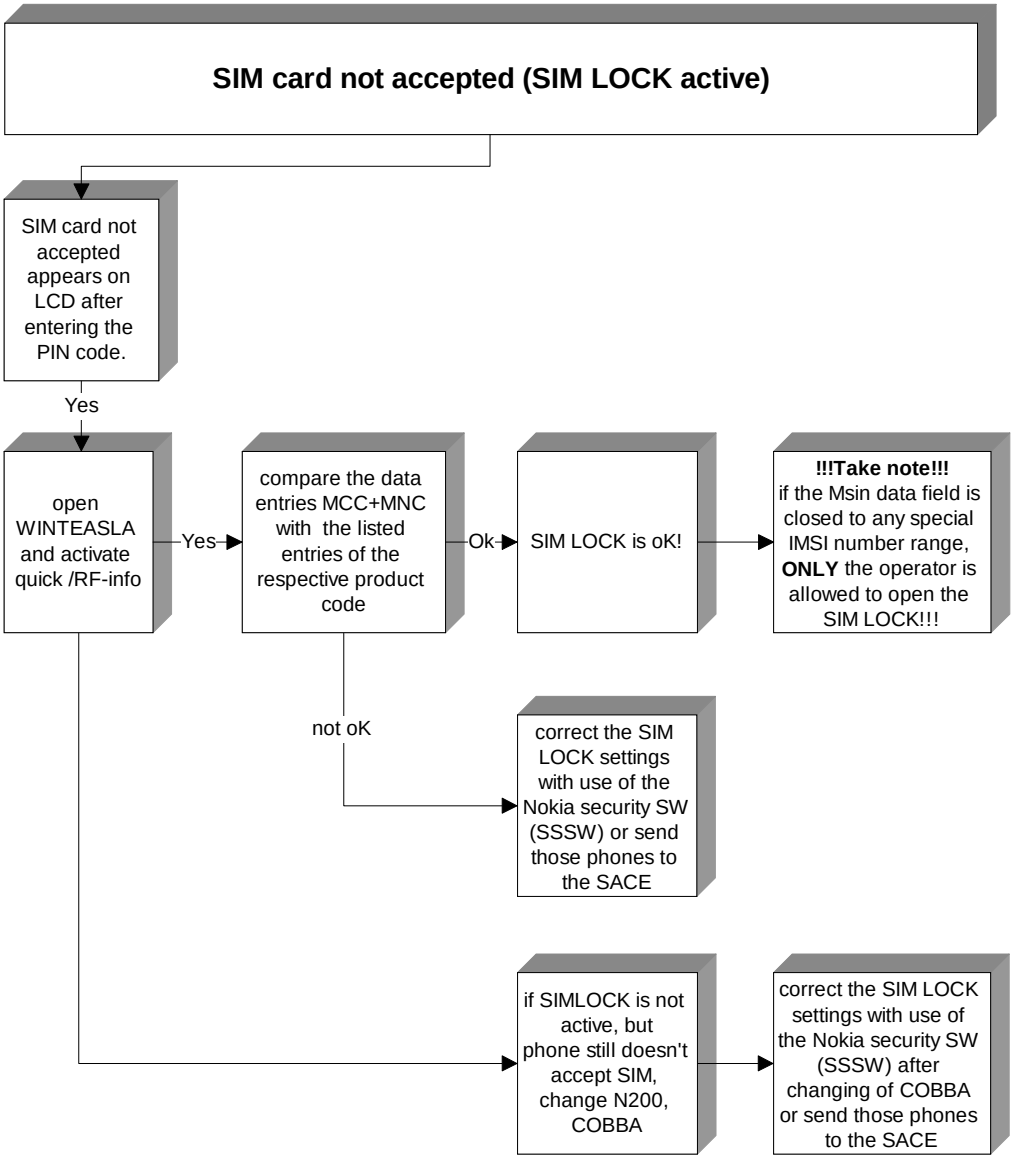
N100, CCONT

- Check SIM card –DATA (Pin 4 SC-reader), -Clock 3,25MHz (Pin 3 SC-reader), -Reset (Pin 2 SC-reader) and VSIM 3V/5V DC (Pin 1/5 SC-reader) depends to the SIM card

V112

- Change component if SIM -DATA, -Clock, -Reset or VSIM is short circuited to ground
- Check also R115, R116, C137, C138, C139, C140, C141 for short circuit or not capacity

SIM card not accepted, SIM LOCK failure



- If message "SIM Card not accepted" appears on LCD after entering PIN code, a SIM LOCK is probably activated in this phone
- Or COBBA has been changed and not reprogrammed with the SIM-LOC DATA
- Initialise phone into normal mode and activate Quick/ RF-info (WINTESLA) compare the SIM LOCK entries with the references from the operator. *Look at Figure: List of current SIM-LOC...*

N100, CCONT

- Refer to insert SIM Card procedure

N200, COBBA

- Change COBBA if all SIM LOCK entries and SIM-CARD signals from CCONT are OK

Note! Rewrite SIMLOCK and IMEI entries with use of the Nokia security SW (SSSW) and make a SW-update or send this phones to the SACE, if this procedure is not permitted to you

Product Code NSE-8

Figure 6: List of current SIM LOC phones NSE-8

Product-Code NSE-8	*SIM-LOCK-DATA*	Operator
0503478	Mcc+Mnc 20820 Msin ??????????	BOUYGUES
0503566	Mcc+Mnc 20210 Msin 99????????	TELESTET
0503565	Mcc+Mnc 20205 Msin 90???????0	PANAFON
0503564	Mcc+Mnc 20201 Msin 1?????????	COSMOTE
0503567	Mcc+Mnc 23830 Msin ??????????	MOBILIX
0503298, 0503299	Mcc+Mnc 20801 Msin ??????????	OLA
0503593	Mcc+Mnc 26001 Msin ??????????	POLKOMTEL
0503594, 0505102	Mcc+Mnc 26801 Msin ??????????	TELECEL
0503575	Mcc+Mnc 21630 Msin ??????????	WESTEL
0503576	Mcc+Mnc 21601 Msin ??????????	PANNON
0505105	Mcc+Mnc 26002 Msin ??????????	ERA
0505100	Mcc+Mnc 23433 Msin ??????????	ORANGE
0505101	Mcc+Mnc 23430 Msin ??????????	ONE2ONE
0505107	Mcc+Mnc 28601 Msin ??????????	TURKCEL
0505108	Mcc+Mnc 28602 Msin ??????????	TELSIM
0505104	Mcc+Mnc 26003 Msin ??????????	CENTERTEL
0505110	Mcc+Mnc 27201 Msin ??????????	EIRCEL
0502159, 0502993, 0502994, 0503161 0503207, 0503286, 0503287, 0503288 0503583, 0505106, 0505112, 0503789 0503824	NO SIM-LOCK	

Product-Code NSE-8	*SIM-LOCK-DATA*	**Operator**
0505109	Mcc+Mnc 23203 Msin ??????????	Maxmobil
0505111	Mcc+Mnc 65510 Msin ??????????	MTN, South Africa
0503708	Mcc+Mnc 23002 Msin ??????????	Eurotel, Czech Rep.
0503706	Mcc+Mnc 20416 Msin ??????????	BEN, Netherlands
0503707	Mcc+Mnc 26806 Msin ??????????	TMN, Portugal
0503785	Mcc+Mnc 23102 Msin ??????????	Mobilkom-A1, Austria
0503788	Mcc+Mnc 20420 Msin ??????????	Duchtone, Netherlands
0503825	Mcc+Mnc 23002 Msin ??????????	Eurotel-Contracrt, Czech Rep.
0503826	Mcc+Mnc 22601 Msin ??????????	Connex
0503827	Mcc+Mnc 20412 Msin ??????????	Telfor, Netherlands
	Mcc+Mnc Msin ??????????	
	Mcc+Mnc Msin ??????????	
	Mcc+Mnc Msin ??????????	
	Mcc+Mnc Msin ??????????	
	Mcc+Mnc Msin ??????????	
	Mcc+Mnc Msin ??????????	
	Mcc+Mnc Msin ??????????	

Recommendation for repair actions in the RF- area

To prevent some additional faults please take care of following recommendations for repairing the RF-area

- Don't use so much flux that it will go through the board and soiled the keyboard area
- Clean after every repair time the rest of the flux from PCB
- Don't make any loose wiring connection on the board
- To change some components it is necessary to remove the shield from the PCB, use matching nozzles for the solder machine. Don't cut it partially and solder the "old" part back or make some unqualified work
- Use a new shield after removing

Low receiver signal strength indicator

Antenna faulty / wrong - Tuning

- Check the fixed position of the antenna, *don't touch the conducting area with the fingers*
- Check the antenna spring connector X501, change it if bent
- Check the receiver signal indicator with a new antenna
- Retune the handset

No Service

Set first the RF-Generator to a high RF-Level output e.g. –40dBm
Set the module with wintesla as follow mode: Initialise/ Local mode/ Testing/ RF Controls.../ Active unit "RX"/ Operation Mode "continuous"

13MHz VCTCXO G701 out of range

- Check the 13MHz reference frequency pin 15 N700 (SUMMA) or pin 2 of G750, a frequency error higher +-50Hz can create deviation of the Intermediate frequencies
- View also SB 18 "The old version 'A' VCTCXO (type number: NGK3092A) should be replaced with a new version 'B' VCTCXO (type number: NGK3092B)"

No RX (no Rx calibration...RSSI reading highest value)

N600 CRFU / faulty / poor soldering

- Check the incoming RF- Channel frequency on pin 27 N600
- Check the LNA_AGC voltage 2,8V DC pin 28 N600
- Check the VRX_1 voltage 2,8V pin 15,16,23, 33, 38,45,46 N600
- Check the LNA_OUT frequency pin 23 N600 and input on pin 18, 19.
  An attenuation from aprox. 10-15dBm between signal input and output is normal!
- Check the UHF LO frequency (2036MHz GSM900 CH60) pin 3 N600 approx. –20dBm.
  No frequency deviations are allowed!
- Check the outgoing 71MHz Intermediate Frequency on pin 15, 16 N600
- Check the soldering of N600 or change it

Z700 / faulty / poor soldering

- Check the 71MHz IF frequency on Z700. The normal attenuation between input and output are ≈15dBm
- Check the components C701, C704,C149, L701, R701 if the signal amplitude is different between the two lines
- check the soldering of Z700 or change it

Z701 faulty / poor soldering

- check the outgoing 13MHz IF on pin 30 N700 (SUMMA)
- check the input 13MHz IF on pin 25, 26 N700 (SUMMA) . The attenuation between input and output is ≈20dBm
- check the 13MHz IF on Z701, around 5dBm attenuation between signal-in and signal-out
- check the soldering of Z701 or change it
- check R717, R718, R719, C706 and the line resistance to ground (10KΩ with all components)

G700 UHF Oscillator faulty

- check the UHF frequency on G700 for high spurious or deviation
- check the UHF-VC on pin 21 N700 1,9V-3.2V DC depending of the channel
- check the 5V VCP supply voltage on pin 13, 22 from N700 SUMMA
- check R733 33KΩ, R730 5K6 Ω, R731 2K2Ω, C740 2,2nF
- change the oscillator

N700 SUMMA faulty / poor soldering

- check the 13MHz reference frequency pin 15 N700. (No frequency deviation higher ±50Hz is allowed!)
- check the power supply voltage VRX_2 2,8V DC pin 35 N600
- check the incoming IF 71MHz pin 37,38 N700
- check the 13MHz IF on pin 30(out),25, 26(in) N700 . The attenuation between input and output are ≈20dBm
- check the control-lines for the PLL pin 5, 6, 7 from N700 (see the diagrams below)
- check the incoming VHF_LO frequency 464MHz pin 8 N700 if the 13MHz IF are deviated or not exist measurable level approximate –20dBm!
- Check the synth. power supply 2,8V DC pin 9, 19 N700 and VCC G700, G702
- Check the VCP 5V DC pin 13, 22 N700
- Check the control voltage for the UHF and VHF oscillator
  (UHF pin 21 control voltage is channel dependent, pin12 2,2V DC on N700)
- Check the soldering of N700 or change it

Figure 7: PLL-SCKL Signal

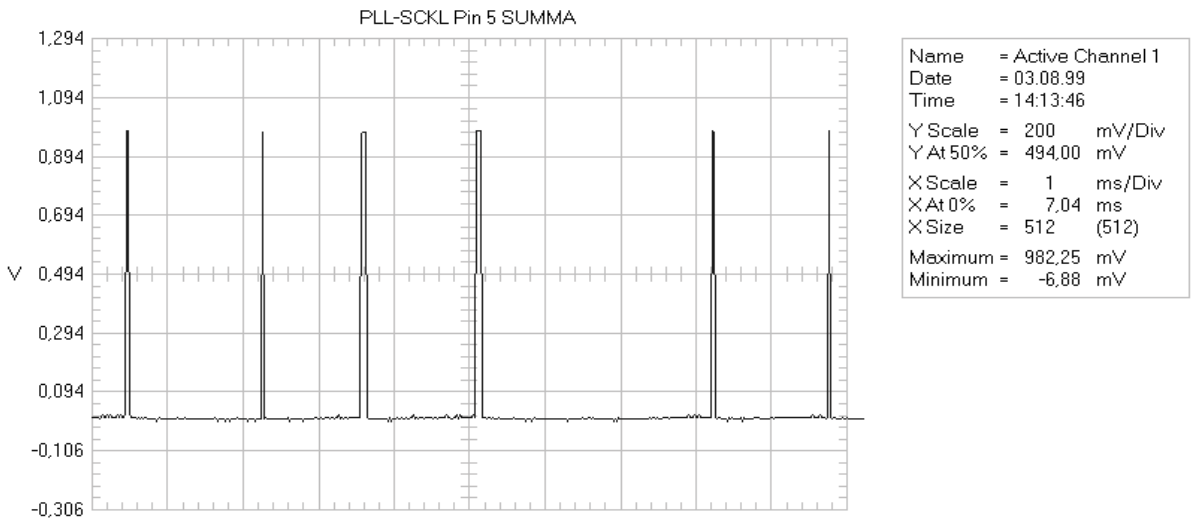


Figure 8:PLL-SDAT Signal

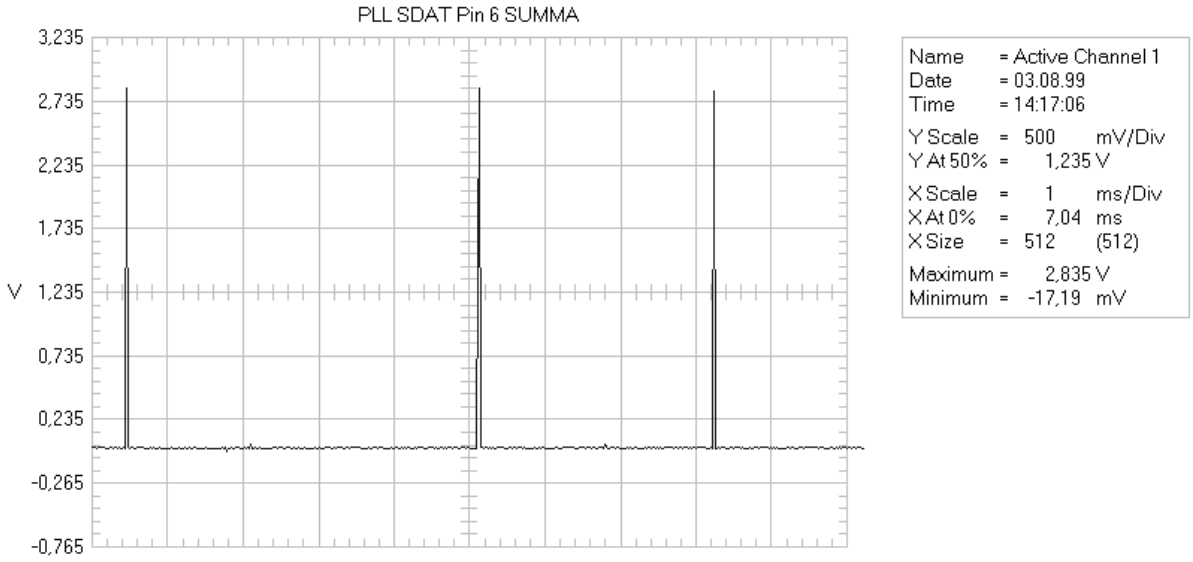
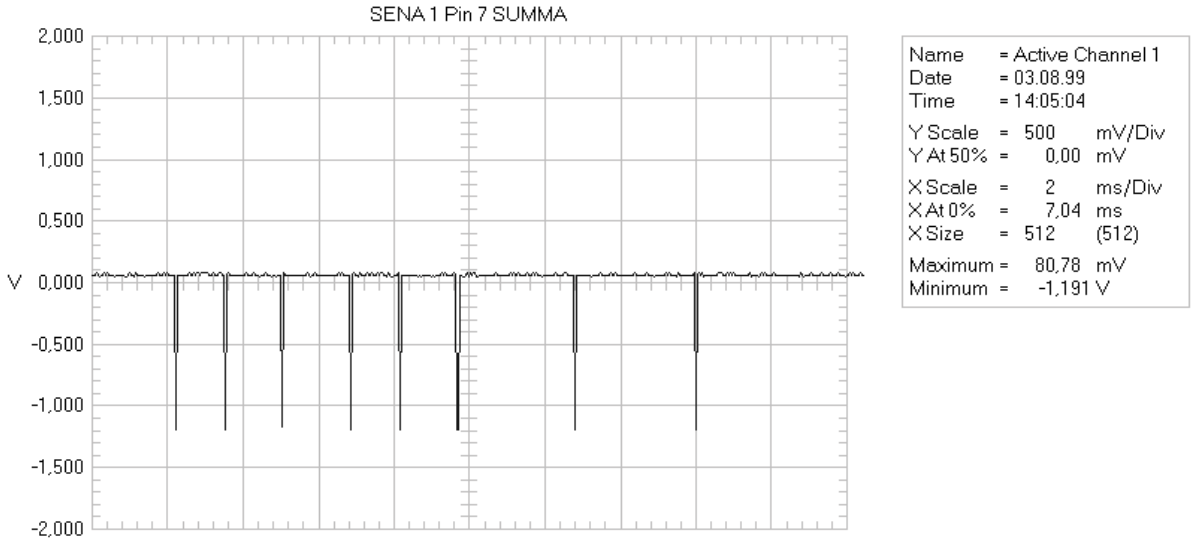


Figure 9:PLL-SENA Signal



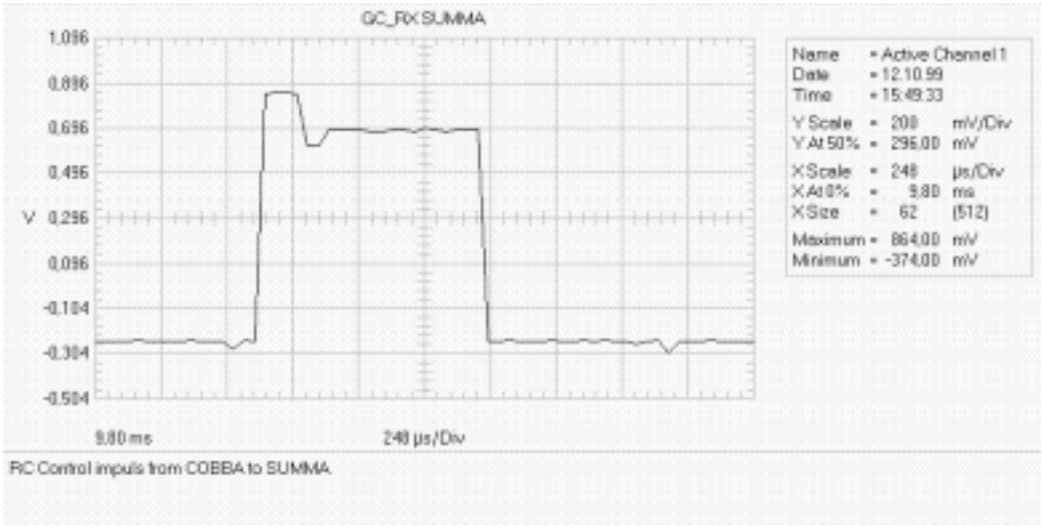
No RX (no Rx calibration...RSSI reading fixed value)

COBBA / MAD faulty /broken solder balls

- Check if the 13MHz IF on pin 23,24 N700 SUMMA change the amplitude if you change the generator frequency level
- Check if the RXC impulse on pin 36 N700 (SUMMA) change the amplitude if the generator frequency level is modified (see the diagram below) **(change the operation mode first to "RX BURST MODE")**
- Check R725 if any or low signals are measurable
- Change COBBA N200(rewrite SIMLOCk and update the handset)
- If the fault persist MAD or the PCB should be the reason
- In this case swap the handset because MAD is not changeable

Note! Rewrite SIMLOCK and IMEI entries with use of the Nokia security SW (SSSW) and make a SW-update or send this phones to the SACE, if this procedure is not permitted to you

Figure 10:RX-Control Signal



Call breaks / No service

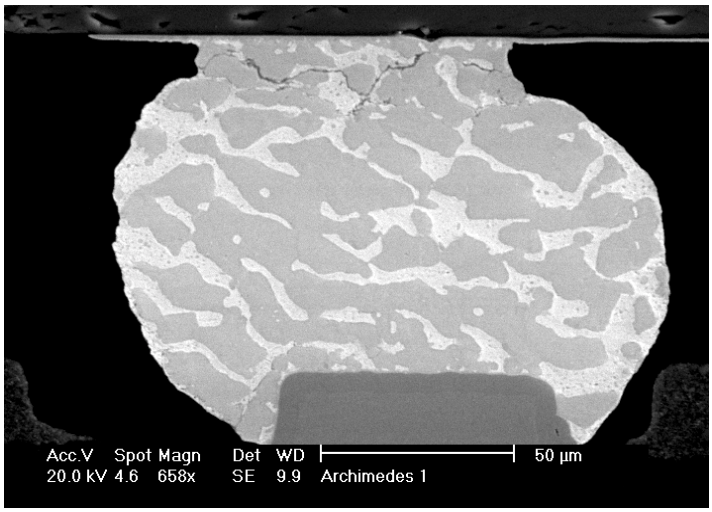
G701 13MHz Oscillator out of range or high spurious emission

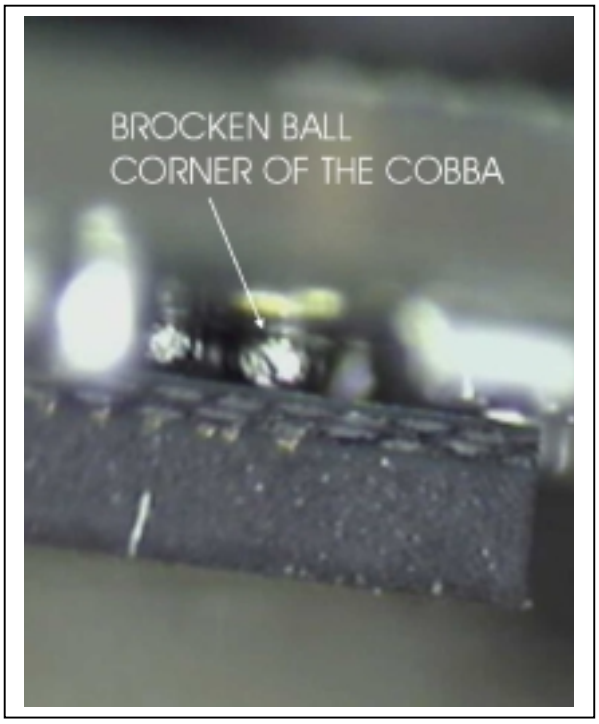
- Set the handset to call mode, check if some phase and frequency errors appear special in GSM 1800 band The deviations will be higher the higher the traffic channel is!
- Change the G701 13MHz Oscillator

COBBA N200 broken solder balls

- Check VBB 2,8V DC on C117 near to CCONT
- Check VCOBBA 2,8V DC C148 near to COBBA
- Check COBBACKL 13MHz 3,2Vpp on J 201 (see the diagram in chapter "COBBA contact service")
- Check the module in call modus with a simulator.
- Knock very careful with something no metalled around the COBBA
- Check if some errors appear on the tester (phase /frequency / RX-Quality/TX-Power level)
- Check the COBBA IC with a microscope, the first broken balls are normal on the corners from circuit.
- Change the circuit with a µBGA solder machine

The pictures indicate a typically case of broken solder ball under the µBGA. On the right you can see the little part of the COBBA IC view with a microscope. The PCB is on the top, and the COBBA are with the body to the bottom of the picture. The picture below shows a broken ball view through a X-ray machine





No TX-Power or to low

See also the troubleshooting chapter 4.GSM transmitter and 5. PCN transmitter from service manual

Z500 Duplexer Filter (Low TX-Power on GSM 900)

- Check the TX-Power level between the TX "in" and "Antenna" pad of the duplexer
- Resolder the ground and signal connection pads of the duplexer
- Change the duplexer

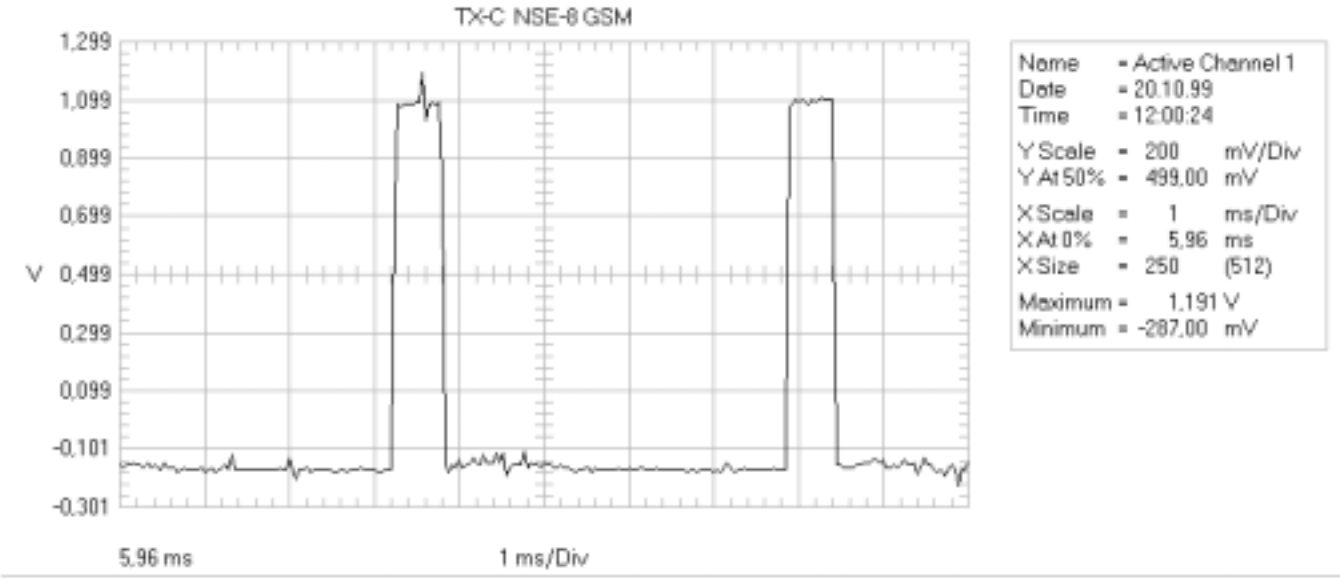
Z504 RX/TX switch GSM1800 (Low TX-Power on GSM 1800)

- Check the 1V DC TX-switching voltage on Z504
- Check the TX-power difference between "TX" and "ANT" pad on Z504
- Change the Z504 if more than 2dBm difference are measurable

N500 /N501 Power Amplifier GSM 900 /GSM 1800

- Check the power supply VDC_OUT(3,2V→4,2V dependent to the power level) N500 /N501 pin 3
- Check the input power on pin N500/ N501 depend of the band (nominal 0dbm)
- Check the outgoing power on pin 4 N500/ N501
- Check the TX-Power control signal on pin 2 N500/ N501 , 0,7Vpp-1,7Vpp / 0,12..V - 0,2..V DC dependent of the power-level (see the diagram below)
- Change the PA if no power or to low power comes out and the power supply and control line are OK

Figure 11:TX-Control Signal



TX-control impuls on pin 2 from N500/N501
example on GSM 900 TX-level 6 approx. 32dBm

Change history

Originator	Status	Version	Date	Comment
Jose Marquez	Draft	0.2	22.10.1999	First draft version for the repair group
	Draft	0.3	02.11.199	Insert comments from the repair team, add layout "Test Points"
	approved	1.0	05.11.1999	First AMS version

Measurement points NSE-8