

No TX EGSM

1. Check 26MHz reference oscillator at G602: 800mVpp/frequency deviation < 100Hz, if not ok, change G602.
2. Check TXIQ signals at R513/R516.
3. Check VBB 2,7V at C256 and VCOBBA at C254 - check COBBACKL at J200, N240 faulty, or there are probably broken solderings under COBBA if ok, goto 7.
4. Check VTX (2,7V) at C142 and VBATTRF 3,6V at L122 if not ok, change N102.
5. Check supply voltagés (2,7V) for HAGAR at a:C513(VXO), b:C501(VRX), c:C503 (VSYN_2), d:N501 input 4,8V (VCP) if one or more of these fails - change N102.
6. Check SDATA at a:J503/J507, SCLK at b: J502/J506 and SLE at c: J501/J505 if not ok MAD D301 faulty.
7. Check TXC at C529, check TXP at R512, change N240 for TXC- and N102 for TXP fault.
8. Check frequency of SHF oscillator G600 if possible refer to EGSM frequency list.
If there is no possibility to check frequency - check if oscillator works by measuring VCC at C601 (2,7V) and VC at C603, which varies between 0,7V and 3,8V (see EGSM list).
If VC is 4,8V the oscillator doesn't work in all probability.
9. Check 897,6 MHz (CH56) at N800, pin 8 - if not ok, check T800, Z802, Z800, V801.
10. Check 897,6 MHz (CH56) at L800, pin 1 - if not ok, check VBATTRF at N800, pin 3 & 6.
11. Check also TXVGSM (2,7Vpp squarewave) at N800, pin 2 and Vapc 1-1,6Vpp squarewave, (depends on TX powerlevel) at N800, pin 7.
12. Check 897,6 MHz (CH56) at X902 (antenna pad) and at X900 (antenna connector) -if not ok, check L800 in Et out - also check Z900 in Et out and TXVGSM at R910.

No RX EGSM

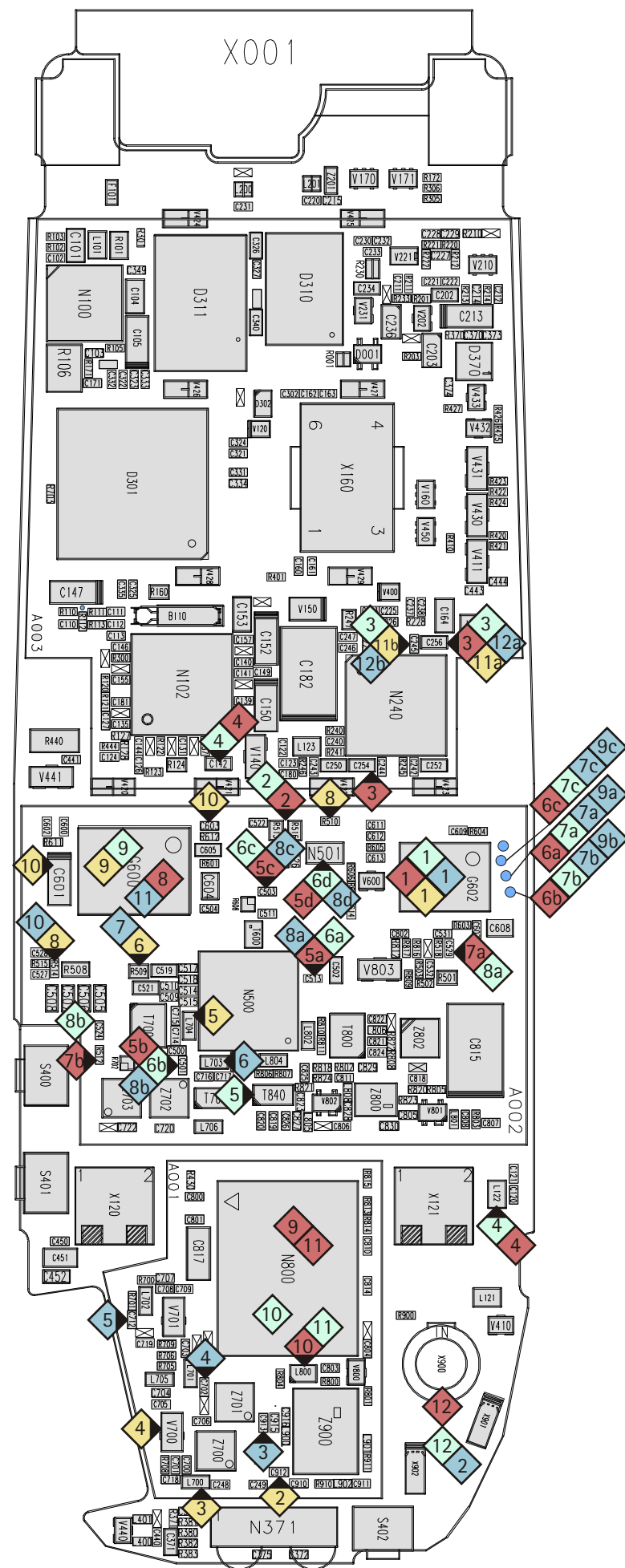
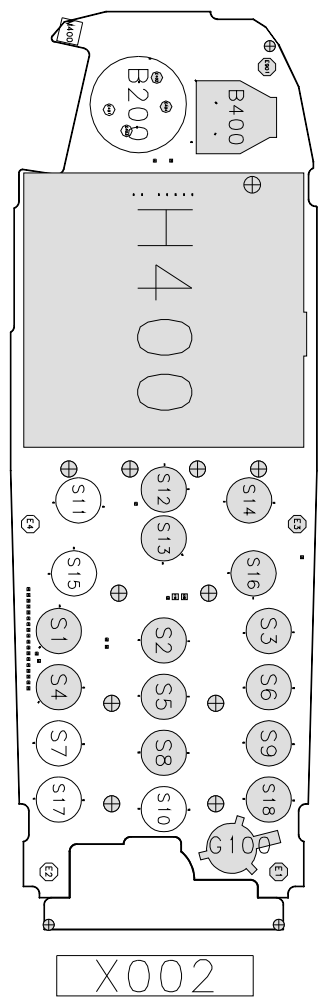
1. Check 26 MHz reference oscillator at G602, 800mVpp/frequency deviation < 100Hz, if not ok, change G602.
2. Check 942,6 MHz (CH56) at C912 - if not ok, check solderings of Z900, change Diplexer if necessary.
3. Check 942,6 MHz (CH56) at L800 - if not ok, check/change Z800.
4. Check 942,6 MHz (CH56) at V800 in Et out - if not ok, check LNA values: VLNAB_G 2,7V at V800, pin 8 and LNA_G 0,7V at pin4, change HAGAR N500 if necessary.
5. Check 942,6 MHz (CH56) at L704 - if not ok, check/change Z703, R702, T800
6. Check RXIQ signals at R509 - if not ok, check supply values at HAGAR N500: supply voltages are 2,7V at C513 (VXO), C501 (VRX), C503(VSYN_2) and N501 input 4,8V (VCP).
If one or more of these fails - change N102
7. Check SDATA at a: J503/J507, SCLK at b: J502/J506 and SLE at c: J501/J505. If not ok MAD D301 faulty.
8. Check VREF (1,5V) at R514 / VREF_RX (1,2V) at R510 if not ok, change N102
9. Check frequency of SHF oscillator G600 if possible refer to EGSM frequencies list
10. If there is no possibility to check frequency - check if oscillator works by measuring VCC at C601 (2,7V) and VC at C603, which varies between 0,7V and 3,8V (see EGSM list)
If VC is 4,8V the oscillator doesn't work in all probability!
If all values are ok but no RXIQ signals measurable at R509 HAGAR faulty, or there are probably broken solderings under N500.
If signals at R509 ok but still no RX calibration possible - check values at COBBA N240:
11. Check VBB at a:C256 (2,7V) and VCOBBA at b:R245 (2,7V), also check COBBACKL at J200. If values ok N240 faulty, or there are probably broken solderings under COBBA.

No TX PCN

1. Check 26 MHz reference oscillator at G602, 800mVpp/frequency deviation < 100Hz, if not ok, change G602.
2. Check TXIQ signals at R513/R516.
3. Check VBB 2,7V at C256 and VCOBBA 2,7Vat R245, check COBBACKL at J200.
- N240 faulty, or there are probably broken solderings under COBBA. If OK, goto 8.
4. Check VTX (2,7V) at C142 and VBATTRF 3,6V at L122 if not ok, change N102.
5. Check 1747,8 MHz at T840 pin 4 and 6.
6. Check supply voltages (2,7V) for HAGAR at a:C513 (VXO), b:C501 (VRX),c:C503 (VSYN_2) and d:N501 input 4,8V (VCP), if one or more of these fails - change N102.
7. Check SDATA at a:J503/J507, SCLK at b:J502/J506 and SLE at c:J501/J505, if not ok MAD D301 faulty.
8. Check TXC at C529, check TXP at C524 if not ok, change N240 for TXC- and N102 for TXP fault.
9. Check frequency of SHF oscillator G600 if possible refer to EGSM frequencies list.
If there is no possibility to check frequency - check if oscillator works by measuring VCC at C601 (2,7V) and VC at C603, which varies between 0,7V and 3,8V (see EGSM list) -
If VC is 4,8V - the oscillator doesn't work in all probability!
If values are ok but no TX signal at T840 measurable - N500 faulty, or there are probably broken solderings under HAGAR.
10. Check 1747,8MHz (CH 700) at N800 pin 8 - if not ok, check parts like T840, Z800 or V801.
11. Check 1747,8MHz (CH 700) at L800 pin 2 - if not ok, check VBATTRF at N800, pin 3 & 6.
Also check TXVPCN 2,8Vpp squarewave at N800, pin 1 and Vapc 1-1,6Vpp squarewave (depends on TX powerlevel) at N800, pin 7.
12. Check 1747,8MHz (CH 700) at X902 (antenna pad) - If not ok, check L800 in Et out, also check Z900 in Et out X900 (antenna connector) and TXVPCN at R911.

No RX PCN

1. Check 26MHz reference oscillator at G602, 800mVpp/frequency deviation < 100Hz, if not ok, change G602.
2. Check 1842,8MHz (CH 700) at X900 and ANT pad of Z900 - if not ok, change X900.
3. Check 1842,8MHz (CH 700)at C913 - if not ok, check solderings of Z900, change if necessary.
4. Check 1842,8MHz (PCS_RX) at C702 - if not ok, check/change Z701.
5. Check 1842,8MHz (CH 700) at C712 - if not ok check values of LNA like VLNAB_G = 2,7V at V701, pin 8 (VC) and LNA_P = 0,7V at pin 4 (VCC), change V701 if necessary.
6. Check 1842,8MHz (CH 700) at L703 - if not ok, check/change Z702, T701.
7. Check RXIQ signal at R509 - if not ok, check values at HAGAR N500:
8. Supply voltages are 2,7V at a:C513 (VXO), b:C501 (VRX), c:C503 (VSYN_2) and d:N501 input 4,8V (VCP).
If one or more of these fails - change N102.
9. Check SDATA at a:J503/J507, SCLK at b:J502/J506 and SLE at c:J501/J505, if not ok MAD D301 faulty.
10. Check VREF (1,5V) at R514 / VREF_RX (1,2V) at R510 if not ok, change N102.
11. Check frequency of SHF oscillator G600 if possible refer to EGSM frequencies list.
If there is no possibility to check frequency - check if oscillator works by measuring VCC at C601 (2,7V) and VC at C603, which varies between 0,7V and 3,8V (see EGSM list).
If VC is 4,8V the oscillator doesn't work in all probability.
If all values are ok but no RXIQ signal is measurable at R509 - N500 faulty, or there are probably broken solderings under HAGAR.
If signal at R509 ok but still no RX calibration possible check values at COBBA N240.
12. Check VBB 2,7V at C256 and VCOBBA 2,7V at R245, also check COBBACKL at J200.
If values are ok, N240 faulty, or there are probably broken solderings under COBBA.



Phone does not switch on

First check current consumption: off state 0-2.35 mA / sleep mode 2.35-4 mA. If too high - continue with section „low standby / operation mode time“

1. Check connectors X001 / X120 / X121 if bent or soiled.
2. Check VB 3,6V at J103 / C105 - if not ok, check L123.
3. Check if PWRON at R401 / J102 drops to 0V while pressing powerswitch, if not ok - check/change S402, R401.
4. Check 32,768kHz at J112 / C113, 3,2Vpp squarewave - ok goto 7.
5. Check/change B110, R110, R111, R112, R113, C110, C111, C112, C113.
Change CCONT N102 if necessary
6. Check VBB 2,7V at J108 / C147 - if not ok, check resistance of line to GND or change CCONT N102
7. Check VXO 2,7V at J105 / C141 - if not ok, check resistance of line to GND or change CCONT N102
8. Check VREF 1,5V (+-1,5%) at J117 / C144 - if not ok, check resistance of line to GND or change CCONT N102
9. Check SLEEPX 2,7V at J333 - if not ok - MAD is faulty in all probability swap the phone, because MAD D301 is not changeable
10. Check PURX 2,7V at J101 after pressing powerswitch - if not ok, change CCONT N102
11. Check 13MHz Clk frequency (RFC) at C613, approximately 800mVpp -
if not ok, check values around G602 / V600 change HAGAR N500 if necessary
try to flash the phone - if not ok - continue with section „FLASH update not possible“

Note: it is necessary to run energy management calibration after changing CCONT N102!
NOTE: for Energy management calibration see also general tuning information page!

FLASH update not possible

Check if fault code from prommer is one of the following :

- MCU boot failure, serial clock/data line failure: yes goto 3
- Algorithm code fail, alias ID missing: goto 2.

External RAM failure:

1. Check values at MAD D301, if ok - SRAM D310 faulty / change FLASH D311 if necessary
2. Update FPS4 box with the latest flash device list and try to update again
If fault remains, check values at MAD D301 - if ok, change FLASH D311
3. Connect "watchdog disable" WDDISX R401 to GND.
4. Check VBB 2,7V at J108/C147 and VXO 2,7V at J105 / C141, if not ok - continue with section "Phone does not switch on"
5. Check SLEEPX 2,7V at J333 - if not ok - MAD D301 faulty in all probability, swap the phone, because MAD is not changeable
6. Check PURX 2,7V at J101 - if not ok change CCONT N102
7. Check 13MHz Clk frequency at C613, approximately 800mVpp, if not ok, check values around G602 / V600 change HAGAR N500 if necessary
8. Check resistance of MBUS / FBUS lines (J113 / J331 / J332) to GND, also check R172, V170, V171, R305, R306 and check X001
If update is still not possible swap the phone, MAD D301 or PCB should be the reason.

Note: it is necessary to run energy management calibration after changing CCONT N102!
NOTE: for Energy management calibration see also general tuning information page!

Low standby / operation mode time

Check power consumption: off state current = 0-2.35 mA. If ok, goto 5

1. lift L122 (VBATTRF) - check current consumption. If ok, goto 3
2. lift L123 (VB) - check current consumption. If ok, goto 4
3. N800 faulty in all probability - if current is still too high after changing N800, check / change C814, C815, C817.
4. VB line faulty - in most cases is CCONT N102 the reason. If fault persists after changing CCONT, it is also possible, that capacitor(s) in VB line is/are faulty (C105, C122, C123, ...) check all these components lifting one after the other, with repeated current testing, probably one of the μBGA CSP's and / or ultimately the PCB should be the reason
5. Check current in sleep mode: 2.35-4 mA. If ok, goto 6
Check resistance of all voltage output lines of CCONT N102 to GND
Change component(s) in corresponding line(s) if resistance is not ok
6. If resistance of voltage lines (from CCONT N102) are ok, but sleep mode current is still too high change CCONT N102

Note: it is necessary to run energy management calibration after changing CCONT N102!

NOTE: for Energy management calibration see also general tuning information page!

Check charging circuit, run energy management calibration.

If calibration fails - continue with section „Not charging“

Align RX / TX values. If calibration fails - continue with section "RX / TX faults"

Note: Standby time also depends on network side and users handling, like lights on/off, VIBRA- / WAP activities, games etc..

Contact Service

MCU ROM Checksum failed:

Try to flash the phone. If not ok - change FLASH D311. If failure still persists after rework of FLASH, MAD D301 or PCB should be the reason

CCONT Interface failed:

N102 faulty and/or probably broken solderings under CCONT. If not ok after rework of CCONT, probably MAD D301 or PCB faulty

Note: it is necessary to run energy management calibration after changing CCONT N102!

NOTE: for Energy management calibration see also general tuning information page!

COBBA parallel / serial failed:

1. Check VBB 2,7V at J108 / C147 and VCOBBA 2,7V at J109 / C254
2. Check COBBACLK at J200 - probably faulty COBBA N240, or broken solderings under COBBA
If fault still remains after rework of N240 swap - probably MAD D301 or PCB faulty

DSP alive test failed

In most of all DSP alive selftest failures - MAD D301 faulty, which is not changeable!

EEPROM tune checksum / EEPROM security checksum failed

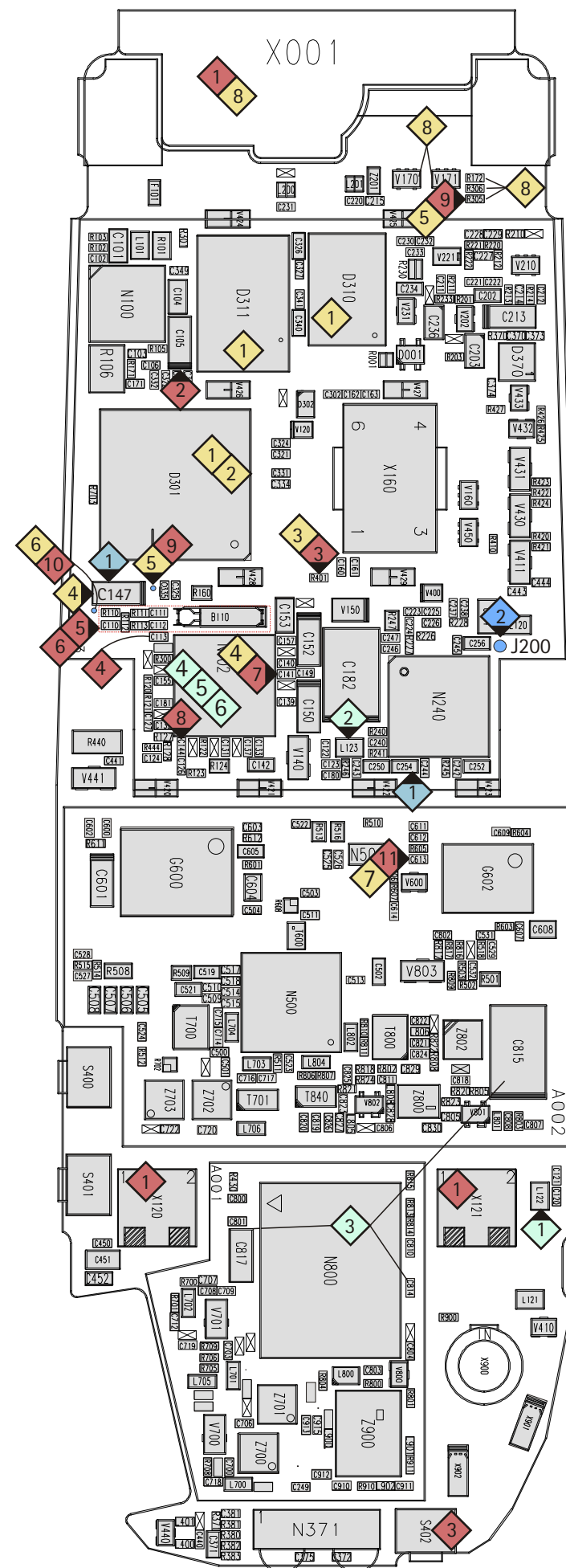
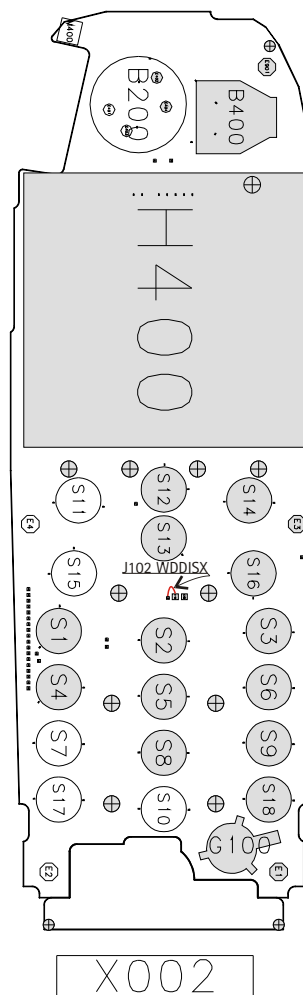
Use Wintelsa to check if phonedata like IMEI-, product- or PSN- data are corrupted / missing

If phone data is ok try to reset the phone. If phone data is not ok, or fault remains after rewriting phone data - change FLASH D311

RTC Battery failed

First try to charge RTC battery, by connecting battery to the phone for app. 10 minutes.

If fault remains after disconnecting/connecting battery - check contact springs of battery and Pads on PCB (if dirty etc.) - change LCD unit and/or CCONT N102, CHAPS N100 if necessary



Internal audio faults

No audio from speaker

1. Check resistance of speaker B200 (300hm), change speaker if bent (especially membrane) or soiled.
2. Check connection between speakerpads on PCB to a)C248/C249 and to b)C246/C247. If not ok, check R247 to GND, resistance of both lines should be > 1 Mohm

If fault persists change COBBA N240.

Note: Realign Rx/Tx values and rewrite SIMlock data after changing COBBA!

Microphone does not work

- Check impedance of microphone (0,5-1k0hm), change if necessary.
 - Check mechanical condition of connector X001 and MIC itself for dirt etc..
3. Check MicBias at L200, 2,4V on active microphone.If not ok, check - values around V231.
 4. Check connection between L200- C263 (470 Ohm),-C237 (0 Ohm),-C238 (0 Ohm) if fault remains, change Cobba N240.

Note: Realign RX / TX values and rewrite SIMlock data after changing COBBA!

Clock time problems

Clock time has to be corrected in short periods

1. Check amplitude and frequency of sleepclock oscillator at C113/J112, should be 3,2Vpp squarewave at 32,768kHz.
2. If not ok, change B110 and check parts around oscillator (R110, R111, R112, R113, C110, C111, C112, C113).

Clock time is lost after removing battery

First try to charge RTC battery, by connecting battery to the phone for app. 10 minutes.
If fault remains, check contact springs of battery, change RTC battery (LCD unit).
If fault persists, probably CCONT N102 or CHAPS N100 faulty.

Note: It is necessary to run energy management calibration after changing CCONT N102!

For Energy managemant calibration also see general tuning information page!

Phone intermittend switches off

1. Check mechanical appearance of connector X120 / X121 - change if necessary .
2. Check amplitude of 32,768kHz at J112 / C113, 3,2Vpp squarewave, change B110 if necessary.
2. If not ok, check parts around (R110, R111, R112, R113, C110, C111, C112, C113),probably broken solderings under CCONT N102 change if necessary. the same problem may cause HAGAR N500, because the reference oscillator G602 is divided to 13MHz system clock by HAGAR N500.

If you suppose broken solderings under HAGAR - rework as described above.

Note: it is necessary to run energy management calibration after changing CCONT N102!

NOTE: for Energy managemant calibration see also general tuning information page!

Not charging

Nothing happens if charger is connected.

1. Check mechanical appearance of connector X120 / X121.
2. Check resistance of fuse F101.
3. Check resistance of charge line (V_IN) to GND - value should be app. 50k0hm, if not ok, check/change R101, L101, C101, C102 and voltage divider R102 / R103.
3. Change N100 and/or N102 if necessary.

"Not charging"

Run energy management calibration. If it works without failuremessage, try to charge again after calibration. If a failure message appears, check the following:

Battery temperature failed:

1. Check X120, R122/123 or change CCONT N102.

Battery size failed:

2. Check X121, R120, R121 or change CCONT N102.

Battery voltage failed:

3. Check X120, C120, C121, L123, C122, C123 or change CCONT N102.

Charge current failed:

4. Check / change R106, R105, C104, or change CHAPS N100 and/or CCONT N102.

Charge voltage failed:

5. Check VCHARGE at voltage divider R102 / R103 - if ok change CCONT N102, if not ok, check parts like X001, X120, X121, F101, R101, L101, C101, C102 and/or change CHAPS N100 if necessary.

NOTE: for Energy managemant calibration see also General tuning information page!

"Insert SIMcard" failure

1. Check X160, if bent or soiled - change if necessary.
2. Check V160: pin1 - DATA0, pin3 - VSIM, pin4 - SIMCLK, pin5 SIMreset0. (See signal-page).
3. Also check R160, C160, C161, C162.
4. Check resistance of simlines to GND - change V160, C163, C164 if necessary, probably broken solderings under CCONT N102. Change CCONT N102 and run energy management calibration, if fault persists - probably MAD D301 or PCB faulty

Vibra failure

1. Check mechanical appearance of M400 change if necessary
2. Check VBATTIR 3,6V at L121
3. Check VBATTIR 3,6V at V440
4. Check VIBRA signal at L401 If not ok, check VIBRA signal at R444
If signal is ok at R444, change V441, if signal fails, MAD D301 probably faulty, or a disconnection between MAD D301 and R444 in VIBRA line

Display failure

If line segments missing or no display function at all

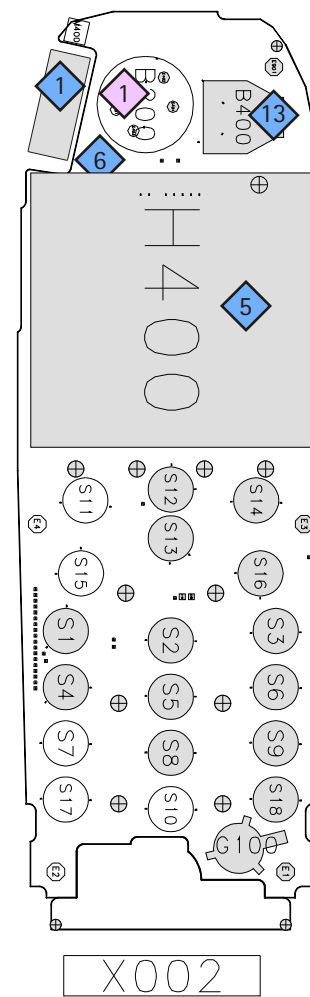
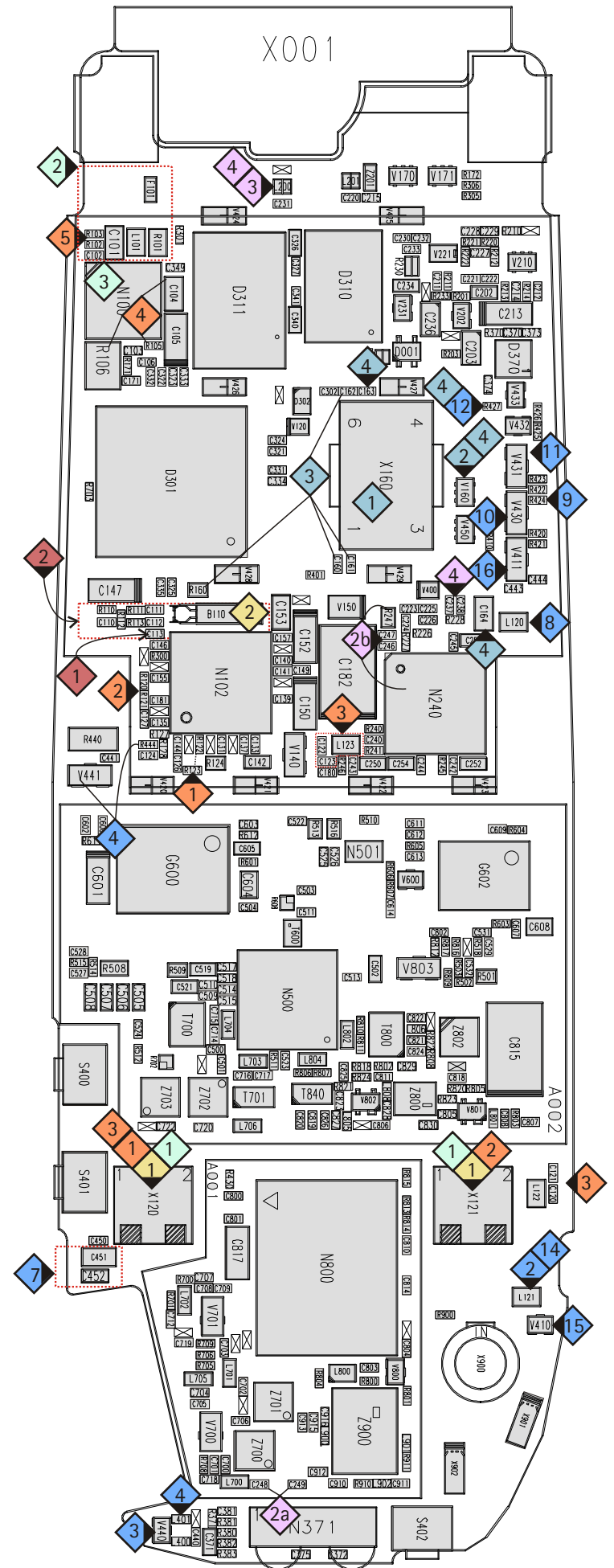
5. Check mechanical appearance of H400 and check Elastomer - change LCD unit if necessary
6. Check contacts on PCB if dirty clean pads if necessary
7. Check VBB 2,7V at C452 if not ok, probably MAD D301 or PCB faulty, check C451 if bent

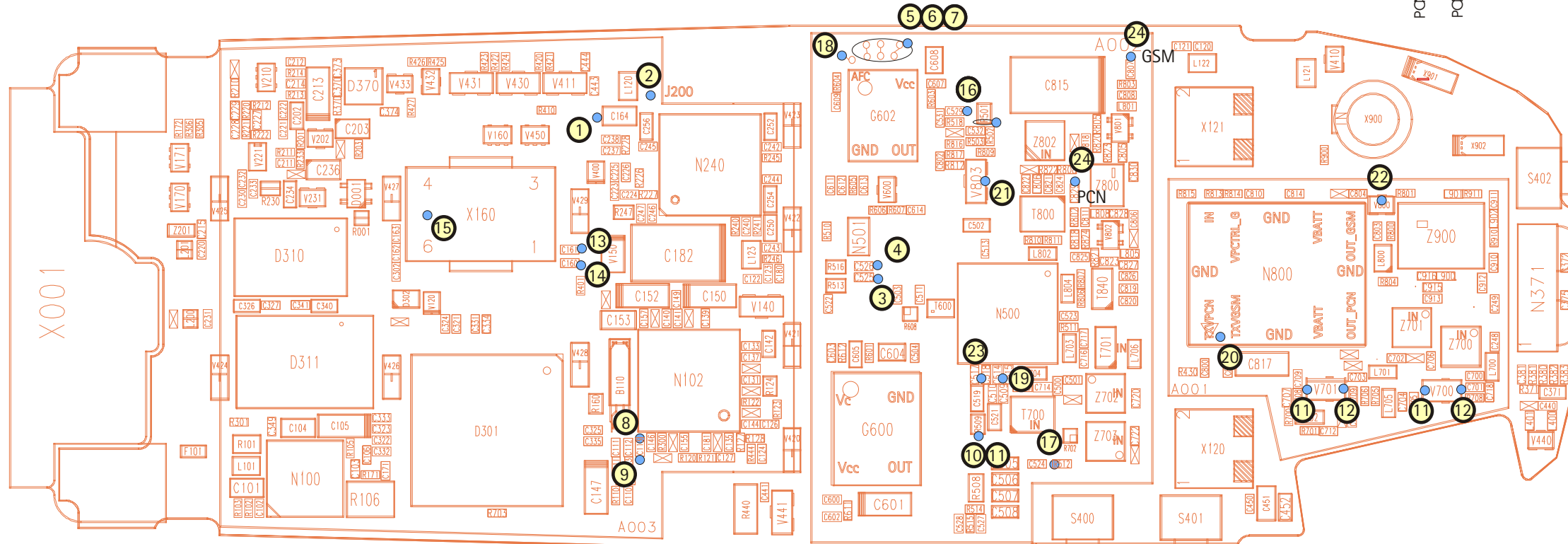
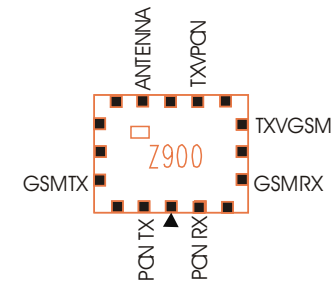
Backlight failure

8. Check VBATTUI 3,6V at L120
9. Check VBATTUI 3,6V at R424
10. Check voltage at V430 (LCD lights) 3.6V, check voltage at LED's V420 - V423
11. Check voltage at V431 (Key lights) 3.6V, check voltage at LED's V424 - V429
12. Check voltage at R427 (LIGHT line) if it fails, MAD D301 probably faulty

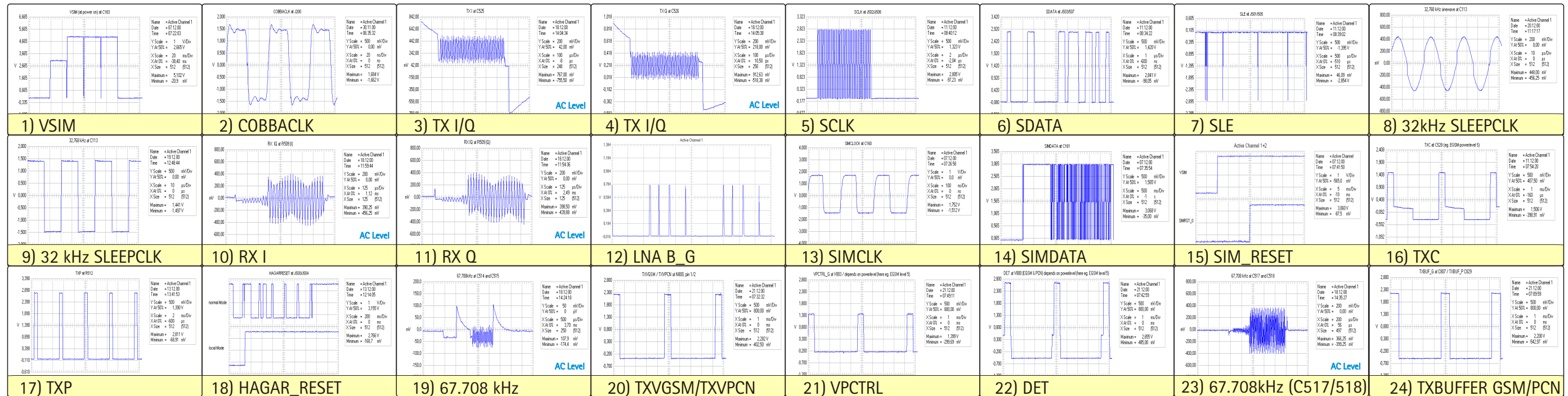
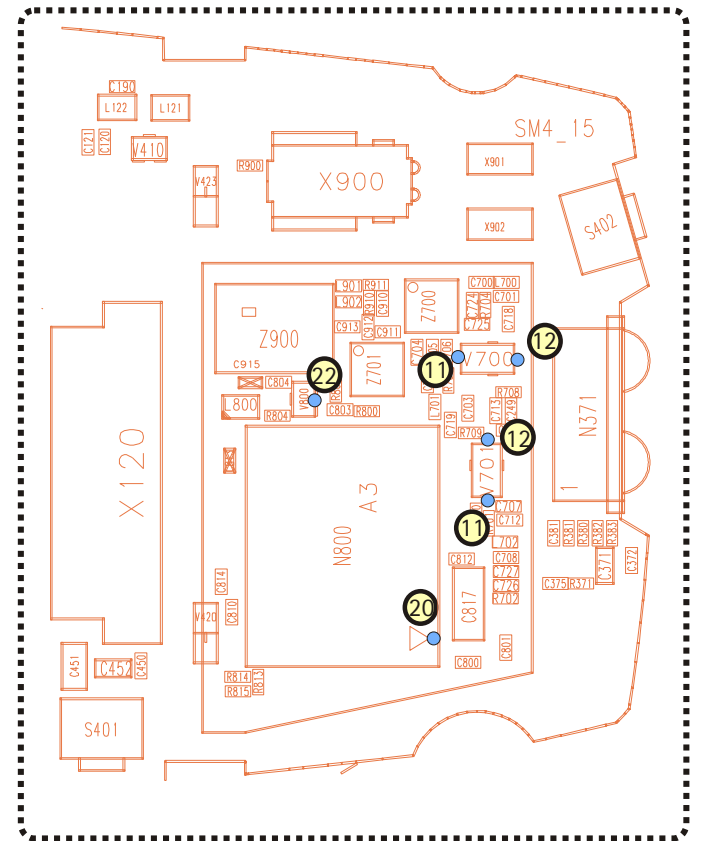
Buzzer failure

13. Check mechanical condition (if dirty etc.) of B400 change if necessary
14. Check VBATTIR 3,6V at L121
15. Check VBATTIR 3,6V at V410
16. Check BUZZER signal at V411 if signal fails, probably MAD D301 or PCB faulty

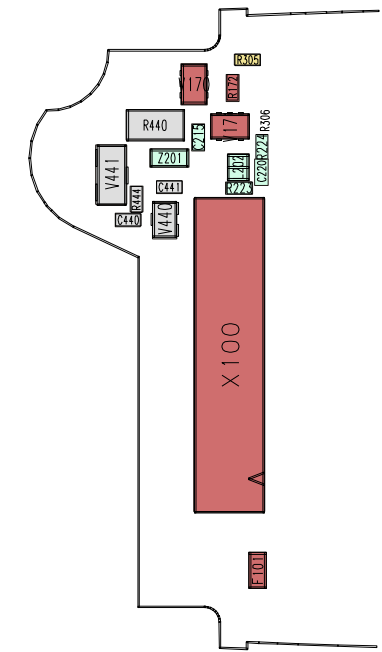




Measuring Points NHM-3 (6250)



NHM-3 :Main Differences



 -200	 400-499
 200-299	 500-599
 300-399	 600-900

NHM-3 :Main Differences

