Phone doesn´t switch on

-. Check current consumption: Off state 0-1mA, sleep mode 1-4mA, if too high continue with section "low standby / operation mode time".
1. Check connector X101 if bend or soiled.
2. Check Vb 3.6V at C129. If not ok, check L103.
3. Check if PWRONX at S330 drops to 0V during pressing powerswitch. If not ok, check/change S330, R118.
4. Check 32.768kHz at J228, 3.2Vpp squarewave. Ok, go to 6.
5. Check/change B100, R100, R102, R154, C101, C102, C113, change CCONT (N100) if necessary.
6. Check Vbb 2.8V at C107. If not ok, check resistance of line to GND or change CCONT (N100).
7. Check Vxo 2.8V at C152. If not ok, check resistance of line to GND or change CCONT (N100).
8. Check Vref 1.5V at C106. If not ok, check resistance of line to GND or change CCONT (N100).
9. Check SLEEPX 2.8V at J226. If not ok, MAD is faulty in all probability. Swap the phone because MAD is not changeable.
10. Check PURX 2.8V at J227 after pressing powerswitch. If not ok, change CCONT (N100).
11. Check 13MHz Clk-frequency at C213, approx. 800mVpp. If not ok, check values around G830, N505 and V800.

-. Try to flash the phone. If not ok, continue with section "Flash update not possible".

Flash update not possible

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

A: External RAM failure :

-. Check values at D200, if OK, swap unit, ComboMemory faulty.

B: Algorithm code fail / alias ID missing:

-. Update FPS4 box with latest flash device list, try to update again. If fault persists, check values at D200, if OK, swap the unit,- ComboMemory is faulty.

C: MCU boot failure, serial clock / data line failure

-. Connect "watchdog disable" R118 to GND.
1. Check Vbb 2.8V at C107 and Vxo 2.8V at C152. If not ok, continue with section "phone doesn't switch on".
2. Check SLEEPX 2.8V at J226. If not ok, MAD faulty in all probability. Swap the phone because MAD is not changeable.
3. Check PURX 2.8V at J227. If not ok, change CCONT (N100).
4. Check 13MHz REFCLK at C213, approx. 800mVpp. If not ok, check values around G830, N505 and V800.
5. Check resistance of Mbus/Fbus lines (J101-J103) to GND. Also check R109, R201, R203, R215. If update still not possible: Swap, MAD or PCB should be the reason.

Low standby / operation mode time

-. Check power consumption of phone: off state 0-1mA.
1. Lift L103, current consumption still to high: check C702/703/704 and C754/755. If failure persists, change N702. If current is OK after removing L103: Resolder it: **Vb line faulty.**
2. In most cases CCONT (N100) is the reason. If fault persists after changing CCONT, probably N101, N220, N310, N401 faulty, also possible that capacitor in Vb line Is faulty (eg C100, C105, C129, C142...).

-. Check current in sleep mode: 1-4mA.
-. Check resistance of output voltage lines of CCONT to GND.
-. Change components in corresponding lines if resistance is not ok. If resistance of lines is ok, but sleep mode current is still too high, change CCONT (N100).
-. Check charging circuit, run energy management calibration. If calibration is not ok, continue with section "Not charging".
-. Calibrate RX / TX values of the phone. If calibration not ok, continue with section "RX / TX faults". Note that the standby time also depends on network side and the users handling of the phone, eg lights on/off, memory activities, games...

Contact Service

A: MCU ROM Checksum failed:

-. Try to flash the phone. If not ok after flashing, probably ComboMemory faulty, which is not changeable.

B: Ccont Interface failed:

-. Probably broken solderings under CCONT (N100). Replace CCONT (if not underfilled) with µBGA rework machine.
-. If not ok after reworking the CCONT, probably MAD or PCB faulty. Note that it is necessary to run energy management calibration after changing CCONT!

C: Cobba parallel/serial failed:

1. Check Vbb 2.8V at C201 and Vcobba 2.8V at C248
2. Check CobbaClk at J252, probably broken solderings under COBBA (N250). Replace COBBA with µBGA rework machine. If fault remains probably MAD or PCB faulty

D: DSP Alive failed

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

E: Eeprom tune checksum failed

-. Use Wintesla to check if phonedata like Imei, product-code or PSN are corruped If phone data is ok, try to reset the phone. If phone data is not ok or fault remains after reset ComboMemory is faulty in all probability

F: RTC Battery failed

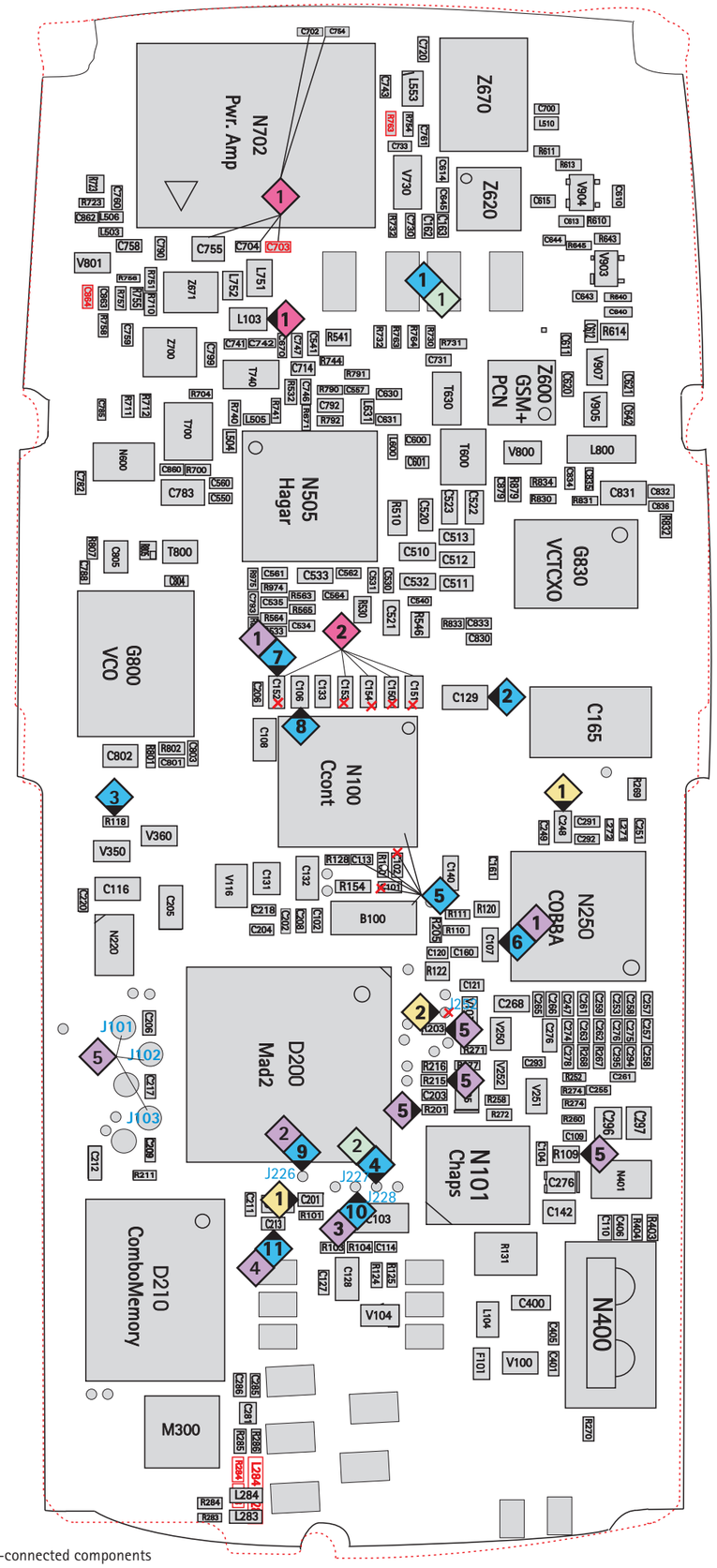
-. First try to charge RTC battery by assembling battery to the phone for 10 to 15 minutes. If fault remains, check contact springs of battery, bend them if nessecary. (see also NSM2 service bulletin 20)
-. In some cases it can be necessary to change CCONT (N100) or CHAPS (N101).

Phone intermittend switches off

1. Check mechanical appearance of connector X101, change if necessary make sure that pads of X101 on PCB are clean.
2. Check amplitude of 32.768kHz at J228, 3.2Vpp squarewave, if not ok, check parts around B100, probably broken solderings under CCONT (N100).

-. Remove CCONT if not underfilled, replace sparepart with µBGA rework machine and run energy management calibration. The same problem may cause N505, because the reference oscillator G830 (26MHz) is divided to 13MHz system clock by Hagar N505.
-. If you suppose broken solderings under Hagar, rework as described above.

NSM-3 differences in red



✕Measurepoint for GND-connected components

Internal audio faults

A: No audio from speaker

-. Check resistance of speaker (30 Ohm), change speaker if bend or soiled.
1. Check connection between speakerpads on PCB and C291/292, if not ok, check L271,272. Check for shorts to GND (>1M).
2. If fault persists, change COBBA (N250). Note that it is necessary to align RX / TX values and rewrite SIMlock-data after changing COBBA!

B: Microphone doesn't work

-. Check impedance of microphone (0,5-1kOhm), change if necessary.
3. Check mechanical condition of connector X280 (8850 only).
4. Check MicBias at L287, 2.4V on active microphone (see Layout). If not ok, check values around V250.
5. Check connection between L287 and C263 (470 Ohm).
6. If fault remains, change COBBA (N250). Note that it is necessary to align RX / TX values and rewrite SIMlock-data after changing COBBA!

Clock time problems

A: Clock time has to be corrected in short periods

1. Check amplitude and frequency of sleepclock oscillator at J228, should be 3.2Vpp squarewave at 32.768kHz.
   If not ok, change B100 or check parts like R100, R102, R154 and C101, C102, C113.

B: Clock time is lost after removing battery

-. Check contact springs of battery, bend them if nessecary (see also NSM-2 service bulletin 20) or change RTC-battery.
   Bending of springs should be always done, also with new batteries.
   If fault persists, probably CCONT (N100) or CHAPS (N101) faulty. Note that you have to run energy management calibration after changing CCONT.

Not charging

A: Nothing happens if charger is connected

-. Check mechanical appearance of connector X110.
1. Check resistance of fuse F101.
2. Check resistance of Vcharge line to GND, value should be around 50kOhm. If not ok, check/change V100, C103/114.
3. Check / Change N101, N100.

B: "not charging" appears on LCD

-. Run energy management calibration. If it works without failuremessage, try to charge after calibration.

C: Battery temperature failed

4. Check X101, R120/122 or change CCONT (N100).

D: Battery size failed

5. Check X101, R120/122 or change CCONT (N100).
-. Battery voltage failed: Change CCONT (N100).

E: Charge current failed

6. Check / change R131, N101, N100.
-. Charge voltage failed:
7. Check Vcharge at voltage divider R103/104. If ok change CCONT (N100).
8. If not ok, check parts like X110, V100, F101, L104 or change N101.

SIMcard faults

A: Insert SIM card

-. Check X302 if bend or soiled, change if necessary.
1. Make sure that pads for SIMcard-reader on PCB are clean.
2. Check V104: Pin 1-SIMclock, pin 3-VSIM, pin-4 SIMdata, pin 5-SIMreset, also check R124, R125, R128.
3. Check resistance of SIMlines to GND, change V104, C127/128 if necessary.
4. Probably broken solderings under CCONT (N100). Remove CCONT if not underfilled, replace sparepart with µBGA rework machine and run energy management calibration.

-.. If fault persists, probably Mad or PCB faulty.

B: SIMcard not accepted

-. Use Wintesla to open quick/RF info window, compare shown SIMlock-data with the listed entries of the respective productcode.
-. If shown SIMlock-data is the same as in the list, SIMlock is ok.
   Probably Msin data field is closed to special Imsi number range can be opened only by operator! (refer to general SB 65).
-. If shown SIMlock-data is not the same as in the list or somehow corrupted rewrite SIMlock-data with Nokia security password or send phone to SACE.
-. If SIMlock is corrected or inactive but fault remains, probably broken solderings under COBBA (N250). Change COBBA, align RX / TX values and rewrite SIMlock-data once more.

UI faults

A: Backlight failure (Also see measurement points on page 4)

1. Check voltage at pin 7 and 15 of N310 (see layout)- should be 2,8V when lights are on. If not ok, there could be a break between D200 and N310, or Mad is faulty
2. Check Vb 3.6V pin 1 of N310 and Vbb 2.8V pin 2 of N310. (See layout)
3. Check resistance of R310 and R311. (See layout)
4. Check Vb at LED´s V320-325 and V331-340. (See layout)
5. If keypad backlight is not bright enough, change resistor R311 (see layout) from39kOhm to 10kOhm (also see NSM 2 service bulletin 23).

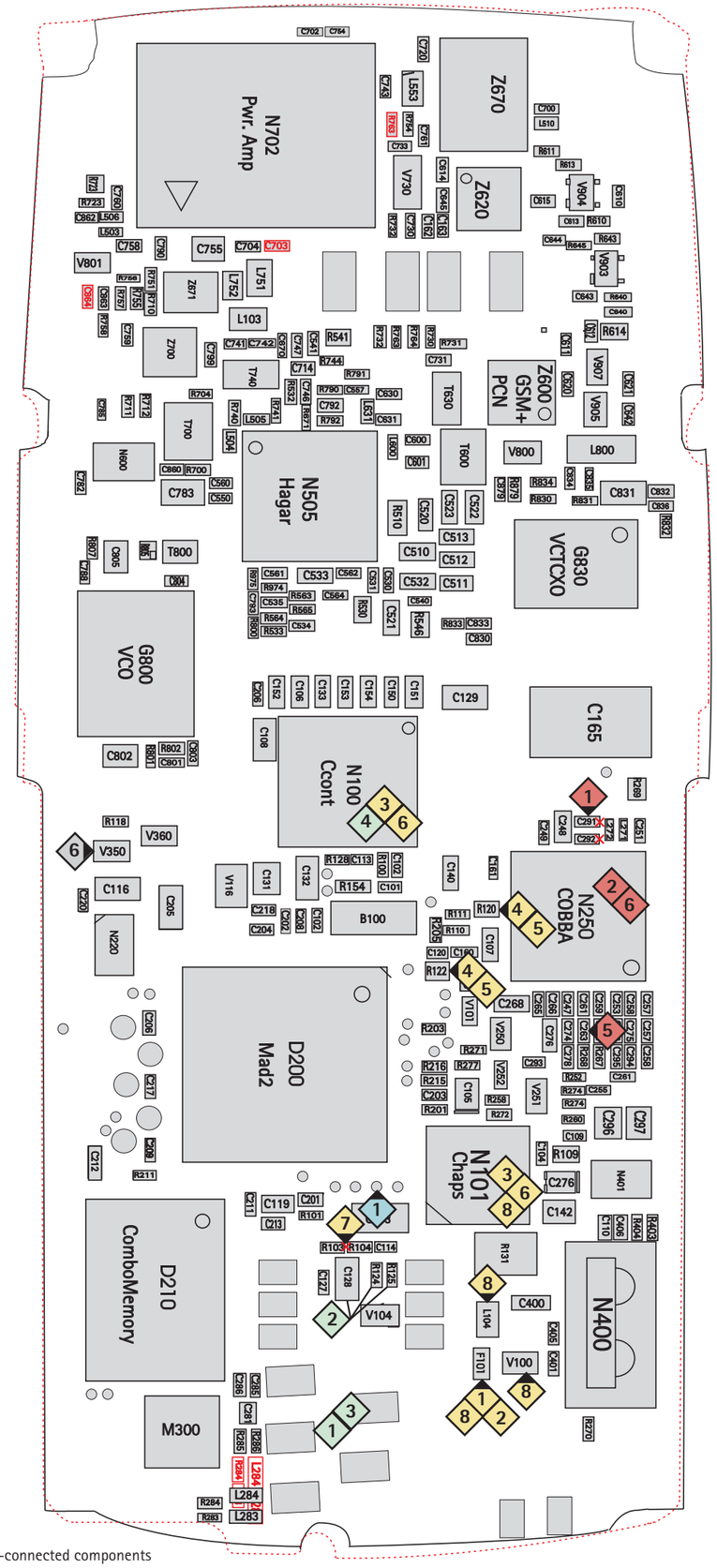
B: Vibra failure

-. Check version of vibramotor, add support tape if necessary (see also NSM-3 service bulletin 11).
6. Check Vb 3.6V at V350.
7. Check Vb 3.6V pin 1 and Vbb 2.8V pin 2 of N310. (See layout)
8. Check vibra signal at pin 16 of N310. If not ok, check vibra_cnt at pin 19 of N310. (See layout)
   If signal is ok at pin19, change N310, else there is a break between D200 and N310, or MAD is faulty.

C: Display failure

-. If line segments missing or no display function at all, check mechanical appearance of display, change it if necessary.

NSM-3 differences in red



✕Measurepoint for GND-connected components

NO TX GSM900

1. Check 26MHz RFCLK at C830(700mVpp), frequency deviation <100Hz.
2. Check TxIQ signals at R541/546. If ok, go to 4.
3. Check Vbb 2,8V at C201and VCOBBA (2,8V) at C248, check COBBACLK at J252, probably COBBA (N250) faulty or broken soldered.
4. Check 902MHz at T700 pin 4 and 6. If ok, go to 6.
5. Check supply voltages for HAGAR(N505) at C535 (1,35V), C550 (2,8V), C557 (2,8V), C560 (4,8V), C561 (2,8V), C562 (2,8V).
6. Check Sdata at J237, SCLK at R205,SENA at R206, TXC at C792.
7. Check TXP at pad of not assembled R745 (between R791/541).
8. Check frequency of G800 (SHF) at C788 (TX-Ch.60-3608MHz) if possible, otherwise you can check Vcc at C804(2,8V) and Vc at C803 which varies between 0,7-3,8V. If Vc =4,8V, the oscillator doesn`t work.
   If values are OK but no TX signal at T700, pobably HAGAR(N505) is faulty or broken soldered.
9. Check 902MHz at N702,pin8. If not OK, check T700,Z700/671, V801.
10. Check 902MHz at L553 pin1. If not OK, check Vbatt at pin 3 and 6 of N702, also check TXV_GSM 2,8Vpp squarewave at N702,pin2 and Vapc 1-1,6Vpp squarewave at N702,pin7 depending on TX powerlevel.
11. Check 902MHz at J600 (Antenna pad).If not, check L553 in/out, Z670 in/out, TXVGSM at R671.

NO TX GSM1800

1. Check 26MHz RFCLK at C830(700mVpp), frequency deviation <100Hz.
2. Check TxIQ signals at R541/546.If ok, go to 4.
3. Check Vbb 2,8V at C201and VCOBBA (2,8V) at C248, check COBBACLK at J252, probably COBBA(N250) faulty or broken soldered.
4. Check 1747,8MHz at T740 pin 4 and 6. If ok, go to 6.
5. Check supply voltages for HAGAR(N505) at C535 (1,35V), C550 (2,8V), C557 (2,8V), C560 (4,8V), C561 (2,8V), C562 (2,8V).
6. Check Sdata at J237, SCLK at R205,SENA at R206, TXC at C792.
7. Check TXP at pad of not assembled R745 (between R791/541).
8. Check frequency of G800 at C788(TX-Ch.700-3495,6MHz) if possible, otherwise you can check Vcc at C804(2,8V) and Vc at C803 which varies between 0,7-3,8V. If Vc =4,8V, the oscillator doesn`t work.
   If Values are OK but no TX signal at T740, pobably HAGAR(N505) is faulty or broken soldered.
9. Check 1747,8MHz at N702,pin8. If not OK, check T740, Z671, V801.
10. Check 1747,8 MHz at L553 pin3. If not OK, check Vbatt at pin 3 and 6 of N702, also check TXVDCS 2,8Vpp squarewave at N702,pin1 and Vapc 1-1,6Vpp squarewave at N702,pin7 depending on TX powerlevel.
11. Check 1747,8MHz at J600 (Antenna pad).If not, check L553 in/out, Z670 in/out, TXVDCS at R670.

NO RX GSM900

1. Check 26MHz reference oscillator at C830, 700mVpp,frequency deviation < 100Hz
2. Check 947MHz at C645. If not ok check solderings of Z670, change if necessary and replace foam on sparepart. (NSM 2 only)
3. Check 947MHz at C615. If not ok check/change Z620
4. Check 947MHz at C610. If not ok check values of LNA like Vlna 2,7V at R614 and LNA_G 0,7V at C611,change V904/907 if necessary.
5. Check 947MHz at L600. If not ok check/change Z600, T600
6. Check RxIQ signal at R530. If not ok, check values at HAGAR(N505) supply voltages at C535 (1,35V), C550 (2,8V), C557 (2,8V), C560 (4,8V), C561 (2,8V), C562 (2,8V), Sdata at J237, Sclk at R205 and Sena at R206, check RxRef 1,2V at C534, Check frequency of G800 at C788 (RX-Ch.60-3788MHz) if possible, otherwise you can check Vcc at C804(2,8V) and Vc at C803 which varies between 0,7-3,8V. If Vc =4,8V, the oscillator doesn`t work.

-. If all values are ok but no RxIQ signal at R530, pobably HAGAR(N505) is faulty or broken soldered.

7. If signal at R530 is ok, but still no Rx-calibration possible,check values at COBBA(N250). Check Vbb 2,8V at C201 and VCOBBA(2,8V) at C248, also check COBBACLK at J252, if values are ok, probably COBBA solderings are broken.

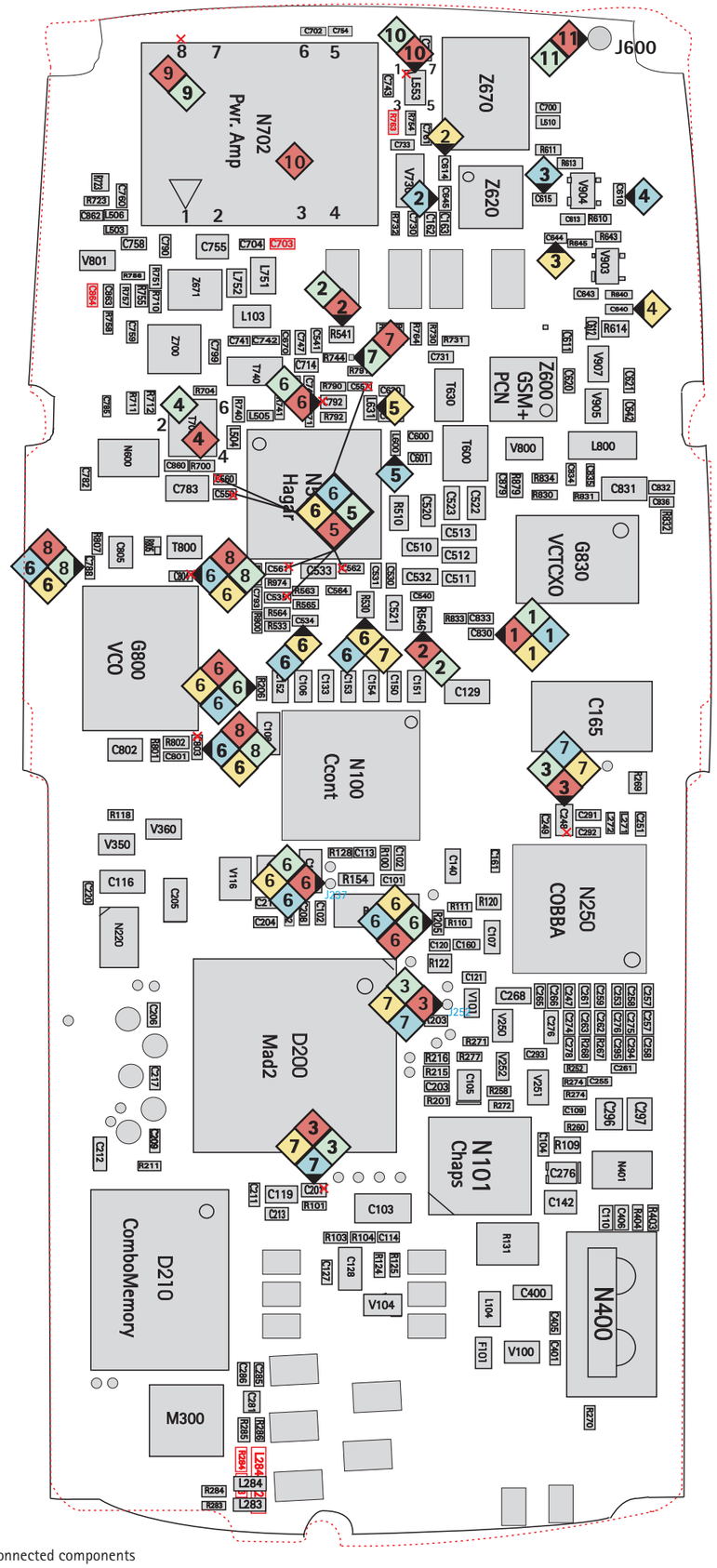
NO RX GSM1800

1. Check 26MHz RFCLK at C830(700mVpp), frequency deviation <100Hz.
2. Check 1842,8MHz at C614. If not OK, check solderings of Z670, change if necessary and replace foam on sparepart.(NSM-2 only).
3. Check 1842,8MHz at C644.If not OK, check/change Z620
4. Check 1842,8MHz at C640. If not ok check values of LNA like Vlna 2,7V at R614 and LNA_P 0,7V at C642,change V903/905 if necessary.
5. Check 1842,8MHz at L631. If not ok check/change Z600, T630.
6. Check RxIQ signal at R530. If not ok check values at HAGAR(N505) like supply voltages at C535 (1,35V), C550 (2,8V), C557 (2,8V), C560 (4,8V), C561 (2,8V), C562 (2,8V), check Sdata at J237, SCLK at R205,SENA at R206, RF_REF 1,2V at C534. Check frequency of G800 at C788 (RX-Ch.700, 3685,6MHz)) if possible, otherwise you can check Vcc at C804(2,8V) and Vc at C803 which varies between 0,7-3,8V. If Vc =4,8V, the oscillator doesn`t work.

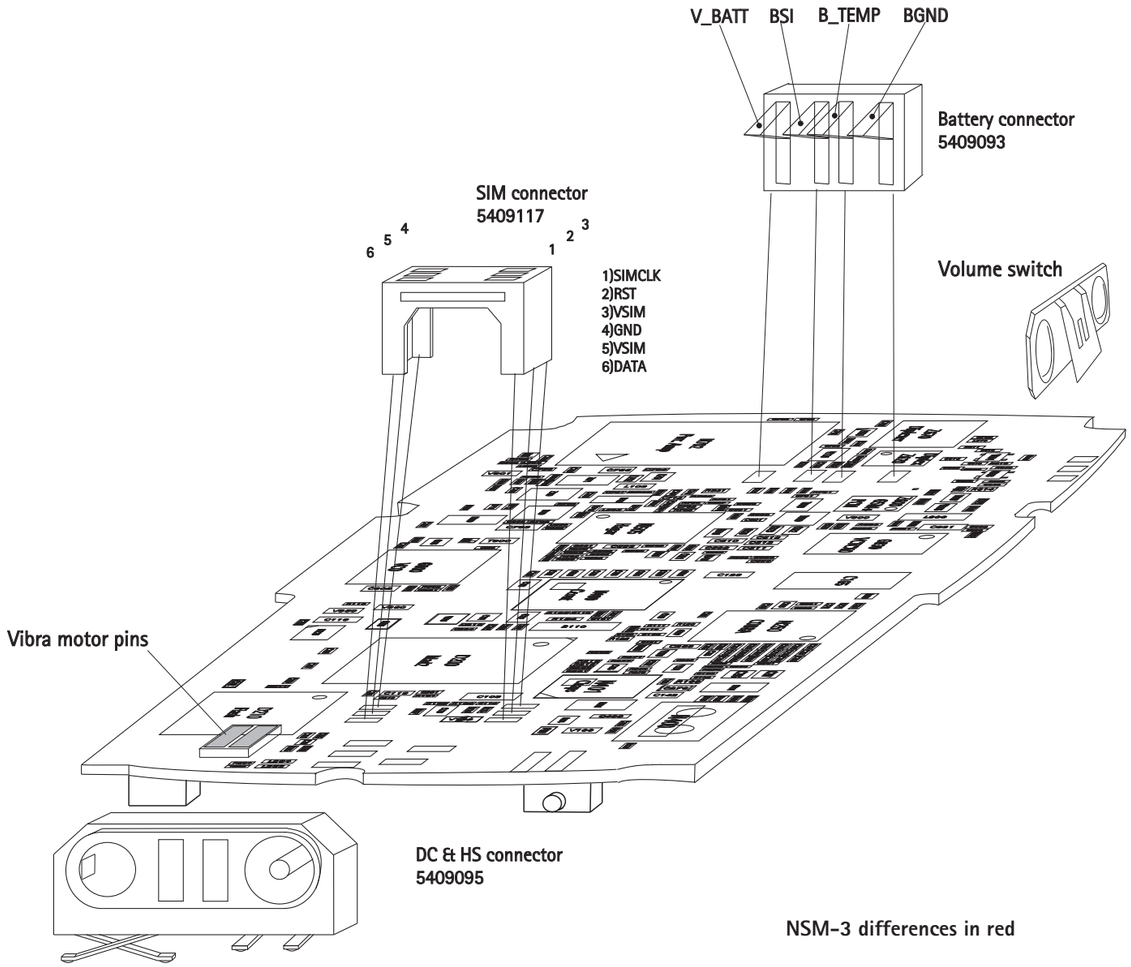
-. If all values are ok but no RxIQ signal at R530, pobably HAGAR(N505) is faulty or broken soldered.

7. If signal at R530 is ok, but still no Rx-calibration possible,check values at COBBA(N250). Check Vbb 2,8V at C201 and VCOBBA(2,8V) at C248, check also COBBACLK at J252, if values are ok, probably COBBA solderings are broken.

NSM-3 differences in red

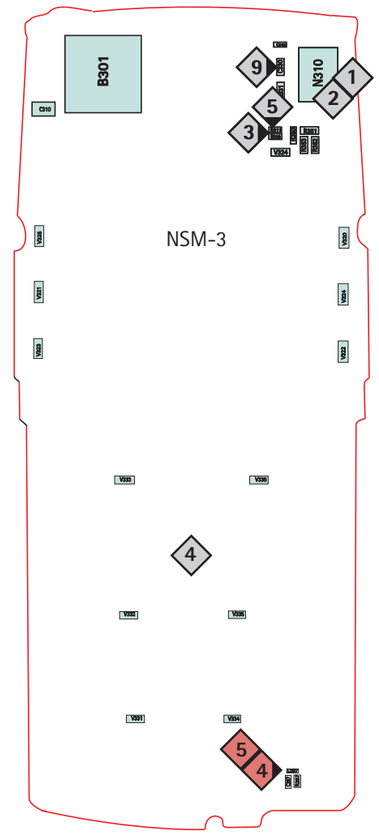


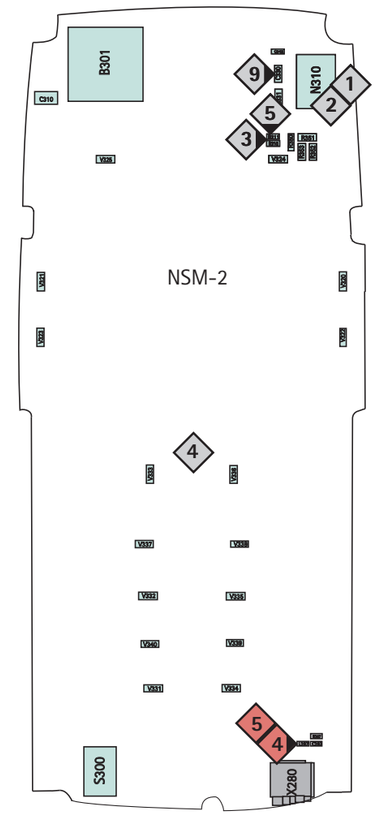
✕Measurepoint for GND-connected components

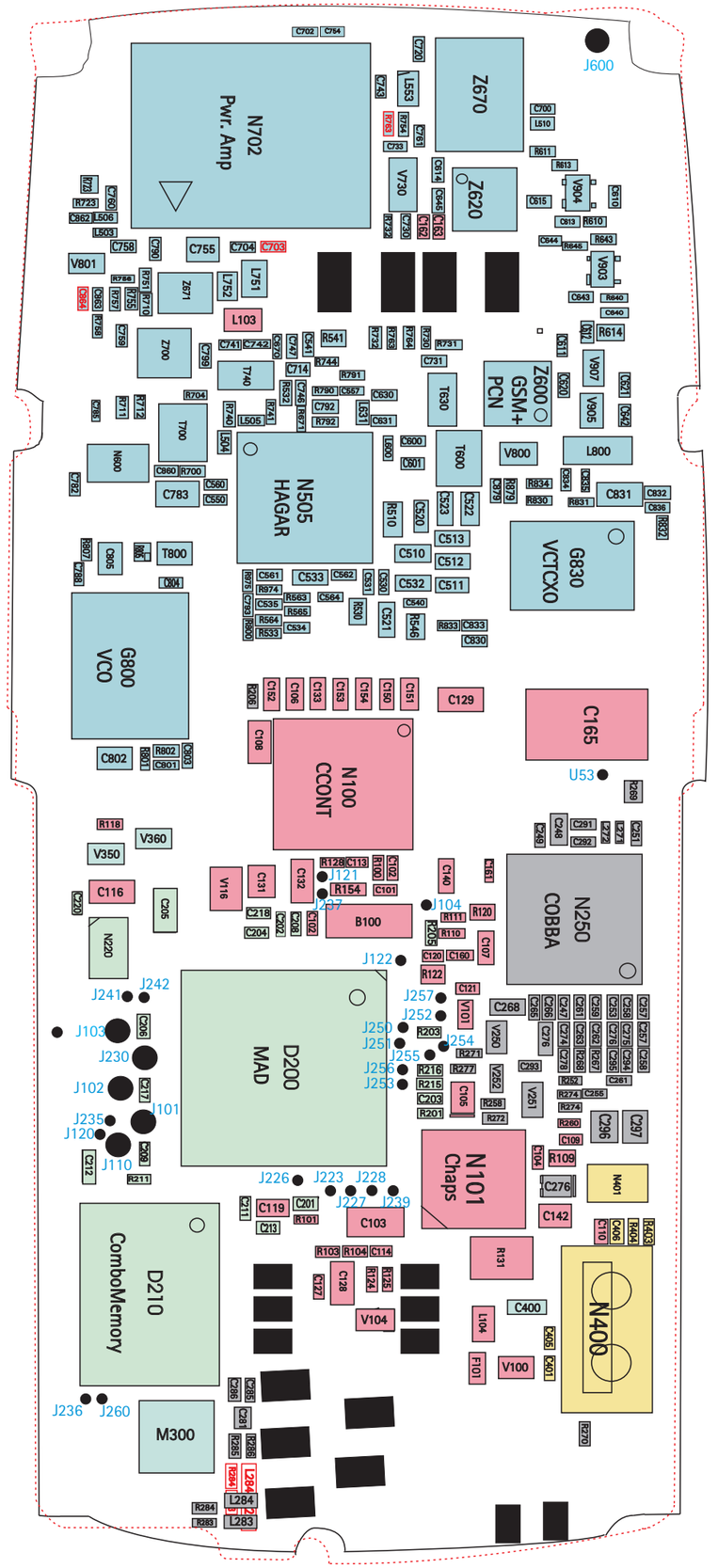


NSM-3 differences in red

300-399	UI
400-420	Infrared
200-220	Baseband
221-299	Audio
400-900	RF-Part
100-199	Power Supply







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Service & Analysis Center Europe	Measurements	Version 1.0 Approved	
SACE CC Training Group	NSM-2/3	11.10.2000	
	System Module RM7/RM7L