

Programmes After Market Services

NPL-1 Series Cellular Phones

6 - Troubleshooting

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Baseband Troubleshooting

General Instructions

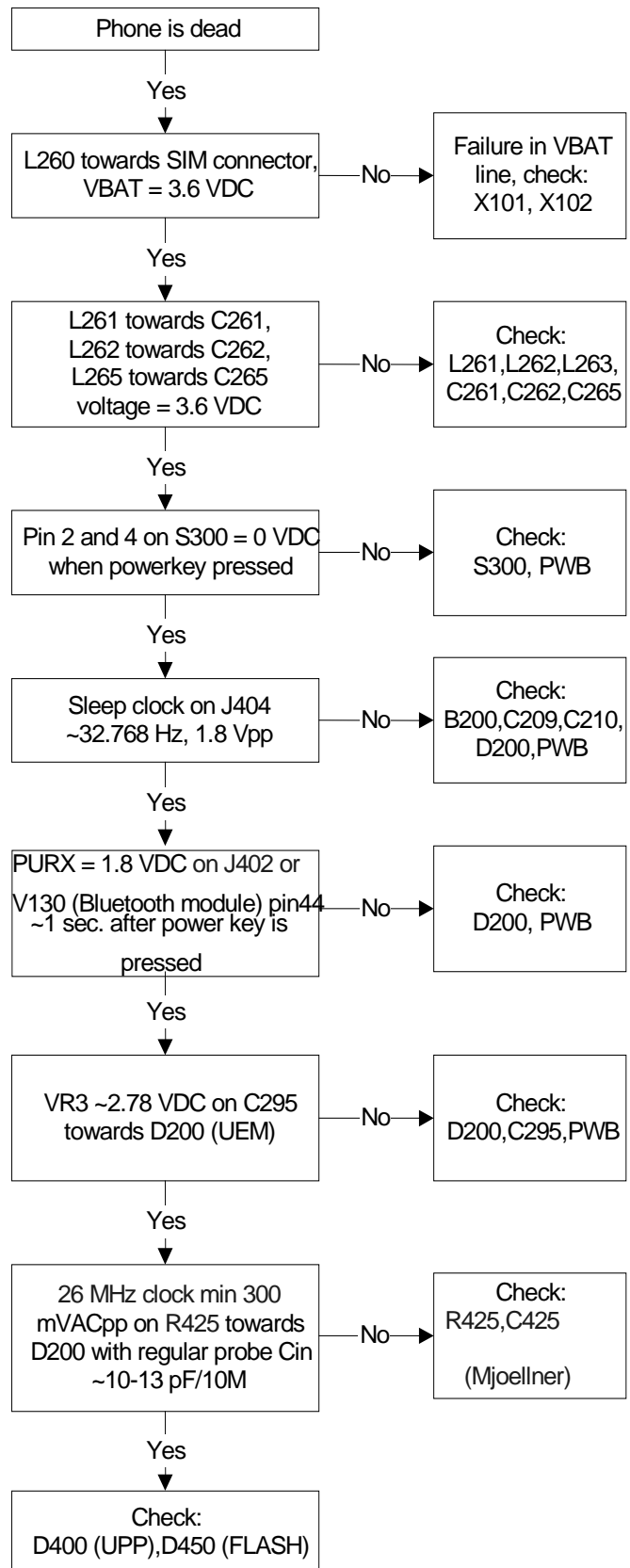
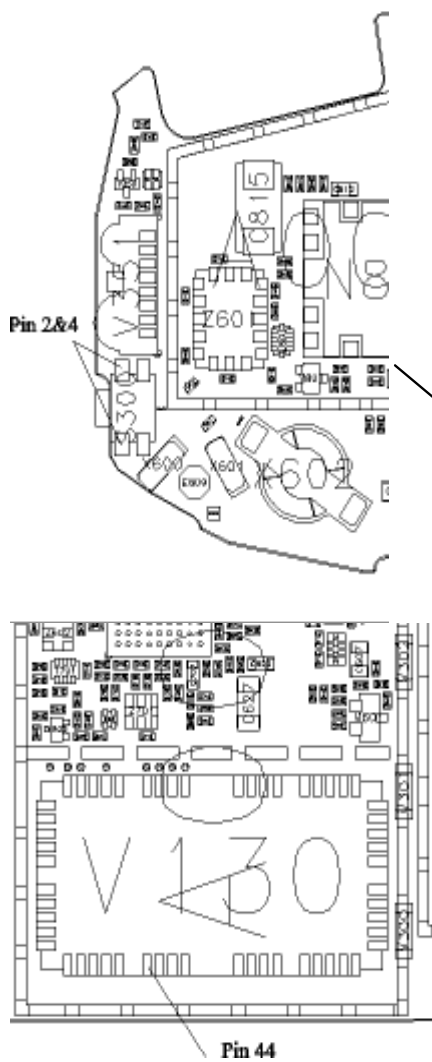
Digital ASICS UEM (D200) and UPP (D40) are underfilled. This means replacement is not possible.

Any indication to change this device or faulty UEM / UPP in the following instructions should be replaced by 'board faulty', i.e. no repair possible.

Phone is dead

This means that the phone does not use any current at all when supply is connected and/or powerkey is pressed.

It is assumed that the voltage supplied is 3.6 VDC. The UEM will prevent any functionality what so ever at battery/supply levels below 2.9 VDC.



Flash programming doesn't work

The flash programming can be done via the pads on the PWB or via system connector X100.

In production, the first programming is done via the pads on the PWB.

The main differences between these are:

- a) Flash programming voltage is produced different way.
- b) Signal routings are different.

In case of Flash failure in FLALI station, problem is most likely related to SMD problems. Possible failures could be Short circuiting of balls under μ BGAs (UEM, UPP, FLASH). Missing or misaligned components.

In flash programming error cases the flash prommer can give some information about a fault.

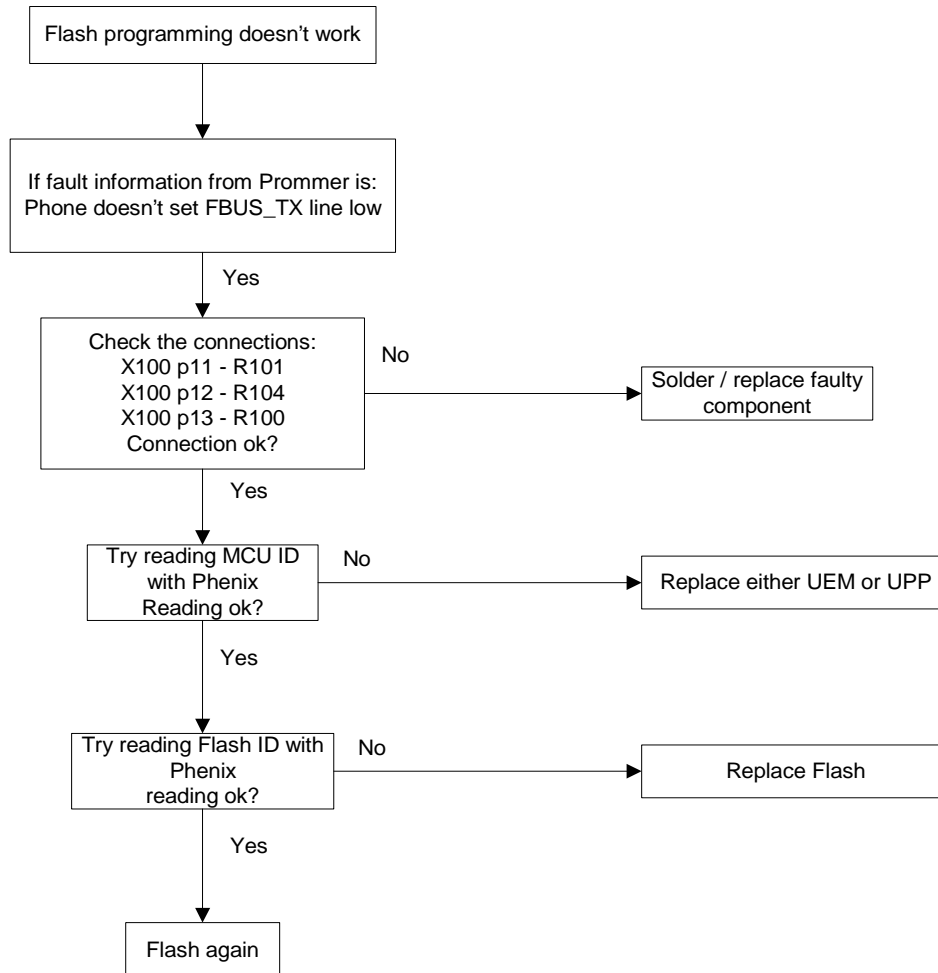
The fault information messages could be:

- Phone doesn't set FBUS_TX line low

The preliminary fault-finding diagrams for flash programming are shown in the next page.

Because of the use of uBGA components it is not possible to verify if there is a short circuit in control- and address lines of MCU (UPP) and memory (flash).

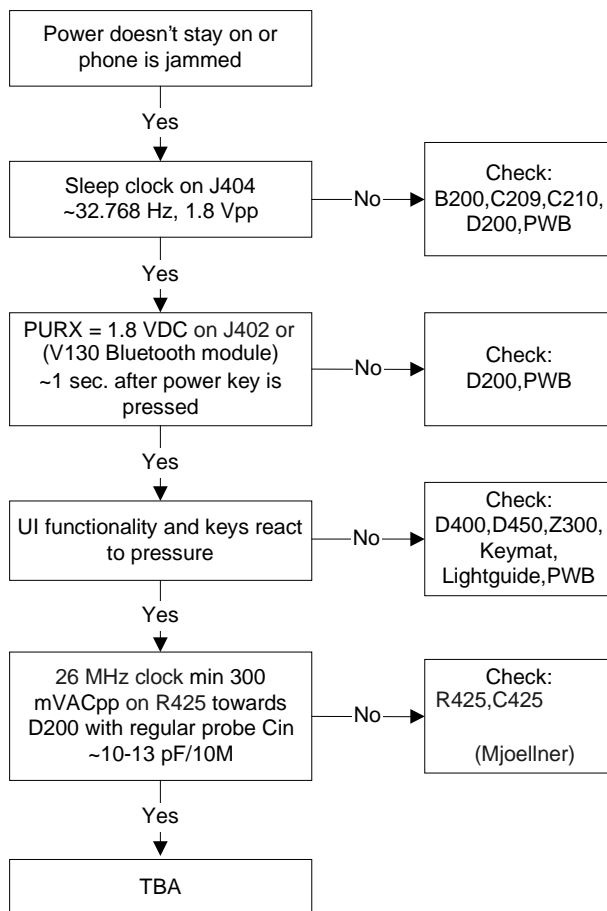
Flash programming



Power doesn't stay on, or phone is jammed

If this kind of failure is presenting itself immediately after FLALI, it is most likely caused by ASICs missing contact with PWB.

If for some reason the MCU does not service the watchdog register within the UEM, the operations watchdog will run out after approximately 32 seconds. Unfortunately, the service routine can not be measured.



Display Information: "Contact Service"

When this error appears in the display, it means that one or more of the internally Base-band tests has failed. The Baseband tests (selftests) are performed each time the phone is powered on. The selftests are divided into those performed while powering up (Start up tests), and the ones that can be executed with a PC using Phoenix (Runtime tests). The following Start-up tests are performed during power up:

- UPP Register verification test.
- UEM CBUS Interface test.
- SleepX loop test.
- Aux. Data loop test.
- Ear Data loop test.
- Tx IDP loop test.
- Tx IQ DP loop test.
- SIM Clock loop test.

SIM I/O Control loop test.

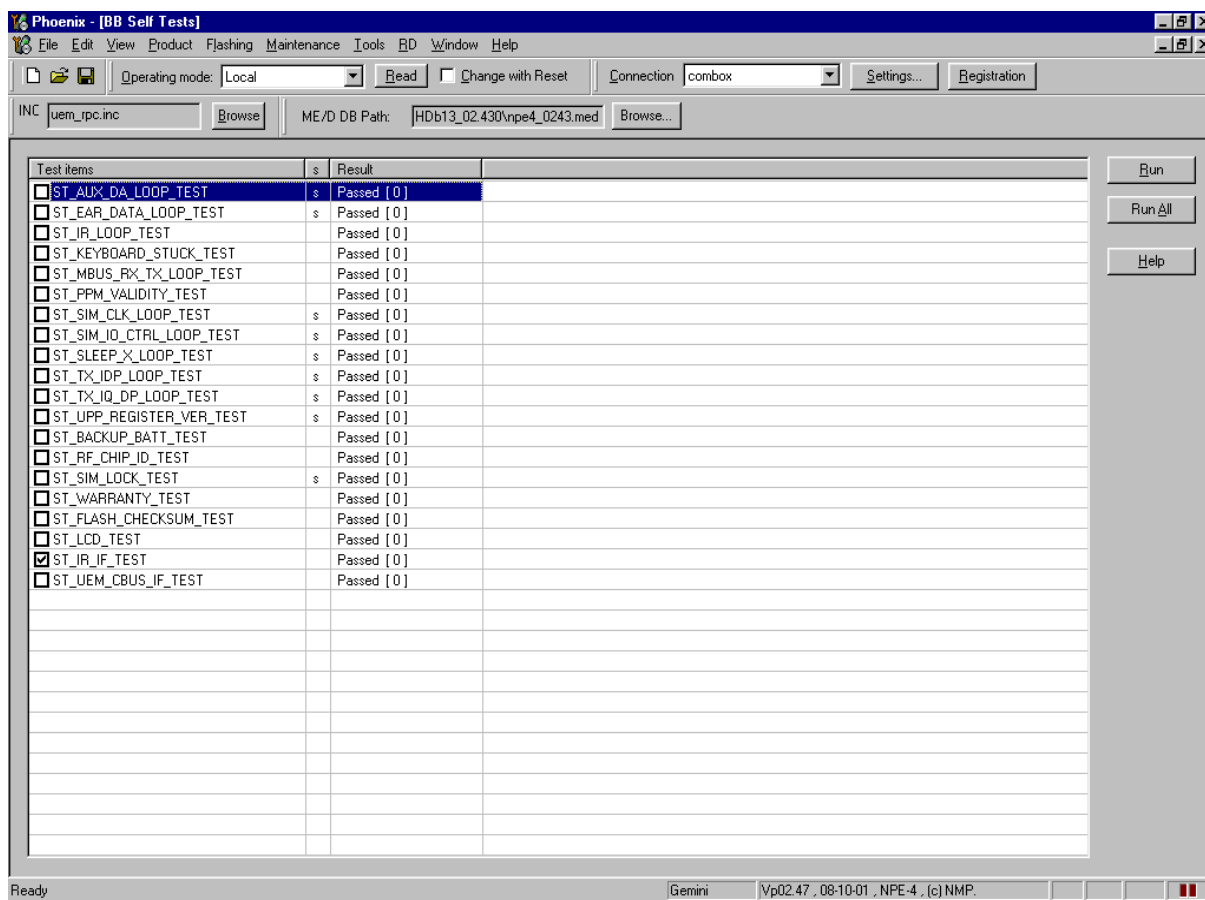
SIM Lock test.

PMM (Flash) Validity test.

PMM (Flash) Checksum test.

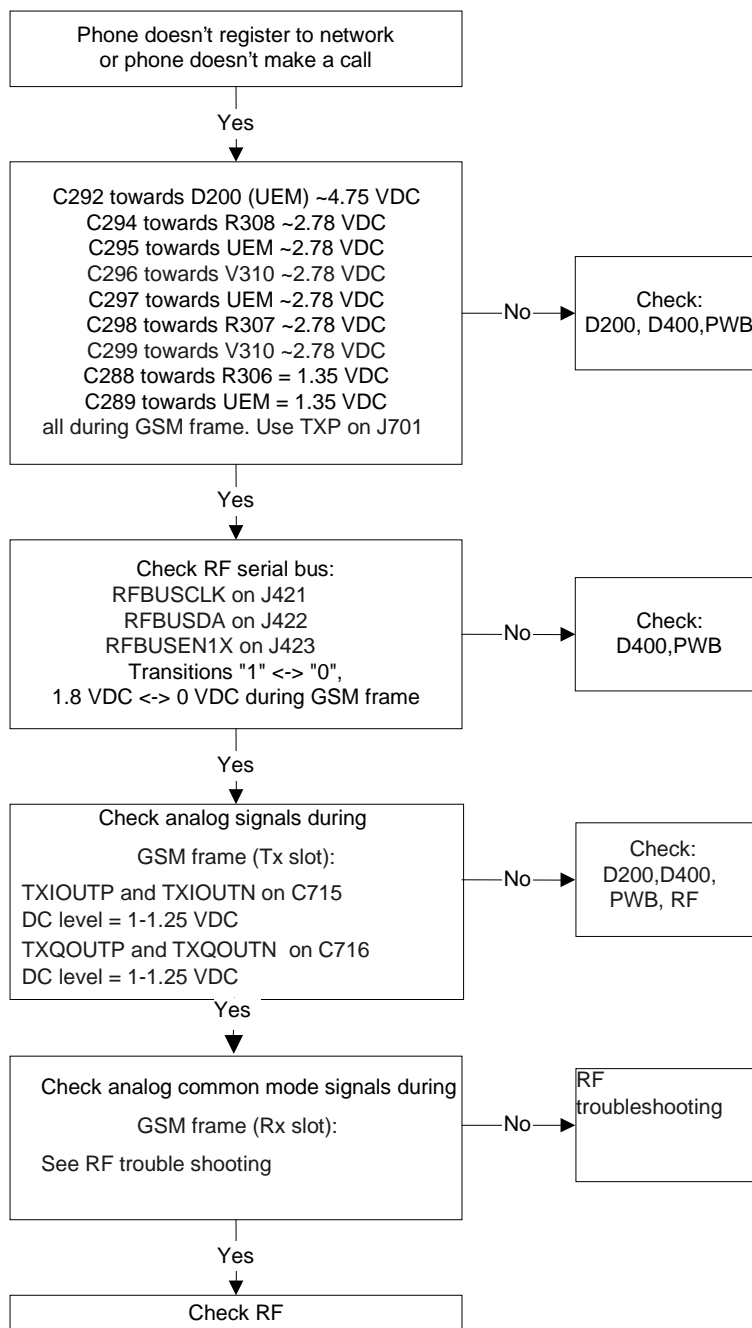
If all these selftests are passed, the phone will start-up.

From Phoenix it is possible to run all the selftest and the additional "Runtime test". The test cases can be seen below.



The phone doesn't register to the network or phone doesn't make a call

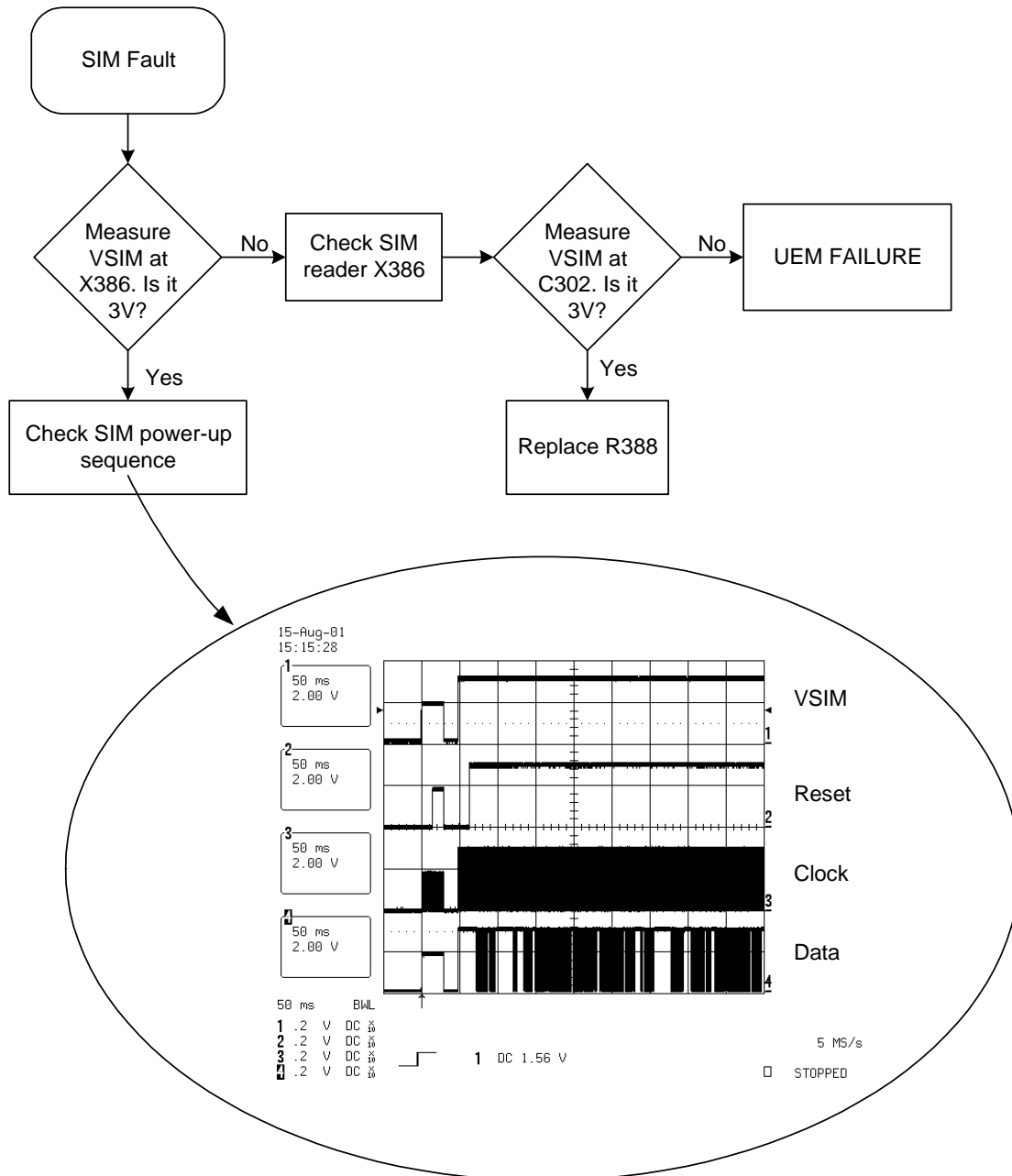
If the phone doesn't register to the network, the fault can be in either BB or RF. Due to the highly module design of the BB area, very few signals can be measured.



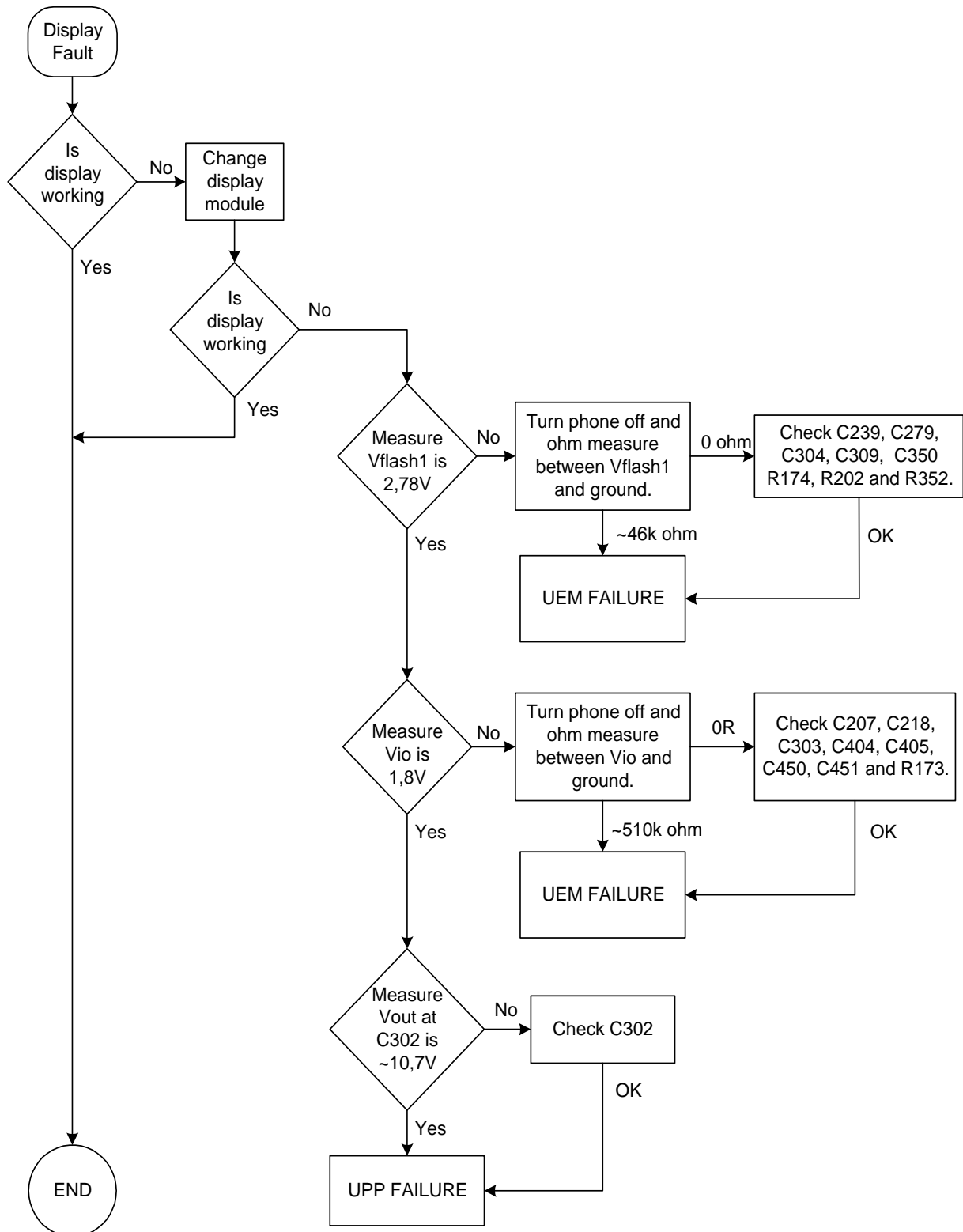
SIM Failure

The hardware of the SIM interface from UEM (D200) to the SIM connector (X386) can be tested without a SIM card. When the power is switched on the phone first check for a 1,8V SIM card and then a 3V SIM card. The phone will try this four times, whereafter it will display "Insert SIM card".

The error "SIM card rejected" means that the ATR message received from SIM card is corrupted, e.g. data signal levels are wrong. The first data is always ATR and it is sent from card to phone.

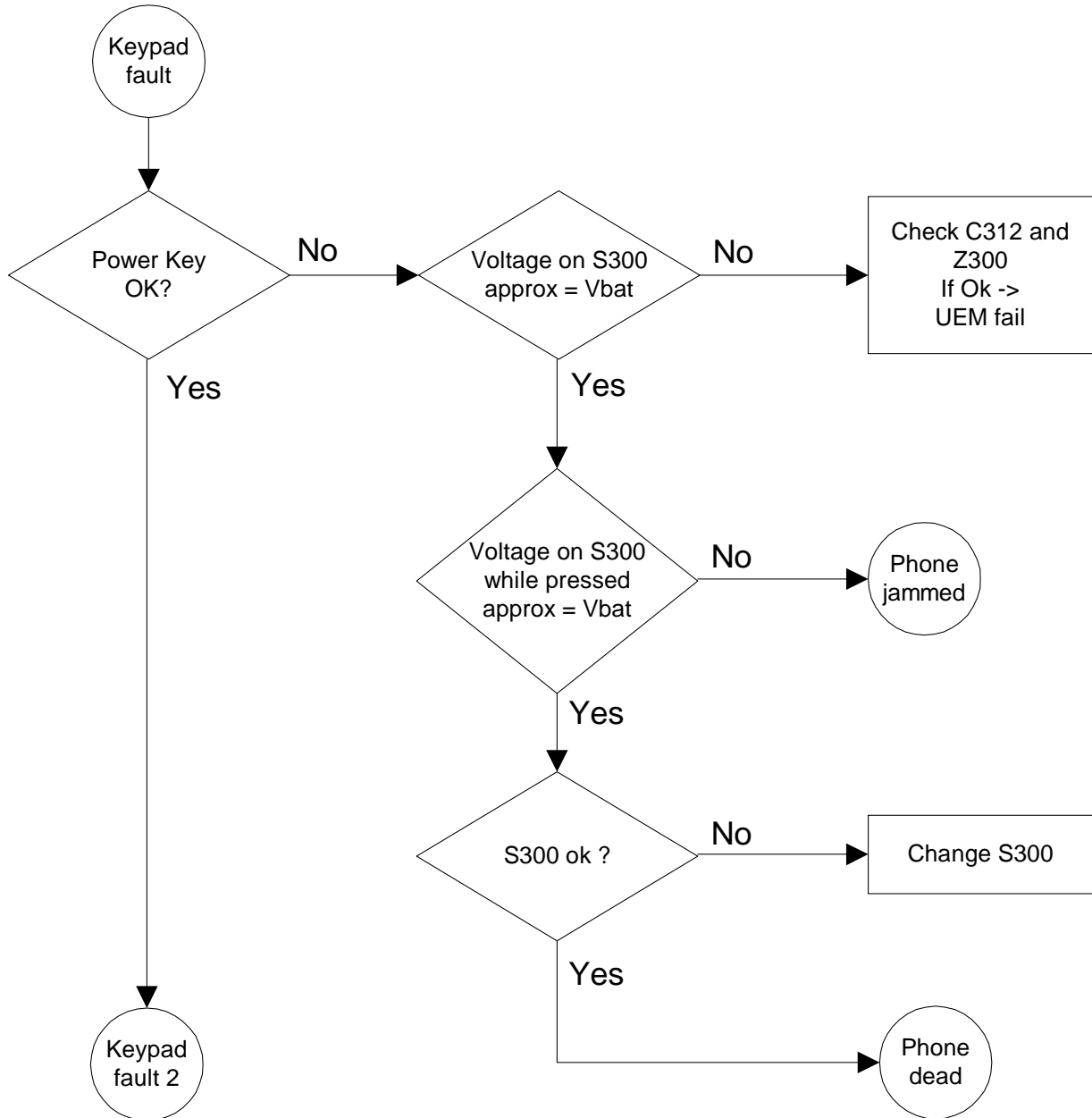


Display Failure

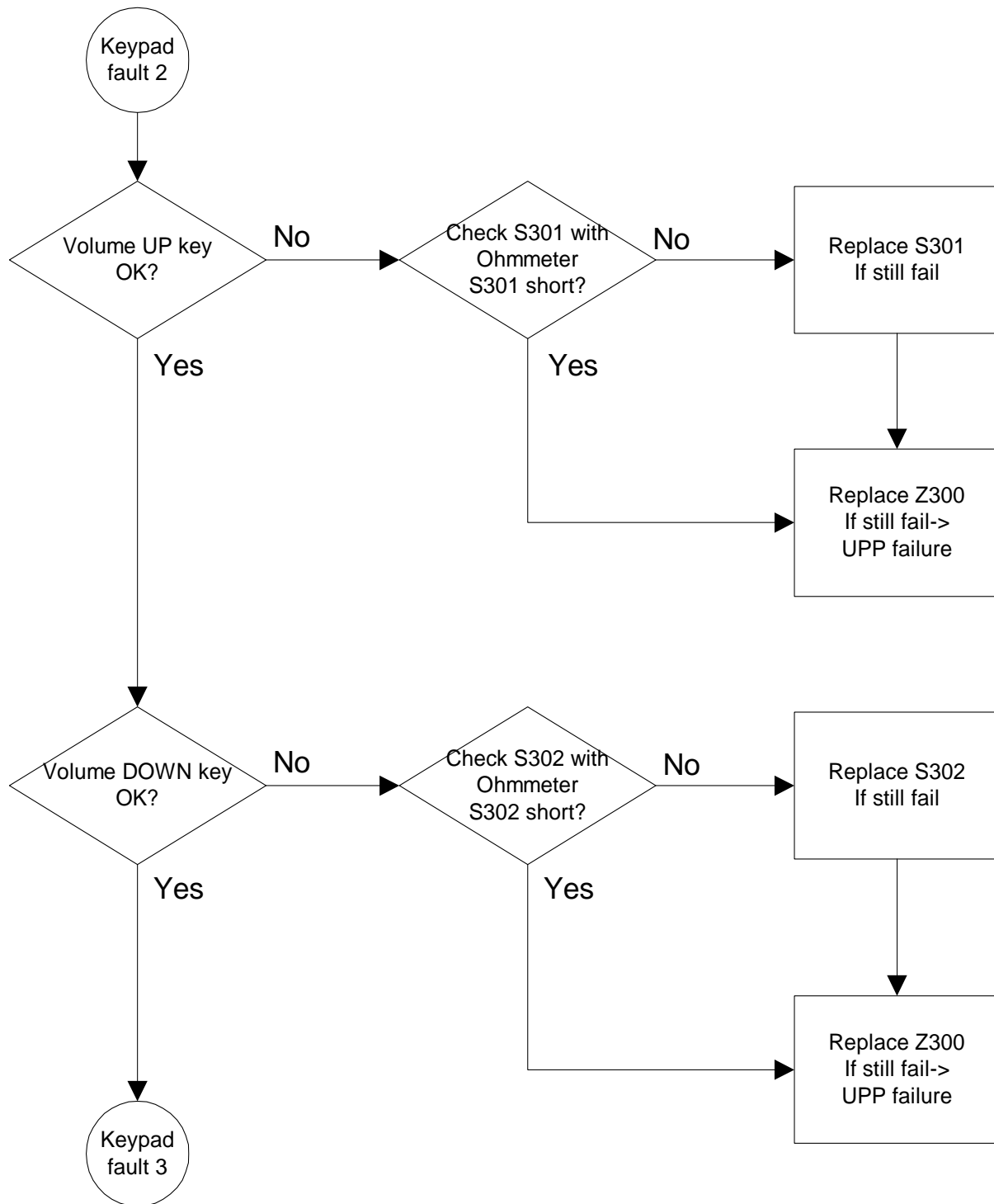


Keypad Failure

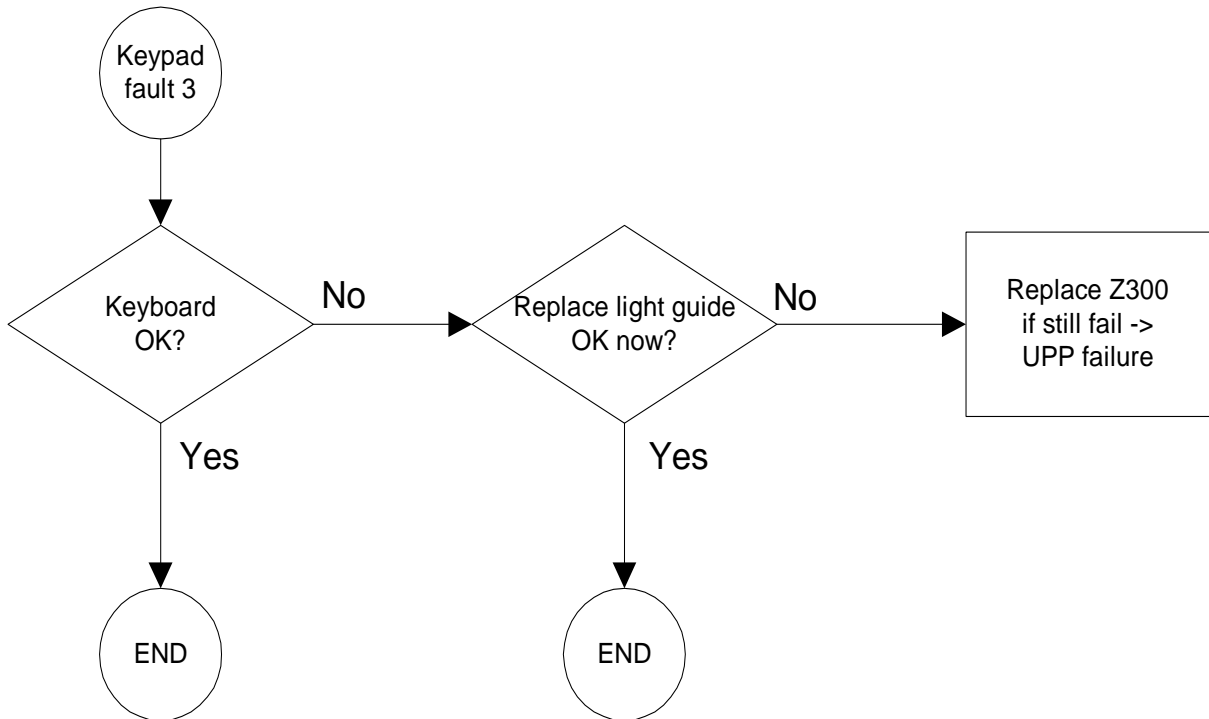
Power key failure



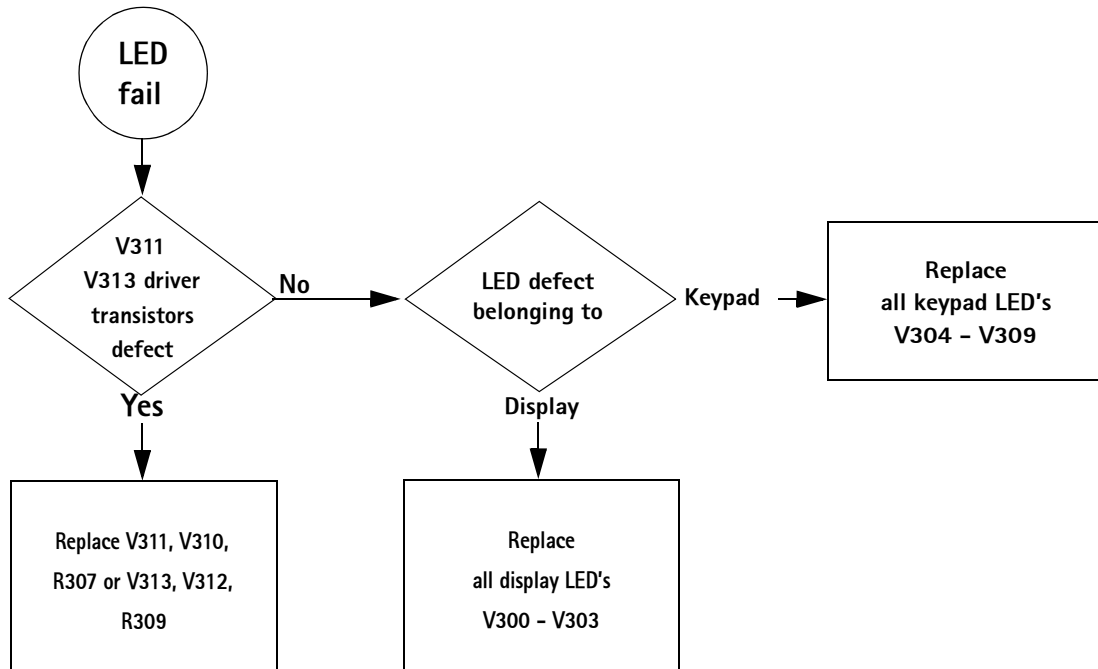
Volume key failure



Keyboard failure

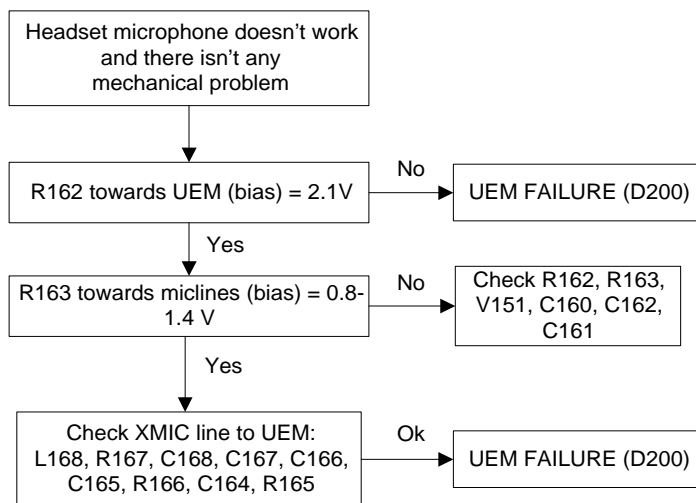
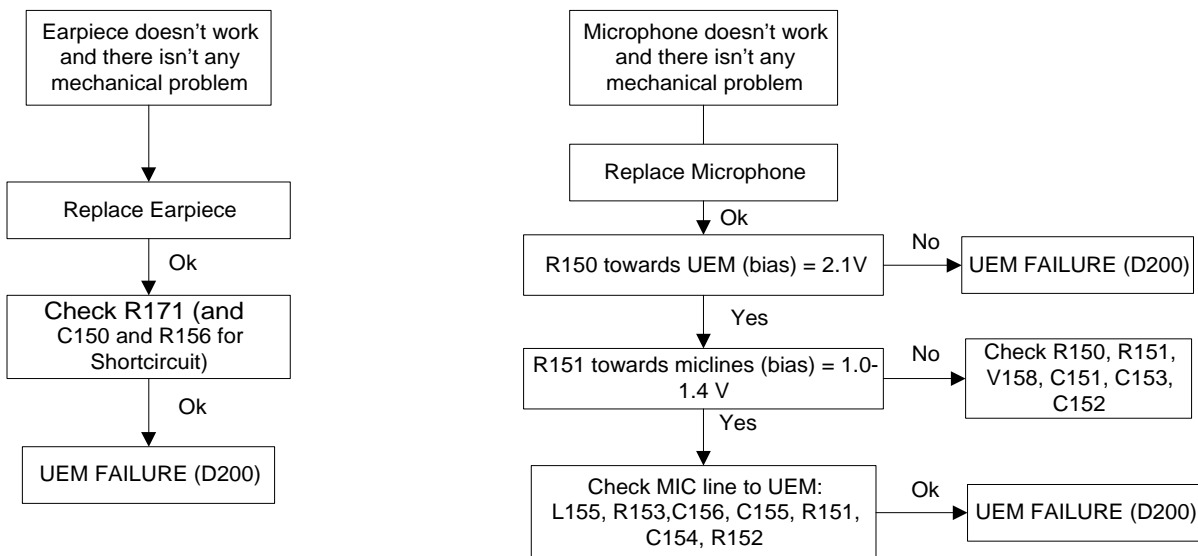


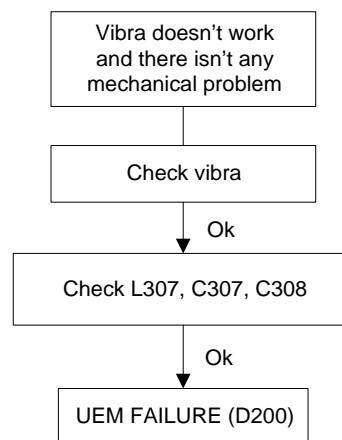
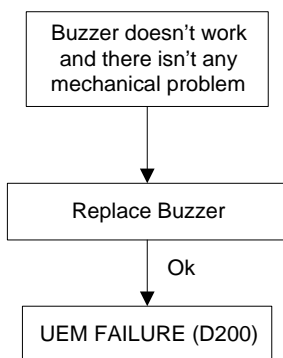
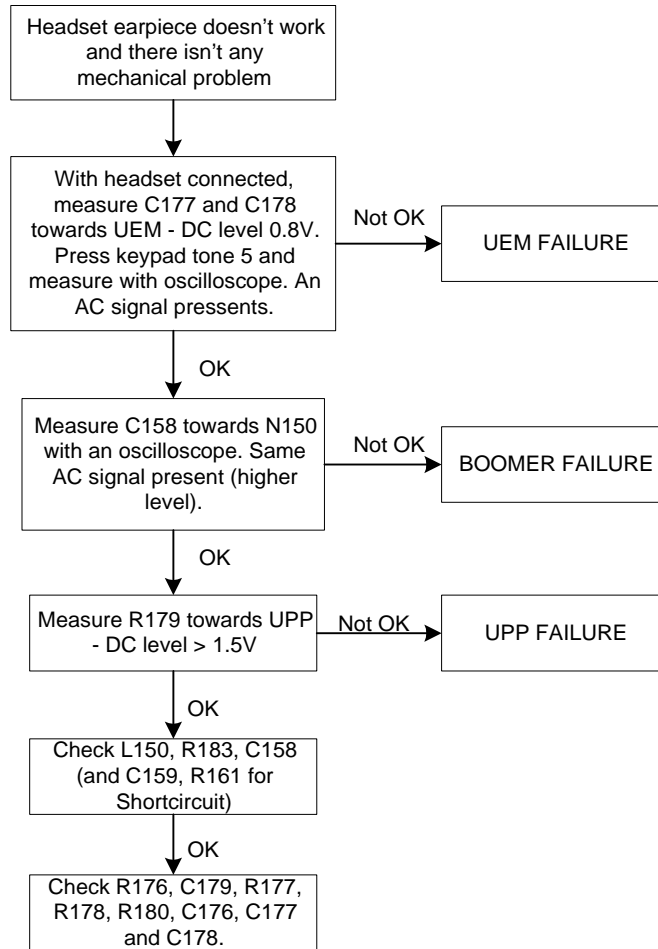
LED Faults



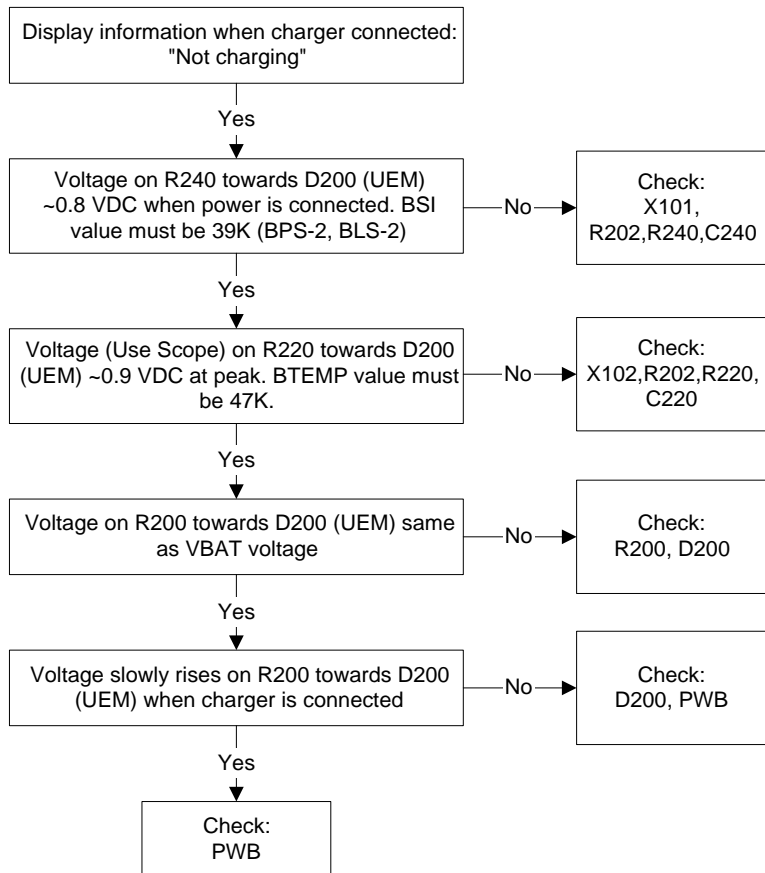
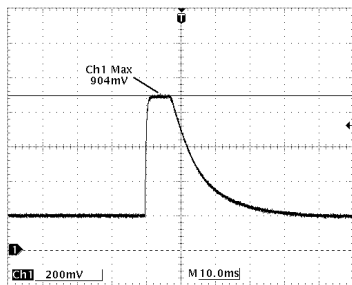
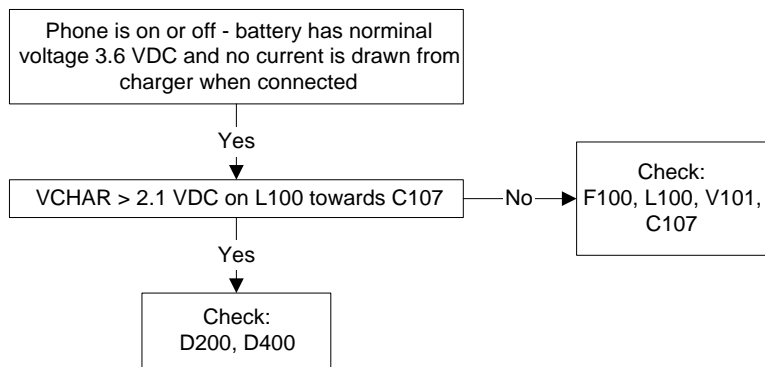
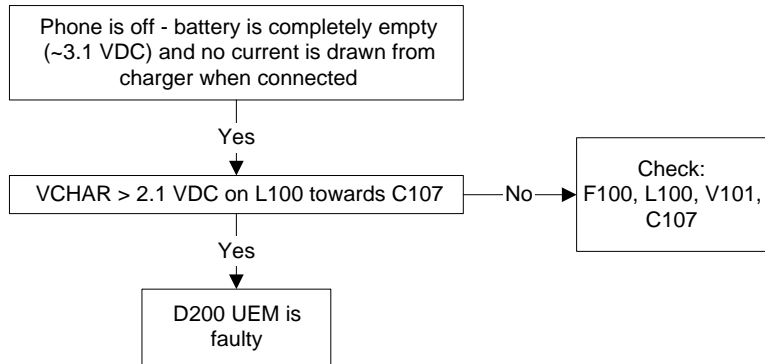
Audio faults

Note: L158 does not exist

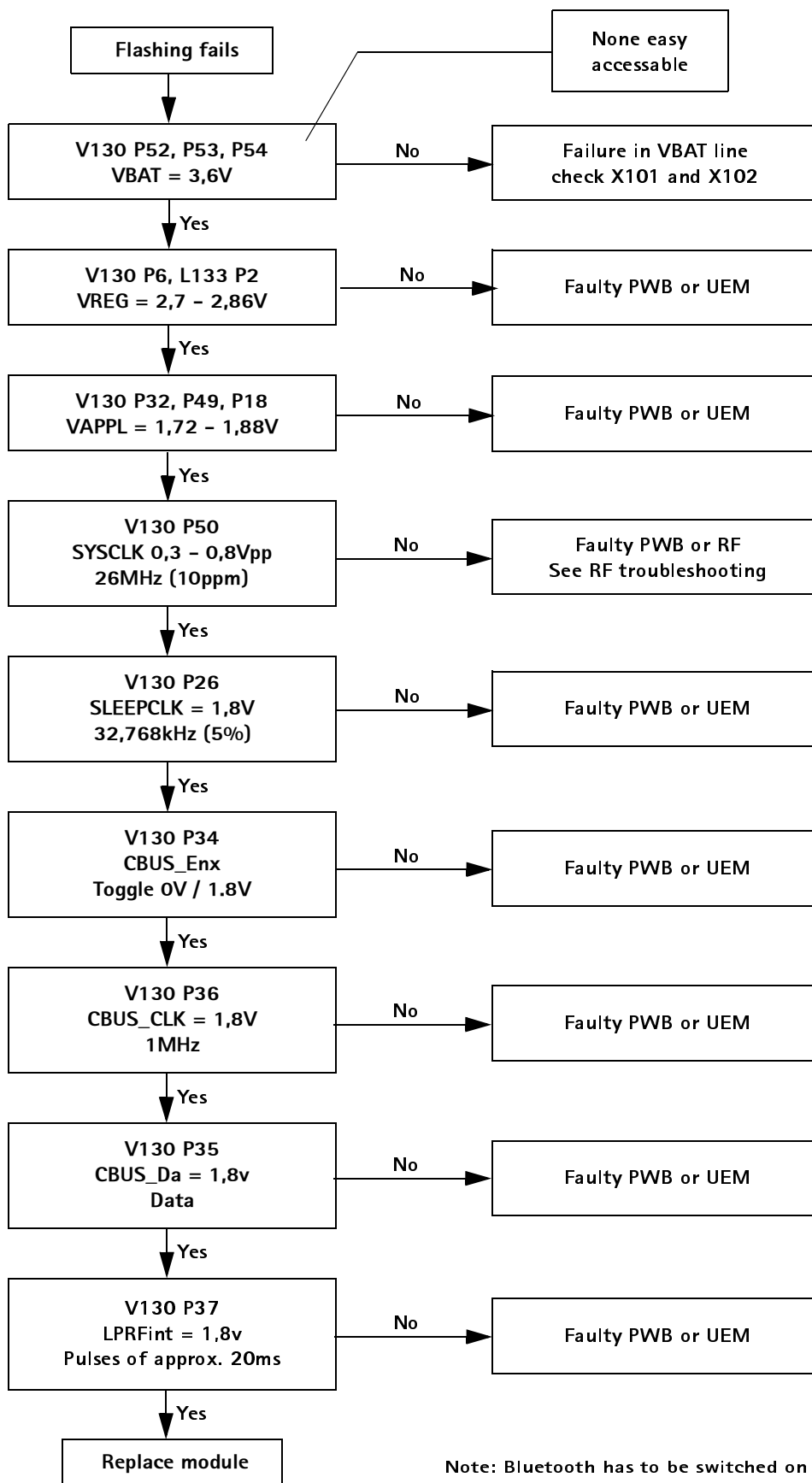




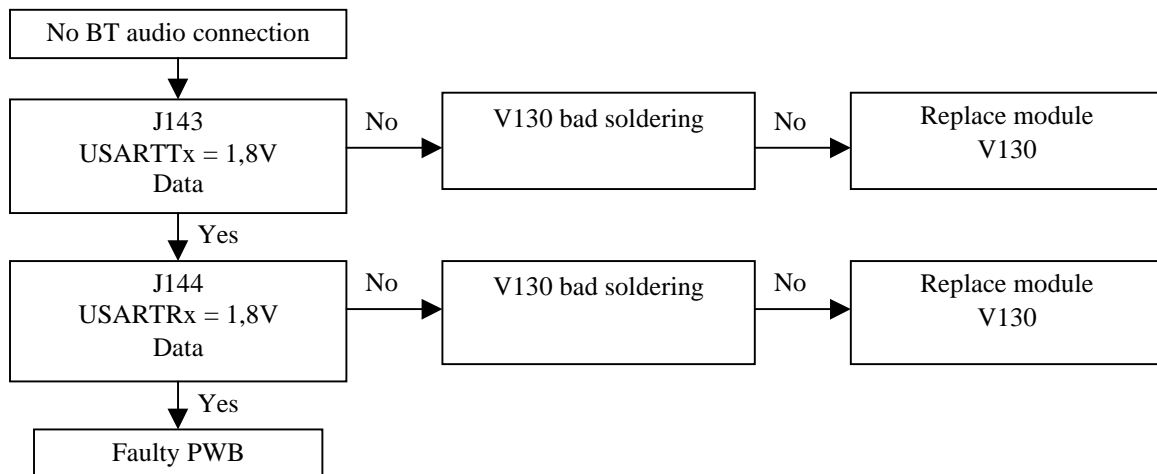
Charger failure

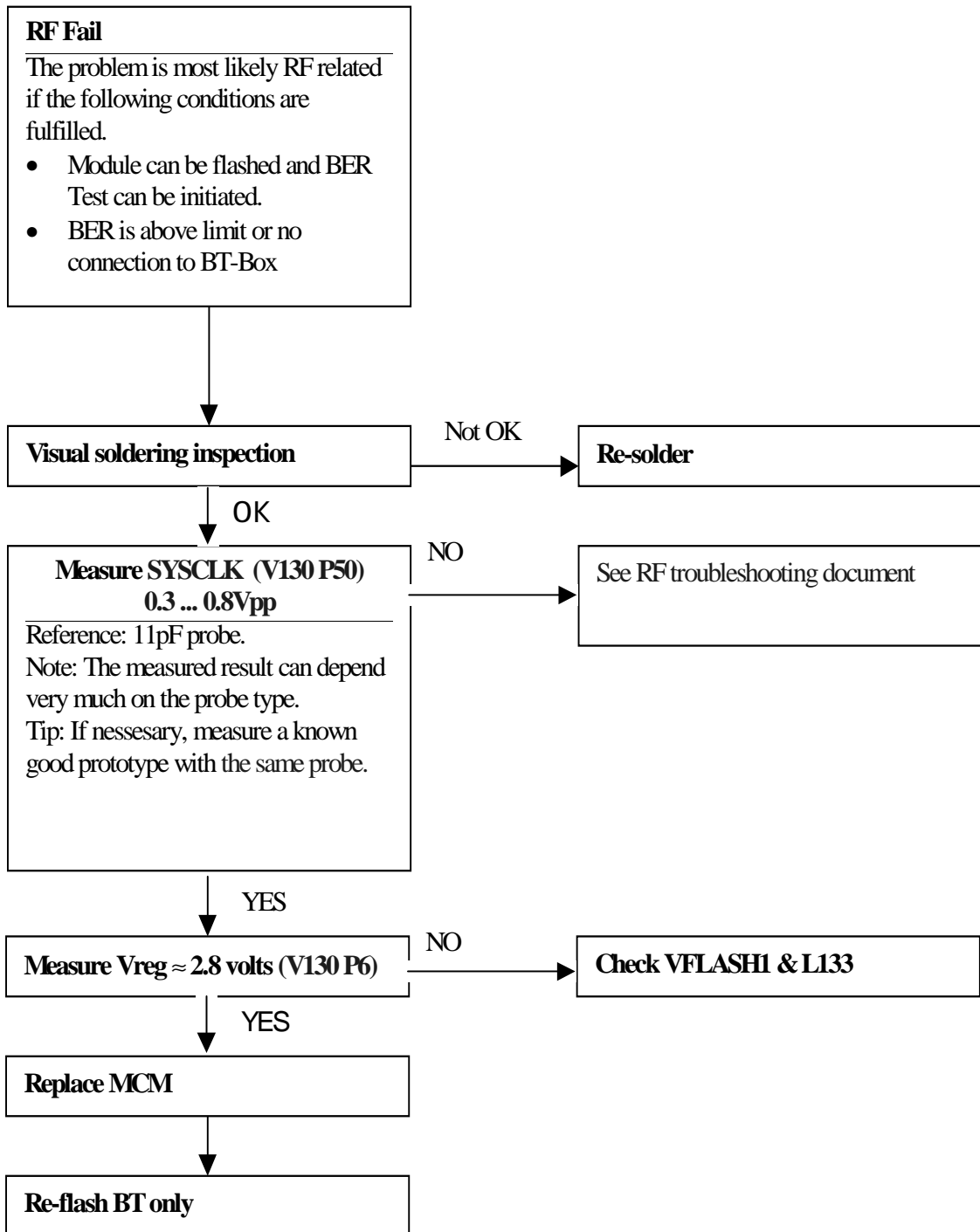


BlueTooth module faults



Note: Bluetooth has to be switched on (Phone UI)





Test points can be seen in the document "Baseband testpoints".