



Working Instruction, Electrical

Applicable for Z310

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1 Lead-free soldering

KEEP ALL CONTACT SURFACES CLEAN OF DIRT AND HAND GREASE!

THIS PRODUCT IS MANUFACTURED WITH LEAD-FREE SOLDER AND LEAD-FREE COMPONENTS!

During electrical repair, it is critical to make sure that no lead is introduced.

This symbol indicates that the product is lead- free.



All lead-free PBA's will be marked with this symbol.



A lead-free work area must be set up completely separated from work areas that are used to make lead repairs.

The lead-free work area must also be clearly labeled with the lead free symbol as shown in the adjacent picture.

The items on this desk must remain lead-free.

They must be adequately labeled to make their lead-free status clearly and easily recognized.





LFS (lead-free solder paste) characteristics:

High melting point (typically 220°C)

Low wettability

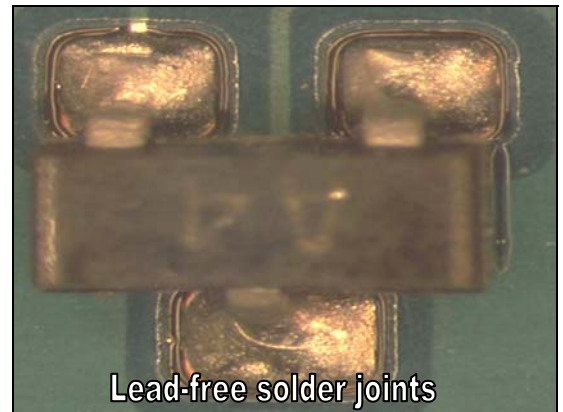
High surface tension

Difficult to spread

Recommended tip temperature = 370°C

WHEN SERVICING PBA'S THAT HAVE BEEN MANUFACTURED WITH LFS (LEAD-FREE SOLDER PASTE), LFS MUST BE USED. IF NOT, THERE IS A HIGH RISK FOR UNRELIABLE SOLDERING JOINTS.

Lead-free solder joints are more difficult to inspect because they do not have shiny surfaces like leaded solder joints. Also, lead-free solder does not flow as well as leaded solder, so some of the solder pad areas may remain exposed.



2 BGA equipment reflow profiles

2.1 General

This document contains reflow profile recommendations for mobile phones and similar products.

They are just general recommendations and considerations have to be taken for every single product.

The solder paste is secondary but could also affect the parameters.

In this document one alloy is specified:

SnAgCu (Lead free) melting point 217°C

2.2 Temperature measurement

At least four probes should be used.

They should be placed on components with the highest and lowest thermal mass.

The probes shall be located in the beginning, in the middle and at the end of the board/panel.

It is recommended that the probes are soldered on the board, but glue and capton tape could also be used, if necessary.

At least one probe shall be placed in the air or on top of a component.

These values are strongly depending on the BGA replacement equipment.

Nozzle type will be chosen after the outer size of the actual component.

Make sure the nozzle does not affect any nearby placed components.

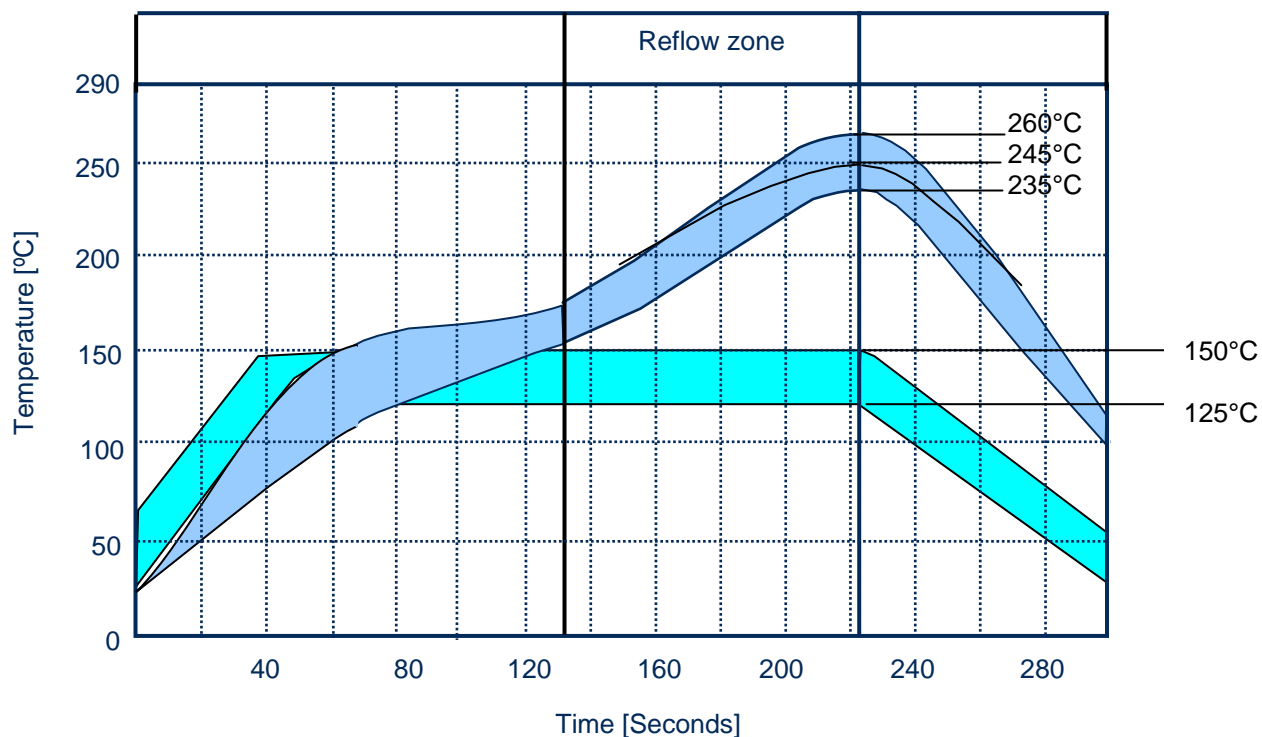
These values are recommendations and may have to be changed depending on the type of equipment.

The maximum temperature for any component must not exceed 250°C.



2.3 Reflow profiles

Sn/Ag/Cu (lead-free)



Ramp rate	< 4°C/sec
Ramp rate cooling zone	< 6°C/sec
Time above liquidus	60-150 sec
Minimum temperature	235°C
Maximum temperature	245°C or 260°C* for 10 sec
Bottom heat temperature	125°C-150°C
Total time	Approx. 4-7 min

* The higher temperature in case the board has extremely high ΔT .

3 Replacement of components

EQUIPMENT

- Dentist hook
- ESD-gloves (cotton gloves)
- ESD-wristband
- Soldering tool
- Hot air soldering station
- BGA replacement equipment
- Pair of tweezers
- Solder cleaning wiper (tin wick)
- Solder paste lead-free (SN 96% Ag 3.5% Cu 0.5%)
- Flux, RMA no-clean flux
- Cutting pliers
- Shield fence pliers NTZ 112 537

CAUTION

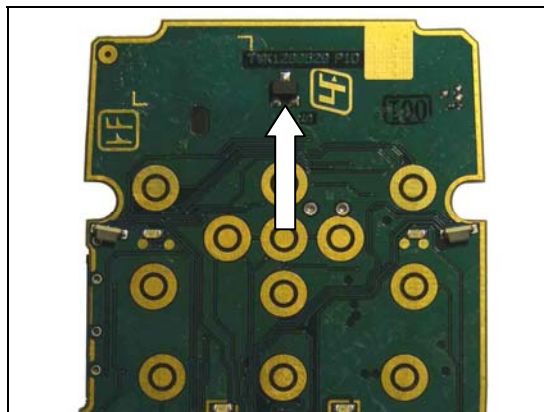
- ***Keep all contact surfaces clean of dirt and hand-grease!***

MECHANICAL INSTRUCTIONS

For all the following part replacements, disassemble and assemble the phone as described in *Working Instruction 3/00021-1/FEA 209 544/125*.

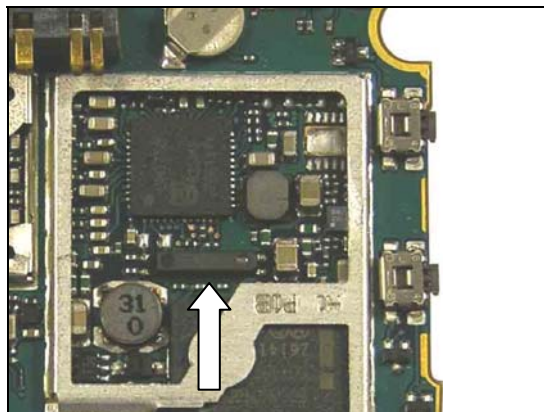
3.1 B2032: MICROCIRCUIT

Use a hot air equipment or soldering iron to remove *B2032*.
Replace it with soldering iron.



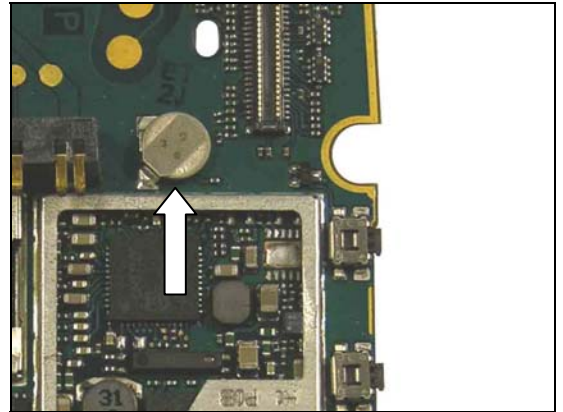
3.2 B5506: QUART CRYSTAL UNIT

Use a hot air equipment to remove *B5506*.
Replace it with soldering iron.



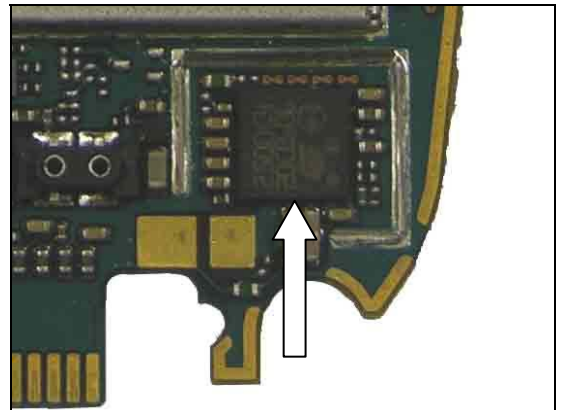
3.3 C0699: CAPACITOR

Use BGA equipment to replace *C0699*.



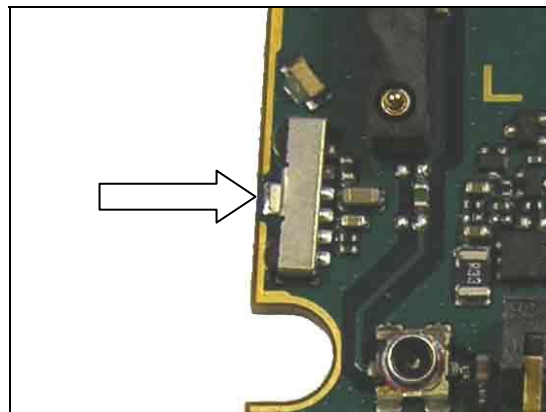
3.4 D2599: MICROCIRCUIT

Use BGA equipment to replace *D2599*.



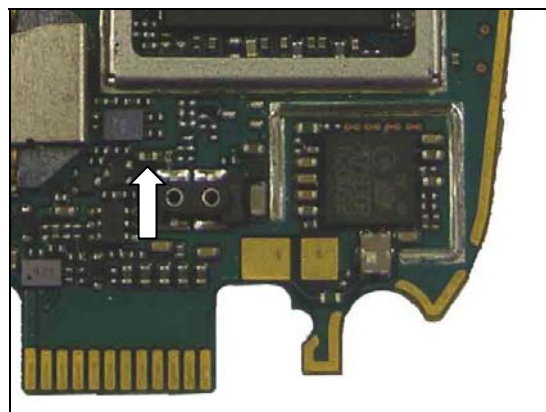
3.5 H2701: DIODE BRIDGE

Use a hot air equipment to remove *H2701*.
Replace it with soldering iron.



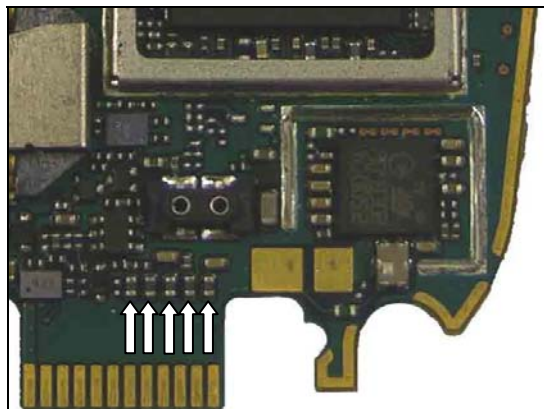
3.6 L2248: EMI FILTER

Use BGA or hot air equipment to replace *L2248*.



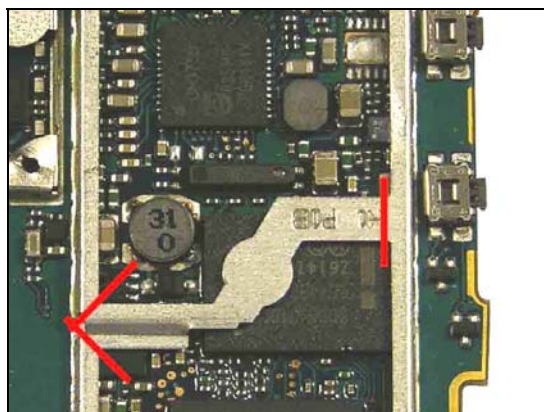
3.7 L2601-L2605: EMI FILTER

Use BGA or hot air equipment to replace *L2601-L2605*.

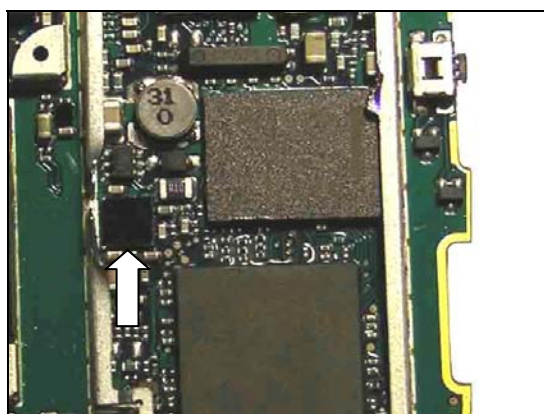


3.8 N1401: MICROCIRCUIT

Cut the fence according to the red lines in the picture.

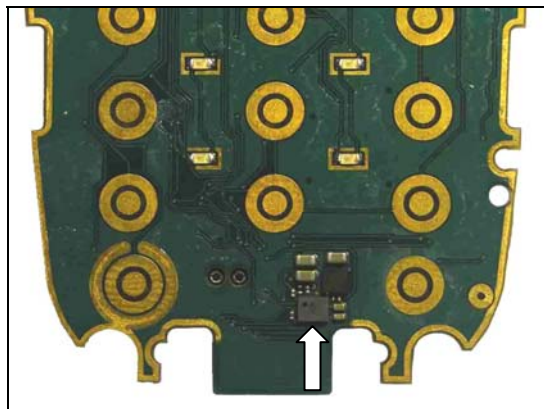


Use BGA equipment to replace *N1401*.



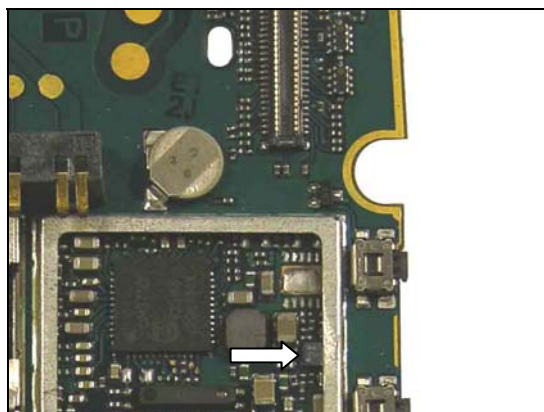
3.9 N2203: PROD. ADAPT. CIRCUIT

Use BGA or hot air equipment to replace N2203.



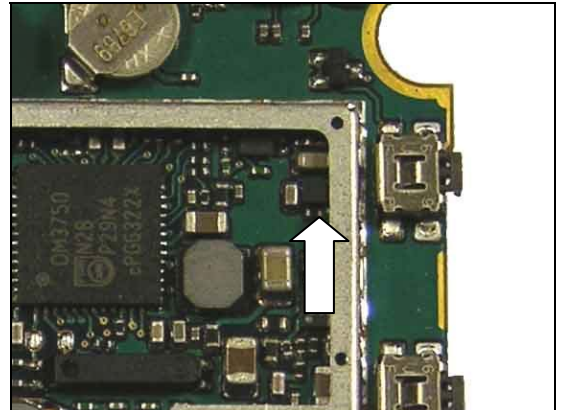
3.10 N2249: MICROCIRCUIT

Use hot air equipment to replace N2249.



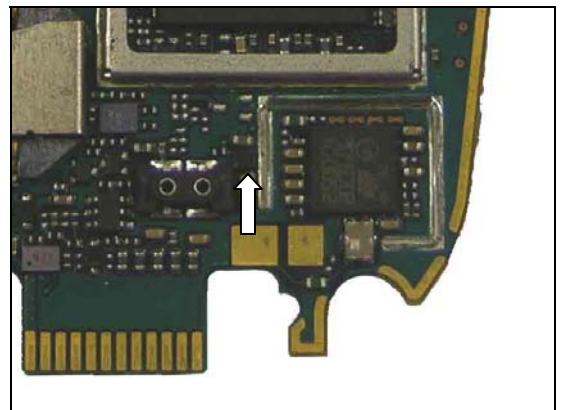
3.11 N2326: MICROCIRCUIT

Use hot air equipment to replace *N2326*.



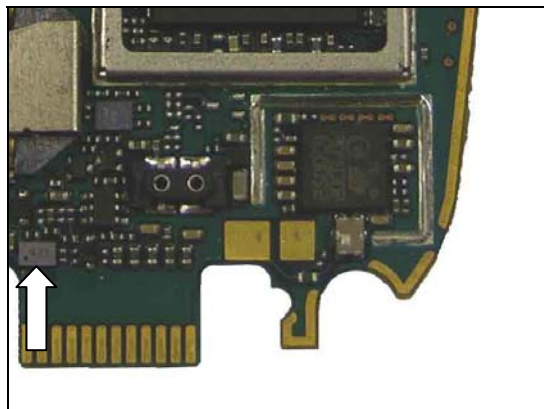
3.12 N2503: MICROCIRCUIT

Use hot air equipment to replace *N2503*.



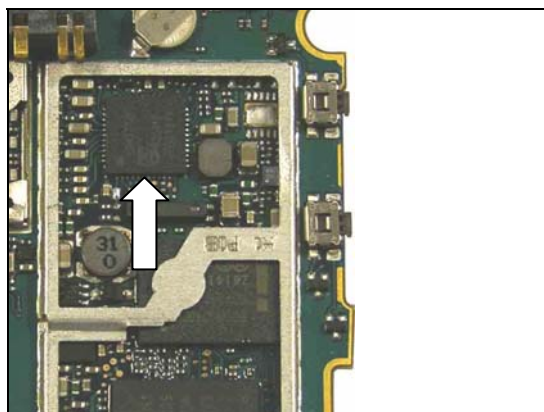
3.13 N2602: DIODE BRIDGE

Use hot air equipment to replace *N2602*.



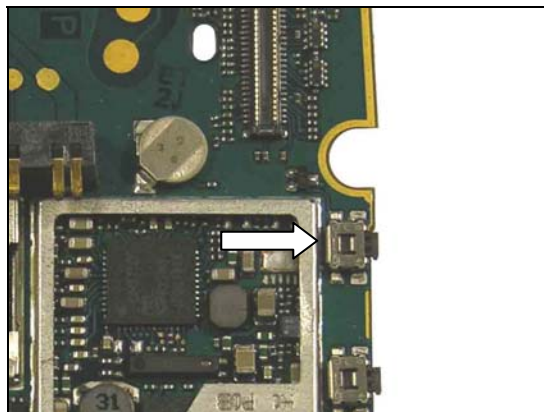
3.14 N7520: PROD. ADAPT. CIRCUIT

Use BGA equipment to replace *N7520*.



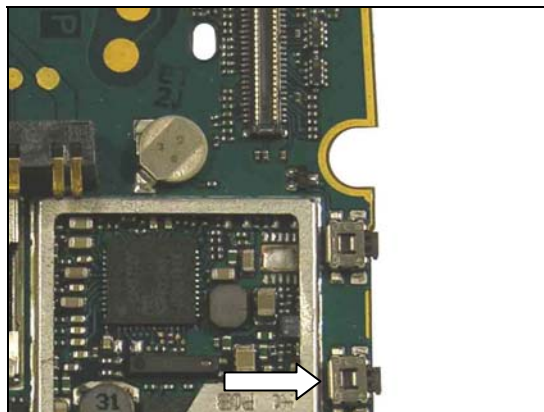
3.15 S2011: SWITCH

Use hot air equipment to remove S2011.
Replace it with soldering iron.



3.16 S2012: SWITCH

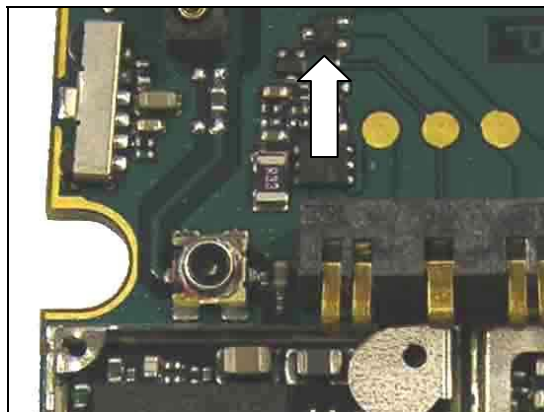
Use hot air equipment to remove S2012.
Replace it with soldering iron.



3.17 V0302: DIODE

Use hot air equipment or soldering iron with removal tip to remove V0302.

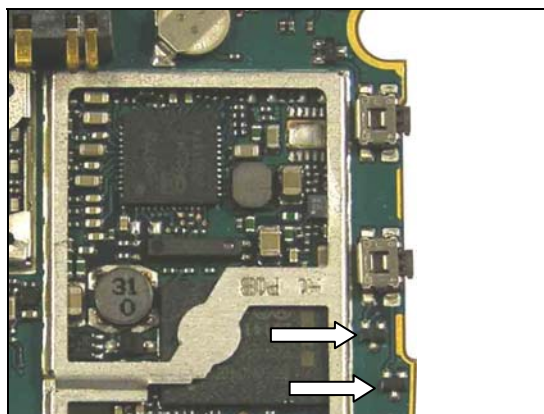
Replace it with soldering iron.



3.18 V2001/V2002: DIODE

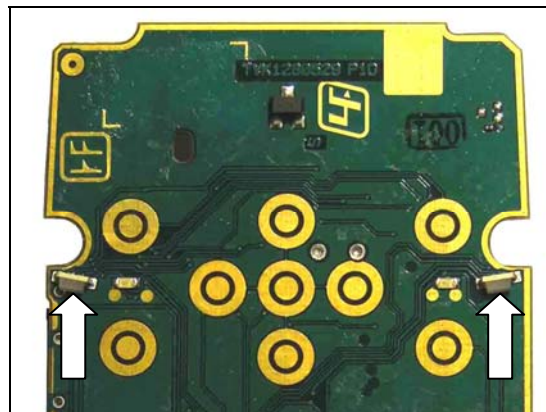
Use hot air equipment or soldering iron with removal tip to remove V2001/V2002.

Replace it with soldering iron.



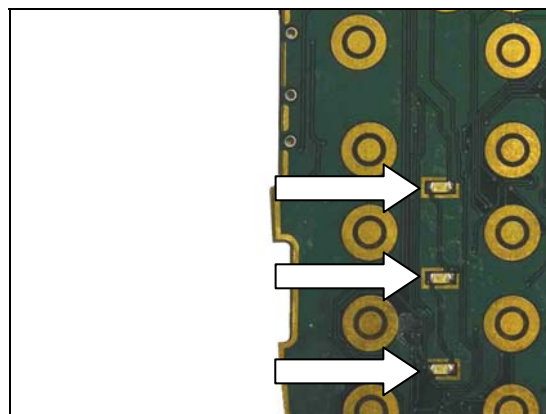
3.19 V1401/V1402: LIGHT EMITTING DIODE

Use hot air equipment to remove V1401/V1402.
Replace it with soldering iron.



3.20 V1403-V1405: LIGHT EMITTING DIODE

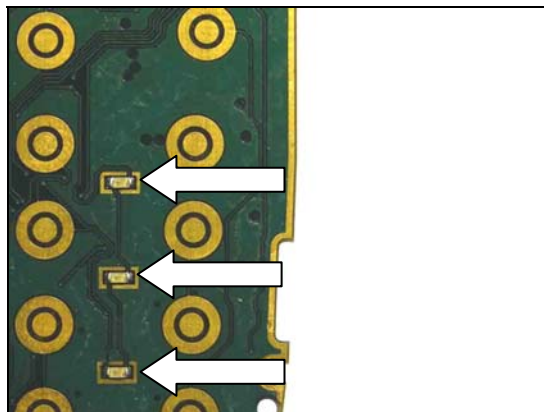
Use hot air equipment or soldering iron to remove V1403-V1405.
Replace it with soldering iron.



3.21 V1406/V1408: LIGHT EMITTING DIODE

Use hot air equipment or soldering iron to remove V1406-V1408.

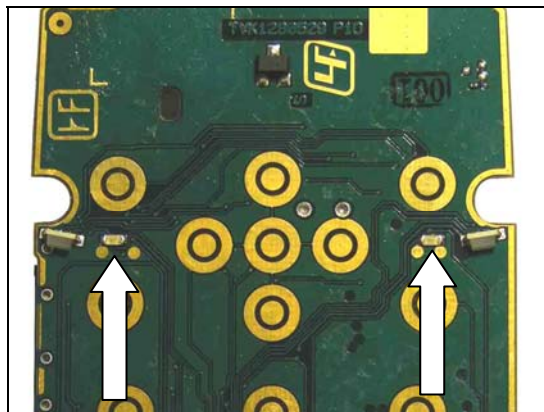
Replace it with soldering iron.



3.22 V1409-V1410: LIGHT EMITTING DIODE

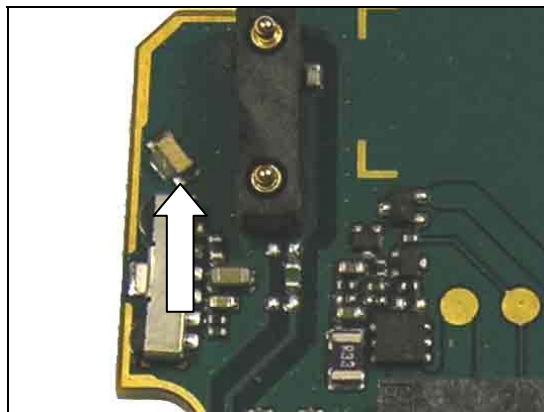
Use hot air equipment or soldering iron to remove V1409-V1410.

Replace it with soldering iron.



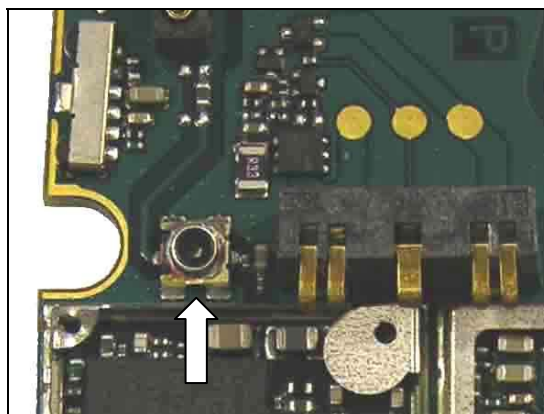
3.23 V1414: LIGHT EMITTING DIODE

Use hot air equipment or soldering iron to remove V1414.
Replace it with soldering iron.



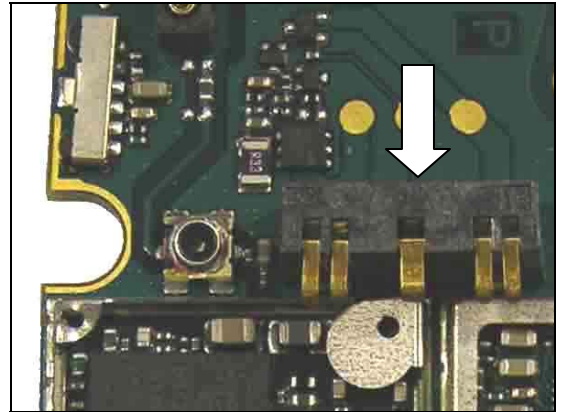
3.24 W5301: CONNECTOR

Use hot air equipment to remove W5301.
Replace it with soldering iron.



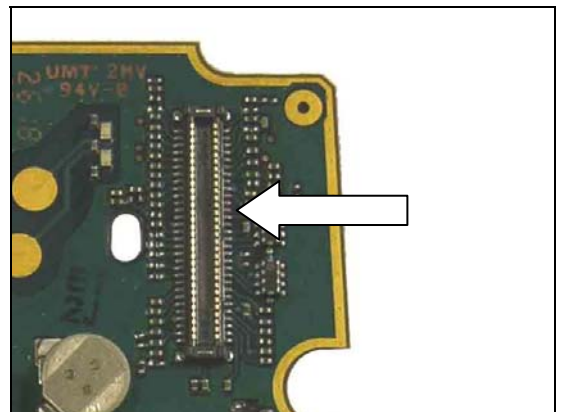
3.25 X0616: FLAT PIN

Use BGE equipment to replace X0616.



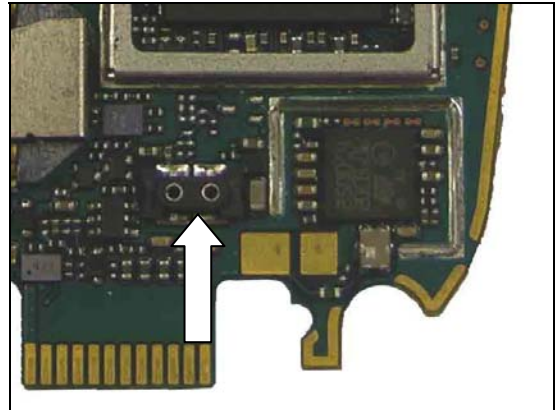
3.26 X1201: CONNECTOR

Use BGA equipment to replace X1201.



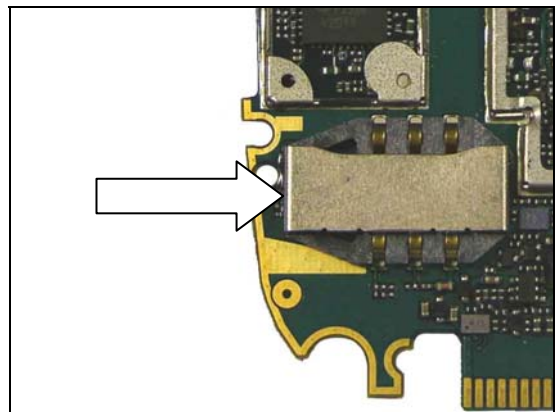
3.27 X2201: COMPONENT HOLDER

Use hot air equipment to remove X2201.
Replace it with soldering iron.



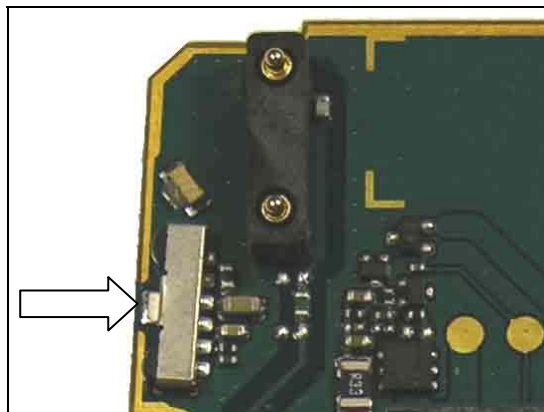
3.28 X2500: SIM READER

Use BGA equipment to replace X2500.



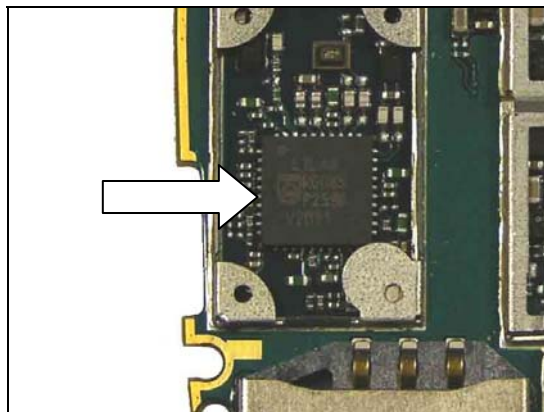
3.29 X5300: CONNECTOR

Use hot air equipment to remove *X5300*.
Replace it with soldering iron.



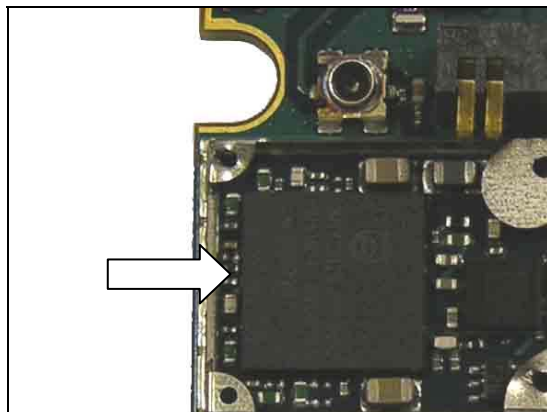
3.30 N5000: PROD. ADAPT. CIRCUIT

Use BGA equipment to replace *N5000*.
Use SERP to RF calibrate the phone.



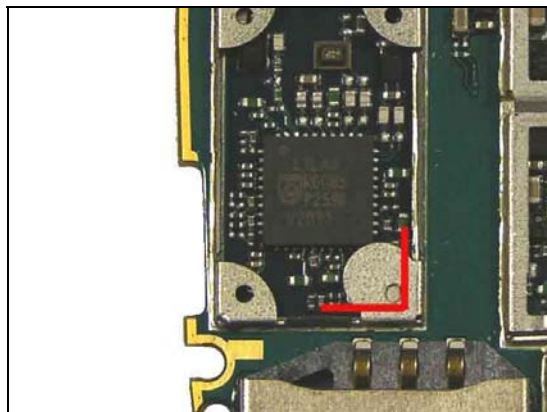
3.31 N5700: MICROCIRCUIT

Use BGA equipment to replace *N5700*.
Use SERP to RF calibrate the phone.

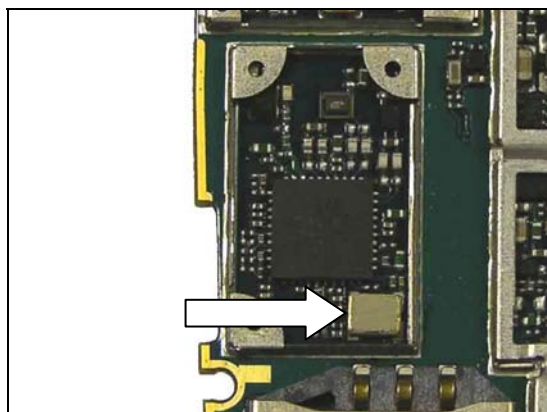


3.32 N7200: OSCILLATOR

Cut the fence according to the red lines in the picture.

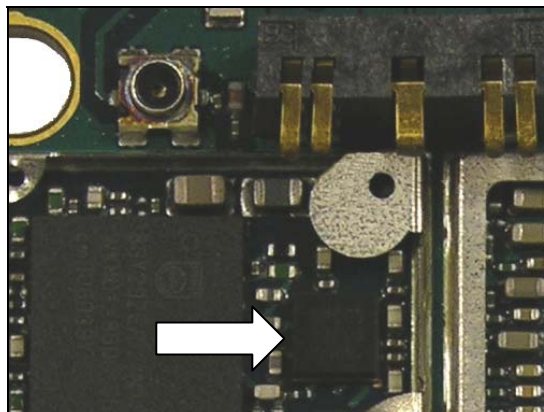


Use hot air equipment to replace *N7200*.
Use SERP to RF calibrate the phone.



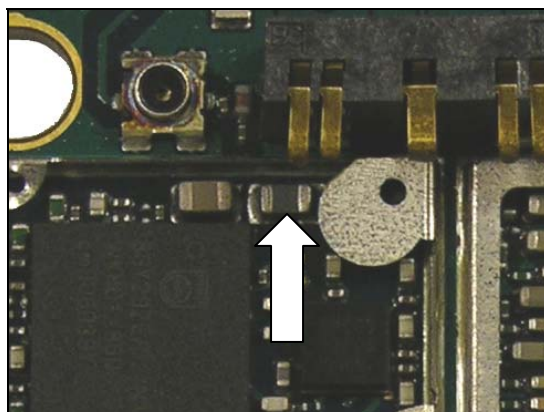
3.33 N5301: MICROCIRCUIT

Use BGA or hot air equipment to replace *N5301*.
Use SERP to RF calibrate the phone.



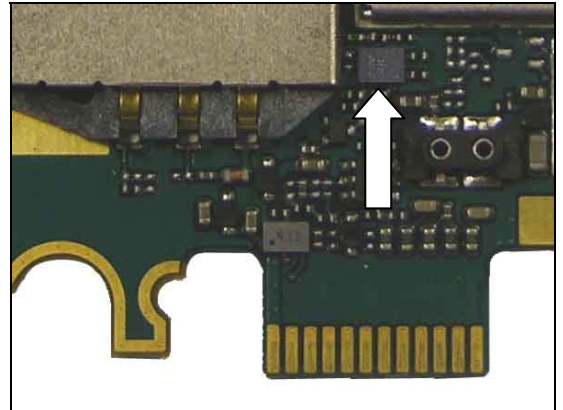
3.34 L5707: CHOKE

Use hot air equipment to remove *L5707*.
Replace it hot air equipment or soldering iron.
Use SERP to RF calibrate the phone.



3.35 N2601: Dual Analogue switch

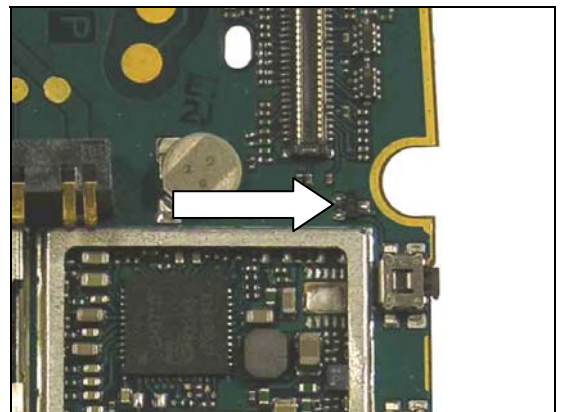
Use hot air equipment to replace *N2601*.



3.36 V2008: Diode/SW1*2

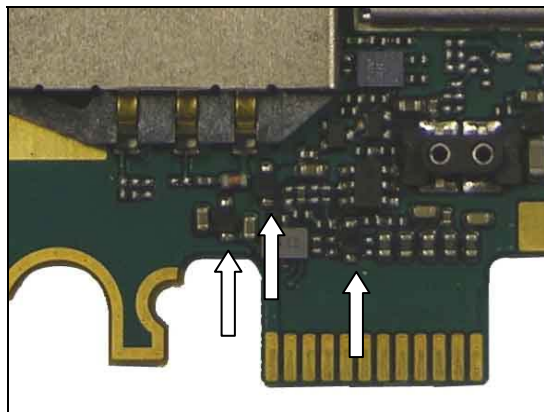
Use hot air equipment or soldering iron with removal tip to remove *V2008*.

Replace it with soldering iron.



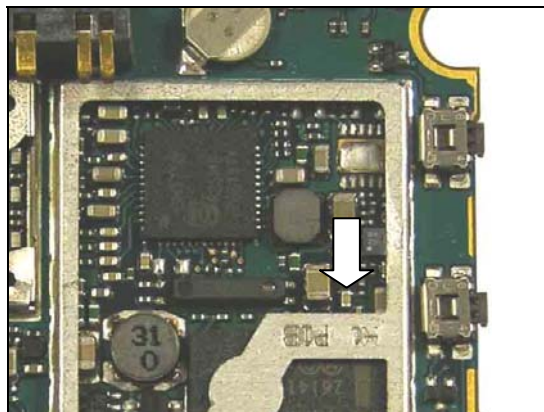
3.37 V0301/V0609/V2611: ESD protector 5,6V

Use hot air equipment to remove V0301/V0609/V2611.
Replace it with soldering iron.



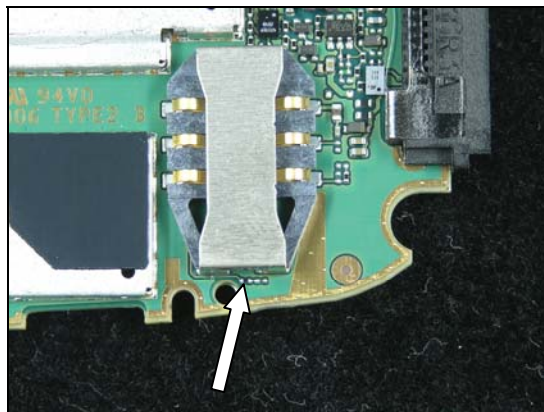
3.38 C2235: CAPACITOR

Use hot air equipment to remove C2235.
Replace it with hot air equipment or soldering iron.



3.39 R1523: RESISTOR

Use hot air equipment to remove *R1523*.
Replace it with hot air equipment or soldering iron.



4 Revision history

Rev.	Date	Changes / Comments
A	2007-02-14	First release
B	2007-02-20	Component, with position X2500, updated with a new name. New name: SIM READER.
C	2007-09-05	R1523 added