



Working Instruction, Electrical

Applicable for Z750

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1 Read this first!

- ***Before you start replacing any components, make sure you have read and fully understood the contents of section 2 and 3!***
- ***Also make sure you have access to the Mechanical Working Instruction and the Equipment Lists described on the first page of section 4!***
- ***Use Electrostatic Discharge (ESD) equipment to avoid damaging the PBA.***
- ***Use gloves or finger cots to avoid contaminating the PBA with skin oil.***



2 Lead-free soldering

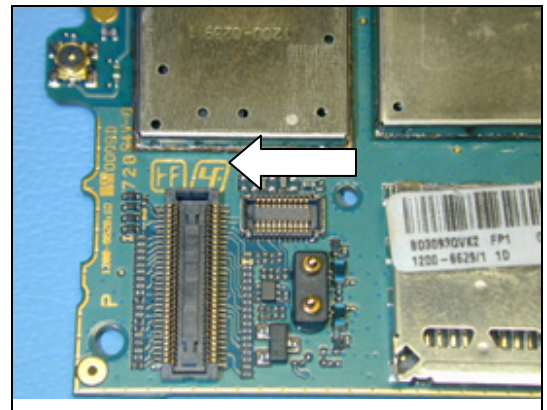
THIS PRODUCT IS MANUFACTURED WITH LEAD-FREE SOLDER AND LEAD-FREE COMPONENTS!

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

This symbol indicates that the product is lead-free.



The lead-free symbol is located on the PCB as shown.



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.





Lead-free soldering *continued*

LFS (lead-free solder) characteristics:

- High melting point (typically 217°C)
- Low wetting
- High surface tension
- Difficult to spread
- Recommended tip temperature = 370°C

WHEN SERVICING PBAs THAT HAVE BEEN MANUFACTURED WITH LFS (LEAD-FREE SOLDER), LFS MUST BE USED! IF NOT, THERE IS A HIGH RISK OF 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.



3 BGA equipment reflow profiles

3.1 General

This section 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 is secondary but could also affect the parameters.

In this document one alloy is specified: SnAgCu (Lead free) melting point 217°C

3.2 Temperature Measurements

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 Kapton tape can be used.

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.

A nozzle type will be chosen based on the outer size of the actual component.

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

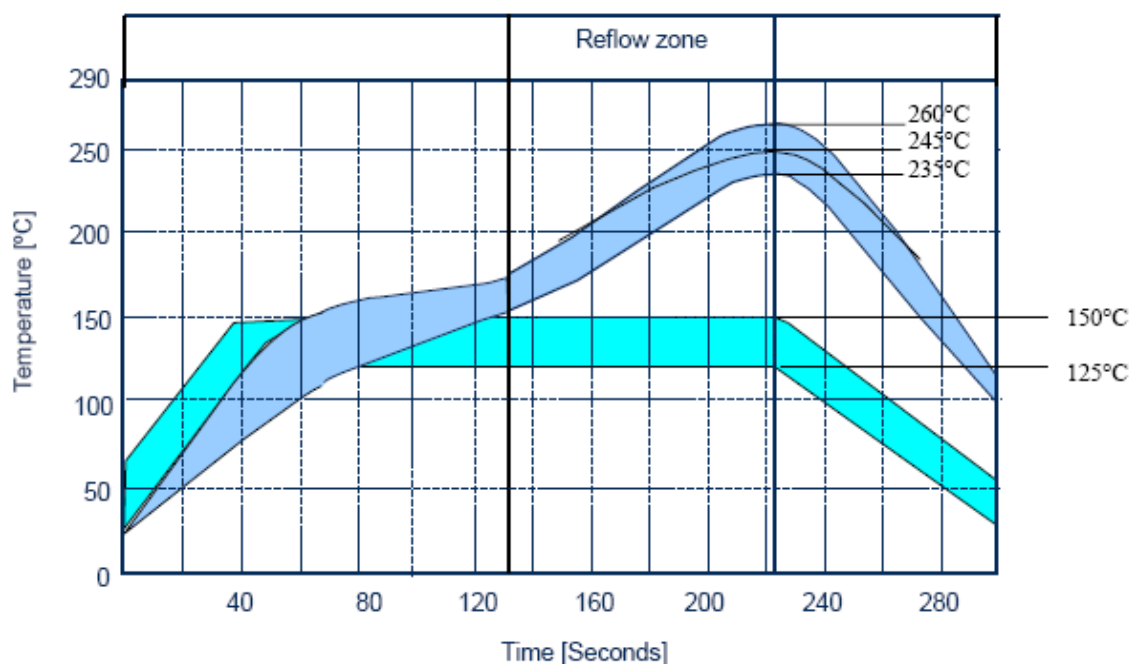
THESE VALUES ARE RECOMMENDATIONS AND MAY HAVE TO BE CHANGED DEPENDANT ON THE TYPE OF EQUIPMENT!

THE MAXIMUM TEMPERATURE FOR ANY COMPONENT MUST NOT EXCEED 260°C!



3.3 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. (the higher temperature in case the board has extremely high ΔT)
Bottom heat temperature	125°C-150°C
Total time	Approx. 4-7 min

4 Replacement of components

CAUTION

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

EQUIPMENT

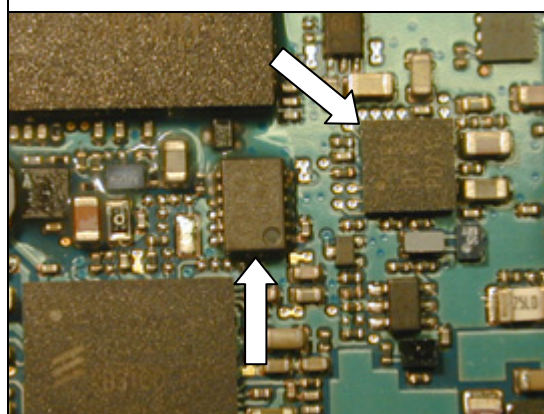
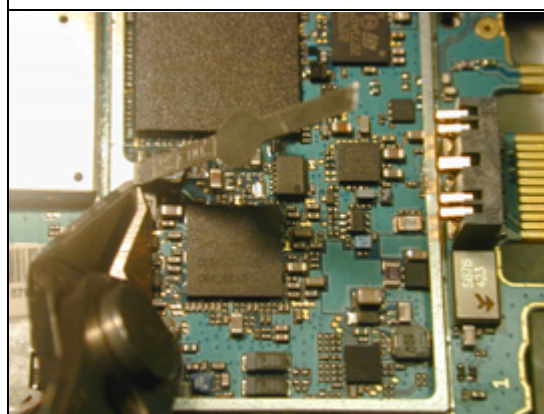
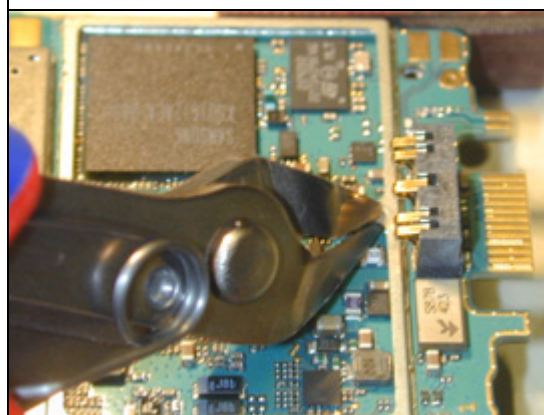
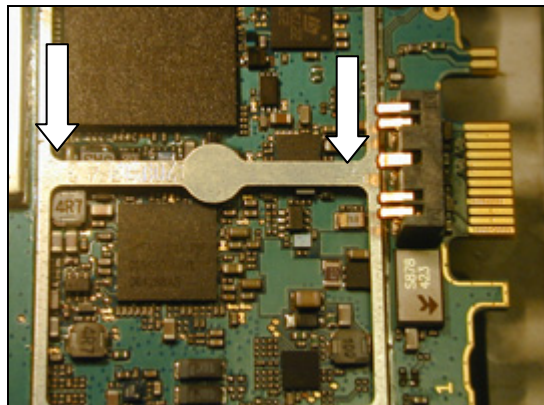
For equipment information, refer to the Electrical and Mechanical Equipment Lists.

MECHANICAL INSTRUCTIONS

For phone disassembly and reassembly information, refer to the Mechanical Working Instruction.

4.1 B2101, D2404:

The parts at these positions are under a cross bar. Cut the ends of the cross bar and remove the metal piece.

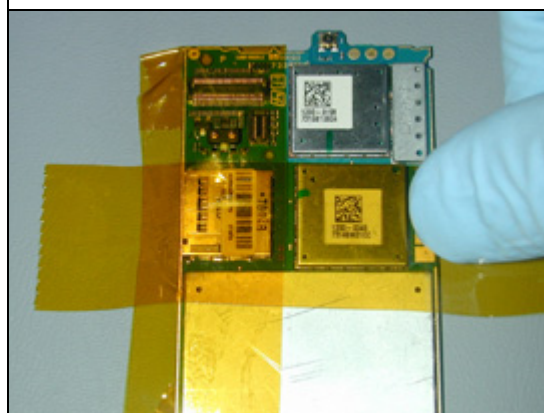


4.2 N1200:

Apply heat-resistant tape to the left side.



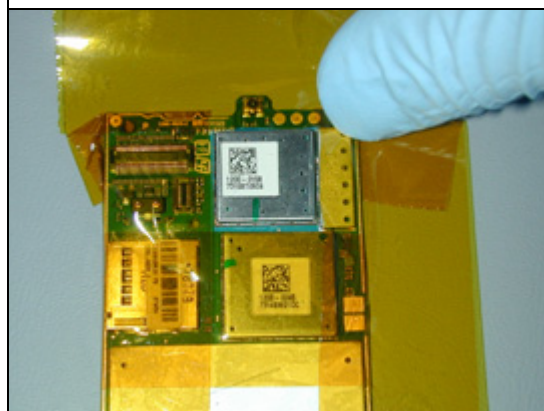
Apply heat-resistant tape to the bottom side.



Apply heat-resistant tape to the right side.



Apply heat-resistant tape to the top side.

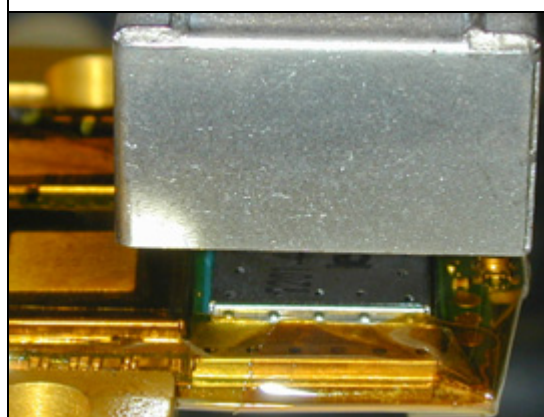


4.3 N1200 Continued:

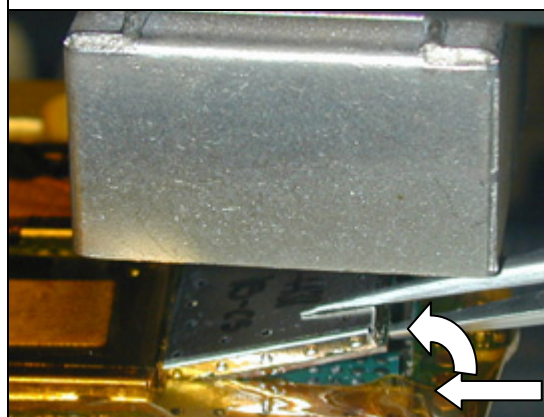
Make sure all adjacent components protected.



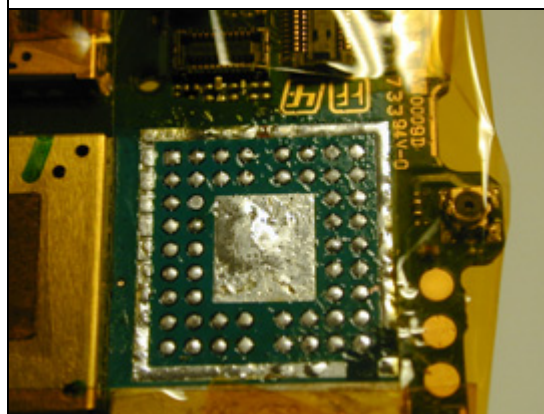
Apply hot air to heat the solder.



Insert tweezers from the top end of the board (the end with the RF test connector) and pry the module up.

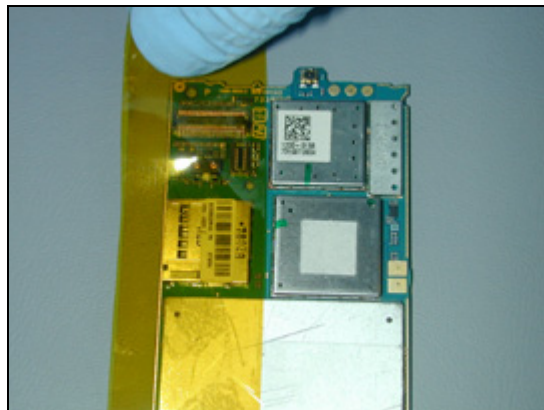


Remove excess solder and clean the pads, then apply flux and mount the new part.

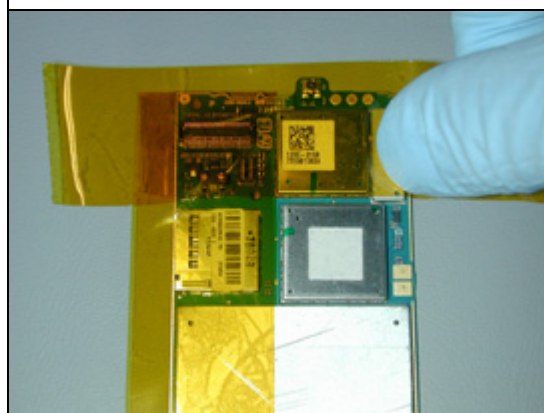


4.4 N1210:

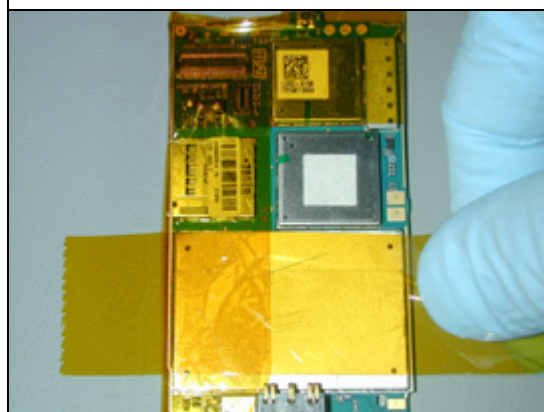
Apply heat-resistant tape to the left side.



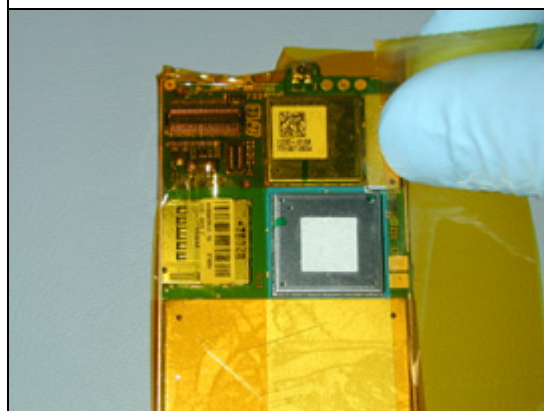
Apply heat-resistant tape to the top side.



Apply heat-resistant tape to the bottom side.



Apply heat-resistant tape to the right side.

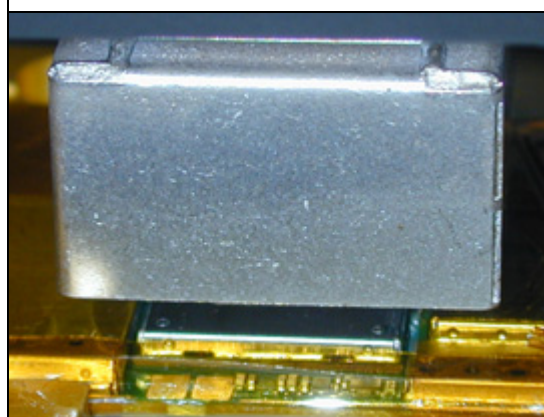


4.5 N1210 Continued:

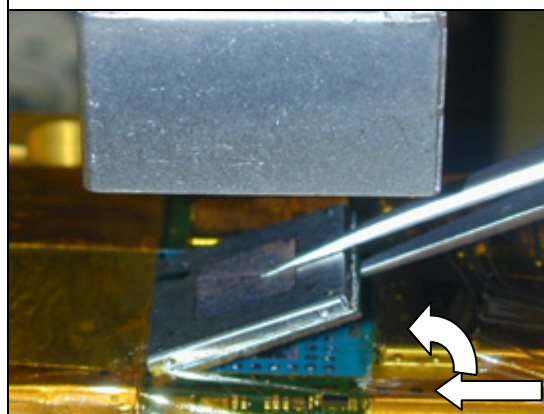
Make sure all adjacent components protected.



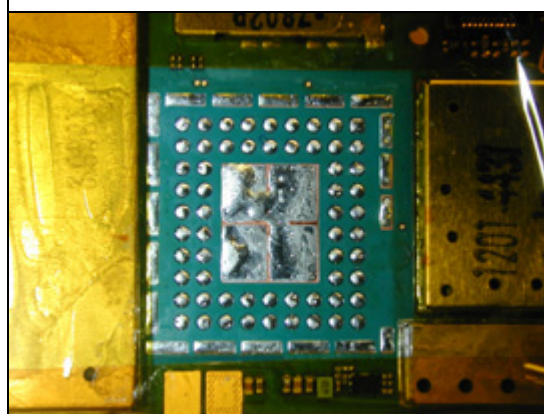
Apply hot air to heat the solder.



Insert tweezers from the top end of the board (the end with the RF test connector) and pry the module up.



Remove excess solder and clean the pads, then apply flux and mount the new part.





4.6 Revision History

Rev.	Date	Changes / Comments
A	2007-Sep-26	Initial Release
B	2007-Nov-20	Added N1200.
C	2008-Jan-11	Added N1210.