



# Working Instruction, Electrical

Applicable for V640i & K630i

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# 1 Read this first!

## CAUTION

***Keep all contact surfaces clean, no dirt or hand grease!***

***Attention! X2403 and N1400 are under-filled! All repair action with Hot air station or BGA repair station around and on the opposite side of these components shall be performed with care, if the soldering joints temperature on these components will reach 220 degree than soldering of these components will be damaged.***

***Remove the Main Camera and VGA Camera before you perform any repair action by using heating tools: Soldering Iron, Hot Air Station or BGA station!***

***Protect the phone from ESD damages whenever it has been opened by using:***

- ***ESD-wristband***
- ***ESD-gloves***

## 2 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.



## Lead-free soldering *continued*

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.



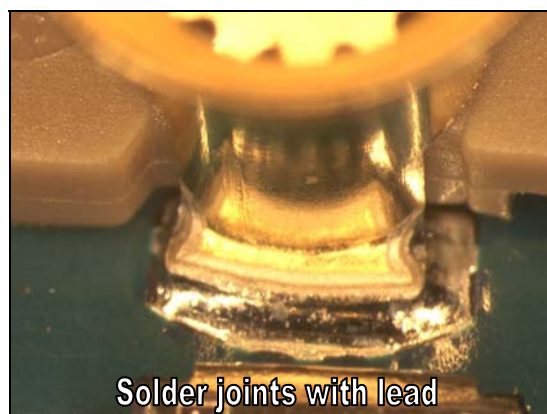
Lead-free solder joints



Solder joints with lead



Lead-free solder joints



Solder joints with lead

## 3 Soldering issues

### 3.1 Hot air gun temperature requirements

The air temperature must not exceed 360°C.

The temperature shall be measured 5 mm from the nozzle outlet.

If it is not possible to remove and/or solder with 360°C, a BGA Rework Station or another repair process must be considered to ensure high process control.

A temperature being too high can cause damage and cracks due to the thermal stress on sensitive components, e.g. ceramic components like capacitors.

### 3.2 Soldering tip temperature requirements

The soldering tip temperature must be minimum 310°C and maximum 360°C.

A temperature being too high can cause damage and cracks due to the thermal stress on sensitive components, e.g. ceramic components like capacitors.

### 3.3 Bottom heat requirements

In certain cases some components may require a bottom heater during repair in order to pre-heat the board and to level out the  $\Delta T$  on the PBA.

This will also minimize the thermal stress.

The temperature on the PBA surface must not exceed 150°C to minimize inter-metallic growth and thermal stress on the PWB.

### 3.4 BGA rework specifications

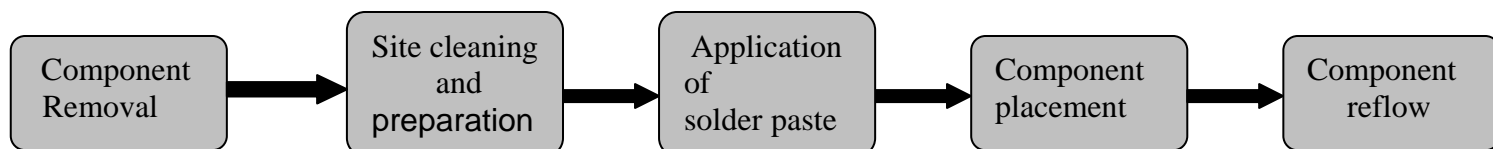
For all components that require the use of a BGA Rework Station, follow the:

*Technical Requirement, Generic document; Space ID: 1207-2949*

and

*Heat treatment document; Space ID: 1212-5402*

### 3.5 Process Flow BGA



## 4 Shield fence instruction

This instruction shows how to cut and bend the shield can fence to be able to replace components under the fence. Use a sharp-edged pliers to cut the fence.



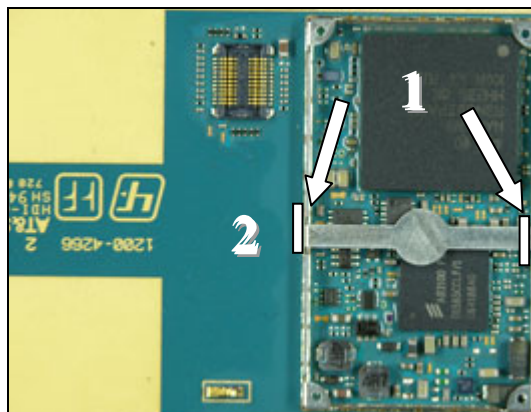
**MAKE SURE THAT CUTTING PLIERS IS SHARP-EDGED TO PREVENT DAMAGING THE SHIELD CAN FENCE.**

Remove the shield can lid, use a dentist hook.

Remove the pick up area according to the white lines with a cutting plier. (1)

This pick up area is only used when machine mounting and there is no need to put it back again.

Cut the shield can fence according to the white lines with a cutting plier. (2)



## 5 Replacement of components

### EQUIPMENT

- Dentist hook
- Shield fence pliers NTZ 112 537
- Hot air soldering equipment
- Soldering iron
- BGA repair equipment
- Pair of tweezers
- Soldering cleaning wiper (tin wick)
- Solder paste lead-free (SN 96% AG 3.5% Cu 0.5 %)
- Flux, RMA no-clean flux
- Cutting pliers



**CAUTION**

**Remove the Main Camera and VGA Camera before you perform any repair action by using heating tools: Soldering Iron, Hot Air Station or BGA station!**

**Attention! X2403 and N1400 are under-filled! All repair action with Hot air station or BGA repair station around and on the opposite side of these components shall be performed with care, if the soldering joints temperature on these components will reach 220 degree than soldering of these components will be damaged.**

**Keep all contact surfaces clean, no dirt or hand grease!**

**Protect the phone from ESD damages whenever it has been opened by using:**

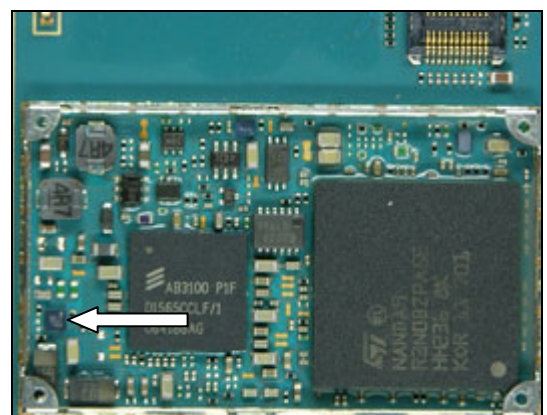
- **ESD-wristband**
- **ESD-gloves**

**MECHANICAL INSTRUCTIONS**

For all the following part replacements, disassemble and assemble the phone as described in *Working Instruction 3/00021-1/FEA 209 544/133*

## **5.1 N3100 IC Amp**

Remove the shield can lid. Use a dentist hook.  
Replace the IC Amp with Hot air soldering equipment.  
Put back a **new** shield can lid.  
Press on all sides of the lid until you hear a “click” sound.



## 5.2 N2400 1-Bit Level Translator

### ***FOLLOW THE SHIELD FENCE INSTRUCTION. (4)***

Remove the shield can lid.

Use a dentist hook.

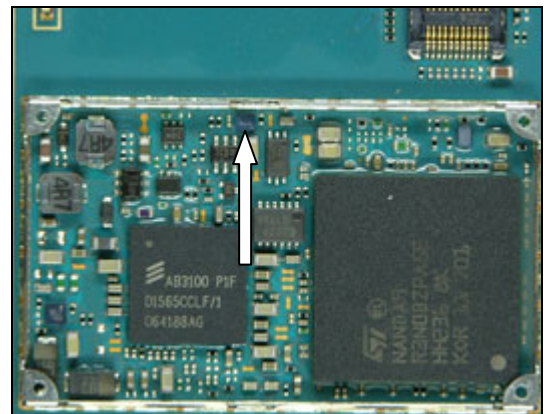
Cut the fence according to the white lines.

Follow the shield fence instruction.

Replace the USB with Hot air soldering equipment.

Put back a **new** shield can lid.

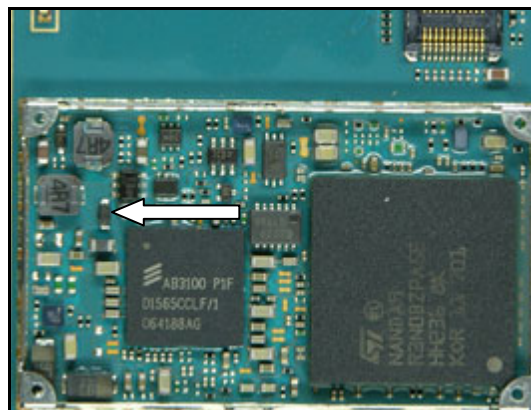
Press on all sides of the lid until you hear a “click” sound.





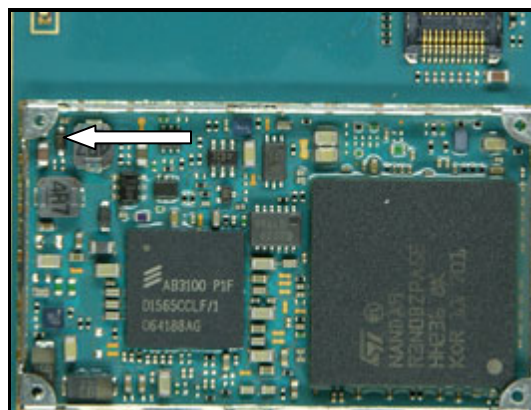
### 5.3 V2206 Diode V Schottky

Remove the shield can lid. Use a dentist hook.  
 Replace the Diode V Schottky with Soldering Iron.  
 Put back a **new** shield can lid.  
 Press on all sides of the lid until you hear a “click” sound.



### 5.4 V4201 Schottky Diode

Remove the shield can lid. Use a dentist hook.  
 Replace the Schottky Diode with Soldering Iron.  
 Put back a **new** shield can lid.  
 Press on all sides of the lid until you hear a “click” sound.



## 5.5 V2405 MOSFET Complementary NP 20

### ***FOLLOW THE SHIELD FENCE INSTRUCTION. (4)***

Remove the shield can lid. Use a dentist hook.

Cut the fence according to the white lines.

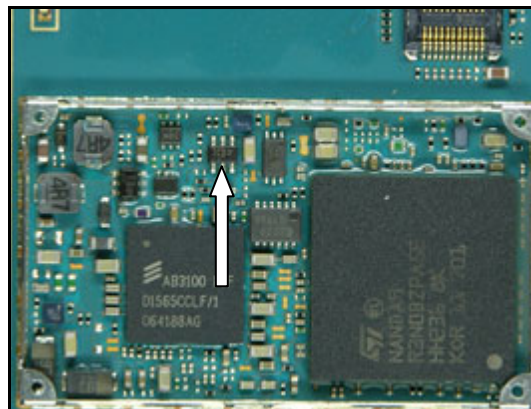
Follow the shield fence instruction.

Remove the Mosfet Complementary with Hot air soldering equipment.

Mount the new component with Soldering Iron.

Put back a **new** shield can lid.

Press on all sides of the lid until you hear a “click” sound.



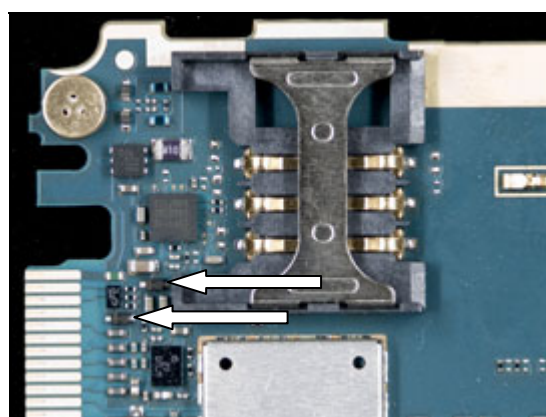
## 5.6 V2420, V2421 Zener Diode voltage regulator 15V

***PROTECT THE MICROPHONE AND SIM CARD READER WITH CAPTON TAPE***

***REMOVE THE BLACK SIM TAPE& GASKET***

Replace the Zener Diode Voltage regulators with Soldering Iron.

***PUT BACK A NEW BLACK SIM TAPE& GASKET***



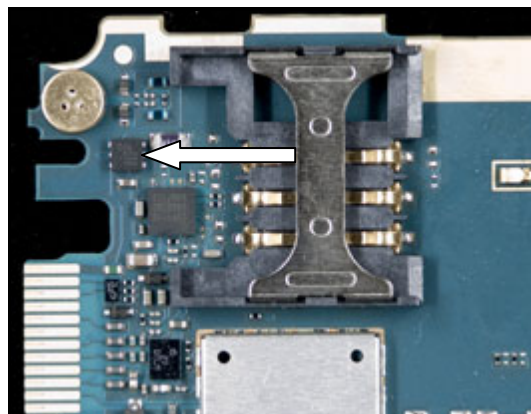
## 5.7 V2202 Trans V; Dual\_PMOSFET

**PROTECT THE MICROPHONE AND SIM CARD READER WITH CAPTON TAPE**

**REMOVE THE BLACK SIM TAPE& GASKET**

Replace the Trans V Dual PMOSFET with Hot air soldering equipment.

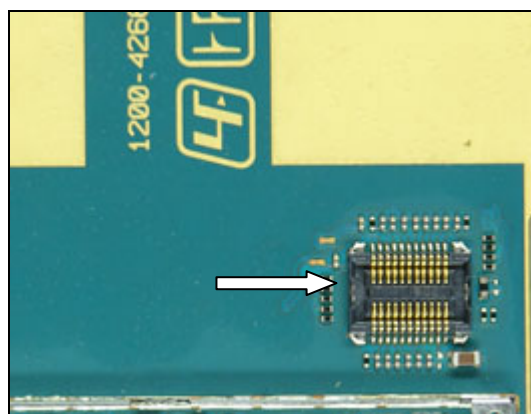
**PUT BACK A NEW BLACK SIM TAPE& GASKET**



## 5.8 X4200 LCD Connector

Remove the LCD Connector with Hot air soldering equipment.

Place a new component with Soldering Iron.



## 5.9 B3100 Microphone

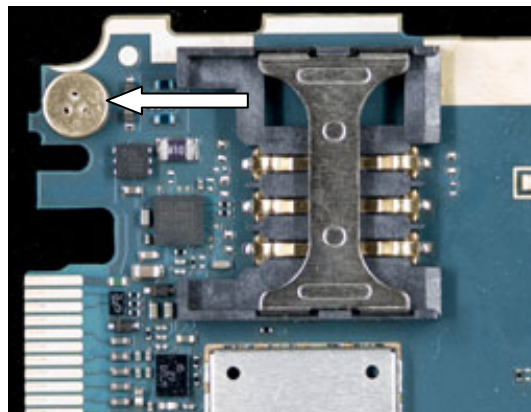
***PROTECT THE SIM CARD READER WITH CAPTON TAPE!***

***PROTECT THE NEW MICROPHONE WITH CAPTON TAPE***

***REMOVE THE BLACK SIM TAPE& GASKET***

Replace the Microphone with Hot air soldering equipment.

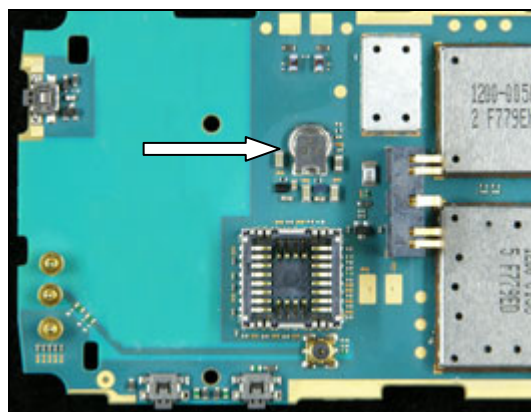
***PUT BACK A NEW BLACK SIM TAPE& GASKET***



## 5.10 C2217 0,07F 3.3V Capacitor

***PROTECT THE BATTERY CONNECTOR AND MAIN CAMERA SOCKET WITH CAPTON TAPE***

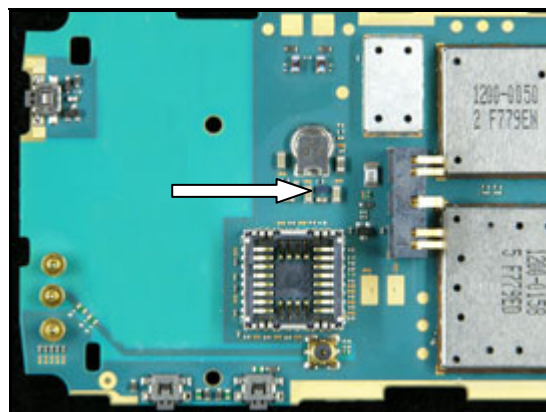
Replace the Capacitor with BGA repair equipment.



## 5.11 N2203 2ch-LDO

**PROTECT THE BATTERY CONNECTOR MAIN CAMERA SOCKET AND THE 0,007F CAPACITOR WITH CAPTON TAPE**

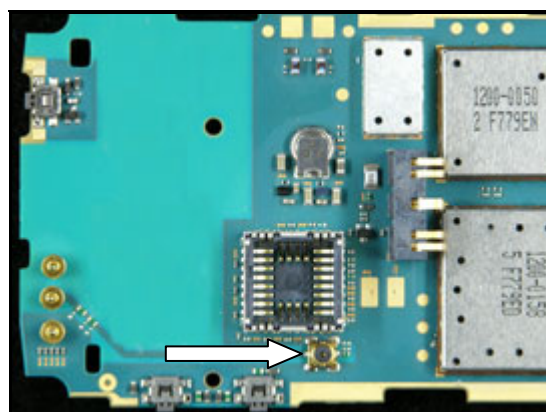
Replace the 2Ch-LDO with Hot air soldering equipment.



## 5.12 X1200 Connector, RF Test

**PROTECT THE MAIN CAMERA SOCKET WITH CAPTON TAPE**

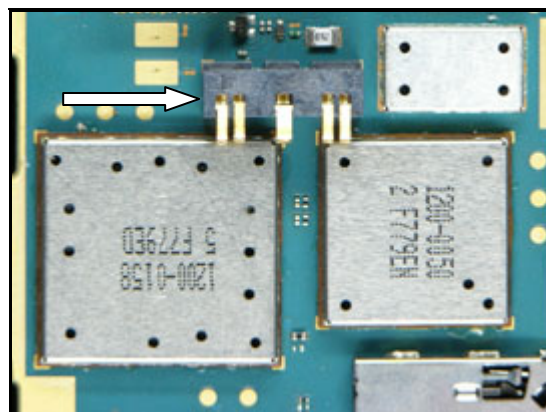
Remove the RF connector with Hot air soldering equipment.  
Place a new component with Soldering Iron.





### **5.13 X2200 Battery Connector**

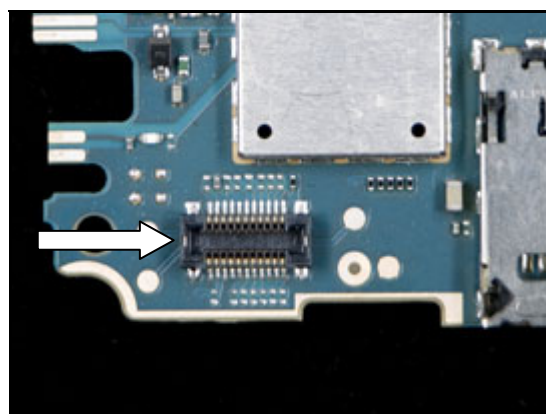
Replace the Battery connector with BGA repair equipment.



### **5.14 X2402 Con X Keyboard connector**

Remove the Keyboard connector with Hot air soldering equipment.

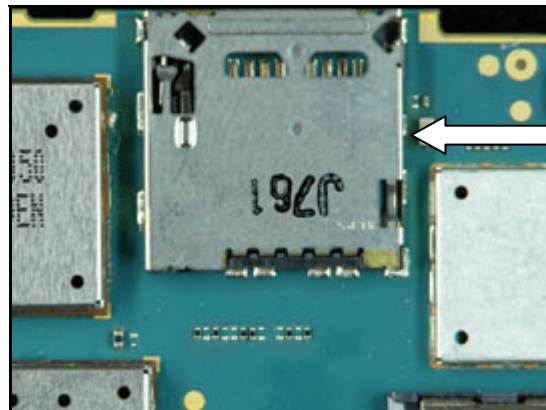
Place a new component with Soldering Iron.





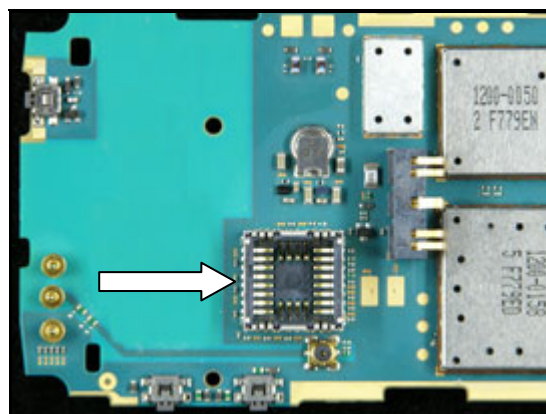
## 5.15 X2490 MS-Micro Pico holder

Replace the MS Holder with BGA repair equipment.



## 5.16 X4310 Socket/Camera

Replace the Main camera socket with BGA repair equipment.

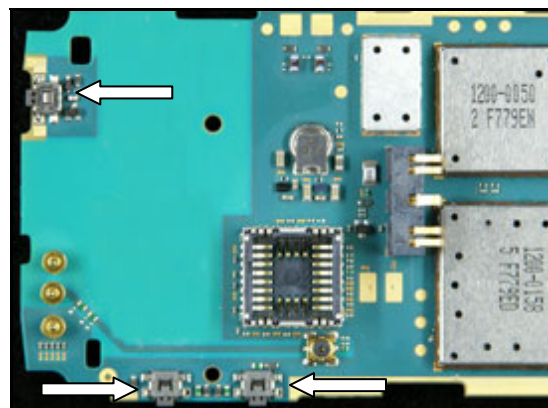


## 5.17 S2400, S2402, S2403 Side push switch

Remove Side key switches with Hot air soldering equipment.

Install new Side key switches with Soldering Iron.

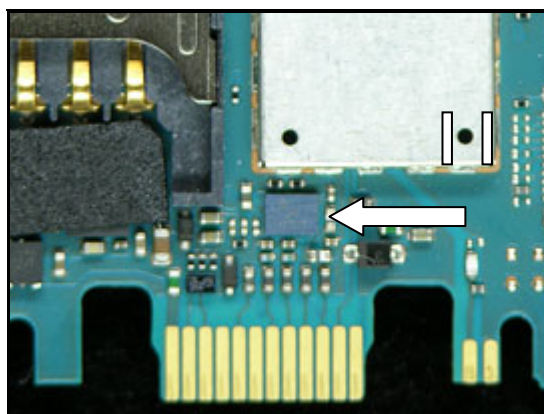
**NOTE: USE AS LITTLE FLUX AS POSSIBLE TO PLACE THE NEW PART. MAKE SURE FLUX DOES NOT GET ON THE COMPONENT BODY. DO NOT CLEAN WITH ALCOHOL THE NEW MOUNTED SWITCH.**



## 5.18 N3101 EMI Filter and ESD

**PROTECT THE SIM CARD READER WITH CAPTON TAPE**

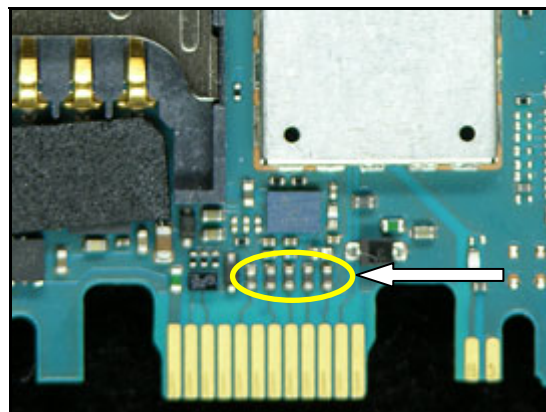
Replace the EMI Filter with Hot air soldering equipment.



## 5.19 L2401, L2402, L2403, L2404

## Filter 0.0Hz 0402

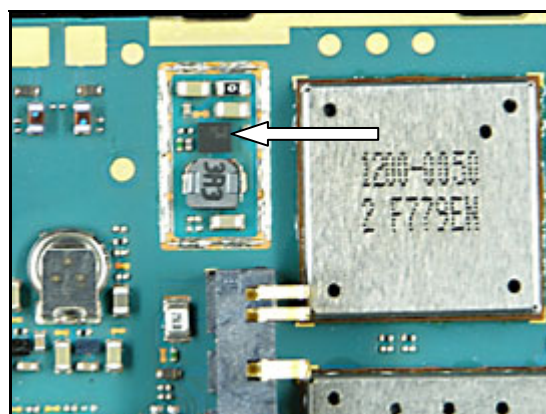
Replace the Filters with Hot air soldering equipment.



## 5.20 N2205

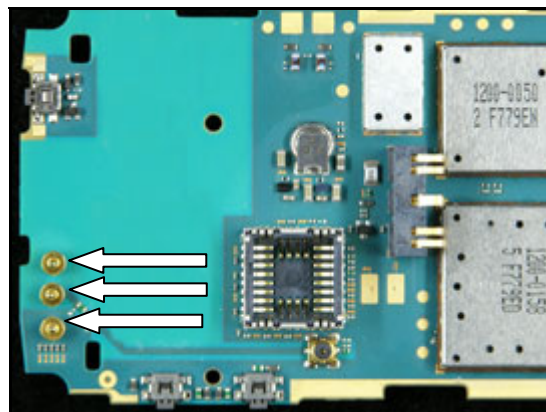
## IC Vreg

Remove the Shield Can (E1003) with BGA Station.  
 Replace the IC Vreg with Hot air soldering equipment.  
 Mount back the Shield Can with BGA Station.



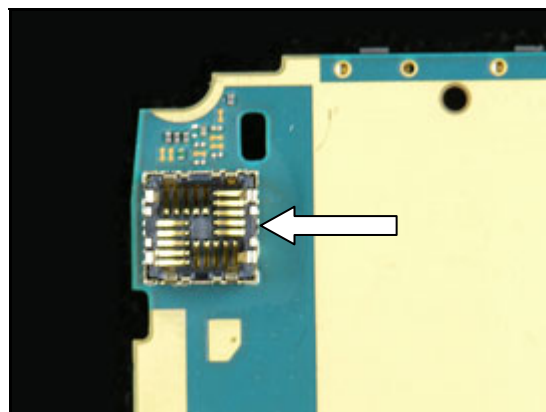
## 5.21 X1201, X1202, X1203 POGO Pin (For Antenna)

Replace the POGO Pins with Hot air soldering equipment.



## 5.22 X4300 Camera Socket

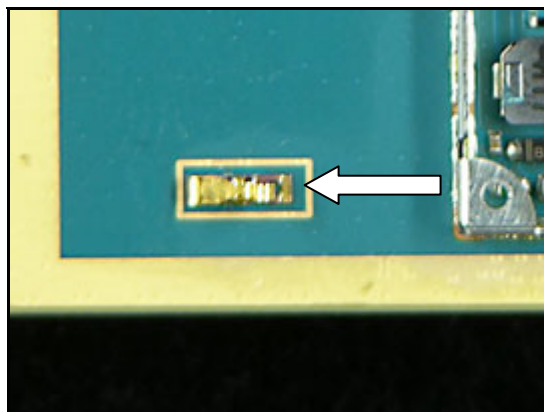
Replace the Camera Socket with BGA Station.



## 5.23 X1001, X1002, X1003 Antenna pin connectors

***DO NOT CONTAMINATE THE TOP OF THE PIN CONNECTORS WITH FLUX OR SOLDER!***

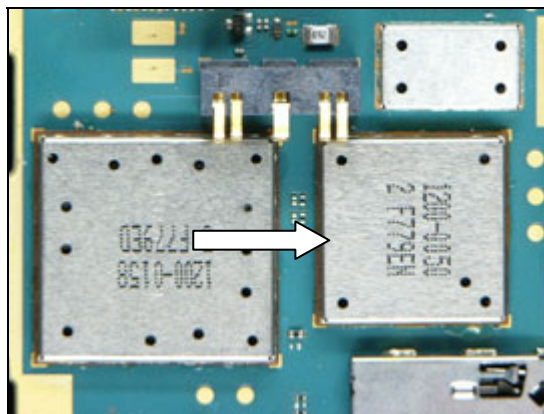
Replace Antenna pin connector with Hot air soldering equipment.



## 5.24 N1210 Mod Radio GSM Squid

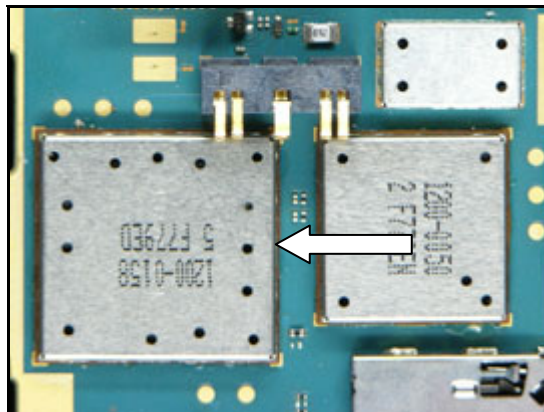
***PROTECT THE BATTERY CONNECTOR WITH CAPTON TAPE***

Replace the Squid module with BGA repair equipment.



## 5.25 N1200 Module Radio EDGE Thor GSM/EDGE

***PROTECT THE BATTERY CONNECTOR WITH CAPTON TAPE***  
Replace the Thor Module with BGA repair equipment.





## 6 Revision history

Rev.	Date	Changes / Comments
A	2007-10-09	Initial release
2	2007-12-17	Tool Part updated
3	2008-03-26	Module Bluetooth + FM STLC2592 and SIM card reader deleted
4	2008-04-29	Chapter 3 changed, adding support for BGA profiles