



# Working Instruction, Electrical

Applicable for C905

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# 1 Read this first!

## CAUTION

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

**ATTENTION! N2000, N1500 and some other adjacent components are underfilled!**

**All repair actions with Hot Air Soldering Equipment or BGA Repair Equipment around these and on the opposite side of these components shall be performed with care, if the soldering joints temperature on these underfilled components achieves 210°C, then soldering of these components will be damaged.**

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

**ESD-wristband**

**ESD-gloves**

# 2 Moisture Sensitivity and Component Baking

## CAUTION!

**THE C905 BOARD (PBA) ITSELF MUST BE BAKED PRIOR TO ANY REPAIRS ARE PERFORMED ON THE BOARD, WHEN USING HOT AIR SOLDERING STATION, BGA REPLACEMENT EQUIPMENT OR BOTTOM HEAT. THE BOARD SHOULD BE BAKED IN 125 DEGREES CELCIUS FOR 4 HOURS.**

Some components in this product are moisture sensitive and must be baked prior to use if they have been exposed to air. These components and their moisture sensitivity levels are specified in the Electrical Component Placing document. Below is a brief description of moisture sensitivity levels, but repair centers should visit the JEDEC website for more details before reworking moisture sensitive components. Search for the most recent version of the IPC/JEDEC J-STD-033A standard online at <http://www.jedec.org/>

- |                 |  |
|-----------------|--|
| <b>LEVEL 1</b>  | <b>UNLIMITED FLOOR LIFE;</b> does not require dry pack or re-baking.   |
| <b>LEVEL 2</b>  | <b>1 YEAR FLOOR LIFE;</b> $\leq 30^{\circ}$ C; 60% relative humidity (rh); shipped in dry pack; must be re-baked after being opened if floor life is exceeded. |
| <b>LEVEL 2A</b> | <b>4 WEEKS FLOOR LIFE;</b> $\leq 30^{\circ}$ C; 60% rh; shipped in dry pack; must be re-baked after being opened if floor life is exceeded.                    |
| <b>LEVEL 3</b>  | <b>168 HOURS FLOOR LIFE;</b> $\leq 30^{\circ}$ C; 60% rh; shipped in dry pack; must be re-baked after being opened if floor life is exceeded.                  |
| <b>LEVEL 4</b>  | <b>72 HOURS FLOOR LIFE;</b> $\leq 30^{\circ}$ C; 60% rh; shipped in dry pack; must be re-baked after being opened if floor life is exceeded.                   |

Parts shipped from the Sony Ericsson Parts Warehouse are most likely NOT shipped in dry pack. This means the time elapsed between placing the order and receiving the parts must be considered as time exposed to the environment.

Different moisture sensitivity levels and exposure times create the need for different baking temperatures and times. More detailed information may be found in the most recent version of the IPC/JEDEC J-STD-033A standard. The standard is available online at <http://www.jedec.org/>.

### 3 Lead-free soldering

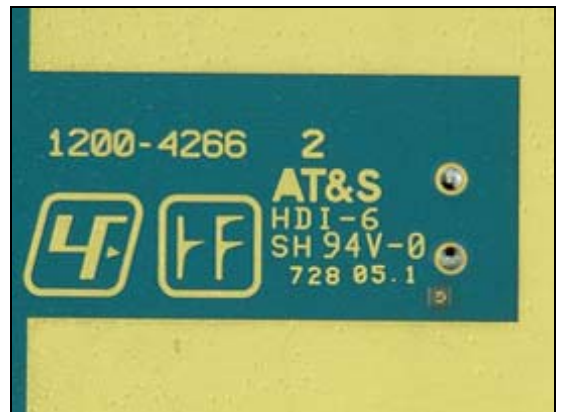
**THIS PRODUCT IS MANUFACTURED WITH LEAD-FREE SOLDER AND LEAD-FREE COMPONENTS!**

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

This symbol indicates that the product is lead-free.



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.


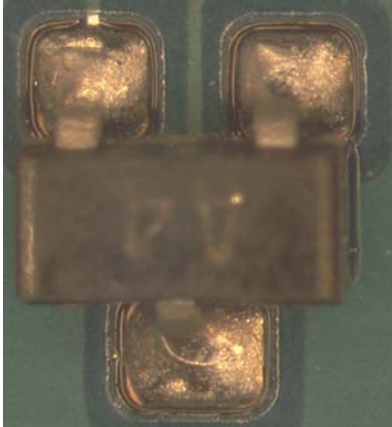
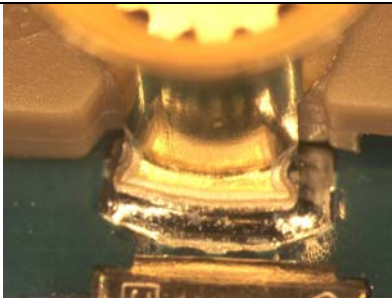
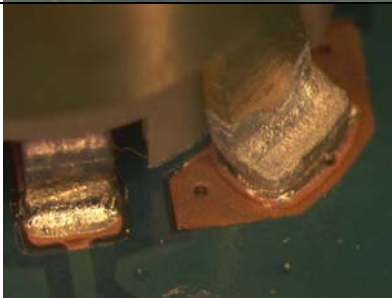
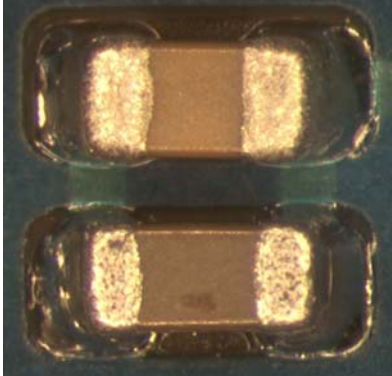
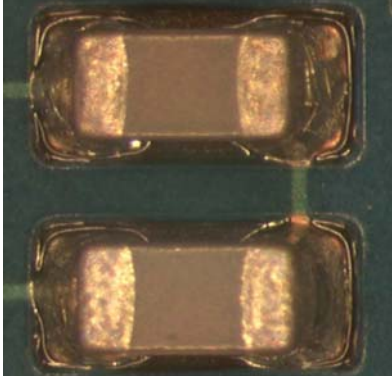
They must be adequately labeled to make their lead-free status clearly and easily recognized.





## Inspection

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 area may remain exposed.

Good Leaded Solder Joints		Good Lead-free Solder Joints	
			
			
			



## 4 Soldering issues

### 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.

### 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.

### 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.

### 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: 1218-1752*



## 5 Replacement of components

### EQUIPMENT

Dentist hook  
ESD-gloves (cotton gloves)  
ESD-wristband  
Soldering tool  
Hot air soldering station  
Bottom Heat  
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

### MECHANICAL INSTRUCTIONS

For all the following part replacements, disassemble and assemble the phone as described in *Working Instruction 1218-1731*.

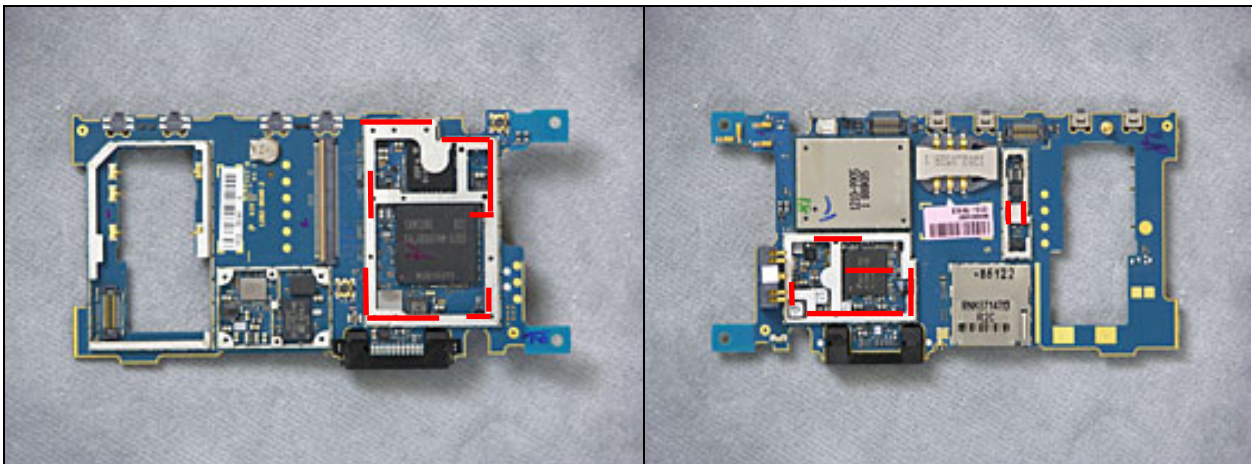
### SHIELD CAN FENCE MODIFICATION

The arrows and the red lines show where the frame should be cut to enable rework.

***BE CAREFUL TO DO NOT DAMAGE THE COMPONENTS WHEN CUTTING THE FENCES***

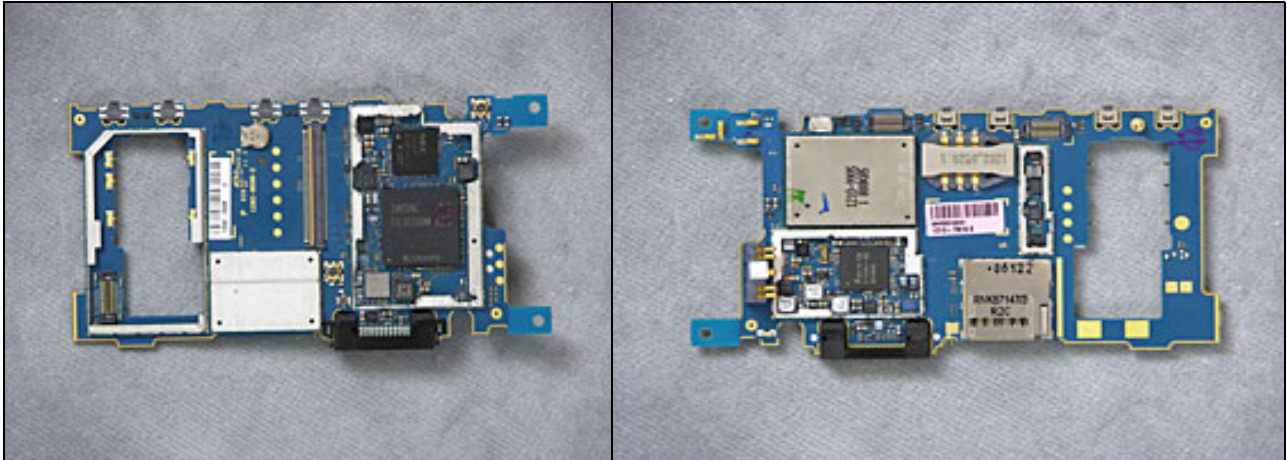
After rework the **height of the frame should not be affected**.

On a reworked unit when the lid is mounted, it **should not be visible that rework has been performed** on the shield frame.





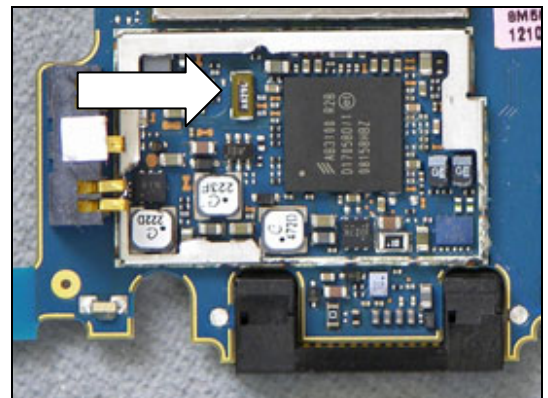
**Examples of modified shield fences**



**B2100**

**Crystal 32,768 kHz**

Use Hot air soldering station to replace component



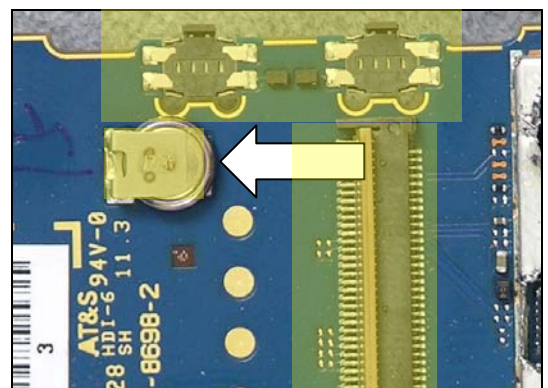
**C2214**

**0,07 F 3.3 V Capacitor**

**PROTECT THE SWITCHES AND THE ZIF CONNECTOR WITH CAPTON TAPE!**

**PROTECT THE CAPACITOR WITH CAPTON TAPE TOO!**

Use Hot air soldering station and Bottom Heat to replace component



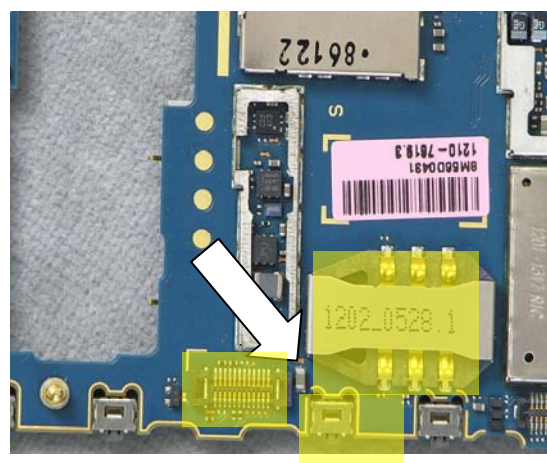


## C4416

***PROTECT THE SIM AND BTB CONNECTOR WITH CAPTON TAPE!***

***PROTECT THE SWITCH WITH CAPTON TAPE***

Use Hot air soldering station to replace component

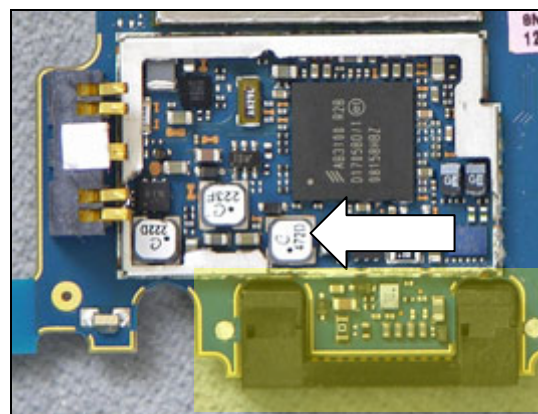


## L2200

**Ind WW 4,7 uH +-20% 2,95x2,95x0,9**

***PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!***

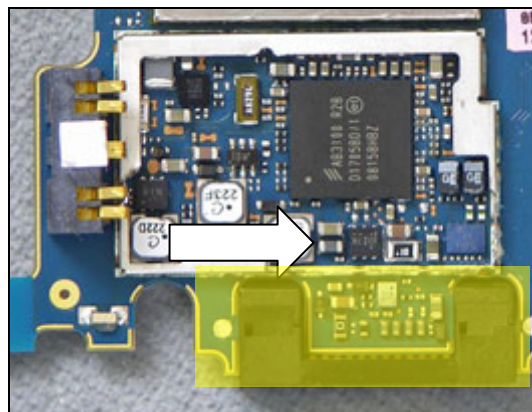
Use Hot air soldering station to replace component



## L2201

## 120ohm 0603 2A 50mohm Bead

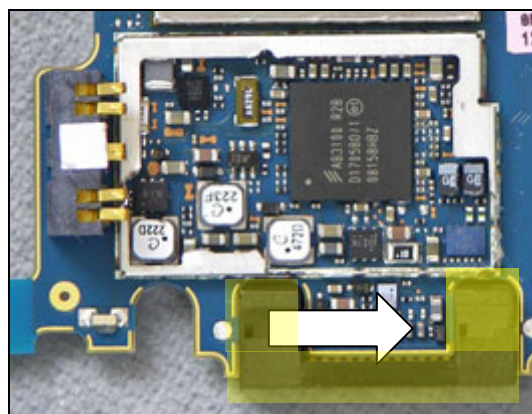
***PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!***  
Use Hot air soldering station to replace component



## L2401

## Filter 0.0Hz 0402

***PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!***  
Use Hot air soldering station to replace component

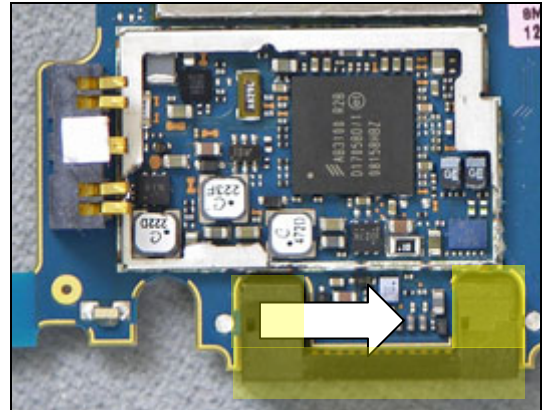




## L2402

***PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!***  
Use Hot air soldering station to replace component

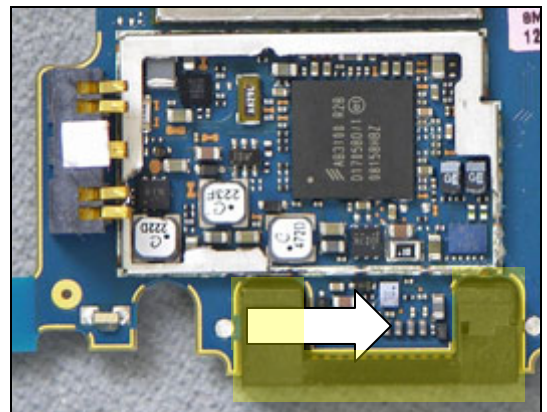
## Filter 0.0Hz 0402



## L2403

***PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!***  
Use Hot air soldering station to replace component

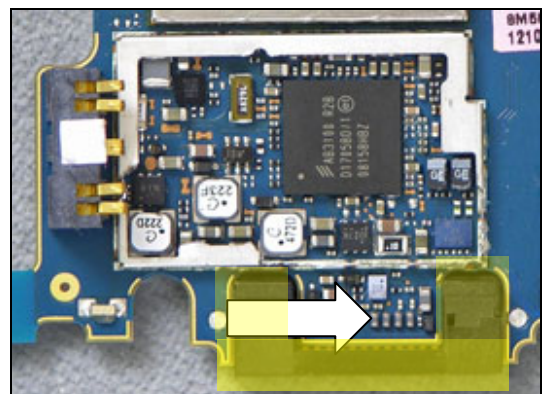
## Filter 0.0Hz 0402



## L2404

***PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!***  
Use Hot air soldering station to replace component

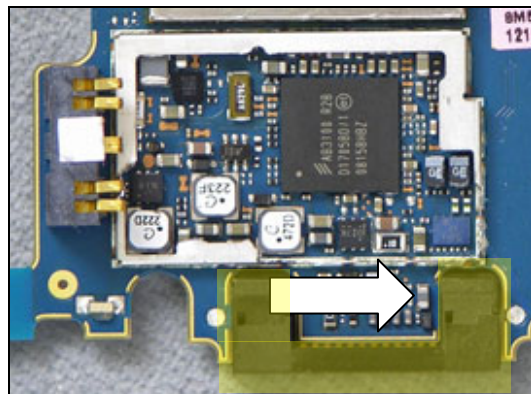
## Filter 0.0Hz 0402



## L2406

**PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!**  
Use Hot air soldering station to replace component

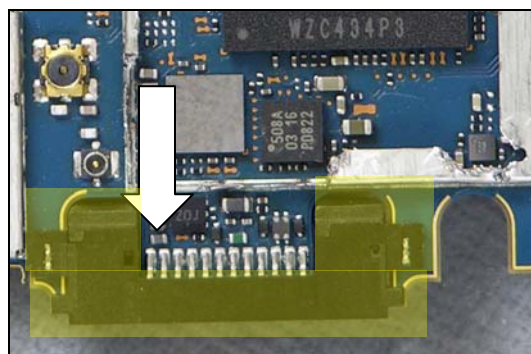
## Filter



## L2407

**PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!**  
Use Hot air soldering station to replace component

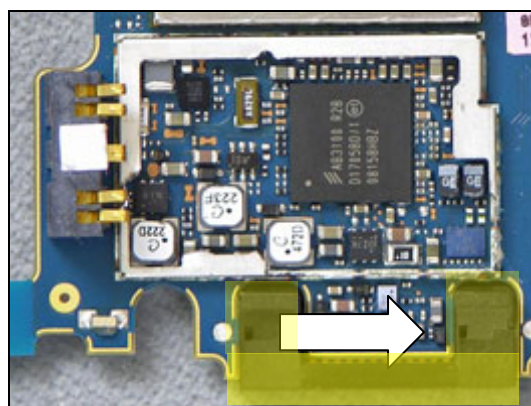
## Filter 1.0 GHz 0402



## L2408

**PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!**  
Use Hot air soldering station to replace component

## Transformer

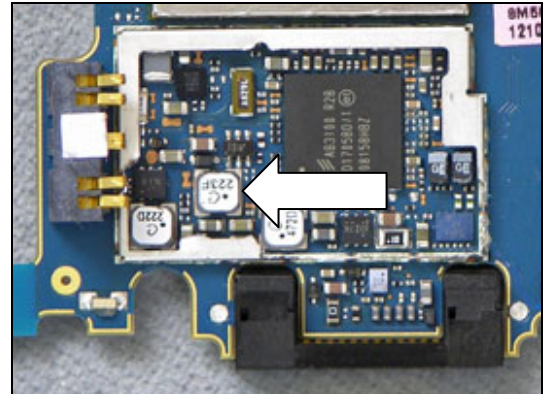




## L4200

Use Hot air soldering station to replace component

## Inductor Chip



## N1200

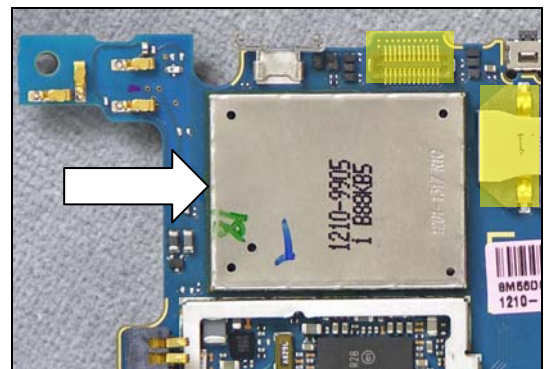
**PROTECT THE BTB CONNECTOR AND SIM CARD READER WITH CAPTON TAPE!**

Use BGA station to remove component

Use BGA station to mount the new component

Calibration required (SERP)

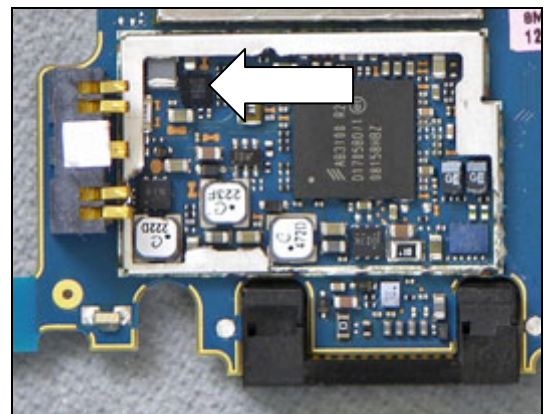
## Radio Module- Tiger



## N1210

Use Hot air soldering station to replace component

## IC Linear

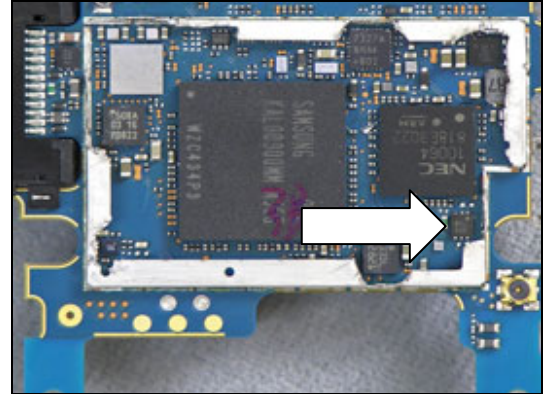




## **N1211**

## **LDO Regulator 300mA low noise**

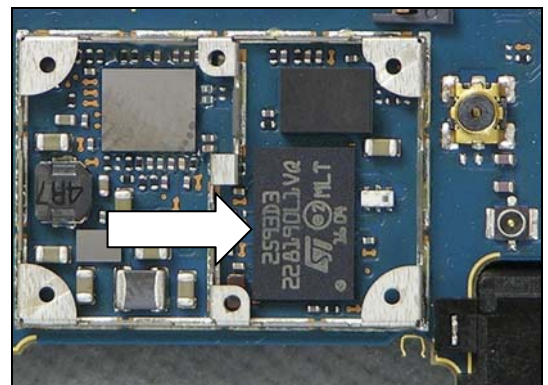
Use Hot air soldering station to replace component



## **N1300**

## **Bluetooth and RDS FM radio tuner**

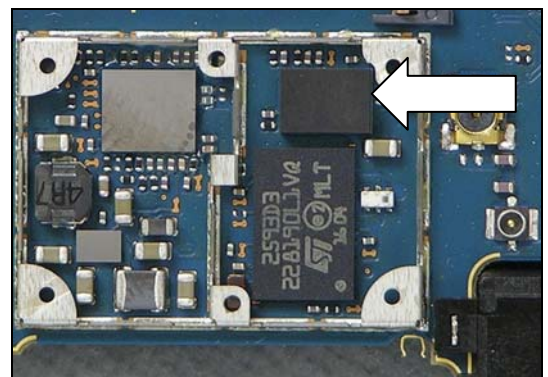
BGA replacement equipment



## **N1510**

## **Mod Radio WLAN R041D**

Use Hot air soldering station and Bottom Heat to replace component

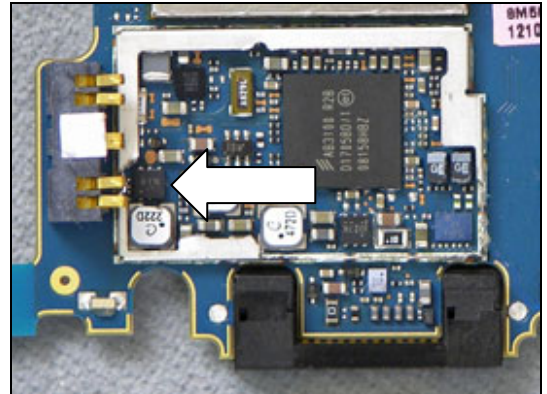




## N2200

## IC Vreg SON 6-Pin 2x2x0.8mm

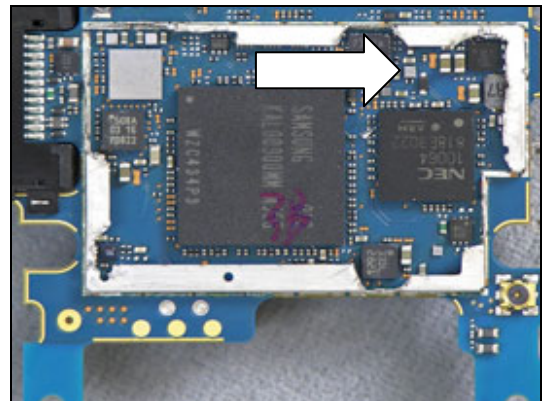
Use Hot air soldering station to replace component



## N2201

## LDO, 3.0V, 150mA, CS-4

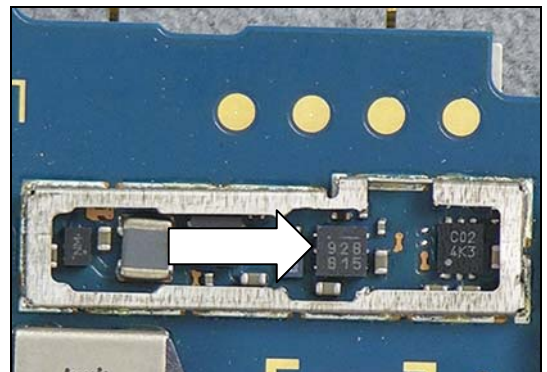
Use Hot air soldering station to replace component



## N2205

## LDO regulator 500mA

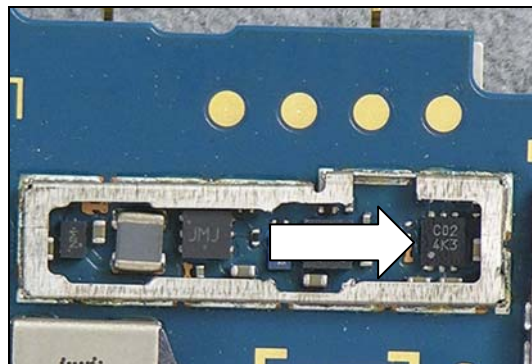
Use Hot air soldering station and Bottom Heat to replace component



## **N2206**

Use Hot air soldering station and Bottom Heat to replace component

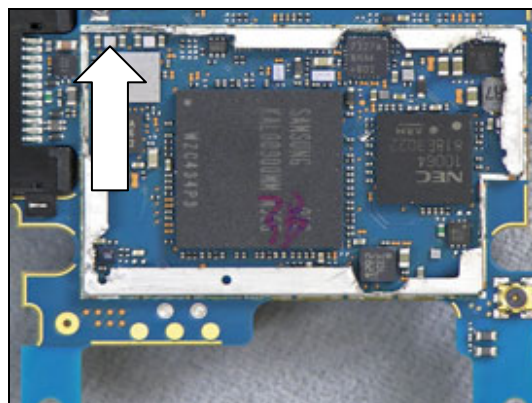
## **LDO Dual 2.8 V & 1.8 V**



## **N2208**

Use Hot air soldering station to replace component

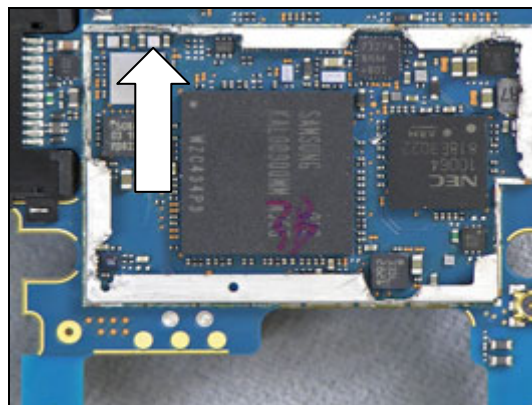
## **LDO, 3.0V, 150mA, CS-4**



## **N2209**

Use Hot air soldering station to replace component

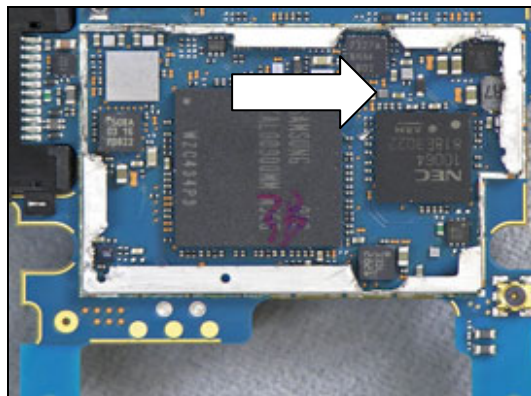
## **LDO regulator 150mA low noise**



## **N2212**

## **LDO regulator 150mA**

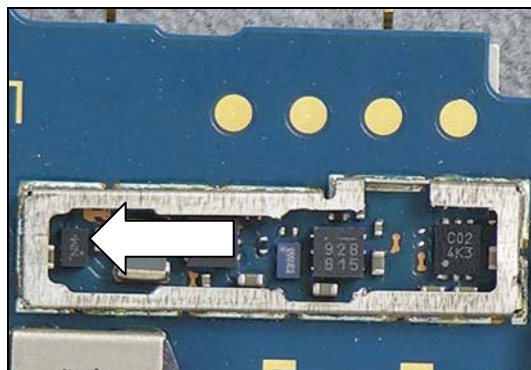
Use Hot air soldering station to replace component



## **N2213**

## **Step Down Converter 500mA**

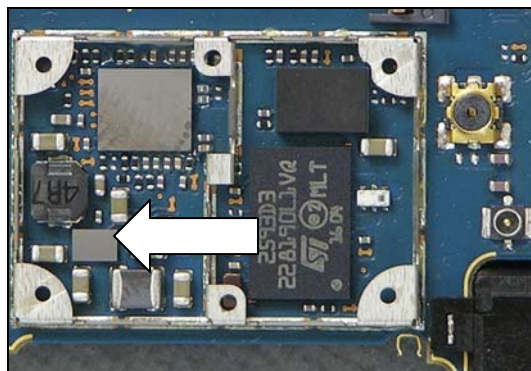
Use Hot air soldering station to replace component



## **N2300**

## **ASIC Power Management**

Use Hot air soldering station to replace component

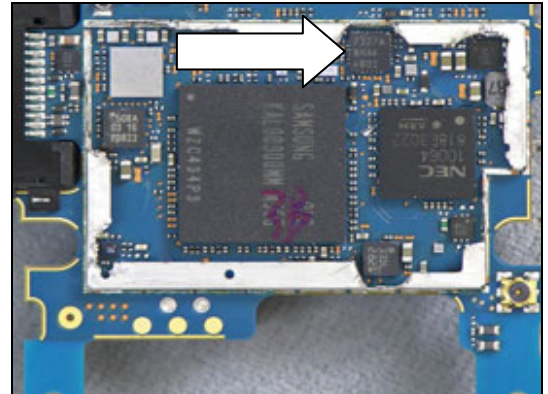




## **N2410**

## **IC IF 3.5x3.5x0.8 thin QFN**

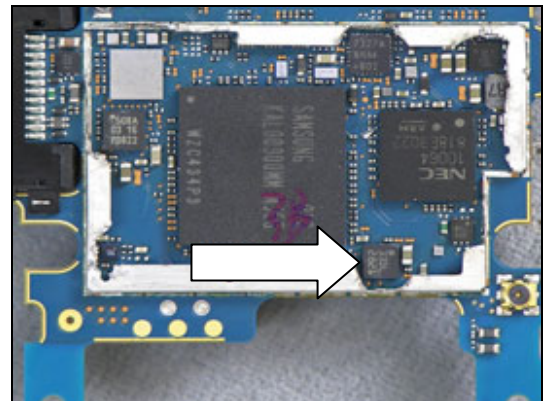
Use Hot air soldering station and Bottom Heat to replace component



## **N2411**

## **ASIC Accelerometer**

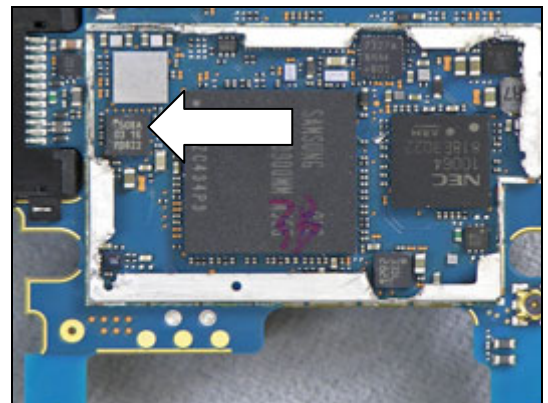
Use Hot air soldering station to replace component



## **N2420**

## **IC IF ISP1508 ES3 (3.5\*3.5\*0.8)**

Use Hot air soldering station to replace component



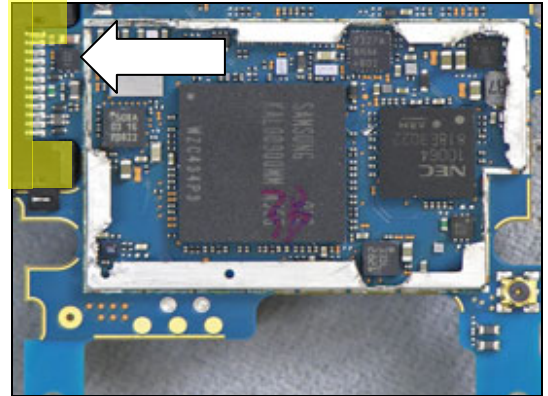




## N2421

## IC ESD Prot UDFN 6 2x2 mm

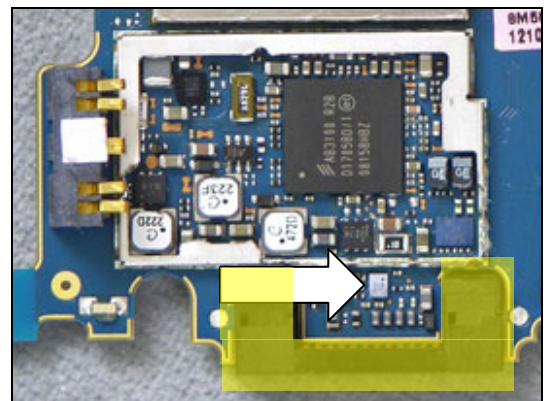
**PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!**  
Use Hot air soldering station to replace component



## N2422

## ASIC Baseband

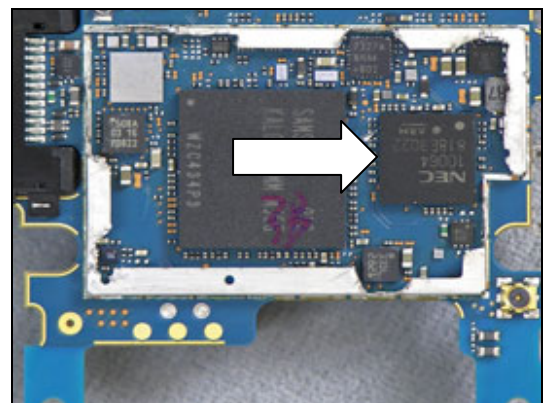
**PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!**  
Use Hot air soldering station to replace component



## N2500

## Companion chip MP202

Use BGA station to replace component

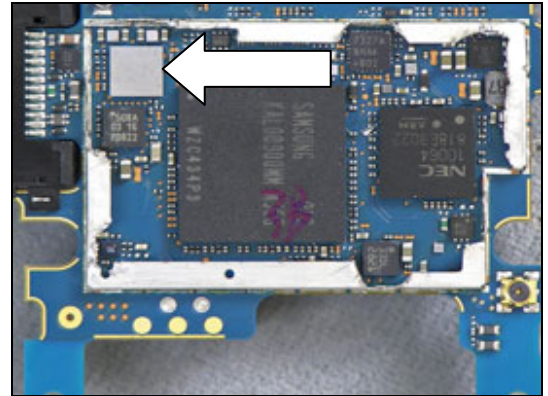




## N2700

Use BGA station to replace component

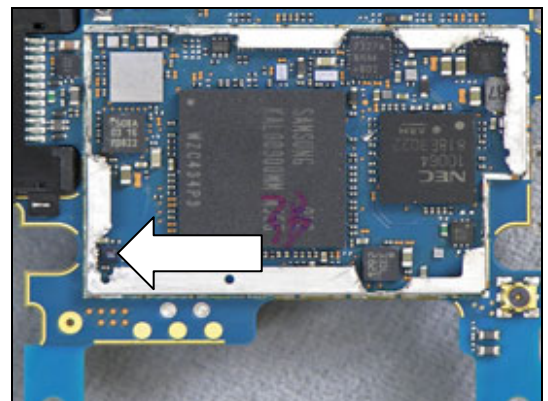
## TV Out Graphics Engine



## N3100

Use Hot air soldering station to replace component

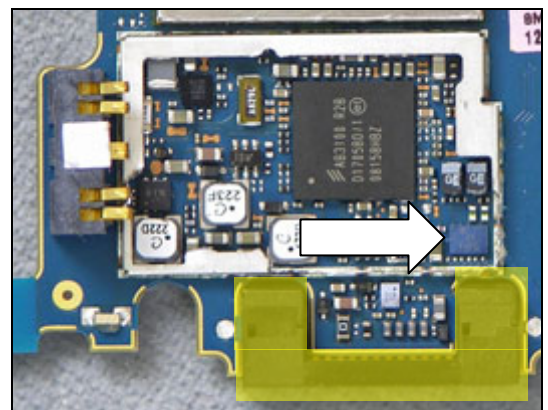
## IC CS-9



## N3101

**PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!**  
Use Hot air soldering station to replace component

## ASIC Tjatte3 CSP20

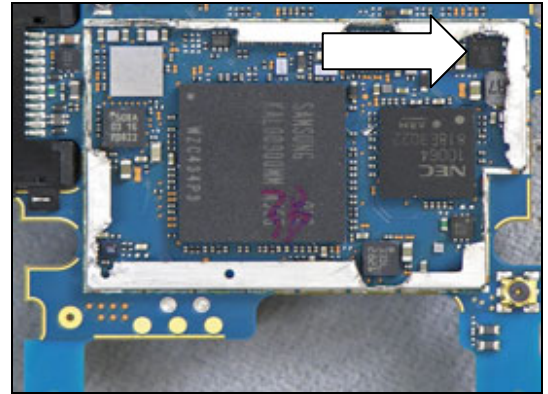




## N4400

## IC Dri MAX8830 ES3 4x4 UCSP

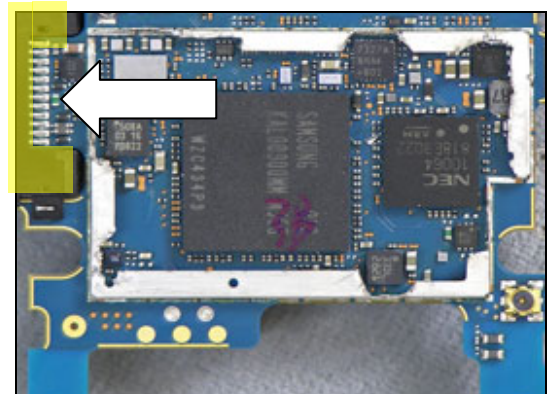
Use Hot air soldering station to replace component



## R2443

## Resistor 0.0 Ohm +/-5% NA mW K0402

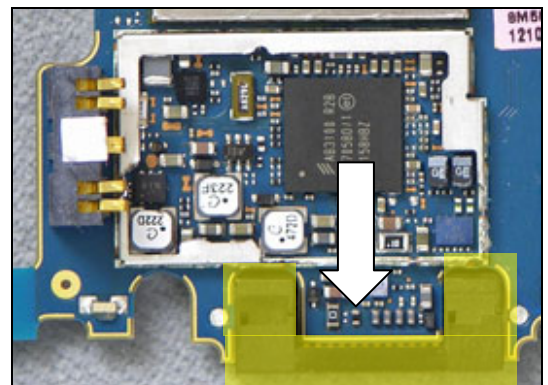
Use Hot air soldering station to replace component



## R2448

## Resistor 0.0 Ohm +/-5% NA mW K0402

**PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!**  
Use Hot air soldering station to replace component







## S2415, S2424, S2453, S2454

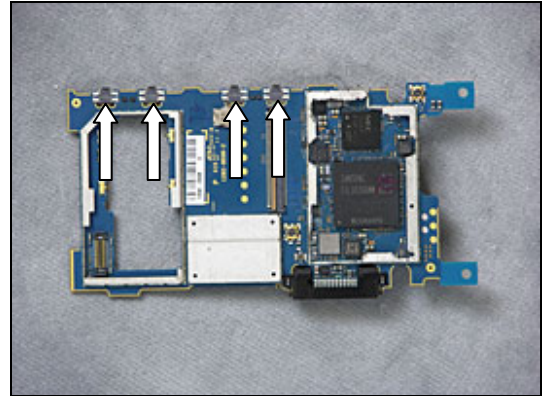
Use Hot air soldering station to remove component

Use Soldering tool to mount the new component

**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.**

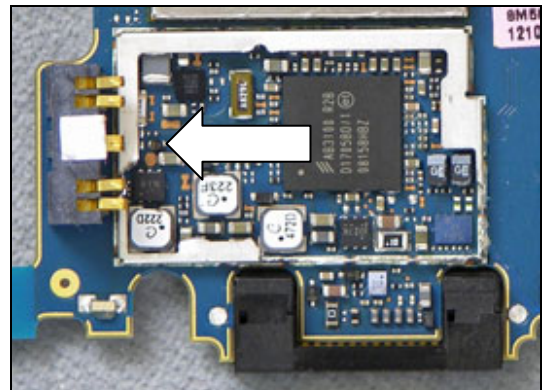
## Input Switch Side Push



## V2200

Use Hot air soldering station to replace component

## Zener diode

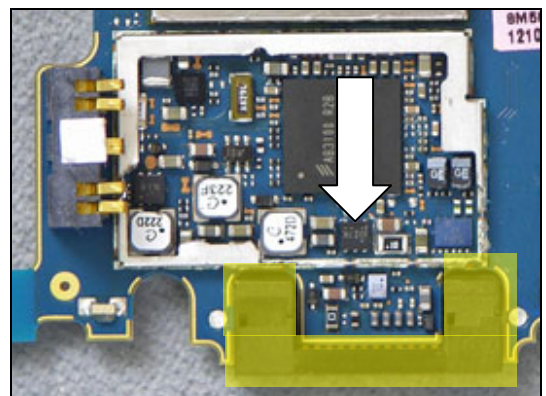


## V2202

**PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!**

Use Hot air soldering station to replace component

## Trans P-ch FET



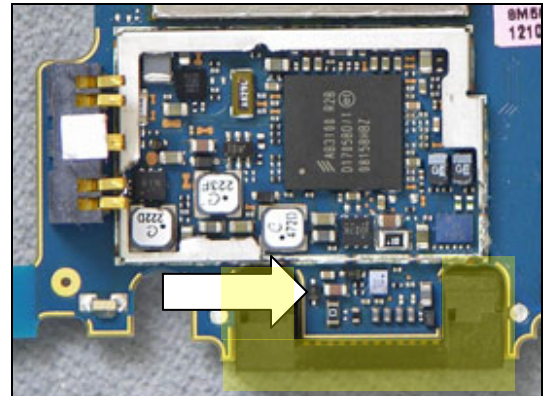


## V2412

## Zener Diode voltage regulator 15V 5%

**PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!**

Use Hot air soldering station to replace component

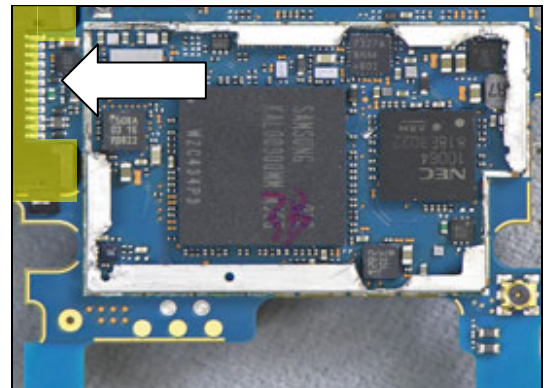


## V2414

## Diode Protection 5, V SOD-923

**PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!**

Use Hot air soldering station to replace component

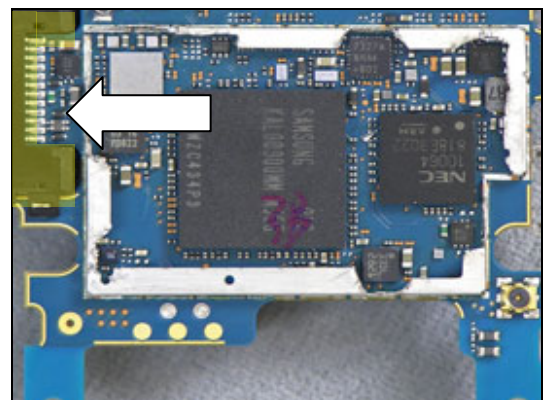


## V2415

## Diode Protection 5, V SOD-923

**PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!**

Use Hot air soldering station to replace component



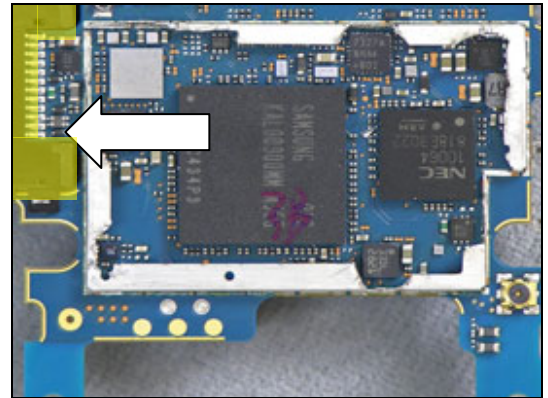




## V2416

## Diode Protection 5, V SOD-923

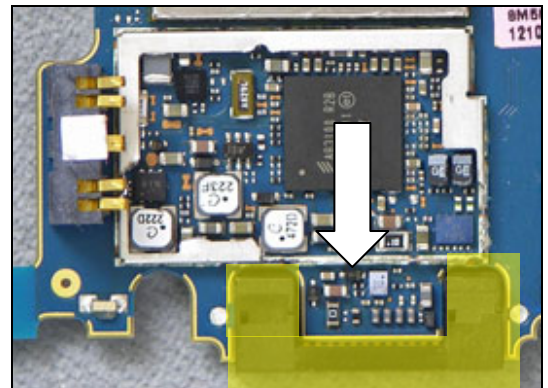
**PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!**  
Use Hot air soldering station to replace component



## V2417

## Zener Diode voltage regulator 15V 5%

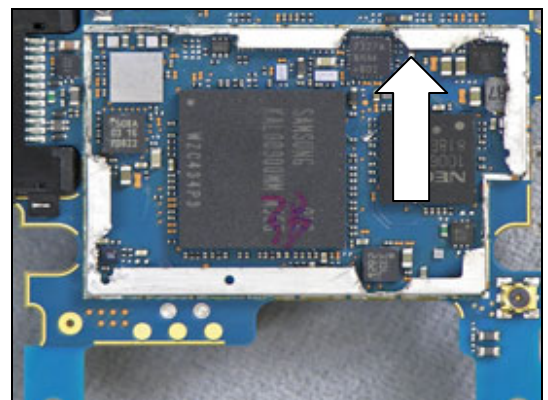
**PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!**  
Use Hot air soldering station to replace component



## V2470

## Schottky Barrier Diodes 2PIN

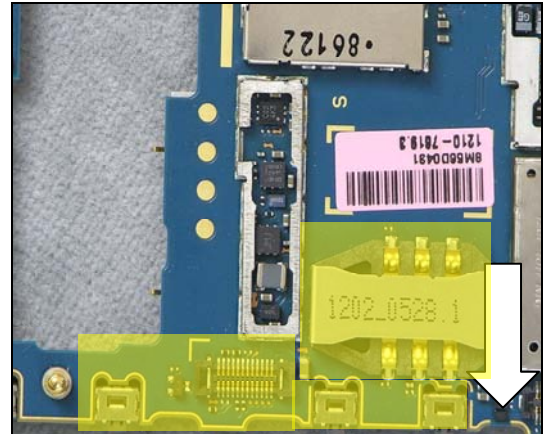
Use Hot air soldering station to replace component



## V2478

**PROTECT THE SIM CONNECTOR ,BTB CONNECTOR AND THE SWITCHES WITH CAPTON TAPE!**

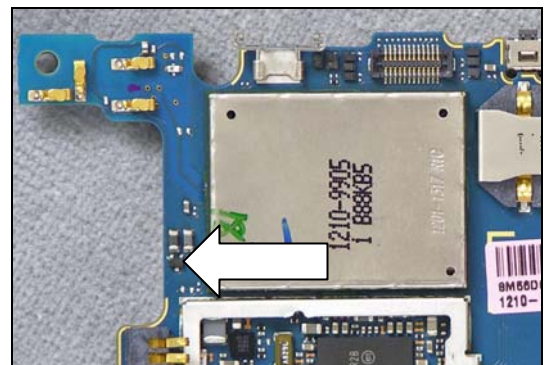
Use Hot air soldering station to replace component



## V3101

### Dual ESD protection diode 6V

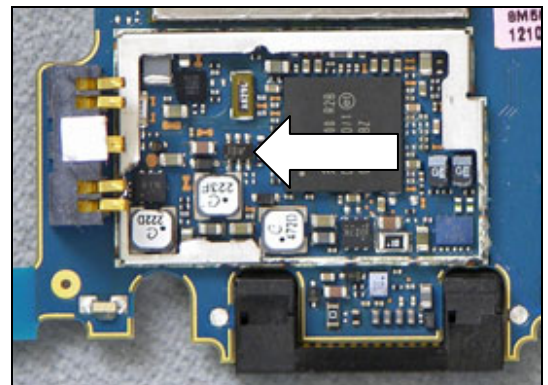
Use Hot air soldering station to replace component



## V4200

### Transistor, Mosfet, N-Channel

Use Hot air soldering station to replace component

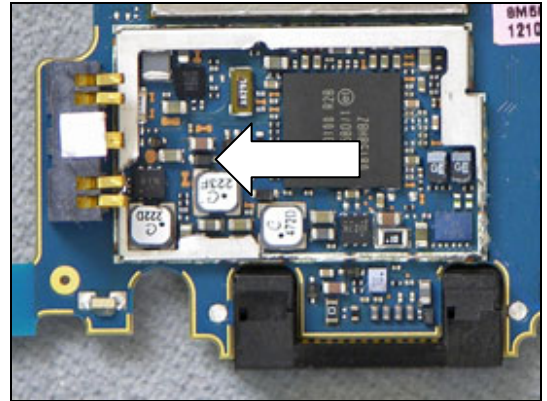




## V4201

Use Hot air soldering station to replace component

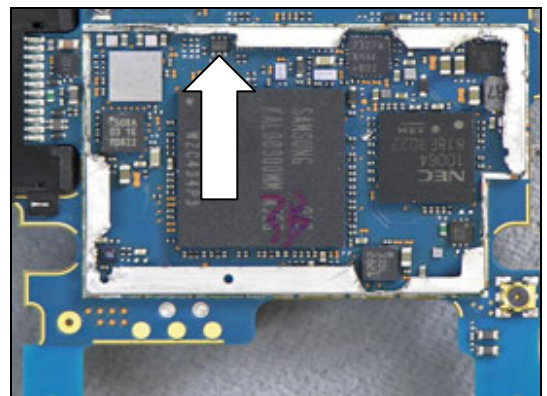
## Diode Schottky 0, SOD523



## V4203

Use Hot air soldering station to replace component

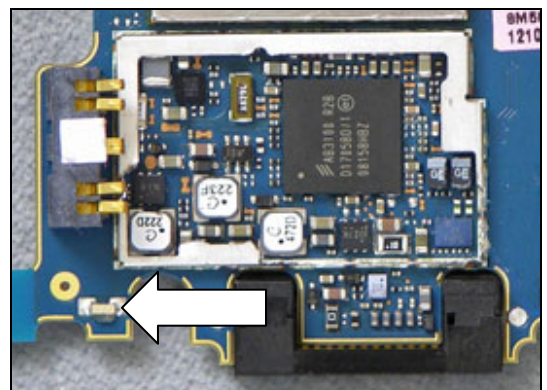
## Trans Array



## V4206

Use Hot air soldering station to remove component  
Use Soldering tool to mount the new component

## LED Red



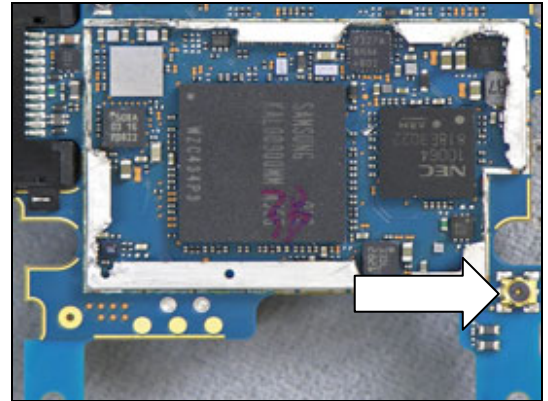


## **X1200**

Use Hot air soldering station and Bottom Heat to remove component

Use Soldering tool to mount the new component

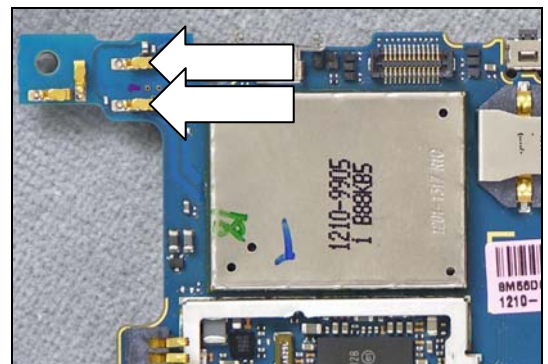
## **RF probe contact 6 Pin**



## **X1210, X1211**

Use Hot air soldering station and Bottom Heat to replace components

## **Conn Leaf Spring**

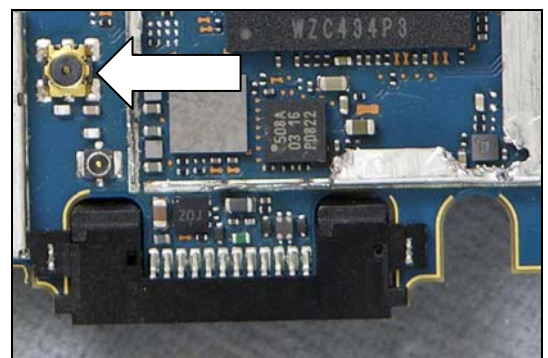


## **X1500**

Use Hot air soldering station and Bottom Heat to remove component

Use Soldering tool and Bottom Heat to mount the new component

## **RF probe contact 6 Pin**



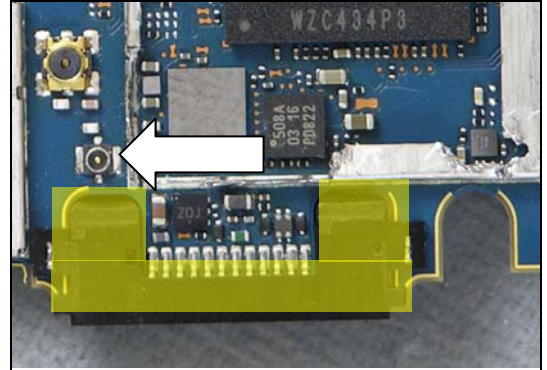
## X1530

**PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!**

Use Hot air soldering station and Bottom Heat to remove component

Use Soldering tool and Bottom Heat to mount the new component

## Conn Other

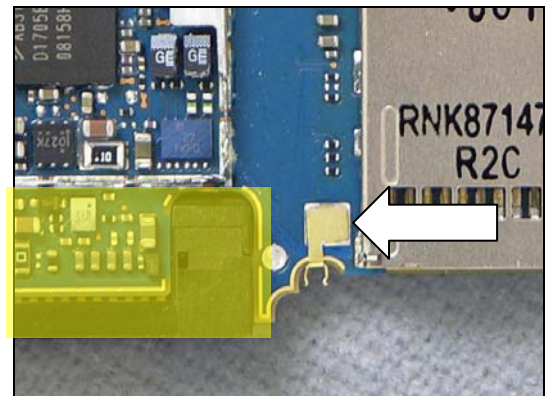


## X1540

**PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!**

Use Hot air soldering station and Bottom Heat to replace component

## Clip BT antenna

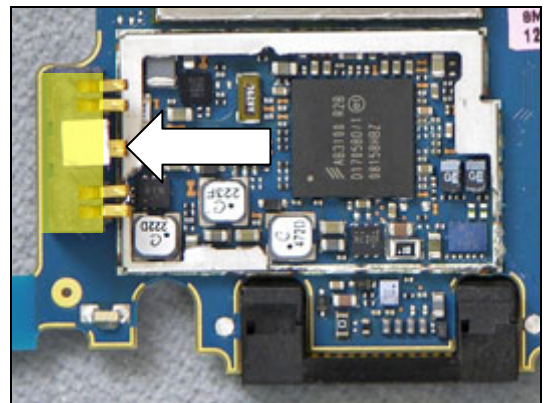


## X2201

**USE CAPTON TAPE TO PROTECT THE BATTERY CONNECTOR!**

Use BGA station to replace component

## Battery Leaf Connector



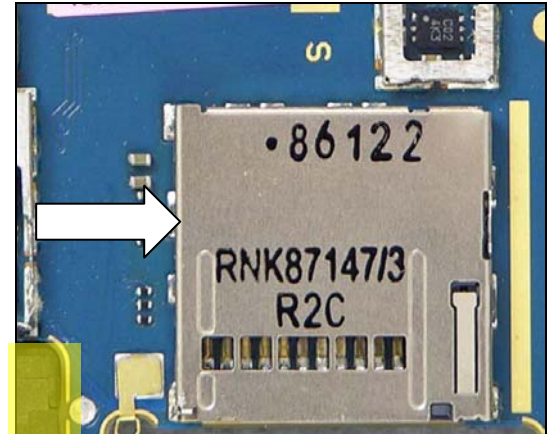




## X2401

**PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!**  
Use BGA station to replace component

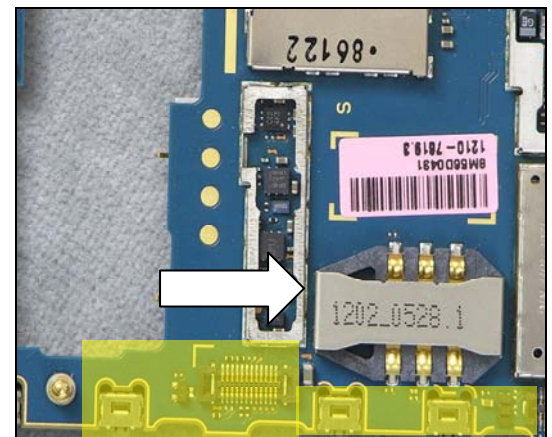
## Memory Card Reader



## X2402

**PROTECT THE BTB CONNECTOR AND THE SWITCHES WITH CAPTON TAPE!**  
Use BGA station to replace component

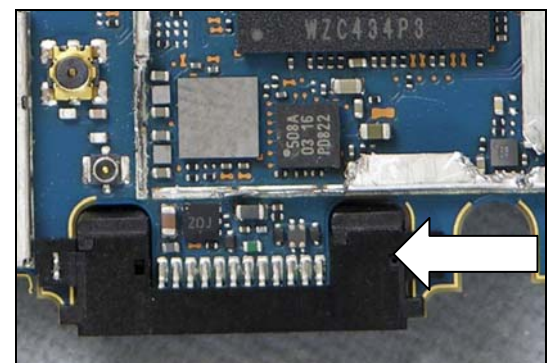
## SIM Card Reader



## X2405

Use Hot air soldering station and Bottom Heat to remove component  
Use Soldering tool and Bottom Heat to mount the new component

## System Connector



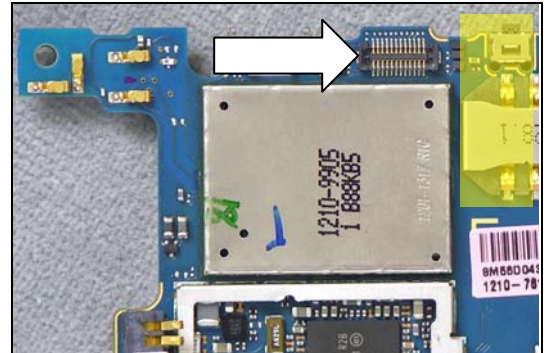


## X2410

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

Use Hot air soldering station and Bottom Heat to replace component

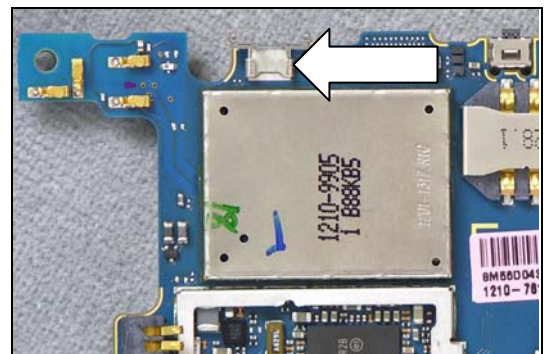
## BtB Receptacle 24pin



## X2411

Use Hot air soldering station and Bottom Heat to replace component

## Clip Camera switch



## X3102, X3103

Use Hot air soldering station and Bottom Heat to replace component

## Conn Leaf Spring





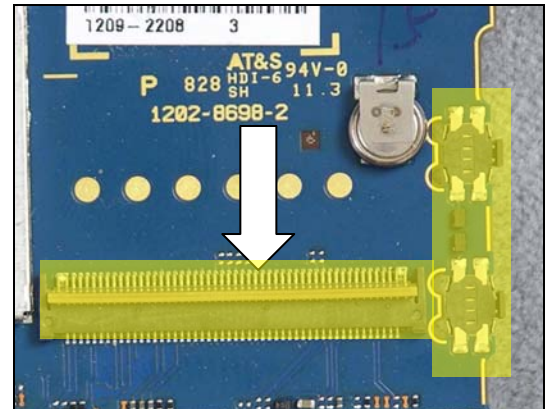
## X4200

**PROTECT THE SWITCHES WITH CAPTON TAPE!**

**USE CAPTON TAPE TO PROTECT THE FPC CONNECTOR!**

Use BGA station to replace component

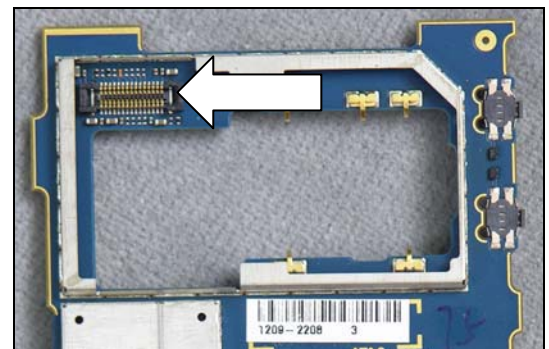
## 100 pin FPC connector



## X4300

Use Hot air soldering station and Bottom Heat to replace component

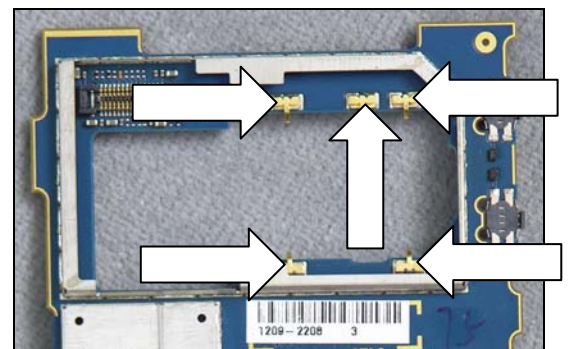
## Conn BtB 30 pin



## X4311, X4312, X4313, X4314, X4315

## Ground Spring Finger 1 pin

Use Hot air soldering station and Bottom Heat to replace component



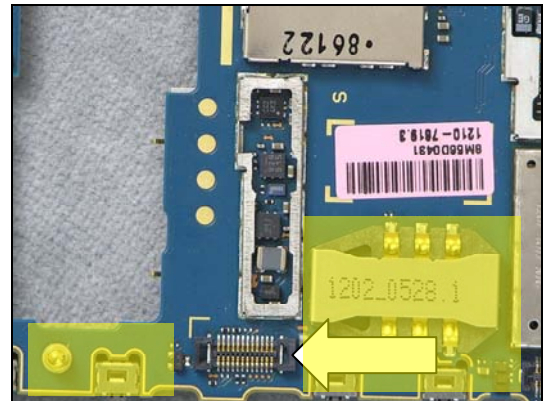


## X4400

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

Use Hot air soldering station and Bottom Heat to replace component

## Conn BtB 24 pin

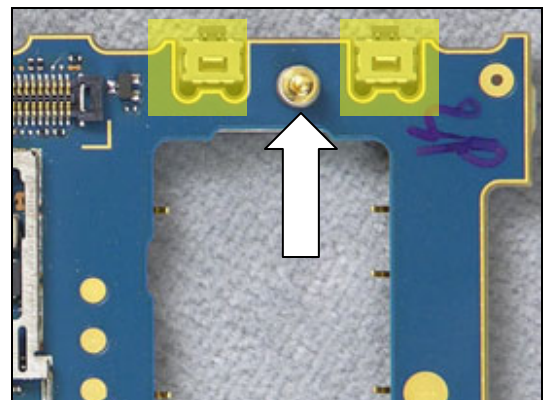


## X4410

**PROTECT THE SWITCHES WITH CAPTON TAPE!**

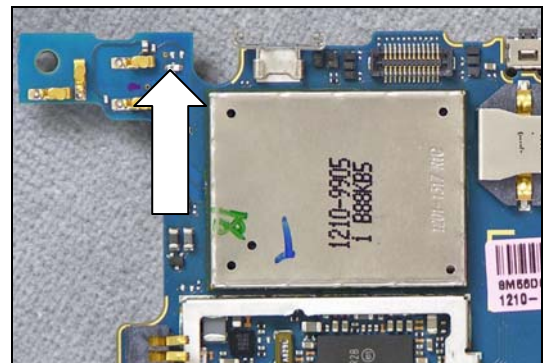
Use Hot air soldering station and Bottom Heat to replace component

## Pogopin Plug 1pin



## Z1200

Use Hot air soldering station to replace components



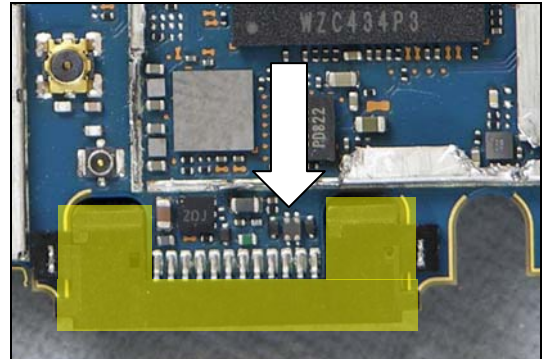




## Z2400

**PROTECT THE SYSTEM CONNECTOR WITH CAPTON TAPE!**  
Use Hot air soldering station to replace component

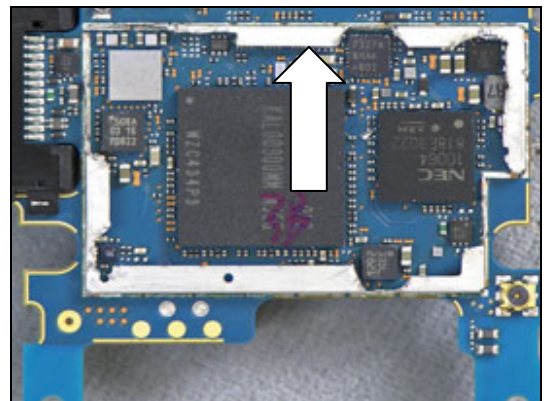
## Filter 100, MHz K1210



## Z4200

Use Hot air soldering station to replace component

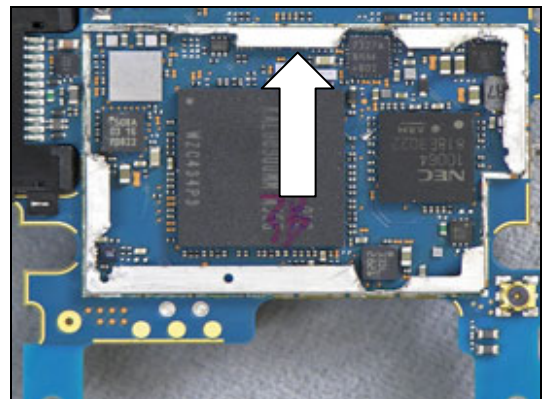
## LC Filter



## Z4201

Use Hot air soldering station to replace component

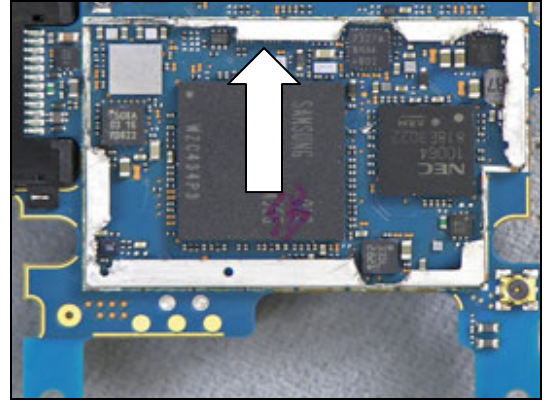
## LC Filter



## **Z4202**

Use Hot air soldering station to replace component

## **LC Filter**



## 6 Revision history

Rev.	Date	Changes / Comments
1	2008-10-24	First release
2	2008-12-05	B2100 and N1200 Released
3	2009-05-19	V2478,Z1200 and C4416 added