



Working Instruction, Electrical

Applicable for W595

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1 Read this first

CAUTION

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

Before you start replacing any components, make sure you have read and fully understood the contents of section 2 – 5.

Also make sure you have access to the mechanical Working Instruction and the equipment listed on the first page of section 6.

Attention! 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 degrees than 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 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 = 360°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.



3 Soldering issues

3.1 Hot air gun temperature requirements

The air temperature shall not exceed 360°C. The temperature shall be measured 5 mm from the nozzle outlet.

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

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

3.2 Soldering tip temperature requirements

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

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

3.3 Bottom heat requirements

In the chapter "Replacement of components" there are components which require to us a bottom heater during repair to pre-heat the board and to level out the ΔT on the PBA. It will also minimize thermal stress.

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

3.4 BGA rework specifications

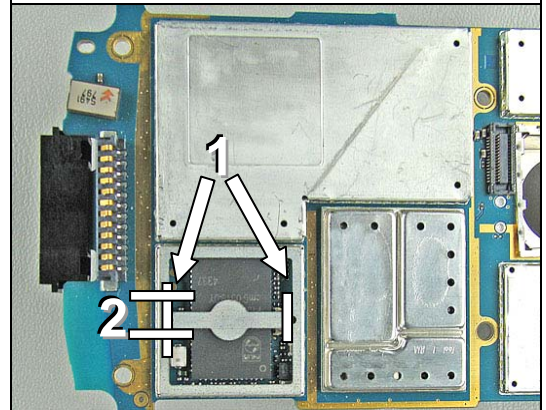
Follow the *Technical Requirement*, 1207-2949, for components that require use of BGA Rework Station.

4 Shield fence instruction

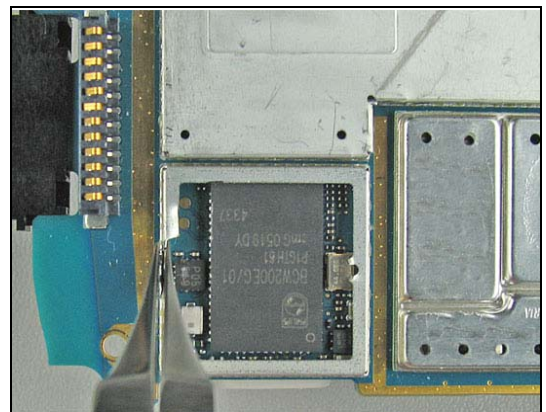
This instruction shows how to cut and bend the shield can fence to be able to replace components under the fence.
Use a sharp-edged pliers to cut the fence.
Use Shield fence pliers NTZ 112 537 to bend the fence.

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

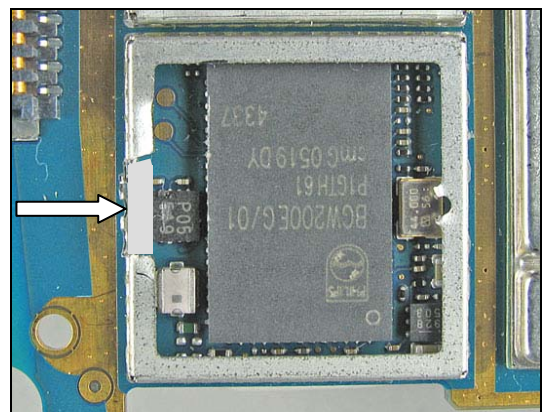
Remove the shield can lid, use a dentist hook.
Remove the pick up area according to the white lines with cutting pliers. (1)
This pick up area is only used when machine mounting and there is no need to put it back again.
Cut the shield can fence according to the white lines with cutting pliers. (2)



Bend carefully the shield fence with a shield fence plier.
Replace the components.

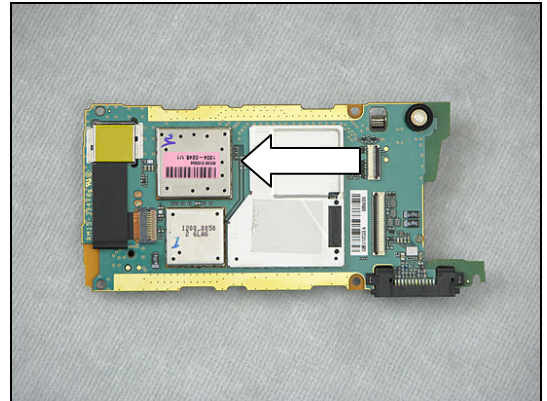


Replace the components.
Bend carefully back the shield fence.
Put back a **new** shield can lid.
Press on all sides of the lid until you hear a "click" sound.

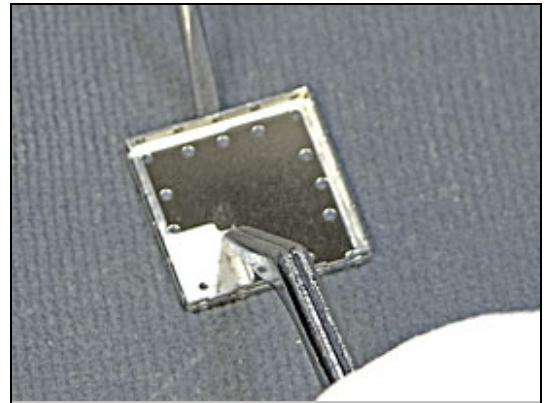


5 Preparations of Thor's shield can lid

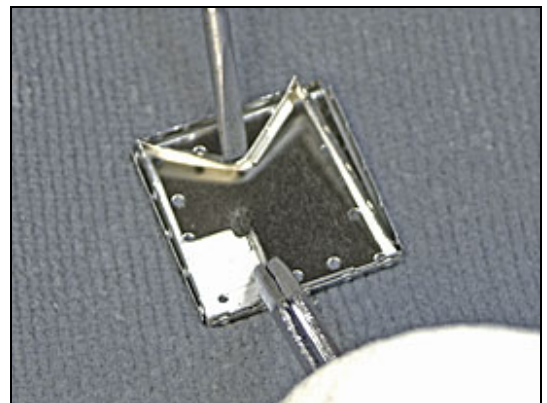
The shield can lid for Thor will be delivered together with a fence. The fence has to be removed from the lid before the lid can be used.



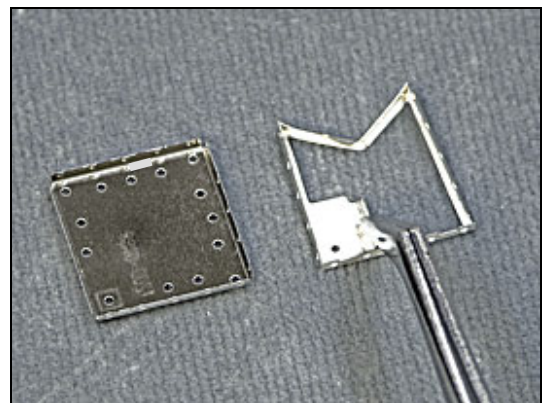
Use a screw driver and a pair of tweezers.
Place the screw driver between the lid and the fence.



Press the shield can fence to the middle.



Use the tweezers to move the fence from the lid.
The shield can lid is now ready to use.



6 Replacement of components

EQUIPMENT

- Dentist hook
- ESD-gloves (cotton gloves)
- ESD-wristband
- Shield fence pliers NTZ 112 537
- Soldering iron
- Hot air soldering equipment
- BGA replacement 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

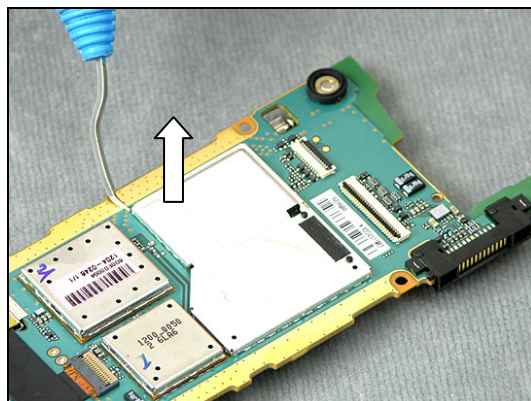
MECHANICAL INSTRUCTIONS

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

6.1 Shield Cover

REMOVAL

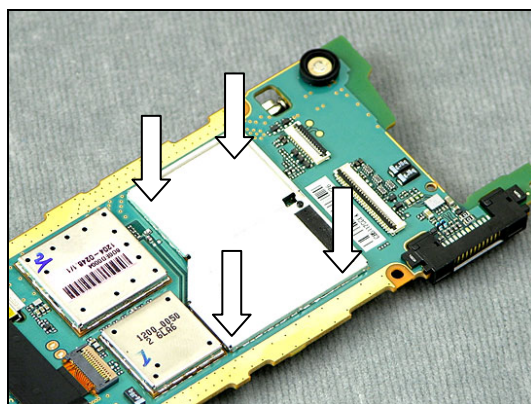
Use a dentist hook or a pair of tweezers to remove the Shield Cover.



INSTALLATION

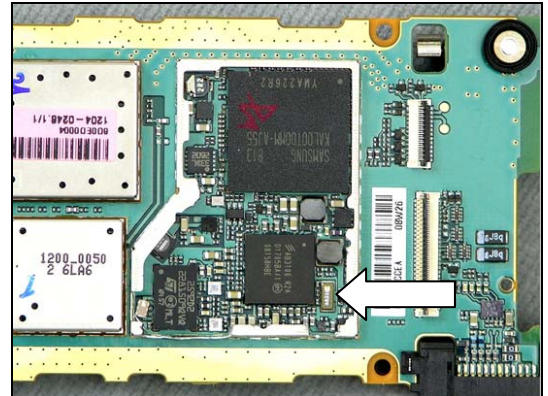
Replace a **new** Shield Cover after repair.

Press down the Shield Cover to snap all hooks onto the shielding frame.



6.2 B2100 Crystal 32,768 kHz

Replace the Crystal with hot air soldering equipment.



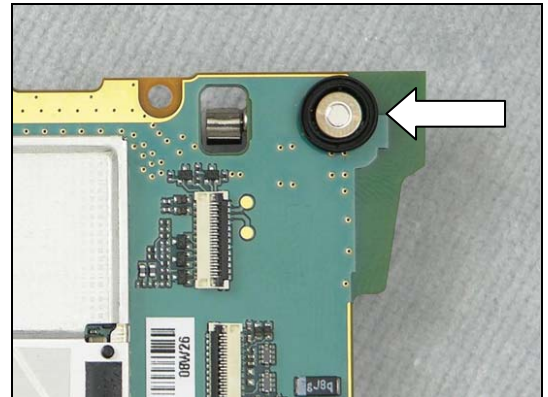
6.3 B3105 Microphone

Remove the Microphone Gasket.

Replace the Microphone with hot air soldering equipment.

Protect the new Microphone with heat resisting tape.

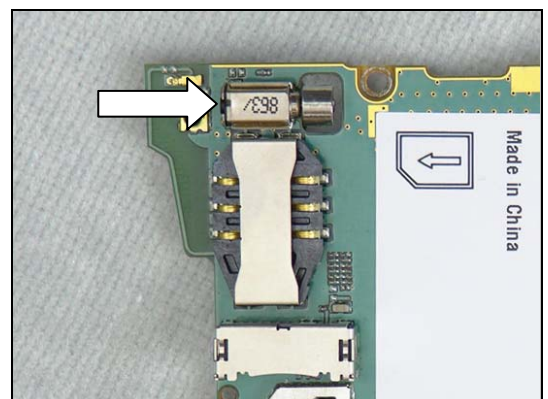
Mount the Microphone Gasket.



6.4 B4200 Vibrator

Protect the SIM connector with heat resisting tape.

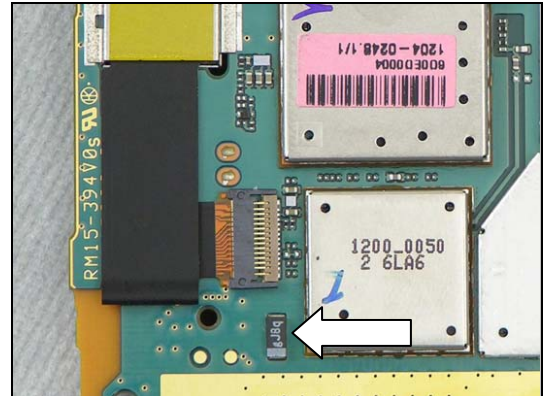
Replace the Vibrator with a soldering iron or hot air soldering equipment.



6.5 C2217 Capacitor 220 μ F 4.0 V

Protect the Camera FPC and the connector with heat resisting tape.

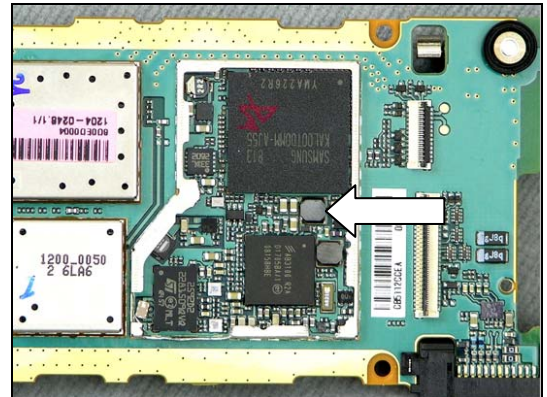
Replace the Capacitor with a soldering iron or hot air soldering equipment.



6.6 L2200 Inductor Wire wound 4.7 μ H

Protect D2000 and N2000 with heat resisting tape.

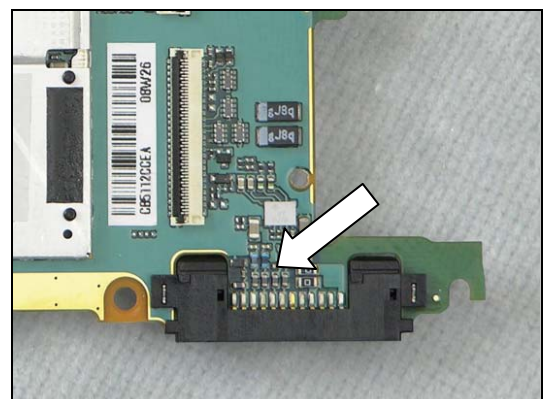
Replace the Inductor with hot air soldering equipment.



6.7 L2401 - L2404 and L2411 Filter 0.0 Hz 0402

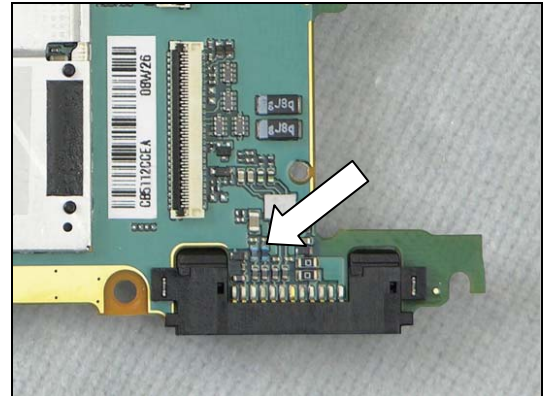
Protect the System connector with heat resisting tape.

Replace the Filter with a soldering iron or hot air soldering equipment.



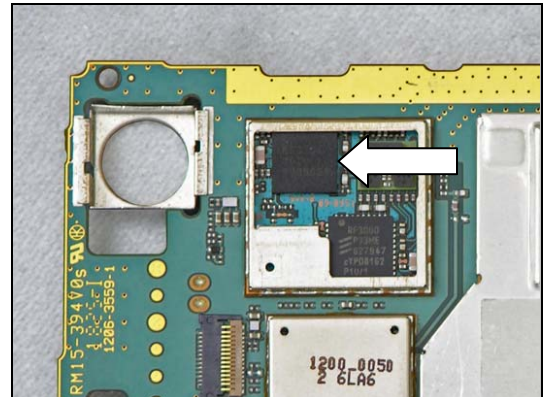
6.8 L2421 - L2422 Inductor 120nH 5% 0402 0.11A

Protect the System connector with heat resisting tape.
Replace the Inductor with a soldering iron or hot air soldering equipment.



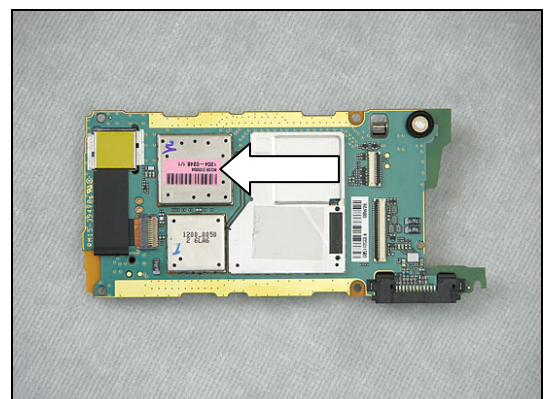
6.9 N1002 IC Amplifier

Remove the shield can lid with a dentist hook.
Replace the IC Amplifier with hot air soldering or BGA equipment.
Prepare a **new** shield can lid (see chapter 5 for further instructions).
Mount the new shield can lid with your fingers and press the shield can lid to attach it.
A CLICKING SOUND WILL CONFIRM A SECURE FIT!



6.10 N1200 Thor2 Radio Module EDGE

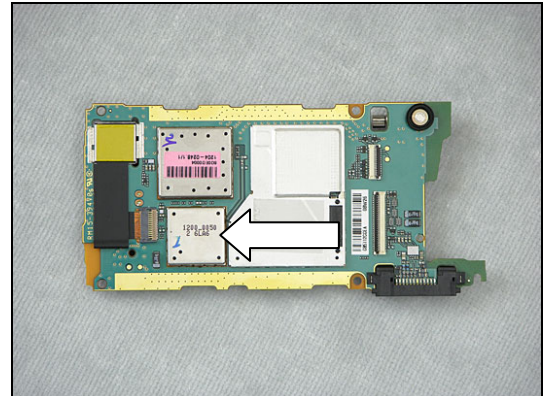
Protect the Camera FPC and the connector with heat resisting tape.
Replace the Radio Module with BGA equipment.



6.11 N1210 RF-Module Squid prebumped

Protect the Camera FPC and the connector with heat resisting tape.

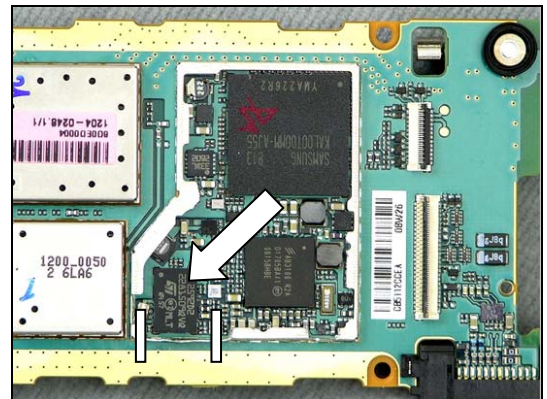
Replace the Radio Module with BGA equipment.



6.12 N1400 Module Bluetooth + FM STLC2592

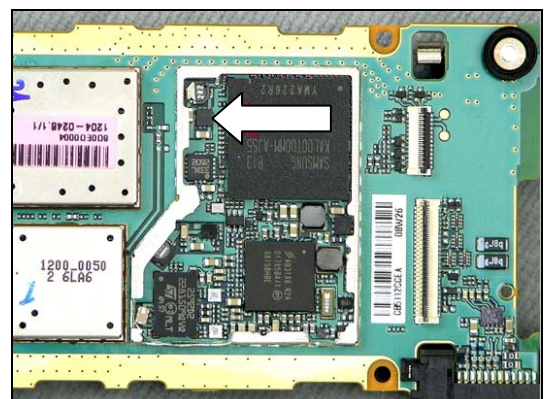
Cut and bend the shield can fence to be able to replace components under the fence according 'Shield fence instruction'.

Replace the Bluetooth Module with hot air soldering equipment or BGA equipment.



6.13 N2202 IC Vreg 600mA

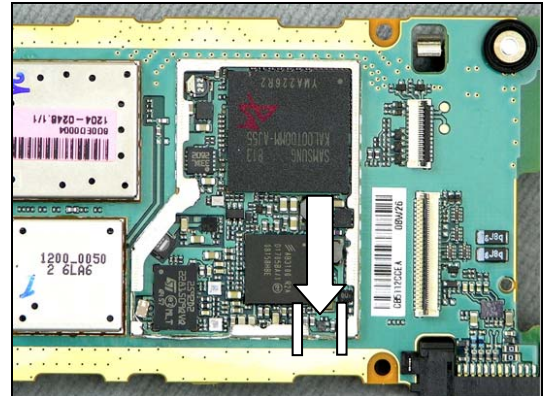
Replace the IC with hot air soldering equipment.



6.14 N2203 IC Vreg PLP1010-4

Cut and bend the shield can fence to be able to replace components under the fence according 'Shield fence instruction'.

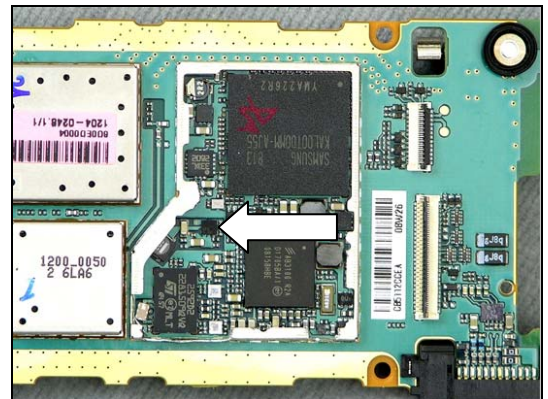
Replace the IC with hot air soldering equipment.



6.15 N2205 DC/DC Converter

Cut and remove the shield can roof to be able to replace components under the roof according 'Shield fence instruction'.

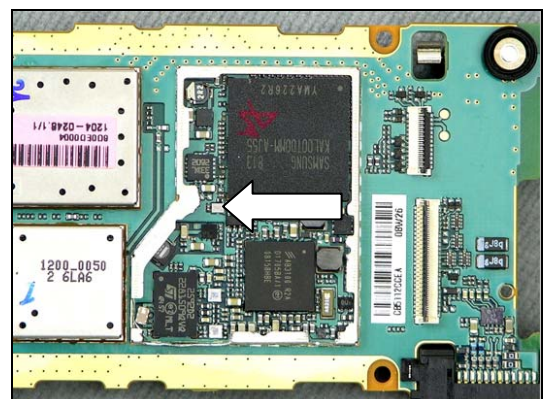
Replace the Converter with hot air soldering equipment.



6.16 N2400 1-Bit Level Translator

Cut and remove the shield can roof to be able to replace components under the roof according 'Shield fence instruction'.

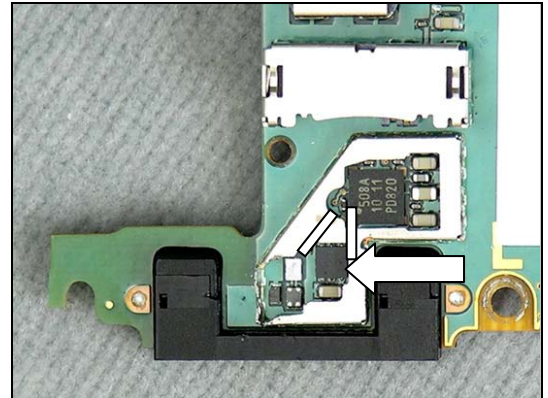
Replace the Translator with hot air soldering equipment.



6.17 N2402 IC ESD Prot UDFN 6 2x2 mm

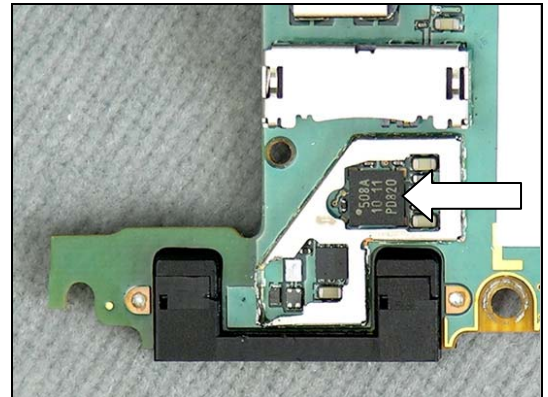
Cut and bend the shield can fence to be able to replace components under the fence according 'Shield fence instruction'.

Replace the IC with a soldering iron or hot air soldering equipment.



6.18 N2404 IC IF ISP1508 ES3 (3.5*3.5*0.8)

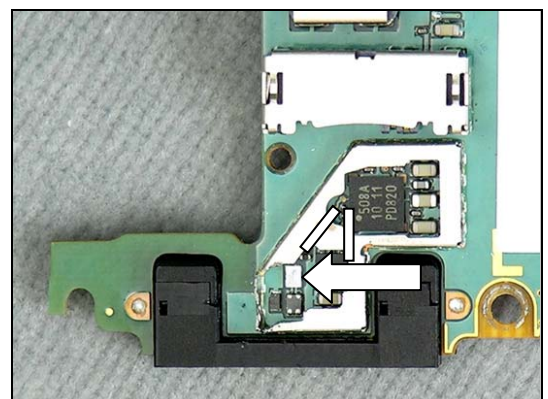
Replace the IC with hot air soldering equipment.



6.19 N2410 IC ESD Prot CS-5

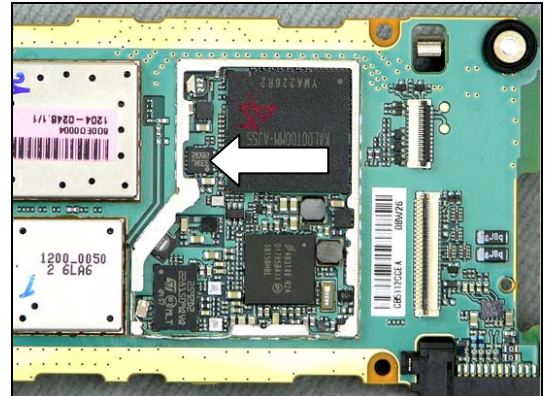
Cut and bend the shield can fence to be able to replace components under the fence according 'Shield fence instruction'.

Replace the IC with hot air soldering equipment.



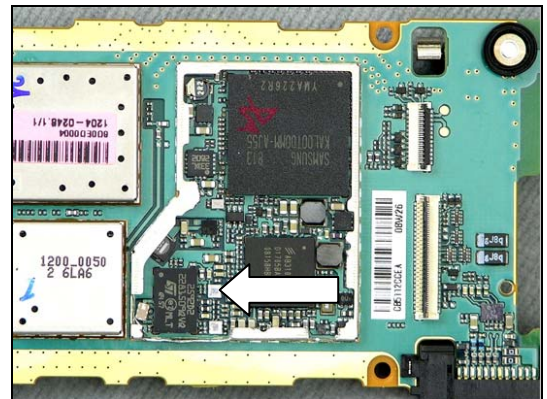
6.20 N2490 ASIC Accelerometer

Replace the Accelerometer with hot air soldering equipment.



6.21 N3100 IC CS-9

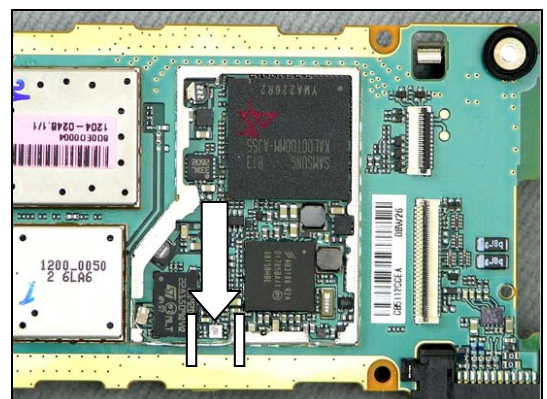
Replace the IC with hot air soldering equipment.



6.22 N3102 IC CS-9

Cut and bend the shield can fence to be able to replace components under the fence according 'Shield fence instruction'.

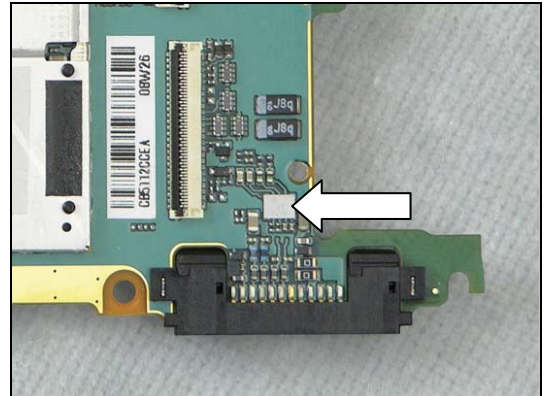
Replace the IC with hot air soldering equipment.



6.23 N3101 ASIC Tjatte3 CSP20

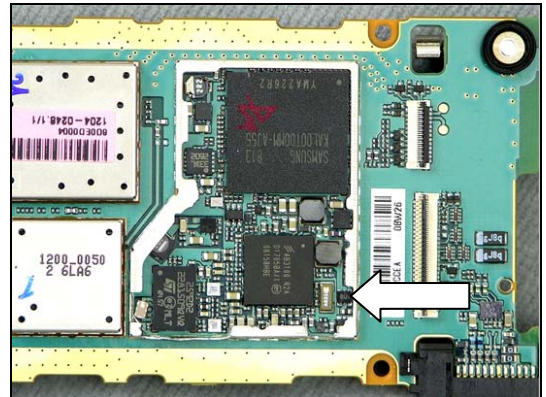
Protect the System connector and the ZIF Connector with heat resisting tape.

Replace the ASIC with hot air soldering equipment.



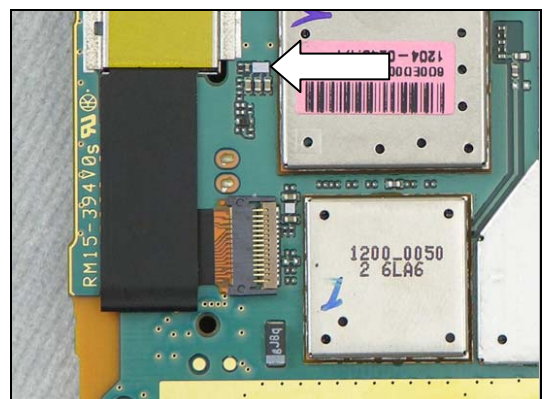
6.24 N4200 Trans N-ch FET

Replace the Transistor with hot air soldering equipment.



6.25 N4310 IC Vreg

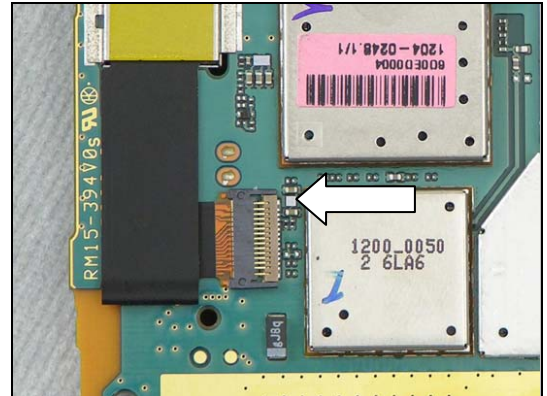
Replace the IC with hot air soldering equipment.



6.26 N4311 IC Vreg

Protect the Camera FPC and the connector with heat resisting tape.

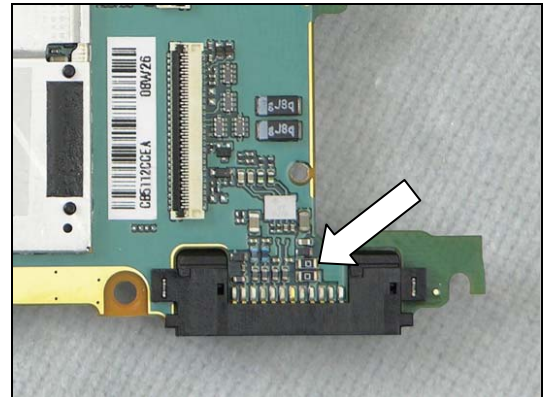
Replace the IC with hot air soldering equipment.



6.27 R2432 and R2434 Resistor 0 Ohm +/-50m 63mW K0603

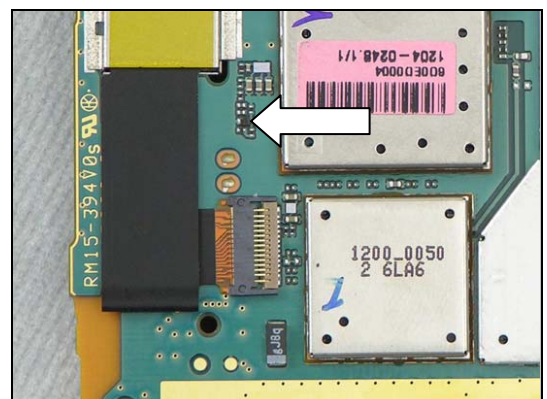
Protect the System connector with heat resisting tape.

Replace the Resistor with a soldering iron or hot air soldering equipment.



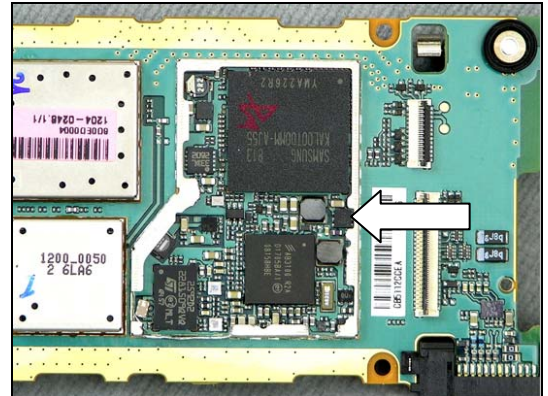
6.28 V2200 Zener diode

Replace the Diode with a soldering iron or hot air soldering equipment.



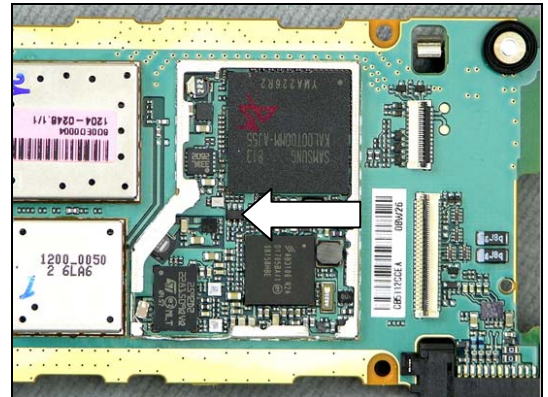
6.29 V2202 Trans P-ch FET

Replace the Transistor with hot air soldering equipment.



6.30 V2405 MOSFET Complementary N P 20 V (DS)

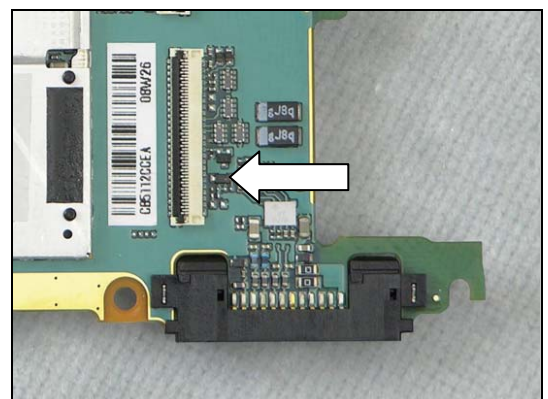
Replace the MOSFET transistor with a soldering iron or hot air soldering equipment.



6.31 V2408 Schottky Barrier Diode 2PIN

Protect the ZIF Connector with heat resisting tape.

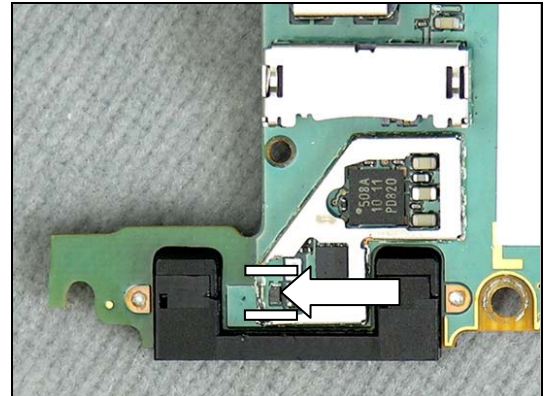
Replace the Diode with a soldering iron or hot air soldering equipment.



6.32 V2420 Zenner Diode 15V

Cut and bend the shield can fence to be able to replace components under the fence according 'Shield fence instruction'.

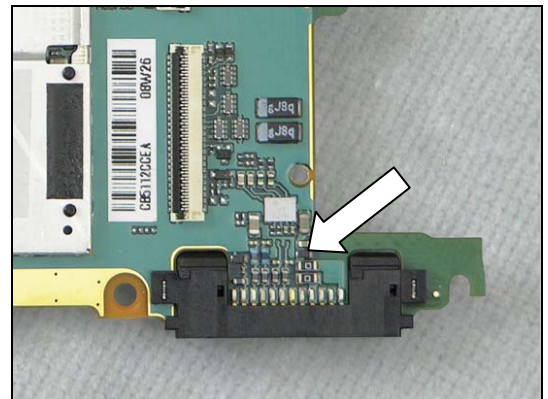
Replace the Diode with a soldering iron or hot air soldering equipment.



6.33 V2421 Zenner Diode 15V

Protect the System connector with heat resisting tape.

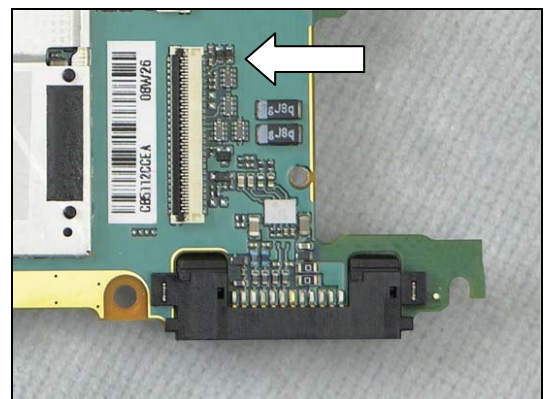
Replace the Diode with a soldering iron or hot air soldering equipment.



6.34 V4220 Zenner Diode 5,6V

Protect the System connector with heat resisting tape.

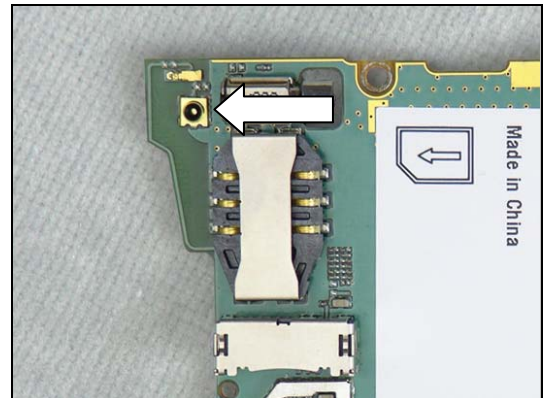
Replace the Diode with a soldering iron or hot air soldering equipment.



6.35 X1200 Conn Receptacle 0p Hirose RF connector

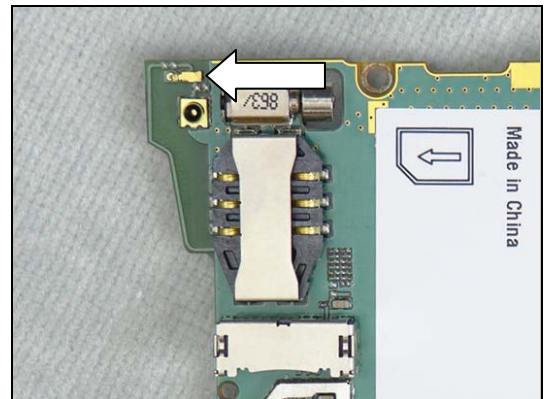
Remove the Connector with hot air soldering equipment.
Replace a new Connector with a soldering iron.

NOTE: Use as little flux as possible to place the new part.
Make sure flux does not get on the component body.



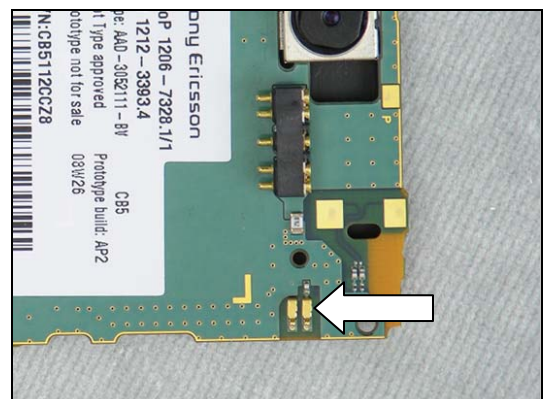
6.36 X1201 Antenna connector

Replace the Connector with a soldering iron.



6.37 X1400 and X1401 Antenna connector

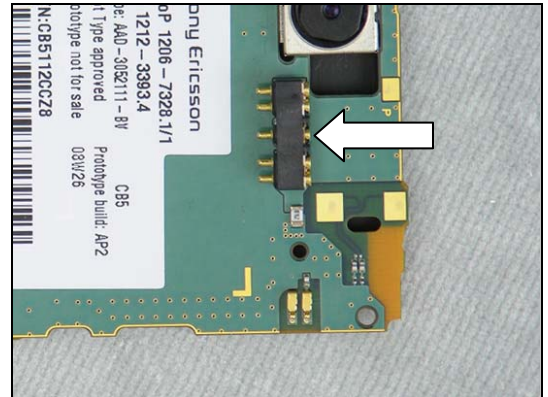
Replace the Connector with a soldering iron.



6.38 X2200 Battery Connector

Remove the Battery Connector with hot air soldering equipment.

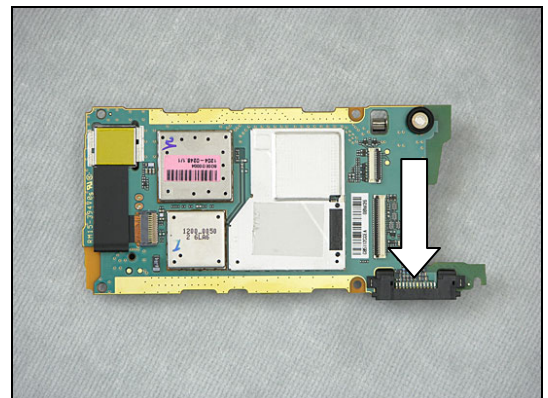
Replace a new Connector with a soldering iron or BGA equipment.



6.39 X2400 System Connector

Remove the Connector with a soldering iron or hot air soldering equipment.

Mount the new Connector with a soldering iron.

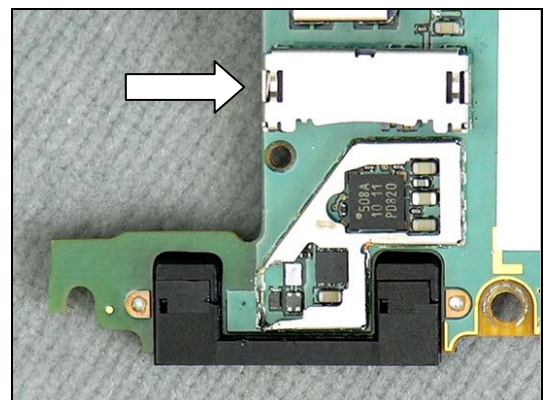


6.40 X2410 MS Connector

Protect the SIM connector with heat resisting tape.

Remove the Connector with hot air soldering equipment.

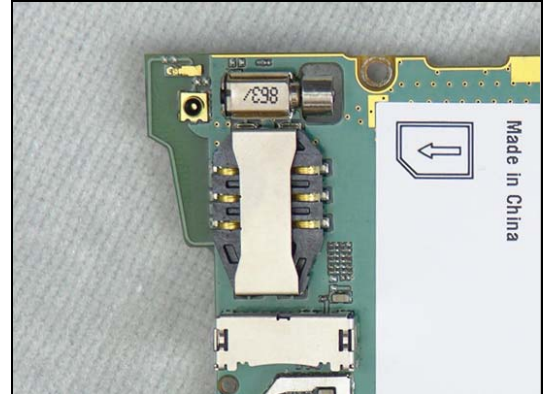
Use BGA soldering equipment to replace the Connector.



6.41 X2420 SIM Connector

Remove the SIM Connector with hot air soldering equipment.

Replace a new Connector with a soldering iron or BGA equipment.

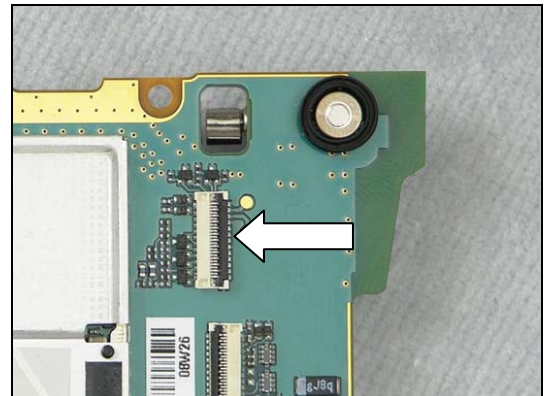


6.42 X2430 Connector FPC 25p

Protect the Connector FPC 51p with heat resisting tape.

Remove the Connector with hot air soldering equipment.

Replace a new Connector with a soldering iron. Bottom heat is required.

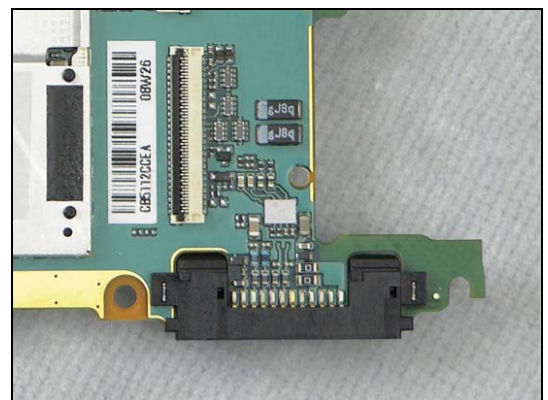


6.43 X4200 Connector FPC 51p

Protect the Connector FPC 25p and the System connector with heat resisting tape.

Remove the Connector with hot air soldering equipment.

Replace a new Connector with a soldering iron. Bottom heat is required.



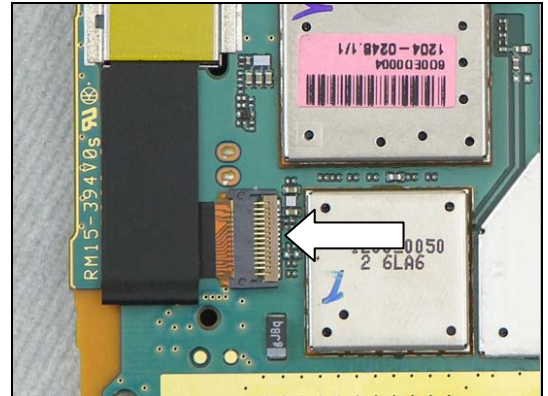
6.44 X4300 Connector FPC 26p

Disassembly the Camera.

Remove the Connector with hot air soldering equipment.

Replace a new Connector with a soldering iron. Bottom heat is required.

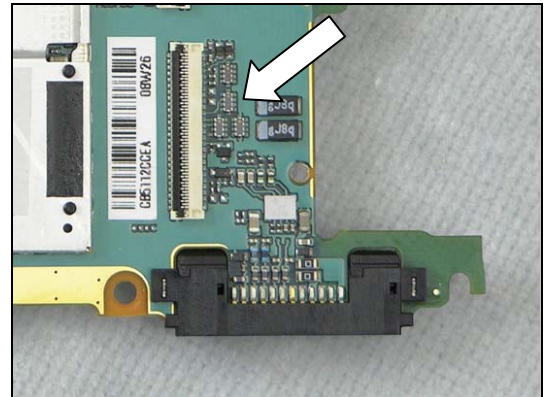
Reassembly the Camera.



6.45 Z4200 - Z4203 LC Filter

Protect the ZIF Connector with heat resisting tape.

Replace the Filter with a soldering iron or hot air soldering equipment.



7 Revision History

Rev.	Date	Changes / Comments
1	2008-09-26	First release
2	2009-06-23	V4220 added