# SERVICE MANUAL
# Level 1&2
# NOKIA 1606 FOLD
# RH-109

**Transceiver characteristics**

**Band**:
RH-109 : CDMA200 1XRTT tri-band Cell, PCS, AWS

**Display**:
**Main display**: 1.77" 128x160 pixel, 262k true color internal display

**Secondary/hidden display**: 0.97" 96x32 pixel, white monochrome external display

**Operating System**:
L4

**Connections**:
Micro USB port for charging and data transfer (USB 2.0+)

Transceiver with BL-4B battery pack

| Talk time | Standby | Note |
|---|---|---|
| Up to 3.5 hours | 10 days | Depend network parameters and phone setting |

## 1. CHANGE HISTORY

| Status | Version No. | Date | Comments |
|---|---|---|---|
| Issue 0.1 | 2008.05.13 | Michelle Wang | Initial draft |
| Issue 0.2 | 2008.07.17 | Michelle Wang | Updated version |
| Issue 0.3 | 2008.07.24 | Michelle Wang | Updated version |
| Issue 0.4 | 2008.08.27 | Michelle Wang | Update Exploded View |
| Issue 0.5 | 2008.09.04 | Michelle Wang | Update Page 1-8 Heading |
| Issue 1.0 | 2008.09.16 | Michelle Wang | Template update |

The purpose of this document is to help NOKIA service levels 1 and 2 workshop technicians to carry out service to NOKIA products. This Service Manual is to be used only by authorized NOKIA service suppliers, and the content of it is confidential. Please note that NOKIA provides also other guidance documents (e.g. Service Bulletins) for service suppliers, follow these regularly and comply with the given instructions.

While every endeavor has been made to ensure the accuracy of this document, some errors may exist. If you find any errors or if you have further suggestions, please notify NOKIA using the address below:

**CMO Operation & Logistics**
**Training and Vendor Development**
**Multimedia Creation & Support**
**mailto:Service.Manuals@nokia.com**

Please keep in mind also that this documentation is continuously being updated and modified, so watch always out for the newest version.

## 2. COPYRIGHT



**IMPORTANT**

This document is intended for use by qualified service personnel only.

## 3. WARNINGS AND CAUTIONS

Please refer to the phone's user guide for instructions relating to operation, care and maintenance including important safety information. Note also the following:

### 3.1 Warnings

1. CARE MUST BE TAKEN ON INSTALLATION IN VEHICLES FITTED WITH ELECTRONIC ENGINE MANAGEMENT SYSTEMS AND ANTI-SKID BRAKING SYSTEMS. UNDER CERTAIN FAULT CONDITIONS, EMITTED RF ENERGY CAN AFFECT THEIR OPERATION. IF NECESSARY, CONSULT THE VEHICLE DEALER/MANUFACTURER TO DETERMINE THE IMMUNITY OF VEHICLE ELECTRONIC SYSTEMS TO RF ENERGY.
2. THE HANDPORTABLE TELEPHONE MUST NOT BE OPERATED IN AREAS LIKELY TO CONTAIN POTENTIALLY EXPLOSIVE ATMOSPHERES, EG PETROL STATIONS (SERVICE STATIONS), BLASTING AREAS ETC.
3. OPERATION OF ANY RADIO TRANSMITTING EQUIPMENT, INCLUDING CELLULAR TELEPHONES, MAY INTERFERE WITH THE FUNCTIONALITY OF INADEQUATELY PROTECTED MEDICAL DEVICES. CONSULT A PHYSICIAN OR THE MANUFACTURER OF THE MEDICAL DEVICE IF YOU HAVE ANY QUESTIONS. OTHER ELECTRONIC EQUIPMENT MAY ALSO BE SUBJECT TO INTERFERENCE.

### 3.2 Cautions

1. Servicing and alignment must be undertaken by qualified personnel only.
2. Ensure all work is carried out at an anti-static workstation and that an anti-static wrist strap is worn.
3. Use only approved components as specified in the parts list.
4. Ensure all components, modules screws and insulators are correctly re-fitted after servicing and alignment.
5. Ensure all cables and wires are repositioned correctly

## 4. ESD PROTECTION

Nokia requires that service points have sufficient ESD protection (against static electricity) when servicing the phone.
Any product of which the covers are removed must be handled with ESD protection. The SIM card can be replaced without ESD protection if the product is otherwise ready for use.
To replace the covers ESD protection must be applied.
All electronic parts of the product are susceptible to ESD. Resistors, too, can be damaged by static electricity discharge.
All ESD sensitive parts must be packed in metallized protective bags during shipping and handling outside any ESD Protected Area (EPA).
Every repair action involving opening the product or handling the product components must be done under ESD protection.
ESD protected spare part packages MUST NOT be opened/closed out of an ESD Protected Area.
For more information and local requirements about ESD protection and ESD Protected Area, contact your local Nokia After Market Services representative.

## 5. CARE AND MAINTENANCE

This product is of superior design and craftsmanship and should be treated with care. The suggestions below will help you to fulfil any warranty obligations and to enjoy this product for many years.

- Keep the phone and all its parts and accessories out of the reach of small children.
- Keep the phone dry. Precipitation, humidity and all types of liquids or moisture can contain minerals that will corrode electronic circuits.
- Do not use or store the phone in dusty, dirty areas. Its moving parts can be damaged.
- Do not store the phone in hot areas. High temperatures can shorten the life of electronic devices, damage batteries, and warp or melt certain plastics.
- Do not store the phone in cold areas. When it warms up (to its normal temperature), moisture can form inside, which may damage electronic circuit boards.
- Do not drop, knock or shake the phone. Rough handling can break internal circuit boards.
- Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the phone.
- Do not paint the phone. Paint can clog the moving parts and prevent proper operation.
- Use only the supplied or an approved replacement antenna. Unauthorised antennas, modifications or attachments could damage the phone and may violate regulations governing radio devices.

All of the above suggestions apply equally to the product, battery, charger or any accessory.

## 6. BATTERY INFORMATION

Note: A new battery's full performance is achieved only after two or three complete charge and discharge cycles! The battery can be charged and discharged hundreds of times but it will eventually wear out.

When the operating time (talk-time and standby time) is noticeably shorter than normal, it is time to buy a new battery. Use only batteries approved by the phone manufacturer and recharge the battery only with the chargers approved by the manufacturer.

Unplug the charger when not in use. Do not leave the battery connected to a charger for longer than a week, since overcharging may shorten its lifetime.

If left unused a fully charged battery will discharge itself over time Temperature extremes can affect the ability of your battery to charge.

For good operation times with Ni-Cd/NiMh batteries, discharge the battery from time to time by leaving the product switched on until it turns itself off (or by using the battery discharge facility of any approved accessory available for the product).

Do not attempt to discharge the battery by any other means Use the battery only for its intended purpose.

Never use any charger or battery which is damaged.

Do not short-circuit the battery. Accidental short-circuiting can occur when a metallic object (coin, clip or pen) causes direct connection of the + and - terminals of the battery (metal strips on the battery) for example when you carry a spare battery in your pocket or purse. Short-circuiting the terminals may damage the battery or the connecting object.

Leaving the battery in hot or cold places, such as in a closed car in summer or winter conditions, will reduce the capacity and lifetime of the battery. Always try to keep the battery between 15°C and 25°C (59°F and 77°F).

A phone with a hot or cold battery may temporarily not work, even when the battery is fully charged. Batteries' performance is particularly limited in temperatures well below freezing.

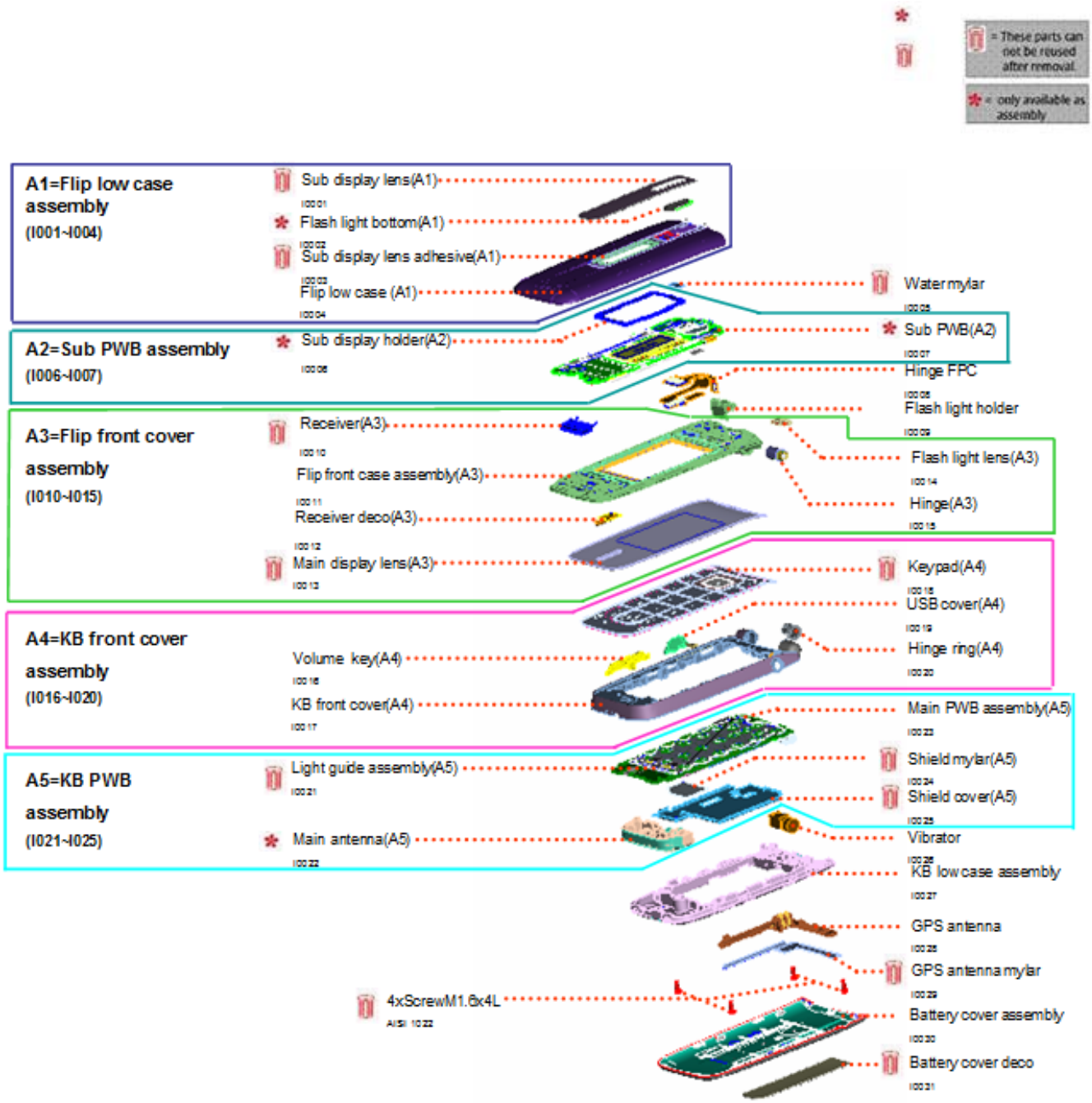
Do not dispose batteries in a fire! Dispose of batteries according to local regulations (e.g. recycling).

Do not dispose as household waste.

## 7. EXPLODED VIEW

See corresponding ITEM/CIRCUIT REF in the Spare Parts Service Bulletins on NOL.

1606 FOLD RH-109 EXPLODED VIEW

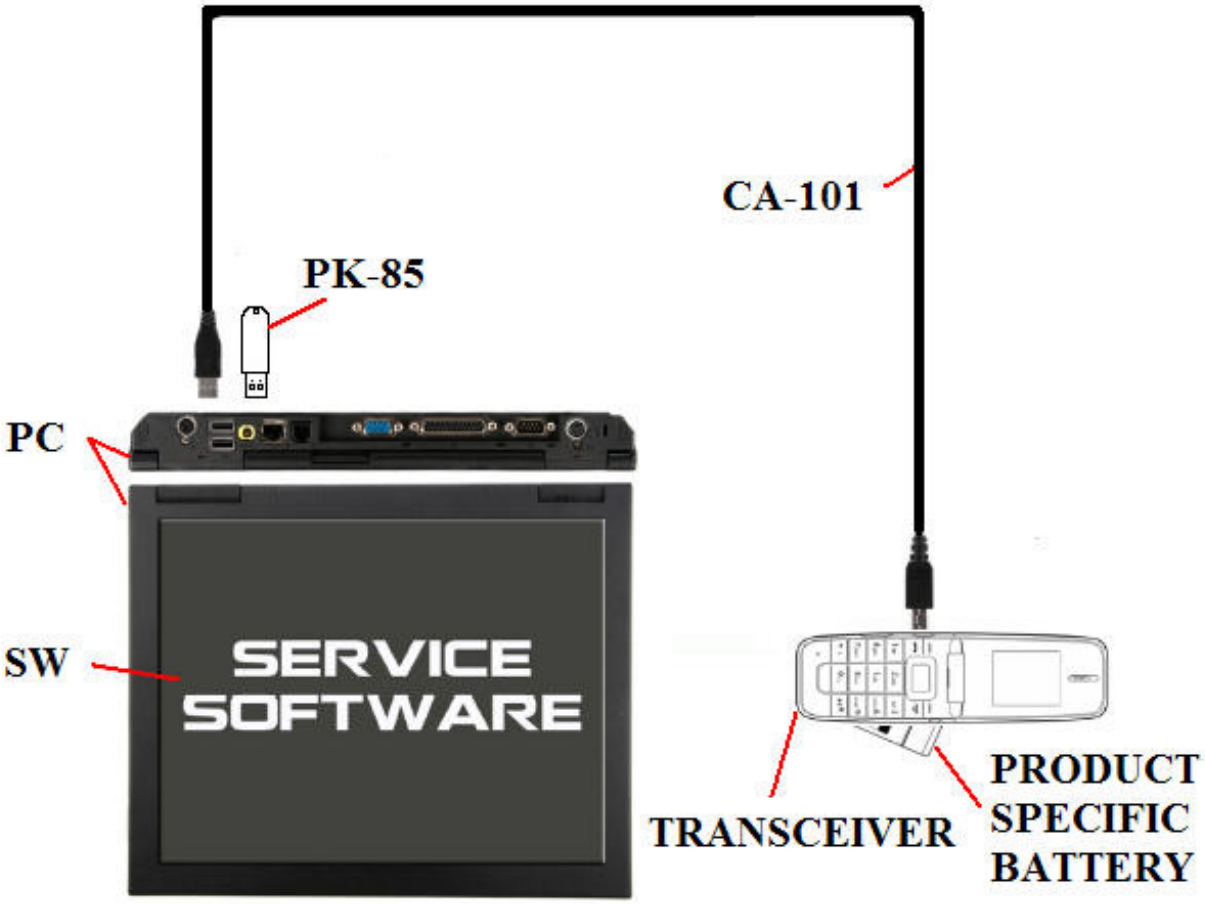


## 8. SERVICE DEVICES

| | | |
|---|---|---|
|  AC-6 Travel Charger |   BL-4B Internal Battery |  RJ-230 Universal Soldering Jig |
|  CA-101 Service Cable |  SS-124 Domesheet Alignment Jig |   **NMP standard toolkit (v2)** For more information, refer to the Service Bulletin (SB-011) on NOKIA Online. Supplier or manufacturer contacts for tool re-order can be found in "Recommended service equipment" document on NOKIA |

## 9. SW-UPDATE

POS (Point of Sale) flash concept



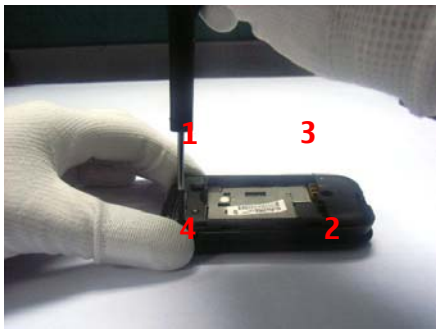
## 10. DISASSEMBLY INSTRUCTION

1. Nokia 1606 ARTE disassembly.

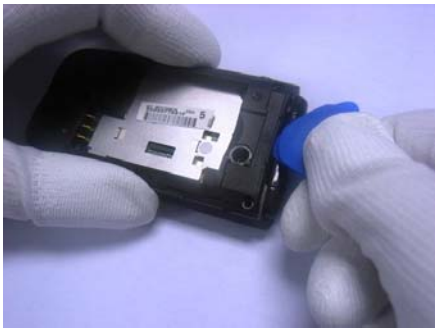
2. You need the Nokia Standard Toolkit version 2.

3. Push release and lift to remove battery cover.

4. Lift and remove battery.



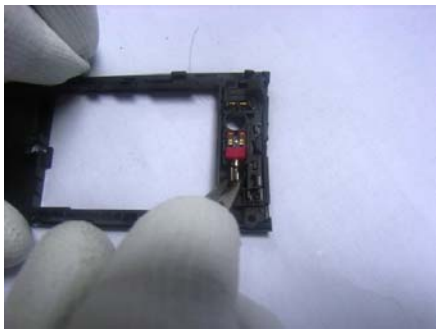

5. Unscrew these 4 screws in the order shown.
**(Screw torsion 1.0 ±0.1 Kgf-cm)**



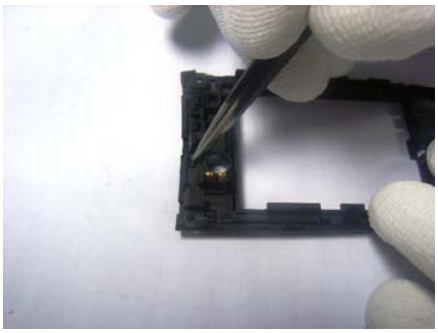
6. Insert the opening tool to lift up

7. Lift up the D-Cover.

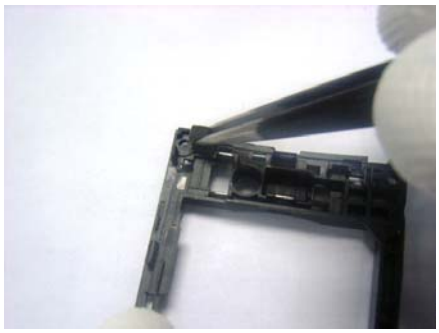
8. D-Cover assembly.



9. Remove the vibrator.

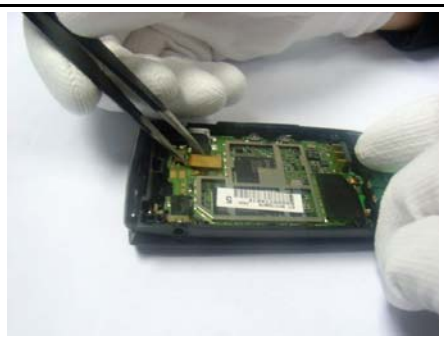


10. Remove the GPS antenna.



11. Remove the FPC sponge.

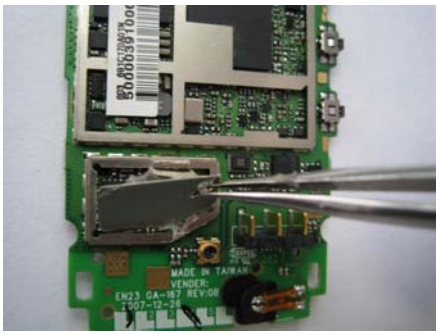
12. Remove the shielding case.



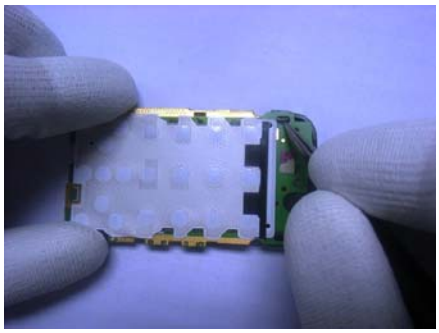
13. Open the FPC BTB connector.

14. Lift up the MB.

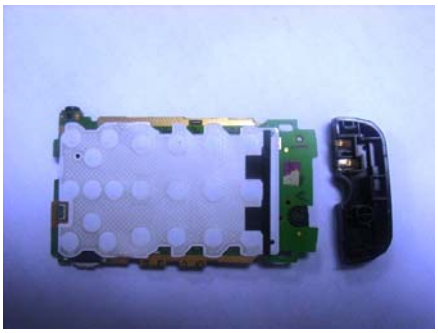
15. Tear off the mylar.



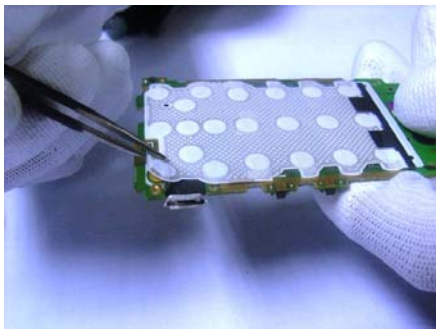
16. Open the shielding case.



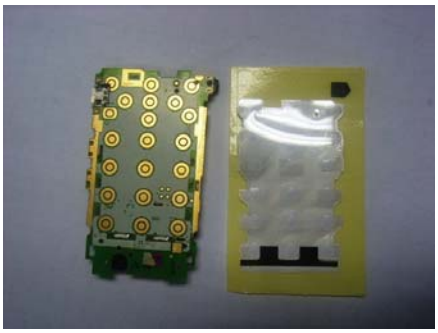
17. Push down the lock to remove the antenna.



18. Antenna removed.



19. Tear off the metal dome.



20. Metal dome removed.

21. Use the tweezers to remove the hinge spring.

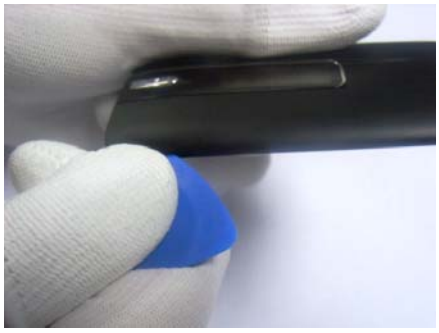
22. Push open the hinge cam by tweezers to separate Housing.

23. Remove FPC.

24. Remove ring.

25. Pull and remove key pad.

26. Key pad removed.



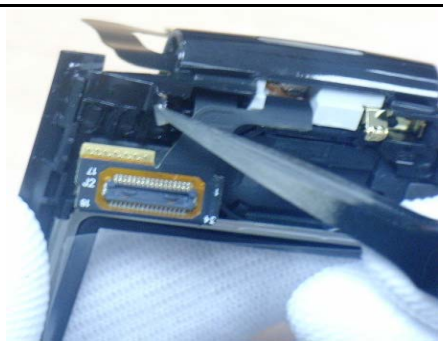
27. Insert the pick into gap and slide along edge to separate housing tabs - 1.

28. Take and remove housing tabs - 2.

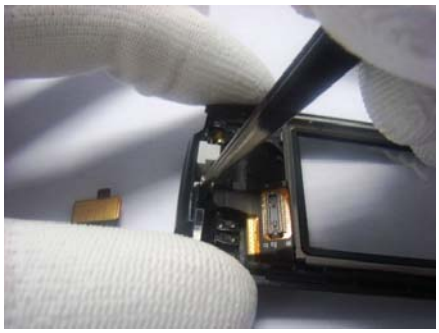
29. Disassemble A-Cover and B-Cover.

30 .Remove the SB .

31. Remove receiver.



32. Remove FPC mylar.



33. Remove FPC holder.

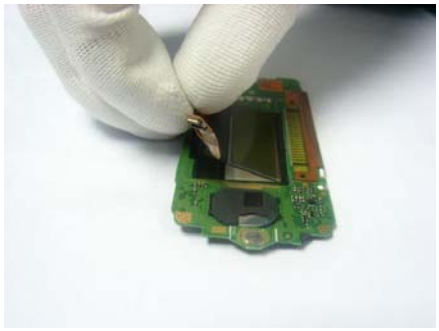
34. Remove FPC.

35. Remove Flash LED Lens.

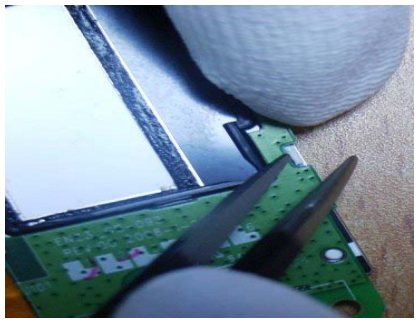
36. Push out the hinge.

37. Remove the hinge.

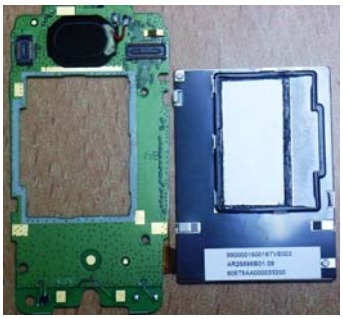
38. Disassemble the BTB Connector of sub LCM - 1.



39. Take and remove sub LCM - 2.



40. Disassemble main LCM - 1.



41. Separate the SUB PCB and Main LCM - 2.

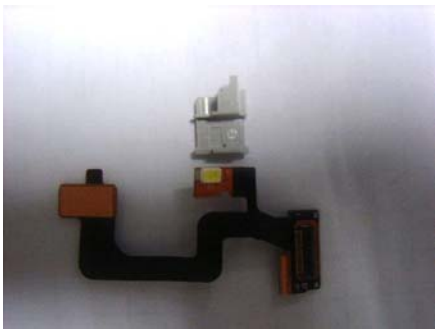
42. Disassembly complete.

## 11. ASSEMBLY HITS

1. Nokia 1606 ARTE assembly.

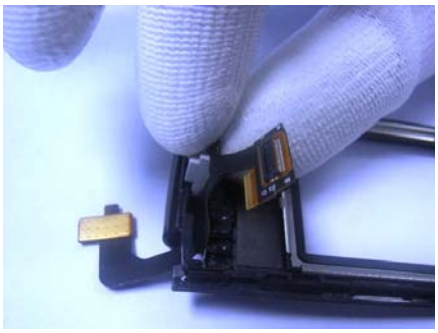
2. You need the Nokia Standard Toolkit version 2.

3. Put receiver down.

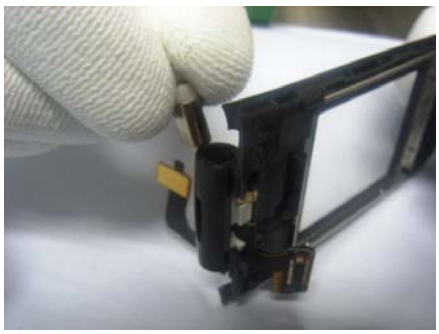


4. Insert FPC.

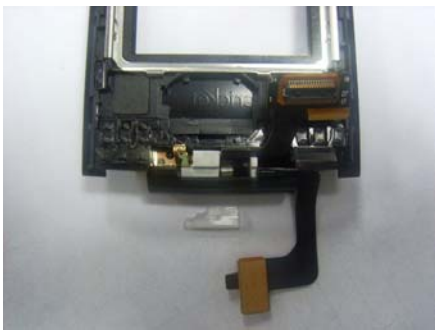
5. Insert FPC through B-Cover – 1.



6. Insert FPC through B-Cover – 2.



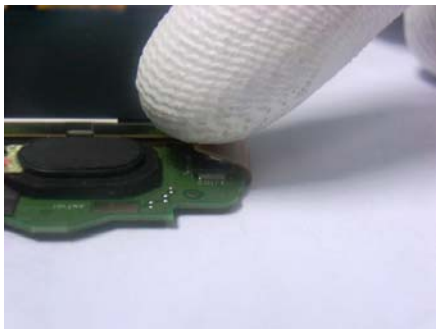
7. Insert the hinge in.



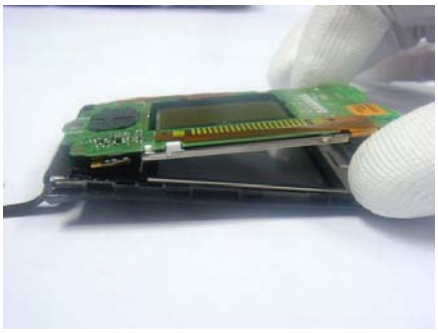
8. Insert Flash LED Lens.

9. Assemble main LCM and SB.

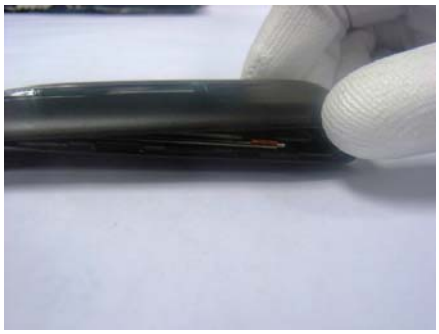
10. Assemble sub LCM.



11. Assemble sub LCM BTB connector.

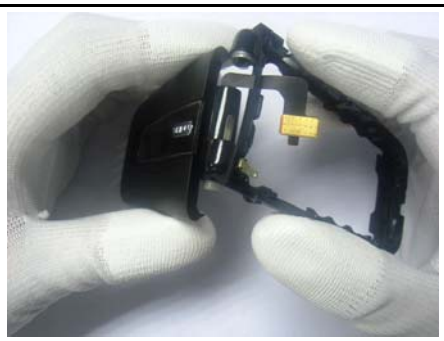


12. Assemble SB and A-Cover.

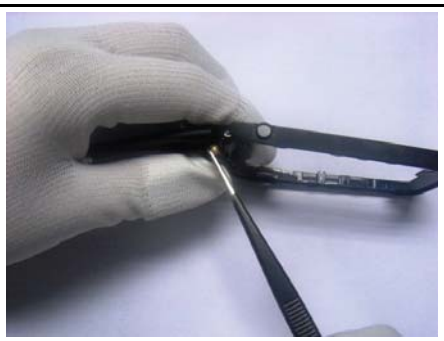


13. Assemble A-Cover and B-Cover.

14. A-Cover and B-Cover assembly completed.

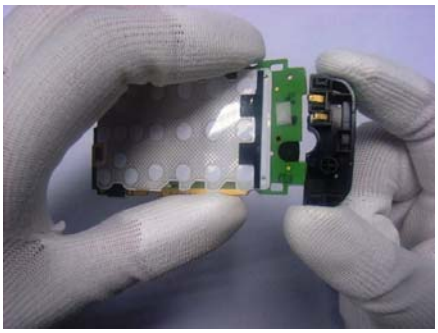


15. Insert FPC through C-Cover.

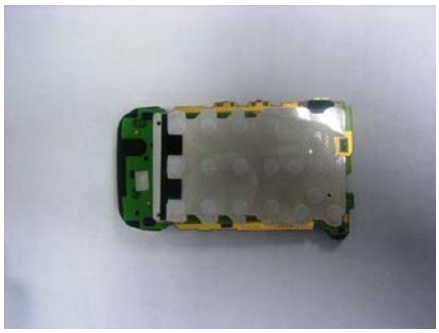


16. Push the hinge cam to housing

17. Assemble B-Cover and C-Cover completed.



18. Assemble antenna.



19. Antenna assembly completed.

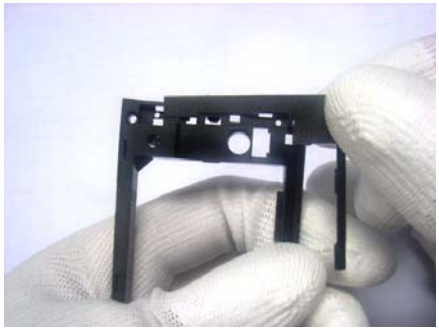
20. Assemble MB in C-Cover.

21. Assemble FPC BTB.

22. Assemble shielding case on MB.

23. MB assembly completed.

24. Insert vibrator.



25. Insert GPS antenna.

26. Stick FPC sponge.

27. Insert side key.

28. Assemble C-Cover and D-Cover.

29. Reserve USB rubber hold for USB rubber inserts.


30. Use a torque driver for tightening the screws.
**(Screw torsion 1.0 ±0.1 Kgf-cm)**

31. Stick key pad.

32. Assembly completed.

## 12. SOLDER COMPONENTS

**1606 fold RH-109 Components overview**

**Solder components only for Level 2**