Nokia Customer Care
6265/6265i/6268 (RM-66)
Mobile Terminals

Antenna Description and Troubleshooting

Contents Page

Introduction

This troubleshooting guide addresses potential failures that affect antenna performance of the 6265/6265i/6268, and discusses methods for correction of these failures.

Main CDMA Antenna

E-cover Assembly/CDMA Antenna

The E-cover assembly is comprised of the E-cover plastic portion, the CDMA antenna (CDMA radiator) and the bezel assembly (camera and flash windows and the bezel). The E-cover snaps into the D-cover assembly with 4 corner tabs of the E-cover. There is also a snap-in feature located on the top right corner (inner side of the E-cover).

The CDMA antenna (radiator) is a flex (sticker) glued on the inside surface of the E-cover and covered in a small area by the bezel assembly.

The E-cover is manufactured according to the following steps:

- The CDMA antenna sticker is glued to the inside of the E-cover. Its position is controlled very accurately.
- The camera and flash bezel assembly is heat-staked on the E-cover, and covers a small area of the sticker.

If the bezel assembly is removed, the E-cover assembly will be permanently damaged because the bezel assembly is heat-staked onto the E-cover. Removing it will permanently deform the heat-staking pins. It is not possible to remove the CDMA antenna without removing the bezel assembly. Therefore, if there is any defect in the E-cover assembly (bezel or radiator), the entire part must be replaced.

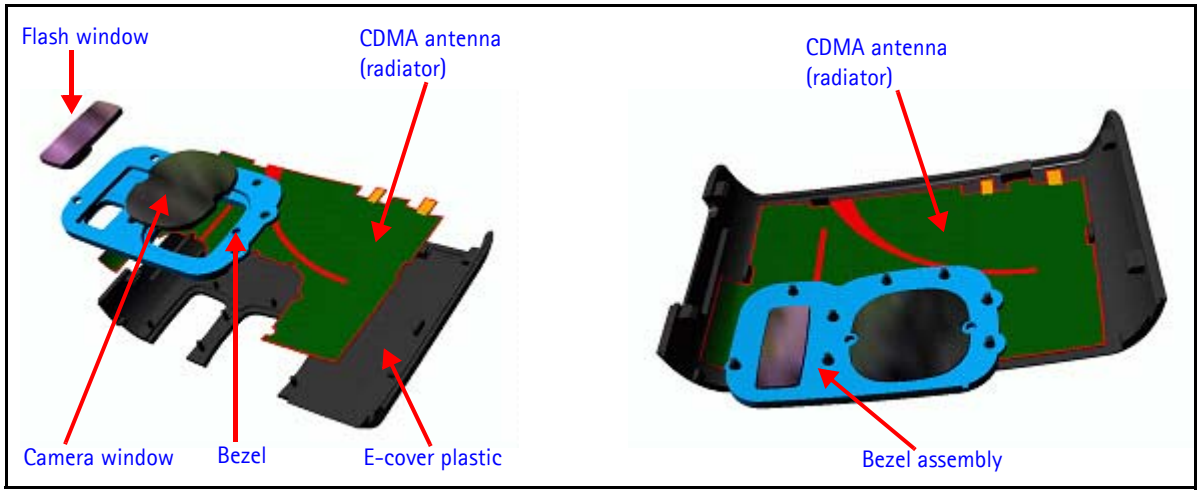


Figure 1: E-cover assembly

To remove the E-cover assembly from the D-cover, use the SRT-6 opening tool to release the four snap-in tabs that lock the E-cover from the D-cover, as shown.

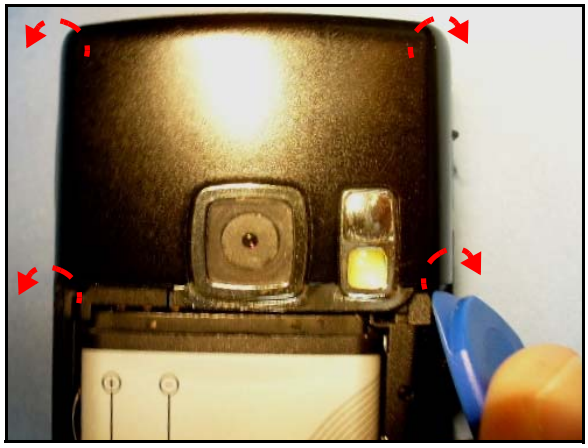


Figure 2: E-cover assembly removal

To re-install the E-cover assembly, align the E-cover above the D-cover and apply vertical force to engage the snap-in feature in the D-cover assembly, as shown.

Figure 3: E-cover assembly installation

Damaged CDMA Sticker or Bezel Assembly

- If the CDMA sticker is damaged (scratched, cut, cracked, corroded, tabs broken), replace the entire E-cover assembly. It is not possible to replace only the CDMA sticker on the existing E-cover, as noted in the E-cover Assembly/CDMA Antenna section above.
- If the bezel assembly is damaged (windows or bezel scratched, cracked), replace the entire E-cover assembly. It is not possible to replace only the bezel assembly on the existing E-cover, as noted in the E-cover Assembly/CDMA Antenna section above.

Missing or Damaged CDMA Antenna Pogo Pins

The CDMA antenna is connected to the PWB by two pogo pins. These pogo pins are located on the top left corner of the main PWB at a distance of ~5mm from each other.

- If either antenna pogo pin is damaged (stuck, broken) or missing, replace it. An improper connection between the CDMA antenna and the PWB due to damaged or missing pogo pins will degrade the antenna performance (more than 25dB).

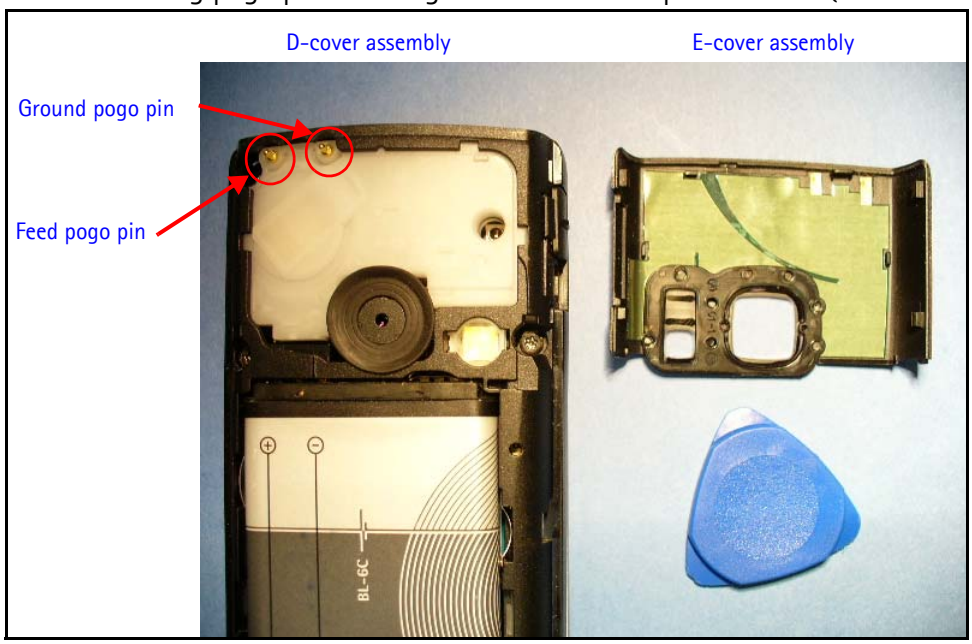


Figure 4: E-cover assembly removed from D-cover

Obstructed RF Feed and Ground Pads

The CDMA antenna feed and ground pogo pins touch the main PWB on ground and feed pads.

- If the main antenna feed pad is obstructed, removed or covered, then the CDMA antenna feed pogo pin will not touch the PWB and the antenna gain will degrade by more than 25 dB.
- If the CDMA antenna ground pad is obstructed, removed, covered the ground pogo pin will not touch the PWB causing the antenna gain to degrade more than 5dB.

- If corrosion is present or the pads are missing, replace the PWB.
- If either pad is obstructed or covered, the pads should be cleared and/or cleaned.

Broken or Missing Matching Circuit

- If the CDMA antenna matching circuit is damaged or missing, replace the component.
- If the PWB is permanently damaged (broken pad or trace), replace the PWB.

Damaged RF Switch

If the CDMA RF connector fails (does not connect RF input to RF output of the RF connector) the antenna gain will degrade by about 25dB. Check for this failure by testing for DC conductivity between RF input and RF output of the RF connector. Note that the DC conductivity test must be done without any cable attached to the RF connector. Since the RF connector is also a switch, the RF output is disconnected from the RF input when a cable is inserted into the RF connector. If no cable is inserted, the RF input is connected to the RF output of RF connector.

- CDMA RF input - connects to duplexer
- CDMA RF output - connects to antenna pad through vias
- RF connector - connects to coaxial cable

If the RF input is not connected properly to the RF output, then replace the RF connector.

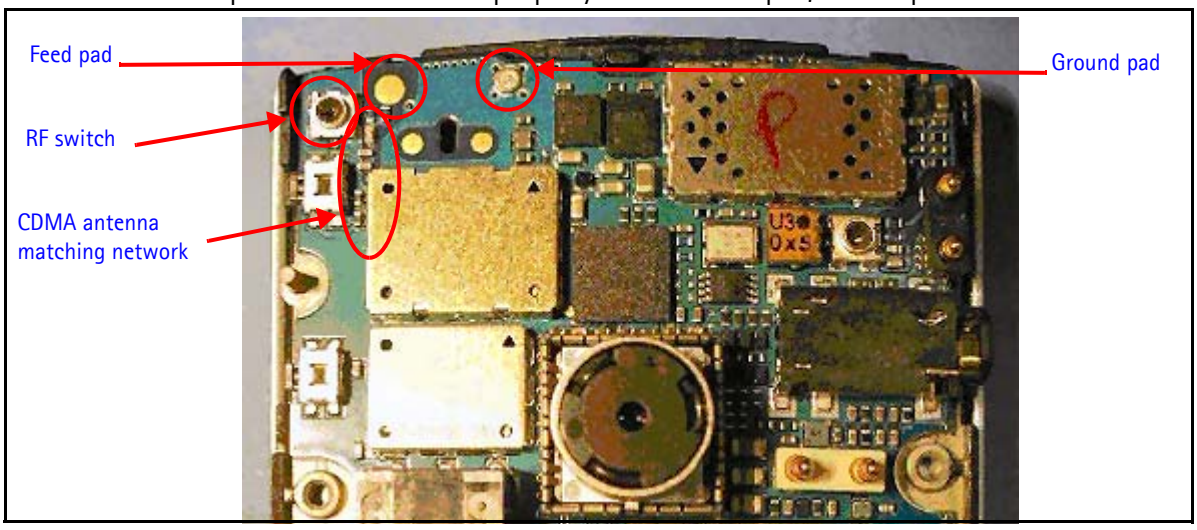


Figure 5: Main PWB

Auxiliary Antennas: GPS, BT and FM

Disassembly for Auxiliary Antenna Removal

1. Remove the battery cover.

Figure 6: Battery cover removal

2. Remove the battery.

Figure 7: Battery removal

3. Remove the E-cover.

Figure 8: E-cover removal

4. Remove the four Torx screws.

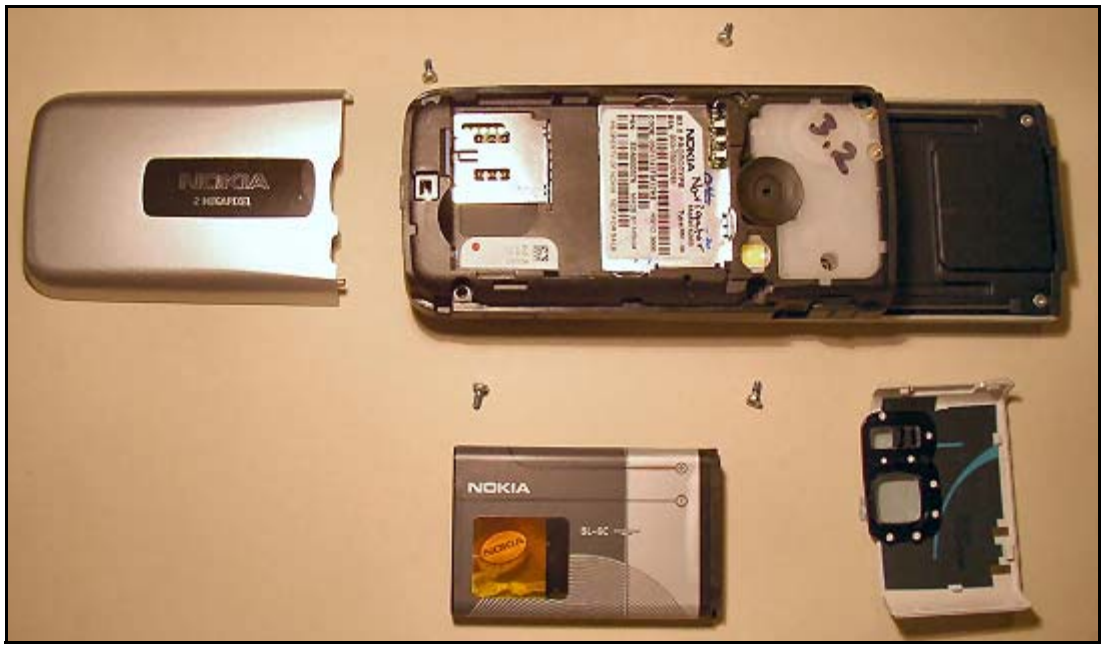


Figure 9: Screw removal

5. Remove the D-cover.

Figure 10: D-cover removal

6. Remove the audio module.

Figure 11: Audio module removal

GPS Antenna

GPS antenna is a printed trace on a flex that adheres to the plastic audio module. It connects to two pogo pins soldered (SMD) to the main PWB. On the back of the PWB (the side with the battery connector and camera), the GPS SMD pogo pins (3.8mm high) are located in the upper right corner, or upper right from the SMD flash pogo pins (5.5mm high). The GPS flex wraps around the side of the plastic audio module with the end near the audio port at the top of the module. On the audio chamber the GPS flex wraps clockwise, to the right where the GPS pogo pins are located, half way on the right of the audio module. The GPS flex wraps downward and under the audio chamber with a tab connecting to the GPS SMD pogo pins on the main PWB. Two chip cellular-blocking components are found on the main PWB close to the GPS antenna pogo pin pads. An RF switch or connector is used to test the GPS RF components directly. See images below.

Possible GPS Antenna System Failure Modes

Table 1 shows possible GPS antenna system failure modes and their solutions.

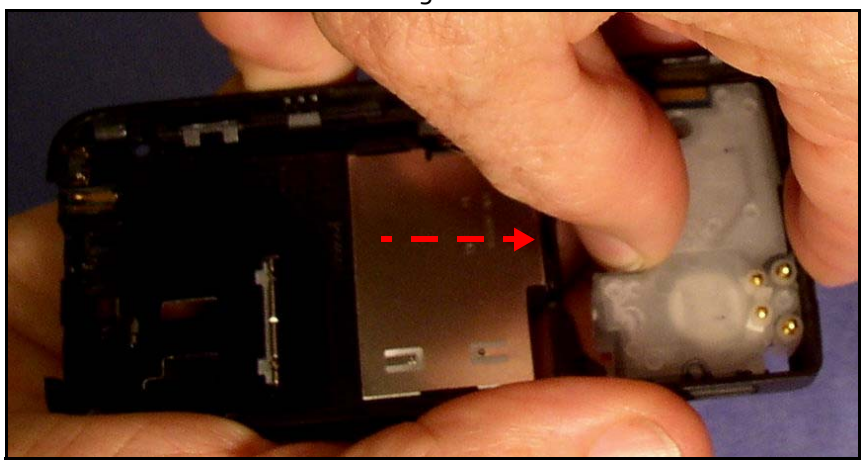
Table 1: GPS antenna system failure modes

Failure	Solution
Solder bridge of the two GPS pogo pin pads on the main PWB.	Remove and clean solder bridge.
The GPS, SMD pogo pins are misaligned.	Properly align and solder pins.
The GPS, SMD pogo pins do not operate freely or easily in their sleeves.	Use good GPS pogo pins.
Wrong pogo pins are soldered at the GPS SMD pogo pin location. Note that the flash pogo pins are 5.5mm high while the GPS SMD pogo pins are 3.8mm high.	Use proper GPS pogo pins.
The GPS, SMD pogo pins are improperly soldered to their pads (cold solder joint, cracked solder joint, insufficient solder, excessive solder causing tilting).	Properly align and solder pins.
The GPS flex antenna shows damage to the pogo pin pad (pressure tearing, hole, cracking, corrosion, bubbles).	Replace with good GPS/audio module.
The GPS flex antenna shows damage to the flex (tearing, cracking, corrosion, bubble).	Replace with good GPS/audio module.
The GPS flex antenna shows damage to the audio outer gasket or screen (permanently creased, indented, torn, dislodged, distorted, or pressed to the side, abnormal shape, texture, coloration).	Replace with good GPS/audio module.
The GPS flex antenna trace shows damage, or contamination. (Cracking, discoloration, corrosion, bubble).	Replace with good GPS/audio module.

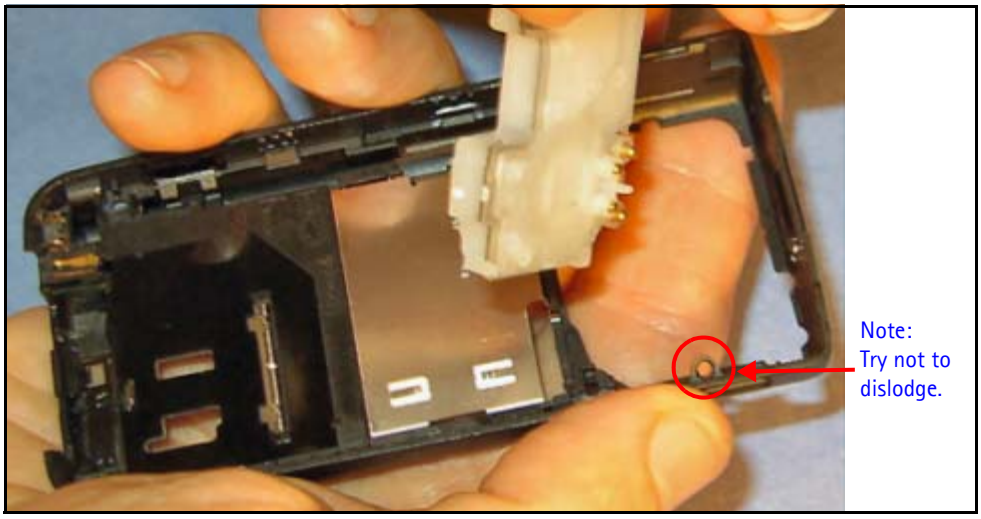
Table 1: GPS antenna system failure modes(Continued)

Failure	Solution
If the GPS cellular blocking chip elements are believed to be incorrect, then replace with correct chips.	Replace with good GPS chip components.
If the GPS cellular RF switch or connector is defective, replace the RF switch (make sure orientation is correct)	Replace with good, properly oriented, GPS RF switch.

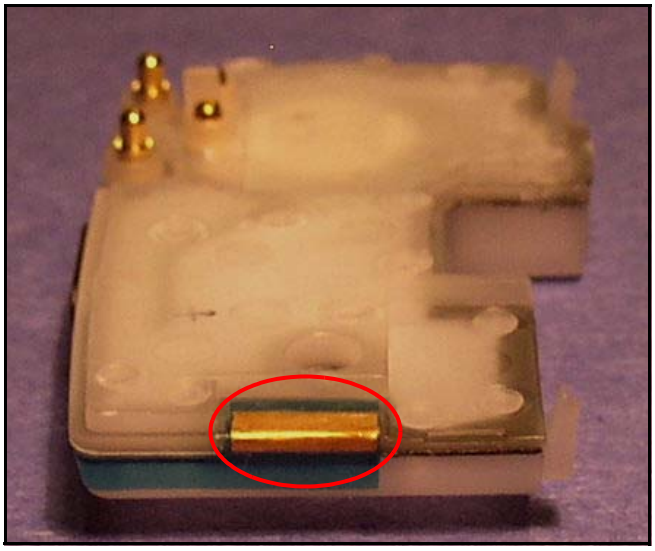
1. Push the audio module to the right to unlock the inner corner catches.



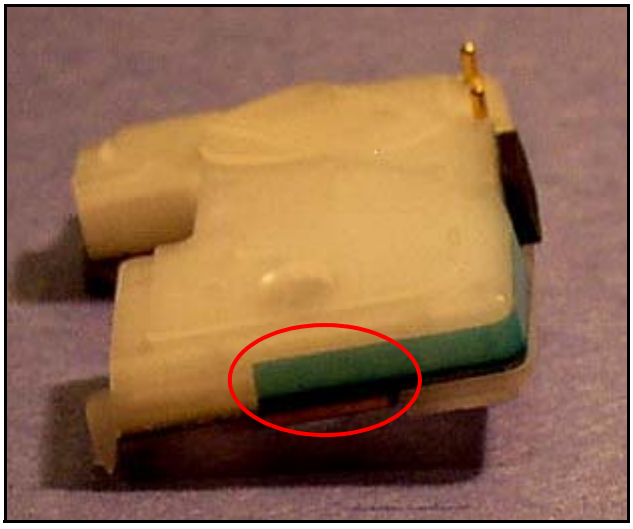
2. Carefully remove the audio module away from volume switch located by your thumb.



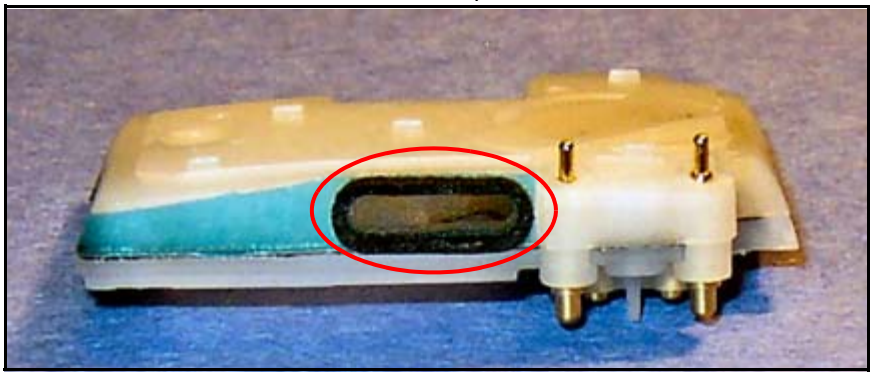
3. The GPS antenna feed tab at the bottom of the audio module.



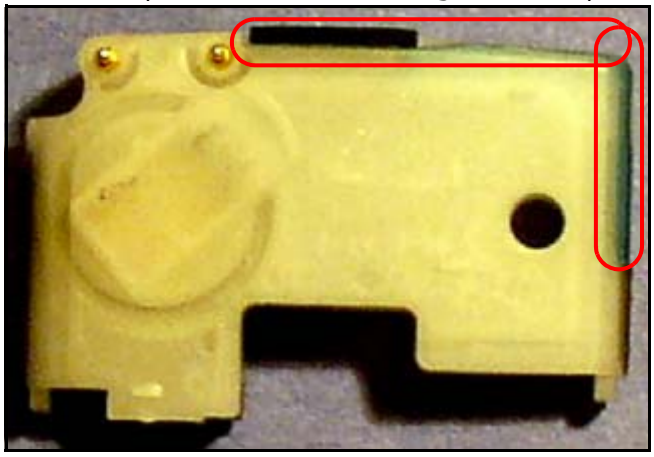
4. The GPS antenna starts on right side.



5. The GPS antenna ends at the audio port. (Note the black, audio, outer gasket.)



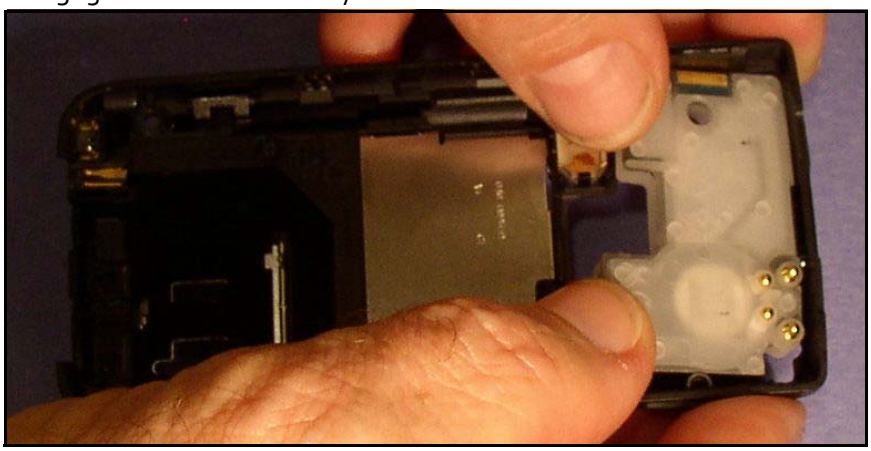
6. The image shows the GPS/audio module - top side. The GPS trace starts at the right side and wraps around to the audio gasket at top of the picture.



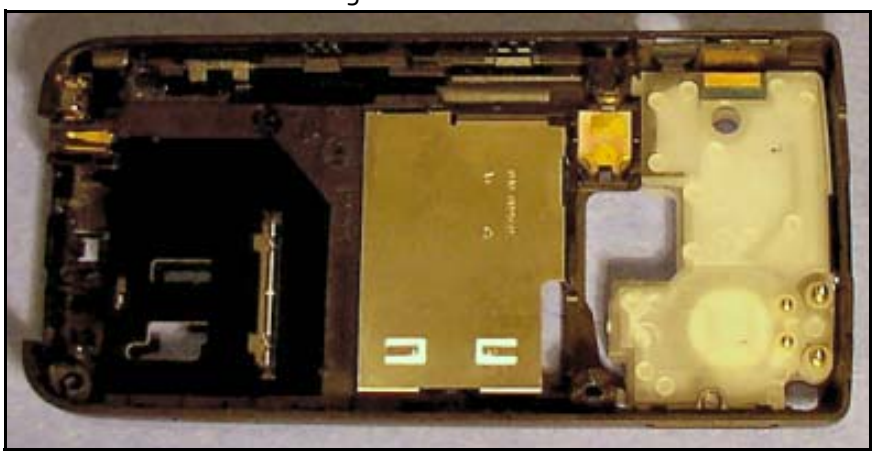
7. The audio module must be carefully installed under the small ledge inside the top of the D-cover.

Caution: Do not damage the outer, audio port gasket.

8. The audio module must be carefully pressed forward to first clear, and then engage the catches near your thumbs.



9. The image below shows a properly installed GPS/audio module, locked in place by the catches and small ledge.



BT Antenna

The BT antenna is a stamped, trimmed metal sheet formed with two spring contacts and heat staked to a plastic support structure. This antenna is located to the right of the battery with the baseband shield under it. It is inserted into the D-cover and makes contact with two PWB pads below it. There is a hole in the top of the D-cover used to catch a locking feature on the BT antenna plastic module. This outer catch and the catch on the inside of the D-cover must be properly engaged. There are no antenna impedance matching elements for BT on the main PWB.

Possible BT Antenna System Failure Modes

Table 2 shows possible BT antenna system failure modes and their solutions.

Table 2: BT antenna system failure modes

Failure	Solution
The BT antenna spring clips are deformed.	Replace with a good BT antenna. Exact spring shape is required to guarantee the BT antenna's ability to function if the mobile terminal is dropped.
The BT antenna plastic heat stakes do not hold the metal antenna firmly.	Replace with a good BT antenna.
The BT antenna plastic catch for the D-cover is deformed or broken.	Replace with a good BT antenna.
The BT-antenna plastic antenna support is deformed or broken.	Replace with a good BT antenna.
The D-cover is deformed or broken.	Replace D-cover.

1. Release the outer catch of the in the D-cover hole that locks the BT antenna.

Figure 12: Outer catch inside D-cover

2. Release the inner catch inside the D-cover that locks the BT antenna and the outer catch. The spring contacts that feed the BT antenna are located to the left of the catch.

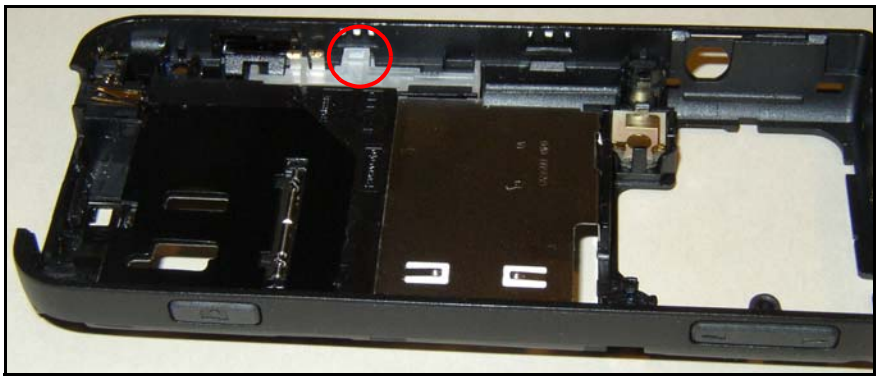


Figure 13: BT antenna inner catch inside D-cover

3. The front of the BT antenna module shows the heat-staked metal strip, plastic support module, plastic inner catch (lower middle) and the spring contacts (left). The metal strip must be trimmed at the location of the last heat stake. The two spring contacts should not be deformed, and should be the same length. These spring contacts extend slightly beyond the plastic stopping post between them.

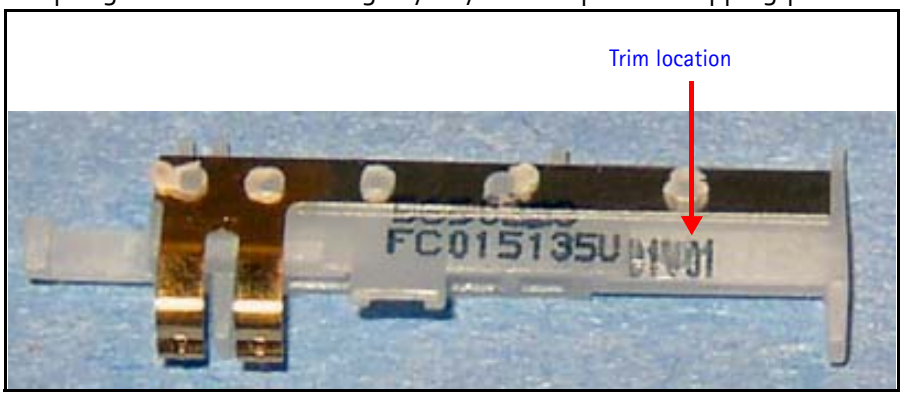


Figure 14: Front of BT antenna module

4. Back of the BT antenna module shows the heat-staked metal strip, plastic support module, plastic inner catch (lower middle) and the spring contact (left). The two spring clips should not be deformed and should be the same length. These spring clips extend a little beyond the plastic stopping post between them.

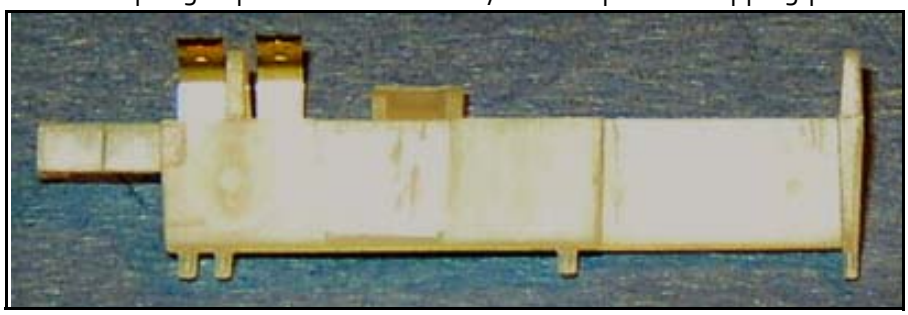


Figure 15: Back of BT antenna module

FM Antenna

The FM antenna uses the connection through a headset and the Universal Headset Jack or the Pop-port™ connector to create an FM antenna of reasonable gain. The RF test points are on the front of the main PWB at the bottom right side, near the end of the Pop-port™ connector (on the opposite side of the PWB.) There are antenna impedance matching chip components on the main PWB.

Possible FM Antenna System Failure Modes

Table 3 shows possible FM antenna system failure modes and their solutions.

Table 3: FM antenna system failure modes

Failure	Solution
The chip components are bad.	Replace the chip components with good, correct chips.
The connectors are bad.	Replace the bad UHJ or Pop-port™ connector with a good connector.
The headset is bad.	Replace with a good headset.

FM antenna formed by connecting a headset to the Pop-port™ connector.

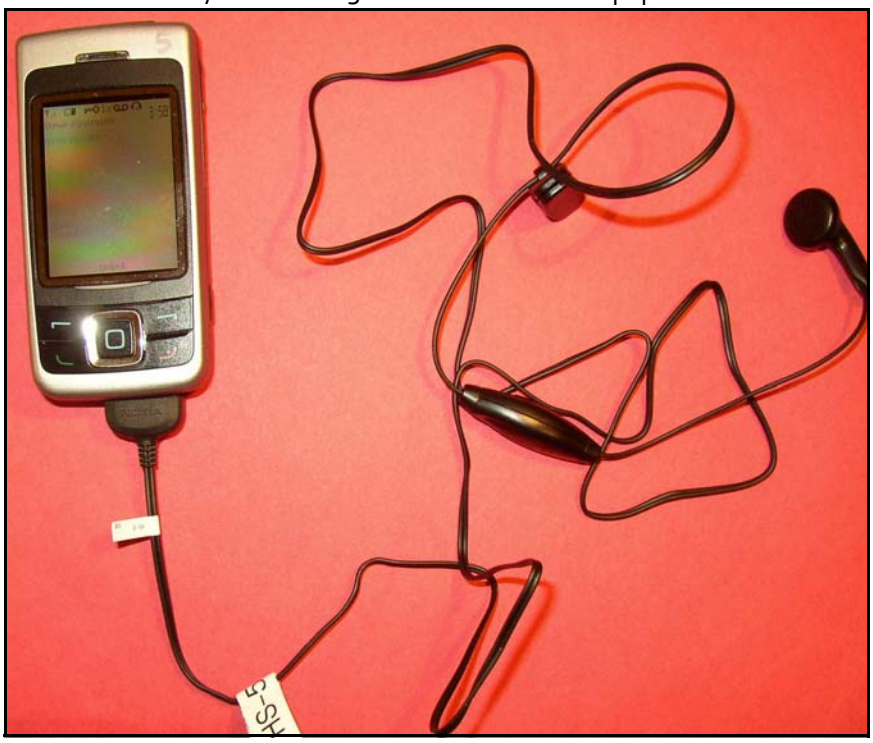


Figure 16: FM antenna - Pop-port™ connector

FM antenna formed by connecting a headset to the Universal Headset Jack (UHJ).

Figure 17: FM antenna – Universal Headset Jack (UHJ) connector

Circuit Diagrams and Chip Locations for Auxiliary Antennas.

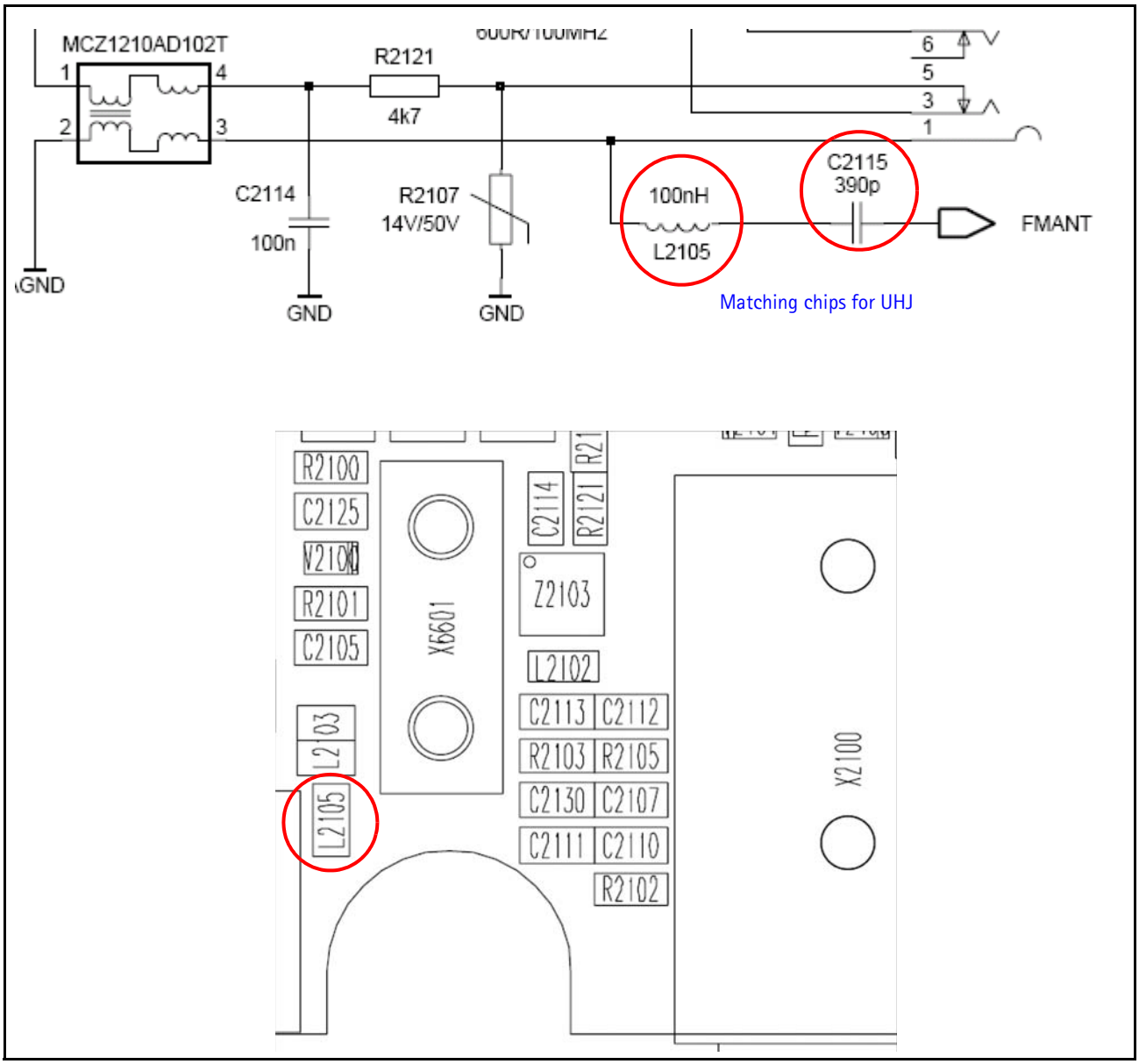


Figure 18: UHJ FM antenna matching elements

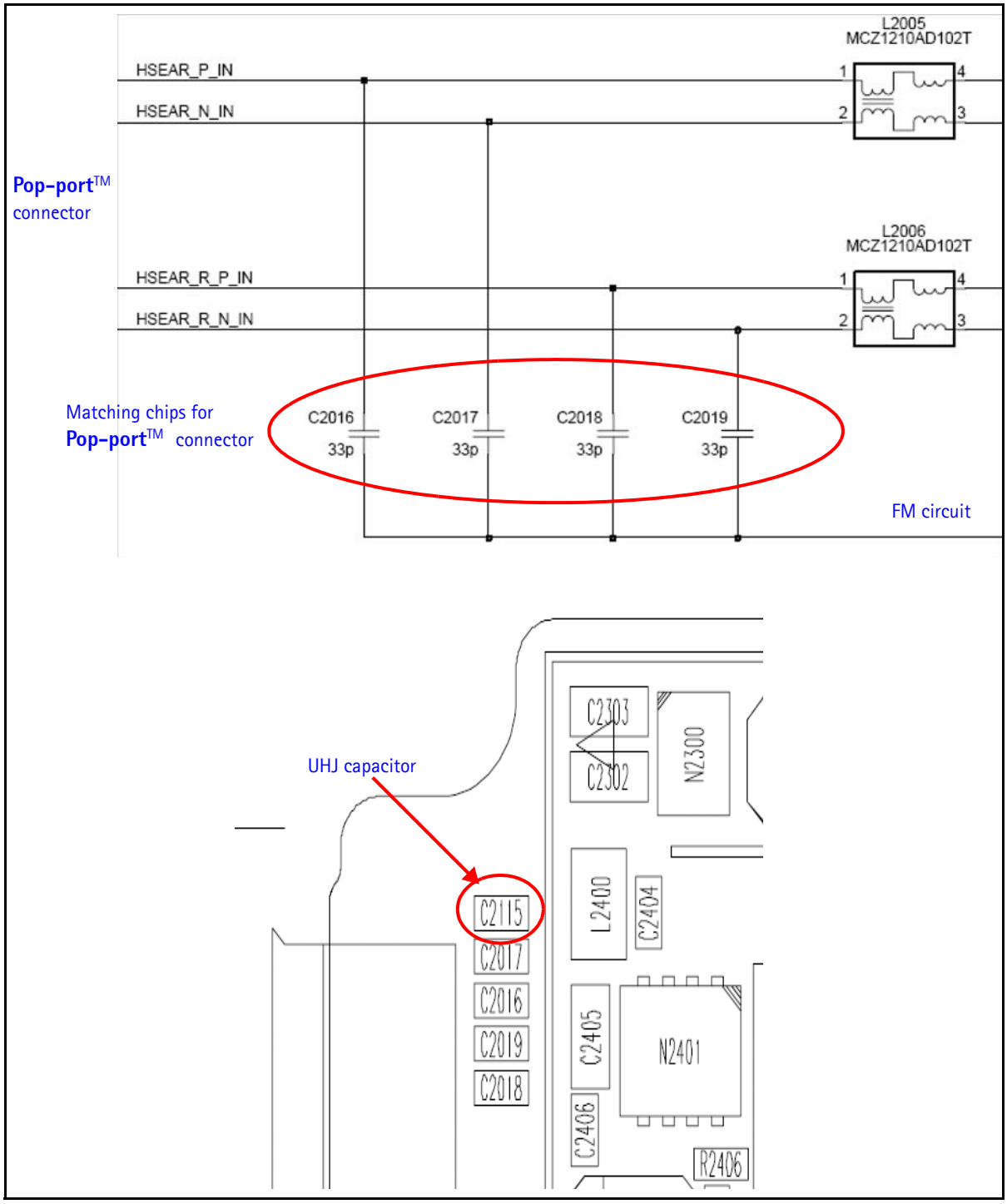


Figure 19: Pop-port™ matching elements and one UHJ matching element

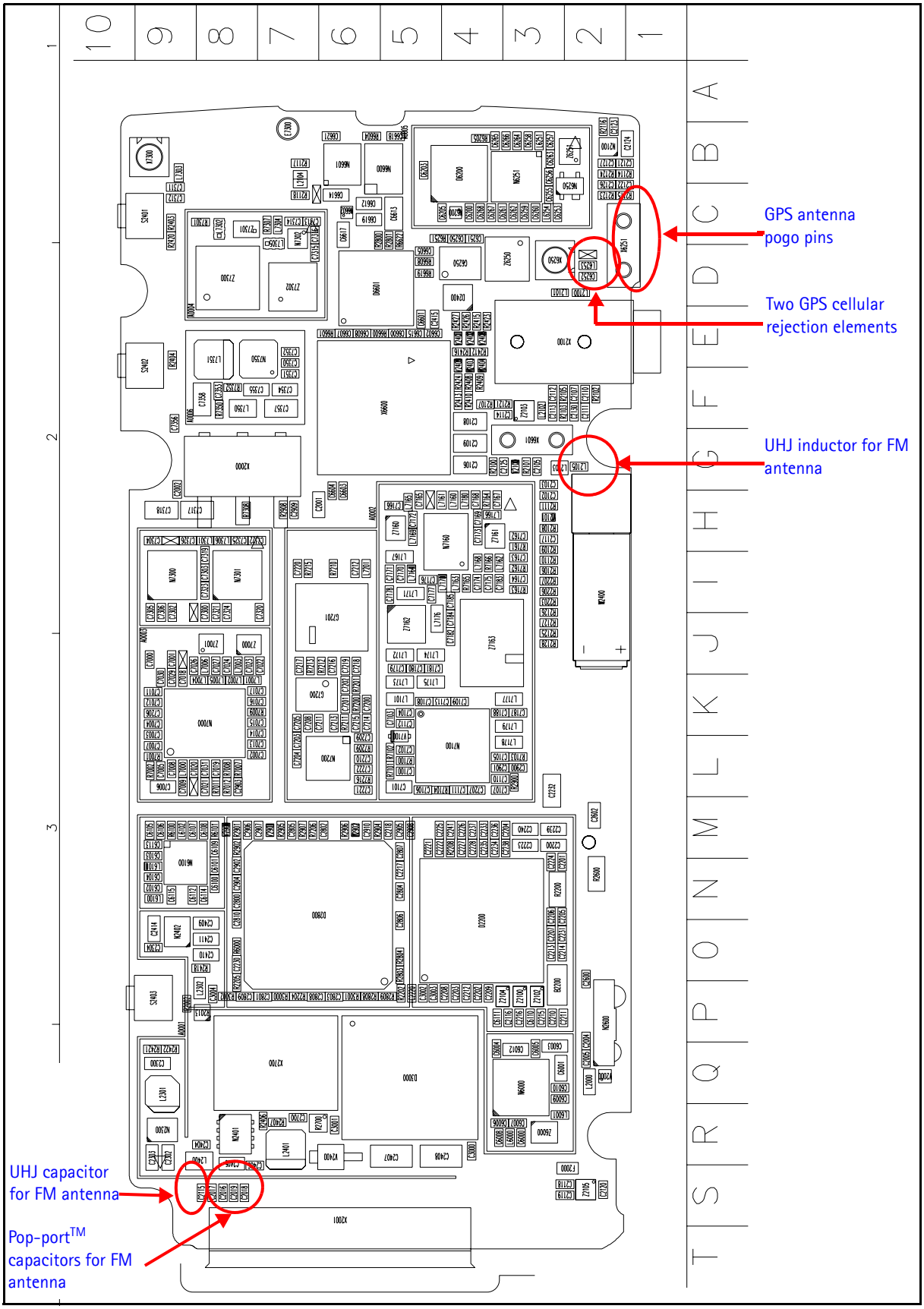


Figure 20: Location of auxiliary antenna

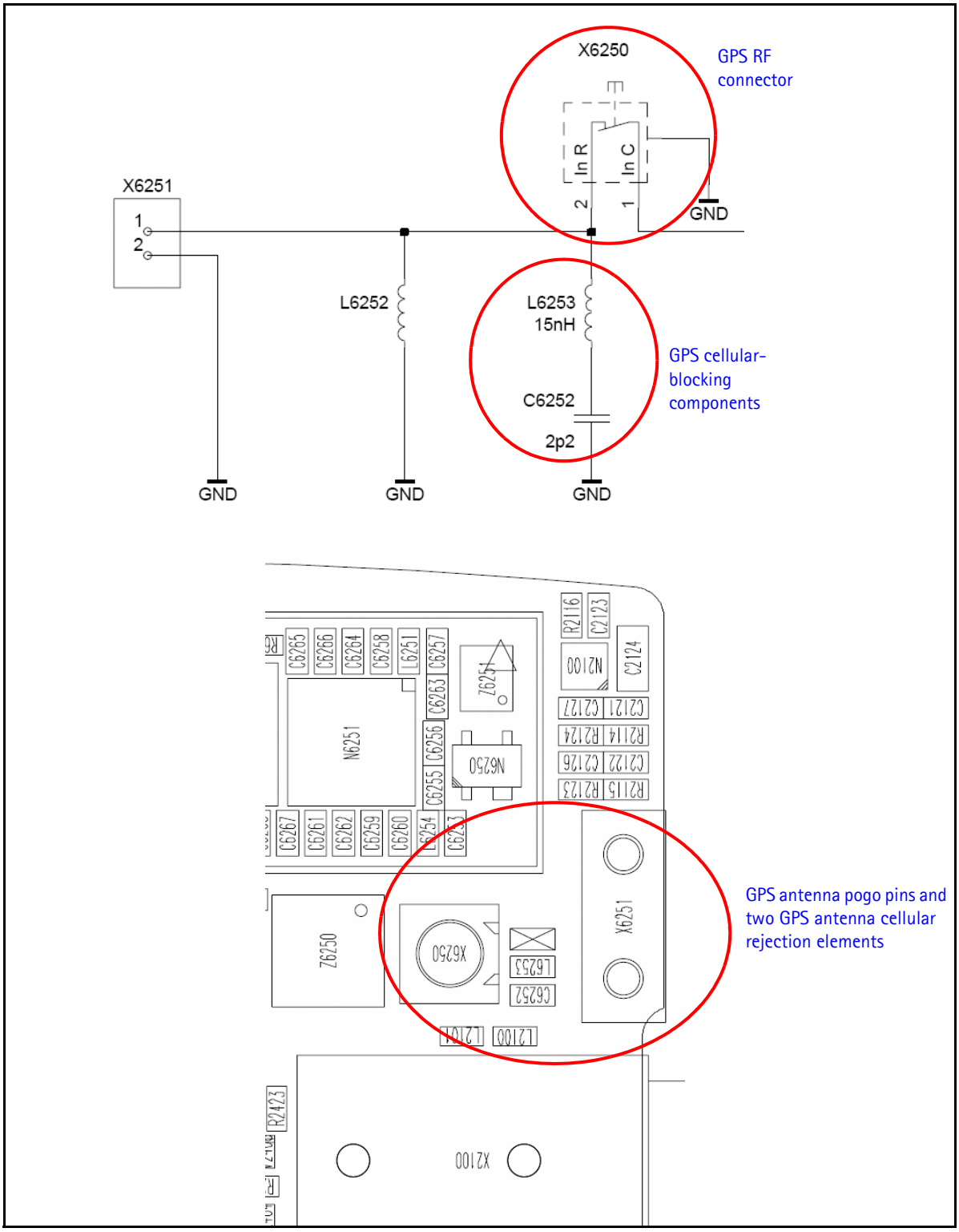


Figure 21: GPS antenna components

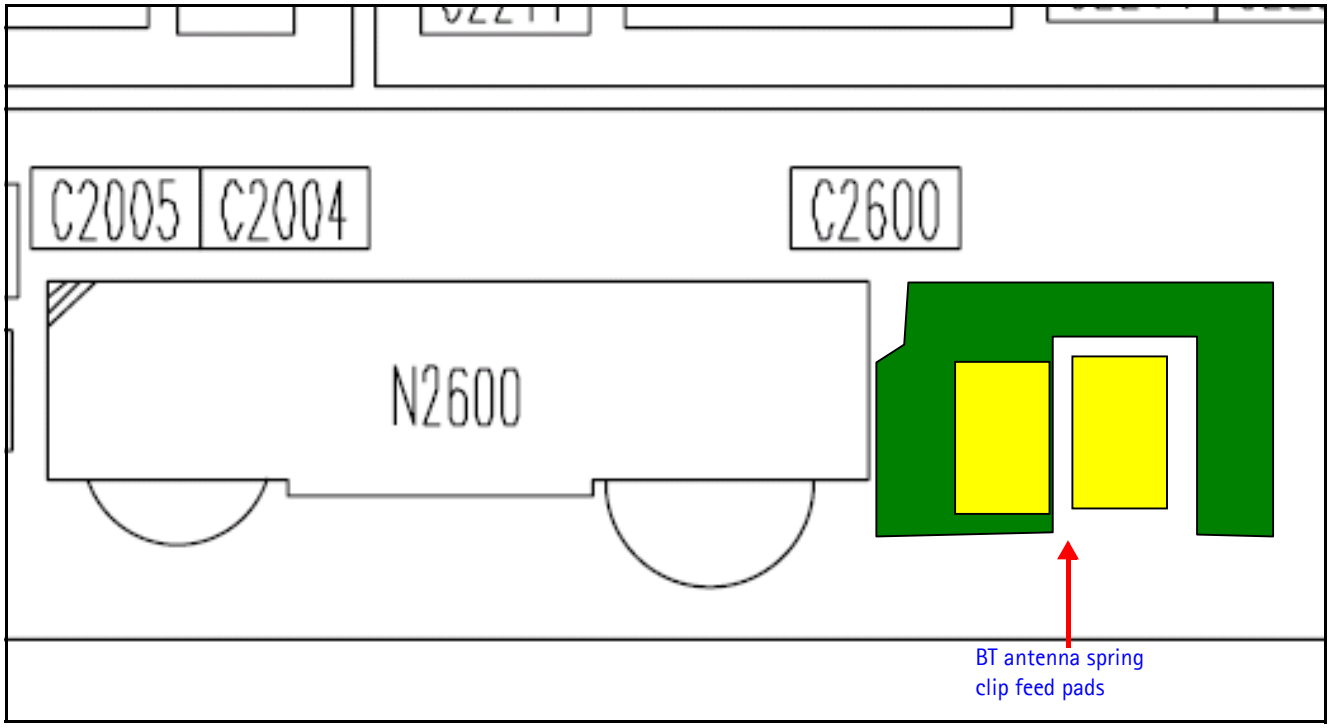


Figure 22: BT antenna pads

UIM Card Holder

UIM card holder is grounded through grounding tabs. An improperly grounded card tray may degrade performance of BT and CDMA antennas. If grounding tabs are permanently deformed of damaged, then replace the D-cover.

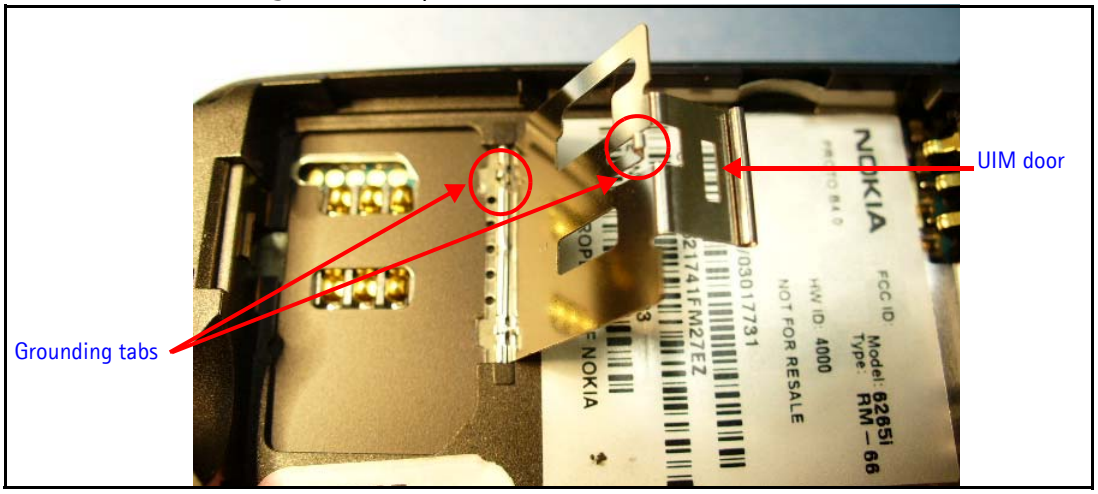


Figure 23: UIM card holder assembled in D-cover

A-cover Foil

A copper foil is glued inside the A-cover. It is grounded to the B-cover (slide mechanism) by 2 pogo pins pressed into the LCD frame. The foil is partially covered by a rubber gasket that is sandwiched between the A-cover and the LCD when assembled.

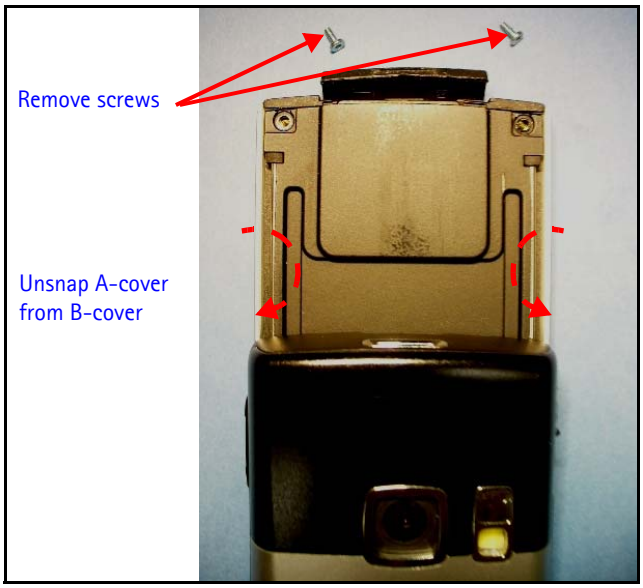


Figure 24: A-cover foil and GND pogo pins

Missing or Damaged Foil

- If the A-cover foil is damaged (cut, scratched, corroded), replace the A-cover assembly.

Missing or Damaged GND Pogo Pins

- If either or both pogo pins connecting the A and B-covers is missing, damaged, corroded or obstructed replace them. Make sure that the pogo pins are properly pressed into the LCD frame.
- If the LCD frame is damaged so that one cannot insert the GND pogo pins, replace the LCD frame.

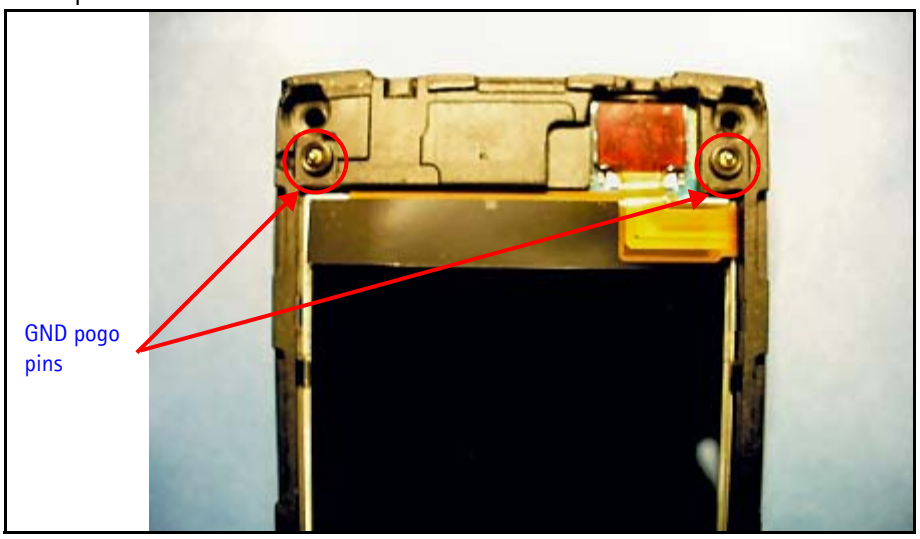


Figure 25: GND pogo pins in LCD frame

HAC Coil

Missing or Damaged HAC Coil

The HAC coil is soldered on the UI PWB and is accessed by removing the LCD frame from the B-cover.

- If the HAC coil is damaged, replace it.
- If the soldering pads on the UI PWB are damaged, replace the entire UI PWB.

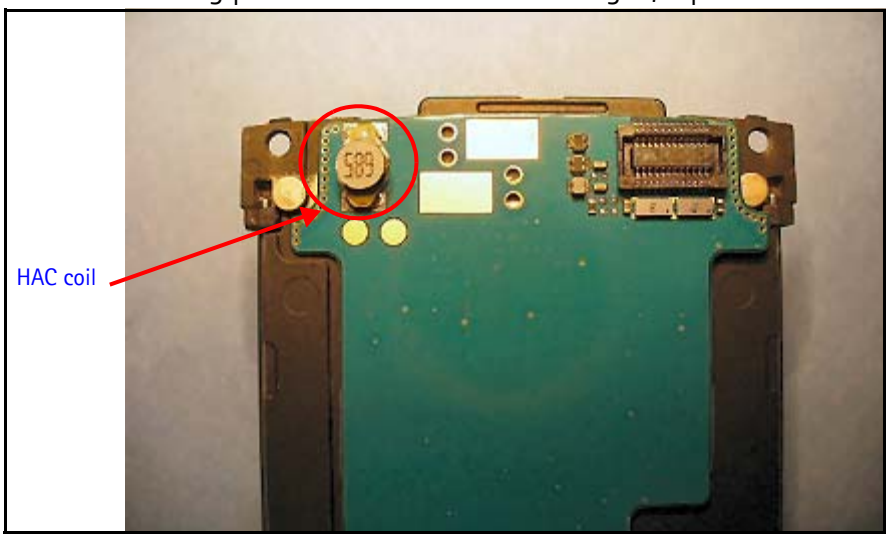


Figure 26: HAC coil on UI PWB