C10 / C11

Level 2.5

Repair Documentation

V 1.0

1Introduction

The product familiy C1x consists of C10 (GSM-900), C11 (GSM-1800) and C12 (GSM-1900). This manual only deals with the C10 and the C11. If parts or repairs are identical instead of C10 and C11 only C1x is mentioned.

This manual is intended to help you carry out repairs on level 2.5, meaning limited component repairs. Failure highlights are documented and should be repaired in the local workshops.

It must be noted that all repairs have to be carried out in an environment set up according to the ESD (Electrostatic Discharge Sensitive Devices) regulations defined in international standards.

If you have any questions regarding the repair procedures or spare parts do not hesitate to contact our technical support team in Kamp-Lintfort, Germany:

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213 MHz oscillator

2.1Affected Units

2.1.1Type: **C10, C11 (different components!)**

2.1.2Affected IMEIs / Date Codes: *All / All*

2.1.3Affected SW-Versions: *All*

2.1.4Fault Code for LSO reporting: C10: 3OSC
C11: 3VCX

2.2Fault Description

2.2.1Fault Symptoms for customers:

Network Search
Handset not logging into network

2.2.2Fault Symptom on GSM-Tester:

Frequency error in synchronized mode >90 Hz
No location update possible

The Oscillator is responsible for generating the 13 MHz reference frequency of the handset. If it is defective, the handset cannot synchronize to the base station anymore.

2.3Priority:

- ☐ ..... Mandatory
- ¤ ..... Repair
- ☐ ..... Optional
- ☐ ..... Not Yet Defined

2.4Repair Documentation

2.4.1Description of procedure:

For the C10 three different 13MHz oscillators can be used: A TCXO, a

VCXO (Both are called Z601 in the placement diagram) and a normal 13 MHz oscillator (Z602).
The production status handsets all have a normal 13 MHz oscillator placed, no VCXO or TCXO is used.

For the C11 only a VCXO is used.

2.4.1.1Diagnosis

Check the output frequency of the oscillator using the level-2 testing program for C10 / C11.
Set the „Simulator“ option in the S611.INI file to 0 and restart the program. Start the test. When the program says „Check power and phase of external antenna with your GSM-Tester“, switch the CMD to „LOCAL“ mode and enter the „MODULE TEST“.
On the CMD display you can see the frequency error of the handset. (Make sure that the CMD is on channel 124, power level 5!)

If the frequency error is higher than 2kHz, the oscillator has to be replaced.

2.4.1.2Repair by component change

Use hot air blower to remove defective oscillator.
Avoid excessive heat!
Watch surrounding components!

Resolder new oscillator afterwards.

2.4.1.3Repair by SW-Booting

Not possible!

2.4.1.4Test

Retest handset after repair as described above.
The frequency error must now be < 2kHz.

2.4.2List of needed material

2.4.2.1Components

C10: 13 MHz oscillator
Part-Number: L36145-F220-Y2

C11: VCXO
Part-Number: L36145-G300-Y21

2.4.2.2 Jigs and Tools

Hot Air Blower
Soldering Iron

2.4.2.3Special Tools

None

2.4.2.4Working materials

Desolder Wick / Braid
Solder

2.4.3Drawings

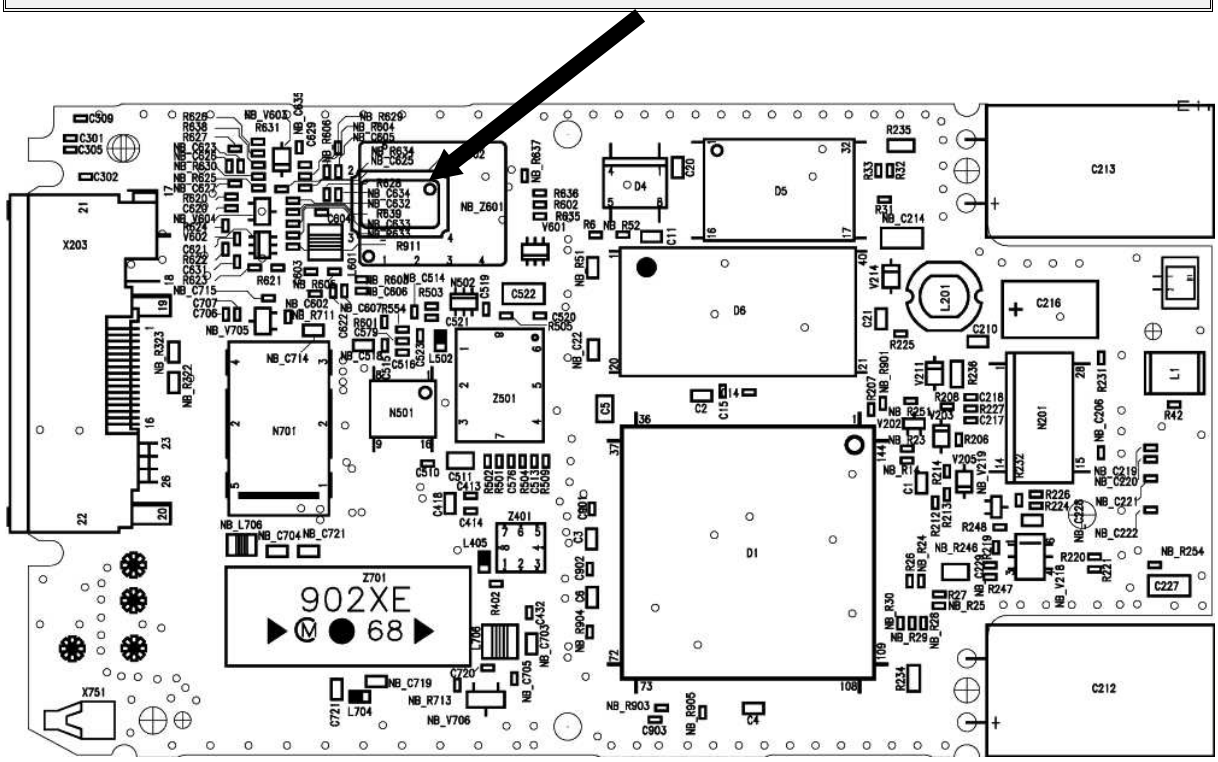


Figure 1: C10 Board 13 MHz Oscillator Side (Top View)

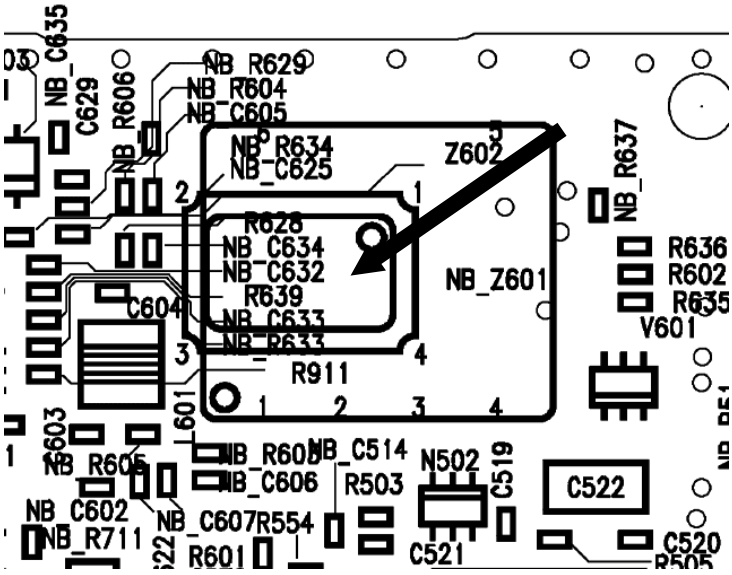


Figure 2: C10 13 MHz Oscillator Placement (Z602) (Top View)

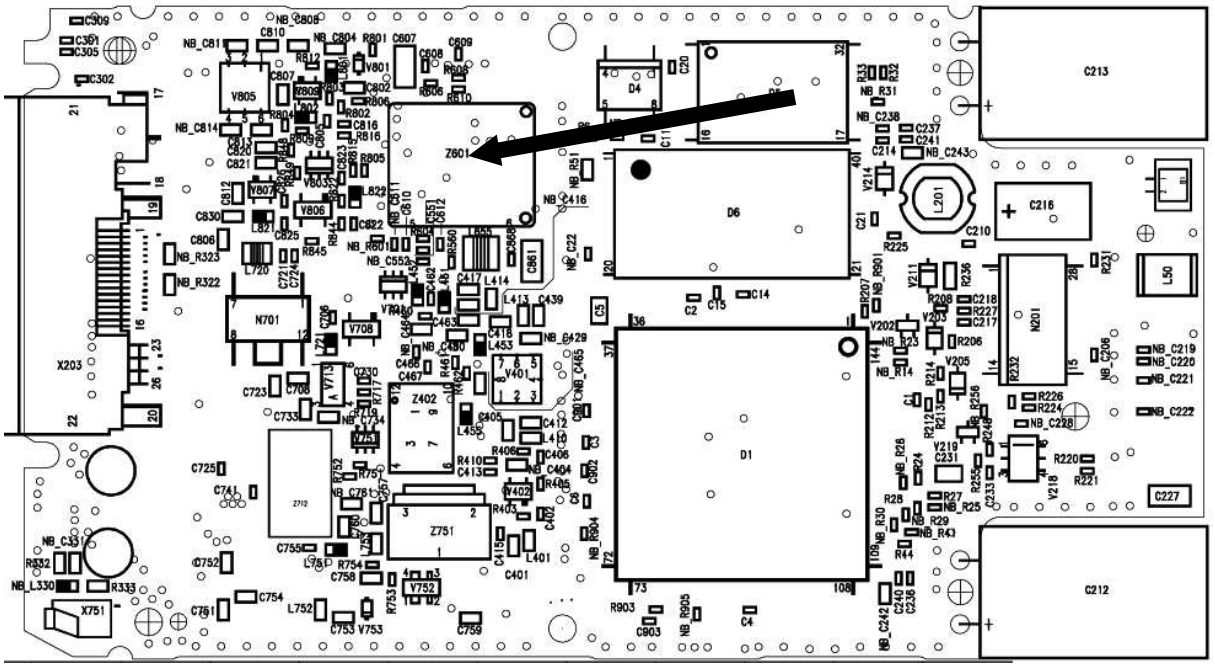


Figure 3: C11 Board VCXO Side (Top View)

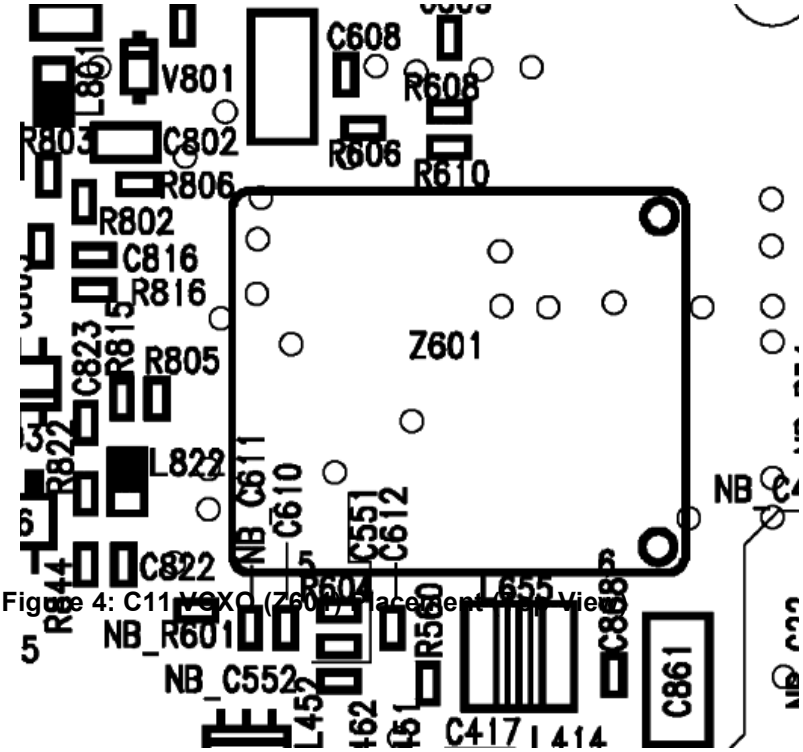


Figure 4: C11 VCXO (Z601) Placement (Top View)

3Fuse 1A

3.1Affected Units

3.1.1Type: **C10, C11**

3.1.2Affected IMEIs / Date Codes: *All / All*

3.1.3Affected SW-Versions: *All*

3.1.4Fault Code for LSO reporting: **C10, C11:** 3FU1

3.2Fault Description

3.2.1Fault Symptoms for customers:

Battery charging not possible

3.2.2Fault Symptom on GSM-Tester:

This fault cannot be detected with a GSM-Tester

3.3Priority:

- ☐ ..... Mandatory
- ¤ ..... Repair
- ☐ ..... Optional
- ☐ ..... Not Yet Defined

3.4Repair Documentation

3.4.1Description of procedure:

3.4.1.1Diagnosis

Check the status of the fuse by measuring its resistance with a multimeter. The fuse is defective if the resistance is higher than 10 ohms.

3.4.1.2Repair by component change

Use soldering iron to remove defective fuse.
Avoid excessive heat!
Watch surrounding components!

Resolder new fuse afterwards.

3.4.1.3Repair by SW-Booting

Not possible!

3.4.1.4Test

Retest handset after repair as described above.

The resistance must now be close to zero.

3.4.2List of needed material

3.4.2.1Components

Fuse
Part-Number: L36145-A820-Y7

3.4.2.2Jigs and Tools

Soldering Iron

3.4.2.3Special Tools

Multimeter

3.4.2.4Working materials

Desolder Wick / Braid
Solder

3.4.3Drawings

Figure 1: C10 Board 1A Fuse Side

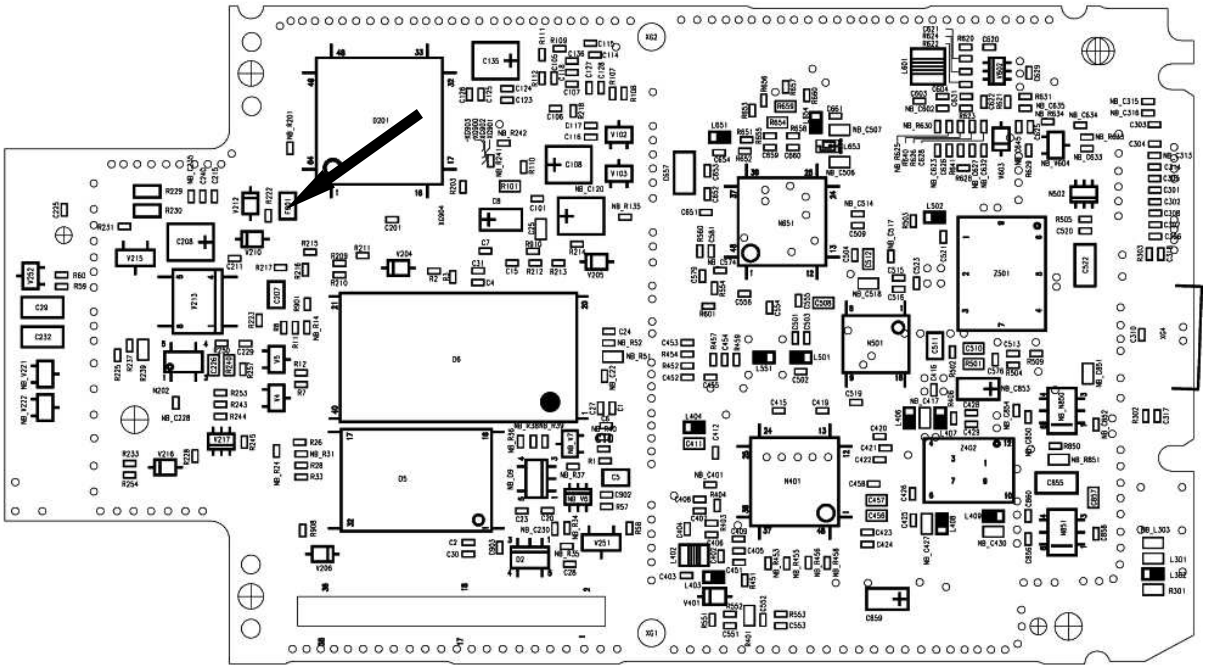
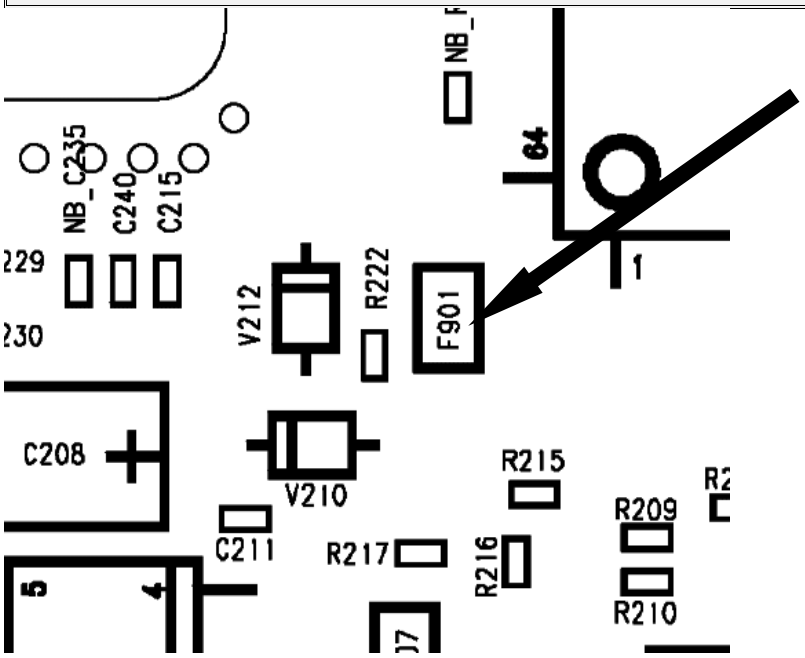


Figure 2: C10 1A Fuse (F901) Placement (Top View)


NB_C235
C240
C215
229
230
V212
R222
F901
64
1
C208
V210
C211
R217
R215
R216
R209
R210
5
4

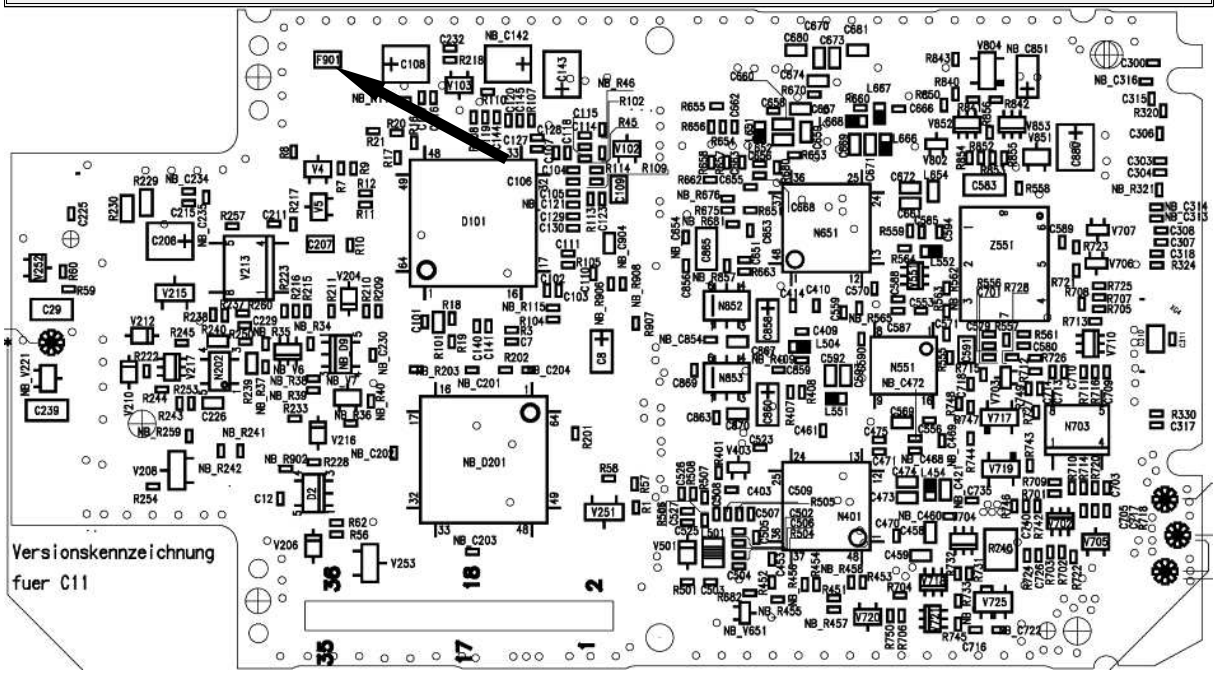


Figure 3: C11 Board 1A Fuse Side

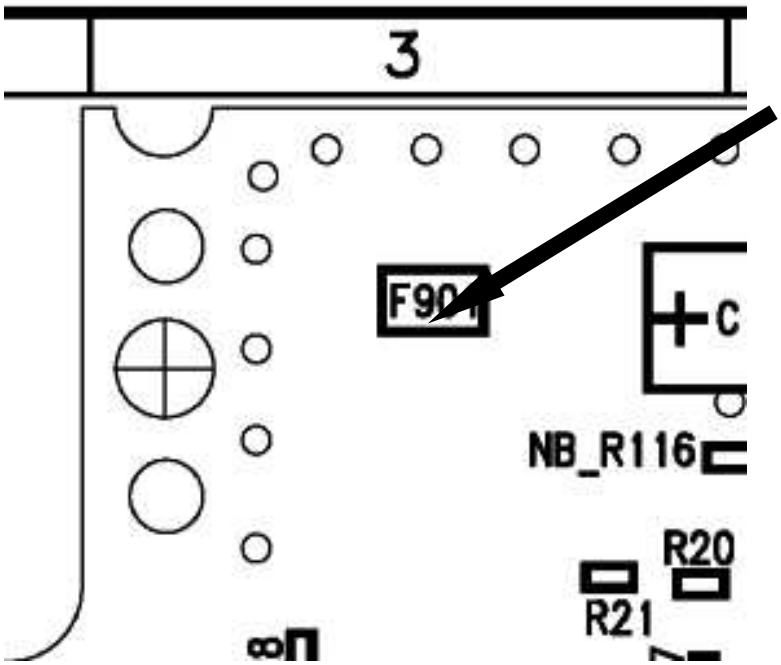


Figure 4: C11 1A Fuse (F901) Placement (Top View)

4Ringer Connector

4.1Affected Units

4.1.1Type: **C10, C11**

4.1.2Affected IMEIs / Date Codes: *All / All*

4.1.3Affected SW-Versions: *All*

4.1.4 Fault Code for LSO reporting: **C10, C11**: **3RIC**

4.2Fault Description

4.2.1Fault Symptoms for customers:

Problems with the handset ringer. No ringer tone audible.

4.2.2Fault Symptom on GSM-Tester:

Handset fails ringer test.

4.3Priority:

☐ ..... Mandatory
¤ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

4.4Repair Documentation

4.4.1Description of procedure:

The connector B1 is connecting the main board of the C1x with the piezo ringer through a two pin cable.

4.4.1.1Diagnosis

Visually check the connector. Watch for bent contacts and dry joints.

4.4.1.2Repair by component change

Resolder dry soldering joints.
If the connector is physically damaged use hot air blower or wick to remove defective connector.
Avoid excessive heat!
Watch surrounding components!

Resolder new connector afterwards.

4.4.1.3Repair by SW-Booting

Not possible!

4.4.1.4Test

Retest handset after repair.

4.4.2List of needed material

4.4.2.1Components

Ringer Connector C1x:
Part-Number: L36334-Z97-C43

4.4.2.2Jigs and Tools

Hot Air Blower
Soldering Iron

4.4.2.3Special Tools

None

4.4.2.4Working materials

Desolder Wick / Braid
Solder
Flux

4.4.3Drawings

Figure 1: C10 Board Ringer Connector Side

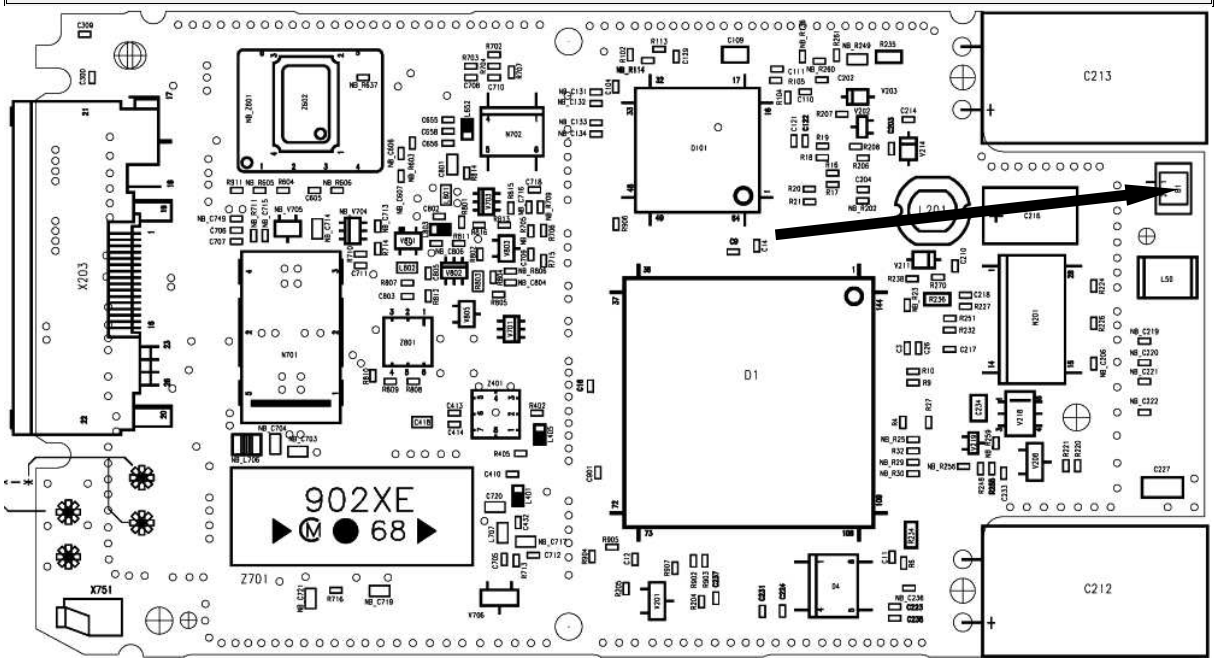


Figure 2: C10 Ringer Connector Placement (Top View)

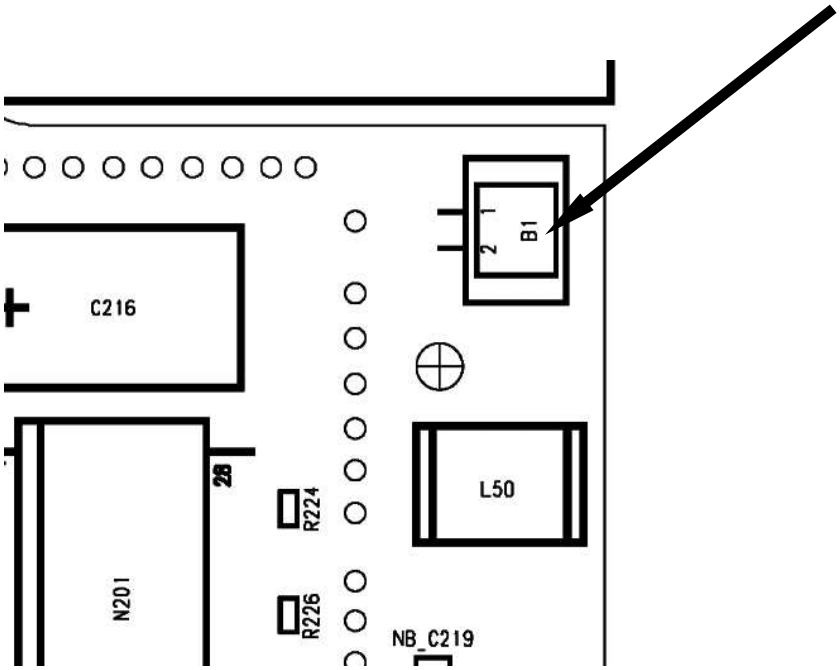


Figure 3: C11 Board Ringer Connector Side

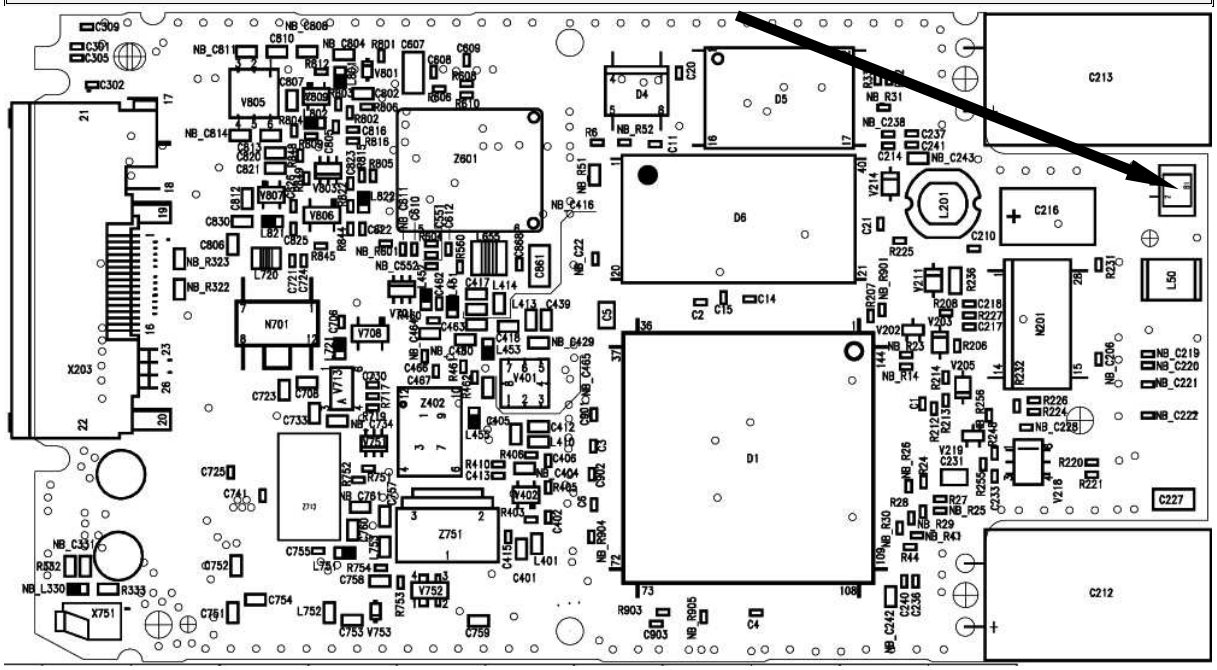
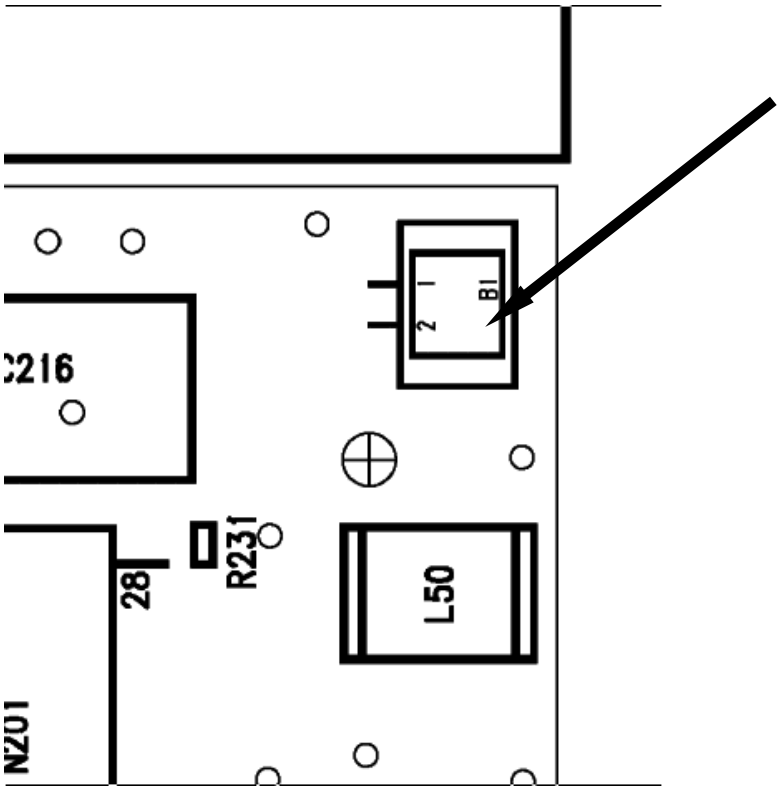


Figure 4: C11 Ringer Connector Placement (Top View)



5Molex Connector

5.1Affected Units

5.1.1Type: **C10, C11**

5.1.2Affected IMEIs / Date Codes: *All / All*

5.1.3Affected SW-Versions: *All*

5.1.4Fault Code for LSO reporting: **C10, C11: 3MOC**

5.2Fault Description

5.2.1Fault Symptoms for customers:

Battery charging not possible.
Problems with external loudspeaker or microphone when using a car kit.
Network search when using the external antenna.
Problems with data accessories.

5.2.2Fault Symptom on GSM-Tester:

Output power problems on the external antenna only

5.3Priority:

☐ ..... Mandatory
¤ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

5.4Repair Documentation

5.4.1Description of procedure:

5.4.1.1Diagnosis

Visually check the bottom connector. Watch for dry joints or a broken charging pin.

5.4.1.2Repair by component change

Use hot air blower remove defective bottom connector.
Avoid excessive heat!
Watch surrounding components!

Resolder new bottom connector afterwards.

5.4.1.3Repair by SW-Booting

Not possible!

5.4.1.4Test

Retest handset after repair.

5.4.2List of needed material

5.4.2.1Components

Bottom Connector C10, C11
Part-Number: L36334-Z93-C244

5.4.2.2Jigs and Tools

Hot Air Blower
Soldering Iron

5.4.2.3Special Tools

None

5.4.2.4Working materials

Desolder Wick / Braid
Solder

5.4.3Drawings

Figure 1: C10 Board Bottom Connector Side

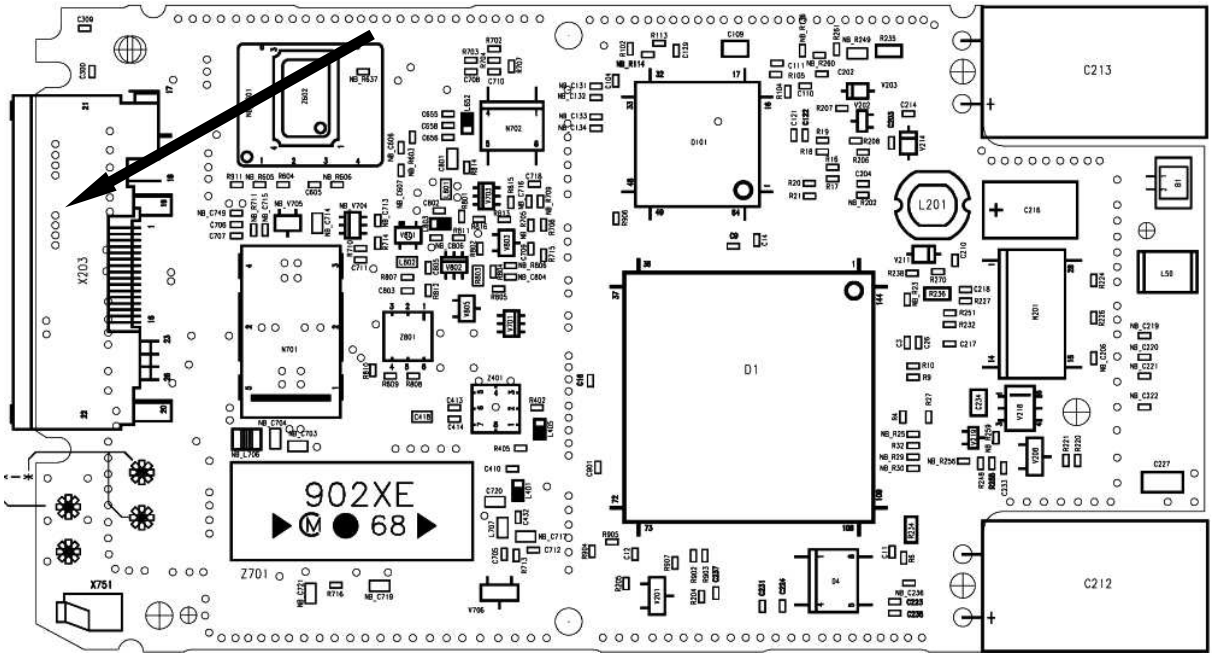


Figure 2: C11 Board Bottom Connector Side

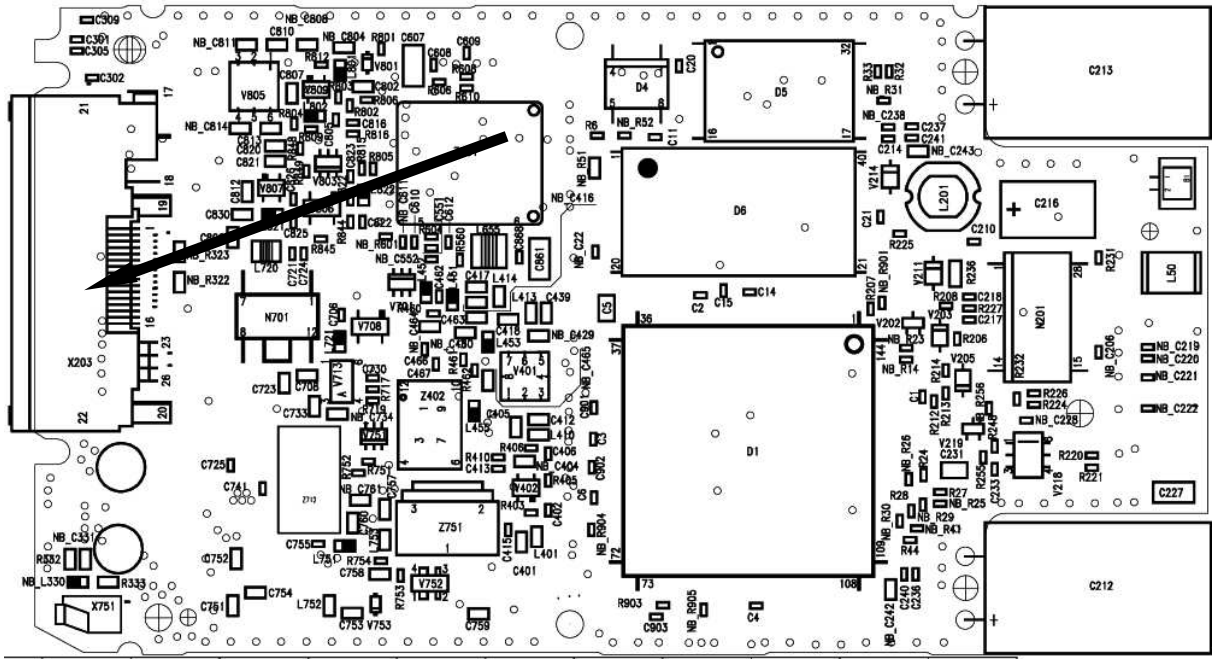
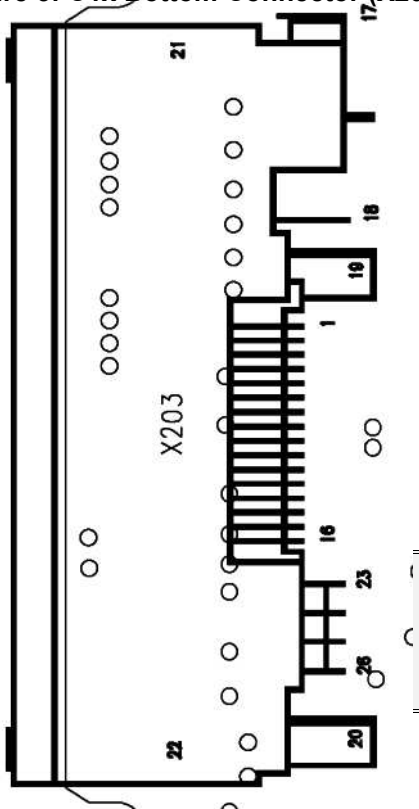


Figure 3: C1x Bottom Connector (X203) Placement (Top View)



618µH Coil

6.1Affected Units

6.1.1Type: **C10, C11**

6.1.2Affected IMEIs / Date Codes: *All / All*

6.1.3Affected SW-Versions: *All*

6.1.4Fault Code for LSO reporting: C10, C11: 3COI

6.2Fault Description

6.2.1Fault Symptoms for customers:

Loud humming noise in loudspeaker.

6.2.2Fault Symptom on GSM-Tester:

Handset fails with loud humming noise in echo loop.

6.3Priority:

☐ ..... Mandatory
¤ ..... Repair
☐ ..... Optional

☐ ..... Not Yet Defined

6.4Repair Documentation

6.4.1Description of procedure:

6.4.1.1Diagnosis

The 18µH coil is used in the step up converter which is generating a 6.0 V supply voltage for the power amplifier out of the 2.8V battery voltage.
If the coil is mechanically damaged (broken) it produces heavy interference with the acoustical elements of the C1x resulting in a loud humming noise in the earpiece.

A broken coil can easily be diagnosed by trying to move it with two fingers. If it moves, the core is broken and the coil has to be replaced.

6.4.1.2Repair by component change

Use hot air to remove defective coil.
Avoid excessive heat!
Watch surrounding components!!

Resolder new coil afterwards

6.4.1.3Repair by SW-Booting

Not possible!

6.4.1.4Test

Retest handset after repair by checking the audio quality with the echo loop of the testprogram.

6.4.2List of needed material

6.4.2.1Components

18µH Coil

Part-Number: L36151-F5183-M

6.4.2.2Jigs and Tools

Soldering Iron
Hot Air Blower

6.4.2.3Special Tools

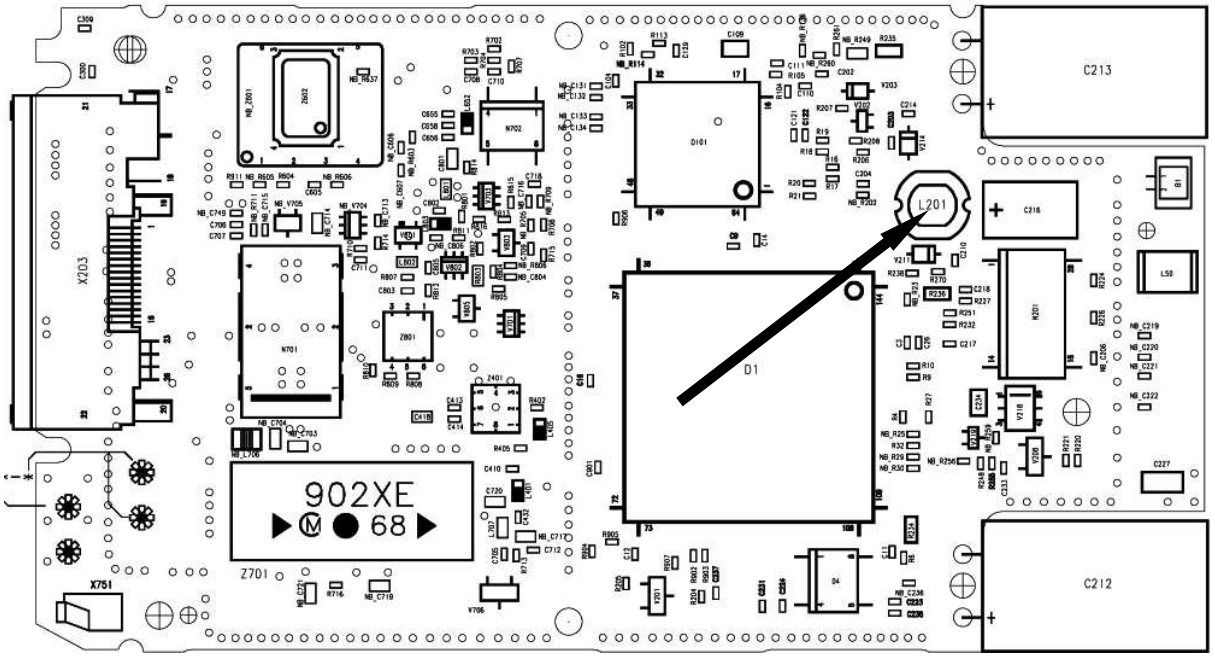
None

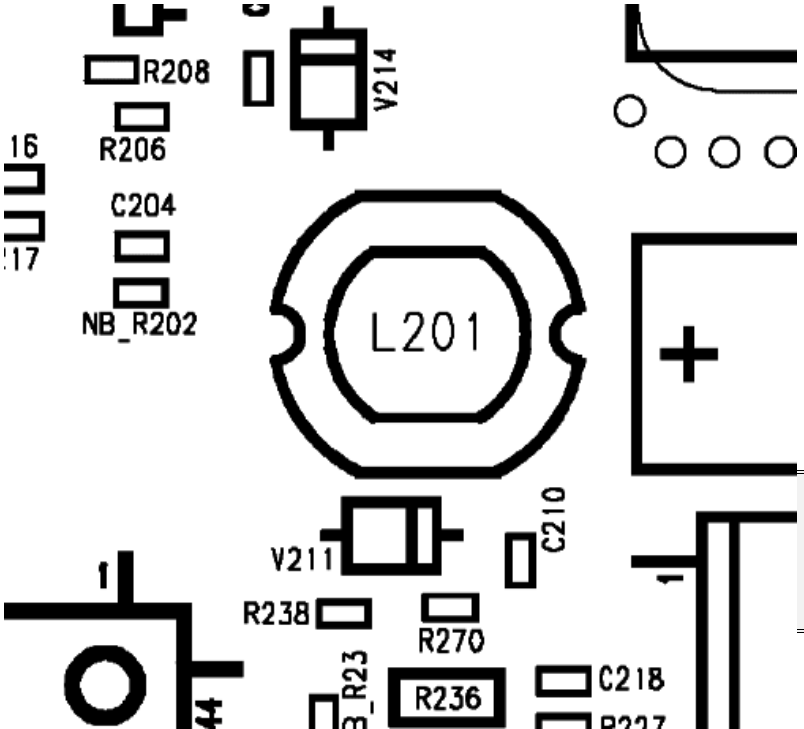
6.4.2.4Working materials

Desolder Wick / Braid
Solder

6.4.3Drawings

Figure 1: C10 Board 18µH Coil (L201) Side





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08/98

Figure 3: C11 Board 18µH Coil (L201) Side

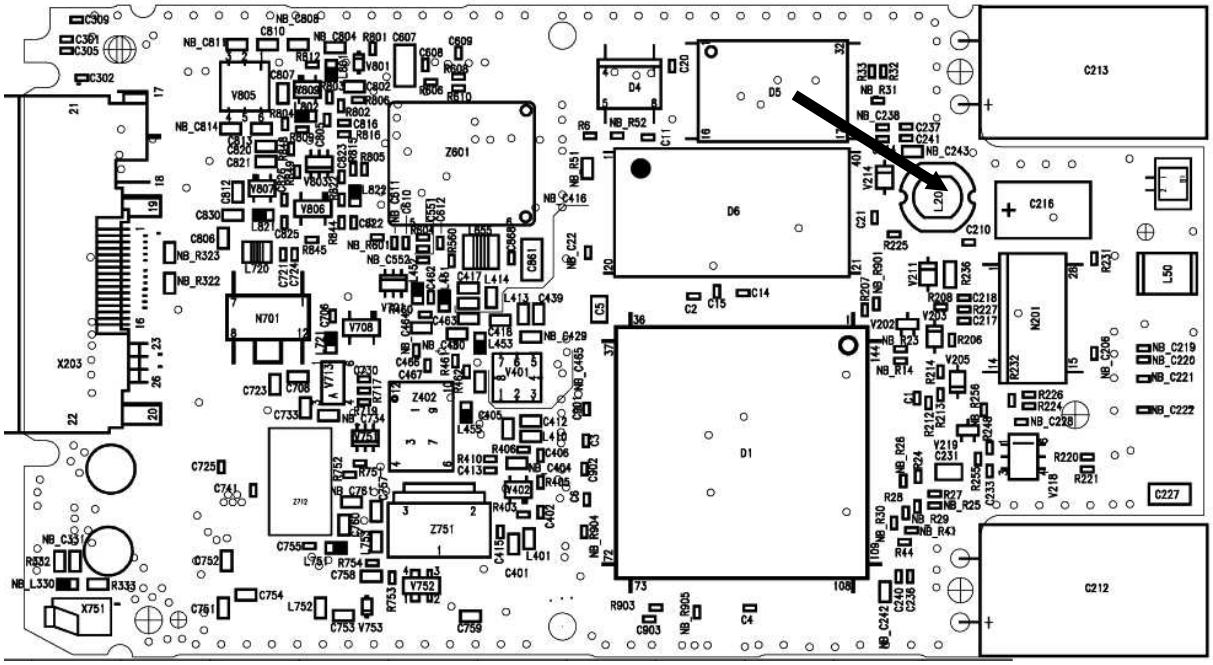
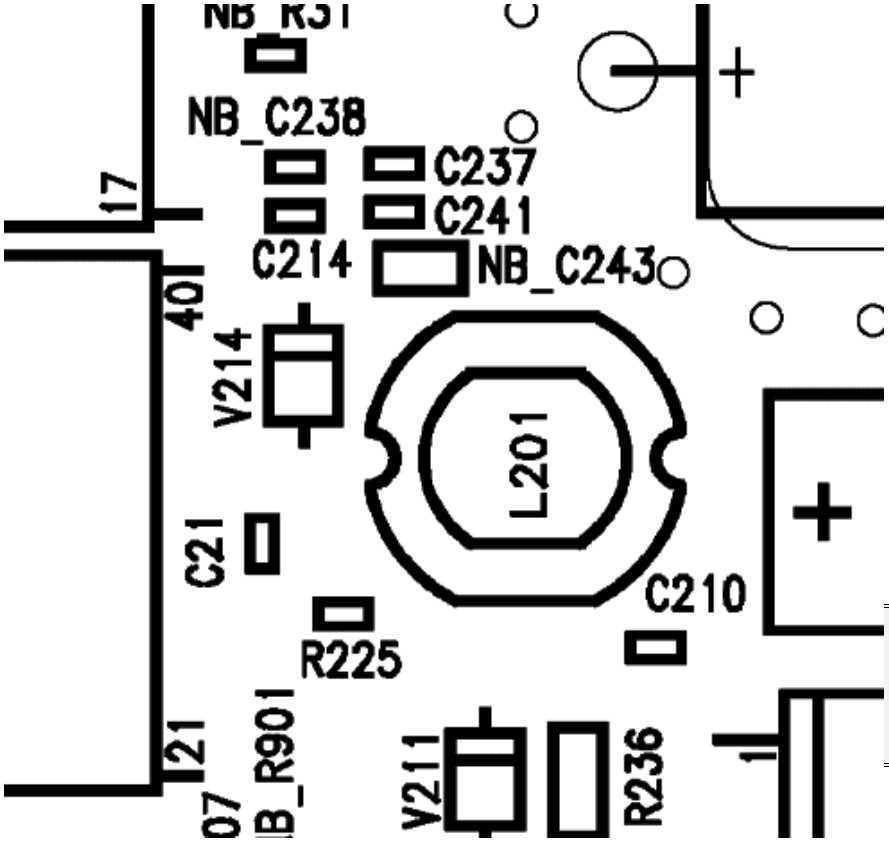


Figure 4: C11 18µH Coil (L201) Placement (Top View)



7Antenna Spring

7.1Affected Units

7.1.1Type: **C10, C11**

7.1.2Affected IMEIs / Date Codes: *All / All*

7.1.3Affected SW-Versions: *All*

7.1.4Fault Code for LSO reporting: **C10, C11: 3ANS**

7.2Fault Description

7.2.1Fault Symptoms for customers:

Network Search.
Handset drops calls.

7.2.2Fault Symptom on GSM-Tester:

Power problems on the internal antenna of the handset only.

7.3Priority:

☐ ..... Mandatory
¤ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

7.4Repair Documentation

7.4.1Description of procedure:

The antennaspring connects the main board with the internal antenna of the handset.

7.4.1.1Diagnosis

Visually check the status of the spring. Bent or oxidated springs have to be replaced.

7.4.1.2Repair by component change

Use soldering iron to remove defective spring.
Avoid excessive heat!
Watch surrounding components!

Resolder new spring afterwards.

7.4.1.3Repair by SW-Booting

Not possible!

7.4.1.4Test

Retest handset after repair.

7.4.2List of needed material

7.4.2.1Components

Antenna Spring C10, C11
Part-Number: L36158-A26-C430

7.4.2.2Jigs and Tools

Hot Air Blower
Soldering Iron

7.4.2.3Special Tools

None

7.4.2.4Working materials

Desolder Wick / Braid
Solder

7.4.3Drawings

Figure 1: C10 Board Antenna Spring Side

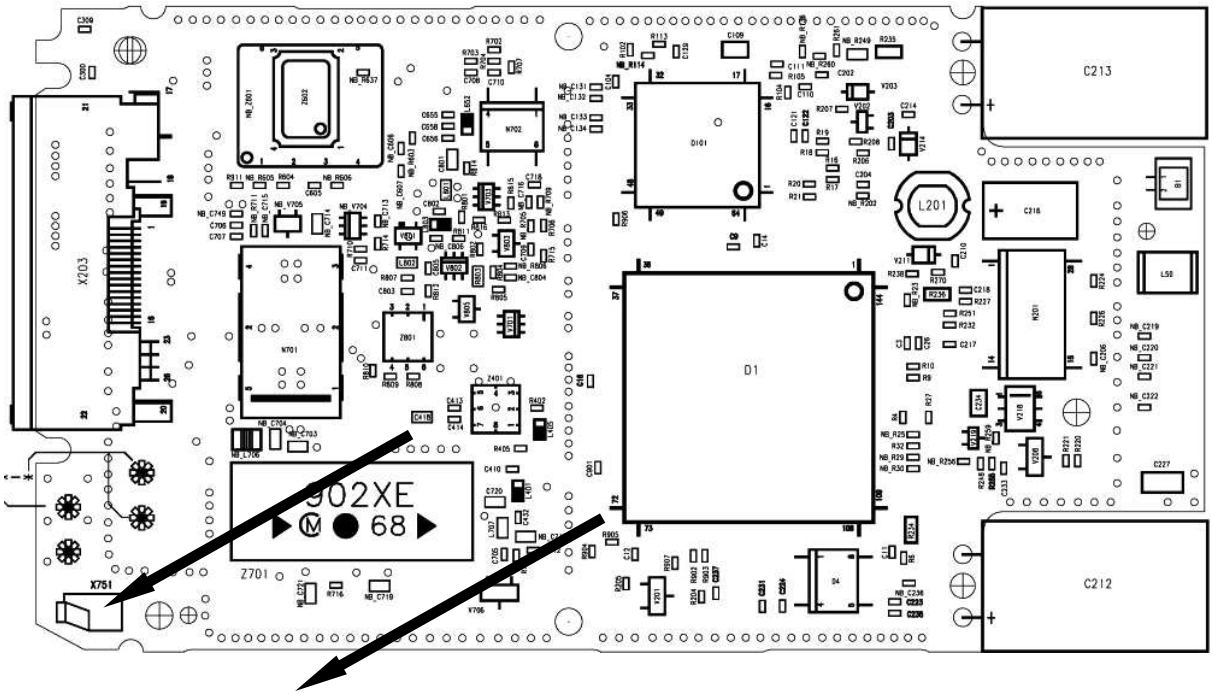


Figure 2: C10 Antenna Spring (X751) Placement (Top View)

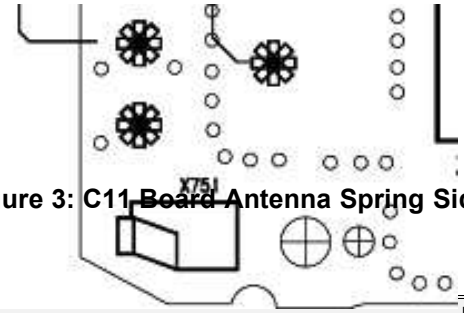


Figure 3: C11 Board Antenna Spring Side

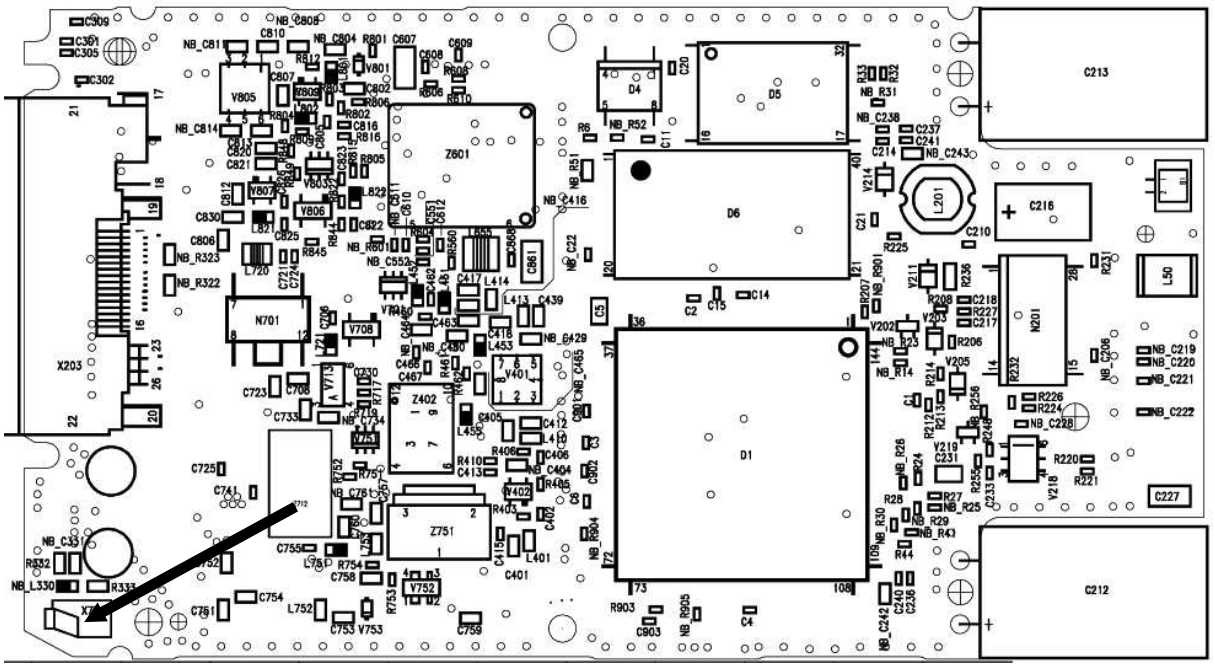


Figure 4: C11 Antenna Spring (X751) Placement (Top View)