

**SL10**

**Level 2.5**

**Repair Documentation**

V 1.3

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## **1 Introduction**

This manual is intended to help you carry out SL10 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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**2TCXO****2.1 Affected Units****2.1.1 Type: SL10****2.1.2 Affected IMEIs / Date Codes: All / All****2.1.3 Affected SW-Versions: All****2.1.4 Fault Code for LSO reporting: 3TCX****2.2 Fault Description****2.2.1 Fault Symptoms for customers:**

Network Search  
Handset not logging into network

**2.2.2 Fault Symptom on GSM-Tester:**

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

The TCXO (Temperature Compensated Crystal 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.

**2.3 Priority:**

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

## 2.4 Repair Documentation

### 2.4.1 Description of procedure:

#### 2.4.1.1 Diagnosis

Check the output frequency of the TCXO using the level-2 testing program for SL10.

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 TCXO has to be replaced.

#### 2.4.1.2 Repair by component change

Use hot air blower to remove defective TCXO.

Avoid excessive heat!

Watch surrounding components!

Resolder new TCXO afterwards.

#### 2.4.1.3 Repair by SW-Booting

Not possible!

#### 2.4.1.4 Test

Retest handset after repair as described above.

The frequency error must now be < 2kHz.

**2.4.2 List of needed material****2.4.2.1 Components**

TCXO  
Part-Number: L36145-G300-Y17

**2.4.2.2 Jigs and Tools**

Hot Air Blower  
Soldering Iron

**2.4.2.3 Special Tools**

None

**2.4.2.4 Working materials**

Desolder Wick / Braid  
Solder

2.4.3 Drawings

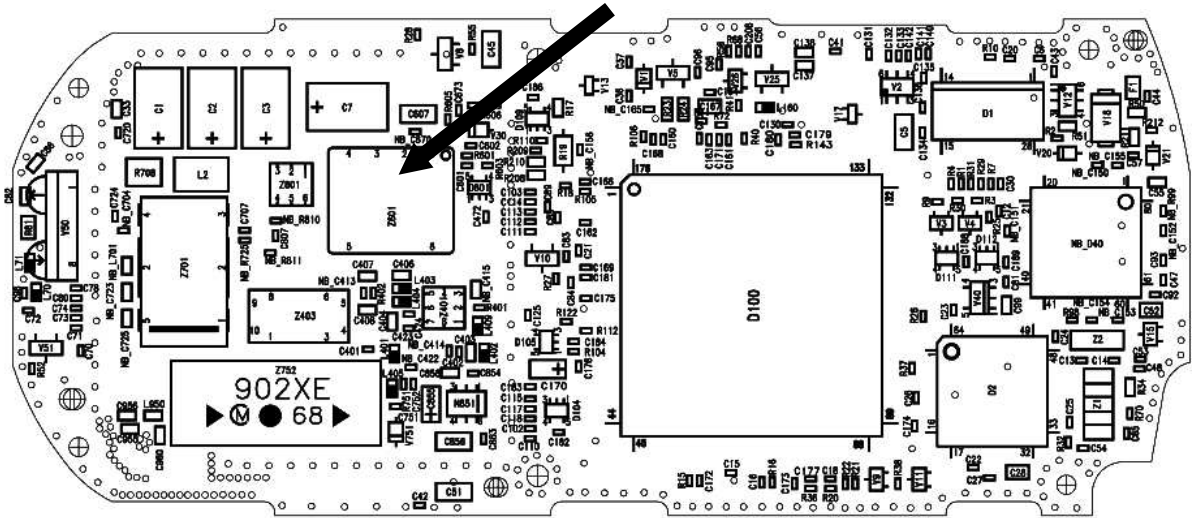


Figure 1: SL10 Board TCXO Side

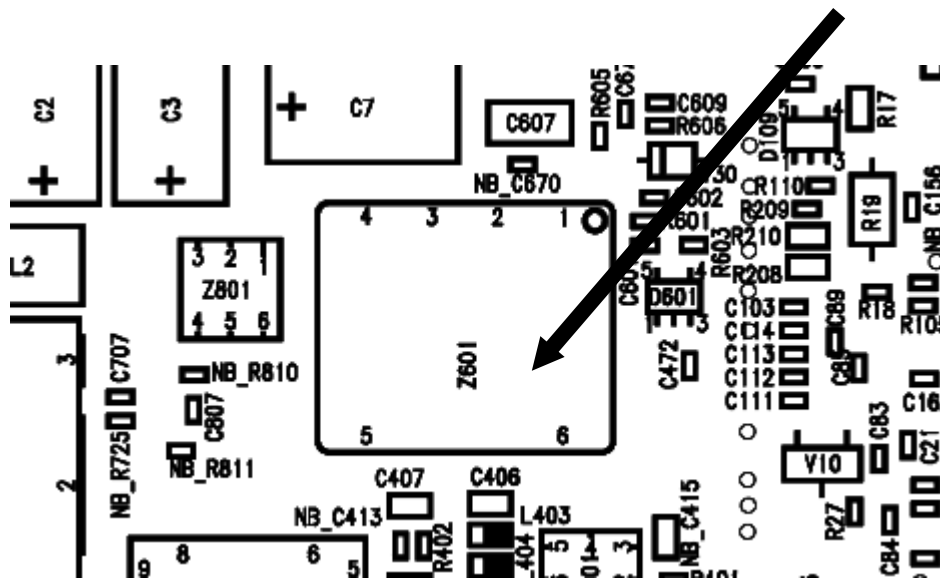


Figure 2: TCXO (Z601) Placement (Top View)





## 3Fuse 1A

### 3.1 Affected Units

3.1.1 Type: **SL10**

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

3.1.3 Affected SW-Versions: *All*

3.1.4 Fault Code for LSO reporting: **3FU1**

### 3.2 Fault Description

#### 3.2.1 Fault Symptoms for customers:

Battery charging not possible

#### 3.2.2 Fault Symptom on GSM-Tester:

This fault cannot be detected with a GSM-Tester

### 3.3 Priority:

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

### **3.4 Repair Documentation**

#### **3.4.1 Description of procedure:**

##### **3.4.1.1 Diagnosis**

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.

##### **3.4.1.2 Repair by component change**

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

Resolder new fuse afterwards.

##### **3.4.1.3 Repair by SW-Booting**

Not possible!

##### **3.4.1.4 Test**

Retest handset after repair as described above.  
The resistance must now be close to zero.

**3.4.2 List of needed material****3.4.2.1 Components**

Fuse  
Part-Number: L36145-A820-Y7

**3.4.2.2 Jigs and Tools**

Soldering Iron

**3.4.2.3 Special Tools**

Multimeter

**3.4.2.4 Working materials**

Desolder Wick / Braid  
Solder

### 3.4.3 Drawings

Figure 1: SL10 Board 1A Fuse Side

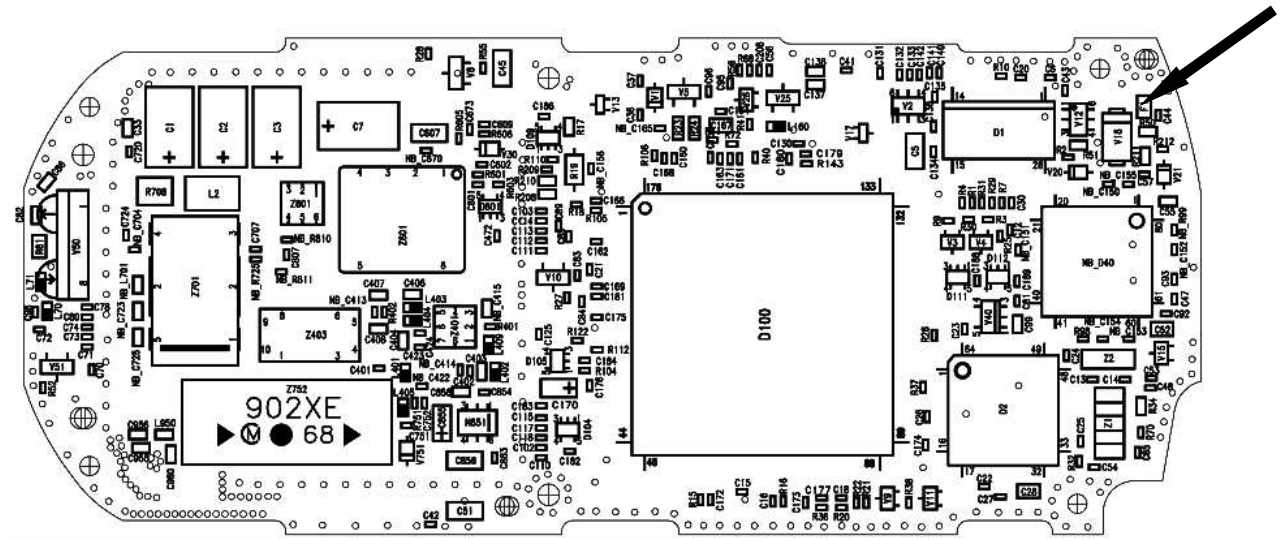
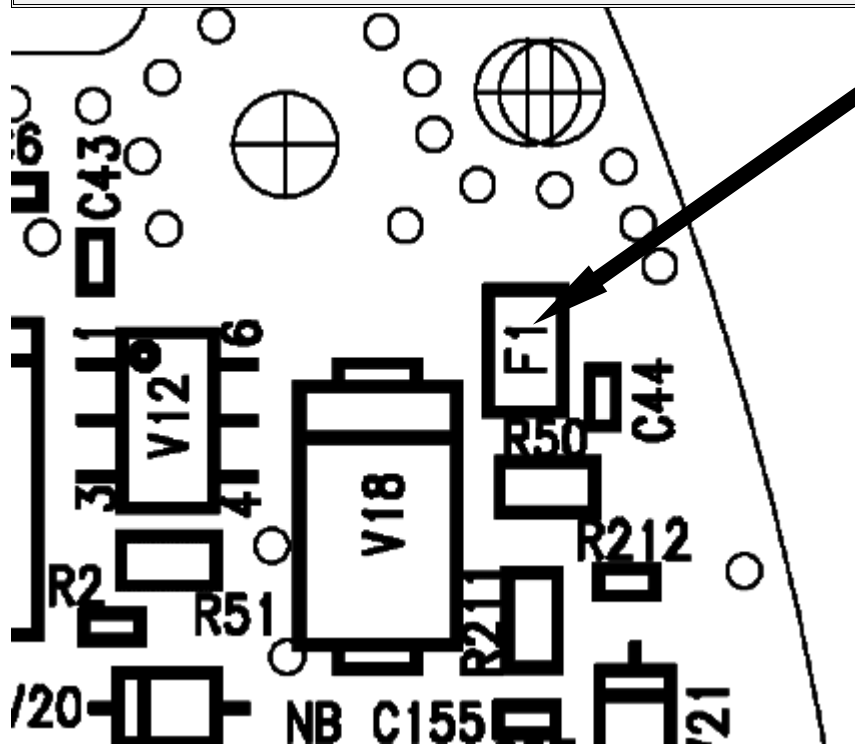


Figure 2: 1A Fuse (F1) Placement (Top View)



### 4Connector X1 - Lower MMI

#### 4.1 Affected Units

4.1.1 Type: SL10

4.1.2 Affected IMEIs / Date Codes: All / All

4.1.3 Affected SW-Versions: All

4.1.4 Fault Code for LSO reporting: 3X1C

#### 4.2 Fault Description

**4.2.1 Fault Symptoms for customers:**

Problems with main keyboard. Either keys or the keyboard illumination not working properly.

**4.2.2 Fault Symptom on GSM-Tester:**

Handset fails test of main keyboard

**4.3 Priority:**

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

## **4.4 Repair Documentation**

### **4.4.1 Description of procedure:**

The connector X1 is connecting the main board of the SL10 with the main keyboard through a flexible cable.

#### **4.4.1.1 Diagnosis**

Visually check the connector. Watch for dry joints.

#### **4.4.1.2 Repair 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.

#### **4.4.1.3 Repair by SW-Booting**

Not possible!

#### **4.4.1.4 Test**

Retest handset after repair.

**4.4.2 List of needed material****4.4.2.1 Components**

Connector X1:  
Part-Number: L36195-Z26-C618

**4.4.2.2 Jigs and Tools**

Hot Air Blower  
Soldering Iron

**4.4.2.3 Special Tools**

None

**4.4.2.4 Working materials**

Desolder Wick / Braid  
Solder  
Flux



4.4.3 Drawings

Figure 1: SL10 Board X1 Connector Side

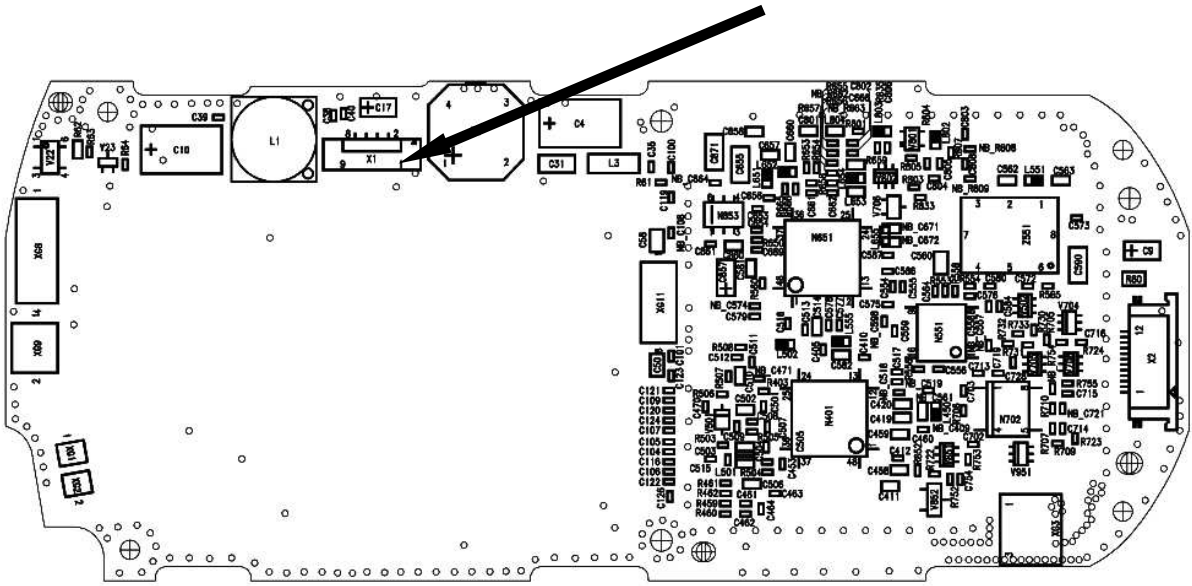
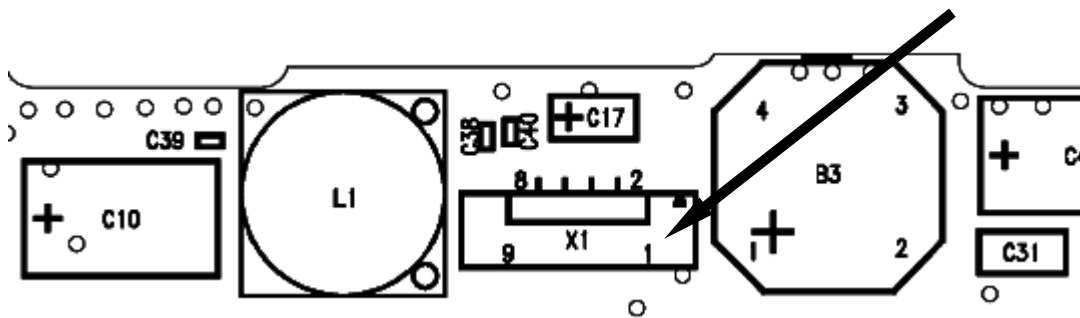


Figure 2: Connector X1 Placement (Top View)



## 5 Connector X2 - Upper MMI + Flexible Cable

### 5.1 Affected Units

5.1.1 Type: **SL10**

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

5.1.3 Affected SW-Versions: *All*

5.1.4 Fault Code for LSO reporting: Connector X2: 3X2C  
Flexible Cable MMI: 3FL2

### 5.2 Fault Description

#### 5.2.1 Fault Symptoms for customers:

Slider keypad does not work properly.  
Display problems.  
Display or keyboard illumination problems.

#### 5.2.2 Fault Symptom on GSM-Tester:

Handset fails the keyboard, display or illumination test.

### 5.3 Priority:

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

## **5.4 Repair Documentation**

### **5.4.1 Description of procedure:**

The connection between the main board and the upper MMI is made through the connector X2 and a flexible cable. The signals of these connection are:

- 1) Display signals.
- 2) Earphone (loudspeaker) signals.
- 3) Display / Keyboard illumination signals.

#### **5.4.1.1 Diagnosis**

Visually check the connector. Watch for dry joints.  
Visually check the flexible cable coming from the upper MMI. Watch for dry joints on the MMI.

#### **5.4.1.2 Repair by component change**

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

Resolder new connector/cable afterwards.

#### **5.4.1.3 Repair by SW-Booting**

Not possible!

#### **5.4.1.4 Test**

Retest handset after repair and verify proper function.



**5.4.2 List of needed material****5.4.2.1 Components**

Connector X2:  
Part-Number: L36195-Z26-C617

Flexible Cable MMI:  
Part-Number: L36880-Q1600-A4

**5.4.2.2 Jigs and Tools**

Soldering Iron  
Hot Air Blower

**5.4.2.3 Special Tools**

None

**5.4.2.4 Working materials**

Desolder Wick / Braid  
Solder

5.4.3 Drawings

Figure 1: SL10 Board MMI Connector (X2) Side

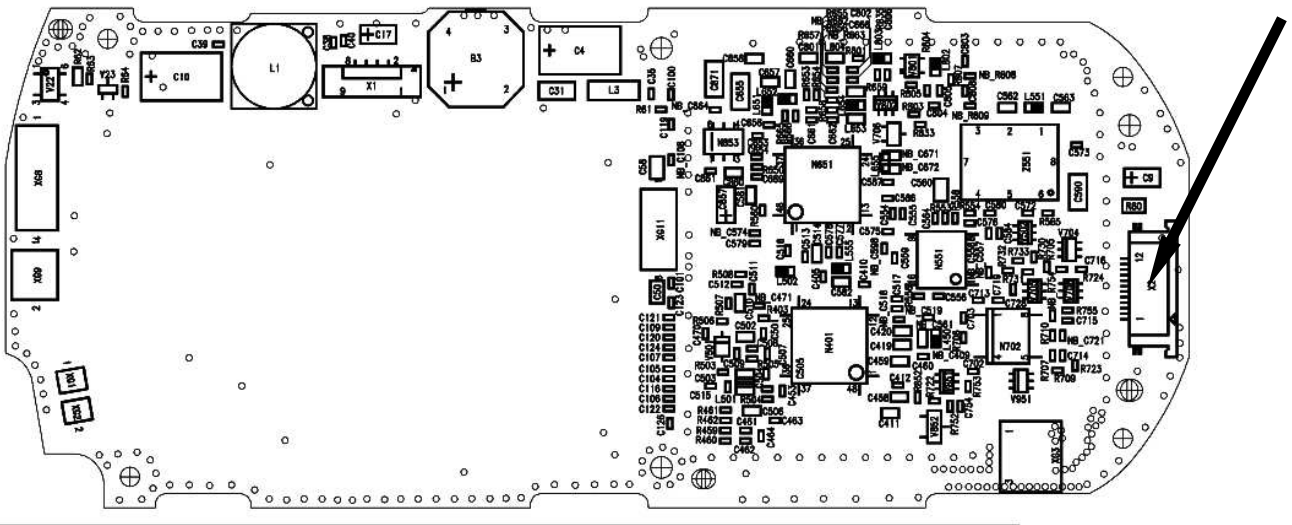
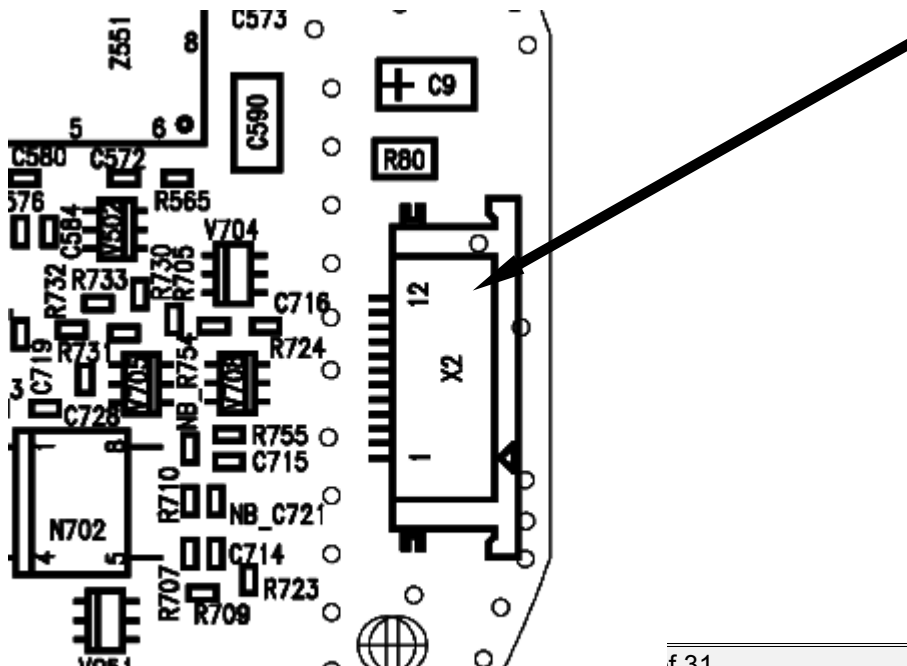
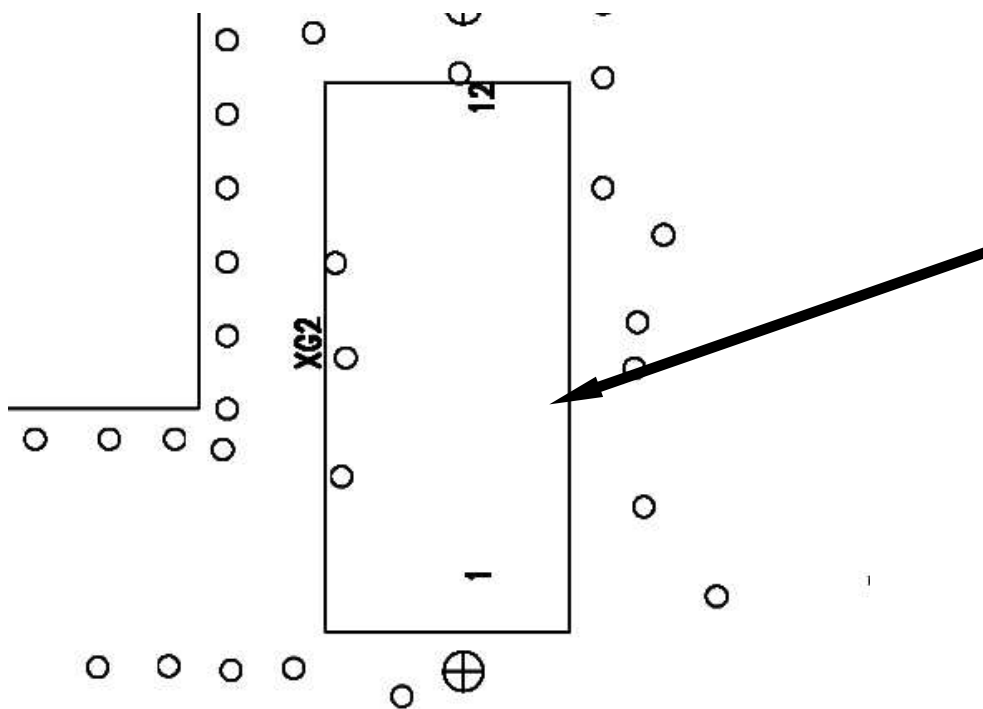
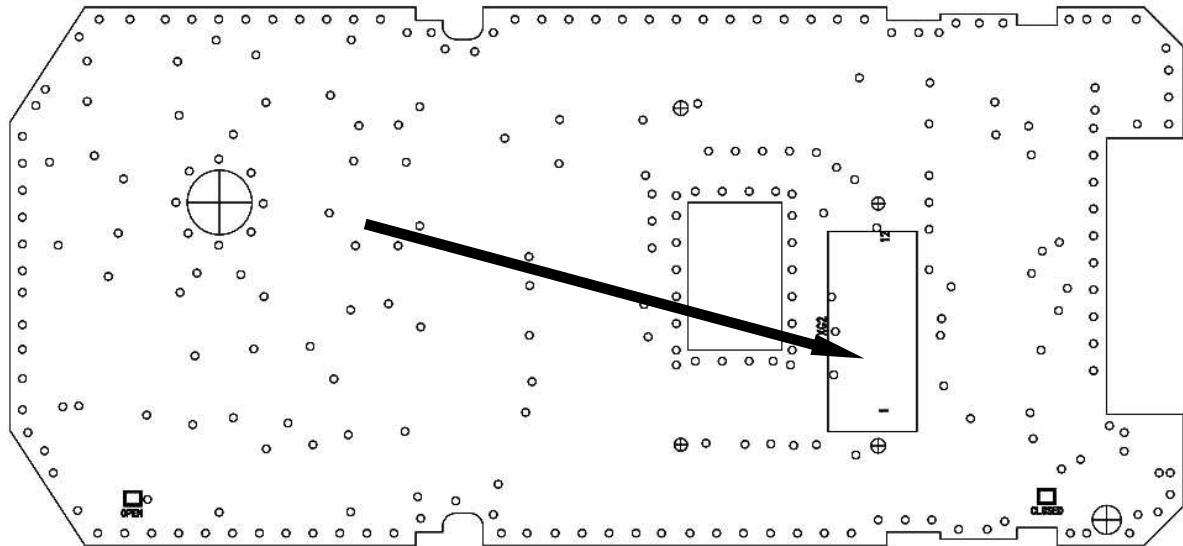


Figure 2: MMI Connector (X2) Placement (Top View)





**Figure 4: SL10 MMI Board Flexible Cable Soldering Pads**

**6Ringer****6.1 Affected Units****6.1.1 Type:** SL10**6.1.2 Affected IMEIs / Date Codes:** All / All**6.1.3 Affected SW-Versions:** All**6.1.4 Fault Code for LSO reporting:** 3RIN**6.2 Fault Description****6.2.1 Fault Symptoms for customers:**

No ringer tone audible or ringer tone distorted.

**6.2.2 Fault Symptom on GSM-Tester:**

Ringer check fails.

**6.3 Priority:**

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



**6.4 Repair Documentation****6.4.1 Description of procedure:****6.4.1.1 Diagnosis**

Check ringer functionality either manually or with testing program.

**6.4.1.2 Repair by component change**

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

Resolder new ringer afterwards.  
Watch placement of ringer hole!

**6.4.1.3 Repair by SW-Booting**

Not possible!

**6.4.1.4 Test**

Retest handset after repair.

**6.4.2 List of needed material****6.4.2.1 Components**

Ringer  
Part-Number: L36178-Z2-C15

**6.4.2.2 Jigs and Tools**

Hot Air Blower  
Soldering Iron

**6.4.2.3 Special Tools**

None

### 6.4.2.4 Working materials

Desolder Wick / Braid  
Solder

### 6.4.3 Drawings

Figure 1: SL10 Board Ringer Side

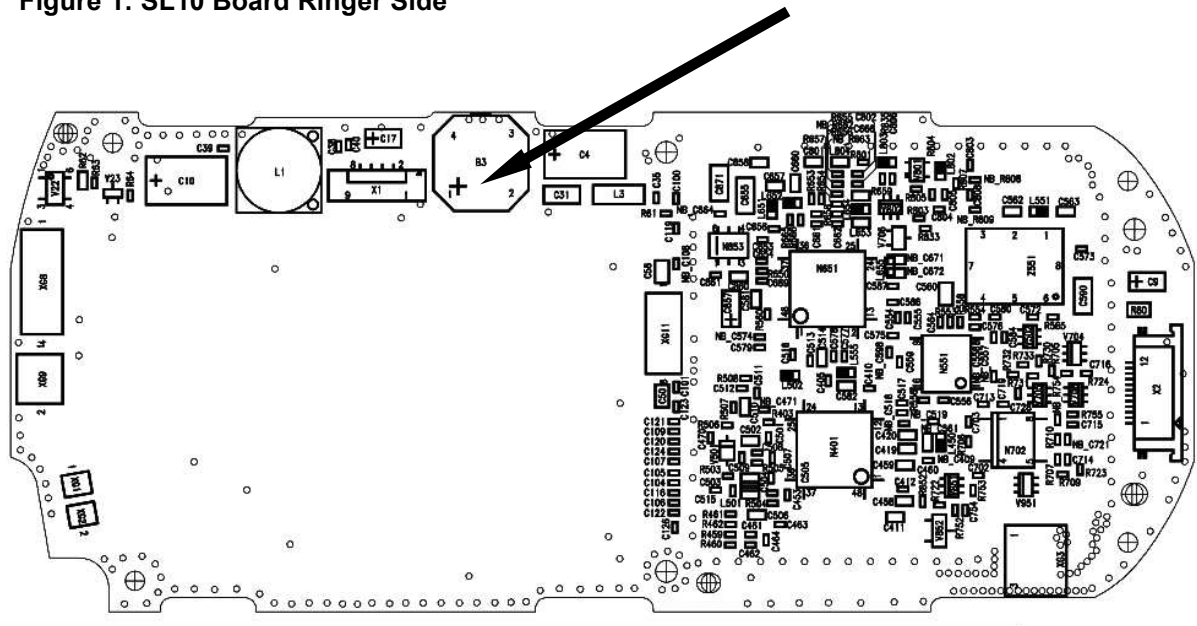
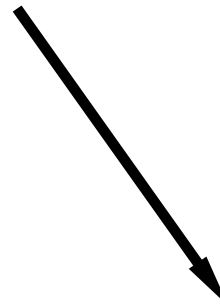
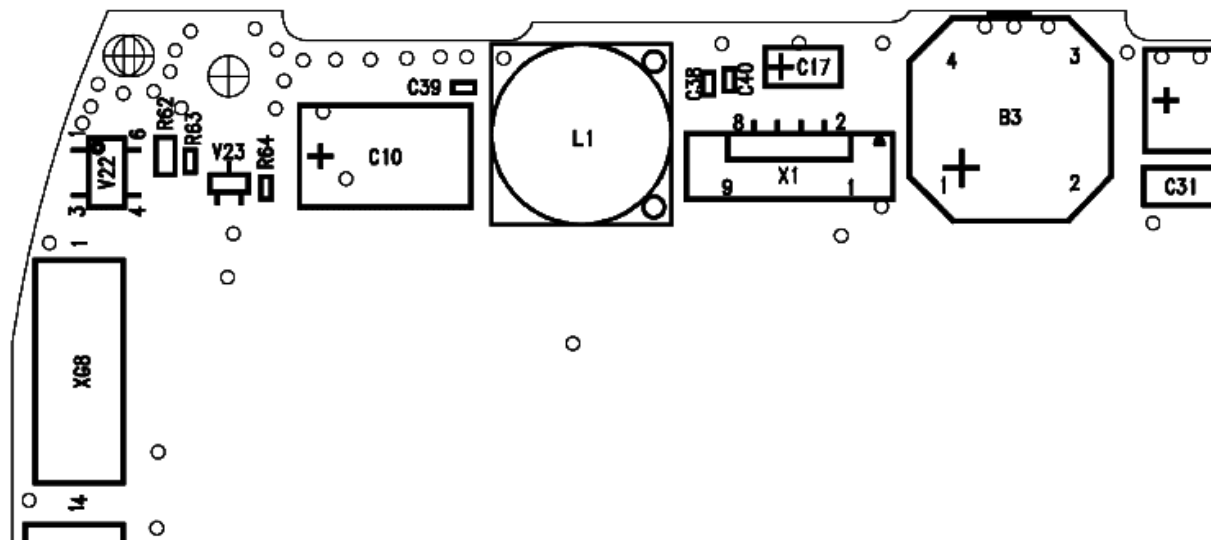


Figure 2: Ringer (B3) Placement (Top View)





## 731µH Coil

### 7.1 Affected Units

7.1.1 Type: **SL10**

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

7.1.3 Affected SW-Versions: *All*

7.1.4 Fault Code for LSO reporting: **3COI**

### 7.2 Fault Description

#### 7.2.1 Fault Symptoms for customers:

Loud humming noise in loudspeaker.

**7.2.2 Fault Symptom on GSM-Tester:**

Handset fails with loud humming noise in echo loop.

**7.3 Priority:**

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

**7.4 Repair Documentation****7.4.1 Description of procedure:****7.4.1.1 Diagnosis**

The 31 $\mu$ H 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 SL10 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.

**7.4.1.2 Repair by component change**

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

Resolder new coil afterwards

#### **7.4.1.3 Repair by SW-Booting**

Not possible!

#### **7.4.1.4 Test**

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

### **7.4.2 List of needed material**

#### **7.4.2.1 Components**

Part-Number: L36151-F5273-M3

#### **7.4.2.2 Jigs and Tools**

Soldering Iron  
Hot Air Blower

#### **7.4.2.3 Special Tools**

None

#### **7.4.2.4 Working materials**

Desolder Wick / Braid  
Solder



### 7.4.3 Drawings

Figure 1: SL10 Board 31 $\mu$ H Coil (L1) Side

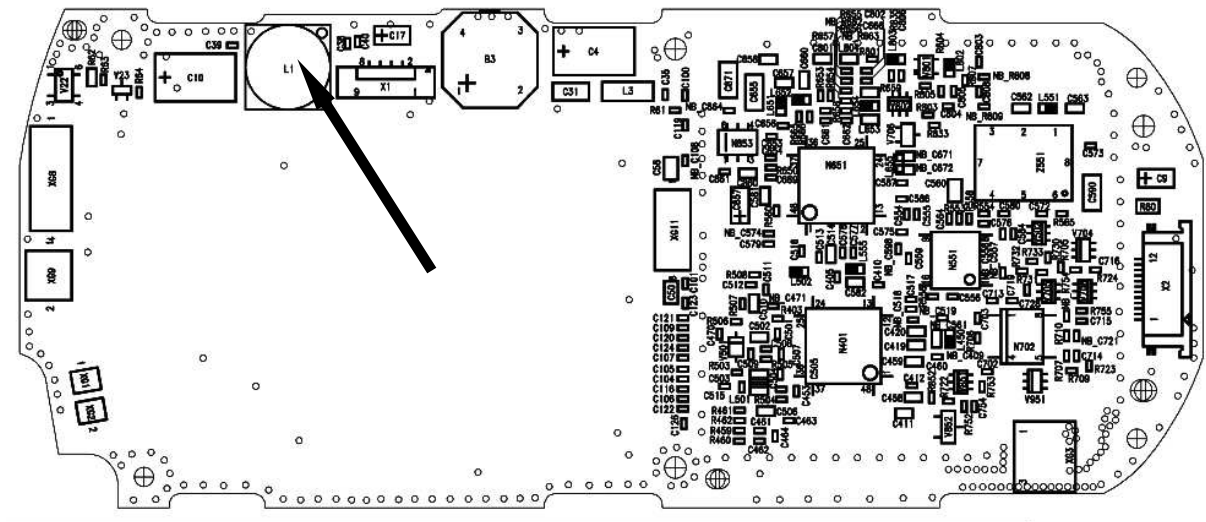
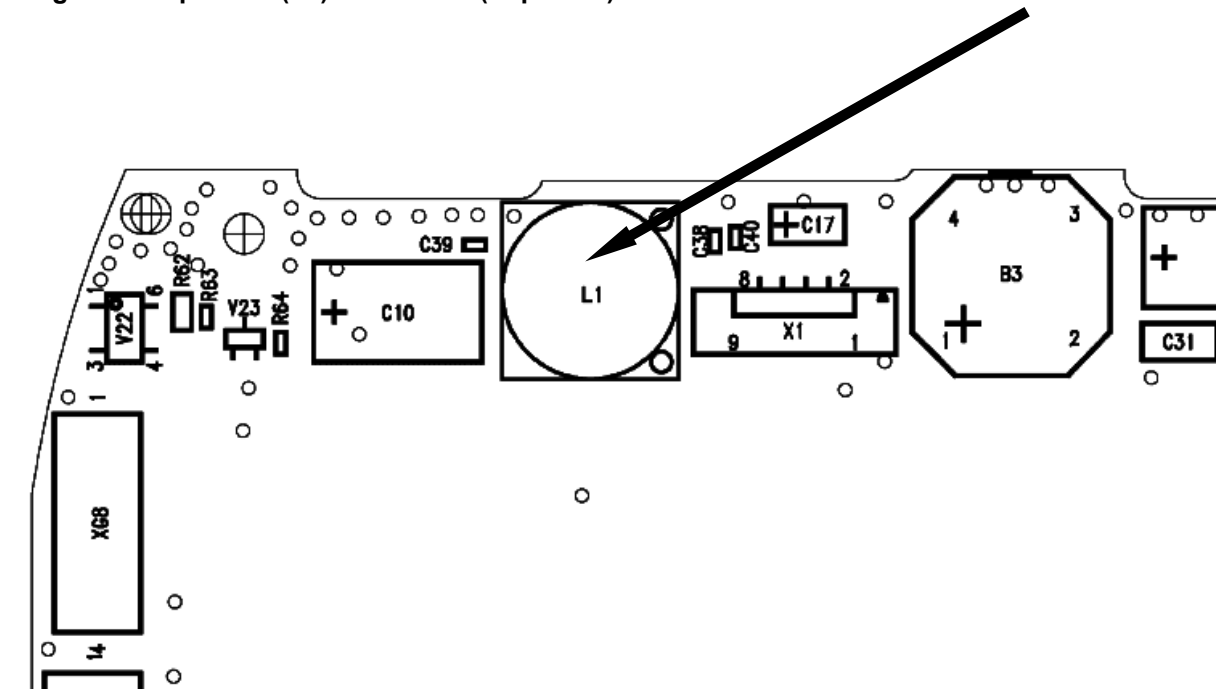


Figure 2: 31 $\mu$ H Coil (L1) Placement (Top View)



## 8Flexible Cable Microphone

### 8.1Affected Units

8.1.1Type: **SL10**

8.1.2Affected IMEIs / Date Codes: *All / All*

8.1.3Affected SW-Versions: *All*

8.1.4Fault Code for LSO reporting: **3FL1**

### 8.2Fault Description

#### 8.2.1Fault Symptoms for customers:

No microphone function.  
Other party cannot hear callers's voice.

#### 8.2.2Fault Symptom on GSM-Tester:

Microphone test fails.

### 8.3Priority:

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



**8.4 Repair Documentation****8.4.1 Description of procedure:**

The microphone is connected to the main board through a two pin flexible cable.

**8.4.1.1 Diagnosis**

Check microphone functionality either manually or with testing program.

**8.4.1.2 Repair by component change**

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

Resolder new cable afterwards.

**8.4.1.3 Repair by SW-Booting**

Not possible!

**8.4.1.4 Test**

Retest handset after repair.

**8.4.2 List of needed material****8.4.2.1 Components**

Flexible Cable Microphone  
Part-Number: L36880-Q1600-A5

**8.4.2.2 Jigs and Tools**

Hot Air Blower  
Soldering Iron

### 8.4.2.3 Special Tools

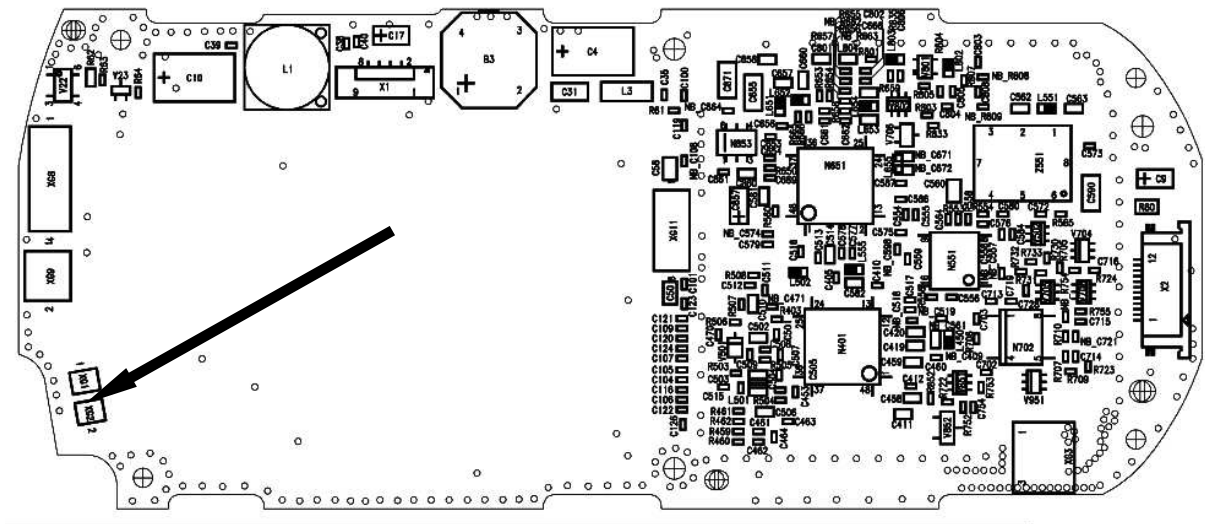
None

### 8.4.2.4 Working materials

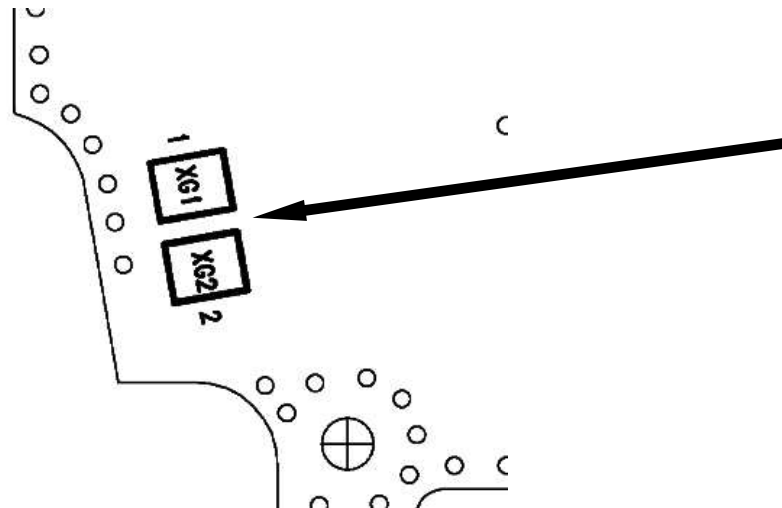
Desolder Wick / Braid  
Solder

### 8.4.3 Drawings

Figure 1: SL10 Board Microphone Cable Side



**Figure 2: Microphone Cable Soldering Pads (XG1;XG2)  
Placement (Top View)**



**Figure 3: Flexible Cable Microphone**

