W370/W375 Troubleshooting Guild

Compal Communication

RDD1/HW2

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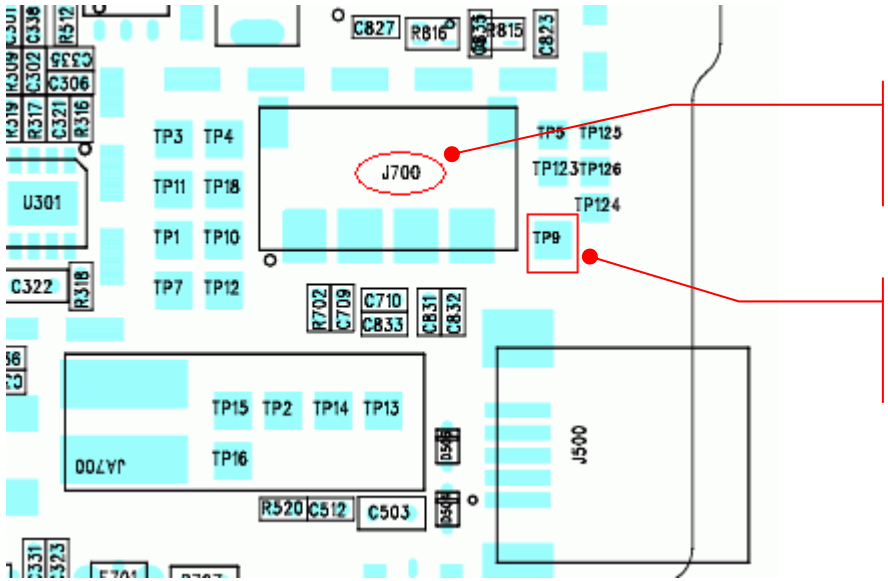
Agenda

A. Cannot power on
B. SIM card not found
C. Display abnormal
D. No Keypad backlight
E. No LCM backlight
F. Receiver no key tone
G. No ring tone
H. Cannot charge
I. Keypad no function
J. Vibrator out of control
K. Microphone malfunction
L. Earphone malfunction
M. RTC failed
N. Phone hang up
O. Auto power on
P. Auto power off
Q. Cannot call out
R. Cannot take a picture

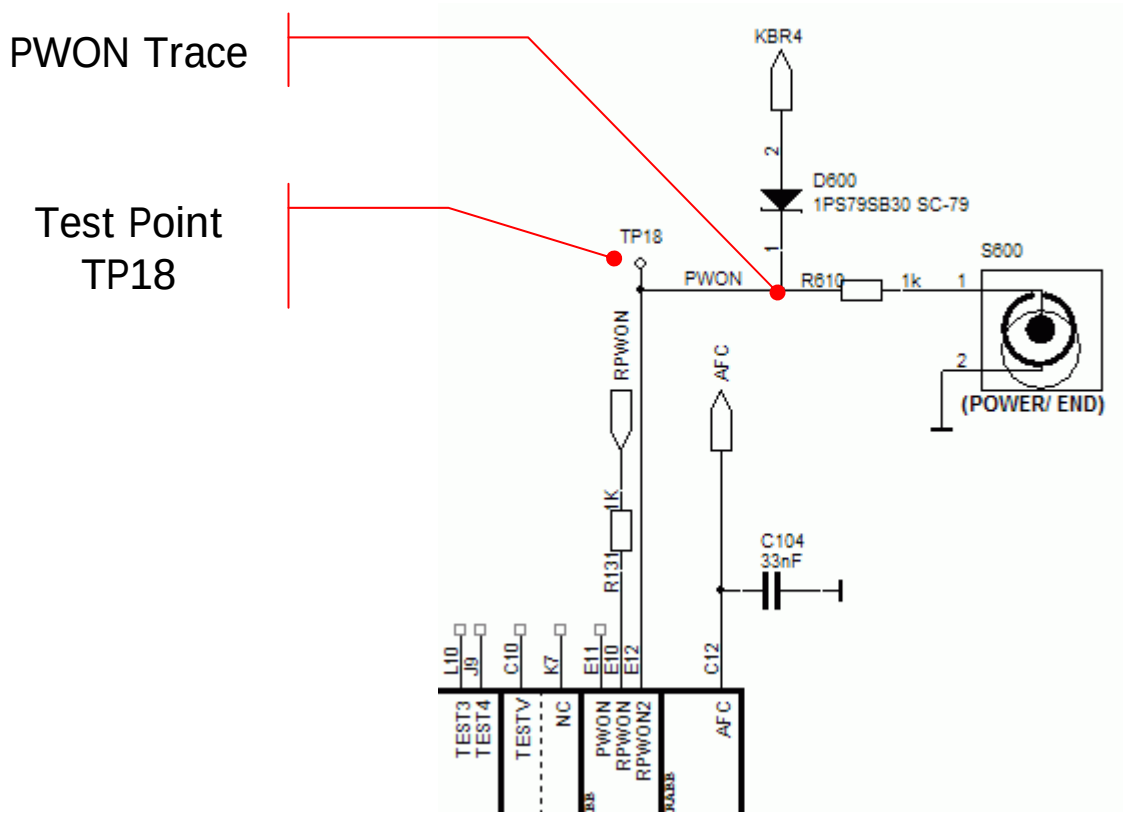
Cannot Power On (1)

1. Check the voltage of the battery.
   - VBAT (TP9) > 3.6V
2. Check battery connector J700



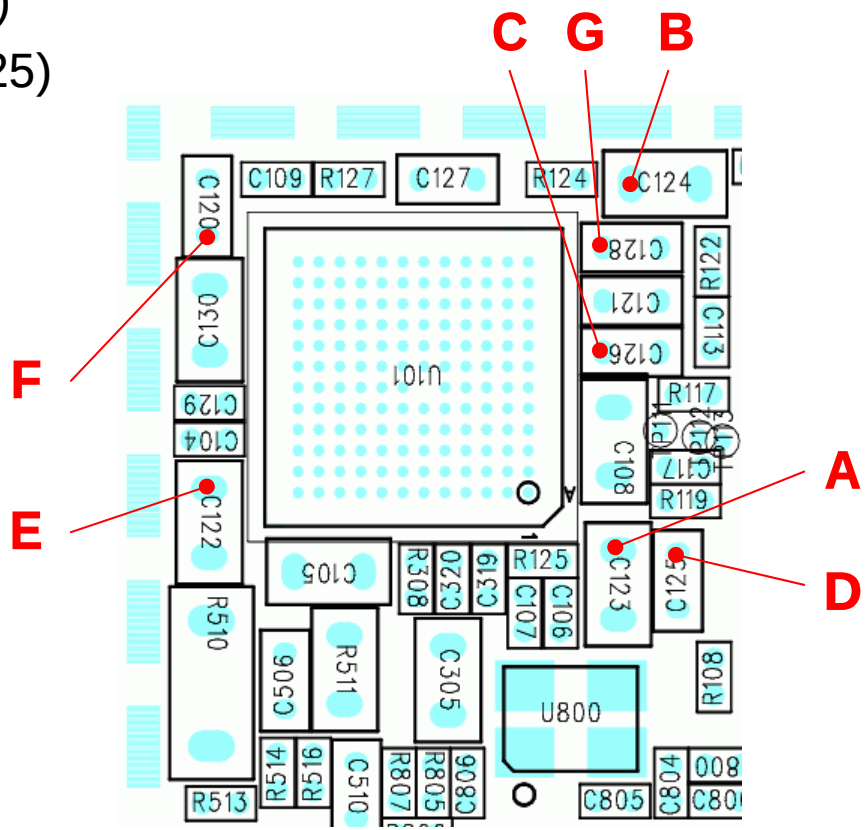
Cannot Power On (2)

3. Check power-on path



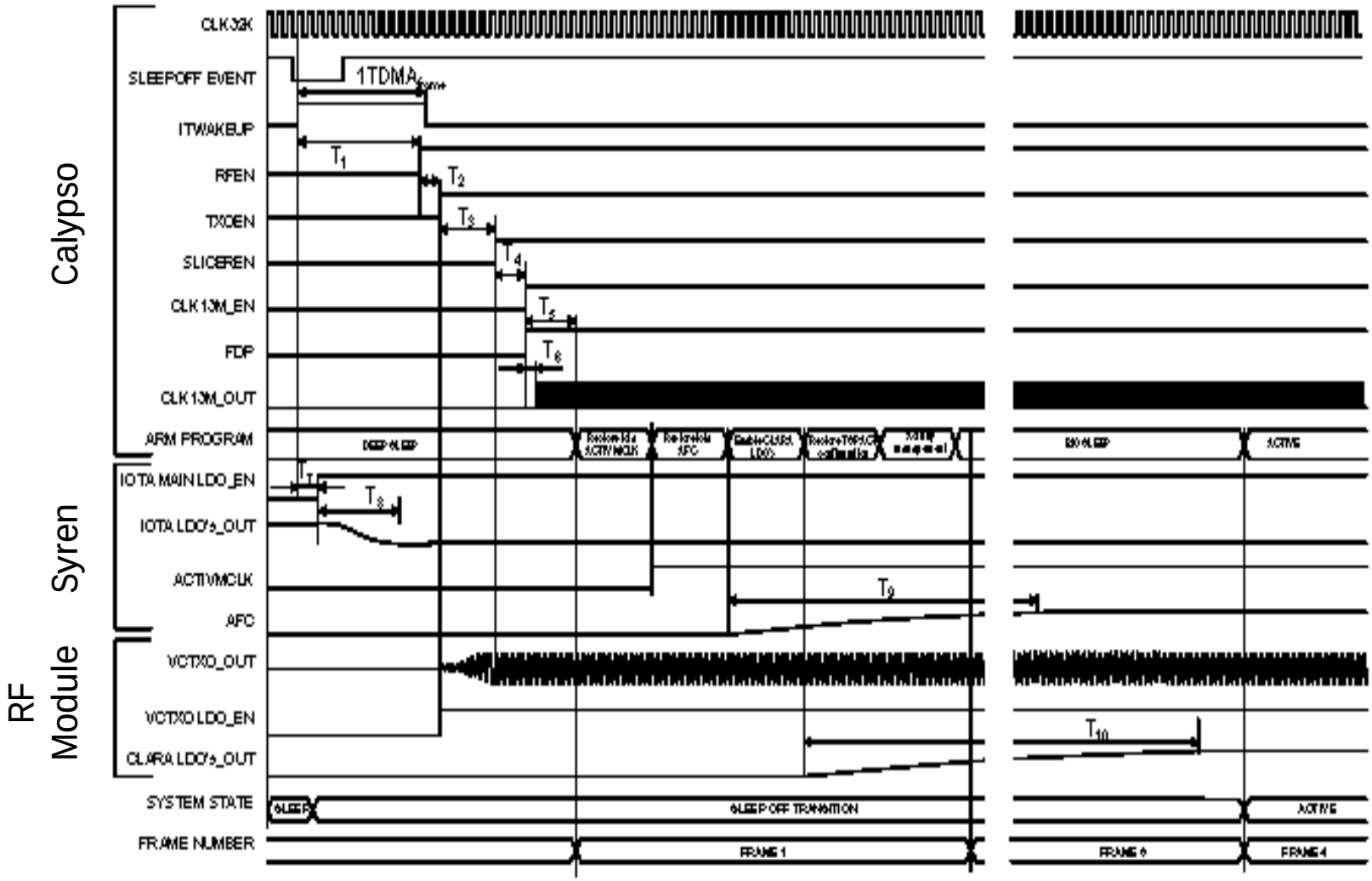
Cannot Power On (3)

4. Check Syren regulator voltage
   - A. V_DBB should be (C123)
   - B. V_IO should be (C124)
   - C. V_RAM should be (C126)
   - D. V_FLASH should be (C125)
   - E. V_ABB should be (C122)
   - F. V_USB should be (C120)
   - G. V_RTC should be (C)



Cannot Power On (4)

5. Check the power-on routine.

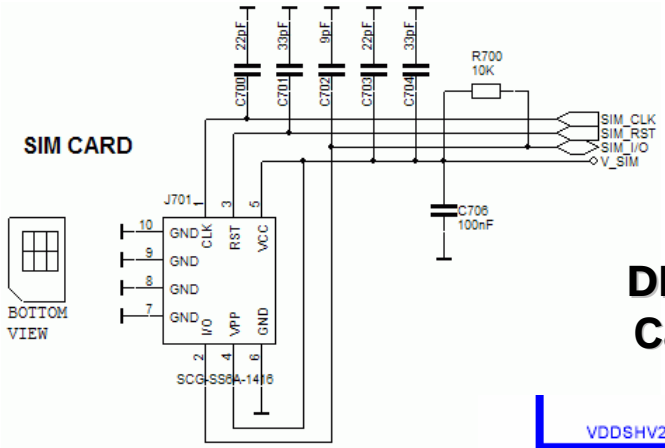


Cannot Power On (5)

6. Try to dump image from the damaged unit to PC for further analysis if possible. Then try to download SW image to the damaged unit. If the damaged unit still cannot power on, you can check the Intel flash (U200) and Calypso-plus (U100.)
7. After the SW image is dumped from the damaged unit, try to download the problematic image to a good unit. If the good unit can power on, there is something wrong with Calypso-plus. If the good unit cannot power on, both Intel flash (U200) and Calypso-plus (U100) are possibly damaged.

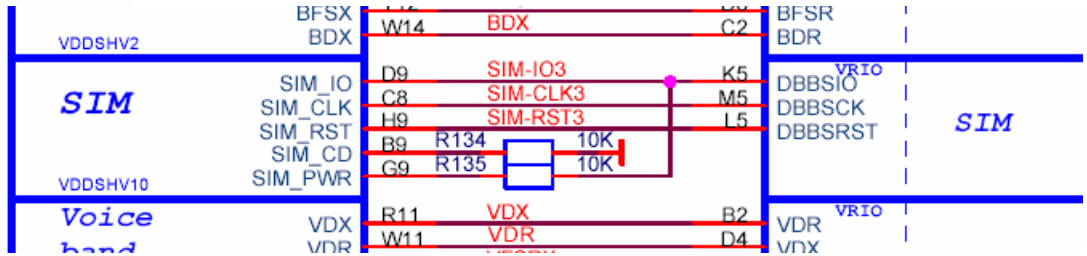
SIM Card Not Found

1. Download SW image to the damaged unit again.
2. Exam whether the contact between SIM card and connector is poor or not.
3. Check the SIM interface between ABB & DBB.
4. If all the signals of ABB are normal but all the signals of DBB are abnormal, please check CalpysoLite_G2 (U7).
5. If all the signals of ABB are abnormal, please check ABB.



DBB U100 Calypso+

ABB U101 SYREN

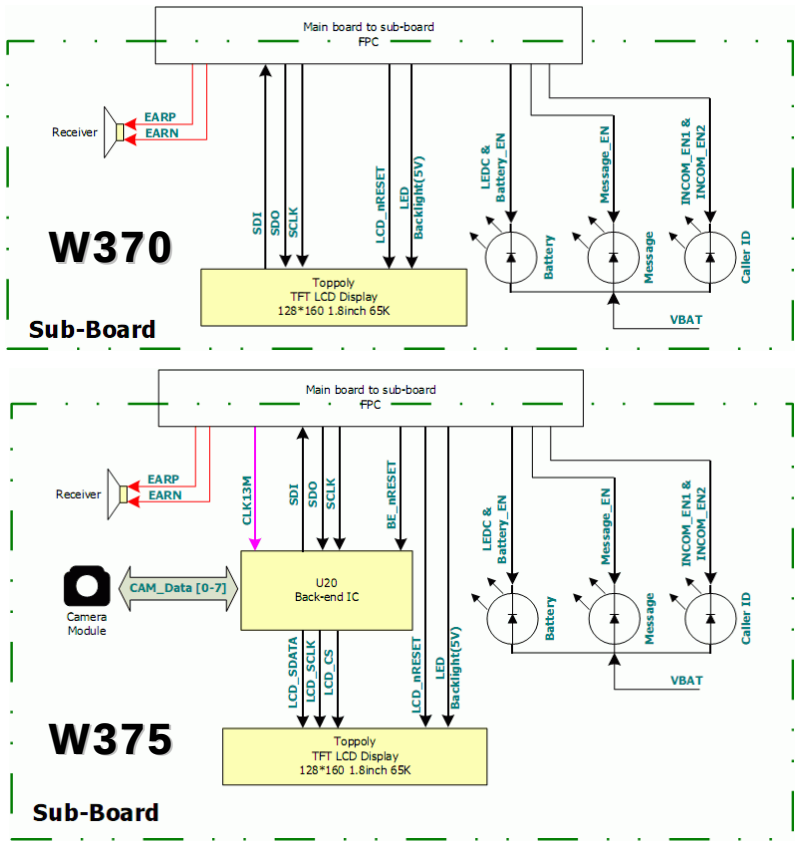


Display Abnormal (1)

1. Please download SW image to the damaged unit.
2. Please check the contact of FPC between main board and sub-board.
3. Exchange the damaged unit with good main board or good sub-board to narrow and find out whether the problem is located on main board or sub-board.
4. For 370, please check all the signal traces of DBB (U100) and LCD connection (J11). The signal traces are LCD_nRESET, LCD_nCS, SCLK, SDO and SDI.
5. For 375, please check the signal traces of DBB (U100), Backend IC (U20) and LCD connection (J11).

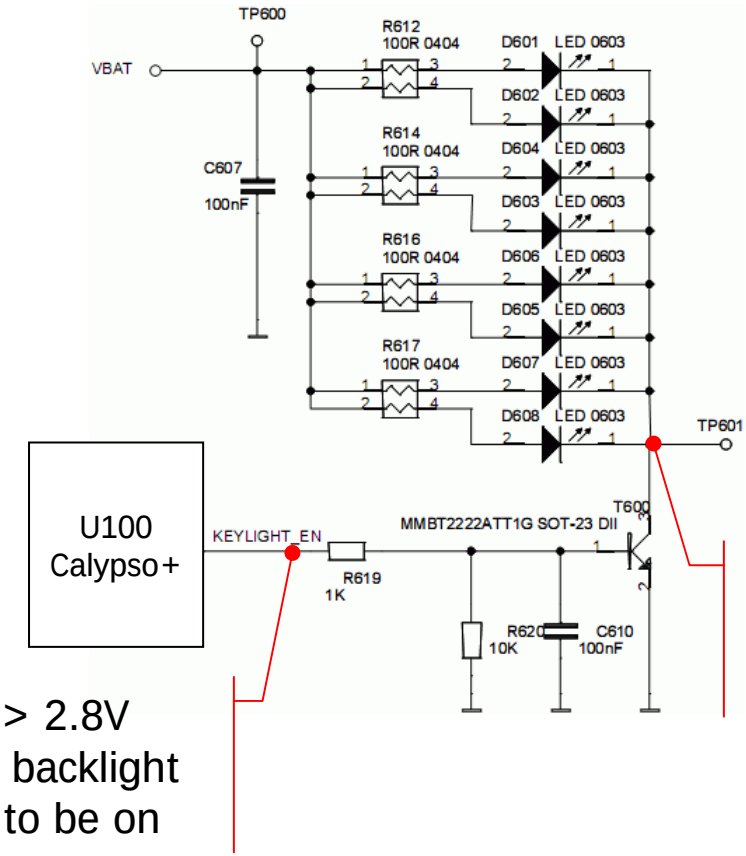
Display Abnormal (2)

6. The difference between W370 and W375 is the signal routing through back-end IC U20.



No Keypad Backlight

1. Check the status of all the LEDs.
2. Check the related circuits.



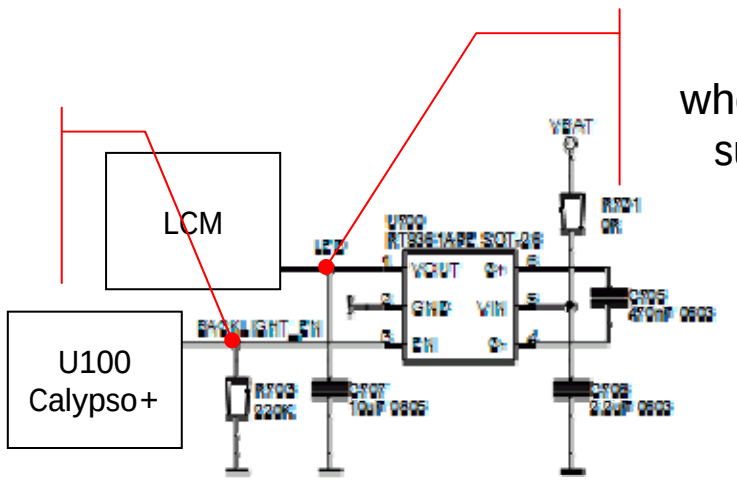
Should be > 2.8V when keypad backlight is supposed to be on

Should be < 2V when keypad backlight is supposed to be on

No LCM backlight

1. Please download SW image to the damaged unit.
2. Please check the contact of FPC between main board and sub-board.
3. Exchange the damaged unit with good main board or good sub-board to narrow and find out whether the problem is located on main board or sub-board.
4. For 370, please check all the signal traces of DBB (U100) and LCD connection (J11). The signal traces are LCD_nRESET, LCD_nCS, SCLK, SDO and SDI.
5. For 375, please check the signal traces of DBB (U100), Backend IC (U20) and LCD connection (J11).

Should be > 2.8V when LCM backlight is supposed to be on



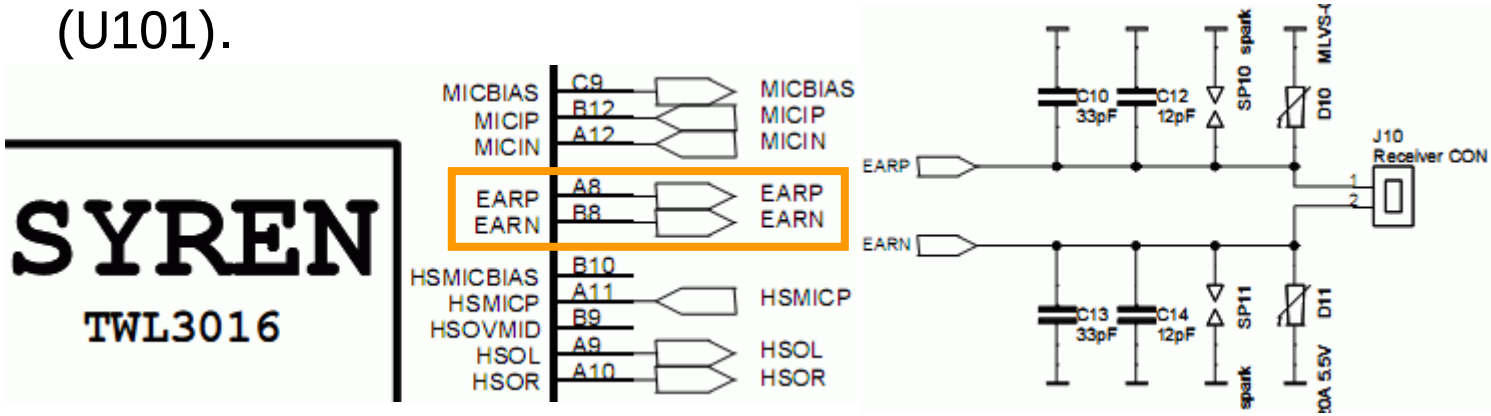
Should be > 5V when LCM backlight is supposed to be on

Receiver No Key Tone (1)

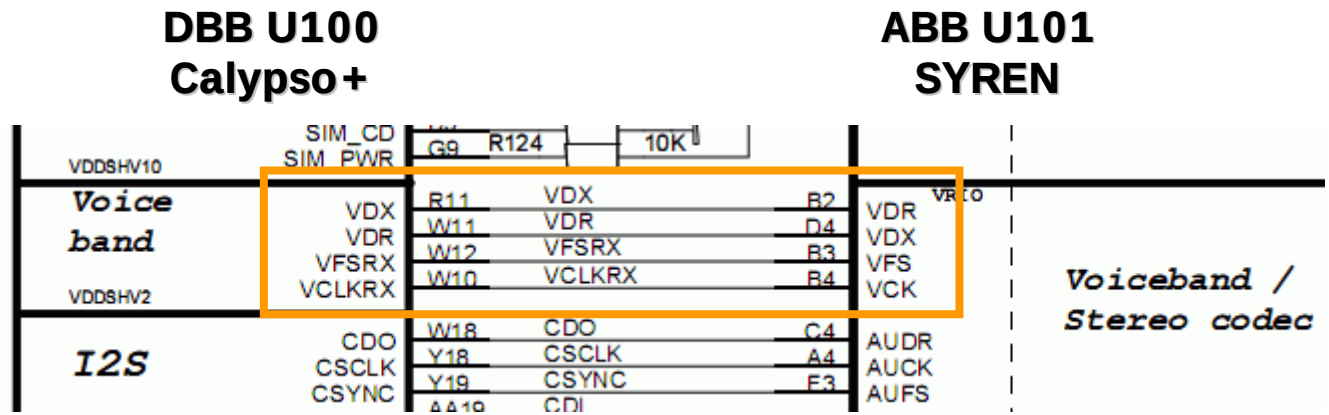
1. Please download SW image to the damaged unit.
2. Please check the metal contact between the receiver and sub-board.
3. Measure the receiver's impedance (about 32 ohm.)
4. Exchange the receiver with a good or new one and check if the function is okay or not.
5. If the problem still exists after the replacement of the receiver, check the contact of FPC and move the focus to main board.
6. If main board is damaged, please check the related circuits.

Receiver No Key Tone (2)

7. The pin connections between the Receiver and SYREN (U101).



8. The pin connections between SYREN (U101) and Calypso Plus (U100)



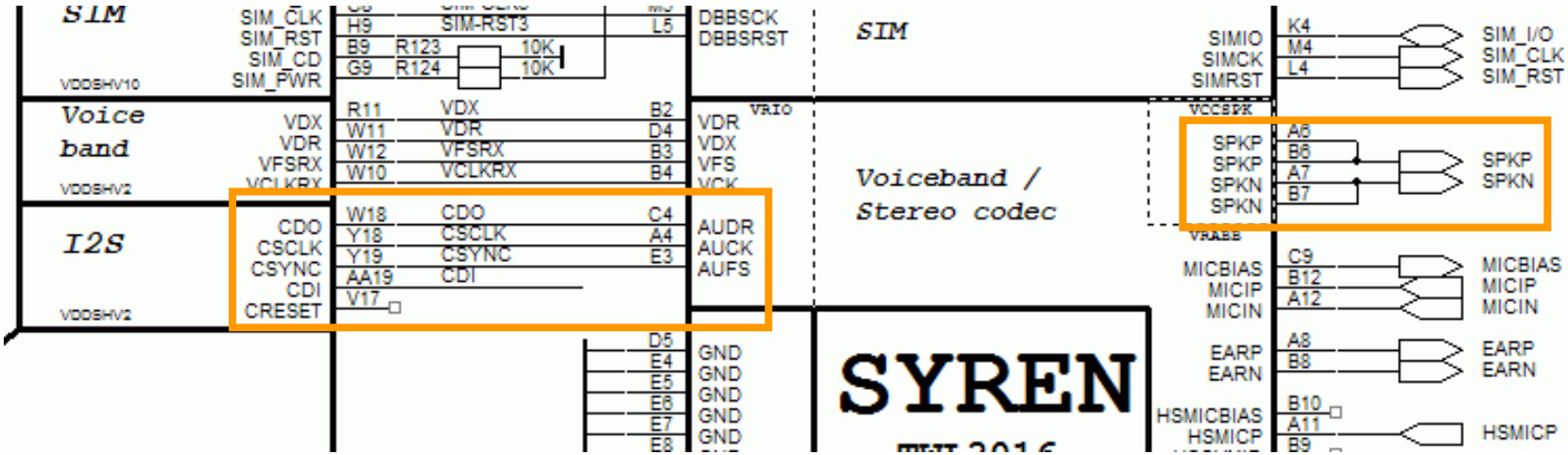
No Ring Tone (1)

1. Check the Ring volume setting.
2. Please download SW to the damaged unit.
3. Check the speaker's impedance (about 8ohm).
4. Check the related circuits and components (include speaker connect J300)
   - If all the signals of DBB are abnormal, please check DBB(U100)
   - If all the signals of DBB are normal and all the signals of ABB are abnormal, please check ABB(U101)
   - If all the signals of ABB are normal and all the signals of U300 are abnormal, please check U300.
   - Check other components

No Ring Tone (2)

The following is the schematic of

1. Connection between the speaker and the SYREN (U101)
2. Connection between SYREN (U101) and Calypso+ (U100)

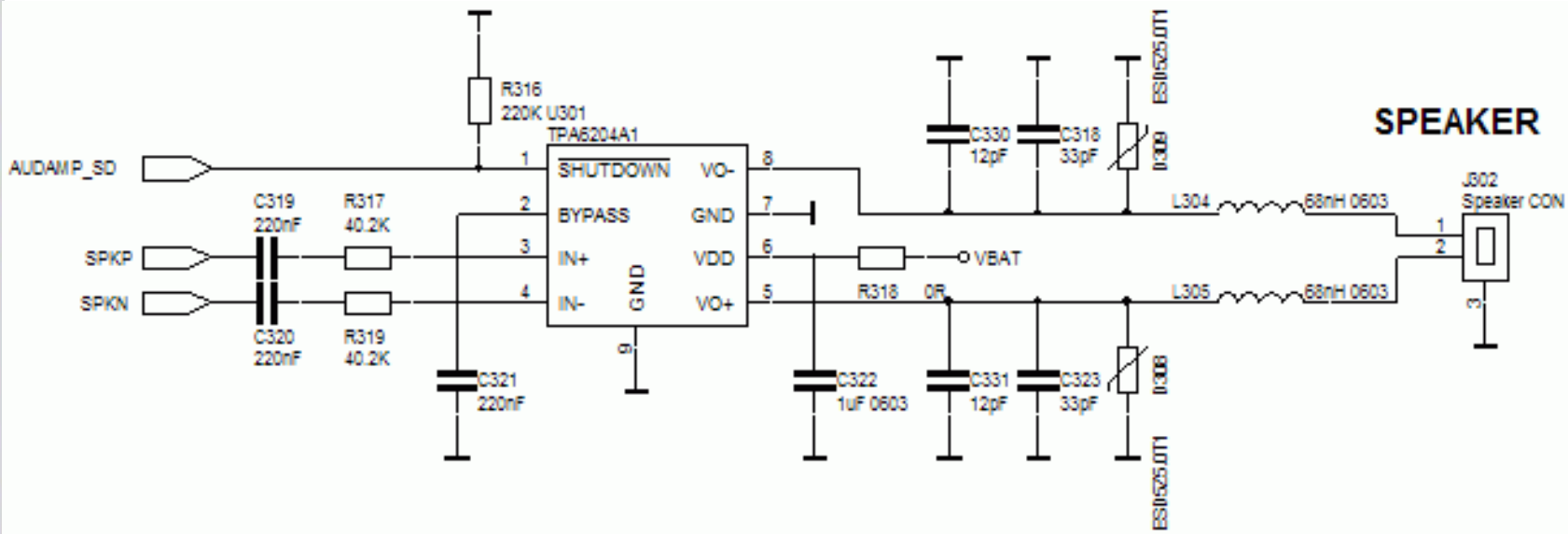


DBB U100
Calypso+

ABB U101
SYREN

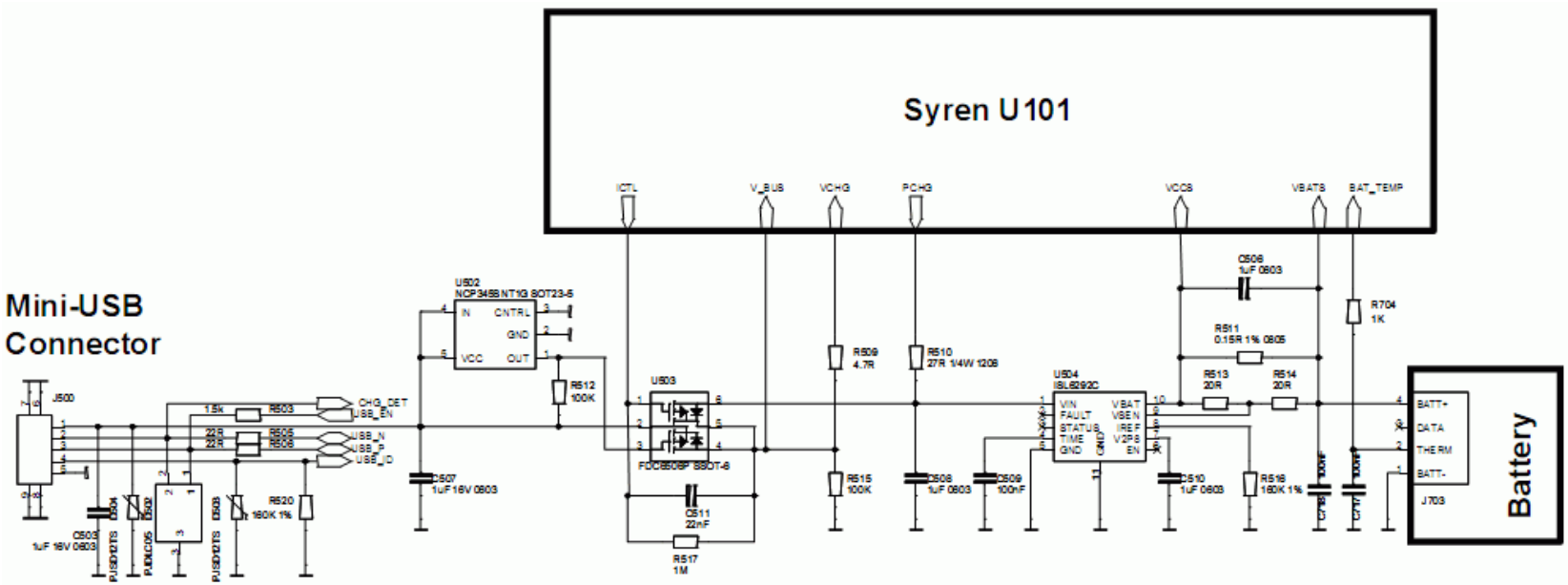
No Ring Tone (3)

The following is the schematic of speaker circuit.



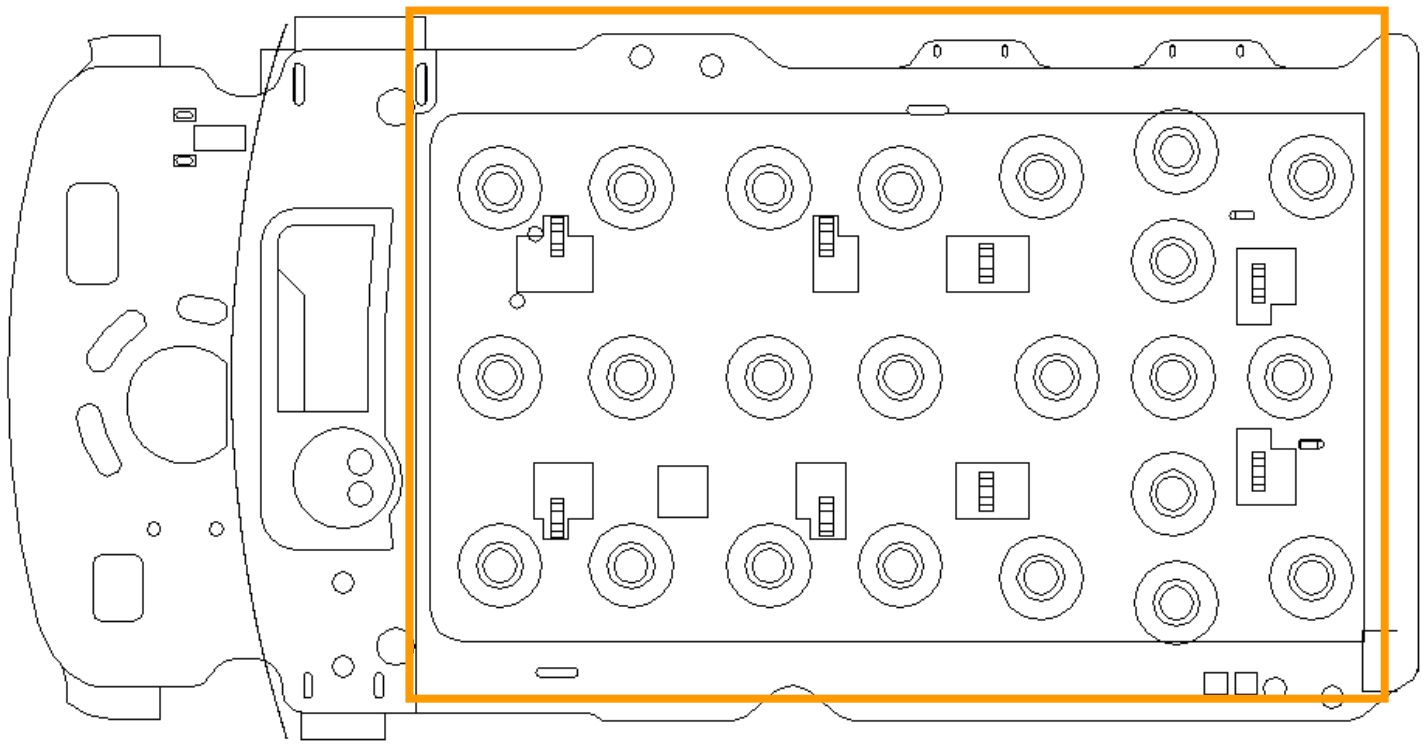
Cannot Charge

1. Check the battery and adaptor
2. Download SW to the unit.
3. Check the USB connector (J500) focus on pin1 and pin5. Charging voltage at pin1 should be around 5V.
4. Check the related circuits



Keypad No Function

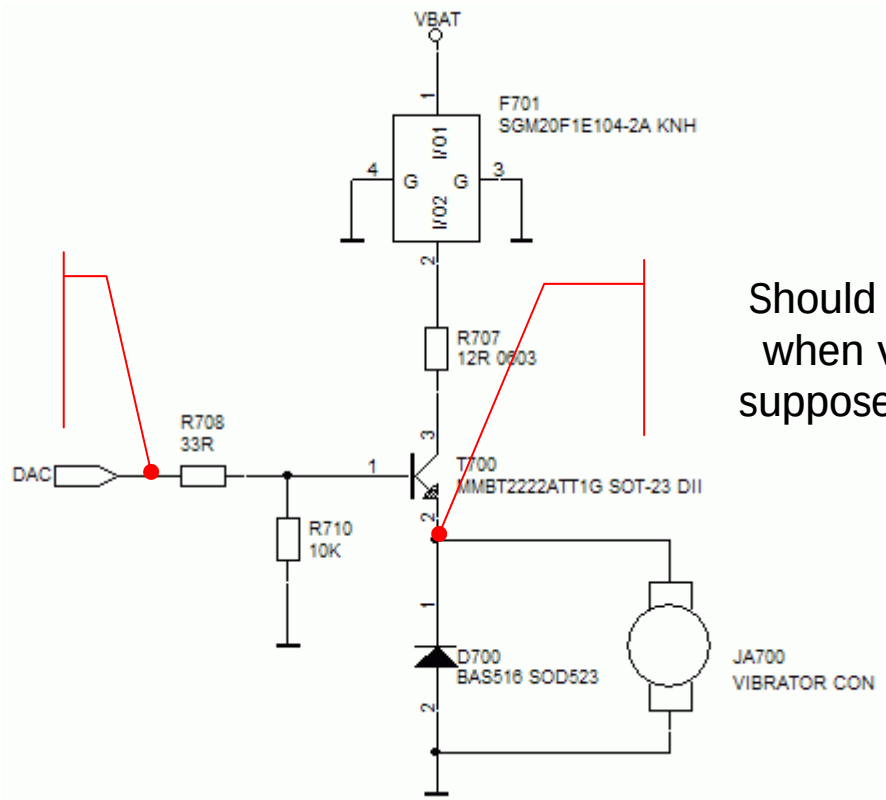
1. Download SW to the damaged unit
2. Check the metal dome and side-key.
3. If there are more than 2 keys failed, please check the DBB (U100). Or check the Key PAD of the PCB.



Vibrator out of control

1. Check the vibration setting.
2. Check the vibrator
3. Check the related circuits

Should be > 2V when vibrator is supposed to be on

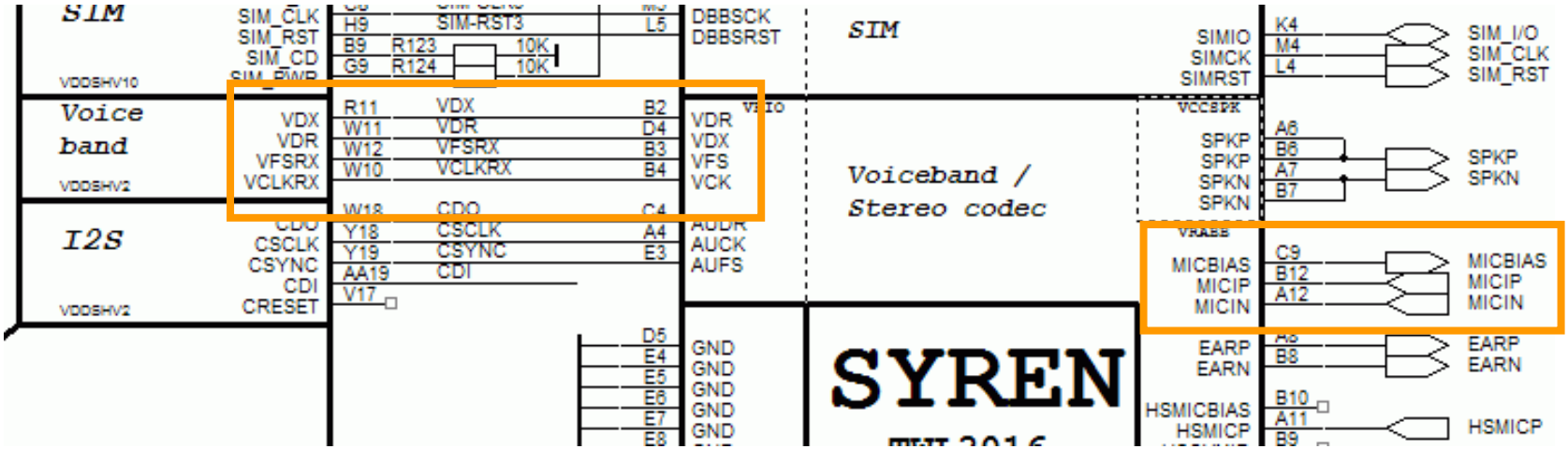


Should be > 1.1V when vibrator is supposed to be on

Microphone Malfunction (1)

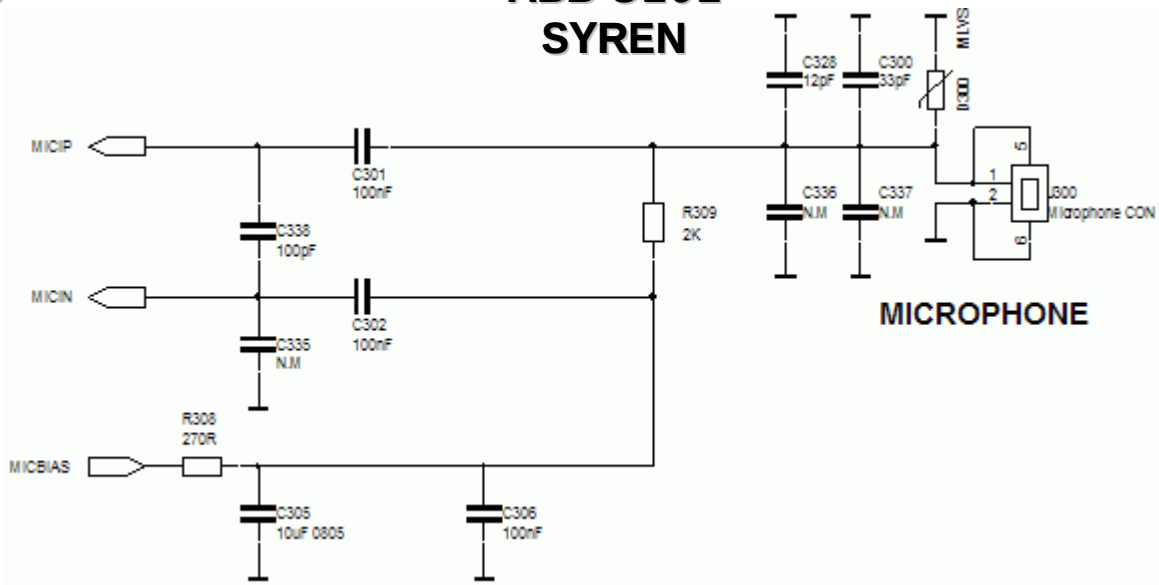
1. Download SW to the damaged unit
2. Exchange the microphone piece with a good or new one and check if the function is okay or not.
3. Check the related circuits
   - If all the signals of DBB are abnormal, please check DBB (U100)
   - If all the signals of DBB are normal and all the signals of ABB are abnormal, please check ABB (U101)
   - Check other components

Microphone Malfunction (2)



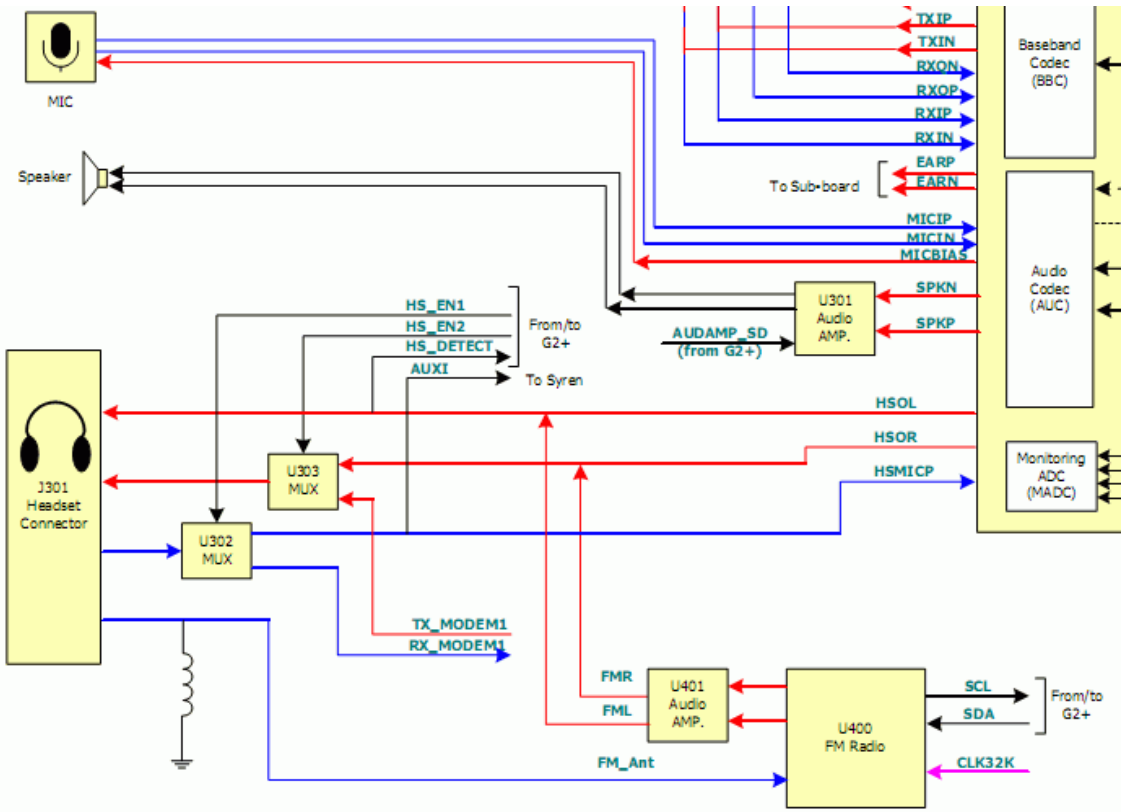
DBB U100
Calypso+

ABB U101
SYREN



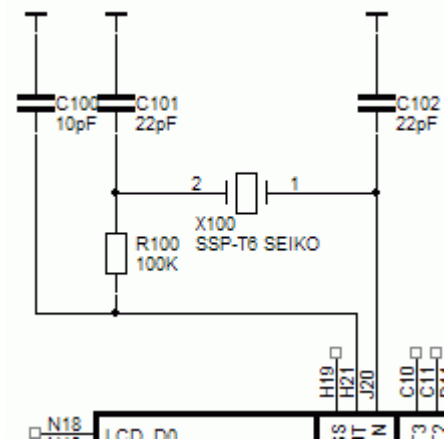
Earphone Malfunction

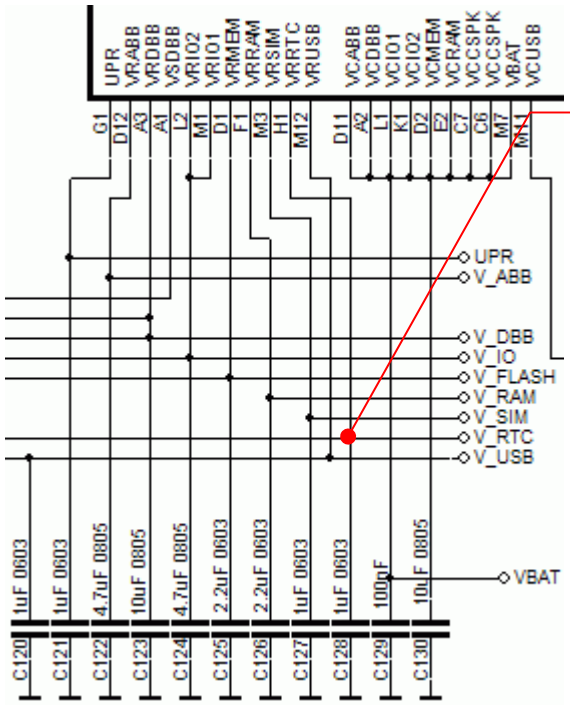
1. Check the earphone
2. Download SW to the damaged unit.
3. Check the Audio Jack (J301)
4. Check the related circuits



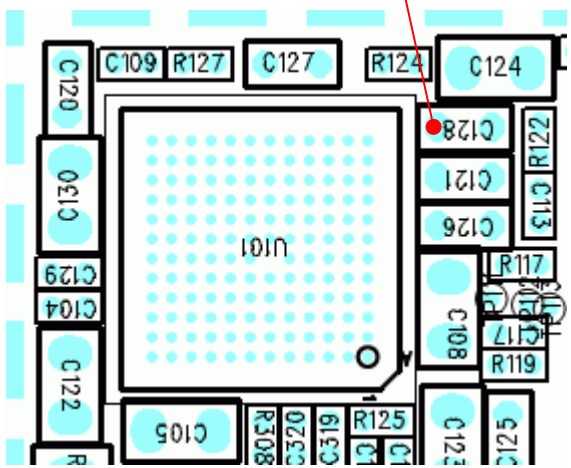
RTC failed

1. Download SW to the damaged unit
2. Check the V_RTC from SYREN (U101)
3. Check the related circuits of DBB and 32KHz oscillator





Should be around 1.5V



Phone Hang Up

1. Try to dump image from the damaged unit to PC for further analysis if possible. Then try to download SW image to the damaged unit. If the damaged unit still cannot power on, you can check the Intel flash (U200) and Calypso-plus (U100.)
2. After the SW image is dumped from the damaged unit, try to download the problematic image to a good unit. If the good unit can power on, there is something wrong with Calypso-plus. If the good unit cannot power on, both Intel flash (U200) and Calypso-plus (U100) are possibly damaged.

Auto Power On

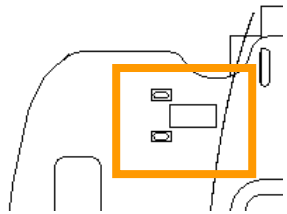
1. Please check the alarm setting of auto power on
2. Please check the power-on path (page 4 and 5.)
3. Please check the charger path (R508), refer to page 18.
4. Download SW to the imaged unit.
5. Try to dump image from the damaged unit to PC for further analysis if possible. Then try to download SW image to the damaged unit. If the damaged unit still cannot power on, you can check the Intel flash (U200) and Calypso-plus (U100.)
6. After the SW image is dumped from the damaged unit, try to download the problematic image to a good unit. If the good unit can power on, there is something wrong with Calypso-plus. If the good unit cannot power on, both Intel flash (U200) and Calypso-plus (U100) are possibly damaged.

Auto Power Off

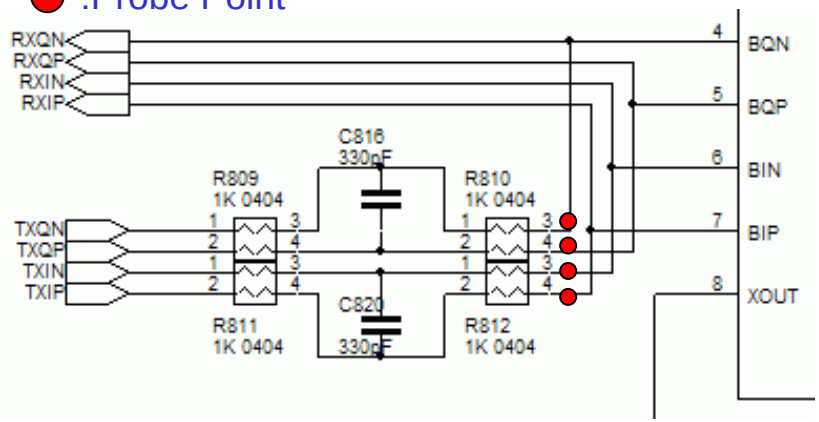
1. Please check the alarm setting of auto power off.
2. Download SW image to the damaged unit.
3. Check the leakage current (<200uA.)
4. If the leakage current is abnormal, please check the parts, RF PA (U803), audio amplifier (U301) and charger IC (U504). Otherwise, go to the following steps.
5. Try to dump image from the damaged unit to PC for further analysis if possible. Then try to download SW image to the damaged unit. If the damaged unit still cannot power on, you can check the Intel flash (U200) and Calypso-plus (U100.)
6. After the SW image is dumped from the damaged unit, try to download the problematic image to a good unit. If the good unit can power on, there is something wrong with Calypso-plus. If the good unit cannot power on, both Intel flash (U200) and Calypso-plus (U100) are possibly damaged.

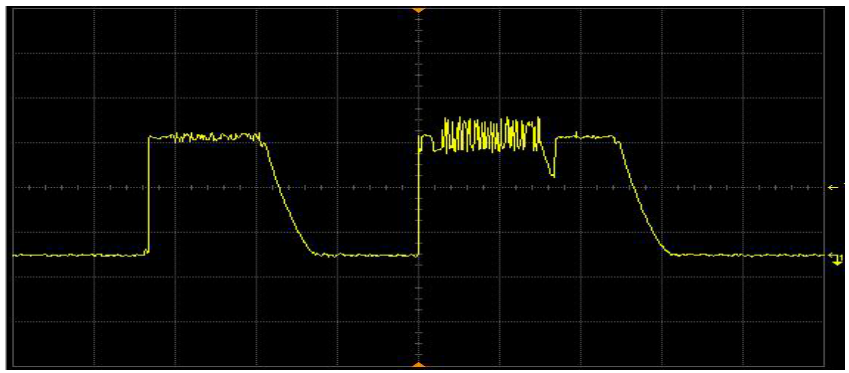
Cannot Call Out (1)

1. Check the metal contact of antenna.
2. Try to make a call
3. Check the transmitter path
   A. Check the I/Q signal
      - Set HP8960 or HP8922, Operating mode: Test mode, Test function: BCH+TCH
        – GSM/GSM850 band: CH62/CH189:902.4/836.4 MHz, cell power:-60dBm, MS_TX_level : 5
        – DCS/PCS band: CH699/CH661:1747.6/1880MHz, cell power:-60dBm, MS_TX_level : 0
      - Use oscilloscope probe to touch red point and you can find waveform (For Example: The TXIP signal)



● :Probe Point



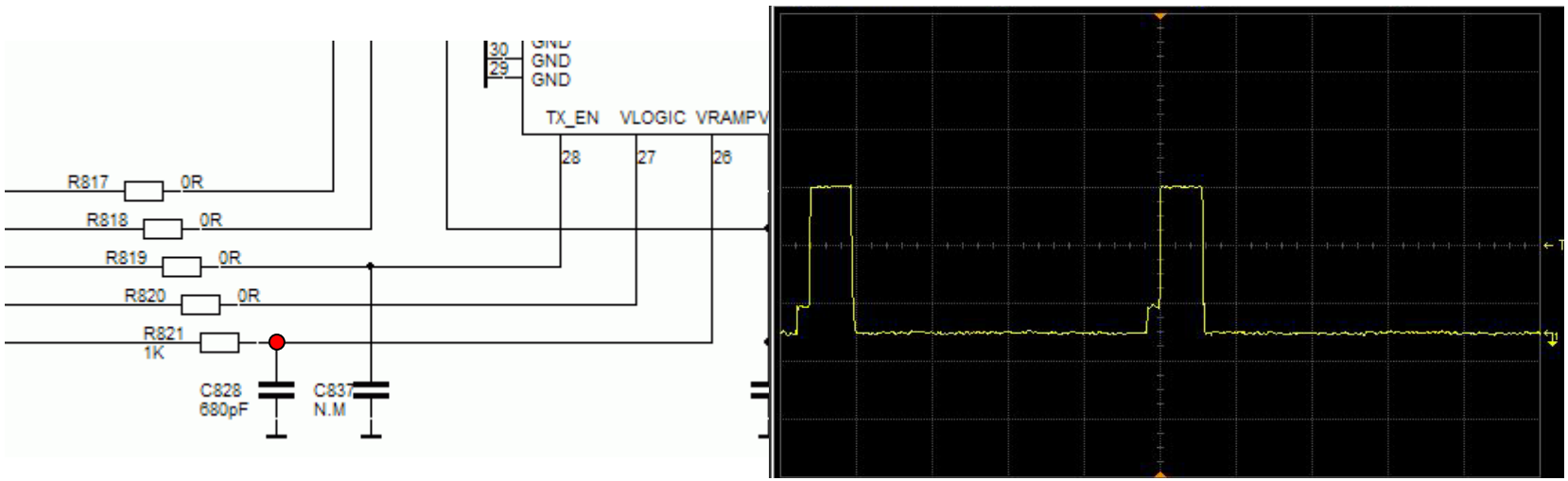


Cannot Call Out (2)

B. Check PA power control pin (VAPC)

- Set HP8960 or HP8922, Operating mode: Test mode,Test function: BCH+TCH
  - GSM/GSM850 band: CH62/CH189:902.4/836.4 MHz, cell power:-60dBm, MS_TX_level : 5
  - DCS/PCS band: CH699/CH661:1747.6/1880MHz, cell power:-60dBm, MS_TX_level : 0
- Use oscilloscope probe to touch R710 to get waveform

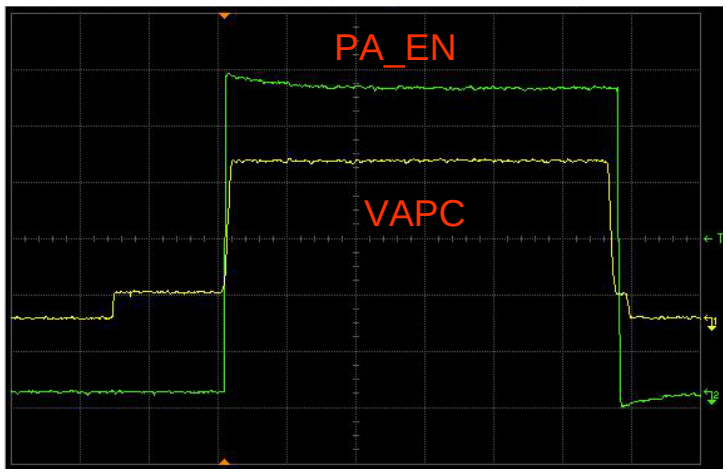
● :Probe Point



Cannot Call Out (3)

C. Check T/R switch control pin (Vc1/Vc2)

- Set HP8960 or HP8922, Operating mode: Test mode, Test function: BCH+TCH
  - GSM/GSM850 band: CH62/CH189:902.4/836.4 MHz, cell power:-60dBm, MS_TX_level : 5
  - DCS/PCS band: CH699/CH661:1747.6/1880MHz, cell power:-60dBm, MS_TX_level : 0
- Use oscilloscope probe to touch C709 (PA_EN) to get waveform

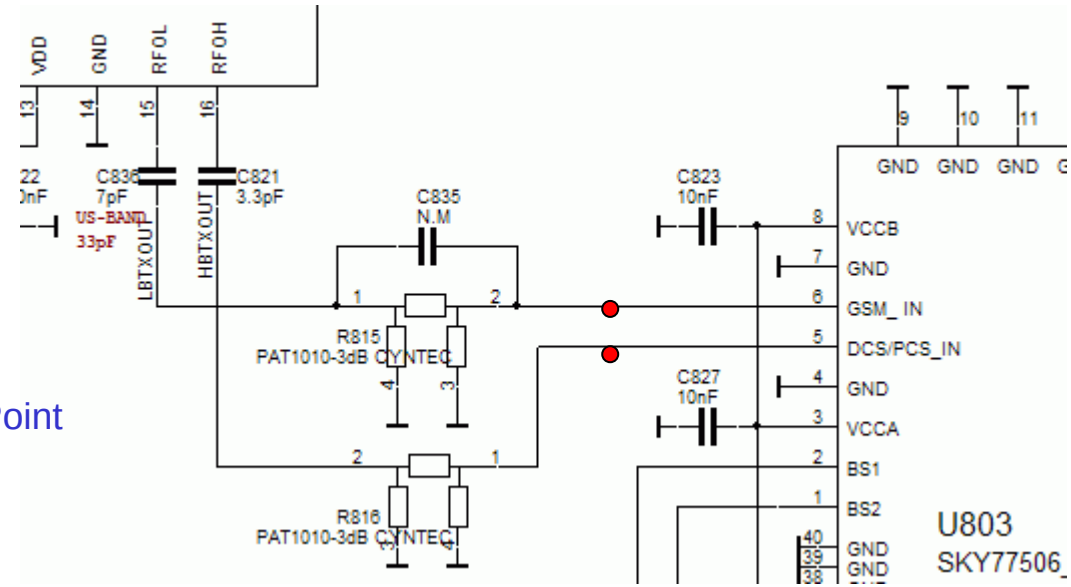


● :Probe Point

Cannot Call Out (4)

D. Check TXVCO out (PA input)

- Set HP8960 or HP8922, Operating mode: Test mode, Test function: BCH+TCH
  - GSM/GSM850 band: CH62/CH189:902.4/836.4 MHz, cell power:-60dBm, MS_TX_level : 5
  - DCS/PCS band: CH699/CH661:1747.6/1880MHz, cell power:-60dBm, MS_TX_level : 0
- Use spectrum probe to touch red point ~ 3dBm (RBW=VBW=200KHz, attenuation=20dB)
  Use spectrum probe to touch red point ~ 3dBm (RBW=VBW=200KHz, attenuation=20dB)



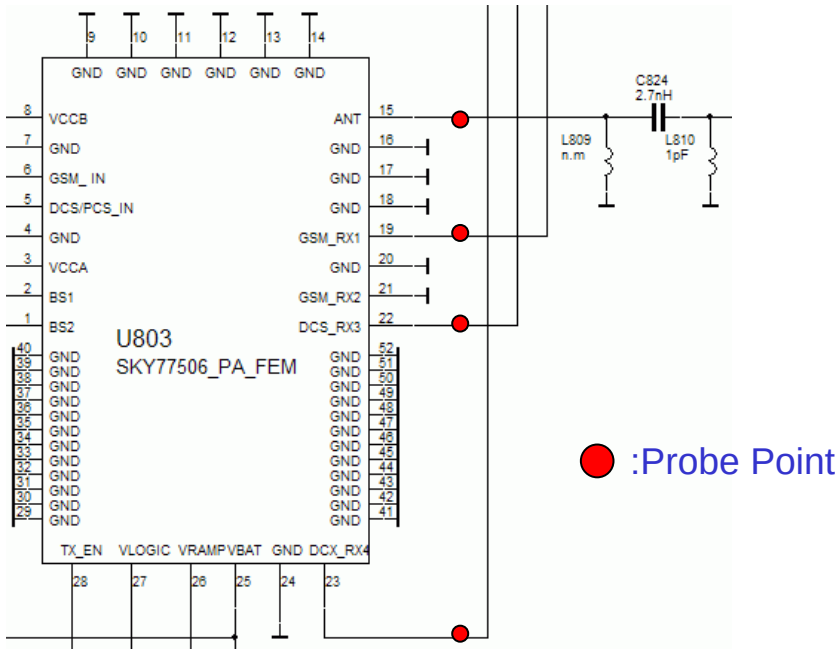
● :Probe Point

Cannot Call Out (5)

4. Check the receiver path

A. Check path Ant. to T/R switch

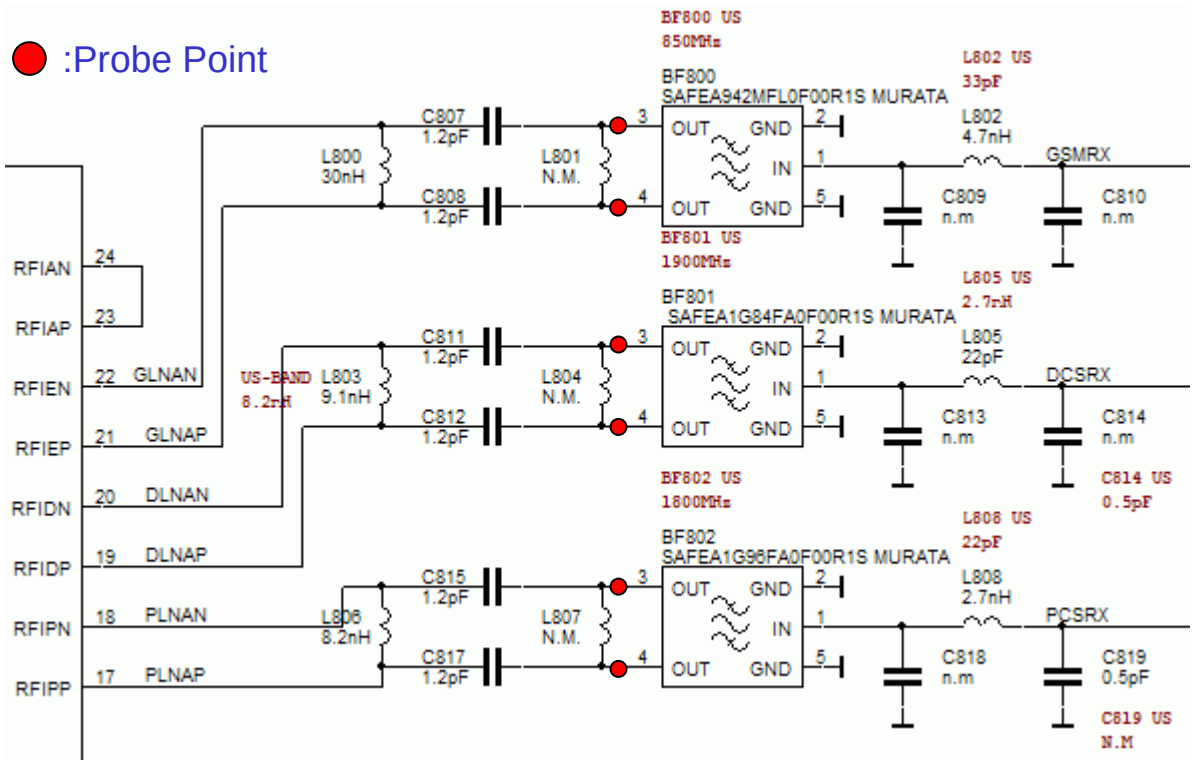
- Set HP8960 or HP8922,Operating mode: Test mode,Test function: BCH+TCH
  - GSM/GSM850 band: CH62/CH189:947.4/881.4MHz, cell power:-60dBm
  - DCS/PCS band: CH699/CH661:1842.6/1960MHz, cell power:-60dBm
- Use spectrum probe to touch U803 pin15 red point~-61dBm (GSM/GSM850/DCS/PCS input)
  Use spectrum probe to touch U803 pin19 red point~-62dBm (GSM/GSM850 output)
  Use spectrum probe to touch U803 pin22/23 red point~-62dBm (DCS/PCS output)



Cannot Call Out (6)

B. Check path T/R switch to SAW filter

- Set HP8960 or HP8922, Operating mode: Test mode, Test function: BCH+TCH
  - GSM/GSM850 band: CH62/CH189:947.4/881.4MHz, cell power:-60dBm
  - DCS/PCS band: CH699/CH661:1842.6/1960MHz, cell power:-60dBm
- Use spectrum probe to touch BF800 pin3/4 red point~-65dBm (GSM/GSM850)
  Use spectrum probe to touch BF801/BF802 pin3/4 red point~-65dBm (DCS/PCS)

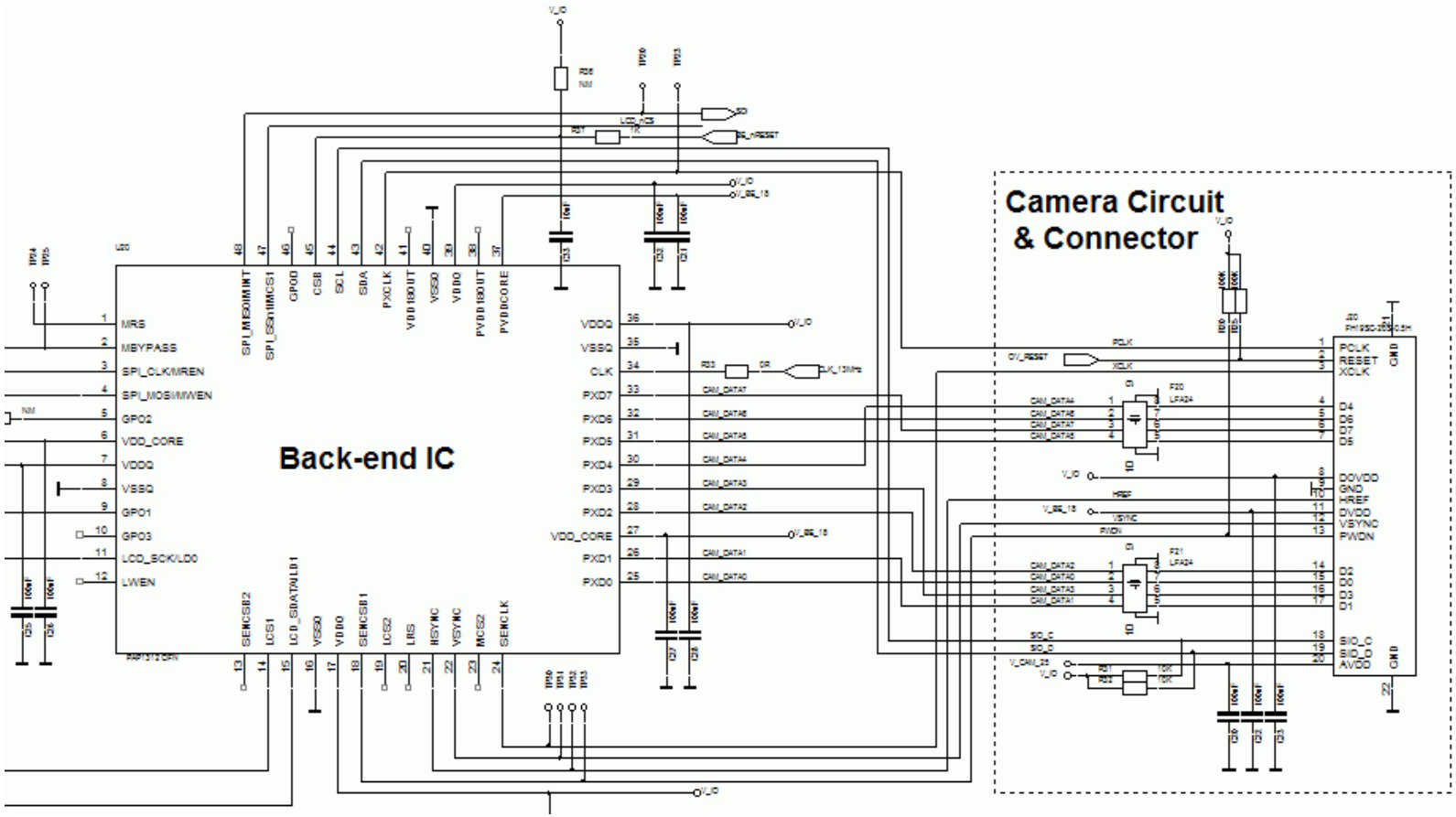


Cannot Take A Picture (1)

1. Please download SW image to the damaged unit.
2. Please check whether the preview video can be seen.
3. Exchange the camera module with a good or new one and check if the function is okay or not.
4. Please check all the signal traces between DBB (U100) and Backend IC (U20).
5. Please check all the signal traces between Backend IC (U800) and Camera connector (J20).

Cannot Take A Picture (2)

Camera schematic (only for W375.)



Cannot Take A Picture (3)

Camera function block diagram (only for W375).