Instructions for checking overvoltage damage

Last modified: May 8, 2025

Contents

Introduction

Before you begin working on the RouterBOARD for your safety please make sure:

- The RouterBOARD is unplugged from the mains outlet.
- To discharge yourself from static electricity by touching a grounded metal surface or by wearing an antistatic wrist strap.
- After unplugging the RouterBOARD, to leave it for at least 15 minutes to allow all the power supply capacitors to discharge (This only applies to boards with built-in power supplies).
- To not touch the internal power supplies (danger of electrical shock)!

INSTRUCTIONS FOR CHECKING OVERVOLTAGE DAMAGE

Over-voltage can be caused by the following reasons: high voltage surge, lightning, electrostatics etc..

You can check if RouterBoard was damaged by over-voltage, by using the following testing methods:

Check Schottky diode

Schottky diode quality can be measured with digital multimeter in diode mode.

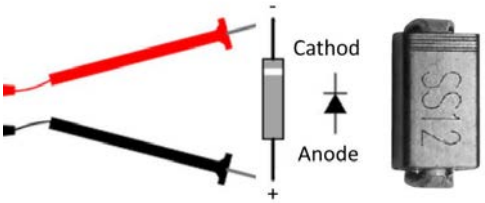
The diode has two terminals - the anode and the cathode. The anode is positive, and the cathode is negative (there is a strip on the diode case), see picture 2.

The diode needs to be checked in reverse switching, when a negative voltage is applied to the anode (multimeter black probe, “COM” probe), and a positive voltage is applied to the cathode (multimeter red probe, positive probe), see picture 2.

When the test probes are connected as shown in the picture 2, then value of measurement should be Open loop, as shown in the picture 1. This indicates that the p-n junction is normal and the current does not flow in the opposite direction. If Schottky diode will be damaged, measurement will show some other value.

If there are ports with PoE in or PoE out, then sometimes the diode value may not be Open Loop; in this case, the vales can be from 1,5V to 2,3V.

Picture 1

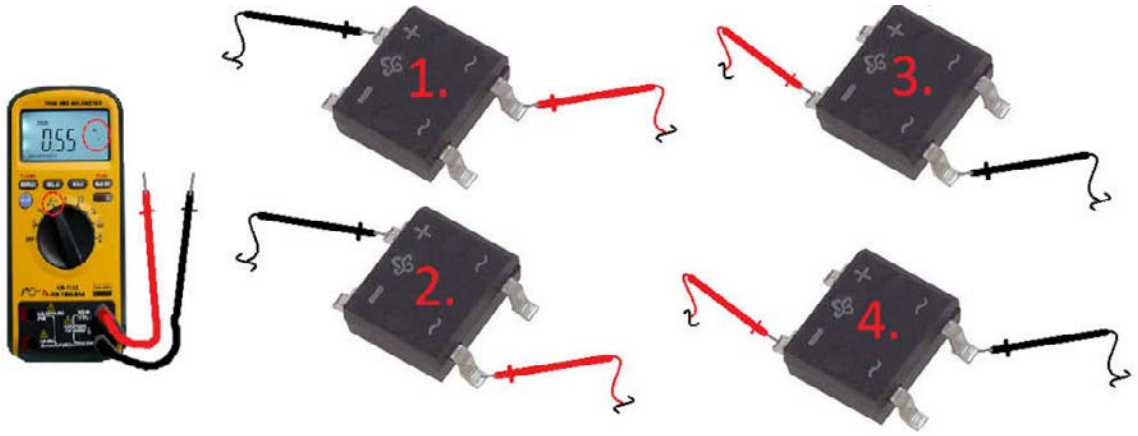


Picture 2

Diode bridge measurement

This measurement is required only in cases where basic test gives uncertain results. This includes readings greater than 1V instead of OL or fluctuating readings.

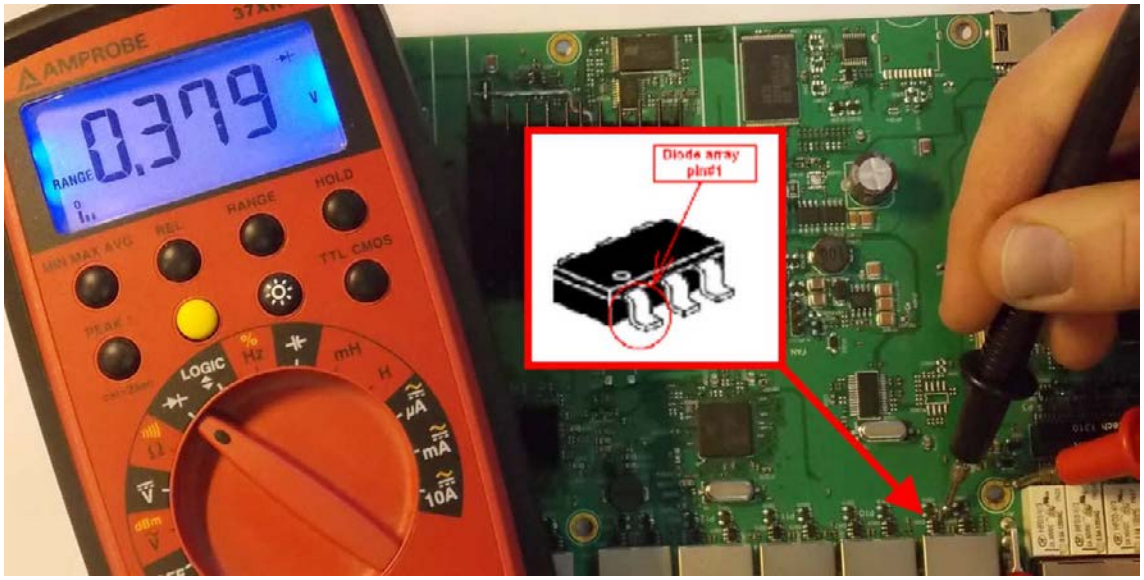
In such cases making sure that each of the bridge diodes have healthy forward voltage (0,45..0,65V) can confirm that there is no damage. In addition, the voltages obtained should not differ significantly (no more than 5%) from each other. This can be done in 4 measurements, by connecting the multi-meter as show in the following picture 3:



Picture 3

Check voltage drop value between diode array pin#1 and Ground

You should measure in diode mode: hold red probe on the Ground and black probe to diode array pin#1. Diode array pin#1 is always marked by dot mark on the diode array case, see picture 4.



Picture 4

Check voltage drop value between Ethernet transformer pins and Ground

You should measure in diode mode: hold red probe on the Ground and black probe to Ethernet transformer pins. In the picture 5 you can see an example of how to correctly measure.

Picture 5

Check termination resistors resistance in RJ-45 connector

For this measurement you should take patch cord and plug it into the routerboard, see picture 6. After that measure resistance of termination resistors by digital multimeter.

Resistance value between Rx and Tx line must be 150 Ohm +/-4

If resistance value is smaller or higher then Tx/Rx line was damaged by high voltage surge.

Picture 6

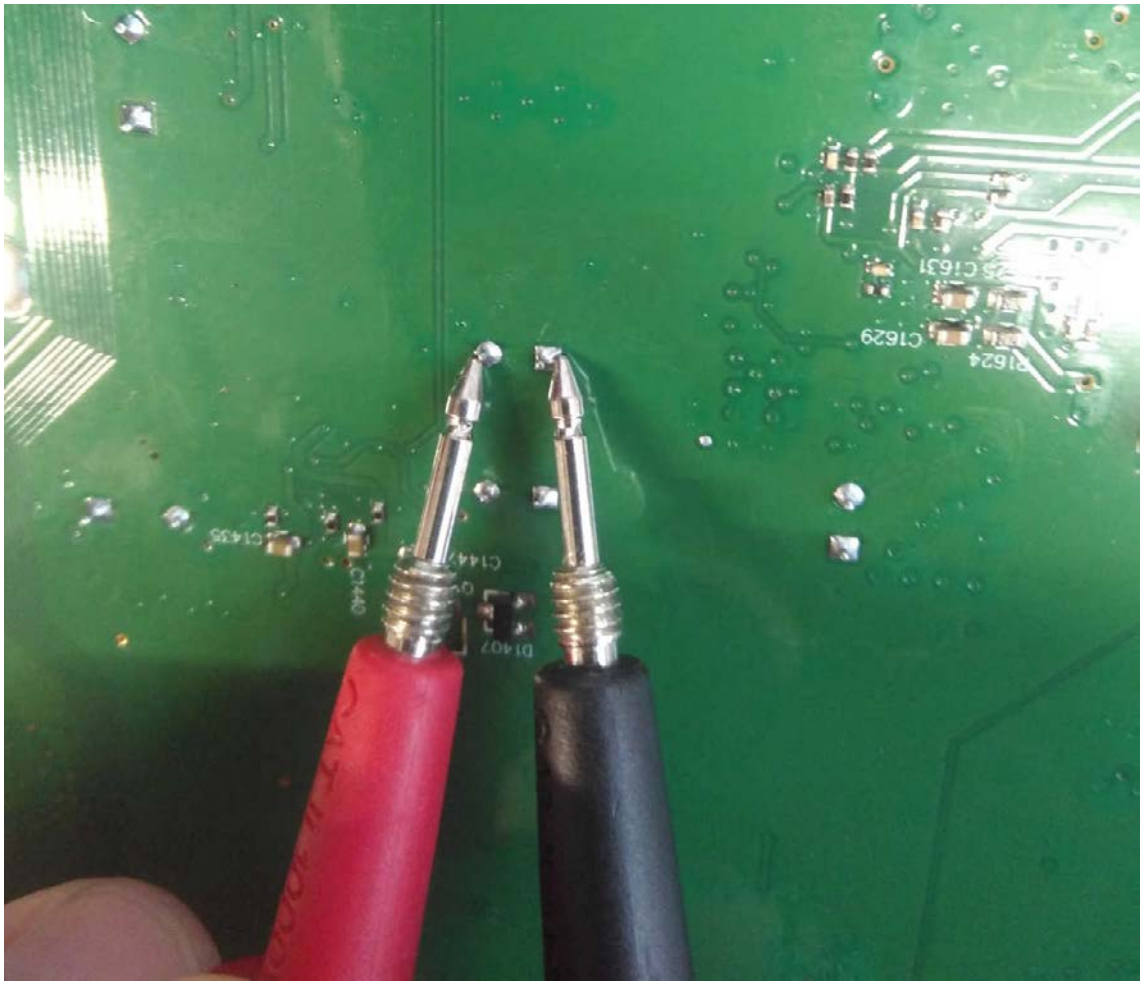
Check resistance on transformer in RJ-45 connector

For this measurement you should take patch cord and plug it into the routerboard, see picture 7. After that measure resistance with digital multimeter. Resistance value for each twisted pair must be smaller than 5 Ohm. If resistance is higher that means line was damaged by high voltage surge.

Picture 7

Fuse check

For this measurement you use your multimeter in resistance mode, if you do not have multimeter with auto range function use lowest resistance setting typically 200 Ohms. With both probes touch the selected fuse leads. Fuse is OK if the multimeter shows very low value (less than 1 Ohm). A display showing OL is a sign of damaged fuse.



Picture 8

PRODUCTS THAT DO NOT HAVE OVERVOLTAGE INSTRUCTIONS

Some low-cost or high-voltage products may not come with overvoltage instructions. These products are listed here:

- MTP250-26V94-OD, MTP250-53V47-OD
- GESP, GESP+POE-IN
- TG-BT5-IN, TG-BT5-OUT
- RBGPOE
- MQS

ACCESSORIES

FTC11XG

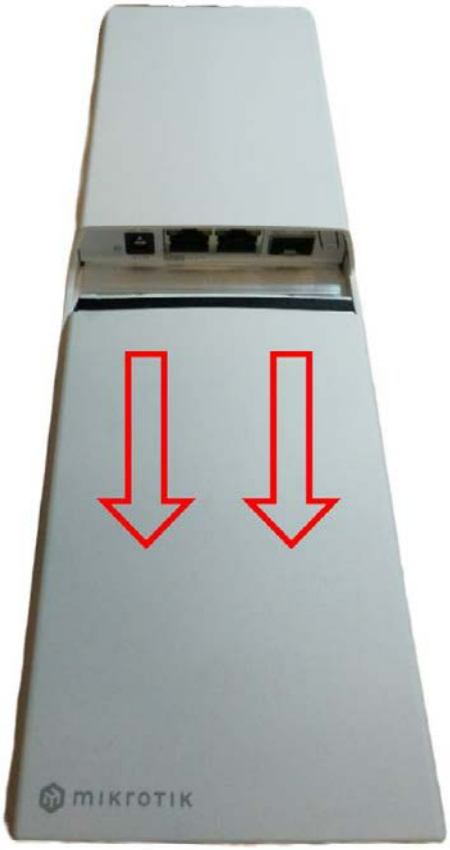
Picture 9

Disassembling information

Step 1: Unscrew 1 screw using PH1 screwdriver. Location of the screw is shown the picture 10.

Picture 10

Step 2: Pull the case cover in the direction shown in the picture 11 and lift the cover up.



Picture 11

Step 3: Unscrew 3 screws using TX9 screwdriver. Location of the screws is shown the picture 12.

Picture 12

Step 4: Pull the printed circuit board out of the case as shown in the picture 13.

Picture 13

Step 5: Unscrew 4 screws using PH1 screwdriver. Location of the screws is shown the picture 14.

Picture 14

Instructions for checking over-voltage

Checking Schottky diode and diode bridge

Check Schottky diodes D7, D200 and diode bridges D1, D2. Location of the diodes on the board you can see in the picture 15. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

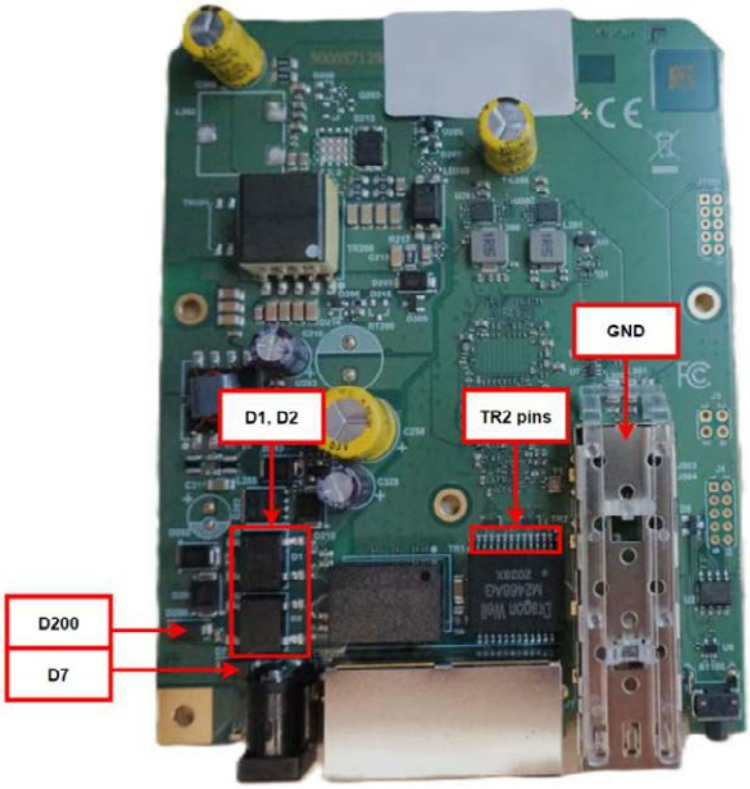
Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformers TR1 and TR2 pins and Ground, see pictures 15 and 16.

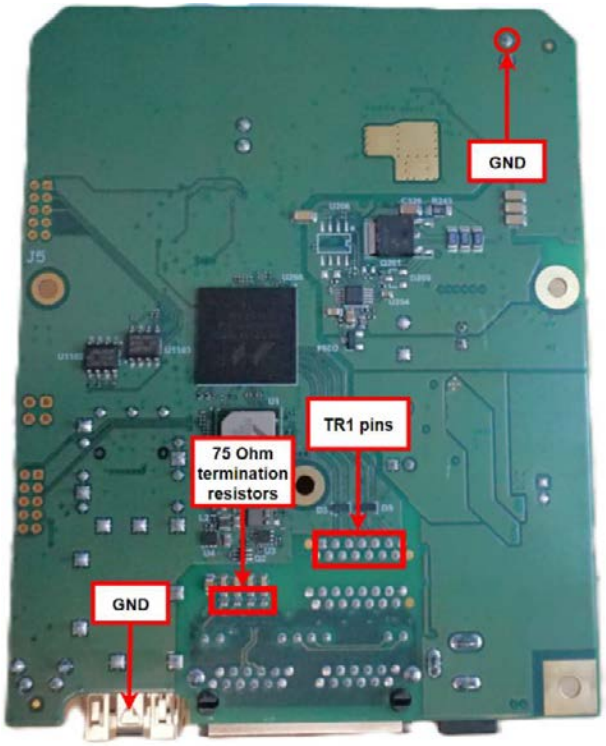
Voltage drop value should be in the range from 0,35V to 0,52V. Voltage drop measurement method is described on page 7.

Checking 75 Ohm termination resistors resistance

Check value of each termination resistor. It should be 75 +/-1% Ohms. Location of resistors is shown in picture 16.



Picture 15



Picture 16

FTC21

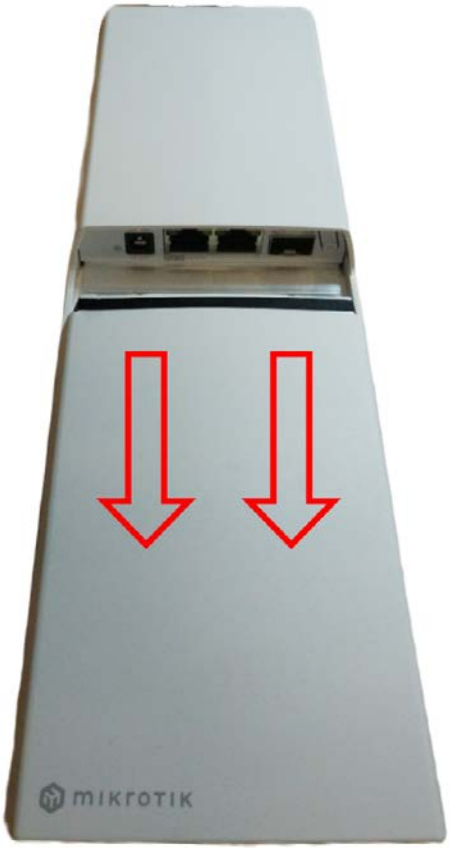
Picture 17

Disassembling information

Step 1: Unscrew 1 screw using a PH1 screwdriver. Location of the screw is shown the picture 18.

Picture 18

Step 2: Pull the case cover in the direction shown in the picture 19 and lift the cover up.



Picture 19

Step 3: Unscrew 3 screws using a TX9 screwdriver. Location of the screws is shown the picture 20.

Picture 20

Step 4: Pull the printed circuit board out of the case as shown in the picture 21.

Picture 21

Step 5: Unscrew 4 screws using a PH1 screwdriver. Location of the screws is shown the picture 22.

Picture 22

Instructions for checking over-voltage

Checking Schottky diode and diode bridges

Check Schottky diode D7 and diode bridges D1, D2. Location of the diodes on the board you can see in the picture 23. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

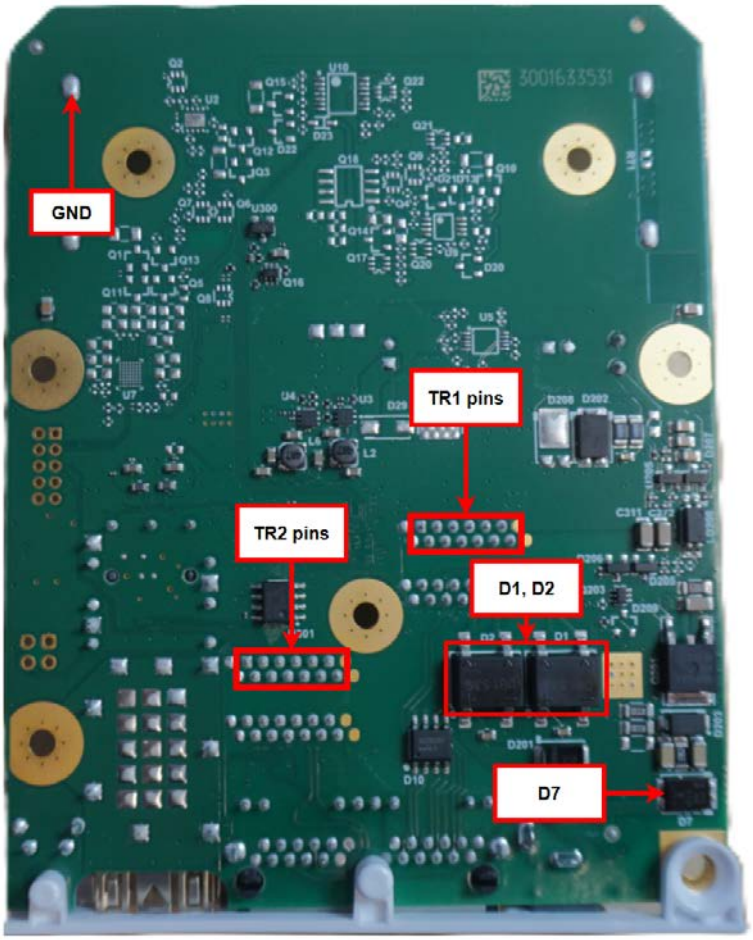
Checking voltage drop value between Ethernet transformers pins and Ground

Check voltage drop value between Ethernet transformers TR1 and TR2 pins and Ground, see picture 23.

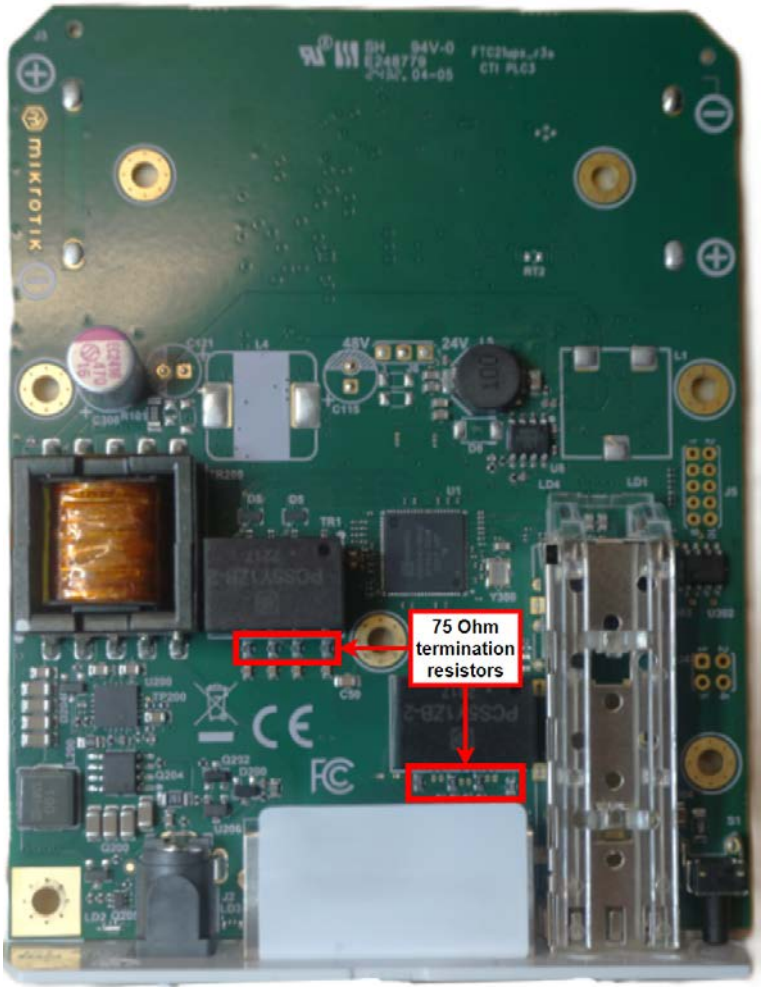
Voltage drop value should be in the range from 0,35V to 0,52V. Voltage drop measurement method is described on page 7.

Checking 75 Ohm termination resistors resistance

Check value of each termination resistor. It should be 75 +/-1% Ohms. Location of resistors is shown in the picture 24.



Picture 23



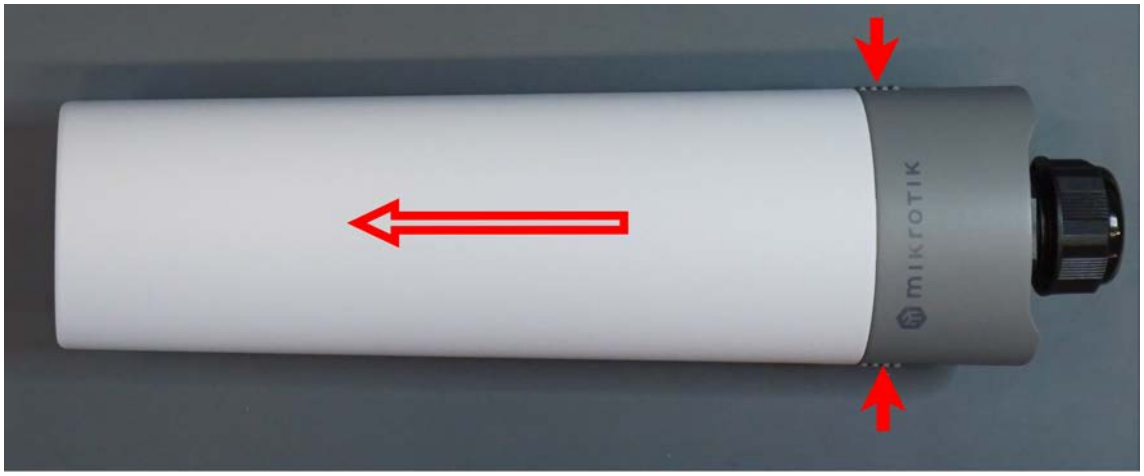
Picture 24

GPeRx4 (GPER14i)

Picture 25

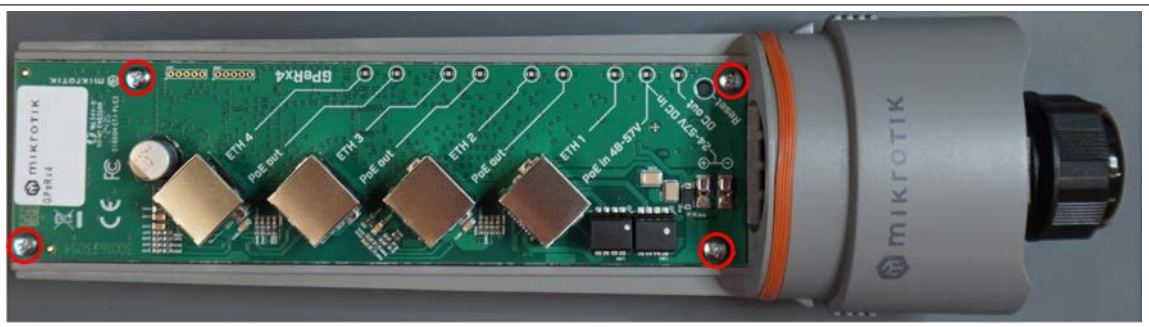
Disassembling information

Step 1: Press two tabs and remove the cover as shown in picture 26.



Picture 26

Step 2: Using the PH1 screwdriver, unscrew 4 screws. Location of the screws is shown in picture 27.



Picture 27

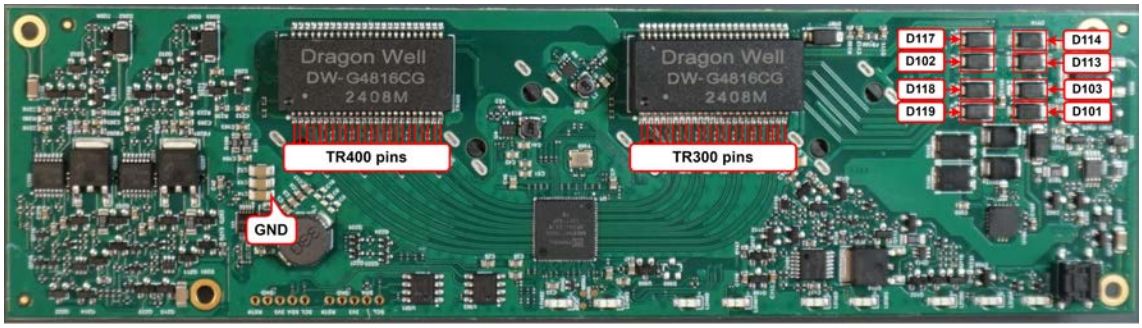
Instructions for checking over-voltage

Checking Schottky diodes

Check Schottky diodes D101, D102, D103, D113, D114, D117, D118, D119. Location of the diodes on the board you can see in picture 28. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

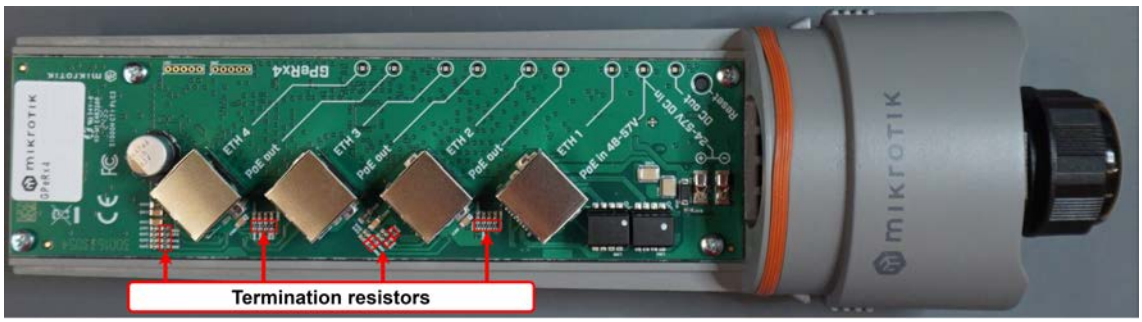
Check the voltage drop value between the Ethernet transformers TR400, TR300 pins and Ground. Test points on the transformer pins are marked with red lines, see picture 28. Voltage drop value should be in the range from 0,35V to 0,55V. Voltage drop measurement method is described on page 7.



Picture 28

Checking termination resistors resistance

Check the value of each termination resistor, it should be 75 Ohm +/-2%. Location of resistors is shown in picture 29.



Picture 29

CLOUD ROUTER SWITCH 100 SERIES ROUTERBOARDS

FiberBox (CRS105-5S-FB)

Picture 30

Disassembling information

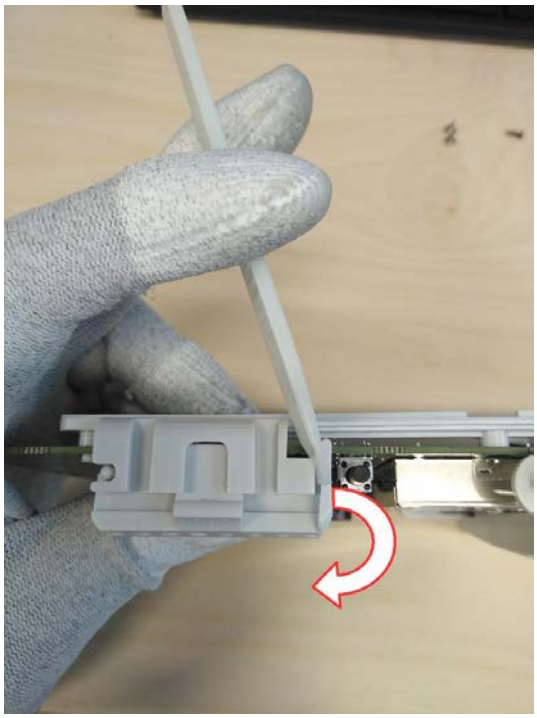
Step 1: Unscrew 3 mounting screws using screwdriver. Location of screws you can see in the picture 31.

Picture 31

Step 2: Gently pull cover the direction arrows are pointing in the following picture 32.

Picture 32

Step 3: To remove LEDs cover make a movement as shown in the following picture 33.

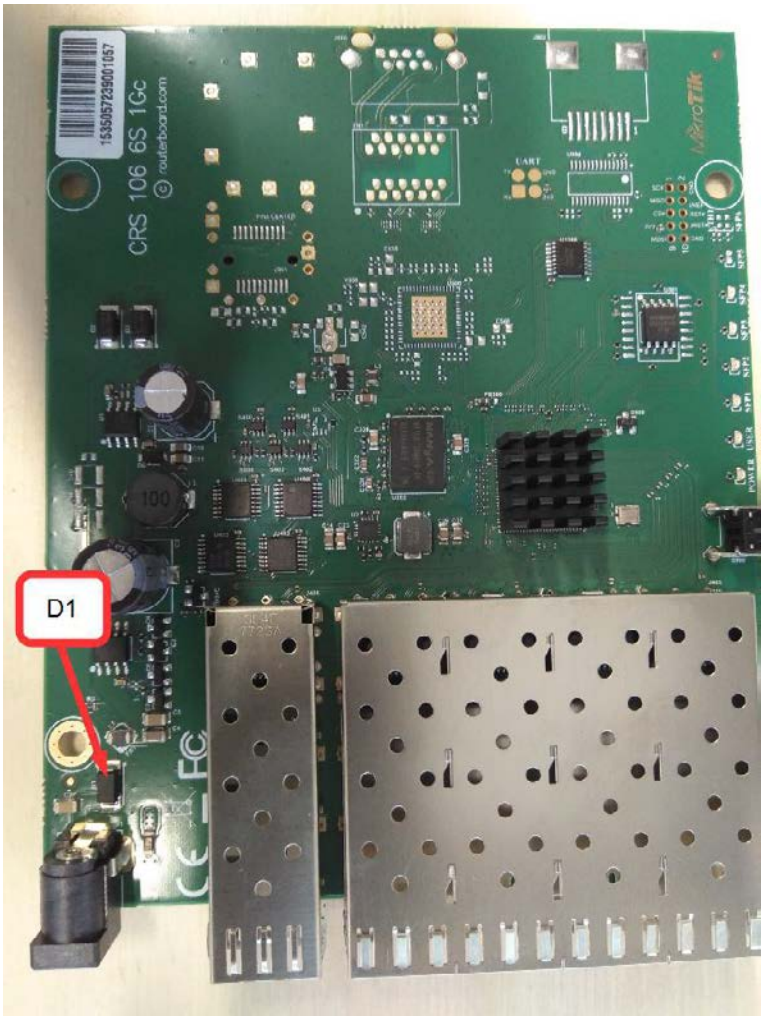


Picture 33

Instructions for checking overvoltage

Checking Schottky diode

Check Schottky diode D1. Location of diodes on the board you can see in the picture 34. Schottky diodes quality measurement method is described on page 4.



Picture 34

CRS106-1C-5S

Picture 35

Disassembling information

Disassembly method of the board is the same as the RB260GSP board. Disassembly method is described on page 84.

Instructions for checking overvoltage

Checking Schottky diode

Check Schottky diodes D1, D3. Location of diodes on the board you can see in the picture 36. Schottky diodes quality measurement method is described on page 4.

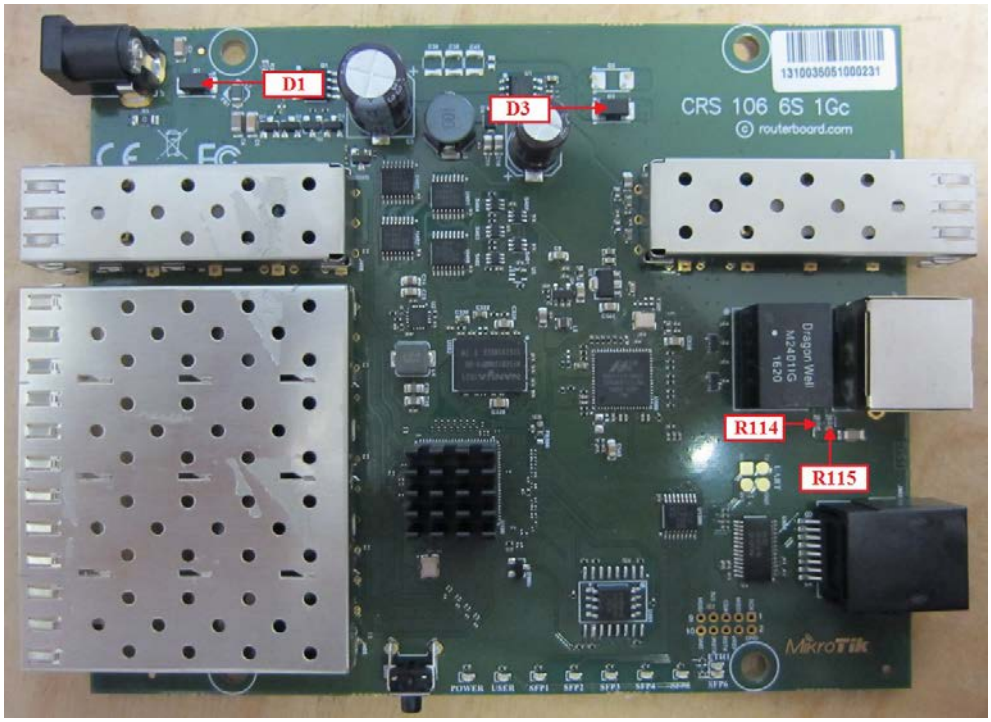
Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformers TR1 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 37.

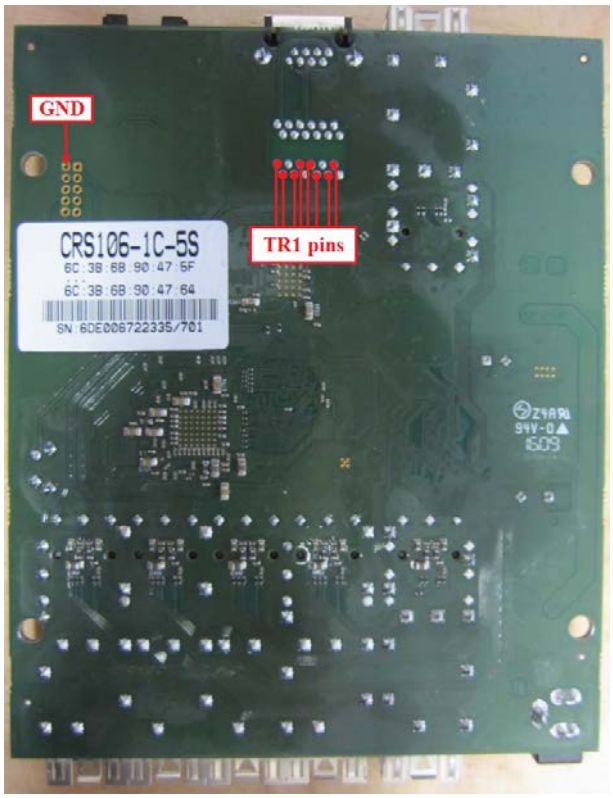
Voltage drop value should be in the range from 0,32V to 0,36V. Voltage drop measurement method is described on page 7.

Checking 75 Ohm termination resistors resistance

Check resistors R114, R115 resistance value. It should be 75 Ohm +/-1%. Location of resistors on the board you can see in the picture 36.



Picture 36



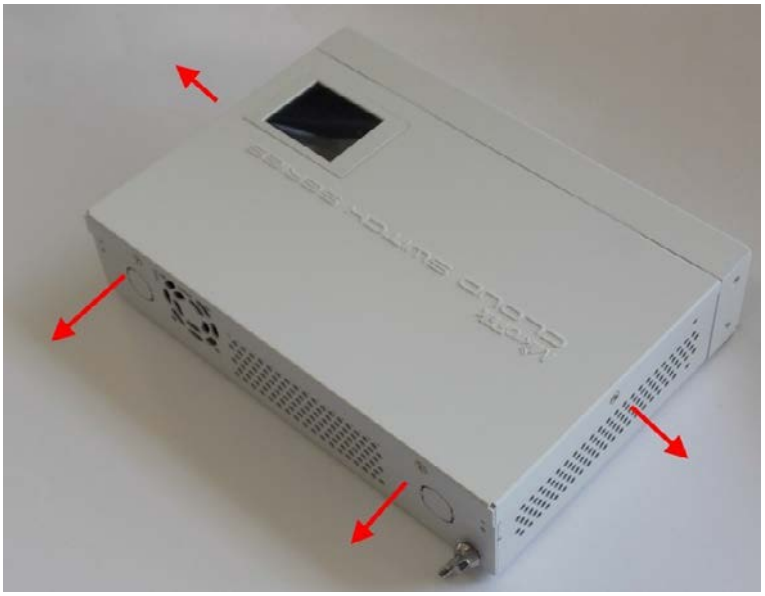
Picture 37

CRS109-8G-1S-2HnD-IN

Picture 38

Disassembling information

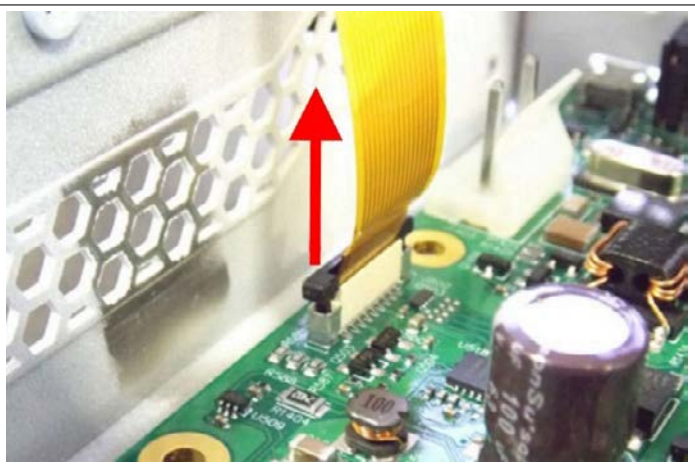
Step 1: Unscrew 4 screws using PH2 screwdriver. Location of screws you can see in the picture 39.



Picture 39

Step 2: Carefully take off the cover. Do not damage the LCD flex cable.

Step 3: Gently lift the latch vertically upward and take out LCD flex cable from FPC connector as showed in the picture 40. Do not damage the FPC connector locking drawer.

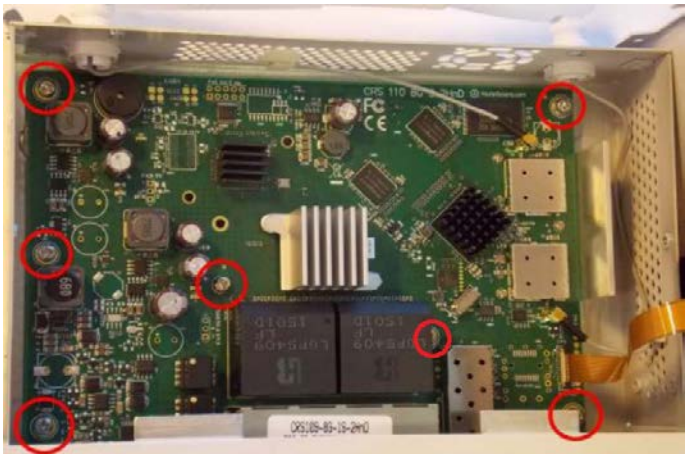


Picture 40

Step 4: Move both antenna cables into a special holes as showed in the picture 41.

Picture 41

Step 5: Unscrew 7 screws which fasten PCB to the case. Location of the screws you can see in the picture 42.



Picture 42

Instructions for checking overvoltage

Checking Schottky diode

Check Schottky diodes D2, D3, D5, D11, D16, D17. Location of diodes on the board you can see in the picture 43. Schottky diodes quality measurement method is described on page 4.

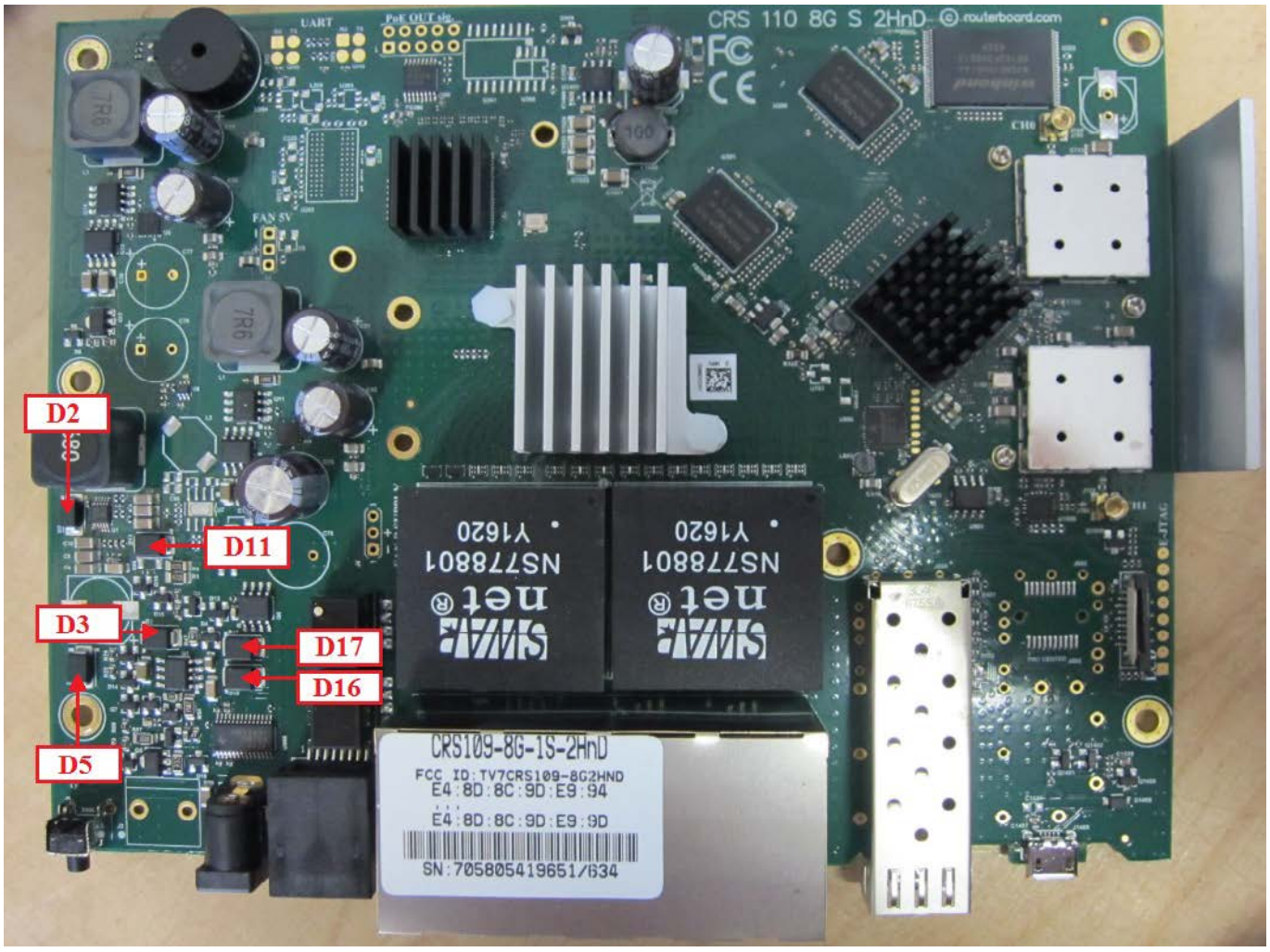
Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformers TR1200, TR1201 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 44.

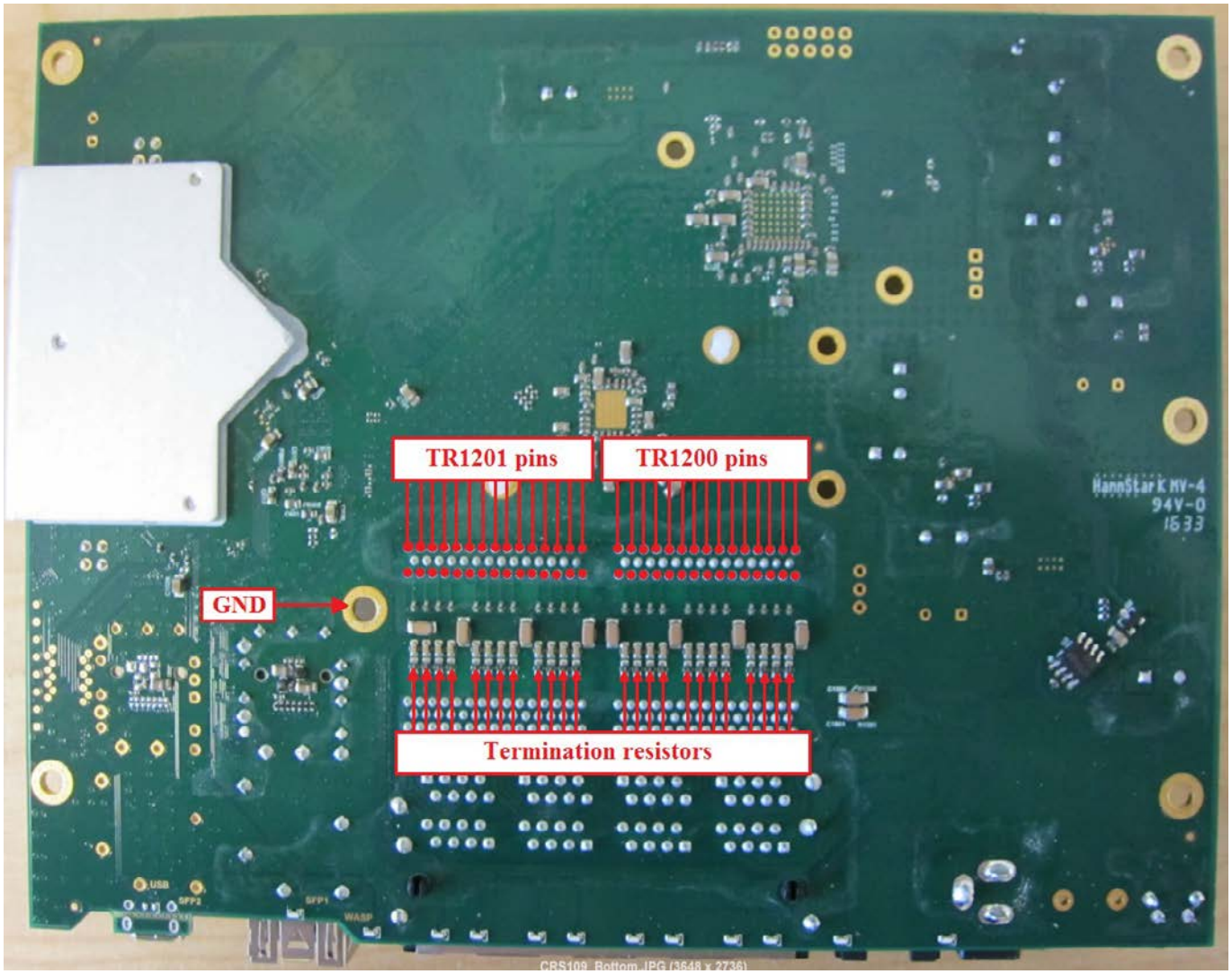
Voltage drop value should be in the range from 0,4V to 0,43V. Voltage drop measurement method is described on page 7.

Checking 75 Ohm termination resistors resistance

Check resistors resistance value. It should be 75 Ohm +/-1%. Location of resistors on the board you can see in the picture 44.



Picture 43



Picture 44

CRS112-8G-4S-IN

Picture 45

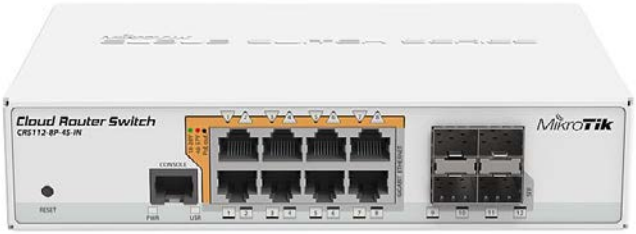
Disassembling information

Disassembly method of the board is the same as the CRS109-8G-1S-2HnD-IN board. Disassembly method is described on page 33.

Instructions for checking overvoltage

Over-voltage testing procedure, the layout of the components on the board and measurement values is the same as for CRS109-8G board, see on page 35.

CRS112-8P-4S-IN



Picture 46

Disassembling information

Disassembly method of the board is the same as the CRS109-8G-1S-2HnD-IN board. Disassembly method is described on page 33.

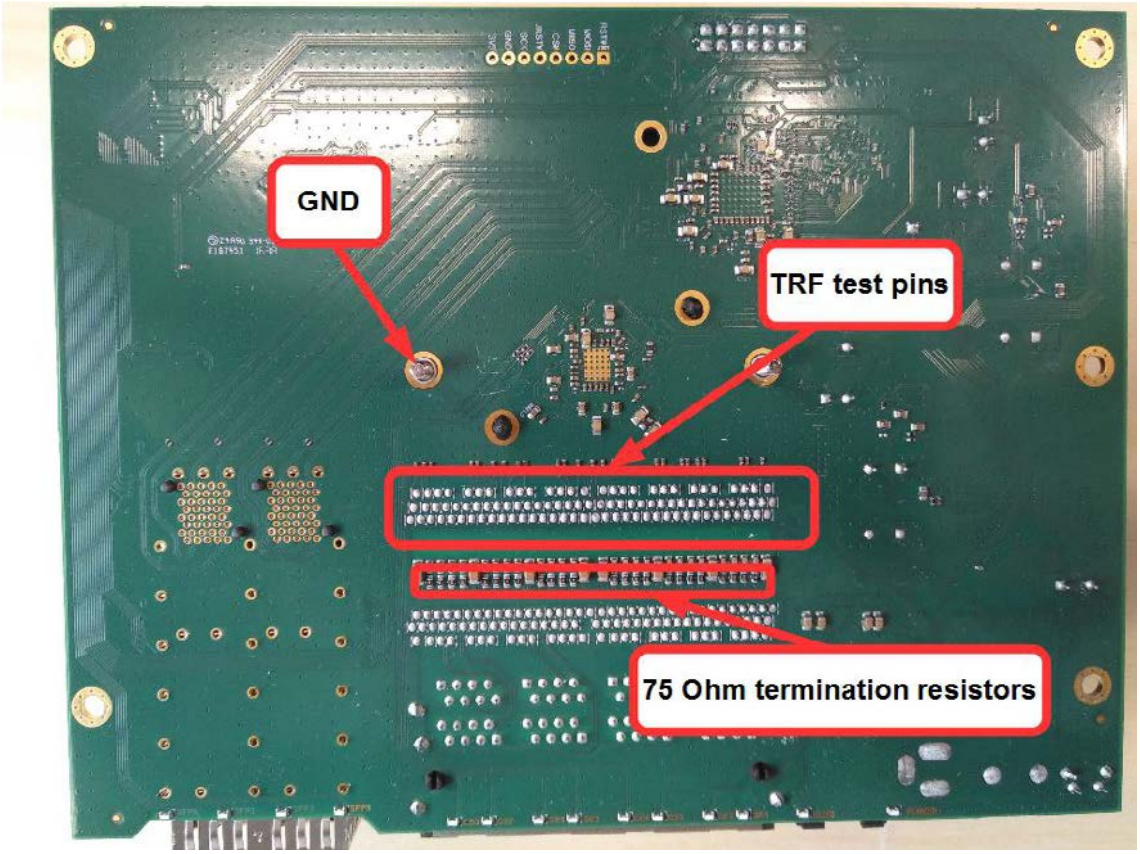
Instructions for checking overvoltage

Checking voltage drop value between Ethernet transformers pins and Ground

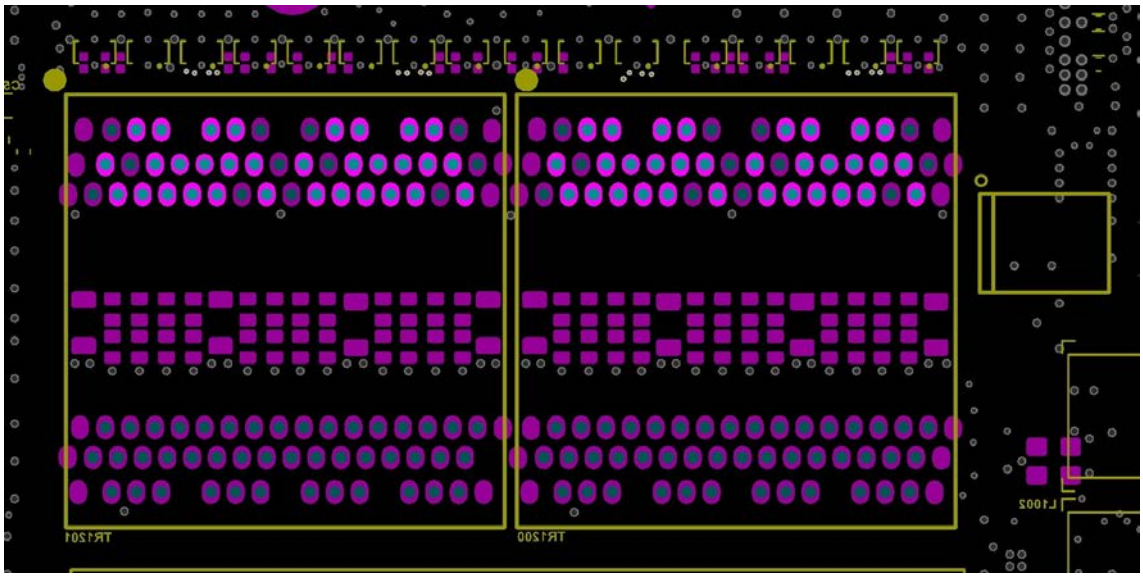
Check voltage drop value between Ethernet transformers TR1200, TR1201 pins and Ground. Test points on the transformers pins are highlighted and can be seen in picture 48. Note that the view for transformer pins are from the bottom for necessary of measurement. Voltage drop value should be in the range from 0,38V to 0,45V. Voltage drop measurement method is described on page 7.

Checking 75 Ohm termination resistors resistance

Check resistors resistance value. It should be 75 Ohm +/-1%. Location of resistors on the board you can see in the picture 47.



Picture 47



Picture 48

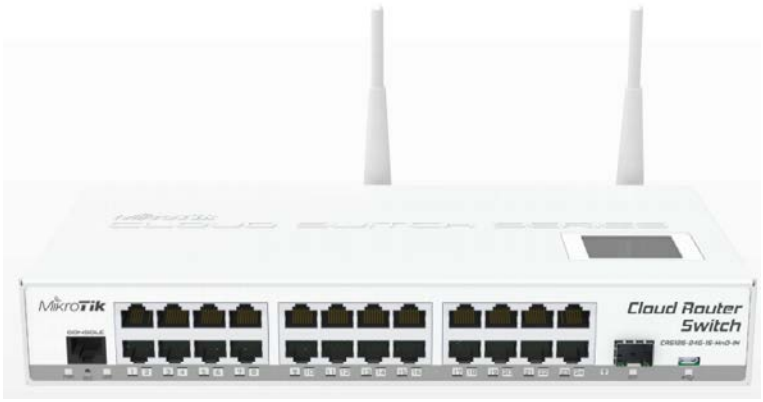
CRS125-24G-1S-IN

Picture 49

CRS125-24G-1S-RM

Picture 50

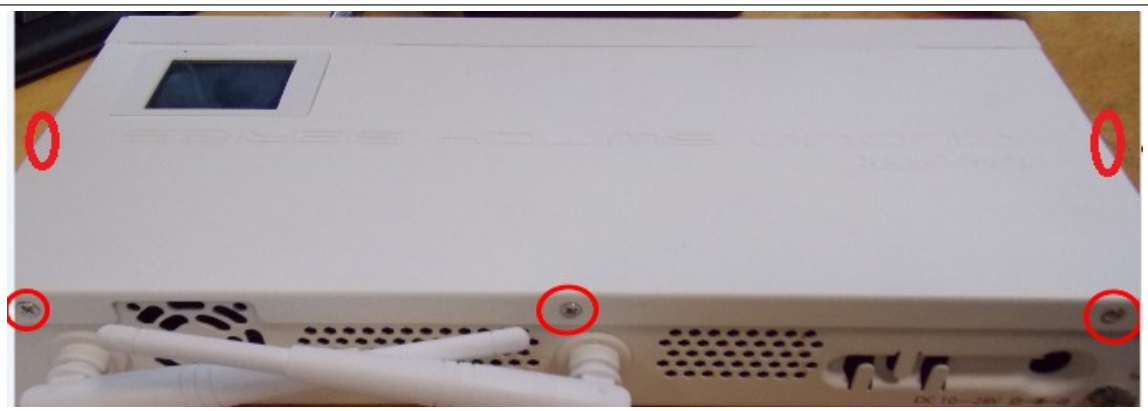
CRS125-24G-1S-2HnD-IN



Picture 51

Disassembling information

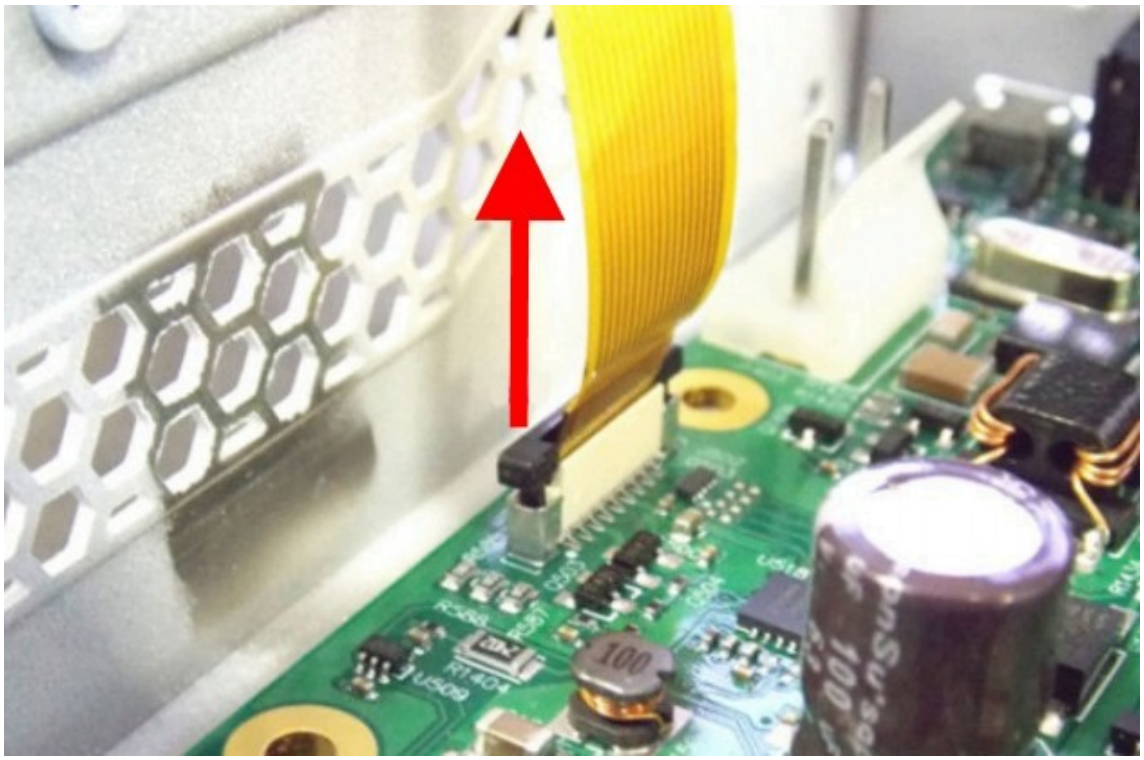
Step 1: Unscrew 5 screws (3 screws behind board case and 1 screw on the side of the board case). Location of the screws you can see in the picture 52.



Picture 52

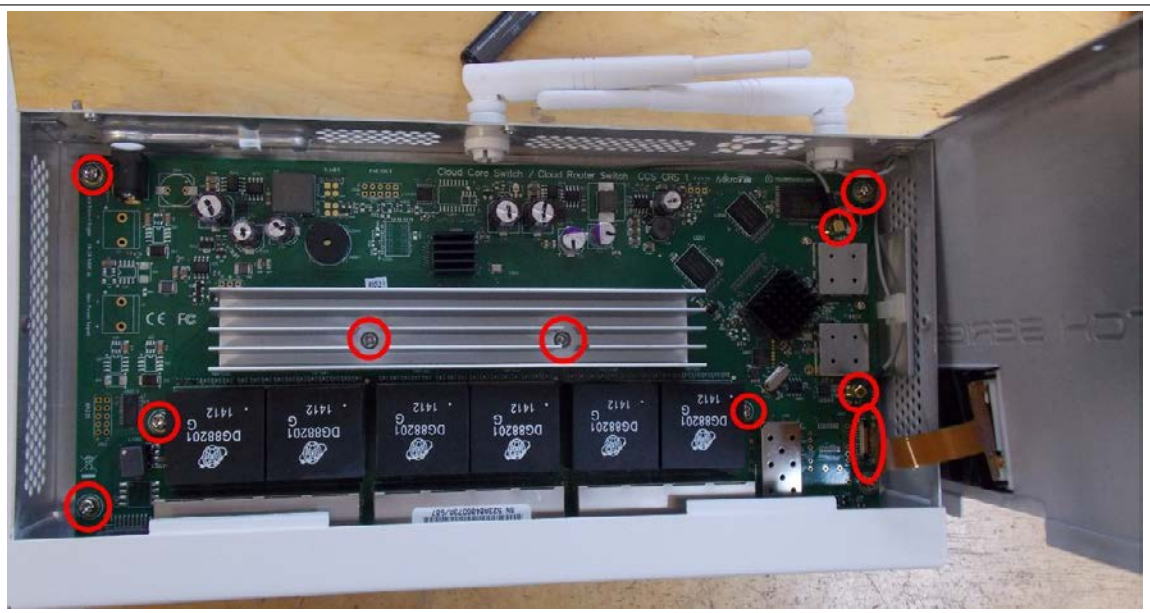
Step 2: Carefully take off the cover. Do not damage the LCD flex cable.

Step 3: Gently lift the latch vertically upward and take out LCD flex cable from FPC connector as showed in the picture 53. Do not damage the FPC connector locking drawer.



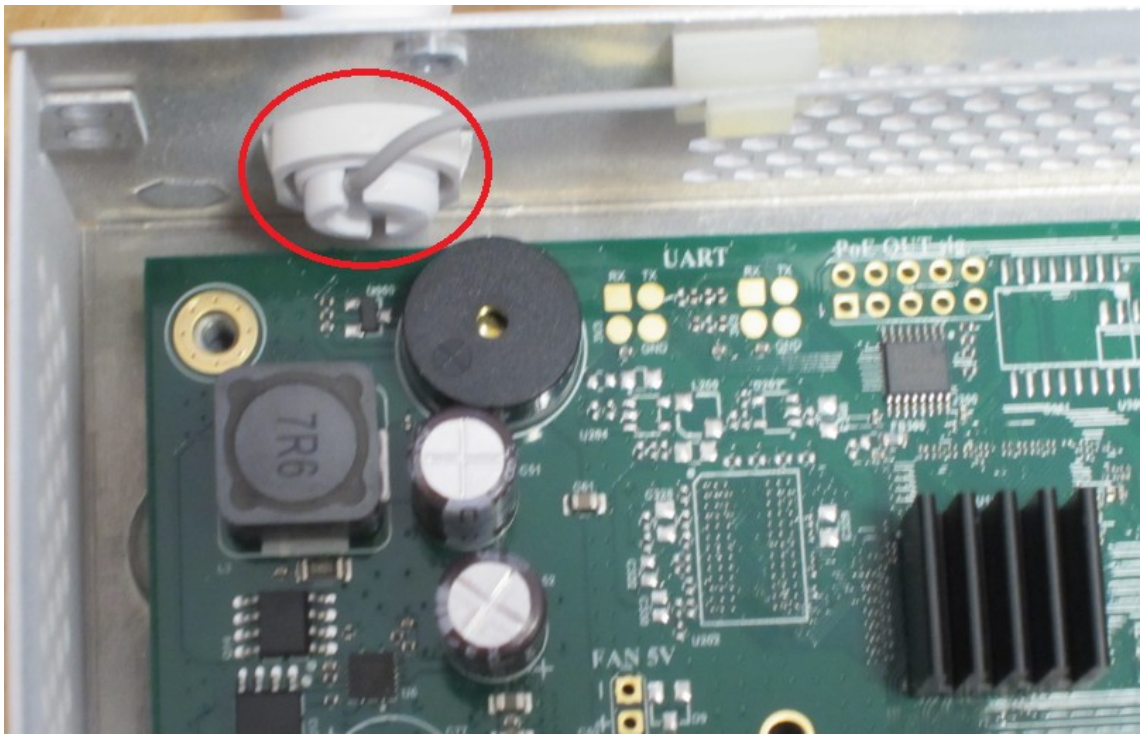
Picture 53

Step 4: Unscrew 8 screws which fasten PCB to the case. Location of the screws see in the picture 54.



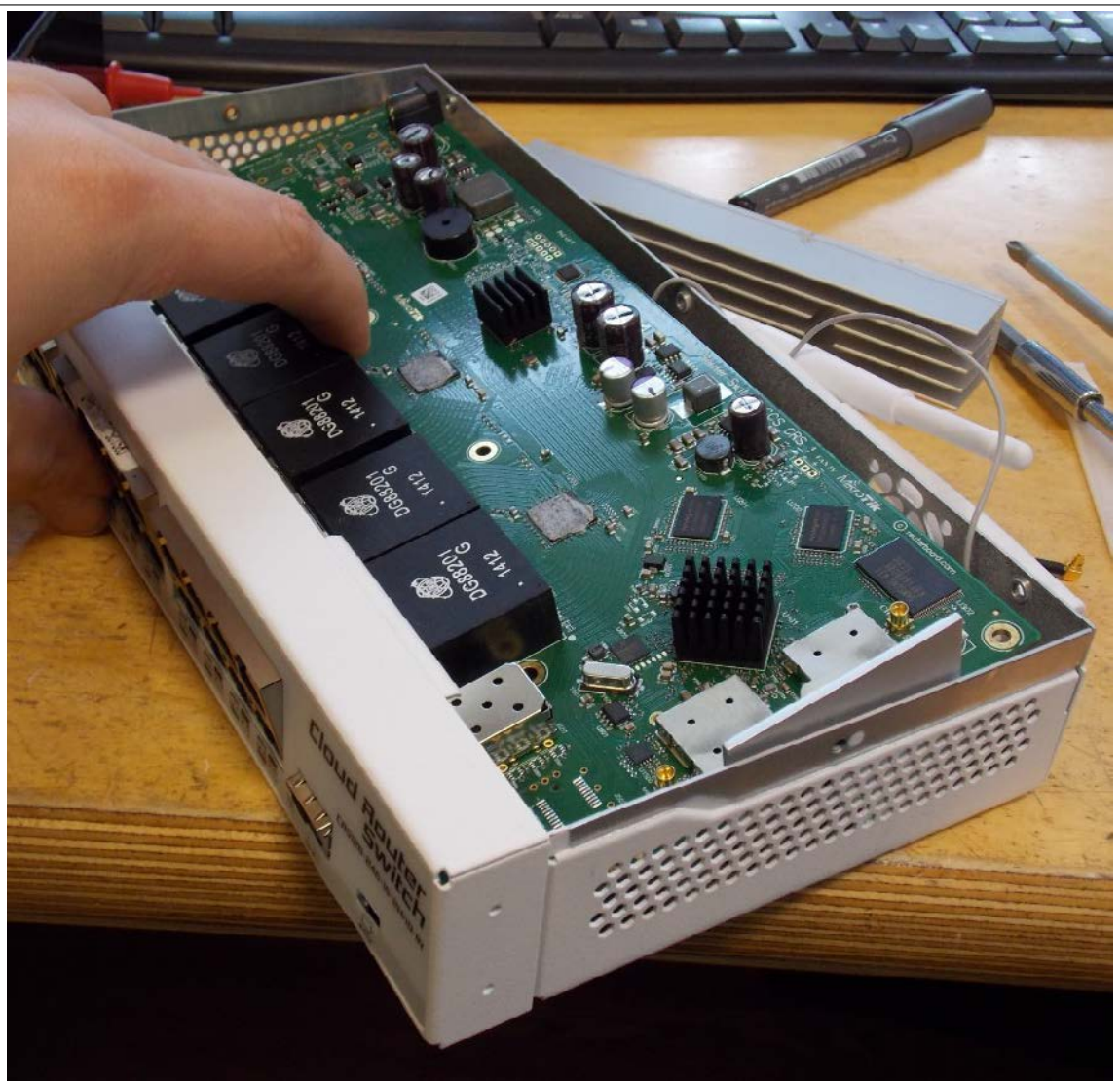
Picture 54

Step 5: Move both antenna cables into a special holes, see picture 55.



Picture 55

Step 6: Move out PCB from the case, see picture 56.



Picture 56

Instructions for checking overvoltage

Checking Schottky diodes

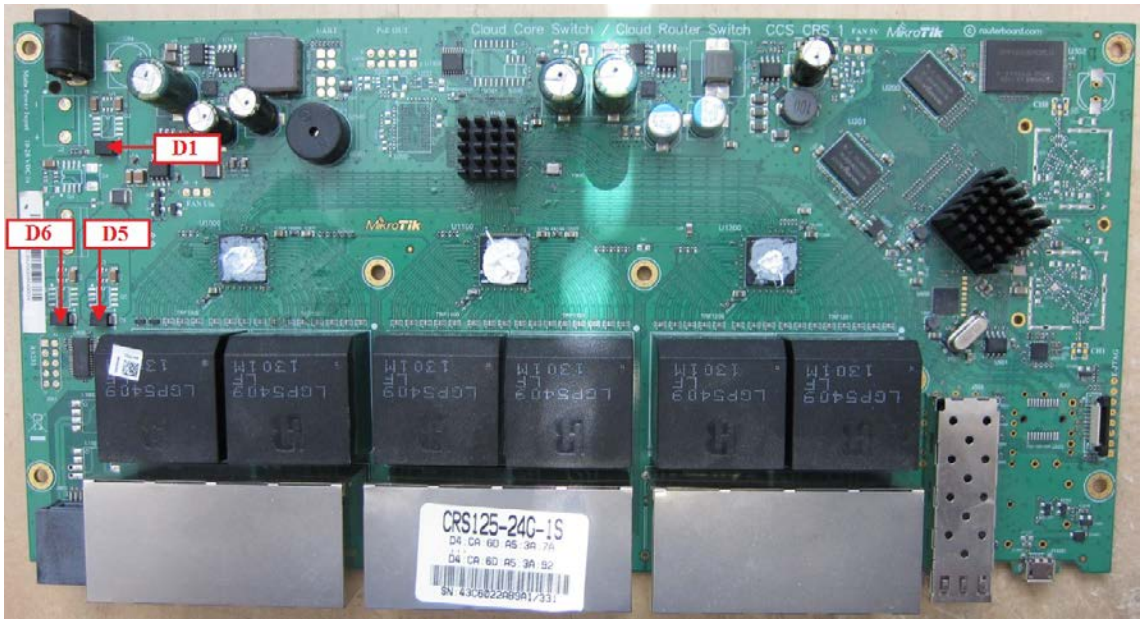
Check Schottky diodes D1, D5, D6 (or D1, D5 for some CRS125 versions). Location of diodes on the board you can see in the picture 57. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformers pins and Ground

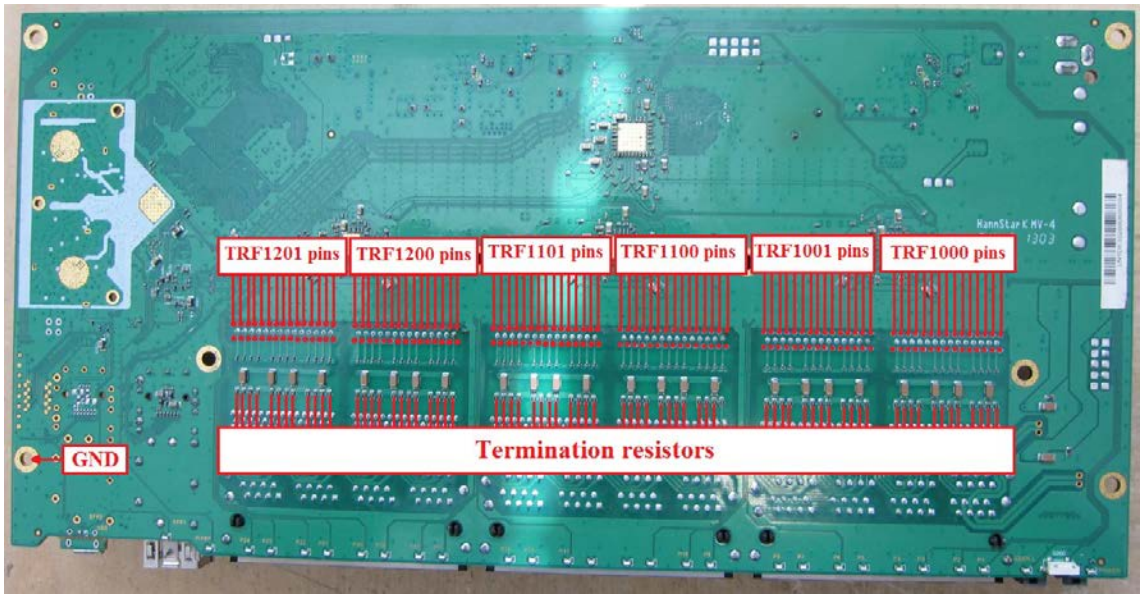
Check voltage drop value between Ethernet transformers TRF1000, TRF1001, TRF1100, TRF1101, TRF1200, TRF1201 pins and Ground. Test points on the transformers pins are marked with red dots, see picture 58. Voltage drop value should be in the range from 0,38V to 0,44V. Voltage drop measurement method is described on page 7.

Checking 75 Ohm termination resistors resistance

Check resistors resistance value. It should be 75 Ohm +/-1%. Location of resistors on the board you can see in the picture 58.



Picture 57



Picture 58

CLOUD ROUTER SWITCH 304 SERIES ROUTERBOARD

CRS304-4XG-IN

Picture 59

Disassembling information

Step 1:

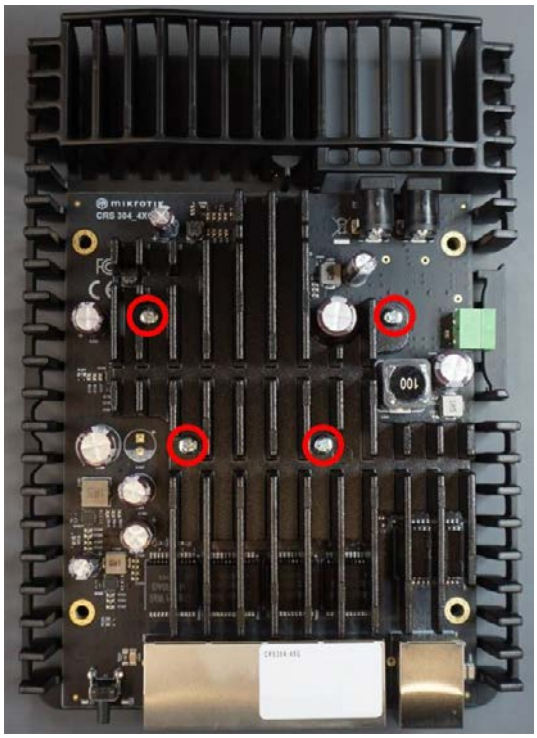
Carefully peel off four silicone rubber pads, than using PH1 screwdriver unscrew four screws, see picture 60 and 61, after that remove the buttom cover and gently pull out the PCB with heat-sinks from the case.

Picture 60

Picture 61

Step 1:

Using PH1 screwdriver unscrew four screws and remove the top heat-sink, than pull out the PCB from the bottom heat-sink. Location of the screw is shown the picture 62.

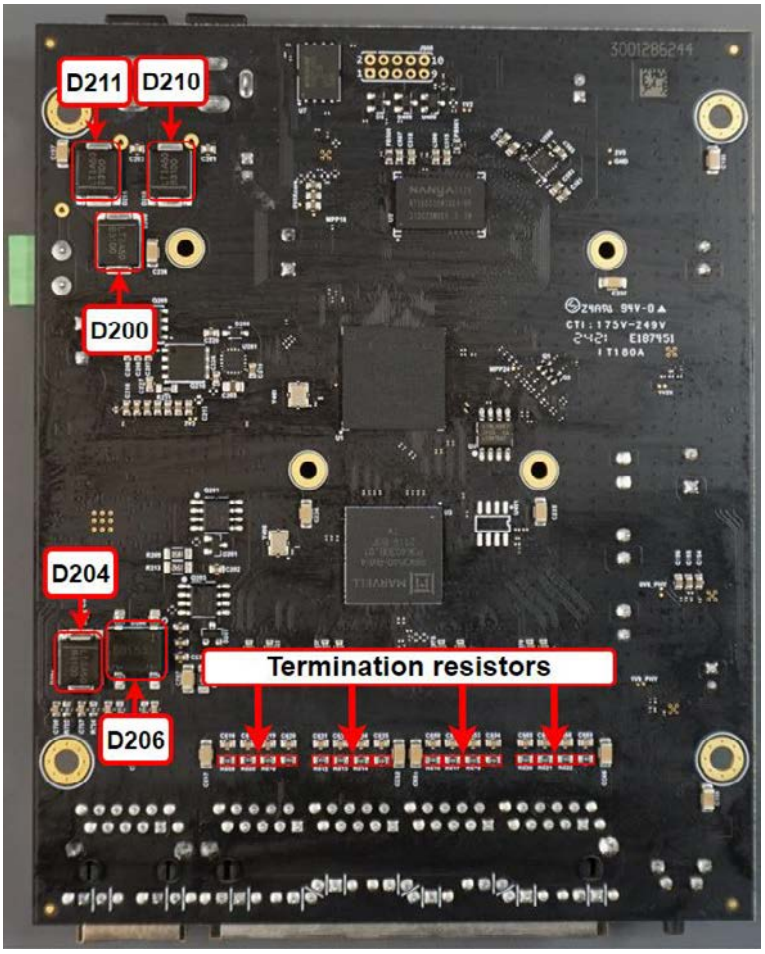


Picture 62

Instructions for checking over-voltage

Checking Schottky diode and diode bridge

Check Schottky diodes D200, D204, D210, D211 and diode bridge D206. Location of the diodes on the PCB you can see in the picture 63. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.



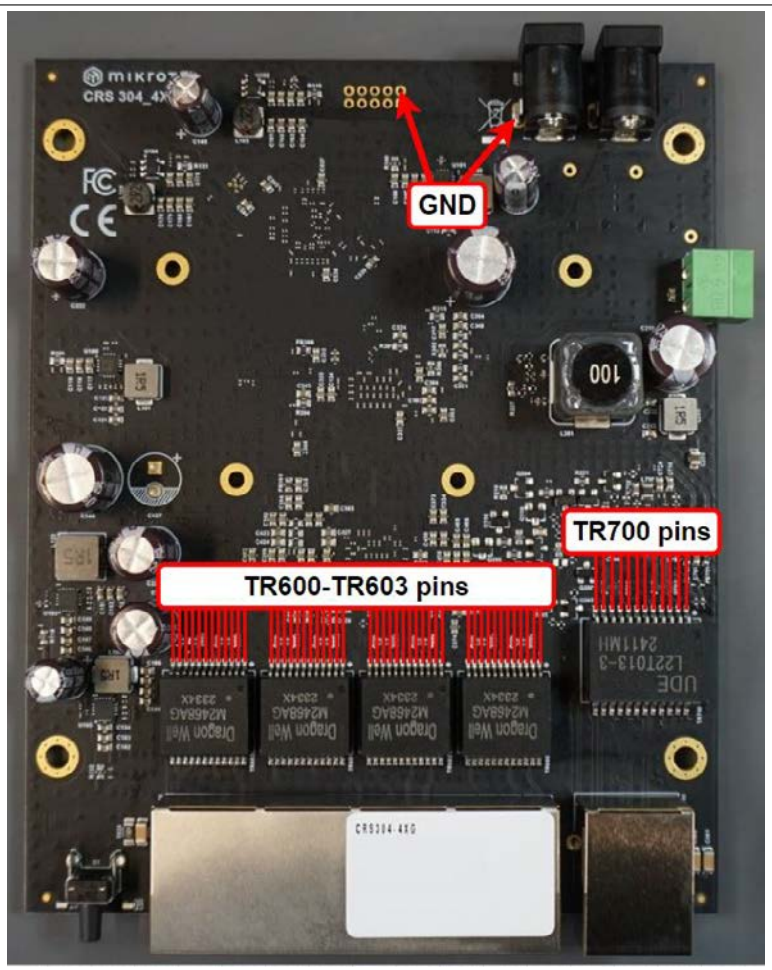
Picture 63

Checking voltage drop value between Ethernet transformers pins and Ground

Check voltage drop value between Ethernet transformers TR600-TR603, TR700 pins and Ground, see picture 64. Voltage drop value on the transformers TR600-TR603 should be in the range from 0,31V to 0,35V and on the transformer TR700 should be in the range from 0,40V to 0,45V. Voltage drop measurement method is described on page 7

Checking 75 Ohm termination resistors resistance

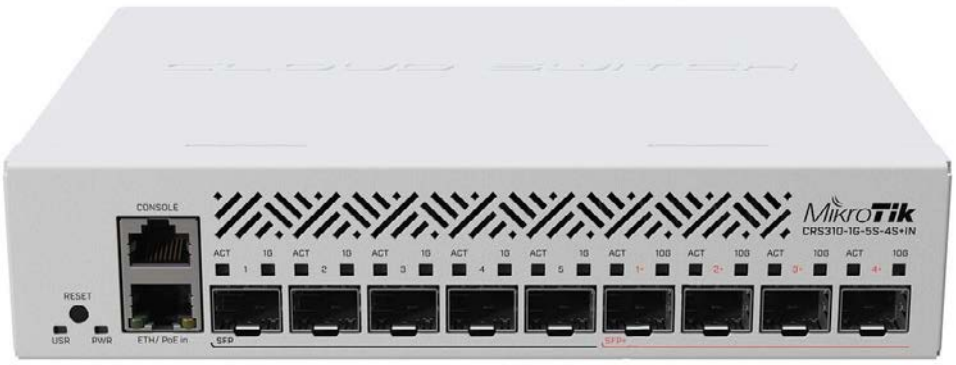
Check value of each termination resistor. It should be 75 Ohms +/- 1%. Location of resistors is shown in picture 63.



Picture 64

CLOUD ROUTER SWITCH 310 SERIES ROUTERBOARD

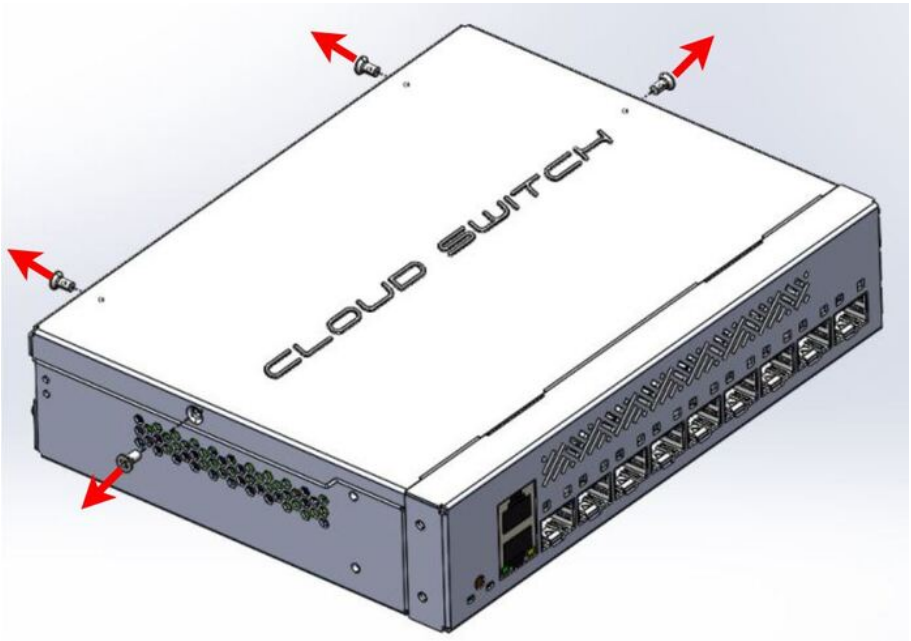
CRS310-1G-5S-4S+IN



Picture 65

Disassembling information

Unscrew 4 screws using PH2 screwdriver and carefully take off the cover. Location of the screws is shown the picture 66.



Picture 66

Instructions for checking over-voltage

Checking Schottky diodes and diode bridge

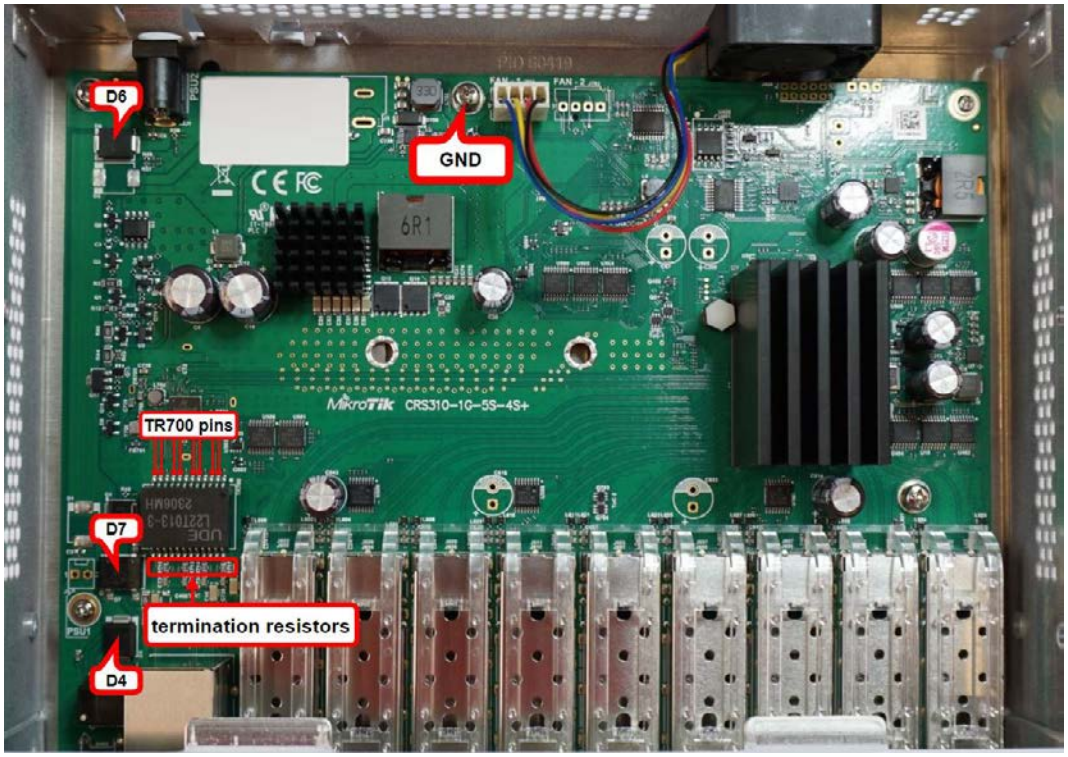
Check Schottky diodes D4, D6 and diode bridge D7. Location of the diodes on the board you can see in the picture 67. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR700 pins and Ground. Test points on the transformer pins are highlighted with red lines, see picture 67. Voltage drop value should be in the range from 0,35V to 0,50V. Voltage drop measurement method is described on page 7.

Checking 75 Ohm termination resistors resistance

Check value of each termination resistor (there are 4 termination resistors). It should be approximately 75 Ohms. Location of resistors is shown in picture 67.



Picture 67

CRS310-1G-5S-4S+OUT (netFiber 9)

Picture 68

Picture 69

Disassembling information

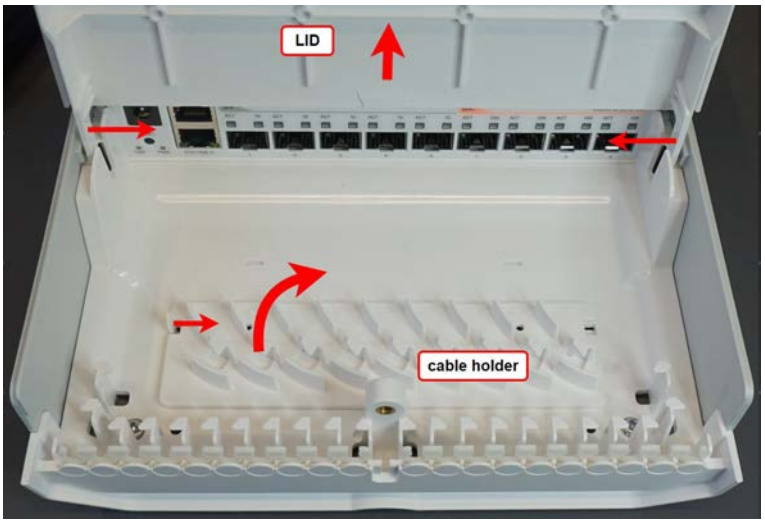
Step 1:

On the back of the case unscrew 9 screws using PH2 screwdriver and carefully remove the heat-sink. Location of the screws is shown the picture 70.

Picture 70

Step 2:

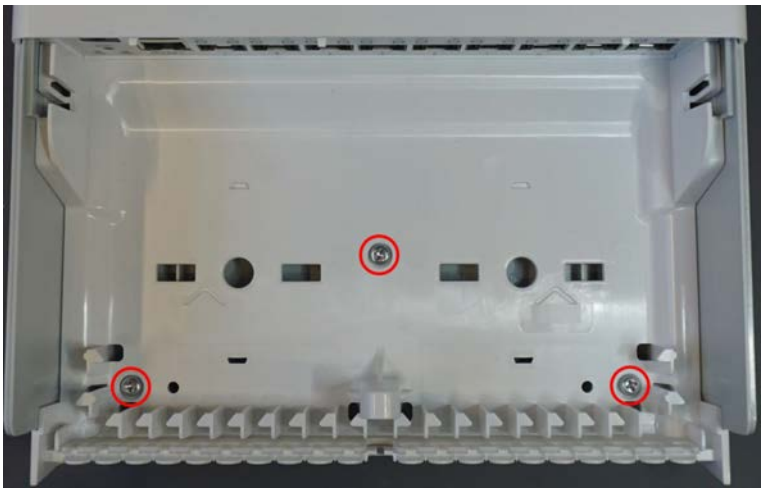
Open the lid, then disattach the lid and the cable holder, as shown in the picture 71.



Picture 71

Step 3:

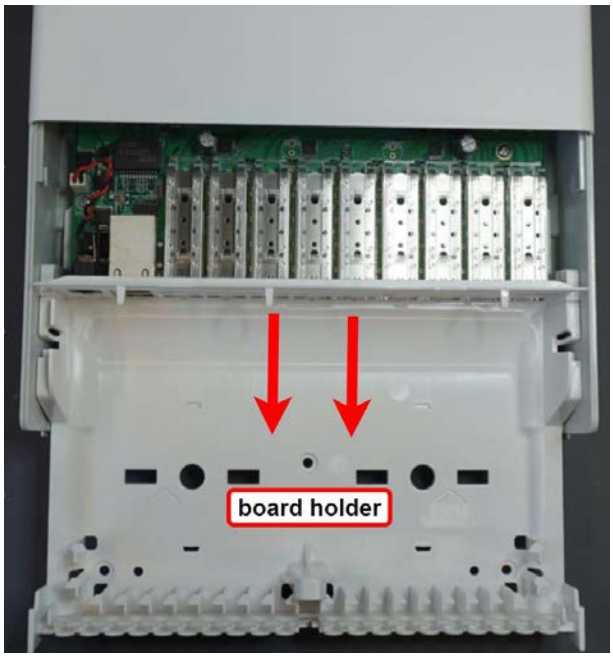
Unscrew 3 screws using PH2 screwdriver. Location of the screws is shown the picture 72.



Picture 72

Step 4:

Gently pull the board holder, as shown in the picture 73 and 74.



Picture 73

Picture 74

Instructions for checking over-voltage

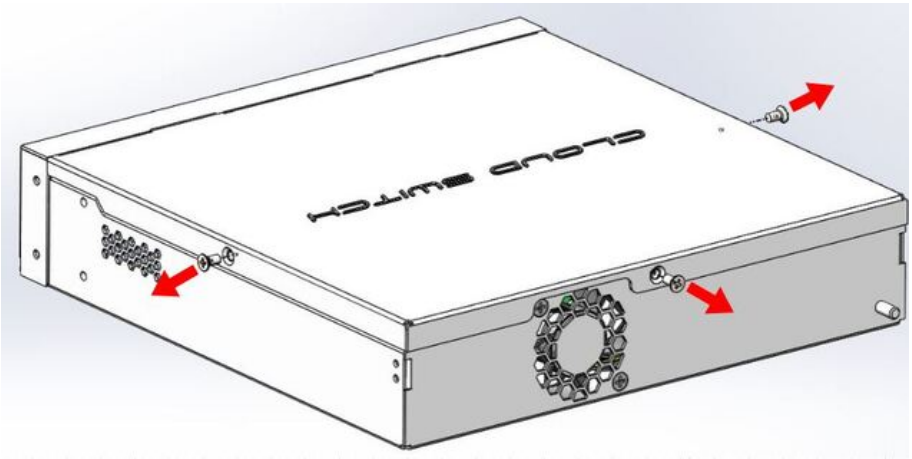
Over-voltage testing procedure is the same as for the CRS310-1G-5S-4S+IN board, see page 52.

CRS310-8G+2S+IN

Picture 75

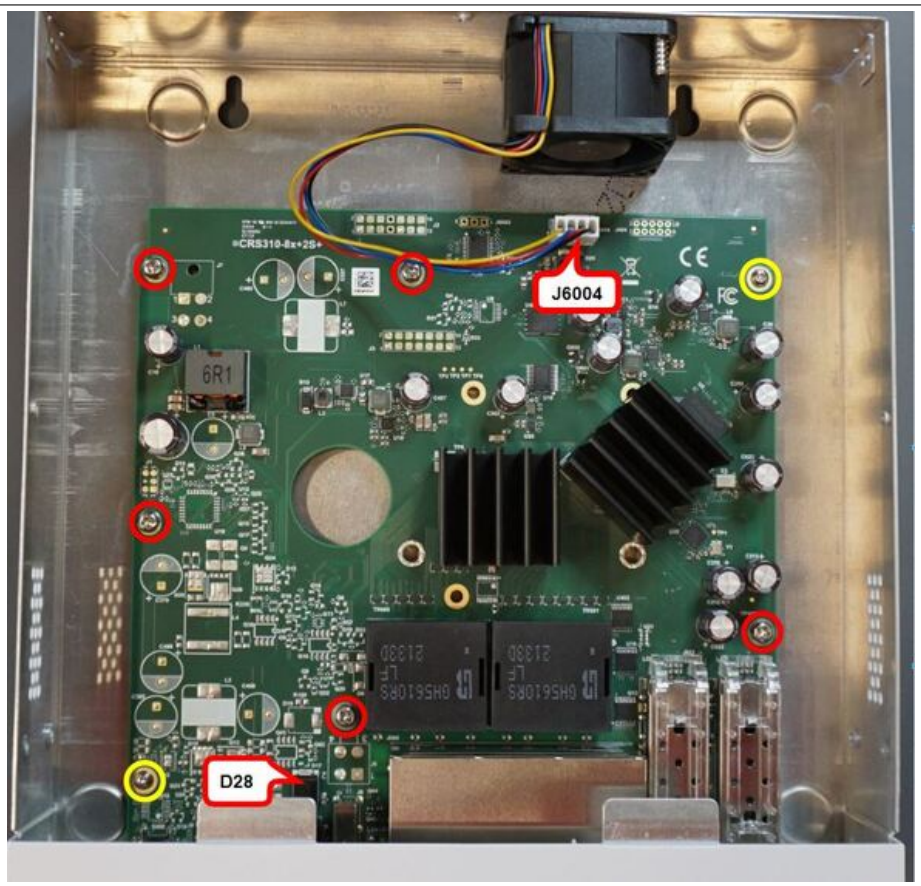
Disassembling information

Step 1: Unscrew 3 screws using PH2 screwdriver and carefully take off the cover. Location of the screws is shown the picture 76.



Picture 76

Step 2: Unscrew 8 screws, the screws marked with a yellow circle using PH1 screwdriver and the screws marked with a red circle using PH2 screwdriver. Disconnect the fan connector J6004. Location of the screws and the fan connector is shown the picture 77.



Picture 77

Instructions for checking over-voltage

Checking Schottky diode

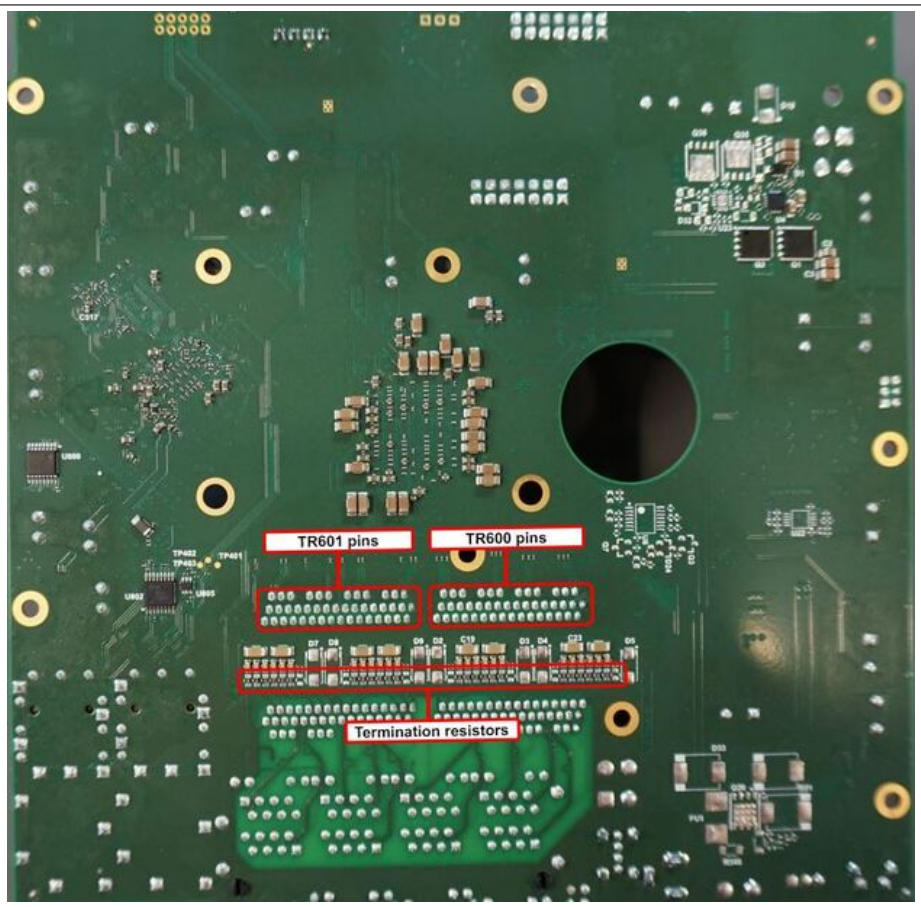
Check Schottky diode D28. Location of the diode on the board you can see in the picture 77. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformers pins and Ground

Check voltage drop value between Ethernet transformers TR600, TR601 pins and Ground. Test points on the transformers pins you can see in the picture 78. Voltage drop value should be in the range from 0,40V to 0,55V. Voltage drop measurement method is described on page 7.

Checking 75 Ohm termination resistors resistance

Check resistors resistance value. It should be 75 Ohm +/-1%. Location of resistors on the board you can see in the picture 78.



Picture 78

CLOUD ROUTER SWITCH 320 SERIES ROUTERBOARD

CRS320-8P-8B-4S+RM

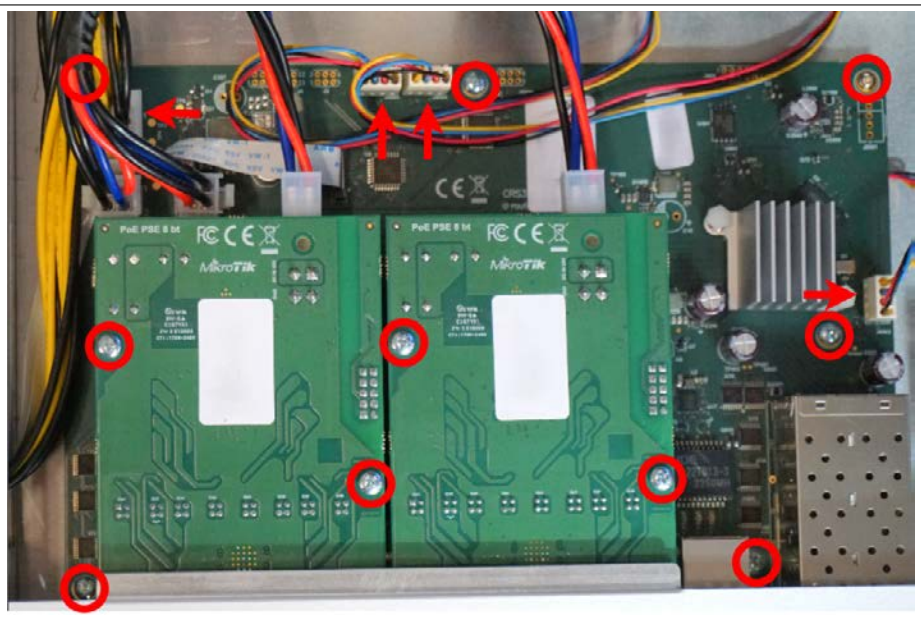
Picture 79

Disassembling information

Step 1: Unscrew 9 screws using a PH2 screwdriver and carefully remove the cover. Location of the screws is shown in the picture 80.

Picture 80

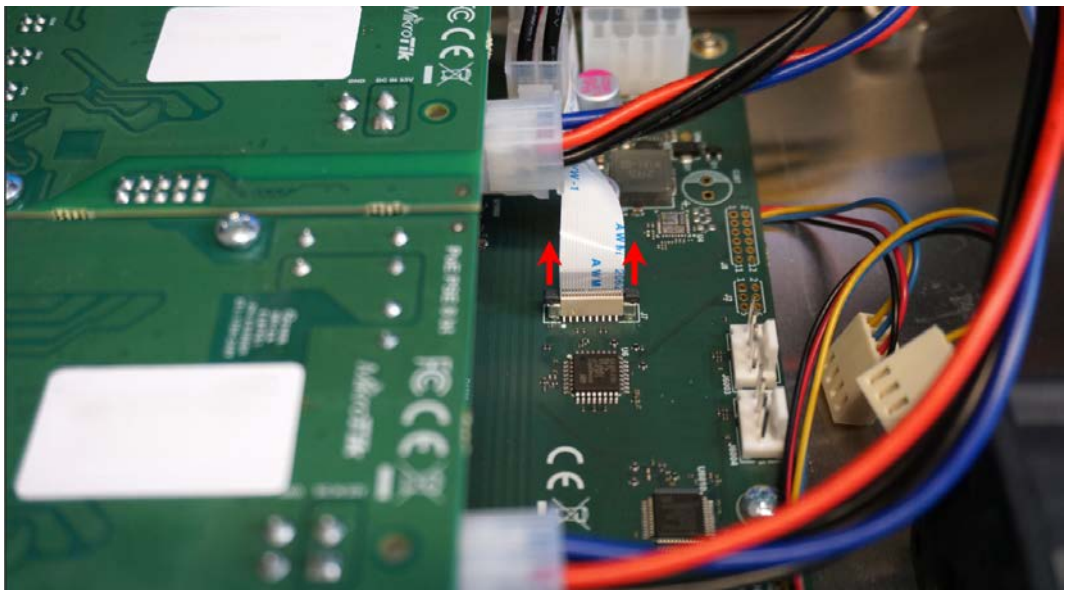
Step 2: Unscrew 10 screws using a PH1 screwdriver and unplug 4 connectors that are marked with arrows. Location of the screws and connectors is shown in the picture 81.



Picture 81

Step 3:

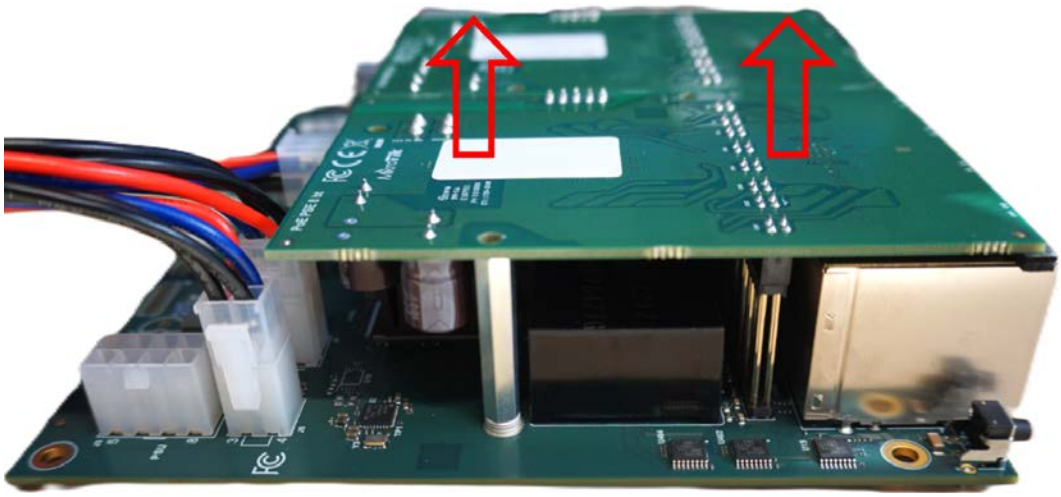
Unplug the connector by alternately pulling the left and right sides of the black pin, see picture 82.



Picture 82

Step 4:

Remove 2 boards by lifting them vertically as shown in the picture 83.



Picture 83

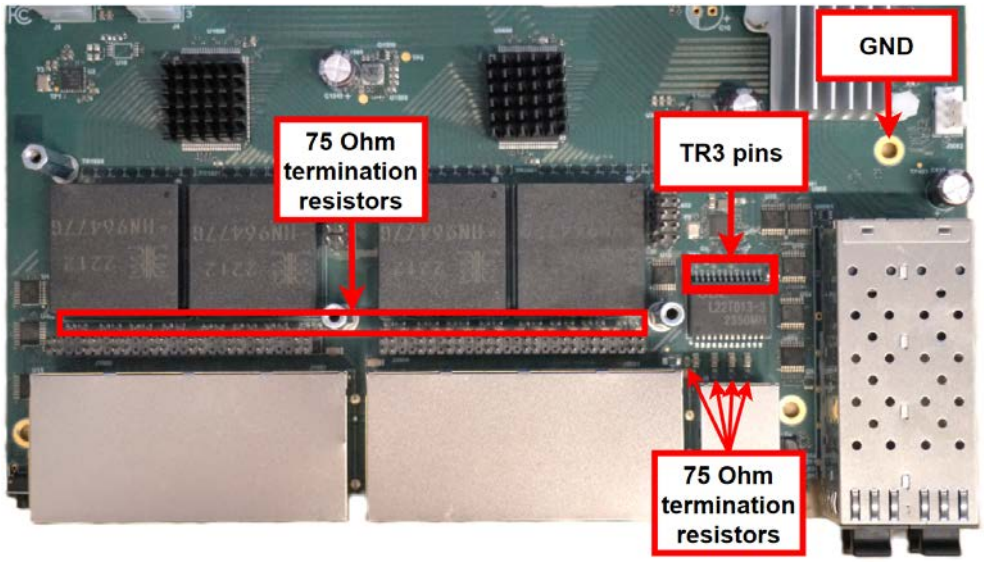
Checking procedure for over-voltage

Checking voltage drop value between Ethernet transformer pins and Ground

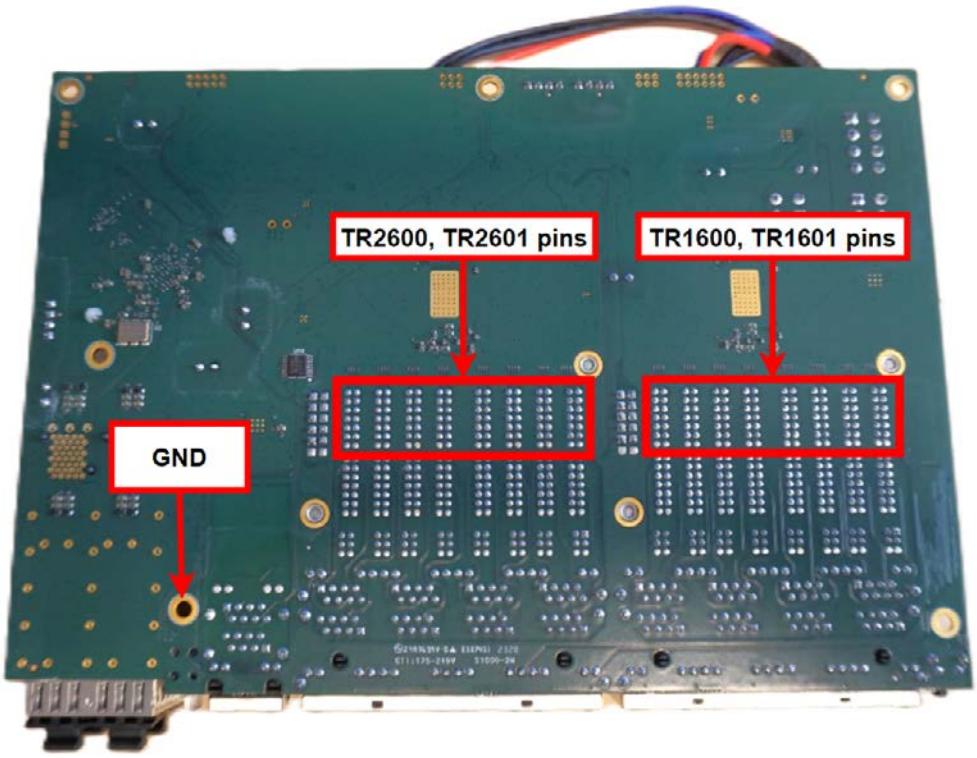
Check voltage drop value between Ethernet transformers TR1600, TR1601, TR2600, TR2601, TR3 pins and Ground. Test points you can see in the pictures 84 and 85. The voltage drop of the TR1600, TR1601, TR2600 and TR2601 transformers should be in the range from 0,30V to 0,35V or 0.60V to 0.65V and the voltage drop of the TR3 transformer should be in the range from 0,39V to 0,45V. Voltage drop measurement method is described on page 7.

Checking 75 Ohm termination resistors resistance

Check value of each termination resistor. It should be 75 +/-1% Ohms. Location of resistors is shown in picture 84.

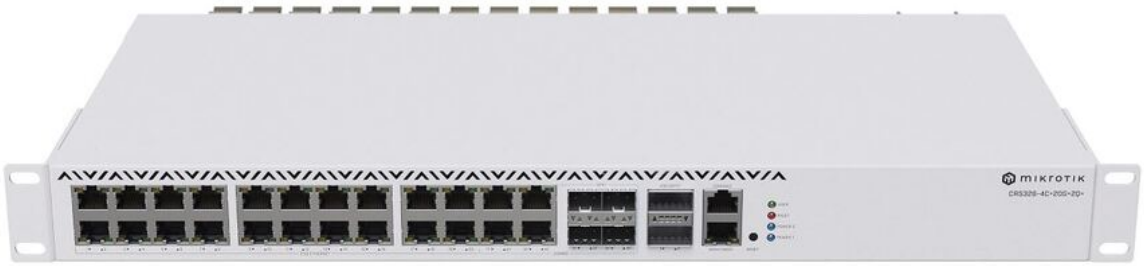


Picture 84



Picture 85

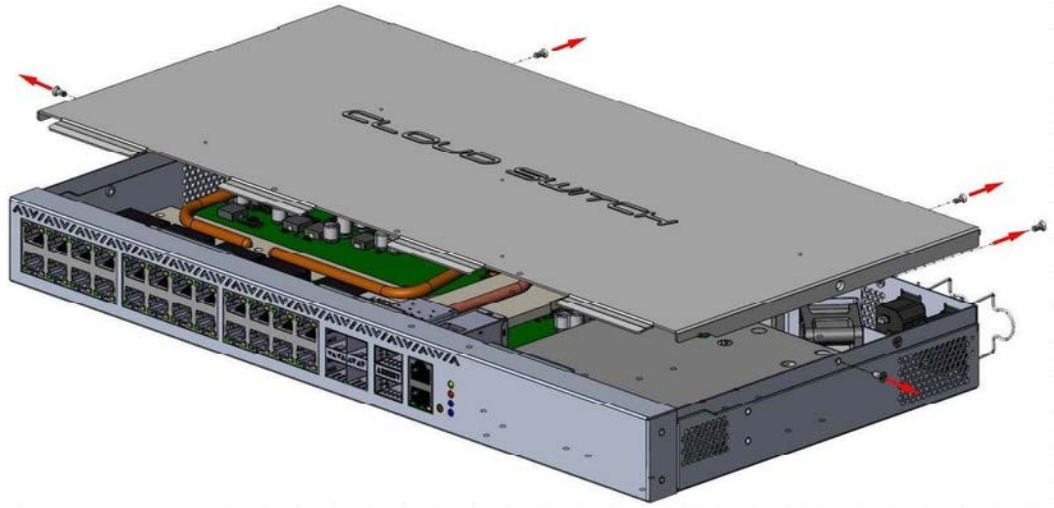
CRS326-4C+20G+2Q+RM



Picture 86

Disassembling information

Step 1: Unscrew 5 screws using PH2 screwdriver and carefully remove the cover. Location of the screws is shown the picture 87.



Picture 87

Step 2: Unscrew two screws using PH2 screwdriver, see picture 88.

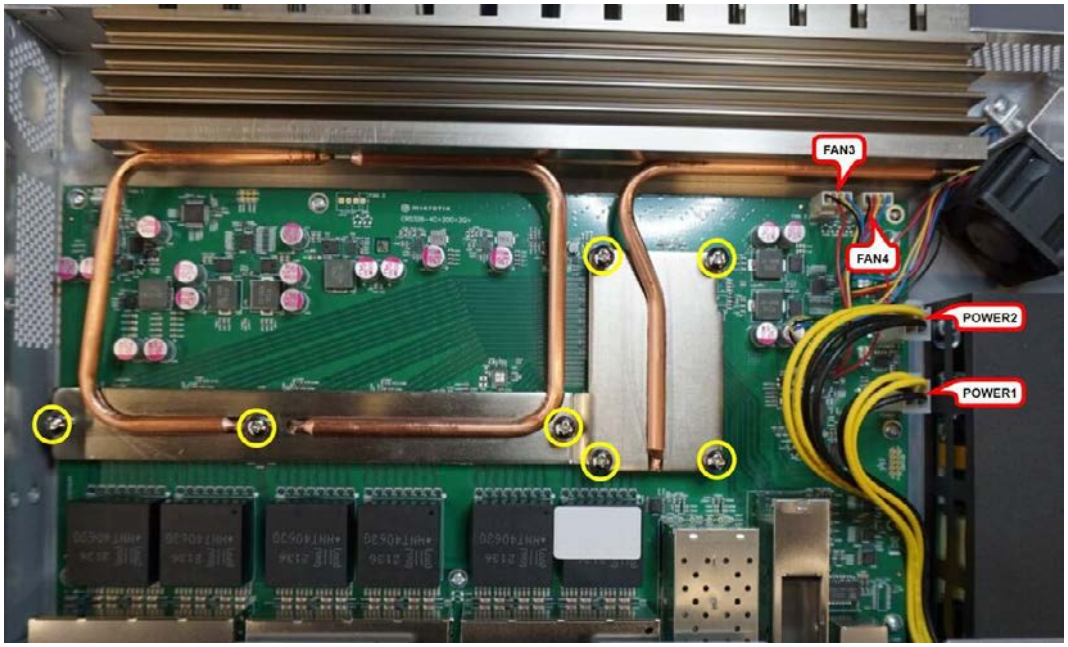
Picture 88

Step 3:

Unplug FAN and power cables, see picture 89.

Step 4:

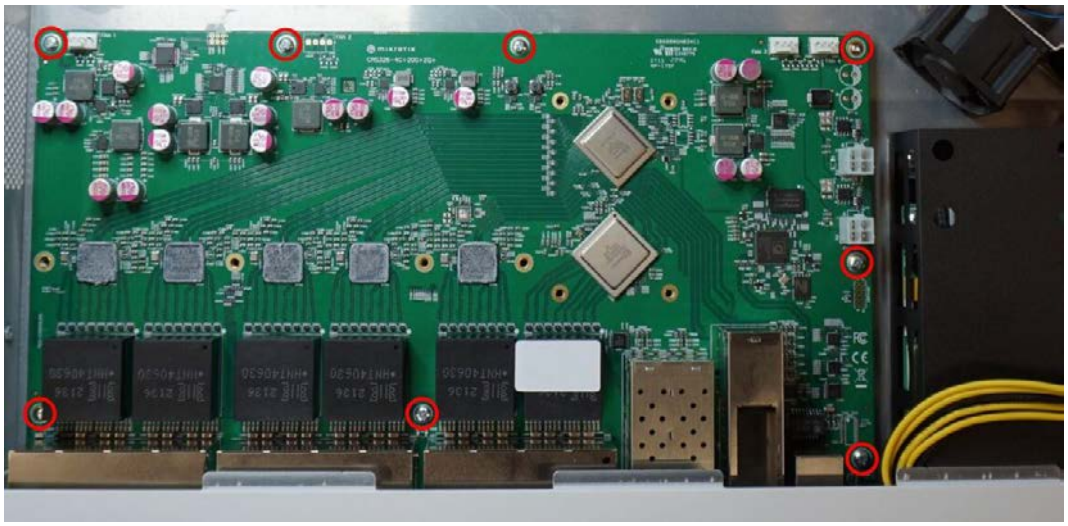
Unscrew 7 screws using PH2 screwdriver and remove heat-sink, see picture 89.



Picture 89

Step 5:

Unscrew 8 screws using PH1 screwdriver. Location of the screws is shown the picture 90.

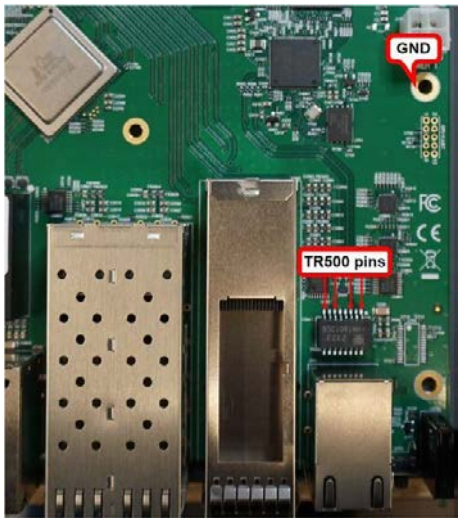


Picture 90

Checking procedure for over-voltage

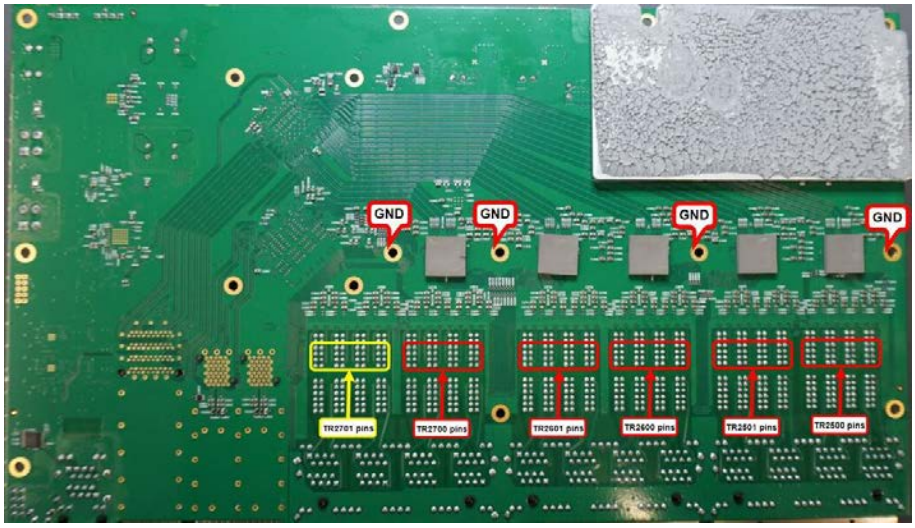
Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR500 pins and Ground. Test points on the transformer pins are highlighted with red lines, see picture 91. Voltage drop value should be in the range from 0,34V to 0,45V. Voltage drop measurement method is described on page 7.



Picture 91

Check voltage drop value between Ethernet transformers TR2500, TR2501, TR2600, TR2601, TR2700, TR2701 pins and Ground. Test points you can see in the picture 92. The voltage drop of the TR2500, TR2501, TR2600, TR2601 and TR2700 transformers should be in the range from 0,10V to 0,20V and the voltage drop of the TR2701 transformer should be in the range from 0,35V to 0,45V. Voltage drop measurement method is described on page 7.



Picture 92

CLOUD ROUTER SWITCH 504 SERIES ROUTERBOARD

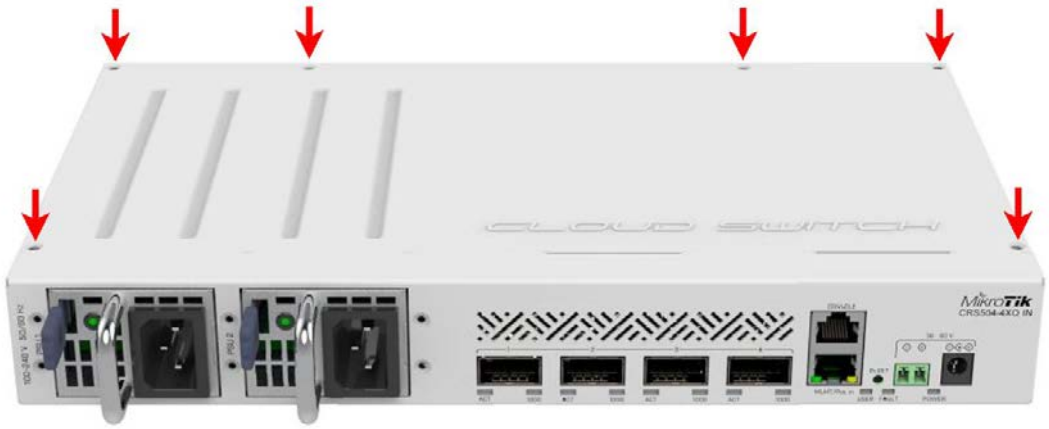
CRS504-4XQ-IN

Picture 93

Disassembling information

Step 1:

Using Phillips PH2 screwdriver unscrew 6 screws and remove the cover. Location of the screws is shown the picture 94.



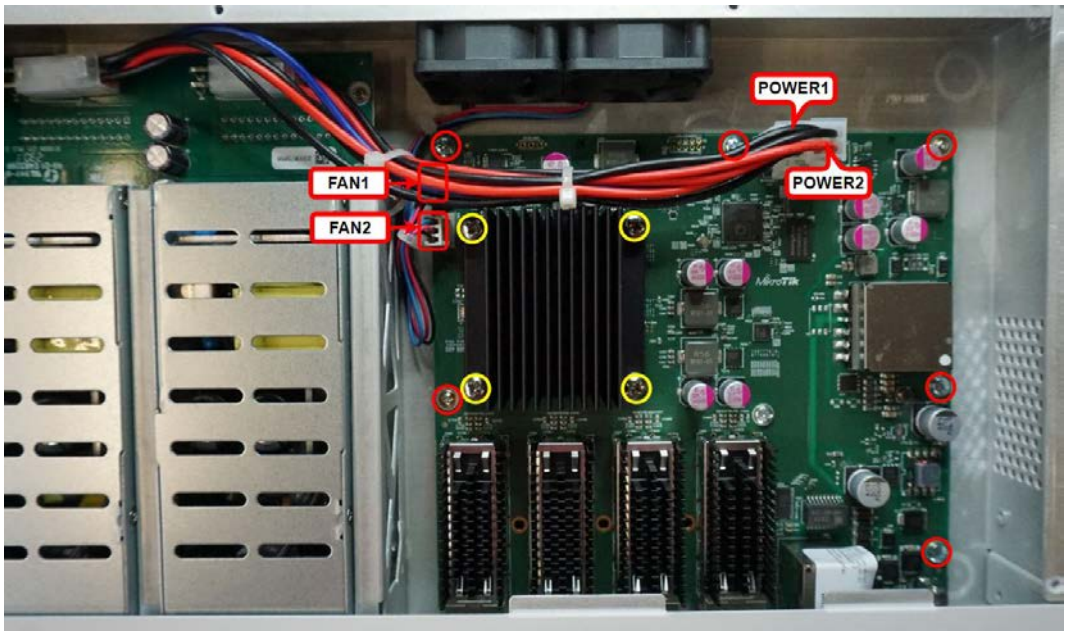
Picture 94

Step 2:

Disconnect the fan and power cables, see picture 95.

Step 3:

Using Phillips PH1 screwdriver unscrew 6 screws marked in red, than using Phillips PH2 screwdriver unscrew 4 screws marked in yellow and carefully remove the PCB from the case. Location of the screws is shown the picture 95.



Picture 95

Instructions for checking overvoltage

Checking Schottky diodes

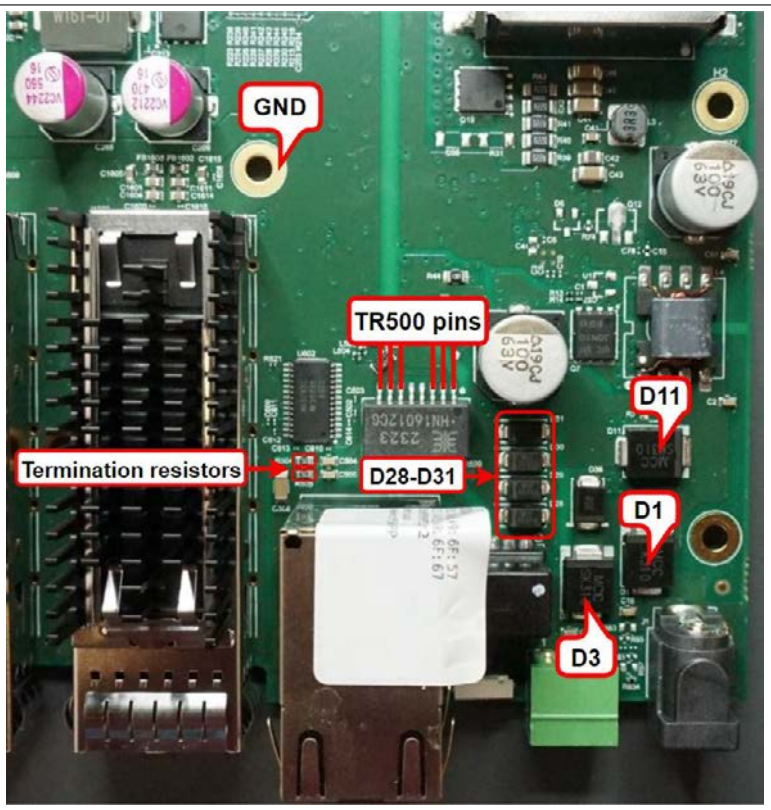
Check Schottky diodes D1, D3, D11, D28, D29, D30, D31, D32, D33, D34, D35. Location of the diodes is shown the picture 96 and 97. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

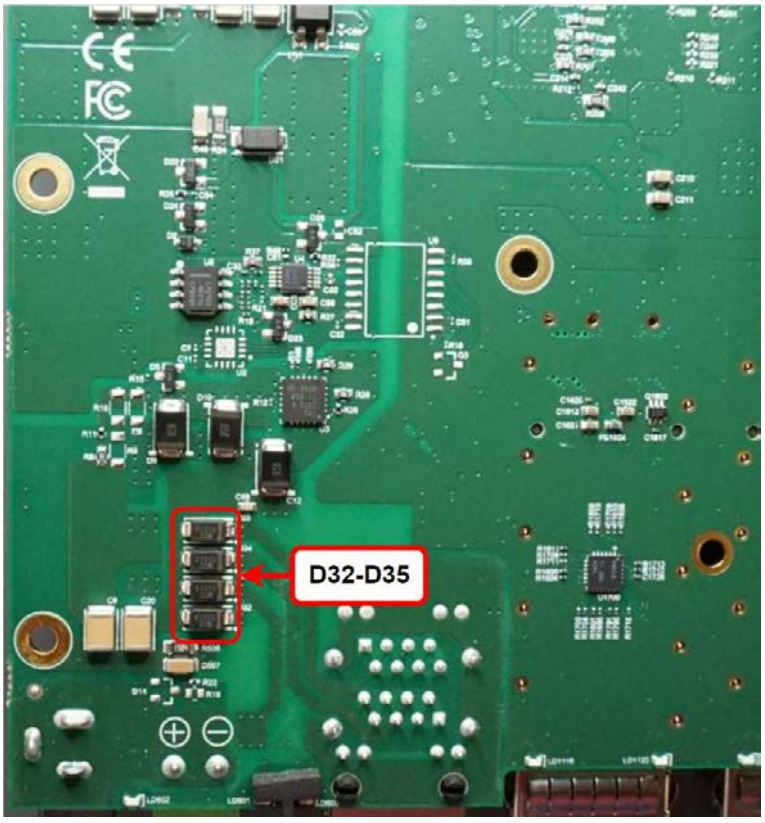
Check voltage drop value between Ethernet transformer TR500 pins and Ground. Test points on the transformer pins are marked with red lines, see picture 96. Voltage drop value should be in the range from 0,37V to 0,40V. Voltage drop measurement method is described on page 7.

Checking 75 Ohm termination resistors resistance

Check value of termination resistors R504 and R505. The resistance value should be 75 Ohms +/- 1%. Location of the termination resistors is shown in the picture 96.



Picture 96



Picture 97

CLOUD ROUTER SWITCH 510 SERIES ROUTERBOARD

CRS510-8XS-2XQ-IN

Picture 98

Disassembling information

Step 1:

Using Phillips PH2 screwdriver unscrew 6 screws and remove the cover. Location of the screws is shown the picture 99.

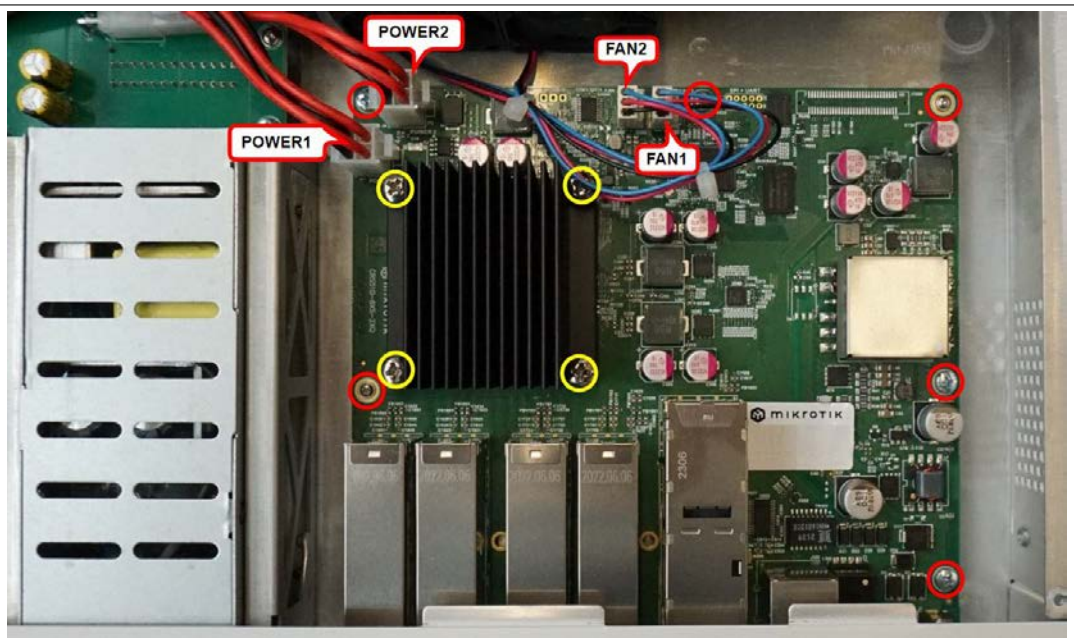
Picture 99

Step 2:

Disconnect the fan and power cables, see picture 100.

Step 3:

Using Phillips PH1 screwdriver unscrew 6 screws marked in red, than using Phillips PH2 screwdriver unscrew 4 screws marked in yellow and carefully remove the PCB from the case. Location of the screws is shown the picture 100.



Picture 100

Instructions for checking overvoltage

Checking Schottky diodes

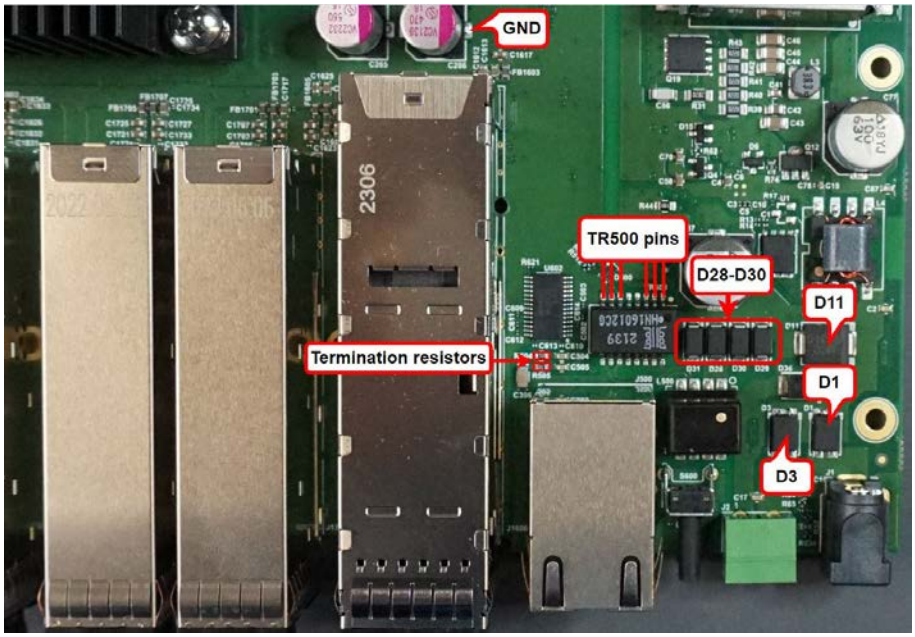
Check Schottky diodes D1, D3, D11, D28, D29, D30, D31, D32, D33, D34, D35. Location of the diodes is shown the picture 101 and 102. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

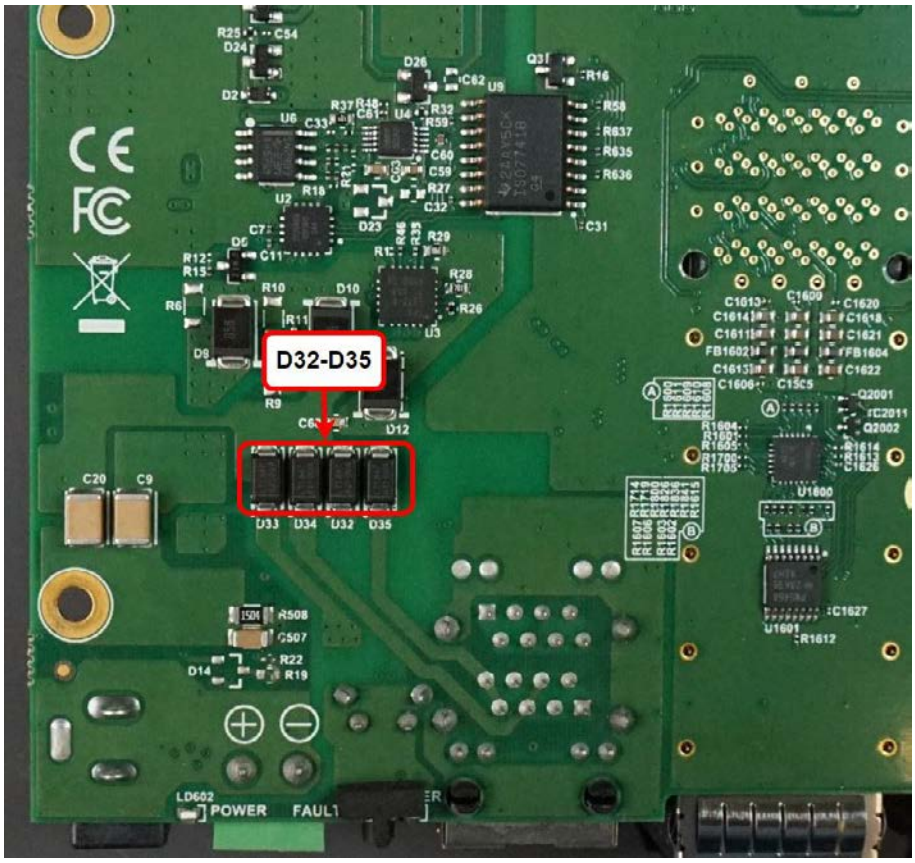
Check voltage drop value between Ethernet transformer TR500, pins and Ground (Ground test point is shown in the picture 102 and 101). Test points on the transformer pins are marked with red lines, see picture 101. Voltage drop value should be in the range from 0,37V to 0,40V. Voltage drop measurement method is described on page 7.

Checking 75 Ohm termination resistors resistance

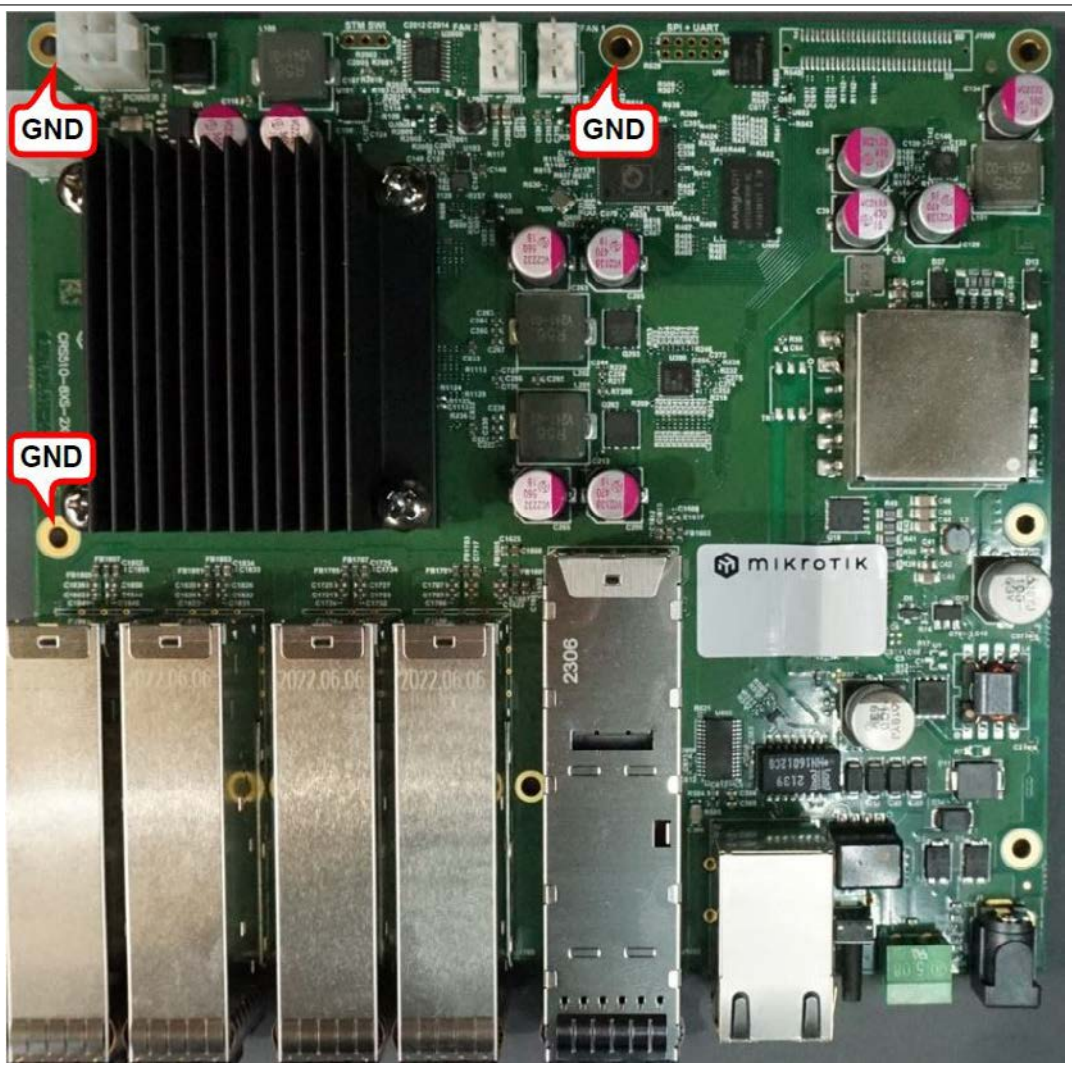
Check value of termination resistors R504 and R505. The resistance value should be 75 Ohms +/- 1%. Location of the termination resistors is shown in the picture 101.



Picture 101



Picture 102



Picture 103

CLOUD ROUTER SWITCH 520 SERIES ROUTERBOARD

CRS520-4XS-16XQ-RM

Picture 104

Disassembling information

Using Phillips PH2 screwdriver unscrew 10 screws and remove the cover. Location of the screws is shown the picture 105.

Picture 105

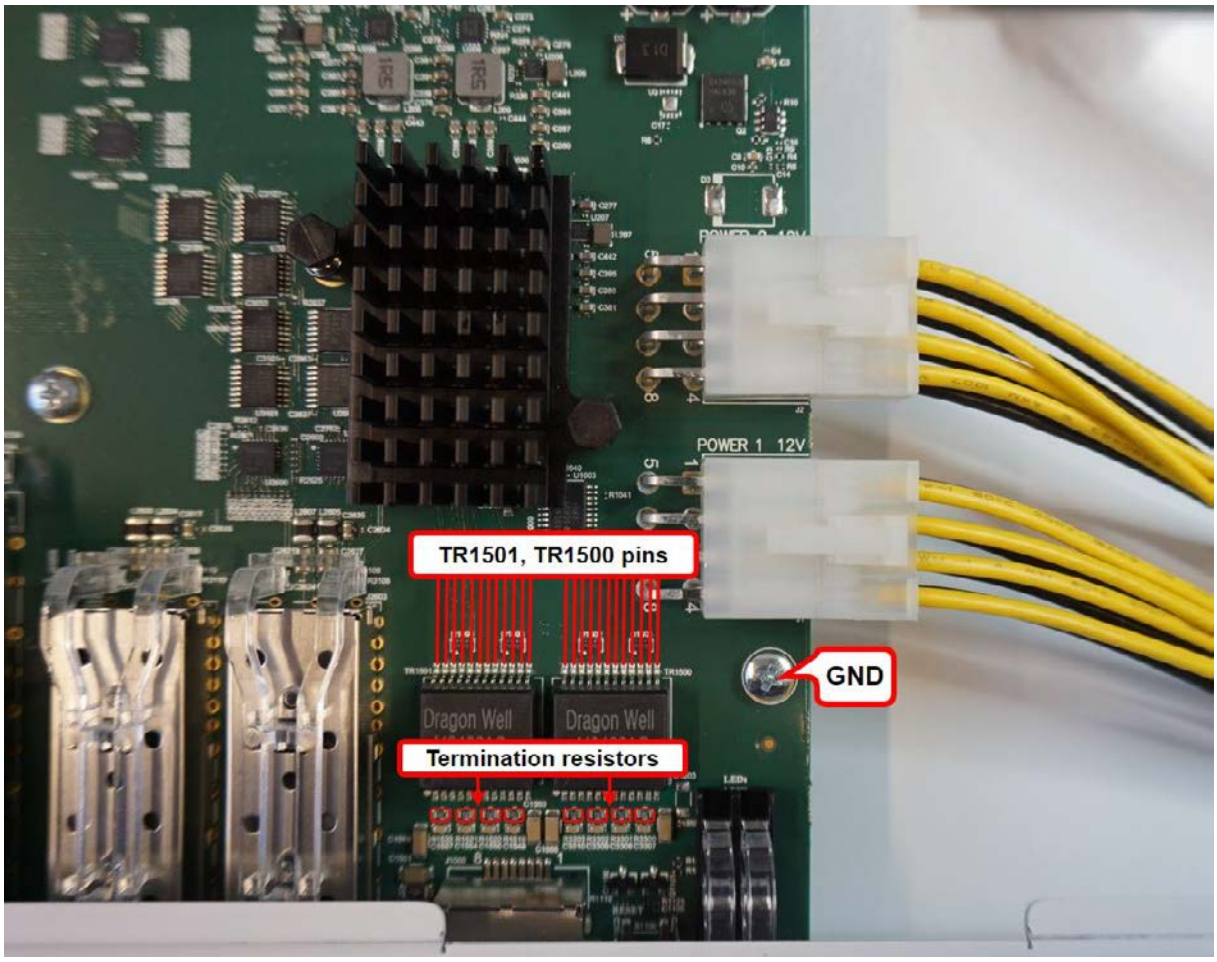
Instructions for checking overvoltage

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformers TR1500, TR1501 pins and Ground. Test points on the transformer pins are marked with red lines, see picture 106. Voltage drop value should be in the range from 0,42V to 0,47V. Voltage drop measurement method is described on page 7.

Checking 75 Ohm termination resistors resistance

Check value of each termination resistor. The resistance value should be 75 Ohms +/- 1%. Location of the termination resistors is shown in the picture 106.



Picture 106

260 SERIES ROUTERBOARDS

RB260GS

Picture 107

Dissasembling information

Disassembly method of the board is the same as the RB260GSP board. Disassembly method is described on page 84.

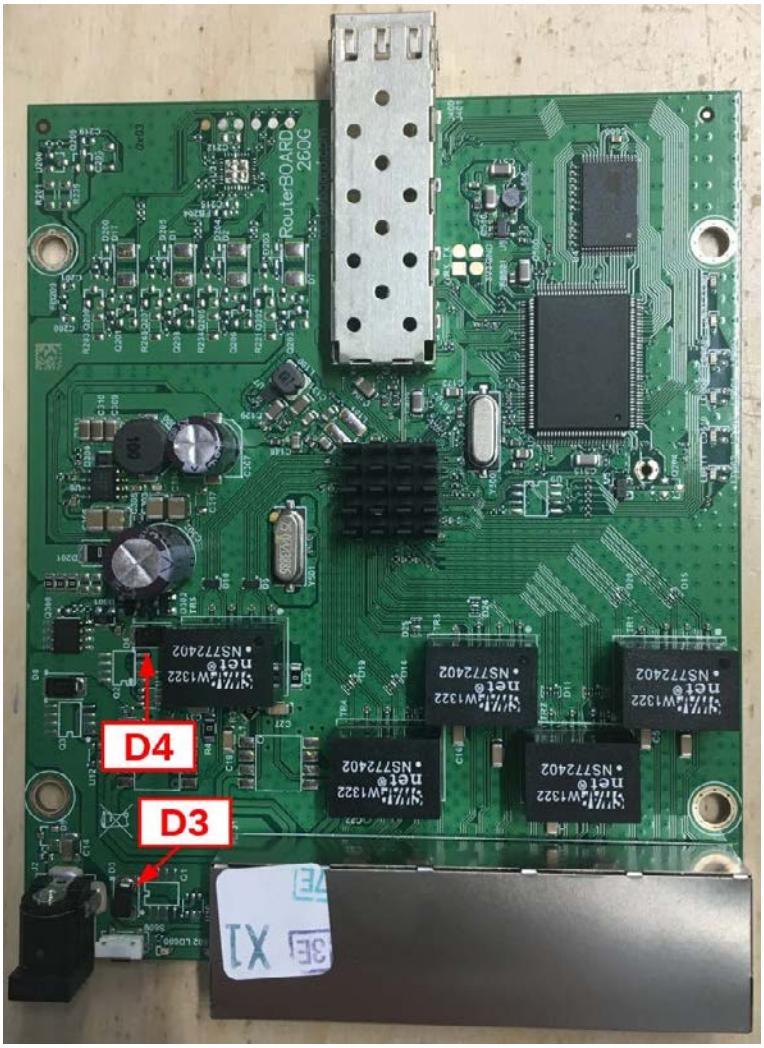
Instructions for checking overvoltage

Checking Schottky diodes

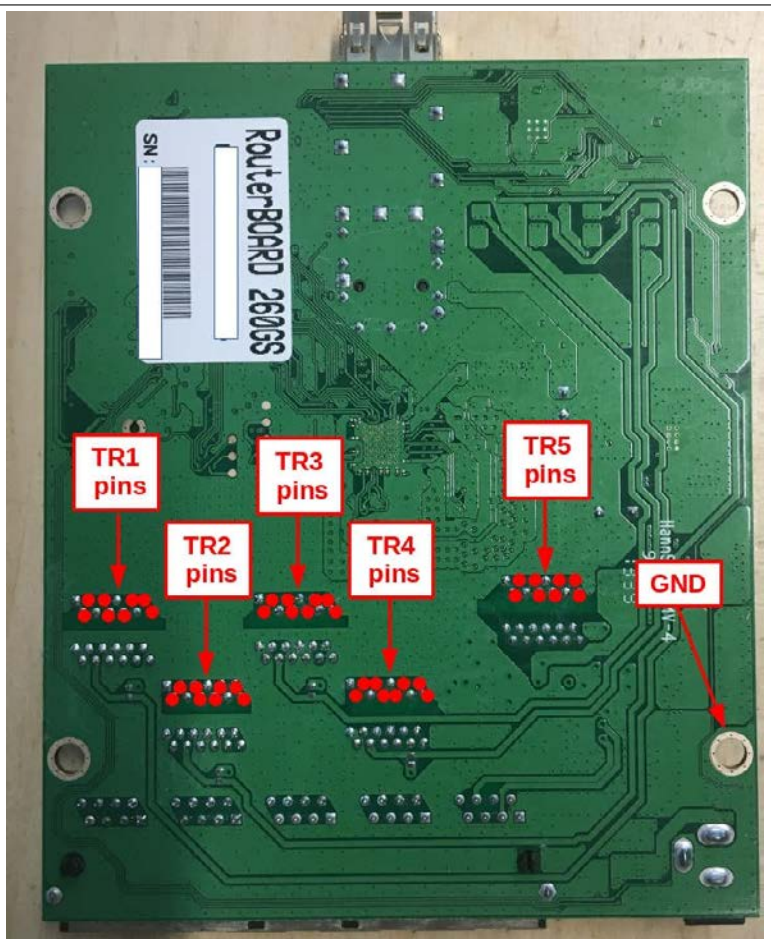
Check Schottky diodes D3, D4. Location of diodes on the board you can see in the picture 108. Schottky diodes quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformers TR1-TR5 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 109. Voltage drop value should be in the range from 0,44V to 0,48V. Voltage drop measurement method is described on page 7.

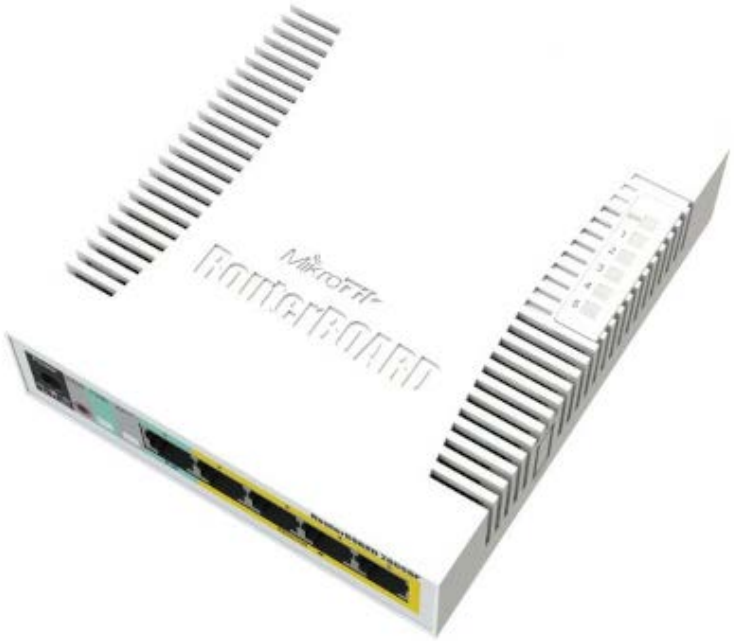


Picture 108


RouterBOARD 260GS
SN:
TR1 pins
TR2 pins
TR3 pins
TR4 pins
TR5 pins
GND

Picture 109

RB260GSP



Picture 110

Dissasembling information

Step 1:
Take off case back sticker as shown in the picture 111.

Picture 111

Step 2:
Take off the cover with a screwdriver as shown in the pictures 112 - 115.

Picture 112

Picture 113

Picture 114

Picture 115

Step 3:
Take out the board as shown in the picture 116.

Picture 116

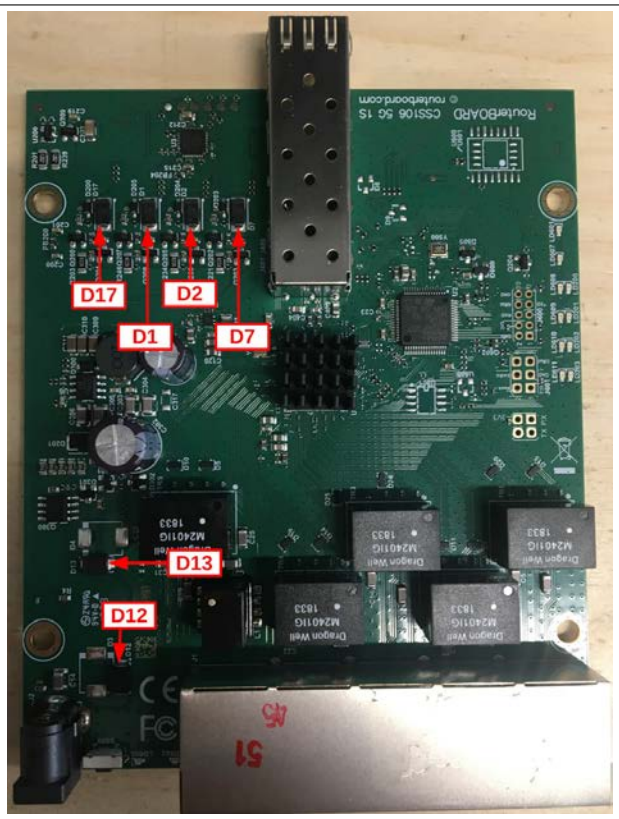
Instructions for checking overvoltage

Checking Schottky diodes

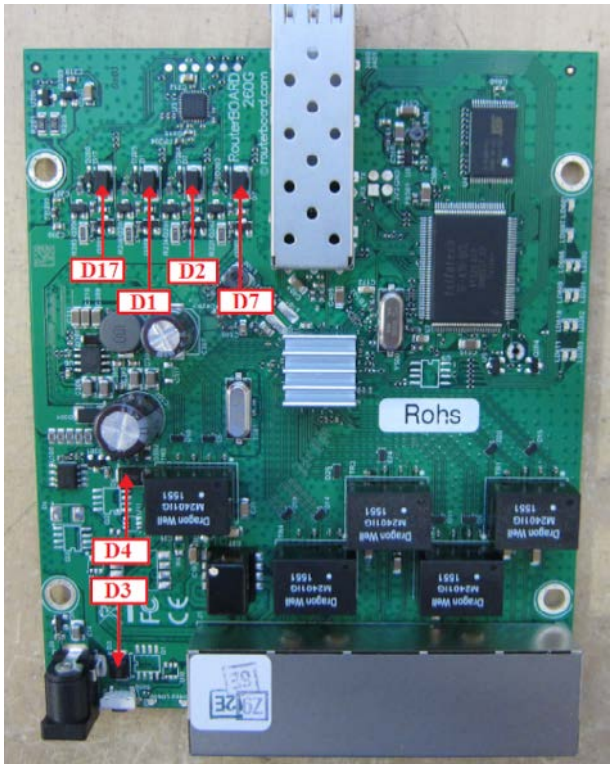
Check Schottky diodes D1-D4, D7, D17. Location of diodes on the board you can see in the picture 118. Schottky diodes quality measurement method is described on page 4.
Some boards may have different PCB layout. If the board does not correspond the PCB in picture 118, then check Schottky diodes D1, D2, D7, D12, D13, D17. Location of diodes on the board you can see in the picture 117. Schottky diodes quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

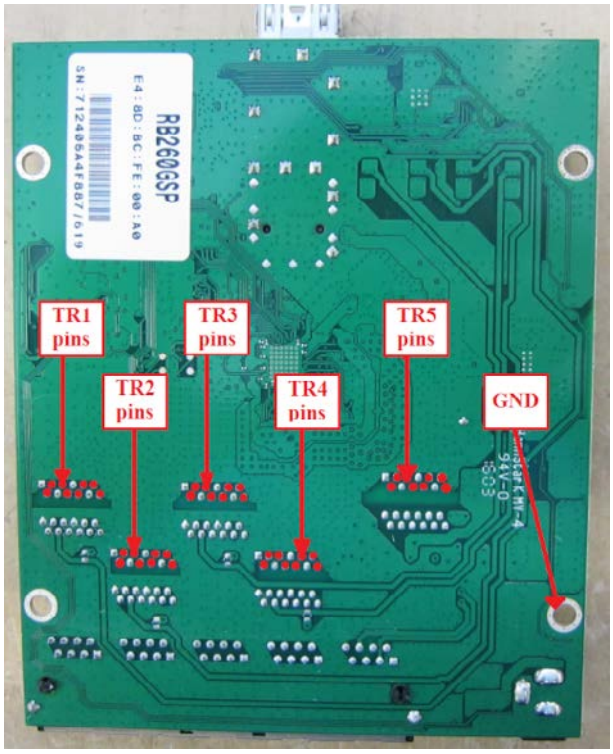
Check voltage drop value between Ethernet transformers TR1-TR5 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 119.
Voltage drop value should be in the range from 0,44V to 0,48V. Voltage drop measurement method is described on page 7.



Picture 117



Picture 118



Picture 119

RB260GS (r2) (CSS106-5G-1S)

Picture 120

Dissasembling information

Disassembly method of the board is the same as the RB260GSP board. Disassembly method is described on page 84.

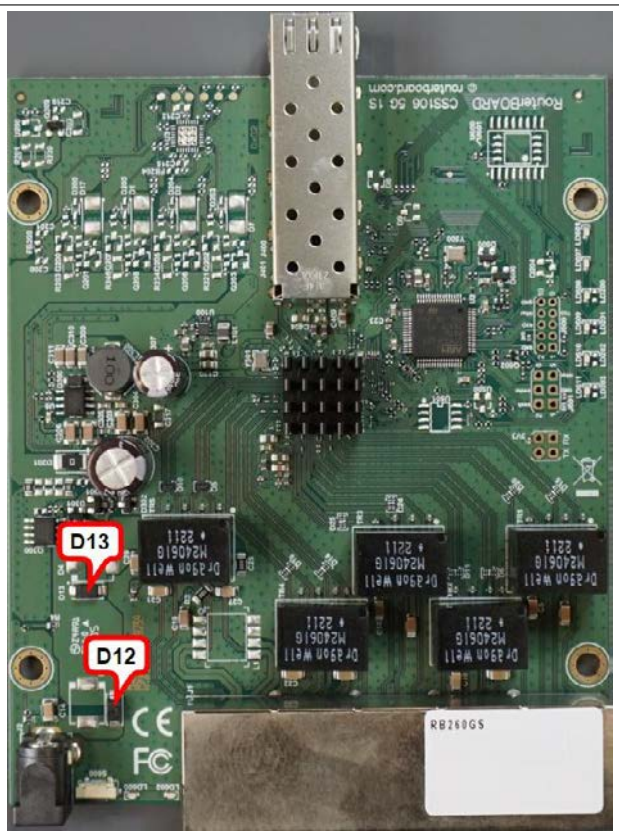
Instructions for checking overvoltage

Checking Schottky diodes

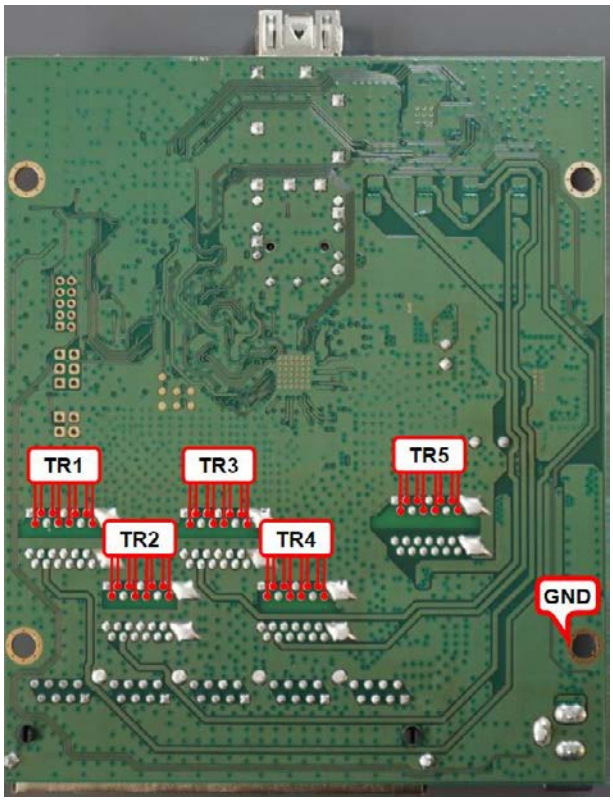
Check Schottky diodes D12 and D13. Location of diodes on the board you can see in the picture 121. Schottky diodes quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformers TR1-TR5 pins and Ground. Test points on the transformer pins are highlighted with red lines, see picture 125. Voltage drop value should be in the range from 0,40V to 0,45V. Voltage drop measurement method is described on page 7.



Picture 121



Picture 122

RB260GSP (r2) (CSS106-5G-1S)

Picture 123

Dissasembling information

Disassembly method of the board is the same as the RB260GSP board. Disassembly method is described on page 84.

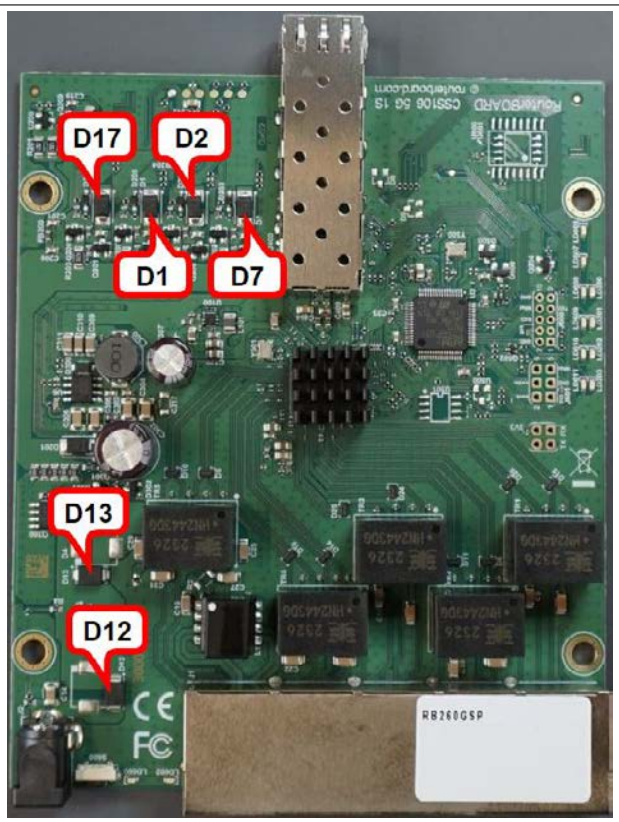
Instructions for checking overvoltage

Checking Schottky diodes

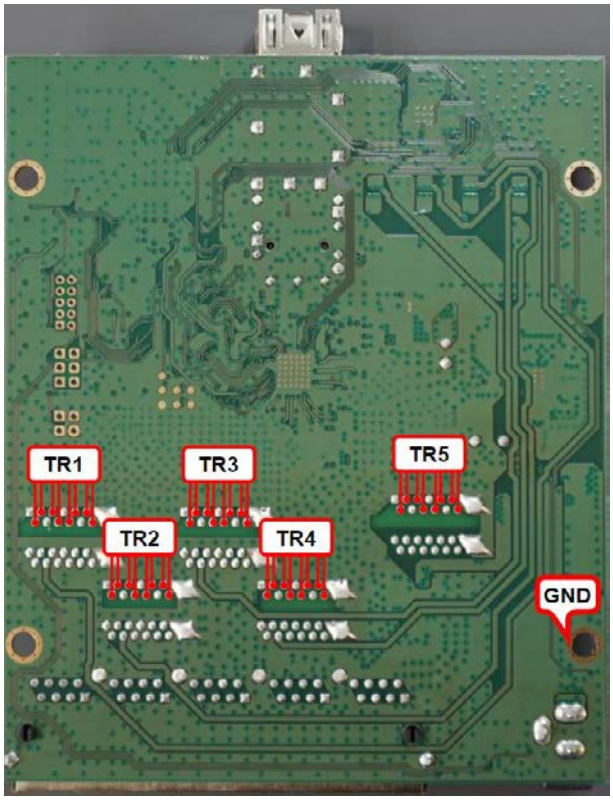
Check Schottky diodes D1, D2, D7, D12, D13, D17. Location of diodes on the board you can see in the picture 124. Schottky diodes quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformers TR1-TR5 pins and Ground. Test points on the transformer pins are highlighted with red lines, see picture 125. Voltage drop value should be in the range from 0,40V to 0,45V. Voltage drop measurement method is described on page 7.



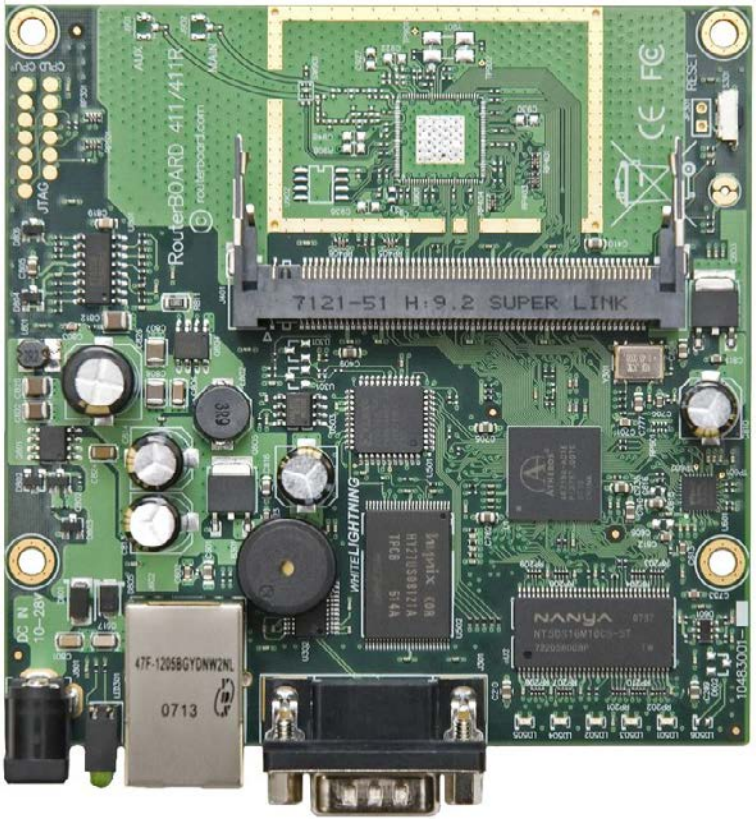
Picture 124



Picture 125

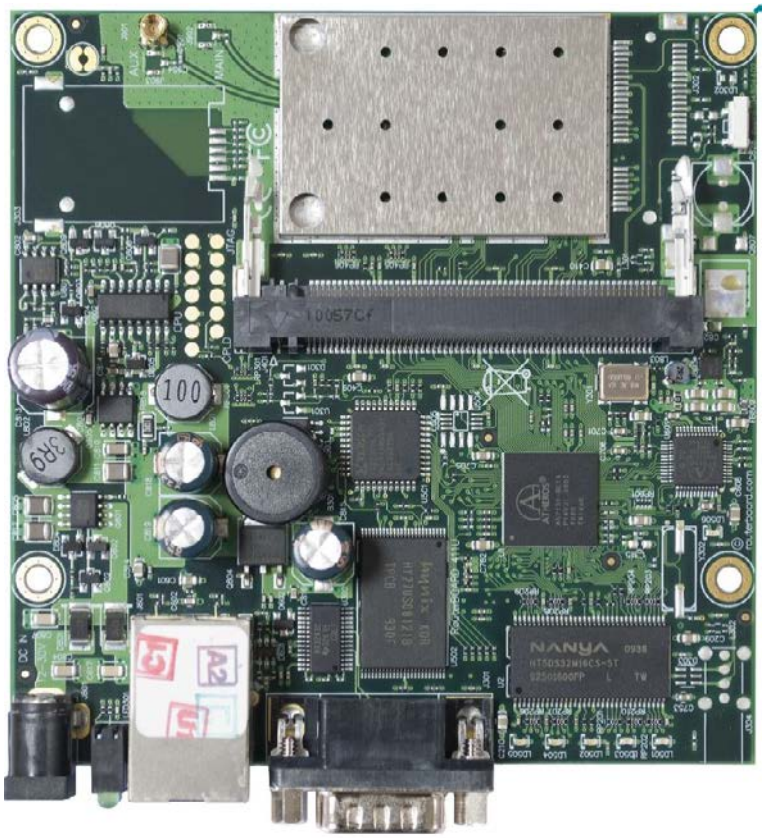
411 SERIES ROUTERBOARDS

RB411AH



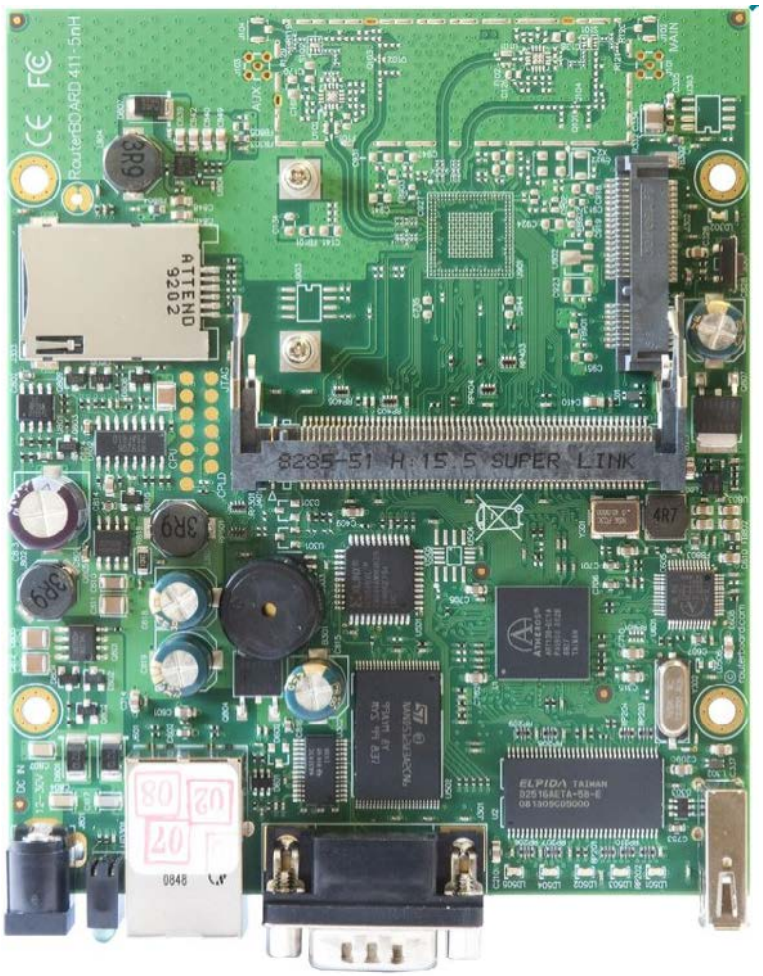
Picture 126

RB411AR



Picture 127

RB411U



Picture 128

Instructions for checking overvoltage

Checking Schottky diodes

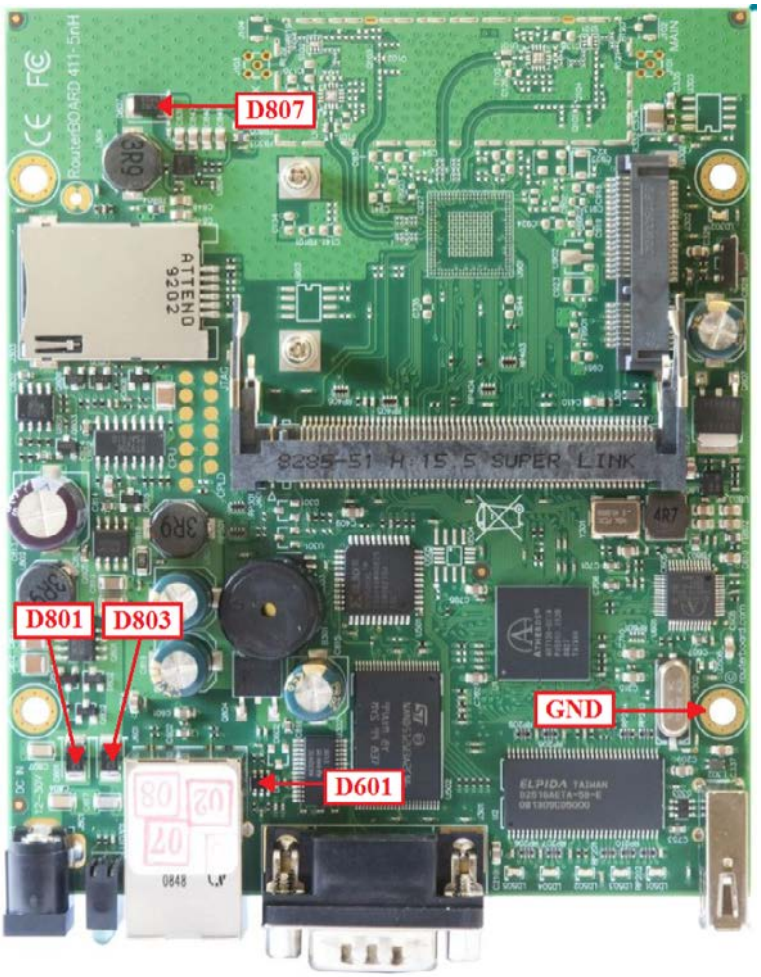
Check Schottky diodes D801, D803. For RB411U you should also check Schottky diode D807. Location of diodes on the board you can see in the picture 129. Schottky diodes quality measurement method is described on page 4.

Checking voltage drop value between diode array pin1 pins and GND

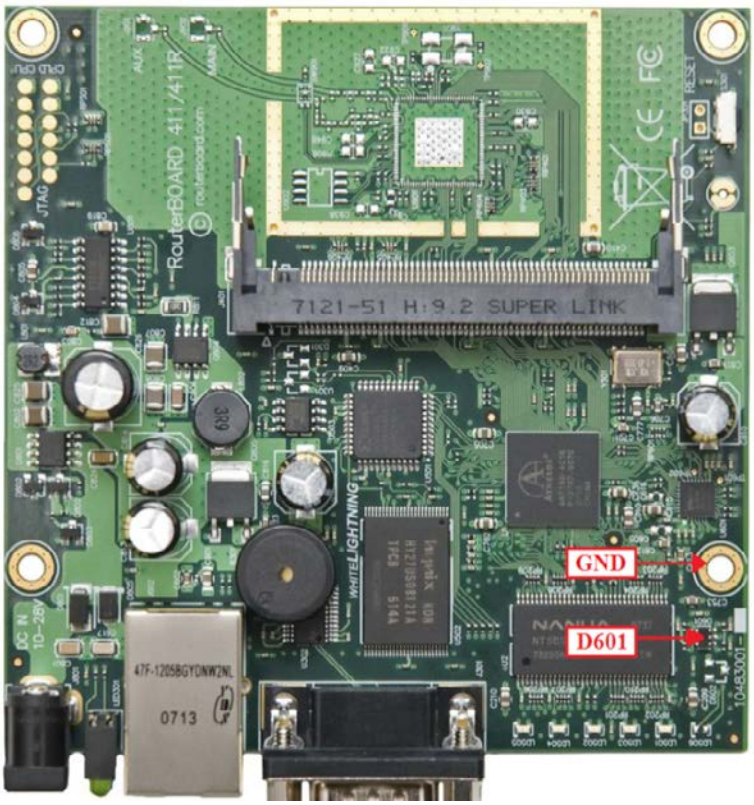
Check voltage drop value between diode array D601 pin1 and Ground. Location of diode array on the boards RB411U, RB411AR you can see in the picture 129, but for RB411AH in the picture 130.
Voltage drop value should be in the range from 0,4V to 0,44V for all mentioned board types. Voltage drop measurement method is described on page 6.

Checking termination resistors in RJ-45 connector

Check termination resistors resistance in J601 connector.
Resistance value between Rx and Tx line must be 150 Ohm +/-4%. Measurement method is described on page 8.

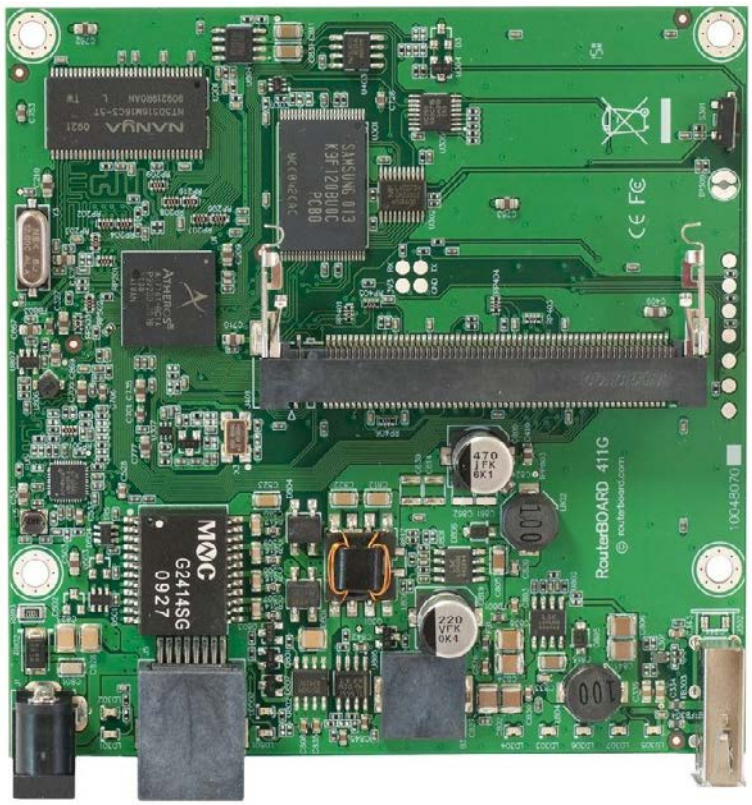


Picture 129



Picture 130

RB411GL



Picture 131

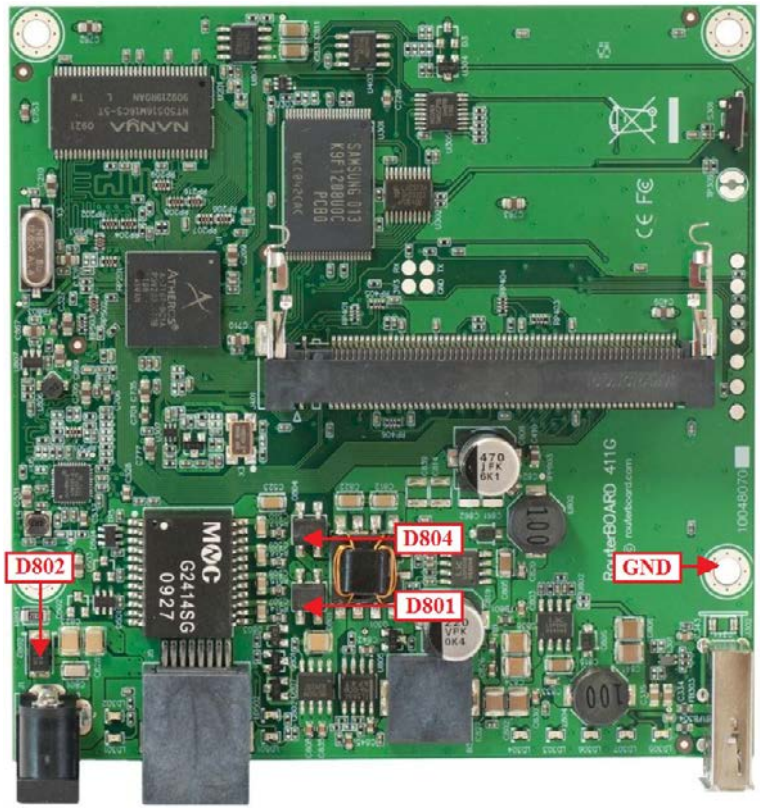
Instructions for checking overvoltage

Checking Schottky diodes and diode bridge

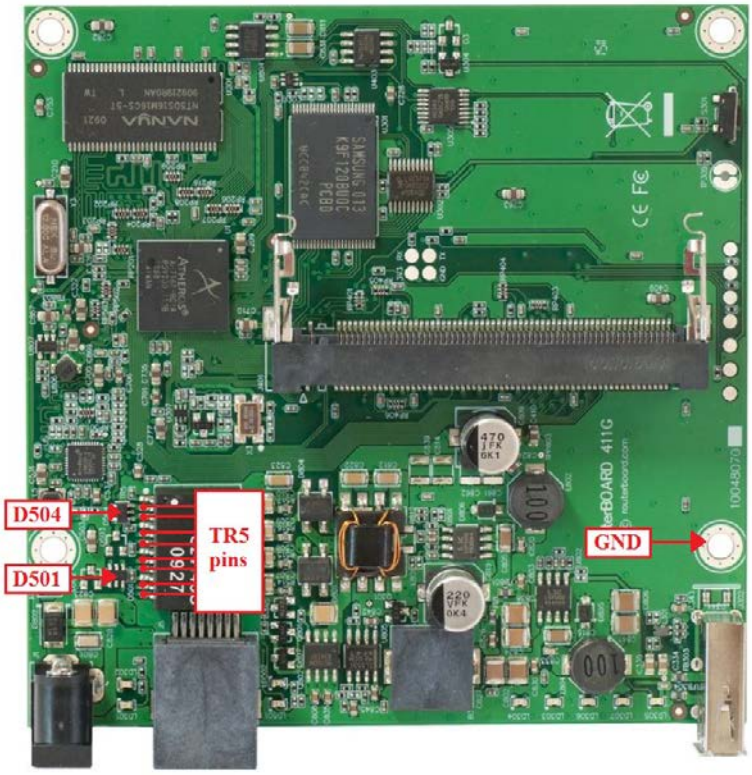
Check Schottky diode D802 and diodes bridges D801, D804. Location of diodes on the board you can see in the picture 132. Diodes quality measurement method is described on page 4.

Checking voltage drop value between diode array pin#1 and Ground

Check voltage drop value between diode arrays D501, D504 pin#1 and Ground or check voltage drop value between Ethernet transformer TR5 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 133. Voltage drop value between diode arrays D501, D504 pin#1 and Ground as well as on the transformer TR5 pins and Ground should be in the range from 0,38V to 0,45V. Voltage drop measurement method is described on page 6.

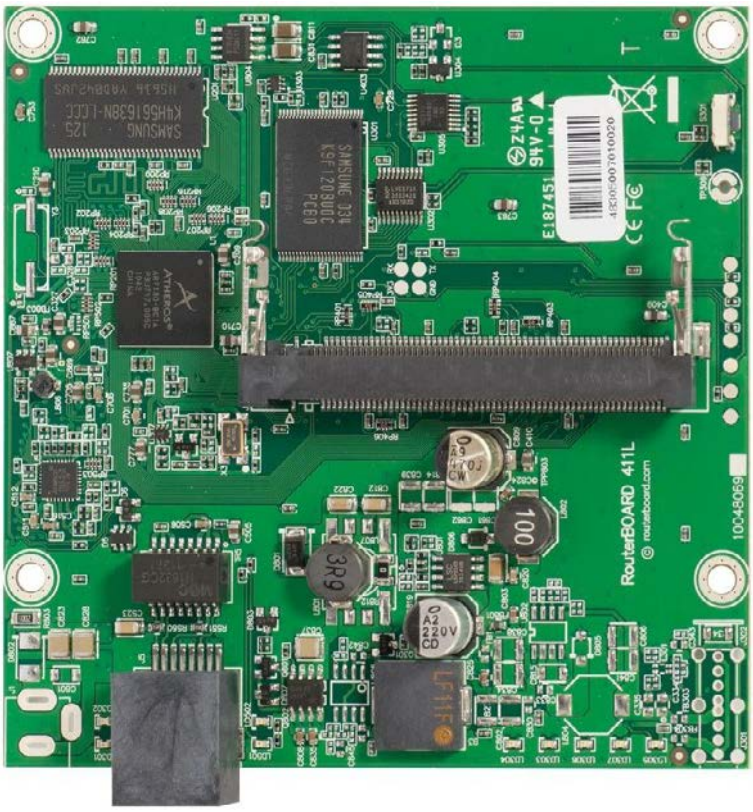


Picture 132



Picture 133

RB411L



Picture 134

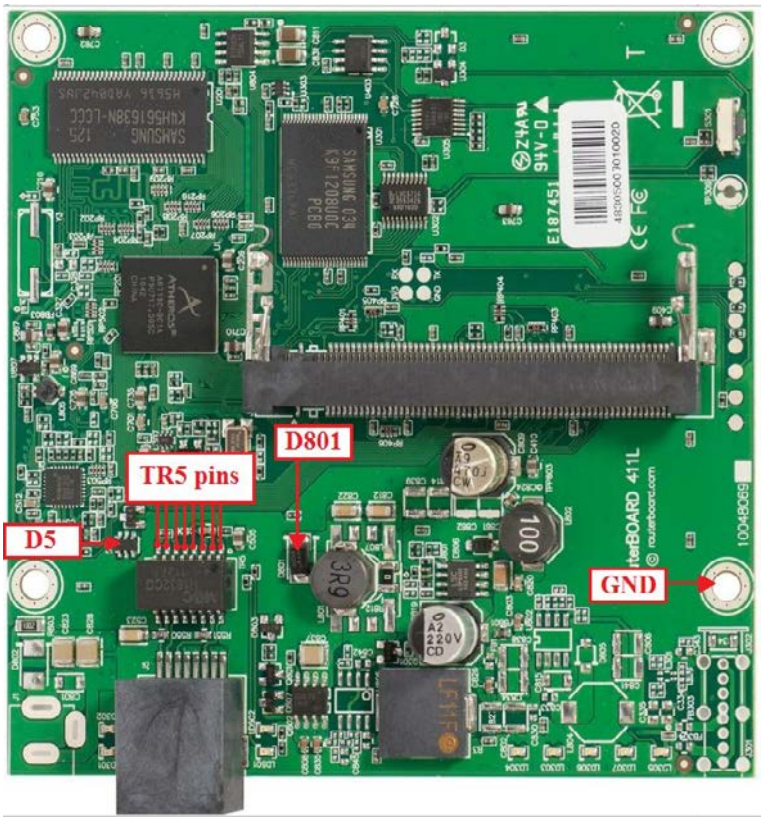
Instructions for checking overvoltage

Checking Schottky diodes and diode bridge

Check Schottky diode D801. Location of diode on the board you can see in the picture 135. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between diode array pin#1 and Ground

Check voltage drop value between diode array D5 pin#1 and Ground or check voltage drop value between transformer TR5 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 135. Voltage drop value between diode array D5 pin#1 and Ground as well as on the transformer TR5 pins and Ground should be in the range from 0,38V to 0,45V. Voltage drop measurement method is described on page 6.



Picture 135

433 SERIES ROUTERBOARDS

RB433AH

Picture 136

Instructions for checking overvoltage

Checking Schottky diodes and diode bridge

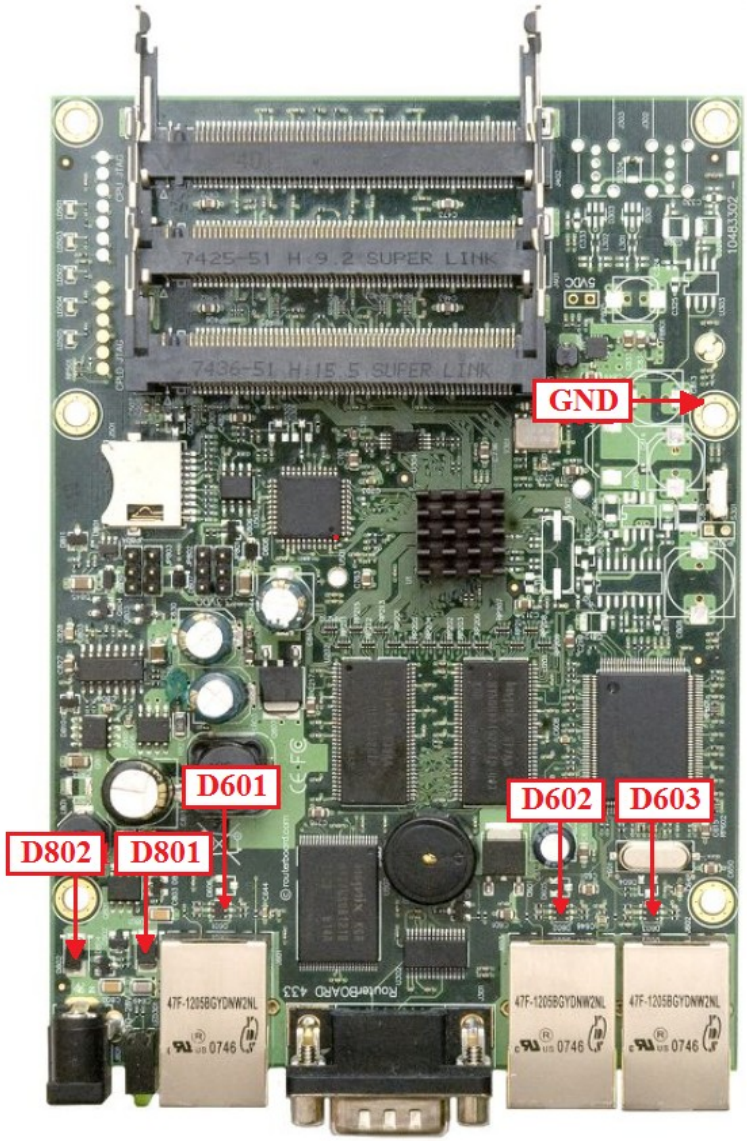
Check Schottky diodes D801, D802. Location of diodes on the board you can see in the picture 137. Diodes quality measurement method is described on page 4.

Checking voltage drop value between diode array pin#1 and Ground

Check voltage drop value between diode arrays D601-D603 pin#1 and Ground. Location of diode arrays on the board you can see in the picture 137. Voltage drop value should be in the range from 0,4V to 0,44V. Voltage drop measurement method is described one page 6.

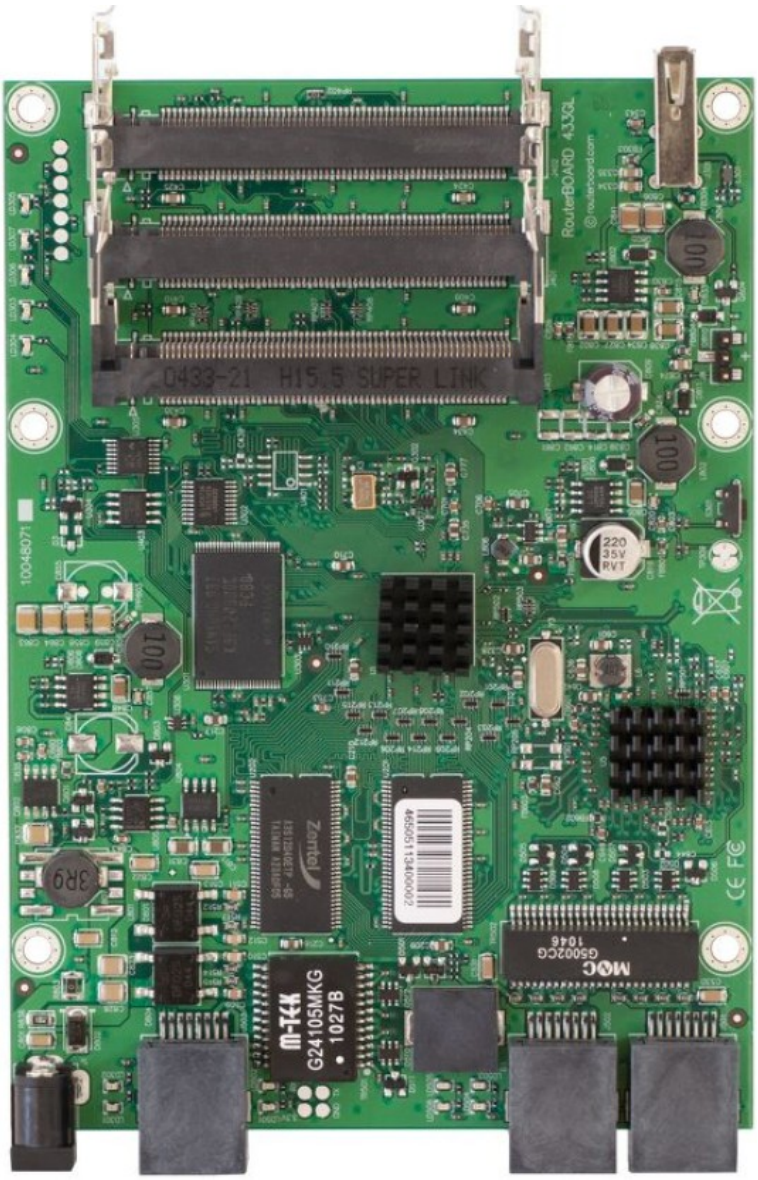
Checking termination resistors resistance in RJ-45 connector

Check termination resistors resistance in each of Ethernet connector J601-J603. Resistance value between Rx and Tx line must be 150 Ohm +/- 4%. Measurement method is described on page 8.



Picture 137

RB433GL



Picture 138

Instructions for checking overvoltage

Checking Schottky diodes and diode bridge

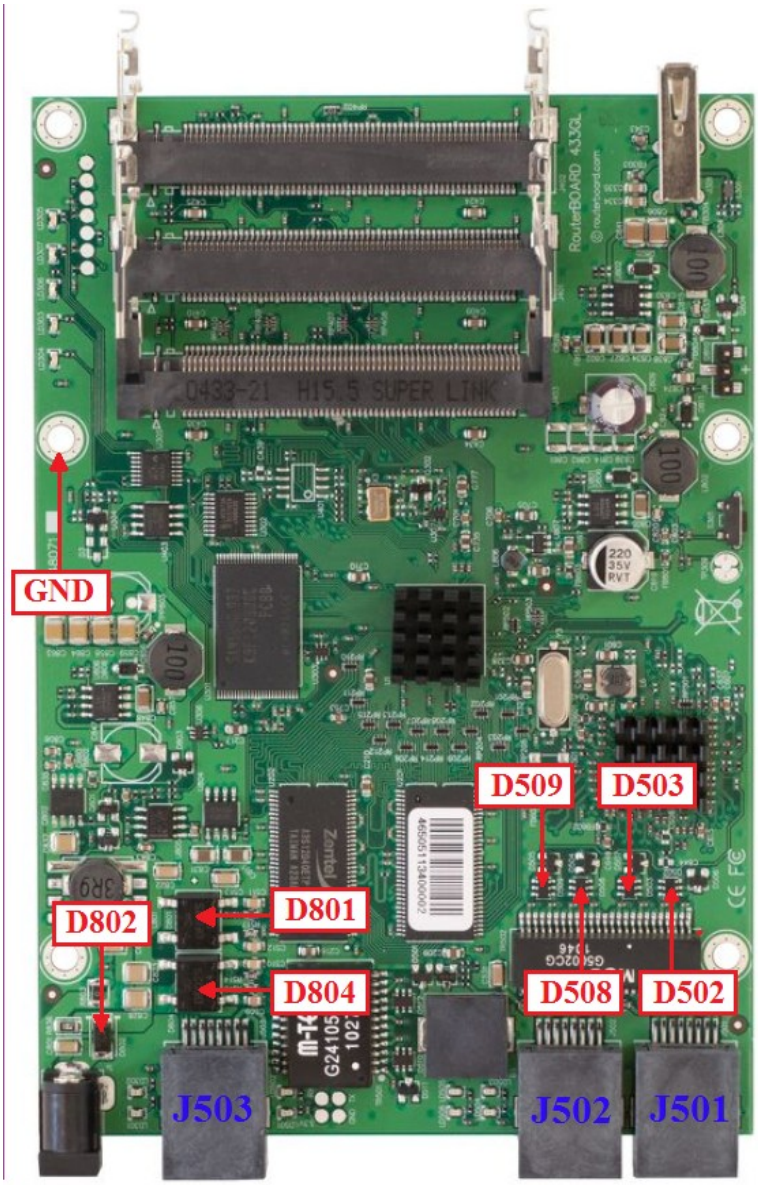
Check Schottky diode D802 and diodes bridges D801, D804. Location of diodes on the board you can see in the picture 139. Diodes quality measurement method is described on page 4.

Checking voltage drop value between diode array pin#1 and Ground

Check voltage drop value between diode arrays D502, D503, D508-D510, D512 pin#1 and Ground. Location of diode arrays on the board you can see in the picture 139. Voltage drop value should be in the range from 0,36V to 0,42V. Voltage drop measurement method is described one page 6.

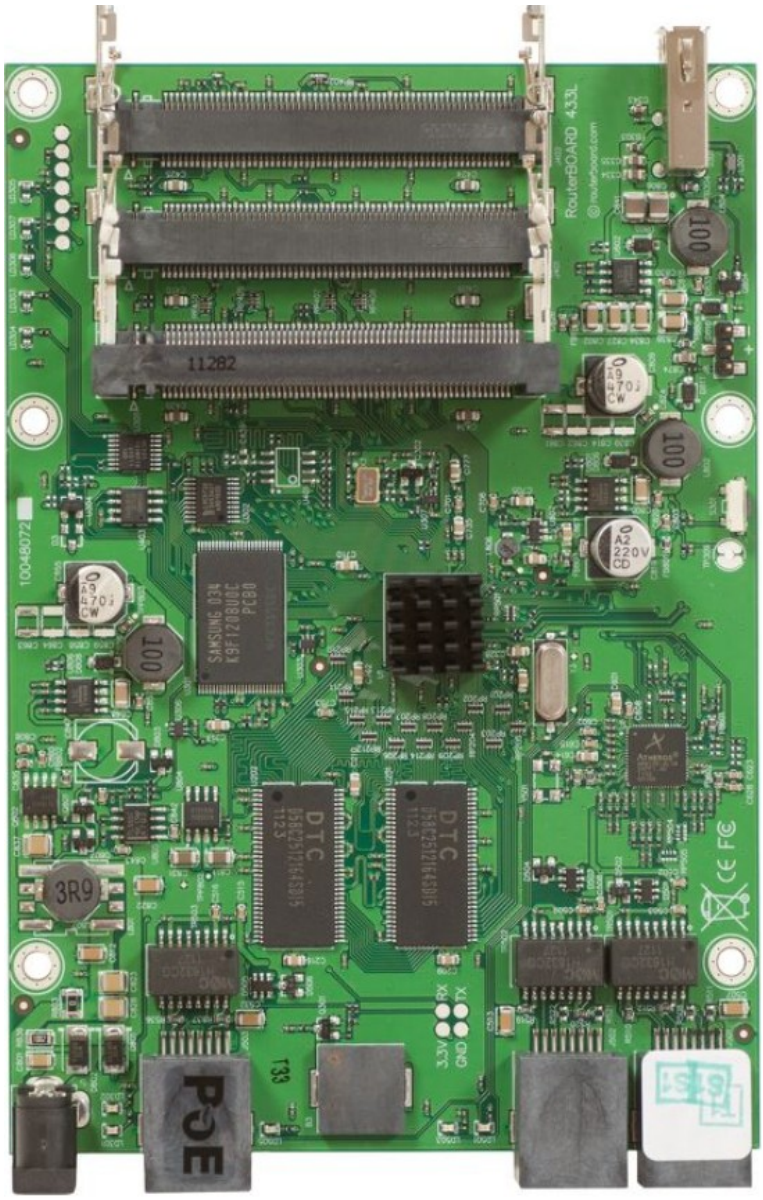
Checking termination resistors resistance in RJ-45 connector

Check termination resistors resistance in J501-J503 connectors. Resistance value between Rx and Tx line must be 150 Ohm +/- 4%. Measurement method is described on page 8.



Picture 139

RB433UL



Picture 140

Instructions for checking overvoltage

Checking Schottky diodes and diode bridge

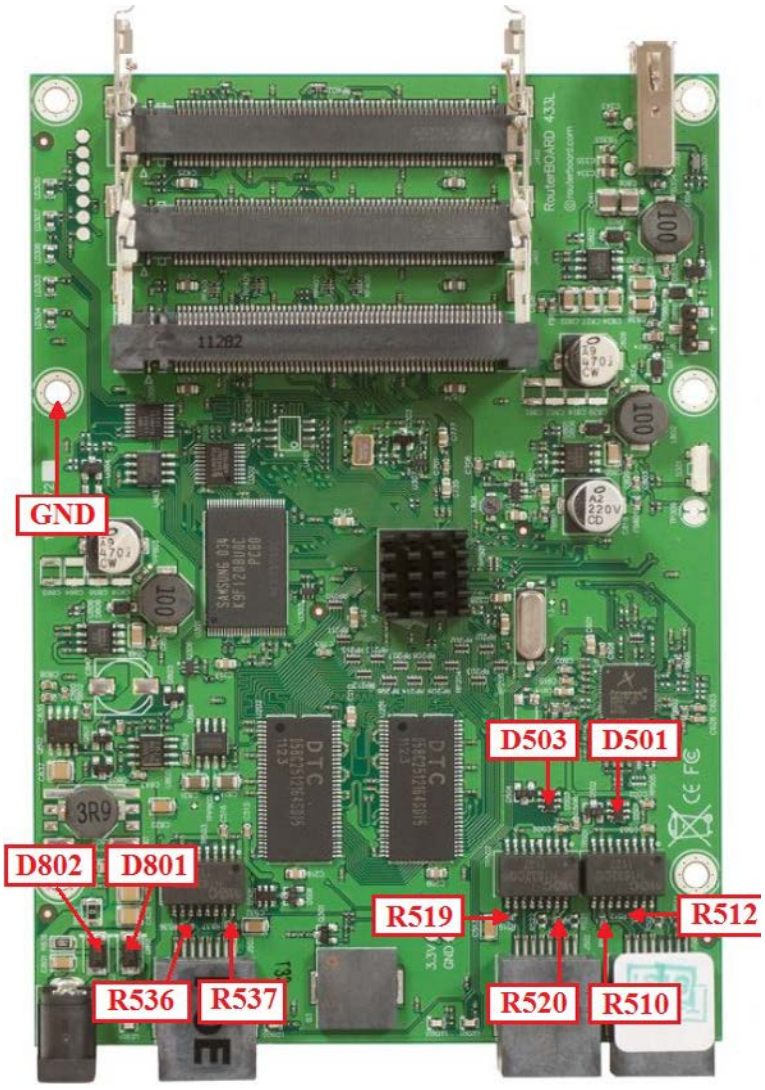
Check Schottky diodes D801, D802. Location of diodes on the board you can see in the picture 141. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between diode array pin#1 and Ground

Check voltage drop value between diode arrays D501, D503, D505 pin#1 and Ground. Location of diode arrays on the board you can see in the picture 141. Voltage drop value should be in the range from 0,32V to 0,36V. Voltage drop measurement method is described on page 6.

Checking 75 Ohm termination resistors resistance

Check resistors R510, R512, R519, R520, R536, R537 resistance value. It should be 75 Ohm +/- 1%. Resistors location on the board you can see in the picture 141.



Picture 141

435 SERIES ROUTERBOARDS

RB435G

Picture 142

Instructions for checking overvoltage

Checking Schottky diodes and diode bridge

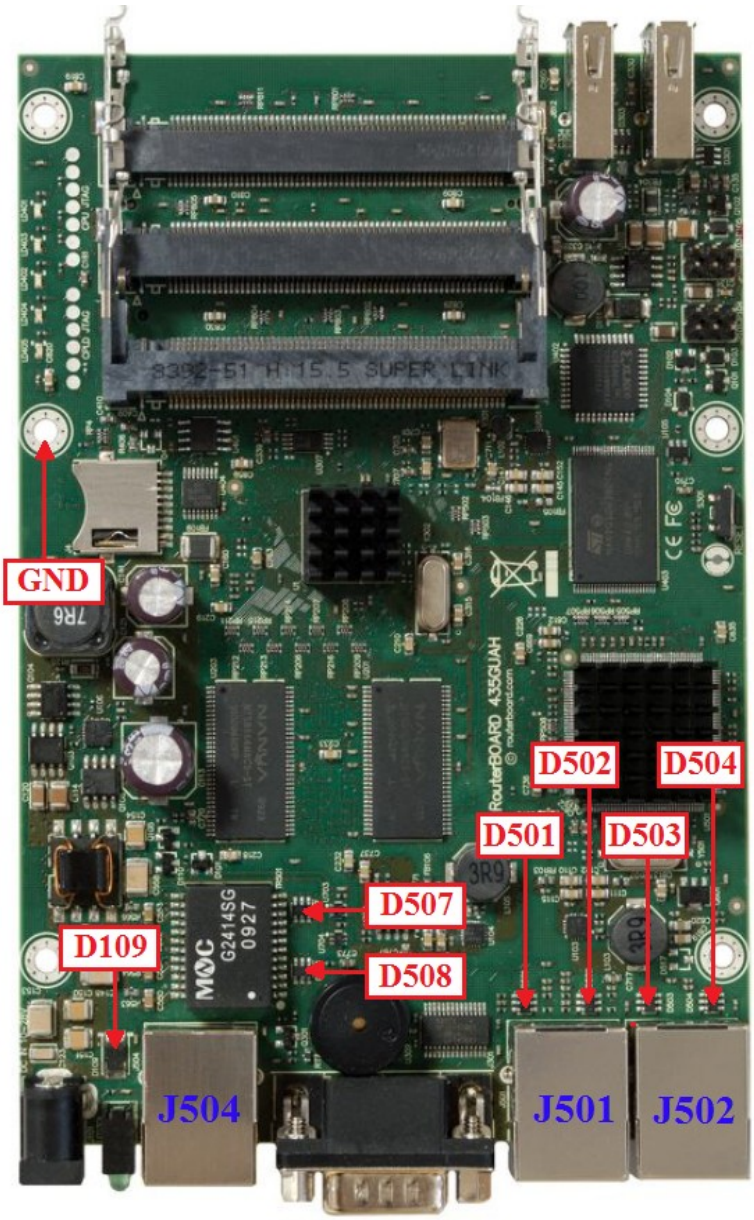
Check Schottky diode D109. Location of diode on the board you can see in the picture 143. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between diode array pin#1 and Ground

Check voltage drop value between diode arrays D501-D504, D507, D508 pin#1 and Ground. Location of diode arrays on the board you can see in the picture 143. Voltage drop value should be in the range from 0,2V to 0,24V. Voltage drop measurement method is described on page 6.

Checking termination resistors resistance in RJ-45 connector

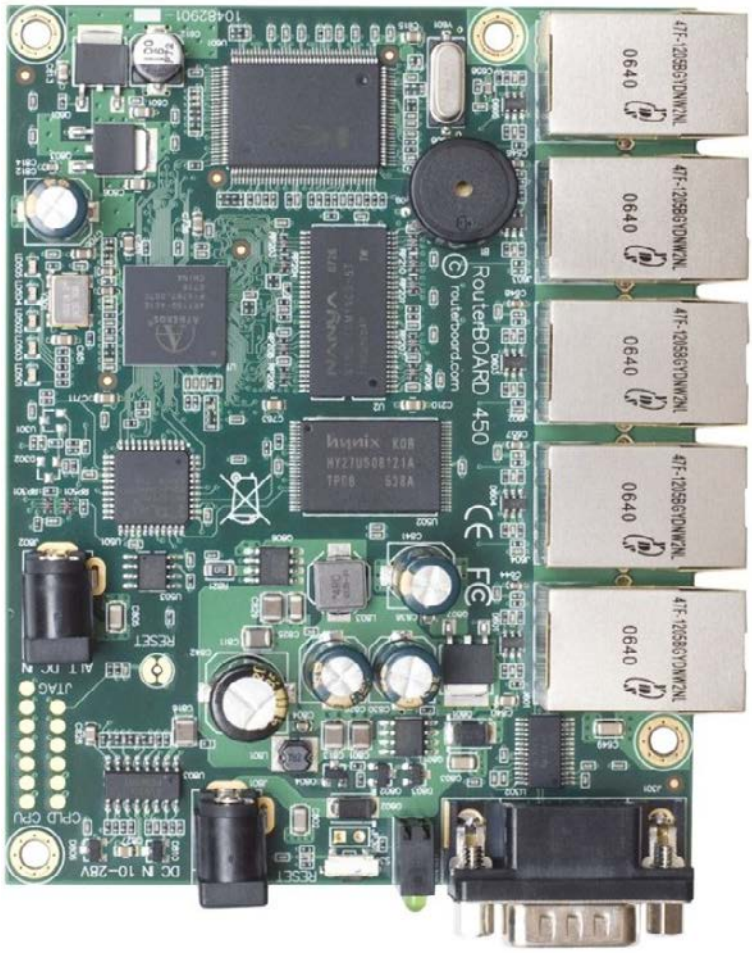
Check termination resistors resistance in J501, J502 connectors. Resistance value between Rx and Tx line must be 150 Ohm +/- 4%. Measurement method is described on page 8.



Picture 143

450 SERIES ROUTERBOARDS

RB450



Picture 144

Instructions for checking overvoltage

Checking Schottky diodes and diode bridge

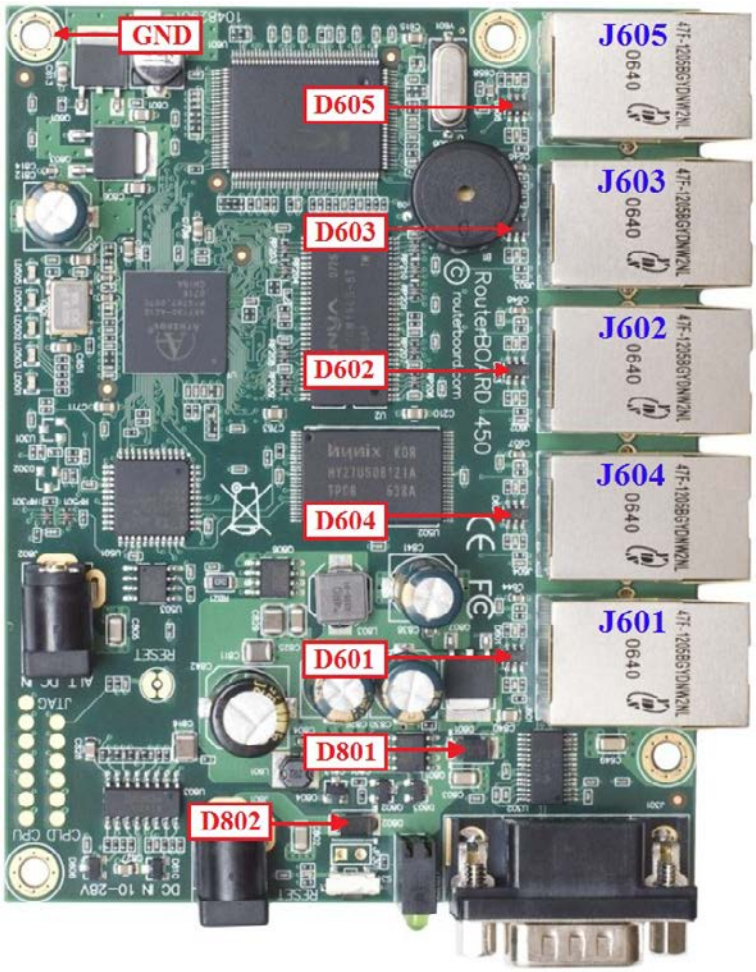
Check Schottky diodes D801, D802. Location of diodes on the board you can see in the picture 145. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between diode array pin#1 and Ground

Check voltage drop value between diode arrays D601-D605 pin#1 and Ground. Location of diode arrays on the board you can see in the picture 145. Voltage drop value should be in the range from 0,4V to 0,44V. Voltage drop measurement method is described on page 6.

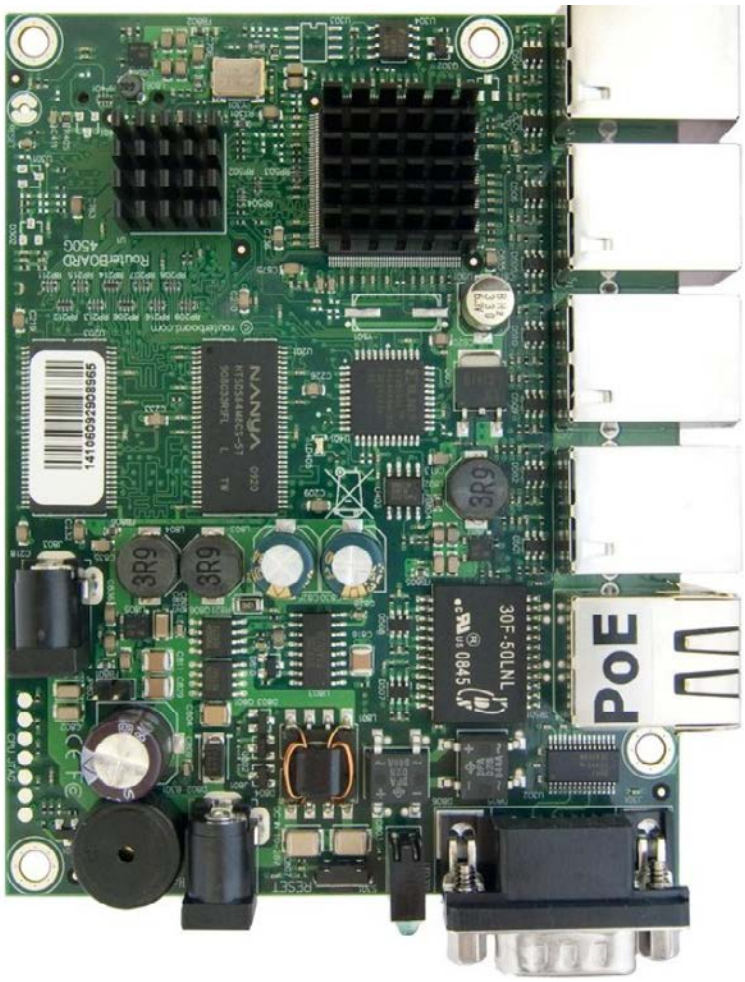
Checking termination resistors resistance in RJ-45 connector

Check termination resistors resistance in J601-J605 connectors. Resistance value between Rx and Tx line must be 150 Ohm +/- 4%. Measurement method is described on page 8.



Picture 145

RB450G



Picture 146

Instructions for checking overvoltage

Checking Schottky diodes and diode bridge

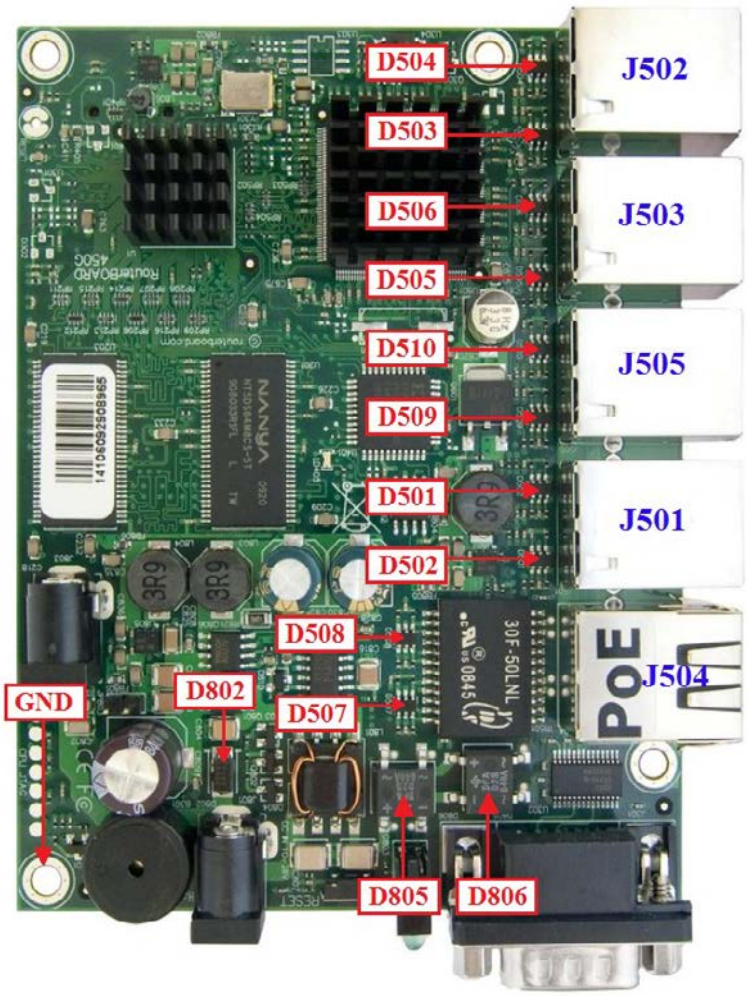
Check Schottky diode D802 and diodes bridges D805, D806. Location of diodes on the board you can see in the picture 147. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between diode array pin#1 and Ground

Check voltage drop value between diode arrays D501-D510 pin#1 and Ground. Location of diode arrays on the board you can see in the picture 147. Voltage drop value should be in the range from 0,2V to 0,26V. Voltage drop measurement method is described on page 6.

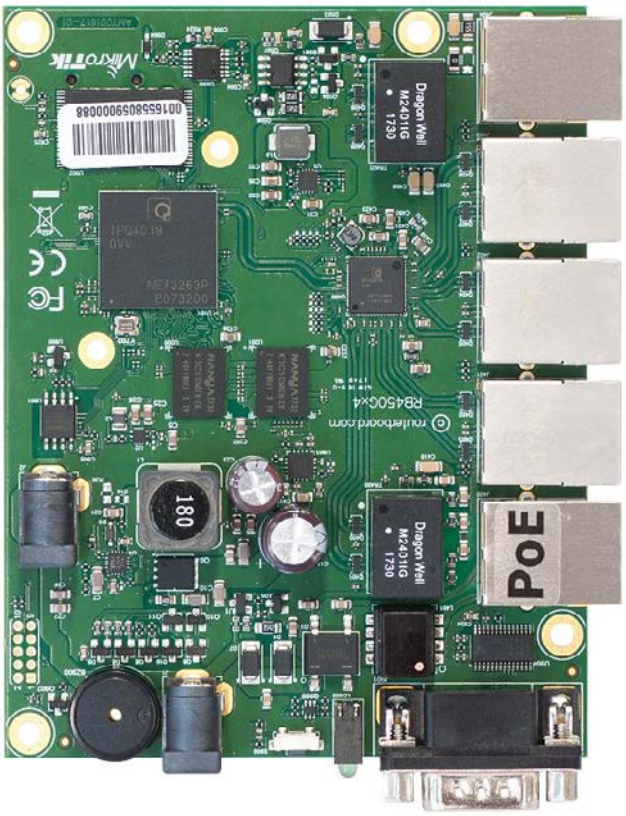
Checking termination resistors resistance in RJ-45 connector

Check termination resistors resistance in J501-J503, J505 connectors. Resistance value between Rx and Tx line must be 150 Ohm +/- 4%. Measurement method is described on page 8.



Picture 147

RB450Gx4



Picture 148

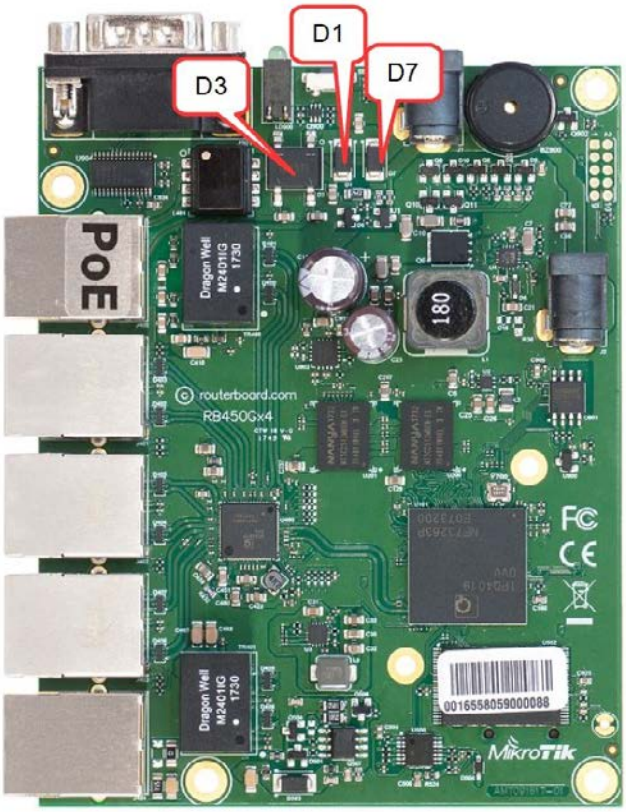
Instructions for checking overvoltage

Checking Schottky diodes and diode bridge

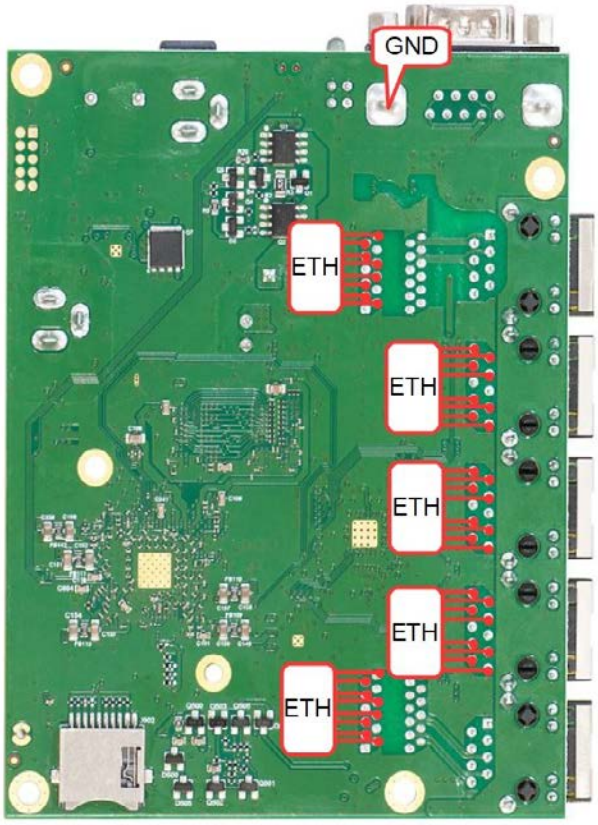
Check Schottky diode D1, D7 and diodes bridges D3. Location of diodes on the board you can see in the picture 149. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between diode array and Ground on RJ45

Check voltage drop value between diode arrays D400-D409. Location of the test points by the name ETH you can see in the picture 150. Voltage drop value should be in the range from 0,36V to 0,43V. Voltage drop measurement method is described on page 7.



Picture 149



Picture 150

493 SERIES ROUTERBOARDS

RB493AH

Picture 151

Instructions for checking overvoltage

Checking Schottky diodes

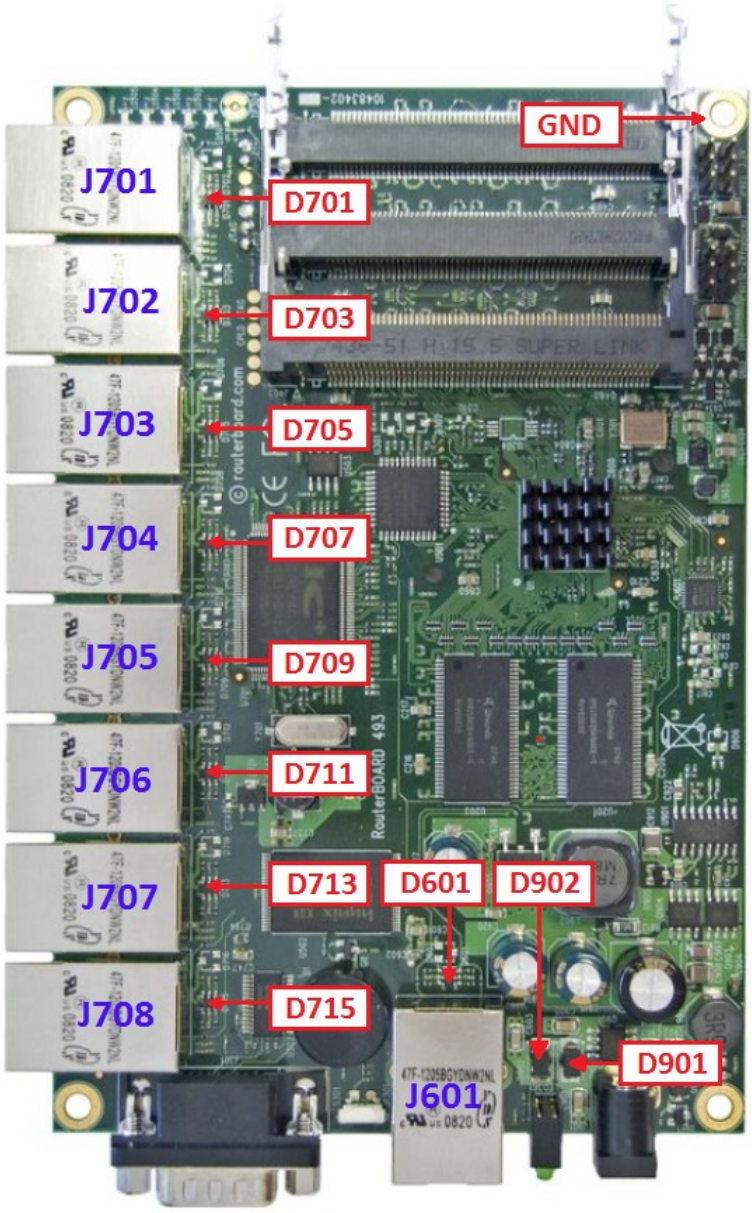
Check Schottky diodes D901, D902. Location of diodes on the board you can see in the picture 152. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between diode array pin#1 and Ground

Check voltage drop value between diode arrays D601, D701, D703, D705, D707, D709, D711, D713, D715 pin#1 and Ground. Location of diode arrays on the board you can see in the picture 6.

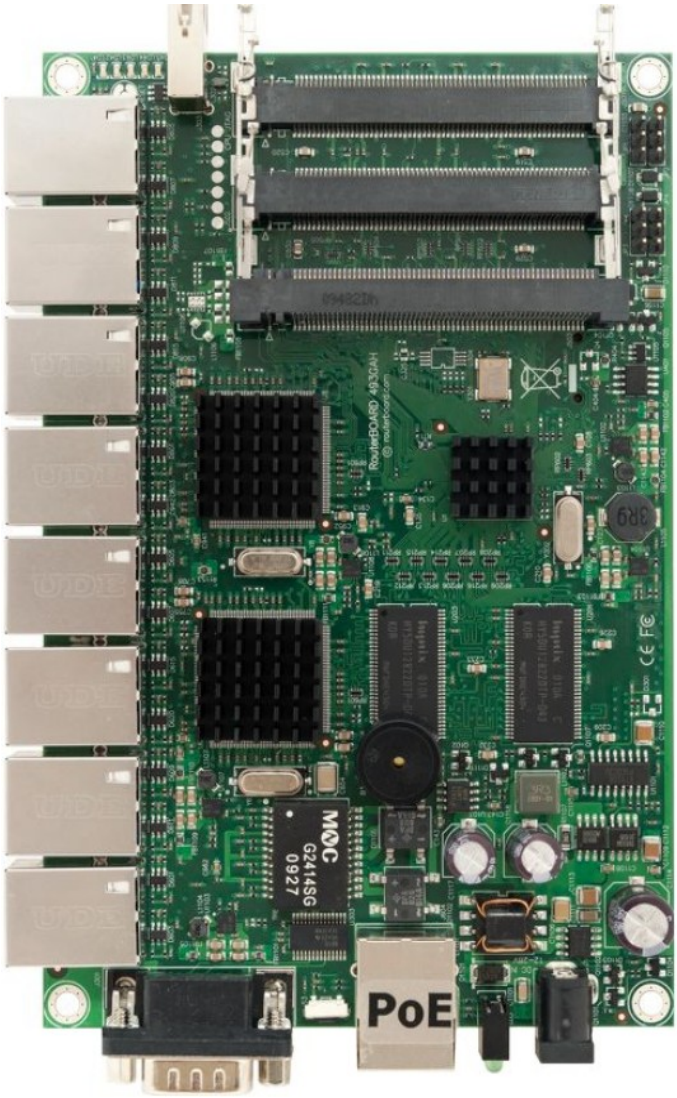
Checking termination resistors resistance in RJ-45 connector

Check termination resistors resistance in J601, J701-J708 connectors. Resistance value between Rx and Tx line must be 150 Ohm +/- 4%. Measurement method is described on page 8.



Picture 152

RB493G



Picture 153

Instructions for checking overvoltage

Checking Schottky diodes

Check Schottky diode D1101 and diodes bridges D1102, D1105. Location of diodes on the board you can see in the picture 154. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between diode array pin#1 and Ground

Check voltage drop value between diode arrays D601, D603, D609, D611, D615, D620, D605, D607, D801, D803, D815, D820, D809, D811, D805, D807 pin#1 and Ground. Location of

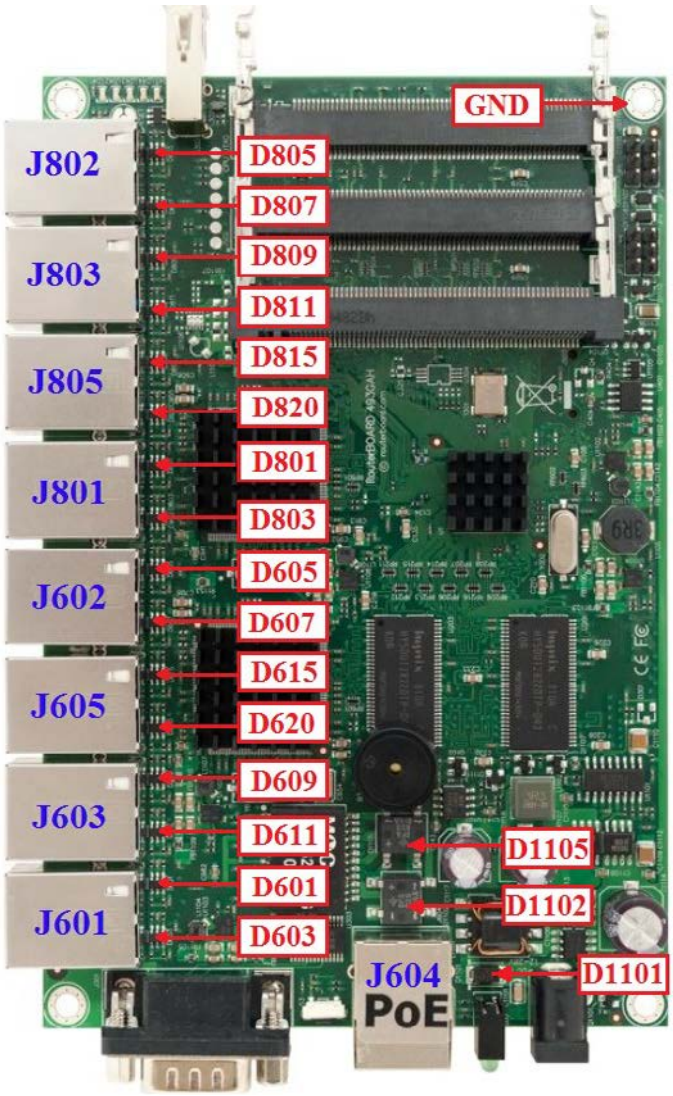
diode arrays on the board you can see in the picture 154. Voltage drop value should be in the range from 0,20V to 0,25V. Voltage drop measurement method is described on page 7.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between transformer TR6 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 154. Voltage drop value should be in the range from 0,2V to 0,25V. Voltage drop measurement method is described on page 7.

Checking termination resistors resistance in RJ-45 connector

Check termination resistors resistance in J601-J603, J605, JJ801-J803, J805 connectors. Resistance value between Rx and Tx line must be 150 Ohm +/- 4%. Measurement method is described on page 9.



Picture 154

751 SERIES ROUTERBOARDS

RB751U-2HnD

Picture 155

Disassembling information

Disassembly method of the board is the same as the RB260GSP board. Disassembly method is described on page 84.

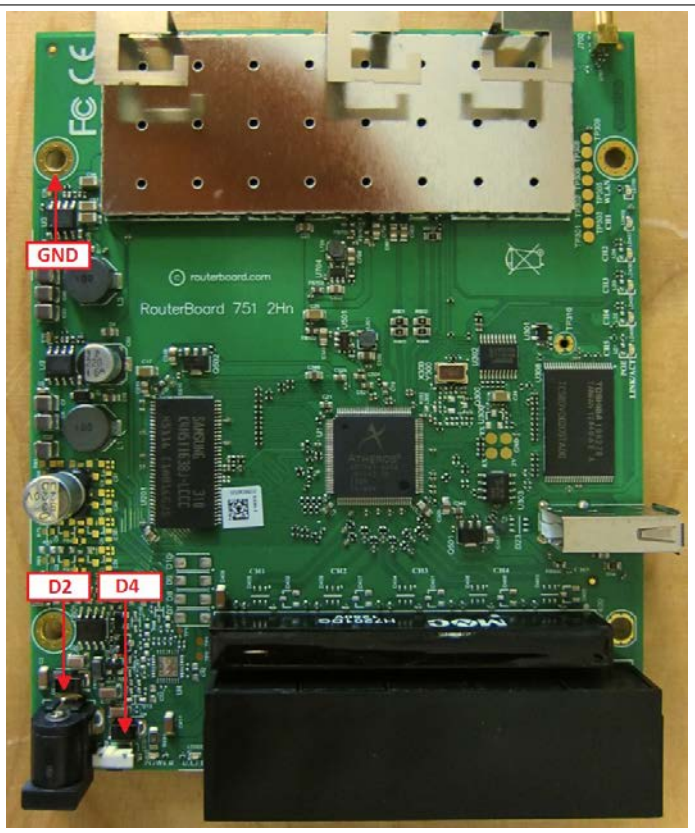
Instructions for checking overvoltage

Checking Schottky diodes

Check Schottky diodes D2, D4. Location of diodes on the board you can see in the picture 156. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformers TRF400 pins and Ground. Test points are marked with red dots, see picture 157. Voltage drop value should be in the range from 0,28V to 0,32V. Voltage drop measurement method is described on page 7.



Picture 156

Picture 157

800 SERIES ROUTERBOARDS

RB800

Picture 158

Instructions for checking overvoltage

Checking diodes bridges

Check diodes bridges D17, D21. Location of diodes on the board you can see in the picture 159. Schottky diode quality measurement method is described on page 5.

Checking voltage drop value between diode array pin#1 and Ground

Check voltage drop value between diode arrays D1, D3, D5, D8, D9, D11 pin#1 and Ground also check voltage drop value between Ethernet transformer TR1 pins and Ground. Test points

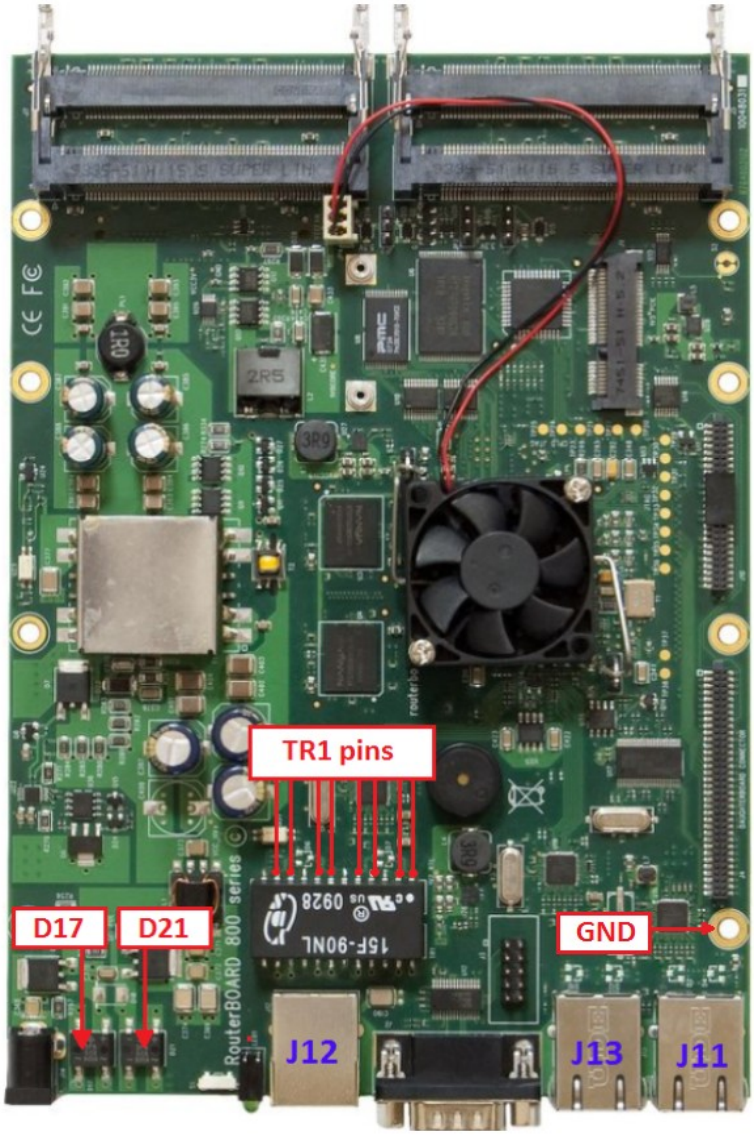
on the transformer pins are marked with red dots, see picture 160. Location of diode arrays on the board you can see in the picture 160. Voltage drop value should be in the range from 0,3V to 0,36V. Voltage drop measurement method is described on page 6.

Checking termination resistors resistance in RJ-45 connector

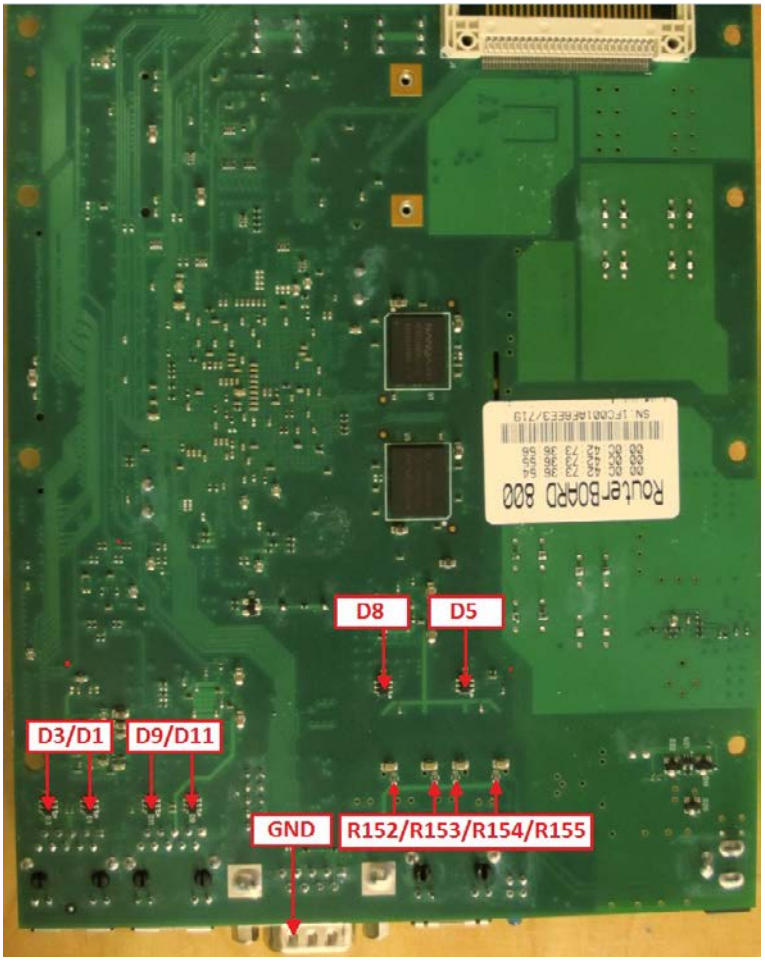
Check termination resistors resistance in J11, J13 connectors. Resistance value between Rx and Tx line must be 150 Ohm +/- 4%. Measurement method is described on page 8.

Checking 75 Ohm termination resistors resistance

Check resistors R152-R155 resistance value. It should be 75 Ohm +/- 1%. Location of resistors on the board you can see in the picture 160.



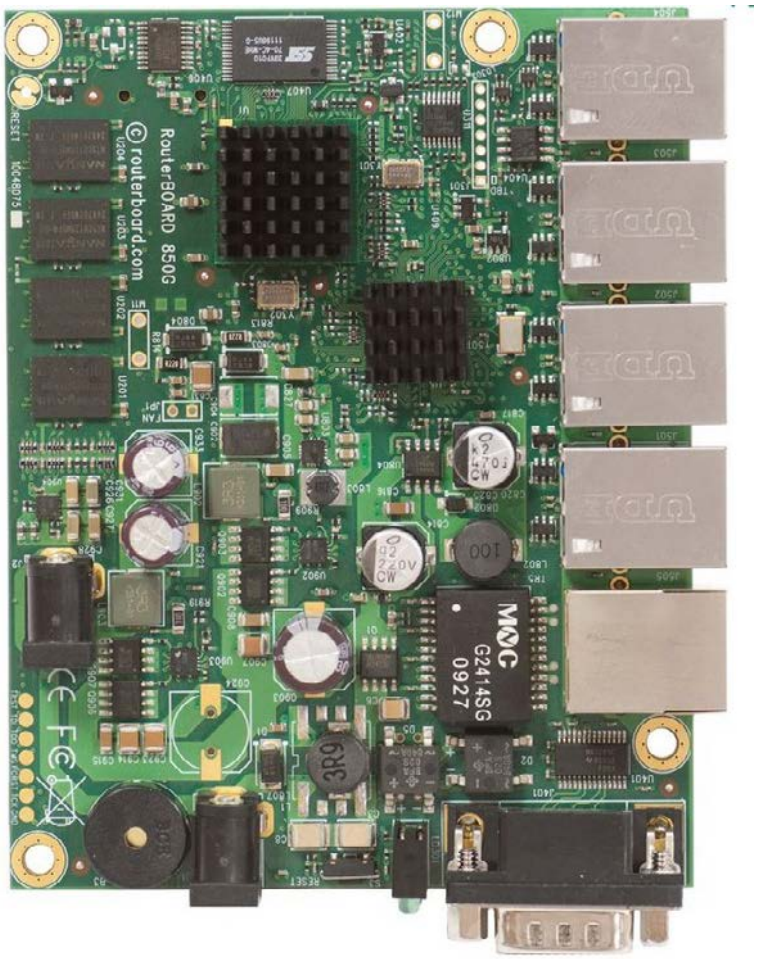
Picture 159



Picture 160

850 SERIES ROUTERBOARDS

RB850Gx2



Picture 161

Instructions for checking overvoltage

Checking Schottky diode and diodes bridges

Check Schottky diode D1 and diodes bridges D2, D5. Location of diodes on the board you can see in the picture 162. Schottky diode quality measurement method is described on page 4 and for diodes bridges 5.

Checking voltage drop value between diode array pin#1 and Ground

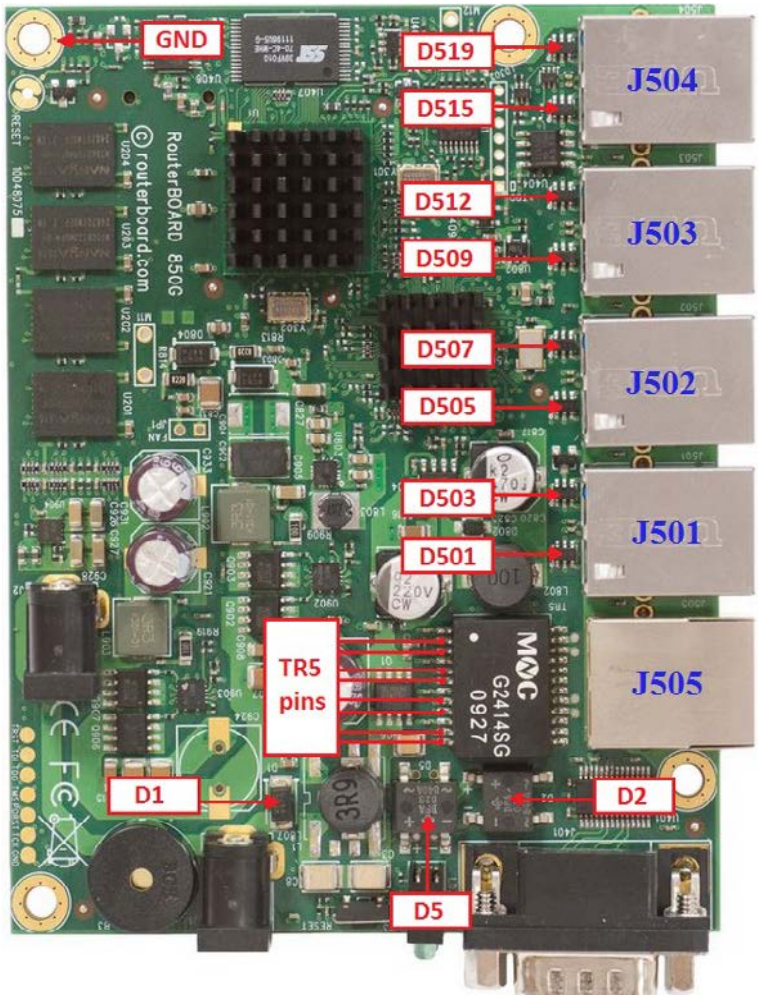
Check voltage drop value between diode arrays D501, D503, D505, D507, D509, D512, D515, D519 pin#1 and Ground. Location of diode arrays on the board you can see in the picture 162. Voltage drop value should be in the range from 0,38 to 0,44V. Voltage drop measurement method is described on page 6.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR5 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 162. Voltage drop value should be in the range from 0,42V to 0,48V. Voltage drop measurement method is described on page 7.

Checking termination resistors resistance in RJ-45 connector

Check termination resistors resistance in J501-J504 connectors. Resistance value between Rx and Tx line must be 150 Ohm +/- 4%. Measurement method is described on page 8.



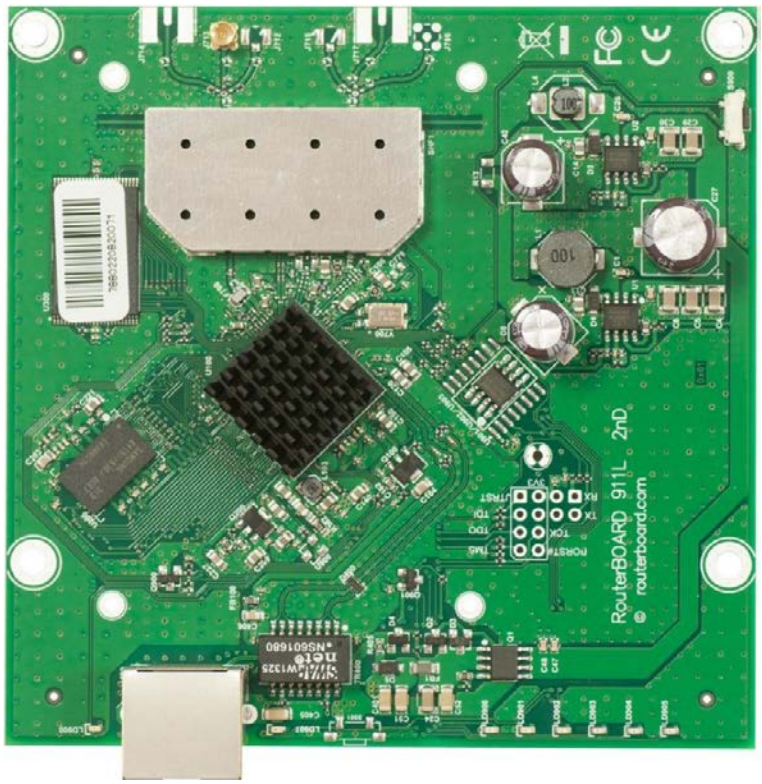
Picture 162

911 SERIES ROUTERBOARDS

911 Lite 2 (RB911-2Hn)

911 Lite 5 (RB911-5Hn)

911 Lite 5 dual (RB911-5HnD)



Picture 163

Instructions for checking overvoltage

Checking Schottky diode

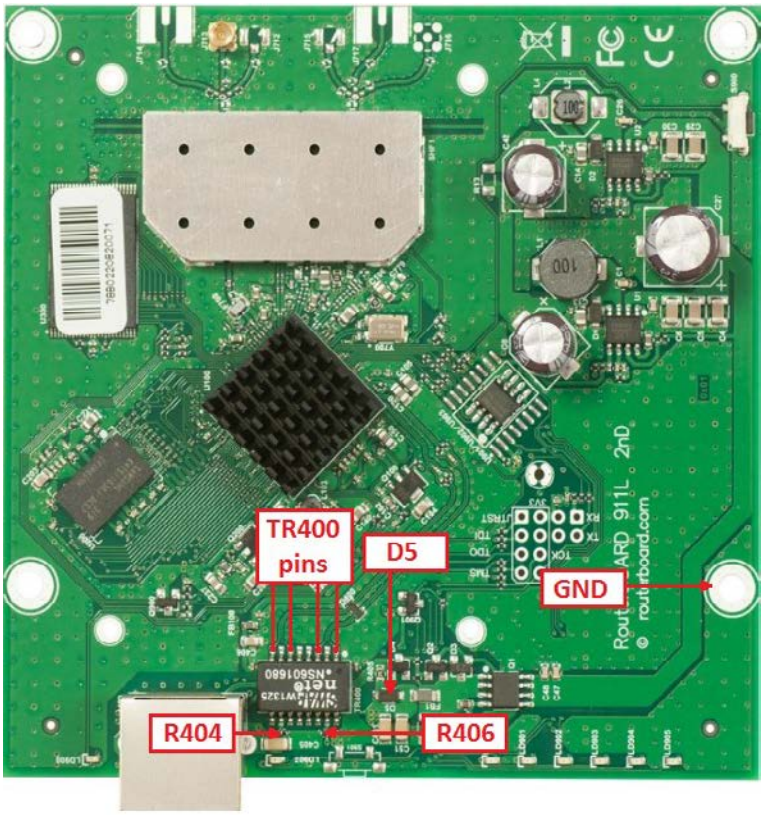
Check Schottky diode D5. Location of diode on the board you can see in the picture 164. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR400 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 164. Voltage drop value should be in the range from 0,32V to 0,38V. Voltage drop measurement method is described on page 7.

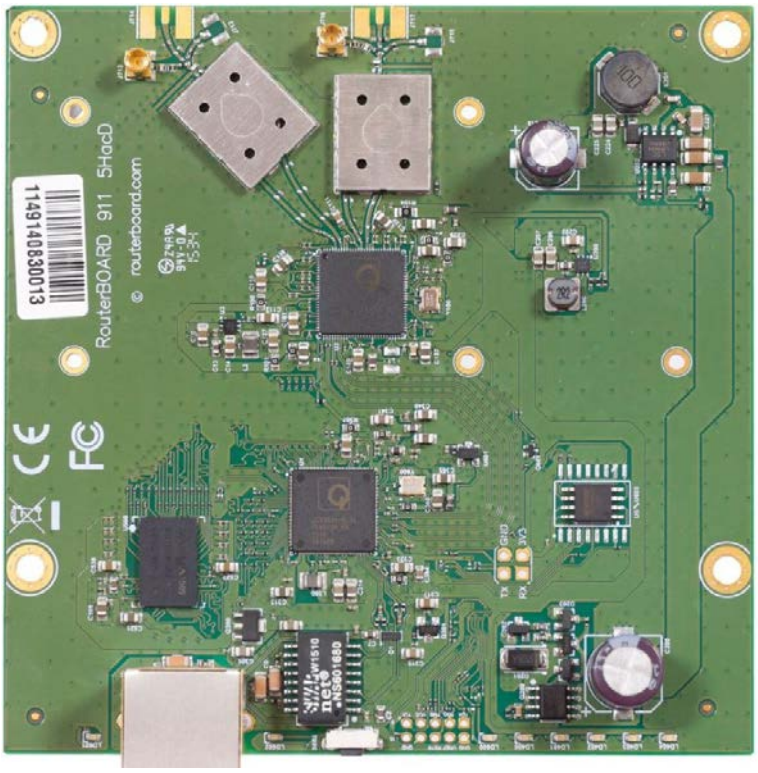
Checking 75 Ohm termination resistors resistance

Check resistors R404, R406 resistance value. It should be 75 Ohm +/- 1%. Location of resistors on the board you can see in the picture 164.



Picture 164

911 Lite 5 ac (RB911-5HacD



Picture 165

Instructions for checking overvoltage

Checking Schottky diode

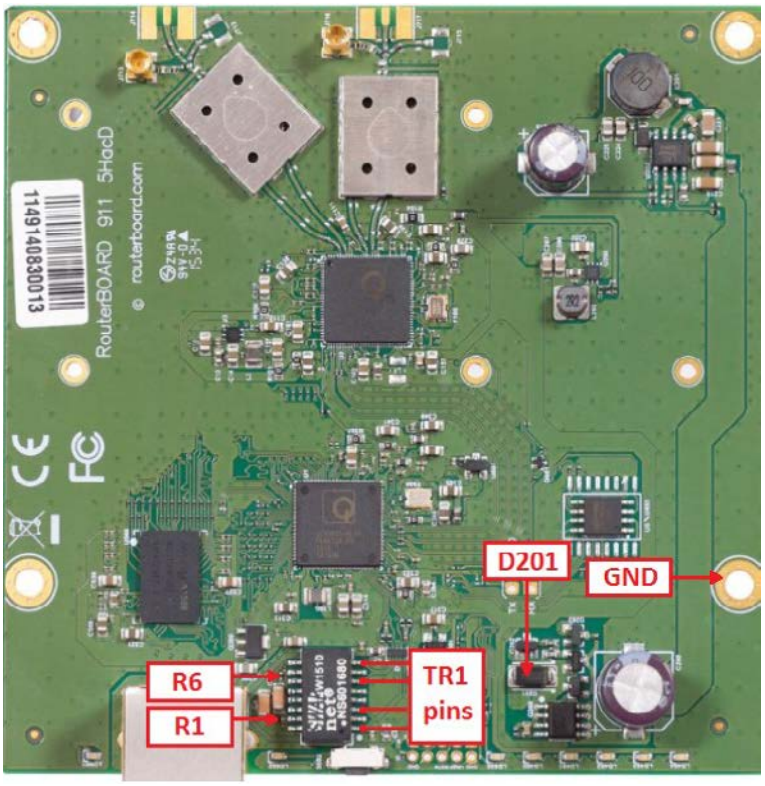
Check Schottky diode D201. Location of diode on the board you can see in the picture 166. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR1 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 166. Voltage drop value should be in the range from 0,36V to 0,42V. Voltage drop measurement method is described on page 7.

Checking 75 Ohm termination resistors resistance

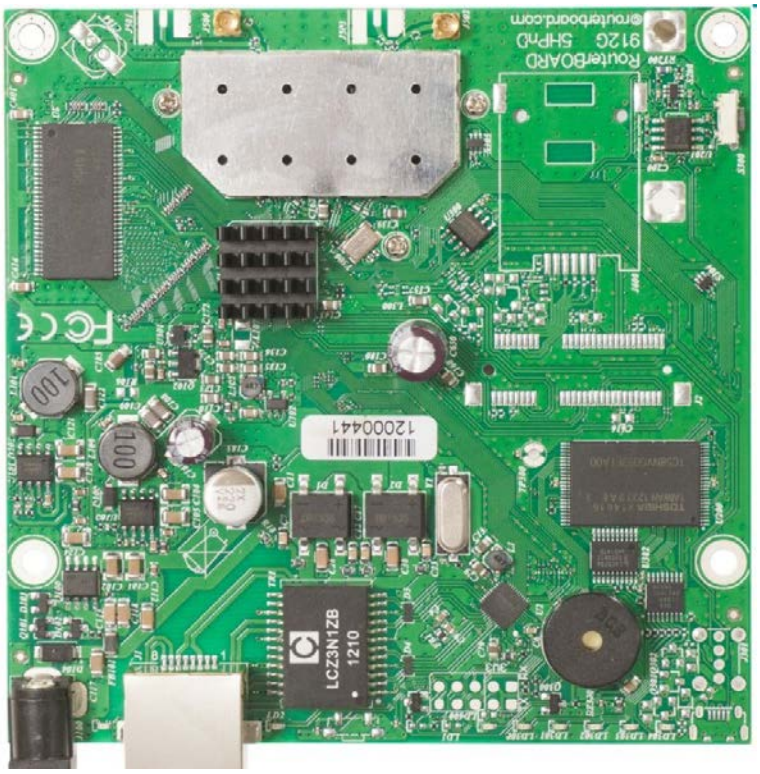
Check resistors R1, R6 resistance value. It should be 75 Ohm +/- 1%. Location of resistors on the board you can see in the picture 166.



Picture 166

RB911G-2HPnD

RB911G-5HPnD



Picture 167

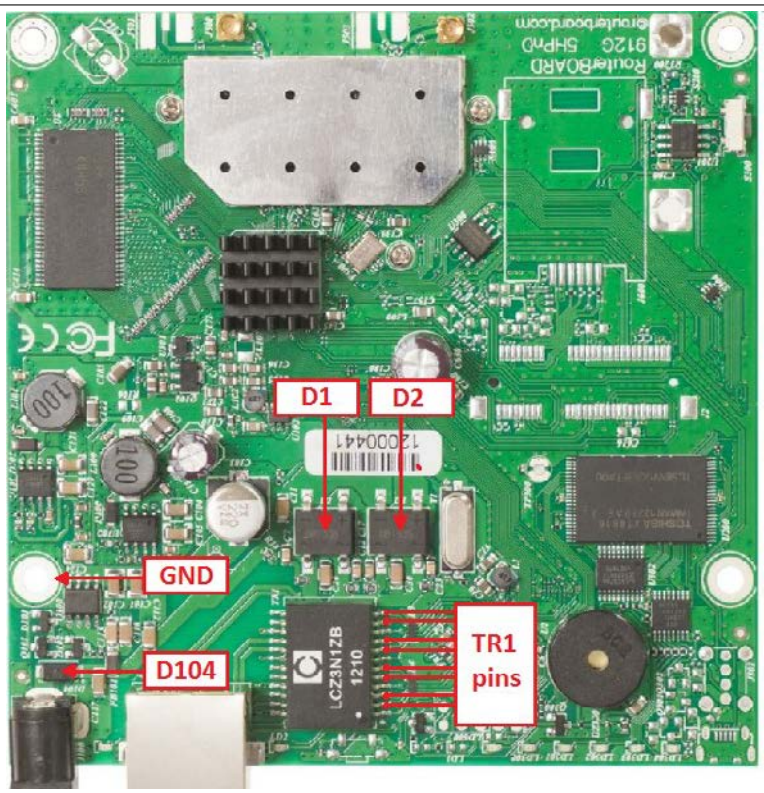
Instructions for checking overvoltage

Checking Schottky diode and diodes bridges

Check Schottky diode D104 and diodes bridges D1, D2. Location of diodes on the board you can see in the picture 168. Schottky diode quality measurement method is described on page 4. Diodes quality measurement method is described on page 5.

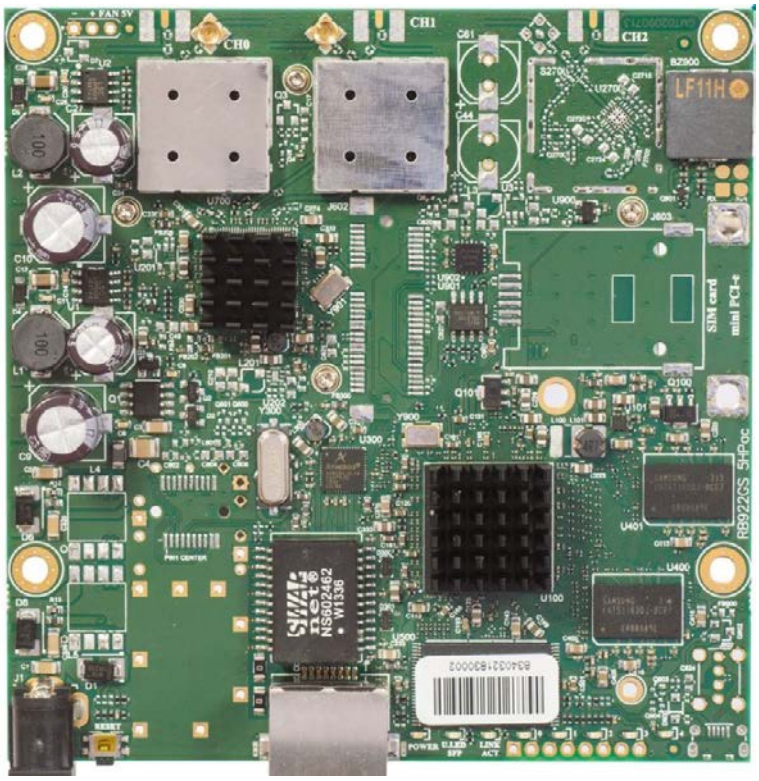
Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR1 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 168. Voltage drop value should be in the range from 0,44V to 0,48V. Voltage drop measurement method is described on page 7.



Picture 168

RB911G-5HPacD



Picture 169

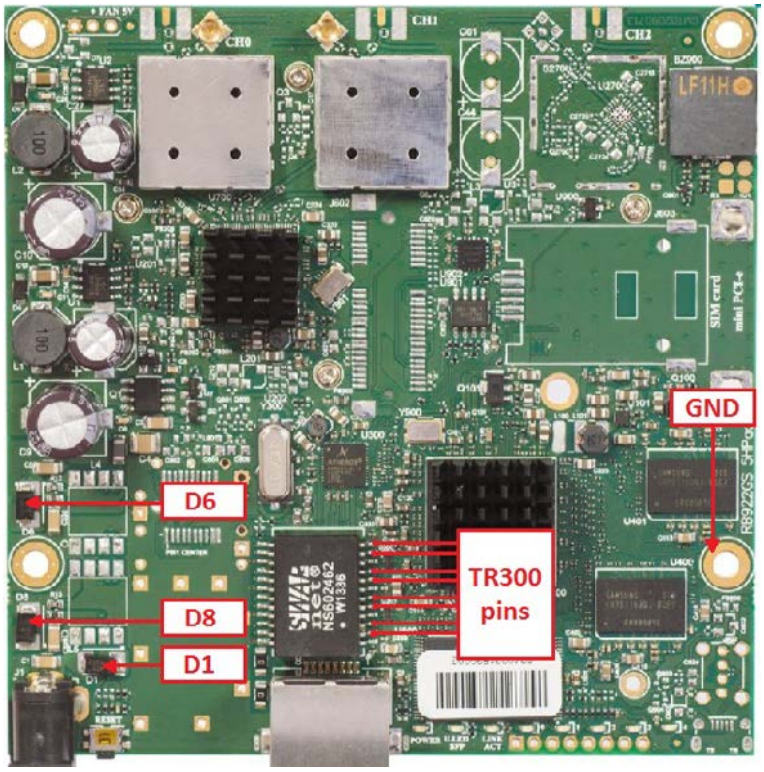
Instructions for checking overvoltage

Checking Schottky diodes

Check Schottky diodes D1, D6, D8. Please, take note that Netbox has an exception where schottky diode D1 does not have to be measured. Location of diodes on the board you can see in the picture 170. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR300 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 170. Voltage drop value should be in the range from 0,44V to 0,48V. Voltage drop measurement method is described on page 7.

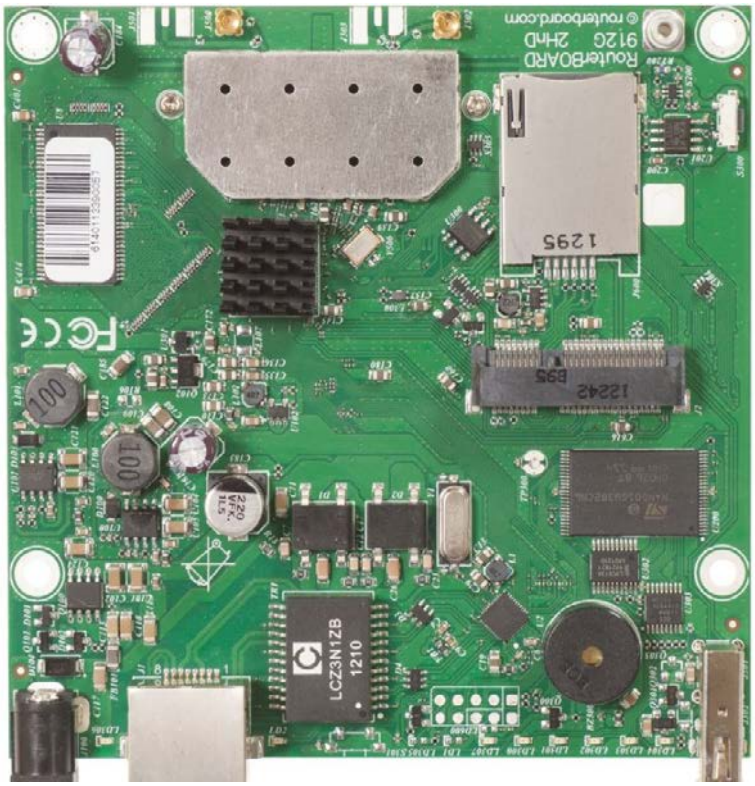


Picture 170

912 SERIES ROUTERBOARDS

RB912UAG-2HPnD

RB912UAG-5HPnD



Picture 171

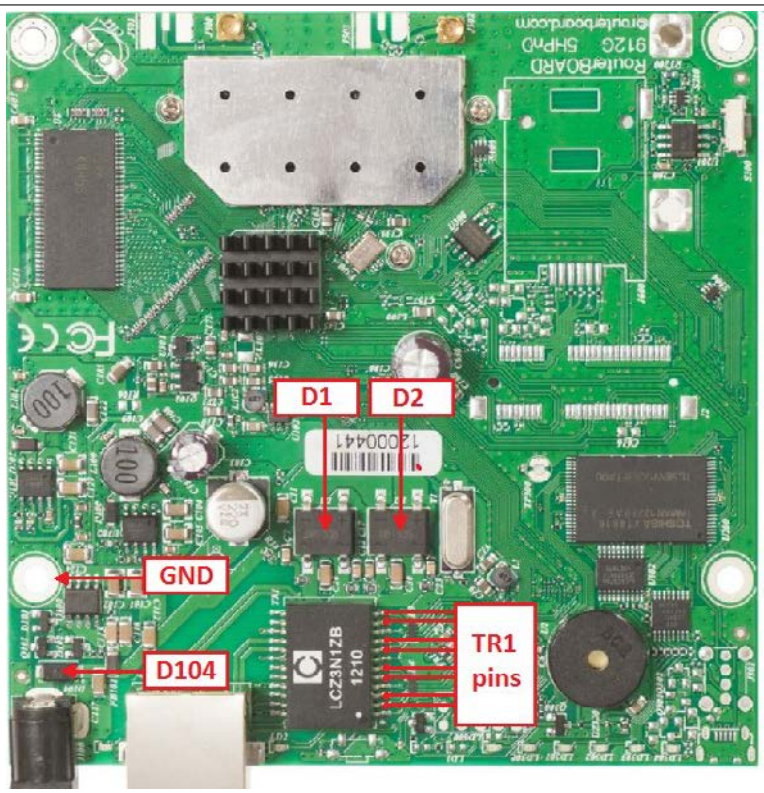
Instructions for checking overvoltage

Checking Schottky diodes

Check Schottky diode D104 and diodes bridges D1, D2. Location of diodes on the board you can see in the picture 172. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

Checking voltage drop value between Ethernet transformer pins and Ground

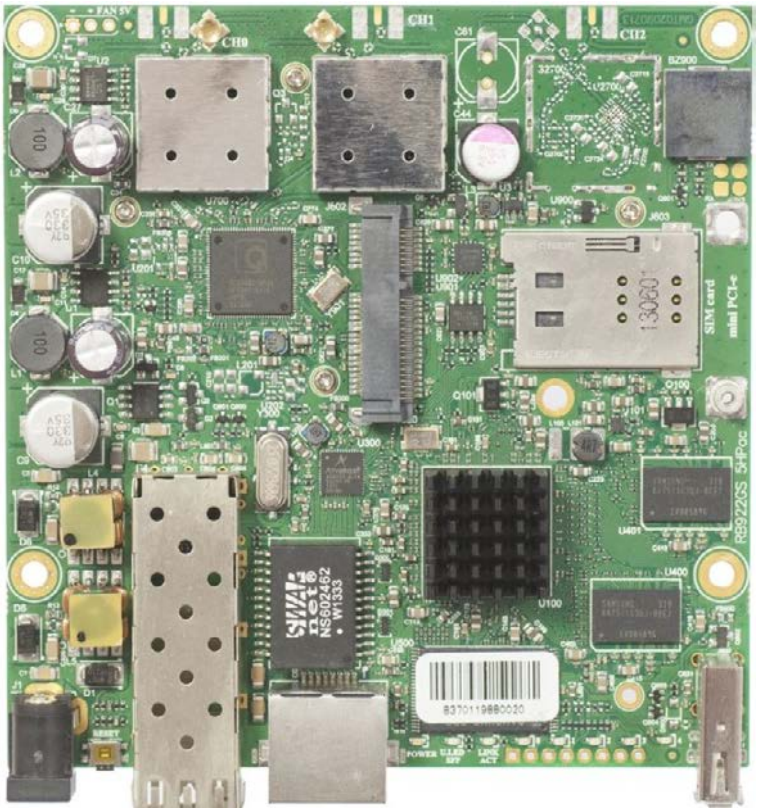
Check voltage drop value between TR1 and Ground. Test points on the transformer pins are marked with red dots, see picture 172. Voltage drop value should be in the range from 0,44V to 0,48V. Voltage drop measurement method is described on page 7.



Picture 172

922 SERIES ROUTERBOARDS

RB922UAGS-5HPacD



Picture 173

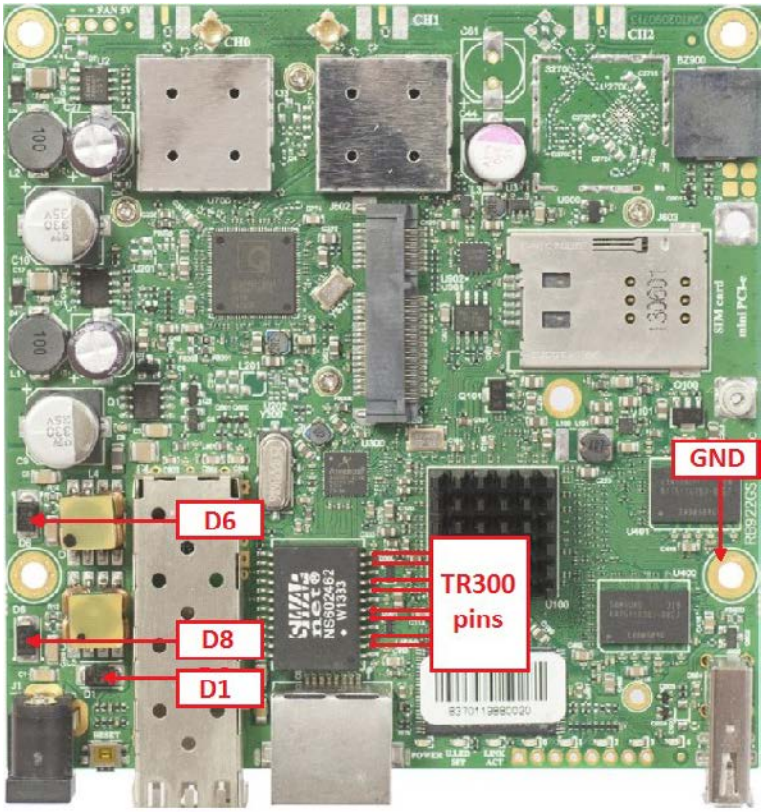
Instructions for checking overvoltage

Checking Schottky diodes

Check Schottky diodes D1, D6, D8. Diode D6 may not be present on some revisions of the RouterBOARD, if so please ignore it. Location of diodes on the board you can see in the picture 174. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR300 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 174. Voltage drop value should be in the range from 0,44V to 0,48V. Voltage drop measurement method is described on page 7.



Picture 174

950 SERIES ROUTERBOARDS

RB951-2Hn

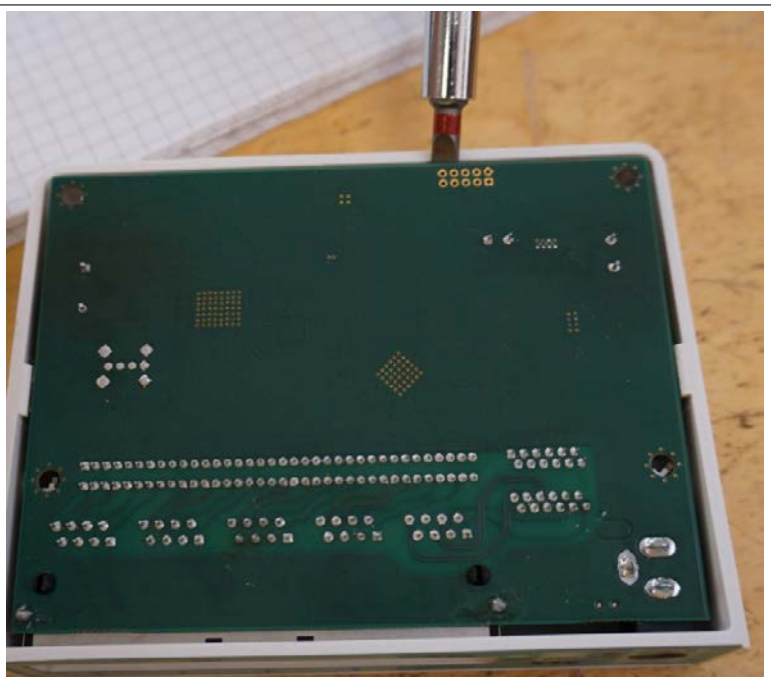
Picture 175

Disassembling information

Step 1: Take off the cover as shown in the picture 176.

Picture 176

Step 2: Take out the board as shown in the picture 177.



Picture 177

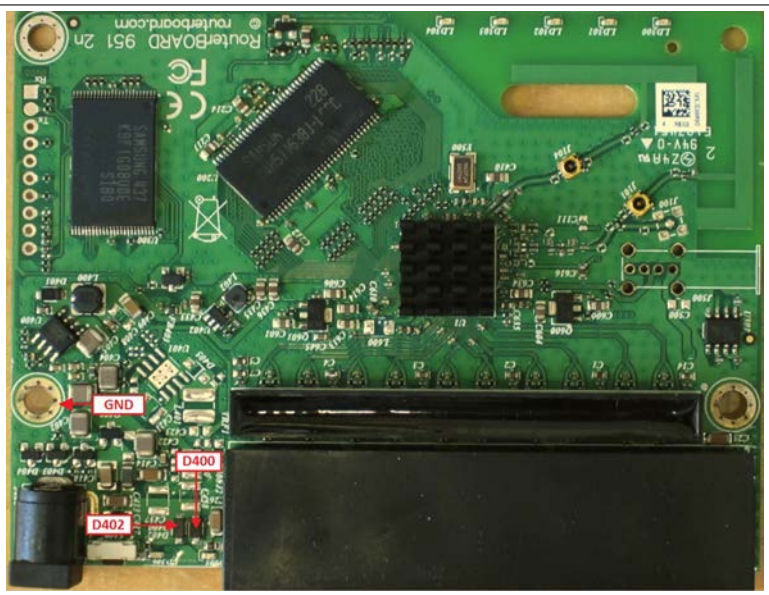
Instructions for checking overvoltage

Checking Schottky diodes

Check Schottky diodes D400, D402. Location of diodes on the board you can see in the picture 178. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet Transformer TRF1 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 179. Voltage drop value should be in the range from 0,32V to 0,38V. Voltage drop measurement method is described on page 7.



Picture 178

Picture 179

RB951G-2HnD

Picture 180

Disassembling information

Disassembly method of the board is the same as the RB260GSP board. Disassembly method is described on page 84.

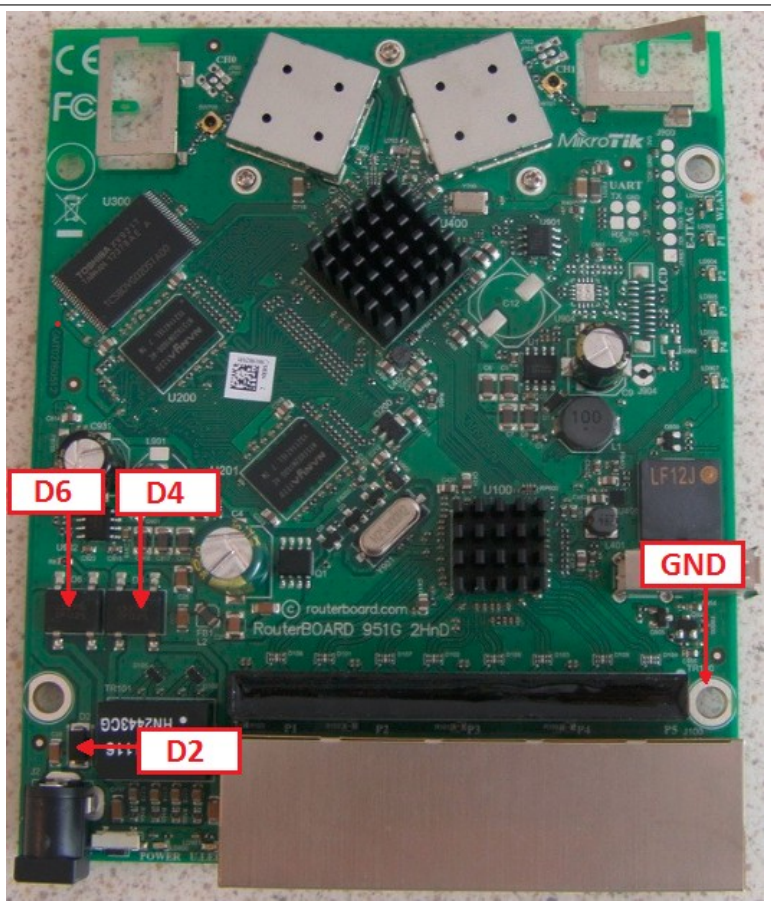
Instructions for checking overvoltage

Checking Schottky diode and diodes bridges

Check Schottky diode D2 and diodes bridges D4, D6. Location of diodes on the board you can see in the picture 181. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformers TR100, TR101 pins and Ground. Test points on the transformers pins are marked with red dots, see picture 182. Voltage drop value between transformer TR100 pins and Ground should be in the range from 0,36V to 0,4V, but between transformer TR101 pins and Ground in the range from 0,44V to 0,48V. Voltage drop measurement method is described on page 7.


D6
D4
GND
D2
MikroTik
RouterBOARD 951G 2HnD
routerboard.com

Picture 181


GND
RB951G-2HnD
RouterBOARD 951G 2HnD
routerboard.com
26%
TR100 pins
TR101 pins
MikroTik

Picture 182

RB951Ui-2HnD

Picture 183

Disassembling information

Disassembly method of the board is the same as the RB260GSP board. Disassembly method is described on page 84.

Instructions for checking overvoltage

Checking Schottky diodes

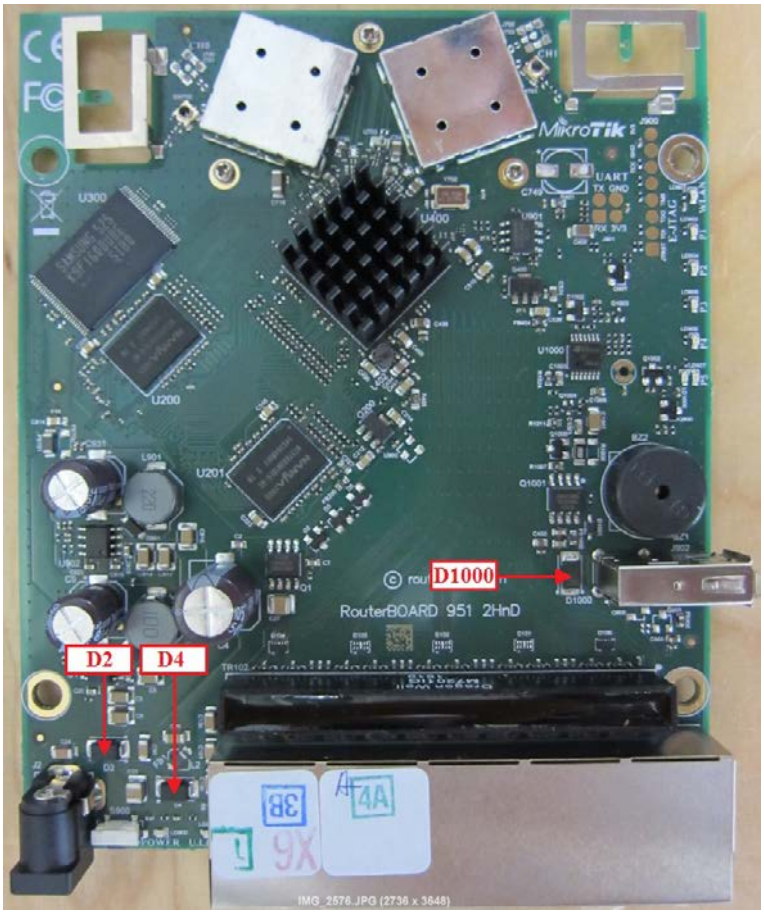
Check Schottky diodes D2, D4, D1000. Location of diodes on the board you can see in the picture 184. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR102 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 185. Voltage drop value should be in the range from 0,32V to 0,38V. Voltage drop measurement method is described on page 7.

Checking termination resistors resistance in RJ-45 connector

Check termination resistors resistance in J101 connector (in the each Ethernet ports). Resistance value between Rx and Tx line must be 150 Ohm +/- 4%. Measurement method is described on page 8.

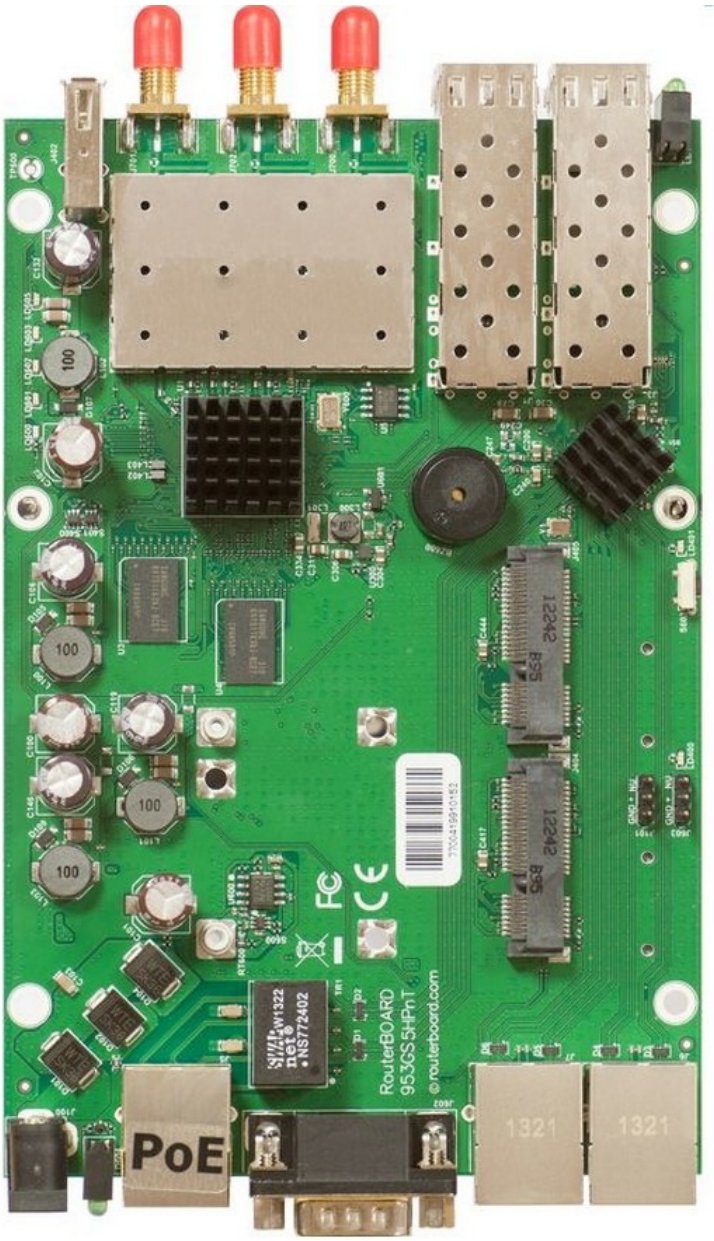


Picture 184


RESET
RouterBOARD 951 2HnD
GND
RB951Ui-2HnD
TR102 pins
PoE OUT
PoE IN

Picture 185

RB953GS-5HnT



Picture 186

Instructions for checking overvoltage

Checking Schottky diodes

Check Schottky diodes D101, D102, D104. Location of diodes on the board you can see in the picture 187. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

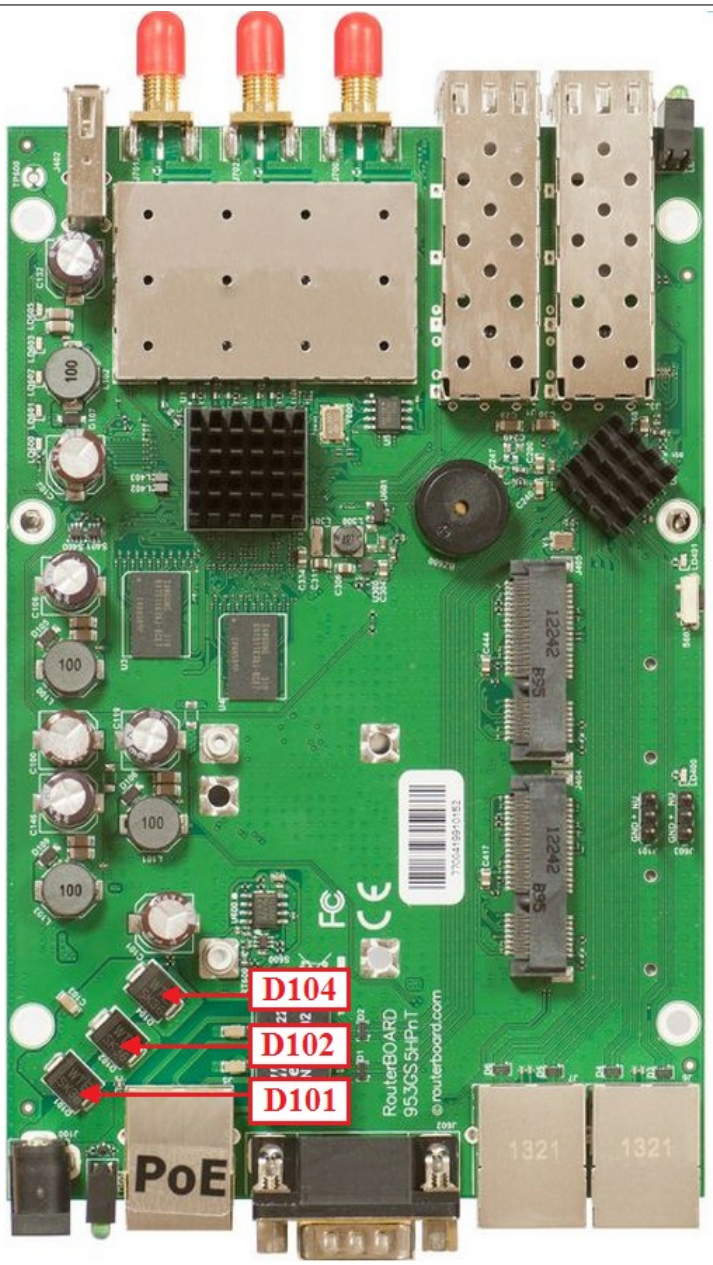
Check voltage drop value between Ethernet transformer TR1 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 188. Voltage drop value should be in the range from 0,42V to 0,48V. Voltage drop measurement method is described on page 7.

Checking termination resistors resistance in RJ-45 connector

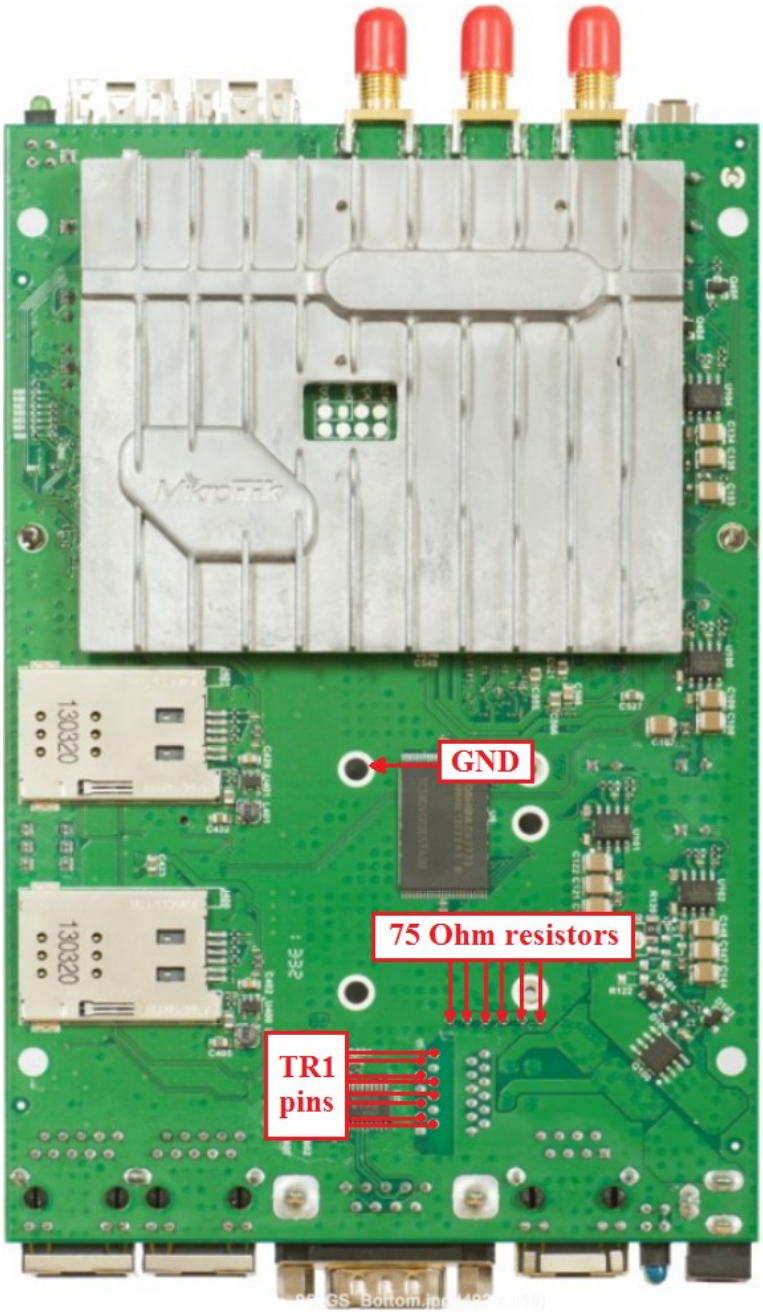
Check termination resistors resistance in J6, J7 connectors. Resistance value between Rx and Tx line must be 150 Ohm +/- 4%. Measurement method is described on page 8.

Checking 75 Ohm termination resistors resistance

Check resistors R36, R38, R39, R42, R44, R45 resistance value. It should be 75 Ohm +/- 1%. Location of resistors on the board you can see in the picture 188.


D104
D102
D101
PoE
RouterBOARD
953GS5HPnT
© routerboard.com

Picture 187



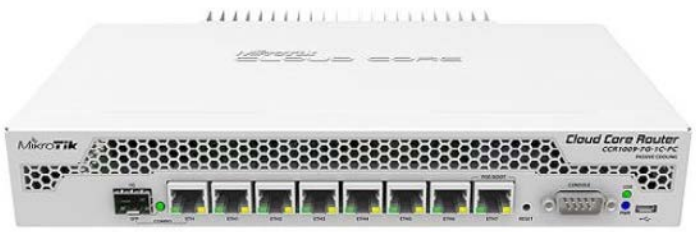
Picture 188

CLOUD CORE ROUTER 1009 SERIES ROUTERBOARDS

CCR1009-7G-1C-PC

CCR1009-7G-1C-1S+

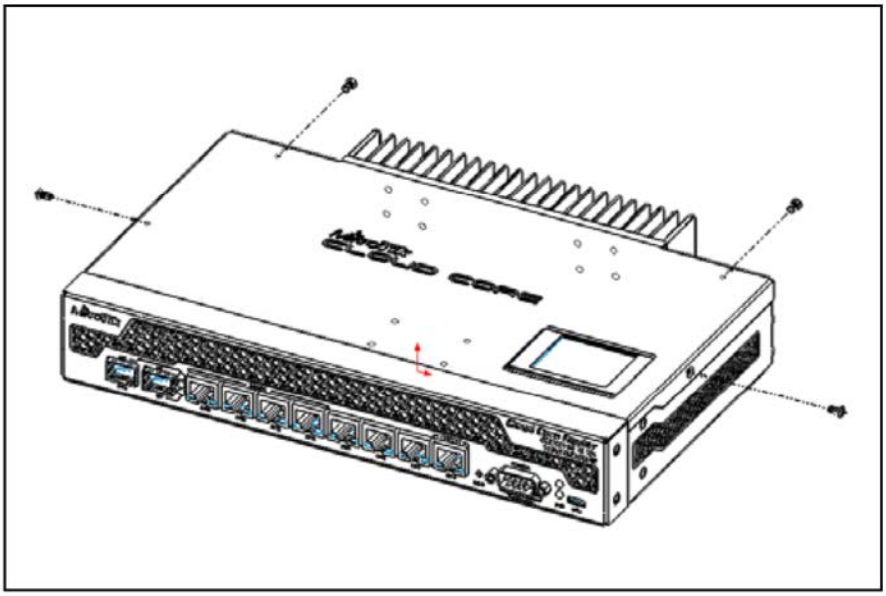
CCR1009-7G-1C-1S+PC



Picture 189

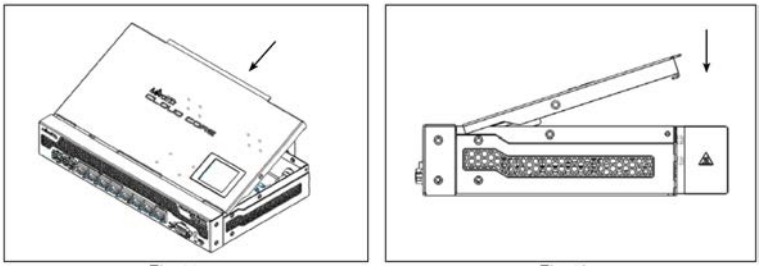
Disassembling information

Step 1: Unscrew 4 screws using PH2 screwdriver. Location of screws you can see in the picture 190.



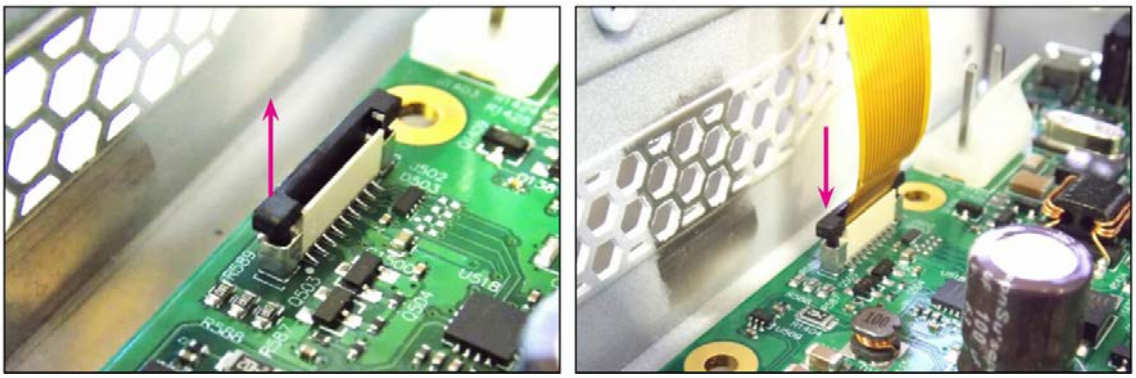
Picture 190

Step 2: Carefully take off the cover as showed in the picture 191. Do not damage the LCD flex cable.



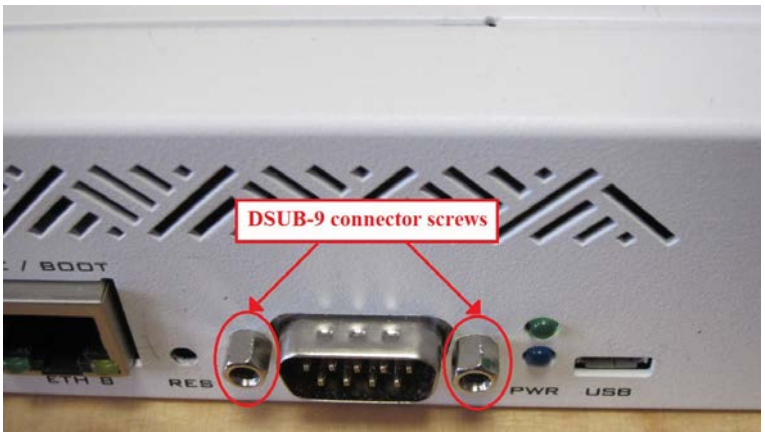
Picture 191

Step 3: Gently lift the latch vertically upward and take out LCD flex cable from FPC connector as showed in the picture 192. Do not damage the FPC connector locking drawer.



Picture 192

Step 4: Detach a male DSUB-9 connector from board case unscrewed 2 screws. Location of the screws you can see in the picture 193.



Picture 193

Instructions for checking overvoltage

Checking Schottky diode

Check Schottky diodes D1401-D1403, D1405. Location of diodes on the board you can see in the picture 194. Schottky diode quality measurement method is described on page 4.

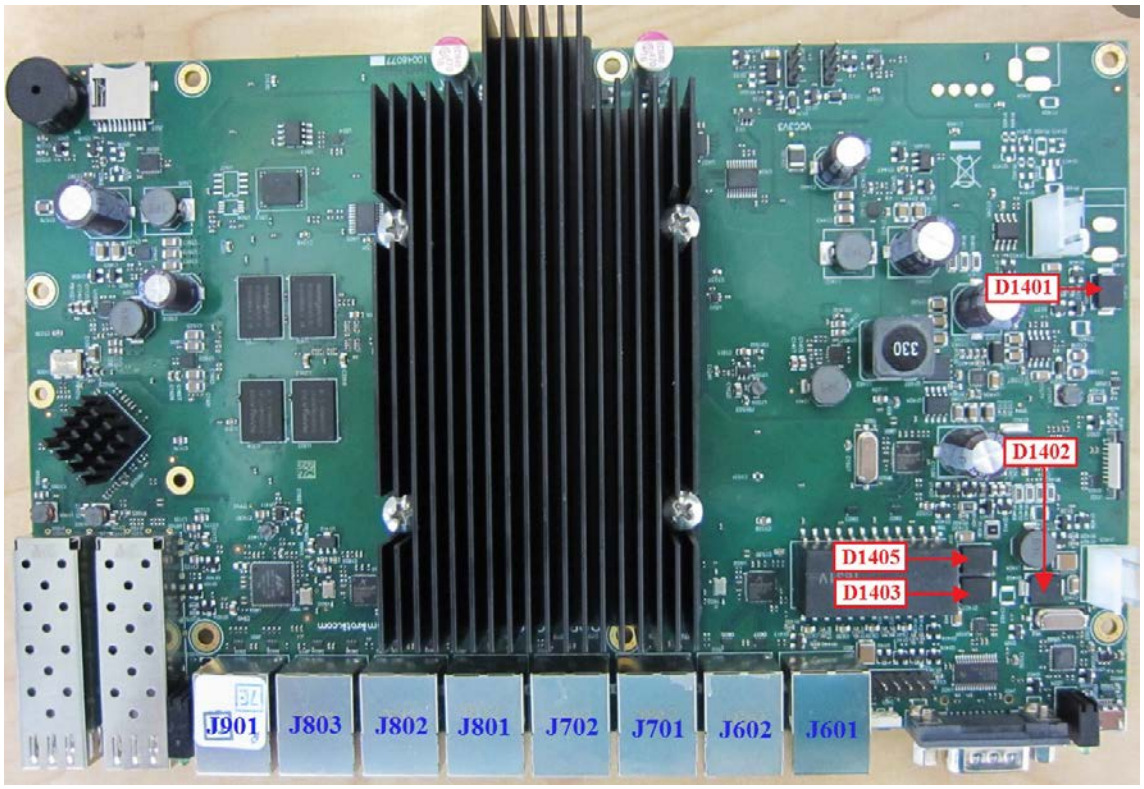
Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR6 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 195. Voltage drop value should be in the range from 0,44V to 0,48V. Voltage drop measurement method is described on page 7.

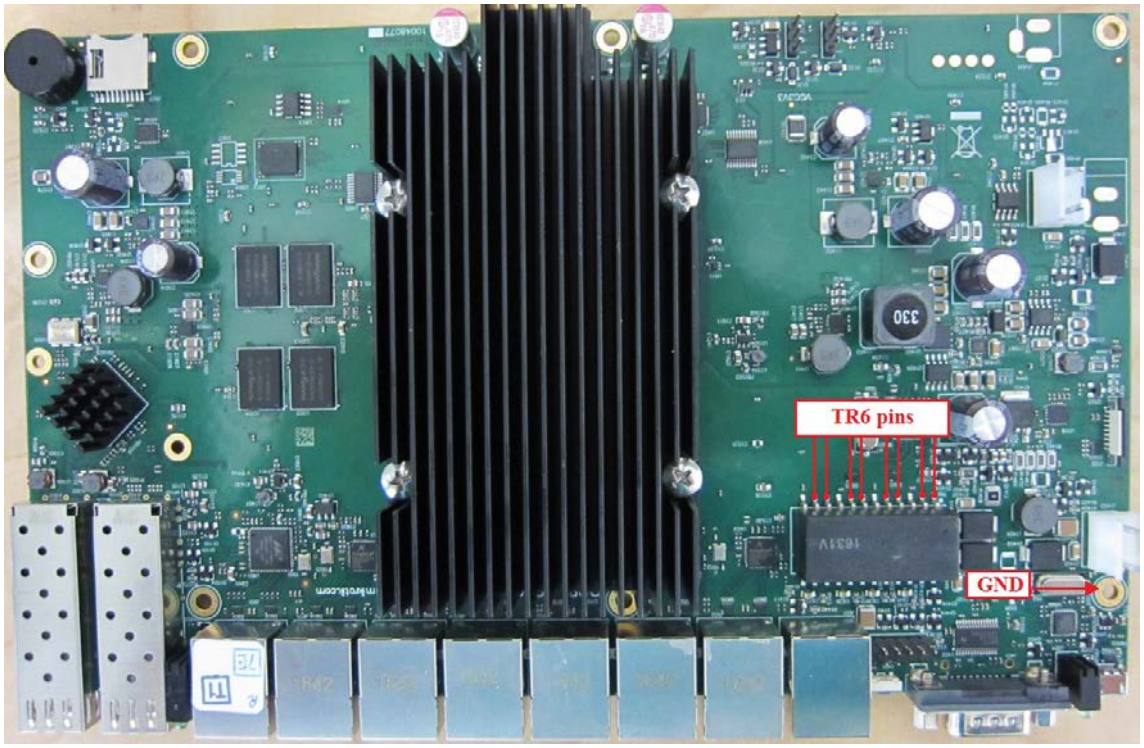
Check voltage drop value between RJ-45 connectors J602, J701, J702, J801, J802, J803 and ground. Test points are shown in picture 196. Voltage drop value should be in the range from 0,36V to 0,40V. Voltage drop measurement method is described on page 7.

Checking termination resistors resistance in RJ-45 connector

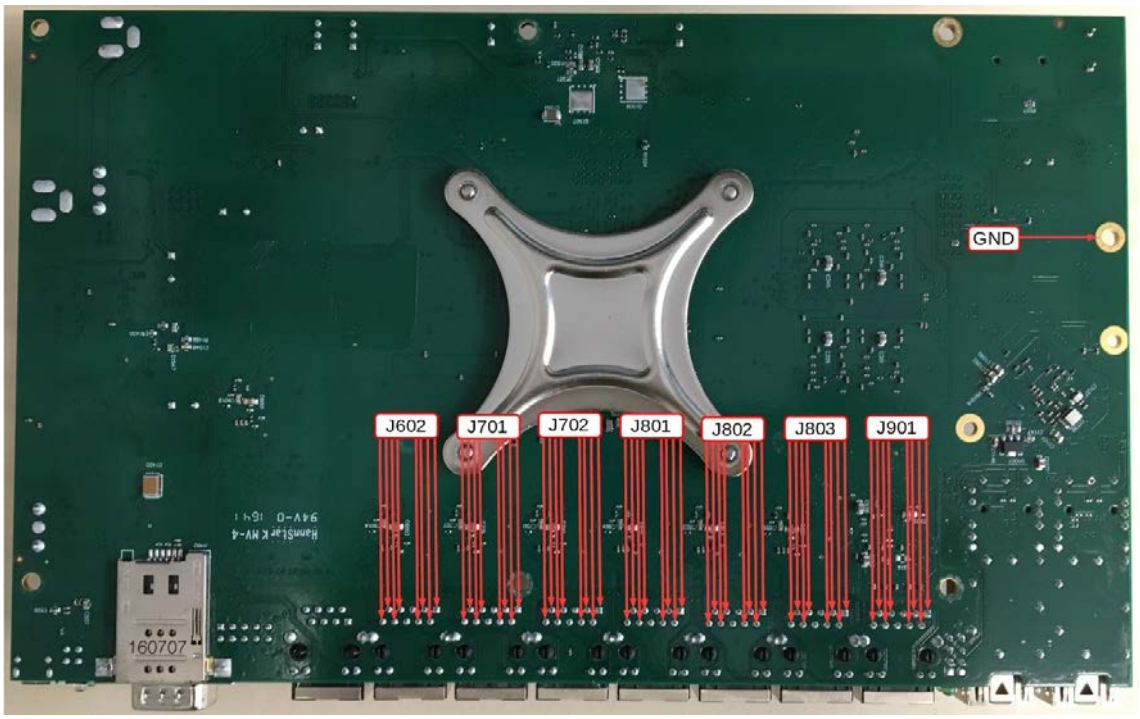
Check termination resistors resistance in J602, J701, J702, J801-J803, J901 connectors. Resistance value between Rx and Tx line must be 150 Ohm +/-4%. Measurement method is described on page 8.



Picture 194



Picture 195



Picture 196

CCR1009-8G-1S-1S+

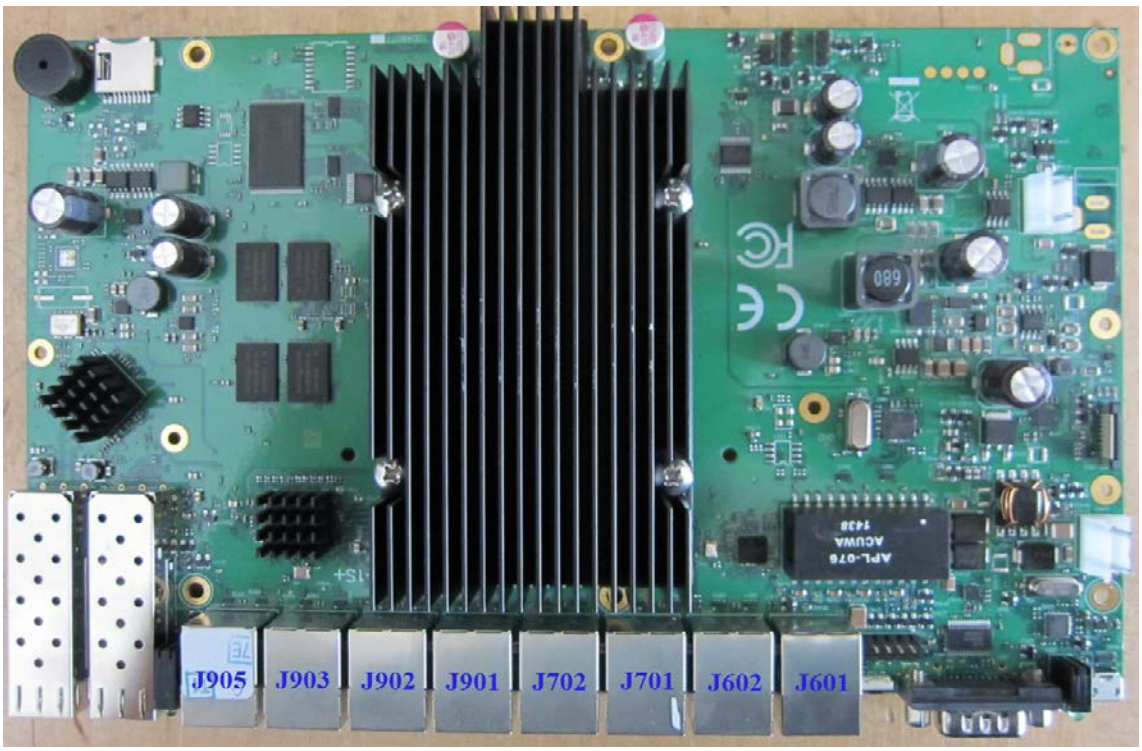
Picture 197

Disassembling information

Disassembly method of the board is the same as the CCR1009-7G board. Disassembly method is described on page 167.

Instructions for checking overvoltage

Over-voltage testing procedure and the layout of the components (with exception of Ethernet ports reference numbers, see picture 198) on the board is the same as for CCR1009-7G boards, see on page 169.



Picture 198

CCR1009-8G-1S

Picture 199

Disassembling information

Step 1: Unscrew 7 screws (5 screws on the board case backside and 1 screw from the each side of board case) using PH2 screwdriver. Location of screws see in the picture 200.

Picture 200

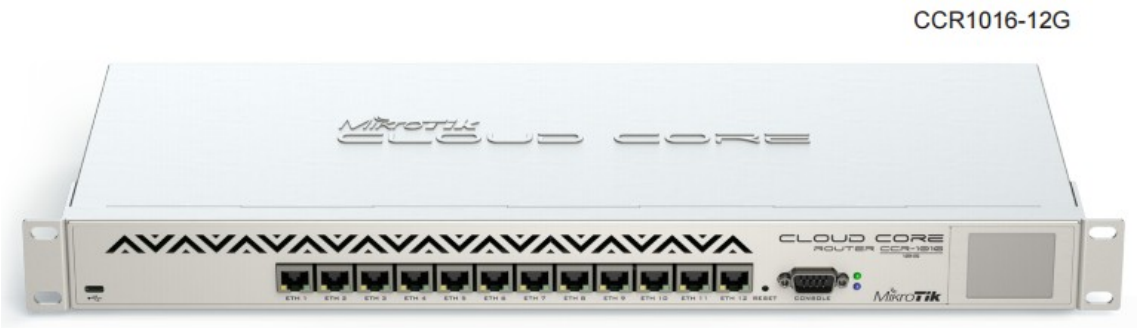
Step 2: Take off the cover.

Instructions for checking overvoltage

Over-voltage testing procedure and the layout of the components (with exception of Ethernet ports reference numbers, see picture 198) on the board is the same as for CCR1009-7G boards, see on page 169.

CLOUD CORE ROUTER 1016 SERIES ROUTERBOARDS

CCR1016-12G



Picture 201

Disassembling information

Disassembly method of the board is the same as the CCR1009-8G-1S board. Disassembly method is described on page 172.

Instructions for checking overvoltage

Checking voltage drop value between diode array pin#1 and Ground

Check voltage drop value between diode arrays D115, D117, D111, D113, D105, D107, D101, D103, D905, D907, D901, D903, D805, D807, D801, D803, D705, D707, D701, D703, D605, D607 pin#1 and Ground. Location of diode arrays on the board you can see in the picture 202.

For diode arrays D601, D603 pin#1 and Ground voltage drop value should be in the range from 0,44V to 0,48V. Voltage drop value should be in the range from 0,36V to 0,4V. Location of diode arrays on the board you can see in the picture 202.

Voltage drop measurement method is described on page 6.

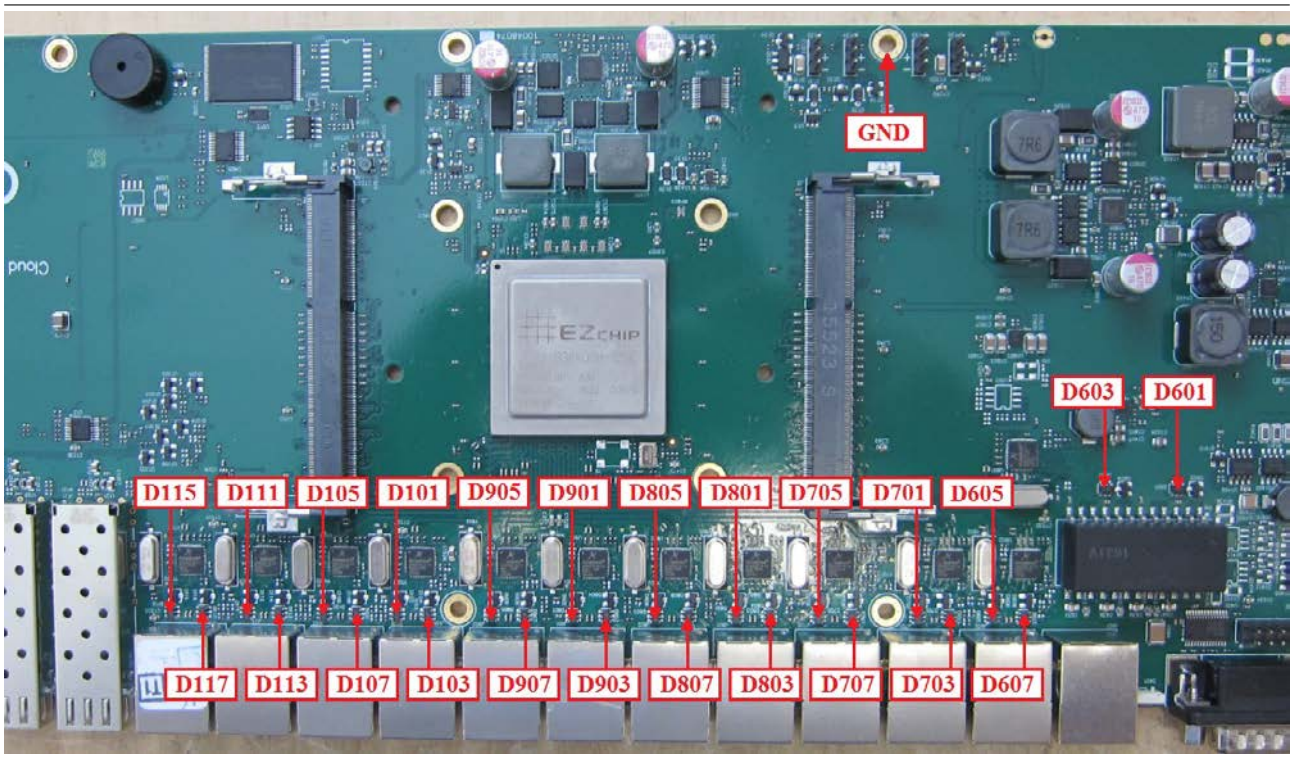
Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR6 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 203.

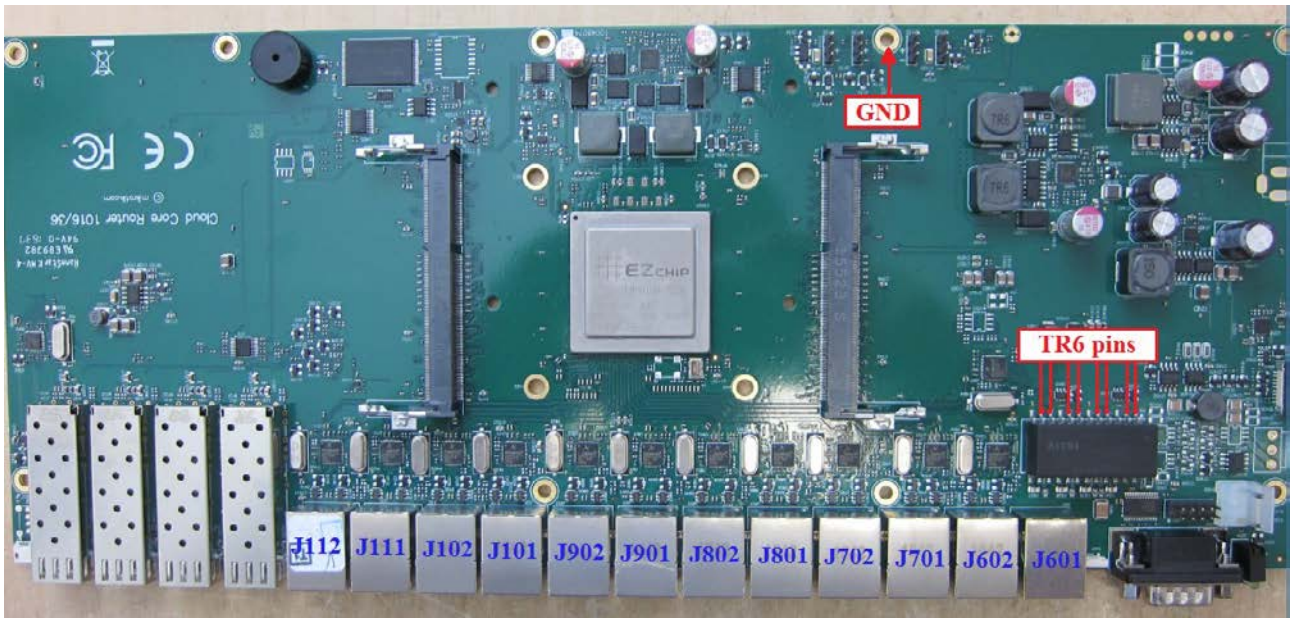
Voltage drop value should be in the range from 0,44V to 0,48V. Voltage drop measurement method is described on page 7.

Checking termination resistors resistance in RJ-45 connector

Check termination resistors resistance in J602, J701, J702, J801, J802, J901, J902, J101, J102, J111, J112 connectors. Resistance value between Rx and Tx line must be 150 Ohm +/-4%. Measurement method is described on page 8.



Picture 202



Picture 203

CCR1016-12G rev2

Picture 204

Disassembling information

Disassembly method of the board is the same as the CCR1036-8G-2S+ rev2 board. Disassembly method is described on page 183.

Instructions for checking overvoltage

Checking voltage drop value between Ethernet transformer pins and Ground

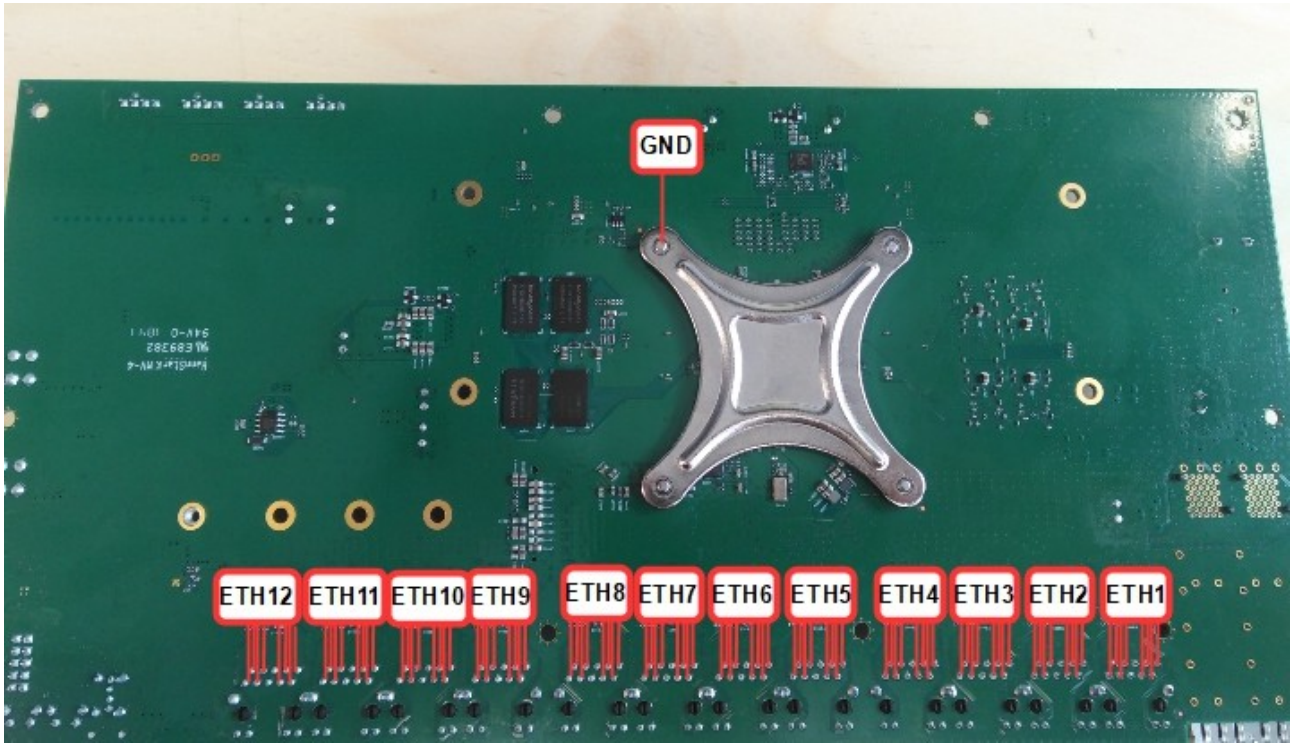
Check voltage drop value between Ethernet built in transformer pins and Ground. Test points on the RJ-45 pins are marked with red dots, see picture 205.

Voltage drop value should be in the range from 0,37V to 0,41V. Voltage drop measurement method is described on page 7.

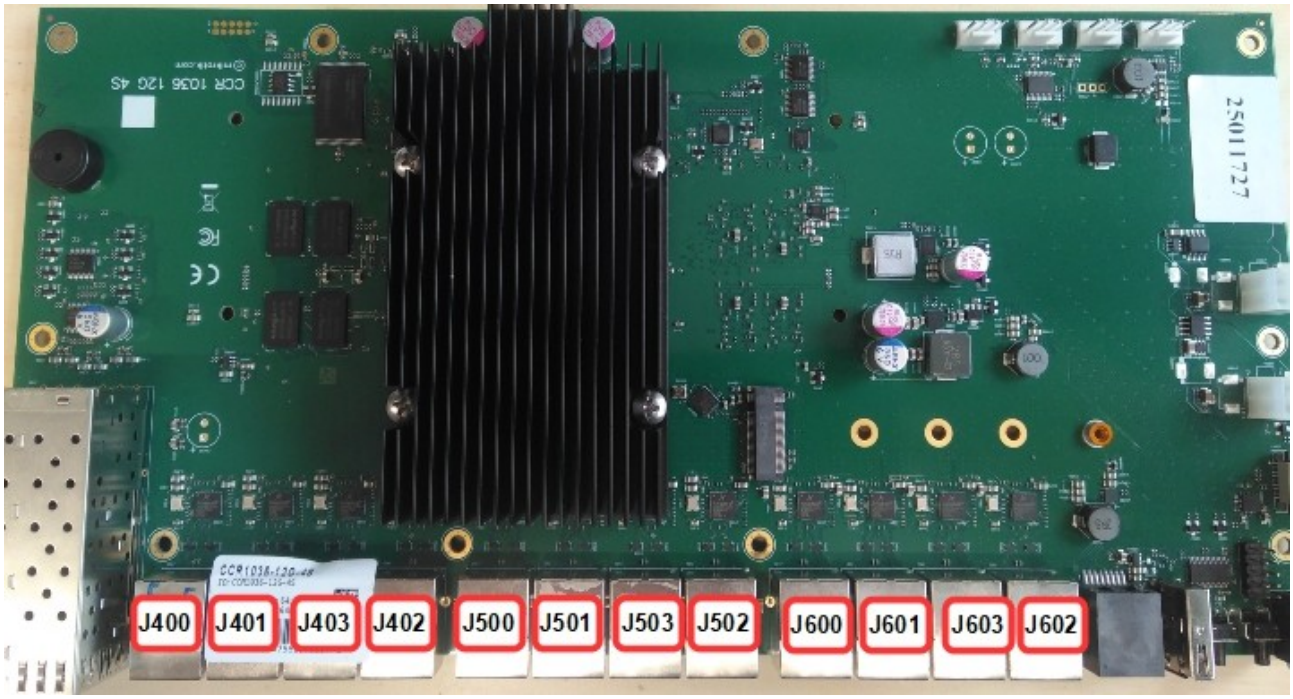
Checking termination resistors resistance in RJ-45 connector

Check termination resistors resistance in J400 - J602 connector. RJ-45 placement is shown in picture 206.

Resistance value between Rx and Tx line must be 150 Ohm +/-4%. Measurement method is described on page 8.



Picture 205



Picture 206

CCR1016-12S-1S+

CCR1016-12S-1S+ rev2

Picture 207

Instructions for checking overvoltage

Not required to do over-voltage test.

CLOUD CORE ROUTER 1036 SERIES ROUTERBOARDS

CCR1036-8G-2S+

CCR1036-8G-2S+EM

Picture 208

Disassembling information

Disassembly method of the board is the same as the CCR1009-8G-1S board. Disassembly method is described on page 172.

Instructions for checking overvoltage

Checking voltage drop value between Ethernet transformer pins and Ground

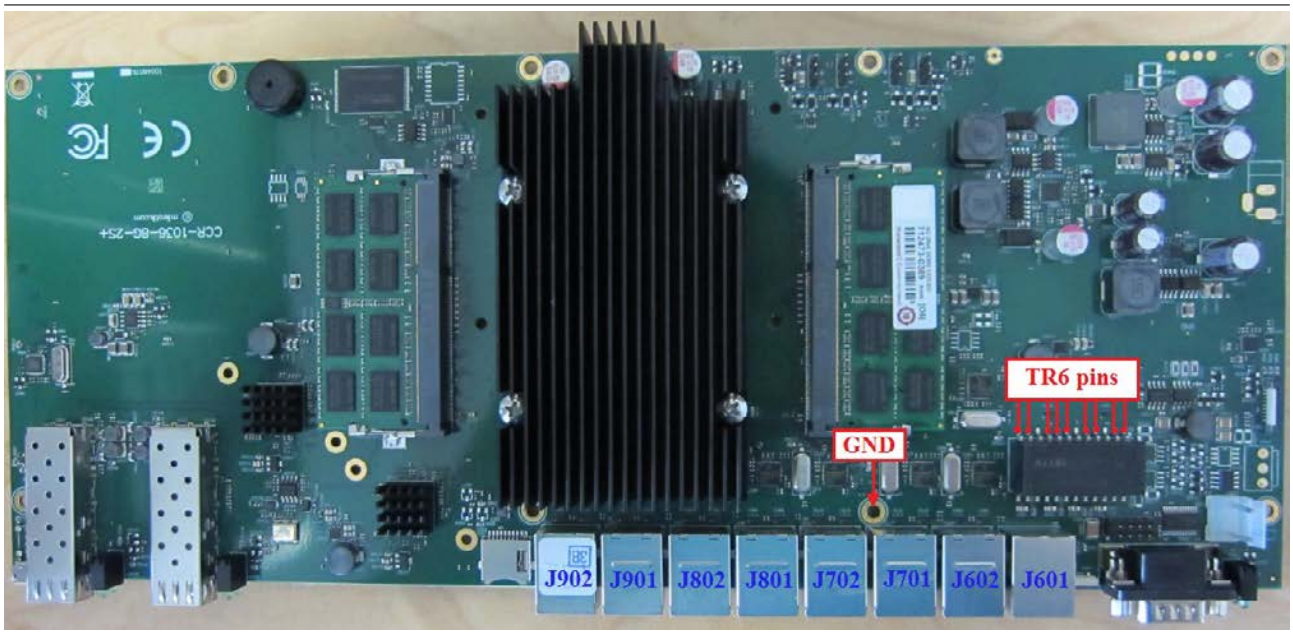
Check voltage drop value between Ethernet transformer TR6 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 209.

Voltage drop value should be in the range from 0,44V to 0,48V. Voltage drop measurement method is described on page 7.

Checking termination resistors resistance in RJ-45 connector

Check termination resistors resistance in J602, J701, J702, J801, J802, J901, J902 connector as shown in the picture 209.

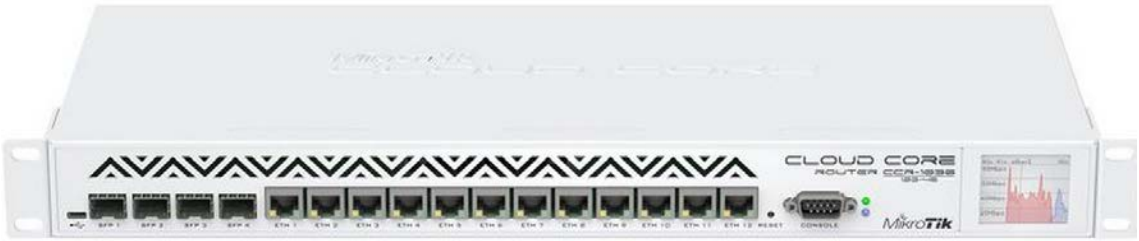
Resistance value between Rx and Tx line must be 150 Ohm +/-4%. Measurement method is described on page 8.



Picture 209

CCR1036-12G-4S

CCR1036-12G-4S-EM



Picture 210

Disassembling information

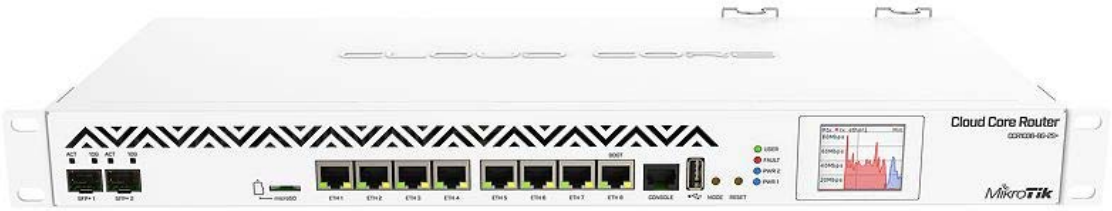
Disassembly method of the board is the same as the CCR1016-12G board. Disassembly method is described on page 174.

Instructions for checking overvoltage

Over-voltage testing procedure, the layout of the components on the board and measurement values is the same as for CCR1016-12G board, see on page 174.

CCR1036-8G-2S+ rev2

CCR1036-8G-2S+EM r2



Picture 211

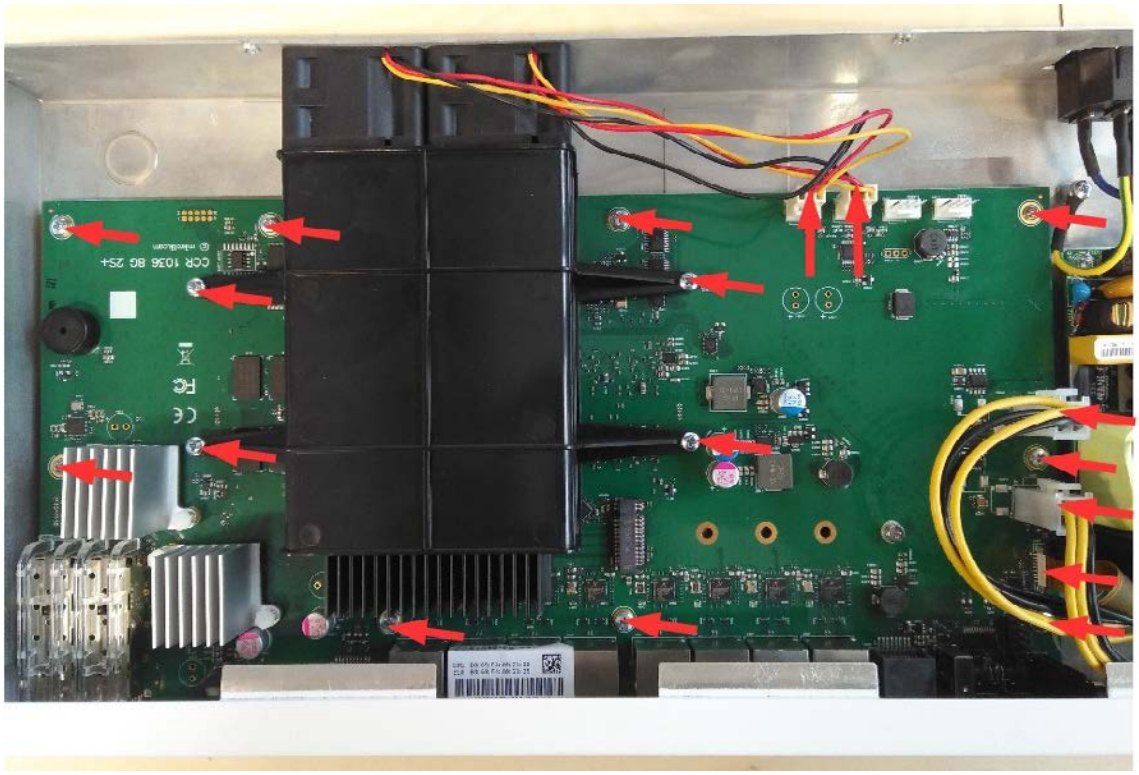
Disassembling information

Step 1: Unscrew 6 screws using PH2 screwdriver. Location of screws you can see in the picture 212.

Picture 212

Step 2: Take off the cover, unscrew all screws using Philips srew driver and unplug FAN, power supply and LCD connectors as showed in the picture 213. Do not damage the LCD flex cable.

Warning! Unplug all AC power cords and wait couple of minutes for open-frame power supply units to discharge their capacitors and then start working on unplugging and undoing screws.



Picture 213

Instructions for checking overvoltage

Checking voltage drop value between Ethernet transformer pins and Ground

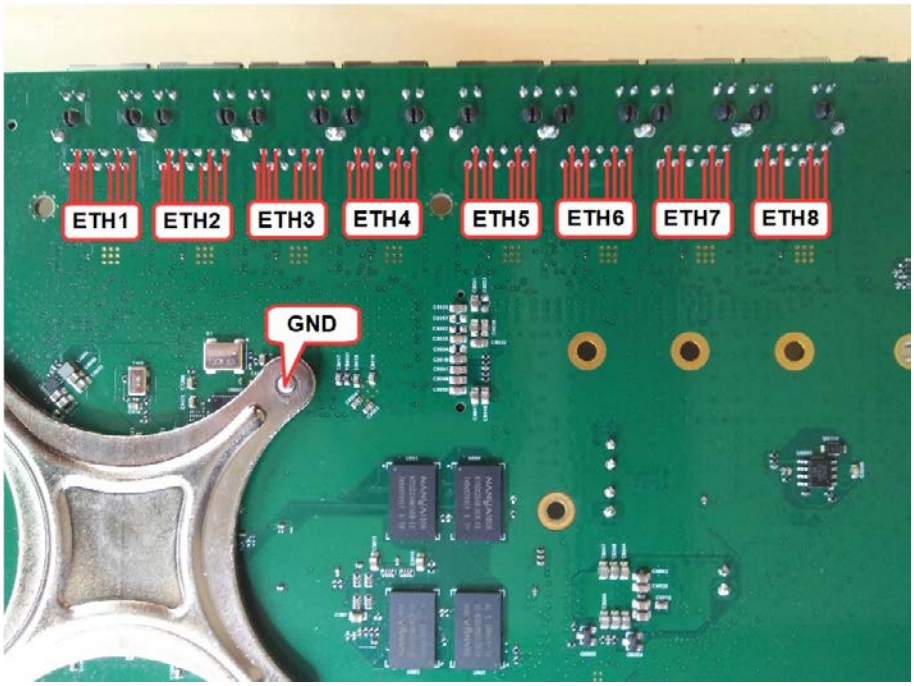
Check voltage drop value between Ethernet built in transformer pins and Ground. Test points on the RJ-45 pins are marked with red dots, see picture 214.

Voltage drop value should be in the range from 0,37V to 0,41V. Voltage drop measurement method is described on page 7.

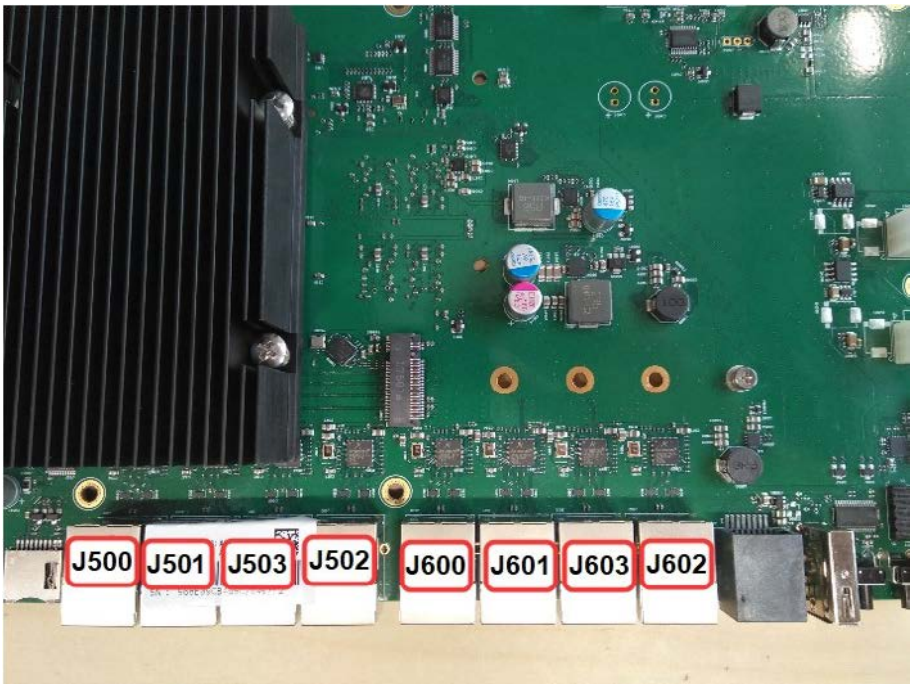
Checking termination resistors resistance in RJ-45 connector

Check termination resistors resistance in J500, J501, J502, J503, J600, J601, J602, J603 connector. RJ-45 placement is shown in picture 215.

Resistance value between Rx and Tx line must be 150 Ohm +/-4%. Measurement method is described on page 8.



Picture 214



Picture 215

CCR1036-12G-4S rev2

CCR1036-12G-4S-EM rev2

Picture 216

Disassembling information

Disassembly method of the board is the same as the CCR1036-8G-2S+ rev2 board. Disassembly method is described on page 183.

Instructions for checking overvoltage

Checking voltage drop value between Ethernet transformer pins and Ground

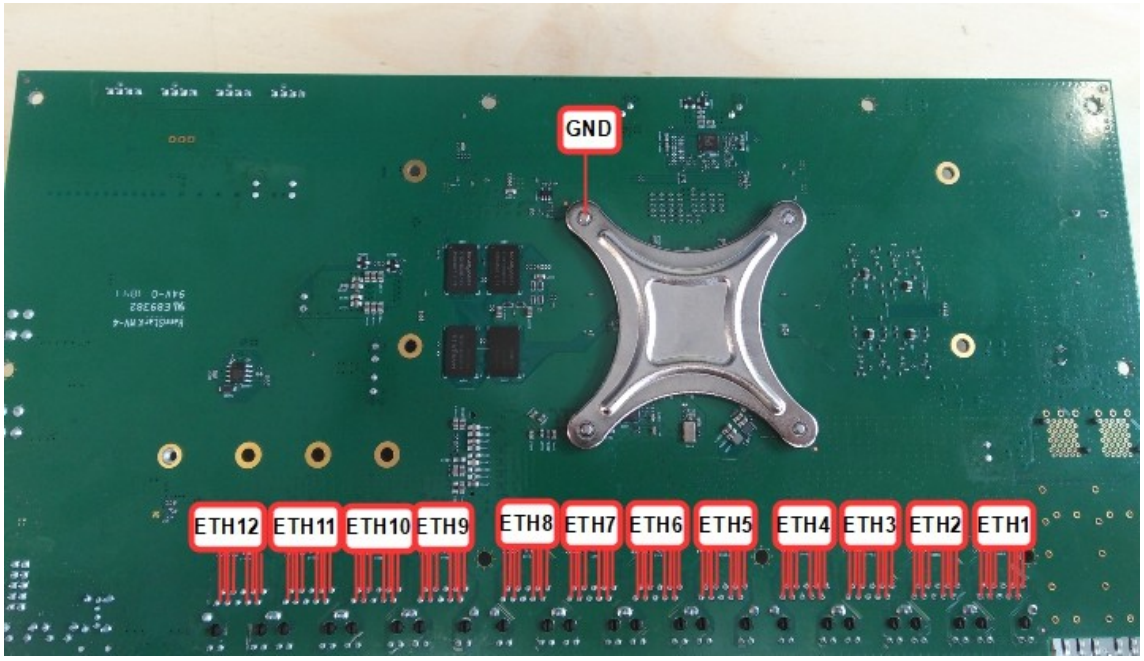
Check voltage drop value between Ethernet built in transformer pins and Ground. Test points on the RJ-45 pins are marked with red dots, see picture 217.

Voltage drop value should be in the range from 0,37V to 0,41V. Voltage drop measurement method is described on page 7.

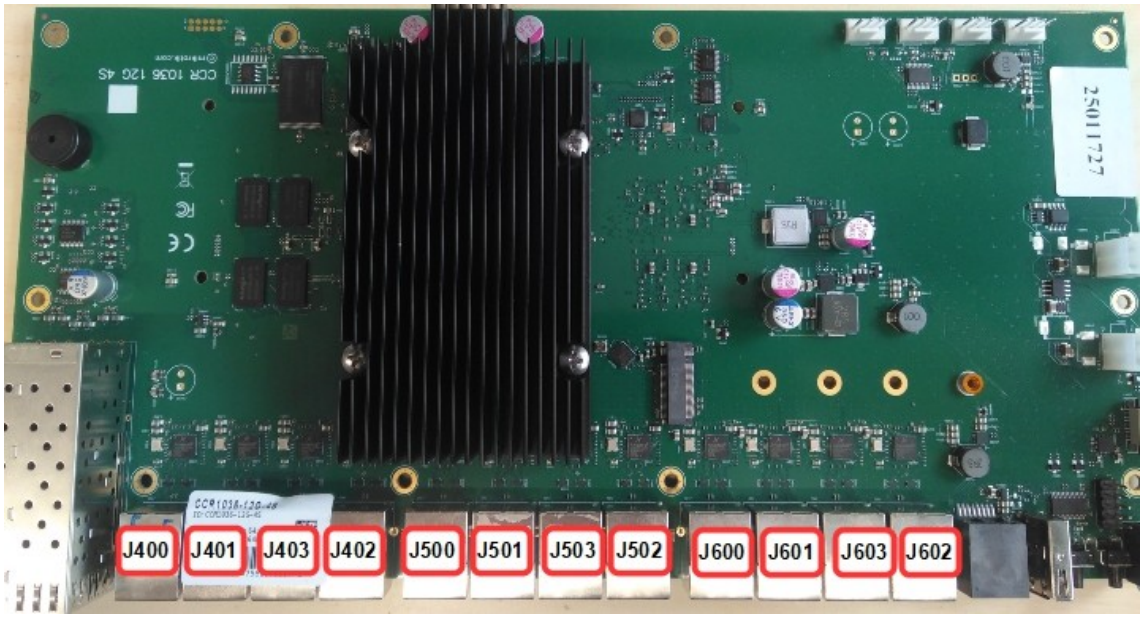
Checking termination resistors resistance in RJ-45 connector

Check termination resistors resistance in J400 - J602 connector. RJ-45 placement is shown in picture 218.

Resistance value between Rx and Tx line must be 150 Ohm +/-4%. Measurement method is described on page 8.



Picture 217



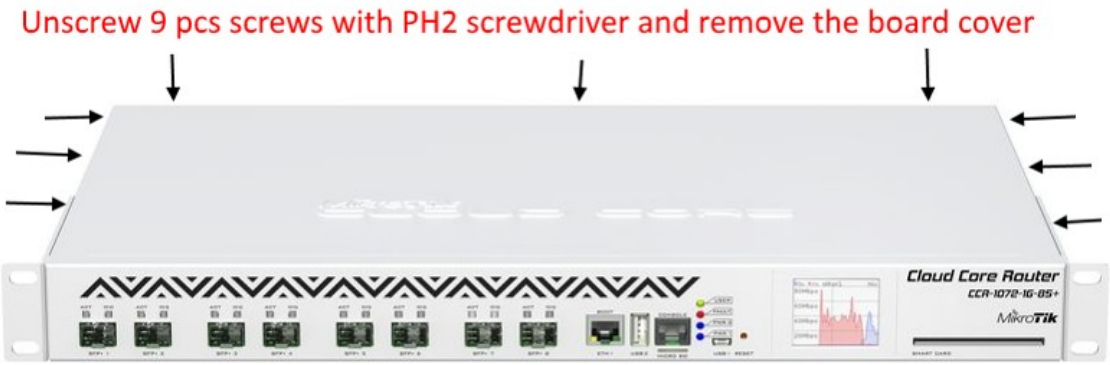
Picture 218

CLOUD CORE ROUTER 1072 SERIES ROUTERBOARDS

CCR1072-1G-8S+

Picture 219

Disassembling information



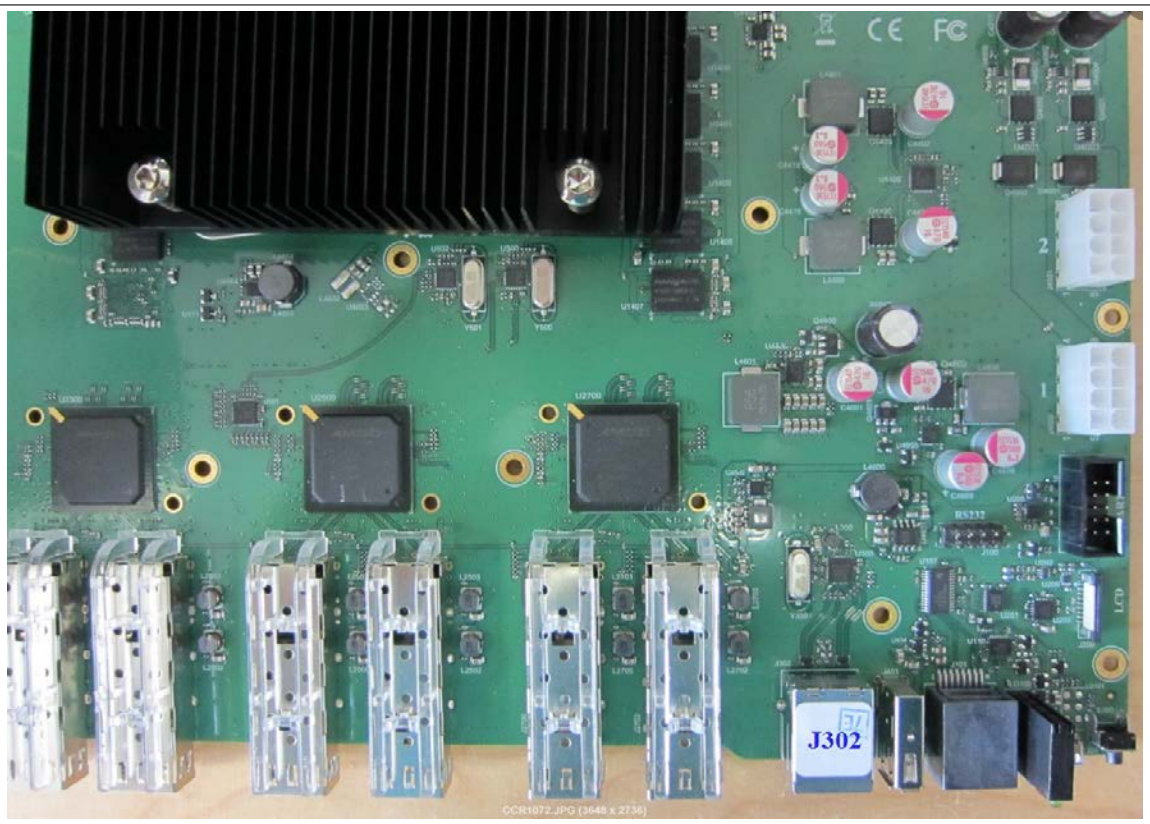
Picture 220

Instructions for checking overvoltage

Checking termination resistors resistance in RJ-45 connector

Check termination resistors resistance in J302 connector as shown in the picture 221.

Resistance value between Rx and Tx line must be 150 Ohm +/-4%. Measurement method is described on page 8.



Picture 221

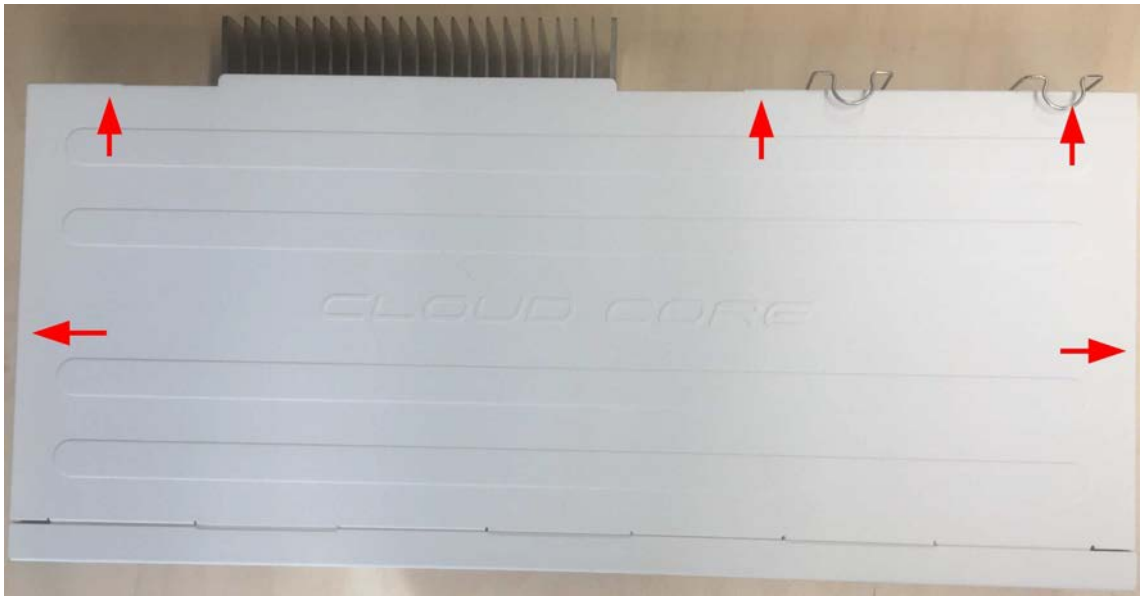
CLOUD CORE ROUTER 2004 SERIES ROUTERBOARDS

CCR2004-1G-12S+2XS

Picture 222

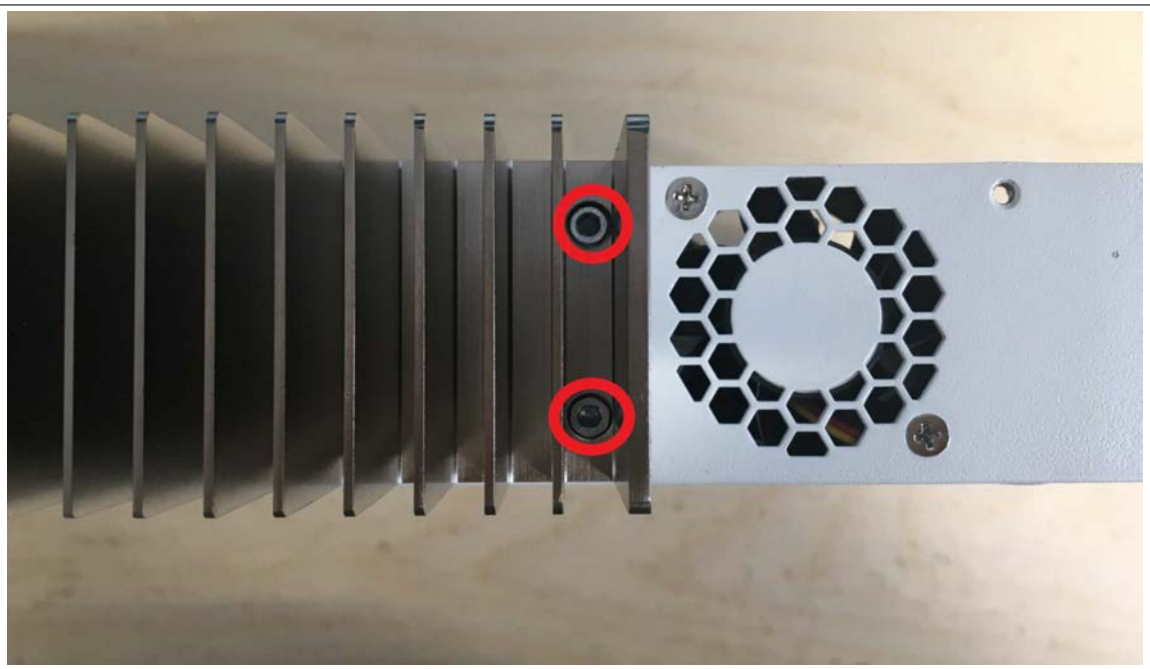
Disassembling information

Step 1: Using Phillips PH2 or similar unscrew all screws shown in picture 223.



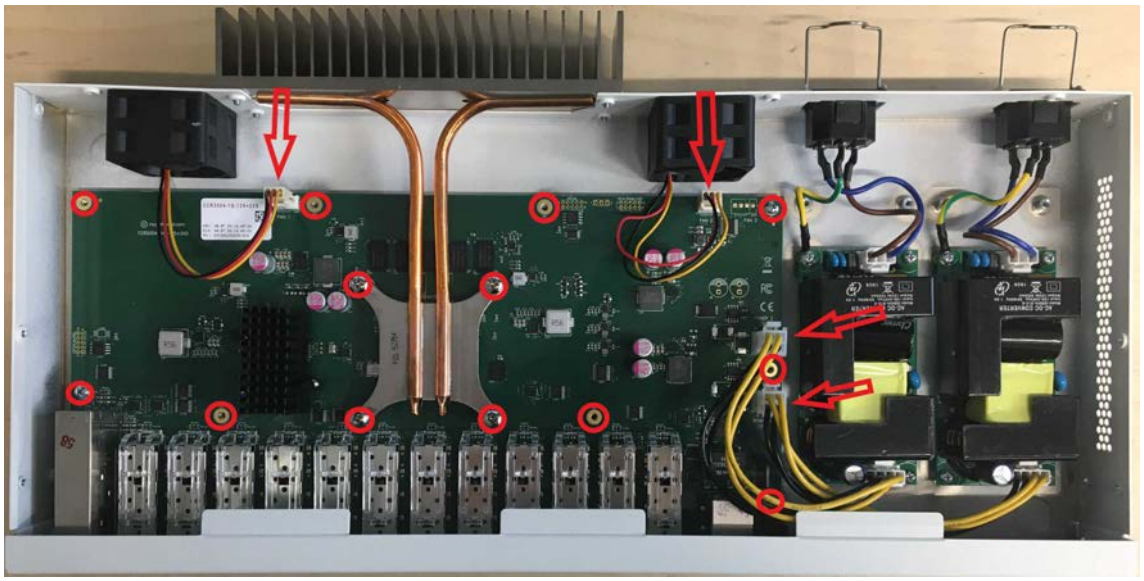
Picture 223

Step 2: Using Torx 10 unscrew a total of 4 bolts to release the heat sink from the case. Location of the bolts is shown in picture reffig:CCR2004-1G-12S+2XS-case-rear.



Picture 224

Step 3: Using Phillips PH1 unscrew all the screws, unplug fans and PSU power cables as shown in picture 225.



Picture 225

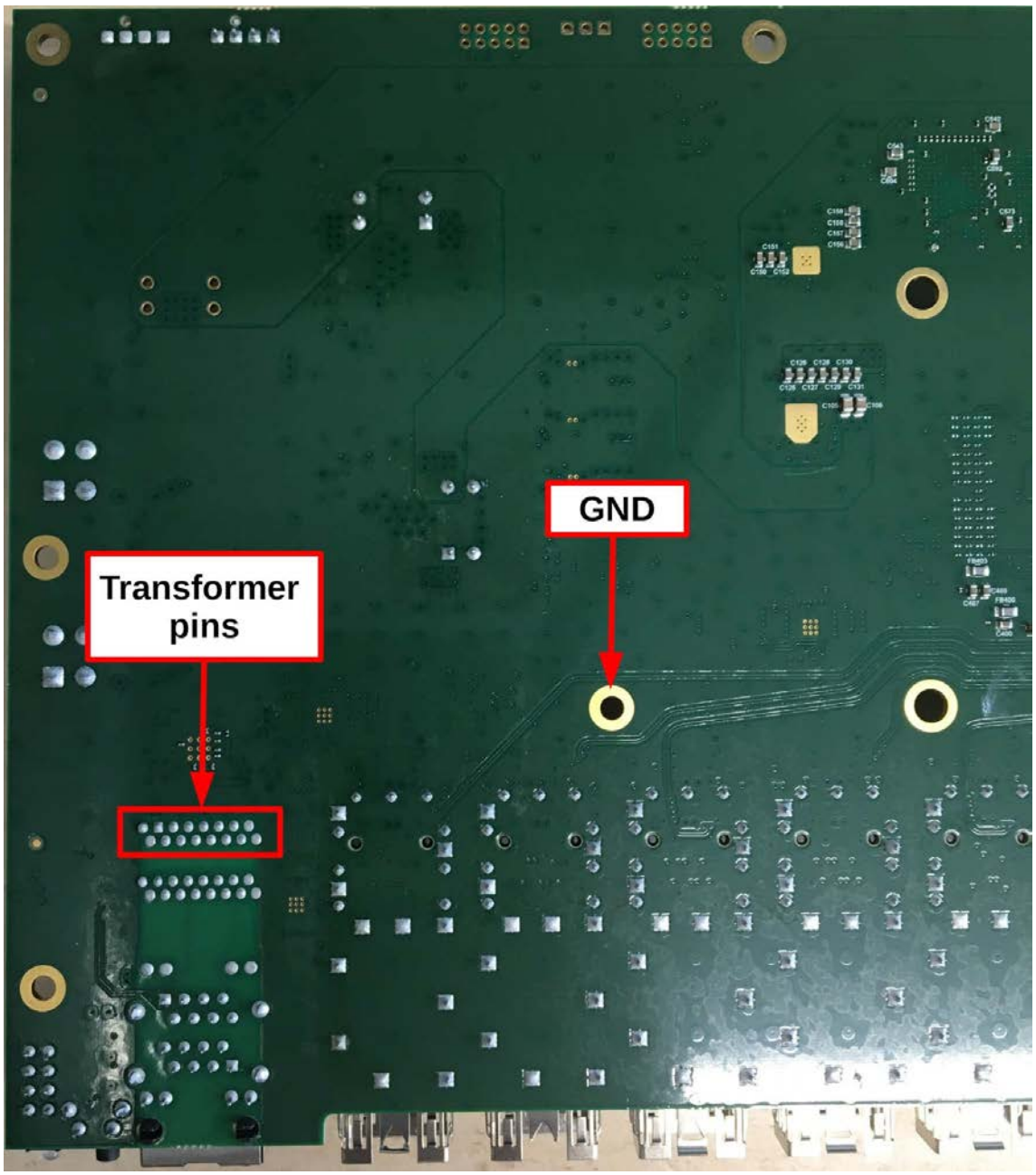
Instructions for checking overvoltage

Checking voltage drop value between Ethernet transformer pins and Ground

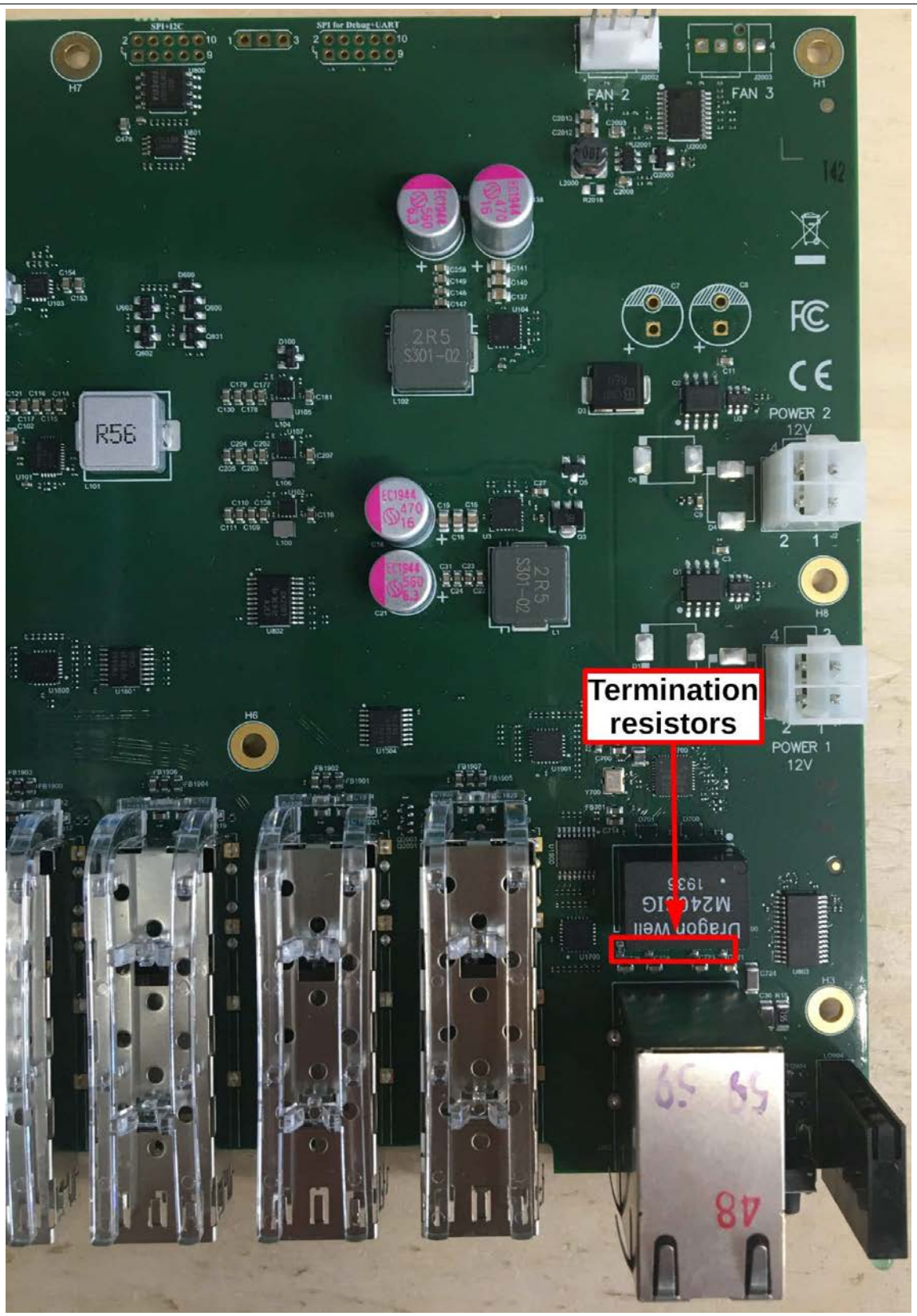
Check voltage drop value between Ethernet transformer pins and GND. Test points are marked in picture 226. Voltage drop value should be in the range from 0,34V to 0,44V. Voltage drop measurement method is described on page 7.

Checking 75 Ohm termination resistors resistance

Check value of each termination resistor. It should be approximately 75 Ohms. Location of resistors is shown in picture 227.



Picture 226



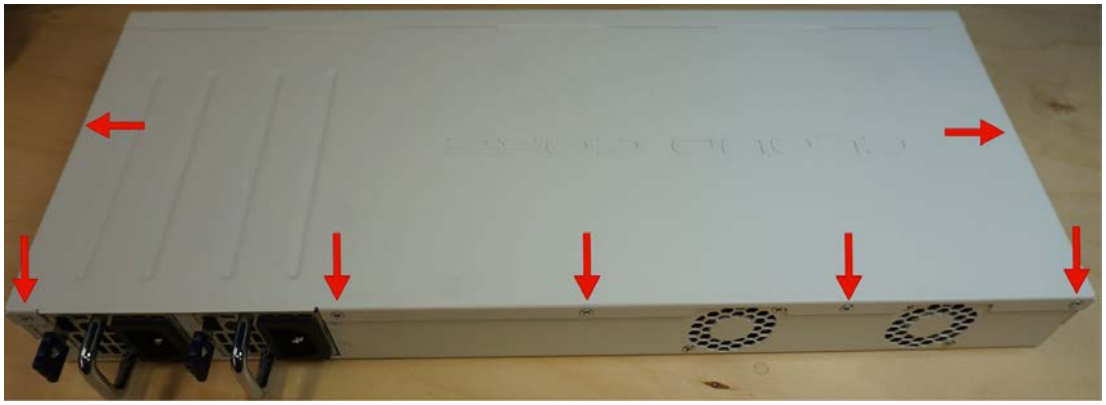
Picture 227

CCR2004-16G-2S+

Picture 228

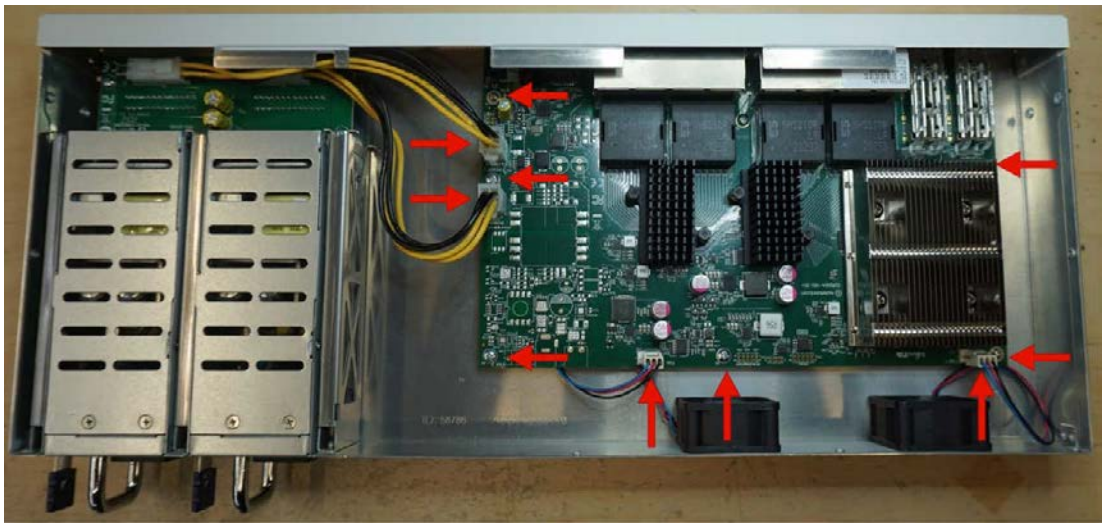
Disassembling information

Step 1: Using Phillips PH2 or similar unscrew all screws shown in picture 229.



Picture 229

Step 2: Take off the cover, unscrew all screws using Philips screw driver, unplug FAN and power supply cables as showed in picture 230.

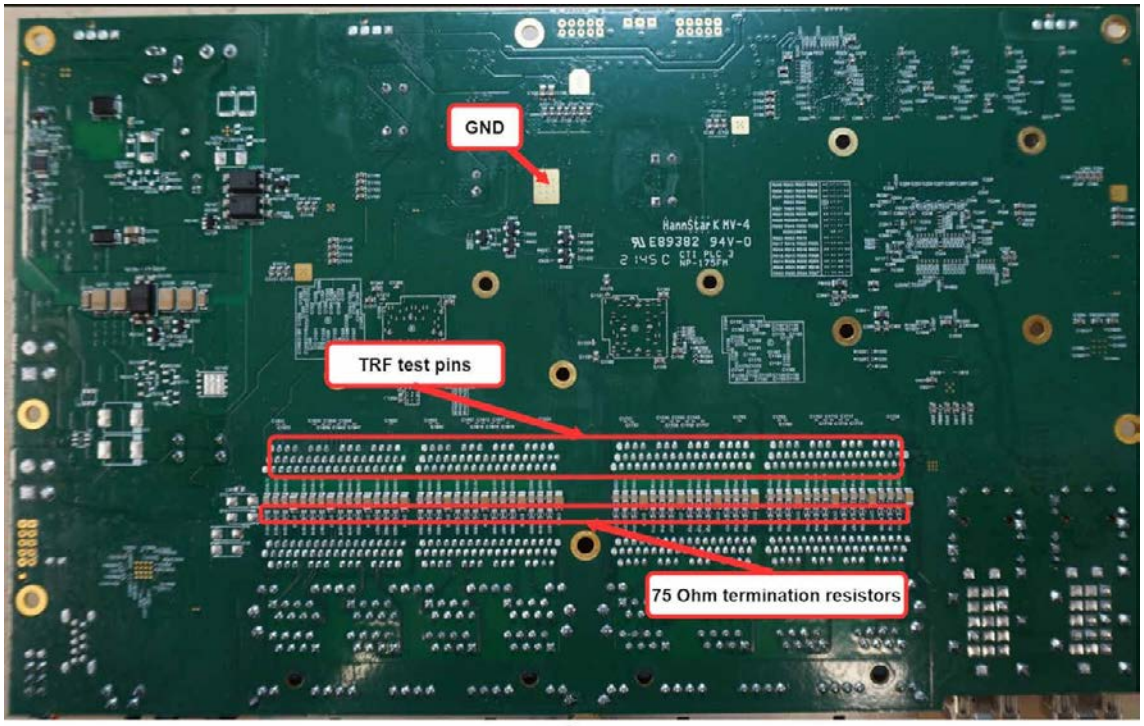


Picture 230

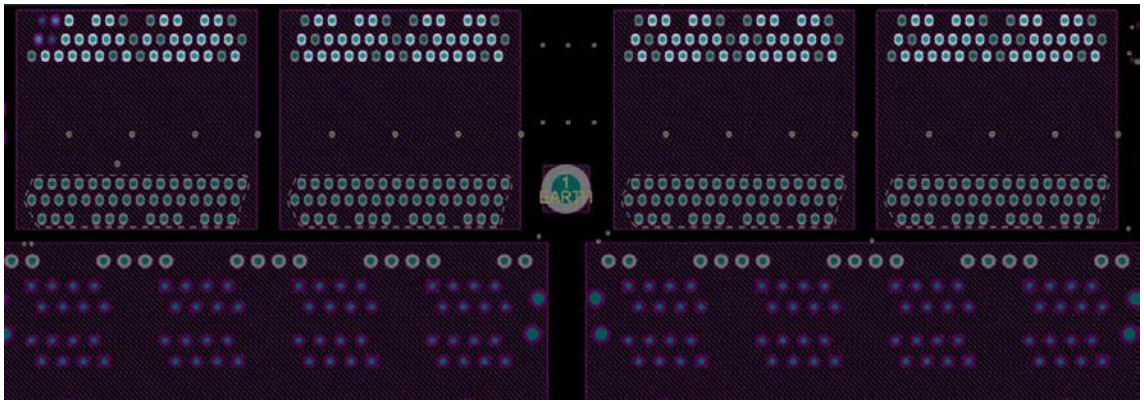
Instructions for checking overvoltage

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR1700, TR1701, TR1800, TR1801 pins and GND. Test points are marked in picture 232. Note that the view for transformer pins are from the bottom for necessary of measurement. Voltage drop value should be in the range from 0,34V to 0,64V. Voltage drop measurement method is described on page 7.



Picture 231



Picture 232

Checking 75 Ohm termination resistors resistance

Check value of each termination resistor. It should be approximately 75 Ohms. Location of resistors is shown in picture 231.

CLOUD CORE ROUTER 2116 SERIES ROUTERBOARDS

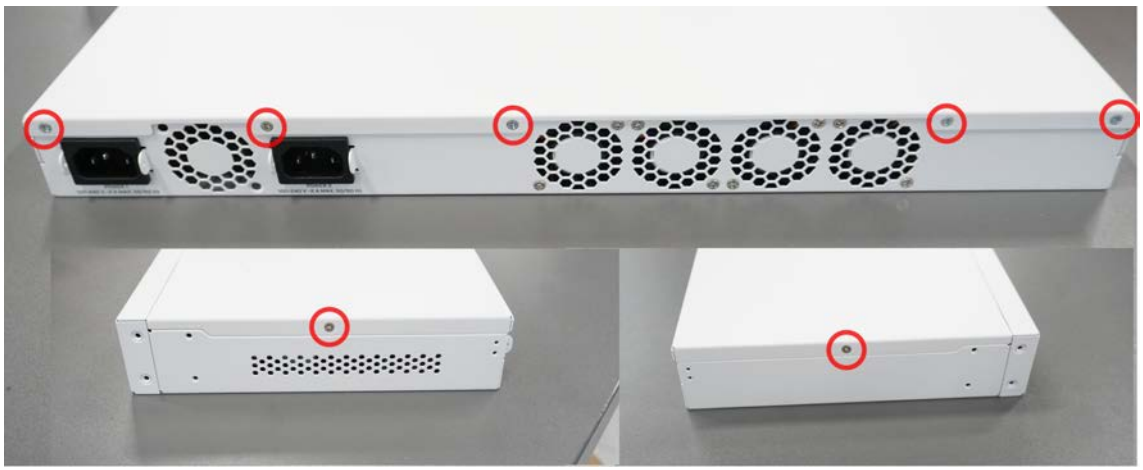
CCR2116-12G-4S+

Picture 233

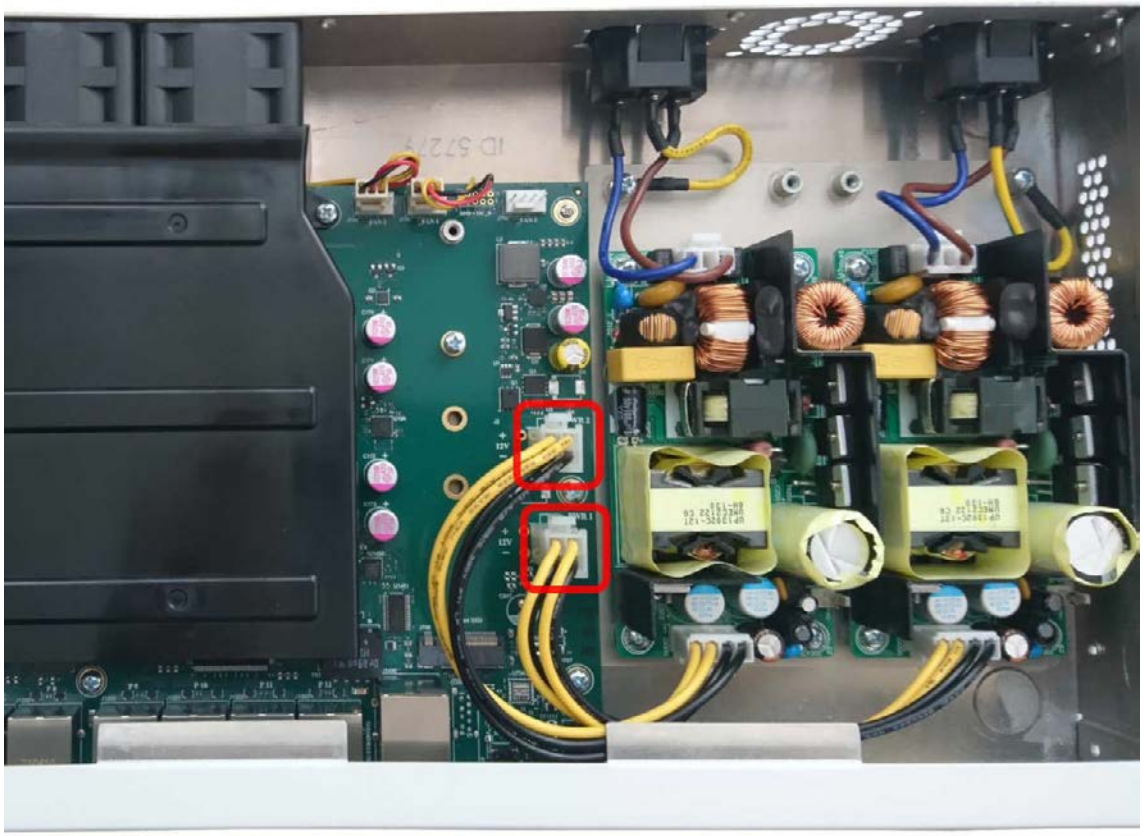
Disassembling information

Step 1: The board contains internal open frame PSUs, before disassembly disconnect the routerboard from mains power and wait about 15min. to allow the PSU capacitors to discharge! Using Phillips PH2 unscrew 7 side screws marked on picture 234 and remove cover. When the cover is removed, disconnect PSUs from the board – PSU connectors are shown on picture 235. Avoid touching any other part of PSU in order to prevent possible electrical shock, board damage or equipment damage!

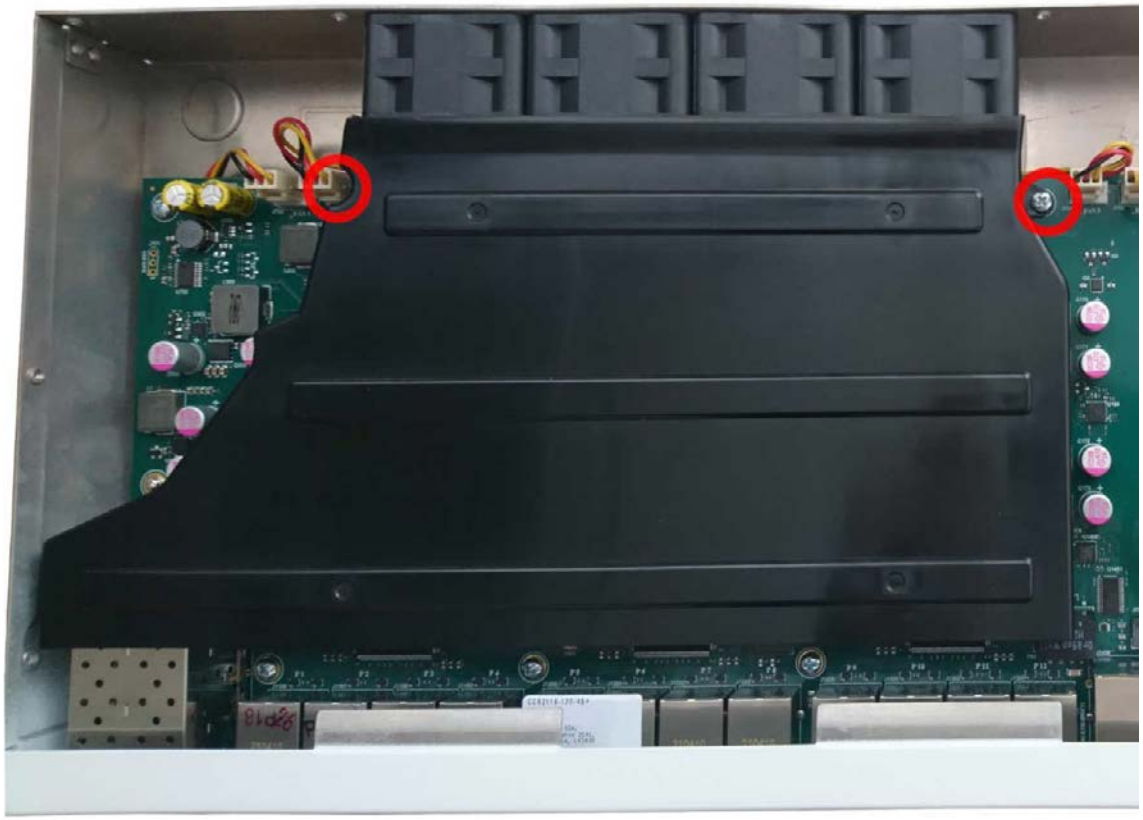
Step 2: Continue the disassembly by removing the wind tunnel, screw placement is shown on picture 236. A screw with a plastic spacer is located on the PSU side of the board, see picture 237. PH1 screwdriver is advised.



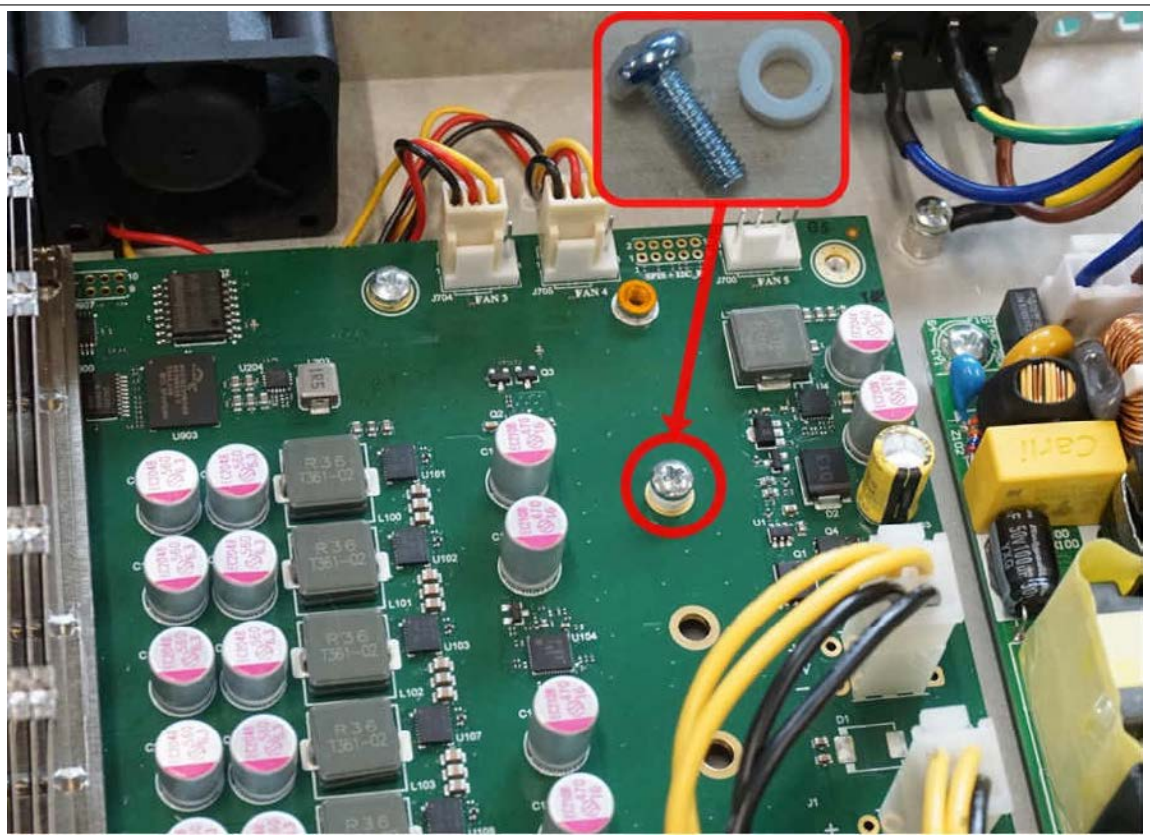
Picture 234



Picture 235

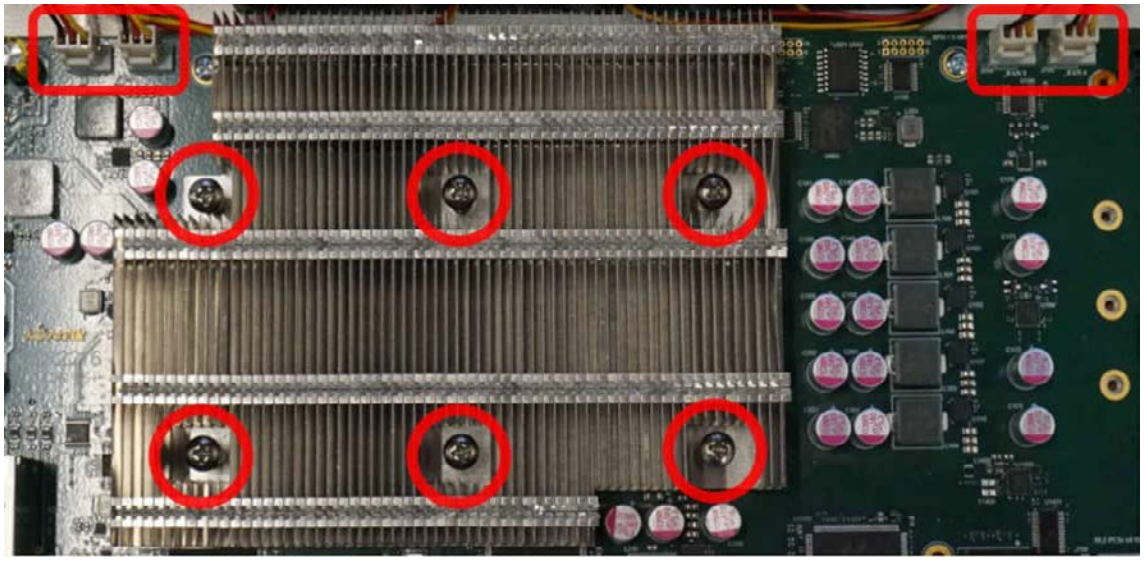


Picture 236



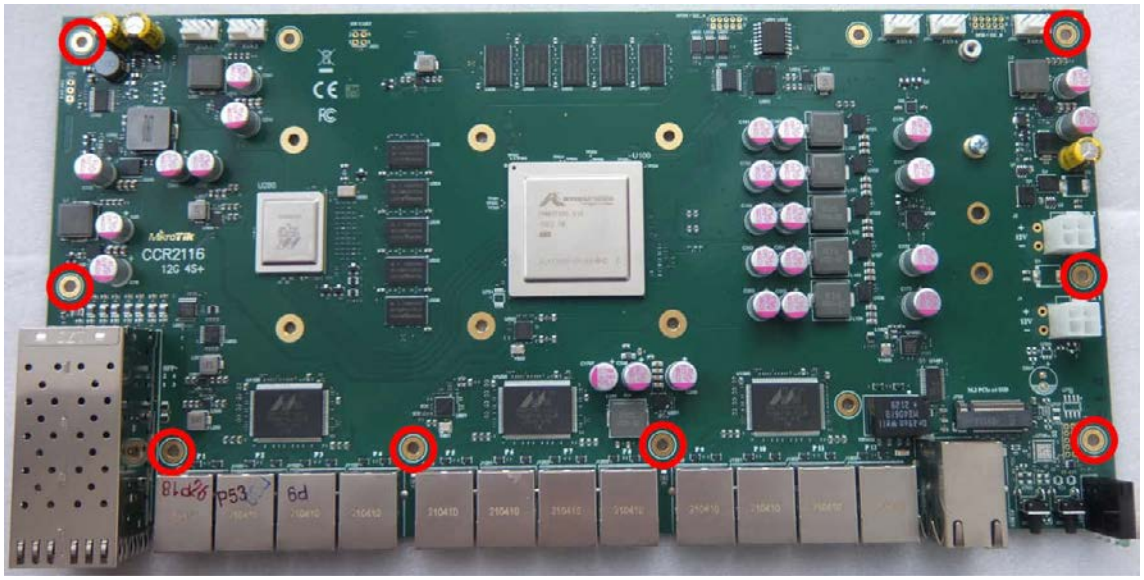
Picture 237

Step 3: Gently remove heatsink (PH2) and fan connectors indicated on picture 238.



Picture 238

Step 4: Using PH1 remove all other screws that are holding the PCB, screws position shown on picture 239.

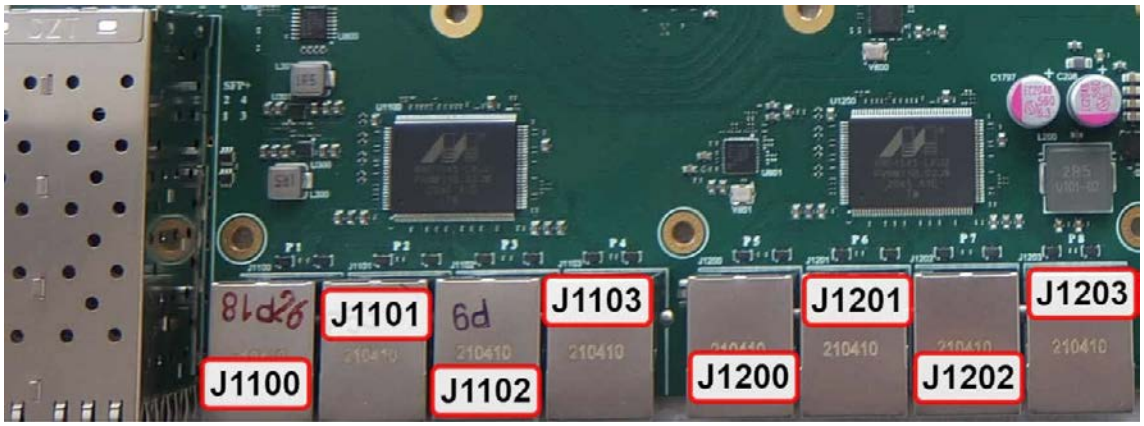


Picture 239

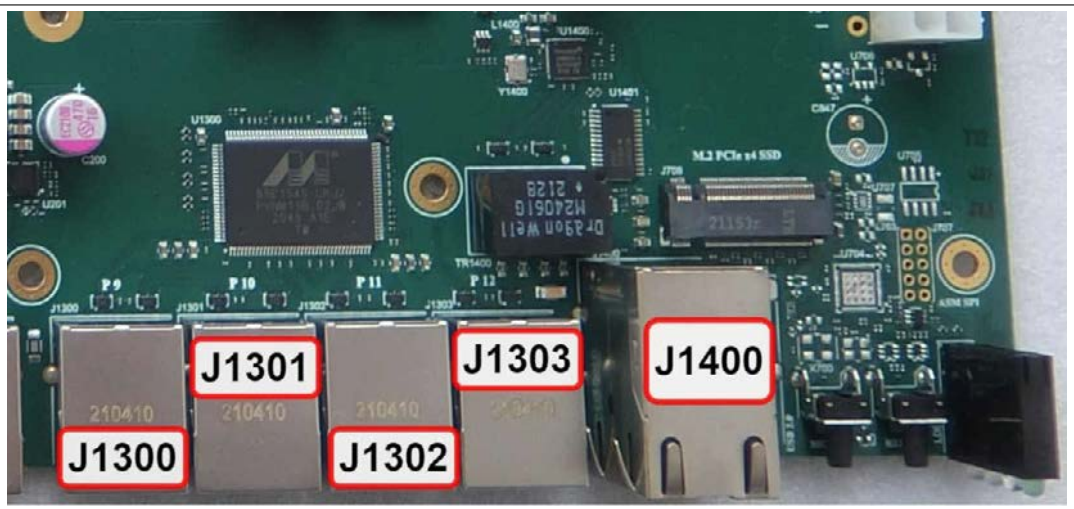
Instructions for checking overvoltage

Checking termination resistors resistance in RJ-45 connector

Check resistance of termination resistors in the following connectors shown on pictures 240 and 241:
J1100, J1102, J1102, J1103, J1200, J1201, J1202, J1203, J1300, J1301, J1302, J1303, J1400.
Resistance value between Rx and Tx line must be 150 Ohm ±4%. Measurement method is described on page 8.



Picture 240



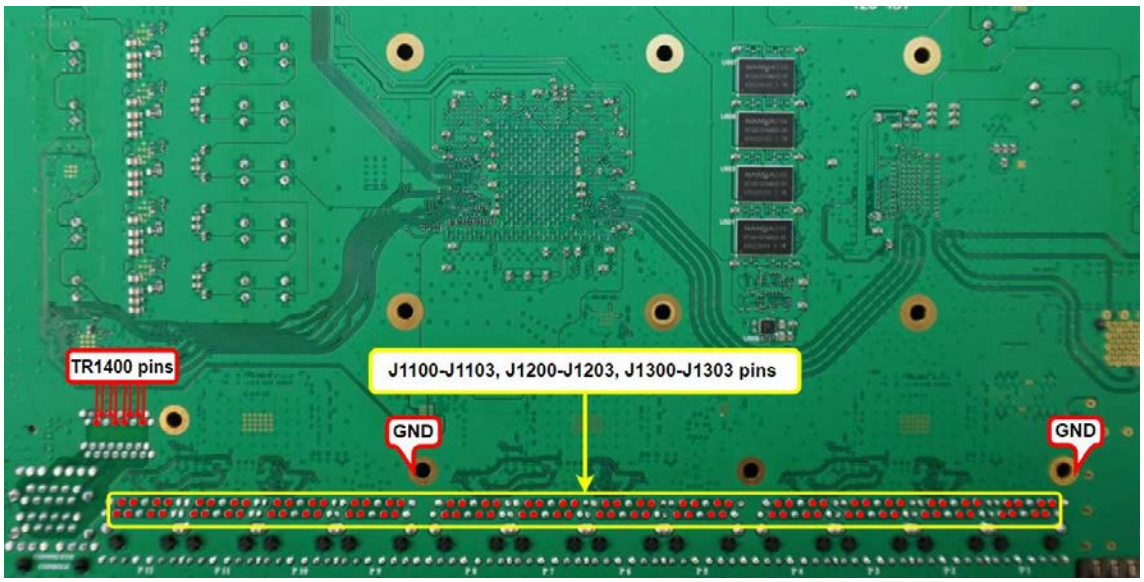
Picture 241

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR1400 pins and Ground. Test points on the transformer pins are highlighted with red lines, see picture 242. Voltage drop value should be in the range from 0,40V to 0,45V. Voltage drop measurement method is described on page 7.

Check voltage drop value between RJ-45 connectors pins and Ground

Check voltage drop value between RJ-45 connectors J1100-J1103, J1200-J1203, J1300-J1303 pins and ground. Test points on the RJ-45 connectors pins are marked with red dots, see picture 242. Voltage drop value should be in the range from 0,23V to 0,29V. Voltage drop measurement method is described on page 7.



Picture 242

CLOUD CORE ROUTER 2216 SERIES ROUTERBOARDS

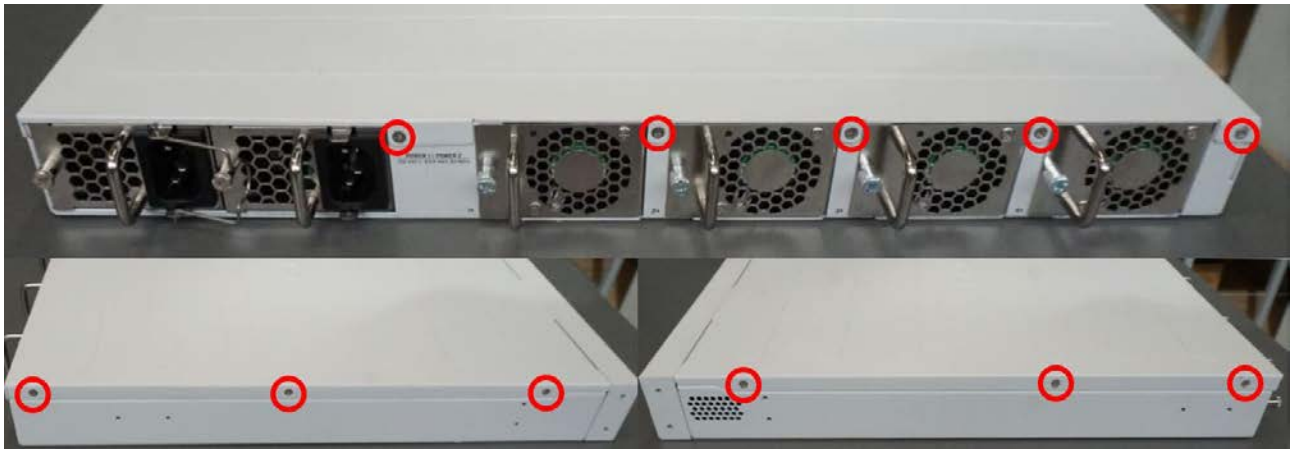
CCR2216-1G-12XS-2XQ

Picture 243

Disassembling information

Step 1:

Using Phillips PH2 unscrew 11 side screws marked on picture 244 and remove the cover.



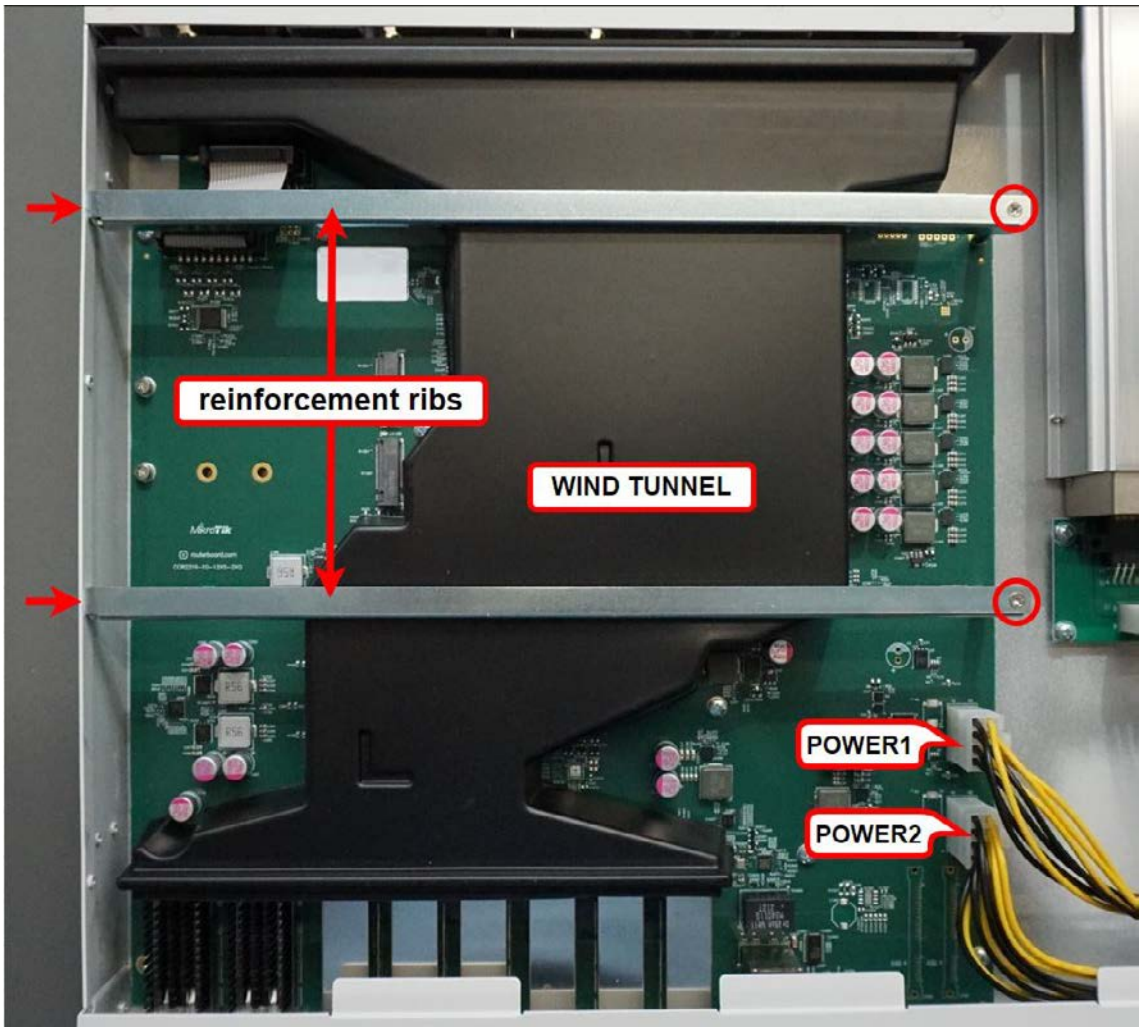
Picture 244

Step 2:

Using Phillips PH2 unscrew 2 side screws end 2 top screws, and then remove reinforcement ribs as shown in picture 245.

Step 3:

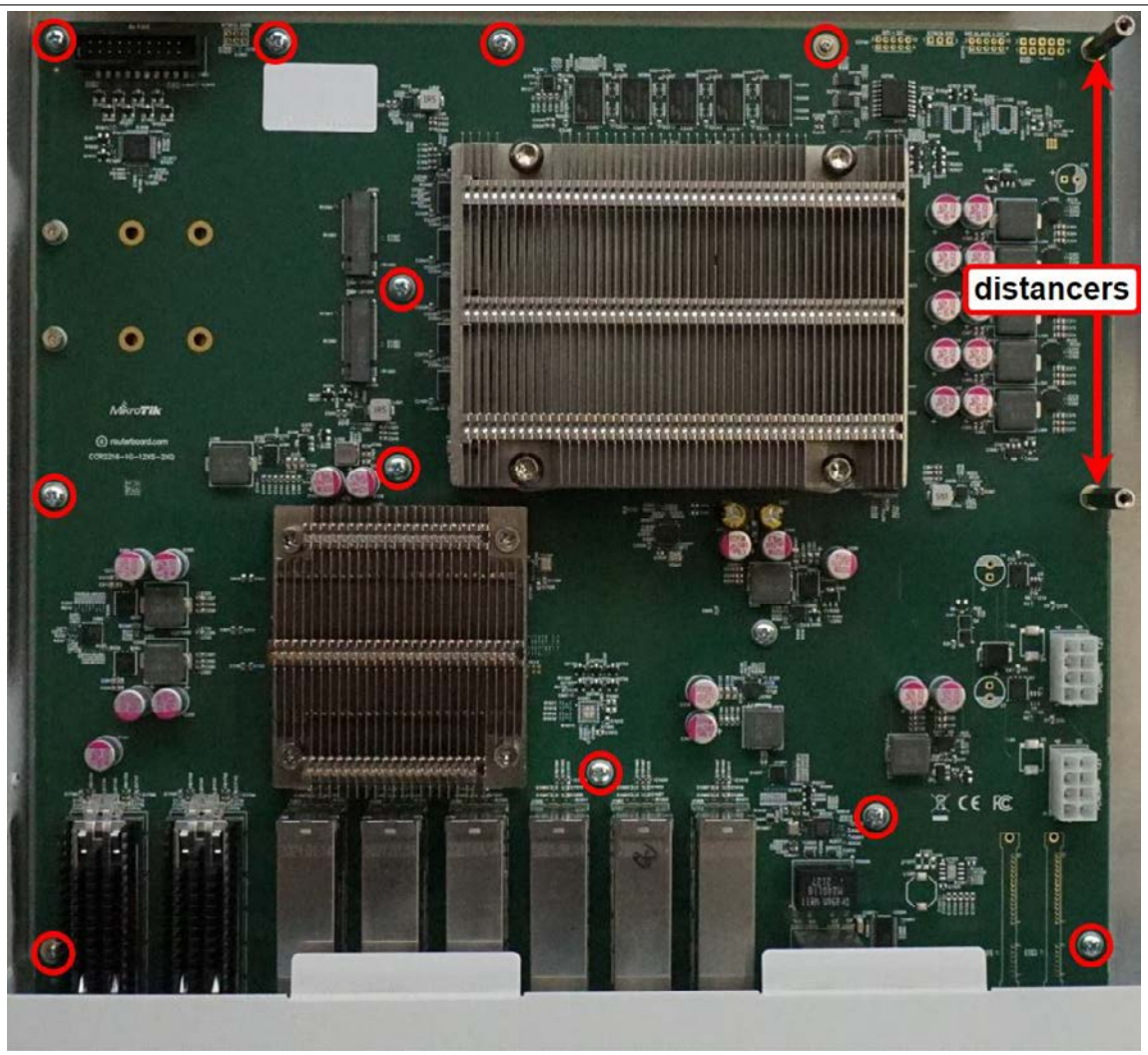
Unplug power supply connectors and gently remove the wind tunnel, see picture 245.



Picture 245

Step 4:

Using 5.5 mm Hex Nut Driver unscrew 2 distancers an using Phillips PH1 unscrew 11 screws, see picture 246.

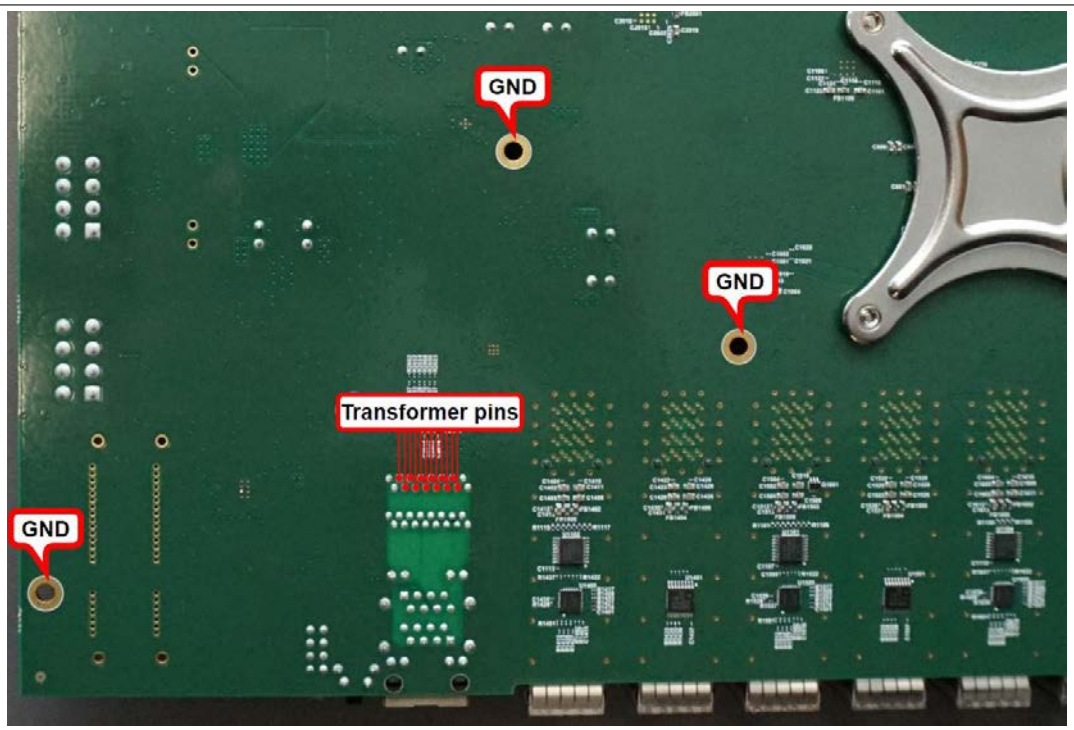


Picture 246

Instructions for checking overvoltage

Checking voltage drop value between Ethernet transformer pins and Ground

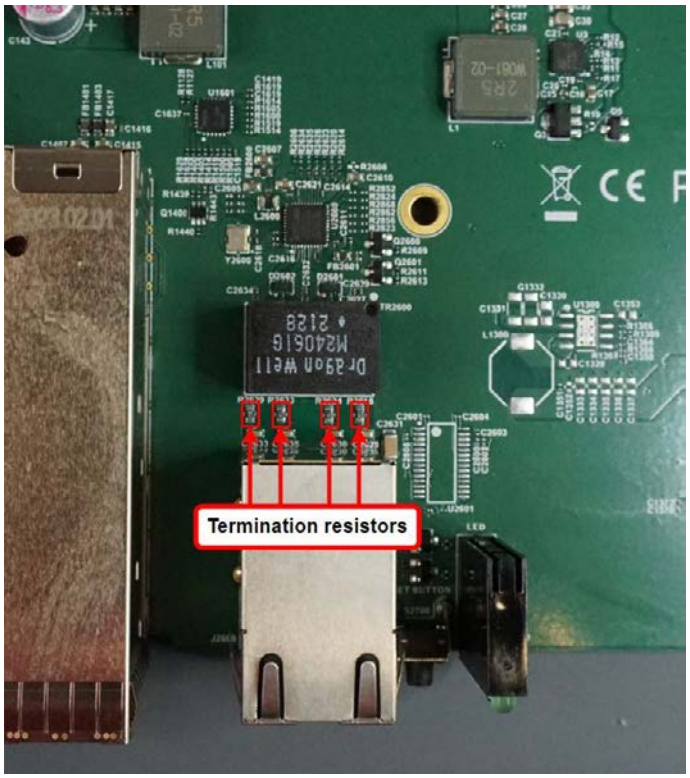
Check voltage drop value between Ethernet transformer TR2600 pins and Ground. Test points on the transformer pins are highlighted with red lines, see picture 247. Voltage drop value should be in the range from 0,45V to 0,52V. Voltage drop measurement method is described on page 7.



Picture 247

Checking 75 Ohm termination resistors resistance

Check value of each termination resistor. It should be 75 Ohms +/- 1%. Location of resistors is shown in picture 248.



Picture 248

CLOUD SMART SWITCH 610 SERIES ROUTERBOARDS

CSS610-8P-2S+IN

Picture 249

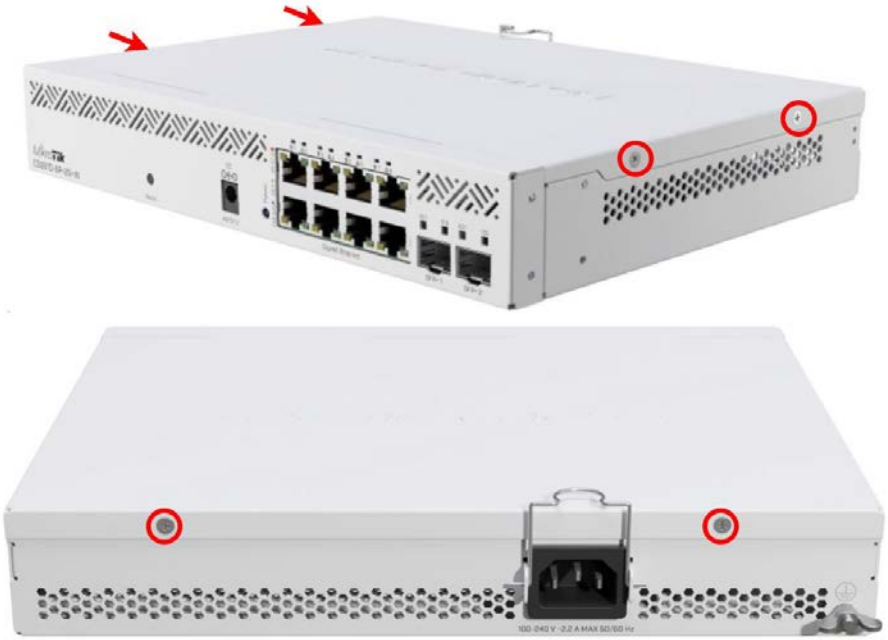
Disassembling information

Warning!!!

The board contains internal open frame PSU, before disassembly disconnect the routerboard power from mains and wait about 15 minutes, to allow the PSU capacitors to discharge!

Step 1:

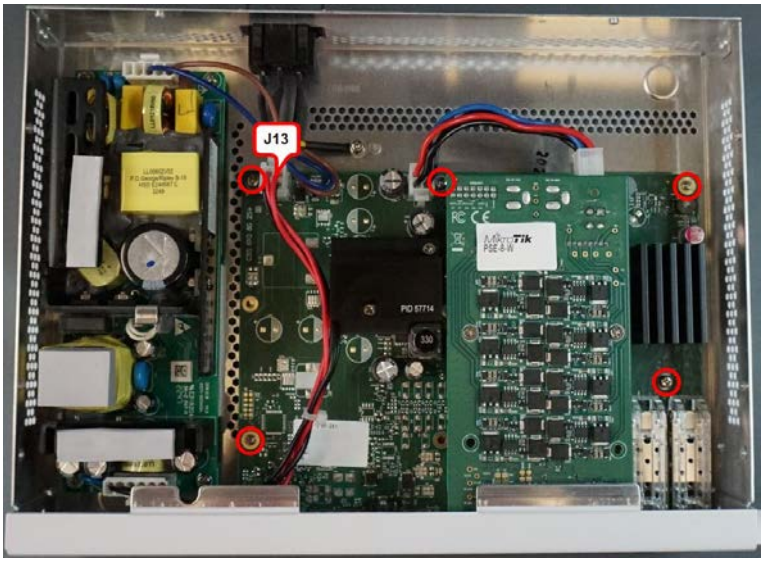
Using Phillips PH2 screwdriver unscrew 6 side screws and remove the cover, see picture 250.



Picture 250

Step 2:

Disconnect from the board the connector J13 and using Phillips PH1 screwdriver unscrew 5 screws, see picture 251.

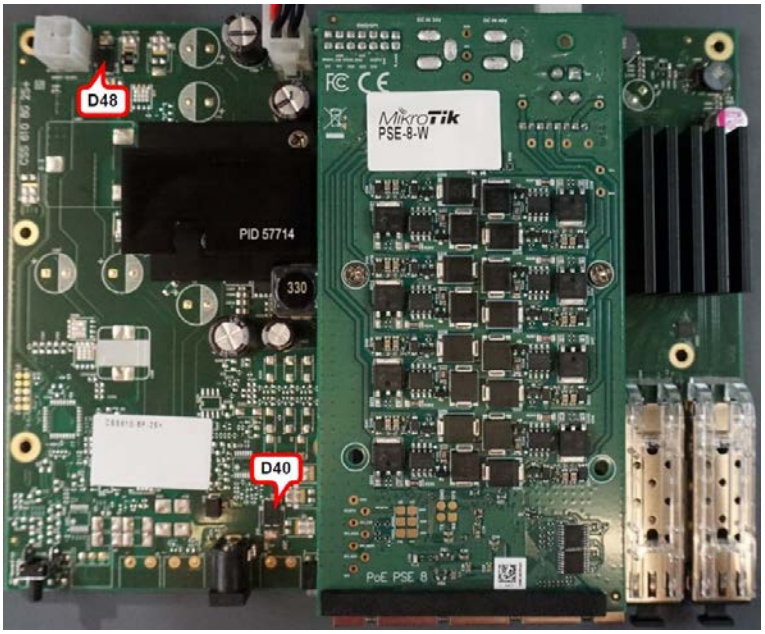


Picture 251

Instructions for checking overvoltage

Checking Schottky diodes

Check Schottky diodes D40, D48. Location of the diodes you can see in the picture 252. Schottky diode quality measurement method is described on page 4.



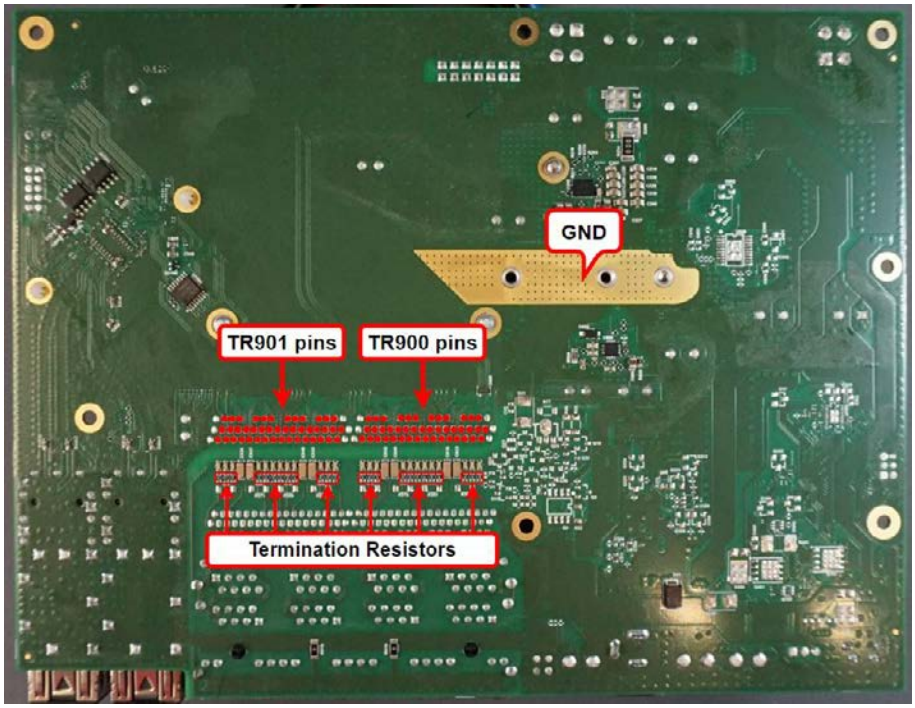
Picture 252

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformers TR900, TR901 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 253. Voltage drop value should be in the range from 0,32V to 0,55V. Voltage drop measurement method is described on page 7.

Checking 75 Ohm termination resistors resistance

Check value of each termination resistor. It should be 75 Ohms +/- 1%. Location of the termintation resistors is shown in picture 253.



Picture 253

1100 SERIES ROUTERBOARDS

RB1100AHx2

Picture 254

Disassembling information

Step 1: Unscrew 6 screws (4 screws behind of the board case and 1 screw on the each side of the board case) using PH2 screwdriver. Location of the screws you can see in the picture 255.

Picture 255

Step 2: Pull the cover away from you, see picture 256.

Picture 256

Instructions for checking overvoltage

Checking Schottky diode and diodes bridges

Check Schottky diode D1101 and diodes bridges D1102, D1105. Location of diodes on the board you can see in the picture 257. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

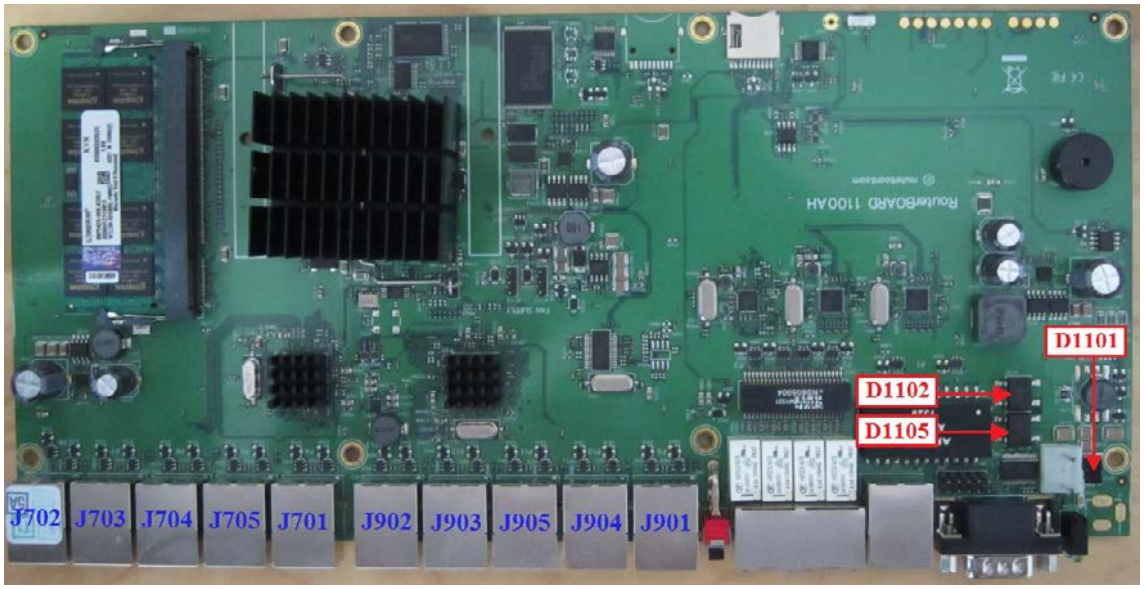
Checking voltage drop value between diode array pin#1 and Ground

Check voltage drop between diode arrays D501, D503, D605, D607 pin#1 and Ground. Location of diode arrays on the board you can see in the picture 258. Voltage drop value should be in the range from 0,3V to 0,34V. Voltage drop measurement method is described on page 6.

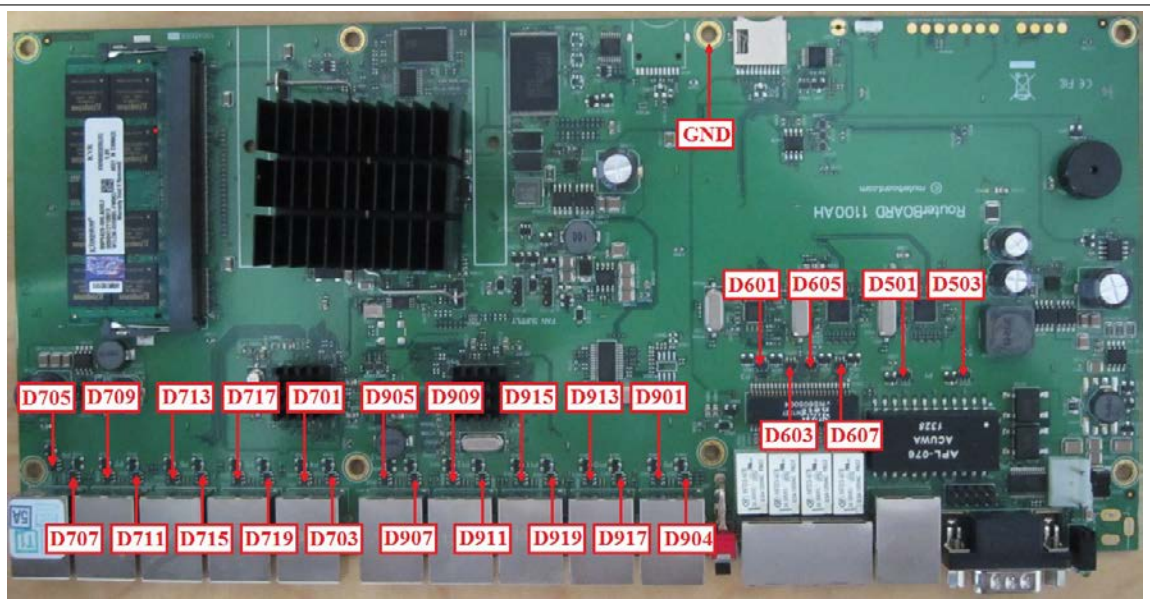
Then check voltage drop value between diode arrays D601, D603, D901, D904, D913, D917, D919, D915, D911, D909, D907, D905, D703, D701, D719, D717, D715, D713, D711, D709, D707, D705 pin#1 and Ground. Location of diode arrays on the board you can see in the picture 258.

Checking termination resistors resistance in RJ-45 connector

Check termination resistors resistance in J701 - J705, J901 - J905 connectors. Resistance value between Rx and Tx line must be 150 Ohm +/- 4%. Measurement method is described on page 8.



Picture 257


GND
D601
D605
D501
D503
D705
D709
D713
D717
D701
D905
D909
D915
D913
D901
D603
D607
D707
D711
D715
D719
D703
D907
D911
D919
D917
D904

Picture 258

RB1100AHx4 Dude Edition

RB1100AHx4

Picture 259

Disassembling information

Disassembly method of the board is the same as the RB1100AHx2 board. Disassembly method is described on page 214.

Instructions for checking overvoltage

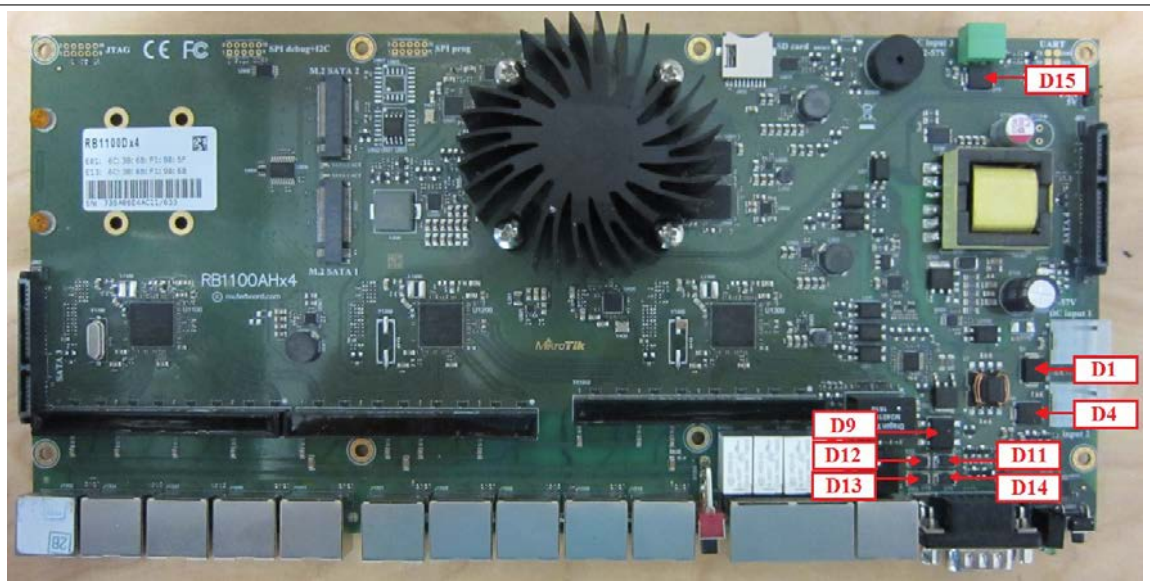
Checking Schottky diode and diodes bridges

Check Schottky diodes D1, D4, D11-D15 and diode bridge D9. Location of diodes on the board you can see in the picture 260. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

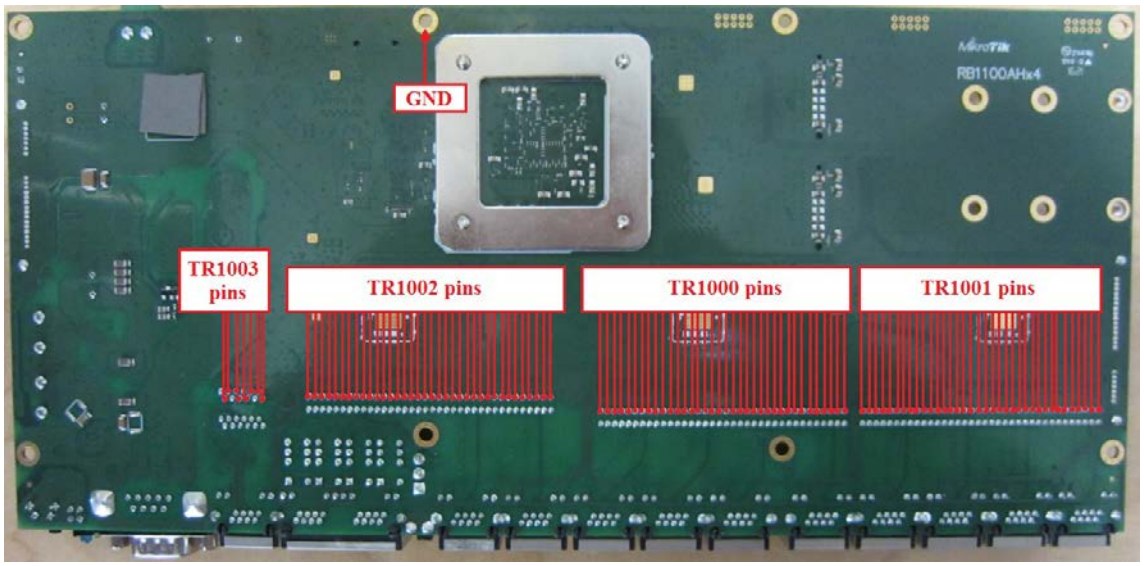
Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformers TR1000-TR1002 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 260. Voltage drop value should be in the range from 0,36V to 0,4V. Voltage drop measurement method is described on page 7.

Check voltage drop value between transformer TR1003 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 260. Voltage drop value should be in the range from 0,36V to 0,4V. Voltage drop measurement method is described on page 7.



Picture 260



Picture 261

2011 SERIES ROUTERBOARDS

RB2011iL-IN

RB2011iL-RM

RB2011iLS-IN

RB2011UiAS-IN

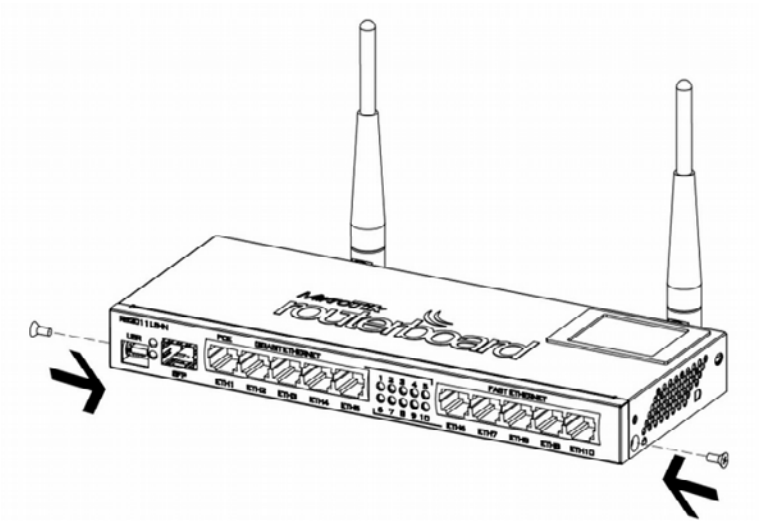
RB2011UiAS-RM

RB2011UiAS-2HnD-IN

Picture 262

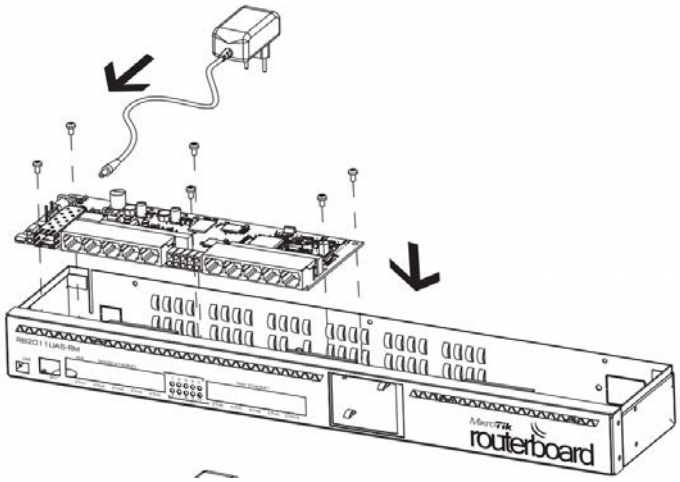
Indoor 2011 series RouterBoard disassembling information

Step 1: Unscrew 2 screws on each side of board case using PH2 screwdriver. Location of the screws you can see in the picture 263.



Picture 263

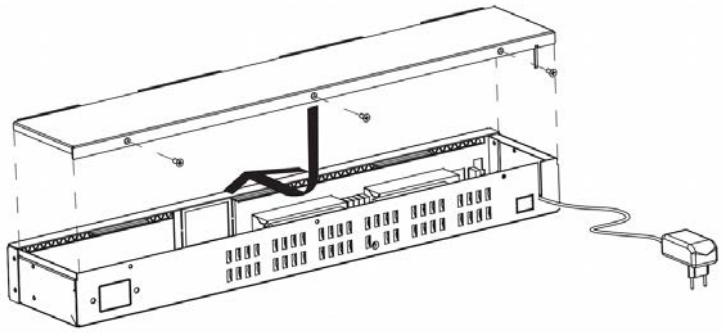
Step 2: Unscrew 6 screws which fasten PCB to routerboard case. Location of the screws you can see in the picture 264.



Picture 264

Rackmount 2011 series RouterBoard disassembling information

Step 1: Unscrew 3 screws from the back of the routerboard case using PH2 screwdriver and then pull the cover towards you. Location of the screws you can see in the picture 265.



Picture 265

Instructions for checking overvoltage

Over-voltage testing procedure, the layout of the components on the board and measurement values is the same for all types of RB2011 boards.

Checking Schottky diode and diodes bridges

Check Schottky diode D2 and diodes bridges D4, D6. Location of diodes on the board you can see in the picture 266. Schottky diode quality measurement method is described on page 4. In rare cases depending on the multimeter used bridges D4 and D6 can give value of 1..2V instead of OL. In such cases the quality of diode bridges can be determined by extended measurements described on page 5.

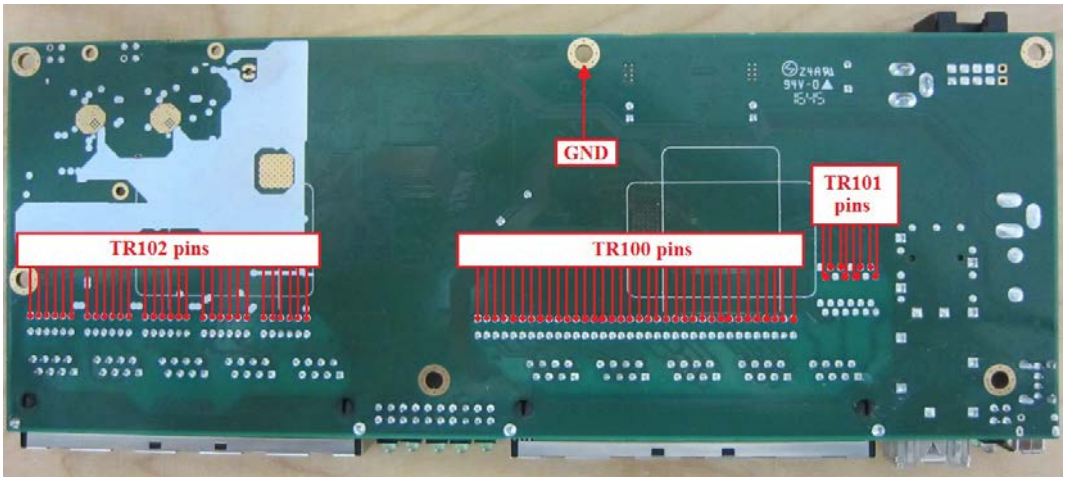
Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between transformer TR101 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 267. Voltage drop value should be in the range from 0,44V to 0,48V. Voltage drop measurement method is described on page 7.

Check voltage drop value between transformer TR100 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 267. Voltage drop value should be in the range from 0,36V to 0,42V. Voltage drop measurement method is described on page 7.

Check voltage drop value between transformer TR102 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 267. Voltage drop value should be in the range from 0,3V to 0,38V. Voltage drop measurement method is described on page 7.

Picture 266



Picture 267

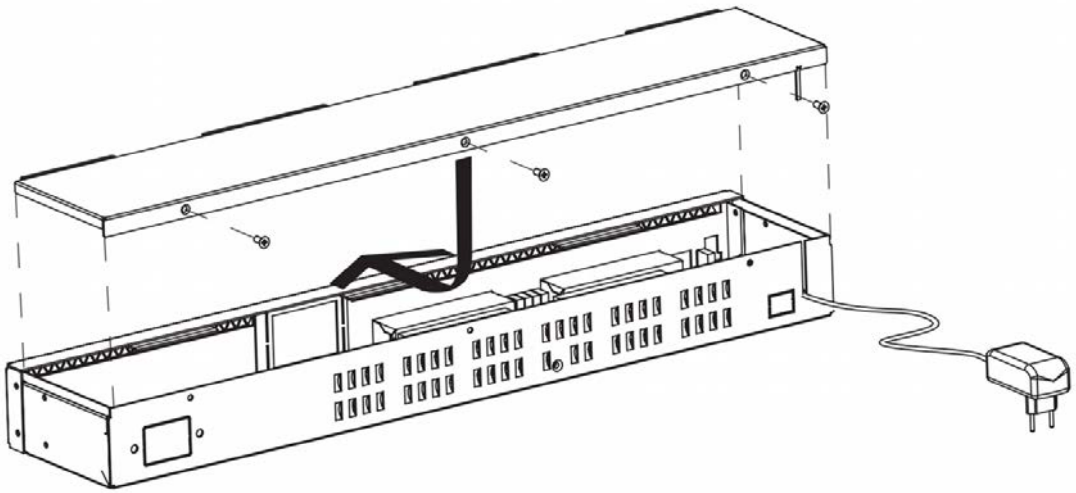
3011 SERIES ROUTERBOARDS

RB3011UiAS-RM

Picture 268

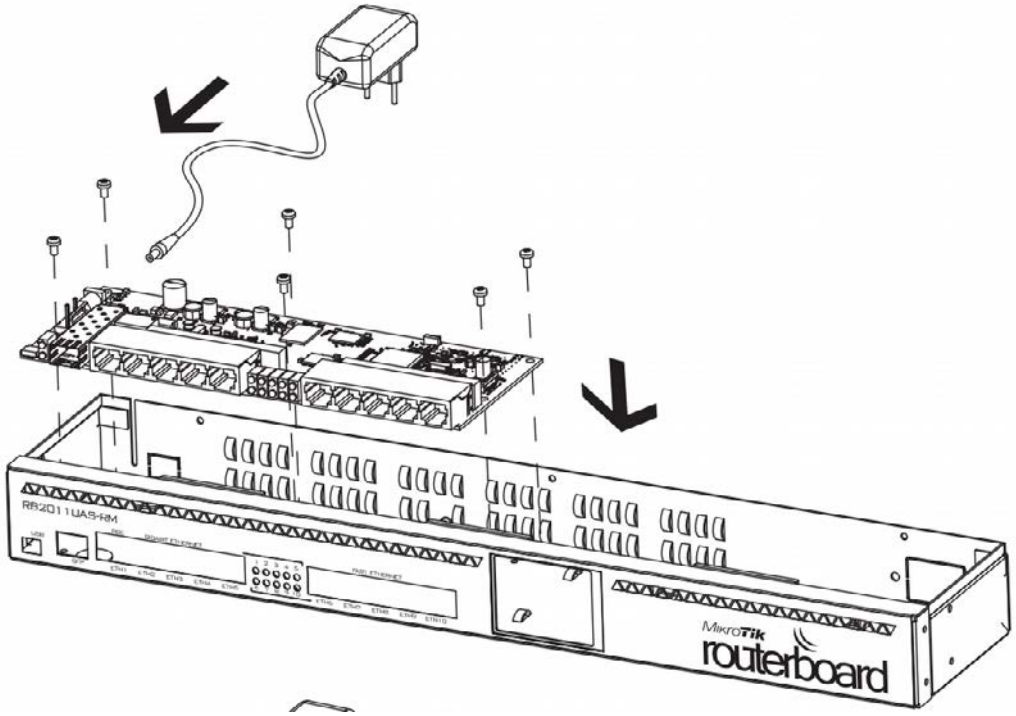
Disassembling information

Step 1: Unscrew 3 screws from the back of the routerboard case using PH2 screwdriver and then pull the cover towards you. Location of the screws you can see in the picture 269.



Picture 269

Step 2: Unscrew 6 screws which fasten PCB to routerboard case. Location of the screws, see picture 270.



Picture 270

Instructions for checking overvoltage

Checking Schottky diode

Check Schottky diodes D2, D6, D600. Location of diodes on the board you can see in the picture 271. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

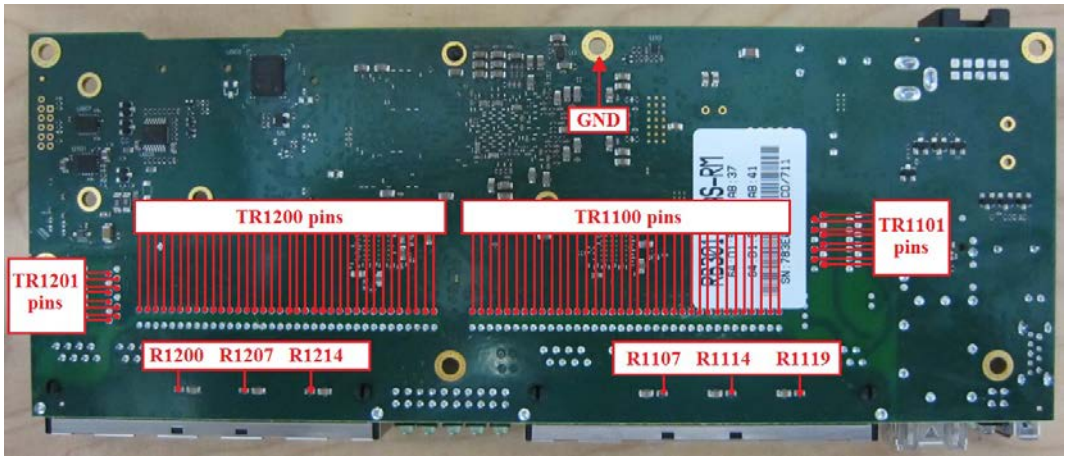
Check voltage drop value between Transformer TR1101 and TR1201 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 272. Voltage drop value should be in the range from 0,4V to 0,46V. Voltage drop measurement method is described on page 7.

Check voltage drop value between transformer TR1100 and TR1200 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 272. Voltage drop value should be in the range from 0,34V to 0,4V. Voltage drop measurement method is described on page 7.

Checking 75 Ohm termination resistors resistance

Check resistors R1200, R1207, R1214, R1107, R1114, R1119 resistance value. It should be 75 Ohm +/- 1%. Location of resistors on the board you can see in the picture 272.

Picture 271



Picture 272

4011 SERIES ROUTERBOARDS

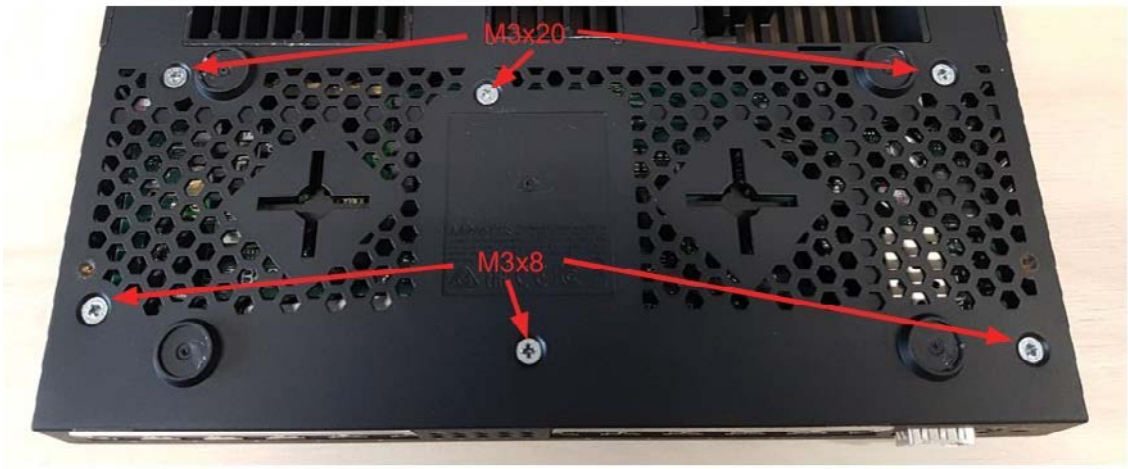
RB4011iGS+RM

RB4011iGS+5HacQ2HnD-IN

Picture 273

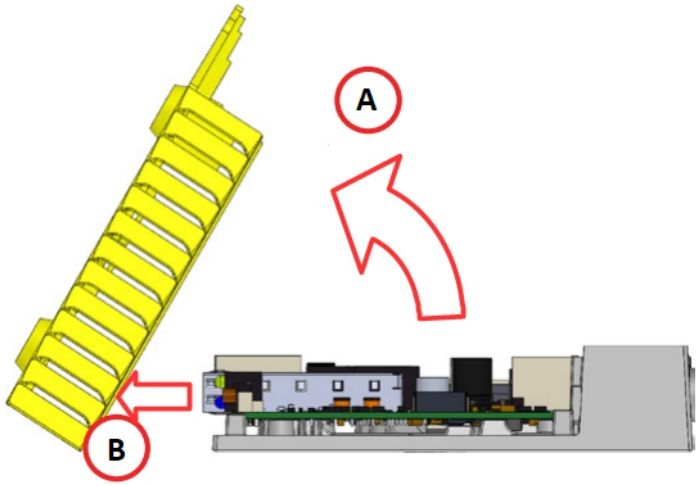
Disassembling information

Step 1: Unscrew 6 screws from the back of the routerboard case using PH2 screwdriver. Location of the screws you can see in the picture 274.



Picture 274

Step 2: Lift the plastic cover according to picture 275.



Picture 275

Step 3: Undo 3 hexagonal threaded spacers and 1 screw according to picture 276.

Picture 276

Instructions for checking overvoltage

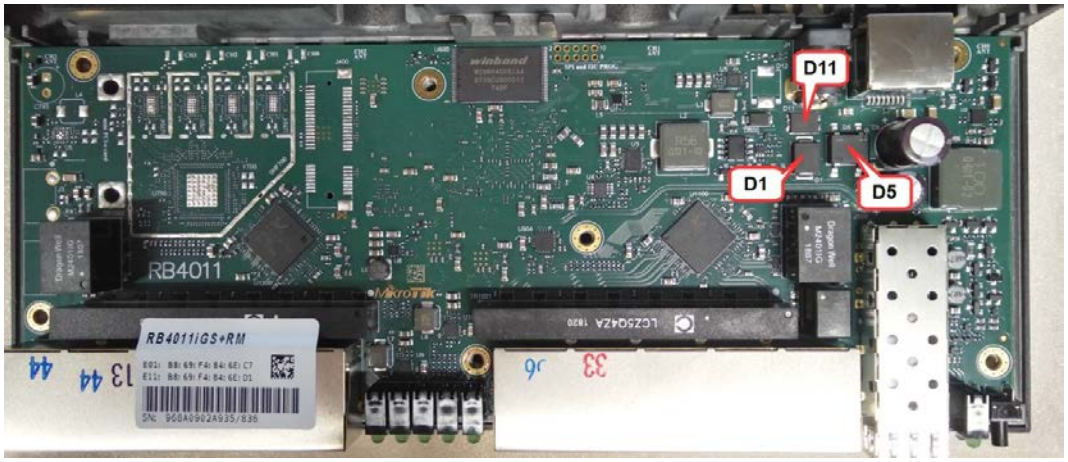
Checking Schottky diode and diodes bridges

Check Schottky diodes D11, D1 and diode bridge D5. Location of diodes on the board you can see in the picture 277. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

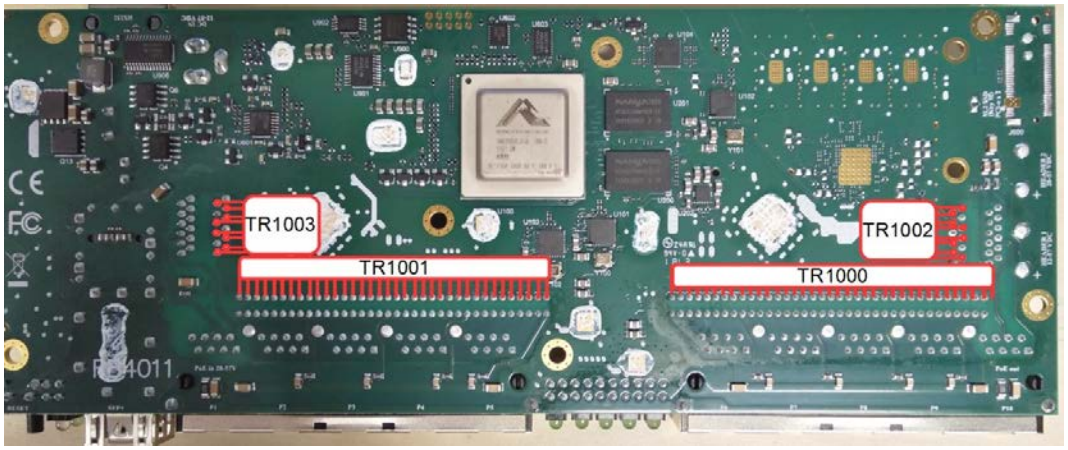
Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Transformer TR1003 and TR1002 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 278. Voltage drop value should be in the range from 0,35V to 0,39V. Voltage drop measurement method is described on page 7.

Check voltage drop value between Transformer TR1001, TR1000 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 278. Voltage drop value should be in the range from 0,34V to 0,4V. Voltage drop measurement method is described on page 7.



Picture 277



Picture 278

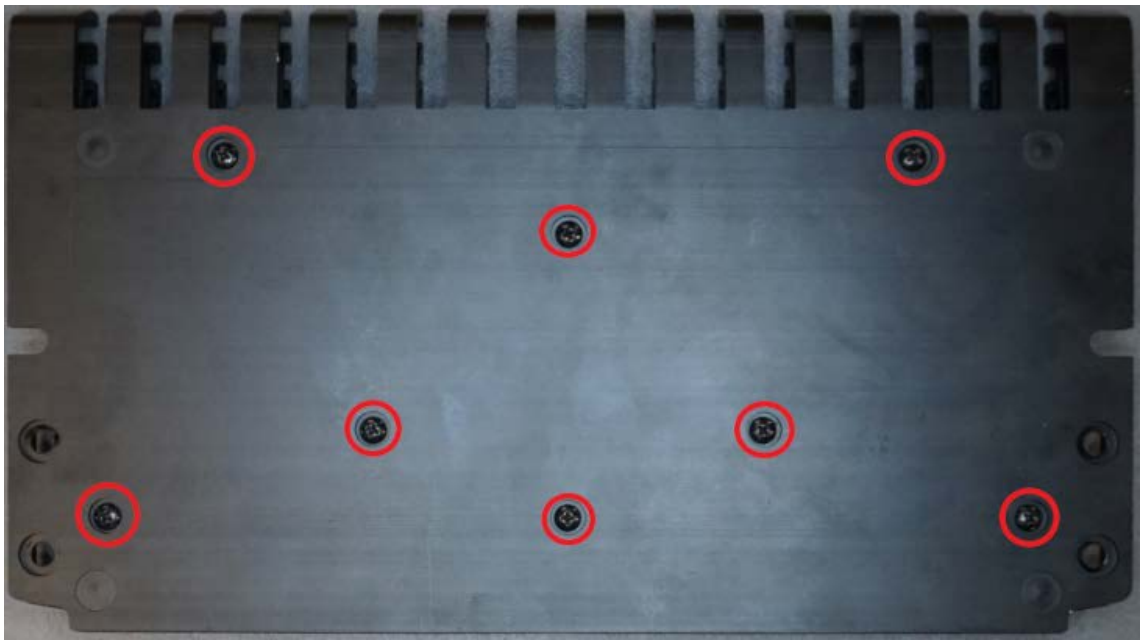
5009 SERIES ROUTERBOARDS

RB5009UG+S+IN

Picture 279

Disassembling information

Step 1: Unscrew 8 M2.5x17 screws from the bottom of the routerboard case using PH1 screwdriver. Location of the screws you can see in the picture 280.



Picture 280

Step 2: Lift the plastic cover according to picture 281.

Picture 281

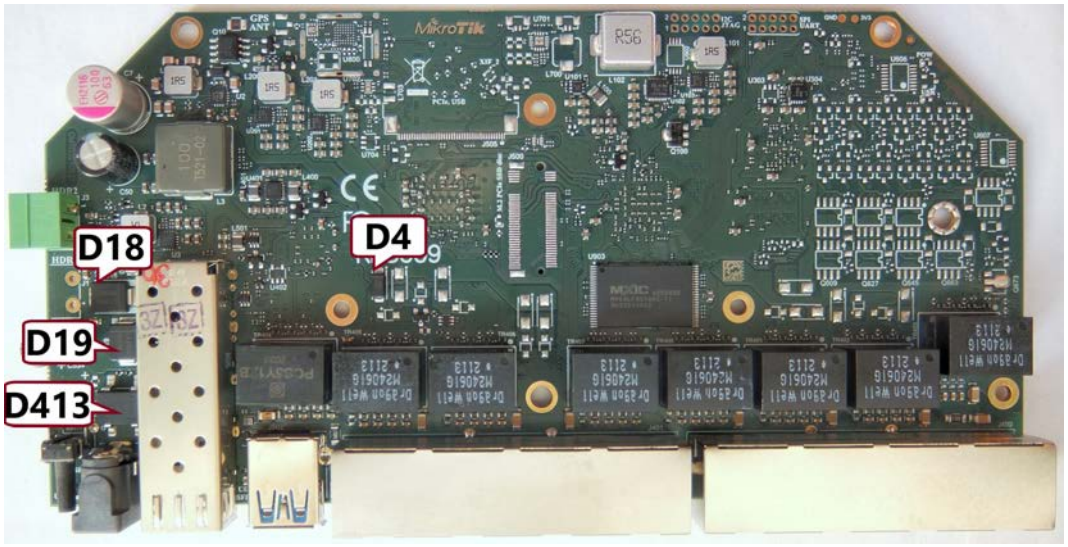
Instructions for checking overvoltage

Checking Schottky diode and diodes bridges

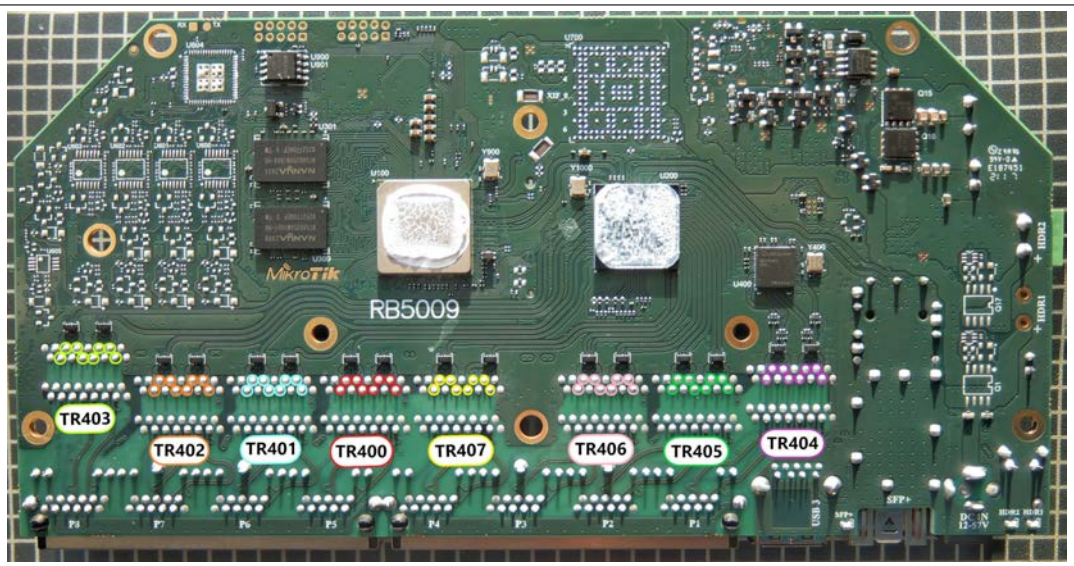
Check Schottky diodes D4, D18, D19 and diode bridge D413. Location of diodes on the board you can see in the picture 282. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

Checking voltage drop value between Ethernet transformer pins and Ground

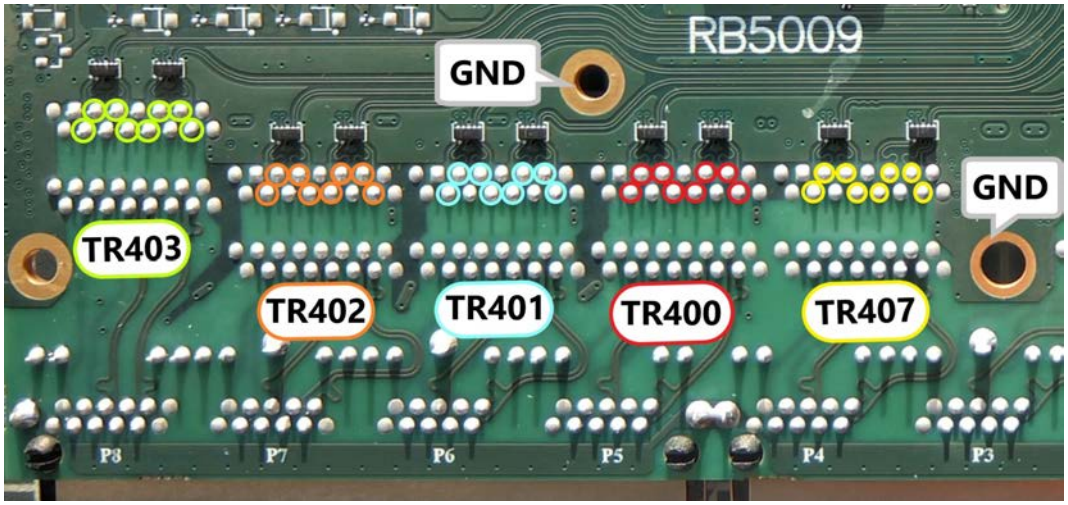
Check voltage drop value between transformers' TR400, TR401, TR402, TR403, TR404, TR405, TR406, TR407 pins and Ground (GND). Test points on the transformers' pins are marked with colored circles, see pictures 283 , 284 , 285. Voltage drop value should be in the range from 0,34V to 0,57V. Voltage drop measurement method is described on page 7.



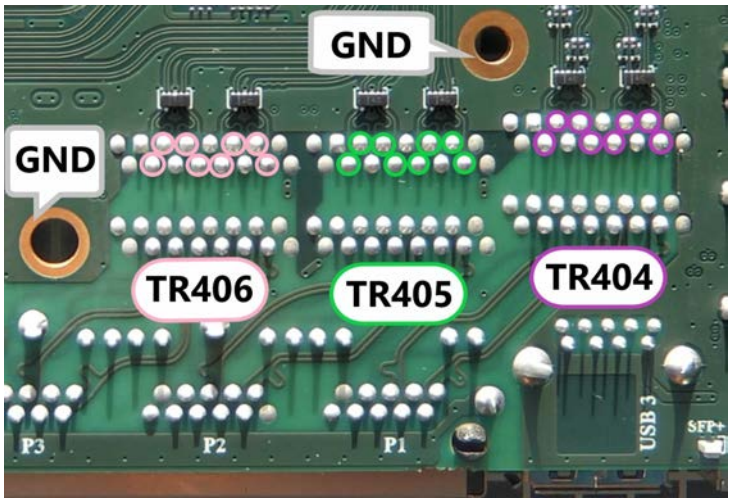
Picture 282



Picture 283



Picture 284



Picture 285

RB5009UPr+S+IN

Picture 286

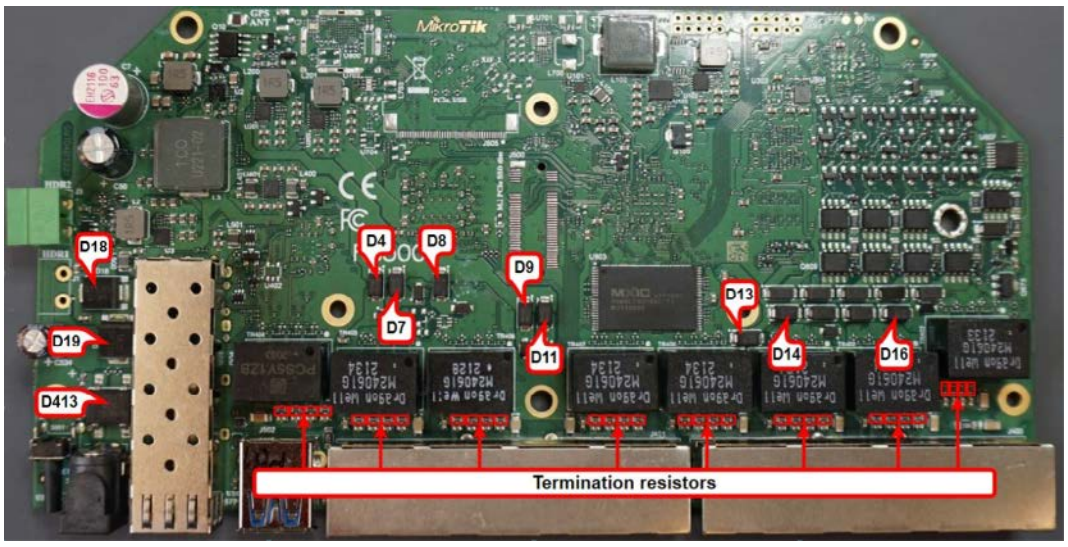
Disassembling information

Step 1:

Disassembly method of the board is the same as the RB5009UG+S+IN board. Disassembly method is described on page 279.

Checking Schottky diode and diodes bridges

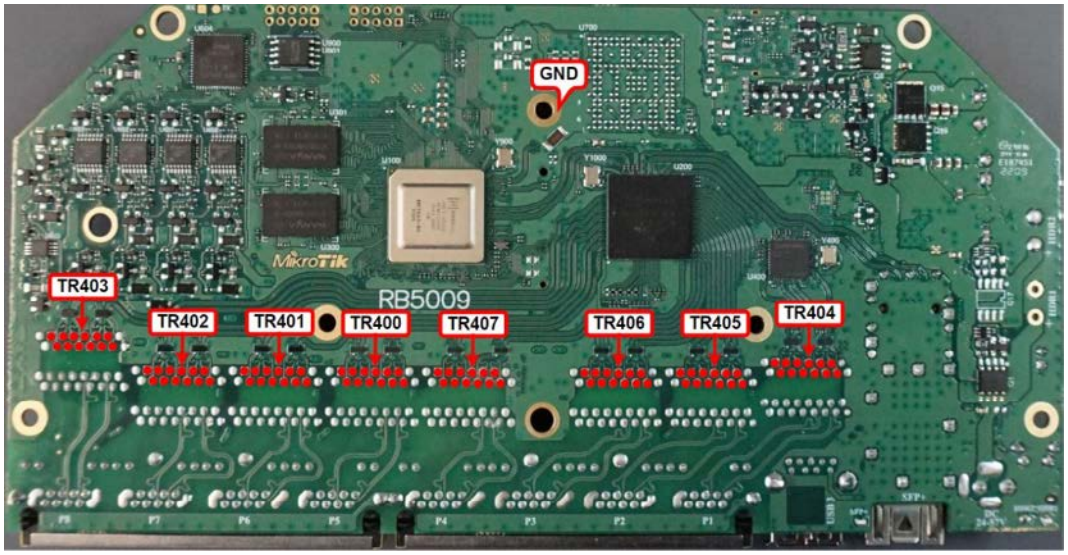
Check Schottky diodes D4, D7, D8, D9, D11, D13, D14, D16, D18, D19 and diode bridge D413. Location of diodes on the board you can see in the picture 287. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.



Picture 287

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between transformers TR400, TR401, TR402, TR403, TR404, TR405, TR406, TR407 pins and Ground (GND). Test points on the transformers pins are marked with red circles, see picture 288. Voltage drop value should be in the range from 0,34V to 0,57V. Voltage drop measurement method is described on page 7.



Picture 288

Checking 75 Ohm termination resistors resistance

Check value of each termination resistor. It should be 75 Ohms +/- 1%. Location of resistors is shown in picture 287.

BASEBOX SERIES ROUTERBOARDS

BaseBox 2 (912UAG-2HPnD-OUT)

BaseBox 5 (912UAG-5HPnD-OUT)

Picture 289

Disassembling information

Step 1: Remove the sticker from connector, see picture 290.

Picture 290

Step 2: Unstick 2 screws stickers from the BaseBox case base, see picture 291.

Picture 291

Step 3: Unscrew the case base from the board holder by torque T8 screwdriver. Location of 2 screws you can see in the picture 292.

Picture 292

Step 4: Take out the case base from the board holder, see picture 293.

Picture 293

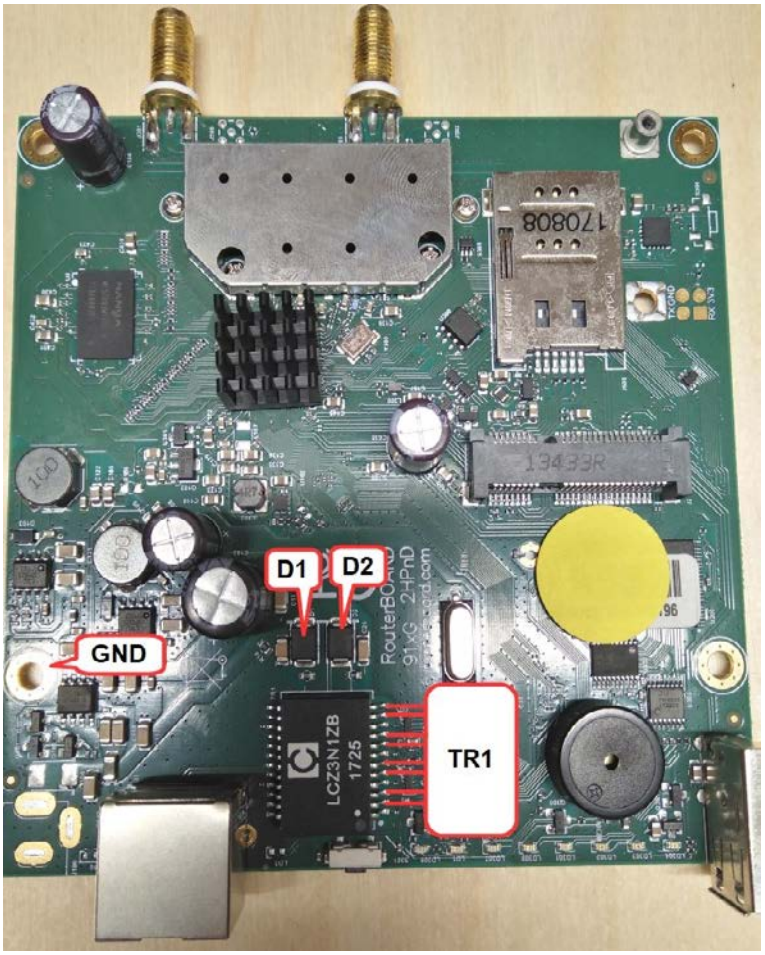
Instructions for checking overvoltage

Checking Schottky diode

Check Schottky diodes D1, D2. Location of diodes on the board you can see in the picture 294. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between TR1 and Ground. Test points on the transformer pins are marked with red dots, see picture 294. Voltage drop value should be in the range from 0,44V to 0,48V. Voltage drop measurement method is described on page 7.



Picture 294

BaseBox 6 (RB912UAG-6HPnD-OUT)

Disassembling information

Disassembly method of the board is the same as the BaseBox 2 board. Disassembly method is described on page 239.

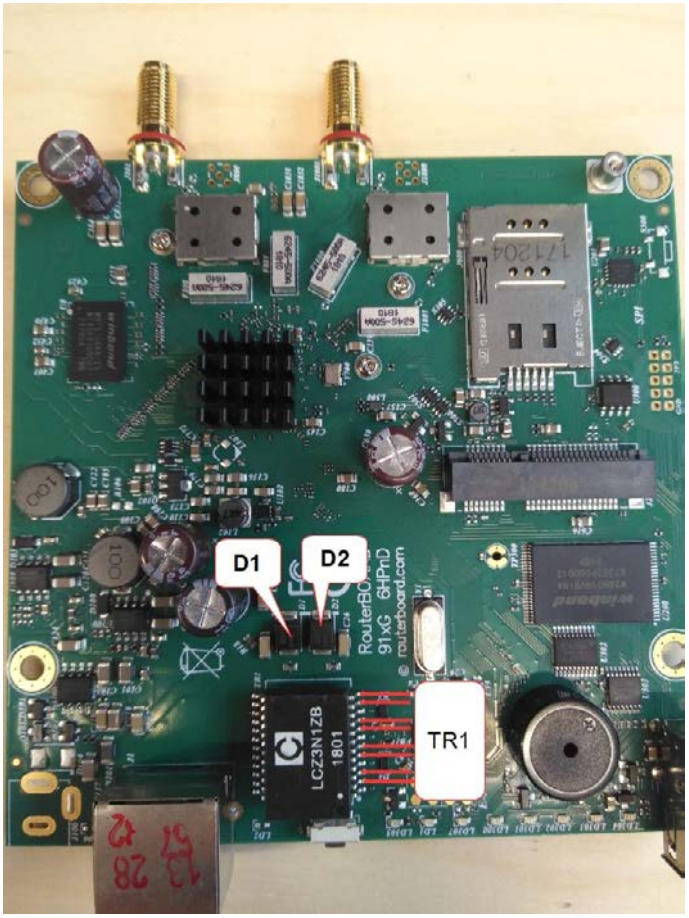
Instructions for checking overvoltage

Checking Schottky diode

Check Schottky diode D1, D2. Location of diodes on the board you can see in the picture 295. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between TR1 and Ground. Test points on the transformer pins are marked with red dots, see picture 295. Voltage drop value should be in the range from 0,44V to 0,48V. Voltage drop measurement method is described on page 7.



Picture 295

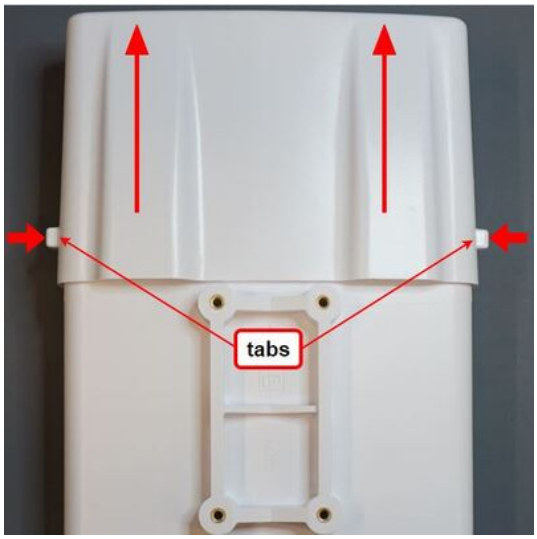
NETBOX SERIES ROUTERBOARDS

NetBox 5 ax (L11UG-5HaxD-NB)

Picture 296

Disassembling information

Step 1: Press two tabs and remove the cable cover as shown in the picture 297.



Picture 297

Step 2: Peel off two plastic stickers from the NetBox case, see picture 298.

Picture 298

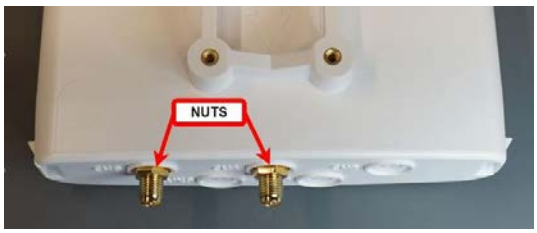
Step 3:

Unscrew 2 screws using torx T8 screwdriver. Location of the screws is shown the picture 299.

Picture 299

Step 4:

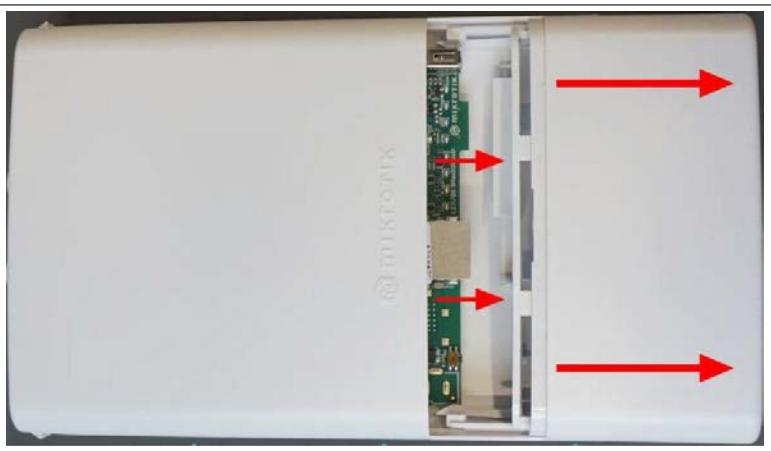
Unscrew two golden plated nuts. Location of the nuts is shown the picture 300.



Picture 300

Step 5:

Carefully remove the board holder and the board from the case as shown in the picture 301.

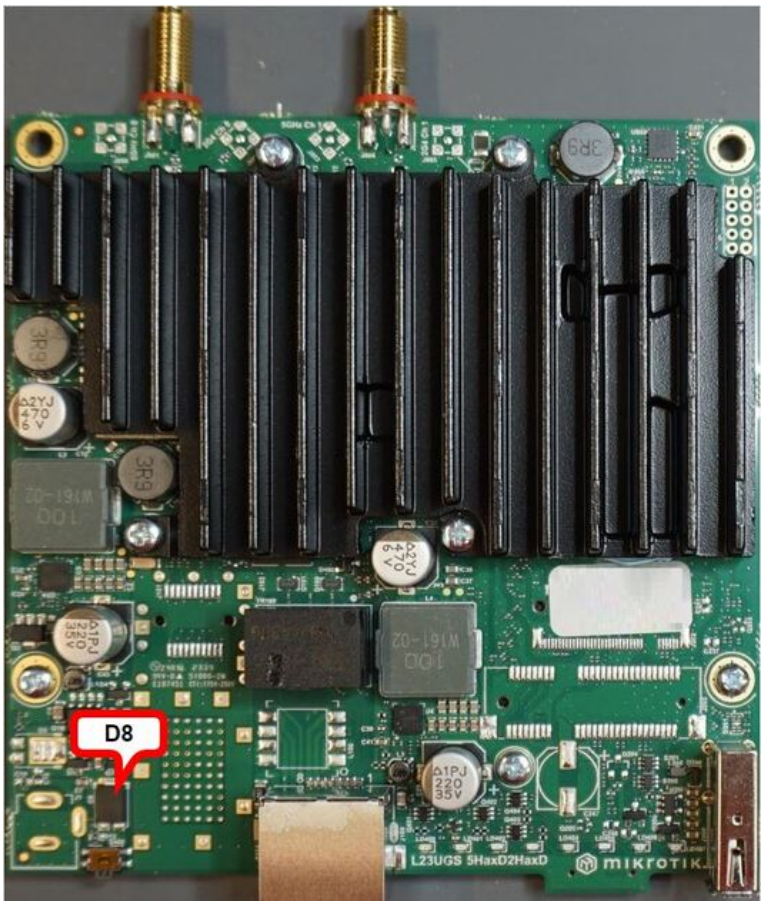


Picture 301

Instructions for checking over-voltage

Checking Schottky diode

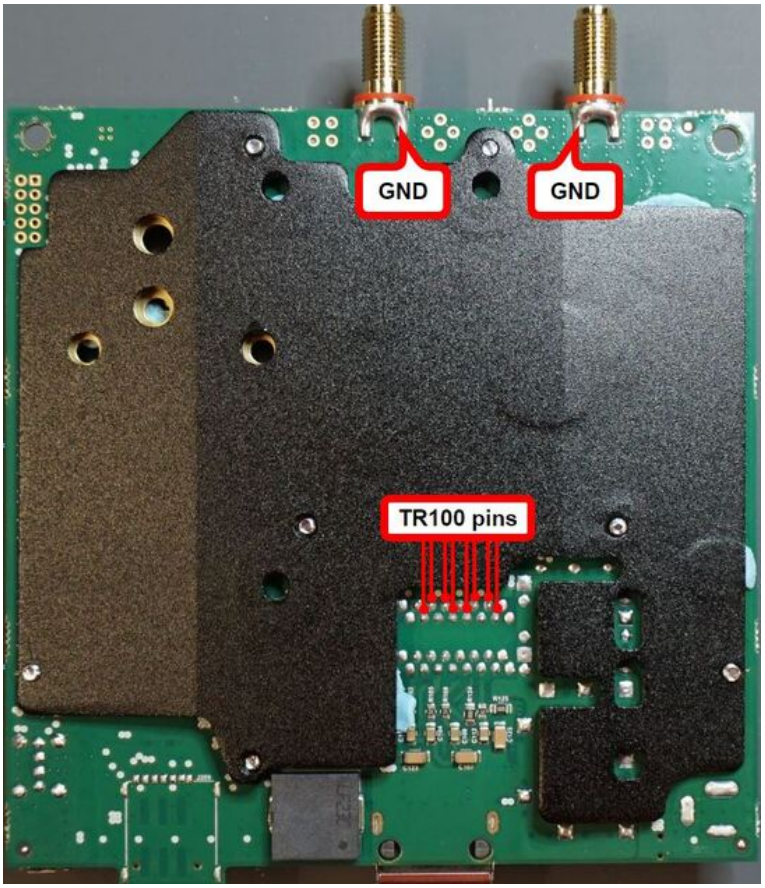
Check Schottky diode D8. Location of the diode on the board you can see in the picture 302. Schottky diode quality measurement method is described on page 4.



Picture 302

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR100 pins and Ground. Test points on the transformer pins are highlighted with red lines, see picture 303. Voltage drop value should be in the range from 0,35V to 0,45V. Voltage drop measurement method is described on page 7.



Picture 303

CAP SERIES ROUTERBOARDS

cAP (cAP2nD)

V1

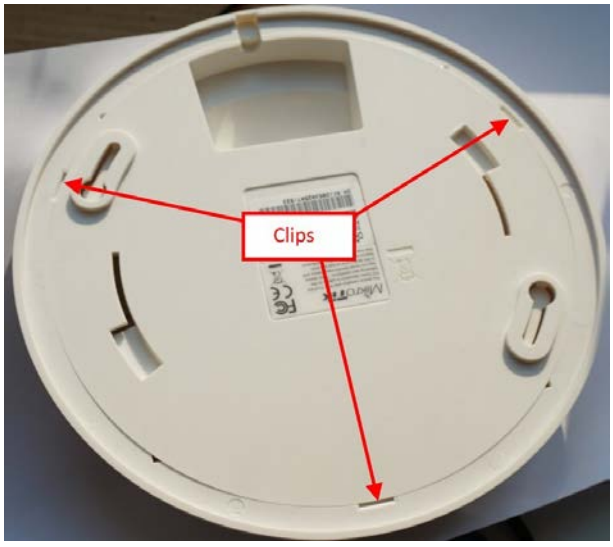
Picture 304

V2

Picture 305

Disassembling information for V1

Step 1: Push the router edge around clips to open the case, see pictures 306 - 307.



Picture 306

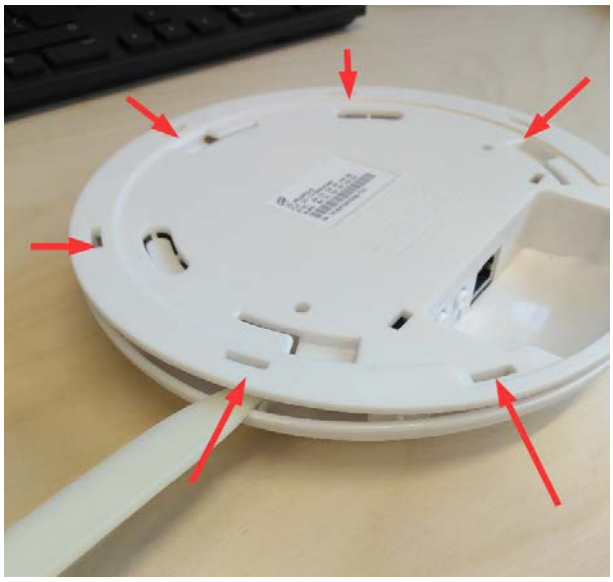
Picture 307

Step 2: Remove cover and take out the board from case, see picture 308.

Picture 308

Disassembling information for V2

Step 1: Push the clips from outside and at the same time lift the case up. Work this way around for all 6 clips as shown in picture 309.



Picture 309

Step 2: Unscrew 2 mounting screws as shown in picture 310.

Picture 310

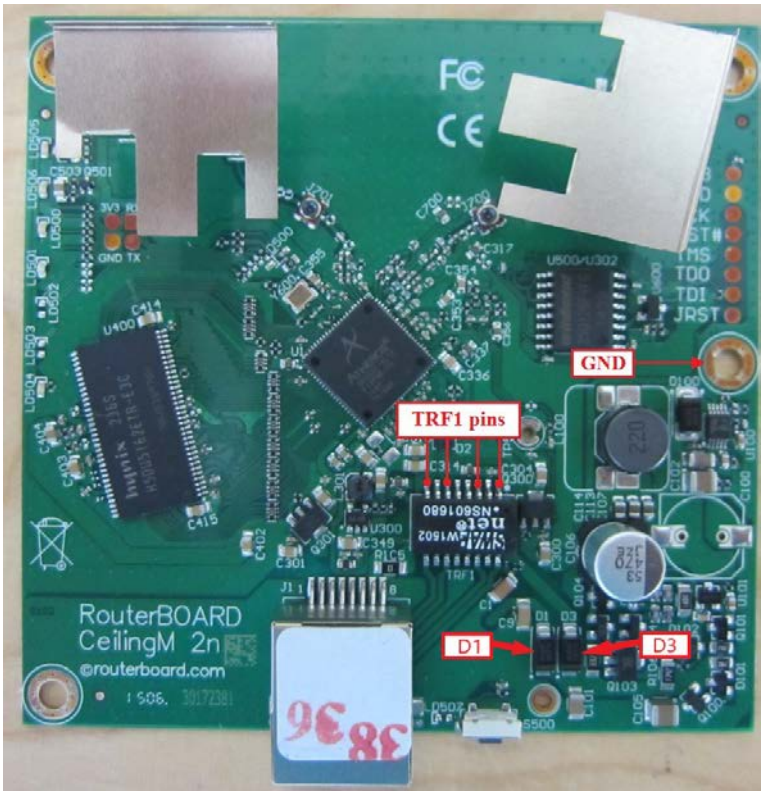
Instructions for checking overvoltage for v1

Checking Schottky diode

Check Schottky diodes D1, D3. Location of diodes on the board you can see in the picture 311. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet Transformer TRF1 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 311. Voltage drop value should be in the range from 0,37V to 0,42V. Voltage drop measurement method is described on page 7.



Picture 311

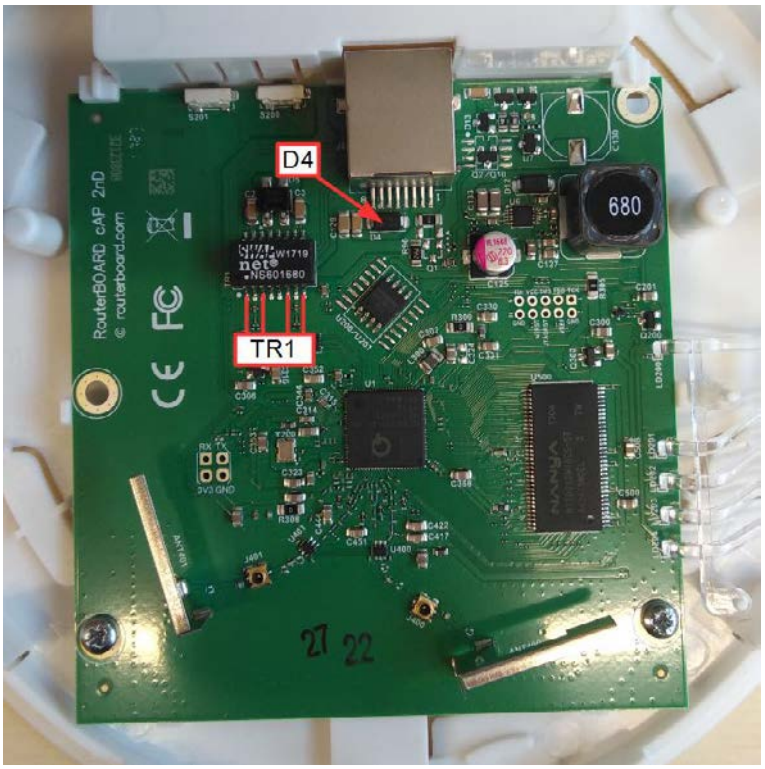
Instructions for checking overvoltage for v2

Checking Schottky diode

Check Schottky diodes D4. Location of diode on the board you can see in the picture 312. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet Transformer TRF1 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 312. Voltage drop value should be in the range from 0,37V to 0,40V. Voltage drop measurement method is described on page 7.



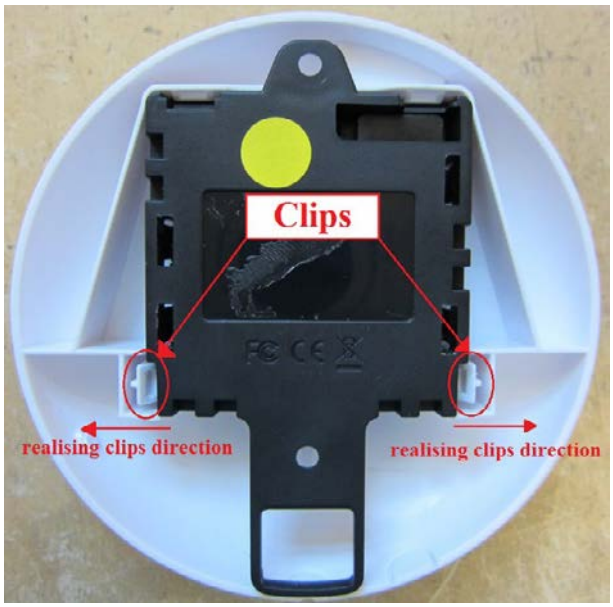
Picture 312

cAP lite (cAP L-2nD)

Picture 313

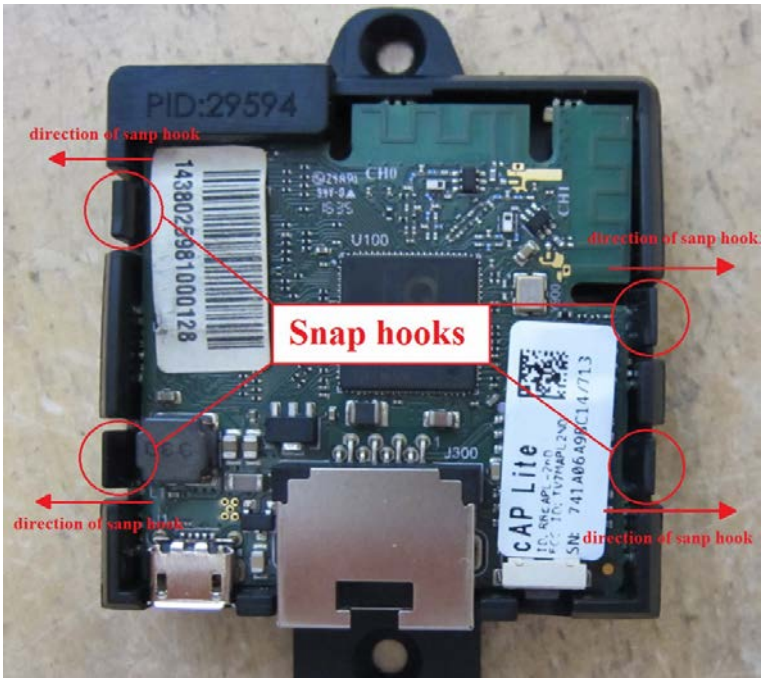
Disassembling information

Step 1: Move the clips in the opposite direction from the fixed board and pull the black plastic housing towards you. Location of the clips you can see in the picture 314.



Picture 314

Step 2: Gently release 4 snap hooks and pull out PCB from the CapL-Base case. Location of the snap hooks you can see in the picture 315.



Picture 315

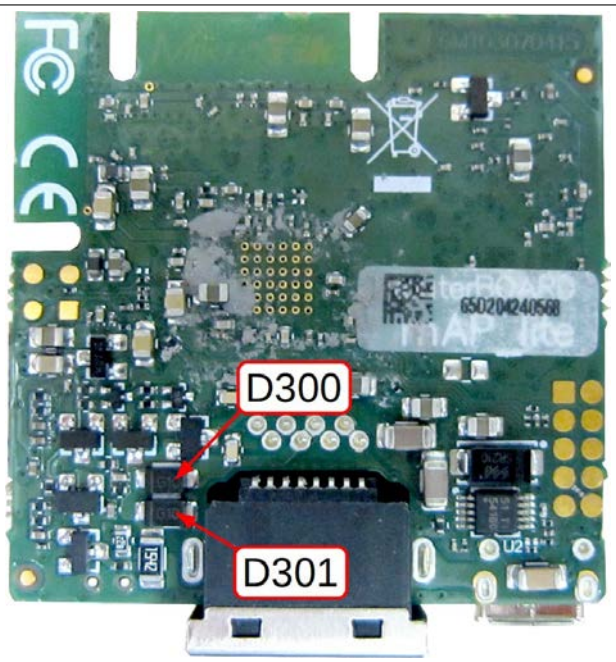
Instructions for checking overvoltage

Checking Schottky diode

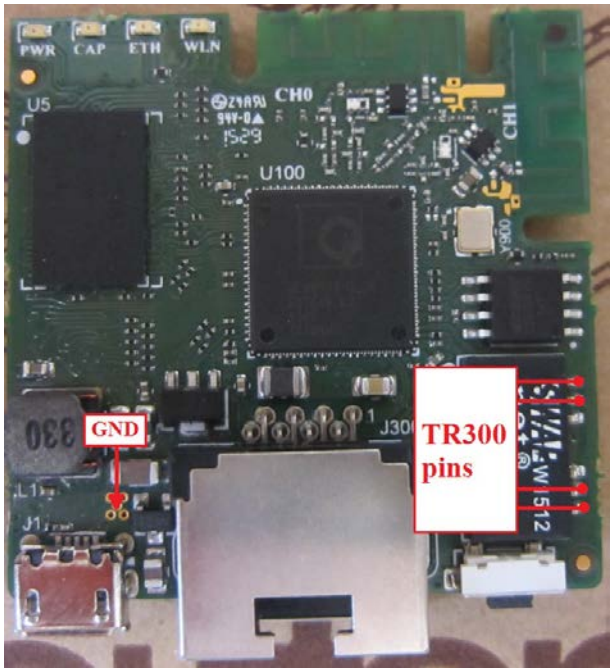
Check Schottky diodes D300, D301 on the board bottom layer, see picture 316. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR300 pins and Ground. Test points on the Ethernet transformer pins are marked with red dots, see picture 317. Voltage drop value should be in the range from 0,35V to 0,39V. Voltage drop measurement method is described on page 7.



Picture 316



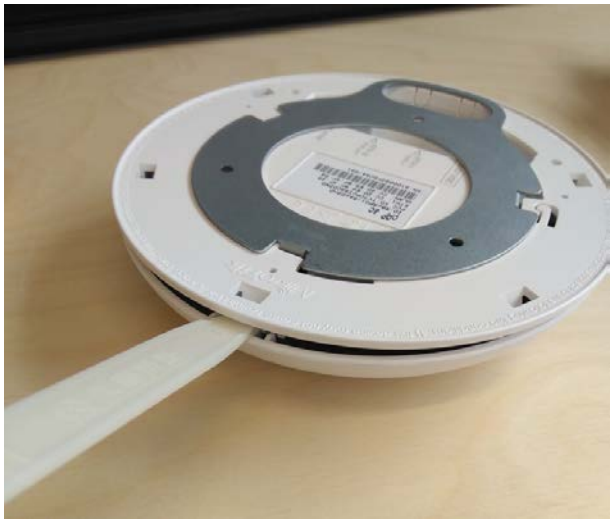
Picture 317

cAP ac (RBcAPGi-5acD2nD)

Picture 318

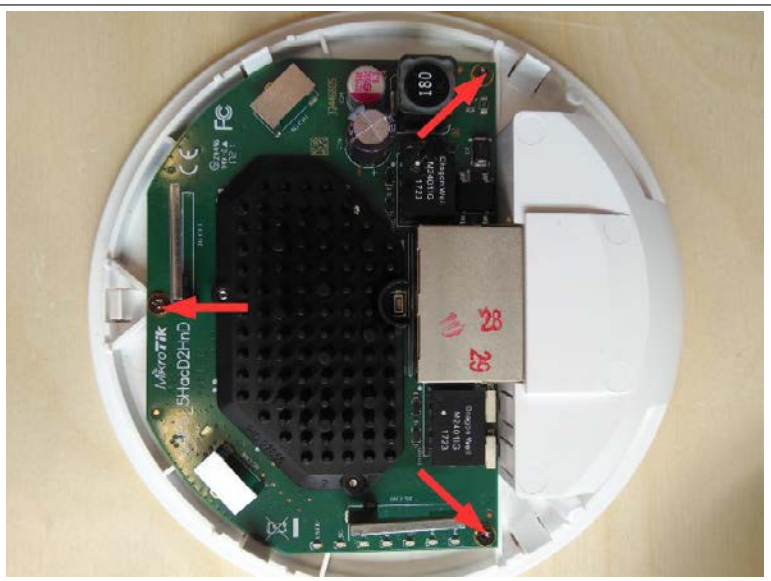
Disassembling information

Step 1: Push the clips from outside and at the same time lift the case up. Work this way around for all 5 clips as shown in picture 319.



Picture 319

Step 2: Unscrew 3 mounting screws as shown in picture 320.



Picture 320

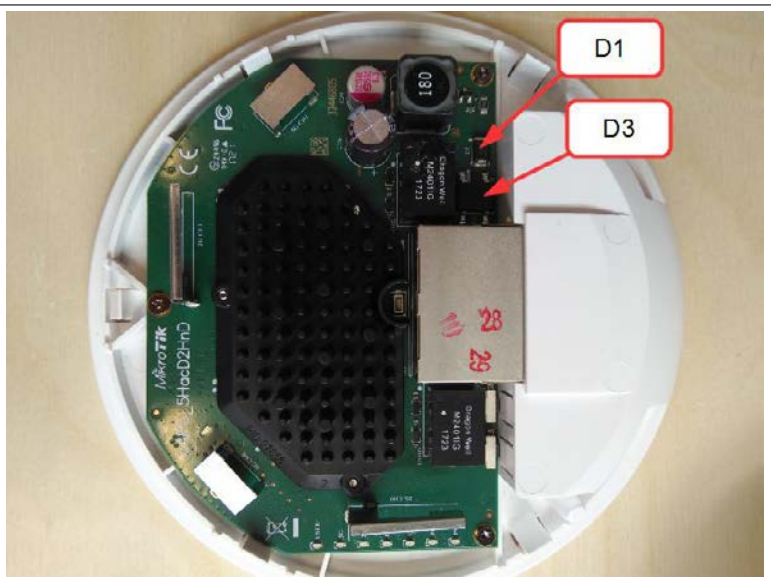
Instructions for checking overvoltage

Checking Schottky diode

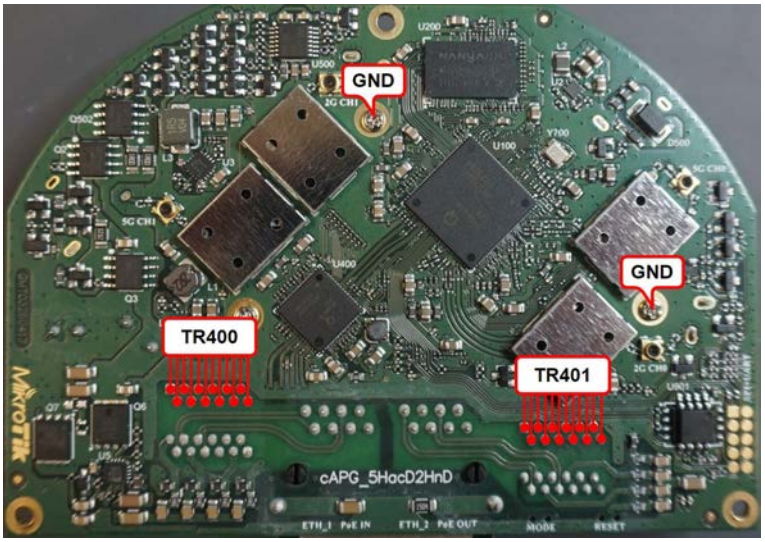
Check Schottky diodes D1 and diode bridge D3. Location of diodes on the board you can see in the picture 321. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR401, TR400 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 322. Voltage drop value should be in the range from 0,35V to 0,39V. Voltage drop measurement method is described on page 7.



Picture 321



Picture 322

cAP ax (cAPGi-5HaxD2HaxD)

Picture 323

Disassembling information

Tools recommended for the disassembly are plastic prying tools, such as shown on pictures 324 and 325.

Picture 324

Picture 325

Step 1:

On the back of the case unskrew 4 skrews using torx T10 screwdriver. Location of the screws is shown the picture 326.

Picture 326

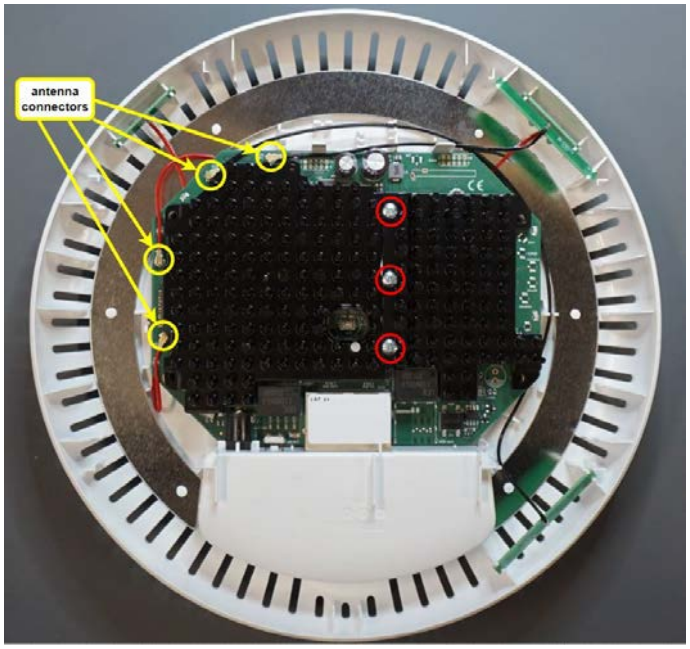
Step 2:

Using plastic prying tool carefully release clips around the perimeter of the case, as shown in the picture 327.

Picture 327

Step 3:

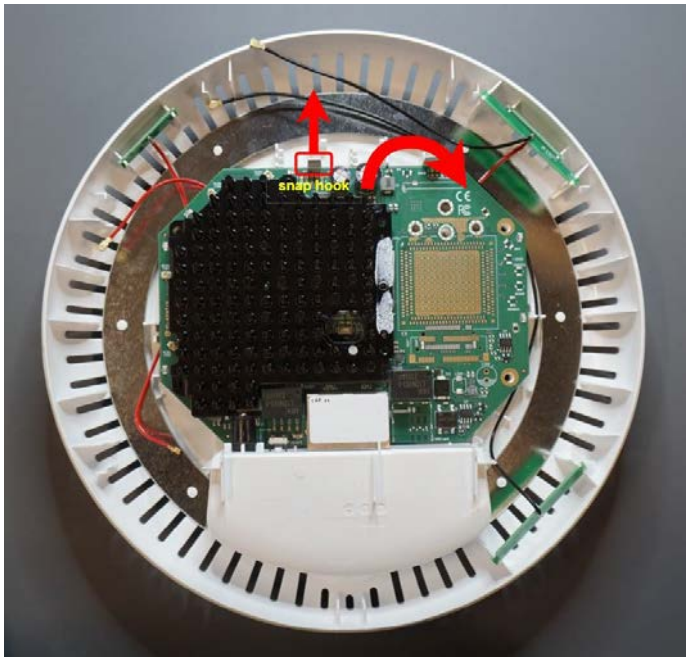
Detach antenna cables and unscrew 4 strews using PH1 screwdriver, see picture 328. Remove the right heat-sink from the board.



Picture 328

Step 4:

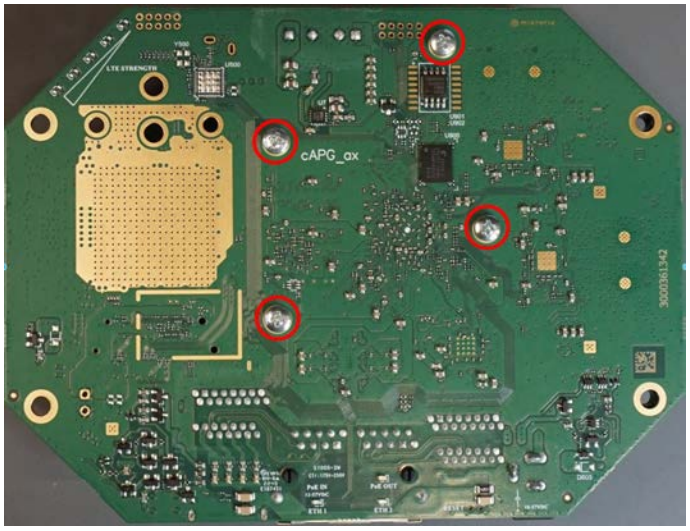
Push the snap hook away from the board and pull out the board from the case, see picture 329.



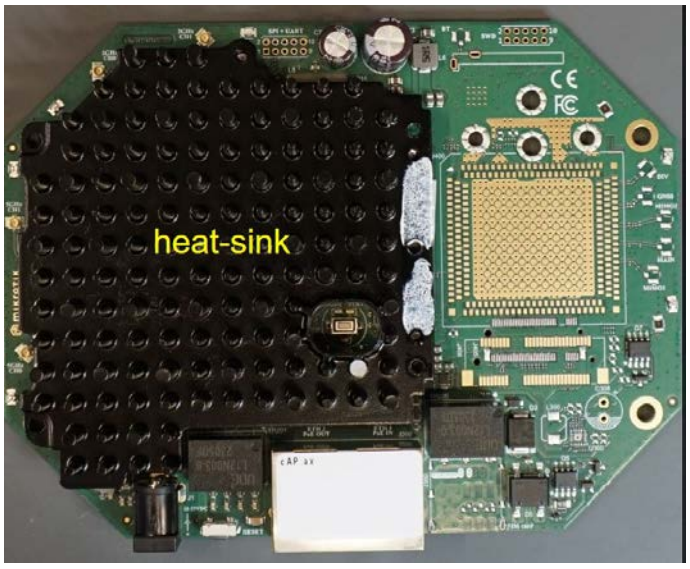
Picture 329

Step 4:

On the back side of the board unscrew 4 skews using PH1 screwdriver and from the top side of the board remove the heat-sink, see pictures 330 and 331.



Picture 330



Picture 331

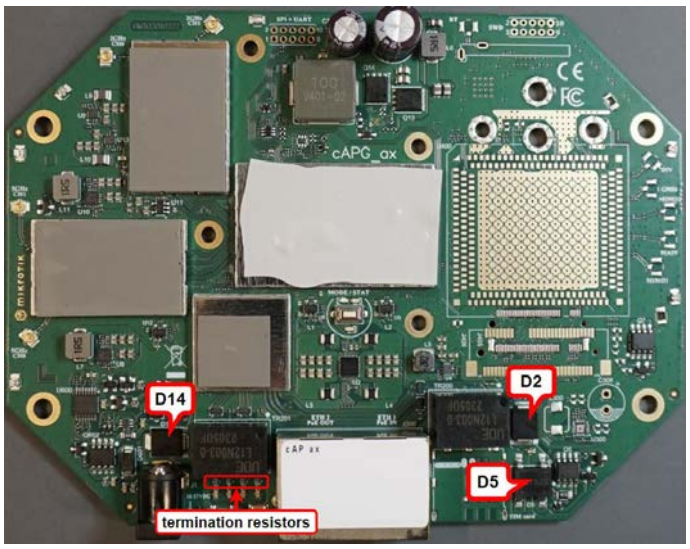
Instructions for checking over-voltage

Checking Schottky diodes and diode bridge

Check Schottky diodes D2, D14, and diode bridge D5. Location of the diodes on the board you can see in the picture 332. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

Checking 75 Ohm termination resistors resistance

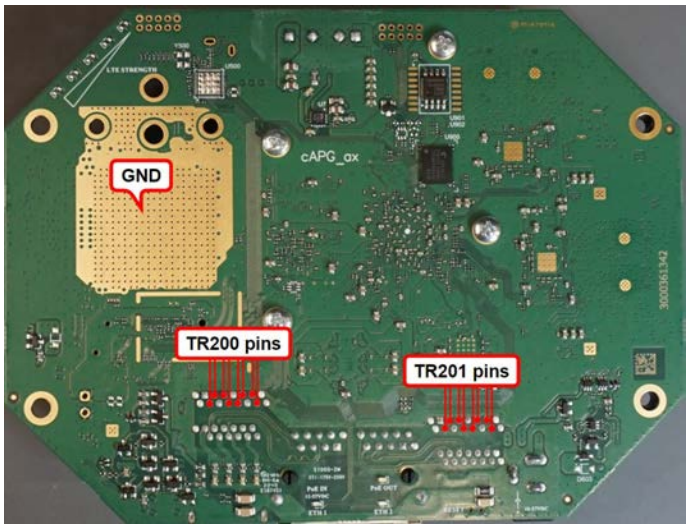
Check value of each termination resistor (there are 4 termination resistors). It should be approximately 75 Ohms. Location of resistors is shown in picture 332.



Picture 332

Checking voltage drop value between Ethernet transformers pins and Ground

Check voltage drop value between Ethernet transformers TR200 and TR201 pins and Ground. Test points on the transformers pins are highlighted with red lines, see picture 333. Voltage drop value should be in the range from 0,35V to 0,40V. Voltage drop measurement method is described on page 7.



Picture 333

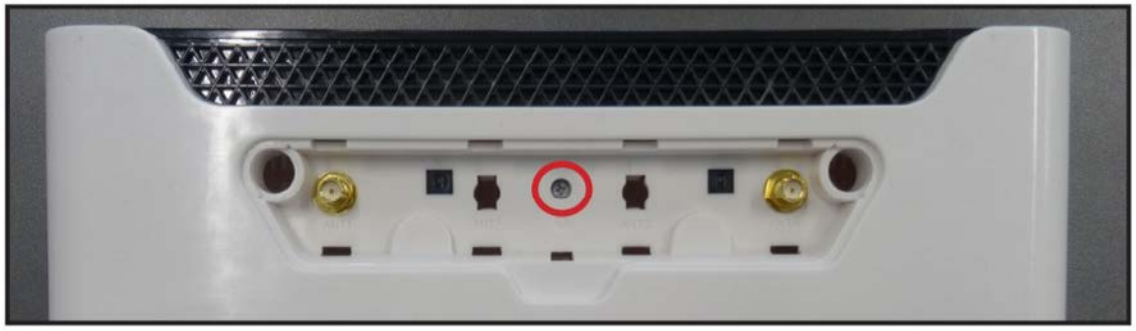
CHATEAU SERIES ROUTERBOARDS

Chateau 5G (D53G-5HacD2HnD-TC&RG502Q, D53G-5HacD2HnD-TC&RG520F, D53G-5HacD2HnD&EG120K-EA)

Picture 334

Disassembling information

Step 1: Tools recommended for the disassembly are plastic prying tools, such as shown on pictures 419 and 420, a PH1 and a T8 screwdriver. Unscrew the central screw (PH1) as shown in the picture 346.



Picture 335

Step 2: The board's cover and base parts are put together using snap fit hooks. Placement of these hooks is shown in picture 347.

Picture 336

Step 3: Plastic prying tools are recommended, because plastic is less likely to leave deformation marks on the case of routerboard. Suggested prying tools are shown on pictures 419 and 420.
The disassembly starts with the lower left snap point: lie the board front side up and place white prying tool's hook between the white and black panels of the case, apply vertical force to release the snap point thereby lifting the white part of the case.
To further minimize the risk of leaving traces of impact a trick can be used, see picture 350 – the white prying tool can be placed in a rubberized ESD glove, the material of the glove will provide a soft medium between two plastic parts (prying tool and case), and the rubberized finish will provide additional grip.
The flat part of the white prying tool can be used to open the case form the flanks.
The blue prying tool is recommended to use in upper and lower parts of the case, see picture

351, here it is advised to insert the blue prying tool with its wide side inside the case, then press on the top of the tool thereby applying vertical force to release this part of the case.
In case dirt marks are appeared on the case it is advised to use microfiber cloth with water for cleaning.

Picture 337

Picture 338

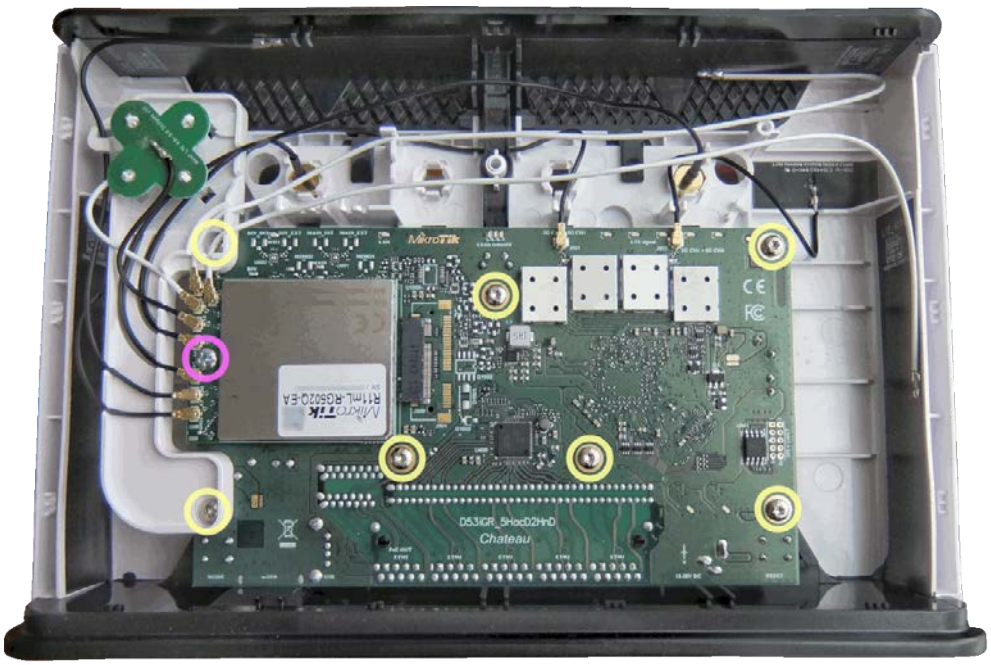
Picture 339

Picture 340

Step 4: Continue to release snap hooks around perimeter as shown in picture 352

Picture 341

Step 5: Gently remove all antenna cables. Unscrew PH1 screw and remove the modem. Unscrew 7x T8 screws, that are holding the PCB. When lifting the PCB proceed with care because the screws were pressing it down to the heatsink. Screw placement is marked on image 342.



Picture 342

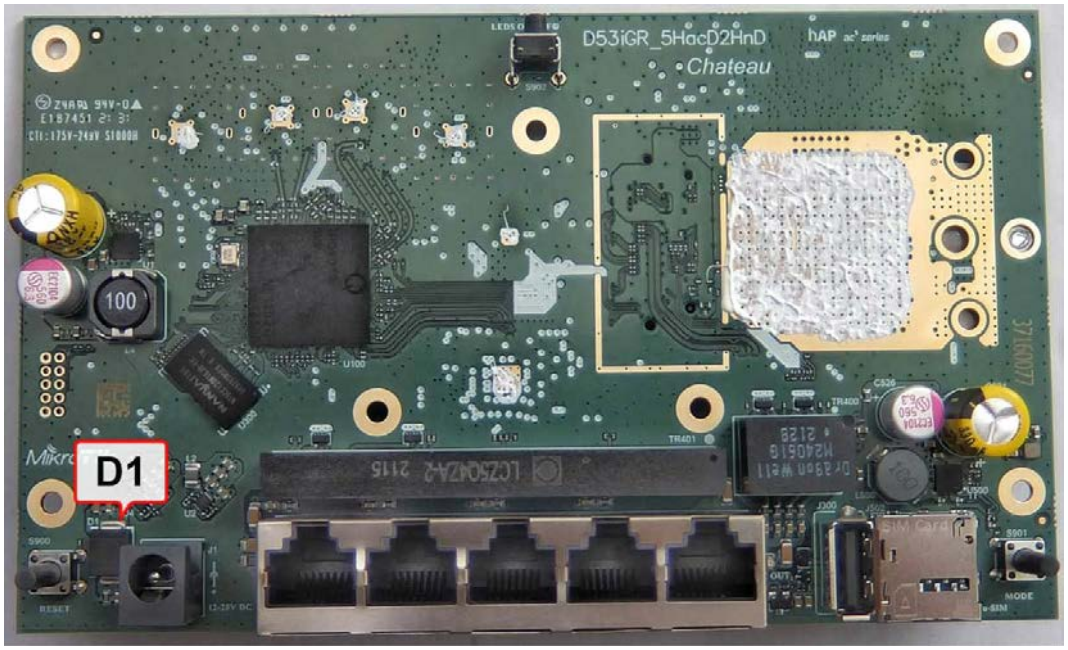
Instructions for checking overvoltage

Checking Schottky diode

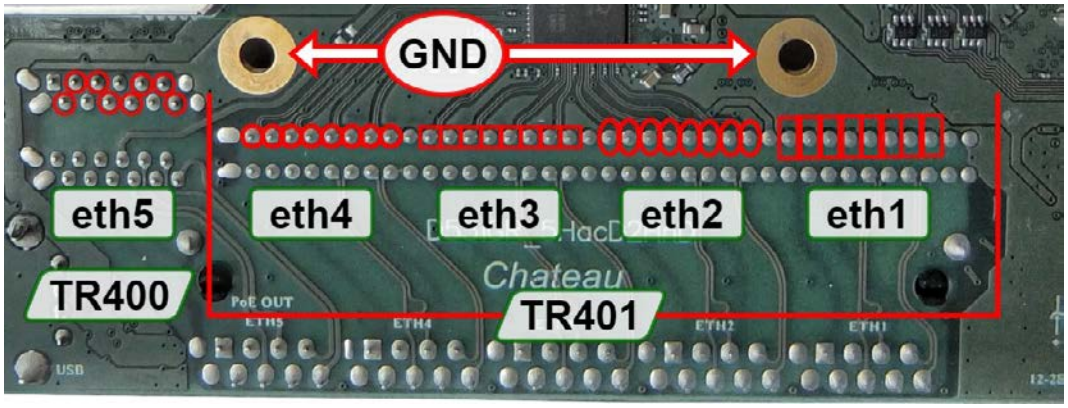
Check Schottky diodes D1. Location of diode on the board is shown in picture 343. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformers TR400 and TR401 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 344. Voltage drop value should be in the range from 0,35V to 0,39V. Voltage drop measurement method is described on page 7.



Picture 343



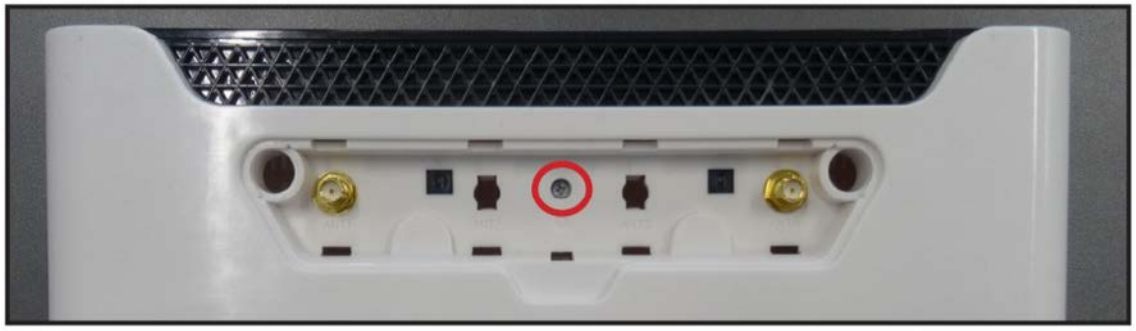
Picture 344

Chateau 5G AX (S53UG+M-5HaxD2HaxD-TC&RG502Q-EA, D53G-5HacD2HnD&EG120K-EA)

Picture 345

Disassembling information

Step 1: Tools recommended for the disassembly are plastic prying tools, such as shown on pictures 419 and 420, a PH1 and a T8 screwdriver. Unscrew the central screw (PH1) as shown in the picture 346.



Picture 346

Step 2: The board's cover and base parts are put together using snap fit hooks. Placement of these hooks is shown in picture 347.

Picture 347

Step 3: Plastic prying tools are recommended, because plastic is less likely to leave deformation marks on the case of routerboard. Suggested prying tools are shown on pictures 419 and 420.
The disassembly starts with the lower left snap point: lie the board front side up and place white prying tool's hook between the white and black panels of the case, apply vertical force to release the snap point thereby lifting the white part of the case.
To further minimize the risk of leaving traces of impact a trick can be used, see picture 350 – the white prying tool can be placed in a rubberized ESD glove, the material of the glove will provide a soft medium between two plastic parts (prying tool and case), and the rubberized finish will provide additional grip.
The flat part of the white prying tool can be used to open the case form the flanks.
The blue prying tool is recommended to use in upper and lower parts of the case, see picture

351, here it is advised to insert the blue prying tool with its wide side inside the case, then press on the top of the tool thereby applying vertical force to release this part of the case.
In case dirt marks are appeared on the case it is advised to use microfiber cloth with water for cleaning.

Picture 348

Picture 349

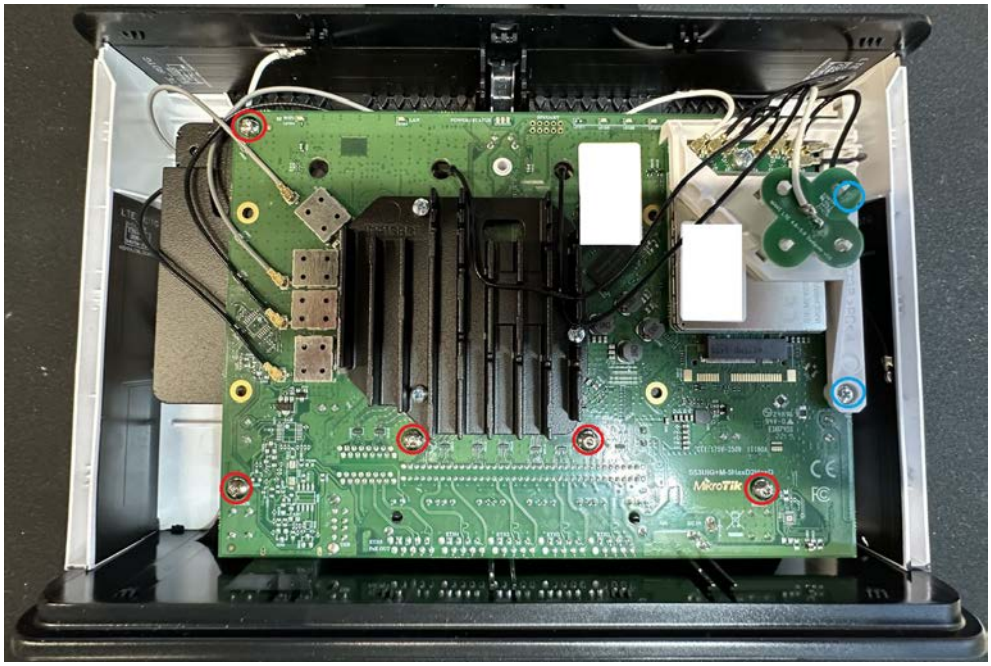
Picture 350

Picture 351

Step 4: Continue to release snap hooks around perimeter as shown in picture 352

Picture 352

Step 5: Gently remove all antenna cables. Unscrew the two PH1 screws and remove the modem plastics. Unscrew 5x T8 screws, that are holding the PCB. When lifting the PCB proceed with care because the screws were pressing it down to the heatsink. Screw placement is marked on image 353.



Picture 353

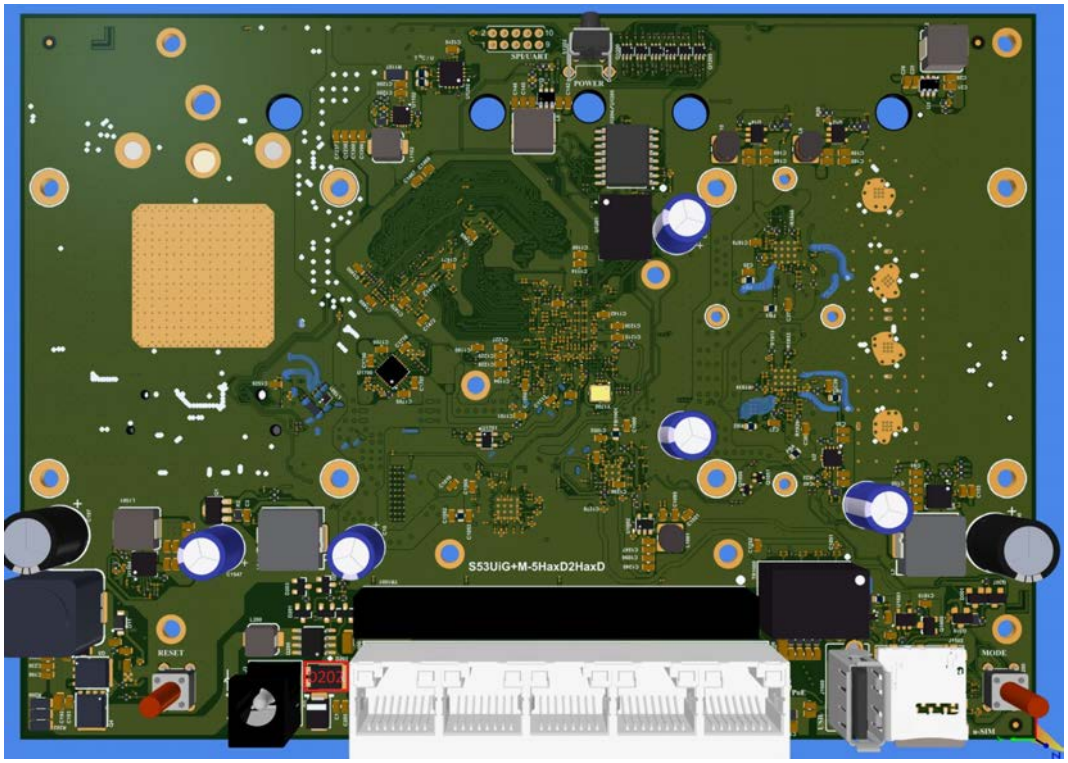
Instructions for checking overvoltage

Checking Schottky diode

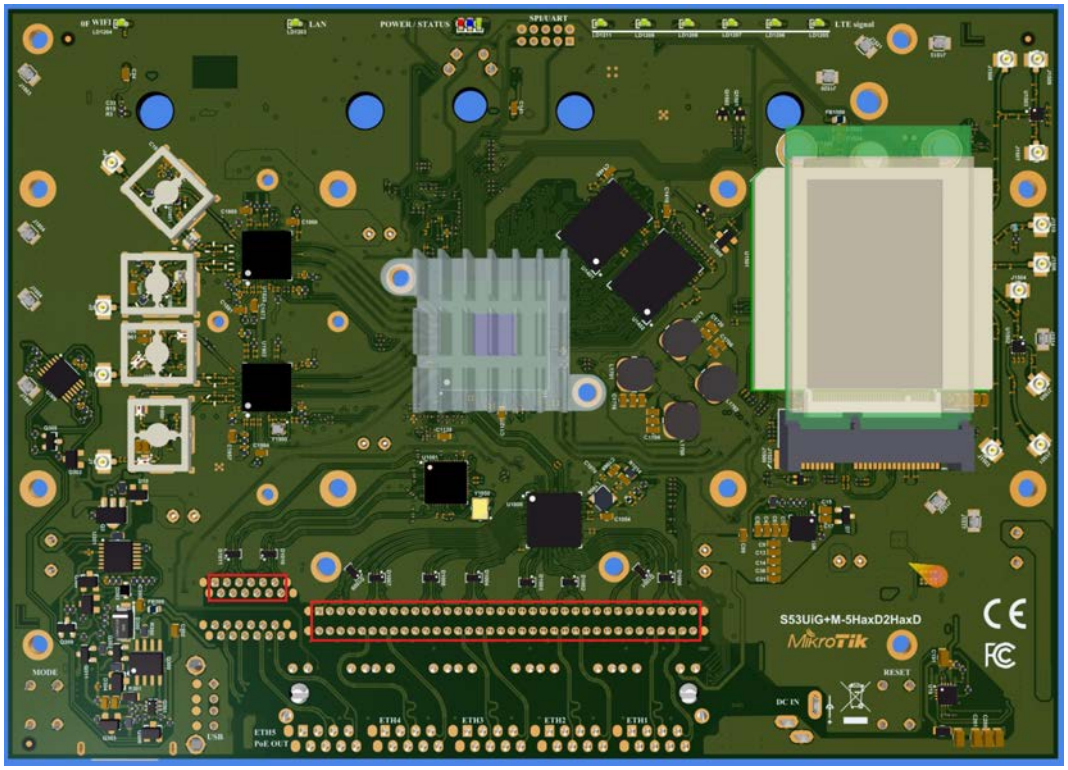
Check Schottky diode D202. Location of diode on the board is shown in picture 354. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformers TR1000 and TR1001 pins and Ground. Test points on the transformer pins are highlighted with red lines, see picture 355. Voltage drop value should be in the range from 0,35V to 0,39V. Voltage drop measurement method is described on page 7.



Picture 354


S53UiG+M-5HaxD2HaxD
MikroTik
LAN
POWER / STATUS
LTE signal
MODE
RESET
DC IN
USB
ETH5
PoE OUT
ETH4
ETH3
ETH2
ETH1

Picture 355

Chateau LTE18 ax

Picture 356

Disassembling information

The Chateau LTE18 ax disassemble is similair to the Chateau 5G AX, you can find description of device disassembly on page 273.

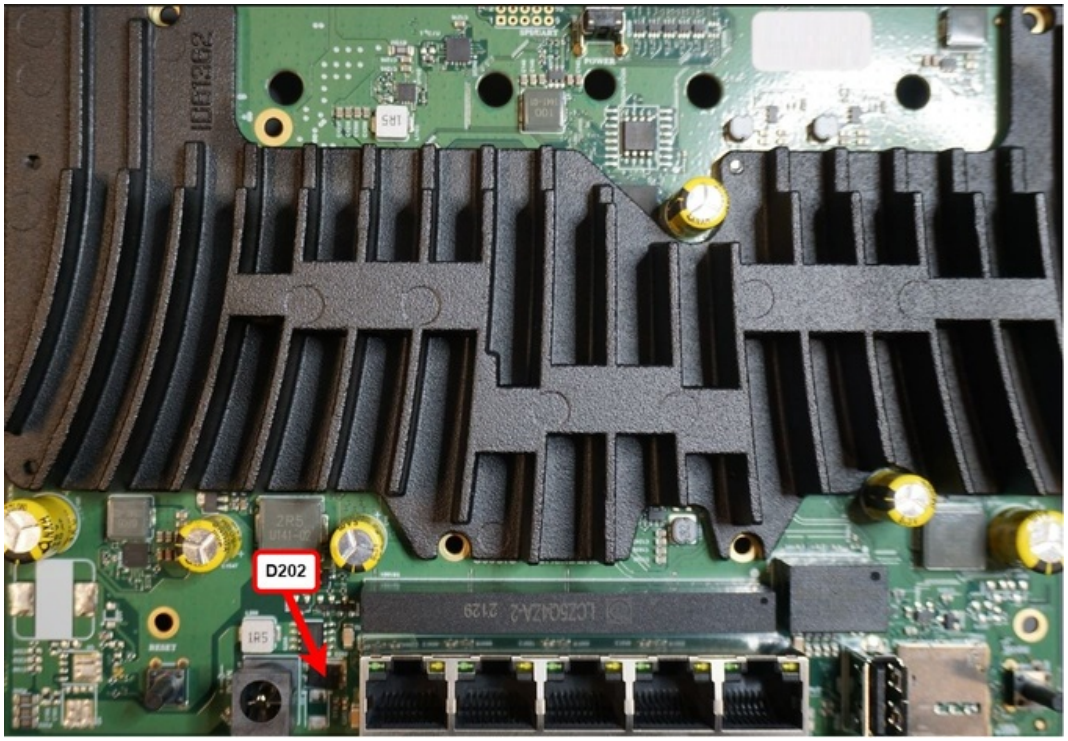
Instructions for checking over-voltage

Checking Schottky diode

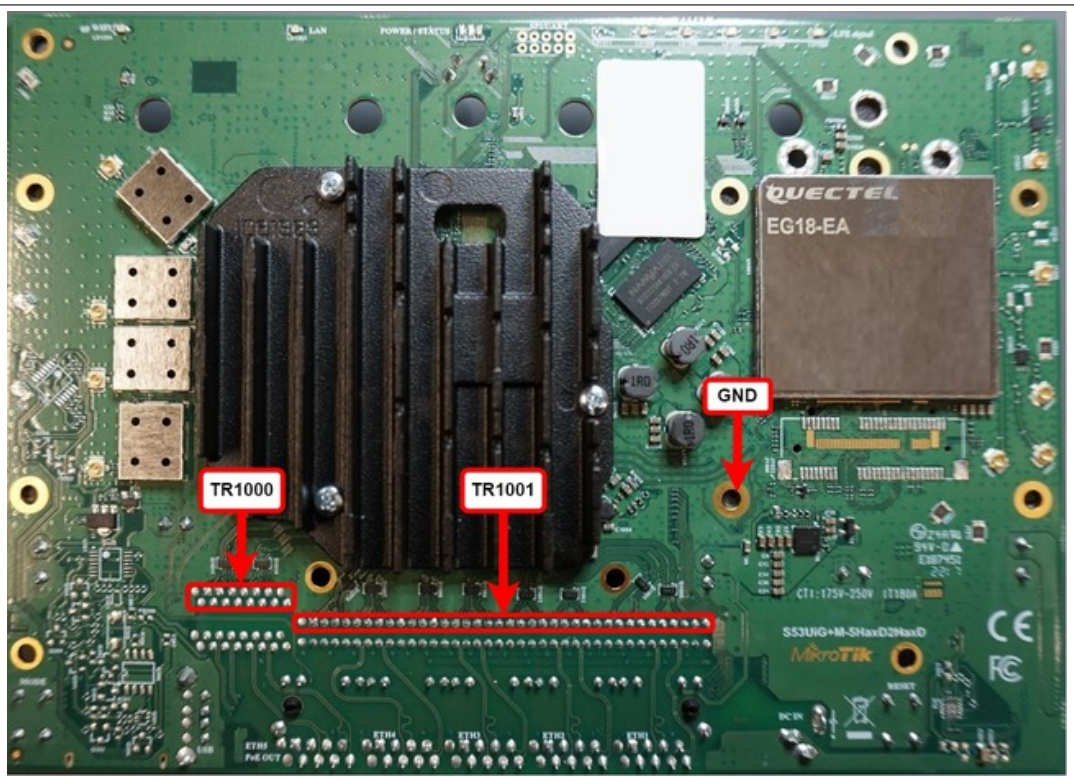
Check Schottky diode D202. Location of the diodes on the board you can see in the picture 357. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformers TR1000, TR1001 pins and Ground. Test points on the transformer pins are highlighted with red lines, see picture 358. Voltage drop value should be in the range from 0,35V to 0,40V. Voltage drop measurement method is described on page 7.



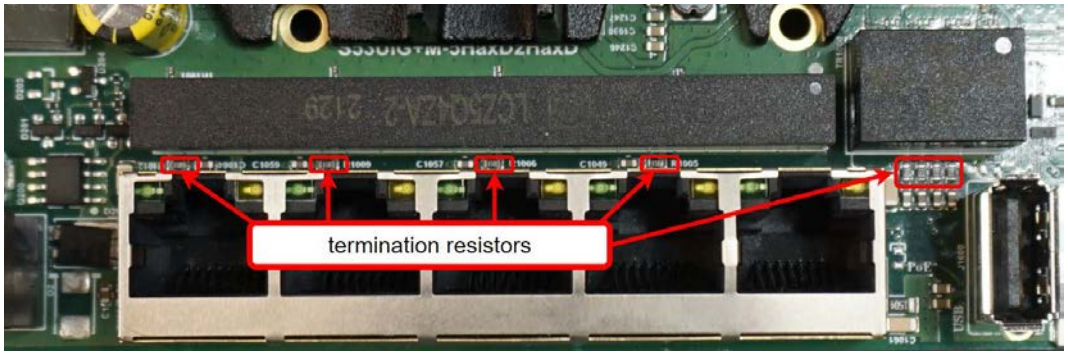
Picture 357



Picture 358

Checking 75 Ohm termination resistors resistance

Check value of each termination resistor. It should be approximately 75 Ohms. Location of resistors is shown in picture 359.



Picture 359

Chateau PRO ax (H53UiG-5HaxQ2HaxQ)

Picture 360

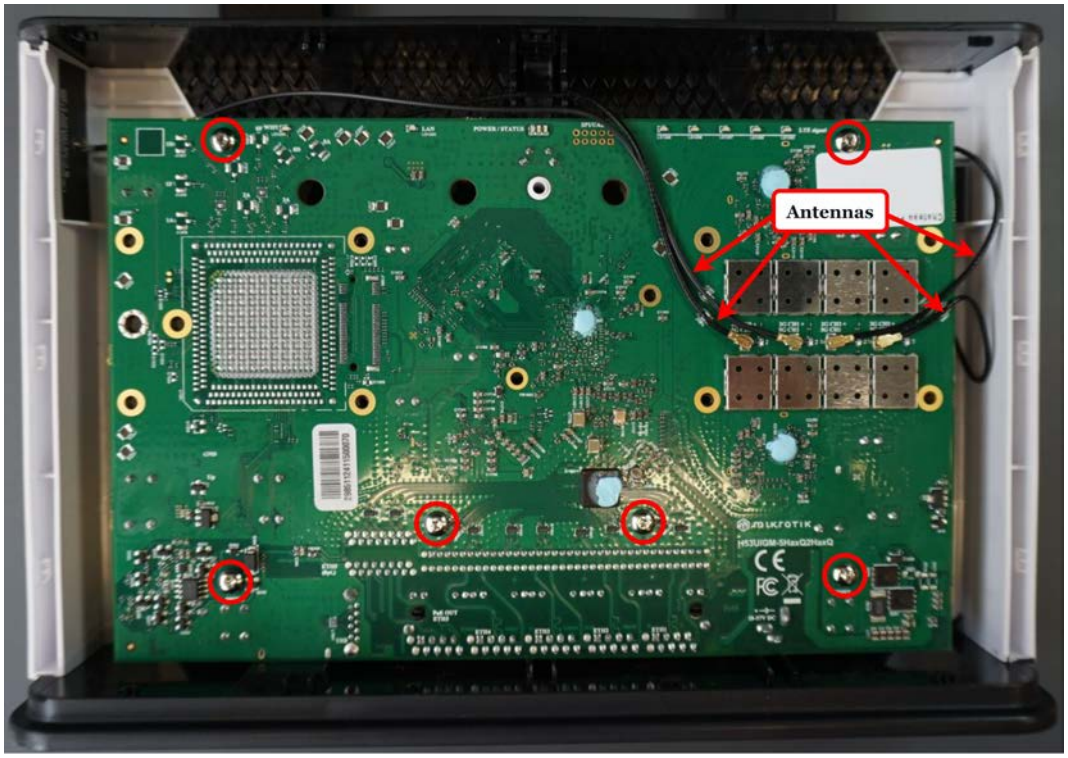
Disassembling information

The removing of the Chateau PRO ax front cover is the same as the removing of the Chateau 5G front cover, see page 267 steps 1-4.

When the front cover of the case is removed, using the PH1 screwdriver unscrew four screws and carefully remove the heatsink, see picture 361.

Picture 361

Disconnect four antenna cables and using TORX T8 screwdriver unscrew six screws, see picture 362.



Picture 362

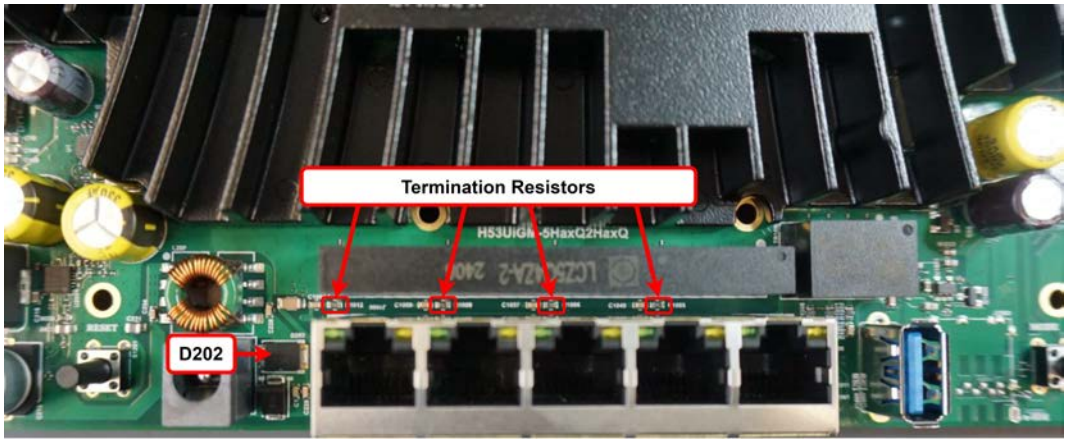
Instructions for checking over-voltage

Checking Schottky diode

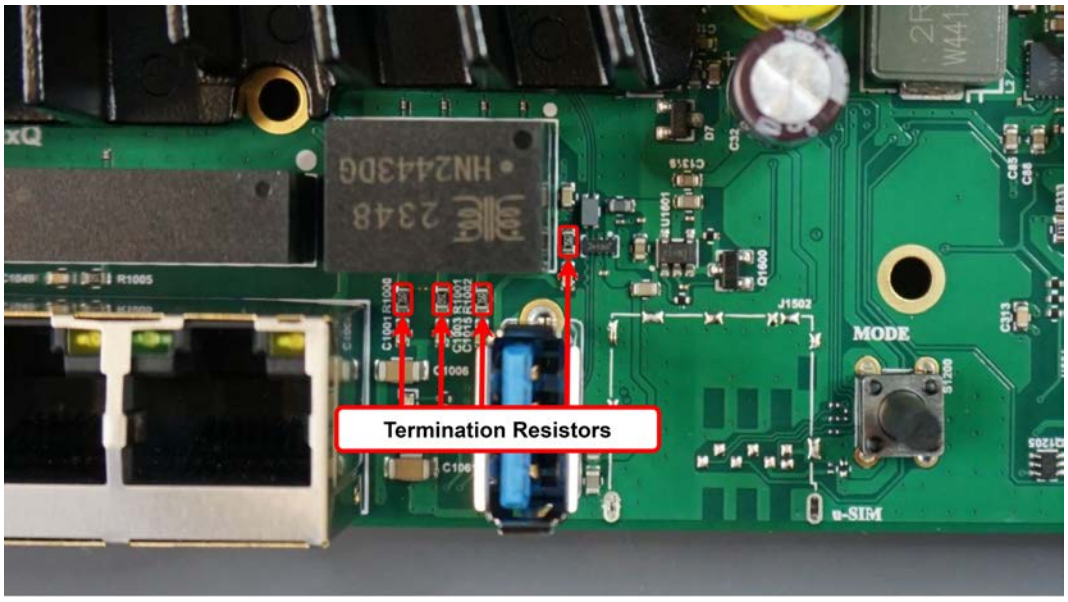
Check Schottky diode D202. Location of the diode on the board you can see in the picture 363. Schottky diode quality measurement method is described on page 4.

Checking 75 Ohm termination resistors resistance

Check value of each termination resistor, it should be 75 Ohms +/- 1%. Location of resistors is shown in pictures 363 and 363.



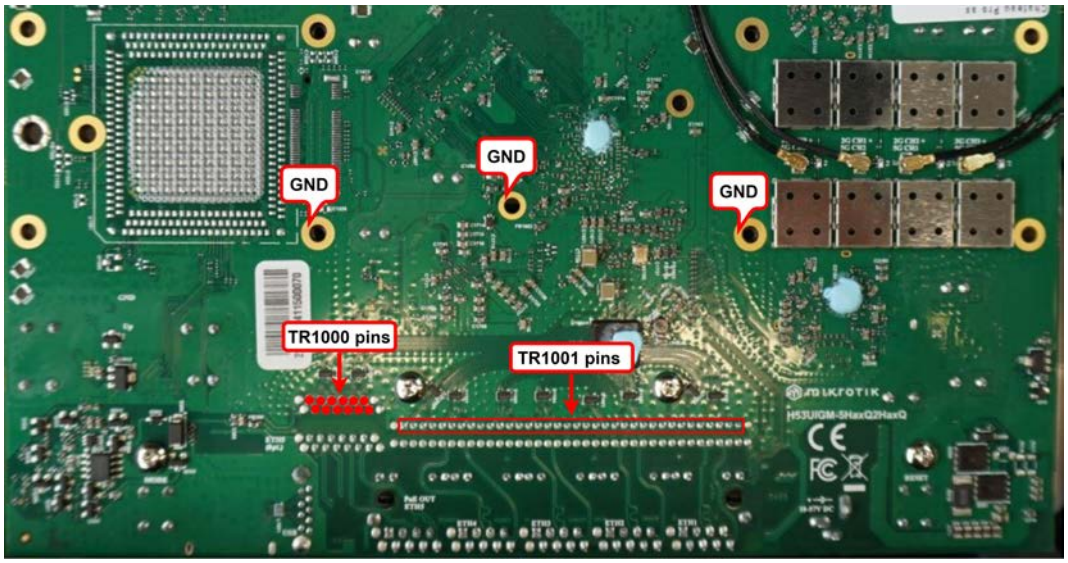
Picture 363



Picture 364

Checking voltage drop value between Ethernet transformers pins and Ground

Check voltage drop between Ethernet transformers TR1000, TR1001 pins and Ground, test points you can see in the picture 365. Voltage drop between pins and Ground of the transformer TR1000 should be in the range from 0,38V to 0,45V, and between pins and Ground of the transformer TR1001 in the rage form 0.35V to 0.41V. Voltage drop measurement method is described on page 7.



Picture 365

HAP SERIES ROUTERBOARDS

hAP ax3 (C53UiG+5HPaxD2HPaxD)

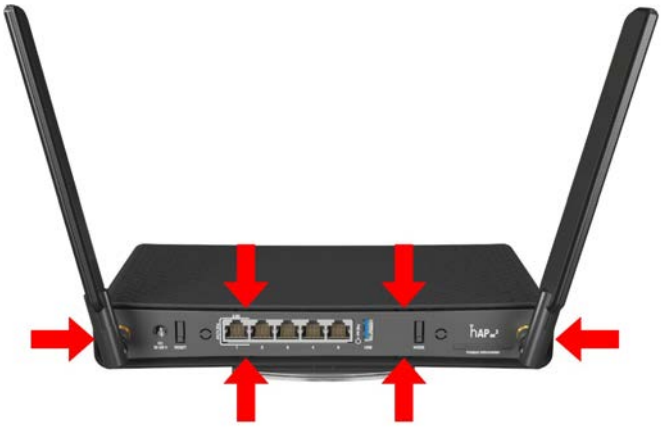
Picture 366

Disassembling information

Step 1: Tools recommended for the disassembly are plastic prying tools, such as the one shown on picture 419, a PH1 screwdriver and a 0,25M ethernet cable. Plug in an ethernet cable in ethernet ports 1 and 5 as shown in picture 367.

Picture 367

Step 2: The board is held inside the case with snap fit hooks. Placement of these hooks is shown in picture 368.



Picture 368

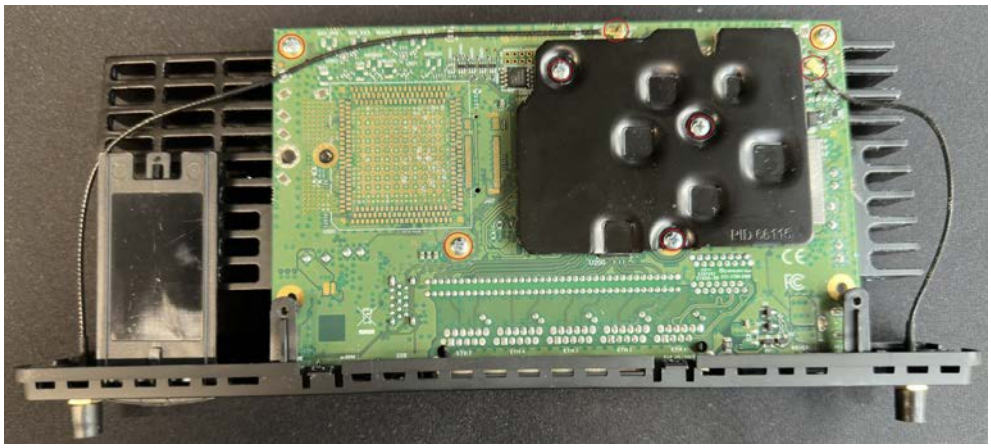
Step 3: Plastic prying tools are recommended, because plastic is less likely to leave deformation marks on the case of the routerboard. Suggested prying tool is shown in picture 419.
The disassembly starts with holding the outer cover and pulling the ethernet cable out of the case, then you must insert a prying tool into the left or right side where the snap fit hook is. Once you undo one side continue with the other side, after that you can undo the top and bottom hooks. Now you can pull the routerboard out of the case.

Picture 369

Step 4: After pulling the routerboard out of the case, unscrew the two screws shown in picture 370

Picture 370

Step 5: Then turn the routerboard to the other side and remove the two antenna connectors and unscrew the 6 screws shown in picture 371.



Picture 371

Step 6: Carefully remove the top, bottom heatsink and the front cover. Now you can begin the overvoltage tests.

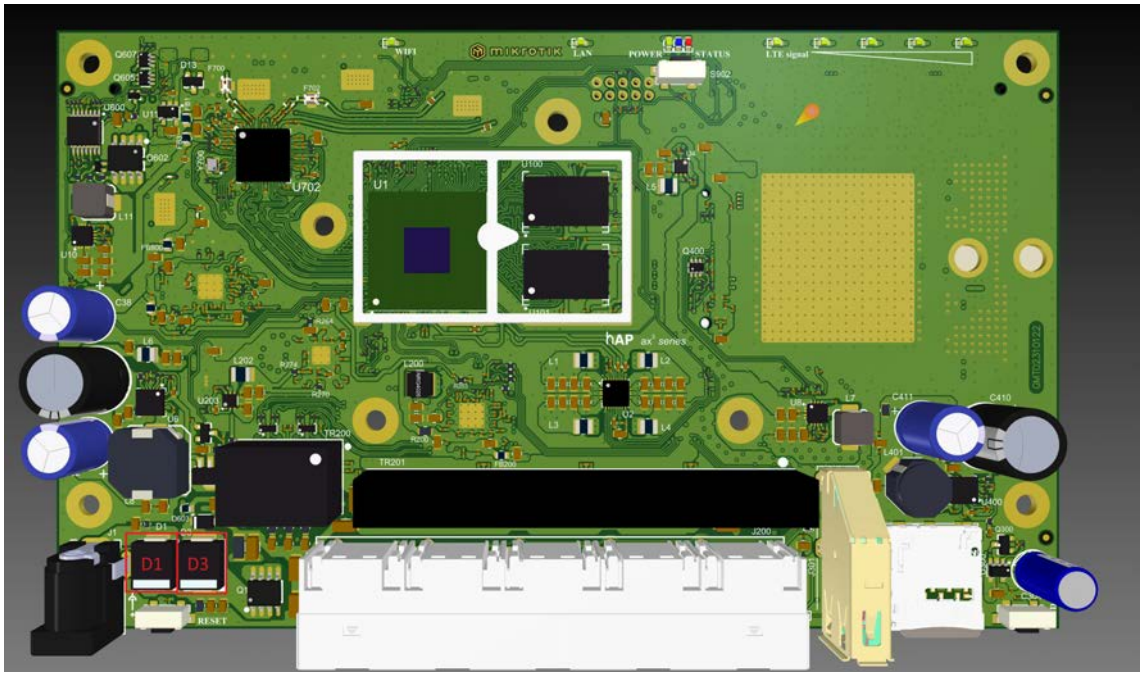
Instructions for checking overvoltage

Checking Schottky diode

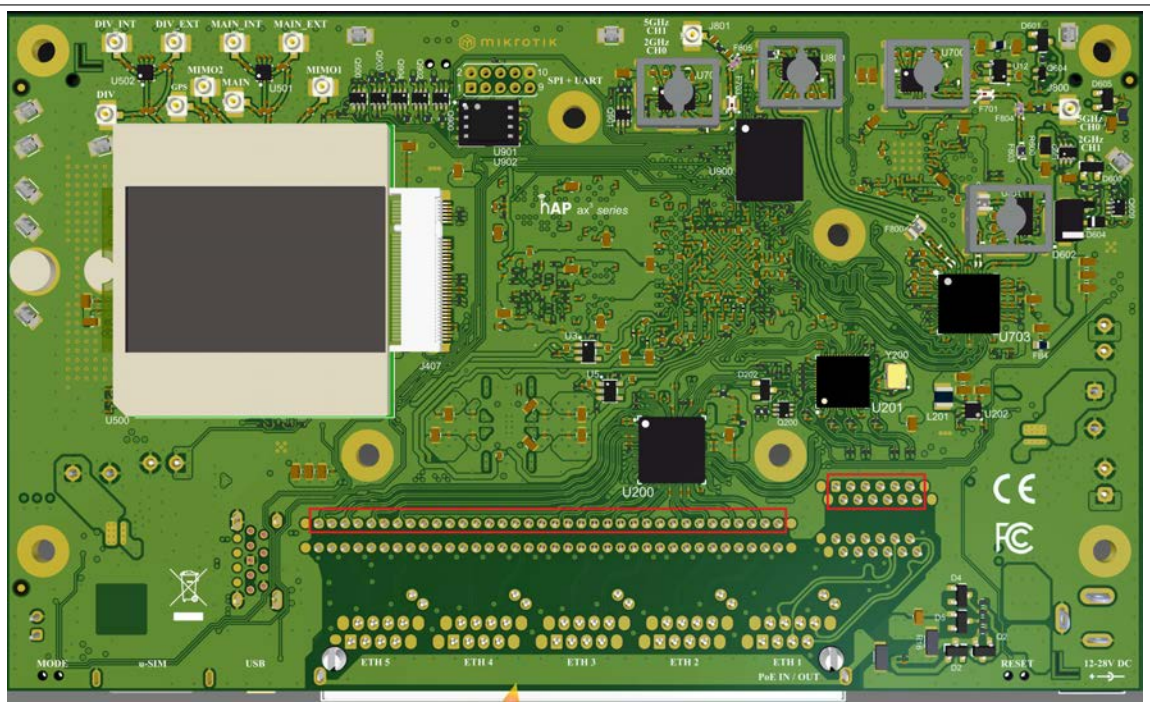
Check Schottky diodes D1 and D3.The location of these diodes on the board is shown in picture 372. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformers TR400 and TR401 pins and Ground. Test points on the transformer pins are highlighted with red lines, see picture 373. Voltage drop value should be in the range from 0,35V to 0,39V. Voltage drop measurement method is described on page 7.



Picture 372


DIV_INT
DIV_EXT
MAIN_INT
MAIN_EXT
MIMO2
MIMO1
MAIN
DIV
GPS
mikrotik
SPI + UART
hAP ax series
U900
U703
U201
U200
MODE
u-SIM
USB
ETH 5
ETH 4
ETH 3
ETH 2
ETH 1
PoE IN / OUT
RESET
12-28V DC

Picture 373

hAP ax2 (C52iG-5HaxD2HaxD-TC)

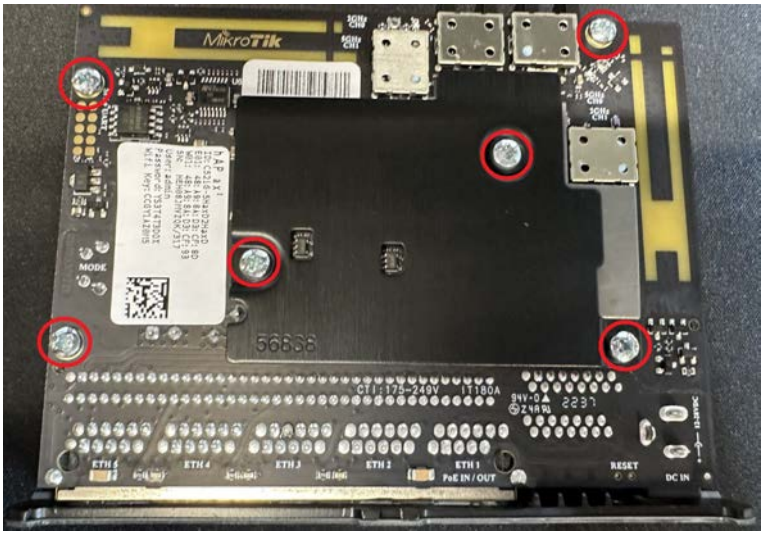
Picture 374

Disassembling information

Step 1: Tools recommended for the disassembly are a PH1 and TR8 screwdriver. First unscrew the two TR8 screws that are shown in picture 375. Then you can slide the board out of the case.

Picture 375

Step 2: Unscrew the six PH1 screws shown in picture 376. Now remove the top and bottom heatsinks and then you can begin the tests for checking overvoltage.



Picture 376

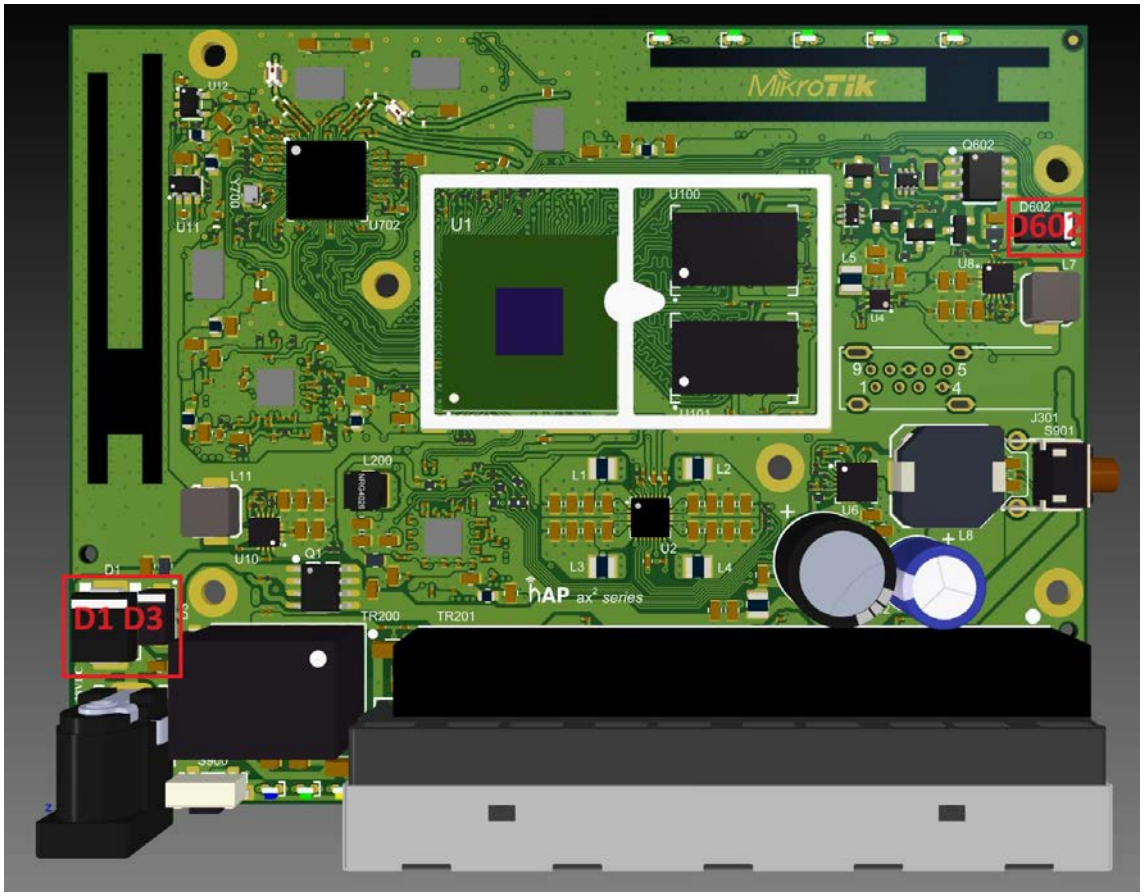
Instructions for checking overvoltage

Checking Schottky diode

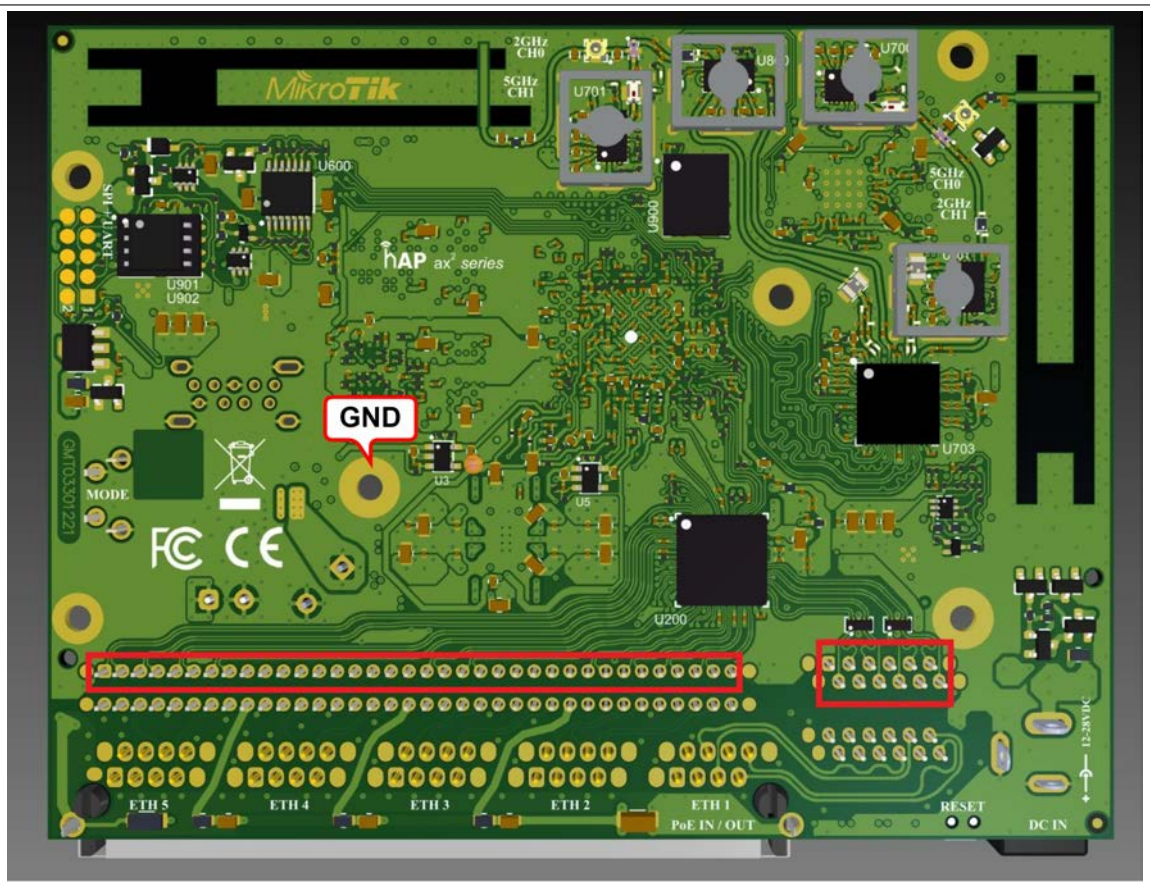
Check Schottky diodes D1, D3 and D602.The location of these diodes on the board is shown in picture 377. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformers TR200 and TR201 pins and Ground. Test points on the transformer pins are highlighted with red lines, see picture 378. Voltage drop value should be in the range from 0,35V to 0,39V. Voltage drop measurement method is described on page 7.



Picture 377


GND
MikroTik
hAP ax series
MODE
ETH 5
ETH 4
ETH 3
ETH 2
ETH 1
PoE IN / OUT
RESET
DC IN

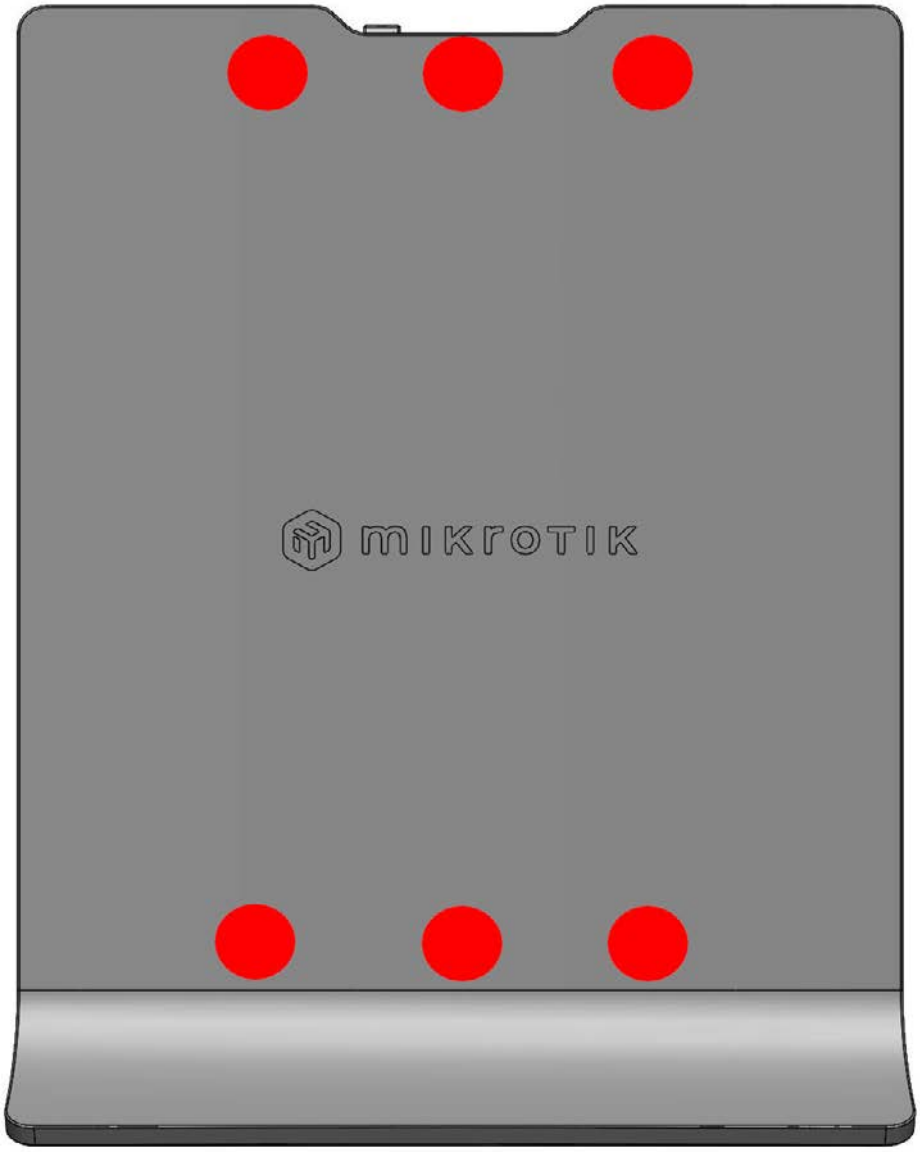
Picture 378

hAP ax lite and hAP ax lite LTE6 (L41G-2axD, L41G-2axD&FG621-EA)

Picture 379

Disassembling information

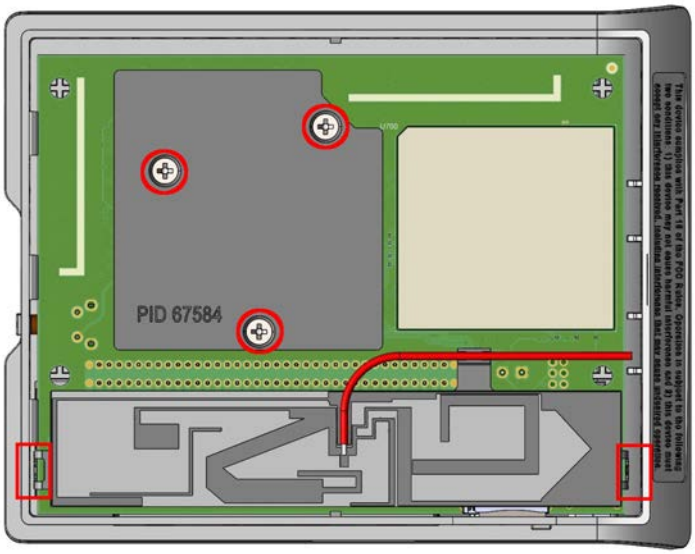
Step 1: Plastic prying tools are recommended, because plastic is less likely to leave deformation marks on the case of the routerboard. Suggested prying tool is shown in picture 381. The disassembly starts undoing six snap fit hooks that are located as shown in picture 380, then you must insert a prying tool into the top left or right corner. Once you undo one side continue with the other side, after that you can undo the top and bottom hooks. Be careful when pulling the routerboard out of the case, because the LTE6 version has a antenna cable that is attached to the chassis.



Picture 380

Picture 381

Step 2: Unscrew the three PH1 screws and remove the LTE antenna (if you have the LTE6 version) which is held on with hooks as shown in picture 382. Now remove the top and bottom heatsinks and then you can begin the tests for checking overvoltage.

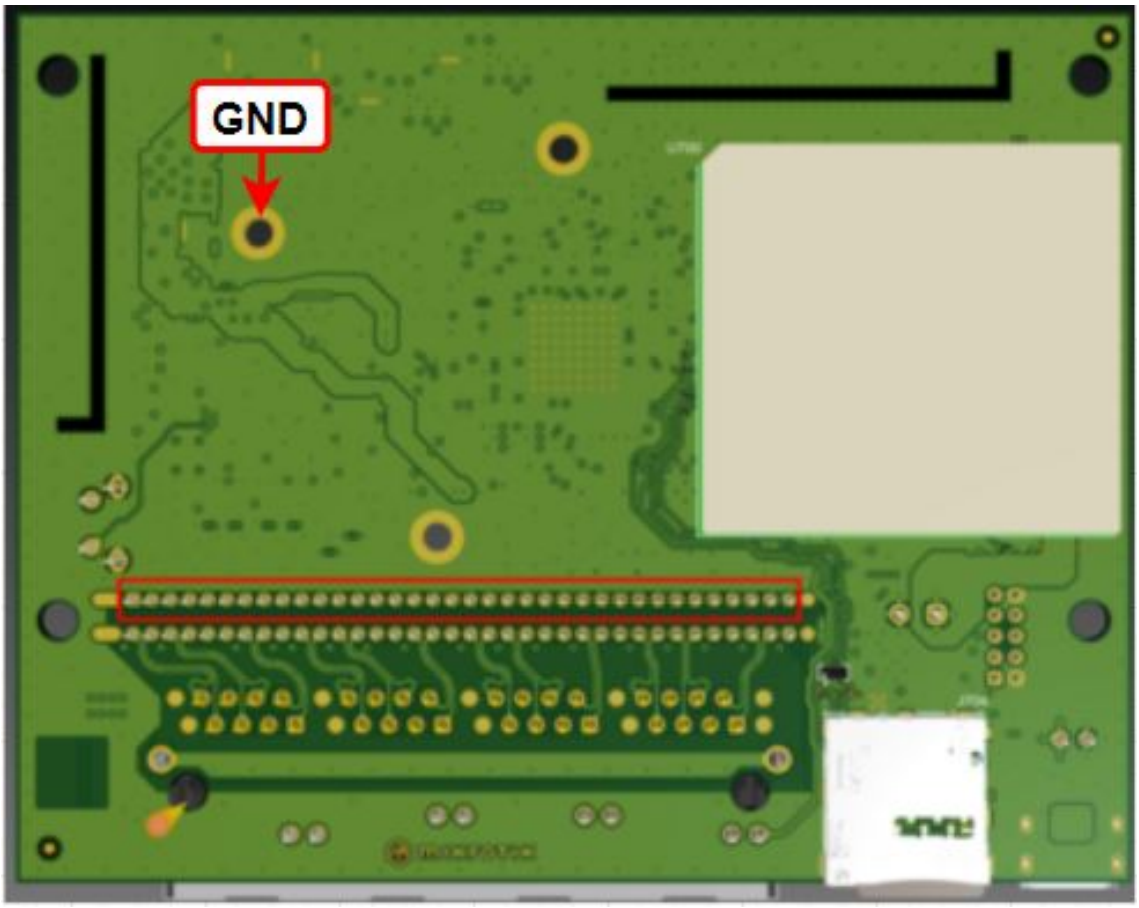


Picture 382

Instructions for checking overvoltage

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformers TR200 and TR201 pins and Ground. Test points on the transformer pins are highlighted with red lines, see picture 383. Voltage drop value should be in the range from 0,35V to 0,39V. Voltage drop measurement method is described on page 7.



Picture 383

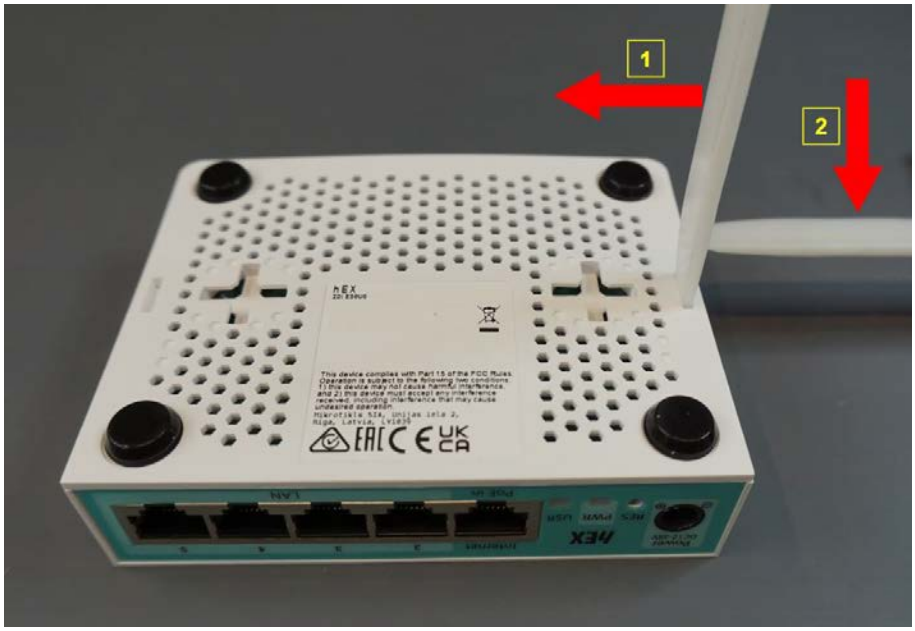
HEX SERIES ROUTERBOARDS

hEX (E50UG)

Picture 384

Disassembling information

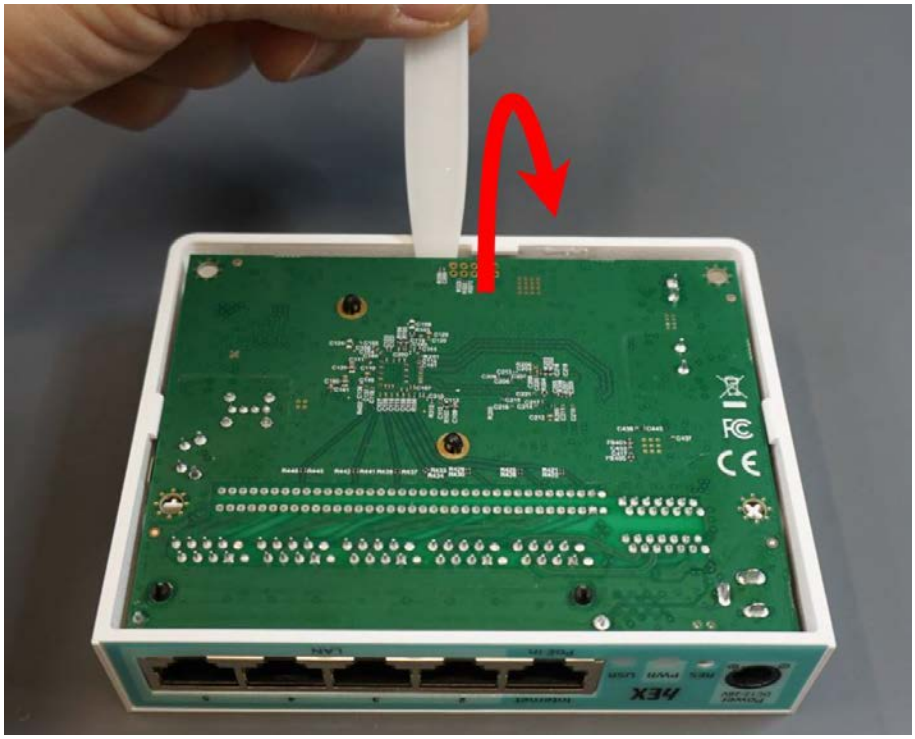
Step 1: Using plastic pry tools remove the back cover as shown in pictures 385 and 386.



Picture 385

Picture 386

Step 2: Remove the PCB from the case, see picture 387.

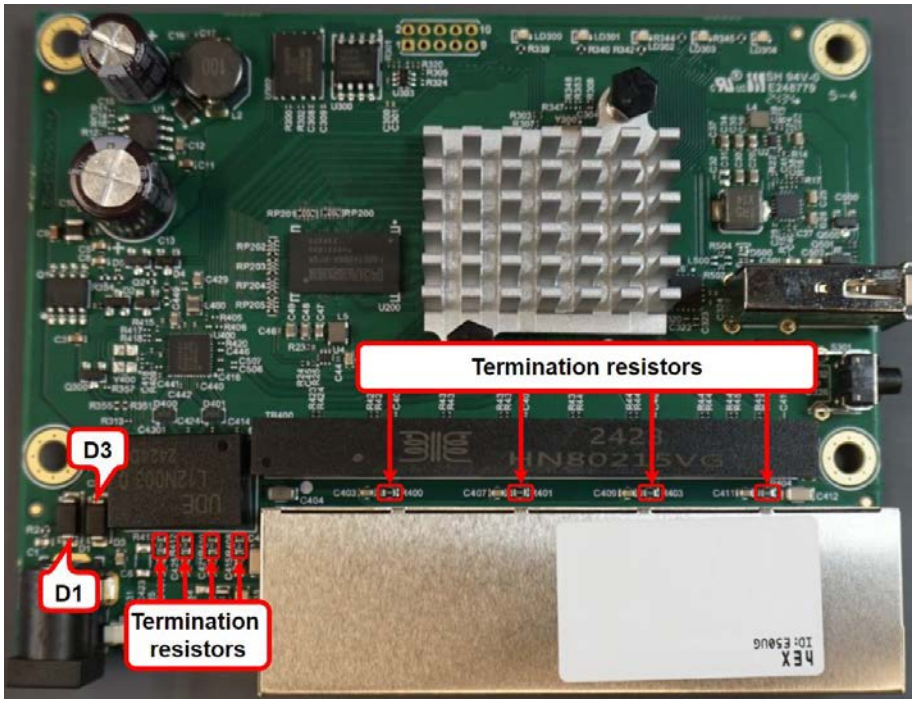


Picture 387

Instructions for checking over-voltage

Checking Schottky diodes

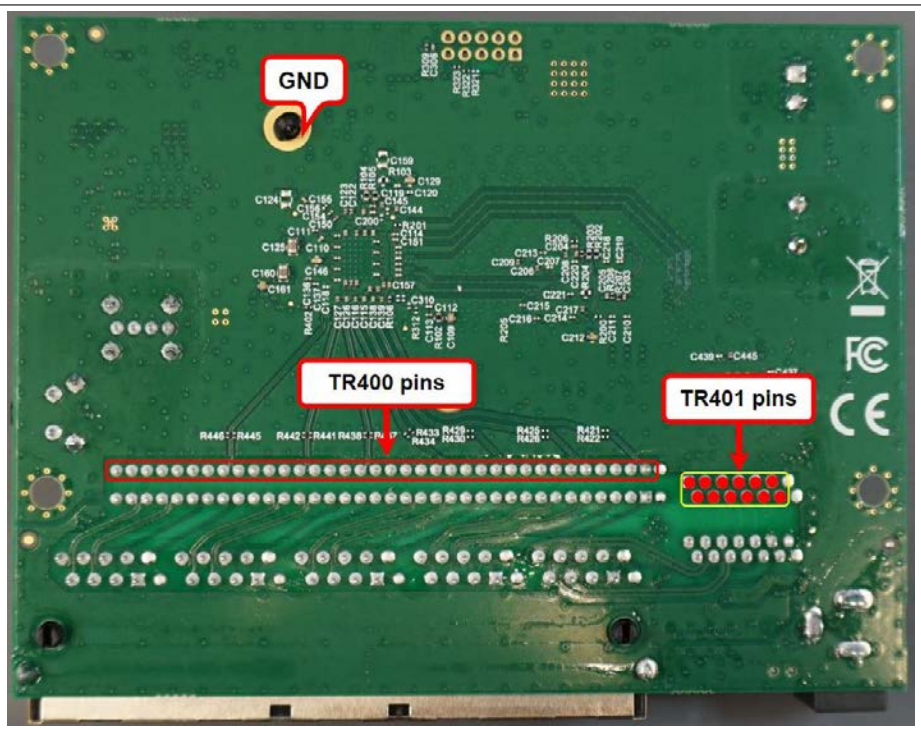
Check Schottky diodes D1 and D3. Location of the diodes on the board you can see in the picture 388. Schottky diode quality measurement method is described on page 4.



Picture 388

Checking voltage drop value between Ethernet transformers pins and Ground

Check voltage drop value between Ethernet transformers TR400, TR401 pins and Ground, see picture 389. Voltage drop value on the transformer TR400 should be in the range from 0,35V to 0,40V and on the transformer TR401 should be in the range from 0,40V to 0,45V. Voltage drop measurement method is described on page 7.



Picture 389

Checking 75 Ohm termination resistors resistance

Check value of each termination resistor. It should be 75 Ohms +/- 1%. Location of resistors is shown in picture 388.

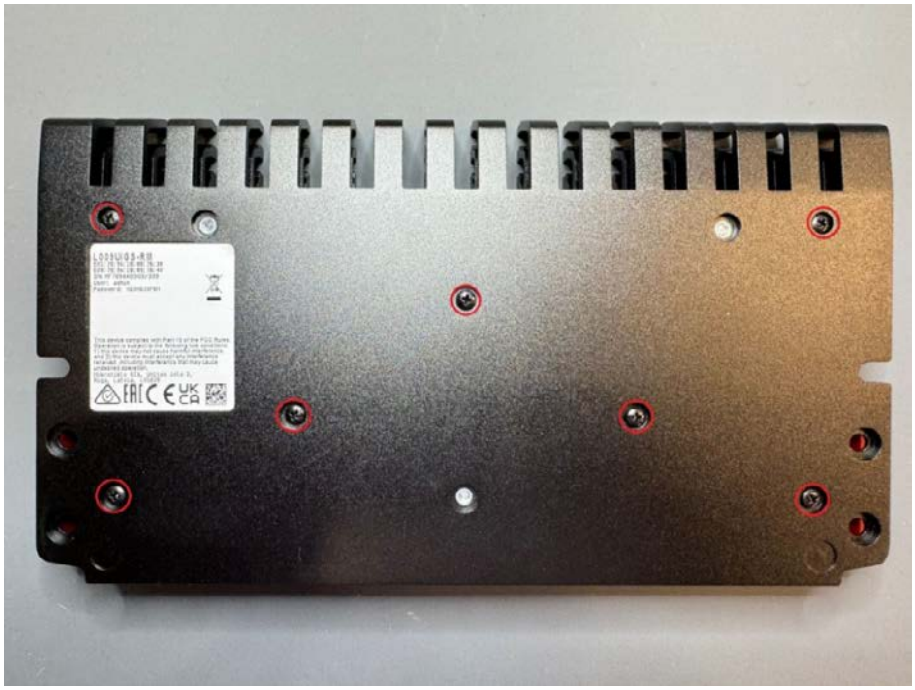
L009 SERIES ROUTERBOARDS

L009UiGS-RM and L009UiGS-2HaxD-IN

Picture 390

Disassembling information

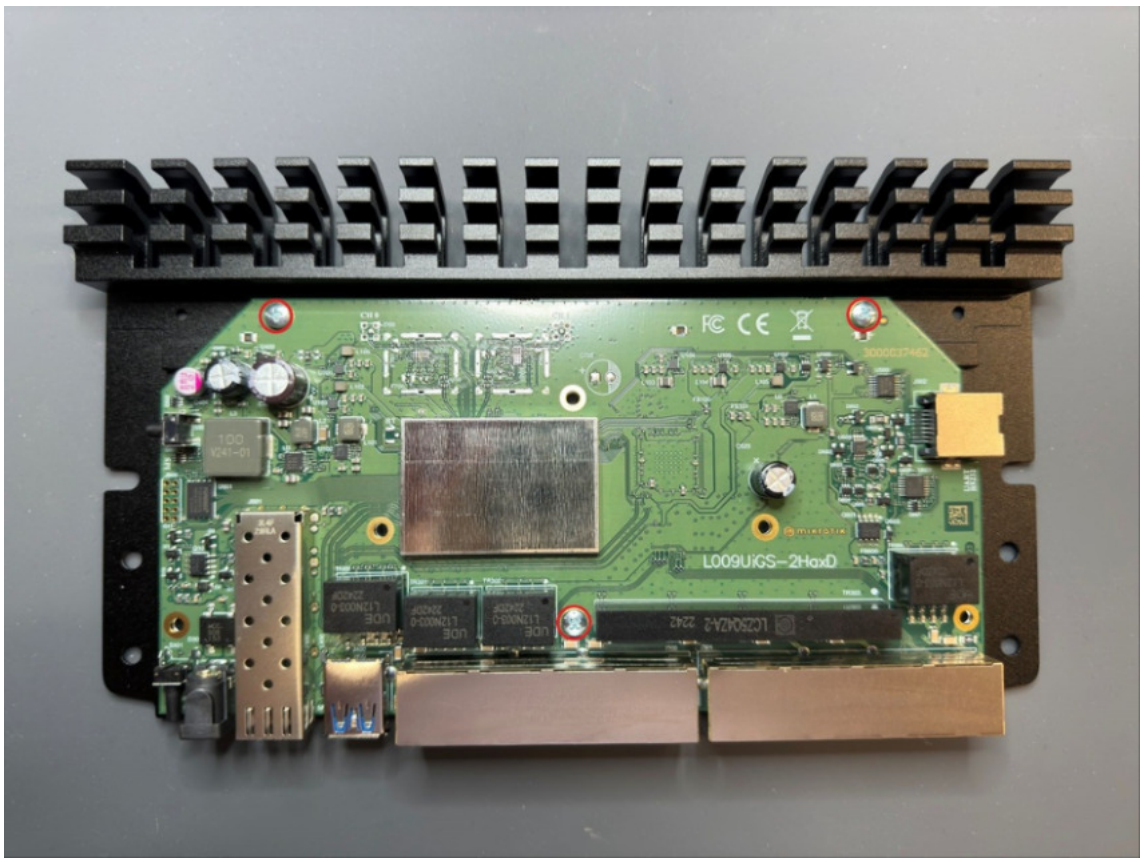
Step 1: To disassemble the RouterBOARD you will need a PH0 screwdriver. To start the disassembly please turn the RouterBOARD black side facing upward and start unscrewing the 7 highlighted screws as shown in picture 391. When you have finished unscrewing the screws turn the RouterBOARD around and remove the red cover as shown in picture 392.



Picture 391

Picture 392

Step 2: After removing the red cover unscrew the 3 screws that are holding the RouterBOARD in place as shown in the picture 393. Now you can remove the PCB and start checking overvoltage.

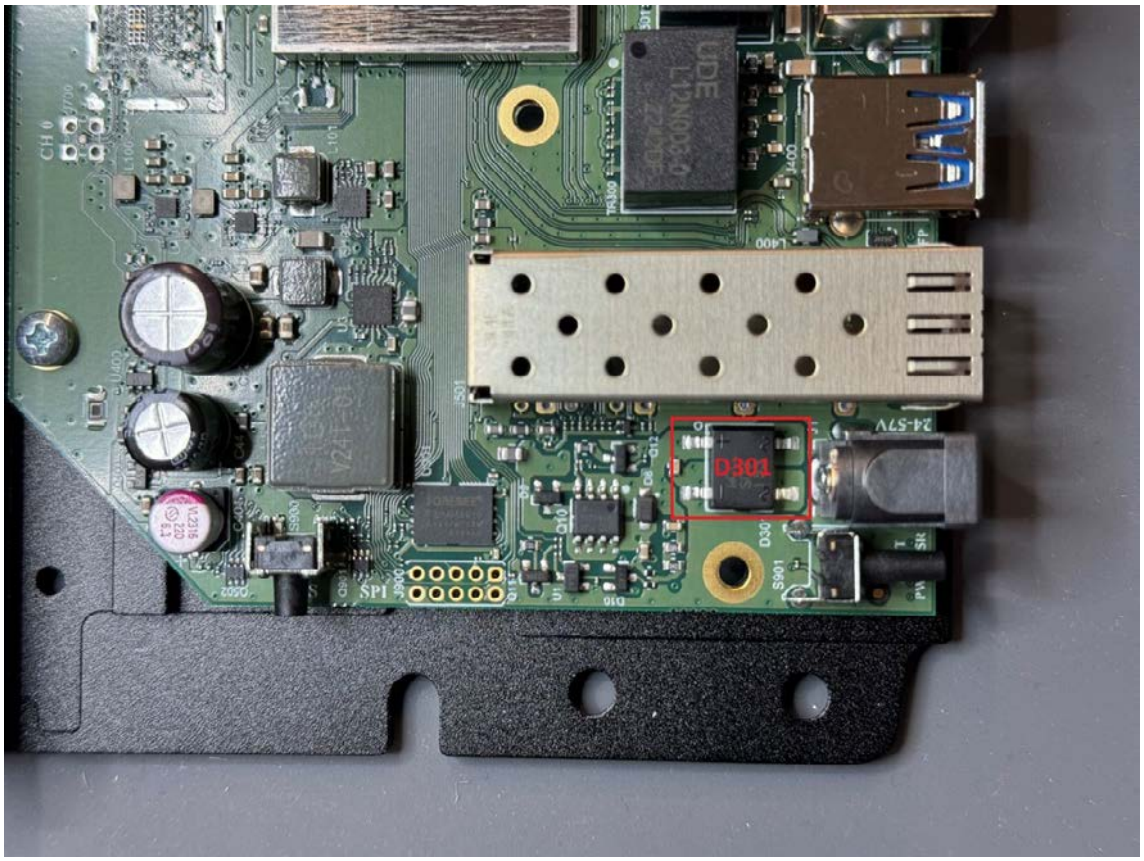


Picture 393

Instructions for checking overvoltage

Checking Schottky diode

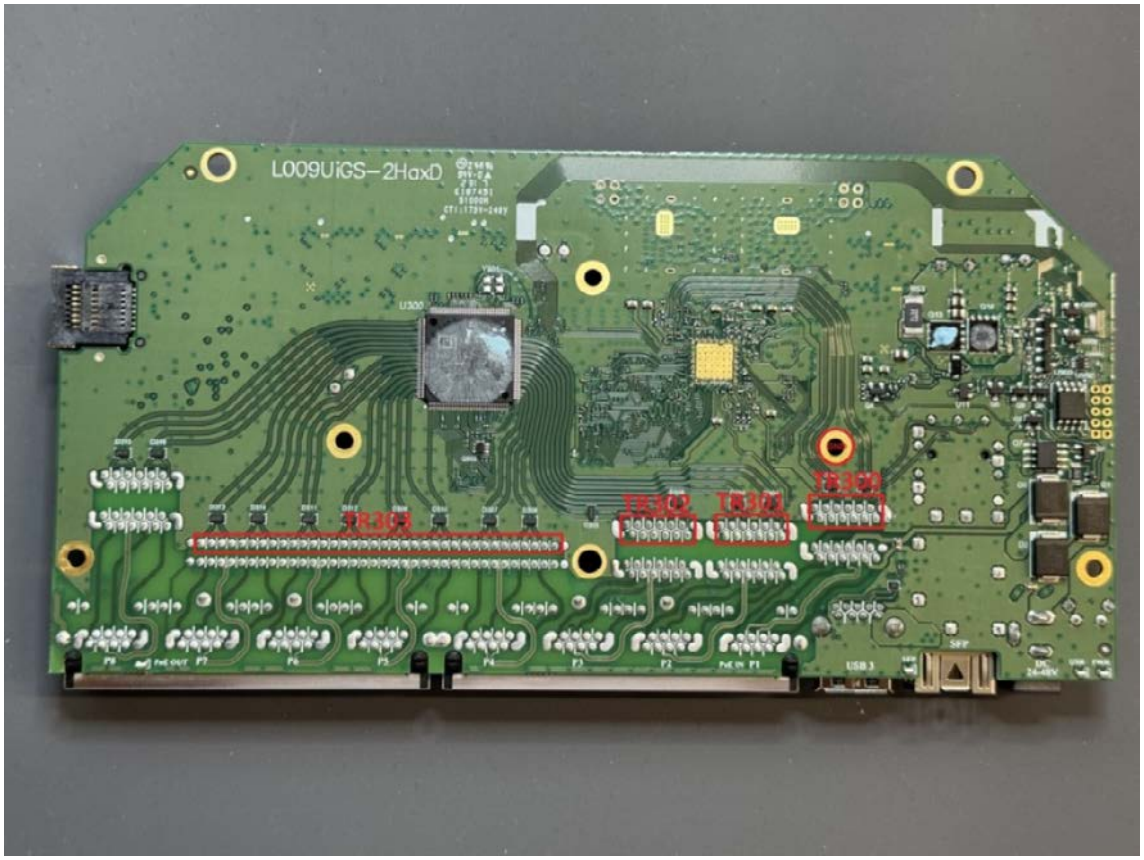
Check diode bridge D301.The location of this diode on the board is shown in picture 394. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.



Picture 394

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformers TR300, TR301, TR302, TR303 pins and Ground. Test points on the transformer pins are highlighted with red squares, see picture 395. Voltage drop value should be in the range from 0,32V to 0,45V. Voltage drop measurement method is described on page 7.



Picture 395

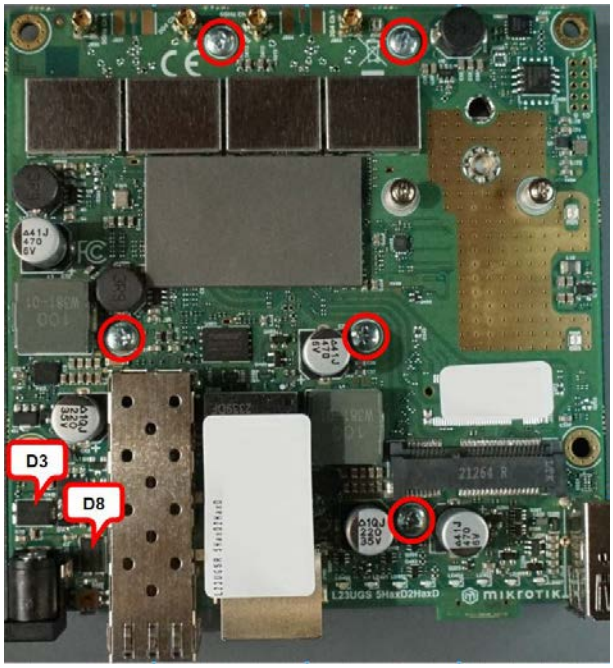
L23 SERIES ROUTERBOARDS

L23UGSR-5HaxD2HaxD

Picture 396

Disassembling information

Unscrew 5 screw using PH1 screwdriver and carefully detach the PCB from the heat-sink. Location of the screw is shown the picture 397.



Picture 397

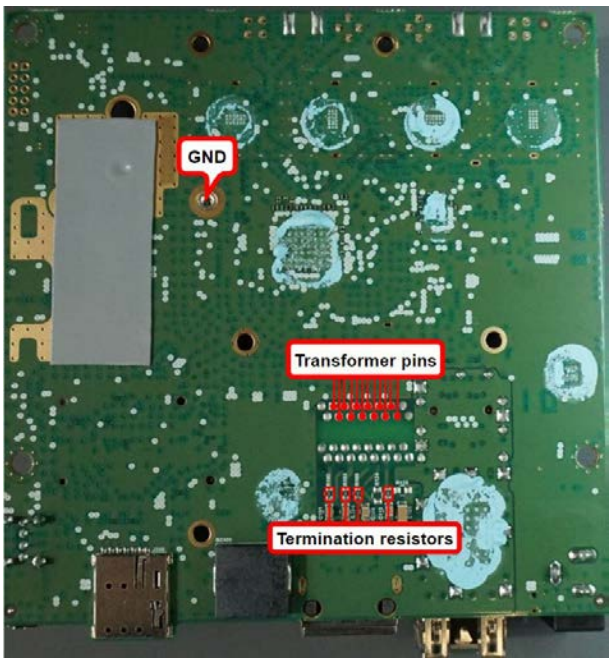
Instructions for checking over-voltage

Checking Schottky diodes

Check Schottky diodes D3, D8. Location of the diodes you can see in the picture 397. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR100 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 398. Voltage drop value should be in the range from 0,35V to 0,45V. Voltage drop measurement method is described on page 7.



Picture 398

Checking termination resistors resistance

Check value of each termination resistor, it should be 75 Ohm +/-2%.Location of resistors is shown in picture 398.

NetMetal ax (L23UGSR-5HaxD2HaxD)

Picture 399

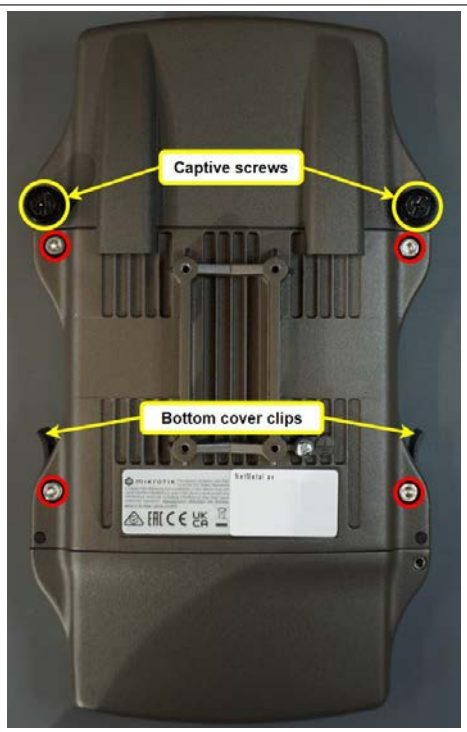
Disassembling information

Step 1:

Unscrew two captive screws and remove the top cover, see picture 400.

Step 2:

Using hex 3 screwdriver unscrew four screws and open the bottom cover. Location of the screws and you can see in the picture 400.



Picture 400

Step 3:

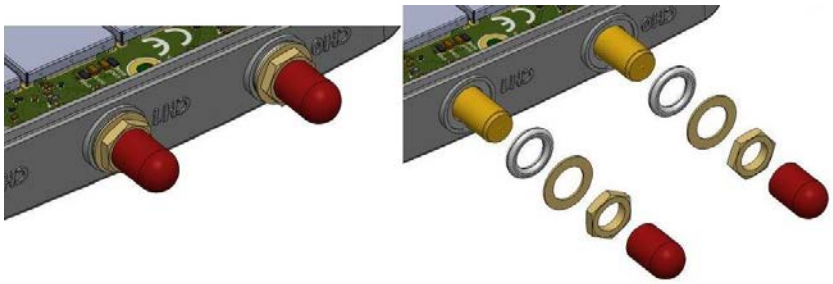
Carefully detach the rubber seal from the top part of the case, see pictures 401, 402. After that, gently peel off the label, see picture 402. Carefully separate the back part of the case from the front part of the case.

Picture 401

Picture 402

Step 4:

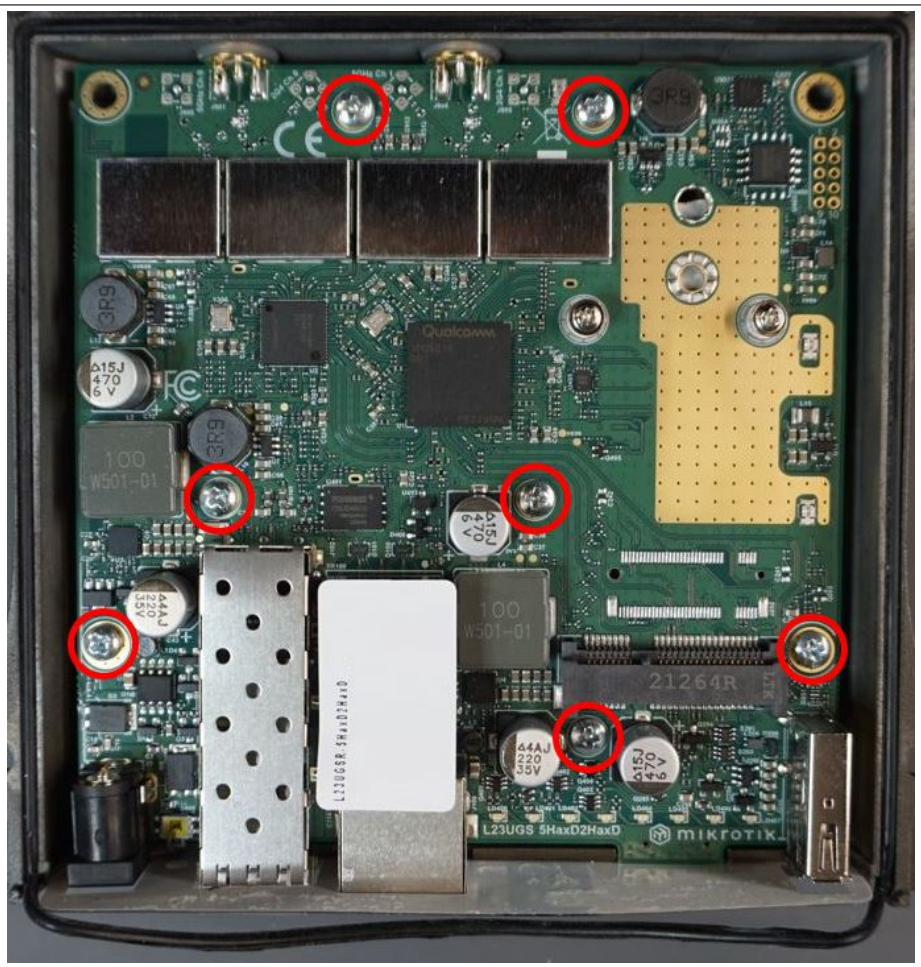
Unscrew two SMA connector nuts. After that, remove washers and transparent gaskets, see picture 403.



Picture 403

Step 4:

Using PH1 screwdriver unscrew 7 screws and pull out the PCB from the case. Location of the screws and you can see in the picture 404.



Picture 404

Instructions for checking over-voltage

Over-voltage testing procedure is the same as for L23UGSR, see page 314.

CUBE SERIES ROUTERBOARD

Cube 60G ac (CubeG-5ac60ay) and CubeSA 60Pro ac (CubeG-5ac60ay-SA)

Picture 405

Disassembling information (sealed with gaskets)

Unscrew 4 screws using torx T10 screwdriver and carefully remove the cover. Location of the screws marked in the red circles is shown the picture 406. The disassembled case can be seen in the picture 407.

Picture 406

Picture 407

Disassembling information (sealed with sealant)

Step 1: Unscrew 4 screws using torx T10 screwdriver. Location of the screws is shown the picture 408.

Picture 408

Step 2: Using a scalpel or a sharp knife, carefully separate the cover. How to do this, see the picture 409. The cover is difficult to remove because it is glued with sealant, so be extremely cautious doing this.

Picture 409

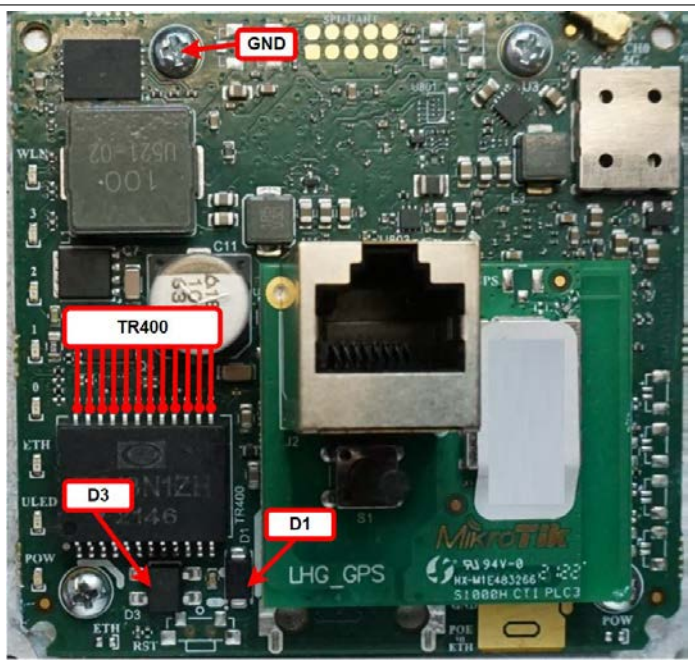
Instructions for checking over-voltage

Checking Schottky diode and diode bridge

Check Schottky diode D1 and diode bridge D3. Location of the diodes on the board you can see in the picture 409. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR400 pins and Ground. Test points on the transformer pins are highlighted with red lines, see picture 409. Voltage drop value should be in the range from 0,35V to 0,40V. Voltage drop measurement method is described on page 7.



Picture 410

Cube 60G ac

The Cube 60G does not have over-voltage instructions because the device case cannot be disassembled.

Cube Lite60

The Cube Lite60 does not have over-voltage instructions because the device case cannot be disassembled.

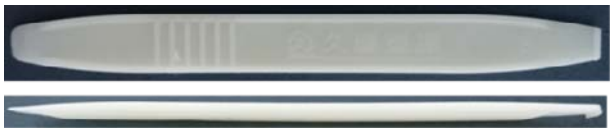
LDF SERIES ROUTERBOARD

LDF LTE6 kit (RBLDFR&R11e-LTE6)

Picture 411

Disassembling information

Tools recommended for the disassembly are plastic prying tools, such as shown on pictures 412 and 413.



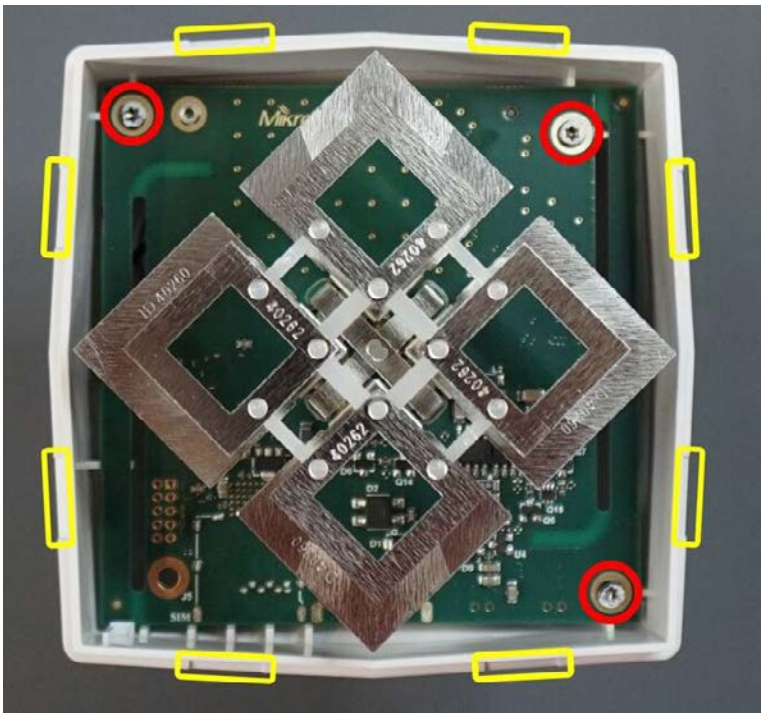
Picture 412

Picture 413

Step 1: Using plastic prying tools release 8 snap hooks around the perimeter of the case as shown in the picture 414. The lactation of the snap hooks can bee seen in the picture 415 (marked in yellow).

Picture 414

Step 2: Unscrew 3 screws using torx T8 screwdriver. Location of the screws is shown the picture 415.

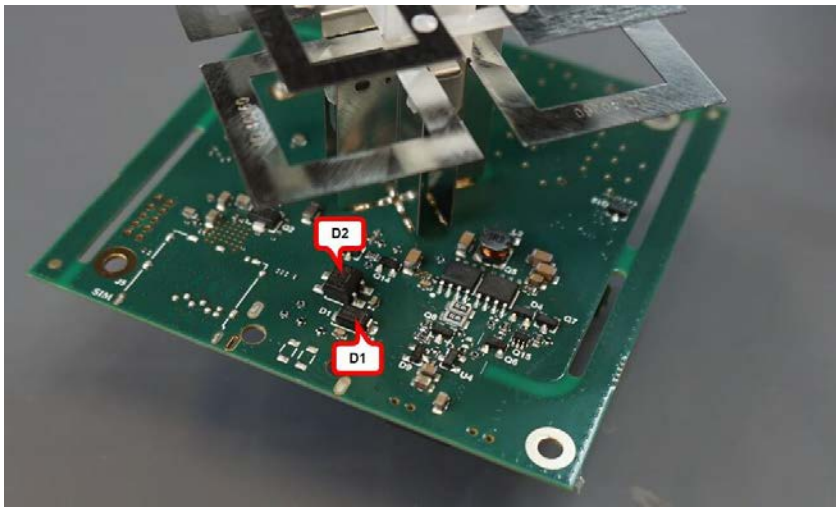


Picture 415

Instructions for checking over-voltage

Checking Schottky diode and diode bridge

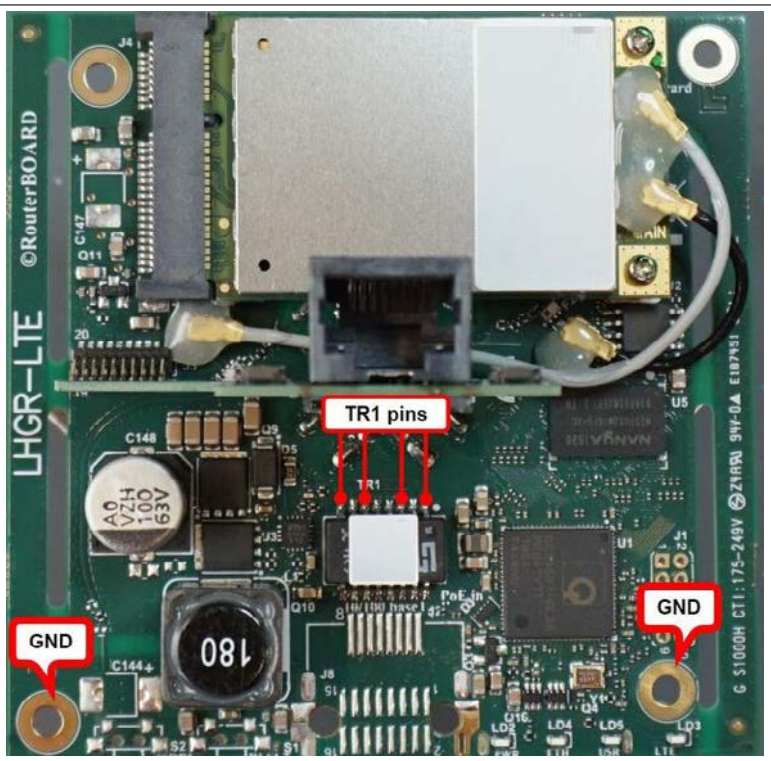
Check Schottky diode D1 and diode bridge D2. Location of the diodes on the board you can see in the picture 416. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.



Picture 416

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR1 pins and Ground. Test points on the transformer pins are highlighted with red lines, see picture 417. Voltage drop value should be in the range from 0,35V to 0,40V. Voltage drop measurement method is described on page 7.



Picture 417

LHG SERIES ROUTERBOARD

LHGG LTE6 kit (RBLHGGR&R11e-LTE6)

Picture 418

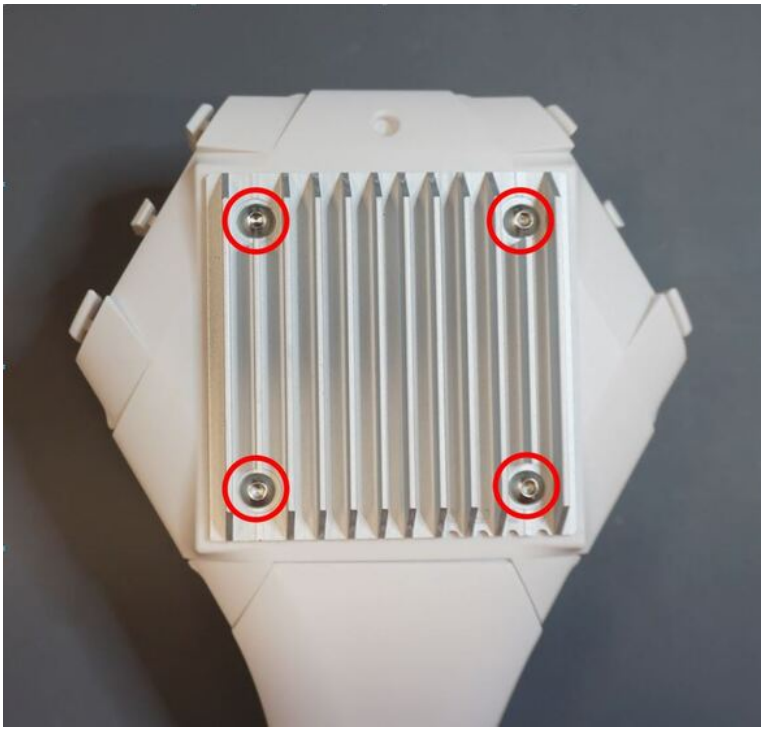
Disassembling information

Tools recommended for the disassembly are plastic prying tools, such as shown on pictures 419 and 420.

Picture 419

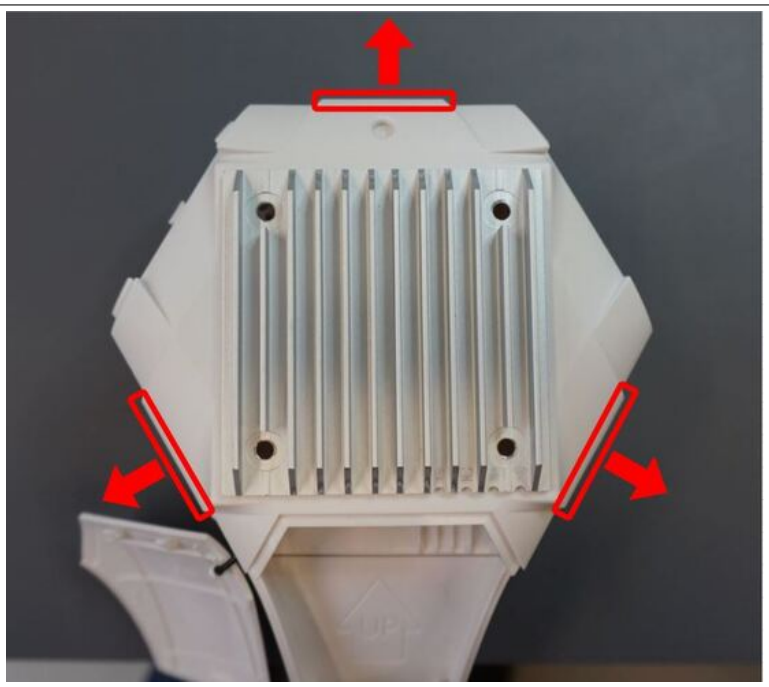
Picture 420

Step 1: Unscrew 4 screws using 2.5mm Hex screwdriver. Location of the screws is shown the picture 421.



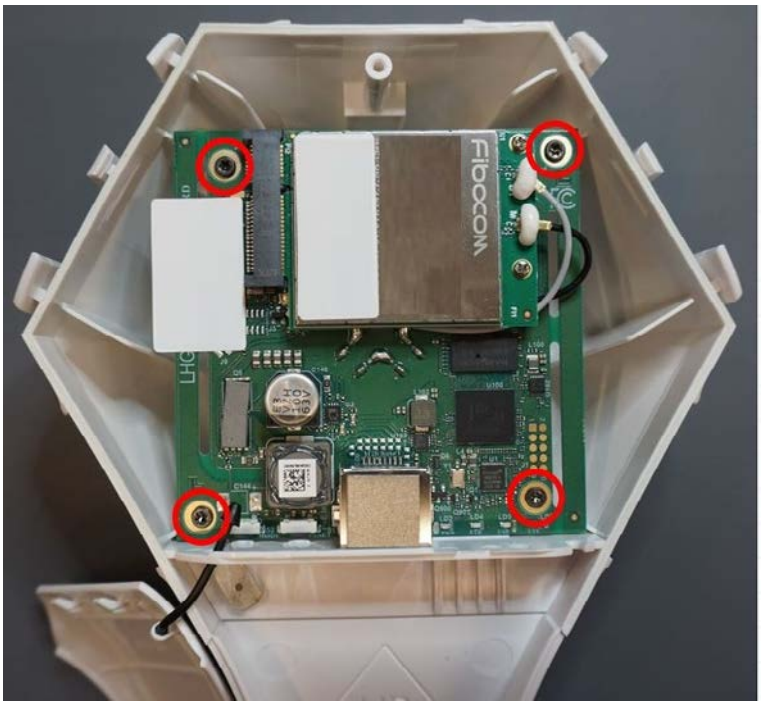
Picture 421

Step 2: Carefully move the clips outwards at the same time trying to lift the lid of the device upward. Location of the clips you can see in the picture 422.



Picture 422

Step 3: Unscrew 4 screws using torx T8 screwdriver and remove the PCB from the case. Location of the screws is shown the picture 423.



Picture 423

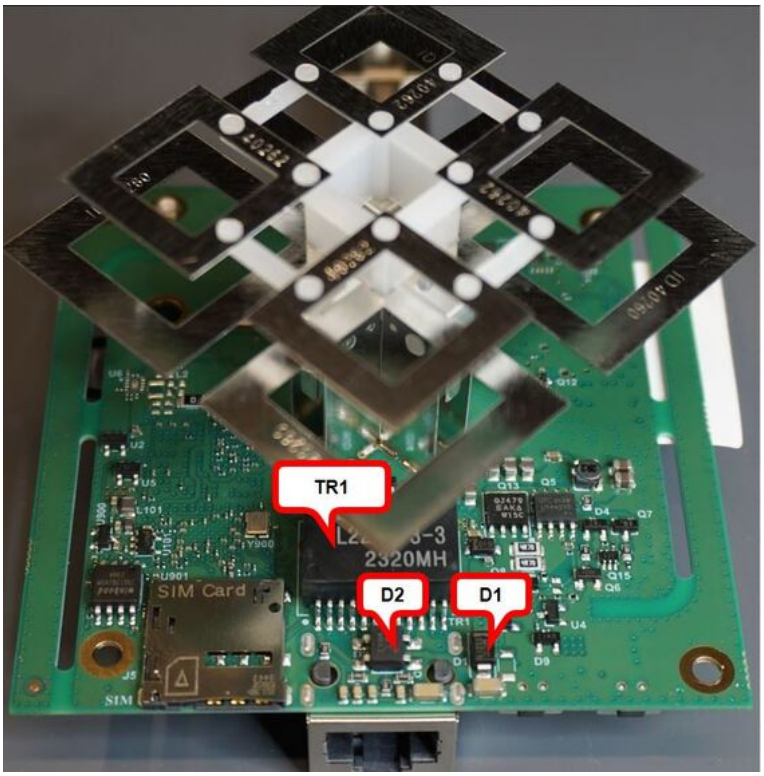
Instructions for checking over-voltage

Checking Schottky diode and diode bridge

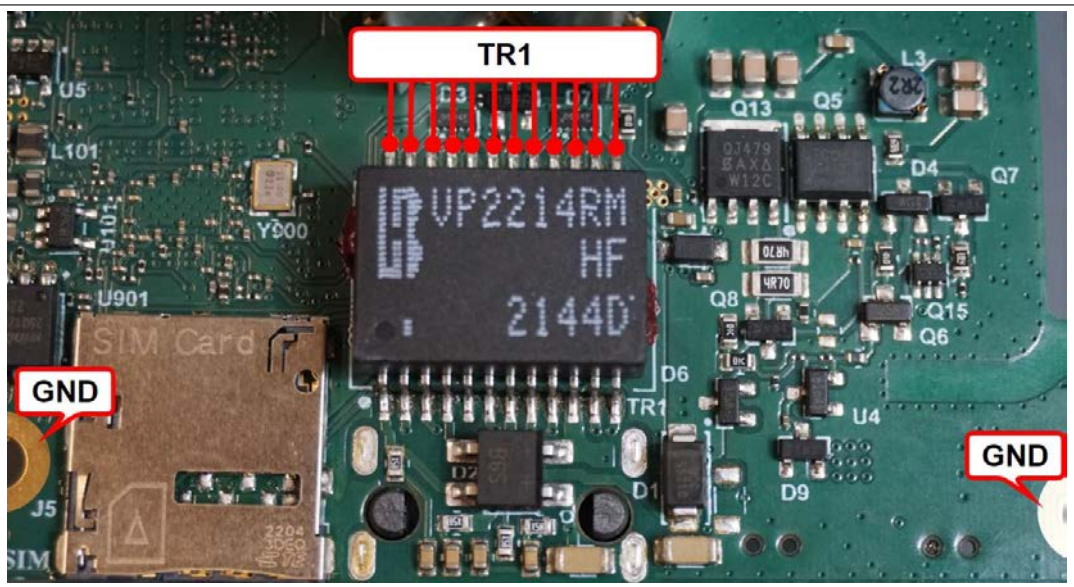
Check Schottky diode D1 and diode bridge D2. Location of the diodes on the board you can see in the picture 424. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR1 pins and Ground. Test points on the transformer pins are highlighted with red lines, see picture 425. Voltage drop value should be in the range from 0,35V to 0,40V. Voltage drop measurement method is described on page 7.



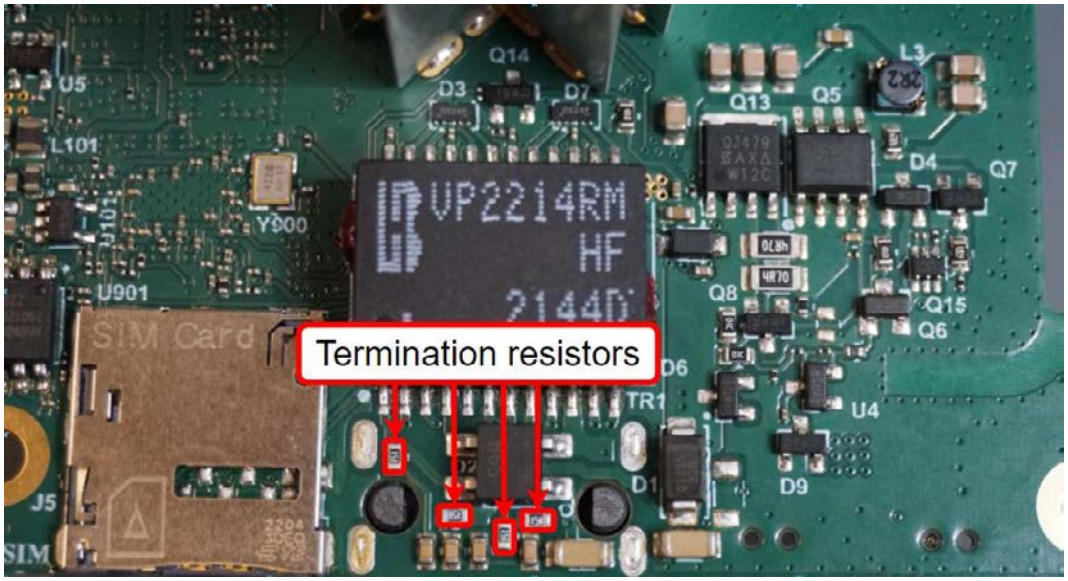
Picture 424



Picture 425

Checking 75 Ohm termination resistors resistance

Check value of each termination resistor. It should be approximately 75 Ohms. Location of resistors is shown in picture 426.



Picture 426

LHGGM&EG18-EA

Picture 427

Disassembling information

Disassembling method is the same as for LHGG LTE6 kit, see page 421.

Instructions for checking over-voltage

Checking Schottky diode and diode bridge

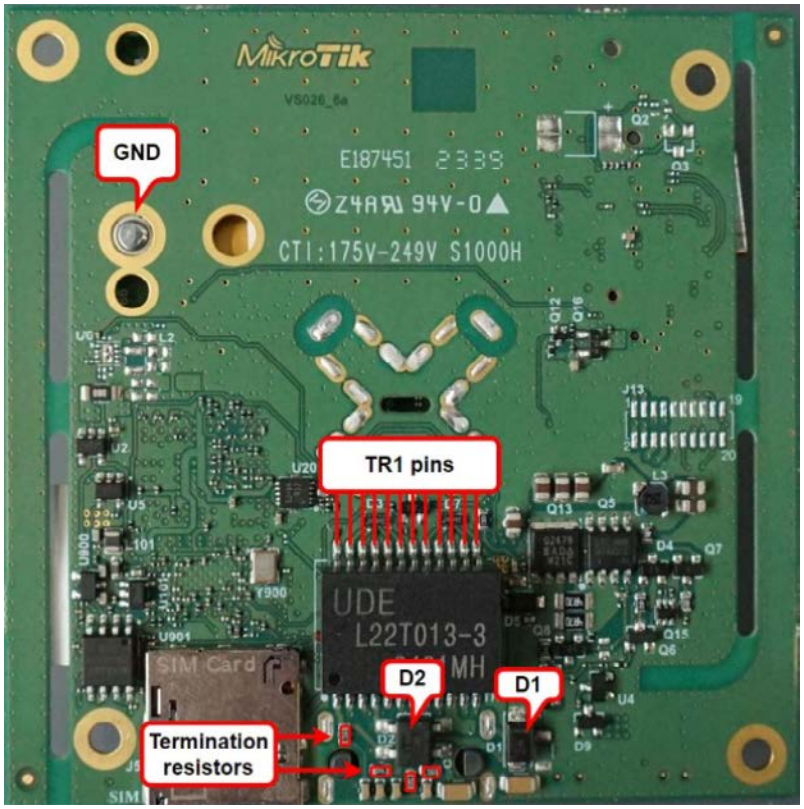
Check Schottky diode D1 and diode bridge D2. Location of the diodes on the board you can see in the picture 428. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR1 pins and Ground. Test points on the transformer pins are highlighted with red lines, see picture 428. Voltage drop value should be in the range from 0,35V to 0,40V. Voltage drop measurement method is described on page 7.

Checking 75 Ohm termination resistors resistance

Check value of four termination resistors. It should be 75 Ohms +/- 1%. Location of resistors is shown in picture 428.



Picture 428

MANTBOX SERIES ROUTERBOARDS

mANTBox 52 15s (RBD22UGS-5HPacD2HnD-15S)

Picture 429

Disassembling information

Step 1: Open the cable enclosure and unscrew the wing-nut, see picture 430.

Picture 430

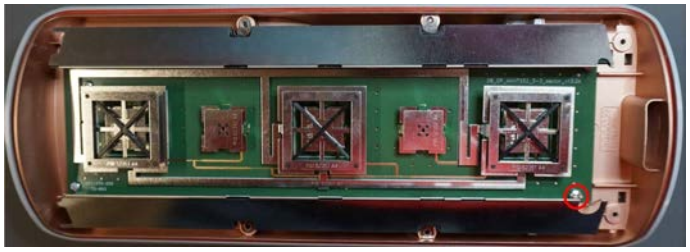
Step 2:

Unscrew 8 screws using torx T10 screwdriver. Location of the screws is shown the picture 431.

Picture 431

Step 3:

Remove the cover from the case and unscrew the screw (M4x16), see picture 432, then pull out the antenna board from the case.



Picture 432

Step 4:

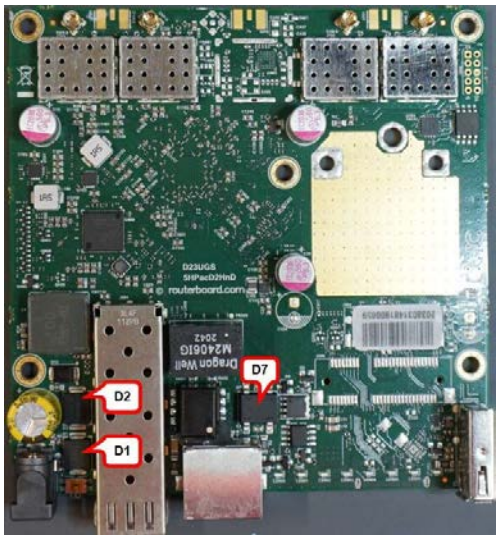
Disconnect antenna cables and unscrew 5 screws using PH1 screwdriver and remove the board, see picture 433.

Picture 433

Instructions for checking over-voltage

Checking Schottky diodes and diode bridge

Check Schottky diodes D1, D2 and diode bridge D2. Location of the diodes on the board you can see in the picture 434. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.



Picture 434

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR600 pins and Ground. Test points on the transformer pins are highlighted with red lines, see picture 435. Voltage drop value should be in the range from 0,35V to 0,40V. Voltage drop measurement method is described on page 7.

Picture 435

mANTBox ax 15s (L22UGS-5HaxD2HaxD-15S)

Picture 436

Disassembling information

Step 1: Open the cable enclosure and unscrew the wing-nut, see picture 437.

Picture 437

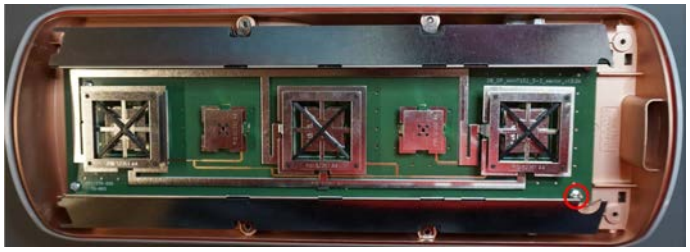
Step 2:

Unscrew 8 screws using torx T10 screwdriver. Location of the screws is shown the picture 438.

Picture 438

Step 3:

Remove the cover from the case and unscrew the screw (M4x16), see picture 439, then pull out the antenna board from the case.



Picture 439

Step 4:

Disconnect antenna cables and unscrew 8 screws using PH1 screwdriver and remover the board, see picture 433.

Picture 440

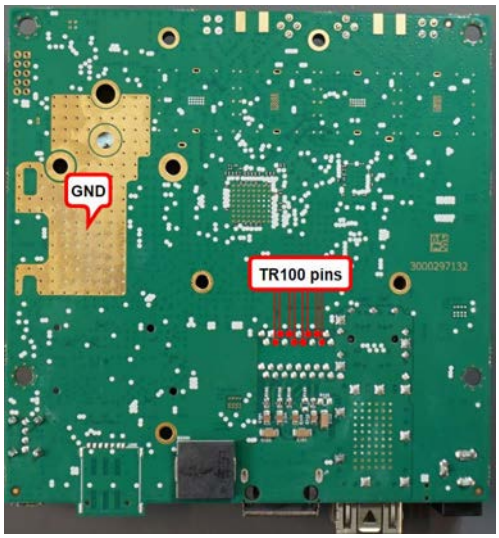
Instructions for checking over-voltage

Check Schottky diodes D3, D8. Location of the diodes on the board you can see in the picture 441. Schottky diode quality measurement method is described on page 4.

Picture 441

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR100 pins and Ground. Test points on the transformer pins are highlighted with red lines, see picture 442. Voltage drop value should be in the range from 0,35V to 0,40V. Voltage drop measurement method is described on page 7.



Picture 442

KNOT SERIES

KNOT LR8 (RB924iR-2nD-BT5&BG77&R11e-LR8)
KNOT LR9 (RB924iR-2nD-BT5&BG77&R11e-LR9)

Picture 443

Disassembling information

Step 1: Unscrew 1 screw using PH1 screwdriver. Location of the screw is shown the picture 444.

Picture 444

Step 2: Press the clips in the direction shown in the picture 445 at the same time lift the case up.

Picture 445

Step 3: Unscrew 6 screw using PH1 screwdriver. Location of the screw is shown the picture 446. Unplug the LR8/LR9 card from the connector and pull the circuit board out of the case.

Picture 446

Instructions for checking over-voltage

Checking Schottky diode and diode bridge

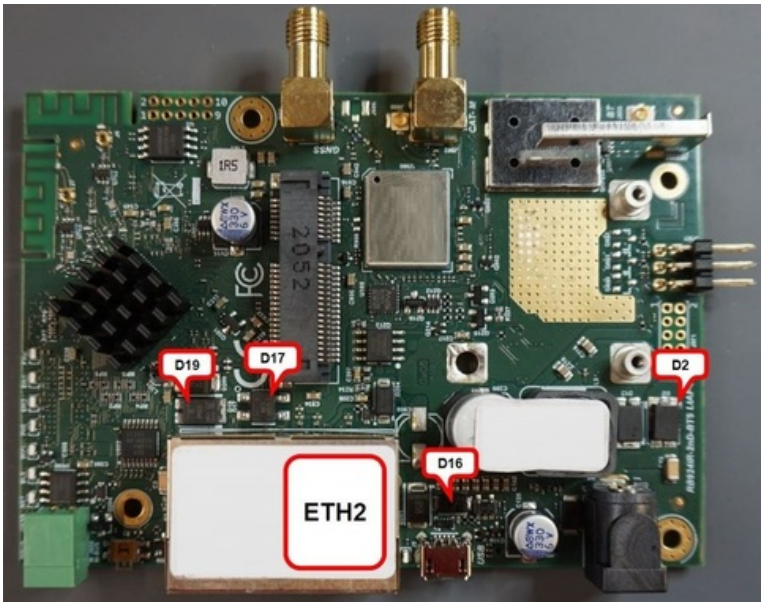
Check Schottky diodes D2, D16, D19 and diode bridge D17. Location of the diodes on the board you can see in the picture 447. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

Checking voltage drop value between RJ-45 connector pins and Ground

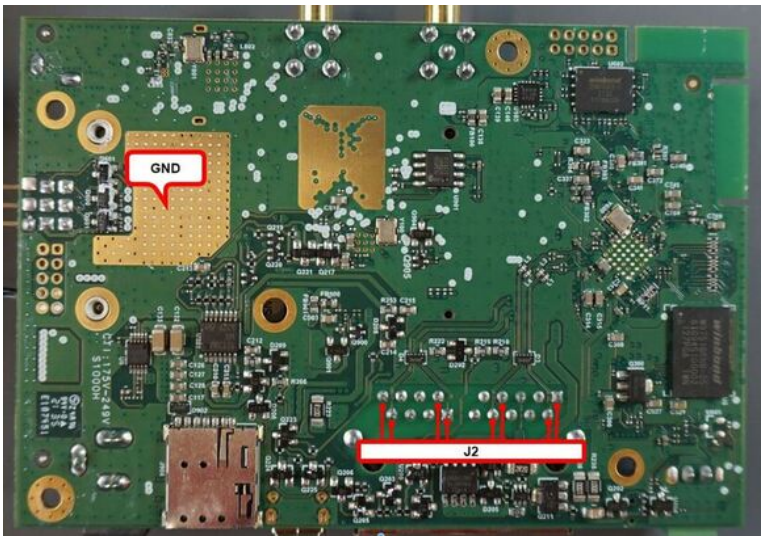
Check voltage drop value between RJ-45 (J2) connector pins and ground. Test points are shown in picture 448. Voltage drop value should be in the range from 0,35V to 0,40V. Voltage drop measurement method is described on page 7.

Checking termination resistors resistance in RJ-45 connector

Check termination resistors resistance in J2 connector. Only second Ethernet port (ETH2) has termination resistors, location of Ethernet port can be seen in the picture 447. Resistance value between Rx and Tx line must be 150 Ohm +/-4 %. Measurement method is described on page 8.



Picture 447



Picture 448

KNOT (RB924i-2nD-BT5&BG77)

Picture 449

Disassembling information

Disassembling method is the same as for KNOT LR8 and KNOT LR9, except for step 3, see page 345.

Instructions for checking over-voltage

Over-voltage testing procedure is the same as for KNOT LR8 and KNOT LR9, see page 346.

WAP SERIES

wAP ax

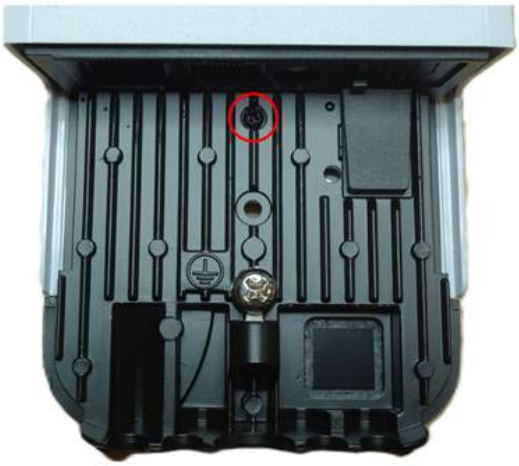
Picture 450

Disassembling information

Step 1: Unscrew 1 screw using PH1 screwdriver. Location of the screw is shown the picture 451.

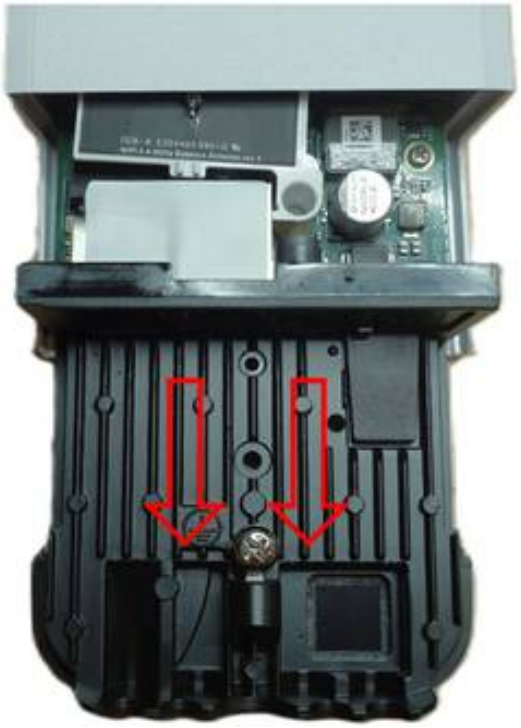
Picture 451

Step 2: Remove case cover and unscrew 1 screw using PH1 screwdriver. Location of the screw is shown the picture 452.



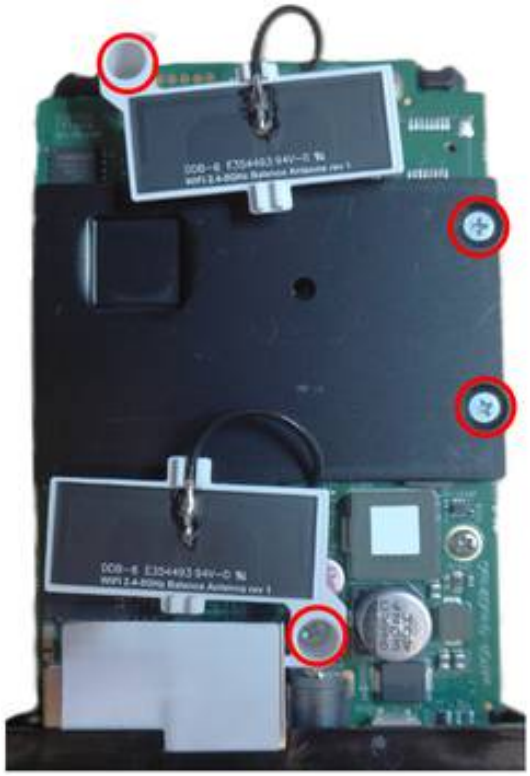
Picture 452

Step 3: Pull the metal case part in the direction shown in the picture 453.



Picture 453

Step 4: Pull the printed circuit board out of the case and unscrew 4 screws using a PH1 screwdriver. The location of the screws is shown in the picture 454. Do not unplug antenna connectors from the circuit.



Picture 454

Step 5: Remove the heatsink and unscrew 2 screws using a PH1 screwdriver and take out the printed circuit board out of the case. Location of the screws is shown the in picture 455.

Picture 455

Instructions for checking over-voltage

Checking Schottky diode and diode bridge

Check Schottky diodes D1000, D1001, and diode bridge D1004. Location of the diodes on the board you can see in the pictures 456 and 457. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR300 pins and Ground, see picture 456. Voltage drop value should be in the range from 0,40V to 0,45V. Voltage drop measurement method is described on page 7.

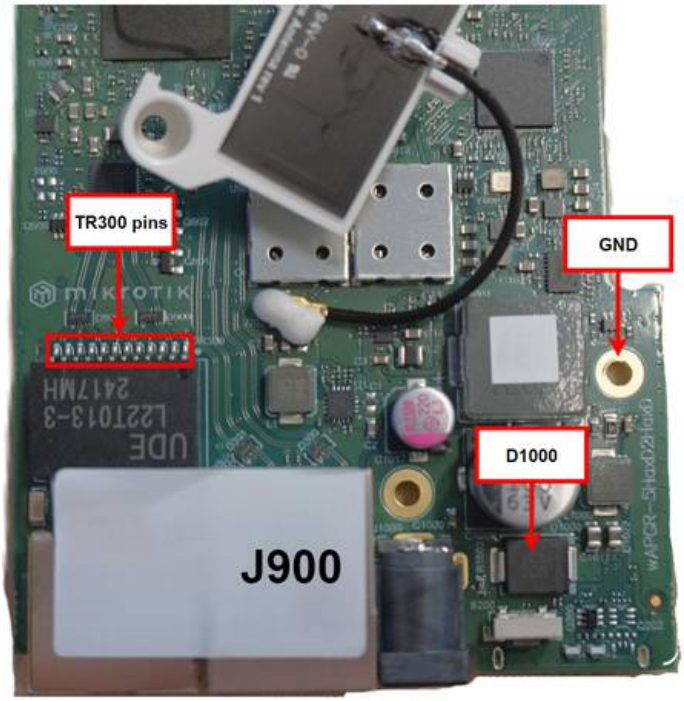
Checking 75 Ohm termination resistors resistance

Check value of each termination resistor. It should be 75 +/-1% Ohms. Location of resistors is shown in picture 457.

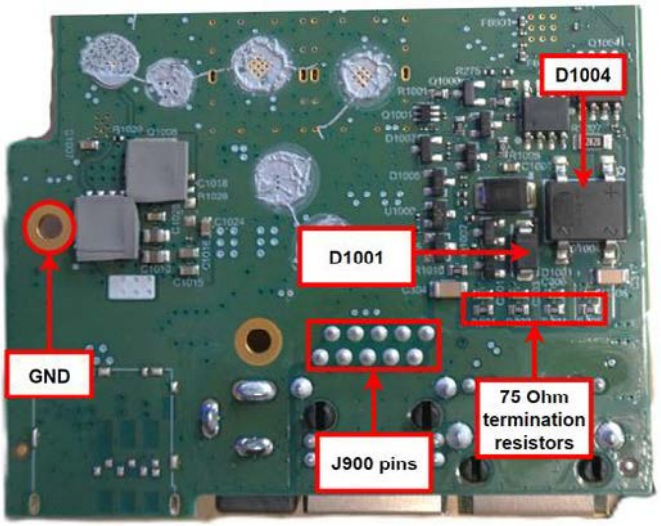
Checking termination resistors resistance in RJ-45 connector

Check termination resistors resistance in J900 connector. RJ-45 placement is shown in picture 456.

Resistance value between Rx and Tx line must be 150 Ohm +/-4%. Measurement method is described on page 8.



Picture 456



Picture 457