Instructions for checking overvoltage damage

Last modified: March 1, 2024

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.

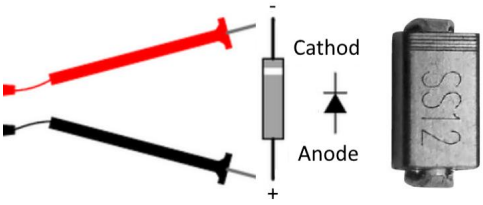
The diode has two terminals - the anode and the cathode. The anode is positive, and the cathode is negative (there is a strip on the diode case), see picture 2.

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.

Picture 1

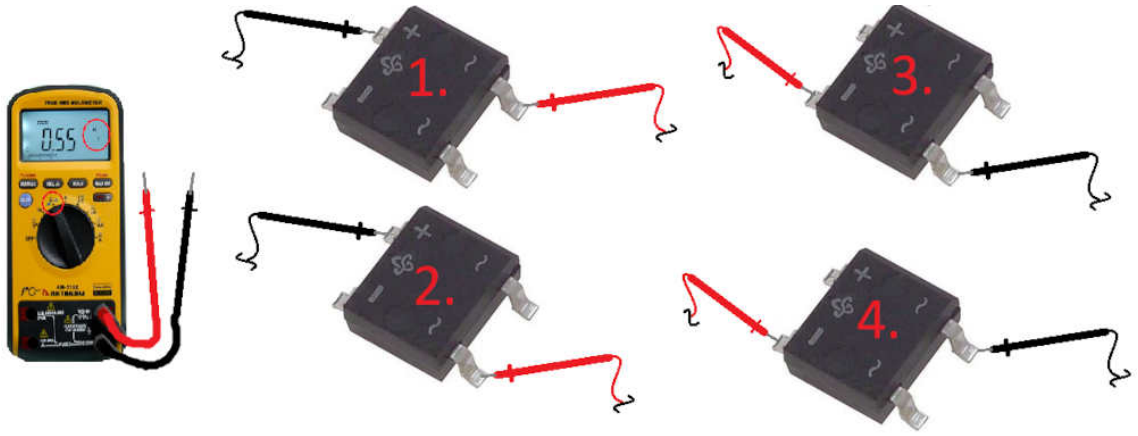


Picture 2

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.

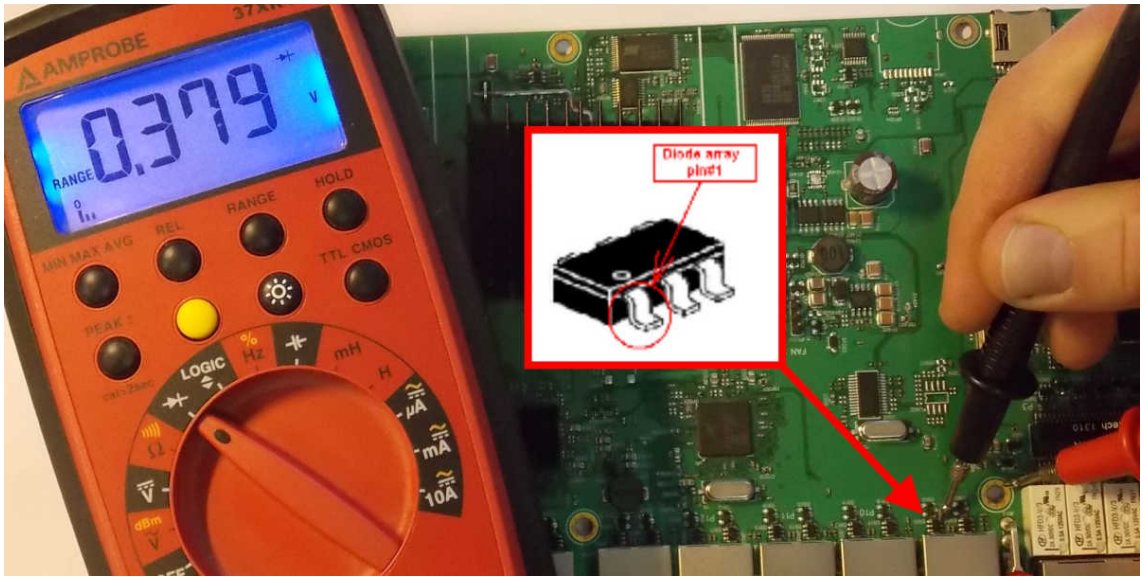
In such cases making sure that each of the bridge diodes have healthy forward voltage (0,45..0,65V) can confirm that there is no damage. In addition, the voltages obtained should not differ significantly (no more than 5%) from each other. This can be done in 4 measurements, by connecting the multi-meter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



Picture 3

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

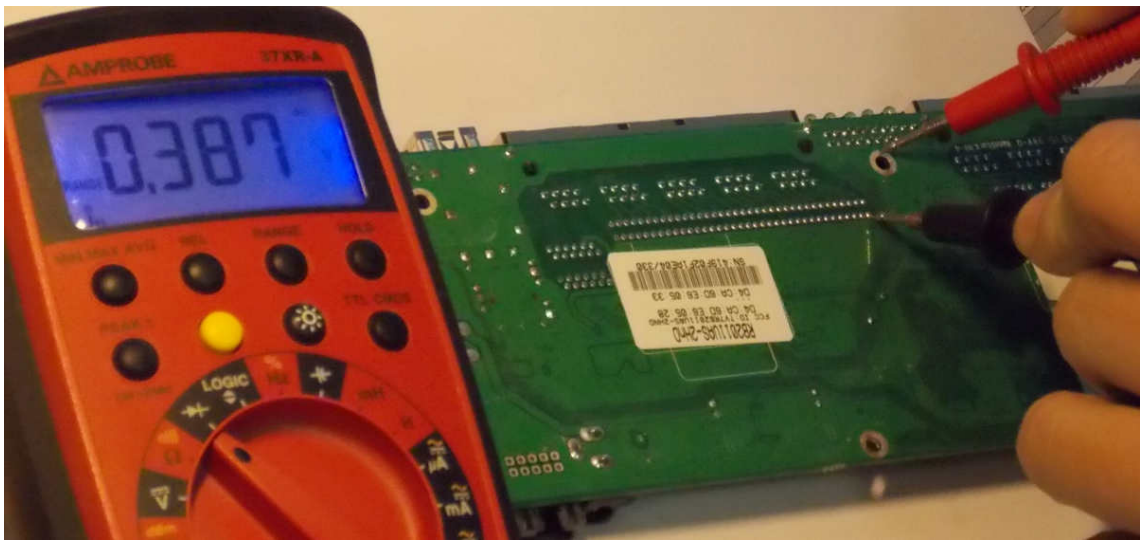
You should measure in diode mode: hold red probe on the Ground and black probe to diode array pin#1. Diode array pin#1 is always marked by dot mark on the diode array case, see picture 4.



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

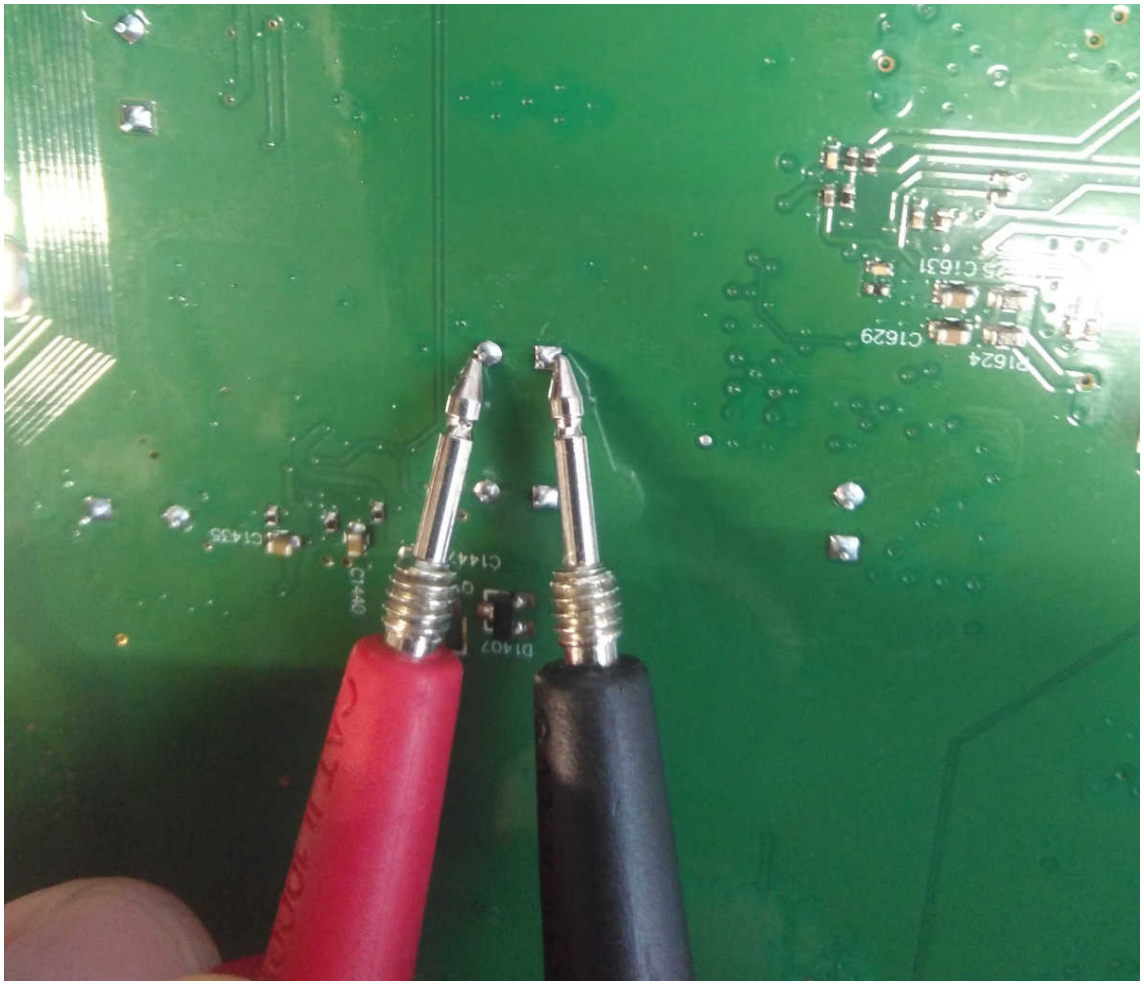
Check resistance on transformer in RJ-45 connector

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

CLOUD ROUTER SWITCH 100 SERIES ROUTERBOARDS

FiberBox (CRS105-5S-FB)

Picture 9

Disassembling information

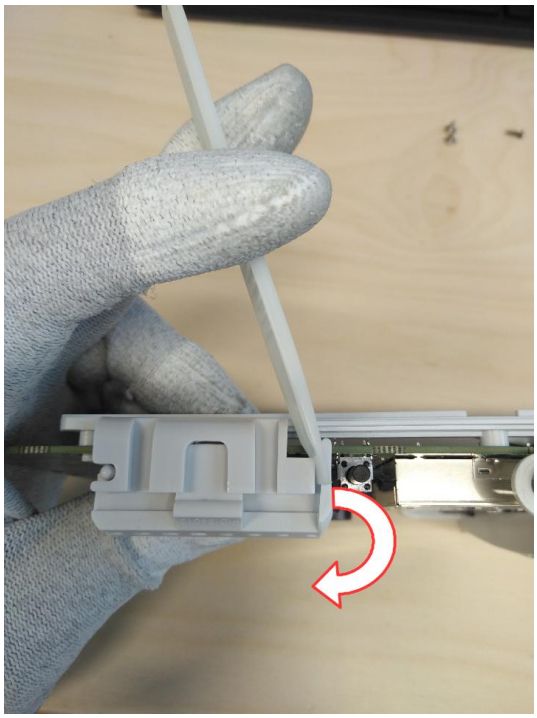
Step 1: Unscrew 3 mounting screws using screwdriver. Location of screws you can see in the picture 10.

Picture 10

Step 2: Gently pull cover the direction arrows are pointing in the following picture 11.

Picture 11

Step 3: To remove LEDs cover make a movement as shown in the following picture 12.

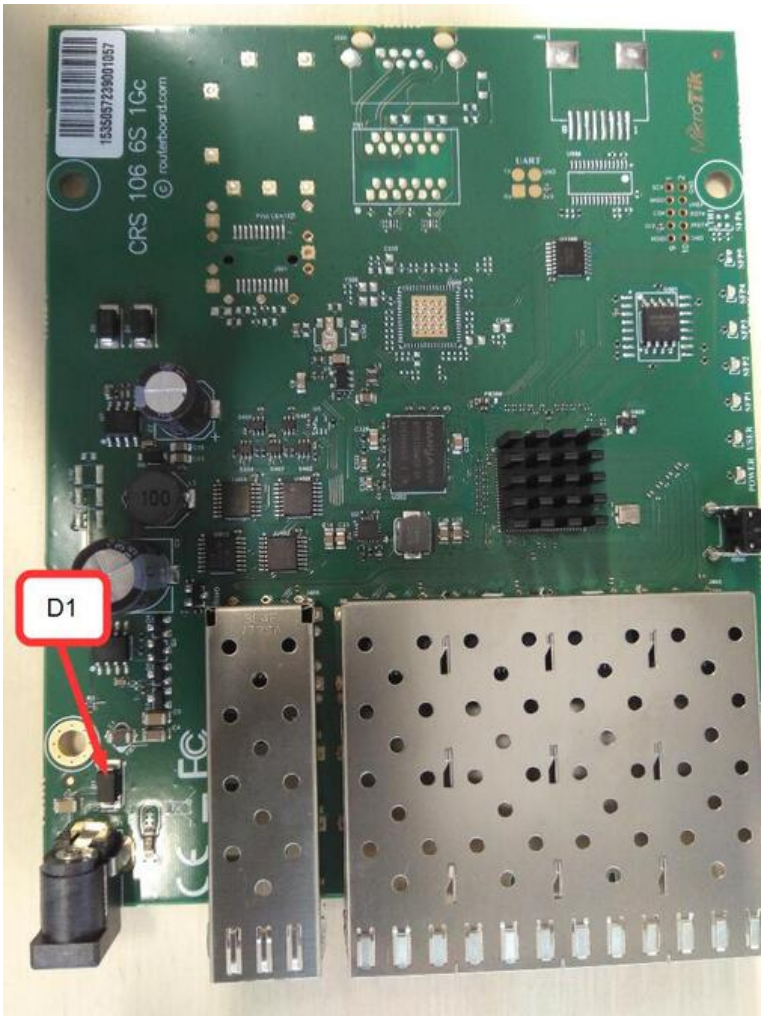


Picture 12

Instructions for checking overvoltage

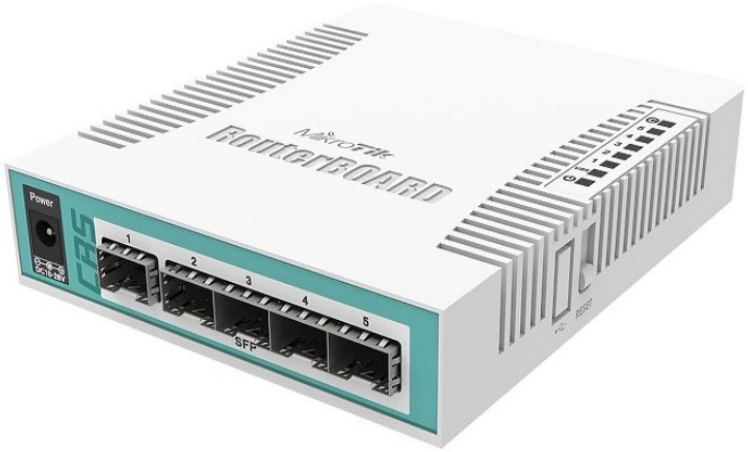
Checking Schottky diode

Check Schottky diode D1. Location of diodes on the board you can see in the picture 13. Schottky diodes quality measurement method is described on page 4.



Picture 13

CRS106-1C-5S



Picture 14

Disassembling information

Disassembly method of the board is the same as the RB260GSP board. Disassembly method is described on page 45.

Instructions for checking overvoltage

Checking Schottky diode

Check Schottky diodes D1, D3. Location of diodes on the board you can see in the picture 15. Schottky diodes quality measurement method is described on page 4.

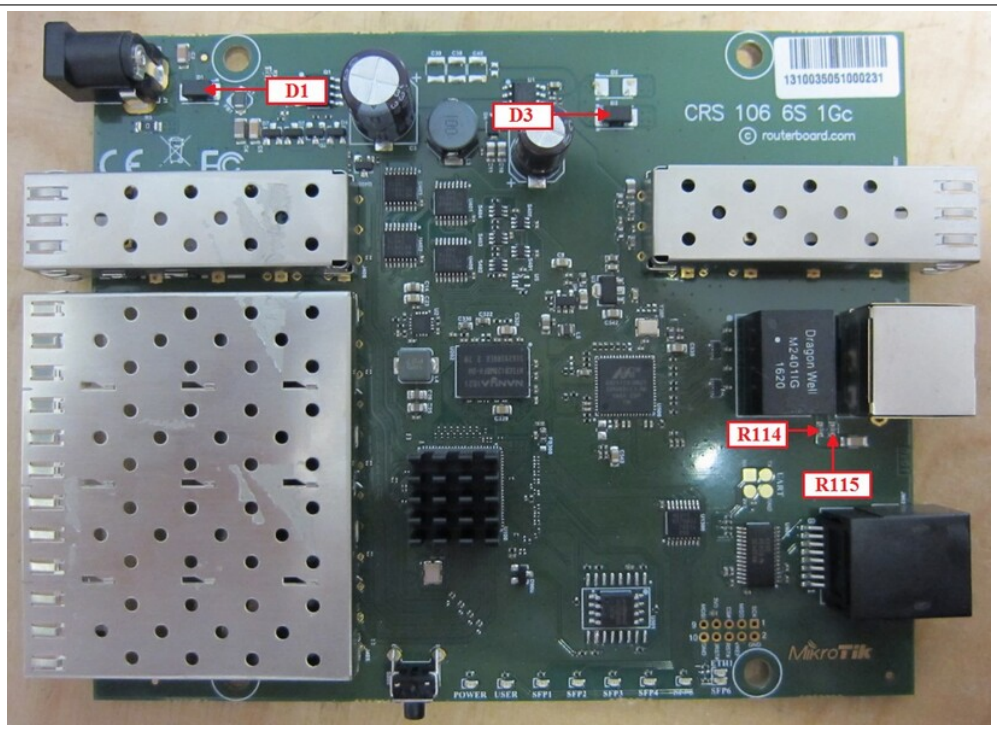
Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformers TR1 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 16.

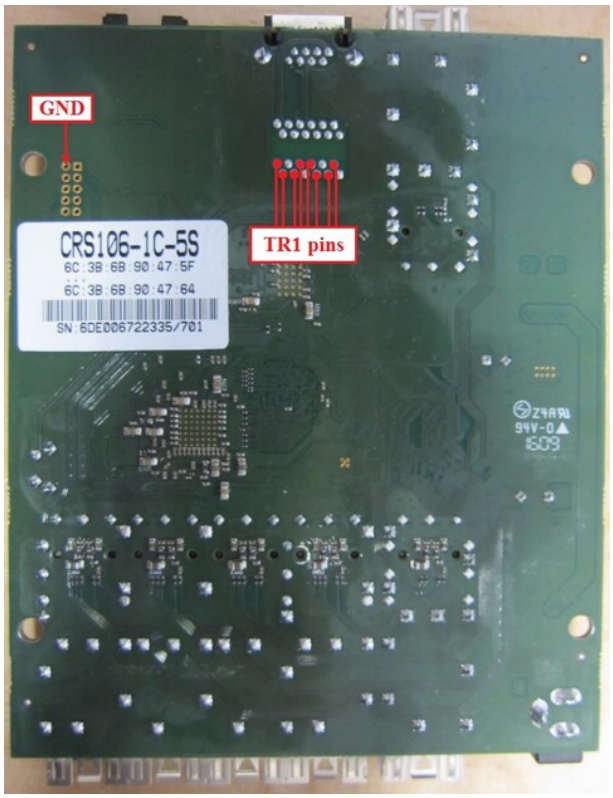
Voltage drop value should be in the range from 0,32V to 0,36V. Voltage drop measurement method is described on page 7.

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 15.



Picture 15



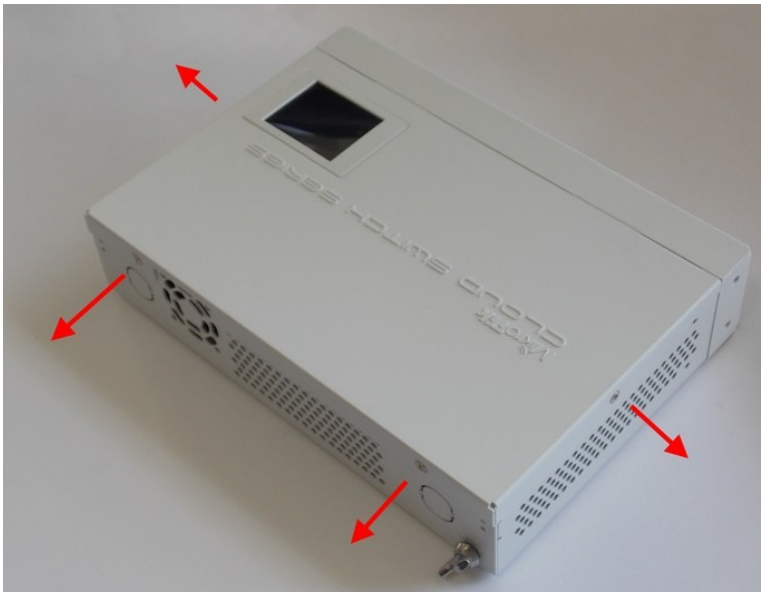
Picture 16

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

Picture 17

Disassembling information

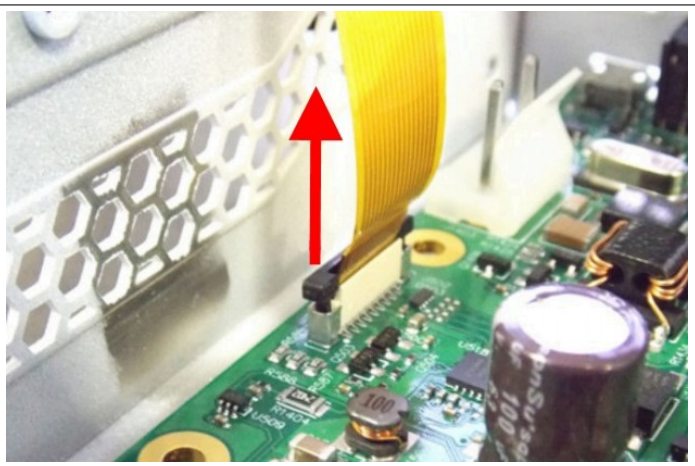
Step 1: Unscrew 4 screws using PH2 screwdriver. Location of screws you can see in the picture 18.



Picture 18

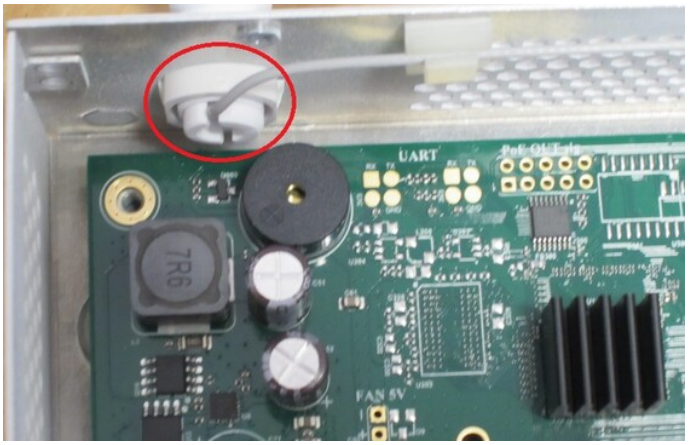
Step 2: Carefully take off the cover. Do not damage the LCD flex cable.

Step 3: Gently lift the latch vertically upward and take out LCD flex cable from FPC connector as showed in the picture 19. Do not damage the FPC connector locking drawer.



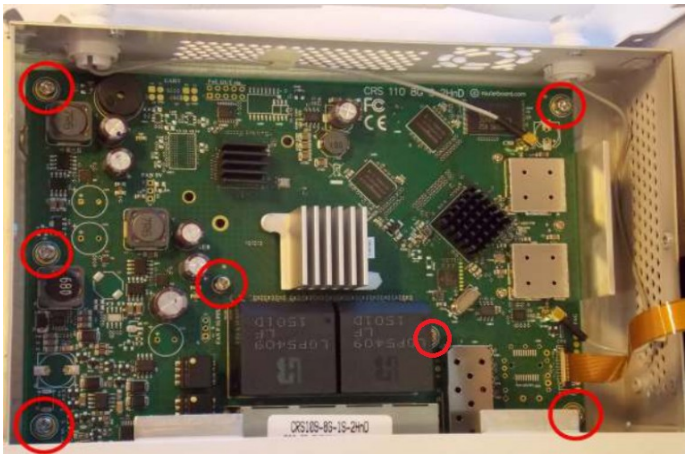
Picture 19

Step 4: Move both antenna cables into a special holes as showed in the picture 20.



Picture 20

Step 5: Unscrew 7 screws which fasten PCB to the case. Location of the screws you can see in the picture 21.



Picture 21

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 22. Schottky diodes quality measurement method is described on page 4.

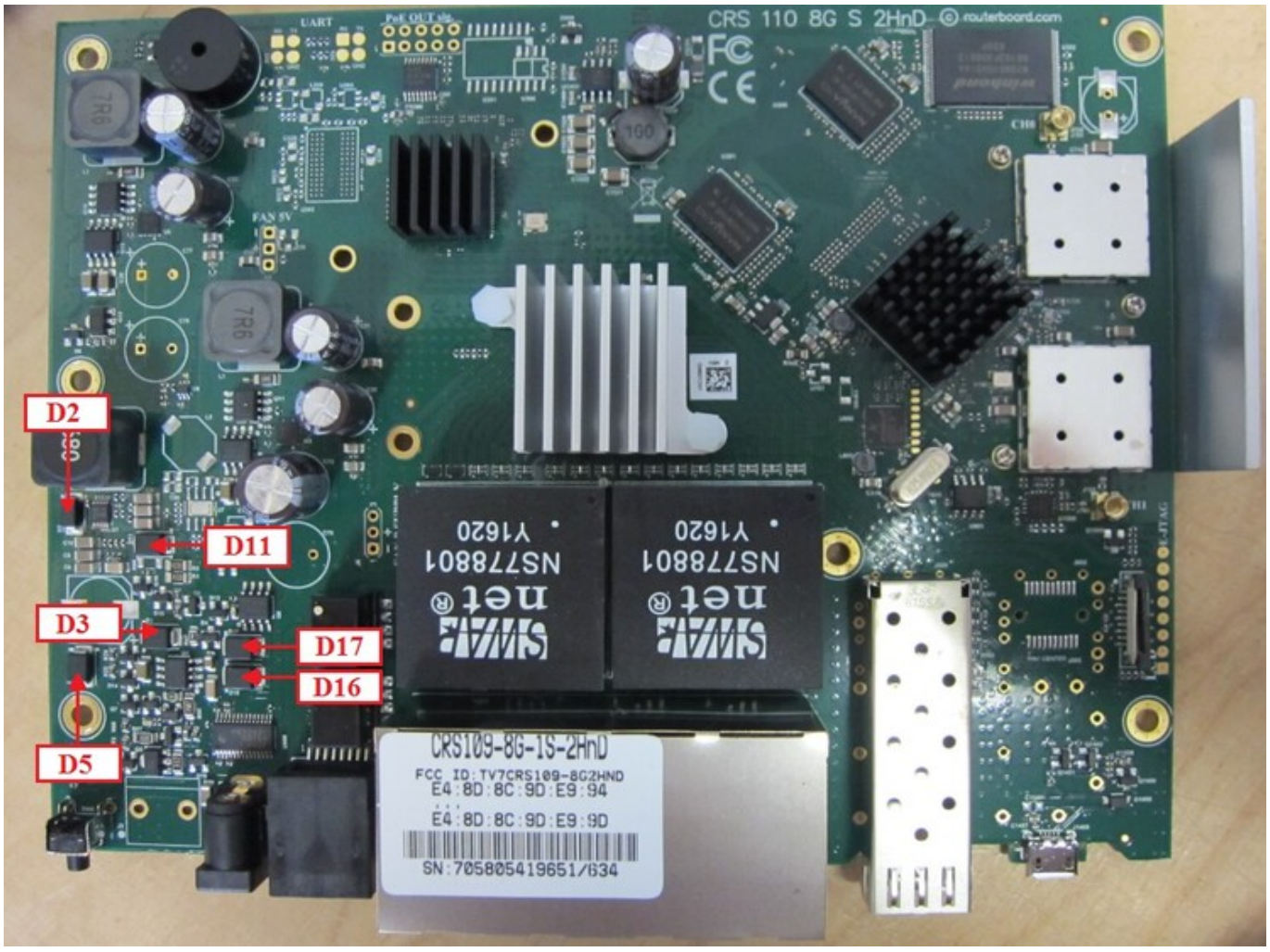
Checking voltage drop value between Ethernet transformer pins and Ground

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 23.

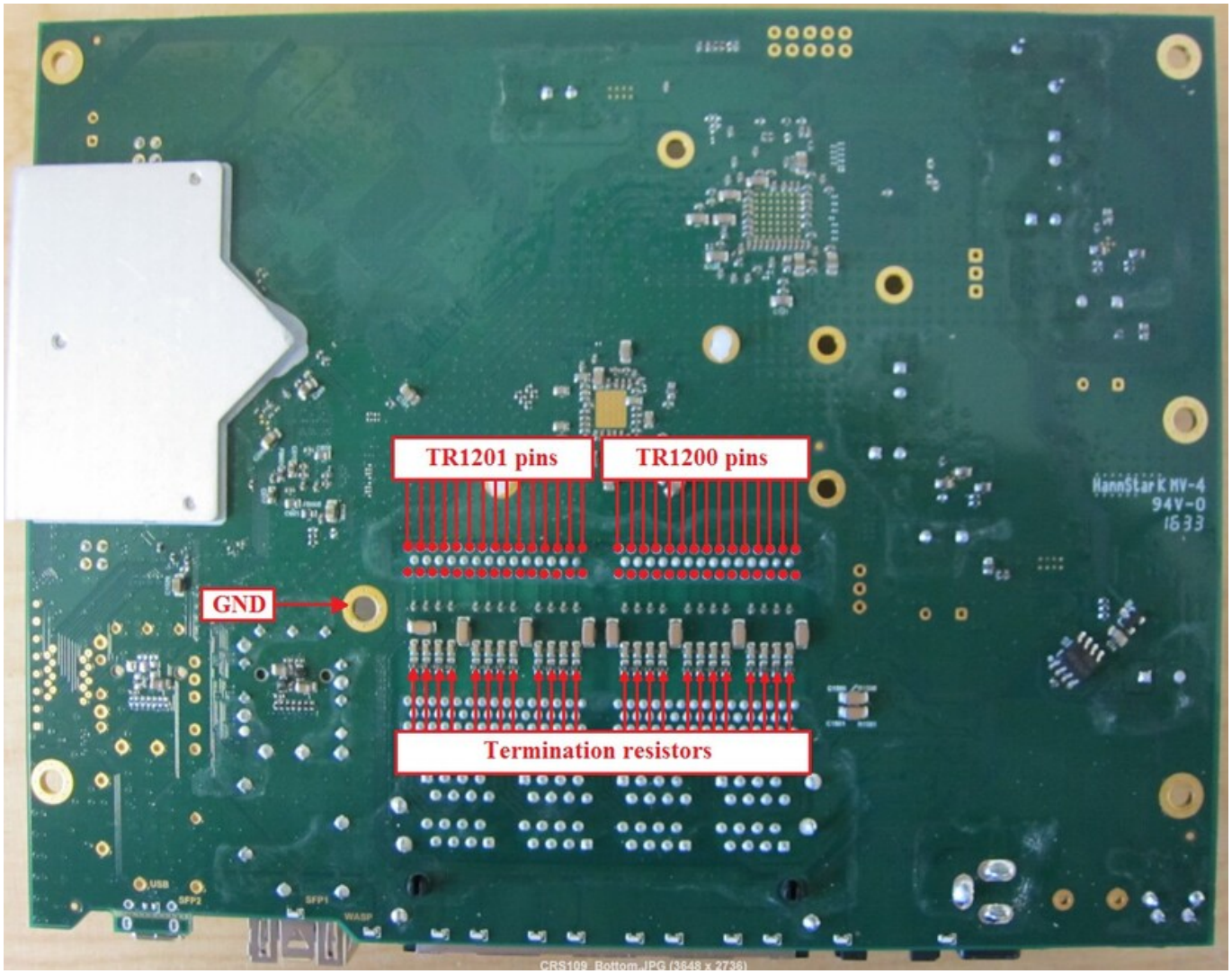
Voltage drop value should be in the range from 0,4V to 0,43V. Voltage drop measurement method is described on page 7.

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 23.



Picture 22



Picture 23

CRS112-8G-4S-IN

Picture 24

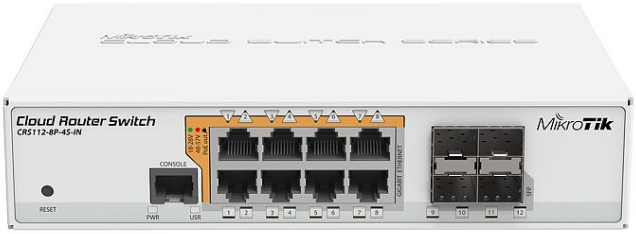
Disassembling information

Disassembly method of the board is the same as the CRS109-8G-1S-2HnD-IN board. Disassembly method is described on page 19.

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 21.

CRS112-8P-4S-IN



Picture 25

Disassembling information

Disassembly method of the board is the same as the CRS109-8G-1S-2HnD-IN board. Disassembly method is described on page 19.

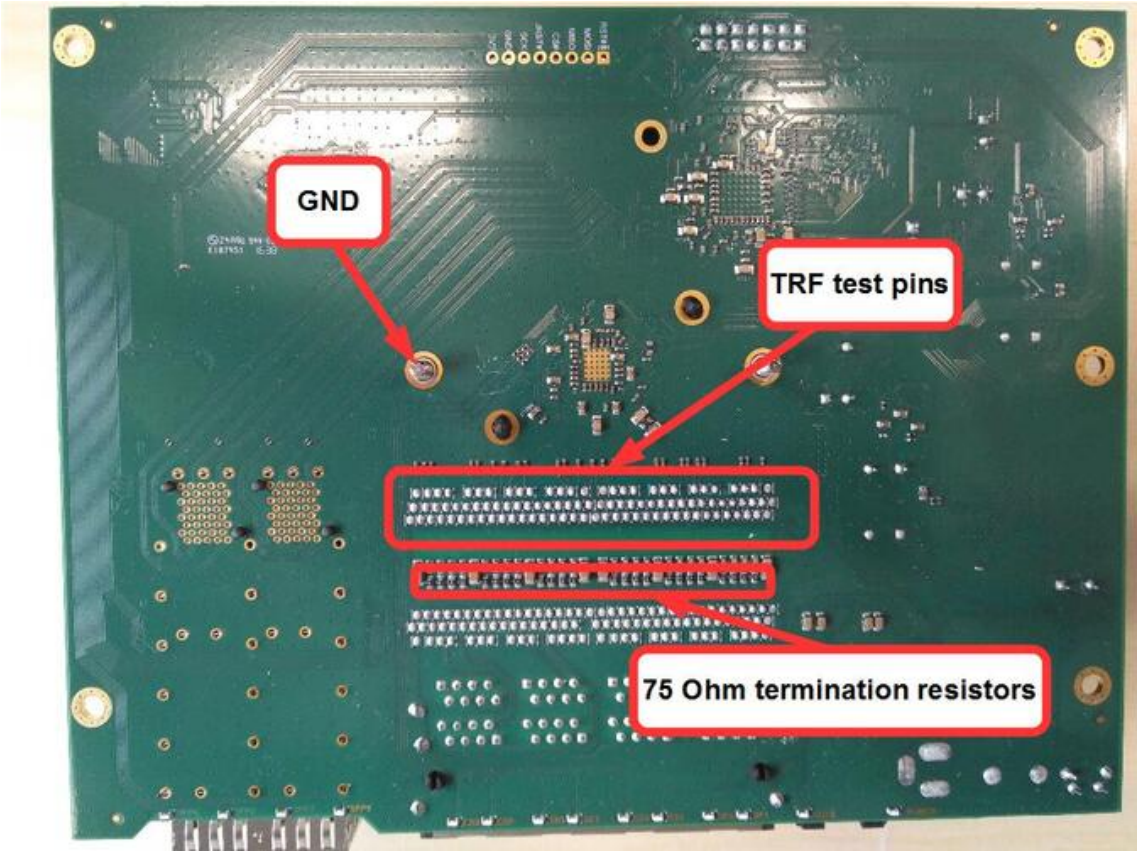
Instructions for checking overvoltage

Checking voltage drop value between Ethernet transformers pins and Ground

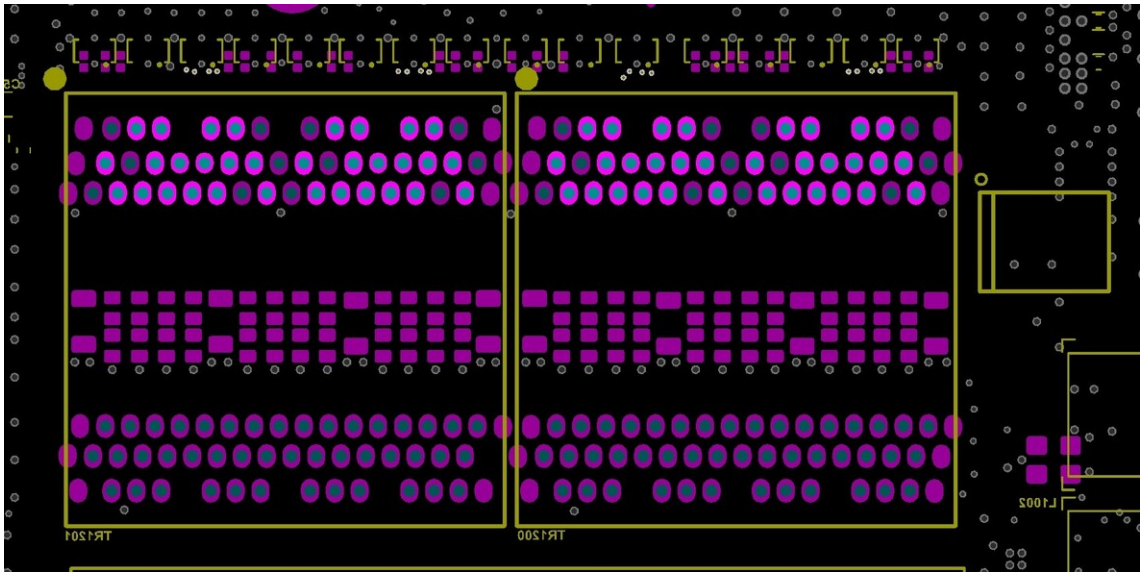
Check voltage drop value between Ethernet transformers TR1200, TR1201 pins and Ground. Test points on the transformers pins are highlighted and can be seen in picture 27. Note that the view for transformer pins are from the bottom for necessary of measurement. Voltage drop value should be in the range 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 26.



Picture 26



Picture 27

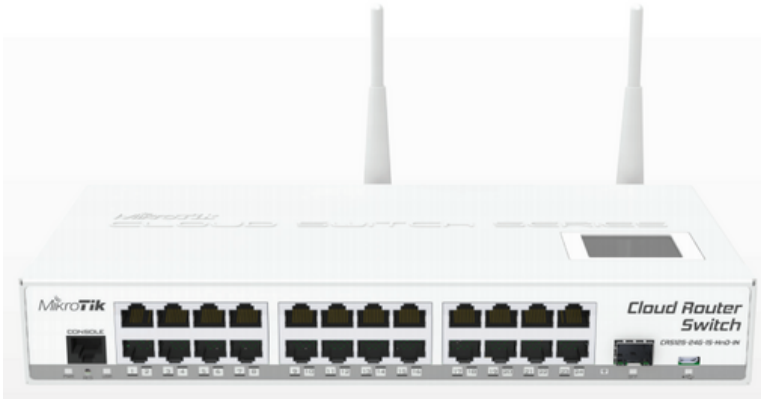
CRS125-24G-1S-IN

Picture 28

CRS125-24G-1S-RM

Picture 29

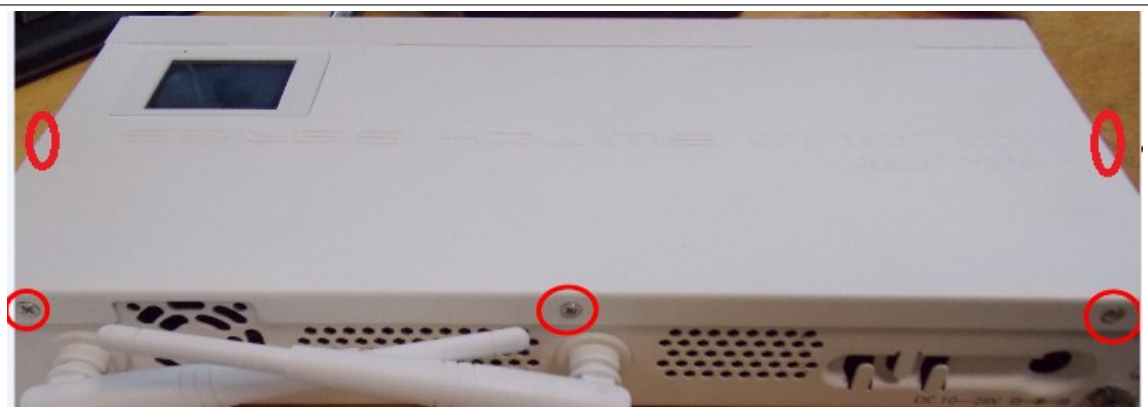
CRS125-24G-1S-2HnD-IN



Picture 30

Disassembling information

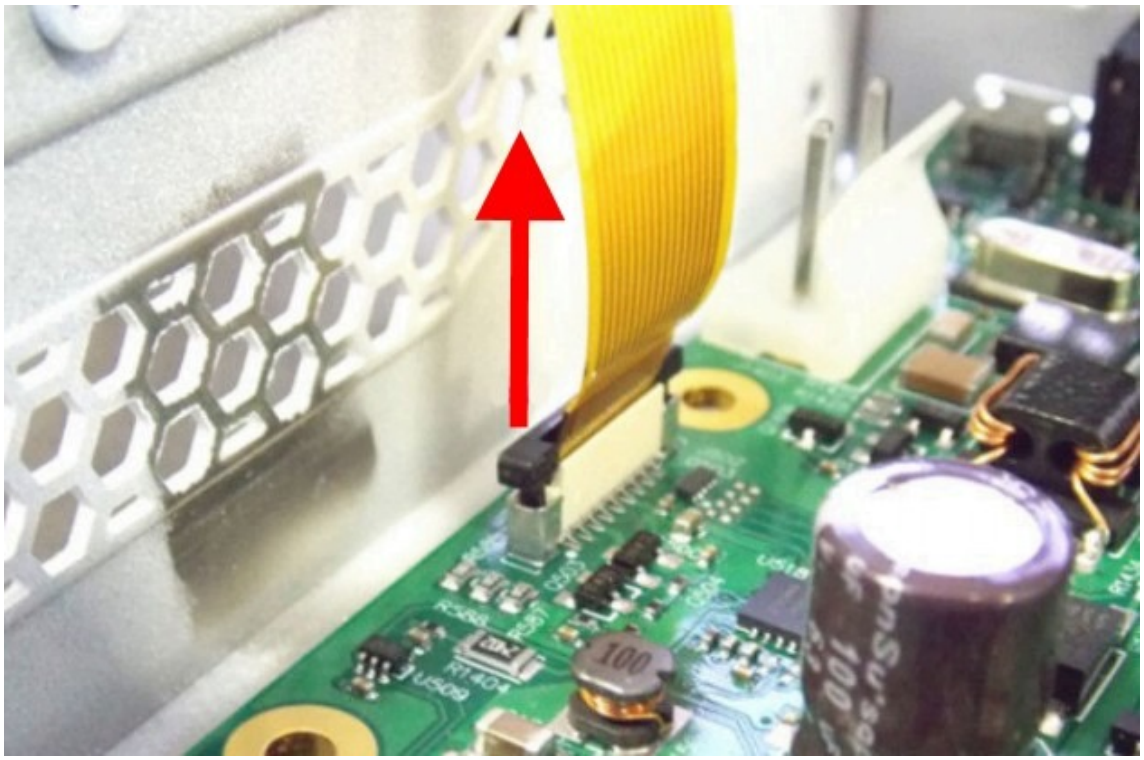
Step 1: Unscrew 5 screws (3 screws behind board case and 1 screw on the side of the board case). Location of the screws you can see in the picture 31.



Picture 31

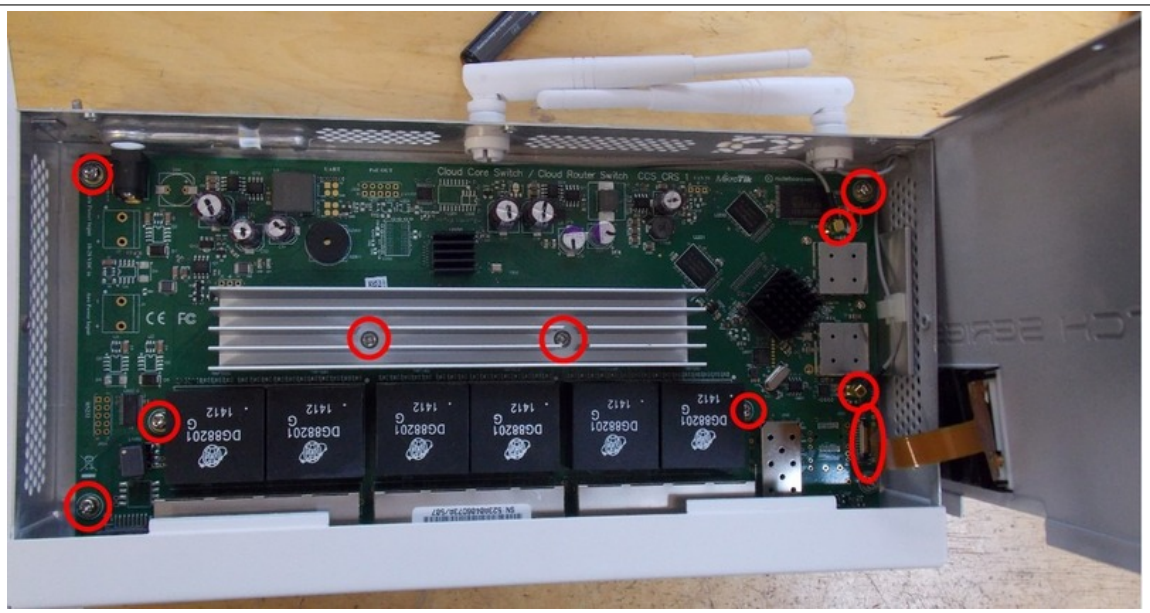
Step 2: Carefully take off the cover. Do not damage the LCD flex cable.

Step 3: Gently lift the latch vertically upward and take out LCD flex cable from FPC connector as showed in the picture 32. Do not damage the FPC connector locking drawer.



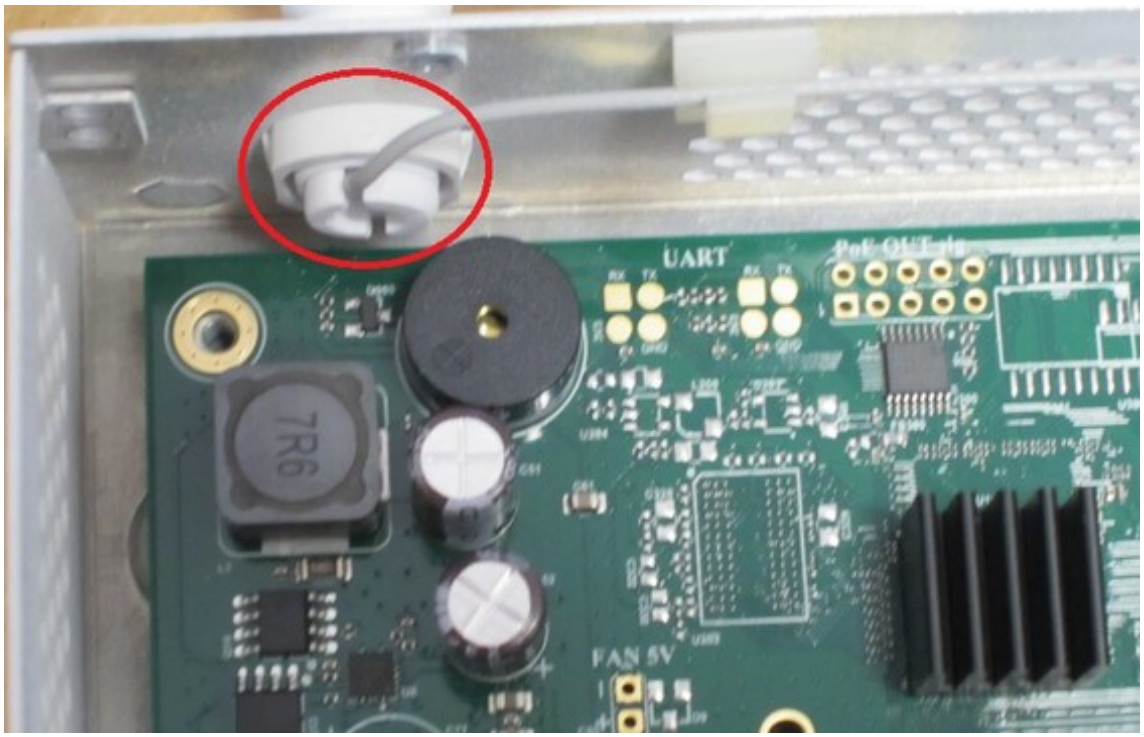
Picture 32

Step 4: Unscrew 8 screws which fasten PCB to the case. Location of the screws see in the picture 33.



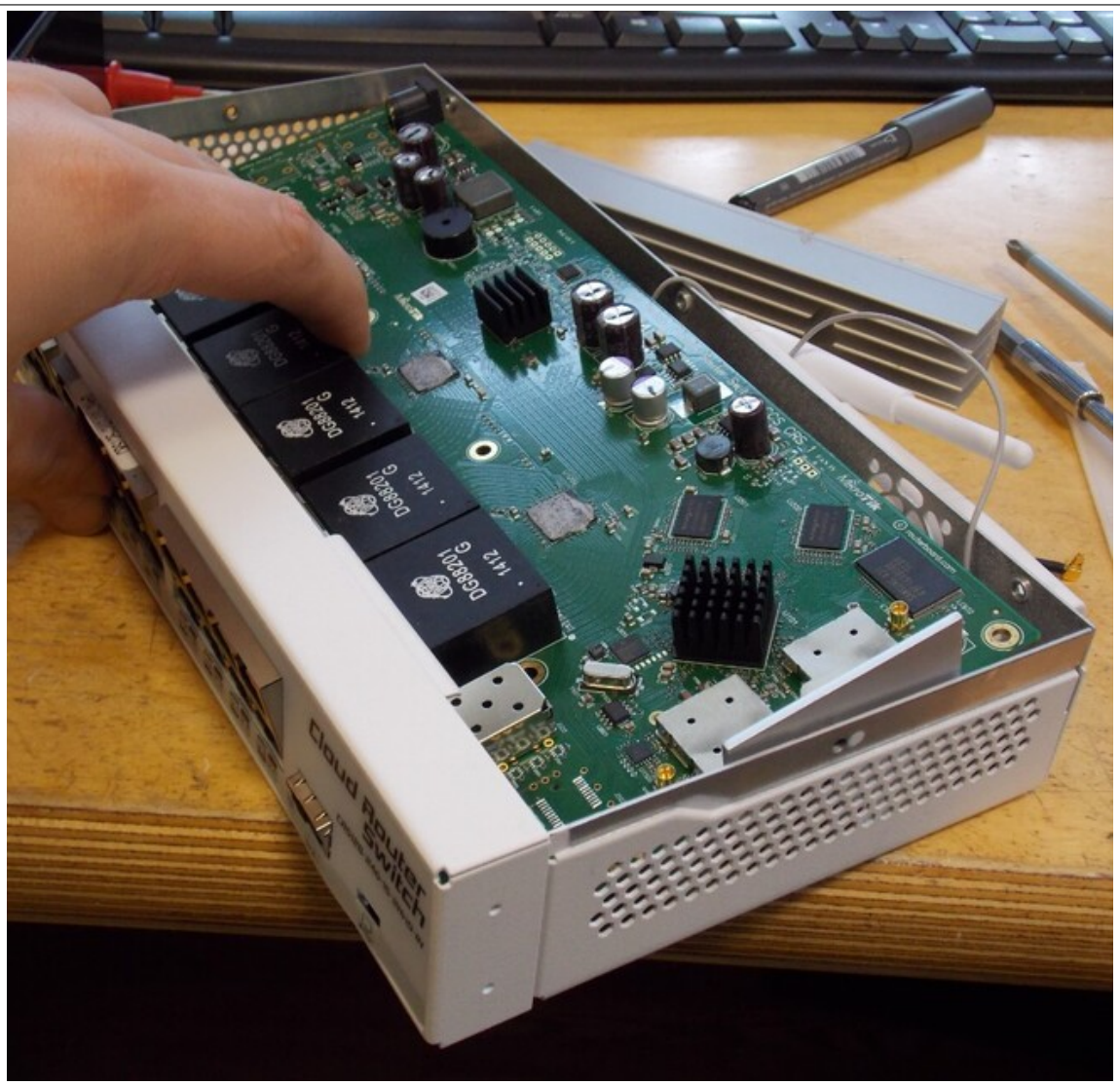
Picture 33

Step 5: Move both antenna cables into a special holes, see picture 34.



Picture 34

Step 6: Move out PCB from the case, see picture 35.



Picture 35

Instructions for checking overvoltage

Checking Schottky diodes

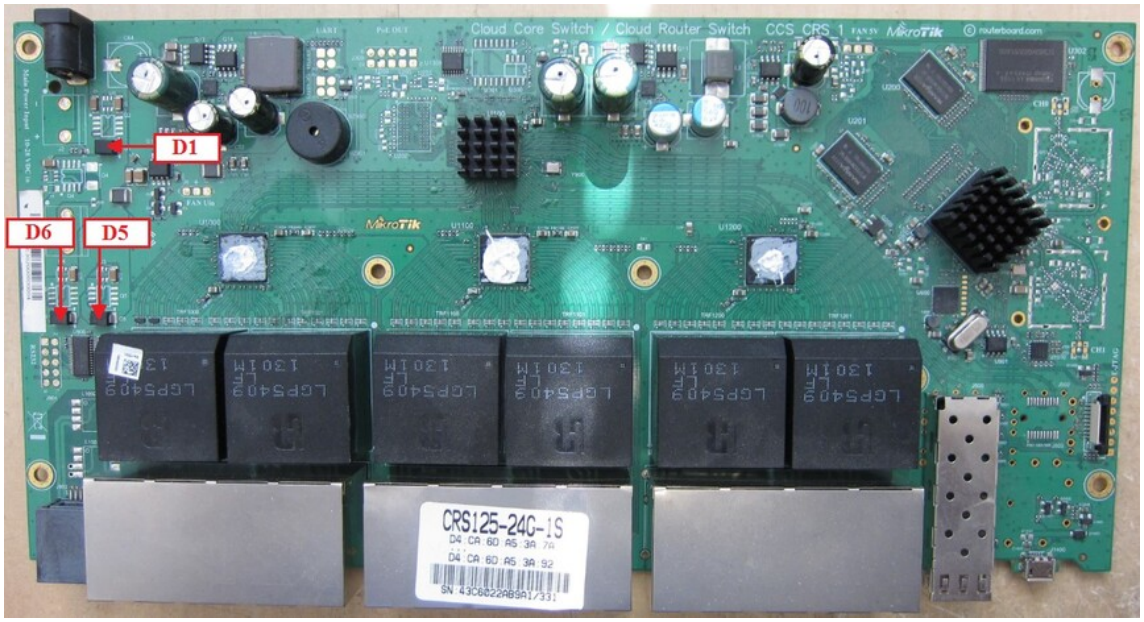
Check Schottky diodes D1, D5, D6 (or D1, D5 for some CRS125 versions). Location of diodes on the board you can see in the picture 36. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformers pins and Ground

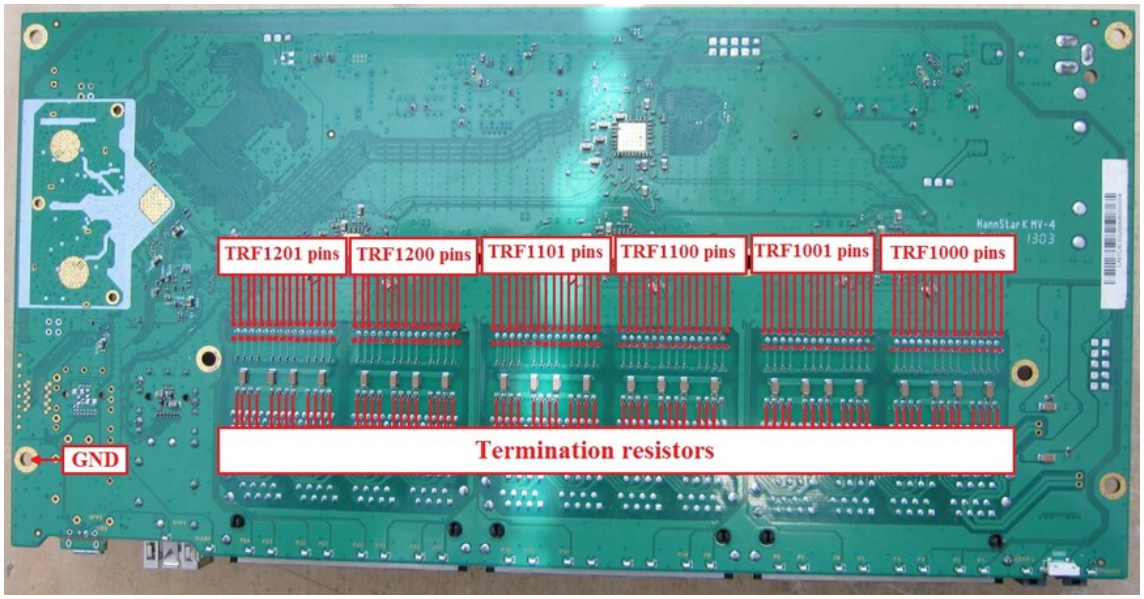
Check voltage drop value between Ethernet transformers TRF1000, TRF1001, TRF1100, TRF1101, TRF1200, TRF1201 pins and Ground. Test points on the transformers pins are marked with red dots, see picture 37. Voltage drop value should be in the range from 0,38V to 0,44V. Voltage drop measurement method is 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 37.



Picture 36



Picture 37

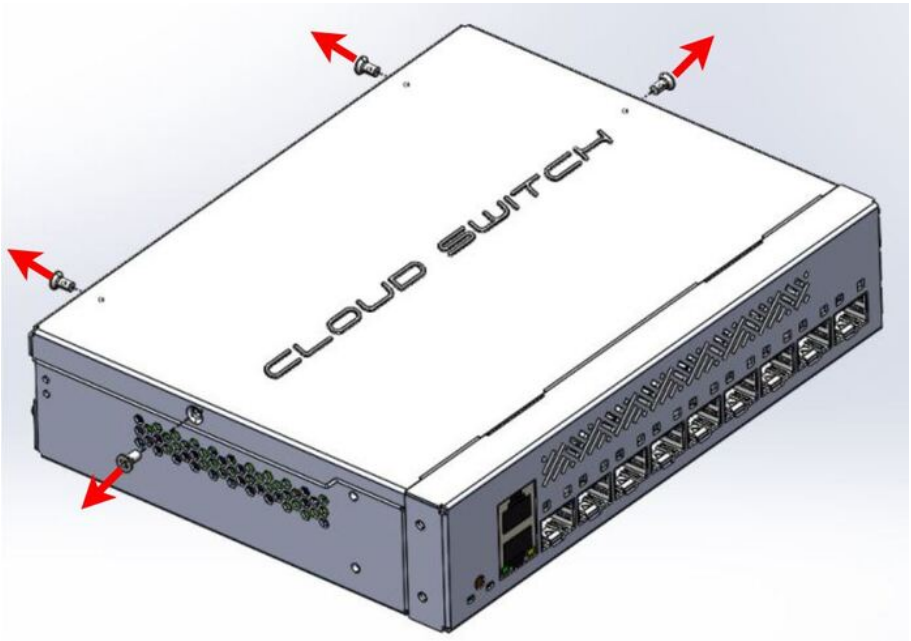
CLOUD ROUTER SWITCH 310 SERIES ROUTESBOARD

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

Picture 38

Disassembling information

Unscrew 4 screws using PH2 screwdriver and carefully take off the cover. Location of the screws is shown the picture 39.



Picture 39

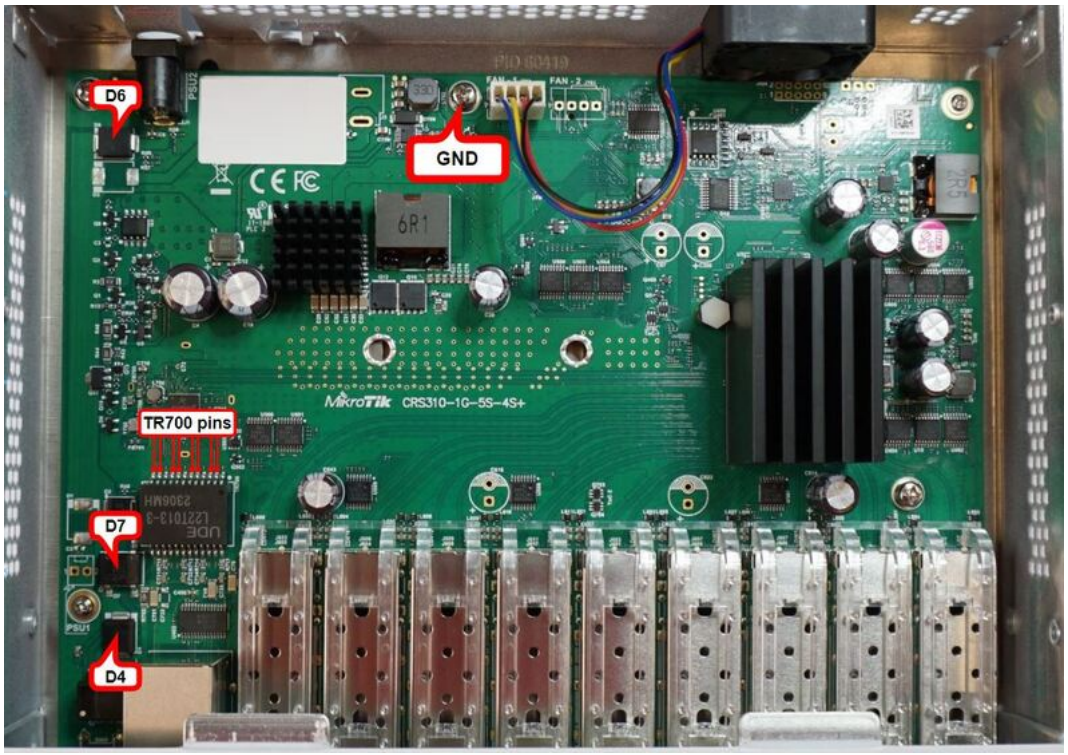
Instructions for checking over-voltage

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 40. 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 40. Voltage drop value should be in the range from 0,35V to 0,50V. Voltage drop measurement method is described on page 7.



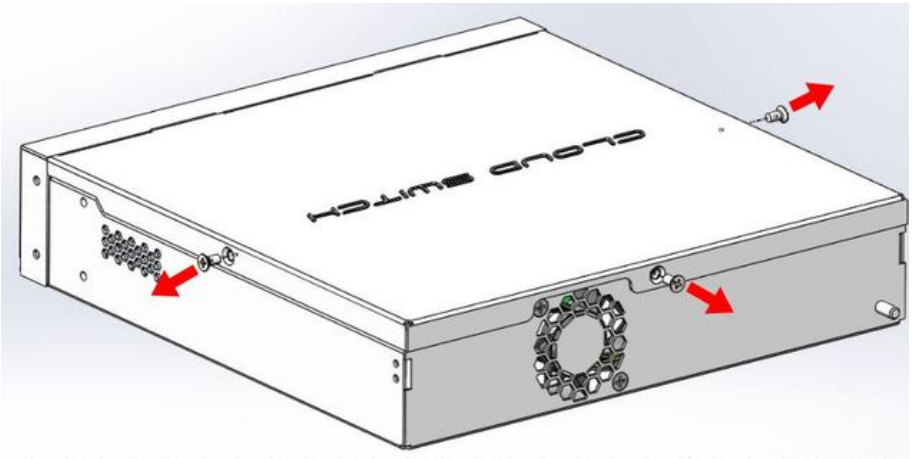
Picture 40

CRS310-8G+2S+IN

Picture 41

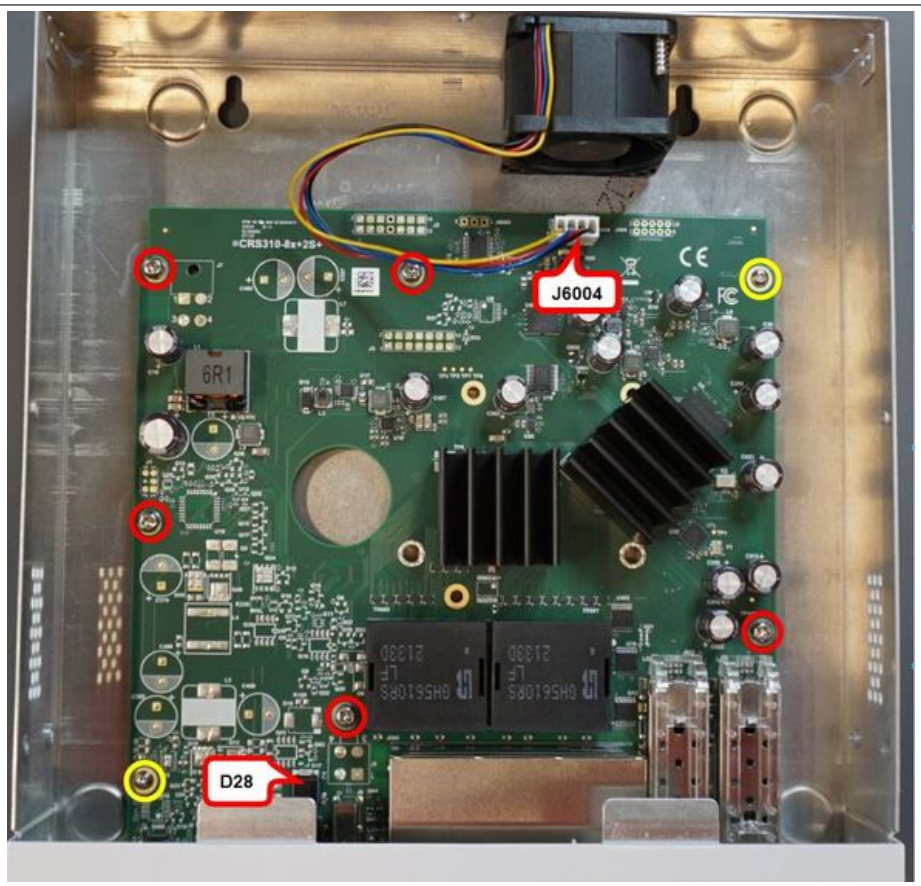
Disassembling information

Step 1: Unscrew 3 screws using PH2 screwdriver and carefully take off the cover. Location of the screws is shown the picture 42.



Picture 42

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 43.



Picture 43

Instructions for checking over-voltage

Checking Schottky diode

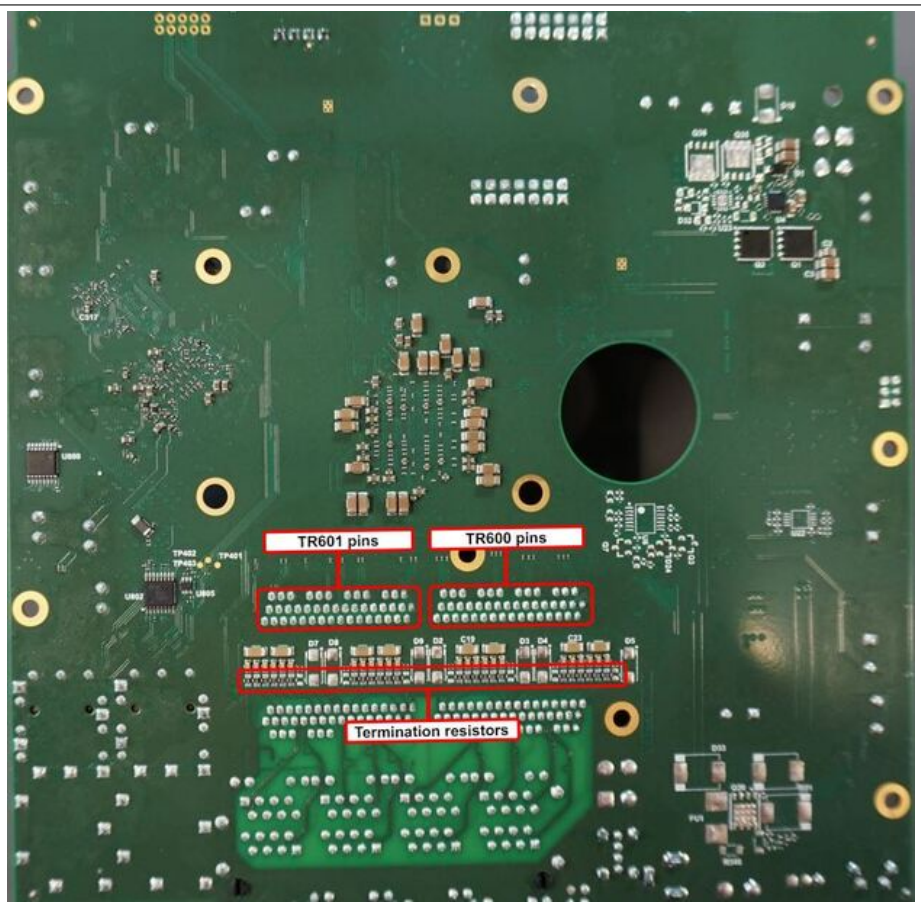
Check Schottky diode D28. Location of the diode on the board you can see in the picture 43. Schottky diode quality measurement method is described on page 4.

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 44. 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 44.



Picture 44

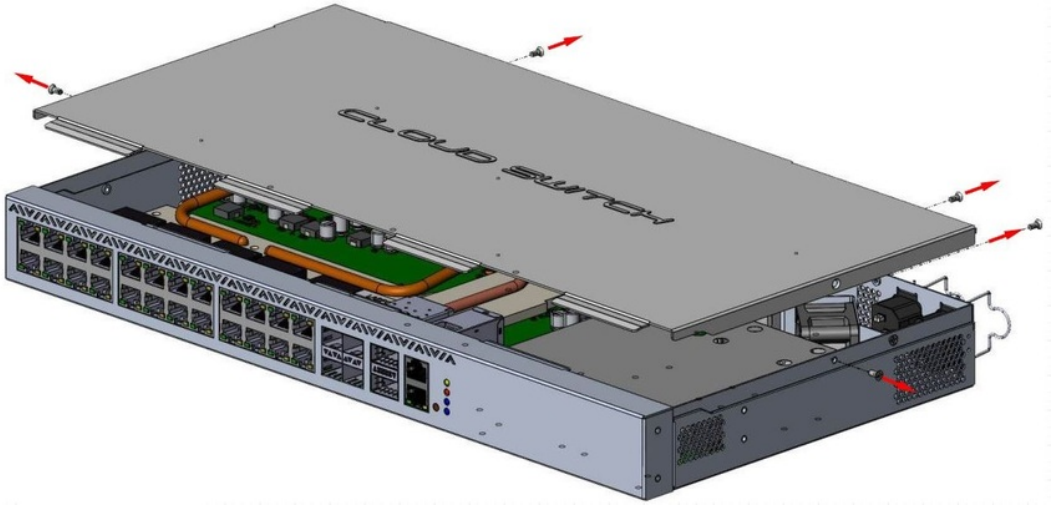
CLOUD ROUTER SWITCH 320 SERIES ROUTESBOARD

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

Picture 45

Disassembling information

Step 1: Unscrew 5 screws using PH2 screwdriver and carefully remove the cover. Location of the screws is shown the picture 46.



Picture 46

Step 2: Unscrew two screws using PH2 screwdriver, see picture 47.

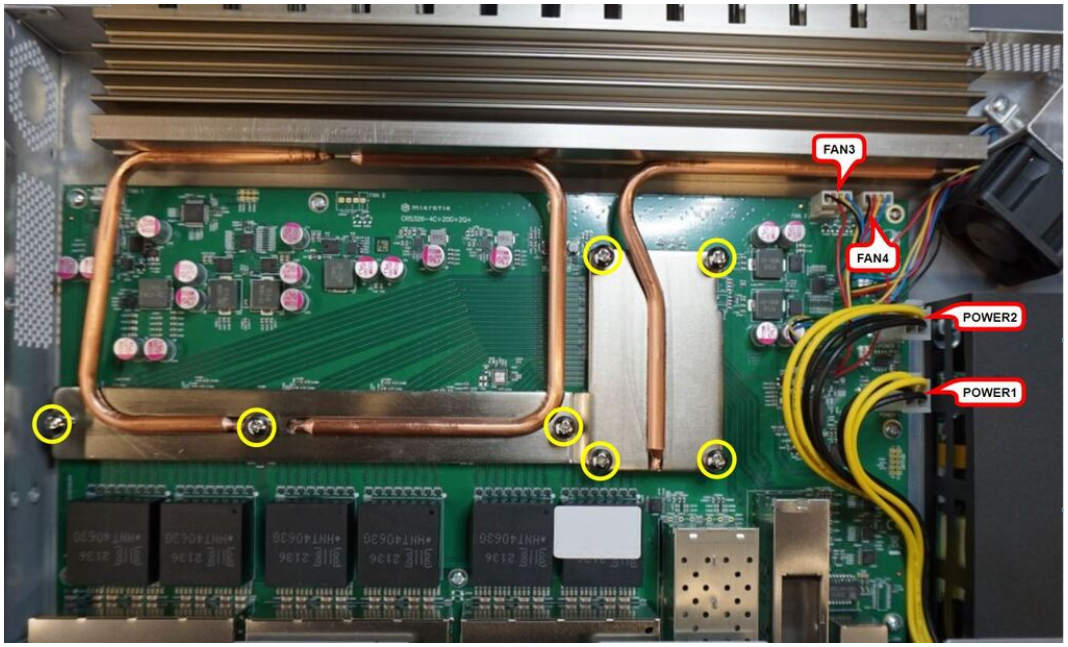
Picture 47

Step 3:

Unplug FAN and power cables, see picture 48.

Step 4:

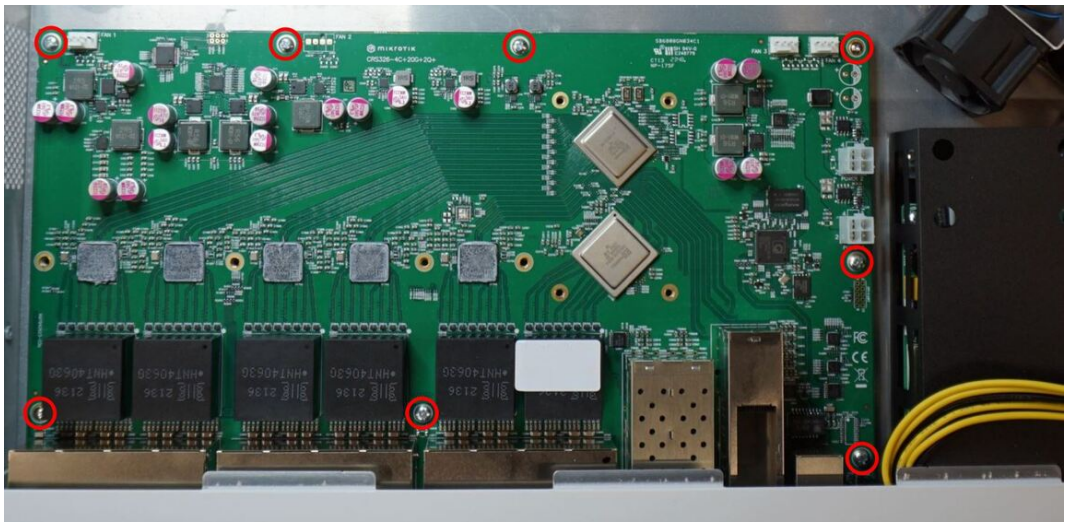
Unscrew 7 screws using PH2 screwdriver and remove heat-sink, see picture 48.



Picture 48

Step 5:

Unscrew 8 screws using PH1 screwdriver. Location of the screws is shown the picture 49.

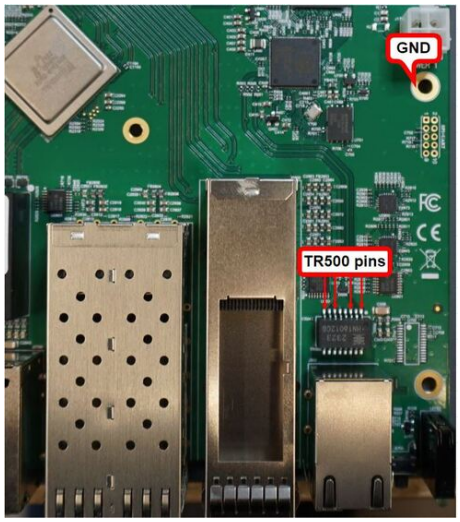


Picture 49

Checking procedure for over-voltage

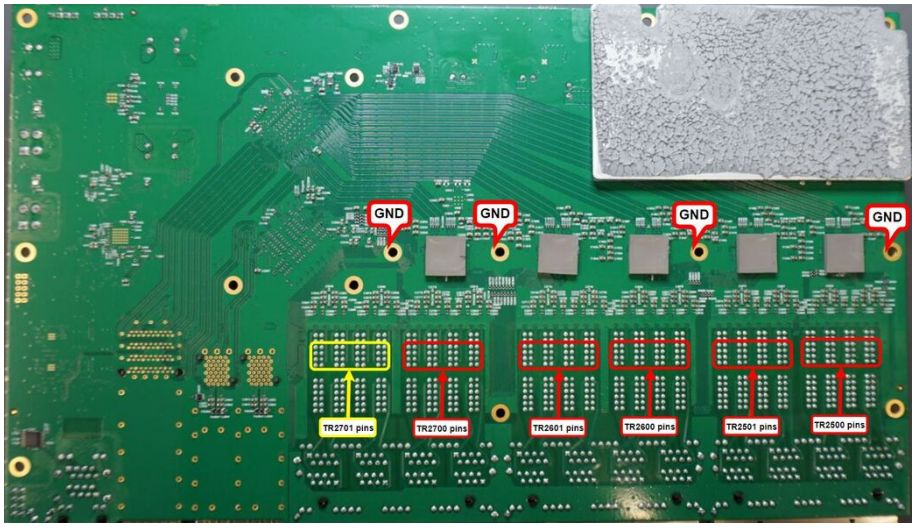
Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR500 pins and Ground. Test points on the transformer pins are highlighted with red lines, see picture 50. Voltage drop value should be in the range from 0,34V to 0,45V. Voltage drop measurement method is described on page 7.



Picture 50

Check voltage drop value between Ethernet transformers TR2500, TR2501, TR2600, TR2601, TR2700, TR2701 pins and Ground. Test points you can see in the picture 51. 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 51

260 SERIES ROUTERBOARDS

RB260GS

Picture 52

Dissasembling information

Disassembly method of the board is the same as the RB260GSP board. Disassembly method is described on page 45.

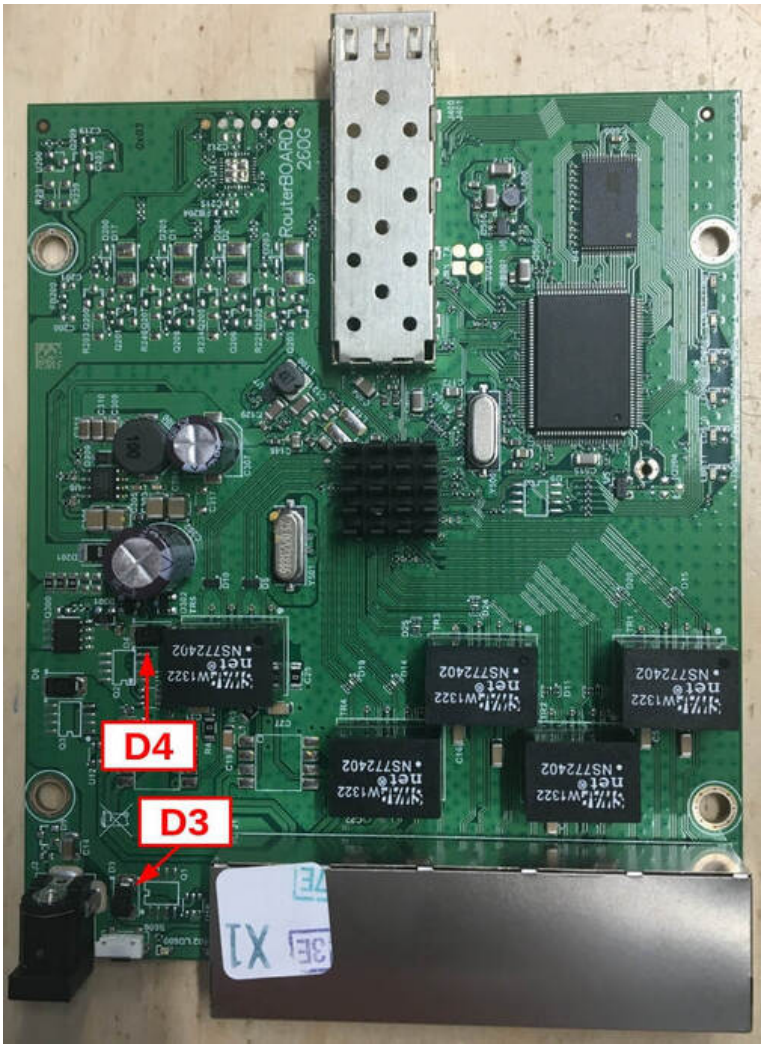
Instructions for checking overvoltage

Checking Schottky diodes

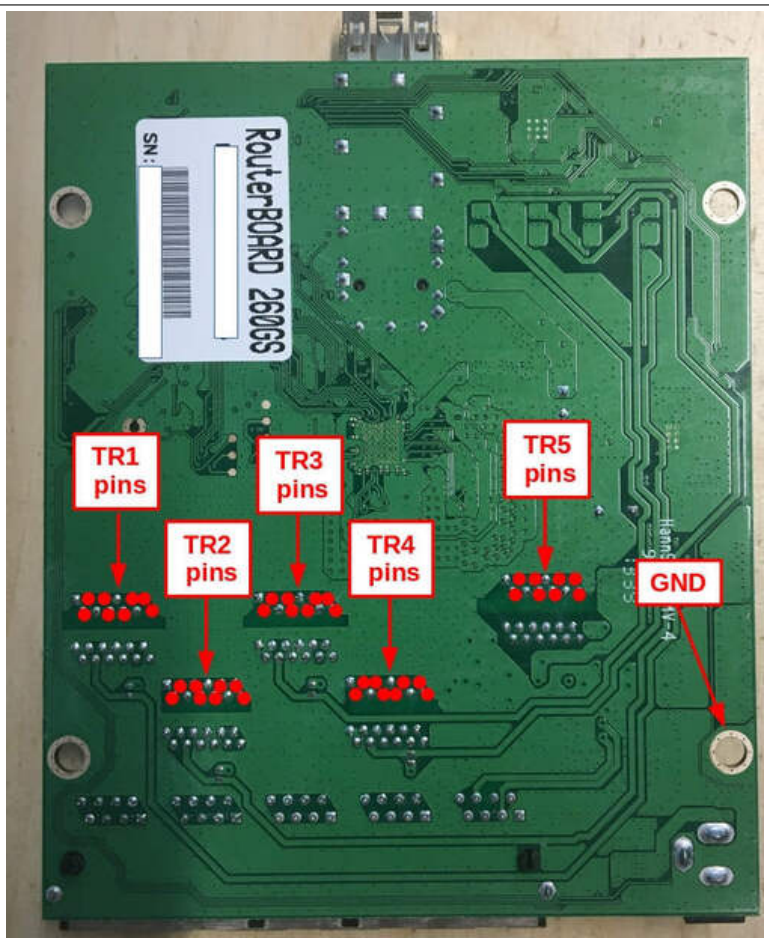
Check Schottky diodes D3, D4. Location of diodes on the board you can see in the picture 53. Schottky diodes quality measurement method is described on page 4.

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

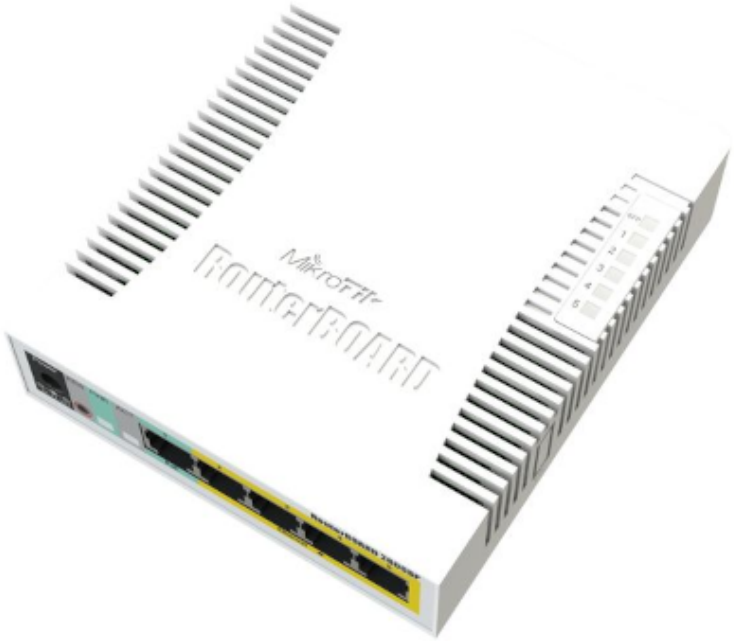


Picture 53


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

Picture 54

RB260GSP



Picture 55

Dissasembling information

Step 1:
Take off case back sticker as shown in the picture 56.

Picture 56

Step 2:
Take off the cover with a screwdriver as shown in the pictures 57 - 60.

Picture 57

Picture 58

Picture 59

Picture 60

Step 3:
Take out the board as shown in the picture 61.

Picture 61

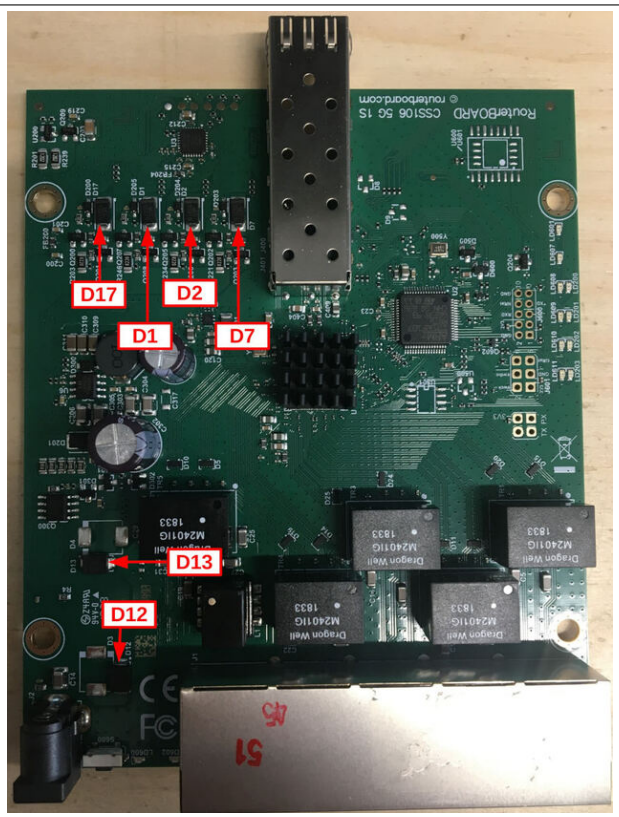
Instructions for checking overvoltage

Checking Schottky diodes

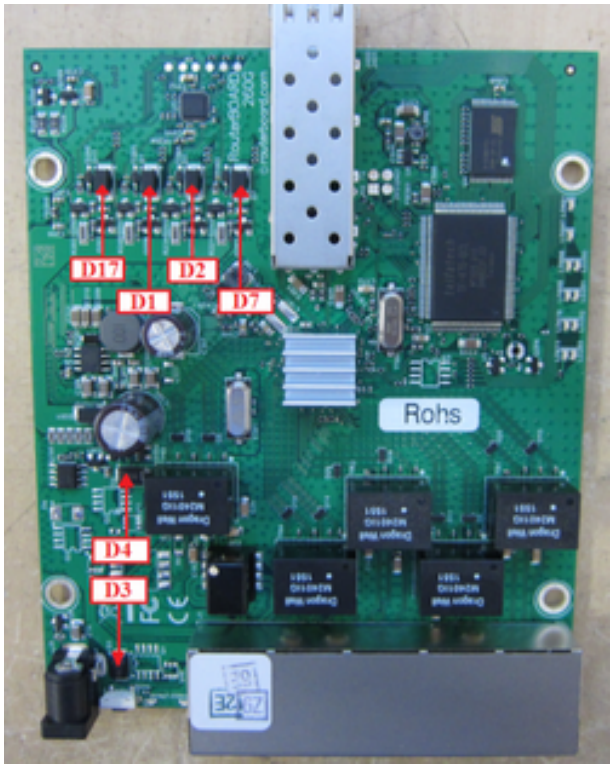
Check Schottky diodes D1-D4, D7, D17. Location of diodes on the board you can see in the picture 63. Schottky diodes quality measurement method is described on page 4.
Some boards may have different PCB layout. If the board does not correspond the PCB in picture 63, then check Schottky diodes D1, D2, D7, D12, D13, D17. Location of diodes on the board you can see in the picture 62. Schottky diodes quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

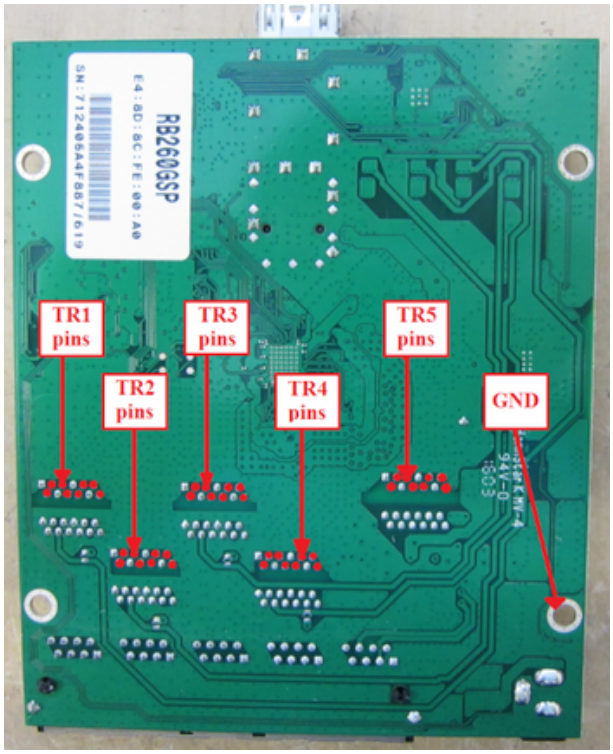
Check voltage drop value between Ethernet transformers TR1-TR5 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 64.
Voltage drop value should be in the range from 0,44V to 0,48V. Voltage drop measurement method is described on page 7.



Picture 62



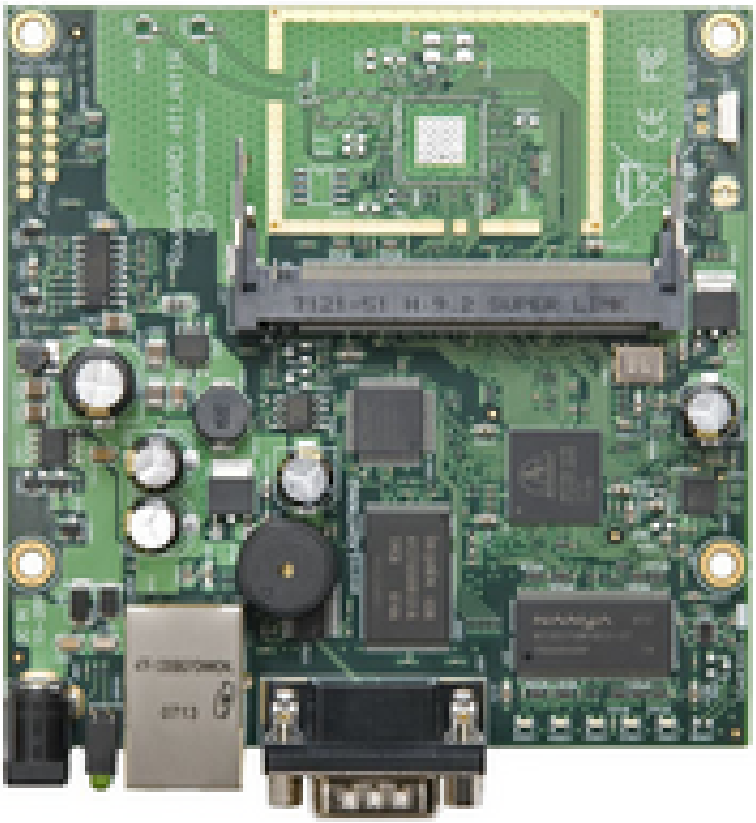
Picture 63



Picture 64

411 SERIES ROUTERBOARDS

RB411AH

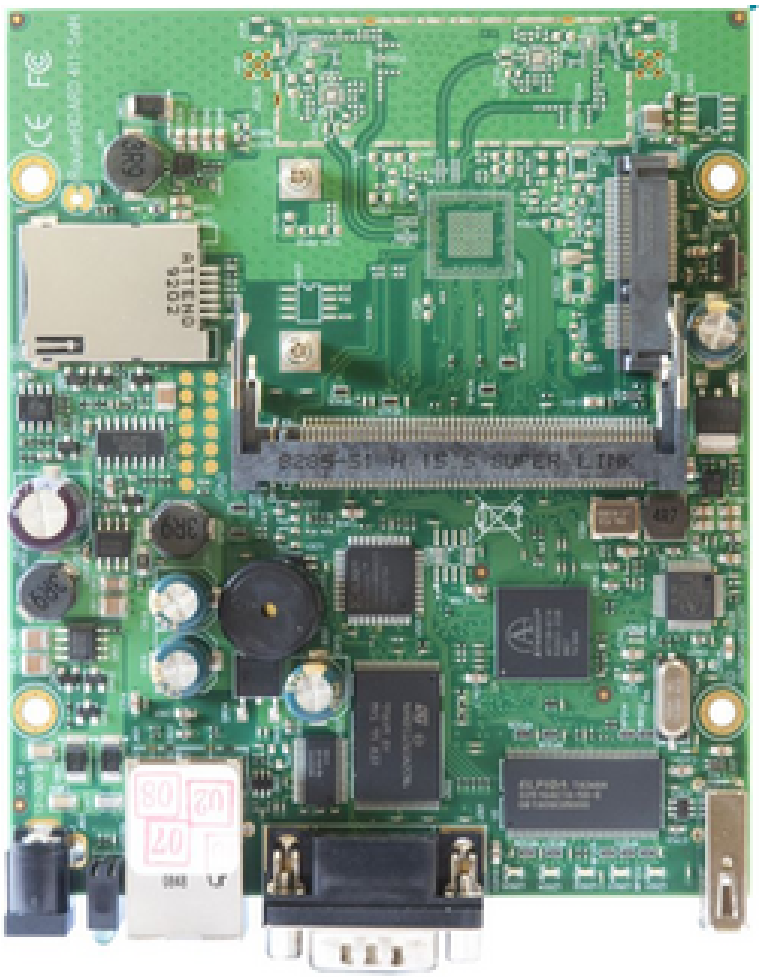


Picture 65

RB411AR

Picture 66

RB411U



Picture 67

Instructions for checking overvoltage

Checking Schottky diodes

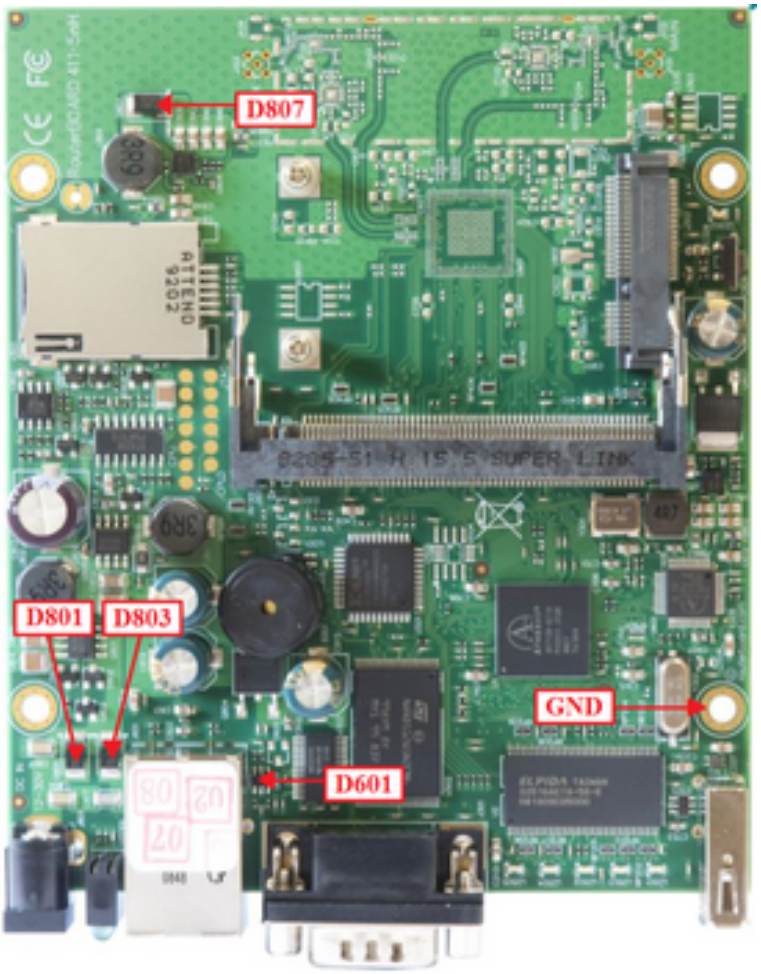
Check Schottky diodes D801, D803. For RB411U you should also check Schottky diode D807. Location of diodes on the board you can see in the picture 68. Schottky diodes quality measurement method is described on page 4.

Checking voltage drop value between diode array pin1 pins and GND

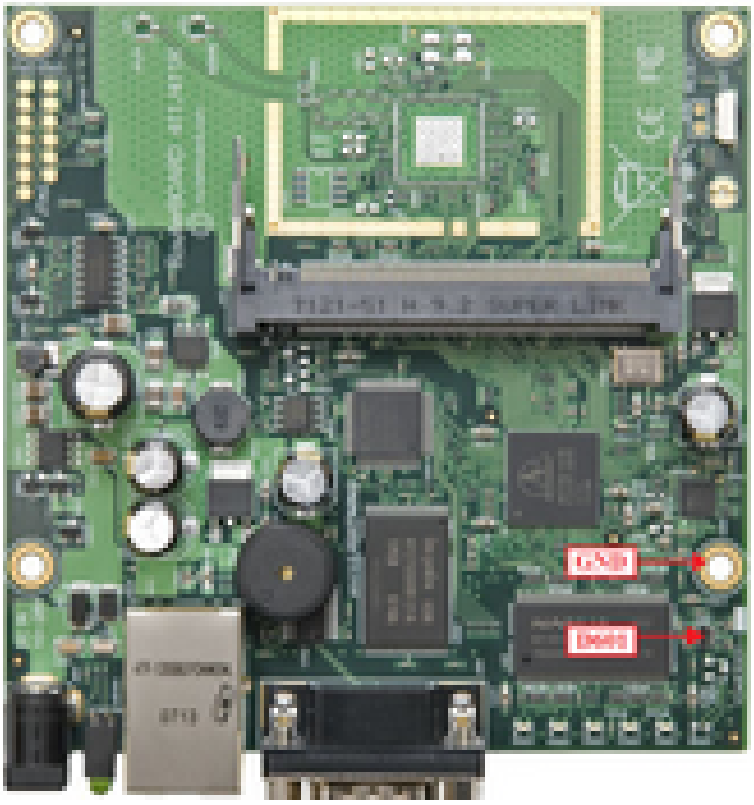
Check voltage drop value between diode array D601 pin1 and Ground. Location of diode array on the boards RB411U, RB411AR you can see in the picture 68, but for RB411AH in the picture 69.
Voltage drop value should be in the range from 0,4V to 0,44V for all mentioned board types. Voltage drop measurement 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.

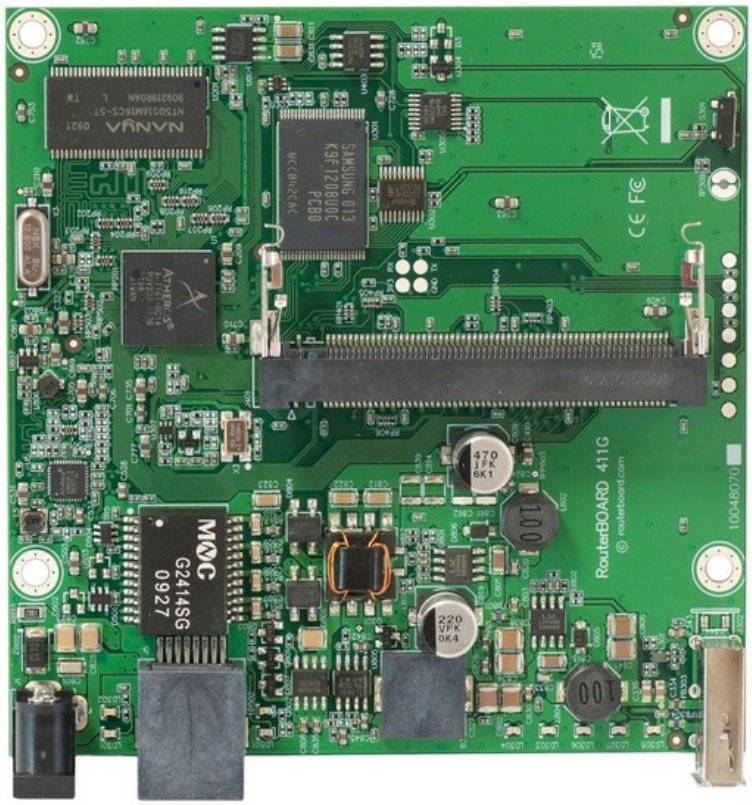


Picture 68



Picture 69

RB411GL



Picture 70

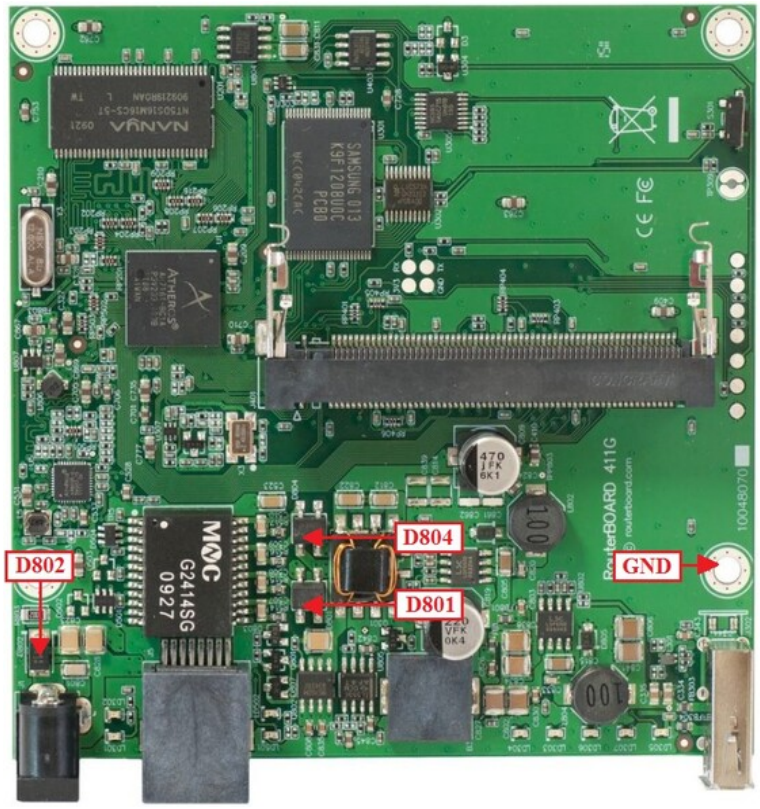
Instructions for checking overvoltage

Checking Schottky diodes and diode bridge

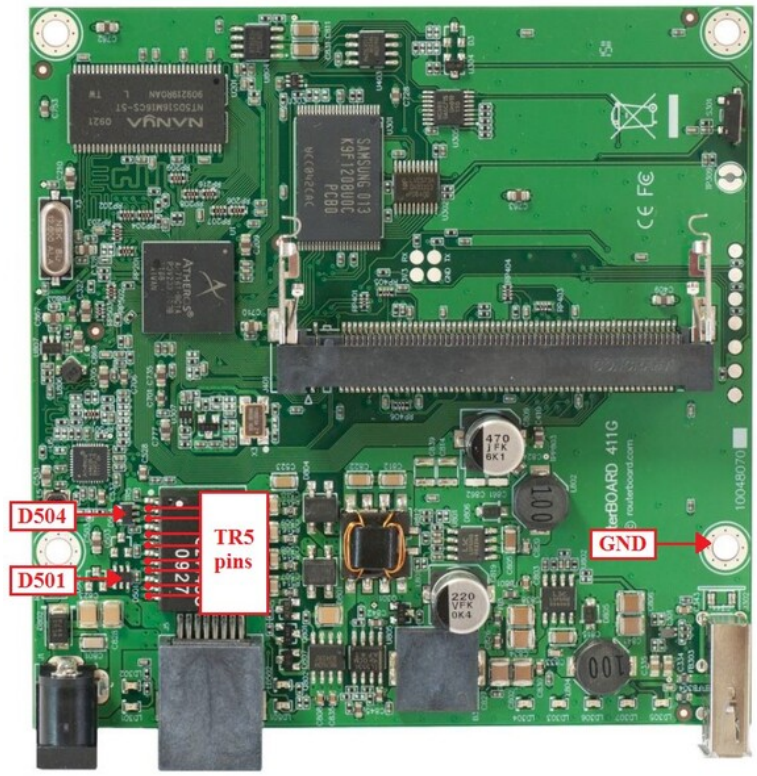
Check Schottky diode D802 and diodes bridges D801, D804. Location of diodes on the board you can see in the picture 71. Diodes quality measurement method is described on page 4.

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 72. 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.

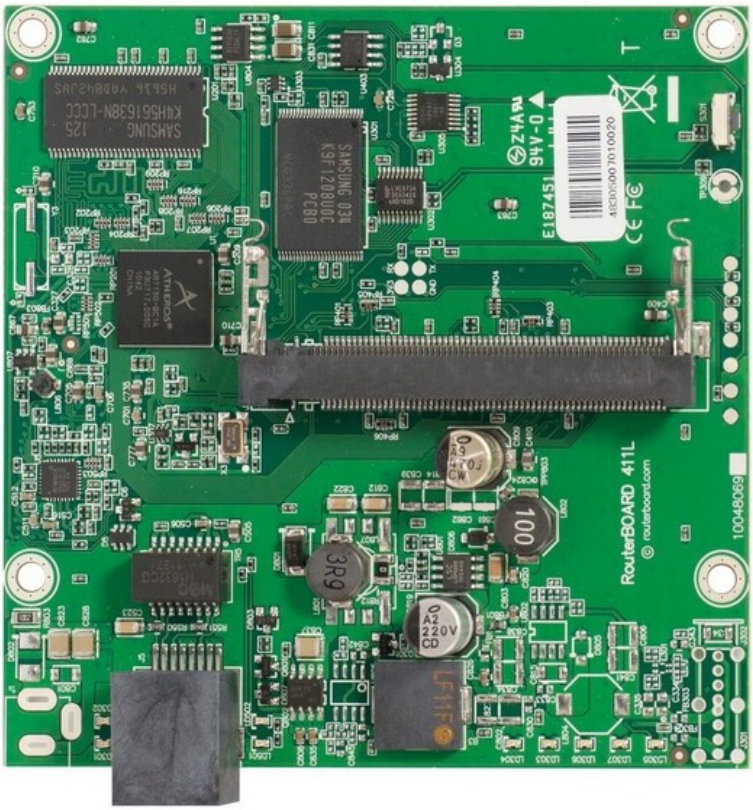


Picture 71



Picture 72

RB411L



Picture 73

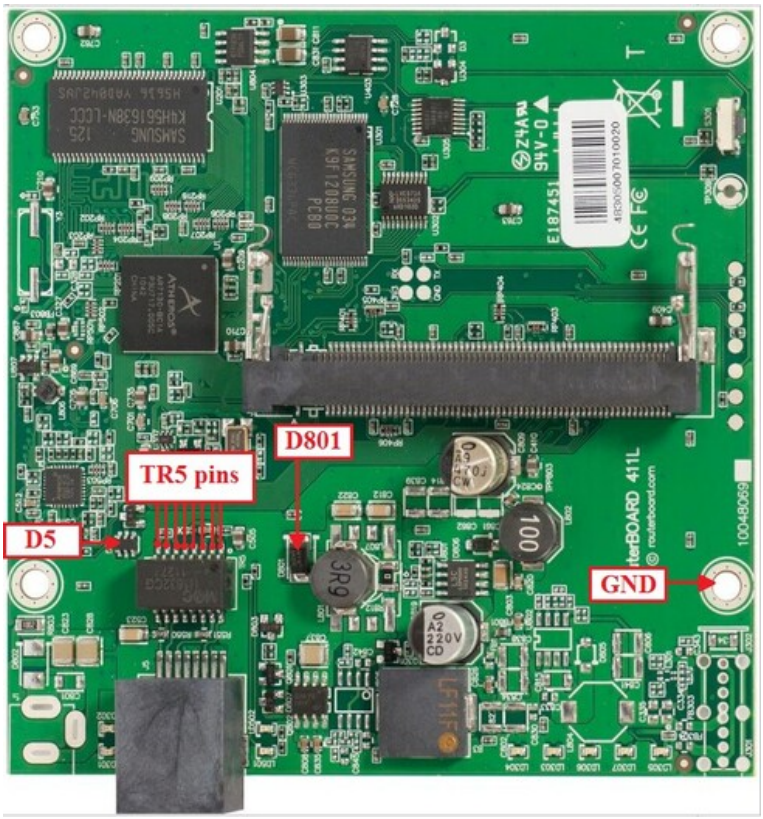
Instructions for checking overvoltage

Checking Schottky diodes and diode bridge

Check Schottky diode D801. Location of diode on the board you can see in the picture 74. 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 74. 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 74

433 SERIES ROUTERBOARDS

RB433AH

Picture 75

Instructions for checking overvoltage

Checking Schottky diodes and diode bridge

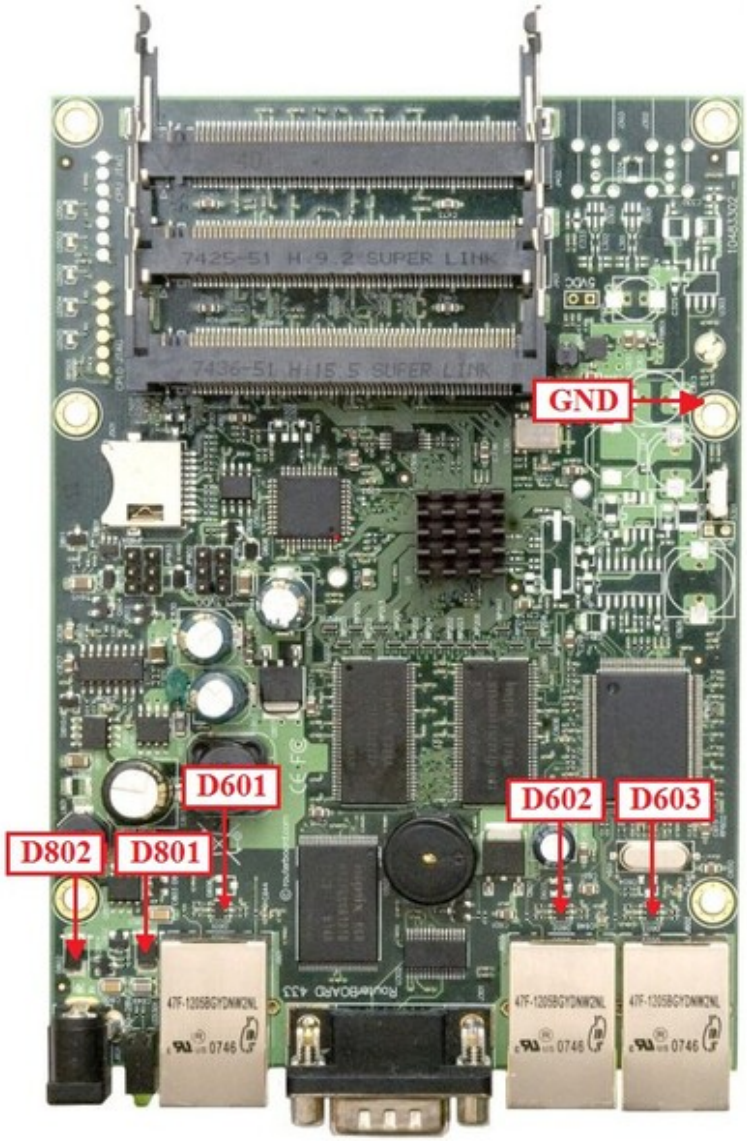
Check Schottky diodes D801, D802. Location of diodes on the board you can see in the picture 76. Diodes quality measurement method is described on page 4.

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 76. Voltage drop value should be in the range from 0,4V to 0,44V. Voltage drop measurement method is described one page 6.

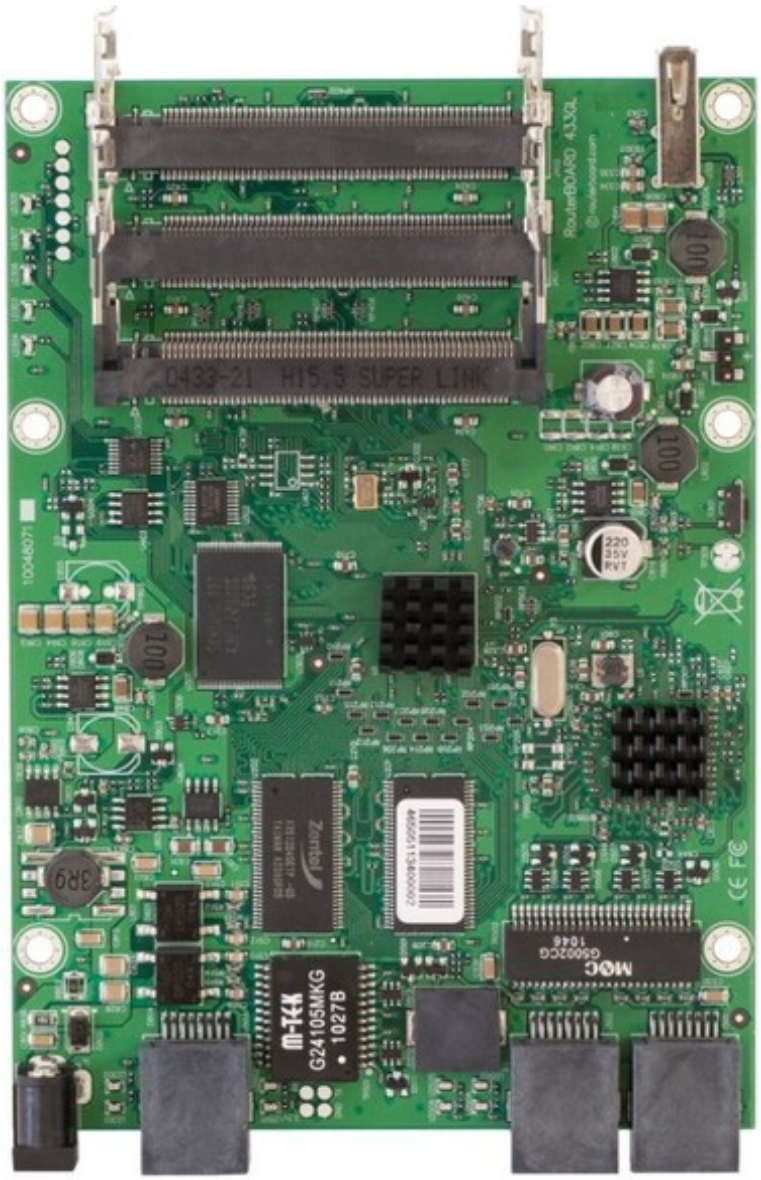
Checking termination resistors resistance in RJ-45 connector

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 76

RB433GL



Picture 77

Instructions for checking overvoltage

Checking Schottky diodes and diode bridge

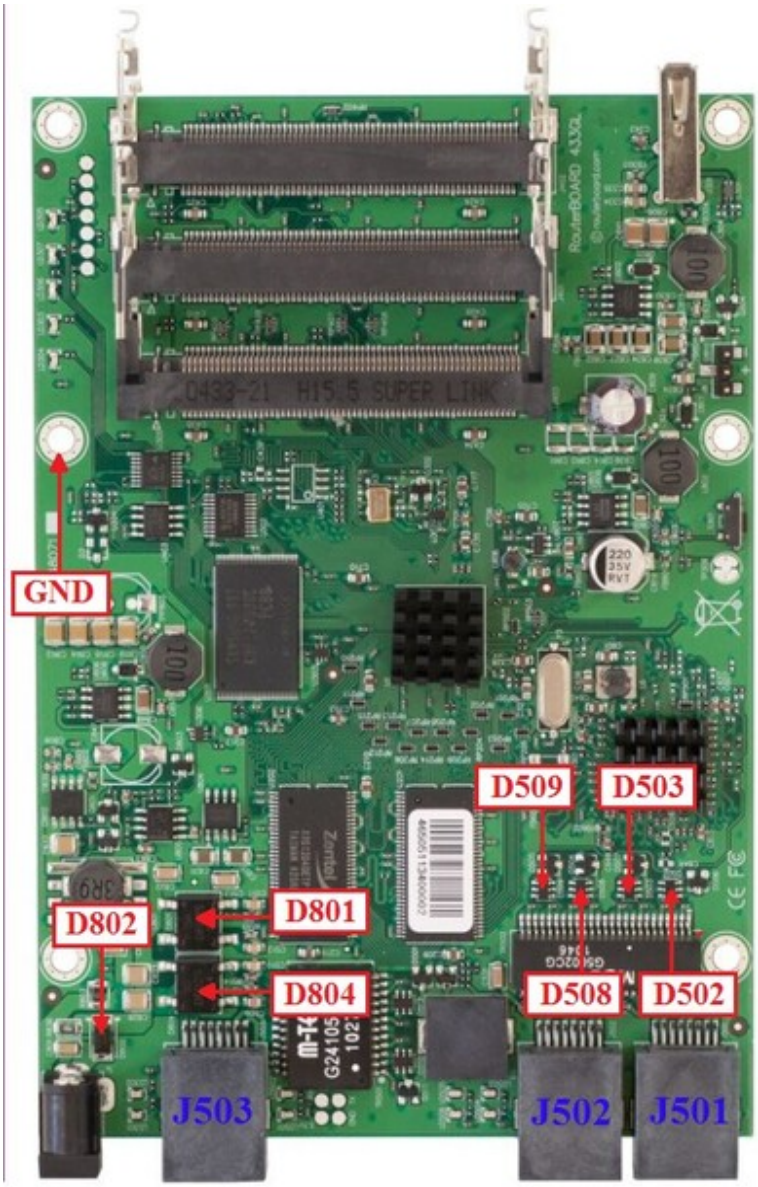
Check Schottky diode D802 and diodes bridges D801, D804. Location of diodes on the board you can see in the picture 78. Diodes quality measurement method is described on page 4.

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 78. Voltage drop value should be in the range from 0,36V to 0,42V. Voltage drop measurement method is described one page 6.

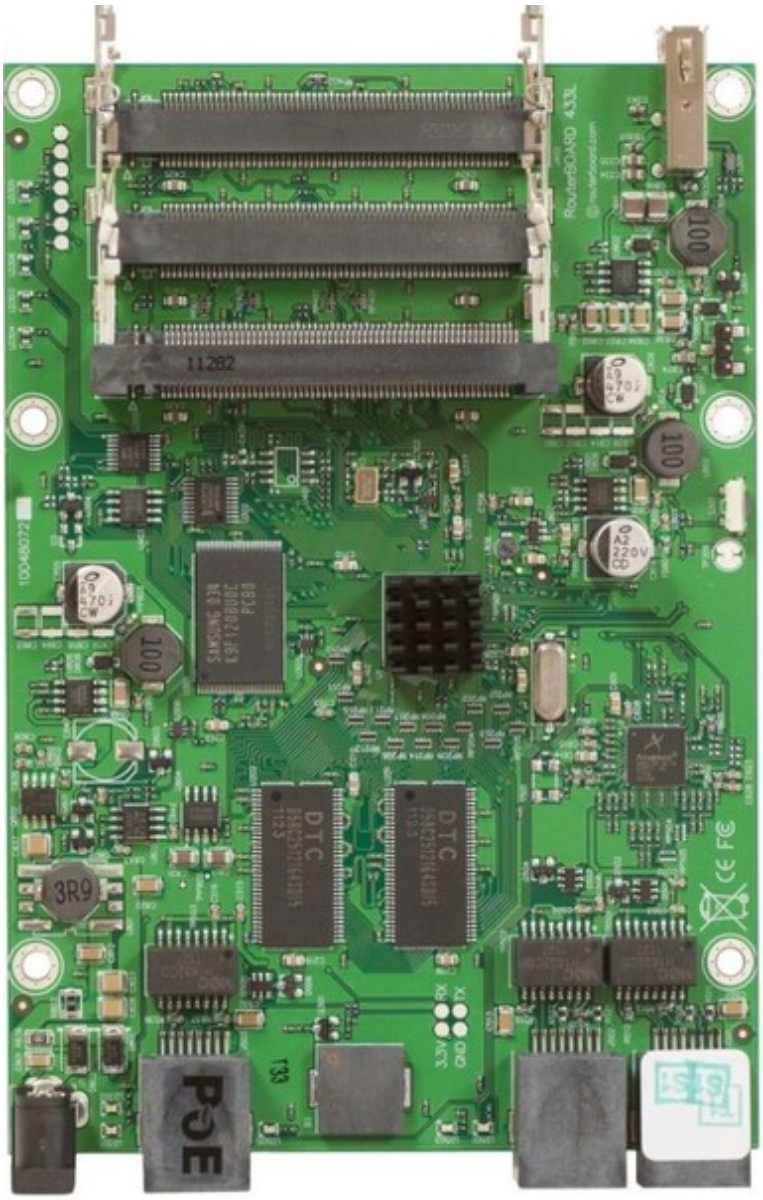
Checking termination resistors resistance in RJ-45 connector

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 78

RB433UL



Picture 79

Instructions for checking overvoltage

Checking Schottky diodes and diode bridge

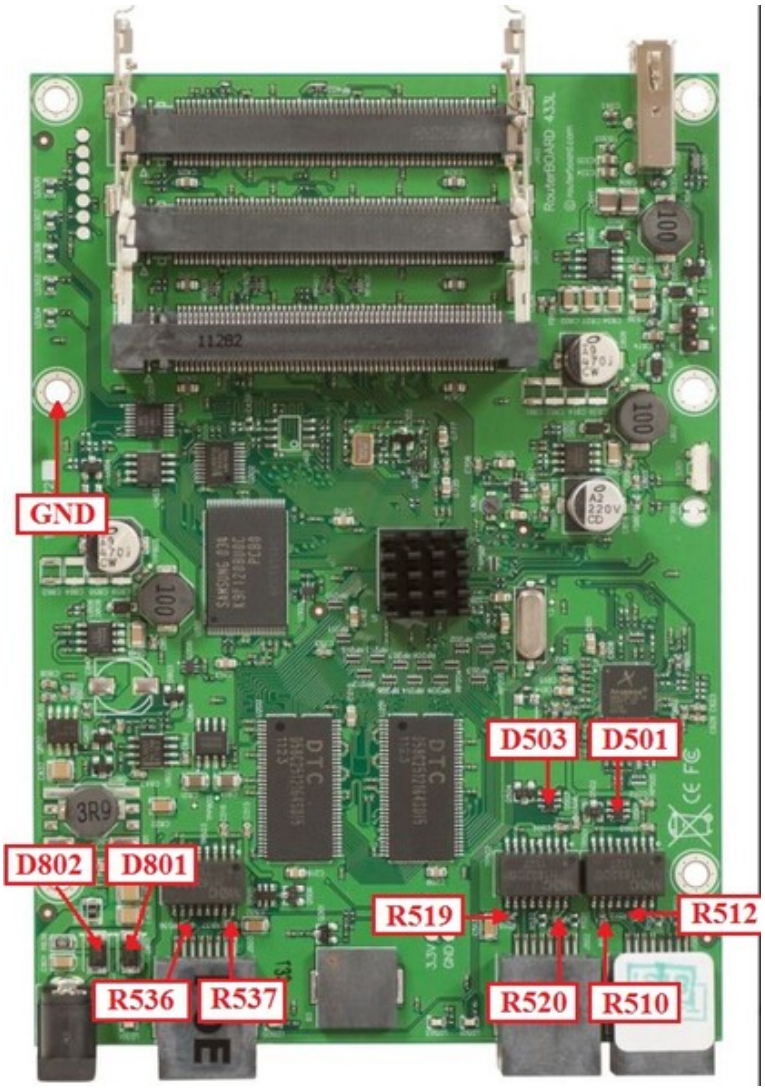
Check Schottky diodes D801, D802. Location of diodes on the board you can see in the picture 80. Schottky diode quality measurement method is described on page 4.

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 80. 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 80.



Picture 80

435 SERIES ROUTERBOARDS

RB435G

Picture 81

Instructions for checking overvoltage

Checking Schottky diodes and diode bridge

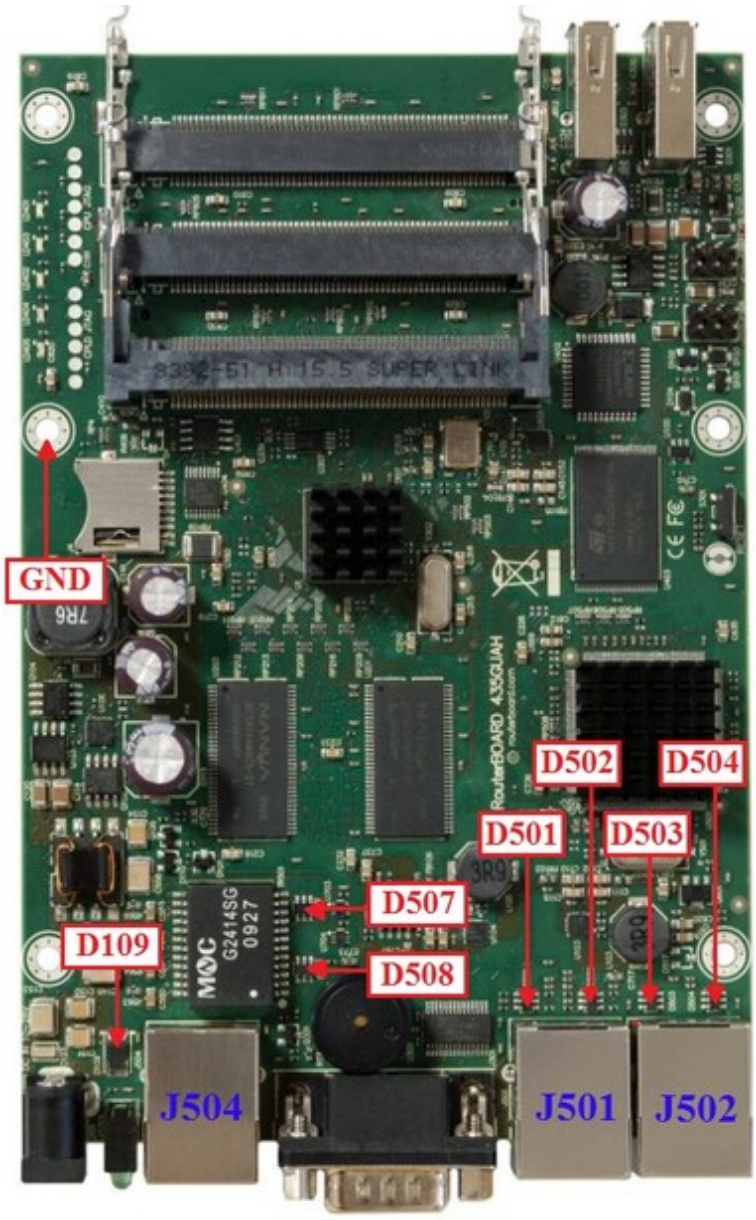
Check Schottky diode D109. Location of diode on the board you can see in the picture 82. Schottky diode quality measurement method is described on page 4.

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 82. 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

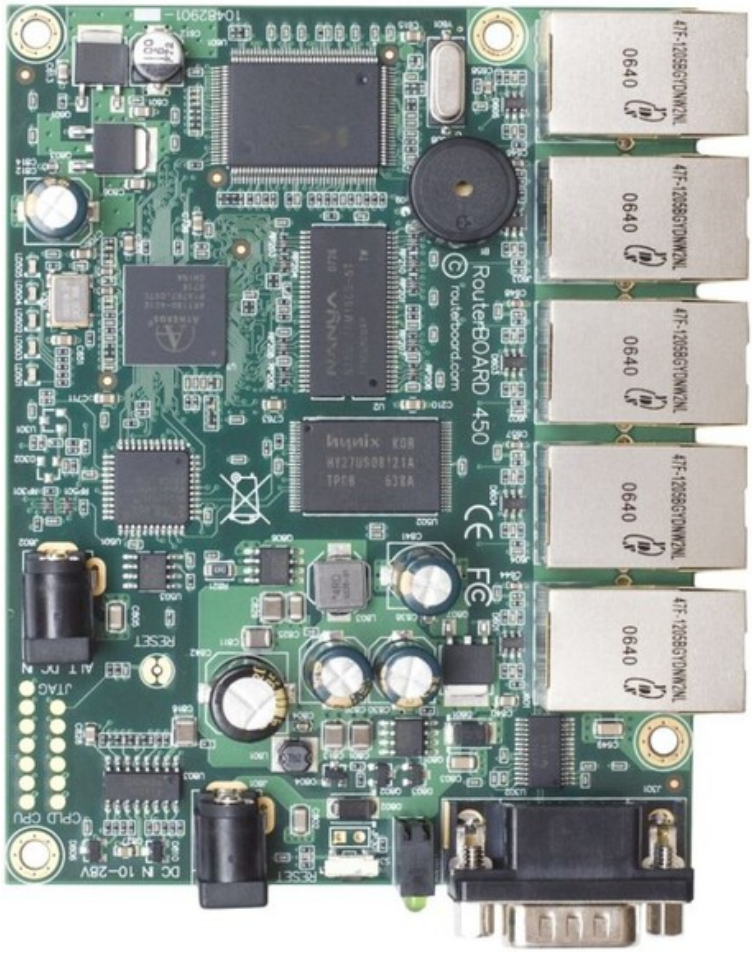
Check termination resistors resistance in J501, J502 connectors. Resistance value between Rx and Tx line must be 150 Ohm +/- 4%. Measurement method is described on page 8.



Picture 82

450 SERIES ROUTERBOARDS

RB450



Picture 83

Instructions for checking overvoltage

Checking Schottky diodes and diode bridge

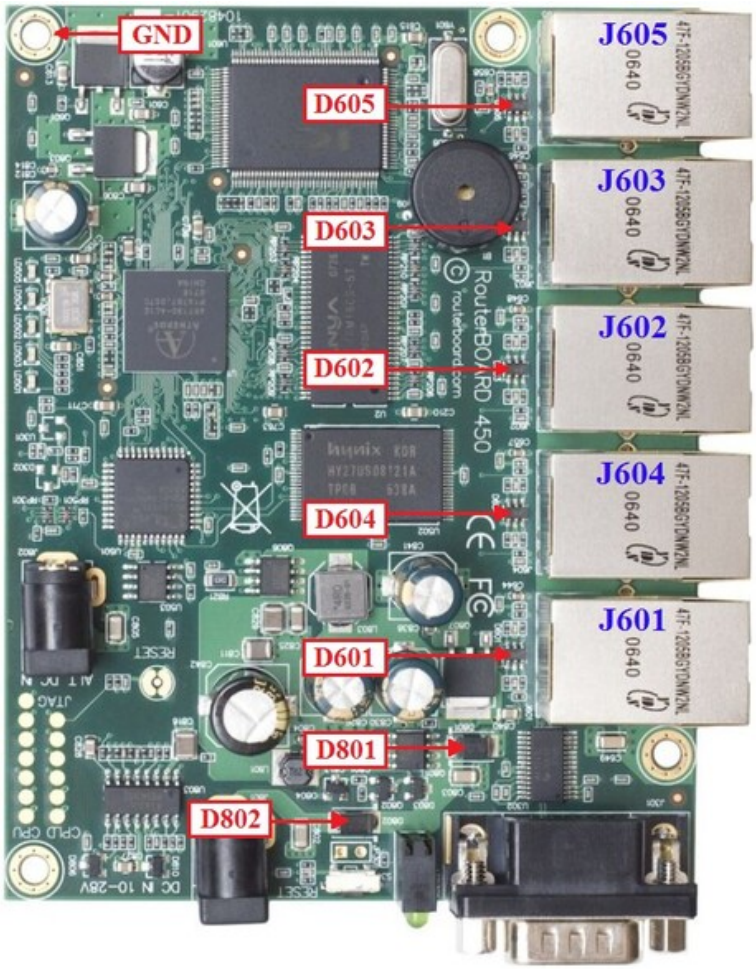
Check Schottky diodes D801, D802. Location of diodes on the board you can see in the picture 84. Schottky diode quality measurement method is described on page 4.

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 84. Voltage drop value should be in the range from 0,4V to 0,44V. Voltage drop measurement method is described on page 6.

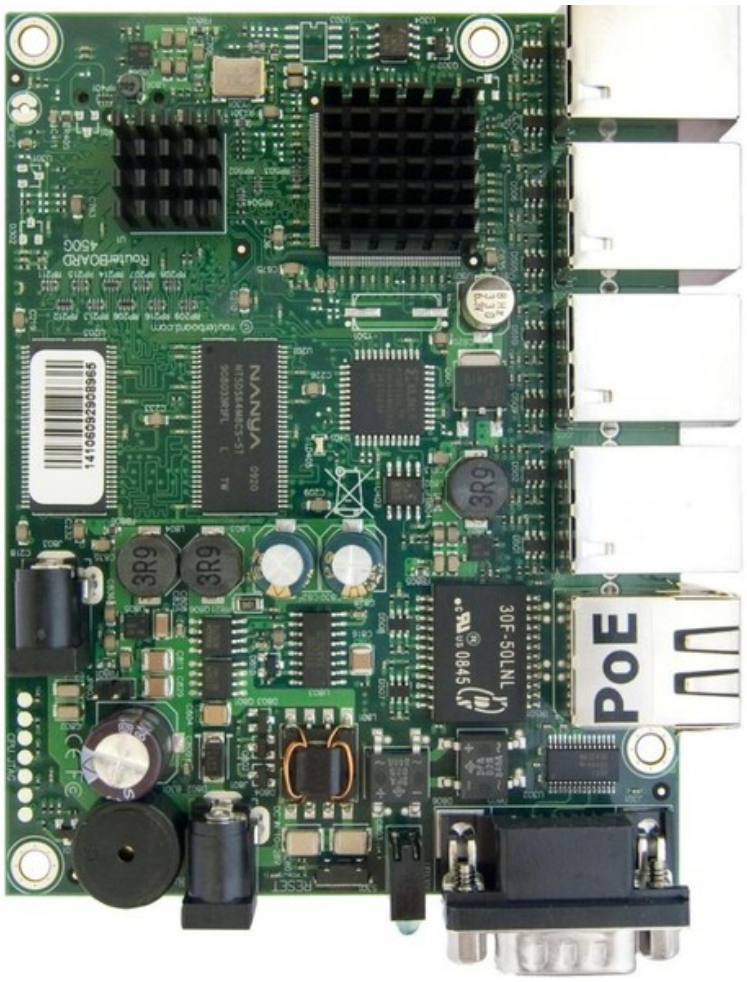
Checking termination resistors resistance in RJ-45 connector

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 84

RB450G



Picture 85

Instructions for checking overvoltage

Checking Schottky diodes and diode bridge

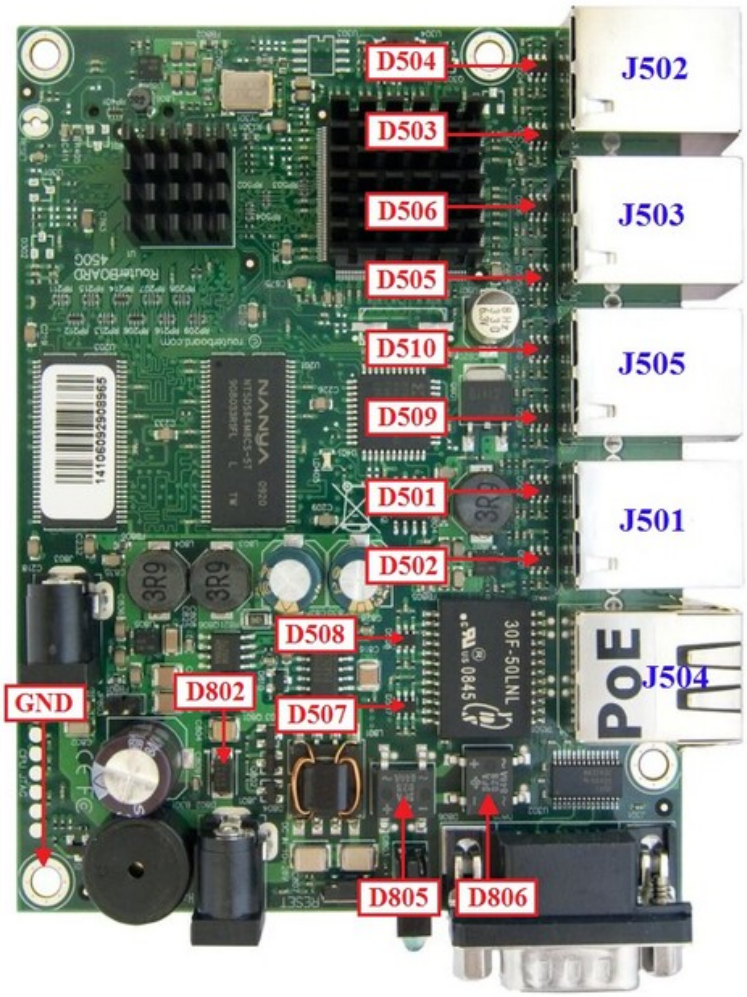
Check Schottky diode D802 and diodes bridges D805, D806. Location of diodes on the board you can see in the picture 86. Schottky diode quality measurement method is described on page 4.

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 86. 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 86

RB450Gx4

Picture 87

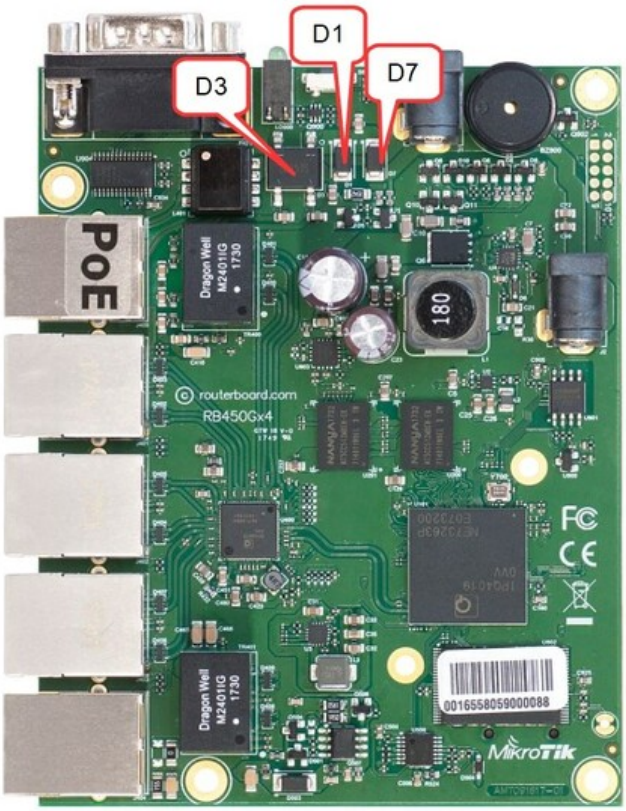
Instructions for checking overvoltage

Checking Schottky diodes and diode bridge

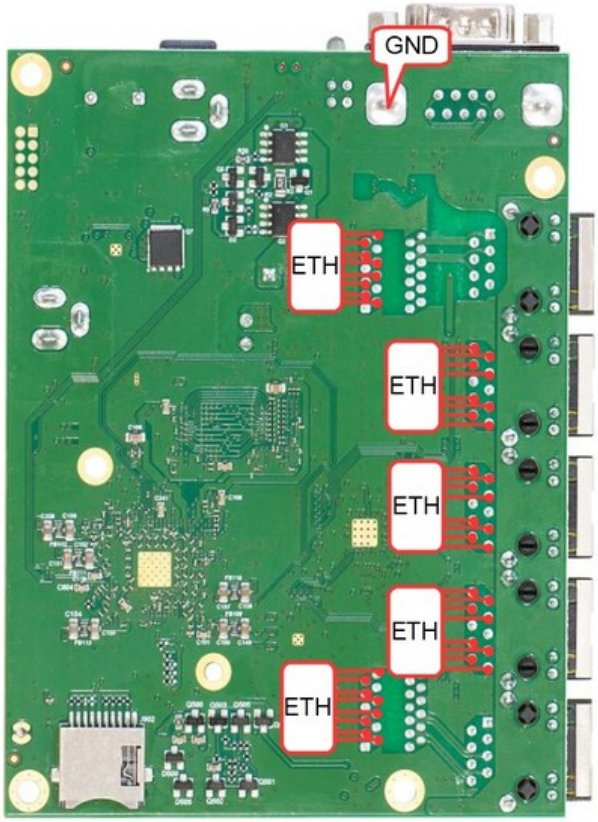
Check Schottky diode D1, D7 and diodes bridges D3. Location of diodes on the board you can see in the picture 88. Schottky diode quality measurement method is described on page 4.

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 89. Voltage drop value should be in the range from 0,36V to 0,43V. Voltage drop measurement method is described on page 7.


D1
D3
D7
PoE
Dragon Wel
M2401IG
1730
180
© routerboard.com
RB450Gx4
FC
CE
0016558059000088
MikroTik

Picture 88



Picture 89

493 SERIES ROUTERBOARDS

RB493AH

Picture 90

Instructions for checking overvoltage

Checking Schottky diodes

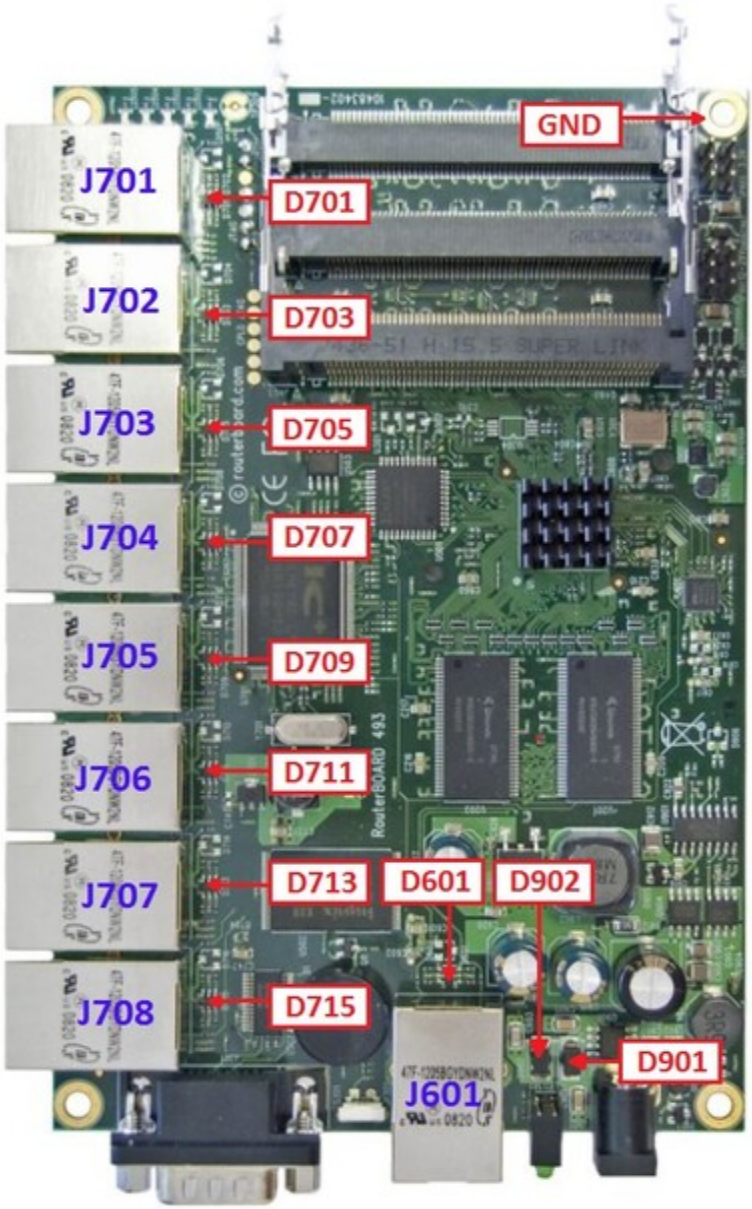
Check Schottky diodes D901, D902. Location of diodes on the board you can see in the picture 91. Schottky diode quality measurement method is described on page 4.

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.

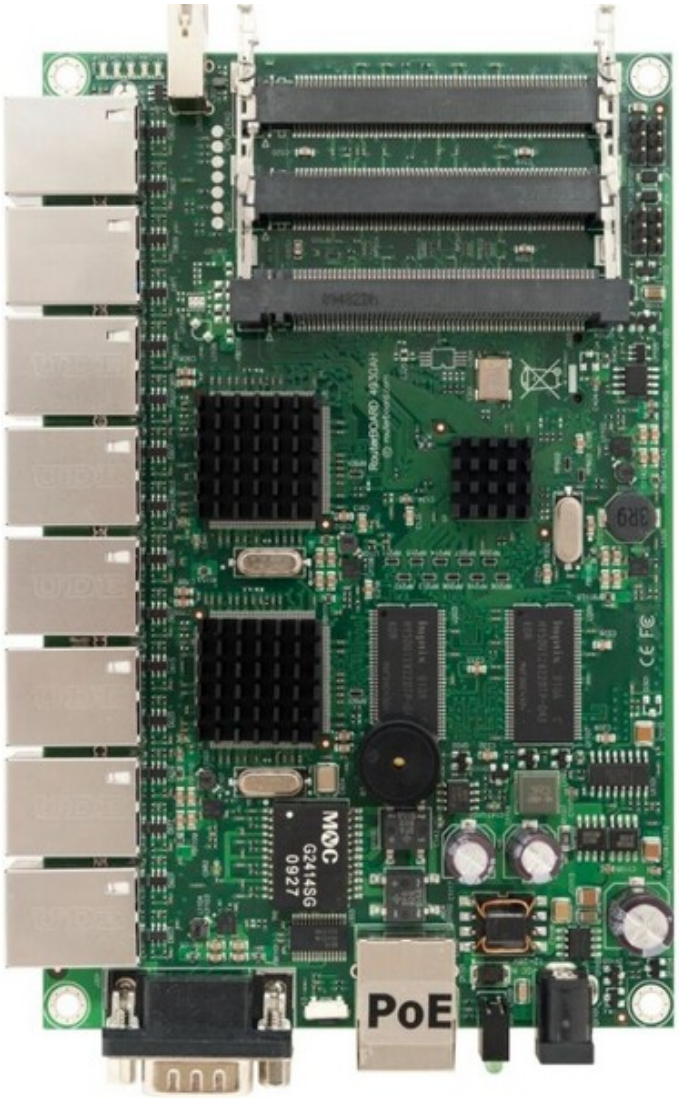
Checking termination resistors resistance in RJ-45 connector

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 91

RB493G



Picture 92

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 93. 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

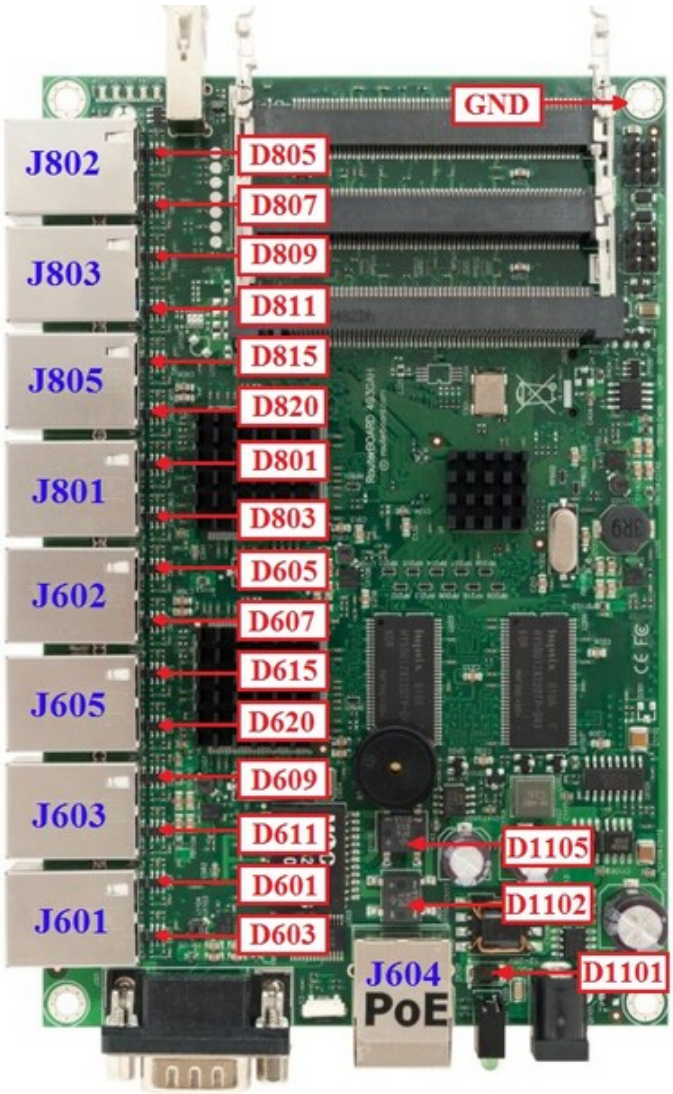
diode arrays on the board you can see in the picture 93. Voltage drop value should be in the range from 0,20V to 0,25V. Voltage drop measurement method is described on page 7.

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 93. 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 93

751 SERIES ROUTERBOARDS

RB751U-2HnD

Picture 94

Disassembling information

Disassembly method of the board is the same as the RB260GSP board. Disassembly method is described on page 45.

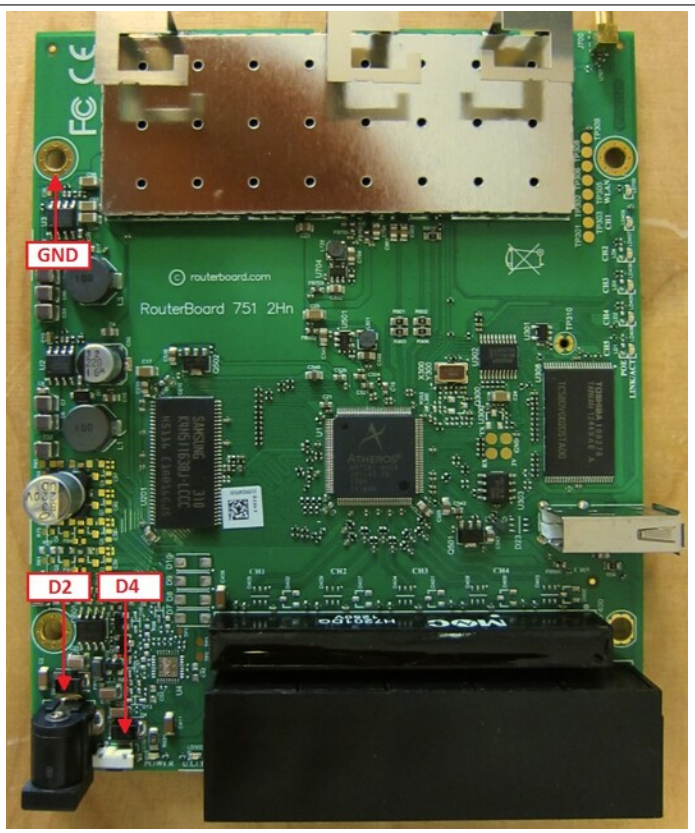
Instructions for checking overvoltage

Checking Schottky diodes

Check Schottky diodes D2, D4. Location of diodes on the board you can see in the picture 95. 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 96. Voltage drop value should be in the range from 0,28V to 0,32V. Voltage drop measurement method is described on page 7.



Picture 95

Picture 96

800 SERIES ROUTERBOARDS

RB800

Picture 97

Instructions for checking overvoltage

Checking diodes bridges

Check diodes bridges D17, D21. Location of diodes on the board you can see in the picture 98. 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

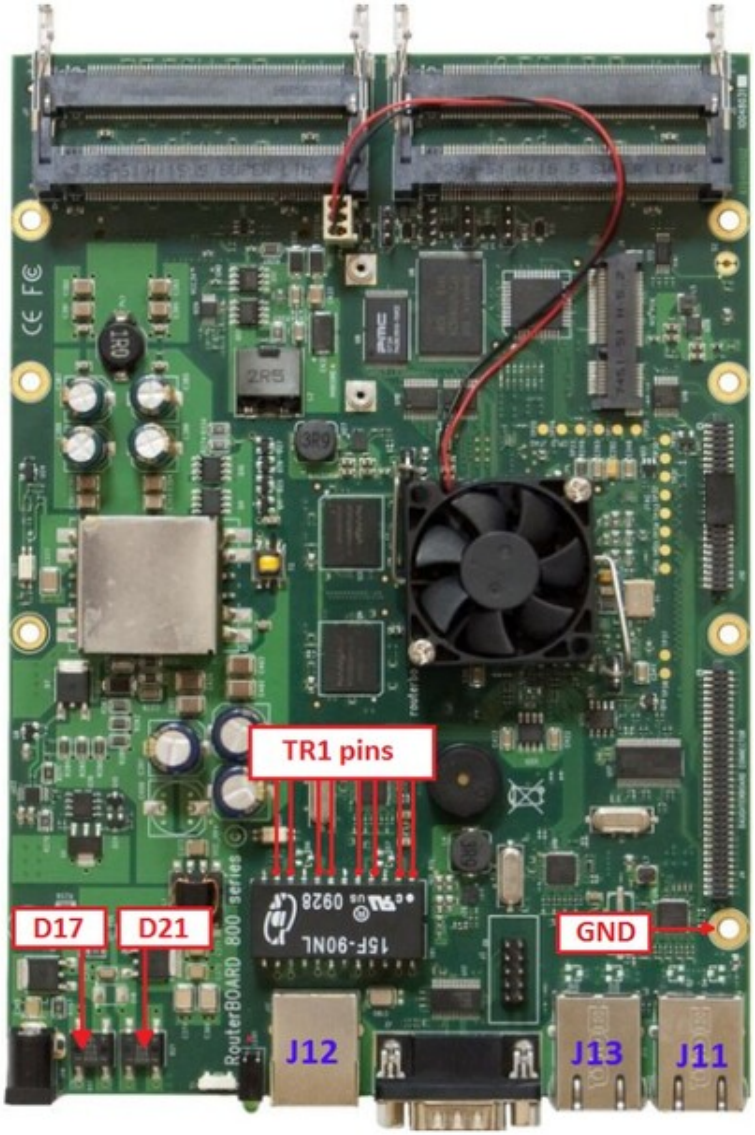
on the transformer pins are marked with red dots, see picture 99. Location of diode arrays on the board you can see in the picture 99. Voltage drop value should be in the range from 0,3V to 0,36V. Voltage drop measurement method is described on page 6.

Checking termination resistors resistance in RJ-45 connector

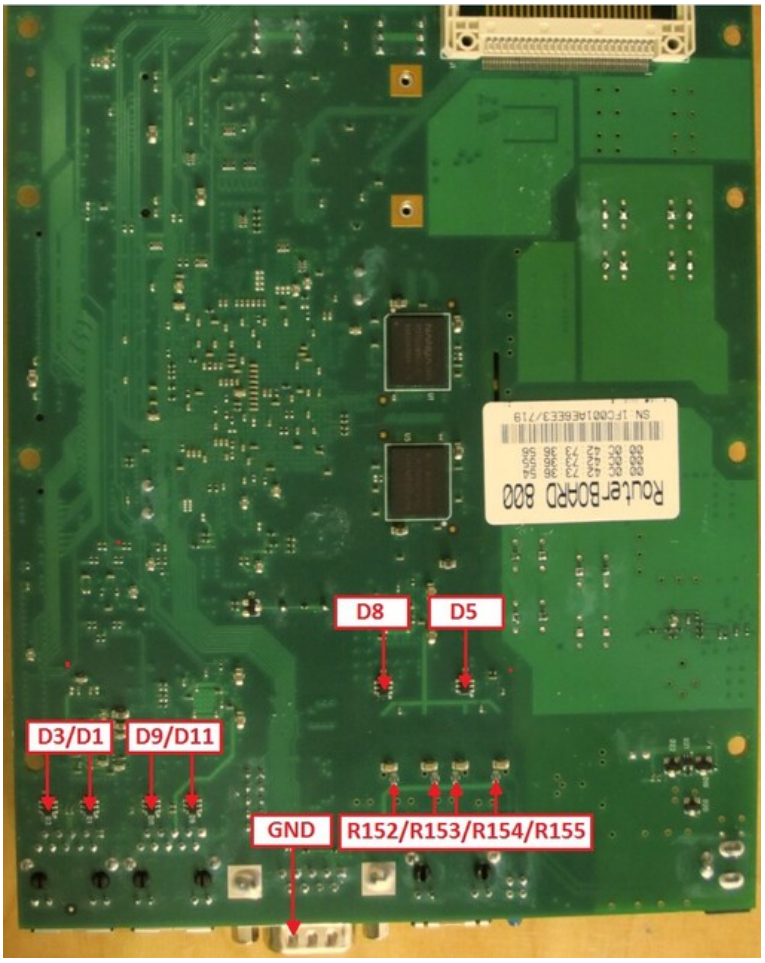
Check termination resistors resistance in J11, J13 connectors. Resistance value between Rx and Tx line must be 150 Ohm +/- 4%. Measurement method is described on page 8.

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 99.



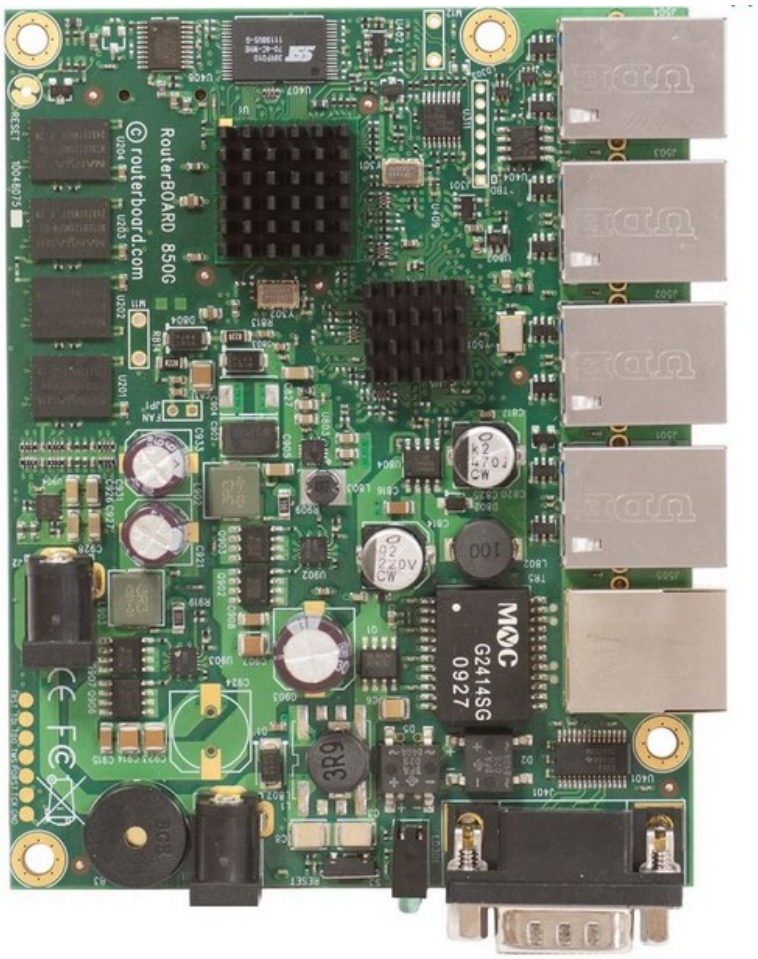
Picture 98



Picture 99

850 SERIES ROUTERBOARDS

RB850Gx2



Picture 100

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 101. 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

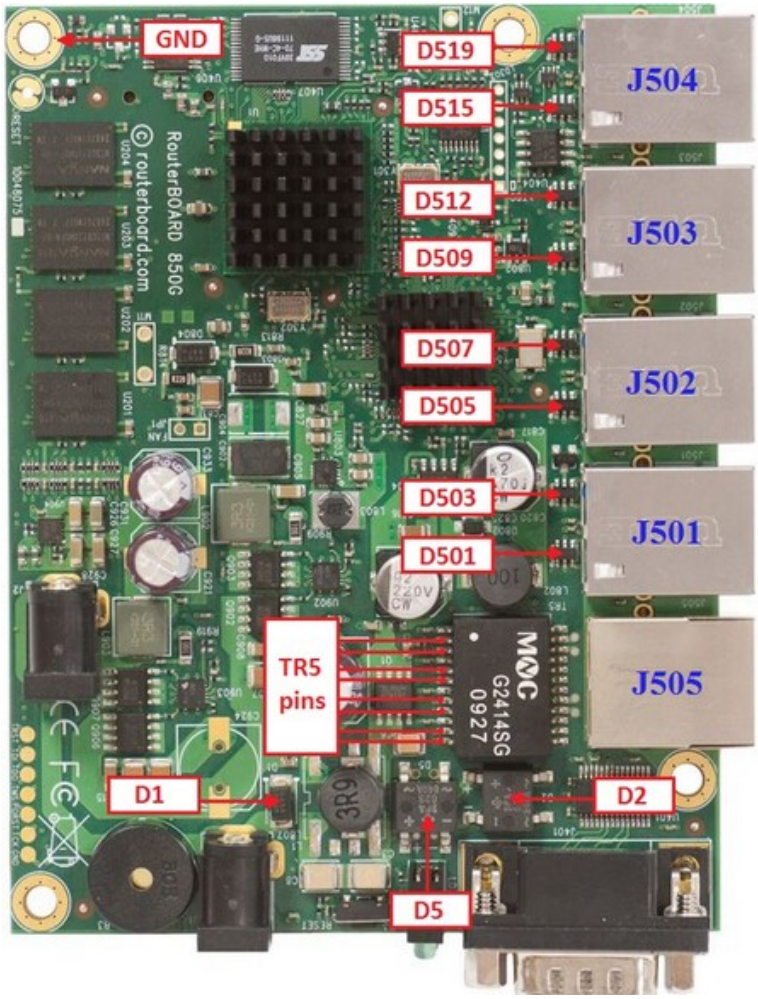
Check voltage drop value between diode arrays D501, D503, D505, D507, D509, D512, D515, D519 pin#1 and Ground. Location of diode arrays on the board you can see in the picture 101. Voltage drop value should be in the range from 0,38 to 0,44V. Voltage drop measurement method is described on page 6.

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 101. 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.



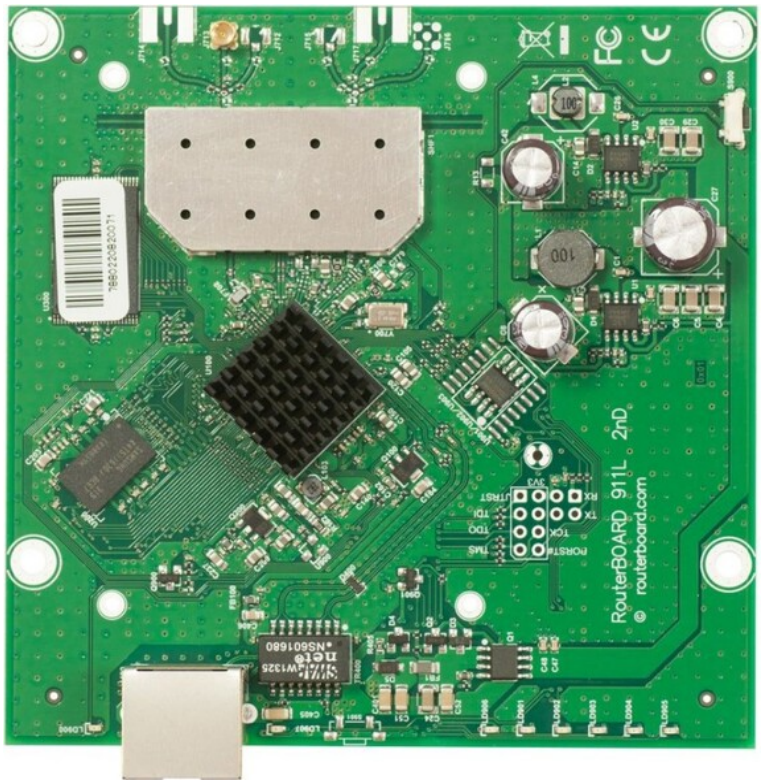
Picture 101

911 SERIES ROUTERBOARDS

911 Lite 2 (RB911-2Hn)

911 Lite 5 (RB911-5Hn)

911 Lite 5 dual (RB911-5HnD)



Picture 102

Instructions for checking overvoltage

Checking Schottky diode

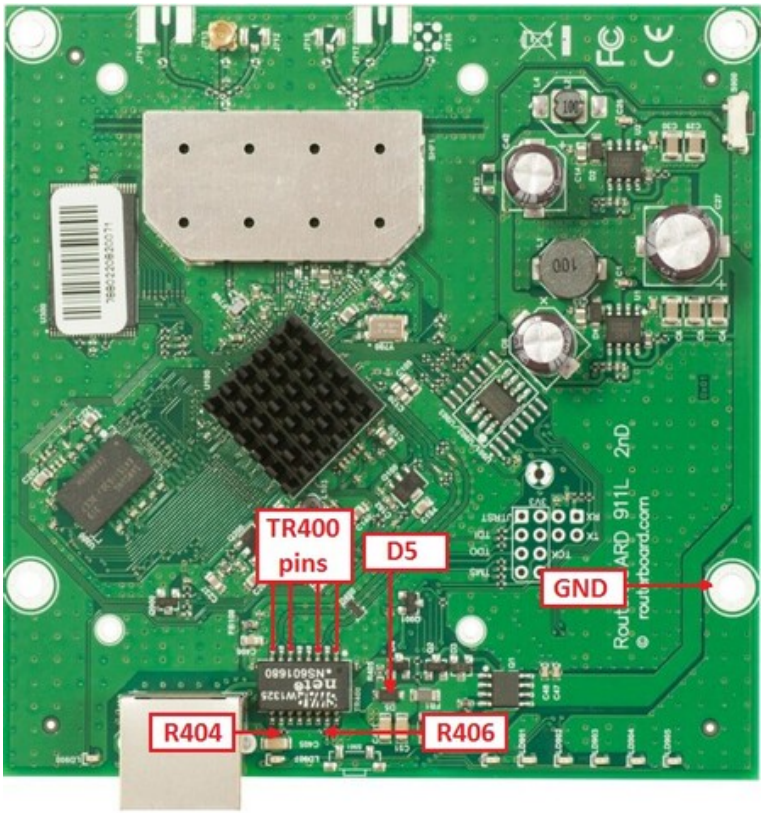
Check Schottky diode D5. Location of diode on the board you can see in the picture 103. Schottky diode quality measurement method is described on page 4.

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 103. Voltage drop value should be in the range from 0,32V to 0,38V. Voltage drop measurement method is described on page 7.

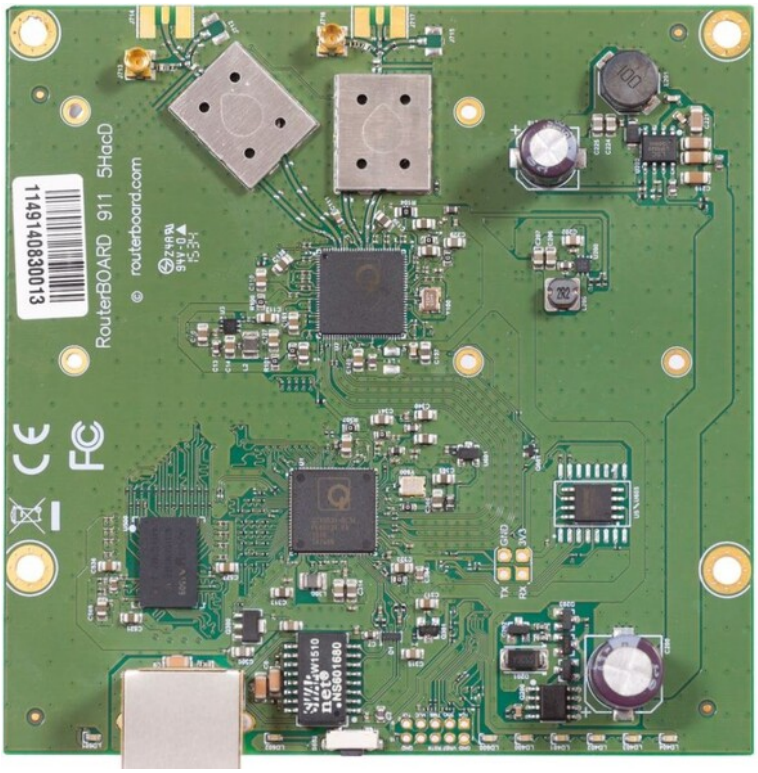
Checking 75 Ohm termination resistors resistance

Check resistors R404, R406 resistance value. It should be 75 Ohm +/- 1%. Location of resistors on the board you can see in the picture 103.



Picture 103

911 Lite 5 ac (RB911-5HacD



Picture 104

Instructions for checking overvoltage

Checking Schottky diode

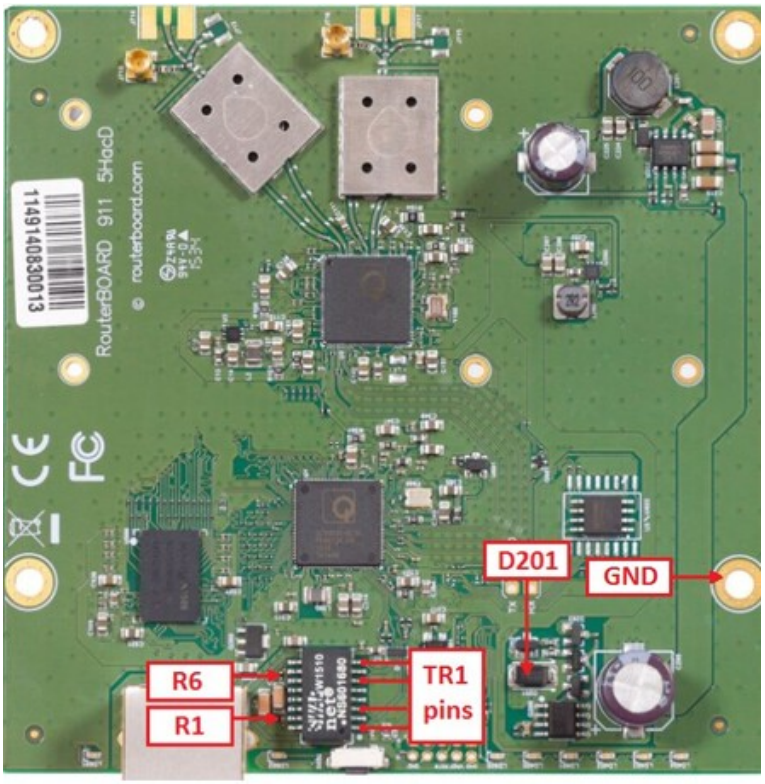
Check Schottky diode D201. Location of diode on the board you can see in the picture 105. Schottky diode quality measurement method is described on page 4.

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 105. 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

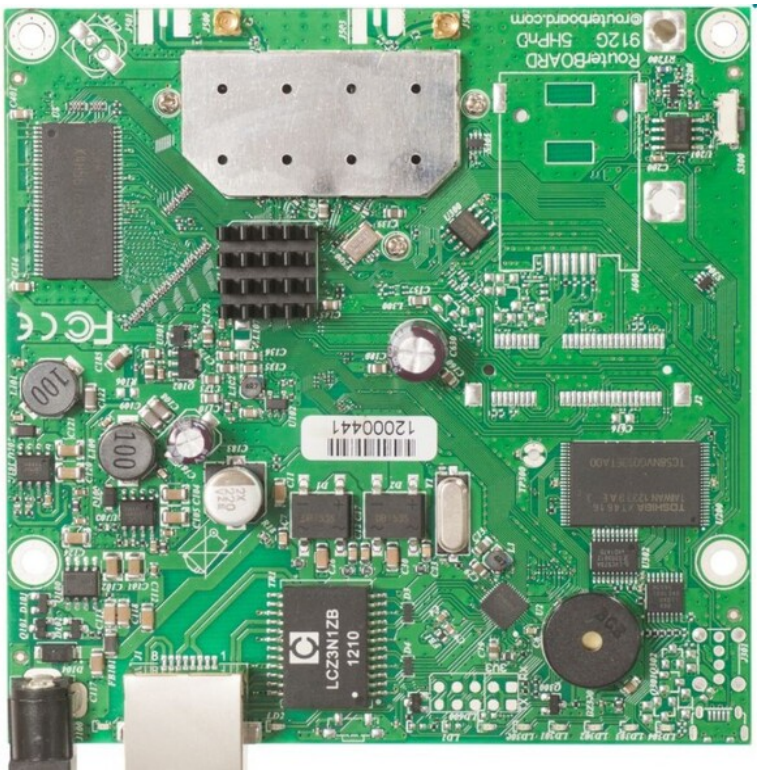
Check resistors R1, R6 resistance value. It should be 75 Ohm +/- 1%. Location of resistors on the board you can see in the picture 105.



Picture 105

RB911G-2HPnD

RB911G-5HPnD



Picture 106

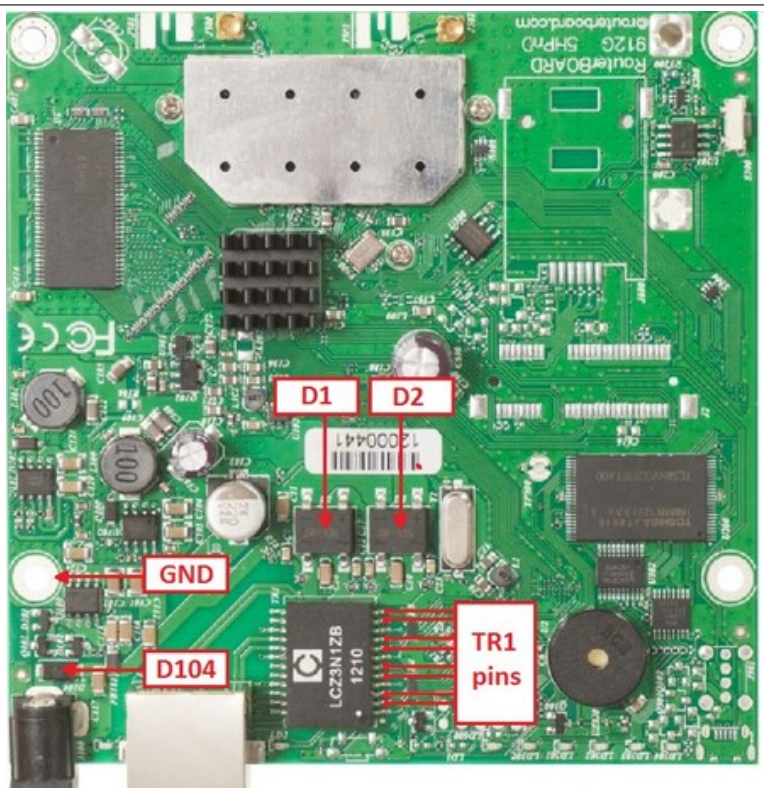
Instructions for checking overvoltage

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 107. Schottky diode quality measurement method is described on page 4. Diodes quality measurement method is described on page 5.

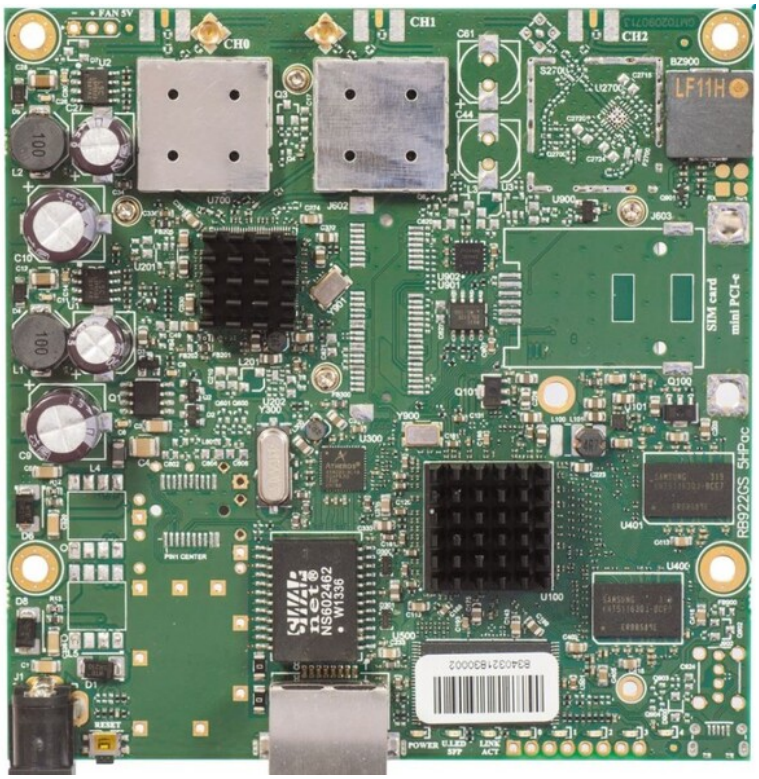
Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR1 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 107. Voltage drop value should be in the range from 0,44V to 0,48V. Voltage drop measurement method is described on page 7.



Picture 107

RB911G-5HPacD



Picture 108

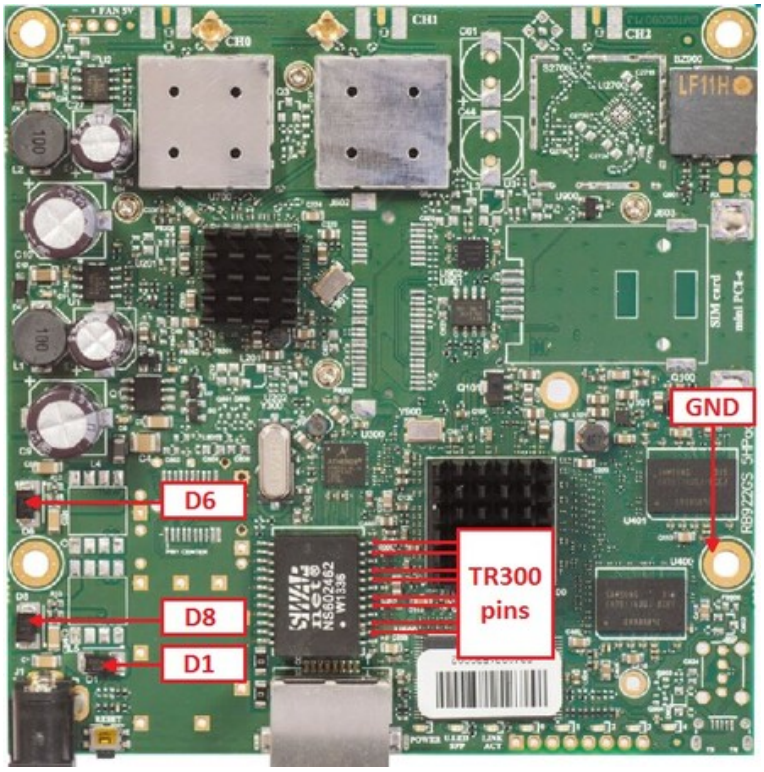
Instructions for checking overvoltage

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

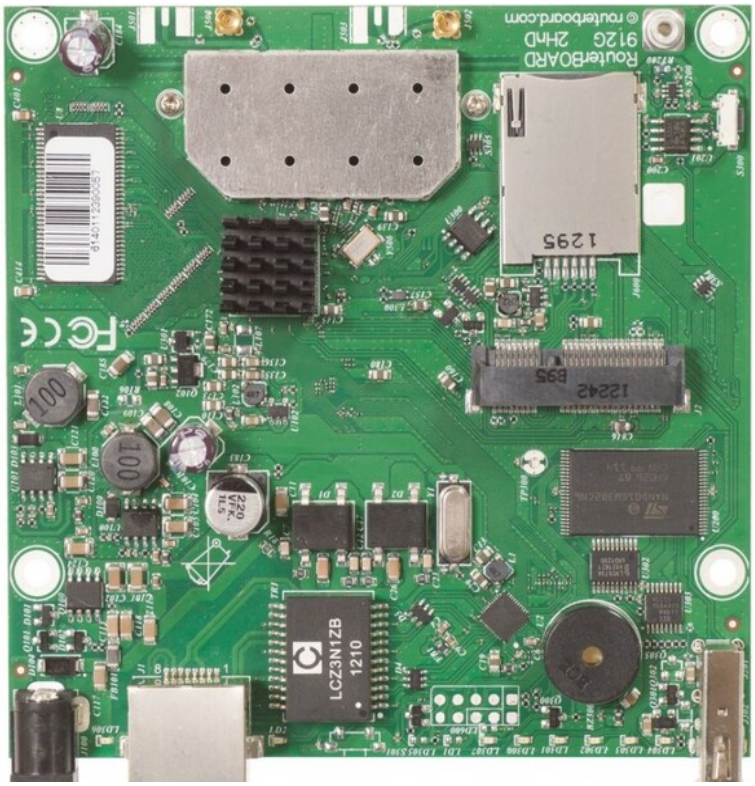


Picture 109

912 SERIES ROUTERBOARDS

RB912UAG-2HPnD

RB912UAG-5HPnD



Picture 110

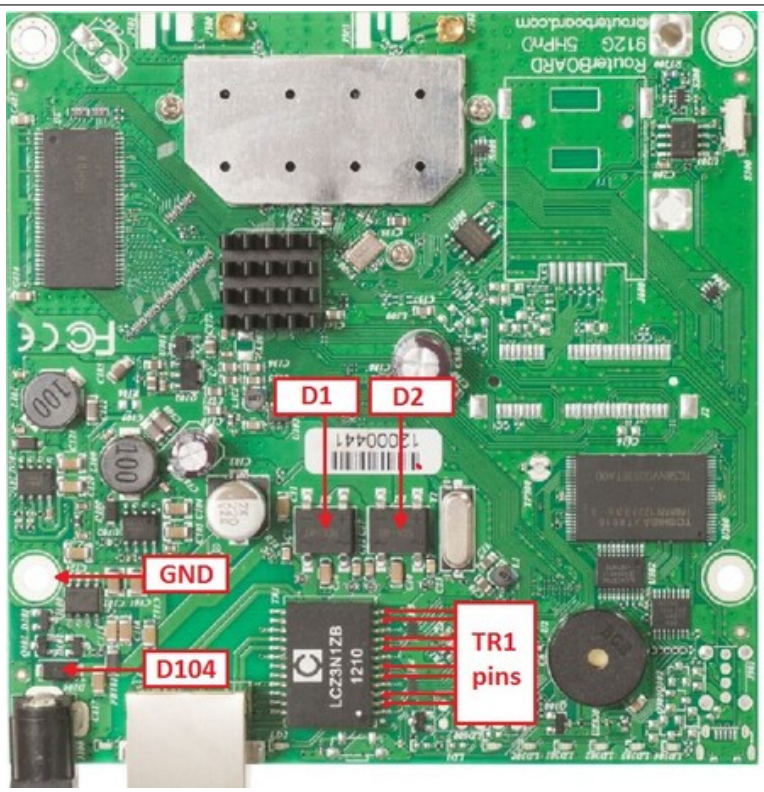
Instructions for checking overvoltage

Checking Schottky diodes

Check Schottky diode D104 and diodes bridges D1, D2. Location of diodes on the board you can see in the picture 111. 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

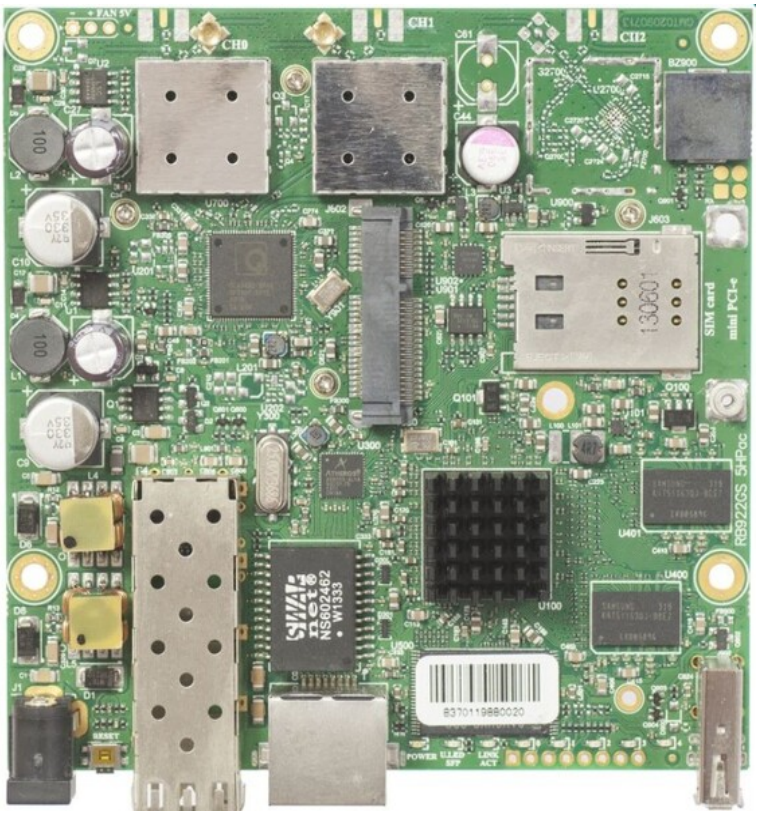
Check voltage drop value between TR1 and Ground. Test points on the transformer pins are marked with red dots, see picture 111. Voltage drop value should be in the range from 0,44V to 0,48V. Voltage drop measurement method is described on page 7.



Picture 111

922 SERIES ROUTERBOARDS

RB922UAGS-5HPacD



Picture 112

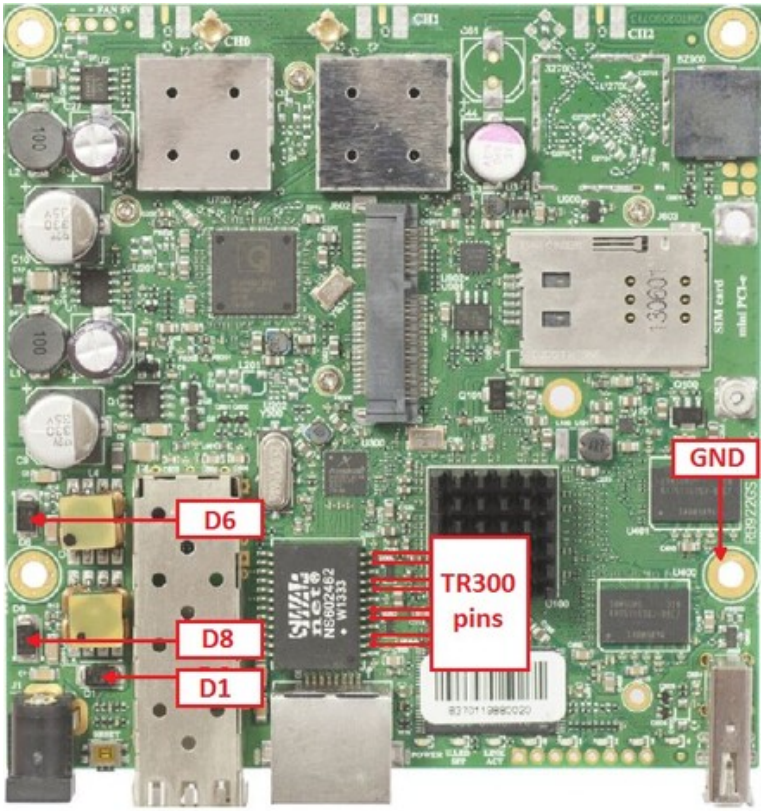
Instructions for checking overvoltage

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



Picture 113

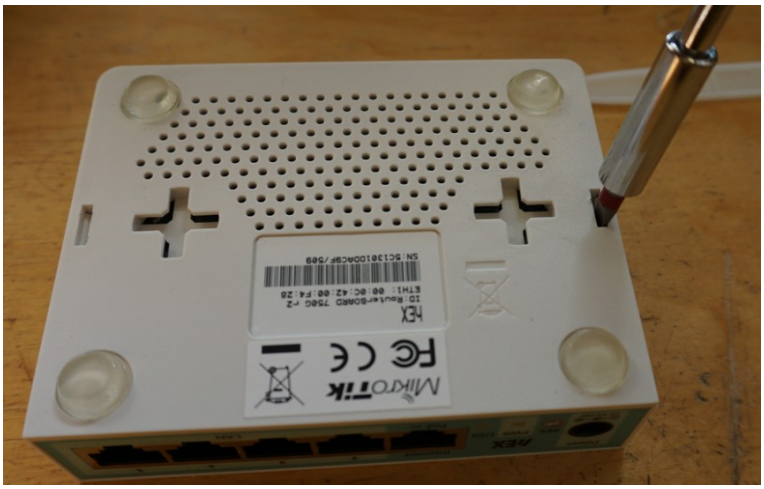
950 SERIES ROUTERBOARDS

RB951-2Hn

Picture 114

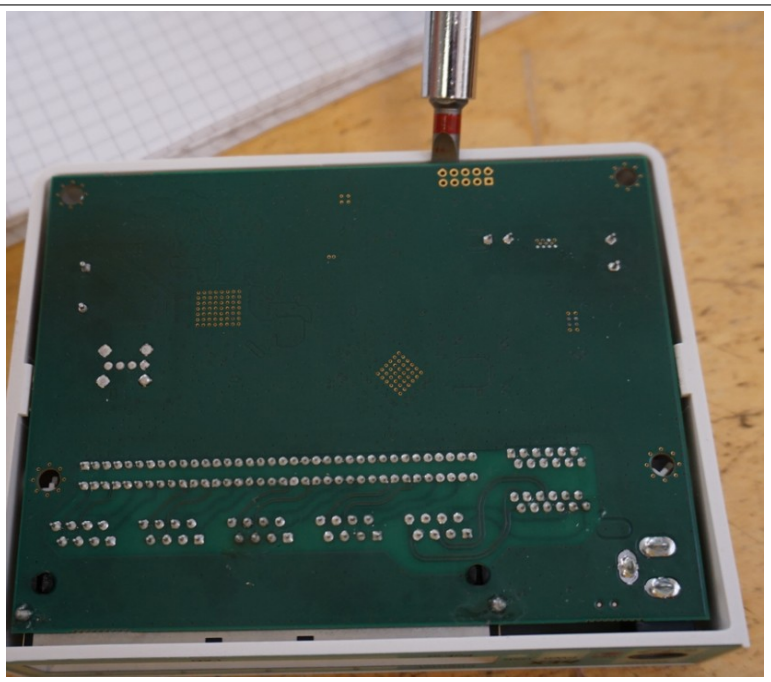
Disassembling information

Step 1: Take off the cover as shown in the picture 115.



Picture 115

Step 2: Take out the board as shown in the picture 116.



Picture 116

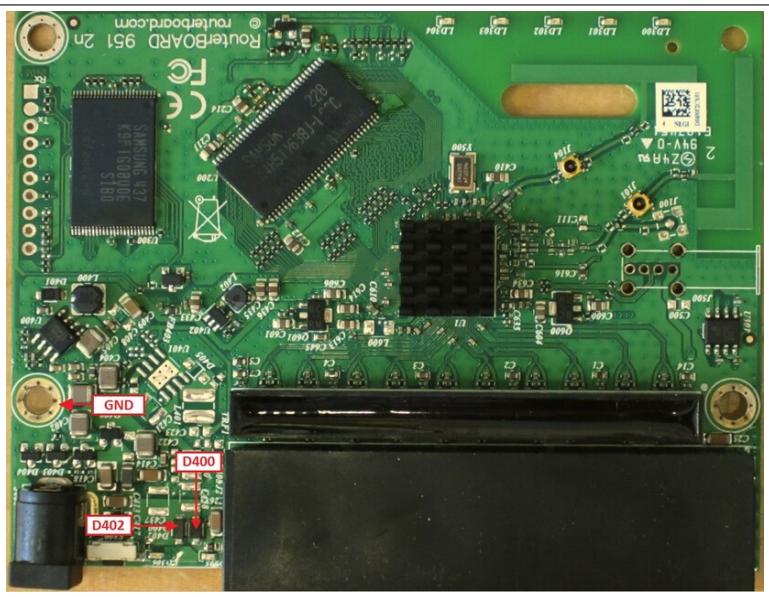
Instructions for checking overvoltage

Checking Schottky diodes

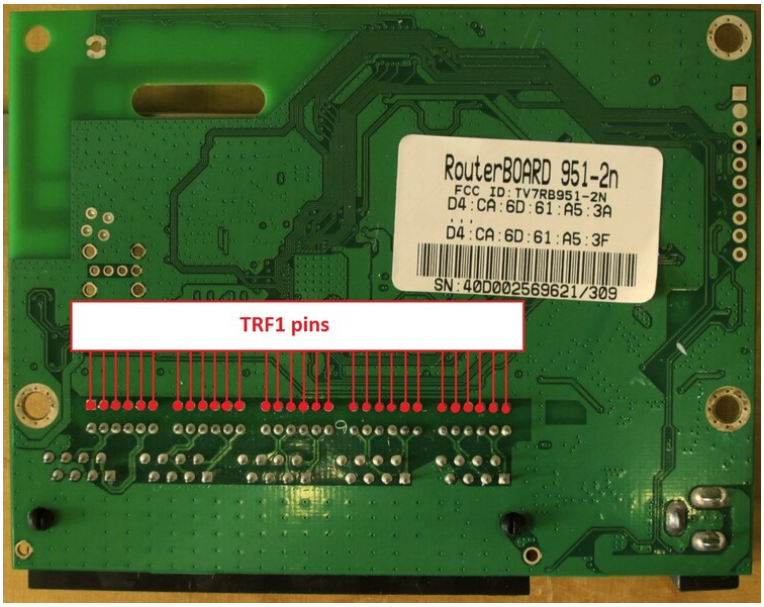
Check Schottky diodes D400, D402. Location of diodes on the board you can see in the picture 117. Schottky diode quality measurement method is described on page 4.

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 118. Voltage drop value should be in the range from 0,32V to 0,38V. Voltage drop measurement method is described on page 7.



Picture 117



Picture 118

RB951G-2HnD

Picture 119

Disassembling information

Disassembly method of the board is the same as the RB260GSP board. Disassembly method is described on page 45.

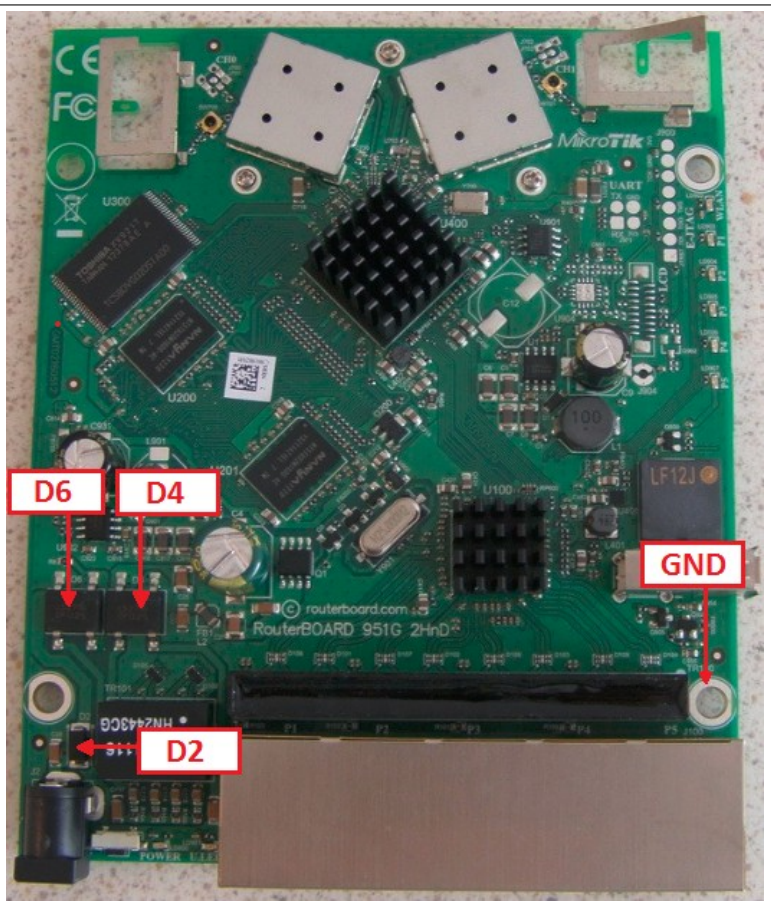
Instructions for checking overvoltage

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 120. 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 121. 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 120


GND
RB951G-2HnD
FCC ID:TV7RB951G-2HND
6C:3B:6B:29:C4:C4
6C:3B:6B:29:C4:C9
SN:642E06489648/621
RouterBOARD 951G 2HnD
routerboard.com
26%
TR100 pins
TR101 pins
MikroTik

Picture 121

RB951Ui-2HnD

Picture 122

Disassembling information

Disassembly method of the board is the same as the RB260GSP board. Disassembly method is described on page 45.

Instructions for checking overvoltage

Checking Schottky diodes

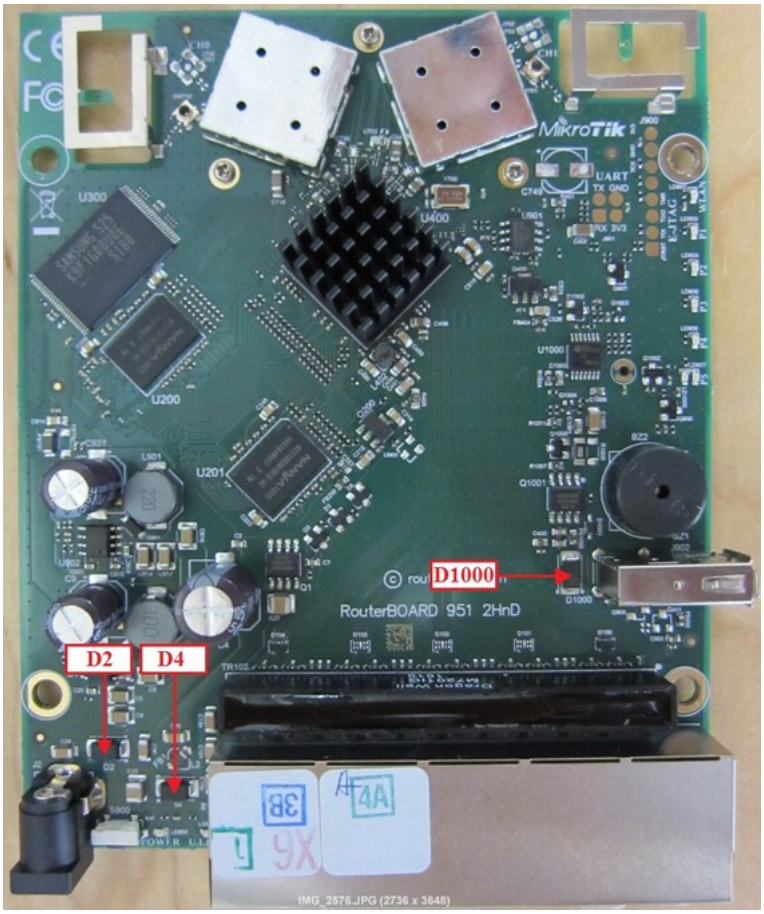
Check Schottky diodes D2, D4, D1000. Location of diodes on the board you can see in the picture 123. Schottky diode quality measurement method is described on page 4.

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 124. 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 123

Picture 124

RB953GS-5HnT

Picture 125

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 126. 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 127. 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

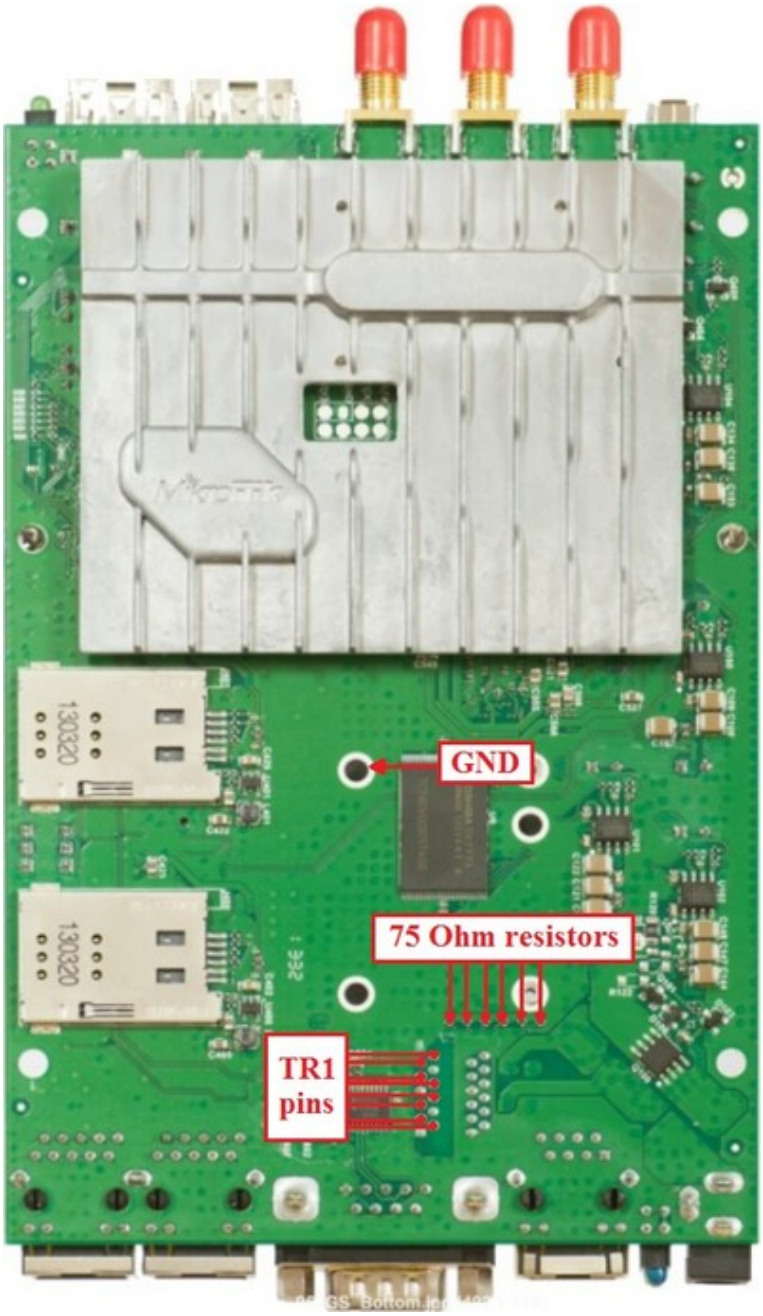
Check termination resistors resistance in J6, J7 connectors. Resistance value between Rx and Tx line must be 150 Ohm +/- 4%. Measurement method is described on page 8.

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 127.


D104
D102
D101
PoE
RouterBOARD
953GS-5HPnT
© routerboard.com
1321
1321

Picture 126



Picture 127

CLOUD CORE ROUTER 1009 SERIES ROUTERBOARDS

CCR1009-7G-1C-PC

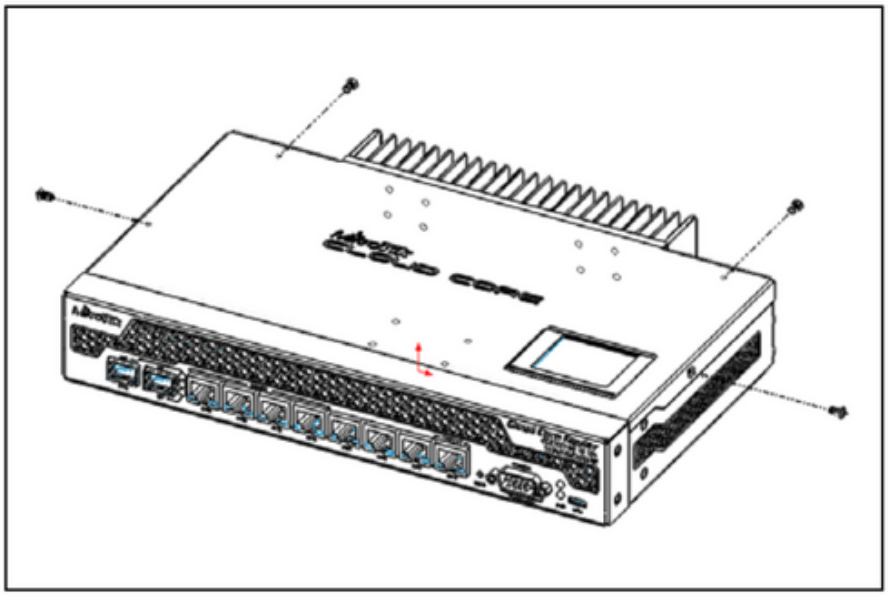
CCR1009-7G-1C-1S+

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

Picture 128

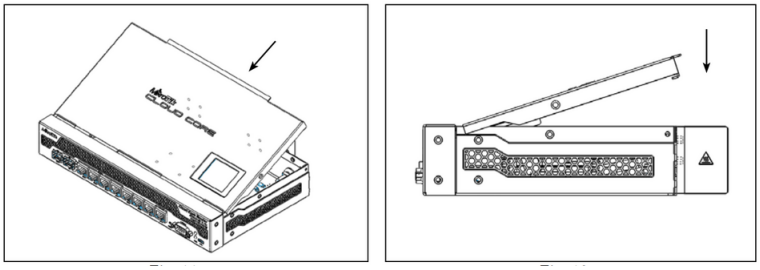
Disassembling information

Step 1: Unscrew 4 screws using PH2 screwdriver. Location of screws you can see in the picture 129.



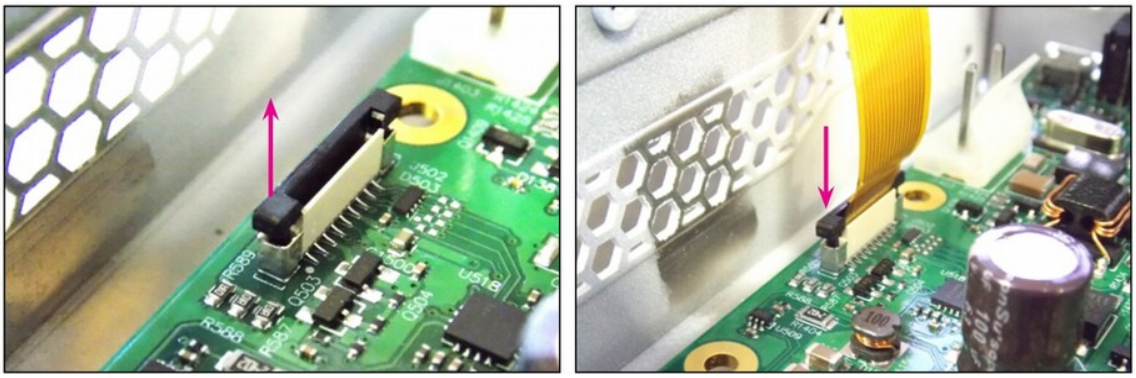
Picture 129

Step 2: Carefully take off the cover as showed in the picture 130. Do not damage the LCD flex cable.



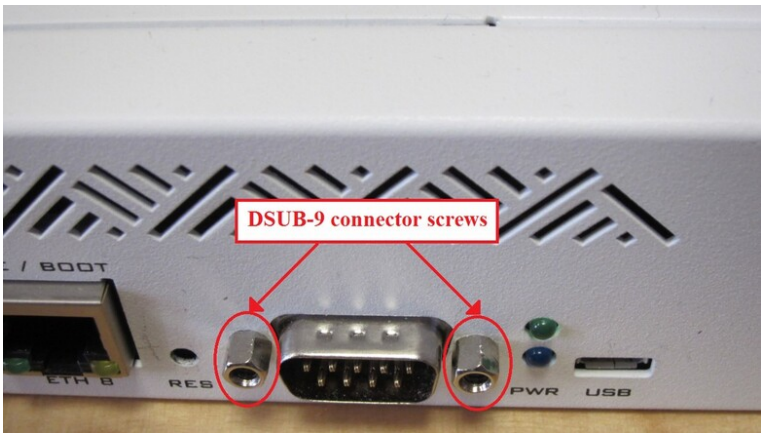
Picture 130

Step 3: Gently lift the latch vertically upward and take out LCD flex cable from FPC connector as showed in the picture 131. Do not damage the FPC connector locking drawer.



Picture 131

Step 4: Detach a male DSUB-9 connector from board case unscrewed 2 screws. Location of the screws you can see in the picture 132.



Picture 132

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 133. Schottky diode quality measurement method is described on page 4.

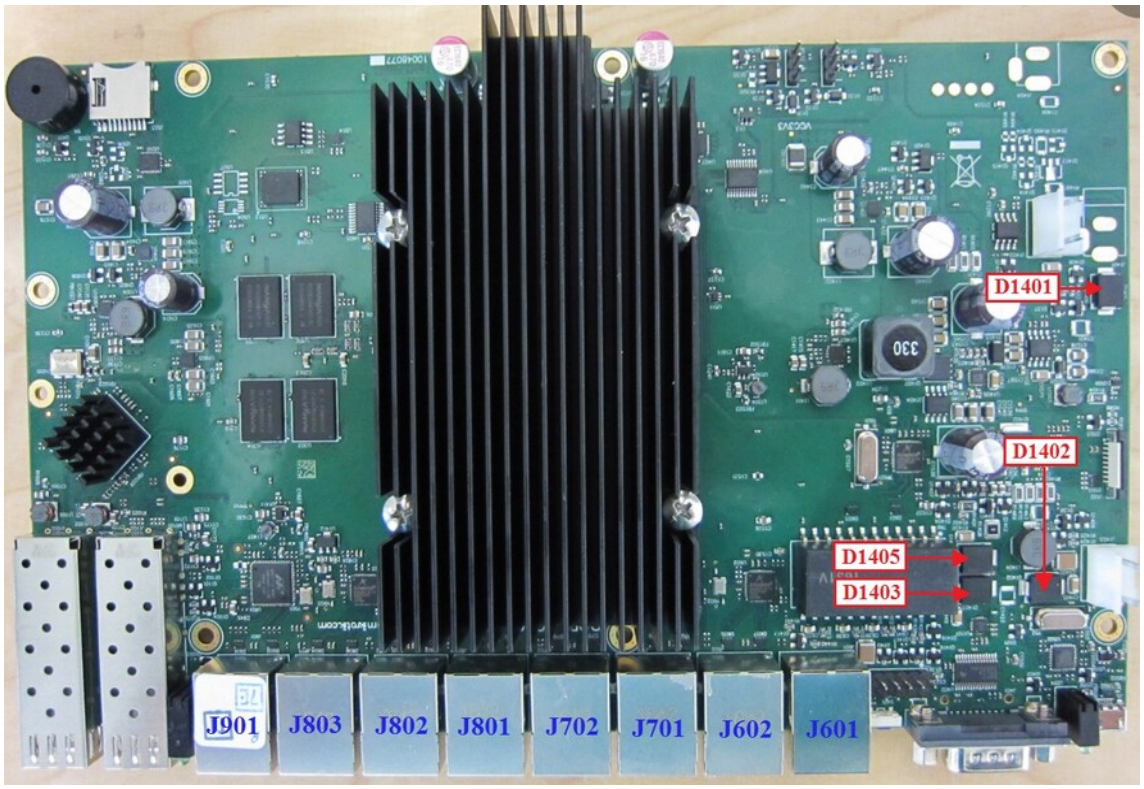
Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR6 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 134. Voltage drop value should be in the range from 0,44V to 0,48V. Voltage drop measurement method is described on page 7.

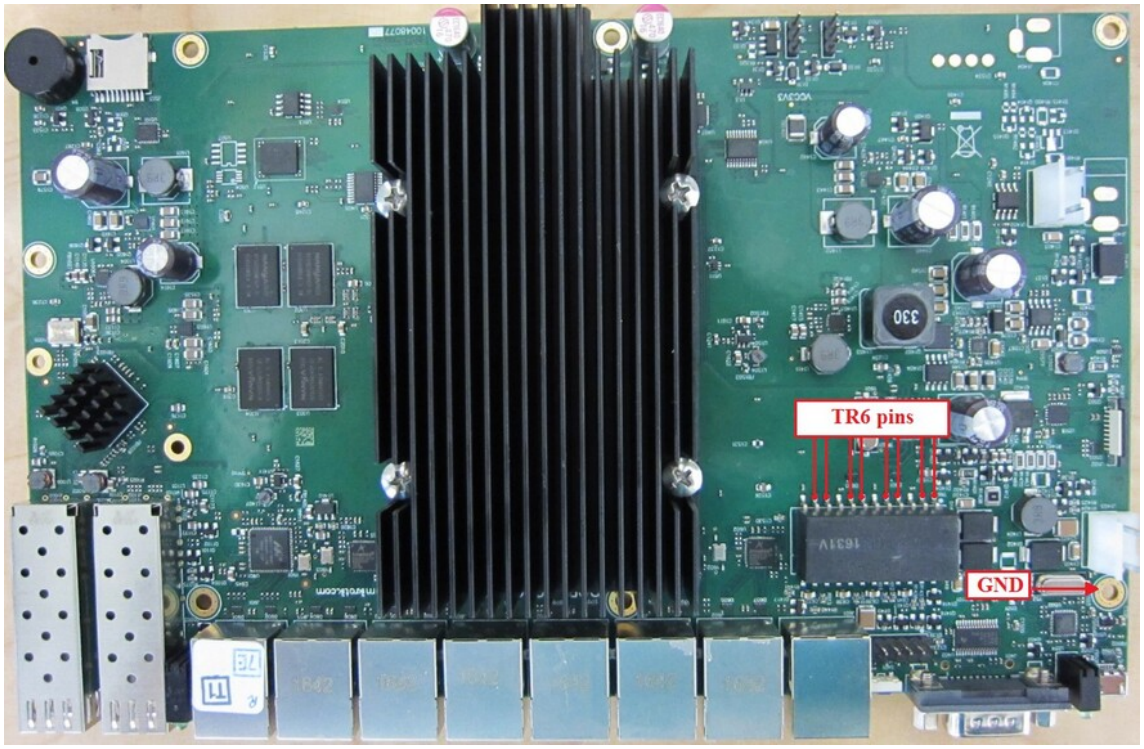
Check voltage drop value between RJ-45 connectors J602, J701, J702, J801, J802, J803 and ground. Test points are shown in picture 135. Voltage drop value should be in the range from 0,36V to 0,40V. Voltage drop measurement method is described on page 7.

Checking termination resistors resistance in RJ-45 connector

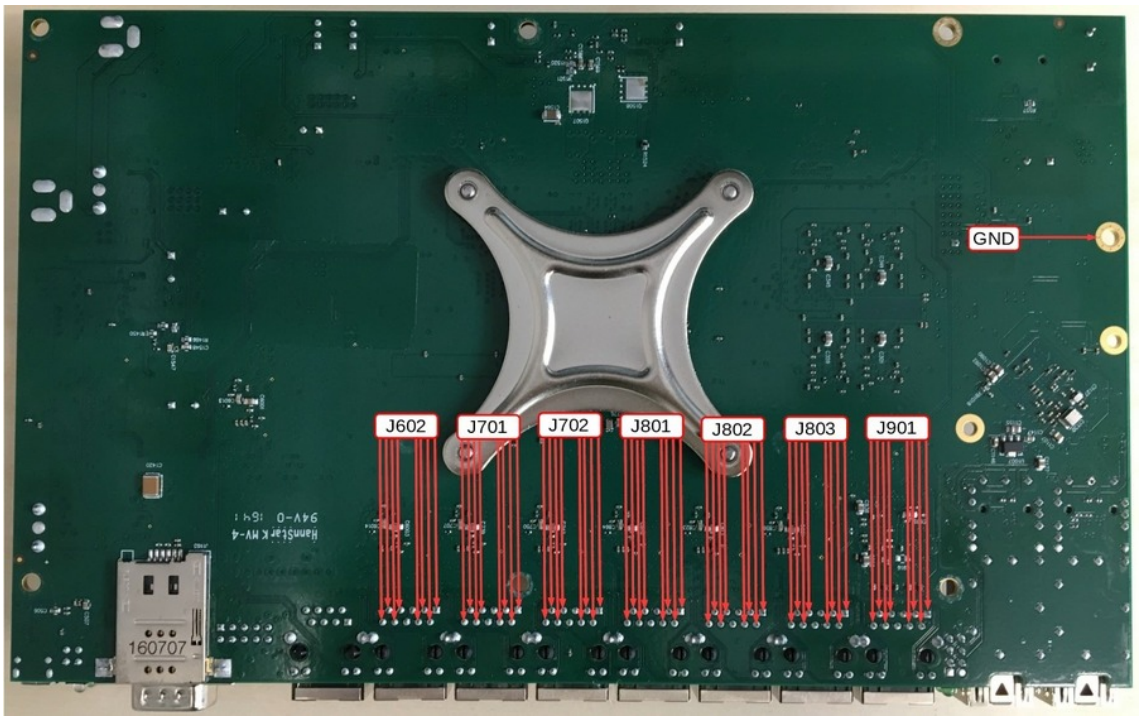
Check termination resistors resistance in J602, J701, J702, J801-J803, J901 connectors. Resistance value between Rx and Tx line must be 150 Ohm +/-4%. Measurement method is described on page 8.



Picture 133



Picture 134



Picture 135

CCR1009-8G-1S-1S+

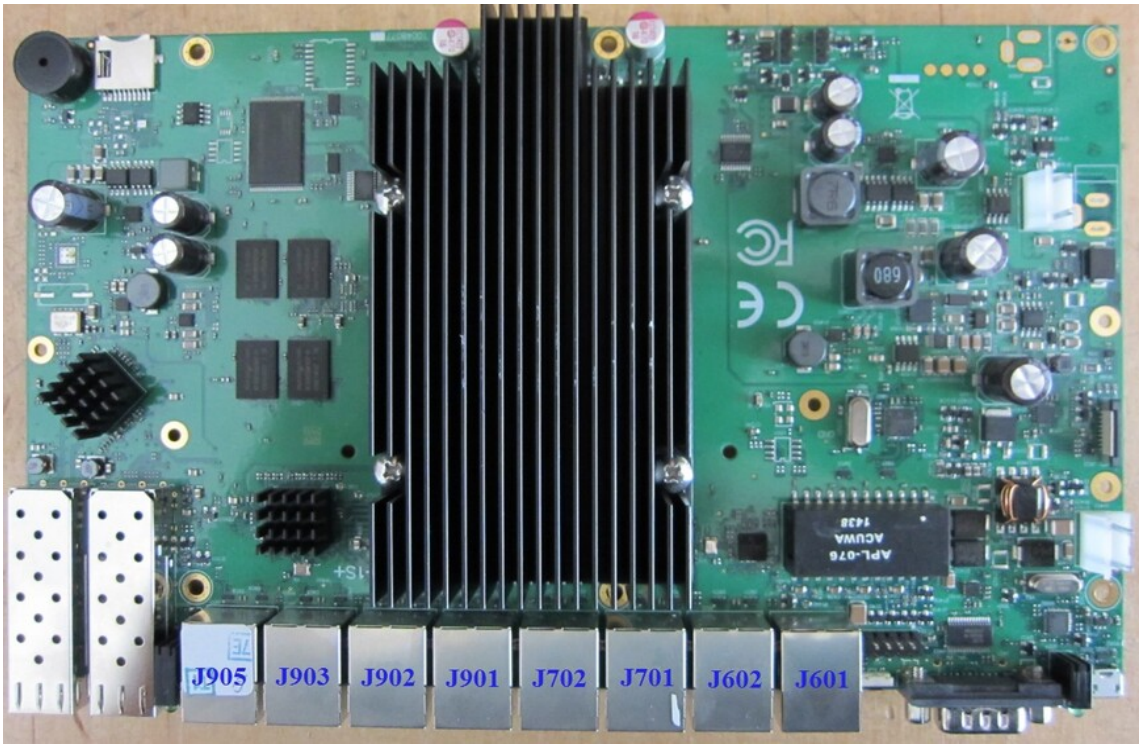
Picture 136

Disassembling information

Disassembly method of the board is the same as the CCR1009-7G board. Disassembly method is described on page 124.

Instructions for checking overvoltage

Over-voltage testing procedure and the layout of the components (with exception of Ethernet ports reference numbers, see picture 137) on the board is the same as for CCR1009-7G boards, see on page 126.



Picture 137

CCR1009-8G-1S

Picture 138

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 139.

Picture 139

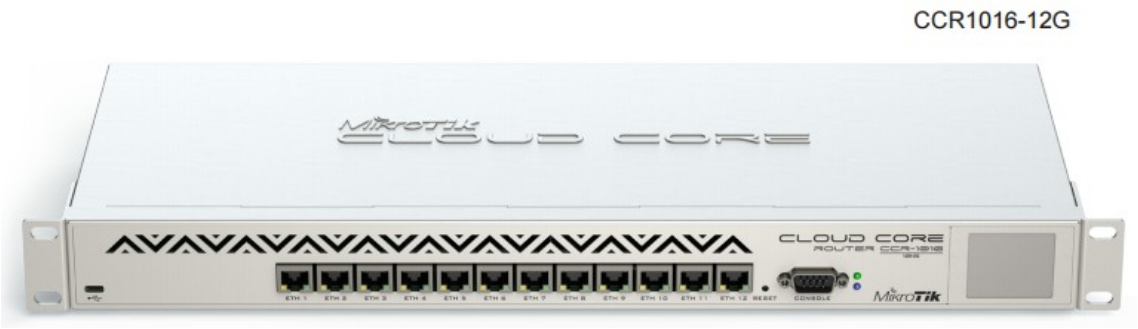
Step 2: Take off the cover.

Instructions for checking overvoltage

Over-voltage testing procedure and the layout of the components (with exception of Ethernet ports reference numbers, see picture 137) on the board is the same as for CCR1009-7G boards, see on page 126.

CLOUD CORE ROUTER 1016 SERIES ROUTERBOARDS

CCR1016-12G



Picture 140

Disassembling information

Disassembly method of the board is the same as the CCR1009-8G-1S board. Disassembly method is described on page 129.

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 141.

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 141.

Voltage drop measurement method is described on page 6.

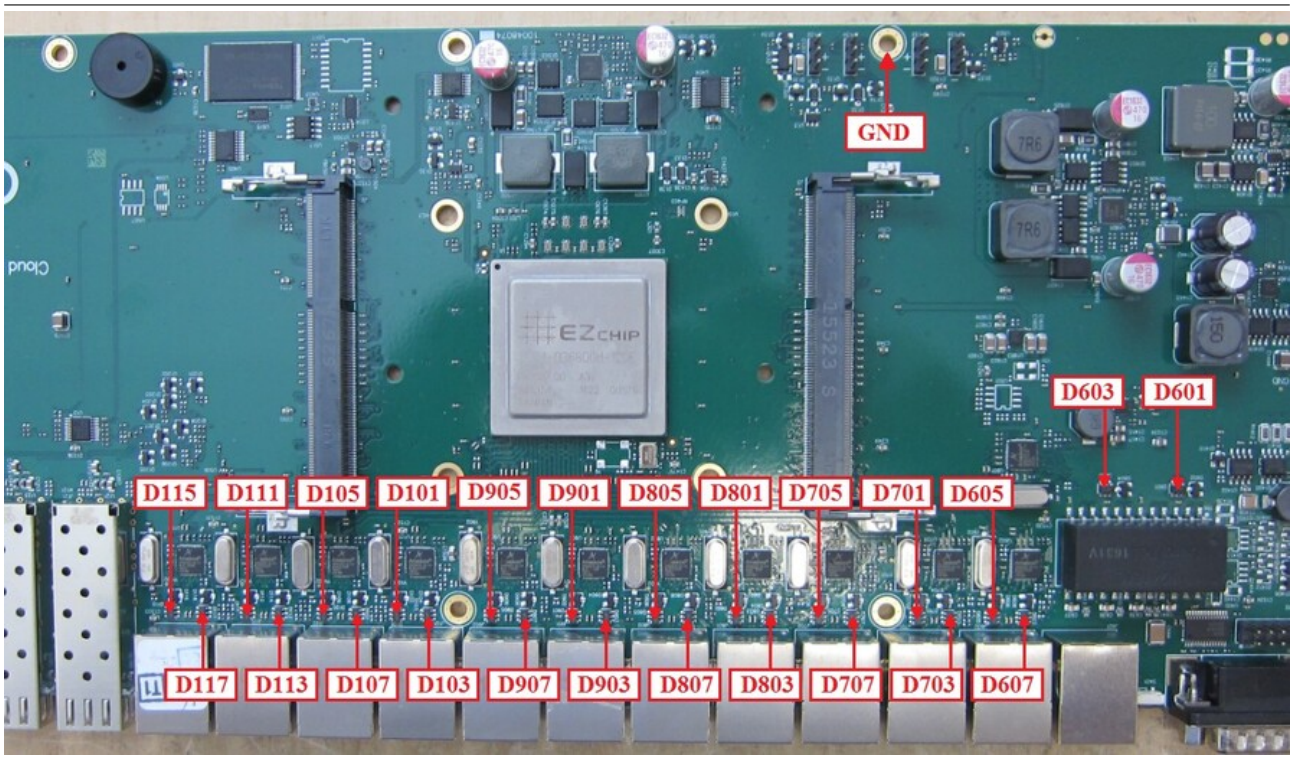
Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between Ethernet transformer TR6 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 142.

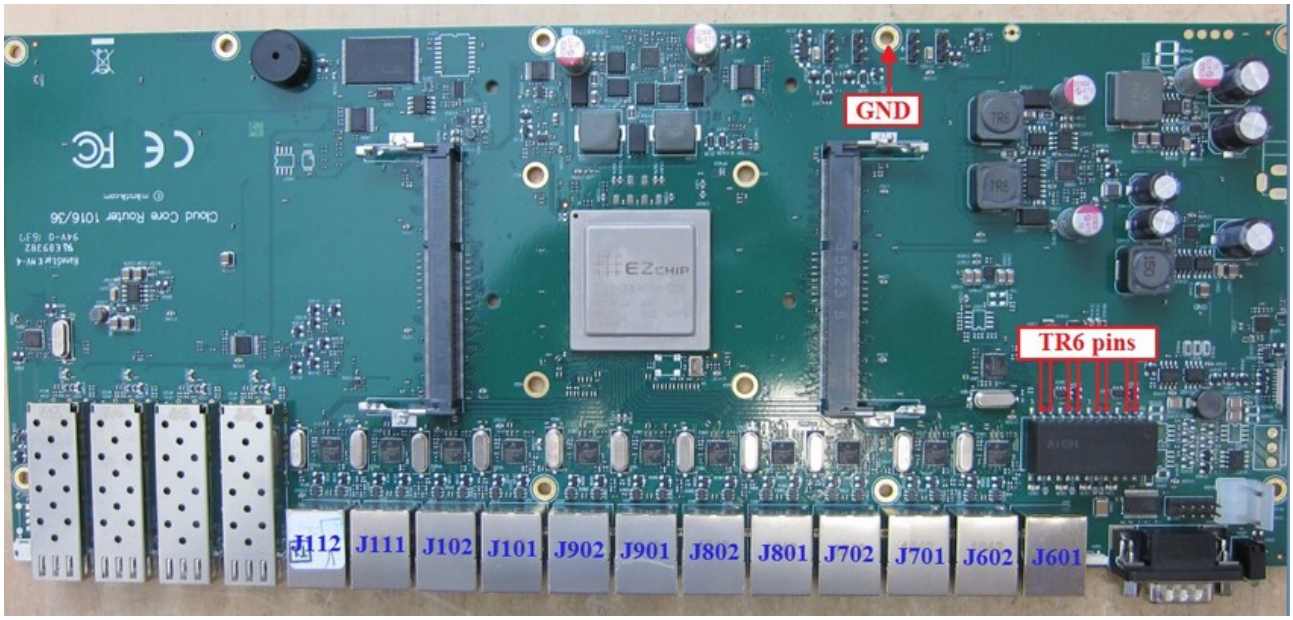
Voltage drop value should be in the range from 0,44V to 0,48V. Voltage drop measurement method is described on page 7.

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 141



Picture 142

CCR1016-12G rev2

Picture 143

Disassembling information

Disassembly method of the board is the same as the CCR1036-8G-2S+ rev2 board. Disassembly method is described on page 140.

Instructions for checking overvoltage

Checking voltage drop value between Ethernet transformer pins and Ground

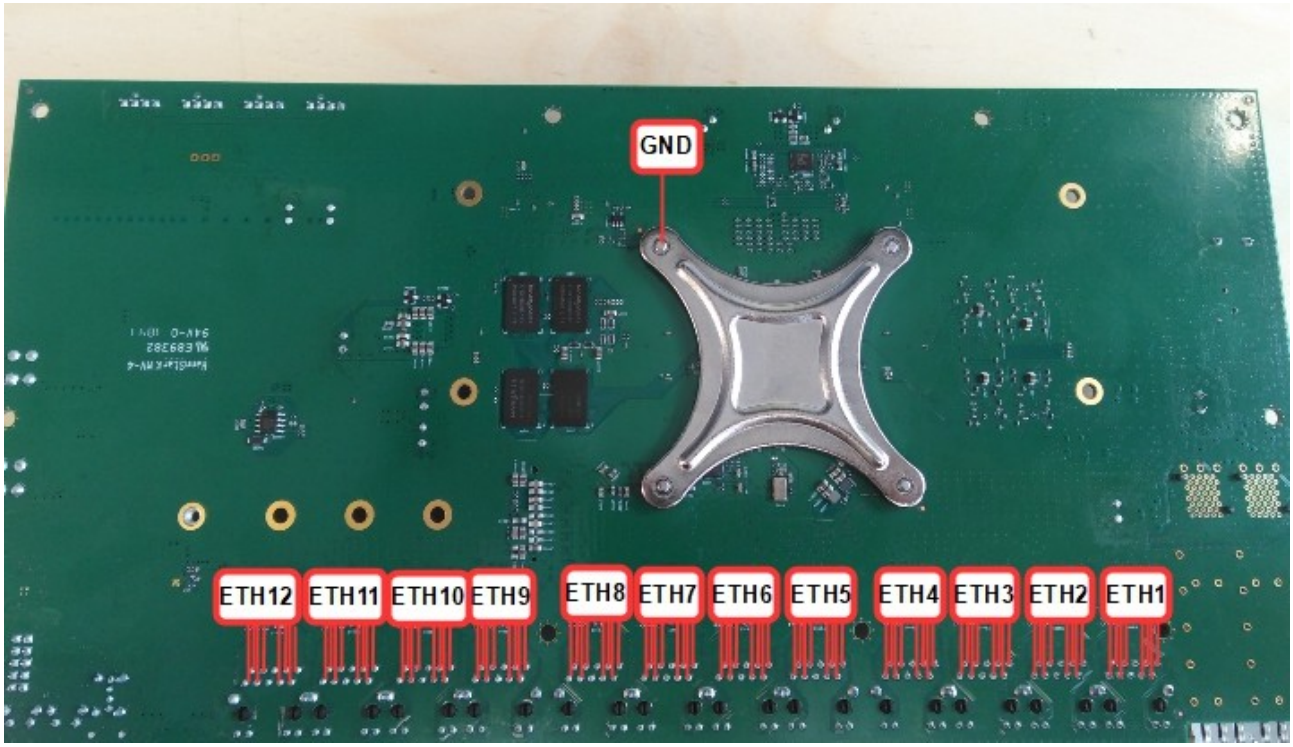
Check voltage drop value between Ethernet built in transformer pins and Ground. Test points on the RJ-45 pins are marked with red dots, see picture 144.

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

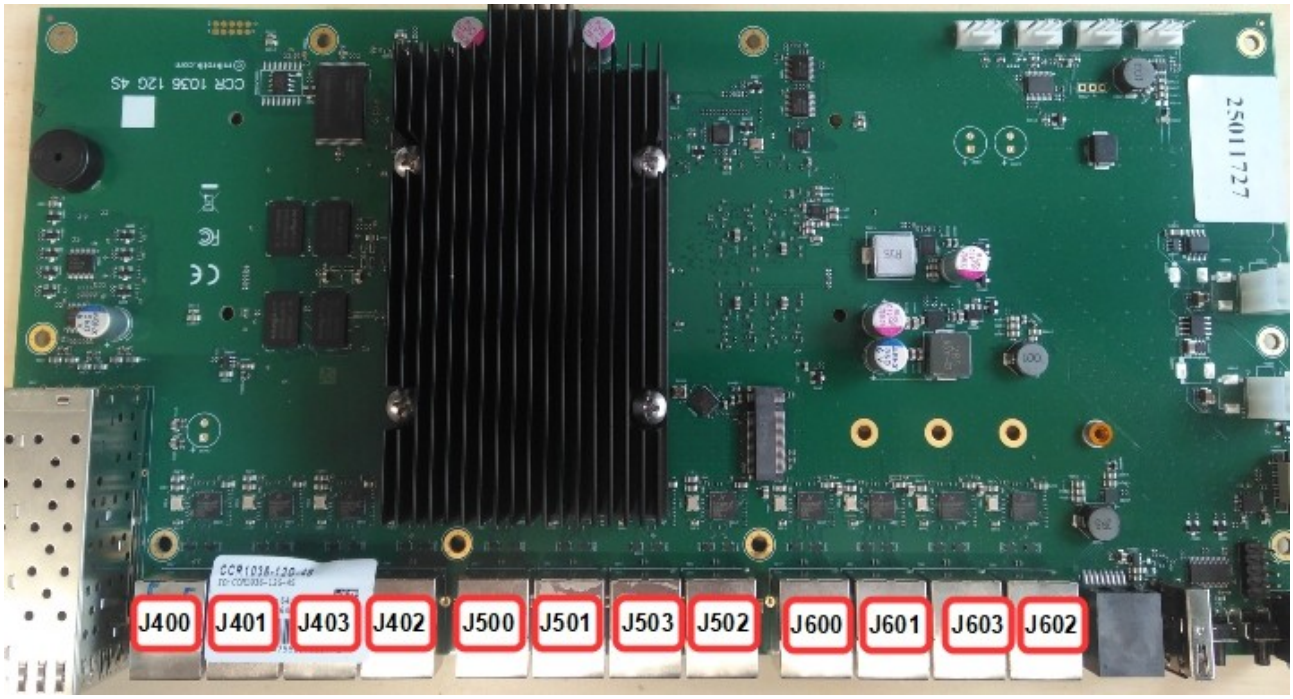
Checking termination resistors resistance in RJ-45 connector

Check termination resistors resistance in J400 - J602 connector. RJ-45 placement is shown in picture 145.

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



Picture 144



Picture 145

CCR1016-12S-1S+

CCR1016-12S-1S+ rev2

Picture 146

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 147

Disassembling information

Disassembly method of the board is the same as the CCR1009-8G-1S board. Disassembly method is described on page 129.

Instructions for checking overvoltage

Checking voltage drop value between Ethernet transformer pins and Ground

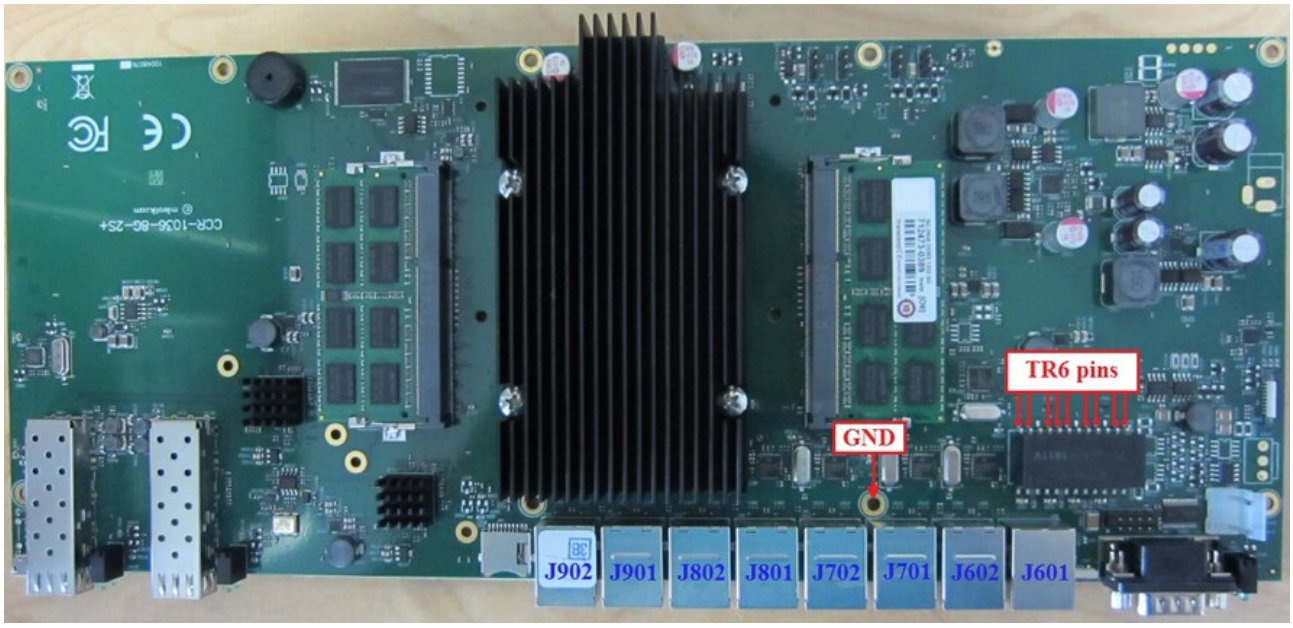
Check voltage drop value between Ethernet transformer TR6 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 148.

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 148.

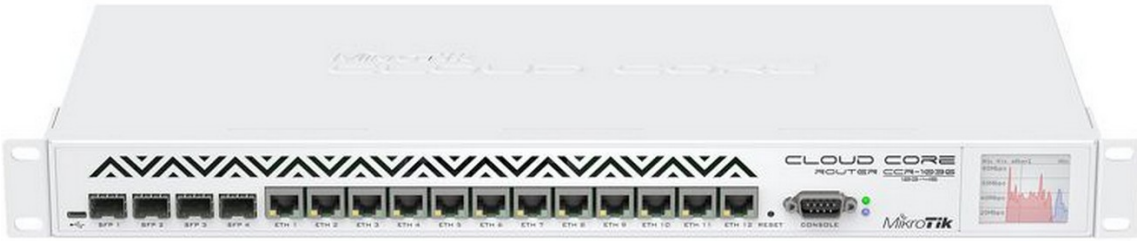
Resistance value between Rx and Tx line must be 150 Ohm +/-4%. Measurement method is described on page 8.



Picture 148

CCR1036-12G-4S

CCR1036-12G-4S-EM



Picture 149

Disassembling information

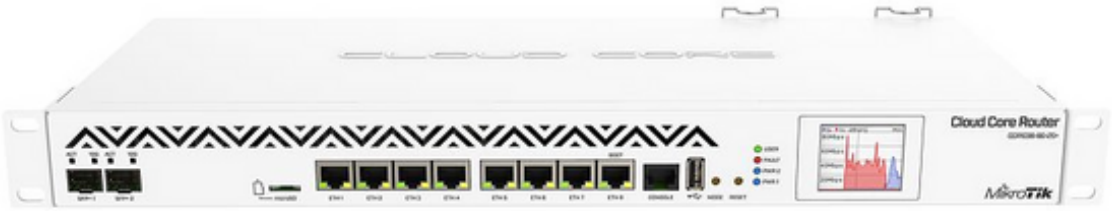
Disassembly method of the board is the same as the CCR1016-12G board. Disassembly method is described on page 131.

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 131.

CCR1036-8G-2S+ rev2

CCR1036-8G-2S+EM r2



Picture 150

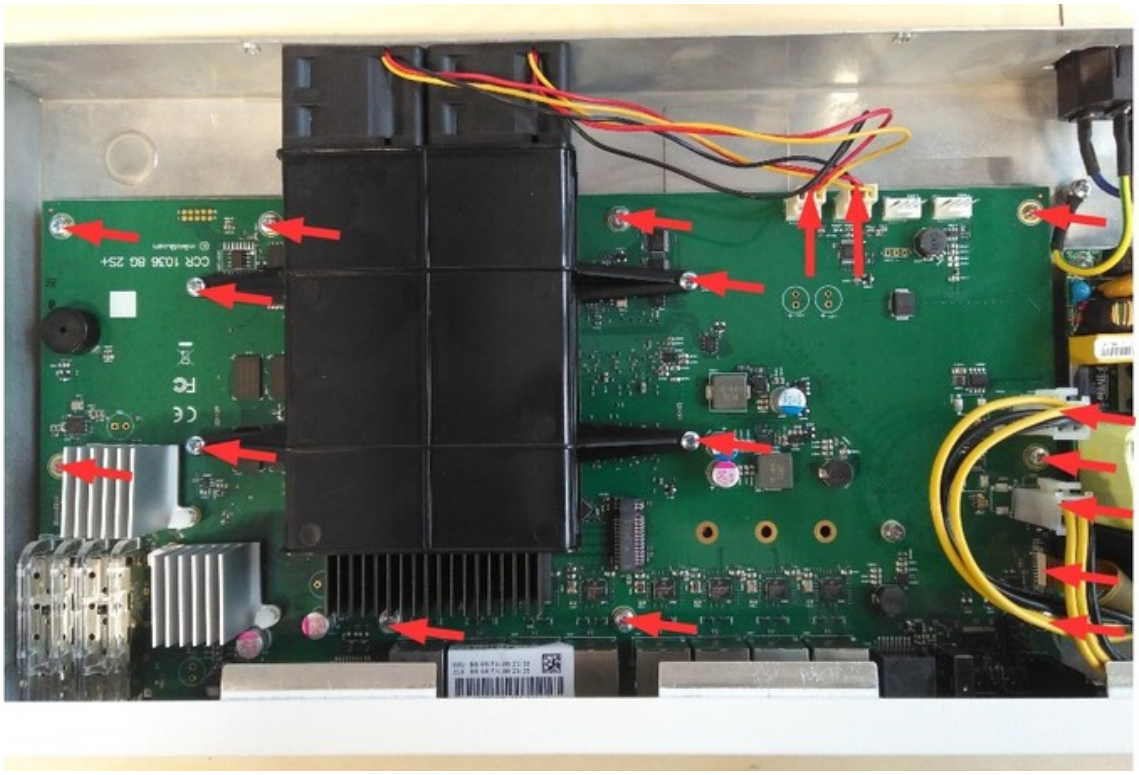
Disassembling information

Step 1: Unscrew 6 screws using PH2 screwdriver. Location of screws you can see in the picture 151.

Picture 151

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 152. 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 152

Instructions for checking overvoltage

Checking voltage drop value between Ethernet transformer pins and Ground

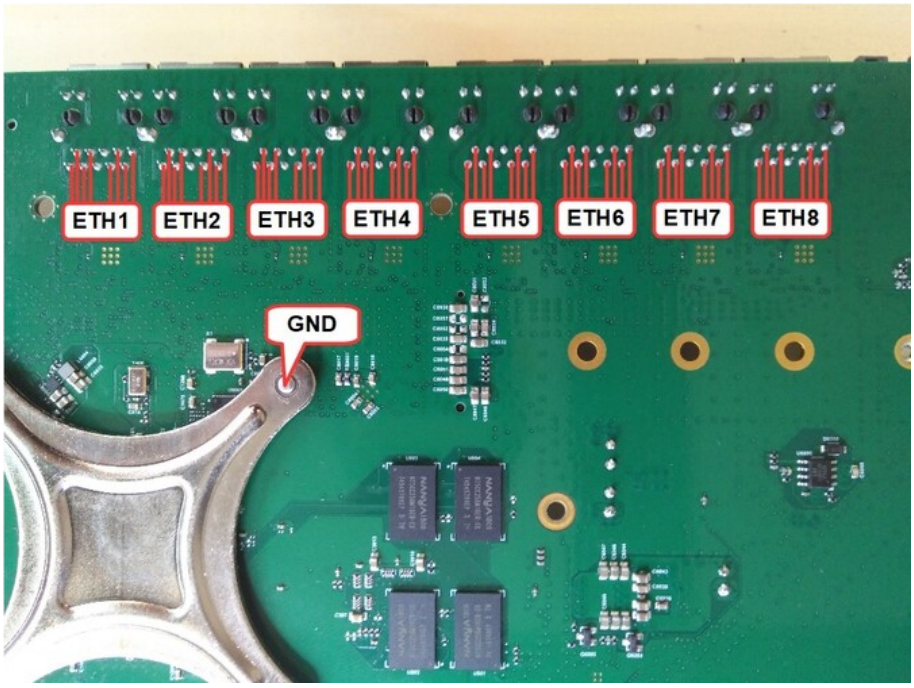
Check voltage drop value between Ethernet built in transformer pins and Ground. Test points on the RJ-45 pins are marked with red dots, see picture 153.

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

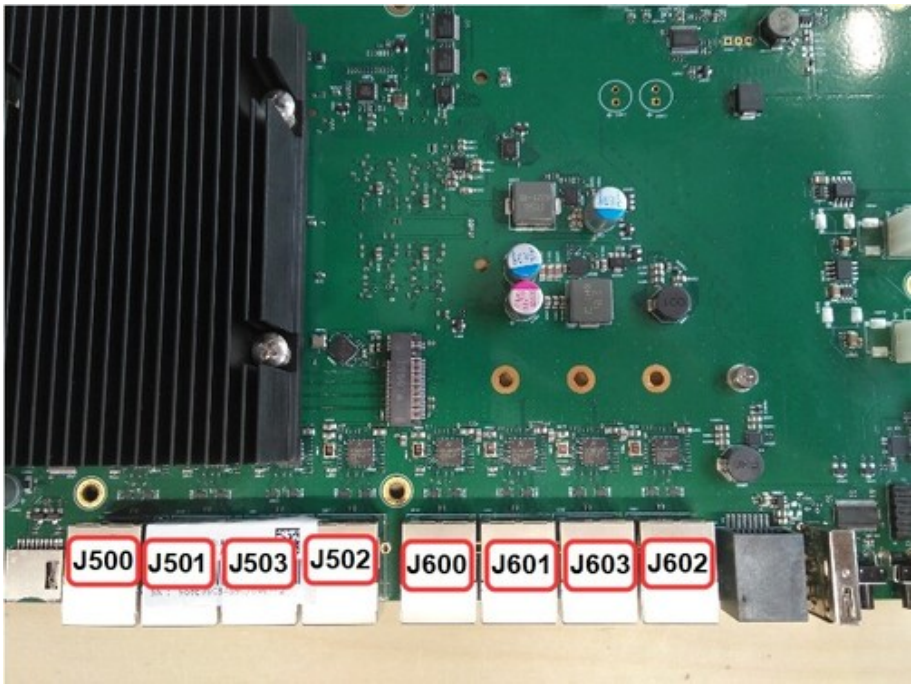
Checking termination resistors resistance in RJ-45 connector

Check termination resistors resistance in J500, J501, J502, J503, J600, J601, J602, J603 connector. RJ-45 placement is shown in picture 154.

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



Picture 153



Picture 154

CCR1036-12G-4S rev2

CCR1036-12G-4S-EM rev2

Picture 155

Disassembling information

Disassembly method of the board is the same as the CCR1036-8G-2S+ rev2 board. Disassembly method is described on page 140.

Instructions for checking overvoltage

Checking voltage drop value between Ethernet transformer pins and Ground

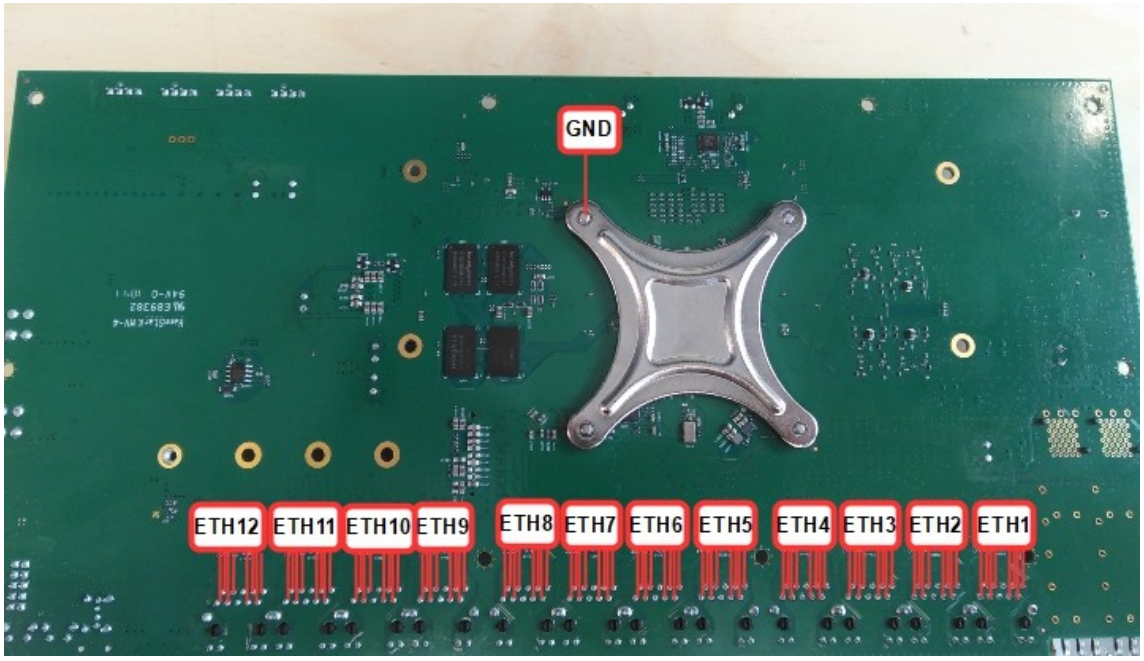
Check voltage drop value between Ethernet built in transformer pins and Ground. Test points on the RJ-45 pins are marked with red dots, see picture 156.

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

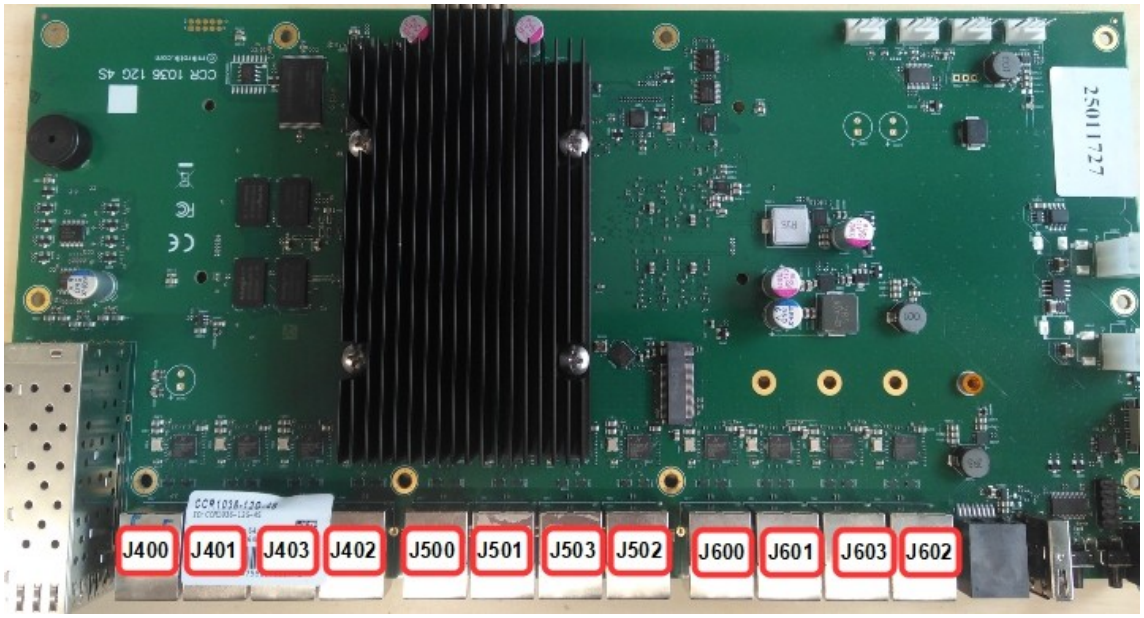
Checking termination resistors resistance in RJ-45 connector

Check termination resistors resistance in J400 - J602 connector. RJ-45 placement is shown in picture 157.

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



Picture 156



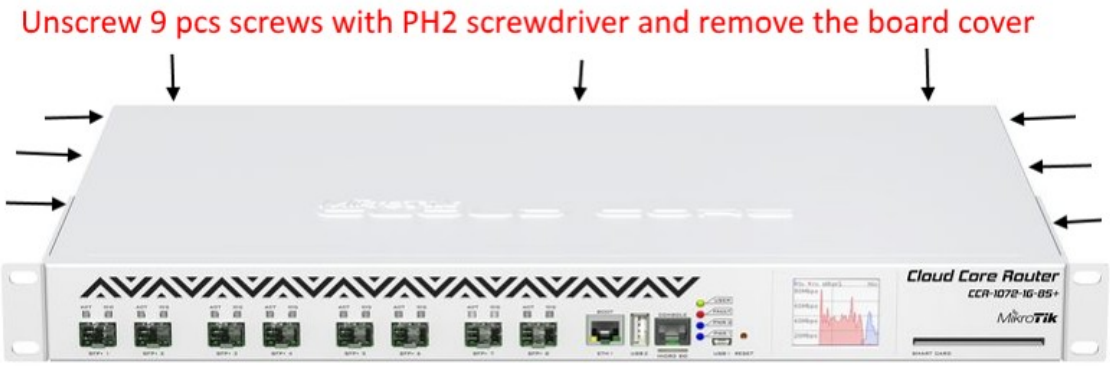
Picture 157

CLOUD CORE ROUTER 1072 SERIES ROUTERBOARDS

CCR1072-1G-8S+

Picture 158

Disassembling information



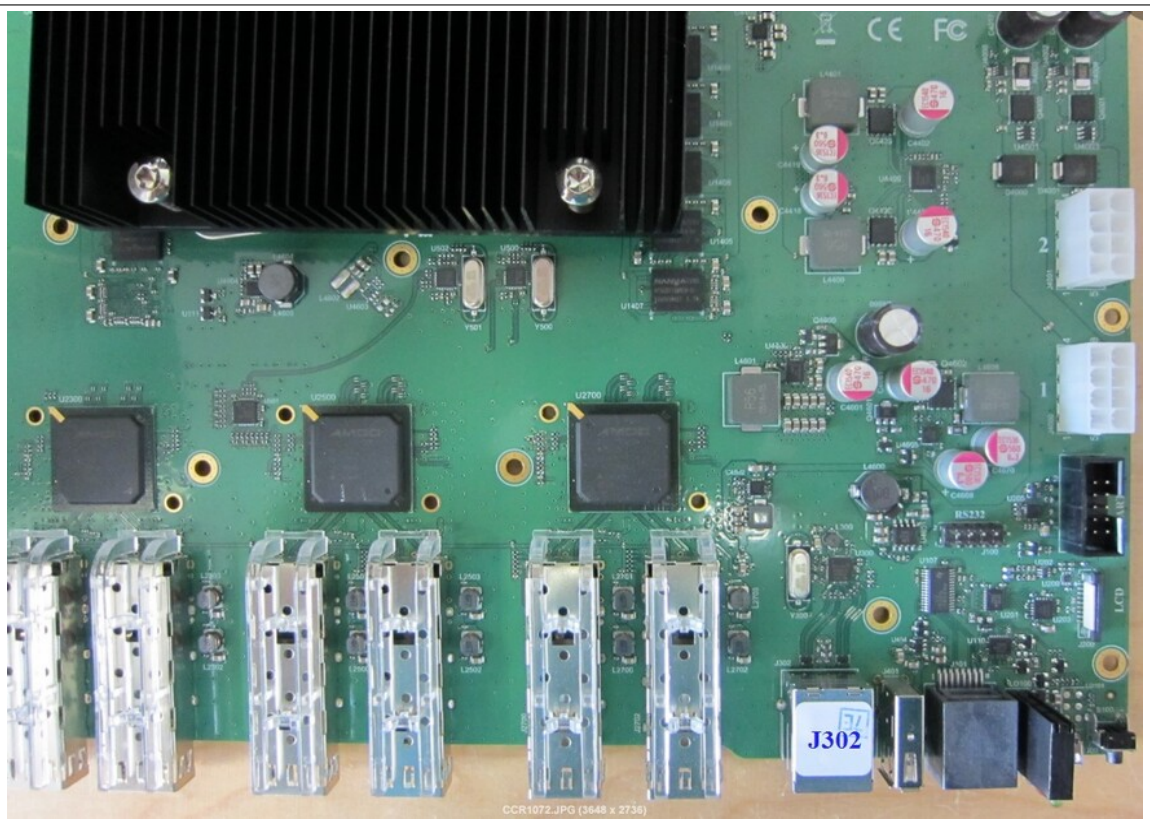
Picture 159

Instructions for checking overvoltage

Checking termination resistors resistance in RJ-45 connector

Check termination resistors resistance in J302 connector as shown in the picture 160.

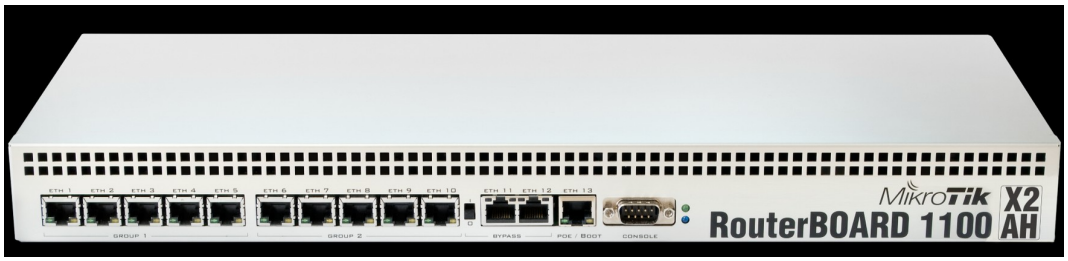
Resistance value between Rx and Tx line must be 150 Ohm +/-4%. Measurement method is described on page 8.



Picture 160

1100 SERIES ROUTERBOARDS

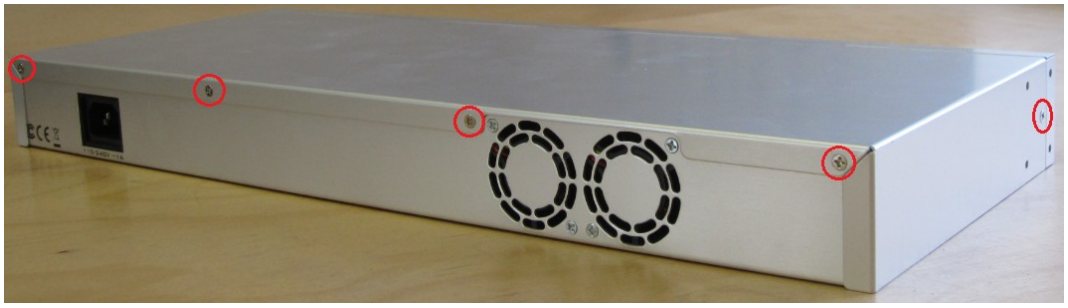
RB1100AHx2



Picture 161

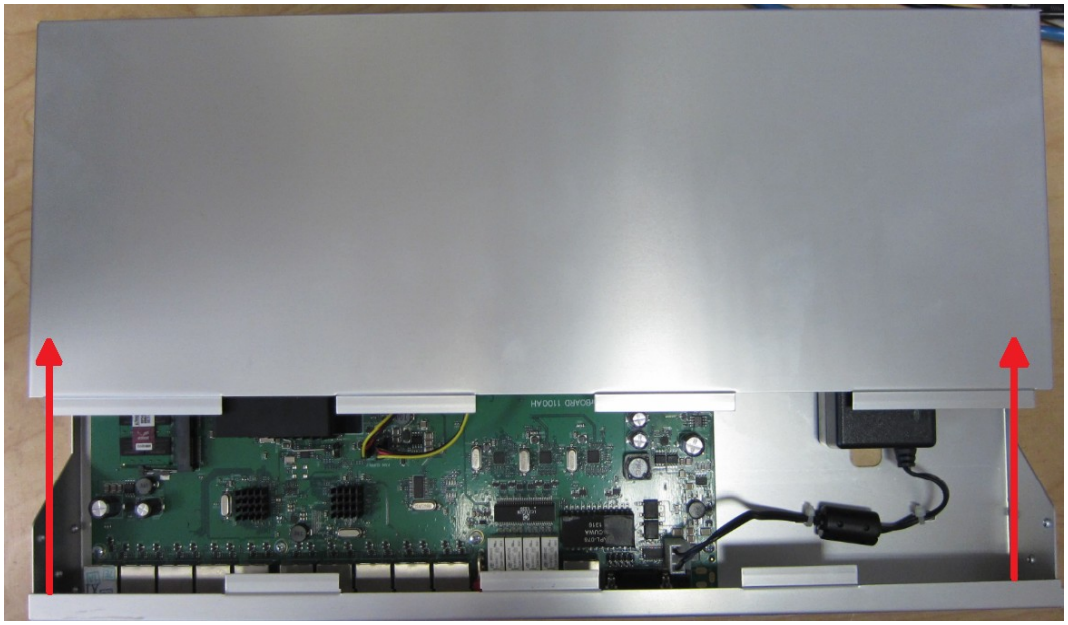
Disassembling information

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 162.



Picture 162

Step 2: Pull the cover away from you, see picture 163.



Picture 163

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 164. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

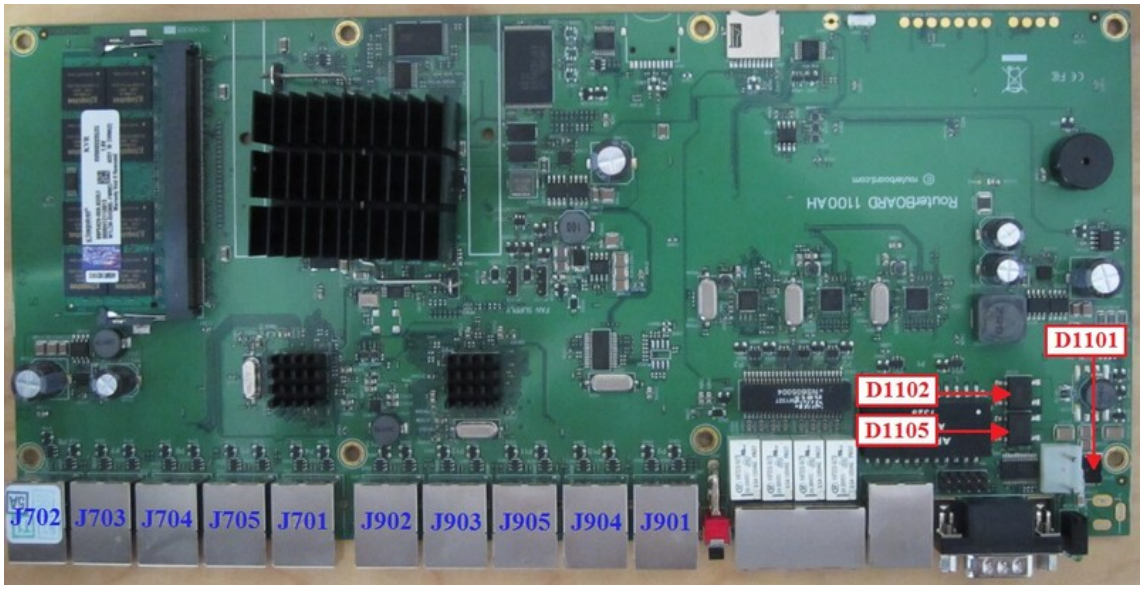
Checking voltage drop value between diode array pin#1 and Ground

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 165. Voltage drop value should be in the range from 0,3V to 0,34V. Voltage drop measurement method is described on page 6.

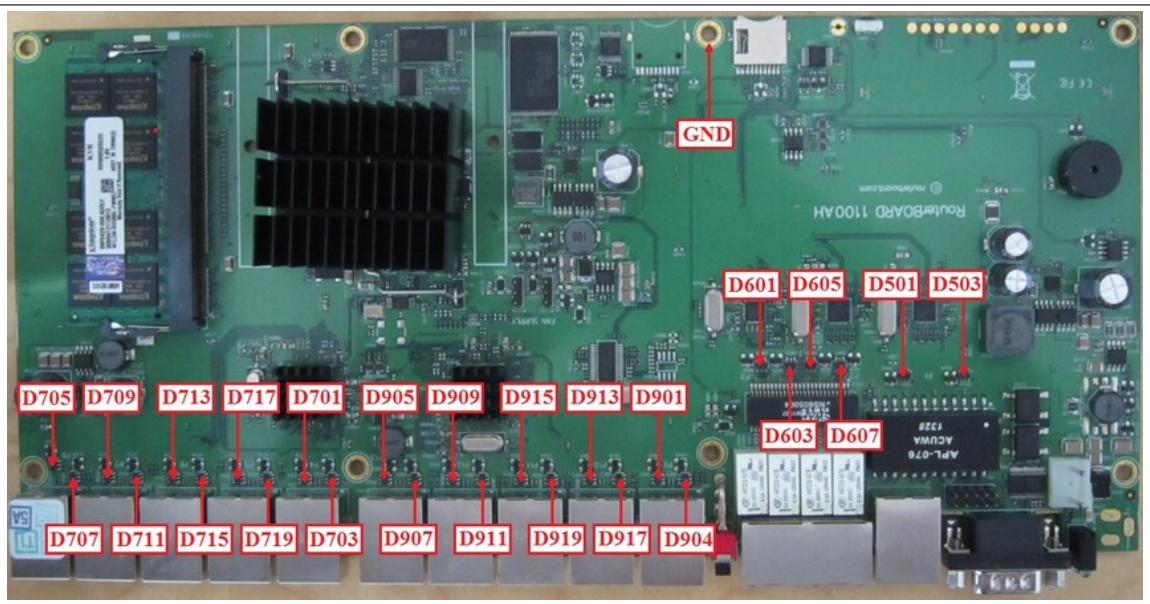
Then check voltage drop value between diode arrays D601, D603, D901, D904, D913, D917, D919, D915, D911, D909, D907, D905, D703, D701, D719, D717, D715, D713, D711, D709, D707, D705 pin#1 and Ground. Location of diode arrays on the board you can see in the picture 165.

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 164


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 165

RB1100AHx4 Dude Edition

RB1100AHx4

Picture 166

Disassembling information

Disassembly method of the board is the same as the RB1100AHx2 board. Disassembly method is described on page 149.

Instructions for checking overvoltage

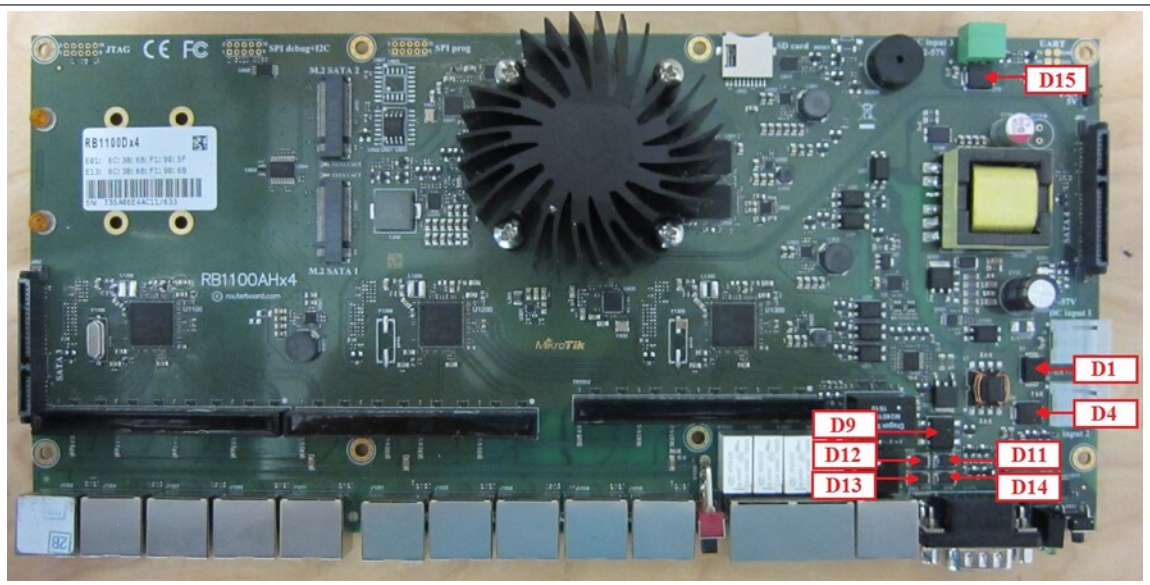
Checking Schottky diode and diodes bridges

Check Schottky diodes D1, D4, D11-D15 and diode bridge D9. Location of diodes on the board you can see in the picture 167. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

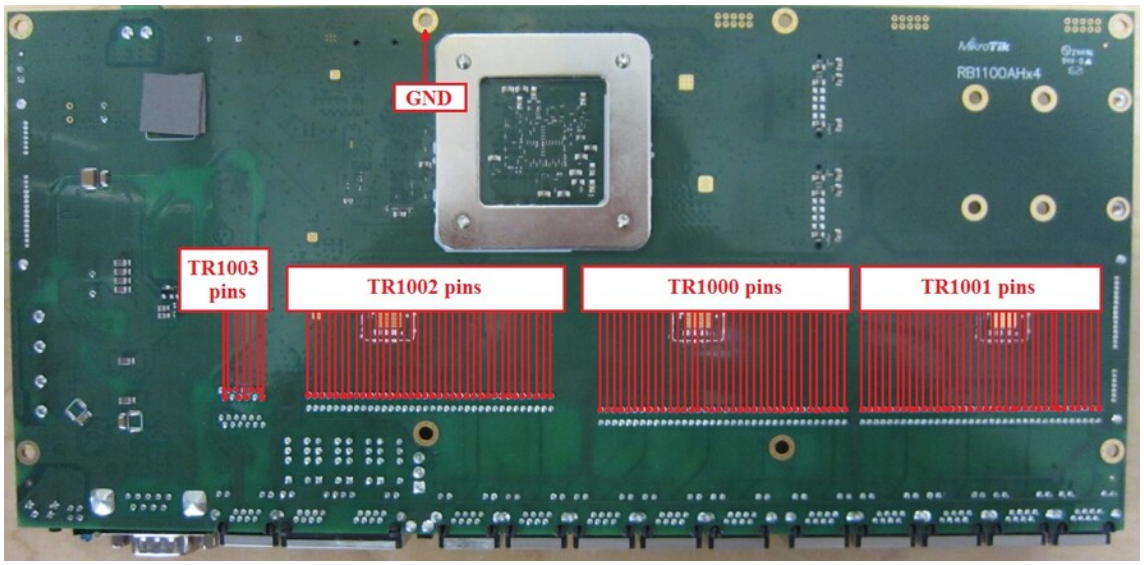
Checking voltage drop value between Ethernet transformer pins and Ground

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 167. 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 167. Voltage drop value should be in the range from 0,36V to 0,4V. Voltage drop measurement method is described on page 7.



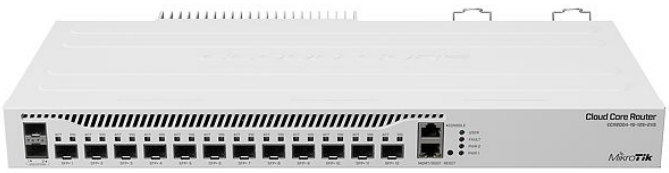
Picture 167



Picture 168

CLOUD CORE ROUTER 2004 SERIES ROUTERBOARDS

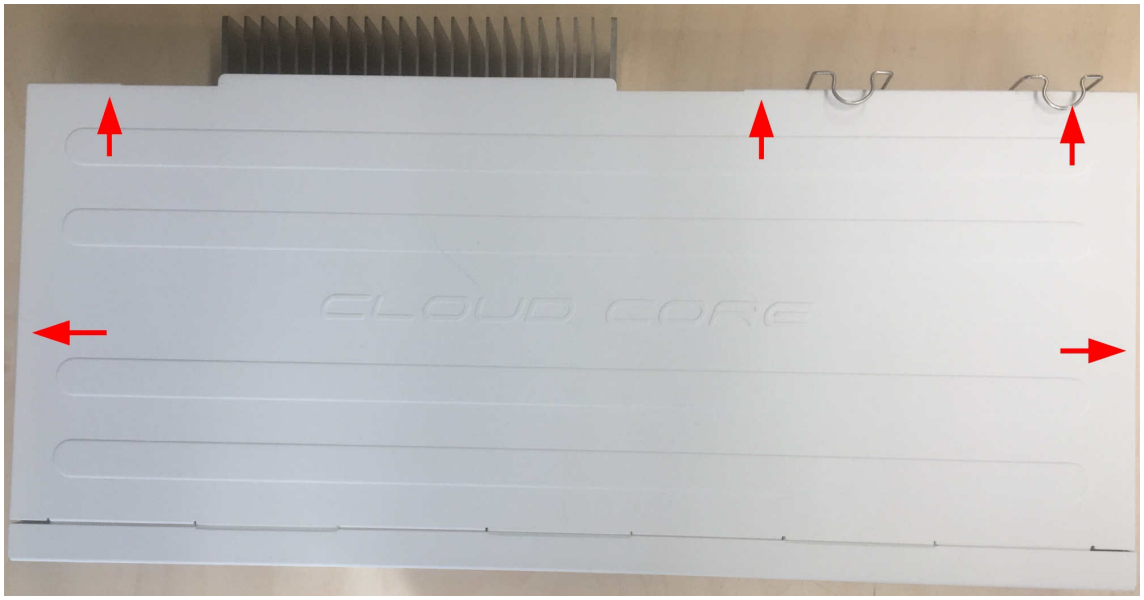
CCR2004-1G-12S+2XS



Picture 169

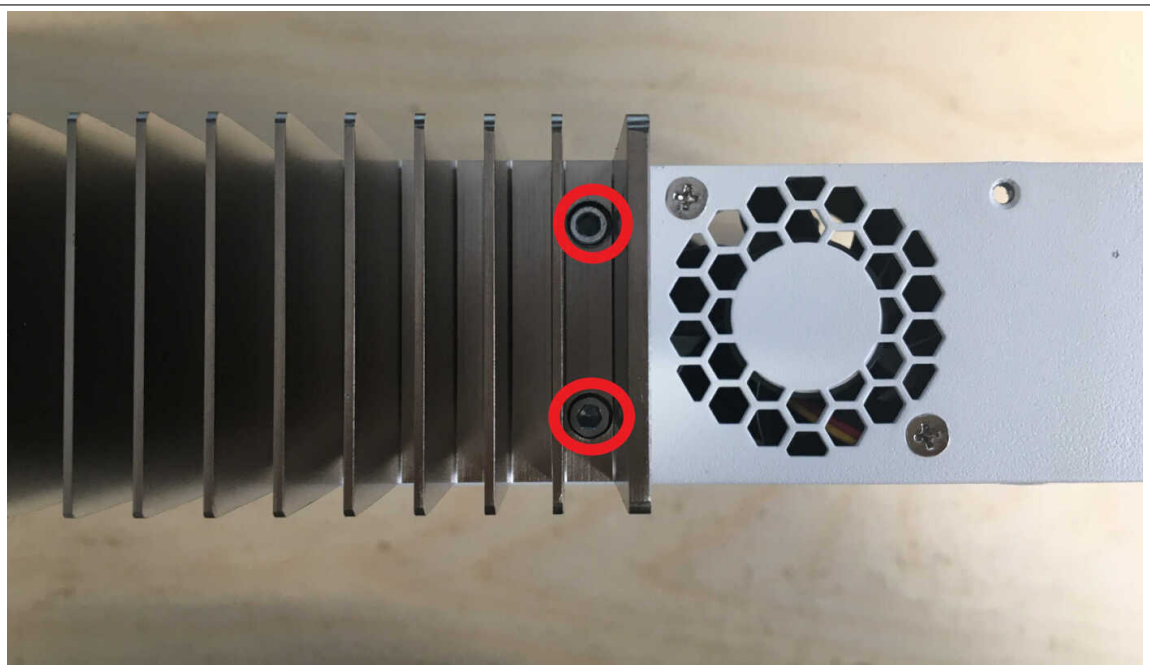
Disassembling information

Step 1: Using Phillips PH2 or similar unscrew all screws shown in picture 170.



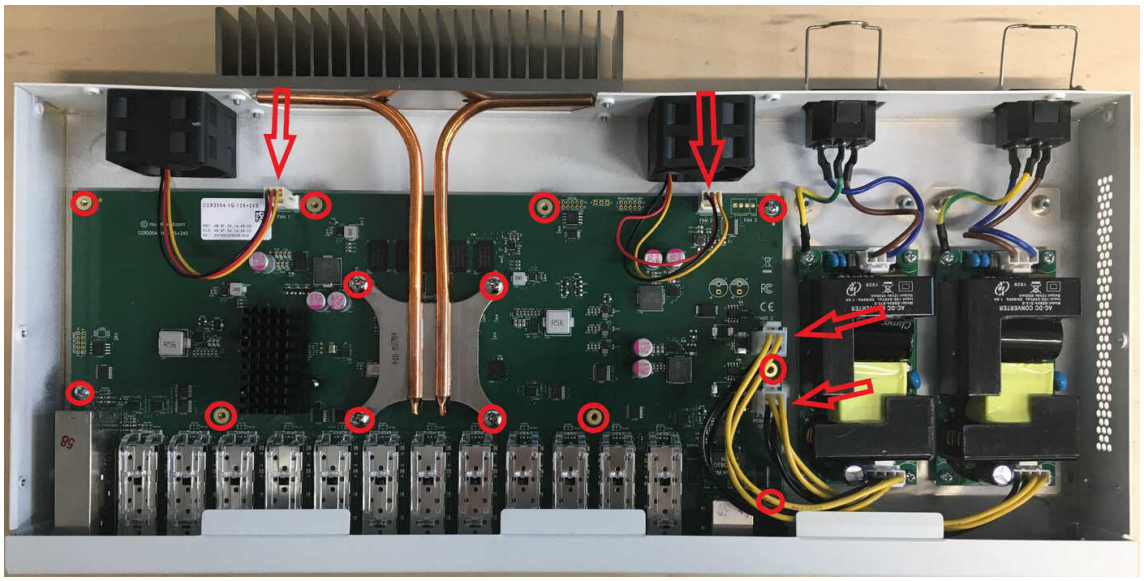
Picture 170

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 171

Step 3: Using Phillips PH1 unscrew all the screws, unplug fans and PSU power cables as shown in picture 172.



Picture 172

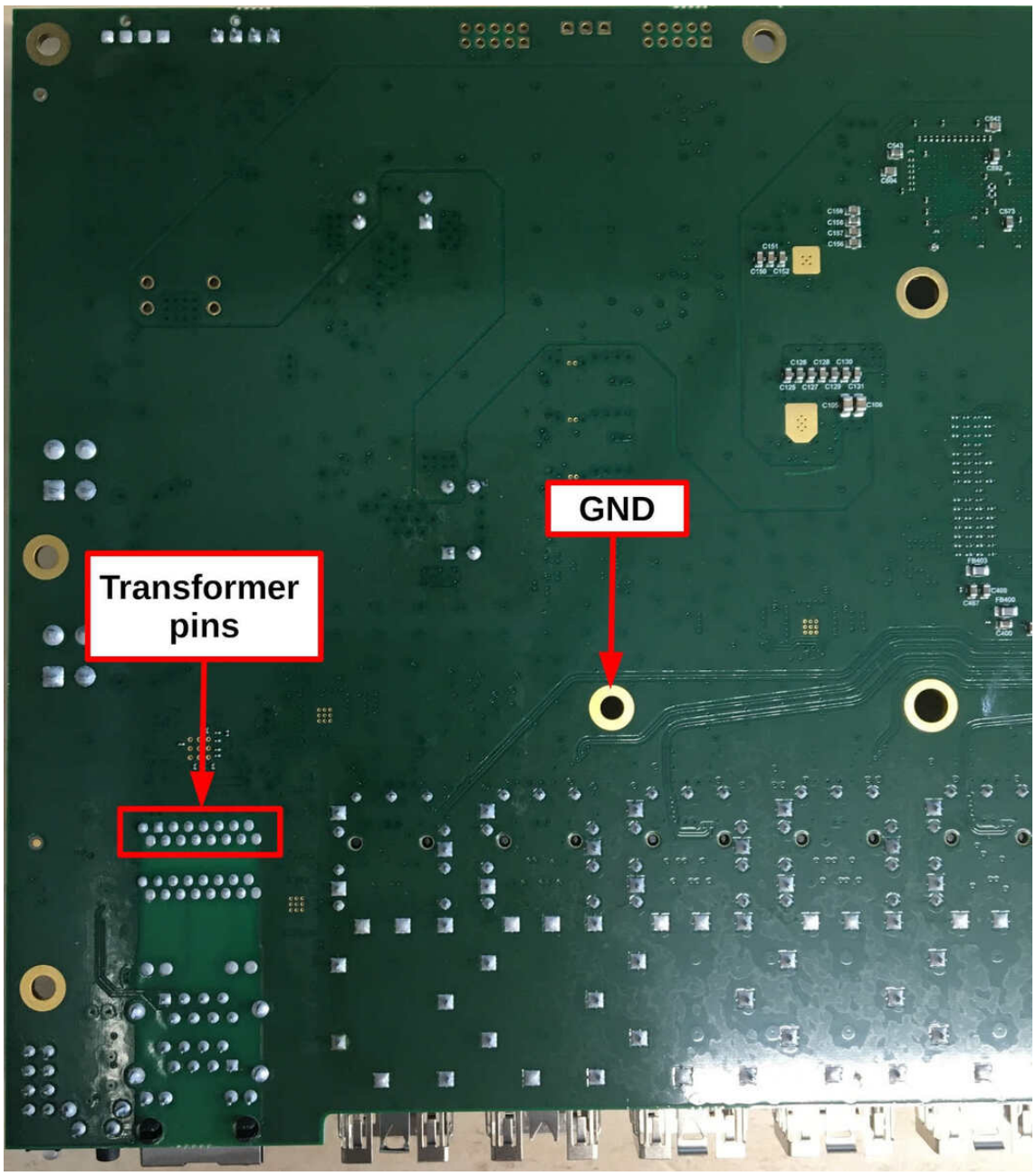
Instructions for checking overvoltage

Checking voltage drop value between Ethernet transformer pins and Ground

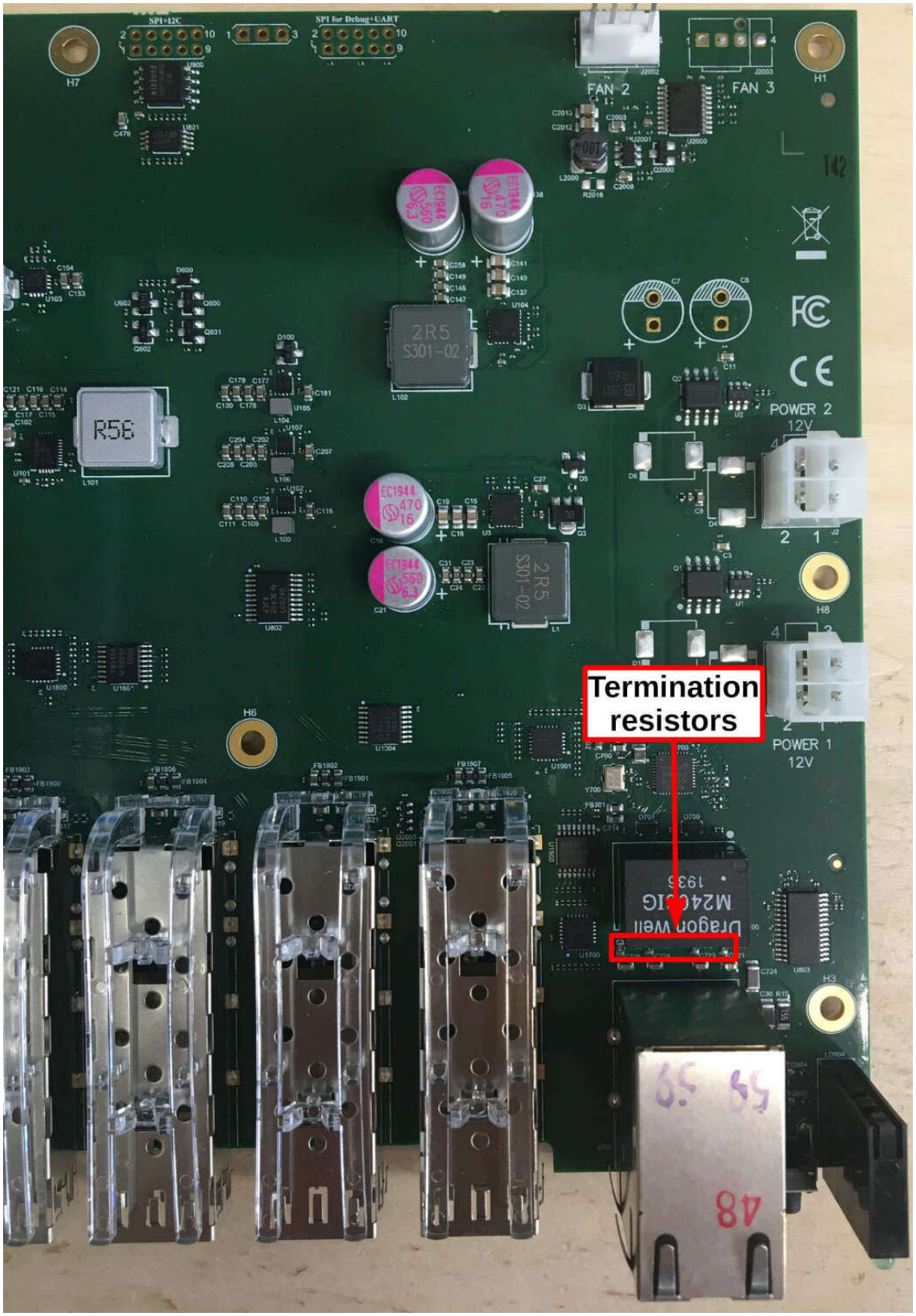
Check voltage drop value between Ethernet transformer pins and GND. Test points are marked in picture 173. Voltage drop value should be in the range from 0,34V to 0,44V. Voltage drop measurement method is described on page 7.

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 174.



Picture 173



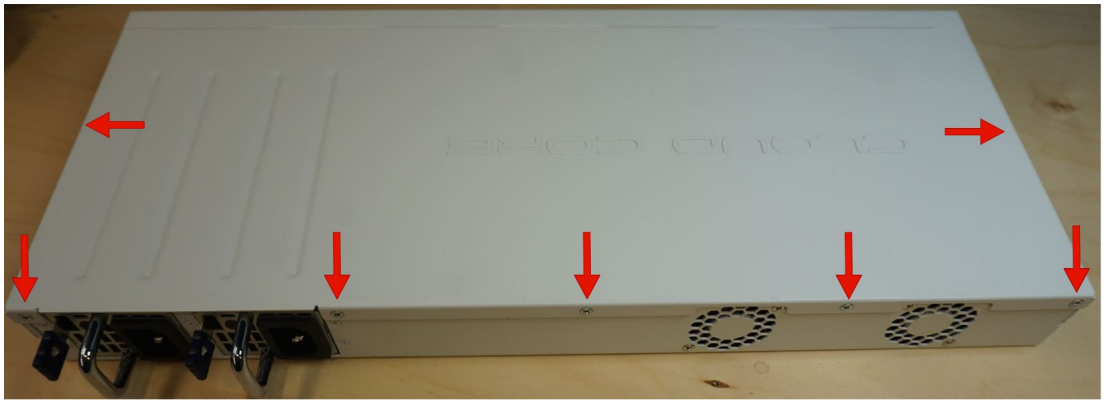
Picture 174

CCR2004-16G-2S+

Picture 175

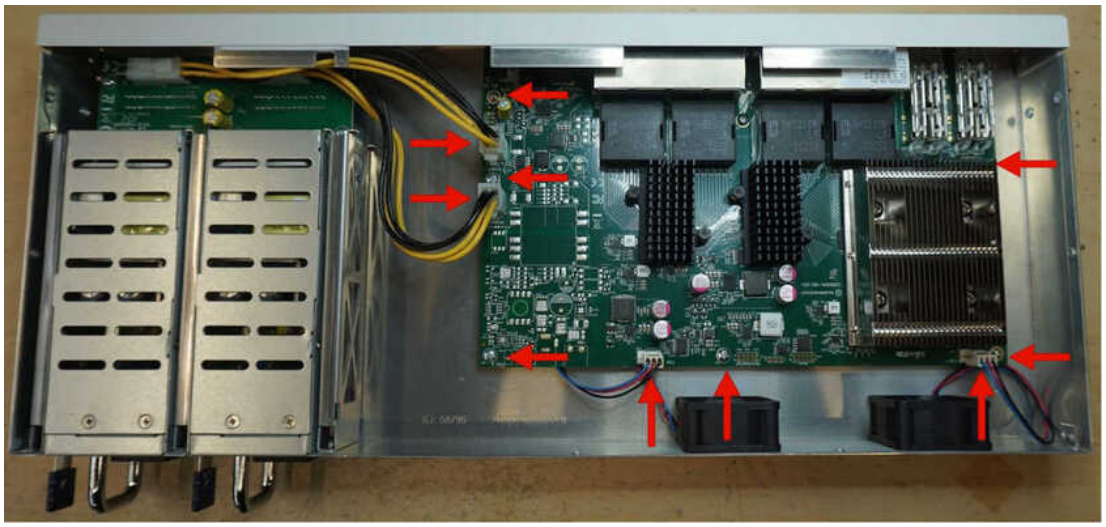
Disassembling information

Step 1: Using Phillips PH2 or similar unscrew all screws shown in picture 176.



Picture 176

Step 2: Take off the cover, unscrew all screws using Philips screw driver, unplug FAN and power supply cables as showed in picture 177.

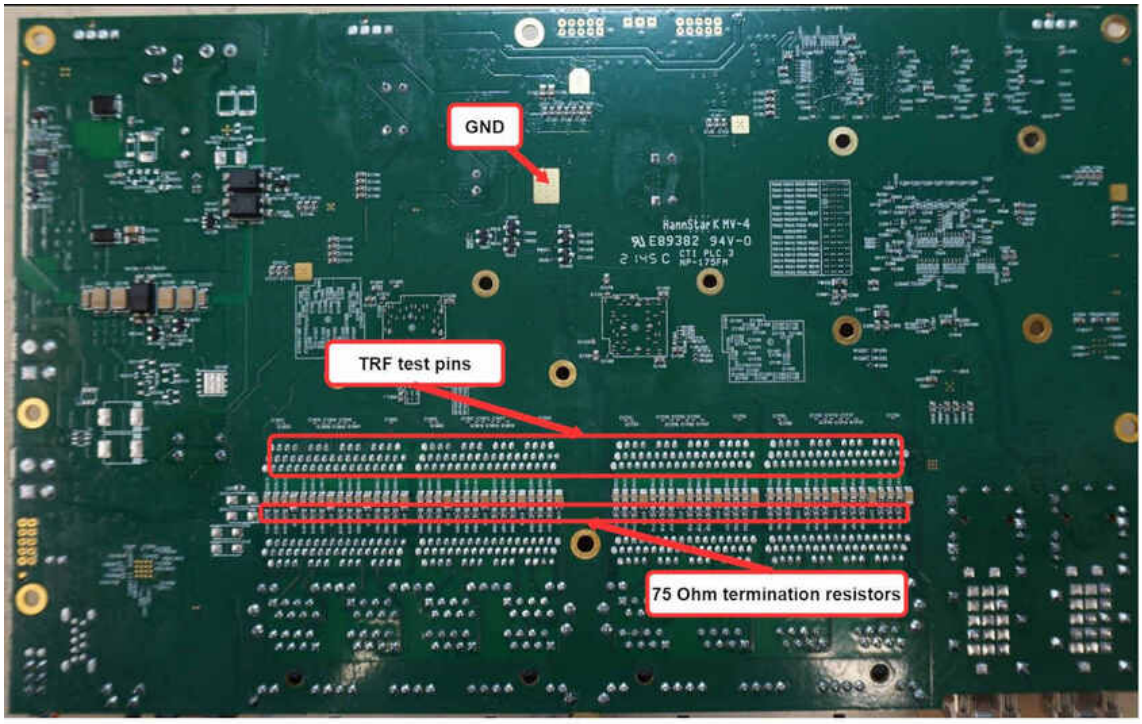


Picture 177

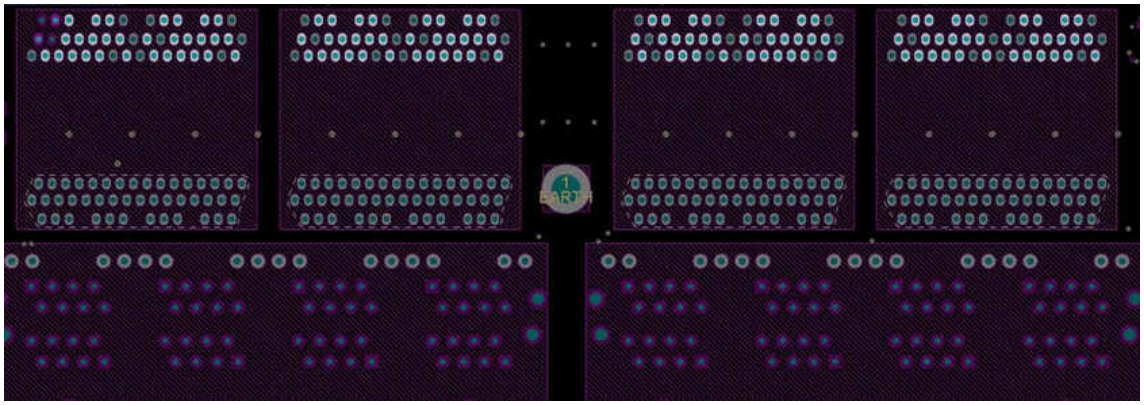
Instructions for checking overvoltage

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 179. 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 0,45V. Voltage drop measurement method is described on page 7.



Picture 178



Picture 179

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 178.

2011 SERIES ROUTERBOARDS

RB2011iL-IN

RB2011iL-RM

RB2011iLS-IN

RB2011UiAS-IN

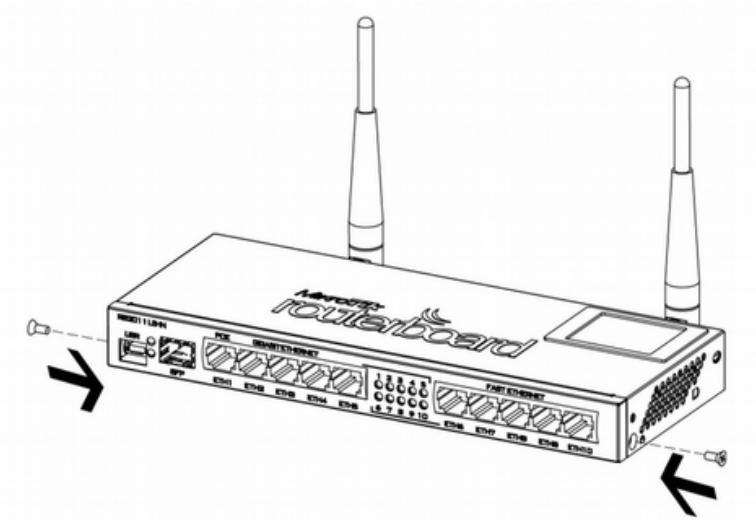
RB2011UiAS-RM

RB2011UiAS-2HnD-IN

Picture 180

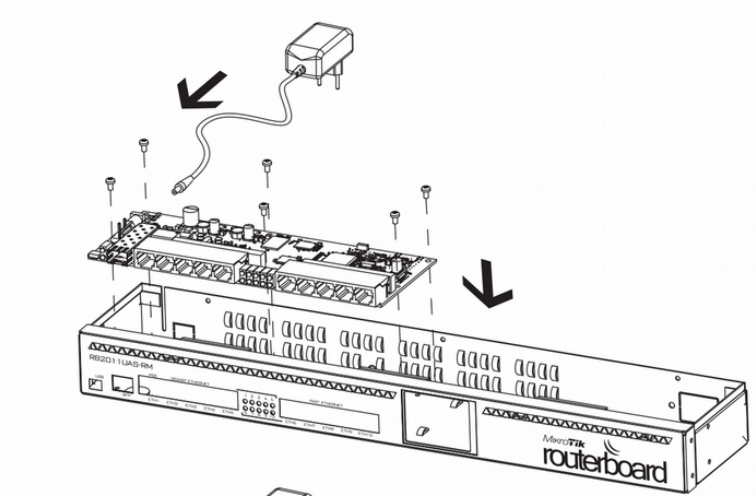
Indoor 2011 series RouterBoard disassembling information

Step 1: Unscrew 2 screws on each side of board case using PH2 screwdriver. Location of the screws you can see in the picture 181.



Picture 181

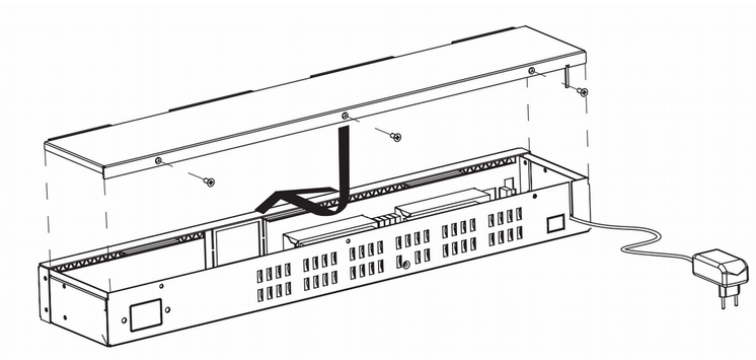
Step 2: Unscrew 6 screws which fasten PCB to routerboard case. Location of the screws you can see in the picture 182.



Picture 182

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 183.



Picture 183

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 184. 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.

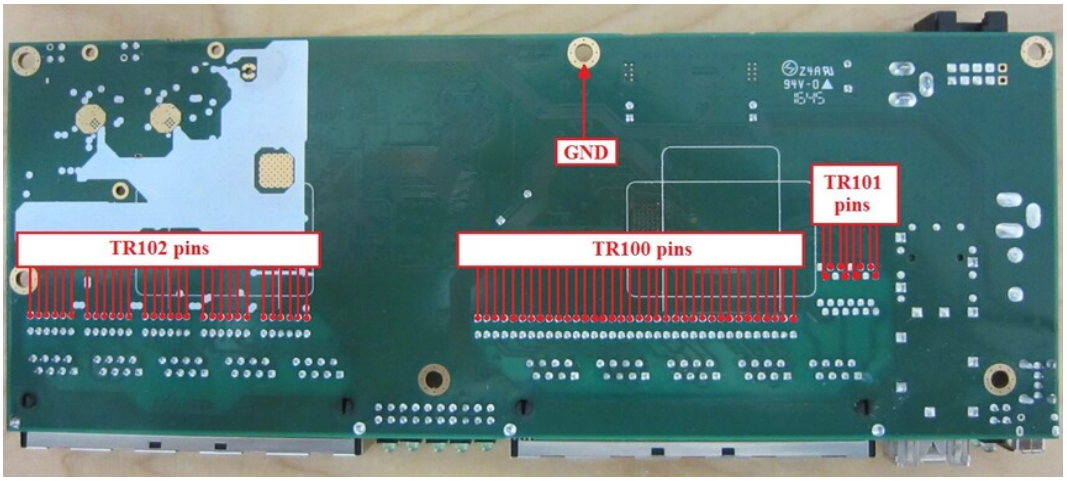
Checking voltage drop value between Ethernet transformer pins and Ground

Check voltage drop value between transformer TR101 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 185. 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 185. 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 185. Voltage drop value should be in the range from 0,3V to 0,38V. Voltage drop measurement method is described on page 7.

Picture 184



Picture 185

CLOUD CORE ROUTER 2116 SERIES ROUTERBOARDS

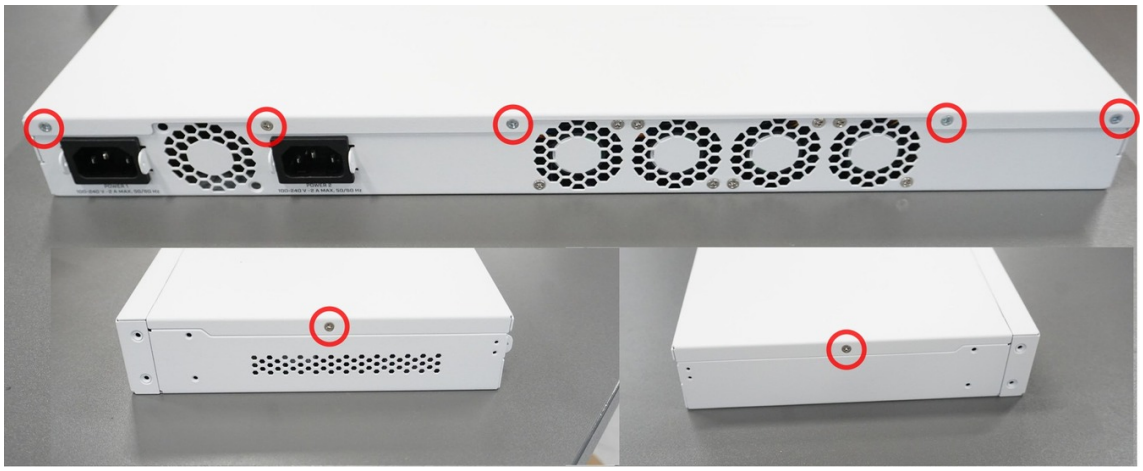
CCR2116-12G-4S+

Picture 186

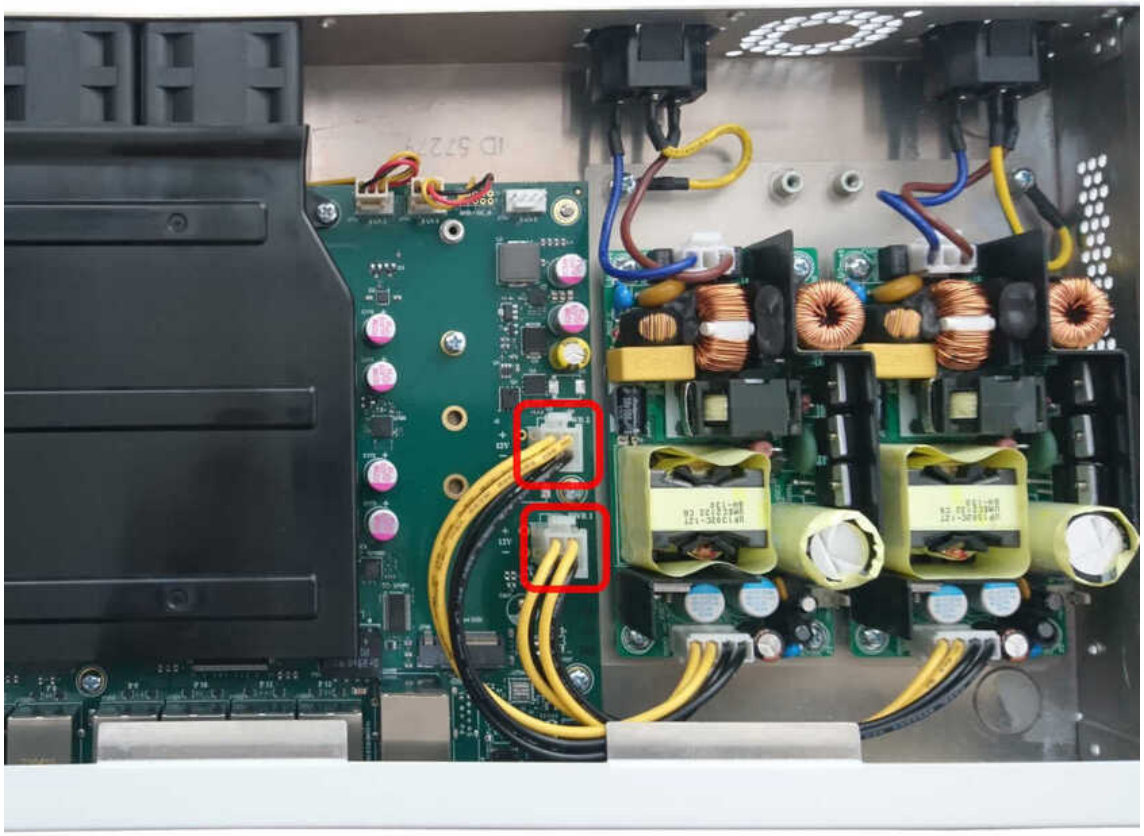
Disassembling information

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 187 and remove cover. When the cover is removed, disconnect PSUs from the board – PSU connectors are shown on picture 188. Avoid touching any other part of PSU in order to prevent possible electrical shock, board damage or equipment damage!

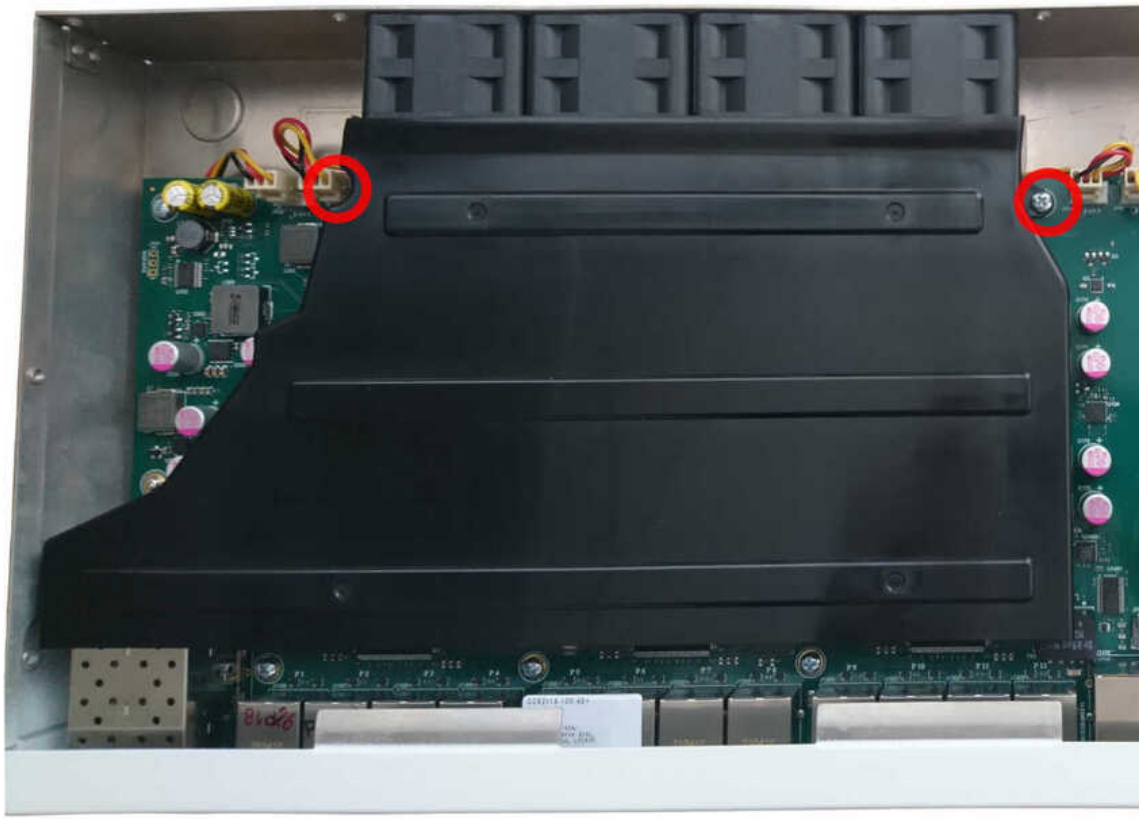
Step 2: Continue the disassembly by removing the wind tunnel, screw placement is shown on picture 189. A screw with a plastic spacer is located on the PSU side of the board, see picture 190. PH1 screwdriver is advised.



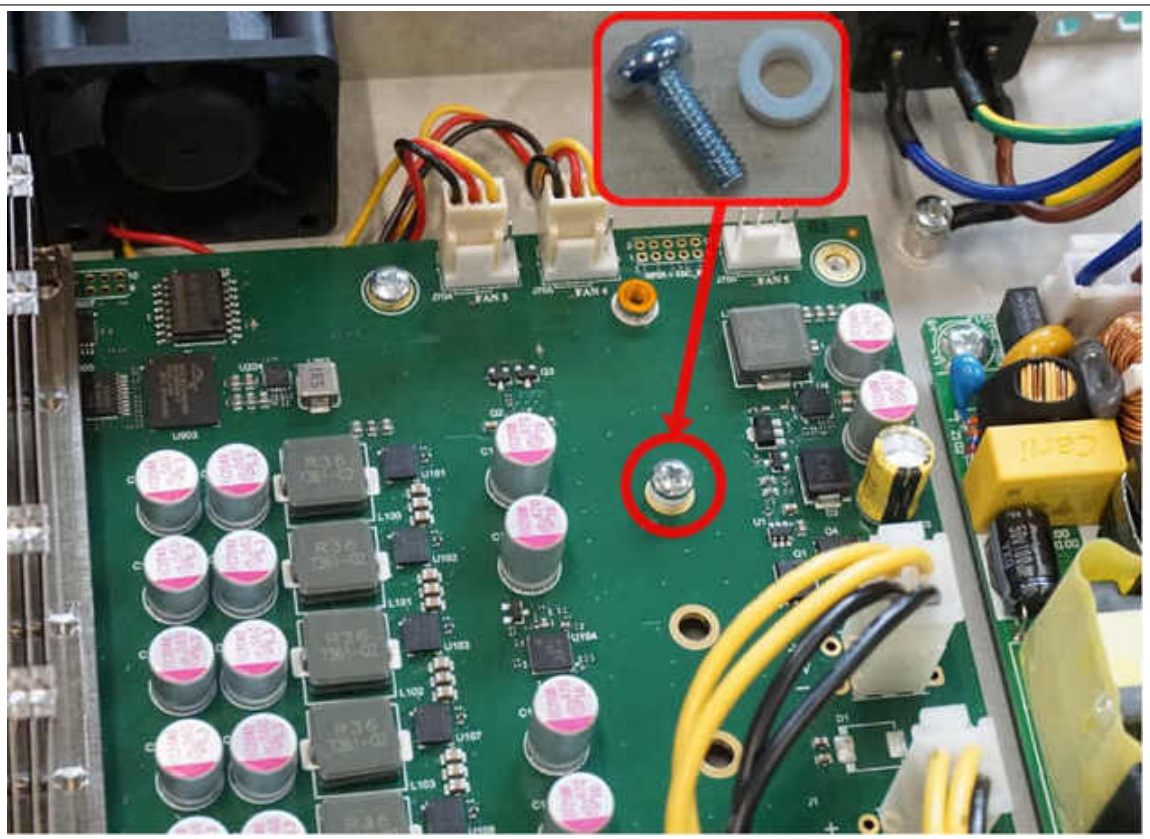
Picture 187



Picture 188

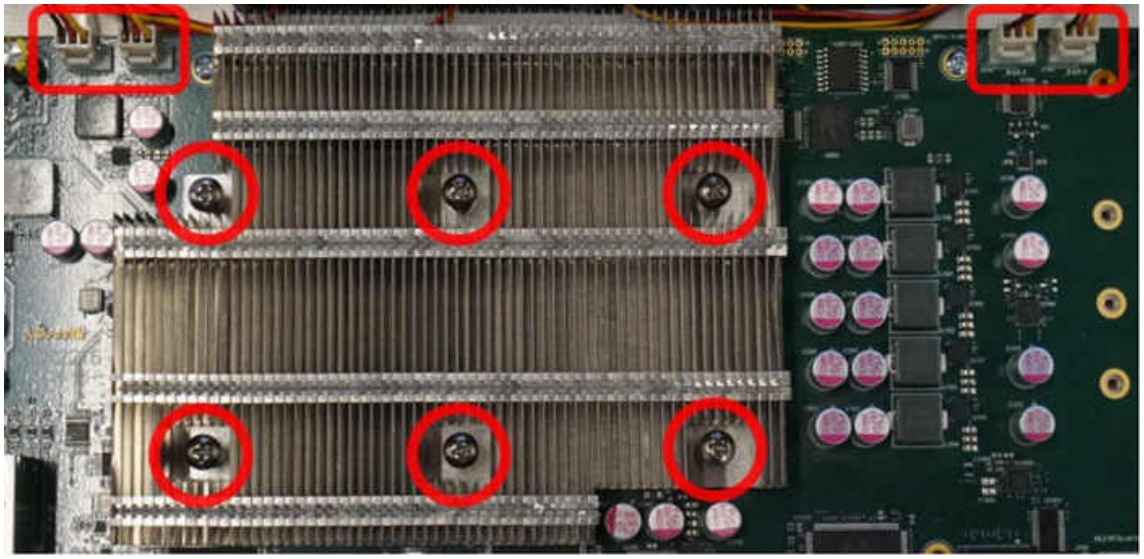


Picture 189



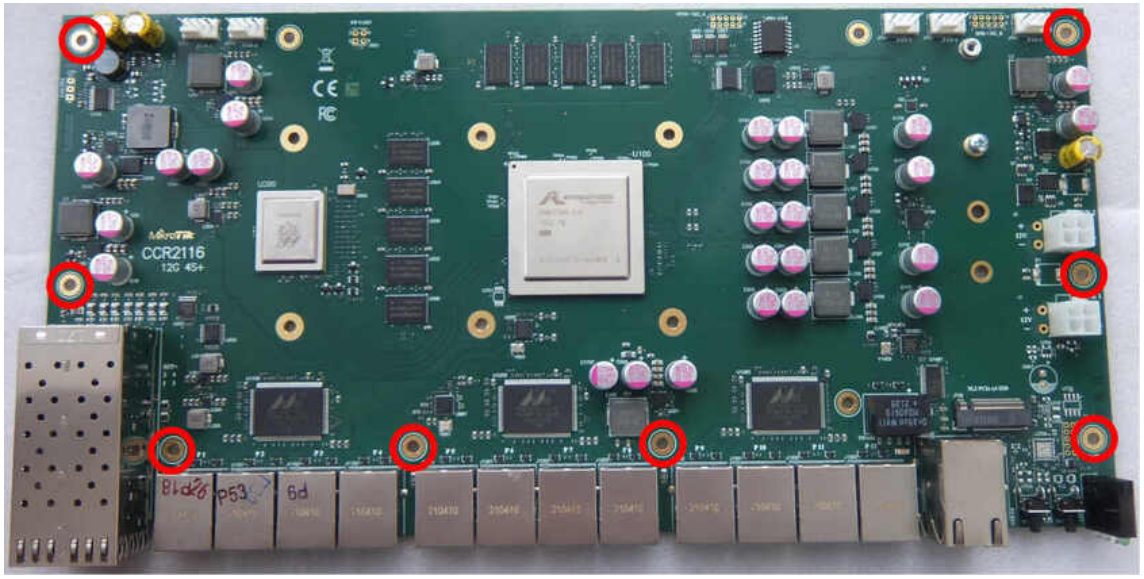
Picture 190

Step 3: Gently remove heatsink (PH2) and fan connectors indicated on picture 191.



Picture 191

Step 4: Using PH1 remove all other screws that are holding the PCB, screws position shown on picture 192.

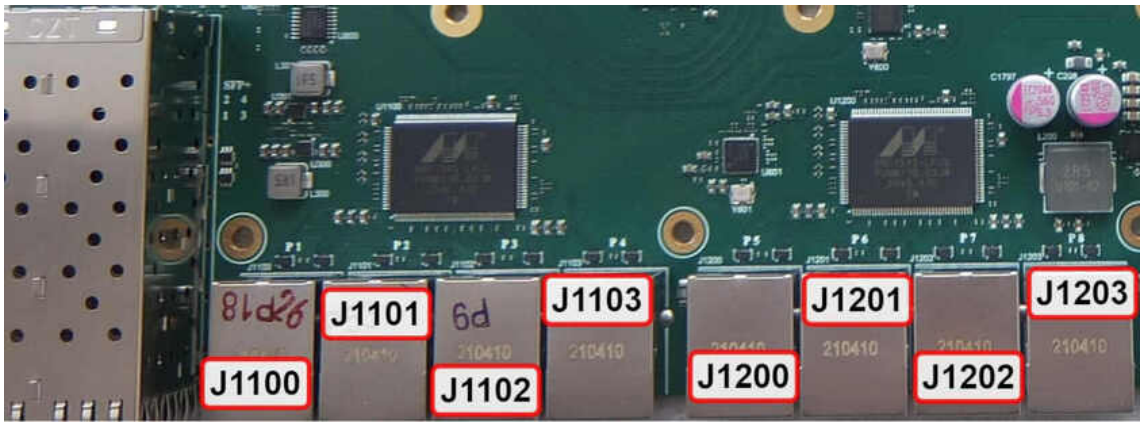


Picture 192

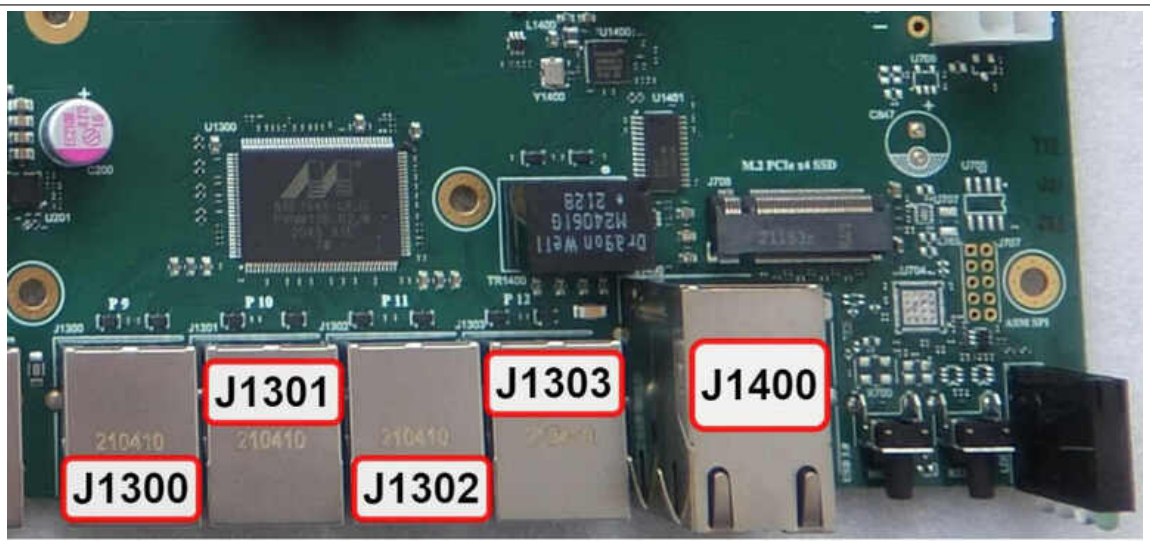
Instructions for checking overvoltage

Checking termination resistors resistance in RJ-45 connector

Check resistance of termination resistors in the following connectors shown on pictures 193 and 194:
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 193



Picture 194

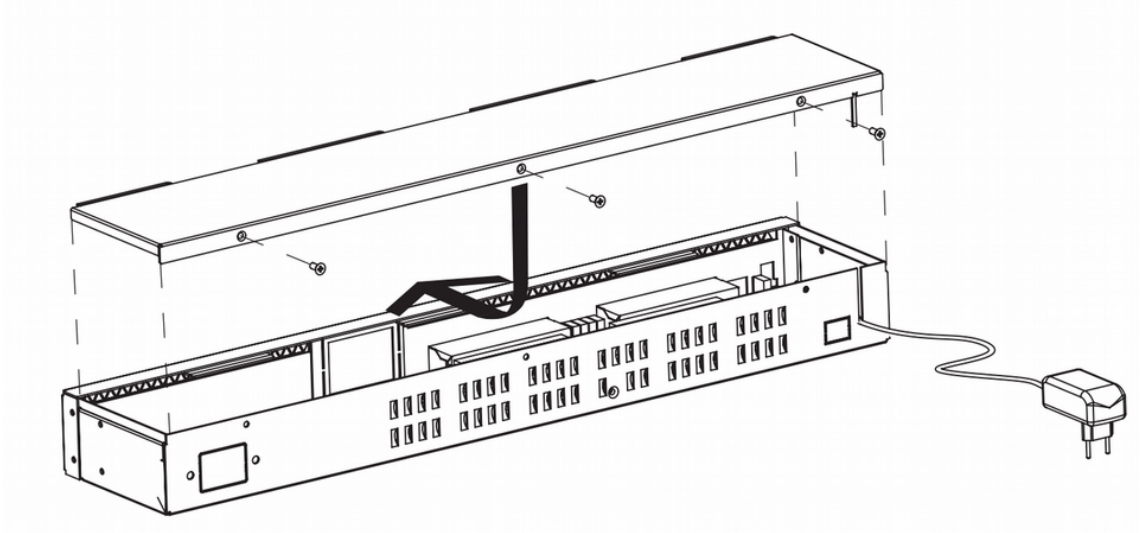
3011 SERIES ROUTERBOARDS

RB3011UiAS-RM

Picture 195

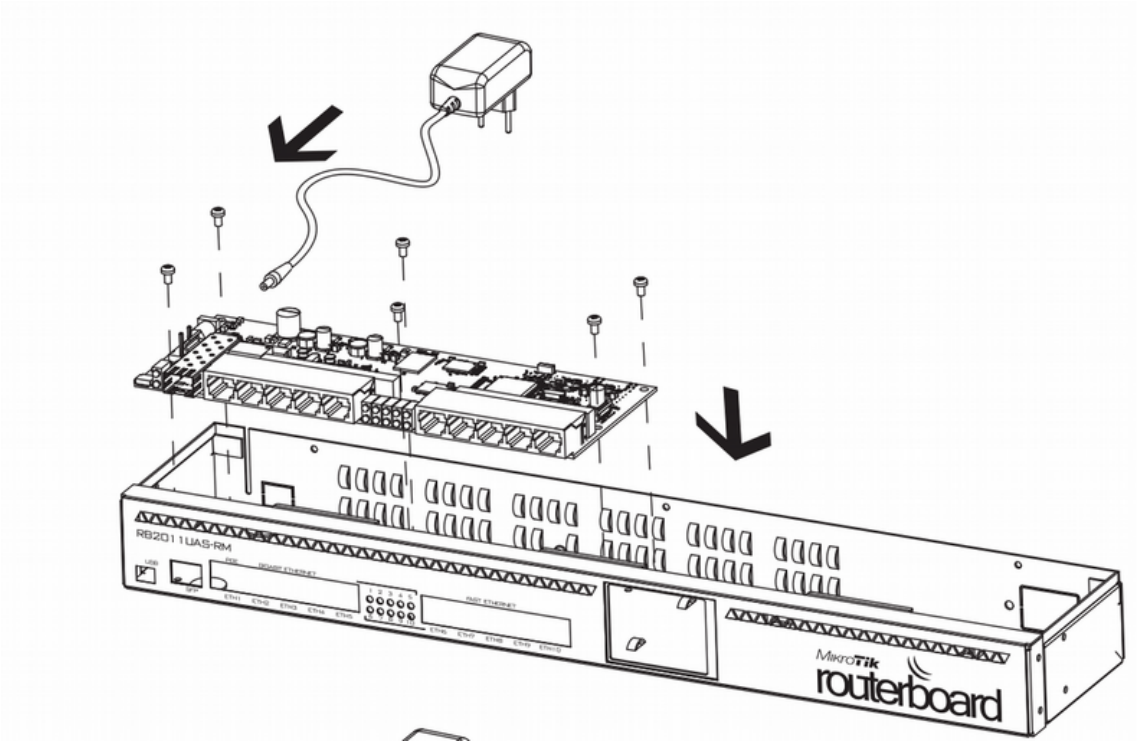
Disassembling information

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 196.



Picture 196

Step 2: Unscrew 6 screws which fasten PCB to routerboard case. Location of the screws, see picture 197.



Picture 197

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 198. Schottky diode quality measurement method is described on page 4.

Checking voltage drop value between Ethernet transformer pins and Ground

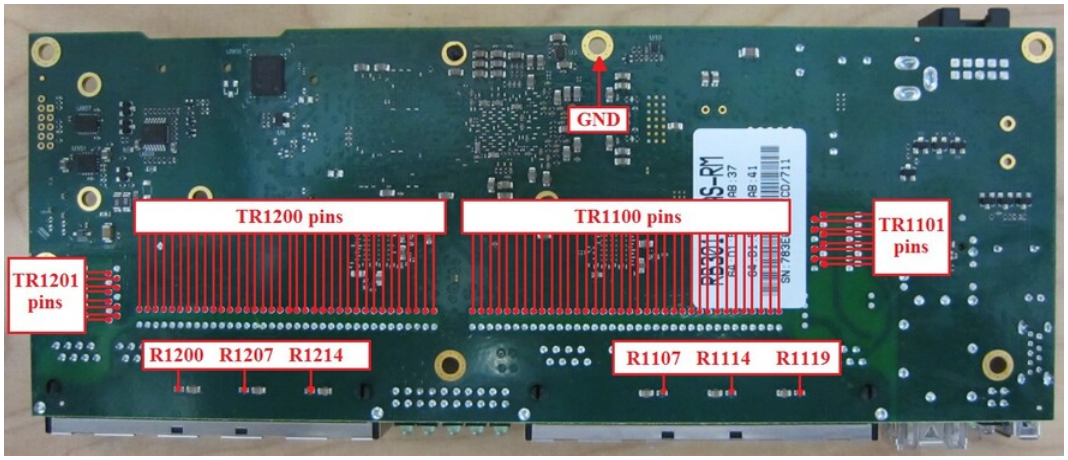
Check voltage drop value between Transformer TR1101 and TR1201 pins and Ground. Test points on the transformer pins are marked with red dots, see picture 199. Voltage drop value should be in the range from 0,4V to 0,46V. Voltage drop measurement method is described on page 7.

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 199. 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 199.

Picture 198



Picture 199

4011 SERIES ROUTERBOARDS

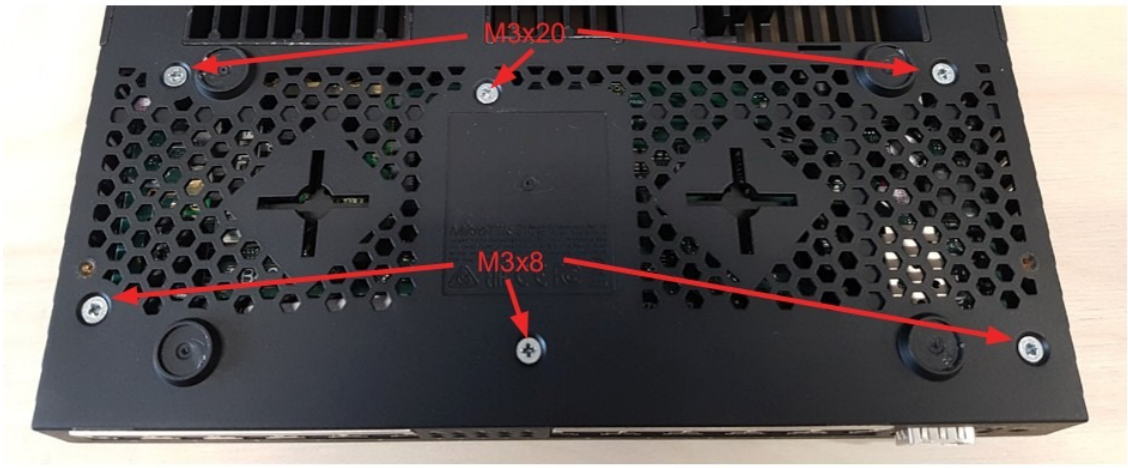
RB4011iGS+RM

RB4011iGS+5HacQ2HnD-IN

Picture 200

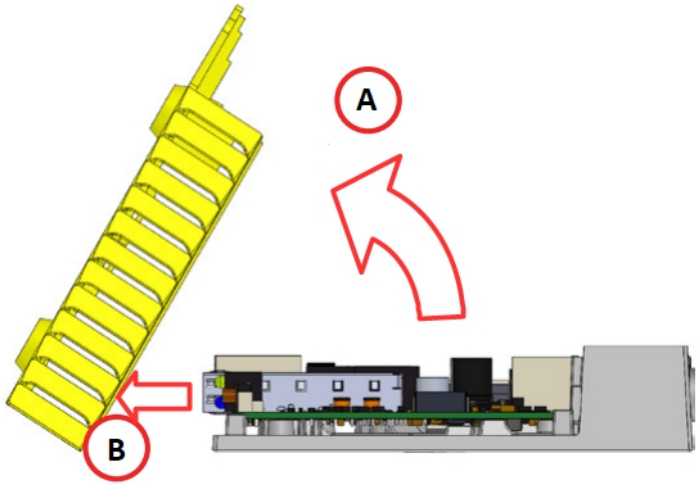
Disassembling information

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 201.



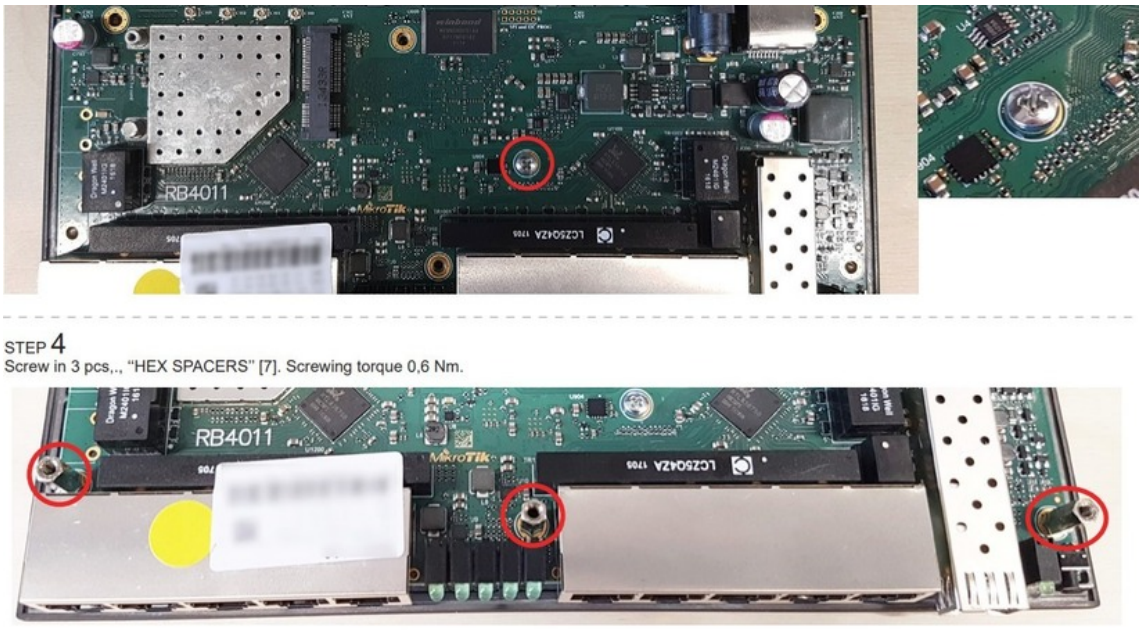
Picture 201

Step 2: Lift the plastic cover according to picture 202.



Picture 202

Step 3: Undo 3 hexagonal threaded spacers and 1 screw according to picture 203.



Picture 203

Instructions for checking overvoltage

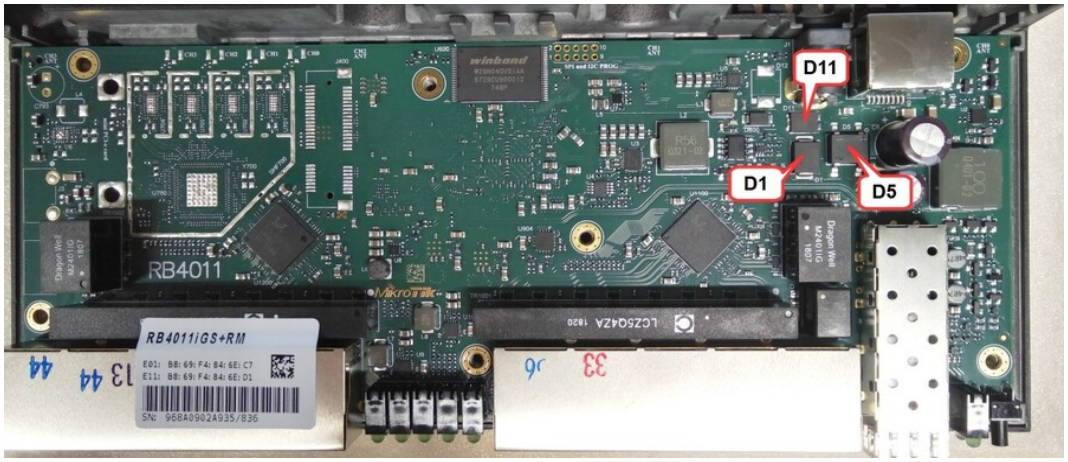
Checking Schottky diode and diodes bridges

Check Schottky diodes D11, D1 and diode bridge D5. Location of diodes on the board you can see in the picture 204. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

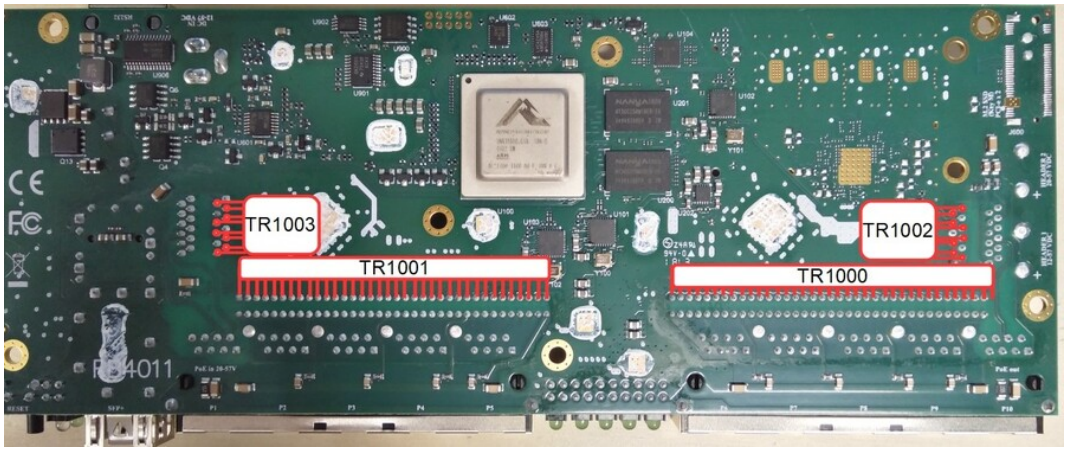
Checking voltage drop value between Ethernet transformer pins and Ground

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 205. 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 205. Voltage drop value should be in the range from 0,34V to 0,4V. Voltage drop measurement method is described on page 7.



Picture 204



Picture 205

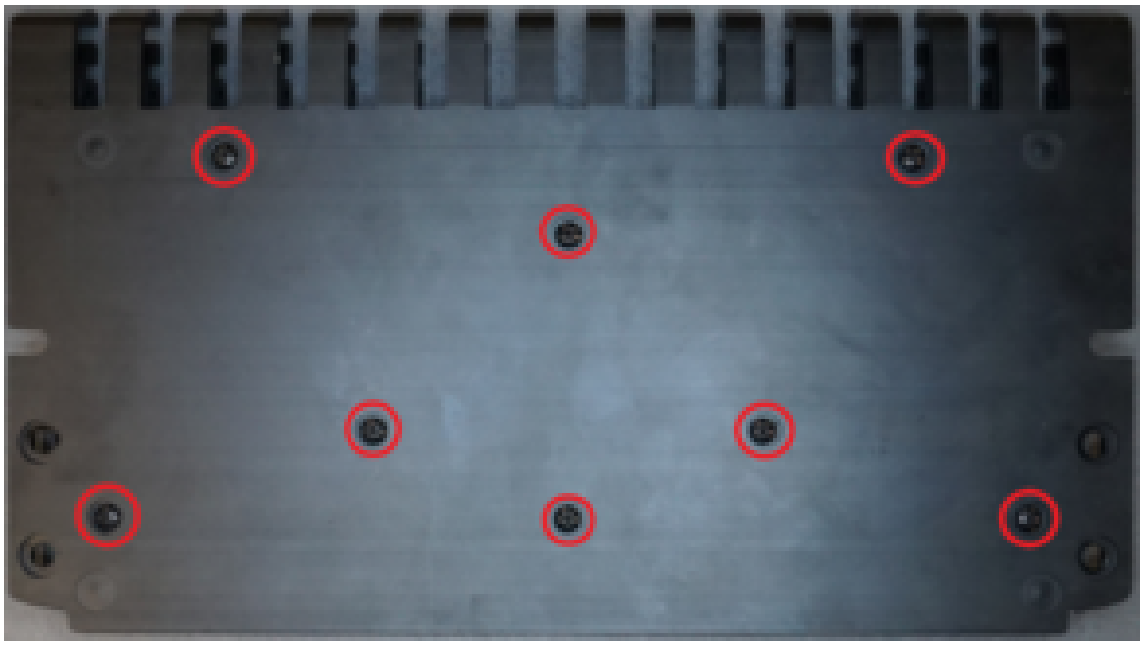
5009 SERIES ROUTERBOARDS

RB5009UG+S+IN

Picture 206

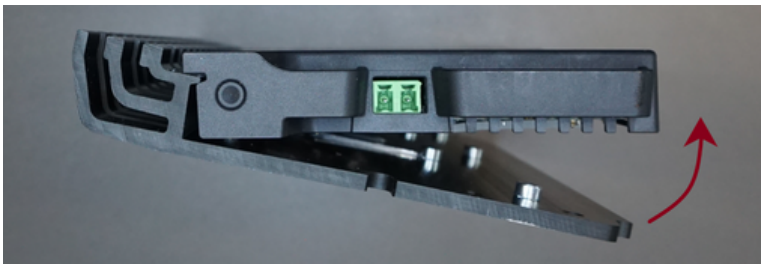
Disassembling information

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 207.



Picture 207

Step 2: Lift the plastic cover according to picture 208.



Picture 208

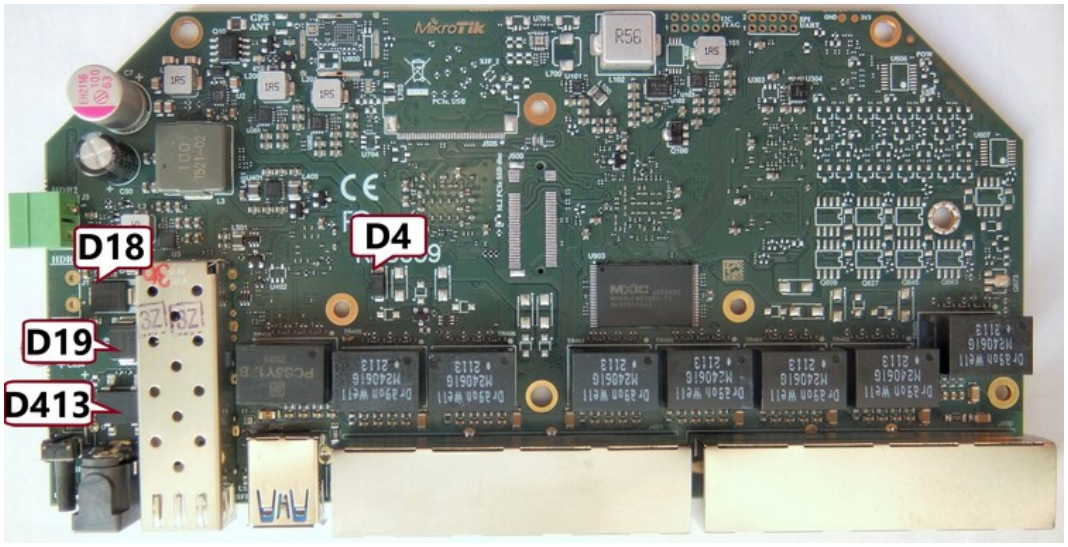
Instructions for checking overvoltage

Checking Schottky diode and diodes bridges

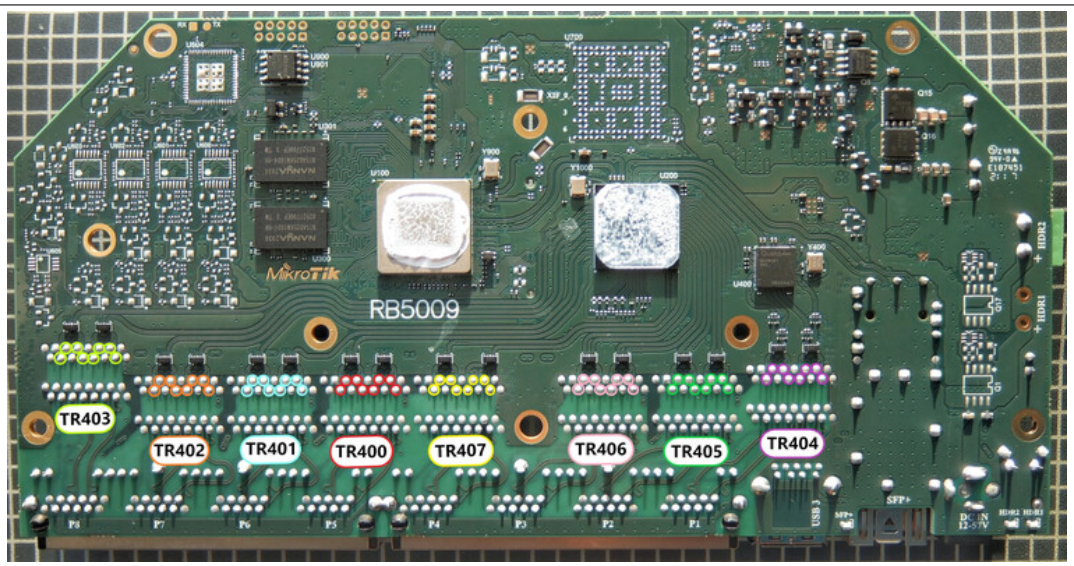
Check Schottky diodes D4, D18, D19 and diode bridge D413. Location of diodes on the board you can see in the picture 209. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

Checking voltage drop value between Ethernet transformer pins and Ground

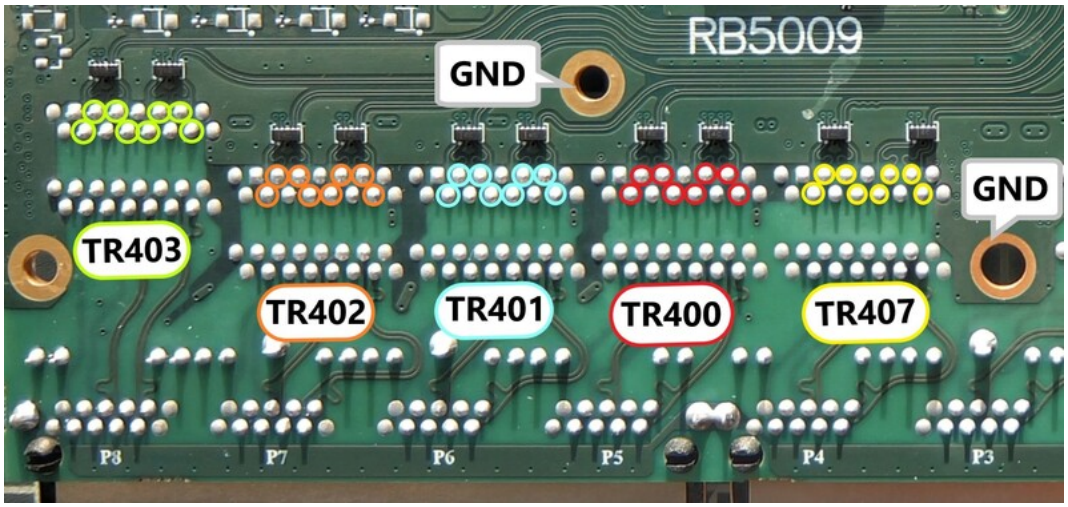
Check voltage drop value between transformers' TR400, TR401, TR402, TR403, TR404, TR405, TR406, TR407 pins and Ground (GND). Test points on the transformers' pins are marked with colored circles, see pictures 210 , 211 , 212. Voltage drop value should be in the range from 0,34V to 0,40V. Voltage drop measurement method is described on page 7.



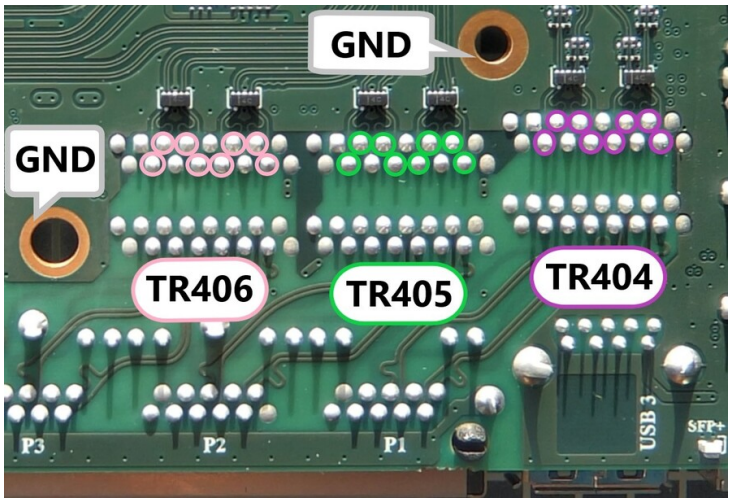
Picture 209



Picture 210



Picture 211



Picture 212

BASEBOX SERIES ROUTERBOARDS

BaseBox 2 (912UAG-2HPnD-OUT)

BaseBox 5 (912UAG-5HPnD-OUT)

Picture 213

Disassembling information

Step 1: Remove the sticker from connector, see picture 214.

Picture 214

Step 2: Unstick 2 screws stickers from the BaseBox case base, see picture 215.

Picture 215

Step 3: Unscrew the case base from the board holder by torque T8 screwdriver. Location of 2 screws you can see in the picture 216.

Picture 216

Step 4: Take out the case base from the board holder, see picture 217.

Picture 217

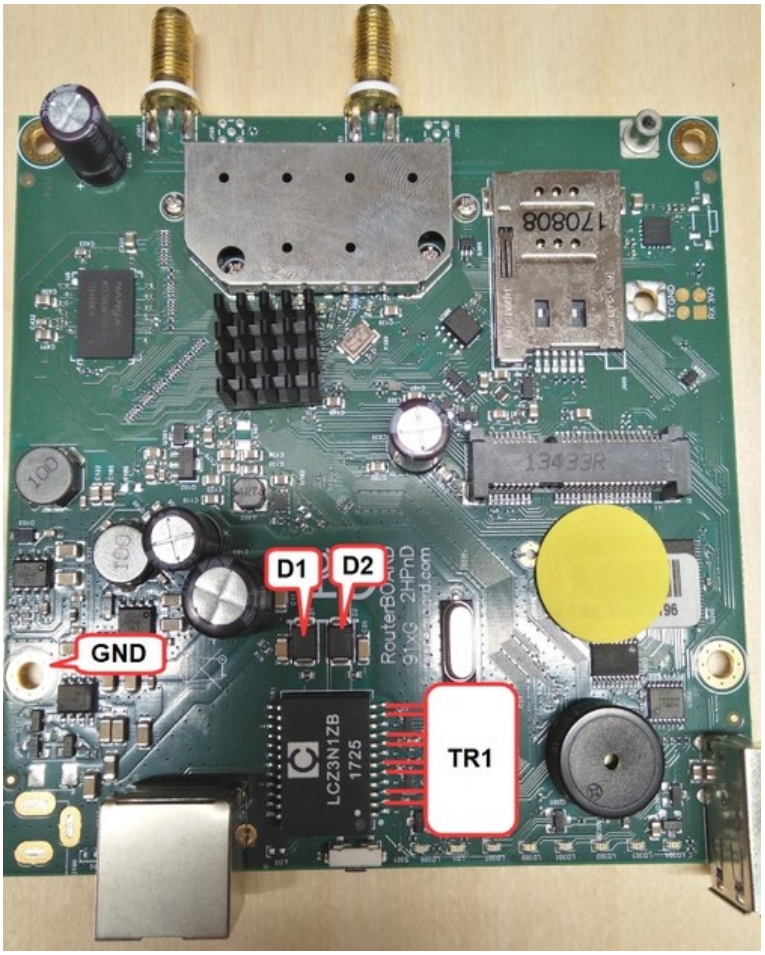
Instructions for checking overvoltage

Checking Schottky diode

Check Schottky diodes D1, D2. Location of diodes on the board you can see in the picture 218. 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 218. Voltage drop value should be in the range from 0,44V to 0,48V. Voltage drop measurement method is described on page 7.



Picture 218

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 185.

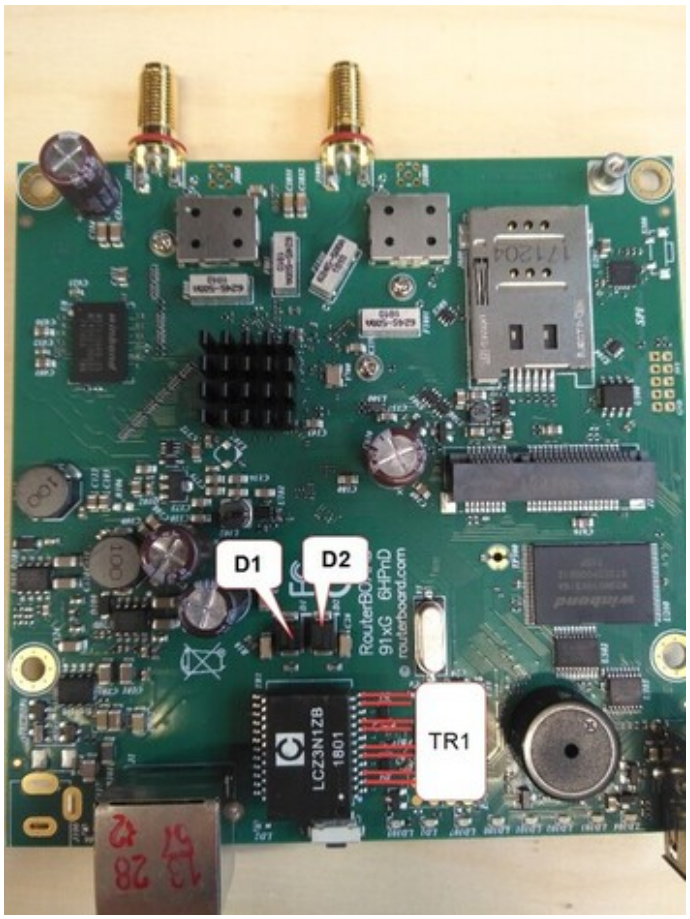
Instructions for checking overvoltage

Checking Schottky diode

Check Schottky diode D1, D2. Location of diodes on the board you can see in the picture 219. 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 219. Voltage drop value should be in the range from 0,44V to 0,48V. Voltage drop measurement method is described on page 7.



Picture 219

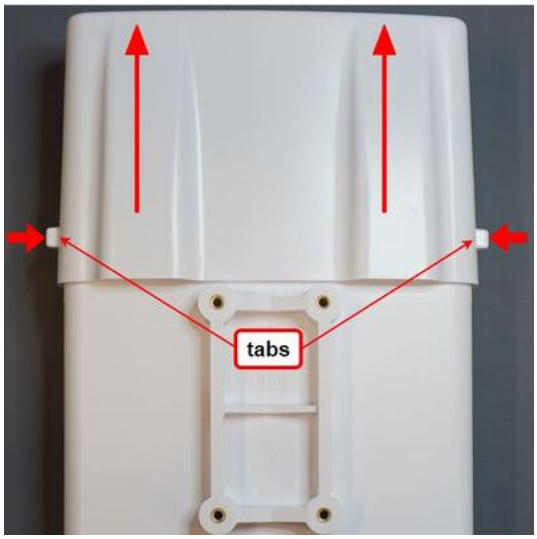
NETBOX SERIES ROUTERBOARDS

NetBox 5 ax (L11UG-5HaxD-NB)

Picture 220

Disassembling information

Step 1: Press two tabs and remove the cable cover as shown in the picture 221.



Picture 221

Step 2: Peel off two plastic stickers from the NetBox case, see picture 222.

Picture 222

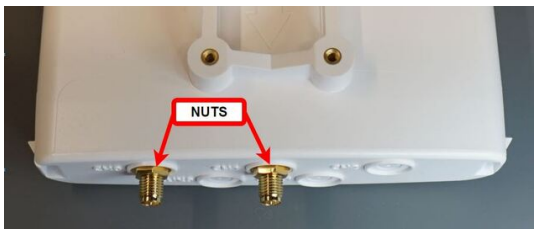
Step 3:

Unscrew 2 screws using torx T8 screwdriver. Location of the screws is shown the picture 223.

Picture 223

Step 4:

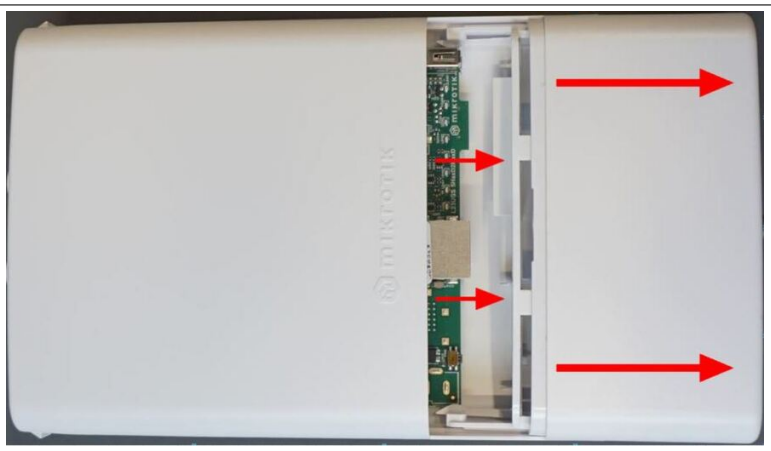
Unscrew two golden plated nuts. Location of the nuts is shown the picture 224.



Picture 224

Step 5:

Carefully remove the board holder and the board from the case as shown in the picture 225.

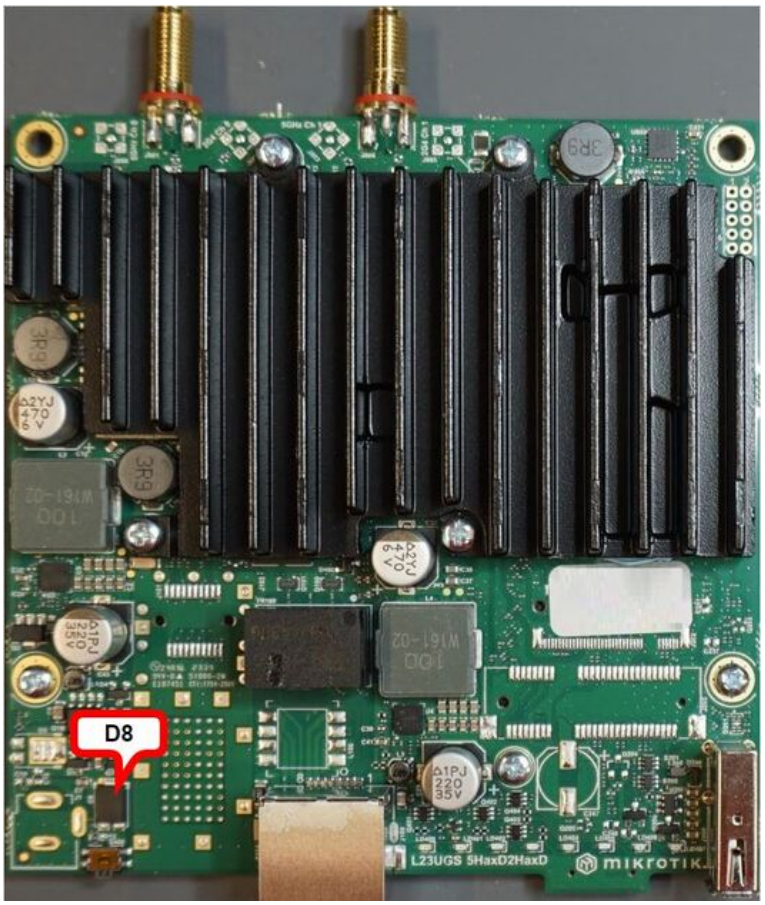


Picture 225

Instructions for checking over-voltage

Checking Schottky diode

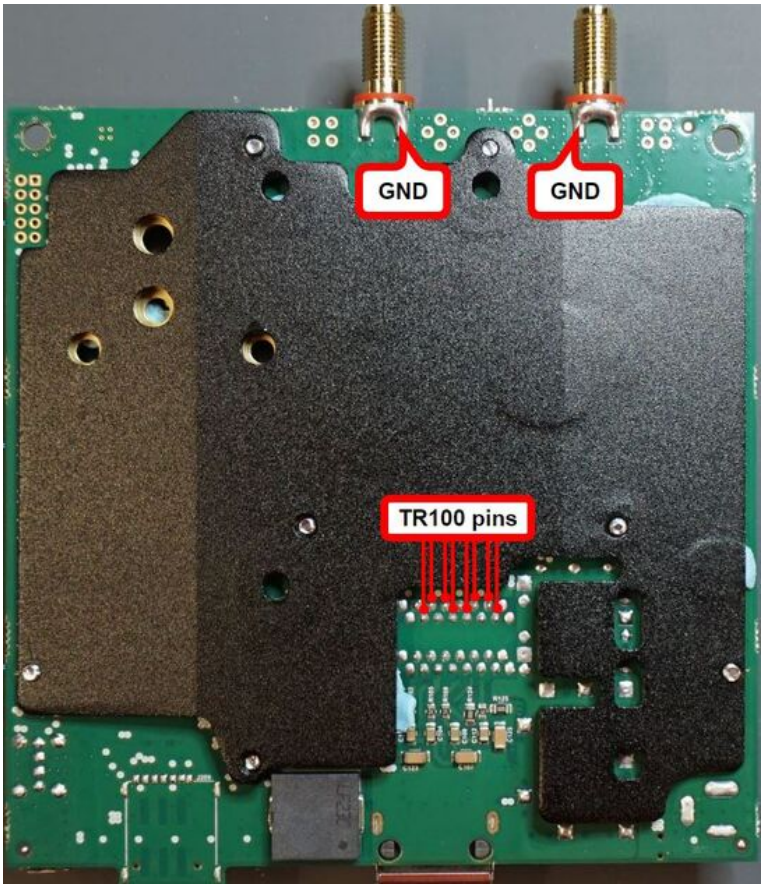
Check Schottky diode D8. Location of the diode on the board you can see in the picture 226. Schottky diode quality measurement method is described on page 4.



Picture 226

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 227. Voltage drop value should be in the range from 0,35V to 0,45V. Voltage drop measurement method is described on page 7.



Picture 227

CAP SERIES ROUTERBOARDS

cAP (cAP2nD)

V1

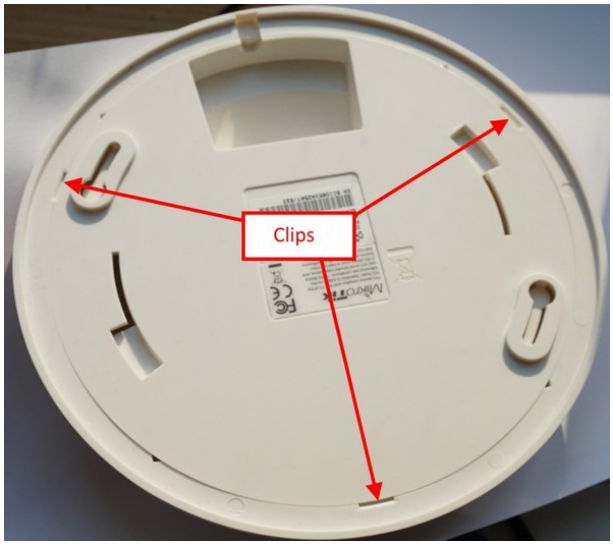
Picture 228

V2

Picture 229

Disassembling information for V1

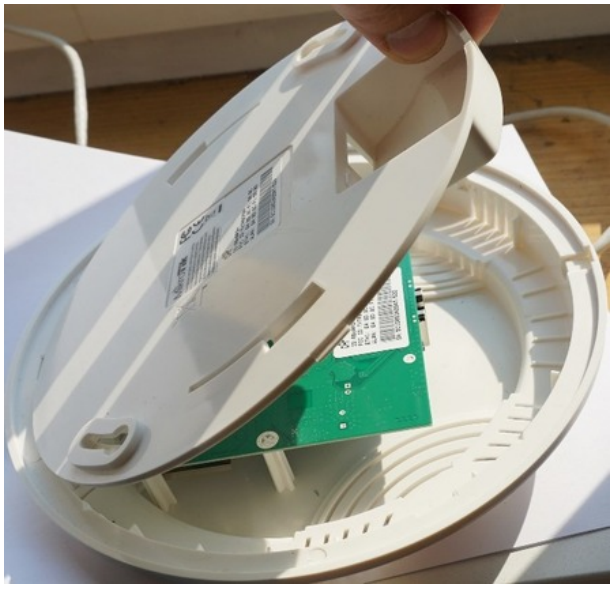
Step 1: Push the router edge around clips to open the case, see pictures 230 - 231.



Picture 230

Picture 231

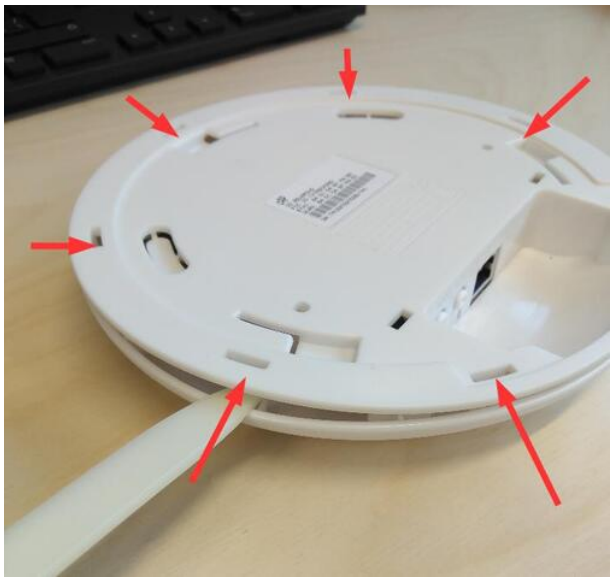
Step 2: Remove cover and take out the board from case, see picture 232.



Picture 232

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 233.



Picture 233

Step 2: Unscrew 2 mounting screws as shown in picture 234.

Picture 234

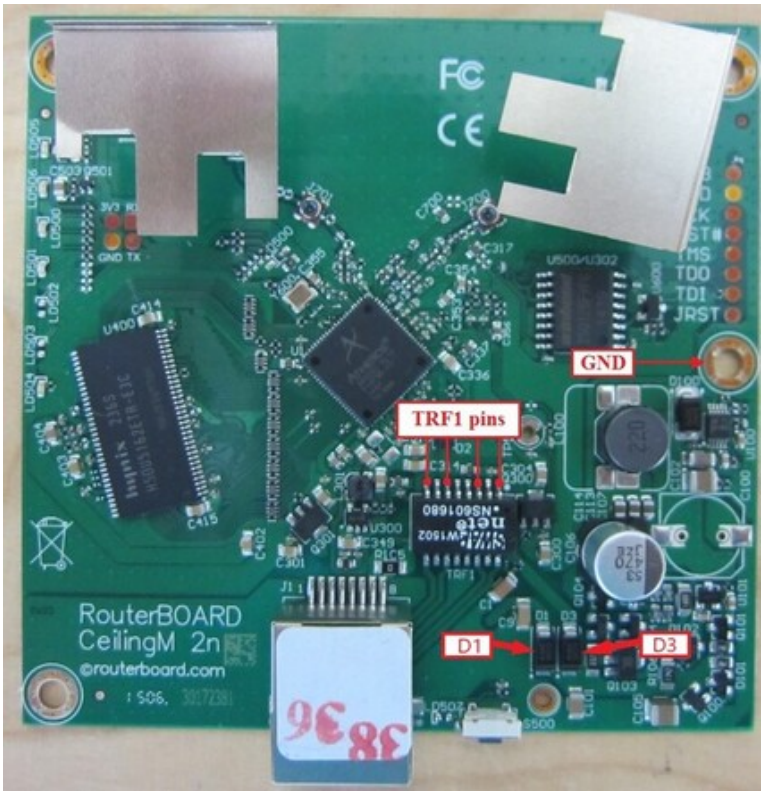
Instructions for checking overvoltage for v1

Checking Schottky diode

Check Schottky diodes D1, D3. Location of diodes on the board you can see in the picture 235. 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 235. Voltage drop value should be in the range from 0,37V to 0,42V. Voltage drop measurement method is described on page 7.



Picture 235

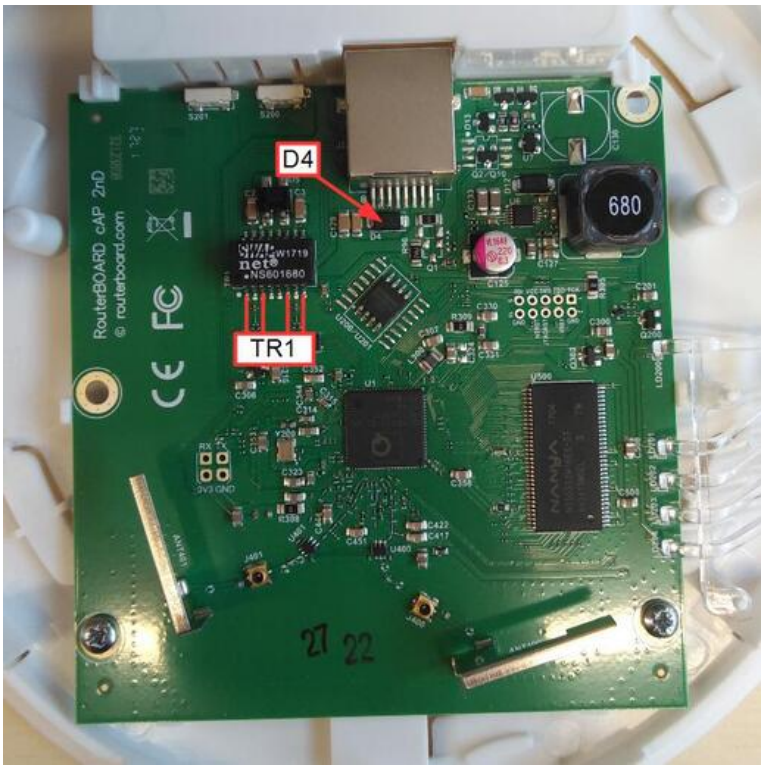
Instructions for checking overvoltage for v2

Checking Schottky diode

Check Schottky diodes D4. Location of diode on the board you can see in the picture 236. 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 236. Voltage drop value should be in the range from 0,37V to 0,40V. Voltage drop measurement method is described on page 7.



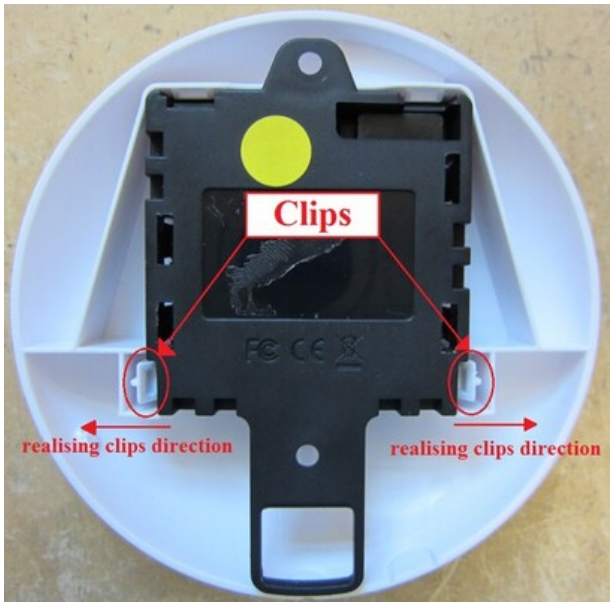
Picture 236

cAP lite (cAP L-2nD)

Picture 237

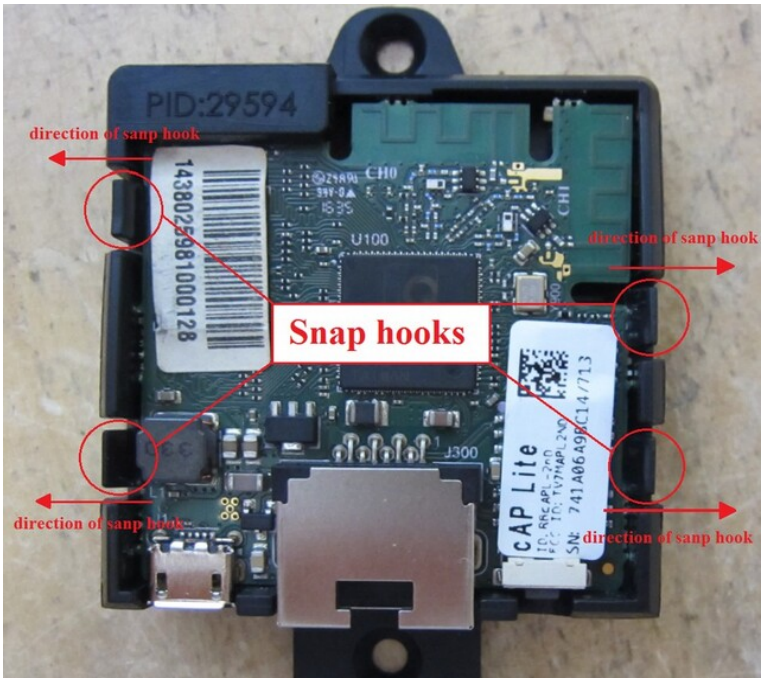
Disassembling information

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 238.



Picture 238

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 239.



Picture 239

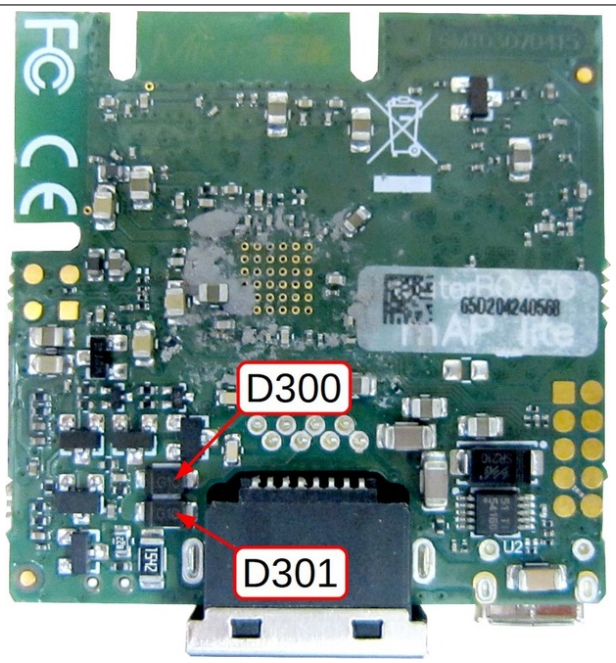
Instructions for checking overvoltage

Checking Schottky diode

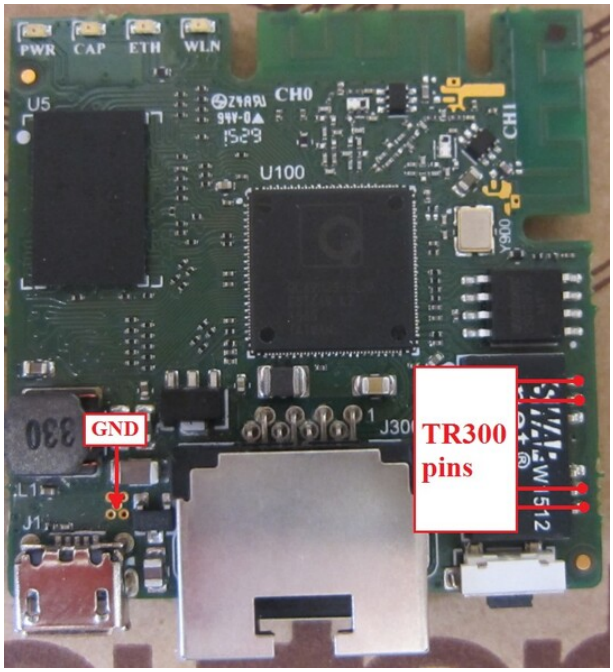
Check Schottky diodes D300, D301 on the board bottom layer, see picture 240. Schottky diode quality measurement method is described on page 4.

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 241. Voltage drop value should be in the range from 0,35V to 0,39V. Voltage drop measurement method is described on page 7.



Picture 240



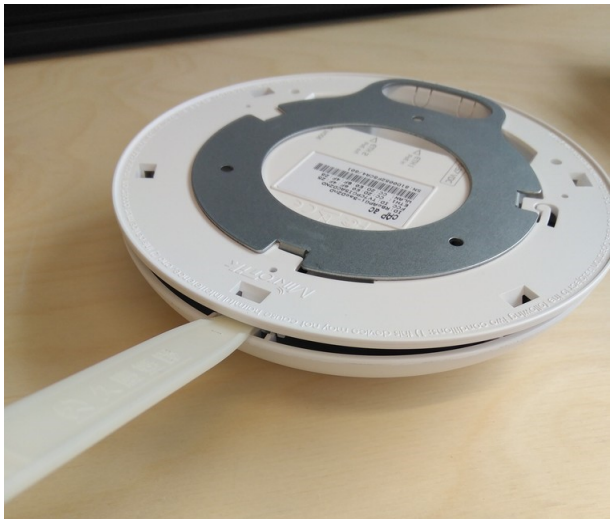
Picture 241

cAP ac (RBcAPGi-5acD2nD)

Picture 242

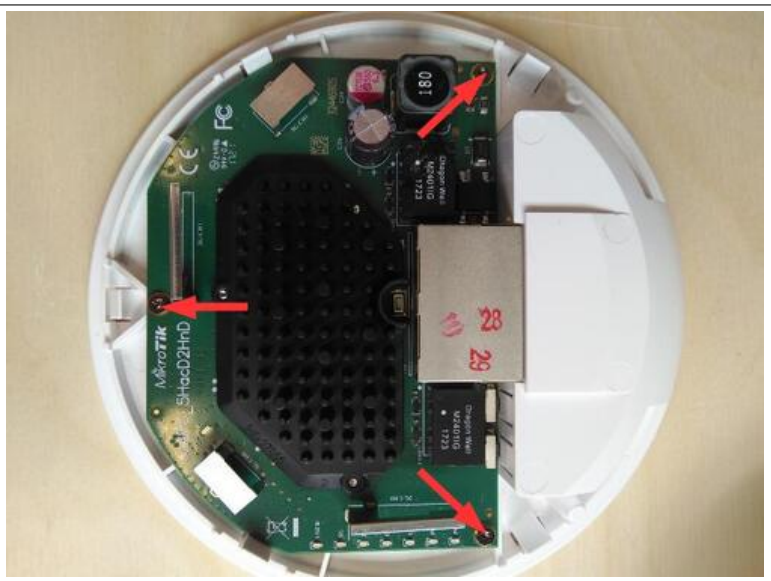
Disassembling information

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 243.



Picture 243

Step 2: Unscrew 3 mounting screws as shown in picture 244.



Picture 244

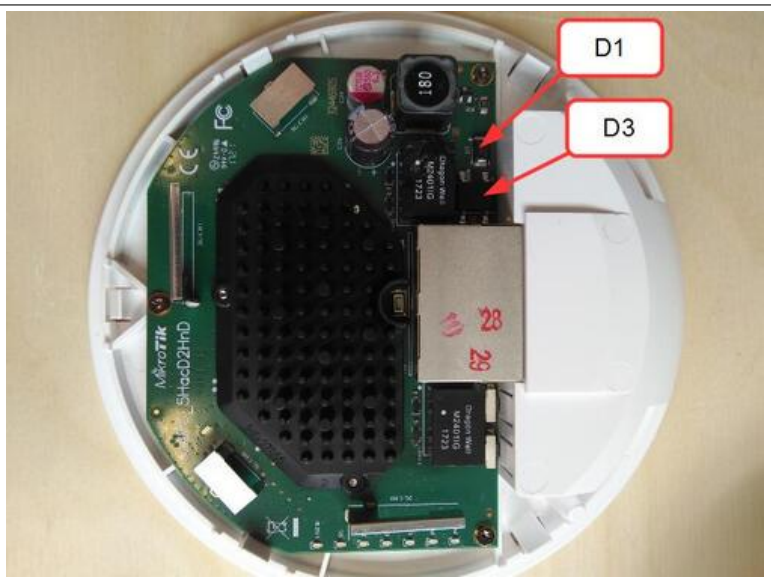
Instructions for checking overvoltage

Checking Schottky diode

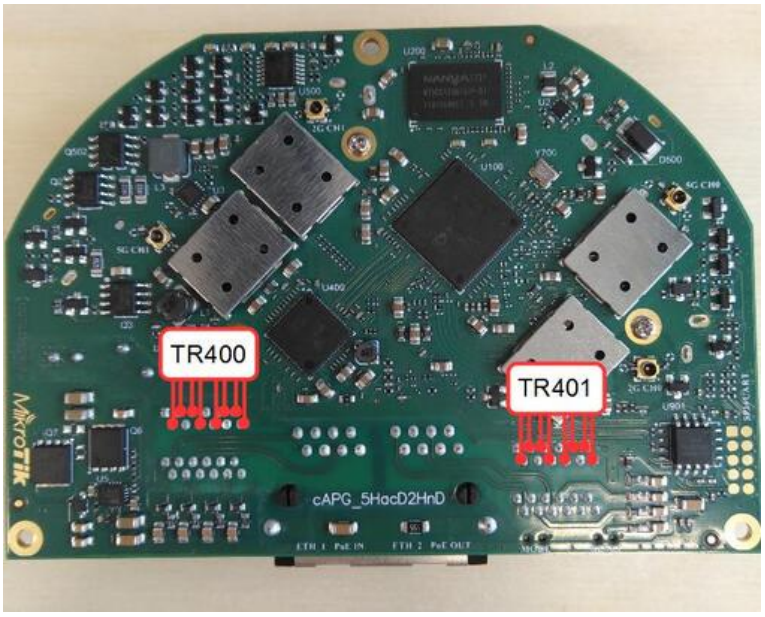
Check Schottky diodes D1 and diode bridge D3. Location of diodes on the board you can see in the picture 245. Schottky diode quality measurement method is described on page 4.

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 246. Voltage drop value should be in the range from 0,35V to 0,39V. Voltage drop measurement method is described on page 7.



Picture 245



Picture 246

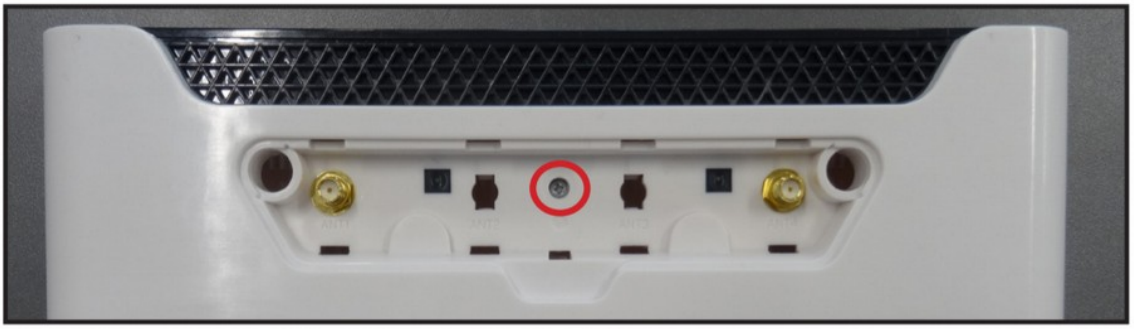
CHATEAU SERIES ROUTERBOARDS

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

Picture 247

Disassembling information

Step 1: Tools recommended for the disassembly are plastic prying tools, such as shown on pictures 308 and 309, a PH1 and a T8 screwdriver. Unscrew the central screw (PH1) as shown in the picture 259.



Picture 248

Step 2: The board's cover and base parts are put together using snap fit hooks. Placement of these hooks is shown in picture 260.

Picture 249

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 308 and 309.
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 263 – 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

264, 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 250

Picture 251

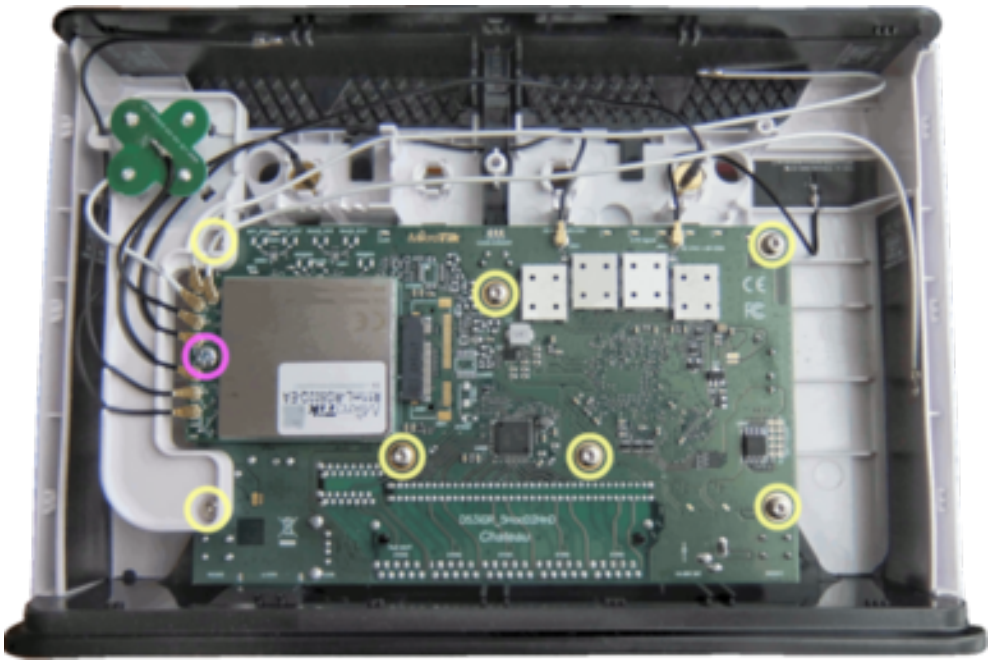
Picture 252

Picture 253

Step 4: Continue to release snap hooks around perimeter as shown in picture 265

Picture 254

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 255.



Picture 255

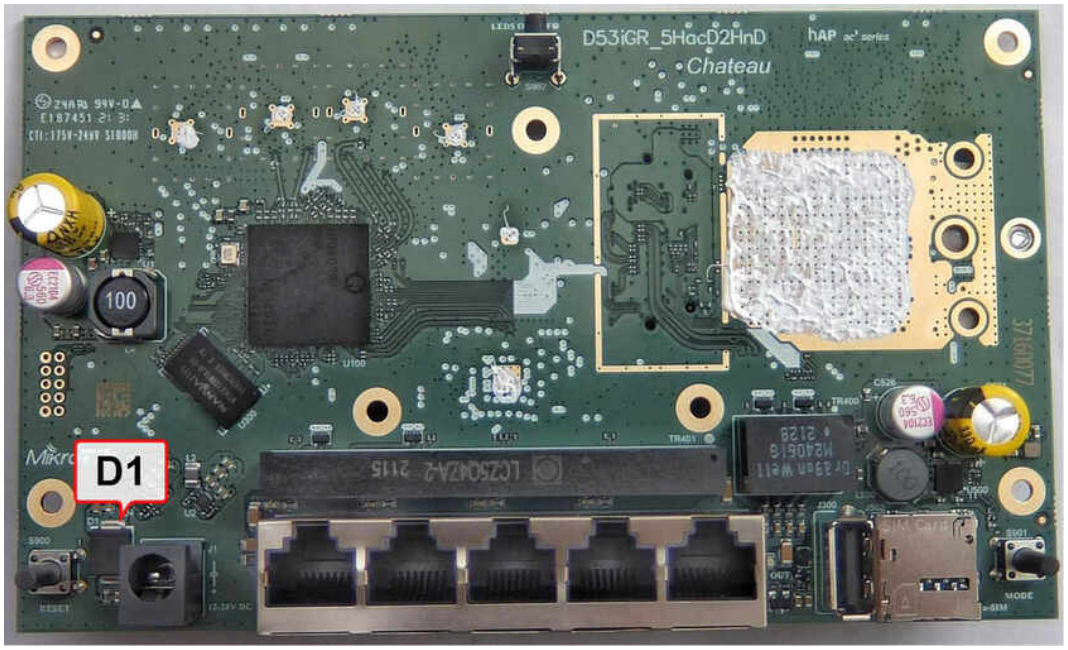
Instructions for checking overvoltage

Checking Schottky diode

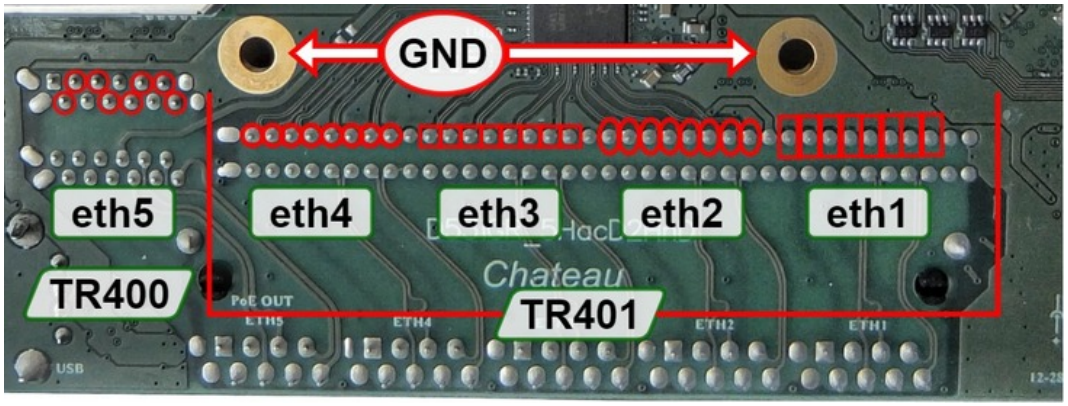
Check Schottky diodes D1. Location of diode on the board is shown in picture 256. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

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 257. Voltage drop value should be in the range from 0,35V to 0,39V. Voltage drop measurement method is described on page 7.



Picture 256



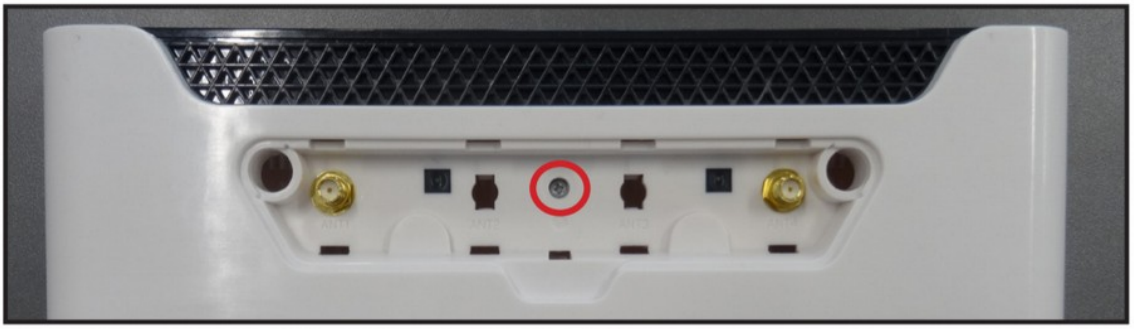
Picture 257

Chateau 5G AX (S53UG+M-5HaxD2HaxD-TC&RG502Q-EA)

Picture 258

Disassembling information

Step 1: Tools recommended for the disassembly are plastic prying tools, such as shown on pictures 308 and 309, a PH1 and a T8 screwdriver. Unscrew the central screw (PH1) as shown in the picture 259.



Picture 259

Step 2: The board's cover and base parts are put together using snap fit hooks. Placement of these hooks is shown in picture 260.

Picture 260

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 308 and 309.
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 263 – 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

264, 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 261

Picture 262

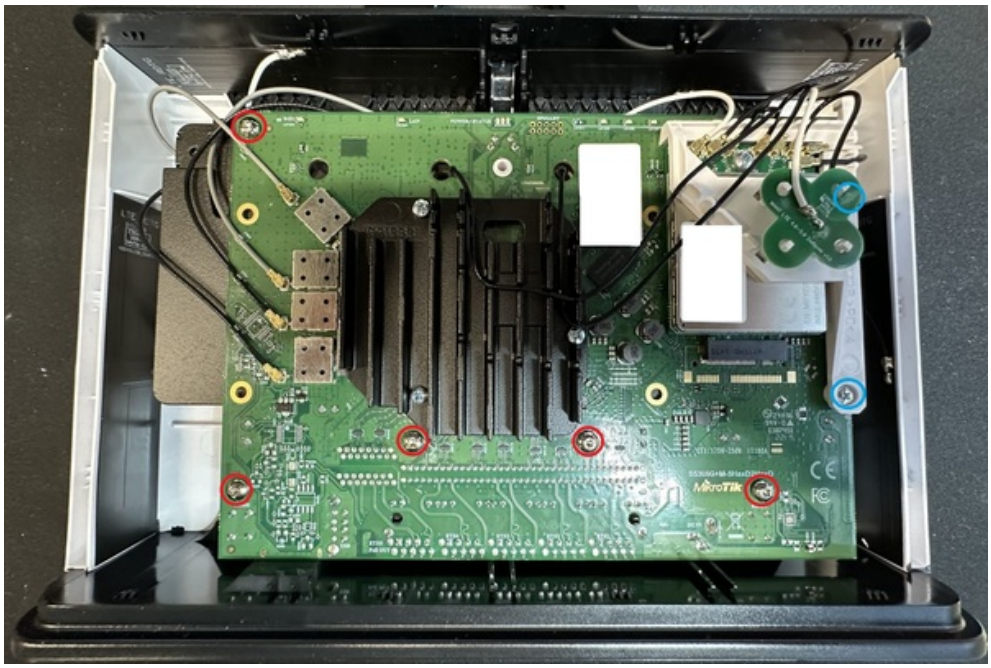
Picture 263

Picture 264

Step 4: Continue to release snap hooks around perimeter as shown in picture 265

Picture 265

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 266.



Picture 266

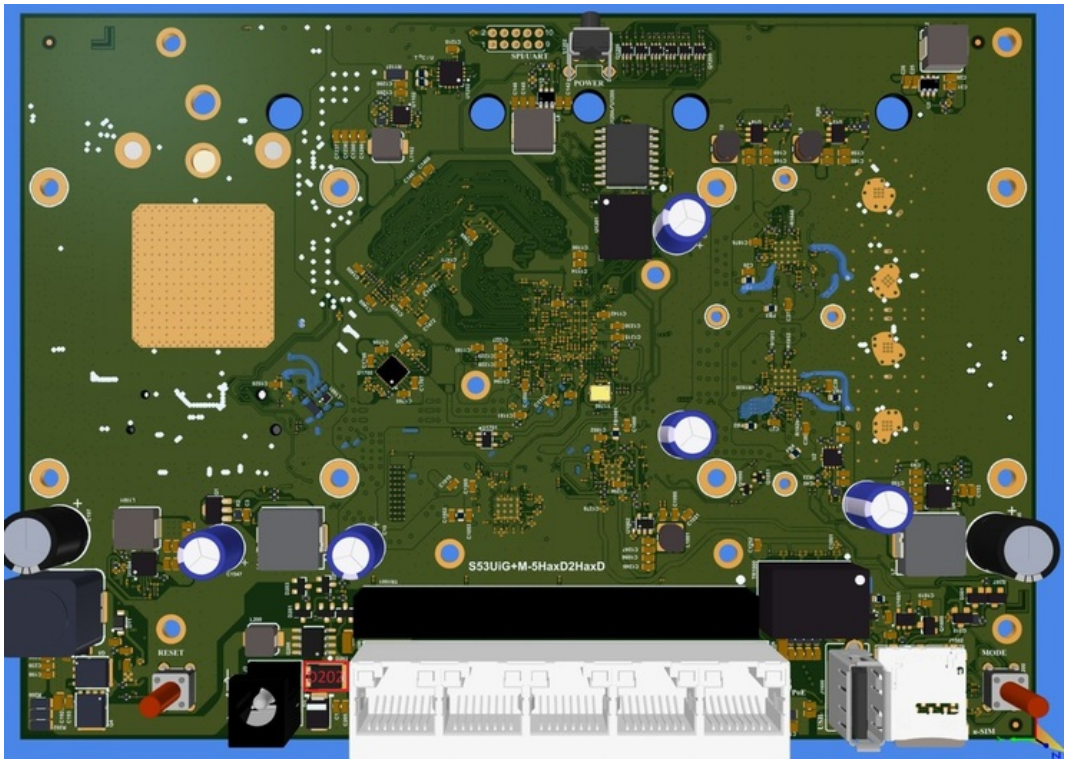
Instructions for checking overvoltage

Checking Schottky diode

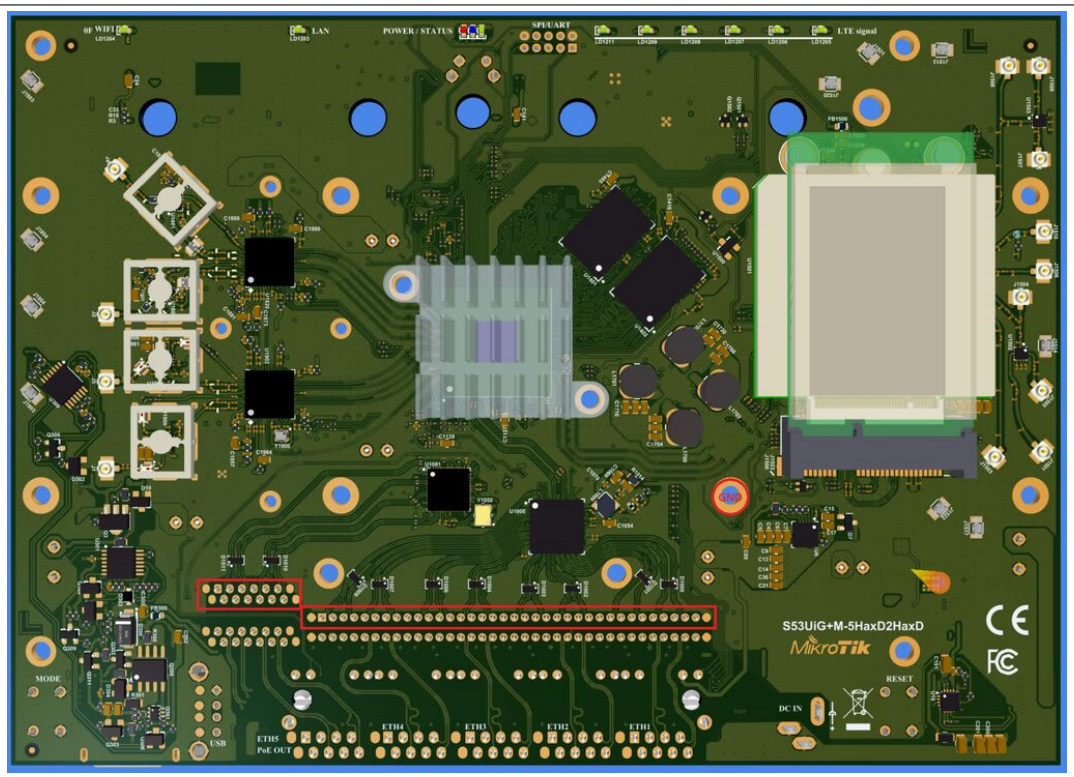
Check Schottky diode D202. Location of diode on the board is shown in picture 267. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

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 268. Voltage drop value should be in the range from 0,35V to 0,39V. Voltage drop measurement method is described on page 7.



Picture 267


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

Picture 268

Chateau LTE18 ax

Picture 269

Disassembling information

The Chateau LTE18 ax disassemble is similair to the Chateau 5G AX, you can find description of device disassembly on page 214.

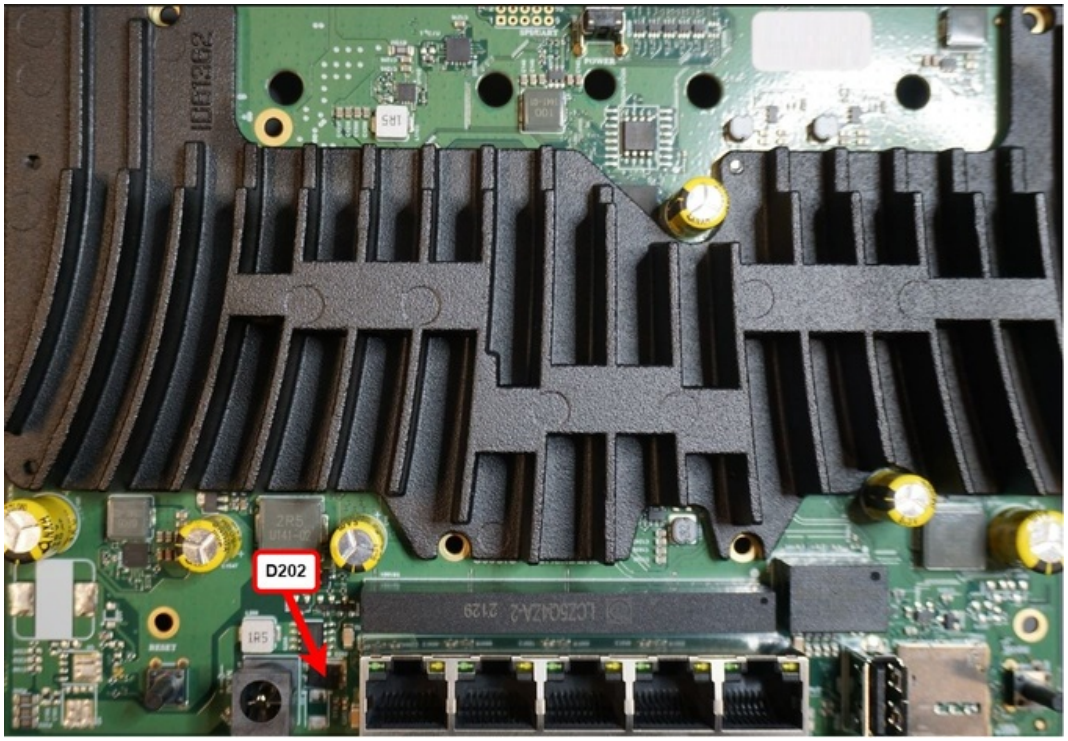
Instructions for checking over-voltage

Checking Schottky diode

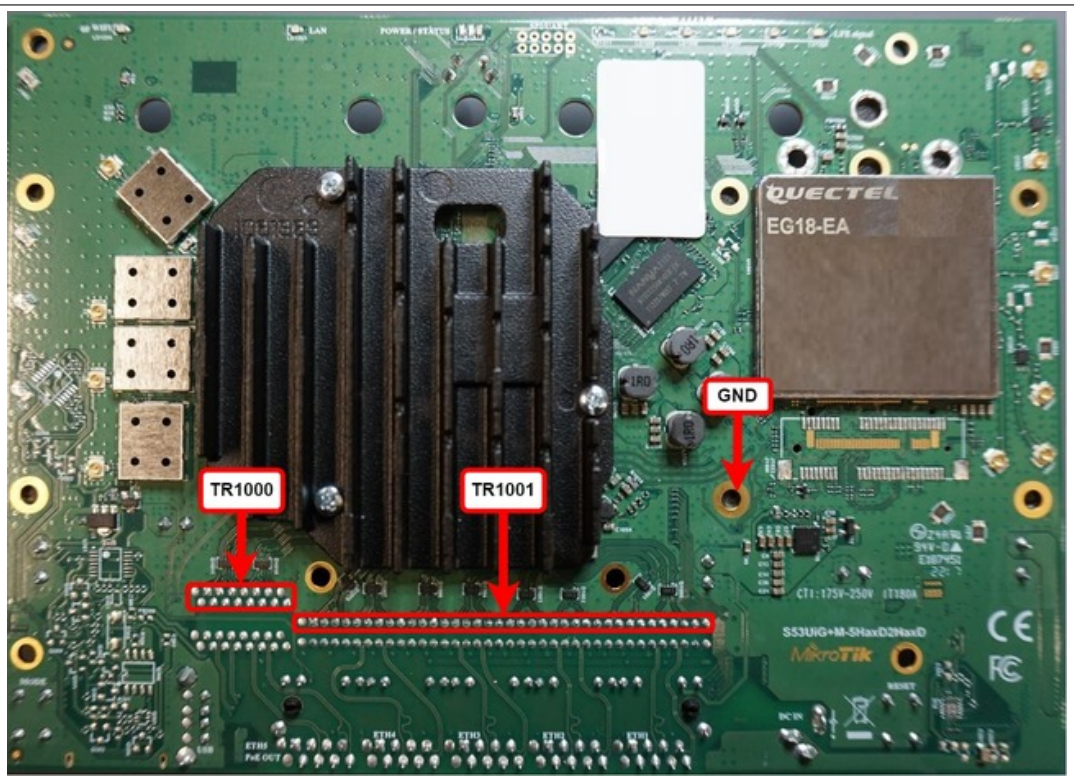
Check Schottky diode D202. Location of the diodes on the board you can see in the picture 270. Schottky diode quality measurement method is described on page 4.

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 271. Voltage drop value should be in the range from 0,35V to 0,40V. Voltage drop measurement method is described on page 7.



Picture 270



Picture 271

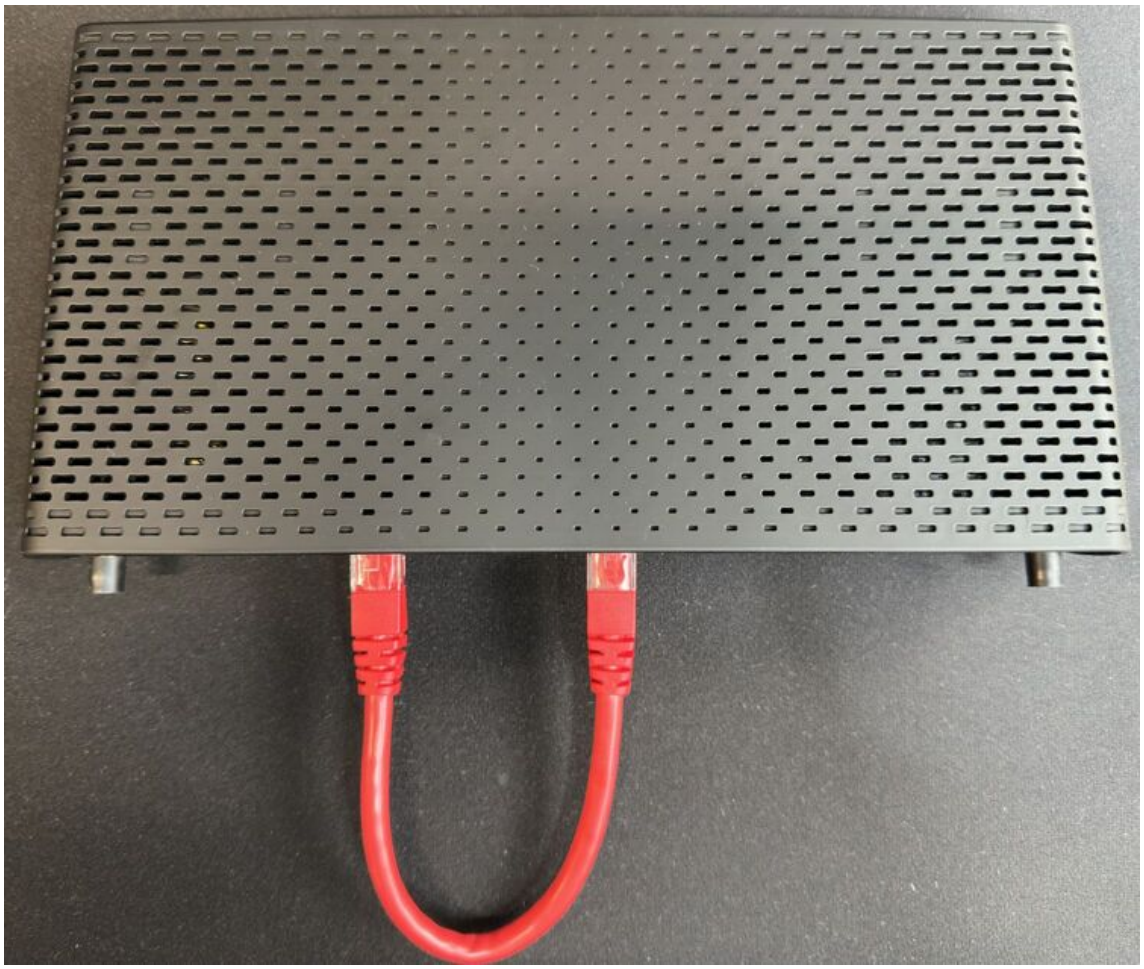
HAP SERIES ROUTERBOARDS

hAP ax3 (C53UiG+5HPaxD2HPaxD)

Picture 272

Disassembling information

Step 1: Tools recommended for the disassembly are plastic prying tools, such as the one shown on picture 308, a PH1 screwdriver and a 0,25M ethernet cable. Plug in an ethernet cable in ethernet ports 1 and 5 as shown in picture 273.



Picture 273

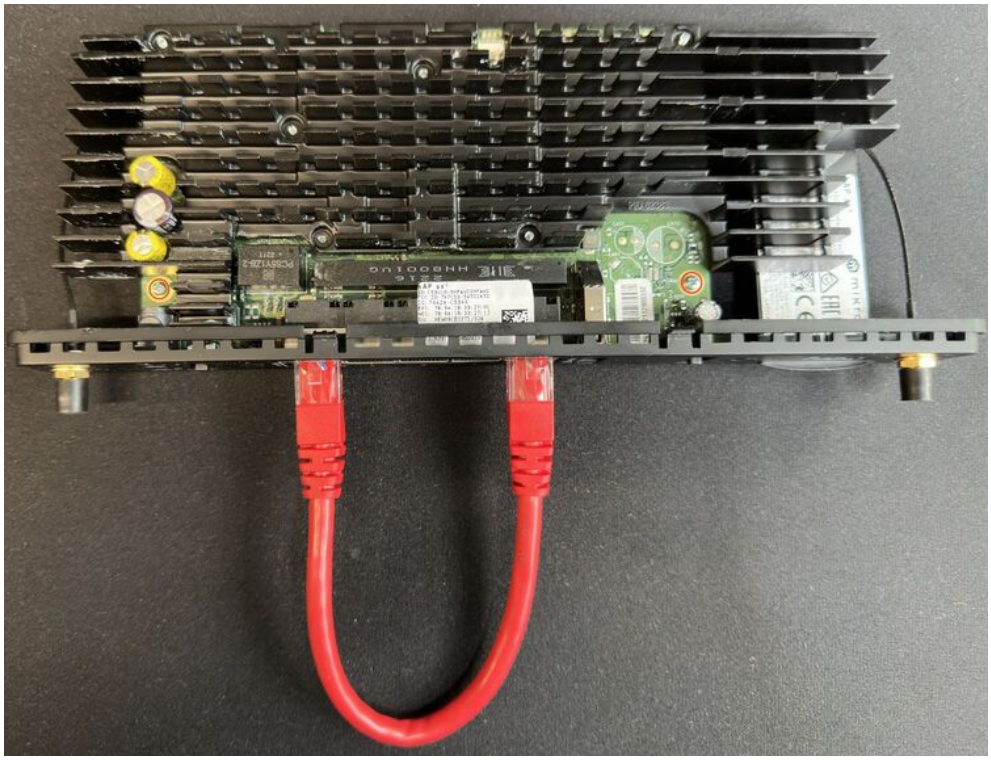
Step 2: The board is held inside the case with snap fit hooks. Placement of these hooks is shown in picture 274.

Picture 274

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 308.
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.

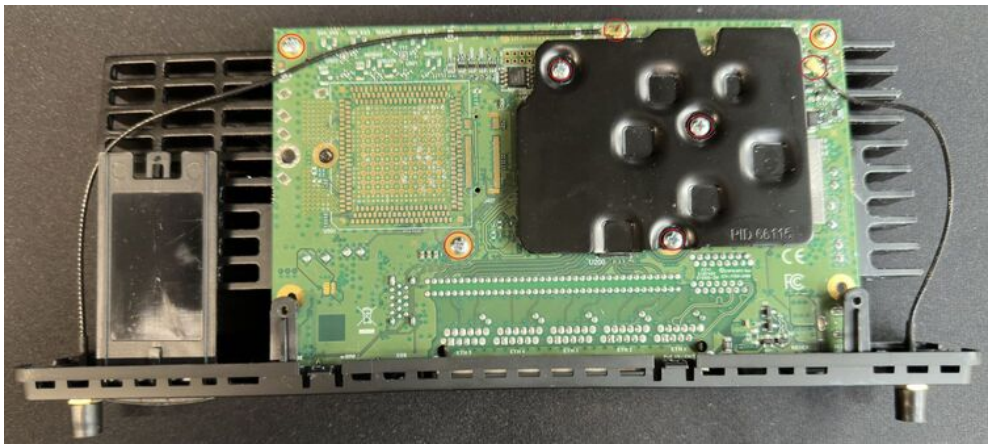
Picture 275

Step 4: After pulling the routerboard out of the case, unscrew the two screws shown in picture 276



Picture 276

Step 5: Then turn the routerboard to the other side and remove the two antenna connectors and unscrew the 6 screws shown in picture 277.



Picture 277

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

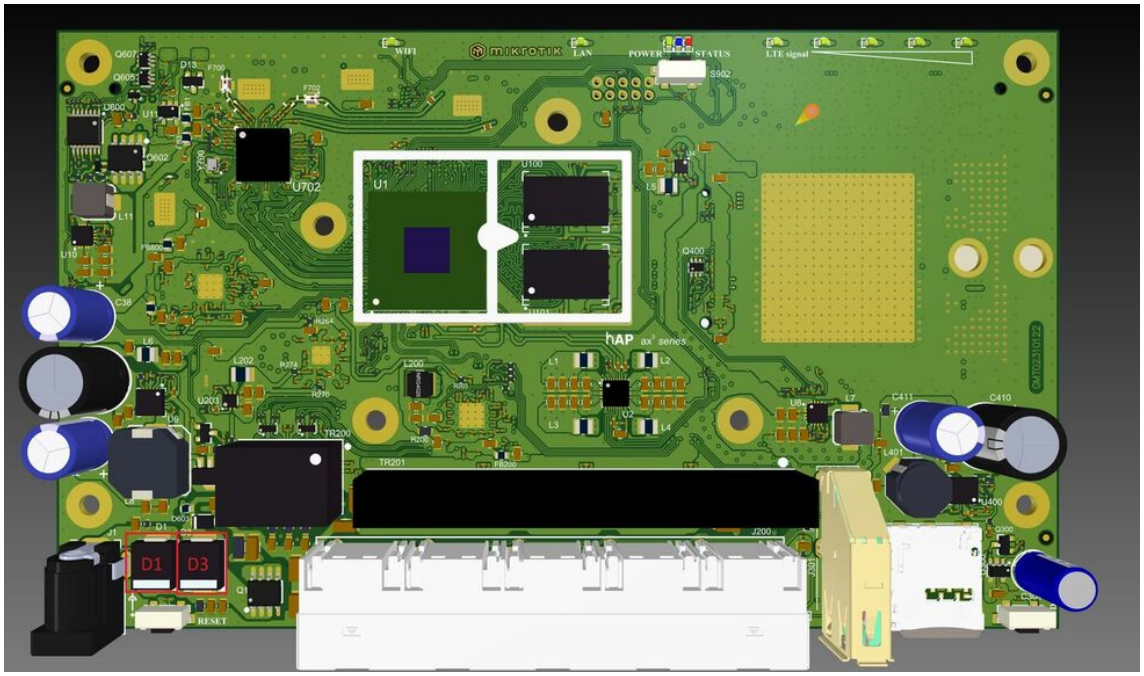
Instructions for checking overvoltage

Checking Schottky diode

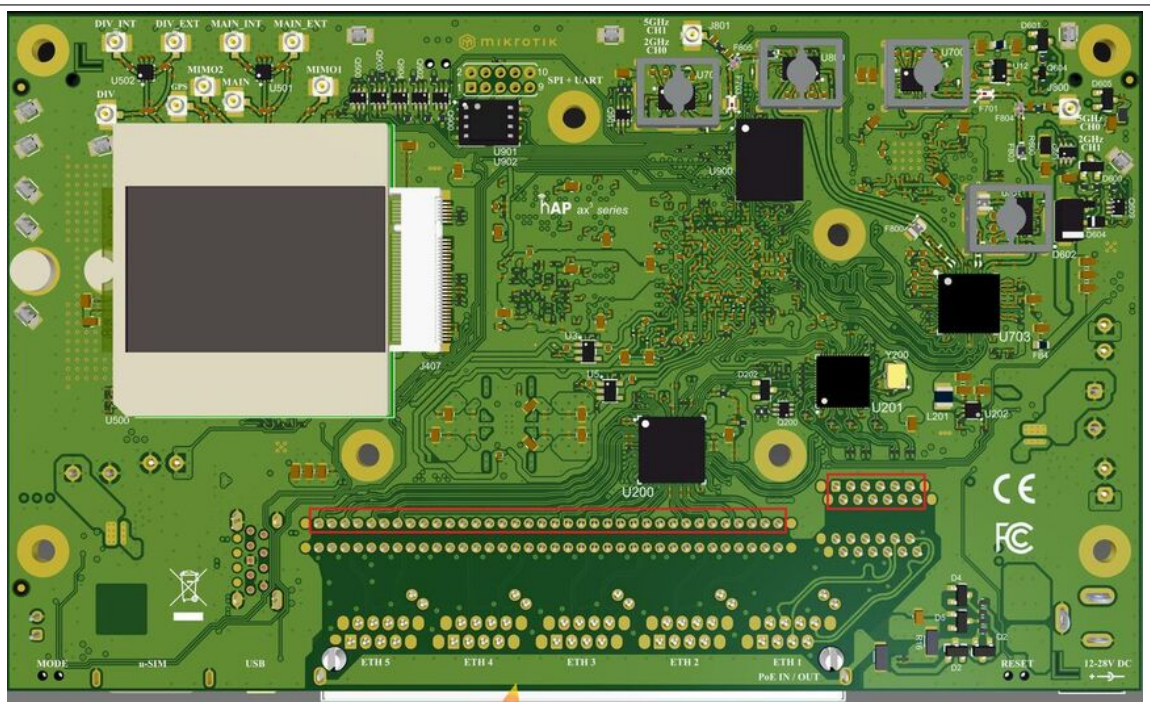
Check Schottky diodes D1 and D3.The location of these diodes on the board is shown in picture 278. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

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 279. Voltage drop value should be in the range from 0,35V to 0,39V. Voltage drop measurement method is described on page 7.



Picture 278


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

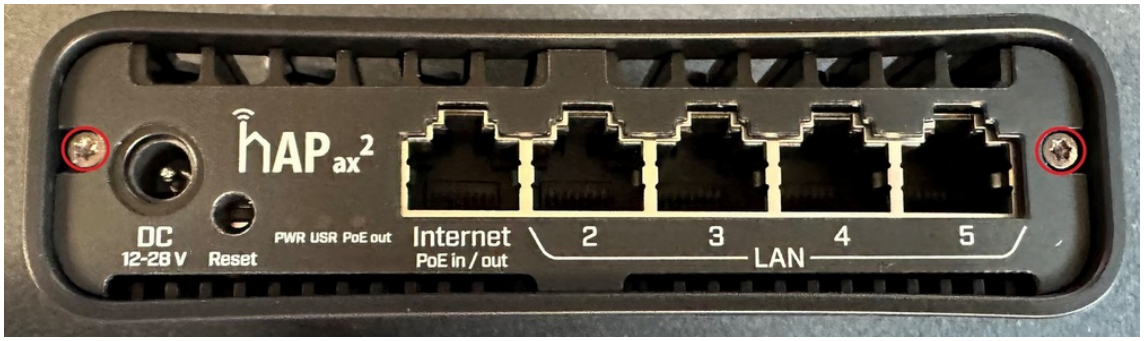
Picture 279

hAP ax2 (C52iG-5HaxD2HaxD-TC)

Picture 280

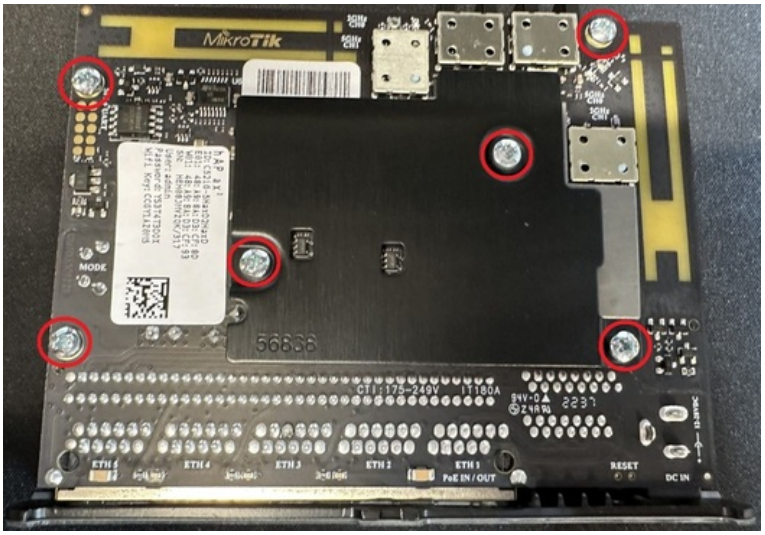
Disassembling information

Step 1: Tools recommended for the disassembly are a PH1 and TR8 screwdriver. First unscrew the two TR8 screws that are shown in picture 281. Then you can slide the board out of the case.



Picture 281

Step 2: Unscrew the six PH1 screws shown in picture 282. Now remove the top and bottom heatsinks and then you can begin the tests for checking overvoltage.



Picture 282

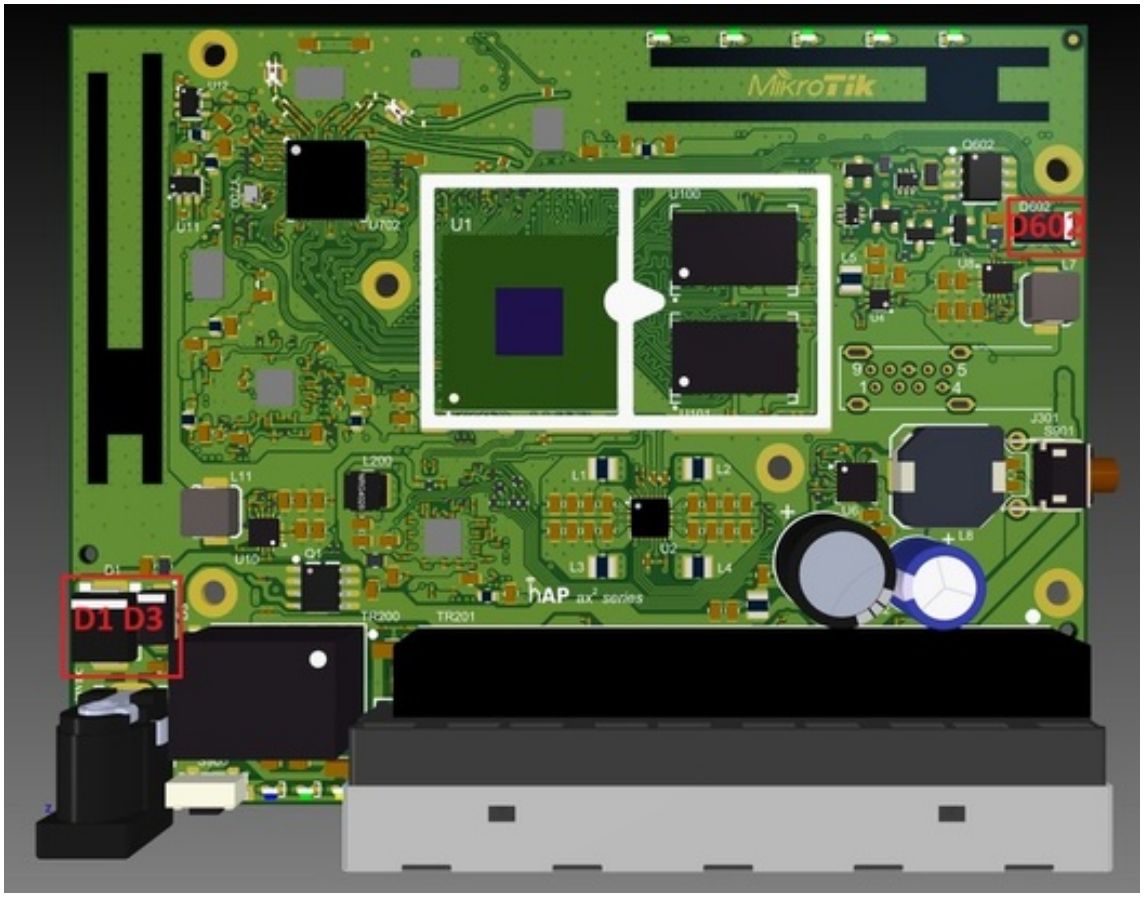
Instructions for checking overvoltage

Checking Schottky diode

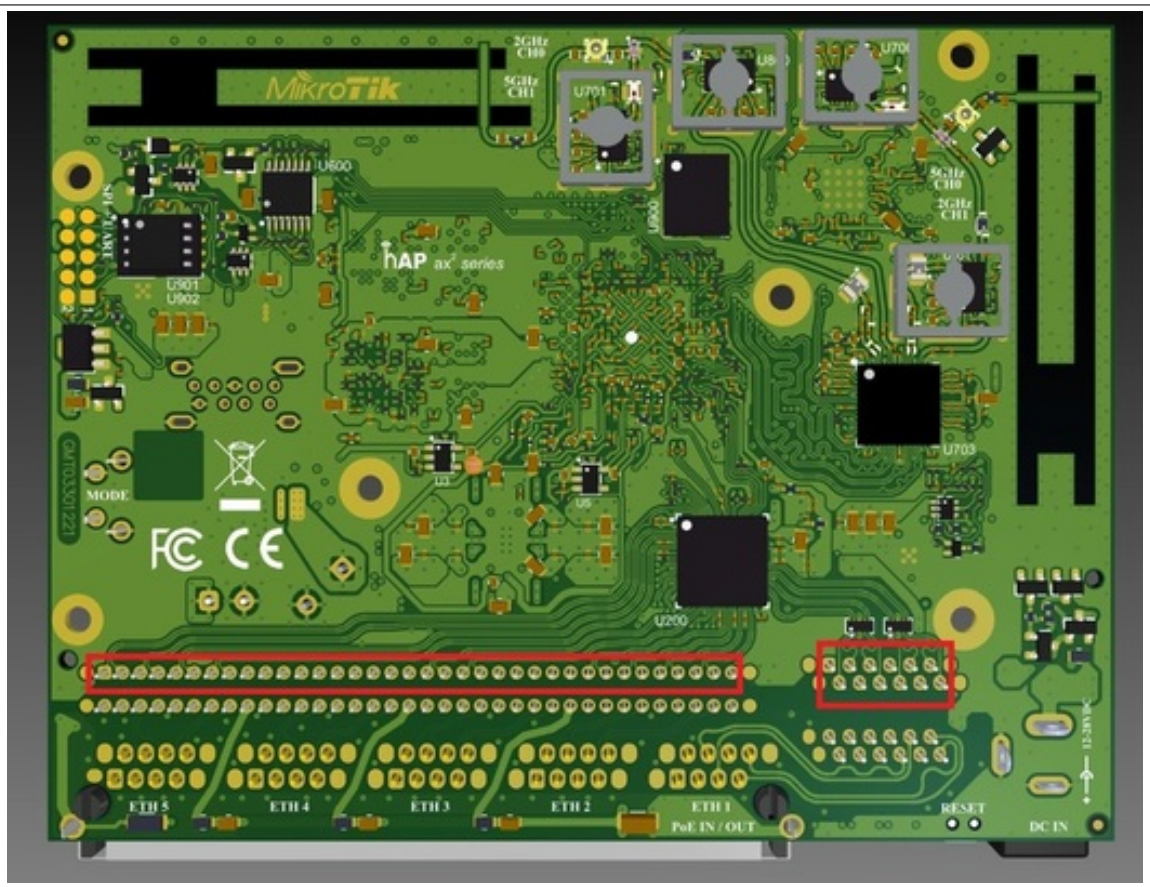
Check Schottky diodes D1, D3 and D602.The location of these diodes on the board is shown in picture 283. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

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 284. Voltage drop value should be in the range from 0,35V to 0,39V. Voltage drop measurement method is described on page 7.



Picture 283


MikroTik
hAP ax² series
MODE
ETH 5
ETH 4
ETH 3
ETH 2
ETH 1
PoE IN / OUT
RESET
DC IN

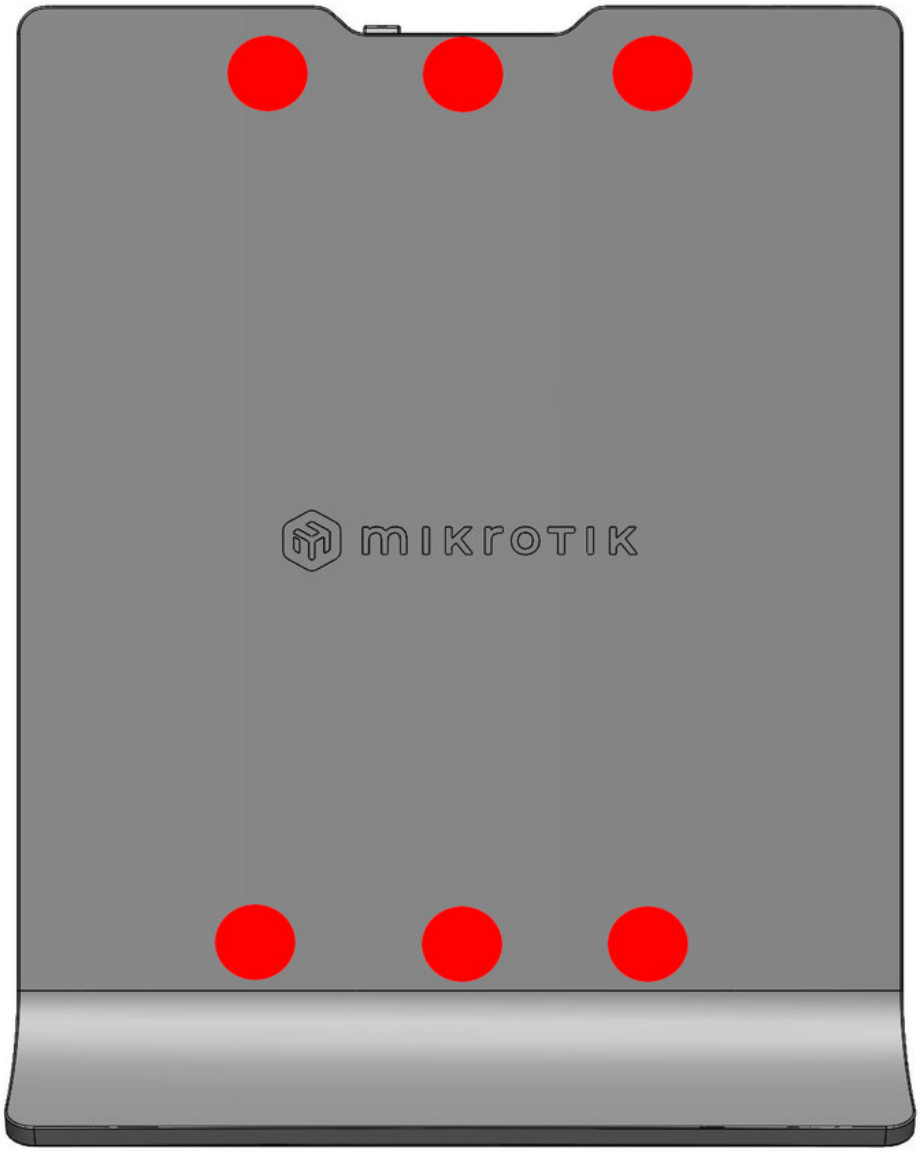
Picture 284

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

Picture 285

Disassembling information

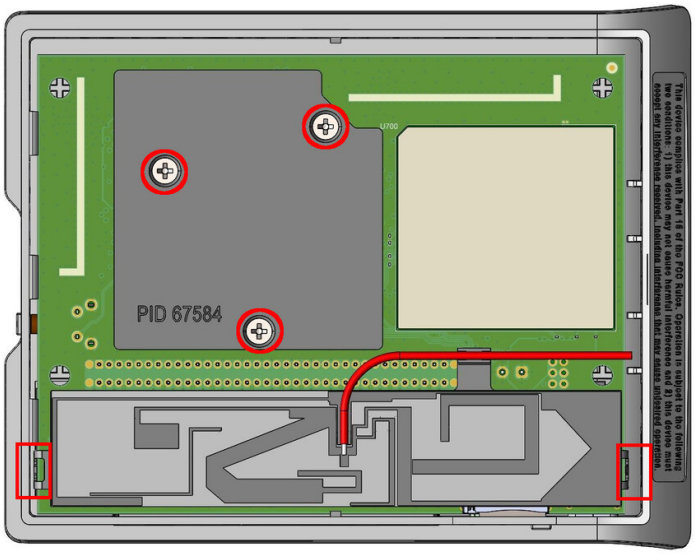
Step 1: Plastic prying tools are recommended, because plastic is less likely to leave deformation marks on the case of the routerboard. Suggested prying tool is shown in picture 287. The disassembly starts undoing six snap fit hooks that are located as shown in picture 286, then you must insert a prying 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 286

Picture 287

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 288. Now remove the top and bottom heatsinks and then you can begin the tests for checking overvoltage.

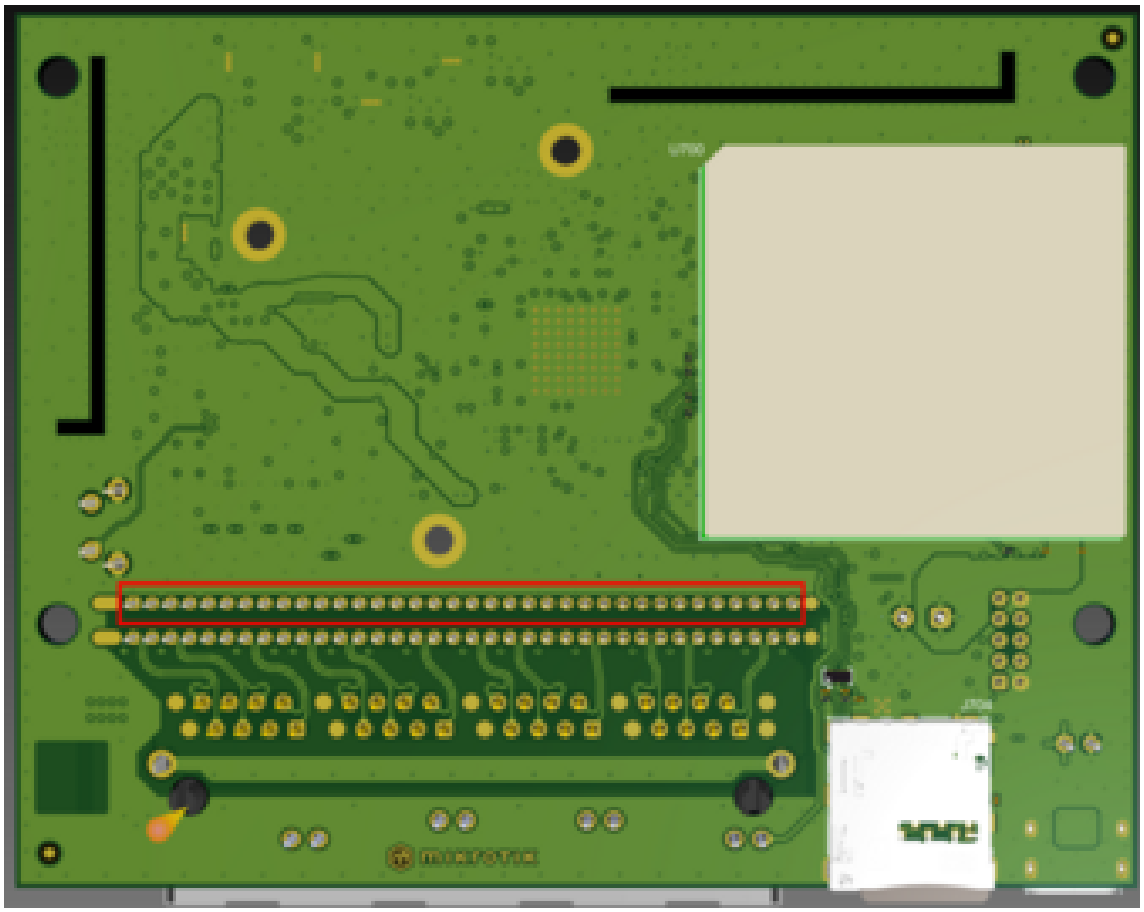


Picture 288

Instructions for checking overvoltage

Checking voltage drop value between Ethernet transformer pins and Ground

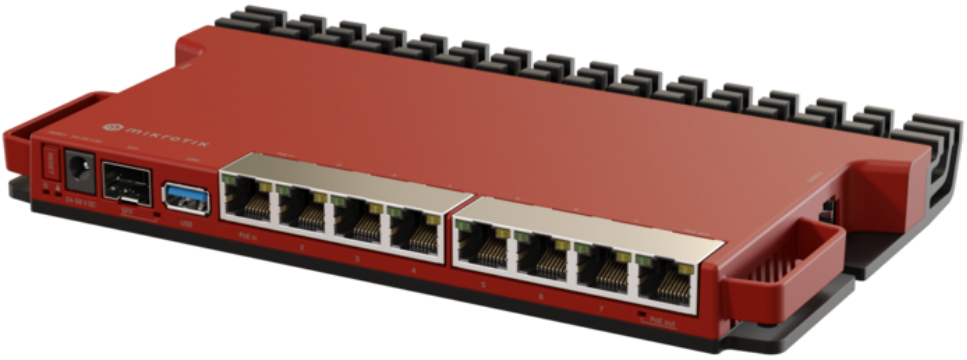
Check voltage drop value between Ethernet transformers TR200 and TR201 pins and Ground. Test points on the transformer pins are highlighted with red lines, see picture 289. Voltage drop value should be in the range from 0,35V to 0,39V. Voltage drop measurement method is described on page 7.



Picture 289

L009 SERIES ROUTERBOARDS

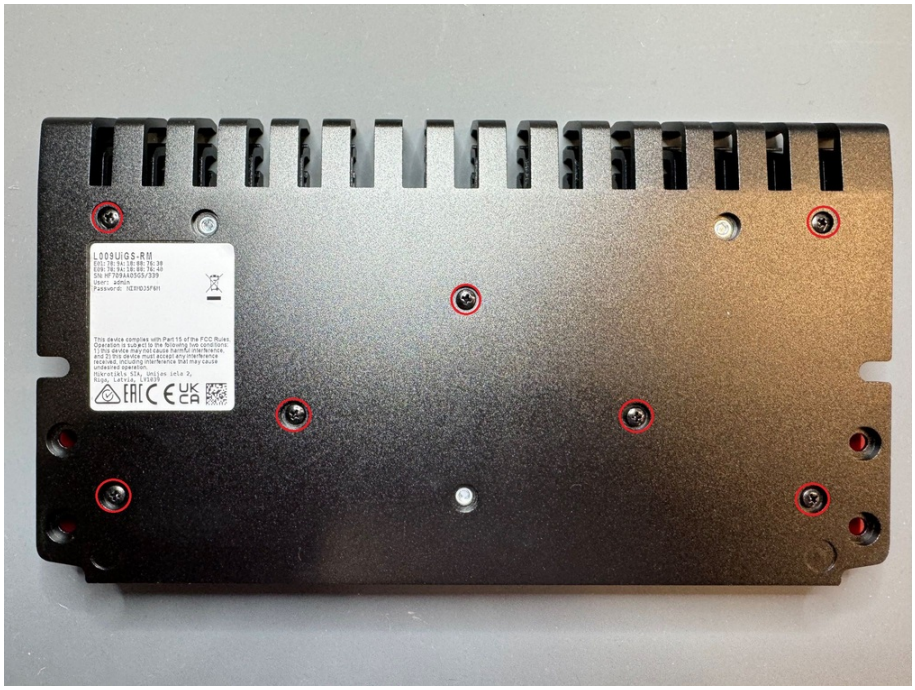
L009UiGS-RM and L009UiGS-2HaxD-IN



Picture 290

Disassembling information

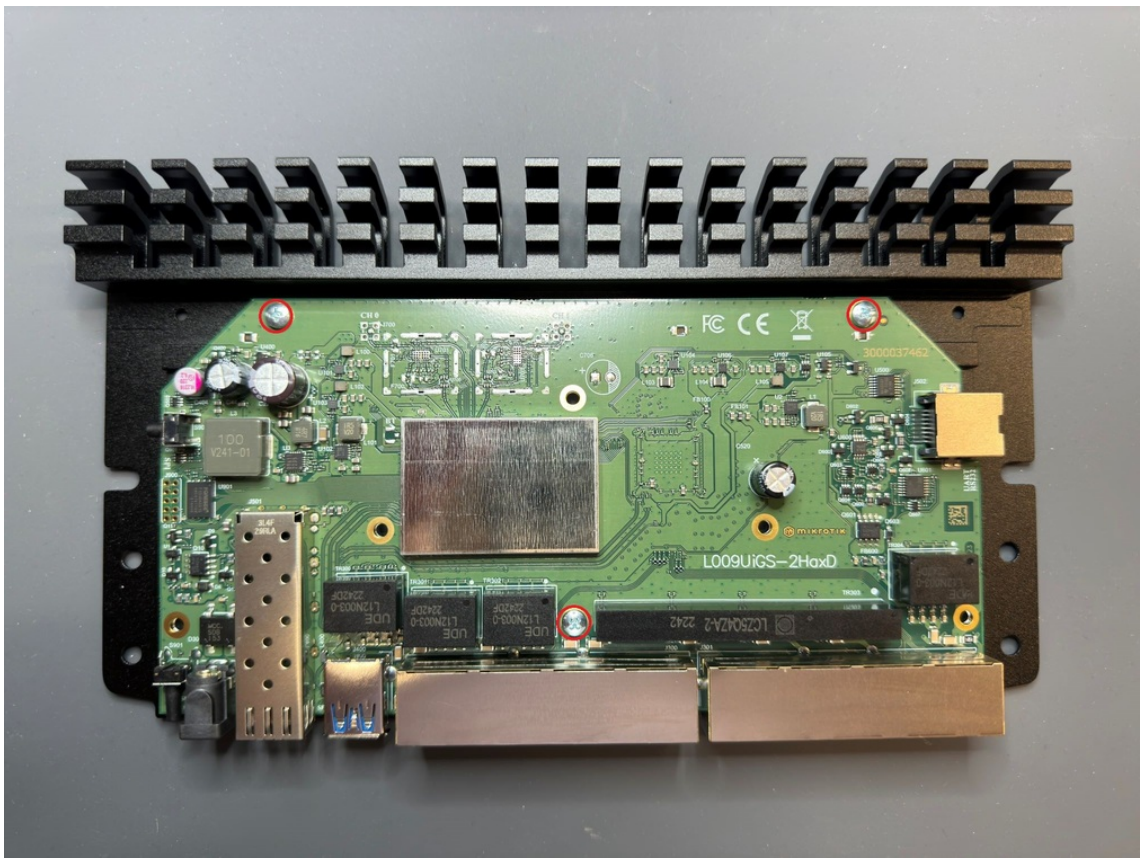
Step 1: To disassemble the RouterBOARD you will need a PH0 screwdriver. To start the disassembly please turn the RouterBOARD black side facing upward and start unscrewing the 7 highlighted screws as shown in picture 291. When you have finished unscrewing the screws turn the RouterBOARD around and remove the red cover as shown in picture 292.



Picture 291

Picture 292

Step 2: After removing the red cover unscrew the 3 screws that are holding the RouterBOARD in place as shown in the picture 293. Now you can remove the PCB and start checking overvoltage.

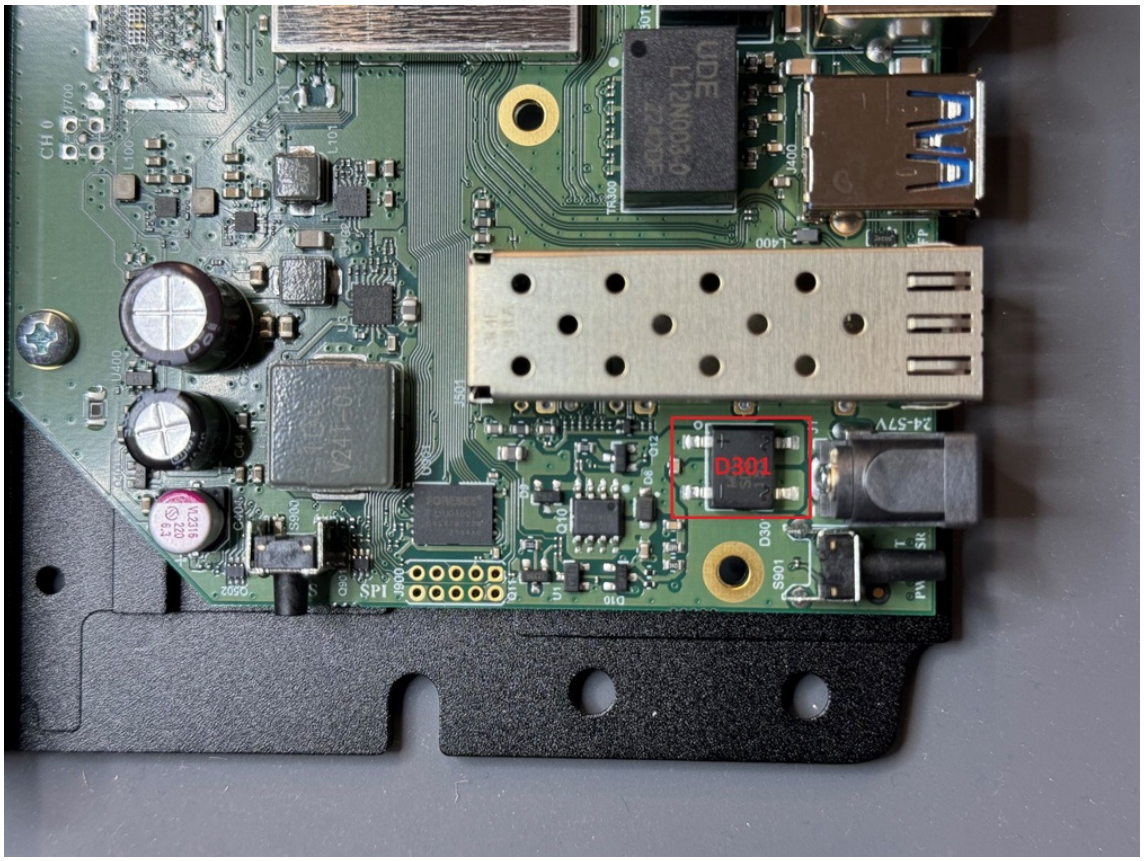


Picture 293

Instructions for checking overvoltage

Checking Schottky diode

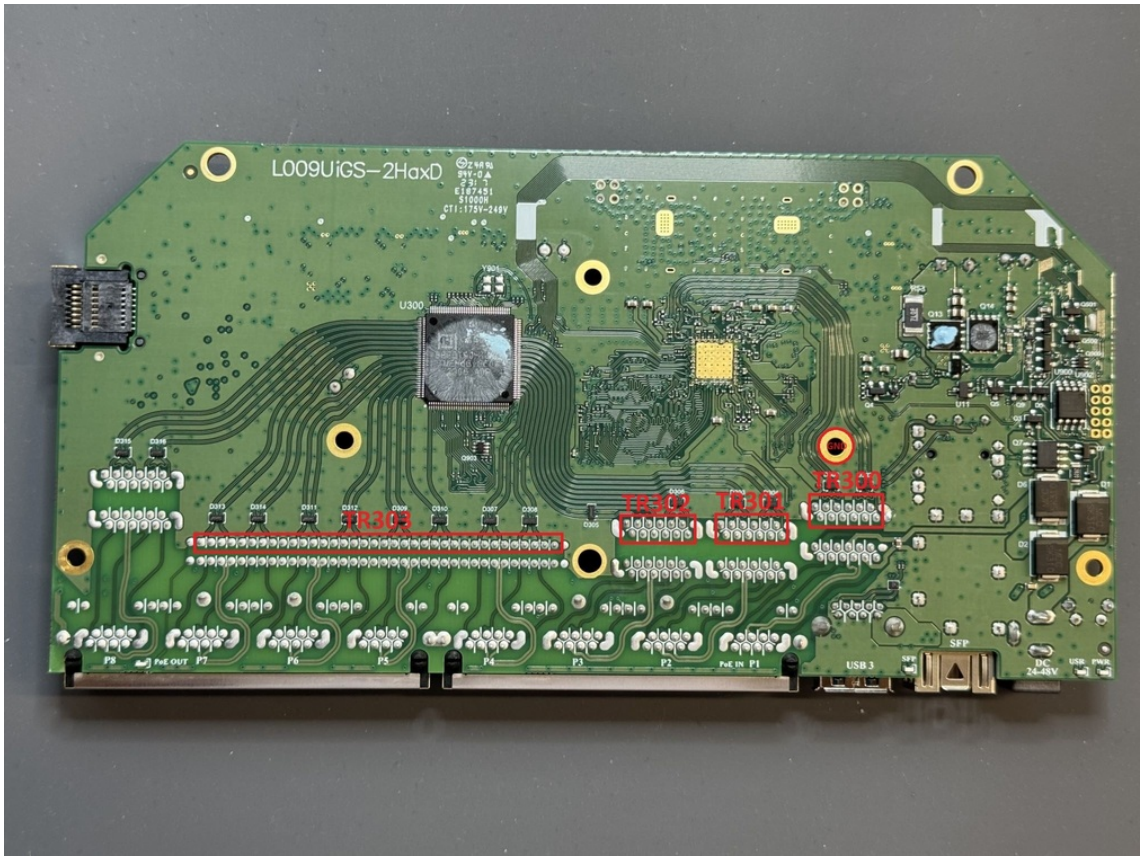
Check diode bridge D301.The location of this diode on the board is shown in picture 294. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.



Picture 294

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 295. Voltage drop value should be in the range from 0,32V to 0,45V. Voltage drop measurement method is described on page 7.



Picture 295

CUBE SERIES ROUTESBOARD

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

Picture 296

Disassembling information

Step 1: Unscrew 4 screws using torx T8 screwdriver. Location of the screws is shown the picture 297.

Picture 297

Step 2: Using a scalpel or a sharp knife, carefully separate the cover. How to do this, see the picture 298. The cover is difficult to remove because it is glued with sealant, so be extremely cautious doing this.

Picture 298

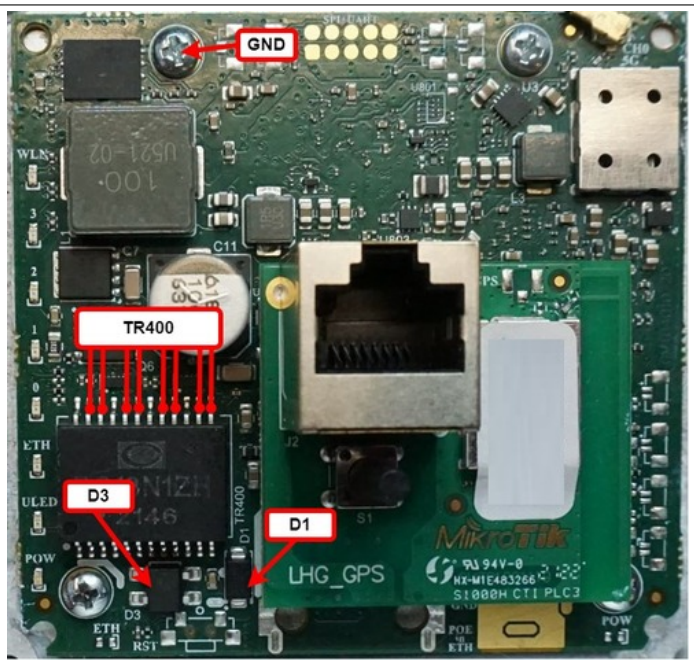
Instructions for checking over-voltage

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 298. 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 298. Voltage drop value should be in the range from 0,35V to 0,40V. Voltage drop measurement method is described on page 7.



Picture 299

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 ROUTESBOARD

LDF LTE6 kit (RBLDFR&R11e-LTE6)

Picture 300

Disassembling information

Tools recommended for the disassembly are plastic prying tools, such as shown on pictures 301 and 302.

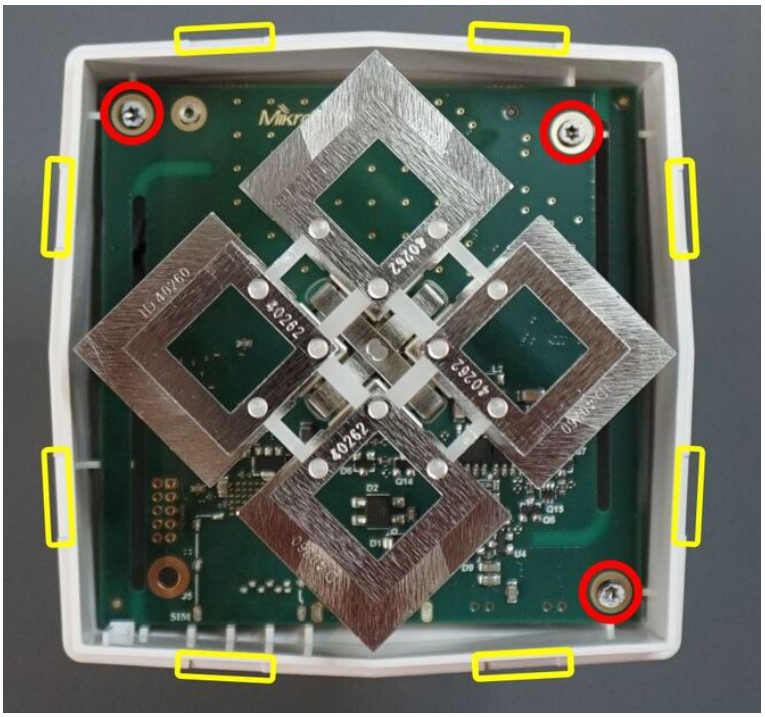
Picture 301

Picture 302

Step 1: Using plastic prying tools release 8 snap hooks around the perimeter of the case as shown in the picture 303. The lactation of the snap hooks can bee seen in the picture 304 (marked in yellow).

Picture 303

Step 2: Unscrew 3 screws using torx T8 screwdriver. Location of the screws is shown the picture 304.

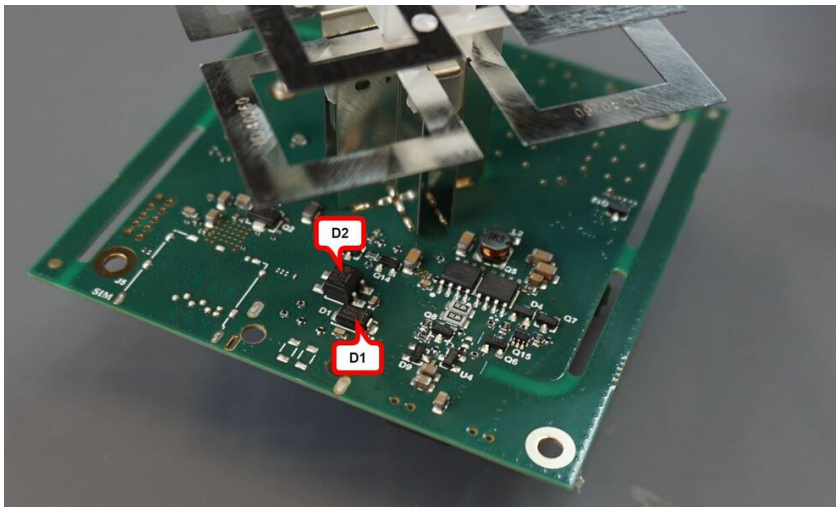


Picture 304

Instructions for checking over-voltage

Checking Schottky diode and diode bridge

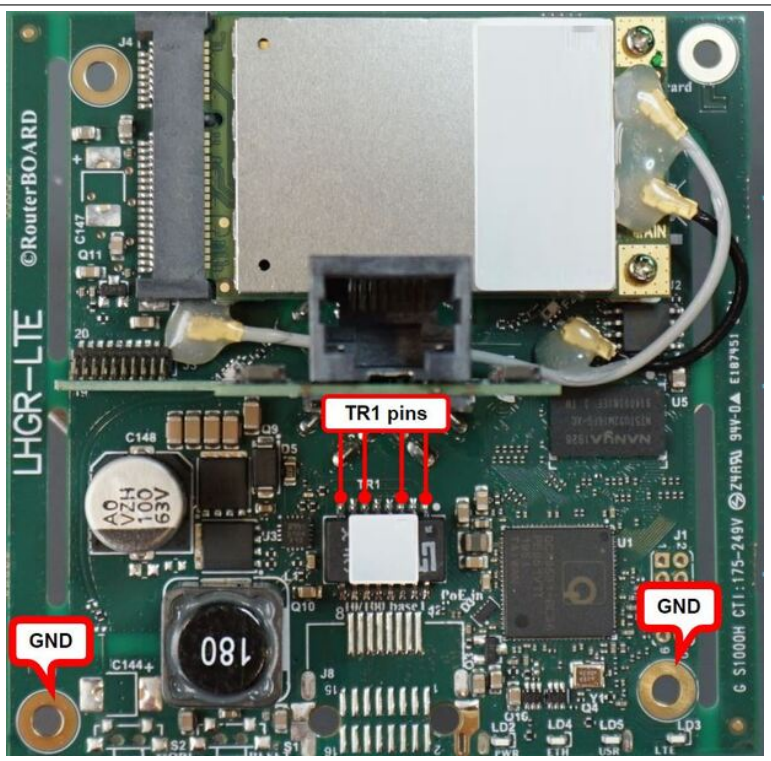
Check Schottky diode D1 and diode bridge D2. Location of the diodes on the board you can see in the picture 305. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.



Picture 305

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 306. Voltage drop value should be in the range from 0,35V to 0,40V. Voltage drop measurement method is described on page 7.



Picture 306

LHG SERIES ROUTESBOARD

LHGG LTE6 kit

Picture 307

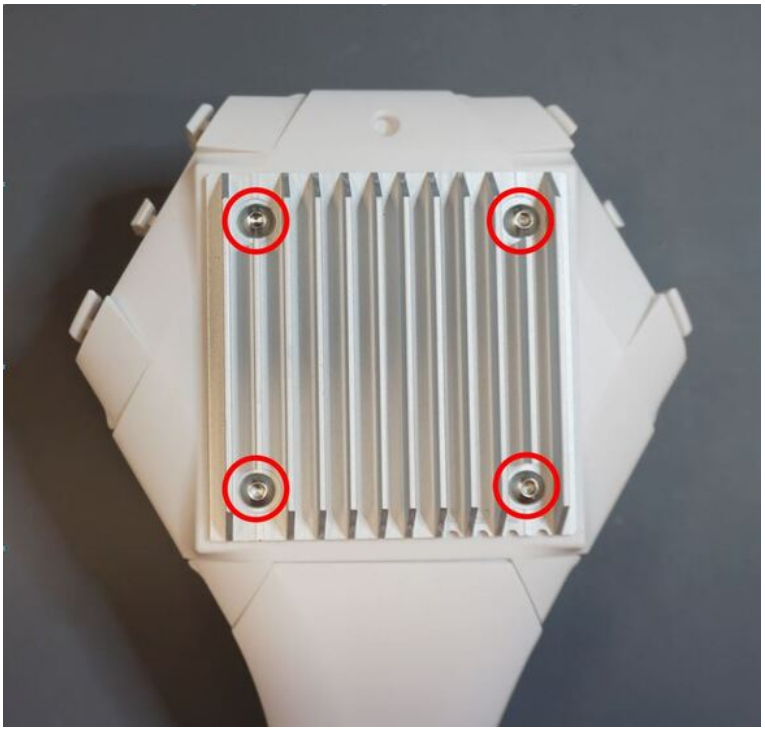
Disassembling information

Tools recommended for the disassembly are plastic prying tools, such as shown on pictures 308 and 309.

Picture 308

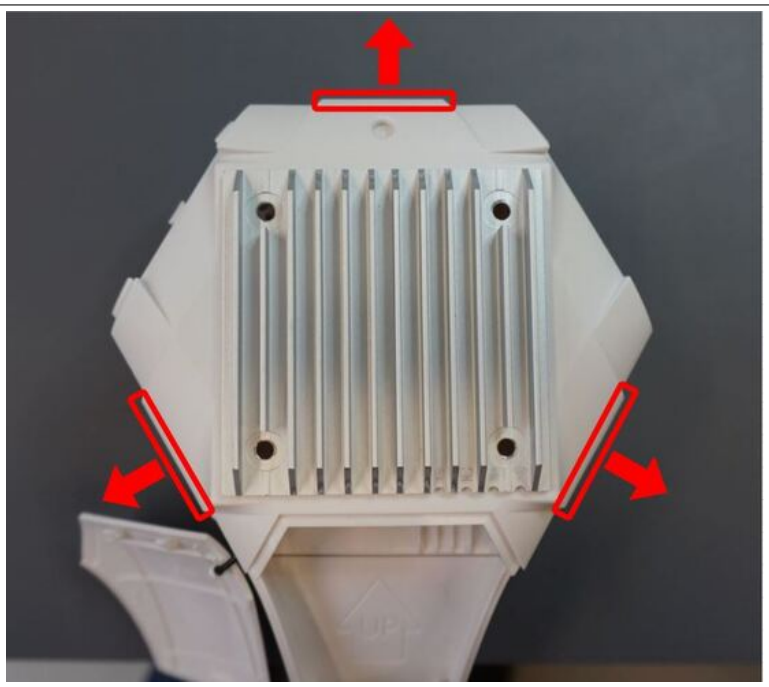
Picture 309

Step 1: Unscrew 4 screws using 2.5mm Hex screwdriver. Location of the screws is shown the picture 310.



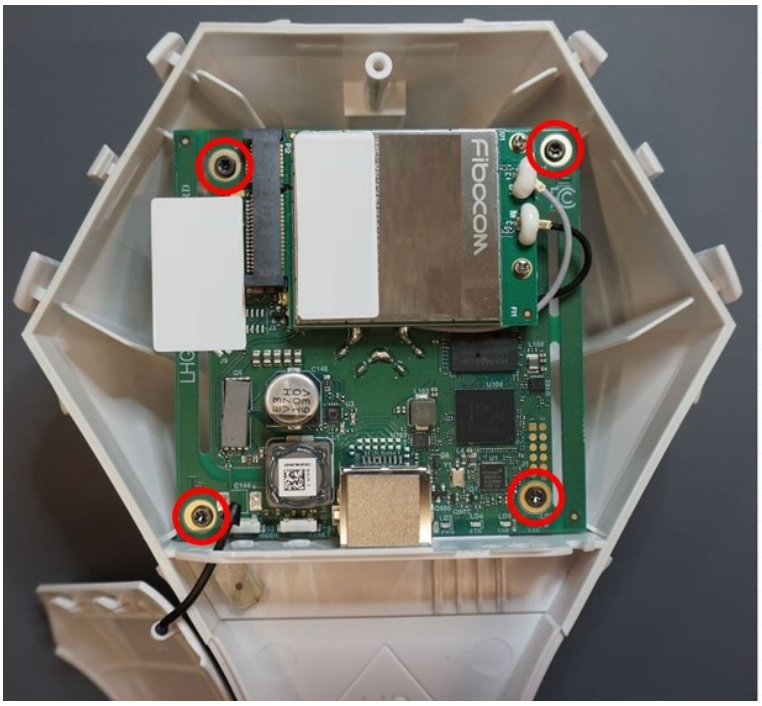
Picture 310

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 311.



Picture 311

Step 3: Unscrew 4 screws using torx T8 screwdriver and remove the PCB from the case. Location of the screws is shown the picture 312.



Picture 312

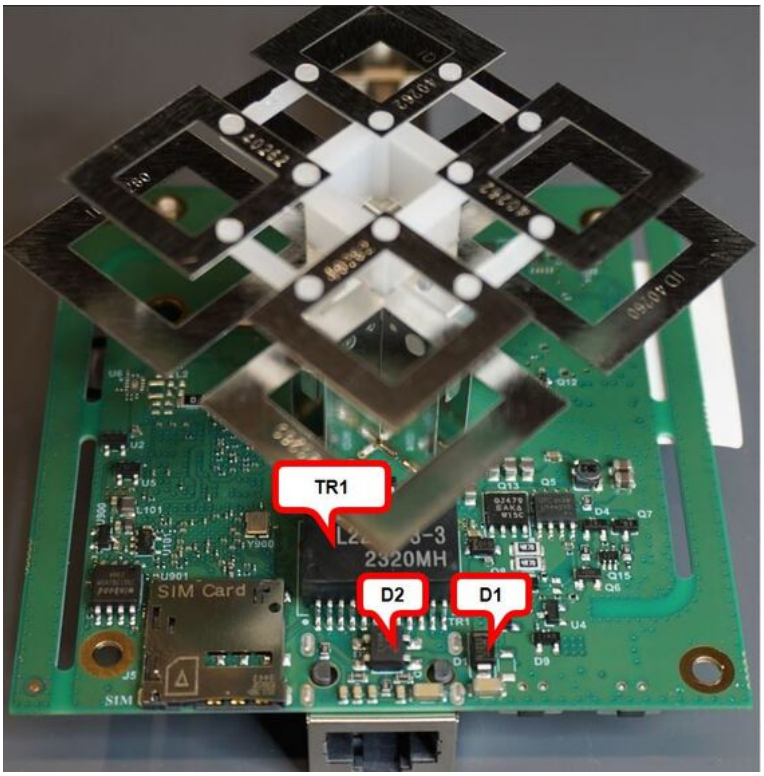
Instructions for checking over-voltage

Checking Schottky diode and diode bridge

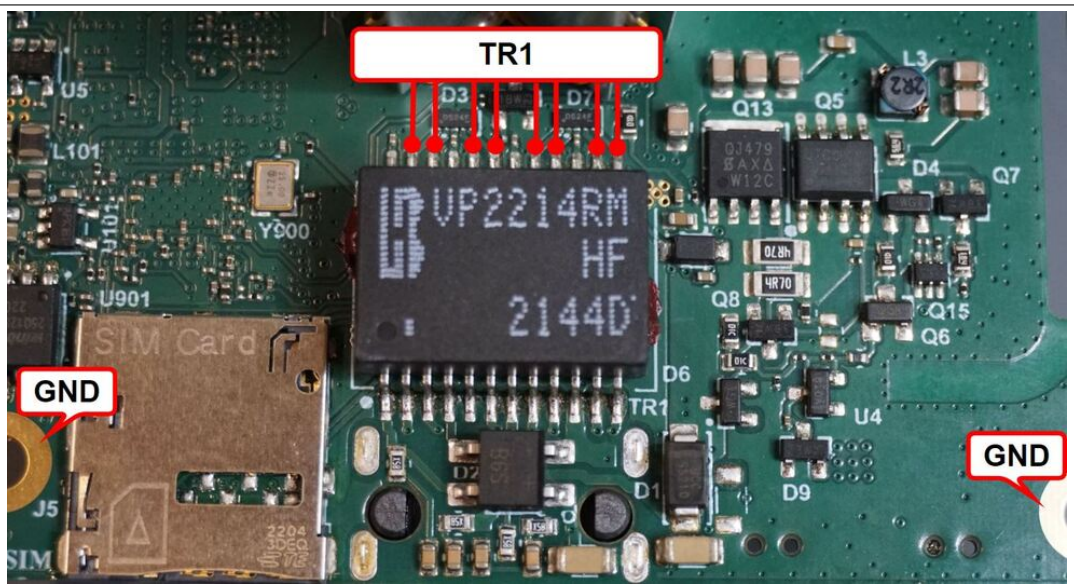
Check Schottky diode D1 and diode bridge D2. Location of the diodes on the board you can see in the picture 313. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

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 314. Voltage drop value should be in the range from 0,35V to 0,40V. Voltage drop measurement method is described on page 7.



Picture 313


TR1
GND
GND
VP2214RM
HF
2144D
SIM Card
U5
L101
Y900
U901
J5
D3
D7
Q13
Q5
L3
D4
Q7
Q8
Q15
Q6
D6
TR1
U4
D1
D9

Picture 314

MANTBOX SERIES ROUTERBOARDS

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

Picture 315

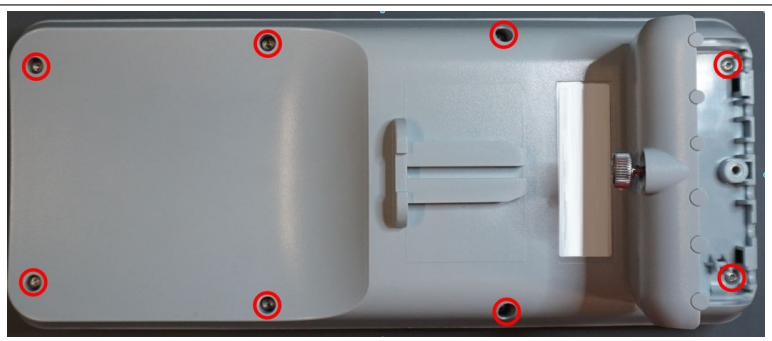
Disassembling information

Step 1: Open the cable enclosure and unscrew the wing-nut, see picture 316.

Picture 316

Step 2:

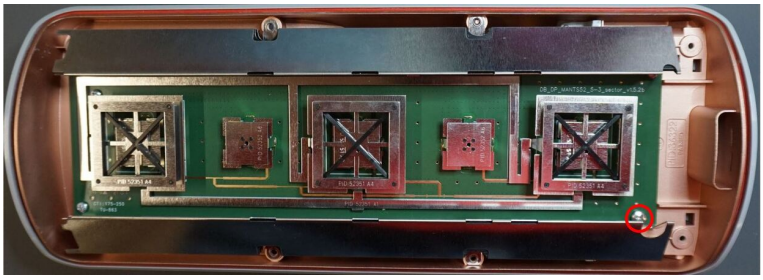
Unscrew 8 screws using torx T8 screwdriver. Location of the screws is shown the picture 317.



Picture 317

Step 3:

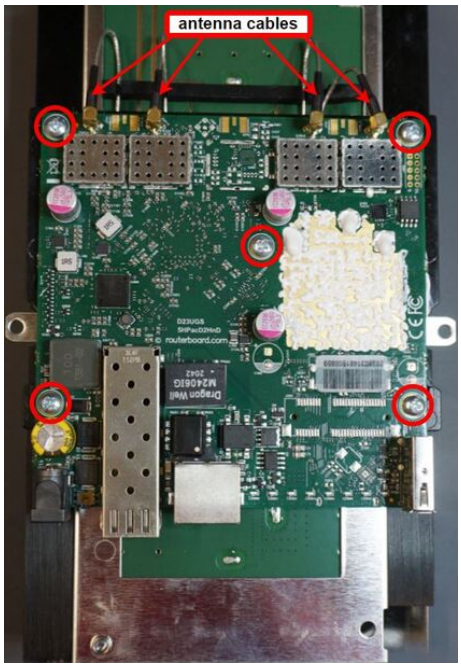
Remove the cover from the case and unscrew the screw (M4x16), see picture 318.



Picture 318

Step 4:

Disconnect antenna cables and unscrew 5 screws, see picture 319.

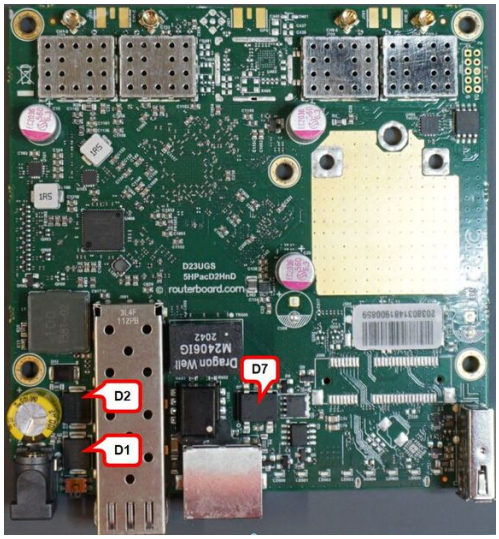


Picture 319

Instructions for checking over-voltage

Checking Schottky diodes and diode bridge

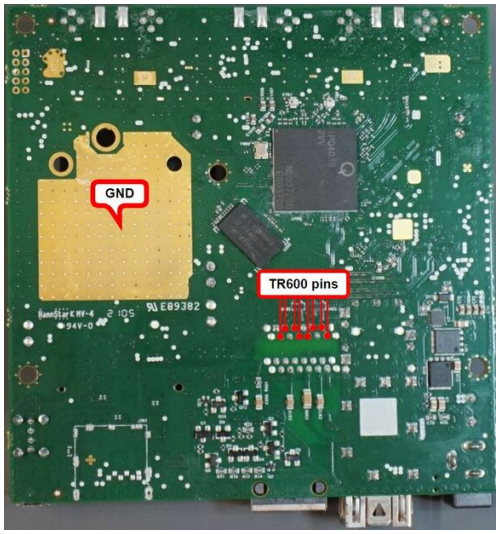
Check Schottky diodes D1, D2 and diode bridge D2. Location of the diodes on the board you can see in the picture 320. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.



Picture 320

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 321. Voltage drop value should be in the range from 0,35V to 0,40V. Voltage drop measurement method is described on page 7.



Picture 321

KNOT SERIES

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

Picture 322

Disassembling information

Step 1: Unscrew 1 screw using PH1 screwdriver. Location of the screw is shown the picture 323.

Picture 323

Step 2: Press the clips in the direction shown in the picture 324 at the same time lift the case up.

Picture 324

Step 3: Unscrew 6 screw using PH1 screwdriver. Location of the screw is shown the picture 325. Unplug the LR8/LR9 card from the connector and pull the circuit board out of the case.

Picture 325

Instructions for checking over-voltage

Checking Schottky diode and diode bridge

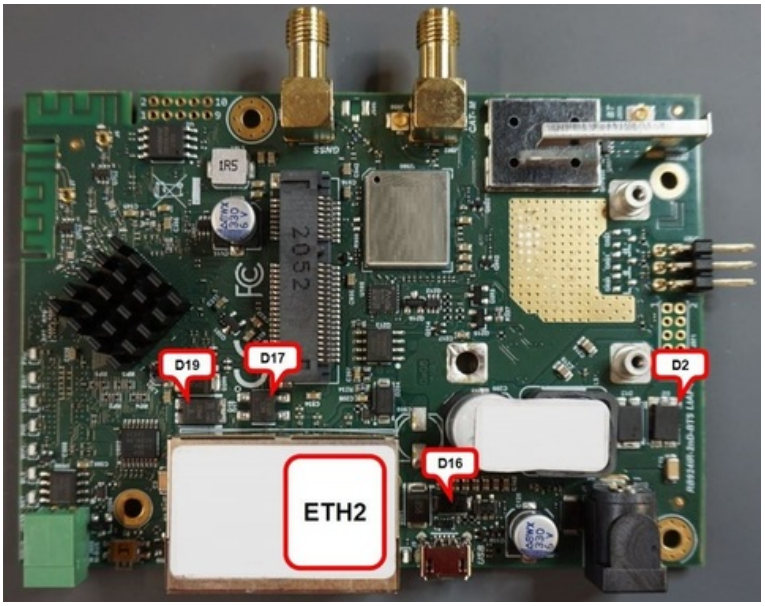
Check Schottky diodes D2, D16, D19 and diode bridge D17. Location of the diodes on the board you can see in the picture 326. Schottky diode quality measurement method is described on page 4. Diode bridge quality measurement method is described on page 5.

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

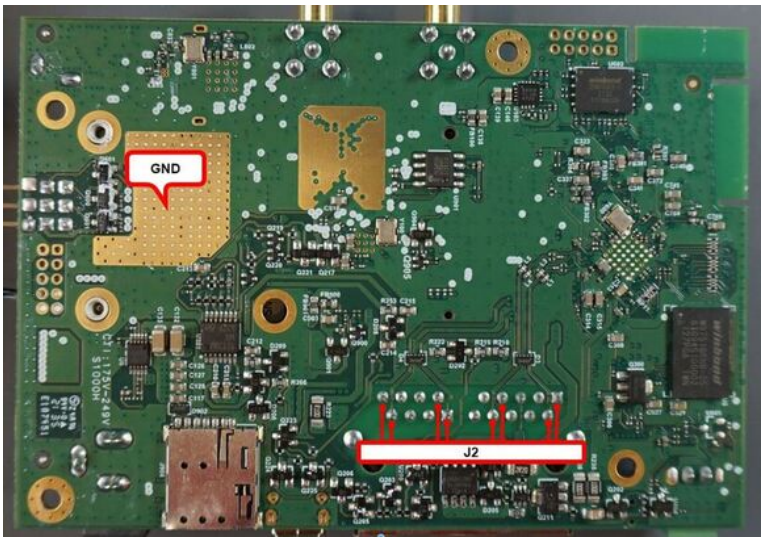
Check voltage drop value between RJ-45 (J2) connector pins and ground. Test points are shown in picture 327. Voltage drop value should be in the range from 0,35V to 0,40V. Voltage drop measurement method is described on page 7.

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



Picture 326



Picture 327