MEC5075
on
LA-9591P VAUA0

Contents

1 Introduction

1.1 Disclaimer

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1.2 Prologue

This How-to will instruct you how to read and write the **MEC5075** SIO controller on the **LA-9591P** mainboard. This process will unset the service tag and put the notebook into the manufacturing mode. You can set the correct service tag afterwards and leave the manufacturing mode. It is **not** possible to remove a password with this process. It is handy to have good solder skills.

1.3 Super I/O

Super I/O, SIO is an integrated circuit on a computer motherboard that handles the slower and less prominent input/output devices shown below. When the Super input/output was first introduced in the late 1980's it was found on an expansion card, later this chip was embedded into the motherboard and communicated over the ISA bus. As ISA began to no longer be used with computers SIO communicated over the PCI bus. Today, super I/O communicates through the Southbridge and is still used with computers to support older legacy devices.

2 Preparation

2.1 Partlist

- SOFTWARE

  Windows7 64Bit
  SVOD3 1.0.3.5

- PROGRAMMER

  SVODprogrammer ver 3

- SOLDERING

  TS-100 with BC2
  FixPoint AP2

- FLUX

  SMD Soldering Water

- CONNECTORS AND CABLES

  1x 0,5 mm Pitch 10 Pin AWM 20624 flex ribbon cable FFC
  1x FPC/FFC DIP10 0.5mm 1.0mm adapter
  2x Bottom port 10Pin 0.5mm pitch FFC/FPC ribbon sockets connector
  1x Dupont test clip
  4x Dupont jumper cable female to male
  2x Dupont connector 4pin
  1x 2.54mm single row pin header strip

2.2 Pinout

You need only **JTAG_TDI**, **JTAG_TMS**, **JTAG_CLK**, **JTAG_TDO** and **GND**. **JTAG_RST** is not needed. Ground can be obtained from anywhere all over the mainboard. Best is to use i/o port metal cover.

JDEG1 PIN #2	⟶	FPC ADAPTER PIN #2	⟶	SVOD3 TDI
JDEG1 PIN #3	⟶	FPC ADAPTER PIN #3	⟶	SVOD3 TMS
JDEG1 PIN #4	⟶	FPC ADAPTER PIN #4	⟶	SVOD3 CLK
JDEG1 PIN #5	⟶	FPC ADAPTER PIN #5	⟶	SVOD3 TDO
MB GND	⟶		⟶	SVOD3 GND

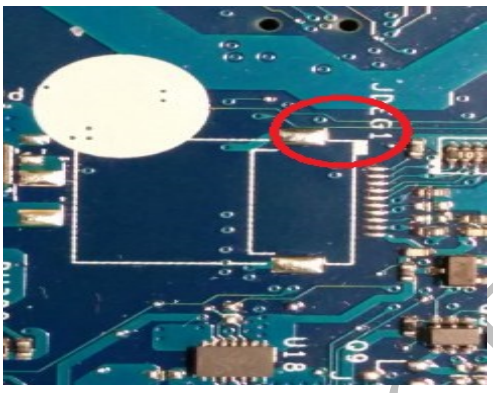

Figure 1: White square marks start direction of PIN #1

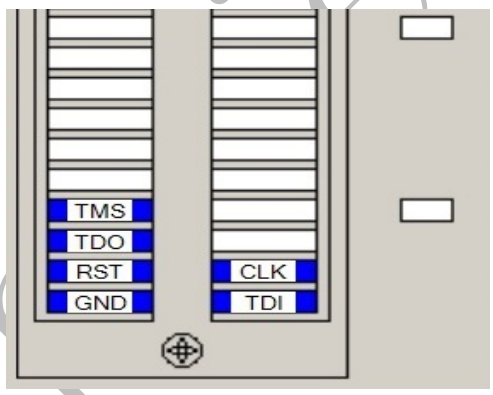

Figure 2: Pinout of the SVOD3 programmer

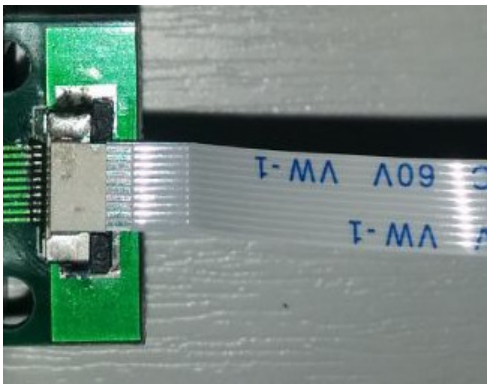

Figure 3: Connected ribbon cable to the FPC adapter

2.3 Soldering

I will not teach you how to solder, check out Youtube. Instead of soldering wire by wire it is much easier to solder a connector directly to the motherboard. If there is no space left in the case unsolder the connector by solder iron or hot air afterwards. It is important to **double** check for shorts on all pins! You should use the same type of connector on the mainboard and also on the adapter when using a straight trough ribbon cable. My choice are fpc **bottom port** connector, easier to solder. The 10pin ribbon cable should be straight trough, not twisted.

Figure 1: Soldered FPC adapter

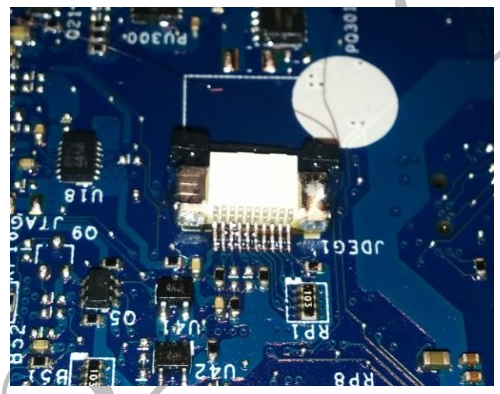

Figure 2: Soldered FPC connector on JDEG1

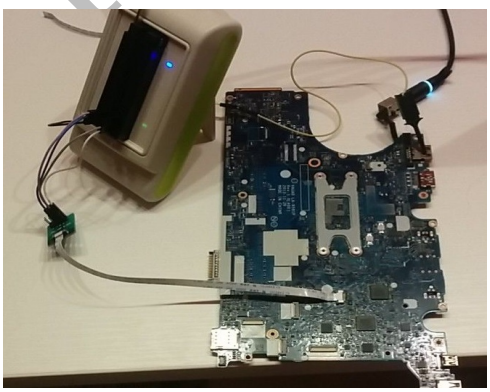

Figure 3: Everything connected properly

2.4 Remove Batteries

Please unplug or remove the main battery and also the CMOS battery.

3 Flashing

I assume you have connected all the cables correct and a connection can be established without problems. The ac connector must be attached all the time unless i will instruct you to remove it.

3.1 Set Mode

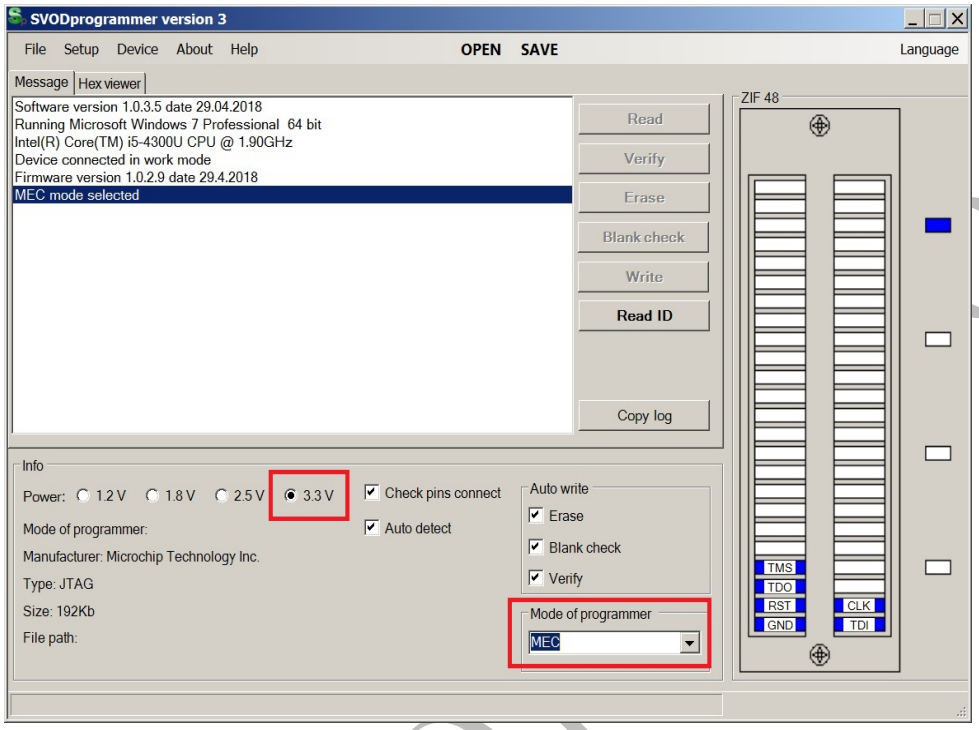

Figure 1: Choose 3.3V and the MEC Mode

3.2 Read ID

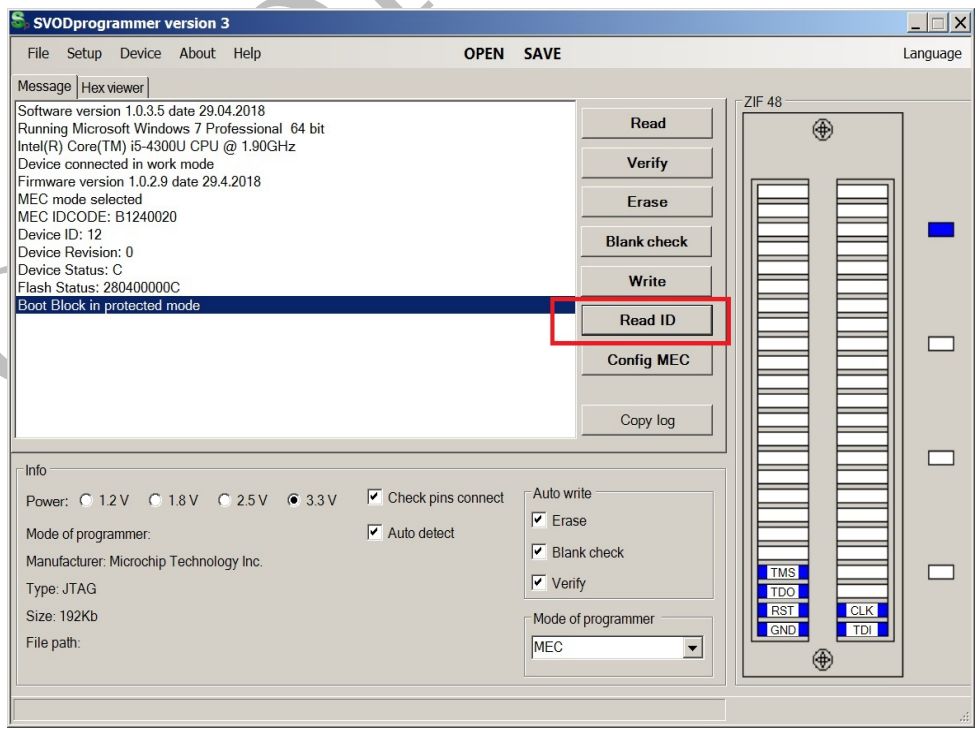

Figure 2: Click the Read ID button. Now you can click the Config MEC button.

3.3 Set MEC Config

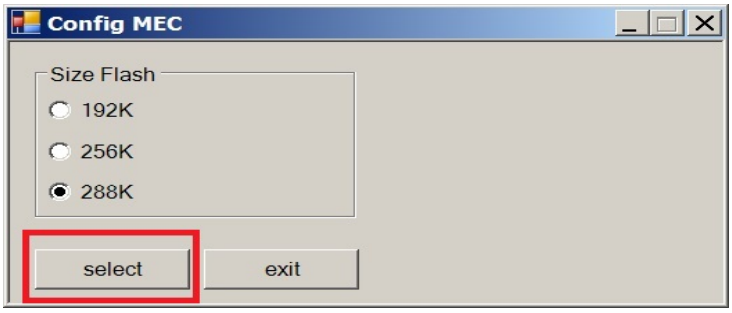

Figure 3: Choose here **288Kb**

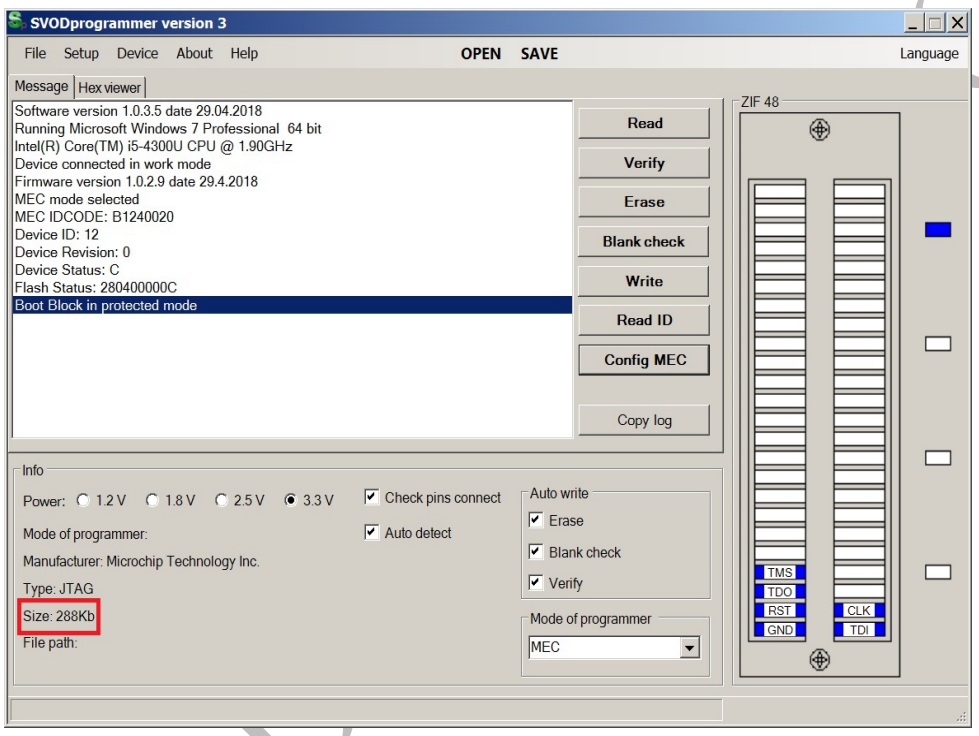

Figure 4: Check that 288Kb is select. This is the correct size

INFO

You can see, that the MEC5075 is in protected mode. If you don‘t need to write the boot block **(0000h-0FFFh)** you can leave it in this state. Otherwise go on and put **FWP#** on ground to unlock the MEC5075.

3.4 Read MEC5075

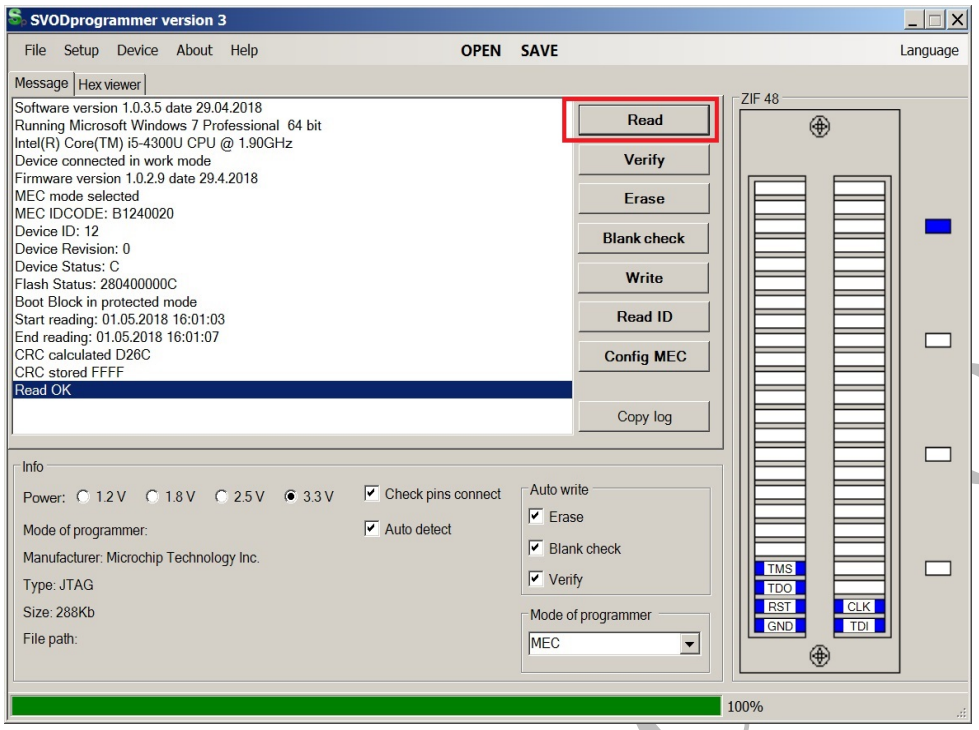

Figure 5: Make a backup of the actual content of the MEC5075 and save it to a file

3.5 Initialize MEC5075

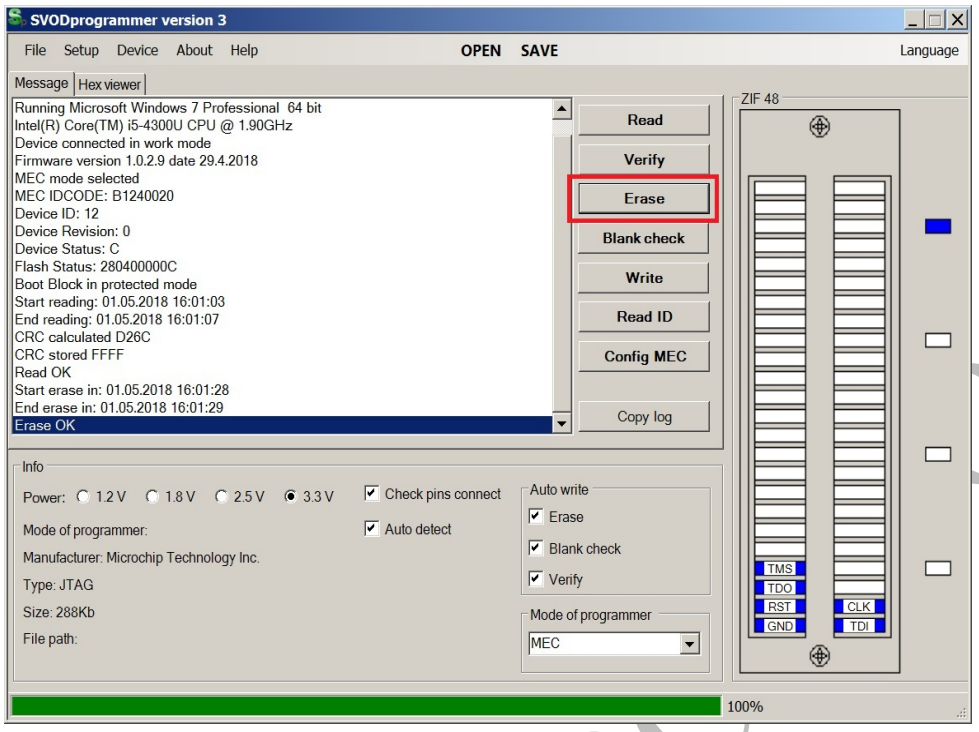

Figure 6: Click Erase button

1) Click Erase
2) Remove ac adapter
3) Wait at least 15 seconds
4) Reconnect ac adapter

INFO

Initializing the MEC5075 is important, so the MEC5075 cannot load any code by himself after powered.

3.6 Write MEC5075

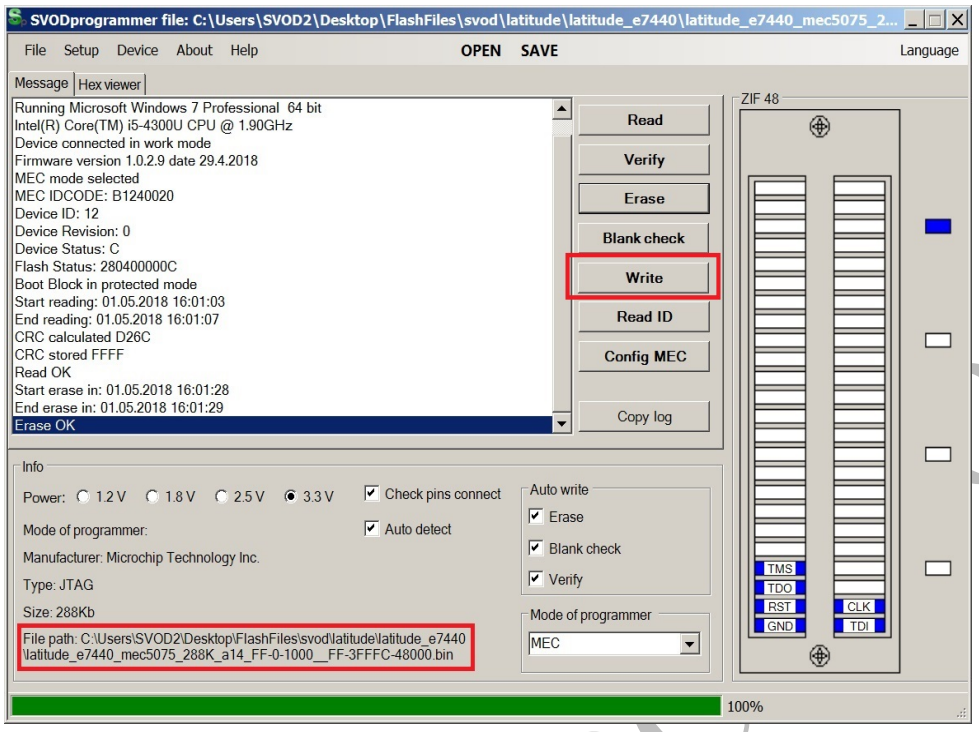

Figure 7: Click write

Open one of the attached files:

MEC5075 factory images for LA-9591P

Then go on with:

1) Click Read ID
2) Click Write

INFO

If you have not unlocked the boot block you should use the modified version. Otherwise verification will fail!

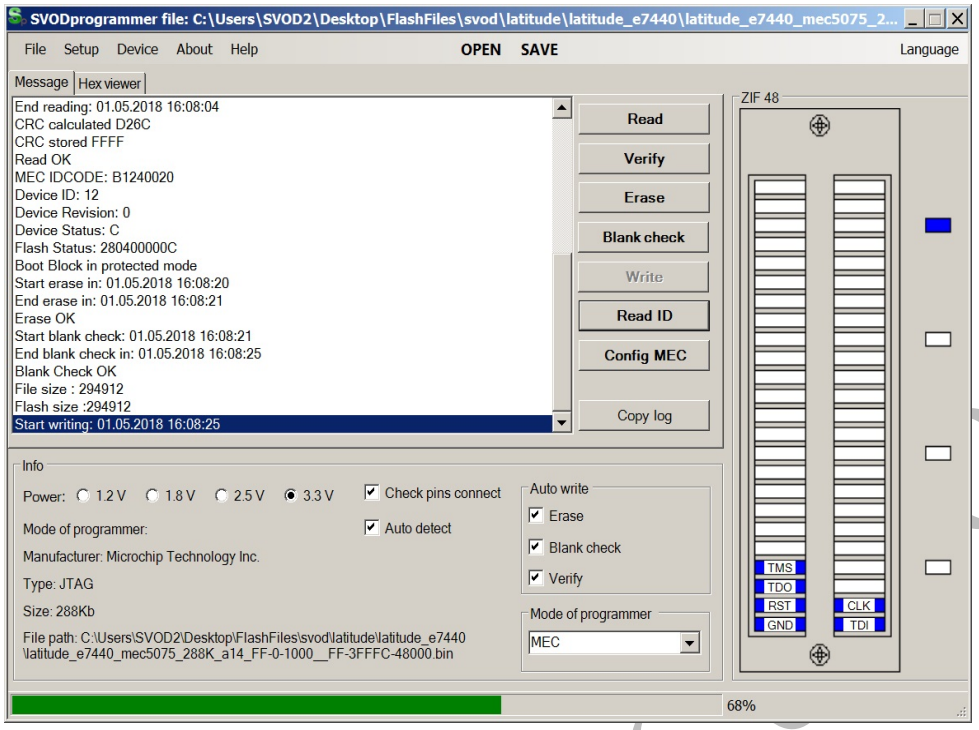

Figure 8: Flash process...

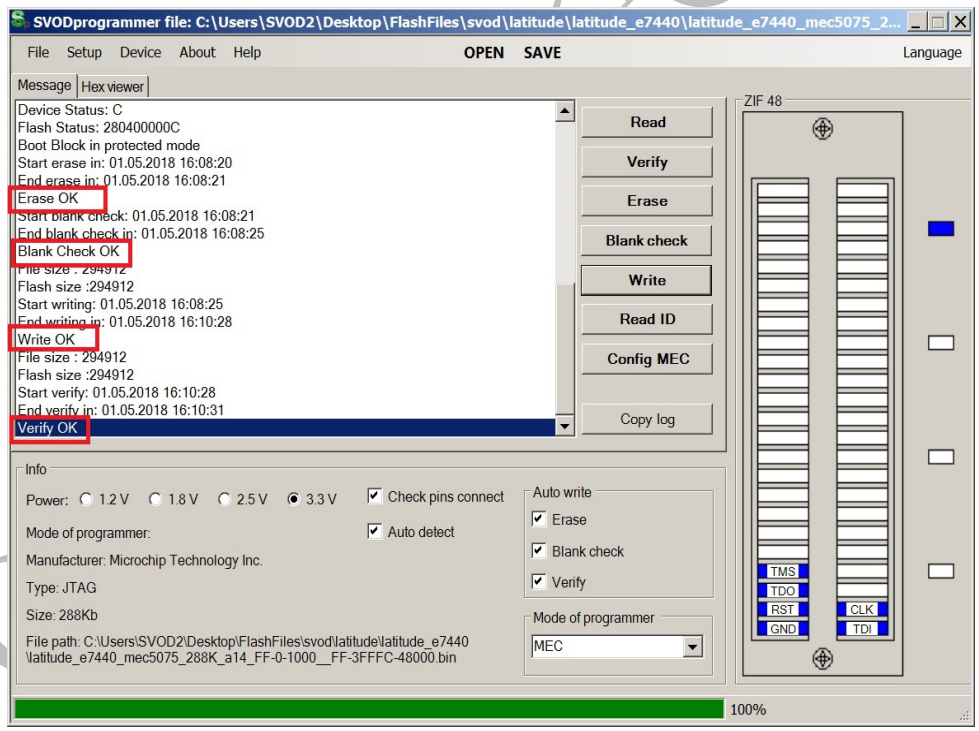

Figure 9: Successful flashing with verification

INFO

If this step fails repeat all steps starting with initializing the mec.

4 Unlock Boot Block

You can unlock the boot block by putting the FirmWareProtect pin **FPW#** or **nFPW** to **GND**. You can find the correct pin in the Schematics.

5 Leave manufacturing mode

The fan will spin at full speed in manufacturing mode. This is normal and it could take some time to boot up. Now you can set a correct service tag and also leave the manufacturing mode. Everything should work normally after this process!

1) Set service tag

   * *enter BIOS and set service tag*

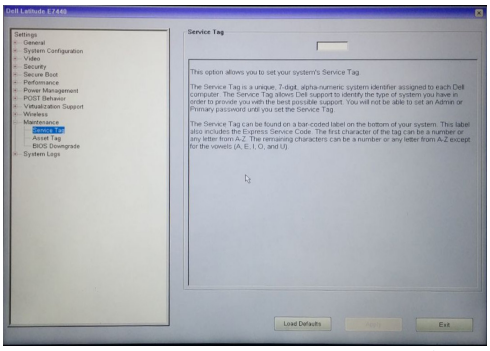

Figure 1: Service Tag installer

2) Leave manufacturing mode

   * *press ALT-F when asked during boot*

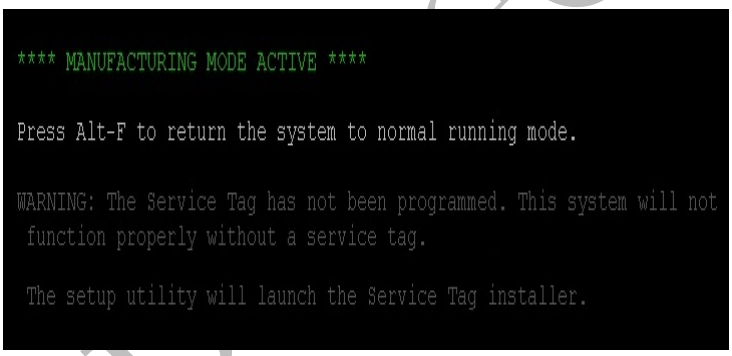

Figure 2: System in manufacturing mode

INFO

You should do a bios update after this process to make sure ec and bios code versions fit together.

6 Question and Answers

- Where can i get the pinout of the mainboard?

  You can find the pinout and port label in the board schematics.

- Why do i need to write a modified dump to the mec?

  *When the BootLock in the Embedded Flash Configuration Register is asserted or the input **nFWP** is asserted, the bottom 4K bytes (**0000h-0FFFh**) of the Flash Main Memory Array (the Boot Block) are write protected and cannot be changed by any programming method including Program Mode or Erase Mode.*

- Do you know the exact description of the MEC?

  MEC5075-LZY_DQFN132_11X11 D

- How can i modify my own dumps to get a successful verification?

  *Write FF from offsett **0000h - 0FFFh** and from **3FFFCh - 48000h**.*

- It is necessary to remove the ac adapter after the first erase?

  Regarding my tests this is an important step!

- Can i remove the password with this procedure?

  No! Try and have fun...

7 Files

Attachments:

MEC5075 Factory Image for LA-9591P:

MEC5075 Factory Image for LA-9591P (*modified if boot block is protected*):