MOD-BT and Duinomite boards errata

Connection fix

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CHAPTER 1: THE PROBLEM

The purpose of this how-to is to fix a problem in the connection between some of the DUINOMITE boards with some of the Olimex's UEXT extension modules/boards. Note that the solution suggested here is especially viable for DUINOMITE-eMEGA since there is no pure software solution for this board.

As reported by some customers successful connection between MOD-BT and DUINOMITE-eMEGA can't be established.

IMPORTANT! This issue has been fixed for MOD-BT modules produced after the date this document is released! Still it is possible to receive non-patched module from a retailer. Do not panic following CHAPTER 3 you will be able to fix the problem.

If you use the demo code in the Duinomite manual it should make possible the connection of MOD-BT and another Bluetooth device:

```
10 OPEN "COM3:115200" AS #1
20 PRINT #1, "ATZ": PAUSE 250
30 PRINT #1, "AT+BTAUT=1,0": PAUSE 250
40 PRINT #1, "AT+BTSRV=1" : PAUSE 250

50 CLOSE #1
60 OPEN "COM3:115200" AS CONSOLE
```

However, after doing everything correct, the Bluetooth module is not visible by other devices.

CHAPTER 2: WHAT IS CAUSING THE PROBLEM

The problem is caused by the CTS line (pin 7 from the UEXT connector) which is held in high position (1). The pin 7 for MOD-BT and MOD-GSM is signal CTS (clear to send) which when held in high position (1) causes the Bluetooth or GSM module to seize sending anything. To be able to send commands you need to keep pin 7 in low position (0).

This has caused problems with other modules in the past (e.g. MOD-GSM). However, due to the multiplexing of the other boards (CTS line going to DUINOMITE GPIO connector) it is possible to just software set the line low by writing in the BASIC:

SETPIN 9,8
PIN(9)=0

BASIC PIN9 in the DUINOMITE boards (except for eMEGA) is the MISO line. If you meet problems connecting UEXT module to a DUINOMITE board always try the above solution, or adjust it according to the schematics (i.e. if CTS is on other BASIC pin different from PIN9).

The above is not the case in DUINOMITE-eMEGA where the CTS line isn't led to the GPIO connector and therefore is not defined in the BASIC and can't be driven low by software means.

There are two ways of fixing the above problem. Either bringing pin 7 of the connector low by hardware means (e.g. connecting it to ground OR cutting the line on the extension board) permanently while the extension board is working is working OR disable the CTS line in the firmware of the extension board.

The solution suggested in the next chapter of this how-to combines both – we keep pin 7 low by connecting it to GND until we update the firmware of the MOD-BT via the UEXT using AT commands, and after we have updated the Bluetooth firmware we will leave pin 7 in normal defualt state.

CHAPTER 3: THE SOLUTION

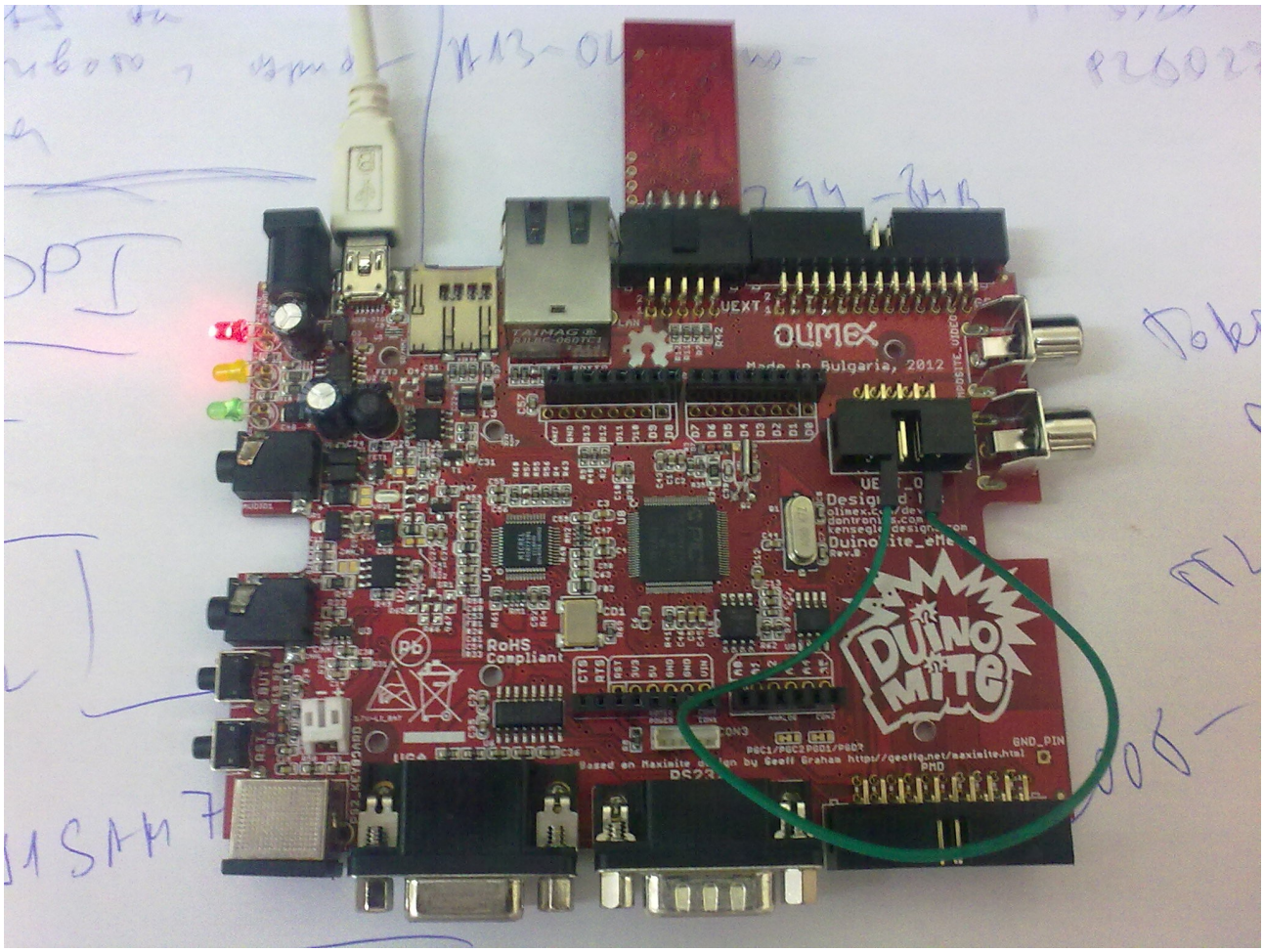
It is very important to follow carefully the instructions in this chapter.

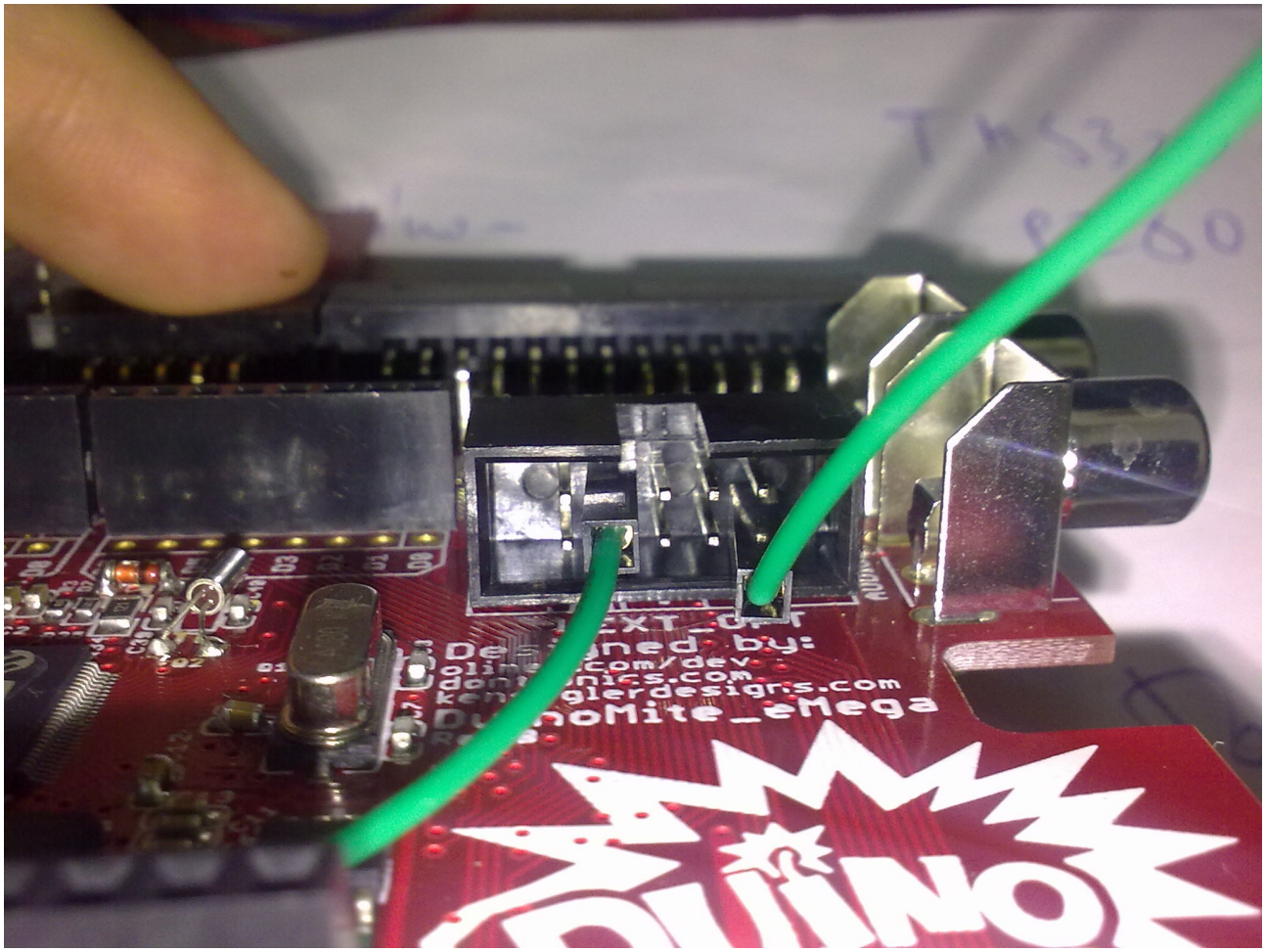
1. We will need a wire to connect pin #7 (MISO) and pin #2 (GND) from UEXT_OUT connector. The best would be a female – female jumper cable.

2. Before you start the procedure, make sure you have removed any SD card from the microSD card connector! Due to multiplexing of signals the fix below might burn your SD card in the slot if it is not removed!

4. Connect MOD-BT to the UEXT connector of DUINOMITE-eMEGA.

5. Connect pin #7 (MISO) to pin #2 (GND) of the UEXT_OUT connector with the wire you have prepared – it should stay firm so you might as well solder it if lacking female-female jumper cable. Please refer to the pictures below:





6. Connect the DUINOMITE-eMEGA to a computer via the miniUSB.

7. Open a terminal program on the COM port that Windows recognized DUINOMITE-eMEGA (if this is the first time connecting the board, also install the proper drivers – they can be found in the GitHub package of DUINOMITE). The speed shouldn't be higher than 115200 kb/s.

8. In the terminal program enter the following commands (with some pause between them and if you copy ensure all characters are copied correctly – sometimes quotation marks are recognized as tilde sign):

```
OPEN "COM3:115200" AS #1

PRINT #1, "ATZ"

PRINT #1, "AT+BTURT=115200,8,0,1,0"

PRINT #1, "AT+BTFLS"
```

```
CLOSE #1
```

Explanation of the above:

First line opens the hardware COM on the UEXT and identifies it as the variable #1.
Second line sends to UEXT command for testing the AT command availability.

Third line sends to UEXT a command configuring the CTS line low (the last parameter which by default is 3 becomes 0).

Third line sends to the UEXT command to save the changes to the FLASH memory of the Bluetooth module, so that they are available after board reset.

For more information on the AT commands check the Bluetooth's manual, that can be found on the MOD-BT web-page.

9. Check if the MOD-BT works with the following program (enter the code and after that write “list” to check the code saved and “run” to execute the code:

```
10 OPEN "COM3:115200" AS #1

20 PRINT #1, "ATZ": PAUSE 250

30 PRINT #1, "AT+BTAUT=1,0": PAUSE 250

40 PRINT #1, "AT+BTSRV=1" : PAUSE 250

50 CLOSE #1

60 OPEN "COM3:115200" AS CONSOLE

LIST
RUN
```

10. You can use better program for dynamic entering of commands and reading the response from MOD-BT

```
10 MSG$=""

20 CMD$ =""

30 OPEN "COM3:9600"

40 PRINT "CMD:";

50 C$ = INKEY$

60 IF C$ = "" THEN 100

70 IF C$=CHR$(13) THEN PRINT #1,CMD$ : CMD$="": PAUSE 250: ? : GOTO 40

80 CMD$ = CMD$ + C$: PRINT C$;

90 GOTO 50

100 IF EOF(1) THEN 50

110 M$ = INPUT$(1,#1);

120 IF M$ = CHR$(13) THEN 150

130 IF M$ <> CHR$(10) THEN MSG$ = MSG$+M$

140 GOTO 50

150 ? "(";LEN(MSG$);")";MSG$: MSG$=""

160 GOTO 40

LIST

RUN
```

We apologize to all customers affected by this problem! Unfortunately, sometimes it is physically impossible to check every board with every module we have at stock. We still want to provide the best support possible for such situations and we are looking forward to your feedback.

Every e-mail or forum post is taken very seriously!

CHAPTER 4: DOCUMENT REVISION

Revision	Changes	Modified Page#
A, 21.09.12	Initial Creation	All

For product support, hardware information and error reports mail to: support@olimex.com. Note that we are primarily a hardware company and our software support is limited.

A place for general questions, FAQ or friendly talk check our forums:
https://www.olimex.com/forum/

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Please note that warrany do not cover problems caused by unproper use, shorts, over-voltages, ESD shock etc.

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If you are positive that the problem is due to manufacturing defect or component you can return the board back to us for inspection.

When we receive the board we will check and if the problem is caused due to our fault and we will repair/replace the faulty hardware free of charge, otherwise we can quote price of the repair.

Note that all shippings back and forth have to be covered by the customer. Before you ship anything back you need to ask for RMA. When you ship back please attach to it your shipping address, phone, e-mail, RMA# and brief description of the problem. All boards should be sent back in antistatic package and well packed to prevent damages during the transport.