ON Semiconductor

Test Procedure for the NCN51205GEVB Evaluation Board

1 OVERVIEW

The scope of this document is testing of NC5120 demoboards rev5 and rev6.

2 TOOLS

2.1 KNX SOFTWARE STACK

.HEX file of the testing software

2.2 MSP–FET430UIF

USB debug interface from TI

2.3 ELPROTRONIC FET-PRO430 LITE

MSP430 programming software from Elprotronic for Windows OS. Can be downloaded from http://www.elprotronic.com/files/FET-Pro430-Lite-Setup.zip

2.4 KNX POWER SUPPLY

3 KNX SOFTWARE STACK

Testing procedure relies on custom KNX software stack developed by ON Semiconductor software team. Its purpose is to monitor NCN5120 device on rev5 and rev6 boards, to react on user activities by initialing transmission on KNX bus as well as to listen on KNX bus traffic.

After startup the software starts a system monitor which continuously checks the status of NCN5120 by issuing status requests to the device as well as testing the state of SAVEB signal of NCN5120. In case of an incorrect reading the software activates its error indication.

The error indication consists of running light on the three LEDs of rev5/rev6 boards. It is active as long as the software detects erroneous state.

The software monitors all switch inputs on rev5/rev6 boards. When user presses one or more switches the software transmits dedicated frame on KNX bus thus informing all other nodes about user activity. At the same time software updates the state of onboard LEDs according to Table 1.

Active switch	LED1	LED2	LED3
SW1 (on header)	On	Off	Off
SW2 (on header)	Off	On	Off
SW3 (on header)	Off	Off	On
SW4 (on header)	On	Off	On
SW1 (button)	On	On	On
More than one switch active		Running light (erroneous situation)	

Table 1 Indication of active onboard switches

The software monitors the messages on KNX bus. If it detects valid message which reflects switch state change on another board it updates onboard LEDs according to Table 1. Therefore when user activates or deactivates a switch on any board, all running boards will display the new switch state on their LEDs. If user presses two switches on separate boards rest of the boards will display the state of latest activated switch and the board with first activated switch will display an error on its LEDs.

4 TEST PROCEDURE

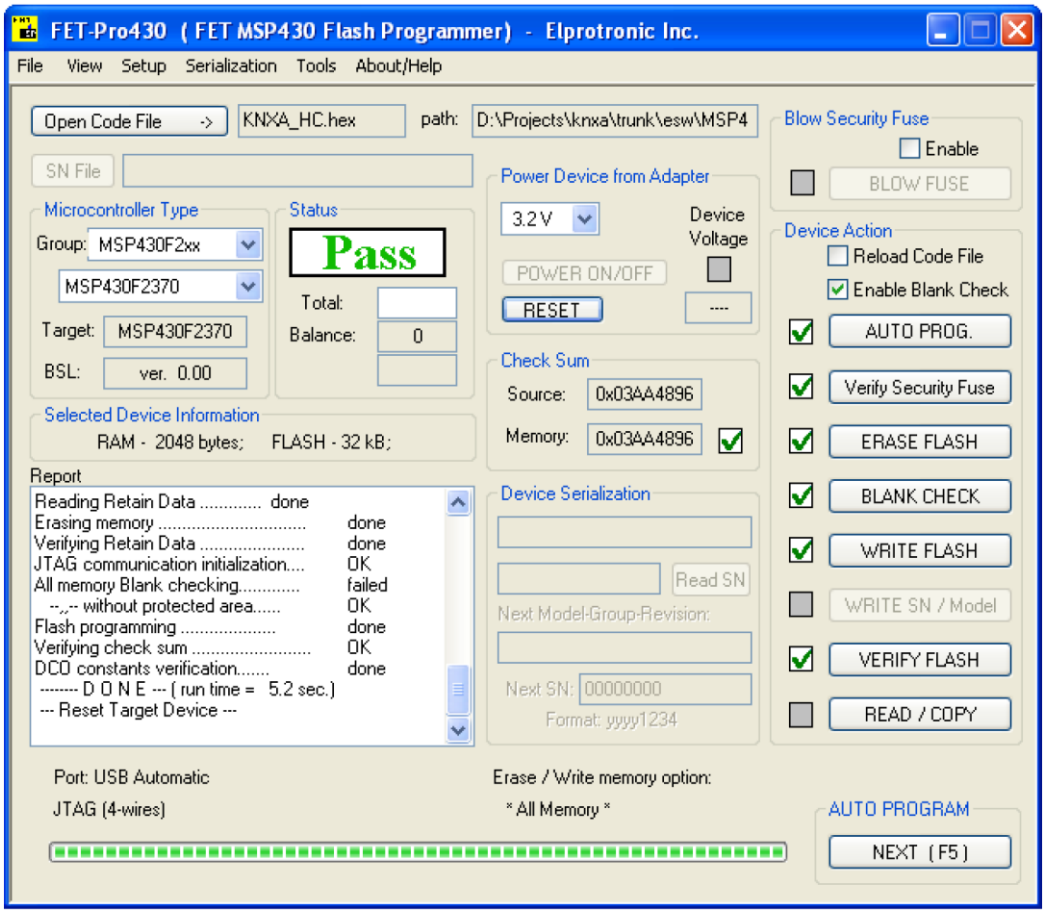
4.a Optical Inspection and jumpers

Check the board visually for solder shorts or tombstoned resistors.
Check if jumpers are placed on J5, J7, J8, and that no jumper is placed on J6.

4.1 PROGRAMMING THE BOARDS

Use FET-PRO430 LITE together with MSP–FET430UIF to download the KNX stack software into every board.

Open FET-PRO430 LITE software.



Select .HEX file for programming => Open Code File.

Choose Microcontroller Type as shown on the snapshot.

Now the first board can be programmed. Press AUTO PROG button. In a few seconds the Status should switch to **Pass**. If an error is displayed the programming can be repeated one or more times by pressing AUTO PROG. If the problem persists than the attached board is faulty.

When all boards are programmed, switch Off and On the KNX power supply to make sure that all boards will start properly.

4.2 TESTING THE BOARDS

When all boards are programmed successfully and powered up, there should be no error indication (running lights) on any of them. If there is such then the board is faulty.

Next start pressing the onboard switches of every board one by one and monitor the LEDs of all boards. All boards including the one which has its switch pressed should display identical and correct reading according to Table 1. No board should display error indication during this stage.

When all running boards have been checked for reacting properly on their own switches and the switches of other boards then they all can be assumed as good ones.