Test Procedure for the NCN511010GEVB Evaluation Board

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Abstract:

Approver	Author
	Koenraad Van den Eeckhout

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To:

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1 Overview

The scope of this document is testing of NCN51XX10GEVB evaluation boards.

2 Tools

2.1 KNX power supply

The testing is done with a KNX power supply, for example Siemens 5WG1 125-1AB21 shown below
Note that using a normal bench power supply is not possible.

Figure 1 – KNX Power Supply

2.2 Signal Generator

A signal generator is used to connect a transmit signal. Any type of signal generator that can generate the required signal is ok. As an example, the Agilent 33220 signal generator can be used.

2.3 Oscilloscope

An oscilloscope is used to monitor the signal lines. Any oscilloscope is ok. As an example, the Tektronix TDO4014 oscilloscope can be used.

2.4 Test Board

The test board is a custom board that will set the DUT in analog mode, and provide the necessary connectors to test the boards. It is shown in figure 2.

3 Test Procedure

3.1 Connect the DUT to the test board

The test board connects to the 24-pin J2 header on the DUT. Both boards are connected component side up.

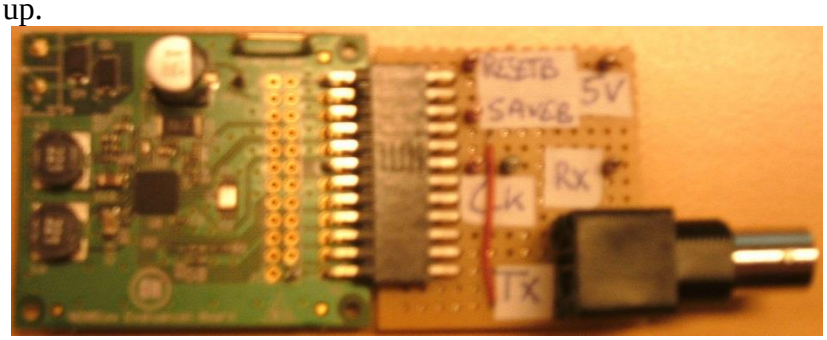

Figure 2 – DUT and test board

3.2 Connect the DUT to the bus power supply

The power supply is connected to connector J4 of the DUT. This connection can be done using a cable with official KNX connectors (Wago 243-211, farnell: 4016014).

Figure 3 – KNX connector

3.3 Measure the bus voltage, 5V, RESETB, SAVEB

Measure the voltage on the bus connectors to verify that the power supply is operational. This voltage should be between 20 V and 30 V.
Measure the voltage on the RESETB and SAVEB test points. This voltage should be between 3.2 V and 3.4 V.
Measure the voltage on the 5V test point. This voltage should be between 4.9 V and 5.1 V.

3.4 Check clock

Measure the frequency of the signal on the CLK test point. This should be between 7.9 and 8.1 MHz.

3.5 Connect the signal generator to TX

The signal generator should be connected to the TX test point and GND bar on the test board.

3.6 Set signal generator waveform

Set the signal generator to square wave, 3.3V high level 0.0 V low level, High Z output, period 104us, duty cycle 35us/104 us = 33.65%.
Turn the output of the signal generator on.
The resulting waveform is shown in figure 4

3.7 Check bus signal

Check the resulting signal on the bus. A pulse 6V to 9V lower should be visible on every signal generator pulse. The negative pulse should be followed by an exponentially decaying positive pulse with maximum between 4V and 10V. The expected waveform is shown on figure 4.

3.8 Check RX signal

Check if the signal is received again on the RX testpoint.
The waveform here should be similar to the TX waveform shown in figure 4