



Test procedure for the NCS5651MNSEVB Evaluation Board

Introduction: This document describes the test procedure for the evaluation board (EVB) of the NCS5651. A test board has been made to speed up testing. With this test board, it is possible to test the input current, the VCOM voltage and the different output signals.

Equipment Required:

1. Two digital multimeters (to measure the input current and the common voltage (VCOM))
2. An oscilloscope with at least 3 inputs to observe the opamps input and the two outputs.
3. A DC power supply with an output voltage of 12
4. A function generator which can generate a 100 kHz, 8 Vpp signal.

Setup Procedure:

1. Set oscilloscope channels 1–3 to be DC-coupled, with a 1 MW impedance, full bandwidth, and 2 V/div scale.
2. Connect channel 1 of the oscilloscope with BNC socket 1 of the board using a BNC–BNC cable, channel 2 with socket, channel 3 with socket 3.
3. The ground level of channel 1 coincides with the center horizontal grid line on the oscilloscope. The following measurements have to be set on this channel: Peak-to-peak, Phase (Channel 1!2) and RMS. Set the horizontal scale to about 5 μ s/div to show enough cycles on the screen during the amplitude measurement. The ground level of channels 2 and 3 is the same as the ground level of channel 1.
4. Connect a multimeter to measure the input current at the test board. The COM-port has to be connected with the white banana socket, the A port has to be connected with the green banana socket.
5. Connect a voltage meter to measure the VCOM to the test board. The COM port has to be connected to one of the two black banana sockets; the positive terminal has to be connected to the yellow banana socket or the small ring next to this socket.
6. Connect the output of the function generator with the black BNC socket.
7. Verify with the oscilloscope shows a 100 kHz, 8 V peak-to-peak sine on channel 1. If not, adjust the function generator.
8. Connect the DC power supply to the board. The ground connects to the other black banana socket, the positive input to the red banana socket.

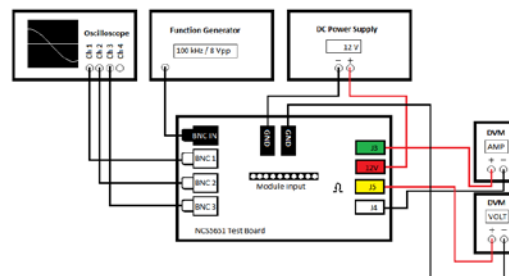


Figure 1: Testboard NCS5651

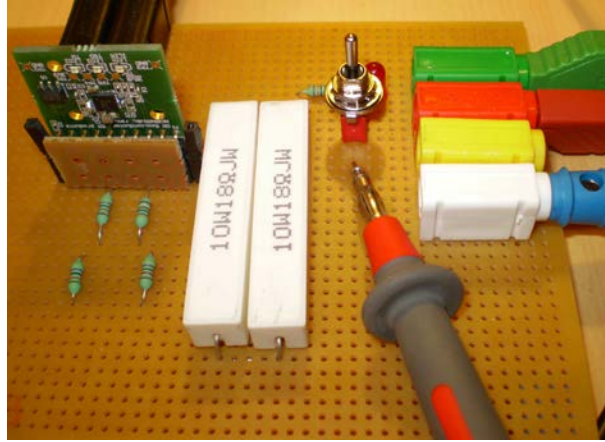


Figure 2: Connecting the probe of the DVM to the hook on the board.

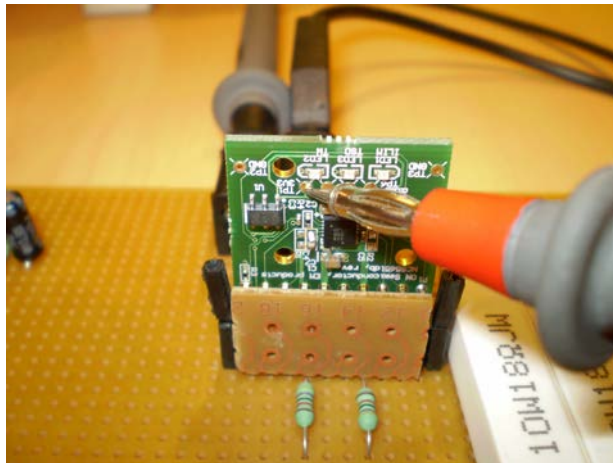


Figure 3: Method to measure the 3V3 logic supply.

Test Procedure:

1. Visually check the NCS5651MNSEVB board for proper diode and electrolytic capacitor orientation and check the overall integrity of solder connections, etc.
2. Plug the NCS5651MNSEVB in the center connector. There is only one way to do this correctly. The backplane of the NCS5651MNSEVB has to face the two ground connectors.
3. Prepare a stopwatch.
4. Toggle the power switch on and start the timer at the same time.
5. If there are any LED apart from LED2 is lighted the board is defect. If so, toggle the switch off.
6. Stop the timer when LED2 on the NCS5651MNSEVB lights up. LED2 is the user programmable warning threshold flag, activating when the junction temperature reaches a preset threshold. This has no influence on the operation of the internal opamps.



7. Observe the VCOM voltage on the DVM. Acceptable values are **5.8–6.2 V**.
8. Observe the input current on the DVM. Acceptable values are **135–170 mA**.
9. Check the signal on channel 1. This has to be almost the same as the input signal (**100 kHz, 8 Vpp**); the DC level should equal VCOM though. Check the peak-to-peak voltage of this
10. Check the signal on channel 2. A phase shift of **160–175°** to the signal measured at channel 1 is acceptable.
11. Check the signal on channel 3. This has to be a phase shift of **160–175°** to the signal measured at channel 1 and coincident with the signal on channel 2.
12. Disconnect the DVM probe from the hook or the yellow banana socket and place this on test point 1 (TP1) of the NCS5651MNSEVB. The output voltage on this point should be **3.3±0.15 V**. The method is shown in *figure 3*.
13. Toggle the switch off. The red LED extinguishes.
14. Remove the NCS5651MNSEVB.

End Of Test