Test Procedure for the NCV7420GEVB

ON Semiconductor®

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Required Equipment

- Oscilloscope
- Bench Power Supply
- Voltmeter
- Signal Generator

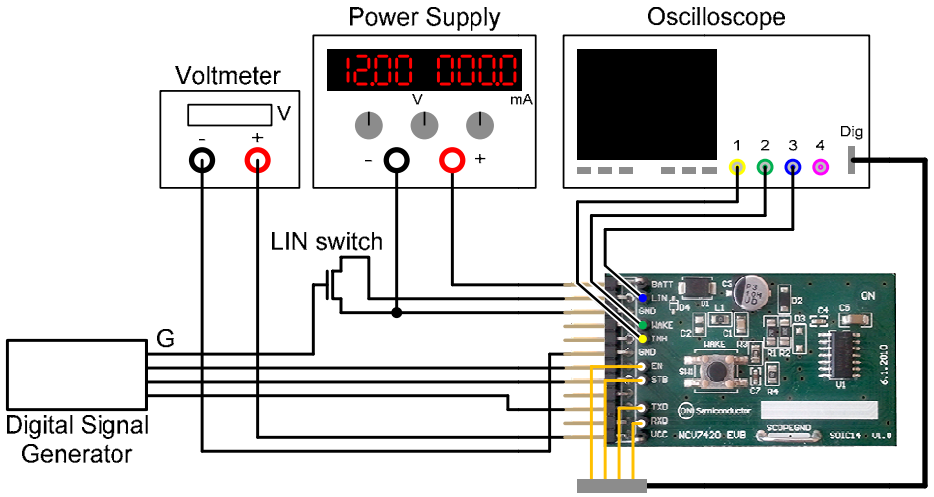

Figure 1: Test Setup Configuration

Test procedure Step 1 (Power-up sequence, Standby mode):

1. Connect the setup as shown above.
2. Set STB, EN and TxD and G (LIN Switch Gate) to LOW.
3. Apply an input voltage, V_{BAT} = 12 V
4. Set STB and TxD to HIGH
5. Check V_{CC}, LIN, INH and RxD State
6. Check I_{BAT}. Caution should be taken with oscilloscope digital probes resistance which could have influence on overall I_{BAT} current.

Table 1: Desired Results

I_{BAT} = Typ. 40 μA, Max. 60 μA (Measured with disconnected digital probes), no V_{CC} Load)
V_{CC} = ON
LIN = RECESSIVE
INH = FLOATING
RxD = HIGH

Test procedure Step 2 (Transition to Normal mode):

1. Set EN HIGH
2. Check V_{CC}, LIN, INH and RxD State
3. Check I_{BAT}. Caution should be taken with oscilloscope digital probes resistance which could have influence on overall I_{BAT} current.

Table 2: Desired Results

I_{BAT} = Typ. 0.64 mA, Max 1 mA (Measured with disconnected digital probes, no V_{CC} Load)
V_{CC} = ON
LIN = RECESSIVE
INH = ON
RxD = HIGH

Test procedure Step 3 (Transmit in Normal mode):

1. Set TxD to LOW, wait <6ms, set TxD HIGH (Generate LIN Dominant state)
2. Observe LIN and RxD. Start observation with TxD falling edge.

Table 3: Desired Results

LIN = Contain one Dominant pattern
RxD = Contain one Dominant pattern

Test procedure Step 4 (Transition to Sleep mode):

1. Set STB to LOW
2. Set EN LOW
3. Set TxD LOW (to simulate a microcontroller without power supply being connected to TxD)
4. Check I_{BAT}, V_{CC}, INH and RxD State

Table 4: Desired Results

I_{BAT} = Typ. 11 μA, Max 20 μA
V_{CC} = OFF
INH = FLOATING
RxD = LOW

Test procedure Step 5 (Local Wakeup):

1. In Sleep, press Local Wakeup switch
2. Set STB and TxD to HIGH
3. Check V_{CC}, INH and RxD State
4. Check I_{BAT}. Caution should be taken with oscilloscope digital probes resistance which could have influence on overall I_{BAT} current.

Table 5: Desired Results

I_{BAT} = Typ. 40 μA, Max. 60 μA (Measured with disconnected digital probes), no V_{CC} Load)
V_{CC} = ON
INH = FLOATING
RxD = HIGH – Signaling Wakeup source – Local Wakeup

Test procedure Step 6 (Remote Wakeup):

1. In Sleep, generate Remote Wakeup pattern: Set G HIGH, wait >150 us, set G LOW
2. Set STB and TxD to HIGH
3. Check V_{CC}, INH and RxD State
4. Check I_{BAT}. Caution should be taken with oscilloscope digital probes resistance which could have influence on overall I_{BAT} current.

Table 6: Desired Results

I_{BAT} = Typ. 0.37 mA – 3.3V version I_{BAT} = Typ. 0.56 mA – 5V version (RxD 10 kΩ pull-up to V_{CC} + 40 μA Standby current consumption) (Measured with disconnected digital probes), no V_{CC} Load)
V_{CC} = ON
INH = FLOATING
RxD = LOW – Signaling Wakeup source – Remote Wakeup

DC Characteristics

	MIN	TYP	MAX
LIN DOMINANT			2 V
LIN RECESSIVE	V_{BAT} - 1 V		
INH HIGH	V_{BAT} - 0.75 V		
VCC ON (3.3 V version)	3.19 V	3.3 V	3.41 V
VCC ON (5 V version)	4.83 V	5.0 V	5.17 V
RxD LOW			0.65 V
RxD HIGH	V_{CC}-0.65 V		