LMK01000
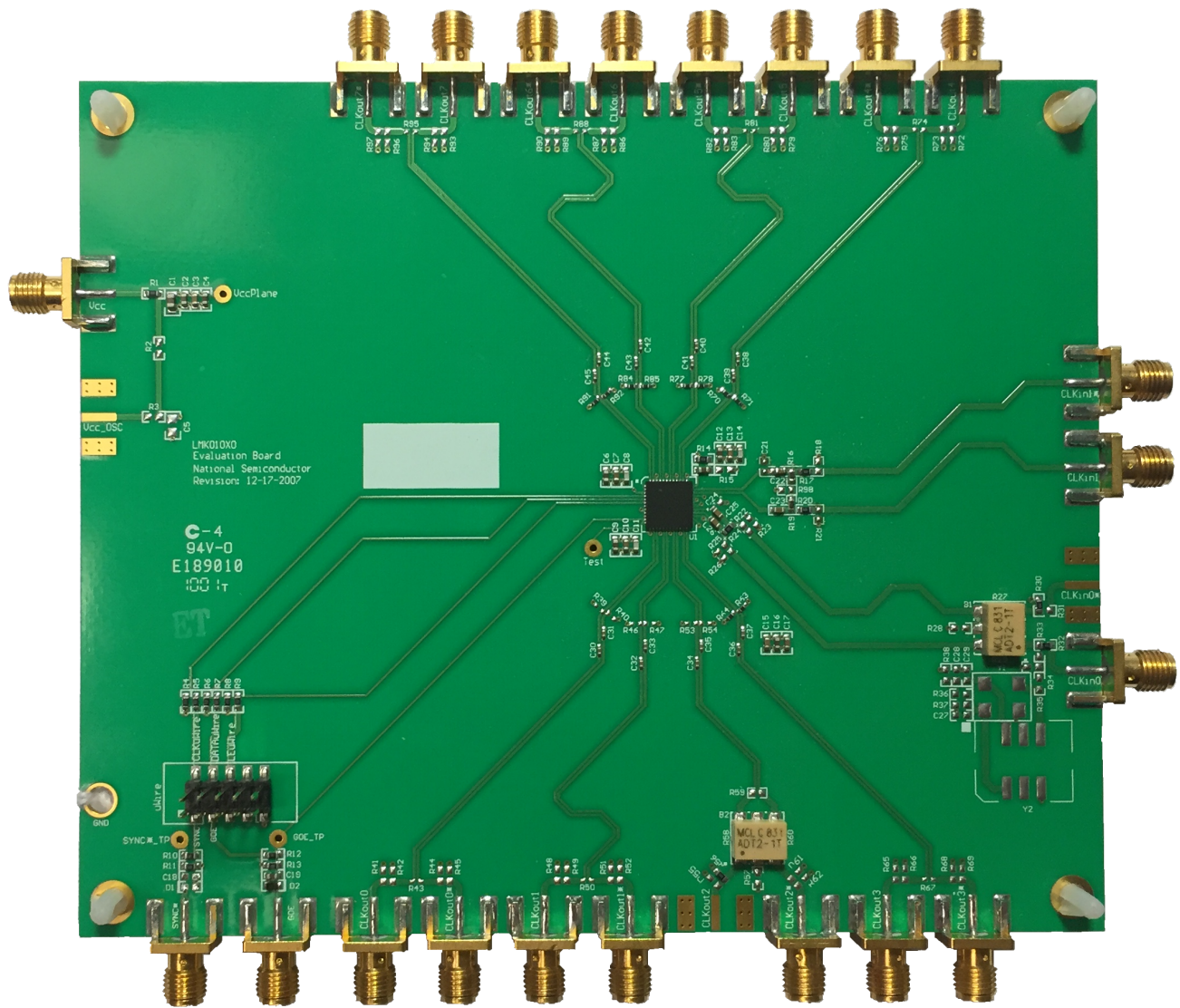
The LMK01000EVM is for the LMK01000 1.6 GHz High Performance Clock Buffer, Divider, and Distributer. The EVM can be used for device evaluation, compliance testing, and system prototyping.

Figure 1. LMK01000EVM

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LMK01000 EVM Operating Instructions

1   Overview

The LMK01000EVM is for the LMK01000 1.6 GHz High Performance Clock Buffer, Divider, and Distributer. The EVM can be used for device evaluation, compliance testing, and system prototyping.

2   Necessary Equipment

- **Power Supply:**
  - The Power Supply should be a low noise power supply. An Agilent 6623A Triple power supply with LC filters on the output to reduce noise was used in creating these evaluation board instructions.
- **Phase Noise / Spectrum Analyzer:**
  - For measuring phase noise an Agilent E5052A is recommended. An Agilent E4445A PSA Spectrum Analyzer with the Phase Noise option is also usable although the architecture of the E5052A is superior for phase noise measurements. At frequencies less than 100 MHz the local oscillator noise of the PSA is too high and measurements will be of the local oscillator, not the device under test
- **Oscilloscope:**
  - The oscilloscope and probes should be capable of measuring the output frequencies of interest when evaluating this board. The Agilent Infiniium DSO81204A was used in creating these evaluation board instructions.
- **Reference Oscillator:**
  - The on board crystal oscillator will provide a low noise reference signal to the device at offsets greater than 1 kHz. Note: The default loop filter has a loop bandwidth of ~60 kHz. Inside the loop bandwidth of a PLL the noise is greatly affected by any noise on the reference oscillator (OSCin). Therefore any noise on the oscillator less than 60 kHz will be passed through and seen on the outputs. For this reason the main output of a Signal Generator is not recommended for driving OSCin in this setup.

3   Basic Operation

- 1) Connect a low noise 3.3 V power supply to the Vcc connector located at the top left of the board.
- 2) Connect 122.88 MHz signal from signal generator output to CLKin0 of board.
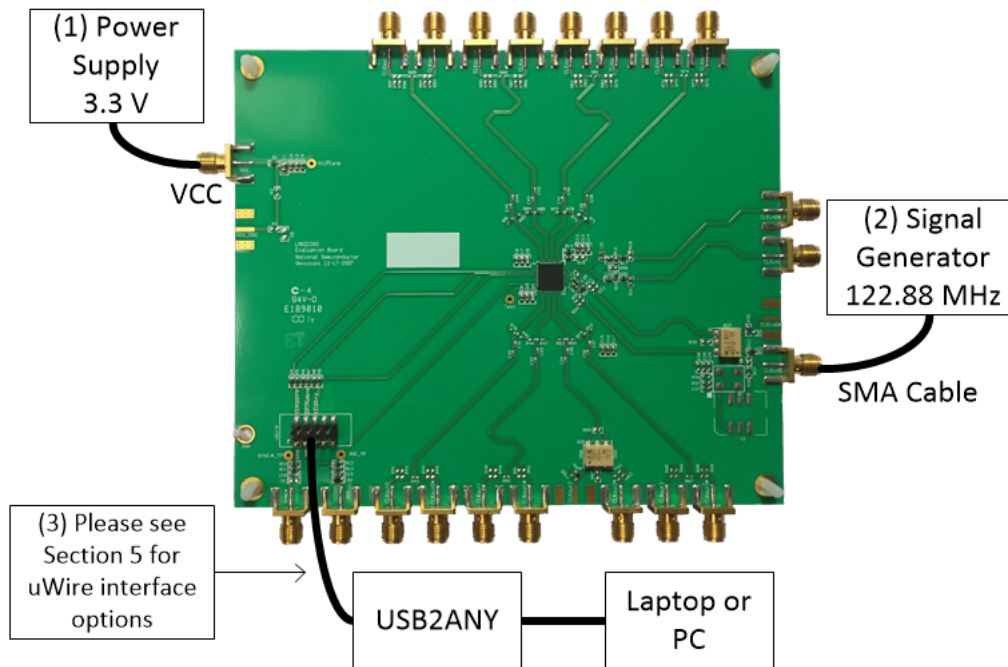- 3) Connect PC to the uWire header. For quick start on interfacing the board please see Section 5.

Figure 2. LMK01000 EVM Set Up

- 4) Start TICS Pro software.
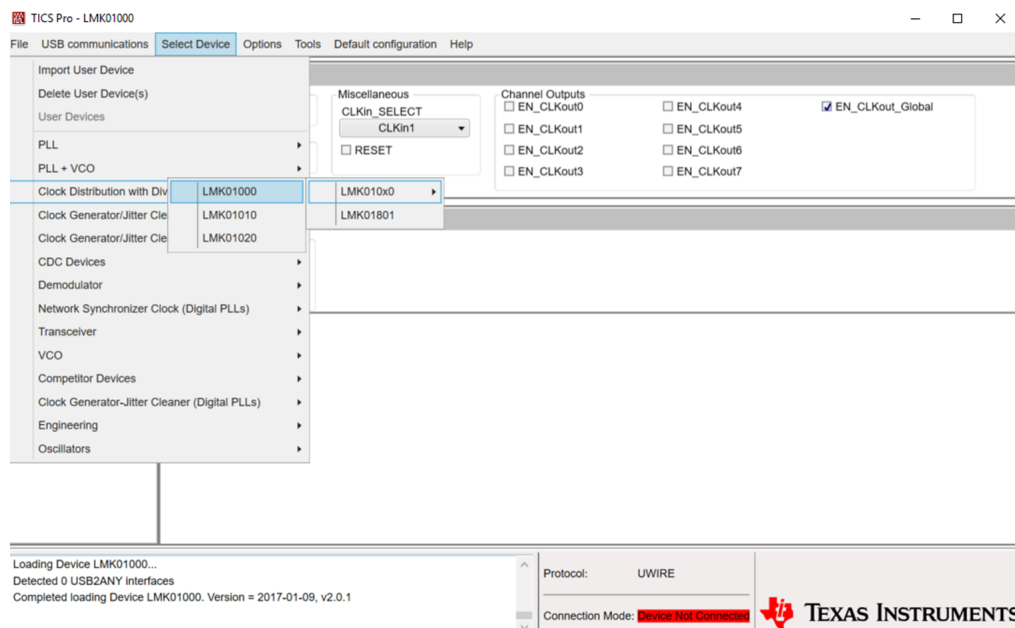- 5) Select the device by "Select Device"→ "Clock Distribution with Divider"→"LMK10x0"→"LMK1000".

Figure 3. GUI 1

- 6) Enable the output to measure (example CLKout0 is enabled see Figure 4).
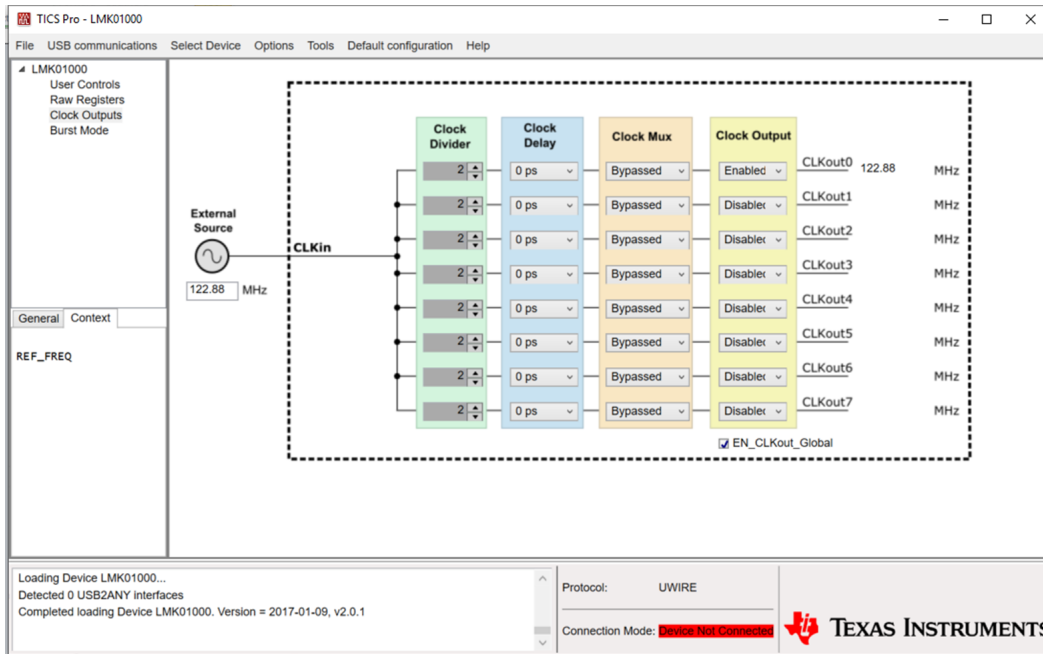

Figure 4. GUI 2

- 7) Program the part by clicking "USB communications"→"Write All Registers" or by pressing Ctrl+L.
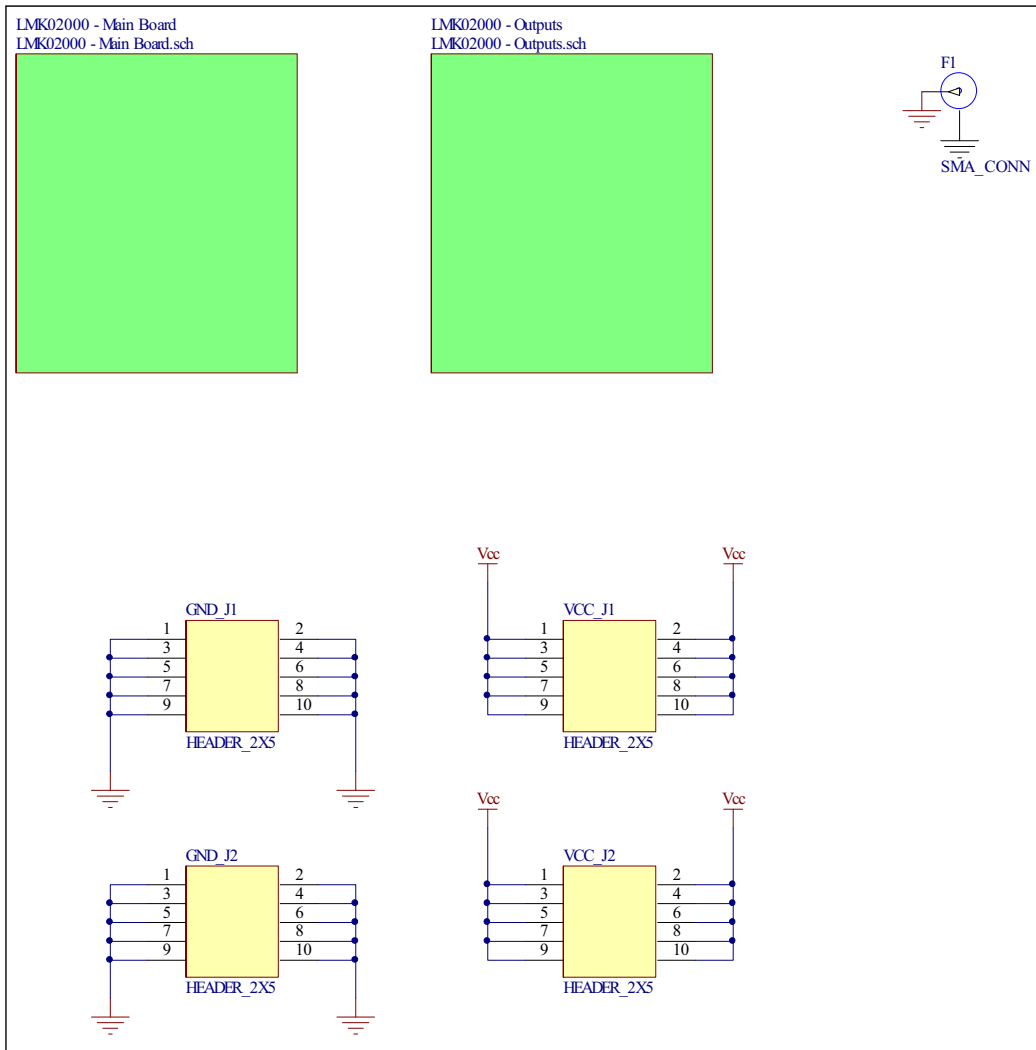
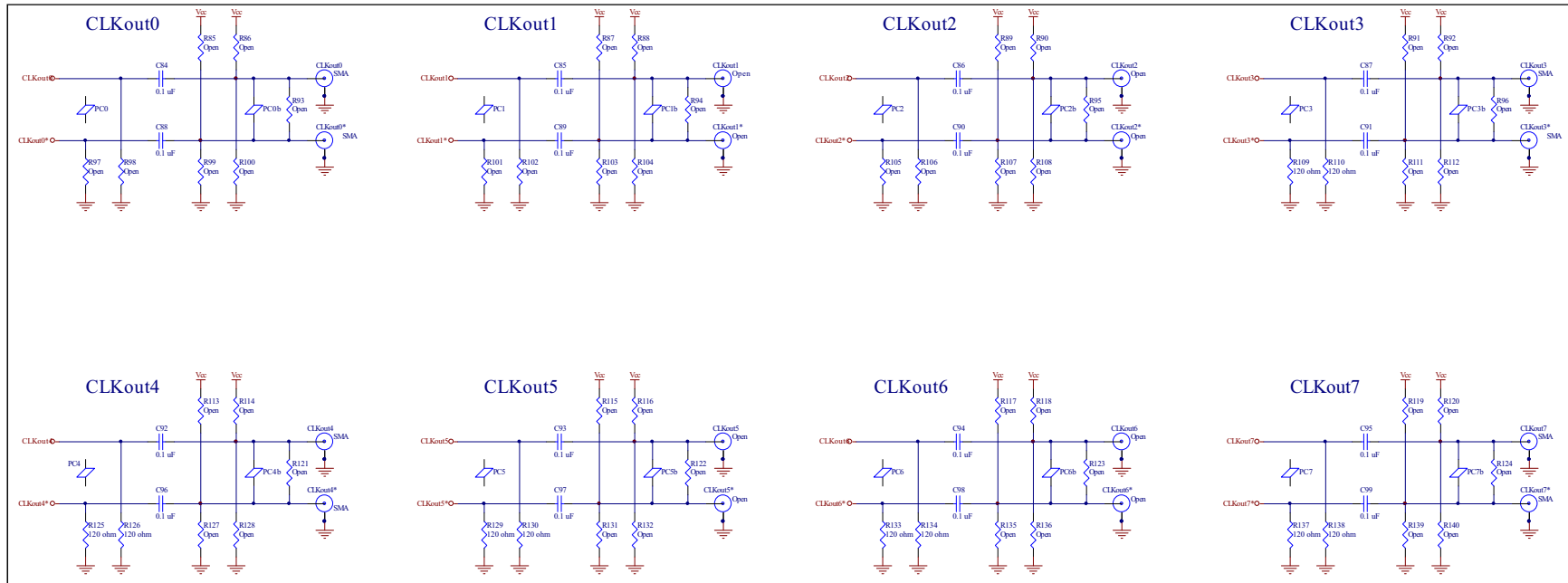## 4 Schematics

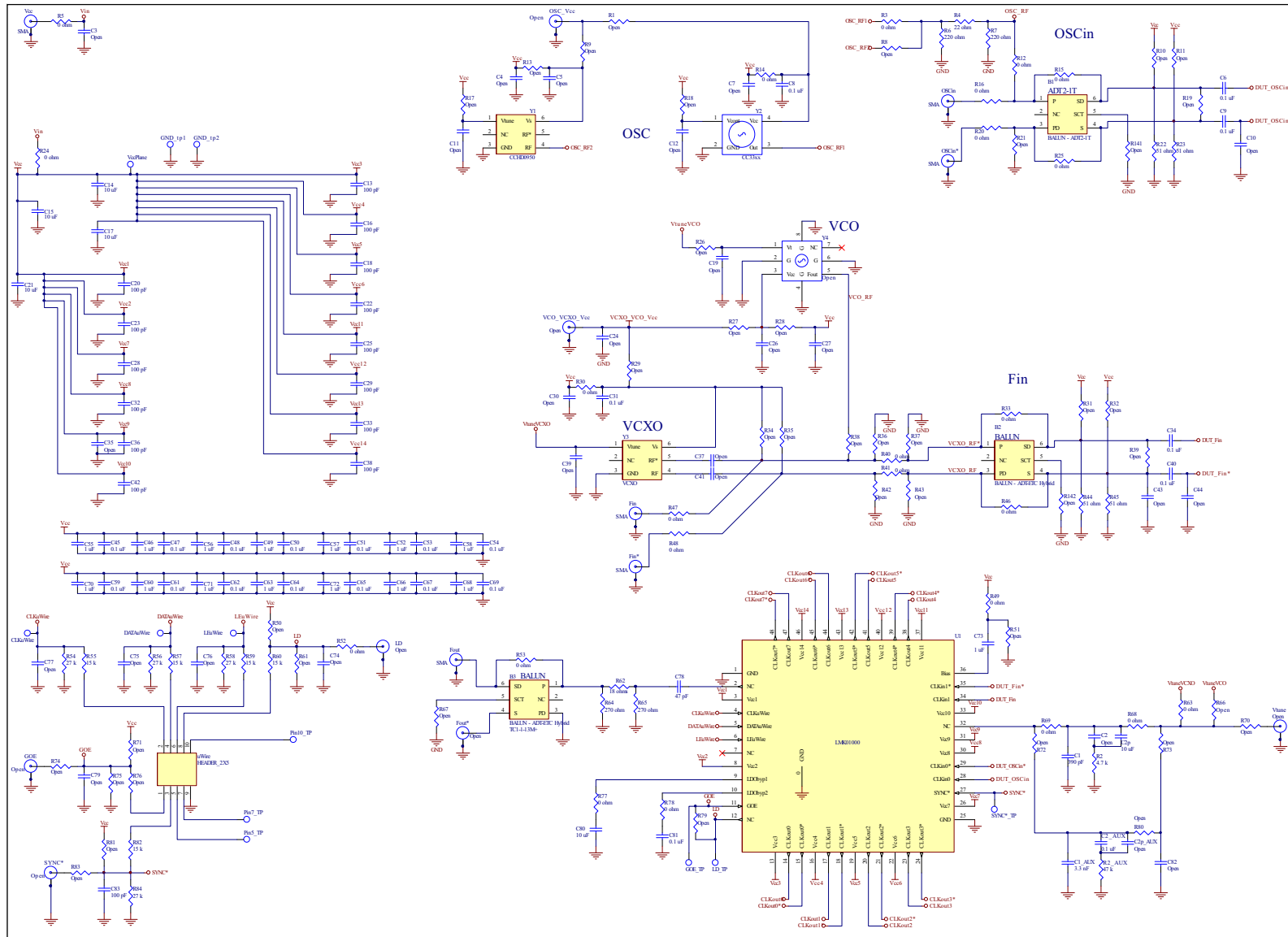**Figure 5. Schematic 1**

Figure 6. Schematic 2

Figure 7. Schematic 3

5   Quick Start for EVM communications

TICS Pro is the software used to communicate with the EVM (Please download the latest version from TI.com - http://www.ti.com/tool/TICSPRO-SW). This EVM can be controlled through the uWire interface on the board using USB2ANY and an adapter board. Under "USB communications" → "interface" select USB2ANY.
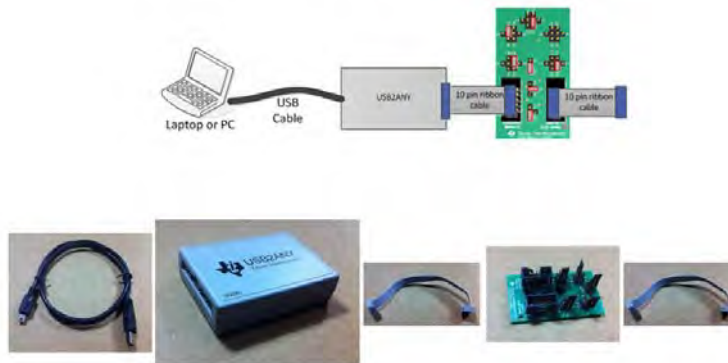

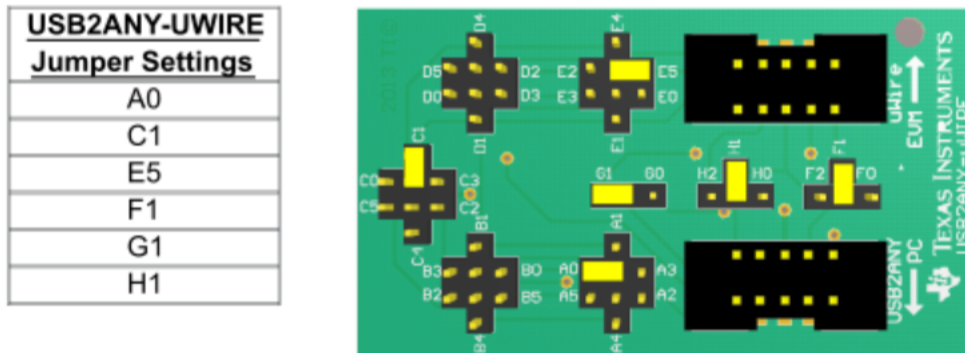**Figure 8. USB2ANY-uWIRE Set up**

Figure 9. USB2ANY-uWIRE Board Set Up

Alternatively if a USB2ANY-uWIRE board is not available the 10 pin connector can be spliced and connected as shown in Figure 10, or jumpers can be used to connect USB2ANY directly to the EVM. Necessary connections include: GND, DATA, CLK, LE, GOE, and SYNC.
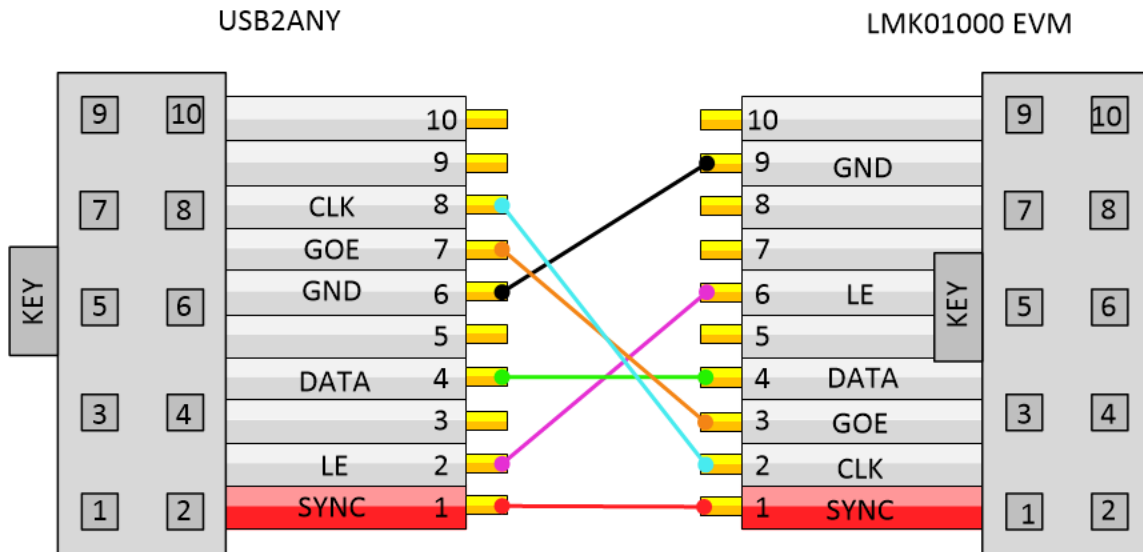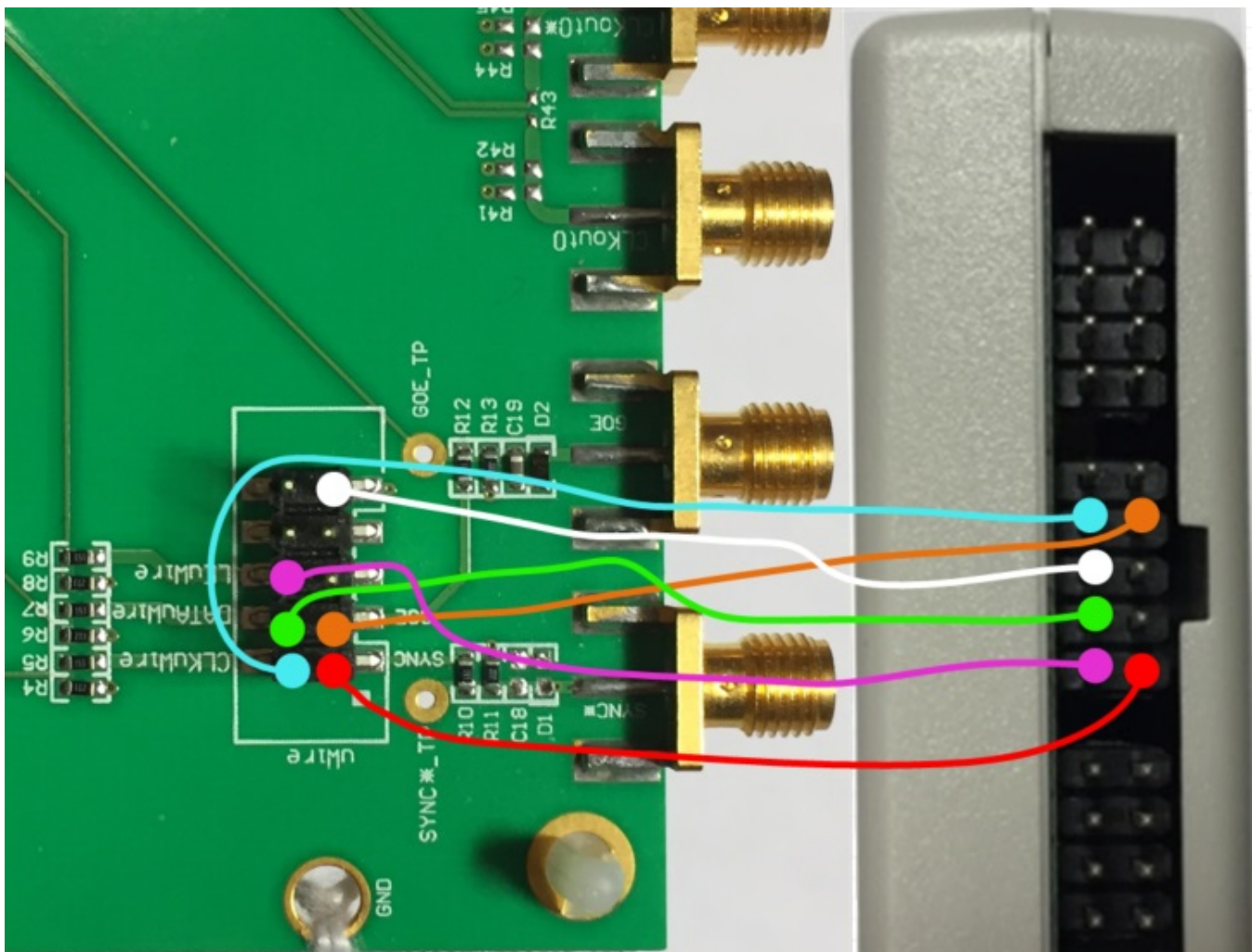
Figure 10. 10 Pin Adapter Configuration

Figure 11. USB2ANY to LMK01000 Jumper Configuration

Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

Changes from A Revision (November 2013) to B Revision	Page
• Changed throughout document.	3

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