

## Introduction

The procedure below enables the user to calibrate the device to a proper VCO band that will guarantee functionality over the full temperature range of the device. That band will then be programmed into the OTP. Certain conditions are required to properly program the device.

### In-System VersaClock 5 / VersaClock 6 OTP Non-Volatile Programming via I2C

1. Conditions: Ambient temperature 25°C, 3.3V. For any other conditions, contact IDT.
2. Procedure:
  - a. Power-up the device
  - b. Write all relevant bits to the device to program PLL, FOD and output types
  - c. Provide a reference clock to the IC corresponding to the configuration.
  - d. Specific bits need to be set:
    - Set VCO Monitoring in address x1D, bit[1] to “0”
    - Set “AFC Enable” bit in address x16, bit[3] to “0”
    - Set Test mode bit in register 0x11 (bit[5]) to “0”
  - e. Perform VCO Calibration:
    - Toggle bit[7] in 0x1C by writing the bit to 0 then 1 and then back to 0. Final state of the bit should be 0.
    - Wait 100 ms
    - Read band in I2C register 0x99 bit[7:3]  
(read only register located in the factory programmable section of the RAM)
    - The value read from register 0x99 has to be different from 0 or 23. If this is not the case then repeat the Calibration step.
    - Write the content of the I2C register 0x99 bit[7:3] to the bits bit[4:0] into register 0x11.
  - f. Programming the OTP

Before programming the OTP, change Test mode bit in register 0x11 (bit[5]) to “1” to force the chip to run the band number written previously in bits[4:0].

Now program the OTP by following the steps on page 5 of the [VersaClock 5 Family Register Descriptions and Programming Guide](#) or the [VersaClock 6 Family Register Descriptions and Programming Guide](#).

## VersaClock 5 / VersaClock 6 Volatile Programming via I2C

The procedure below enables the user to calibrate the device to a proper VCO band that will guarantee functionality over the full temperature range of the device. Certain conditions are required to properly calibrate the VCO.

1. Conditions: Ambient temperature 25°C, 3.3V. For any other conditions, contact IDT.
2. Procedure:
  - a. Power-up the device
  - b. Write all relevant bits to the device to program PLL, FOD and output types
  - c. Provide a reference clock to the IC corresponding to the configuration written in point b.
  - d. Specific bits need to be set:
    - Set VCO Monitoring in address x1D, bit[1] to “0”
    - Set Test mode bit in register 0x11 (bit[5]) to “0”
  - e. Perform VCO Calibration:
  - f. Toggle bit[7] in 0x1C by writing the bit to 0 then 1 and then back to 0. Final state of the bit should be 0.
    - Wait 100 ms



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