

## **AD9375 DPD QUICK START GUIDE**

# AD9375 DPD Quick Start Guide

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## REVISION HISTORY

05/2017—Rev 1.0 Initial document released.

# AD9375 DPD Quick Start Guide

## DPD HARDWARE SETUP

Equipment needed:

- Included in the kit: 1× AD9375 Daughter Card, 1× Power Amplifier EVB (SKY66297-11 PA EVB or similar), 1× AD-FMC-SDCARD, 1× ADRV9371-SDCARD
- 1× Xilinx Zynq ZC-706 Evaluation Platform and 12 V power supply (Xilinx EK-Z7-ZC706-G or Avnet AES-Z7-JESD3-G)
- DC power supply (Keithley 2230-30-1 or equivalent), and cables to connect the PA supply lines to the power supply (like Pomona Banana-Grabber Test Leads or equivalent)
- 1× Coupler (Narda 4243-20 or equivalent) or Splitter (Mini-Circuits 3-way ZN3PD-622W-S+ or equivalent)
- 30 dB attenuator (Mini-Circuits BW-S30W20+ or equivalent)
- 6 dB attenuator (Mini-Circuits VAT-6W2+ or equivalent)
- SMA connectors and RF cables to interconnect various RF input and output ports as shown in Figure 1.
- OS: Windows 7 64-bit (**Windows 7 32-bit and newer Windows versions are not currently supported**)

Figure 1 shows the external loopback hardware setup with a Skyworks PA. The ADRV9375-N/PCBZ FMC evaluation board must be connected to the High Pin Count (HPC) FMC connector J37 on the ZC-706 board.

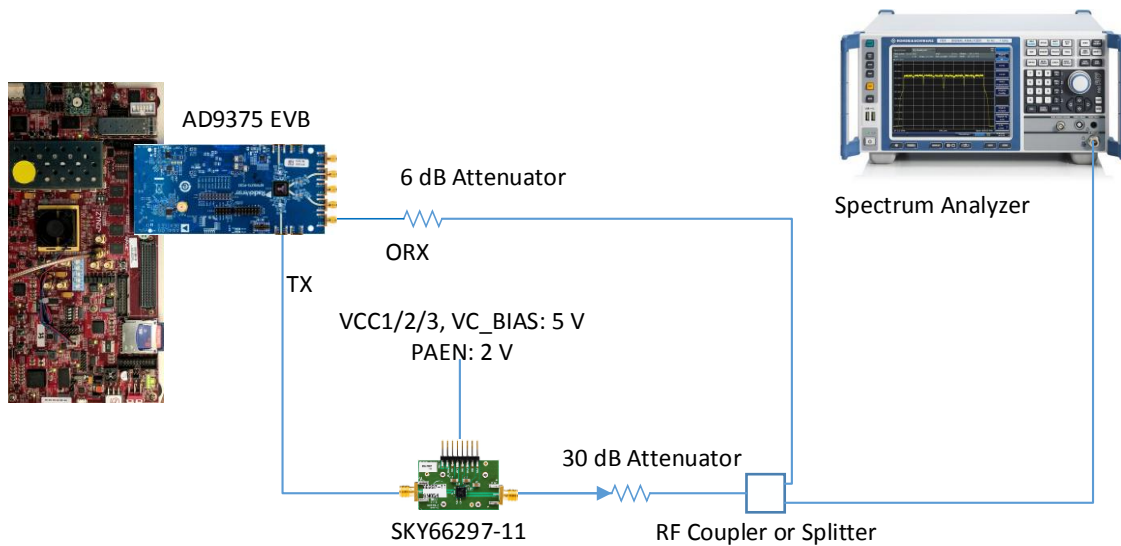


Figure 1. Hardware Setup

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## STARTING THE CUSTOMER SOFTWARE & CONFIGURING THE AD9375

Before the DPD GUI is launched, the AD9375 must be programmed using the AD9375 Transceiver Evaluation Software (TES) GUI.

**NOTE:** During device initialization, the PA must **NOT** be powered on. Large amplitude CW tones that are transmitted during initialization and calibration may damage the PA if it is powered on.

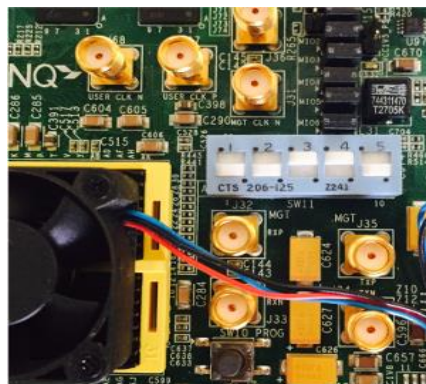


Figure 2: Zynq DIP switch setup

1. Insert the ADRV9371-SDCARD packaged with the AD9375 evaluation board into the slot (J30) on the ZC-706 board.
2. Ensure that the DIP switches on the ZC-706 board (SW11) are set as shown in Figure 2 (SW1: down, SW2: down, SW3: up, SW4: up, SW5: down).
3. Connect the Xilinx ZC-706 platform to the host PC using the Ethernet cable.
4. Power on the ZC-706 platform and ensure the AD9375 is connected properly and is powered up.
5. Before attempting to connect using the TES GUI, wait until the GPIO LEDs near the power switch (SW1) on the ZC-706 board stop flashing.
6. Launch TES and click Connect.
7. Click on the AD9528 link on the left pane of the TES GUI and choose the reference clock frequency. Ensure that the same frequency clock is applied to the reference clock input SMA J401 on the AD9375 evaluation board.
8. Click on the AD9375 link on the left pane of the TES GUI and select the desired Tx profile. Tx profiles that begin with the “TxDPD” label have either one or two of the DPD half band (HB) filters enabled. Each HB filter interpolates the data by a factor of two downstream of the JESD interface. The DPD IQ rate is therefore 2x or 4x the IQ rate shown in the profile selection tab. This interpolation allows for the higher bandwidth required for DPD operation while keeping a lower data rate across the JESD link. All other Tx profiles have the DPD HBs disabled so DPD IQ rate matches the profile IQ rate.
9. The ORx profile must be chosen such that its IQ rate matches the DPD IQ rate of the Tx profile. Refer to Table 1. .

Table 1. Supported DPD Tx and ORx Profiles

TX Profiles	DPD IQ Rate
TxDPD 20/100 MHz, IQRate 61.44 MHz, Dec5	122.88 MHz
TxDPD 40/200 MHz, IQRate 122.88 MHz, Dec5	245.76 MHz
TxDPD 100/250 MHz, IQRate 153.76 MHz, Dec5	307.2 MHz
TxDPD 40/200MHz, IQrate 122.88MHz, Dec5	245.76MHz
TxDPD 40/200MHz, IQrate 61.44MHz, Dec5	245.76MHz

For AD9375 devices, it is possible to choose profiles not labeled “TxDPD” such that the Tx and ORx IQ rates match, resulting in no interpolation being used.

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10. Select the Tx LO frequency in the Tx PLL box. Select a frequency that is compatible with the frequency match of the daughter card and the PA.
11. Ensure that the PA is off.
12. Click Program Device.
13. Click the Disconnect button. This releases the command server connection for the DPD GUI to use.
14. The user can now launch the DPD GUI for evaluation purposes. Please refer to the AD9375 System Development User Guide (SDUG) for instructions on using the DPD GUI.