AFE2256 256-Channel, Analog Front-End for Digital X-Ray, Flat-Panel Detectors

This user's guide provides an introduction to the evaluation module (EVM) for the AFE2256 from Texas Instruments.

1 AFE2256EVM Kit Contents

The AFE2256EVM is a compact USB 2.0-based evaluation platform for the AFE2256, a high performance and low-noise analog front-end (AFE) designed for digital X-ray imaging systems.

The kit consists of:

1. AFE2256EVM FPGA board
2. Two AFE2256 Chip-on-Film (COF) devices
3. Two AFE2256 COF adapter boards
4. Power Cable
5. USB 2.0 cable for communication to the software GUI

Figure 1 shows an overview of the evaluation module containing the AFE2256EVM.

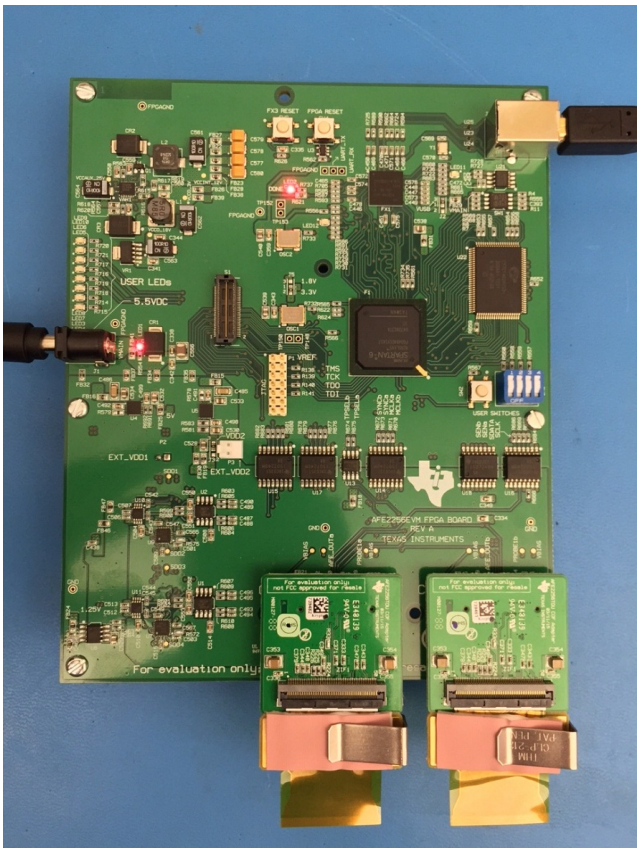

Figure 1. AFE2256EVM

2 AFE2256EVM Hardware Features

The EVM includes two AFE2256 COF devices which are connected to the FPGA board via adapter boards. The COF devices are mounted using detachable connectors so that they can be easily replaced or even attached to external x-ray panels for system level evaluation. An on-board FPGA is also included on the EVM which configures the AFE2256, generates timing signals, and captures device data. A single DC Barrel jack power input and on-board LDOs provide low-noise supplies to the AFE2256 devices and other board components allowing for easy power connections. The on-board DAC circuitry provides compensation voltages and pixel charge emulation to the AFE2256 devices so that performance over the entire input range can be evaluated.

3 AFE2256EVM Software Features

The AFE2256EVM GUI software provides a powerful evaluation platform for the AFE2256. The user can configure the AFE2256 COFs using pre-installed examples or user-specific custom configurations. The user can save the device configurations and re-load them later as needed. This makes device configuration a “one click” process which is also easily repeatable or sharable between setups.

The GUI includes data capture and analysis tools which provide various visualizations like gray scale image, time domain plot, histogram, and candlestick plot. The GUI also displays various calculated noise parameters from the captured data for quantitative performance analysis. The captured data can be saved in csv format and can be imported into analysis tools such as Matlab.

4 AFE2256EVM Documentation

All relevant documentation including EVM schematics, Bill of Materials (BOM), Altium database, IBIS model, and User’s Guides are available for download.

A comprehensive User’s Guide explaining step-by-step software installation procedures as well as testing procedures is provided. A detailed explanation of all features of the GUI software is also given in this comprehensive User’s Guide.

Additional documents such as application notes and user specific examples are available upon request. The AFE2256EVM kit is a complete evaluation setup for the AFE2256. For more information on the AFE2256, or to begin evaluation, please write to AFE2256-support@list.ti.com.

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- *Reorient or relocate the receiving antenna.*
- *Increase the separation between the equipment and receiver.*
- *Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.*
- *Consult the dealer or an experienced radio/TV technician for help.*

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3.2.1 *For EVMs issued with an Industry Canada Certificate of Conformance to RSS-210*

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Concernant les EVMs avec antennes détachables

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http://www.tij.co.jp/lsds/ti_ja/general/eStore/notice_01.page

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2. Use EVMs only after User obtains the license of Test Radio Station as provided in Radio Law of Japan with respect to EVMs, or
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