# RENESAS

## USER'S MANUAL

#### JESD204B High Speed ADC

Evaluation Kit

The Intersil JESD204B High Speed ADC evaluation system allows users to evaluate the Intersil portfolio of low-power, 12to 16-bit, high-performance analog-to-digital converters (ADC) with JESD204B high speed serial outputs. These converters run at sampling rates of 40MSPS to 500MSPS and their JESD204B outputs operate at rates from 1 to 4.375Gbps. The evaluation system uses the Intersil iEvalADC software, which displays all pertinent data such as SFDR, SINAD, ENOB, harmonics, current, and power measurements. The software also plots outputs in frequency spectra and time domain.

To begin testing, simply connect the input signal, sampling clock, and target computer to the motherboard, and supply power (Figure 1). The motherboard (ADCMB-HSFMCEV1Z) provides appropriate supply voltages and captures digital data from the daughter card. Daughter cards contain the ADCs and attach directly to the motherboard to form the ADC evaluation platform (Figure 2). To ensure proper operation of the system, it is recommended that the most current software version be installed. If Intersil iEvalADC is already installed on the machine, a new installation may proceed without removing the prior version.

### Features

- Complete high-speed ADC measurement solution
- · 40MSPS to 500MSPS operation
- Datasheet-style, live-updated display with calculation of critical ADC parameters (SNR, SFDR, SINAD, ENOB, Harmonics, Power)
- Multiple display modes: frequency (FFT), time domain
- Integrated SPI control for ADC configuration
- JESD204B receiver reference design (included with iEvalADC software)
- USB 2.0 interface for rapid data transfer
- 1M (2<sup>20</sup>) word capture depth

## **Evaluation System Contents**

The evaluation system is provided with a USB cable to connect to a PC and a 5V power supply. The user need only provide signal and clock sources, optional filters, and a PC running the Microsoft Windows™ XP operating system with Java installed. Intersil iEvalADC software can be downloaded from the Intersil web site. Please visit <u>www.intersil.com/jesd204b</u> for more details.



FIGURE 1. EVALUATION PLATFORM BLOCK DIAGRAM



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FIGURE 2. EXAMPLE EVALUATION BOARD CONNECTIONS SHOWING ISLA214S50 DAUGHTER CARD

#### **Installation Requirements**

Before installing iEvalADC, please confirm the following:

- PC operating system is Windows XP
- The account that the software is installed from has administrator privileges.
- · Java is installed.
  - The Java Runtime Environment is installed on the PC. If not, it can be installed by downloading from <a href="http://java.com/">http://java.com/</a>
  - Windows XP has associated files with the \*.jar extension with the java runtime environment. This is done by default during the java runtime environment install. You can modify your file extension associations by opening an explore window, clicking on the Tools drop down menu, selecting Folder Options, and interacting with the pop up window.

#### **Setup and Operation of the ADC Evaluation Platform**

To set up the ADC evaluation platform, the following items are required:

- 1. Intersil ADCMB-HSFMCEV1Z motherboard
- 2. USB cable (USB-A to USB-B, 1.25 to 2M long) (supplied with ADCMB-HSFMCEV1Z)
- 3. 5V power supply, 18 W minimum (supplied with ADCMB-HSFMCEV1Z)
- 4. Intersil daughter card containing ADC to be tested (ordered separately)
- 5. Suitable signal and clock sources (see "Appendix A" on page 4)(supplied by user)
- 6. PC with free USB2.0 port, logged in with administrator rights (supplied by user)

#### Installing the iEvalADC Software

1. Double click the installer executable (i.e., "Intersil\_iEvalADC\_V1.04.exe"). This will launch the installer, resulting in the following window. Click "Next".

🤳 Intersil iEvalADC 1.0 Setup	
	Welcome to the Intersil iEvalADC 1.0 Setup Wizard This wizard will guide you through the installation of Intersil EvalADC 1.0. R is recommended that you close all other applications
	before starting Setup. This will make it possible to update relevant system files without having to reboot your computer. Click Next to continue.
	[Next > ] Cancel

FIGURE 3.

2. The End User License Agreement will be displayed. In the License Agreement window, if you agree with the Software Evaluation License Agreement, click "I accept the terms of the License Agreement" radio button, then click "Next".

🚺 Intersil iEvalADC 1.03 Setup
License Agreement Please review the license terms before installing Intersil EvalADC 1.03.
Press Page Down to see the rest of the agreement.
Software Evaluation License Agreement Intersil Corporation (for itself and its subsidiaries)
PLEASE READ THIS AGREEMENT CAREFULLY. By clicking "I Accept" or by using or accessing the Intersil EvalADC software (the "Software") you agree (a) that this agreement (the "Agreement") is a legally biodion and which contract hatwase the consumption can be all of which you
If you accept the terms of the agreement, click I Agree to continue. You must accept the agreement to install Intersil IEvalADC 1.03.
<ul> <li>I accept the terms of the License Agreement</li> <li>I do not accept the terms of the License Agreement</li> </ul>
Nullsoft Install System v2:46 < Back Next > Cancel

FIGURE 4.



3. The "Choose Install Location" window opens. Click "Next".



FIGURE 5.

4. The "Choose Start Menu Folder" opens. Click "Install".

1 Intersil iEvalADC 1.03 Setup	
Choose a Start Menu Folder Choose a Start Menu folder for the Intersil IEvalADC 1.03 shortcuts.	Ţ
Select the Start Menu folder in which you would like to create the program's sho can also enter a name to create a new folder.	ortcuts. You
Intersil iEvalADC	
Accessories Administrative Tools Canon Ultilles Check Point Cisco Cisco Systems VPN Client Cirkri ICA Client CordoSourcery Dell System Manager Diglient GraphiCode	×
Nullsoft Install System v2.46 < Back Install	Cancel

FIGURE 6.

5. The "Completing the Intersil iEvalADC Setup Wizard" window opens. Click "Finish".



FIGURE 7.

6. Setup the hardware as shown in Figure 1.

7. Windows will automatically detect the new hardware and prompt for the appropriate driver via the "Found New Hardware Wizard". Click "No, not this time", then click "Next".

FIGURE 8.

8. The Software Installation wizard window will open. Click the "Install the software automatically (Recommended)" radio button, then click "Next".

Found New Hardware Wizard	
	This wizard helps you install software for: Intersil Corp ADCMB-HSFMC-EV1Z If your hardware came with an installation CD or floppy disk, insert it now. What do you want the wizard to do? Constall the software automatically [Recommended]
	Click Next to continue.



 The" Completing the Found New Hardware Wizard" window will open. Click "Finish". (For common issues encountered during this process and solutions to these issues, please refer to "Appendix B" on page 4).



FIGURE 10.

**10**. Double click on the iEvalADC shortcut on the desktop to launch the application.



#### **Running the Software**

Once the installation is complete, the software can be launched by double clicking on the shortcut located on the desktop, by default called "iEvalADC". There is no need to attach the evaluation kit hardware to launch the software. The first time the program is launched, you may experience a delay as the Java runtime environment unpacks the required libraries. Subsequent runs will be much shorter. A window similar to the following will be displayed once iEvalADC has launched.

TSII Y SMARTER							
nance							
ation							
nul							
250.00 MHz							
32760							
14							
	r SAMATER = namce adiom 	rswarts - nance nation 2260 Meg 2271 B 271	aftee	rswarts - nance nation 220,00 Mig 220,00 Mig 221,14 0	alian 22009 Ha 23114 0	suvarta * nance nation 220,0348 220,714 0	suvarte * anne * adian *** 220.0348 22174 0

FIGURE 11.

Thank you for installing the iEvalADC software. For a complete user guide for iEvalADC, please refer to <u>Application Note 1809</u>.

#### **Appendix A**

#### **Source Requirements**

Source jitter and noise will degrade performance. For best test results, a combined jitter (for both clock and signal sources) that does not exceed 200fs is recommended.

#### **Sample Clock and Input Signal Source Setup**

Sample clock settings:

• 40MHz to 500MHz sine, +10dBm

Signal settings:

• 4.5MHz to 250MHz, +10dBm to +16dBm (depending on analog input attenuation)

#### **Appendix B**

Sometimes there are multiple drivers that match the VID/PID characteristics of the hardware. In those cases, a window similar to the following will be displayed when trying to automatically install the driver. When this occurs, select the driver with the location of "c:\windows\inf\lcyusb.inf" and click "Next".

Intersil Corp ADCMB-HSFMC-E	V1Z		
Description	Version	Manufacturer	Location
Intersil Corp ADCMB-HSFMC-EV1Z	3.4.5.0	Cypress	c:\windows\in
Intersil Corp ADCMB-HSFMC-EV1Z	3.4.5.0	Cypress	c:\windows\in
Intersil Corp ADCMB-HSFMC-EV1Z	Unknown	Intersil	c:\windows\in
Intersil Corp ADCMB-HSFMC-EV1Z	Unknown	Intersil	c:\windows\in
•			
This driver is not digitally sign Tell me why driver signing is important	ed! nt		

FIGURE 12.

Occasionally, windows will prompt for the 'ICYUSB.sys' file after selecting the icyusb.inf file. If so, the prompt will look something like the window displayed in Figure 13. If this prompt is displayed, fill in the install directory of iEvalADC along with the subdirectory, lib. Alternatively, browse to this directory. If you accepted the defaults during installation, the correct path will be C:\Program Files\Intersil\iEvalADC\lib. After entering the appropriate directory, click "OK", then, click "Search for the best driver in these locations". Also, make sure the check box "Include this location in the search" is selected and the directory highlighted is the install directory of iEvalADC with the "lib" subdirectory, and click "Next" or "OK".

Files Need	led 🔀
۲	The file 'CYUSB.sys' on Cypress CYUSB Driver OK Installation Disk is needed. Cancel
	Type the path where the file is located, and then click $\ensuremath{OK}$ .
	Copy files from:           CNProgram Files/Intersil/iEvalADC/lib         Browse

FIGURE 13.

