Application Notes

AN_387

FT600 Data Streamer Application User Guide

Version 1.0

Issue Date: 2015-10-19

This document provides a guide on how to use the sample demo application, FT600 Data Streamer Application.

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1 Introduction

This document explains how to use the FT600/FT601 Streamer Application, a sample demo application transferring data to and from the FIFO master via FT600/FT601 chip.

1.1 Overview

The FT600 and FT601 are the first USB devices in a brand new SuperSpeed series from FTDI Chip. The devices provide a USB 3 SuperSpeed to FIFO bridge, with up to 5Gbps of bandwidth. Delivering the option of 16 bit (FT600) and 32 bit (FT601) wide parallel FIFO interfaces; the FT60X series enables connectivity for numerous applications including high resolution cameras, displays, multifunction printers and much more.

FT600/FT601 Streamer Application is a simple multi-threaded Windows MFC-based application written in C++. It demonstrates FT60X performance in transferring data from the host application to the FIFO master and vice versa.

1.2 Prerequisite

A PC running Windows 7 or greater is required. Both 32 bit and 64 bit Windows OS's are supported. The application is tested on FTDI's UMFT600X/UMFT600A/UMFT601X/UMFT601A evaluation boards, designed based on FT600 and FT601 USB 3.0 bridging chips. The evaluation boards should be connected to Xilinx or Altera FPGA platforms to do data transfer. Note that FTDI provides two categories of demo applications – data loopback and data streaming. Ensure that the data streaming FPGA image is used when using this data streaming application. To setup the module with FPGA platform, please refer to Document References.

FT60X uses D3XX, FTDI's latest USB driver targeted for USB 3.0 devices. The test machine should also be installed with the D3XX driver, which is available here: http://www.ftdichip.com/Drivers/D3XX.htm.

The test machine should also be installed with Visual C++ Runtime. The application is compiled with dynamic C++ runtime so the C++ runtime libraries should be present on the machine. If there is no Visual Studio installed on the machine, please install the 32-bit Visual C++ Runtime libraries from:

- Visual C++ Redistributable Packages for Visual Studio 2012 Update 4
- Visual C++ Redistributable Packages for Visual Studio 2013

2 User Interface

Below is a screenshot of the FT600/FT601 Data Streamer application.

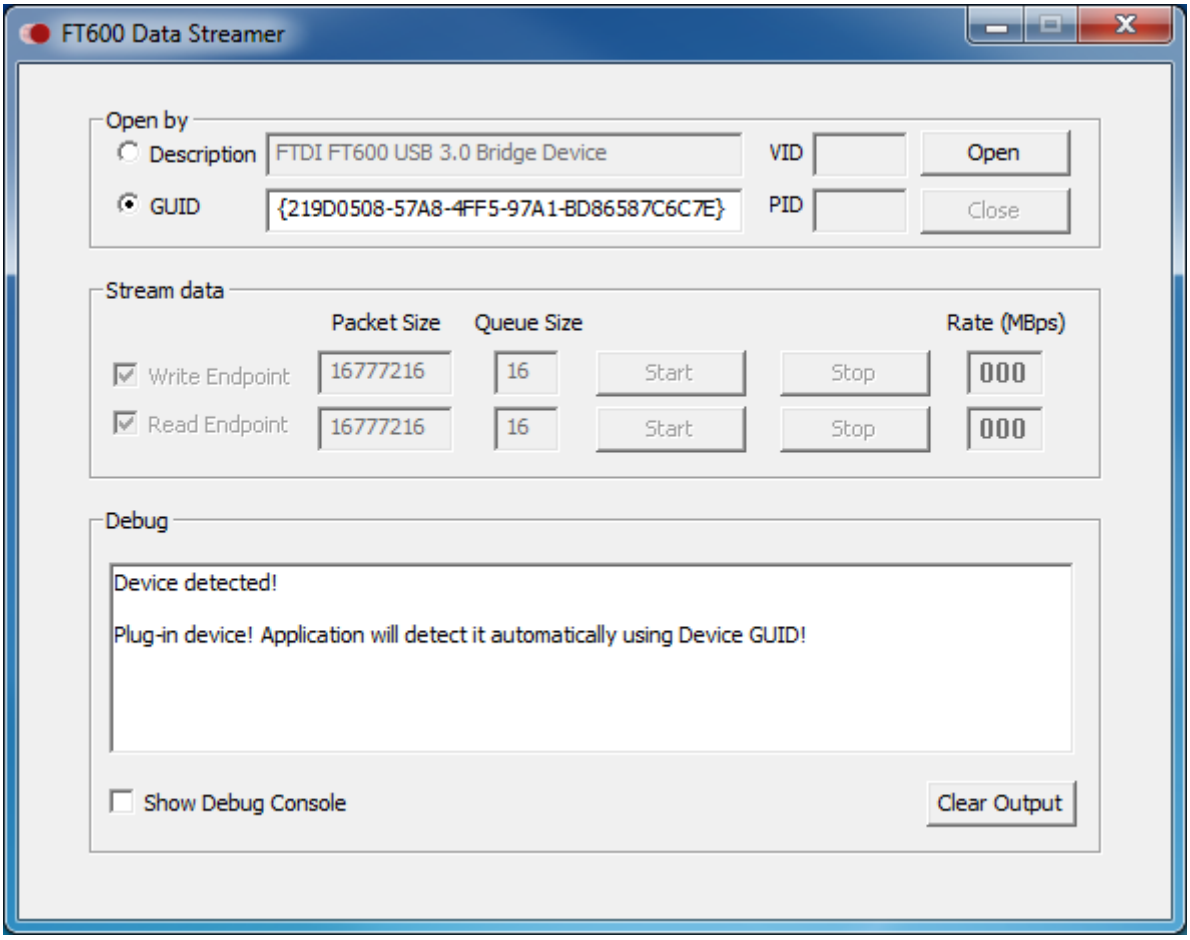

Figure 2.1 Application Screenshot

The streamer application transfers data to and from the FIFO master via the FT600/ FT601. It allows user to measure the performance of FT600/FT601 using a specific packet size and queue size.

Note that the performance can vary based on the chip's configuration settings. Specifically, the Channel Configuration and FIFO Clock settings can increase or decrease the performance.

Please refer to the source code for guidance on how to achieve the most optimal performance.

3 Features

3.1 Auto-Detection of Device Plugin/Unplug

The application can detect if a device is plugged-in or unplugged. Once the device is plugged-in, the UI controls will be enabled. If the UI controls are not enabled, please check if the driver has been installed. Once the device is unplugged, the UI controls will be disabled with a light grey mark.

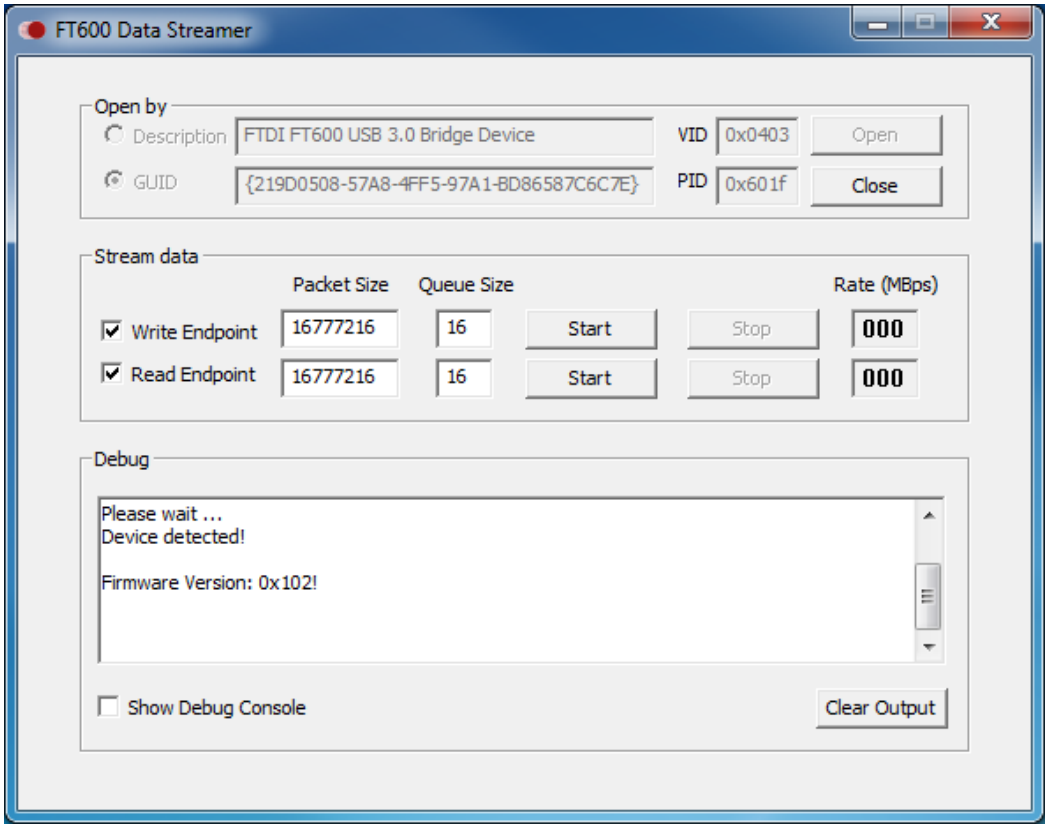

Figure 3.1 Device Detection Screenshot

3.2 Data Transfer on Write or Read Pipes

The application can do data streaming on write or read pipes of channel 1 using a specified payload size and queue size. But user can still configure the chip to any channel configuration (i.e. 4 channels, 2 channels, 1 channel, 1 OUT pipe or 1 IN pipe).

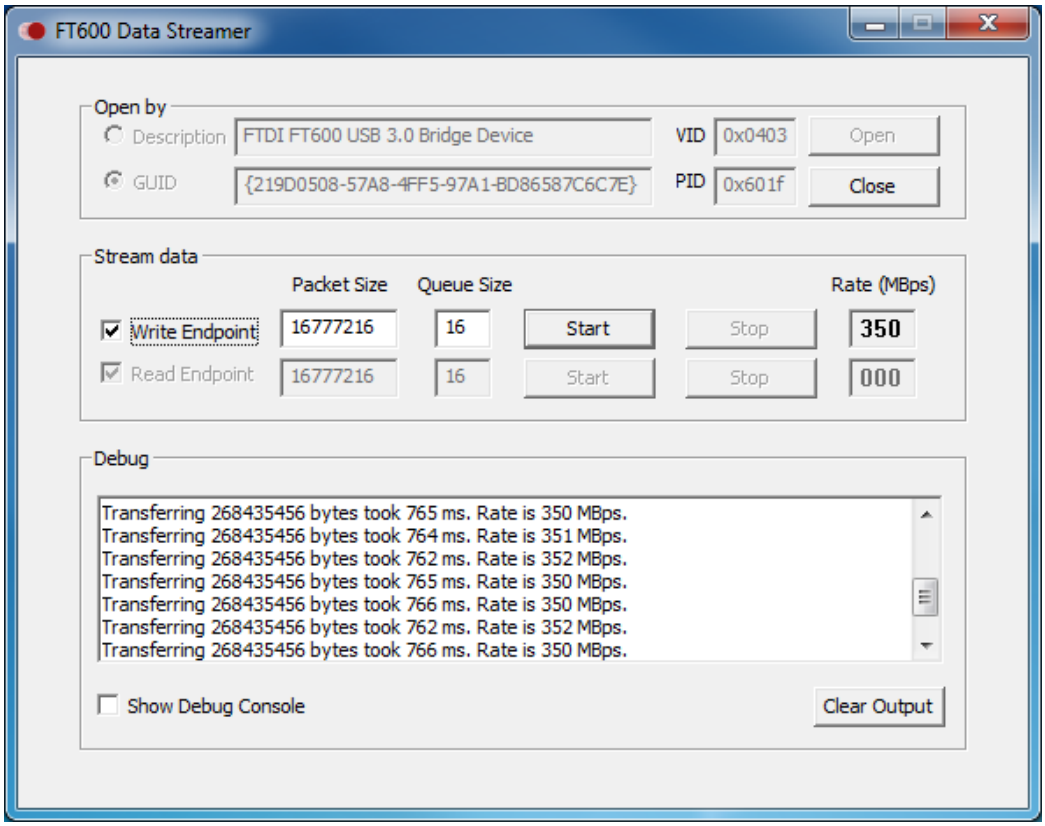

Figure 3.2 Packet Size and Queue Size Selection Screenshot

The default payload size is 16MB while the default queue size is 16. 16 MB is the default size since it is big enough to represent a Quad-HD frame (2560 x 1440 x 4).

4 Troubleshooting

Note that we have two categories of demo applications – data loopback and data streaming. Ensure that the data streaming FPGA image is used when using the data streaming application.

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Distributor and Sales Representatives

Please visit the Sales Network page of the FTDI Web site for the contact details of our distributor(s) and sales representative(s) in your country.

Appendix A – References

Document References

DS_UMFT60xx Module Datasheet

AN_376 Xilinx FPGA FIFO Master Programming Guide

AN_377 Altera FPGA FIFO Master Programming Guide

http://www.ftdichip.com/Products/ICs/FT600.html

Acronyms and Abbreviations

Terms	Description
API	Application Programming Interface
D2XX	FTDI USB Driver
D3XX	Latest FTDI USB Driver with support for USB 3.0 devices like FT600
EP	USB Endpoint
FIFO	First In First Out
FPGA	Field-Programmable Gate Array
FTDI	Future Technology Devices International
KB	Kilobytes
HD	High Definition
MB	Megabytes
MFC	Microsoft Foundation Classes
OS	Operating System
UI	User Interface
UMFT600A	16BIT FIFO TO USB 3.0 Module for Altera
UMFT601A	32BIT FIFO TO USB 3.0 Module for Altera
UMFT600X	16BIT FIFO TO USB 3.0 Module for Xilinx
UMFT601X	32BIT FIFO TO USB 3.0 Module for Xilinx
USB	Universal Serial Bus

Appendix B – List of Tables & Figures

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Appendix C – Revision History

Document Title: AN_387 FT600 Data Streamer Application User Guide

Document Reference No.: FT_001236

Clearance No.: FTDI# 477

Product Page: http://www.ftdichip.com/FTProducts.htm

Document Feedback: Send Feedback

Revision	Changes	Date
1.0	Initial Release	2015-10-19