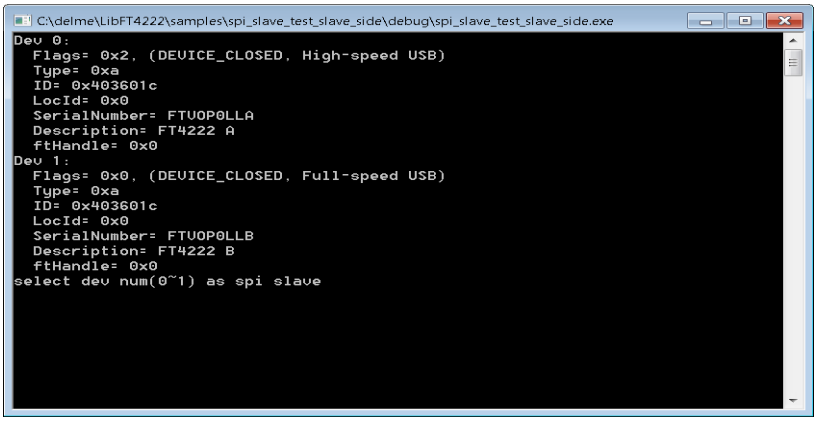
ADuCM350 SPIH to FTDI FT4222H Example

This examples interfaces to the FTDI (Future Technologies Devices International Ltd.) FT4222 component. The FT4222 provides SPI to USB (CDC-ACM) functionality allowing the example to send output strings to a COM port on the PC.

To run the example you will need to

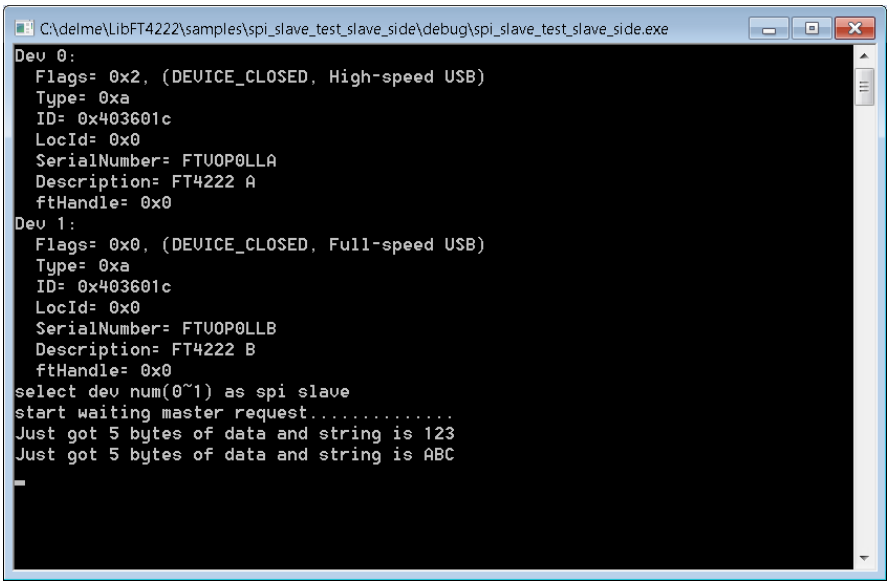
1. Purchase the FTDI4222H chip.
2. Wire the FT4222 as outlined below using the ADuCM350 breakout board.
3. Build the FT4222 example by
   a. Obtain the LibFT4222_examples from the FTDI website
   b. Build the spi_slave_test_slave_side example
4. Build and run the example code on the ADuCM350

Run the windows example first and you will see the following



Enter “0” (zero) to select High-speed USB

Then run the ADuCM350 example and you should see the following results

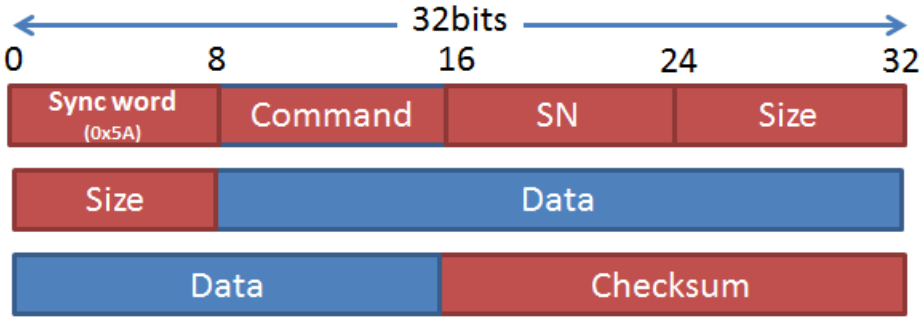


The ADuCM350 example creates packets according to the FTDI documentation. The relevant parts of the documentation are shown below along with references to the documentation on the FTDI website (see the reference section at the end of this file.

SPI Packet Structure

The FT4222H and LibFT4222 design have implemented an SPI slave protocol which must be used to handle the integrity of data transmission. [3]
In this protocol, a master starts an SPI transaction by sending a packet in the format illustrated below:

The SPI packets that are transmitted are derived from [3] AN_329 user Guide for LibFT4222



It starts with a Sync word: 0x5A, and followed by a Command field:

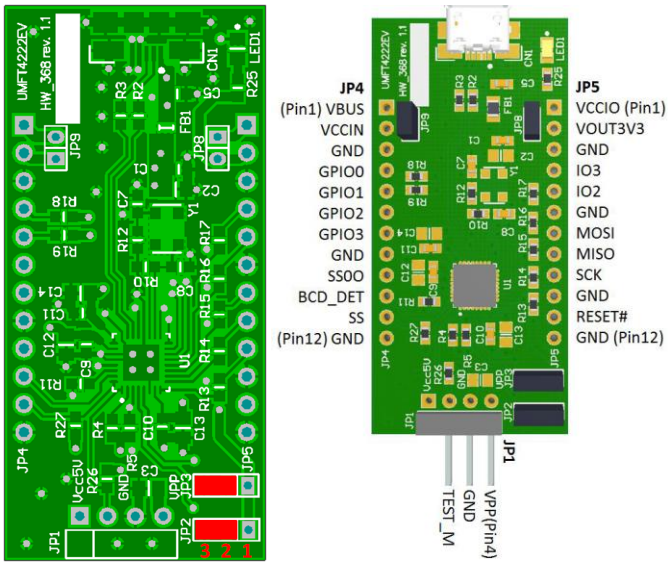
Command	Value
Master Transfer	0x80
Slave transfer	0x81
Short master transfer (without checksum)	0x82
Short slave transfer (without checksum)	0x83
ACK	0x84

ADuCM350 example hardware setup:

FTDI: See [5] for more information

Configure the FT42322 in Mode 0 as shown below

JP1/JP3 configuration: Mode 0 (DCNF0 = 0, DCNF1 = 0)



Connect the ADuCM350 breakout board to the FT4222 as follows

FTDI Pin Connections (See below from [5])	Breakout Digital header 2 J1 LK1 in Position B	Breakout Digital header 1 J1 LK1 in Position A
JP5.12 GND <common ground>	<any GND pin>	
JP5.9 SCK	J3.40 SPIH SCK P0.12	
JP5.8 MISO		J3.20 SPIH MISO P0.13
JP5.7 MOSI		J3.18 SPIH MOSI P0.14
JP4.11 SS		J4.16 SPIH.SS P0.15

References

All of the following documents can be found on the FTDI web site http://www.ftdichip.com/

[1] DS_FT4222H.pdf FT4222H Datasheet
[2] AN_119_FTDI_Drivers_Installation_Guide_for_Windows7.pdf
[3] AN_329_User_Guide_for_LibFT4222.pdf
[4] TN_116_USB Data Structure.pdf
[5] DS_UMFT4222EV USB2.0 to QuadSPI/I_2C Bridge Development Module