
USB Test and Measurement Device

This application note shows how to create a USB Test and Measurement class device on an XMOS multicore microcontroller.

The code associated with this application note uses the XMOS USB Device Library and associated USB class descriptors to create a standard USB test and measurement class (USBTMC) device running over high speed USB. The code supports the minimal standard requests associated with this class of USB devices.

The application demonstrates VISA compliant USBTMC client host software (such as NI LabVIEW, NI MAX, pyUsbtmc etc.) request test and measurement data using a subset of SCPI commands implemented on xCORE device. The application also integrates an open source SCPI library and thus provides a framework to implement the needed SCPI commands easily on a USBTMC xCORE device.

Required tools and libraries

- xTIMEcomposer Tools - Version 14.0.0
- XMOS USB library - Version 3.1.0

Required hardware

This application note is designed to run on an XMOS xCORE-USB series device.

The example code provided with the application has been implemented and tested on the xCORE-USB sliceKIT (XK-SK-U16-ST) but there is no dependency on this board and it can be modified to run on any development board which uses an xCORE-USB series device.

Prerequisites

- This document assumes familiarity with the XMOS xCORE architecture, the Universal Serial Bus 2.0 Specification (and related specifications, the XMOS tool chain and the xC language. Documentation related to these aspects which are not specific to this application note are linked to in the references appendix.
- For descriptions of XMOS related terms found in this document please see the XMOS Glossary¹.
- For the full API listing of the XMOS USB Device (XUD) Library please see the the document XMOS USB Device (XUD) Library².
- For information on designing USB devices using the XUD library please see the XMOS USB Device Design Guide for reference³.

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¹<http://www.xmos.com/published/glossary>

²<http://www.xmos.com/published/xuddg>

³<http://www.xmos.com/published/xmos-usb-device-design-guide>
