

# emsys USB EmuTest Box



## External USB Emulation and Test Box

### Key Features

The *emsys USB EmuTest Box* is a hardware programmable FPGA based system to emulate an embedded USB Host, USB Device or USB OTG Device for testing purpose. Internally, the emsys IP Cores are used as reference FPGA Design. A normal PC with high-speed USB 2.0 interface is required to connect the *emsys USB EmuTest Box* and to run a software stack controlling the reference hardware design. A port access API is provided which allows the access of the reference device at register/memory level.

Depending on the configuration, the *emsys USB EmuTest Box* can be equipped with a standard USB-A connector for USB host mode, or a USB-Mini-AB connector for USB device/host/OTG mode.

The reference design for USB host configuration supports:

- All USB speeds
- Initiation of USB signals like USB Reset, USB Suspend and USB Resume
- Transmission of single packets
- Execution of complete transactions (token-handshake, token-data-handshake)
- Execution of complete data transfers that consist of more than one transaction
- Execution of complete control transfers
- Modify transactions concerning different errors (user defined PIDs, CRC errors, bit-stuff errors etc.)
- Generation of trigger output signals at packet level
- External triggering of transaction/transfer execution
- Usage of external clock signal

The reference design for USB device configuration supports:

- USB high- or full- speed devices
- Emulation of different USB device usecases (CCID, CDC, HID, Mass Storage, PTP/MTP, RNDIS etc.)
- Testing of your software stack in a programmable USB reference device
- Programmable external trigger signals (input and output)

- Modify transactions concerning different errors (user defined PIDs, CRC errors, bit-stuff errors etc.)
- Usage of external clock signal

### Software

Because the reference hardware is accessed at register/memory level, there exist a lot of options the *emsys USB EmuTest Box* can be used for.

- Emulation of USB device/host/OTG device. This allows to run/test the software at the PC
- USB Tester
  - Tester Device or Tester Host
  - Allows level error insertion (CRC errors, Bit-Stuff errors etc)
  - Allows the implementation of an USB Host or Device that runs at different frequencies

For the option to run the *emsys USB EmuTest Box* as a USB Tester to test USB devices, there is a ready to use software API available.

For the option to run the *emsys USB EmuTest Box* for emulating USB device/host/OTG, emsys provides a portable software stack which can be used to emulate different use cases.

### Contact

emsys Embedded Systems GmbH  
D-98693 Ilmenau  
Ehrenbergstrasse 11  
E-Mail: [emsys@emsys.de](mailto:emsys@emsys.de)  
Phone: (+49)-3677-668251  
Fax : (+49)-3677-668259

Germany