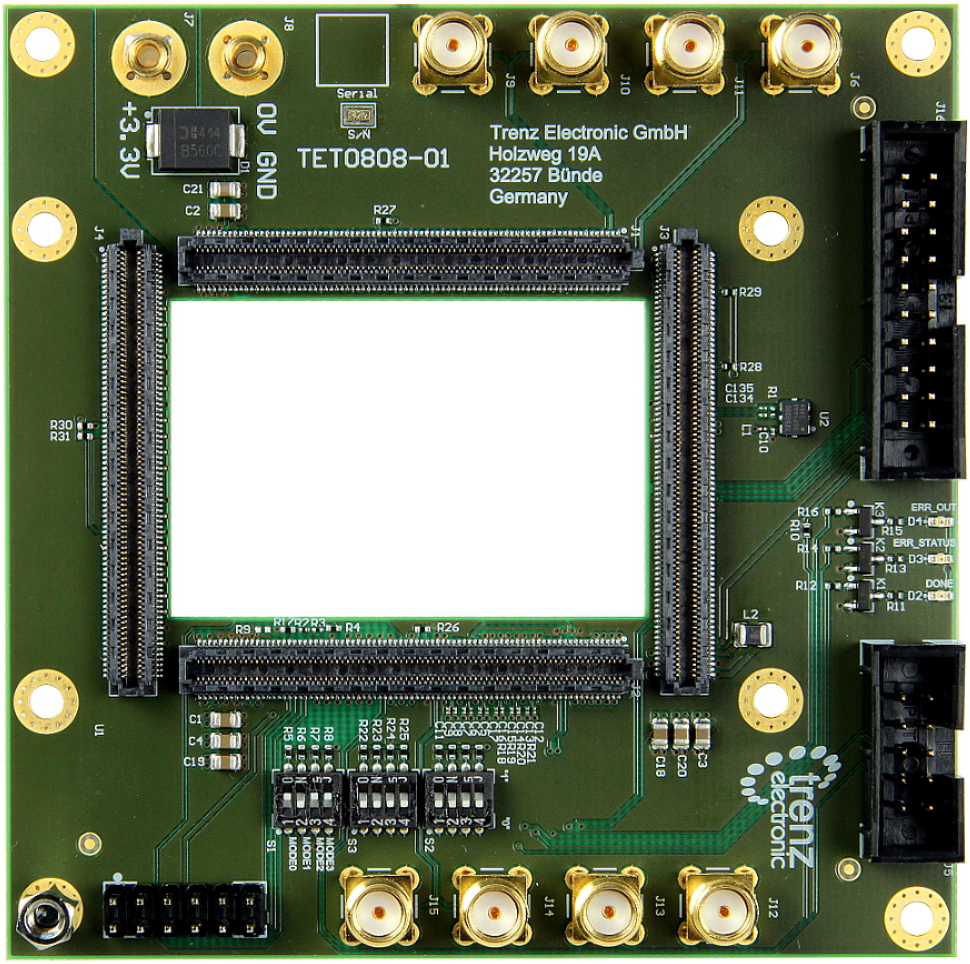
TEBT0808 Getting Started



Features

- Single 3.3V input
- Header for TE0790 JTAG/UART Adapter
- 20 PIn ARM JTAG header (connected to MIO JTAG 0)
- 10 Pin I2C header for Silabs Clock Builder Field Programmer
- Done, Error/Status LEDs
- One PL GT with SMA connectors
- One PS GT with SMA connectors
- GT local loopback
- PL I/O loopbacks
- PS I/O loopbacks
- Boot Mode switches
- Power control switches to control TE0808 power domains

Recommended Accessories

TesKit is a "Test Fixture" for testing TE0808, most I/O pins are looped back for I/O Connector connectivity testing. For additional testing an LVDS oscillator is providing known clock to GT Reference Clock. SMA Connectors are provided on PL and on PS Connected GT lanes. Connector is provided for direct connection to SiLabs ClockBuilder Pro Field Programmer for Si5345 Programming.

Item	Name	Vendor	Separate Order	Comments
1	TE0808 or TE0803	Trenz	TE0808, TE0803	
3	TE0790 USB JTAG/UART Adapter	Trenz	TE0790	
4	SMA Cable (50 cm long), 4 pcs			
5	mini USB Cable			
6	Cables for power (2mm Banana Connector), 2 pcs			
7	ClockBuilder Pro Programmer	SiLabs	digikey / mouser	

NOTE: Kit Content may be different, depending on customer agreements. Positions 1 to 3 are always included.

Supported Bootmodes are SPI and JTAG.

Getting Started

TestKits are pre-assembled and pre-flashed with initial Flash image, they start up as soon as power (3.3V) is applied.

WARNING: There is no over-voltage protection on TEBT0808, proper power supply must be used!

Power would be around 3W if the ZU+ does not boot (DDR4 not active). With Linux booted (or hello world from DDR4), the power consumption goes up to some 5W. If the junction temperature goes higher, then the power consumption goes up to 6-7W.

Startup procedure

1. Connect mini-USB Cable to PC
2. Start terminal 115200 Baud
3. Connect 3.3V Supply to 2mm Banana Connectors
4. Turn on power

Depending on initial Flash content either Hello appears, or then Linux does boot.

To restart the boot process press the small push-button on TE0790, it is wired to TE0808 Reset.

Manual test

TesKit808, mini-USB cable not connected, 3.3V power applied.

TE0790 SW	TE0808 RLED	TE0790 GLED	TE0790 RLED	DONE	ERR
Pressed	OFF	ON	ON	OFF	OFF
Released	OFF	ON	ON	ON	ON

Function Description

GT transceiver have either internal connection or loopbacks or are connected to SMA Connectors. Note that connections to SMA are not AC Coupled!

QUAD	Lane	Function
B128	0	on-board loopback
B128	0	B505 Lane 1
B128	1	B505 Lane 2
B128	2	B505 Lane 3
B228	0-3	on-board loopback
B229	0-3	on-board loopback
B230	0-2	on-board loopback
B230	3	SMA Connectors
B505	0	SMA Connectors
B505	1	B128 Lane 0
B505	2	B128 Lane 1
B505	3	B128 Lane 2

GT Transceiver connections and loopbacks.

PL I/O has on-board internal loopback an all pins for connectivity testing.

UART

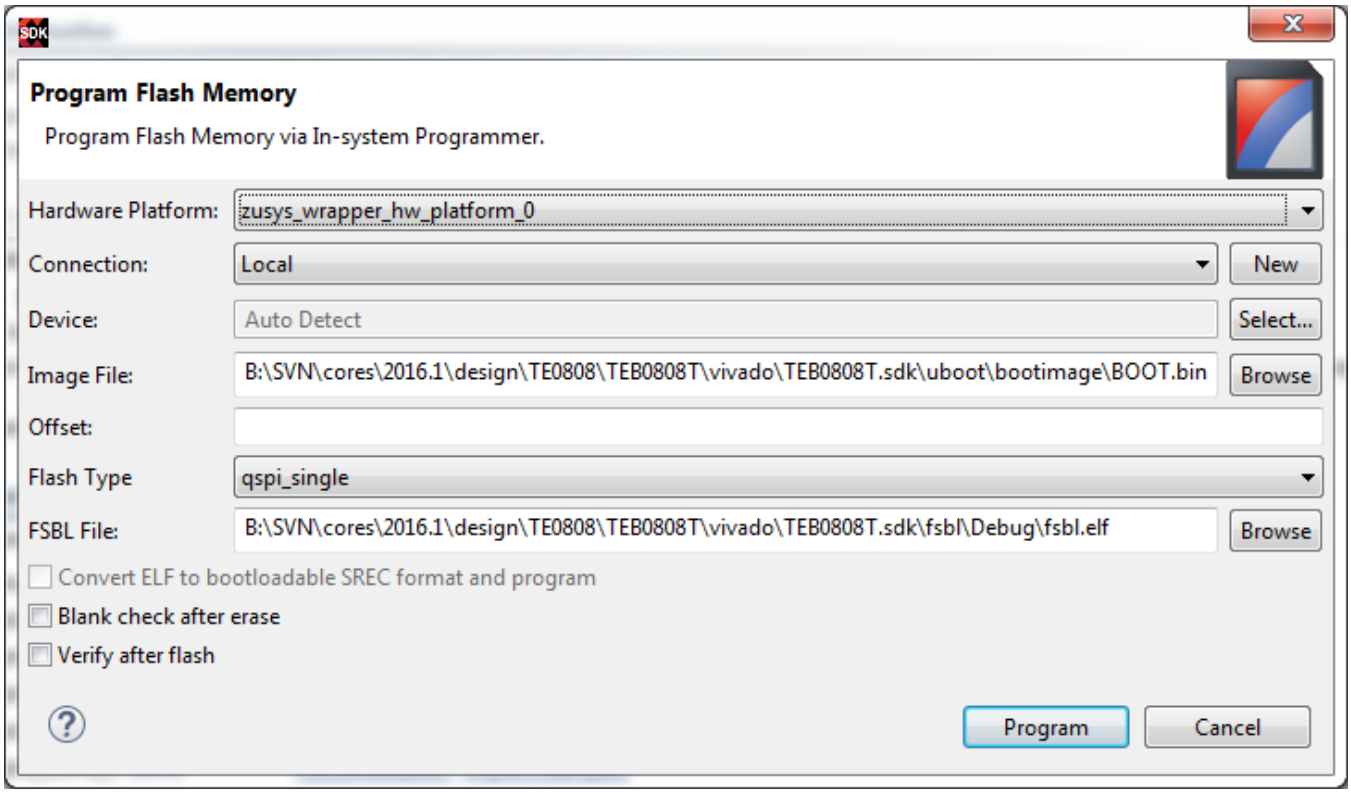
UART is available on MIO68, MIO69 via the supplied TE0790 USB Module. TE0808 and TE0803 board parts do not support this settings. They must be changed manually.

Boot Mode Settings

M3	M2	M1	M0	Bootmode Hex	Bootmode	Notes
ON	ON	ON	ON	0x0	PS Main JTAG (TE0790 USB JTAG)	Needed for SPI Flash Programming
ON	ON	OFF	ON	0x2	SPI Flash (dual parallel, 4bit x 2, 32bit Addressing)	Default

SPI Flash Programming

Flash programming is supported from SDK GUI, fsbl.elf that is needed is provided in common download area.



NOTE: Boot mode must be set to JTAG before starting Flash Programming.

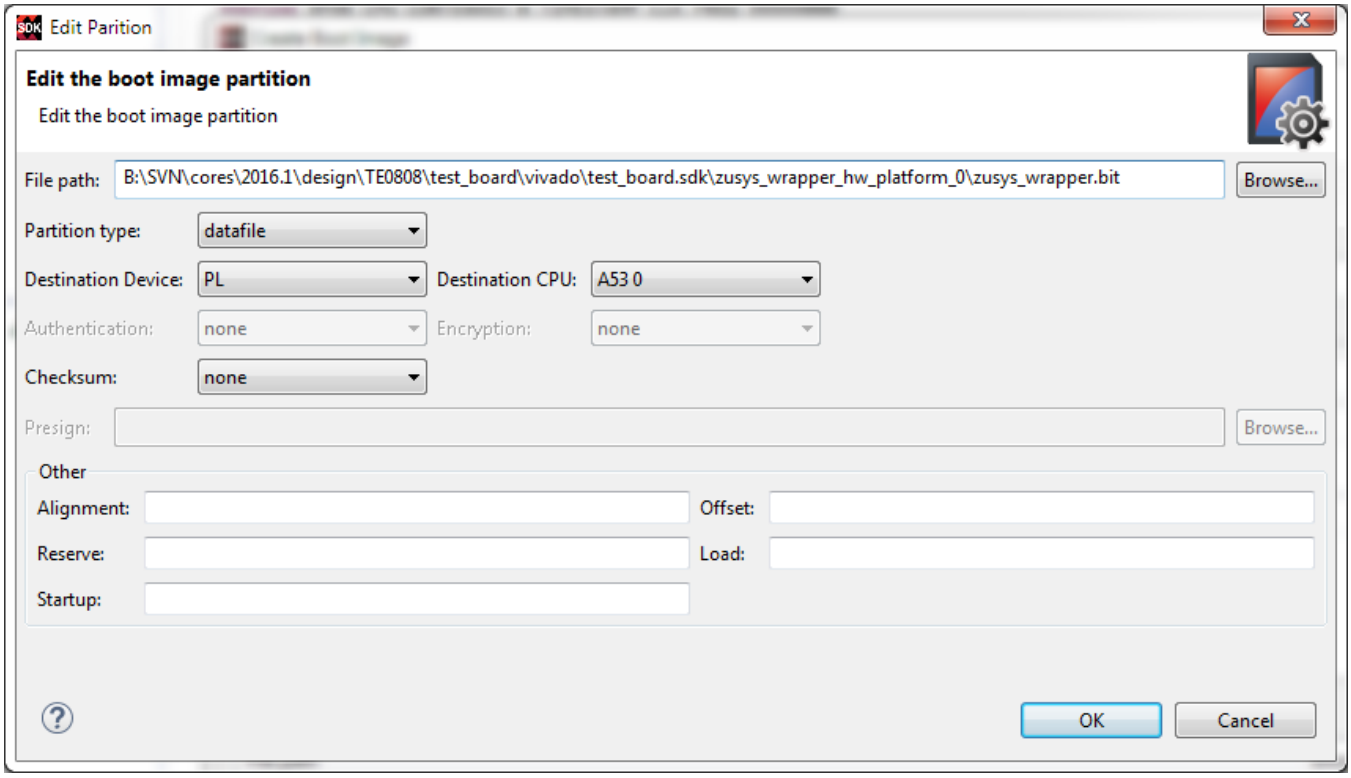
See Xilinx AR66715

Reference and Test Designs

Please check Project Delivery - AMD devices first.

Hello World

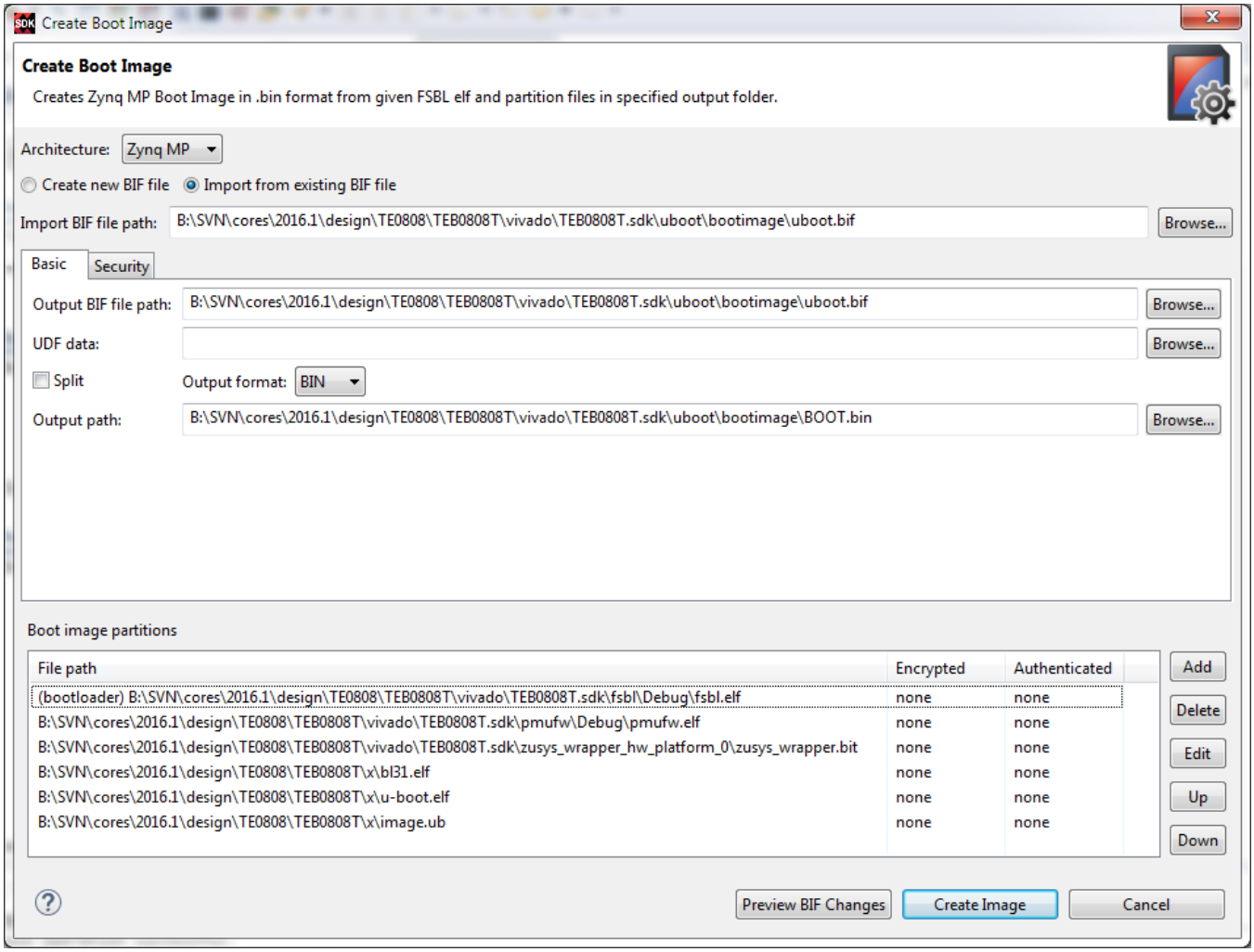
This works out of the box with Vivado/SDK 2016.1, if you only have EVAL license for ZU+ then it is necessary to export HDF without bitstream.



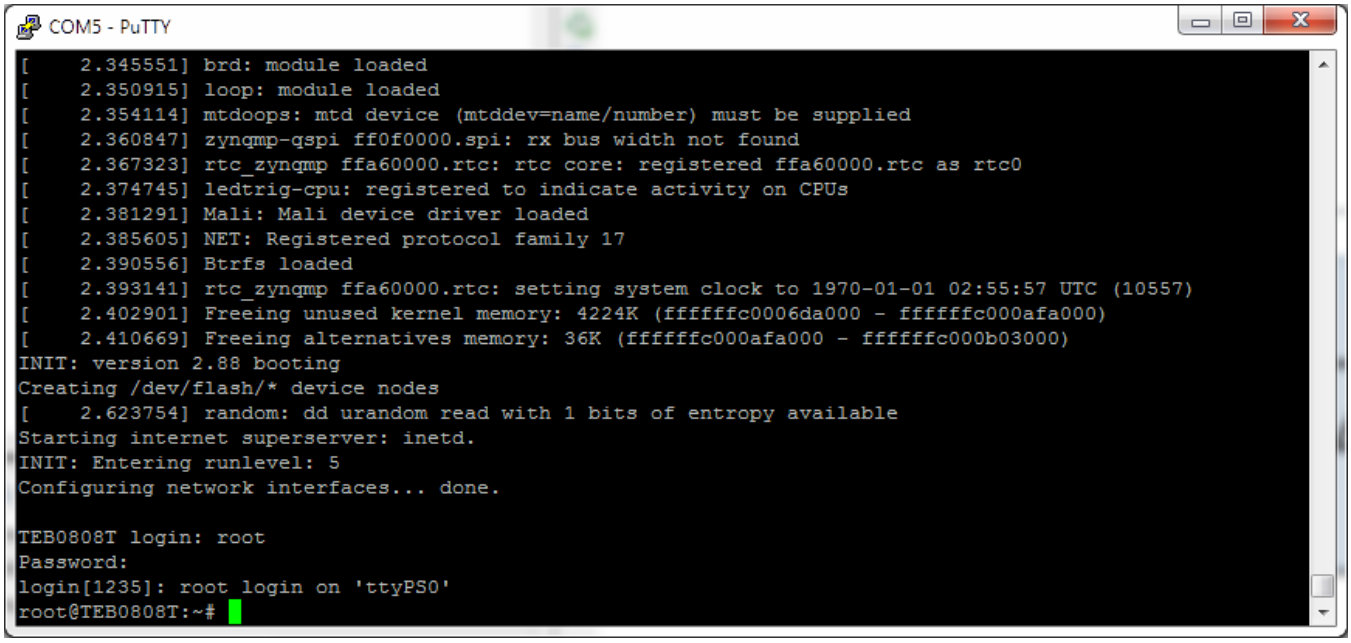
NOTE: 2016.1 Bootgen seems to have small bug, automatically generated BIF file has bitstream partition set to PS as destination device what results in BOOT.BIN that does not load correctly. Make sure it is set to PL. This problem has been fixed in 2016.2

Petalinux

Support in Petalinux 2016.x for ZU+ MPSoC is fully integrated. Vivado HSI flow works, all settings from Vivado Design are imported to SDK and Petalinux to generate a working system with all required software components.



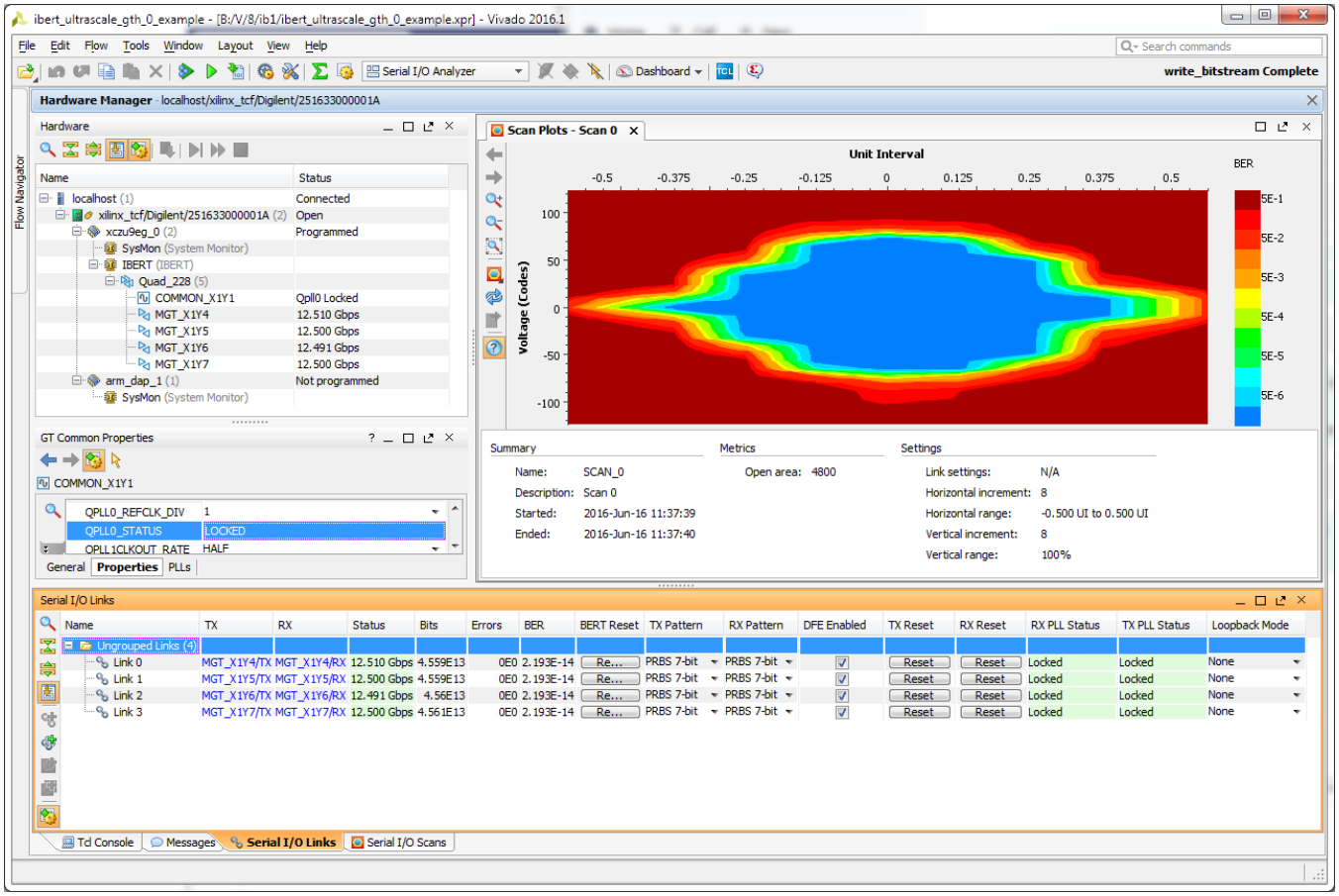
Important: BL31.ELF is needed or Linux would fail with kernel panic. PMU Fimware is not absolutely necessary, without it there would be warnings during Linux boot.



Note: if there are no network drivers installed, then linux boot does stop on "Configuring network interfaces..." as workaround special "disable network" application can be installed into petalinux to allow booting with no network.

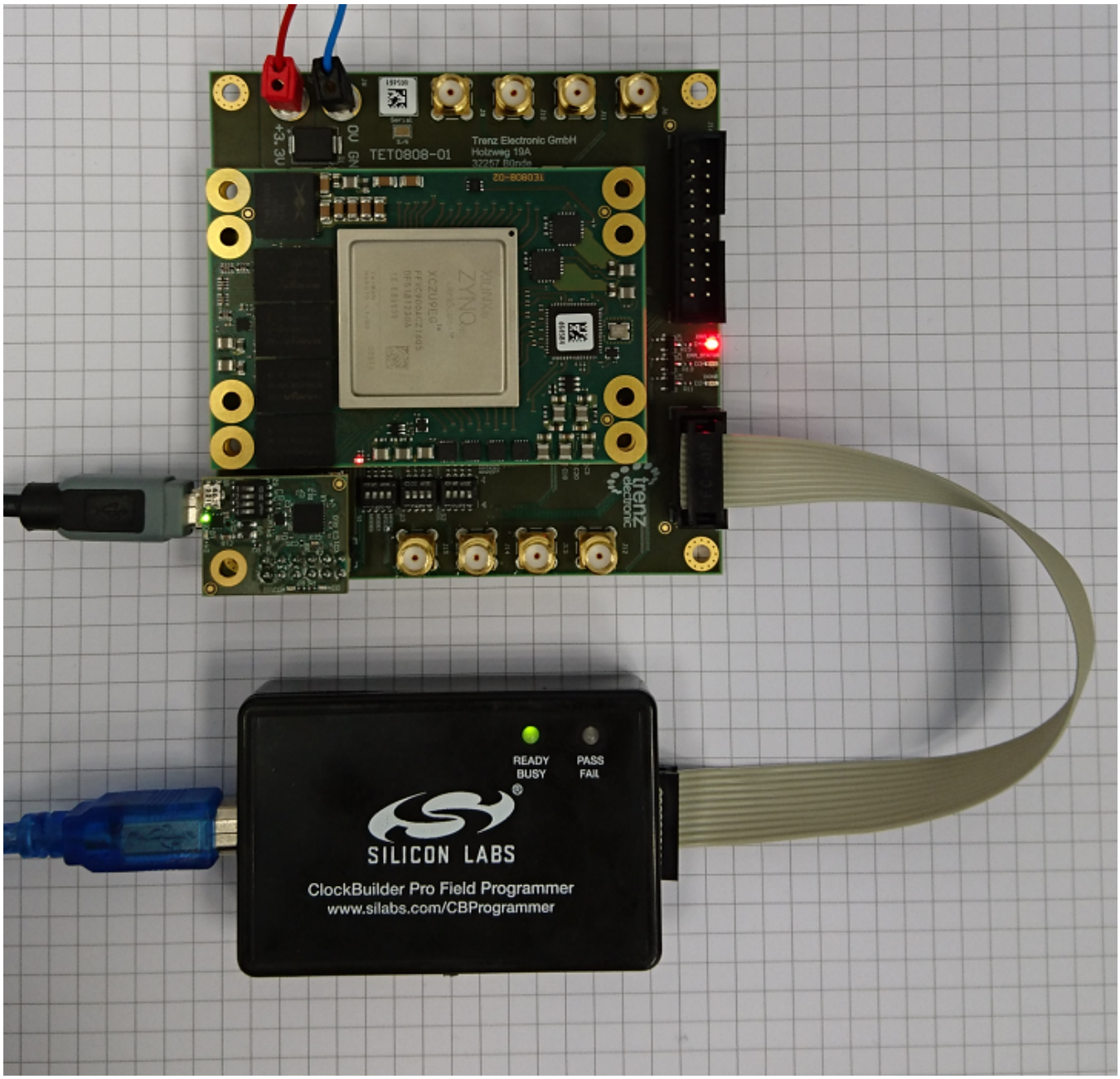
IBERT

If Si5345 is not programmed then there is only 1 GT Clock available, from 125MHz oscillator on TEBT0808, it does clock B228 CLK0 input, with this clock up to 12 GT can be tested, including the GT that has SMA connectors.



IBERT with external Loopback on QUAD228, using 125MHz LVDS clock from TEBT0808 base.

Si5345 Programming



Setup for Si5345 PLL Programming using SiLabs ClockBuilder Pro Field Programmer.

References

- Silabs ClockBuilder Pro Field Programmer
- TEBT0808 Documentation
- TE0808 Documentation
- Xilinx Zynq UltraScale MPSoC Base TRD

Document Change History

Date	Revision	Contributors	Description
2017-06-07	Unknown macro: 'metadata'	John Hartfiel	Initial version.

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Error rendering macro 'page-info'

Ambiguous method overloading for method jdk.proxy241.$Proxy3496#hasContentLevelPermission. Cannot resolve which method to invoke for [null, class java.lang.String, class com.atlassian.confluence.pages.Page] due to overlapping prototypes between: [interface com.atlassian.confluence.user.ConfluenceUser, class java.lang.String, class com.atlassian.confluence.core.ContentEntityObject] [interface com.atlassian.user.User, class java.lang.String, class com.atlassian.confluence.core.ContentEntityObject]