# VadaTech PCI113-UTC002/4

## *Front Port QSFP Configuration Guide*

February 2019
Version 2.2

## Copyright



## Notice

**While reasonable efforts have been made to assure the accuracy of this document, VadaTech, Inc. assumes no liability resulting from any omissions in this document or from the use of the information obtained herein. VadaTech reserves the right to revise this document and to make changes periodically and the content hereof without obligation of VadaTech to notify any person of such revision or changes.**

**Electronic versions of this material may be read online, downloaded for personal use, or referenced in another document as a URL to the VadaTech Incorporated Web site. The text itself may not be published commercially in print or electronic form, edited, translated, or otherwise altered without the permission of VadaTech, Inc.**

**It is possible that this publication may contain reference to or information about VadaTech products (machines and programs), programming, or services that are not available in your country. Such references or information must not be construed to mean that VadaTech intends to announce such products, programming, or services in your country.**

## Trademarks

**The VadaTech, Inc name and logo are registered trademarks of VadaTech Incorporated in the U.S.A. All other product or service names mentioned in this document are the property of their respective owners.**

# Revision History

| Doc Rev | Description of Change | Revision Date |
|---|---|---|
| 1.0 | Document Created | February 2013 |
| 1.1 | Note to configure Gen1 if fiber is used | April 2014 |
| 1.2 | Note added for Spread Spectrum Clock | October 2015 |
| 2.0 | Document updated with new template | February 2017 |
| 2.1 | Updated UTC002 configuration section | November 2018 |
| 2.2 | Updated document properties to fix file name | February 2019 |

# Table of Contents



# Figures

# 1 Introduction

This document briefly describes how to install and setup and link UTC002/4 and PCI113 using a PC and MicroTCA Chassis.

## 1.1 Applicable Products

- UTC002
- UTC004
- PCI113
- VT817
- VT950
- VT951

## 1.2 Document References

### 1.2.1 Specifications

- *PICMG® 3.0 Revision 3.0 AdvancedTCA® Base Specification*
- *PICMG® AMC.0 R2.0 Advanced Mezzanine Card Base Specification*

## 1.3 Conventions Used

The following conventions are used in this document:

***WARNING - Important information, when ignored can cause harm. serious injury or death to the User is described next to this symbol***

***CAUTION - Important information, when ignored can cause serious damage to the device is described using this symbol***

***NOTE - Important information useful to the reader is described next to this symbol***

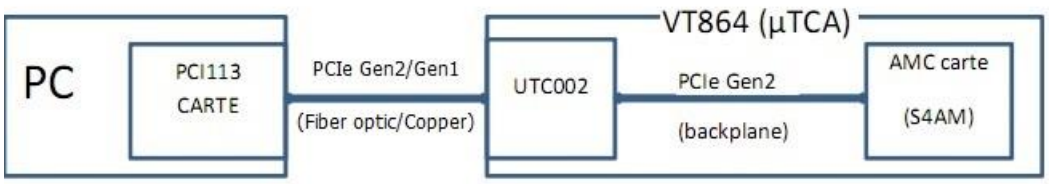
`Command` ***Any CLI commands are described with this font style***

# 2 Setup and Configuration

The following describe a simple setup were the PCI113 is installed in the PC PCIe slot. The PC is the root and upstream. The UTC002 and the AMC (Video card or any downstream card) is installed on a MicroTCA chassis.

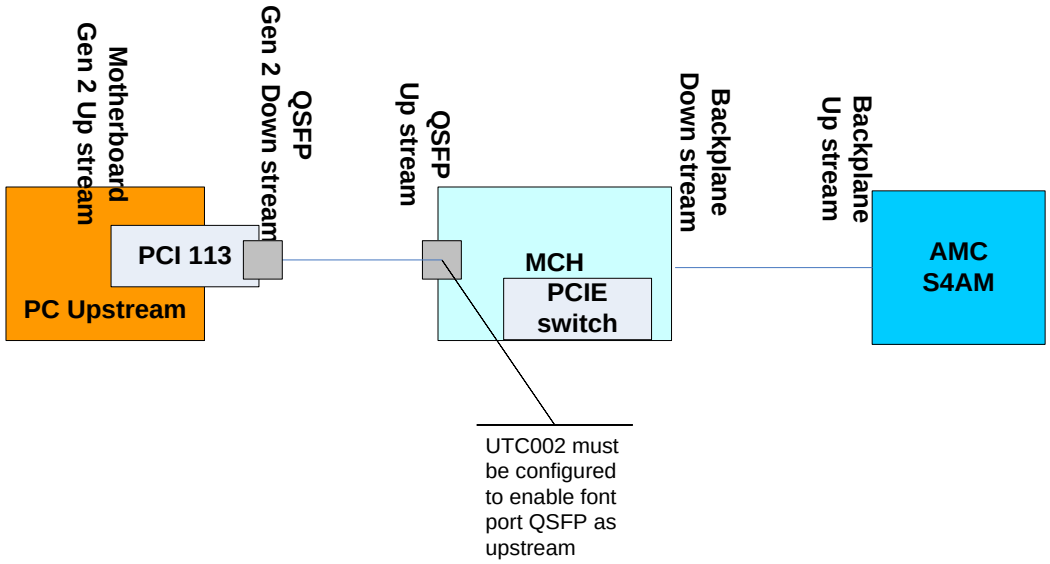
The UTC002 with a DA117 daughter card option includes a front QSFP port with x4 link width. The PC and the UTC002 is connected using a copper or Fiber QSFP cable.

*Figure 1: UTC002 Connection with PCI113*




First we want to make sure the PCI113 and the UTC002 is configured correctly as upstream/downstream: refer to the picture below.

*Figure 2: PCI113/UTC002 Configuration*




***NOTE: PCIe Gen2 communication is possible ONLY if copper cable is used for PCI113/UTC002 connection. In case if fiber cable is used please consider configuring both PCI113 and UTC002 front port to operate at Gen1.***

## 2.1 PC Configuration

PCs may require Gen2/Gen1 operation configuration. Please refer to the vendor bios setup.

## 2.2 Configuring PCI113

***Configure the PCI113 as Gen2 downstream on the QSFP port end.***
***Configure the PCI113 as Gen2 upstream on Motherboard end.***

The PCI113 can be configuring using the CLI accessible via the serial interface. Select gen1 or gen2 and make sure the upstream port is currently motherboard and QSFP is downstream.

```
Upstream port is currently motherboard
Speed is set to Gen2
Commands: upstream, gen1, gen2, tune
PCI113> QSFP Power is on
Detected PCIe Reset
PLX8624 Found
Enabling port 0
```

***NOTE: The Spread Spectrum Clocking (SSC) on the motherboard should be disabled. If it is enabled then the PCI113 won't work properly against the MCH since they do not share a common clock. SSC can be disabled on the PC mother board BIOS.***

## 2.3 Configuring UTC002

***Configure the MCH UTC002 as Gen2 Upstream on the front QSFP Port.***

On the MCH console follow the instructions to configure the QSFP port up stream Gen2.

1. mount -o remount,rw /
2. vi /opt/vadatech/startup/vtipmi.conf
3. Enable the PCIe Expansion slot 0, PCIe direction "Upstream", Speed as Gen2, Width as x4 and select the Domain number "0"

```
ENABLE_PCIE_EXPANSION_0=1
PCIE_EXPANSION_0_DIR=up
PCIE_EXPANSION_0_SPEED=gen2
PCIE_EXPANSION_0_WIDTH=x4
PCIE_EXPANSION_0_DOMAIN=0

ENABLE_PCIE_EXPANSION_1=0
PCIE_EXPANSION_1_DIR=down
PCIE_EXPANSION_1_SPEED=gen2
PCIE_EXPANSION_1_WIDTH=x4
PCIE_EXPANSION_1_DOMAIN=0

ENABLE_PCIE_EXPANSION_2=0
PCIE_EXPANSION_2_DIR=down
PCIE_EXPANSION_2_SPEED=gen2
PCIE_EXPANSION_2_WIDTH=x4
PCIE_EXPANSION_2_DOMAIN=0

ENABLE_PCIE_EXPANSION_3=0
PCIE_EXPANSION_3_DIR=down
PCIE_EXPANSION_3_SPEED=gen2
PCIE_EXPANSION_3_WIDTH=x4
PCIE_EXPANSION_3_DOMAIN=0
```

4. Save the file
5. sync; sync
6. power cycle the MCH

At this point the configuration is complete from the system point of view.

***NOTE: UTC002/DA117 RevA when the QSFP port is enabled the AMC slot 2 cannot be used on the MicroTCA chassis. UTC002/DA117 RevB when the QSFP port is enabled the AMC slot 12 cannot be used on the MicroTCA chassis.***

Depending on the DA installed the MCH will mux either the front port QSFP or to the AMC2/12. Since you have enabled the front port QSFP the AMC slot 2/12 cannot be used.

***NOTE: If PCIe Front Expansion port on DA supports x8 or x16 links widths (VT951, VT817, etc..) then aproprietrary PCIe Expansion Slot 1,2 and 3 can be configured in vtipmi.conf file to have dual x4, quad x4 or dual x8 configuration on PCIe Front Expansion Port.***

## 2.4 Powering up the system

MicroTCA and PC must be powered off and verify the setup.

7. Install PCIe AMC on AMC slot (not AMC slot 2). Close the handle.
8. Connect the QSFP from the PCI113 to MCH QSFP port
9. Power up the MicroTCA chassis first.
10. Verify all the boards are activated.
11. Power on the PC
12. Check the PCIe status on the MCH to verify the front port status

In this test a Video Card is installed in AMC slot 1 as an example:

13. Verify the PCI113 Port0 or Port1 LED is on (GREEN)
14. Verify the PCI113 MB LED is on (GREEN)
15. Verify the PCI113 Port/0 or Port1 x4 or x8 negotiated link lights are on (GREEN)

This verifies the PCI113 negotiated link with the Mother Board and the UTC001.

On the MCH Console the PCIe switch can be queried to obtain the status of the links. The AMC is linked downstream and the PC is linked upstream.

```
[root@vtipmi root]# pcie
```

| Device | Physical | Virtual Switch | Link Status | Max Width | Link Width | Link Speed | Type |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 0 | Enabled | x4 | x4 | 5.0 GT/s | Downstream |
| 2 | 19 | 0 | Enabled | x4 | x4 | 5.0 GT/s | Upstream |
| 3 | 21 | 0 | Disabled | No Link | x4 | 2.5 GT/s | Downstream |
| 4 | 22 | 0 | Disabled | No Link | x4 | 2.5 GT/s | Downstream |
| 5 | 18 | 0 | Disabled | No Link | x4 | 2.5 GT/s | Downstream |
| 6 | 17 | 0 | Disabled | No Link | x4 | 2.5 GT/s | Downstream |
| 7 | 3 | 0 | Disabled | No Link | x4 | 2.5 GT/s | Downstream |
| 8 | 0 | 0 | Disabled | No Link | x4 | 2.5 GT/s | Downstream |
| 9 | 20 | 0 | Disabled | No Link | x4 | 2.5 GT/s | Downstream |
| 10 | 12 | 0 | Disabled | No Link | x4 | 2.5 GT/s | Downstream |
| 11 | 1 | 0 | Disabled | No Link | x4 | 2.5 GT/s | Downstream |
| 12 | 16 | 0 | Disabled | No Link | x4 | 2.5 GT/s | Downstream |

Power cycle the PC again and verify the PC boot up can be seen via a monitor connected to the VGA on the video card.

# Contact VadaTech

## Technical Support

If you have purchased the VadaTech product through our distributor network, contact your distributor for any technical assistance. If you require further technical support, you can contact VadaTech technical support team from VadaTech Customer Support site.

## Locations


| VadaTech Corporate Office | European Sales Office | Asia Pacific Sales Office |
|---|---|---|
| 198 N, Gibson Road<br>Henderson, NV 89014<br>USA<br>Email: info@vadatech.com<br>Telephone: +1 702 896 3337<br>Fax: +1 702 896 0332 | VadaTech House, Bulls Copse Road,<br>Southampton, SO40 9LR<br>UK<br>Email: info@vadatech.com<br>Telephone: +44 2380 016403 | 7th Floor, No 2, Wenhu Street,<br>Neihu District, Taipei 114,<br>Taiwan<br>Email: info@vadatech.com<br>Telephone: +886 2 2627 7655<br>Fax: +886 2 2627 7792 |