

# DHH architecture with optical links

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SeeVogh TB meeting

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# Naming convention

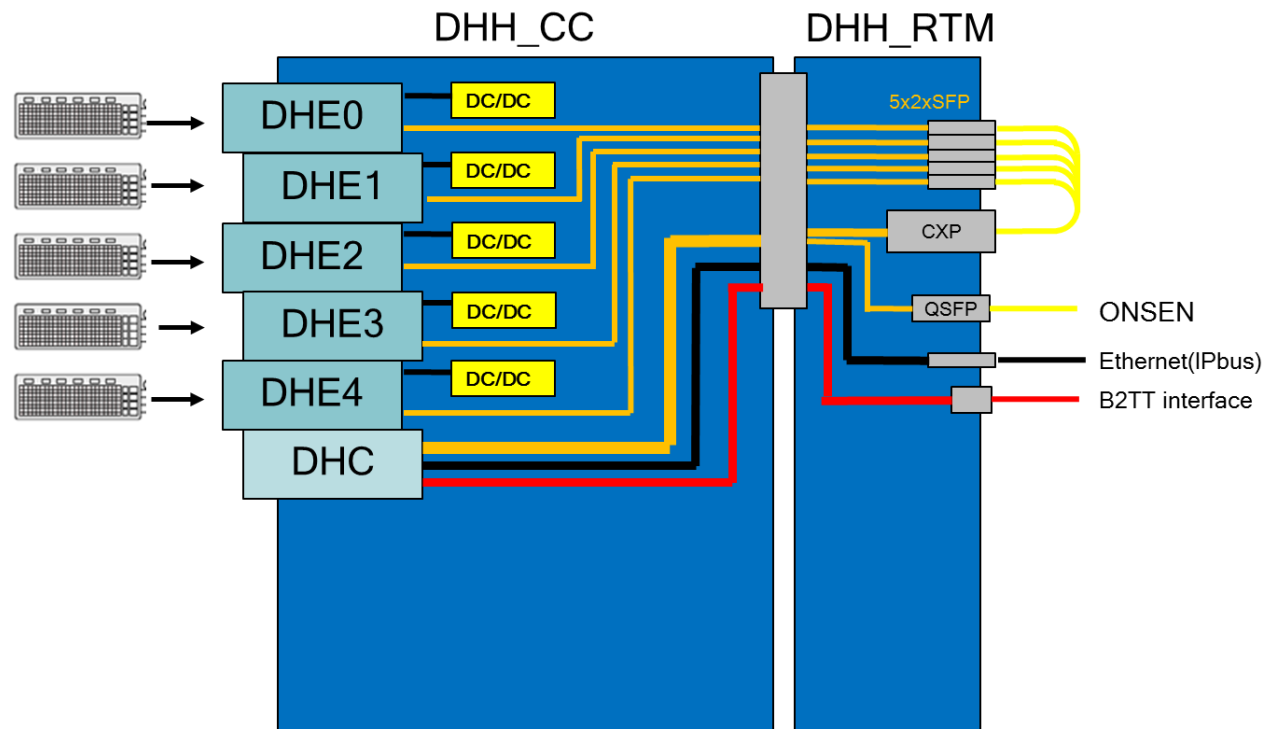
DHH – Data Handling Hub

DHE – Data Handling Engine

DHC – Data Handling Controller

DHHCC – DHH Carrier Card

DHHRTM – DHH Rear Transition Module



# DHPT ⇔ DHE copper Interface

## Infiniband Cable :

- 4 links of 1.52 Gbps for data transmission : 4 pairs
- GCK, CNTR : 2 differential pairs
- DHPT VCC, DHPT GND : 1 pair
- DCD Current Monitor : 1 pair

## RJ45 cable

- JTAG : 4 differential pairs

## DHE

RJ45  
connector

Infiniband  
connector



AMC  
Connector  
High  
Speed  
Links

## DHE ↔ DHC , optical link for galvanic isolation

Single High Speed Full Duplex Line @5.04Gbps/6.35Gbps, SFP ↔ QSFP

- 127 MHz clock
- Trigger, Revo signals, Veto
- IPBUS for slow control
- Data transmission

## DHC ↔ ONSEN

4 High Speed links, QSFP, @ 6.25Gbps

- Data transmission
- ONSEN Memory fill level => backpressure to B2TT

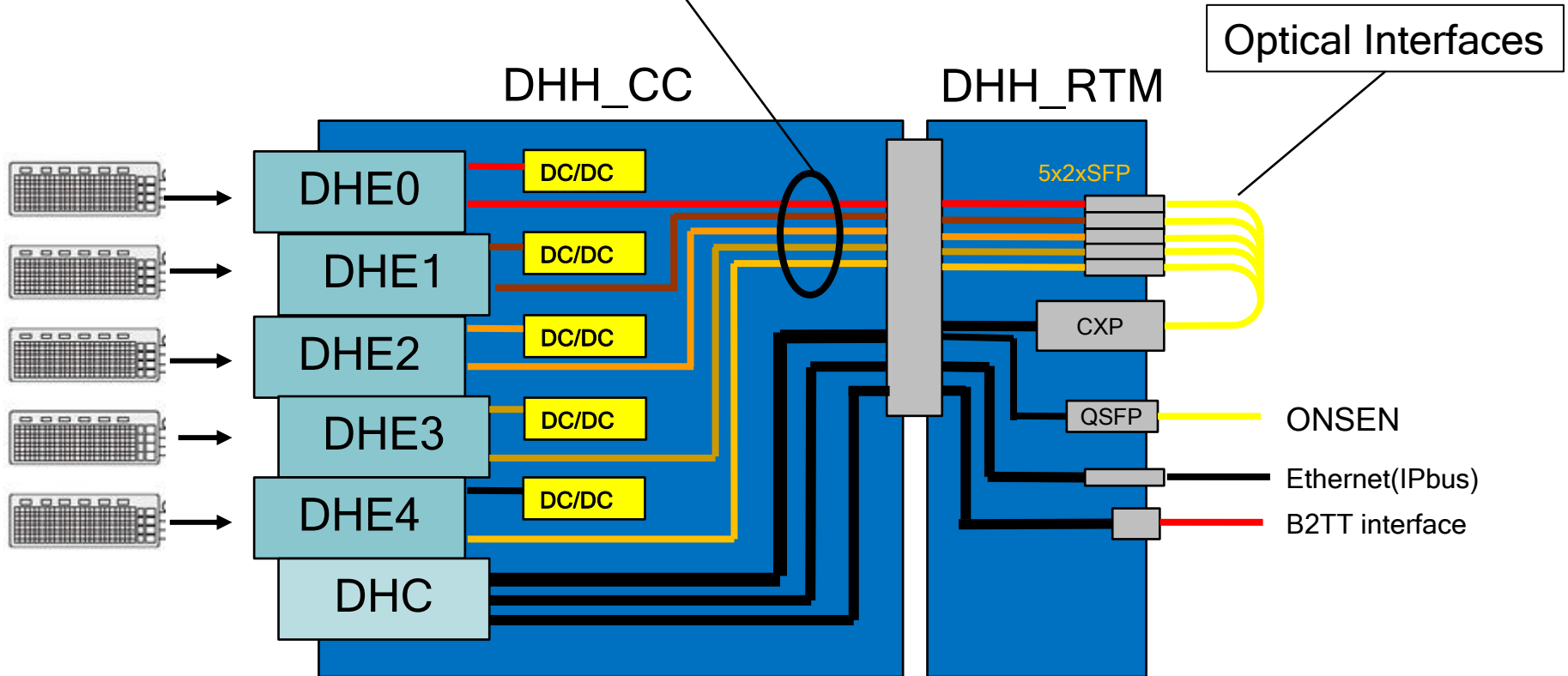
## DHC ↔ B2TT

Copper 4 differential lines, RJ45

## DHC ↔ Ethernet

Copper, RJ45

Copper lines galvanically isolated



### Optical Cable :

- 4 links of 1.52 Gbps for data transmission

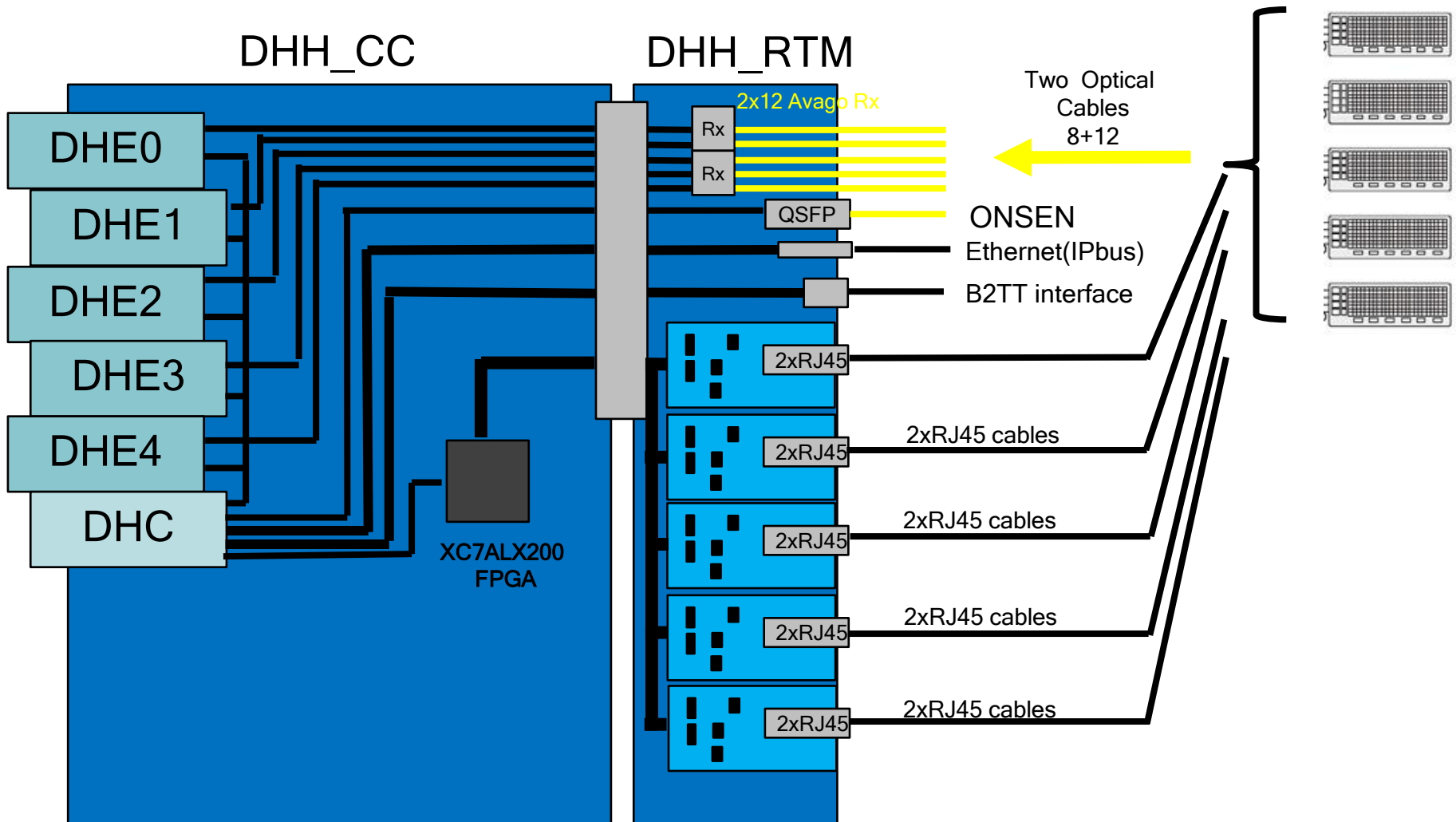
### RJ45 cable 1

- GCK, CNTR : 2 differential pairs
- DHPT VCC, DHPT GND : 1 pair
- DCD Current Monitor : 1 pair

### RJ45 cable 2

- JTAG : 4 differential pairs

# DHH\_CC design Optical interfaces



- 5 identical submodules
- Submodule design
  - Galvanic isolation, ground common with detector ground
  - DC/DC converters
  - 2xRJ45 connectors
    - Dif.JTAG(unchanged),
    - GCLK+TRG\_CNTR+CurrentSource + DHPT Voltage sensors(new cable type)
  - Digital IC with isolation from Analog Device
    - ADN4651 Differential 600MHz for GCLK and CNTR\_TRG
    - ADUM141D for JTAG and Current source, 150Mbit



## Avago AFBR-811FN1Z

12 channels, 850nm, 10Gbps per channel

3.3V, 2.5V; 100mW per channel

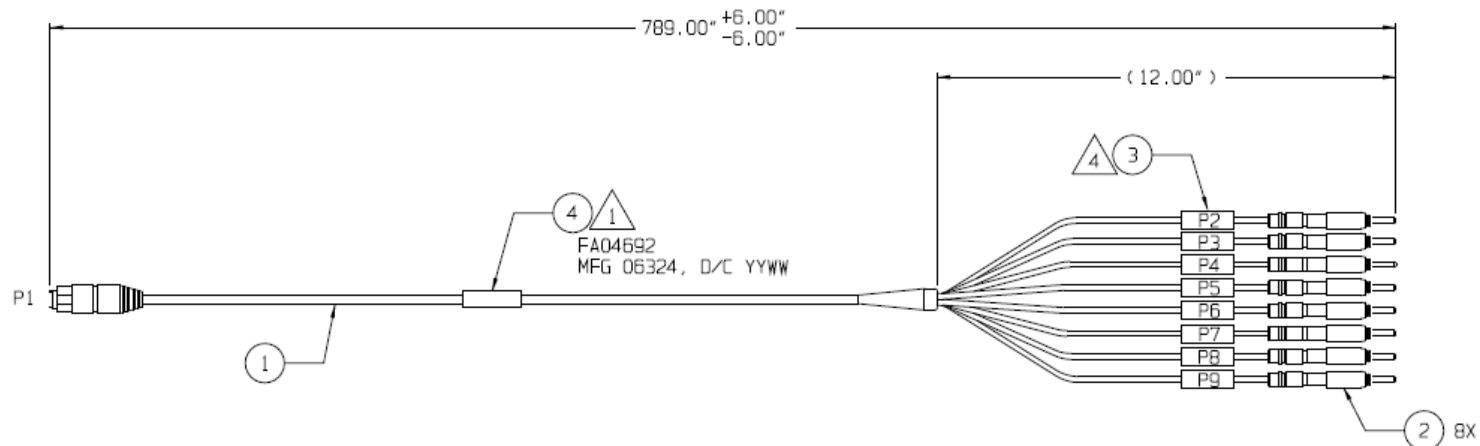
Size 22x19x15 (mm)



- First transmitters delivered on 22.02.2016



- Optical Cable design, total length ~20m



THANK YOU