Considerations Regarding a 1 Gb/s Uplink Rate for Clause 192.

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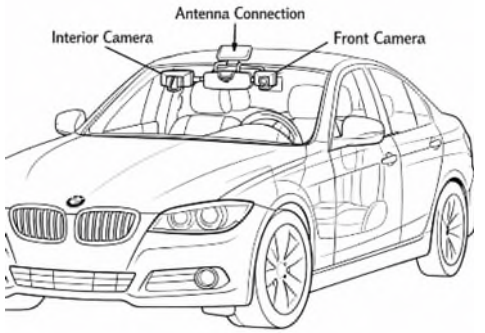
Tony Schedl, BMW Group

Camera Usecase.



Usecase for an IEEE 802.3dm Interface

HPC

1 Gb/s

7.5 Gb/s

End node (Integrated Device)

Internal Interface (non Ethernet) — Interior Camera

Internal Interface (non Ethernet) — Front Camera

⋮

Internal Interface (non Ethernet) — Camera

This is an end node:
There is communication between HPC and the device but there is no further communication from the device to other nodes in the car.

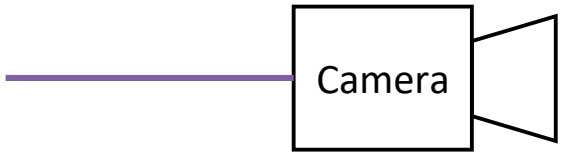
This is an end node camera link:
There is camera data transferred from the camera to the HPC.

PAR scope:
„ […] for automotive end-node camera links […] “

Conclusion 1: The usecase is in the PAR scope.

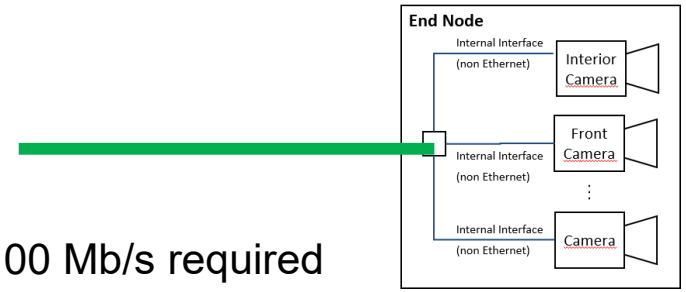
CFI and PAR Scope.

The **CFI** talks about the data rate **towards camera.**



< 100 Mb/s sufficient

The **PAR** talks about „optimized for automotive **end-node camera links**“



> 100 Mb/s required

- **End-node camera links** may be a point-to-point link to an **aggregator** connected to one or more cameras and other devices
- The **aggregator** connection to cameras and other components is an internal connection within a device and not point-to-point Ethernet.
- **End-node camera links** therefore may include multiple instances of traffic 'towards camera' and other traffic
- As a result, the traffic **towards** a single **camera** over an **end-node camera link** is never more than 100 Mb/s.
- However, the aggregate traffic over an **end-node camera link** may exceed 100 Mb/s

Conclusion 2: 1 Gb/s Upstream Requirement is in the scope of the PAR.

CFI and PAR
Additional Information.

CFI Information.

Camera Link Problem Statement

- Key characteristics:
  1. Efficiently support highly asymmetric data rates:
     - 1Gbps to 10Gbps or more from camera
     - Never more than 100Mbps towards camera
  2. Power constrains solution in camera module, to control temperature in the module
  3. Power delivery over the data link
  4. Very cost sensitive – needs an optimized solution

- Seamless integration with the overall automotive Ethernet network

https://www.ieee802.org/3/cfi/0723_1/CFI_01_0723.pdf

PAR Information.

5.2.b Scope of the project: The scope of this project is to specify additions to and appropriate modifications of IEEE Std 802.3 to add Physical Layer specifications and management parameters for electrical media and operating conditions that are optimized for automotive end-node camera links for operation up to 10 Gb/s in one direction and with a lower data rate in the other direction.

https://www.ieee802.org/3/dm/P802.3dm_PAR.pdf