



Project Overview

Development and Pre-Qualification of a
Gigabit Ethernet POF Transceiver
for Automotive Applications

The need for
data communication systems in vehicles
is rapidly growing

Data networks are needed to integrate increasingly
sophisticated electronic systems that improve:



Security
Efficiency
Reliability
Comfort

Rac

Sample Applications:
Advanced Driver Assistance Systems (ADAS)
Infotainment
Powertrain

Introduction



Increasing demands require increasing complexity of data networks in vehicles

Increasing complexity requires:

Higher Speed
Real-Time Data Transmission
Low-Latency
Reliability
Cost Efficiency

Which are limited with current technologies

Introduction



Current Technologies are becoming unsuitable to embrace the **challenges** in implementing faster and more reliable data networks at a competitive cost

Challenges:

Scalability
Standardization
Flexibility
Cost Predictability
Performance
Reliability

Environmental Challenges:

Vibration
Temperature
Weight
Electromagnetic Compatibility
Length
Maintenance

Introduction



Examples of Today's Technologies:

Controller Area Network (CAN)

Local Interconnect Networking (LIN)

Low Voltage Differential Signaling (LVDS)

MOST



Are not suitable to face the challenges in:

Scalability

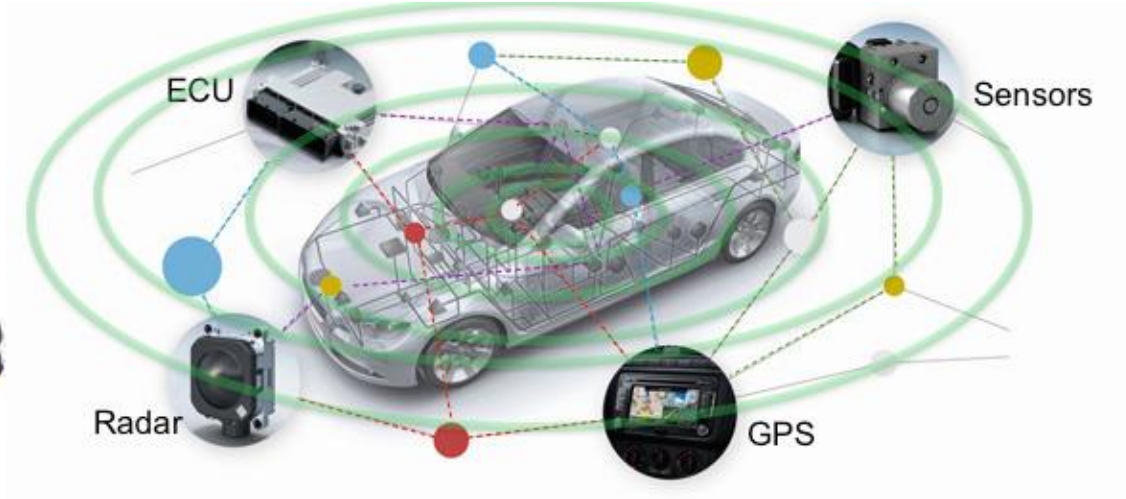
Standardization

Flexibility

Cost Predictability

Performance

Reliability



The solution is a simplified approach:

Ethernet + Plastic Optical Fiber (POF)

Ethernet is:

Scalable

Standard

Flexible

Cost Efficient



POF is best for:

Vibration

Temperature

Weight

Electromagnetic Compatibility (EMC)

Length

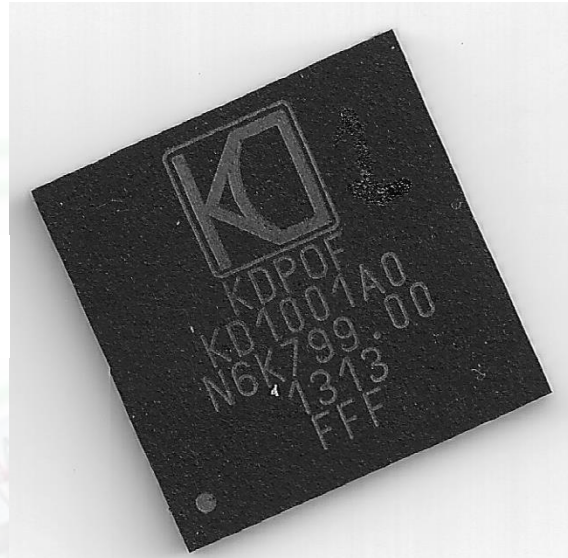
Maintenance

Introduction



KDPOF's Technology:

Ethernet



POF

sensors

An **ASIC** that implements:
Data Transmission over POF
Data Transmission Rate of 1 Gbps (Gigabit per second)
Ethernet Compatible
Reliable
Cost Effective

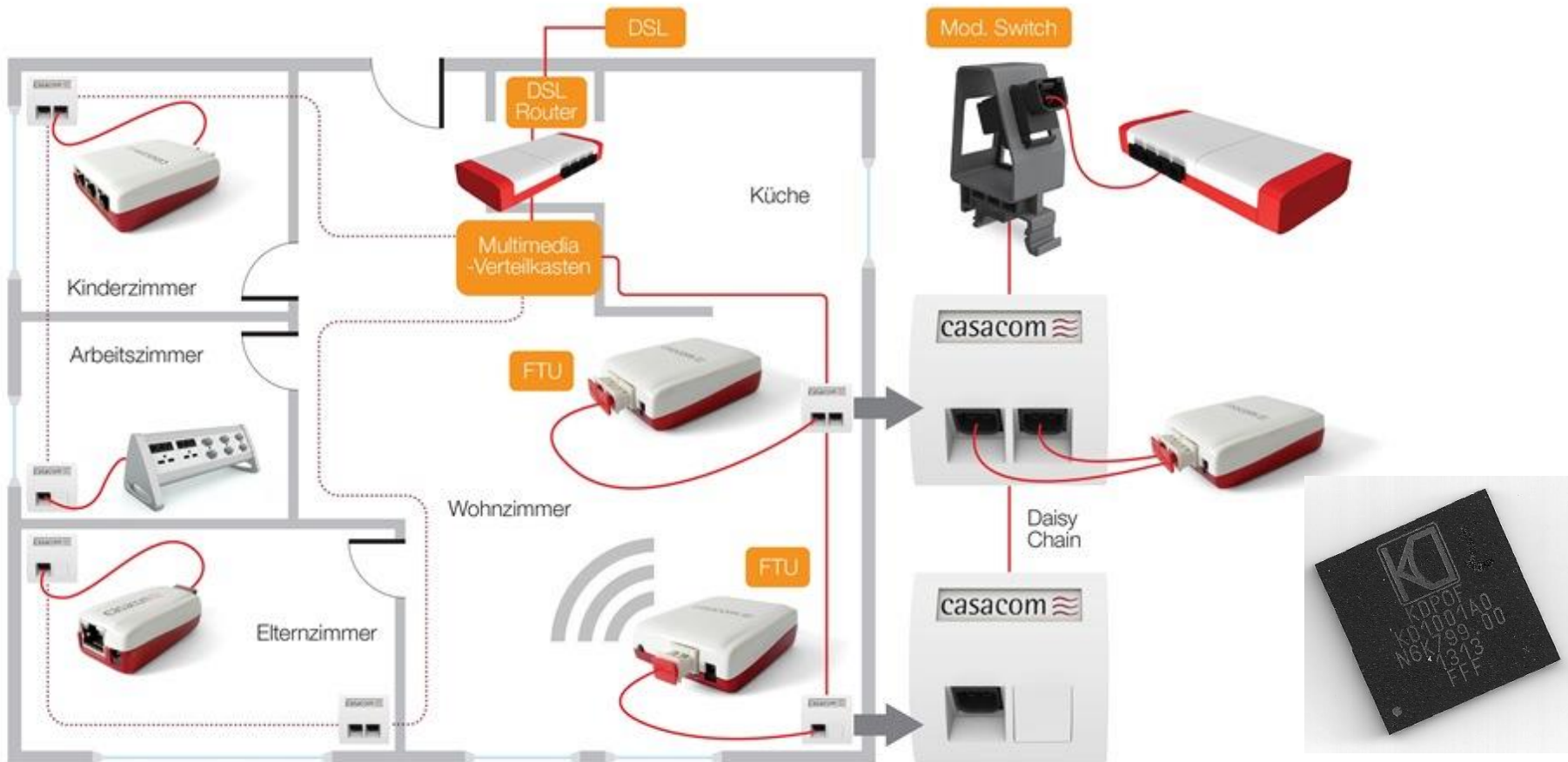
Introduction



KDPOF's Current Technology: **KD1000 Family**

- KD1001
- KD1002
- KD1011
- KD1012

Currently for
Consumer & Industrial
Applications

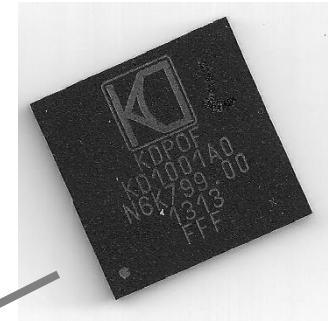


Introduction

KDPOF's Steps Towards Next Generation Technology:



Adaptation to Automotive



"This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 666449".

KDPOF is using a Phase 2 SME Instrument from the European Commission's Horizon 2020 Framework Program for Research & Innovation to take the next vital steps towards developing and standardizing a new technology for data communications in automobiles.

The Project

May 2015 – May 2017

Pre-Qualification of a
Gigabit Ethernet POF Transceiver
for Automotive Applications

The Project

Objective

To develop an ASIC that can function as a PHY device for Gigabit Ethernet over POF in automotive data networks and to demonstrate that it can comply with the design, robustness and reliability expectations and requirements of the automotive industry.

Proposal ID: 666449



Proposal title:

Rapid Data Communication Network for Connected Cars

Single participant:


| No | Participant organisation name | Country | |
|----|--|---------|---|
| 1 | Knowledge Development for POF Technologies | Spain |  |

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The Project

Work Packages

Design & Adaptation

Pre-Qualification

Integration & Demonstration

Commercial Engagement

Market Watch & IPR

Market Strategy & Business Plan

Project Management

Project Overview



| Work Packages | Tasks | Milestones |
|--|---|--|
| DESIGN AND ADAPTATION TO AUTOMOTIVE INDUSTRY | Functional and performance requirements | Comprehensive requirements and specifications |
| | Design, emulation and verification | Code freeze |
| | BE, TO, FAB, Packaging | Tape Out |
| | ASIC Bring up | Test-chip |
| PRE-QUALIFICATION | Mission profile | Mission profile defined |
| | Definition of qualification strategy | Specification for robustness design and manufacturing |
| | Definition of robustness design and manufacturing | ASIC characterization |
| | Spec, design and manufact of test load-board | Pre-qualification report |
| | ASIC Characterization | |
| | Devel Qualification test | |
| | Assessment of qualification results | |
| INTEGRATION AND DEMONSTRATION | Spec., design and manufacturing of Evaluation Board | Evaluation Board |
| | Assembly | |
| | Test | |
| COMMERCIAL ENGAGEMENT | Gather inputs on functionality and specs | Customer awareness of mission profile and qualification strategy |
| | Customer test of current technology implementation | Customer awareness of robustness specifications |
| | Periodical report of qualification plan and results | Customer awareness of ASIC characterization |
| | Strategic audit of plan with external partner | Customer awareness of ASIC qualification |
| | Development of strategic market alliances | |
| | Standardization for broad market | |
| | Show demonstrator to customers | |
| MARKET WATCH & IPR | Market watch | EU patent application |
| | IPR | |
| MARKET STRATEGY BUSINESS PLAN | Operational Strategy | Investor-ready Business Plan |
| | Marketing Strategy | |
| | Business Plan | |
| PROJECT MANAGEMENT | Administrative and financial coordination | |
| | Scientific project coordination and management | Project progress meeting |

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Project Overview



Start Date: May 1, 2015

| Milestones | M1 | M2 | M3 | M4 | M5 | M6 | M7 | M8 | M9 | M10 | M11 | M12 | M13 | M14 | M15 | M16 | M17 | M18 | M19 | M20 | M21 | M22 | M23 | M24 |
|---|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Comprehensive requirements and specifications | | | | | █ | | | | | | | | | | | | | | | | | | | |
| Code freeze | | | | | | | | | | | █ | | | | | | | | | | | | | |
| Tape Out | | | | | | | | | | | | | | █ | | | | | | | | | | |
| Test-chip | | | | | | | | | | | | | | | | | | | | █ | | | | |
| Mission profile defined | | | | █ | | | | | | | | | | | | | | | | | | | | |
| Specification for robustness design and manufacturing | | | | | | | | | | | █ | | | | | | | | | | | | | |
| ASIC characterization | | | | | | | | | | | | | | | | | | | | | | █ | | |
| Pre-qualification report | | | | | | | | | | | | | | | | | | | | | | | | █ |
| Evaluation Board | | | | | | | | | | | | | | | | | | | | | █ | | | |
| Customer awareness of qualification strategy | | | | | █ | | | | | | | | | | | | | | | | | | | |
| Customer awareness of robustness specifications | | | | | | | | | | | █ | | | | | | | | | | | | | |
| Customer awareness of ASIC characterization | | | | | | | | | | | | | | | | | | | | | | | █ | |
| Customer awareness of ASIC qualification | | | | | | | | | | | | | | | | | | | | | | | | █ |
| EU patent application | | | | | | | | | | | | | | | | | | | | | | | | █ |
| Investor-ready Business Plan | | | | | | | | | | | | | | | | | | | | | | | | █ |
| Project progress meeting | | | | █ | | █ | | █ | | █ | | █ | | █ | | █ | | █ | | █ | | █ | | █ |

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End Date: April 30, 2015

Final Outcome Expected:

- Test Chip
- Qualification Report
- Evaluation Board/Kit

Available for Customer (Automotive OEM) Evaluation

Questions

&

Answers



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