



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

Rad

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

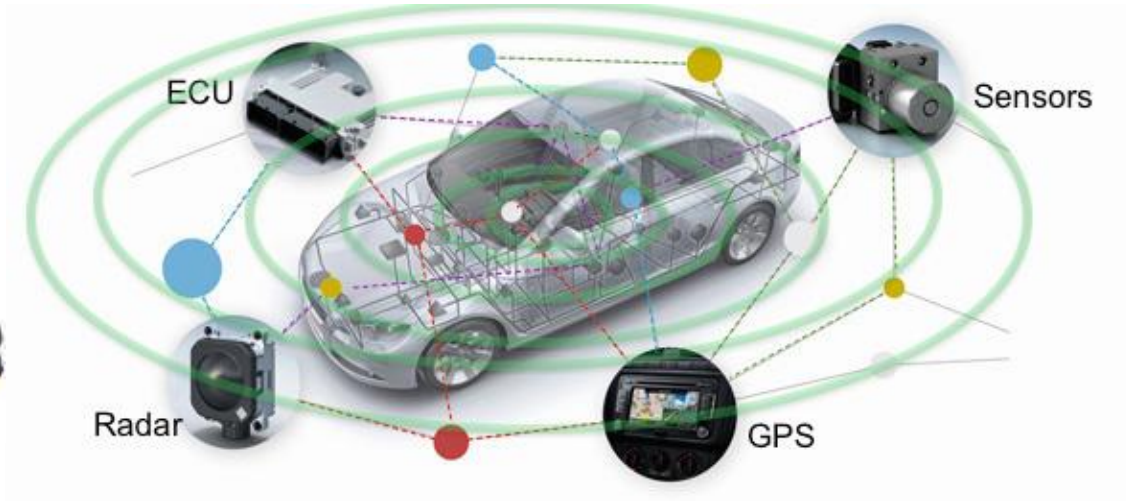
Standardization

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

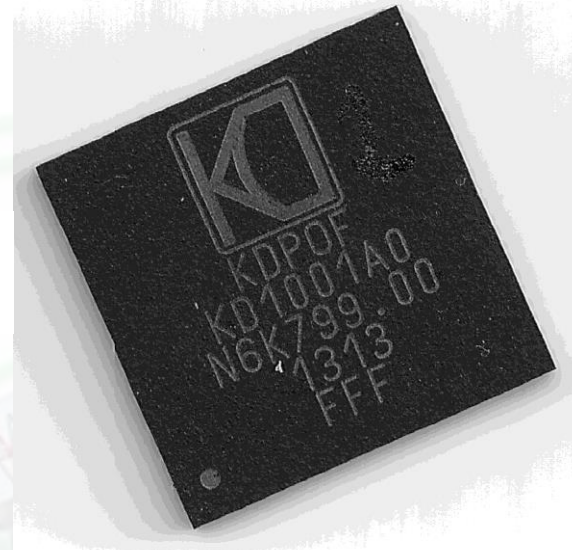
Maintenance

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

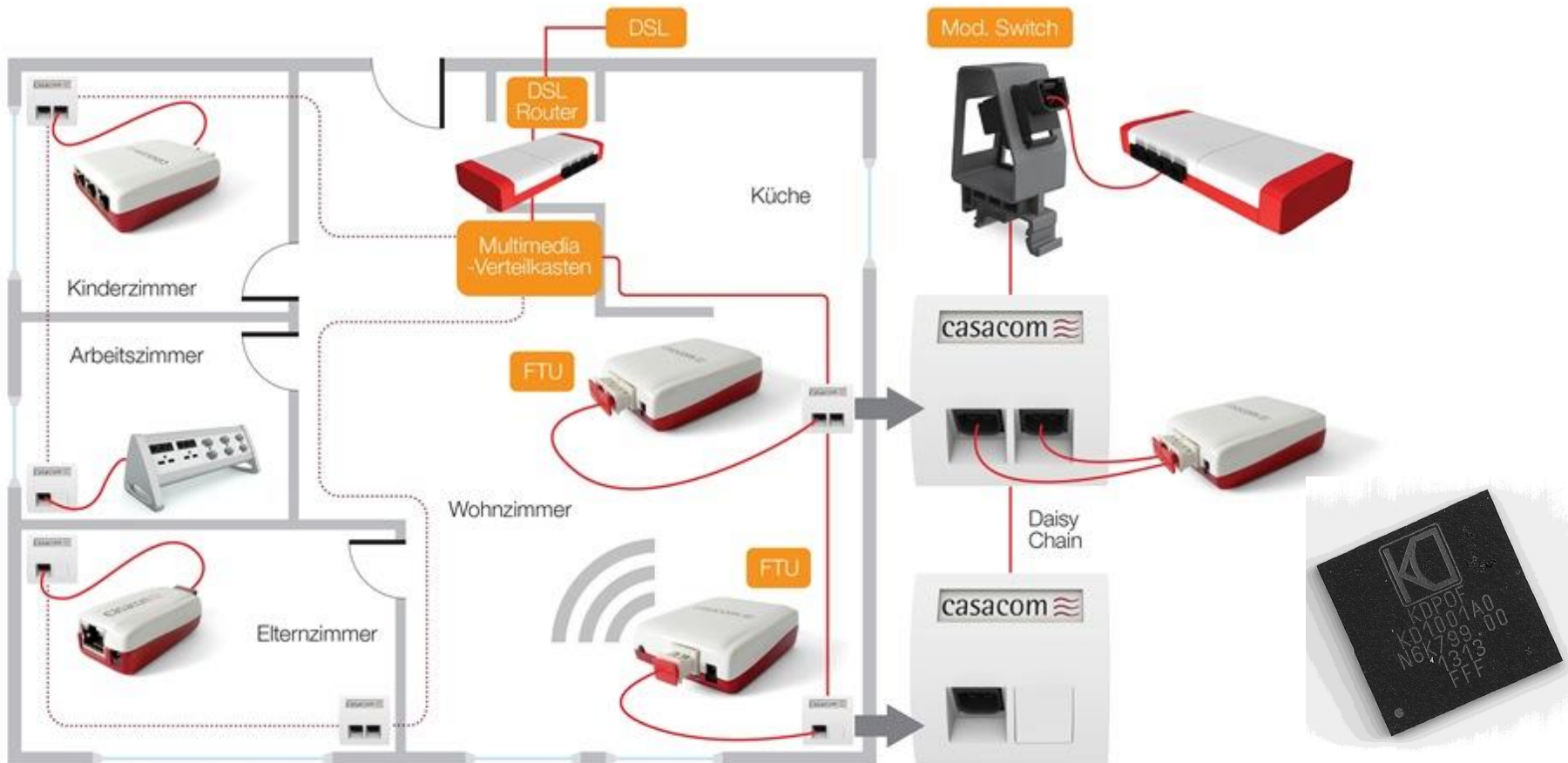
Introduction



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

- KD1001
- KD1002
- KD1011
- KD1012

Currently for
Consumer & Industrial
Applications

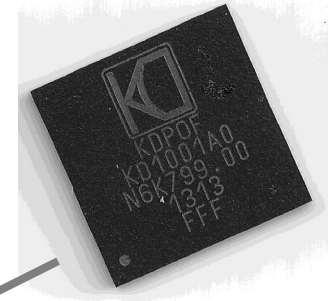


Introduction

KDPOF's Steps Towards Next Generation Technology:



Adaptation to Automotive



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

The logo for the CARNET project, featuring the word 'CARNET' in a green, blocky font with a circuit-like pattern of small squares around it.

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 POE 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

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				█		█		█		█		█		█		█		█		█		█		█

End Date: April 30, 2015

Final Outcome Expected:

- Test Chip
- Qualification Report
- Evaluation Board/Kit

Available for Customer (Automotive OEM) Evaluation

Questions

&

Answers