

A futuristic, green, aerodynamic car is shown in motion, surrounded by vibrant green and blue energy waves and light trails. The car has a transparent body, revealing internal components like the engine and wheels. The background is a dark, swirling green and blue, suggesting a high-speed or high-tech environment.

Quick Start Guide



Qorivva MPC5604EKIT:
Development Kit Enabling Video Over
Ethernet with Qorivva MPC5604E MCU





Meet the Qorivva MPC5604EKIT: Development Kit Enabling Video Over Ethernet with Qorivva MPC5604E MCU

Using Ethernet for the transmission of video over twisted pair cables allows for the removal of expensive LVDS coaxial cables from next-generation camera systems. The Qorivva MPC5604E microcontroller (MCU) from Freescale enables customers to realize this cost savings, along with a very small form factor, but also enables the capability to place camera sensors in a wide range of new applications both for the automotive and general markets.

To support customers being creative in exploring new and different application areas for utilizing camera sensors, Freescale has produced the Qorivva MPC5604EKIT kit that contains a camera sensor and image signal processor. The Qorivva MPC5604EKIT provides a complete development platform for next-generation general market and

automotive camera applications. This kit includes a Freescale Qorivva MPC5604E MCU that delivers the capability for video compression and transmission over Ethernet, Freescale software for Ethernet based camera systems using the Qorivva MPC5604E MCU, the AP0132AT image sensor and AP0101 image signal processor (ISP) from Aptina. The Qorivva MPC5604EKIT is populated with two Ethernet Physical Interfaces (PHYs) from Broadcom, supporting both BroadR-Reach (R) and standard 100Mbps; BCM89810 and BCM5241 PHYs.

This helps to reduce time to market by providing a foundational product design and serves as a launching point for Ethernet gateway application. Qorivva MPC5604EKIT is preloaded with "Freescale Software for Ethernet based Camera Systems using Qorivva



cluded with the design are links to the hardware design files, tools and precompiled Freescale Software for Ethernet based Camera Systems using MPC5604E to get you up and running quickly.

Qorivva MPC5604EKIT Features

- Qorivva MPC5604E MCU
- Aptina Image Sensor AR0132
- Aptina Image Signal Processor AP0101
- BroadR-Reach® Single-Port Automotive Ethernet Transceiver - 100 Mbps operation over single-pair copper cable
- Broadcom Single-Port MII 10/100BASE-TX Transceiver
- Freescale Software for Ethernet-based Camera Systems using the MPC5604E MCU including:
 - Ethernet Streaming Software
 - Camera Application Software
 - Autosar RTOS

Get to know the Qorivva MPC5604EKIT: Development Kit Enabling Video Over Ethernet with Qorivva MPC5604E MCU

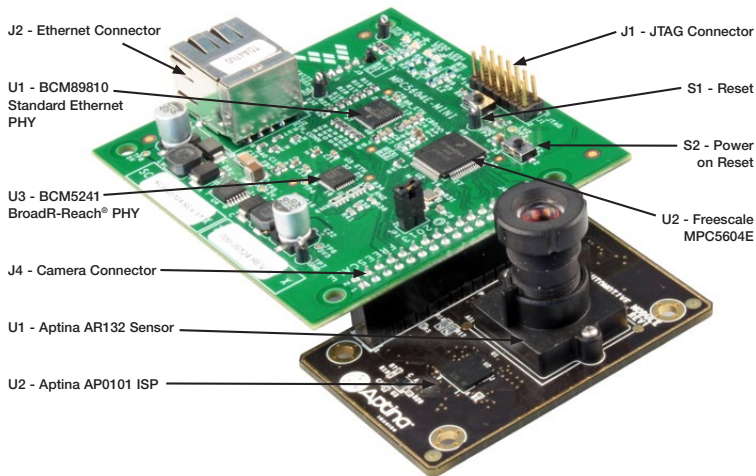


Figure 1: Qorivva MPC5604E Kit (top angle)

J3 - BroadR-Reach® Connector
with Power Supply Input



Figure 2: Qorivva MPC5604E Kit (bottom angle)



Getting Started

This section describes how to use the Qorivva MPC5604E mini development board and the components in the kit. This section also describes the computers requirements to develop applications using the Qorivva MPC5604EKIT.

1 Unpacking the Kit

The Qorivva MPC5604EKIT is shipped with the items listed in Table 1. Ensure the items listed in Table1 are available in the Qorivva MPC5604EKIT development kit. Remove the board from the antistatic bag and perform a visual inspection.

Table 1: MPC5604E Kit Contents

Boards	• Qorivva MPC5604E mini development board • Aptina Camera board
Cable	Power supply extension cable
Documentation	Qorivva MPC5604EKIT Insert

2 Download Software and Tools

Download installation software, Freescale Software for Ethernet based Camera Systems using MPC5604E and documentation under **“Jump Start Your Design”** at **freescale.com/MPC5604EKIT**. Table 2 lists the documents available on the kit website.



Table 2: “Jump Start Your Design” Contents

Qorivva MPC5604EKIT	• Schematic, layout and Gerber files • Aptina Camera board
Software development tools	CodeWarrior development studio
Freescale Software for Ethernet based Camera Systems using the Qorivva MPC5604E MCU	Including pre-compiled SW image uploaded on this board

Setting up the System

1 Connect Ethernet Cable

For default configuration use standard ethernet connected to J2. Connect straight through ethernet cable from Host (192.168.1.1) to Mini (192.168.1.2)

2 Connect 12V Power Supply to Pigtail

For default configuration use 12 V power supply, 500mA minimum (not included). When use BroadR-Reach® ethernet network, 12 V is provided by this network.

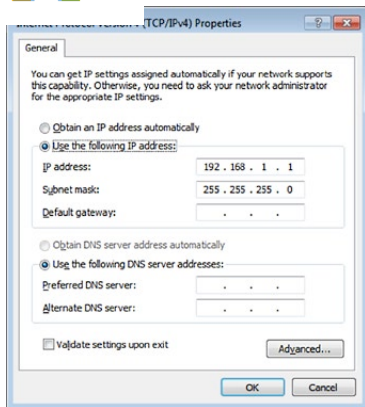
3 Install VLC 1.1.11 Software

Download and install VLC version 1.1.11 or newer using the default settings.

4 Configure the Ethernet and Firewall on the Host Computer

The Ethernet port on the host needs to be set to 192.168.1.1 and, if a firewall is up, it needs to be taken down. Instructions for configuring the firewall are specific to the firewall software being used, and are beyond the scope of this document. Performing a web search on the firewall software being used is suggested.

Use following IP address configuration of your network card in host PC.



5 Configure VLC Player and Displaying Video

- Start VLC using following commandline parameter:
vlc.exe --demux=mjpeg

- Open the media stream, if not already opened. (Media > Open Network Stream...)
- Enter **udp://@:1234** for the network URL. Then Click **Play**. Now VLC will show the URL at the bottom of the window.

NOTE: there is no “@” in the displayed URL, this is OK.

- Connect the Ethernet cable coming from the Host PC to the Mini:J2:ETH_CONN
- Connect the 12V Power Supply to the AC outlet and its barrel connector to the Pigtail, if not already configured as such.
- On the Mini, the Green LED (DS1 near the top left corner) and the Orange LINK LED

(DS5) will be lit constant and the Green ACTIVITY LED (DS5) near the ETH_CONN will flicker. (NOTE: the green LED will eventually turn off if the stream is not established.)

- Press the reset switch Mini:S1:RST. About 5 seconds later, live video will be displayed in VLC.
- VLC stores video into the buffer before displaying it which may result to the small observed delay. Another option is to use professional video analysis tool from Technica Engineering <http://www.technica-engineering.de/> which allow debugging UDP as well as AVB stream.



For more information, visit
freescale.com/MPC5604EKIT

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