82574L
NIC CONTROLLER
BLOCK DIAGRAM

OPEN Q-820 uSOM MODULE

82574I NIC + PHY

FLASH
EEPROM

LEVEL TRANSLATOR

I2C

RST

WAKE

1 PAIR -CLK+ 2 PAIR - PCIE SIGNALS

VDD

12V

POE MODULE

MAGNETICS + RJ45 CONNECTOR

1 PAIR PCIE SIGNALS

4 PAIR PCIE SIGNALS

SPI

SPI

OPEN Q-820 uSOM

Operating System: Debian GNU/Linux
Kernel release: 3.18.20-g40ad06f-00059-gb9b2e17
Kernel version: #5 SMP PREEMPT Tue Apr 24 15:31:22 CDT 2018

QMAX SYSTEMS
MAJOR COMPONENTS

• Intel 82574l Gigabit Ethernet controller

• Phy Interface

• Flash Memory

BRIEF DESCRIPTION

• The carrier board has a SOC Module OPEN Q - 820 μSOM that runs on Linux operating system.

• It has a LAN Interface using Intel 82574l Gigabit Ethernet as a Network Controller.

• The Board schematics were implemented based on the Intel’s Gigabit CT Desktop Adapter and OPEN –Q 820 μSOM development Kit.

• We used the flash IC from Gigabit CT Desktop Adapter as it contained Valuable Data like MAC address for Internet Connectivity.

• CAT5 cable is being used for Connectivity.
 ISSUE FACED

• When running on Linux, we were able to detect the Ethernet chip and up to 10/100Mbps speed the controller was working well.

• When we tried Pinging 1Gbps from the local host, the Ethernet controller reduced its speed to 10/100 Mbps forcing the SOC to a limited access speed.

TEST RESULTS

NOTE:

• The speed is reduced to 100Mb/s under Full duplex. Command: sudo ethtool eth1

• Command: sudo ethtool -s eth1 speed 1000 forces the controller to switch to 1Gbps
NIC to uSOM Schematics
82754I LAN CONTROLLER

FROM PHY INTERFACE

82574I

TO uSOM

LEVEL TRANSLATOR

JTAG INTERFACE

uSOM WORKS ON 1.8V
82574I WORKS ON 3.3V
PCIE SECTION

82574I NIC

uSOM

FLASH

MAGNETICS +RJ54
PCIE COMPONENTS

- **Intel 82574I gbe controller**
  - Flash IC - SST25VF040B-50-4I-SAF
  - EEPROM IC - CAT25320VI-GT3
  - PHY CONNECTOR - 08261X1TGH-F
  - CAT5 CABLE