Edgecore ECW7220-L

Wireless Access Point Specification

Revision 1.0

OPEN Compute Project

Revision History

Revision	Date	Author	Description
.01	2/29/2016	Jeff Catlin	Initial Release
1.0	8/4/2017	Jeff Catlin	Minor edits to license text

Contents

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Description	**Manufacturer**	**Part Number**
CPU	Broadcom	BCM53016A (Optional BCM5822B)
RF 5G	Broadcom	BCM43460
RF 2.4G	Broadcom	BCM43431
DDR III	MICRON	MT41K128M16JT-125:K
NOR Flash	MXIC	MX25L25635E
NAND Flash	MICRON	MT29F4G08ABADAWP:D
Watchdog Timer	MAXIM	MAX6369
TPM	Atmel	AT97SC3204T
PoE Power Converter	TI	TPS23754

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Scope

This document outlines the technical specifications for the Edgecore ECW7220-L Open wireless Access Point submitted to the Open Compute Foundation.

Overview

The ECW7220-L is an indoor 802.11a/b/g/n/ac dual-band, dual-radio enterprise Access Point with a 3x3 MIMO antenna configuration.

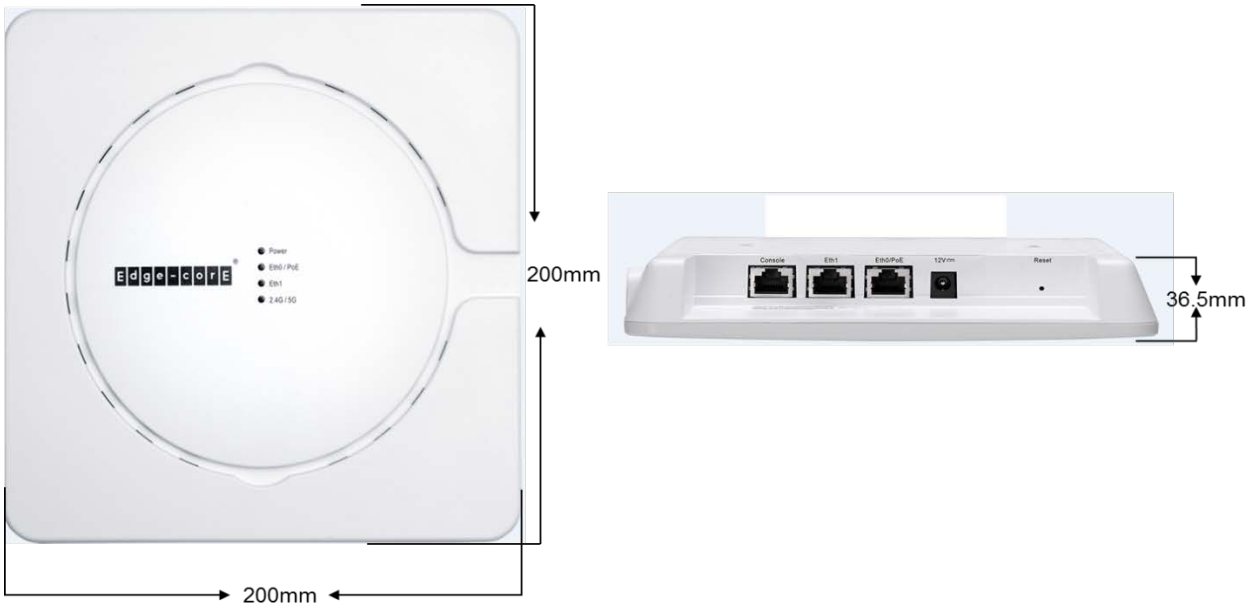
Through its two Gigabit Ethernet ports the 802.11ac dual-band wireless Access Point can connect to the backbone network. The ECW7220-L supports 802.3at/af PoE which enables the Access Point to be powered remotely by a PoE switch. An AC power adapter option is also included for locations where PoE is not available.

The ECW7220-L is designed so that it can easily be wall mounted or ceiling mounted to T-Bars.

Physical Overview

Dimensions

	Inches	Millimeters
Length	7.87	200
Width	7.87	200
Height	1.44	36.5



Top View

The top view of the ECW7220-L shows the following

LEDs

LED Name	Description	State
Power	Led to indicate status of Power	Green - Normal Off – No Power
ETH0 / PoE	Led to indicate link status of port	Green – Valid link Off – No link
Eth1	Led to indicate link status of port	Green – Valid link Off – No link
2.4/5G	LED to indicate radio status	On blue for 2.4GHz radio and/or 5GHz radio

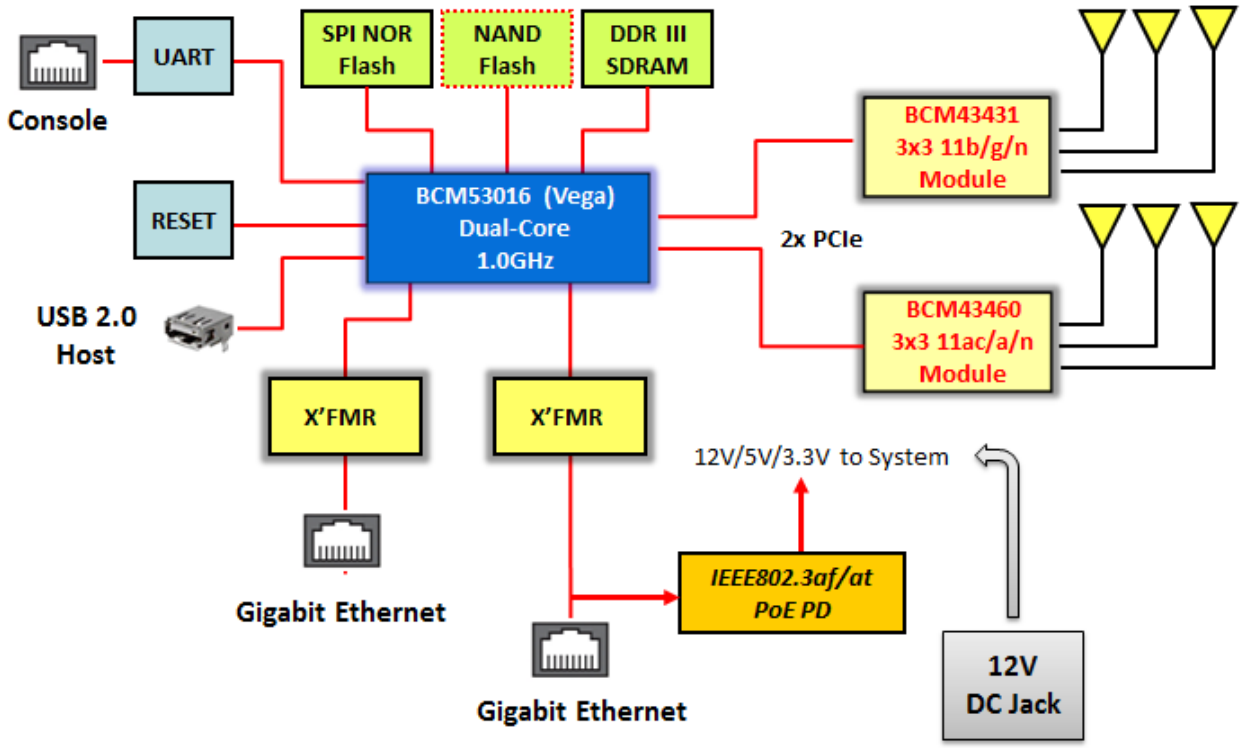
Front View

The front panel view of the ECW7220-L includes the following key components:

- Reset button
  - Used to reset the CPU and associated components
- 12V power jack
  - Used with optional external 12V power module
- Eth0/PoE Gb Ethernet port
  - Used for network connectivity and to power device through PoE
- Eth 1Gb Ethernet port
  - Used for network connectivity
- Console port
  - Used for serial communication to the device

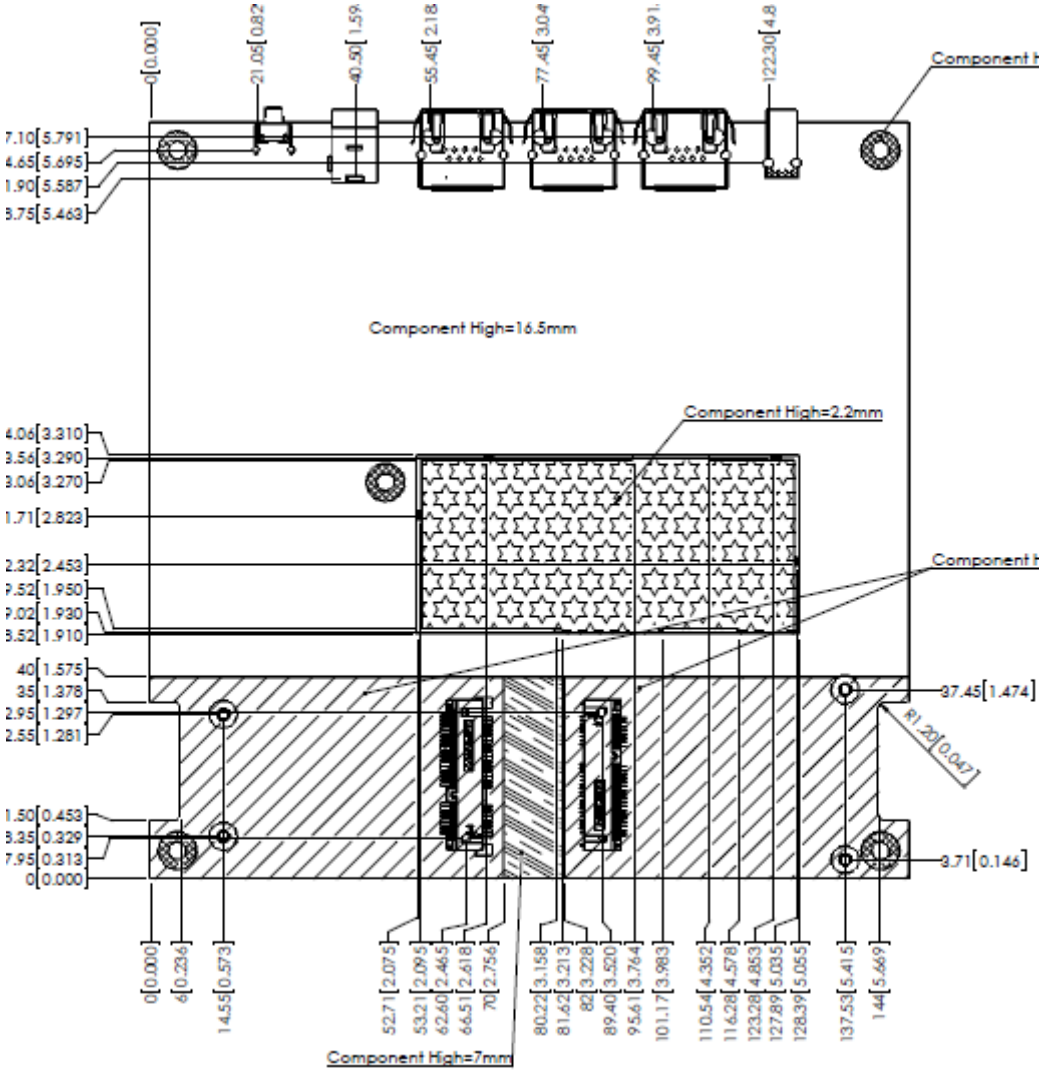
System Overview:

Main PCB Block Diagram



PCB Board mechanical outline

The ECW7220-L is composed of 6 layer PCB assembly:



PCB

The PCB is a six layer board supporting the CPU and radio silicon, front panel networking and management ports, and LEDs.

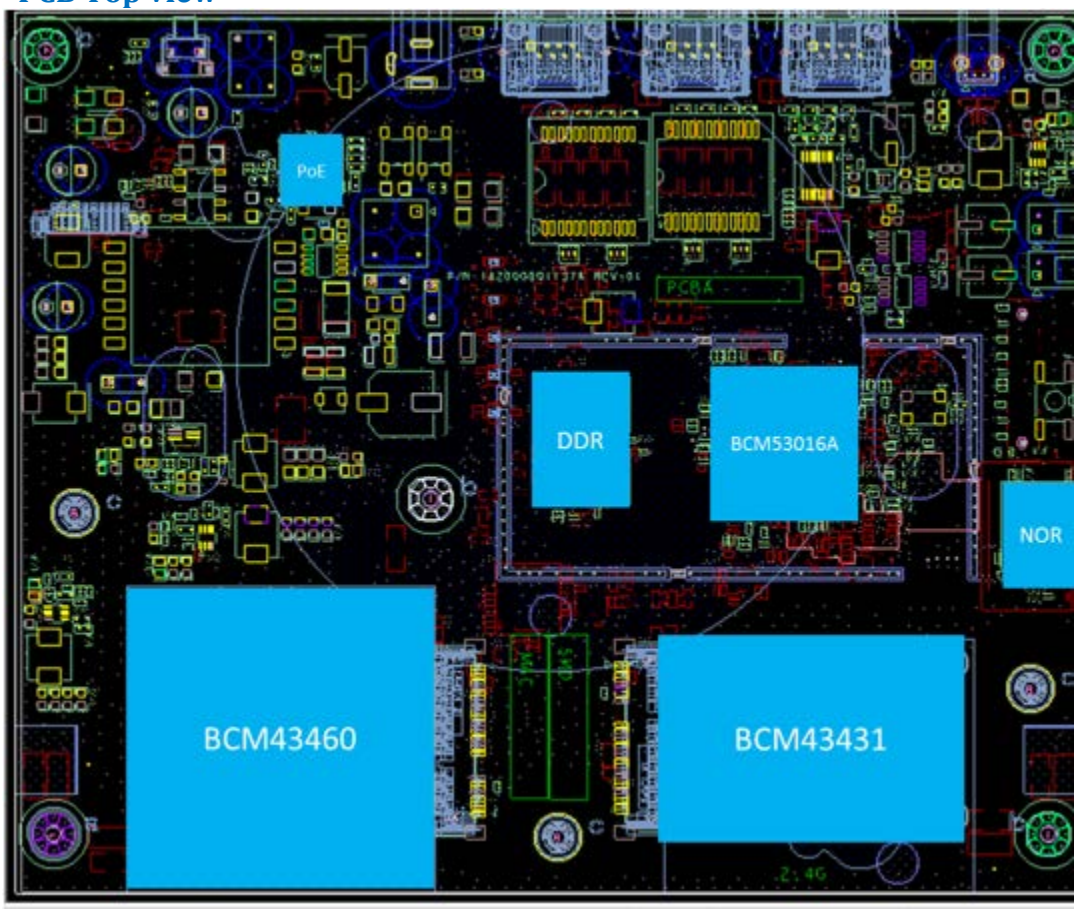
PCB Dimensions

	Inches	Millimeters
Length	5.9	150
Width	5.9	150

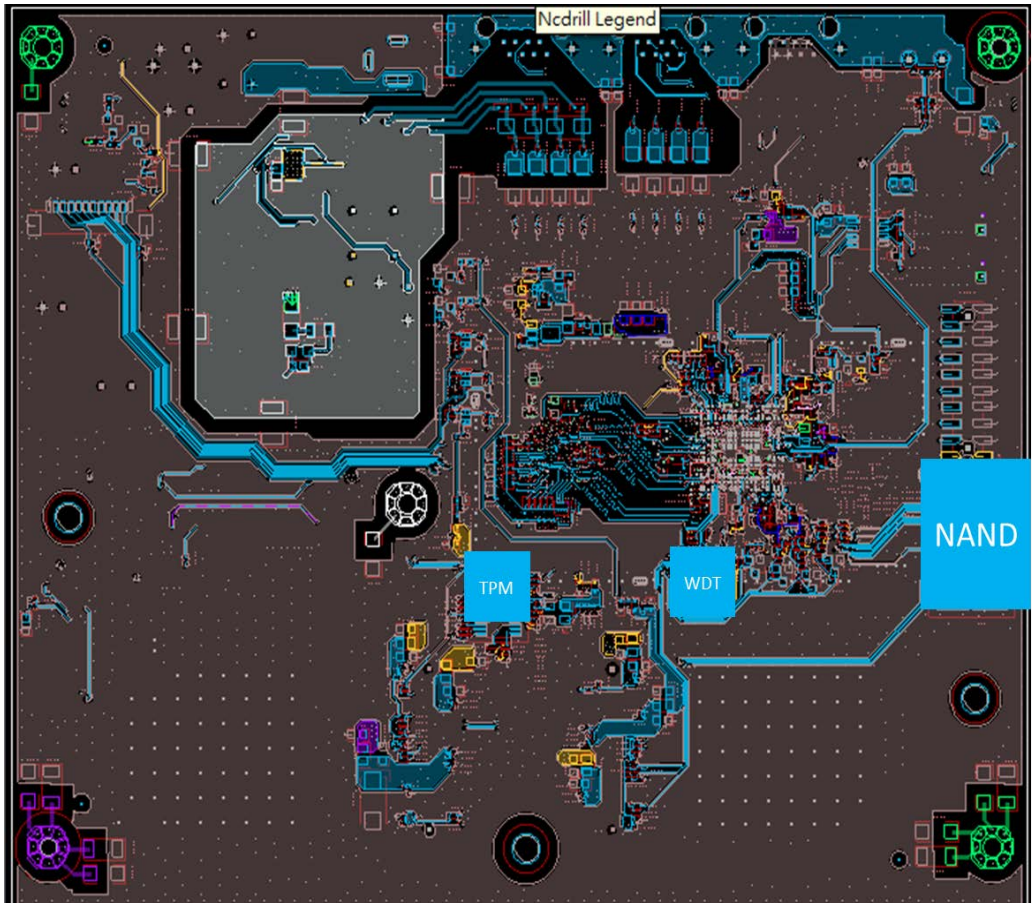
PCB major components

Description	Manufacturer	Part Number
CPU	Broadcom	BCM 53016 (optional BCM5822)
3x3 802.11ac/a/n MAC/PHY Radio	Broadcom	BCM 43460
3x3 802.11b/g/n MAC/PHY Radio	Broadcom	BCM 43431
DDR III Memory	MICRON	MT41K128M16JT-125:K
NOR Flash	MXIC	MX25L25635E
NAND Flash	MICRON	MT29F4G08ABADAWP:D
Watchdog Timer	MAXIM	MAX6369
Trusted Platform Module (TPM)	Atmel	AT97SC3204T
PoE Power Converter	TI	TPS23754

PCB Top view



PCB bottom view



CPU Subsystem

The ECW7220-L utilizes the Broadcom 53016 communications processor supporting the following:

- NOR Flash 32MBytes
- NAND Flash 512MBytes
- DDR III 256Mbytes

Console Port

A RJ45 connector is located on the front panel equips with DTE configuration for console usage. A special cable to translate the RJ45 to DB9 is used with the pin out is shown below. In the list below, the directions 'IN' and 'OUT' are relative to the board. (i.e. 'IN' means input to the board)

RJ45 Pin#	DB9 Pin#	Mnemonic	Detail	Direction	BCM53016 Pin Name
7	1	DCD	Data Carrier Detect	IN	NC
6	2	RXD	Receive Data	IN	UART_RX
3	3	TXD	Transmit Data	OUT	UART_TX
2	4	DTR	Data Terminal Ready	OUT	NC
4,5	5	Sig. GND	Signal Ground	–	GND
-	6	DSR	Data Set Ready	IN	NC
1	7	RTS	Request To Send	OUT	UART_RTS
8	8	CTS	Clear To Send	IN	UART_CTS

Thermal Monitoring

The ECW7220-L supports a LM56 thermal sensor used to monitor system temperature.

Watchdog Timer

The ECW7220-L supports the MAX6369 pin-selectable watchdog timers that supervise microprocessor (µP) activity and signal when a system is operating improperly. During normal operation, the microprocessor should repeatedly toggle the watchdog input (WDI) before the selected watchdog timeout period elapses to demonstrate that the system is processing code properly. If the µP does not provide a valid watchdog input transition before the timeout period expires, the supervisor asserts a watchdog (WDO) output to signal that the system is not executing the desired instructions within the expected time frame. The watchdog output pulse can be used to reset the µP or interrupt the system to warn of processing errors.

TPM

The ECW7220-L supports the AT97SC3204T which is a fully integrated security module designed to be integrated into embedded systems and implements version 1.2 of the Trusted computing Group (TCG) specification.

Software Support

The ECW7220-L supports a base software package composed of the following components:

U-Boot

The ECWO7220-L Supports U-Boot version 1.4.0.2 or greater

ONIE

Please check http://onie.org/ for the latest supported version

Specifications

Power Consumption

The total estimated system power consumption of the ECW7220-L is ~22Watts. This is based upon worst case power assumptions for traffic and environmental conditions. Typical power consumption will be less.

Regulatory Compliances

Radio EN 300 328 V1.8.1:2012 (2012-06)
EN 301 893 V1.7.1:2012 (2012-06)
FCC Part 15C 15.247/15.207 (2.4-2.4835 GHz)
FCC Part 15E 15.407 (5.150GHz-5.250 GHz,
5.725-5.850 GHz)

Emissions

EN 55022 2010/ AC: 2011, Class B
FCC Part 15 Subpart B, Class B
ICES-003, Issue 5, Class B

Immunity

EN 55024 : 2010
EN 301 489-1 V1.9.2 (2011-09), Class B
EN 301 489-17 V2.2.1 (2012-09)
AS/NZS CISPR 22: 2009/Amdt 1: 2010, Class B
Safety UL (CSA 22.2 No. 60950-1 & UL60950-1)
CB (IEC/EN60950-1)

Environmental

Weight 750 g (1.65 lb)
Temperature Operating: 0° C to 40° C (32° F to 104° F)
Storage: -40° C to 70° C (-40° F to 158° F)
Humidity Operating: 5% to 95% (non-condensing)

ROHS

Restriction of Hazardous Substances (6/6)

Compliance with Environmental procedure 020499-00 primarily focused on Restriction of Hazardous Substances (ROHS Directive 2002/95/EC) and Waste and Electrical and Electronic Equipment (WEEE)