Agema AGC5648S Switch Specifications
Revision 0.1

Agema System Inc.
Fremont CA

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Version History

Rev	Date	Description	Page	Editor
0.1	Feb, 2017	Init		**WISH.HO**

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Agema Systems, Inc.

2. AGC5648S Overview

The AGC5648S is the next generation carrier switch for Telecommunication Networks. It leverages the 100G technology (4x25G SERDES) to offers 48-port 25G SFP28 and 6-port 100G QSFP28 in a compact 1RU form factor. 2.5 times speed upgrade from current 10Gigabits leaf switch. The 48 ports 25G are backward compatible to 10G and the 100G uplink offer dual speed – 40G and 100G. Total I/O bandwidth upgrade to 1.8T which is 2.5time capacity performance of current 10G downlink and 40G uplink switch (720G). The processor used on AGC5648S is the Intel® Xeon® Processor Broadwell-DE D1548 which is one of the D-1500 product families. There is also one Integrated Remote Management Processor-AST2520 which is a baseboard management controller (BMC).

2.1. Features

- External Serial RS232 port (RJ45 type).
- Support one USB ports for USB type-A
- 48 x 25Gbps SFP28 ports and 6 x 100Gbps QSFP28 ports in front.
- The 25G port support 10G/25G speeds
- The 100G port support 10G/25G speed by Fanout cable, the port also supports 40G QSFP28 transceiver.
- 1588 Synchronization
- SYNC-E Synchronization
- Front panel 1G Management port. (RJ45 type)
- Rear panel 1G BMC Management port. (RJ45 type)
- Front panel LED display for System, FAN and power status indicates.
- On board high performance CPU system with high density memory, Intel Broadwell-DE D1548
- Temperature monitoring. (TMP75).
- Backup BIOS
- Software readable thermal monitor.
- RTC time clock support.
- Hot plugging redundant power supply.
- Current monitoring for Power management.
- FAN removable and monitoring.
- Standard 1U chassis high

2.2. Main Components

AGC5648S	
CPU	BROADWELL-DE-GP D-1548
BIOS	32MB NOR FLASH
Memory	16G DDR4 MODULE *2
Storage	64GB SLC SSD
MAC	BCM88680CA0KFSBG *2
Packet DRAM	8G GDDR5 *16
KBP	BCM52311 *2
PHY (OOB Port)	WGI210AT *1 BCM54616S *1
PSU	DPS1600AB13A (1600W AC PSU) *2
DC FAN	MAX 2300 rpm (Front to Rear)

Table 1: Main Components
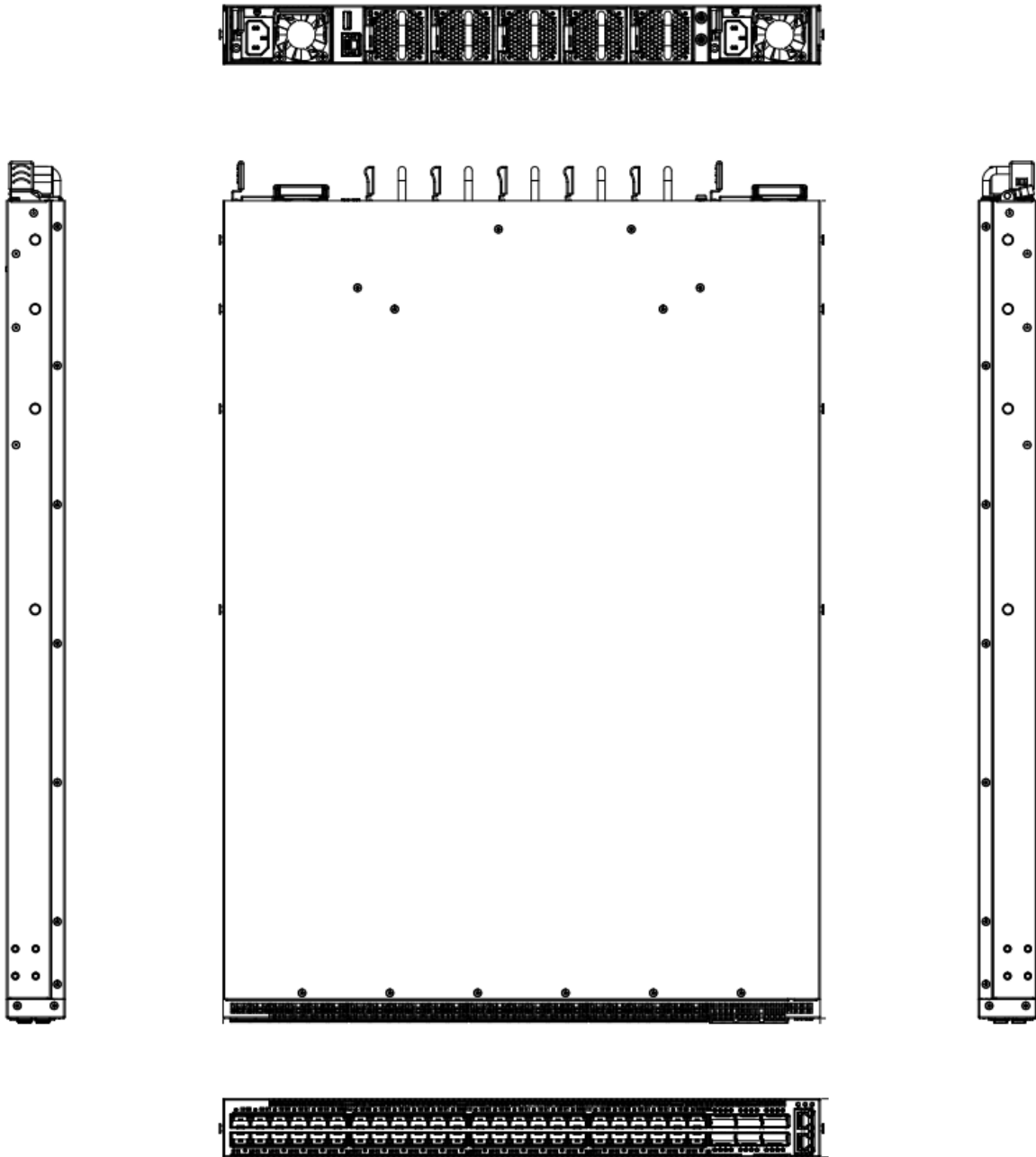
2.3. System Block Diagram W/O SYNCE
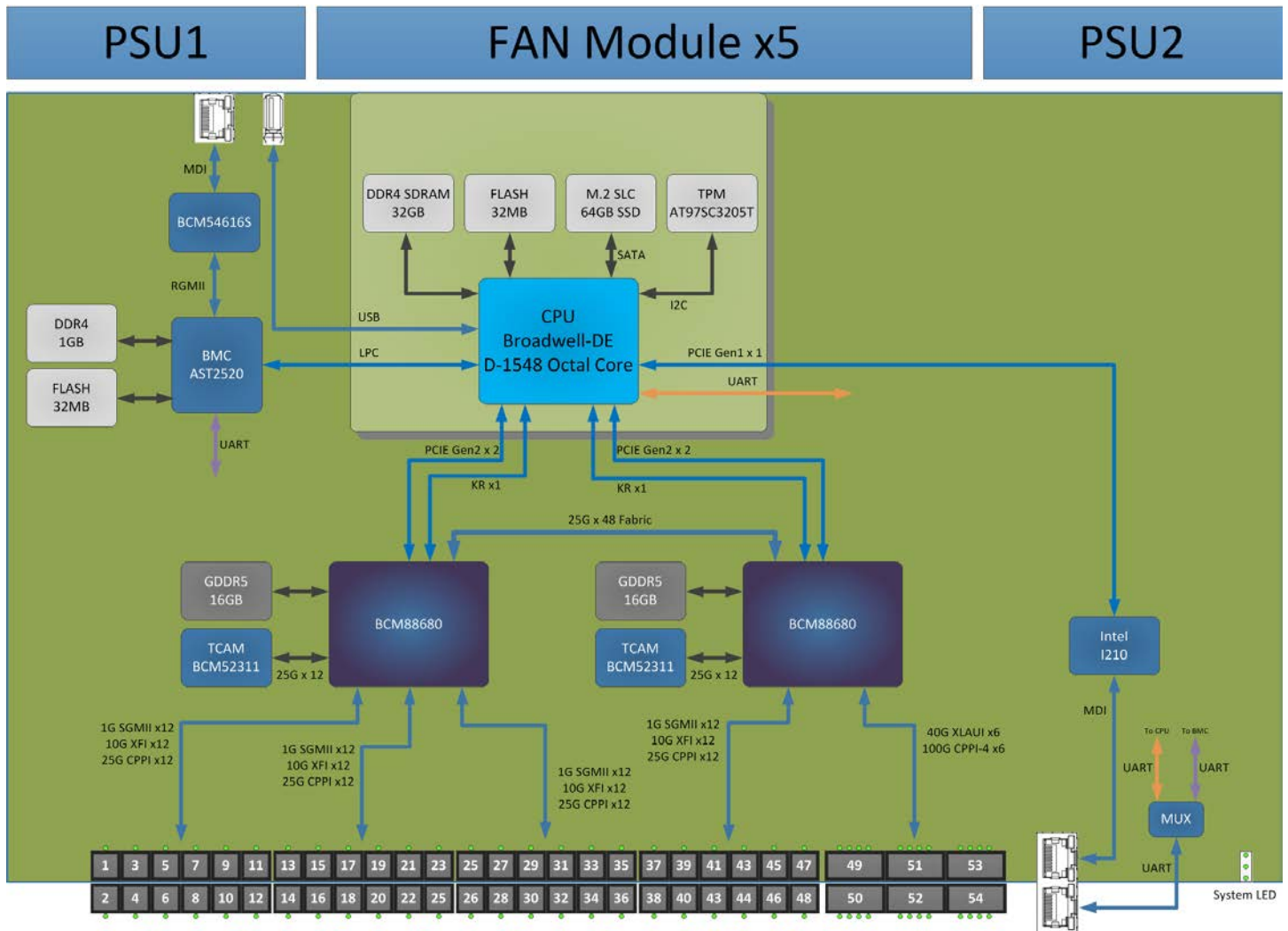
2.4. Mechanical overview
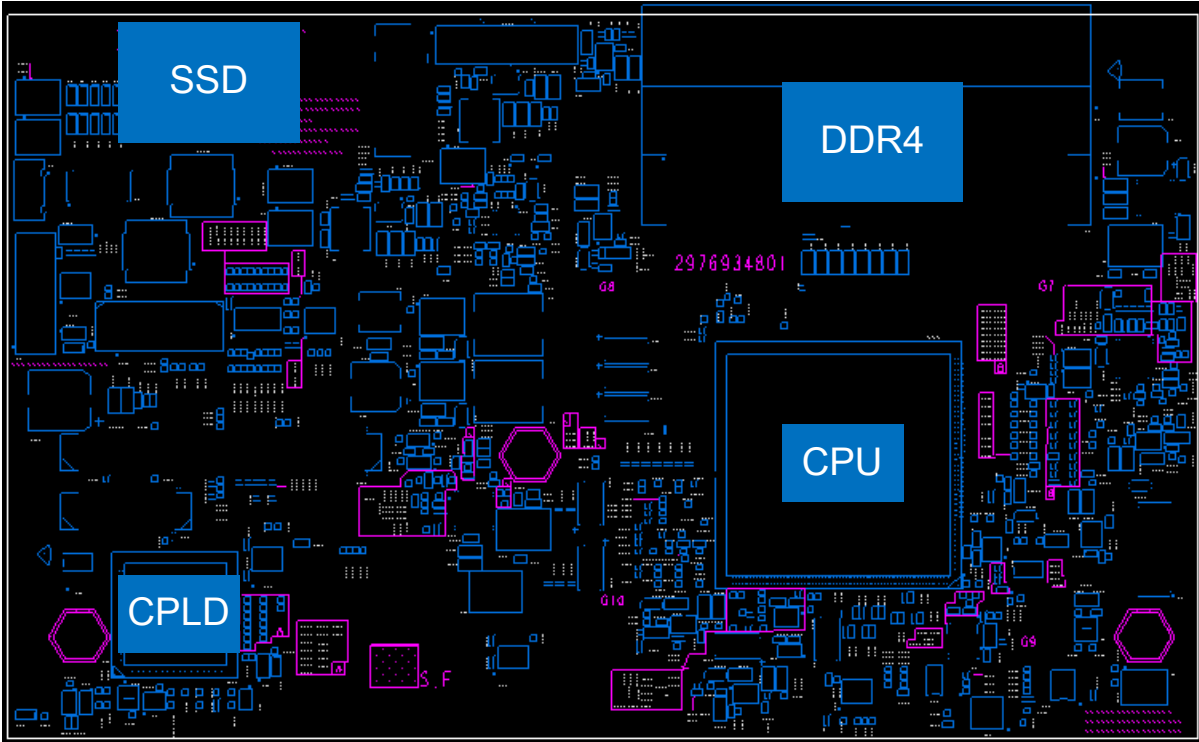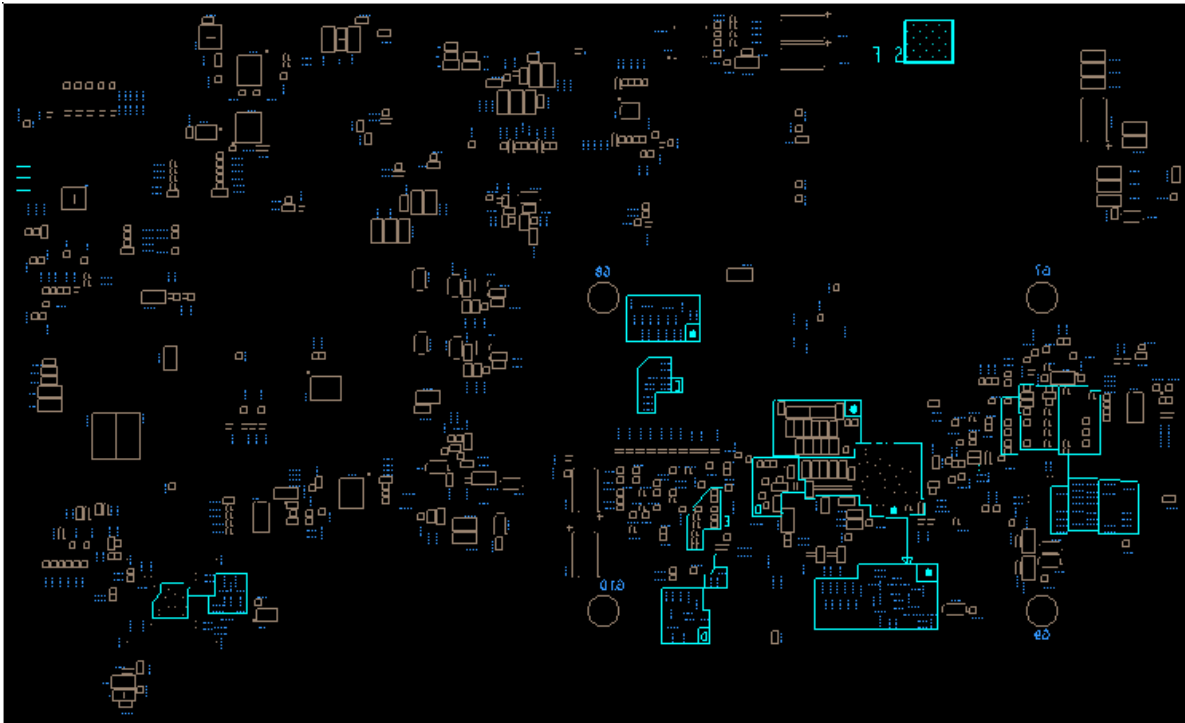
Dimension: H(43mm) x W(438.5mm) x L(600mm)

2.4.1. **Outline**

2.5. PCB

2.5.1. CPU (TOP)

2.5.2. CPU (BOT)

2.5.1. SW (TOP)
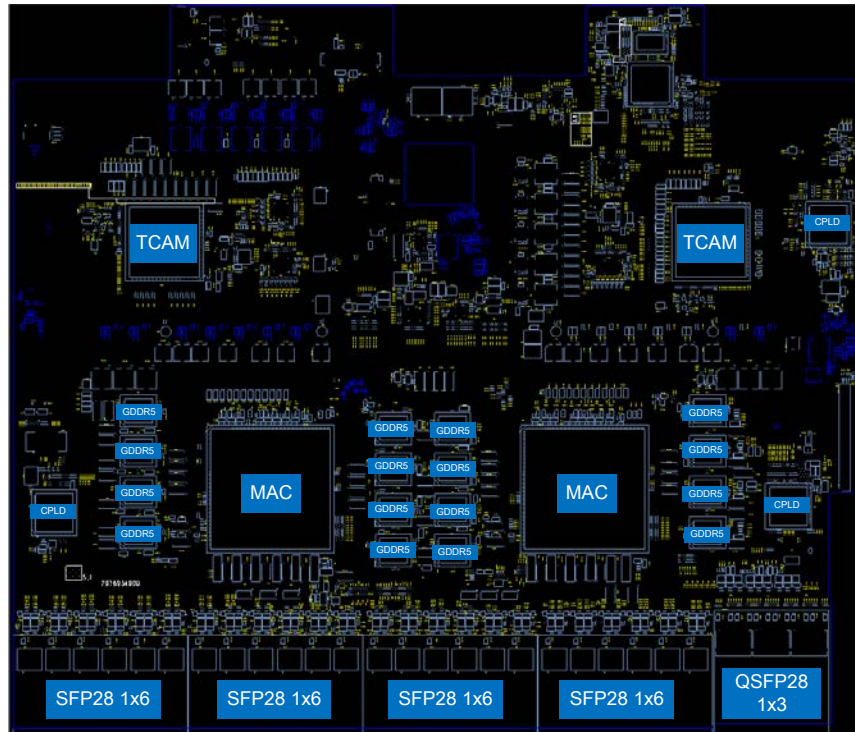
2.5.2. SW (BOT)
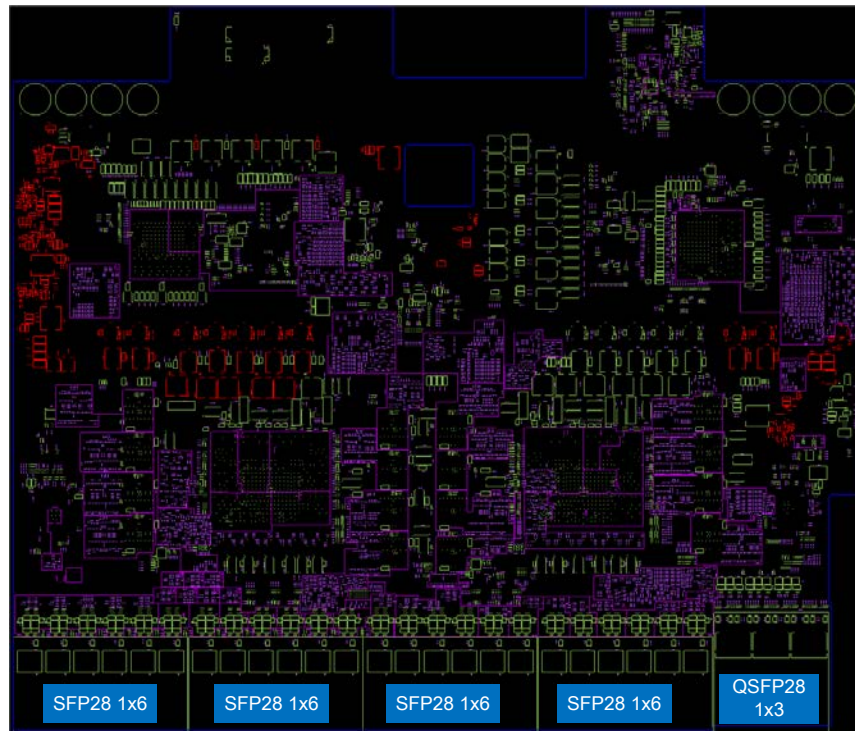
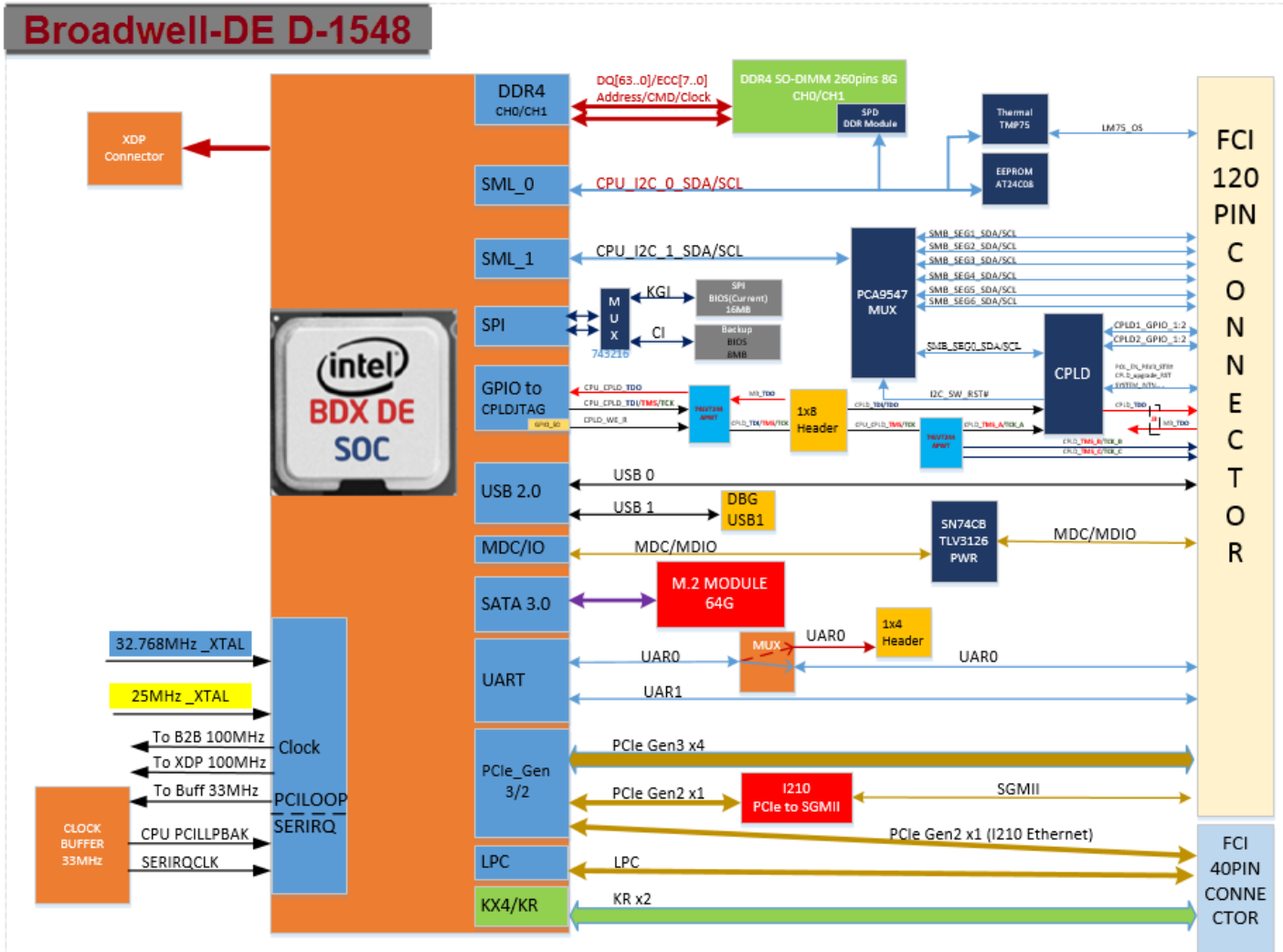# 3. CPU SUBSYSTEM

3.1. CPU Subsystem

Figure 1: CPU block diagram

3.2. BMC Subsystem

A baseboard management controller (BMC) is a specialized service processor that monitors the physical state of a network server or other hardware device using sensors and communicating with the system administrator through an independent connection. The BMC is part of the Intelligent Platform Management Interface (IPMI) and is usually contained in the motherboard or main circuit board of the device to be monitored.
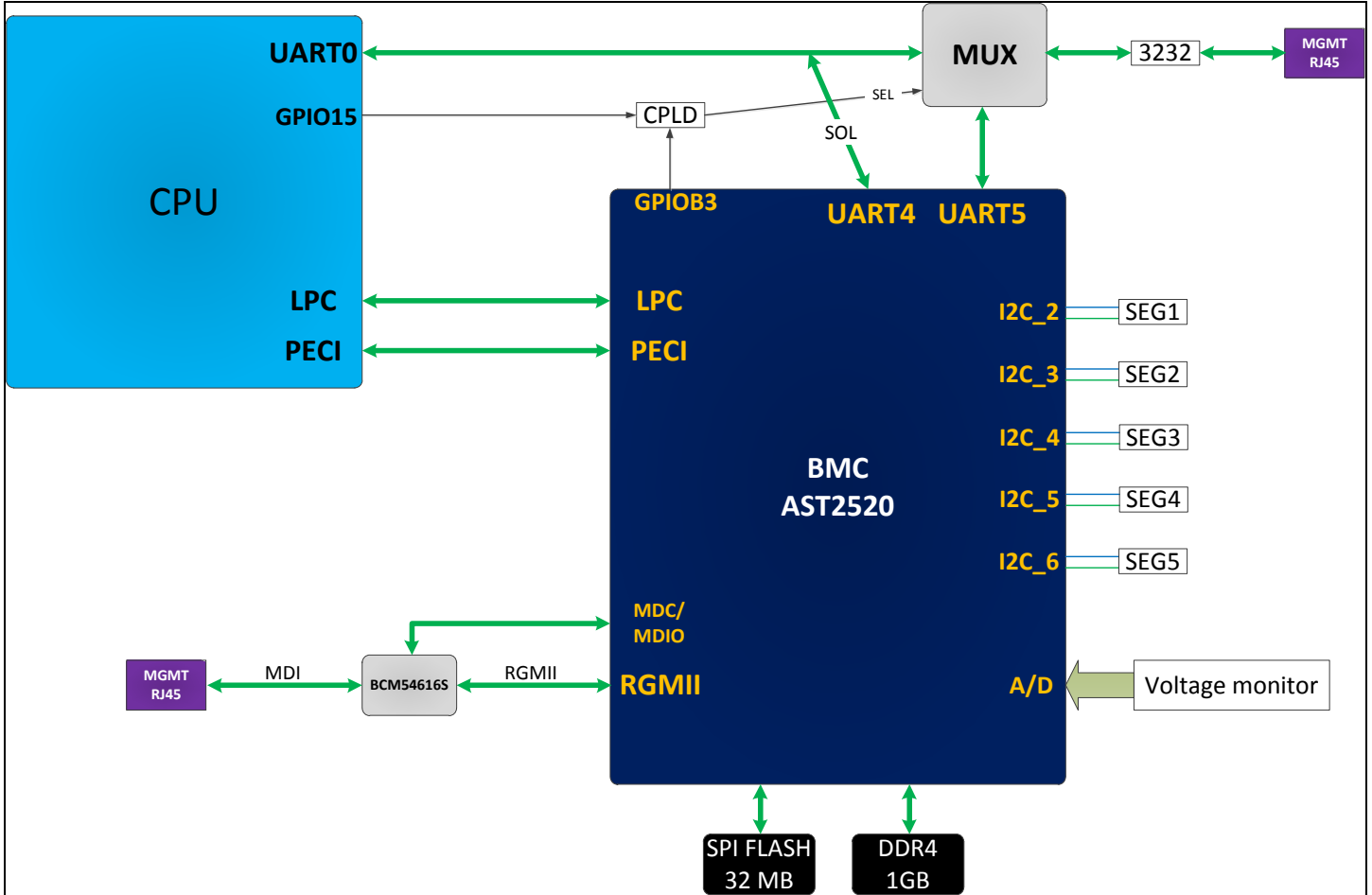
Figure 2: BMC block diagram
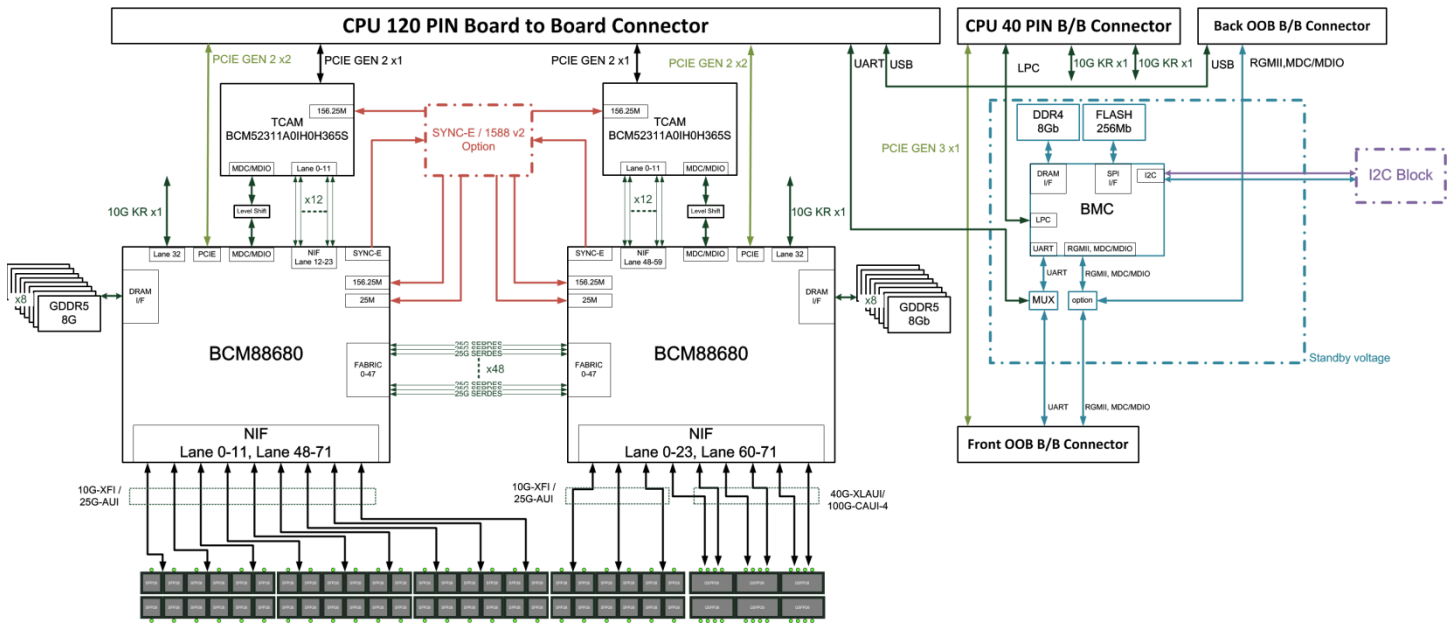
4. SWITCH SUBSYSTEM

Figure 3: Switch block diagram

4.1. Switch Engine

The Broadcom® BCM88680 device process up to 900Gpbs traffic at wire speed, supporting up to nine 100G full-duplex ports at Layer 2 through Layer 4, with integrated deep buffer traffic management capabilities and a fabric interface. The BCM88680 has integrated 1GbE, 10GbE, 25GbE, 40GbE, 50GbE and 100GbE MAC network interface, supporting various port rate combinations.

4.2. AGC5648S Port Allocation
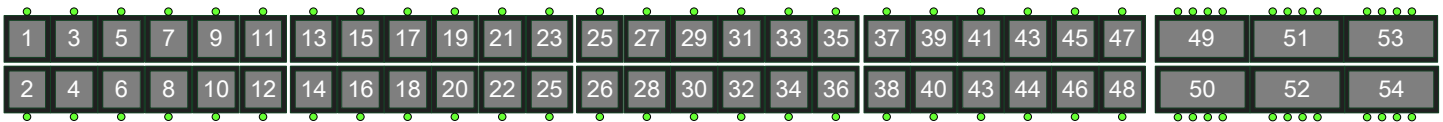
4.2.1. Front Panel Port Number

Figure 4: Port Number on front panel

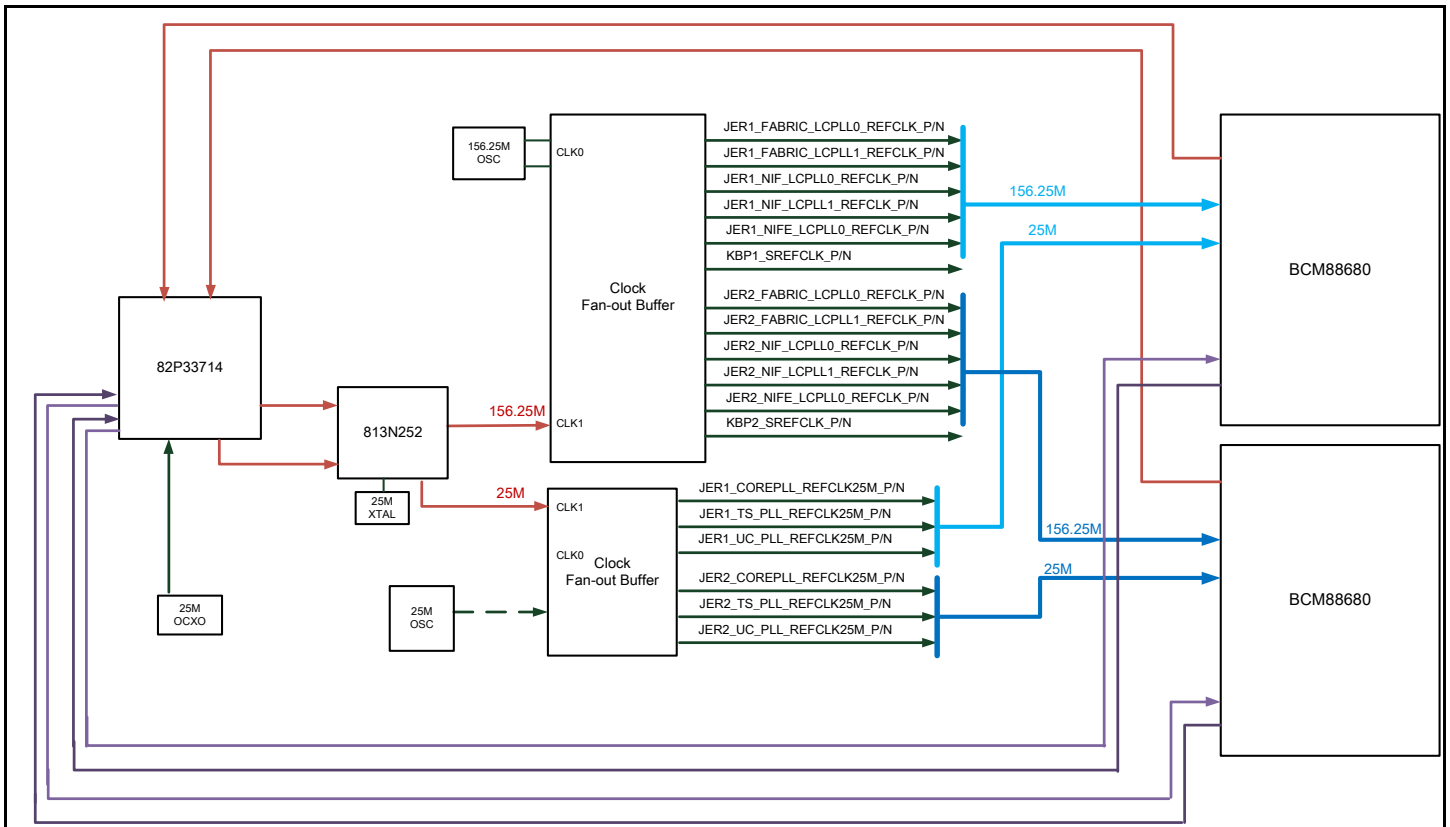# 5. SYNC-E & 1588 SUBSYSTEM

5.1. System Clock

Figure 5: SYNC-E & IEEE1588 Block Diagram

5.1.1. SYNC-E and IEEE1588v2

The 82P33714 Synchronization Management Unit (SMU) provides tools to manage timing references, clock sources and timing paths for IEEE1588 / Precision Time Protocol (PTP) and Synchronous Ethernet (SyncE) based clocks. The device supports up to three independent timing paths that control: PTP clock synthesis; SyncE clock generation; and general purpose frequency translation. The device supports physical layer timing with Digital PLLs (DPLLs) and it supports packet based timing with Digitally Controlled Oscillators (DCOs). Input-to- input, input-to-output and output-to-output phase skew can all be precisely managed. The device outputs low-jitter clocks that can directly synchronize lower-rate Ethernet interfaces; as well as CPRI/OBSAI, SONET/SDH and PDH interfaces and IEEE 1588 Time Stamp Units (TSUs).

6. PSU SUBSYSTEM

6.1. Overview

■ Features
- Output power: 1600W
- Input: AC 110V~220V
- Output: DC 12V/132A; DC stby 12V/2.1A
- FAN speed: 23000 Rpm
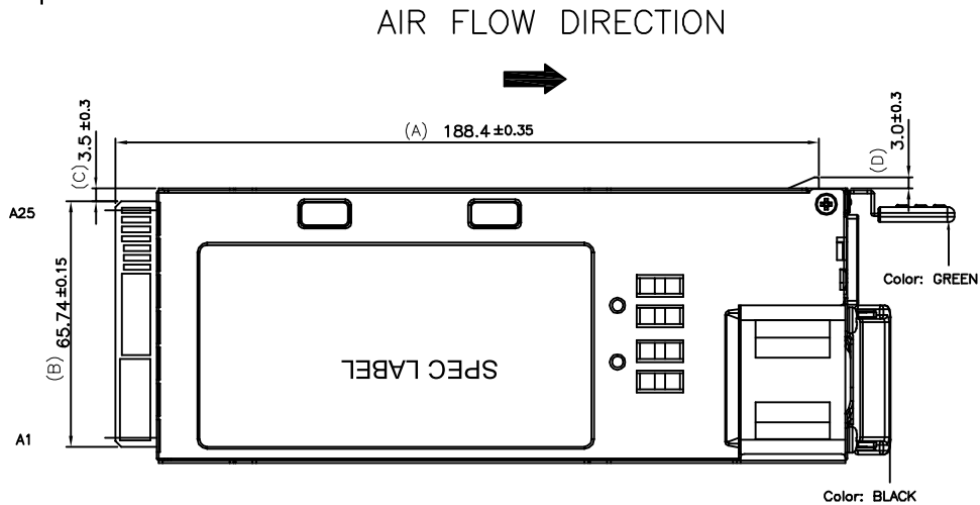- Air direction: front to rear

■ Power Supply Top View

Figure 6: Delta DPS-1600AB-13 A

7. MISCELLANEOUS

7.1. LED

7.1.1. System LED

Feature	Detailed Description	Comment
Power LED	**Solid Green** – 2 Power Suppliers are supplied to the switch & operating normally **Solid Yellow** – Single power supplier is installed and operating. **Blinking Yellow** –2 Power Suppliers are installed, but only single power supply is operating. **Off** – Power is Disconnected.	At front
System LED	Solid Green – Normal operation Blinking Green – Booting progress Solid Red – System is failed Off – No Power	At front
FAN Status LED	Solid Green – FAN operating normally. Solid Amber – FAN failed.	At front

7.1.2. MGMT Port LED

| Feature	Detailed Description	Comment
CPU 1G OOB Port	Link LED: (on the left side) Off –No link is established on the port. Solid Yellow - A valid link at 10/100Mbps is established on the port. Solid Green – A valid link at 1000/10000Mbps is established on the port. Act LED: (on the right side) Off –No link is established on the port. Blinking green – Activity, transmitting or receiving packet at this port.	At front
BMC 1G OOB Port	Link LED: (on the left side) Off –No link is established on the port. Solid Yellow - A valid link at 10/100Mbps is established on the port. Solid Green – A valid link at 1000Mbps is established on the port. Act LED: (on the right side) Off –No link is established on the port. Blinking green – Activity, transmitting or receiving packet at this port.	At rear

7.1.1. PSU LED

Feature	Detailed Description	Comment
PSU LED	Solid green – Good AC input. Solid red – NO AC input.	At rear

7.1.1. FAN LED

Feature	Detailed Description	Comment
FAN Status LED	Green – FAN operating normally. Red – FAN failed.	At rear

7.1.1.1. SFP28 25G, 10G LED
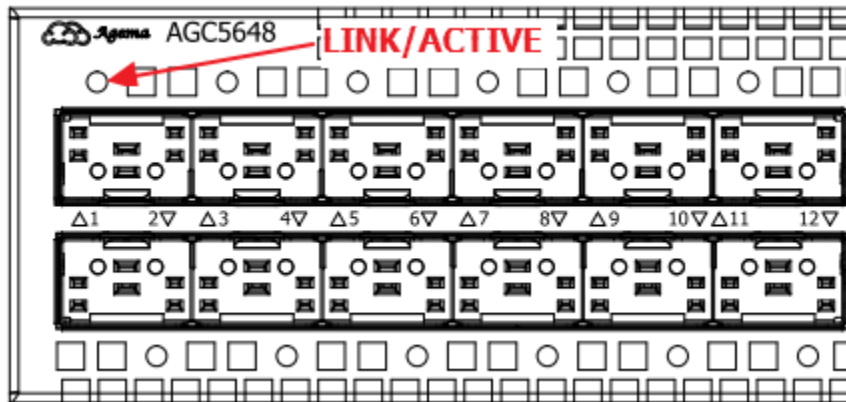
Speed	LED
25G operation	Green
10G operation	Amber

7.1.1.2. QSFP28 100G, 40G, 50G, 25G, 10G LED
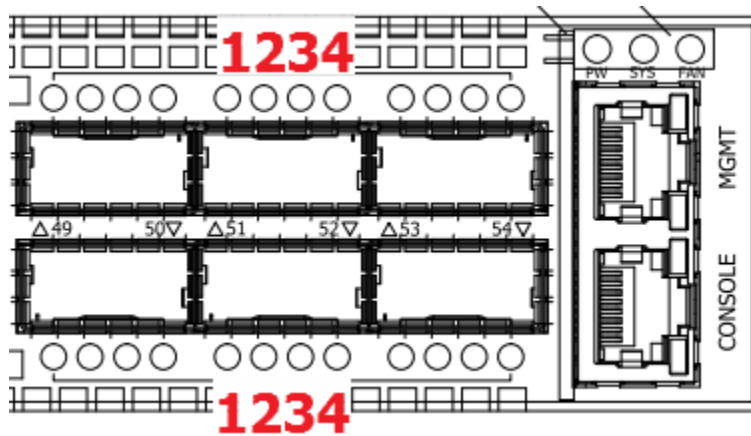
Speed	LED 1	LED 2	LED 3	LED 4
100G operation	Green	Off	Off	Off
40G operation	Amber	Off	Off	Off
50G operation	White	Off	White	Off
25G operation	Blue	Blue	Blue	Blue
10G operation	Purple	Purple	Purple	Purple

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