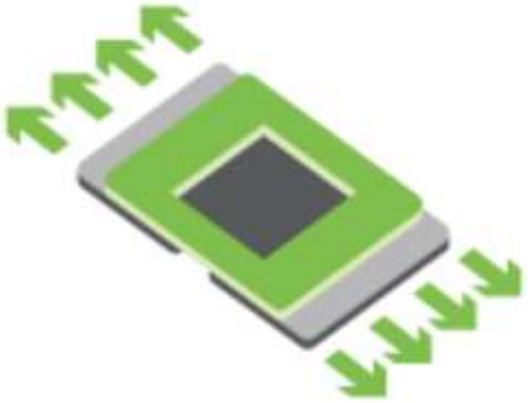


OCP OAI Group Monthly Call

07102019

Agenda

- JDA Group updates
- OAM Spec v1.0 release candidate review
- OAM Reference System Design proposals update
- UBB Status Update
- UBB/Reference system Schedule
- Next Steps

JDA Group Update

- Group members
- UBB Spec lockdown meeting in Beijing

UBB Spec Lock Down Meeting in Beijing

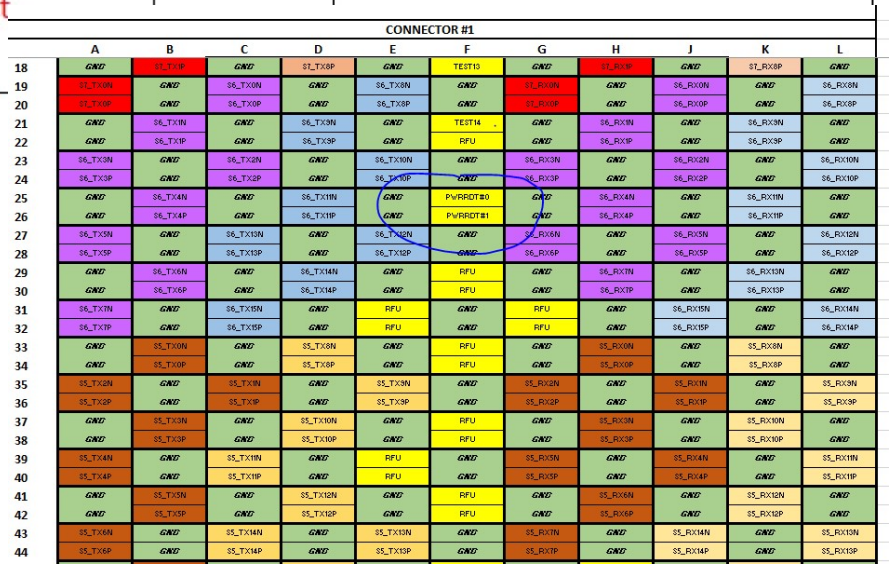
6/26-6/27/2019

OAM Spec v1.0 Candidate Ready to Release

- Pin list
- Pin Map
- OAM specification

Add PWRRDT#[1:0] on Conn1

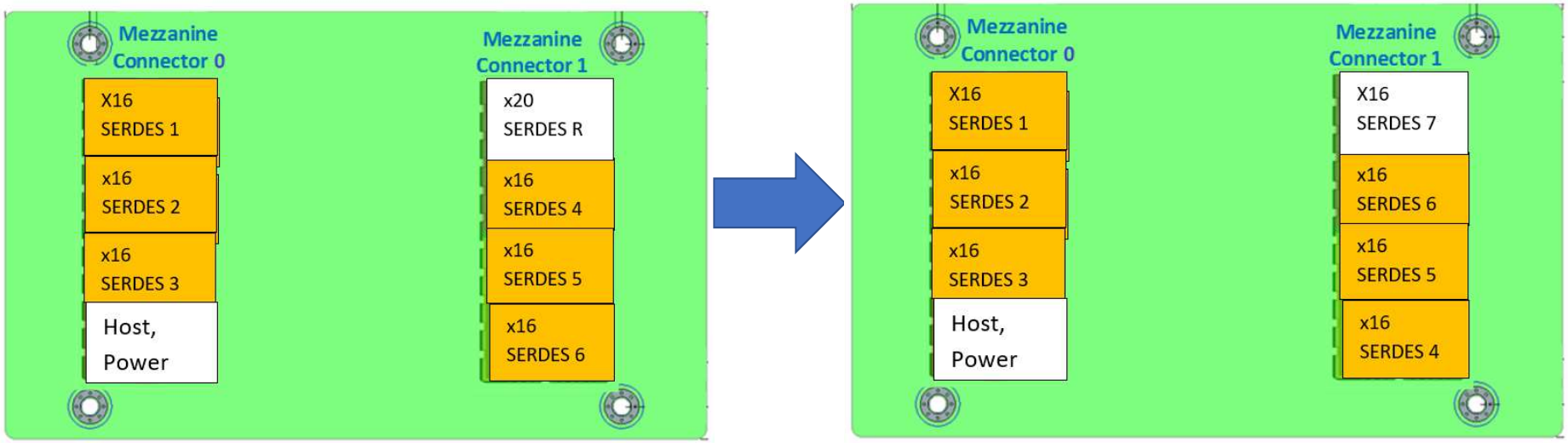
PWRRDT#[1:0]	Input	Power Reduction GPIO to instruct Oam to go certain stage to reduce power 11 - default state L0, normal power 10 - L1, 1st level power reduction. 01 - L2, 2nd level power reduction. 00 - L3, max power reduction. Details defined by specific OAM product specification.	3.3V	Required



CONNECTOR #1

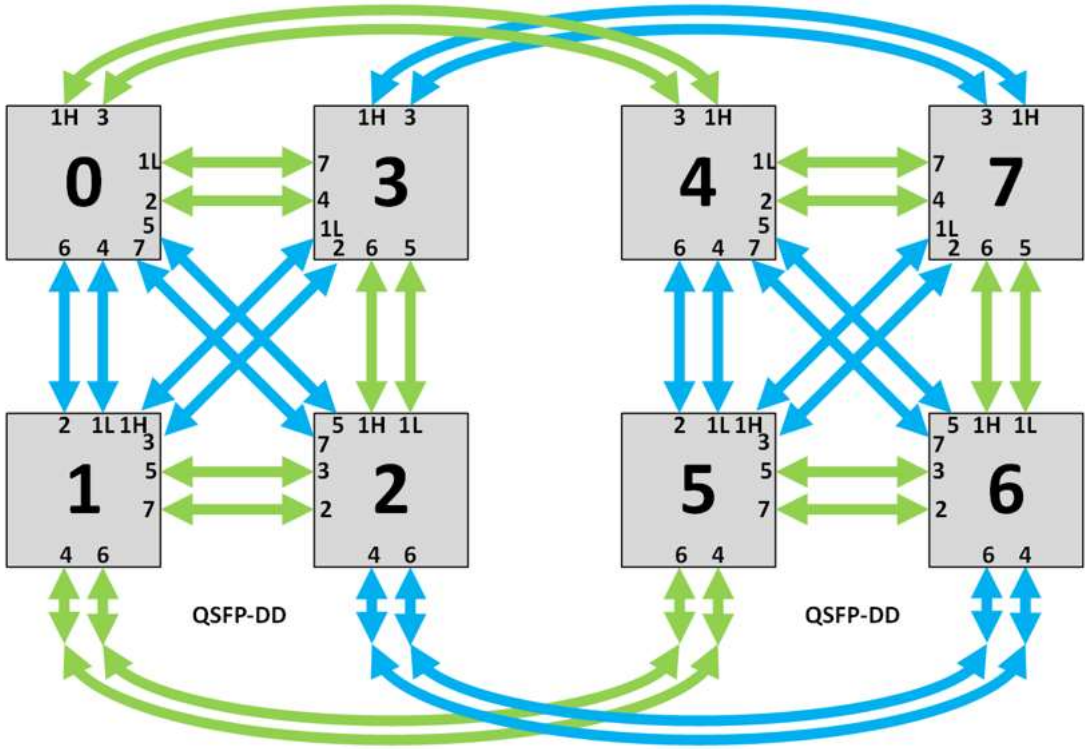
	A	B	C	D	E	F	G	H	J	K	L
18	GND	S1_TX1P	GND	S7_TX0P	GND	TEST13	GND	S1_RX1P	GND	S7_RX0P	GND
19	S1_TX0N	GND	S6_TX0N	GND	S6_TX8N	GND	S1_RX0N	GND	S6_RX0N	GND	S6_RX8N
20	S1_TX0P	GND	S6_TX0P	GND	S6_TX8P	GND	S1_RX0P	GND	S6_RX0P	GND	S6_RX8P
21	GND	S6_TX1N	GND	S6_TX9N	GND	TEST14	GND	S6_RX1N	GND	S6_RX9N	GND
22	GND	S6_TX1P	GND	S6_TX9P	GND	RFU	GND	S6_RX1P	GND	S6_RX9P	GND
23	S6_TX3N	GND	S6_TX2N	GND	S6_TX10N	GND	S6_RX3N	GND	S6_RX2N	GND	S6_RX10N
24	S6_TX3P	GND	S6_TX2P	GND	S6_TX10P	GND	S6_RX3P	GND	S6_RX2P	GND	S6_RX10P
25	GND	S6_TX4N	GND	S6_TX11N	GND	PWRRDT#0	GND	S6_RX4N	GND	S6_RX11N	GND
26	GND	S6_TX4P	GND	S6_TX11P	GND	PWRRDT#1	GND	S6_RX4P	GND	S6_RX11P	GND
27	S6_TX5N	GND	S6_TX13N	GND	S6_TX12N	GND	S6_RX6N	GND	S6_RX5N	GND	S6_RX12N
28	S6_TX5P	GND	S6_TX13P	GND	S6_TX12P	GND	S6_RX6P	GND	S6_RX5P	GND	S6_RX12P
29	GND	S6_TX6N	GND	S6_TX14N	GND	RFU	GND	S6_RX7N	GND	S6_RX13N	GND
30	GND	S6_TX6P	GND	S6_TX14P	GND	RFU	GND	S6_RX7P	GND	S6_RX13P	GND
31	S6_TX7N	GND	S6_TX15N	GND	RFU	GND	RFU	GND	S6_RX15N	GND	S6_RX14N
32	S6_TX7P	GND	S6_TX15P	GND	RFU	GND	RFU	GND	S6_RX15P	GND	S6_RX14P
33	GND	S5_TX0N	GND	S5_TX8N	GND	RFU	GND	S5_RX0N	GND	S5_RX8N	GND
34	GND	S5_TX0P	GND	S5_TX8P	GND	RFU	GND	S5_RX0P	GND	S5_RX8P	GND
35	S5_TX2N	GND	S5_TX1N	GND	S5_TX9N	GND	S5_RX2N	GND	S5_RX1N	GND	S5_RX9N
36	S5_TX2P	GND	S5_TX1P	GND	S5_TX9P	GND	S5_RX2P	GND	S5_RX1P	GND	S5_RX9P
37	GND	S5_TX3N	GND	S5_TX10N	GND	RFU	GND	S5_RX3N	GND	S5_RX10N	GND
38	GND	S5_TX3P	GND	S5_TX10P	GND	RFU	GND	S5_RX3P	GND	S5_RX10P	GND
39	S5_TX4N	GND	S5_TX11N	GND	RFU	GND	S5_RX5N	GND	S5_RX4N	GND	S5_RX11N
40	S5_TX4P	GND	S5_TX11P	GND	RFU	GND	S5_RX5P	GND	S5_RX4P	GND	S5_RX11P
41	GND	S5_TX5N	GND	S5_TX12N	GND	RFU	GND	S5_RX6N	GND	S5_RX12N	GND
42	GND	S5_TX5P	GND	S5_TX12P	GND	RFU	GND	S5_RX6P	GND	S5_RX12P	GND
43	S5_TX6N	GND	S5_TX14N	GND	S5_TX13N	GND	S5_RX7N	GND	S5_RX14N	GND	S5_RX13N
44	S5_TX6P	GND	S5_TX14P	GND	S5_TX13P	GND	S5_RX7P	GND	S5_RX14P	GND	S5_RX13P

Change SerDes Numbering



Change SerDesR X20 to SerDes7 X16

Add 8-link HCM Topology to spec



Other Changes

- Restrict OAM Vref range to 1.5V-3.3V
- Add baseboard design recommendation information to pin list

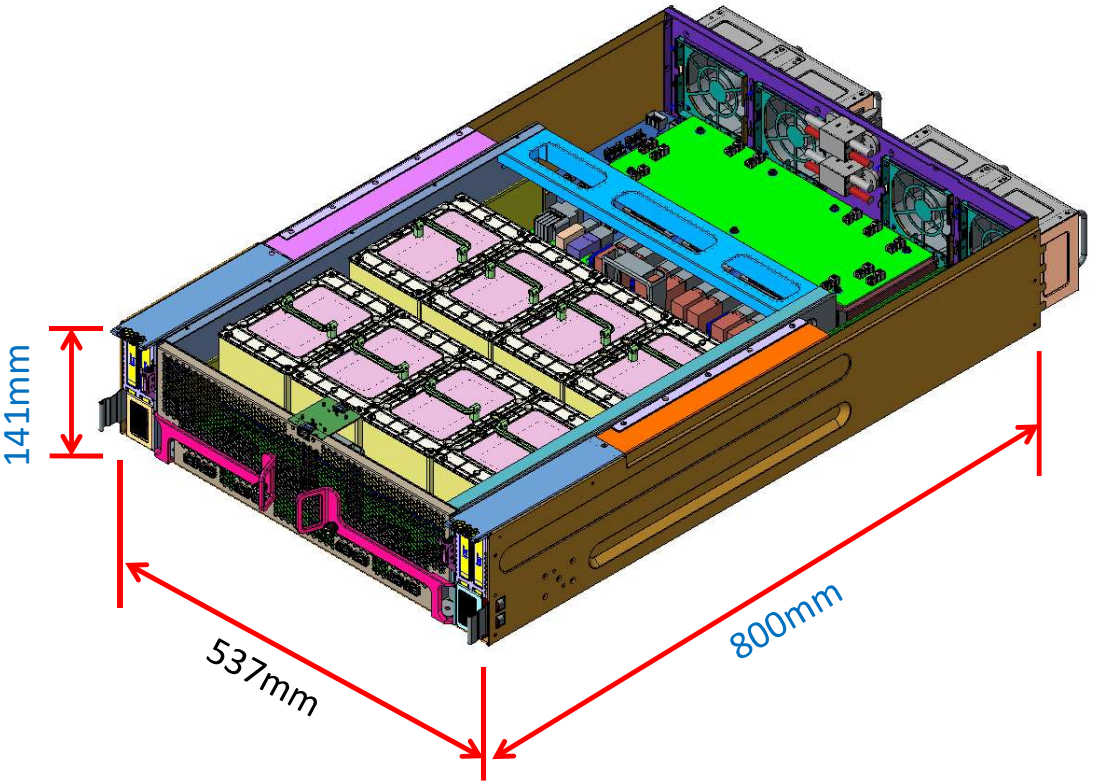
OCP Signal name	Mezz Module Direction POV	OCP Signal Description	Voltage	OAM Baseboard implemention Recommendation
MODULE_ID[4:0]	Input	Module node identifier (e.g. Module #0, #1,...#n). Module has weak PU to drive to 1 by default.		Required. Tied to GND through 1K resistor on baseboard for logic 0, leave open for logic 1
LINK_CONFIG[4:0]	Input	Mezz Module Host Interface/SerDes Link Configuration and topology. See link config table for details. Module has weak PU to Vref to drive high by default.		Required. Tied to GND through 1K resistor on baseboard for logic 0, leave open for logic 1

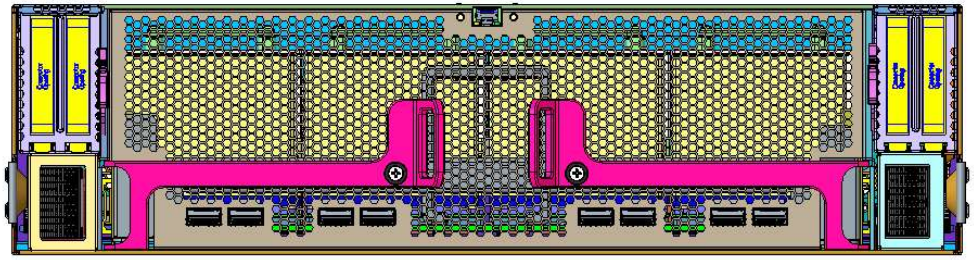
OAM Reference Systems Design Variety

- Different topologies: FC/HCM
- 19’’/21’’ Rack
- Coplanar system vs. Stack System or Others
- Air Cool vs. Liquid Cool
- 12V vs. 54V
- Others

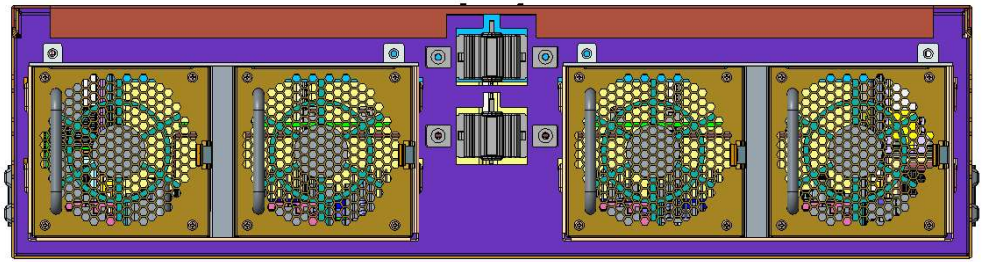
Reference Systems Design Proposal 1

21’’ Rack, air cool, front I/O, 4*AICs





Front View

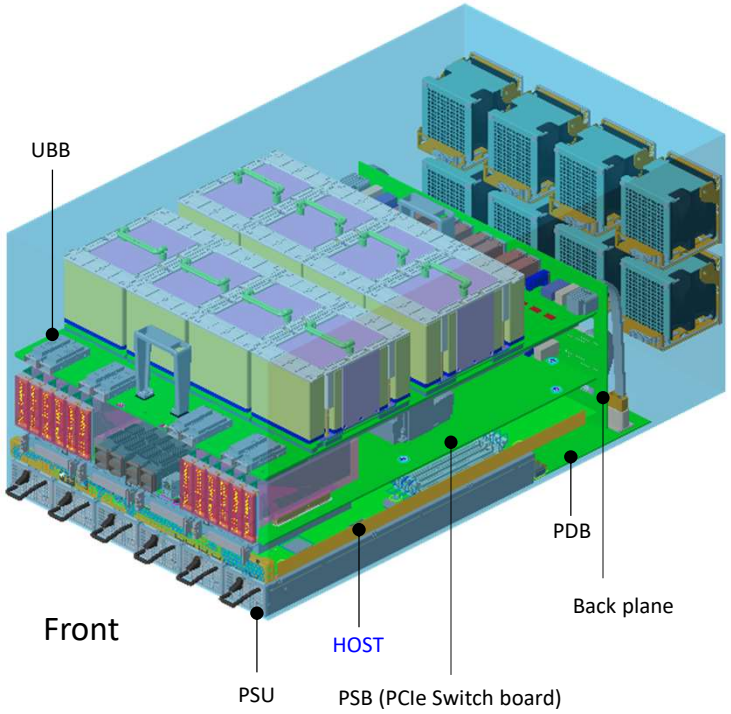


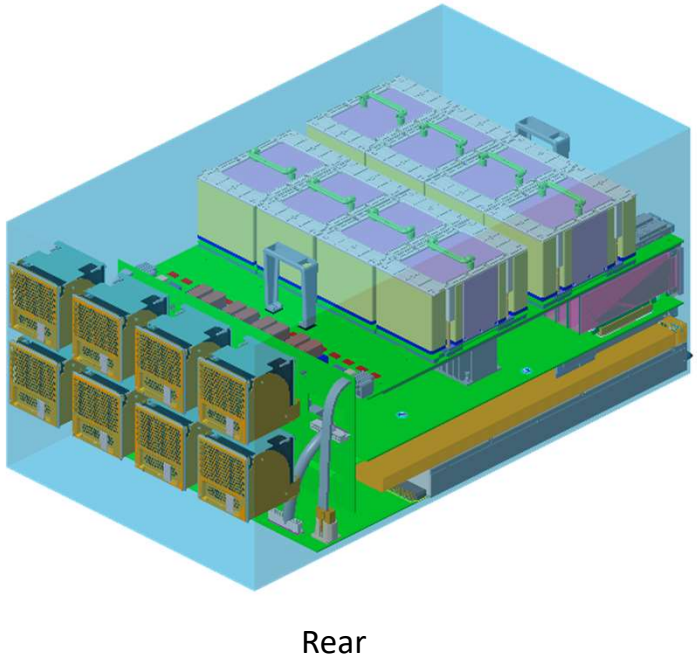
Rear View

- ✓ Update dimension to height 141mm and depth 800mm
- ✓ Hinge in UBB box is under design, will do mating force simulation.

Reference Systems Design Proposal 2

19’’ Rack, aircool/liquid cool, front I/O, up to 12*AICs, flexible host

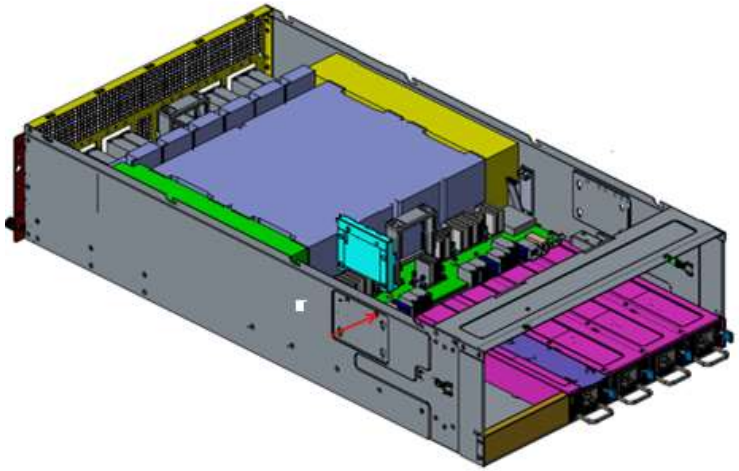


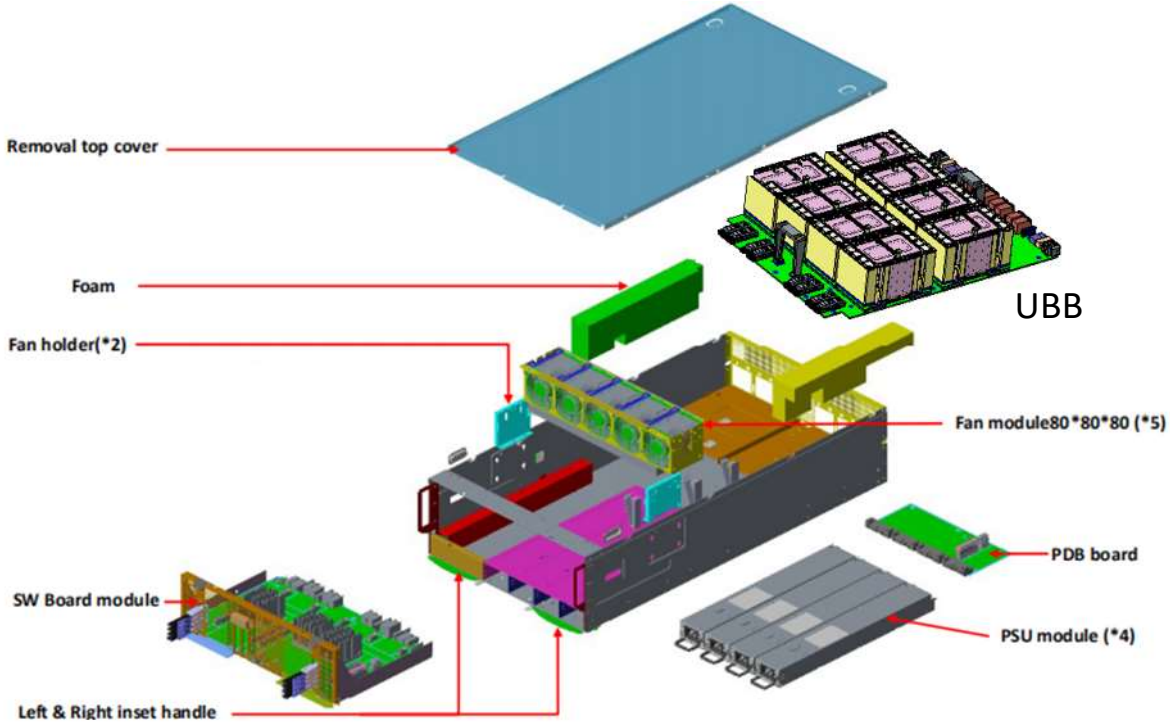


- Backplane connection between UBB and PSB
- Total 8RU. If using busbar, and host is in separated system, system will be 6RU

Reference Systems Design Proposal 3

19’’ Rack, air cool/liquid cool, front/rear I/O, 4/8 AICs, flexible host

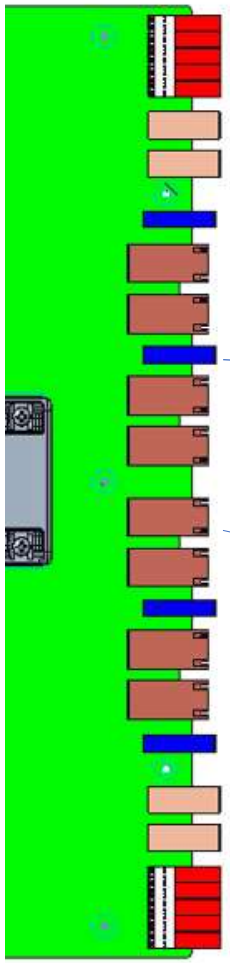




- Under evaluation
- Total 5RU

UBB Status Update

- Connectors/Pin list
- UBB Dimension
- PCB material and stack up
- 12V/54V PI on going



Amphenol

12V 3x10 150A/conn *2pcs(PN:C-JX412-50432)

54V 2x2 36A/conn, *4pcs(PN10061289-001LF)

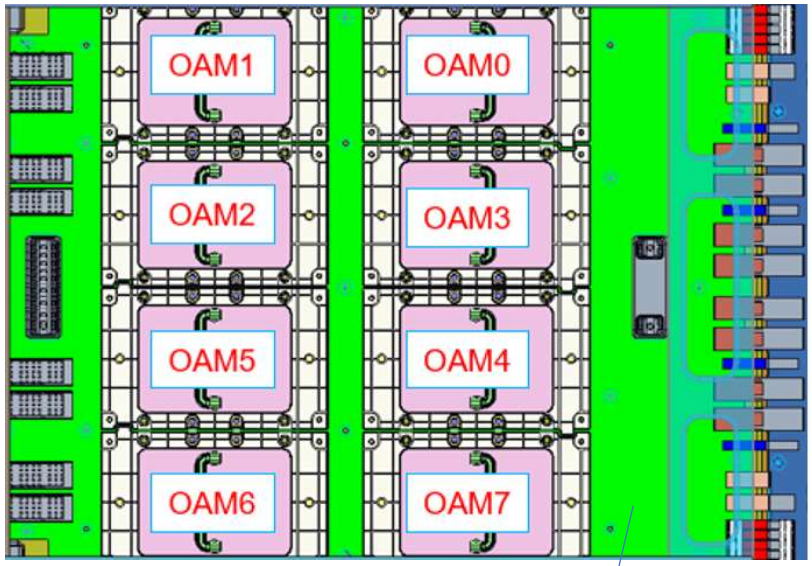
Guide pin 4pcs

ExaMax 6x8 *8pcs (PN:10131762-101LF)
1st version of pin list available

Connector List

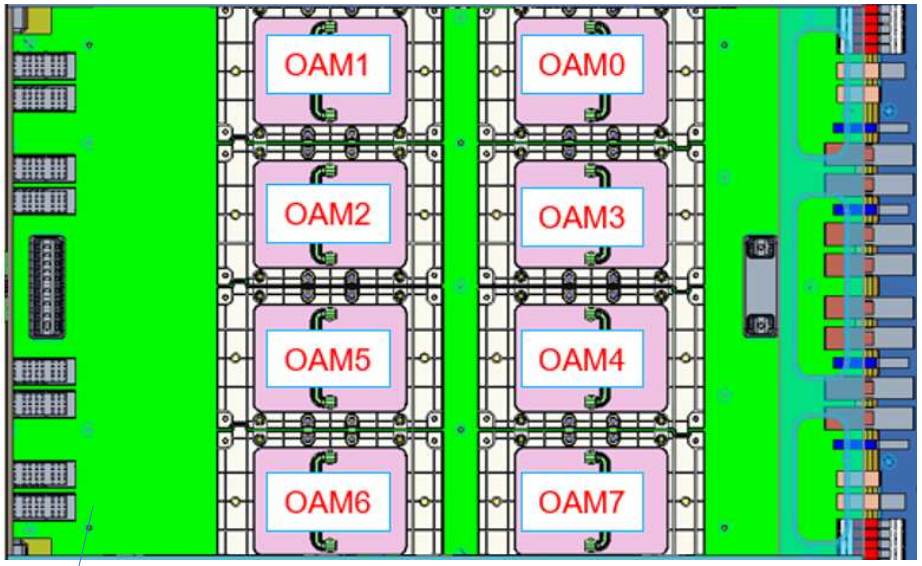
UBB Dimension

Size : L x W=553x417mm



Reserve space for Host interface retimer

Size : L x W=**585**x417mm(?)



Reserve space for scale out interconnect retimer X8*8pcs

PCB Material Study & Stackup

Material	EM891K (HVLP)	TU883SP (HVLP)	IT968 (HVLP)	IT968SE (HVLP)
Impedance	90 ohm			
Width/Spacing	4.8/6.2			
loss/inch @8GHz (< -0.58 dB)	Yes	Yes	Yes	Yes
loss/inch @16GHz (< -0.96dB)	Yes	Yes	Yes	Yes
Halogen Free	NO	YES	NO	NO
Halogen Free Substitution	EM890K	NA	IT988G	IT988SE

Summary :

- ❑ Board thickness target 128.4 mil , 3.26 mm 22L
- ❑ Keep Core and Prepreq (= 4.0 / 5.0 mil) design for better SI performance

Stackup_Referenc
e

UBB/Reference system Schedule

- UBB/system design on going
- System bringup beginning of Oct
- Reference Systems demo in OCP Amsterdam OCP summit

Still Under Discussion

- 54V based to support ~500w OAM TDP, how much we could support for 12V
- Scale out retimer selection
- Host interface retimer

Next Steps

- OAM test vehicle enablement
  - Provide reference systems to OAM suppliers for validation
  - Provide OAM samples to system providers for validation
- Lockdown UBB design spec