LCLSII-HE PRL Rack Wiring ---Bo Hong 11-20-2023

RFOF RX 2.6GHz&1.3GHz Chassis 2x
From Sector 2 RFoF
Ethernet cable
IOC
Frequency Counter 2Ux½ width 90W
Rb Standard 8.5"x3.5"x13" 150W 2x
Instrumentation Network
S7 ATCA Network Switch L2KG07-16/49
Private network 2x Single Mode strands Fiber
RFOF 2.6GHz
RFOF Cleanup VCO Down-Mix ATCA Crate
VCO 2.6GHz
-33dB
-31dB
162.5MHz Mon
162.5MHz In
162.5MHz-1300MHz MO-LO Gen 20W 17x
1.3GHz Out
1.3GHz Out
MO to L3 PLL, -24dBm
MO to L4 PLL, -24dBm
LPF
Cleanup VCO
1.3GHz x2
Power Supply
MO-LO Gen Power Supply Chassis 2x
L3 Return PA Out Mon. -24dBm
L4 Return PA Out Mon. -24dBm
L4 Return PA Out Mon. 9dBm
L3 Return PA Out Mon. 7dBm
Private network 2x Single Mode strands Fiber
Private network 2x Single Mode strands Fiber
Private network 2x Single Mode strands Fiber
Ethernet cable
Ethernet cable
PA Fwd & Refl Det. Reset
Beckhoff for 1x 40W PA (DinRail) 4x
ATT Ctrl.
L3 PLL Down Mix 4x
L3 PLL Ctrl. 3x
L4 Ret Att SN03 -4dB
L3 Ret Att SN05 -4dB
~8dBm
L4 VCO Ctrl. 3x
162.5MHz VCO 2x
-4dB Att 3x
L4 PLL Ctrl. 3x
L4 PLL Down Mix 4x
LO Dri Att 3x SN10 -4dB
34dBm
Local PA Mon 4x
L3 Active-End Chassis behind a SIM Crate
Remote PA In
Remote PA Cpl To Att From Local Return PA
46dBm
~8dBm
Remote PA Cpl To Att 4x
From Local (Return) PA
Remote PA In
L4 Active-End Chassis behind a SIM Crate
Local PA Mon
46dBm
34dBm
Ethernet cable
Ethernet cable
From L4 End
ATT Ctrl.
4x Beckhoff for LO 30W PA & 2x 80W PAs (DinRail)
PA Fwd & Refl Det. Reset
PA Fwd & Refl Det. Reset
To 1.32GHz PA Att
From L3 End
162.5MHz In J9 4dBm J10 9dBm
162.5MHz-1300MHz MO-LO Gen 20W, 2U 3x
MO-LO Gen Power Supply Chassis 2U 2x
To L4 VCO PA In
DB9 L4 VCO PA 1.3GHz 80W 400W Load In Out 3x
water
46dBm
34dBm
Power Strip (PDU)
L4 VCO PA Out
L2KG??-??, last LO Coupler of L4 Total loss: ?dB->10dB
-1dBm
LO Amp and 3-way Splitter 2U 50W
To LLRF Chassis
-12dB L4
Will not take a chassis space. Can hang inside the rack -20dB 2x
~27dBm
To LO Dist. 7/8" Heliax (need stress release to prevent the damage of the PA output connector.
-3dB
-3dBm
PA Mon Out 1.32GHz 30W LO PA for L4, 200W load DB9 In 3x
water
PA Mon DB9 L3 Return PA 1.3GHz 50W, 400W load Out In 3x
In L2KG02-24
water
PA Mon DB9 L4 Return PA 1.3GHz 50W, 400W load Out In 3x
In L2KG02-24
water
Power Strip (PDU)
PRL L4 Rack L2KG10-23 near PEN1004
L2KG07-16 & L2KG07-49 near PEN0706

IOC
FODUs
LinuxRT CPU
S2 ATCA Network Switch L2KG04-20
CA?
Private network 2x Single Mode strands in a 6x strand bundle of Fiber
VCO Status Report
S2 ATCA Network Switch L2KG02-24
Instrumentation Network
Private network Fiber
This is not from L2KG04-20 switch?
existing
4x L2 162.5MHz to 1.3GHz Gen
2x L2 MO-LO Gen PS Chassis 2U
L2 VCO Ctrl. 2x
162.5MHz VCO 2x
L3 Att 3x
L2 Att 3x
4x L3 162.5MHz to 1.3GHz Gen
2x L3 MO-LO Gen PS Chassis 2U
L3 VCO Ctrl. 2x
162.5MHz VCO 2x
L3 LO Att 3x
Ethernet cable
ATT Ctrl.
4x Beckhoff for LO 30W PA & 2x 80W PAs (DinRail)
PA Fwd & Refl Det. Reset
PA Fwd & Refl Det. Reset
Ethernet cable
Will not take a chassis space. Can hang inside the rack -20dB 2x
22-24dBm
From end of L2 LO
To L3 LO Line
PA Mon DB9 L3 LO 30W PA 200W Load 3U Out In 3x
water
PA Mon DB9 L2 VCO PA 80W 400W Load 3U Out In 3x
water
PA Mon DB9 L3 VCO PA 80W 400W Load 3U Out In 3x
water
46dBm
34dBm
46dBm
7/8" Heliax
Total loss:7dB->10dB
-1dBm
1.32GHz LO Amp & Dist. Chassis
To LLRF Chassis
-1dBm
1.32GHz LO Amp & Dist. Chassis
To LLRF Chassis
10x Dual-drcpl
4-Way Splitter
4-Way Splitter
L3
Total loss = -12dB
L2
PRL L2 & L3 Rack L2KG04-20 near PEN0404
Power Strip (PDU)