



**serial**  
C A B L E S

# User Manual

PCI5-ENC24G-U2-1x4  
Gen5 PCIe/NVMe JBOF (1x4)

PCI5-ENC24G-U2-2x2  
Gen5 PCIe/NVMe JBOF (1x4)

REV / 0.8

2024  
Sep

# Gen5 JBOF

## Board to Board Design



# CHANGE HISTORY

REV	Date of Release	Description
0.8	Sep 2024	Initial Release

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The background is a solid dark blue color. It features several white wireframe elements: two spheres, one in the upper left and one in the lower left, and a large, curved, grid-like structure that sweeps across the right side of the page. The overall aesthetic is clean, modern, and technical.

**01**

# **Introduction**

# 1.1 Overview

---

## Description

P5-2425-S/ P5-2425-D is a high density U.2 JBOF board to board design that include two switch ( PEX89088 ) controller boards , chassis , two CRPS power supplies , two ball bearings high CFM fans and 24 full heigh disk trays.

## Features

### All Support Remote Power On/Off Funtion

P5-2425-S x4 mode advance features for each drive

- a. power on / off control
- b. Dual\_EN# control
- c. porta , portb reset control

P5-2425-D 2x2x mode advance features for each drive

- a. power on / off control
- b. disk reset control

## 1.2 Specification

---

Form Factor	EIA-310D 2U form factor
SSD I/F	SFF8639 U.2 form-factor, support single port and dual ports NVMe drives
PCIe Switch Board	Broadcom PEX89088
Power Supply	Two 800W 80 PLUS Titanium power supply
Dimension	2U 19" 19" 480mm (W) x 3.5" 88mm (H) x 14.2" 360mm (D)
System cooling	Two 80mm (W) x 80mm (H) x38mm (D) FANs
LEDs indication	SSD Activity (Blue), Present (White) and Fault (Red) LEDs per slot PSU Fault (Red) LEDs Controller Heart Beat Green LED System healthy (Red/Green) LED Upstream Port Indicate ( Blue ) LED Upstream Port Link not Matching ( Red ) LED

Rear I/O per switch board	Five QSFP-DD connectors Two USB Type C port for terminal RJ45 Ethernet 10/100 port, Blue button for power on/off/Mute function
System Alarm	Buzzer beeping for critical events (FANs, PSUs, over voltages and temperatures)
I/O Capability	Upstream bandwidth : One Upstream Port Connect : PCIe Gen5 x 16, 512 GT/s Two Upstream Ports Connect : PCIe Gen5 x 16 x2 1024GT/s maximum Four Upstream Ports Connect : PCIe Gen5 x 16 x4 2048GT/s
Downstream port	24 bays SSDs with PCIe Gen5 1x4 or 2x2
Serviceability	Hot-Swappable SSDs,Switch Controller, PSUs

**Environment conditions Operating Temperature :** 5C to 35C

**Storage Temperature :** -10C to 85C

**Operating Humidity :** 10% to 90% relative humidity non-condensing

**Storage Humidity :** 5% to 95% relative humidity non-condensing

Enclosure management CLI running in USB or Ethernet port





**02**

# **Hardware Description**

## 2.1 Components Description

---

### Front Panel :



- ✘ different color of lights meaning
- White LED : Power on and drive present
- Blue LED : Drive access
- Red LED : link abnormal(Not Gen5 x2 /Gen5 x4)

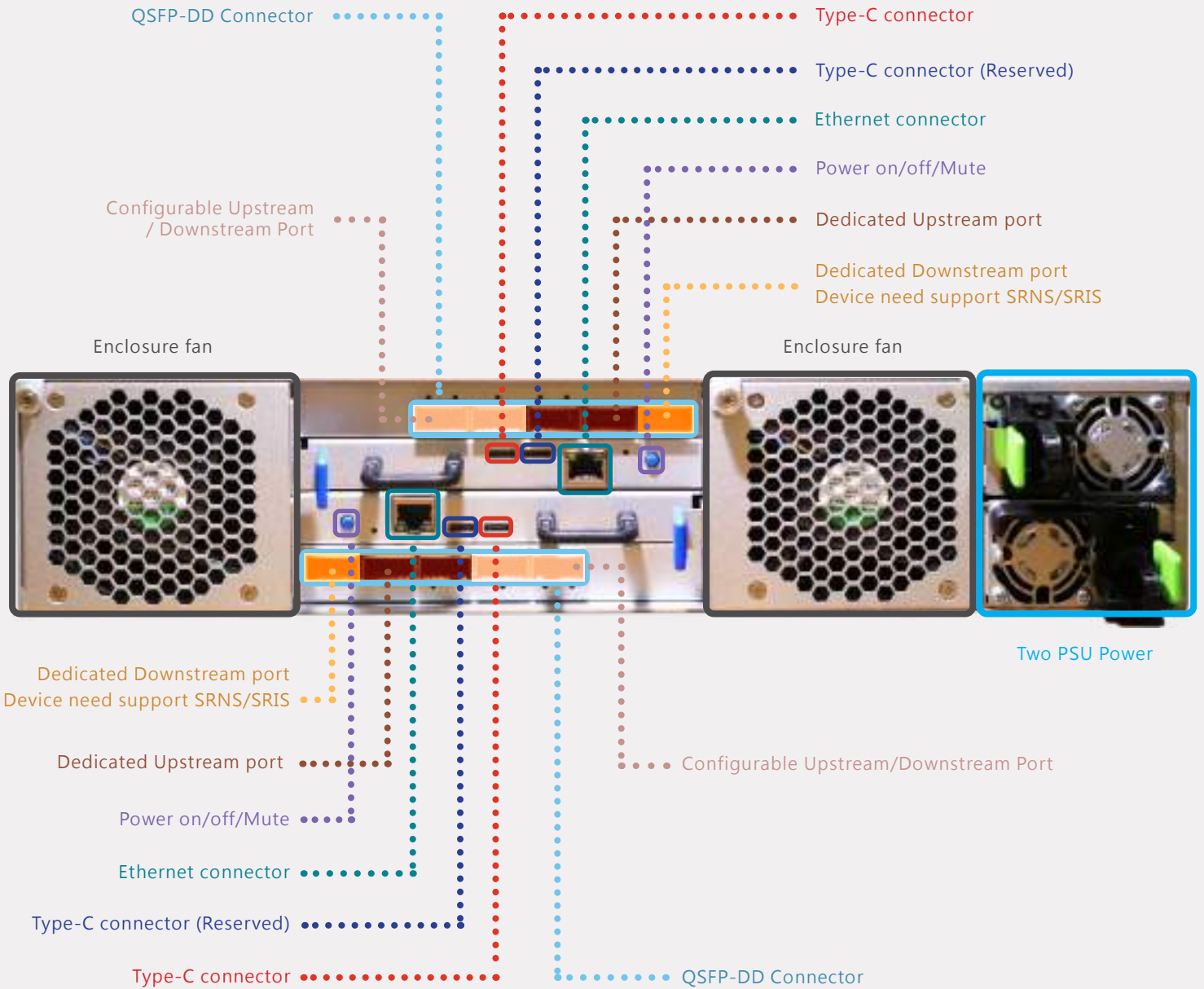


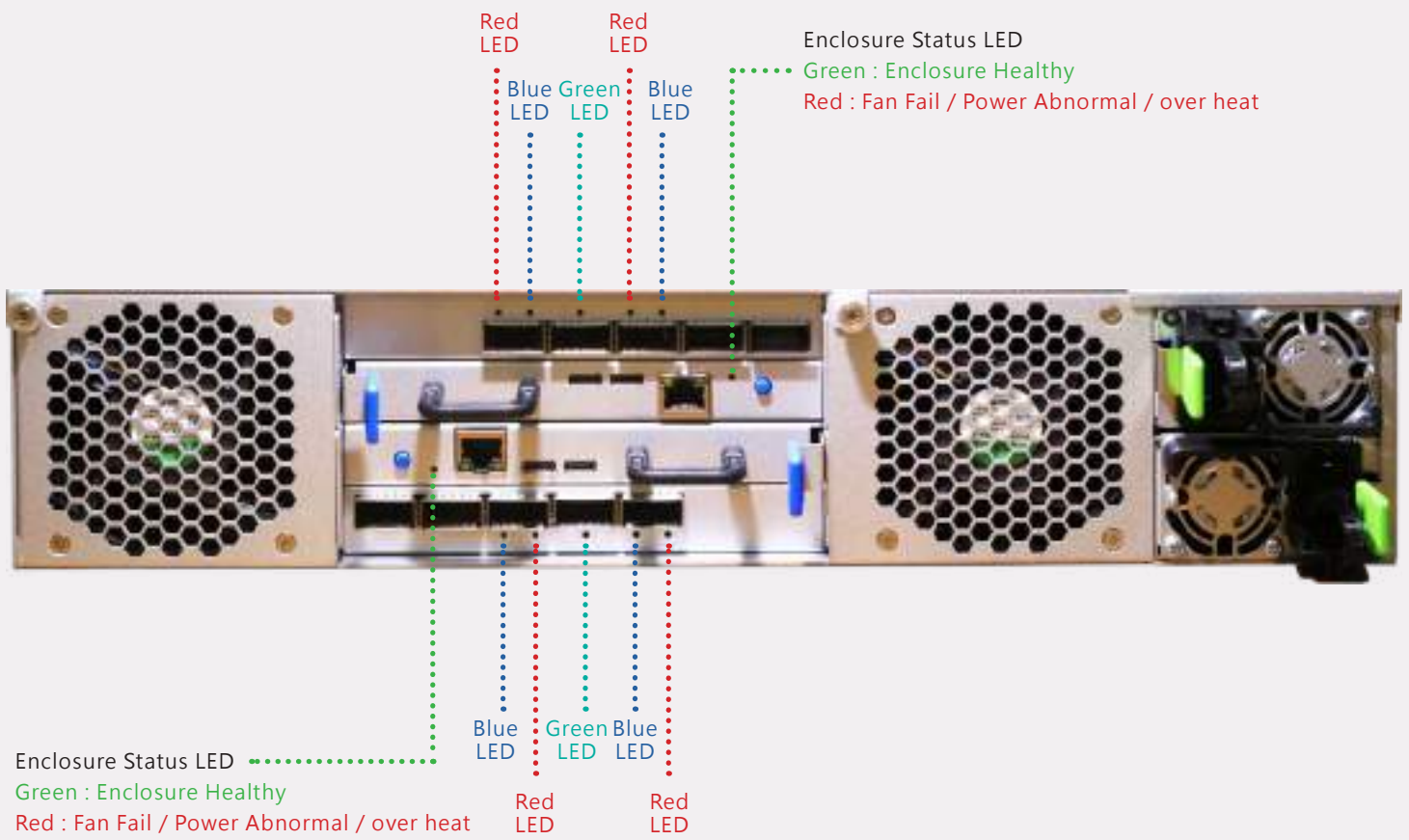
Left Side LED Blink indicate  
Left side fan abnormal



Right Side LED Blink indicate  
Right side fan abnormal

# Rear Panel :





Blue LED : Upstream port  
 Green LED : Switch heart beat  
 Red LED : Link abnormal(Not Gen5 x16)

The background is a solid dark blue color. It features several white wireframe graphics: two spheres in the upper left and lower left, and a large, curved, grid-like structure that spans across the middle and right side of the page, resembling a stylized letter 'C' or a curved architectural element.

**03**

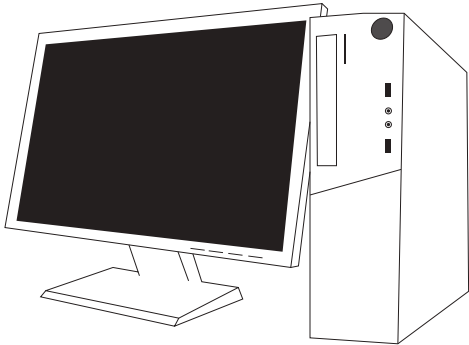
# **Installation guidelines**

# 3.1 SSD Installation Guide

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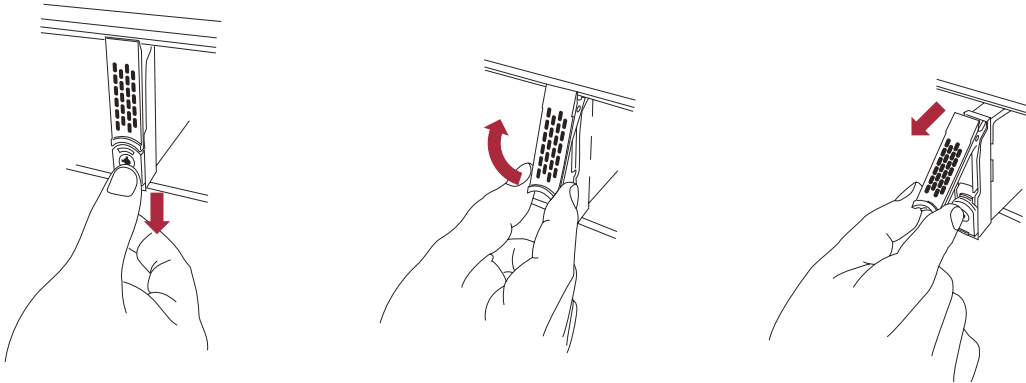
## STEP 01

Remove the 24 bay JBOF enclosure from its packaging, and place the enclosure next to computer, server, or workstation.



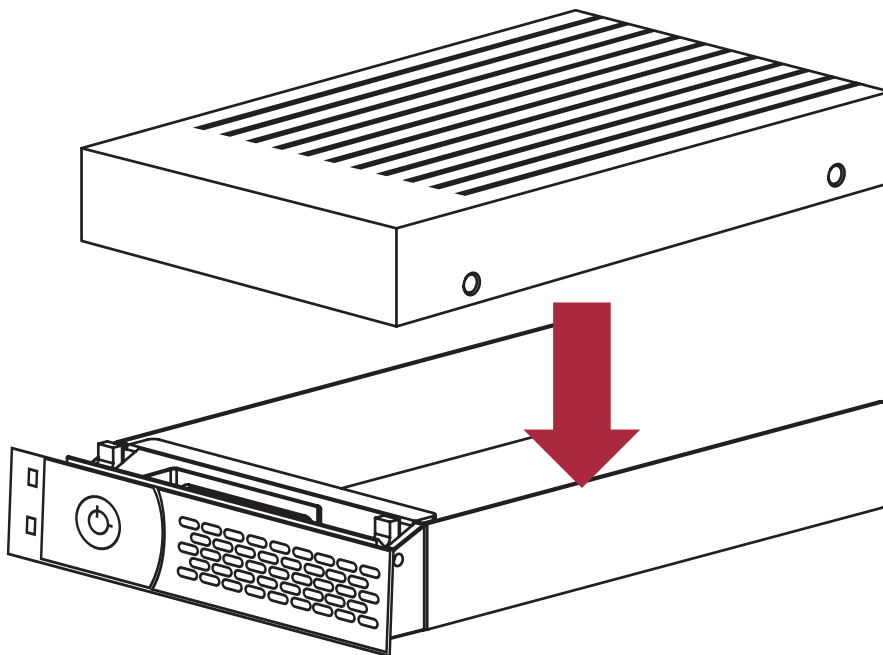
## STEP 02

Hold one of the U.2 drive trays from the enclosure and push its button downward for the release of the lever until the lever pops out.



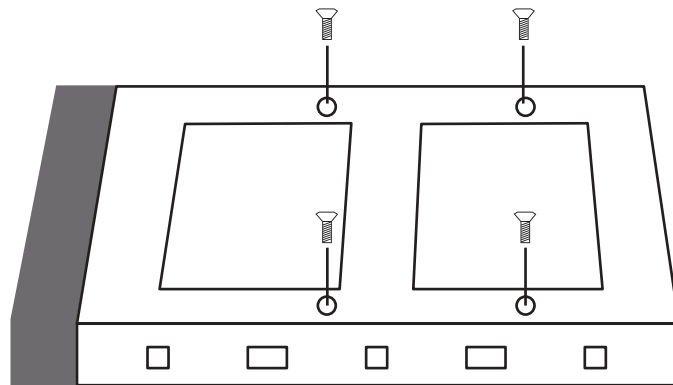
## STEP 03

Place a U.2 drive tray on a flat and level surface, and then attach the 2.5" U.2 NVMe SSD into the tray.



## STEP 04

Adopt four of the screws provided, and fasten the U.2 NVMe SSD on the tray. Tighten each screw to fasten the U.2 NVMe SSD snugly to the drive tray. Do not tighten the screws overly.



※ You must verify the heads of the four screws are level with the U.2 drive tray while the 2.5" U.2 NVMe SSD is attached to the tray; otherwise, a screw may take hold of the tray from the bottom side and prevent you to pull the tray out of the enclosure.



## STEP 05

Insert the U.2 drive module into the NS388P enclosure correctly until its lever appears to shut, and then press the lever to close until it clicks to ensure that the U.2 drive module is within the enclosure.



※ Do not force the levers to close while you insert U.2 drive modules into the enclosure. If a lever does not close smoothly, draw out and insert the U.2 drive module again, and then press the lever to close.

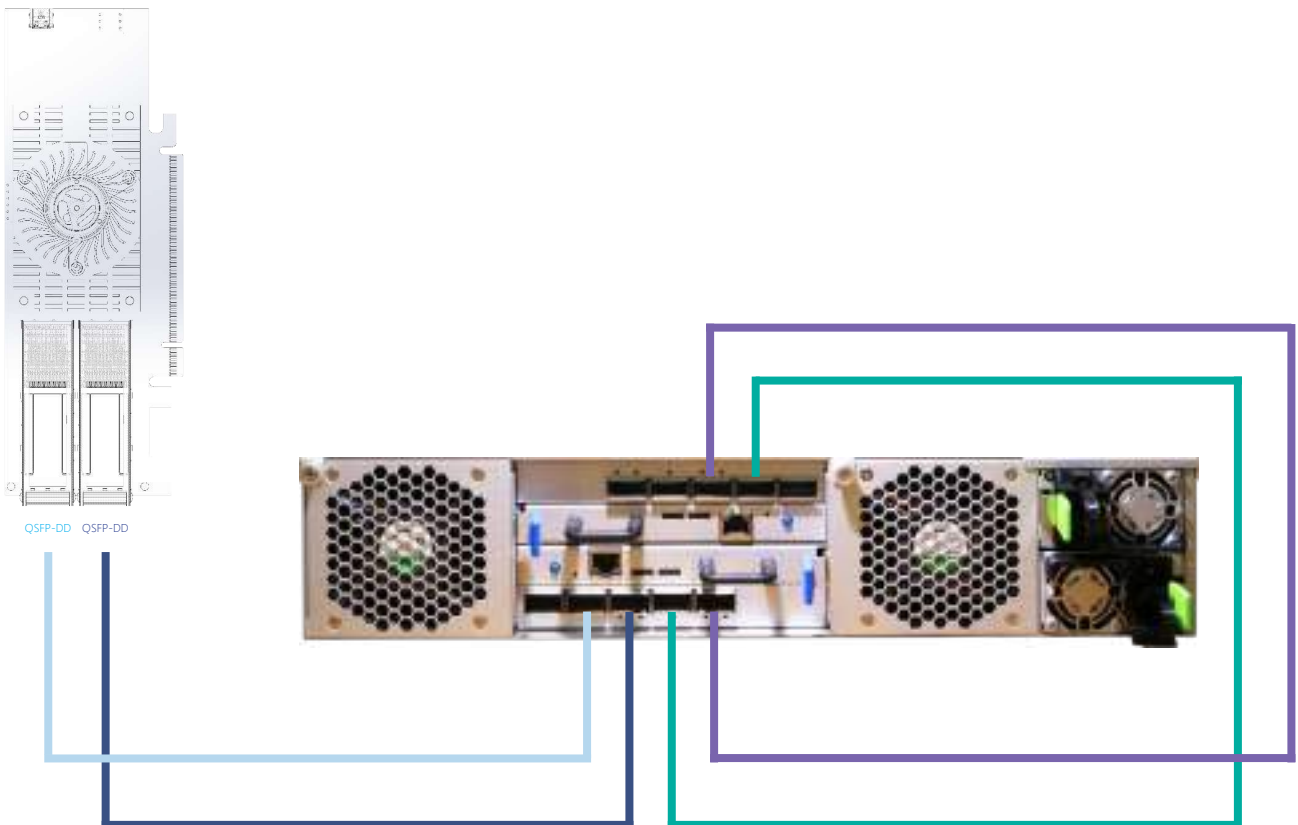
## 3.2 JBOF Connection Guide

### 3.2.1 P5-2425-S --- x4 mode

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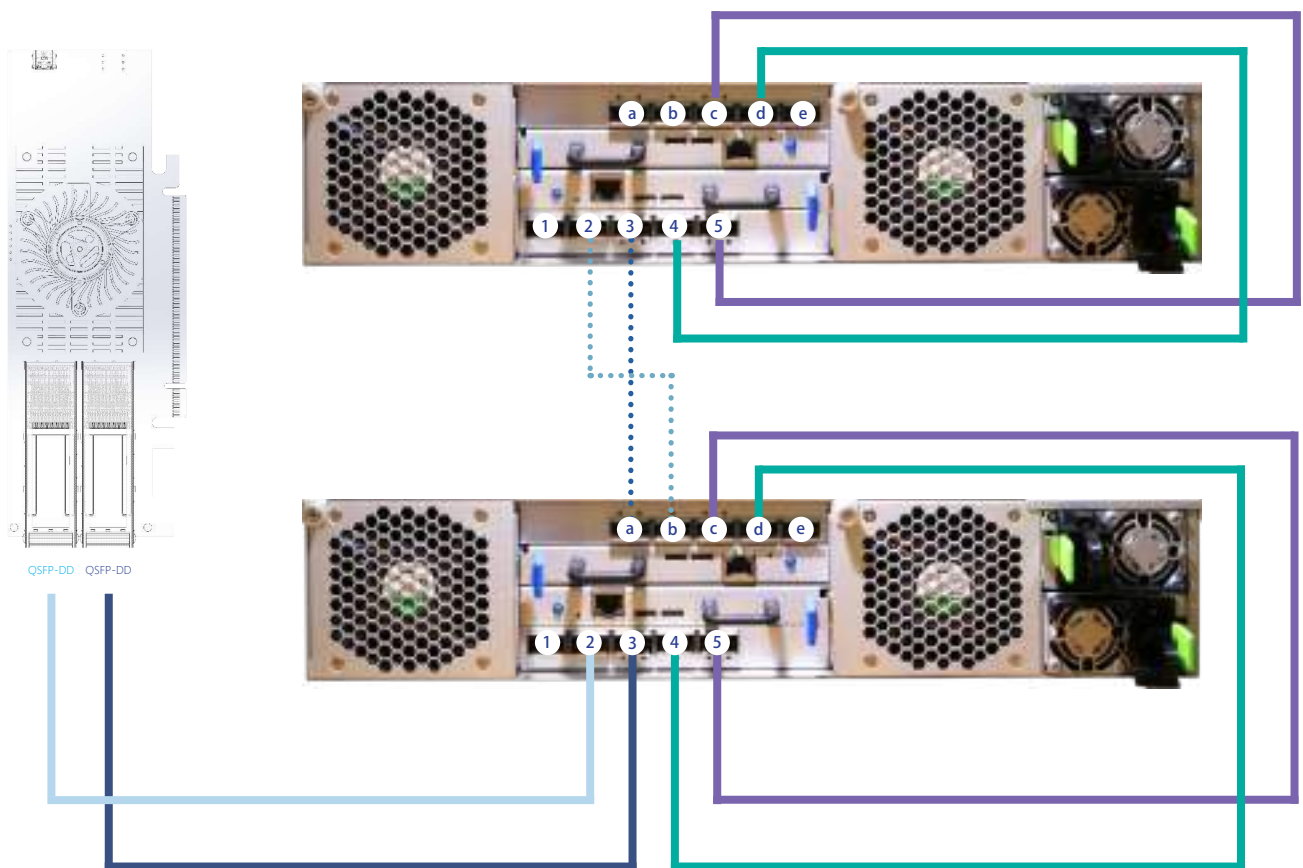
#### Condition 1 : One host card connect to one JBOF

Connect QSFP-DD with QDD cable to the corresponding position on 24 bay JBOF. The way of connection for using one card marked by color show as below :



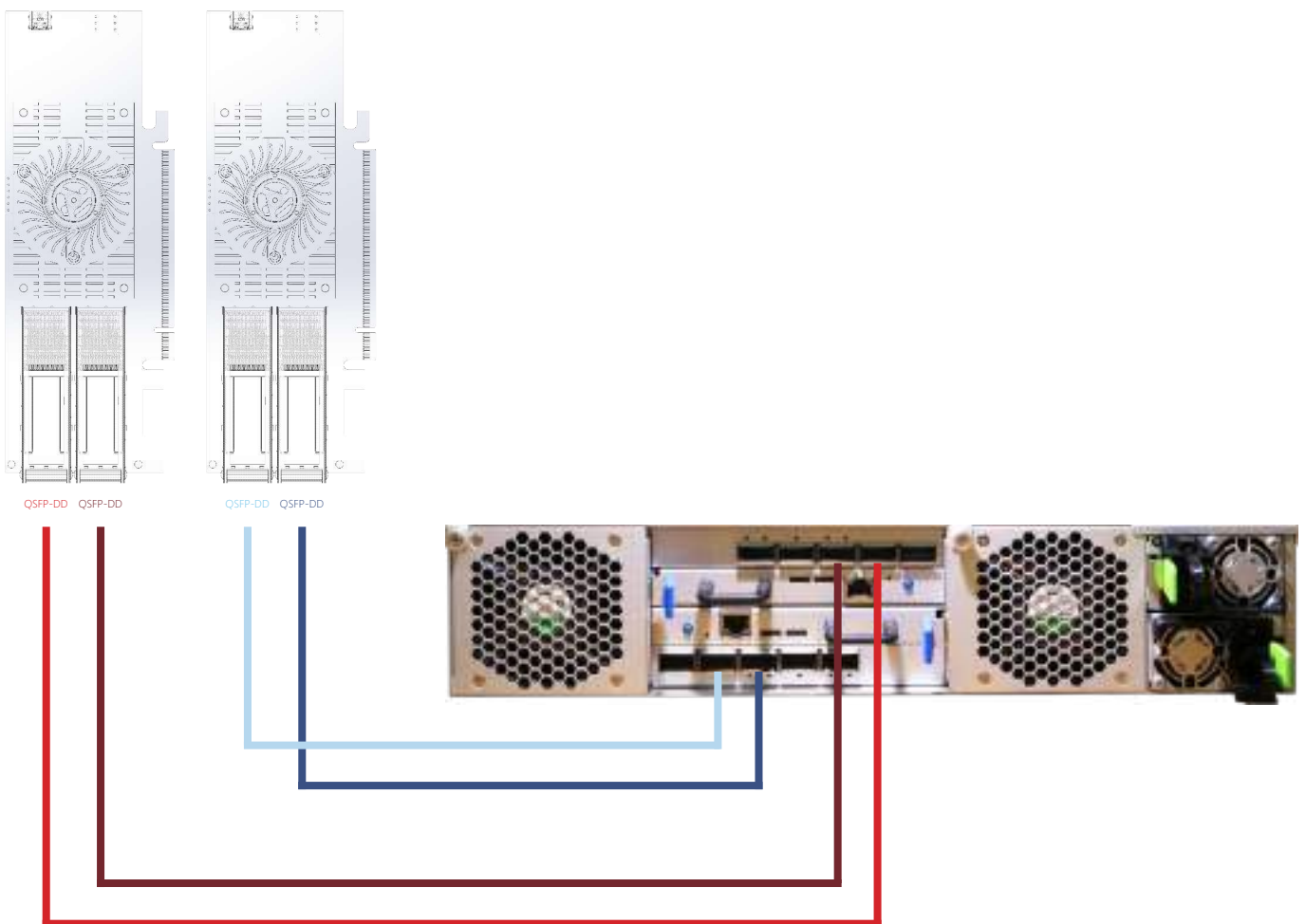
## Condition 2 : One host card connect to two JBOFs

Connect QSFP-DD with QDD cable to the corresponding position on 24 bay JBOF. The way of connection for using one card marked by color show as below :



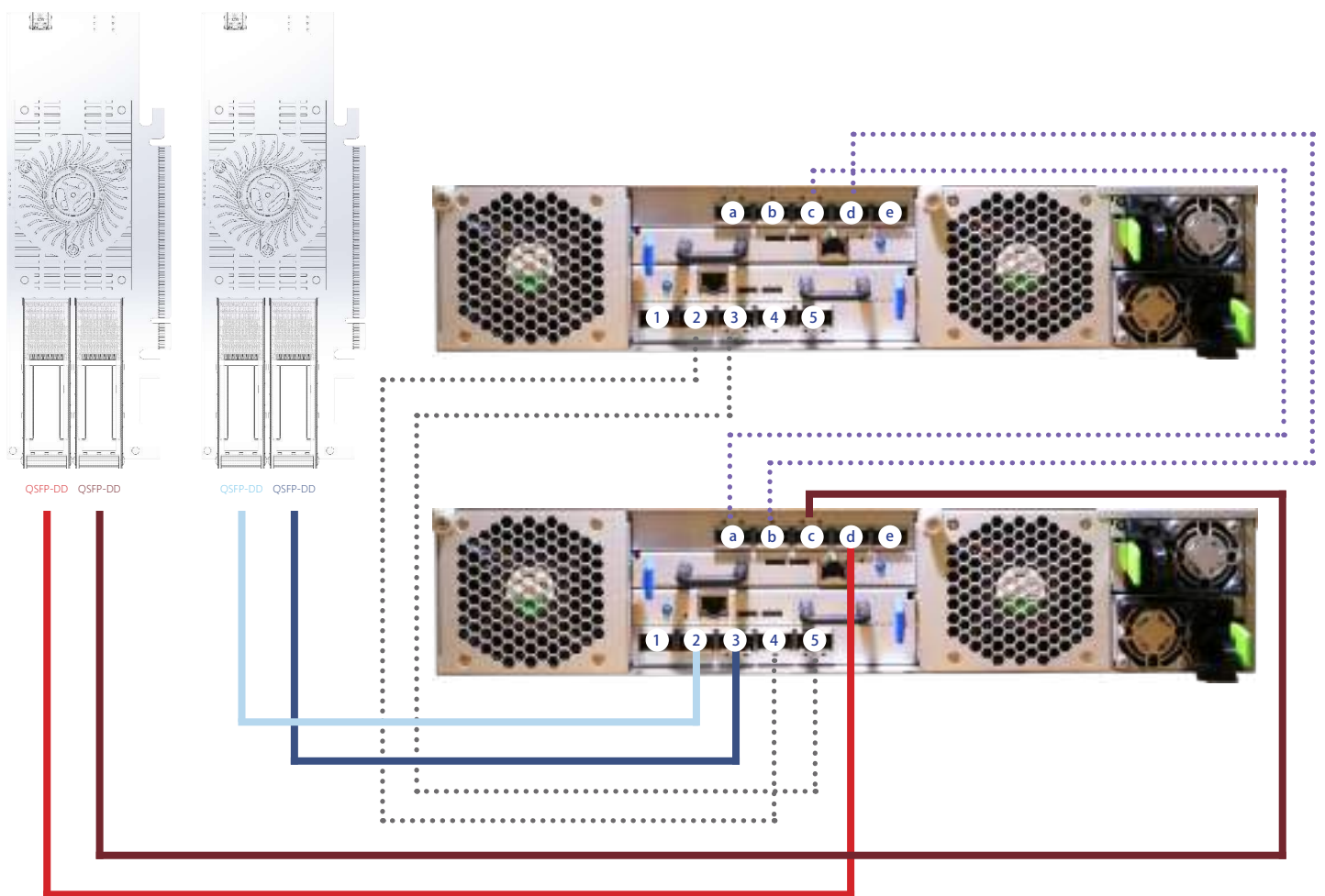
### Condition 3 : Two host cards connect to one JBOF

Connect QSFP-DD with QDD cable to the corresponding position on 24 bay JBOF. The way of connection for using two card marked by color show as below :



### Condition 4 : Two host cards connect to two JBOFs

Connect QSFP-DD with QDD cable to the corresponding position on 24 bay JBOF. The way of connection for using one card marked by color show as below :

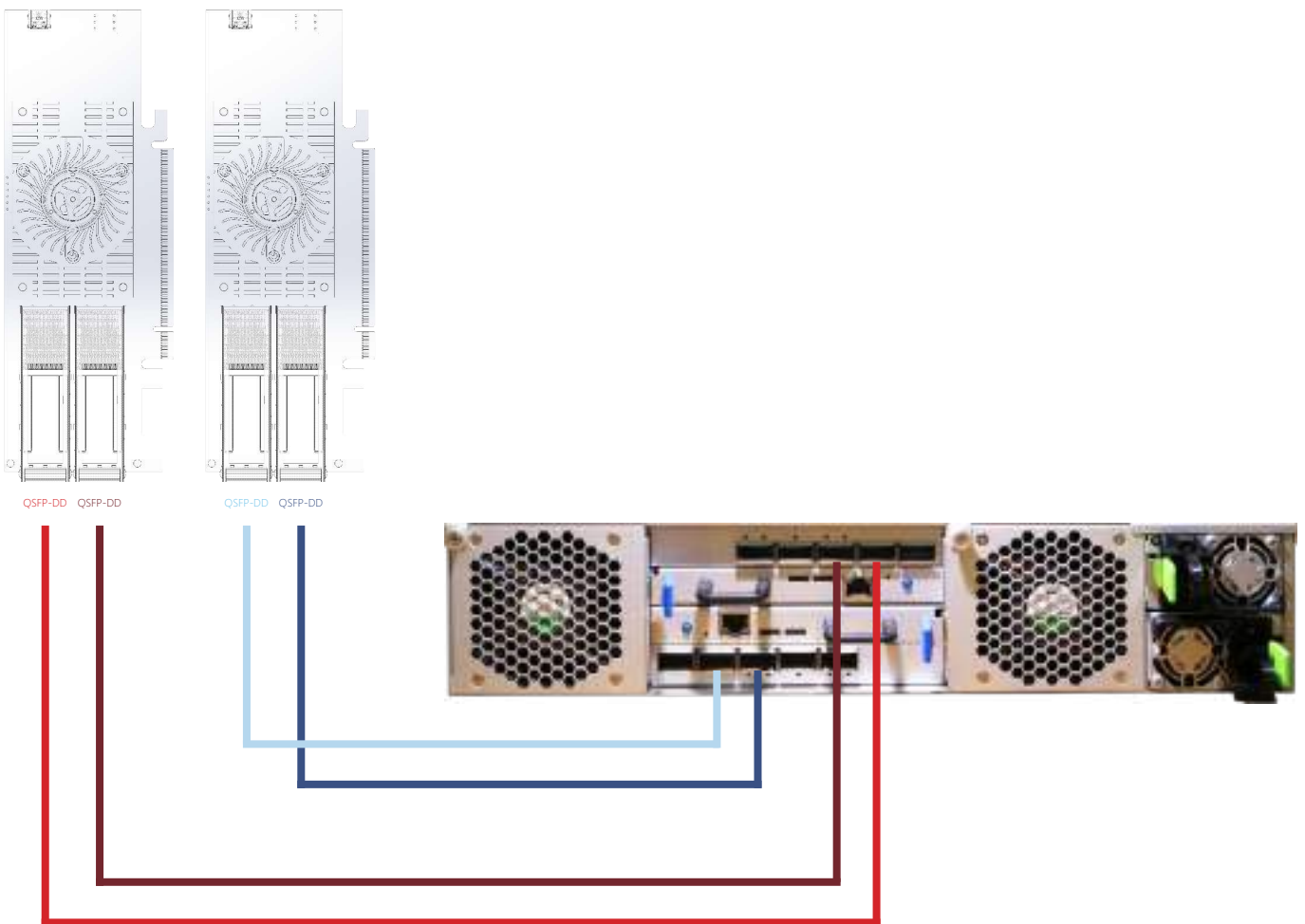


## 3.2.2 P5-2425-D --- 2x2 Mode

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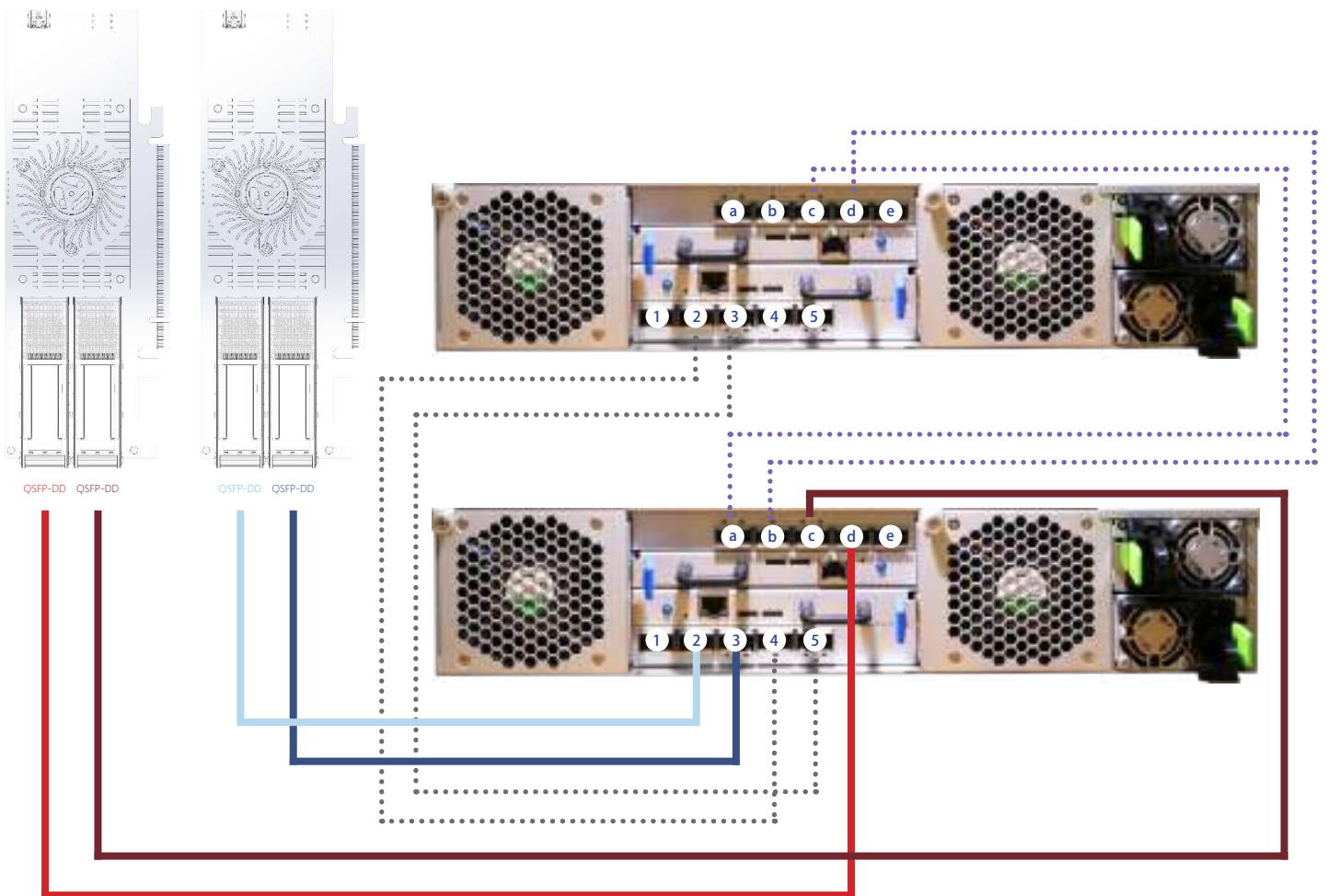
### Condition 1 : Two host cards connect to one JBOF

Connect QSFP-DD with QDD cable to the corresponding position on 24 bay JBOF. The way of connection for using one card marked by color show as below :



## Condition 2 : Two host cards connect to Two JBOFs

Connect QSFP-DD with QDD cable to the corresponding position on 24 bay JBOF. The way of connection for using one card marked by color show as below :



# 3.3 Install USB Driver

Download and install the synergy CDC driver.

✂ No USB driver is required for Windows 10 and Linux

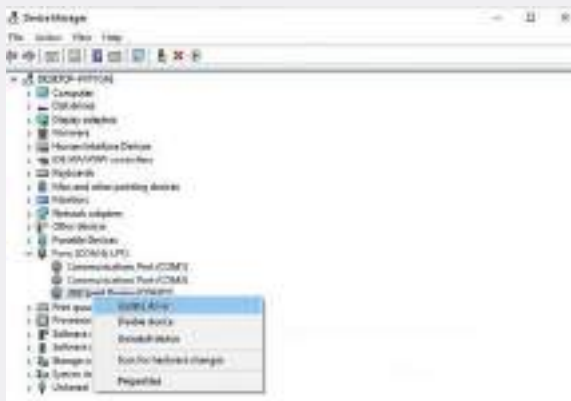
STEP  
01



STEP  
03



STEP  
02

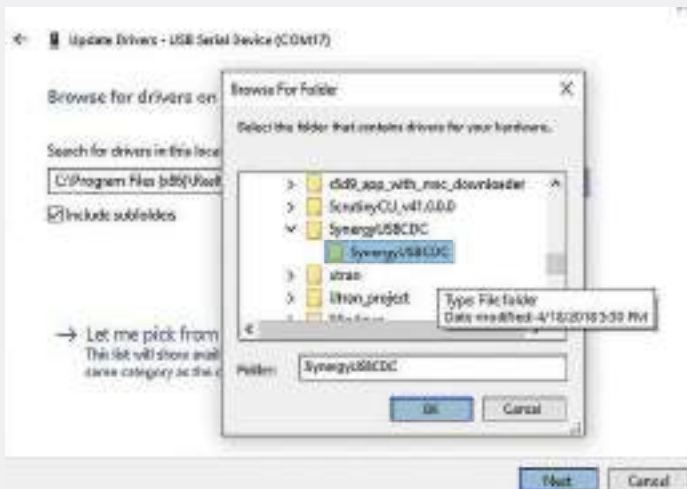


STEP  
04

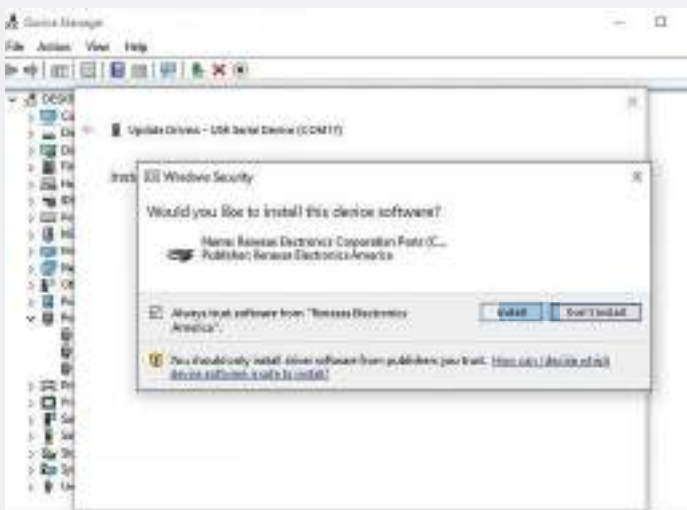




# STEP 05



# STEP 06



# STEP 07



The background is a solid dark blue color. It features several white wireframe graphics: two spheres in the upper left and lower left, and a large, curved, grid-like structure that resembles a tunnel or a large pipe curving from the top center towards the bottom right.

**04**

# **CLI Manager**

## 4.1 Start-up Tera term Screen

---

PCIe switch board uses the USB port as the serial port interface. Please use the USB type A male to Type C male cable to connect PCIe switch board to PC and operation system will detect a new "USB Serial Device" . Please use this serial port to configure the PCIe switch board.

## 4.1.1 For the USB Serial Device

### STEP 01

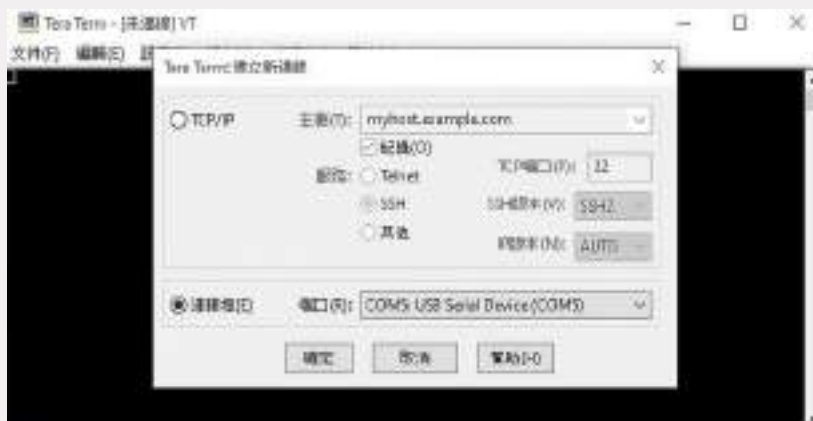
Install and launch Tera Term application.

<https://reurl.cc/qVjg00>



### STEP 02

Open Tera Term and make a new connection, you will see the USB Serial Device(COM).



# STEP 03

To ensure proper communications between PCIe switch board and the Tera Term Terminal emulation, please configure the Tera Term Terminal emulation settings to the values shown below :



For "Port" , select COM3 in this example.

(Depend on which COM port used on Host)

For "Baud rate" , select 9600.

For "Data" , select 8 bit. For "Parity" , select none.

For "Stop" , select 1 bit. For "Flow control" , select: none.

Click OK when you have finished your selections.

# STEP 04

Setup is complete. Please press ENTER , and you will see the cmd> command show as below :



## 4.1.2 For the Telnet Con-nection

### STEP 01

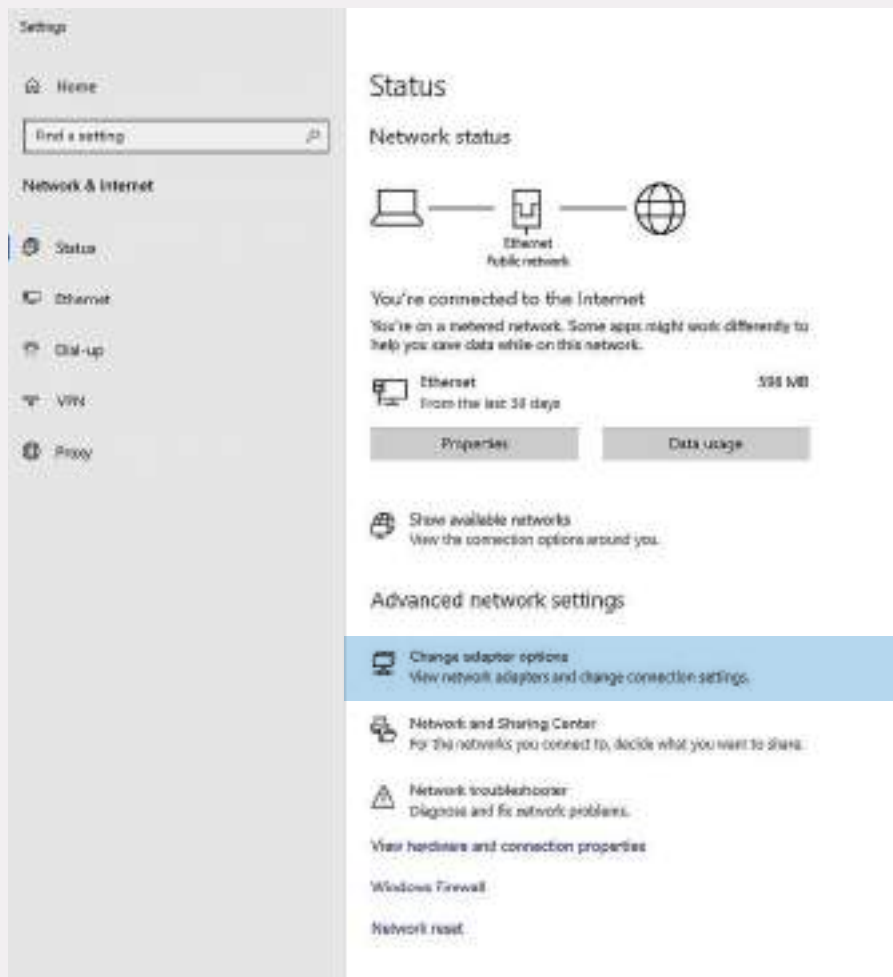
Install and launch Tera Term application

<https://reurl.cc/qVjg00>



# STEP 02

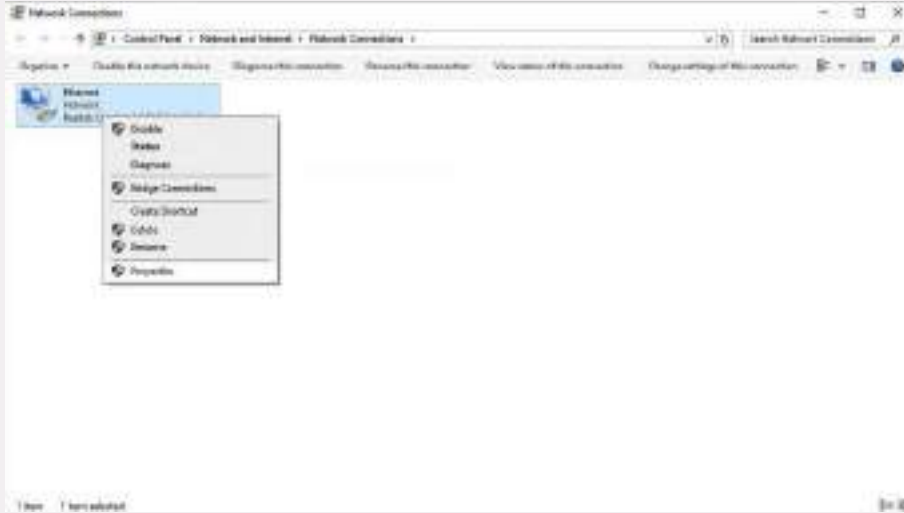
Open windows Ethernet setting and press "Change adapter options". Enter here.





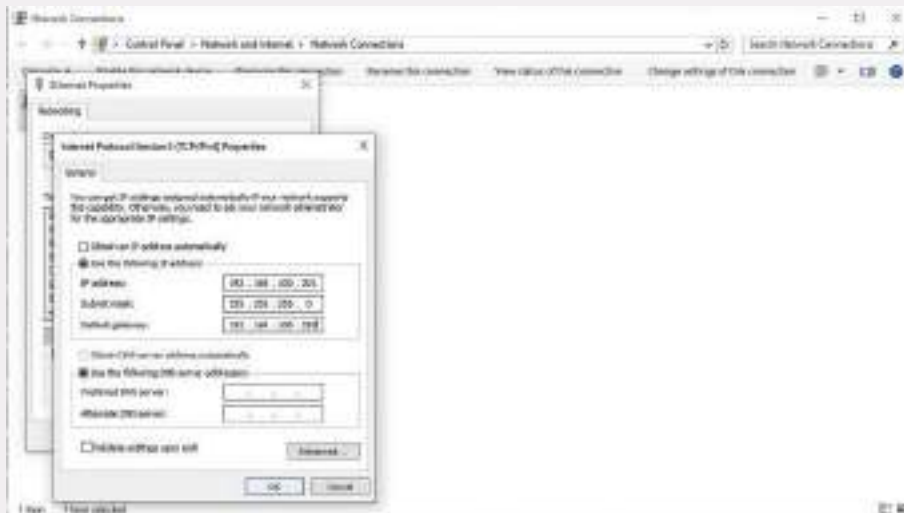
# STEP 03

Please enter the Ethernet properties.



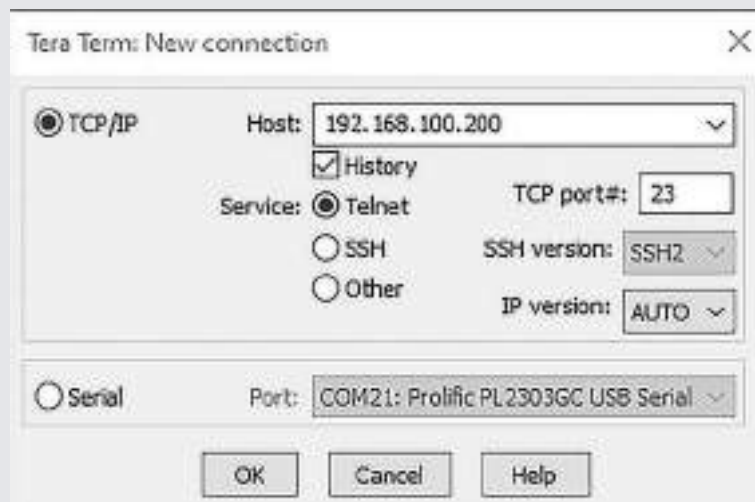
# STEP 04

Setting the IP address like the picture below :



# STEP 05

Type the IP "192.168.100.200" (default) in the host option  
Select "Telnet" in service option, press "OK" to start the telnet con-nection. You will see the cmd command.



## 4.2 CLI Command

---

This section provides detailed information about PCIe switch board' s CLI function. Please type in lower case for all of commands.

Command	Descriptions
<a href="#">?</a>	Show list of commands
<a href="#">syspwr</a>	NVMe JBOF enclosure power ON/OFF control
<a href="#">eth</a>	Ethernet IP configuration
<a href="#">dhcp</a>	Ethernet DHCP function control
<a href="#">setmac</a>	Set Ethernet MAC address
<a href="#">fdl</a>	Update MCU FW
<a href="#">lsd</a>	Show environmental info, including temperatures, FANs, PSUs, voltages
<a href="#">dr</a>	Dump switch-specific registers.
<a href="#">dp</a>	Dump switch port-specific registers.
<a href="#">spwr</a>	Control the power of each U.2 slot.
<a href="#">srst</a>	Reset each U.2 NVMe SSD
<a href="#">pwrdis</a>	slot led control.
<a href="#">showport</a>	Show link status for USP/DSP and slot.
<a href="#">buz</a>	buzzer control.
<a href="#">pwmctrl</a>	JBOF enclosure FANS speed control
<a href="#">ver</a>	Show on-board mcu and PCIe switch F/W information.
<a href="#">sysinfo</a>	Show system information.
<a href="#">reset</a>	Reset switch controller board.

## ? Command

This command provides an on-line table of contents, providing brief descriptions of the supported command groups and built-in commands.

Type "?" to get detail information about the CLI commands summary.

Usage

?

Example `cmd>?`

```

Cmd>?
Cmd Help Menu
syspwr :
  NUMe JBOF enclosure power control.
  - Usage: syspwr [on|off]

eth :
  Set Ethernet IP Configuration.
  - Usage: eth <ipaddr(*)> <subnet(*)> <gateway(*)>

dhcp :
  Enable DHCP.
  - Usage: dhcp <on|off>

mw :
  Write 32-bit data to register.
  - Usage: mw <register(H)> <data(H)>
  - register(H) : register should be 0x00000000 ~ 0xFFFFFFFF
  - data(H) : data should be 0x00000000 ~ 0xFFFFFFFF

setmac :
  Set Ethernet MAC address.
  - Usage: setmac <xx:xx:xx:xx:xx:xx>

fdl :
  %modem download image.
  - Usage: fdl <fw|mcu>
  - fw : update fw into switch.
  - mcu : update on-board mcu fw.

lsd :
  Show environmental conditions information.
  - Usage: lsd

dr :
  Dump switch-specific registers.
  - Usage: dr <register(H)> [count(H)]
  - register(H) : register should be 0x00000000 ~ 0xFFFFFFFF
  - count(H) : count should be 0x00000000 ~ 0xFFFFFFFF

dp :
  Dump switch port-specific registers.
  - Usage: dp <port_number(D)>
  - port_number(D) : port_number should be 0 ~ 31

portpwr :
  Port power control.
  - Usage: portpwr [<portpwr(D)!all> <on|off>]
  - portpwr(D) : portpwr number should be 0 ~ 9

portrst :
  Reset port.
  - Usage: sdrst <port(D)!all>
  - slot(D) : slot number should be 0~9
  - Ex: portrst 4
  - Ex: portrst all

led :
  slot red led blink control.
  - Usage: led [<slot(D)!all> <t!g!b> <on|off>]
  - slot(D) : slot number should be 0 ~ 9
  - Ex : led 1 r on
  - Ex : led 4 t on
  
```

## syspwr Command

Switch board enclosure power control.

This command allows users to remote power ON/OFF the Switch board.

Usage

syspwr on/off

Example `syspwr on`



```
VT COM5 - Tera Term VT
文件(F) 編輯(E) 設定(S) 控制(O) 視窗(W) 幫助(H)
Cmd>syspwr on
Cmd>
```

## eth Command

Ethernet IP configuration

Shows the Ethernet port configuration, etc. MAC address, IP address, link status, gateway, MTU, DHCP.

Usage

eth

Example `cmd>eth`

```
File Edit Setup Control Window KanjiCode Help
Cmd>eth
=====
Physical Address . . . . . : 84-81-D2-8E-22-23
Ethernet Link Status . . . . . : Up
IP Address . . . . . : 192.168.100.200
Subnet Mask . . . . . : 255.255.255.0
Gateway . . . . . : 192.168.100.253
MTU . . . . . : 1500
DHCP . . . . . : OFF
=====
```

## dhcp Command

Ethernet DHCP function control

Enable or disable DHCP function support for Ethernet port.

Usage

dhcp on/off

Example `cmd>dhcp on`

```
File Edit Setup Control Window KanjiCode Help
Cmd>dhcp on
Set Ethernet - save configuration ok
Cmd>eth

=====
Physical Address . . . . . : 84-81-D2-8E-22-23
Ethernet Link Status . . . . . : Up
IP Address . . . . . : 192.168.1.225
Subnet Mask . . . . . : 255.255.255.0
Gateway . . . . . : 192.168.1.1
MTU . . . . . : 1500
DHCP . . . . . : ON
=====
```

## setmac Command

Setting the MAC address to the Ethernet

To program any MAC address for testing purpose. The new MAC address will be applied after MCU reset or switch controller board power cycle.

Usage

setmac <xx:xx:xx:xx:xx:xx>

Example `cmd>setmac 00:11:22:33:44:55`

```
File Edit Setup Control Window KanjiCode Help
Cmd>setmac 00:11:22:33:44:55
MacAddress[0] 0
MacAddress[1] 11
MacAddress[2] 22
MacAddress[3] 33
MacAddress[4] 44
MacAddress[5] 55
Set MAC - save configuration ok
```



## fdl Command

Update MCU FW

Sending the new FWs via XMODEM.

A few seconds for switch config or MCU FW updating.

Usage

fdl mcu

Example `cmd>fdl mcu`



```
COM8 - Tera Term VT
文件(F) 編輯(E) 設定(S) 控制(O) 視窗(W) 幫助(H)

Cmd>fdl mcu

=====
Xmodem upload a new firmware image to flash
=====

Use Q Or q to quit Download
Send data using the -Xmodem- protocol from terminal emulator now!
█
```

## Isd Command

Show environmental info, including temperature, FANs, PSUs, voltages.

Usage

Isd

Example `cmd>Isd`

```

Cmd>Isd

Thermal:
  Board Temperature : 28 degree
  BackPlane Temperature 1: 28 degree
  BackPlane Temperature 2: 28 degree
  PSU1 Temperature 1: 31 degree
  PSU1 Temperature 2: 29 degree
  PSU2 Temperature 1: 35 degree
  PSU2 Temperature 2: 39 degree

Fans Speed:
  Switch Fan : 6584 rpm
  Enclosure Fan 1 : 3826 rpm
  Enclosure Fan 2 : 3676 rpm
  PSU1 Fan : 4768 rpm
  PSU2 Fan : 2304 rpm

Current Sensors:
  PSU1 Current : 0 mA
  PSU2 Current : 2375 mA

Voltage Sensors:
  Board 0.8V Voltage : 798 mV
  Board 1.25V Voltage : 1315 mV
  Board 1.8VA Voltage : 1818 mV
  Board 1.8V Voltage : 1825 mV
  
```

Board temp is the sensor in switch module

Two temp fan sensors on blackplane

Two temp sensors inside PSU

Example cmd>lsd

```
Cmd>lsd

Thermal:
  Board Temperature : 28 degree
BackPlane Temperature 1: 28 degree
BackPlane Temperature 2: 28 degree
  PSU1 Temperature 1: 31 degree
  PSU1 Temperature 2: 29 degree
  PSU2 Temperature 1: 35 degree
  PSU2 Temperature 2: 39 degree

Fans Speed:
  Switch Fan : 6584 rpm
  Enclosure Fan 1 : 3826 rpm
  Enclosure Fan 2 : 3676 rpm
  PSU1 Fan : 4768 rpm
  PSU2 Fan : 2304 rpm

Current Sensors:
  PSU1 Current : 0 mA
  PSU2 Current : 2375 mA

Voltage Sensors:
Board 0.8V Voltage : 798 mV
Board 1.25V Voltage : 1315 mV
Board 1.8VA Voltage : 1818 mV
Board 1.8V Voltage : 1825 mV
BackPlane 3.3V Voltage : 3456 mV
BackPlane 1.8V Voltage : 1792 mV
PSU1 12V Voltage : 12125 mV
PSU2 12V Voltage : 12062 mV
```

Switch FAN is the FNA for PCIe switch

Fan1/Fan2 are the FANs located in the rear of enclosure

FAN sensor in two PSU

The current measure per PSU

4 voltage sensors

Two voltage sensors on blackplane

12Volts output monitoring per PSU

## dr Command

Dump switch-specific registers.

Usage

dr <SW address>

Example `cmd>dr 0xffff0000`

## dp Command

Dump switch port-specific registers.

Usage

dp <port(0~142)>

Example `cmd>dp 96`

```

COM8 - Tera Term VT
文件(F) 編輯(E) 設定(S) 控制(O) 視窗(W) 幫助(H)
Cmd>dp 96
60860000:c0301000 00100000 060400b0 00010000
60860010:00000000 00000000 00929200 000001f1
60860020:0000fff0 0001fff1 00000000 00000000
60860030:00000000 00000040 00000000 00000100
60860040:c8034801 00000008 03866805 00000000
60860050:00000000 00000000 00000000 00000000
60860060:00000000 00000000 0052a410 00008004
60860070:00000810 6042ed05 00850000 00000000
60860080:00000000 00000000 00000000 00350860
60860090:00000000 81803f3e 011e0005 00000000
608600a0:00000000 0000000d 01041000 00000000
608600b0:00000000 00000000 00000000 00000000
608600c0:00000000 00000000 00000000 00000000
608600d0:00000000 00000000 00000000 00000000
608600e0:00000000 00000000 00000000 00000000
608600f0:00000000 00000000 00000000 00000000
60860100:fb410003 dc87cb08 00805e86 00000000
60860110:db42001e 00000000 00000000 00000000
60860120:00000000 00000000 00000000 00000000
60860130:00000000 00000000 db410004 00000000
60860140:00000000 00000001 af410002 00000c00
60860150:00000000 00000000 03000008 800000ff
  
```

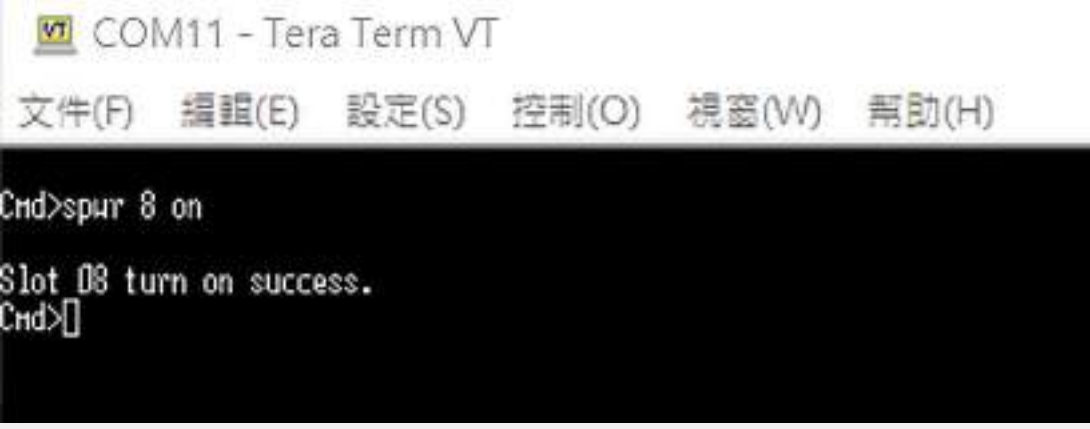
## spwr Command

The command is for controlling the 12 volts power of each U.2 NVMe drive slot.

Usage

spwr <slot(1~24)> <on/off>

Example `cmd>spwr 8 on`



```
VT COM11 - Tera Term VT
文件(F) 編輯(E) 設定(S) 控制(O) 視窗(W) 幫助(H)
Cmd>spwr 8 on
Slot 08 turn on success.
Cmd>
```

## srst Command

To generate an around 350ms “L” duration in PERST# signals in U.2 slot.  
A channel means ePERST0# in U.2 Pin E5 for 1st PHY of dual port drives.  
B channel means ePERST1# in U.2 Pin E4 for 2nd PHY of dual port drives.

Usage

srst <slot(1~24)>

Example `cmd>srst 8`



```
VT COM11 - Tera Term VT
文件(F) 編輯(E) 設定(S) 控制(O) 視窗(W) 幫助(H)
cmd>srst 8
Reset slot 8 success
cmd>
```

## pwrdis Command

Set PWRDIS in U.2 as "H" or "L" state.

Set pwrdis in slot pin3 level to high/low.

Set PWRDIS to "H" state to disable SSD power.

Set PWRDIS to "L" state to enable SSD power.

Usage

pwrdis <slot(1~24)> <h/l>

Example `cmd>pwrdis 8 h`



```
VT COM11 - Tera Term VT
文件(F) 編輯(E) 設定(S) 控制(O) 視窗(W) 幫助(H)
Cmd>pwrdis 8 h
Set slot 8 pwrdis level to high success.
Cmd>
```



## showport Command

Show link status for each USP/DSP slot.

Usage

showport

Example `cmd>showport`

```
COM11 - Tera Term VT
文件(F) 编辑(E) 设定(S) 控制(O) 视窗(W) 帮助(H)

cmd>showport
Board Position: BOTTOM
N/A Slot
Slot01: present No, speed 01, width 00, partition 00
Slot02: present No, speed 01, width 00, partition 00
Slot03: present No, speed 01, width 00, partition 00
Slot04: present No, speed 01, width 00, partition 00
Slot05: present No, speed 01, width 00, partition 00
Slot06: present No, speed 01, width 00, partition 00
Slot07: present No, speed 01, width 00, partition 00
Slot08: present Yes, speed 05, width 04, partition 00
Slot09: present No, speed 01, width 00, partition 00
Slot10: present No, speed 01, width 00, partition 00
Slot11: present No, speed 01, width 00, partition 00
Slot12: present No, speed 01, width 00, partition 00
Ext. Slot
-----
Upstream
Con. 01: speed 01, width 00, max_width = 16
-----

Board Position: TOP
N/A Slot
Slot13: present No, speed 01, width 00, partition 00
Slot14: present No, speed 01, width 00, partition 00
Slot15: present No, speed 01, width 00, partition 00
Slot16: present No, speed 01, width 00, partition 00
Slot17: present No, speed 01, width 00, partition 00
Slot18: present No, speed 01, width 00, partition 00
Slot19: present No, speed 01, width 00, partition 00
Slot20: present No, speed 01, width 00, partition 00
Slot21: present No, speed 01, width 00, partition 00
Slot22: present No, speed 01, width 00, partition 00
Slot23: present No, speed 01, width 00, partition 00
Slot24: present No, speed 01, width 00, partition 00
Ext. Slot
-----
Upstream
Con. 01: speed 01, width 00, max_width = 16
```

## buz Command

This command is for setting the buzzer of PCIe switch board.  
Buzzer control

Usage

buz <on/off/en/dis>

Example `cmd>buz on`



```
VT COM8 - Tera Term VT
文件(F) 編輯(E) 設定(S) 控制(O) 視窗(W) 幫助(H)
Cmd>buz on
OK, turn on buzzer
Cmd>buz off
OK, turn off buzzer
Cmd>
```

## pwmctrl Command

JBOF enclosure FANS speed control(use percentage)

Usage

pwmctrl <fan(1~2)> <speed(30~100percentage)>

Example `cmd>pwmctrl 1 50`



The screenshot shows a terminal window titled "COM11 - Tera Term VT". The menu bar includes "文件(F)", "編輯(E)", "設定(S)", "控制(O)", and "視窗(W)". The terminal output shows the command `cmd>pwmctrl 1 50` being entered, followed by the response `Setting fan1 success !`, and the prompt `cmd>` with a cursor.

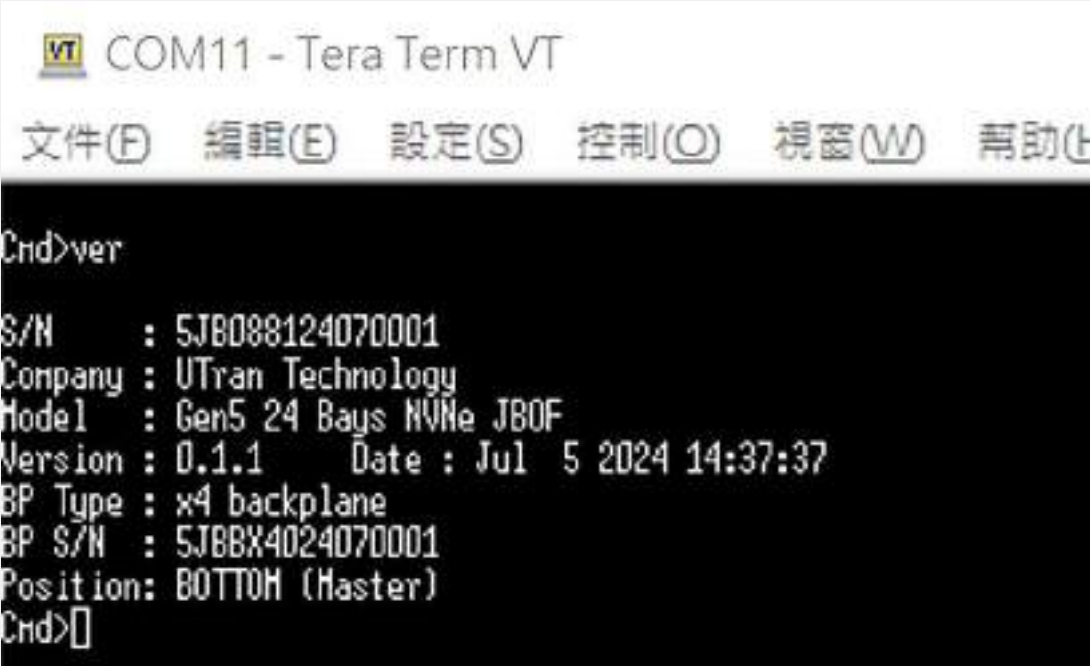
## ver Command

Show on-board MCU and PCIe switch F/W information.

Usage

ver

Example `cmd>ver`



```
COM11 - Tera Term VT
文件(F) 編輯(E) 設定(S) 控制(O) 視窗(W) 幫助(H)
Cmd>ver
S/N      : 5J8088124070001
Company  : UTran Technology
Model    : Gen5 24 Bays NVMe JBOD
Version  : 0.1.1   Date : Jul 5 2024 14:37:37
BP Type  : x4 backplane
BP S/N   : 5J8BX4024070001
Position : BOTTOM (Master)
Cmd>
```

```

VT COM11 - Tera Term VT
文件(F) 編輯(E) 設定(S) 控制(O) 視窗(W) 幫助(H)

Cmd>ver
S/N      : 5JB088124070001
Company  : UTran Technology
Model    : Gen5 24 Bays NVMe JBOD
Version  : 0.1.1   Date : Jul 5 2024 14:37:37
BP Type  : x4 backplane
BP S/N   : 5JB8X4024070001
Position : BOTTOM (Master)
Cmd>

```



JBOF (control board)

Version One

atlas2 version

5 JB 088 1 2407 1 001

Gen 5

88 lanes

Warranty Period (Year/Month)

Serial Number

JBOF (control board)

Original Version

atlas2 version

5 JB B X4 0 2407 1 001

Gen 5

Backplane

Warranty Period (Year/Month)

Serial Number

## sysinfo Command

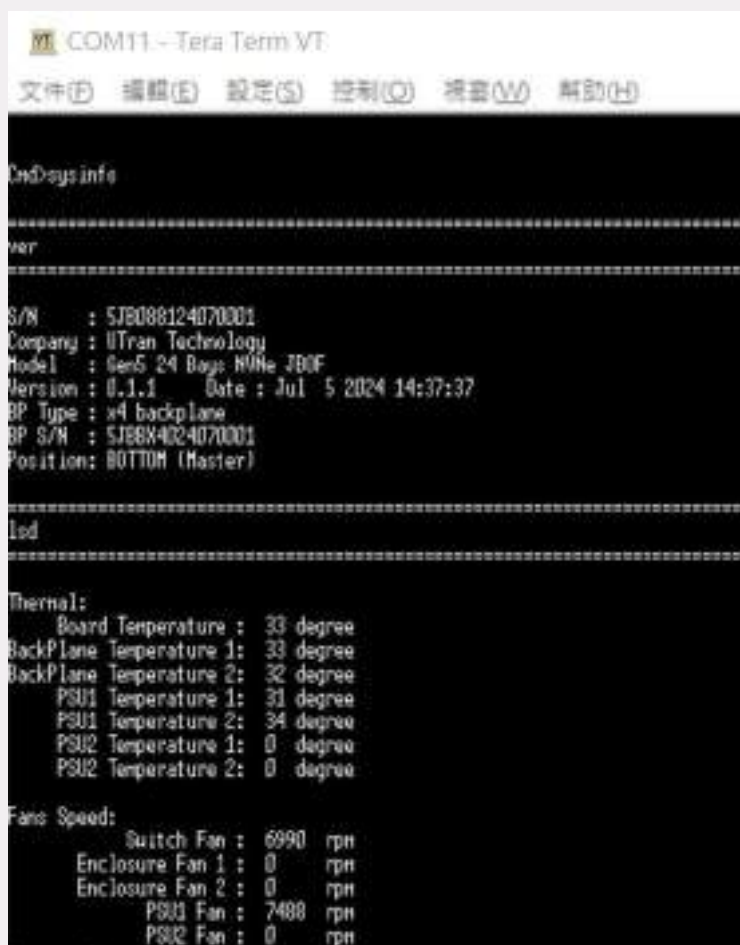
Show system information

Sysinfo command is for switch board enclosure diagnostic, it combines ver, lsd, showport command

Usage

sysinfo

Example `cmd>sysinfo`



```
COMT1 - Tera Term VT
文件(F) 编辑(E) 设定(S) 控制(C) 视窗(W) 帮助(H)

cmd>sysinfo
-----
ver
-----
S/N      : 5J8088124070001
Company  : UTran Technology
Model    : Gen5 24 Bays N/Ne J80F
Version  : 0.1.1   Date : Jul 5 2024 14:37:37
BP Type  : x4 backplane
BP S/N   : 5J88X4024070001
Position: BOTTOM (Master)
-----
lsd
-----
Thermal:
  Board Temperature : 33 degree
  BackPlane Temperature 1: 33 degree
  BackPlane Temperature 2: 32 degree
  PSU1 Temperature 1: 31 degree
  PSU1 Temperature 2: 34 degree
  PSU2 Temperature 1: 0 degree
  PSU2 Temperature 2: 0 degree
-----
Fan Speed:
  Switch Fan : 6990 rpm
  Enclosure Fan 1 : 0 rpm
  Enclosure Fan 2 : 0 rpm
  PSU1 Fan : 7488 rpm
  PSU2 Fan : 0 rpm
```

## reset Command

reset switch controller board

MCU reset and the MCU will have PCIe switch power on reset.

Usage

reset

Example `cmd>reset`



```
COM8 - Tera Term VT
文件(F) 編輯(E) 設定(S) 控制(O) 視窗(W) 幫助(H)
cmd>reset
System Reset...
cmd>
```



**05**

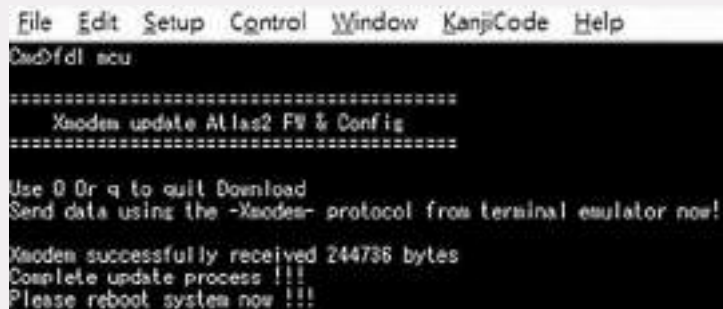
# **firmware Upgrade**



# 5.1 Mcu firmware upgrade

## STEP 01

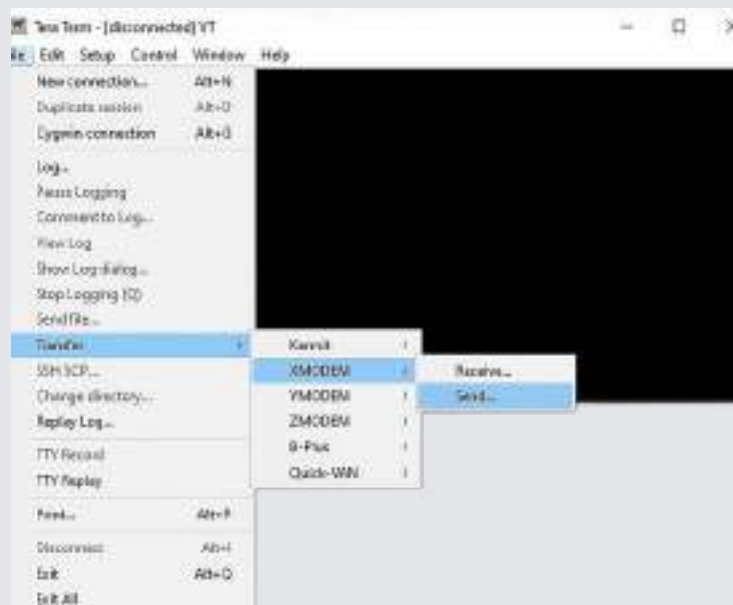
Type "fdl mcu" on command line,you will see the picture in below.



```
File Edit Setup Control Window KanjiCode Help
Cwd>fdl mcu
=====
Xmodem update Atlas2 FW & Config
=====
Use D Or q to quit Download
Send data using the -Xmodem- protocol from terminal emulator now!
Xmodem successfully received 244736 bytes
Complete update process !!!
Please reboot system now !!!
```

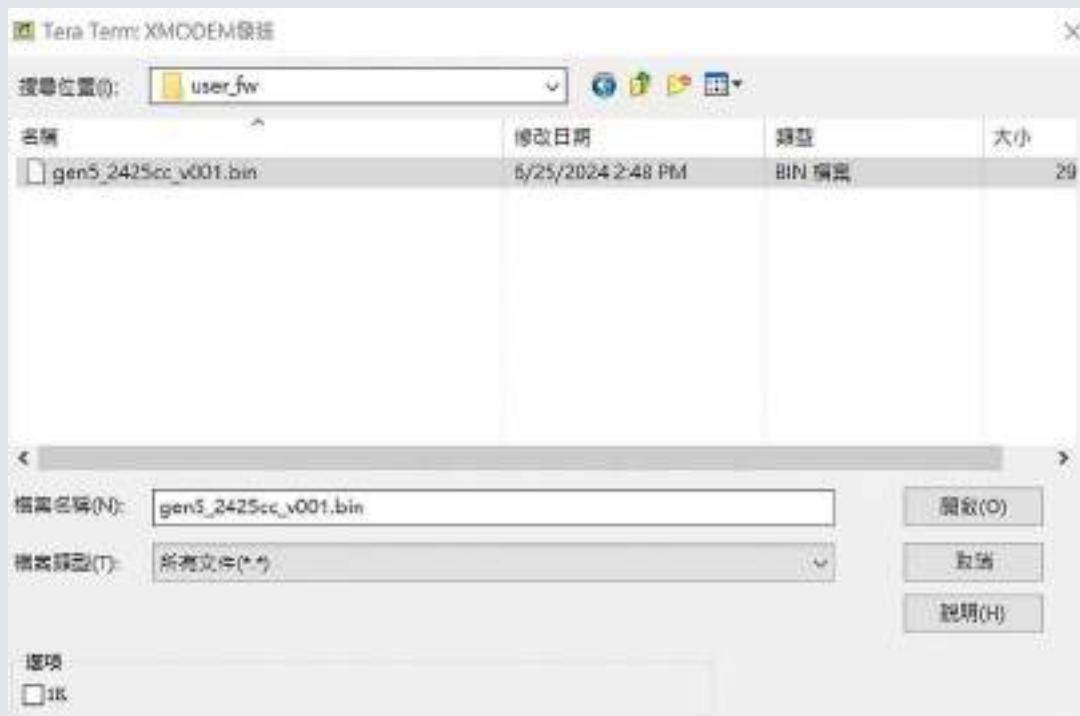
## STEP 02

Click on the file, scroll down to Transfer, and select "XMODEM" on the second frame,you will see the sent.



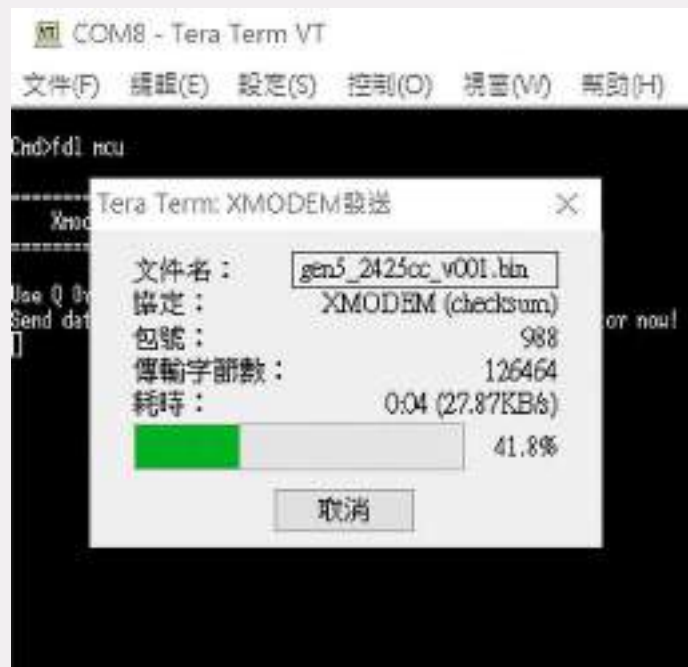
# STEP 03

Makesure the file you sent is bin.  
(the latest version firmware please download on official websites.)



# STEP 04

You will see this picture which means the firmware is already upgrading.



Please reset the system when it complete, and you can enjoy the latest firmware.

## 5.2 Switch firmware upgrade

Please contact Utran to get the password.

### STEP 01

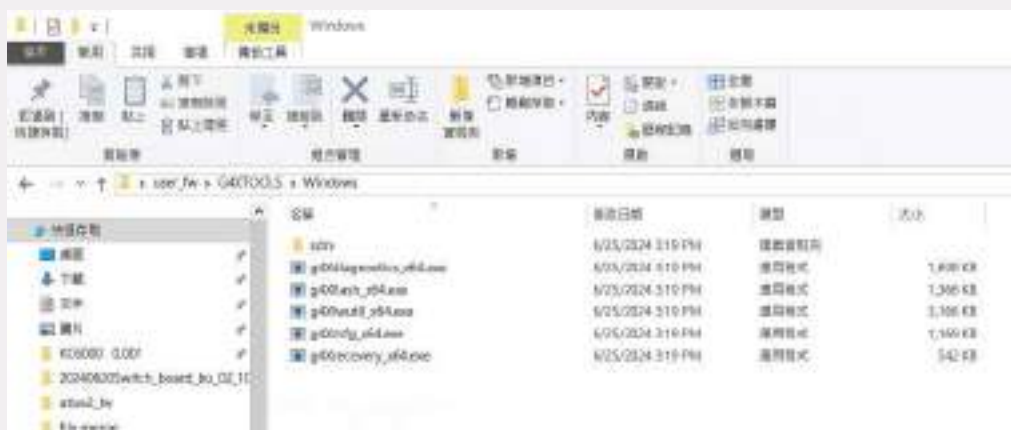
Download the "G4XTOOLS" on the website.



## [Connect the USB Type-C port\(Reserved\)](#)

### STEP 02

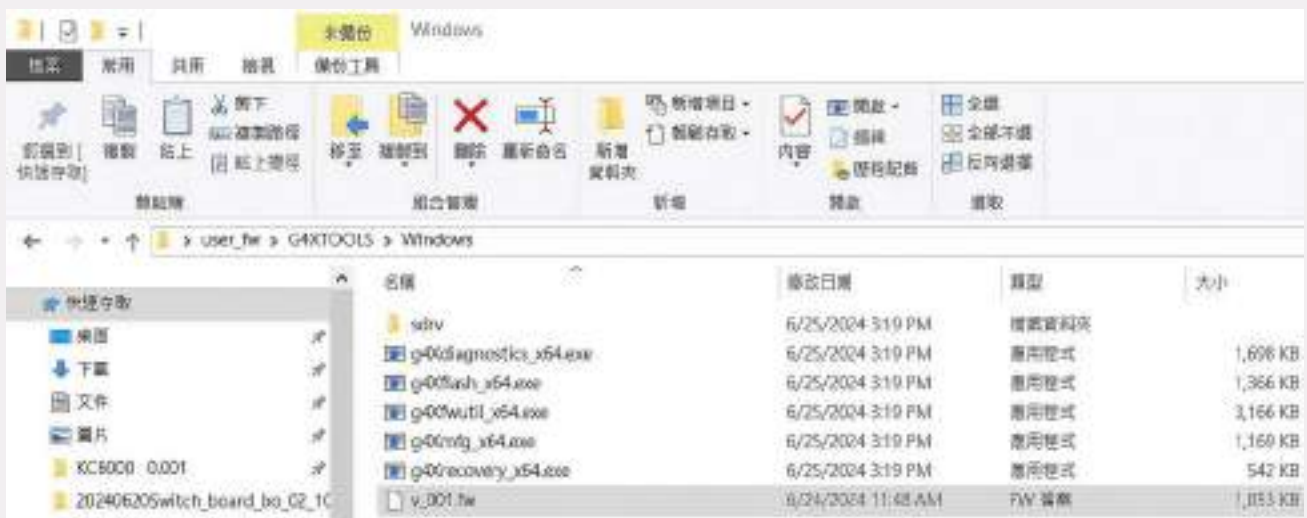
Open the G4XTOOLS file,there are two files named Windows / LINUX, select your system to get one of them in.Here will take Windows for example, click windows file.



# STEP 03

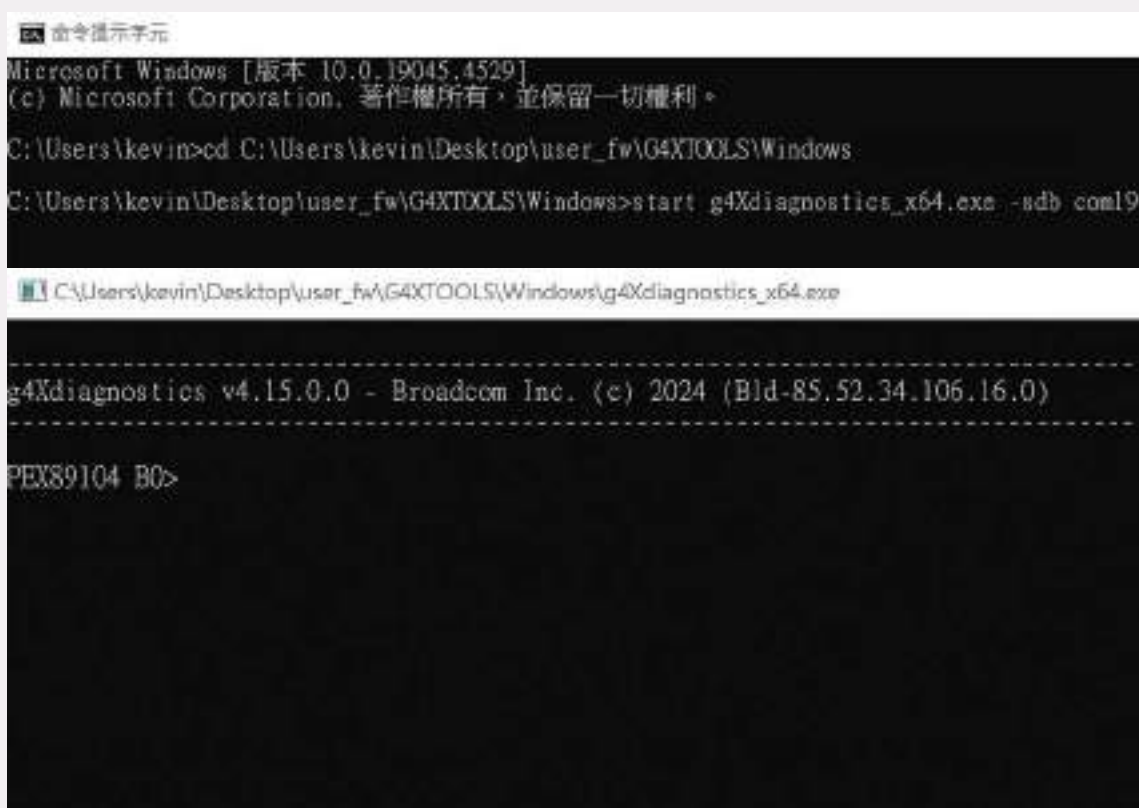
Download the .fw file on the website, and open CMD Command, replicate your .fw file, then go back to G4XTOOLS file. You can use cmd command to enter the specified path where your firmware file located in, and paste the .fw file you just replicated.

```
命令提示字元
Microsoft Windows [版本 10.0.19045.4529]
(c) Microsoft Corporation. 著作權所有，並保留一切權利。
C:\Users\kevin>cd C:\Users\kevin\Desktop\user_fw\G4XTOOLS\Windows
C:\Users\kevin\Desktop\user_fw\G4XTOOLS\Windows>
```



## STEP 04

Type `>start g4Xdiagnostics_x64.exe -sdb com "numder"` on the last line. The number filled in is depend on your device manager. You can see boardcom switch name after you press "enter".



```
命令提示字元
Microsoft Windows [版本 10.0.19045.4529]
(c) Microsoft Corporation. 著作權所有，並保留一切權利。
C:\Users\kevin>cd C:\Users\kevin\Desktop\user_fw\G4XTOOLS\Windows
C:\Users\kevin\Desktop\user_fw\G4XTOOLS\Windows>start g4Xdiagnostics_x64.exe -sdb com19

C:\Users\kevin\Desktop\user_fw\G4XTOOLS\Windows\g4Xdiagnostics_x64.exe
-----
g4Xdiagnostics v4.15.0.0 - Broadcom Inc. (c) 2024 (Bld-85.52.34.106.16.0)
-----
PEX89104 B0>
```

## STEP 05

Type `>dl -p ".fw file" -o 0x0` on the first line of the second paragraph.



```
C:\Users\kevin\Desktop\user_fw\G4XTOOLS\Windows\g4xdiagnostics_x64.exe
-----
g4xdiagnostics v4.15.0.0 - Broadcom Inc. (c) 2024 (Bid-85.52.34.106.16.0)
-----
PEX89104 B0> dl -p v_001.fw -o 0x0
PEX89xxx SPI access acquired (Firmware has been put on IDLE state)
Flash data will be erased from offset 0 for 1077496 bytes.
Do you want to continue (Yes / No) : yes
```

✘ *Do not shut down your device during the program update.*

Restart it when update is complete, and the brand new firmware will be ready for enjoying.





**ATTACHMENT**

**ATTACHMENT**

---

# **Verify Signal Integrity**

Verification Software

---

# Boardcom

## ARCTIC -12.18247

Verification conditions

---

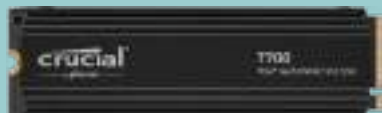
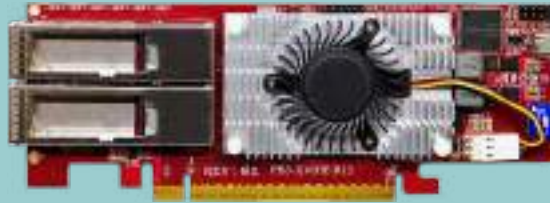
**Error bit rate**

**$10^{-18}$**

**All lanes passed**

# Signal Flow

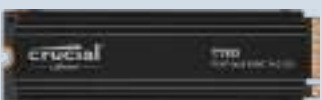
All Lanes Passed



Upstream port captured signal path



Downstream port captured signal path



**ATTACHMENT**

---

# **Eyesclope**

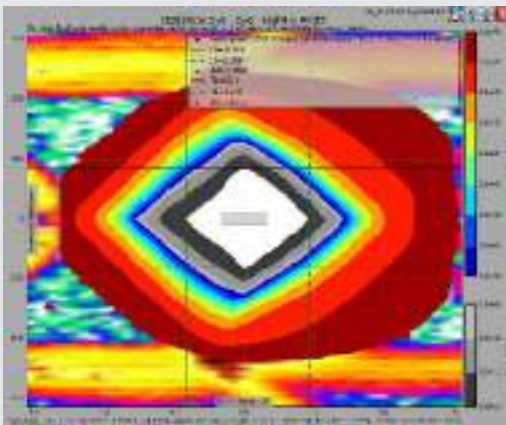
**Diagrams**

## b.1 P5-2425-S Slot 1-24

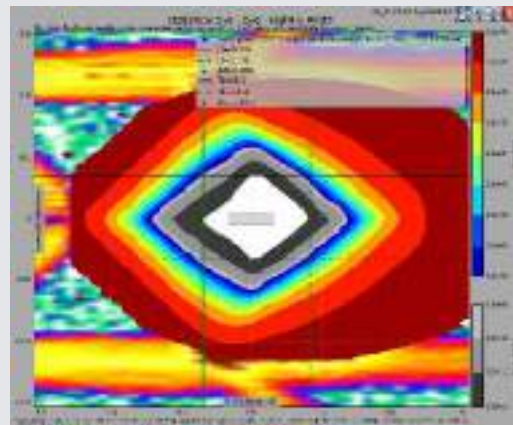
### Eyescopes Diagrams / JBOF x4 / slot 1

---

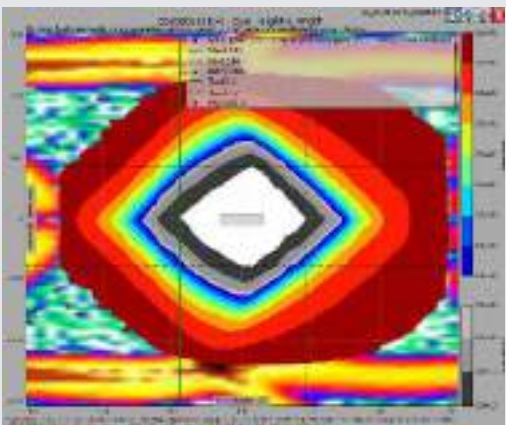
lane 0



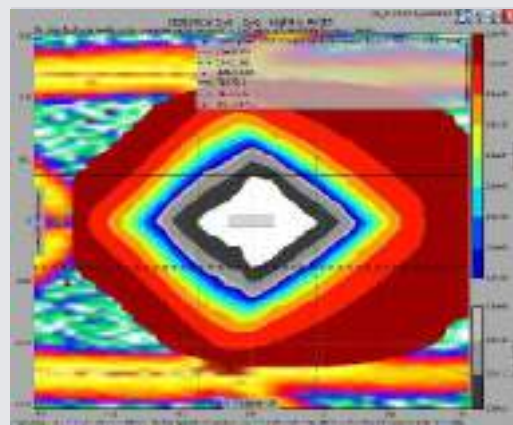
lane 1



lane 2



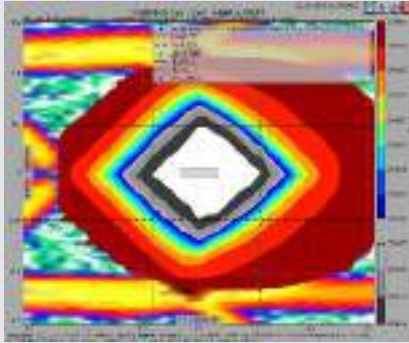
lane 3



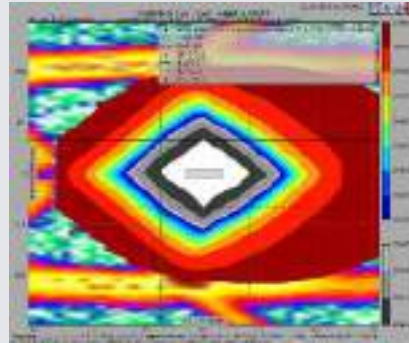
## Eyescopes Diagrams / JBOF x4 / slot 2

---

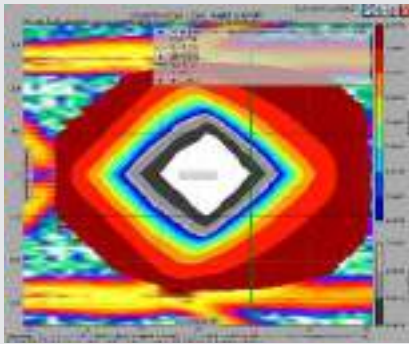
lane 4



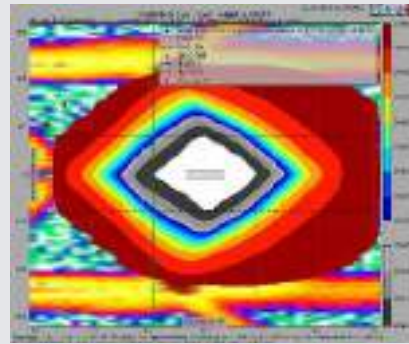
lane 5



lane 6



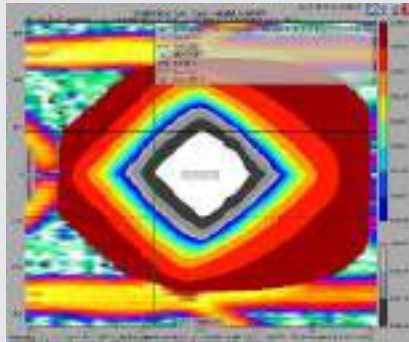
lane 7



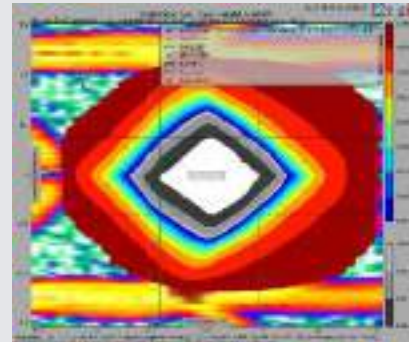
## Eyescopes Diagrams / JBOF x4 / slot 3

---

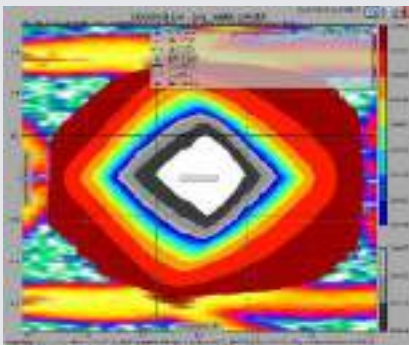
lane 8



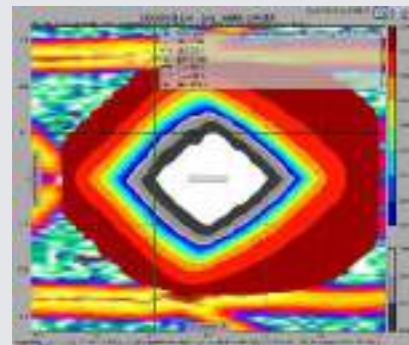
lane 9



lane 10



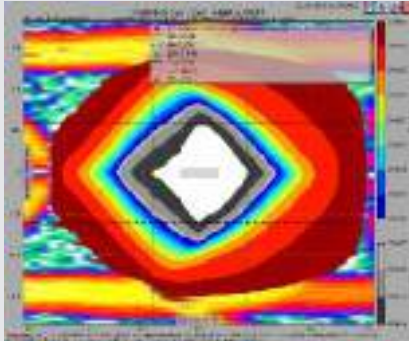
lane 11



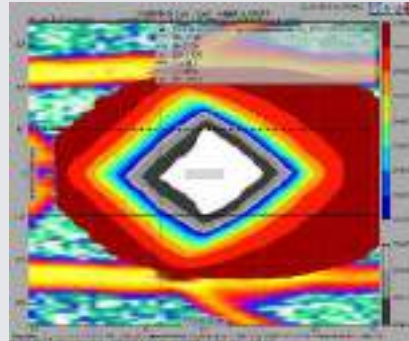
## Eyescopes Diagrams / JBOF x4 / slot 4

---

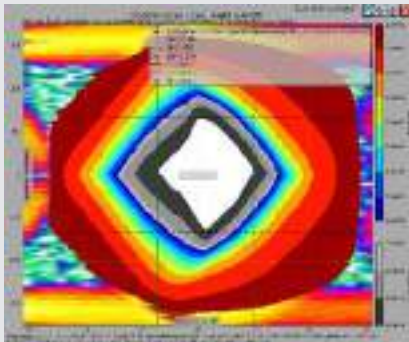
lane 12



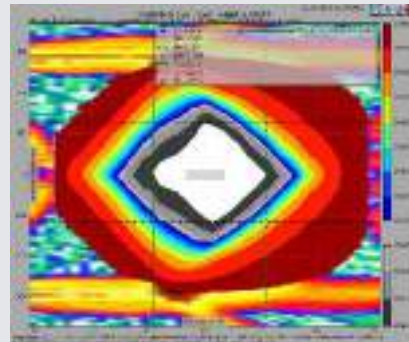
lane 13



lane 14



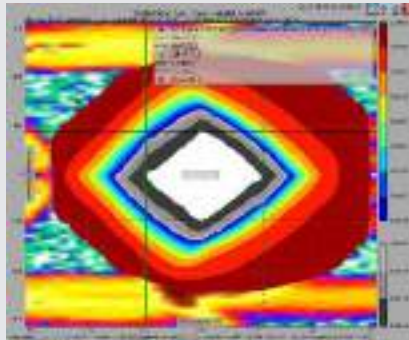
lane 15



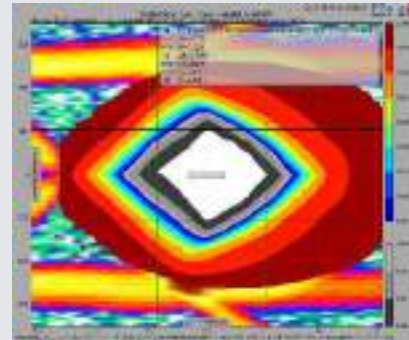
## Eyescopes Diagrams / JBOF x4 / slot 5

---

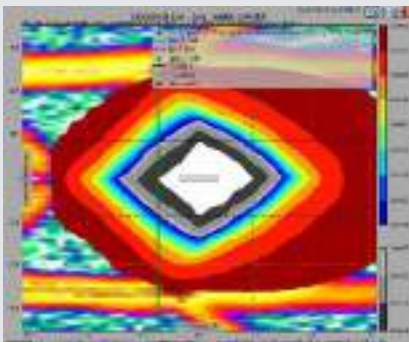
lane 16



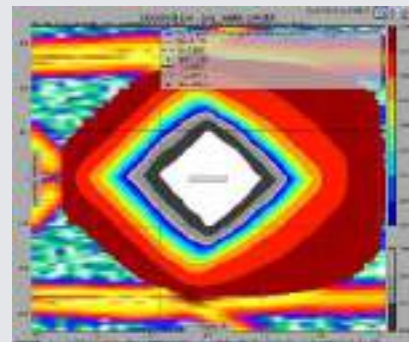
lane 17



lane 18



lane 19

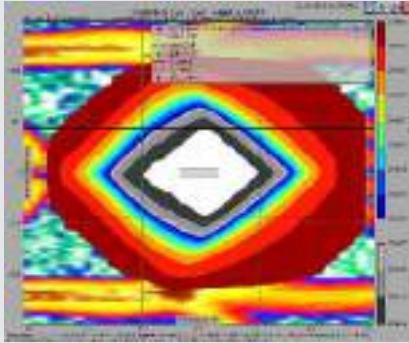




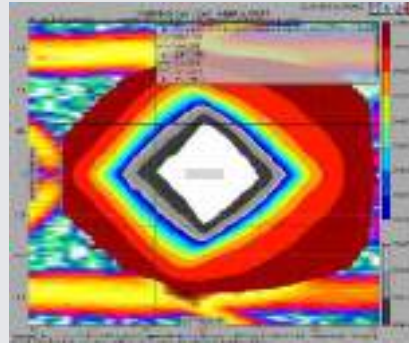
## Eyescopes Diagrams / JBOF x4 / slot 6

---

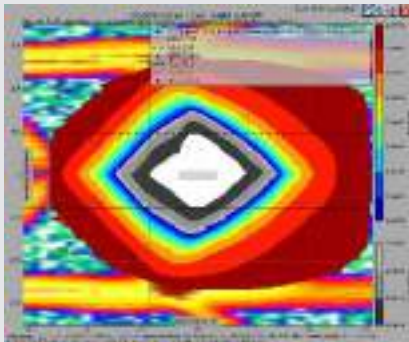
lane 20



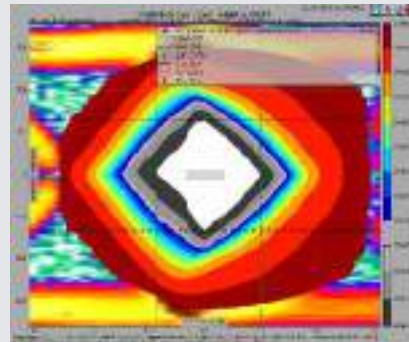
lane 21



lane 22



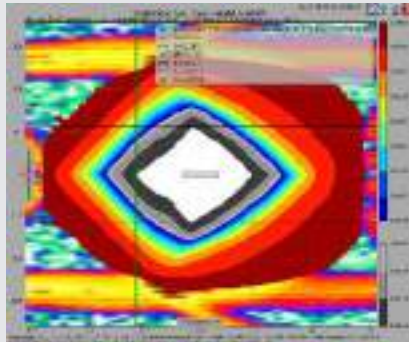
lane 23



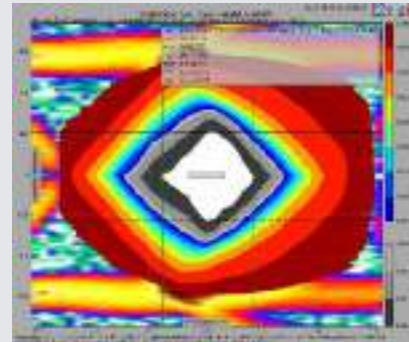
## Eyescopes Diagrams/ JBOF x4 / slot 7

---

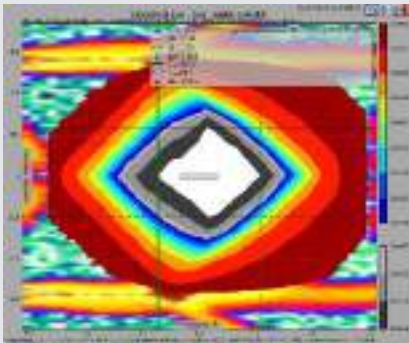
lane 24



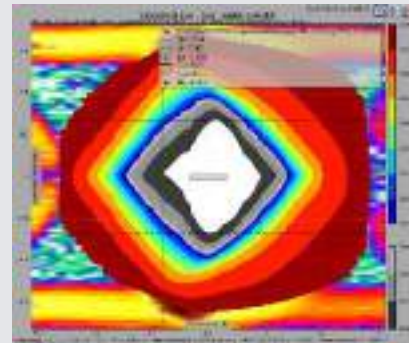
lane 25



lane 26



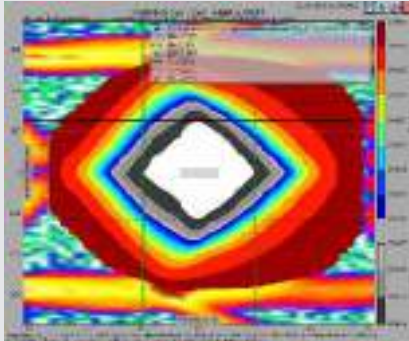
lane 27



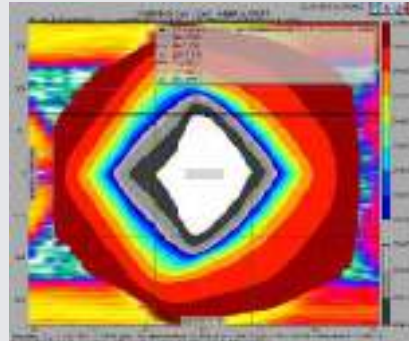
## Eyescopes Diagrams / JBOF x4 / slot 8

---

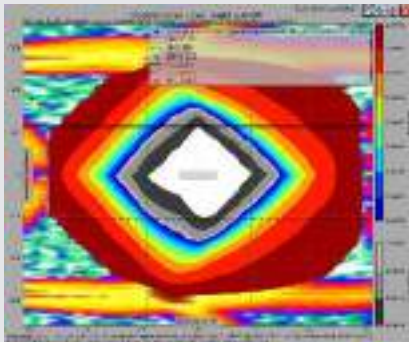
lane 28



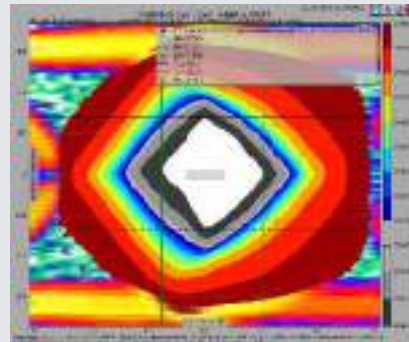
lane 29



lane 30



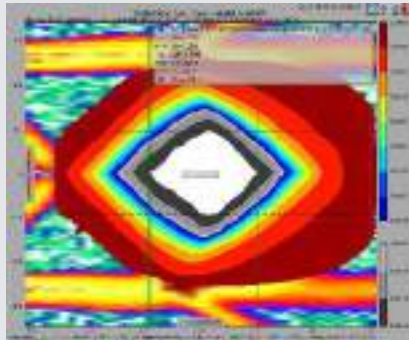
lane 31



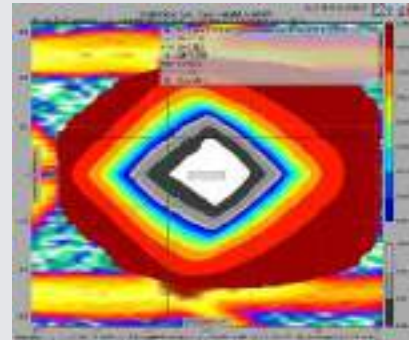
## Eyescopes Diagrams / JBOF x4 / slot 9

---

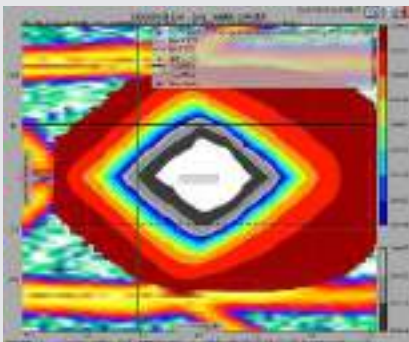
lane 32



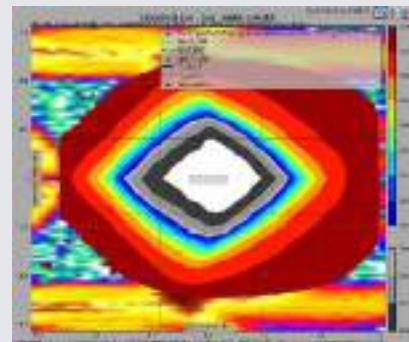
lane 33



lane 34



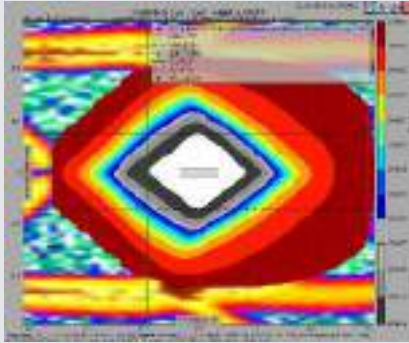
lane 35



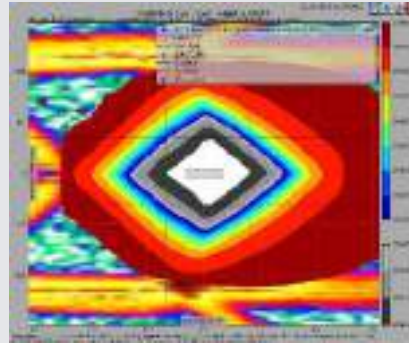
## Eyescopes Diagrams / JBOF x4 / slot 10

---

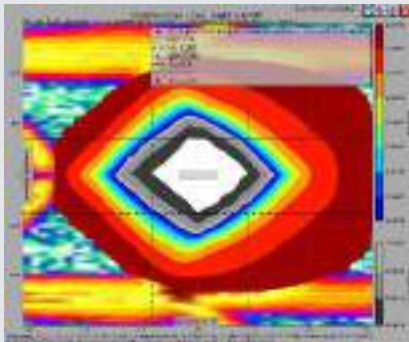
lane 36



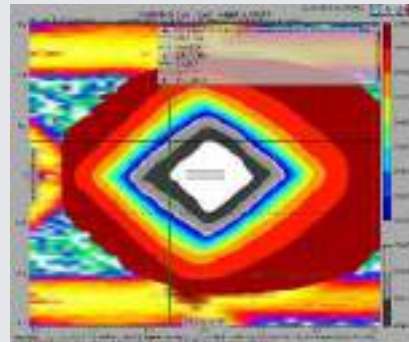
lane 37



lane 38



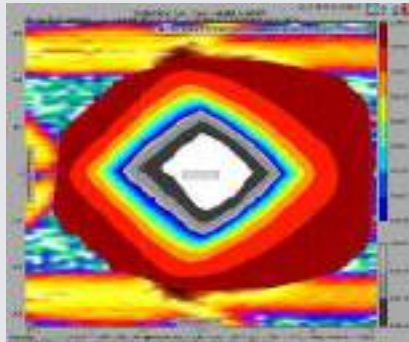
lane 39



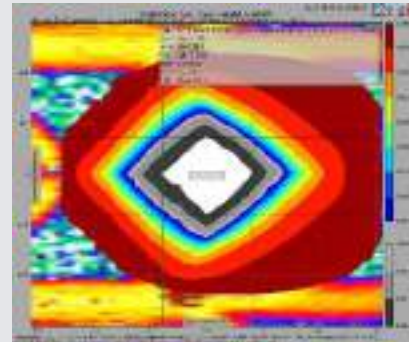
## Eyescopes Diagrams / JBOF x4 / slot 11

---

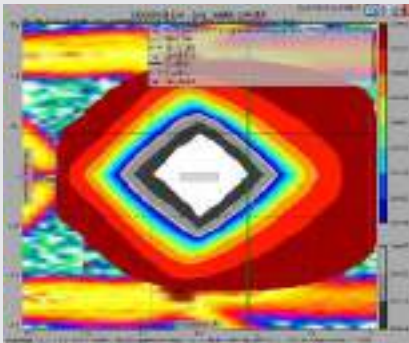
lane 40



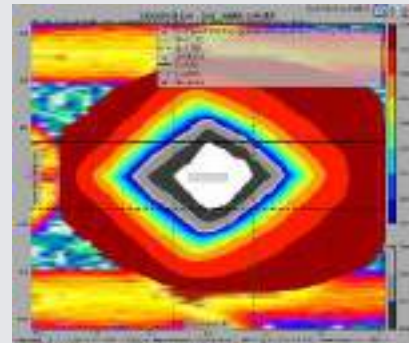
lane 41



lane 42



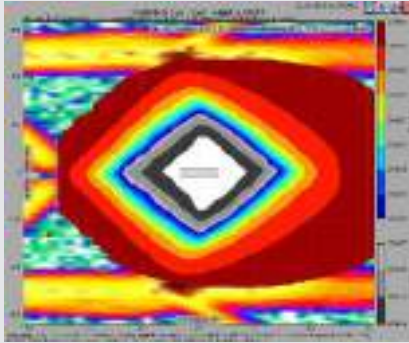
lane 43



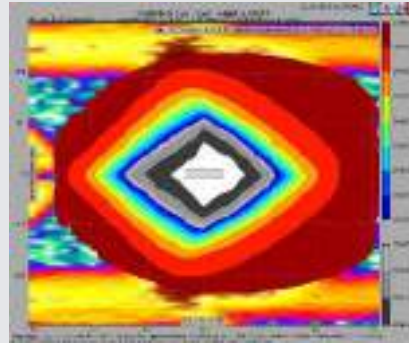
## Eyescopes Diagrams / JBOF x4 / slot 12

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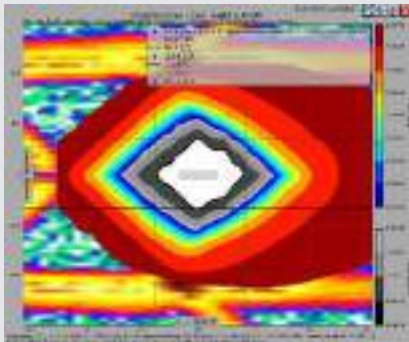
lane 44



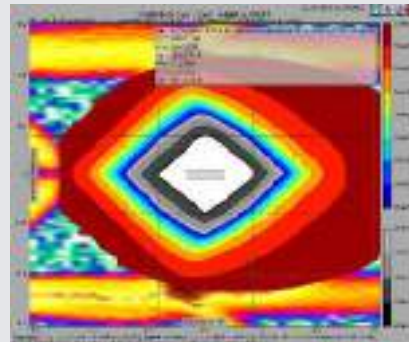
lane 45



lane 46



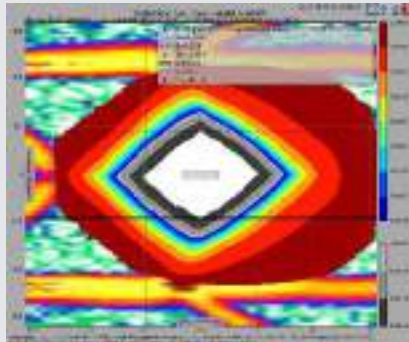
lane 47



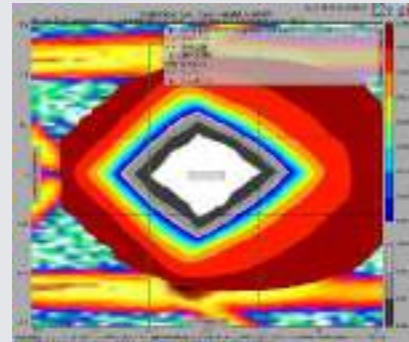
## Eyescopes Diagram / JBOF x4 / slot 13

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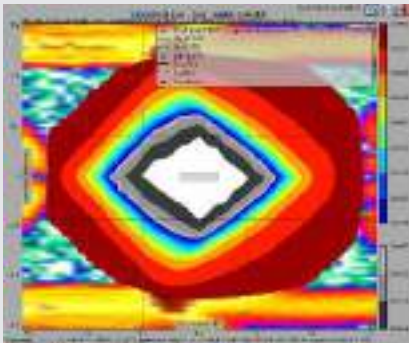
lane



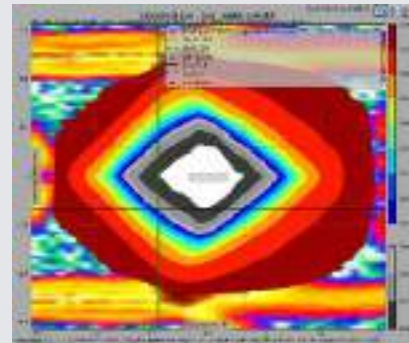
lane



lane



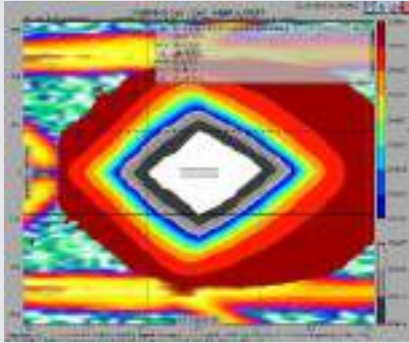
lane



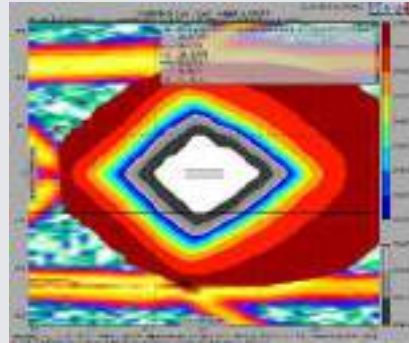
## Eyescope Diagram / JBOF x4 / slot 14

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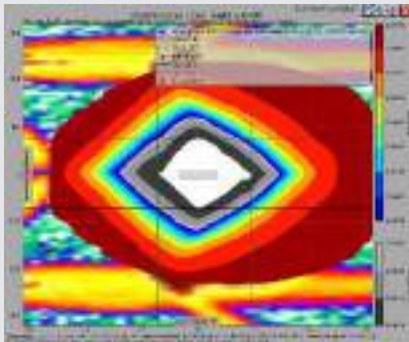
lane



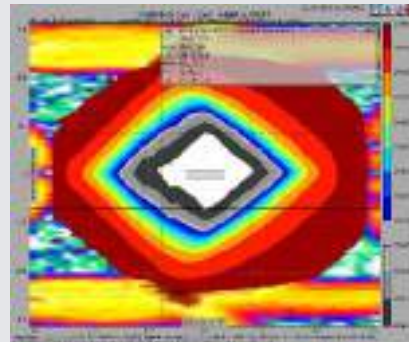
lane



lane 38



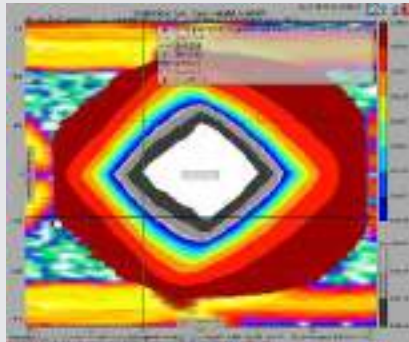
lane 39



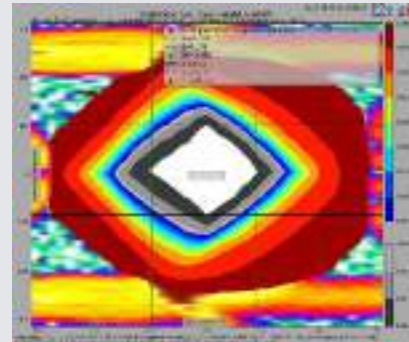
## Eyescope Diagram / JBOF x4 / slot 15

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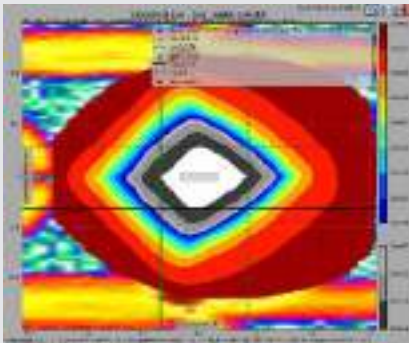
lane



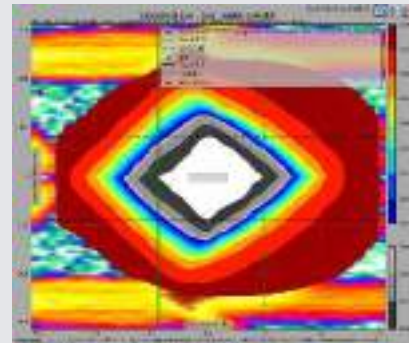
lane



lane



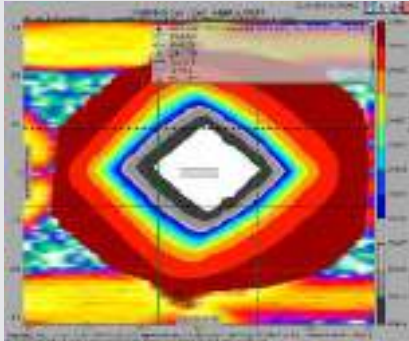
lane



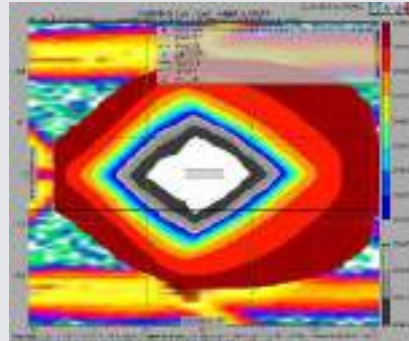
## Eyescope Diagram / JBOF x4 / slot 16

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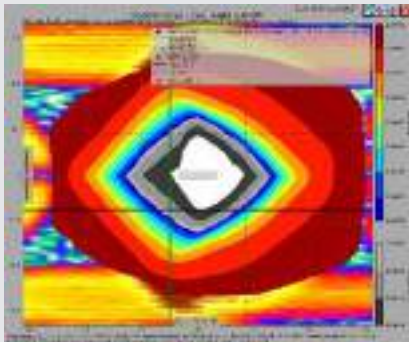
lane 28



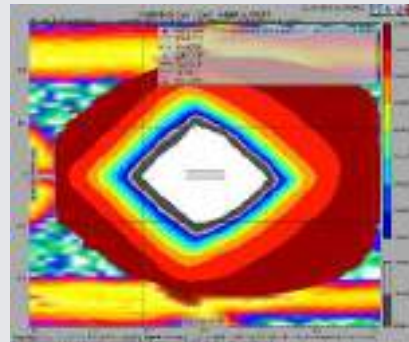
lane 29



lane 30



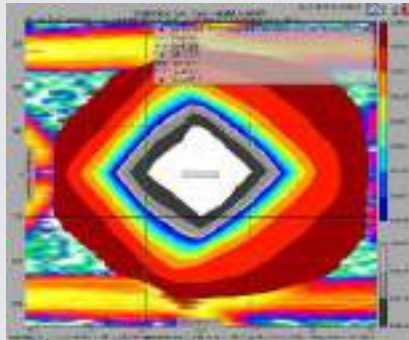
lane 31



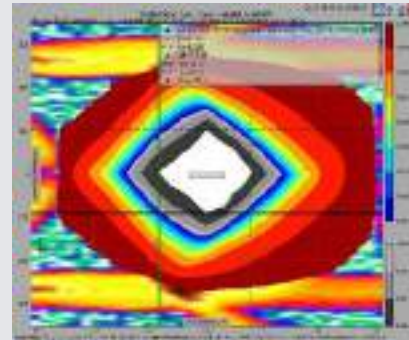
## Eyescope Diagrams / JBOF x4 / slot 17

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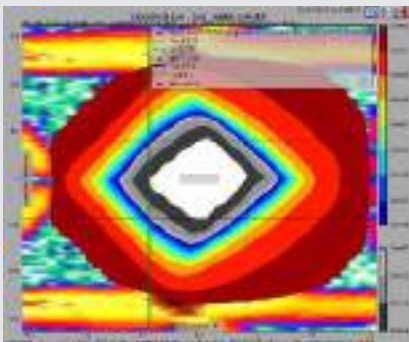
lane



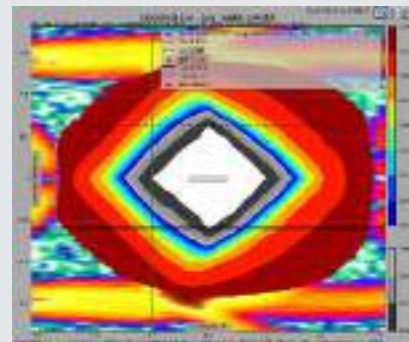
lane



lane



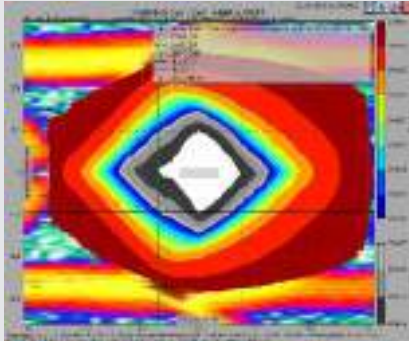
lane



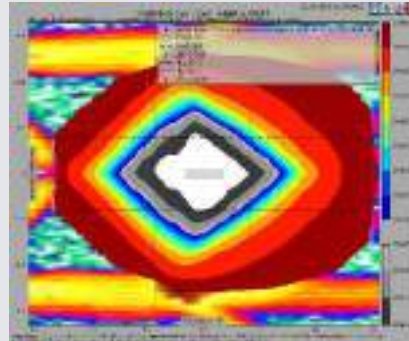
## Eyescopes Diagrams / JBOF x4 / slot 18

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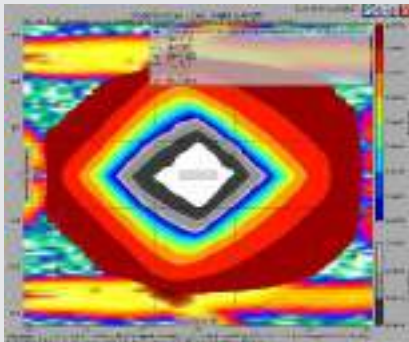
lane



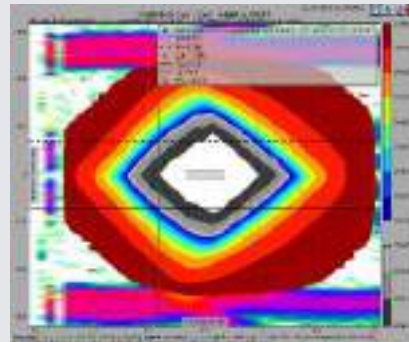
lane



lane



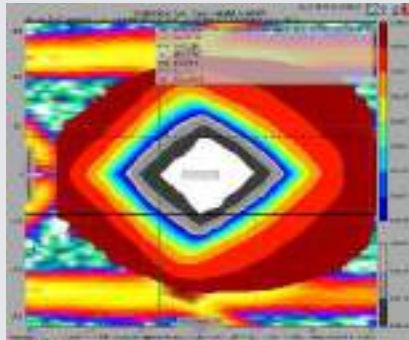
lane



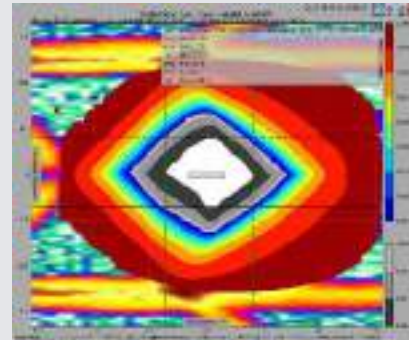
## Eyescopes Diagrams / JBOF x4 / slot 19

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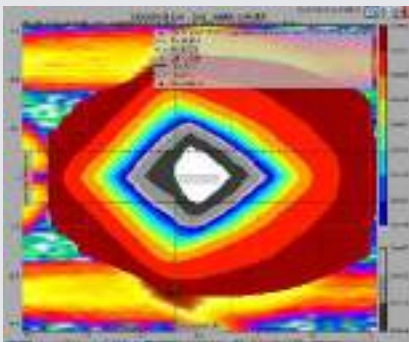
lane



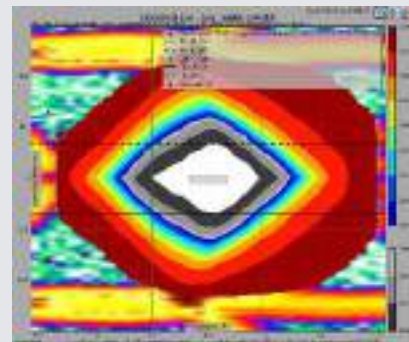
lane



lane



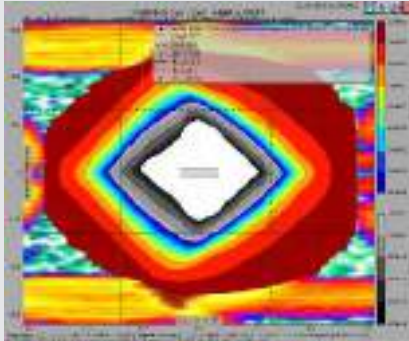
lane



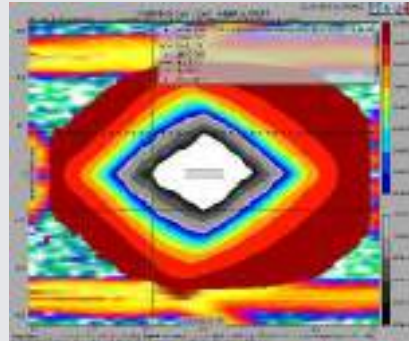
## Eyescope Diagram / JBOF x4 / slot 20

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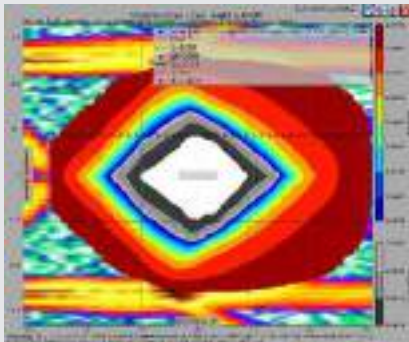
lane



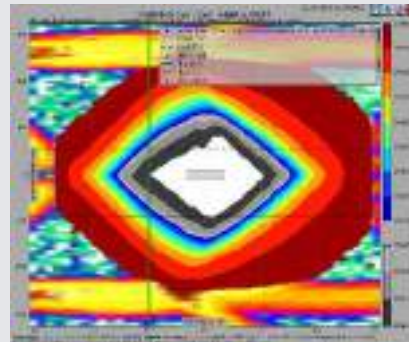
lane



lane 30



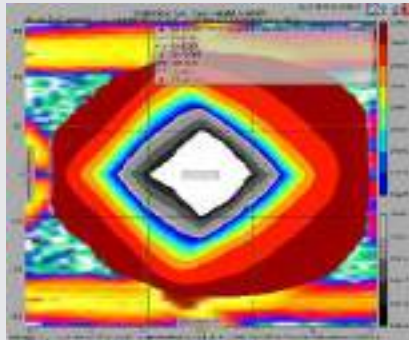
lane 31



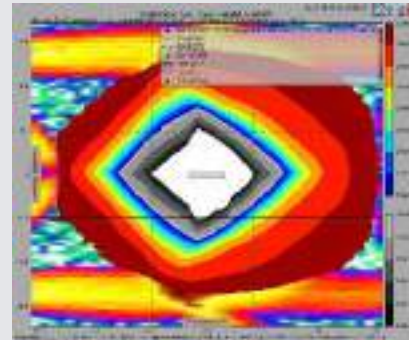
## Eyescope Diagrams / JBOF x4 / slot 21

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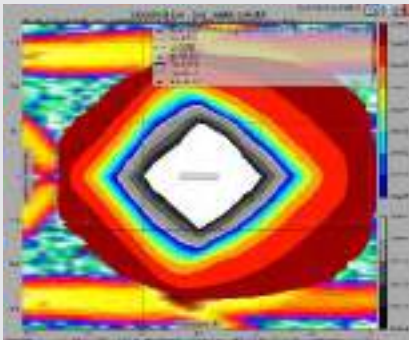
lane



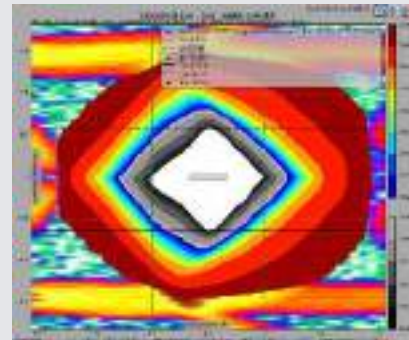
lane



lane



lane

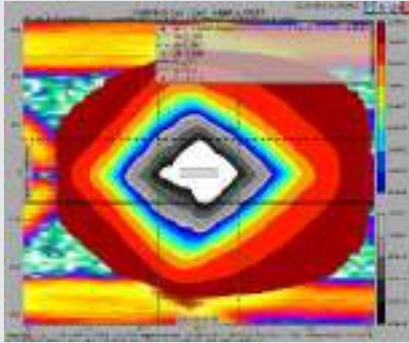




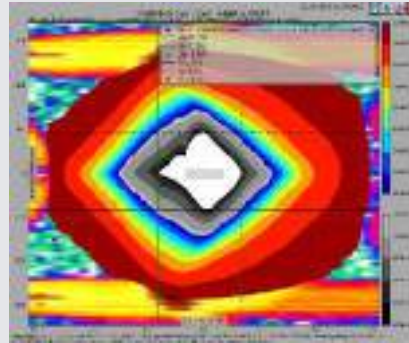
## Eyescopes Diagrams / JBOF x4 / slot 22

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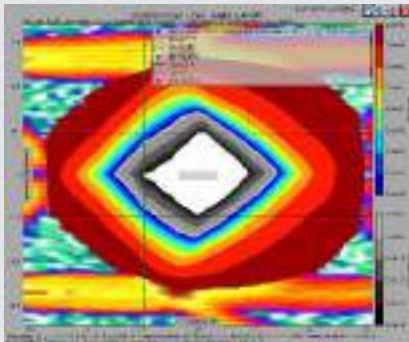
lane



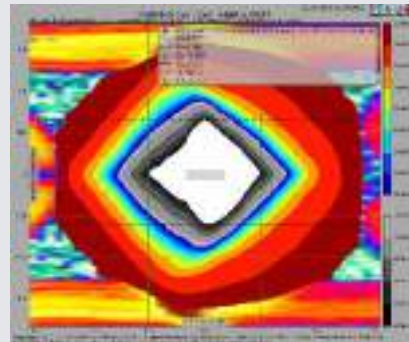
lane



lane



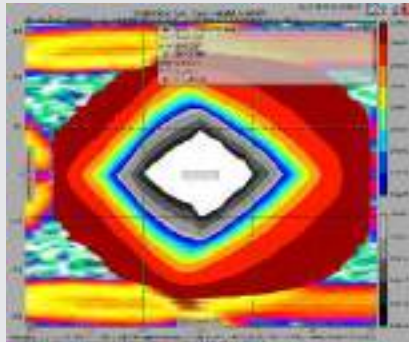
lane



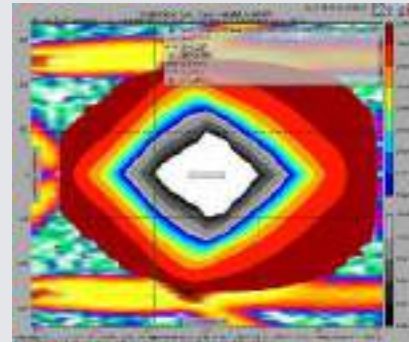
## Eyescopes Diagrams / JBOF x4 / slot 23

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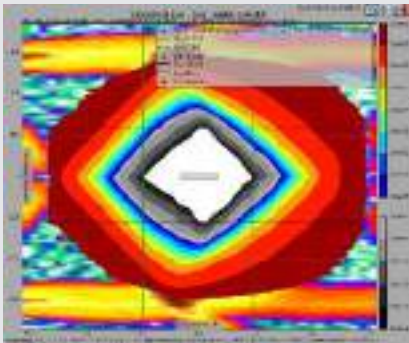
lane



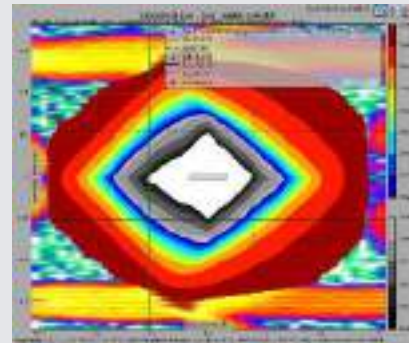
lane



lane

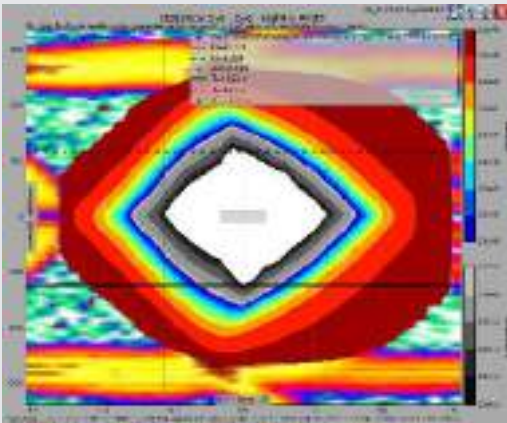


lane

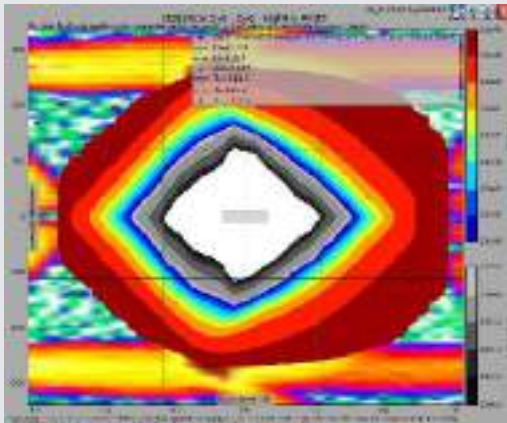


# Eyescopes Diagrams / JBOF x4 / slot 24

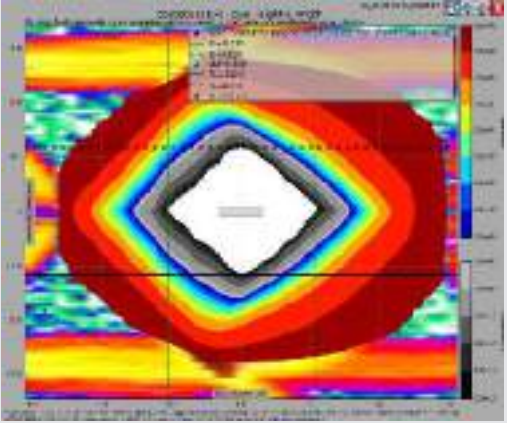
lane



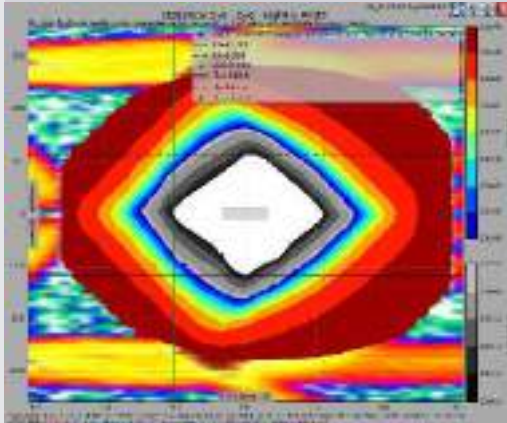
lane



lane



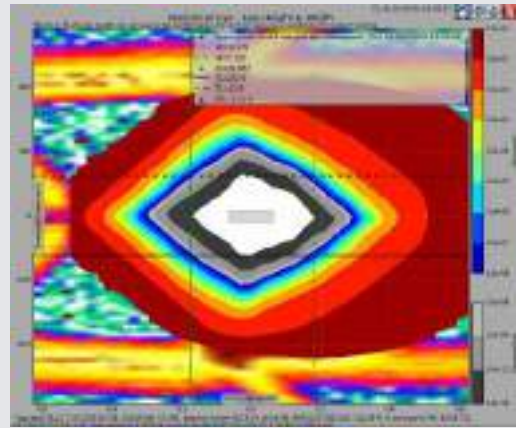
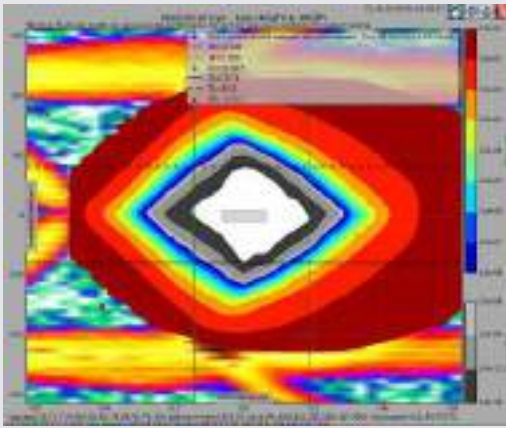
lane



## b.2 P5-2425-D Slot 1-24

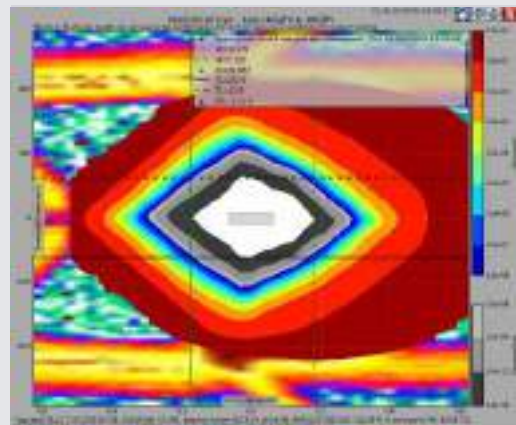
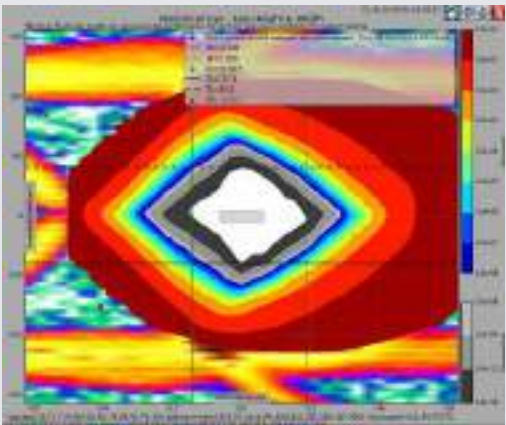
### JBOF 2x2 / slot 1 / Top Controller

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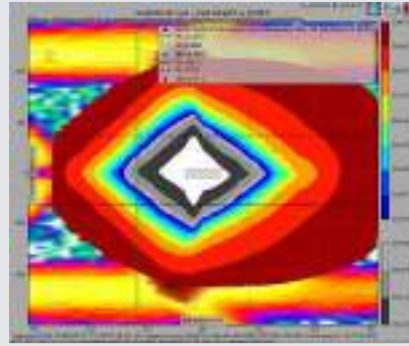
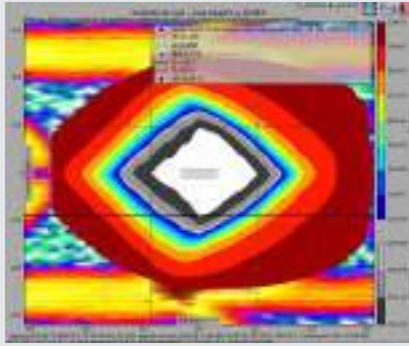
### JBOF 2x2 / slot 1 / Bottom Controller

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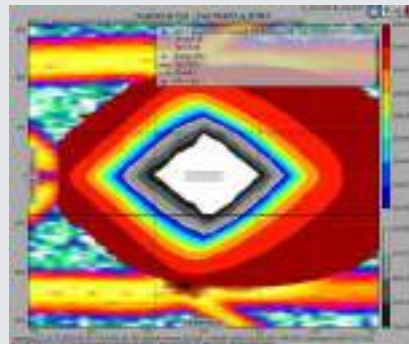
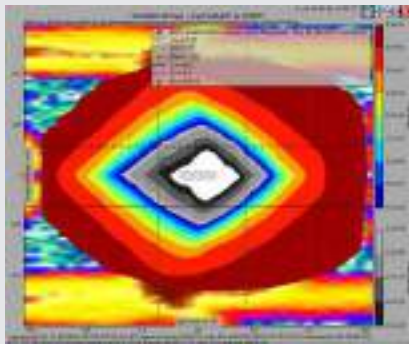
## JBOF 2x2 / slot 2 / Top Controller

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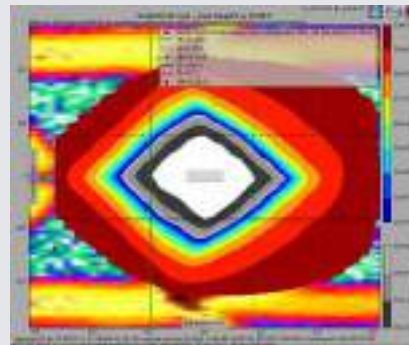
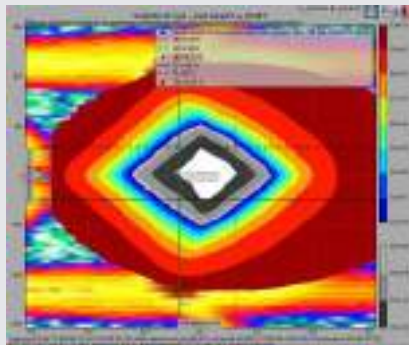
## JBOF 2x2 / slot 2 / Bottom Controller

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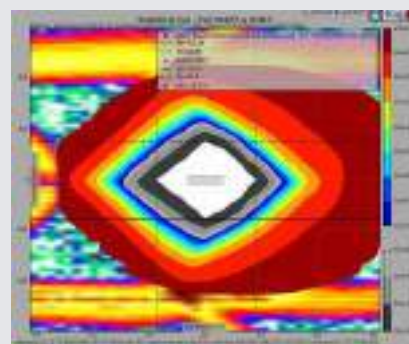
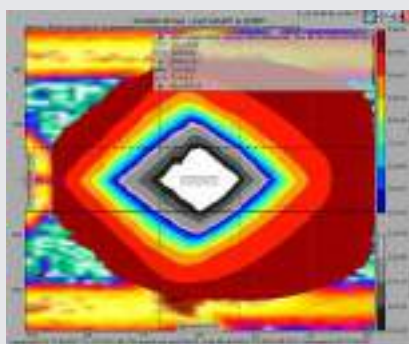
## JBOF 2x2 / slot 3 / Top Controller

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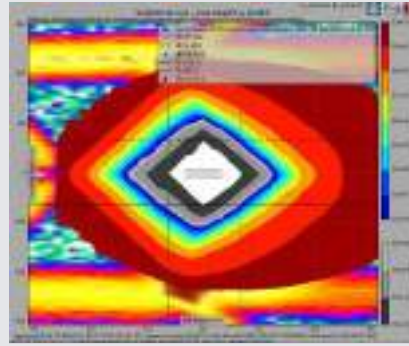
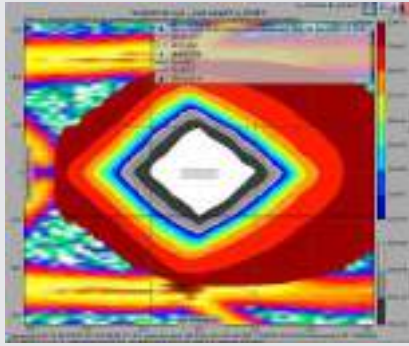
## JBOF 2x2 / slot 3 / Bottom Controller

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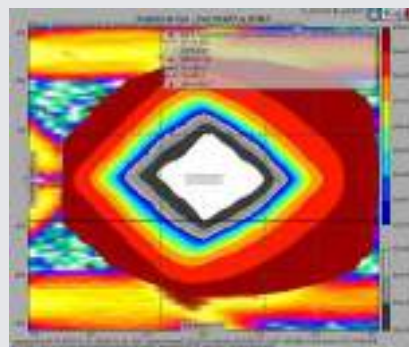
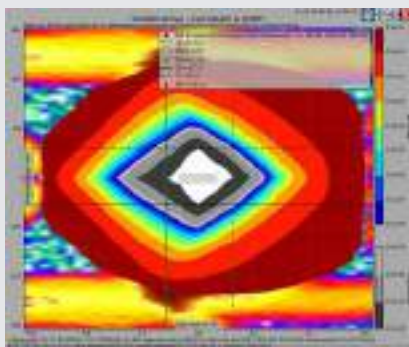
## JBOF 2x2 / slot 4 / Top Controller

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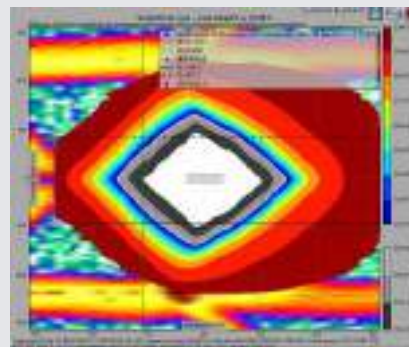
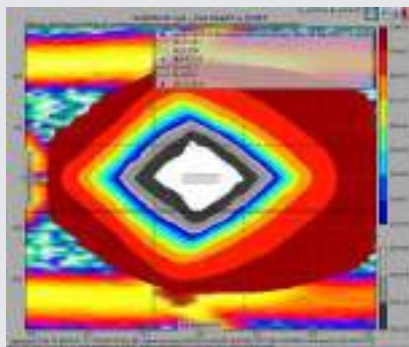
## JBOF 2x2 / slot 4 / Bottom Controller

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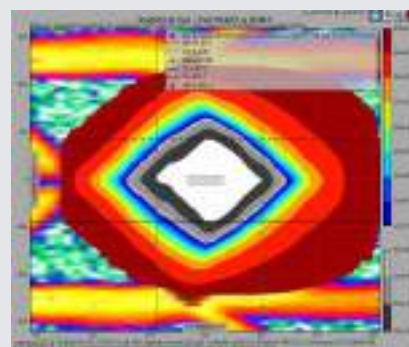
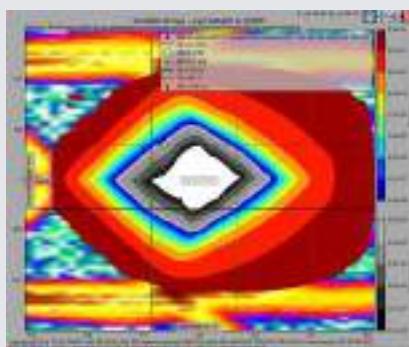
## JBOF 2x2 / slot 5 / Top Controller

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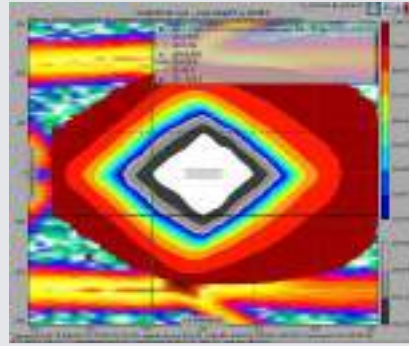
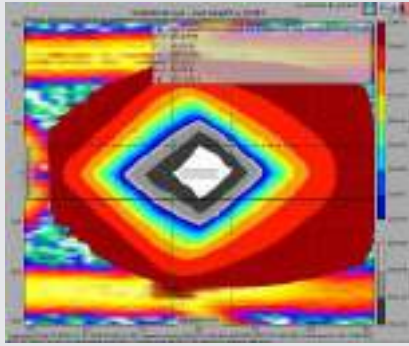
## JBOF 2x2 / slot 5 / Bottom Controller

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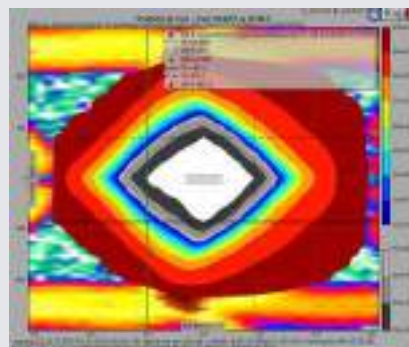
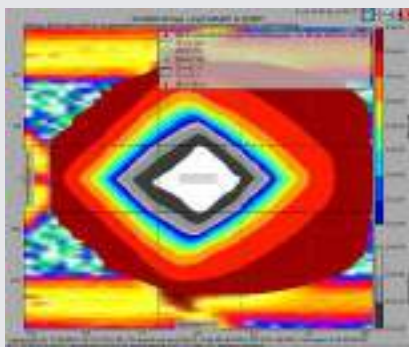
## JBOF 2x2 / slot 6 / Top Controller

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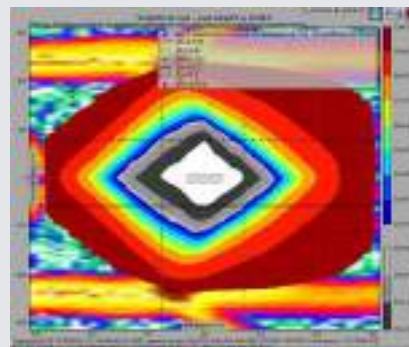
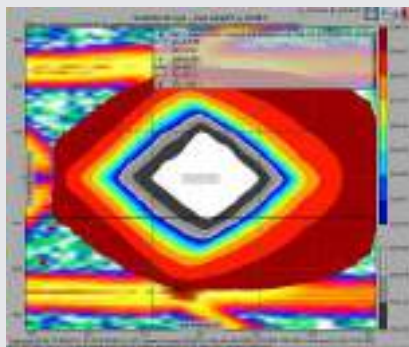
## JBOF 2x2 / slot 6 / Bottom Controller

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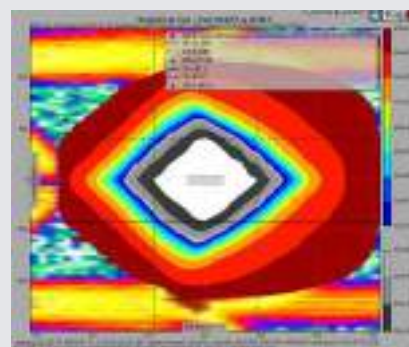
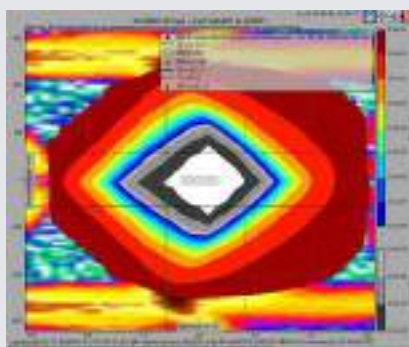
## JBOF 2x2 / slot 7 / Top Controller

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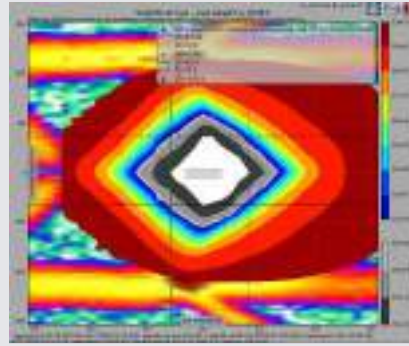
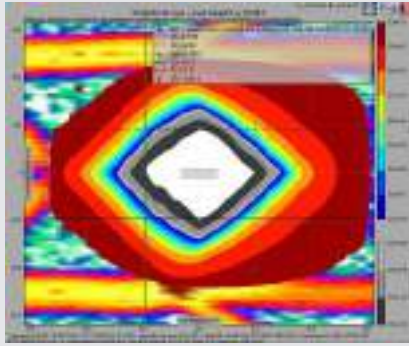
## JBOF 2x2 / slot 7 / Bottom Controller

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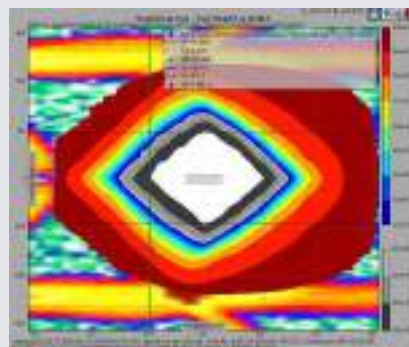
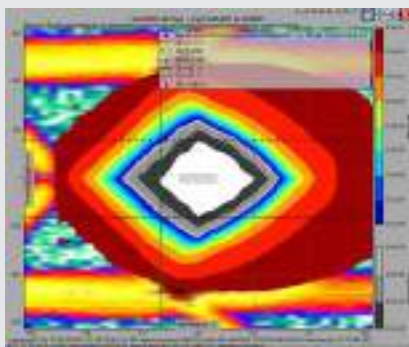
## JBOF 2x2 / slot 8 / Top Controller

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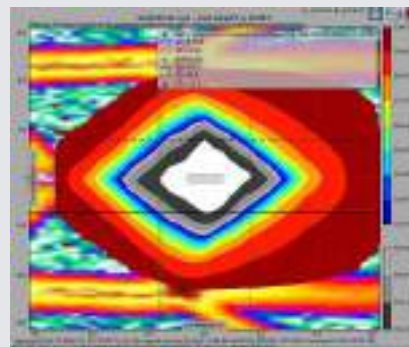
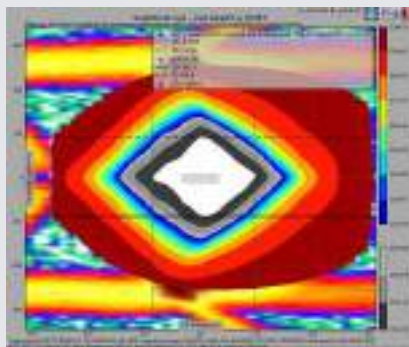
## JBOF 2x2 / slot 8 / Bottom Controller

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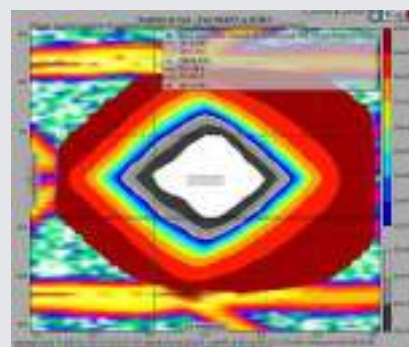
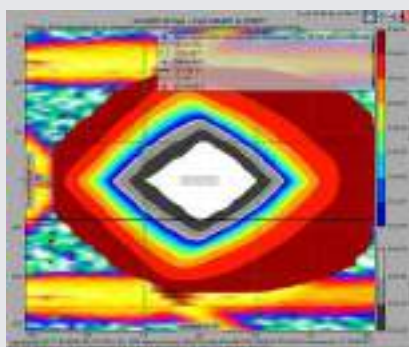
## JBOF 2x2 / slot 9 / Top Controller

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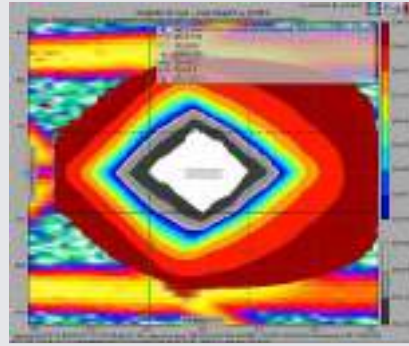
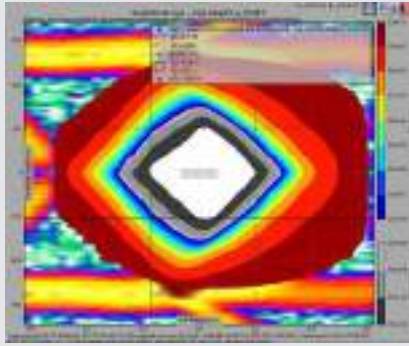
## JBOF 2x2 / slot 9 / Bottom Controller

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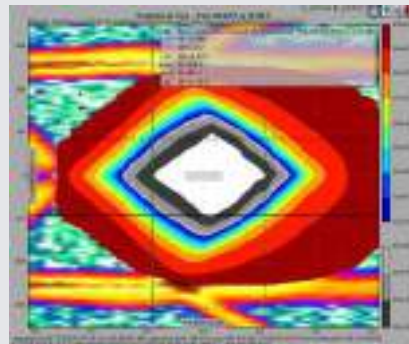
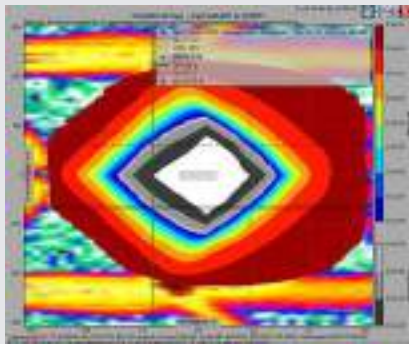
## JBOF 2x2 / slot 10 / Top Controller

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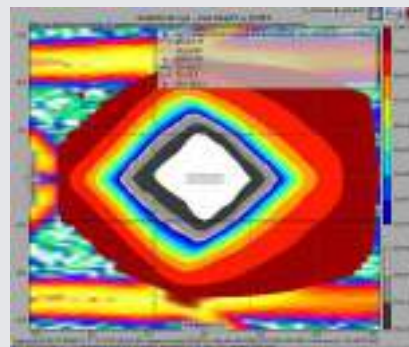
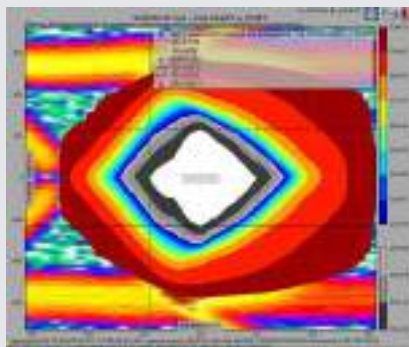
## JBOF 2x2 / slot 10 / Bottom Controller

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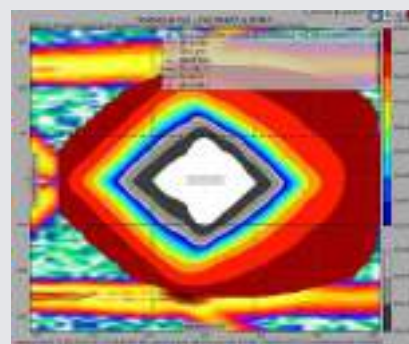
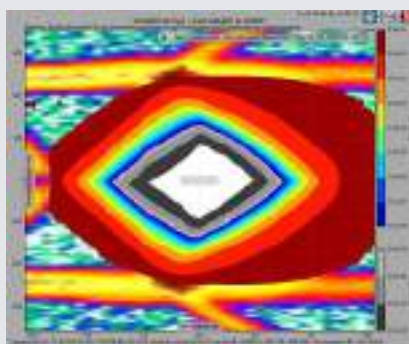
## JBOF 2x2 / slot 11 / Top Controller

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## JBOF 2x2 / slot 11 / Bottom Controller

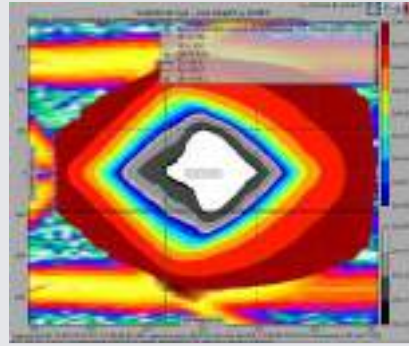
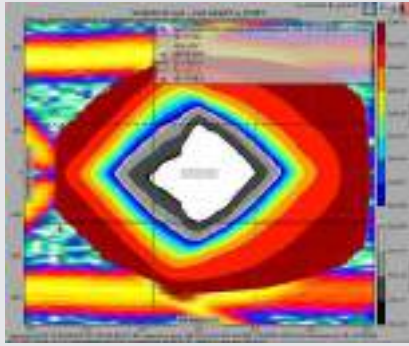
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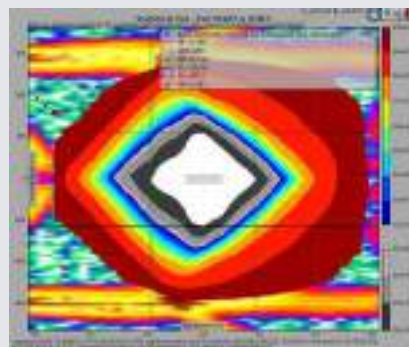
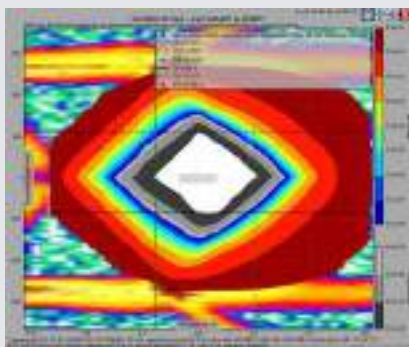
## JBOF 2x2 / slot 12 / Top Controller

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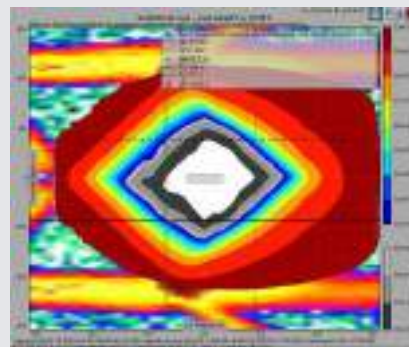
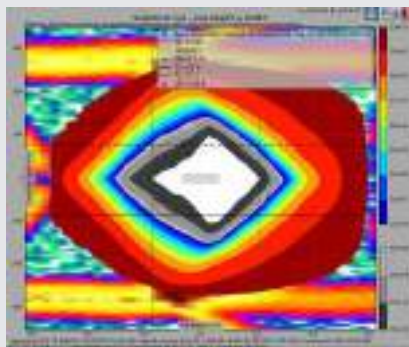
## JBOF 2x2 / slot 12 / Bottom Controller

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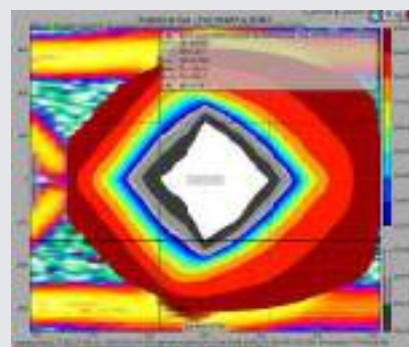
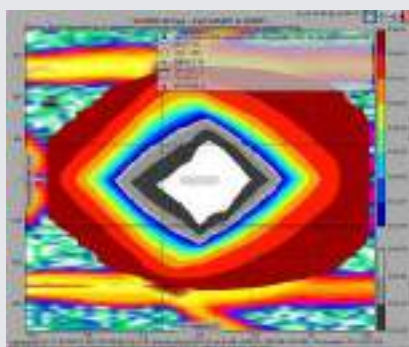
## JBOF 2x2 / slot 13 / Top Controller

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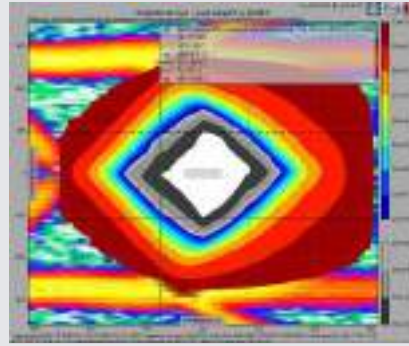
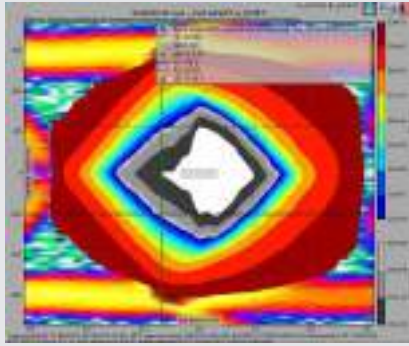
## JBOF 2x2 / slot 13 / Bottom Controller

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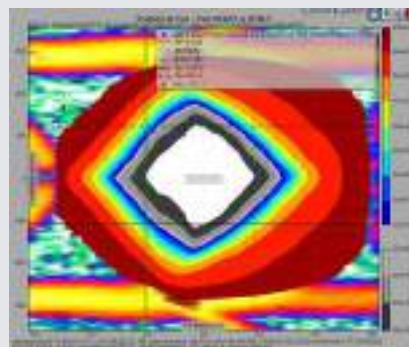
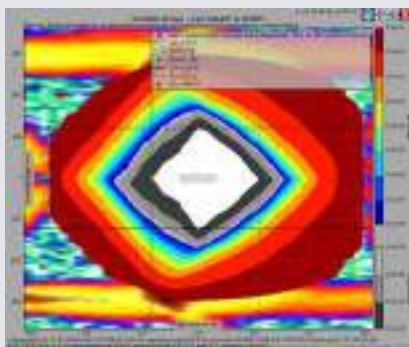
## JBOF 2x2 / slot 14 / Top Controller

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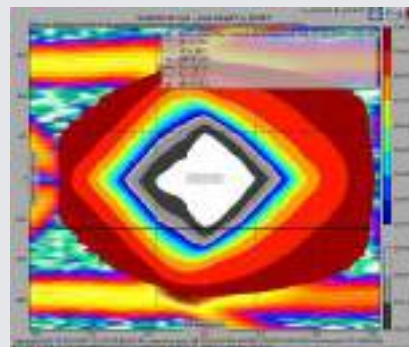
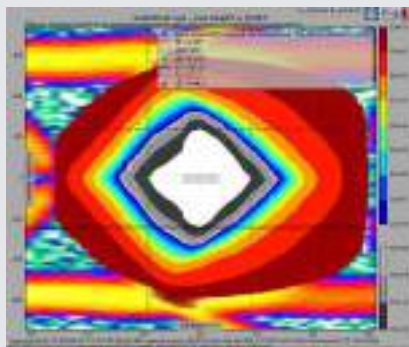
## JBOF 2x2 / slot 14 / Bottom Controller

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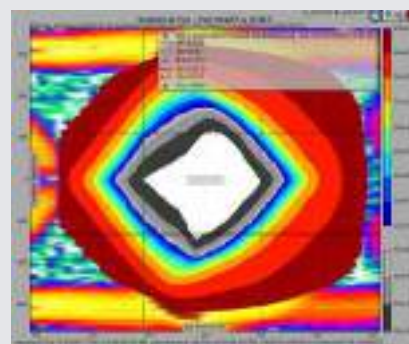
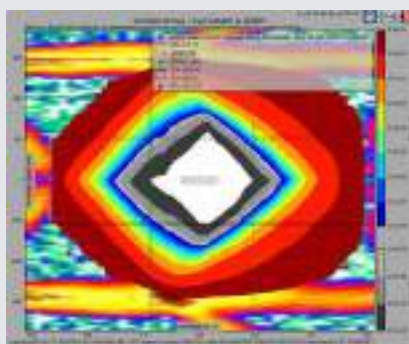
## JBOF 2x2 / slot 15 / Top Controller

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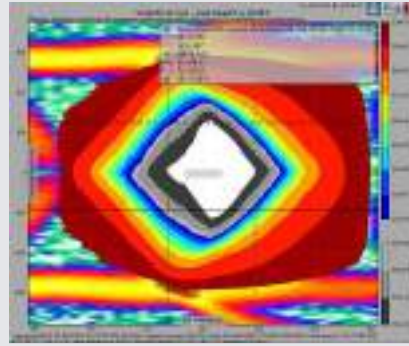
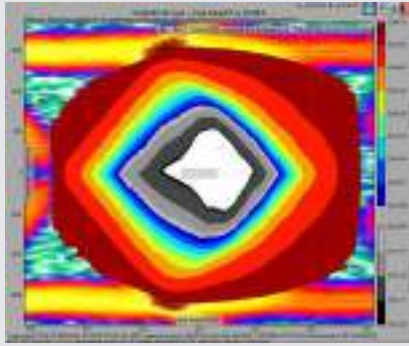
## JBOF 2x2 / slot 15 / Bottom Controller

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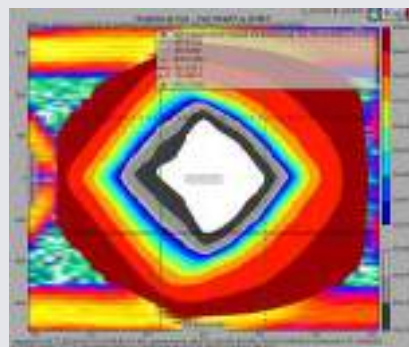
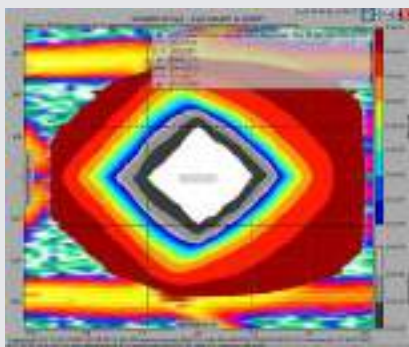
## JBOF 2x2 / slot 16 / Top Controller

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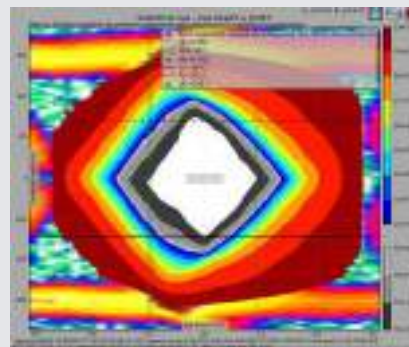
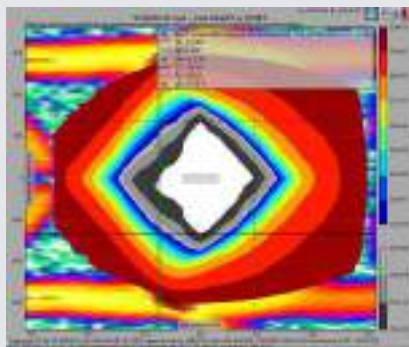
## JBOF 2x2 / slot 16 / Bottom Controller

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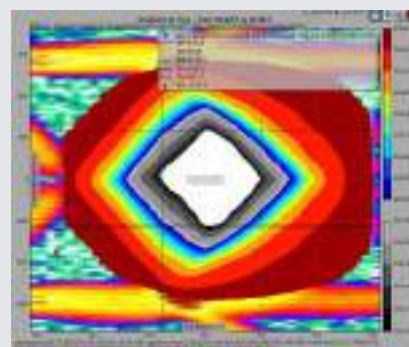
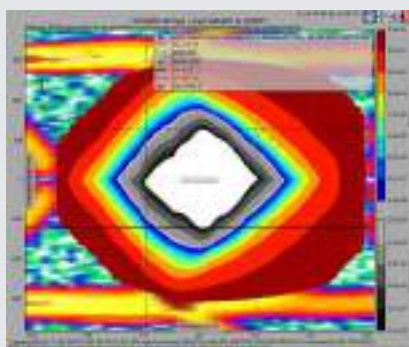
## JBOF 2x2 / slot 17 / Top Controller

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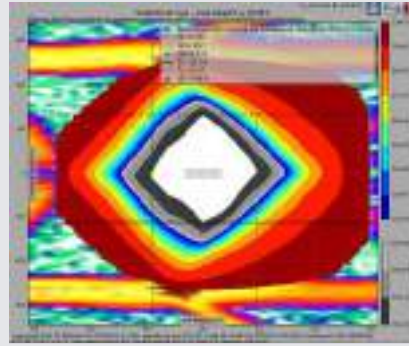
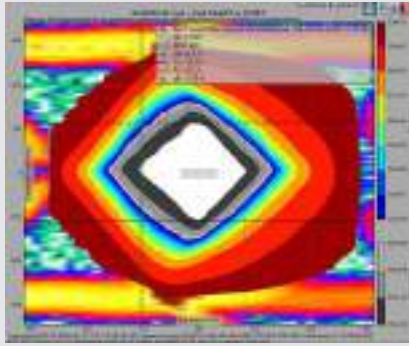
## JBOF 2x2 / slot 17 / Bottom Controller

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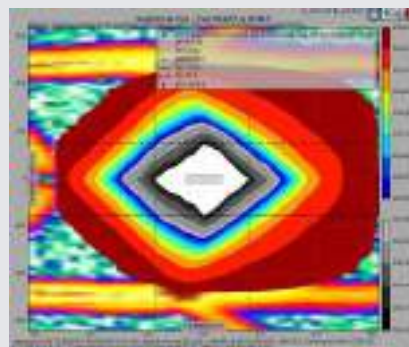
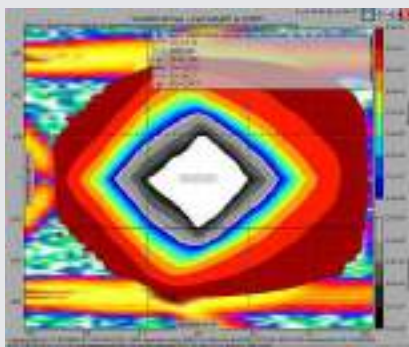
## JBOF 2x2 / slot 18 / Top Controller

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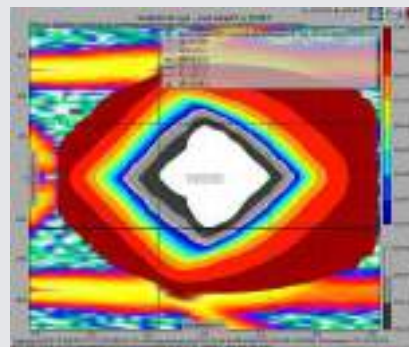
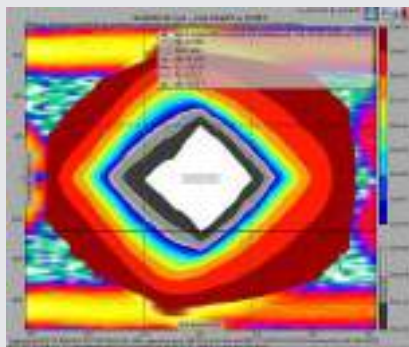
## JBOF 2x2 / slot 18 / Bottom Controller

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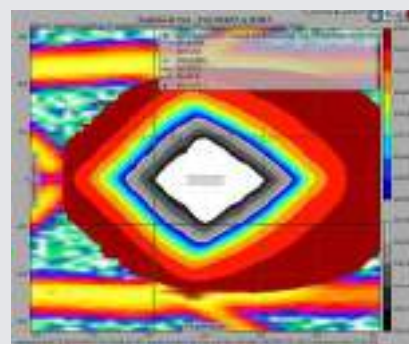
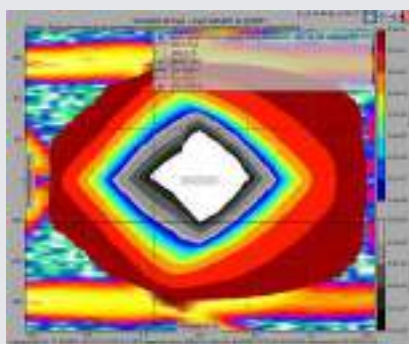
## JBOF 2x2 / slot 19 / Top Controller

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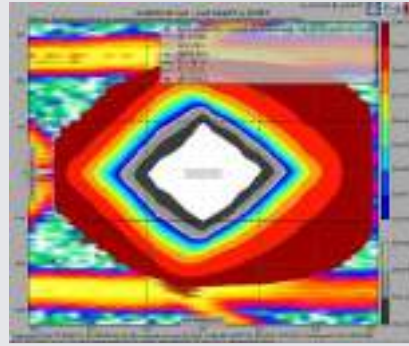
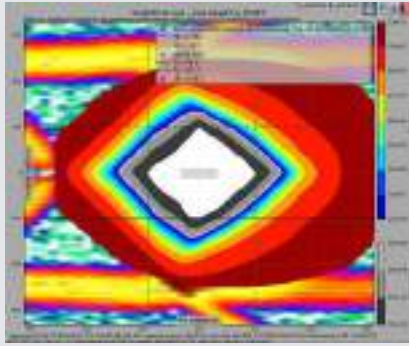
## JBOF 2x2 / slot 19 / Bottom Controller

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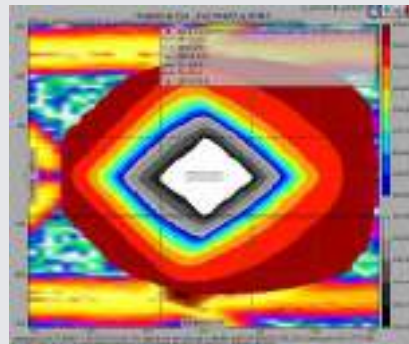
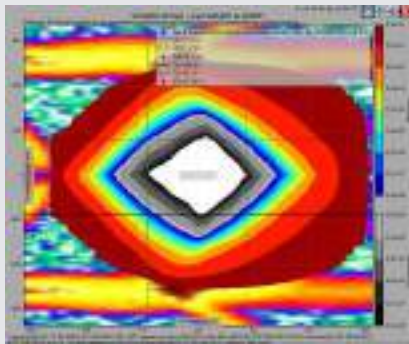
## JBOF 2x2 / slot 20 / Top Controller

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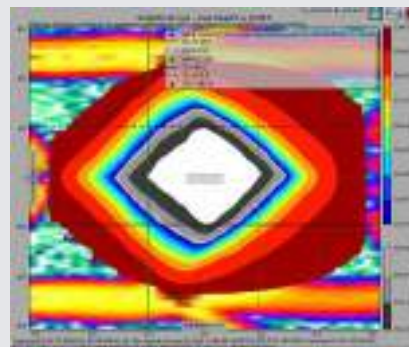
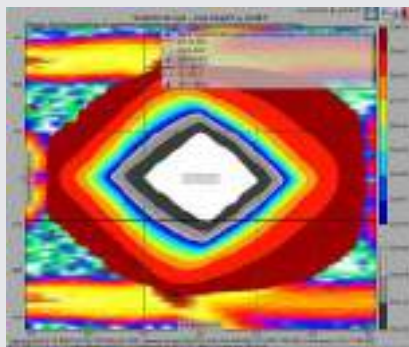
## JBOF 2x2 / slot 20 / Bottom Controller

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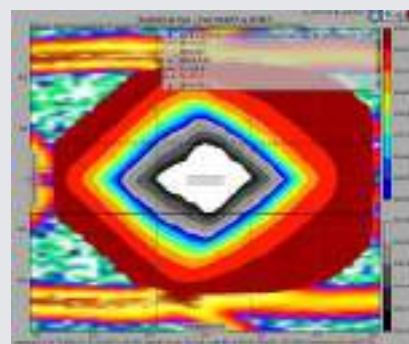
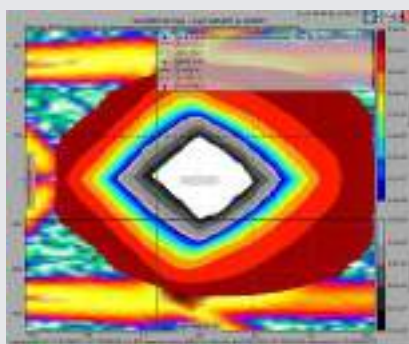
## JBOF 2x2 / slot 21 / Top Controller

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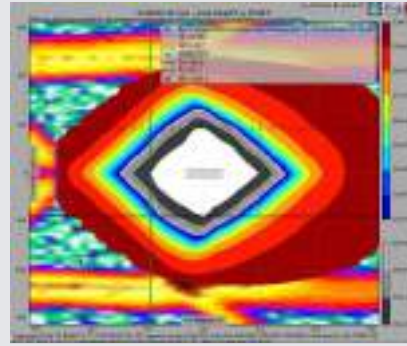
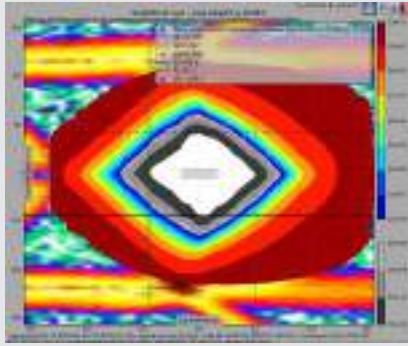
## JBOF 2x2 / slot 21 / Bottom Controller

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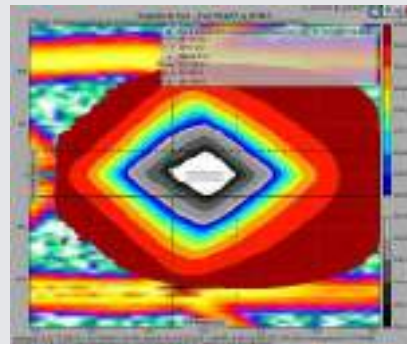
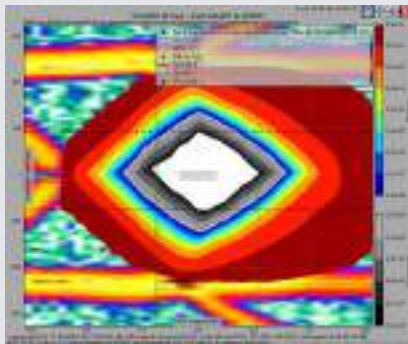
## JBOF 2x2 / slot 22 / Top Controller

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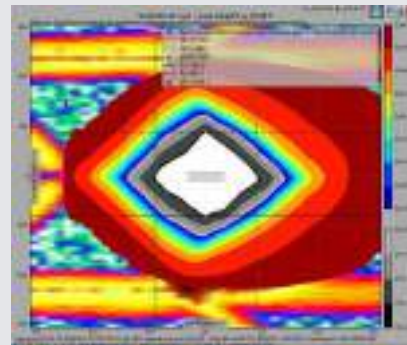
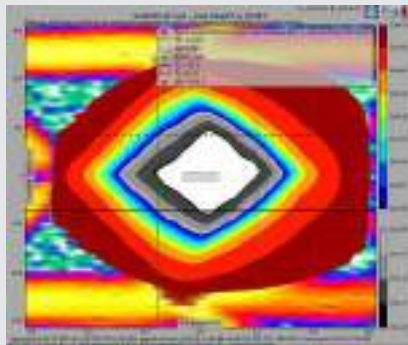
## JBOF 2x2 / slot 22 / Bottom Controller

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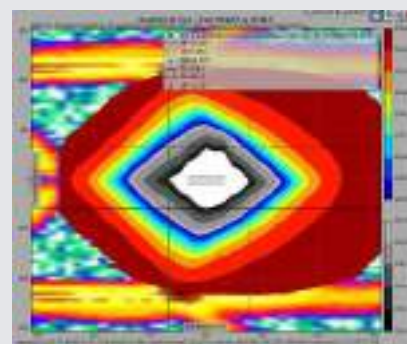
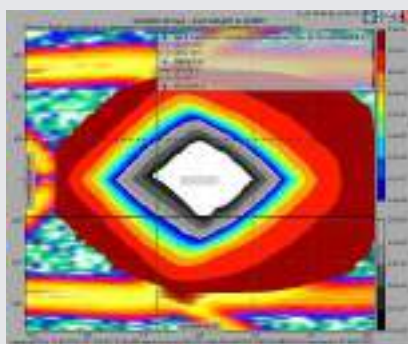
## JBOF 2x2 / slot 23 / Top Controller

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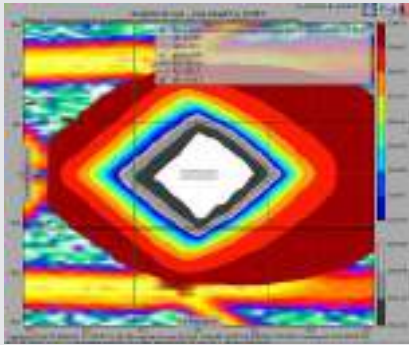
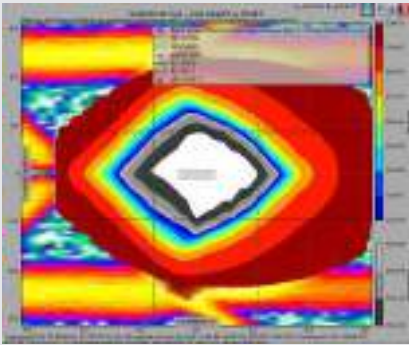
## JBOF 2x2 / slot 23 / Bottom Controller

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JBOF 2x2 / slot 24 / Top Controller

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JBOF 2x2 / slot 24 / Bottom Controller

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