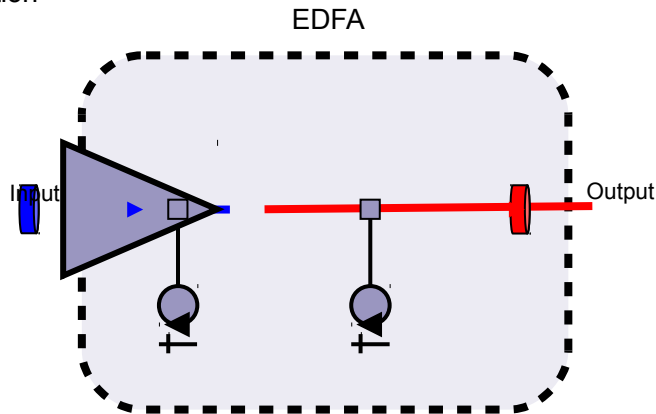


SNR-EDFA-DB

Full C-band EDFA +17dBm Booster

1 DESCRIPTION

1.1 Product Function



2 OPTIC AND/OR ELECTRIC SPECIFICATION

2.1 SNR-EDFA-DB

NO.	PARAMETER	SPECIFICATION			UNITS	NOTE
		MIN.	TYP.	MAX.		
2.1.1	Operation Wavelength Range	1528.5		1562	nm	C-band
2.1.2	Working mode	APC & AGC				
2.1.3	Input Power	-6		3	dBm	
2.1.4	Gain	14	18	23	dB	AGC mode, step 0.5dB; 23dB gain @-6dBm input; 18dB gain mode is recommended.
2.1.5	Output Power	10		17	dBm	APC mode, step 0.5dB; 10dBm output @-6dBm input
2.1.6	Gain Flatness			1	dB	gain@18dB,25°C
2.1.7	Noise Figure			5.5	dB	
2.1.8	Pump power leakage@ input			-30	dBm	
2.1.9	Pump power leakage@ output			-30	dBm	
2.1.10	Return loss @ input	40			dB	Pump off
2.1.11	Return loss @ output	40			dB	Pump off
2.1.12	PDG			0.3	dB	
2.1.13	PMD			0.5	dB	
2.1.14	Power supply voltage		220@50Hz		VAC	Dual AC
2.1.15	Power consumption			30	W	

SNR-EDFA-DB

Full C-band EDFA +17dBm Booster

ABSOLUTE MAXIMUM RATINGS

NO	PARAMETER	SPECIFICATION	UNITS	NOTE
3.1	Operation Temperature	-5~55	°C	
3.2	Operation Humidity	5~90	%RH	
3.3	Storage Temperature	-25~70	°C	
3.4	Storage Humidity	5~95	%RH	

3 OPTIC PORTS DEFINITION

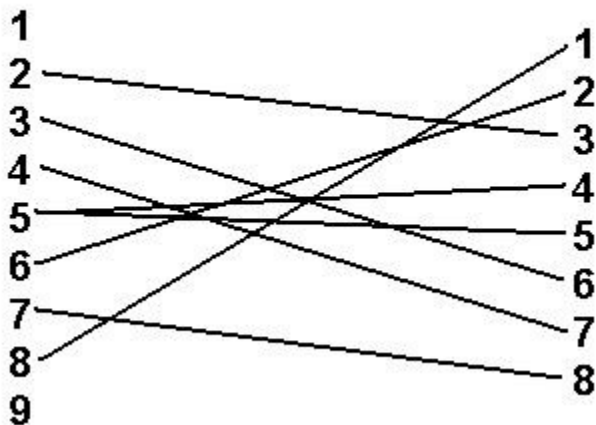
NO	CODE	PORT	DEFINITION OF PORT	CONNECTOR TYPE	NOTE
4.1	1	Input	Signal Input of EDFA	SC/APC	
4.2	2	Output	Signal Output of EDFA	SC/APC	

ELECTRIC PORTS DEFINITION

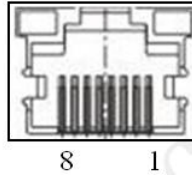
5.1 RS 232 Port

DB9

RJ45



5.2 Ethernet port

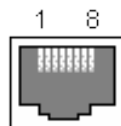


Pin	Name
1	TX+
2	TX-
3	RX+
4	Not connected
5	Not connected
6	RX-
7	Not connected
8	Not connected

5.3 Monitor

EDFA can export 4 alarm signal to the system via a standard RJ45 interface. These alarm signals are Input Power Alarm, Output Power Alarm, Pump status Alarm and Module Temperature Alarm and. When give an alarm, the corresponding TTL level will be set to low.

Pin Assignment (RJ45)



Monitor

Pin	Signal Name
1	Loss of Input Power
2	Loss of Output Power
3	Pump Laser Failure
4	Module Internal Temp. Alarm
5	Not connected
6	Not connected
7	Not connected
8	Ground

6 CLI COMMAND Reference

To access the CLI, you will require:

- Telnet software for an IP connection (for Windows, Telnet or HyperTerminal)

SNR-EDFA-DB

Full C-band EDFA +17dBm Booster

- Connection via an Ethernet or RS 232

RS232 is set at the baud rate of 9600 bps, 8 data bits, no parity, and 1 stop bit.

Ethernet Port Configuration: 21

- System password to login, if required.

Login user roles include:

Guest: only read base information.

General User: read and configure system information, modify user password.

Super User: In addition to the general user rights, as well as create / delete user privileges.

The user-level prompt consists of the device host name followed by the angle bracket (>).

When a command generates a report (including help messages) that is too long to fit onto your screen, use these keystrokes to move through the pages of the report.

Keyboard shortcuts are not case-sensitive.

Press...	To...
?	Provides help tailored to the current command you are entering. For example, if you are part way through typing a command, it will show you the valid syntax to complete it.
Up/down arrows	Moves back and forth through previously issued commands.
Tab	To speed up entry of commands, you need only enter enough of the command so that the CLI can uniquely recognize it, or press TAB and the CLI will automatically complete the current keyword for you. For example: The PROFILE command can be shortened to PROF. Pressing TAB expands it to PROFILE.

6.1 View System Information

6.1.1 help

Description: List all of command requested.

Permission: Guest/General User/Super User

Example: help

Answer: Help may be requested at any point in a command by entering a question mark '?'. If nothing matches, the help list will be empty.

Two styles of help are provided:

1. Full help is available when you are ready to enter a command argument <e.g. 'show ?'> and describes each possible argument.
2. Partial help is provided when an abbreviated argument is entered and you want to know what arguments match the input <e.g. 'show v?'>

6.1.2 history

Description: Display ten commands that user used recently.

Permission: General User/Super User

Example: History

Answer:

1. ?
2. clr

6.1.3 uptime

Description: Display the time since the host has started.

Permission: General User/Super User

Example: uptime

Answer: 0 Day 0 Hour 13 Minute 8 Second.

6.1.4 show user

Description: List all CLI and WEB User.

Permission: Super User

Format: User Name : username

Example: show user

Answer: User Name : admin123

User Name : user1

User Name : user2

User Name : user3

6.1.5 show version

Description: View the optical switch system version information.

Permission: Guest/General User/Super User

Example: show version

Answer: Serial Number : 701234

Hardware Version : 01.01

Firmware Version : 01.02

Manufacturing Date : 2011-07-07

Calibration Date : 2011-07-07

6.1.6 show ipaddr

Description: Display system IP address .

Permission: Guest/General User/Super User

Example: show ipaddr

Answer: IP Address : 172.168.21.64

Net Mask : 255.255.0.0

Gateway : 172.168.1.1

DNS1 : 202.103.24.68

DNS2 : 10.15.1.1

6.1.7 show snmp

Description: Display some information about snmp

Permission: General User/Super User

Command: show snmp

Example: show snmp

Answer: SNMP Version : V2C

SNMP agent status : Enabled

SNMP agent RO community : public

SNMP agent RW community : admin

SNMP trap status : Enabled

SNMP trap host 01 : 172.168.21.63

SNMP trap host 02 : 172.168.0.2

SNMP trap host 03 : 0.0.0.0

6.1.8 show devicename

Description: show the name of device

Permission: General User/Super User

Example: show devicename

Answer: device name: edfa123

6.2 Configuring System Information

6.2.1 clr

Description: Clear the message displayed on the terminal screen.

Permission: Guest/General User/Super User

6.2.2 set dhcp

Description: Configure dhcp enable or disable.

Permission: General User/Super User

Command: set dhcp [enable|disable]

Example: set dhcp enable

Answer: Start DHCP client ...

6.2.3 set ipaddr

Description: Configure the system IP address and subnet mask.

Permission: General User/Super User

Command: ipaddr A.B.C.D netmask A.B.C.D

Example: set ipaddr

Answer: IP Address[172.168.21.64]:172.168.21.65

Netmask[255.255.0.0]:255.255.0.0

Gateway address[172.168.1.1]:172.168.1.1

DNS 1[202.103.24.68]:202.103.24.68

DNS 2[10.15.1.1]:10.15.1.1

Are you sure to save the network settings?(y|n)'[n]:y

Network configuration is set successfully

6.2.4 set log init

Description: Empty the system log information.

Permission: General User/Super User

Example: set log init

6.2.5 ping

Description: Query whether a destination host exists.

Permission: Guest/General User/Super User

Command: ping A.B.C.D

Example: ping 172.168.21.64

Answer: 172.168.21.64 is alive!

6.2.6 reboot

Description: Restart system.

Permission: General User/Super User

Example: reboot

Answer: Reset System Successfully!

6.2.7 user add

Description: Add user to CLI and WEB.

Permission: Super User

Command: user add user_name

Example: user add user3

Answer: Please input the password of user user3:*****

Please input the password again*****

User user3 is added successfully.

Note: The max count user is four.

6.2.8 user del

Description: Delete user in CLI and WEB.

Permission: Super User

Command: user del user_name

Example: user del user3

Answer: User user3 is deleted successfully.

6.2.9 chpwd

Description: Modify the password of the current CLI and web user.

Permission: General User/Super User

Example : chpwd

Answer: ->Please input old admin password:*****

->Please enter the new password(5 -15characters):*****

->Please confirm your new password:*****

Admin password is changed successfully!

6.2.10 login

Description: User login to access the corresponding function.

Permission: Guest

Command: Username

Password

Example: login

Answer: Username: admin

Password: *****

(Default: username: admin password: admin)

6.2.11 logout

Description: User logout of the system

Permission: General User/Super User

Example: logout

6.2.12 set snmp

Description: Set some information about snmp.

Permission: General User/Super User

Example: set snmp

Answer: Enable SNMP agent?(y|n)[y]:y

SNMP RO Community[public]:public

SNMP RW Community[admin]:admin

Enable SNMP trap?(y|n)[y]:y

SNMP Host-0 IP[172.168.21.63]:172.168.21.63

SNMP Host-1 IP[172.168.0.2]:172.168.0.2

SNMP Host-2 IP[0.0.0.0]:172.168.21.62

Are you sure to save the SNMP settings?(y|n)[y]:y

SNMP configuration is set successfully

6.2.13 set devicename

Description: Set the name of device.

Permission: General User/Super User

Example: set devicename edfa123

Answer: Set Device Name successfully

6.3 View Device Parameters

6.3.1 show edfa all

Description: View all edfa parameters.

Permission: General User/Super User

Example: show edfa all

```
Answer:  EDFA SN           : 798645
         EDFA Temperature   : 25.3 C
         .....
```

6.3.2 show edfa sn

Description: View the edfa serial number.

Permission: General User/Super User

Example: show edfa sn

Answer: EDFA SN: 798645

6.3.3 show edfa temperature

Description: View the temperature of EDFA module.

Permission: General User/Super User

Example: show edfa temperature

Answer: EDFA Temperature: 25.3 C

6.3.4 show edfa pump

Description: Display parameters about pump.

Permission: General User/Super User

Example: show edfa pump

```
Answer:  EDFA Pump 01 Current   : 500.56 mA
         EDFA Pump 01 Temperature : 25 C
```

EDFA Pump 01 Cooler Current : 210 mA

EDFA Pump 02 Current : 850 mA

EDFA Pump 02 Temperature :25 C

EDFA Pump 02 Cooler Current : 310 mA

6.3.5 show edfa opmode

Description: Display the work mode of EDFA module.

Permission: General User/Super User

Example: show edfa opmode

Answer: EDFA Operation Mode: AGC

6.4 Configuring Device Parameters

6.4.1 set edfa opmode

Description: Set the mode of operating AGC or APC.

Permission: General User/Super User

Command : set edfa opmode [agc|apc]

Example: set edfa opmode agc

Answer: Set EDFA operating mode successfully

6.4.2 set edfa pinth

Description: Set input power threshold

Permission: General User/Super User

Command: set edfa pinth value

Example: set edfa pinth -35

Answer: Set EDFA pin threshold successfully

6.4.3 set edfa poutth

Description: Set ouput power threshold

Permission: General User/Super User

Command: set edfa poutth value

Example: set edfa poutth -35

Answer: Set EDFA pout threshold successfully

6.4.4 set edfa agcgain

Description: Set the edfa gain in AGC mode

Permission: General User/Super User

Example: set edfa agcgain -35

Answer: Set EDFA AGC gain successfully

6.4.5 set edfa apcpower

Description: Set the edfa APC power inAPC mode

Permission: General User/Super User

Example: set edfa apcpower 15

Answer: Set EDFA APC power successfully

7 SNMP Reference

7.1 SNMP Mib definition (SNMPV2C based on UDP)

No.	OID	Content	R/W Authority	Value Type
System Information				
1	1.3.6.1.4.1.28318.1.1.1.1	Product Type ID	R	String
2	1.3.6.1.4.1.28318.1.1.1.2	Hw Version	R	String
3	1.3.6.1.4.1.28318.1.1.1.3	Sw Version	R	String
4	1.3.6.1.4.1.28318.1.1.1.4	Manufacturing date	R	String
5	1.3.6.1.4.1.28318.1.1.1.5	Calibration date	R	String
6	1.3.6.1.4.1.28318.1.1.1.6	Reserved	R	String
7	1.3.6.1.4.1.28318.1.1.1.7	Reserved	R	String
8	1.3.6.1.4.1.28318.1.1.1.8	Reserved	R	Integer
9	1.3.6.1.4.1.28318.1.1.1.9	Reserved	R	Integer
10	1.3.6.1.4.1.28318.1.1.1.10	IP Address	RW	String
11	1.3.6.1.4.1.28318.1.1.1.11	Netmask	RW	String
12	1.3.6.1.4.1.28318.1.1.1.12	Gateway	RW	String
13	1.3.6.1.4.1.28318.1.1.1.13	Reserved	R	String
14	1.3.6.1.4.1.28318.1.1.1.14	Add a Trap IP	RW	String
15	1.3.6.1.4.1.28318.1.1.1.15	Get Trap IP	R	String
16	1.3.6.1.4.1.28318.1.1.1.16	Delete a Trap IP	RW	String
17	1.3.6.1.4.1.28318.1.1.1.17	reboot	RW	Integer
18	1.3.6.1.4.1.28318.1.1.1.18	Name of device	RW	String
19	1.3.6.1.4.1.28318.1.1.1.19	Reserved	R	String
20	1.3.6.1.4.1.28318.1.1.1.20	Reserved	R	String
EDFA Module Data Table				
21	1.3.6.1.4.1.28318.1.1.1.21	EDFA Module Table	R	
22	1.3.6.1.4.1.28318.1.1.1.21.1	EDFA Module Information Item	R	
23	1.3.6.1.4.1.28318.1.1.1.21.1.1	Index of table	R	Integer
24	1.3.6.1.4.1.28318.1.1.1.21.1.2	Index of device	R	String
25	1.3.6.1.4.1.28318.1.1.1.21.1.3	EDFA SN.	R	String
26	1.3.6.1.4.1.28318.1.1.1.21.1.4	EDFA Working Mode	RW	Integer
27	1.3.6.1.4.1.28318.1.1.1.21.1.5	EDFA Case Temperature(°C)	R	String
28	1.3.6.1.4.1.28318.1.1.1.21.1.6	EDFA AGC Gain(dB)	RW	String
29	1.3.6.1.4.1.28318.1.1.1.21.1.7	EDFA Input Power(dBm)	R	String
30	1.3.6.1.4.1.28318.1.1.1.21.1.8	EDFA Input Power threshold(dBm)	RW	String
31	1.3.6.1.4.1.28318.1.1.1.21.1.9	EDFA Output Power(dBm)	R	String
32	1.3.6.1.4.1.28318.1.1.1.21.1.10	EDFA Output Power threshold(dBm)	RW	String
33	1.3.6.1.4.1.28318.1.1.1.21.1.11	Pump1 Current (mA)	R	String
34	1.3.6.1.4.1.28318.1.1.1.21.1.12	Pump1 Power(mW)	R	String
35	1.3.6.1.4.1.28318.1.1.1.21.1.13	Pump1 Temperature(°C)	R	String
36	1.3.6.1.4.1.28318.1.1.1.21.1.14	Pump1 Itec(mA)	R	String
37	1.3.6.1.4.1.28318.1.1.1.21.1.15	Pump2 Current (mA)	R	String
38	1.3.6.1.4.1.28318.1.1.1.21.1.16	Pump2 Power(mW)	R	String
39	1.3.6.1.4.1.28318.1.1.1.21.1.17	Pump2 Temperature(°C)	R	String
40	1.3.6.1.4.1.28318.1.1.1.21.1.18	Pump2 Itec(mA)	R	String
41	1.3.6.1.4.1.28318.1.1.1.21.1.19	EDFA APC Power(dBm)	Rw	String
OID Defined for Trap				
41	1.3.6.1.4.1.28318.1.1.1.22.1	Event type of alarm (D)	accessible-for-notify	Integer
42	1.3.6.1.4.1.28318.1.1.1.22.2	Cause of alarm (D)	accessible-for-notify	Integer
43	1.3.6.1.4.1.28318.1.1.1.22.3	Source of alarm	accessible-for-notify	String
44	1.3.6.1.4.1.28318.1.1.1.22.4	Perceived severity for an alarm (D)	accessible-for-notify	Integer
55	1.3.6.1.4.1.28318.1.1.1.22.5	Value of Alarm	accessible-for-notify	String

Note :

- A. 1: enable 0: disable
- B. Gain value for Gain mode (dB)
- C. Alarm Bytes = ALM1 *256 + ALM2

SNR-EDFA-DB

Full C-band EDFA +17dBm Booster

ALM1

Bit	7	6	5	4	3	2	1	0
Description	Pin	Pout	TEMP		P1 Iop	P1 Power	P1 Tchip	P1 Cooler

ALM2

Bit	7	6	5	4	3	2	1	0
Description	P2 Iop	P2 Power	P2 Tchip	P2 Cooler				

The alarm byte is given by modules and just for reference. Users will receive the alarm types and causes when occurring by actively informing messages.

D. Event Type & Cause of alarm & Perceived severity

Event Type:

- 2 : communicationsAlarm
- 3 : environmentalAlarm
- 4 : equipmentAlarm
- 10: processingErrorAlarm
- 11: qualityOfServiceAlarm

Perceived severity

- 0 : indeterminate
- 1 : critical
- 2 : major
- 3 : minor
- 4 : warning
- 5 : cleared

Cause of alarm

Cause of alarm	Event Type	Perceived severity
1: Pin alarm	4	1
2: Pout alarm	4	1
3: Pump alarm	4	1
4: Temp (case temperature alarm)	3	3
5: Inner Communication alarm	4	2

e. The command “EDFA Output Power threshold” is valid only in condition of APC mode, and the value should be in the range between the value of “EDFA APC Power” and “EDFA APC Power -3dB”. Or, the value in setting is invalid.

For AGC mode, the “EDFA Output Power threshold” is automatically set by the formula, which equals “the lowest input power+Gain-3dB”.

f. The products have been designed compatibility for one pump and two pumps modules. In this case, the edfa module is in one pump design, so the data and command about “pump2” are always invalid and can be ignored.

g. In “APC mode”, the command “EDFA AGC Gain” is not supported. Meanwhile, in “AGC mode”, the command “EDFA APC Power” is not supported.

7.2 SNMP Trap Definition

SNR-EDFA-DB

Full C-band EDFA +17dBm Booster

No	Oid1 (Event Type)	Oid2 (cause of alarm)	Oid3 (Source of alarm)	Oid4 (severity for an alarm)	Oid5 (value of alarm)
1	1.3.6.1.4.1.28318. 1.1.1.22.1	1.3.6.1.4.1.28318. 1.1.1.22.2	1.3.6.1.4.1.28318. 1.1.1.22.3	1.3.6.1.4.1.28318. 1.1.1.22.4	1.3.6.1.4.1.28318. 1.1.1.22.5

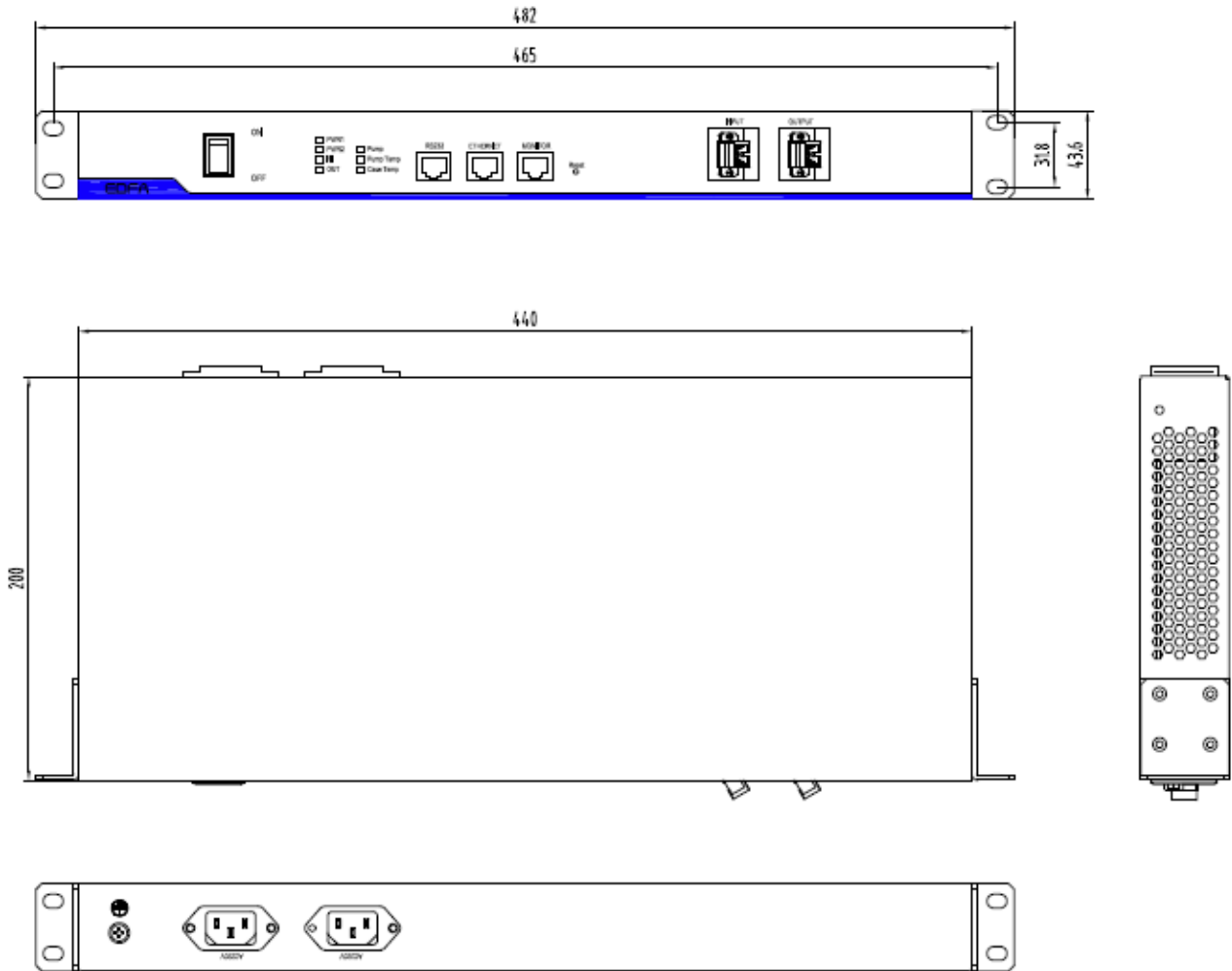
Alarm Traps are sent according to following rules:

Normal->Alarm: Just send Alarm trap one time
Alarm->Normal: Just send Alarm cleared trap one time
Normal: Don't send Alarm trap

SNR-EDFA-DB

Full C-band EDFA +17dBm Booster

8 MECHANICAL DRAWINGS



9 PRODUCT APPEARANCE AND MATERIAL

10 PACKAGING ATTACHEMENT AND OTHER REQUIREMENT

11 TEST REQUIREMENT