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DATE: 02/12/2005

COMMENTS:

MARS
Org: WHOI
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Date: 02/03/05

EDFA Response Test

Purpose of Test:

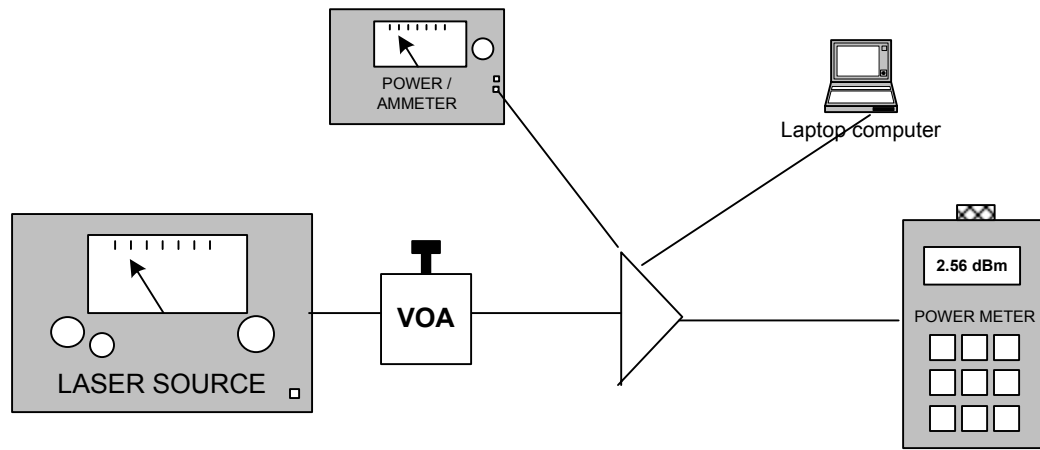
- To determine the gain and linearity of the EDFA
- To determine the flatness of the frequency curve for the EDFA
- To characterize electrical power consumption at a given optical level

Gain Linearity and Electrical Power Consumption: Laser source is connected to EDFA and ranged from -50 to -6 dBm. Data points are recorded for assorted values of input vs output and the current drawn.

Frequency Response: Laser source is connected to EDFA, tuned to various input values, and ranged from 1528 to 1560 nm being careful not to overload the EDFA (<-6dBm). Data points are recorded for assorted values of wavelength input.

WARNING: DO NOT ALLOW INJECTION INTO EDFA TO EXCEED -6 dBm

O02-EDFA: EDFA Response Test



LEGEND			
n	Attenuator Bulkhead	n dB	Expected Gain / Loss
n dBm	Calibrated Input	n dBm	Expected Output

-30 to -6 dBm

+17 dB

-13 to 11 dBm

0dBm 1528-1560 nm

+17 dB

+17 dBm +/- 3dBm

PROCEDURE:

1) Connect the EDFA as shown on the previous page. The PC need only be placed in a minicom or hyperterm mode with an RS232 connection to the EDFA "evaluation" card, per Bookham's instructions. You will probably need a null modem here.

Setup Parms are: 8N1 flowcontrol off 9600b.

2) Type AD FFFF 1234 to log in

Use dBm for all power values: $(\text{dBm}=10 \log P_{\text{mw}})$

Power meter should be set for the 1550nm range.

GAIN TEST & POWER TEST

0) Set the laser into gain mode with the command: SA 1 G 23

1) Set the laser to 1550nm and bring up the power to the values on the table of the next page.

2) Record the output value with an optical power meter and enter the values in the table on the next page.

3) At this time record the current and/or electrical power consumption.

4) Display the output power data on the laptop and insure that it agrees with step 2. The Command is:

AP

CONSTANT OUTPUT TEST

1) Repeat the above test this time setting the amplifier into constant power mode for -2 dBm with command:

> SA 1 O -2

FREQUENCY RESPONSE TEST

1) Set the laser to 1528nm and bring up the power to -30 dBm.

2) Record the output value with an optical power meter. Be sure to set the optical meter for 1550nm.

3) Record the values in the table on the next page,

4) Increase the frequency of the laser as shown in the table and continue thru all frequencies

5) Perform the test for the other input powers listed

input vs output (dBm) @1550nm Output in Gain Mode			
EDFA TYPE:		1AEC28 Line amp	
inpt	outpt	amps	watts
-44	-2	0.38	1.9
-13.7	-9.6	0.45	2.25
-13.1	10.6	0.46	2.3
-12.1	11.1	0.49	2.45
-11.1	12.1	0.52	2.6
-10.7	12.5	0.52	2.6
-8.3	14.8	0.68	3.4
-7.7	15.4	0.73	3.65
-6.7	16.4	0.83	4.15
-5.3	17.7	1.02	5.1

input vs output (dBm) @1550nm Output in Output Mode	
EDFA TYPE: 1AOC28 Pre Amp	
inpt	outpt
-40	-2.9
-35	-2.9
-30	-2.9
-20	-2.9
-10	-2.9

OUTPUT /	
EDFA TYPE:	
1AOC28 Pre Amp	
EDFA MODE:	
GAIN	
inpt dBm	-20
nm	dBm
1528	2.98
1535	2.96
1545	3.13
1555	3.12
1565	3,11

OUTPUT /	
EDFA TYPE:	
1AOC28 Pre Amp	
EDFA MODE:	
GAIN	
inpt dBm	-40
nm	dBm
1528	-4.48
1535	-4.47
1545	-4.46
1555	-4.46
1565	-4.47

OUTPUT /	
EDFA TYPE:	
1AOC28 Pre Amp	
EDFA MODE:	
CONSTANT	
inpt dBm	-20
nm	dBm
1528	-2.9
1535	-2.9
1545	-2.9
1555	-2.9
1565	-2.9