DFB Laser measurement

Adviser : Keang-Po Ho

Student : Kevin

DFB Laser measurement

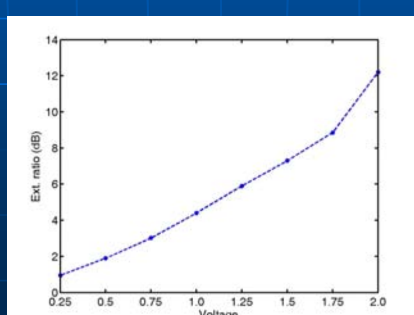
$V_{p\text{-}p}$ = 0.25~2v

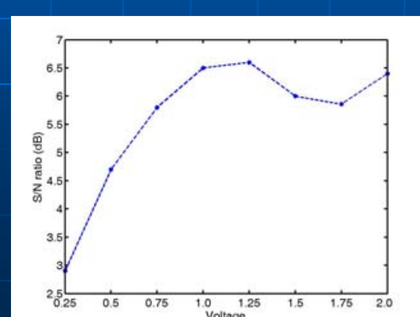
Current = 55mA

Temperature = 25

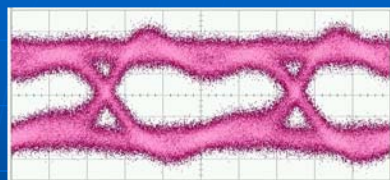
Ext. ratio = ?

S/N ratio = ?

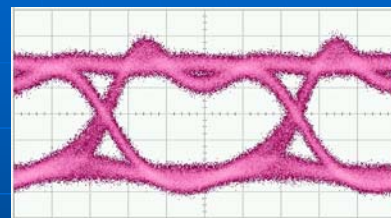




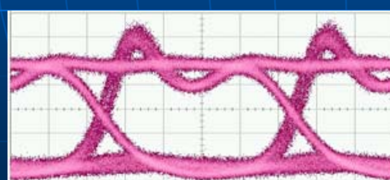
DFB Laser measurement



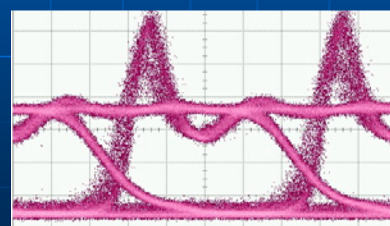
(a)0.5V



(b)1.0V



(c)1.5V



(d)2.0V

DFB Laser measurement

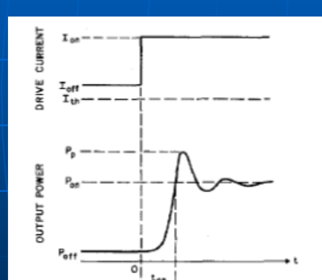
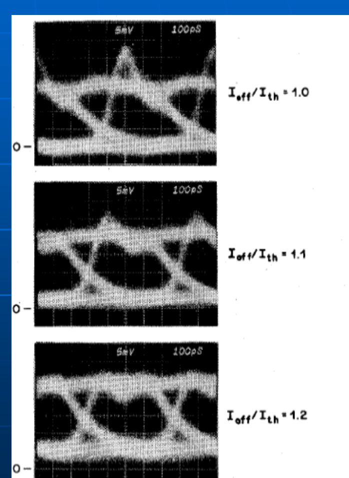
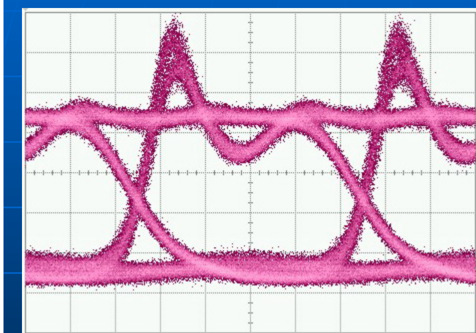


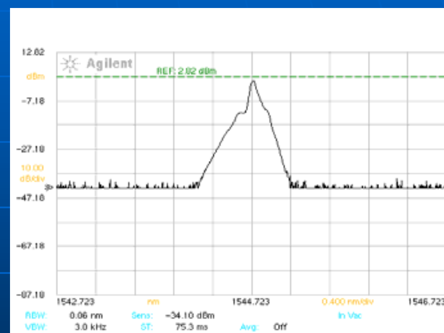
Fig. 10. Step input current and laser response.



Measured 2-Gbit/s eye pattern of ridge laser for I_{off}/I_{th} increasing from 1.0 to 1.2.

DFB Laser measurement





Vp-p = 1.75V

Ext. ratio = 8.85dB

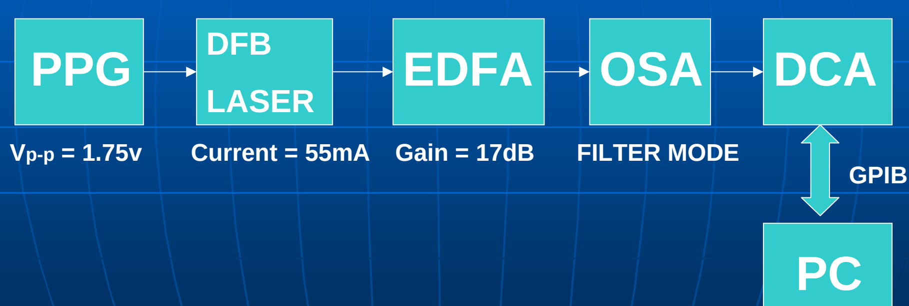
S/N ratio = 5.86dB

$\lambda_c = 1544.71nm$

$span = 4nm$

DFB Laser measurement

Chirp measurement block diagram



DFB Laser measurement

- Time-resolved chirp quantifies the time variation of both the intensity and the frequency of a transmitter.

		Frequency (Hz)					
		f1	f2	f3	...	Fn	Chirp
Time (s)	t1	P(t1,f1)	P(t1,f2)	P(t1,f3)	...	P(t1,fn)	f(t1)
	t2	P(t2,f1)	P(t2,f2)	P(t2,f3)	...	P(t2,fn)	f(t2)
	t3	P(t3,f1)	P(t3,f2)	P(t3,f3)	...	P(t3,fn)	f(t3)
	...	...	...	...	...	...	...
	tn	P(tn,f1)	P(tn,f2)	P(tn,f3)	...	P(tn,fn)	f(tn)

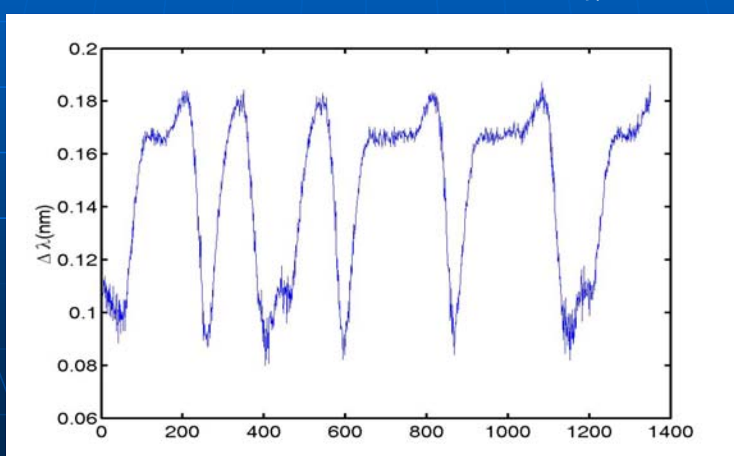
Raw Data:
Power vs. Frequency and Time

$$Chirp = \Delta f\,(t_n) = \Sigma \frac{P\,(t_n, f_i)\,(f_i - f_{mean})}{\Sigma P\,(t_n, f_i)}$$

DFB Laser measurement

Chirp:

$$\Delta f = \frac{C * \Delta\lambda}{\lambda^2}$$



DFB Laser measurement

Chirp: