EXPERIMENT NO.- 8

NAME-ANJALI MANTRI ROLL NO.-U18EC125

Aim: To simulate setup of 10Gb/s channel of 1550nm SMF transmission using Optisystem software:
A) Study the effect of attenuation (0.2dB/Km) and improve the signal by increasing the laser power (1mW-3mW). Evaluate the performance on the basis of eye diagram.
B) Compare the results with and without help of dispersion compensating fiber (DCF). Show the analysis on the basis of time domain optical waveform?

Equipments Required:

- OptisystemSoftware

Connection Diagram:

- **Attenuation**

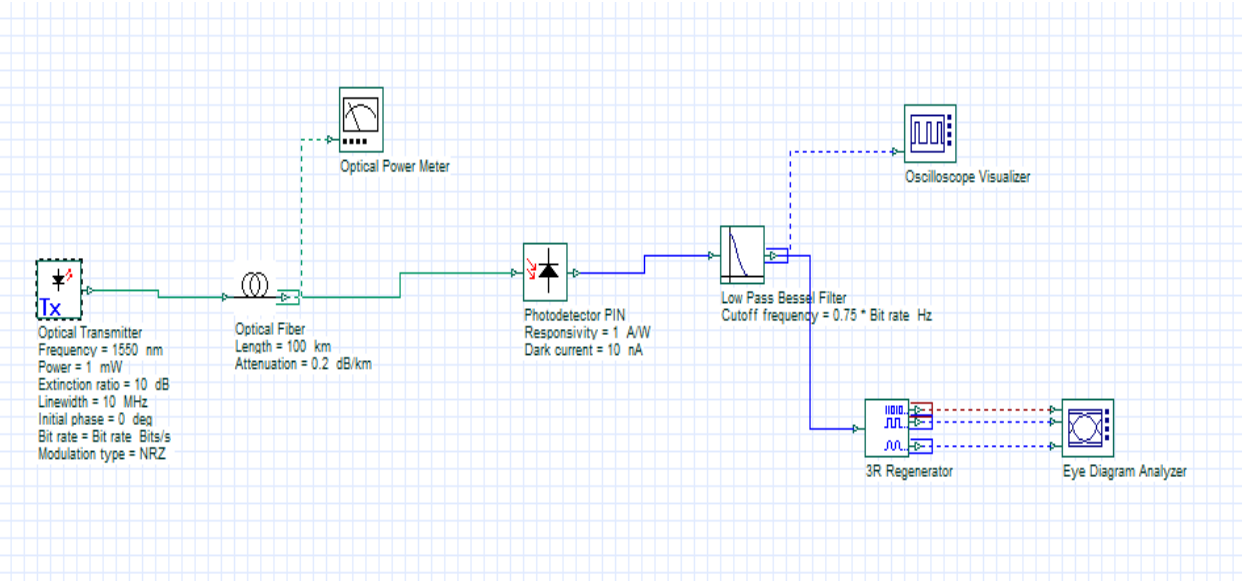

Table 1 for attenuation

S. No	Transmit power	Received power
1	1mW	5.430x10^-6W
2	1.5mW	8.144x10^-6W
3	2mW	10.859x10^-6W
4	2.5mW	13.574x10^-6W
5	3mW	16.289x10^-6W

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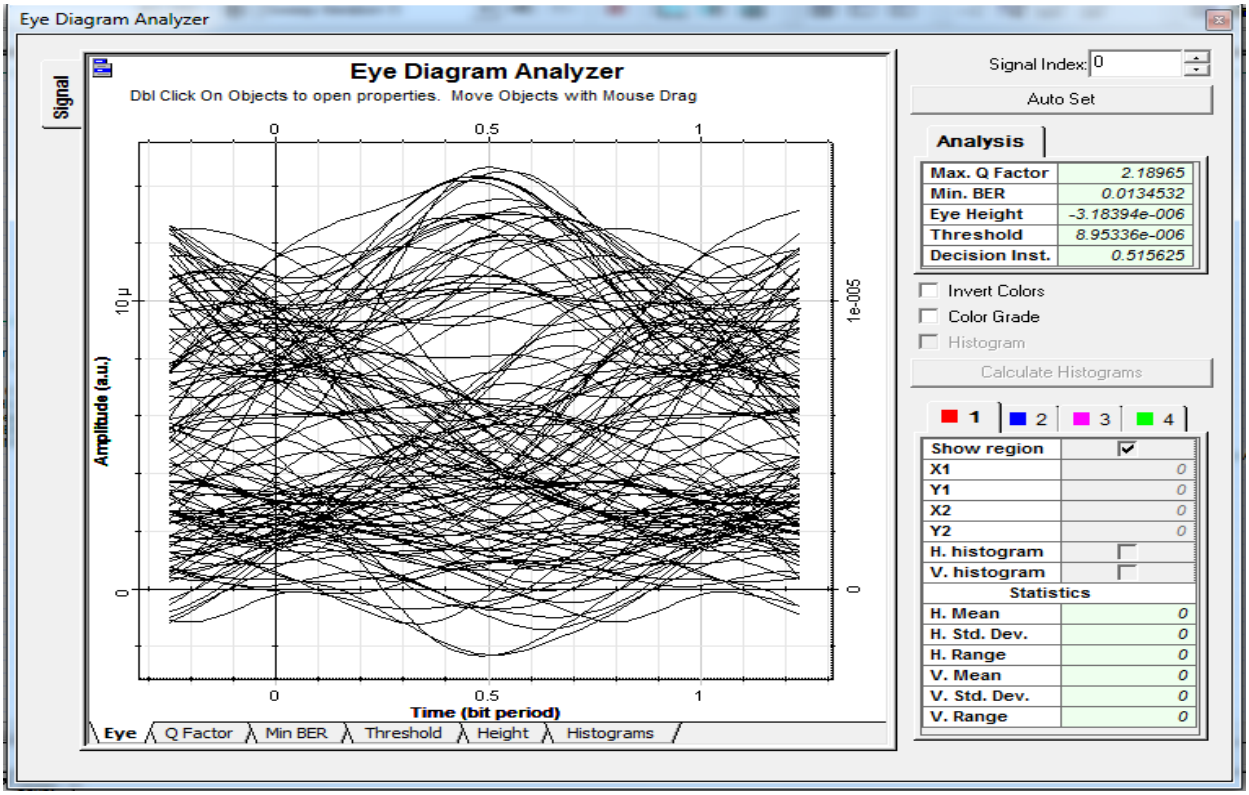
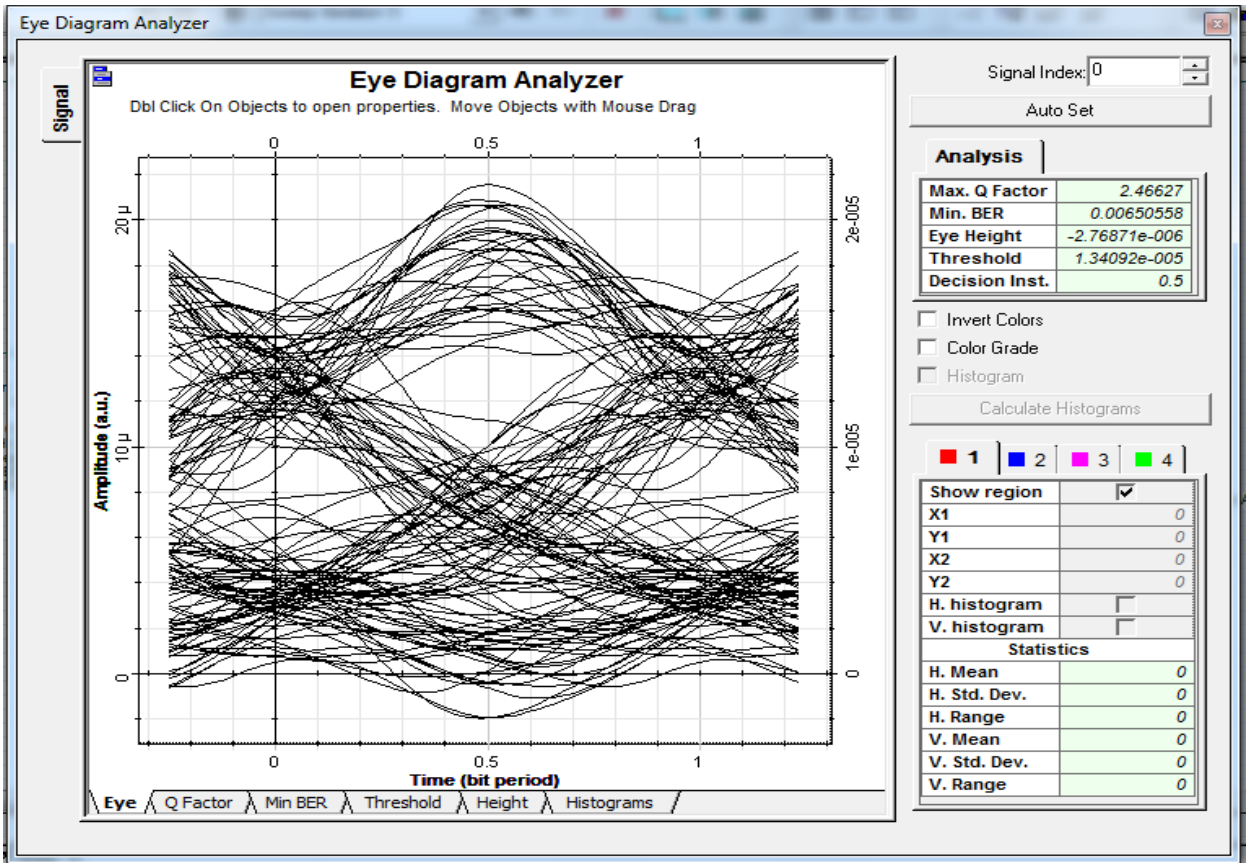
Eye Diagram:

- **For 1mW**



- **For 1.5Mw**



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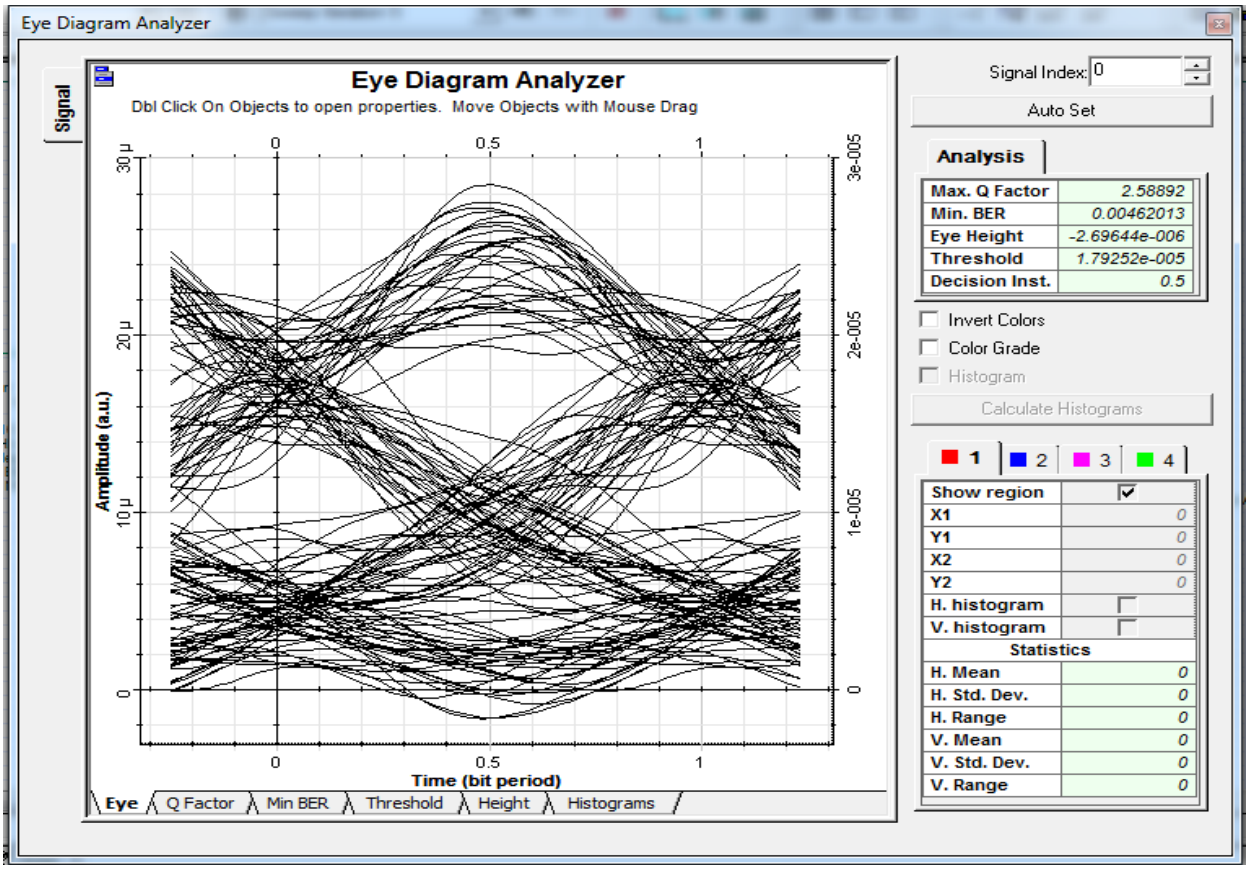
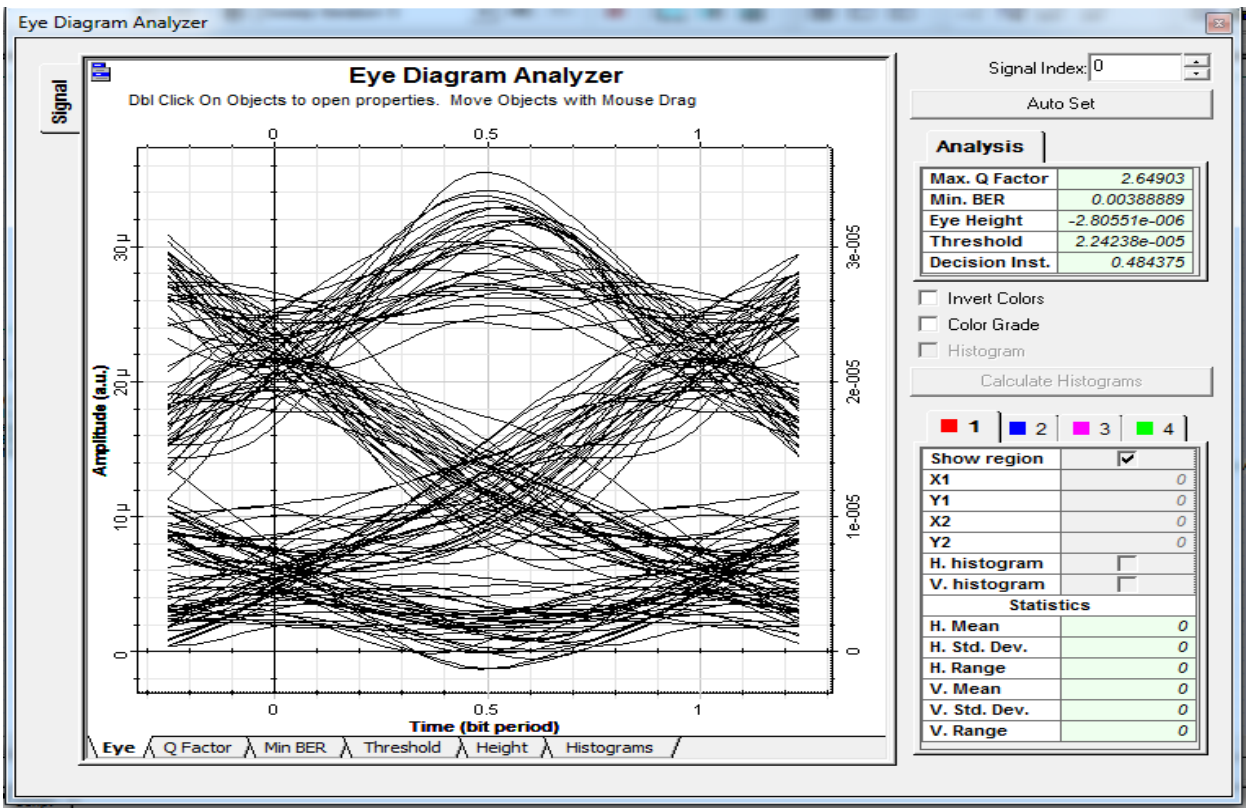
- **For 2mW**



- **For 2.5mW**



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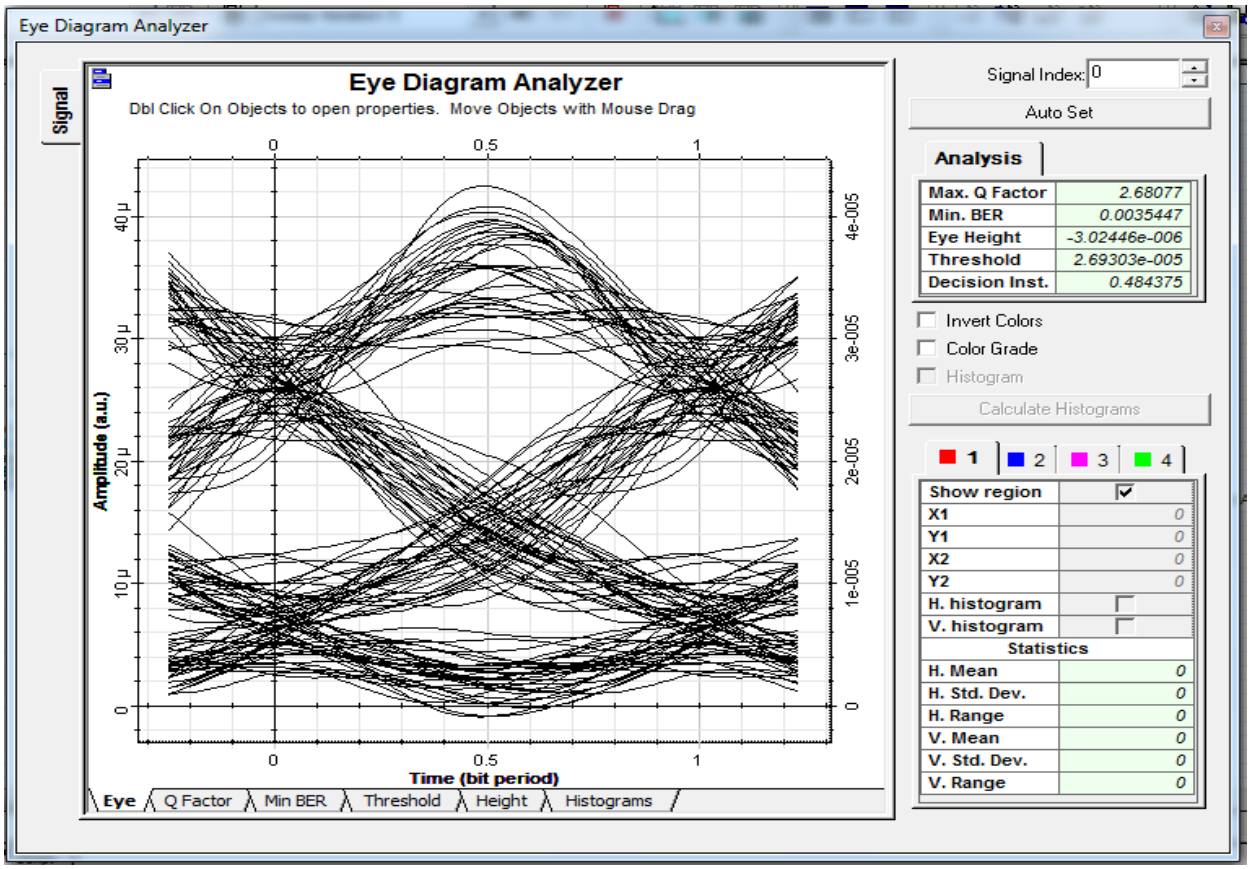
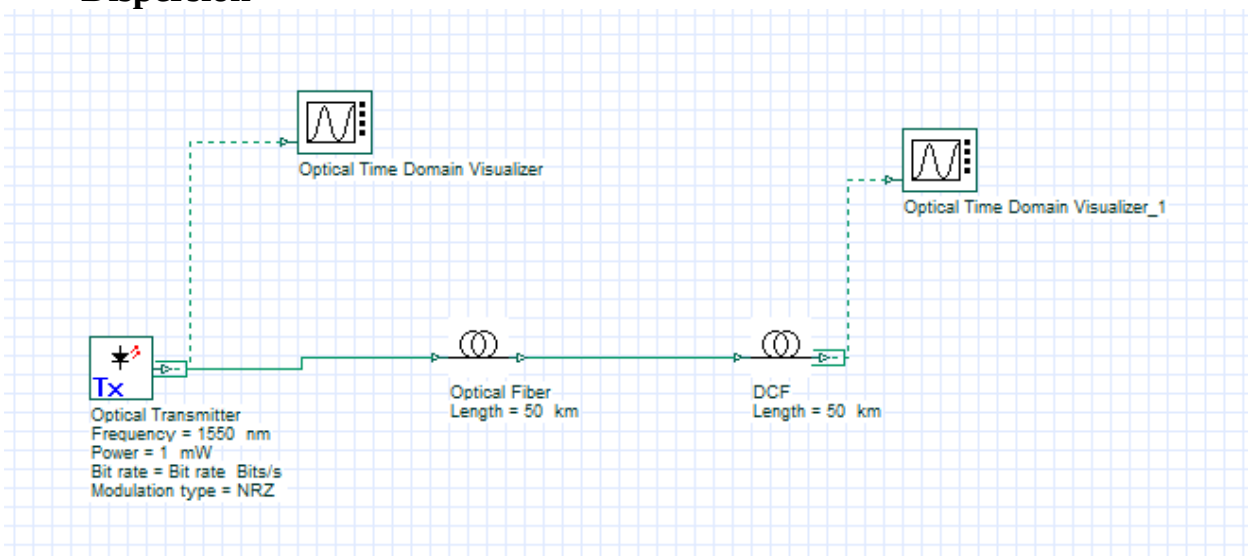
- **For 3mW**



Connection Diagram:

- **Dispersion**



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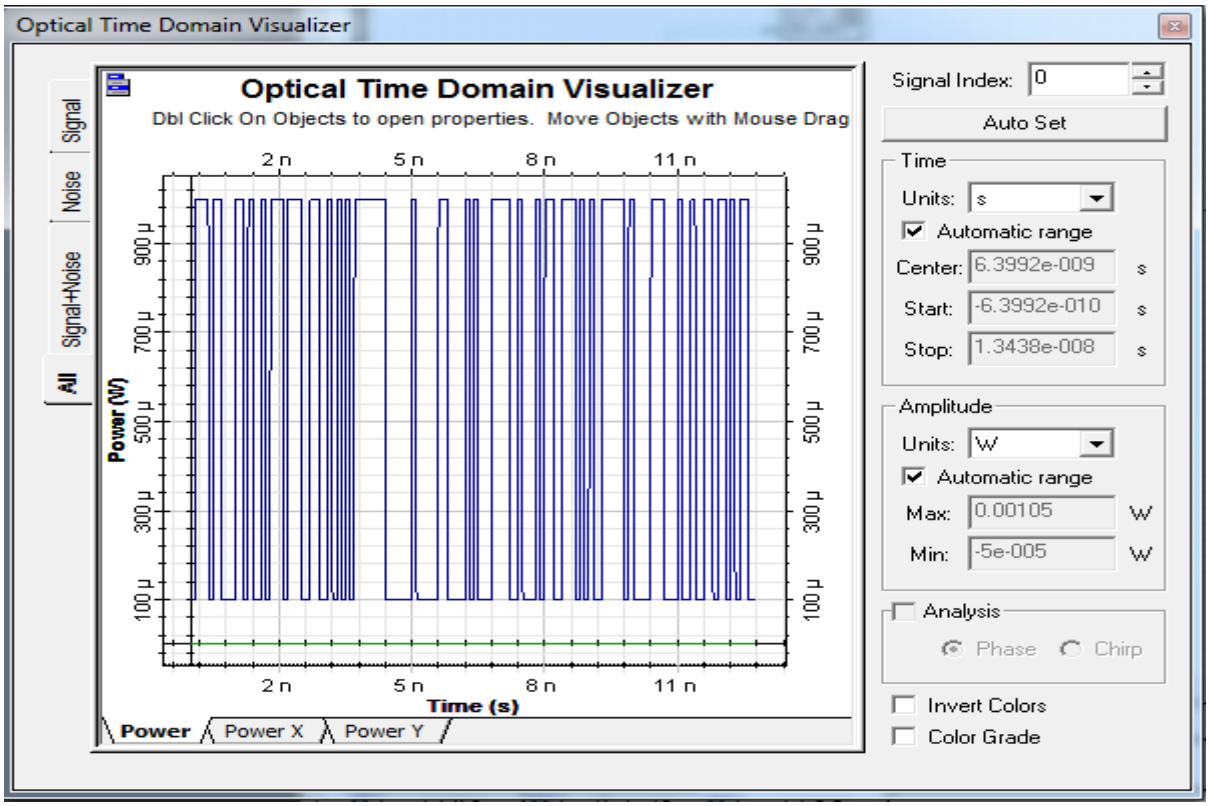
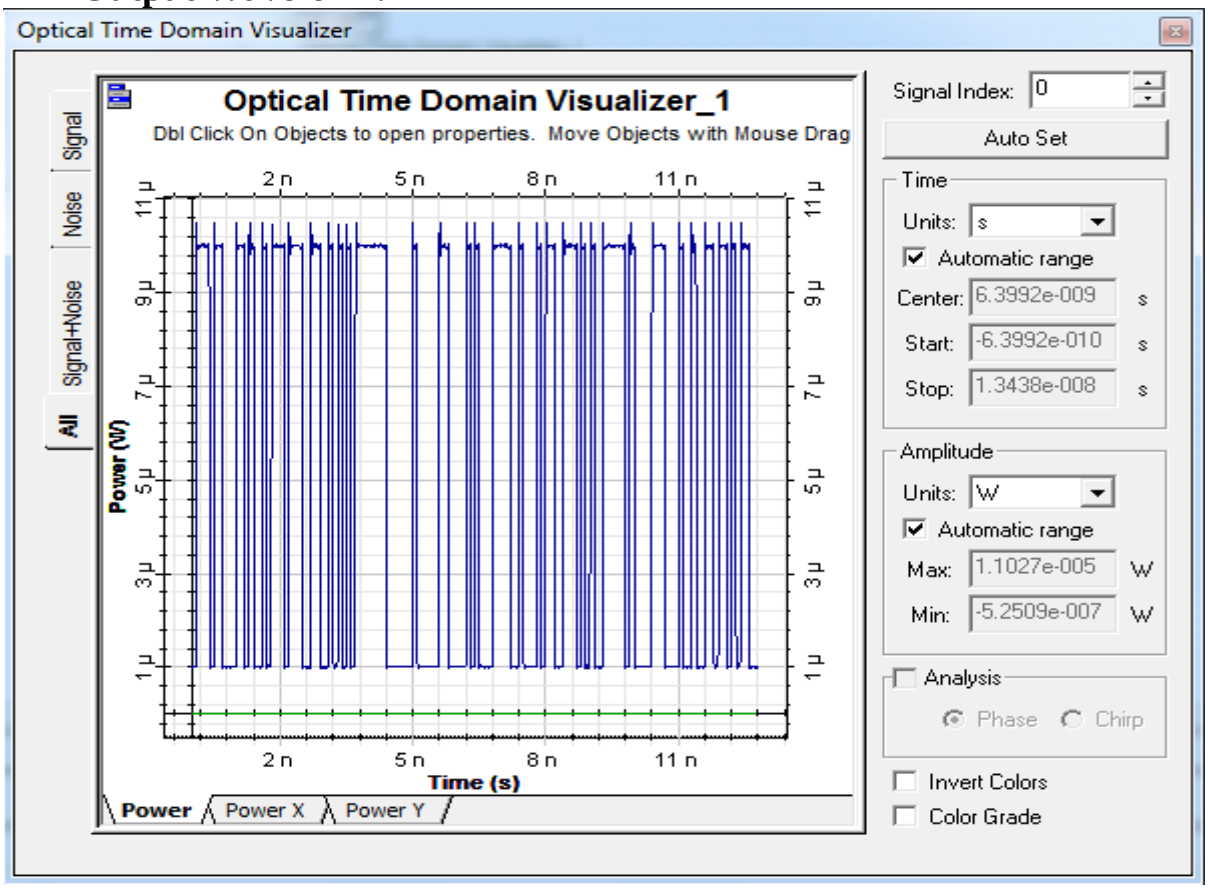
- **Transmitted waveform:**



- **Output Waveform:**



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Conclusion: From the above experiment we observed the attenuation and dispersion in fiber. In attenuation we observed received power corresponding transmit power and eye diagram . And we compensate the dispersion coefficient that we got output waveform almost equal to input waveform that means dispersion in fiber became less.