

Experiment No. 4

Code:-

```
Clc;clear;close;
```

```
Pin = input("Enter the launched power in mW: ");
```

```
Alpha = input("Enter three values of attenuation coefficient in []: ");
```

```
L = 0:0.01:15; // distance in km
```

```
Po1 = Pin./(10^(alpha(1)*L/10)); //output power in mW
```

```
Po2 = Pin./(10^(alpha(2)*L/10)); //output power in mW
```

```
Po3 = Pin./(10^(alpha(3)*L/10)); //output power in mW
```

```
Plot(L,Po1,'-',L,Po2,':',L,Po3,'-.');
```

```
Legend("alpha = 0.2dB/km","alpha = 0.5dB/km","alpha = 2dB/km");
```

```
Xlabel("distance in km");
```

```
Ylabel("output power in mW");
```

```
Title("output power vs distance");
```

```
Pin = Pin*1e-3; //input power in W
```

```
Po = 2e-6; //sensitivity of detector
```

```
L1 = (10/alpha(1))*log10(Pin./Po);
```

```
L2 = (10/alpha(2))*log10(Pin./Po);
```

```
L3 = (10/alpha(3))*log10(Pin./Po);
```

```
Disp("Maximum possible link length without repeaters (in km) for alpha = 0.2 dB/km",L1);
```

```
Disp("Maximum possible link length without repeaters (in km) for alpha = 0.5 dB/km",L2);
```

```
Disp("Maximum possible link length without repeaters (in km) for alpha = 2 dB/km",L3);
```

Output:-

Enter the launched power in mW: 1.5

Enter three values of attenuation coefficient in []: [0.2 0.5 2]

“Maximum possible link length without repeaters (in km) for $\alpha = 0.2$ dB/km”

143.75306

“Maximum possible link length without repeaters (in km) for $\alpha = 0.5$ dB/km”

57.501225

“Maximum possible link length without repeaters (in km) for $\alpha = 2$ dB/km”

14.375306

