**East West University**

**Department of CSE**

**Lab Report 02**

**CSE 453**

**Wireless Networking**

**Submitted To:**

Md. Mahir Ashhab

Lecturer

Department of Computer Science and Engineering

**Submitted By:**

Adri Saha

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Planning Terrestrial Radio Networks

Part 2

**Providing my solutions:**

1. **Antenna height, type and orientation for each transmitter and receiver.**

**Ans:**

**For A**, antenna type: yagi.ant

Antenna height: 100 meters

Orientation: A to D

**For B**, antenna type: yagi.ant

Antenna height: 100 meters

Orientation: B to C

**For C**, antenna type: yagi.ant

Antenna height: 25 meters

Orientation: C to B

**For D**, antenna type: yagi.ant

Antenna height: 25 meters

Orientation: D to A

1. **EIRP for each transmitter.**

**Ans:**

**For A,**

**EIRPA (dBm)**= Pt- LC +GA

= 46.99-2+13

= 57.99 dBm = 58 dBm

**EIRPA (KW)** = (10^ (58/10))/1000 W = 630.957 W

= 0.630 KW

**For B,**

**EIRPB (dBm)** = 46.99-5+13

= 54.99 dBm = 55 dBm

**EIRPB (KW)**= (10^ (55/10))/1000 W = 316.227 W

= 0.316 KW

1. **Numerically show that SIR is greater than 10dB at both receivers. Note that you do not need to calculate the received powers analytically in order to do this task. Simply use the signal and interference levels that you obtained in your simulation results. Also, be careful about the units when you calculate the signal-to-interference ratio.**

**Ans:**

AD= AD-BD= -72.1-(93.7) =21.6 >10

BC= BC-AC= -101-(-112.3) =11.3 >10

1. **Briefly explain your solution method and results. In your explanation, use the screenshots of Radio Link profiles of both links and Interference plots at both receivers.**

**Ans:**

* Make node A, B height 100 meter & C, D height 25 meter.
* Then go to the membership & click list of all units: A, B, C, D.
* Set the orientations for each nodes means change the antenna direction.
* Then go to the tools--- radio link.
* Check A to D, A to C, B to C, B to D. Here we can see some solutions like: Tx and Rx power, line loss, antenna gain, EIRP.

Radio link profiles screenshots are given:

Graphical user interface

Description automatically generated

Graphical user interface

Description automatically generated

* Draw for Tx unit A and Rx unit D. Between A and D interference is Tx unit B. Then draw the plot.

Graphical user interface, application

Description automatically generated

* Draw for Tx unit B and Rx unit C. Between B and C interference is Tx unit A. Then draw the plot.

Graphical user interface, application

Description automatically generated