

# Assignment - 5: WiFi Throughput Analysis in Hostels

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## 1 Plots and Inferences

### 1.1 Variation of Throughput with RSSI

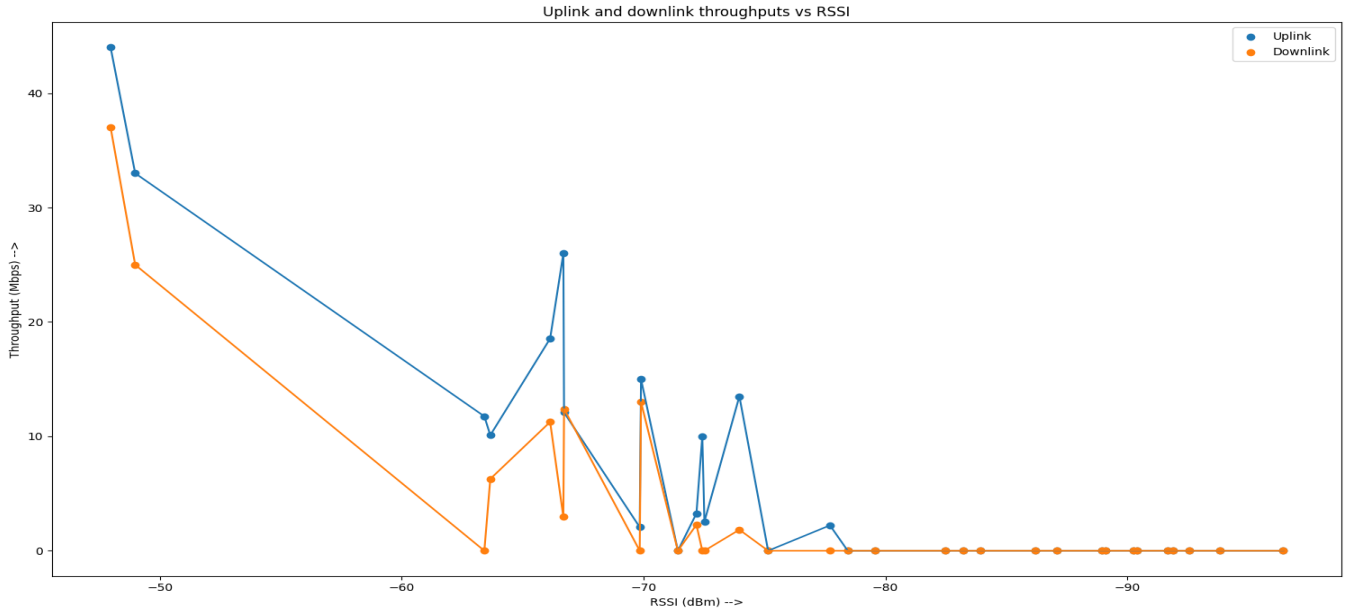


Figure 1: Throughput variation with RSSI in the 2.412 GHz band

Inferences:

- From the above plot it is clear that throughput decreases with RSSI in general, with the nature of the decrease being roughly exponential.
- Also, we see that the minimum possible RSSI value required to achieve a non-zero throughput is around -78 dBm which is close to the value specified in the standards.
- The outlier data points could be caused by interference from other access points or due to multipath fading.

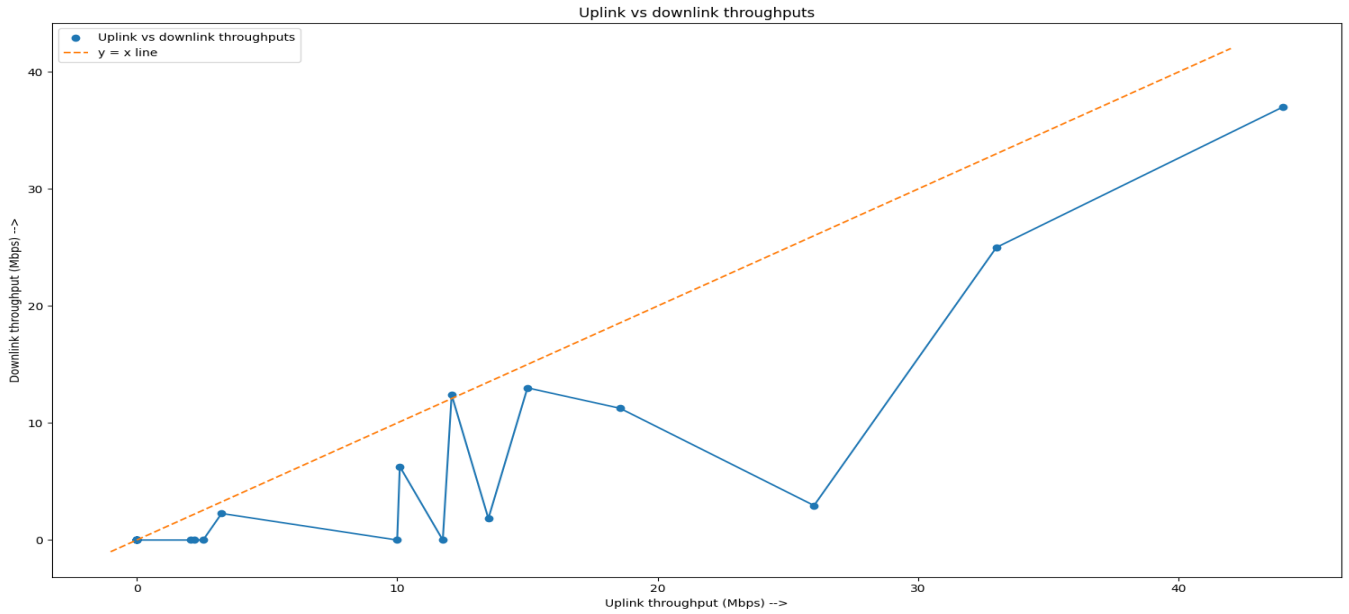


Figure 2: Scatter Plot:

Inferences:

- The relation between the uplink and downlink throughputs is nearly linear. That is, both the uplink and downlink throughputs increase by nearly equal amounts with the RSSI.
- We also notice that the graph is entirely below the  $y=x$  line, which implies that the uplink throughput was higher than the downlink throughput at all locations, regardless of the distance or number of walls.
- The reason for differences in uplink and downlink performances may be that the receiving device used on the downlink side had a poorly built receiver.