Characterizing the variation of Received Signal Strength Indication with Distance

I. The following graph illustrates the measurement of Received Signal Strength (RSSI) with distance in meters.

The calculations were performed in an outdoor environment where distance ranges from 3 to 30 meters and received RSSI varies from 36 to 12 respectively.
As observed in the graph, the RSSI value decreases with increase in distance between the nodes.

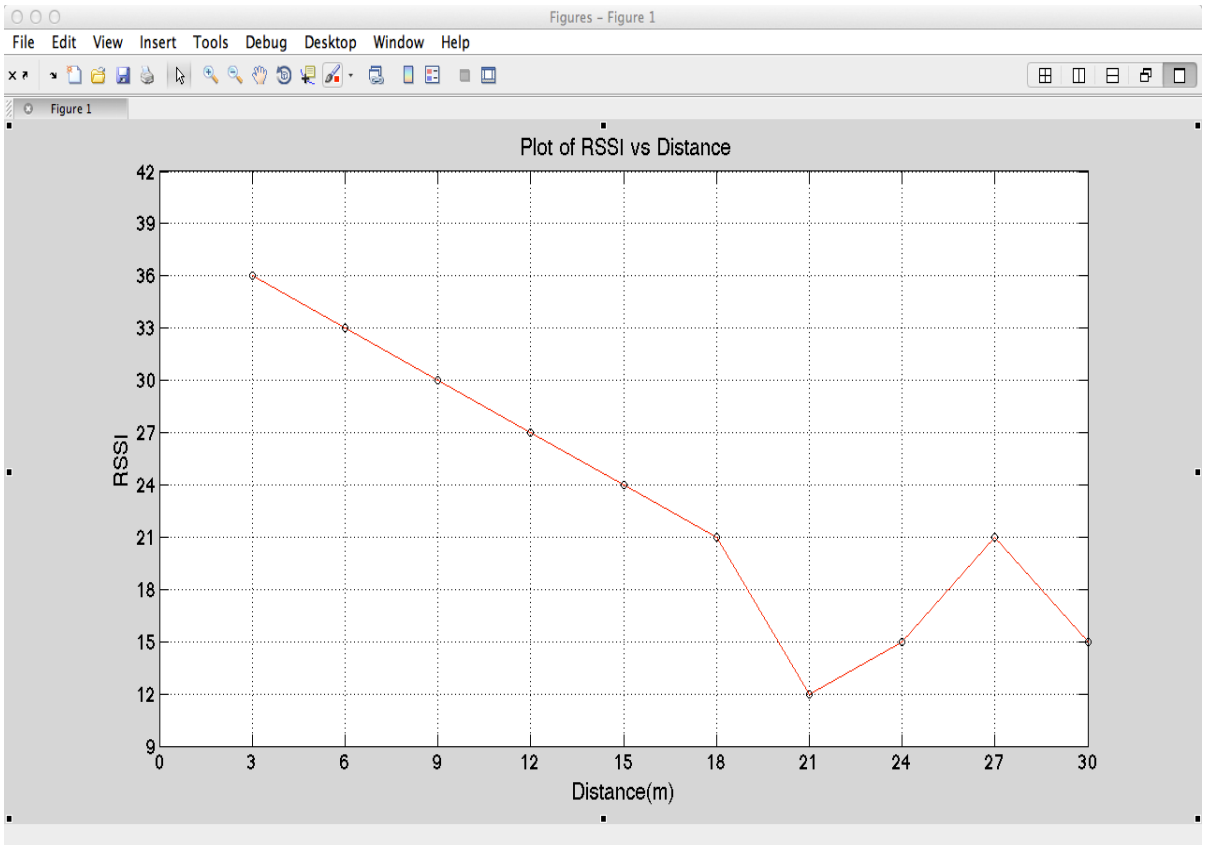

Fig 1. Plot summarizing the measurement of RSSI vs Distance (m).

II. Computing the path loss component:

RSSI is linearly related to path loss,(L2-L1)=(RSSI1-RSSI2)

Case1:
L2=33; d2=6m
L1=36;d1=3m
n =(L2-L1)/(10*log10(d2/d1))
n= - 0.99

Case2:
L2=30; d2=9m
L1=36;d1=3m
n =(L2-L1)/(10*log10(d2/d1))
n= - 1.25

Case 3:
L2=27; d2=12m
L1=36;d1=3m
n =(L2-L1)/(10*log10(d2/d1))
n= - 1.49

Case 4:
L2=24; d2=15m
L1=36;d1=3m
n =(L2-L1)/(10*log10(d2/d1))
n= - 1.71

Case 5:
L2=21; d2=18m
L1=36;d1=3m
n =(L2-L1)/(10*log10(d2/d1))
n= - 1.92

Case 6:
L2=12; d2=21m
L1=36;d1=3m
n =(L2-L1)/(10*log10(d2/d1))
n= - 2.84

Case 7:
L2=15; d2=24m
L1=36;d1=3m
n =(L2-L1)/(10*log10(d2/d1))
n= - 2.325

Case 8:
L2=21; d2=27m
L1=36;d1=3m
n =(L2-L1)/(10*log10(d2/d1))
n= -1.57

Case 9:
L2=15; d2=30m
L1=36;d1=3m
n =(L2-L1)/(10*log10(d2/d1))
n= - 2.1

Approximate Value of n: (Average is: -1.799)
Standard Deviation :0.2864
Variance:0.535