Haque mobassir imtiyaz, Niyaz khan, Veena narayankar / International Journal of Engineering Research and Applications (IJERA) ISSN: 2248-9622
www.ijera.com Vol. 2, Issue 4, July-August 2012, pp.1727-1732

FRESNEL ZONE AND DI-ELECTRIC MEDIUM TRANSMISSION IN UNIQUE CO-EXISTENCE

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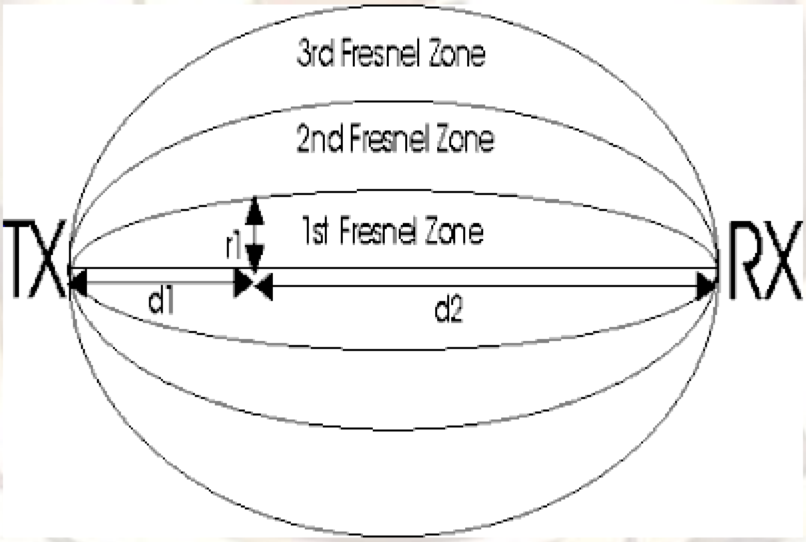
ABSTRACT

In this paper we are describing about the unique co-existence of fresnel zone and di-electric medium transmission, in this study we have found result between device reflection co-efficient at infinite value. It is the review of fresnel zone theory

KEYWORDS: Fresnel zone, reflection and refraction co-efficient in unique relation deduced at infinitely high value of n2, n1 transmission device co-efficient and n2 receiving device co-efficient

FRESNEL ZONE THEORY

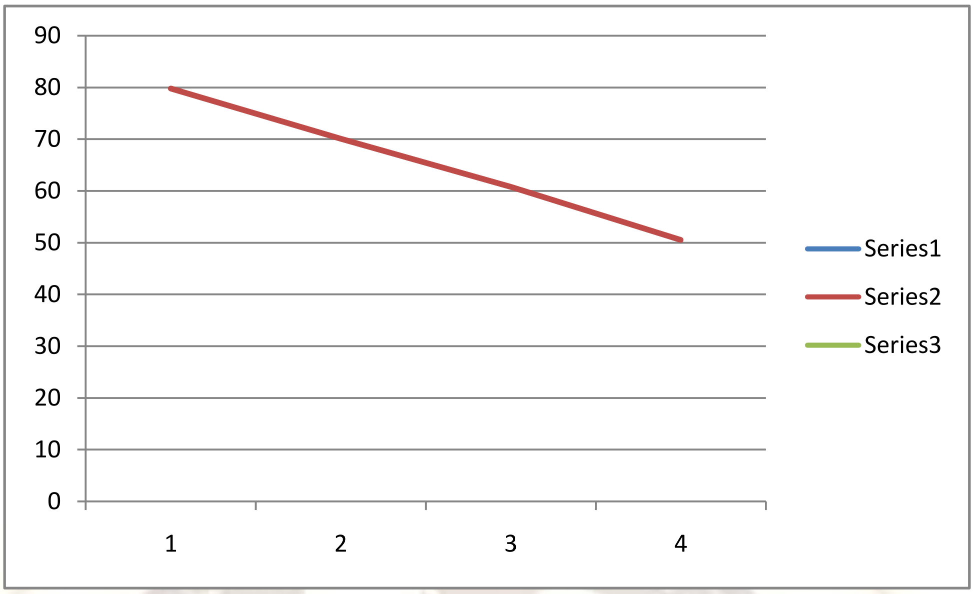
In electro-dynamics, acoustics and gravitational radiation a concentric ellipsoids in circular aperture defining radiation pattern volume is formed known as Fresnel zone. Waves travel in two ways between two direct points first is the wave which travels in straight line and one which travels off the axis. The time required for the wave which travels off the axis is more and covers larger distance as compared to the wave which travels in straight line. If the phase difference is complete one cycle from the on axis waves then the ellipsoids formation begins. First Fresnel zone will consists of the signals which are 0-90 degree out of phase, in second Fresnel zone 90-270 degree out of phase, in third Fresnel zone 270-450 degree and so on. The communication occurs in first Fresnel zone



Pic 1.1 depicting various fresnel zones

CALCULATIONS

fresnel zone calculations deals with reflection and re-fraction Fresnel's Equations can be stated in terms of the angles of incidence and transmission. Light source medium of index n1= 1. Incident upon a index of medium n2=2, at an angle Ѳi = 30°, transmission angle Ѳt = 14.477512185929921°. Fresnel zone reflection co-officient r11= $\frac{\tan(\Theta i-\Theta t)}{tna(\Theta i+\Theta t)}$ = 0.28285965272742574 and $r_{\perp}$ = -$\frac{\sin(\Theta i-\Theta t)}{\sin(\Theta i+\Theta t)}$ = -0.3819660112501052. transmission co-efficients t11= $\frac{2\sin\Theta t\cos\Theta i}{\sin(\Theta i+\Theta t)\cos(\Theta i-\Theta t)}$ = 0.6414298263637128 and $t_{\perp}$ = $\frac{2\sin\Theta t\cos\Theta i}{\sin(\Theta i+\Theta t)}$ = 0.6180339887498948. parallel case reflected = 8.00095831410799%, perpendicular case reflected = 14.58980337503155%, parallel case transmitted = 91.99904168589201%, perpendicular case transmitted = 85.41019662496845%. and vrying n1 = 1 and n2 = 50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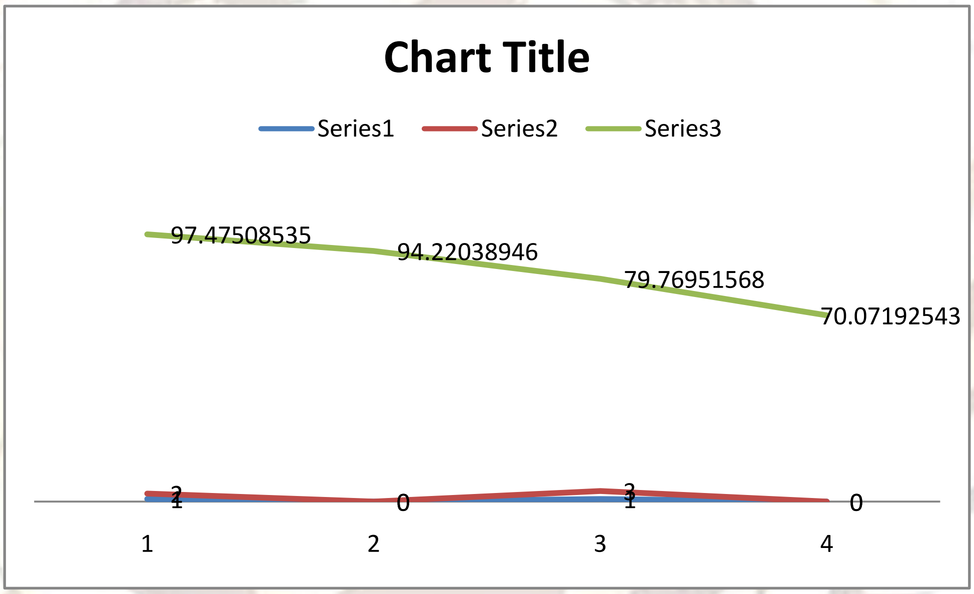
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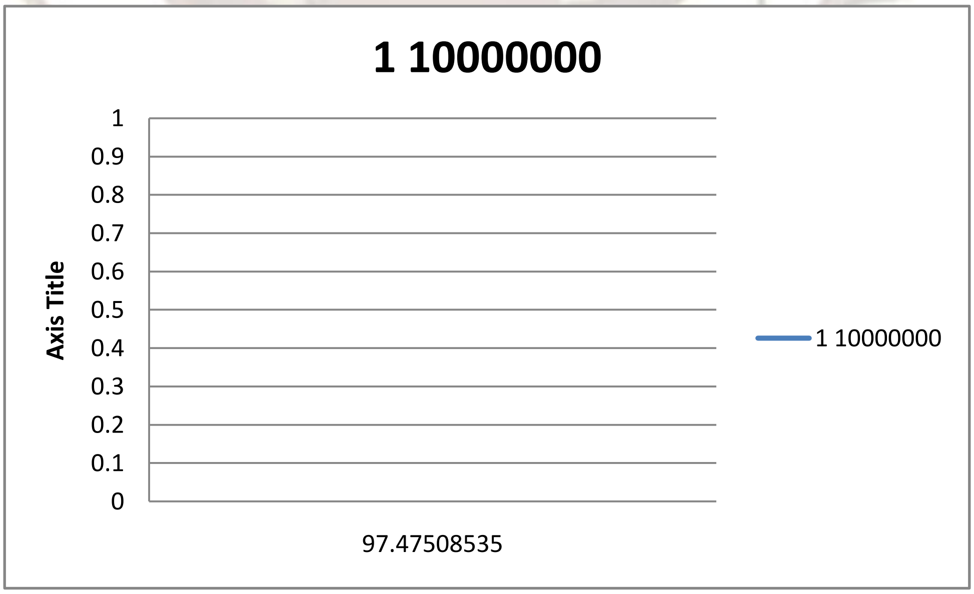
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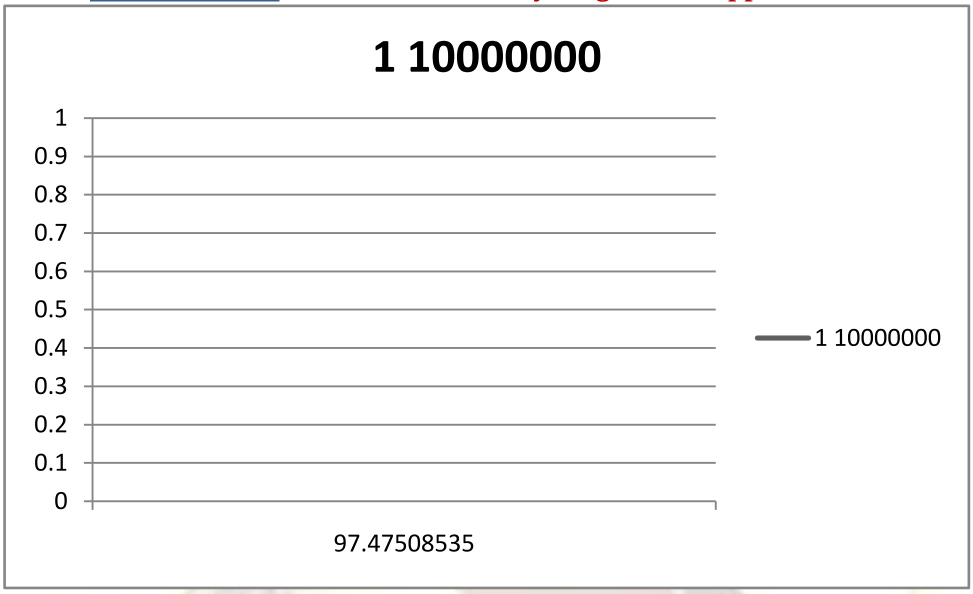
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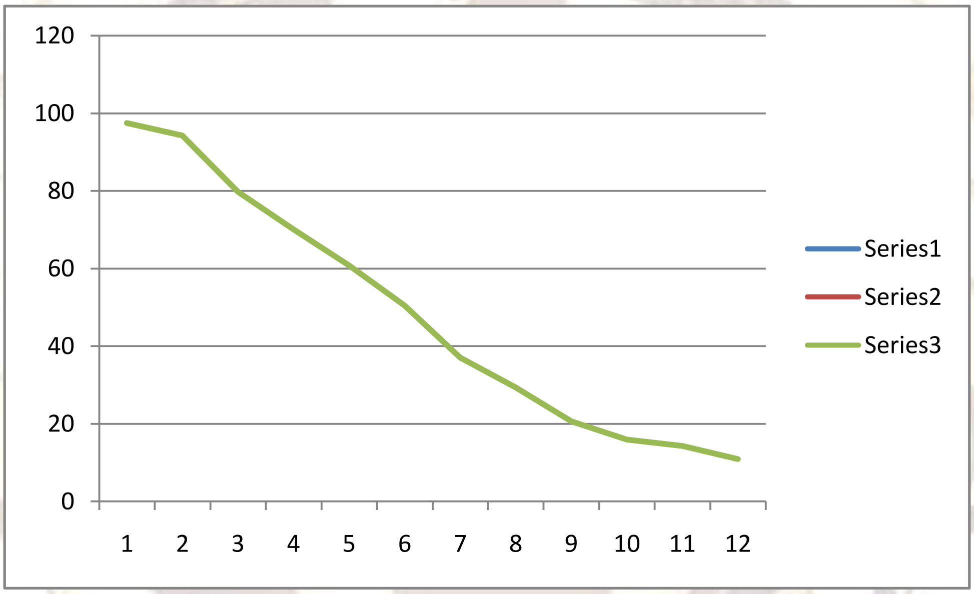
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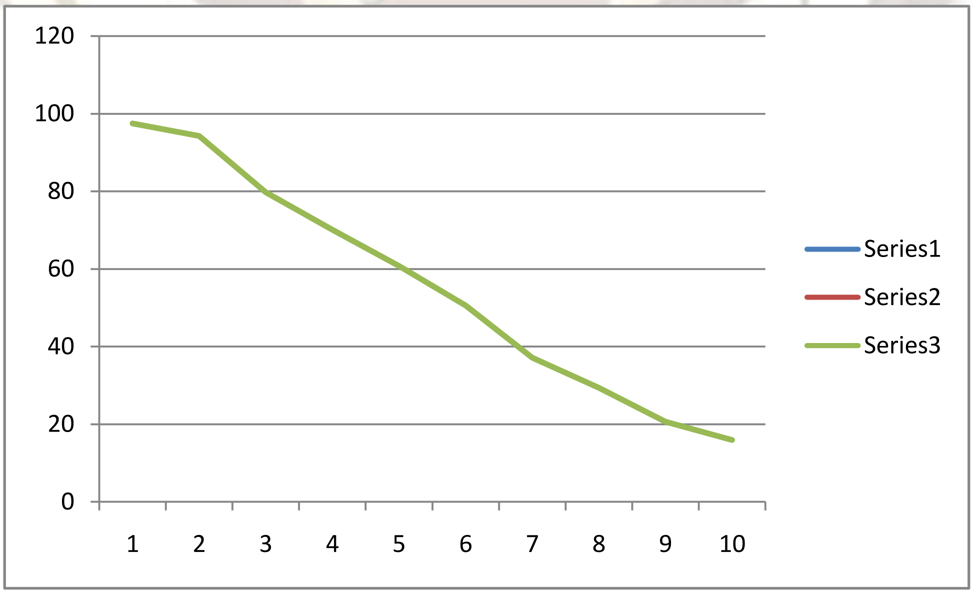
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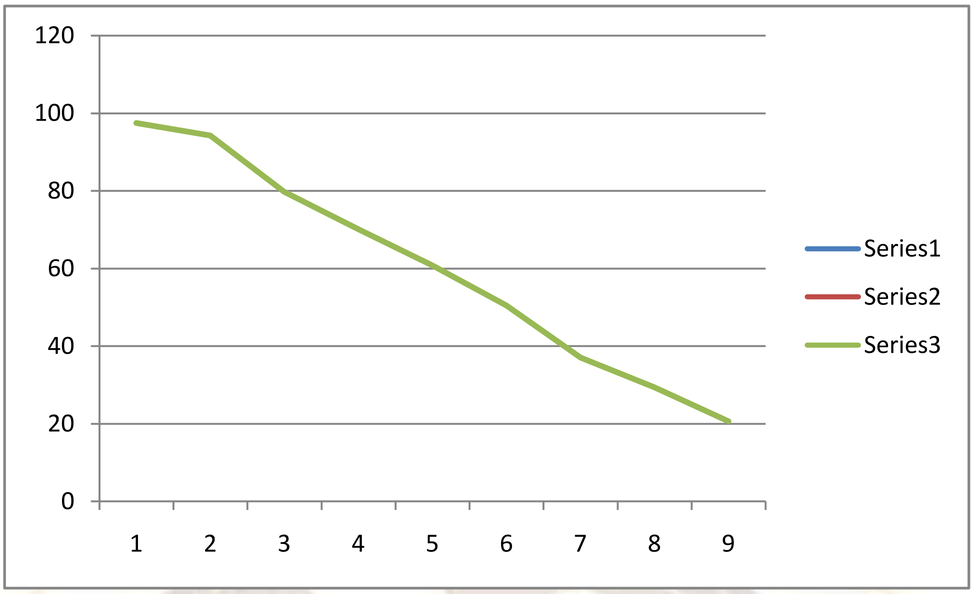
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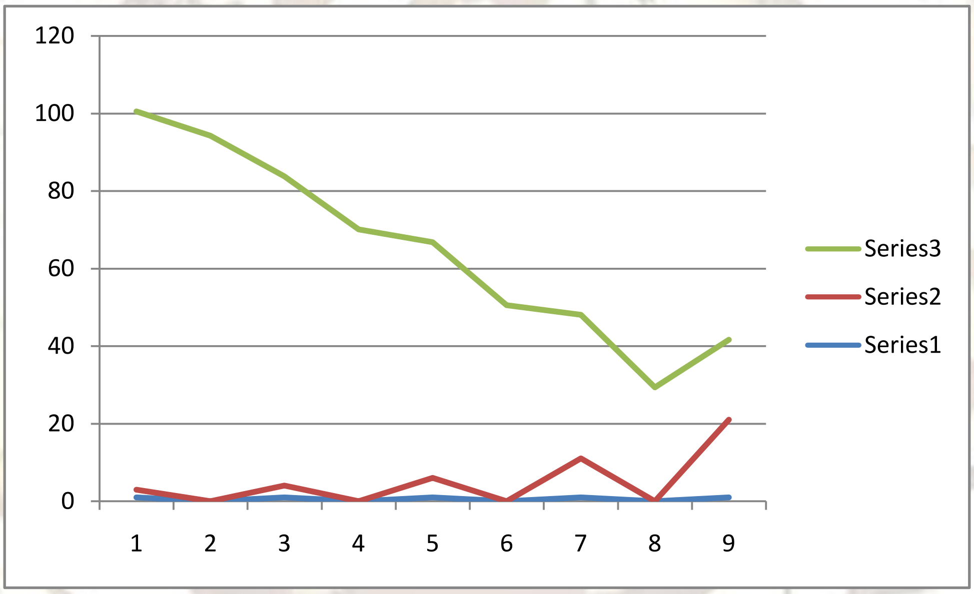
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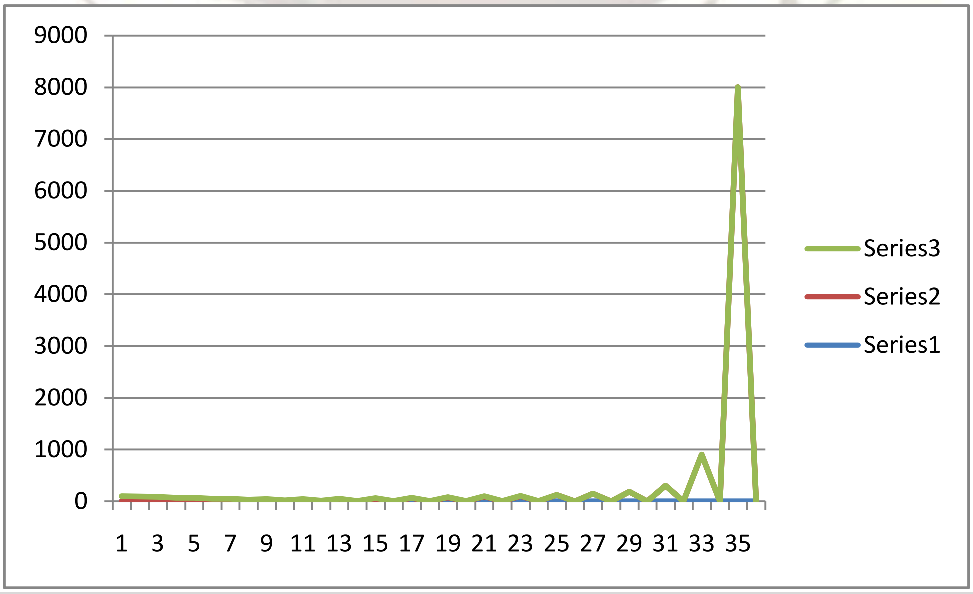
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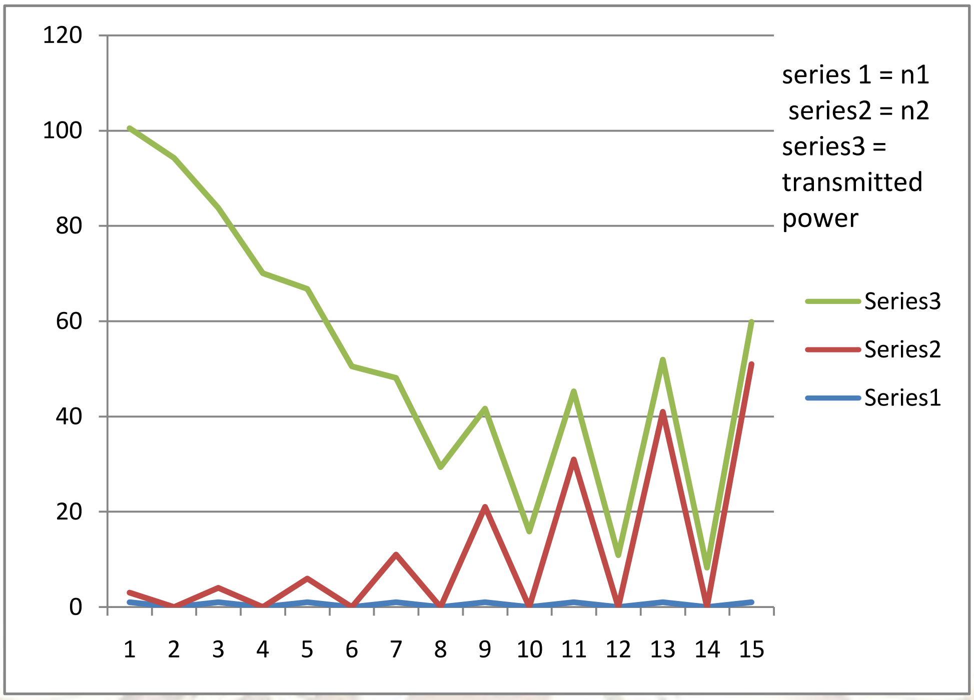
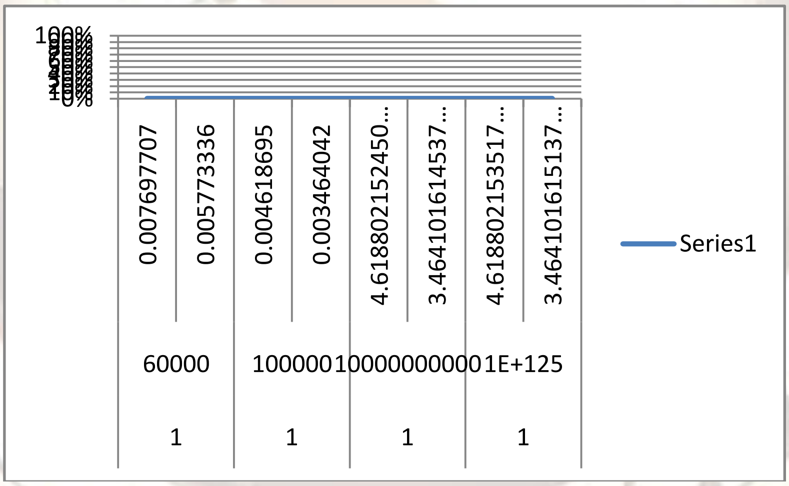


1 = 1 and n2 = 100000000000000



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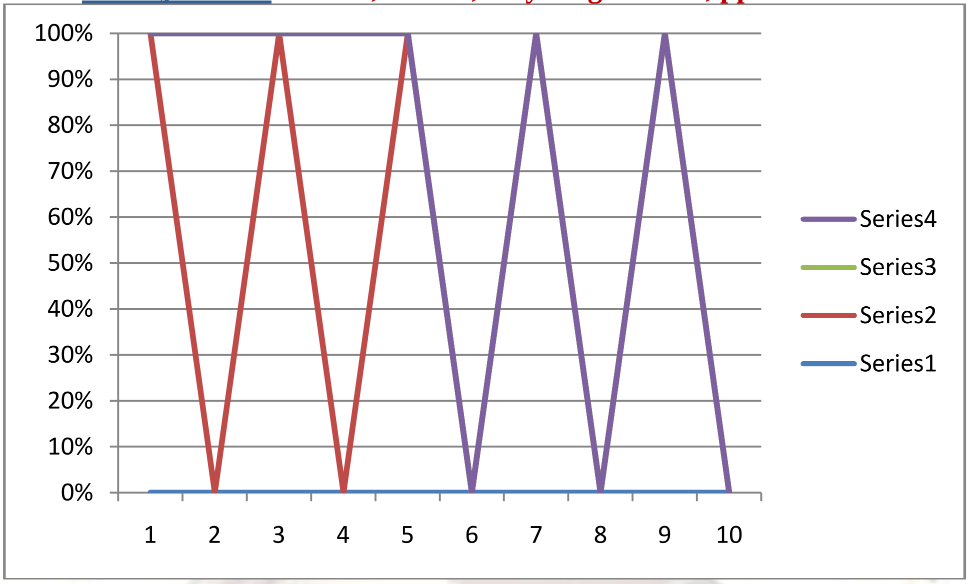

Conclusion under study

Thus we conclude this unique behavior of signal transmission in fresnel zone through di-electric medium that power reduces to near minimum zero when we increases n2 = 100000 but after further increase the reception jumps to 4% and remains constant for few subsequent values before ultimately falling to zero.