

[mohsenasad@hotmail.com](mailto:mohsenasad@hotmail.com)

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Echo ranging

(Direct listening)

(selective)

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$$I = P/A \text{ ( W/m}^2 \text{ )}: \quad =$$

$$I = \frac{P.C.W. \cdot A}{P.C.V} = \frac{P}{P.C} = \frac{P.V}{P}$$

kHz      kHz

$$C = \sqrt{Y \cdot P / P} \quad (Y)$$

$$\frac{\sin \theta_i}{\sin \theta_g} = \frac{C_v}{C_r}$$

R

$$R = \frac{T_L - T_c}{T_L + T_c} \quad \text{که } R \text{ داندیم } -1 < R < +1$$

$$(T < T_c) T = \frac{t_L}{T_L + T} = \frac{p_L v_{cl}}{p_L v_{cl} + P v}$$

Transmission ) : :  
 : (coefficient

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A I A I

$$B = \log \frac{I_r}{I_s} = \gamma \log \frac{A_r}{A_s}$$

$$dB = \gamma \log \frac{I_r}{I_s} = \gamma \log \frac{A_r}{A_s}$$

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( Absorbation )

( scattering) ( .

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: ( Quen ching )

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sound navigation and ranging

( sonar ) :

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.( Active)

.( passive )

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( oscillator )

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 . : ( searchlight sonar ) (
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: ( scaning sonar ) (

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( OWN DOPPLER NALLIFIER ) ODN

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[ ]Dr.Thomas J.Green,”Robust Passive Sonar “ Program Manager, september 1999

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