電磁波與天線導論 HW7

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1

$$\beta l = \frac{2\pi}{\lambda} 0.35\lambda = 0.7\pi$$

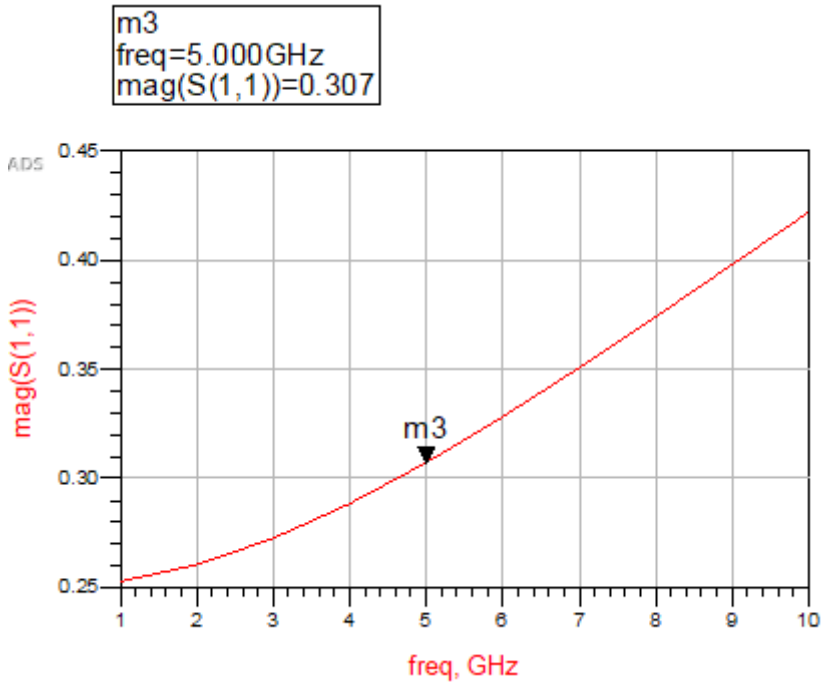
$$Z_0 = 100$$

$$Z_L = 60 + j30$$

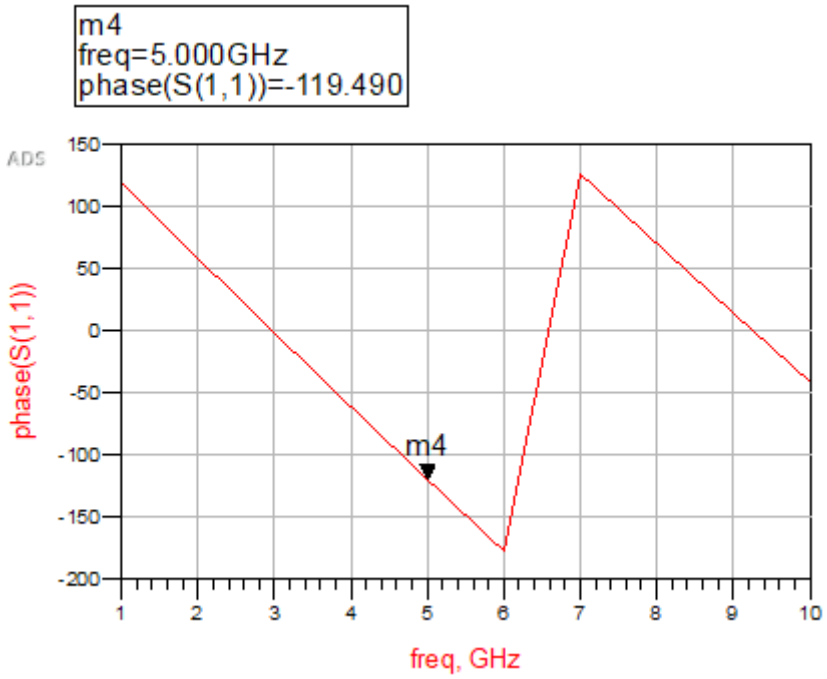
$$\Gamma = \frac{Z_L - Z_0}{Z_L + Z_0} = 0.3071 e^{j132.5049^\circ} - < ans >$$

$$Z_{in} = Z_0 \left(\frac{Z_L + jZ_0 tan\beta l}{Z_0 + jZ_L tan\beta l} \right) = 75.299 e^{-j30.558^\circ} - < ans >$$

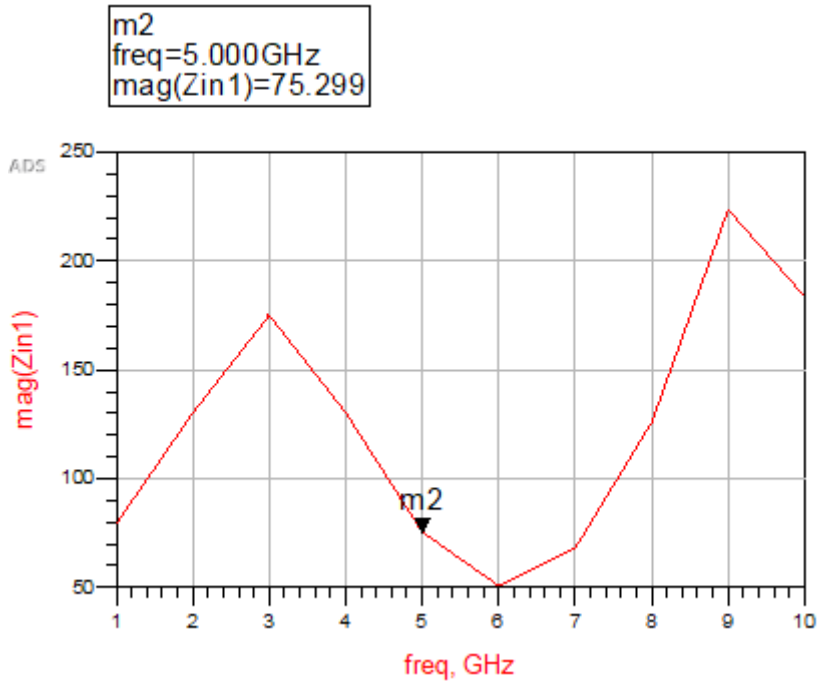
reflection magnitude



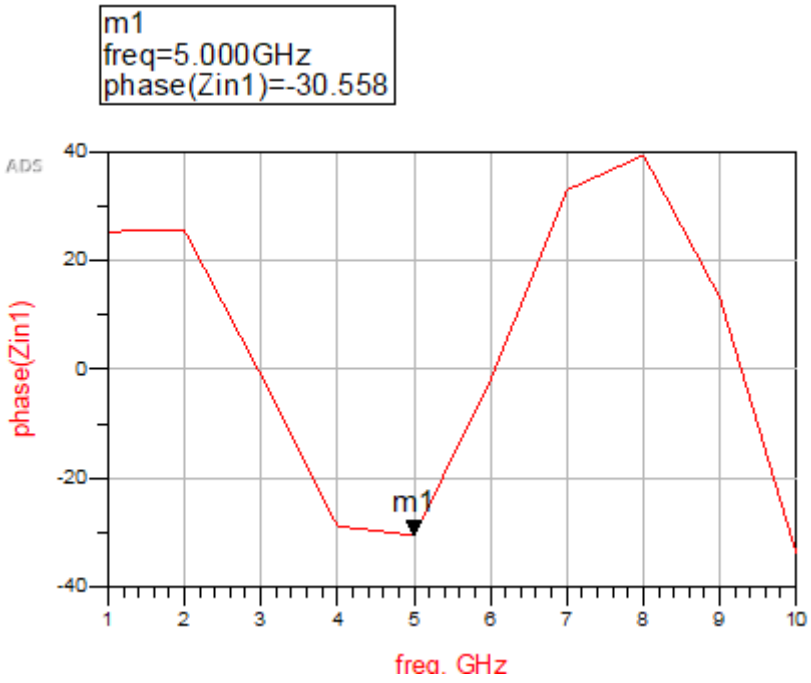
reflection phase



input impedance magnitude



input impedance phase



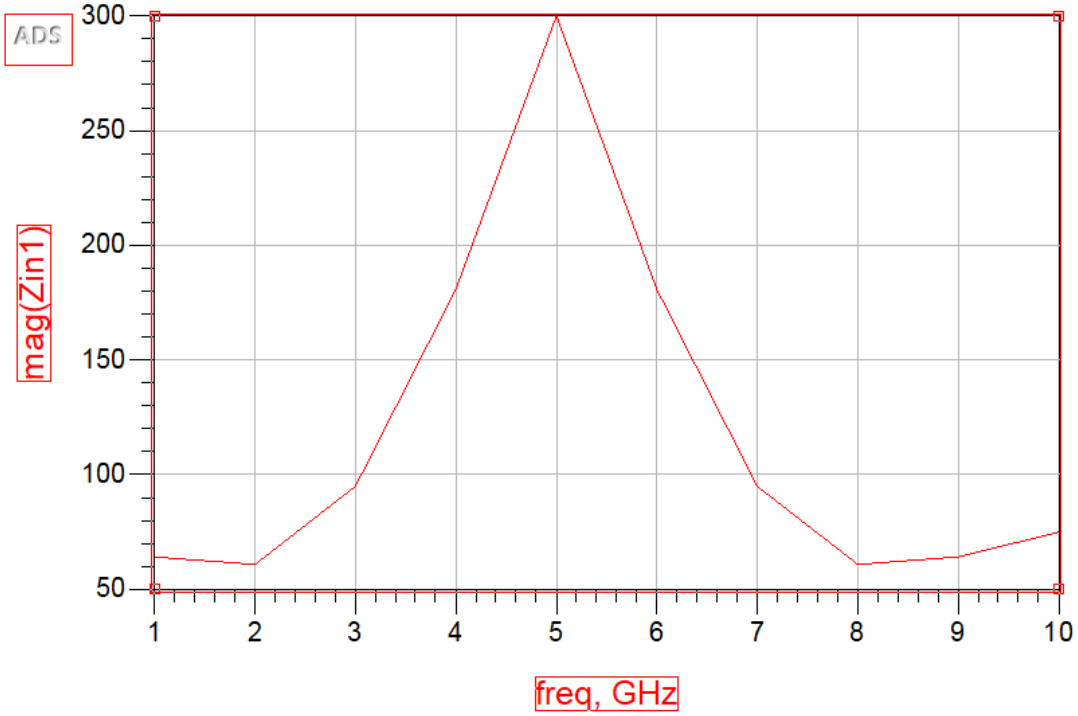
2

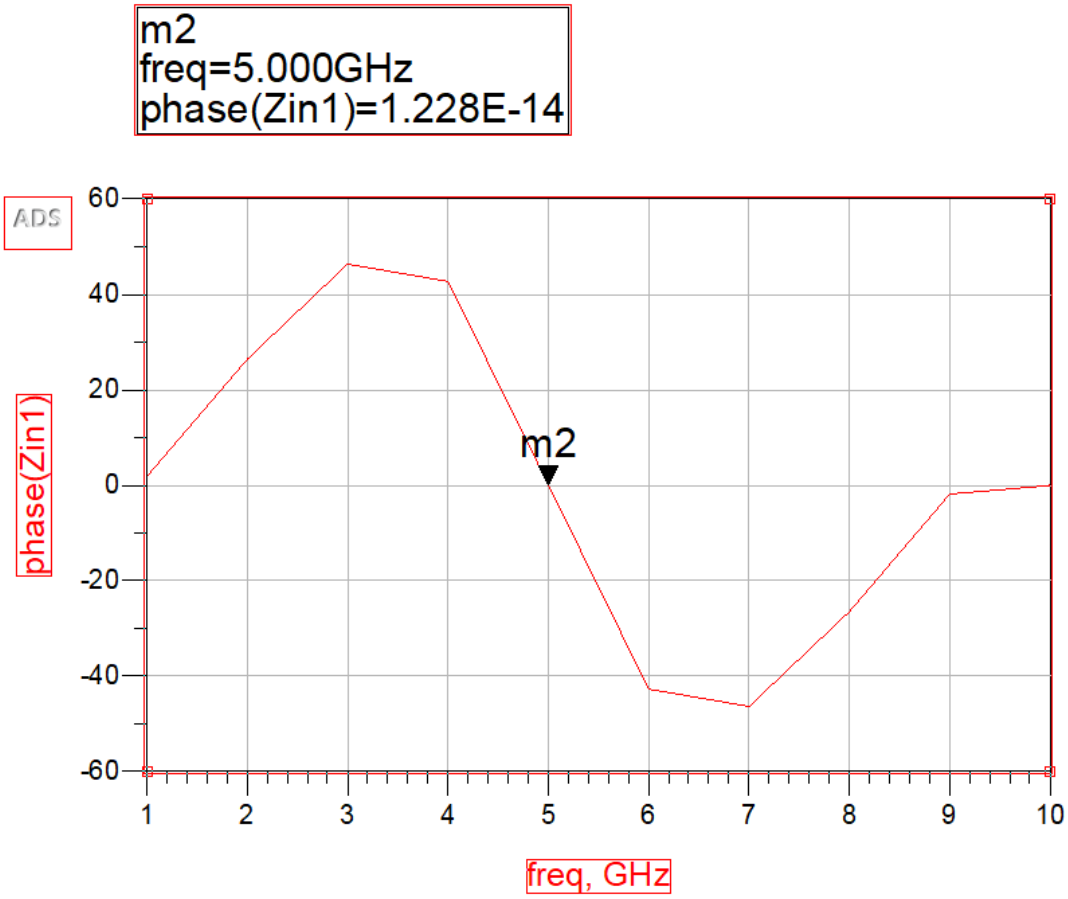
$$\beta l = \frac{2\pi}{\lambda} 0.25\lambda = 0.5\pi$$

$$Z_{in} = Z_0\left(\frac{Z_L + jZ_0 tan\beta l}{Z_0 + jZ_L tan\beta l}\right) = \frac{Z_0^2}{Z_L}$$

$$Z_{in}|_{z_0=50} = \frac{50^2}{75} = 100/3$$

$$Z_{in}|_{z_0=100} = \frac{100^2}{100/3} = 300(\Omega) - < ans >$$




m2
freq=5.000GHz
phase(Zin1)=1.228E-14
ADS
60
40
20
0
-20
-40
-60
phase(Zin1)
m2
1
2
3
4
5
6
7
8
9
10
freq, GHz