

EE381 HW3

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2.47

(a) $\Gamma = 0.5\angle 0^\circ$

(b) $\Gamma = 0.62\angle -29.74^\circ$

(c) $\Gamma = 1\angle -53.13^\circ$

(d) $\Gamma = 1\angle 180^\circ$

2.53

(a) $\Gamma = 0.24\angle 75^\circ$

(b) $SWR = 1.65$

(c) $z(0.35\lambda) = 0.61 - j0.05$

(d) $y(0.35\lambda) = 1.65 + j0.05$

(e) $d = 0.105\lambda$

(f) $d(max) = 0.105\lambda$

2.54

(a) $\Gamma = 0.24\angle 76^\circ$

(b) $SWR = 1.64$

(c) $z(0.35\lambda) = 0.61 - j0.02$

(d) $y(0.35\lambda) = 1.64 + j0.06$

(e) $d = 0.105\lambda$

(f) $d(max) = 0.105\lambda$

2.58

(a) $Z_L = j0.95 \cdot Z_0 = 95\Omega$

(b)

z_L = 0.0 + j 0.95
Γ_L = 1.0 ∠ 92.9376 °
z(d) = 0.0 - j 0.025641
Γ_d = 1.0 ∠ -177.0624 °
y(d) = 0.0 + j 39.0
d' = 0.375 λ d = 0.875 λ
2 β d' = 4.712389 rad = 270.0°
0.5 λ - d' = 0.125 λ
2 β (0.5 λ - d') = 1.570796 rad = 90.0°

2.65

First Solution
d₁ = 0.22899 λ = 68.6983 mm
Z(d₁) = 202.6551 Ω
Z₀₂ = 142.357 Ω
Second Solution
d₂ = 0.47899 λ = 143.6983 mm
Z(d₂) = 49.3449 Ω
Z₀₂ = 70.2459 Ω
Transformer Length λ₂/4 = 75.0 mm