

Solutions of the Amanogawa Exercises

RLC Parallel Circuit

Resonance Frequency	Char. Imp. $\omega \cdot L$	$\frac{1}{\omega \cdot L}$ [Ω^{-1}]	R	L	C	Q_0	Q_i
50 MHz	32 Ω	0.03125	10 k Ω	101.9 nH	99.4 pF	312.5	1.55
11.6 kHz	1000 Ω	0.00100	10 k Ω	13.7 mH	13.7 nF	10	na
20.0 MHz	47 Ω	0.02128	10 k Ω	375.4 nH	168.7 pF	212	1.05
50 Hz	320 Ω	0.00312	10 k Ω	1.019 H	9.94 μ F	31.3	na
10 MHz	3200 Ω	0.00031	10 k Ω	50.93 μ H	5.00 pF	3.13	na

$$Q_0 = \frac{R}{\omega L}$$

Modes in a Rectangular Waveguide

a [m]	a/b	TE10		TE01		TE/TM11		TE20	
		f_c [GHz]	λ_c [m]	f_c [GHz]	λ_c [m]	f_c [GHz]	λ_c [m]	f_c [GHz]	λ_c [m]
0.08	1.25	1.875	0.16	2.344	0.128	3.0	0.1	3.75	0.08
0.1	1.67	1.5	0.2	2.505	0.12	2.92	0.103	3.0	0.1