Enigmas, etc.

DC Load Pull

■ **Takashi Ohira**

Continued from last month, a single series diode rectifier is excited by a sinusoidal voltage source through a series inductor. To adjust the diode's on-duty cycle, we now employ a variable resistor for the dc load, as shown in Figure 1. Can we predict the specific resistance R_o that leads the diode to a 50% on-duty cycle? Choose the correct answer from the following four candidates for R_o:
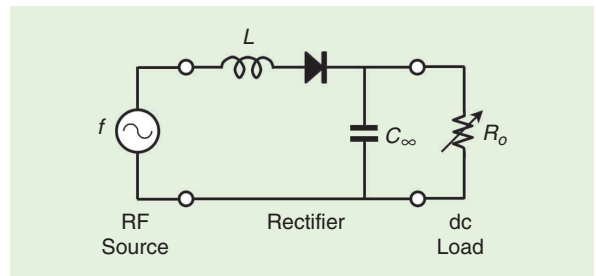
a) $2fL$
b) $2\pi fL$
c) $2\pi^2 fL$
d) $2\pi^3 fL$.

Figure 1. *Single series diode rectifier from last month, now terminated by a variable resistor for the dc load-pull thought experiment.*

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Errata

In a recent "Health Matters" column [1], on page 19 of the magazine, there was an error in the following sentence: "For base station antennas transmitting at 1,990 MHz, the FCC limit for the public is 1.27 mW/cm^2 (12.7 W/m^2)."

A digit was missing, and the key phrase "for frequencies above 1,500 MHz" was left out. The sentence should read, "For base station antennas transmitting at 1,990 MHz, instead of a value of 1.327 mW/cm^2 (13.27 W/m^2), the FCC limit for the public is capped by 1 mW/cm^2 (10 W/m^2) for operating frequencies above 1,500 MHz."

In addition, power densities listed in Table 1 should be in W/m^2 and not W/cm^2.

The *IEEE Microwave Magazine* regrets the errors.

Reference

[1] J. C. Lin, "RF health safety limits and recommendations [Health Matters]," *IEEE Microw. Mag.*, vol. 24, no. 6, pp. 18–77, Jun. 2023, doi: 10.1109/MMM.2023.3255659.