

Definitions and Reference

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Questions

E9H01 – What is the effective radiated power of a repeater with 150 watts transmitter power output, 2-dB feed line loss, 2.2-dB duplexer loss and 7-dBd antenna gain?

286 watts

$$\begin{aligned} -2\text{ dB} - 2.2\text{ dB} + 7\text{ dB} &= 2.8\text{ dB} \\ 10^{\frac{2.8}{10}} \times 150 &= 285.8 \approx 286\text{ watts} \end{aligned}$$

E9H02 – What is the effective radiated power of a repeater station with 200 watts transmitter power output, 4-dB feed line loss, 3.2-dB duplexer loss, 0.8-dB circulator loss and 10-dBd antenna gain?

317 watts

$$\begin{aligned} -4\text{ dB} - 3.2\text{ dB} - 0.8\text{ dB} + 10\text{ dB} &= 2.0\text{ dB} \\ 10^{\frac{2}{10}} \times 200 &= 316.97 \approx 317\text{ watts} \end{aligned}$$

E9H03 – What is the effective radiated power of a repeater station with 200 watts transmitter power output, 2-dB feed line loss, 2.8-dB duplexer loss, 1.2-dB circulator loss and 7-dBd antenna gain?

252 watts

$$\begin{aligned} -2\text{ dB} - 2.8\text{ dB} - 1.2\text{ dB} + 7\text{ dB} &= 1.0\text{ dB} \\ 10^{\frac{1}{10}} \times 200 &= 251.8 \approx 252\text{ watts} \end{aligned}$$

E9H04 – What term describes station output (including the transmitter, antenna, and everything in between), when considering transmitter power and system gains and losses?

Effective radiated power

E9H05 – What is the main drawback of a wire-loop antenna for direction finding?

It has a bidirectional pattern

E9H06 – What is the triangulation method of direction finding?

Antenna headings from several different receiving stations are used to locate the signal source

E9H07 – Why is an RF attenuator desirable in a receiver used for direction finding?

It prevents receiver overload from extremely strong signals

E9H08 – What is the function of a sense antenna?

It modifies the pattern of a DF antenna array to provide a null in one direction

E9H09 – What is a receiving loop antenna?

One or more turns of wire wound in the shape of a large open coil

E9H10 – How can the output voltage of a receiving loop antenna be increased?

By increasing the number of wire turns in the loop or the area of the loop structure

E9H11 – Why is an antenna with a cardioid pattern desirable for a direction finding system?

The response characteristics of the cardioid pattern can assist in determining the direction of the desired station

E9H12 – What is an advantage of using a shielded loop antenna for direction finding?

It is electro-statically balanced against ground giving better nulls