

## Section 5.2

G9C01 (A)

Which of the following would increase the bandwidth of a Yagi antenna?

- A. Larger-diameter elements
- B. Closer element spacing
- C. Loading coils in series with the element
- D. Tapered-diameter elements

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G9C02 (B)

What is the approximate length of the driven element of a Yagi antenna?

- A. 1/4 wavelength
- B. 1/2 wavelength
- C. 3/4 wavelength
- D. 1 wavelength

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G9C03 (A)

How do the lengths of a three-element Yagi reflector and director compare to that of the driven element?

- A. The reflector is longer, and the director is shorter
- B. The reflector is shorter, and the director is longer
- C. They are all the same length
- D. Relative length depends on the frequency of operation

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G9C05 (A)

How does increasing boom length and adding directors affect a Yagi antenna?

- A. Gain increases
- B. Beamwidth increases
- C. Front-to-back ratio decreases
- D. Front-to-side ratio decreases

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G9C06 (D)

What configuration of the loops of a two-element quad antenna must be used for the antenna to operate as a beam antenna, assuming one of the elements is used as a reflector?

- A. The driven element must be fed with a balun transformer
- B. There must be an open circuit in the driven element at the point opposite the feed point
- C. The reflector element must be approximately 5 percent shorter than the driven element
- D. The reflector element must be approximately 5 percent longer than the driven element

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G9C07 (C)

What does "front-to-back ratio" mean in reference to a Yagi antenna?

- A. The number of directors versus the number of reflectors
- B. The relative position of the driven element with respect to the reflectors and directors
- C. The power radiated in the major radiation lobe compared to that in the opposite direction
- D. The ratio of forward gain to dipole gain

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G9C08 (D)

What is meant by the "main lobe" of a directive antenna?

- A. The magnitude of the maximum vertical angle of radiation
- B. The point of maximum current in a radiating antenna element
- C. The maximum voltage standing wave point on a radiating element

D. The direction of maximum radiated field strength from the antenna

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G9C09 (B)

How does the gain of two three-element, horizontally polarized Yagi antennas spaced vertically  $1/2$  wavelength apart typically compare to the gain of a single three-element Yagi?

- A. Approximately 1.5 dB higher
- B. Approximately 3 dB higher
- C. Approximately 6 dB higher
- D. Approximately 9 dB higher

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G9C10 (D)

Which of the following can be adjusted to optimize forward gain, front-to-back ratio, or SWR bandwidth of a Yagi antenna?

- A. The physical length of the boom
- B. The number of elements on the boom
- C. The spacing of each element along the boom
- D. All these choices are correct

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G9C12 (A)

Which of the following is an advantage of using a gamma match with a Yagi antenna?

- A. It does not require that the driven element be insulated from the boom
- B. It does not require any inductors or capacitors
- C. It is useful for matching multiband antennas
- D. All these choices are correct

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G9C13 (A)

Approximately how long is each side of the driven element of a quad antenna?

- A.  $1/4$  wavelength
- B.  $1/2$  wavelength
- C.  $3/4$  wavelength
- D. 1 wavelength

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G9C14 (A)

How does the forward gain of a two-element quad antenna compare to the forward gain of a three-element Yagi antenna?

- A. About the same
- B. About  $2/3$  as much
- C. About 1.5 times as much
- D. About twice as much

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G9C16 (A)

What is a beta or hairpin match?

- A. It is a shorted transmission line stub placed at the feed point of a Yagi antenna to provide impedance matching
- B. It is a  $1/4$  wavelength section of 75 ohm coax in series with the feed point of a Yagi to provide impedance matching
- C. It is a series capacitor selected to cancel the inductive reactance of a folded dipole antenna
- D. It is a section of 300 ohm twinlead used to match a folded dipole antenna

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G9D05 (D)

What is an advantage of vertical stacking of horizontally polarized Yagi antennas?

- A. It allows quick selection of vertical or horizontal polarization
- B. It allows simultaneous vertical and horizontal polarization
- C. It narrows the main lobe in azimuth
- D. It narrows the main lobe in elevation

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G9D06 (A)

Which of the following is an advantage of a log periodic antenna?

- A. Wide bandwidth
- B. Higher gain per element than a Yagi antenna
- C. Harmonic suppression
- D. Polarization diversity

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G9D07 (A)

Which of the following describes a log periodic antenna?

- A. Element length and spacing vary logarithmically along the boom
- B. Impedance varies periodically as a function of frequency
- C. Gain varies logarithmically as a function of frequency
- D. SWR varies periodically as a function of boom length

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G9D10 (B)

In which direction or directions does an electrically small loop (less than  $1/3$  wavelength in circumference) have nulls in its radiation pattern?

- A. In the plane of the loop
- B. Broadside to the loop
- C. Broadside and in the plane of the loop
- D. Electrically small loops are omnidirectional

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