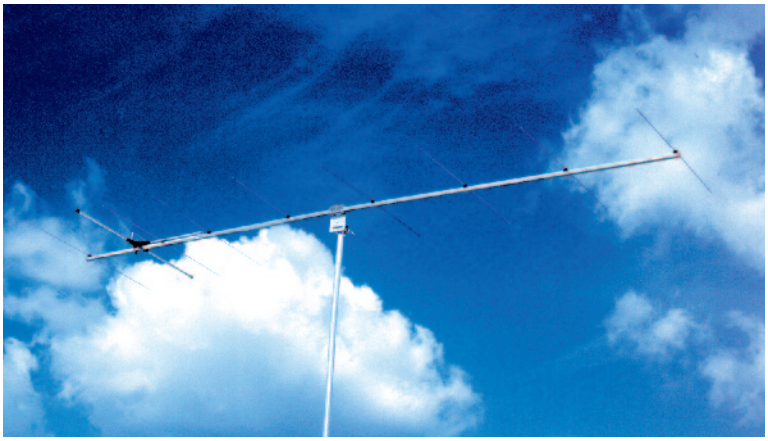
9 elements Yagi antenna

144 to 146 MHz

Part Nr. 20809



Electrical data

Radiation at 144.5 MHz

Effective electrical length ..... : 1.65 λ
Isotropic gain ..... : 13.1 dBi
Aperture angle @ -3 dB
- E-plane ..... : 2 x 20.2°
- H-plane ..... : 2 x 23°

First side lobe set
- E-plane ..... : - 20.5 dB @ 54°
- H-plane ..... : - 13.6 dB @ 58°

Rear protection ..... : - 19.8 dB
Average stray radiation
- E-plane ..... : - 35 dB
- H-plane ..... : - 24 dB

Bandwidth

Gain @ -1 dB ..... : 140 to 148 MHz
Nominal impedance ..... : 50 Ω
Impedance match bandwidth @ SWR <1.3/1..... : 143.4 to 146.2 MHz
Acceptable RF power (continous duty) ..... : 1000 W

Array of 2 or 4 antennas

(optimized stacking distance. from center to center of elements. for minimal side lobe radiation)

- E plane - Electrical distance ..... : 1.33 λ
  - Pratical distance ..... : 2.77 m
- H plane - Electrical distance ..... : 1.33 λ
  - Pratical distance ..... : 2.77 m

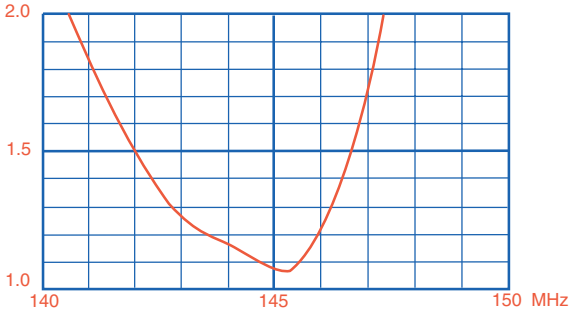
Mechanical data

Connector ..... : N
Overall length ..... : 3.47 m
Mass ..... : 3.0 kg
Effective wind load
- Horizontal polarization ..... : 0.10 m²
- Vertical polarization ..... : 0.15 m²

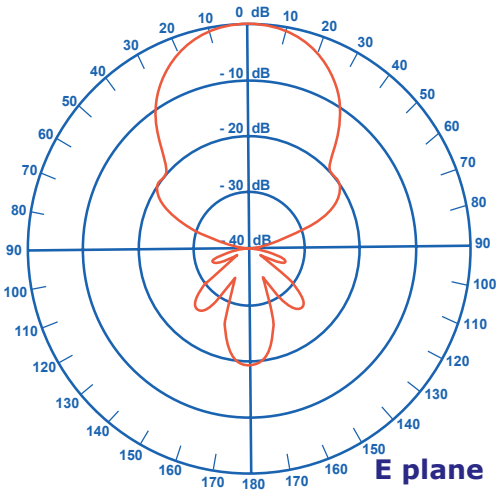
Approximate wind load (25 m/s - 55 mph)
- Horizontal polarization ..... : 4.1 daN
- Vertical polarization ..... : 6.1 daN

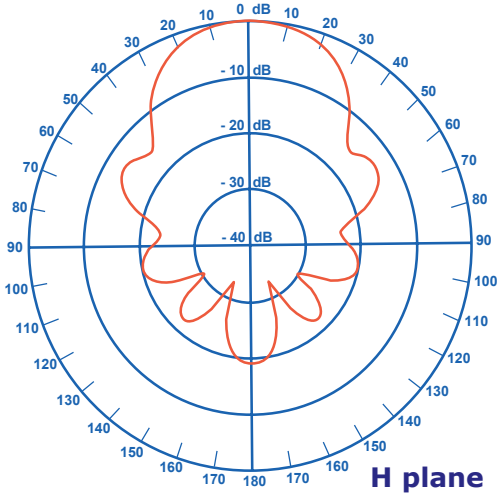
Approximate wind load (45 m/s - 100 mph)
- Horizontal polarization ..... : 13.2 daN
- Vertical polarization ..... : 19.7 daN

SWR curve



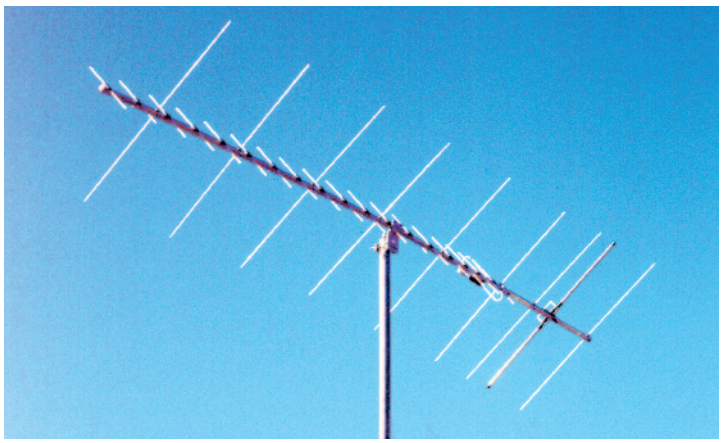
Radiation patterns





AFT

9 elements Yagi antenna 144 to 146 MHz 19 elements 430 to 440 MHz Special satellite Part Nr. 20899



Both antennas are electrically completely independant. So they need two separate coaxial feed lines.
Both antenna planes being orthogonal, when one antenna is used in horizontal polarization, the other is then in vertical polarization. This has no importance as far as satellite operation is concerned.
On other hand. proper stacking of such antennas is impossible. Suppose an optimized stacking for the 144 MHz band ; spacings are then too large at 432 MHz. If optimized at 432 MHz, they become too short at 144 MHz. leading to unacceptable impedance mismatch and practically no stacking gain.

Electrical data

Refer to respective data of the antenna Part Nr. 20809 for the 144/146 MHz section and of the antenna Part Nr. 20919 for the 430/440 MHz section.

Mechanical data

Connector ..... : N
Overall length ..... : 3.70 m
Mass ..... : 3.5 kg
Effective wind load
- Horizontal polarization ..... : 0.10 m²
- Vertical polarization ..... : 0.16 m²

Approximate wind load (25 m/s - 55 mph)
- Horizontal polarization ..... : 4.1 daN
- Vertical polarization ..... : 6.5 daN

Approximate wind load (45 m/s - 100 mph)
- Horizontal polarization ..... : 13.2 daN
- Vertical polarization ..... : 21.0 daN

Note : «horizntal» and «vertical» refer to plane of the 144 MHz antenna section

19 elements Yagi antenna

430 to 440 MHz

Part Nr. 20919

Electrical data

Radiation at 432 MHz

Effective electrical length ..... : 4.02 λ
Isotropic gain ..... : 16.4 dBi
Aperture angle @ -3 dB
- E-plane ..... : 2 x 14.8°
- H-plane ..... : 2 x 15.7°

First side lobe set
- E-plane ..... : - 16.0 dB @ 38°
- H-plane ..... : - 12.9 dB @ 38°

Rear protection ..... : - 23.6 dB
Average stray radiation
- E-plane ..... : - 38 dB
- H-plane ..... : - 28 dB

Bandwidth

Gain @ -1 dB ..... : 415 to 442 MHz
Nominal impedance ..... : 50 Ω
Impedance match bandwidth @ SWR <1.3/1..... : 431.0 to 439.0 MHz
Acceptable RF power (continous duty) ..... : 1000 W

Array of 2 or 4 antennas

(optimized stacking distance. from center to center of elements. for minimal side lobe radiation)

- E plane - Electrical distance ..... : 1.80 λ
  - Pratical distance ..... : 1.25 m
- H plane - Electrical distance ..... : 1.80 λ
  - Pratical distance ..... : 1.25 m

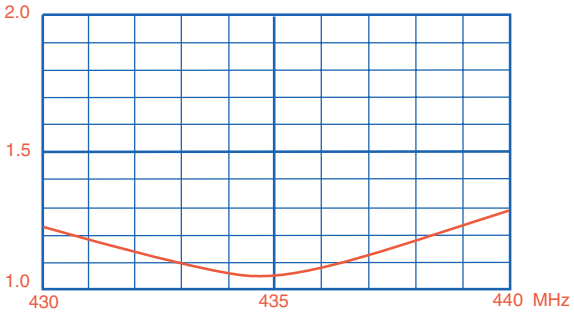
Mechanical data

Connector ..... : N
Overall length ..... : 2.82 m
Mass ..... : 1.9 kg
Effective wind load
- Horizontal polarization ..... : 0.06 m²
- Vertical polarization ..... : 0.09 m²

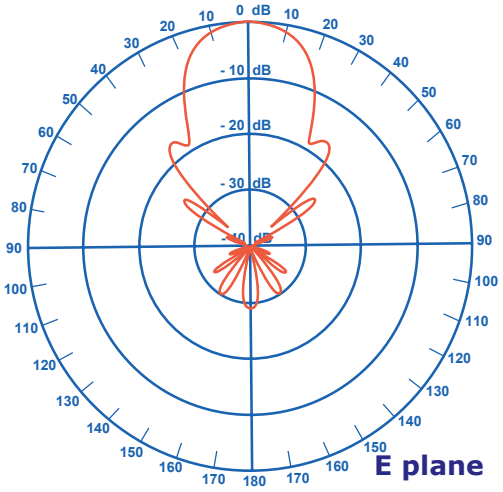
Approximate wind load (25 m/s - 55 mph)
- Horizontal polarization ..... : 2.3 daN
- Vertical polarization ..... : 3.5 daN

Approximate wind load (45 m/s - 100 mph)
- Horizontal polarization ..... : 7.5 daN
- Vertical polarization ..... : 11.3 daN

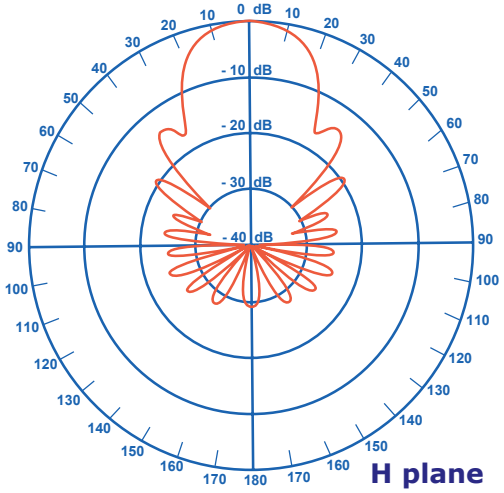
SWR curve



Radiation patterns



E plane



H plane

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