28MHz 6el LFA Yagi

A 6 element LFA Yagi for 28MHz with a 11.960mtr boom

Revised September 2010 v1.0

This is a high-gain, wideband LFA (Loop Fed Array) Yagi which covers 28 - 28.5MHz with an SWR of less than1.3:1. It has options with both UK/USA and European sized tube and has a 3 section taper.

This Antenna has been modelled using NEC4 and confirmed by FEKO. This is thousands of dollars of the very latest antenna design software available and the results are highly accurate. When loading into your software, you will see similar SWR but not the same. Please do not alter the model, build to these dimensions for the best results.

Contact me if you are unsure what correction (if any) you require for the element holders/stand-offs you will use or any other questions you may have or require different element diameter.

Also read 'An Intro to LFA Yagis' and 'Making the LFA Loop' and 'Creating a Balun'

SWR: Below 1.3.1 from 28MHz to 28.500MHz

Construction details:

Refer to the above drawing.

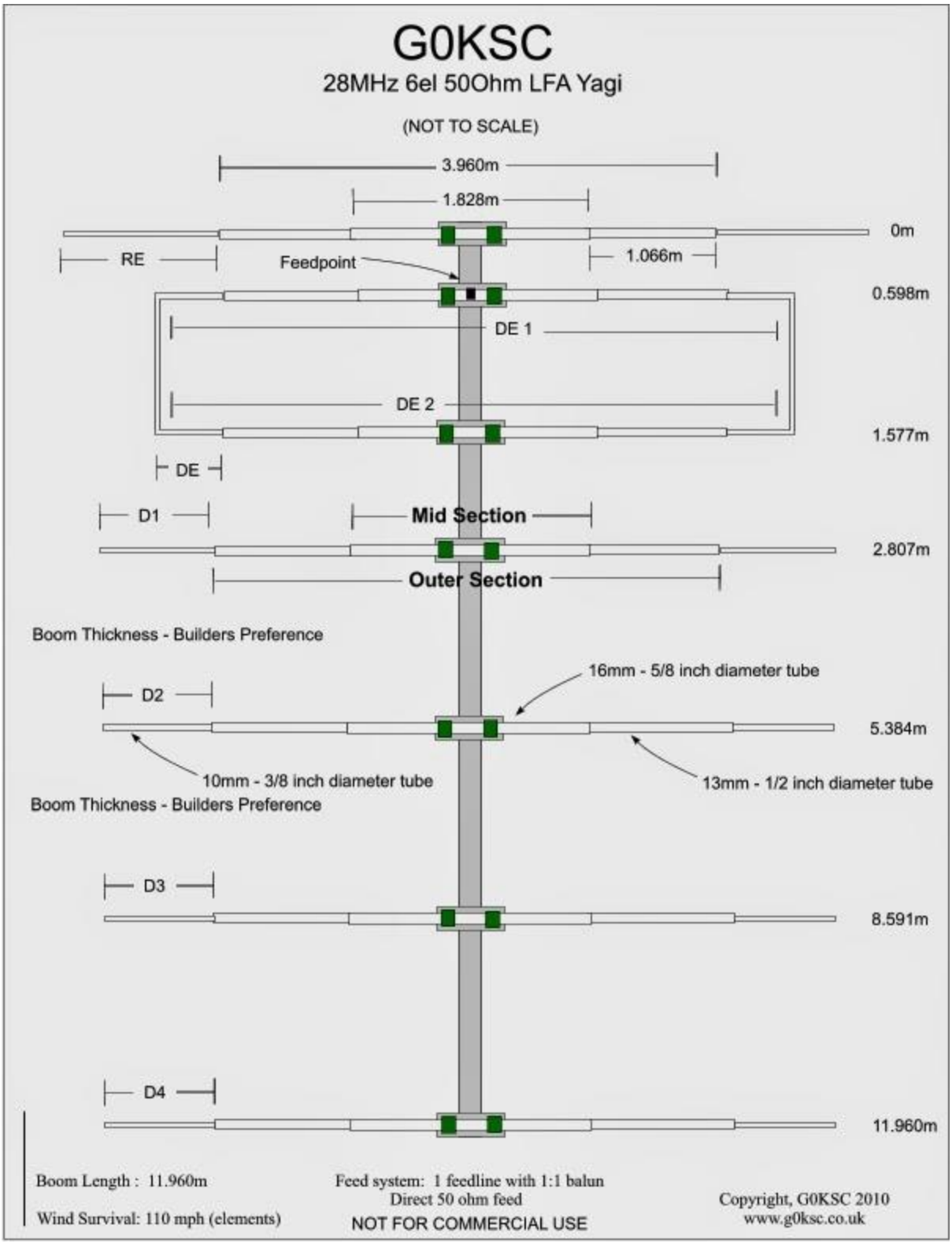
Antenna Dimensions for UK/USA sized tubing - European version below

Taper: Mid Section, 5/8 inch or 16mm tube (total length 1.828m). Outer section 1/2 inch or 13mm tube. End sections as per below schedule and in 3/8 inch or 10mm.

	Spacing	End Section Length (All below sizes in Metres)
Reflector	0	.739
DE1	.598	0.275 - FEEDPOINT
DE2	1.577	0.275
D1	2.807	0.565
D2	5.384	0.503
D3	8.591	0.459
D4	11.960	0.340

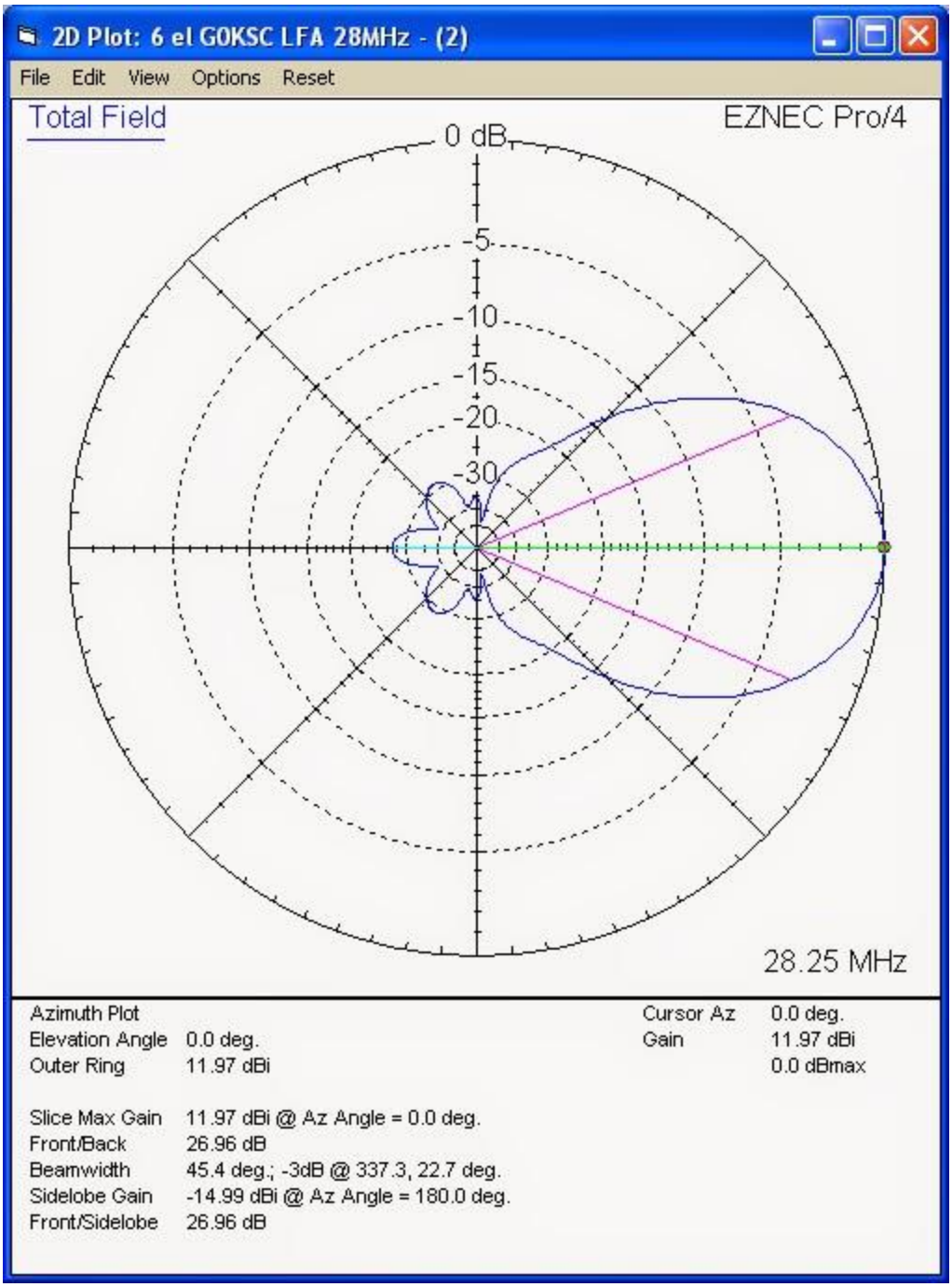
Adjust loop width for best SWR upon completion. Fit antenna with a 1:1 balun

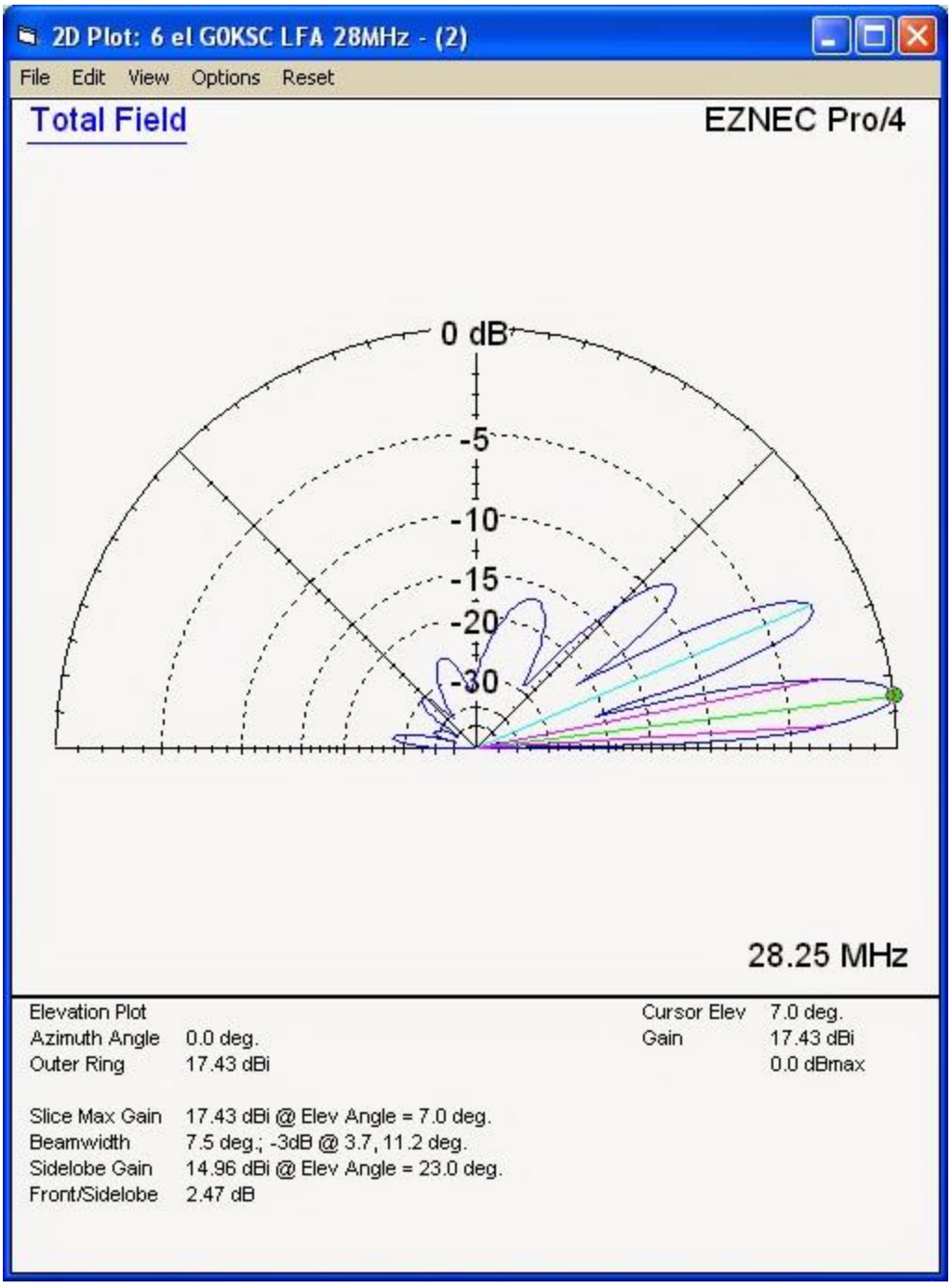
Antenna Layout and Construction

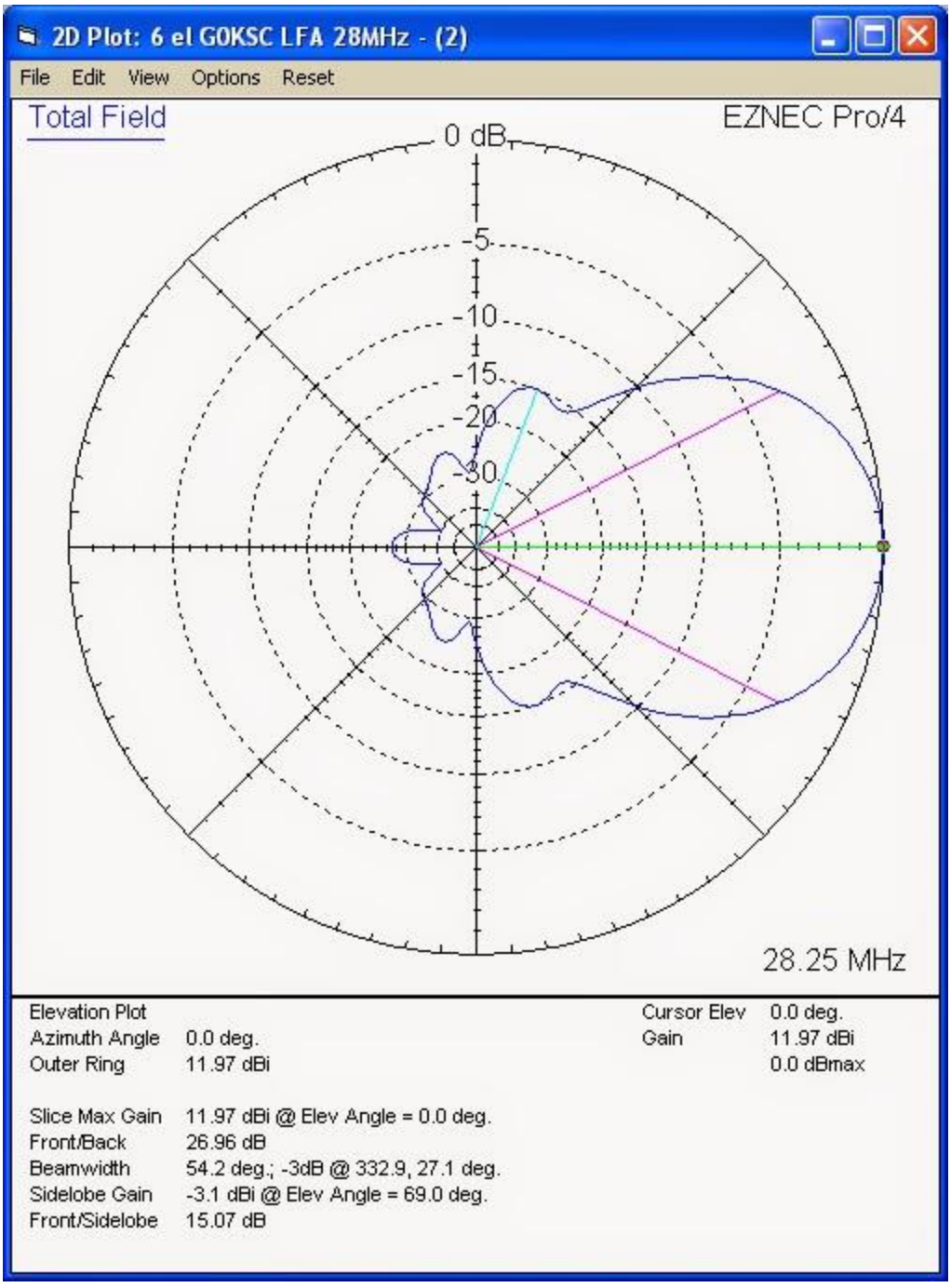


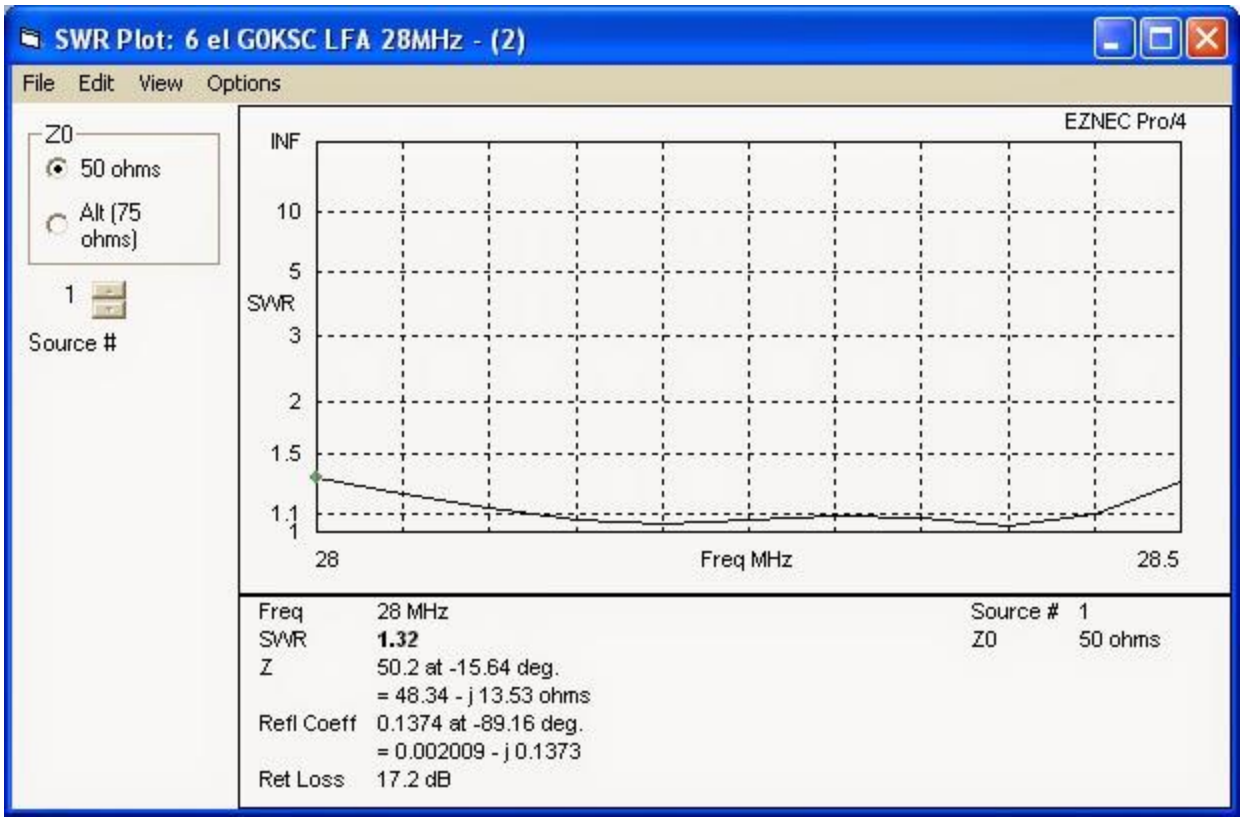
Performance
11.97dBi @ 28.250MHz
26.96dB @ 28.250MHz

Polar Plots




2D Plot: 6 el GOKSC LFA 28MHz - (2)
File Edit View Options Reset
Total Field
EZNEC Pro/4
0 dB
-5
-10
-15
-20
-30
28.25 MHz
Elevation Plot
Azimuth Angle 0.0 deg.
Outer Ring 17.43 dBi
Cursor Elev 7.0 deg.
Gain 17.43 dBi
0.0 dBmax
Slice Max Gain 17.43 dBi @ Elev Angle = 7.0 deg.
Beamwidth 7.5 deg.; -3dB @ 3.7, 11.2 deg.
Sidelobe Gain 14.96 dBi @ Elev Angle = 23.0 deg.
Front/Sidelobe 2.47 dB


2D Plot: 6 el GOKSC LFA 28MHz - (2)
File Edit View Options Reset
Total Field
EZNEC Pro/4
0 dB
-5
-10
-15
-20
-30
28.25 MHz
Elevation Plot
Azimuth Angle 0.0 deg.
Outer Ring 11.97 dBi
Cursor Elev 0.0 deg.
Gain 11.97 dBi
0.0 dBmax
Slice Max Gain 11.97 dBi @ Elev Angle = 0.0 deg.
Front/Back 26.96 dB
Beamwidth 54.2 deg.; -3dB @ 332.9, 27.1 deg.
Sidelobe Gain -3.1 dBi @ Elev Angle = 69.0 deg.
Front/Sidelobe 15.07 dB


SWR Plot: 6 el G0KSC LFA 28MHz - (2)
File Edit View Options
Z0
50 ohms
Alt (75 ohms)
1
Source #
EZNEC Pro/4
INF
10
5
SWR
3
2
1.5
1.1
1
28
Freq MHz
28.5
Freq 28 MHz
SWR 1.32
Z 50.2 at -15.64 deg.
= 48.34 - j 13.53 ohms
Refl Coeff 0.1374 at -89.16 deg.
= 0.002009 - j 0.1373
Ret Loss 17.2 dB
Source # 1
Z0 50 ohms