

Der Hexagonalbeam oder das reflektierte W  
Eine Richtantenne mit kleinem Platzbedarf

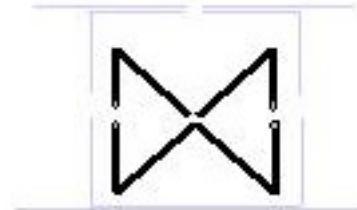




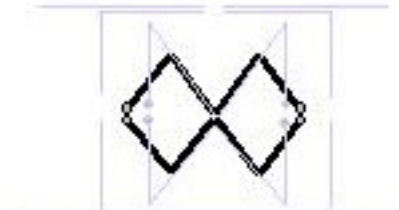
Yagi



Moxon



reflected M



reflected W

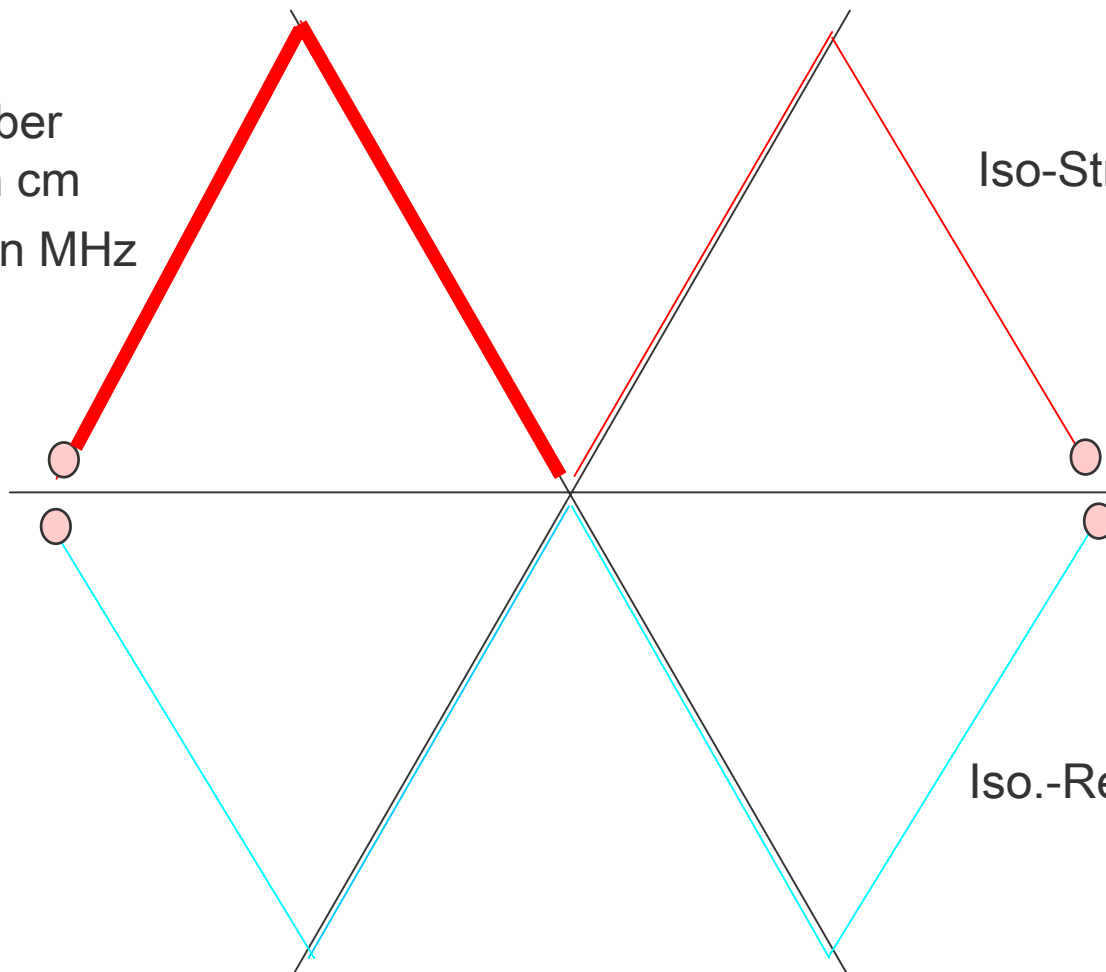
### Strahler

$$L = 7840 / f$$

L – Länge halber  
Strahler in cm

f – Frequenz in MHz

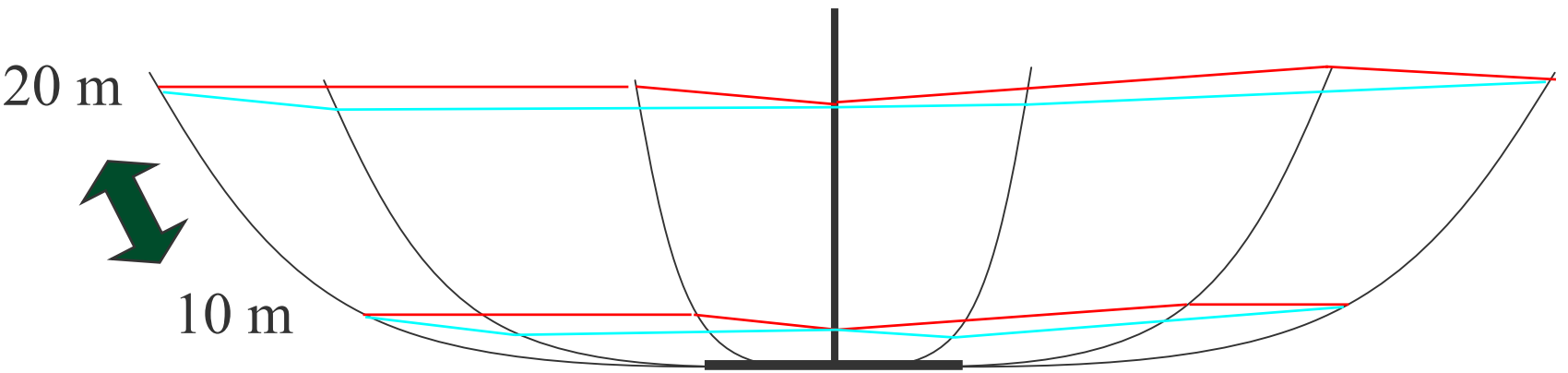
$$\text{Iso-Str. (cm)} = 258 / f$$

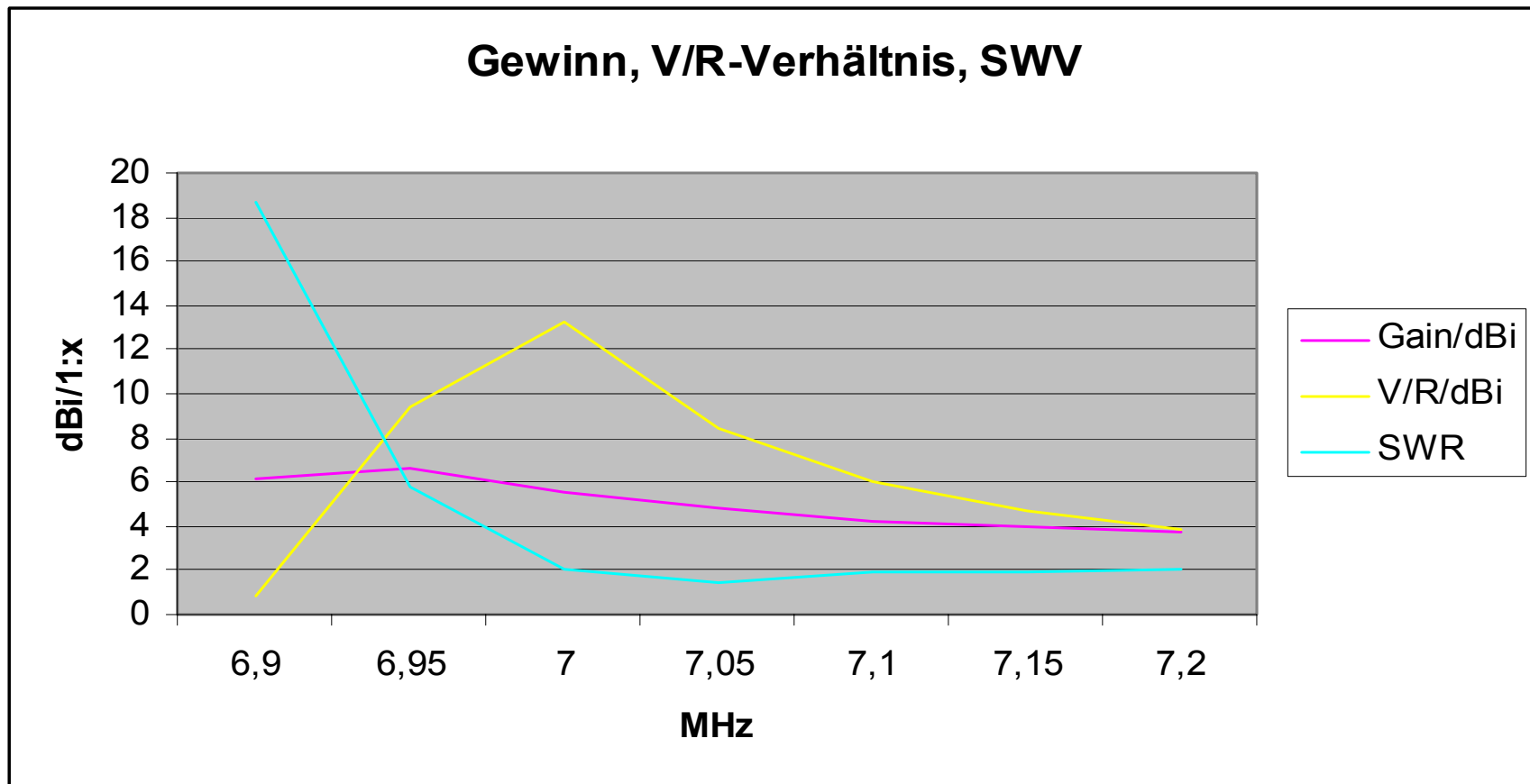


$$L = 8075 / f$$

### Reflektor

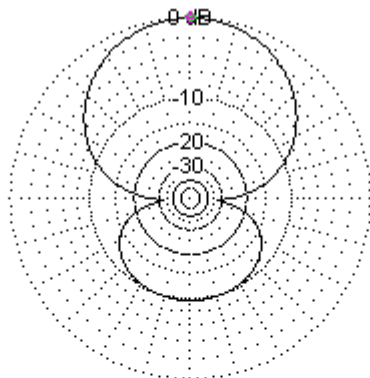
$$\text{Iso.-Refl. (cm)} = 165 / f$$





## Gewinn und SWV nehmen über die Frequenz ab

**Total Field**



EZNEC+

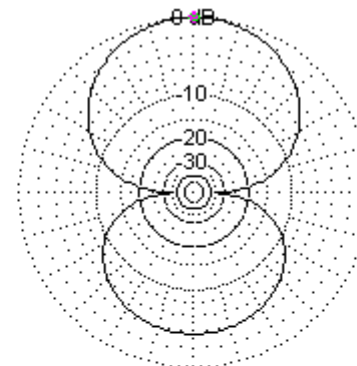
7 MHz

Azimuth Plot  
 Elevation Angle 0,0 deg.  
 Outer Ring 6,28 dBi

Cursor Az 90,0 deg.  
 Gain 6,28 dBi  
 0,0 dBmax

Slice Max Gain 6,28 dBi @ Az Angle = 90,0 deg.  
 Front/Back 9,74 dB  
 Beamwidth 82,4 deg.; -3dB @ 48,8, 131,2 deg.  
 Sidelobe Gain -3,46 dBi @ Az Angle = 270,0 deg.  
 Front/Sidelobe 9,74 dB

**^ Total Field**



EZNEC+

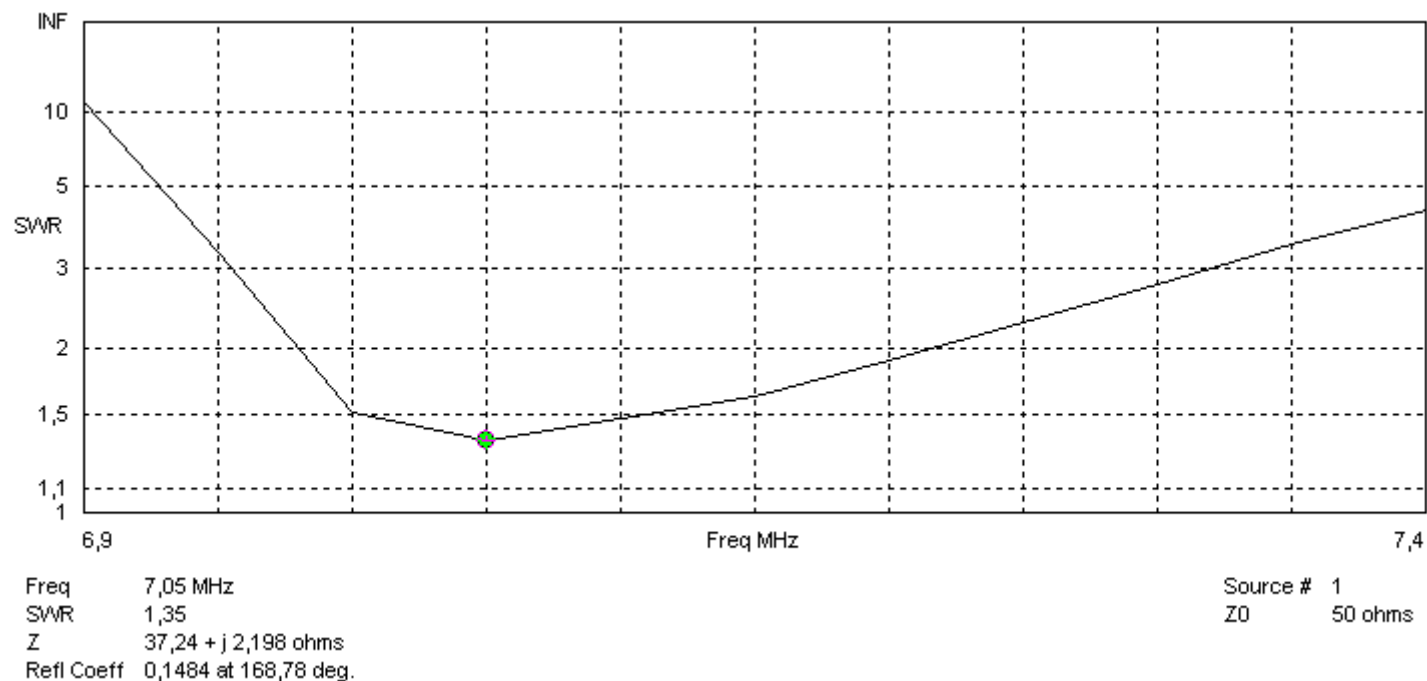
7,2 MHz

Azimuth Plot  
 Elevation Angle 0,0 deg.  
 Outer Ring 4,8 dBi

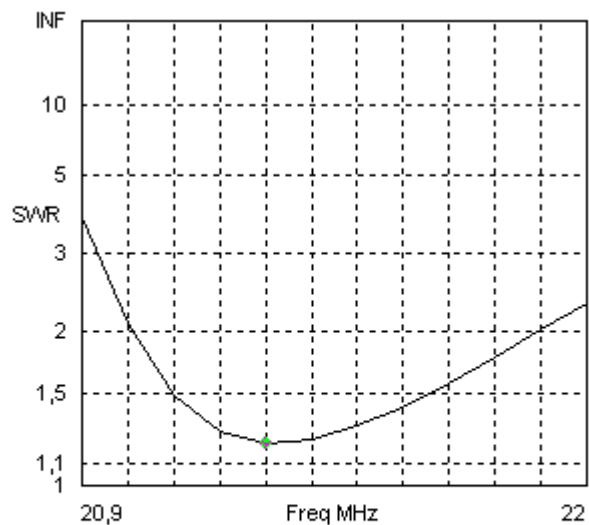
Cursor Az 90,0 deg.  
 Gain 4,8 dBi  
 0,0 dBmax

Slice Max Gain 4,8 dBi @ Az Angle = 90,0 deg.  
 Front/Back 3,58 dB  
 Beamwidth 86,4 deg.; -3dB @ 46,8, 133,2 deg.  
 Sidelobe Gain 1,21 dBi @ Az Angle = 270,0 deg.  
 Front/Sidelobe 3,58 dB

## Beispiel für das Stehwellenverhältnis an einer 7 MHz Variante

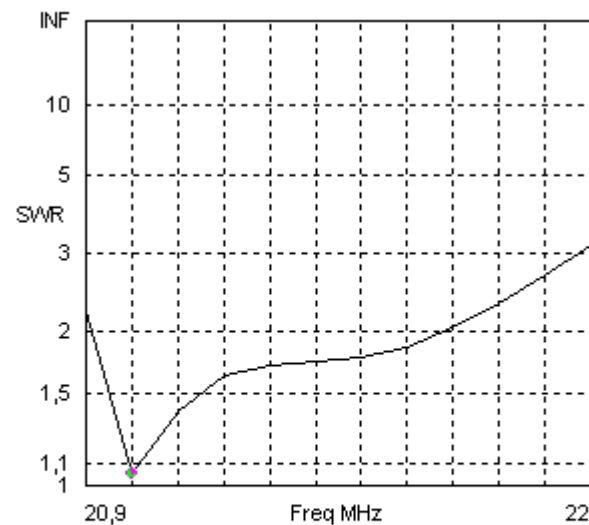


## 50 Ohm

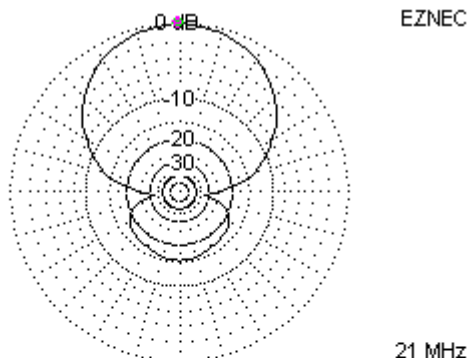


Freq 21,3 MHz                      Source # 1  
 SWR 1,2                                Z0 50 ohms  
 Z 42,23 + j 3,205 ohms  
 Refl Coeff 0,09104 at 155,59 deg.

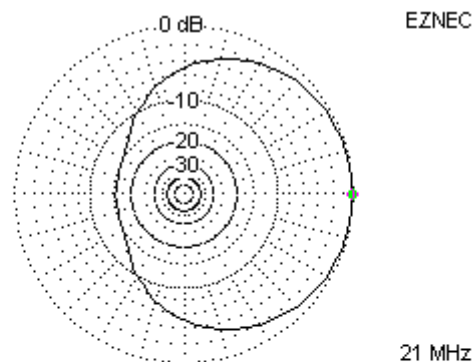
## 25 Ohm



Freq 21 MHz                            Source # 1  
 SWR 1,057                              Z0 25 ohms  
 Z 24,06 - j 0,9738 ohms  
 Refl Coeff 0,0276 at -132,88 deg.



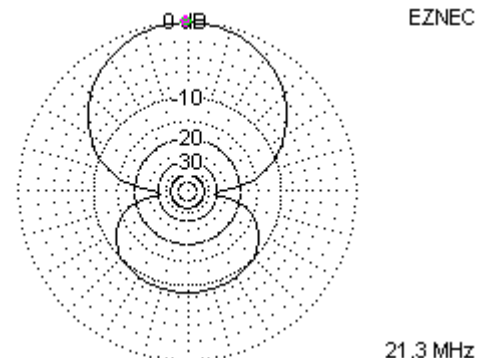
21 MHz



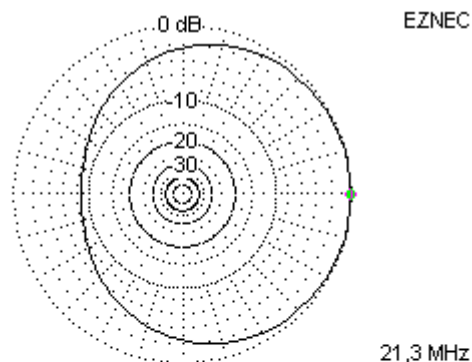
21 MHz

Elevation Plot		Cursor Elev	0,0 deg.
Azimuth Angle	90,0 deg.	Gain	5,62 dBi
Outer Ring	5,62dBi		0,0 dBmax

3D Max Gain	5,62 dBi
Slice Max Gain	5,62 dBi @ Elev Angle = 0,0 deg.
Front/Back	15,55 dB
Beamwidth	145,2 deg.; -3dB @ 287,4, 72,6 deg.
Sidelobe Gain	-9,93 dBi @ Elev Angle = 180,0 deg.
Front/Sidelobe	15,55 dB



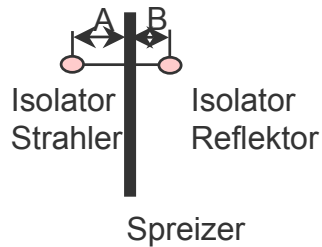
21,3 MHz



21,3 MHz

Elevation Plot		Cursor Elev	0,0 deg.
Azimuth Angle	90,0 deg.	Gain	4,16 dBi
Outer Ring	4,16dBi		0,0 dBmax

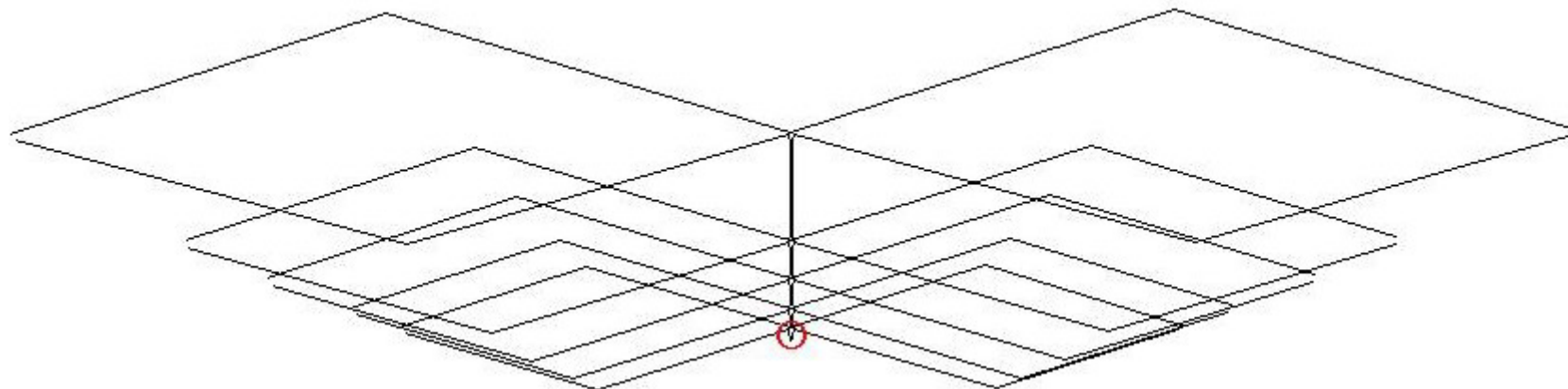
3D Max Gain	4,16 dBi
Slice Max Gain	4,16 dBi @ Elev Angle = 0,0 deg.
Front/Back	8,82 dB
Beamwidth	195,6 deg.; -3dB @ 262,2, 97,8 deg.
Sidelobe Gain	< -100 dBi
Front/Sidelobe	> 100 dB



Die Angaben zu den Isolatorlängen beziehen sich vom Mittelpunkt des Spreizers bis zum Ende des Drahtelementes,  
Die Elemente bestehen aus Kupferlitze, nicht isoliert, mit einem Querschnitt von 1,5 mm<sup>2</sup>.

Band	Länge halber Strahler in m	Länge halber Reflektor in m	Länge Isolator Strahler in cm	Länge Isolator Reflektor in cm
6 m	1,57	1,61	4	2,5
10 m	2,80	2,85	8	5
12 m	3,11	3,21	10	6
15 m	3,65	3,80	12	7
17 m	4,27	4,42	13	9
20 m	5,51	5,69	15	11
30 m	7,66	7,87	19	15
40 m	11,10	11,33	27	21
80 m	22,00	22,60	50	42

## Der Klassiker, 5 Band Variante von 20-10m



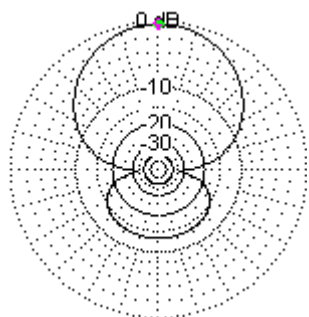
Band	Länge halber Strahler in m	Länge halber Reflektor in m	Länge Isolator Strahler in cm	Länge Isolator Reflektor in cm	Abstand zw. den Bändern in cm
20m	5,52	5,60	17	11	40 cm _____ 14 cm _____ 11,5 cm _____ 7,5 cm
17m	4,25	4,31	13,5	9	
15m	3,635	3,695	12	8	
12m	3,05	3,11	11,5	6,5	
10m	2,73	2,775	9,5	6	



## Der Beam für das Sonnenfleckenninimum, 40-17m

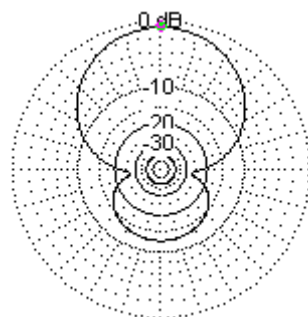
Band	Länge halber Strahler in m	Länge halber Reflektor in m	Länge Isolator Strahler in cm	Länge Isolator Reflektor in cm	Abstand zw. den Bändern in cm
40m	10,52	11,34	19	14	80 cm 30cm 20cm
30m	7,58	7,85	19	14	
20m	5,58	5,66	16	11	
17m	4,31	4,38	13	9	

äußerer Ring entspricht 6 dBi Gewinn (im Freiraum, verlustfrei)



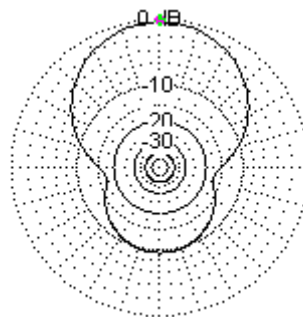
7 MHz

V/R: 12,9 dB



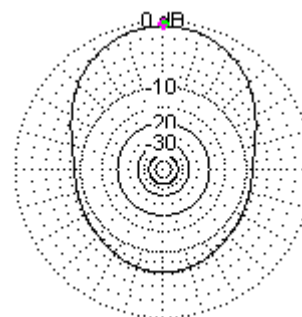
10,1 MHz

V/R: 11,8 dB



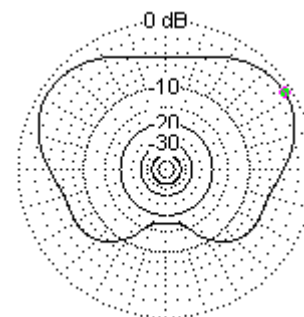
14 MHz

V/R: 9,8 dB



18,1 MHz

V/R: 5,7 dB



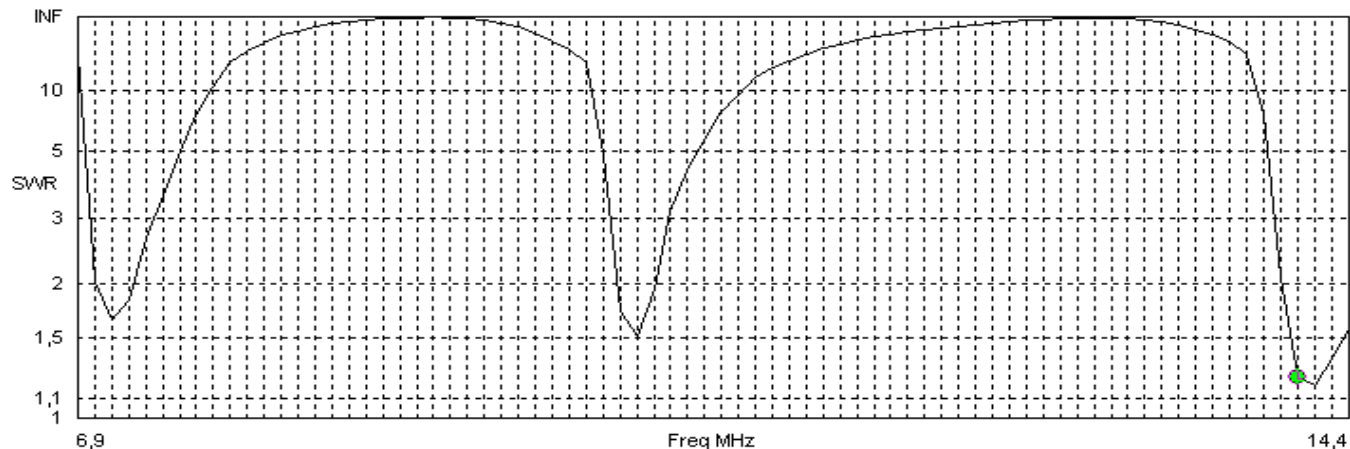
21 MHz

V/R: 5,4 dB



## DL7IO-40-3, 3 Band Variante von 40-20 m

Band	Länge halber Strahler in m	Länge halber Reflektor in m	Länge Isolator Strahler in cm	Länge Isolator Reflektor in cm	Abstand zw. den Bändern in cm
40m	10,52	11,34	19	14	80cm 30cm
30m	7,70	7,85	19	14	
20m	5,58	5,66	16	11	



Freq 14,1 MHz  
 SWR 1,22  
 Z 45,1 + j 8,29 ohms  
 Refl Coeff 0,1009 at 115,6 deg.

Source # 1  
 Z0 50 ohms

### DL7IO-40-2, 40/30m Beam

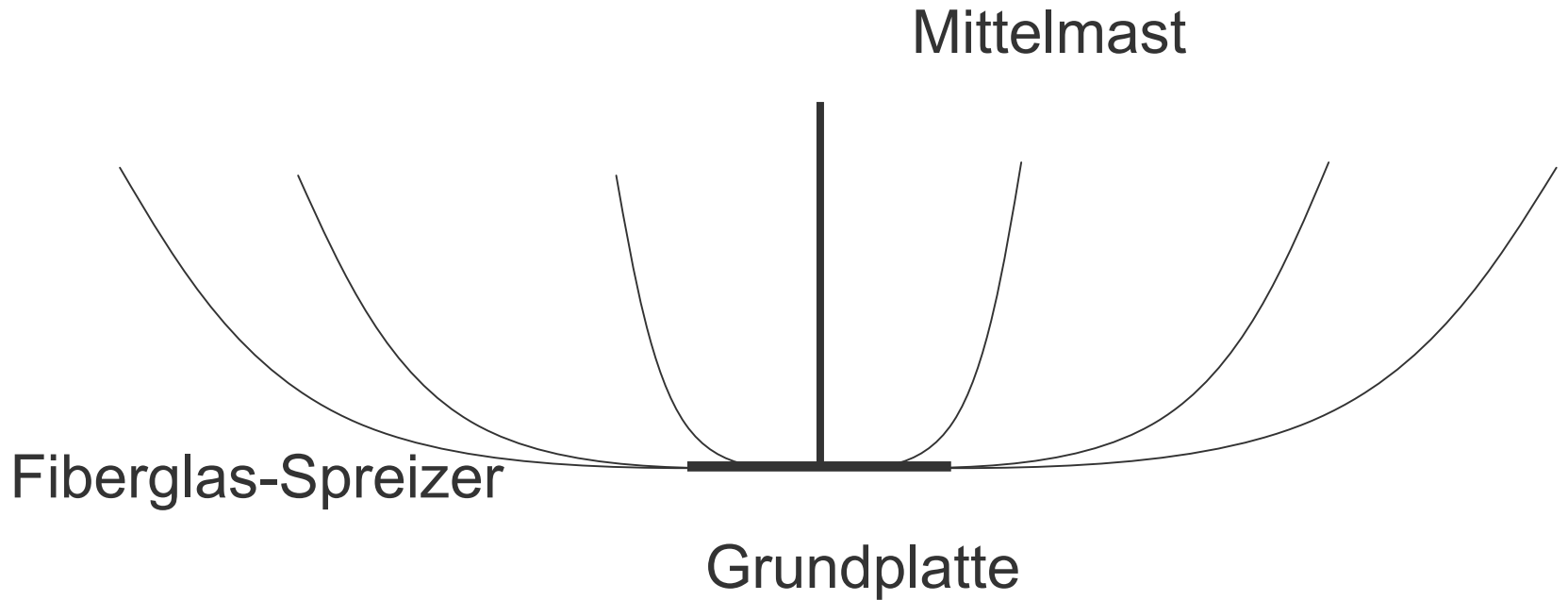
Band	Länge halber Strahler in m	Länge halber Reflektor in m	Länge Isolator Strahler in cm	Länge Isolator Reflektor in cm	Abstand zw. 30/40 in cm
40m	10,80	11,35	10	9	80 cm
30m	7,74	7,90	19	15	

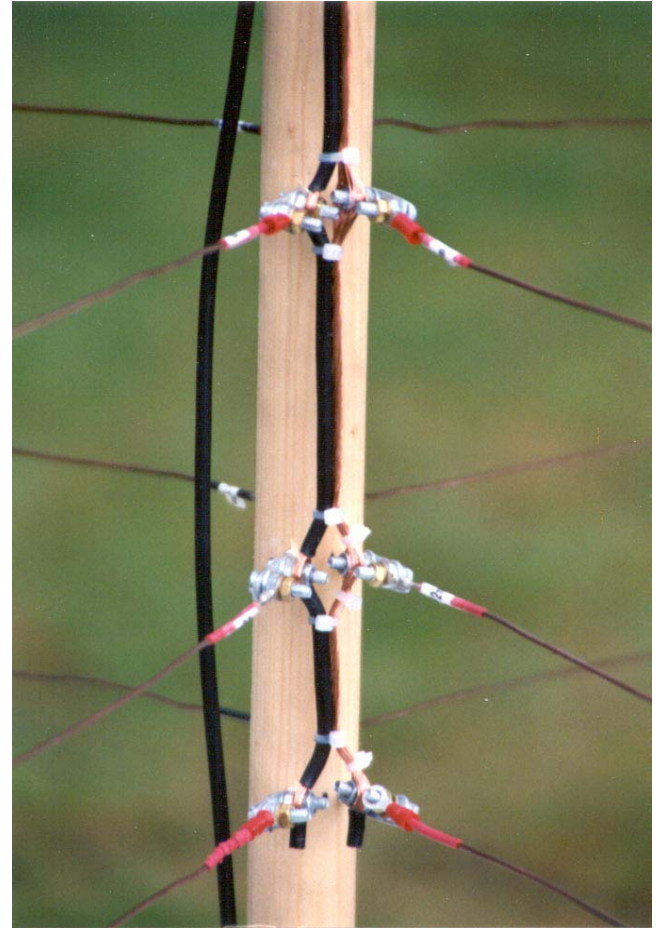
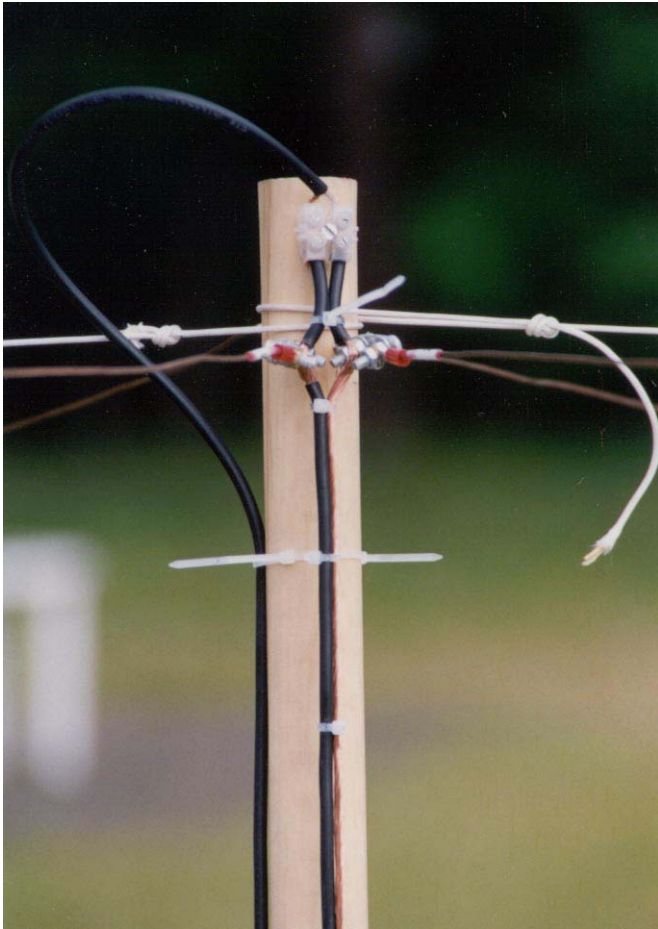
### DL7IO-20-2, 20/17m Beam

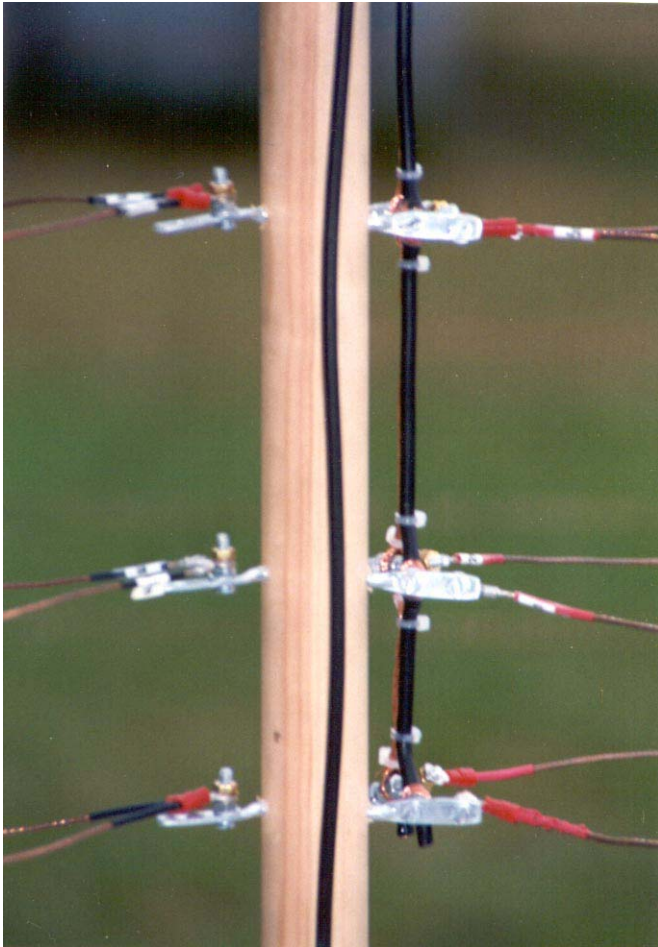
Band	Länge halber Strahler in m	Länge halber Reflektor in m	Länge Isolator Strahler in cm	Länge Isolator Reflektor in cm	Abstand zw. 20/17 in cm
20m	5,51	5,69	13	9	40 cm
17m	4,31	4,41	13	9	

### DL7IO-20-3, 20/17/15m Beam

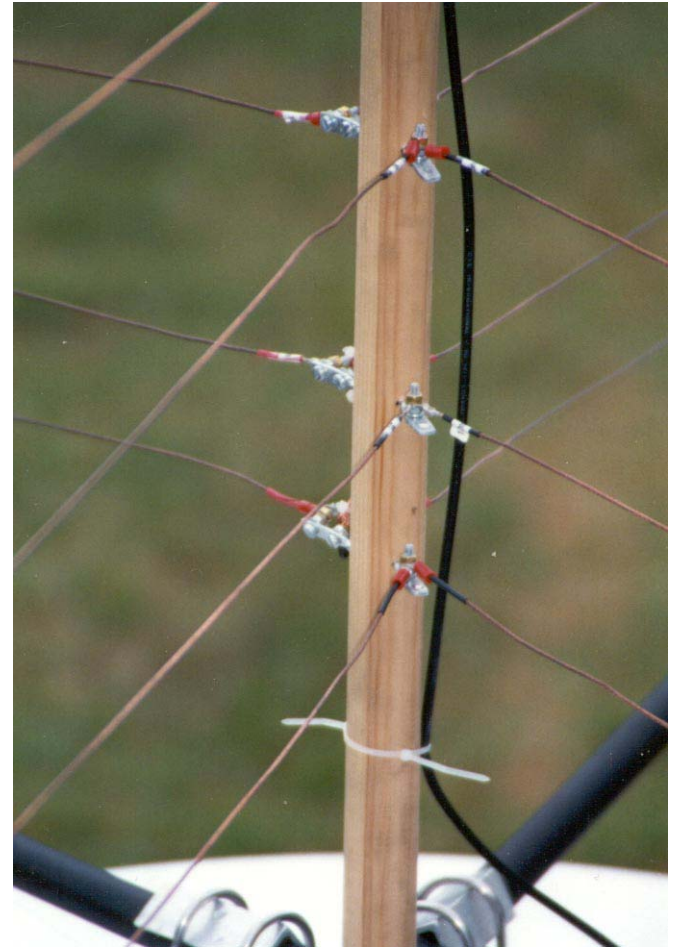
Band	Länge halber Strahler in m	Länge halber Reflektor in m	Länge Isolator Strahler in cm	Länge Isolator Reflektor in cm	Abstand zw. den Bändern in cm
20m	5,40	5,69	10	9	40 cm
17m	4,28	4,41	10	9	
15m	3,74	3,78	10	7	14 cm



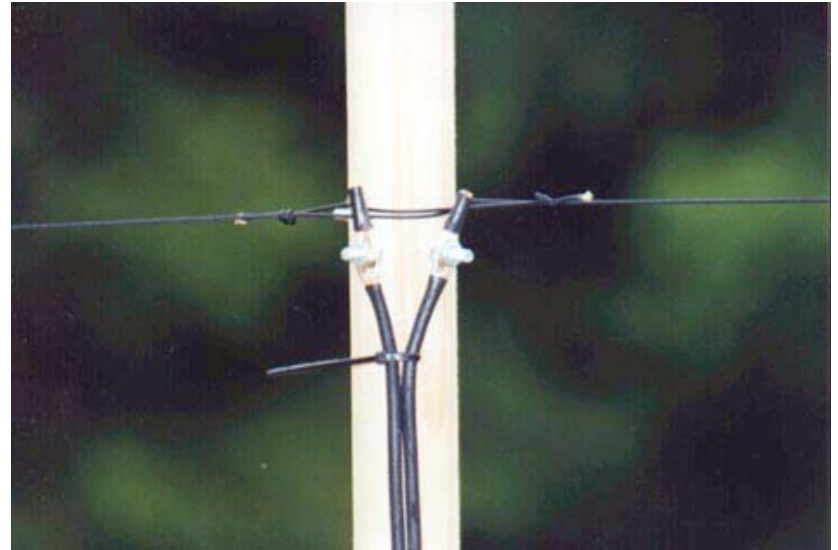


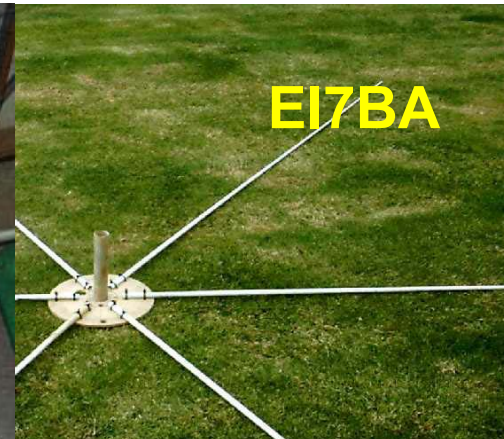


Seitenansicht

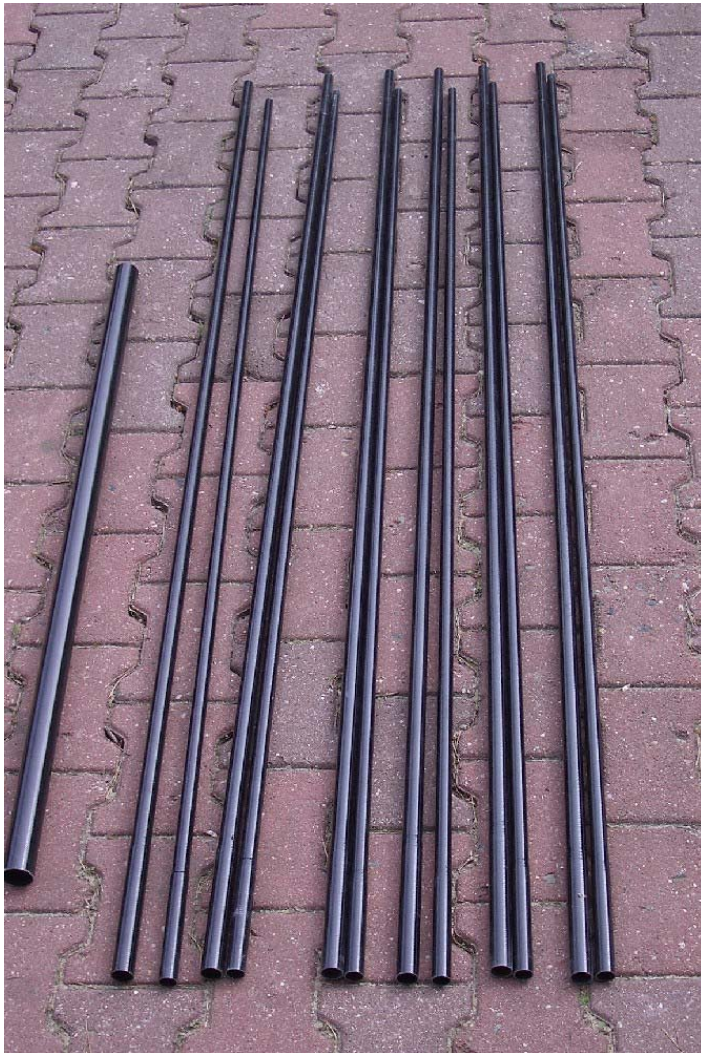


Reflektorseite

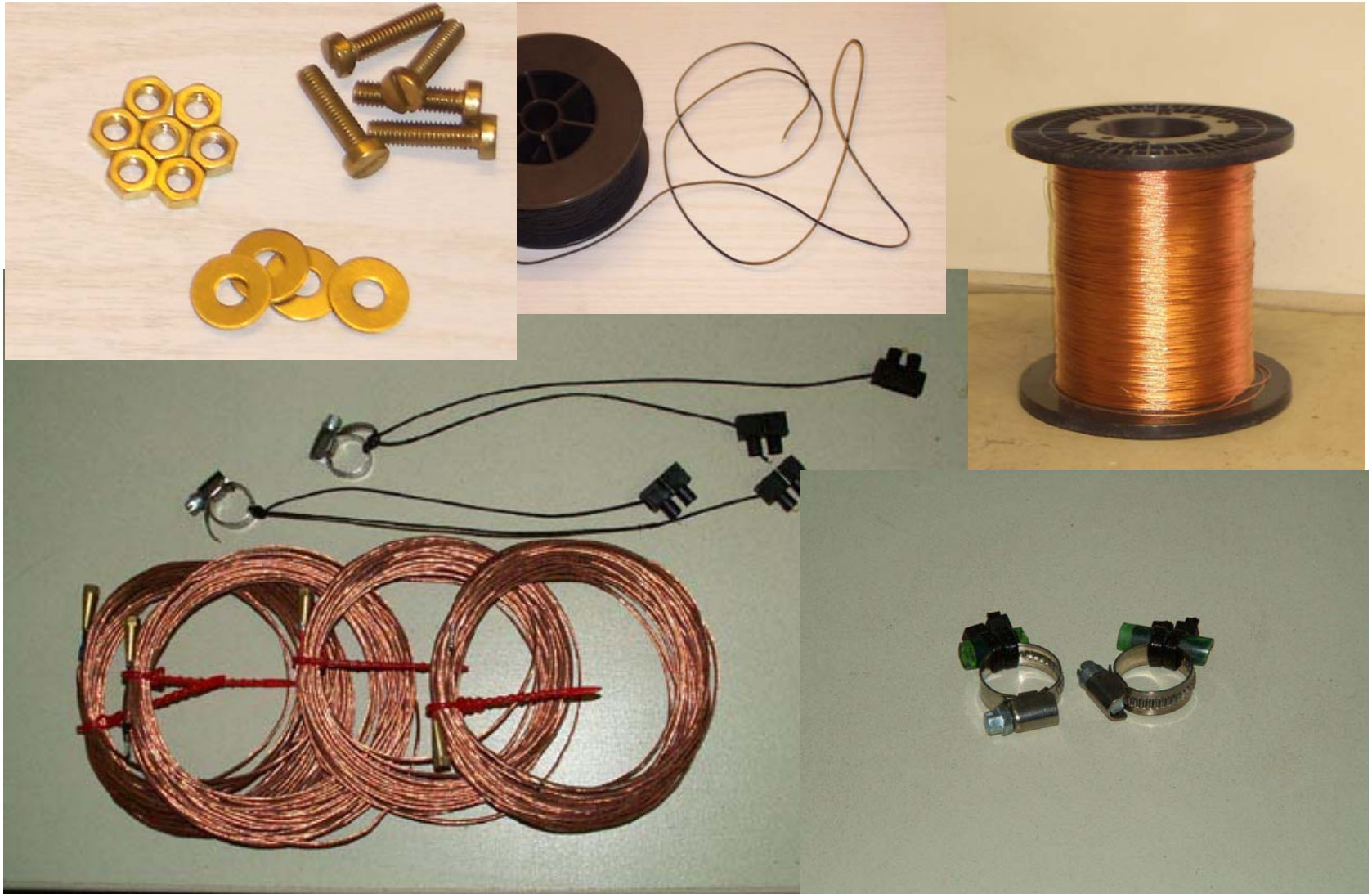












HOBITEC

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<http://groups.yahoo.com/group/hex-beam>