StepplR™

What does it mean to dream?

To want a Dream Beam of course!

Presenter: President and Founder
Mike Mertel K7IR

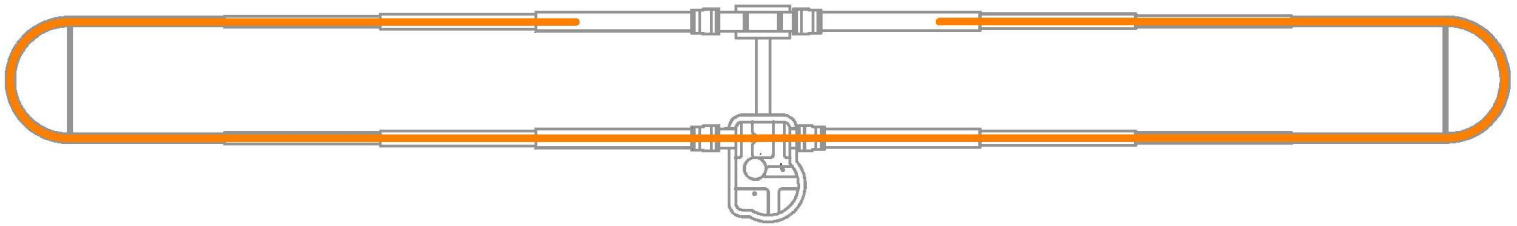
Shortening SteppIR Elements

40m Shortened Dipoles

40m Shortened 2 Element Yagis

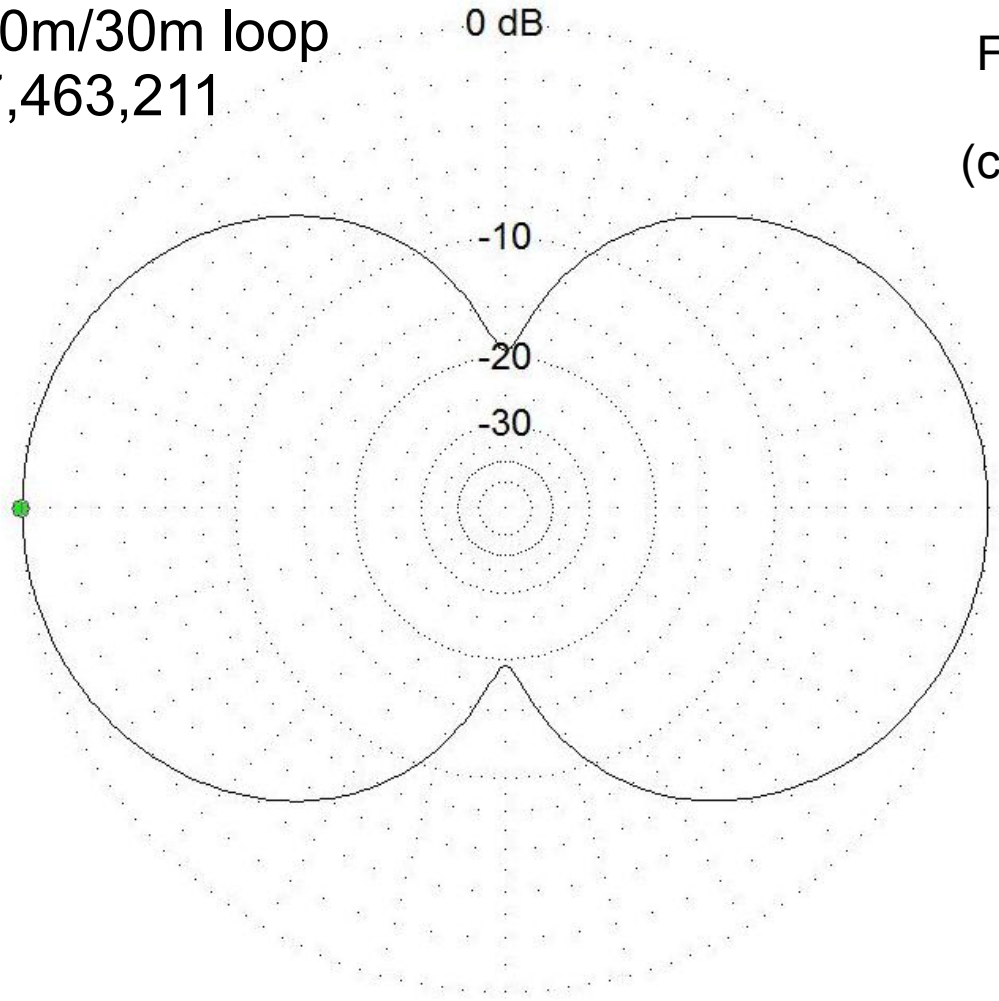
40m Shortened 3 Element Yagis

SteppIR 40m/30m Folded Dipole



40m Dipole 39ft (loop element)

SteppIR 40m/30m loop
Patent # 7,463,211



Frequency: 7.175 MHz
Gain: -0.3 dBd
(compared to full-sized)

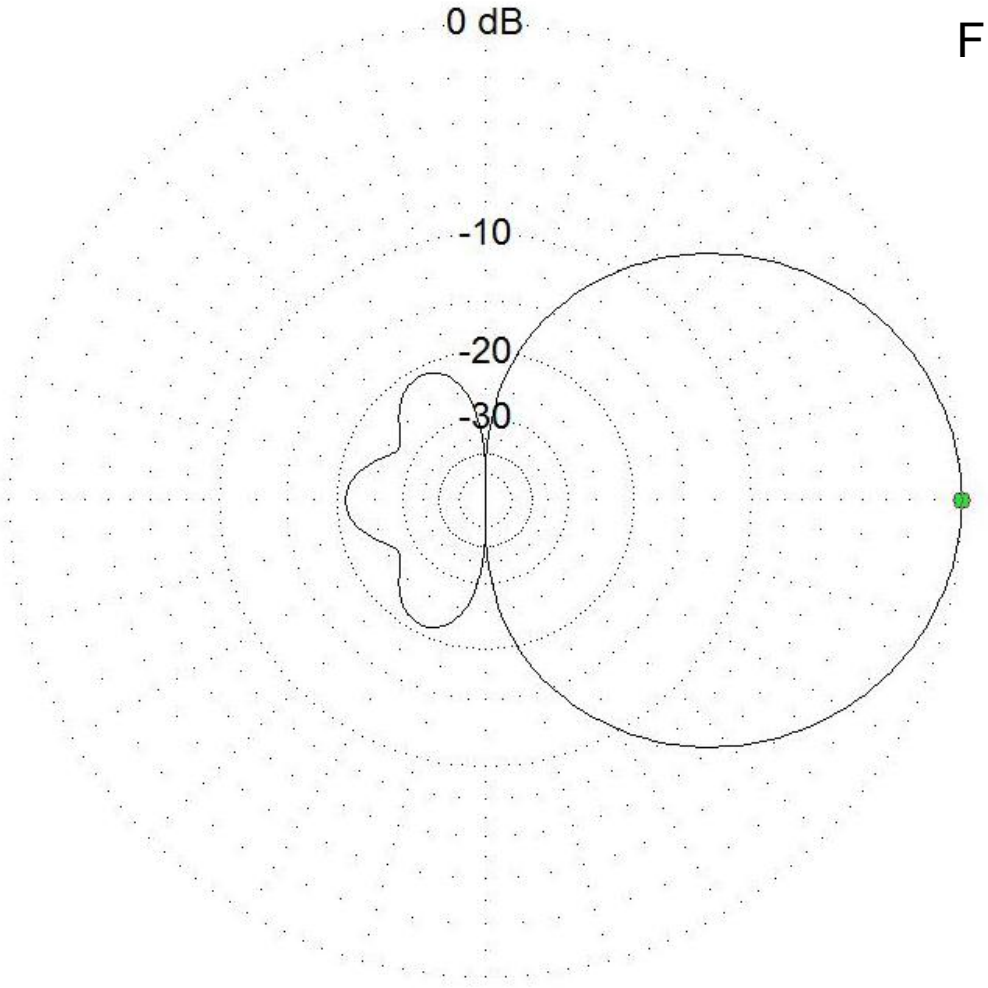
Conclusions on shortened Dipoles

39’ loop elements provide excellent performance with much shorter elements

Gain = -0.3 dBd

Pattern = slightly degraded side rejection

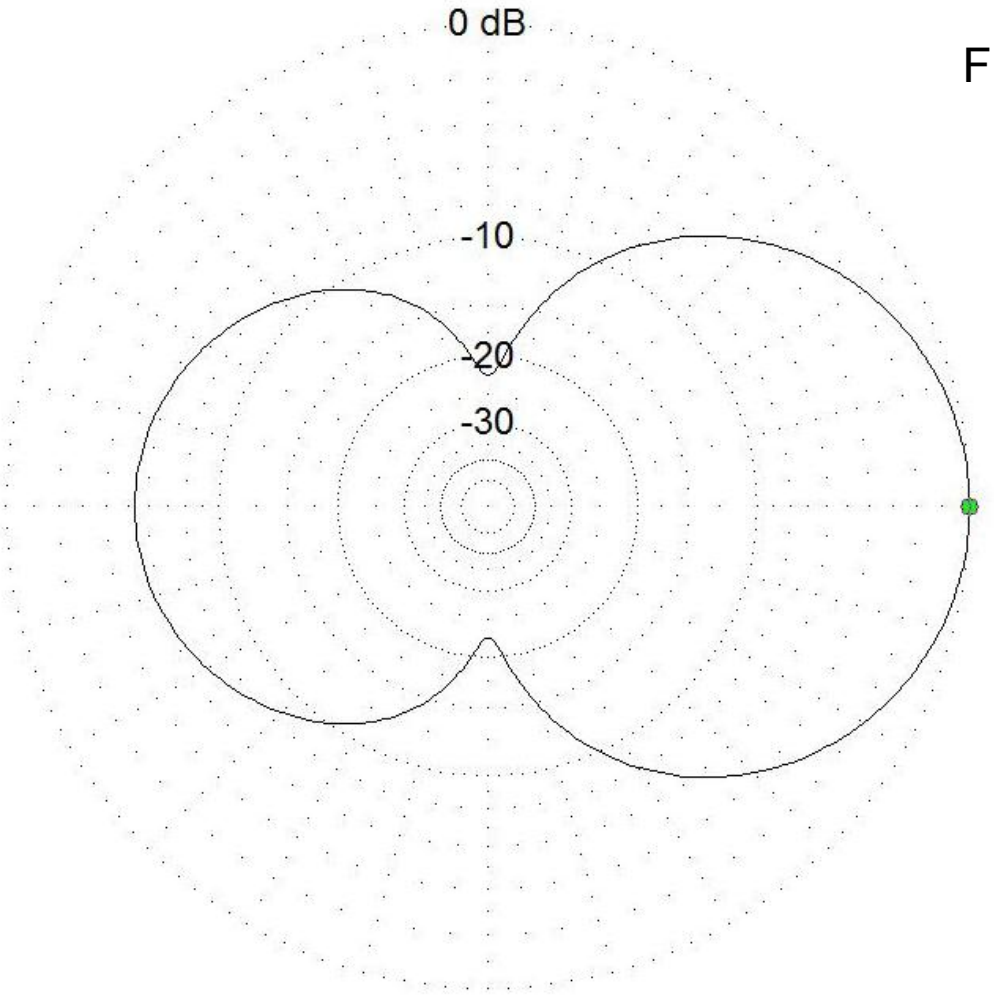
40m Two Element Full-Size Antenna (Director Type)



Frequency: 7.175 MHz
Gain: 6.54 dBi
F/B: 21.05 dB

NOTE:
* Boom length 13 ft

40m Two 39 ft Elements (Director Type)

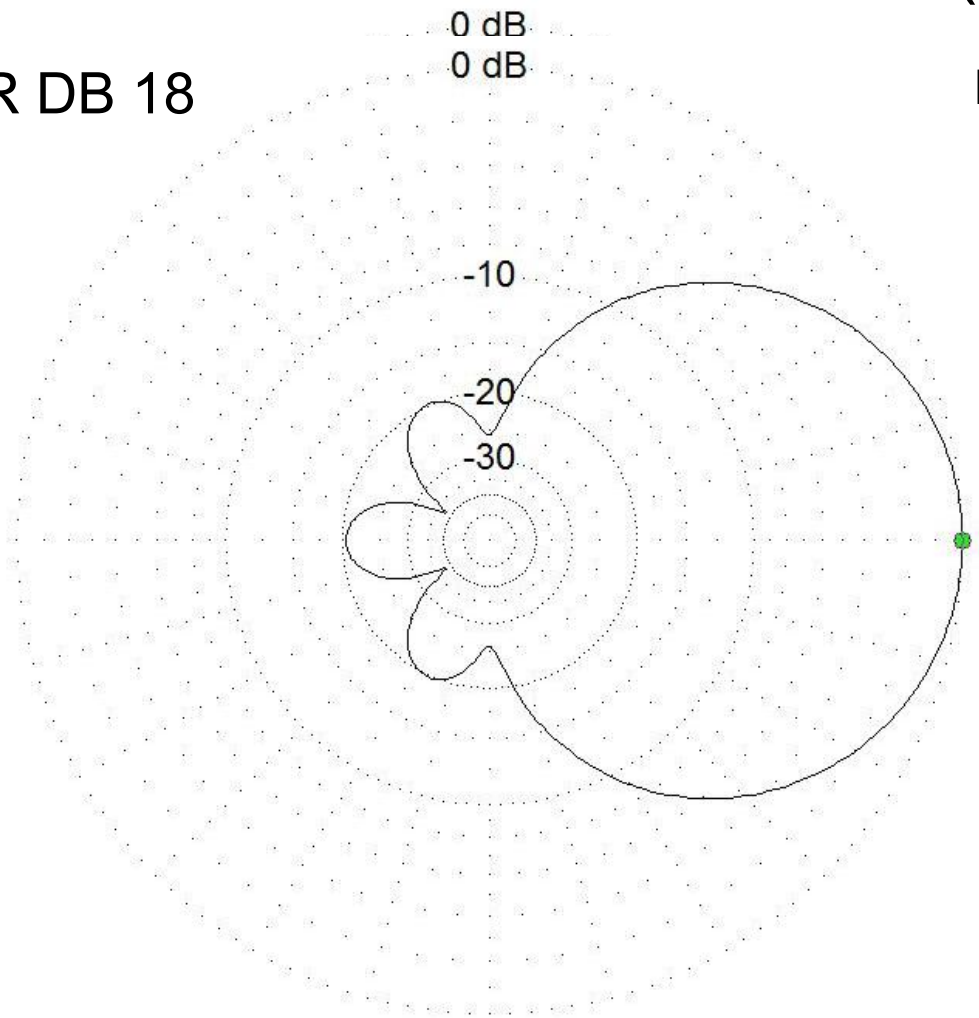


Frequency: 7.175 MHz
Gain: 4.4 dBi
F/B: 5.33 dBi

NOTE:
* Boom length 16 ft (effective minus loop width)

40m Two Element Folded Antenna (Reflector Type)

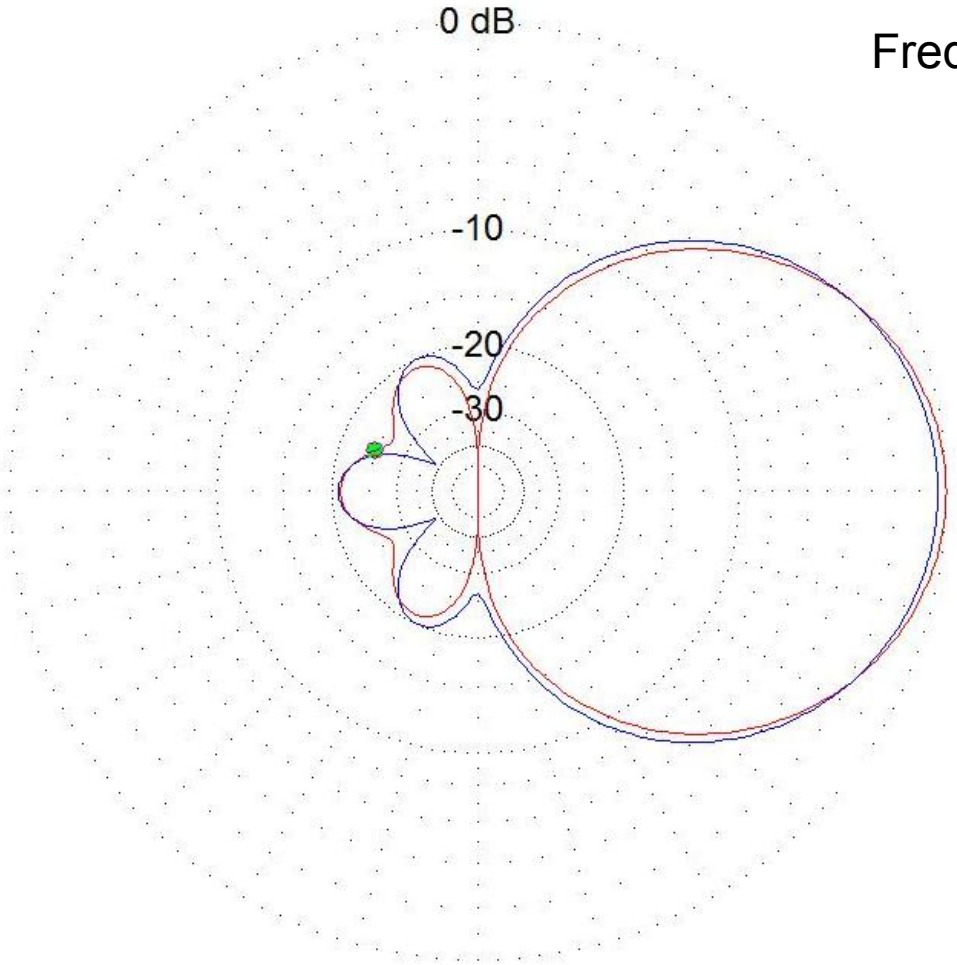
SteppIR DB 18



Frequency: 7.175MHz
Gain: 6.23dBi
F/B: 20.45dB

NOTE:
* Boom length 16 ft (effective minus loop width)

40m 2 Element folded vs 2 Element full size



Frequency: 7.175MHz
Gain: 6.23dBi
F/B: 20.45dB
Gain: 6.54dBi
F/B: 21.05dB

NOTE:
* Full size elements were used as a director type Yagi.

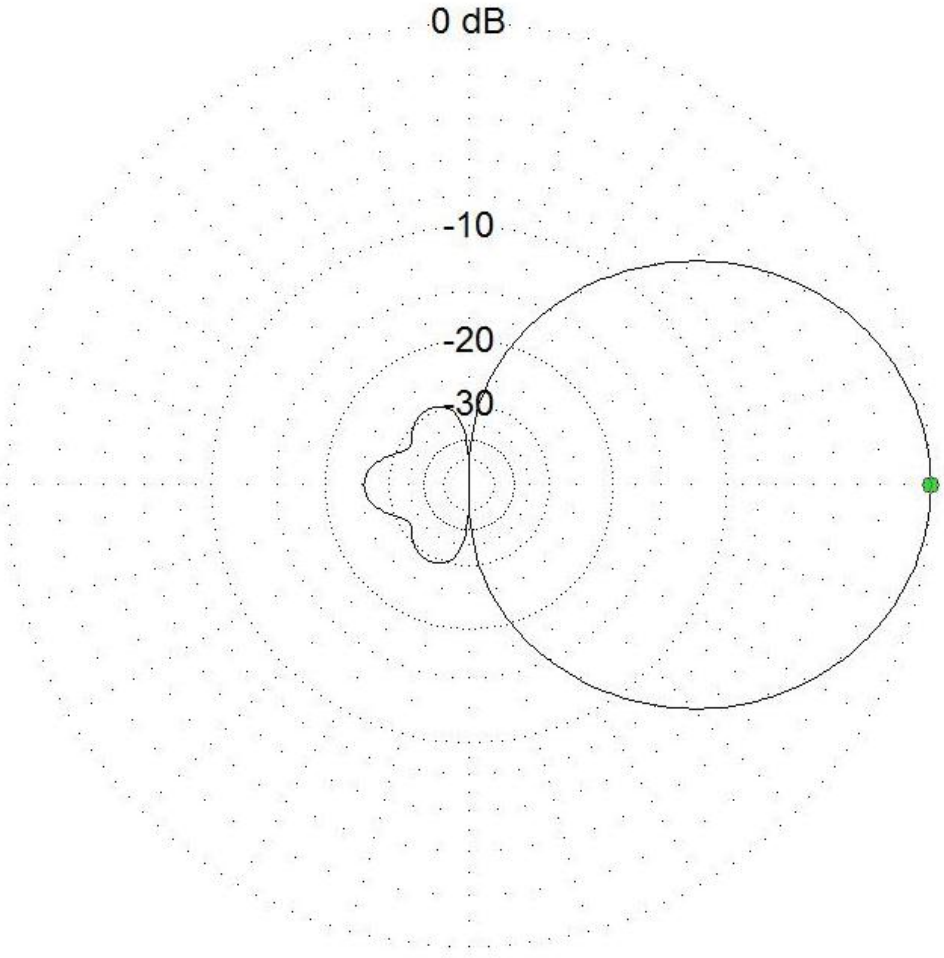
CONCLUSIONS ON SHORTENED 2 ELEMENT YAGIS

Shortened elements make terrible directors but good reflectors

Gain = -0.3 dB compared to a full-size two element optimized at a SINGLE frequency

F/R = essentially equal

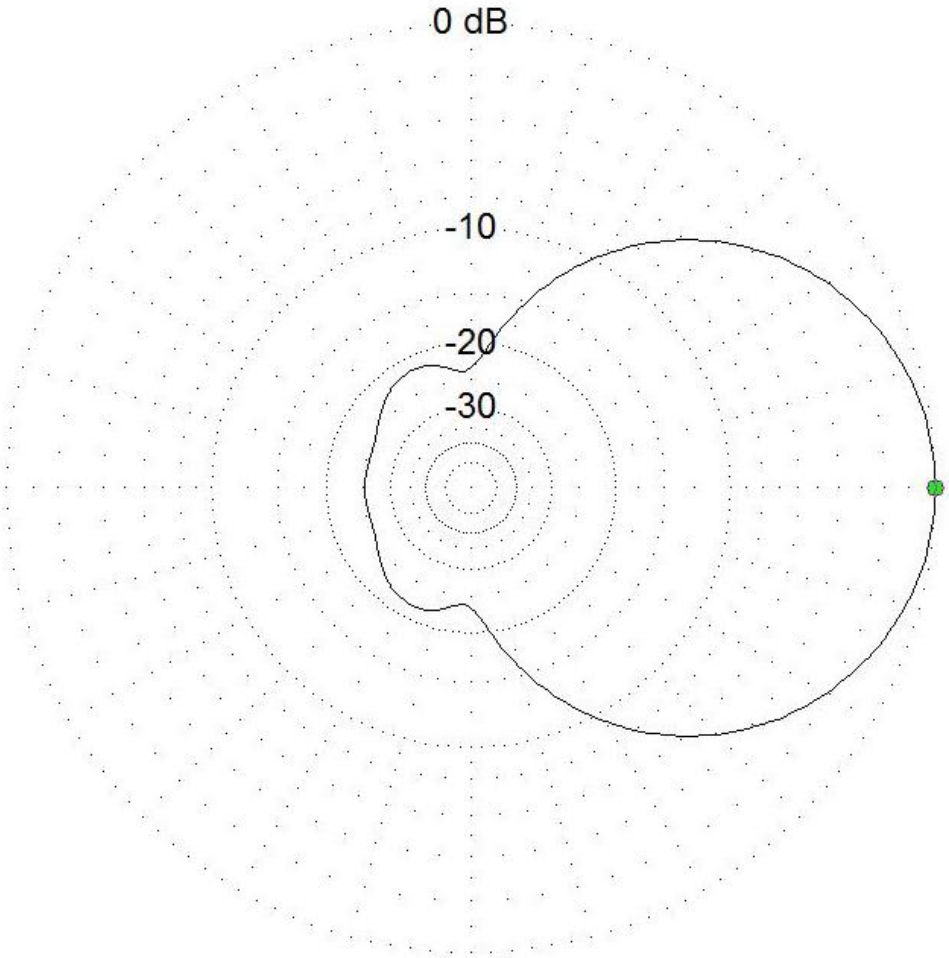
40m 3 Element Full-Size Antenna



Frequency: 7.175 MHz
Gain: 8.12 dBi
F/B: 25.4 dB

NOTE:
* Boom length 42 ft

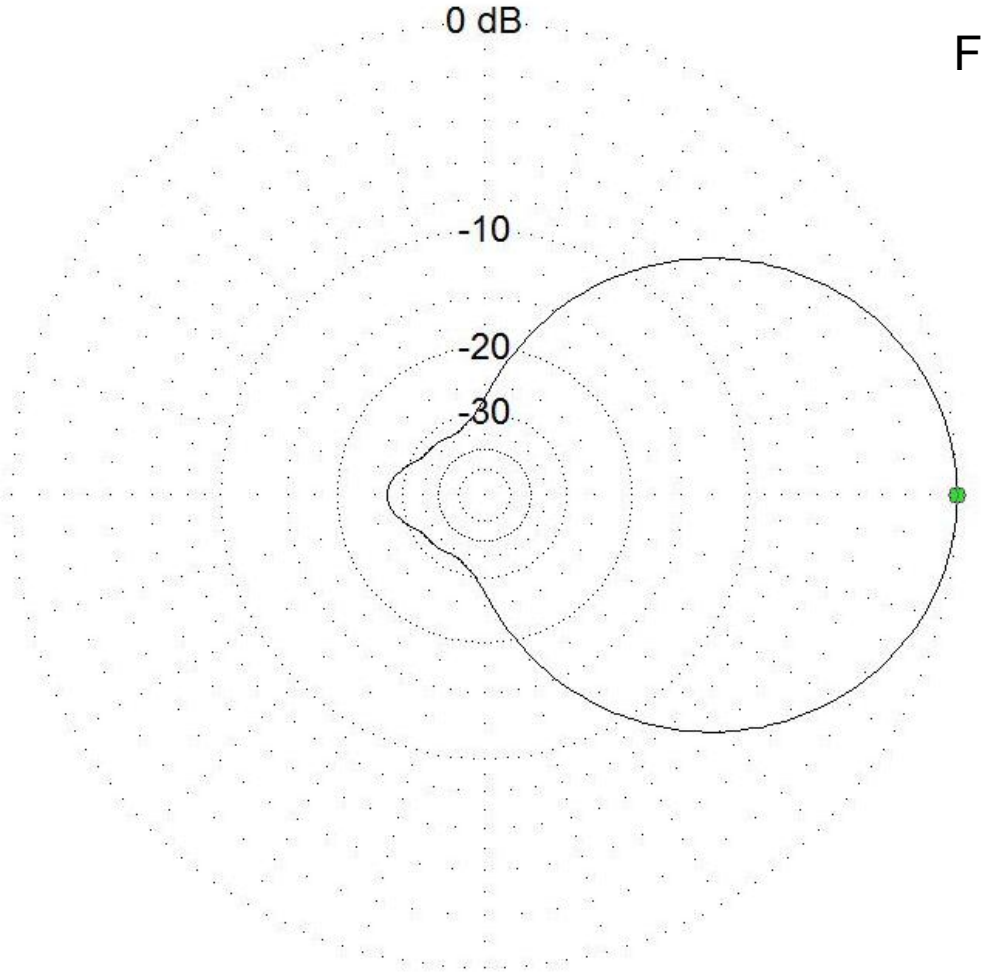
Three Elements 40m All 39 ft



Frequency: 7.175MHz
Gain: 7.0 dBi
F/B: 25.32 dB

NOTE:
* Boom length 42 ft

Three Element 40m ALL 49’ long (loop element)

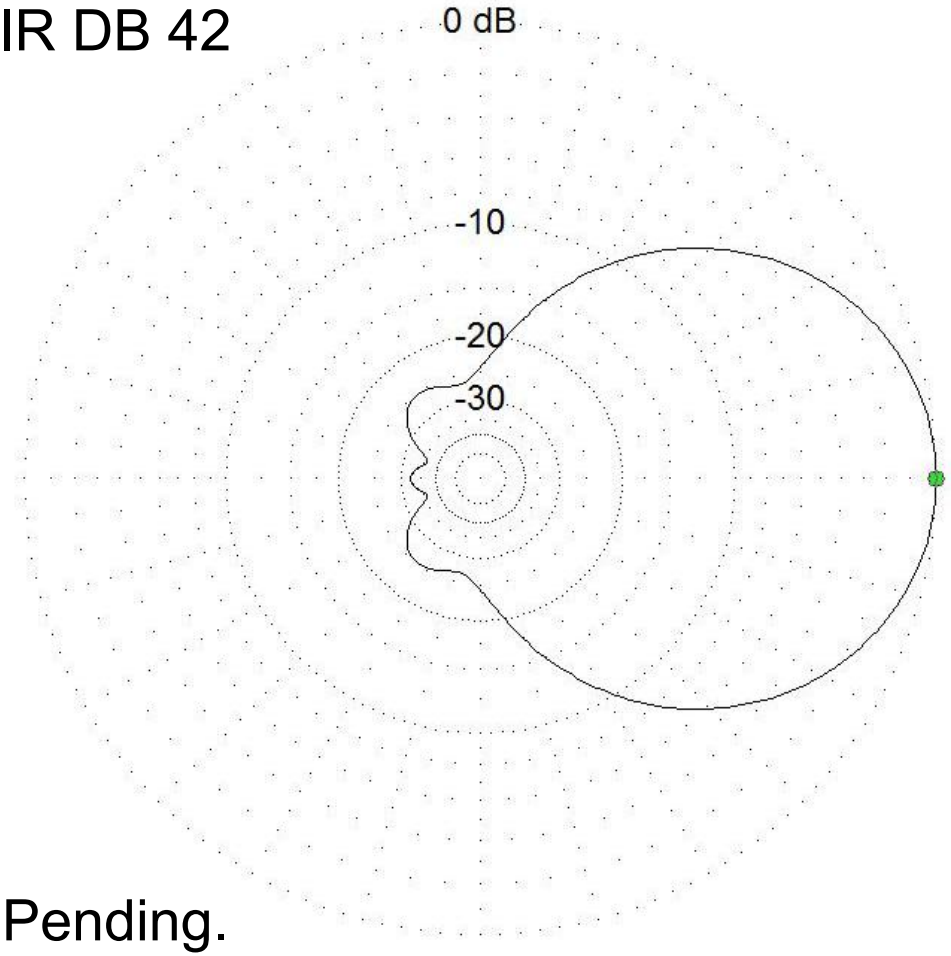


Frequency: 7.175 MHz
Gain: 8.11 dBi
F/B: 27.11 dB

NOTE:
* Boom length 42 ft (effective minus loop width)

40m 3 Element,
Two 39’ Passives, 49’ Driven Element

SteppIR DB 42

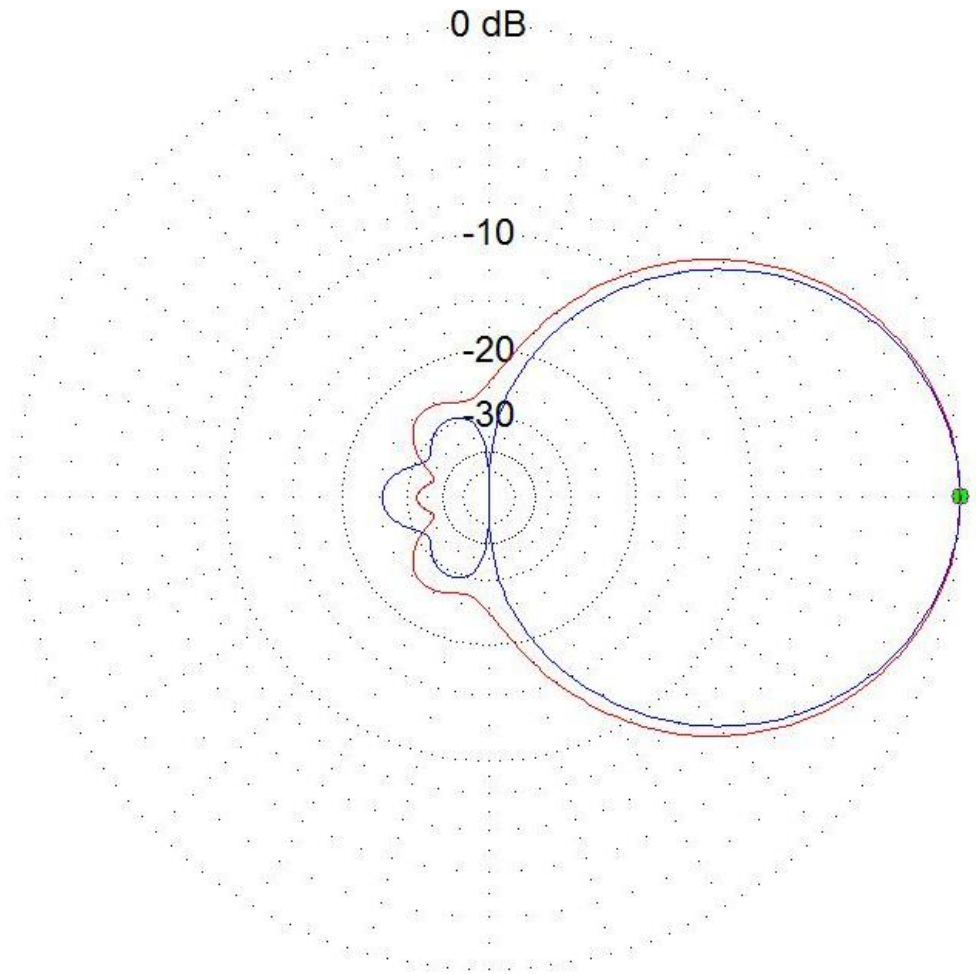


Frequency: 7.175 MHz
Gain: 8.14 dBi
F/B: 32.2 dB

NOTE:
* Boom length 42 ft

Patent Pending.
Inventor Clay Curtiss W7CE

40m 3 Element Full-Size vs DB 42



Frequency: 7.175MHz
Gain: 8.12dBi
F/B: 25.4dB
Gain: 8.14dBi
F/B: 32.2dB

CONCLUSIONS ON THREE ELEMENT WITH LONGER DRIVEN ELEMENT

All three elements 39': Gain = -1.1dB

F/R = Overall rear response compromised

All three elements 49': Gain = Equal to full-sized

F/R = Arguably better than full-sized

Two elements 39', middle element 49':

Gain = Equal to full-sized

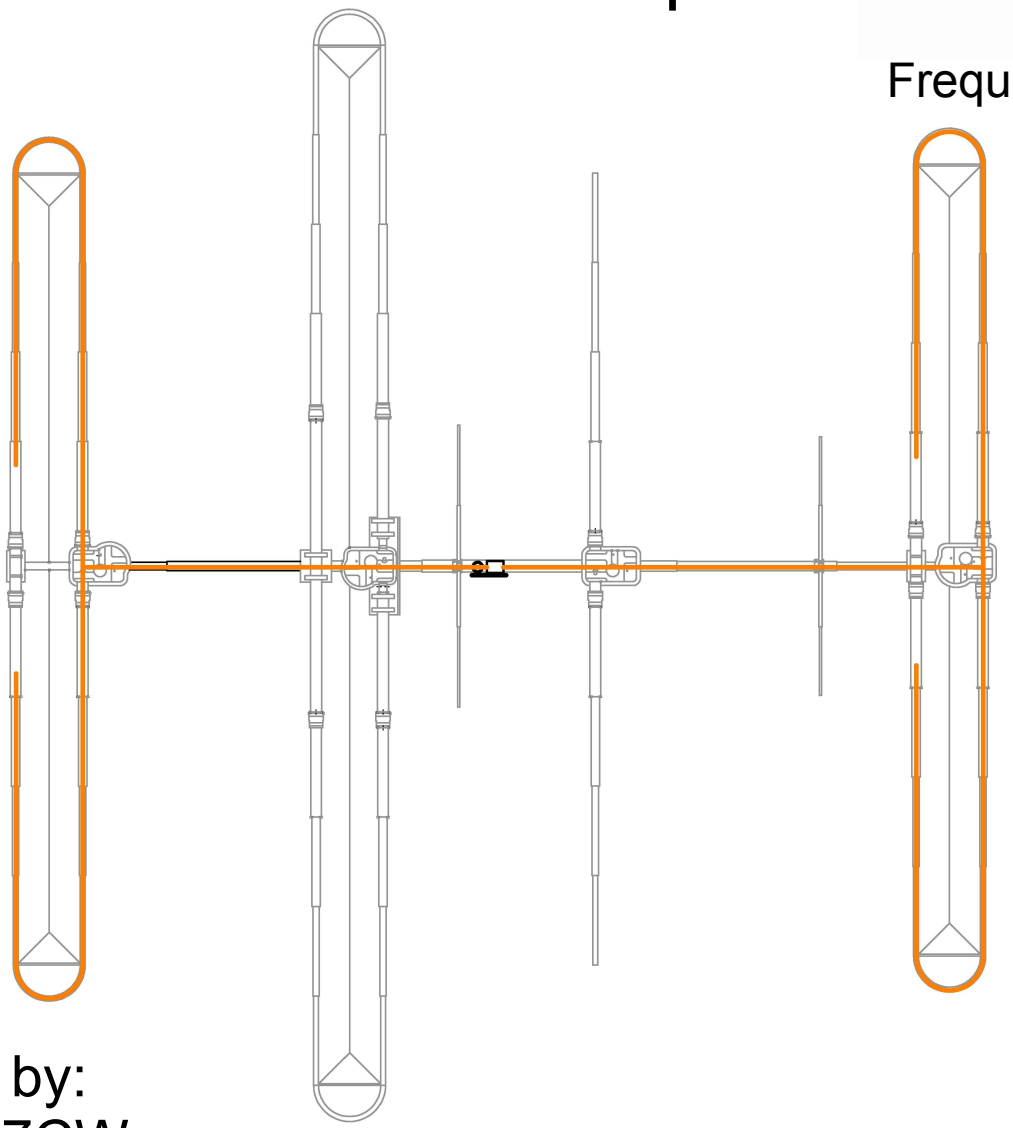
F/R = Arguably equal to full-sized

Advantage: Full-sized performance with an antenna with 60% sized antenna

DB 36 80m dipole

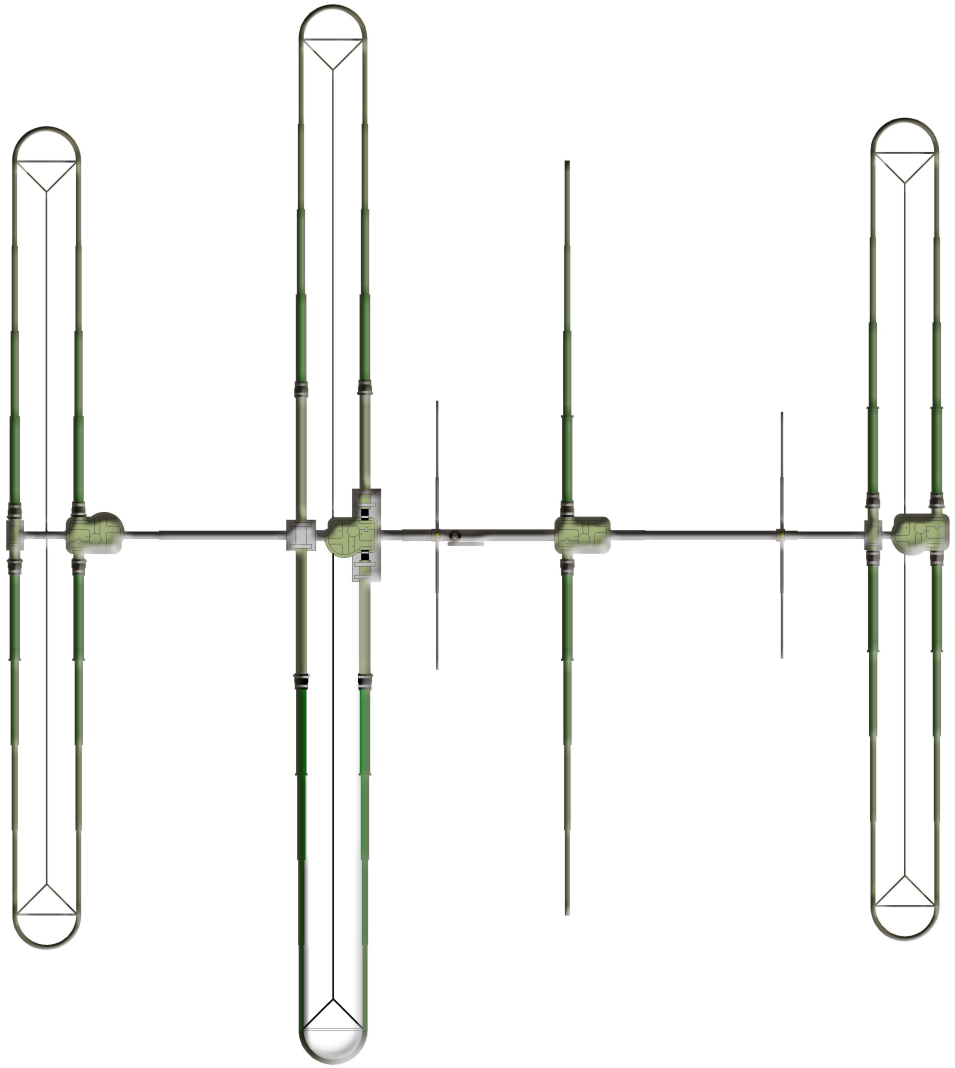
StreppIR™

Frequency: 3.50 MHz
Gain: -0.7 dBd



Original design by:
Rick Dwight KL7CW
June 2007 QST

DB 36

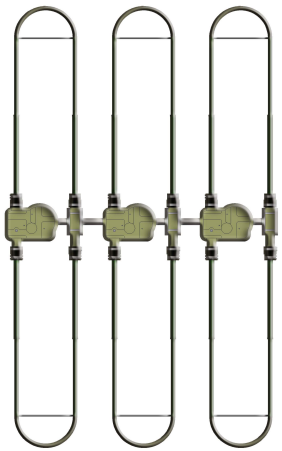


SDA 100

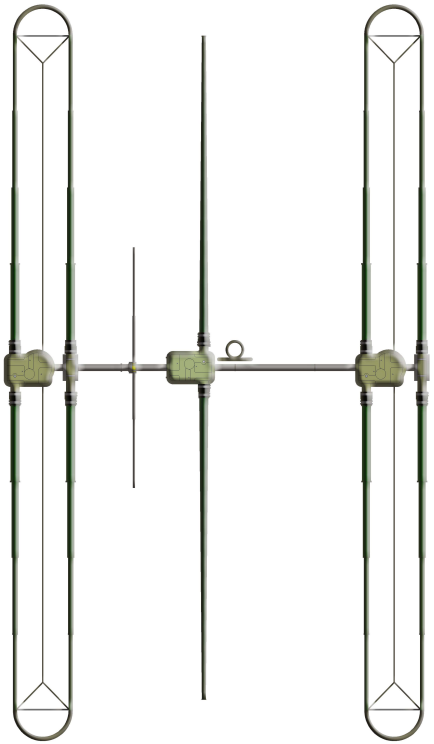

SteppIR SDA 100 Controller
Manual Mode +00
14.200mhz
TUNING
RETRACT
POWER
NORM
180°
BI (3/4)
AUTOTRACK
SELECT
SETUP
FINE
COARSE
BAND
FREQUENCY ADJUST

StepIR™

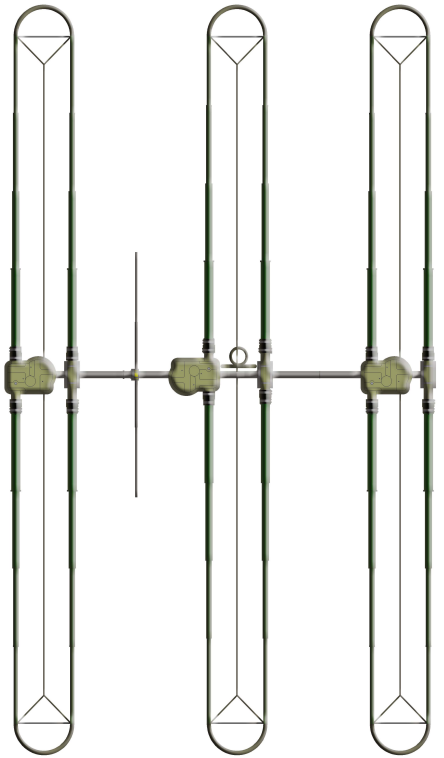
DB 11



DB 18

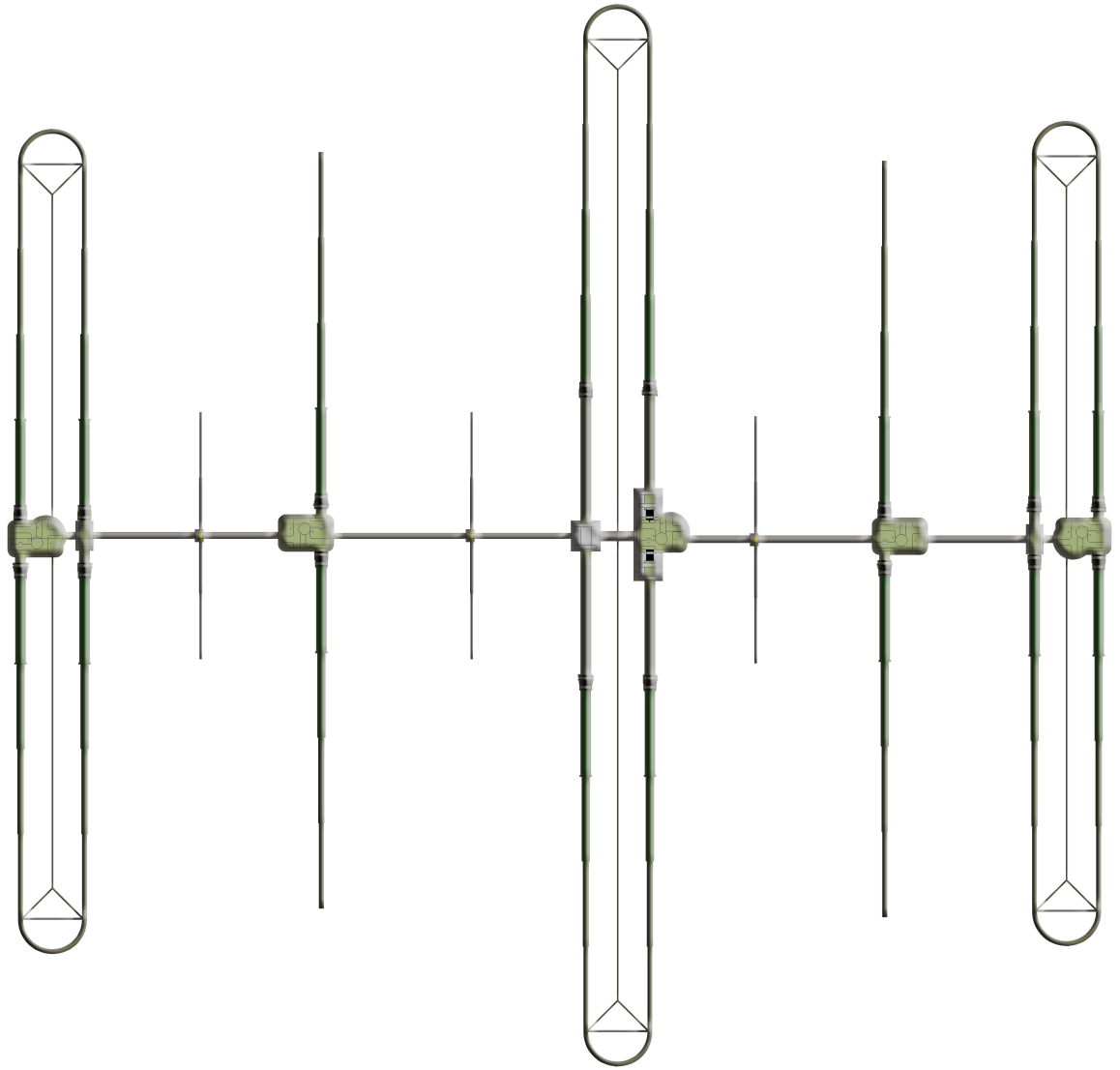


DB18E



DB 42

StepIR™



Real World Comparision

Commercially available Yagi

Boom = 48’

3 elements full-sized

Turning radius = 42’

Gain = 8.14 dBi

F/B = 20 dB

SWR 2:1 Bandwidth = 200 kHz

Price = $4154

SteppIR DB42

Boom = 42’

3 elements 2 x 39’ 1 x 49’

Turning radius = 29’

Gain = 8.14 dBi

F/B = 32.2 dB

SWR 2:1 Bandwidth = HUGE

Price = $5700

(includes 3 elements on 30m,
5 elements on 20m = 6m)

StepIR™

StepIR™

Questions?