

# Multiband Wire Antennas



Focus is on the Hex Beam

# Concepts to Consider

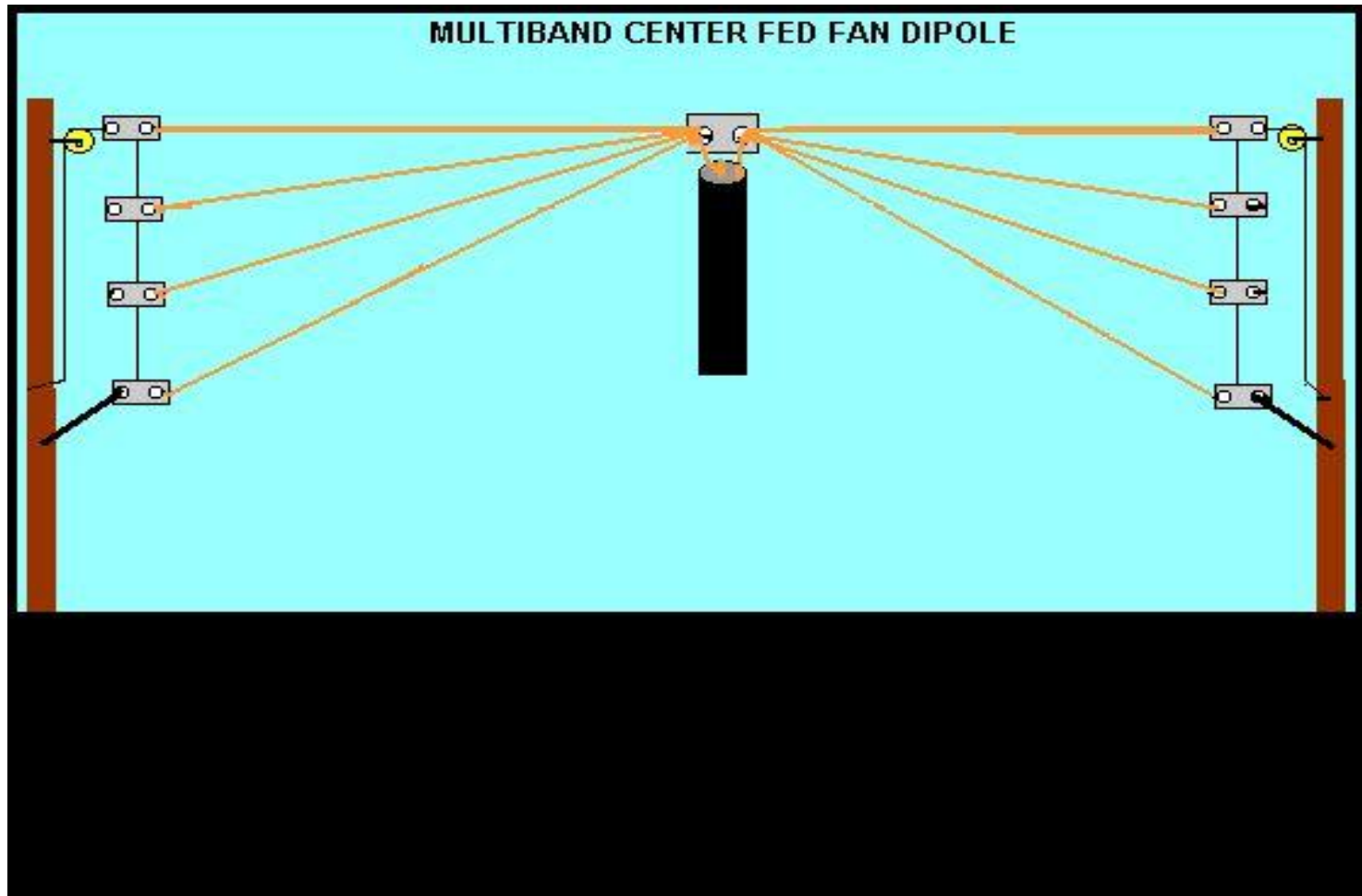
- Bending of Antenna Elements
- Spacing Between Elements
- Feed Point Considerations
- Mounting Methods
- Wire Management
- Environmental Wind , Ice etc.

# **Some multiband Wire antennas**

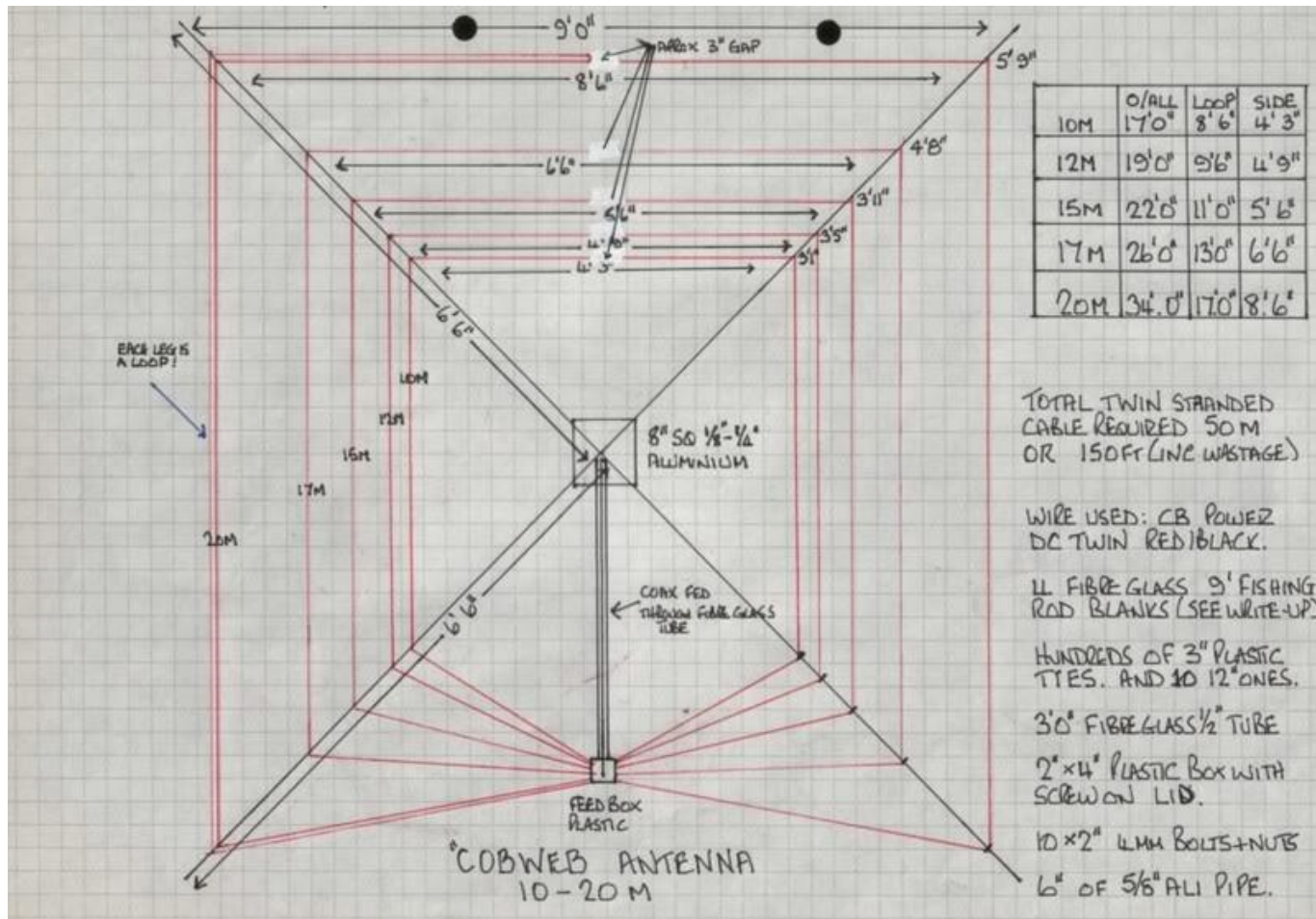
- **Fan Dipole**
- **Cobb Web Antenna Omnidirectional Multiband**
- **Spider Beam - Multiband Multi Element**
- **X Beam Single Band - Predecessor to Hex Beam**
- **Classic Hex Beam Mike Traffie N1HXA**
- **Broad Band Hex Beam Steve Hunt G3TXQ**



# Multiband Dipole most common



# Cobweb Antenna



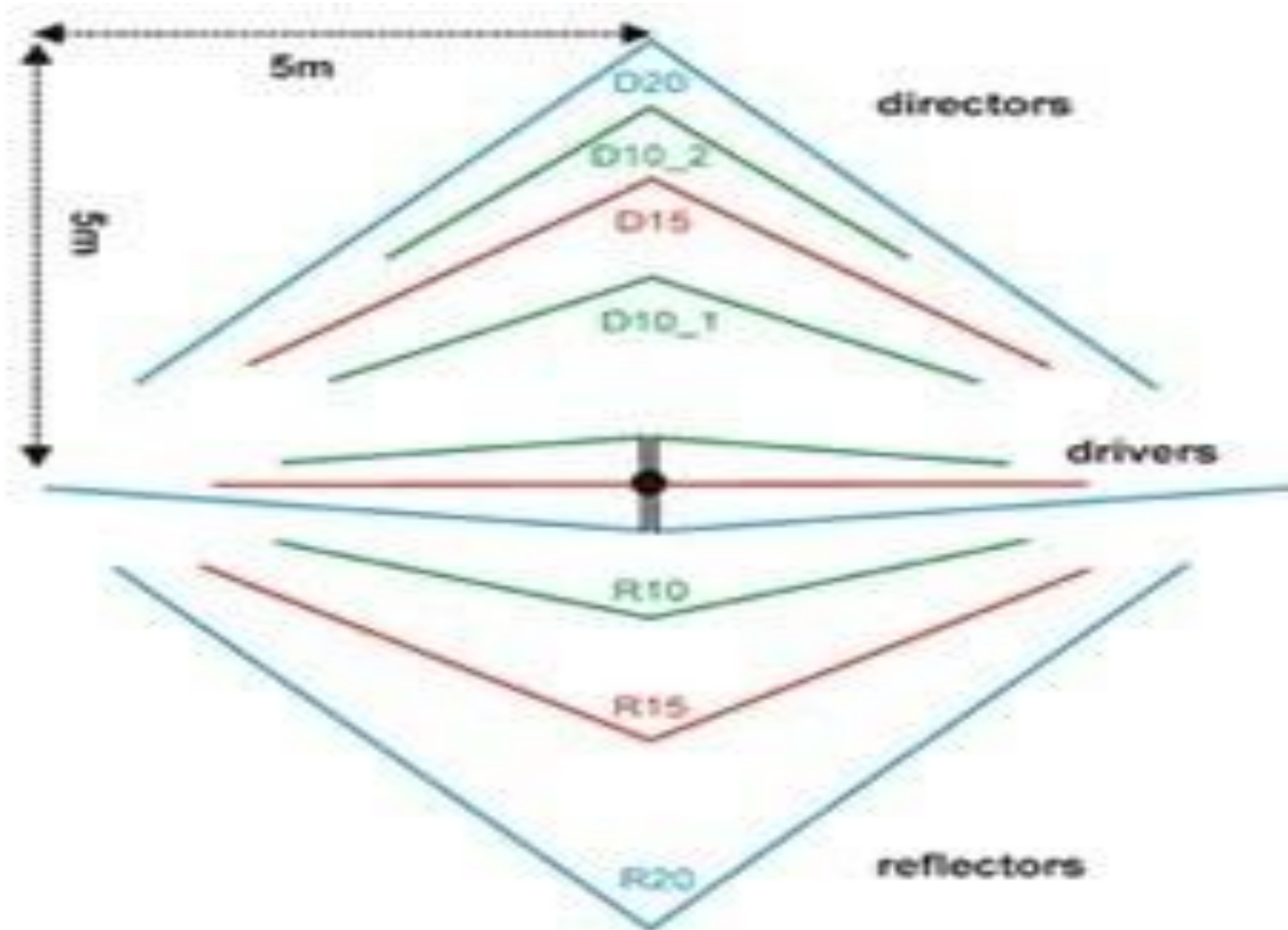
# The Cobb Web Antenna



# **Cobb Web Characteristics**

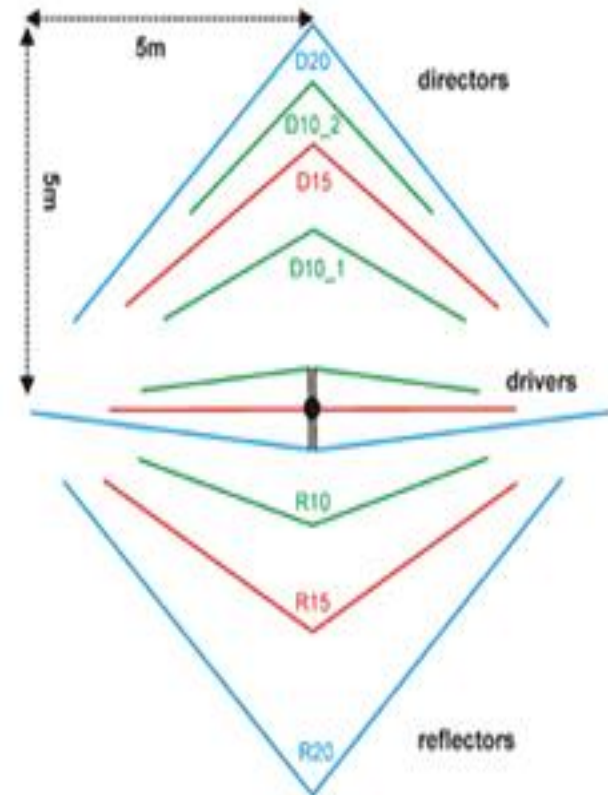
- **5 Bands on an 8 ½ foot square**
- **Omnidirectional**
- **Requires 4:1 matching**
- **Can Be built from simple materials**
- **Light Weight**
- **Jeff Maddox KG5AMQ Built one of these**
- **G3TXQ has a good description and design info**
- **Could fit in some attics**

# Spider Beam Multi Band Multi Element





**Used on many Dxpeditions**  
**V shape reduces overall size**  
**Light Weight**



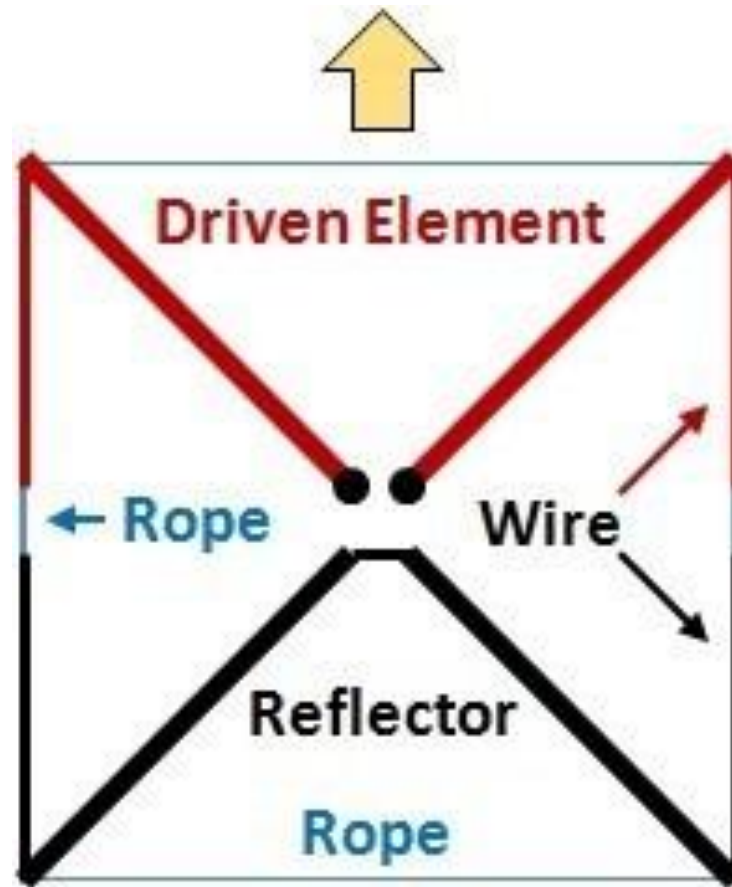
# Highest Gain of all these Antennas

- **At least 3 elements on most Bands**
- **4 elements on 10 meters**
- **The Manufacturer Builds portable Models**
- **Makes it attractive for Dxpeditions**
- **For details go to [www.spiderbeam.com](http://www.spiderbeam.com)**

# Historical Hex Beam Development

- The origin of the Hex was probably the X-Beam
- Published in the ARRL hand book
- Similar to Moxon
- Single band operation
- Mike Traffie created his antenna in 1992
- G3TXQ created the Broadband in 2002

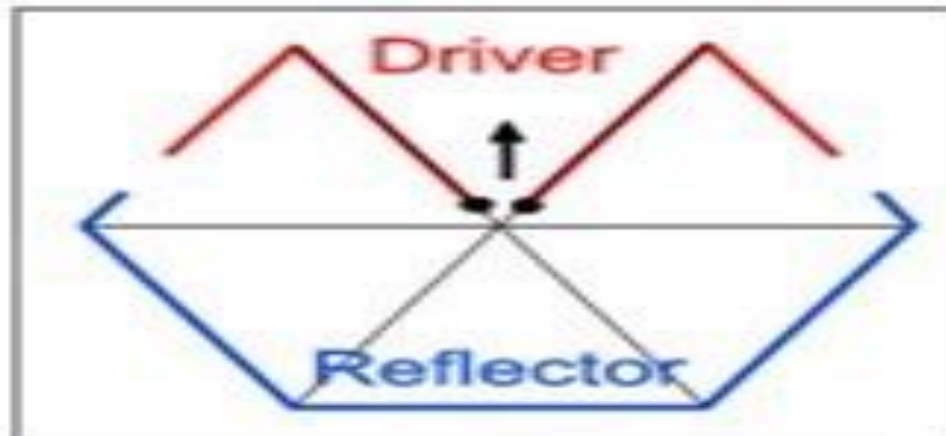
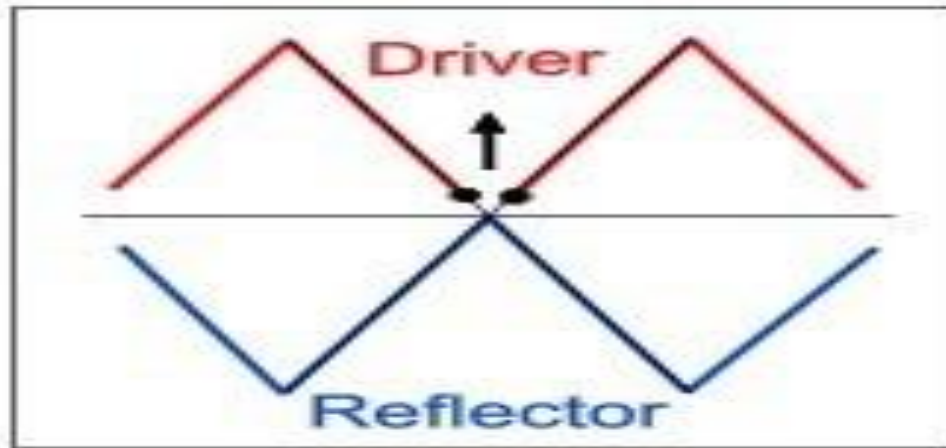
Predecessor to the Hex  
just some additional bending



The X-Beam

# More Bending Leads to the Hex

**Classical Hex Beam**

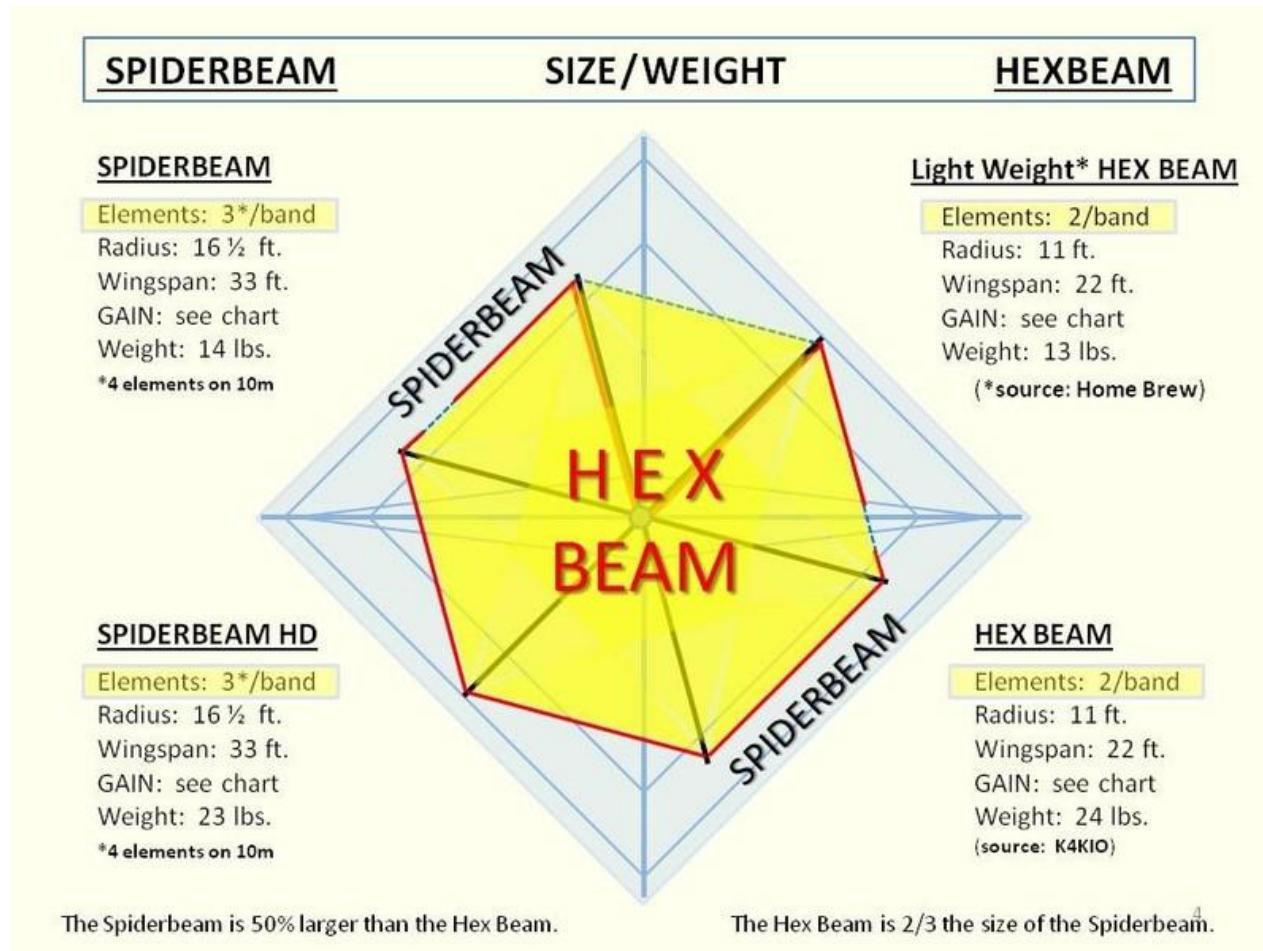


**Broadband Hex Beam**

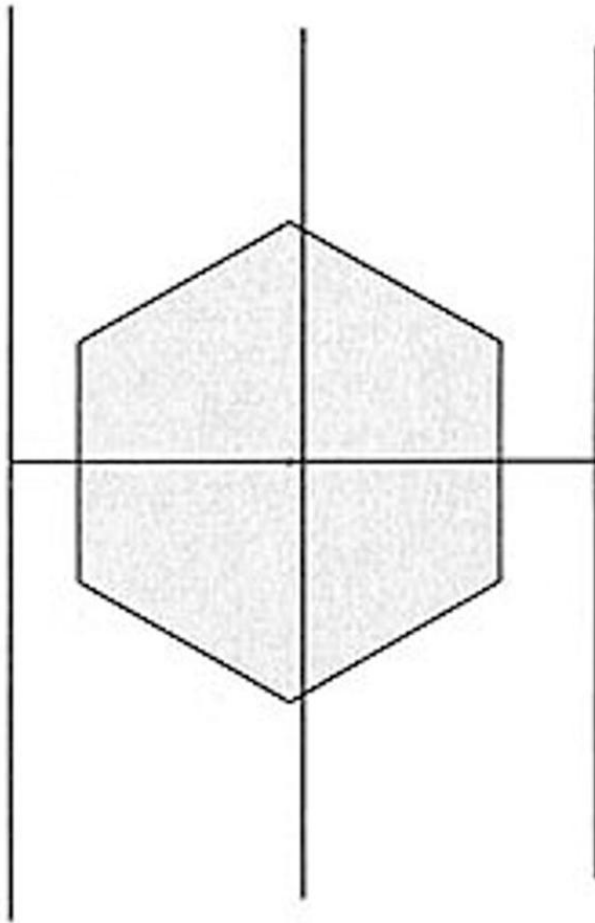
# The Hex Beam or Beams

- **Good Reviews on DX**
- **Coverage of 20 through 6 meters with the WARC bands**
- **Compact and lightweight**
- **Good directionality 20 DB or better FB**
- **Two basic types: Broadband G3TXQ – The Traffie N1HXA Classic**

# Size Comparisons

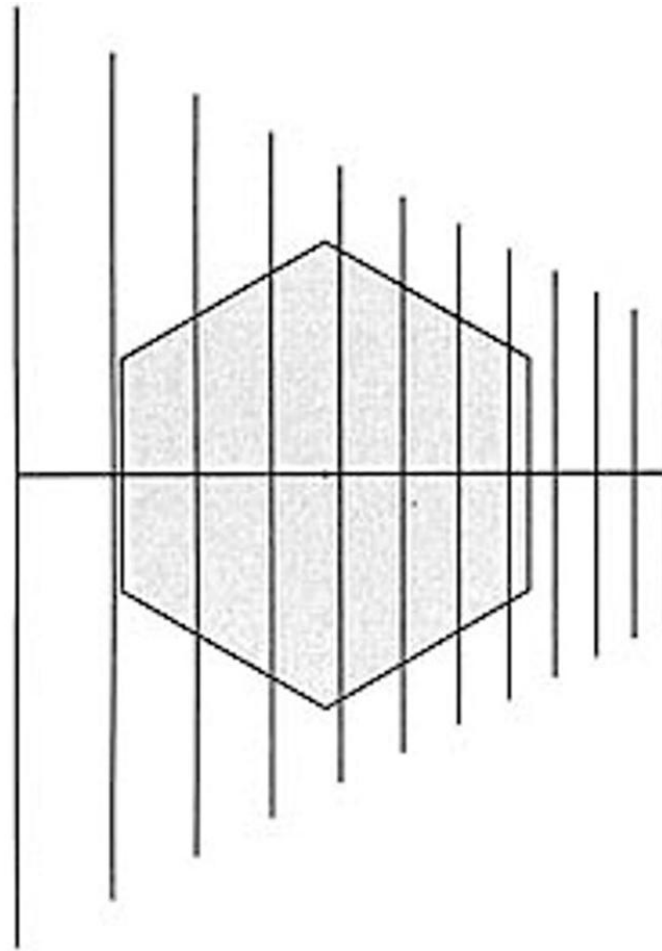


# Hex versus 3 element 20 Meter Yagi





# Comparison with 5 band TW Antenna



# Where do you start?

- Lots of Internet sources mostly for the Broadband model
- Best source: the G3TXQ web site – Steve Hunt built hundreds of models and tuned and tested them
- K4KIO commercialized the G3TXQ model and published a DIY model for the build it crowd.
- Yahoo has a forum on Hex Beams

# Broadband Hex Beam Specs

- Beam Diameter: Approximately 22 feet
- Height from Base: 39 1/2 inches
- Weight <29 lbs
- Wind Surface Area: approximately 5 Sq. Ft.
- SWR: < 1.75:1 at 50 feet < 2.0 :1 @ 20 feet
- Typical: <1.5:1
- Power Rating: 1500 Watts
- Front to back: >10db all bands
- Typical: > 15db all bands
- Gain: Equivalent to 2 element beam

# Components

- Baseplate – generally Hex shaped – other shapes also used
- Spreaders – generally fiberglass – Mike Traffie has his custom made – K4KIO - Max Gain Systems– DX Engineering - some use fishing poles
- Center pole – Coax feed – many variations – Coax Jumpers – Coax Poles – Balanced feeders

# Components ( continued )

- Wire guides – K4KIO uses Rubber guides with SS center - early DIY used loops made of wire ties -Traffie uses plastic tubes – All generally use hose clamps to position the wires
- Rope to Hold Spreaders in position – Most use Dacron rope – some use rope with Kevlar – Traffie uses phillistran

# Center Pole Types



# Baseplate Types





# Hex with push-up Mast





# My first Hex





# Rotor Mount and Thrust Bearing



# Present Installation with 30- 40 – 80 Dipoles



# Texas Towers



# KP2CX US Virgin Is.





# Bob Burkett Hex with 2 meter K5DCZ



# Some Thoughts for the Future

- Smaller Versions
- Attic Hex - Ghost version
- Classic Hex with special 20 meter design
- Less than 16 ft diameter vs 19.5 feet
- Looking at small size 30 – 40 meter version
- Standard 40 meter is 42 ft in diameter
- Shooting for under 35 ft diameter with same performance