

Jefferson County Antenna Zoning Violation

Zoning Requirements

Solutions

Their Effects

The Violation

- In April 2012 a 4 Element 20 M yagi was replaced with a 3 element Steppir DB18E on a 30+ year old 70 foot tower
- In May a notice of violation was received.
 - Because the antenna was changed, it had to meet all the current zoning requirements.
 - The violation need to be corrected with in 30 days or receive a \$100/day fine

Jefferson County Antenna Zoning Restrictions

- Violations are complaint driven
- Structures before 2004 are grand fathered as long as **NO** changes are made

- Max Height:

– Lot size	Fixed	Crank Up
– 5K ft sq to 1/2 acre	Zoned	50
– 1/2 to 2 acres	50	65
– 2 to 5 acres	50	75
– 5 to 10	75	100
– >10	199	NA

Jefferson County Antenna Zoning Restrictions

- Telecommunications permit is required for all structures:
 - Structures taller than 20 feet
 - Attachment to building greater than 10 feet
- A report by a registered professional engineer that the system is in compliance with EIA RS-222 rev F is required
 - Max area must be specified
 - Max weight must be specified
 - Antennas can be changed if less than the maximums in the report

Jefferson County Antenna Zoning Restrictions

- Can not extend over the property line
- Guys no closer than 5 feet to line
- Painted neutral in color
- Anti-climb device or 6 foot fence required

Solution 1

Restore the Old Antenna

- Prove the antenna and tower was up in it's existing location before 2004
 - KEEP PROOF OF YOUR GRAND FATHERED TOWER AND ANTENNAS WAS UP BEFORE 2004
 - I could keep the tower with no antenna
 - Restore the old antenna before 180 days

Solution 2

Apply for a Variance

- 2X the fees
 - little chance of success
- Variance:
 - 50 feet is the maximum height
 - Guy wires closer than 5 foot from the property line
 - The tower would fall over the property line

Solution 3

Put up a Legal Structure

- Modify the existing structure
 - Lower the tower 20 feet
 - Move a set of guy wires
- Put up a new tower
 - 50 foot max for a fixed tower
 - 75 foot for a crank up (12 hours max in the raise position)
 - The old system can stay as long as no changes are made to it

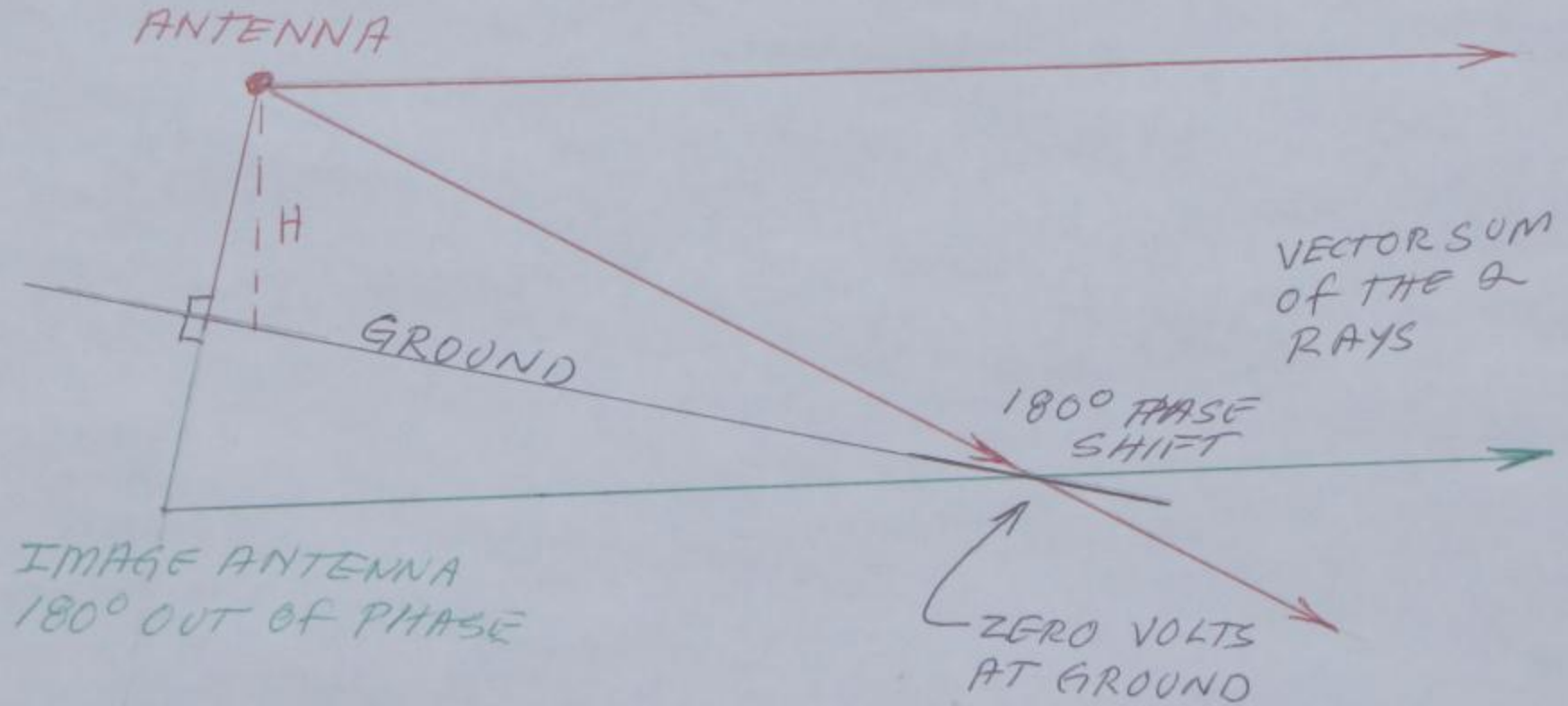
What to Do????

- I really enjoyed the Steppir when it was up
- Modify the old tower?
- Put up a new tower?
 - Fixed tower at 50 feet?
 - 75 foot crank up?
 - Where to put it?
 - How will it affect my signal?
 - What to do with the old tower?
 - Buy in from my wife !!!

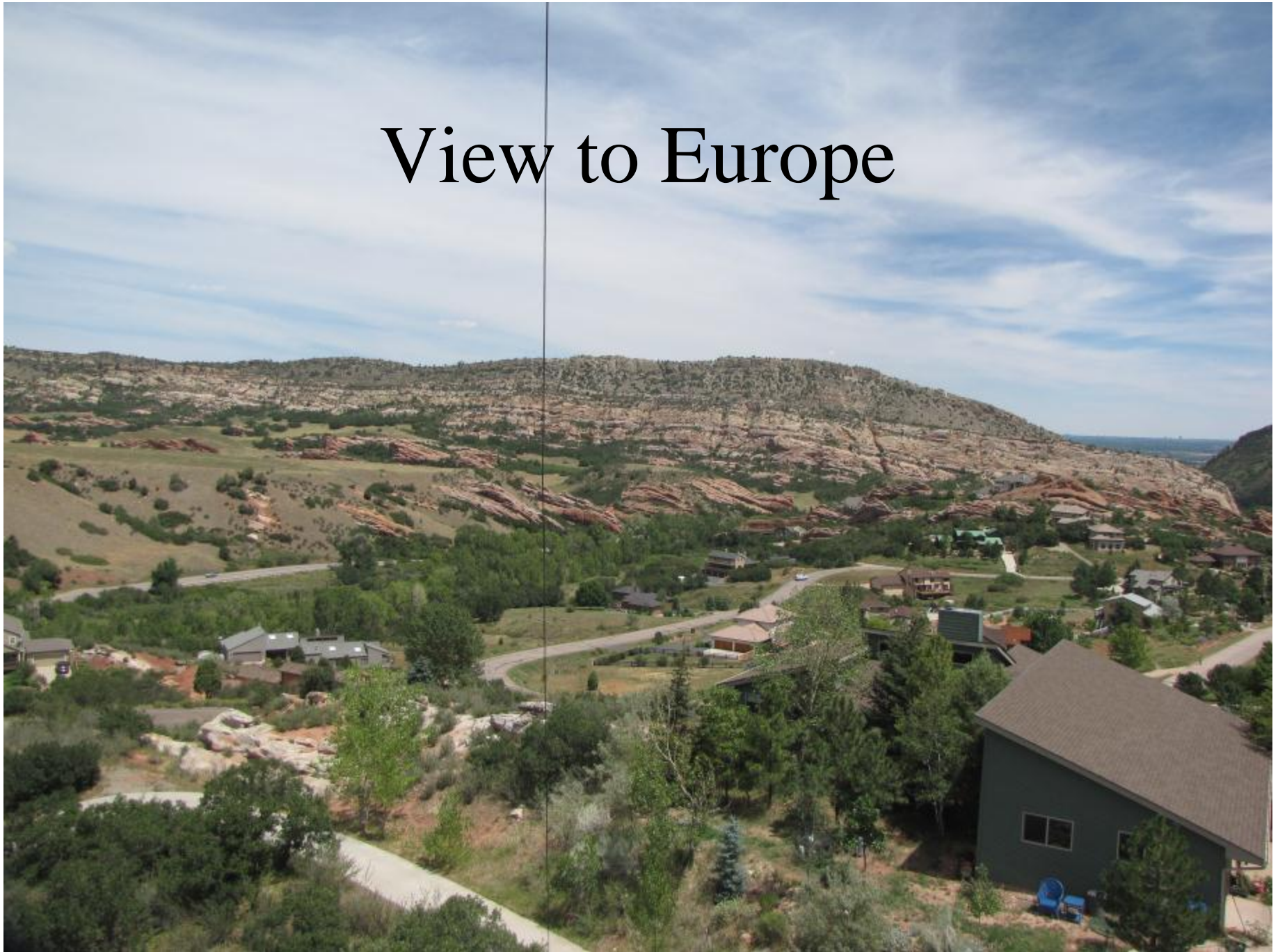
Answers to the First Three Questions

- Free software:
 - High Frequency Terrain Analysis
 - Free software with the antenna handbook to analyze the effects of terrain on angle of radiation
 - Statistical data as to how often a path is open to various parts of the world
 - Compare up to 4 different antennas
 - MicroDem
 - Free software to get the elevation points into Yagi Terrain

Method of Images



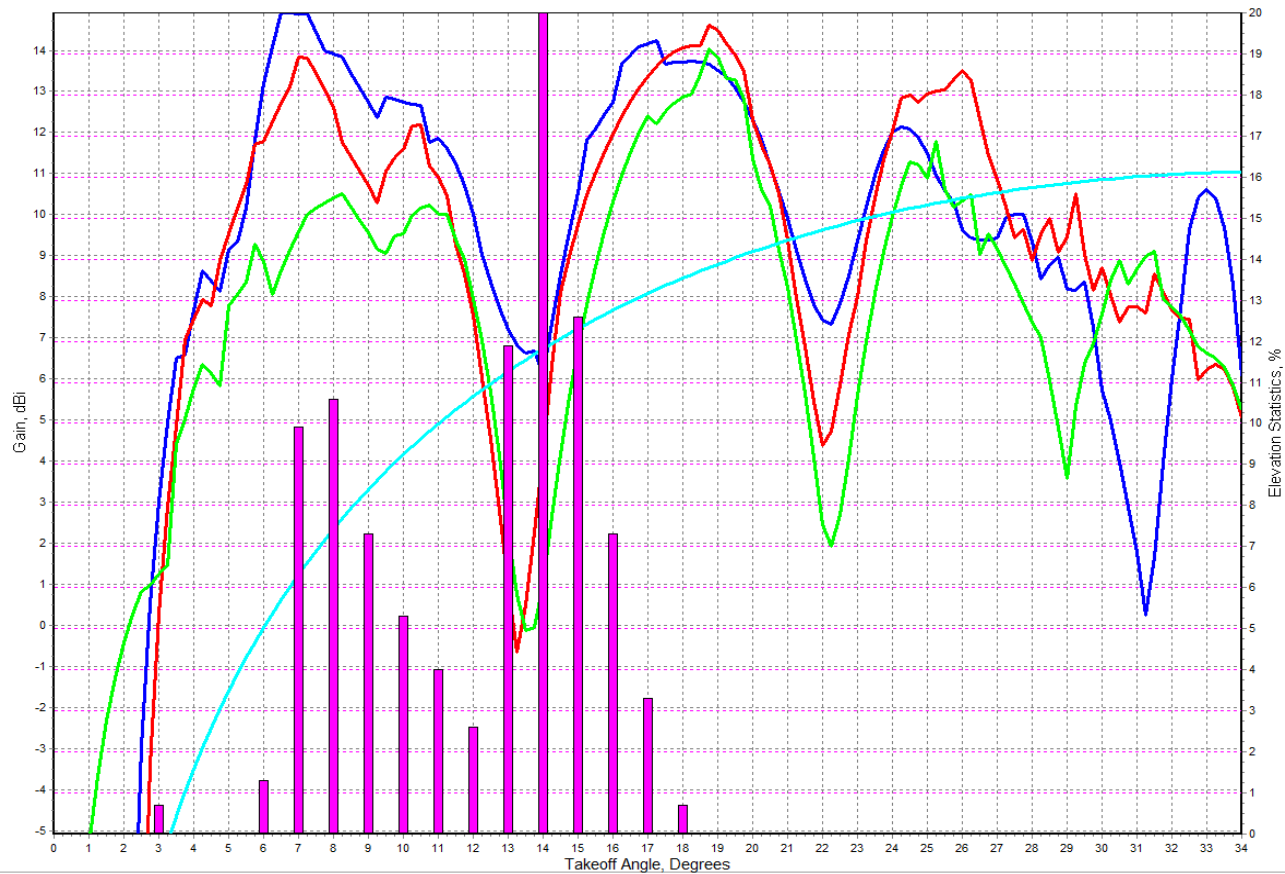
View to Europe



40 M

Output Graph, HFTA

HFTA, Copyright ARRL 2003-2004, by N6BV, Ver. 1.03



Freq. = 7.0 MHz

Max. Gain: 14.9 dBi

KONA-45.00.PRO

21.3 m

3-Ele.

Fig. of Merit: 11.6

KONA-45.00.PRO

15.2 m

3-Ele.

Fig. of Merit: 10.3

KONA-45.00.PRO

10.7 m

3-Ele.

Fig. of Merit: 8.1

FLAT.PRO

15.2 m

3-Ele.

Fig. of Merit: 5.7

Elev. Statistic

W0-CO-EU.PRN

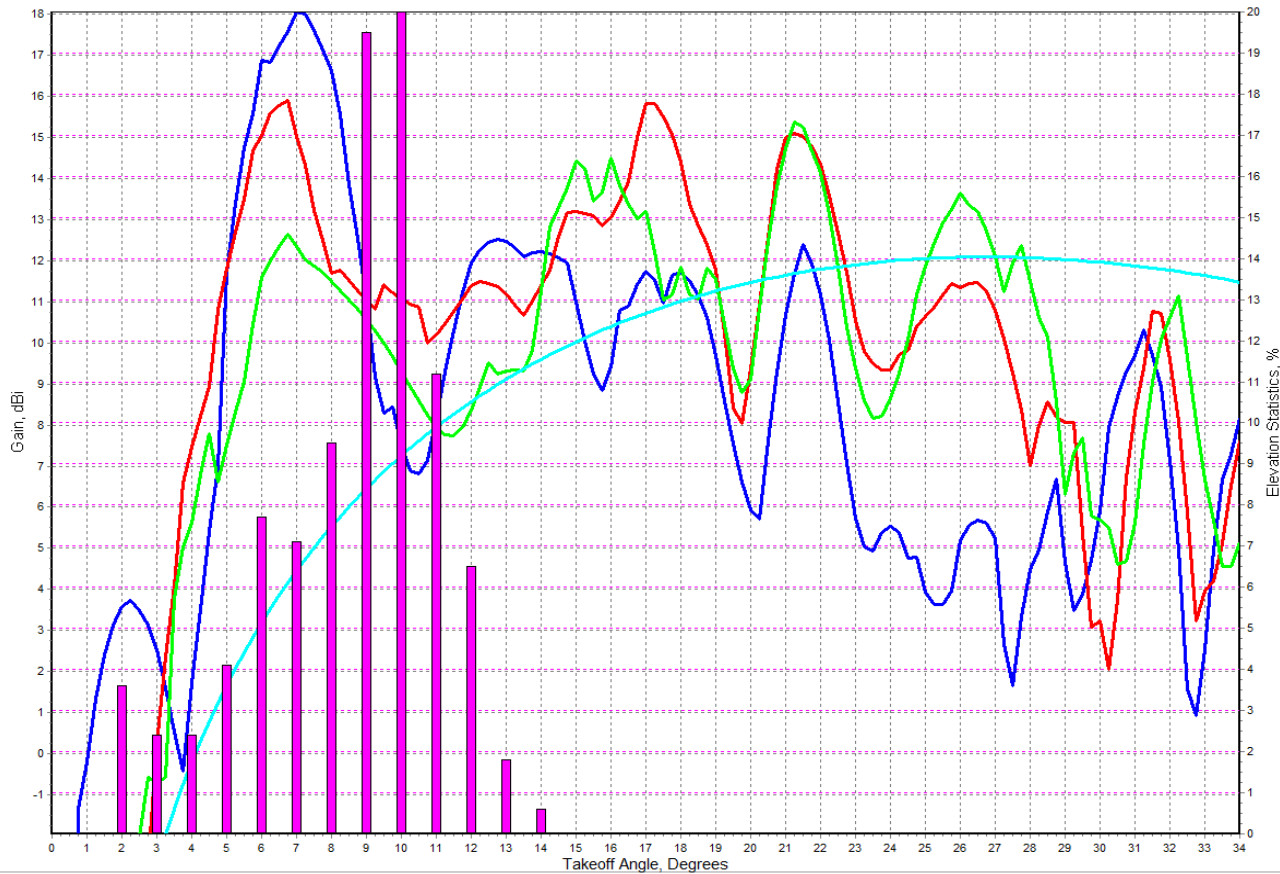
Print Out File

Close

30 M

Output Graph, HFTA

HFTA, Copyright ARRL 2003-2004, by N6BV, Ver. 1.03



Freq. = 10.1 MHz

Max. Gain: 18.1 dBi

KONA-45.00.PRO

21.3 m

3-Ele.

Fig. of Merit: 12.9

KONA-45.00.PRO

15.2 m

3-Ele.

Fig. of Merit: 11.7

KONA-45.00.PRO

10.7 m

3-Ele.

Fig. of Merit: 9.8

FLAT.PRO

15.2 m

3-Ele.

Fig. of Merit: 6.3

Elev. Statistic

W0-CO-EU.PRN

Print

Out File

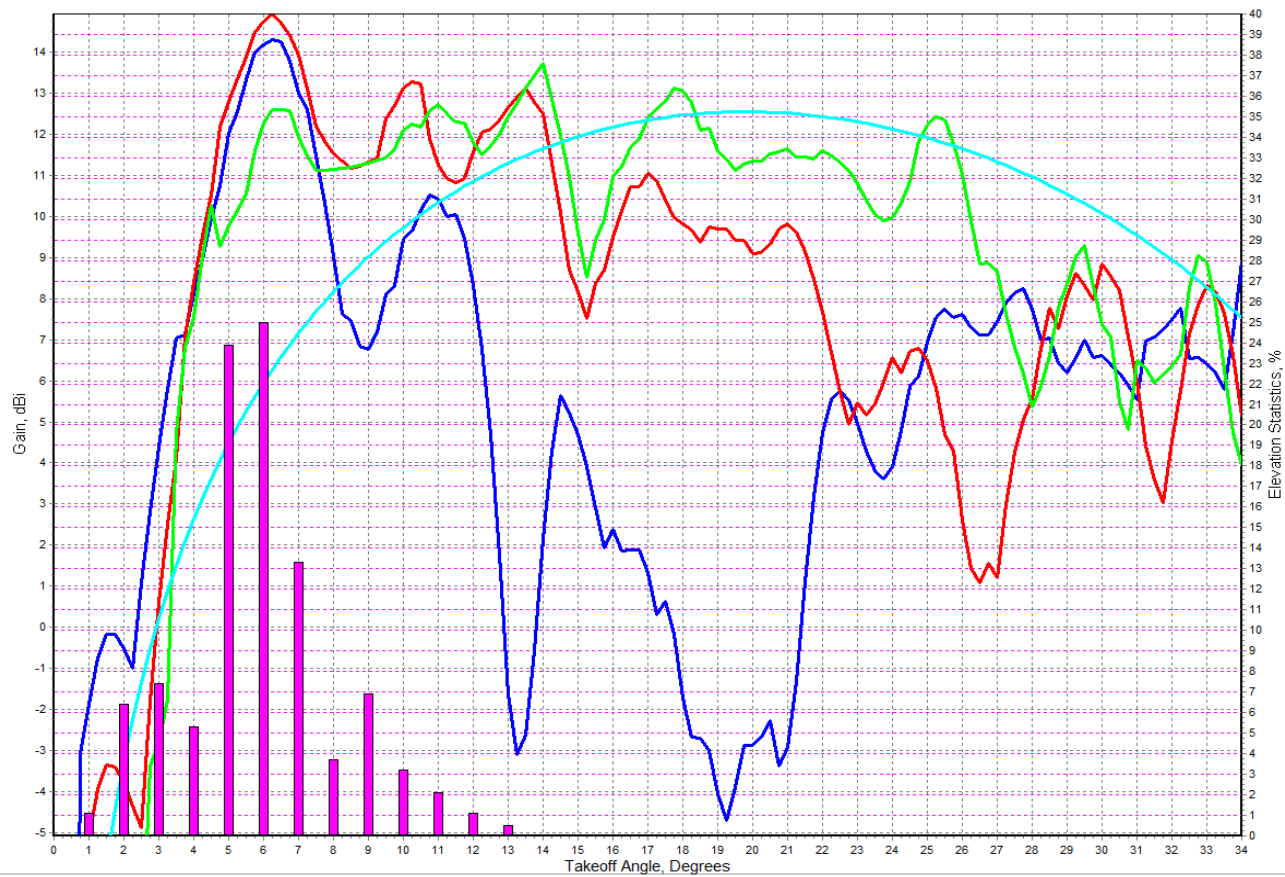
Close



20 M

Output Graph, HFTA

HFTA, Copyright ARRL 2003-2004, by N6BV, Ver. 1.03



Freq. = 14.0 MHz

Max. Gain: 14.9 dBi

KONA-45.00.PRO

21.3 m

3-Ele.

Fig. of Merit: 11.7

KONA-45.00.PRO

15.2 m

3-Ele.

Fig. of Merit: 12.7

KONA-45.00.PRO

10.7 m

3-Ele.

Fig. of Merit: 10.6

FLAT.PRO

15.2 m

3-Ele.

Fig. of Merit: 6.1

Elev. Statistic

W0-CO-EU.PRN

Print

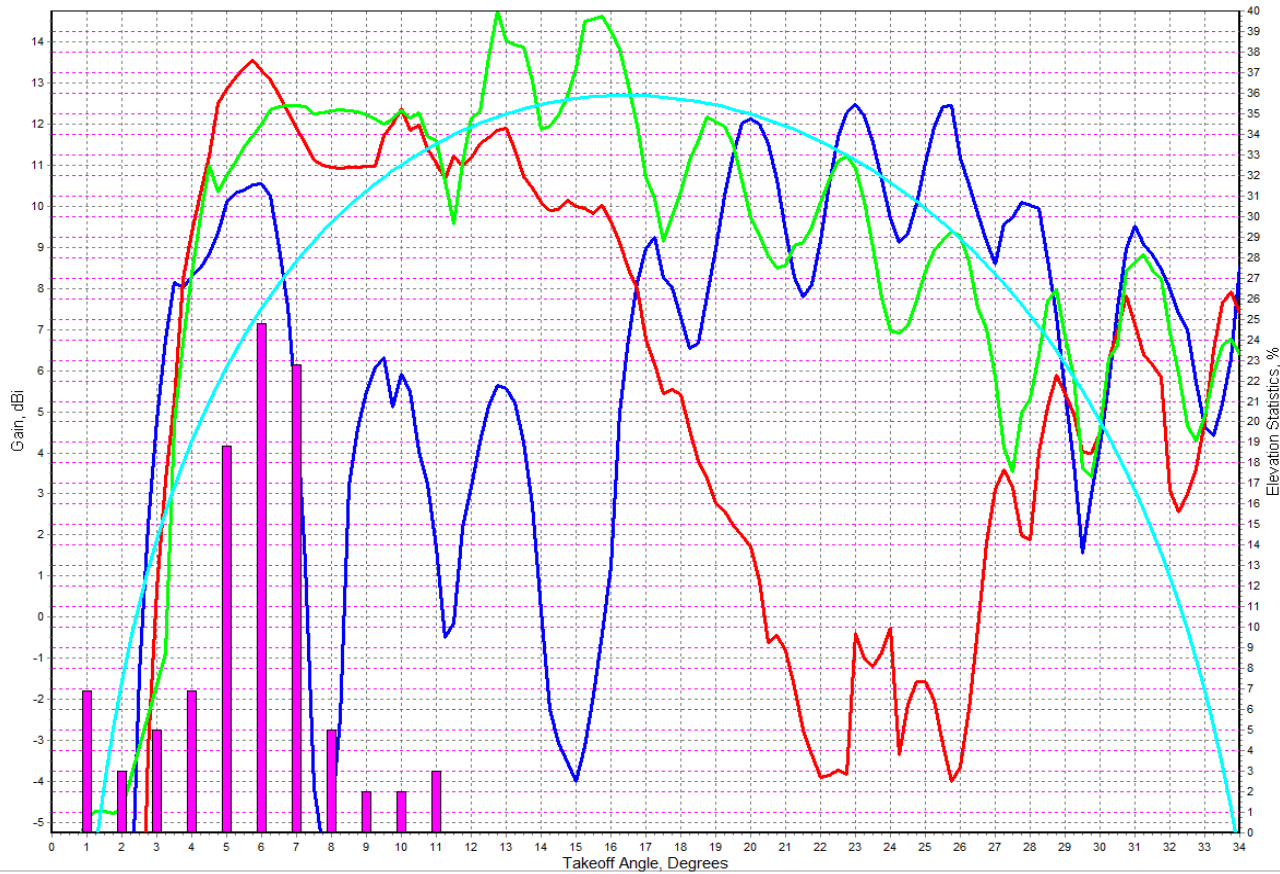
Out File

Close

17 M

Output Graph, HFTA

HFTA, Copyright ARRL 2003-2004, by N6BV, Ver. 1.03



Freq. = 17.0 MHz
Max. Gain: 14.8 dBi
KONA-45.00.PRO
21.3 m
3-Ele.
Fig. of Merit: 8
KONA-45.00.PRO
15.2 m
3-Ele.
Fig. of Merit: 11.7
KONA-45.00.PRO
10.7 m
3-Ele.
Fig. of Merit: 11
FLAT.PRO
15.2 m
3-Ele.
Fig. of Merit: 7.4
Elev. Statistic
WO-CO-EU.PRN

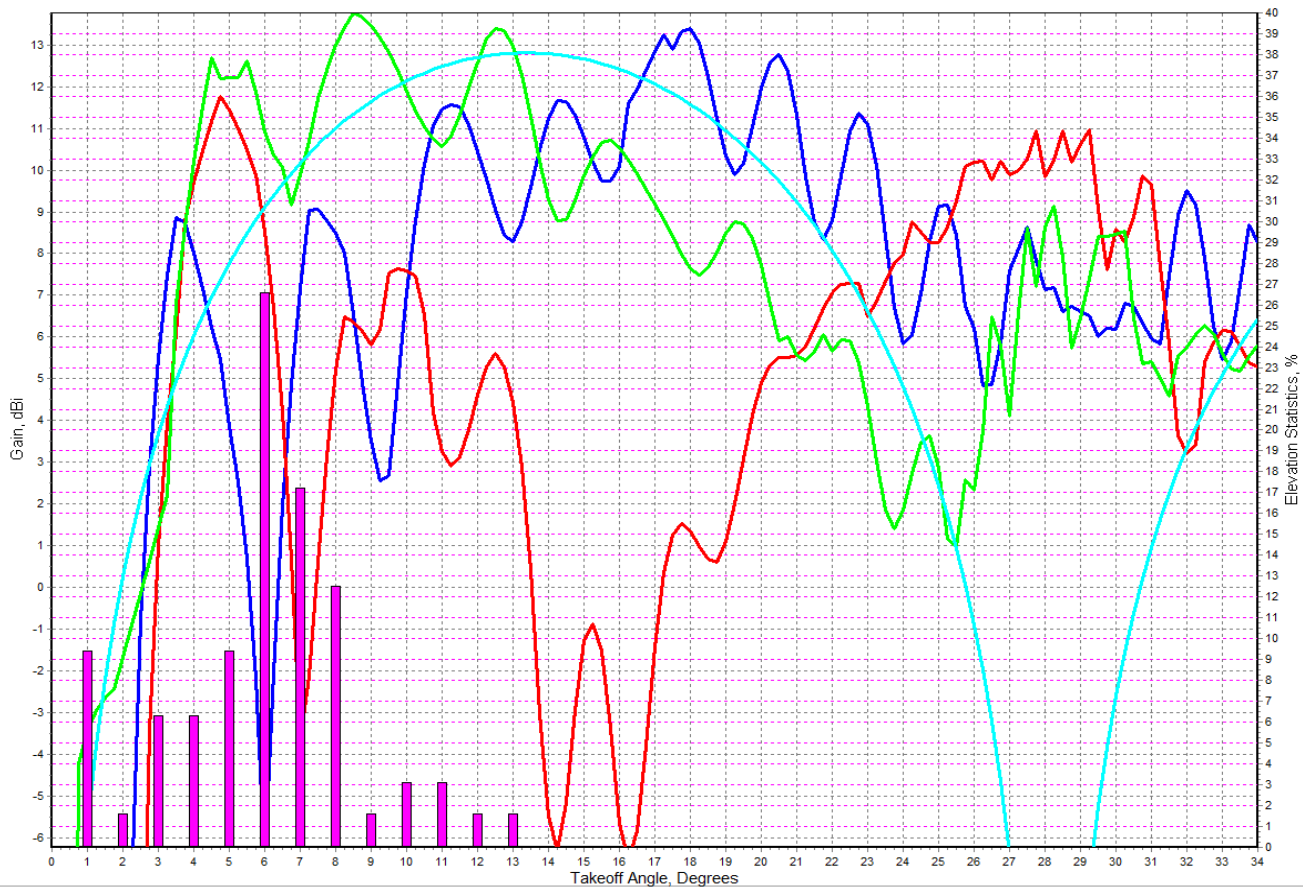
Print Out File
Close



15 M

Output Graph, HFTA

HFTA, Copyright ARRL 2003-2004, by N6BV, Ver. 1.03



Freq. = 21.0 MHz

Max. Gain: 13.8 dBi

KONA-45.00.PRO

21.3 m

3-Ele.

Fig. of Merit: 5.6

KONA-45.00.PRO

15.2 m

3-Ele.

Fig. of Merit: 6.8

KONA-45.00.PRO

10.7 m

3-Ele.

Fig. of Merit: 10.7

FLAT.PRO

15.2 m

3-Ele.

Fig. of Merit: 9.3

Elev. Statistic

W0-CO-EU.PRN

Print

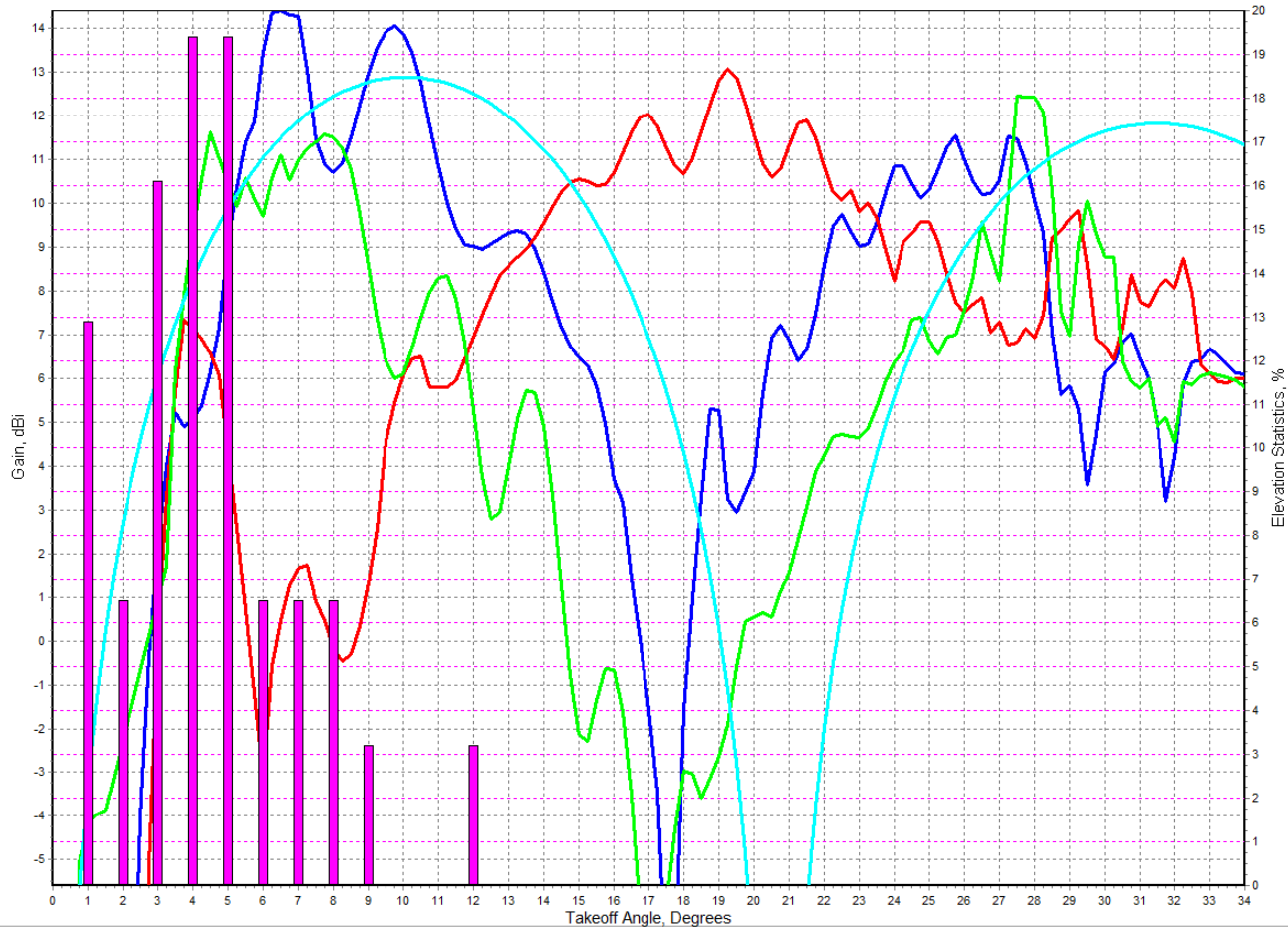
Out File

Close

10 M

Output Graph, HFTA

HFTA, Copyright ARRL 2003-2004, by N6BV, Ver. 1.03



Freq. = 28.0 MHz

Max. Gain: 14.4 dBi

KONA-45.00.PRO

21.3 m

3-Ele.

Fig. of Merit: 8.6

KONA-45.00.PRO

15.2 m

3-Ele.

Fig. of Merit: 3.2

KONA-45.00.PRO

10.7 m

3-Ele.

Fig. of Merit: 8.3

FLAT.PRO

15.2 m

3-Ele.

Fig. of Merit: 9.1

Elev. Statistic

W0.CO.EU.PRN

Print

Out File

Close

50 and 35 foot Antennas Compared to 70 Feet

• Band	50 feet	35 feet
• 7	-1.3	-3.5
• 10.1	-1.2	-3.1
• 14	+1.0	-1.1
• 17	+3.7	+3.0
• 28	-5.4	-0.3

Conclusions

- 50 feet is a good height
 - worse case: -1.3 db from the existing tower on the lower bands
- A crank up tower would have some benefits on the higher bands
- Considerations such as location, feed lines, maintenance, and visual impact may be more important than the height