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3EL. 6 Band YAGI

20, 15, 17, 12, 10, 6M

SuperBeam™

Model YP-3

THE SUPERANTENNA YP3 6 BAND 3 ELEMENT YAGI by Vern, W6MMA

Congratulations. You have just received a light-weight, extremely flexible beam antenna designed for field applications by the QRP operator and others. The antenna provides forward gain and directivity on all band 20M through 6M using and ingenious combination of parts that you adjust in the field with almost no tools. When placed on a common push-up or similar mast at least 20 feet tall, the antenna will provide the benefits of directional reception and transmission. Yet you may carry the antenna in a 3 foot long bag with great ease as you move from home to field and back again. In operation, the antenna expands to a maximum side to side width of about 220 inches and a maximum length of less than 120 inches. The estimated power limit of the antenna is 500 Watts.

WHAT IS THE SUPERANTNENNA FIELD YAGI?
The field Yagi is a 3 element Yagi optimized within its design for use on a wide range of frequencies. The Yagi 3 element design provides wide bandwidth on each band for each field adjustments. You only need to set and measure the element lengths and coils according to the instructions for each band You may even vary the recommended dimensions for special circumstances and the instructions will provide you with some guidelines.

For 6 meter operation, the boom must be shortened and the elements greatly reduced in length but it is now a full size Yagi with good gain and F/B on the bottom of the band 50.0 to 50.5 mHz. CW operation is 50.0 to 50.100 normally. 50.110 is the international SSB and CW calling frequency. 50.125 is the beginning of the stateside phone band. Normally SSb contacts inside the USA are not done below 50.125. The 6m beacon band is 50.0 to 50.080.

On 10 meters you have a full size yagi that covers the bottom 1 mHz with one setting. Boom length is set to maximum and no coils are required. Gain and F/B are excellent.

On 17 and 12 meters mid element coils are used to resonate the elements and the antenna will cover the full amateur band. You will experience good gain and F/B on both bands.

20 and 15 meters are much wider bands, therefore the coil loaded element require two settings per band. The gain and F/B on 15m is close to that of a full size Yagi. On 20m the reduced size of the antenna for portable work will provide good directivity and F/B offering improved communications over a dipole at the same height.

YP3 SUPERANTENNA ASSEMBLY DETAILS

9-9-08

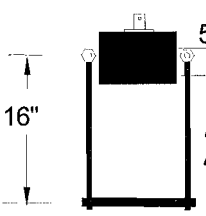
TOOLS REQUIRED: Measuring tape, 1/2 nut driver; end wrench or socket.

Prior to assembly chose the band you intend to operate.

1. Lay out the boom sections and assemble using the DIMENSION sheet as a guide for position.
2. Lay out the elements sections by length and position as shown the DIMENSION sheet.
   Now begin threading the element sections together. The large coils are used only on 20M. Use a tape measure to set the exposed length of each element section. TIP: If you plan on using the same band over and over, mark the dimension with a permanent felt pen marker and note the band (20m) next to the marks. This will really speed up reassembly at the next site.
3. Continue assembling the sections until you get to the 1/4" diameter rod tips. Use a tape measure and set each tip pair to the correct length.
4. The Director element halves and the Reflector element halves simply screw into the center mounting block at each end of the boom. Be careful to place the reflector elements at the correct spacing to the driven element.
5. The driven element Matching device is a HAIRPIN. Each 1/8" brass hairpin rod has a 3/8' ring lug at one end. Insert the threaded butt of each Driven element half through the ring lug and then screw it into the center feed block. Align the rods parallel with the boom and install the shorting rod on the two hairpin rods. Set it to the proper length for the band you have chosen.
6. Plug in the banana jack to BNC adapter, attach your feed line and mount the antenna on an appropriate mast as high as possible. If the antenna is placed 15 to 20 feet above ground, the best match should be very close to center of the band or band segment you have chosen. Small adjustments to the driven element tips should bring the match to the desired frequency.
7. If large frequency shifts are required, find the frequency where the antenna is working properly like 28.4 mHz. Divide that frequency by the new frequency. 28.4/29.4 = .966. Measure the element half length, say 98", and multiply 98x .966 = 94.668 (round off to 94.75) and adjust each element tip to achieve the new element half length. Do this to all 3 elements. Make small improvements in frequency and VSWR by adjusting the Driven Element tips slightly.

Don't be too concerned about a VSWR of 1.5:1 or less. Your radio should handle this with ease and spend time on the air having fun...enjoy!

YP3 QUICK ASSEMBLY GUIDE



20 METERS

REFLECTOR EXP. TIP
1/4x26-5/8" CW
1/4x25" FONE

D.E. EXP. TIP
1/4x24-3/8" CW
1/4x23-1/2" PH

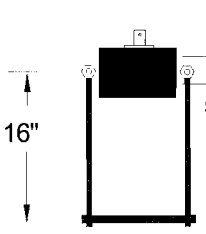
DIRECTOR EXP. TIP
1/4x23-1/8" CW
1/4x22-1/2" PH

REFLECTOR
107-1/8" CW
105-1/2" PH

DRIVEN ELE.
104-7/8" CW
104" PH

DIRECTOR
103-5/8" CW
103" PH

ELEMENT SPACING FOR 20M TO 10M
REFLECTOR SPACE 71"
DIRECTOR SPACE 64-1/2"



17 METERS

REFLECTOR EXP. TIP
1/4x28"

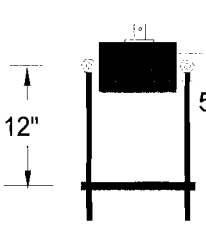
D.E. EXP. TIP
1/4x25-3/8"

DIRECTOR EXP. TIP
1/4x24"

REFLECTOR
108"

DRIVEN ELE.
105-3/8"

DIRECTOR
104"



15 METERS

REFLECTOR EXP. TIP
1/4x18-1/4"

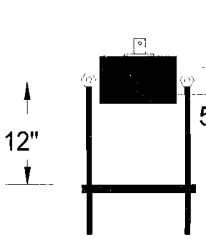
D.E. EXP. TIP
1/4x16-1/2"

DIRECTOR EXP. TIP
1/4x14-1/2"

REFLECTOR
76"

DRIVEN ELE.
74-1/4"

DIRECTOR
72-1/4"



12 METERS

REFLECTOR EXP. TIP
1/4x4-7/8"

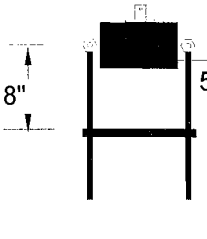
D.E. EXP. TIP
1/4x3-1/8"

DIRECTOR EXP. TIP
1/4x1-1/8"

REFLECTOR
62-5/8"

DRIVEN ELE.
61-1/2"

DIRECTOR
58-7/8"



10 METERS

REFLECTOR EXP. TIP
1/4x26-1/2"

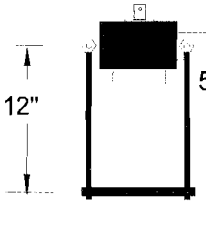
D.E. EXP. TIP
1/4x20-3/8"

DIRECTOR EXP. TIP
1/4x17-1/2"

REFLECTOR
108"

DRIVEN ELE.
101-7/8"

DIRECTOR
99"



6 M

REFLECTOR EXP. TIP
1/2x26-1/2"

D.E. EXP. TIP
1/2x23-1/8"

DIRECTOR EXP. TIP
1/2x18-3/4"

REFLECTOR
58"

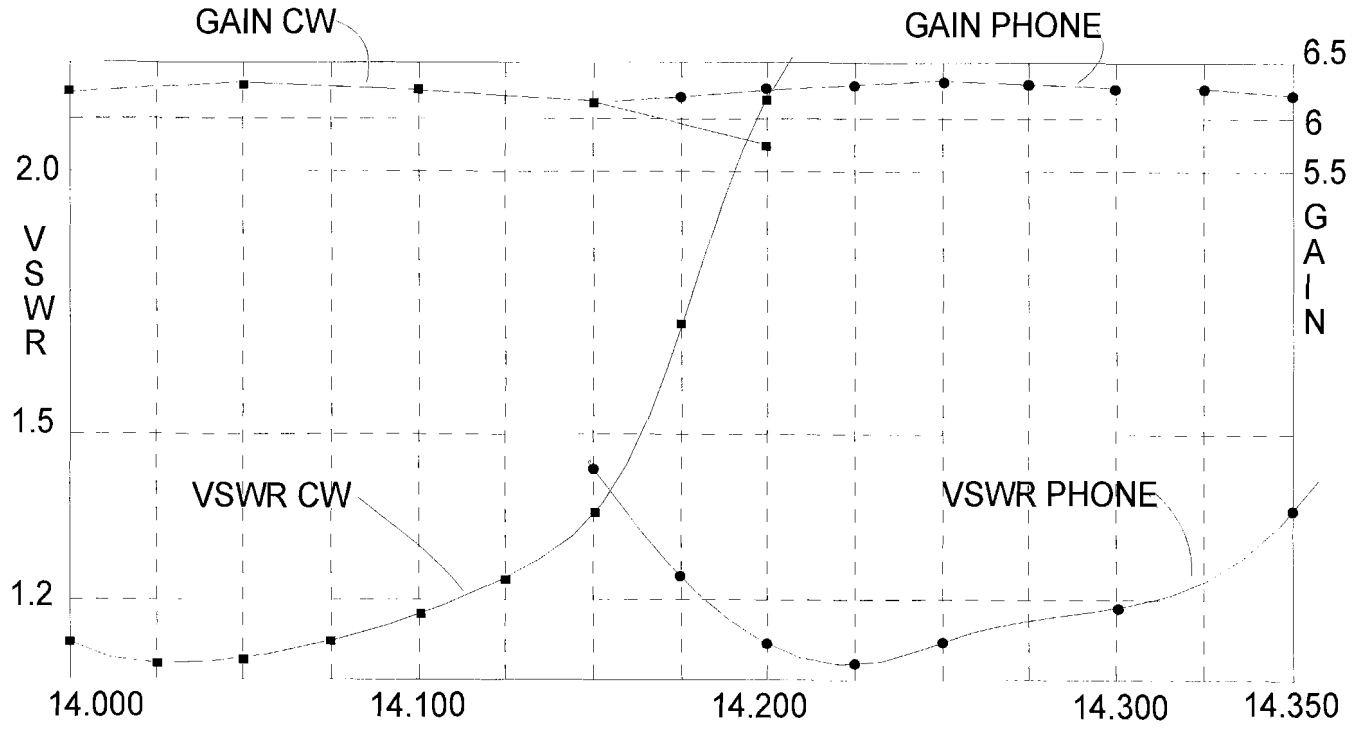
DRIVEN ELE.
54-1/8"

DIRECTOR
50-1/4"

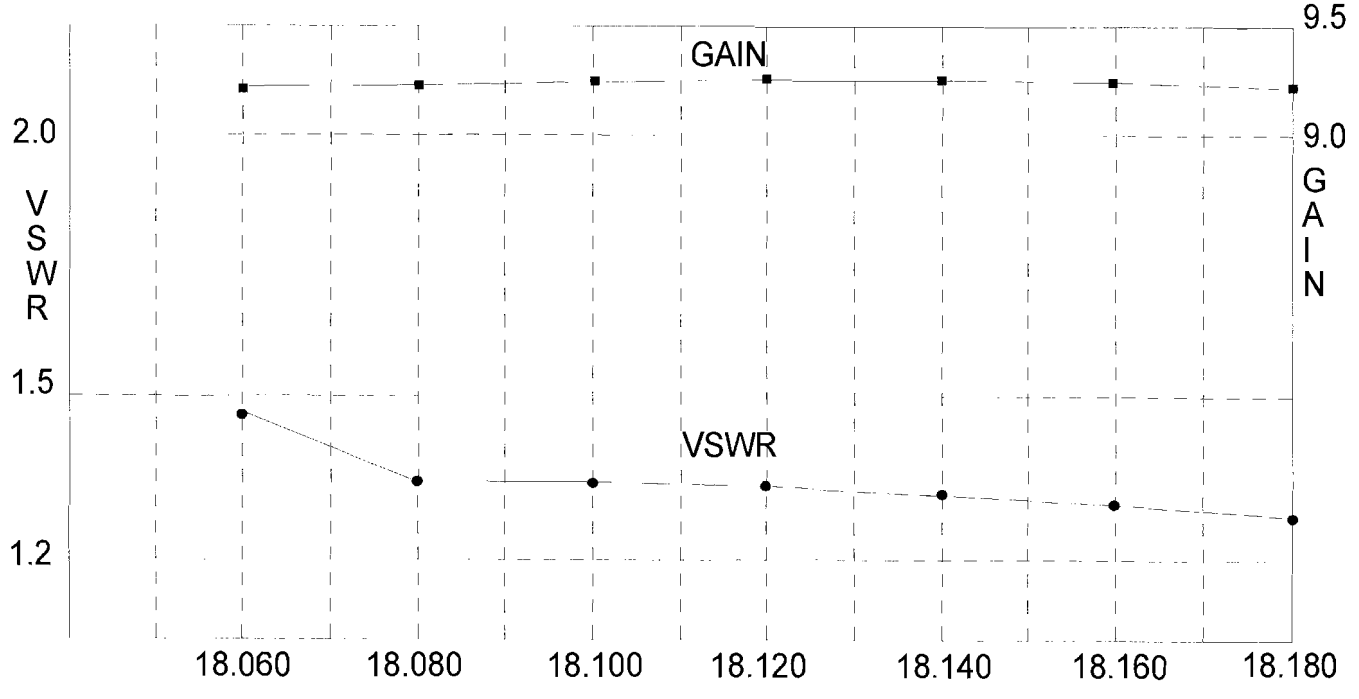
REFLECTOR SPACED 54"
DIRECTOR SPACED 45"

YP3QUICK
M. STAAL
4-18-08

YP3-20M VSWR / GAIN CURVE



YP3-17M VSWR / GAIN CURVE



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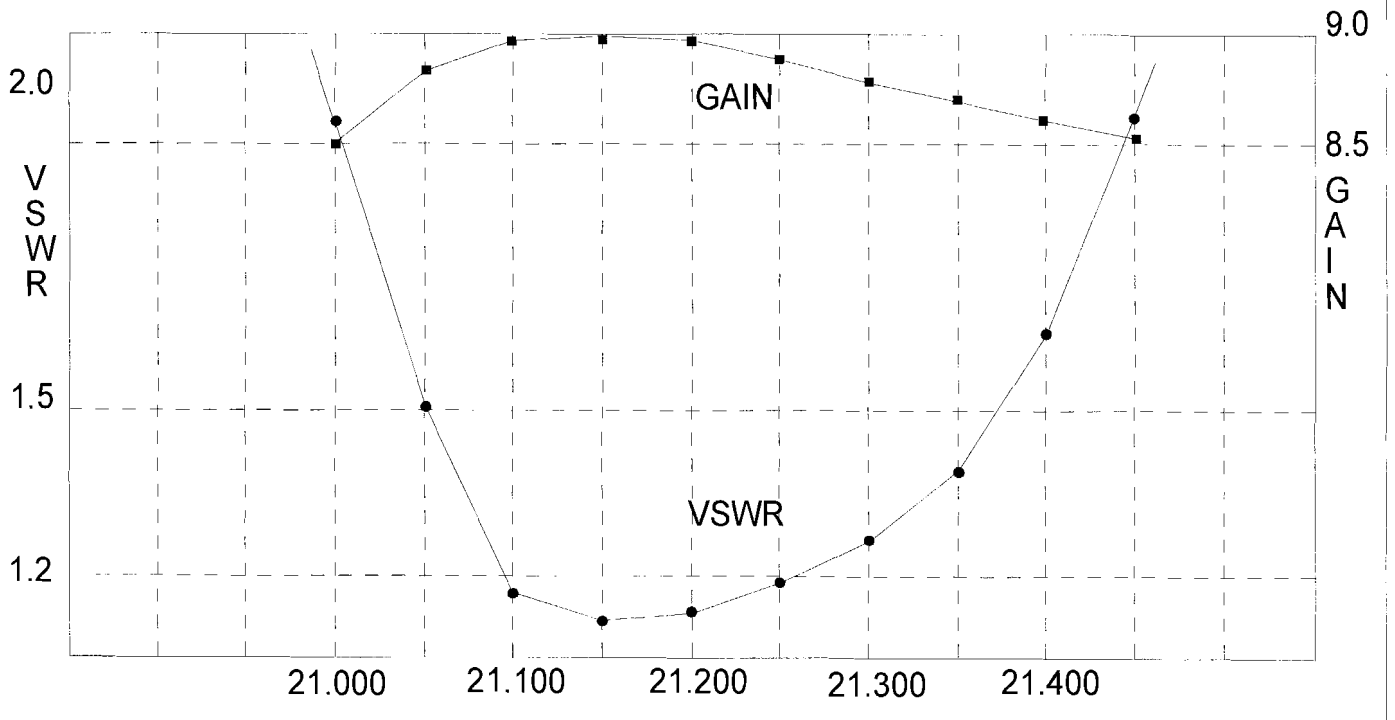
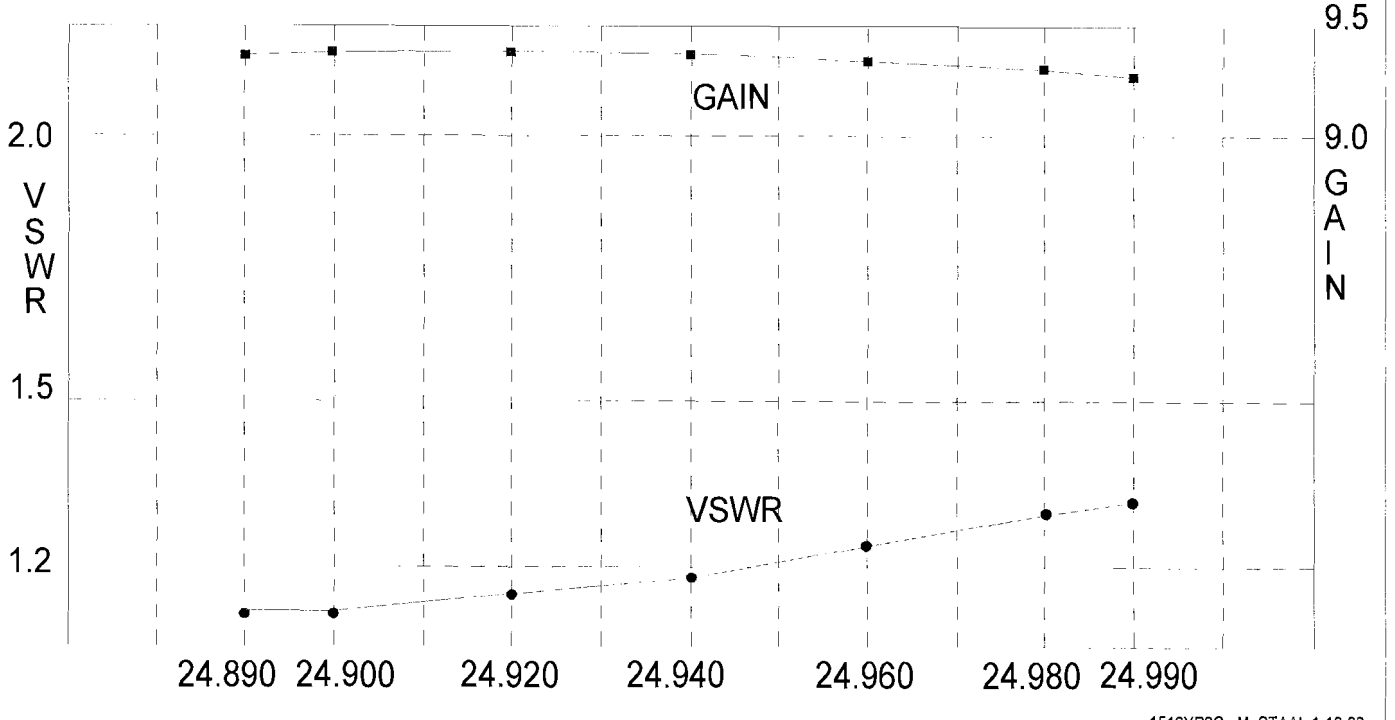
YP3-15M VSWR / GAIN CURVE

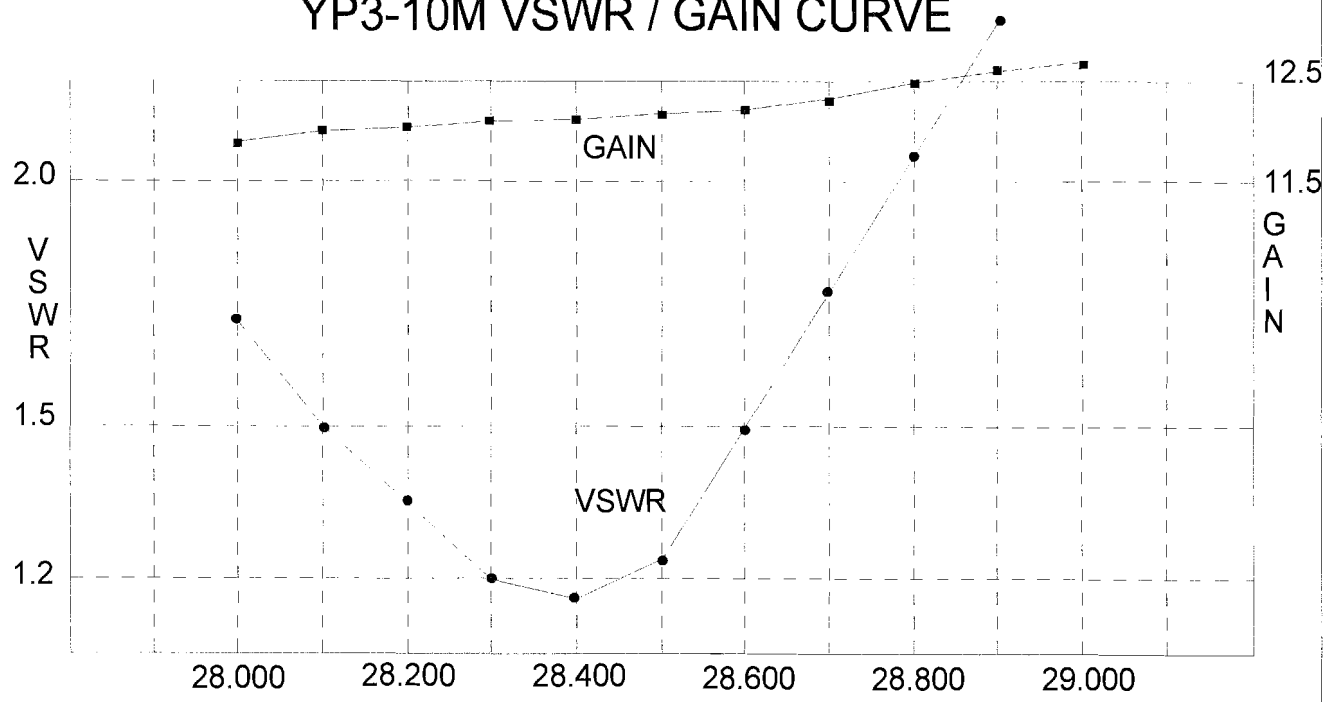


YP3-12M VSWR / GAIN CURVE

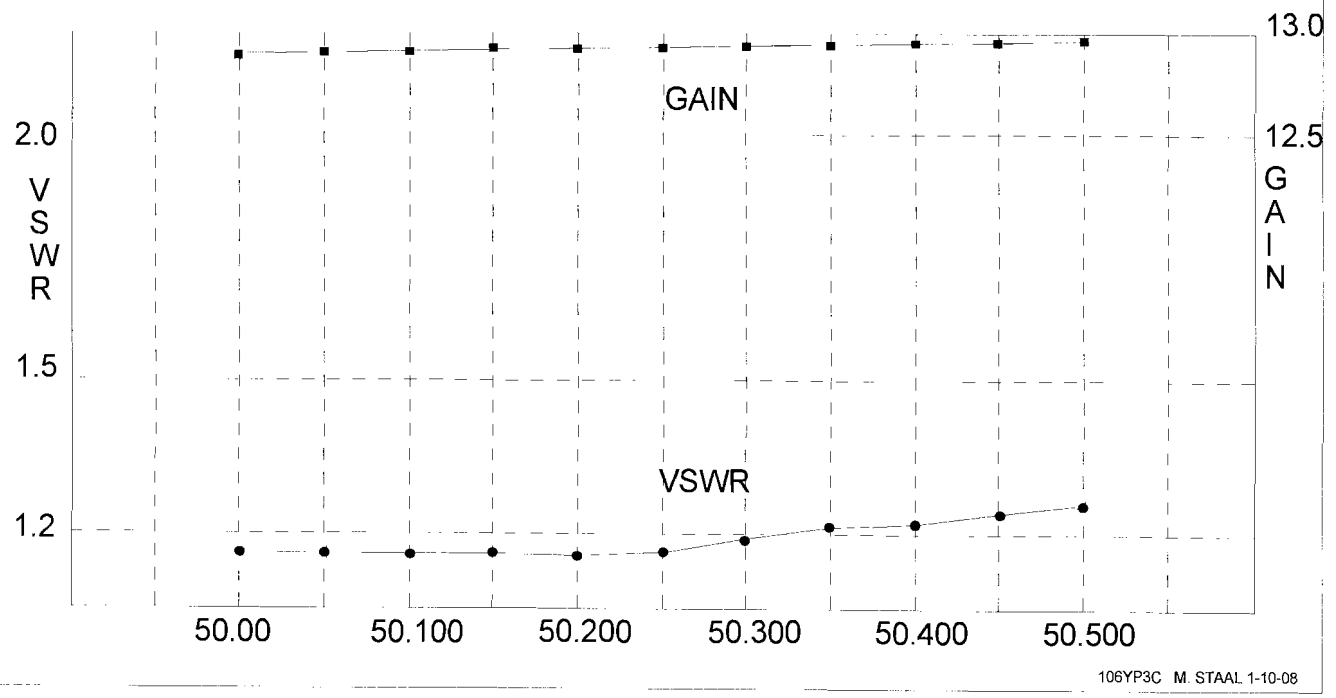


1512YP3C M. STAAL 1-10-08

YP3-10M VSWR / GAIN CURVE



YP3-6M VSWR / GAIN CURVE



106YP3C M. STAAL 1-10-08

PARTS LIST:

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DESCRIPTION	QTY
BOOM CENTER SECTION, 1-1/4 x 30"	1
BOOM MID SECTION, 1-1/8 X 30"	2
BOOM END SECTION 1 X 30"	2
INNER ELEMENT SECTION 5/8 X 30"	6
MIDDLE ELEMENT SECTION, 1/2 X 30"	6
ELEMENT OUTER SECTION, 3/8 X 22"	6
ELEMENT TIPS, 1/4 X 30" ROD	6
SHORT ELEMENT TIP, 1/4 6" ROD	6
HEX NUT, 1"	6
COIL, 20M 7 Uhy	6
COIL, 17M, 15M & 12M, 3.5 Uhy	6
DRIVEN ELEMENT CENTER INSULATOR	1
HAIR PIN RODS 1/8" X 16" BRASS	2
SHORTING BAR, 2-1/2" X 1/4" ALUM.	1
BANANA JACK TO BNC CONN. ADAPTER	1
BOOM-TO-MAST PLATE, 3 X 4 X 3/16"	1
BOOM CLAMPS. 1-1/4"	2

HARDWARE

U-BOLT, 1-1/2"	2
NUTS, 5/16-18 SS	4
THUMB SCREWS (4 EXTRA)	16
SPRING CLIPS, BOOM ASSEMBLY INSTALLED	4
TAPE MEASURE, 12 FOOT	1
ASSEMBLY MANUAL	1

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