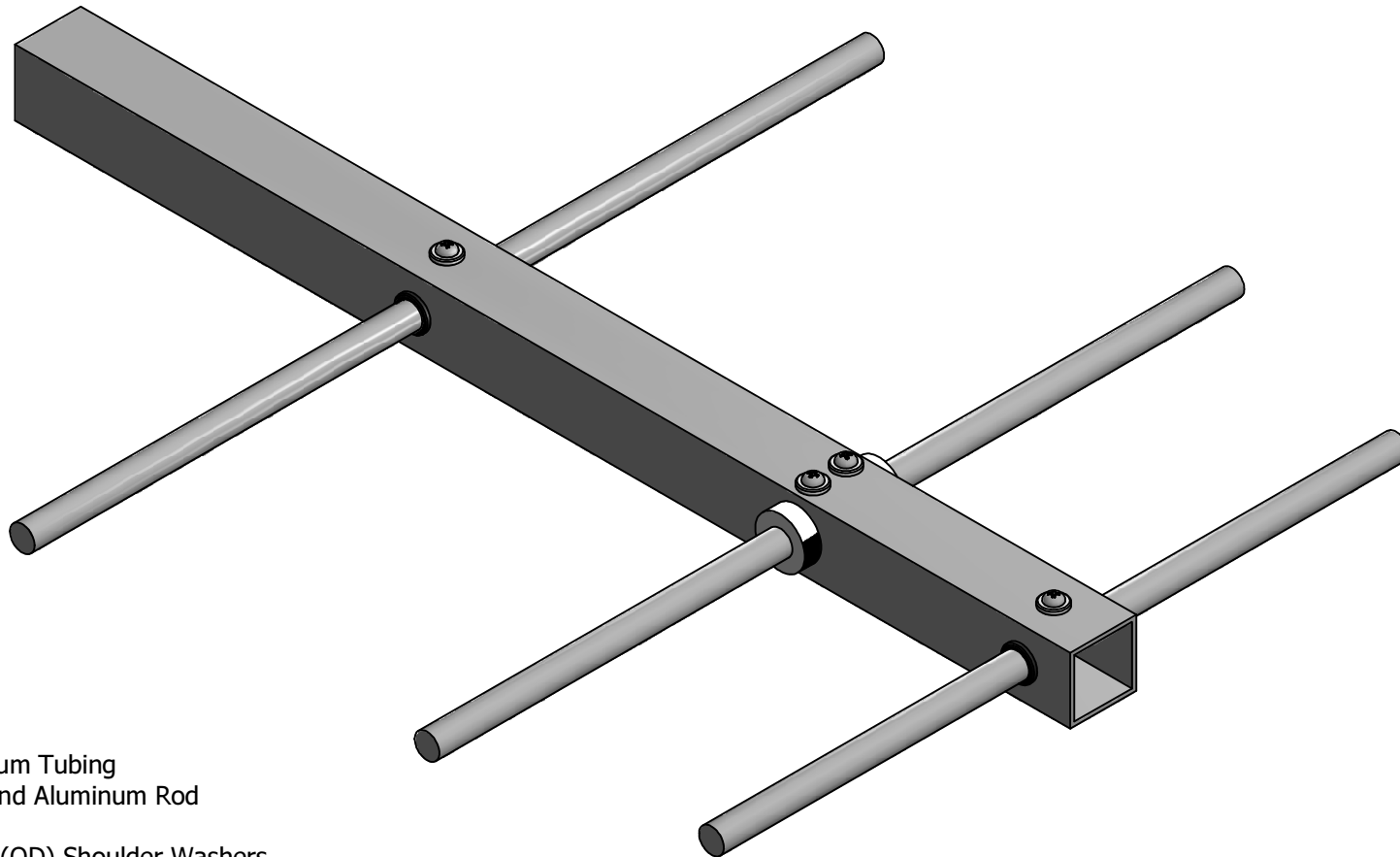


GMRS YAGI

By: Jeffrey Bail - N1BMX
Http://www.N1BMX.com

TOOLS NEEDED:

- Measuring Device (Tape Ruler and/or Vernier Calipers)
- Marking Device (Center punch and/or Marker)
- Hacksaw (Or Band Saw/Chop Saw)
- Drill (Drill press preferred)
- Drill Bits (#29[.136], #H[.266] 7/16"[.438] and 3/4"[.750])
- #8-32 Bottoming Tap W/ Tap Handle
- Bench Vise
- (Optional) 4-1/2" Angle grinder for tuning*

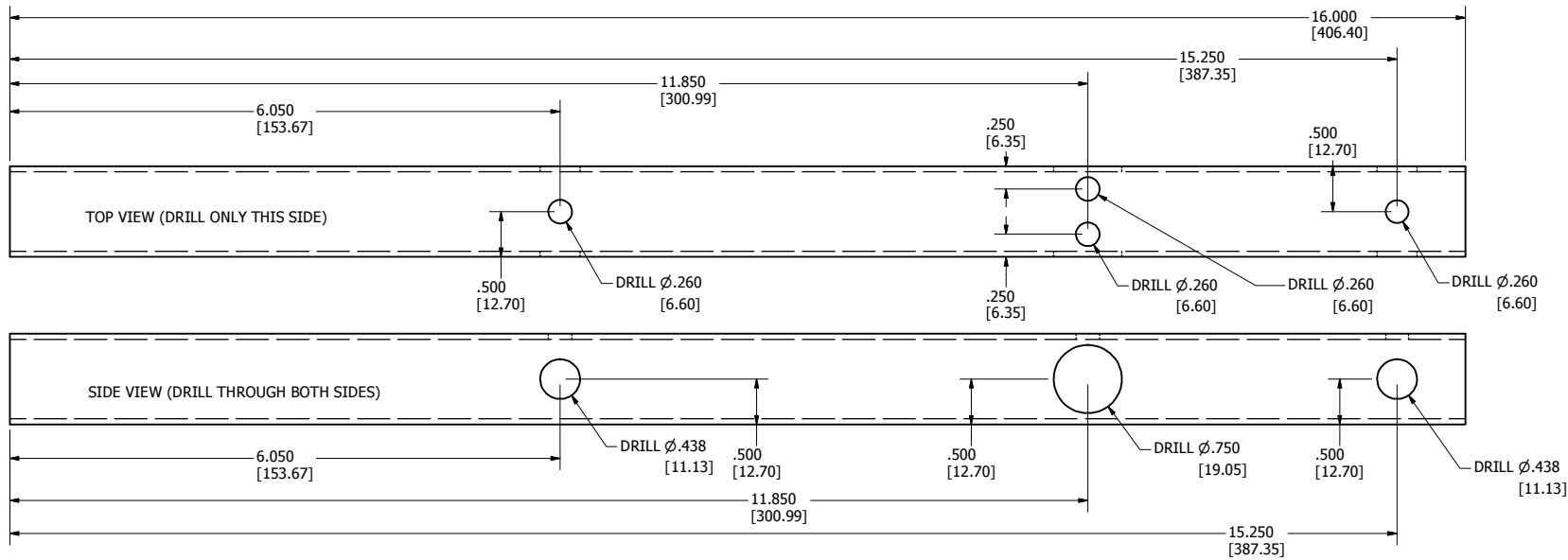


Materials Needed:

- 16in 1X1" Sq Aluminum Tubing
- 40in 3/8" (.375) Round Aluminum Rod
- 4X #8-32 SS Screws
- 4X 0.168(ID)x0.375"(OD) Shoulder Washers
(McMaster Carr P/N: 93835A340)
- 4X 0.375(ID)x0.625"(OD) Shoulder Washers
(McMaster Carr P/N: 93920A170)
- 1X 0.375(ID)x0.750"(OD) Round Spacer
(McMaster Carr P/N: 94729A335)
- 2+ Ft RG-8 or Better COAX
- 2 #8 Terminal Rings
- 1X 2-Part Epoxy

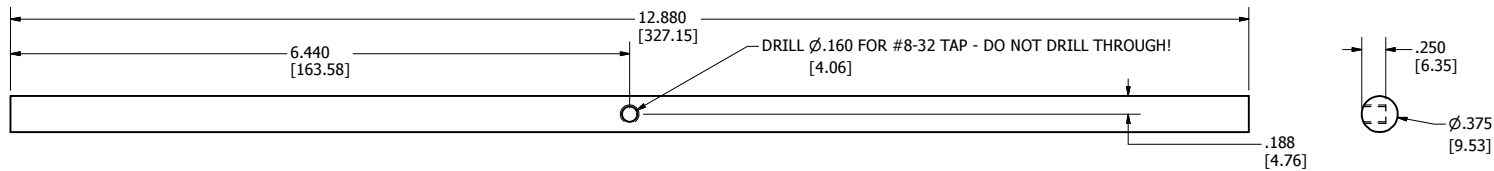
An easy to build 3 element directional antenna that is designed to transmit on the GMRS band. This antenna can be used at home or in the field.

1X



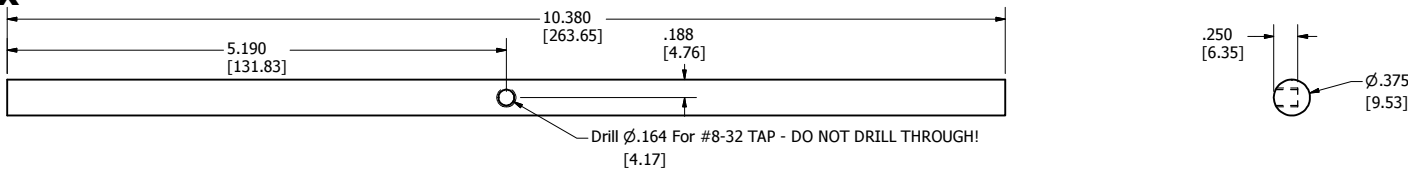
BOOM

1X



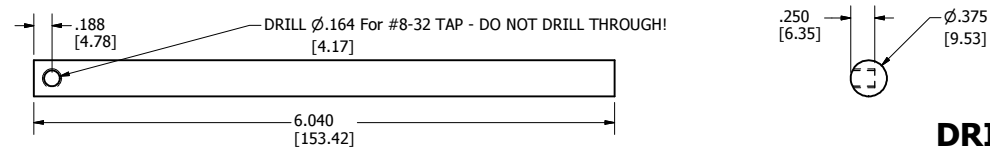
REFLECTOR

1X



DIRECTOR

2X

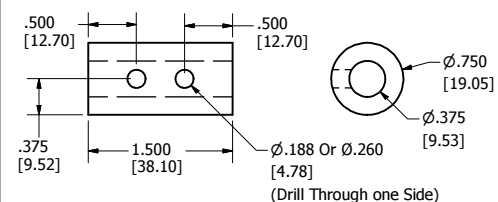


DRIVEN ELEMENT

Instructions:

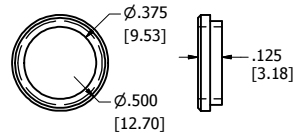
- Cut the 1" Sq Tubing to 16"
- Cut the 3/8" Rod to the following
 - 1pc 12.88" (or 12-7/8")
 - 1pc 10.38" (or 10-3/8")
 - 2pc 6.04"
- Using marking device locate and mark the parts you just cut using this print
- Drill Holes And/Or TAP using the sizes listed on print
- Sand/Smooth any sharp edges

1X



Spacer - McMaster Carr P/N 94729A335

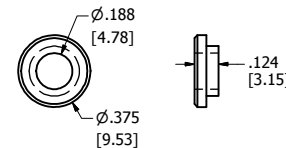
4X



Shoulder Washer

No Modification Needed
Mc Master Carr P/N: 93920A170

4X

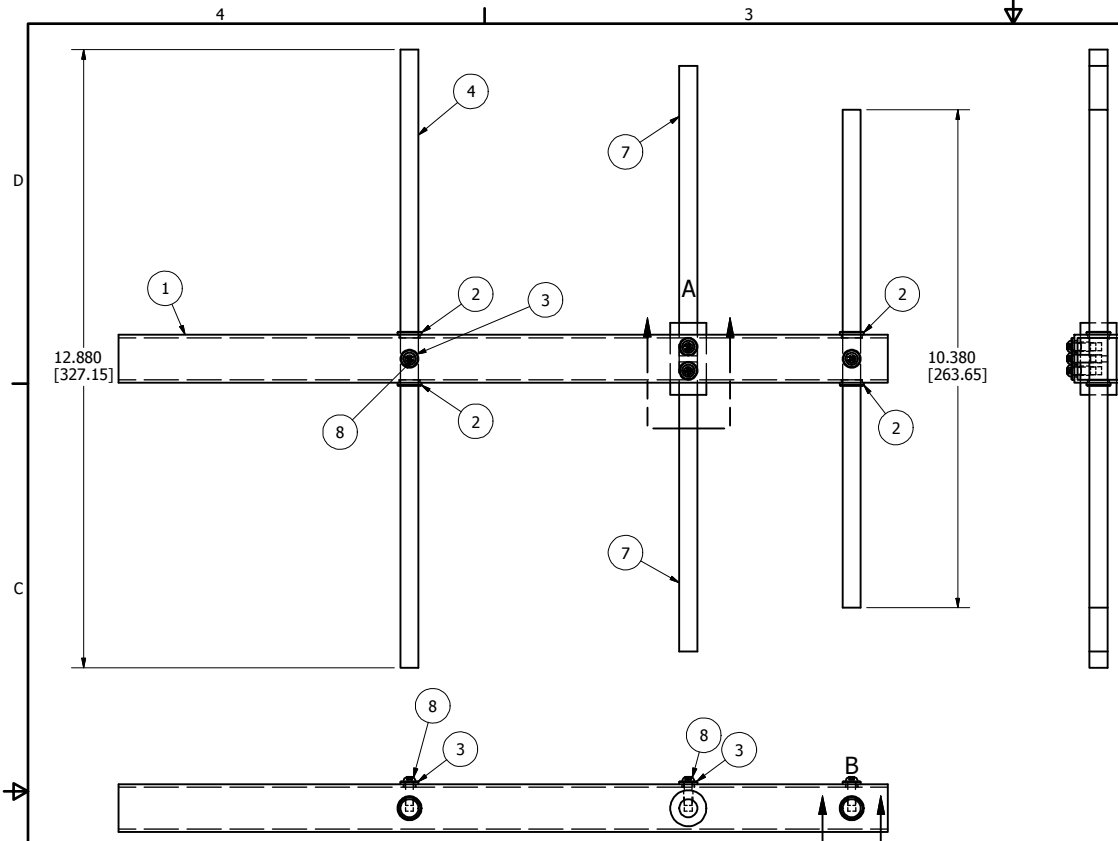


Shoulder Washer

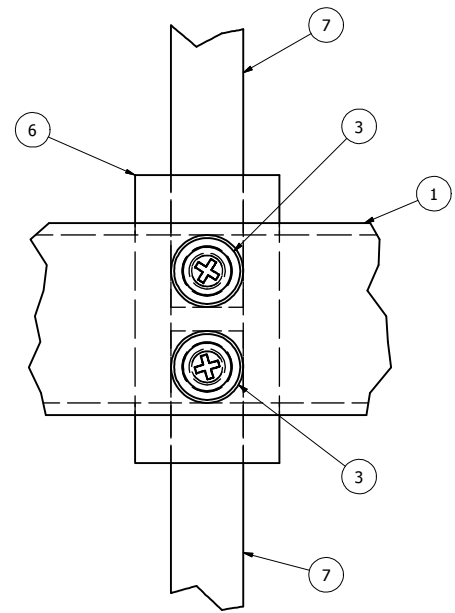
No Modification Needed
McMaster Carr P/N: 94729A335

PLEASE EXERCISE SAFETY AND CARE!
See [Http://www.N1BMX.com](http://www.N1BMX.com) for detailed instructions

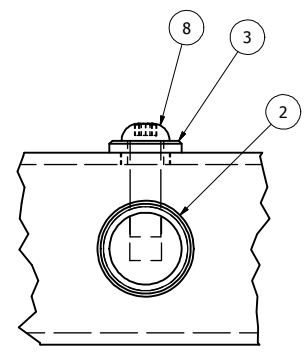
See Page 3 for Assembly



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	Boom	1" SQ BOOM
2	4	Element Insulator	Plastic Shoulder Washer
3	4	Screw Insulator	Plastic Shoulder Washer
4	1	Reflector	3/8" (.375) Aluminum Rod
5	1	Director	3/8" (.375) Aluminum Rdd
6	1	Driven Insulator	3/4" (.750) OD Plastic Spacer
7	2	Driven Element	3/8" (.375) Aluminum Rod
8	4	8-32screw	#8-32 Stainless Machine Screws



DETAIL A
SCALE 2 : 1

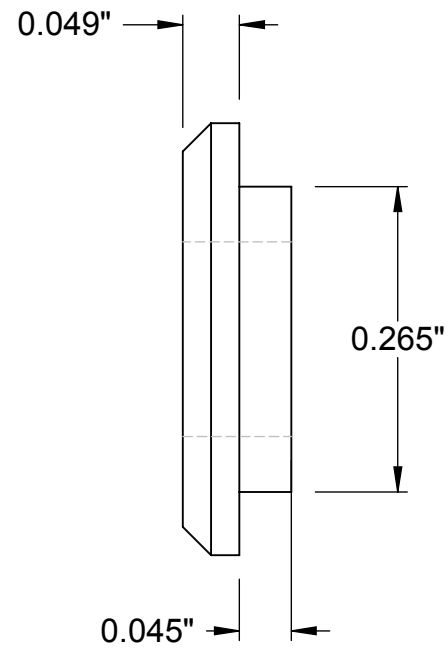
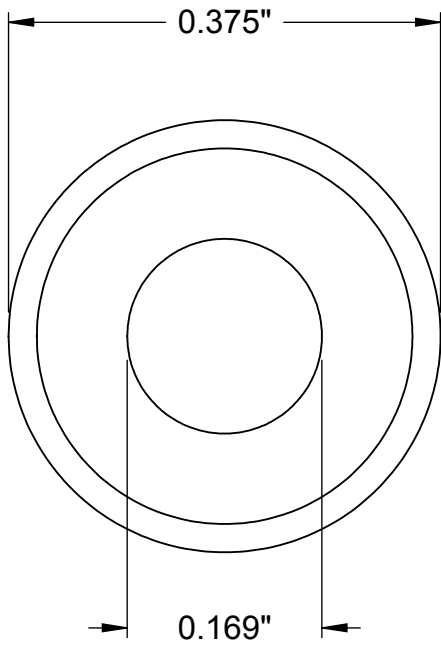
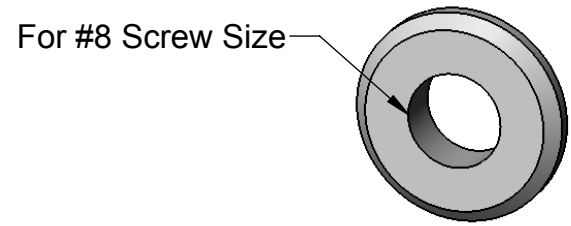


DETAIL B
SCALE 2 : 1

Assembly Instructions:

- 1.) Dry fit all the materials together. Make sure all the shoulder washers and plastic spacer fit through the hole. Then make sure the elements slide through the washers. Then screw in the elements and use a continuity tester to make sure there is no contact between the elements and the boom and also the two driven elements from each other. If something is touching the boom or both driven elements are touching then double check your setup.
- 2.) If Dry Fit checks OK, Mix some two part epoxy (save some for later!) and use it to glue the **shoulder washers** to the boom. **DO NOT GLUE THE DRIVEN ELEMENT SPACER!** The screws will later hold the driven elements and spacers. wait for glue to set or cure
- 3.) After the epoxy is set, assemble the antenna according to the print above. Slide the elements through the shoulder washers to line up the hole you drilled and tapped, then use a #8-32 Screw to secure the rod (Do not over tighten).
- 4.) Slide each half of the Driven element, hole first into the plastic spacer making sure the hole in the element lines up with the hole in the spacer, depending on the spacer used, you might have to hammer it in.
- 5.) Slide assembled driven element through the boom while making sure the hole line up to the ones on the boom. Then secure the the driven elements and plastic spacer using #8-32 Screws. These two screws are considered your feed point.
- 6.) Test your antenna one more time to make sure there is no contact between the elements and the boom and the driven elements from the boom and each other. If it checks out, your antenna is ready for use
- 7.) Not shown is the feed line assembly. There are many ways to do this. Just make sure the shield of the coax is connected to one side of feed point and the center (core) is connected to the other. After connection, test the end of the coax with your meter for any shorts. Test SWR and trim elements if necessary, Once 1.2:1 SWR is obtained (or better) Use epoxy to seal everything.

See [Http://www.N1BMX.com](http://www.N1BMX.com) for detailed information! - Special thanks to WB3BEL for the help!



McMASTER-CARR CAD

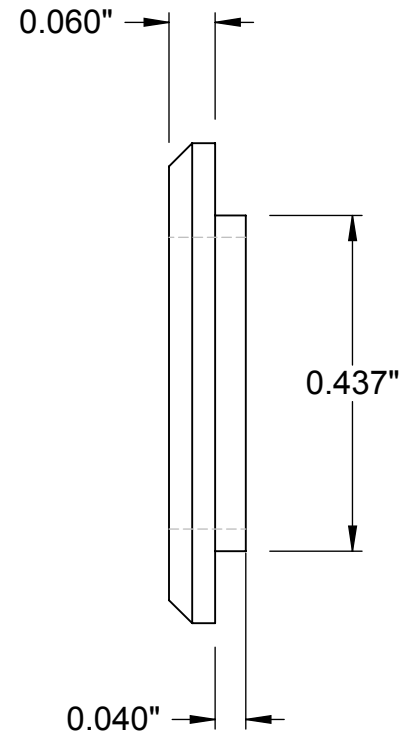
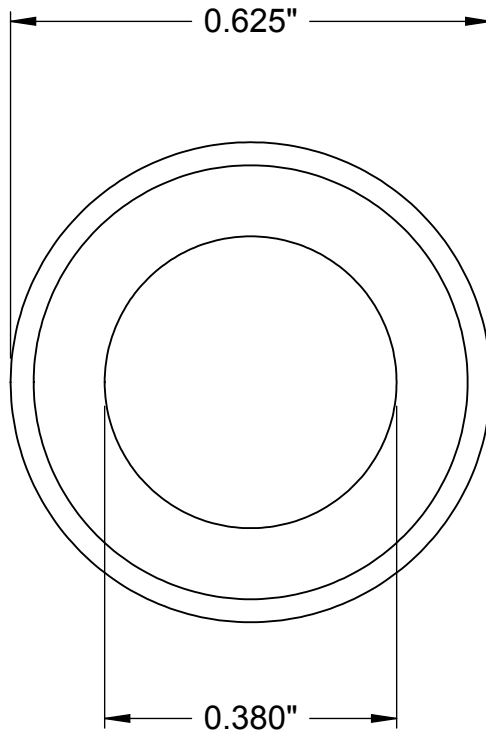
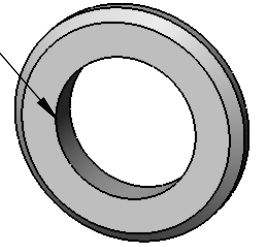
<http://www.mcmaster.com>
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Information in this drawing is provided for reference only.

PART NUMBER **93835A340**

White PTFE Unthreaded
Shoulder Spacer with Flange

For 3/8" Screw Size



McMASTER-CARR CAD

<http://www.mcmaster.com>
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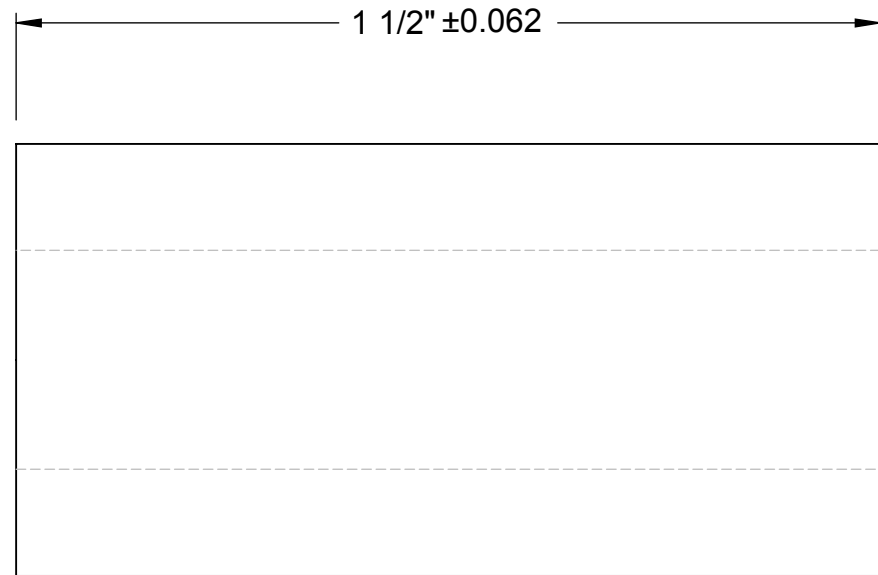
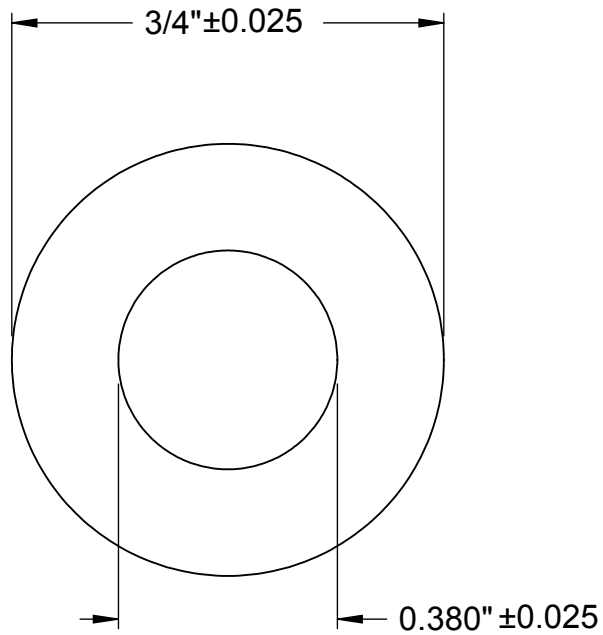
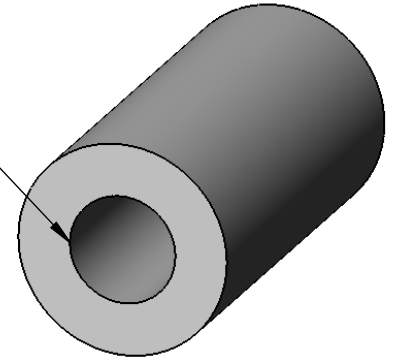
Information in this drawing is provided for reference only.

PART
NUMBER

93920A170

Black Hard Fiber Unthreaded
Shoulder Spacer with Flange

For 3/8" Screw Size



McMASTER-CARR CAD

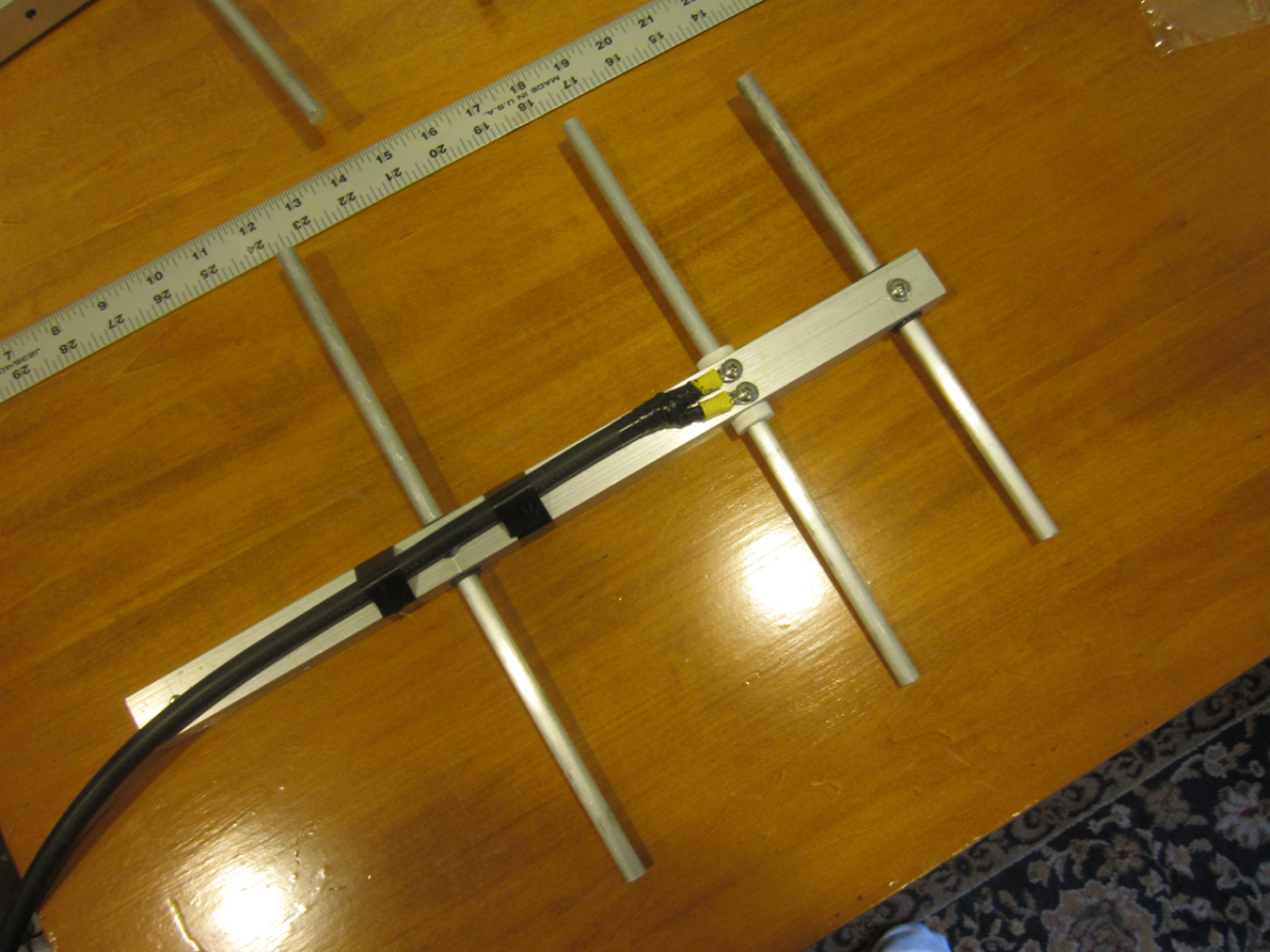
<http://www.mcmaster.com>
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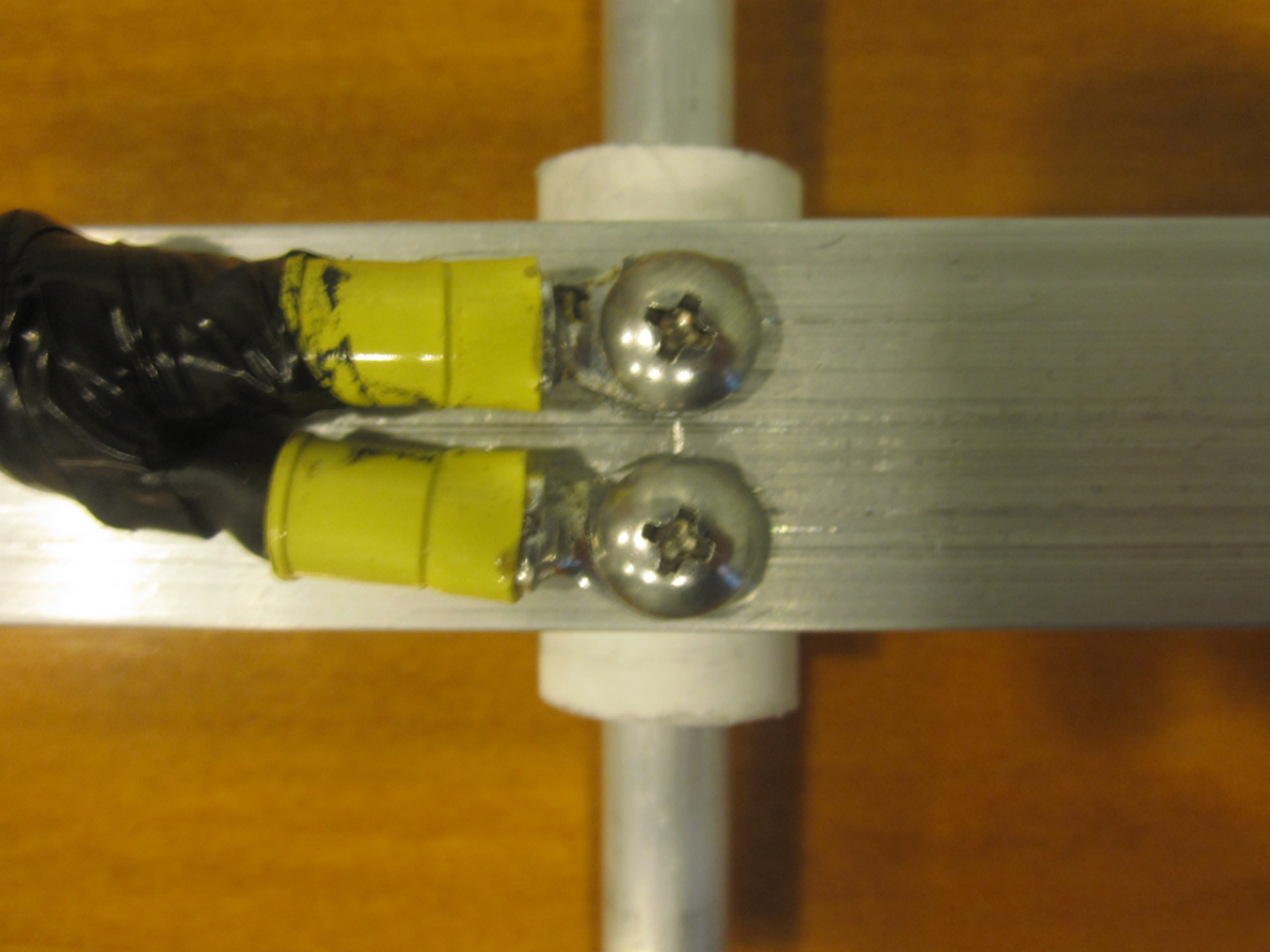
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PART
NUMBER

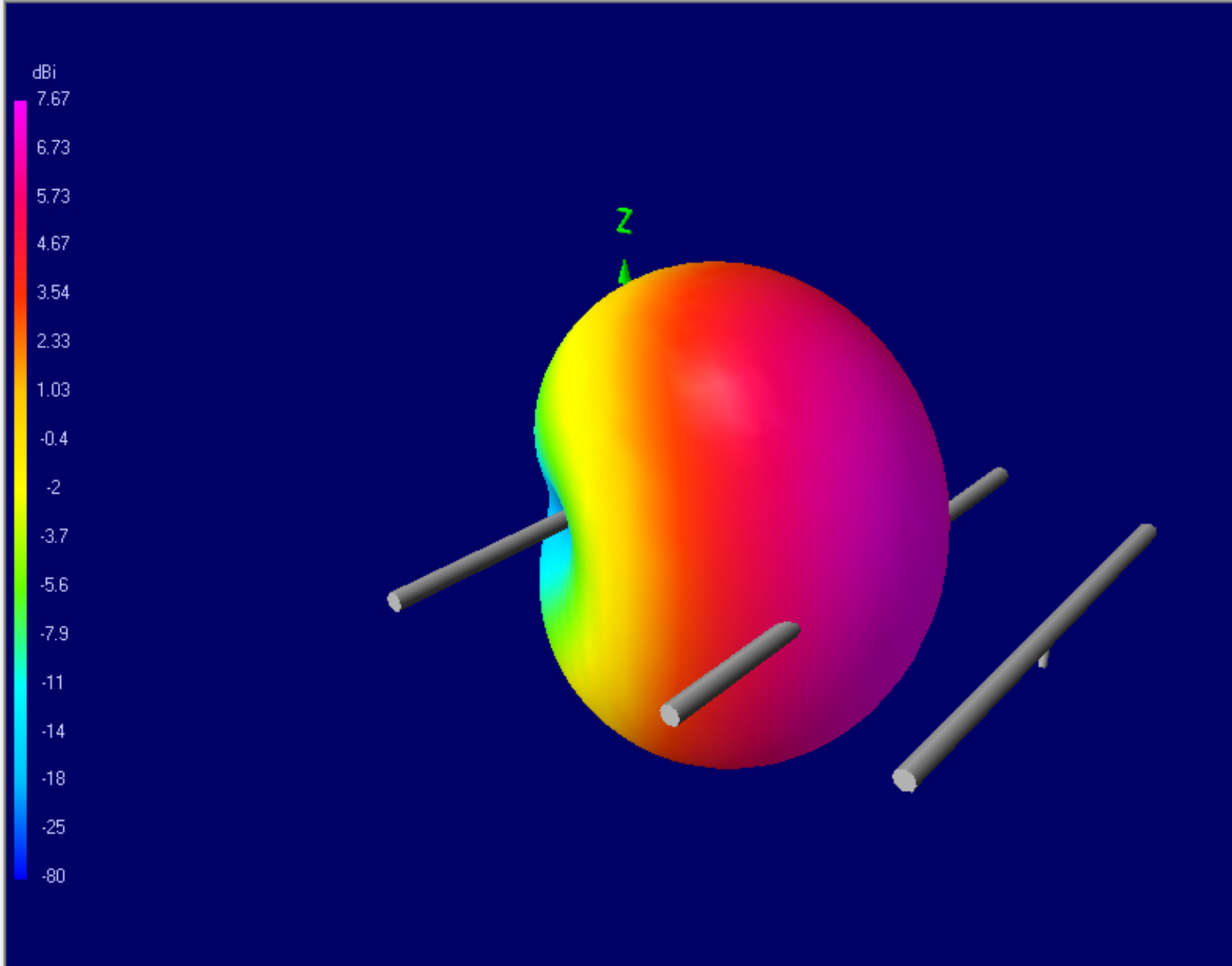
94729A335

White Polypropylene
Unthreaded Spacer





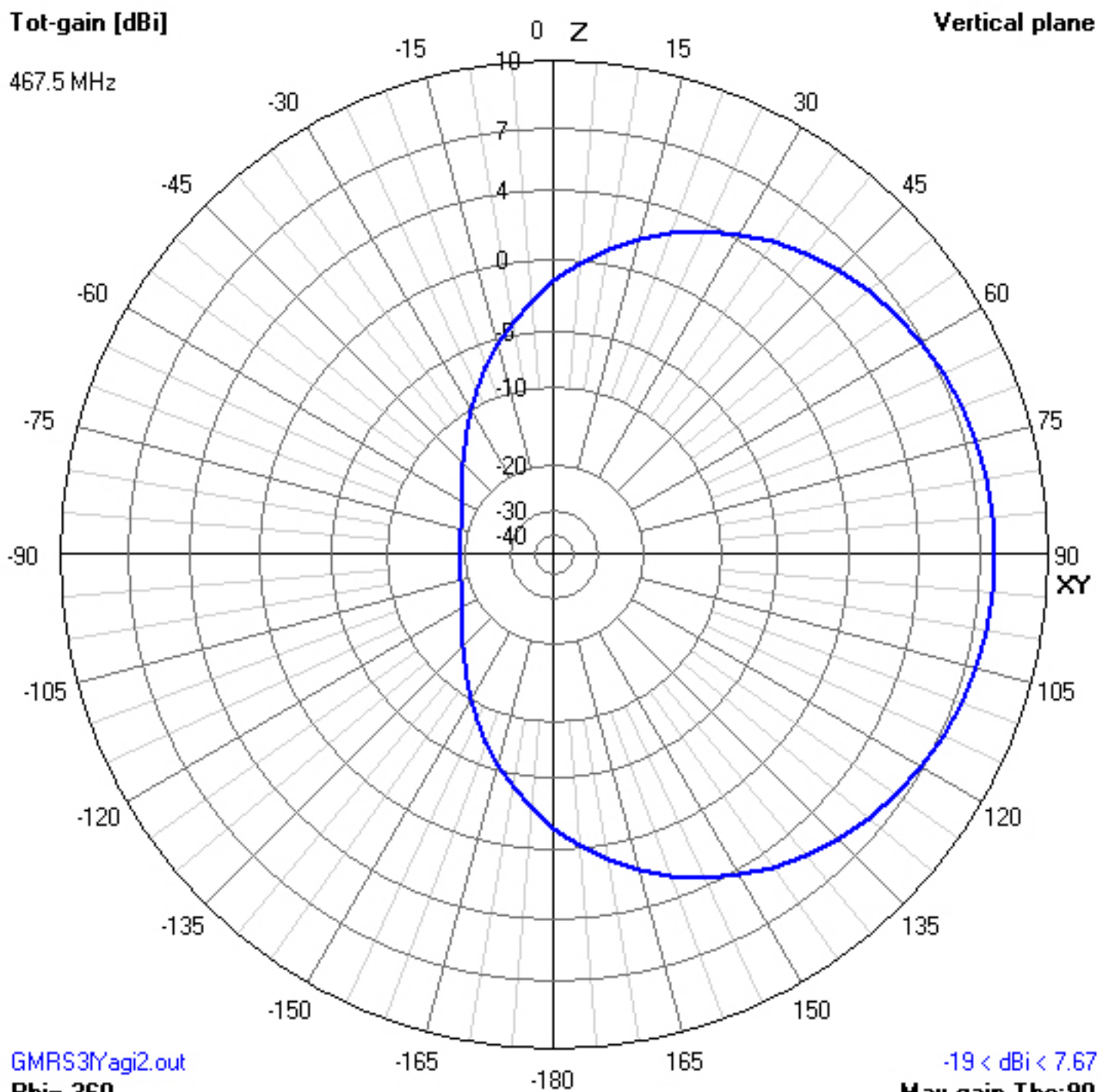




Tot-gain [dBi]

Vertical plane

467.5 MHz



GMRS3Yagi2.out

Phi= 360

-19 < dBi < 7.67

Max gain The:90

SWR (50 ohm)

10

8

6

5

4

3

2

1

465.1 MHz

1.16729

462

462.5

463

463.5

464

464.5

465

465.5

466

466.5

467

467.5

468 MHz

1