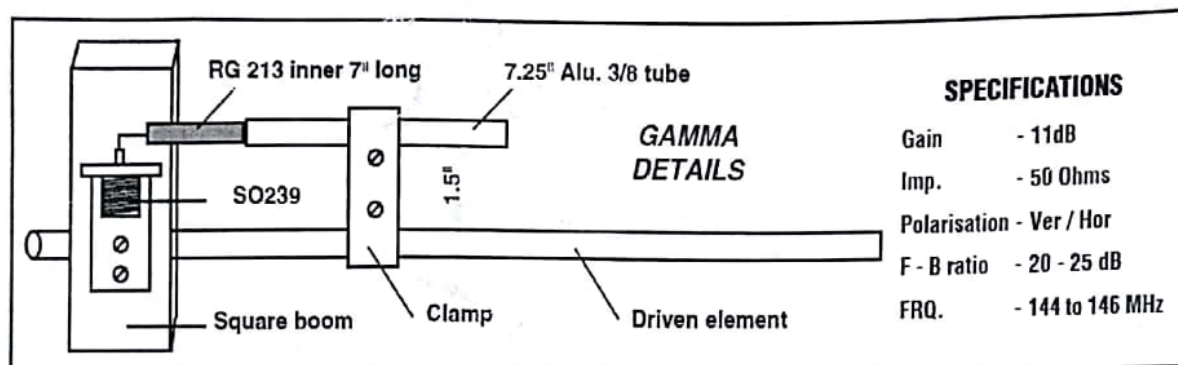
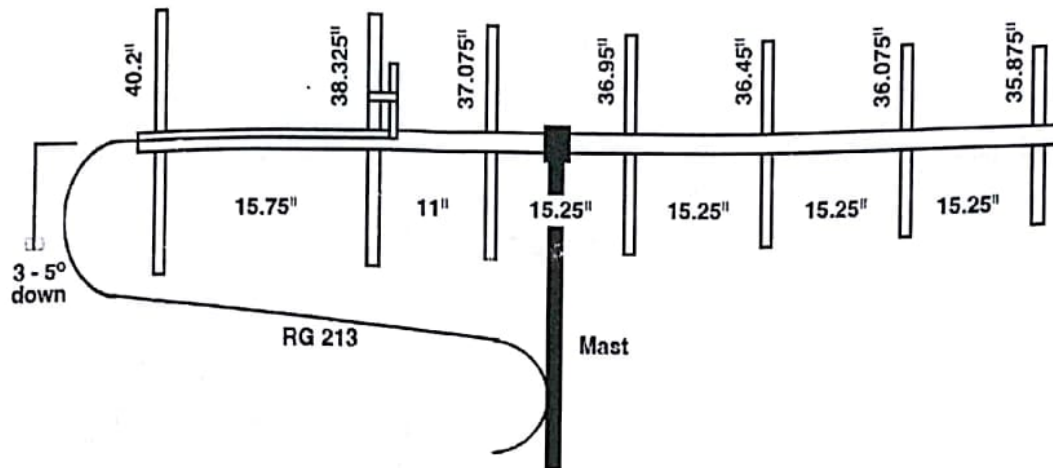


# EVALUATION REPORT FOR THE 7 EL YAGI DESIGNED BY VU3NSH.

This is an evaluation report on the performance of 7 element yagi designed and made by OM Hari, VU3NSH of Palakkad. The antenna is designed for the VHF ham band and works on the official ham band frequencies between 144MHz and 146 MHz. I have been using the beam for the last ten months from my location at Pollachi, 40 km from Coimbatore and Palakkad. My house location is not the best place for vhf operation as I have higher elevated regions on the northern side and southern side. I have an opening towards east and west. Under normal propagating conditions on vhf I am able to contact the repeaters at Coimbatore, Kodaikanal, Cochin, Palakkad, Yercaud and when the conditions are good I am able to get Bangalore repeater also. As far as simplex contacts are concerned I am able to contact Ilayangudi, VU2HRS, Madurai VU3GJP and UDUMALPET VU3MOB and VU3PIP and VU2MDA and VU2TX, Salem VU2BJP and Muthur VU2PTH, Coimbatore almost all stations. The performance compared to my earlier antennae such as, my first vhf antenna Ground plane, is almost like Readability 1 and Readability 5. I could copy stations which I could not copied with my ground plane. Later I was using a 13 element beam with a hairpin match from Mettupalayam at the foot hills of Nilgiri Hills and that antenna was working only to Coimbatore repeater and I was able to have simplex contacts only with stations from Erode. Later I was trying a slim jim antenna and with that I was able to trigger Coimbatore repeater from Pollachi and Kodai repeater and no simplex contacts were possible with that. Finally I tried a 3 element yagi from the present location and the performance was not satisfactory as it was no better than the Slim Jim. Finally I put up this 7 element yagi at a height of 20 feet above ground level and the difference was really noticeable. I was able to trigger all the repeaters around and the simplex contacts were with a little bit of noise. I raised the antenna height to 33 feet and the performance improved tremendously and many stations told me that they are able to hear me directly even though I was not able to hear them. The main thing I like in this antenna is the simplicity for tuning the antenna for minimum swr on any required frequency. The antenna came with the tuning of swr 1:1 for 145.000 and I wanted to have the minimum swr on my most favourable transmitting frequency of 145150 and it was so easy to shift the gamma match by few millimetres to get the required lowest swr on the required frequency. I used the two handsets of the cordless phones and using them as intercom I requested one swl to adjust the gamma rod on the antenna at a height of 5 feet above the terrace level and I used to check the swr from the shack at low power and give the reading to my friend through the intercom. Then he moved the gamma rod a wee bit on the upper side and ask me what change it makes. If it increases the swr, I ask him to move the rod in the opposite direction. Like this it was possible to get the lowest swr within four or five adjustments. Then you raise the antenna to the full height and check the swr once again and there will be slight change for the better or worse and you can decide to bring down the antenna and make the correction according to the value of the swr after raising the antenna for the full height. In a nutshell, the performance of the antenna is far superior to the ground plane and slim jim mainly because of its low noise, forward gain and good front to back ratio. It is not too unwieldy to raise as the total weight is not much and it is very well balanced with the supplied clamps and stands rigidly well above with simple guy wires to prevent movements during high winds. The only precaution which I took is to provide a 3 feet rigid pvc pipe to fix the boom so that all the elements including the longest one (Reflector) will not come parallel in the proximity of the metal vertical pipe in which we are fixing the boom normally. I will not have any hesitation to recommend this simple inexpensive antenna for 2 meter VHF for the hams and I am sure the user will never regret for buying this antenna. Good luck and Good Dx.

VU2DX (Since 1965)  
vu2dx@yahoo.com



23' or 25' Elements - 275.95"

7'31" or ~~7'5"~~ Boom - 87.75"

8'

6" Piece bigger for Boom joint



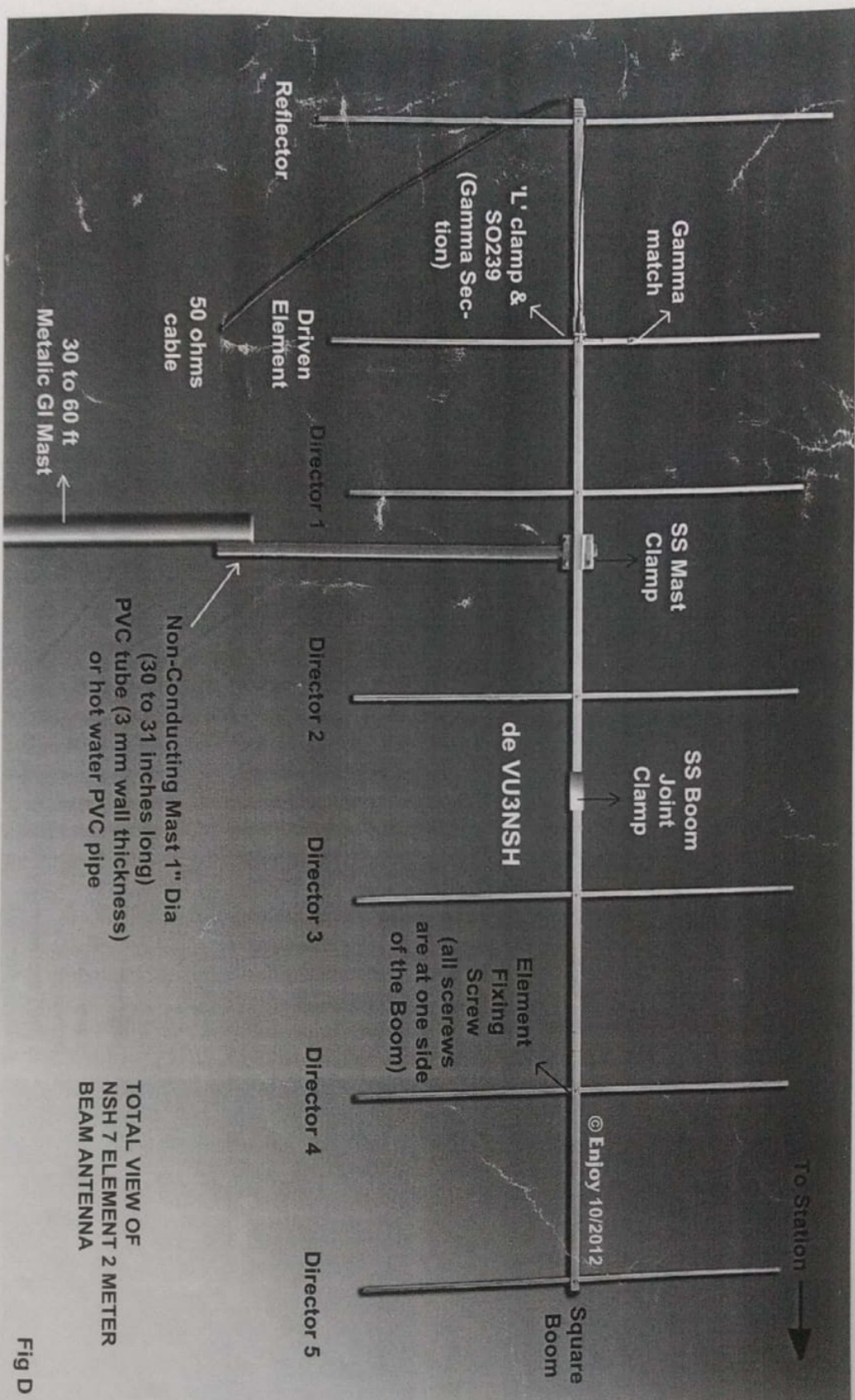


Fig D

# NSH 7 ELEMENT 2 METER BEAM ANTENNA

## SPECIFICATION

Gain	- 11 dB +
F / B ratio	- 25 dB Max
BW	- 1.5 : 1 over 2 MHz
VSWR	- 1.0:1 over 300 KHz
I/P	- upto 200 W
Matching	- Gamma
Polarization	- Vertical or Horizontal
Impedance	- 50 ohms

This design is first made during 1995 and evaluated with YO in 1996-97. I had made three prototypes for test and evaluation during that period. Now more than 160 people are using this antenna for getting distant stations and repeaters.

Mount the Antenna on the mast about 7 feet above the ground in a clear surrounding. Set your transceiver to the operating frequency that you operate more. Place the SWR meter between the transceiver and the antenna, then apply low power test transmission. Note the SWR level and slide the gamma tube IN or OUT until you get lowest SWR. Then apply high power transmission and do the same carefully to get the best match. Tighten the gamma - driven element feeding clamp (solid square block). If you use the beam for vertical polarization, you need to use a non-conducting mast to avoid detuning the beam and skewing the radiation pattern. Fix your antenna at 30 feet or above for the best VHF operation. Have a nice DXing.

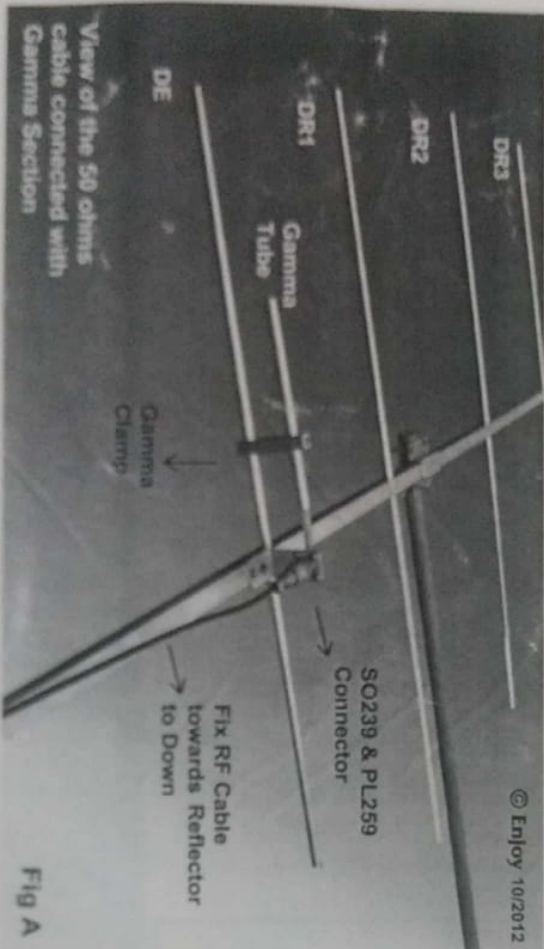


Fig A

Sideview of Reflector (R), driven element (DE) & Gamma Section

73, de VU3NSH

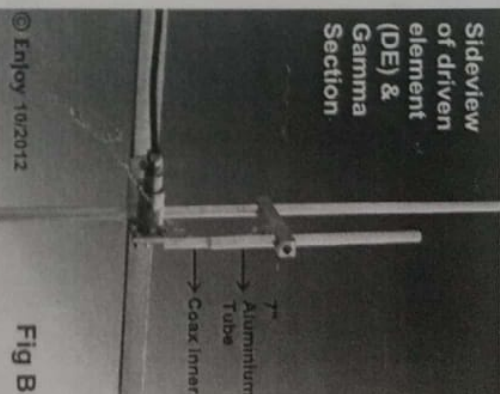


Fig B

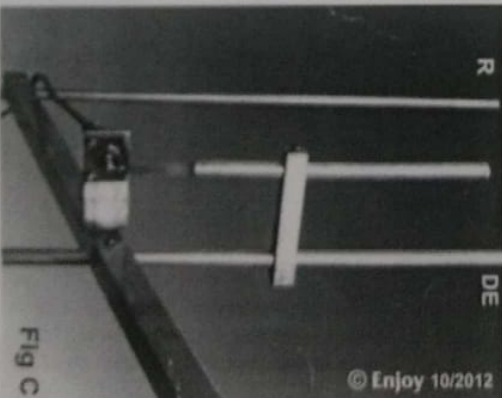


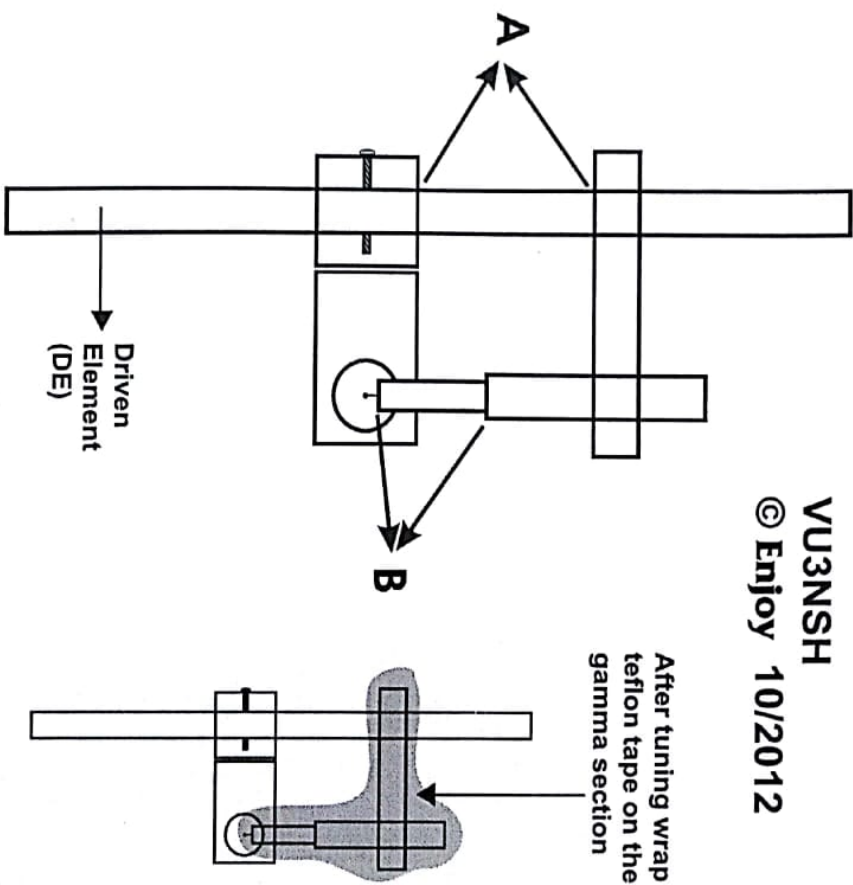
Fig C



## CAUTION :

All Mounting Screws for elements should be finger tightened initially. Finally, use screw driver to avoid thread damage.

- The boom clamp is half square type and mast clamp is half round type. Fix the mast clamp as shown in fig D.
- The longest element is the reflector, next longest is the driven element and the third longest is the Director 1 and subsequent elements are Director 2, Director 3, etc.
- All elements are mirror polished.



VU3NSH  
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Approximate Measurement of  
Gamma Position with Techno Cables

A) 7.8 cm	B) 4.24 cm	Type : RG 213 20 mtrs.
A) 6.9 cm	B) 6.00 cm	Type : RG 58 U 20-25 mtrs.