

## **COLOMBO SPECIAL 2M VHF YAGI by 4S7JL**

Got an idea to make a VHF Yagi for Colombo and suburb hams  
And aims are,

1. Use only one antenna to cover all the repeaters in Sri Lanka without turning around for each repeater, and to have some sort of a good back lobe to cover the local area as well.
2. Low cost, to keep maximum around RS 1000. I built the prototype, it cost me around RS 885
3. Use locally available items and commonly available tools, so that anyone can build this antenna very easily
4. Transportability - Antenna can transport inside a car without dismantling
5. Antenna gain – To have a good gain on repeater in puts frequencies as well to have a good gain on 144 MHz area for local simplex frequencies

So I finally came with a good design with a gain of 6.78dBd with a 11.2db front to back ratio, and the interesting thing is this antenna is having a very low SWR across the ham band .To mold this beautiful fat lady I used very famous Yagi molding software call yagicad <http://www.yagicad.com/> .

By the way this is not a well optimized Yagi for high gain and directivity but, this Yagi was well optimized to have a decent front lobe and a good back lobe for local use. I know you will say that ‘why do we need a yagi, we can use silm-jim or jpole to activate repeaters in Sri Lanka’. But we all know sometimes you need that extra bit to hit the repeaters in hill country.

So let’s start building this simple Yagi antenna with a gamma match. And you can find all the hardware items from your local shops.

### **Tools**

1. Pop revert gun
2. Hand drill and drill bits
3. Hacksaw
4. Measuring tape
5. Pencil or maker
6. SWR meter

### **Required hardware**

1. 13mm square boom – 90 cm
2. 9mm aluminum tube - 1.5 length
3. Antenna element holder - 3 pcs
4. Antenna dust cap - 7 pcs
5. SO 239 socket -1 pcs
6. Pop rivets 7 pcs
7. Antenna mounting U bolt - 1 pcs
8. RG 213- 20 cm length
9. Sealing compound
- 10.screw ½ inch 1 pcs

### Cutting list

1. Boom 85 cm -13mm square tube
2. Reflector 104cm -9mm tube
3. Driven element 96.5cm -9mm tube
4. Director 92 cm -9mm tube
5. Gamma spacer 6cm- 13mm square tube
6. Gamma rod 18 cm – 9mm tube
7. Gamma inner wire 17.8 – from RG213 coax

Now you have all the materials in hand, so let's build this Yagi antenna as described in the diagram (fig2) below.

Once you build the antenna you can fine tune it using SWR meter by adjusting the gamma matching section to get a lower SWR. Typically you can achieve SWR of less than 1:1.2 across the vhf band.

### Yagi specification

Center freq: 145.000 MHz

Fwd gain: 6.78 dBd

F/B:11.21 db

SWR: less than 1:1.2 across the vhf ham band.

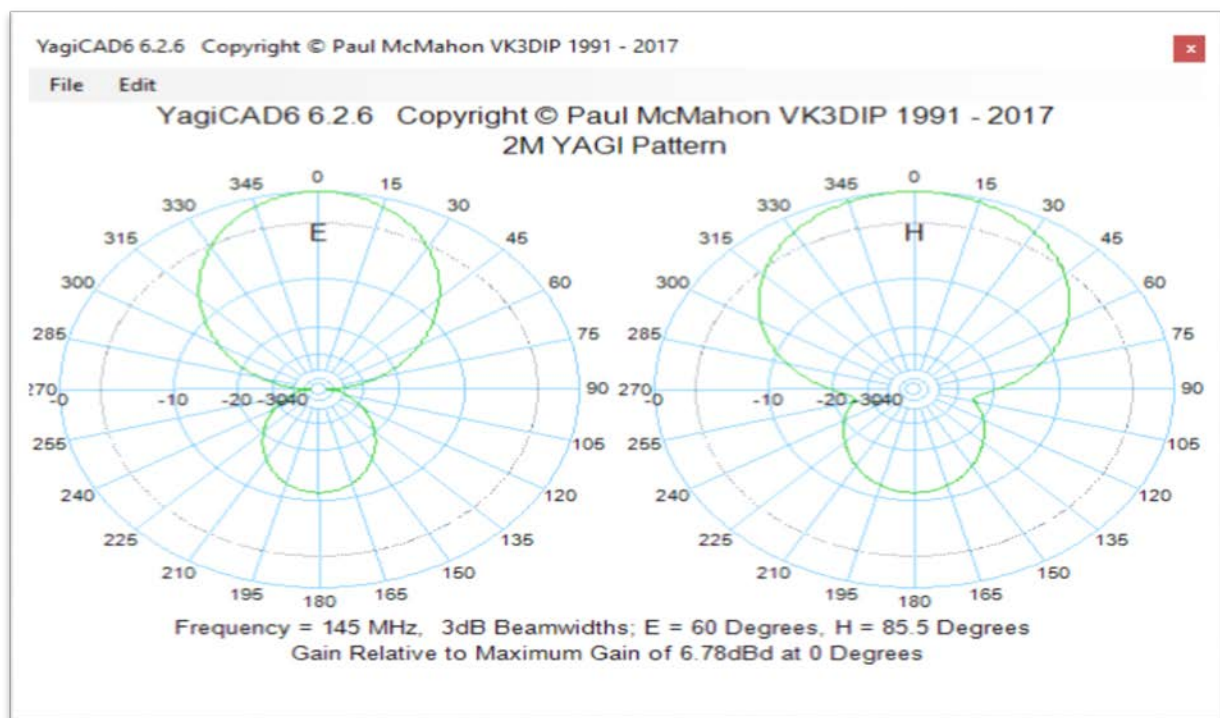


Fig 01

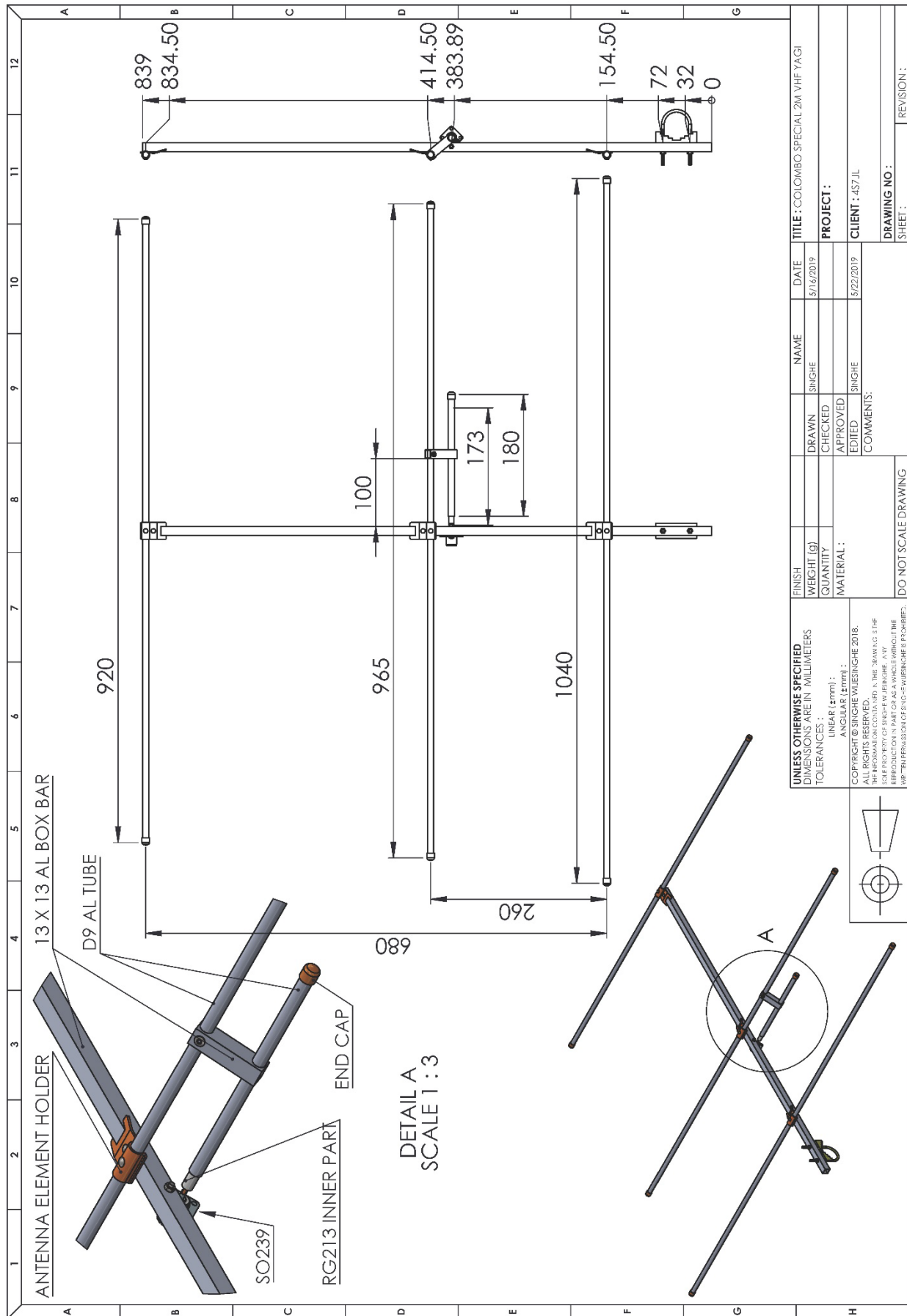
My sincere thank goes to VK3DIP, 4S7RO,4S7VJ,4S6LEO,4S5SC, who helped me throughout this project.

Finally, if you face any problems or difficulties building this Yagi antenna or have any doubts about it, please do not hesitate to contact me via my email address given below, I'm more than happy to help.

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FINISH WEIGHT (g)		NAME	DATE	TITLE : COLOMBO SPECIAL 2M VHF YAGI	
QUANTITY		SINGHE	5/16/2019	PROJECT :	
MATERIAL :		CHECKED		CLIENT : 457JL	
		APPROVED		DRAWING NO. :	
		EDITED	5/22/2019	SHEET :	
		COMMENTS :			
		DO NOT SCALE DRAWING			
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