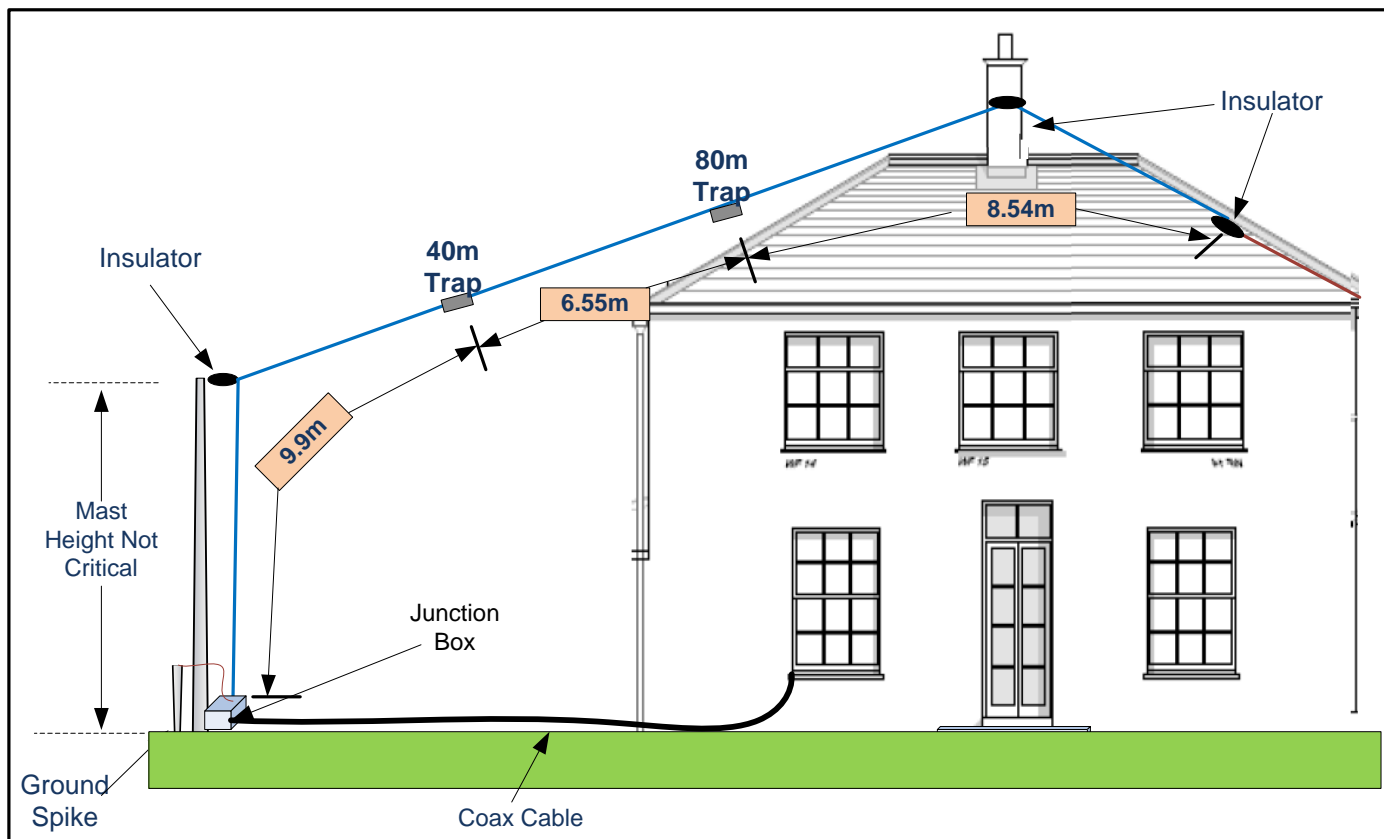
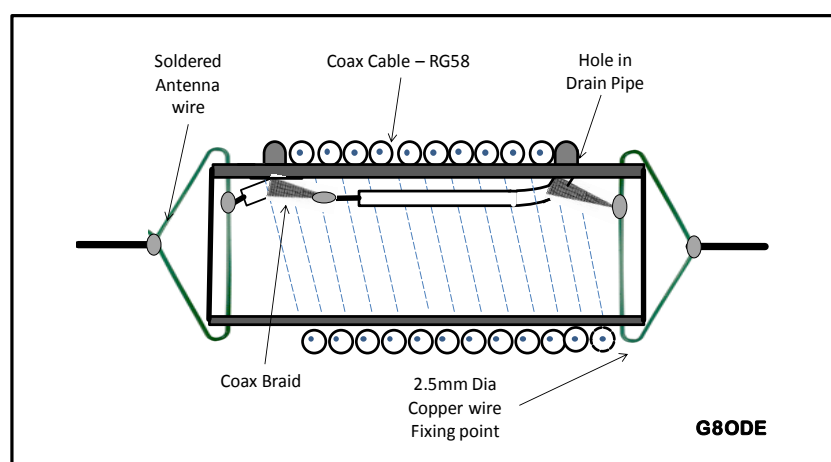


160-80-40m END FED ANTENNA - G0CSK



NOTES:-

1. At the Junction Box , coax inner connects to the antenna wire (blue) and braid connects to the brown wire and ground spike.
2. Each section of the antenna is initially cut over size by 300mm, and trimmed to reduce the SWR on each band starting with 40m band section first , then the 80m section, and finally the 160m section
3. If the ground is not very conductive add supplementary radial insulated wires on the ground to act as a counterpoise. (8 x 4m)



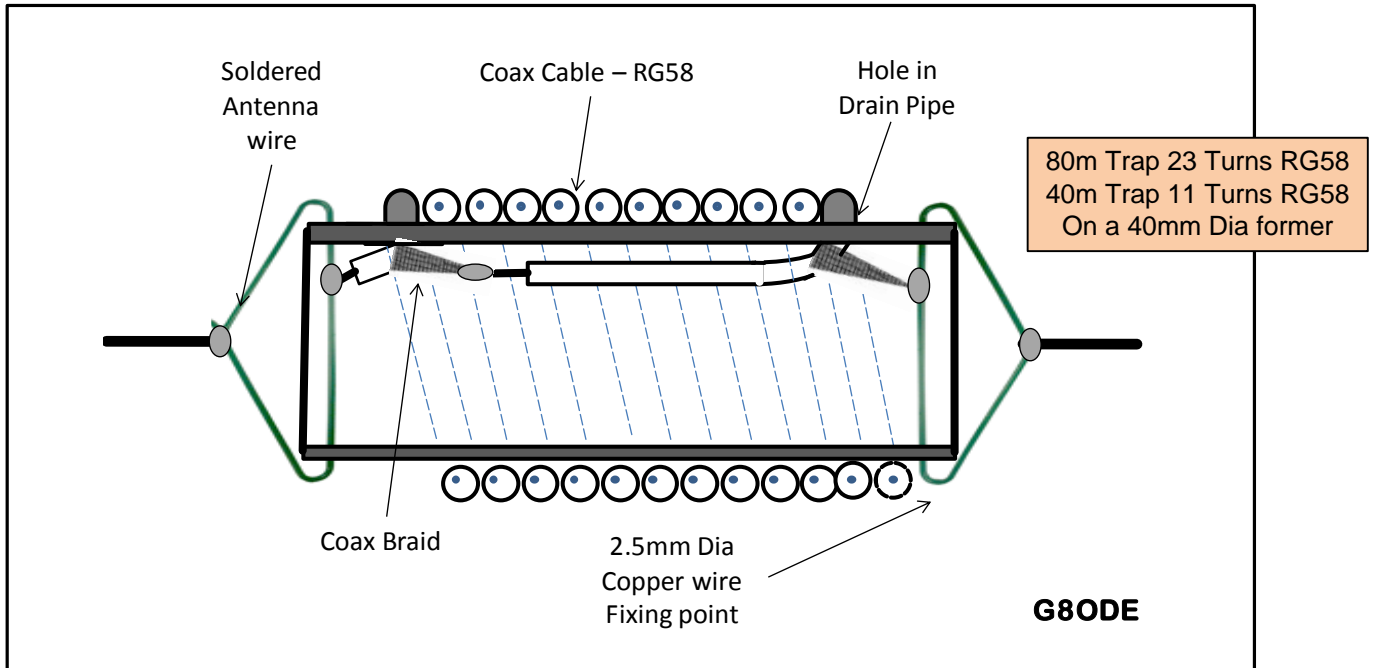
TRAP DESIGN INFORMATION

- 80m Trap 23 turns RG58 on 40mm Diameter plastic pipe 150mm long
- 40m Trap 11 turns RG58 on 40mm Diameter plastic pipe 80mm long

G0CSK

N.B. A very useful tool for coax-traps is a program by Tony VE6YP called "coaxtrap.exe". You can download the program from his website www.qsl.net/ve6yp.

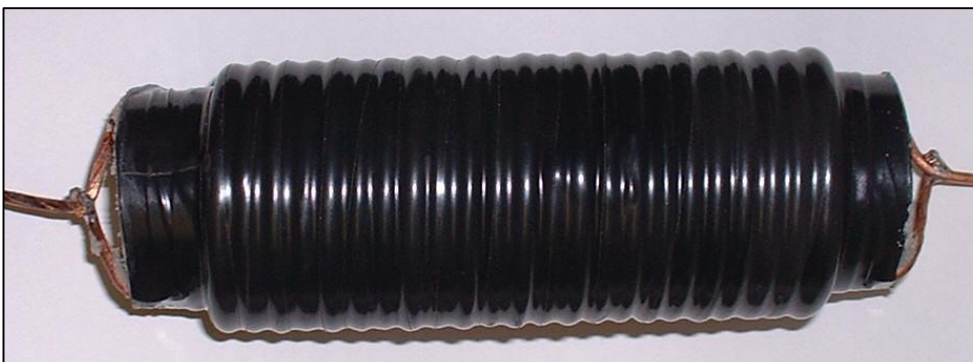
160-80-40m END FED ANTENNA - G0CSK



Here are the photographs two that were made using this form of construction. The Coax has been taped over for additional protection, and the ends have been sealed by first fitting cut plastic discs and sealing these in with silicone bath sealer



40 Metre Coaxial Trap



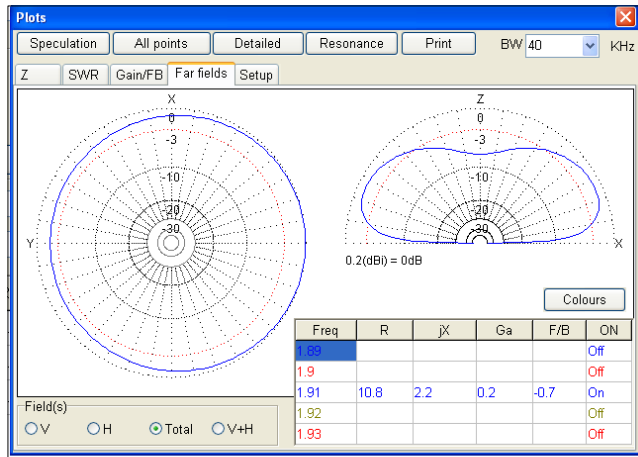
80 Metre Coaxial Trap

N.B. A very useful tool for coax-traps is a program by Tony VE6YP called "coaxtrap.exe". You can download the program from his website www.qsl.net/ve6yp.

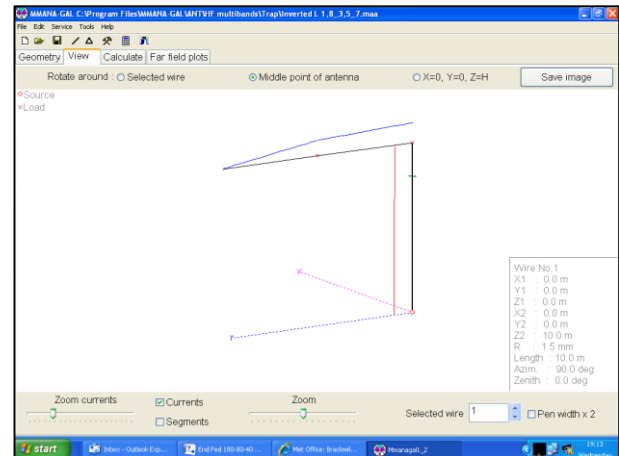
160-80-40m END FED ANTENNA - G0CSK



1.91MHz Plots

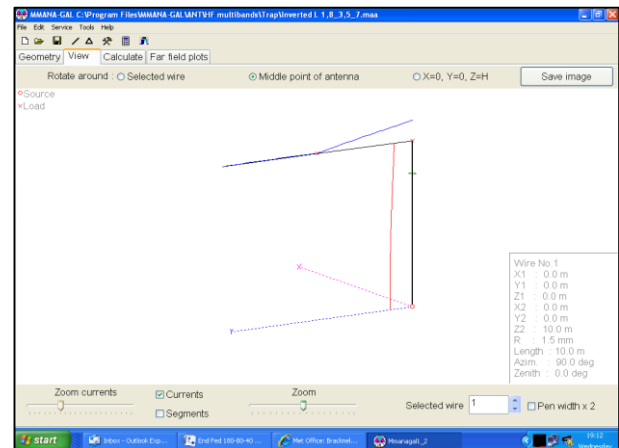
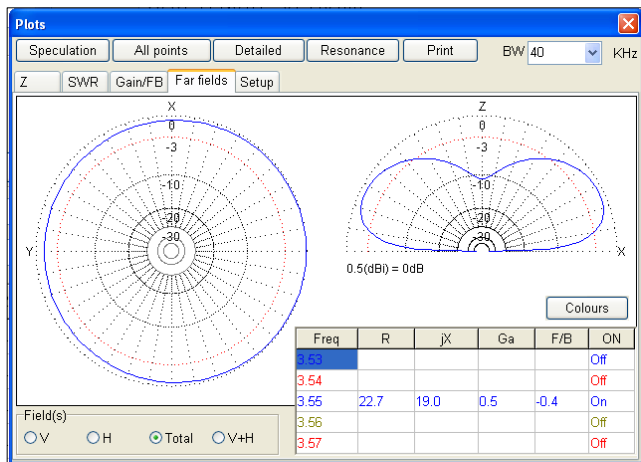


Note: The Red & Blue colours are used simply to emphasise the vertical & horizontal components of the antenna current. The "X" marks the position of the traps.



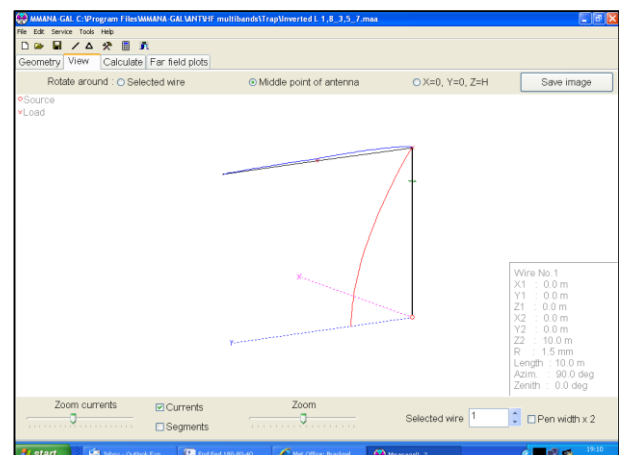
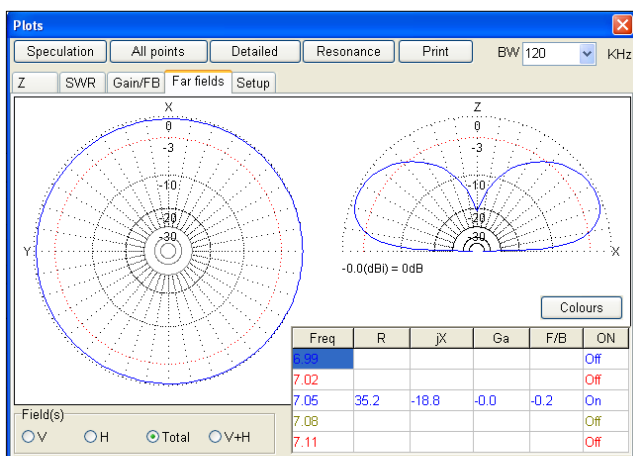
Looking at the current distribution, it will be seen that the 1.92MHz Frequency does not cause either of the two traps to become activated & the antenna behaves as a long wire.

3.55MHz Plots



Here the 3.55MHz frequency causes the 80m trap to operate and electrically shorten the antenna. The current in the last section of the antenna is significantly reduced

7.05 MHz Plots



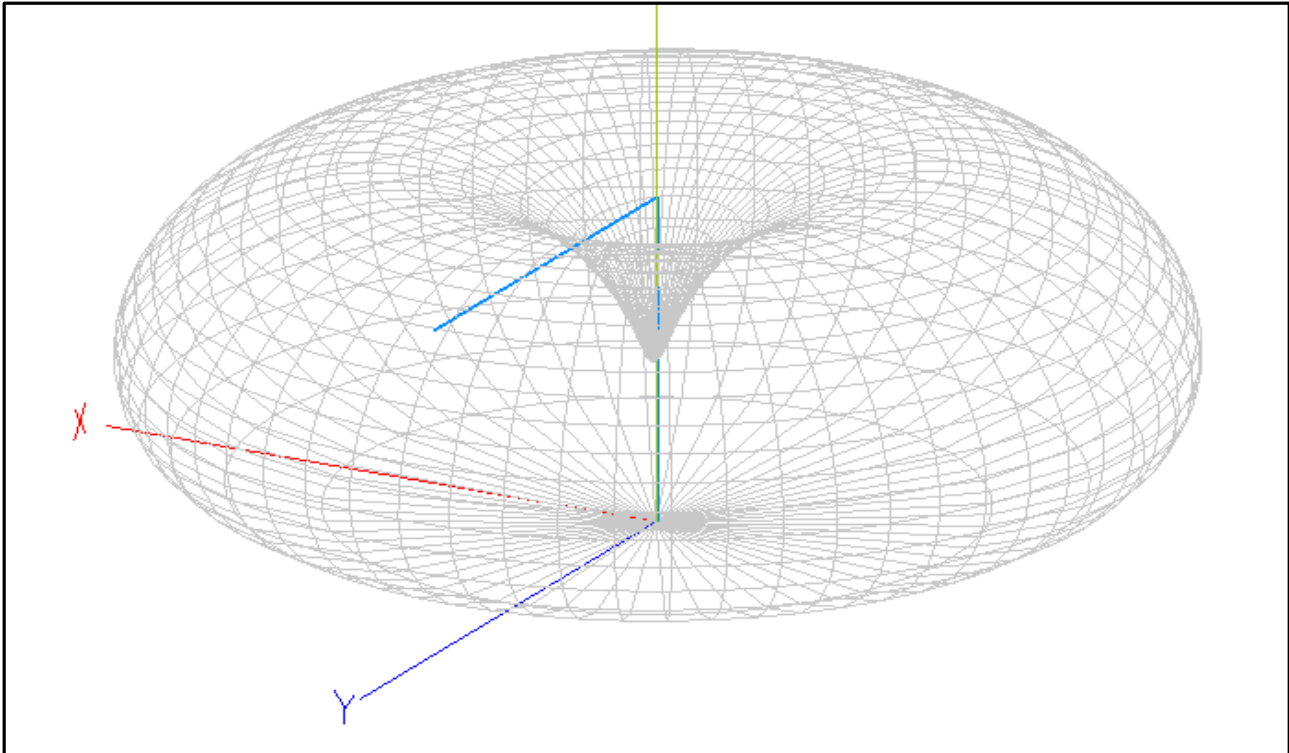
Here the 7.05 MHz frequency causes the 40m trap to operate and further electrically shorten the antenna. The current in the last two sections is thus significantly reduced



160–80–40m END FED ANTENNA - G0CSK



3-D Far Field Total Radiation Plot for 7.05 MHz.



The 3.55MHz & 1.92MHz plots are very similar. The “funnel” in the centre gradually disappears. In all three cases the maximum radiation is at an angle of about 30 degrees to the ground.(see results below)

MMANA-GAL MODEL RESULTS

MMANA-GAL C:\Program Files\MMANA-GAL\ANTVHF multibands\Trap\Inverted L 1,8_3,5_7.maa

File Edit Service Tools Help

Geometry View Calculate Far field plots

Multi-Band TRAP-DP (160m,80m,40m)

Freq 7.050 MHz

Ground
 Free space
 Perfect
 Real Ground setup

Add height 0.00 m

Material Cu wire

WAVE LENGTH = 42.524 (m)
 TOTAL PULSE = 174
 THE LOWEST POINT OF ANTENNA = 0.000 M
 FILL MATRIX...
 FACTOR MATRIX...
 PULSE U (V) I (mA) Z (Ohm) SWR
 w1b -1.00-j0.00 -22.10-j11.84 35.15-j18.83 1.76
 CURRENT DATA...
 FAR FIELD ...
 NO FATAL ERROR(S)
 0.41 sec

No.	F (MHz)	R (Ohm)	jX (Ohm)	SWR 50	Gh dBd	Ga dBi	F/B dB	Elev.	Ground	Add H.	Polar.
10	7.05	35.15	-18.83	1.76	---	-0.04	-0.18	26.5	Real	0.0	vert.
9	3.55	22.72	19.05	2.59	---	0.53	-0.42	27.2	Real	0.0	vert.
8	1.91	10.77	2.208	4.65	---	0.24	-0.75	27.2	Real	0.0	vert.

GOCSK

The model only provides an indication of the expected performance of this antenna. In practice better SWR results & hence improved efficiencies can be obtained.

160–80–40m END FED ANTENNA - G0CSK



The traps for this antenna can also be made using coils and capacitors. E A Rule G3FEW (RAOTA 1487) who is a fellow member published this information as part of his trapped Multi-band antenna in the RAOTA journal issue OTN89 and also made the article available on the web as a PDF.

<http://www.norfolkamateurradio.org/pdf/talks/G3FEW%20Multiband%20Antenna.pdf>.

The table below provides details of how to make the coils. A 40mm diameter plastic tube is used for the former, and a 100pf high voltage capacitor to tune the trap for each of the HF bands.

He also suggests a way of making a capacitor from double sided glass fibre copper laminate board (PCB).. For high powers in excess of 100 watts the high voltage capacitor should be used, because the epoxy resin used for the PCB material may become over stressed and start to breakdown. If the capacitor's value falls between 90pf to 110pf the antenna Wires length will need altering..

G8ODE RSARS 1691 RAOTA 2004

Alternate Method for making Traps

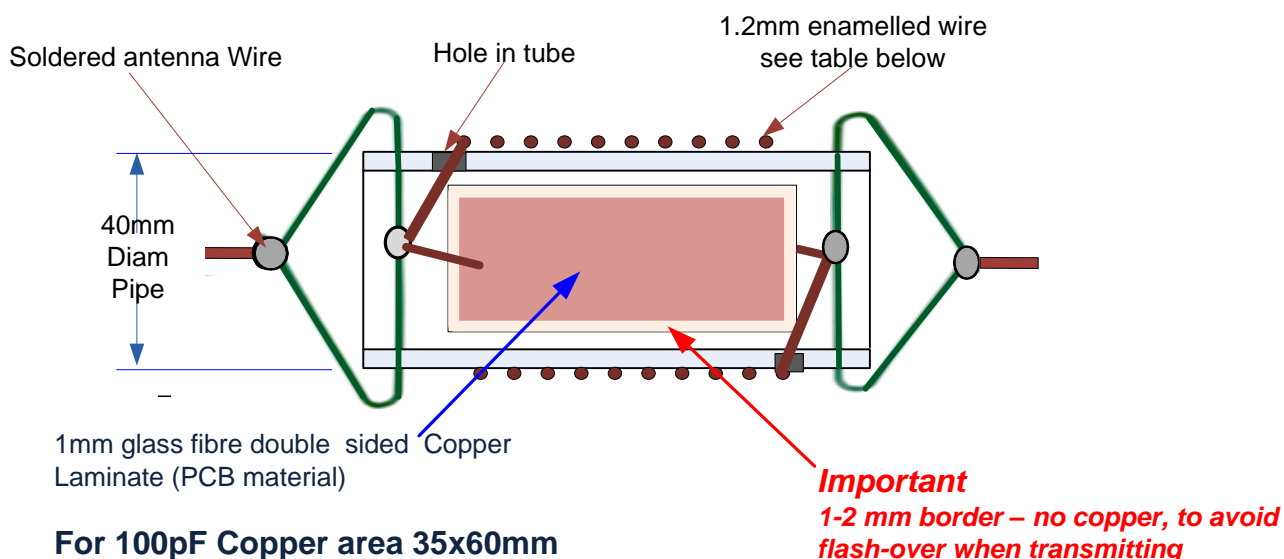


Table 1. LC Trap winding details. -- E A Rule G3FEW (RAOTA 1487)

Trap	Freq MHz	Turns	uH	Capacitor pF
10m	28.4	2.5	0.312	100
12m	24.94	3	0.407	100
15m	21.225	3.5	0.562	100
17m	18.118	4	0.771	100
20m	14.2	5	1.256	100
30m	10.15	8	2.458	100
40m	7.1	10	5.024	100