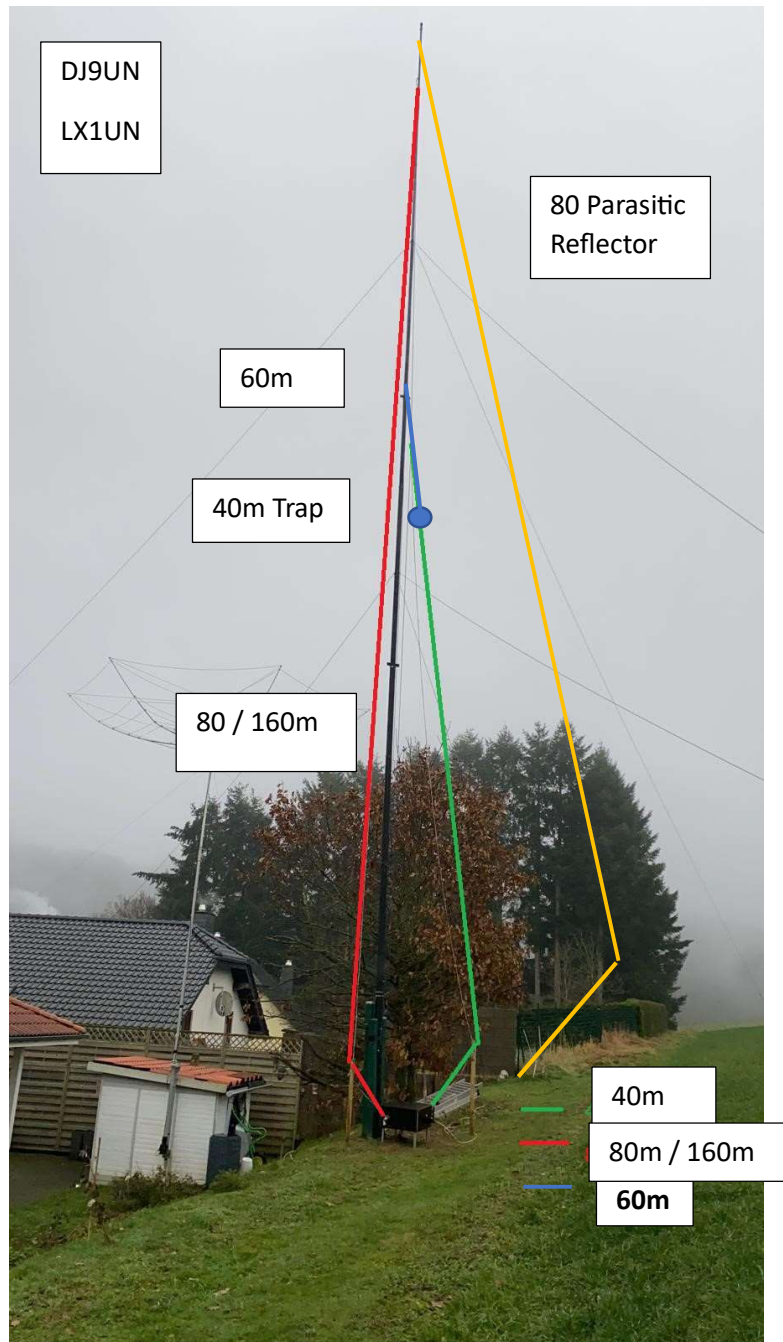


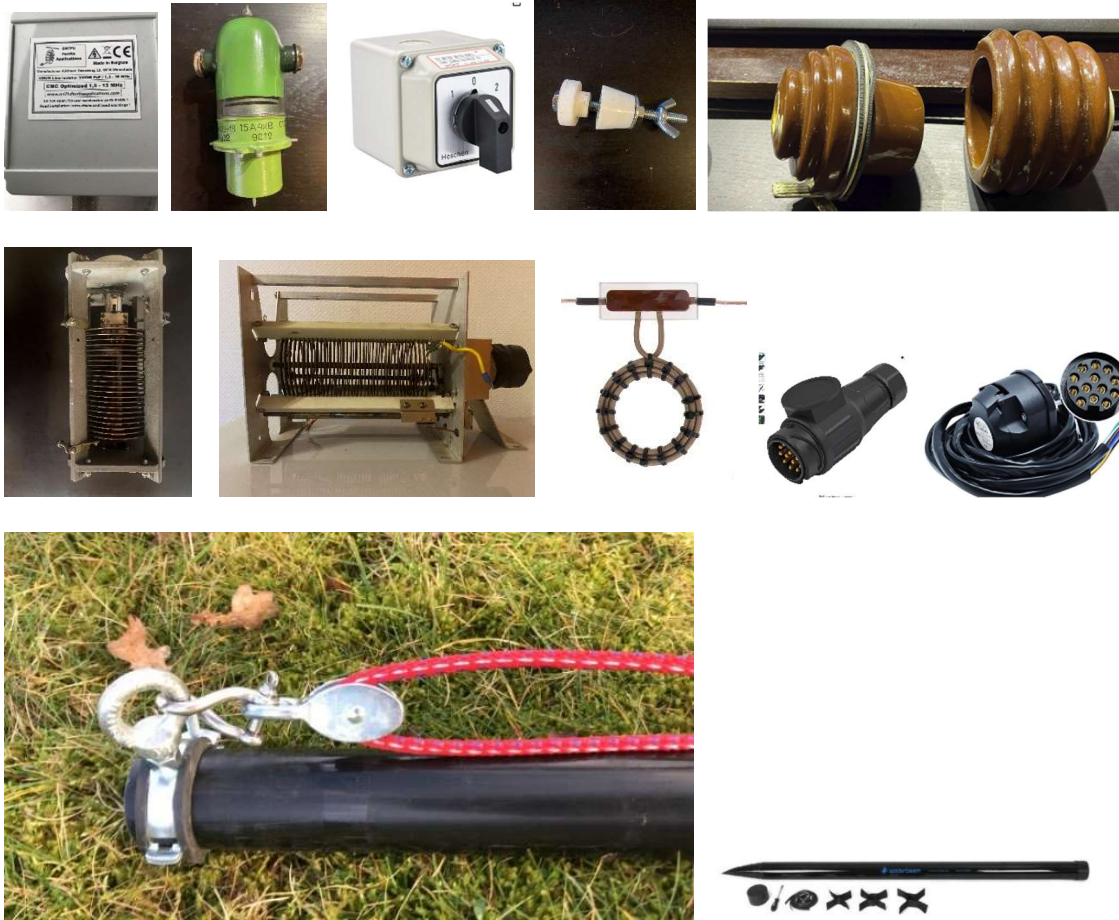
Low Band Vertical Antenna 40 60 80 160 DJ9UN

15/12/23

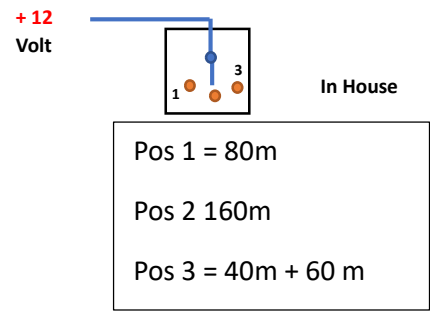
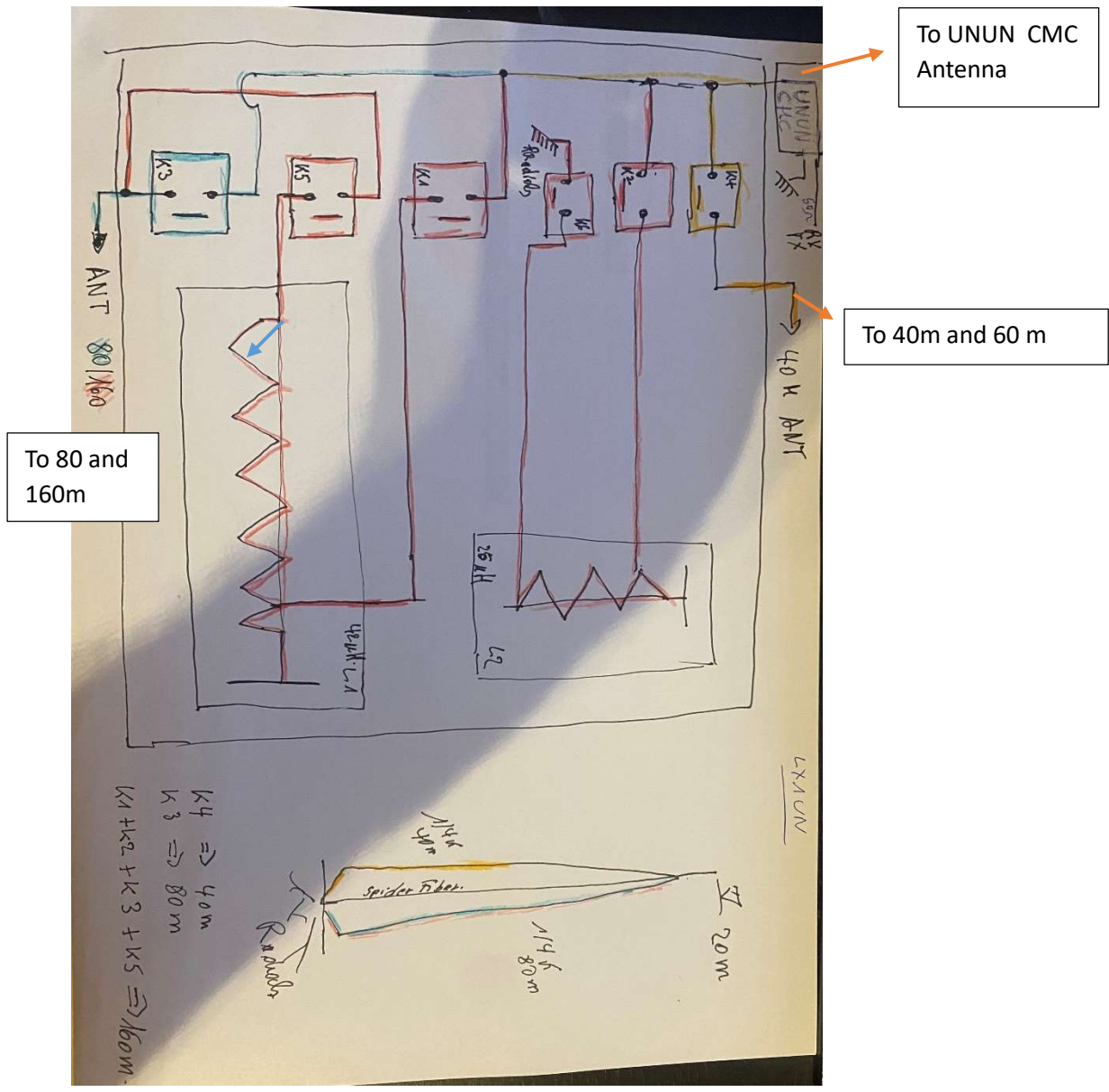


Material List

- 1 Spider Fibre Mast 26 m Version (use of 20m only)
- 1 Pipe clamp with rubber and eye bolt
- 1 Twisted anchor shackle
- 1 Eye pulley
- 50 m rope for the pulley
- A roll of guy rope
- Antenna wire 2x2,5mm
- CMC UNUN Line insulator from ON7FU
- Connectors, 10mm² cable for internal connections
- 25 uH (flea market)
- 42 uH (flea market)
- 6 [Vacuum Relays](#) (Ebay Not from Ukraine !!! from Bulgaria only)
- Radials 200 from 10m, 20m and 40m long
- Porcelain Isolators 3 small (Amazon) and 1 big isolator (flea market)
- Cam Switch 3 Positions (Amazon)
- 40m Kelemen Coax Trap
- 2 DC 12 V Motors with DC Motor Controller (Amazon)
- 13 pin trailer socket set (Amazon)

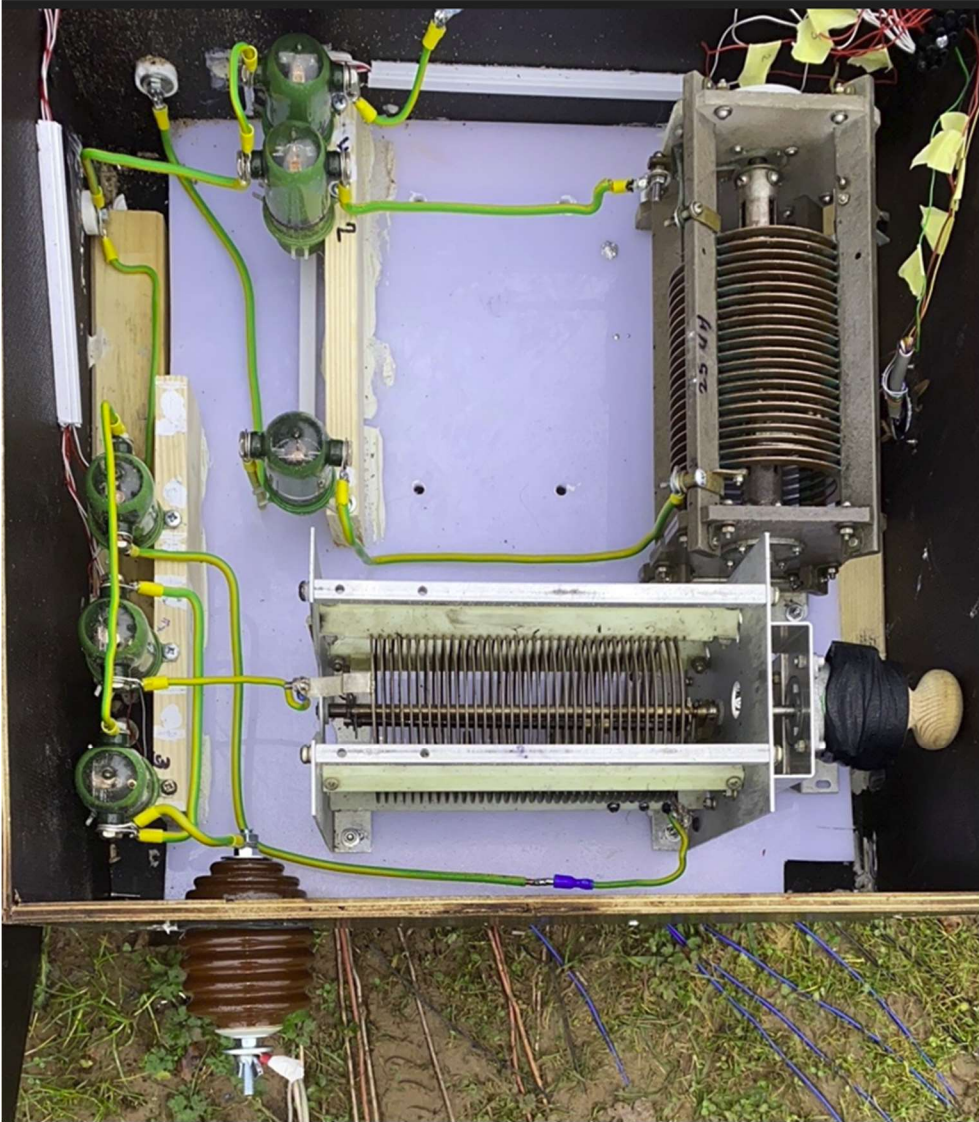


Wiring diagram

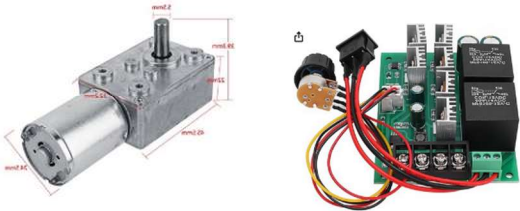


- P 1** 80m operation R3 closed R1, R2, R4, R 5 and R6 open
- P 2** 160m operation R1, R2, R5 and R6 closed, R3 and R4 open
- P 3** 40m and 60m operation: R4 closed R1, R2, R4, R 5 and R6 open

Temporary wooden Test box Tuner assembly



The 2 coils will be equipped with DC Motors and DC Motor Controller Brush Speed Control Adjustable CW CCW (Amazon) (Thank you Roland OE2ROL for the Idea)

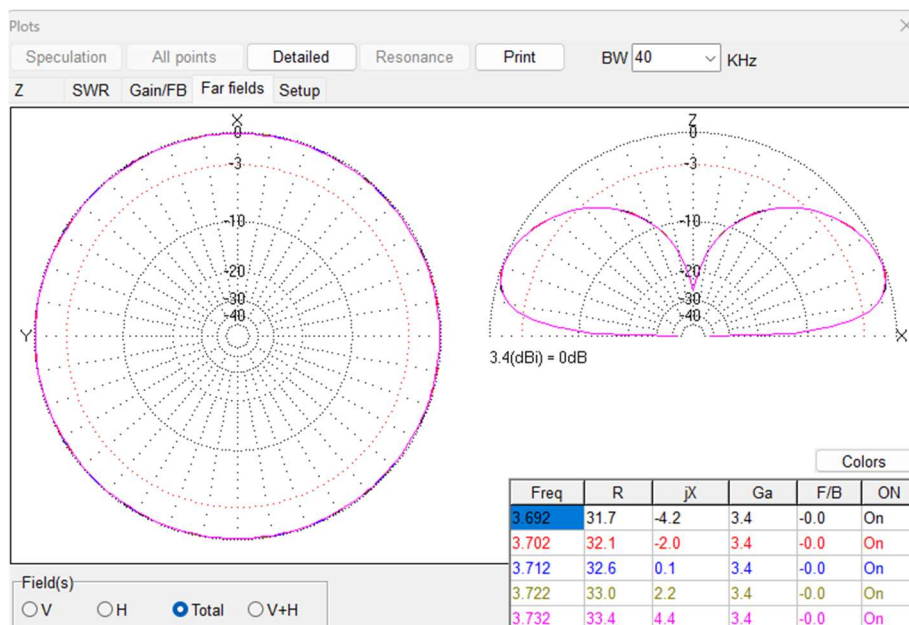
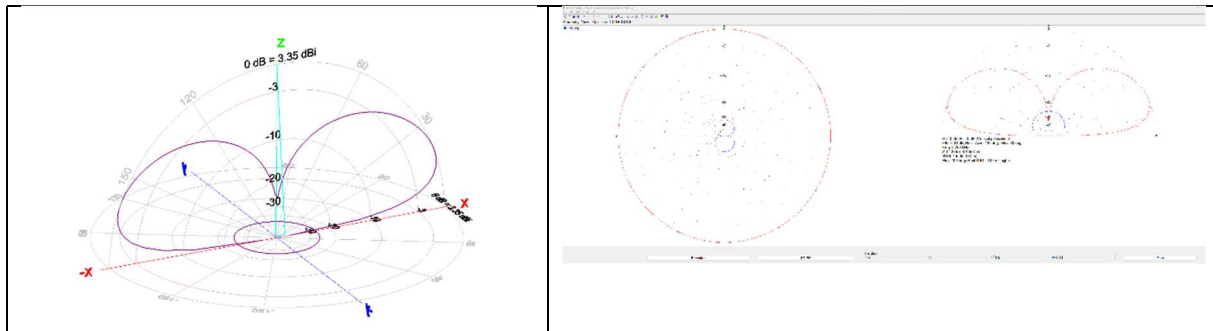


Test results measured at the feed point of the Antenna

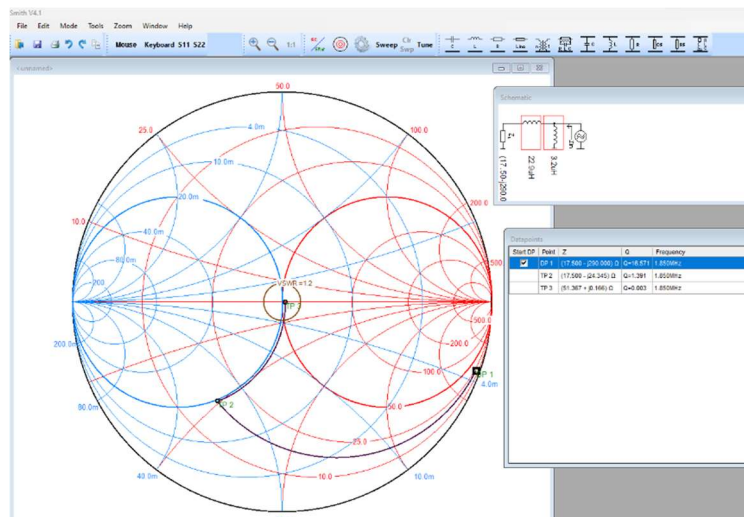
- 1) 80 m Band Impedance against radial system at the feed point of the antenna (3.750 KHz)



Conclusion: 37 Ω Antenna and very low losses about 3 Ω to ground.



- 2) 160m Band Impedance against radial system at the feed point of the antenna (1.850 kHz) **without** tuner and CMC UNUN

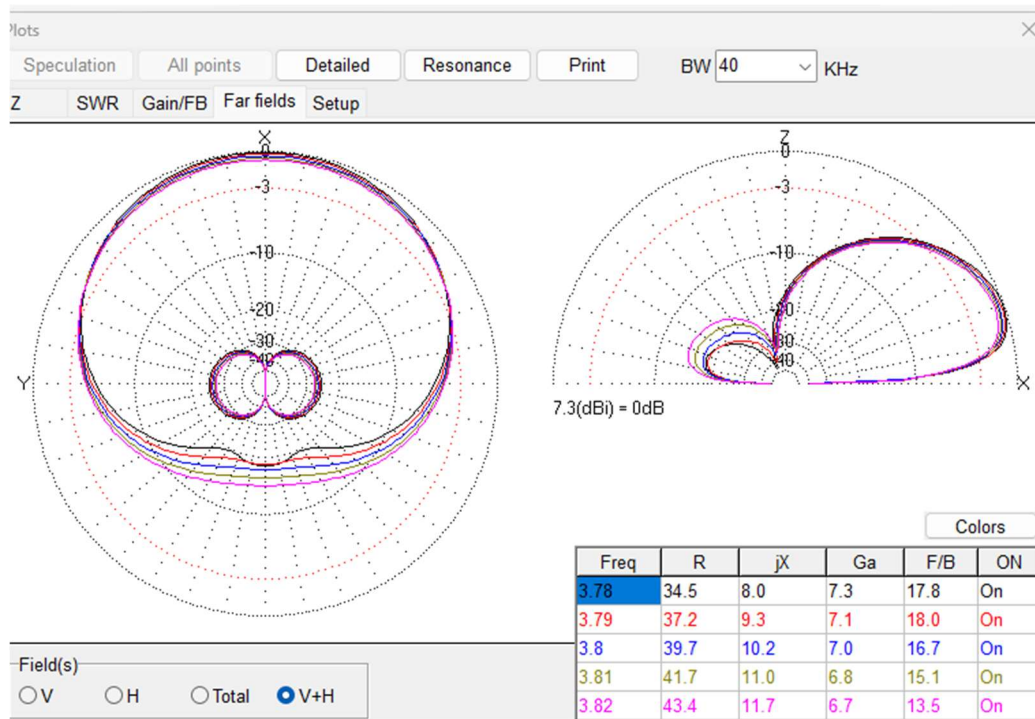
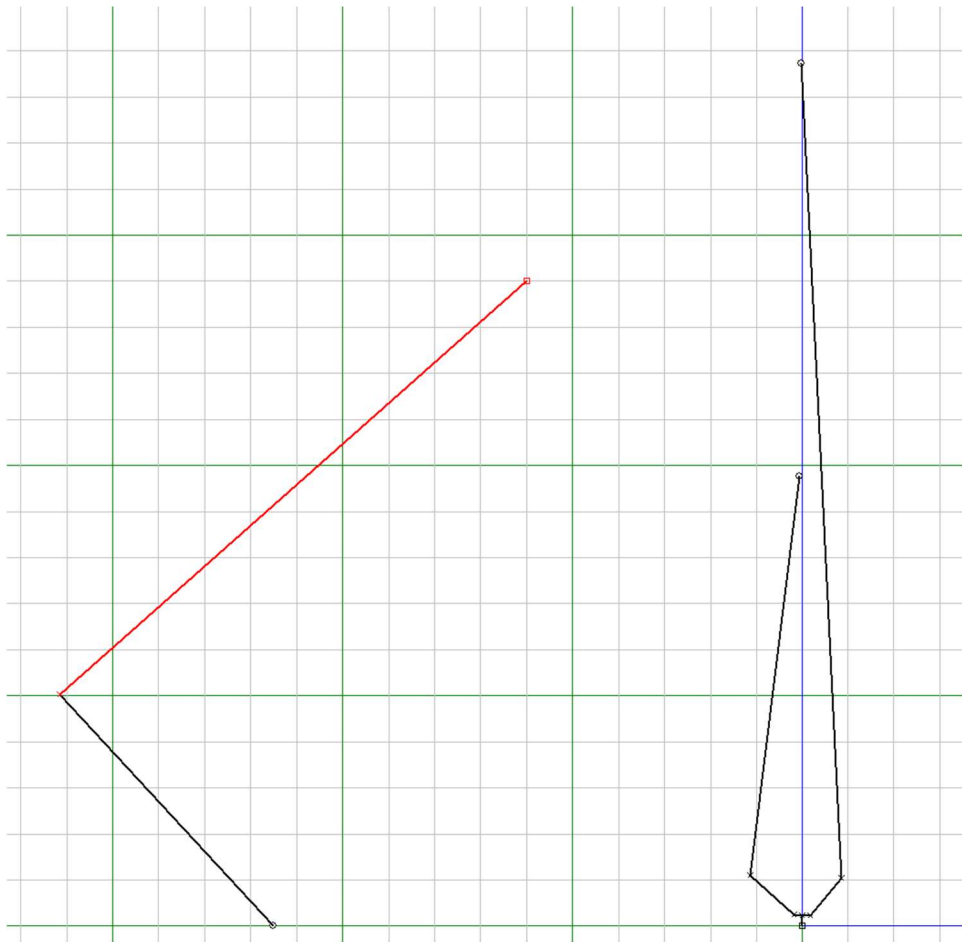


Thanks Thomas for your help DF1TB

- 3) Impedance against radial system at the feed point of the antenna after matching with the tuner and CMC UNUN



Parasitic 1/4 wave reflector for 80m



80 Vertical with Reflector

Auto segmentation: DIM1 200 DIM2 10 Freq 1.85 MHz

Wires 9 lamda Keep connect

No.	X1(m)	Y1(m)	Z1(m)	X2(m)	Y2(m)	Z2(m)	R(mm)	Seg.
1	-5.0	0.0	14.0	-16.1533	0.0	-5.02686	0.89	-1
2	-16.1533	0.0	5.02686	-11.5	0.0	0.0	0.89	-1
3	0.0	0.0	-0.01919	-0.01919	0.0	0.23386	1.26	-1
4	-1.13397	0.0	0.08947	-0.08947	0.0	9.76208	1.26	-1
5	-0.19421	0.0	0.24898	-1.13397	0.0	1.09847	1.26	-1
6	-0.01919	0.0	0.23386	-0.19421	0.0	0.24898	1.26	-1
7	0.01919	0.0	0.23386	0.19421	0.0	0.24898	1.26	-1
8	0.19421	0.0	0.23386	0.01919	0.0	0.24898	1.26	-1
9	0.89	0.0	1.048	-0.01919	0.0	1873608	0.89	-1
next								

Sources 1 Use loads

Loads 2 (L - uH - C - pF - R / X - Ohm)

No.	Type	LC	LR/AO	C/X/B0	O/A1	F/B1
1	w3b		38	0	0.0	
2	w3b	R+X	33	0		
next						

80 Vertical with Reflector

Wave Length = 41.929 (m)

TOTAL PULSE = 66

POINT OF ANTENNA = 0.000 M

PULSE (V) = 1 (mA)

PULSE (V) = 1 (mA)

POWER = (0.0294 - j0.00528) WTT

SWR = 1.55

Z (Ohm) = 33.00-j5.83

NO FATAL ERROR(S)

0.12 sec

Ground

Free space

Perfect

Real

Ground setup

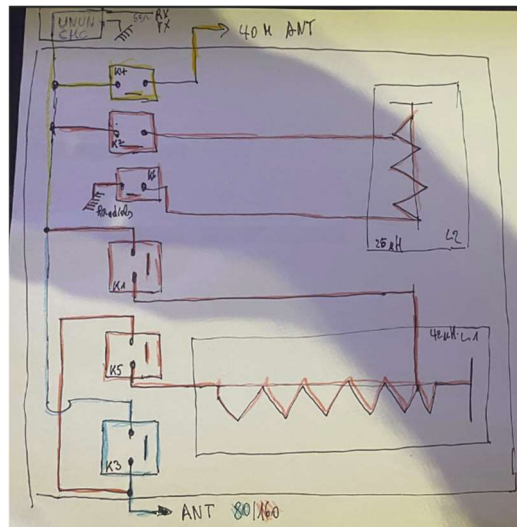
Add height 0.00 m

Material Cu wire

No.	F (MHz)	R (Ohm)	X (Ohm)	SWR.50	Gh dBd	Ga dBd	FIB dB	Elev.	Ground	Add H.	Polar.
3	7.15	33.0	-5.832	1.55	---	3.64	0.54	20.9	Real	0.0	vert.
2	3.79	37.24	9.286	1.44	---	7.12	18.02	19.1	Real	0.0	vert.
1	1.85	36.76	12.68	1.53	---	-6.08	-0.07	17.0	Real	0.0	vert.

Lesson learned during building and testing

- 1) Needed to add 2 relays K5 and K6 to completely disconnect the coils because while tuning for 160m the resonance and SWR on 40 and 80 acted and changed.



- 2) Needed to change the isolator at the entrance of the box for 80m / 160m. While tuning 160m with the $\frac{1}{4}$ wavelength on 80 wires with 500 Watt extremely high voltage burned me the small isolators and the wooden box outside only. (Box was wet outside due to rain)



