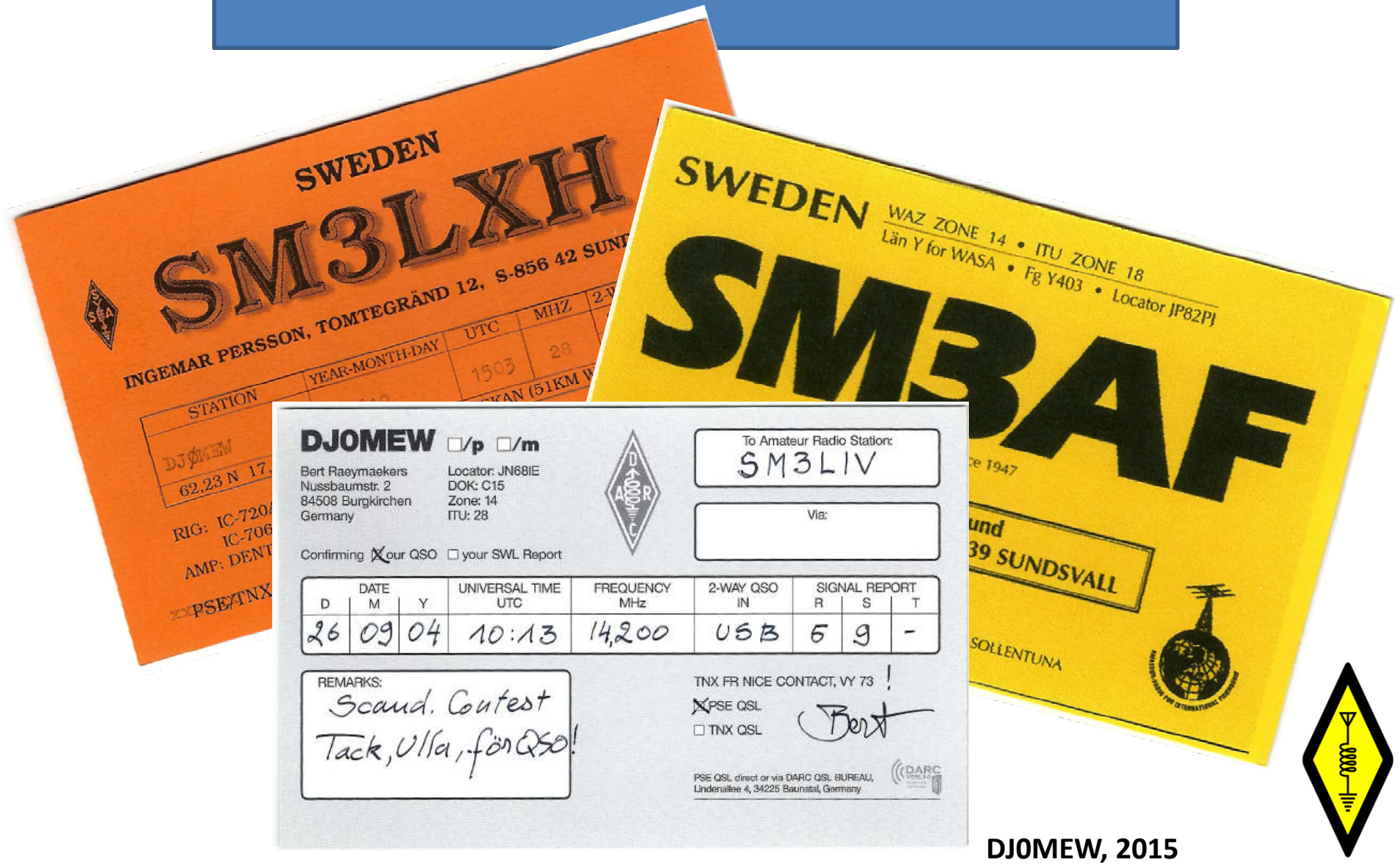
Tack för inbjudan!



DJ0MEW, 2015

DJ0MEW – a short presentation

DJ0MEW, 2015

DJ0MEW, 2015

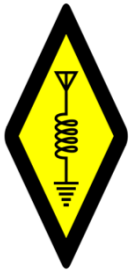

DJ0MEW
DJ0MEW
DJ0MEW
1406000
MAGIC


A GP or a dipole have
an impedance of abt 50-60Ω,
but most other wires have
(X + iY)Ω

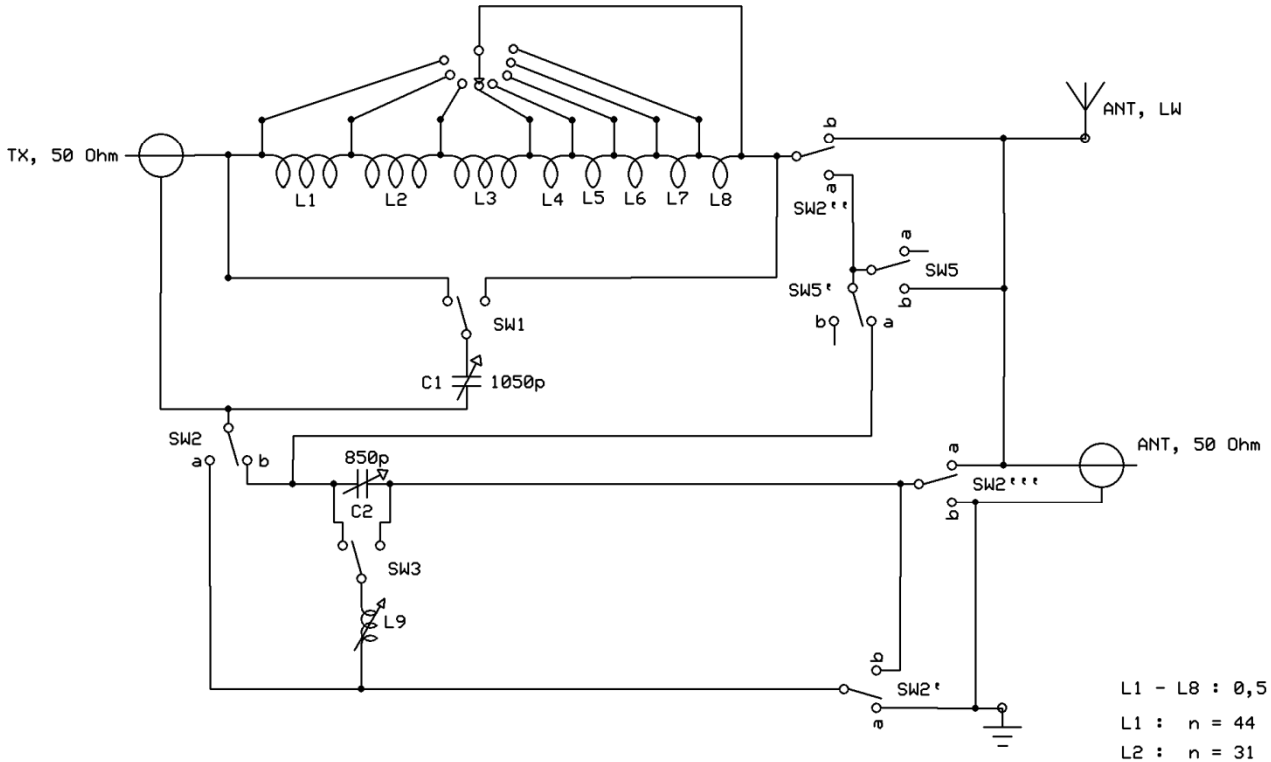
QRP – Antenna Tuner

Goals for the design of an antenna tuner:

- Flexible tuner, so that alsmost any LC-geometry can be chosen
- Suitable for a FT-817, so max PWR < 10W
- Suitable for an aluminium case (for our holidays in Sweden!)
- Tunable ´mass wire´ (counter weight cable during outdoor operation)



DJ0MEW, 2015



L1 - L8 : 0,5 mm Cu, T-50/2 toroid

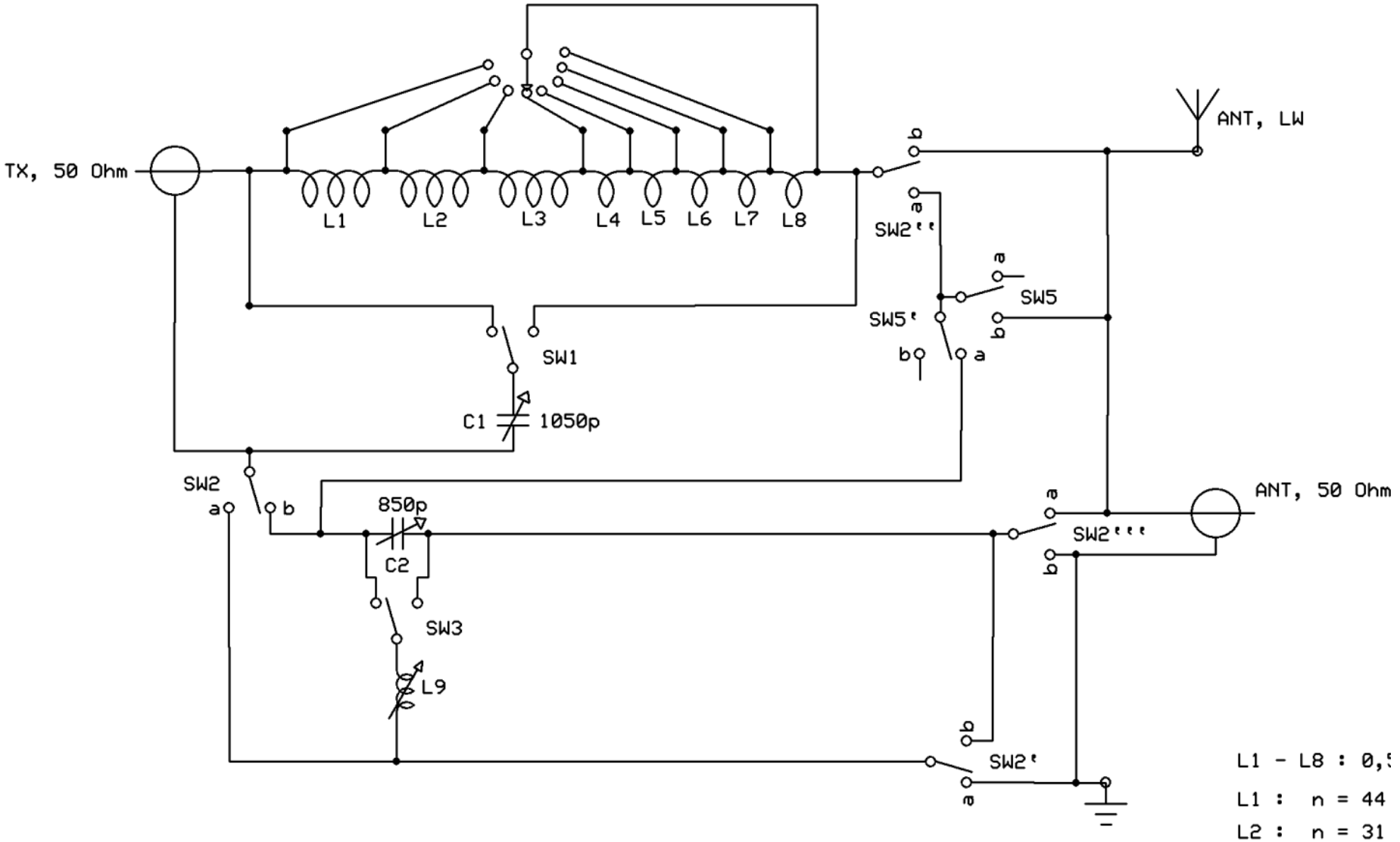
L1 :	n = 44	9,4 uH
L2 :	n = 31	4,6 uH
L3 :	n = 27	3,5 uH
L4 :	n = 18	1,6 uH
L5 :	n = 13	0,8 uH
L6 :	n = 9	0,4 uH
L7 :	n = 6	0,2 uH
L8 :	n = 5	0,1 uH

L9 : n = 7 Diam 26mm Laenge 13mm
mit variablem Ferritkern

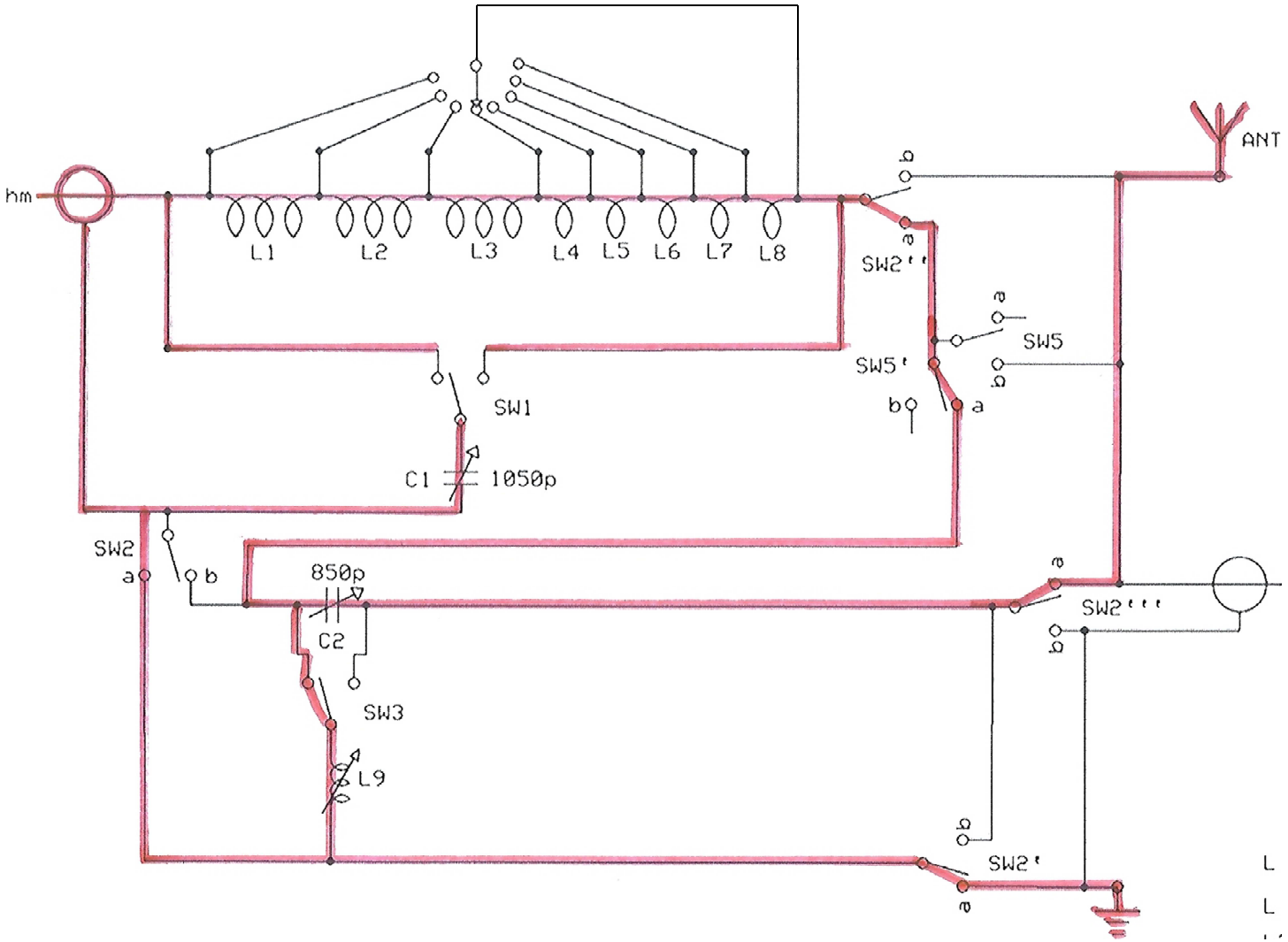
DJ0MEW

Exper. QRP Antenna Tuner

Bert Raeymaekers	Rev 1.0 26.07.2015	


TX, 50 Ohm
L1
L2
L3
L4
L5
L6
L7
L8
SW1
C1
1050p
SW2
a
b
850p
C2
SW3
L9
SW2'''
SW5
SW5'
SW2''
ANT, LW
ANT, 50 Ohm
SW2'
L1 - L8 : 0,5
L1 : n = 44
L2 : n = 31
L3 : n = 27
L4 : n = 18
L5 : n = 13
L6 : n = 9

QRP – Antenna Tuner



Zwei LC-Anpassungen hinter einander.

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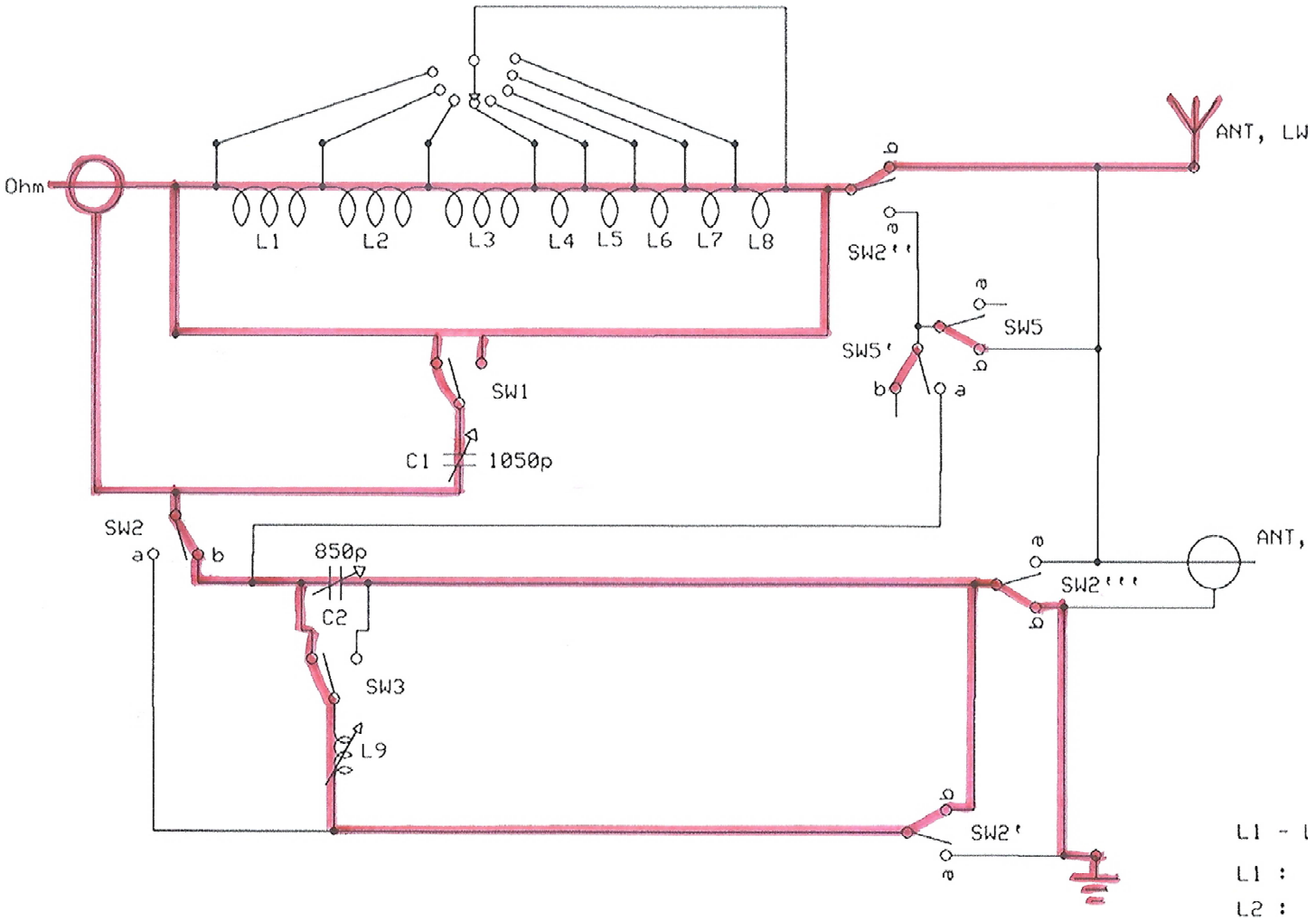
QRP – Antenna Tuner



One LC-tuner for the antenna and one
LC-tuner fot the mass system.

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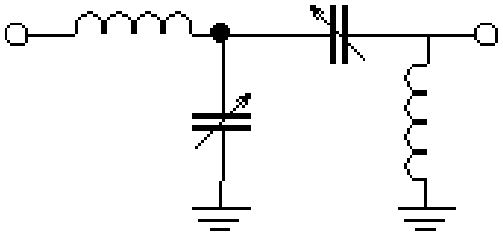
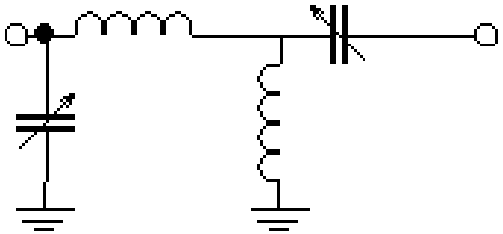
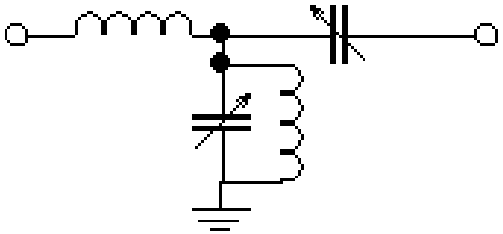
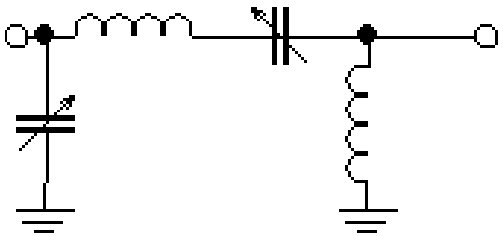
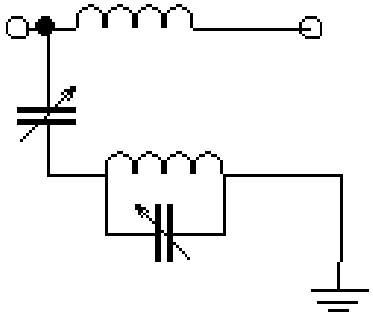
QRP – Antenna Tuner

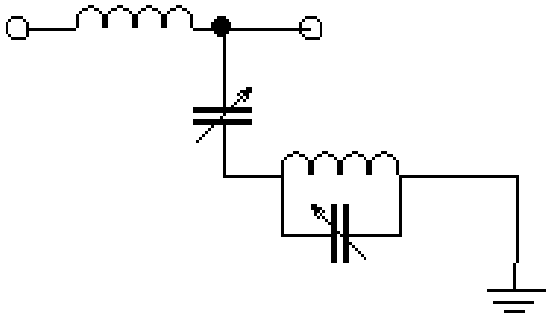












Switching possibilities

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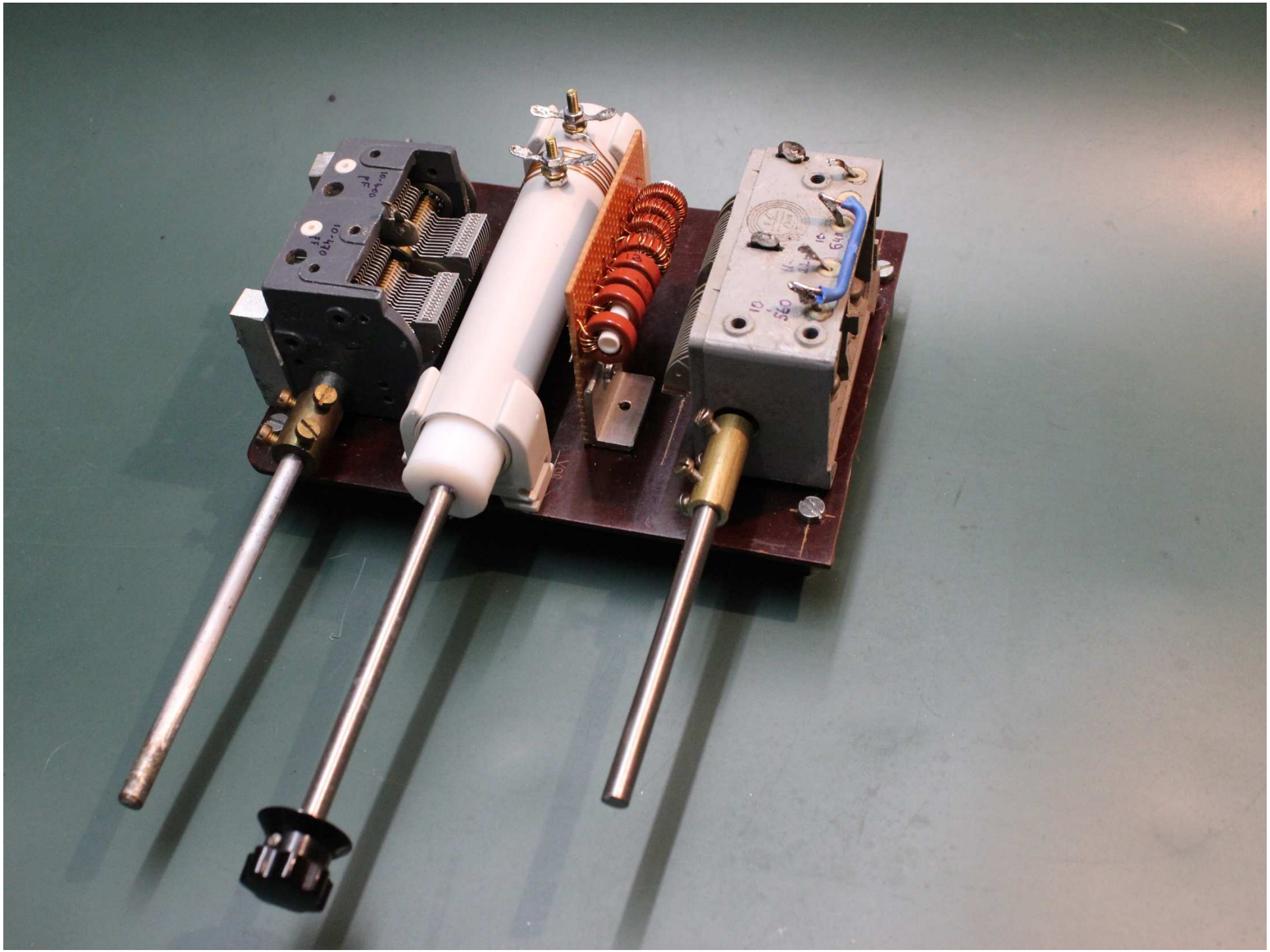
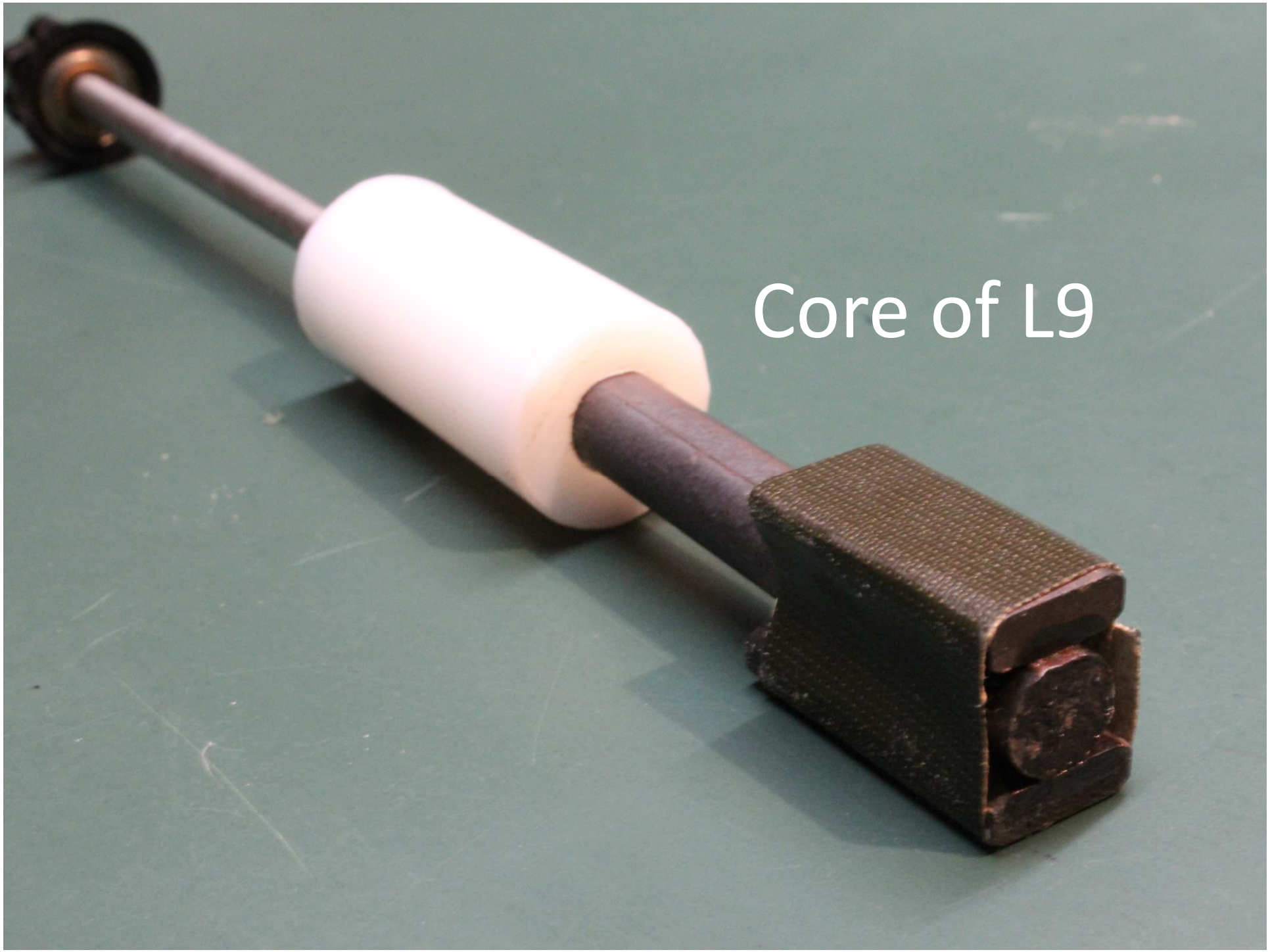
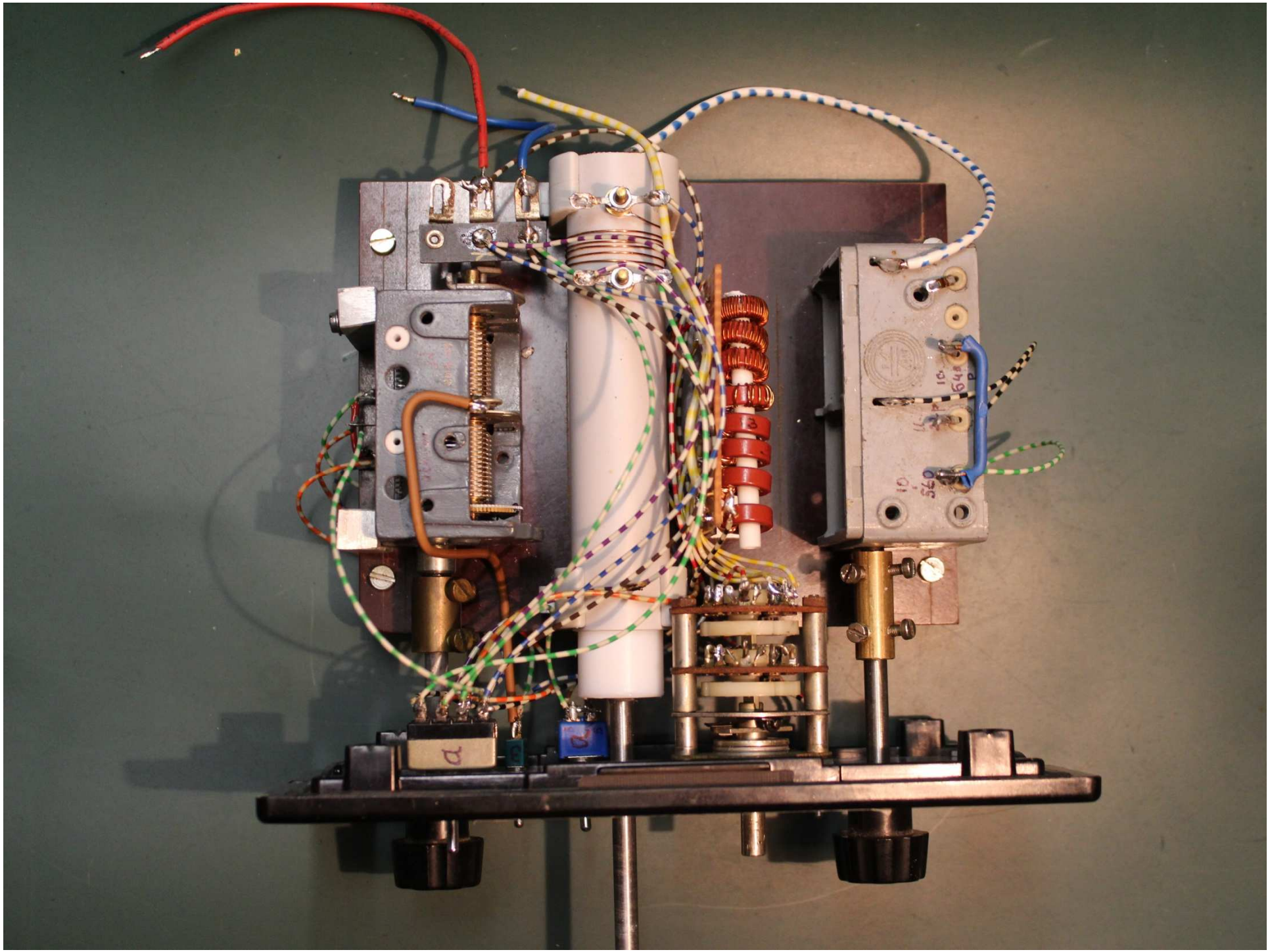
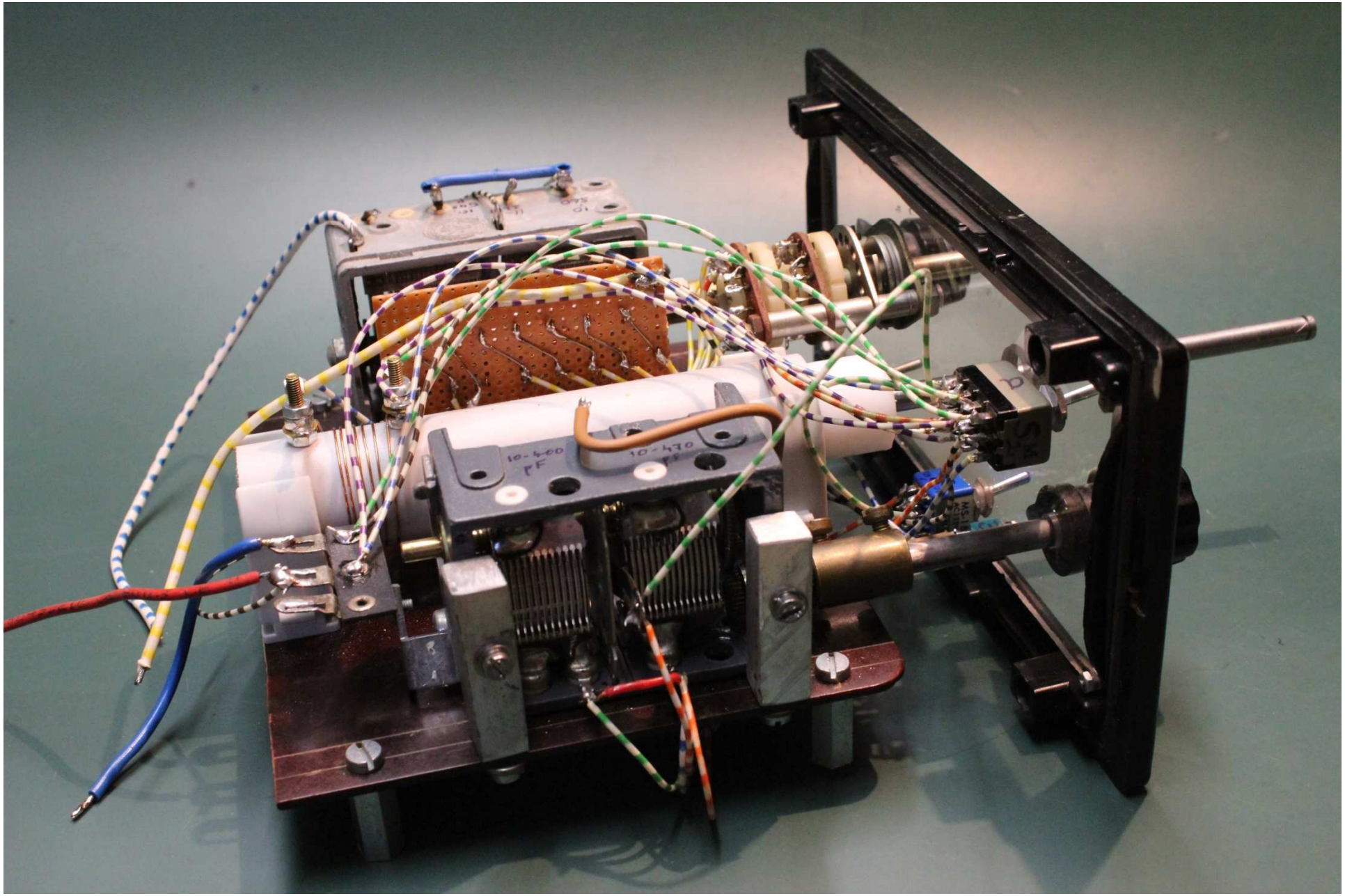


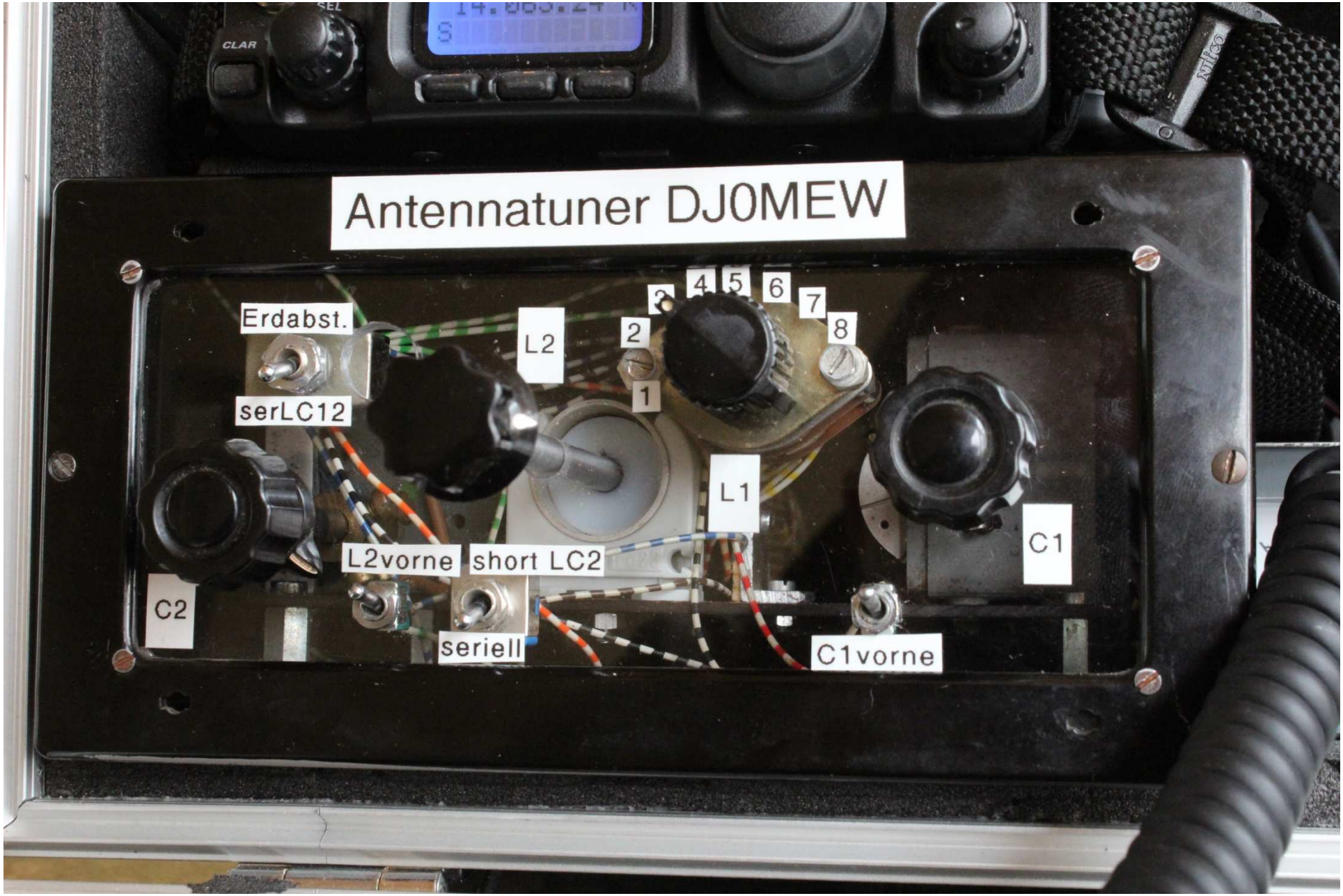

Core of L9



QRP – Antenna Tuner



QRP – Antenna Tuner




Antennatuner DJ0MEW
Erdabst.
L2
serLC12
L1
C1
L2vorne
short LC2
C2
Seriell
C1vorne
YAESU
FT-817ND
ORP-LOG
DJ0MEW RIG FT-817nd
PWR = 4W
DATE
TIME
BAND
CALL
QTH
NAME
REMARKS
22.2
10.20
15
OR4CYT
599 599
11.03
20
FØCDE
59 59
PWR 4

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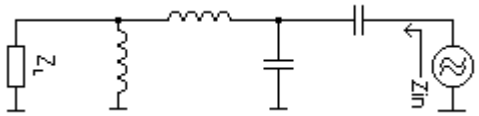
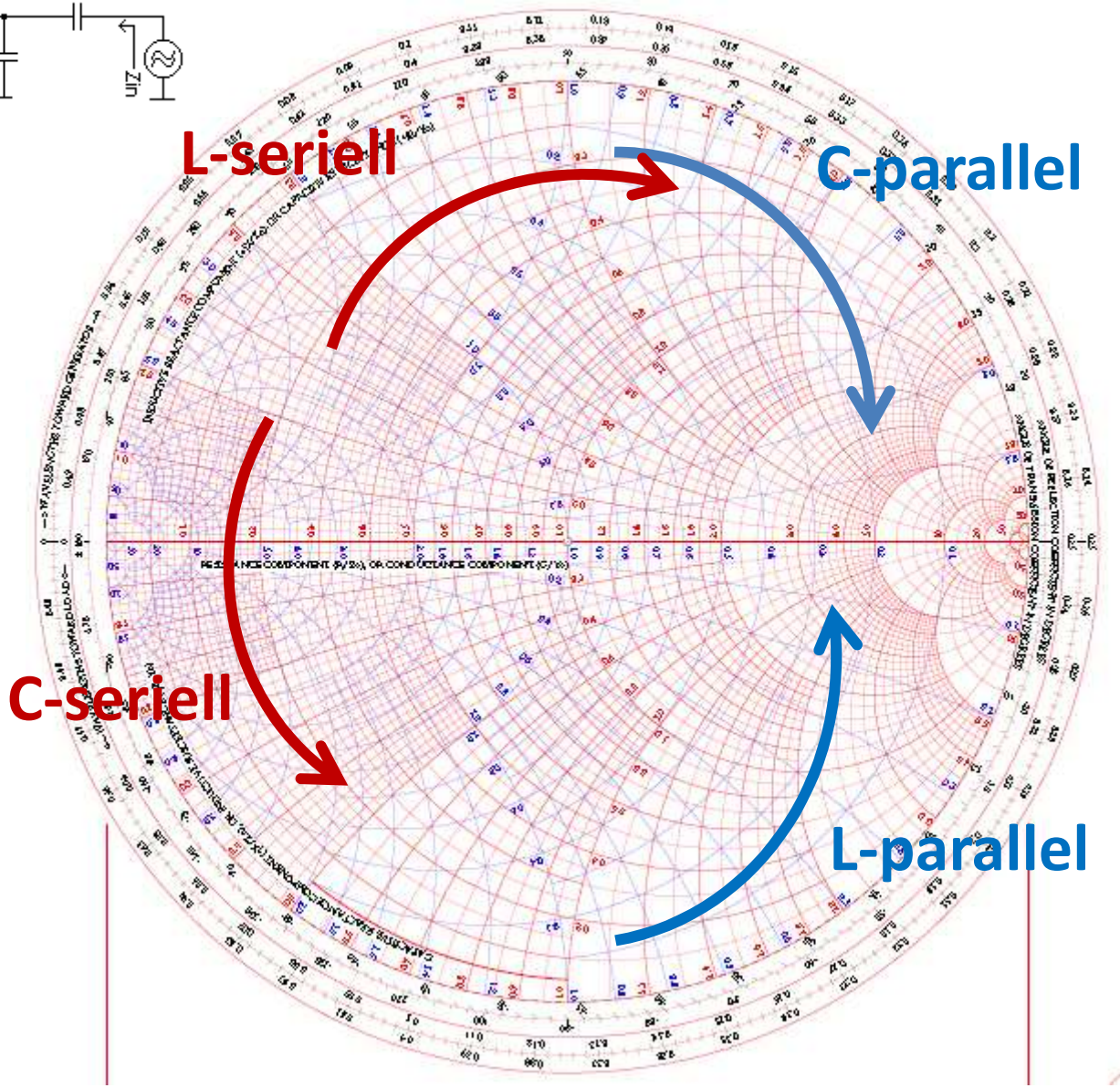
Tuning possibilities in LC networks: the Smith chart!





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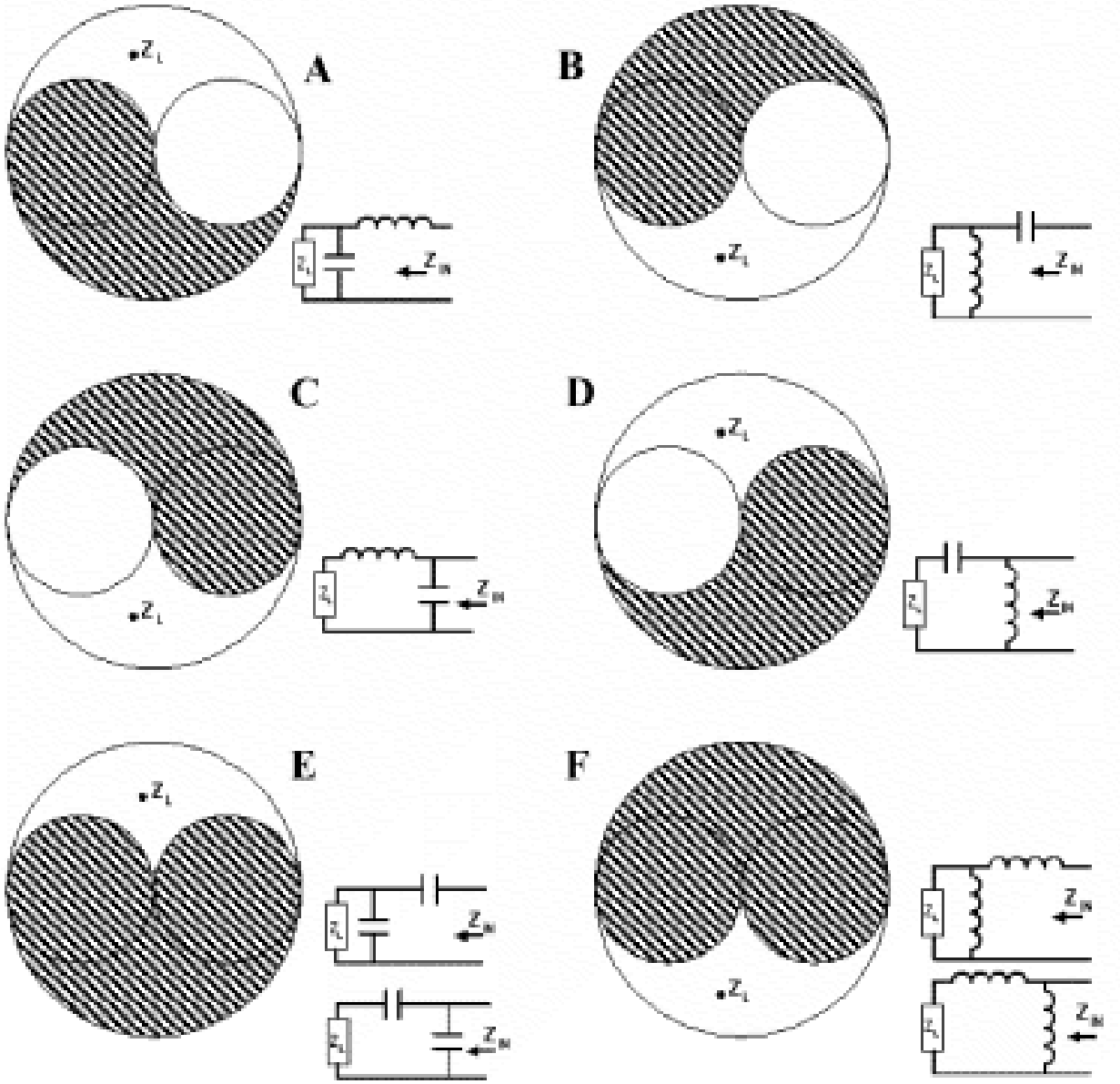
QRP – Antenna Tuner



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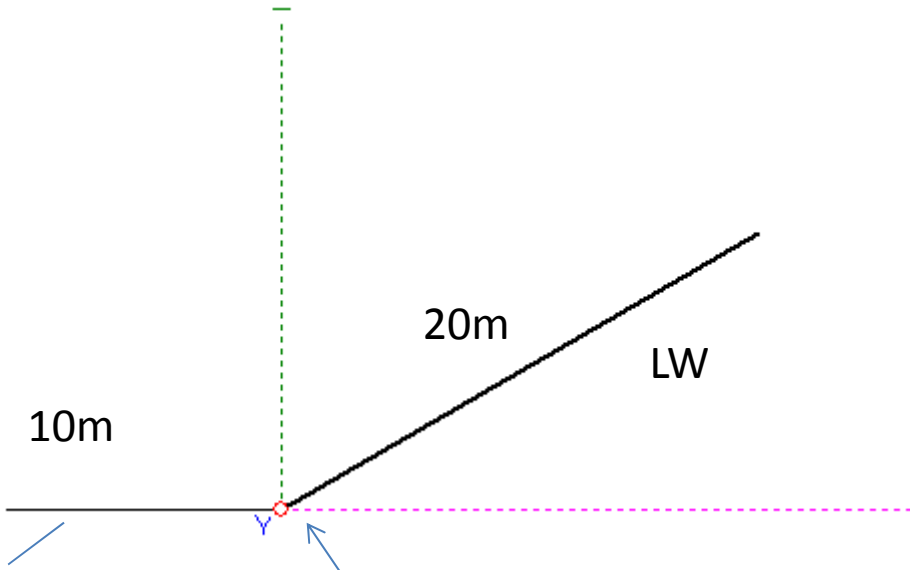
QRP – Antenna Tuner

Back to the goals: we have to tune a LW antenna, hung up at a tree
Model and calculation in MMANA:



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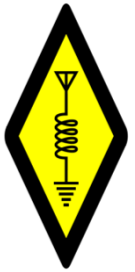
QRP – Antenna Tuner

Antenna impedances were calculated with the MANNA package.

	Frequenz [MHz]	Reeller Wirkwiderstand [Ω]	Imaginärer [Ω]
1	1,825	2,26	-590
2	3,55	10,46	-58
3	7,05	5389	-36
4	10,12	58,4	-221
5	14,05	1352	1480
6	18,08	57	-122
7	21,05	427	793
8	24,9	80	-230
9	28,2	265	532



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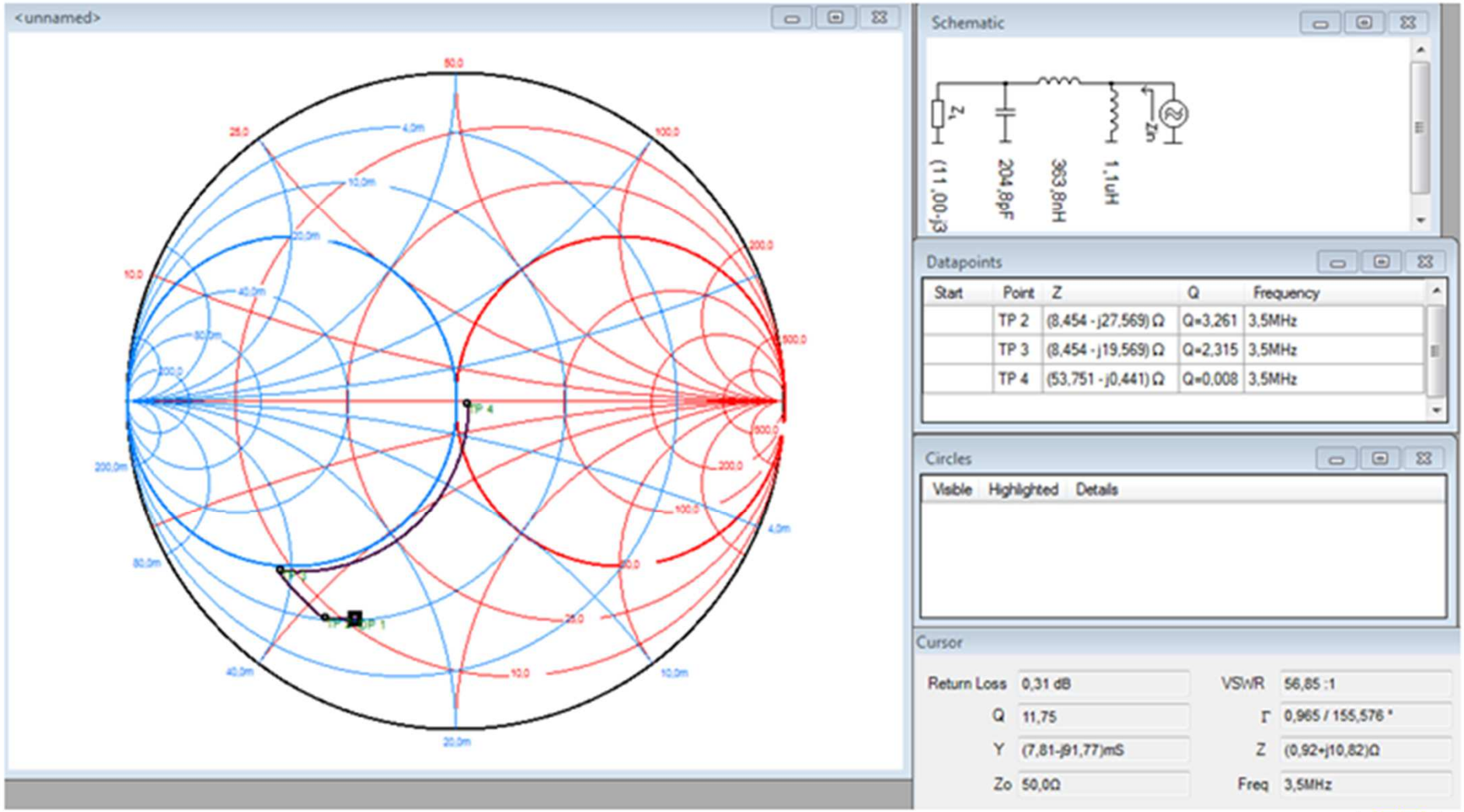
QRP – Antenna Tuner

2. Für 80m



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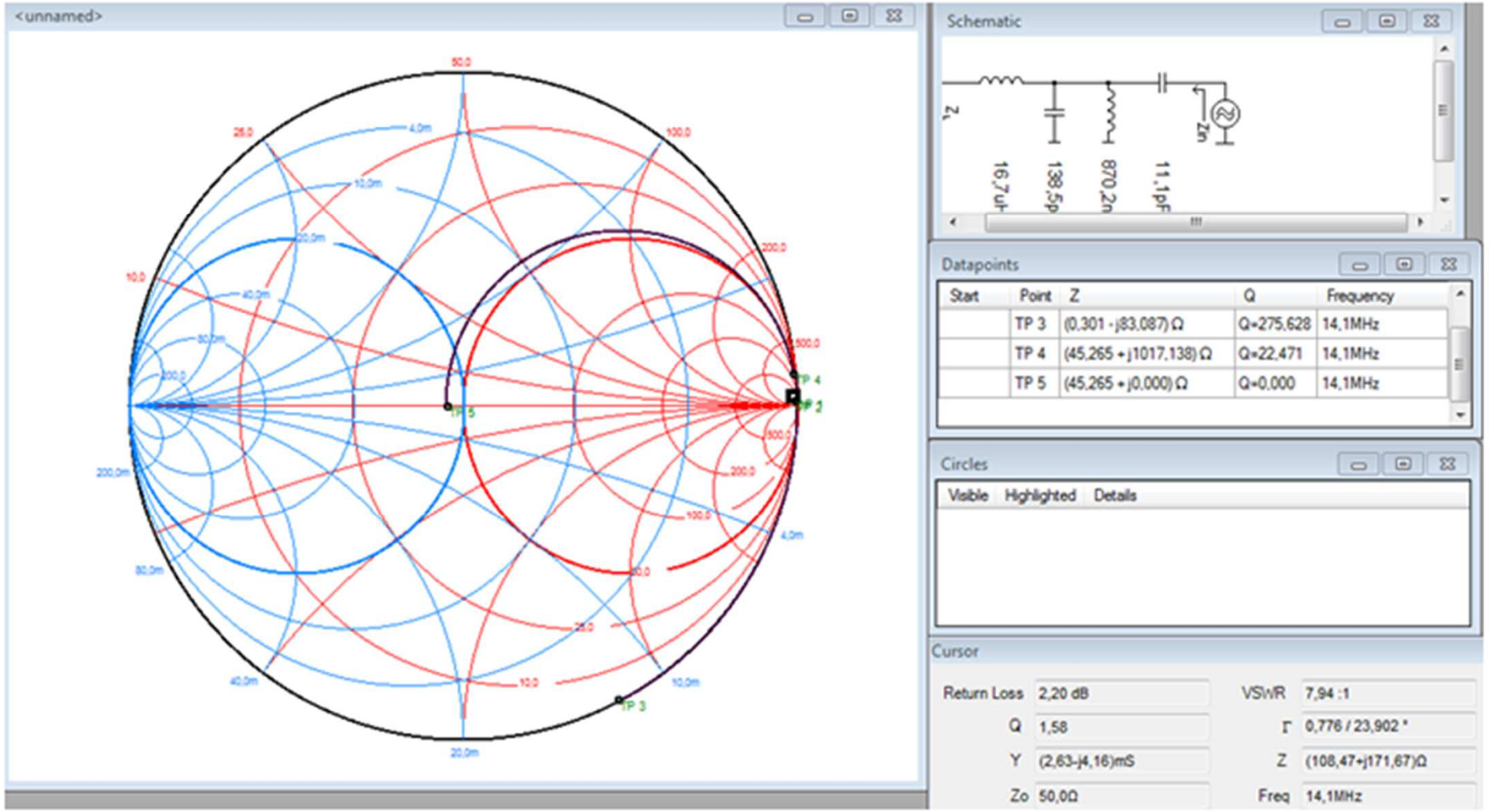
QRP – Antenna Tuner

5. Für 20 m



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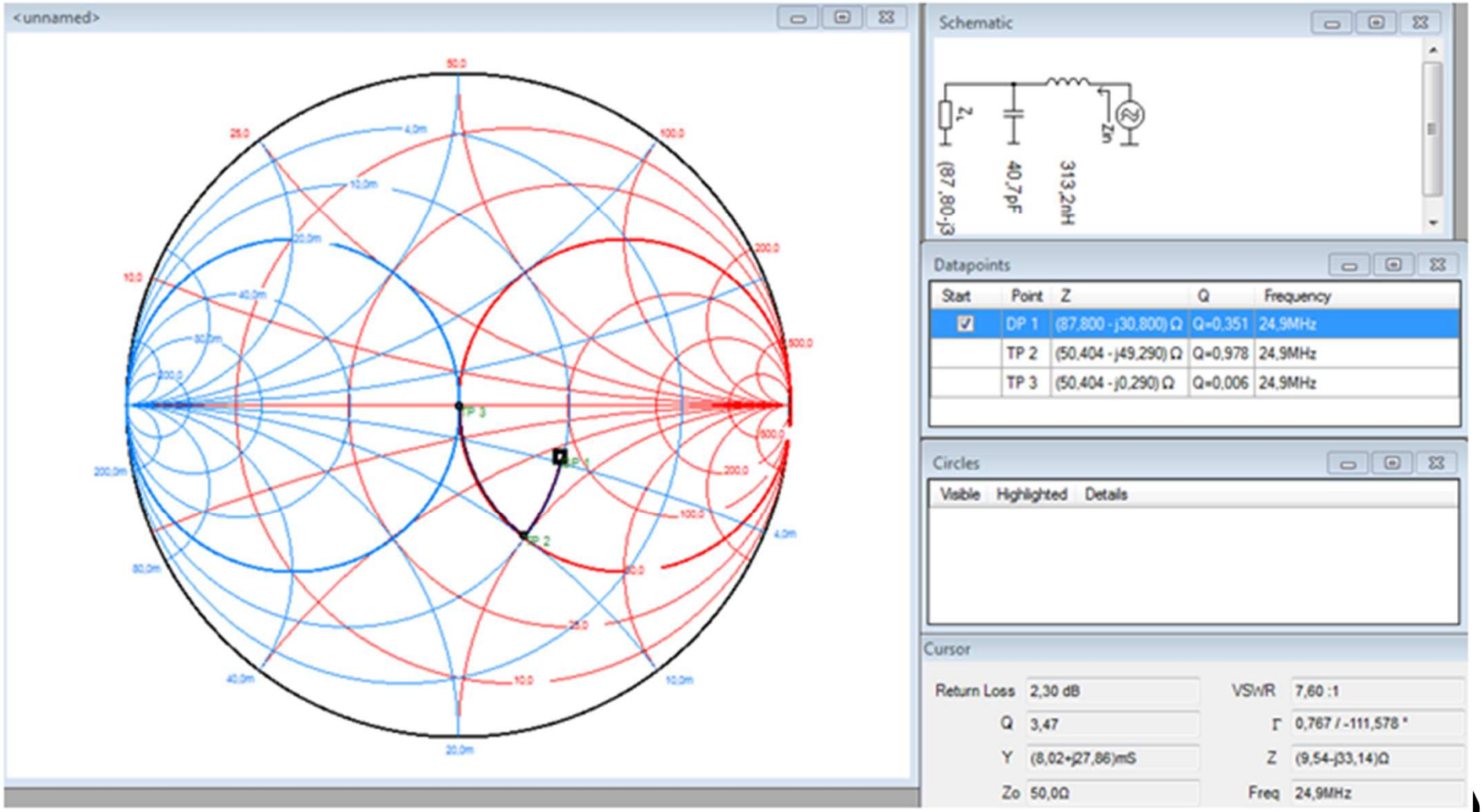
QRP – Antenna Tuner

8. Für 12 m



That´s fine, but the tuner is too large for my bag pack.
So I need another leight weight tuner for SOTA operation…

…but I found something in my scrap box…

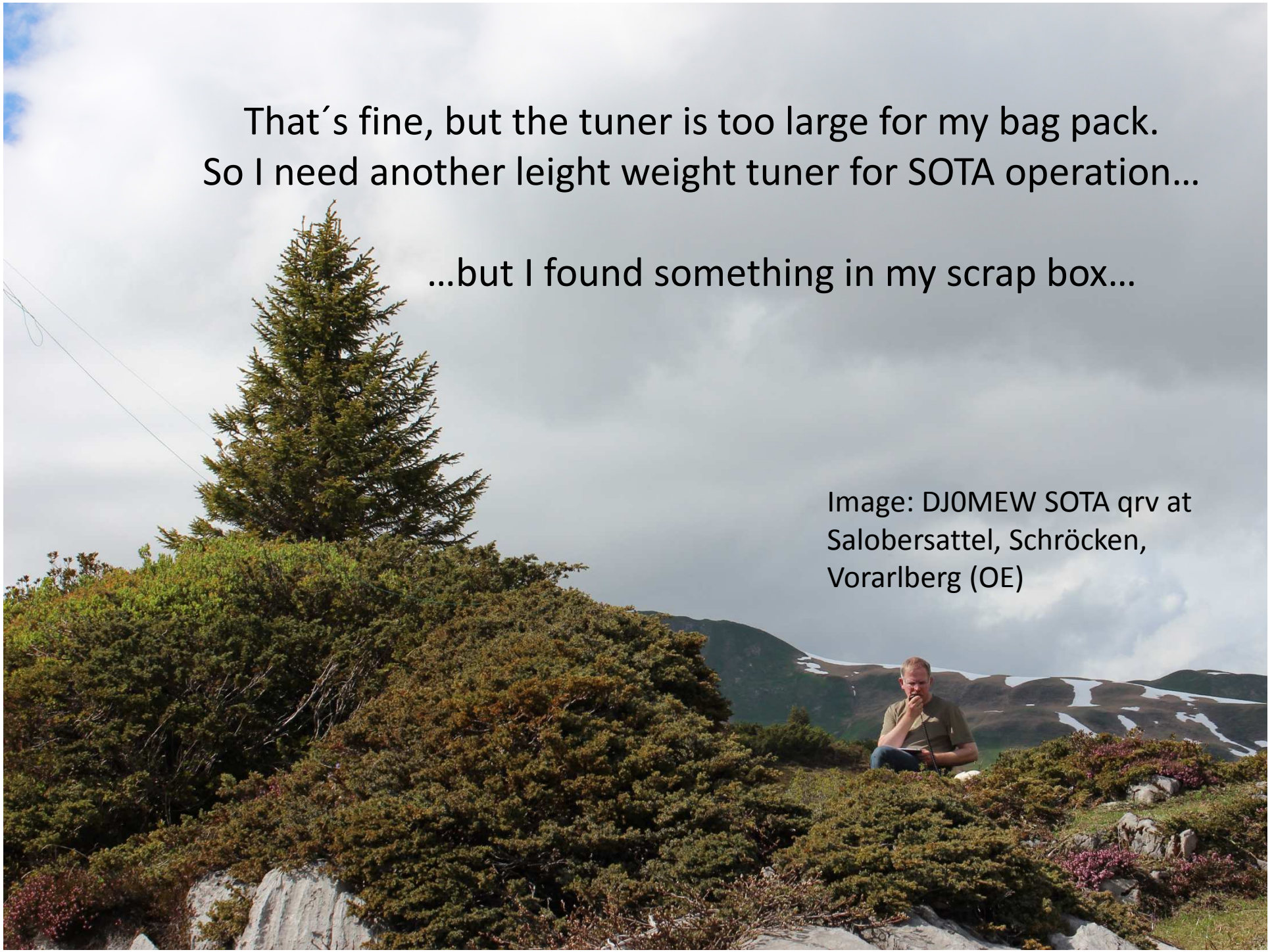
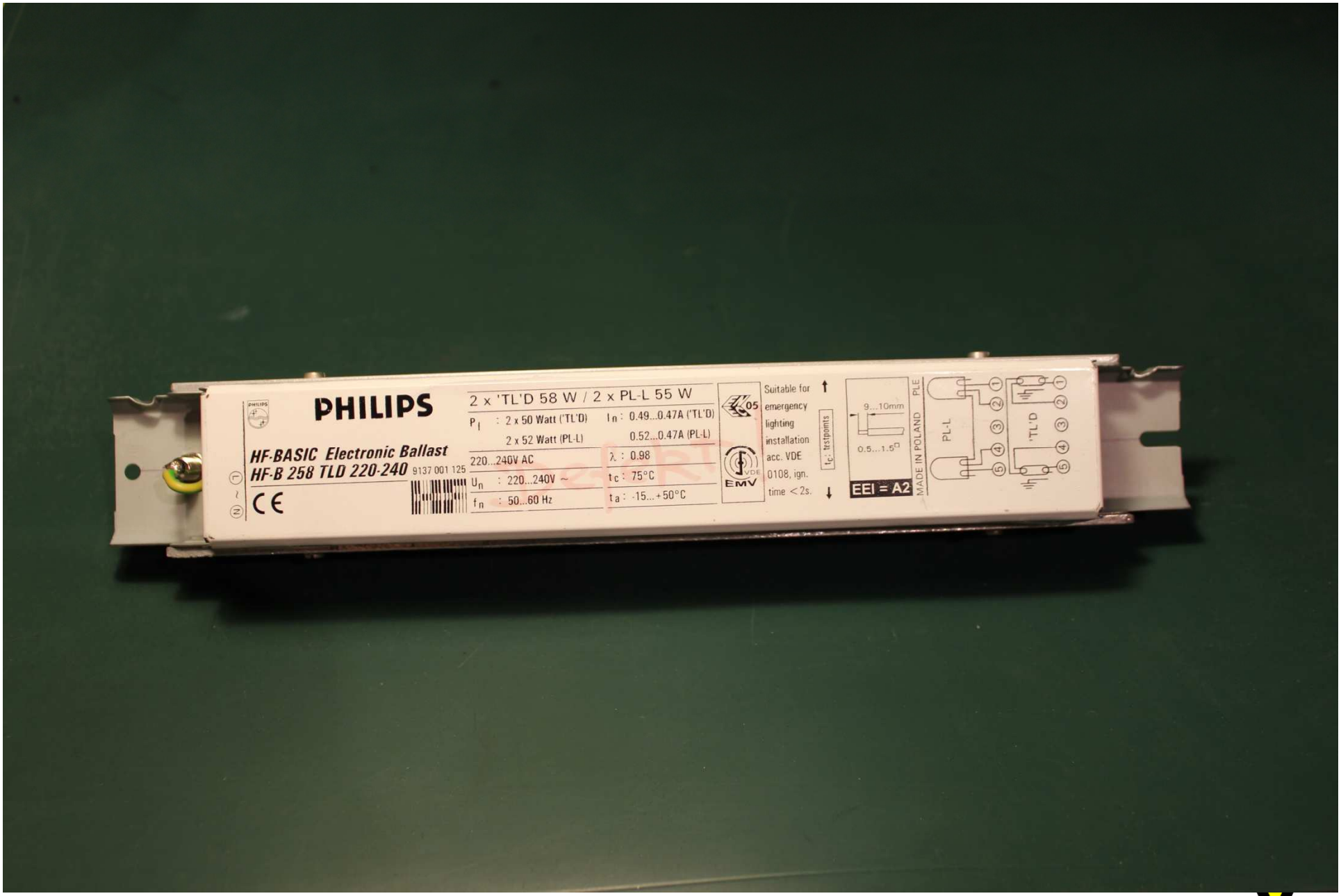


Image: DJ0MEW SOTA qrv at Salobersattel, Schröcken, Vorarlberg (OE)

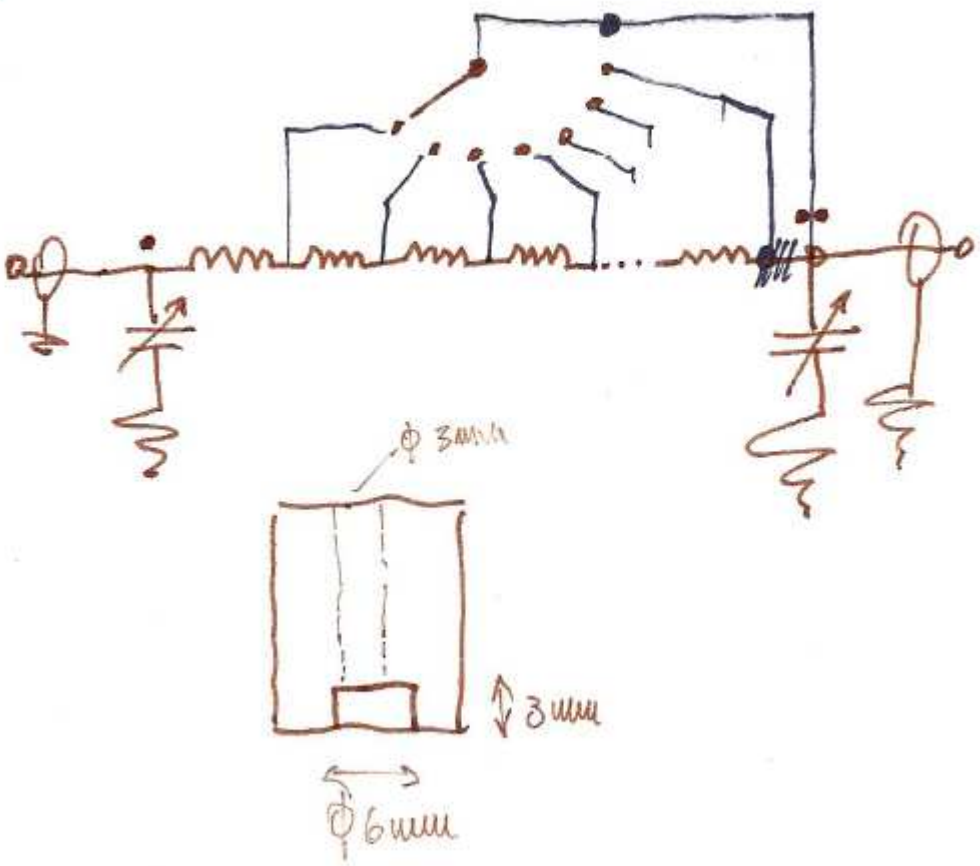

PHILIPS
HF-BASIC Electronic Ballast
HF-B 258 TLD 220-240 9137 001 125
2 x 'TL'D 58 W / 2 x PL-L 55 W
P l : 2 x 50 Watt ('TL'D)
2 x 52 Watt (PL-L)
In : 0.49...0.47A ('TL'D)
0.52...0.47A (PL-L)
220...240V AC
λ : 0.98
U n : 220...240V ~
t c : 75°C
f n : 50...60 Hz
t a : -15...+50°C
Suitable for emergency lighting installation acc. VDE 0108, ign. time < 2s.
tc: testpoints
9...10mm
0.5...1.5
EEI = A2
MADE IN POLAND PLE
PL-L
'TL'D

DJ0MEW, 2015

QRP – Antenna Tuner

Antennentuner in Ballast-Box auf T-50/2

	N	L (µH)
L_1	5	0,1
L_2	6	0,2
L_3	9	0,4
L_4	13	0,8
L_5	18	1,6
L_6	27	3,5
L_7	31	4,6
L_8	44	9,4
		$\Sigma = 20,6$



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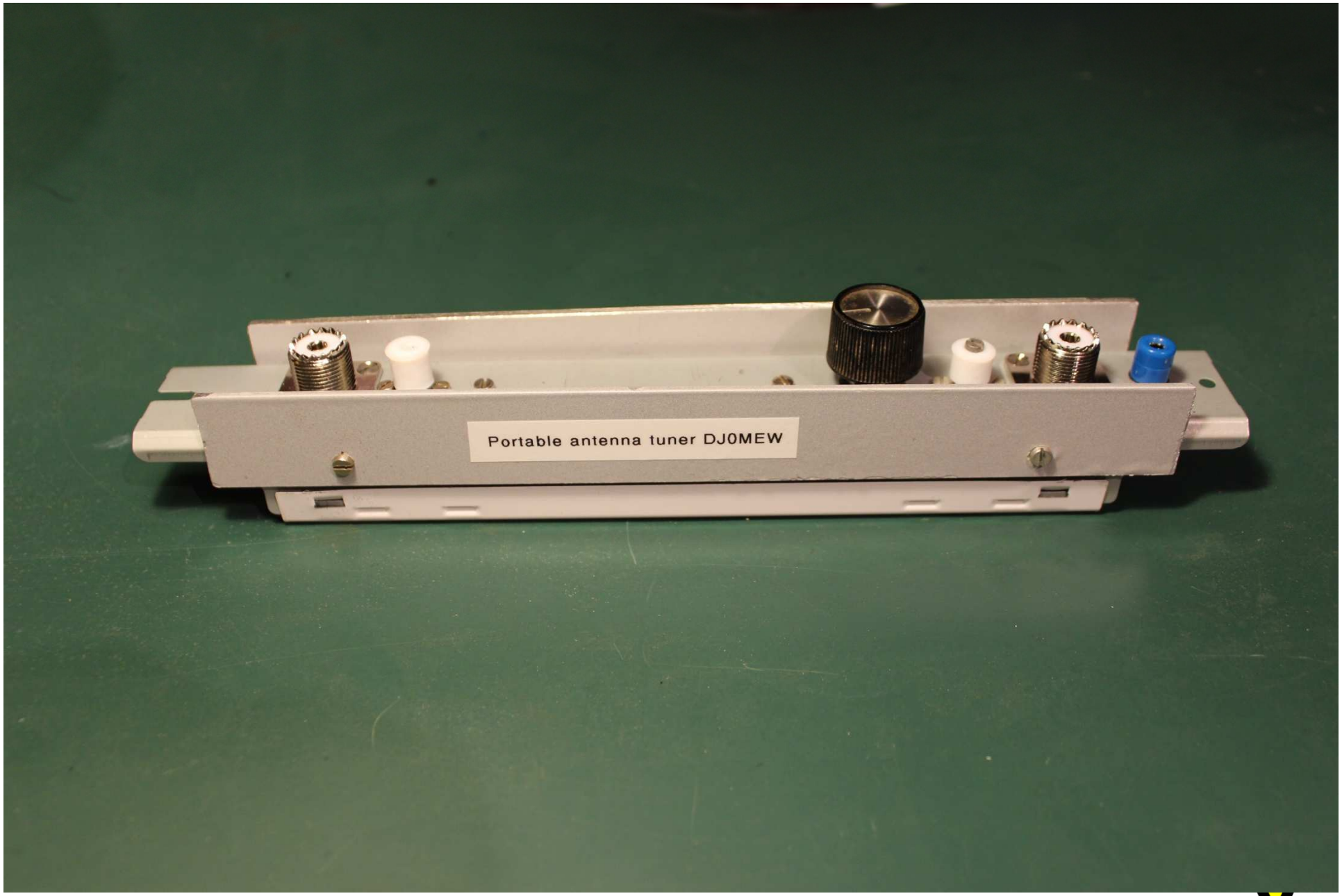

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3W, LW20m lang im Garten
Erdung an der Heizung
13m TA2AO/4 599
13m UR7ICH 5??
13m R6AU 569
30m SN750NMT 569

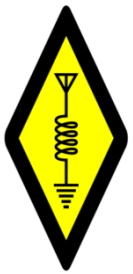
DJ0MEW, 2015

Conclusions

- An antenna tuner, allowing to tune the mass system (counter weight) can easily be build. Experiences with simple LW antennas were up to now very good.

- A QRP-antenna tuner for the bag pack could easily be constructed in a scrap metal housing of the ignition electronics of a fluorescent lamp.

- The Smith-Chart was usefull to understand the different tuning possibilities of the LC networks. It can be used easily without studying the background mathematics, using a programm: Software Smith V3.10, downloadable free of charge from:
  http://www.fritz.dellsperger.net/



Tack för uppmärksamheten!
Vy 73 de DJ0MEW