Splitters for HF antenna stacking

These power splitters were designed for tribander stacking 14-30MHz.

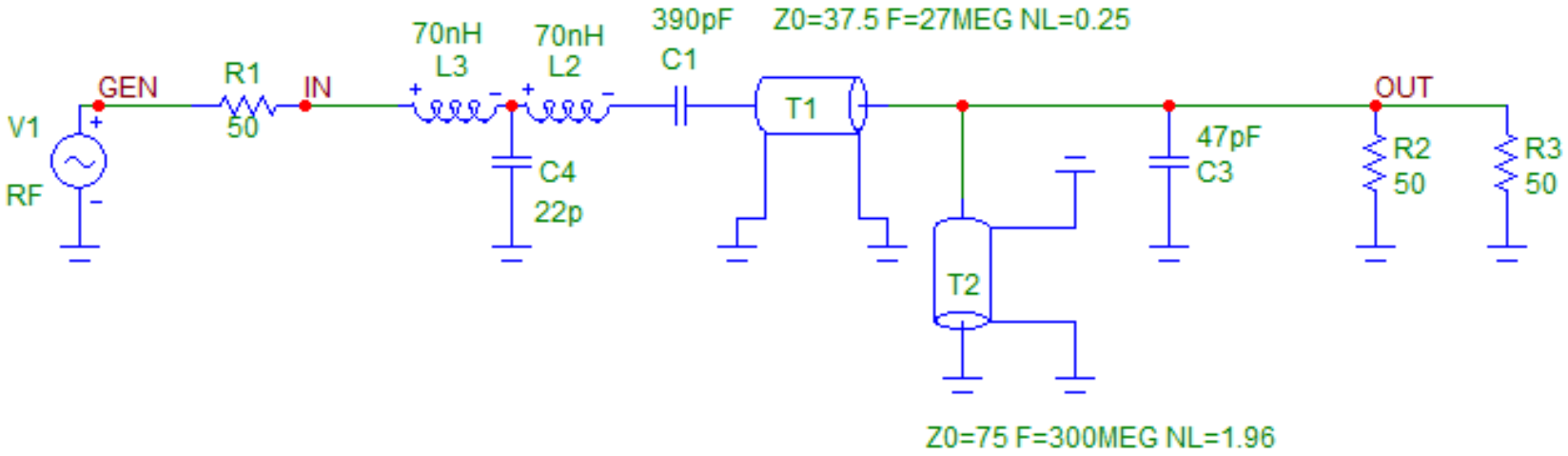
Their phase behavior is linear and do not change antenna phasing.

Stacks of 2, 3, 4 and 6 antennas can be done with these splitters.

Impedance matching is excellent when properly built.

Toroid transformers are often used but these are alternatives.

Wideband matching network for two tribanders 14-30MHz, 50/25ohm



Ideal cables in the model, v=1.
NL=lenght in wavelengts on F frequency
T1 electrical lenght:L=300x0.25/27= 2.777m, two parallel 75 ohm cables
T2 electrical lenght L=300x1.96/300=1.96m, 75ohm cable
Multiply these dimensions with cable velocity factor v.

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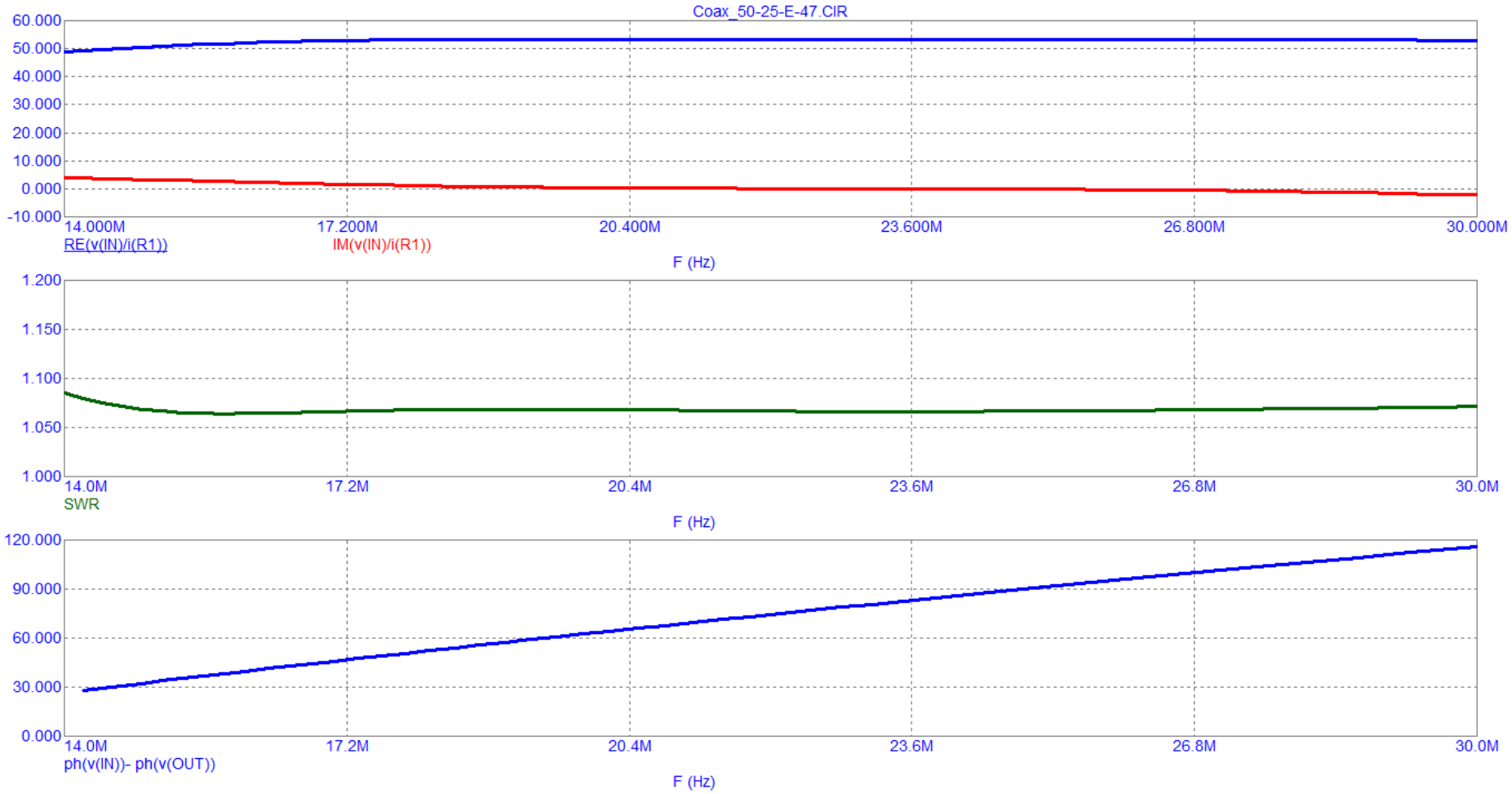
Performance

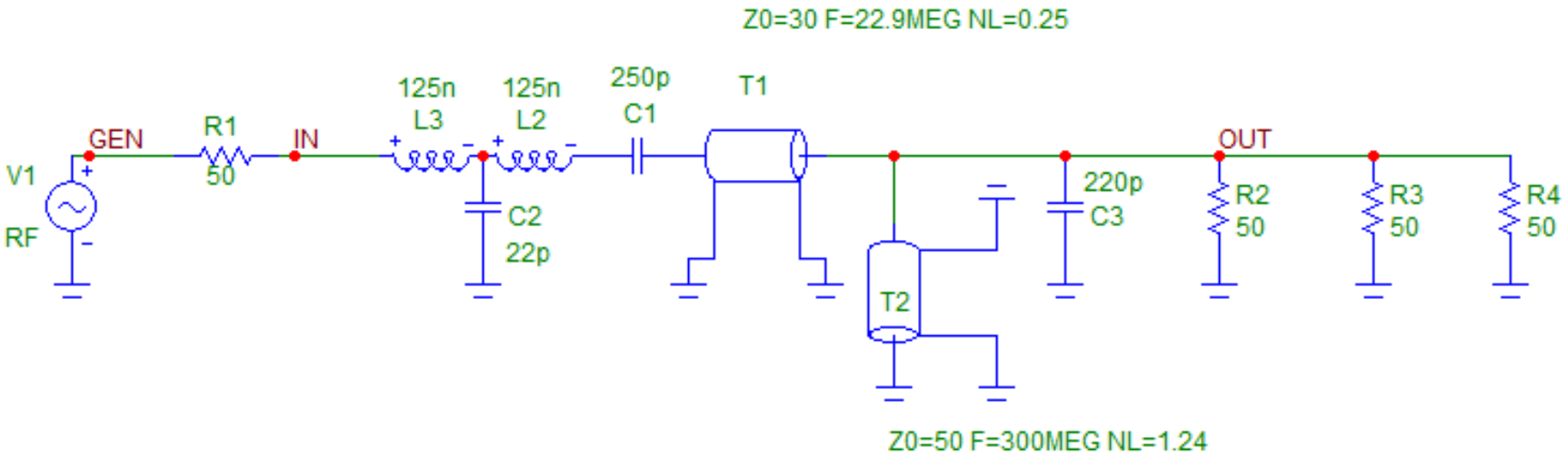
Top: input resistance (blue) and reactance (red) /ohms
Center: Input SWR
Bottom: Phase delay /deg



Some notes, 50/25ohm

- This matching network is modified from original UA6LGO design, which has only cables and one capacitor.
- The cables shall be of low loss type. The model itself is lossless.
- T-network at the input has two coils. Note, that all wiring to the input connector, capacitor C1 and cable T1 are included in these values. This gives possibility to eliminate stray inductance of the wiring!
- Wiring to the output connectors shall be short and not add stray inductance.
- Capacitors shall be of doorknob type, capable to handle your TX current and voltage
- 37.5ohm cable is made by connecting two 75ohm cables parallel.

Wideband matching network for three tribanders 14-29MHz, 50/16.6ohm



Ideal cables in the model, v=1.
NL=lenght in wavelengts on F frequency
T1 electrical lenght:L=300x0.25/22.= 3.275m, 75ohm and 50ohm cables parallel = 30ohm
T2 electrical lenght L=300x1.24/300=1.24m, 50ohm cable
Multiply these dimensions with cable velocity factor v.

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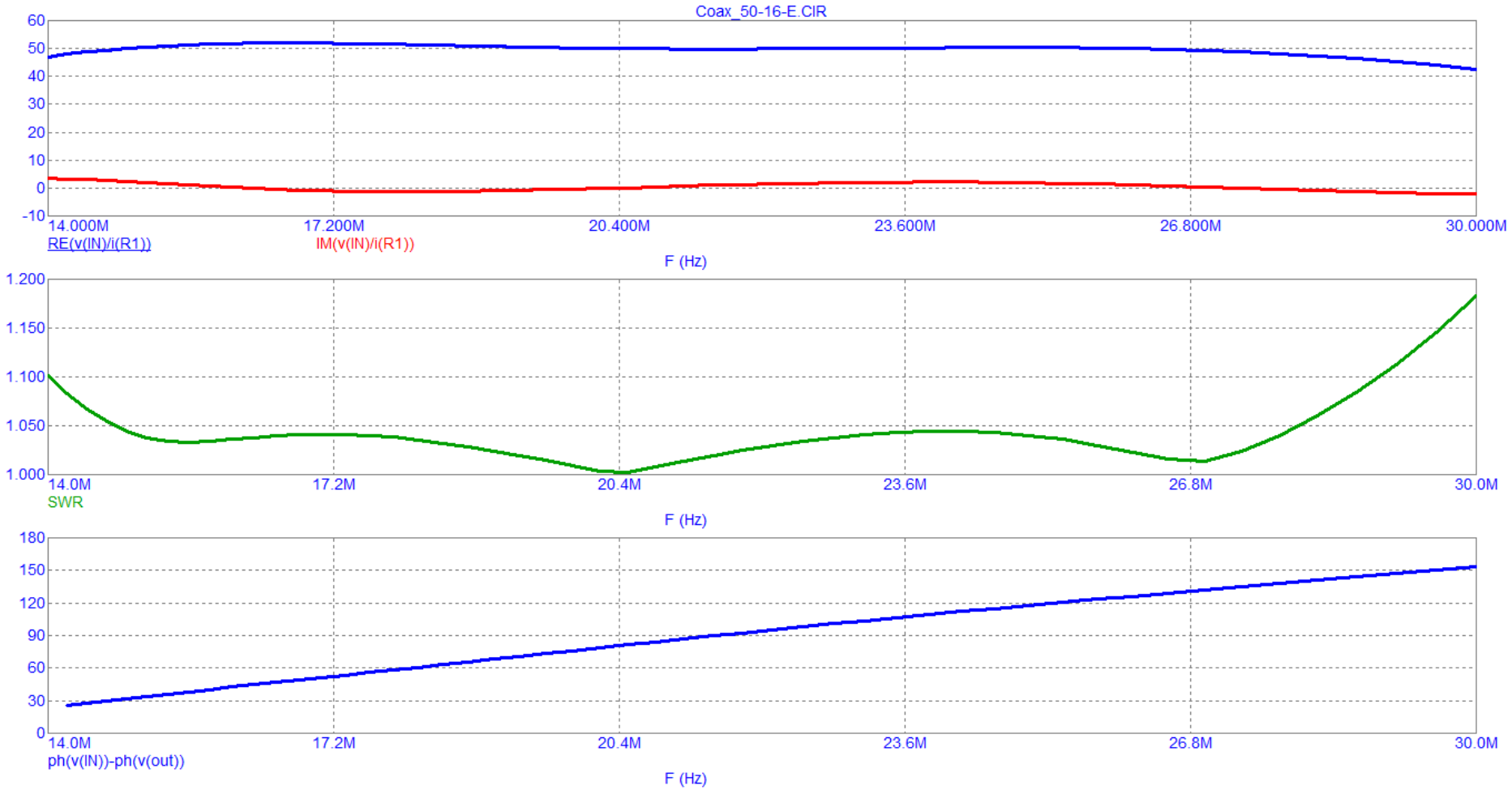
Performance

Top: input resistance (blue) and reactance (red) /ohms
Center: Input SWR (green)
Bottom: Phase delay (blue) /deg



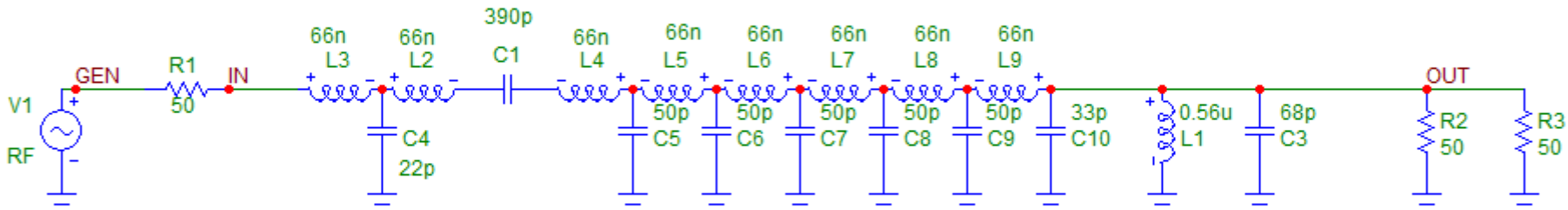
Some notes, 50/16.6ohm

- The cables shall be of low loss type. The model itself is lossless.
- T-network at the input has two coils. Note, that all wiring to the input connector, capacitor C1 and cable T1 are included in these values. This gives possibility to eliminate stray inductance of the wiring!
- Wiring to the output connectors shall be short and not add stray inductance.
- Capacitors shall be of doorknob type, capable to handle your TX current and voltage
- 30ohm cable is made by connecting 75ohm and 50ohm cables parallel. Note, that electrical lengths shall be equal.

Wideband matching LC-network 50/25ohm

- This LC-network is the same as the first network but transmission lines are replaced with low-pass LC-model.
- This is just to show that such a wideband matching can be done.
- In practice cable version may be easier to build.
- See next two pages.

Wideband matching network for stacking, 14-30MHz, 50/25ohm



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Performance

Top: input resistance (blue) and reactance (red) /ohms
Center: Input SWR (green)
Bottom: Phase delay (blue) /deg