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MFJ – 911
4:1 current balun 200ohm dipole antenna's

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The use of the MFJ-911 balun, can be used to create a 200 ohm dipole, connecting as a balanced antenna load.

Each dipole element would have essentially a 400ohm inductive reactance, details of which are illustrated below.

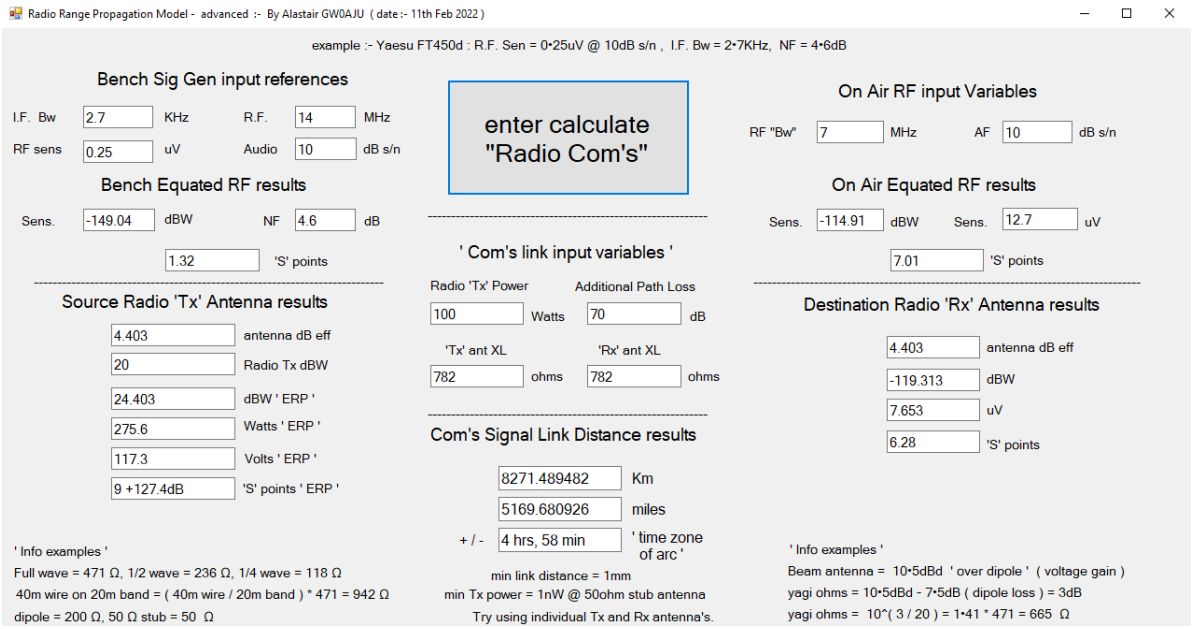
400 ohm inductor for 20m band

```
freq = 14 MHz
ind XL = 391.4 ohms
standard dipole = 782 ohms
ind = 4.45 uH
swr = 1.14:1
>
```

air wound coil inductor

```
for inductance of = 4.45uH
Coil diameter = 1 inches or 25.4mm
Coil length = 1 inches or 25.4mm
by diameter =  16.065491 turns
calculation check by radius =  16.065491 turns
>_
```

Using the radio propagation model, an ideal of how the antenna may perhaps function.



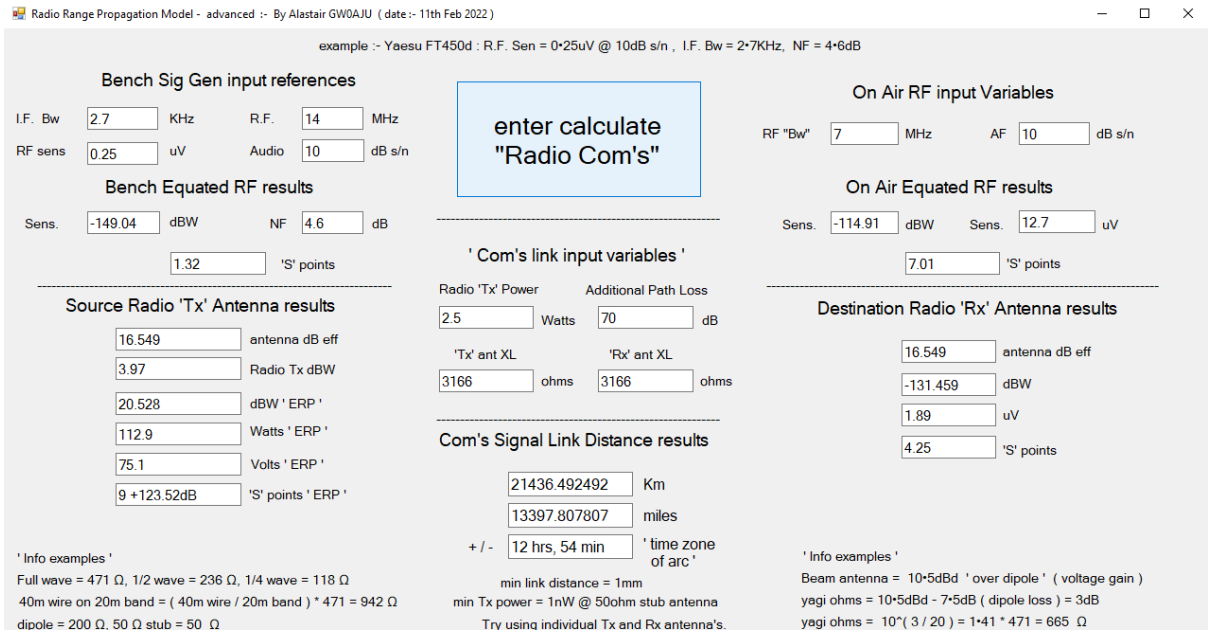
For a cross dipole design, each terminal connector would be connected to two coils, positioned into a “V” shape projecting out from left and right of the MFJ – 911 4:1 current 200ohm balun. Details below illustrate each element with an inductive reactance of essentially 800 ohms.

air wound coil inductor

```
for inductance of = 9uH
Coil diameter = 2 inches or 50.8mm
Coil length = 1 inches or 25.4mm
by diameter = 13.0766968 turns
calculation check by radius = 13.0766968 turns
>
```

400 ohm inductor for 20m band

```
freq = 14 MHz
ind XL = 791.6 ohms
cross dipole = 3166 ohms
ind = 9 uH
swr = 1.01:1
>
```



It maybe worth noting the transmitter power output, expressed as an average wattage. With my Yaesu FT450d, I added an external mic gain control circuit, running off from the radio’s mic socket 5Volt supply. The idea was to vary the radio transmitter power output without digging back into the radio settings.

I found while using an analogue power meter, setting the radio to 100Watts, the analogue power meter registered the radio at an average 50Watts, where from the transmitter output when voice is added to the carrier, the analogue power meter reads up from 50Watts to a peek of 100Watts.

This is interesting, as any propagation models would need to include the transmitter power as an average value. The 50Watts average to a 100Watts peek, is thus the voice signal of the transmission.

The standard dipole, propagation model, averages a radio transmitter of 100Watts, which would be a peek of a 200Watt radio transmitter.

The cross dipole, propagation model, has an average of 2·5Watts, which would be a 5Watt peek transmitter output, or a QRP radio.

Each propagation model result is based upon both radio hams at each end using the MFJ – 911 200ohm dipole, be a standard or cross dipole design.