

G5RV

- Louis Varney -- G5RV (SK)
- 1934
- 102 ft $3/2$ WL 20 M dipole
- 72 Ohm twinlead to shack
- 300 Ohm matching section for 40 M
- 30 ft is $1/2$ WL for 20 M & $1/4$ WL for 40 M
- What about other bands?

3/2 WL 20M Dipole

- Three 20 M halfwave dipoles
- Tied end-to-end
- About 33 to 34 feet each
- Total about 100 feet ... or so

EZNEC

- Calculate antenna impedances
- Calculate antenna gain
- Calculate far field plot
- Calculate antenna current

3/2 WL 20M Dipole

- Three 20 M halfwave dipoles
- Tied end-to-end
- About 33 feet each
- Total about 99 feet ... or so
- Three current nodes – Nodes are peaks
- When current is high, voltage is low
- $R = E/I$... Therefore impedance is low

3/2 WL 20M Dipole at 40M

- Halfwave at 20 M is quarterwave at 40 M
- 3/2 WL 20M is $\frac{3}{4}$ wavelength at 40 M
- Check EZNEC

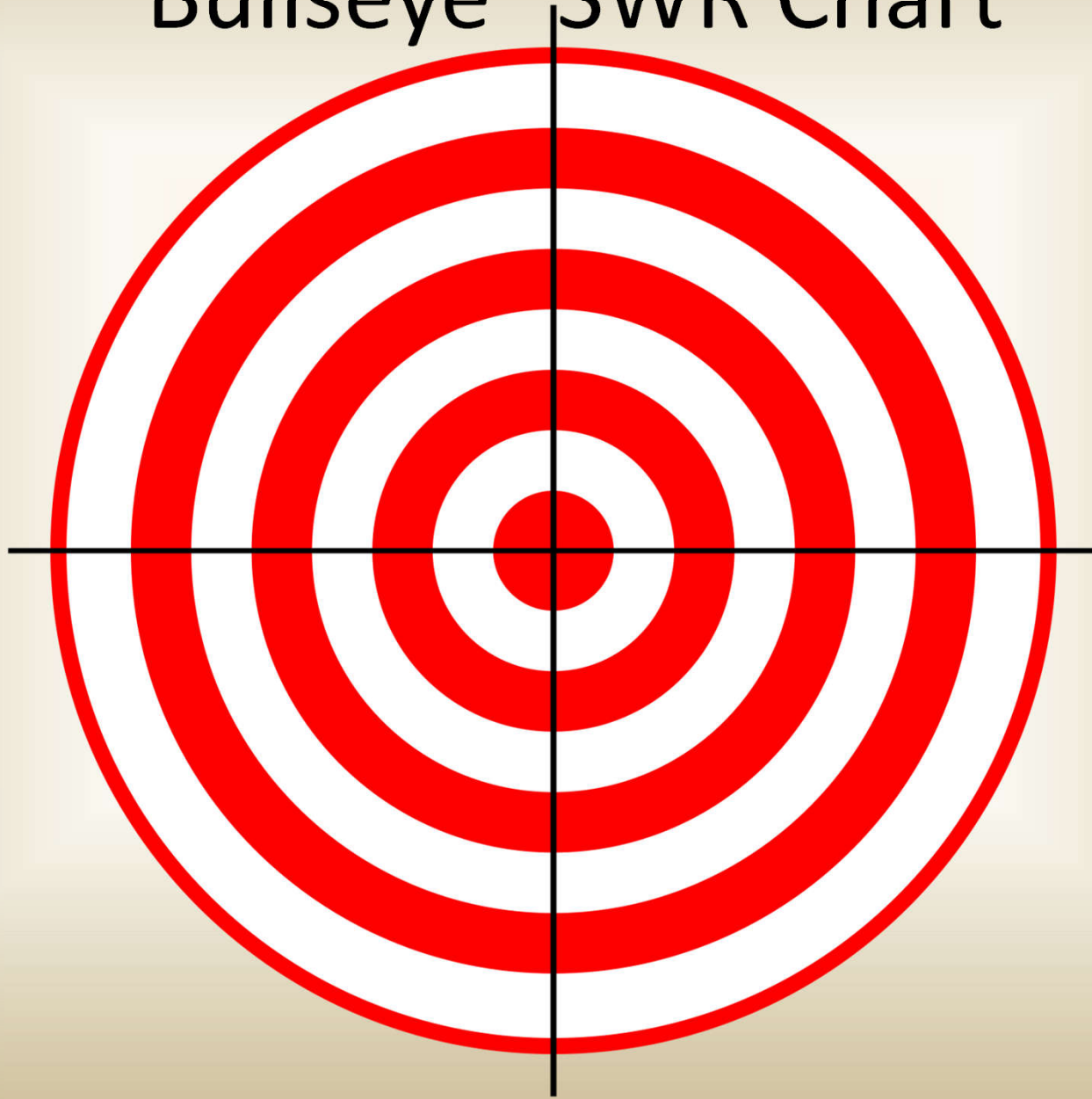
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Matching Section

- $\frac{1}{4}$ WL transmission line makes high Z to low Z
- $\frac{1}{2}$ WL transmission line preserves Z
- $\frac{3}{4}$ WL transmission line makes high Z to low Z
- 1 WL transmission line preserves Z

“Bullseye” SWR Chart



Use SimSmith for Bullseye

- Use 3:1 SWR target
 - Radio likes 1:1
 - Radio limits above 3:1
 - All auto tuners will match 3:1
 - Limited coax loss at 3:1 and below
- Use antenna Z file from EZNEC
- Use simple transmission line
- Set generator Z to 75 Ohms

Matching Section

- $\frac{1}{4}$ WL transmission line makes high Z to low Z
- $\frac{1}{2}$ WL transmission line preserves Z
- $\frac{3}{4}$ WL transmission line makes high Z to low Z
- 1 WL transmission line preserves Z
- G5RV designed for 20 & 40 M

3/2 WL 20M Dipole at 40M

- Halfwave at 20 M is quarterwave at 40 M
- 3/2 WL 20M is $\frac{3}{4}$ wavelength at 40 M
- Look at EZNEC
- Current nodes of $\frac{3}{4}$ WL are displaced from center
- The center is almost a current minimum
- Center voltage is therefore high
- Center impedance is high
- $\frac{1}{4}$ WL transmission line will transform Z to low

Matching Section

- $\frac{1}{4}$ WL transmission line makes high Z to low Z
- $\frac{1}{2}$ WL transmission line preserves Z
- $\frac{3}{4}$ WL transmission line makes high Z to low Z
- 1 WL transmission line preserves Z
- Look at Bullseye
- G5RV designed for 20 & 40 M
- Is $5/2$ WL at 12 M and TL is 1 WL so OK
- Would be OK at 16 M but not ham band
- No other bands?

ZS6BKW

- Brian Austin -- ZS6BKW 1980 (or so)
- “Computer optimized” G5RV
- 92 ft dipole
- 50 Ohm feed to shack
- 39-40 ft 400 Ohm downlead
- 40, 20, 17, 12, 10 M match?

W5DXP resource

- Cecil Moore – W5DXP
- Likes matching with balanced window line
- Has 130 ft dipole and method for matching
- Plots antenna length with matching section
- Investigated ZS6BKW
- Has many ideas for additional band match

ZS6BKW

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- 92 ft dipole
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- 40, 20, 17, 12, 10 M match?
- Check W5DXP
- Look at EZNEC & check Bullseye

G0GSF

- G0GSF 2018 (February RadCom)
- 96 ft inverted U
- “Shorter” than 40 M dipole – 46 ft top
- 25 ft ends hang straight down
- 50 Ohm feed to shack
- 40 ft 400 Ohm matching section
- Match like ZS6BKW
- Brian Austin -- G0GSF

GOGSF

- Check W5DXP
- Check EZNEC
- Check Bullseye for matches

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- Match like ZS6BKW
- Brian Austin G0GSF was ZS6BKW!

Links

- [KC7HXC: Google -> coax loss antenna gain](#)
- http://www.ae6ty.com/Smith_Charts.html
- <http://www.w5dxp.com/>
- http://www.w5ddl.org/files/Zs6bkw_vs_G5rv_20100221b.pdf
- <http://ars.nc4fb.org/zs6bkw/zs6bkw-antenna-from-the-horses-mouth-by-g0gsf.pdf>
- <http://www.nc4fb.org/wordpress/zs6bkw-multi-band-antenna/>
- <http://www.wirelesswaffle.com/index.php?m=02&y=07&entry=entry070209-160601>



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- http://www.w5ddl.org/files/Zs6bkw_vs_G5rv_20100221b.pdf
- <http://ars.nc4fb.org/zs6bkw/zs6bkw-antenna-from-the-horses-mouth-by-g0gsf.pdf>
- <http://www.nc4fb.org/wordpress/zs6bkw-multi-band-antenna/>
- <http://www.wirelesswaffle.com/index.php?m=02&y=07&entry=entry070209-160601>

