

Common requirement for matching:

10% of power is reflected back to load

(for general purpose antennas. Sometimes requirement is more strict)

$$S = \frac{1 + |\Gamma|}{1 - |\Gamma|}$$

$$\Gamma = \sqrt{0.1} = 0.3162$$

$$S = 1.925$$

Common requirement is VSWR of 2:1

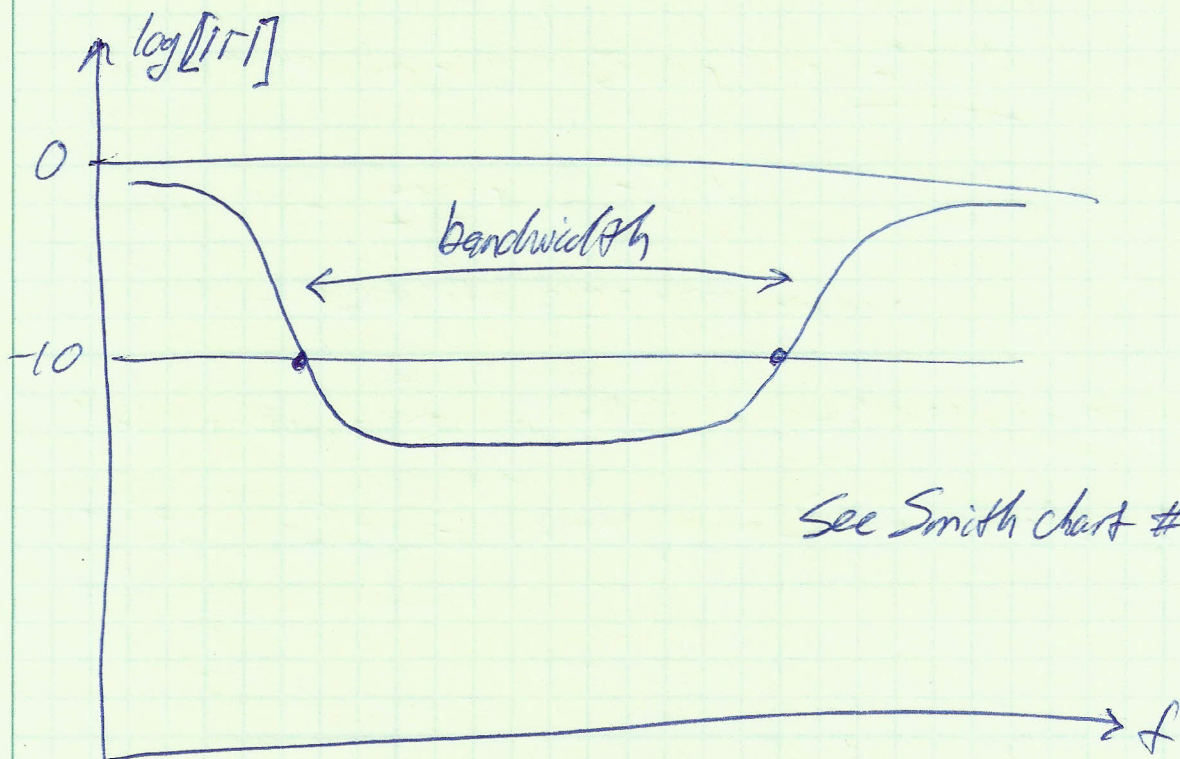
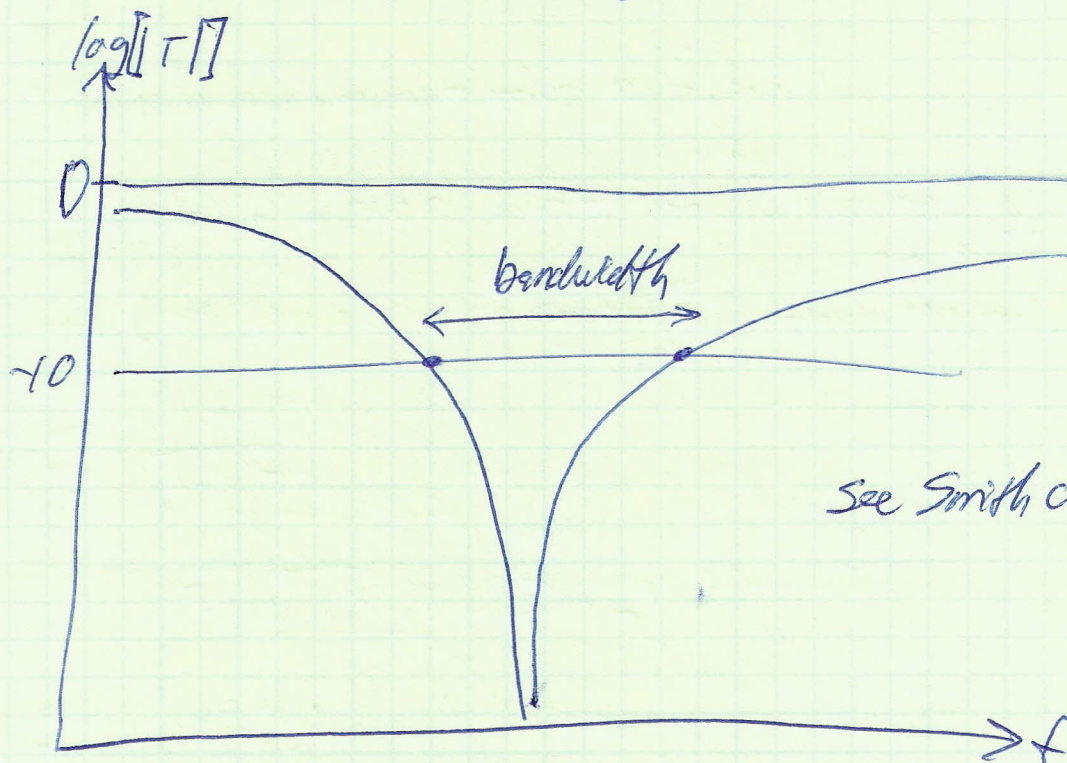
Often plot $Z(f)$ or $\Gamma(f)$

look for behavior over frequency

Network analyzers give this plot with one keystroke

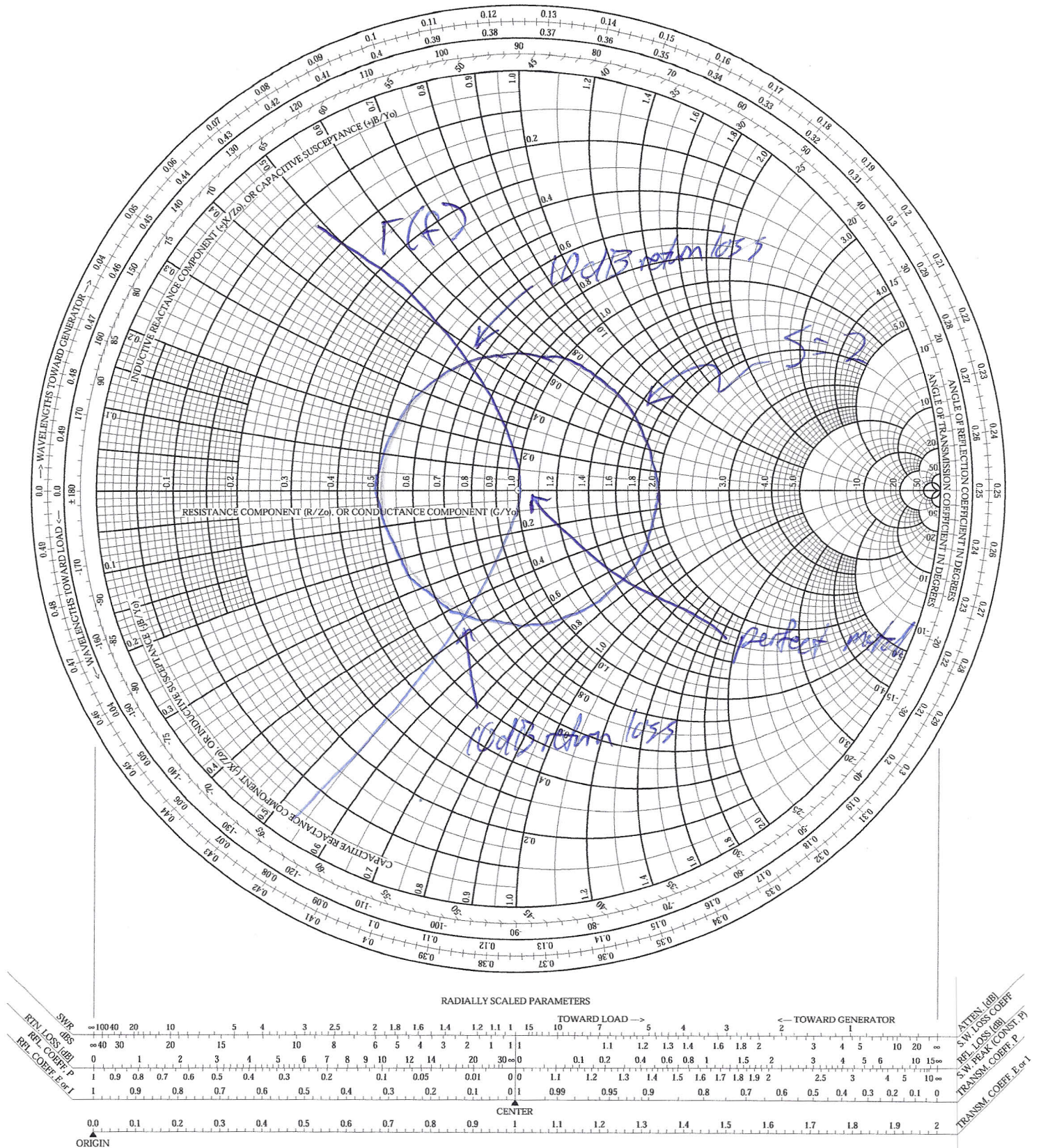
HFSS, ADS, etc can all give Smith Chart plots

- One element (C, L, etc.) can often give a match at one frequency
- Often, a perfect match at one frequency is not the goal, but instead a reasonable match ($VSWR < 2$) that is broadband



#1

Black Magic Design



#2

The Complete Smith Chart

Black Magic Design

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