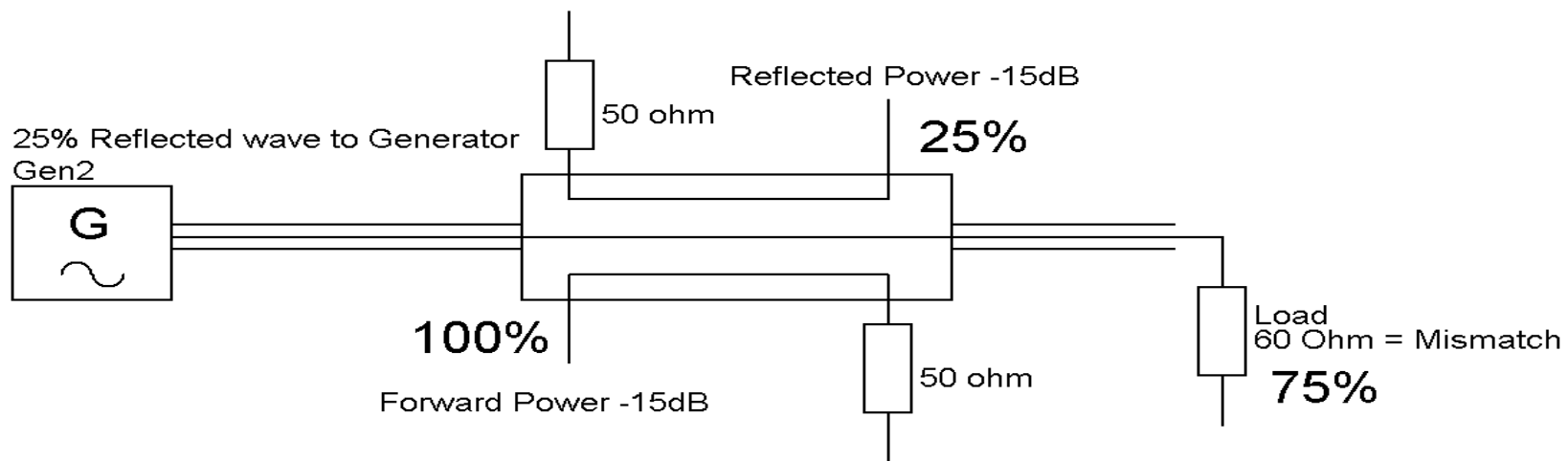
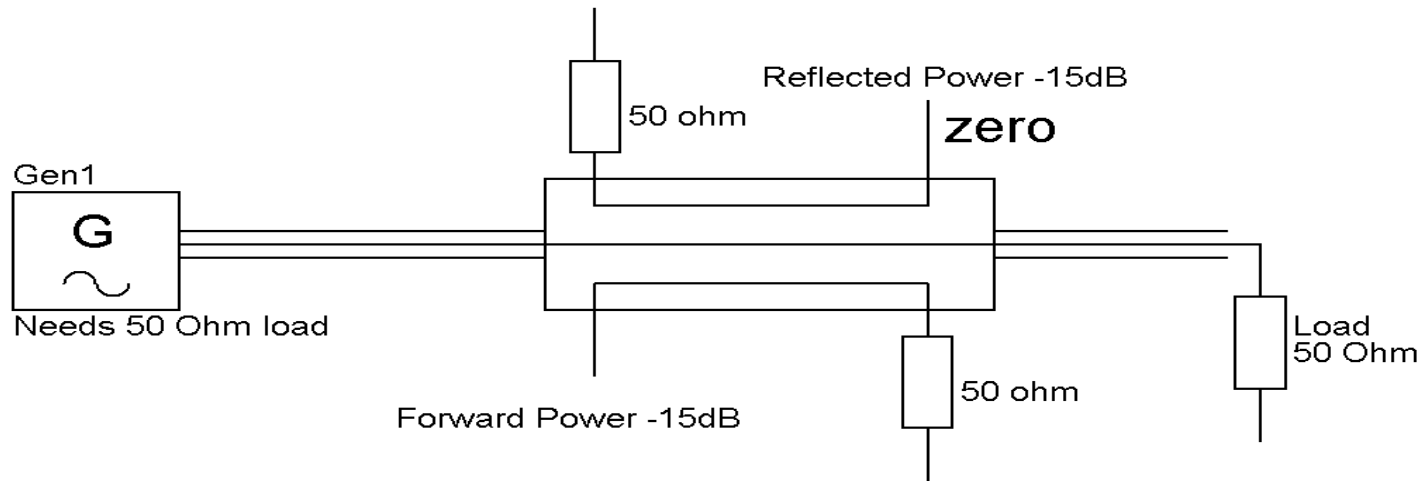


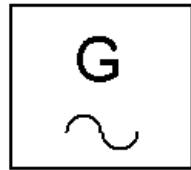
Antennas

Peter Wright 2005

Directional Coupler



Symmetrical load for Symmetrical feed



2

Half wave Dipole

2x Quarter wave elements

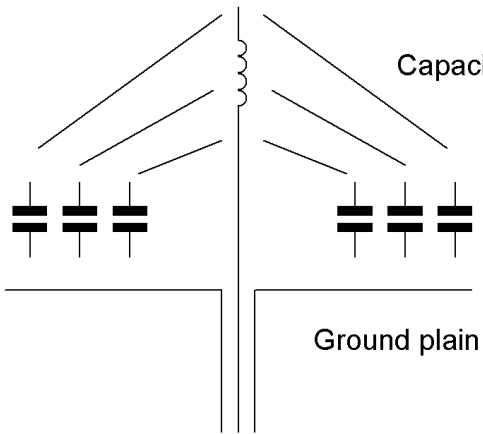
Un-Symmetrical load for Un-Symmetrical feed



1

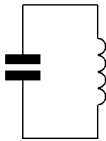
Quarter wave monopole

Inductive loading

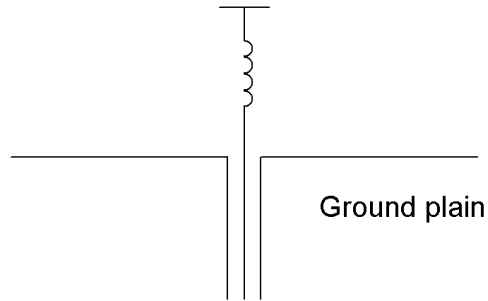


How is an antenna Resonant ?

Optimum Q

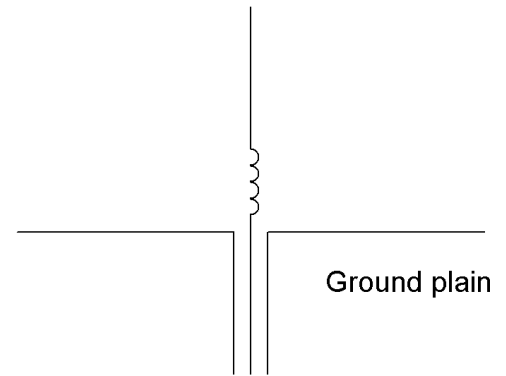


Capacitive hat or thicker cable
Shortens element



C May be increased

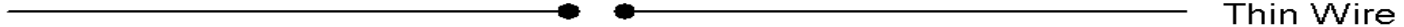
Inductive Base Load
Shortens element



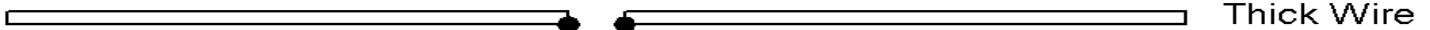
L may be increased

Element Thickness to Frequency bandwidth

Very Small Bandwidth



Wider Band width



Cage Dipole Large Band width



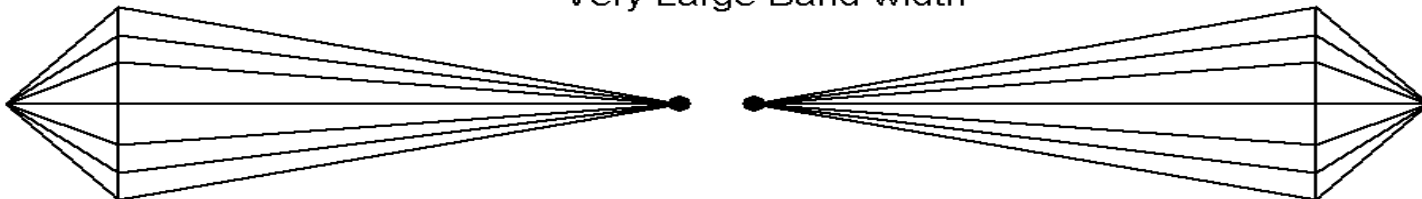
Large Bandwidth



Tapered Cage

"Very Large Band width

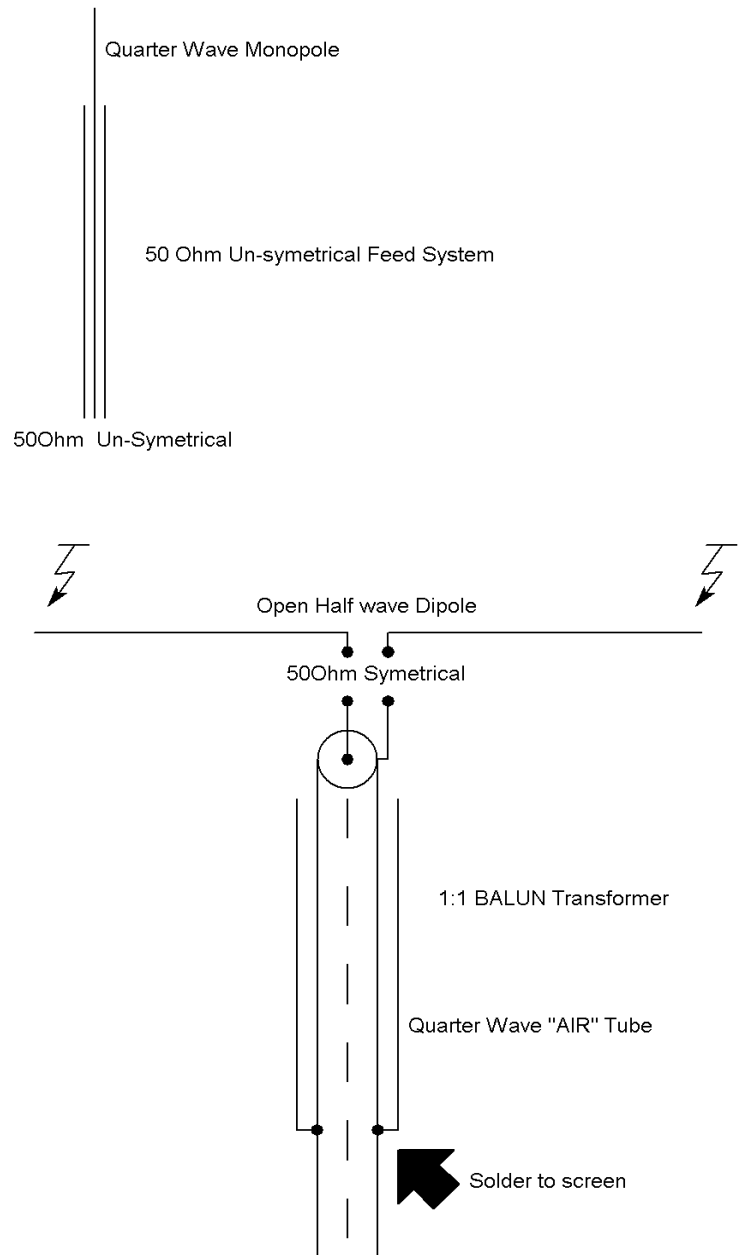
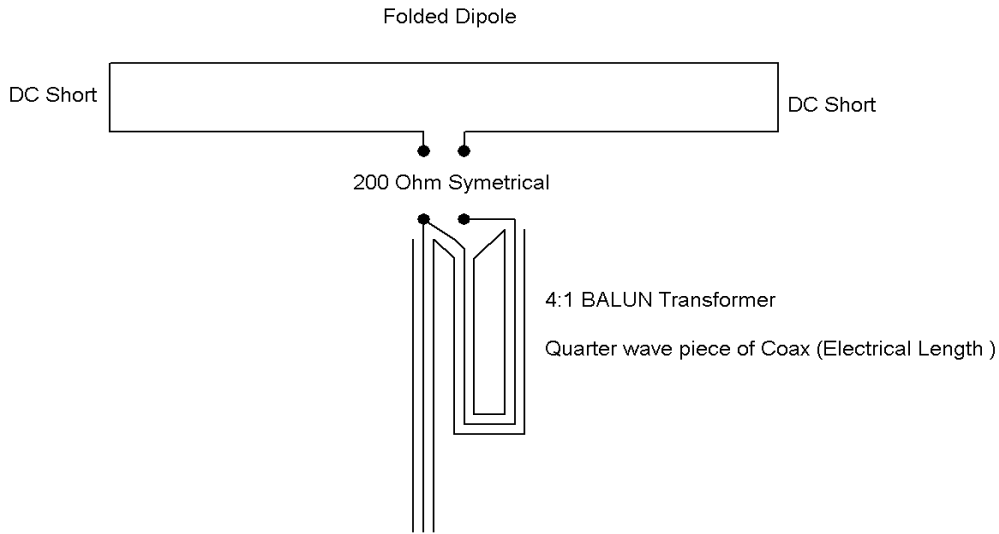
Tapered Cage



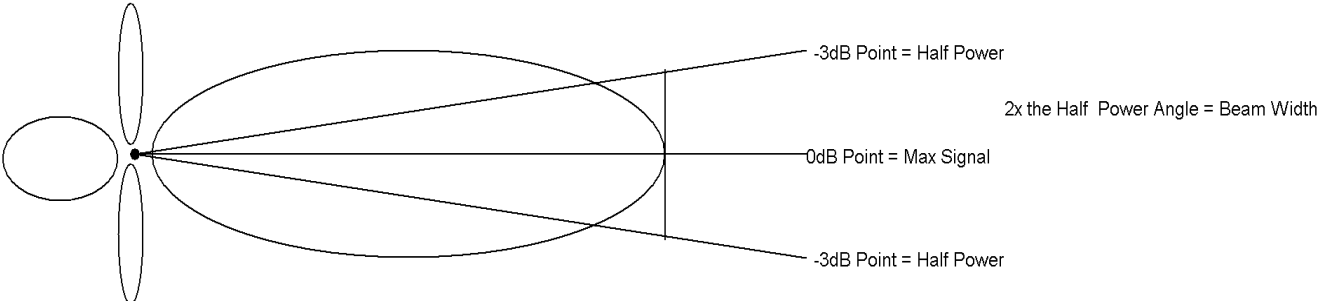
Very Common EMI Test Antenna !

Basic Rules

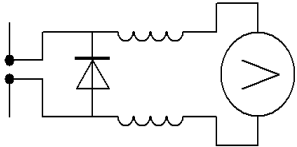
- Antennas are Resonant at design frequencies and their Harmonics however with different beam radiation patterns
- Antennas may be stacked or grouped together for more gain however the feed Impedance needs always to be matched to the Generator !



Calculation of Beam Width

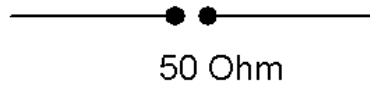


2x the Half Power Angle = Beam Width

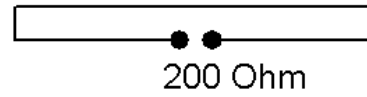


Signal Strength detector

Simple Dipole

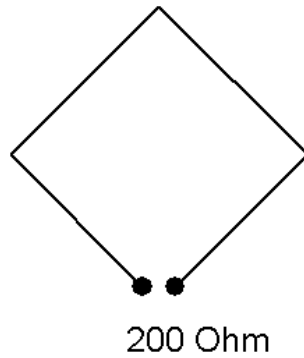


Folded Dipole

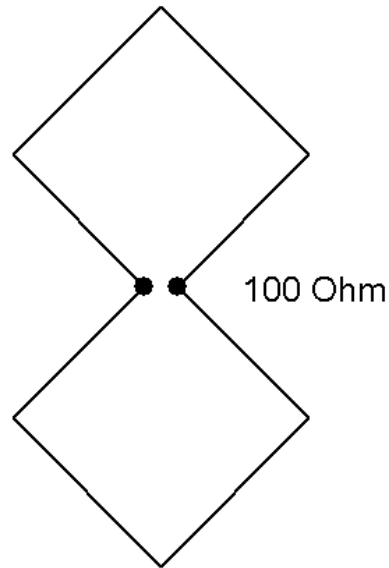


Quad

Each Leg a Quarter Wave length

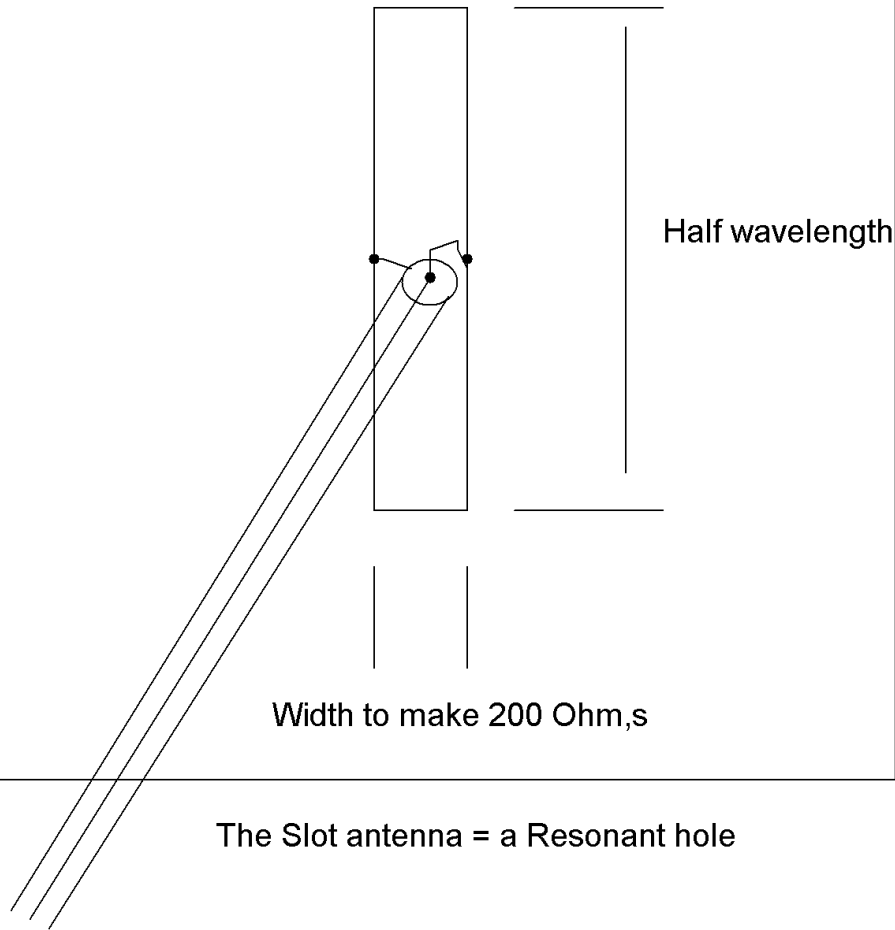


Double Quad



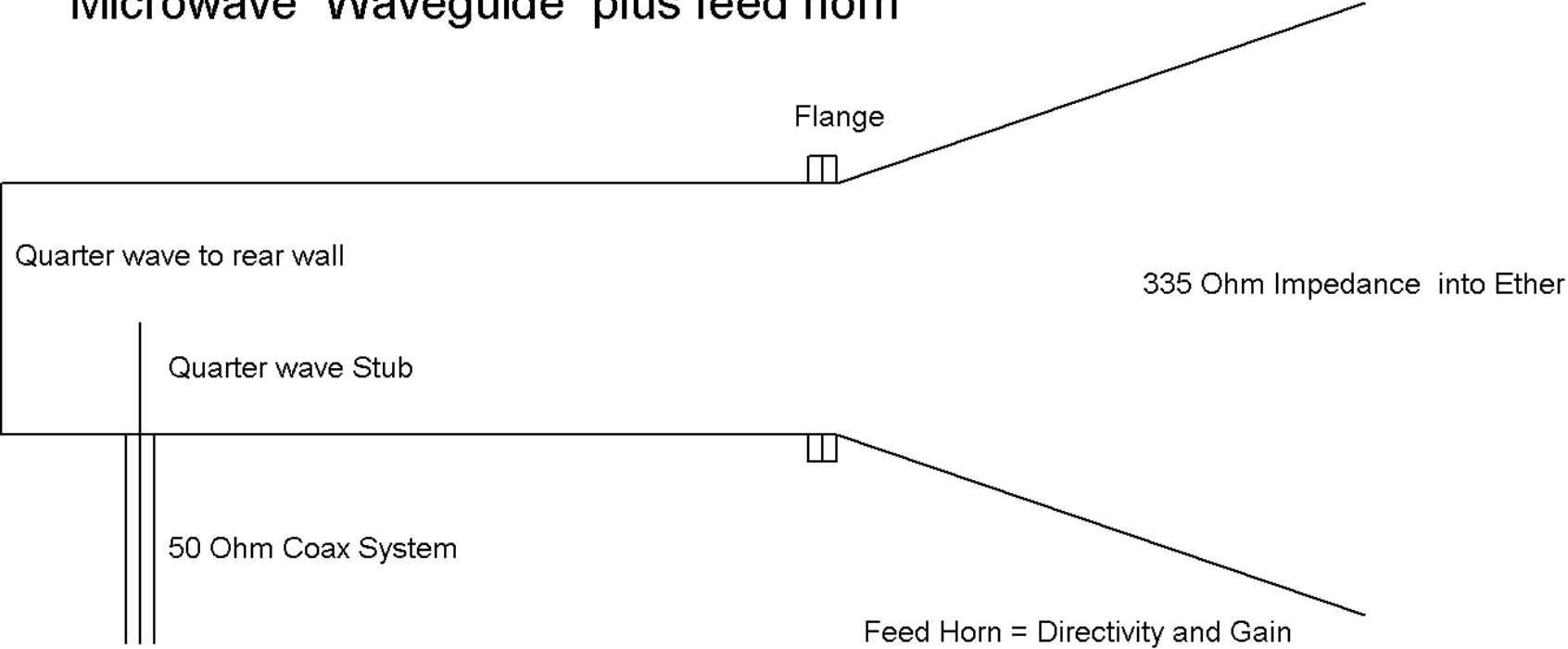
Directivity again with Reflectors and directors

Piece of Metal sheet any size



The Slot antenna = a Resonant hole

Microwave Waveguide plus feed horn

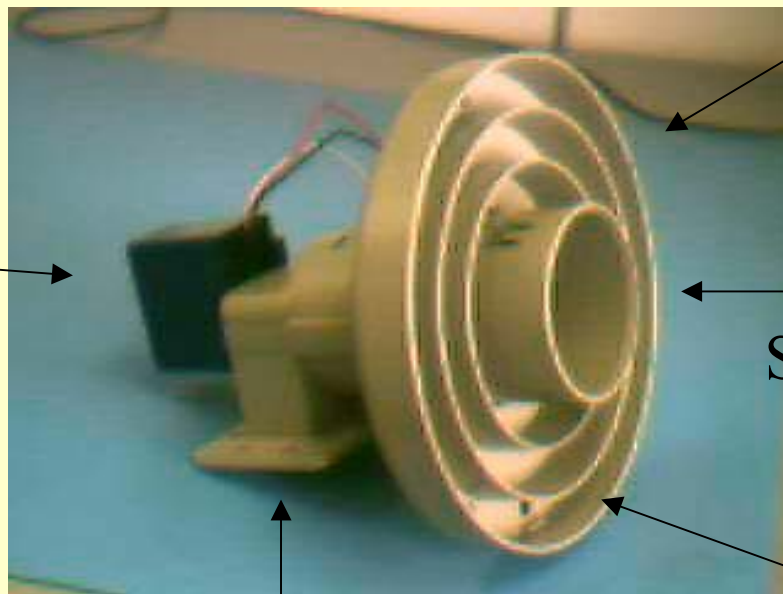


Sectoral Horn Parabolic





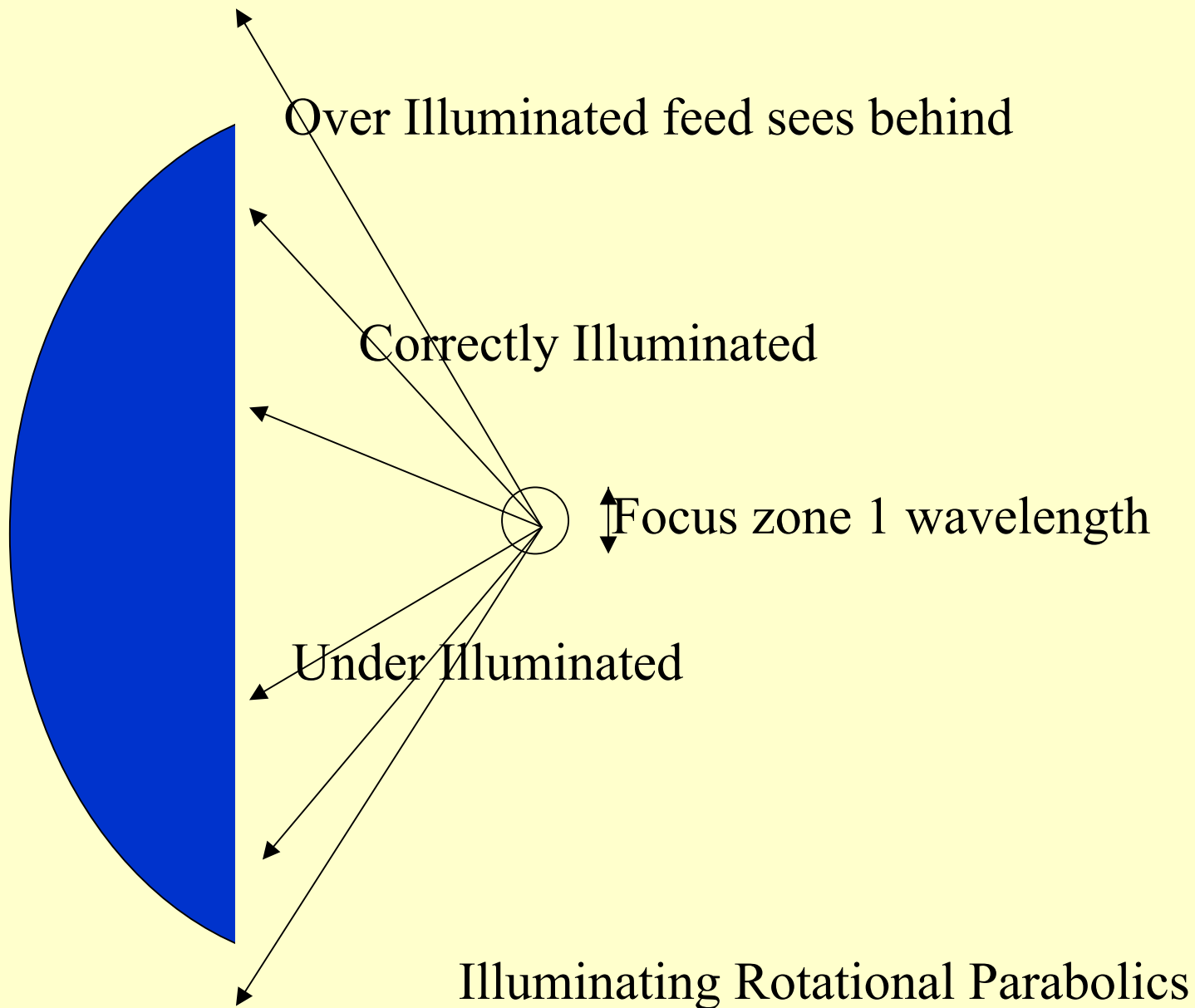
Probe motor



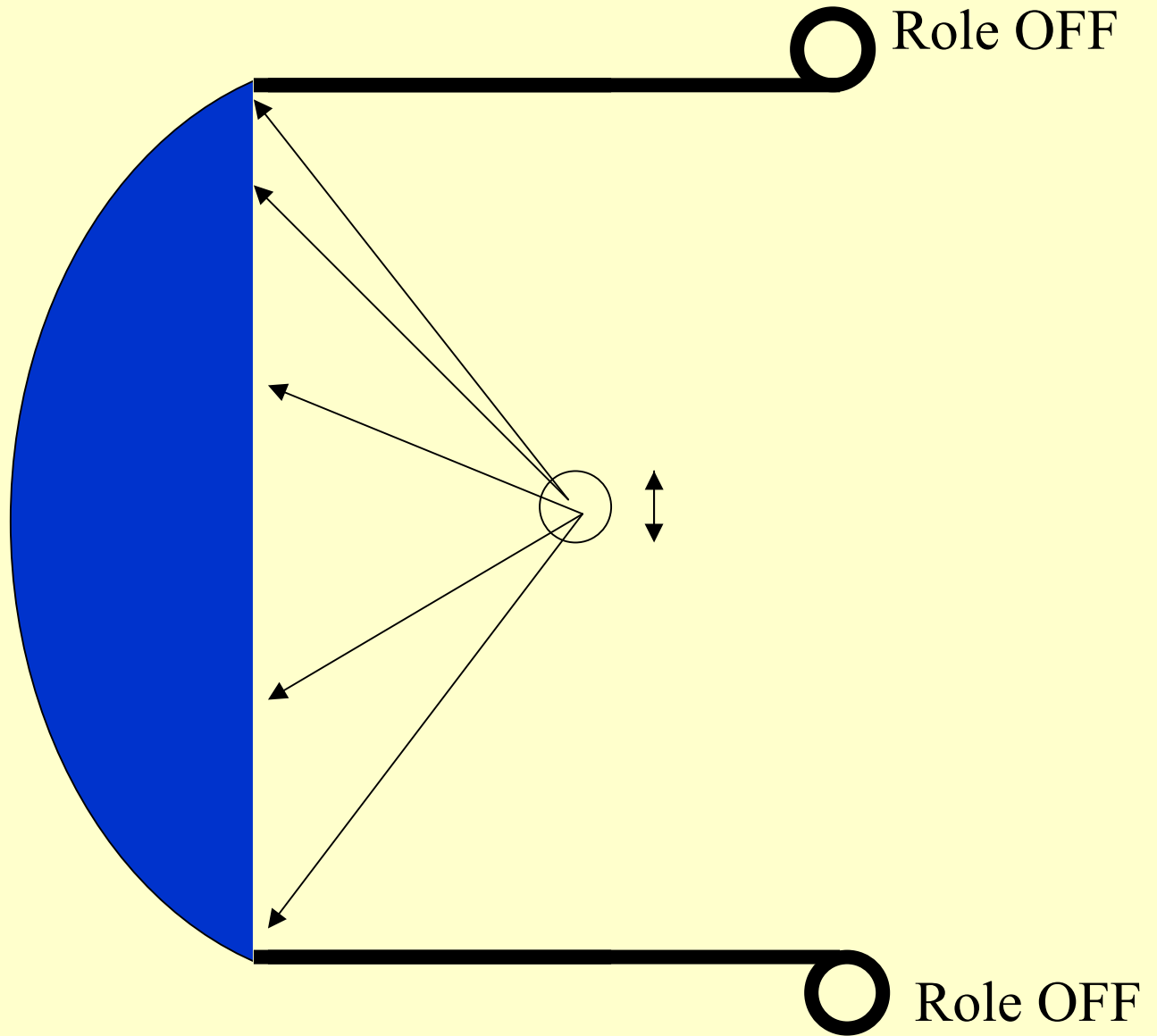
Signal

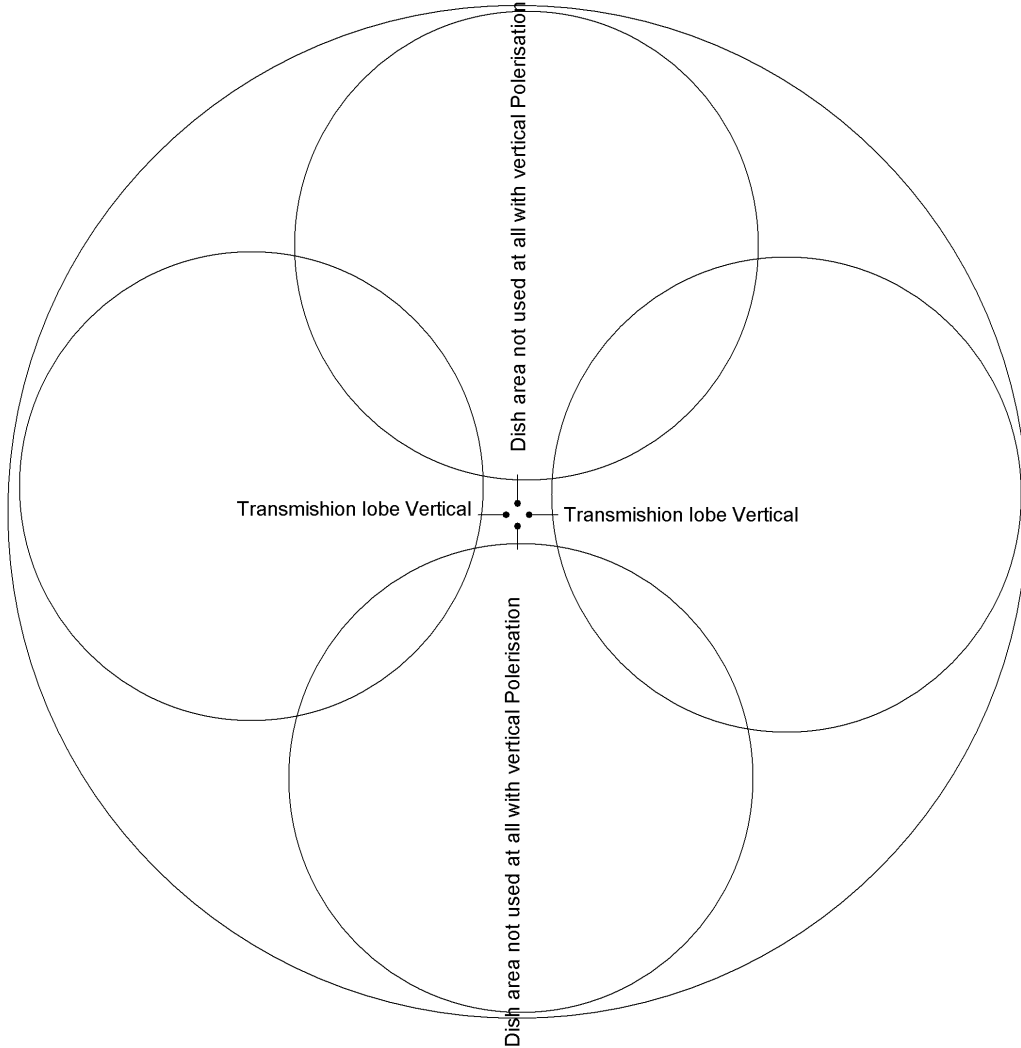
Beam angle

Wave guide flange



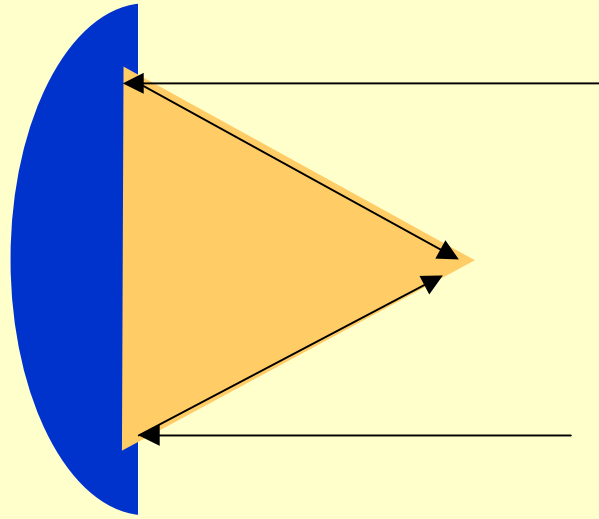
Using a Side Wall



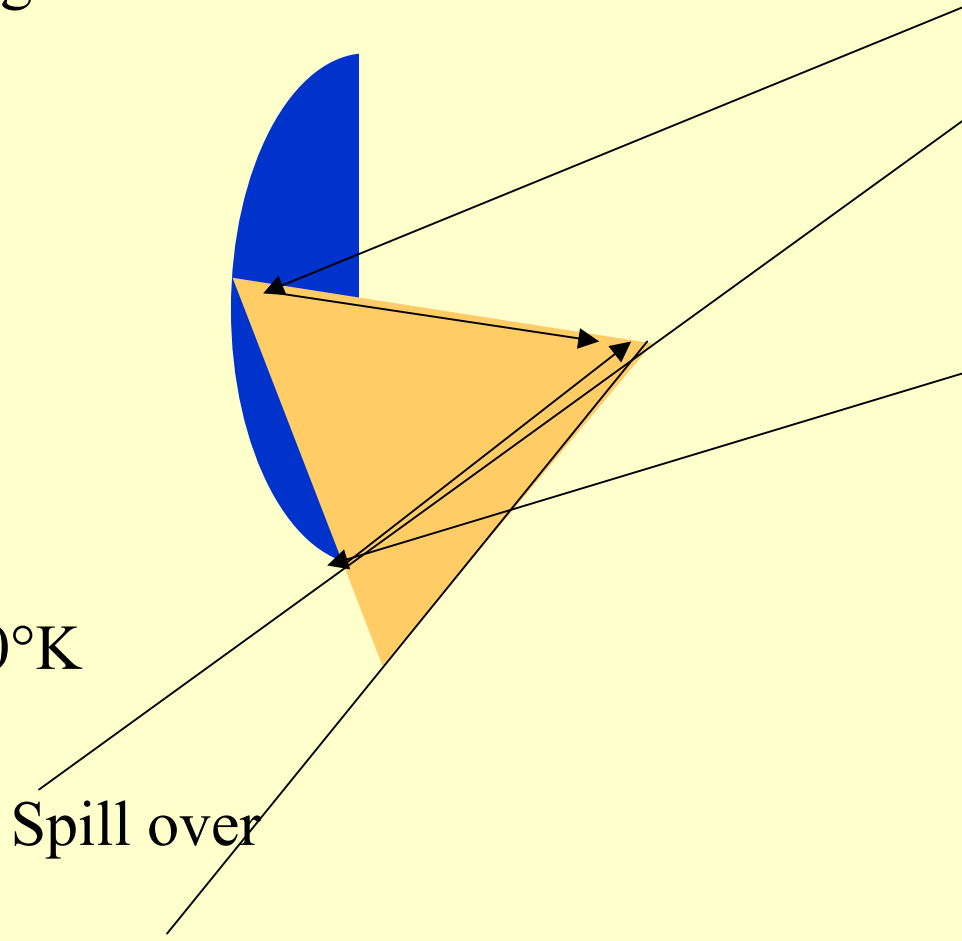


Illumination of a Rotatioal Parabolic dish with V or H

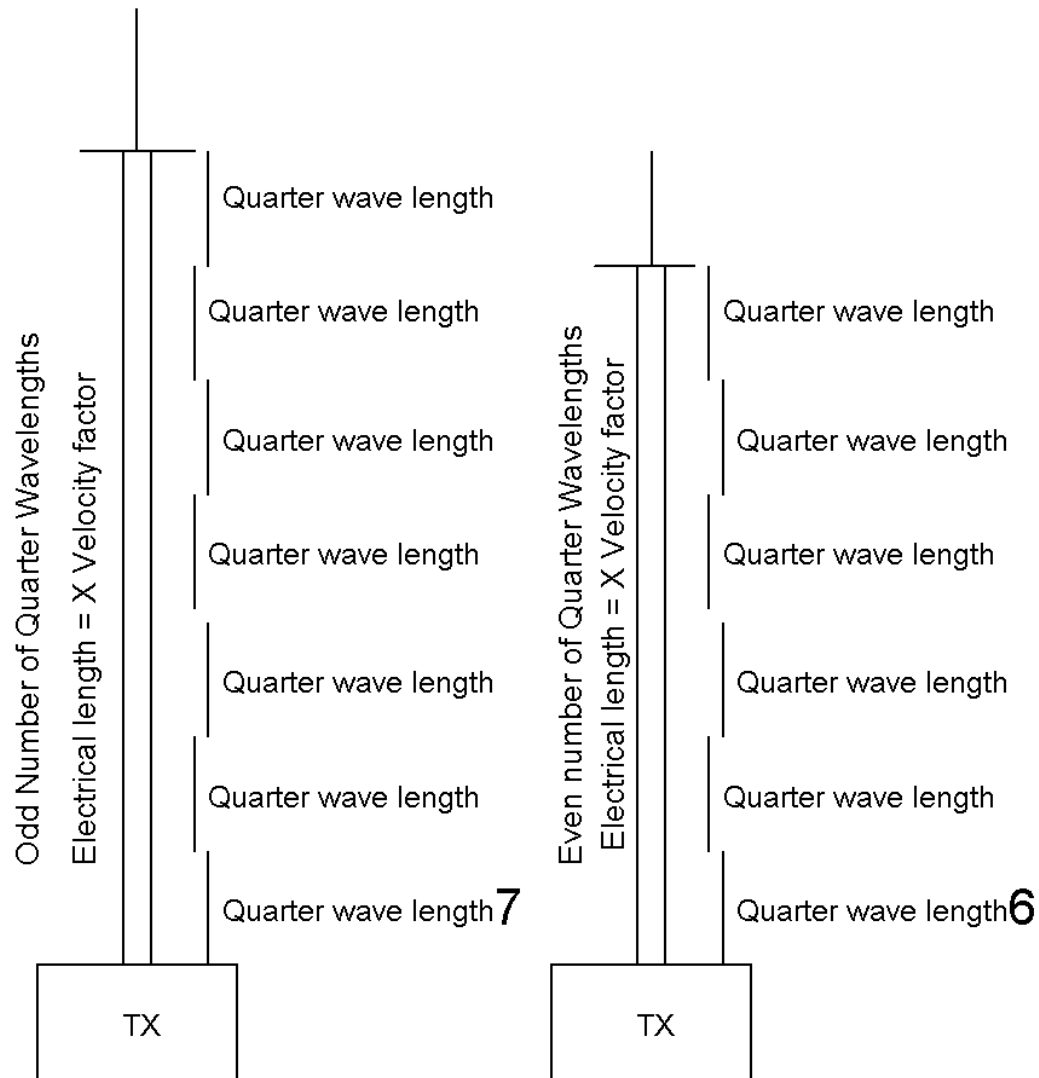
Offset Focus = Lower Gain , See,s Background
Signal to noise Rises !



Central focus= Full gain no 300°K



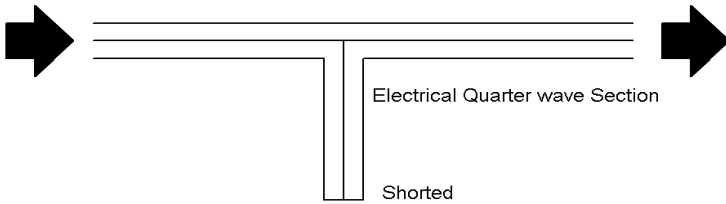
Spill over



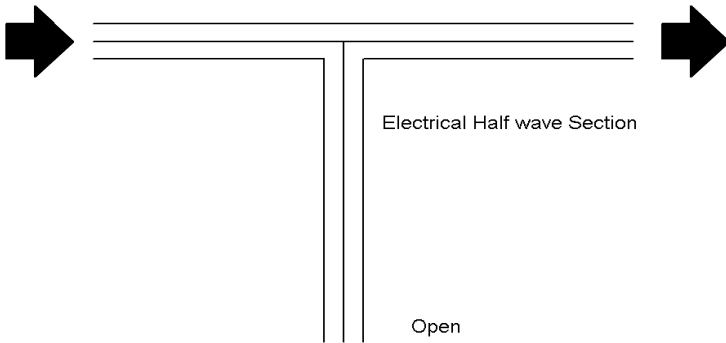
Correct Electrical match Here the coax feed is Resonant

The Antenna has no funktion the cable will get hot

Coax cables when resonant are the worst thing that can happen to an engineer !!

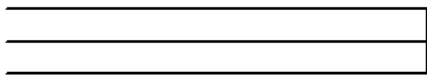


A Quarter wave "Shorted STUB" is Resonant at its Electrical Length frequency and so filters out an unwanted Signal

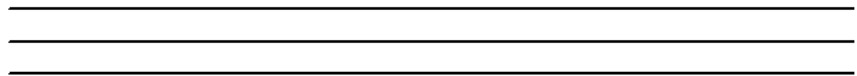


A Half wave "OpenSTUB" is Resonant at its Electrical Length frequency and so filters out an unwanted Signal

Coaxial and parrallel lines



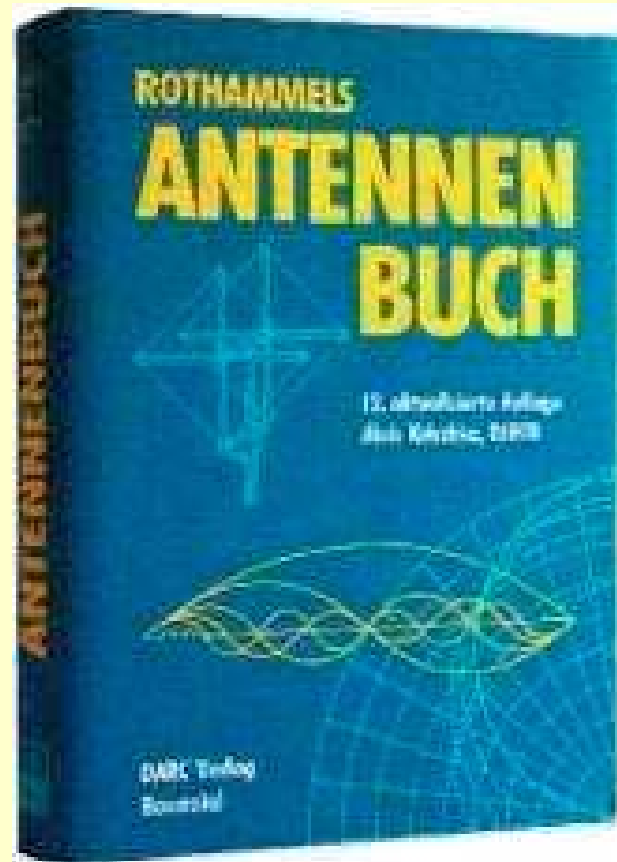
Quarter wave section resonant when shorted



Half wave section resonant when open

A Dammed good Book

- Karl Rothammel
Antennenbuch



Enda

