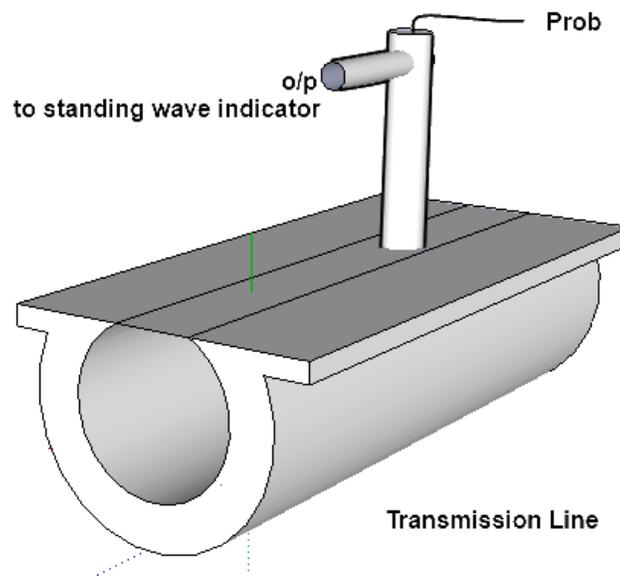


Slotted Line

A section in a transmission line, such as a waveguide or coaxial line, in which a lengthwise slot is cut into the outer conductor, with an adjustable probe placed in said slot. Used, for instance, for the determination of load impedance or standing wave ratios in microwave systems. Also called slotted section, slotline, or slotted waveguide.

Construction of Slotted Line

As shown in the below diagram, the slotted line consists of minimum $\lambda/2$ piece having a slot in its longitude and a circular shape internally. The test probe is kept inside the slot in such a way that it is parallel to the electric field and the transmission line. The output of the probe is provided to standing wave indicator in order to measure the voltage standing wave ratio. The transmission line is kept inside the slotted line for measurement of values of maximum voltage point and minimum voltage location.



Working of Slotted Line

Whenever we want to measure the voltage standing wave ratio of the transmission line, we are to place the conducting wire of the line inside the slotted line through the slot provided in that device. We are to adjust the probe should not touch the conducting wire of transmission line. It should only be electrically coupled with the energy passing through the transmission line.

For measuring of voltage standing wave ratio we take the maximum and minimum reading of voltage along the transmission line by moving the probe right and left and locating at the SWR indicator.

Ahmad Bilal

To measure the frequency of the transmitter with the help of slotted line, the scale is provided at the device. We mark the point for maximum and minimum voltage reading. The distance between those two points provides us the wave length equal quarter λ frame which we can calculate the operating frequency using the formula

$$\lambda/4 = v/uF$$

Where V stand for velocity of electromagnetic waves in free space equal to 3×10^8 ms.

Uses of Slotted Line

The slotted line is used to measure the voltage standing wave ratio of the transmission line upto the frequency in GHz.