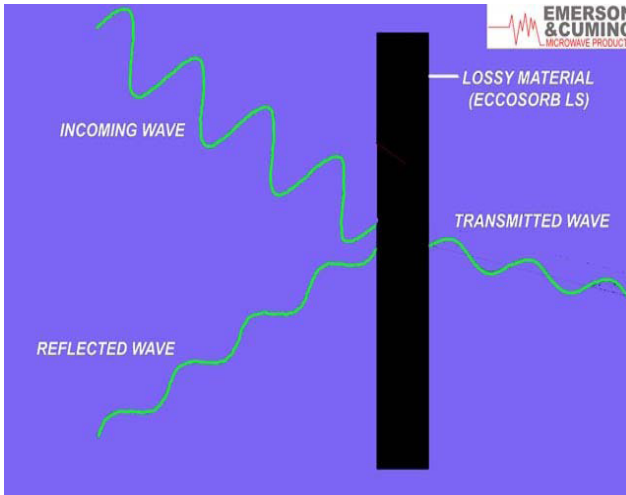


## Insertion Loss Testing

Insertion loss is a measure of how much microwave energy traveling from Point A to Point B is reduced by the introduction (or insertion) of a microwave absorbent material in the path. An insertion loss measurement does not differentiate between all the factors which will affect the reduction in power including reflection from the material and loss as the wave transits through the material.

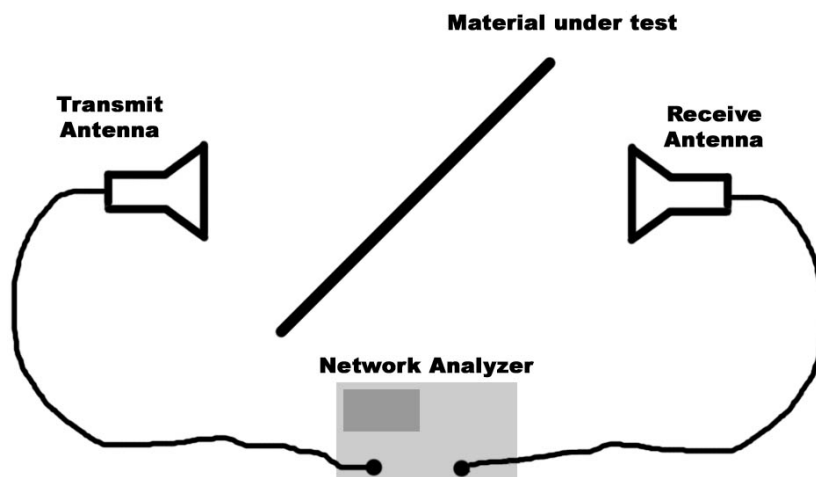


A well designed setup for testing insertion loss would include two antennas oriented so that their maximum directivity is towards each other. They will be separated sufficiently to satisfy far field requirements though the greater the separation, the larger the sample size must be to minimize errors caused by energy leaking around the edges of the sample under test.

In practice, insertion loss measurement is straightforward. A signal is transmitted through one antenna and the response measured at the second antenna. This establishes the reference or 0 dB level and is usually measured as a function of frequency. The material under test is then placed between the antennas and a measurement is performed. The insertion loss is expressed in dB as a function of frequency.

At Emerson & Cuming Microwave Products, standard insertion loss testing is performed at a 45° incidence angle with the polarized electric field perpendicular to the incidence plane. This reduces the impact of the reflected signal interfering with the measurement. Insertion loss testing for Eccosorb® LS and QR-13AF material is performed at 3 GHz. At higher frequencies phase cancellation effects can distort the results.

### Insertion Loss Test Setup



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