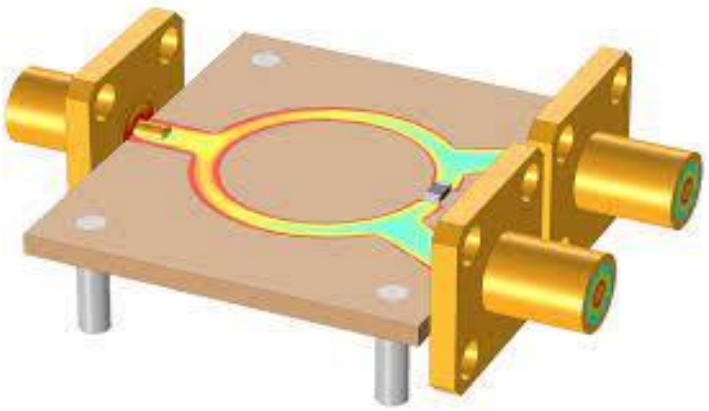
SNS COLLEGE OF ENGINEERING

(Autonomous)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

19EC602- MICROWAVE AND OPTICAL ENGINEERING

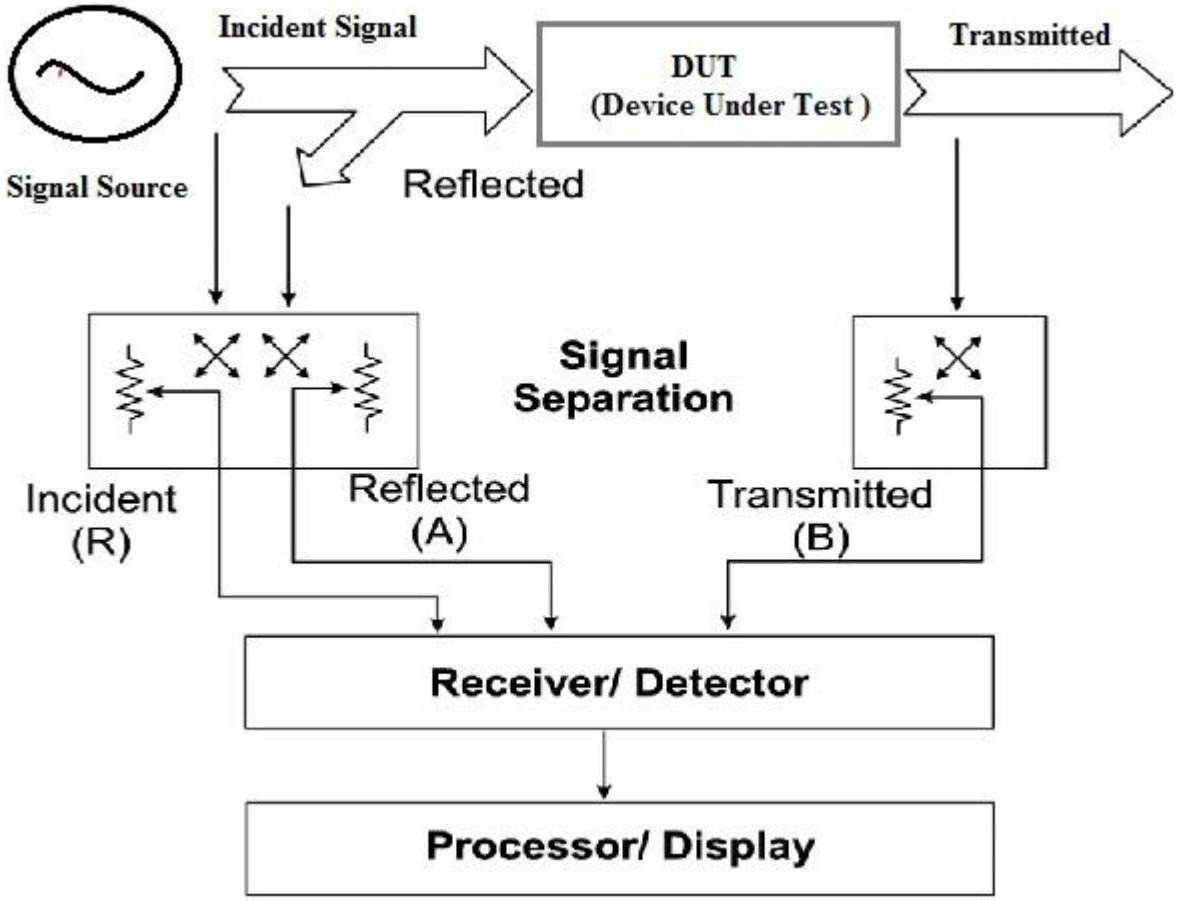
UNIT-3
NETWORK ANALYZER



NETWORK ANALYSER

A network analyzer is a device that gives you a very good idea of what is happening on a network by allowing you to look at the actual data that travels over it, packet by packet. A typical network analyzer understands many protocols, which enables it to display conversations taking place between hosts on a network

NETWORK ANALYSER



Signal Source

The main function of the signal source in the network analyzer is to provide the incident signal which excites the device under test which is also known as DUT. This test device simply responds by reflecting elements of the incident signal & transmitting the leftover part. The response of the DUT can be simply determined through frequency sweeping of the frequency response of the source. The sources are available in two types sweep oscillator & synthesized signal generator.

Signal Separation

The next part in this block diagram is a signal separation that is used to divide different signals like incident, reflected & transmitted. When these three signals are divided then their phase & amplitude measurement can be simply carried out & their variations can be identified. So this can be done by using power splitters, high impedance probes or bridges, and directional couplers.

Receiver/Detector

The receiver or detector in this block diagram is used to change RF voltage to lower intermediate frequency or direct current signal to permit more precise measurement. There are three major receiver methods are used to achieve this diode, fundamental mixing & harmonic mixing.

A diode is one type of broadband detector used to change RF signal to the relative DC voltage. This method is most frequently used in SNA or scalar network analyzers.

The remaining two are broadband tuned receiver methods which are used for changing RF signal into the low-frequency intermediate frequency signal. These two signals will have BPF at IF frequencies to refuse the false frequencies & expand the noise floor.

Processor/Display

The display is the final part of this analyzer that generates the results as preferred by the operator. The signal processor or display processes the intermediate frequency signal & displays the information on the cathode ray tube screen.

Working

The above network analyzer block diagram working is, fist the signal source generates an incident signal to DUT. After that, the signal separation device divides incident, reflected & transmitted signals. The receiver or detector changes the frequency from microwave to lower IF to make it simple for further processing. Finally, the processor or display processes the IF signal & displays the data on the CRT display.


Thank
you