



# **SNS COLLEGE OF TECHNOLOGY**

**Coimbatore-35**  
**An Autonomous Institution**



Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A++' Grade  
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

## **DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

### **OPTICAL AND MICROWAVE ENGINEERING**

III YEAR/ VI SEMESTER  
1

#### **UNIT 3 – MICROWAVE MEASUREMENTS**

**TOPIC– SPECTRUM ANALYZER**

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## What is a Spectrum Analyzer?

A spectrum analyzer measures the magnitude of an input signal versus frequency within the full frequency range of the instrument

Spectrum analyzers usually display raw, unprocessed signal information such as voltage, power, period, wave shape, sidebands, and frequency. They can provide you with a clear and precise window into the frequency spectrum.



## Difference between Spectrum Analyzer & Oscilloscope:-

An oscilloscope give amplitude v/s time display of a wave,  
whereas the spectrum analyzer gives amplitude v/s frequency display.

The oscilloscope gives distribution of energy in wave with respect to time  
whereas the spectrum analyzer displays frequency components of a wave and their amplitudes.



## Most Common Spectrum Analyzer Measurements are

### Modulation

Modulation is important for making sure your system is working properly and that the information is being transmitted correctly.

### Distortion

In communications, measuring distortion is critical for both the receiver and transmitter. Excessive harmonic distortion at the output of a transmitter can interfere with other communication bands.

### Noise

Noise is often the signal you want to measure. Any active circuit or device will generate noise.

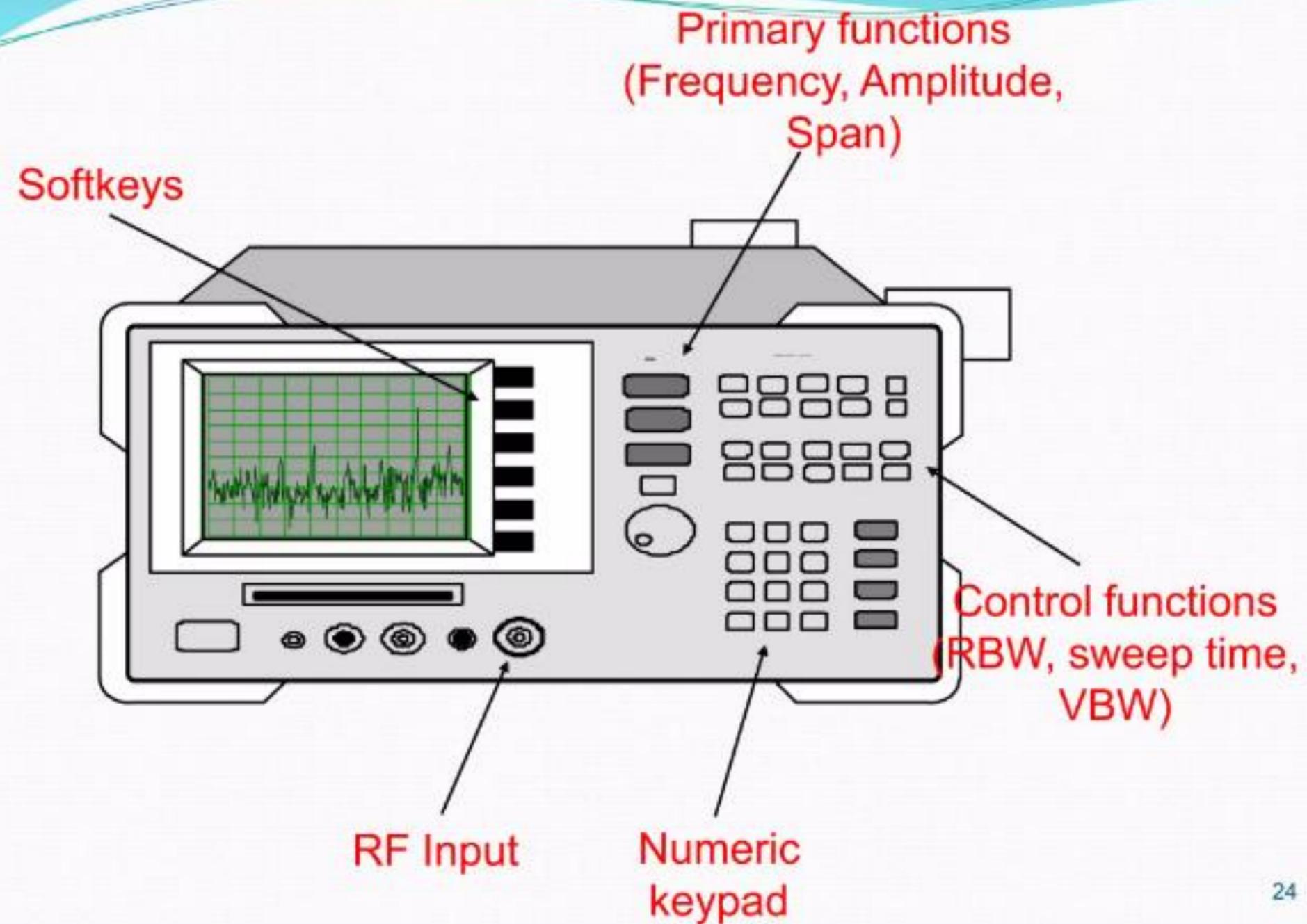


## Major blocks in a spectrum analyzer are:-

- 1] RF input attenuator,
- 2] Mixer,
- 3] IF (Intermediate Frequency) gain,
- 4] IF filter,
- 5] Detector,
- 6] Video filter,
- 7] Local oscillator,
- 8] Sweep generator, and
- 9] CRT display.



# Front Panel Operation





**THANK YOU**