

1. What is Binomial array?

A Binomial array is an array in which the antenna element amplitudes are arranged according to the coefficients of binomial array.

2. What is an antenna array?

An antenna array is a radiating system of similar antennas spaced properly to achieve greater field strength in desired direction at a point at far distance from the radiating system.

3. What is Linear array?

An antenna array is said to be linear if the elements of the antenna array are equally spaced along a straight line.

4. What is meant by uniform linear array?

The linear ^{antenna} array is to be uniform linear array if all the elements are fed with a current of equal magnitude with progressive uniform phase shift along the line.

5. What are different types of antenna array?

1. Broadside array
2. End fire array
3. collinear array
4. parasitic array

6. what is meant by Broadside array?

Broadside array is the arrangement of antennas in which maximum radiation is in the direction perpendicular to the axis of array and plane containing the elements of array.

7. what is meant by end fire array?

End fire array can be defined as an array with direction of maximum radiation coincides with the direction of the axis of array to get unidirectional radiation.

8. what is the main difference between Broadside array and end fire array?

Broadside array

End fire array

1. The direction of the maximum radiation is perpendicular to the axis of the array.

The direction of the maximum radiation is along the axis of the array.

$$\begin{aligned} 2. \text{BWFN} &= \frac{2\lambda}{L} \text{ rad} \\ &= \frac{114.6}{L} \lambda \text{ deg} \end{aligned}$$

$$\begin{aligned} \text{BWFN} &= 2 \sqrt{\frac{2\lambda}{L}} \text{ rad} \\ &= 114.6 \sqrt{\frac{2\lambda}{L}} \text{ deg} \end{aligned}$$

$$3. \text{HPBW} = \lambda \text{ rad (or)} 57.3^\circ$$

$$\text{HPBW} = \sqrt{2\lambda} \text{ rad (or)}$$

$$\text{Directivity, } D = \frac{2L}{\lambda}$$

$$D = \frac{4L}{\lambda}$$

9. what is the need for Binomial array?

In case of uniform linear array, to increase the directivity the array length has to be increased. But when the array length increases, the secondary or side lobes appear in the pattern.

In some of the special applications, it is desired to have single main lobe with no minor lobes. That means the minor lobes should be eliminated completely or reduced to minimum level as compared to main lobe.

10. what are advantages and disadvantages of Binomial array?

The advantage of Binomial array is that there are no side lobes in the resultant pattern.

The disadvantages are i) undesirable large beamwidth of main lobe

ii) small directivity

iii) High Excitation levels needed to feed centre elements of an array.

11. what is phased array ?

The array in which the phase and the amplitude of the elements are variable, provided that the direction of maximum radiation (Beam direction) and pattern shape along with the side lobes is controlled is called as phased array.

12. what is meant by grating lobes ?

The grating lobe or grating beam is a beam identical to the main beam but in undesired direction.

13. How grating lobes existing in the array can be minimized ?

For broadside array, the grating lobe appears when $d \geq \lambda$ and for endfire array it appears when $d \geq \lambda/2$. we can conclude that to avoid grating lobe in the radiation pattern for any array, the inter-element spacing should be $< \lambda/2$.

Draw the experimental setup for impedance measurement

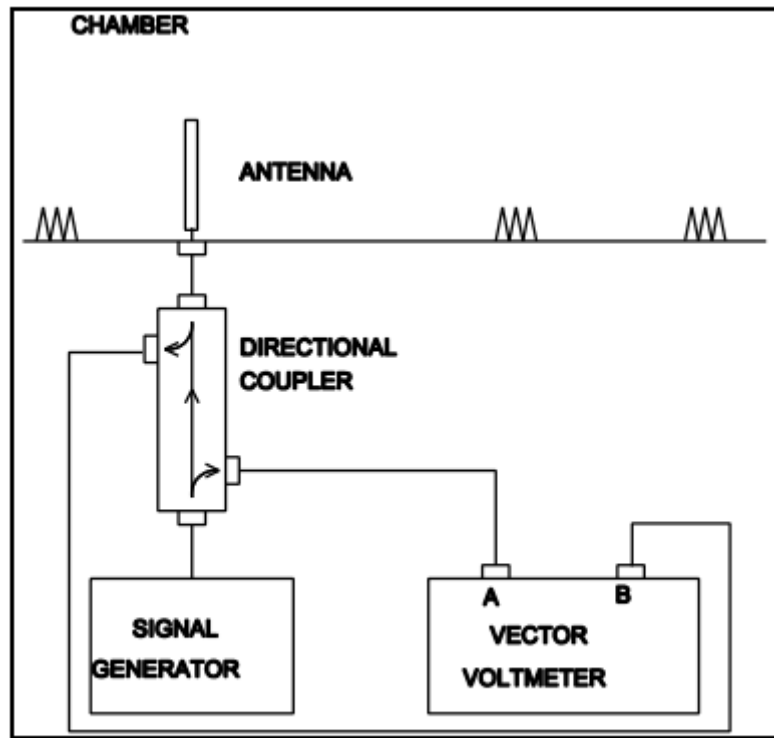


Figure 2. Experimental setup for input impedance measurements.