

Advantages of phased array radar:

1. The primary advantage is that phased array radar eliminates the need for mechanically rotating antenna elements.
2. The radiation pattern is capable of changing rapidly to follow the moving target.
3. The array has the ability to generate simultaneously many independent beams from the same antenna aperture. The array might generate fixed beams, scanning beams or both at the same time.
4. Large peak or large average powers may be obtained with separate transmitters at each of the elements of the array.
5. The spill over loss is almost absent in phased array.
6. The efficiency of phased array radar is higher compared to all other systems.

Limitations of phased array:

1. Limited Coverage available from a single plane array. Theoretically, a single plane array should be able to cover hemisphere but practically it is difficult.
2. The phased array radars are the costliest and the complexity is the biggest disadvantage.

Applications of phased array antenna

13.

steerable antenna Phased array antennas are electronically steerable...
A phased array may be used to point a fixed radiation pattern or to scan rapidly in azimuth or elevation.

3. It is used in optical Communication as a wavelength selective Splitter.

4. Am broadcast Casting: used in many Am broadcast radio stations to enhance signal strength and therefore Coverage in the city of license while minimizing interference to other areas.

5. FM broadcasting: which greatly increase the antenna gain magnifying the emitted RF energy toward the horizontal which greatly increases the stations broadcast range.

6. Naval usage: phased array radars allow a warship to use one radar system for surface detection and tracking, air detection and tracking and missile Cplink Capabilities.

7. Weather research usage: for better understanding of thunder storms and tornados, eventually leading to increased warning times and enhanced prediction of tornados.

8. Radio frequency Identification: phased arrays has been included in RFID systems in order to significantly boost the reading capability of passive UHF tags passing from 30 feet to 600 feet.