



SNS COLLEGE OF ENGINEERING
(Autonomous)
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING



19EC504 – TRANSMISSION LINES AND ANTENNAS

III YEAR/ V SEMESTER

UNIT 4 – SPECIAL ANTENNAS

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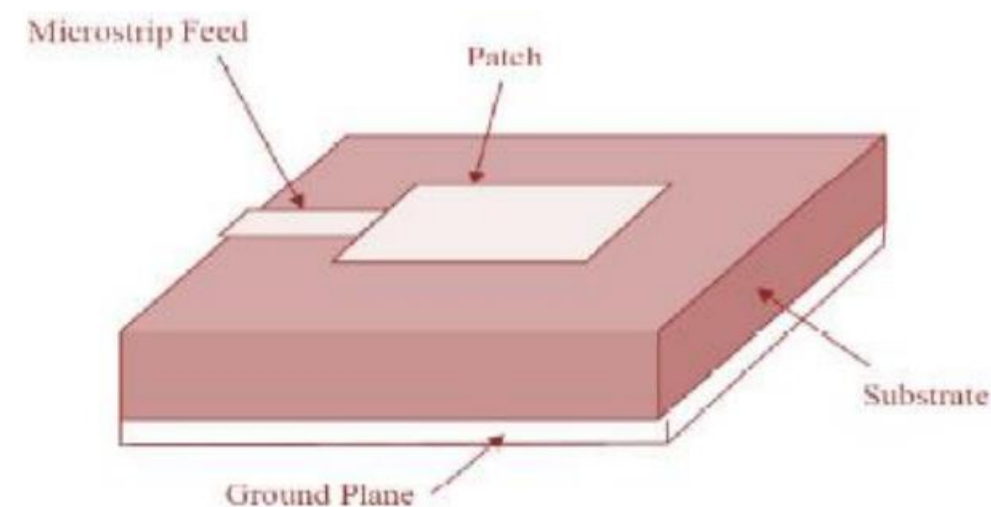
TYPES OF FEEDS



- A variety of methods can feed microstrip Patch Antenna. These methods can be classified into two categories: ***contacting*** and ***non-contacting***. In the contacting methods, the RF power is fed directly to the radiating patch using connecting elements such as a microstrip line.
- In a non-contacting scheme, the patch is not directly fed with the RF power, but instead, power is transferred to the patch from the feed line through electromagnetic coupling. The most commonly used non- contacting feed methods are aperture and proximity coupled feed.

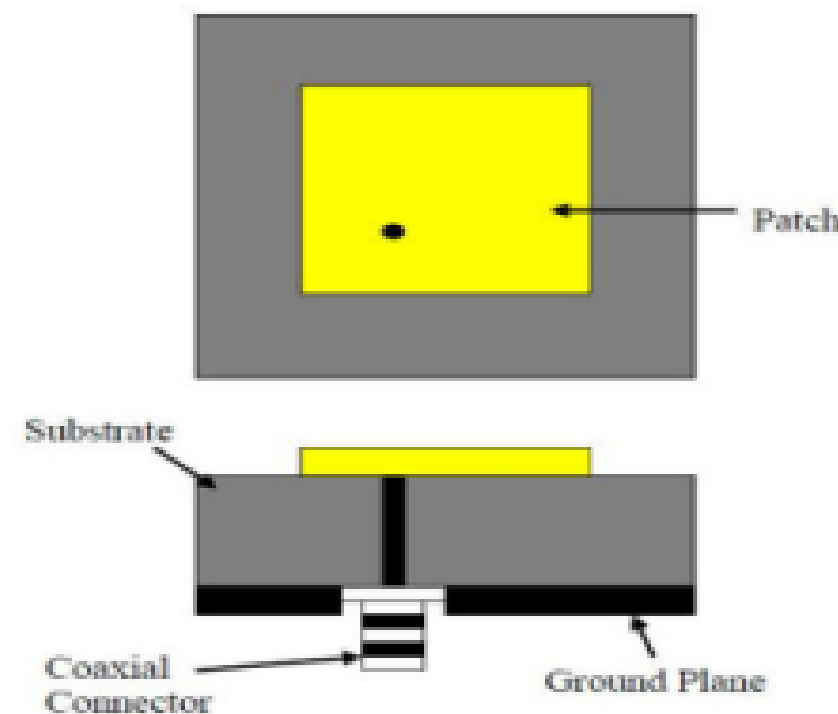
MICROSTRIP LINE FEED

- In this type of feed technique, a conducting strip is connected directly to the microstrip patch's edge.
- The conducting strip is smaller in width than the patch, and this kind of feed arrangement has the advantage that the feed can be etched on the same substrate to provide a planar structure.



CO-AXIAL FEED

The co-axial feed is a non-planar feeding technique in which a co-axial cable is used to feed the patch. The inner conductor of the co-axial cable is used to feed the patch. The inner conductor of the co-axial cable extends through the dielectric, making a metal contact with the patch, and the outer conductor of the cable is connected to the ground plane.





PROXIMITY COUPLED FEED



In proximity feed, the feed line is placed between two dielectric substrates. In the edge fed technique, it is impossible to choose a 50 ohms feed point since the impedance at the edges will be very high. To overcome this, the feed line is moved to a lower level below the patch.

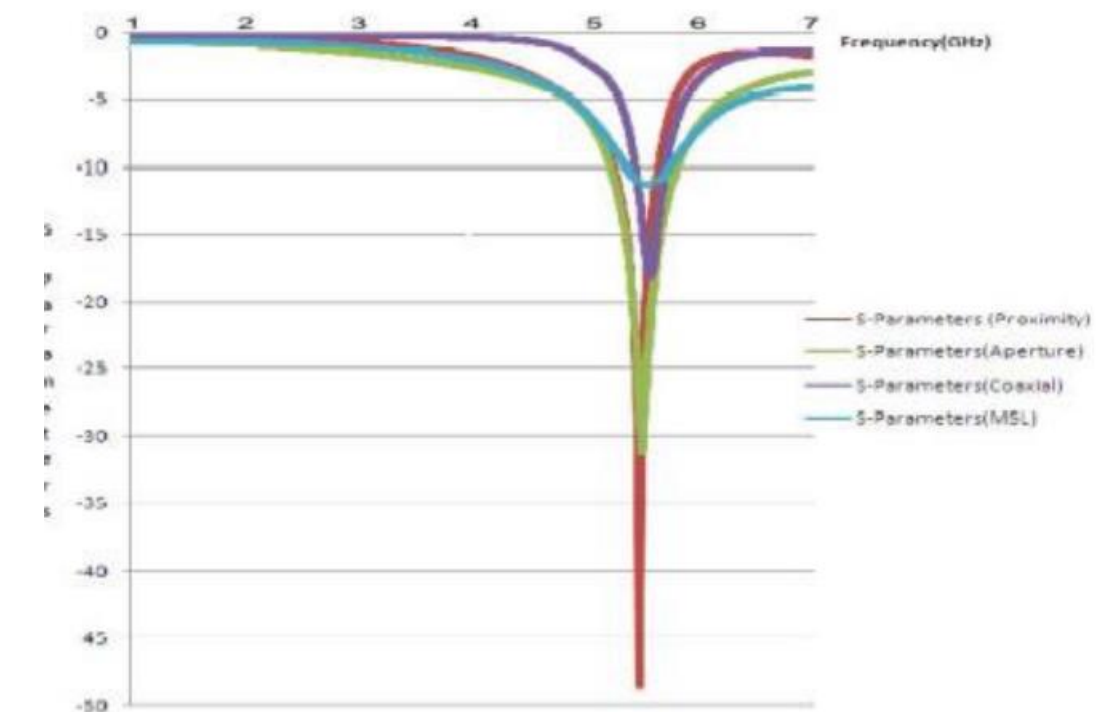
The edge of the feed line is located at a point where the antenna input impedance is 50 ohms. Here the power transfer from the feed to the patch takes place through electromagnetic field coupling. Also, it has an improved bandwidth efficiency compared to the other techniques. The disadvantage with this method is that multilayer fabrication has to be done, and it offers poor polarization purity plane.



COMPARISON OF DIFFERENT FEEDING TECHNIQUES



- Comparisons between different techniques are that the Aperture-coupled feed has more bandwidth but less directivity. The co-axial feed provides high beam-width but less bandwidth. Aperture feed has the lowest reflection loss. The co-axial feed has the highest beam-width. Aperture feed has the lowest VSWR value and has the simplest structure making it easier to fabricate.





THANK YOU