PARAMETERS ANALYSIS & STUDY OF AN ARROW SHAPED PATCH ANTENNA IN INCREASING SLOTS MODE KEEPING INPUT PARAMETERS CONSTANT

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1 INDRODUCATION

Microstrip antenna consists of a radiating patch of any planar geometry (e.g. Circular, square, Ellipse, ring and rectangular) on one side of a dielectric material substrate backed by a ground plane on the other side. It has some advantages such as light weight, low cost etc. and some disadvantages such as low bandwidth low gain. My methodology is to improve the performance of patch antenna by introducing slots in its cross-section and analyzing the effects.IE3D software is used as simulator and study to generate a conclusion that what will happen with the important antenna parameters if in any antenna slots are increased at different positions. The discussion will start from the basic geometry of the antenna; I have taken an arrow shaped antenna for this practice

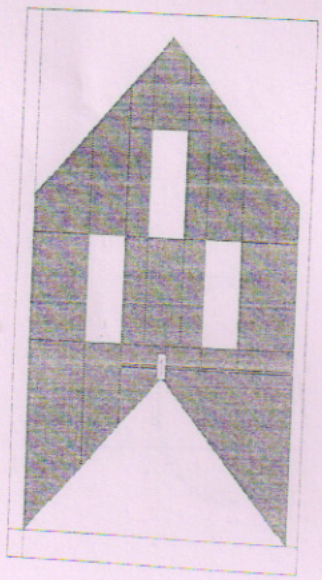

Figure 1:Single slot arrow shape MSA

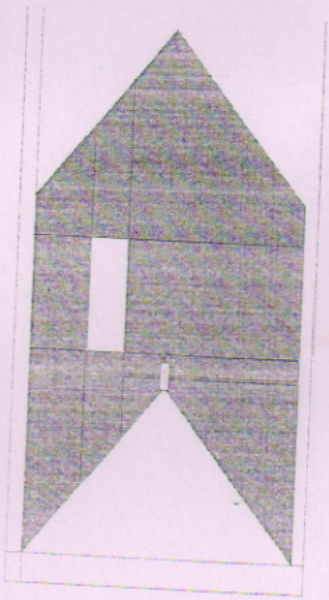

Figure 2: Double slot arrow shape MSA

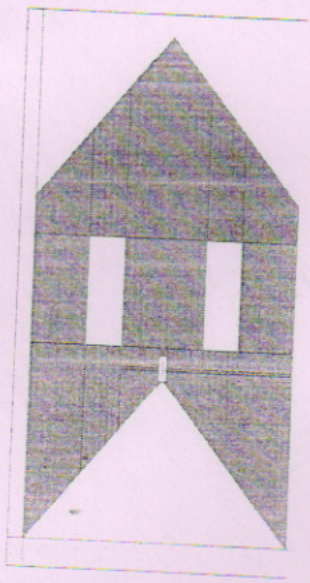

Figure 3: Triple slot arrow shape MSA

Figure 1, Figure 2 and Figure 3 are representing the three samples and they are taken for analysis in this paper. The coordinates of this basic arrow shape in which have dig these holes , starting from origin (0,0) are (18.06,15), (36.12,0), (36.12,31.51), (18.06,46.51) and (0.31,51). The feed Point is given as (18,16) and then by simulation on IE3D following results are generated and compared, Figure 4, 5 and 6 show the value of return loss of antennas .

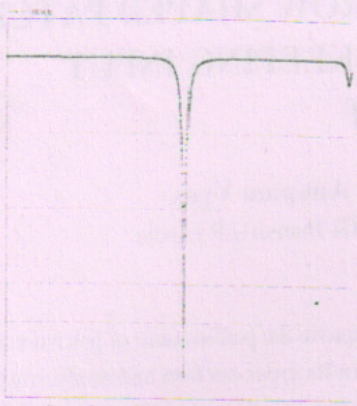

Figure 4 : Return Loss Graph of Single slot arrow shape MSA

Figure 5: Return Loss Graph of Double slot arrow shape MSA

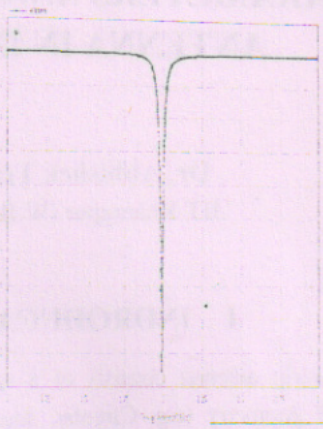

Figure 6 : Return Loss Graph of triple slot arrow shape MSA

Smith chart of each antenna has been drawn as show in the figures 7,8 & 9.

Figure 7: Smith Chart of Single slot arrow shape MSA

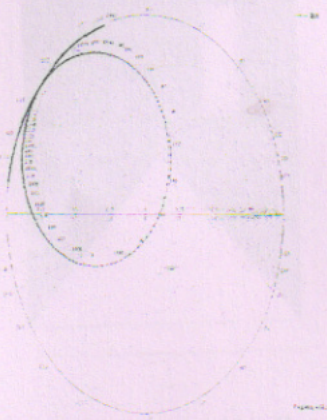

Figure 8: Smith Chart of Double slot arrow shape MSA

Figure 9 :Smith Chart of Triple slot arrow shape MSA

VSWR Graphs of the slotted arrow shaped antenna have been drawn at figure 8,9,and10.

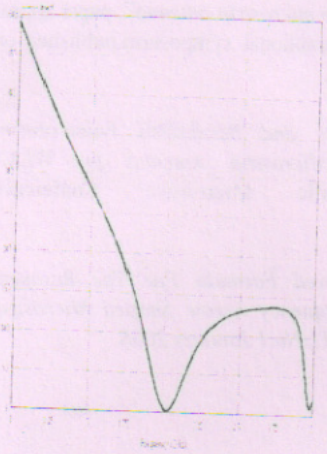

Figure 8

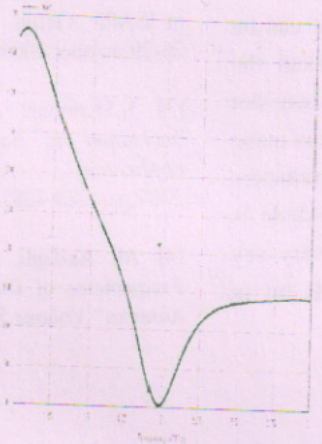

Figure 9

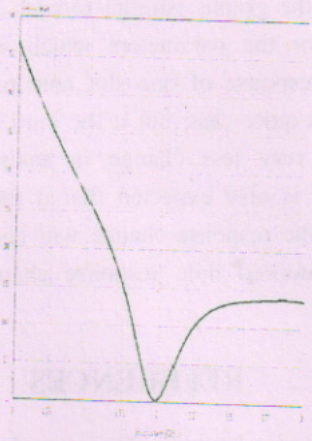

Figure 10

Both Real and Imaginary parts of S-Parameters of antennas as generated by IE3D respectably are shown figure 11to 16

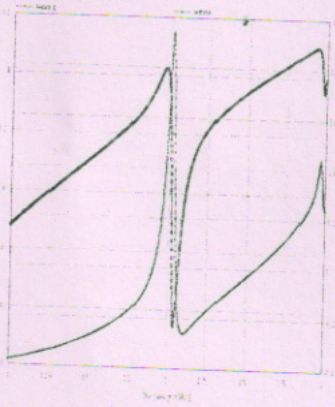

Figure 11

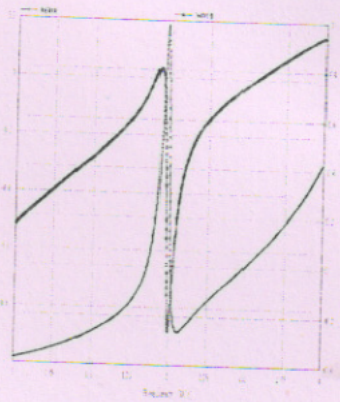

Figure 12

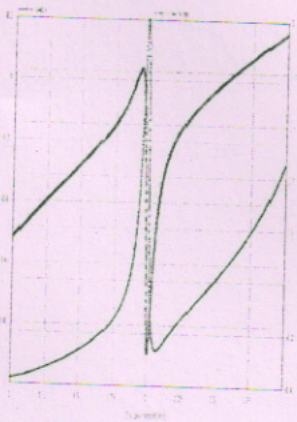

Figure 13

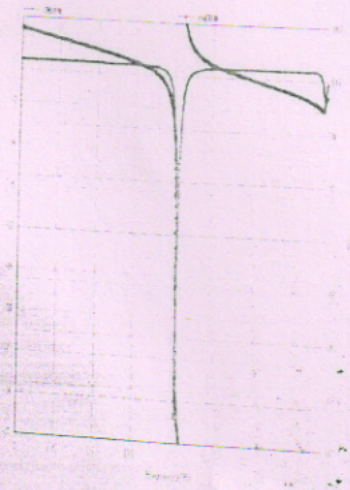

Figure 14

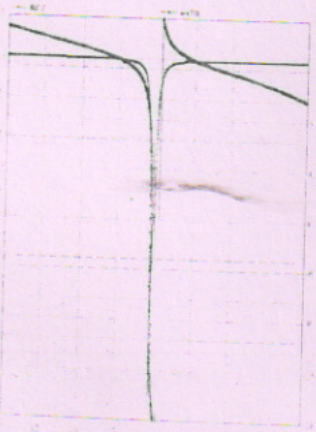

Figure 15

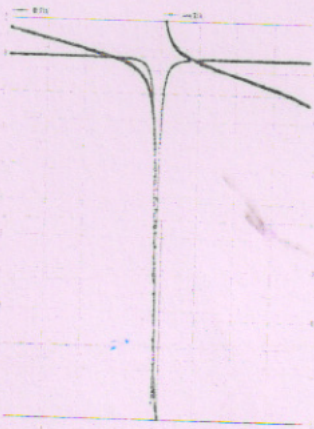

Figure 16

II CONCLUSION

By putting the graphs parallel to each other it can be seen that for the parameters which we worked the change in response of one slot antenna and two slot antenna was quite clear but if the third hole was made then there very less change in antenna parameters response, it is also expected that if the forth hole is made then the response change will become very vey less. For succeed hole response change will be in significant.

REFERENCES

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