$$\Delta L = 0.412\, h \frac{\left(\varepsilon_{re} + 0.3\right)\left(\frac{W}{h} + 0.264\right)}{\left(\varepsilon_{re} - 0.258\right)\left(\frac{W}{h} + 0.8\right)}$$

Substituting εre, Width of patch i.e. W and h we get ΔL=0.713mm.

Calculation of actual length of patch (L)

The length is a critical parameter and the above equations are used to obtain an accurate value for the patch length L.

The actual length is obtained by:

$$Leff = L + 2\,\Delta L$$

Here by substituting the value of ΔL and L*eff we get* L=49.57mm

3. Geometry of Proposed Antenna

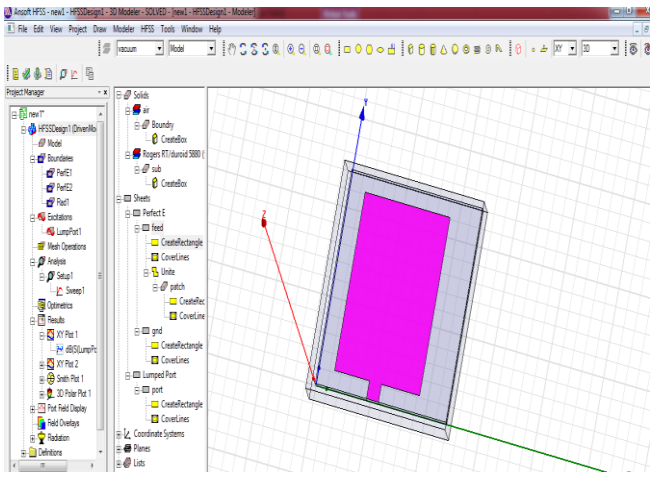

Figure 1: Geometry of Proposed Antenna

4. Result and Conclusion

S parameter

S parameter is the graph of S11 parameter vs Frequency, In S parameter we check the return losses. Here I get return loss which is less than -10db.

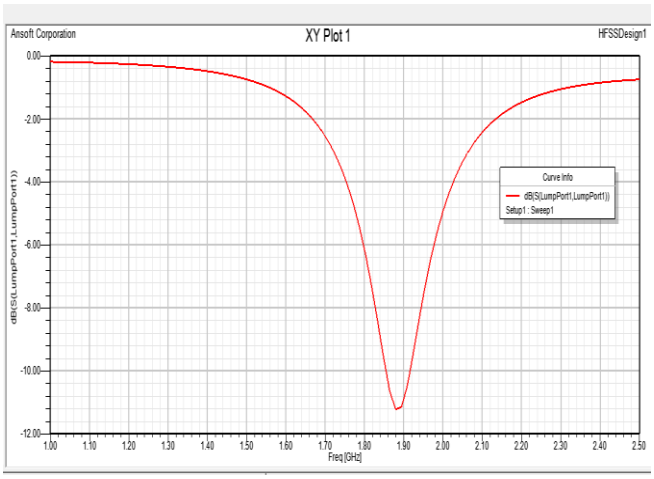

Figure 2: S11 Parameter vs. Frequency plot

VSWR (Voltage Standing Wave Ratio)

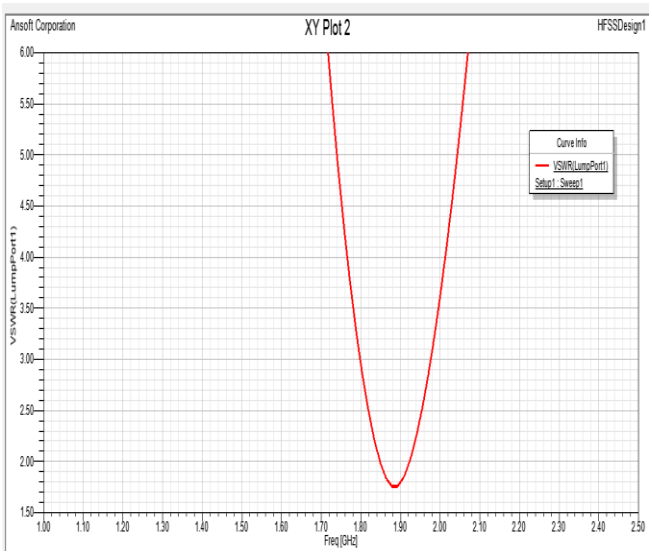

Figure 1: VSWR vs. Frequency plot

The Idle value for VSWR is 1 Means there is no reflection so here I got value of VSWR is 1.7 so here is small reflection of waves from load to generator.

5. Smith Chart

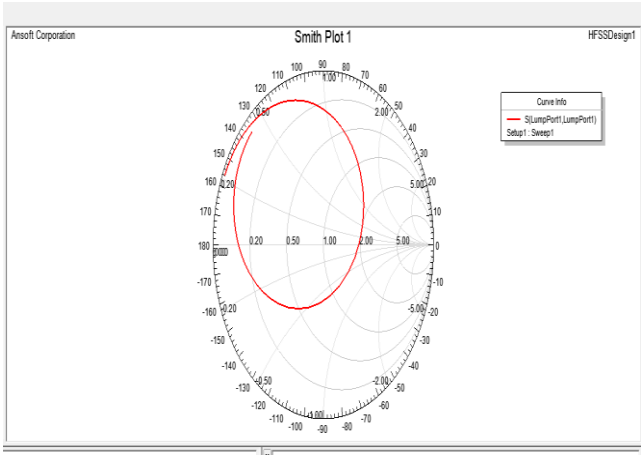

Figure 4: Smith Chart

6. Radiation Pattern:

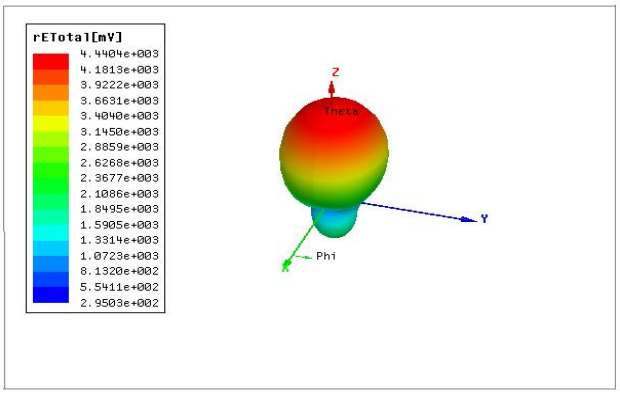

Figure 4: Radiation Pattern

7. Conclusion

Rectangular patch antenna at 1.98GHz with -12 dB return loss is designed on Ansoft HFSS. Also got the VSWR which is less than 2 is achieved. The designed antenna is suitable for Wireless application.

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