



ANTENNA DESIGN ON FLEXIBLE SUBSTRATE

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INTRODUCTION

A wearable antennas are applied to enable the communication in so-called wireless communication. These wearable antennas must be integrated easily in the cloth, comfortable and endurable to any bending or crumpling and in another word they have to be flexible.

SPECIFICATION AND DESIGN REQUIREMENTS

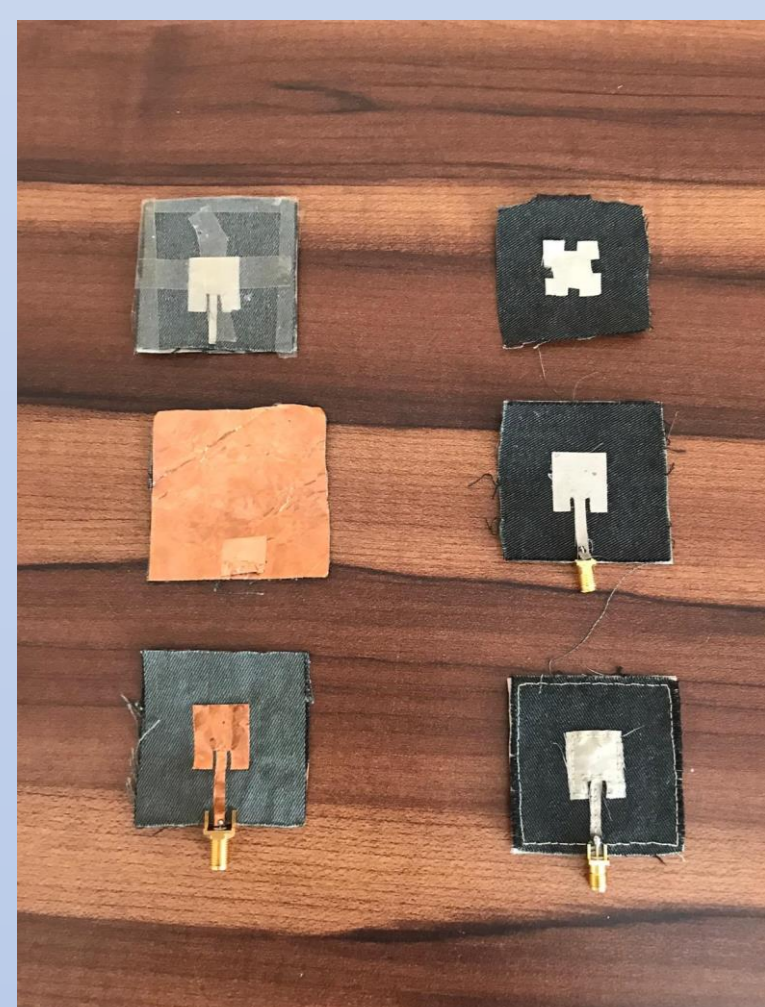
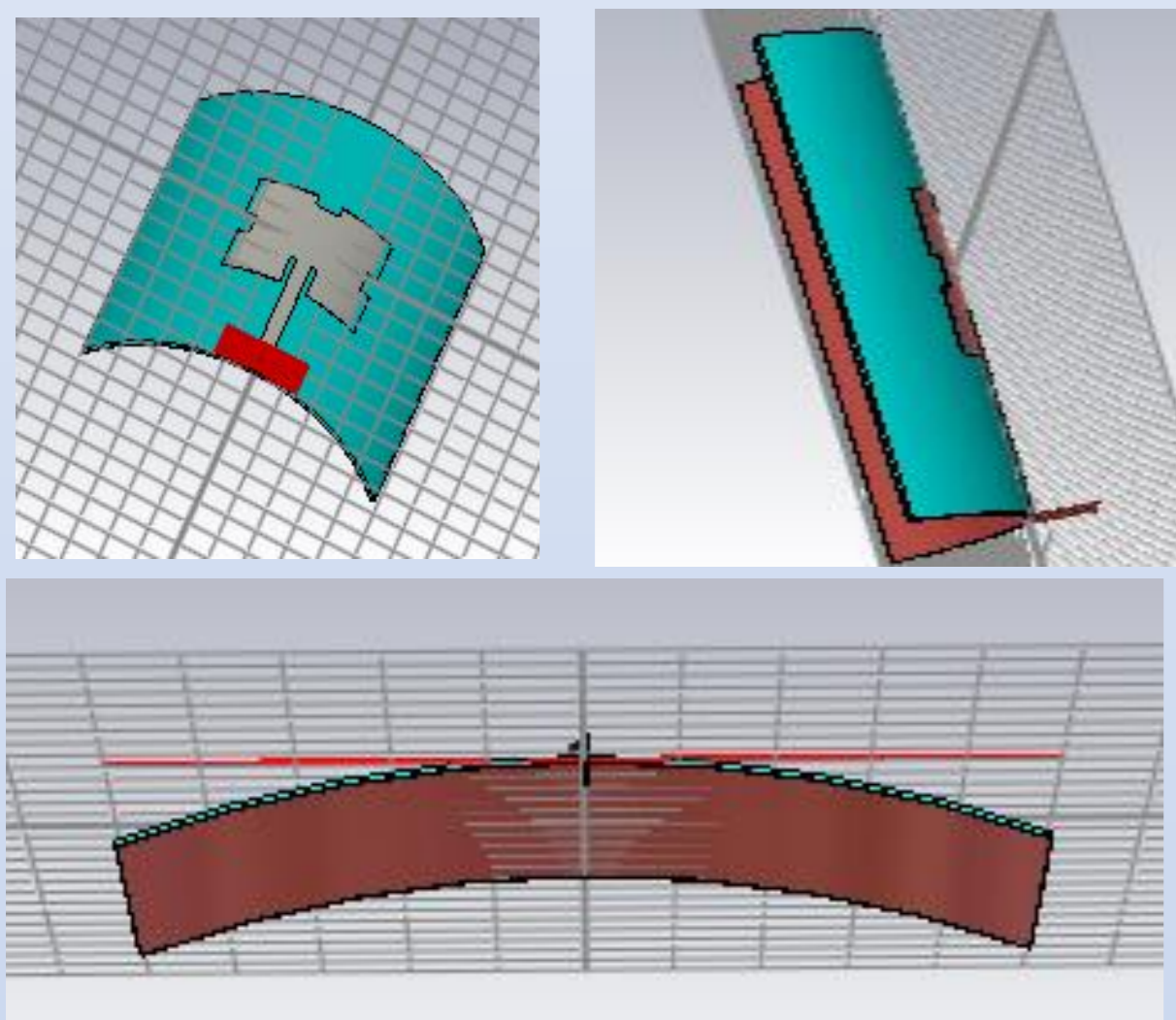
Patch Width and Actual Length

$$W = \frac{c}{2f_0\sqrt{\frac{\epsilon_r + 1}{2}}} \quad L_{eff} = \frac{c}{2f_0\sqrt{\epsilon_{eff}}}$$

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

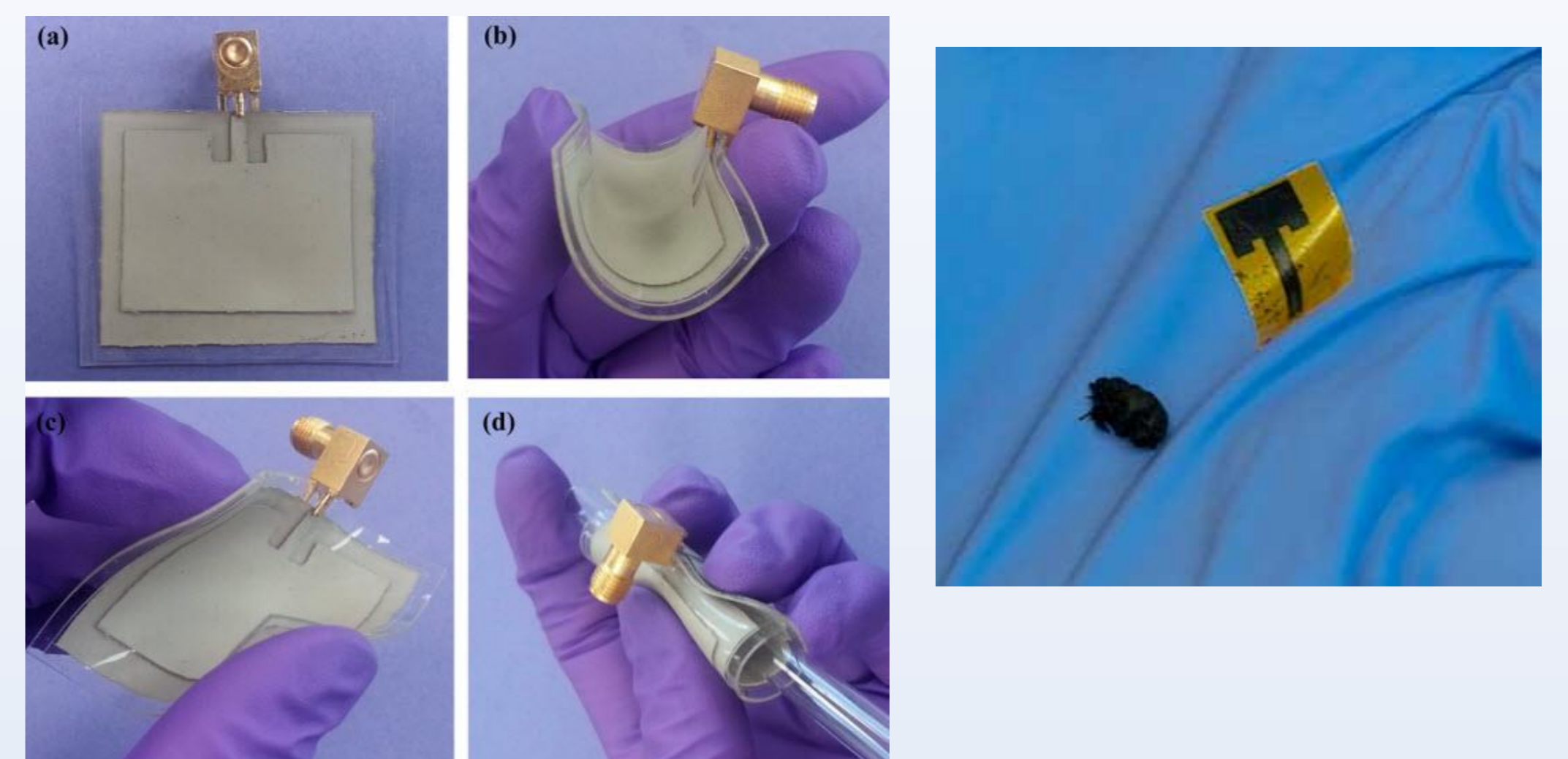
$$L = L_{eff} - 2\Delta L$$

SIMULATION AND REALIZATION



APPLICATION AND AREAS

Flexible microstrip antenna that can be placed in contact with the human skin. These antennas play significant role in Wireless Body Area Network(WBAN) applications.



RESULTS AND DISCUSSION

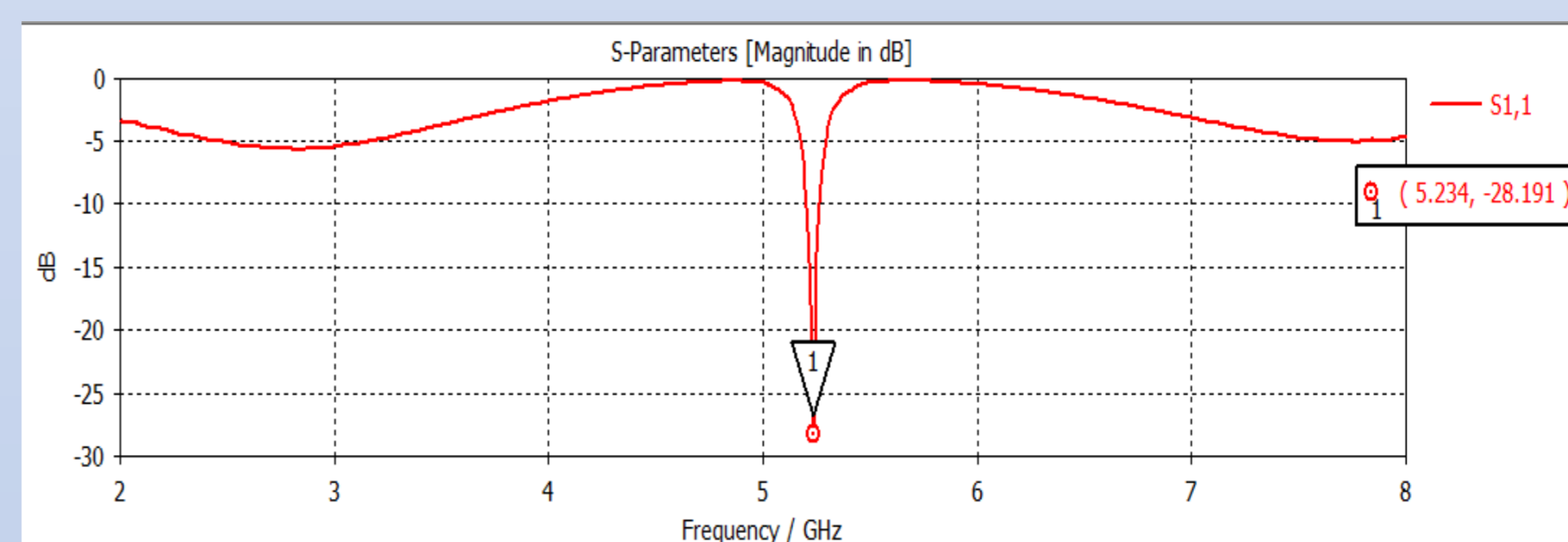
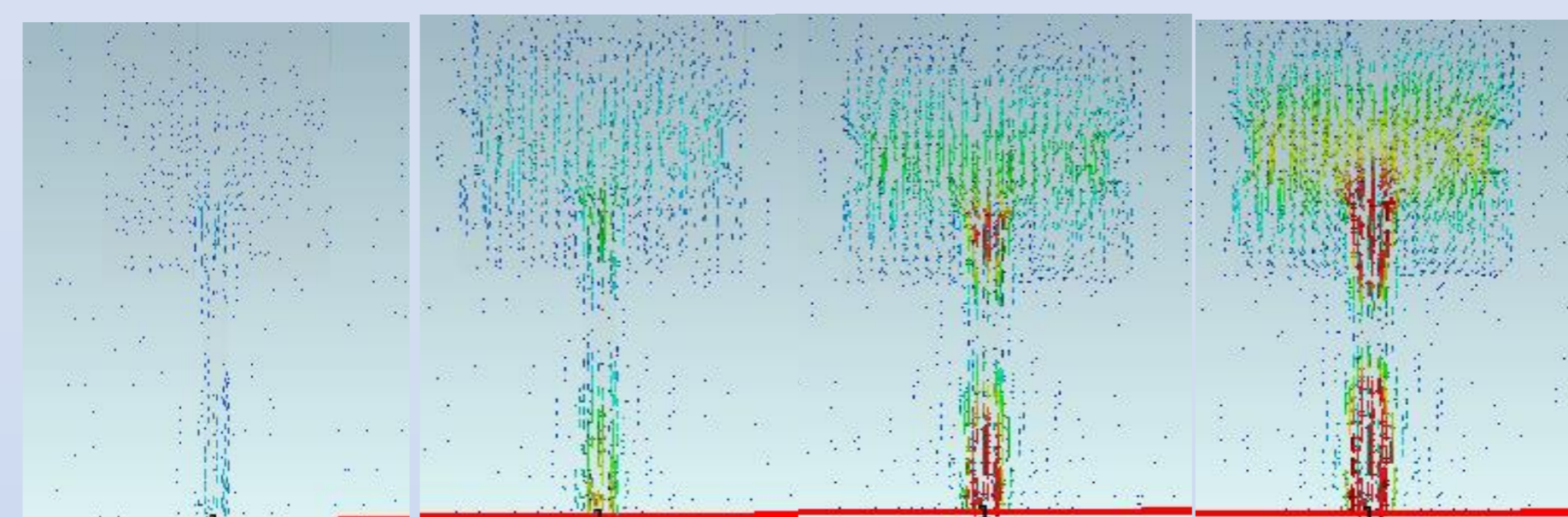
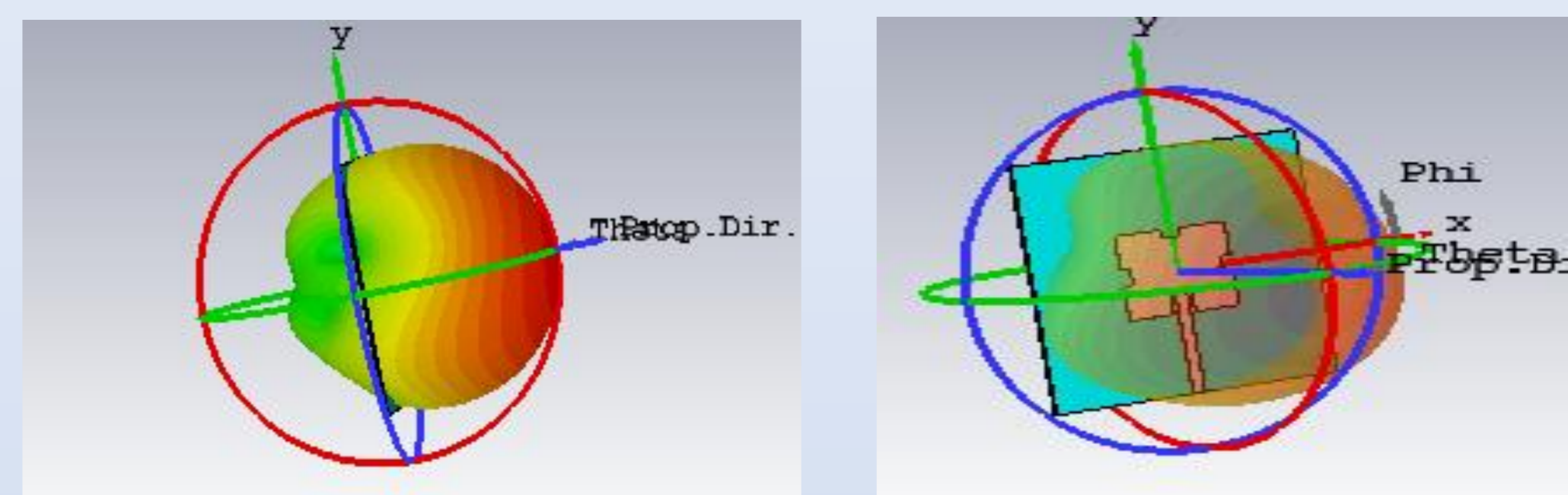


Figure: Far Field , Surface Currents and S11 parameter of fractal bended antenna

REFERENCES

- Girish Kumar, Broadband Microstrip Antennas
- A. Balanis, Antenna Theory, Chapter 14
- Ying Hu, David R. Jackson, Jeffery T. Williams, and Stuart A. Long, A Design Approach for Inset-Fed Rectangular Microstrip Antennas