Antennas and RF Systems EEE60121

Patch Antenna Design and Modelling (Lab 3)

Report writing format:

- Font type: Times New Roman (Justified)
- Font size: 12
- 1.15 Spacing

Report Content

Introduction (1/2 page) (5 marks)

- Describe about aims and objective of the report, what the simulation and the reports all about.

Background Theory (1 page) (5 marks)

- Theory about the patch antenna design, antenna parameters such as resonance frequency and S11, bandwidth, gain (IEEE gain and Realised gain), directivity and bandwidth and their relation in patch antenna design

Procedures (1 and 1/2 pages) (10 marks)

- Figure of modelled patch antennas, the dimensions of the antennas, material used, type of port used, frequency range, parameters being observed
- Input impedance of the antenna vs impedance of the transmission line.
- Simulation repeated for different designs

Simulation result, discussion and analysis (8 pages) (60 marks)

- Figures with values and markers for each task, discuss the result
- Comparison table for all the different dimensions of the patch antenna designs (for related antenna parameters), discussion and comparison

Conclusion (1 page) (5 marks)

- Conclude the finding from aims and objectives and the analysis

References, report formatting and presentation (10 marks)

- Page limit (12 pages), cover page, report organization, figures and table caption

Bonus Section (1 1/2 pages) (5 marks)

In this this bonus section you can show your own improved square patch antenna design. Your design should present some improvement over the design that was suggested in the lab script. The improvement in performance can be in terms of input impedance matching, S11 parameters, bandwidth or gain.

- The bonus section is not included in the page count.
- Present your design with dimensions
- Show the parameters that you investigated
- Justify why your design is better and what parameters have you improved
- Include some theory for the design that may have improved your antenna performance