SCHOOL OF ENGINEERING

FINAL YEAR ENGINEERING PROJECT (3317)

FINAL REPORT

Course	: B.Eng. (Hons) Communication and Electronic Engineering
Project Title	: Design of Low-Noise Microwave Amplifier
Name	: Dicky Lee Yung Loong
Student No	: 99208432
1st supervisor	: Ms. Ruzita Binti Abu Bakar
2nd supervisor	: Mr. Ammar A.M Ali. Al Talib
Project Coordinator	: Dr. Khedr M.M Abo-Hassan
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Abstract:

As the demand for wireless network access increases, so does the need for high performance wireless Local Area Network (LAN). One of the key components of the wireless LAN is the Low-Noise Amplifier (LNA).

In this report, the design of low-noise microwave amplifier to meet specifications of the gain and low noise is explained. Besides, this report presents designing and prototyping of a low noise microwave amplifier. The circuit was built using a transistor MGA-52543 from Agilent Technologies. Simulations using Microwave Office (AWR2002) allowed the LNA to be optimized for better performance. With the LNA designed, the physical layout that is designed using microstrip form was performed to identify the effect on the LNA's operation.

The design of the LNA was simulated in AWR to verify its performance. At the frequency of 1.0 GHz, the single stage LNA exhibit the noise figure of 1.511dB and a gain of 15.89dB has been achieved. In most cases, the objectives of the project were met. However, recommendations for further research and work of the enhancement the maximum gain while minimizing the noise factor are outlined in this report. The future work can be divided into work on the circuit design, the integration of the LNA and development of layout, and further enhancement.