ROBOTICS AND COMMUNICATIONS SYSTEMS ENGINEERING TECHNOLOGY
EMITTER, SHUNT, & SERIES PEAKING LAB
3RD SEMESTER, SR. INSTRUCTOR TIM LEISHMAN

General Objective:

Upon completion of this lab, the student will be able to:

A. Improve the Critical Frequency High of an amplifier circuit using Emitter, Shunt, & Series Peaking.
B. Discuss and show calculations for each circuit modification.
C. Measure and document the results of each circuit modification.
D. Identify and reconcile any discrepancies between a calculated and measured result.
E. Demonstrate the proper use of the oscilloscope, DMM, and sweep audio generator to obtain accurate measurements.

References:

- Theory notes
- First Year Text & Lab books
- Tektronix AFG1022 Function Generator Excerpt
- Multistage Schematic
- Multistage PCB Layout

Check-Off Sheet:

- Check-Off Sheet

Specific Objectives:

Notes.

a. See Multistage Schematic
b. DC supply voltage to J2 is 25V

1. Emitter, Shunt, and Series Peaking:
   - Emitter Peaking
     a. Explain what emitter peaking is and how it works.
     b. Calculate the capacitor needed for emitter peaking.
     c. Draw a bode plots comparing the original response and the effect of emitter peaking. Calculate the improvement factor.
     d. **Instructor Check**
     e. Measure the effects of emitter peaking.
     f. Observe frequency response using the sweep generator. Document measured frequency response (bode plot).
     g. Annotate in a Table Calculated vs. Measured data.
     h. Identify any discrepancies and provide analysis/justification for discrepancies.
     i. **Instructor Check**
   - Shunt Peaking - Repeat above steps for Shunt Peaking.
   - Series Peaking - Repeat above steps for Series Peaking.

2. Employ “Peaking” to achieve a 3.579545Mhz signal that is within the pass band of the amplifier.
3. Additional documentation requirements:
    1. List five factors that limit the high frequency response of transistor amplifiers.
    2. List four factors that limit the low frequency response of transistor amplifiers.
    3. List methods that could be incorporated in an amplifier to improve the high frequency response.
    4. List methods that could be incorporated in an amplifier to improve the low frequency response.

4. Complete Conclusion and submit completed Check-Off sheet and Lab writeup in Moodle.