This week:

1. Measured maximum power and gain for ten frequencies in increments of 20 Hz.

<table>
<thead>
<tr>
<th>Frequency (Hz)</th>
<th>Vout (V)</th>
<th>Gain</th>
<th>Max Power (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>0.7</td>
<td>1.000</td>
<td>0.123</td>
</tr>
<tr>
<td>40</td>
<td>1.1</td>
<td>1.571</td>
<td>0.303</td>
</tr>
<tr>
<td>60</td>
<td>1.2</td>
<td>1.714</td>
<td>0.360</td>
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<tr>
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<td>1.3</td>
<td>1.857</td>
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Gain equals the output voltage divided by the input voltage.

\[ A_i = \frac{V_{out}}{V_{in}} \]

Where the input voltage measured 0.7 Volts, \( V_{in} = 0.7V \).
Maximum power was calculated using the equation,

\[ P_{\text{max}} = \frac{V_{\text{out}}^2}{R_{\text{load}}} \]

Where the load resistance equals the 4 Ohm speaker resistance, \( R_{\text{load}} = 4\Omega \).

2. Acquire a BNC to RCA composite cable to connect the signal generator to the amplifier.

A BNC to RCA composite cable could not be found at any electronic stores including RadioShack, Fry's Electronics, Best Buy, and Walmart.

3. Build our own BNC to RCA cable.

We first connected the signal generator ground to the music input ground, which only produced noise at the speaker. Then, at the signal generator output we connected a BNC cable, to an alligator clip, to a Y adaptor RCA cable, purchased at RadioShack, to the amplifier music input. Connecting the circuit with this makeshift wiring method produced no changes at the speaker as a result of frequency and amplitude variations at the signal generator. Our instructor advised us this connection
MUST be a secure connection requiring soldering.

4. Soldered a RCA composite cable to a BNC connector.

We split the RCA composite cable, found a BNC connector, and soldered the BNC connector on one end of the RCA cable being careful to add insulation and separating the high and low RCA leads. Plugging the BNC side to the signal generator and the RCA side into the music input of the amplifier we received a clean and pure sound to our output speaker. After completing a secure, closed circuit the signal generator is responding to frequency and amplitude changes.

Next week (9/21/07):

The details for next week were not clearly laid out by our instructor. Here are the general details specified for us.

1. Construction of excitation unit
2. Microphone; possibly acquisition and connection.
3. Full setup
   Signal Generator > Amplifier > Exciter >
   Test Block > Microphone > Amplifier >
   Oscilloscope
LASER-BASED OPTO-ACoustic DEFECTOSCOPY OF CONSTRUCTION MATERIALS FOR CIVIL ENGINEERING

EE 4349-003

Dr. Nikolai Stelmakh

Team Members:
- Eric Gabay
- Dolapo Saboyede
- Dan Marek
- Nasir Kencuangui
- Marco Martinez
- Ben George
- Icira Iyengar (Self)
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Marco Martinez
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Project 2 – Team 1: Ben George & Kiran Iyengar

Friday, September 14, 2007

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Amplifier Model 010

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