Subject: Re: Basshorn or Transmission Line
Posted by Cal on Tue, 14 Jun 2005 11:36:00 GMT
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Thanks for the reply, see you are awake in the middle of the night, also."But if the cooling system is too small, then pressures in the system will tend to reduce airflow in the ducts. There may be pressure instead of flow if the system is too small."With you on that. Call the cooling system an inductor with series resistor and parallel capacitor resonating at a low frequency. The resistance will increase with Reynolds number and impedance with pumping frequency. This means the flow will reduce with increasing driver frequency and rate of change. Inductive. Pulses in the air flow will result in rapid changes in turbulence, Reynolds number changes, making more drag as the pressure changes at acoustic rates. You need a steady air flow to get any kind of mass transfer through this thing. Pump the air into a liter (maybe bigger) tank then through the cooler, kind of a capacitive input power supply filter, a low pass filter, a balance to the high tubing inductance.This is the same thing as your statement about the system acting as a choke on the air flow if the system is too small, as in too small diameter tubes, too closely spaced plates, etc. We are looking at several feet of 1/4" ID tubing here, very low cutoff frequency, a wave guide, I guess. Nasty math, there!! Please, no!!Figure how much air flow, filter out the sound, go for a Reynolds number of about 2500, should work, seems to me!! Probably need some measurement of flows with no pressure fluctuations and with the actual horn application. Bubbling air into an inverted 2 liter soda bottle in a bucket of water might work for flow measurement. Regular u-tubes for pressure.This tube is like a very long very tiny reflex port. What do you think?All of this stuff is why I have been thinking about heat pipes. Two little heat exchangers, two fans, some tubing, and cool to within maybe 20 F. of ambient dry bulb.