CRYSTAL : LASER TEST

Q-Tech Laboratories P/L

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A crude laser test to determine the amplification properties of 1 of our specially grown crystals which have been cut for various laboratory projects has been performed to confirm that the amplification properties are consistant with the type of crystal required for construction of devices which require this type of amplification. These tests were performed on the basis of information supplied by the Managing Director of Q-Tech Laboratories, Terry Skrinjar.

The components used in this test were as follows :

1. The specially grown cut crystal.
2. A hand held pointer Laser.
3. A number of Z3235 photo transistors.
4. A crude assortment of mounting devices.

The voltage measurements recorded were gained with the use of a Fluke Multimeter, model 867B.

Experiment Explanation

The purpose of the experiment was to determine if any amplification of energy would be recorded when a laser beam was passed through the crystal. To be able to measure the input of the laser and output of the crystal, photo transistors were used as voltage sensors. Firstly the voltage was measured on the photo transistor due to the presence of light in the test area, then a photo transistor was placed directly in front of the beam and then at a distance of 100mm. The two voltage measurements were the same whether directly in front or at the 100mm distance. These two measurements show that an amount of energy is being converted by the photo transistor into voltage from both the laser and the natural light present. Using these figures we can calculate the extra input to the photo transistor from the laser.

Both the laser and the crystal are then mounted so that the laser beam is fired through the crystal at a distance of 100mm. The single beam of the laser entering the crystal is converted into six beams exiting. We already know the potential of the photo transistor to convert the single light beam into an already measured voltage.

The next step in the experiment is to measure the voltage conversion of each of the individual beams exiting the crystal using the photo transistor as the sensor. In theory if each of the output beams, being six of them, add up to more than the measured input we can say we have achieved amplification.

The Results

1. The voltage of the photo transistor in natural light : 0.324 vdc
2. The voltage of the photo transistor in the input beam : 0.481 vdc
3. The voltage of the photo transistor in each output beam : 0.448 vdc

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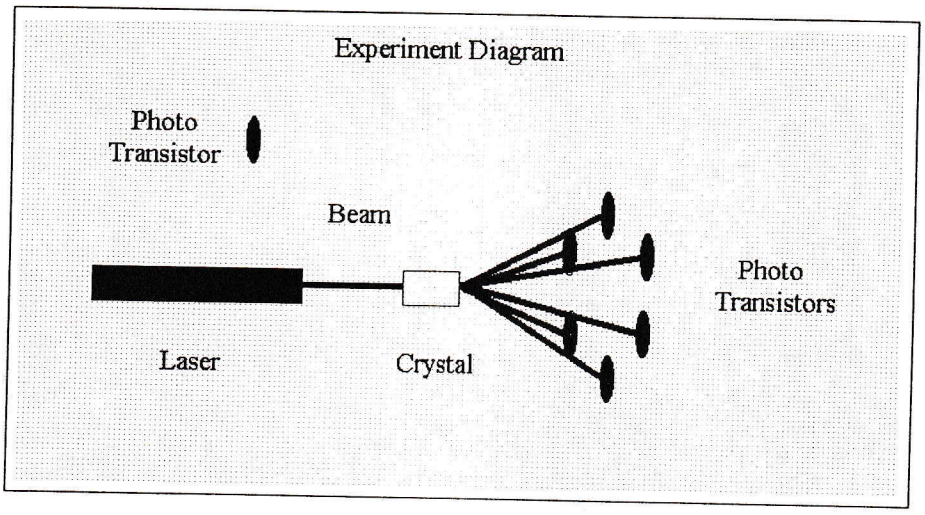
It was also recorded that when the voltage of the photo transistor was measured in the absence of any natural light (laser only) it still produced a value of 0.481 vdc. This would suggest that the nature of the components used in the experiment would yield the same test data in the absence of any natural light.

Using the resultant measurements it was determined that a drop of 0.033 vdc occurred when passing through the crystal, however we now had six beams with only a 0.033 voltage drop. Each of the six beams measured the same voltage using the photo transistor.

If we multiply the six voltage values we now have :

6 x 0.448 vdc = 2.688 vdc

Original input measurement = 0.481 vdc



Using the above Data we seem to have a greater output than input, however a permanent model of the device needs to be constructed and test data should be obtained on the current (amps) of all of the beams using the same test equipment and photo transistor to confirm 100% the amplification findings of this crude experiment.