

## FREQUENCY STABILITY

### Frequency Stability Test Data

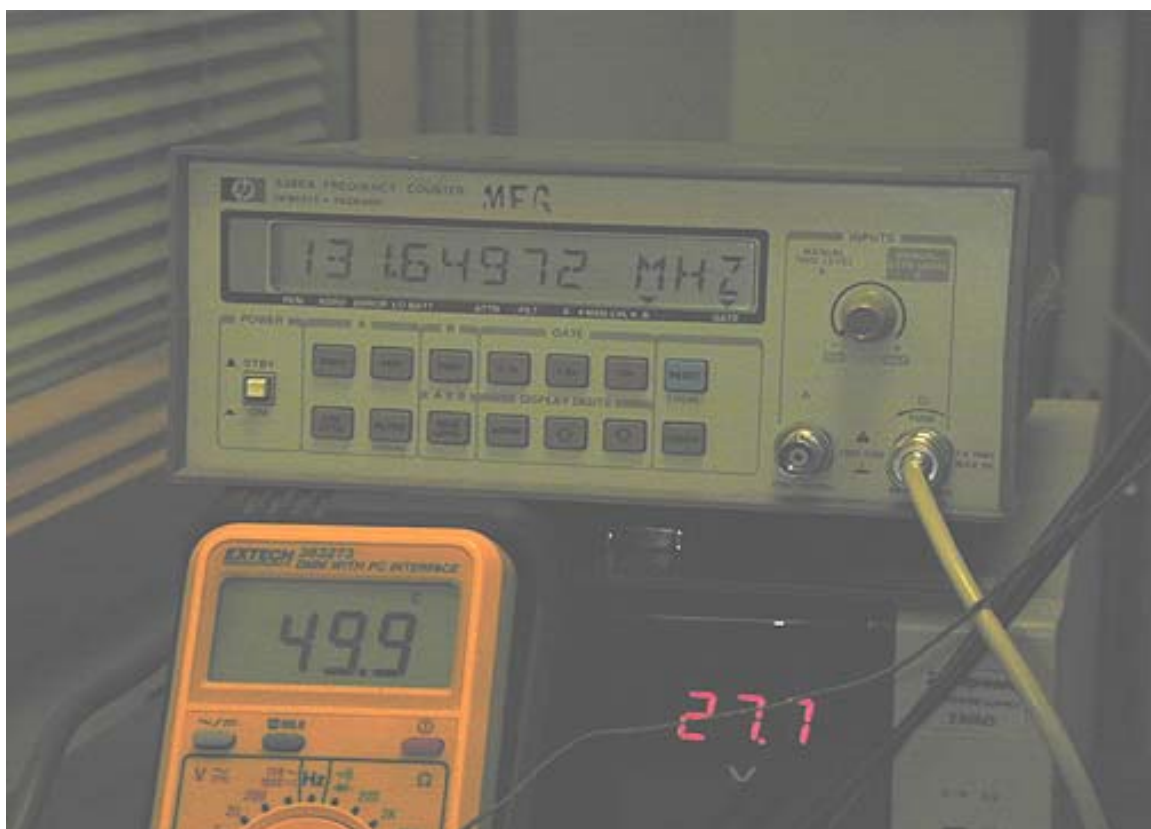
Temperature (in degrees C)	Frequency (In MHz)	Change from Baseline (In Hz)
-20	131.64984	0
-10	131.64982	2
0	131.64981	3
10	131.64981	3
20	131.64981	3
30	131.64984	0
40	131.64983	1
50	131.64972	12

The total variation is  $\pm 6$  Hz over the temperature range. This equates to  $\pm 0.045$  ppm.  
The requirement is  $\pm 5$  ppm.

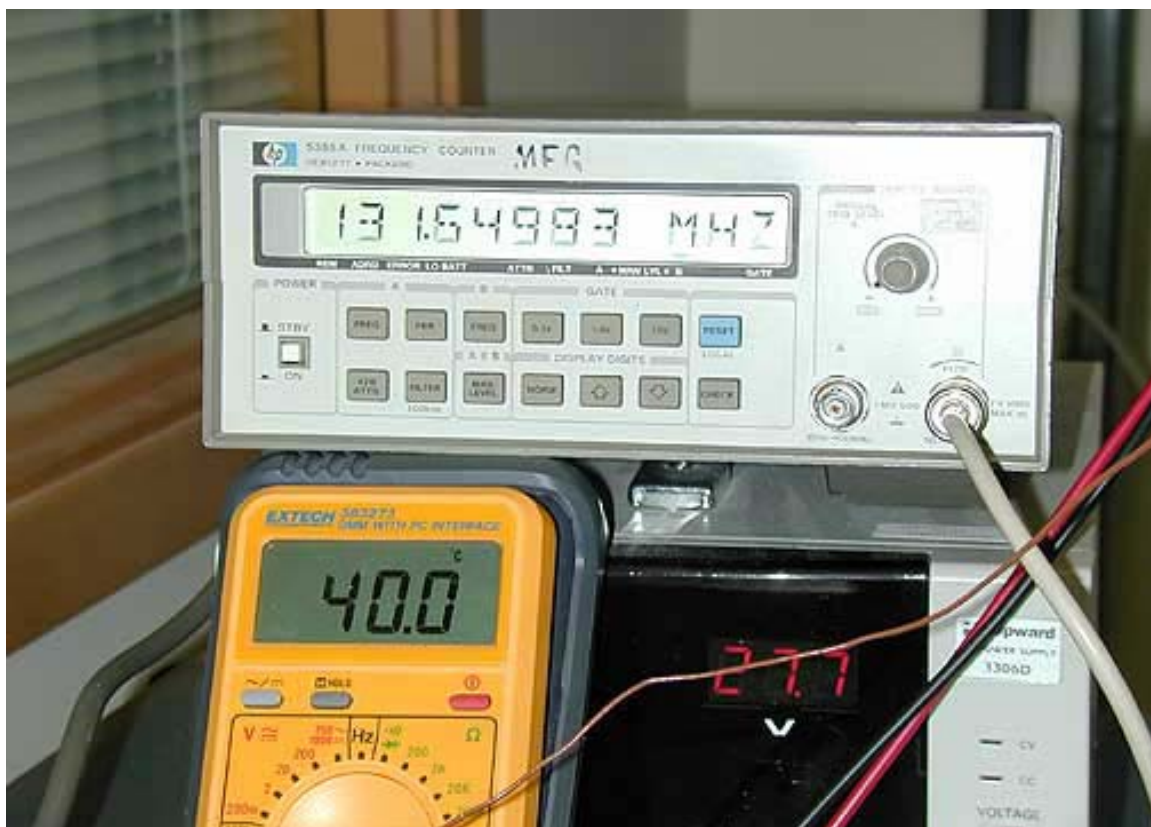
Unit in Chamber Prior to Test



## 50°C Measurement



## 40°C Measurement



30°C Measurement



## 20°C Measurement





### 10°C Measurement

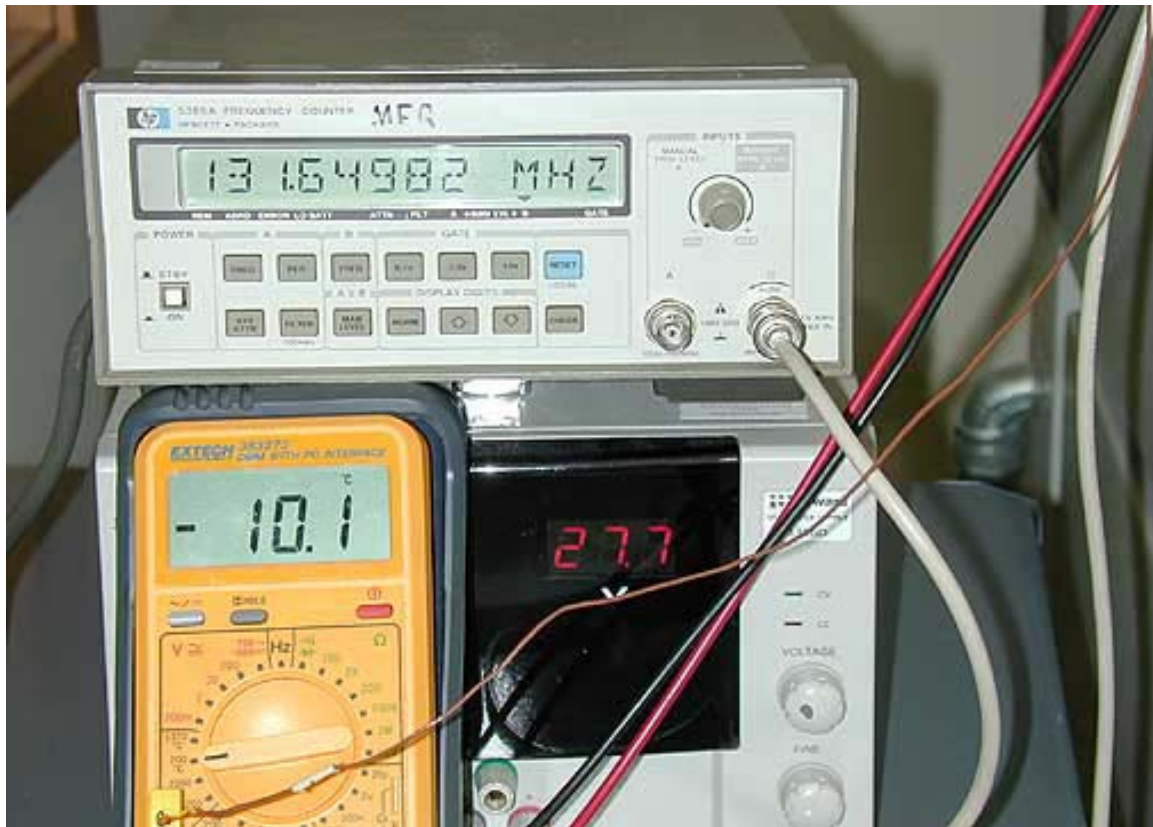


## 0°C Measurement





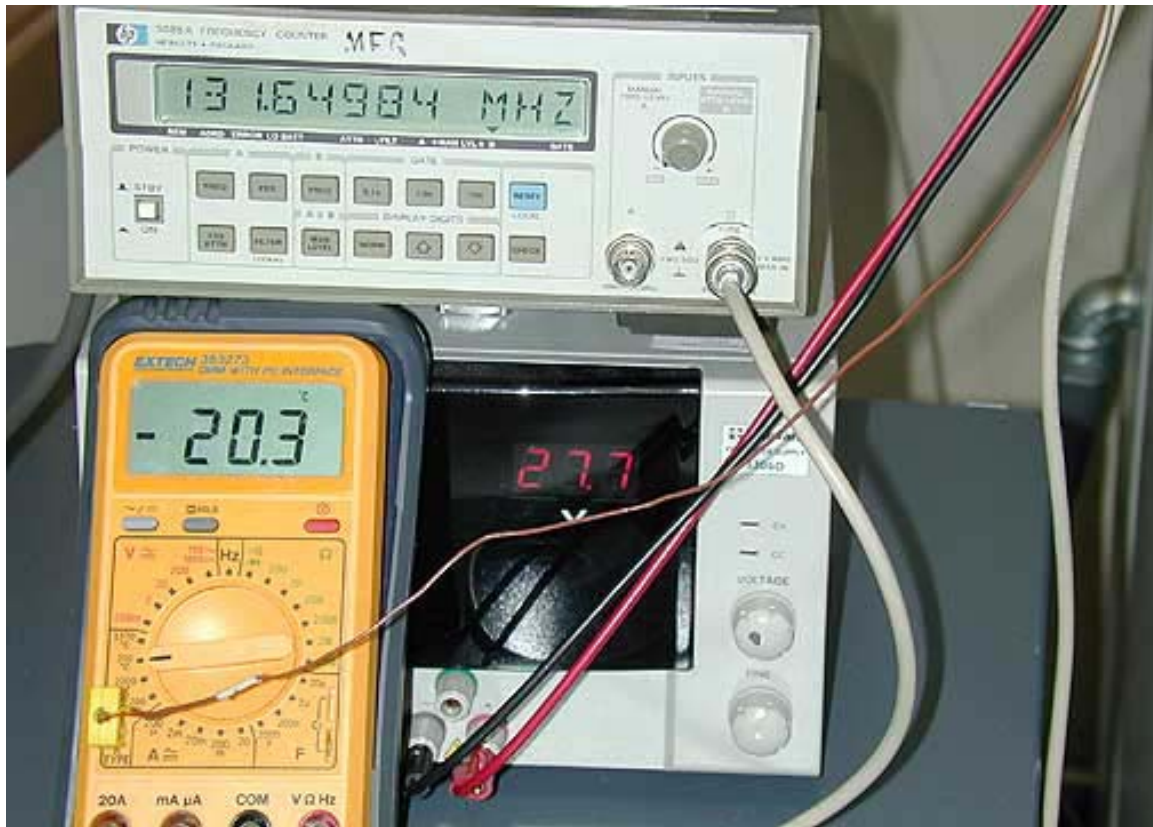
-10°C Measurement



Initial Setup Prior to Setting Chamber to -20°C



## 20°C Measurement



## ***1.1 Test Procedure for Frequency Stability***

### **1.1.1 Test Setup**

Equip the DLink+ so that the LO frequency can be monitored via an RF connection. Place the DLink+ into the temperature chamber. Connect the DLink+'s LO output to the RF input port on the HP5385A Frequency Counter located outside of the temperature chamber. Connect the DLink+ to the 28 Vdc power supply located outside of the temperature chamber. Tape a thermocouple to the case of the unit and connect the thermocouple to a digital multi-meter (located outside of the chamber) that has the capability to monitor the thermocouple resistance and determine the equivalent temperature.

### **1.1.2 Procedure**

Close the chamber door. Verify that the frequency counter is displaying a constant frequency near 131 MHz. Set the chamber temperature to  $-20$  degrees C. Once at  $-20$  degrees C, dwell for  $\frac{1}{2}$  hour. Verify that the thermocouple reads  $-20 \pm 1$  degrees C. Record the frequency. Set the chamber temperature to  $-10$  degrees C. When the thermocouple reads  $-10 \pm 1$  degrees C, record the frequency. Continue in this fashion (10 degree C increments) until the frequency has been recorded at  $+50$  degrees C. This concludes the test.

## **Frequency Stability Test List of Test Equipment**

Frequency Counter

Model HP5385A

S/N 3206A07117

Calibration Date: 4/5/2004

Calibration Due: 4/5/2005

Digital Multimeter with Type K Temperature Probe

Extech Model 383273

S/N 970705042

Calibration Date: 5/14/2004

Calibration Due: 5/14/2005

DC Power Supply

Topward Model 3306D

SN 665496

No Calibration Required

Temperature Chamber

Thermotron Model SE-600-3-3

SN 001421

No Calibration Required