

T-2071-M (Derringer) Frequency Stability: Temperature Stability

Relevant FCC Chapter:

"§ 2.1055 Measurements required: Frequency Stability.

(a) The frequency stability shall be measured with variation of ambient temperature as follows:

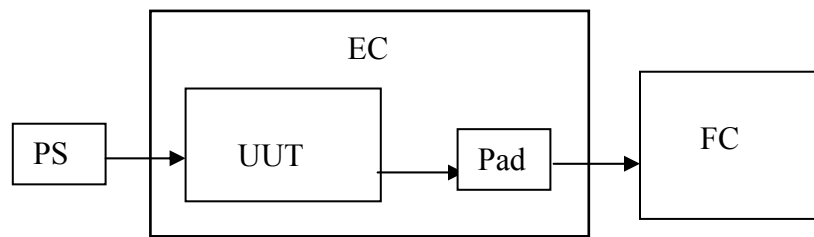
(1) From -30° to +50° centigrade for all equipment except that specified in paragraphs (a) (2) and (3) of this section.

[The T-2071 does not qualify under part 90, chapter 2.1055 (a)(2) or (a)(3)]

(b) Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10° centigrade through the range. A period of time sufficient to stabilize all of the components of the oscillator circuit at each temperature level shall be allowed prior to frequency measurement. The short term transient effects on the frequency of the transmitter due to keying (except for broadcast transmitters) and any heating element cycling normally occurring at each ambient temperature level also shall be shown. Only the portion or portions of the transmitter containing the frequency determining and stabilizing circuitry need be subjected to the temperature variation test.

Test Setup:

The setup for this test is shown below.



PS – Power Supply – Hewlett-Packard HP6207B – SN 1149A01889

EC – Environmental Chamber – Applied Systems BK-1101 – SN 8665

UUT – T-2071-M Derringer

Pad – 30 dB Pad – Mini-Circuits BW 30

FC – Frequency Counter – HP 5351B – SN 3049A01169

Test Method:

The unit under test was powered at 9.0 VDC. The Environmental Chamber was set to -30° C and swept to +70° C in 10° steps. Due to the small size of the chamber and the UUT, the unit was left at each temperature for 15 minutes before the measurement was made. Since there is no method of keying the transmitter or any form of heating element in the UUT, those results are not required

Test Results:

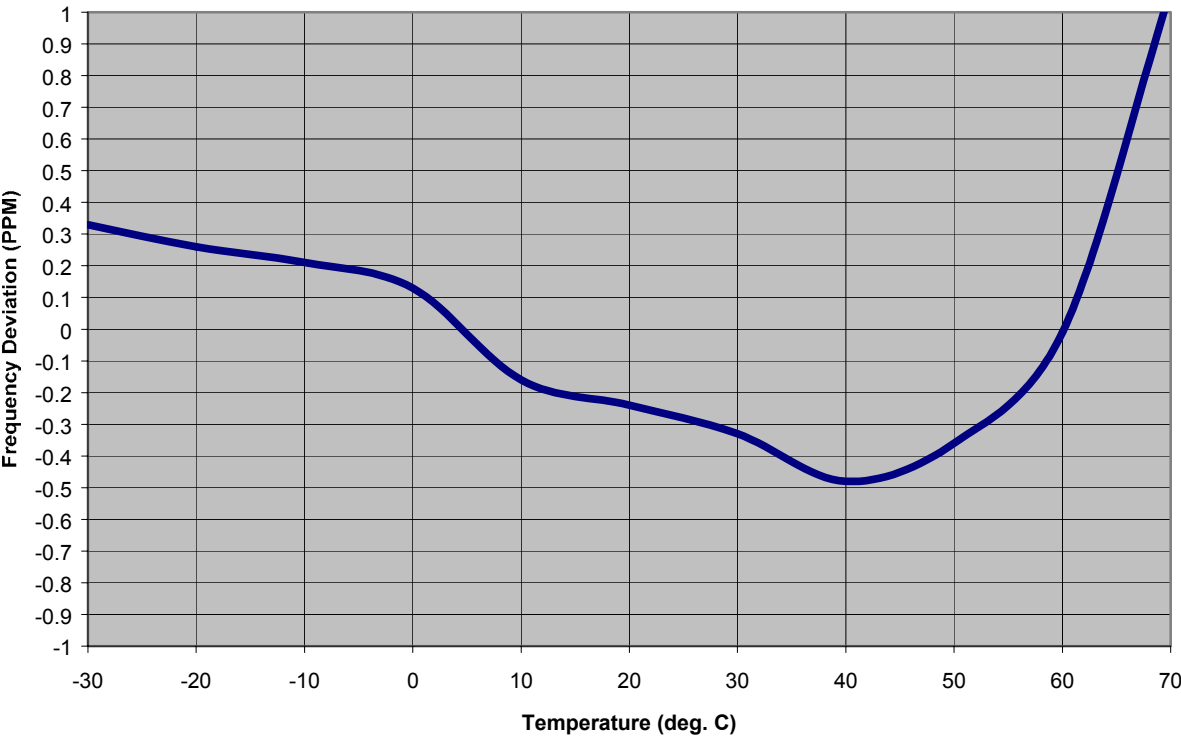
The results of the test are shown in Figures 16 and 17.

Figure 16 – Frequency Stability (Pursuant to FCC Requirement 2.1055a) – Raw Data

Frequency Deviation (PPM) as a function of temperature

Temp (°C)	Fr Dev. (PPM)
-30	+.33
-20	+.26
-10	+.21
0	+.13
10	-.16
20	-.24
30	-.33
40	-.48
50	-.36
60	-.01
70	

**Figure 17 - Frequency Deviation (PPM) as a Function of Temperature
(Pursuant to FCC Requirement 2.1055a)**



T-2071-M (Derringer) Frequency Stability: Power Supply Stability

Relevant FCC Chapter:

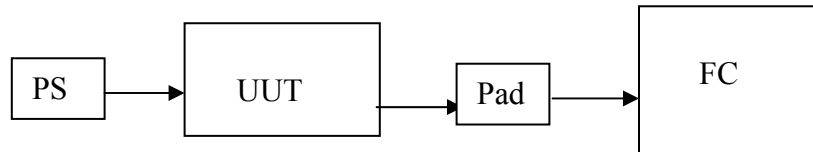
"§ 2.1055 Measurements required: Frequency Stability.

(d) The frequency stability shall be measured with variation of primary supply voltage as follows:

(2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.

Test Setup:

The setup for this test is shown below.



PS – Power Supply – Hewlett-Packard HP6207B – SN 1149A01889

UUT – T-2071-M Derringer

Pad – 30 dB Pad – Mini-Circuits BW 30

FC – Frequency Counter – HP 5351B – SN 3049A01169

Test Method:

The Frequency output of the unit under test was measured at supply voltages from 5.0 VDC to 9.0 VDC in .5 VDC increments.

Test Results:

The results of the test are shown in Figures 18 and 19.

Figure 18 – Frequency Stability (Pursuant to FCC Requirement 2.1055d) – Raw Data

Frequency Deviation (PPM) as a function of supply voltage

Voltage (VDC)	Fr Dev. (PPM)
5.0	+.03
5.5	+.02
6.0	+.01
6.5	-.01
7.0	-.02
7.5	-.05
8.0	-.06
8.5	-.10
9.0	-.13

**Figure 19 - Frequency Deviation (PPM) as a Function of Supply Voltage
(Pursuant to FCC Requirement 2.1055d)**

