

MAINTENANCE OF HP 5071A PRIMARY FREQUENCY STANDARDS AT USNO

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Abstract

The U.S. Naval Observatory (USNO) has been operating Hewlett-Packard model 5071A cesium-beam frequency standards for over five years. During that period, there have been a variety of failures and these devices have shown frequency and phase changes.

The HP 5071A model primary frequency standard offers a very useful troubleshooting tool by outputting the status of 22 different operating parameters. This paper will present an explanation of the parameters and show any correlation of them with the time, frequency, and environmental changes. This paper will also offer some indicators to predict future device problems.

INTRODUCTION

The Hewlett-Packard (HP) model 5071A Primary Frequency Standard is a quantum leap forward compared to the HP model 5061B. Among the improvements is the greater frequency stability through a broader temperature and humidity range. HP also improved the device's operational parameter monitoring capabilities. No longer must people enter the room housing the device (disrupting its environment) and physically make the measurements on the device. The new standards can output their parameters via an RS-232 connection to a computer for permanent filing and analysis.

