



# 6688 & 6689

## High Stability Frequency Standards

pendulum  
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- Rubidium or high stability oven frequency reference standard
- Distribution amplifiers for 5 x 10 MHz and 1 x 5 MHz outputs as standard
- Optional 10 x 10 MHz outputs
- 0.001 ppm aging in 10 years (Rubidium)
- Ideal for telecommunication test systems and calibration laboratories



The Pendulum Frequency References; model 6689 with a Rubidium clock and model 6688 with a high-stability oven-controlled crystal oscillator, are designed for use in test systems, where a very high stability frequency reference is required and where multiple instruments or testers need to be supplied.

The Frequency References are also suited in calibration laboratories for calibrating various instrumentation, like frequency counters and synthesizers. The 6689 Rubidium Reference can be used as a primary lab reference, ensuring a frequency drift due to aging of less than 0.001 ppm during 10 years.

### Reference Outputs

#### Standard Model:

5x 10 MHz, 1x 5MHz; sine >0,6 Vrms in 50  $\Omega$

#### Incl. option 70:

10x 10 MHz, 1x 5MHz; sine >0,6 Vrms in 50  $\Omega$

### Frequency Stability

Stability	6688 (Oven)	6689 (Rubidium)
Aging/month	$3 \times 10^{-9}$	$5 \times 10^{-11}$
Aging/year; aging/10 years	$2 \times 10^{-8}$ (1 year)	$1 \times 10^{-9}$ (10 years)
Temperature (0 to +50°C)	$2.5 \times 10^{-9}$	$3 \times 10^{-10}$
Short term (Root Allan variance)	$5 \times 10^{-12}$ $t=1$ s $5 \times 10^{-12}$ $t=1$ s	$1 \times 10^{-11}$ $t=10$ s $3 \times 10^{-11}$ $t=1$ s
Warm up (at +25°C):	10 min to $5 \times 10^{-9}$	5.4 min to lock 11 min to $4 \times 10^{-10}$

### General Specifications

#### Environmental Data

**Temperature:** 0°C to +50°C (operating), -40°C to +70°C (storage)

**Safety:** Compliant to EN 61010-1, Cat II, pollution degree 2, CE

**EMI:** Compliant to EN 55011 ISM group, class B and EN 50082-2, CE

#### Power Consumption (90 to 264 V, 47 to 63 Hz)

**6688:** <20 W at warm-up,

<7W continuous operation

**6689:** <70 W at warm-up,

<30 W continuous operation

#### Mechanical Data

##### WidthxHeightxDepth:

315 x 86 x 395 mm (12.4 x 3.4 x 15.6 in)

**Weight:** Net 4.8 kg (10.6 lb)

Shipping 7.8 kg (17.2 lb)

### Built-In Options

#### Option 70

5 extra 10 Mhz outputs

### Ordering Information

**6688/011:** Crystal oven standard model;

5x 10 MHz and 1x 5MHz outputs

**6688/021:** Crystal oven incl. option 70;

10x 10 MHz and 1x 5MHz outputs

**6689/011:** Rubidium standard model;

5x 10 MHz and 1x 5MHz outputs

**6689/021:** Rubidium incl. option 70;

10x 10 MHz and 1x 5MHz outputs

#### Included with instrument:

Operators manual, Calibration certificate

#### Optional accessories

**Option 22:** 19" rack mount kit

**Option 27:** Carrying case

