

StepOnePlus™ Real-Time PCR System

Comparison to the ABI PRISM® 7000 Sequence Detection System

GREEN BENEFITS

- Energy-efficient
- Less material usage
- Decreased fuel consumption and greenhouse gas emissions for transport
- Less waste
- Less hazardous waste



Introduction

This paper provides the rationale behind the environmental claim that this product is more energy-efficient, utilizes less raw materials, and is less hazardous for disposal than its predecessor, the ABI PRISM® 7000 Sequence Detection System.

The StepOnePlus™ Real-Time PCR System is safer and easier to recycle, because it is designed free of key hazardous substances commonly found in electronic products (e.g., lead, mercury, cadmium, hexavalent chromium, polybrominated flame retardants).

Product Description

The StepOnePlus™ Real-Time PCR System makes it simple and easy to get publication-ready high-quality real-time PCR results on day one. This remarkably simple 96-well, 4-color real-time PCR system is designed with a user-friendly yet powerful interface for researchers of all experience levels.

Green Features

Energy-Efficient

The StepOnePlus™ Real-Time PCR System draws 50% less energy when idling and 58% less energy to process one sample plate (instrument is in a heated state), compared to the ABI PRISM® 7000 Sequence Detection System

Condition 1: Idle

Table 1. Energy Usage When Idling.

Instrument	Average Usage (kW)	Run Time (hr)	kW-hour
7000	0.26	1	0.26
StepOnePlus™	0.13	1	0.13
Energy Conservation			50%

Condition 2: Instrument completing a 96-well sample plate run from a heated start (i.e., the heated cover was 105°C when the run was started). It is recommended by Applied Biosystems to start the protocol after the instrument has been in a heated state.

Setup, StepOnePlus™ System: Each well of a 96-well plate was prepared with 10 µL of the TaqMan® Fast Universal PCR Master Mix (2X) and 10 µL water, for a total of 20 µL. The type of protocol selected was the default “Fast Protocol”. The instruments were set up at 100 VAC @ 60 Hz.

Setup, 7000 System: Each well of a 96-well plate was used a substitute medium (96-well plate sealed with no liquid). The test protocol for the 7000 instrument was set up to emulate the default “Fast PCR” protocol on the StepOnePlus™ System. The instruments were set up at 100 VAC @ 60 Hz.

Table 2. Energy Usage When Performing a Run.

Instrument	Average Usage (kW)	Run Time (hr)	kW-hour
7000 “Fast Protocol”	0.41	0.93	0.38
StepOnePlus™ “Fast Protocol”	0.26	0.63	0.16
Energy Conservation			57.9%

* A substitute medium (96-well plate sealed with no liquid) will have a negligible effect on energy readings.

Less Hazardous

The StepOnePlus™ Real-Time PCR System was engineered to be meet the European Union’s Restriction of Hazardous Substances (RoHS) Directive (Directive 2002/95/EC)—eliminating lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyls (PBBs), and polybrominated diphenyl ethers (PBDEs).

Fewer Resources

Manufacturing the StepOnePlus™ Real-Time PCR System requires 29% less material than its predecessor, the ABI PRISM® 7000 Sequence Detection System. Furthermore, the instrument has a smaller footprint (almost 37% less), which helps to improve laboratory space use efficiency.

Table 3. Instrument Weight and Footprint.

Instrument	Instrument Weight (kg)	Footprint
7000	34	1989 cm ² 39 cm x 51 cm
StepOnePlus™	24	1259 cm ² (24.6 cm x 51.2 cm)
Material Reduction	29.41%	36.7%



For research use only. Not intended for human or animal therapeutic or diagnostic use.

© 2010 Life Technologies Corporation. All rights reserved.

The trademarks mentioned herein are the property of Life Technologies Corporation or their respective owners. TaqMan is a registered trademark of Roche Molecular Systems, Inc. C013339