



Preventive maintenance of Real-Time PCR cyclers Applied Biosystems®

Instrument models covered:

ABI 7300, ABI 7500, ABI 7500 Fast, ABI 7900, StepOne™, StepOnePlus™, ViiA7, QuantStudio

We recommend to carry out the preventive maintenance of Real-Time PCR cyclers by Applied Biosystems® according to the needs of the laboratory, at least once a year.

Preventive maintenance consists of:

- Instrument inspection (required) – carried out by a certified service engineer to ensure trouble-free instrument operation, including validation
- Instrument performance verification (optional) – reliability check of the Real-Time PCR cycler using the manufacturer's verification standard, carried out by a certified service engineer or application specialist
- Instrument operator training (optional) – professional training for instrument operators to secure their qualification and efficient use of instruments, carried out by a certified application specialist

Instrument inspection:

- System verification – Identifies and records the system hardware on site
 - Instrument version, Computer and operating system version, Operating system settings
- Software verification – Records the software and firmware versions installed
 - Operating system and service pack, Firmware and data collection software
- Instrument subsystems – functionality check
 - Low voltage internal power supply,
 - Optical path – settings and finetuning
 - CCD – functional check and settings
 - Thermal cycler check - Temperature accuracy, Cooling and heating speed (ramping cycle check), Uniformity check
- Cleaning / maintenance
 - Interior cleaning, Computer maintenance
- Service protocol – The service protocol is issued recording all data measured and steps performed, including all exceptions and possible defects

Instrument performance verification:

- The TaqMan® RNase P Instrument Verification Plate is used to verify the performance of the Real-Time PCR cyclers by Applied Biosystems®. The TaqMan® RNase P Instrument Verification Plate is a PCR plate preloaded with the necessary reagents to detect and quantitate genomic copies of the human RNase P gene, a single-copy gene encoding the RNA moiety of the RNase P enzyme. Each well contains preloaded reaction mix and template.
- The TaqMan® RNase P Instrument Verification Plate satisfies the same requirements as the cycler installation. To pass installation, the instruments must demonstrate the ability to distinguish between 5,000 and 10,000 genomic equivalents with a 99.7% confidence level for a subsequent sample run in a single well. To ensure accurate results, Applied Biosystems® recommends that the performance of the instrument be verified every twelve months (subject to change for some models).
- Validation Protocol - the validation protocol is issued after performing IPV.

Instrument operator training:

- Working principle of the instrument, instrument handling – the instrument software
- Maintenance and operational demands of the instrument, instrument calibrations performed by the user, reagents and accessories needed
- Data analysis software package
- Basic troubleshooting of instrument malfunctions, questions and answers session – using their own data instrument operators are taught how to uncover sources of problems observed during instrument operation
- Instrument operator training certificate – the certificate is issued for every instrument operator after participating at the training