

LabChip | HT RNA Version 2 Assay

Automated Integrity Assessment of RNA Samples

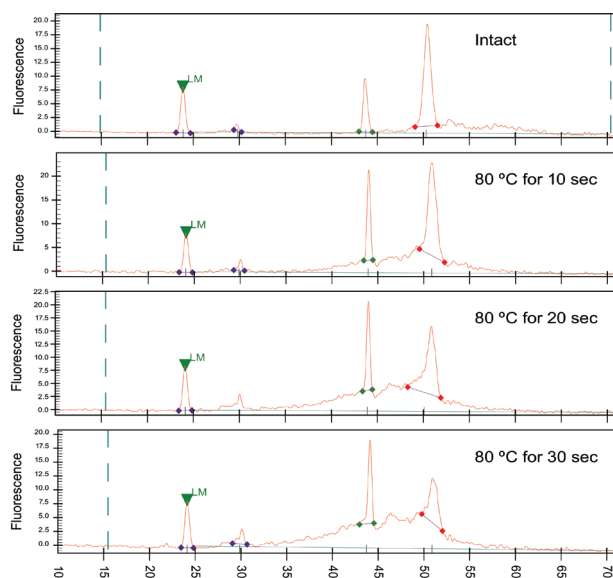
The HT RNA Version 2 assay provides a fast and easy way to analyze RNA samples ranging in size from 100 to 6,000 nucleotides on the Caliper LabChip GX and GXII. Performing RNA sample analysis with the HT RNA assay saves time and money by automating steps for quantification and integrity analysis. HT RNA provides the user with RNA concentration and ribosomal ratios as an indicator of integrity.

The LabChip GX/GXII Electrophoresis System uses a single sipper microfluidic chip to aspirate RNA samples directly from 96- or 384-well plates. The microfluidics chip technology automatically mixes in an intercalating dye, electrophoretically separates, and analyzes the RNA sample. The instrument optics detect the laser-induced fluorescent signal. System software automatically analyzes the data and determines fragment size and concentration using ladder and marker calibration standards. Digital data results are immediately available for review or reporting in virtual gel, electropherogram graph, or table summary form.

Features

- Save Time! – High throughput provides complete automated analysis of RNA in about 80 seconds
- Save Money! – Automated analysis procedure provides significant cost savings relative to the materials and labor required to run manual gels for RNA analysis
- Automated exporting of results
- Digital format facilitates review, export, and archiving of data
- Extended Workflow profile allows chip to be loaded once for support of sample processing anytime within an 8 hour window
- Flexible data display options - Results shown in your choice of virtual gel, electropherogram graph, or tabular formats
- RFID signature confirms compatibility of chip and assay selection
- Automatic calculation of sample quality score (RQS)

Example of Quantitative Analysis Used to Detect Degraded RNA Samples



Well Name	RNA Frag	Height	rRNA Height Ratio [28S / 18S]	rRNA Area Ratio [28S / 18S]	% of total Area	Fast Area Ratio
Intact100	18S	9.7	1.91	3.15	13.3	-0.02
	28S	18.6	1.91	3.15	41.9	-0.02
RNA 10	18S	19.1	1.07	2.55	10.4	0.12
	28S	20.5	1.07	2.55	26.5	0.12
RNA 20	18S	16.9	0.78	2.21	8.6	0.24
	28S	13.1	0.78	2.21	18.9	0.24
RNA 30	18S	15	0.58	1.21	7.8	0.23
	28S	8.7	0.58	1.21	9.5	0.23
RNA 40	18S	10.7	0.4	0.97	5.5	0.34
	28S	4.3	0.4	0.97	5.3	0.34

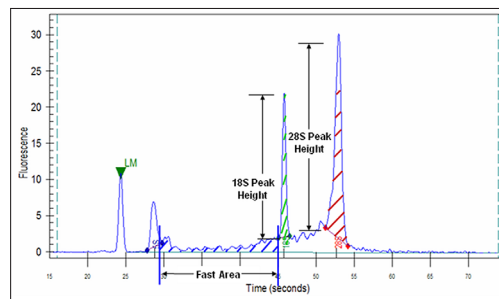
RNA Quality Assessed By:

- 28S/18S Height Ratio
- 28S/18S Area Ratio
- 28S Fraction of Total Area
- 18S Fraction of Total Area
- Fast Area Ratio
- 28S Fragment detected
- 18S Fragment detected

The figure above shows a progression of degradation of an RNA sample, from top to bottom. The intact RNA was intentionally degraded by heating over a prescribed period of time. One can clearly see the change in the metrics shown in the table as the sample degrades. An individual ratio or a combination of ratios can be used as appropriate to assess the quality of the RNA samples.

Caliper RNA Quality Score (RQS)

Caliper engineers have devised the RQS to determine the degree of sample degradation over a wide range of RNA sample types and experimental conditions. This scoring system takes into account many different characteristics of the sample electropherogram, such as the Fast Region Area percentage, the 18S and 28S area percentage, and the ribosomal ratio of 28S to 18S peak height. The result is a Quality Score that ranges between '0' and '10', where '10' is an intact sample. This score can be used as a standalone evaluation, or used in conjunction with the individual parameters that Caliper GX software provides for quantifying RNA samples. The RQS correlates extremely well to other commercially available indices.



HT RNA Version 2 Assay Specifications

Linear Range:	25 to 250 ng/μL (high range) 5 to 50 ng/μL (low range)
Quantification Reproducibility:	< 20% CV (from chip to chip and instrument to instrument)
Quantification Accuracy:	< +/- 30% error with ladder as sample
Size Range:	100 to 6000 nucleotides (suitable for total RNA)
Carryover:	< 0.5% following 500 ng/μL sample.
RNA Sample Volume:	2 μL of user sample for high range assay 6 μL of user sample for low range assay
Run Time:	80 sec per sample (about 2.5 hours for 96 well plate)
Setup Time:	About 1/2 hour for chip and sample prep
Number of Samples per Chip Prep:	200 samples max, then dye/gel must be replaced
Reagent Kit Lifetime:	Up to 5 chip primes (Typical modeled workflow is 96 samples per prime, thus 480 samples per reagent kit. Some high volume users may realize the full 200 sample capacity per prime --> 1000 samples per reagent kit)
Chip Lifetime:	>2000 samples

Ordering Information:

LabChip HT DNA 5K / RNA Version 2 Chip	P/N 760435
LabChip HT RNA Reagent Set	P/N 760410



Tel: 1.508.435.9500
Email: cust.support@caliperLS.com
www.caliperLS.com