

Product Overview

The ATP analysis harnesses a naturally-occurring, light-producing process to measure total microorganism concentration. The amount of light produced in the analysis is directly related to the quantity of microorganisms. To measure the light intensity and therefore the microbiological quantity, a luminometer is required. LuminUltra is pleased to provide to its customers the Berthold Junior LB 9509.

This luminometer is highly sensitive, fully portable, very robust, and allows users to take full advantage of LuminUltra's cutting-edge products. For your convenience, this product is compatible with all LuminUltra test kits.



This quick-reference guide provides users with instruction for basic use. For more detailed instructions on how to access additional features, please refer to the Berthold Technologies operating manual.

Startup and Background

Measurement

Upon instrument startup, LuminUltra suggests recording a background RLU which will then be subtracted from sample RLU values for more accurate ATP calculations.

1. Turn the Junior LB 9509 on by pressing the 'on' button (Figure 1).
2. After the start up screen, "Measurement Start" will be displayed at the top of the screen. Press the 'ent' button (Figure 2). After a 10 second integration time, the luminometer will return a RLU reading.
3. Record this value as your background RLU (bRLU).



Figure 1: Berthold Junior LB 9509 On Button



Figure 2: Berthold Junior LB 9509 Ent Button

Sample Measurement

1. Before performing sample measurements, ensure the sample holder (Figure 3) is in the measuring chamber. Individual assay tubes are inserted into the sample holder for measurement.
2. Once the bRLU reading has been recorded, press the 'ent' button.
3. The following screen (Figure 4) will read "Measurement Start" at the top and "insert sample" at the bottom. At this point, open the measurement chamber and insert the 12x55mm assay tube, with the sample you want to measure, into the chamber of the luminometer, and close the lid (a click will be heard when the lid is completely closed).
4. Press the 'ent' button, after a 10 second integration time, the luminometer will return a RLU reading.
5. Record this value as your sample RLU. Before proceeding to the **Final Calculations** section of the test-kit instructions, subtract the bRLU value from all sample RLU's for more accurate ATP calculations.



Figure 3: Berthold Junior LB 9509 Sample Holder

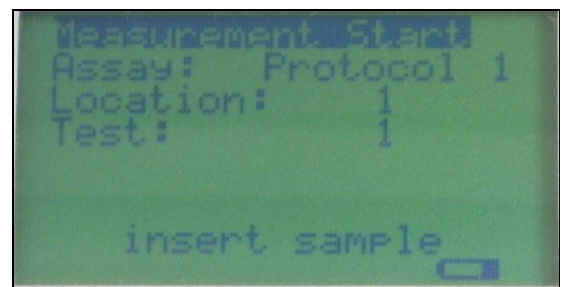


Figure 4: Berthold Junior LB 9509 "Measurement Start" Screen

Power Adapter and Charging

The instrument can operate by means of either the power supply of rechargeable batteries. The remaining battery charge can be read at the bottom right corner of the display. A warning message is displayed 15 minutes before the batteries become completely discharged. When the unit is fully charged, it can be expected to operate around 6 hours. When the unit is plugged in and in use, the recharge time is 4 – 5 hours. To plug the power adaptor into the unit, slide the protective panel on the rear of the instrument to the open position to access the connection – the screen pictured in Figure 5 will be displayed (with a plug icon at the bottom right).

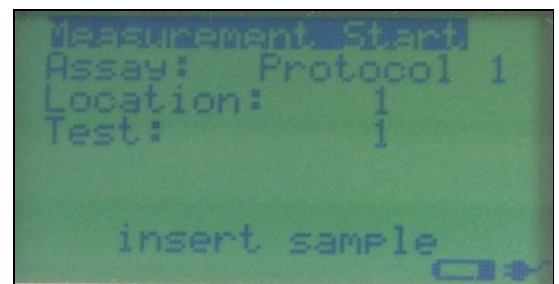


Figure 5: Berthold Junior LB 9509 "Measurement Start" Screen

Pass/Fail Warning

When performing UltraCheck1 calibrations and taking sample measurements the pass/warn/fail readings can be ignored. The pass/fail thresholds are user defined and are set to factory defaults. Refer to section 5.2 (pg. 26-28) of the operating manual for detailed instruction on how to change the pass/fail thresholds.

Comparison to Kikkoman C-110 Lumitester

The Berthold Junior LB 9505 and Kikkoman C-110 Lumitester are manufactured with different photomultiplier tubes and utilize different software programs to process results, as such RLU outputs are different between the two units for a given ATP concentration – RLU outputs for the C-110 are approximately 2X RLU outputs for the LB 9509 (e.g. An UltraCheck1 calibration on the C-110 Lumitester that would display an RLU of 20000 would be 10000 RLU on the LB 9509). These differences between the units do not affect ATP results – use of LuminUltra's ATP standard (UltraCheck1) allows users to standardize RLU results from each luminometer so that calculated sample ATP values are equivalent, no matter which luminometer is used.

Quick Reference Guide – Berthold Junior LB 9509



Technical Specifications

The Berthold Junior LB 9509 has the following features:

Detection Method	Photomultiplier in single photon counting mode
Detection Range	<3 fmol ATP, 0.4 amol firefly luciferase
Dark Noise	50 RLU
Dynamic Range	More than 6 decades
Measurement/Integration Time	10 seconds (default).
Wavelength of Maximum Response	380 – 630 nm
Assay Tube Chamber	12mm diameter, 47-75mm height
Output	Relative Light Units, RLU
Data Memory	2000 pieces of data
Display	Illuminated graphic display, 128 x 64 pixel
Interface	RS-232C (USB conversion cable available)
Software	WinTerm (option) terminal software for data transfer to PC and export to EXCEL spreadsheets
Power	3 rechargeable NiMH Akku batteries 1.2V/4500 mAh; AC adapter, 110-230 V; 50/60 Hz; 35 VA
Dimensions	150W x 280D x 170H mm
Weight	Approx. 2kg
Temperature	Storage 0 to +40°C, Operating +15 to +35°C
Humidity	10-90 %, non-condensation
Standard Accessories	1. AC Adapter c/w Type A, C, and D Adaptors 2. Replacement sample holders
Manufacturer's Warranty	1-Year Factory Warranty