BS-480

Chemistry Analyzer

BS-480 Chemistry Analyzer

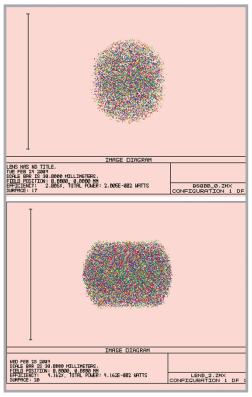
Robust hardware

Enhanced Liquid System

- Precise sample and reagent aspiration
- Built in air bubble elimination prior to washing
- High pressure interior probe wash
- Carry-over <0.05%

Economy Usage

- Light-Spot Flatting Technology facilitates lower reaction volume
- 24 hour non-stop refrigeration at 2-10°C
- Minimum sample volume: 1.5 µl
- Reagent volume: 10 ~ 350 µl
- States Cuvette Volume:120~360µl



Easy to perform maintenance

- Front loaded reagent compartment for easier access Debbie
- Easy access for routine maintenance and troubleshooting
- Built in Step-by-Step maintenance guide

Intelligent Probe System functions and smart protection

- Supports methods with up to 4 reagents
- Vertical and horizontal collision protection
- Automatic System Recovery
- Liquid level detection, clot detection

Tailor made

for your lab

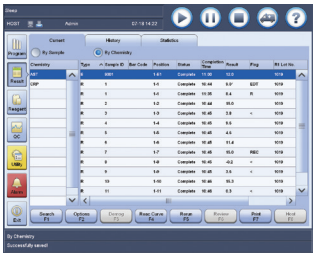
Advanced software

User-friendly Interface

- Real-time analytical and carousel status monitoring
- Bi-directional LIS interface transmission

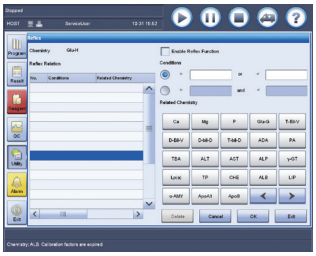
Real-time QC Status Monitoring

- Levy-Jennings chart and Twin-Plot chart
- QC Out-of-Range real-time alarm
- Customizable periodic QC reminder



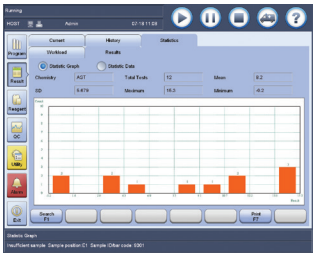
Traceable Test Results

- Historic data recall from reagent/ calibrator/ control archive
- Intuitive software, intuitive software design, easy historical results



Reflex Function

- User-defined customizable reflexive assays
- EMultiple reflexive criteria may apply to a single assay
- A single reflexive criteria may apply up to 20 assays



Test Summary

- Test summary reports & sample rerun available on all assays and Quality Assurance
- Facilitate computation of total test costs
- Error Log Export function -facilitate error report to engineers
- Results Archive can be transferred to engineers for evaluation

Accurate, Reliable Results

To ensure accuracy, reliability and correlation of diagnostic data, Mindray utilizes the International Standard in result reporting. To assure ease of report retrieving, Mindray establishes the Mindray Clinical Chemistry Measurement System for result traceability.

Standard reference system

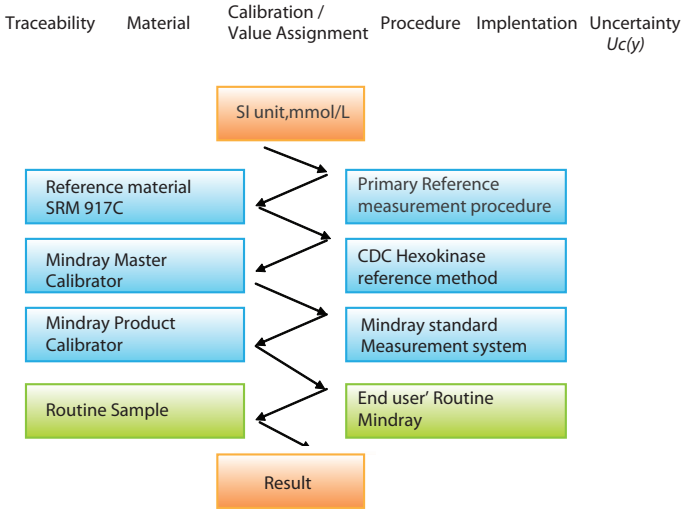
- Adopt JCTLM reference system
- IFCC primary method for enzyme, ID/MS method for substrate
- NIST, IRMM reference materials

JCTLM, Joint Committee On Traceability In Laboratory Medicine
NIST, National Institute of Standards and Technology,USA
IRMM, Institute for Reference Materials and Measurements,EU
IFCC, International Federation of Clinical Chemistry and Laboratory Medicine

Complete traceability process

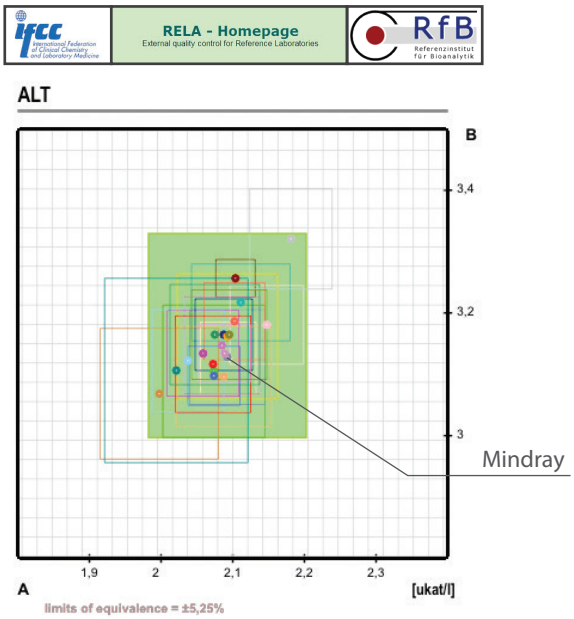
- Complete calibration hierarchy and traceability chain based on ISO standard (EN/ISO17511) from reference system to routine measurement system

Traceability chain of Mindray measurement system (Glu)



Proficiency testing for reference measurement

- Participate RELA (External quality control for reference laboratory) to verify the accuracy of the value assignment procedure.



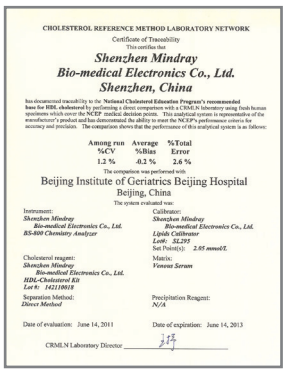
International standardization certification

- International Standardization certificates of Cholesterol and HbA1c from CRMLN and NGSP.

  More information refers to website (http://www.cdc.gov).

  CRMLN (Cholesterol Reference Method of Laboratory Network)

  NGSP(National glycosylated hemoglobin standardization program)


CHOLESTEROL REFERENCE METHOD LABORATORY NETWORK

Certificate of Traceability

This certifies that

Shenzhen Mindray
Bio-medical Electronics Co., Ltd.
Shenzhen, China

has documented traceability to the **National Cholesterol Education Program's recommended base for HDL cholesterol** by performing a direct comparison with a CRMLN laboratory using fresh human specimens which cover the **NCEP** medical decision points. This analytical system is representative of the manufacturer's product and has demonstrated the ability to meet the NCEP's performance criteria for accuracy and precision. The comparison shows that the performance of this analytical system is as follows:

Among run %CV	Average %Bias	%Total Error
1.2 %	-0.2 %	2.6 %

The comparison was performed with

Beijing Institute of Geriatrics Beijing Hospital
Beijing, China

The system evaluated was:

Instrument: *Shenzhen Mindray Bio-medical Electronics Co., Ltd. BS-800 Chemistry Analyzer*

Calibrator: *Shenzhen Mindray Bio-medical Electronics Co., Ltd. Lipids Calibrator Lot#: SL295* Set Point(s): *2.05 mmol/L*

Cholesterol reagent: *Shenzhen Mindray Bio-medical Electronics Co., Ltd. HDL-Cholesterol Kit Lot #: 142110018 Direct Method*

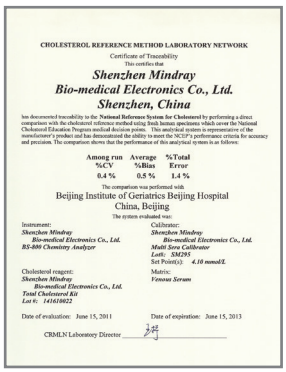
Matrix: *Venous Serum*

Separation Method:

Precipitation Reagent: *N/A*

Date of evaluation: June 14, 2011 Date of expiration: June 14, 2013

CRMLN Laboratory Director


CHOLESTEROL REFERENCE METHOD LABORATORY NETWORK

Certificate of Traceability

This certifies that

Shenzhen Mindray
Bio-medical Electronics Co., Ltd.
Shenzhen, China

has documented traceability to the **National Reference System for Cholesterol** by performing a direct comparison with the cholesterol reference method using fresh human specimens which cover the National Cholesterol Education Program medical decision points. This analytical system is representative of the manufacturer's product and has demonstrated the ability to meet the NCEP's performance criteria for accuracy and precision. The comparison shows that the performance of this analytical system is as follows:

Among run %CV	Average %Bias	%Total Error
0.4 %	0.5 %	1.4 %

The comparison was performed with

Beijing Institute of Geriatrics Beijing Hospital
China, Beijing

The system evaluated was:

Instrument: *Shenzhen Mindray Bio-medical Electronics Co., Ltd. BS-800 Chemistry Analyzer*

Calibrator: *Shenzhen Mindray Bio-medical Electronics Co., Ltd. Multi Sera Calibrator Lot#: SM295* Set Point(s): *4.10 mmol/L*

Cholesterol reagent: *Shenzhen Mindray Bio-medical Electronics Co., Ltd. Total Cholesterol Kit Lot #: 141610022*

Matrix: *Venous Serum*

Date of evaluation: June 15, 2011 Date of expiration: June 15, 2013

CRMLN Laboratory Director


University of Washington
Northwest Lipid Metabolism and Diabetes Research Laboratories
Seattle, Washington

Based on the results of the comparison performed with this laboratory using forty fresh-frozen specimens covering a clinical meaningful range, it can be stated that the **Apolipoprotein A-I** values obtained by

ShenZhen Mindray Bio-Medical Electronics Co., Ltd.,
Nanshan, ShenZhen, GuangDong Province
P. R. China

are traceable to the WHO-International Reference Material for Apo A-I, SP1-01.

This laboratory has demonstrated an average absolute bias of 2.1 versus the comparison method and a coefficient of variation of 0.8%. The analyses were performed on a **BS-400, Mindray.**

Director: Sanica M. Marcovina, Ph.D.
Research Professor of Medicine

Date of evaluation: June 2010


University of Washington
Northwest Lipid Metabolism and Diabetes Research Laboratories
Seattle, Washington

Based on the results of the comparison performed with this laboratory using forty fresh-frozen specimens covering a clinical meaningful range, it can be stated that the **Apolipoprotein B** values obtained by

ShenZhen Mindray Bio-Medical Electronics Co., Ltd.,
Nanshan, ShenZhen, GuangDong Province
P. R. China

are traceable to the WHO-International Reference Material for Apo B, SP3-07.

This laboratory has demonstrated an average absolute bias of 1.6 versus the comparison method and a coefficient of variation of 0.8%. The analyses were performed on a **BS-400, Mindray.**

Director: Sanica M. Marcovina, Ph.D.
Research Professor of Medicine

Date of evaluation: June 2010


NGSP

Certificate of Traceability

Manufacturer Certification

This certifies that ***Mindray*** using ***Enzymatic on BS-800*** has participated in and successfully completed the NGSP certification for manufacturers and is traceable to the **Diabetes Control and Complications Trial** Reference method. The comparison was performed with: **Reference Material Institute for Clinical Chemistry Standards (ReCCS) ASRI #1**

The system evaluated was:

Instrument:	Calibrator Lot:
Mindray BS-800	**44612004**
Reagent Lot:	Calibrator Assigned Values:
44612004	**5.0%, 11.9%**

Date of Certification: May 1, 2012 Certification Expires: May 1, 2013

NGSP Steering Committee Chair — NGSP Network Coordinator — SRL director/ supervisor

Matched calibrators and controls

- Dedicated calibrators with traceability and specific target value
- Convenient design of multi items of calibrators and controls combined into one vial
- Long shelf life of lyophilized powder

Dedicated, high-quality reagents

- **Diagnostic function test panels**

  Test panels such as : Hepatic panel, renal panel, pancreatic panel, lipid panel, cardiac panel, diabetic panel, rheumatic factor panel

- **Reliable analysis performance**

  EP series standard (CLSI)-evaluate and optimize reagent system for reliable performance in precision, linearity, stability, specificity and anti-interference capability

- **ISO standard manufacturing**

  Mindray follows straightly the ISO certified manufacturing process to ensure every lot of reagent in production is of supreme quality

Reagent Menu

Hepatic Panel

Alanine Aminotransferase (ALT)
Aspartate Aminotransferase (AST)
Alkaline Phosphatase (ALP)
γ-GlutamylTransferase (γ-GT)
Direct Bilirubin (D-Bil) DSA Method
Direct Bilirubin (D-Bil)VOX Method
Total Bilirubin (T-Bil) DSA Method
Total Bilirubin (T-Bil)VOX Method
Total Protein (TP)
Albumin (ALB)
Total Bile Acids (TBA)
Prealbumin (PA)
Cholinesterase (CHE)
α-L-fucosidase (AFU)
5'-nucleotidase (5'-NT)

Renal Panel

Urea (UREA)
Creatinine (CREA) Modified Jaffé Method
Creatinine (CREA)Sarcosine Oxidase Method
Uric Acid (UA)
Carbon dioxide (CO2)
Microalbumin
β2-Microglobulin (β2-MG)
Cystatin C (CysC)
Retinol binding protein(RBP)

Cardiac panel

Creatine Kinase (CK)
Creatine Kinase-MB (CK-MB)
Lactate Dehydrogenase (LDH)
α-Hydroxybutyrate Dehydrogenase(α-HBDH)
High sensitive C-reaction protein(HS-CRP)
Homocysteine (HCY)
Myoglobin(MYO)
D-Dimer(D-Dimer)

Inorganic & Anemia

Iron (Fe)
Ferritin (FER)
Transferrin (TRF)
Calcium (Ca)
Magnesium (Mg)
Phosphate Inorganic (P)
Unsaturated iron binding capacity (UIBC)
Glucose-6-phosphate dehydrogenase (G6PD)

Lipid Panel

Total Cholesterol (TC)
Triglycerides (TG)
HDL-Cholesterol (HDL-C)
LDL-Cholesterol (LDL-C)
Apolipoprotein A1 (ApoA1)
Apolipoprotein B (ApoB)
Lipoprotein(a) [Lp(a)]

Immune Panel

Immunoglobulin A (IgA)
Immunoglobulin G (IgG)
Immunoglobulin M (IgM)
Immunoglobulin E (IgE)
Complement C3 (C3)
Complement C4 (C4)

Diabetes Panel

Glucose (Glu) GOD-POD Method
Glucose (Glu) HK Method
Hemoglobin A1c (HbA1c)
Fructosamine (FUN)
β-Hydroxybutyrate(β-HB)

Rheumatism Panel

C-reactive protein (CRP)
Rheumatoid Factor (RF)
Antibodies Against Streptolysin O (ASO)

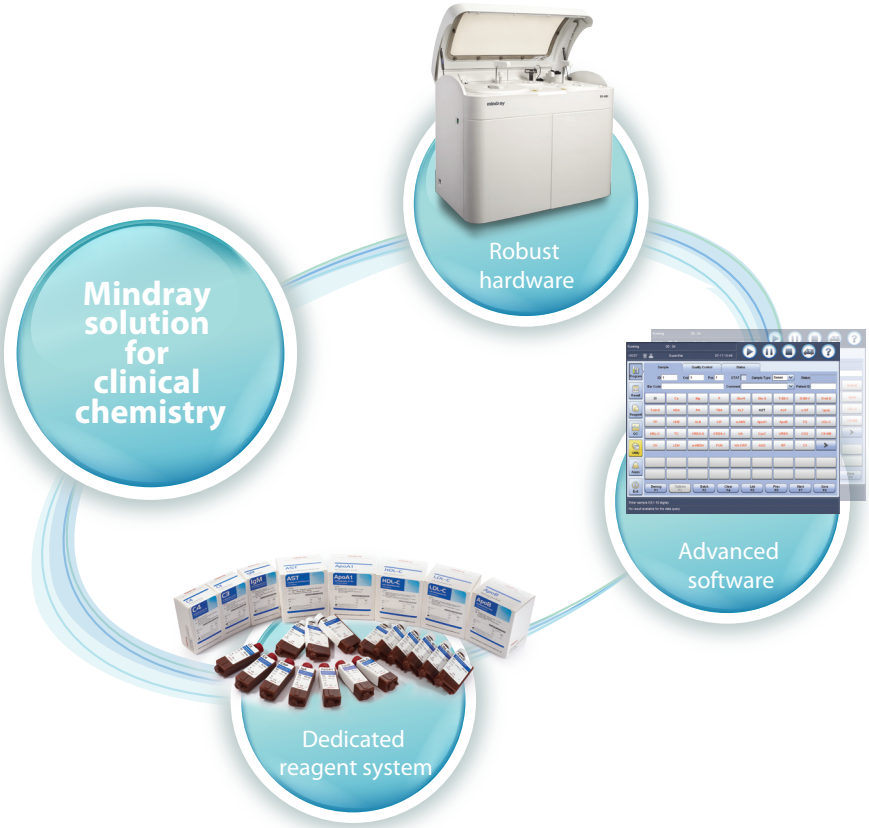
Pancreatitis Panel

α-Amylase (α-AMY)
Lipase (LIP)

Lung Panel

Adenosine Deaminase (ADA)
Angiotensin Converting Enzyme(ACE)

Mindray solution for clinical chemistry



Mindray can now provide 60 parameters of dedicated reagents (more than 8 others are coming), covering hepatic, renal, cardiac, lipids, diabetes, pancreatitis, inorganic ions and immunalassays, etc.,together with original calibrators with metrological traceability as well as controls for BS-480 chemistry analyzer.

Technical Specifications

System function

Fully automated, discrete, random access,
STAT, urine and homogeneous immunoassays;STAT sample priority
Throughput: 400 photometric tests/hour, up to 240 tests/hour for ISE
Measuring principles: Absorbance Photometry, Turbidimetry
Methodology: End-point, Fixed-time, Kinetic, ISE (Optional)
Single/Dual/Triple/Quadruple reagent chemistries,
Monochromatic/Bichromatic
Programming: User defined profiles and calculation

Sample Handling

Sample tray: 90 positions for primary or secondary tubes and sample cups
Sample volume: 1.5~45 µl, step by 0.1µl
Sample probe: Liquid level detection, clot detection and collision protection
Probe cleaning: Interior and exterior automatic probe washing
carry-over < 0.05%
Automatic sample dilution, Pre-dilution and post-dilution
Dilution with ratio up to 1: 150
Dilution vessel: Quartz cuvette

Internal bar code reader

Sample/Reagent barcode reading
including Codabar, ITF (Interleaved Two of Five), code128, code39,
UPC/EAN, Code93; Bi-directional LIS Interface transmission

ISE Module (optional)

Optional selection of K^+, Na^+, Cl^-
Throughput: Up to 240 tests per hour

Reagent Handling

Reagent tray: 80 positions in refrigerated compartment (2~10°C)
Reagent volume: 10~350µl
Reagent probe: Liquid level detection, collision protection and
inventory check
Probe cleaning: Interior and exterior automatic probe washing

Reaction System

Reaction rotor: Rotating tray, 90 cuvettes with automatic washing
Cuvette: Optical length 5mm
Reaction volume: 120~360µl
Operating temperature: 37°C
Temperature fluctuation: ±0.1°C
Mixing system: 2 independent mixers

Optical System

Light Source: Halogen-tungsten lamp
Photometer: Reversed optics, grating photometry
Wavelength: 340nm, 380nm, 412nm, 450nm, 505nm, 546nm,
570nm, 605nm, 660nm, 700nm, 740nm, 800nm
Absorbance range: 0~3.3Abs (10mm conversion)
Resolution: 0.0001Abs

Control and Calibration

Calibration mode: Linear (one-point, two-point and multi-point),Logit
-Log 4P, Logit-Log 5P, Spline, exponential, Polynomial,
Parabola
Control rules: Westgard multi-rule, Levy-Jennings, Cumulative sum
check, twin plot

Operation Unit

Operation system: Windows 8
Interface: RS-232, Network Port, USB/ parallel port

Working Conditions

Power Supply: 200~240V, 50/60Hz, 1500VA
or 110~130V, 60Hz, 1500VA
Temperature: 15~30°C
Humidity: 35~85%
Water consumption: ≤20L/hour, De-ionized water
Dimension: 1180mm x 710mm x 1150mm (W x D x H)
Weight: 300 Kg

www.mindray.com

P/N:ENG-BS-480-210285x8P-20171017

mindray
healthcare within reach