# *Calibration Certificate*

This is to certify that Haematology Analyzer **CelQuant-3 Prime** Instrument Serial. No. **CQP30191216** installed at **IVY Hospital, Nawanshahar** has been calibrated by our engineer on **01-May-2021** with appropriate and sophisticated tools. Below parameters are been calibrated:

This calibration includes preventive maintenance, calibration of all moving parts.

**TEST ITEMS AND RESULT**

| | |
|---|---|
| Appearance | OK |
| Test Speed | OK |
| Suction sample program | OK |
| Valve and optical application | OK |
| Motor & valve | OK |
| Gain adjustment and red, white MCV test | OK |
| Sample Volume | OK |
| Diameter Orifice | OK |
| Hydraulic Unit | OK |
| Power Consumption | 250V 4A |
| Fuse check | OK |
| Power Supply and Earthing | 230 Volts and Grounding less then 5V |

This Calibration Certificate is Valid Up to **30-April-2022.**

Conclusion: All parameter are within range. The Machine is working properly. (As per Meril terms.)

Engineer Name: **Mr. Amit Kumar** Designation: **Service Specialist**

R&D SYSTEMS
614 McKinley Place NE
Minneapolis, MN 55413

# Traceability
## CBC-ST PLUS Hematology Controls

R&D Systems, Inc Hematology Control and Calibrator values are traceable to standard reference methods.

Hematology analyzers in R&D Systems' Quality Assurance Laboratory are whole blood calibrated to values obtained using the following standard reference methods. Whole blood samples drawn from normal, healthy donors are collected in EDTA anticoagulant and analyzed within six hours of collection.

The **White Blood Cell (WBC)** and **Red Blood Cell (RBC)** are analyzed on a Coulter Counter Z series instrument. All counts are corrected for coincidence.

**Hemoglobin** is measured using the Clinical Laboratory Standards Institute (CLSI) recommended reagent for the hemoglobincyanide (cyanmethemoglobin) method [1]. Readings are made at 540 nm in a colorimeter/spectrophotometer calibrated according to CLSI H15-A3 and ICSH recommendations [1].

The **hematocrit** (packed cell volume) is measured using plain glass microhematocrit tubes (not coated with anticoagulant) centrifuged for 5 minutes in a microhematocrit centrifuge according to the CLSI H7-A3 document [2]. No correction is made for trapped plasma.

**Platelets** are assayed using a hemocytometer and phase contrast optics.

1. National Committee for Clinical Laboratory Standards (now Clinical Laboratory Standards Institute.) Reference and Selected Procedures for the Quantitative Determination of Hemoglobin in Blood: Approved Standard-Third Edition. NCCLS document H15-A3. Wayne, PA: NCCLS, 2000.
2. National Committee for Clinical Laboratory Standards (now Clinical Laboratory Standards Institute.) Procedure for Determining Packed Cell Volume by the Microhematocrit Method: Approved Standard, NCCLS document H7-A3. NCCLS, Wayne, PA: NCCLS, 2001.

IVY HOSPITAL

ID:
Date: 01-05-2021 13:33
No. : 217622
Mode: WB
Patient:
Sex: Age: Years
Bed No:
Dept:
Case No:

| Item: | Result: | |
|---|---|---|
| WBC | 0 | 10^3/uL |
| RBC | 0 | 10^6/uL |
| HGB | 0 | g/dL |
| HCT | *.** | % |
| MCV | *.** | fL |
| MCH | *.** | pg |
| MCHC | *.** | g/dL |
| PLT | 0 | 10^3/uL |
| LYM# | *.** | 10^3/uL |
| MXD# | *.** | 10^3/uL |
| NEUT# | *.** | 10^3/uL |
| LYM% | *.** | % |
| MXD% | *.** | % |
| NEUT% | *.** | % |
| RDW-CV | *.** | % |
| RDW-SD | *.** | fL |
| PDW | *.** | fL |
| MPV | *.** | fL |
| P-LCR | *.** | % |
| PCT | *.** | % |
| P-LCC | *.** | 10^3/uL |

IVY HOSPITAL

ID:
Date: 01-05-2021 10:01
No. : 1
Mode: WB
Patient:
Sex: Age: Years
Bed No:
Dept:
Case No:

| Item: | Result: | |
|---|---|---|
| WBC | 5.7 | 10^3/uL |
| RBC | 3.5 | 10^6/uL |
| HGB | ↓9.1 | g/dL |
| HCT | ↓31.3 | % |
| MCV | 89.3 | fL |
| MCH | 26 | pg |
| MCHC | ↓29.1 | g/dL |
| PLT | 418 | 10^3/uL |
| LYM# | 1.19 | 10^3/uL |
| MXD# | 0.61 | 10^3/uL |
| NEUT# | 3.9 | 10^3/uL |
| LYM% | 20.8 | % |
| MXD% | 10.8 | % |
| NEUT% | 68.4 | % |
| RDW-CV | ↑16.9 | % |
| RDW-SD | 50.4 | fL |
| PDW | 15.8 | fL |
| MPV | 10.3 | fL |
| P-LCR | 25.8 | % |
| PCT | ↑0.431 | % |
| P-LCC | 108 | 10^3/uL |

IVY HOSPITAL

ID:
Date: 01-05-2021 10:05
No. : 2
Mode: WB
Patient:
Sex: Age: Years
Bed No:
Dept:
Case No:

| Item: | Result: | |
|---|---|---|
| WBC | 5.73 | 10^3/uL |
| RBC | 3.51 | 10^6/uL |
| HGB | ↓9.2 | g/dL |
| HCT | ↓31.3 | % |
| MCV | 89.2 | fL |
| MCH | 26.2 | pg |
| MCHC | ↓29.4 | g/dL |
| PLT | 402 | 10^3/uL |
| LYM# | 1.1 | 10^3/uL |
| MXD# | 0.37 | 10^3/uL |
| NEUT# | 4.26 | 10^3/uL |
| LYM% | 19.1 | % |
| MXD% | 6.4 | % |
| NEUT% | 74.5 | % |
| RDW-CV | ↑17 | % |
| RDW-SD | 51.3 | fL |
| PDW | ↓12.6 | fL |
| MPV | 9.7 | fL |
| P-LCR | 23.9 | % |
| PCT | ↑0.39 | % |
| P-LCC | 96 | 10^3/uL |

IVY HOSPITAL

ID:
Date: 01-05-2021 10:07
No. : 3
Mode: WB
Patient:
Sex: Age: Years
Bed No:
Dept:
Case No:

| Item: | Result: | |
|---|---|---|
| WBC | 5.47 | 10^3/uL |
| RBC | 3.51 | 10^6/uL |
| HGB | ↓9.2 | g/dL |
| HCT | ↓31.1 | % |
| MCV | 88.7 | fL |
| MCH | 26.2 | pg |
| MCHC | ↓29.6 | g/dL |
| PLT | 391 | 10^3/uL |
| LYM# | 1.05 | 10^3/uL |
| MXD# | 0.44 | 10^3/uL |
| NEUT# | 3.98 | 10^3/uL |
| LYM% | 19.3 | % |
| MXD% | 8 | % |
| NEUT% | 72.7 | % |
| RDW-CV | ↑16.6 | % |
| RDW-SD | 49.5 | fL |
| PDW | ↓12.7 | fL |
| MPV | 9.8 | fL |
| P-LCR | 24.3 | % |
| PCT | ↑0.383 | % |
| P-LCC | 95 | 10^3/uL |

IVY HOSPITAL

ID:
Date: 01-05-2021 10:09
No. : 4
Mode: WB
Patient:
Sex: Age: Years
Bed No:
Dept:
Case No:

| Item: | Result: | |
|---|---|---|
| WBC | 5.7 | 10^3/uL |
| RBC | 3.58 | 10^6/uL |
| HGB | ↓9.4 | g/dL |
| HCT | ↓31.9 | % |
| MCV | 89.2 | fL |
| MCH | 26.3 | pg |
| MCHC | ↓29.5 | g/dL |
| PLT | 412 | 10^3/uL |
| LYM# | 1.1 | 10^3/uL |
| MXD# | ↑1.2 | 10^3/uL |
| NEUT# | 3.4 | 10^3/uL |
| LYM% | 19.3 | % |
| MXD% | ↑21.1 | % |
| NEUT% | 59.6 | % |
| RDW-CV | ↑17.2 | % |
| RDW-SD | 49.5 | fL |
| PDW | 16.8 | fL |
| MPV | 10.5 | fL |
| P-LCR | 26.1 | % |
| PCT | ↑0.433 | % |
| P-LCC | 108 | 10^3/uL |

IVY HOSPITAL

ID:
Date: 01-05-2021 10:11
No. : 5
Mode: WB
Patient:
Sex: Age: Years
Bed No:
Dept:
Case No:

| Item: | Result: | |
|---|---|---|
| WBC | 5.63 | 10^3/uL |
| RBC | ↓3.49 | 10^6/uL |
| HGB | ↓9.2 | g/dL |
| HCT | ↓31.1 | % |
| MCV | 89.1 | fL |
| MCH | 26.4 | pg |
| MCHC | ↓29.6 | g/dL |
| PLT | 411 | 10^3/uL |
| LYM# | 1.09 | 10^3/uL |
| MXD# | 0.66 | 10^3/uL |
| NEUT# | 3.88 | 10^3/uL |
| LYM% | 19.4 | % |
| MXD% | 11.8 | % |
| NEUT% | 68.8 | % |
| RDW-CV | ↑17 | % |
| RDW-SD | 49.5 | fL |
| PDW | 16.5 | fL |
| MPV | 10.6 | fL |
| P-LCR | 26.5 | % |
| PCT | ↑0.436 | % |
| P-LCC | 109 | 10^3/uL |

IVY HOSPITAL

ID:
Date: 01-05-2021 10:14
No. : 6
Mode: WB
Patient:
Sex: Age: Years
Bed No:
Dept:
Case No:

| Item: | Result: | |
|---|---|---|
| WBC | 5.39 | 10^3/uL |
| RBC | 3.51 | 10^6/uL |
| HGB | ↓9.1 | g/dL |
| HCT | ↓31.1 | % |
| MCV | 88.7 | fL |
| MCH | ↓25.9 | pg |
| MCHC | ↓29.3 | g/dL |
| PLT | 418 | 10^3/uL |
| LYM# | 1.23 | 10^3/uL |
| MXD# | ↑1.12 | 10^3/uL |
| NEUT# | 3.04 | 10^3/uL |
| LYM% | 22.8 | % |
| MXD% | ↑20.7 | % |
| NEUT% | 56.5 | % |
| RDW-CV | ↑16.6 | % |
| RDW-SD | 49.5 | fL |
| PDW | 16.1 | fL |
| MPV | 10.5 | fL |
| P-LCR | 26.3 | % |
| PCT | ↑0.439 | % |
| P-LCC | 110 | 10^3/uL |

IVY HOSPITAL

ID:
Date: 01-05-2021 10:17
No. : 7
Mode: WB
Patient:
Sex: Age: Years
Bed No:
Dept:
Case No:

| Item: | Result: | |
|---|---|---|
| WBC | 5.6 | 10^3/uL |
| RBC | 3.5 | 10^6/uL |
| HGB | ↓9.2 | g/dL |
| HCT | ↓31.1 | % |
| MCV | 88.8 | fL |
| MCH | 26.3 | pg |
| MCHC | ↓29.6 | g/dL |
| PLT | 395 | 10^3/uL |
| LYM# | 1.2 | 10^3/uL |
| MXD# | 0.8 | 10^3/uL |
| NEUT# | 3.6 | 10^3/uL |
| LYM% | 21.5 | % |
| MXD% | 14.2 | % |
| NEUT% | 64.3 | % |
| RDW-CV | ↑16.8 | % |
| RDW-SD | 49.5 | fL |
| PDW | 15.2 | fL |
| MPV | 10.2 | fL |
| P-LCR | 25.2 | % |
| PCT | ↑0.403 | % |
| P-LCC | 100 | 10^3/uL |

IVY HOSPITAL

ID:
Date: 01-05-2021 10:19
No. : 8
Mode: WB
Patient:
Sex: Age: Years
Bed No:
Dept:
Case No:

| Item: | Result: | |
|---|---|---|
| WBC | 5.56 | 10^3/uL |
| RBC | 3.5 | 10^6/uL |
| HGB | ↓9.2 | g/dL |
| HCT | ↓31 | % |
| MCV | 88.5 | fL |
| MCH | 26.3 | pg |
| MCHC | ↓29.7 | g/dL |
| PLT | 406 | 10^3/uL |
| LYM# | 1.21 | 10^3/uL |
| MXD# | 0.55 | 10^3/uL |
| NEUT# | 3.8 | 10^3/uL |
| LYM% | 21.7 | % |
| MXD% | 10 | % |
| NEUT% | 68.3 | % |
| RDW-CV | ↑17.3 | % |
| RDW-SD | 50.4 | fL |
| PDW | ↓12.8 | fL |
| MPV | 9.9 | fL |
| P-LCR | 24.7 | % |
| PCT | ↑0.402 | % |
| P-LCC | 100 | 10^3/uL |

IVY HOSPITAL

ID:
Date: 01-05-2021 10:23
No. : 9
Mode: WB
Patient:
Sex: Age: Years
Bed No:
Dept:
Case No:

| Item: | Result: | |
|---|---|---|
| WBC | 5.47 | 10^3/uL |
| RBC | 3.51 | 10^6/uL |
| HGB | ↓9.3 | g/dL |
| HCT | ↓31.1 | % |
| MCV | 88.7 | fL |
| MCH | 26.5 | pg |
| MCHC | ↓29.9 | g/dL |
| PLT | 416 | 10^3/uL |
| LYM# | 1.16 | 10^3/uL |
| MXD# | 0.47 | 10^3/uL |
| NEUT# | 3.84 | 10^3/uL |
| LYM% | 21.1 | % |
| MXD% | 8.6 | % |
| NEUT% | 70.3 | % |
| RDW-CV | ↑16.8 | % |
| RDW-SD | 49.5 | fL |
| PDW | 16 | fL |
| MPV | 10.3 | fL |
| P-LCR | 25.8 | % |
| PCT | ↑0.428 | % |
| P-LCC | 107 | 10^3/uL |

IVY HOSPITAL

ID:
Date: 01-05-2021 10:29
No. : 10
Mode: WB
Patient:
Sex: Age: Years
Bed No:
Dept:
Case No:

| Item: | Result: | |
|---|---|---|
| WBC | 5.5 | 10^3/uL |
| RBC | 3.53 | 10^6/uL |
| HGB | ↓9.3 | g/dL |
| HCT | ↓31.3 | % |
| MCV | 88.8 | fL |
| MCH | 26.3 | pg |
| MCHC | ↓29.7 | g/dL |
| PLT | 393 | 10^3/uL |
| LYM# | 1.09 | 10^3/uL |
| MXD# | 0.49 | 10^3/uL |
| NEUT# | 3.92 | 10^3/uL |
| LYM% | 19.8 | % |
| MXD% | 8.9 | % |
| NEUT% | 71.3 | % |
| RDW-CV | ↑17 | % |
| RDW-SD | 48.7 | fL |
| PDW | 16.4 | fL |
| MPV | 10.6 | fL |
| P-LCR | 26.8 | % |
| PCT | ↑0.417 | % |
| P-LCC | 105 | 10^3/uL |