

External Quality Assurance (EQA) of G6PD Quantitative Test

Survey No. : RH2018-01

Sample sent on : 2018/02/26

Reporting deadline : 2018/03/05

Sample sent : [21 set](#)

Results reported (%) : 21 (100%)

- 1. [Summary report on this EQA survey](#)
- 2. [The distribution of G6PD reported in this survey](#)
- 3. [The distribution of Hb reported in this survey](#)
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Summary Report of G6PD and Hemoglobin (Hb) Quantitative Test Results

Lab	Referral Hosp.	Report (day)	G6PD Reagent Code	Sample 1				Sample 2				Sample 3				Hb 1	Hb 2	Hb 3
				(U/gHb)	D%	z score	SDI	(U/gHb)	D%	z score	SDI	(U/gHb)	D%	z score	SDI	(g/dL)	(g/dL)	(g/dL)
F02	F02	4	5	6.3	-1.6%	-0.2	-0.4	18.9	1.1%	0.2	0.4	3.3	-2.9%	-0.4	-0.5	2.1	2.1	2.2
F03	F03	4	5	6.3	-1.6%	-0.2	-0.4	18.2	-2.7%	-0.4	-0.5	3.4	0.0%	0.0	0.0	2.1	2.2	2.2
F04	F04	4	5	6.3	-1.6%	-0.2	-0.4	18.2	-2.7%	-0.4	-0.5	3.4	0.0%	0.0	0.0	2.0	2.1	2.1
F05	F05	7	5	6.5	1.6%	0.2	0.4	18.0	-3.7%	-0.5	-0.7	3.4	0.0%	0.0	0.0	2.0	2.1	2.1
F07	F07	7	5	6.7	4.7%	0.7	1.2	19.4	3.7%	0.5	1.0	3.6	5.9%	0.8	1.0	2.1	2.2	2.2
F09	F09	7	5	6.6	3.1%	0.4	0.8	19.8	5.9%	0.8	1.5	3.0	-11.8%	-1.7	-2.0	2.0	1.6	2.3
F10	F10	4	5	6.1	-4.7%	-0.7	-1.2	18.0	-3.7%	-0.5	-0.7	3.2	-5.9%	-0.8	-1.0	2.1	2.2	2.3
F11	F11	4	5	6.4	0.0%	0.0	0.0	18.8	0.5%	0.1	0.2	3.4	0.0%	0.0	0.0	2.0	2.1	2.2
F12	F12	7	5	7.1	10.9%	1.6	2.8	20.7	10.7%	1.5	2.6	4.1	20.6%	2.9	3.5	2.1	2.2	2.2
F13	F13	7	5	6.4	0.0%	0.0	0.0	18.7	0.0%	0.0	0.1	3.6	5.9%	0.8	1.0	2.3	2.3	2.4
F14	F14	7	5	6.4	0.0%	0.0	0.0	19.0	1.6%	0.2	0.5	3.5	2.9%	0.4	0.5	2.0	2.2	2.2
F15	F15	3	5	6.1	-4.7%	-0.7	-1.2	17.6	-5.9%	-0.8	-1.2	3.2	-5.9%	-0.8	-1.0	2.1	2.2	2.3
F17	F17	7	5	6.8	6.2%	0.9	1.6	19.9	6.4%	0.9	1.6	3.8	11.8%	1.7	2.0	2.0	2.1	2.1
F18	F18	3	5	6.4	0.0%	0.0	0.0	18.7	0.0%	0.0	0.1	3.5	2.9%	0.4	0.5	2.0	2.0	2.0
F19	F19	7	5	6.8	6.2%	0.9	1.6	19.2	2.7%	0.4	0.7	3.6	5.9%	0.8	1.0	2.0	2.0	2.1
F20	F20	7	5	5.7	-10.9%	-1.6	-2.8	10.1	-46.0%	-6.6	-10.4	3.2	-5.9%	-0.8	-1.0	2.2	2.5	2.5
F21	F21	7	5	6.4	0.0%	0.0	0.0	18.8	0.5%	0.1	0.2	3.2	-5.9%	-0.8	-1.0	2.0	2.1	2.4
F22	F22	3	5	6.5	1.6%	0.2	0.4	18.6	-0.5%	-0.1	0.0	3.5	2.9%	0.4	0.5	2.0	2.1	2.2
F25	F25	5	5	6.5	1.6%	0.2	0.4	17.9	-4.3%	-0.6	-0.9	3.4	0.0%	0.0	0.0	2.0	2.3	2.5
F26	F26	5	5	6.3	-1.6%	-0.2	-0.4	18.1	-3.2%	-0.5	-0.6	3.2	-5.9%	-0.8	-1.0	2.1	2.1	2.2
F27	F27	7	5	6.3	-1.6%	-0.2	-0.4	18.1	-3.2%	-0.5	-0.6	3.4	0.0%	0.0	0.0	2.1	2.1	2.1
Total participating laboratories = 21																		
Xa (Median)	-	7	-	6.4				18.7				3.4				2.0	2.1	2.2
u _{Xa}	-	-	-	0.060				0.197				0.048				-	-	-
σ _p	-	-	-	0.448				1.309				0.238				-	-	-
σ _p '	-	-	-	-				-				-				-	-	-
Range	-	3-7	-	5.7-7.1				10.1-20.7				3.0-4.1				2.0-2.3	1.6-2.5	2.0-2.5
n	-	-	-	21				21				21				21	21	21
Mean	-	-	-	6.4				18.6				3.4				2.0	2.1	2.2
S.D.	-	-	-	0.25				0.82				0.20				0.00	0.11	0.13
C.V.	-	-	-	3.9%				4.4%				5.9%				0.0%	5.2%	5.9%

Note:

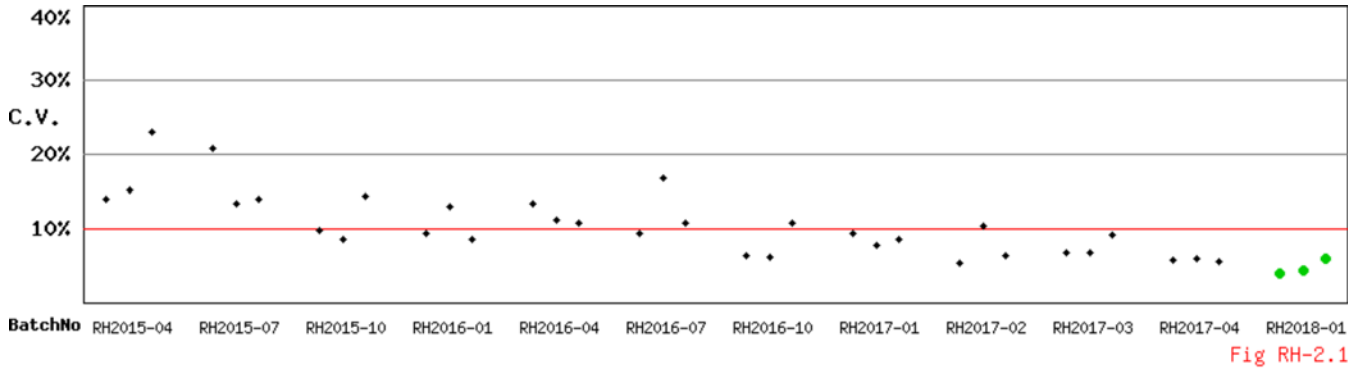
1. $D\% = [(X - X_a) / X_a] \times 100\%$; X = Your Results , X_a = Assigned value
2. u_{Xa} = uncertainty of the assigned value. $u_{Xa} = 1.1 \times SD / n^{1/2}$
3. SD for proficiency assessment (σ_p) = 7% x X_a ; but while X_a < 2.9 U/gHb, σ_p = 0.2 U/gHb
4. Adjusted SD for proficiency assessment (σ_p') = (σ_p² + u_{Xa}²)^{1/2}. σ_p' is used for proficiency assessment when u_{Xa} ≥ 0.3σ_p
5. z score = D / σ_p ; D = X - X_a, σ_p = SD for proficiency assessment
6. SDI = (X - Mean) / SD ; SD = standard deviation of peer group ; SDI is not calculated when SD equals 0
7. The assigned value (X_a) is the **median** of all the results reported of this EQA sample
8. Robust results (Mean and SD) were calculated by Algorithm A according to ISO 13528
9. The evaluation criteria for measurement result of each specimen : Acceptable : |z| <= 2; Caution : 2 < |z| <= 3; Unsatisfactory : |z| > 3
10. Maximum Allowable Deviation (MAD) = 3 x (σ_p / X_a) x 100% or 3 x (σ_p' / X_a) x 100% when u_{Xa} ≥ 0.3σ_p

Reagent Kit	G6PD Reagent Code	Lab
Medicon	5	F02, F03, F04, F05, F07, F09, F10, F11, F12, F13, F14, F15, F17, F18, F19, F20, F21, F22, F25, F26, F27

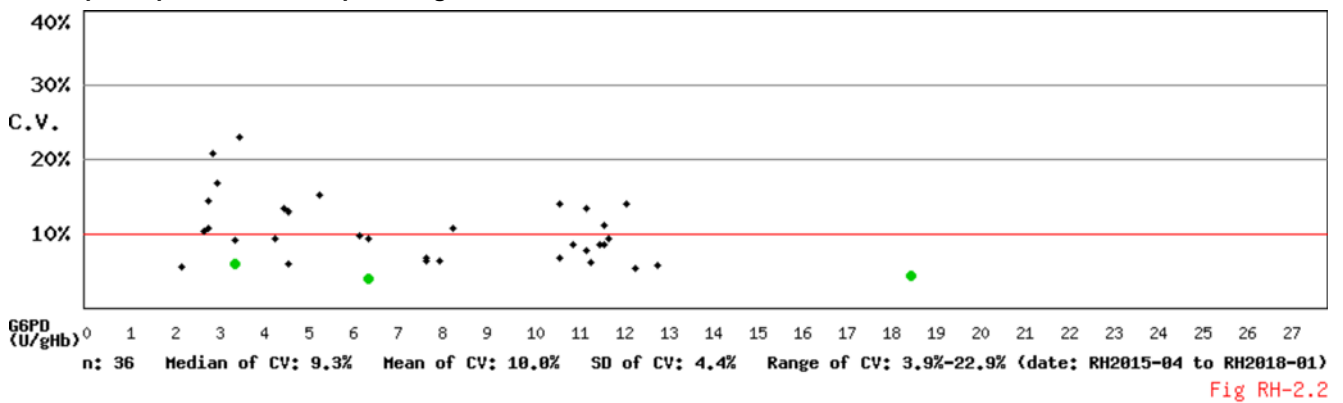
Long Term Observation of Blood G6PD Quantitative Test EQA Survey Results

Survey No : RH2018-01 (in green ●)

- Total participants' CV result plotted against surveys



- Total participants' CV result plotted against G6PD activities



* Mean and SD are calculated by Robust method according to ISO 13528 since 2014

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(Report generated at 2018-03-06 17:23:16)

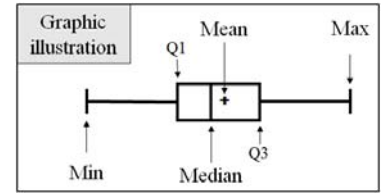
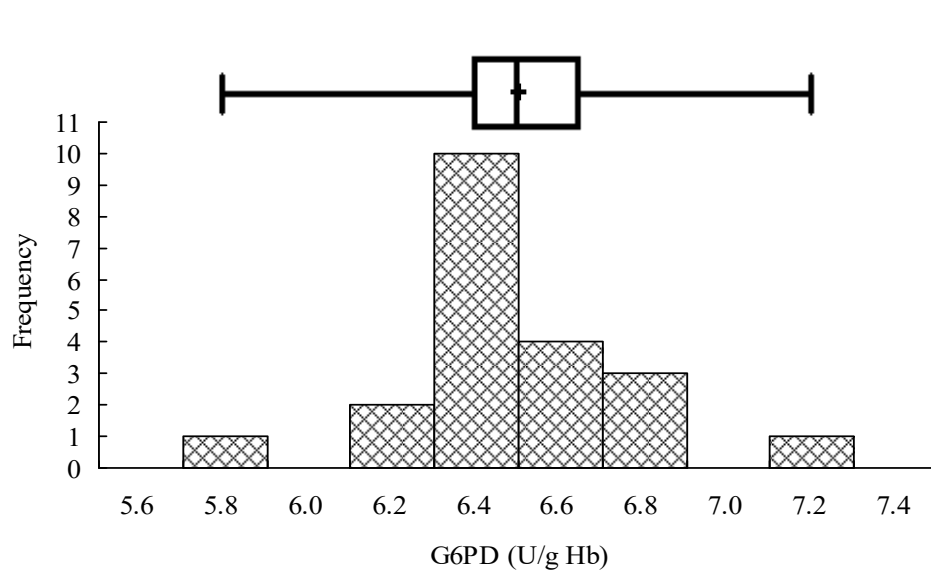
RH2018-01 Distribution of G6PD Test Results

Survey No. : RH2018-01

Sample sent on : 2018/02/26

Reporting deadline : 2018/03/05

Results reported (%) : 100%



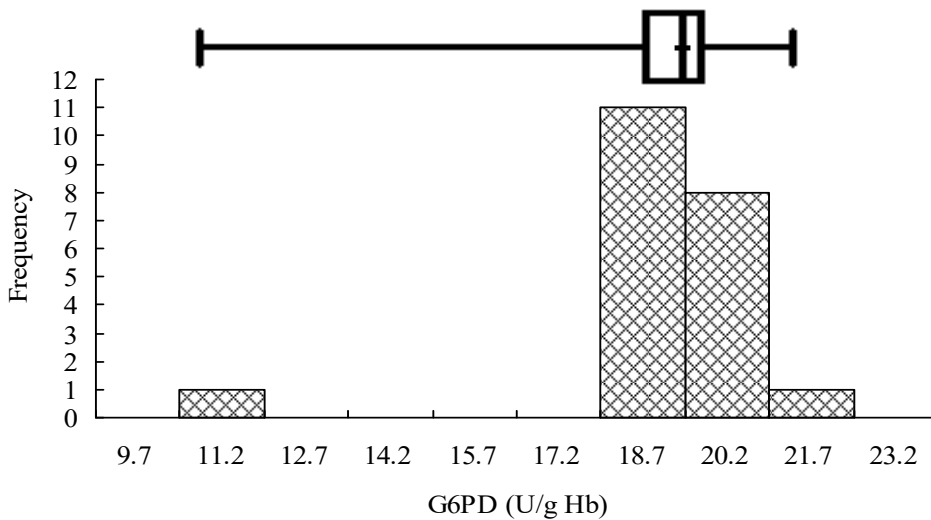
Sample 1

Median = 6.4 (n = 21)

Mean* = 6.4 (n = 21)

SD* = 0.25

CV = 3.9%



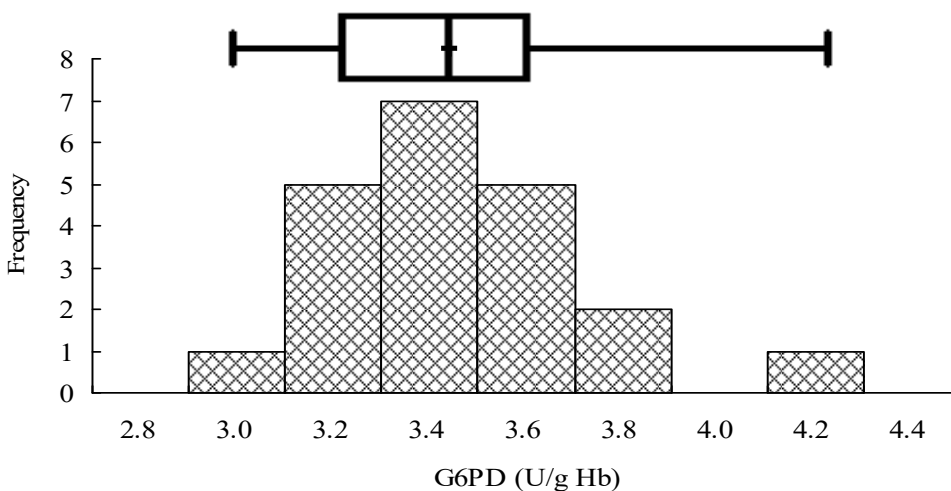
Sample 2

Median = 18.7 (n = 21)

Mean* = 18.6 (n = 21)

SD* = 0.82

CV = 4.4%



Sample 3

Median = 3.4 (n = 21)

Mean* = 3.4 (n = 21)

SD* = 0.20

CV = 5.9%

*Robust results (Mean and SD) were calculated by Algorithm A according to ISO 13528

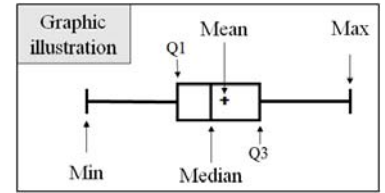
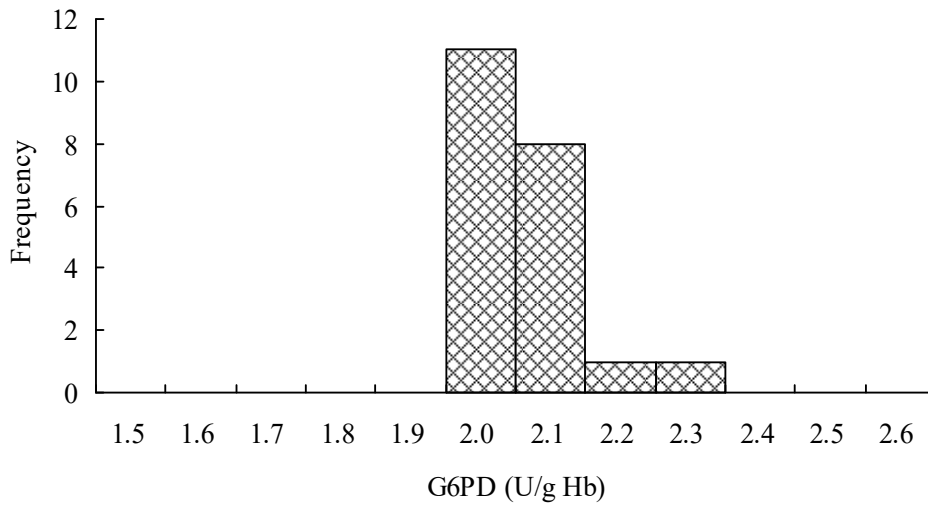
RH2018-01 Distribution of Hb Test Results

Survey No. : RH2018-01

Sample sent on : 2018/02/26

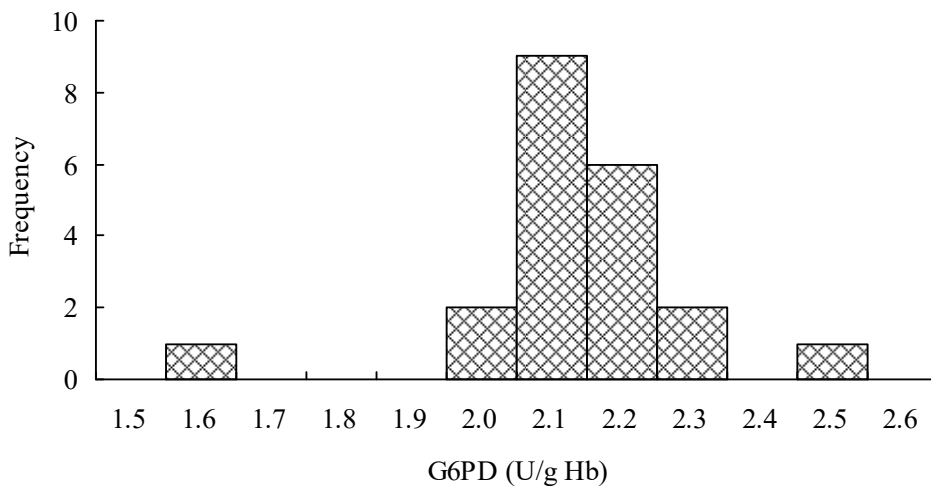
Reporting deadline : 2018/03/05

Results reported (%) : 100%



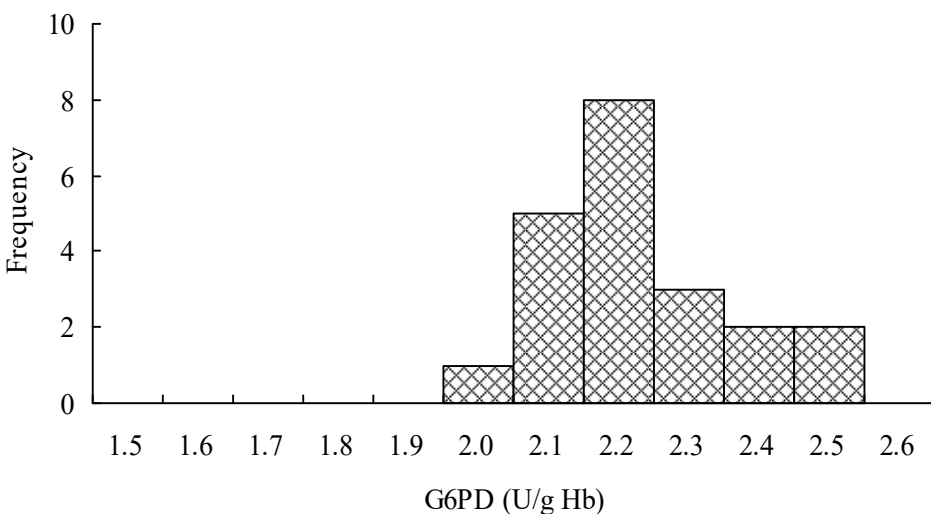
Sample 1

Median = 2.0 (n = 21)
Mean* = 2.0 (n = 21)
SD* = 0.00
CV = 0.0%



Sample 2

Median = 2.1 (n = 21)
Mean* = 2.1 (n = 21)
SD* = 0.11
CV = 5.2%



Sample 3

Median = 2.2 (n = 21)
Mean* = 2.2 (n = 21)
SD* = 0.13
CV = 5.9%

*Robust results (Mean and SD) were calculated by Algorithm A according to ISO 13528

External Quality Assurance (EQA) Program for G6PD Quantitative Test in Philippines

Survey No. : RH2018-01 Sample sent on : 2018 / 02 / 26

Reporting deadline : 2018 / 03 / 05

This Survey **S3** has been used in 2013-2018 (n = 6 ; Survey / Sample No.) :

[RH2013-05/S1](#) ; [RH2015-07/S1](#) ; [RH2016-07/S2](#) ; [RH2016-10/S3](#) ; [RH2017-02/S2](#) ; [RH2018-01/S3](#)

Intermediate Measurement Precision of G6PD Quantitative Test

Lab	Survey : RH2018-01 / Sample 3		Program period: 2013 ~ 2018²			
	U/gHb	SDI ¹	Mean	n	SD	CV
F02	3.3	0.9	2.9	6	0.47	16.2%
F03	3.4	0.8	2.9	6	0.64	22.1%
F04	3.4	1.0	2.9	6	0.50	17.2%
F05	3.4	0.5	3.2	6	0.41	12.8%
F07	3.6	0.4	3.2	6	0.91	28.4%
F09	3.0	0.9	2.6	6	0.46	17.7%
F10	3.2	0.7	2.7	6	0.70	25.9%
F11	3.4	0.6	3.1	6	0.50	16.1%
F12	4.1	0.7	3.5	6	0.92	26.3%
F13	3.6	1.0	2.8	6	0.83	29.6%
F14	3.5	1.2	2.9	5	0.50	17.2%
F15	3.2	1.5	2.8	5	0.26	9.3%
F17	3.8	1.2	3.1	5	0.59	19.0%
F18	3.5	1.5	3.0	5	0.33	11.0%
F19	3.6	1.0	3.1	5	0.50	16.1%
F20	3.2	0.4	3.0	5	0.53	17.7%
F21	3.2	1.9	2.7	5	0.26	9.6%
F22	3.5	—	—	4	—	—
F25	3.4	—	—	4	—	—
F26	3.2	—	—	3	—	—
F27	3.4	—	—	2	—	—
Total participating laboratories = 21						
Median	3.4	0.9	2.9	—	0.50	17.2%
Range	3.0 ~ 4.1	0.4 ~ 1.9	2.6 ~ 3.5	—	0.26 ~ 0.92	9.3% ~ 29.6

1). Standard Deviation Index (SDI) = (Individual Result - Individual Mean) / Individual SD

2). Survey / Sample No. : [RH2013-05/S1](#) ; [RH2015-07/S2](#) ; [RH2016-07/S2](#) ; [RH2016-10/S3](#) ; [RH2017-02/S2](#) ; [RH2018-01/S3](#)

* Intermediate Measurement Precision ; ISO 3534-2:2006, JCGM 200:2012 (VIM, 3rd ed.) 2.23

** Mean and SD are calculated by Robust method according to ISO 13528

*** n < 5, NOT calculated Mean and SD