

External Quality Assurance (EQA) of G6PD Quantitative Test

Survey No. : RH2016-04
Sample sent : [24 set](#)

Sample sent on : 2016/04/11
Results reported (%) : 23 (96%)

Reporting deadline : 2016/04/18

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](#)

4. [Long term observation of inter laboratory CV vs. surveys](#)

5. [Long term observation of inter laboratory CV vs. G6PD activities](#)

6. [Deviation graph for individual laboratory](#)

Referral Hosp. G6PD and Hemoglobin(Hb) Quantitative Test Results

Lab	Referral Hosp.	Report (day)	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			
F02	F02	3	4.8	6.7%	1.0	0.5	12.9	12.2%	1.7	0.9	2.9	3.6%	0.5	0.3	2.0	1.9	2.1
F03	F03	5	4.7	4.4%	0.6	0.3	12.8	11.3%	1.6	0.8	2.8	0.0%	0.0	0.0	2.1	2.0	2.0
F04	F04	4	3.7	-17.8%	-2.5	-1.3	10.0	-13.0%	-1.9	-1.3	2.2	-21.4%	-3.1	-2.0	2.3	2.1	2.3
F05	F05	4	4.5	0.0%	0.0	0.0	10.8	-6.1%	-0.9	-0.7	3.0	7.1%	1.0	0.7	2.2	2.1	2.2
F06	F06	7	4.0	-11.1%	-1.6	-0.8	10.8	-6.1%	-0.9	-0.7	2.4	-14.3%	-2.0	-1.3	2.2	2.0	2.2
F07	F07	4	4.4	-2.2%	-0.3	-0.2	10.3	-10.4%	-1.5	-1.1	2.7	-3.6%	-0.5	-0.3	2.1	2.1	2.2
F08	F08	6	4.6	2.2%	0.3	0.2	11.5	0.0%	0.0	-0.2	3.0	7.1%	1.0	0.7	2.3	2.0	2.6
F09	F09	7	3.9	-13.3%	-1.9	-1.0	10.0	-13.0%	-1.9	-1.3	2.5	-10.7%	-1.5	-1.0	2.2	1.9	2.2
F10	F10	4	3.8	-15.6%	-2.2	-1.2	10.6	-7.8%	-1.1	-0.8	2.4	-14.3%	-2.0	-1.3	2.3	2.1	2.2
F11	F11	7	3.9	-13.3%	-1.9	-1.0	10.5	-8.7%	-1.2	-0.9	2.3	-17.9%	-2.6	-1.7	2.5	2.2	2.2
F12	F12	7	6.2	37.8%	5.4	2.8	14.0	21.7%	3.1	1.8	3.7	32.1%	4.6	3.0	2.3	2.2	2.2
F13	F13	8	4.6	2.2%	0.3	0.2	11.4	-0.9%	-0.1	-0.2	2.9	3.6%	0.5	0.3	2.4	2.2	2.4
F14	F14	7	4.5	0.0%	0.0	0.0	12.4	7.8%	1.1	0.5	2.8	0.0%	0.0	0.0	2.3	2.0	2.1
F15	F15	7	4.8	6.7%	1.0	0.5	12.2	6.1%	0.9	0.4	2.9	3.6%	0.5	0.3	2.4	2.1	2.3
F16	F16	2	6.2	37.8%	5.4	2.8	15.4	33.9%	4.8	2.8	3.7	32.1%	4.6	3.0	2.2	2.0	2.1
F17	F17	4	4.5	0.0%	0.0	0.0	11.5	0.0%	0.0	-0.2	2.7	-3.6%	-0.5	-0.3	2.1	2.0	2.1
F18	F18	3	4.3	-4.4%	-0.6	-0.3	10.7	-7.0%	-1.0	-0.8	2.8	0.0%	0.0	0.0	2.2	2.1	2.2
F19	F19	4	4.8	6.7%	1.0	0.5	11.8	2.6%	0.4	0.1	3.0	7.1%	1.0	0.7	2.3	2.1	2.2
F20	F20	2	4.3	-4.4%	-0.6	-0.3	11.0	-4.3%	-0.6	-0.5	2.7	-3.6%	-0.5	-0.3	2.4	2.1	2.3
F21	F21	7	4.9	8.9%	1.3	0.7	12.3	7.0%	1.0	0.5	2.8	0.0%	0.0	0.0	2.2	2.3	2.2
F22	F22	1	4.0	-11.1%	-1.6	-0.8	11.0	-4.3%	-0.6	-0.5	3.0	7.1%	1.0	0.7	2.0	2.0	2.0
F23	None	N.R.	N.R.	N.R.%	N.R.	N.R.	N.R.	N.R.%	N.R.	N.R.	N.R.	N.R.%	N.R.	N.R.	N.R.	N.R.	N.R.
F24	F24	6	5.5	22.2%	3.2	1.7	13.8	20.0%	2.9	1.6	3.4	21.4%	3.1	2.0	2.3	2.0	2.2
F25	F25	7	5.0	11.1%	1.6	0.8	12.6	9.6%	1.4	0.7	3.0	7.1%	1.0	0.7	2.2	2.0	2.1
Total participating laboratories = 24																	
Xa (Median)	-	5	4.5				11.5				2.8				2.2	2.1	2.2
σ _p	-	-	0.315				0.805				0.196				-	-	-
Range	-	1-8	3.7-6.2				10.0-15.4				2.2-3.7				2.0-2.5	1.0-2.3	2.0-2.6
n	-	-	23				23				23				23	23	23
Mean	-	-	4.5				11.7				2.8				2.2	2.1	2.2
S.D.	-	-	0.6				1.3				0.3				0.1	0.1	0.1
C.V.	-	-	13.3%				11.1%				10.7%				4.5%	4.8%	4.5%
Note:																	
1. $D\% = [(X - X_a) / X_a] \times 100\%$; X = Your Results , X _a = Assigned value																	
2. $z \text{ score} = D / \sigma_p$; D = X - X _a , σ _p = SD for proficiency assessment																	
3. $SDI = (X - \text{Mean}) / SD$; SD = standard deviation of peer group																	
4. The assigned value (X _a) is the median of all the results reported of this EQA sample																	
5. SD for proficiency assessment (σ _p) = 7% x X _a ; but while X _a < 2.9 U/gHb, σ _p = 0.2																	
6. Robust results (Mean and SD) were calculated by Algorithm A according to ISO 13528:2005																	
7. Acceptable : z <= 2; Caution : 2 < z <= 3; Unsatisfactory : z > 3																	
8. Maximum Allowable Deviation (MAD) = 3 x (σ _p / X _a) x 100%																	

[Ordered by Referral Hosp.](#)



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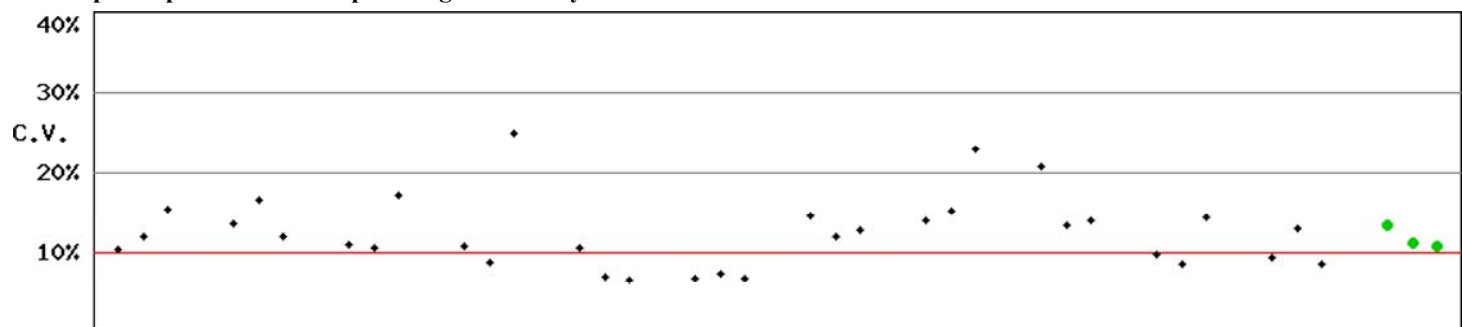
info@newbornscreening.ph



Long Term Observation of Blood G6PD Quantitative Test QA Survey Results

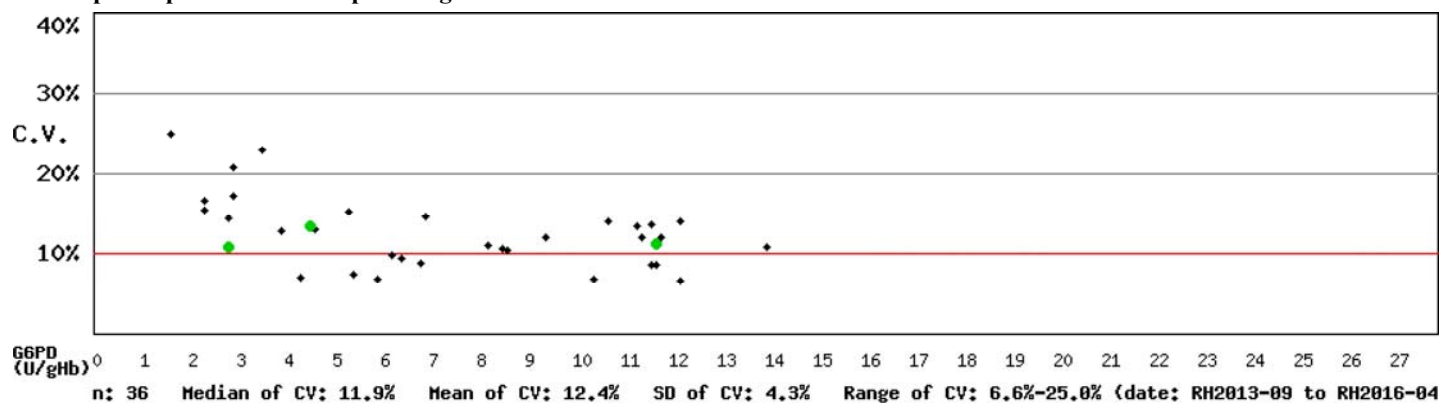
Survey No : RH2016-04 (in green ●)

- Total participants' CV result plotted against surveys



BatchNo RH2013-09 RH2013-11 RH2014-01 RH2014-04 RH2014-07 RH2014-10 RH2015-01 RH2015-04 RH2015-07 RH2015-10 RH2016-01 RH2016-04
Fig RH-2.1

- Total participants' CV result plotted against G6PD activities



G6PD (U/gHb) 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
n: 36 Median of CV: 11.9% Mean of CV: 12.4% SD of CV: 4.3% Range of CV: 6.6%-25.0% (date: RH2013-09 to RH2016-04)
Fig RH-2.2

* Mean and SD are calculated by Robust method according to ISO 13528:2005 since 2014

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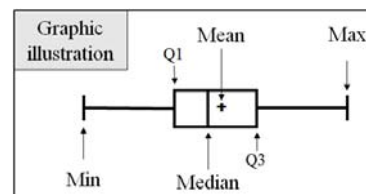
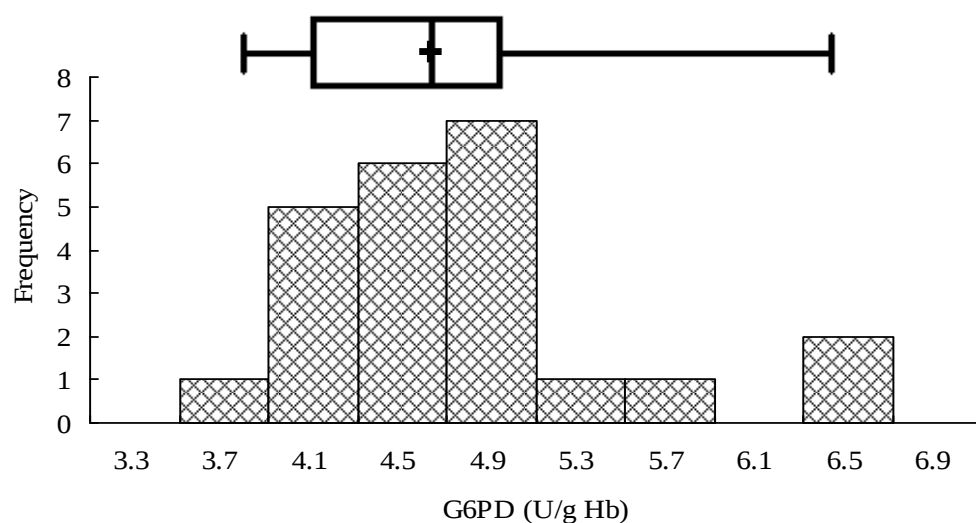
RH2016-04 External Quality Assurance -G6PD

Survey No. : RH2016-04

Sample sent on : 2016/04/11

Reporting deadline : 2016/04/18

Results reported (%) : 96%



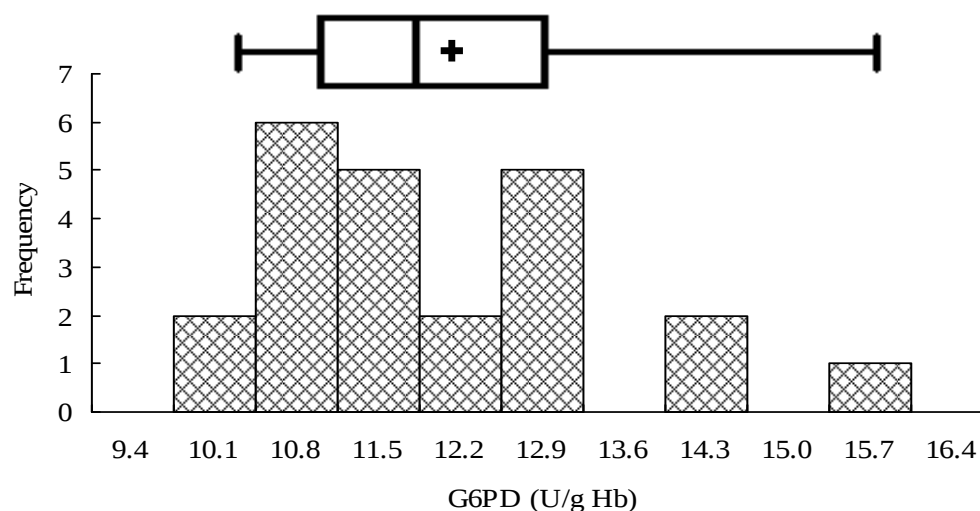
Sample 1

Median = 4.5 (n = 23)

Mean* = 4.5 (n = 23)

SD* = 0.6

CV = 13.3%



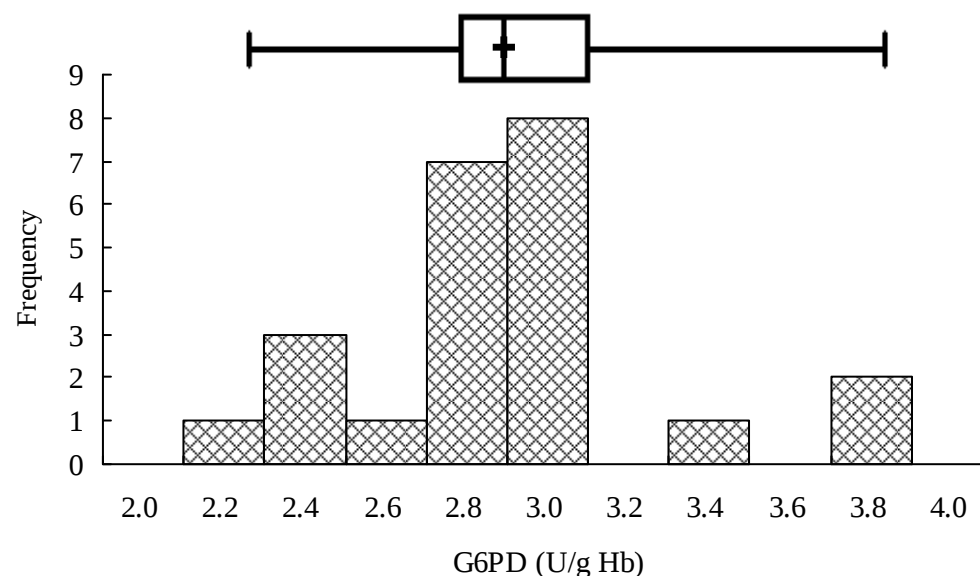
Sample 2

Median = 11.5 (n = 23)

Mean* = 11.7 (n = 23)

SD* = 1.3

CV = 11.1%



Sample 3

Median = 2.8 (n = 23)

Mean* = 2.8 (n = 23)

SD* = 0.3

CV = 10.7%

*Robust results (Mean and SD) were calculated by Algorithm A according to ISO 13528:2005

Fig PHIQ-3

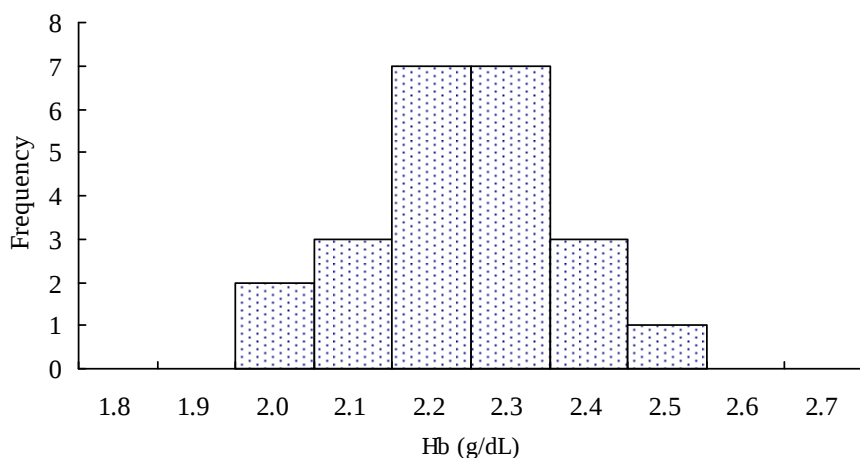
RH2016-04 External Quality Assurance -Hb

Survey No. : RH2016-04

Sample sent on : 2016/04/11

Reporting deadline : 2016/04/18

Results reported (%) : 96%



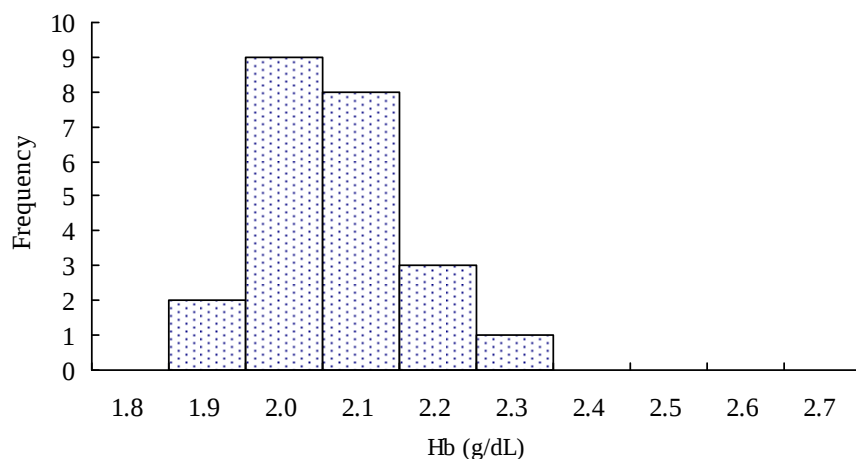
Sample 1

Median = 2.2 (n = 23)

Mean* = 2.2 (n = 23)

SD* = 0.1

CV = 4.5%



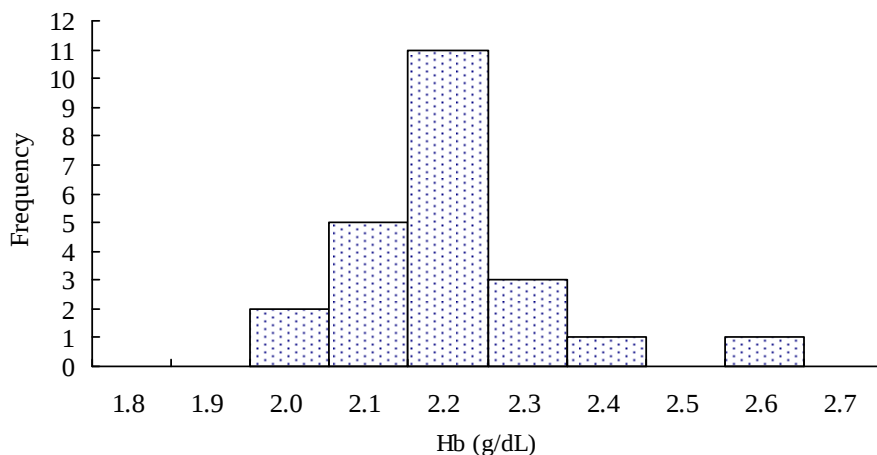
Sample 2

Median = 2.1 (n = 23)

Mean* = 2.1 (n = 23)

SD* = 0.1

CV = 4.8%



Sample 3

Median = 2.2 (n = 23)

Mean* = 2.2 (n = 23)

SD* = 0.1

CV = 4.5%

*Robust results (Mean and SD) were calculated by Algorithm A according to ISO 13528:2005

Fig PHIQ-4

External Quality Assurance (EQA) Program

for

G6PD Quantitative Test in Philippines

Survey No. : RH2016-04 Sample sent on : 2016 / 04 / 11

Reporting deadline : 2016 / 04 / 18

This Survey [S3](#) has been used in 2009-2016 (n = 9 ; Survey / Sample No.) :

[RH2009-09/S3](#) ; [RH2010-01/S3](#) ; [RH2011-05/S1](#) ; [RH2011-07/S3](#) ; [RH2012-05/S2](#) ; [RH2013-01/S3](#) ; [RH2014-01/S3](#) ; [RH2015-10/S3](#) ; [RH2016-04/S3](#) ;

Intermediate Measurement Precision of G6PD Quantitative Test

Lab	Survey : RH2016-04 / Sample 3		Program period: 2009 ~ 2016³			
	U/gHb	SDI ²	Mean	n	SD	CV
F02	2.9	-1.0	3.2	9	0.3	9.4%
F03	2.8	-0.6	3.5	9	1.2	34.3%
F04	2.2	-1.3	2.7	8 ⁵	0.4	14.8%
F05	3.0	-0.7	3.2	9	0.3	9.4%
F06	2.4	-1.2	3.1	8 ⁶	0.6	19.4%
F07	2.7	-0.9	3.3	9	0.7	21.2%
F08	3.0	-0.5	3.2	9	0.4	12.5%
F09	2.5	-0.2	3.1	8 ⁵	2.6	83.9%
F10	2.4	0.0	2.4	9	0.4	16.7%
F11	2.3	—	3.2	5	—	—
F12	3.7	—	3.3	4	—	—
F13	2.9	—	2.9	3	—	—
F14	2.8	—	2.6	3	—	—
F15	2.9	—	2.6	3	—	—
F16	3.7	—	3.4	2	—	—
F17	2.7	—	3.0	2	—	—
F18	2.8	—	2.8	2	—	—
F19	3.0	—	3.0	2	—	—
F20	2.7	—	2.7	2	—	—
F21	2.8	—	3.0	2	—	—
F22	3.0	—	2.8	2	—	—
F24	3.4	—	—	1	—	—
F25	3.0	—	—	1	—	—
Total participating laboratories = 23						
Median	2.8	-0.7	3.0	—	0.4	16.7%
Range	2.2 ~ 3.7	-1.3 ~ 0.0	2.4 ~ 3.5	—	0.3 ~ 2.6	9.4% ~ 83.9%

- 1). Mean and SD are calculated by Robust method according to ISO 13528:2005
- 2). Standard Deviation Index (SDI) = (Individual Result - Individual Mean) / Individual SD
- 3). Survey / Sample No. : [RH2009-09/S3](#) ; [RH2010-01/S3](#) ; [RH2011-05/S1](#) ; [RH2011-07/S3](#) ; [RH2012-05/S2](#) ; [RH2013-01/S3](#) ; [RH2014-01/S3](#) ; [RH2015-10/S3](#) ; [RH2016-04/S3](#)
- 4). Not participated in the [RH2009-09](#) survey.
- 5). Results not reported for the [RH2009-09](#) survey.
- 6). Results not reported for the [RH2010-01](#) survey.
- 7). Intermediate Measurement Precision ; ISO 3534-2:2006