Portable portable dry biochemical analyzer

Clinical evaluation report

KonsungPRO

Content

KonsungPRO

1. Overview

The portable dry biochemical analyzer produced by Jiangsu Konsung Bio-Medical Science And Technology Co.,Ltd. (hereinafter referred to as "Konsung") uses a specific wavelength of LED light source to illuminate the color area of the test strip, measure the absorbance of the test strip, and capture it with a photodiode The reflected signal is strong or weak, and the analyte content is detected according to the obtained AD value. In order to evaluate the safety and effectiveness of the product in clinical use, a comparative test was conducted on the same clinical sample with similar products on the market and of reliable quality to verify the safety and effectiveness of Konsung's portable dry biochemical analyzer in clinical use.

2. Working principle

Illuminate the color area of test card with a specific wavelength LED light source, measure the absorbance of the test card, capture the reflected signal strength with the photosensitive diode, and detect the content of the analyte according to the obtained AD value.

3. Intended use

Used in conjunction with the test card produced by Jiangsu Konsung Biological Medical Technology Co., Ltd., it is used for quantitative analysis of clinical chemical components in whole blood, serum and plasma of human blood samples by reflectance spectrophotometry.

4. Objective of clinical trial

Through comparative research tests with similar products on the market, it is proved that the portable dry biochemical analyzer produced by Konsung is safe and effective in clinical use. The specific test plan is as follows:

a.   whole blood

Clinical whole blood samples or untested whole blood samples meeting the requirements were collected and tested simultaneously on a dry biochemical analyzer (model: Compass2000-1) (hereinafter referred to as Compass2000-1) produced by Konsung and a portable dry biochemical analyzer (model: Compass2800-1) (hereinafter referred to as Compass2800-1) produced by Konsung, and the test results were recorded separately, and the differences between the two were analyzed by counting the test results.

b.   Serum

Clinical serum samples samples or untested serum samples samples meeting the requirements were collected and tested simultaneously on a dry biochemical analyzer (model: Compass2000-1) (hereinafter referred to as Compass2000-1) produced by Konsung and a portable dry biochemical analyzer (model: Compass2800-1) (hereinafter referred to as Compass2800-1) produced by Konsung, and the test results were recorded separately, and the differences between the two were analyzed by counting the test results.

c.   Plasma

Clinical plasma samples or untested plasma samples meeting the requirements were collected and tested simultaneously on a dry biochemical analyzer (model: Compass2000-1) (hereinafter referred to as Compass2000-1) produced by Konsung and a portable dry biochemical analyzer (model: Compass2800-1) (hereinafter referred to as Compass2800-1) produced by Konsung, and the test results were recorded separately, and the differences between the two were analyzed by counting the test results.

5.   Test samples

200 whole blood samples, 195 serum samples and 206 plasma samples were selected from the Laboratory Department of the Sixth People's Hospital of Shenzhen, Guangdong Province from October 18, 2021 to December 26, 2021. The sample concentration range covers 1.1 mmol/L～33.3 mmol/L, the concentration range distribution is shown in the table below.

Table 1 Concentration distribution of each sample type for the test (unit: mmol/L)

Scope / Sample Type	1.1~3.9	3.9~6.1	6.1~15	15~33.3	合计
whole blood	38	62	85	15	200
serum	40	75	70	10	195
plasma	42	60	90	14	206

6.   Test data processing

a.   For the above-mentioned whole blood, serum and plasma sample test results, statistical software was used to perform linear regression analysis, T test, and Bland-Altman analysis

on the test data. When the linear regression coefficient r≥0.99, the T test result>0.05, and Bland-Altman analysis 95% of the Altman relative bias graphs fall within the range of ±1.96SD, indicating that the Kangshang portable dry biochemical analyzer and similar marketed products have good consistency in the measurement results of the same blood sample (whole blood, serum or plasma).

b. At the same time, statistical analysis was conducted on the consistency of the sample test results to verify the sensitivity, specificity and accuracy of Konsung portable dry biochemical analyzer in clinical use.

7. Test results

a. Whole blood

The results of the whole blood test are shown in Appendix 1.

1. Linear regression analysis

Taking the test result of Compass2800-1 as y ,and the test result of Compass2000-1 as X, the regression equation was fitted with MedCalc statistical software.As shown in figure 1.
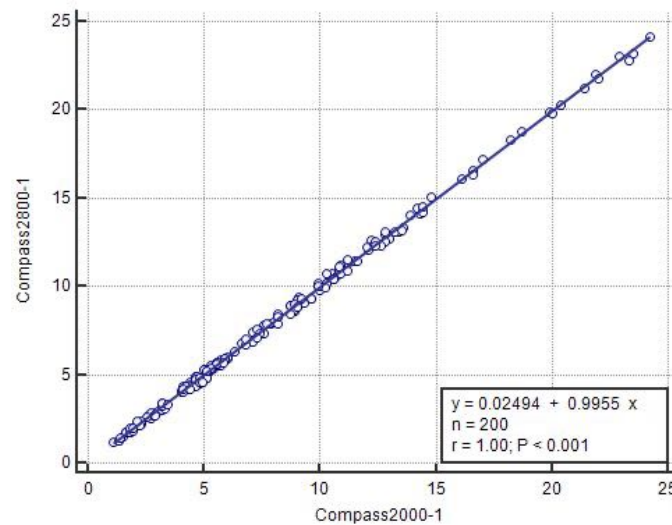
Figure 1   Linear regression graph of Compass2800-1 and Compass2000-1 whole blood test results

Regression Equation

y = 0.02494 + 0.9955 x

Parameter	Coefficient	Std. Error	95% CI	t	P
Intercept	0.02494	0.02401	-0.02242 to 0.07229	1.0384	0.3004
Slope	0.9955	0.002554	0.9904 to 1.0005	389.7583	<0.0001

Figure 2 Slope and intercept 95% interval of regression equation

F-ratio	151911.5442
Significance level	P<0.0001

Figure 3 Significance of whole blood test results between Konsung and BS-230

According to Figure 1, Compass2800-1 and Compass2000-1 tested 200 whole blood samples at the same time. The linear regression equation of the test results was: $Y = 0.02494+ 0.9955X$, and the correlation coefficient $r=1.00>0.99$, indicating good consistency between Compass2800-1 and Compass2000-1 test results of whole blood;

According to Figure 2, the 95% interval of slope is [0.9904~1.0005], and the 95% interval of intercept is [-0.02242~0.07229].

Through the figure 3 can be concluded that significant $P<0.0001<0.05$, Compass2800-1 and Compass2000-1 testing 200 whole blood samples at the same time, the whole blood test results no significant difference in statistics.

2. T test

Paired samples t-test	
Mean difference	-0.01100
Standard deviation of mean difference	0.1845
Standard error of mean difference	0.01305
95% CI	-0.03673 to 0.01473
Test statistic t	-0.843
Degrees of Freedom (DF)	199
Two-tailed probability	P = 0.4002

Fig. 4 T-test diagram of MedCalc software

As can be seen from Fig. 4, $P=0.4002>0.05$, indicating that there is no significant difference between Compass2800-1 and Compass2000-1 measurement methods.
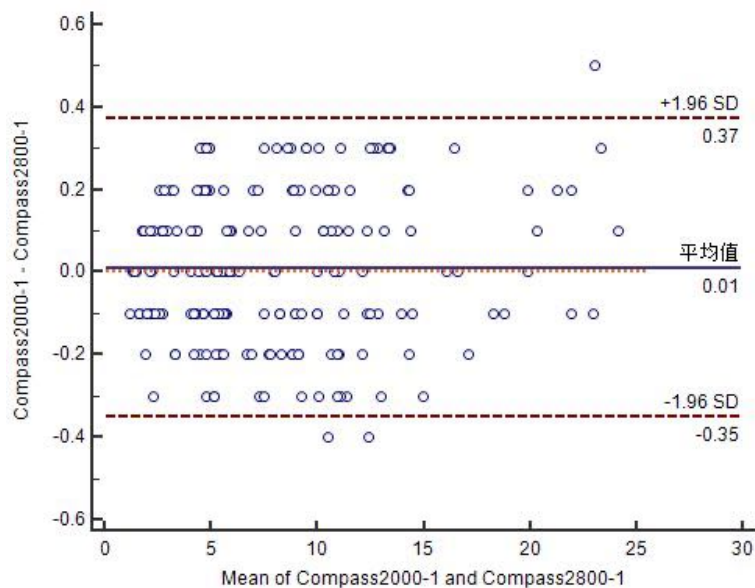
3. Bland-Altman graphic analysis

Fig. 5 Absolute bias diagram

According to Fig. 5, Bland-Altman absolute bias plot analysis of 200 pairs of data showed that 98.5% of the points fell within the range of $\pm 1.96SD$, indicating that the whole blood results of Compass2800-1 and Compass2000-1 comparison test had a good consistency.

b.   Serum

The serum test results are shown in Appendix 2.

1.   Linear regression analysis

Taking the test result of Compass2800-1 as Y and the test result of Compass2000-1 as X, the regression equation was fitted with MedCalc statistical software. As shown in figure 6.

Fig. 6 Scatter plot of Compass2800-1 and Compass2000-1 serum test results

Regression Equation

y = -0.01209 + 1.0043 x					
Parameter	Coefficient	Std. Error	95% CI	t	P
Intercept	-0.01209	0.02301	-0.05747 to 0.03329	-0.5255	0.5998
Slope	1.0043	0.002625	0.9991 to 1.0095	382.6618	<0.0001

Fig. 7 Slope and intercept 95% interval of regression equation

F-ratio	146430.0292
Significance level	P<0.0001

Figure 8 Significance of Compass2800-1 and Compass2000-1 serum test results

According to Fig. 6, 195 serum samples were tested by Compass2800-1 and Compass2000-1 at the same time. The linear regression equation of the test results was Y = -0.01209+1.0043x, and the correlation coefficient r=1.00>0.99, indicating that Compass2800-1 and Compass2000-1 test

serum results were in good agreement.

According to Figure 7, the 95% interval of slope is [0.9991~1.0095], and the 95% interval of intercept is [-0.05747~0.03329].

Through the figure 8 can be concluded that P<0.0001<0.05, Compass2800-1 and Compass2000-1 of 195 serum samples were tested at the same time, serum test results no significant difference in statistics.

2. T test

Paired samples t-test	
Mean difference	0.01897
Standard deviation of mean difference	0.1836
Standard error of mean difference	0.01315
95% CI	-0.006957 to 0.04491
Test statistic t	1.443
Degrees of Freedom (DF)	194
Two-tailed probability	P = 0.1506

Fig. 9 T-test diagram of MedCalc software

According to Fig. 9, P=0.1506>0.05, indicating that there is no significant difference between Konsung and BS-230 measurement methods.

3. Bland-Altman graphic analysis

Fig. 10 Absolute bias diagram

According to Fig. 10, the Bland-Altman absolute bias plot analysis of 195 pairs of data showed that 96.4% of the points fell within the range of ±1.96SD, indicating that the results of

Compass2800-1 and Compass2000-1 comparison test serum had a good consistency.

c. Plasma

The plasma test results are shown in Appendix 3.

1. Linear regression analysis

Taking the test result of Compass2800-1 as Y and the test result of Compass2000-1 as X, the regression equation was fitted with MedCalc statistical software. As shown in figure 11.
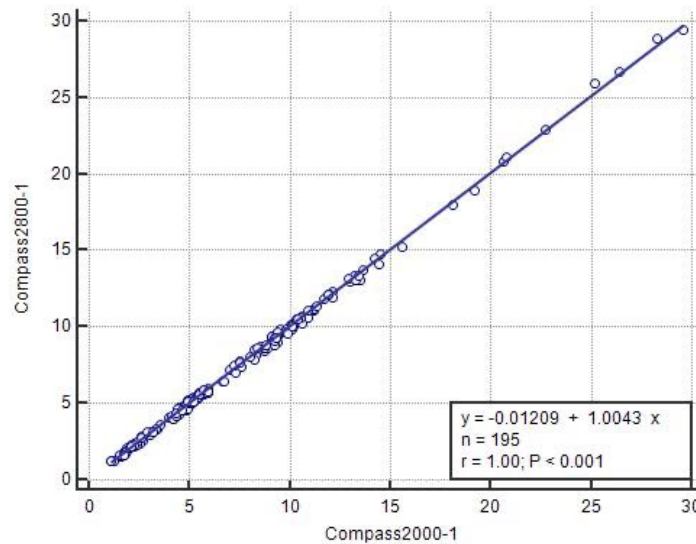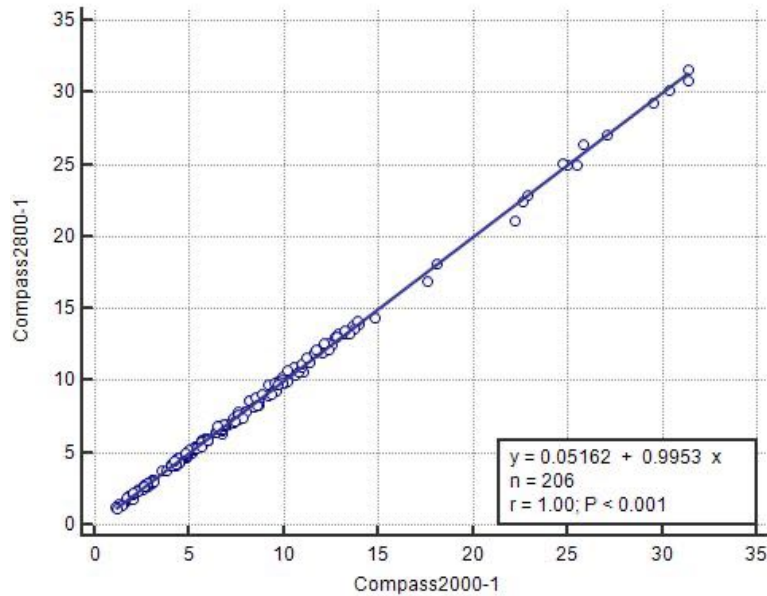

Fig. 11 Scatter plot of Compass2800-1 and Compass2000-1 plasma test results

Regression Equation

y = 0.05162 + 0.9953 x

Parameter	Coefficient	Std. Error	95% CI	t	P
Intercept	0.05162	0.02582	0.0007060 to 0.1025	1.9990	0.0469
Slope	0.9953	0.002619	0.9901 to 1.0004	380.0482	<0.0001

Fig. 12 Slope and intercept 95% interval of regression equation

F-ratio	144436.6570
Significance level	P<0.0001

Fig. 13 Significance of plasma test results between Compass2800-1 and Compass2000-1

According to Fig. 11, 206 plasma samples were tested by Compass2800-1 and Compass2000-1 at the same time. The linear regression equation of the test results was y=0.05162+0.9953x, and the correlation coefficient r=1.00>0.99, indicating that the plasma results of Compass2800-1 and Compass2000-1 were in good agreement.

According to Figure 12, the 95% interval of slope is [0.9901~1.0004], and the 95% interval of

intercept is [0.0007060~0.1025].P<0.0001<0.05 ， through figure 13 can be concluded thatCompass2800-1 and Compass2000-1 of 206 serum samples were tested at the same time, the plasma test results no significant difference in statistics.

2. T test

Paired samples t-test	
Mean difference	0.01408
Standard deviation of mean difference	0.2227
Standard error of mean difference	0.01552
95% CI	-0.01652 to 0.04467
Test statistic t	0.907
Degrees of Freedom (DF)	205
Two-tailed probability	P = 0.3654

Fig. 14 T-test diagram of MedCalc software

As can be seen from Fig. 14, P=0.3654>0.05, indicating that there is no significant difference between Compass2800-1 and Compass2000-1 measurement methods.
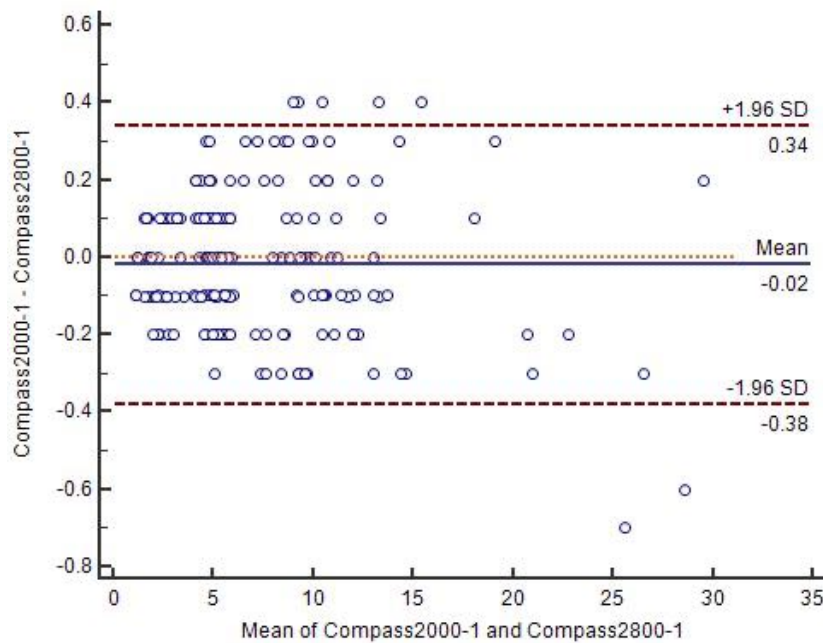
3. **Bland-Altman** graphic analysis
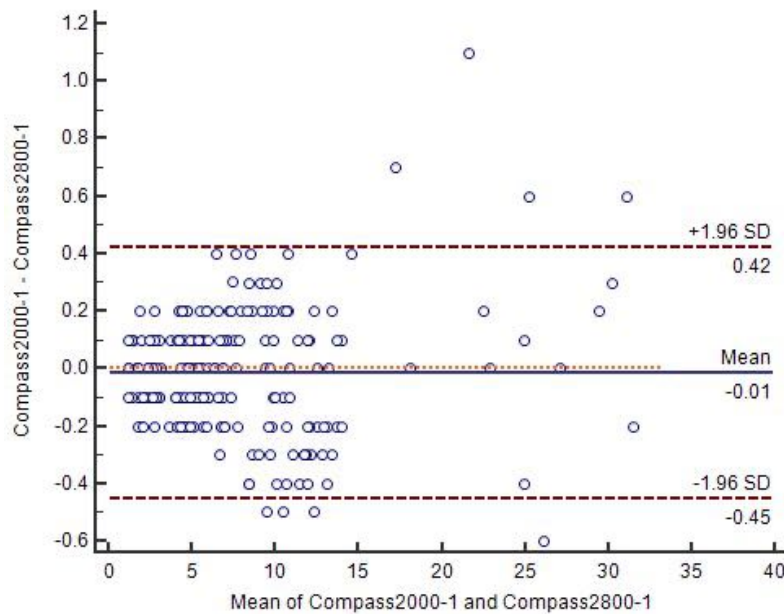
Fig. 15 Absolute bias diagram

According to Fig. 15, the Bland-Altman absolute bias chart analysis of 206 pairs of data showed that 96.1% of the points fell within the range of ±1.96SD, indicating that the results of Compass2800-1 and Compass2000-1 comparison test serum had a good consistency.

d. Statistical analysis of consistency of test results

A total of 200 samples of whole blood, 195 samples of serum and 206 samples of plasma were tested. The negative and positive results of the samples are shown in the table below. The test data

were statistically analysed and specificity, sensitivity and accuracy were calculated separately. The specific results are shown in the table below:

Table 2 Consistency of whole blood test results

/		Compass2000-1		Total
		positive（+）	negative（-）	
Compass2800-1	positive（+）	135	2	137
	negative（-）	3	60	63
	Total	138	62	200

Table 3 Consistency of serum test results

/		Compass2000-1		Total
		positive（+）	negative（-）	
Compass2800-1	positive（+）	119	1	120
	negative（-）	1	74	75
	Total	120	75	195

Table 4 Consistency of plasma test results

/		Compass2000-1		Total
		positive（+）	negative（-）	
Compass2800-1	positive（+）	143	2	145
	negative（-）	3	58	61
	Total	146	60	206

Conclusion: According to the data of whole blood test results in Table 2, it can be concluded that the sensitivity of Compass2800-1 and Compass2000-1 is 97.83% when measuring whole blood samples of 200 cases. The specificity was 96.77%. Accuracy is 97.50%.

According to the data of serum test results in Table 3, it can be concluded that the sensitivity of Compass2800-1 and Compass2000-1 was 99.17% when measuring 195 serum samples. The specificity was 98.67%. Accuracy is 98.97%.

According to the data of plasma test results in Table 4, it can be concluded that the sensitivity of Compass2800-1 and Compass2000-1 was 97.95% when 206 plasma samples were measured. The specificity was 96.67%. The accuracy was 97.57%.

8. Clinical trial conclusion

In order to verify the consistency between the test results of whole blood, serum and plasma by Compass2800-1 and the test results of Compass2000-1, linear regression analysis, T test and

Bland-Altman analysis were conducted by statistical software (MedCalc). The detailed results are as follows:

a.   whole blood

Two measurement methods, Compass2800-1 and Compass2000-1, were used to test the whole blood of 200 cases. The linear regression equation was Y =0.02494+ 0.9955X, and the correlation coefficient r=1.00>0.99. T-test P=0.4002>0.05, indicating that there was no significant difference between the two measurement methods of Compass2800-1 and Compass2000-1, and the test results were highly consistent, and there was no statistically significant difference.

Bland-Altman absolute bias plot analysis was carried out on 200 pairs of data, and 98.5% of the points fell within the range of ±1.96SD, indicating that the results of measurement of venous blood by Compass2800-1 and Compass2000-1 methods were in good agreement.

b.   Serum

Two measurement methods, Compass2800-1 and Compass2000-1, were used to test the serum of 195 cases. The linear regression equation was Y = -0.01209+ 1.0043X, and the correlation coefficient r=1.00>0.99. T-test P=0.1506>0.05, indicating that there was no significant difference between the two measurement methods of Compass2800-1 and Compass2000-1, and the test results were highly consistent, and there was no statistically significant difference.

Bland-Altman absolute bias plot was used to analyze 195 paired data. 96.4% of the points fell within the range of ±1.96SD, indicating that Compass2800-1 and Compass2000-1 methods had a good consistency in the measurement results of the blood of the tip of the finger.

c.   Plasma

Two measurement methods, Compass2800-1 and Compass2000-1, were used to test the plasma of 206 cases. The linear regression equation was Y =0.05162+ 0.9953X, and the correlation coefficient r=1.00>0.99. T-test P=0.3654>0.05, indicating that there was no significant difference between the two measurement methods of Compass2800-1 and Compass2000-1, and the test results were highly consistent, and there was no statistically significant difference.

Bland-Altman absolute bias plot was used to analyze 206 paired data. 96.1% of the points fell within the range of ±1.96SD, indicating that Compass2800-1 and Compass2000-1 methods had a good consistency in the measurement results of the blood of the tip of the finger.

d.   Sensitivity, specificity and accuracy

According to the test results, it can be concluded that:

Konsung portable dry biochemical analyzer in the test of the whole blood sample, the sensitivity of 97.83%,the specificity was 96.77%, the accuracy is 97.50%.

Konsung portable dry biochemical analyzer in the test of the serum sample, the sensitivity of 99.17%; The specificity was 98.67%. The Accuracy is 98.97%.

Konsung portable dry biochemical analyzer in the test of the plasma samples, the sensitivity of 97.95%; The specificity was 96.67%. The Accuracy is 97.57%.

9. Conclusion

Through the test of 200 whole blood samples, 195 serum samples and 206 plasma samples, the test data were statistically analyzed. The results of Compass2800-1 and Compass2000-10 test were highly consistent, indicating that Konsung portable dry biochemical analyzer is safe and effective in clinical use.

10. References

1. Comparison of Blood Glucose Detection Results Between Two Analyzers   Liu Tao Ding Yuhua Clinical Medicine, 2013,33(11)

2. The new technique of clinical biochemical test -- dry biochemical analysis [J].   Wan Shilin, Xu Ning. China medical device information. 2000(02)

3. Quality control of dry chemical test results and analysis of influencing factors[J]   Zhang Zhihui, Zhang Haipu, Xie Xiaomin, Zhang Jian . 2004(16)

4. Application of dry biochemical analysis [J]. Wu Ayang, Cao Shuang. Medical Laboratory and Clinical Practice. 2007(06)

Appendix 1—Whole blood test result

No.	Compass2000-1 Test result	Compass2800-1 Test result	No.	Compass2000-1 Test result	Compass2800-1 Test result
1	2.7	2.6	101	11.0	11.0
2	1.3	1.3	102	12.1	12.1
3	2.7	2.5	103	11.5	11.4
4	2.9	2.8	104	7.9	7.9
5	1.8	1.7	105	9.9	10.0
6	1.5	1.5	106	13.0	12.7
7	2.6	2.7	107	12.8	12.9
8	1.1	1.2	108	12.0	12.2
9	2.2	2.3	109	8.7	8.9
10	3.0	2.9	110	9.0	8.8
11	2.3	2.2	111	13.6	13.3
12	2.2	2.2	112	10.0	9.8
13	1.6	1.7	113	9.1	9.4
14	2.7	2.8	114	11.2	11.3
15	1.9	2.0	115	10.3	10.2
16	1.6	1.7	116	12.2	12.6
17	1.6	1.7	117	10.9	11.1
18	2.1	2.2	118	9.0	9.2
19	1.3	1.3	119	10.5	10.7
20	1.4	1.4	120	11.0	10.9
21	3.2	3.0	121	11.2	11.5
22	2.1	2.2	122	13.4	13.1
23	2.8	2.7	123	10.0	10.0
24	3.3	3.1	124	12.8	12.5
25	1.8	1.7	125	7.6	7.3
26	1.9	1.8	126	10.7	10.6
27	3.2	3.4	127	14.3	14.1
28	3.2	3.2	128	7.1	7.4
29	2.5	2.6	129	10.3	10.2
30	3.2	3.4	130	16.6	16.6
31	2.9	2.7	131	14.2	14.4
32	1.8	2.0	132	10.8	11.0
33	3.4	3.3	133	10.8	10.8
34	2.1	2.1	134	10.3	10.7
35	2.3	2.4	135	14.4	14.3
36	2.2	2.1	136	14.4	14.2
37	2.1	2.4	137	8.9	8.6
38	1.9	2.0	138	9.3	9.1
39	4.0	4.0	139	8.9	9.0

No.	Compass2000-1 Test result	Compass2800-1 Test result	No.	Compass2000-1 Test result	Compass2800-1 Test result
40	4.6	4.7	140	13.2	13.1
41	5.2	5.3	141	12.8	13.1
42	5.6	5.6	142	14.8	15.1
43	6.0	5.9	143	8.0	8.0
44	5.4	5.4	144	11.6	11.4
45	5.5	5.5	145	14.4	14.5
46	4.6	4.4	146	13.5	13.2
47	4.7	4.4	147	9.0	8.9
48	4.6	4.9	148	8.7	8.9
49	4.7	4.7	149	10.9	10.7
50	4.4	4.3	150	6.6	6.8
51	5.6	5.7	151	12.3	12.4
52	4.2	4.3	152	10.2	9.9
53	5.3	5.5	153	9.0	9.2
54	4.4	4.6	154	8.2	8.3
55	5.0	4.8	155	7.6	7.8
56	6.0	6.0	156	7.4	7.5
57	5.6	5.7	157	7.3	7.6
58	5.0	5.3	158	8.2	8.4
59	5.1	5.3	159	10.9	11.2
60	5.7	5.7	160	8.2	7.9
61	4.7	4.9	161	8.9	8.7
62	4.3	4.2	162	9.9	10.2
63	4.1	4.3	163	7.1	6.9
64	5.0	5.3	164	13.9	14.0
65	5.2	5.2	165	10.6	10.4
66	4.2	4.3	166	11.2	10.9
67	4.9	4.6	167	9.6	9.3
68	4.4	4.4	168	6.8	6.7
69	4.4	4.3	169	8.2	8.3
70	4.8	4.5	170	6.3	6.3
71	5.7	5.5	171	9.9	10.0
72	5.5	5.5	172	10.8	11.1
73	4.6	4.7	173	7.4	7.3
74	5.9	5.8	174	7.3	7.1
75	5.1	4.8	175	7.7	7.9
76	4.6	4.3	176	8.9	9.0
77	4.9	4.7	177	9.6	9.3
78	4.2	4.3	178	8.7	8.4
79	4.8	4.6	179	6.8	7.0
80	5.7	5.8	180	12.4	12.5

No.	Compass2000-1 Test result	Compass2800-1 Test result	No.	Compass2000-1 Test result	Compass2800-1 Test result
81	5.9	5.9	181	10.6	10.4
82	5.5	5.7	182	9.2	9.3
83	5.0	4.7	183	9.0	8.8
84	5.0	4.7	184	12.6	12.3
85	4.0	4.1	185	12.4	12.3
86	5.1	4.8	186	23.5	23.2
87	5.6	5.7	187	18.7	18.8
88	5.9	5.9	188	16.6	16.3
89	4.1	4.0	189	22.9	23.0
90	4.1	4.2	190	19.9	19.9
91	4.8	4.8	191	18.2	18.3
92	4.8	4.6	192	20.0	19.8
93	5.1	5.2	193	23.3	22.8
94	5.3	5.3	194	21.4	21.2
95	4.9	4.6	195	21.9	22.0
96	5.5	5.6	196	24.2	24.1
97	5.8	5.7	197	20.4	20.3
98	5.3	5.4	198	17.0	17.2
99	4.4	4.2	199	16.1	16.1
100	5.1	5.2	200	22.0	21.8

Appendix 2—Serum test result

No.	Compass2000-1 Test result	Compass2800-1 Test result	No.	Compass2000-1 Test result	Compass2800-1 Test result
1	2.4	2.5	99	5.8	5.9
2	3.4	3.3	100	4.4	4.6
3	1.9	2.0	101	4.0	4.1
4	3.5	3.6	102	5.2	5.2
5	1.1	1.2	103	5.4	5.4
6	2.2	2.2	104	4.1	4.2
7	2.6	2.7	105	4.3	4.2
8	2.5	2.6	106	5.0	5.1
9	1.7	1.6	107	5.5	5.6
10	3.3	3.3	108	4.2	4.0
11	1.9	2.0	109	4.9	5.1
12	2.7	2.6	110	4.3	4.2
13	2.5	2.4	111	4.3	4.4
14	1.2	1.2	112	4.6	4.5
15	1.7	1.8	113	5.2	5.1
16	3.0	3.1	114	5.7	5.9
17	1.6	1.5	115	5.9	5.8
18	1.8	1.7	116	9.5	9.8
19	2.2	2.4	117	7.0	7.2
20	2.1	2.3	118	7.6	7.4
21	2.6	2.7	119	13.2	13.3
22	2.6	2.8	120	11.2	11.1
23	3.0	2.9	121	14.5	14.8
24	3.2	3.1	122	10.0	10.1
25	2.9	3.1	123	12.1	12.3
26	2.4	2.3	124	6.6	6.4
27	3.2	3.1	125	12.0	12.1
28	1.5	1.6	126	10.9	10.9
29	1.9	2.1	127	13.5	13.1
30	1.7	1.7	128	14.2	14.5
31	2.4	2.5	129	7.3	7.0
32	1.8	1.8	130	9.1	9.2
33	1.9	1.9	131	12.1	11.9
34	2.2	2.3	132	13.0	13.1
35	1.7	1.6	133	11.7	11.8
36	2.0	2.1	134	13.0	13.0
37	1.2	1.2	135	11.9	12.1
38	2.6	2.7	136	9.8	9.8
39	2.1	2.2	137	8.7	8.4

No.	Compass2000-1 Test result	Compass2800-1 Test result	No.	Compass2000-1 Test result	Compass2800-1 Test result
40	1.1	1.2	138	6.7	6.4
41	4.5	4.6	139	9.4	9.0
42	4.7	4.7	140	9.2	9.5
43	5.9	5.9	141	9.7	9.7
44	5.8	5.9	142	9.4	9.4
45	5.1	5.2	143	10.8	10.6
46	4.7	4.8	144	12.9	13.2
47	5.2	5.1	145	13.6	13.7
48	5.2	5.4	146	10.1	10.1
49	4.3	4.4	147	9.1	9.4
50	5.5	5.6	148	7.2	7.5
51	4.5	4.7	149	9.1	9.4
52	4.4	4.3	150	8.9	8.6
53	5.9	5.7	151	11.9	12.1
54	5.6	5.7	152	9.4	9.7
55	5.4	5.5	153	10.1	9.8
56	4.6	4.6	154	8.7	8.6
57	5.3	5.2	155	9.2	8.8
58	5.5	5.7	156	8.5	8.7
59	4.2	4.0	157	7.5	7.8
60	4.9	5.0	158	10.5	10.6
61	4.8	4.7	159	10.6	10.7
62	5.5	5.7	160	10.2	10.0
63	5.9	6.0	161	10.8	10.6
64	4.3	4.2	162	8.4	8.4
65	4.5	4.3	163	11.2	11.2
66	5.4	5.3	164	10.9	10.6
67	5.9	5.8	165	10.1	10.0
68	4.8	4.7	166	14.4	14.1
69	5.1	5.0	167	7.5	7.7
70	4.6	4.6	168	9.2	9.3
71	4.9	5.2	169	9.9	9.6
72	4.8	4.5	170	8.3	8.1
73	5.4	5.5	171	8.8	8.8
74	5.5	5.5	172	9.2	9.1
75	4.9	4.7	173	10.9	11.1
76	5.0	5.2	174	10.6	10.2
77	4.9	5.1	175	10.5	10.6
78	4.3	4.3	176	10.3	10.5
79	5.1	5.2	177	9.3	9.3
80	4.6	4.6	178	13.3	13.1

No.	Compass2000-1 Test result	Compass2800-1 Test result	No.	Compass2000-1 Test result	Compass2800-1 Test result
81	4.7	4.6	179	13.4	13.3
82	5.7	5.6	180	8.2	7.9
83	4.9	4.8	181	8.2	8.5
84	5.7	5.8	182	10.4	10.5
85	5.7	5.7	183	11.3	11.4
86	4.7	4.7	184	8.0	8.0
87	4.2	4.1	185	8.4	8.6
88	5.0	4.8	186	26.4	26.7
89	5.5	5.7	187	22.7	22.9
90	4.8	4.8	188	29.6	29.4
91	5.2	5.2	189	19.2	18.9
92	5.7	5.9	190	20.6	20.8
93	5.9	5.8	191	28.3	28.9
94	4.9	4.7	192	18.1	18.0
95	5.1	5.2	193	20.8	21.1
96	4.9	4.6	194	15.6	15.2
97	5.1	5.3	195	25.2	25.9
98	5.0	5.0	/	/	/

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Appendix 3—Plasma test result

No.	Compass2000-1 Test result	Compass2800-1 Test result	No.	Compass2000-1 Test result	Compass2800-1 Test result
1	1.8	2.0	104	7.3	7.1
2	3.0	3.1	105	12.4	12.6
3	1.5	1.4	106	12.7	13.0
4	2.6	2.6	107	13.0	13.2
5	1.7	1.8	108	10.0	9.8
6	2.3	2.4	109	9.4	9.4
7	1.8	1.8	110	10.4	10.5
8	3.5	3.7	111	8.7	8.5
9	2.3	2.3	112	12.1	12.0
10	2.8	2.6	113	7.2	7.1
11	2.9	2.8	114	12.0	12.3
12	3.0	2.9	115	8.7	8.3
13	1.7	1.7	116	7.6	7.5
14	1.3	1.4	117	11.9	12.1
15	1.2	1.2	118	11.7	12.0
16	2.6	2.5	119	7.1	7.0
17	3.0	3.1	120	9.7	9.9
18	3.1	3.1	121	9.5	9.7
19	1.2	1.2	122	11.6	11.9
20	3.1	3.0	123	6.7	6.3
21	1.8	1.8	124	10.6	10.8
22	2.8	2.7	125	6.9	6.8
23	2.0	1.9	126	12.9	13.3
24	2.8	2.8	127	6.8	7.0
25	1.1	1.2	128	10.9	10.7
26	1.9	2.1	129	7.9	7.8
27	2.0	1.8	130	12.0	11.9
28	2.8	2.9	131	8.2	8.6
29	1.4	1.3	132	8.2	8.6
30	2.7	2.8	133	7.6	7.3
31	2.5	2.4	134	8.5	8.8
32	1.2	1.1	135	9.2	9.7
33	1.7	1.9	136	7.6	7.8
34	2.6	2.8	137	6.7	6.5
35	2.1	2.2	138	13.6	13.8
36	2.0	2.1	139	13.2	13.2
37	2.8	2.9	140	6.6	6.8
38	2.6	2.6	141	9.5	9.8
39	2.3	2.3	142	6.4	6.4
40	2.0	2.2	143	6.8	6.8

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No.	Compass2000-1 Test result	Compass2800-1 Test result	No.	Compass2000-1 Test result	Compass2800-1 Test result
41	3.8	3.7	144	13.7	13.6
42	2.6	2.7	145	12.8	13.0
43	4.8	4.6	146	9.8	9.9
44	4.6	4.8	147	10.8	10.9
45	5.3	5.4	148	11.8	12.0
46	4.9	4.8	149	9.9	10.3
47	5.1	5.0	150	10.5	10.9
48	4.1	4.2	151	11.0	10.6
49	5.9	6.0	152	9.4	9.3
50	5.3	5.4	153	9.2	8.9
51	5.7	5.8	154	6.7	6.6
52	4.3	4.2	155	9.9	10.0
53	4.3	4.2	156	6.8	6.9
54	4.8	4.8	157	10.6	10.4
55	5.3	5.4	158	11.4	11.3
56	5.7	5.6	159	10.8	10.6
57	4.1	4.3	160	6.4	6.4
58	5.6	5.6	161	10.2	9.9
59	4.0	4.2	162	8.0	7.8
60	5.1	5.2	163	9.6	9.4
61	4.8	4.8	164	7.3	7.4
62	5.2	5.2	165	6.6	6.8
63	4.0	4.1	166	8.4	8.2
64	4.5	4.4	167	12.5	12.5
65	4.3	4.2	168	14.8	14.4
66	4.3	4.5	169	6.5	6.6
67	5.6	5.8	170	10.9	10.9
68	4.9	4.9	171	10.2	10.7
69	4.8	4.6	172	10.9	11.2
70	4.6	4.6	173	11.2	11.6
71	4.9	4.8	174	7.6	7.6
72	6.0	5.8	175	11.6	11.9
73	5.8	6.0	176	13.9	14.1
74	5.8	5.9	177	9.6	9.3
75	5.6	5.6	178	12.4	12.2
76	4.3	4.1	179	6.8	6.8
77	4.5	4.3	180	8.6	8.3
78	5.4	5.4	181	7.8	7.4
79	4.3	4.4	182	9.3	9.1
80	5.5	5.4	183	7.4	7.2
81	5.7	5.8	184	9.9	9.8

No.	Compass2000-1 Test result	Compass2800-1 Test result	No.	Compass2000-1 Test result	Compass2800-1 Test result
82	6.0	5.9	185	11.7	12.1
83	4.2	4.1	186	13.5	13.3
84	4.4	4.6	187	6.8	7.0
85	4.3	4.3	188	8.8	9.1
86	5.2	5.3	189	13.2	13.5
87	5.8	5.9	190	9.7	9.7
88	4.8	4.8	191	6.5	6.8
89	4.0	4.1	192	12.1	12.6
90	4.5	4.6	193	22.2	21.1
91	5.0	5.2	194	29.5	29.3
92	4.8	4.9	195	18.1	18.1
93	4.8	5.0	196	27.1	27.1
94	5.9	6.0	197	22.9	22.9
95	6.0	6.0	198	31.4	31.6
96	5.4	5.3	199	25.5	24.9
97	4.5	4.3	200	30.4	30.1
98	5.6	5.7	201	25.0	24.9
99	5.6	5.4	202	24.7	25.1
100	6.0	5.8	203	17.6	16.9
101	4.3	4.2	204	22.6	22.4
102	4.2	4.4	205	31.4	30.8
103	14.0	13.9	206	25.8	26.4