Suppl. Material

Supplementary Table S1: Based on the results from our reference method on the Alinity m, sensitivity, positive predictive value (PPV), specificity and negative predictive value (NPV) were calculated for cobas® 6800, GeneXpert, genesig® and RIDA®GENE.

Assay	n	Overall Positives	Correct Positives	Sensitivity / PPV (%)	Overall Negatives	Correct Negatives	Specificity / NPV (%)
cobas® 6800	**85**	50	50	98.04% / 100.0%	35	34	100.0% / 97.14%
GeneXpert	**85**	51	51	100.0% / 100.0%	34	34	100.0% / 100.0%
genesig®	**85**	36	36	70.59% / 100.0%	49	34	100.0% / 69.39%
RIDA®GENE	**85**	46	46	90.20% / 100.0%	39	34	100.0% / 87.18%

Supplementary Table S2: Results of measurements on Alinity m, cobas® 6800, GeneXpert, genesig® and RIDA®GENE. Ct values and corresponding viral loads as calculated by standard curves are displayed. n=85. neg=negative.

	Alinity m				cobas® 6800				
Sample No.	**Ct RdRp- & N-Gene**	**Isolation Ct-value**	**Viral Load [copies/ml]**	**Isolation Viral Load**	**Ct ORF1a/b**	**Isolation Ct-value**	**Ct E-Gene**	**Viral Load [copies/ml]**	**Isolation Viral Load**
1	33.38	no	6.20E+02	no	32.84	no	34.46	3.43E+03	no
2	20.36	yes	2.32E+06	yes	24.81	yes	25.44	3.83E+06	yes
3	32.04	no	1.45E+03	no	33.4	no	34.36	2.10E+03	no
4	29.34	yes	7.96E+03	no	31.6	no	32.88	1.01E+04	no
5	35.01	no	2.21E+02	no	34.61	no	36.45	7.29E+02	no
6	16.31	yes	3.00E+07	yes	19.94	yes	20.71	2.70E+08	yes
7	19.83	yes	3.25E+06	yes	23.63	yes	24.06	1.07E+07	yes
8	19.97	yes	2.97E+06	yes	23.23	yes	23.66	1.52E+07	yes
9	19.83	yes	3.25E+06	yes	23.68	yes	24.37	1.03E+07	yes
10	23.7	yes	2.81E+05	no	27.59	yes	28.2	3.37E+05	no
11	20.76	yes	1.80E+06	yes	24.07	yes	24.72	7.31E+06	yes
12	22.3	yes	6.82E+05	no	25.04	yes	25.71	3.13E+06	yes
13	27.98	yes	1.88E+04	no	30.75	no	31.64	2.13E+04	no
14	14.93	yes	7.18E+07	yes	18.77	yes	19.34	7.51E+08	yes
15	25.4	yes	9.61E+04	no	28.27	yes	28.7	1.86E+05	no
16	17.68	yes	1.26E+07	yes	21.04	yes	21.81	1.03E+08	yes
17	17.09	yes	1.83E+07	yes	21.04	yes	21.6	1.03E+08	yes
18	17.03	yes	1.91E+07	yes	20.39	yes	20.95	1.82E+08	yes
19	25.94	yes	6.83E+04	no	29.47	yes	30.32	6.52E+04	no

20	13.04	yes	2.37E+08	yes	16.34	yes	17.12	6.28E+09	yes
21	24.59	yes	1.60E+05	no	28.24	yes	29.01	1.91E+05	no
22	33.56	no	5.53E+02	no	32.42	no	34.64	4.95E+03	no
23	19.86	yes	3.19E+06	yes	23.98	yes	24.88	7.90E+06	yes
24	29.73	yes	6.22E+03	no	31.88	no	32.84	7.93E+03	no
25	22.62	yes	5.57E+05	no	26.2	yes	26.88	1.14E+06	yes
26	neg	no		no	neg	no	neg		no
27	30.22	no	4.57E+03	no	31.66	no	33.22	9.61E+03	no
28	25.64	yes	8.26E+04	no	29.14	yes	29.7	8.69E+04	no
29	16.95	yes	2.00E+07	yes	21.94	yes	22.35	4.70E+07	yes
30	13.27	yes	2.05E+08	yes	19.39	yes	19.33	4.37E+08	yes
31	25.42	yes	9.49E+04	no	28.83	yes	29.73	1.14E+05	no
32	19.52	yes	3.95E+06	yes	24.58	yes	25.53	4.68E+06	yes
33	26.36	yes	5.24E+04	no	29.99	yes	31.02	4.14E+04	no
34	22.76	yes	5.10E+05	no	26.29	yes	27.21	1.05E+06	yes
35	20.21	yes	2.55E+06	yes	23.6	yes	23.92	1.10E+07	yes
36	31.74	no	1.75E+03	no	32.44	no	33.62	4.86E+03	no
37	35.05	no	2.16E+02	no	neg	no	35.39		no
38	neg	no		no	neg	no	neg		no
39	30.64	no	3.50E+03	no	31.56	no	33	1.05E+04	no
40	neg	no		no	neg	no	neg		no
41	17.48	yes	1.43E+07	yes	21.21	yes	21.63	8.90E+07	yes
42	22.12	yes	7.64E+05	no	25.42	yes	26.12	2.25E+06	yes
43	22.05	yes	7.98E+05	no	24.83	yes	25.45	3.76E+06	yes
44	neg	no		no	neg	no	neg		no
45	17.72	yes	1.23E+07	yes	21.42	yes	22.08	7.41E+07	yes

46	30.77	no	3.23E+03	no	31.13	no	32.65	1.53E+04	no
47	35.43	no	1.70E+02	no	34.62	no	36.5	7.23E+02	no
48	18.23	yes	8.92E+06	yes	21.66	yes	22.23	6.00E+07	yes
49	21.53	yes	1.11E+06	yes	25.3	yes	25.86	2.49E+06	yes
50	19.61	yes	3.73E+06	yes	22.38	yes	23.17	3.20E+07	yes
51	32.22	no	1.29E+03	no	32.38	no	34	5.12E+03	no
52	25.48	yes	9.13E+04	no	28.89	yes	29.85	1.08E+05	no
53	39.17	no	1.60E+01	no	neg	no	neg		no
54	34.67	no	2.74E+02	no	neg	no	34.59		no
55	31.31	no	2.29E+03	no	32.42	no	35.05	4.95E+03	no
56	neg	no		no	neg	no	neg		no
57	neg	no		no	neg	no	neg		no
58	neg	no		no	neg	no	neg		no
59	neg	no		no	neg	no	neg		no
60	neg	no		no	neg	no	neg		no
61	neg	no		no	neg	no	neg		no
62	neg	no		no	neg	no	neg		no
63	neg	no		no	neg	no	neg		no
64	neg	no		no	neg	no	neg		no
65	neg	no		no	neg	no	neg		no
66	neg	no		no	neg	no	neg		no
67	neg	no		no	neg	no	neg		no
68	neg	no		no	neg	no	neg		no
69	neg	no		no	neg	no	neg		no
70	neg	no		no	neg	no	neg		no
71	neg	no		no	neg	no	neg		no

72	neg	no		no	neg	no	neg		no
73	neg	no		no	neg	no	neg		no
74	neg	no		no	neg	no	neg		no
75	neg	no		no	neg	no	neg		no
76	neg	no		no	neg	no	neg		no
77	neg	no		no	neg	no	neg		no
78	neg	no		no	neg	no	neg		no
79	neg	no		no	neg	no	neg		no
80	neg	no		no	neg	no	neg		no
81	neg	no		no	neg	no	neg		no
82	neg	no		no	neg	no	neg		no
83	neg	no		no	neg	no	neg		no
84	neg	no		no	neg	no	neg		no
85	neg	no		no	neg	no	neg		no

	GeneXpert					**genesig®**			
Sample No.	**Ct N2-Gene**	**Isolation Ct-value**	**Ct E-Gene**	**Viral Load [copies/ml]**	**Isolation Viral Load**	**Ct ORF1a/b**	**Isolation Ct-value**	**Viral Load [copies/ml]**	**Isolation Viral Load**
1	38.1	no	35.1	5.85E+02	no	neg	no		no
2	25.5	yes	23.4	2.82E+06	yes	30.75	no	6.16E+05	no
3	37.1	no	33.5	1.15E+03	no	neg	no		no
4	34.7	no	31.6	5.77E+03	no	36.15	no	1.39E+04	no
5	39.6	no	35.5	2.13E+02	no	neg	no		no
6	19.5	yes	18	1.60E+08	yes	27.94	yes	4.29E+06	yes
7	23.3	yes	21.6	1.24E+07	yes	31.51	no	3.66E+05	no
8	23.8	yes	21.6	8.85E+06	yes	30.94	no	5.40E+05	no

9	24.2	yes	22.4	6.76E+06	yes	31.48	no	3.73E+05	no
10	27.7	yes	26.2	6.41E+05	no	36.57	no	2.16E+04	no
11	24.4	yes	22.8	5.91E+06	yes	32.32	no	2.09E+06	yes
12	26.6	yes	24.2	1.34E+06	yes	32.08	no	2.46E+05	no
13	33.8	no	30.9	1.06E+04	no	37.73	no	3.87E+03	no
14	19.4	yes	17.4	1.71E+08	yes	25.23	yes	2.78E+07	yes
15	29.3	yes	27.4	2.18E+05	no	36.22	no	2.80E+04	no
16	21.4	yes	19.8	4.45E+07	yes	neg	no		no
17	20	yes	18.2	1.14E+08	yes	26.88	yes	8.91E+06	yes
18	20.4	yes	18.3	8.72E+07	yes	25.99	yes	1.66E+07	yes
19	30.9	no	28.4	7.44E+04	no	35.21	no	2.81E+04	no
20	16.2	yes	13.4	1.47E+09	yes	20.79	yes	5.95E+08	yes
21	29.5	yes	27	1.91E+05	no	34.91	no	3.48E+04	no
22	37.2	no	35.3	1.07E+03	no	neg	no		no
23	22.6	yes	21.1	1.98E+07	yes	29.56	yes	1.31E+06	yes
24	35.6	no	32.5	3.15E+03	no	36.81	no	8.32E+03	no
25	27.8	yes	26	5.99E+05	no	33.81	no	7.51E+04	no
26	neg	no	neg		no	neg	no		no
27	33.6	no	31.4	1.21E+04	no	neg	no		no
28	30.4	no	28.3	1.04E+05	no	36.15	no	1.39E+04	no
29	20.9	yes	19.5	6.23E+07	yes	28.3	yes	3.35E+06	yes
30	16.8	yes	16.4	9.84E+08	yes	25.81	yes	1.87E+07	yes
31	29.7	yes	27.3	1.67E+05	no	35.73	no	1.91E+04	no
32	23.7	yes	21.4	9.46E+06	yes	30.97	no	5.33E+06	yes
33	31.3	no	29.1	5.68E+04	no	35.88	no	1.71E+04	no
34	27.9	yes	25.9	5.60E+05	no	33.34	no	1.03E+05	no

35	24.7	yes	22.3	4.83E+06	yes	30.97	no	5.30E+06	yes
36	36.8	no	34.1	1.40E+03	no	neg	no		no
37	38.2	no	34.5	5.47E+02	no	neg	no		no
38	neg	no	neg		no	neg	no		no
39	34.1	no	31.4	8.64E+03	no	neg	no		no
40	neg	no	neg		no	neg	no		no
41	22.2	yes	20.5	2.60E+07	yes	29.63	yes	1.34E+06	yes
42	24	yes	22.6	7.73E+06	yes	30.7	no	6.39E+05	no
43	28.4	yes	23.6	4.00E+05	no	32.97	no	1.33E+05	no
44	neg	no	neg		no	neg	no		no
45	22.8	yes	20.3	1.73E+07	yes	28.84	yes	2.31E+06	yes
46	34.7	no	31.5	5.77E+03	no	neg	no		no
47	41	no	37.8	8.31E+01	no	neg	no		no
48	22.9	yes	20.5	1.62E+07	yes	29.55	yes	1.41E+06	yes
49	25.5	yes	23.6	2.82E+06	yes	32.04	no	2.53E+06	yes
50	23.4	yes	21.1	1.16E+07	yes	29.04	yes	2.01E+06	yes
51	37.3	no	33.8	1.00E+03	no	neg	no		no
52	30.5	no	28.6	9.74E+04	no	35.46	no	2.35E+04	no
53	41	no	neg	8.31E+01	no	neg	no		no
54	36	no	33.8	2.40E+03	no	neg	no		no
55	34.7	no	32.3	5.77E+03	no	neg	no		no
56	neg	no	neg		no	neg	no		no
57	neg	no	neg		no	neg	no		no
58	neg	no	neg		no	neg	no		no
59	neg	no	neg		no	neg	no		no
60	neg	no	neg		no	neg	no		no

61	neg	no	neg		no	neg	no		no
62	neg	no	neg		no	neg	no		no
63	neg	no	neg		no	neg	no		no
64	neg	no	neg		no	neg	no		no
65	neg	no	neg		no	neg	no		no
66	neg	no	neg		no	neg	no		no
67	neg	no	neg		no	neg	no		no
68	neg	no	neg		no	neg	no		no
69	neg	no	neg		no	neg	no		no
70	neg	no	neg		no	neg	no		no
71	neg	no	neg		no	neg	no		no
72	neg	no	neg		no	neg	no		no
73	neg	no	neg		no	neg	no		no
74	neg	no	neg		no	neg	no		no
75	neg	no	neg		no	neg	no		no
76	neg	no	neg		no	neg	no		no
77	neg	no	neg		no	neg	no		no
78	neg	no	neg		no	neg	no		no
79	neg	no	neg		no	neg	no		no
80	neg	no	neg		no	neg	no		no
81	neg	no	neg		no	neg	no		no
82	neg	no	neg		no	neg	no		no
83	neg	no	neg		no	neg	no		no
84	neg	no	neg		no	neg	no		no
85	neg	no	neg		no	neg	no		no

	RIDA®GENE			
Sample No.	**Ct E-Gene**	**Isolation Ct-value**	**Viral Load [copies/ml]**	**Isolation Viral Load**
1	40	no	8.61E+02	no
2	28.68	yes	2.20E+06	yes
3	40	no	8.61E+02	no
4	35.85	no	1.53E+03	no
5	neg	no		no
6	25	yes	2.83E+07	yes
7	28.49	yes	2.51E+06	yes
8	28.34	yes	2.79E+06	yes
9	28.73	yes	2.13E+06	yes
10	32.73	no	1.33E+05	no
11	28.94	yes	1.83E+06	yes
12	29.56	yes	1.20E+06	yes
13	37.01	no	6.84E+03	no
14	23.09	yes	1.06E+08	yes
15	33.2	no	9.52E+04	no
16	30.99	no	4.43E+05	no
17	24.16	yes	5.04E+07	yes
18	24.29	yes	4.63E+07	yes
19	33.87	no	6.05E+04	no
20	18.91	yes	1.92E+09	yes
21	33.14	no	9.97E+04	no
22	40	no	8.61E+02	no
23	27.08	yes	6.69E+06	yes

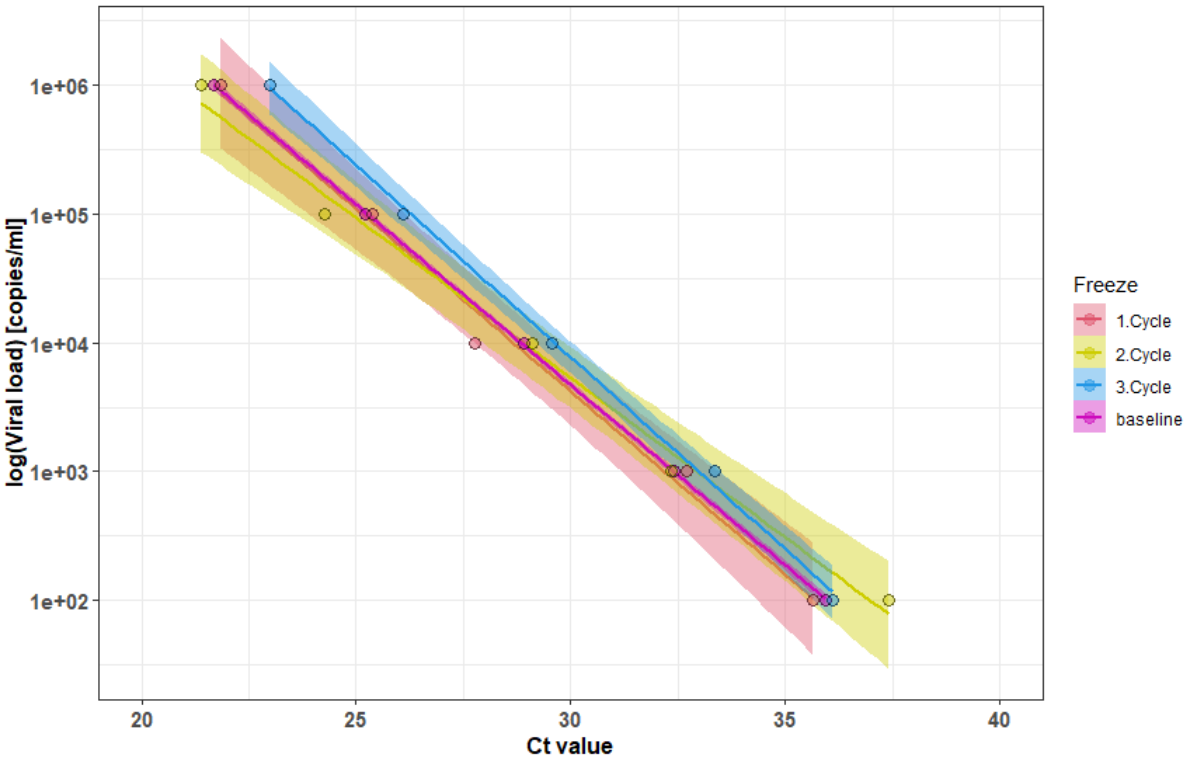
24	40	no	8.61E+02	no
25	31.56	no	2.98E+05	no
26	neg	no		no
27	38.01	no	3.42E+03	no
28	34.99	no	2.77E+04	no
29	25.46	yes	2.04E+07	yes
30	22.07	yes	2.16E+08	yes
31	33.92	no	5.84E+04	no
32	27.13	yes	6.45E+06	yes
33	34.1	no	5.15E+04	no
34	31.11	no	4.09E+05	no
35	28.62	yes	2.30E+06	yes
36	38.55	no	2.36E+03	no
37	neg	no		no
38	neg	no		no
39	39.46	no	1.25E+03	no
40	neg	no		no
41	26.32	yes	1.13E+07	yes
42	28.27	yes	2.92E+06	yes
43	29.79	yes	1.02E+06	yes
44	neg	no		no
45	25.9	yes	1.52E+07	yes
46	40	no	8.61E+02	no
47	neg	no		no
48	26.55	yes	9.56E+06	yes
49	29.54	yes	1.21E+06	yes

50	27.04	yes	6.85E+06	yes
51	neg	no		no
52	34.16	no	4.94E+04	no
53	neg	no		no
54	40	no	8.61E+02	no
55	36.83	no	7.72E+03	no
56	neg	no		no
57	neg	no		no
58	neg	no		no
59	neg	no		no
60	neg	no		no
61	neg	no		no
62	neg	no		no
63	neg	no		no
64	neg	no		no
65	neg	no		no
66	neg	no		no
67	neg	no		no
68	neg	no		no
69	neg	no		no
70	neg	no		no
71	neg	no		no
72	neg	no		no
73	neg	no		no
74	neg	no		no
75	neg	no		no

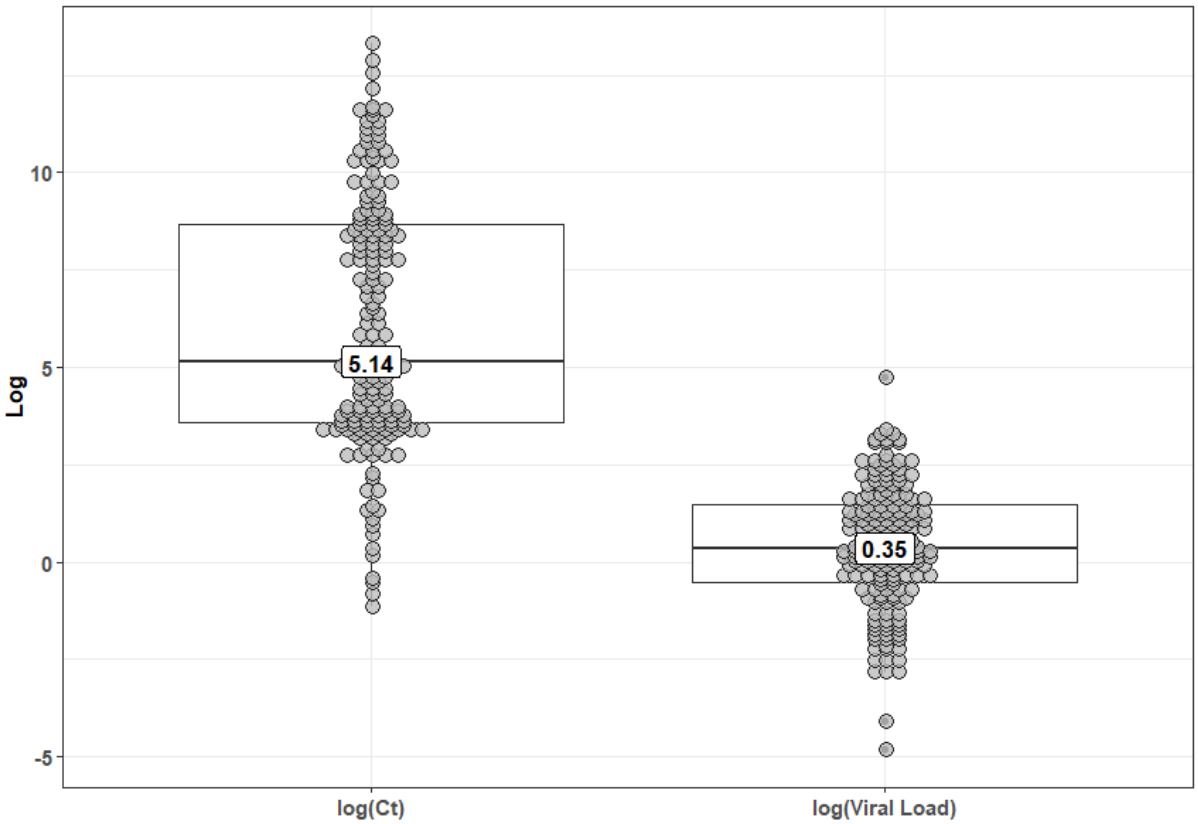
76	neg	no		no
77	neg	no		no
78	neg	no		no
79	neg	no		no
80	neg	no		no
81	neg	no		no
82	neg	no		no
83	neg	no		no
84	neg	no		no
85	neg	no		no

Supplementary Table S3: Results of standard curve measurements. Defined viral loads were analyzed on the respective systems. Ct values and the corresponding viral loads are shown. Viral loads below 10^3 were not detectable for genesig® and RIDA®GENE.

	Ct values				
copies/ml	**Alinity m**	**cobas® 6800**	**GeneXpert**	**genesig®**	**RIDA®GENE**
1.00E+07	17.95	23.77	23.62	27.70	26.43
1.00E+06	21.61	26.41	27.04	31.04	29.75
1.00E+05	25.99	29.86	30.46	34.38	33.07
1.00E+04	29.10	32.36	33.88	37.71	36.40
1.00E+03	32.30	34.20	37.30	n.a.	n.a.
1.00E+02	36.37	36.88	40.72	n.a.	n.a.



Supplementary Figure S1: Impact of freeze/thaw cycles on standard curve generation. Standard curves were generated via serial dilution measurements of a sample with a known SARS-CoV-2 concentration using our reference method on the Alinity m. This was done at baseline and following three freeze/thaw cycles (12 hours freezing at -80°C for each cycle). Standard curves are shown with the respective 95% confidence intervals.



Supplementary Figure S2: Boxplot of log(Ct) and log(Viral Load). Medians are displayed in the respective boxplots.