



Poker Cards Analysis - January 2021

The Directors

Entain Plc

This is to confirm that iTech Labs has examined the game logs for Poker games for the period **January 01, 2021 to January 31, 2021** as recorded by the respective game servers and analyzed the Poker cards for statistical randomness. The results of the analysis are given below.

For details on the gaming sites serviced by the Entain Plc game servers and used in this audit refer to the [List](#).

1. Poker hand types statistics

These calculations were done for Royal Flush, Straight Flush, Four of a Kind, Full House, Flush, Straight, 3 of a Kind, 2 pairs, 1 Pair, High Card.

The Poker hand types analysis involved creating subsets of data and conducting Chi-square tests on each subset.

The null hypothesis for the chi-square test is that the observed frequencies of each type of hand matches the theoretical values for a deck that has been shuffled using a perfect random number generator. The p-values observed in these multiple tests are expected to follow a uniform distribution for the range 0.0 to 1.0.

The analysis performs a KS Test (Kolmogorov-Smirnov test) for uniform distribution on the observed p-values, and the combined p-value result of this test is taken as the final result of the Poker hand types statistics tests.

1.1 Poker hand types statistics for 52 cards deck:

Test No.	DOF	ChiSqr	P-Value
1	9	16.08	0.06524
2	9	3.55	0.93848
3	9	13.16	0.15555
4	9	6.46	0.69273
5	9	5.15	0.82118
6	9	6.80	0.65801
7	9	16.08	0.06517
8	9	6.53	0.68596
9	9	8.94	0.44262
10	9	12.82	0.17096
11	9	7.36	0.60021
12	9	5.74	0.76583
13	9	16.24	0.06202
14	9	4.96	0.83801
15	9	7.68	0.56687
16	9	12.17	0.20406
17	9	16.23	0.06224
18	9	2.46	0.98204
19	9	8.30	0.50375
20	9	8.03	0.53161
21	9	6.98	0.63895
22	9	4.19	0.89849
23	9	4.47	0.87813
24	9	13.11	0.15752

25	9	3.69	0.93038
26	9	10.06	0.34551
27	9	7.21	0.61530
28	9	7.96	0.53779
29	9	4.93	0.84029
30	9	6.01	0.73853
31	9	19.11	0.02427
32	9	9.56	0.38728
33	9	7.49	0.58640
34	9	14.50	0.10560
35	9	15.13	0.08733
36	9	11.38	0.25070
37	9	13.38	0.14623
38	9	2.63	0.97715
39	9	17.67	0.03918
40	9	7.77	0.55726
41	9	7.47	0.58808
42	9	6.30	0.70993
43	9	6.24	0.71563
44	9	12.49	0.18726
45	9	8.34	0.50049
46	9	14.44	0.10740
47	9	11.54	0.24060
48	9	7.54	0.58099
49	9	20.90	0.01309
50	9	8.54	0.48061
51	9	13.17	0.15517
52	9	12.30	0.19686
53	9	7.20	0.61653
54	9	3.46	0.94346
55	9	7.96	0.53861
56	9	11.87	0.22098
57	9	8.38	0.49675
58	9	11.67	0.23232
59	9	11.27	0.25755
60	9	7.95	0.53967
61	9	3.37	0.94802
62	9	16.08	0.06530
63	9	16.95	0.04951
64	9	6.90	0.64796
65	9	8.57	0.47780
66	9	8.33	0.50086
67	9	10.00	0.35085
68	9	10.11	0.34149
69	9	12.74	0.17479
70	9	15.49	0.07822
71	9	14.22	0.11488
72	9	14.12	0.11815
73	9	5.84	0.75566
74	9	7.48	0.58754
75	9	5.54	0.78459
76	9	7.34	0.60188
77	9	12.29	0.19738
78	9	3.54	0.93911
79	9	5.54	0.78527

80	9	4.36	0.88641
81	9	12.58	0.18275
82	9	9.71	0.37477
83	9	24.30	0.00385
84	9	7.68	0.56639
85	9	4.98	0.83632
86	9	11.07	0.27077
87	9	1.97	0.99189
88	9	25.13	0.00283
89	9	17.40	0.04281
90	9	15.46	0.07895
91	9	9.70	0.37545
92	9	8.65	0.47047
93	9	14.31	0.11160
94	9	8.00	0.53420
95	9	4.09	0.90511
96	9	10.35	0.32292
97	9	8.42	0.49196
98	9	16.45	0.05813
99	9	9.31	0.40924
100	9	8.33	0.50111
Combined P-value for all tests (Using KS method)			0.19951

Notes:

- 1) The P-values are observed probabilities from the Chi-Square tests. The last row shows the result of the KS Test performed on the p-values for all Chi-Square tests, where there are sufficient data.

1.2 Poker hand types statistics for 36 cards deck:

Test No.	DOF	ChiSqr	P-Value
1	9	10.94	0.28016
2	9	9.61	0.38272
3	9	4.44	0.88023
4	9	4.77	0.85364
5	9	5.52	0.78664
Combined P-value for all tests (Using KS method)			N/A (Insufficient data)

Notes:

- 1) The P-values are observed probabilities from the Chi-Square tests. The last row shows the result of the KS Test performed on the p-values for all Chi-Square tests, where there are sufficient data.

2. Poker rank statistics

The Poker rank analysis aims to establish that the rank of the cards in each position was equally distributed in one of the 13 possible ranks (2, 3, 4, 5, 6, 7, 8, 9, 10, J, Q, K, A) for a 52 card deck and 9 ranks (6, 7, 8, 9, 10, J, Q, K, A) for a 36 card deck.

The Poker rank analysis involved creating subsets of data and conducting Chi-square tests on each subset. The analysis performs a KS Test (Kolmogorov-Smirnov test) for uniform distribution on the observed p-values, and the combined p-value result of this test is taken as the final result of the Ranks statistics tests.

2.1 Poker rank statistics for 52 cards deck:

Test No.	Positions	DOF	ChiSqr	P-Value
1	7	84	84.23	0.47236
2	7	84	75.87	0.72459
3	7	84	88.54	0.34629
4	7	84	93.63	0.22142
5	7	84	99.57	0.11802
6	7	84	93.59	0.22229
7	7	84	76.49	0.70749
8	7	84	84.30	0.47032
9	7	84	77.11	0.68973
10	7	84	86.80	0.39548
11	7	84	73.07	0.79700
12	7	84	88.52	0.34676
13	7	84	75.87	0.72468
14	7	84	69.75	0.86779
15	7	84	83.12	0.50652
16	7	84	88.87	0.33727
17	7	84	66.49	0.92008
18	7	84	77.16	0.68824
19	7	84	73.29	0.79177
20	7	84	70.63	0.85076
21	7	84	95.46	0.18465
22	7	84	94.98	0.19379
23	7	84	94.36	0.20623
24	7	84	65.73	0.92982
25	7	84	88.19	0.35593
26	7	84	68.93	0.88261
27	7	84	99.91	0.11351
28	7	84	75.78	0.72715
29	7	84	82.43	0.52802
30	7	84	71.91	0.82380
31	7	84	77.91	0.66641
32	7	84	99.59	0.11772
33	7	84	80.94	0.57438
34	7	84	61.97	0.96589
35	7	84	71.49	0.83294
36	7	84	90.44	0.29616
37	7	84	85.69	0.42813
38	7	84	75.24	0.74189
39	7	84	80.43	0.59024
40	7	84	84.49	0.46452
41	7	84	97.07	0.15590
42	7	84	121.14	0.00499
43	7	84	78.87	0.63785
44	7	84	87.15	0.38539
45	7	84	89.27	0.32656
46	7	84	77.14	0.68882
47	7	84	74.90	0.75087
48	7	84	63.21	0.95610
49	7	84	78.43	0.65085
50	7	84	102.53	0.08276
51	7	84	67.57	0.90466
52	7	84	75.23	0.74219
53	7	84	96.32	0.16895
54	7	84	95.99	0.17490

55	7	84	69.40	0.87426
56	7	84	74.91	0.75051
57	7	84	109.12	0.03413
58	7	84	91.07	0.28017
59	7	84	94.32	0.20714
60	7	84	68.69	0.88667
61	7	84	91.24	0.27614
62	7	84	74.18	0.76945
63	7	84	101.09	0.09864
64	7	84	71.82	0.82569
65	7	84	81.61	0.55368
66	7	84	91.44	0.27116
67	7	84	67.47	0.90617
68	7	84	80.84	0.57731
69	7	84	95.63	0.18140
70	7	84	75.83	0.72568
71	7	84	80.96	0.57372
72	7	84	67.88	0.89993
73	7	84	77.01	0.69263
74	7	84	73.21	0.79357
75	7	84	86.28	0.41059
76	7	84	70.60	0.85134
77	7	84	82.74	0.51852
78	7	84	87.27	0.38195
79	7	84	97.02	0.15683
80	7	84	66.75	0.91661
81	7	84	85.93	0.42099
82	7	84	86.10	0.41604
83	7	84	95.72	0.17977
84	7	84	61.52	0.96899
85	7	84	83.07	0.50814
86	7	84	79.60	0.61565
87	7	84	93.33	0.22779
88	7	84	88.25	0.35420
89	7	84	105.44	0.05685
90	7	84	93.01	0.23484
91	7	84	105.66	0.05518
92	7	84	69.73	0.86825
93	7	84	87.50	0.37538
94	7	84	75.87	0.72461
95	7	84	74.55	0.76000
96	7	84	89.53	0.31947
97	7	84	85.62	0.43037
98	7	84	94.20	0.20957
99	7	84	93.41	0.22613
100	7	84	77.76	0.67078
Combined P-value for all tests (Using KS method)				0.72562

Notes:

- 1) The P-values are observed probabilities from the Chi-Square tests. The last row shows the result of the KS Test performed on the p-values for all Chi-Square tests, where there are sufficient data.

2.2 Poker rank statistics for 36 cards deck:

Test No.	Positions	DOF	ChiSqr	P-Value
1	7	56	75.58	0.04166

2	7	56	61.49	0.28595
3	7	56	46.35	0.81753
4	7	56	49.36	0.72261
5	7	56	66.66	0.15591
6	7	56	53.28	0.57840
7	7	56	47.32	0.78888
8	7	56	65.72	0.17559
9	7	56	75.10	0.04513
10	7	56	64.12	0.21325
11	7	56	43.98	0.87804
12	7	56	49.34	0.72323
13	7	56	41.19	0.93084
14	7	56	43.58	0.88674
15	7	56	50.47	0.68325
16	7	56	46.08	0.82510
17	7	56	47.58	0.78111
18	7	56	41.37	0.92802
19	7	56	44.43	0.86766
20	7	56	76.36	0.03661
21	7	56	64.60	0.20129
22	7	56	45.78	0.83348
23	7	56	53.23	0.58046
24	7	56	53.57	0.56739
25	7	56	54.06	0.54880
26	7	56	45.60	0.83830
27	7	56	82.21	0.01284
28	7	56	59.65	0.34430
29	7	56	42.90	0.90082
30	7	56	65.49	0.18078
31	7	56	47.49	0.78390
32	7	56	41.42	0.92716
33	7	56	58.56	0.38180
34	7	56	48.66	0.74636
35	7	56	56.31	0.46340
36	7	56	36.74	0.97825
37	7	56	46.82	0.80400
38	7	56	49.79	0.70759
39	7	56	61.29	0.29196
40	7	56	62.64	0.25244
41	7	56	49.00	0.73489
42	7	56	65.25	0.18607
43	7	56	72.83	0.06479
44	7	56	67.09	0.14740
45	7	56	73.21	0.06109
46	7	56	52.02	0.62618
47	7	56	63.42	0.23136
48	7	56	67.36	0.14225
49	7	56	68.83	0.11650
50	7	56	61.15	0.29637
51	7	56	67.39	0.14158
52	7	56	68.83	0.11650
53	7	56	59.94	0.33477
54	7	56	46.73	0.80664
55	7	56	75.24	0.04408
56	7	56	52.71	0.60033

57	7	56	46.77	0.80559
58	7	56	32.22	0.99551
59	7	56	44.23	0.87229
60	7	56	58.32	0.39001
61	7	56	44.01	0.87723
62	7	56	58.93	0.36869
63	7	56	51.66	0.63965
64	7	56	63.49	0.22946
65	7	56	67.39	0.14158
66	7	56	63.29	0.23471
67	7	56	38.92	0.96000
68	7	56	64.71	0.19870
69	7	56	56.65	0.45066
70	7	56	46.44	0.81497
71	7	56	40.07	0.94662
72	7	56	56.87	0.44260
73	7	56	50.20	0.69319
74	7	56	74.31	0.05131
75	7	56	56.03	0.47377
76	7	56	54.12	0.54631
77	7	56	58.42	0.38646
78	7	56	57.92	0.40433
79	7	56	56.20	0.46736
80	7	56	82.84	0.01138
81	7	56	49.90	0.70372
82	7	56	42.65	0.90566
83	7	56	45.90	0.83025
84	7	56	58.94	0.36862
85	7	56	59.67	0.34364
86	7	56	72.68	0.06632
87	7	56	63.36	0.23298
88	7	56	44.09	0.87555
89	7	56	54.72	0.52360
90	7	56	54.80	0.52051
91	7	56	49.82	0.70657
92	7	56	70.70	0.08932
93	7	56	59.28	0.35694
94	7	56	69.69	0.10330
95	7	56	47.16	0.79374
96	7	56	63.76	0.22236
97	7	56	49.62	0.71350
98	7	56	54.75	0.52223
99	7	56	53.33	0.57660
100	7	56	46.72	0.80686
Combined P-value for all tests (Using KS method)				0.63248

Notes:

- 1) The P-values are observed probabilities from the Chi-Square tests. The last row shows the result of the KS Test performed on the p-values for all Chi-Square tests, where there are sufficient data.

3. Poker suits statistics

The Poker suits analysis aims to verify that that the cards dealt exhibit an equal probability of all 4 suits (Clubs, Diamonds, Hearts and Spades) in all positions.

The Poker suits analysis involved creating subsets of data and conducting Chi-square tests on each subset. The analysis performs a KS Test (Kolmogorov-Smirnov test) for uniform distribution on the observed p-values, and the combined p-value result of this test is taken as the final result of the Suits statistics tests.

3.1 Poker suits statistics for 52 cards deck:

Test No.	Positions	DOF	ChiSqr	P-Value
1	7	21	28.48	0.12698
2	7	21	21.36	0.43739
3	7	21	28.18	0.13515
4	7	21	16.45	0.74397
5	7	21	15.46	0.79944
6	7	21	20.94	0.46241
7	7	21	26.67	0.18210
8	7	21	13.83	0.87695
9	7	21	21.77	0.41300
10	7	21	26.53	0.18711
11	7	21	27.16	0.16559
12	7	21	21.49	0.42915
13	7	21	20.10	0.51474
14	7	21	21.95	0.40230
15	7	21	21.14	0.45066
16	7	21	31.50	0.06575
17	7	21	16.43	0.74475
18	7	21	22.75	0.35766
19	7	21	16.26	0.75512
20	7	21	21.31	0.44000
21	7	21	30.04	0.09122
22	7	21	19.43	0.55758
23	7	21	21.67	0.41884
24	7	21	25.65	0.22004
25	7	21	22.09	0.39408
26	7	21	21.75	0.41395
27	7	21	26.95	0.17244
28	7	21	23.46	0.31995
29	7	21	10.49	0.97175
30	7	21	13.78	0.87871
31	7	21	16.46	0.74339
32	7	21	20.96	0.46126
33	7	21	21.86	0.40745
34	7	21	12.08	0.93736
35	7	21	19.23	0.57053
36	7	21	15.18	0.81391
37	7	21	40.64	0.00621
38	7	21	19.39	0.56004
39	7	21	14.70	0.83772
40	7	21	28.00	0.14008
41	7	21	17.66	0.67017
42	7	21	18.10	0.64240
43	7	21	14.57	0.84391
44	7	21	23.73	0.30656
45	7	21	16.32	0.75142
46	7	21	32.21	0.05578
47	7	21	19.97	0.52337
48	7	21	29.14	0.11065

49	7	21	30.87	0.07591
50	7	21	16.55	0.73777
51	7	21	21.92	0.40431
52	7	21	30.36	0.08507
53	7	21	20.88	0.46657
54	7	21	20.96	0.46127
55	7	21	18.86	0.59440
56	7	21	18.90	0.59180
57	7	21	11.77	0.94554
58	7	21	20.73	0.47579
59	7	21	20.58	0.48462
60	7	21	35.88	0.02257
61	7	21	22.19	0.38862
62	7	21	14.10	0.86506
63	7	21	26.21	0.19852
64	7	21	15.15	0.81555
65	7	21	30.88	0.07562
66	7	21	28.65	0.12277
67	7	21	26.46	0.18958
68	7	21	16.48	0.74214
69	7	21	31.18	0.07067
70	7	21	12.76	0.91679
71	7	21	20.13	0.51334
72	7	21	21.86	0.40745
73	7	21	18.66	0.60707
74	7	21	28.71	0.12122
75	7	21	33.38	0.04216
76	7	21	11.06	0.96151
77	7	21	17.80	0.66192
78	7	21	13.22	0.90074
79	7	21	21.28	0.44182
80	7	21	25.69	0.21844
81	7	21	31.74	0.06214
82	7	21	34.84	0.02940
83	7	21	25.41	0.22991
84	7	21	15.20	0.81297
85	7	21	21.30	0.44100
86	7	21	25.47	0.22752
87	7	21	25.87	0.21134
88	7	21	22.12	0.39244
89	7	21	12.15	0.93554
90	7	21	22.11	0.39317
91	7	21	23.36	0.32493
92	7	21	18.54	0.61455
93	7	21	39.70	0.00810
94	7	21	23.01	0.34340
95	7	21	12.77	0.91639
96	7	21	31.93	0.05948
97	7	21	17.30	0.69261
98	7	21	24.15	0.28569
99	7	21	15.44	0.80029
100	7	21	27.25	0.16261
Combined P-value for all tests (Using KS method)				0.13007

Notes:

- 1) The P-values are observed probabilities from the Chi-Square tests. The last row shows the result of the KS Test performed on the p-values for all Chi-Square tests, where there are sufficient data.

3.2 Poker suits statistics for 36 cards deck:

Test No.	Positions	DOF	ChiSqr	P-Value
1	7	21	20.86	0.46728
2	7	21	23.76	0.30483
3	7	21	10.03	0.97849
4	7	21	14.66	0.83981
5	7	21	24.21	0.28309
6	7	21	24.52	0.26855
7	7	21	20.22	0.50762
8	7	21	22.55	0.36832
9	7	21	26.49	0.18845
10	7	21	12.94	0.91085
11	7	21	44.16	0.00223
12	7	21	24.90	0.25135
13	7	21	19.16	0.57488
14	7	21	20.90	0.46482
15	7	21	10.94	0.96402
16	7	21	27.75	0.14733
17	7	21	25.28	0.23524
18	7	21	10.82	0.96611
19	7	21	15.80	0.78078
20	7	21	24.40	0.27408
21	7	21	16.89	0.71787
22	7	21	14.34	0.85437
23	7	21	20.45	0.49306
24	7	21	36.10	0.02128
25	7	21	18.74	0.60156
26	7	21	22.14	0.39171
27	7	21	14.68	0.83866
28	7	21	27.95	0.14152
29	7	21	29.31	0.10671
30	7	21	13.82	0.87704
31	7	21	26.83	0.17648
32	7	21	24.15	0.28575
33	7	21	20.88	0.46629
34	7	21	13.71	0.88165
35	7	21	21.16	0.44921
36	7	21	31.70	0.06271
37	7	21	30.22	0.08758
38	7	21	23.82	0.30166
39	7	21	27.14	0.16640
40	7	21	20.33	0.50058
41	7	21	31.97	0.05899
42	7	21	24.14	0.28613
43	7	21	18.86	0.59386
44	7	21	10.70	0.96825
45	7	21	19.59	0.54722
46	7	21	28.95	0.11516
47	7	21	29.83	0.09542
48	7	21	25.46	0.22795
49	7	21	16.74	0.72650
50	7	21	21.48	0.42999

51	7	21	26.98	0.17138
52	7	21	21.81	0.41065
53	7	21	19.59	0.54722
54	7	21	19.52	0.55182
55	7	21	17.31	0.69203
56	7	21	19.18	0.57385
57	7	21	19.20	0.57231
58	7	21	9.18	0.98769
59	7	21	15.89	0.77591
60	7	21	36.61	0.01866
61	7	21	21.24	0.44437
62	7	21	20.14	0.51266
63	7	21	18.46	0.61999
64	7	21	21.38	0.43572
65	7	21	17.94	0.65305
66	7	21	30.68	0.07915
67	7	21	19.43	0.55745
68	7	21	33.17	0.04439
69	7	21	20.31	0.50158
70	7	21	25.88	0.21106
71	7	21	20.59	0.48409
72	7	21	14.10	0.86527
73	7	21	24.28	0.27969
74	7	21	14.90	0.82794
75	7	21	31.70	0.06283
76	7	21	15.23	0.81113
77	7	21	20.80	0.47122
78	7	21	21.92	0.40436
79	7	21	21.20	0.44703
80	7	21	16.83	0.72148
81	7	21	16.48	0.74210
82	7	21	16.97	0.71280
83	7	21	20.53	0.48782
84	7	21	38.64	0.01082
85	7	21	11.11	0.96064
86	7	21	13.42	0.89320
87	7	21	22.75	0.35756
88	7	21	16.80	0.72292
89	7	21	29.76	0.09700
90	7	21	21.16	0.44897
91	7	21	26.74	0.17976
92	7	21	15.26	0.80968
93	7	21	31.62	0.06388
94	7	21	27.76	0.14721
95	7	21	14.34	0.85474
96	7	21	15.86	0.77746
97	7	21	18.58	0.61181
98	7	21	30.52	0.08195
99	7	21	23.71	0.30722
100	7	21	23.93	0.29671
Combined P-value for all tests (Using KS method)				0.44671

Notes:

- 1) The P-values are observed probabilities from the Chi-Square tests. The last row shows the result of the KS Test performed on the p-values for all Chi-Square tests, where there are sufficient data.

4. Summary of the analysis

4.1 Summary of the analysis of 52 cards deck:

The analysis of 52 cards completes by combining the result of the KS Test performed in the 3 types of analysis (Hand Types, Ranks and Suits) for 52 card decks using the Holm's method and producing a single Combined P -value.

The combined p-value produced using the Holm's method is used as indication for statistical randomness.

Combination of p-values using Holm's Method		
Test	P-Value	P-Adjusted
Ranks Test	0.72562	0.72562
Suits Test	0.13007	0.39022
Hand Types Test	0.19951	0.39903
Combined P-Value using Holm's Method		0.39022

Notes:

- 1) The combined p-value of all statistical tests using Holm's Method conducted for 52 card decks is greater than the minimum value of 0.05 which indicates that the randomness of the observed data falls within 95% confidence limits.

The final outcome of the analysis of 52 cards deck indicates that the RNG is working correctly.

4.2 Summary of the analysis of 36 cards deck:

The analysis of 36 cards completes by combining the result of the KS Test performed in the 3 types of analysis (Hand Types, Ranks and Suits) for 36 card decks using the Holm's method and producing a single Combined P -value. Where there are insufficient data the individual Chi-Square tests results are used in the Holm's method for producing a combined p-value.

The combined p-value produced from the using the Holm's method is used as indication for statistical randomness.

Combination of p-values using Holm's Method		
Test	P-Value	P-Adjusted
Ranks Test	0.63248	1.00000
Suits Test	0.44671	1.00000
Hands Type Test	0.28016	1.00000
Hands Type Test	0.38272	1.00000
Hands Type Test	0.88023	1.00000
Hands Type Test	0.85364	1.00000
Hands Type Test	0.78664	1.00000
Combined P-Value using Holm's Method		1.00000

Notes:

- 1) The combined p-value of all statistical tests using Holm's Method conducted for 36 card decks is greater than the minimum value of 0.05 which indicates that the randomness of the observed data falls within 95% confidence limits.

The final outcome of the analysis of 36 cards deck indicates that the RNG is working correctly.

5. Conclusion

Analysis of actual data from game logs for 'Hand Types', 'Ranks' and 'Suits' for **52-card decks** and **36-card decks** indicated statistical randomness.

iTech Labs has done limited sanity checks to verify the integrity of the game logs. iTech Labs also maintains a copy of the game logs for verification purposes. There were a large enough number of game records to give the calculations sufficient statistical power.

We conclude that the Random Number Generator (RNG) is working correctly.

Please click here to see the [Original](#) report.

Signed:



Kiren Sreekumar
Principal Consultant
iTech Labs Australia
Date: 12 April 2021

Signed:



Geoff Nicoll
Principal Consultant
iTech Labs Australia
Date: 12 April 2021

Disclaimer.

While it is not possible to test all possible scenarios in a laboratory environment, iTech Labs has conducted a level of testing appropriate for a component test of this type.

