

Installation and Operational Qualification Testing For R Statistical Software
R version 2.15.1 (2012-06-22)
Architecture: x86_64
Platform: x86_64-apple-darwin9.8.0

July 3, 2012

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1 Introduction

The R software being tested in this report was downloaded from The Comprehensive R Archive Network (CRAN):

<http://cran.r-project.org/>

or a CRAN mirror:

<http://cran.us.r-project.org/mirrors.html>

if this is a stable release or from:

<http://R.research.att.com/>

if a patched release for Apple's OSX operating system.

The R software was installed on this computer in a manner consistent with "The R Installation and Administration Manual" (the Manual) which is available from:

<http://cran.r-project.org/doc/manuals/R-admin.html>

The Manual provides recommendations for the post-installation testing of R. The procedures for this testing are described in:

http://cran.r-project.org/doc/manuals/R-admin.html#Testing-a-Unix_002dalike-Installation

for Unix, Linux and OSX installations and:

<http://cran.r-project.org/doc/manuals/R-admin.html#Testing-a-Windows-Installation>

for Windows installations. The results contained within this report are based upon an automated implementation of the procedures described in the Manual.

General guidance for the use of R in regulated clinical trials has been provided by the R Foundation in a document entitled:

R: Regulatory Compliance and Validation Issues
A Guidance Document for the Use of R in Regulated Clinical Trial Environments

which is available from:

<http://www.r-project.org/doc/R-FDA.pdf>

The above document describes various characteristics of R, including the Software Development Life Cycle (SDLC) and relevant aspects of 21 CFR Part 11 compliance issues as they may pertain to the use of R for statistical analysis applications for clinical trials.

The output on the following pages of this report describe various technical characteristics of the computer upon which R is running, the R installation, current R session information and is followed by a series of tests for the so-called "Base" and "Recommended" packages which are a part of the official R distribution, as released by the R Foundation.

2 Installation Qualification (IQ)

The following is the output of `R.home()`, showing where R was installed on this computer:

```
1 /Library/Frameworks/R.framework/Resources
```

The following is the output of `system("R -e 'q()'")`, presenting the R welcome banner as displayed from a default R console (terminal) to show the R console correctly running and then exiting:

```
1 R version 2.15.1 (2012-06-22) -- "Roasted Marshmallows"
2 Copyright (C) 2012 The R Foundation for Statistical Computing
3 ISBN 3-900051-07-0
4 Platform: x86_64-apple-darwin9.8.0/x86_64 (64-bit)
5
6 R is free software and comes with ABSOLUTELY NO WARRANTY.
7 You are welcome to redistribute it under certain conditions.
8 Type 'license()' or 'licence()' for distribution details.
9
10 R is a collaborative project with many contributors.
11 Type 'contributors()' for more information and
12 'citation()' on how to cite R or R packages in publications.
13
14 Type 'demo()' for some demos, 'help()' for on-line help, or
15 'help.start()' for an HTML browser interface to help.
16 Type 'q()' to quit R.
17
18 > q()
```

Only “Base” and “Recommended” packages, which are a part of the official R Foundation distribution of R, should be installed while running these tests. A scan of the currently installed packages indicates:

Only Base and Recommended packages are currently installed.

The following is the output of `installed.packages()`.

	Package	LibPath	Version	Priority
1				
2	KernSmooth	"KernSmooth"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.23-7" "recommended"
3	MASS	"MASS"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"7.3-18" "recommended"
4	Matrix	"Matrix"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"1.0-6" "recommended"
5	base	"base"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.1" "base"
6	boot	"boot"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"1.3-4" "recommended"
7	class	"class"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"7.3-3" "recommended"
8	cluster	"cluster"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"1.14.2" "recommended"
9	codetools	"codetools"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"0.2-8" "recommended"
10	compiler	"compiler"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.1" "base"
11	datasets	"datasets"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.1" "base"
12	foreign	"foreign"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"0.8-50" "recommended"
13	grDevices	"grDevices"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.1" "base"
14	graphics	"graphics"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.1" "base"
15	grid	"grid"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.1" "base"
16	lattice	"lattice"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"0.20-6" "recommended"
17	methods	"methods"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.1" "base"
18	mgcv	"mgcv"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"1.7-18" "recommended"
19	nlme	"nlme"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"3.1-104" "recommended"
20	nnet	"nnet"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"7.3-1" "recommended"
21	parallel	"parallel"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.1" "base"
22	rpart	"rpart"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"3.1-53" "recommended"
23	spatial	"spatial"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"7.3-3" "recommended"
24	splines	"splines"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.1" "base"
25	stats	"stats"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.1" "base"
26	stats4	"stats4"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.1" "base"
27	survival	"survival"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.36-14" "recommended"
28	tcltk	"tcltk"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.1" "base"
29	tools	"tools"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.1" "base"
30	utils	"utils"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.1" "base"
31		Depends	Imports	
32	KernSmooth	"R (>= 2.5.0), stats"	NA	
33	MASS	"R (>= 2.14.0), grDevices, graphics, stats, utils"	NA	
34	Matrix	"R (>= 2.15.0), stats, methods, utils, lattice"	"graphics, grid"	
35	base	NA	NA	
36	boot	"R (>= 2.14.0), graphics, stats"	NA	
37	class	"R (>= 2.5.0), stats, utils"	"MASS"	
38	cluster	"R (>= 2.10.0), stats, graphics, utils"	NA	
39	codetools	"R (>= 2.1)"	NA	
40	compiler	NA	NA	
41	datasets	NA	NA	
42	foreign	"R (>= 2.14.0), stats"	"methods, utils"	
43	grDevices	NA	NA	
44	graphics	NA	"grDevices"	
45	grid	NA	"grDevices"	
46	lattice	"R (>= 2.14.0)"	"grid, grDevices, graphics, stats, utils, methods"	
47	methods	NA	"utils"	
48	mgcv	"R (>= 2.14.0), stats, graphics"	"nlme, methods, Matrix"	
49	nlme	"graphics, stats, R (>= 2.13)"	"lattice"	
50	nnet	"R (>= 2.5.0), stats, utils"	NA	
51	parallel	NA	NA	
52	rpart	"R (>= 2.14.0), graphics, stats, grDevices"	NA	
53	spatial	"R (>= 2.5.0), graphics, stats, utils"	NA	
54	splines	NA	"graphics, stats"	
55	stats	NA	NA	
56	stats4	"methods, graphics, stats"	NA	
57	survival	"stats, utils, graphics, splines, R (>= 2.13.0)"	NA	
58	tcltk	NA	NA	
59	tools	NA	NA	
60	utils	NA	NA	
61		LinkingTo Suggests	Enhances	
62	KernSmooth	NA "MASS"	NA	
63	MASS	NA "lattice, nlme, nnet, survival"	NA	
64	Matrix	NA "expm, MASS"	"MatrixModels, graph, SparseM (>= 0.87), sfsmisc"	
65	base	NA NA	NA	
66	boot	NA "MASS, survival"	NA	
67	class	NA NA	NA	
68	cluster	NA NA	"MASS"	

69	codetools	NA	NA	NA
70	compiler	NA	NA	NA
71	datasets	NA	NA	NA
72	foreign	NA	NA	NA
73	grDevices	NA	NA	NA
74	graphics	NA	NA	NA
75	grid	NA	"lattice"	NA
76	lattice	NA	"grid, KernSmooth, MASS"	"chron"
77	methods	NA	NA	NA
78	mgcv	NA	"nlme (>= 3.1-64), splines, Matrix, parallel"	NA
79	nlme	NA	"Hmisc, MASS"	NA
80	nnet	NA	"MASS"	NA
81	parallel	NA	NA	"snow"
82	rpart	NA	"survival"	NA
83	spatial	NA	"MASS"	NA
84	splines	NA	NA	NA
85	stats	NA	NA	NA
86	stats4	NA	NA	NA
87	survival	NA	NA	NA
88	tcltk	NA	NA	NA
89	tools	NA	NA	NA
90	utils	NA	NA	NA
91		OS_type	License	Built
92	KernSmooth	NA	"Unlimited"	"2.15.1"
93	MASS	NA	"GPL-2 GPL-3"	"2.15.1"
94	Matrix	NA	"GPL (>= 2)"	"2.15.1"
95	base	NA	"Part of R 2.15.1"	"2.15.1"
96	boot	NA	"Unlimited"	"2.15.1"
97	class	NA	"GPL-2 GPL-3"	"2.15.1"
98	cluster	NA	"GPL (>= 2)"	"2.15.1"
99	codetools	NA	"GPL"	"2.15.1"
100	compiler	NA	"Part of R 2.15.1"	"2.15.1"
101	datasets	NA	"Part of R 2.15.1"	"2.15.1"
102	foreign	NA	"GPL (>= 2)"	"2.15.1"
103	grDevices	NA	"Part of R 2.15.1"	"2.15.1"
104	graphics	NA	"Part of R 2.15.1"	"2.15.1"
105	grid	NA	"Part of R 2.15.1"	"2.15.1"
106	lattice	NA	"GPL (>= 2)"	"2.15.1"
107	methods	NA	"Part of R 2.15.1"	"2.15.1"
108	mgcv	NA	"GPL (>= 2)"	"2.15.1"
109	nlme	NA	"GPL (>= 2)"	"2.15.1"
110	nnet	NA	"GPL-2 GPL-3"	"2.15.1"
111	parallel	NA	"Part of R 2.15.1"	"2.15.1"
112	rpart	NA	"GPL-2 GPL-3"	"2.15.1"
113	spatial	NA	"GPL-2 GPL-3"	"2.15.1"
114	splines	NA	"Part of R 2.15.1"	"2.15.1"
115	stats	NA	"Part of R 2.15.1"	"2.15.1"
116	stats4	NA	"Part of R 2.15.1"	"2.15.1"
117	survival	NA	"GPL (>=2)"	"2.15.1"
118	tcltk	NA	"Part of R 2.15.1"	"2.15.1"
119	tools	NA	"Part of R 2.15.1"	"2.15.1"
120	utils	NA	"Part of R 2.15.1"	"2.15.1"

The following is the output of `Sys.info()`, defining some details about the current system upon which R is running and user information:

```
1                                     sysname
2                                     "Darwin"
3                                     release
4                                     "11.4.0"
5                                     version
6 "Darwin Kernel Version 11.4.0: Mon Apr  9 19:32:15 PDT 2012; root:xnu-1699.26.8~1/RELEASE_ARM_T8020"
7                                     nodename
8                                     "MacBookPro.local"
9                                     machine
10                                    "x86_64"
11                                    login
12                                    "marcschwartz"
13                                    user
14                                    "marcschwartz"
15                                    effective_user
16                                    "marcschwartz"
```

The following is the output of `.Platform`, defining some details of the platform upon which R was built (compiled):

```
1 $OS.type
2 [1] "unix"
3
4 $file.sep
5 [1] "/"
6
7 $dynlib.ext
8 [1] ".so"
9
10 $GUI
11 [1] "X11"
12
13 $endian
14 [1] "little"
15
16 $pkgType
17 [1] "mac.binary.leopard"
18
19 $path.sep
20 [1] ":"
21
22 $r_arch
23 [1] "x86_64"
```

The following is the output of `R.version`, defining detailed information on the currently running version of R:

```
1  
2 platform      -  
3 arch          x86_64-apple-darwin9.8.0  
4 arch          x86_64  
5 os            darwin9.8.0  
6 system        x86_64, darwin9.8.0  
7 status  
8 major         2  
9 minor         15.1  
10 year          2012  
11 month         06  
12 day           22  
13 svn rev       59600  
14 language      R  
15 version.string R version 2.15.1 (2012-06-22)  
16 nickname      Roasted Marshmallows
```

The following is the output of `.Machine`, defining the numerical characteristics of the computer upon which R is running:

```
1 $double.eps
2 [1] 2.220446e-16
3
4 $double.neg.eps
5 [1] 1.110223e-16
6
7 $double.xmin
8 [1] 2.225074e-308
9
10 $double.xmax
11 [1] 1.797693e+308
12
13 $double.base
14 [1] 2
15
16 $double.digits
17 [1] 53
18
19 $double.rounding
20 [1] 5
21
22 $double.guard
23 [1] 0
24
25 $double.ulp.digits
26 [1] -52
27
28 $double.neg.ulp.digits
29 [1] -53
30
31 $double.exponent
32 [1] 11
33
34 $double.min.exp
35 [1] -1022
36
37 $double.max.exp
38 [1] 1024
39
40 $integer.max
41 [1] 2147483647
42
43 $sizeof.long
44 [1] 8
45
46 $sizeof.longlong
47 [1] 8
48
49 $sizeof.longdouble
50 [1] 16
51
52 $sizeof.pointer
53 [1] 8
```

The following is the output of `sessionInfo()`, defining current R version, locale information and attached packages:

```
1 R version 2.15.1 (2012-06-22)
2 Platform: x86_64-apple-darwin9.8.0/x86_64 (64-bit)
3
4 locale:
5 [1] C
6
7 attached base packages:
8 [1] tools      stats      graphics  grDevices  utils      datasets  methods    base
```

3 R Core Operational Qualification - System Tests (OQ)

The following is the output of `testInstalledBasic("both")`, which runs a series of core system-wide operational tests of the R installation, including various regression tests:

```

1 R version 2.15.1 (2012-06-22) -- "Roasted Marshmallows"
2 Copyright (C) 2012 The R Foundation for Statistical Computing
3 ISBN 3-900051-07-0
4 Platform: x86_64-apple-darwin9.8.0/x86_64 (64-bit)
5
6
7 R is free software and comes with ABSOLUTELY NO WARRANTY.
8 You are welcome to redistribute it under certain conditions.
9 Type 'license()' or 'licence()' for distribution details.
10
11 R is a collaborative project with many contributors.
12 Type 'contributors()' for more information and
13 'citation()' on how to cite R or R packages in publications.
14
15 Type 'demo()' for some demos, 'help()' for on-line help, or
16 'help.start()' for an HTML browser interface to help.
17 Type 'q()' to quit R.
18
19 > options(echo = FALSE)
20 running strict specific tests
21   running code in 'eval-etc.R'
22     comparing 'eval-etc.Rout' to 'eval-etc.Rout.save' ... OK
23   running code in 'simple-true.R'
24     comparing 'simple-true.Rout' to 'simple-true.Rout.save' ... OK
25   running code in 'arith-true.R'
26     comparing 'arith-true.Rout' to 'arith-true.Rout.save' ... OK
27   running code in 'lm-tests.R'
28     comparing 'lm-tests.Rout' to 'lm-tests.Rout.save' ... OK
29   running code in 'ok-errors.R'
30     comparing 'ok-errors.Rout' to 'ok-errors.Rout.save' ... OK
31   running code in 'method-dispatch.R'
32     comparing 'method-dispatch.Rout' to 'method-dispatch.Rout.save' ... OK
33   running code in 'd-p-q-r-tests.R'
34     comparing 'd-p-q-r-tests.Rout' to 'd-p-q-r-tests.Rout.save' ... OK
35 running sloppy specific tests
36   running code in 'complex.R'
37     comparing 'complex.Rout' to 'complex.Rout.save' ... OK
38   running code in 'print-tests.R'
39     comparing 'print-tests.Rout' to 'print-tests.Rout.save' ... OK
40   running code in 'lapack.R'
41     comparing 'lapack.Rout' to 'lapack.Rout.save' ... OK
42   running code in 'datasets.R'
43     comparing 'datasets.Rout' to 'datasets.Rout.save' ... OK
44 running regression tests
45   running code in 'reg-tests-1a.R'
46   running code in 'reg-tests-1b.R'
47   running code in 'reg-tests-2.R'
48     comparing 'reg-tests-2.Rout' to 'reg-tests-2.Rout.save' ... OK
49   running code in 'reg-I0.R'
50     comparing 'reg-I0.Rout' to 'reg-I0.Rout.save' ... OK
51   running code in 'reg-I02.R'
52     comparing 'reg-I02.Rout' to 'reg-I02.Rout.save' ... OK
53   running code in 'reg-S4.R'
54     comparing 'reg-S4.Rout' to 'reg-S4.Rout.save' ... OK
55   running code in 'reg-tests-3.R'
56     comparing 'reg-tests-3.Rout' to 'reg-tests-3.Rout.save' ... OK
57 running tests of plotting Latin-1
58 expect failure or some differences if not in a Latin or UTF-8 locale
59   running code in 'reg-plot-latin1.R'
60 FAILED
61   comparing 'reg-plot-latin1.ps' to 'reg-plot-latin1.ps.save' ...diff: reg-plot-latin1.ps: No such file or
    directory
62 diff: reg-plot-latin1.ps.save: No such file or directory
63 OK
64 running tests of consistency of as/is.*
65 creating 'isas-tests.R'
66   running code in 'isas-tests.R'
67   comparing 'isas-tests.Rout' to 'isas-tests.Rout.save' ...2638a2639
68 > >
69 running tests of random deviate generation -- fails occasionally
70   running code in 'p-r-random-tests.R'
71     comparing 'p-r-random-tests.Rout' to 'p-r-random-tests.Rout.save' ... OK
72 running tests of primitives
73   running code in 'primitives.R'
74 running regexp regression tests
75   running code in 'utf8-regex.R'
76 running tests to possibly trigger segfaults

```

```
77 creating 'no-segfault.R'  
78   running code in 'no-segfault.R'  
79  
80  
81 Test suite result: PASS
```

The final line of the above output displays the status of running the above tests. “PASS” indicates a successful running of the tests, a “FAIL” would indicate that an error was detected during the running of the tests.

There may be some tests where the result of performing a “diff” on two files that were being compared demonstrate a content difference that may or may not be relevant and may be dependent upon locale settings. Any such differences displayed in the above output should be reviewed in detail to determine their relevance to the Operational Qualification of this R installation.

4 R Base Package Operational Qualification - Package Examples (OQ)

The following is the output of `testInstalledPackages(outDir = "IQ-OQ-TestOutput", scope = "base", types = "examples")`, which runs a series of operational tests of the R Base package code examples:

```
1 R version 2.15.1 (2012-06-22) -- "Roasted Marshmallows"
2 Copyright (C) 2012 The R Foundation for Statistical Computing
3 ISBN 3-900051-07-0
4 Platform: x86_64-apple-darwin9.8.0/x86_64 (64-bit)
5
6 R is free software and comes with ABSOLUTELY NO WARRANTY.
7 You are welcome to redistribute it under certain conditions.
8 Type 'license()' or 'licence()' for distribution details.
9
10
11 R is a collaborative project with many contributors.
12 Type 'contributors()' for more information and
13 'citation()' on how to cite R or R packages in publications.
14
15 Type 'demo()' for some demos, 'help()' for on-line help, or
16 'help.start()' for an HTML browser interface to help.
17 Type 'q()' to quit R.
18
19 > options(echo = FALSE)
20 Testing examples for package 'base'
21 Testing examples for package 'tools'
22   comparing 'tools-Ex.Rout' to 'tools-Ex.Rout.save' ...
23 files differ in number of lines:
24 811a812,828
25 > $Depends
26 > [1] "lattice"
27 >
28 > $Installed
29 > [1] "lattice"
30 >
31 > $Found
32 > list()
33 >
34 > $NotFound
35 > character(0)
36 >
37 > $R
38 > [1] "R (>= 2.14.0)"
39 >
40 > attr(,"class")
41 > [1] "DependsList" "list"
42 Testing examples for package 'utils'
43 Testing examples for package 'grDevices'
44   comparing 'grDevices-Ex.Rout' to 'grDevices-Ex.Rout.save' ... OK
45 Testing examples for package 'graphics'
46   comparing 'graphics-Ex.Rout' to 'graphics-Ex.Rout.save' ... OK
47 Testing examples for package 'stats'
48   comparing 'stats-Ex.Rout' to 'stats-Ex.Rout.save' ... OK
49 Testing examples for package 'datasets'
50   comparing 'datasets-Ex.Rout' to 'datasets-Ex.Rout.save' ... OK
51 Testing examples for package 'methods'
52 Testing examples for package 'grid'
53   comparing 'grid-Ex.Rout' to 'grid-Ex.Rout.save' ... OK
54 Testing examples for package 'splines'
55   comparing 'splines-Ex.Rout' to 'splines-Ex.Rout.save' ... OK
56 Testing examples for package 'stats4'
57   comparing 'stats4-Ex.Rout' to 'stats4-Ex.Rout.save' ... OK
58 Testing examples for package 'tcltk'
59 Testing examples for package 'compiler'
60 Testing examples for package 'parallel'
61
62
63 Test suite result: PASS
```

The final line of the above output displays the status of running the above tests. “PASS” indicates a successful running of the tests, a “FAIL” would indicate that an error was detected during the running of the tests.

There may be some tests where the result of performing a “diff” on two files that were being compared demonstrate a content difference that may or may not be relevant and may be dependent upon locale settings. Any such differences displayed in the above output should be reviewed in detail to determine their relevance to the Operational Qualification of this R installation.

5 R Base Package Operational Qualification - Package Vignettes (OQ)

The following is the output of `testInstalledPackages(outDir = "IQ-OQ-TestOutput", scope = "base", types = "vignettes")`, which runs a series of operational tests of the R Base package vignette code examples:

```
1
2 R version 2.15.1 (2012-06-22) -- "Roasted Marshmallows"
3 Copyright (C) 2012 The R Foundation for Statistical Computing
4 ISBN 3-900051-07-0
5 Platform: x86_64-apple-darwin9.8.0/x86_64 (64-bit)
6
7 R is free software and comes with ABSOLUTELY NO WARRANTY.
8 You are welcome to redistribute it under certain conditions.
9 Type 'license()' or 'licence()' for distribution details.
10
11 R is a collaborative project with many contributors.
12 Type 'contributors()' for more information and
13 'citation()' on how to cite R or R packages in publications.
14
15 Type 'demo()' for some demos, 'help()' for on-line help, or
16 'help.start()' for an HTML browser interface to help.
17 Type 'q()' to quit R.
18
19 > options(echo = FALSE)
20 Running vignettes for package 'utils'
21 Running vignettes for package 'grid'
22 Running vignettes for package 'parallel'
23
24
25 Test suite result: PASS
```

The final line of the above output displays the status of running the above tests. “PASS” indicates a successful running of the tests, a “FAIL” would indicate that an error was detected during the running of the tests.

There may be some tests where the result of performing a “diff” on two files that were being compared demonstrate a content difference that may or may not be relevant and may be dependent upon locale settings. Any such differences displayed in the above output should be reviewed in detail to determine their relevance to the Operational Qualification of this R installation.

6 R Recommended Package Operational Qualification - Package Examples (OQ)

The following is the output of `testInstalledPackages(outDir = "IQ-OQ-TestOutput", scope = "recommended", types = "examples")`, which runs a series of operational tests of the R Recommended package code examples:

```
1
2 R version 2.15.1 (2012-06-22) -- "Roasted Marshmallows"
3 Copyright (C) 2012 The R Foundation for Statistical Computing
4 ISBN 3-900051-07-0
5 Platform: x86_64-apple-darwin9.8.0/x86_64 (64-bit)
6
7 R is free software and comes with ABSOLUTELY NO WARRANTY.
8 You are welcome to redistribute it under certain conditions.
9 Type 'license()' or 'licence()' for distribution details.
10
11 R is a collaborative project with many contributors.
12 Type 'contributors()' for more information and
13 'citation()' on how to cite R or R packages in publications.
14
15 Type 'demo()' for some demos, 'help()' for on-line help, or
16 'help.start()' for an HTML browser interface to help.
17 Type 'q()' to quit R.
18
19 > options(echo = FALSE)
20 Testing examples for package 'MASS'
21   comparing 'MASS-Ex.Rout' to 'MASS-Ex.Rout.save' ...
22 1535c1535
23 < factor(subject)2 -4.271e-15  2.828e-01  0.000 1.000000
24 ---
25 > factor(subject)2 -2.300e-15  2.828e-01  0.000 1.000000
26 5187c5187
27 < Achieved convergence tolerance: 4.39e-06
28 ---
29 > Achieved convergence tolerance: 4.324e-06
30 Testing examples for package 'lattice'
31 Testing examples for package 'Matrix'
32 Testing examples for package 'nlme'
33 Testing examples for package 'survival'
34 Testing examples for package 'boot'
35   comparing 'boot-Ex.Rout' to 'boot-Ex.Rout.save' ... OK
36 Testing examples for package 'cluster'
37 Testing examples for package 'codetools'
38 Testing examples for package 'foreign'
39 Testing examples for package 'KernSmooth'
40 Testing examples for package 'rpart'
41   comparing 'rpart-Ex.Rout' to 'rpart-Ex.Rout.save' ... OK
42 Testing examples for package 'class'
43   comparing 'class-Ex.Rout' to 'class-Ex.Rout.save' ... OK
44 Testing examples for package 'nnet'
45 Testing examples for package 'spatial'
46   comparing 'spatial-Ex.Rout' to 'spatial-Ex.Rout.save' ... OK
47 Testing examples for package 'mgcv'
48
49
50 Test suite result: PASS
```

The final line of the above output displays the status of running the above tests. “PASS” indicates a successful running of the tests, a “FAIL” would indicate that an error was detected during the running of the tests.

There may be some tests where the result of performing a “diff” on two files that were being compared demonstrate a content difference that may or may not be relevant and may be dependent upon locale settings. Any such differences displayed in the above output should be reviewed in detail to determine their relevance to the Operational Qualification of this R installation.

7 R Recommended Package Operational Qualification - Package Vignettes (OQ)

The following is the output of `testInstalledPackages(outDir = "IQ-OQ-TestOutput", scope = "recommended", types = "vignettes")`, which runs a series of operational tests of the R Recommended package vignette code examples:

```
1
2 R version 2.15.1 (2012-06-22) -- "Roasted Marshmallows"
3 Copyright (C) 2012 The R Foundation for Statistical Computing
4 ISBN 3-900051-07-0
5 Platform: x86_64-apple-darwin9.8.0/x86_64 (64-bit)
6
7 R is free software and comes with ABSOLUTELY NO WARRANTY.
8 You are welcome to redistribute it under certain conditions.
9 Type 'license()' or 'licence()' for distribution details.
10
11 R is a collaborative project with many contributors.
12 Type 'contributors()' for more information and
13 'citation()' on how to cite R or R packages in publications.
14
15 Type 'demo()' for some demos, 'help()' for on-line help, or
16 'help.start()' for an HTML browser interface to help.
17 Type 'q()' to quit R.
18
19 > options(echo = FALSE)
20 Running vignettes for package 'Matrix'
21 Running vignettes for package 'survival'
22
23
24 Test suite result: PASS
```

The final line of the above output displays the status of running the above tests. “PASS” indicates a successful running of the tests, a “FAIL” would indicate that an error was detected during the running of the tests.

There may be some tests where the result of performing a “diff” on two files that were being compared demonstrate a content difference that may or may not be relevant and may be dependent upon locale settings. Any such differences displayed in the above output should be reviewed in detail to determine their relevance to the Operational Qualification of this R installation.

8 R Base Package Operational Qualification - Package Tests (OQ)

The following is the output of `testInstalledPackages(outDir = "IQ-OQ-TestOutput", scope = "base", types = "tests")`, which runs a series of operational tests of the R Base package code tests:

```

1  R version 2.15.1 (2012-06-22) -- "Roasted Marshmallows"
2  Copyright (C) 2012 The R Foundation for Statistical Computing
3  ISBN 3-900051-07-0
4  Platform: x86_64-apple-darwin9.8.0/x86_64 (64-bit)
5
6  R is free software and comes with ABSOLUTELY NO WARRANTY.
7  You are welcome to redistribute it under certain conditions.
8  Type 'license()' or 'licence()' for distribution details.
9
10
11 R is a collaborative project with many contributors.
12 Type 'contributors()' for more information and
13 'citation()' on how to cite R or R packages in publications.
14
15 Type 'demo()' for some demos, 'help()' for on-line help, or
16 'help.start()' for an HTML browser interface to help.
17 Type 'q()' to quit R.
18
19 > options(echo = FALSE)
20 Running specific tests for package 'tools'
21   Running 'undoc.R'
22 Running specific tests for package 'utils'
23   Running 'Sweave-tst.R'
24   Running 'completion.R'
25 Running specific tests for package 'grDevices'
26   Running 'ps-tests.R'
27   comparing 'ps-tests.Rout' to 'ps-tests.Rout.save' ... OK
28   Running 'xfig-tests.R'
29   comparing 'xfig-tests.Rout' to 'xfig-tests.Rout.save' ... OK
30 Running specific tests for package 'stats'
31   Running 'NLSstClosest.R'
32   Running 'cmdscale.R'
33   Running 'drop1-polr.R'
34   Running 'ig_glm.R'
35   Running 'ks-test.R'
36   comparing 'ks-test.Rout' to 'ks-test.Rout.save' ... OK
37   Running 'nafns.R'
38   Running 'nls.R'
39   comparing 'nls.Rout' to 'nls.Rout.save' ... OK
40   Running 'offsets.R'
41   Running 'ppr.R'
42   Running 'simulate.R'
43   comparing 'simulate.Rout' to 'simulate.Rout.save' ... OK
44   Running 'smooth.spline.R'
45   Running 'ts-tests.R'
46 Running specific tests for package 'methods'
47   Running 'S3.R'
48   Running 'basicRefClass.R'
49   Running 'duplicateClass.R'
50   Running 'fieldAssignments.R'
51   Running 'mixinInitialize.R'
52   Running 'namesAndSlots.R'
53   Running 'nextWithDots.R'
54   Running 'refClassExample.R'
55   Running 'testConditionalIs.R'
56   Running 'testGroupGeneric.R'
57   Running 'testIs.R'
58 Running specific tests for package 'grid'
59   Running 'bugs.R'
60   Running 'reg.R'
61   Running 'testls.R'
62   comparing 'testls.Rout' to 'testls.Rout.save' ... OK
63   Running 'units.R'
64 Running specific tests for package 'stats4'
65   Running 'confint.R'
66 Running specific tests for package 'compiler'
67   Running 'assign.R'
68   Running 'basics.R'
69   Running 'const.R'
70   Running 'envir.R'
71   Running 'jit.R'
72   Running 'loop.R'
73   Running 'switch.R'
74 Running specific tests for package 'parallel'
75   Running 'Master.R'
76
77

```

```
78 | Test suite result: PASS
```

The final line of the above output displays the status of running the above tests. “PASS” indicates a successful running of the tests, a “FAIL” would indicate that an error was detected during the running of the tests.

There may be some tests where the result of performing a “diff” on two files that were being compared demonstrate a content difference that may or may not be relevant and may be dependent upon locale settings. Any such differences displayed in the above output should be reviewed in detail to determine their relevance to the Operational Qualification of this R installation.

9 R Recommended Package Operational Qualification - Package Tests (OQ)

The following is the output of `testInstalledPackages(outDir = "IQ-OQ-TestOutput", scope = "recommended", types = "tests")`, which runs a series of operational tests of the R Recommended package code tests:

```
1
2 R version 2.15.1 (2012-06-22) -- "Roasted Marshmallows"
3 Copyright (C) 2012 The R Foundation for Statistical Computing
4 ISBN 3-900051-07-0
5 Platform: x86_64-apple-darwin9.8.0/x86_64 (64-bit)
6
7 R is free software and comes with ABSOLUTELY NO WARRANTY.
8 You are welcome to redistribute it under certain conditions.
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10
11 R is a collaborative project with many contributors.
12 Type 'contributors()' for more information and
13 'citation()' on how to cite R or R packages in publications.
14
15 Type 'demo()' for some demos, 'help()' for on-line help, or
16 'help.start()' for an HTML browser interface to help.
17 Type 'q()' to quit R.
18
19 > options(echo = FALSE)
20 Running specific tests for package 'MASS'
21   Running 'confint.R'
22   Running 'fitdistr.R'
23   comparing 'fitdistr.Rout' to 'fitdistr.Rout.save' ... OK
24   Running 'glm.nb.R'
25   Running 'hubers.R'
26   Running 'lme.R'
27   Running 'polr.R'
28   Running 'profile.R'
29   Running 'regression.R'
30   comparing 'regression.Rout' to 'regression.Rout.save' ... OK
31   Running 'rlm.R'
32   Running 'scripts.R'
33 Running specific tests for package 'lattice'
34   Running 'MASSch04.R'
35   Running 'dates.R'
36   Running 'dotplotscoping.R'
37   Running 'levelplot.R'
38   Running 'scales.R'
39   Running 'temp.R'
40   Running 'test.R'
41   Running 'wireframe.R'
42 Running specific tests for package 'Matrix'
43   Running 'Class+Meth.R'
44   Running 'Simple.R'
45   Running 'abIndex-tsts.R'
46   Running 'base-matrix-fun.R'
47   Running 'bind.R'
48   comparing 'bind.Rout' to 'bind.Rout.save' ... OK
49   Running 'dg_Matrix.R'
50   Running 'dpo-test.R'
51   Running 'dtpMatrix.R'
52   Running 'factorizing.R'
53   Running 'group-methods.R'
54   Running 'indexing.R'
55   comparing 'indexing.Rout' to 'indexing.Rout.save' ... OK
56   Running 'matprod.R'
57   Running 'matr-exp.R'
58   Running 'other-pkgs.R'
59   Running 'spModel.matrix.R'
60   Running 'validObj.R'
61   Running 'write-read.R'
62 Running specific tests for package 'nlme'
63   Running 'anova.gls.R'
64   Running 'augPred_lab.R'
65   Running 'augPredmissing.R'
66   Running 'coef.R'
67   Running 'contrMat.R'
68   Running 'data.frame.R'
69   Running 'deparse.R'
70   Running 'getData.R'
71   Running 'glms.R'
72   Running 'lmList.R'
73   Running 'lme.R'
74   comparing 'lme.Rout' to 'lme.Rout.save' ... OK
75   Running 'missing.R'
76   comparing 'missing.Rout' to 'missing.Rout.save' ... OK
77   Running 'nlme.R'
```

```

78 | comparing 'nlme.Rout' to 'nlme.Rout.save' ... OK
79 | Running 'predict.lme.R'
80 | Running 'update.R'
81 | Running 'updateLme.R'
82 | Running 'varIdent.R'
83 | Running specific tests for package 'survival'
84 | Running 'aareg.R'
85 | comparing 'aareg.Rout' to 'aareg.Rout.save' ... OK
86 | Running 'anova.R'
87 | comparing 'anova.Rout' to 'anova.Rout.save' ... OK
88 | Running 'bladder.R'
89 | comparing 'bladder.Rout' to 'bladder.Rout.save' ... OK
90 | Running 'book1.R'
91 | comparing 'book1.Rout' to 'book1.Rout.save' ... OK
92 | Running 'book2.R'
93 | comparing 'book2.Rout' to 'book2.Rout.save' ... OK
94 | Running 'book3.R'
95 | comparing 'book3.Rout' to 'book3.Rout.save' ... OK
96 | Running 'book4.R'
97 | comparing 'book4.Rout' to 'book4.Rout.save' ... OK
98 | Running 'book5.R'
99 | comparing 'book5.Rout' to 'book5.Rout.save' ... OK
100 | Running 'book6.R'
101 | comparing 'book6.Rout' to 'book6.Rout.save' ... OK
102 | Running 'book7.R'
103 | comparing 'book7.Rout' to 'book7.Rout.save' ... OK
104 | Running 'cancer.R'
105 | comparing 'cancer.Rout' to 'cancer.Rout.save' ... OK
106 | Running 'clogit.R'
107 | comparing 'clogit.Rout' to 'clogit.Rout.save' ... OK
108 | Running 'concordance.R'
109 | comparing 'concordance.Rout' to 'concordance.Rout.save' ... OK
110 | Running 'counting.R'
111 | comparing 'counting.Rout' to 'counting.Rout.save' ... OK
112 | Running 'coxsurv.R'
113 | comparing 'coxsurv.Rout' to 'coxsurv.Rout.save' ... OK
114 | Running 'coxsurv2.R'
115 | comparing 'coxsurv2.Rout' to 'coxsurv2.Rout.save' ... OK
116 | Running 'coxsurv3.R'
117 | comparing 'coxsurv3.Rout' to 'coxsurv3.Rout.save' ... OK
118 | Running 'coxsurv4.R'
119 | comparing 'coxsurv4.Rout' to 'coxsurv4.Rout.save' ... OK
120 | Running 'detail.R'
121 | comparing 'detail.Rout' to 'detail.Rout.save' ... OK
122 | Running 'difftest.R'
123 | comparing 'difftest.Rout' to 'difftest.Rout.save' ... OK
124 | Running 'doaml.R'
125 | comparing 'doaml.Rout' to 'doaml.Rout.save' ... OK
126 | Running 'doweight.R'
127 | comparing 'doweight.Rout' to 'doweight.Rout.save' ... OK
128 | Running 'expected.R'
129 | comparing 'expected.Rout' to 'expected.Rout.save' ... OK
130 | Running 'expected2.R'
131 | comparing 'expected2.Rout' to 'expected2.Rout.save' ... OK
132 | Running 'factor.R'
133 | comparing 'factor.Rout' to 'factor.Rout.save' ... OK
134 | Running 'factor2.R'
135 | comparing 'factor2.Rout' to 'factor2.Rout.save' ... OK
136 | Running 'fr_cancer.R'
137 | comparing 'fr_cancer.Rout' to 'fr_cancer.Rout.save' ... OK
138 | Running 'fr_colon.R'
139 | comparing 'fr_colon.Rout' to 'fr_colon.Rout.save' ... OK
140 | Running 'fr_kidney.R'
141 | comparing 'fr_kidney.Rout' to 'fr_kidney.Rout.save' ... OK
142 | Running 'fr_lung.R'
143 | comparing 'fr_lung.Rout' to 'fr_lung.Rout.save' ... OK
144 | Running 'fr_ovarian.R'
145 | comparing 'fr_ovarian.Rout' to 'fr_ovarian.Rout.save' ... OK
146 | Running 'fr_rat1.R'
147 | comparing 'fr_rat1.Rout' to 'fr_rat1.Rout.save' ... OK
148 | Running 'fr_rat2.R'
149 | comparing 'fr_rat2.Rout' to 'fr_rat2.Rout.save' ... OK
150 | Running 'fr_resid.R'
151 | comparing 'fr_resid.Rout' to 'fr_resid.Rout.save' ... OK
152 | Running 'fr_simple.R'
153 | comparing 'fr_simple.Rout' to 'fr_simple.Rout.save' ... OK
154 | Running 'frailty.R'
155 | comparing 'frailty.Rout' to 'frailty.Rout.save' ... OK
156 | Running 'frank.R'
157 | comparing 'frank.Rout' to 'frank.Rout.save' ... OK
158 | Running 'infcov.R'

```

```

159 comparing 'infcox.Rout' to 'infcox.Rout.save' ... OK
160 Running 'jasa.R'
161 comparing 'jasa.Rout' to 'jasa.Rout.save' ... OK
162 Running 'model.matrix.R'
163 comparing 'model.matrix.Rout' to 'model.matrix.Rout.save' ... OK
164 Running 'mrtest.R'
165 comparing 'mrtest.Rout' to 'mrtest.Rout.save' ... OK
166 Running 'nested.R'
167 comparing 'nested.Rout' to 'nested.Rout.save' ... OK
168 Running 'ovarian.R'
169 comparing 'ovarian.Rout' to 'ovarian.Rout.save' ... OK
170 Running 'prednew.R'
171 comparing 'prednew.Rout' to 'prednew.Rout.save' ... OK
172 Running 'pspline.R'
173 comparing 'pspline.Rout' to 'pspline.Rout.save' ... OK
174 Running 'pyear.R'
175 comparing 'pyear.Rout' to 'pyear.Rout.save' ... OK
176 Running 'r_capacitor.R'
177 comparing 'r_capacitor.Rout' to 'r_capacitor.Rout.save' ... OK
178 Running 'r_donnell.R'
179 comparing 'r_donnell.Rout' to 'r_donnell.Rout.save' ... OK
180 Running 'r_lung.R'
181 comparing 'r_lung.Rout' to 'r_lung.Rout.save' ... OK
182 Running 'r_peterson.R'
183 comparing 'r_peterson.Rout' to 'r_peterson.Rout.save' ... OK
184 Running 'r_resid.R'
185 comparing 'r_resid.Rout' to 'r_resid.Rout.save' ... OK
186 Running 'r_sas.R'
187 comparing 'r_sas.Rout' to 'r_sas.Rout.save' ... OK
188 Running 'r_scale.R'
189 comparing 'r_scale.Rout' to 'r_scale.Rout.save' ... OK
190 Running 'r_stanford.R'
191 comparing 'r_stanford.Rout' to 'r_stanford.Rout.save' ... OK
192 Running 'r_strata.R'
193 comparing 'r_strata.Rout' to 'r_strata.Rout.save' ... OK
194 Running 'r_tdist.R'
195 comparing 'r_tdist.Rout' to 'r_tdist.Rout.save' ... OK
196 Running 'r_user.R'
197 comparing 'r_user.Rout' to 'r_user.Rout.save' ... OK
198 Running 'ratetable.R'
199 comparing 'ratetable.Rout' to 'ratetable.Rout.save' ... OK
200 Running 'rounding.R'
201 comparing 'rounding.Rout' to 'rounding.Rout.save' ... OK
202 Running 'singtest.R'
203 comparing 'singtest.Rout' to 'singtest.Rout.save' ... OK
204 Running 'strata2.R'
205 comparing 'strata2.Rout' to 'strata2.Rout.save' ... OK
206 Running 'stratatest.R'
207 comparing 'stratatest.Rout' to 'stratatest.Rout.save' ... OK
208 Running 'summary_survfit.R'
209 comparing 'summary_survfit.Rout' to 'summary_survfit.Rout.save' ... OK
210 Running 'surv.R'
211 comparing 'surv.Rout' to 'surv.Rout.save' ... OK
212 Running 'survfit2.R'
213 comparing 'survfit2.Rout' to 'survfit2.Rout.save' ... OK
214 Running 'survreg2.R'
215 comparing 'survreg2.Rout' to 'survreg2.Rout.save' ... OK
216 Running 'survtest.R'
217 comparing 'survtest.Rout' to 'survtest.Rout.save' ... OK
218 Running 'testci.R'
219 comparing 'testci.Rout' to 'testci.Rout.save' ... OK
220 Running 'testci2.R'
221 comparing 'testci2.Rout' to 'testci2.Rout.save' ... OK
222 Running 'testnull.R'
223 comparing 'testnull.Rout' to 'testnull.Rout.save' ... OK
224 Running 'testreg.R'
225 comparing 'testreg.Rout' to 'testreg.Rout.save' ... OK
226 Running 'tiedtime.R'
227 comparing 'tiedtime.Rout' to 'tiedtime.Rout.save' ... OK
228 Running 'tt.R'
229 Running 'turnbull.R'
230 comparing 'turnbull.Rout' to 'turnbull.Rout.save' ... OK
231 Running specific tests for package 'boot'
232 Running specific tests for package 'cluster'
233 Running 'agnes-ex.R'
234 comparing 'agnes-ex.Rout' to 'agnes-ex.Rout.save' ... OK
235 Running 'clara-NAs.R'
236 comparing 'clara-NAs.Rout' to 'clara-NAs.Rout.save' ...
237 48c48
238 < 2.00 27.25 147.50 114.60 188.50 270.00 16
239 ---

```

```

240 >      2.00    27.25  147.50  114.60  188.50  270.00   16.00
241 Running 'clara-ex.R'
242 Running 'clara.R'
243 comparing 'clara.Rout' to 'clara.Rout.save' ... OK
244 Running 'clusplot-out.R'
245 comparing 'clusplot-out.Rout' to 'clusplot-out.Rout.save' ... OK
246 Running 'daisy-ex.R'
247 comparing 'daisy-ex.Rout' to 'daisy-ex.Rout.save' ... OK
248 Running 'diana-boots.R'
249 Running 'diana-ex.R'
250 comparing 'diana-ex.Rout' to 'diana-ex.Rout.save' ... OK
251 Running 'ellipsoid-ex.R'
252 comparing 'ellipsoid-ex.Rout' to 'ellipsoid-ex.Rout.save' ... OK
253 Running 'fanny-ex.R'
254 Running 'mona.R'
255 comparing 'mona.Rout' to 'mona.Rout.save' ... OK
256 Running 'pam.R'
257 comparing 'pam.Rout' to 'pam.Rout.save' ... OK
258 Running 'silhouette-default.R'
259 comparing 'silhouette-default.Rout' to 'silhouette-default.Rout.save' ... OK
260 Running 'sweep-ex.R'
261 Running specific tests for package 'codetools'
262 Running 'tests.R'
263 Running specific tests for package 'foreign'
264 Running 'S3.R'
265 comparing 'S3.Rout' to 'S3.Rout.save' ... OK
266 Running 'arff.R'
267 comparing 'arff.Rout' to 'arff.Rout.save' ... OK
268 Running 'download.R'
269 Running 'minitab.R'
270 comparing 'minitab.Rout' to 'minitab.Rout.save' ... OK
271 Running 'octave.R'
272 comparing 'octave.Rout' to 'octave.Rout.save' ... OK
273 Running 'sas.R'
274 Running 'spss.R'
275 comparing 'spss.Rout' to 'spss.Rout.save' ... OK
276 Running 'stata.R'
277 comparing 'stata.Rout' to 'stata.Rout.save' ... OK
278 Running 'xport.R'
279 comparing 'xport.Rout' to 'xport.Rout.save' ... OK
280 Running specific tests for package 'KernSmooth'
281 Running 'bkfe.R'
282 Running specific tests for package 'rpart'
283 Running 'backticks.R'
284 Running 'rpartco.R'
285 Running 'surv_test.R'
286 Running 'testall.R'
287 comparing 'testall.Rout' to 'testall.Rout.save' ... OK
288 Running 'usersplits.R'
289 comparing 'usersplits.Rout' to 'usersplits.Rout.save' ...
290 174c174
291 < Timing ratio = 9.5
292 ---
293 > Timing ratio = 5.9
294 Running specific tests for package 'class'
295 Running specific tests for package 'spatial'
296
297
298 Test suite result: PASS

```

The final line of the above output displays the status of running the above tests. “PASS” indicates a successful running of the tests, a “FAIL” would indicate that an error was detected during the running of the tests.

There may be some tests where the result of performing a “diff” on two files that were being compared demonstrate a content difference that may or may not be relevant and may be dependent upon locale settings. Any such differences displayed in the above output should be reviewed in detail to determine their relevance to the Operational Qualification of this R installation.

10 Summary of Findings

The following table presents the results of the various tests performed in the prior sections.

The column labeled “System Results” is an indication that the individual test batch file was able to be executed (**PASS**) or that there may have been a system level failure (**FAIL**) in the execution of the program.

The column labeled “Test Results” is an indication that the test suites themselves either passed (**PASS**) or failed (**FAIL**) and should be consistent with the final line output for each section of tests. As noted previously, there may be some tests where the result of performing a “diff” on two files that were being compared demonstrate a content difference that may or may not be relevant. These differences, if present, may or may not be based upon system settings such as locale. Any such differences displayed in the prior sections should be reviewed in detail to determine their relevance to the Operational Qualification of this R installation.

The result for **Installation Qualification** is listed in the “Test Results” column only. The result will be **PASS** if `system("R -e 'q()')"` ran successfully AND `installed.packages()` shows that only Base and Recommended Packages are currently installed. If BOTH of the requirements are not met, the result will be **FAIL**.

Table 10.1: Summary of Test Suite Results

Test Suite	System Results	Test Results
Installation Qualification	NA	PASS
Core Operational Qualification - System Tests	PASS	PASS
Base Package Operational Qualification - Package Examples	PASS	PASS
Base Package Operational Qualification - Package Vignettes	PASS	PASS
Recommended Package Operational Qualification - Package Examples	PASS	PASS
Recommended Package Operational Qualification - Package Vignettes	PASS	PASS
Base Package Operational Qualification - Package Tests	PASS	PASS
Recommended Package Operational Qualification - Package Tests	PASS	PASS