

Installation and Operational Qualification Testing For R Statistical Software
R version 2.15.2 (2012-10-26)
Architecture: i386
Platform: i386-apple-darwin9.8.0

October 28, 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 2.15.2 (2012-10-26) -- "Trick or Treat"
2 Copyright (C) 2012 The R Foundation for Statistical Computing
3 ISBN 3-900051-07-0
4 Platform: i386-apple-darwin9.8.0/i386 (32-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"	"2.23-8" "recommended"
3	MASS	"MASS"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"7.3-22" "recommended"
4	Matrix	"Matrix"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"1.0-9" "recommended"
5	base	"base"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.2" "base"
6	boot	"boot"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"1.3-7" "recommended"
7	class	"class"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"7.3-5" "recommended"
8	cluster	"cluster"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"1.14.3" "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"	"2.15.2" "base"
11	datasets	"datasets"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.2" "base"
12	foreign	"foreign"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"0.8-51" "recommended"
13	grDevices	"grDevices"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.2" "base"
14	graphics	"graphics"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.2" "base"
15	grid	"grid"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.2" "base"
16	lattice	"lattice"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"0.20-10" "recommended"
17	methods	"methods"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.2" "base"
18	mgcv	"mgcv"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"1.7-22" "recommended"
19	nlme	"nlme"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"3.1-105" "recommended"
20	nnet	"nnet"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"7.3-5" "recommended"
21	parallel	"parallel"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.2" "base"
22	rpart	"rpart"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"3.1-55" "recommended"
23	spatial	"spatial"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"7.3-5" "recommended"
24	splines	"splines"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.2" "base"
25	stats	"stats"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.2" "base"
26	stats4	"stats4"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.2" "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"	"2.15.2" "base"
29	tools	"tools"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.2" "base"
30	utils	"utils"	"/Library/Frameworks/R.framework/Versions/2.15/Resources/library"	"2.15.2" "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	OS_
		type		
62	KernSmooth	NA "MASS"	NA	NA
63	MASS	NA "lattice, nlme, nnet, survival"	NA	NA
64	Matrix	NA "expm, MASS"	"MatrixModels, graph, SparseM, sfsmisc"	NA
65	base	NA NA	NA	NA
66	boot	NA "MASS, survival"	NA	NA
67	class	NA NA	NA	NA
68	cluster	NA "MASS"	NA	NA

69	codetools	NA	NA	NA	NA
70	compiler	NA	NA	NA	NA
71	datasets	NA	NA	NA	NA
72	foreign	NA	NA	NA	NA
73	grDevices	NA	NA	NA	NA
74	graphics	NA	NA	NA	NA
75	grid	NA	"lattice"	NA	NA
76	lattice	NA	"grid, KernSmooth, MASS"	"chron"	NA
77	methods	NA	NA	NA	NA
78	mgcv	NA	"nlme (>= 3.1-64), splines, Matrix, parallel"	NA	NA
79	nlme	NA	"Hmisc, MASS"	NA	NA
80	nnet	NA	"MASS"	NA	NA
81	parallel	NA	NA	"snow"	NA
82	rpart	NA	"survival"	NA	NA
83	spatial	NA	"MASS"	NA	NA
84	splines	NA	NA	NA	NA
85	stats	NA	NA	NA	NA
86	stats4	NA	NA	NA	NA
87	survival	NA	NA	NA	NA
88	tcltk	NA	NA	NA	NA
89	tools	NA	NA	NA	NA
90	utils	NA	NA	NA	NA
91		License	Built		
92	KernSmooth	"Unlimited"	"2.15.2"		
93	MASS	"GPL-2 GPL-3"	"2.15.2"		
94	Matrix	"GPL (>= 2)"	"2.15.2"		
95	base	"Part of R 2.15.2"	"2.15.2"		
96	boot	"Unlimited"	"2.15.2"		
97	class	"GPL-2 GPL-3"	"2.15.2"		
98	cluster	"GPL (>= 2)"	"2.15.2"		
99	codetools	"GPL"	"2.15.2"		
100	compiler	"Part of R 2.15.2"	"2.15.2"		
101	datasets	"Part of R 2.15.2"	"2.15.2"		
102	foreign	"GPL (>= 2)"	"2.15.2"		
103	grDevices	"Part of R 2.15.2"	"2.15.2"		
104	graphics	"Part of R 2.15.2"	"2.15.2"		
105	grid	"Part of R 2.15.2"	"2.15.2"		
106	lattice	"GPL (>= 2)"	"2.15.2"		
107	methods	"Part of R 2.15.2"	"2.15.2"		
108	mgcv	"GPL (>=2)"	"2.15.2"		
109	nlme	"GPL (>= 2)"	"2.15.2"		
110	nnet	"GPL-2 GPL-3"	"2.15.2"		
111	parallel	"Part of R 2.15.2"	"2.15.2"		
112	rpart	"GPL-2 GPL-3"	"2.15.2"		
113	spatial	"GPL-2 GPL-3"	"2.15.2"		
114	splines	"Part of R 2.15.2"	"2.15.2"		
115	stats	"Part of R 2.15.2"	"2.15.2"		
116	stats4	"Part of R 2.15.2"	"2.15.2"		
117	survival	"GPL (>=2)"	"2.15.2"		
118	tcltk	"Part of R 2.15.2"	"2.15.2"		
119	tools	"Part of R 2.15.2"	"2.15.2"		
120	utils	"Part of R 2.15.2"	"2.15.2"		

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 "12.2.0"
5 version
6 "Darwin Kernel Version 12.2.0: Sat Aug 25 00:48:52 PDT 2012; root:xnu-2050.18.24~1/RELEASE_X86_64"
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] "i386"
```

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

```
1  
2 platform      - i386-apple-darwin9.8.0  
3 arch          i386  
4 os            darwin9.8.0  
5 system        i386, darwin9.8.0  
6 status  
7 major         2  
8 minor         15.2  
9 year          2012  
10 month         10  
11 day           26  
12 svn rev       61015  
13 language      R  
14 version.string R version 2.15.2 (2012-10-26)  
15 nickname      Trick or Treat
```

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] 4
45
46 $sizeof.longlong
47 [1] 8
48
49 $sizeof.longdouble
50 [1] 16
51
52 $sizeof.pointer
53 [1] 4
```

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

```
1 R version 2.15.2 (2012-10-26)
2 Platform: i386-apple-darwin9.8.0/i386 (32-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 2.15.2 (2012-10-26) -- "Trick or Treat"
2 Copyright (C) 2012 The R Foundation for Statistical Computing
3 ISBN 3-900051-07-0
4 Platform: i386-apple-darwin9.8.0/i386 (32-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 > options(echo = FALSE)
19 running strict specific tests
20   running code in 'eval-etc.R'
21     comparing 'eval-etc.Rout' to 'eval-etc.Rout.save' ... OK
22   running code in 'simple-true.R'
23     comparing 'simple-true.Rout' to 'simple-true.Rout.save' ... OK
24   running code in 'arith-true.R'
25     comparing 'arith-true.Rout' to 'arith-true.Rout.save' ... OK
26   running code in 'lm-tests.R'
27     comparing 'lm-tests.Rout' to 'lm-tests.Rout.save' ... OK
28   running code in 'ok-errors.R'
29     comparing 'ok-errors.Rout' to 'ok-errors.Rout.save' ... OK
30   running code in 'method-dispatch.R'
31     comparing 'method-dispatch.Rout' to 'method-dispatch.Rout.save' ... OK
32   running code in 'd-p-q-r-tests.R'
33     comparing 'd-p-q-r-tests.Rout' to 'd-p-q-r-tests.Rout.save' ... OK
34 running sloppy specific tests
35   running code in 'complex.R'
36     comparing 'complex.Rout' to 'complex.Rout.save' ... OK
37   running code in 'print-tests.R'
38     comparing 'print-tests.Rout' to 'print-tests.Rout.save' ... OK
39   running code in 'lapack.R'
40     comparing 'lapack.Rout' to 'lapack.Rout.save' ... OK
41   running code in 'datasets.R'
42     comparing 'datasets.Rout' to 'datasets.Rout.save' ... OK
43 running regression tests
44   running code in 'reg-tests-1a.R'
45   running code in 'reg-tests-1b.R'
46   running code in 'reg-tests-2.R'
47     comparing 'reg-tests-2.Rout' to 'reg-tests-2.Rout.save' ... OK
48   running code in 'reg-I0.R'
49     comparing 'reg-I0.Rout' to 'reg-I0.Rout.save' ... OK
50   running code in 'reg-I02.R'
51     comparing 'reg-I02.Rout' to 'reg-I02.Rout.save' ... OK
52   running code in 'reg-S4.R'
53     comparing 'reg-S4.Rout' to 'reg-S4.Rout.save' ... OK
54   running code in 'reg-tests-3.R'
55     comparing 'reg-tests-3.Rout' to 'reg-tests-3.Rout.save' ... OK
56 running tests of plotting Latin-1
57 expect failure or some differences if not in a Latin or UTF-8 locale
58   running code in 'reg-plot-latin1.R'
59 FAILED
60   comparing 'reg-plot-latin1.ps' to 'reg-plot-latin1.ps.save' ...diff: reg-plot-latin1.ps: No such file or
61     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
2 R version 2.15.2 (2012-10-26) -- "Trick or Treat"
3 Copyright (C) 2012 The R Foundation for Statistical Computing
4 ISBN 3-900051-07-0
5 Platform: i386-apple-darwin9.8.0/i386 (32-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 'base'
21 Testing examples for package 'tools'
22   comparing 'tools-Ex.Rout' to 'tools-Ex.Rout.save' ... OK
23 Testing examples for package 'utils'
24 Testing examples for package 'grDevices'
25   comparing 'grDevices-Ex.Rout' to 'grDevices-Ex.Rout.save' ... OK
26 Testing examples for package 'graphics'
27   comparing 'graphics-Ex.Rout' to 'graphics-Ex.Rout.save' ... OK
28 Testing examples for package 'stats'
29   comparing 'stats-Ex.Rout' to 'stats-Ex.Rout.save' ... OK
30 Testing examples for package 'datasets'
31   comparing 'datasets-Ex.Rout' to 'datasets-Ex.Rout.save' ... OK
32 Testing examples for package 'methods'
33 Testing examples for package 'grid'
34   comparing 'grid-Ex.Rout' to 'grid-Ex.Rout.save' ... OK
35 Testing examples for package 'splines'
36   comparing 'splines-Ex.Rout' to 'splines-Ex.Rout.save' ... OK
37 Testing examples for package 'stats4'
38   comparing 'stats4-Ex.Rout' to 'stats4-Ex.Rout.save' ... OK
39 Testing examples for package 'tcltk'
40 Testing examples for package 'compiler'
41 Testing examples for package 'parallel'
42
43
44 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 2.15.2 (2012-10-26) -- "Trick or Treat"
3 Copyright (C) 2012 The R Foundation for Statistical Computing
4 ISBN 3-900051-07-0
5 Platform: i386-apple-darwin9.8.0/i386 (32-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 2.15.2 (2012-10-26) -- "Trick or Treat"
3 Copyright (C) 2012 The R Foundation for Statistical Computing
4 ISBN 3-900051-07-0
5 Platform: i386-apple-darwin9.8.0/i386 (32-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 2.15.2 (2012-10-26) -- "Trick or Treat"
3 Copyright (C) 2012 The R Foundation for Statistical Computing
4 ISBN 3-900051-07-0
5 Platform: i386-apple-darwin9.8.0/i386 (32-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
2 R version 2.15.2 (2012-10-26) -- "Trick or Treat"
3 Copyright (C) 2012 The R Foundation for Statistical Computing
4 ISBN 3-900051-07-0
5 Platform: i386-apple-darwin9.8.0/i386 (32-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 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 2.15.2 (2012-10-26) -- "Trick or Treat"
3 Copyright (C) 2012 The R Foundation for Statistical Computing
4 ISBN 3-900051-07-0
5 Platform: i386-apple-darwin9.8.0/i386 (32-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 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' ...
56 files differ in number of lines:
57 284,285c284,285
58 < Note: Method with signature 'nsparseMatrix#sparseMatrix' chosen for function '==',
59 < target signature 'ngCMatrix#ngTMatrix'.
60 ---
61 > Note: Method with signature "nsparseMatrix#sparseMatrix" chosen for function "==",
62 > target signature "ngCMatrix#ngTMatrix".
63 695a696,698
64 > Note: Method with signature "numeric#sparseVector" chosen for function "coerce",
65 > target signature "integer#sparseVector".
66 > "atomicVector#sparseVector" would also be valid
67 854,855c857,858
68 < Note: Method with signature 'sparseMatrix#ldiMatrix' chosen for function '==',
69 < target signature 'nsCMatrix#ldiMatrix'.
70 ---
71 > Note: Method with signature "sparseMatrix#ldiMatrix" chosen for function "==",
72 > target signature "nsCMatrix#ldiMatrix".
73 890,891c893,894
74 < 2*m =?= m+m: Note: Method with signature 'sparseMatrix#ldiMatrix' chosen for function '&',
75 < target signature 'nsCMatrix#ldiMatrix'.
76 ---
77 > 2*m =?= m+m: Note: Method with signature "sparseMatrix#ldiMatrix" chosen for function "&",

```

```

78 > target signature "nsCMatrix#ldiMatrix".
79 1286,1287c1289,1290
80 < Note: Method with signature 'sparseMatrix#ANY' chosen for function 'kronecker',
81 < target signature 'dtTMatrix#dsyMatrix'.
82 ---
83 > Note: Method with signature "sparseMatrix#ANY" chosen for function "kronecker",
84 > target signature "dtTMatrix#dsyMatrix".
85 Running 'matprod.R'
86 Running 'matr-exp.R'
87 Running 'other-pkgs.R'
88 Running 'spModel.matrix.R'
89 Running 'validObj.R'
90 Running 'write-read.R'
91 Running specific tests for package 'nlme'
92 Running 'anova.gls.R'
93 Running 'augPred_lab.R'
94 Running 'augPredmissing.R'
95 Running 'coef.R'
96 Running 'contrMat.R'
97 Running 'data.frame.R'
98 Running 'deparse.R'
99 Running 'getData.R'
100 Running 'glS.R'
101 Running 'lmList.R'
102 Running 'lme.R'
103 comparing 'lme.Rout' to 'lme.Rout.save' ... OK
104 Running 'missing.R'
105 comparing 'missing.Rout' to 'missing.Rout.save' ... OK
106 Running 'nlme.R'
107 comparing 'nlme.Rout' to 'nlme.Rout.save' ... OK
108 Running 'predict.lme.R'
109 Running 'update.R'
110 Running 'updateLme.R'
111 Running 'varIdent.R'
112 Running specific tests for package 'survival'
113 Running 'aareg.R'
114 comparing 'aareg.Rout' to 'aareg.Rout.save' ... OK
115 Running 'anova.R'
116 comparing 'anova.Rout' to 'anova.Rout.save' ... OK
117 Running 'bladder.R'
118 comparing 'bladder.Rout' to 'bladder.Rout.save' ... OK
119 Running 'book1.R'
120 comparing 'book1.Rout' to 'book1.Rout.save' ... OK
121 Running 'book2.R'
122 comparing 'book2.Rout' to 'book2.Rout.save' ... OK
123 Running 'book3.R'
124 comparing 'book3.Rout' to 'book3.Rout.save' ... OK
125 Running 'book4.R'
126 comparing 'book4.Rout' to 'book4.Rout.save' ... OK
127 Running 'book5.R'
128 comparing 'book5.Rout' to 'book5.Rout.save' ... OK
129 Running 'book6.R'
130 comparing 'book6.Rout' to 'book6.Rout.save' ... OK
131 Running 'book7.R'
132 comparing 'book7.Rout' to 'book7.Rout.save' ... OK
133 Running 'cancer.R'
134 comparing 'cancer.Rout' to 'cancer.Rout.save' ... OK
135 Running 'clogit.R'
136 comparing 'clogit.Rout' to 'clogit.Rout.save' ... OK
137 Running 'concordance.R'
138 comparing 'concordance.Rout' to 'concordance.Rout.save' ... OK
139 Running 'counting.R'
140 comparing 'counting.Rout' to 'counting.Rout.save' ... OK
141 Running 'coxsurv.R'
142 comparing 'coxsurv.Rout' to 'coxsurv.Rout.save' ... OK
143 Running 'coxsurv2.R'
144 comparing 'coxsurv2.Rout' to 'coxsurv2.Rout.save' ... OK
145 Running 'coxsurv3.R'
146 comparing 'coxsurv3.Rout' to 'coxsurv3.Rout.save' ... OK
147 Running 'coxsurv4.R'
148 comparing 'coxsurv4.Rout' to 'coxsurv4.Rout.save' ... OK
149 Running 'detail.R'
150 comparing 'detail.Rout' to 'detail.Rout.save' ... OK
151 Running 'diffest.R'
152 comparing 'diffest.Rout' to 'diffest.Rout.save' ... OK
153 Running 'doaml.R'
154 comparing 'doaml.Rout' to 'doaml.Rout.save' ... OK
155 Running 'doweight.R'
156 comparing 'doweight.Rout' to 'doweight.Rout.save' ... OK
157 Running 'expected.R'
158 comparing 'expected.Rout' to 'expected.Rout.save' ... OK

```

```

159 Running 'expected2.R'
160 comparing 'expected2.Rout' to 'expected2.Rout.save' ... OK
161 Running 'factor.R'
162 comparing 'factor.Rout' to 'factor.Rout.save' ... OK
163 Running 'factor2.R'
164 comparing 'factor2.Rout' to 'factor2.Rout.save' ... OK
165 Running 'fr_cancer.R'
166 comparing 'fr_cancer.Rout' to 'fr_cancer.Rout.save' ... OK
167 Running 'fr_colon.R'
168 comparing 'fr_colon.Rout' to 'fr_colon.Rout.save' ... OK
169 Running 'fr_kidney.R'
170 comparing 'fr_kidney.Rout' to 'fr_kidney.Rout.save' ... OK
171 Running 'fr_lung.R'
172 comparing 'fr_lung.Rout' to 'fr_lung.Rout.save' ... OK
173 Running 'fr_ovarian.R'
174 comparing 'fr_ovarian.Rout' to 'fr_ovarian.Rout.save' ... OK
175 Running 'fr_rat1.R'
176 comparing 'fr_rat1.Rout' to 'fr_rat1.Rout.save' ... OK
177 Running 'fr_rat2.R'
178 comparing 'fr_rat2.Rout' to 'fr_rat2.Rout.save' ... OK
179 Running 'fr_resid.R'
180 comparing 'fr_resid.Rout' to 'fr_resid.Rout.save' ... OK
181 Running 'fr_simple.R'
182 comparing 'fr_simple.Rout' to 'fr_simple.Rout.save' ... OK
183 Running 'frailty.R'
184 comparing 'frailty.Rout' to 'frailty.Rout.save' ... OK
185 Running 'frank.R'
186 comparing 'frank.Rout' to 'frank.Rout.save' ... OK
187 Running 'infcox.R'
188 comparing 'infcox.Rout' to 'infcox.Rout.save' ... OK
189 Running 'jasa.R'
190 comparing 'jasa.Rout' to 'jasa.Rout.save' ... OK
191 Running 'model.matrix.R'
192 comparing 'model.matrix.Rout' to 'model.matrix.Rout.save' ... OK
193 Running 'mrtest.R'
194 comparing 'mrtest.Rout' to 'mrtest.Rout.save' ... OK
195 Running 'nested.R'
196 comparing 'nested.Rout' to 'nested.Rout.save' ... OK
197 Running 'ovarian.R'
198 comparing 'ovarian.Rout' to 'ovarian.Rout.save' ... OK
199 Running 'prednew.R'
200 comparing 'prednew.Rout' to 'prednew.Rout.save' ... OK
201 Running 'pspline.R'
202 comparing 'pspline.Rout' to 'pspline.Rout.save' ... OK
203 Running 'pyear.R'
204 comparing 'pyear.Rout' to 'pyear.Rout.save' ... OK
205 Running 'r_capacitor.R'
206 comparing 'r_capacitor.Rout' to 'r_capacitor.Rout.save' ... OK
207 Running 'r_donnell.R'
208 comparing 'r_donnell.Rout' to 'r_donnell.Rout.save' ... OK
209 Running 'r_lung.R'
210 comparing 'r_lung.Rout' to 'r_lung.Rout.save' ... OK
211 Running 'r_peterson.R'
212 comparing 'r_peterson.Rout' to 'r_peterson.Rout.save' ... OK
213 Running 'r_resid.R'
214 comparing 'r_resid.Rout' to 'r_resid.Rout.save' ... OK
215 Running 'r_sas.R'
216 comparing 'r_sas.Rout' to 'r_sas.Rout.save' ... OK
217 Running 'r_scale.R'
218 comparing 'r_scale.Rout' to 'r_scale.Rout.save' ... OK
219 Running 'r_stanford.R'
220 comparing 'r_stanford.Rout' to 'r_stanford.Rout.save' ... OK
221 Running 'r_strata.R'
222 comparing 'r_strata.Rout' to 'r_strata.Rout.save' ... OK
223 Running 'r_tdist.R'
224 comparing 'r_tdist.Rout' to 'r_tdist.Rout.save' ... OK
225 Running 'r_user.R'
226 comparing 'r_user.Rout' to 'r_user.Rout.save' ... OK
227 Running 'ratetable.R'
228 comparing 'ratetable.Rout' to 'ratetable.Rout.save' ... OK
229 Running 'rounding.R'
230 comparing 'rounding.Rout' to 'rounding.Rout.save' ... OK
231 Running 'singtest.R'
232 comparing 'singtest.Rout' to 'singtest.Rout.save' ... OK
233 Running 'strata2.R'
234 comparing 'strata2.Rout' to 'strata2.Rout.save' ... OK
235 Running 'stratatest.R'
236 comparing 'stratatest.Rout' to 'stratatest.Rout.save' ... OK
237 Running 'summary_survfit.R'
238 comparing 'summary_survfit.Rout' to 'summary_survfit.Rout.save' ... OK
239 Running 'surv.R'

```

```

240 comparing 'surv.Rout' to 'surv.Rout.save' ... OK
241 Running 'survfit2.R'
242 comparing 'survfit2.Rout' to 'survfit2.Rout.save' ... OK
243 Running 'survreg2.R'
244 comparing 'survreg2.Rout' to 'survreg2.Rout.save' ... OK
245 Running 'survtest.R'
246 comparing 'survtest.Rout' to 'survtest.Rout.save' ... OK
247 Running 'testci.R'
248 comparing 'testci.Rout' to 'testci.Rout.save' ... OK
249 Running 'testci2.R'
250 comparing 'testci2.Rout' to 'testci2.Rout.save' ... OK
251 Running 'testnull.R'
252 comparing 'testnull.Rout' to 'testnull.Rout.save' ... OK
253 Running 'testreg.R'
254 comparing 'testreg.Rout' to 'testreg.Rout.save' ... OK
255 Running 'tiedtime.R'
256 comparing 'tiedtime.Rout' to 'tiedtime.Rout.save' ... OK
257 Running 'tt.R'
258 Running 'turnbull.R'
259 comparing 'turnbull.Rout' to 'turnbull.Rout.save' ... OK
260 Running specific tests for package 'boot'
261 Running specific tests for package 'cluster'
262 Running 'agnes-ex.R'
263 comparing 'agnes-ex.Rout' to 'agnes-ex.Rout.save' ... OK
264 Running 'clara-NAs.R'
265 comparing 'clara-NAs.Rout' to 'clara-NAs.Rout.save' ... OK
266 Running 'clara-ex.R'
267 Running 'clara.R'
268 comparing 'clara.Rout' to 'clara.Rout.save' ... OK
269 Running 'clusplot-out.R'
270 comparing 'clusplot-out.Rout' to 'clusplot-out.Rout.save' ... OK
271 Running 'daisy-ex.R'
272 comparing 'daisy-ex.Rout' to 'daisy-ex.Rout.save' ... OK
273 Running 'diana-boots.R'
274 Running 'diana-ex.R'
275 comparing 'diana-ex.Rout' to 'diana-ex.Rout.save' ... OK
276 Running 'ellipsoid-ex.R'
277 comparing 'ellipsoid-ex.Rout' to 'ellipsoid-ex.Rout.save' ... OK
278 Running 'fanny-ex.R'
279 Running 'mona.R'
280 comparing 'mona.Rout' to 'mona.Rout.save' ... OK
281 Running 'pam.R'
282 comparing 'pam.Rout' to 'pam.Rout.save' ... OK
283 Running 'silhouette-default.R'
284 comparing 'silhouette-default.Rout' to 'silhouette-default.Rout.save' ... OK
285 Running 'sweep-ex.R'
286 Running specific tests for package 'codetools'
287 Running 'tests.R'
288 Running specific tests for package 'foreign'
289 Running 'S3.R'
290 comparing 'S3.Rout' to 'S3.Rout.save' ... OK
291 Running 'arff.R'
292 comparing 'arff.Rout' to 'arff.Rout.save' ... OK
293 Running 'download.R'
294 Running 'minitab.R'
295 comparing 'minitab.Rout' to 'minitab.Rout.save' ... OK
296 Running 'octave.R'
297 comparing 'octave.Rout' to 'octave.Rout.save' ... OK
298 Running 'sas.R'
299 Running 'spss.R'
300 comparing 'spss.Rout' to 'spss.Rout.save' ... OK
301 Running 'stata.R'
302 comparing 'stata.Rout' to 'stata.Rout.save' ... OK
303 Running 'xport.R'
304 comparing 'xport.Rout' to 'xport.Rout.save' ... OK
305 Running specific tests for package 'KernSmooth'
306 Running 'bkfe.R'
307 Running specific tests for package 'rpart'
308 Running 'backticks.R'
309 Running 'rpartco.R'
310 Running 'surv_test.R'
311 Running 'testall.R'
312 comparing 'testall.Rout' to 'testall.Rout.save' ... OK
313 Running 'usersplits.R'
314 comparing 'usersplits.Rout' to 'usersplits.Rout.save' ...
315 174c174
316 < Timing ratio = 7.4
317 ---
318 > Timing ratio = 5.9
319 Running specific tests for package 'class'
320 Running specific tests for package 'spatial'

```



```
321 |  
322 |  
323 | 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