Installation and Operational Qualification Testing For R Statistical Software

R version 4.5.1 (2025-06-13 ucrt)

Architecture: x86 64

Platform: x86 64-w64-mingw32

January 30, 2026

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- **Version 1.0.00 - November 21, 2025**
- Initial version
- Author/Title: Donald Musgrove

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

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 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. Any installed packages that are not "Base" or "Recommended" packages are not part of this validation procedure and are ignored.

Installation Qualification (IQ)

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

```
C:/R/R-4.5.1
```

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:

```

R version 4.5.1 (2025-06-13 ucrt) -- "Great Square Root"
Copyright (C) 2025 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64

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'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

> q()
```

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

```
      sysname         release         version        nodename         machine
    "Windows"       "10 x64"  "build 26100"       "YYY"           "x86-64"
        login              user effective_user        udomain
    "XXX"                "XXX"       "XXX"          "ENT"
```

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

```
$OS.type
[1] "windows"

$file.sep
[1] "/"

$dynlib.ext
[1] ".dll"

$GUI
[1] "RTerm"

$endian
[1] "little"

$pkgType
[1] "win.binary"

$path.sep
[1] ";"

$r_arch
[1] "x64"
```

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

```
               _
platform       x86_64-w64-mingw32
arch           x86_64
os             mingw32
crt            ucrt
system         x86_64, mingw32
status
major          4
minor          5.1
year           2025
month          06
day            13
svn rev        88306
language       R
version.string R version 4.5.1 (2025-06-13 ucrt)
nickname       Great Square Root
```

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

```
$double.eps
[1] 2.220446e-16

$double.neg.eps
[1] 1.110223e-16

$double.xmin
[1] 2.225074e-308

$double.xmax
[1] 1.797693e+308

$double.base
[1] 2

$double.digits
[1] 53

$double.rounding
[1] 5

$double.guard
[1] 0

$double.ulp.digits
[1] -52

$double.neg.ulp.digits
[1] -53

$double.exponent
[1] 11

$double.min.exp
[1] -1022

$double.max.exp
[1] 1024

$integer.max
[1] 2147483647

$sizeof.long
[1] 4

$sizeof.longlong
[1] 8

$sizeof.longdouble
[1] 16

$sizeof.pointer
[1] 8

$sizeof.time_t
[1] 8

$longdouble.eps
[1] 1.084202e-19

$longdouble.neg.eps
[1] 5.421011e-20

$longdouble.digits
[1] 64

$longdouble.rounding
[1] 5

$longdouble.guard
[1] 0

$longdouble.ulp.digits
[1] -63

$longdouble.neg.ulp.digits
[1] -64

$longdouble.exponent
```

```
[1] 15

$longdouble.min.exp
[1] -16382

$longdouble.max.exp
[1] 16384
```

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

```
R version 4.5.1 (2025-06-13 ucrt)
Platform: x86_64-w64-mingw32/x64
Running under: Windows 11 x64 (build 26100)

Matrix products: default
  LAPACK version 3.12.1

locale:
[1] LC_COLLATE=English_United States.utf8
[2] LC_CTYPE=English_United States.utf8
[3] LC_MONETARY=English_United States.utf8
[4] LC_NUMERIC=C
[5] LC_TIME=English_United States.utf8

time zone: America/Chicago
tzcode source: internal

attached base packages:
[1] stats     graphics  grDevices utils     datasets  methods   base

loaded via a namespace (and not attached):
[1] compiler_4.5.1
```

The following is the output of `.libPaths()`, the current package library location; may be more than one folder:

```
[1] "C:/R/R-4.5.1/library"
```

The following is the output of `rmarkdown::pandoc_version()` listing the version of Pandoc used to render the report:

```
[1] '3.6.3'
```

The following is the output of `tinytex::tlmgr_version()` listing the version and installation path of TinyTex used to render the report to pdf:

```
tlmgr revision 76773 (2025-11-06 20:43:29 +0100)
tlmgr using installation: C:/Users/XXX/AppData/Roaming/TinyTeX TeX Live
(https://tug.org/texlive) version 2025
```

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:

```
R version 4.5.1 (2025-06-13 ucrt) -- "Great Square Root"
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Platform: x86_64-w64-mingw32/x64

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Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

>
> options(echo = FALSE)
running strict specific tests
  running code in 'eval-etc.R'
  comparing 'eval-etc.Rout' to 'eval-etc.Rout.save' ... OK
  running code in 'simple-true.R'
  comparing 'simple-true.Rout' to 'simple-true.Rout.save' ... OK
  running code in 'arith-true.R'
  comparing 'arith-true.Rout' to 'arith-true.Rout.save' ... OK
  running code in 'lm-tests.R'
  comparing 'lm-tests.Rout' to 'lm-tests.Rout.save' ... OK
  running code in 'ok-errors.R'
  comparing 'ok-errors.Rout' to 'ok-errors.Rout.save' ... OK
  running code in 'method-dispatch.R'
  comparing 'method-dispatch.Rout' to 'method-dispatch.Rout.save' ... OK
  running code in 'array-subset.R'
  running code in 'p-r-random-tests.R'
  comparing 'p-r-random-tests.Rout' to 'p-r-random-tests.Rout.save' ... OK
  running code in 'd-p-q-r-tst-2.R'
  running code in 'any-all.R'
  comparing 'any-all.Rout' to 'any-all.Rout.save' ... OK
  running code in 'structure.R'
  comparing 'structure.Rout' to 'structure.Rout.save' ... OK
  running code in 'd-p-q-r-tests.R'
  comparing 'd-p-q-r-tests.Rout' to 'd-p-q-r-tests.Rout.save' ... OK
running sloppy specific tests
  running code in 'complex.R'
  comparing 'complex.Rout' to 'complex.Rout.save' ... OK
  running code in 'print-tests.R'
  comparing 'print-tests.Rout' to 'print-tests.Rout.save' ... OK
  running code in 'lapack.R'
  comparing 'lapack.Rout' to 'lapack.Rout.save' ... OK
  running code in 'datasets.R'
  comparing 'datasets.Rout' to 'datasets.Rout.save' ... OK
  running code in 'datetime.R'
  comparing 'datetime.Rout' to 'datetime.Rout.save' ... OK
  running code in 'iec60559.R'
  comparing 'iec60559.Rout' to 'iec60559.Rout.save' ... OK
running regression tests
  running code in 'reg-tests-1a.R'
  running code in 'reg-tests-1b.R'
  running code in 'reg-tests-1c.R'
  running code in 'reg-tests-1d.R'
  running code in 'reg-tests-1e.R'
  running code in 'reg-tests-2.R'
  comparing 'reg-tests-2.Rout' to 'reg-tests-2.Rout.save' ... OK
  running code in 'reg-examples1.R'
  running code in 'reg-examples2.R'
  running code in 'reg-packages.R'
  running code in 'reg-S4-examples.R'
  running code in 'classes-methods.R'
  running code in 'datetime3.R'
  running code in 'p-qbeta-strict-tst.R'
  running code in 'reg-IO.R'
  comparing 'reg-IO.Rout' to 'reg-IO.Rout.save' ... OK
  running code in 'reg-IO2.R'
  comparing 'reg-IO2.Rout' to 'reg-IO2.Rout.save' ... OK
```

```
  running code in 'reg-plot.R'
  comparing 'reg-plot.pdf' to 'reg-plot.pdf.save' ...6892c6892
< /F1 1 Tf 1 Tr 7.48 0 0 7.48 382.53 302.24 Tm (l) Tj 0 Tr
---
> /F1 1 Tf 1 Tr 7.48 0 0 7.48 382.73 302.24 Tm (l) Tj 0 Tr
6895c6895
< /F1 1 Tf 1 Tr 7.48 0 0 7.48 387.27 302.24 Tm (l) Tj 0 Tr
---
> /F1 1 Tf 1 Tr 7.48 0 0 7.48 387.47 302.24 Tm (l) Tj 0 Tr
6898c6898
< /F1 1 Tf 1 Tr 7.48 0 0 7.48 392.01 302.24 Tm (l) Tj 0 Tr
---
> /F1 1 Tf 1 Tr 7.48 0 0 7.48 392.21 302.24 Tm (l) Tj 0 Tr
6901c6901
< /F1 1 Tf 1 Tr 7.48 0 0 7.48 396.75 302.24 Tm (l) Tj 0 Tr
---
> /F1 1 Tf 1 Tr 7.48 0 0 7.48 396.94 302.24 Tm (l) Tj 0 Tr
6904c6904
< /F1 1 Tf 1 Tr 7.48 0 0 7.48 401.49 302.24 Tm (l) Tj 0 Tr
---
> /F1 1 Tf 1 Tr 7.48 0 0 7.48 401.68 302.24 Tm (l) Tj 0 Tr
6907c6907
< /F1 1 Tf 1 Tr 7.48 0 0 7.48 406.22 302.24 Tm (l) Tj 0 Tr
---
> /F1 1 Tf 1 Tr 7.48 0 0 7.48 406.42 302.24 Tm (l) Tj 0 Tr
6910c6910
< /F1 1 Tf 1 Tr 7.48 0 0 7.48 410.96 302.24 Tm (l) Tj 0 Tr
---
> /F1 1 Tf 1 Tr 7.48 0 0 7.48 411.16 302.24 Tm (l) Tj 0 Tr
7102c7102
< 390.23 119.08 m 390.23 111.88 l  S
---
> 390.43 119.08 m 390.43 111.88 l  S
7110c7110
< /F2 1 Tf 12.00 0.00 0.00 12.00 379.65 93.16 Tm [(No) 15 (v)] TJ
---
> /F2 1 Tf 12.00 0.00 0.00 12.00 379.85 93.16 Tm [(No) 15 (v)] TJ
7130,7131c7130,7131
< 394.77 119.08 m 394.77 119.08 l  S
< 394.77 119.08 m 394.77 104.22 l  S
---
> 394.97 119.08 m 394.97 119.08 l  S
> 394.97 119.08 m 394.97 104.22 l  S
7133c7133
< /F2 1 Tf 12.00 0.00 0.00 12.00 359.18 78.76 Tm [(No) 15 (v 01 23:00)] TJ
---
> /F2 1 Tf 12.00 0.00 0.00 12.00 359.37 78.76 Tm [(No) 15 (v 01 23:00)] TJ
7135,7136c7135,7136
< 391.42 490.60 m 391.42 490.60 l  S
< 391.42 490.60 m 391.42 497.80 l  S
---
> 391.61 490.60 m 391.61 490.60 l  S
> 391.61 490.60 m 391.61 497.80 l  S
7138c7138
< /F2 1 Tf 12.00 0.00 0.00 12.00 355.82 507.88 Tm [(No) 15 (v 01 06:00)] TJ
---
> /F2 1 Tf 12.00 0.00 0.00 12.00 356.02 507.88 Tm [(No) 15 (v 01 06:00)] TJ
DIFFERED
  running code in 'reg-S4.R'
  comparing 'reg-S4.Rout' to 'reg-S4.Rout.save' ... OK
  running code in 'reg-BLAS.R'
  running code in 'reg-encodings.R'
  running code in 'reg-translation.R'
  running code in 'reg-tests-3.R'
  comparing 'reg-tests-3.Rout' to 'reg-tests-3.Rout.save' ... OK
  running code in 'reg-examples3.R'
  comparing 'reg-examples3.Rout' to 'reg-examples3.Rout.save' ... OK
running tests of plotting Latin-1
  expect failure or some differences if not in a Latin or UTF-8 locale
  running code in 'reg-plot-latin1.R'
  comparing 'reg-plot-latin1.pdf' to 'reg-plot-latin1.pdf.save' ...OK


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.

R Base Package Operational Qualification - Package Examples (OQ)

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

```
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'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

>
> options(echo = FALSE)
Testing examples for package 'base'
Testing examples for package 'tools'
  comparing 'tools-Ex.Rout' to 'tools-Ex.Rout.save' ... OK
Testing examples for package 'utils'
Testing examples for package 'grDevices'
  comparing 'grDevices-Ex.Rout' to 'grDevices-Ex.Rout.save' ... OK
Testing examples for package 'graphics'
  comparing 'graphics-Ex.Rout' to 'graphics-Ex.Rout.save' ... OK
Testing examples for package 'stats'
  comparing 'stats-Ex.Rout' to 'stats-Ex.Rout.save' ... OK
Testing examples for package 'datasets'
  comparing 'datasets-Ex.Rout' to 'datasets-Ex.Rout.save' ... OK
Testing examples for package 'methods'
Testing examples for package 'grid'
  comparing 'grid-Ex.Rout' to 'grid-Ex.Rout.save' ... OK
Testing examples for package 'splines'
  comparing 'splines-Ex.Rout' to 'splines-Ex.Rout.save' ... OK
Testing examples for package 'stats4'
  comparing 'stats4-Ex.Rout' to 'stats4-Ex.Rout.save' ... OK
Testing examples for package 'tcltk'
Testing examples for package 'compiler'
Testing examples for package 'parallel'


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.

R Base Package Operational Qualification - Package Vignettes (OQ)

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

```
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Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

>
> options(echo = FALSE)
Running vignettes for package 'utils'
  Running 'Sweave.Rnw'
Running vignettes for package 'stats'
  Running 'reshape.Rnw'
Running vignettes for package 'grid'
  Running 'displaylist.Rnw'
  Running 'frame.Rnw'
  Running 'grid.Rnw'
  Running 'grobs.Rnw'
  Running 'interactive.Rnw'
  Running 'locndimn.Rnw'
  Running 'moveline.Rnw'
  Running 'nonfinite.Rnw'
  Running 'plotexample.Rnw'
  Running 'rotated.Rnw'
  Running 'saveload.Rnw'
  Running 'sharing.Rnw'
  Running 'viewports.Rnw'
Running vignettes for package 'parallel'
  Running 'parallel.Rnw'


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.

R Recommended Package Operational Qualification - Package Examples (OQ)

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

```
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Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

>
> options(echo = FALSE)
Testing examples for package 'MASS'
  comparing 'MASS-Ex.Rout' to 'MASS-Ex.Rout.save' ... OK
Testing examples for package 'lattice'
Testing examples for package 'Matrix'
Testing examples for package 'nlme'
Testing examples for package 'survival'
  comparing 'survival-Ex.Rout' to 'survival-Ex.Rout.save' ... OK
Testing examples for package 'boot'
  comparing 'boot-Ex.Rout' to 'boot-Ex.Rout.save' ... OK
Testing examples for package 'cluster'
Testing examples for package 'codetools'
Testing examples for package 'foreign'
Testing examples for package 'KernSmooth'
Testing examples for package 'rpart'
  comparing 'rpart-Ex.Rout' to 'rpart-Ex.Rout.save' ... OK
Testing examples for package 'class'
Testing examples for package 'nnet'
Testing examples for package 'spatial'
  comparing 'spatial-Ex.Rout' to 'spatial-Ex.Rout.save' ... OK
Testing examples for package 'mgcv'


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.

R Recommended Package Operational Qualification - Package Vignettes (OQ)

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

```
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Platform: x86_64-w64-mingw32/x64

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Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

>
> options(echo = FALSE)
Running vignettes for package 'lattice'
  Running 'grid.Rnw'
Running vignettes for package 'Matrix'
  Running 'Comparisons.Rnw'
  Running 'Design-issues.Rnw'
  Running 'Intro2Matrix.Rnw'
  Running 'Introduction.Rnw'
  Running 'sparseModels.Rnw'
Running vignettes for package 'survival'
  Running 'adjcurve.Rnw'
  Running 'approximate.Rnw'
  Running 'compete.Rnw'
  Running 'concordance.Rnw'
  Running 'matrix.Rnw'
  Running 'methods.Rnw'
  Running 'multi.Rnw'
  Running 'other.Rnw'
  Running 'population.Rnw'
  Running 'redistribute.Rnw'
  Running 'splines.Rnw'
  Running 'survival.Rnw'
  Running 'tiedtimes.Rnw'
  Running 'timedep.Rnw'
  Running 'validate.Rnw'
Running vignettes for package 'rpart'
  Running 'longintro.Rnw'
  Running 'usercode.Rnw'


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.

R Base Package Operational Qualification - Package Tests (OQ)

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

```
R version 4.5.1 (2025-06-13 ucrt) -- "Great Square Root"
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Platform: x86_64-w64-mingw32/x64

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Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

>
> options(echo = FALSE)
Running specific tests for package 'tools'
  Running 'hashes.R'
  Running 'QC.R'
  Running 'Rd.R'
  Running 'Rd2HTML.R'
  Running 'Rd2pdf.R'
  Running 'S3.R'
  Running 'undoc.R'
Running specific tests for package 'utils'
  Running 'charclass.R'
  Running 'completion.R'
  Running 'relist.R'
  Running 'Sweave-tst.R'
  Running 'tar.R'
Running specific tests for package 'grDevices'
  Running 'convertColor-tests.R'
  Running 'encodings.R'
  comparing 'encodings.Rout' to 'encodings.Rout.save' ... OK
  Running 'encodings2.R'
  comparing 'encodings2.Rout' to 'encodings2.Rout.save' ... OK
  Running 'encodings3.R'
  comparing 'encodings3.Rout' to 'encodings3.Rout.save' ... OK
  Running 'grDev-tsts.R'
  Running 'palettes-tests.R'
  Running 'ps-tests.R'
  comparing 'ps-tests.Rout' to 'ps-tests.Rout.save' ... OK
  Running 'saved-recordPlot.R'
  Running 'urw-fonts.R'
  Running 'xyTable.R'
  comparing 'xyTable.Rout' to 'xyTable.Rout.save' ... OK
  Running 'zzcheck-encodings.R'
Running specific tests for package 'stats'
  Running 'arimaML.R'
  Running 'bandwidth.R'
  comparing 'bandwidth.Rout' to 'bandwidth.Rout.save' ... OK
  Running 'cmdscale.R'
  Running 'density_chk.R'
  Running 'dpq-xtra.R'
  Running 'drop1-polr.R'
  Running 'factanal-tst.R'
  Running 'glm-etc.R'
  Running 'glm.R'
  comparing 'glm.Rout' to 'glm.Rout.save' ... OK
  Running 'ig_glm.R'
  Running 'ks-test.R'
  comparing 'ks-test.Rout' to 'ks-test.Rout.save' ... OK
  Running 'loglin.R'
  comparing 'loglin.Rout' to 'loglin.Rout.save' ... OK
  Running 'nafns.R'
  Running 'nlm.R'
  Running 'nls.R'
  comparing 'nls.Rout' to 'nls.Rout.save' ... OK
  Running 'NLSstClosest.R'
  Running 'offsets.R'
  Running 'ppr.R'
```

```
  Running 'psmirnov.R'
  comparing 'psmirnov.Rout' to 'psmirnov.Rout.save' ... OK
  Running 'simulate.R'
  comparing 'simulate.Rout' to 'simulate.Rout.save' ... OK
  Running 'smooth.spline.R'
  Running 'table-margins.R'
  Running 'ts-tests.R'
Running specific tests for package 'methods'
  Running 'basicRefClass.R'
  Running 'duplicateClass.R'
  Running 'envRefClass.R'
  Running 'fieldAssignments.R'
  Running 'mixinInitialize.R'
  Running 'namesAndSlots.R'
  Running 'nextWithDots.R'
  Running 'refClassExample.R'
  Running 'S3.R'
  Running 'testConditionalIs.R'
  Running 'testGroupGeneric.R'
  Running 'testIs.R'
Running specific tests for package 'grid'
  Running 'bugs.R'
  Running 'clippaths.R'
  Running 'compositing.R'
  Running 'coords.R'
  Running 'glyphs.R'
  Running 'grep.R'
  comparing 'grep.Rout' to 'grep.Rout.save' ... OK
  Running 'groups.R'
  Running 'masks.R'
  Running 'nesting.R'
  Running 'paths.R'
  Running 'patterns.R'
  Running 'reg.R'
  Running 'testls.R'
  comparing 'testls.Rout' to 'testls.Rout.save' ... OK
  Running 'units.R'
Running specific tests for package 'splines'
  Running 'sparse-tst.R'
  Running 'spline-tst.R'
Running specific tests for package 'stats4'
  Running 'confint.R'
Running specific tests for package 'compiler'
  Running 'assign.R'
  Running 'basics.R'
  Running 'const.R'
  Running 'curexpr.R'
  Running 'envir.R'
  Running 'jit.R'
  Running 'loop.R'
  Running 'srcref.R'
  Running 'switch.R'
  Running 'vischk.R'
Running specific tests for package 'parallel'
  Running 'Master.R'
  Running 'RSeed.R'


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.

R Recommended Package Operational Qualification - Package Tests (OQ)

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

```

R version 4.5.1 (2025-06-13 ucrt) -- "Great Square Root"
Copyright (C) 2025 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64

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R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

>
> options(echo = FALSE)
Running specific tests for package 'MASS'
  Running 'confint.R'
  Running 'cov.mcd.R'
  Running 'fitdistr.R'
  comparing 'fitdistr.Rout' to 'fitdistr.Rout.save' ... OK
  Running 'glm.nb.R'
  Running 'glmmPQL.R'
  Running 'hubers.R'
  Running 'lme.R'
  Running 'loglm.R'
  Running 'polr.R'
  Running 'profile.R'
  Running 'regression.R'
  comparing 'regression.Rout' to 'regression.Rout.save' ... OK
  Running 'rlm.R'
  Running 'scripts.R'
Running specific tests for package 'lattice'
  Running 'auto-key.R'
  Running 'barchart-width.R'
  Running 'call.R'
  Running 'colorkey-title.R'
  Running 'dataframe-methods.R'
  Running 'dates.R'
  Running 'dotplotscoping.R'
  Running 'fontsize.R'
  Running 'levelplot.R'
  Running 'MASSch04.R'
  Running 'scales.R'
  Running 'shade-wireframe.R'
  Running 'summary.R'
  Running 'temp.R'
  Running 'test.R'
  Running 'wireframe.R'
Running specific tests for package 'Matrix'
  Running 'abIndex-tsts.R'
  Running 'base-matrix-fun.R'
  Running 'bind.R'
  comparing 'bind.Rout' to 'bind.Rout.save' ... OK
  Running 'Class+Meth.R'
  Running 'dg_Matrix.R'
  Running 'dpo-test.R'
  Running 'dtpMatrix.R'
  Running 'factorizing.R'
  Running 'group-methods.R'
  Running 'indexing.R'
  comparing 'indexing.Rout' to 'indexing.Rout.save' ...30,31d29
< Warning in Sys.setLanguage("en") :
<   no natural language support or missing translations
  Running 'matprod.R'
  Running 'matr-exp.R'
  Running 'other-pkgs.R'
  Running 'packed-unpacked.R'
  Running 'Simple.R'
  Running 'spModel.matrix.R'
  Running 'symmDN.R'
```

```
  Running 'validObj.R'
  Running 'write-read.R'
Running specific tests for package 'nlme'
  Running 'anova.gls.R'
  Running 'augPred_lab.R'
  Running 'augPredmissing.R'
  Running 'coef.R'
  comparing 'coef.Rout' to 'coef.Rout.save' ... OK
  Running 'contrMat.R'
  Running 'corMatrix.R'
  Running 'corStruct.R'
  Running 'data.frame.R'
  Running 'deparse.R'
  Running 'deviance.R'
  Running 'fitted.R'
  Running 'getData.R'
  Running 'getVarCov.R'
  Running 'gls.R'
  Running 'gnls-ch8.R'
  Running 'lme.R'
  comparing 'lme.Rout' to 'lme.Rout.save' ... OK
  Running 'lmList.R'
  Running 'missing.R'
  comparing 'missing.Rout' to 'missing.Rout.save' ... OK
  Running 'nlme.R'
  Running 'nlme2.R'
  Running 'predict.lme.R'
  Running 'scoping.R'
  Running 'sigma-fixed-etc.R'
  Running 'updateLme.R'
  Running 'varConstProp.R'
  Running 'varFixed.R'
  Running 'varIdent.R'
Running specific tests for package 'survival'
  Running 'aareg.R'
  comparing 'aareg.Rout' to 'aareg.Rout.save' ... OK
  Running 'anova.R'
  comparing 'anova.Rout' to 'anova.Rout.save' ... OK
  Running 'bladder.R'
  comparing 'bladder.Rout' to 'bladder.Rout.save' ... OK
  Running 'book1.R'
  comparing 'book1.Rout' to 'book1.Rout.save' ... OK
  Running 'book2.R'
  comparing 'book2.Rout' to 'book2.Rout.save' ... OK
  Running 'book3.R'
  comparing 'book3.Rout' to 'book3.Rout.save' ... OK
  Running 'book4.R'
  comparing 'book4.Rout' to 'book4.Rout.save' ... OK
  Running 'book5.R'
  comparing 'book5.Rout' to 'book5.Rout.save' ... OK
  Running 'book6.R'
  comparing 'book6.Rout' to 'book6.Rout.save' ... OK
  Running 'book7.R'
  comparing 'book7.Rout' to 'book7.Rout.save' ... OK
  Running 'brier.R'
  comparing 'brier.Rout' to 'brier.Rout.save' ... OK
  Running 'cancer.R'
  comparing 'cancer.Rout' to 'cancer.Rout.save' ... OK
  Running 'checkSurv2.R'
  comparing 'checkSurv2.Rout' to 'checkSurv2.Rout.save' ... OK
  Running 'clogit.R'
  comparing 'clogit.Rout' to 'clogit.Rout.save' ... OK
  Running 'concordance.R'
  comparing 'concordance.Rout' to 'concordance.Rout.save' ... OK
  Running 'concordance2.R'
  comparing 'concordance2.Rout' to 'concordance2.Rout.save' ... OK
  Running 'concordance3.R'
  comparing 'concordance3.Rout' to 'concordance3.Rout.save' ... OK
  Running 'counting.R'
  comparing 'counting.Rout' to 'counting.Rout.save' ... OK
  Running 'coxsurv.R'
  comparing 'coxsurv.Rout' to 'coxsurv.Rout.save' ... OK
  Running 'coxsurv2.R'
  comparing 'coxsurv2.Rout' to 'coxsurv2.Rout.save' ... OK
  Running 'coxsurv3.R'
  comparing 'coxsurv3.Rout' to 'coxsurv3.Rout.save' ... OK
  Running 'coxsurv4.R'
  comparing 'coxsurv4.Rout' to 'coxsurv4.Rout.save' ... OK
  Running 'coxsurv5.R'
  comparing 'coxsurv5.Rout' to 'coxsurv5.Rout.save' ... OK
  Running 'coxsurv6.R'
```

```
  comparing 'coxsurv6.Rout' to 'coxsurv6.Rout.save' ... OK
  Running 'detail.R'
  comparing 'detail.Rout' to 'detail.Rout.save' ... OK
  Running 'difftest.R'
  comparing 'difftest.Rout' to 'difftest.Rout.save' ... OK
  Running 'doaml.R'
  comparing 'doaml.Rout' to 'doaml.Rout.save' ... OK
  Running 'doublecolon.R'
  comparing 'doublecolon.Rout' to 'doublecolon.Rout.save' ... OK
  Running 'doweight.R'
  comparing 'doweight.Rout' to 'doweight.Rout.save' ... OK
  Running 'dropspecial.R'
  comparing 'dropspecial.Rout' to 'dropspecial.Rout.save' ... OK
  Running 'ekm.R'
  comparing 'ekm.Rout' to 'ekm.Rout.save' ... OK
  Running 'expected.R'
  comparing 'expected.Rout' to 'expected.Rout.save' ... OK
  Running 'expected2.R'
  comparing 'expected2.Rout' to 'expected2.Rout.save' ... OK
  Running 'factor.R'
  comparing 'factor.Rout' to 'factor.Rout.save' ... OK
  Running 'factor2.R'
  comparing 'factor2.Rout' to 'factor2.Rout.save' ... OK
  Running 'finegray.R'
  comparing 'finegray.Rout' to 'finegray.Rout.save' ... OK
  Running 'fr_cancer.R'
  comparing 'fr_cancer.Rout' to 'fr_cancer.Rout.save' ... OK
  Running 'fr_kidney.R'
  comparing 'fr_kidney.Rout' to 'fr_kidney.Rout.save' ... OK
  Running 'fr_lung.R'
  comparing 'fr_lung.Rout' to 'fr_lung.Rout.save' ... OK
  Running 'fr_ovarian.R'
  comparing 'fr_ovarian.Rout' to 'fr_ovarian.Rout.save' ... OK
  Running 'fr_rat1.R'
  comparing 'fr_rat1.Rout' to 'fr_rat1.Rout.save' ... OK
  Running 'fr_resid.R'
  comparing 'fr_resid.Rout' to 'fr_resid.Rout.save' ... OK
  Running 'fr_simple.R'
  comparing 'fr_simple.Rout' to 'fr_simple.Rout.save' ... OK
  Running 'frailty.R'
  comparing 'frailty.Rout' to 'frailty.Rout.save' ... OK
  Running 'frank.R'
  comparing 'frank.Rout' to 'frank.Rout.save' ... OK
  Running 'infcox.R'
  comparing 'infcox.Rout' to 'infcox.Rout.save' ... OK
  Running 'jasa.R'
  comparing 'jasa.Rout' to 'jasa.Rout.save' ... OK
  Running 'model.matrix.R'
  comparing 'model.matrix.Rout' to 'model.matrix.Rout.save' ... OK
  Running 'mstate.R'
  comparing 'mstate.Rout' to 'mstate.Rout.save' ... OK
  Running 'mstate2.R'
  comparing 'mstate2.Rout' to 'mstate2.Rout.save' ... OK
  Running 'mstrata.R'
  comparing 'mstrata.Rout' to 'mstrata.Rout.save' ... OK
  Running 'multi2.R'
  comparing 'multi2.Rout' to 'multi2.Rout.save' ... OK
  Running 'multi3.R'
  comparing 'multi3.Rout' to 'multi3.Rout.save' ... OK
  Running 'multistate.R'
  comparing 'multistate.Rout' to 'multistate.Rout.save' ... OK
  Running 'neardate.R'
  comparing 'neardate.Rout' to 'neardate.Rout.save' ... OK
  Running 'nested.R'
  comparing 'nested.Rout' to 'nested.Rout.save' ... OK
  Running 'nsk.R'
  comparing 'nsk.Rout' to 'nsk.Rout.save' ... OK
  Running 'ovarian.R'
  comparing 'ovarian.Rout' to 'ovarian.Rout.save' ... OK
  Running 'overlap.R'
  comparing 'overlap.Rout' to 'overlap.Rout.save' ... OK
  Running 'prednew.R'
  comparing 'prednew.Rout' to 'prednew.Rout.save' ... OK
  Running 'predsurv.R'
  comparing 'predsurv.Rout' to 'predsurv.Rout.save' ... OK
  Running 'pseudo.R'
  comparing 'pseudo.Rout' to 'pseudo.Rout.save' ... OK
  Running 'pspline.R'
  comparing 'pspline.Rout' to 'pspline.Rout.save' ... OK
  Running 'pyear.R'
  comparing 'pyear.Rout' to 'pyear.Rout.save' ... OK
```

```
  Running 'quantile.R'
  comparing 'quantile.Rout' to 'quantile.Rout.save' ... OK
  Running 'r_lung.R'
  comparing 'r_lung.Rout' to 'r_lung.Rout.save' ... OK
  Running 'r_resid.R'
  comparing 'r_resid.Rout' to 'r_resid.Rout.save' ... OK
  Running 'r_sas.R'
  comparing 'r_sas.Rout' to 'r_sas.Rout.save' ... OK
  Running 'r_scale.R'
  comparing 'r_scale.Rout' to 'r_scale.Rout.save' ... OK
  Running 'r_stanford.R'
  comparing 'r_stanford.Rout' to 'r_stanford.Rout.save' ... OK
  Running 'r_strata.R'
  comparing 'r_strata.Rout' to 'r_strata.Rout.save' ... OK
  Running 'r_tdist.R'
  comparing 'r_tdist.Rout' to 'r_tdist.Rout.save' ... OK
  Running 'r_user.R'
  comparing 'r_user.Rout' to 'r_user.Rout.save' ... OK
  Running 'ratetable.R'
  comparing 'ratetable.Rout' to 'ratetable.Rout.save' ... OK
  Running 'residsf.R'
  comparing 'residsf.Rout' to 'residsf.Rout.save' ... OK
  Running 'royston.R'
  comparing 'royston.Rout' to 'royston.Rout.save' ... OK
  Running 'rttright.R'
  comparing 'rttright.Rout' to 'rttright.Rout.save' ... OK
  Running 'singtest.R'
  comparing 'singtest.Rout' to 'singtest.Rout.save' ... OK
  Running 'strata2.R'
  comparing 'strata2.Rout' to 'strata2.Rout.save' ... OK
  Running 'stratatest.R'
  comparing 'stratatest.Rout' to 'stratatest.Rout.save' ... OK
  Running 'summary_survfit.R'
  comparing 'summary_survfit.Rout' to 'summary_survfit.Rout.save' ... OK
  Running 'surv.R'
  comparing 'surv.Rout' to 'surv.Rout.save' ... OK
  Running 'survcheck.R'
  comparing 'survcheck.Rout' to 'survcheck.Rout.save' ... OK
  Running 'survfit1.R'
  comparing 'survfit1.Rout' to 'survfit1.Rout.save' ... OK
  Running 'survfit2.R'
  comparing 'survfit2.Rout' to 'survfit2.Rout.save' ... OK
  Running 'survreg1.R'
  comparing 'survreg1.Rout' to 'survreg1.Rout.save' ... OK
  Running 'survreg2.R'
  comparing 'survreg2.Rout' to 'survreg2.Rout.save' ... OK
  Running 'survSplit.R'
  comparing 'survSplit.Rout' to 'survSplit.Rout.save' ... OK
  Running 'survtest.R'
  comparing 'survtest.Rout' to 'survtest.Rout.save' ... OK
  Running 'testci.R'
  comparing 'testci.Rout' to 'testci.Rout.save' ... OK
  Running 'testci2.R'
  comparing 'testci2.Rout' to 'testci2.Rout.save' ... OK
  Running 'testnull.R'
  comparing 'testnull.Rout' to 'testnull.Rout.save' ... OK
  Running 'testreg.R'
  comparing 'testreg.Rout' to 'testreg.Rout.save' ... OK
  Running 'tiedtime.R'
  comparing 'tiedtime.Rout' to 'tiedtime.Rout.save' ... OK
  Running 'tmerge.R'
  comparing 'tmerge.Rout' to 'tmerge.Rout.save' ... OK
  Running 'tmerge2.R'
  comparing 'tmerge2.Rout' to 'tmerge2.Rout.save' ... OK
  Running 'tmerge3.R'
  comparing 'tmerge3.Rout' to 'tmerge3.Rout.save' ... OK
  Running 'tt.R'
  comparing 'tt.Rout' to 'tt.Rout.save' ... OK
  Running 'tt2.R'
  comparing 'tt2.Rout' to 'tt2.Rout.save' ... OK
  Running 'turnbull.R'
  comparing 'turnbull.Rout' to 'turnbull.Rout.save' ... OK
  Running 'update.R'
  comparing 'update.Rout' to 'update.Rout.save' ... OK
  Running 'yates0.R'
  comparing 'yates0.Rout' to 'yates0.Rout.save' ... OK
  Running 'yates1.R'
  comparing 'yates1.Rout' to 'yates1.Rout.save' ... OK
  Running 'yates2.R'
  Running 'zph.R'
  comparing 'zph.Rout' to 'zph.Rout.save' ... OK
```

```
Running specific tests for package 'boot'
  Running 'parallel-censboot.R'
Running specific tests for package 'cluster'
  Running 'agnes-ex.R'
  comparing 'agnes-ex.Rout' to 'agnes-ex.Rout.save' ... OK
  Running 'clara-ex.R'
  comparing 'clara-ex.Rout' to 'clara-ex.Rout.save' ... OK
  Running 'clara-gower.R'
  Running 'clara-NAs.R'
  comparing 'clara-NAs.Rout' to 'clara-NAs.Rout.save' ... OK
  Running 'clara.R'
  comparing 'clara.Rout' to 'clara.Rout.save' ... OK
  Running 'clusplot-out.R'
  comparing 'clusplot-out.Rout' to 'clusplot-out.Rout.save' ... OK
  Running 'daisy-ex.R'
  comparing 'daisy-ex.Rout' to 'daisy-ex.Rout.save' ... OK
  Running 'diana-boots.R'
  Running 'diana-ex.R'
  comparing 'diana-ex.Rout' to 'diana-ex.Rout.save' ... OK
  Running 'ellipsoid-ex.R'
  comparing 'ellipsoid-ex.Rout' to 'ellipsoid-ex.Rout.save' ... OK
  Running 'fanny-ex.R'
  comparing 'fanny-ex.Rout' to 'fanny-ex.Rout.save' ... OK
  Running 'mona.R'
  comparing 'mona.Rout' to 'mona.Rout.save' ... OK
  Running 'pam.R'
  comparing 'pam.Rout' to 'pam.Rout.save' ... OK
  Running 'silhouette-default.R'
  comparing 'silhouette-default.Rout' to 'silhouette-default.Rout.save' ... OK
  Running 'sweep-ex.R'
Running specific tests for package 'codetools'
  Running 'tests.R'
Running specific tests for package 'foreign'
  Running 'arff.R'
  comparing 'arff.Rout' to 'arff.Rout.save' ... OK
  Running 'download.R'
  Running 'minitab.R'
  comparing 'minitab.Rout' to 'minitab.Rout.save' ... OK
  Running 'mval_bug.R'
  comparing 'mval_bug.Rout' to 'mval_bug.Rout.save' ... OK
  Running 'octave.R'
  comparing 'octave.Rout' to 'octave.Rout.save' ... OK
  Running 'S3.R'
  comparing 'S3.Rout' to 'S3.Rout.save' ... OK
  Running 'sas.R'
  Running 'spss.R'
  comparing 'spss.Rout' to 'spss.Rout.save' ...353c353
<  $ factor_s_duplicated      : Factor w/ 5 levels "A","Ãd","A_duplicated_b",..: 1 5 2 NA NA
---
>  $ factor_s_duplicated      : Factor w/ 5 levels "A","A_duplicated_b",..: 1 5 4 NA NA
458c458
<  $ string_500               : Factor w/ 4 levels "
    "| __truncated__,..: 2 1 4 1 3
---
>  $ string_500               : Factor w/ 4 levels "
    "| __truncated__,..: 2 1 3 1 4
462c462
<  $ factor_s_duplicated      : Factor w/ 5 levels "A","Ãd","A_duplicated_b",..: 1 5 2 NA NA
---
>  $ factor_s_duplicated      : Factor w/ 5 levels "A","A_duplicated_b",..: 1 5 4 NA NA
  Running 'stata.R'
  comparing 'stata.Rout' to 'stata.Rout.save' ... OK
  Running 'testEmpty.R'
  comparing 'testEmpty.Rout' to 'testEmpty.Rout.save' ... OK
  Running 'writeForeignSPSS.R'
  comparing 'writeForeignSPSS.Rout' to 'writeForeignSPSS.Rout.save' ... OK
  Running 'xport.R'
  comparing 'xport.Rout' to 'xport.Rout.save' ... OK
Running specific tests for package 'KernSmooth'
  Running 'bkfe.R'
  Running 'locpoly.R'
Running specific tests for package 'rpart'
  Running 'backticks.R'
  comparing 'backticks.Rout' to 'backticks.Rout.save' ... OK
  Running 'cost.R'
  comparing 'cost.Rout' to 'cost.Rout.save' ... OK
  Running 'cptest.R'
  comparing 'cptest.Rout' to 'cptest.Rout.save' ... OK
  Running 'minus_in_formula.R'
```

```
  comparing 'minus_in_formula.Rout' to 'minus_in_formula.Rout.save' ... OK
  Running 'priors.R'
  comparing 'priors.Rout' to 'priors.Rout.save' ... OK
  Running 'rescale.R'
  comparing 'rescale.Rout' to 'rescale.Rout.save' ... OK
  Running 'testall.R'
  comparing 'testall.Rout' to 'testall.Rout.save' ... OK
  Running 'treble.R'
  comparing 'treble.Rout' to 'treble.Rout.save' ... OK
  Running 'treble2.R'
  comparing 'treble2.Rout' to 'treble2.Rout.save' ... OK
  Running 'treble3.R'
  comparing 'treble3.Rout' to 'treble3.Rout.save' ... OK
  Running 'treble4.R'
  comparing 'treble4.Rout' to 'treble4.Rout.save' ... OK
  Running 'usersplits.R'
  comparing 'usersplits.Rout' to 'usersplits.Rout.save' ... OK
  Running 'xpred1.R'
  comparing 'xpred1.Rout' to 'xpred1.Rout.save' ... OK
  Running 'xpred2.R'
  comparing 'xpred2.Rout' to 'xpred2.Rout.save' ... OK
Running specific tests for package 'spatial'


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.

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. Tests using `Sweave` may fail during testing. `Sweave` is typically not needed for use as part of the installed software. 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, otherwise the result will be FAIL.

Table 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