

# Package ‘affyQCReport’

April 15, 2020

**Version** 1.64.0

**Title** QC Report Generation for affyBatch objects

**Author** Craig Parman <craig.parman@bifx.org>, Conrad Halling <conrad.halling@bifx.org>, Robert Gentleman

**Maintainer** Craig Parman <craig.parman@bifx.org>

**Depends** Biobase (>= 1.13.16), affy, lattice

**Imports** affy, affyPLM, Biobase, genefilter, graphics, grDevices, lattice, RColorBrewer, simpleaffy, stats, utils, xtable

**Suggests** tkWidgets (>= 1.5.23), affydata (>= 1.4.1)

**Description** This package creates a QC report for an AffyBatch object. The report is intended to allow the user to quickly assess the quality of a set of arrays in an AffyBatch object.

**License** LGPL (>= 2)

**biocViews** Microarray,OneChannel,QualityControl

**Collate** arrayReport.R correlation.R border1.R border2.R titlepage.R signalDist.R affyQAReport.R

**git\_url** <https://git.bioconductor.org/packages/affyQCReport>

**git\_branch** RELEASE\_3\_10

**git\_last\_commit** c97d070

**git\_last\_commit\_date** 2019-10-29

**Date/Publication** 2020-04-14

## R topics documented:

affyQAReport . . . . .	2
borderQC1 . . . . .	3
borderQC2 . . . . .	4
correlationPlot . . . . .	4
QCReport . . . . .	5
signalDist . . . . .	6
titlePage . . . . .	7

<b>Index</b>	<b>8</b>
--------------	----------

---

 affyQAReport

*Generate a QA Report for Affymetrix arrays*


---

### Description

These functions provide a method for creating, viewing and removing QA reports on an experiment run on Affymetrix CEL files.

### Usage

```
affyQAReport(affyB, output = "pdf", outdir = file.path(getwd(), "affyQA"),
             overwrite = FALSE, repName)
rmQAReport(x)
openQAReport(x)
```

### Arguments

affyB	An instance of the AffyBatch class.
output	Type of output wanted, currently only pdf is supported.
outdir	The directory (or folder) where output will be directed.
overwrite	Whether an existing report, with the same name, should be overwritten.
repName	A character string indicating the name of the report.
x	A character string containing the location of the directory holding the report.

### Details

A wide variety of tools from different packages are used, in conjunction with Sweave tools to produce an integrated document with various statistics that should help determine whether there are data quality problems with the data.

This package only works for Affymetrix data. It requires a working LaTeX implementation and so is not likely to work on Windows platforms, and in some cases on OS X unless the user has installed these tools.

Sample names that have an underscore in them have it replaced by a dot. Underscore causes a number of problems with Latex, if it is not escaped.

### Value

A list with the following components is returned.

qcStats	The QC statistics computed by the <b>simpleaffy</b> package.
affyPLM	The QC statistics computed by the <b>affyPLM</b> package.
MADS	The computed MAD statistic on the ‘M’ values from an M-A decomposition.
loc	The location (directory/folder) containing the report.
name	The name of the report.

### Author(s)

R. Gentleman

**Examples**

```
## Not run:  
library("affydata")  
data("Dilution")  
affyQAReport(Dilution)  
  
## End(Not run)
```

---

borderQC1

*Distribution of intensities of the border elements*

---

**Description**

Creates the forth page of the QC report created by [QCReport](#) for an object of class [AffyBatch](#). The page contains a boxplots showing the intensities from the border element of arrays in an [AffyBatch](#) object.

**Usage**

```
borderQC1(object)
```

**Arguments**

object            An object of class [AffyBatch](#).

**Details**

This creates the forth page of a [QCReport](#) report. Boxplots of the positive and negative border elements of arrays in a [AffyBatch](#) object are shown.

More details are available in the vignette.

**Value**

TRUE

**Examples**

```
library(affydata)  
data(Dilution)  
  
borderQC1(Dilution)
```

---

borderQC2	<i>Center of intensity QC plots</i>
-----------	-------------------------------------

---

**Description**

Creates the fifth page of the QC report created by [QCReport](#) for an object of class [AffyBatch](#). The page contains plots showing the center of intensity of the border element of arrays in an [AffyBatch](#) object.

**Usage**

```
borderQC2(object)
```

**Arguments**

object            An object of class [AffyBatch](#).

**Details**

This creates the fifth page of a [QCReport](#) report. Plots of the center of intensity of the positive and negative border elements of arrays in a [AffyBatch](#) object are shown. This plot is useful for detecting spatial biases in intensities on an array.

More details are available in the vignette.

**Value**

TRUE

**Examples**

```
library(affydata)
data(Dilution)

borderQC2(Dilution)
```

---

correlationPlot	<i>Array-array intensity correlation plot</i>
-----------------	---

---

**Description**

Creates the sixth page of the QC report created by [QCReport](#) for an object of class [AffyBatch](#). The page displays array-array intensity correlation coefficients.

**Usage**

```
correlationPlot(object)
```

**Arguments**

object            An object of class [AffyBatch](#).

**Details**

This creates the sixth page of a [QCReport](#) report. The page displays array-array intensity correlation coefficients for all pairs of arrays in an [AffyBatch](#) object. Arrays are ordered according to phenotypic data if available. This plot is useful for detecting outlier arrays.

More details are available in the vignette.

**Value**

TRUE

**Examples**

```
library(affydata)
data(Dilution)
correlationPlot(Dilution)
```

---

QCReport

*QC Report for AffyBatch objects*

---

**Description**

Creates a QC report for an object of class [AffyBatch](#).

**Usage**

```
QCReport(object, file="AffyQCReport.pdf", ...)
```

**Arguments**

object            An object of class [AffyBatch](#).  
file              A valid filename for the output PDF file.  
...               further arguments for [plot](#) function.

**Details**

This creates a 6 page QC report in PDF file format.

- The default output file is `AffyQCReport.pdf` created in the working directory.
- The [AffyBatch](#) object is not required to contain phenotypic data but that data is used if available.
- The CDF environment must be available for the method to work fully.

More details are available in the vignette.

**Value**

TRUE

**Examples**

```
## Not run:  
  
library(affydata)  
data(Dilution)  
  
QCReport(Dilution, file="ExampleQC.pdf") ##A QC report for the Example data will be generated  
  
## End(Not run)
```

---

`signalDist`*Intensity distribution plots for a AffyBatch object*

---

**Description**

Creates the second page of the QC report created by [QCReport](#) for an object of class [AffyBatch](#). The page contains a boxplot and intensity distribution plots.

**Usage**

```
signalDist(object)
```

**Arguments**

`object` An object of class [AffyBatch](#).

**Details**

This creates the second page of a [QCReport](#) report. The first graph is created with the [AffyBatch](#) method `boxplot`. The second graph is created with the [AffyBatch](#) method `hist`.

More details are available in the vignette.

**Value**

TRUE

**Examples**

```
library(affydata)  
data(Dilution)  
  
signalDist(Dilution)
```

---

`titlePage`*QC report title page with array names*

---

**Description**

Creates the titlepage of the QC report created by `QCReport` for an object of class `AffyBatch`.

**Usage**

```
titlePage(object)
```

**Arguments**

`object` An object of class `AffyBatch`.

**Details**

This creates the title page of a `QCReport` report.  
More details are available in the vignette.

**Value**

TRUE

**Examples**

```
library(affydata)
data(Dilution)

titlePage(Dilution)
```

# Index

## \*Topic **hplot**

- borderQC1, 3
- borderQC2, 4
- correlationPlot, 4
- QCReport, 5
- signalDist, 6
- titlePage, 7

## \*Topic **manip**

- affyQAReport, 2

AffyBatch, 3–7

affyQAReport, 2

borderQC1, 3

borderQC2, 4

correlationPlot, 4

openQAReport (affyQAReport), 2

plot, 5

QCReport, 3–5, 5, 6, 7

QCReport-correlationPlot  
(correlationPlot), 4

QCReport-signalDist (signalDist), 6

QCReport-titlePage (titlePage), 7

rmQAReport (affyQAReport), 2

signalDist, 6

titlePage, 7