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# KaryoStudio System Information and Benchmark Performance

System information and benchmark performance data for determining hardware, software, and memory requirements for analysis of Infinium® DNA BeadChips within Illumina's analysis software for cytogenetics.

## Introduction

This document includes the following information:

- **Hardware, operating system, and memory requirements for analysis of Illumina DNA BeadChips using the KaryoStudio software application**
- **Report file size estimates**
- **Benchmark performance data for common operations performed on multiple computer setups**

## Hardware And Operating System Requirements

Illumina recommends the following hardware and operating systems for your KaryoStudio cytogenetics analysis projects (Tables 1 and 2).

**Table 1: Hardware and Operating System Requirements**

| Minimum System | Recommended System |
|---|---|
| Intel Pentium IV or newer processor (1.5 GHz) | Intel Pentium IV or newer processor (2.0 GHz) |
| 32-bit system* | 64-bit system |
| 4 GB RAM* | 8 GB RAM* |
| 100+ GB hard drive | 100+ GB hard drive |
| 1,024 x 768 video display | 1,024 x 768 video display |
| Window XP SP2, Windows Vista, or Windows 7 operating system | Window XP SP2, Windows Vista, or Windows 7 operating system |
| Microsoft.Net framework 3.5 or above | Microsoft.Net framework 3.5 or above |
| 1 GB or higher network connection | 1 GB or higher network connection |

*A 64-bit system and 8 GB of RAM are required for high-density BeadChips (approximately 1M markers or more).

**Table 2: System Requirements for Infinium HD BeadChips***

| Beadchip | Processor | System | RAM | Hard Drive |
|---|---|---|---|---|
| Low-Density (≤ 500k markers) | Intel Pentium 4 or newer | 32-bit | 4 GB | 100 GB+ |
| Medium-Density (500k–1M markers) | | 64-bit | 8 GB | |
| High-Density (≥ 1M markers) | | 64-bit | 8 GB | |

*Minimum system requirements provided. A 64-bit, 8 GB RAM system configuration is preferable for all densities.

## Report File Sizes And Storage

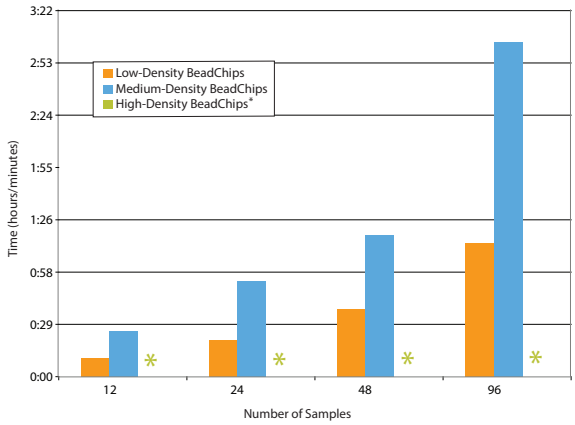
Report file sizes vary based on the Infinium BeadChip used and the number of samples in a project. For example, a *.pdf report containing five aberrations identified from data generated by a low-density BeadChip will be approximately 200–400 KB in size.

## Benchmark Performance

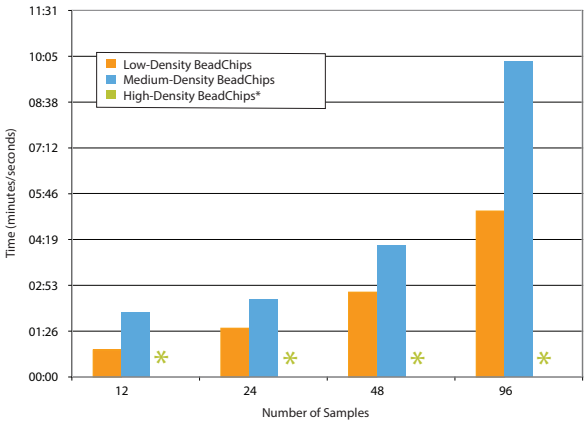
Graphs A and C in Figure 1 provides benchmark performance data for the creation of projects in KaryoStudio, including data importation and scanning by cnvPartition. Graphs B and D display the time required to generate reports. Note that it takes about the same amount of time to create projects and reports for low-density and medium-density BeadChips.

## Figure 1: Benchmark Performance Data For Infinium HD BeadChips

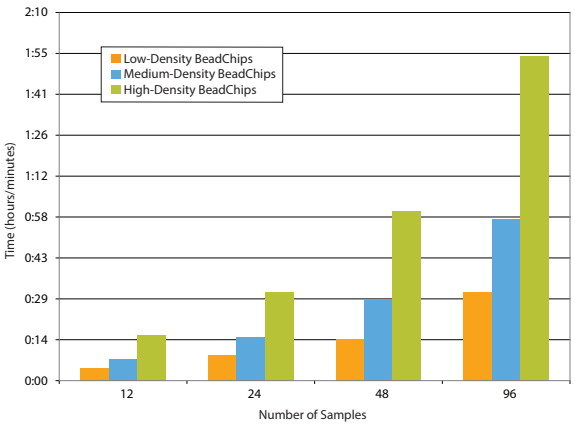
A: Project Creation
32-bit Windows XP, 4 GB RAM*



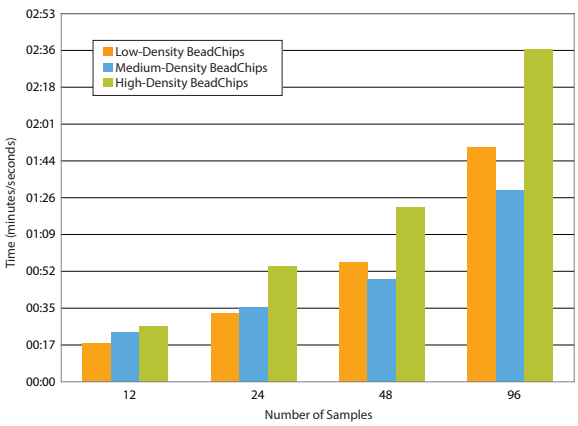

B: Cytogenetics Report Generation
32-bit Windows XP, 4 GB RAM*




C: Project Creation
64-bit Windows XP, 8 GB RAM




D: Cytogenetics Report Generation
64-bit Windows XP, 8 GB RAM




Project creation and report generation were performed using cnvPartition v1.0.2. Newer versions of cnvPartition provide additional functionality and may require additional processing time. Note that KaryoStudio only uses file-based storage.

*This congfiguration has insufficient memory for processing high-density BeadChip data.

**Illumina, Inc.** • 1.800.809.4566 toll-free (U.S.) • +1.858.202.4566 tel • techsupport@illumina.com • www.illumina.com

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