

DECEMBER 2019

## Canon PIXMA G4511 versus Device A and Device B Reliability Test

### Test Objective

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Keypoint Intelligence - Buyers Lab was commissioned by Canon Europe Ltd. to conduct a 30,000-impression reliability test on the Canon PIXMA G4511, Device A, and Device B. Testing took place over a period of 20 days and involved printing the ISO 24734 test suite and a batch of proprietary Buyers Lab image quality files. Image quality was checked every 5,000 impressions to assess the consistency of output. The printers were operated in default mode, with any misfeeds, multi-sheet feeding, misalignment skewing, and printer malfunctions, or failures recorded. Testing was conducted at Buyers Lab's European test facility. The Canon PIXMA G4511 is also sold as the Canon PIXMA G4411 and Canon PIXMA G4410, so this report is also applicable to those devices.

### Executive Summary

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In the reliability test, the Canon PIXMA G4511 performed incredibly well, completing 30,000 impressions with just one printhead clean. In stark contrast, Device A printed only 11,356 impressions and required seven printhead cleanings and Device B printed just 20,834 impressions and four printhead cleanings to get to that point. This makes the Canon PIXMA G4511 the most reliable device tested, especially given its service rate of one intervention every 30,000 impressions, compared to Device A, at one every 1,622 impressions.

Buyers Lab technicians also checked the halftone, text, and fine line consistency to see if the quality remained consistent over the course of the test. In all cases, image quality output didn't degrade. The Canon PIXMA G4511 optical density readings were slightly more inconsistent than those of Device A, but the real-world difference was negligible. However, the Canon PIXMA G4511's average colour gamut reading was much higher than those of Devices A and B (50.5% higher than that of Device A).

Based on our test, the Canon PIXMA G4511 is the most reliable of the three devices.

## Reliability

Printer reliability is a key concern because a reliable device means both less downtime and improved productivity. In this test, each device was tasked with printing 30,000 impressions over 20 days, with the workload split equally between simplex and duplex jobs.

- Only the Canon PIXMA G4511 reached the end of the test (30,000 impressions)—both of its rivals had to be retired. The Canon PIXMA G4511 only needed one printhead cleaning during the test, which gives it a rate of one intervention every 30,000 impressions.
- Device A prompted the Buyers Lab technician to call for service at 11,356 impressions because it wouldn't print. Up until that point, Device A required six printhead cleanings before it displayed an error code stating that its ink pad was at the end of its service life, which gave it a rate of one intervention every 1,622 impressions.
- Device B required four printhead cleans up until 20,834 impressions, at which point it required a clean to rectify missing ink on output. However, even a further 13 head cleans didn't rectify the issue, which meant the device was unsuitable for use.

## Summary

	Canon PIXMA G4511	Device A	Device B
Impressions	30,000	11,356	20,834
Operator Service Interventions* (error code clearance; paper sensor cleaning; printhead clean)	1	7	17
Intervention Rate (per impressions)	1/30,000	1/1,622	1/1,225
Total Misfeeds	0	0	0
Misfeed Rate	Not applicable	Not applicable	Not applicable

\* Operator interventions do not include ink tank refills..

## Image Quality

To assess image quality consistency, the Buyers Lab technician printed Buyers Lab's proprietary test targets on each device, with samples taken at 5,000-impression intervals. Image quality was assessed in several areas, such as text, fine lines, solid density and colour gamut volume. Photographic and text samples were compared and graded on a three-point scale where 3 is excellent, 2 is good, and 1 is poor. From a user perspective, output with a 3 would be nearly flawless, meeting the higher standard required for distribution to external clients; a 2 would be average, and while showing some slight defects or flaws would be suitable for internal use; and a 1 rating would have major defects and could be illegible in places, rendering it unusable.

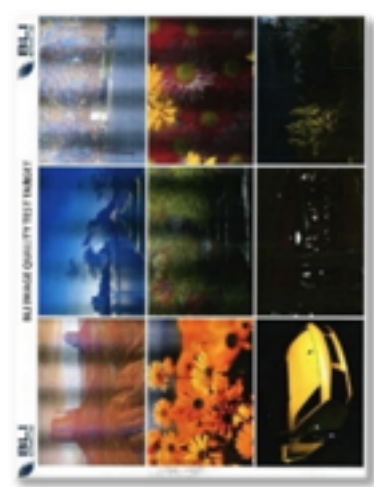
## Examples of Image Quality Ratings



3 Rating: Smooth tones, vibrant colours, with fine detailing and good contrast

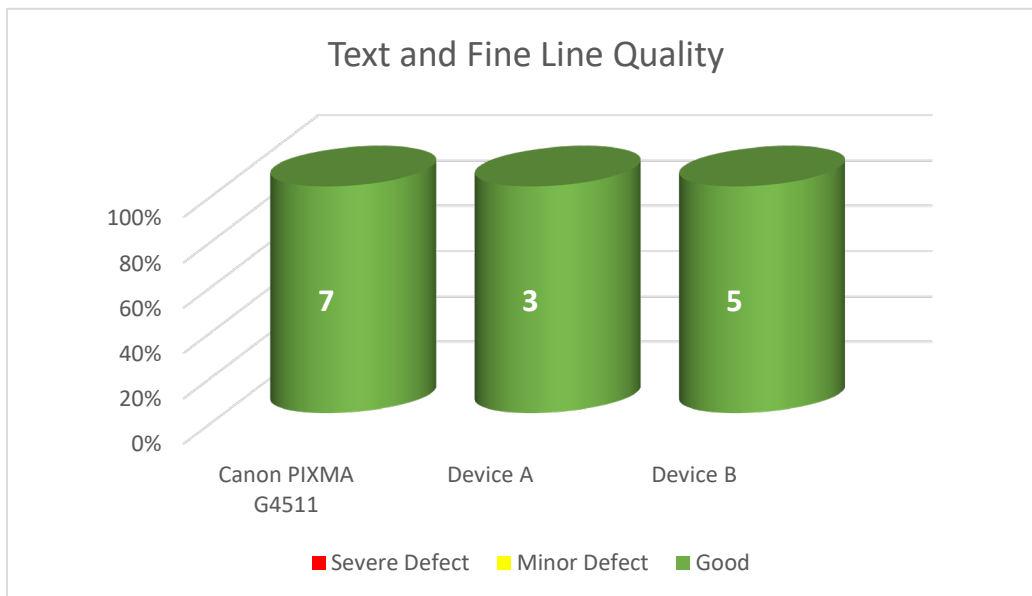


2 Rating: Some localized defects, but overall quality is okay

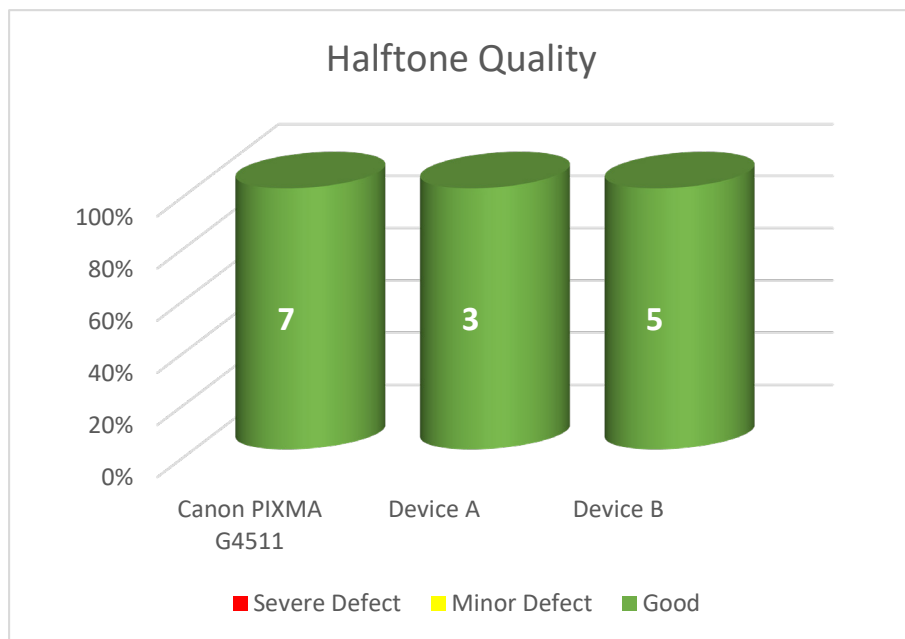


1 Rating: The whole page suffers from poor quality, rendering it unusable

Throughout testing, all three devices produced samples that displayed consistent image quality, with photographs, text, and fine lines that earned a 3 rating.



Grades for text and fine lines are indicated by a colour, such as green, which means there were no defects; yellow, which represents a minor defect; and red, which represents a severe defect. The number on the cylinders relates to the number of image quality samples produced.



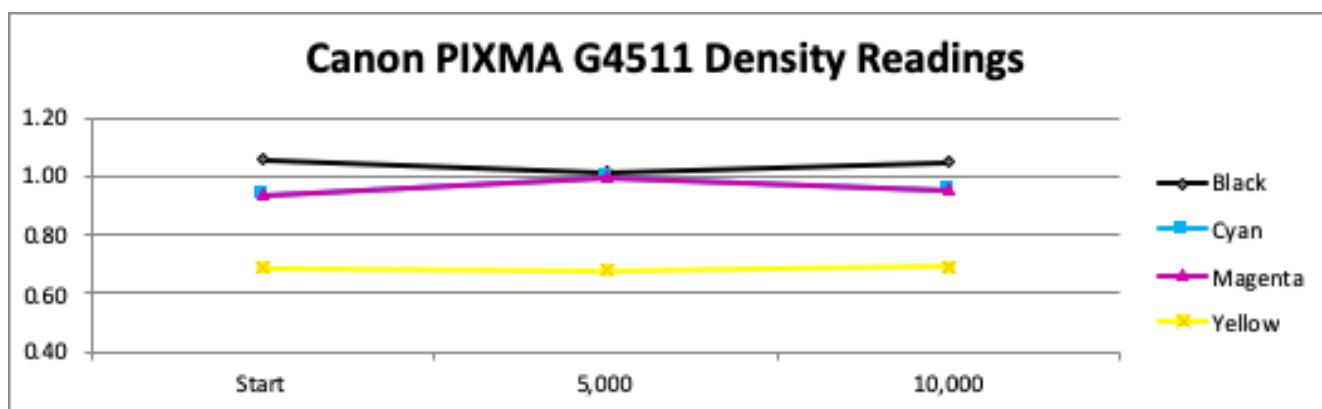
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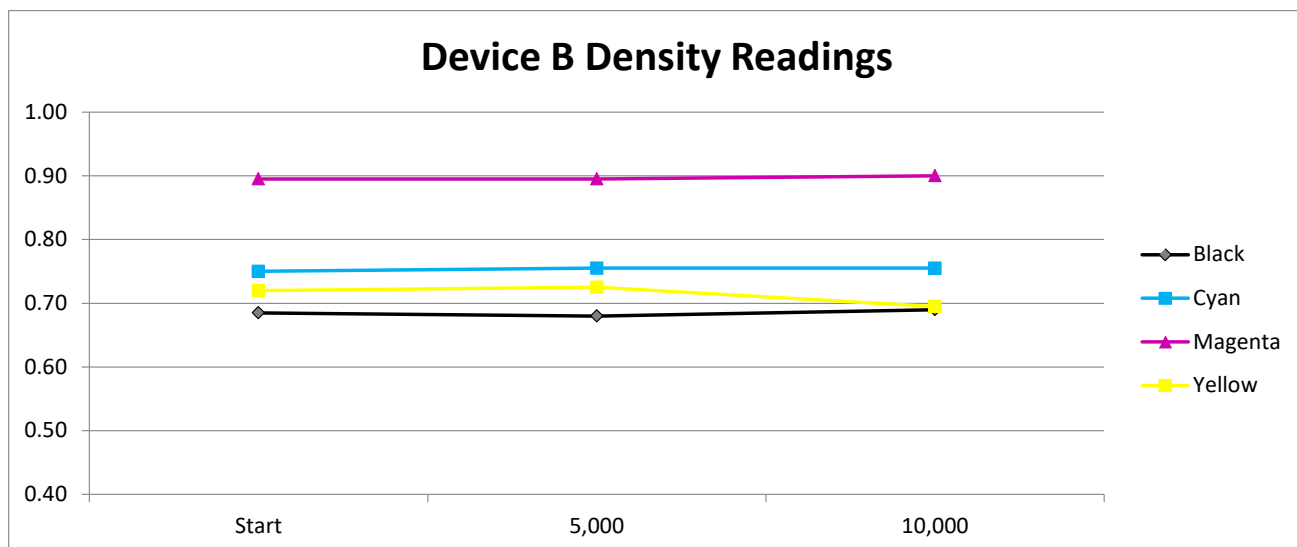
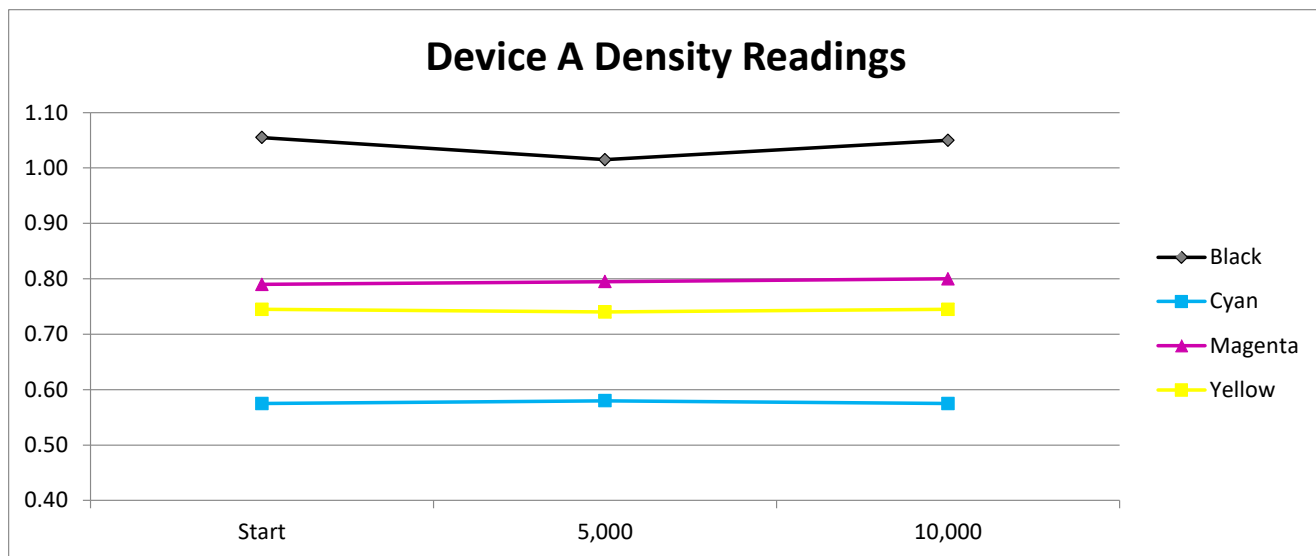
## Colour Density

A higher print density reading for black means that output will be darker and/or richer. However, a higher density isn't always better for cyan, magenta, and yellow, as the most desirable density depends on context and the clarity and accuracy of colour production.

Device A and Device B both had very consistent density readings, with the Canon PIXMA G4511 not far behind. However, the real-world differences between the readings are negligible.

As Device A only printed 11,356 impressions, Buyers Lab could compare only the first three density readings from the devices.





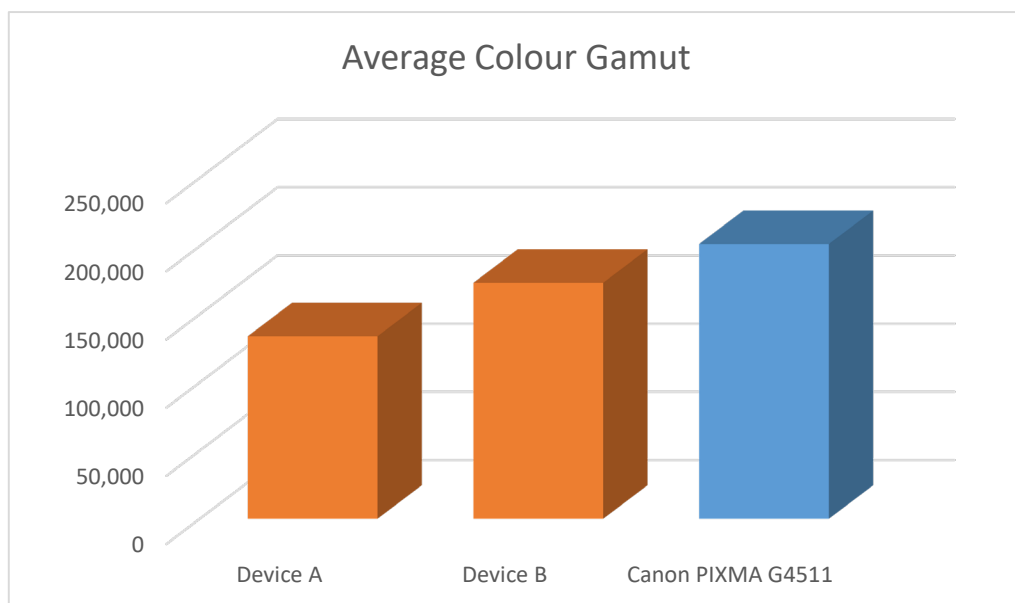
Canon PIXMA G4511				
	Average	Maximum	Minimum	Variance
Black	1.04	1.06	1.02	0.04
Cyan	0.96	1.00	0.94	0.06
Magenta	0.96	1.00	0.94	0.06
Yellow	0.69	0.69	0.68	0.01
Device A				
	Average	Maximum	Minimum	Variance
Black	1.04	1.06	1.02	0.04
Cyan	0.58	0.58	0.58	0.01
Magenta	0.80	0.80	0.79	0.01
Yellow	0.74	0.75	0.74	0.01
Device B				
	Average	Maximum	Minimum	Variance
Black	0.69	0.69	0.68	0.01
Cyan	0.75	0.76	0.75	0.01
Magenta	0.90	0.90	0.90	0.01
Yellow	0.71	0.73	0.70	0.03

## Colour Gamut

Colour gamut represents the ability to render a range of colours, with a larger gamut indicating the ability to produce a wider range of shades and hues. Even though the difference between its lowest and highest colour gamut readings was higher than its rivals, the Canon PIXMA G4511's average CIE colour gamut was much higher than Device A and Device B's. Indeed, the Canon G4511's average colour gamut is 50.5% higher than that of Device A, and 16.4% higher than that of Device B.

CIE Colour Gamut Volume				
	Average Volume	Min Volume	Max Volume	Variance
Canon PIXMA G4511	201,536	197,657	206,940	9,283
Device A	133,870	128,236	136,888	8,652
Device B	173,108	168,428	176,765	8,337

Max and Min indicate the highest and lowest volumes over the course of testing.



## Supporting Test Data

### Detailed Reliability Log

#### Canon PIXMA G4511 Event Log

Date	Task	Action	Meter count
17/07/2019	Head clean required	Conduct head clean	8,291

#### Device A Event Log

Date	Task	Solution	Meter count
14/07/2019	Head clean required	Conduct head clean	3,926
15/07/2019	Head clean required	Conduct head clean	5,282
16/07/2019	Head clean required	Conduct head clean	8,641
17/07/2019	Head clean required	Conduct head clean	8,707
17/07/2019	Head clean required	Conduct head clean	9,250
18/07/2019	Head clean required	Conduct head clean	11,086
19/07/2019	Error code		11,356

#### Device B Event Log

Date	Task	Solution	Meter count
14/07/2019	Head clean required	Conduct head clean	1,392
18/07/2019	Head clean required	Conduct head clean	7,009
19/07/2019	Head clean required	Conduct head clean	11,262
22/07/2019	Head clean required	Conduct head clean	13,116

26/07/2019	Head clean required	Conduct head clean	20,834
26/07/2019	Head clean required	Conduct head clean	20,834
26/07/2019	Head clean required	Conduct head clean	20,834
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26/07/2019	Head clean required	Conduct head clean	20,834
26/07/2019	Head clean required	Conduct head clean	20,834
26/07/2019	Head clean required	Image quality still sub-par after 13th head clean, so removed the device from testing	20,834

## Test Methodology

Buyers Lab conducted a 30,000-impression reliability test on three devices: the Canon PIXMA G4511, Device A, and Device B, with a 50/50 split between simplex and duplex. The devices were operated in default mode. All issues, including misfeeds, multi-sheet feeding, skewing, and printer malfunctions were recorded. Image quality samples, along with optical density and gamut readings, were taken at 5,000-impression intervals and then used to assess the devices' consistency over the test period. Pukka Paper Everyday A4 80gsm and Canon Red Label A4 80gsm were used during testing.

## Test Environment/Conditions

All testing was conducted in a controlled environment at Buyers Lab's test facility located at Unit 11, The Business Centre, Molly Millars Lane, Wokingham, RG41 2QZ per the following conditions:

- A. Temperature was maintained at 22°C, +/-2.7°C, with daily conditions monitored and logged 24/7 by a Seven-Day Temperature/Humidity Chart Recorder.
- B. Relative humidity was maintained within 45% +/- 10%, with daily conditions monitored and logged 24/7 by a Seven-Day Temperature/Humidity Chart Recorder.
- C. Materials conditioning: Printers, paper and cartridges were acclimatized to the above conditions for a minimum of 24 hours prior to testing. Prior to acclimatization, packaging and shipping materials were opened in a manner that prevented light damage from occurring to the print cartridge during acclimatization. Paper was acclimatized in the ream wrapper.

## About Keypoint Intelligence - Buyers Lab

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Keypoint Intelligence is a one-stop shop for the digital imaging industry. With our unparalleled services and unmatched depth of knowledge, we cut through the noise of data to offer clients the independent insights and responsive tools they need.

For over 50 years, Buyers Lab has been the global document imaging industry's resource for unbiased and reliable research, test data, and competitive information services. In addition to publishing the industry's most comprehensive and accurate test reports, each representing months of hands-on testing in our U.S. and UK laboratories, we have been the leading organization for extensive specifications/pricing databases on MFPs, printers, scanners, and software. Buyers Lab also provides consulting services and a range of private testing services that include document imaging device beta and pre-launch testing, performance certification testing, consumables testing (toner, ink, fusers, and photoconductors), solutions evaluations, and media runnability testing.

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