

May 2017



Evaluation of Logitech BRIO

Hands-on testing of a 4K (Ultra HD) high performance USB webcam with advanced light compensation capabilities

This evaluation sponsored by ...



Background

Founded in 1981, Logitech International S.A. (Logitech) is a leading PC peripheral manufacturer offering webcams, keyboards, standard and “gaming” computer mice, PC speakers, mobile speakers, tablet accessories, home control devices / remotes, and more.

In 2011, Logitech formed the “Logitech for Business” division offering a variety of products and accessories targeting business / enterprise users. Wainhouse Research (WR) has used and evaluated numerous offerings from the company’s business division including the [Logitech GROUP](#), the [Logitech GROUP Kit](#), and the [Logitech SmartDock](#) offerings.

In February 2017, Logitech announced Logitech BRIO – a 4K (Ultra HD) video webcam offering 5x digital zoom, up to 90 degree horizontal field of view, and Logitech’s RightLight 3 capability with HDR (high dynamic range) for automatic exposure and contrast adjustment.

In early 2017, Logitech commissioned the WR test team to perform a third-party assessment of its BRIO webcam. This document contains the results of our hands-on testing.

Your Webcam DOES Matter

According to Wikipedia, the first webcam was used in 1991 at Cambridge University Computer Science Department and was pointed at the coffee pot.¹ This webcam captured a 128 x 128 pixel (total of 16,384 pixels) greyscale image.

The first commercial webcam, the QuickCam, was released in 1994 by Connectix (acquired by Logitech in 1998) and offered 320 x 240 pixel (total of 76,800 pixels or QVGA resolution) greyscale image.

Over the last 25 years, webcams have evolved in form factor, have become standard features on virtually all notebook PCs, and now provide full motion, high resolution, color images.

In recent years, the use of personal video conferencing has exploded in the enterprise. A September 2016 survey of 311 enterprise workers revealed that 97% of their organizations offer desktop video conferencing. In addition, more than 2/3rds indicated that they use Skype or Skype for Business (SfB) for personal video conferencing. In addition, the respondents indicated that more than half of their web conferences now include personal video.²

In late 2016, WR interviewed fifteen (15) IT decision makers representing more than a million enterprise end-users about their organization’s desktop video conferencing and webcam usage. All but one said that their company’s desktop video conferencing usage has increased in recent years. In addition, all 15 said that their people are concerned about how they look on camera during video calls.

And the above does not even consider the ongoing increases in enterprises allowing and embracing user generated content (UGC).

¹ Source: <https://en.wikipedia.org/wiki/Webcam>

² Source: <http://cp.wainhouse.com/content/2016-video-conferencing-end-user-survey>

On a related note, in the last few years WR has noted a dramatic increase in the use of webcams in enterprise meeting rooms. Some vendors (e.g. BlueJeans, Polycom, Prysm, and others) even bundle webcams with their meeting room product and service offerings.

The takeaway here is that desktop video is more heavily used than in the past, and webcams are starting to make their way into larger meeting spaces. These items have made webcam performance more critical than ever before.

Logitech's answer to the enterprise need for a next-gen webcam is Logitech BRIO.

Understanding Logitech BRIO

Logitech BRIO is a high-definition USB webcam intended for use with a notebook PC, sitting on a standard PC display, or mounted on a tripod for recording and streaming applications.³

BRIO sells for US \$199 (MSRP), and is available from Logitech resellers and many retailers / e-tailers (e.g. Amazon, Best Buy, etc.).

BRIO offers the following features:⁴

- Video resolutions up to 4K (ultra-high definition) at 30 fps
- 5X digital zoom (with digital pan / tilt)
- Automatic exposure and contrast adjustment with Logitech RightLight 3 and HDR technology
- Software-selectable field of view (90, 78, or 65 degrees)
- Dual integrated omni-directional microphones with noise cancellation



BRIO also ships with a lens privacy cover and a travel bag for those taking BRIO “on the road.”

Logitech also offers the following free software applications released specifically for Brio:

- Logitech Brio for Windows Hello – a driver that allows BRIO to be used with Windows 10 Hello.
- Logitech Camera Settings application – provides access to BRIO features including field of view selection, HDR enable / disable, digital zoom control, and image settings (brightness, contrast, auto-focus, white balance, color intensity, etc.).
- Logitech Camera Settings with Background Replacement – a beta version of the settings app that adds the ability to virtually replace the user's real-life background with a static image.

³ While not specifically marketed by Logitech for use in a meeting room, BRIO's 4K resolution also makes it well suited for use in smaller meeting rooms.

⁴ Technically speaking, the software-selectable field of view and 5x digital zoom are both digital zoom functions. The field of view can be set via Logitech's software only, while the digital zoom is controllable via 3rd party software (e.g. conferencing applications).

Hands-On Testing

Logitech BRIO Installation

The physical installation of a Logitech BRIO on a display or notebook PC could not be simpler thanks to the integrated and malleable mounting clip at the bottom of the device (see image below).

A stabilization pad at the bottom of the clip ensures that the BRIO will not wobble while in use.

In addition, the mounting clip can be removed to reveal a standard tripod mount.

Logitech clearly put some thought into the mounting options for BRIO.

In terms of connections, BRIO requires only a standard USB connection. And since BRIO is UVC-compliant (plug-and-play), no additional software drivers are needed to use BRIO with Windows, Mac, or Linux systems.

It took our team less than five minutes to unpack, mount, connect, and start using our BRIO. We then downloaded and installed the various free Logitech Brio software apps.



Logitech BRIO User Experience

For our first barrage of testing, we compared the performance of Logitech BRIO to the performance of embedded cameras in an Apple iMac⁵ and Dell Inspiron 5000 notebook. We conducted various tests to simulate situations faced by desktop video users. These tests used the default settings on all cameras.

Bench Testing

Test #1: Standard Lighting Test (BRIO vs. iMac Camera)

This test was conducted in one of our offices with standard overhead fluorescent lighting generating ~130 lux on our tester's face.

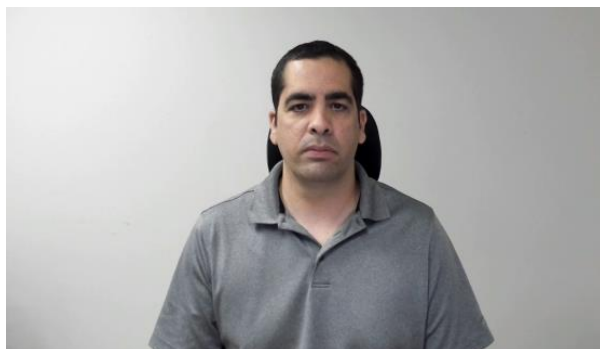


Figure 1: Logitech BRIO (L) vs. iMac Camera (R) with Standard Lighting

As shown, BRIO offered a superior experience by adjusting the brightness on the tester's face.

⁵ For our testing, we used an iMac 27" 5K display with the embedded FaceTime HD webcam.

Test #2: Low Light Test (BRIO vs. Dell Inspiron Camera)

For this test, we turned the overhead lights off, resulting in a light level of ~ 15 lux on the tester's face.

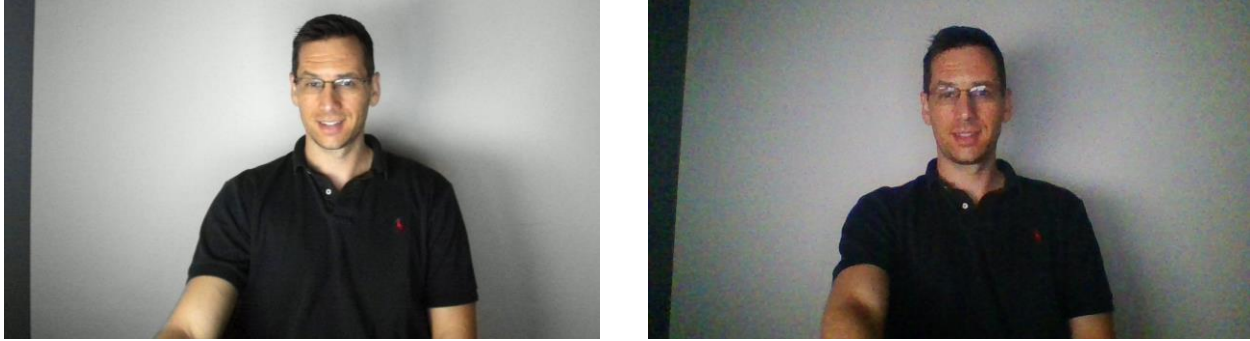


Figure 2: Logitech BRIO (L) vs. Dell Inspiron Camera (R) in Low Lighting Condition

While both cameras offered a usable image, BRIO's image was far less noisy (see the noisy background in the right image) than the Dell's image at this low light level.

Test #3: Side Lighting Test (BRIO vs. iMac Camera)

For this test, we turned off the overhead lighting in the office and used a side light generating ~ 65 lux on the left side of our tester's face.

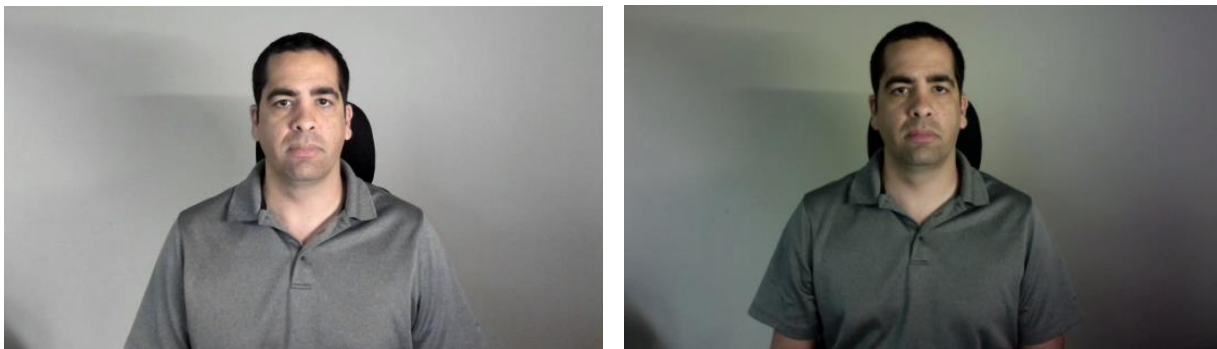


Figure 3: Logitech BRIO (L) vs. iMac Camera (R) with Side Lighting

Once again, BRIO did a better job compensating for the light condition.

Test #4: Backlight Test (BRIO vs. iMac Camera)

For this test, we used our standard office lighting (overhead fluorescent fixtures) and added a backlight resulting in a total of ~ 560 lux entering the camera lens.

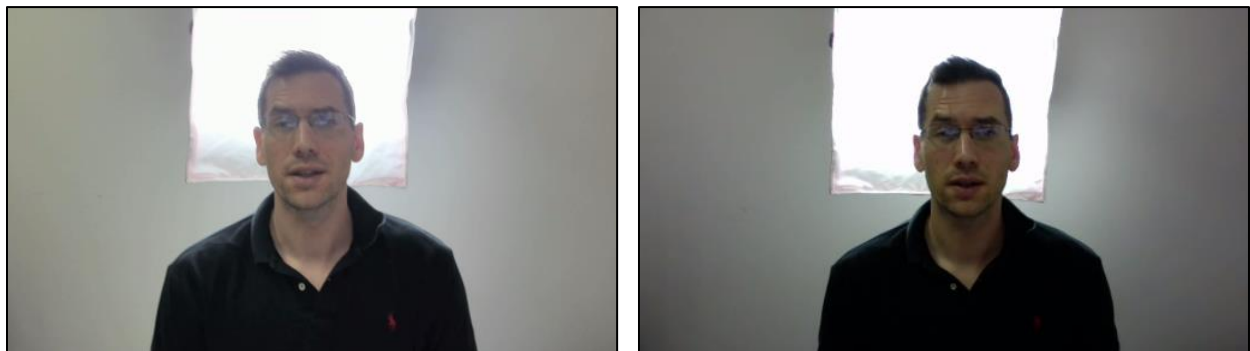


Figure 4: Logitech BRIO (L) vs. iMac Camera (R) with Back Lighting

Note how BRIO was able to provide an acceptable image of our tester's face, while the competing camera provided an unacceptably dark image.

Test #5: Digital Zoom Test (BRIO only)

For this test, we captured two images – one with the BRIO zoomed all the way out as it would be when used within a small meeting room or huddle room, and one with the BRIO zoomed in to capture the person at the head of the table only.



Figure 5: Logitech BRIO at 1x Zoom (L) and ~ 3.5x Zoom (R)

As shown, BRIO was able to provide a sharp, well focused image even when zoomed-in on a single person. Note the legibility of the text in the Wainhouse Research logo on our tester's shirt.

Bench Testing Summary

In theory, it would be possible to improve the images above by manually adjusting the various camera settings (contrast, brightness, color, white balance, etc.). However, the reality is that very few if any users would make such adjustments before participating in a video call.

In addition, not all conferencing applications provide access to advanced camera control functions. Therefore, the user would have to use other applications (e.g. Webcam Settings on a Mac or Windows Camera app on Windows 10) to make such adjustments.

The net is that in most cases, a webcam's ability to automatically compensate for different situations will be is the primary determinant of image quality.

Video Conferencing Testing

The second part of our testing involved using several Logitech BRIO webcams within our production environment for several weeks. During this time we placed hundreds of video calls from Windows 10 and Mac PCs and notebooks using numerous conferencing applications / services including:

- BlueJeans Network
- Cisco Spark and Cisco WebEx
- Polycom RealPresence Desktop
- Skype for Business (SfB)
- StarLeaf Breeze
- Vidyo Neo and WebRTC
- Zoom

Overall, the video experience provided by Logitech BRIO was strong across all of the apps and services we use on a routine basis. In fact, several of our testers have since made BRIO their primary webcam.

On a more critical note, we found that some conferencing apps offered a sharper image than others when used with BRIO. Also in some cases, especially with Mac applications, BRIO zoom settings were lost between calls. Finally, at times we discovered that disabling HDR improved image clarity. We expect some of these minor nits will improve or disappear over time as software updates are released.

Audio Performance

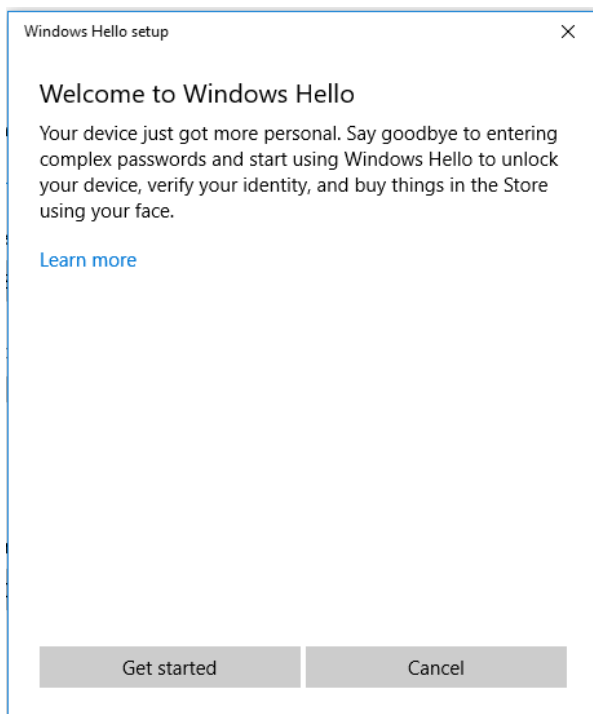
We also tested the audio performance of BRIO's dual integrated omni-directional microphones.

- When used for personal conferencing (distance from speaker to camera of ~ 2 - 3 feet), the mics performed quite well and provided a solid outgoing audio experience. Note, however, that WR expects most people to use a headset or external mic / speaker unit for desktop video calling.
- When used in a meeting room environment (distance from speaker to camera of 6+ feet), the audio was acceptable, but hollow sounding.

Additional Feature Testing

Windows Hello

After installing the Logitech BRIO for Windows Hello software, we were able to successfully activate and use Windows Hello on our Windows 10 machine (see screenshots below). The image at right is an IR photo used by Windows 10 for facial recognition.

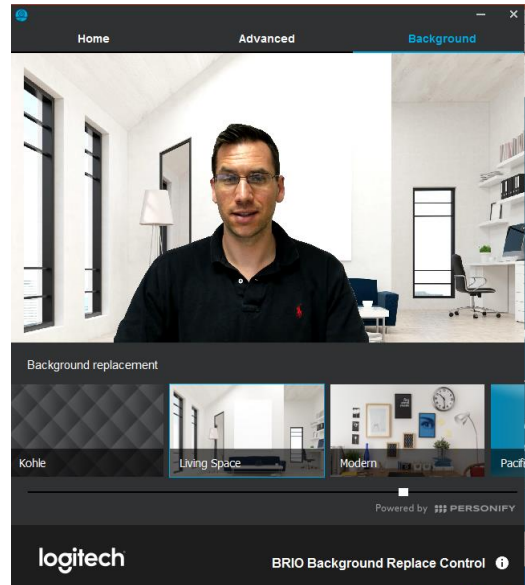


Background Replacement

Currently in beta, this feature allows users to replace their background with a static image. As shown in the image at right, this feature worked quite well and provided a relatively clean resulting image.

Unfortunately, none of the conferencing apps we use were able to access the new camera image. Therefore we could not use this feature during video conference calls.

In addition, one of our test PCs was unable to use this feature due to lack of support for AVX (a set of CPU extensions not supported on some early PCs).



Analysis and Opinion

The Logitech BRIO webcam performed quite well throughout our bench testing and weeks of use in our production environment.

Thanks to Logitech's RightLight 3 with HDR capabilities, BRIO offered consistently strong image quality in numerous lighting conditions and situations – all without having to adjust the camera settings.

In addition, BRIO's 4K image capture provided high quality images even when using the digital zoom. And we also appreciated the ability to add Windows Hello support to Windows 10 PCs using BRIO.

In short – Logitech has really upped the ante with this new \$199 webcam.

WR has noted that most users take their webcam for granted. However, increased desktop video conferencing usage has made webcam performance more important than ever before.

Based on the results of our hands-on testing, WR believes that organizations using desktop video conferencing would benefit from the superior performance of the Logitech BRIO webcam.

Contributing Authors / Research Team



Ira M. Weinstein is a Senior Analyst & Partner at Wainhouse Research and a 25-year veteran of the conferencing, collaboration and audio-visual industries. Ira has authored and contributed to dozens of articles, white papers, studies, reports, and evaluations on rich media communications, video conferencing, streaming and webcasting, audio-visual design and integration, business strategy, and general business practices. Ira specializes in providing strategic advisory services to vendors, resellers, and end-users within the collaboration space. Ira can be reached at iweinstein@wainhouse.com.



Saar Litman is a Senior Analyst & Consultant at Wainhouse Research and has 17 years' of experience in the audio-visual and video conferencing industry. Saar's primary focus is the products, services, and companies within the audio-visual space. In addition, Saar provides AV design services, helps enterprise organizations define and implement global AV standard systems and designs, and manages the WR test lab in Coral Springs, Florida. Saar can be reached at slitman@wainhouse.com.



Peter Schwarck is a Researcher & Technical Writer at Wainhouse Research. Peter has authored and developed content for private corporations, non-profits, and government organizations. In addition, Peter worked as an educational consultant while writing and developing textbooks and curriculums for foreign companies abroad. Peter can be reached at pschwarck@wainhouse.com.

About Wainhouse Research



Wainhouse Research, www.wainhouse.com, is an independent analyst firm that focuses on critical issues in the Unified Communications and Collaboration (UC&C). The company conducts multi-client and custom research studies, consults with end users on key implementation issues, publishes white papers and market statistics, and delivers public and private seminars as well as speaker presentations at industry group meetings.

About Logitech

(Copy provided by Logitech)



Logitech designs products that have an everyday place in people's lives, connecting them to the digital experiences they care about. More than 35 years ago, Logitech started connecting people through computers, and now it's a multi-brand company designing products that bring people together through music, gaming, video and computing. Brands of Logitech include [Jaybird](#), [Logitech G](#) and [Ultimate Ears](#). Founded in 1981, and headquartered in Lausanne, Switzerland, Logitech International is a Swiss public company listed on the SIX Swiss Exchange (LOGN) and on the Nasdaq Global Select Market (LOGI). Find Logitech at www.logitech.com, the [company blog](#) or [@Logitech](#).