

**UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF FLORIDA**

DOLBY LABORATORIES LICENSING  
CORP.,

*Plaintiff,*

v.

BLU PRODUCTS, INC.,

*Defendant.*

**JURY TRIAL DEMANDED**

**COMPLAINT FOR PATENT INFRINGEMENT**

Plaintiff Dolby Laboratories Licensing Corp. (“Plaintiff”), by its counsel and pursuant to Federal Rule of Civil Procedure 8(a), alleges the following in support of its Complaint against Defendant BLU Products, Inc. (“BLU Products” or “Defendant”) for patent infringement:

**INTRODUCTION**

1. Plaintiff and its affiliates (“Dolby”) are recognized as a world leader in the research and development of technologies that enhance and expand the capabilities of consumer electronics products. This case arises from Defendant’s intentional and persistent infringement of Dolby-developed video-coding inventions after Defendant was provided multiple opportunities to license those inventions. The inventions at issue in this litigation (the “Inventions”) are widely recognized as creating significant advancements in video-coding compression technologies. The Inventions have been adopted by industry organizations to materially improve earlier technologies, and have been awarded patents by the United States Patent and Trademark Office and other patent agencies around the world. The Inventions are widely used by product manufacturers and software developers to materially improve the video recording and/or playback capabilities of the products they sell.

2. Among other products, the Inventions are used in mobile phones, TV receivers, set-top boxes, media players, personal computers, and game machines. Dolby licenses the Inventions in a joint license for the AVC/H.264 (MPEG-4 Part 10) digital video-coding standard (the “AVC Standard”) administered by Via Licensing Alliance (“Via”) (formerly MPEG LA) with more than 40 other patentees who also have contributed to state-of-the-art technologies, or bilaterally. The Inventions permeate the video industry, including as a part of the widely adopted AVC Standard; to date, more than 1,600 manufacturers of consumer products and software developers have taken a license to implement the AVC Standard, which enables clear video streaming on consumer devices such as smartphones. Dolby cannot and will not allow manufacturers such as Defendant to intentionally infringe Dolby’s patents and profit from the Inventions while refusing to pay a reasonable royalty for a license. In short, Dolby will not allow the theft of its intellectual property, and files this case seeking to prevent Defendant from continuing to do so.

3. Among others, the Inventions infringed by Defendant are claimed in U.S. Patent No. 11,887,560 (“’560 Patent”) and U.S. Patent No. 10,297,008 (“’008 Patent”) (together, the “Asserted Patents,” attached as Exhibits 1 and 2 respectively). These Inventions are directed to systems and methods of encoding and decoding video signals in a way that minimizes the loss of features that are perceptible to the human eye. Using the Inventions allows devices to play high-quality video files and stream high-quality internet video content—so called “high definition” video that captures millions more colors and exponentially greater contrast and brightness than traditional video—regardless of the capabilities of the device. This means that even video content captured on a high resolution/high definition camera can be displayed with minimal distortion on any smartphone that offers the invention. Defendant offers this valuable

technology on its smartphones to increase its sales by offering an extraordinary viewing experience to its customers, but refuses to license it—in contrast to nearly all of its competitors.

4. In its pursuit of providing consumers with ever-more high-quality and efficient video, Dolby has invested years and millions of dollars in developing technologies that allow viewers to see visual media in a manner that is as close as possible to what the creators of that media intended. Dolby's inventions ensure that high-quality visual content is delivered efficiently, with minimal distortion, so that viewers can enjoy that content on a wide range of devices from high-end televisions and PC displays to mobile devices like smartphones and tablet computers. The manufacturers of these devices, including almost every smartphone manufacturer, have licensed and recognized the value of Dolby's inventions (such as the technology claimed in the Asserted Patents), as well as the validity and enforceability of Dolby's patent rights with respect to that technology. The manufacturers that have been licensed—including Apple, LG, Samsung, Sony, Huawei, and Lenovo (Motorola)—compete directly with Defendant, which sells and offers to sell infringing devices, including smartphones, in this country. Unlike the Defendant, however, these other companies respect their intellectual property obligations and have obtained licenses for the right to incorporate Dolby's patented inventions into their products, hundreds of millions of which have been sold to U.S. consumers.

5. Defendant has incorporated Dolby's patented technology in its products, thus recognizing the value of the inventions' advances, but has refused to take a license. As a result of its use of Dolby's technology, including the Asserted Patents, Defendant's infringing devices can play high-definition video files and stream high-definition internet video content, offering higher-value products that customers often choose for these features. And Defendant's

infringing devices compete directly with products manufactured by licensees who respect and pay for Dolby's intellectual property.

6. Defendant has had numerous opportunities to license the patented inventions, but has refused to do so. Defendant's failure to take a license has left Plaintiff no choice but to enforce its rights by bringing this action for damages and injunctive relief to remedy and prevent Defendant's unauthorized use of Dolby's patented technology. Without such relief, Dolby will suffer irreparable harm because of, among other things, less resources to devote to Dolby's research and development efforts, resulting in fewer opportunities to develop innovative technologies, reputational damage and lost good will, and impairment of Dolby's licensing program (because licensees and potential licensees will be less willing to pay for Dolby's technology if they must compete with other companies that offer the technology without paying for it). A subsequent money damages award alone will not make up for such harm. In addition, and because Defendant's infringing conduct reflects its intentional infringement and willful disregard of patent rights, Plaintiff seeks enhanced damages and an award of its fees and costs.

#### **THE PARTIES**

7. Plaintiff Dolby Laboratories Licensing Corp. is a corporation headquartered in San Francisco, California, and is incorporated in New York. Dolby Laboratories Licensing Corp. and its affiliates together have more than 2,000 employees in the United States and overseas.

8. Defendant BLU Products is a corporation organized under the laws of Florida with its principal place of business at 8600 NW 36th Street, Suite 300, Doral, FL 33166.

9. Defendant sells and offers to sell in the United States, and imports into the United States, including in this District, mobile devices including smartphones that infringe the Asserted Patents.

### **JURISDICTION AND VENUE**

10. This Court has subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338(a).

11. This Court has personal jurisdiction over Defendant because Defendant is a Florida corporation and Defendant has established minimum contacts with Florida. The Defendant is subject to personal jurisdiction in Florida under, at a minimum, Fla. Stat. § 48.193, Florida's long-arm statute, thereby submitting itself to the jurisdiction of the Florida courts because its transactions in the State of Florida—importing or causing to be imported, using or causing to be used, offering to sell or causing to be offered for sale, selling or causing to be sold directly, through intermediaries and/or as an intermediary, devices that infringe the Asserted Patents to customers in Florida—are (i) substantial and not isolated activity, and (ii) constitute operation or carrying on a business in the state.

12. Venue is proper in this district pursuant to 28 U.S.C. § 1400(b), because, *inter alia*, Defendant is incorporated in Florida and has its principal place of business and committed acts of infringement in this district.

### **THE ASSERTED PATENTS**

#### **A. Video Encoding and Decoding Technology**

13. Since its founding in 1965, Dolby has been dedicated to developing innovations that improve consumer enjoyment of audio and audio-visual, and subsequently video, content. Among the many Dolby inventions are video-processing and delivery methods employed by content creators, including movie, television, and video game makers, and used in TVs, computers, and mobile devices to play back and display such content.

14. Dolby devotes substantial resources to cutting-edge research and development efforts that are often reflected in patented inventions that can be, and are, licensed and incorporated into products made and sold by others around the world, and to standards that are

used by many electronic products worldwide. Dolby's patented inventions, including those claimed in the Asserted Patents, allow consumer devices to record, compress/decompress, distribute, and play back video content in ways that would not be possible without those inventions.

15. Video content generally consists of a connected series of images, or "frames." A single frame consists of a two-dimensional array of picture elements, or "pixels," arranged in rows and columns. The visual aspects of each pixel can be represented by data bits that indicate its color and brightness, identified as the chrominance ("chroma") and luminance ("luma") of the pixel, respectively.

16. Depending on the resolution of the image, a single frame may include millions of pixels, each with its own chroma and luma values. Video encoding, also known as "compression," is a technological process for reducing the amount of digital information, including pixel information, that must be transmitted or stored to recreate the stream of frames in a video. The digital information is compressed (or "encoded") in part by the use of the Asserted Patents.

17. Coding/compression using the Asserted Patents allows the sequence of images to be stored efficiently as a file or to be streamed with a fewer number of bits (called "bit rate") via a transmission medium. The result of video coding is a "bitstream," a sequence of bits approximating, in their totality, the original image sequence—but using a much smaller amount of data. The bitstream can be decoded (*i.e.*, decompressed) using the same formatting rules in reverse to generate a series of images that can then be displayed on a screen. Encoding and decoding processes thus mirror each other, and fundamentally rely on the same technology.

18. Upon information and belief, the compression used by Defendant's Accused Products (defined below) is "lossy," meaning that the video lacks some information present in the original video, so the decompressing process cannot produce video that is identical to the original. Lossy encoding typically relies on a technique called "quantization" to reduce the number of bits required to represent the chroma and/or luma values of a particular pixel. Quantization treats any value within a particular range, often called a quantization "step," as equal to a single value within the step; rounding and truncation are typical examples of quantization processes. By way of example: If video content has pixels with luma values anywhere from 1 unit to 100 units, one could quantize the value of each pixel using even steps of 1 unit by rounding any luma value between two integers (*e.g.*, between 1 and 2, or between 39 and 40) to the value of the lower integer; in this example, pixels with luma values of 39.2, 39.4, and 39.7 would all be quantized as 39, and the information regarding any difference between luma values of those pixels would be lost. If the quantization step size is reduced (*e.g.*, by changing it to 0.5 instead of 1), less information is lost; the same pixels in this example would be quantized as 39, 39, and 39.5, preserving at least some of the difference between them.

19. Each quantized level of the pixel's video content (*e.g.*, 1, 39, 39.5) is associated with a binary code value (*e.g.*, 0000000001 (the binary code equivalent of the number 1), 0000100111 (39), 1000000000 (512)). For a given encoding format, the number of binary code values available to quantize the chroma or luma of a pixel is directly related to the number of bits used to represent the code, known as the "bit depth."

20. A consequence of the loss of information due to quantization is that encoded video content has lower quality than the original, uncompressed video. This had little impact in the past because the available display devices generally were unable to show the differences in

pixel chroma or luma that were lost in the encoding process. However, advances in technology now allow modern display designs to render image and video content with significant improvements in the range of chroma and luma values that can be displayed. As the '560 Patent explains, “more modern displays are capable of rendering content with a dynamic range (DR)”—the range of luma values that can be displayed—“that is higher than the standard dynamic range (SDR) of conventional or standard displays.” '560 Patent at 1:54-60. These displays are known as high dynamic range, or “HDR” displays. Encoding video for display on an HDR system, absent the inventions claimed in the Asserted Patents, would either require higher bit depth or result in more information lost during the encoding process, because the encoded bitstream must capture and quantize a larger range of chroma and/or luma values.

**B. The '560 Patent**

21. On January 30, 2024, the United States Patent and Trademark Office issued the '560 Patent, entitled “Perceptual Luminance Nonlinearity-Based Image Data Exchange Across Different Display Capabilities,” based on an application filed by inventors Jon Scott Miller, Scott Daly, Mahdi Nezamabadi, and Robin Atkins. The '560 Patent claims priority to U.S. Provisional Patent Application No. 61/703,449, filed on September 20, 2012, U.S. Provisional Patent Application No. 61/674,503, filed on July 23, 2012, and U.S. Provisional Patent Application No. 61/567,579, filed on December 6, 2011. A true and correct copy of the '560 Patent is attached hereto as Exhibit 1.

22. The '560 Patent is assigned to Plaintiff. Plaintiff has standing to assert the '560 Patent under 35 U.S.C. § 281.

23. The invention claimed in the '560 Patent stems from the inventors' recognition that encoding chroma and luma values using *uniform* quantization steps is wasteful and causes more loss than necessary because it leads to both (i) the retention of information that the human eye would not perceive and (ii) the loss of information about differences that the eye will perceive. Human vision may not perceive a difference between two luma values if the two luma values are not sufficiently different from each other. '560 Patent, at 4:1-5. Instead, human vision only perceives a difference if the luma value differs more than what is called a "just noticeable difference" ("JND"). *Id.* Due to the perceptual nonlinearity of human vision, the size of individual JNDs are not uniform across the range of light levels that may be captured in an image, but rather vary with different individual chroma or luma levels. *See id.* at 4:63-5:4. The inventors recognized that encoding image data with chroma or luma quantization steps of equal sizes does not match with the varying size of the JNDs that will be perceived. *Id.* at 4:1-14. Thus, using equal-sized quantization steps results in too many code values (or "words") in areas of an image where small luma differences between pixels will be invisible to a viewer, and too few code values in areas where such small differences will be perceived. As the '560 Patent explains:

In the overpopulated region, a multitude of code words may not produce perceptual differences, and are, for all practical purposes, therefore wasted. In the underpopulated region, two adjacent code words may produce a perceptual difference much greater than a JND [leading to visual distortion and other artifacts].

*Id.* at 4:25-29.

24. The inventions claimed in the '560 Patent are the result of lengthy and costly research by Dolby's scientists and engineers to develop what they called a Perceptual Quantizer ("PQ"), which consists of quantization systems and methods to encode and decode a bitstream. The PQ efficiently distributes code values so that the system can capture chroma and luma

differences that will be perceived by the human eye and largely limits the data losses inherent in the encoding process to differences that would not be perceived. The inventions of the '560 Patent make it possible to efficiently and reliably capture changes in the contrast and colors of an image with greater precision and accuracy—at least those that will be perceived—and play it back without perceptible artifacts.

25. An additional feature of the PQ, also claimed in the '560 Patent, is that video can be encoded according to the characteristics and parameters of one device, transmitted to a second device, and decoded for display according to the characteristics and parameters of the second device. The inventions of the '560 Patent allow video media captured on a high-quality camera to display on a lower-quality device with different display capabilities, such as peak brightness, maximum ranges, or limited color capabilities. Using these inventions, the same video can be enjoyed by viewers with different devices with fewer noticeable errors, even when that content was captured on a system with entirely different display and recording capabilities. For example, a movie camera is generally capable of capturing video with higher brightness and contrast than a consumer's smartphone or tablet computer is capable of displaying. That mismatch can lead to visually noticeable errors when the movie is played on the consumer's device. The '560 Patent provides a solution to that problem.

26. The claimed inventions of the '560 Patent work to encode images by associating code values with “normalized” luma values (described below) for each pixel in the image. Normalized (rather than absolute) values are used to enable the same encoded image to be rendered optimally regardless of the different characteristics and parameters of the devices used to capture or display that image. As discussed above, different cameras and device displays have different capabilities—a high-quality camera may capture brightness levels from 0 to 10,000, for

example, while a device display may be able to show only levels from 100 to 5,000. By normalizing the luma value associated with a normalized code value, the image captured by the high-quality camera can be properly rendered on the lower-quality display with minimal distortion or other visual artifacts.

27. The inventions claimed in the '560 Patent encode and decode video in which normalized code values are associated with normalized luma values through the use of software comprising an opto-electrical transfer function ("OETF"). In the OETF, each code value can correspond to a luma or chroma value. *Id.* at 41:39-45 The number of code values available is determined by the bit depth of the system. For example, a system with a bit depth of 10 can have up to 1024 binary code values, while a system with a bit depth of 12 can have up to 4096 code values.

28. A luma value is normalized by dividing it by the maximum range of luma values the device can capture or display. For example, for a camera that can capture a range of 10,000, a luma value of 5,000 might have a normalized value of 0.5. That normalized luma value of 0.5 is associated with a normalized code value and, ultimately, an actual code value by the encoder. For example, in an 8-bit system, a normalized luma value of 0.5 might be associated with a normalized code value of 0.5, which is then converted into an actual code value of 128 (*i.e.*,  $0.5 \times 256$  code values available on an 8-bit system) that is stored by the encoder.

29. When the encoded signal is decoded using the claimed inventions, the decoder reverses the process. For each pixel, the decoder determines a normalized code from the actual stored code value for each pixel. It then uses the inverse of the encoder OETF, known as an electro-optical transfer function, or "EOTF," to derive the normalized luma value corresponding to the normalized code. Finally, it uses the normalized luma value to "render," or display, an

absolute luma value for each pixel based on the luma range available on the display device. In the above example, the decoder would associate the code value of 128 with a normalized code value of 0.5, which in turn corresponds to a normalized luma value of 0.5; if the device display were capable of rendering luma values of 0 to 4,900, the device would render a luma value of 2,450 (*i.e.*, 0.5 x 4900). The net result is that the encoded luma value of 5,000 captured by the camera (capable of capturing luma values from 0 to 10,000) is decoded for rendering on a less-capable display (capable of displaying luma values of 0 to 4,900) as a value of 2,450.

30. An encoder implementing the inventions claimed in the '560 Patent will carry out the following steps:

- Convert an absolute luma value for a pixel to a normalized luma value. For a device capable of capturing a luma range of 10,000, the following may be used:

$$Y = \frac{L}{10,000}$$

Where L is the absolute luma value and Y is the normalized value.

- Convert the normalized luma value to a corresponding normalized code value using the code value distribution specified by the PQ in an OETF. In one embodiment disclosed and claimed in the Asserted Patent, the following OETF is used:

$$V = \left( \frac{c_1 + c_2 Y^n}{1 + c_3 Y^n} \right)^m$$

Where Y is the normalized luma value and V is the normalized code value, and

c<sub>1</sub>, c<sub>2</sub>, c<sub>3</sub>, n, and m are parameters with the following values:

$$n = \frac{2610}{4096} \times \frac{1}{4} \cong 0.1593017578125;$$

$$m = \frac{2523}{4096} \times 128 \cong 78.84375;$$

$$c_1 = c_3 - c_2 + 1 = \frac{3424}{4096} \cong 0.8359375;$$

$$c_2 = \frac{2413}{4096} \times 32 \cong 18.8515656; \text{ and}$$

$$c_3 = \frac{2392}{4096} \times 32 \cong 18.6875.$$

- Convert the normalized code value to a code value that represents the captured luminance, again according to a distribution specified by the PQ.

31. A decoder implementing the same disclosed and claimed inventions will reverse the process, using the same PQ-based distribution of code values in the form of an EOTF:

- Decode the encoded code value to a normalized code value, using the inverse of the normalization distribution used by the encoder.
- Convert the normalized code value to a corresponding normalized luma value by using an EOTF that is the *inverse* of the OETF used by the encoder. In one embodiment disclosed and claimed in the Asserted Patent, the following EOTF is used:

$$Y = \left( \frac{\max[(V^{1/m} - c_1), 0]}{c_2 - c_3 V^{1/m}} \right)^{1/n},$$

where Y is the normalized luma value and V is the normalized code value, and  $c_1$ ,  $c_2$ ,  $c_3$ ,  $n$ , and  $m$  are the same parameters described above.

- Convert the normalized luma value to an actual luma value, based on the parameters and features of the display, and use that value to render the pixel on the display.

32. As discussed above, the number of code values a system can use to capture luma and chroma information is determined by the bit depth of the system. The inventions of the '560

Patent (and the other Asserted Patent) enable the use of bit depths of 8, bits 10 bits, or 12 bits, providing 256, 1024, or 4096 code values, respectively.

33. Using the inventions claimed in the '560 Patent increases the quality of video displayed on a consumer's device by permitting video captured on devices with different imaging capabilities to be played back without introduction of visual perception errors.

34. Claims 3 and 4 of the '560 Patent are directed to stored computer software that, when executed, causes the processor of a device to decode a PQ-encoded video bitstream. The claimed software includes instructions for decoding a PQ-encoded video bitstream by converting a normalized luma code value  $V$  into a normalized luma value  $Y$  based on the PQ implementation set out in claim 3. Claim 4 is directed to software for decoding PQ-encoded video when the code values have a bit depth of 8, 10, or 12 bits.

35. Claim 3 of the '560 Patent claims the following:

A non-transitory computer-readable medium storing instructions that, when executed by a processor, cause the processor to perform operations, the operations comprising: receiving encoded image data; and decoding the image data, characterized in that the decoding comprises mapping digital code values in the encoded image data to normalized luminance values based at least in part on a functional model of:

$$Y = \left( \frac{\max[(V^{1/m} - c_1), 0]}{c_2 - c_3 V^{\frac{1}{m}}} \right)^{1/n},$$

wherein:  $Y$  is a normalized luminance value, wherein  $0 \leq Y \leq 1$ ,

$V$  is a normalized value of a corresponding one of the digital code values  $D$  of the encoded image data, wherein  $0 \leq V \leq 1$ , and

$n$ ,  $m$ ,  $c_1$ ,  $c_2$ , and  $c_3$  are predetermined values, with:

$$n = \frac{2610}{4096} \times \frac{1}{4} \cong 0.1593017578125;$$

$$m = \frac{2523}{4096} \times 128 \cong 78.84375;$$

$$c_1 = c_3 - c_2 + 1 = \frac{3424}{4096} \cong 0.8359375;$$

$$c_2 = \frac{2413}{4096} \times 32 \cong 18.8515656; \text{ and}$$

$$c_3 = \frac{2392}{4096} \times 32 \cong 18.6875.$$

36. Claim 4 of the '560 Patent claims "[t]he non-transitory computer-readable medium of claim 3, wherein the digital code values D are 8, 10, or 12 bits code values."

### **C. The '008 Patent**

37. On May 21, 2019, the United States Patent and Trademark Office issued the '008 Patent, entitled "Method and System for Improving Compressed Image Chroma Information," based on an application filed by inventor Gary Demos, an Oscar award-winning motion picture technologist. The '008 Patent claims priority to U.S. Provisional Patent Application No. 09/905,039, filed on July 12, 2001. A true and correct copy of the '008 Patent is attached hereto as Exhibit 2.

38. The '008 Patent was originally assigned to Plaintiff. In 2023, Plaintiff sold the '008 Patent to Tagivan II, LLC, a Delaware limited liability company, while retaining an exclusive license to the '008 Patent within a "Retained Field" (video compression associated with the AVC Standard and that encompasses Blu's infringing conduct as alleged herein), and retaining the right to sue for infringement of the '008 Patent within that Retained Field. As the exclusive licensee with all substantial rights in the patent with respect to the infringing conduct alleged herein, Plaintiff has standing to assert the '008 Patent in this action under 35 U.S.C. § 281.

39. The technology disclosed and claimed in the '008 Patent reflects a related, but different, insight about the relationship between human visual perception and quantization than that giving rise to the inventions of the '560 Patent. Video encoding and decoding schemes used

today typically employ what is known as a “YUV” (also known as “YCbCr”) luma/chroma coding format. In the YUV format, “Y” refers to the luma value or component of the pixel, while U and V (or Cb and Cr) refer to the chroma components of a pixel. It has long been recognized that, as the ’008 Patent explains, “the human visual system is less sensitive to changes in U and V than it is in changes to luminance, Y.” ’008 Patent, at 3:30-32. To reflect this difference and reduce the total number of bits required to code an image, more pixel subsamples, and thus bits, are allocated to coding the Y values and fewer to coding either U or V. Moreover, although U and V are generally allocated the same number of bits, “the human visual system is more sensitive to U . . . than to V . . . .” *Id.* at 3:38-39. As a result, “U [coding] often requires higher precision and clarity than is commonly used in video compression.” *Id.* at 5:14-16.

40. In video coding, a quantization parameter (“QP”) is a number that reflects the step size used to quantize an encoded luma or chroma value. A larger quantization parameter reflects a larger step size and generates a smaller coded bitstream. In video coding, QP values are used to trade off between the bit rate of the output and quality.

41. The inventions of the ’008 Patent reflect the inventor’s insight that by using the same QP for Y, U, and V, additional information is lost in the coding process, introducing distortion and artifacts into the decoded, displayed image. As the ’008 Patent explains:

[One] aspect of the present invention is a technique for reducing the level of chroma noise that results from any given value of the quantization parameter (QP) used during compression, thereby improving image quality. This is accomplished by utilizing a lower value of QP for the U [red] channel than for the Y [luminance] channel. Similarly, the quality of V [blue] may also be improved by utilizing a lower QP value for the V channel than for the Y channel.

*Id.* at 6:13-21.

42. In one embodiment described in the '008 Patent, the invention is implemented by “subtracting a specified difference value”—called a “QP bias”—“from the QP value for Y to yield a QP value for each of U and V.” *Id.* at 6:32-37. It explains that different QP bias values can be used for U and V:

For example, ‘2’ might be subtracted from the QP value for Y to yield the QP value for U, and ‘1’ might be subtracted for the QP value for Y to yield the QP value for V.

*Id.* at 6:26-29. “Any useful value of the amount to subtract can be used,” *id.* 6:29-30, and the patent explains that the range of potential bias values can be expanded beyond those that can be encoded in the number of available bits, by associating the coded values with a broader range of bias values provided in a lookup table at the decoder. *Id.* at 6:38-42.

43. The invention encompasses signaling the luminance QP, as well as both the U-QP bias and V-QP bias values, from the encoder to the decoder. The patent explains that “[this] can be specified once, for example, for each [decoding] session, for each group of pictures (GOP), frame, or image region.” *Id.* at 6:43-46. The invention can be “implemented in hardware or software, or a combination of both.” *Id.* at 10:5-7.

44. Thus, a decoder using Dolby’s variable QP technology as disclosed and claimed in the '008 Patent will:

- Extract from an encoded bitstream at least a luminance QP, a U-QP bias and a different V-QP bias;
- Determine the different U-QP and V-QP parameters either by direct calculation or by using a lookup table, which may reflect a linear or non-linear relationship; and

- Use the extracted luminance QP and the different U-QP and V-QP parameters to decompress/decode the required Y, U, and V values for use in rendering the image.

45. Using the inventions claimed in the '008 Patent increases the quality of video displayed on a consumer's device by reducing the noise and artifacts that would otherwise be produced by using the same QP to quantize the Y, U, and V chroma/luma values within the same image or region of an image. By using QP bias values (which are typically much smaller than QP itself), it also permits the U-QP and V-QP to be transmitted or stored with fewer bits than would otherwise be required.

46. Claim 1 of the '008 patent claims the following:

A method for a decoder, the method comprising:

receiving, at the decoder, at least a luminance QP (quantization parameter) value and a first chroma QP bias value, wherein the decoder comprises a luminance channel, a U chroma channel and a V chroma channel;

utilizing, with the decoder, the luminance QP value and the first chroma QP bias value to determine a first chroma QP value for the U chroma channel by adding the first chroma QP bias value to the luminance QP value; and

decompressing an image region of a video image using the luminance QP value and the first chroma QP value.

47. Claim 3 claims:

The method of claim 1, further comprising:

receiving, at the decoder, a second chroma QP bias value;

utilizing, with the decoder, the luminance QP value and the second chroma QP bias value to determine a second chroma QP value for the V chroma channel by adding the second chroma QP bias value to the luminance QP value; and

decompressing the image region of the video image using at least the second chroma QP value.

48. Claim 4 claims:

The method of claim 3, wherein the first chroma QP bias value used to determine the first chroma QP value for the U chroma channel differs from the second chroma QP bias value used to determine the second chroma QP value for the V chroma channel.

49. Claim 9 claims:

The method of claim 1, further comprising:

utilizing, with the decoder, a range of differential chroma-biased QP values, wherein the range of the differential chroma-biased QP values comprises the QP bias value.

50. Claim 10 claims:

The method of claim 9, further comprising:

extending the range of the differential chroma-biased QP values with an extended QP range function or a lookup table comprising the differential chroma-biased QP values.

51. Claim 11 claims:

The method of claim 10, wherein the lookup table comprises a non-linear lookup table.

52. Claim 12 claims:

The method of claim 10, wherein at least some of the differential chroma-biased QP values comprise regionally-varying QP values that vary over an image.

53. Claim 13 claims:

A video system comprising:

a decoder;

a data storage system;

a processor configured to interact with the data storage system and the decoder to execute instructions to:

receive, at the decoder, at least a luminance QP (quantization parameter) value and a first chroma QP bias value, wherein the decoder comprises a luminance channel, a U chroma channel and a V chroma channel;

utilize, with the decoder, the luminance QP value and the first chroma QP bias value to determine a first chroma QP value for the U chroma channel by adding the first chroma QP bias value to the luminance QP value; and

decompress an image region of a video image using the luminance QP value and the first chroma QP value.

54. Claims 14-16 and 19-20 claim “[a] computer program, stored on a non-transitory computer-readable storage medium, for a video image system including a processor and a decoder that are configured to utilize quantization parameters for a color video image, the computer program comprising instructions to cause the processor in the video image system to execute instructions to” carry out a method corresponding to that claimed in claims 1, 3-4, and 9-10, respectively.

55. The inventions claimed in the Asserted Patents provide technological solutions to a technological problem: the data loss and resulting image distortion inherent in the use of video coding without the inventions in the Asserted Patents. Video compression is carried out by computers, not by human beings, and the claimed inventions do much more than merely automate an otherwise long-existing human endeavor. The inventions claimed in the Asserted Patents improve the operation and ability of computers and other devices to encode and decode a bitstream so that it can be transmitted efficiently and displayed by viewers without perceived distortion or error. The mechanisms and steps used to solve these problems were not well-understood, routine, or conventional at the time of the claimed inventions.

**THE WIDESPREAD USE AND LICENSING BY OTHERS OF  
DOLBY'S PQ AND VARIABLE QP TECHNOLOGIES**

56. After developing its video encoding and decoding technologies, including its PQ and variable QP technologies, Dolby disclosed these advances to the public, applying for and obtaining patent protection from governments throughout the world, including in the United States.

57. Dolby's PQ and variable QP technologies, including the inventions claimed in the Asserted Patents, have become immensely popular and widely implemented. These inventions have been implemented in millions of smartphones, tablet computers, and other devices, including the Accused Products, that deliver streaming video content. The inventions claimed in the Asserted Patents have been widely recognized as enabling highly efficient and high-quality visual display in devices such as the Accused Products, and have been incorporated into the AVC Standard.

58. Consumers' use of hardware and software incorporating the technologies claimed in the Asserted Patents is widespread, including in their smartphones to play video files that have been encoded using Dolby's patented technology. For example, many video streaming services, such as Netflix, Hulu, Prime Video, Vimeo, YouTube, and the iTunes Store, rely on Dolby's patented inventions, including those claimed in the Asserted Patents, to reduce their storage and transmission costs and improve video quality. These streaming services offer content using Dolby's PQ and variable QP technologies. Millions of viewers on wireless mobile devices also benefit from this use of Dolby's technology, because many do not have an "unlimited" wireless data subscription and thus the amount they pay depends upon the amount of wireless data they send and receive. Dolby's technology in these users' smartphones and other devices permits them to experience high-quality video at a substantially reduced cost. Without the inventions

claimed in the Asserted Patents, users cannot view such video offerings, or can only view them in a distorted form. In addition, some mobile service providers offer “unlimited” data subscriptions to users, often at a higher cost than “limited” subscriptions. Dolby’s technology, including the technology claimed in the Asserted Patents, permits these service providers to offer such plans because of the efficiencies made possible through the use of those technologies. As a consequence, use of the Asserted Patents adds tremendous value to the infringing devices sold by Defendant. Defendant’s Accused Products provide consumers with the benefits described above as a result of Defendant’s infringement of the Asserted Patents.

59. Several hundred manufacturers and software developers have recognized the value and technical superiority of the Asserted Patents and have licensed them, with other patents, through a license offered by Via. Manufacturers that have been licensed under the Asserted Patents through Via or through a license directly from Dolby comprise virtually all of Defendant’s primary competitors in the smartphone and tablet computer markets, including Apple, LG, Samsung, Sony, Huawei, Lenovo (Motorola), and others.

#### **BLU PRODUCTS INFRINGES THE ASSERTED PATENTS**

60. Defendant imports, causes to be imported, uses, offers to sell, and/or sells in the United States electronic devices that practice at least claim 4 of the ’560 Patent and claims 1, 3-4, 9-16, and 19-20 of the ’008 Patent (the “Accused Products”). The Accused Products are at least capable of decoding and playing video content created using Dolby’s PQ technology and its variable QP technology. The Accused Products are smartphones including at least Defendant’s smartphone models Blu G93, Blu G73, and Blu G63.

61. On information and belief, the Accused Products use an 8-bit color depth and, using hardware and/or software provided on the device by Defendant in a non-transitory computer readable media, are able to decode and display content encoded with Dolby’s PQ

OETF with 8-bit code values as described in ¶¶ 27-36. Content encoded using the EOTF of Dolby's PQ, when decoded by the processor on the Accused Products using the hardware and/or software provided by Defendant on the Accused Products, is displayed with luma range and contrast that would be expected from use of the technology claimed in the '560 Patent. On information and belief, these results indicate that the decoding hardware and/or software provided by Defendant on its Accused Products infringe at least claim 4 of the '560 Patent.

62. On information and belief, the Accused Products use the YUV color coding format and include hardware and/or software provided by Defendant that is configured to decode and display content encoded with Dolby's variable QP technology as described in ¶¶ 39-54. Analysis of the Accused Products indicates that the decoder hardware and/or software provided on the devices by Defendant are configured to decode images (i) by applying different QPs to decode Y, U, and V values within a single image or block within an image, where (ii) the QPs for U and V values are determined by applying different bias value to a corresponding luma QP, and (iii) the range of quantization bias values can be expanded using a lookup table. This indicates that the decoder hardware and/or software provided by Defendant on the Accused Products, and the decoding method they use, infringe at least claims 1, 3-4, 9-16, and 19-20 of the '008 Patent.

63. Defendant, in importing, using, offering to sell, and/or selling the Accused Products, infringes and has infringed at least claim 4 of the '560 Patent, and claims 1, 3-4, 9-16, and 19-20 of the '008 Patent.

64. Defendant has also directed, controlled, contributed to, and/or induced acts of infringement committed by others, including, for example, by providing and importing smartphones that use the Asserted Patents, and by providing marketing and promotional

materials and services as well as instruction manuals and other information to Amazon.com and consumers that promote, describe, instruct, and/or encourage the use of the Accused Products.

65. Defendant stands virtually alone among major manufacturers or sellers of smartphones and other mobile devices in electing to market products that benefit from incorporating and using Dolby's technology, including the inventions claimed in the Asserted Patents, while refusing to pay royalties for using Dolby's inventions.

**NOTICE TO DEFENDANT AND  
DEFENDANT'S REFUSAL TO TAKE A LICENSE**

66. Since at least July 27, 2009, a license to all Dolby patents essential to the AVC Standard including the Asserted Patents and others ("Via Licensed Patents") has been available from Via and its predecessor, MPEG LA, and widely publicized.

67. Via has regularly reminded representatives of BLU Products of its willful infringement of the Via Licensed Patents, including the Asserted Patents.

68. Via has offered a license to BLU Products that would cover the Asserted Patents. For example, in January 2015, Via met with BLU Products' Vice President of Sales, Elliot Cohen, to discuss BLU Products' need for coverage under various license agreements, including the Via Licensed Patents. Yet, despite Via's repeated efforts to communicate with BLU Products about its infringement, BLU Products has not taken a license.

69. BLU Products has never denied that it distributes mobile electronic devices, including smartphones utilizing Dolby's PQ and variable QP technology, that infringe claims of the Asserted Patents. Nor has BLU Products claimed that the Asserted Patents are invalid or unenforceable. Nevertheless, BLU Products has not entered into a license to the Asserted Patents with either Via or Dolby even with multiple, consistent reminders for the past decade. From 2015 to 2017, BLU Products' Mr. Cohen largely ignored many follow-up communications

from Via urging him to take a license. From 2017 to the present, Via has corresponded with BLU Products' outside counsel, Bernard Egozi, and has continuously reiterated BLU Products' need for a license and the importance of paying for BLU Products' past infringement. Despite the years of persistent efforts, Mr. Egozi has not agreed to a BLU Products license.

**FIRST COUNT**  
**(PATENT INFRINGEMENT—'560 PATENT)**  
**35 U.S.C. §§ 271 AND 281**

70. Plaintiff incorporates and repeat the preceding paragraphs 1 through 69 above as if fully set forth herein.

71. Upon information and belief, Defendant has directly infringed one or more claims of the '560 Patent (including the claims referred to above) pursuant to 35 U.S.C. § 271(a) by importing, using, selling, and/or offering to sell in the United States products, including, but not limited to, smartphone models such as those listed in paragraph 60. Upon information and belief, infringement pursuant to 35 U.S.C. § 271(a) by Defendant is ongoing.

72. Upon information and belief, Defendant has indirectly infringed one or more claims of the '560 Patent (including the claims referred to above) pursuant to 35 U.S.C. § 271(b) by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, original equipment manufacturers ("OEMs"), other manufacturers, designers, distributors, importers, resellers, repair providers, software developers, customers, and/or end users, to make, use, import, sell, and/or offer to sell in the United States, those of Defendant's products including, but not limited to, smartphone models such as those listed in paragraph 60, by, among other things, providing instructions, manuals, technical assistance, and promotional materials relating to the installation, use, operation, and maintenance of said smartphones and

tablet computers. Defendant's inducement of infringement pursuant to 35 U.S.C. § 271(b) is ongoing.

73. Defendant has committed the foregoing infringing activities without a license to the '560 Patent, with notice of the '560 Patent.

74. Defendant's foregoing infringing activities were committed willfully and intentionally.

75. Dolby has been and will continue to be irreparably harmed and damaged by Defendant's foregoing acts of infringement, and has no adequate remedy at law.

76. As a consequence of the foregoing infringing activities by Defendant, Dolby has been damaged in an amount not yet determined.

77. Unless enjoined, Defendant will continue to infringe the '560 Patent.

**SECOND COUNT**  
**(PATENT INFRINGEMENT—'008 PATENT)**  
**35 U.S.C. §§ 271 AND 281**

78. Plaintiff incorporates and repeats the preceding paragraphs 1 through 77 above as if fully set forth herein.

79. Upon information and belief, Defendant has directly infringed one or more claims of the '008 Patent (including the claims referred to above) pursuant to 35 U.S.C. § 271(a) by importing, using, selling, and/or offering to sell in the United States products, including, but not limited to, smartphone models such as those listed in paragraph 60. Upon information and belief, infringement pursuant to 35 U.S.C. § 271(a) by Defendant is ongoing.

80. Upon information and belief, Defendant has indirectly infringed one or more claims of the '008 Patent (including the claims referred to above) pursuant to 35 U.S.C. § 271(b) by actively and knowingly inducing, directing, causing, and encouraging others, including, but

not limited to, original equipment manufacturers (“OEMs”), other manufacturers, designers, distributors, importers, resellers, repair providers, software developers, customers, and/or end users, to make, use, import, sell, and/or offer to sell in the United States, those of Defendant’s products including, but not limited to, smartphone models such as those listed in paragraph 60, by, among other things, providing instructions, manuals, technical assistance, and promotional materials relating to the installation, use, operation, and maintenance of said smartphones and tablet computers. Defendant’s inducement of infringement pursuant to 35 U.S.C. § 271(b) is ongoing.

81. Defendant has committed the foregoing infringing activities without a license to the ’008 Patent, with notice of the ’008 Patent.

82. Defendant’s foregoing infringing activities were committed willfully and intentionally.

83. Plaintiff has been and will continue to be irreparably harmed and damaged by Defendant’s foregoing acts of infringement, and have no adequate remedy at law.

84. As a consequence of the foregoing infringing activities by Defendant, Plaintiff has been damaged in an amount not yet determined.

85. Unless enjoined, Defendant will continue to infringe the ’008 Patent.

#### **JURY DEMAND**

86. Plaintiff requests a jury trial of all issues in this action so triable.

#### **PRAYER FOR RELIEF**

WHEREFORE, Plaintiff prays for judgment in its favor and relief as follows:

- A. Adjudging, finding, and declaring that Defendant is infringing the Asserted Patents.
- B. Adjudging, finding, and declaring that Defendant’s infringement has been willful.

- C. Permanently enjoining the sale of each and every device that infringes the Asserted Patents, and permanently enjoining Defendant, its officers, agents, servants, employees, and attorneys, and those persons in active concert or participation with them, from infringing the Asserted Patents.
- D. Ordering that Defendant recall from customers any infringing device not sold to consumers.
- E. Awarding Plaintiff an accounting and damages against Defendant in a sum to be determined at trial, together with interest and costs as fixed by the Court; all of these damages to be enhanced in an amount up to treble the amount of compensatory damages.
- F. Awarding Plaintiff its reasonable attorneys' fees, costs, and disbursements in this action.
- G. Granting Plaintiff such other and further relief as is just and proper.

Dated: September 23, 2024

Respectfully submitted,

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