

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION**

MAXELL, LTD.,

Plaintiff,

v.

LENOVO GROUP LTD., LENOVO
(UNITED STATES) INC., AND
MOTOROLA MOBILITY LLC,

Defendants.

Civil Action No. 6:21-cv-01169-ADA

**COMPLAINT AND DEMAND FOR
JURY TRIAL**

FIRST AMENDED COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Maxell, Ltd. (“Maxell”), by and through its undersigned counsel, files this first amended complaint under 35 U.S.C. § 271 for Patent Infringement against Defendants Lenovo Group Ltd., Lenovo (United States) Inc., and Motorola Mobility LLC (all collectively, “Lenovo” or “Defendant”) and further alleges as follows, upon actual knowledge with respect to itself and its own acts, and upon information and belief as to all other matters.

OVERVIEW

1. This is an action for patent infringement by Maxell. Founded in 1961 as Maxell Electric Industrial Co., Ltd., Maxell is a leading global manufacturer of information storage media products, including magnetic tapes, optical discs, and battery products such as lithium ion rechargeable micro batteries and alkaline dry batteries, and the company has over 50 years of experience producing industry-leading recordable media and energy products for both the consumer and the professional markets. Maxell is also a leading manufacturer of projectors and

lenses and additionally sells various other devices, such as Bluetooth headsets, wireless charging solutions, etc.

2. Maxell has built up an international reputation for excellence and reliability, for pioneering the power supplies and digital recordings for today's mobile and multi-media devices, and leading the electronics industry in the fields of storage media and batteries.

3. Since being one of the first companies to develop alkaline batteries and Blu Ray camcorder discs, Maxell has always assured its customers of industry-leading product innovation and is one of the world's foremost suppliers of memory, power, audio, and video goods. Maxell's well-recognized logo and iconic "blown away" image exemplify the reputation Maxell carefully developed in these markets.



4. As more fully described below, in 2009 Hitachi, Ltd. assigned much of its consumer product-facing intellectual property to its consumer product business division, Hitachi Consumer Electronics Co., Ltd. Then, in 2013, the consumer electronics division of Hitachi Consumer Electronics Co., Ltd., was transferred to Hitachi Maxell, Ltd. This involved assigning the intellectual property including the patents in this case, to Hitachi Maxell, Ltd. In 2017, Hitachi Maxell engaged in a reorganization and name change—to Maxell, Ltd.—in an effort to align its

intellectual property with the business development, and research and development, and licensing efforts of Maxell, including in the mobile and mobile-media device market (Hitachi, Ltd. and Hitachi Consumer Electronics Co., Ltd. are referred to herein collectively as “Hitachi”). Maxell continues to own all rights to the patents-in-suit, as well as the entire Maxell portfolio initially obtained from Hitachi.

5. Today, Maxell maintains a thriving business in the mobile device market including wireless charging solutions, wireless flash drives, multimedia players, storage devices, and headphones. Maxell also maintains intellectual property related to televisions, computer products, tablets, digital cameras, and mobile phones. As a mobile technology developer and industry leader, and due to its historical and continuous investment in research and development, including in the state of Texas, Maxell owns a portfolio of patents related to such technologies and actively enforces its patents through licensing and/or litigation. Leading smartphone manufacturers have recognized the value of Maxell’s intellectual property and have obtained a license from Maxell in the recent past—including many of the smartphone companies well-known to consumers.

6. Maxell is forced to bring this action against Lenovo as a result of Lenovo’s knowing and ongoing infringement of Maxell’s patents as further described herein.

Lenovo [REDACTED]

7. Lenovo has been aware of Maxell’s patents since at least [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

8. [REDACTED]
[REDACTED]

[REDACTED]

[REDACTED]

9. [REDACTED]

[REDACTED]

[REDACTED]

10. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

11. [REDACTED]

[REDACTED]

12. [REDACTED]

[REDACTED]

13. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

PUBLIC VERSION

[REDACTED]

14. [REDACTED]

[REDACTED]

15. [REDACTED]

[REDACTED]

16. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

17. [REDACTED]

[REDACTED]

18. On or about October 30, 2014, however, Lenovo acquired Motorola Mobility's smartphone lines of business from Google in a transaction of \$2.91 billion and began selling Motorola-branded smartphones.

19. Upon information and belief, and according to publicly available reports and publications, at the time of the acquisition of Motorola Mobility, its annual sales were at least one hundred million U.S. dollars in either of the two (2) fiscal years prior to the time of the acquisition.

20. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

21. Specifically, Maxell sent a letter to Lenovo on May 17, 2018 identifying fifty patents from Maxell's patent portfolio that Maxell believed were infringed by Lenovo's sale of Motorola-branded smartphones. *See* Letter from J. Beaber to C. Welton dated May 17, 2018 (Exhibit 1). In the letter, Maxell explained that it "is focused on addressing these issues without the need for costly and protracted litigation, and it would welcome the opportunity to have constructive discussions with Motorola to determine whether a mutually acceptable patent license agreement can be reached." *See* Exhibit 1 at 5.

22. Between May 17, 2018 and July 9, 2018, Maxell's representative—Jamie Beaber—and Lenovo's Director of Licensing—Kathryn Tsirigotis—exchanged several communications including invitations from Mr. Beaber to schedule a time for a call or host an in-person meeting in Ms. Tsirigoti's then-location of North Carolina. Ms. Tsirigotis never responded to Mr. Beaber's invitations and no further communications were received from Lenovo. *See* Exhibit 2 (email exchange between Mr. Beaber and Ms. Tsirigotis).

23. Having not heard back from any Lenovo representatives, Maxell sent another letter on June 3, 2021, following up with respect to the prior invitations to host a meeting and continue to explain that Maxell believes that Lenovo's sale of Motorola-branded smartphones infringe Maxell's patents. *See* Letter from J. Beaber to Fergal Clarke, and Robert Renke dated June 3, 2021 (Exhibit 3). In this correspondence, Maxell specifically called to attention additional patents (112

in total) from Maxell's portfolio and identified claims of those patents along with specific Motorola smartphone models that were infringing the claims. Once again, Lenovo did not respond.

24. Mr. Beaber finally was able to reach Mr. Fergal Clarke—a different Lenovo representative—through further exchanges of email and the two of them held a telephone conference on August 17, 2021. Despite Maxell's efforts, this call took place approximately three years after the initial communications with Lenovo and after numerous invitations for a call or meeting.

25. During the call, Mr. Clarke confirmed that he was aware of the initial correspondence with Ms. Tsirigotis but noted that she had departed the company. He also confirmed [REDACTED]

[REDACTED]

[REDACTED] Mr. Clarke requested additional time to confer with his colleagues on this issue.

26. Another telephone conference on September 14, 2021, also did not resolve the issue.

27. On yet another follow-up call, on October 5, 2021, Mr. Clarke was joined by Lenovo's Director, IP Counsel, Mr. Scott Reid. Although it took place years after the initial Maxell contacts, Mr. Reid was able to provide some clarity of Lenovo's position [REDACTED]

[REDACTED]

28. Lenovo confirmed its position [REDACTED] in an email exchange later that day. [REDACTED]

[REDACTED]

29. After more than three years of Maxell trying to get clarity on the issue, Lenovo finally stated to Maxell that [REDACTED]

[REDACTED] The fact that Lenovo's Motorola-branded smartphones infringe Maxell patents also did not seem to concern Lenovo's representatives, despite the point being emphasized in several communications and on the October 5, 2021 telephone call.

30. Maxell agrees that [REDACTED]

[REDACTED]

[REDACTED] Such a discussion would have provided the parties an opportunity to discuss a royalty rate appropriate for smartphones, as well as the proper base to which the rate would apply. [REDACTED]

Maxell wanted to provide Lenovo an opportunity to have this discussion in good faith, to do the right thing and respect Maxell's patents

like Lenovo's competitors have done, by licensing the patents for smartphones. However, Lenovo

[REDACTED]

31. Nevertheless, Maxell had hoped that the parties could reach a mutually beneficial solution— [REDACTED] —but Lenovo instead implemented dilatory tactics for over three and a half years and elected not to enter into an agreement with Maxell and/or license Maxell's patents for smartphones. Accordingly, Maxell has filed this Complaint because Lenovo continues to make, use, sell and offer for sale Maxell's patented technology without a license.

PARTIES

32. Plaintiff Maxell, Ltd. is a Japanese corporation with a registered place of business at 1 Koizumi, Oyamazaki, Oyamazaki-cho, Otokuni-gun, Kyoto, Japan.

33. Upon information and belief, Lenovo Group Ltd. is a corporation organized and existing under the laws of China, with its principal place of business located at No 6 Chuang Ye Road, Haidian District, Shangdi Information Industry Base, Beijing, 100085, China, and may be served pursuant to the provisions of the Hague Convention.

34. Upon information and belief, Defendant Lenovo (United States) Inc. is a corporation organized and existing under the laws of the state of Delaware, with its principal place of business located at 1009 Think Place, Morrisville, North Carolina 27650. Defendant Lenovo (United States) Inc. may be served through its registered agent for service of process – The Corporation Trust Company, Corporation Trust Center, 1209 Orange St., Wilmington, DE 19801.

35. Upon information and belief, Defendant Motorola Mobility LLC is a corporation organized and existing under the laws of the state of Delaware, with its principal place of business located at 600 N. U.S. Highway 45, Libertyville, IL 60048. Defendant Motorola Mobility LLC is

a subsidiary of or otherwise controlled by Defendant Lenovo Group Ltd. Defendant Motorola Mobility LLC may be served through its registered agent for service of process – The Corporation Trust Company, Corporation Trust Center, 1209 Orange St., Wilmington, DE 19801.

NATURE OF THE ACTION, JURISDICTION, AND VENUE

36. Maxell brings this action for patent infringement under the patent laws of the United States, 35 U.S.C. § 271 *et seq.*

37. This Court has subject matter jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1338(a) because the action arises under the patent laws of the United States.

38. This Court has personal jurisdiction over Lenovo. Lenovo conducts business and has committed acts of direct and indirect patent infringement in this District, the State of Texas, and elsewhere in the United States. Moreover, Lenovo is registered to do business in the State of Texas, has offices and facilities in the State of Texas and this District, actively posts job listings for positions in Texas, and actively directs its activities to customers located in the State of Texas and this District.

39. Venue is proper in this Judicial District pursuant to 28 U.S.C. § 1400(b) because, among other things, Lenovo has a regular and established place of business in this District. Specifically, Lenovo has admitted that they have at least 53 employees in this District. *See Gesture Technology Partners, LLC v. Lenovo Group Ltd. et al.*, 6:21-cv-00122, (E.D. Tex. October 13, 2021), Dkt. No. 32 at 2. Lenovo has admitted that they provide reimbursement to their employees to maintain home offices in this District. *Id.* at 2-3. Lenovo has further admitted that at least 12 of Lenovo's employees in this District have received funds from Lenovo to establish home offices in this District. *Id.* at 2-3.

40. In addition, Lenovo has numerous job listings for positions in this District indicating that it intends to continue to maintain a regular and established place of business in this District:

Android Software Developer

General Information

Req # 100013626

City: Chicago

Career Area: Engineering

Additional Locations:

Country/Region: United States of America

US - Atlanta, US - Austin, US - Mobile, US - Morrisville

State: Illinois

Date: Monday, October 18, 2021

See https://jobs.lenovo.com/en_US/careers/JobDetail/Parent-Evergreen-Android-Developer/31415

Sr. Research & Innovation Software Engineer

General Information

Req # WD00010066

Additional Locations:

Career Area: Software Engineering

FL41 - Ft. Lauderdale, FL42 - Miami, US - Austin, US - Mobile, US - Morrisville, US - Morrisville (Davis Dr), US - San Jose

Country/Region: United States of America

State: California

Date: Monday, August 30, 2021

City: San Jose

Working Time: Full-time

See https://jobs.lenovo.com/en_US/careers/JobDetail/Sr-Research-Innovation-Software-Engineer/29483

Director Of Strategy, Mergers And Acquisitions (SSG BU)

General Information

Req # WD00008047

Career Area: Strategy and Operations

Country/Region: United States of America

State: North Carolina

City: Morrisville

Additional Locations:

US - Atlanta, US - Austin, US - Bellevue, US -
Morrisville (Davis Dr), US - San Jose

Date: Monday, October 4, 2021

Working Time: Full-time

APPLY

If you require an accommodation to complete this application, please contact ability@lenovo.com

Share this job:

See https://jobs.lenovo.com/en_US/careers/JobDetail/Director-of-M-A-Strategy-Solutions-and-Services-Group/28714

41. In addition, Lenovo has at least the following Authorized Service Providers and/or service centers in this District:

- Intech Southwest Services, LLC (4778 Research Drive, San Antonio, TX 78240)
- Streamline Technical Services, LLC (2711 Oakmont Drive, Round Rock, TX 78665)
- Abacus Computers Inc. (6 Desta Drive, Suite 1350, Midland, TX 79705)
- BJ Associates of San Antonio (10823 Gulfdale, San Antonio, TX 78216)
- Computer Express (12758 Cimarron Path, Suite 104B, San Antonio, TX 78249)
- 9900 S IH 35 Frontage Rd Suite P475, Austin, TX 78748
- 14010 US-183 Suite 528, Austin, TX 78717
- 115 Sundance Parkway Suite 320, Round Rock, TX 78681
- 107 Childers Dr Suite 300 Bastrop, TX 78602
- 750 Barnes Drive Suite 116, San Marcos, TX 78666
- 160 Creekside Way Suite 102B, New Braunfels, TX 78130
- 200 Commercial Drive Suite 102, Harker Heights, TX 76548
- 12140 O'Connor Rd San Antonio, TX 78233

See *Gesture Technology Partners*, 6:21-cv-00122, (E.D. Tex. October 13, 2021), Dkt. No. 32 at 6-7.

42. In addition, Lenovo has Authorized Dealers in this District including, but not limited to, Ingram/Bright Point, Ice Mobility, Planet Cell and Quality One. Additional Authorized Dealers in this District can be found by using the “Find a Reseller” tool, available at <https://www.lenovo.com/us/en/landingpage/resellerlocator/>.

43. A regular and established place of business requires the regular, physical presence of an employee or other agent of the defendant conducting the defendant's business at the alleged place of business. Lenovo: (1) has the physical presence of at least 50 employees in this District that are provided reimbursement from Lenovo to maintain and establish a place of business, (2) continues to advertise positions for hiring additional employees in this District; (3) has at least a dozen Authorized Service Providers and/or service centers in this District; and (4) Authorized Dealers in this District.

44. Additionally, Maxell has had regular and continuous business in Texas since 2014. As a result of such business dealings and hopes to expand those and other business dealings, a Maxell affiliate, Maxell Research and Development America, LLC ("MRDA"), was founded in Marshall, Texas. MRDA is part of a joint venture with another business in Marshall, and the entities work together on research and development related to IoT, mobile, media and battery technologies. MRDA's ongoing projects include, for example, the research and development of lensless camera technology, which Maxell hopes will be utilized for sensor and camera technology in smartphones. Prior to the pandemic, Maxell engineers and executives would regularly travel to Marshall to meet and work to expand the research and development activities, business, and investments being made by Maxell, MRDA, and their business partners in Texas to further the goals of these companies. While these efforts continue remotely for the time being, they have started to continue in-person now that travel restrictions are easing.

45. Maxell has filed seven other lawsuits in Texas in order to enforce the patent portfolio of which the currently asserted patents are a part against various smartphone manufacturers including Apple Inc., ASUSTeK Computer Inc., Huawei Technologies Co. Ltd., and ZTE (USA) Inc. Two of the patents accused of infringement herein, including U.S. Patent No.

8,098,695 and U.S. Patent No. 6,928,292, and a family member with similar claim terms as U.S. Patent No. 8,059,177, were previously asserted in the Eastern District of Texas against ZTE (USA), Inc., ZTE Corporation, and/or Huawei Technologies Co. Ltd. The prior case against ZTE (USA) Inc., *Maxell Ltd. v. ZTE (USA) Inc.*, Case No. 5:16-cv-00179-RWS, culminated in a ten day jury trial resulting in a verdict of \$43 million in favor of Maxell. At this point, all of Maxell's filed cases relating to this portfolio have been resolved and dismissed.

COUNT 1 - INFRINGEMENT OF U.S. PATENT NO. 8,098,695

46. Maxell incorporates paragraphs 1-45 above by reference.

47. U.S. Patent No. 8,098,695 (the "'695 Patent," attached hereto at Exhibit 5) duly issued on January 17, 2012 and is entitled *Multiplexed audio data decoding apparatus and receiver apparatus*.

48. Maxell is the owner by assignment of the '695 Patent and possesses all rights under the '695 Patent, including the exclusive right to recover for past and future infringement.

49. In order to play audio and voice signals in multiple formats, decoders in conventional devices at the time of the '695 Patent (which claims priority to November 4, 1998) had to have built-in memory space to store code for decompressing signals in each of those multiple formats. '695 Patent at 1:56-62. This need for substantial built-in memory caused conventional audio decoders to consume considerable space, making them difficult to integrate into existing products. *Id.* at 2:5-13. In addition, conventional decoders were inflexible: they could not easily be updated to include new or revised decoding instructions. *Id.* at 2:13-17. This was a hardware-specific problem in the field of audio processing in computing devices.

50. Other inventors had proposed particular solutions in the field of audio processing, but these alternative solutions did not solve all of the problems that would face a person of ordinary skill in the art. For example, inventors at LSI Logic Corporation provided one solution in U.S.

Patent No. 5,845,249. Specifically, U.S. Patent No. 5,845,249 disclosed using two separate state machines (“MPEG State Machine” and “AC – 3 State Machine”) to provide dedicated hardware to offer flexibility. *See* U.S. Patent No. 5,845,249 at Fig. 5A. This solution was not sufficient at least because it increased the hardware requirements of the device and would require an increase in size of the device to accommodate additional hardware state machines, which would increase the cost, and would also not be easy to update to accommodate additional audio formats. Thus, other solutions in this field had been proposed, but were inadequate.

51. The '695 Patent solved this problem by designing a decoder that could pull the necessary code and other information for decompressing and decoding signals of different formats from outside of the built-in memory. '695 Patent at 2:24-3:25. The claimed arrangement of hardware recited in claims 1 and 4 detects a change in the format or type of compression and encoding and transfers the necessary code for decompressing and decoding audio signals according to the new format to the audio decoder's memory. *Id.* at 6:31-7:65. The new code may come from an external source, such as the Internet (*id.* at 10:37-42) or from another memory location (*id.* at 9:7-12).

52. Specifically, the invention is directed to the novel arrangement of hardware components including, for example, “a demultiplexer,” “a memory,” “a digital signal processor,” and a “controller” in an “audio decoder apparatus” that improve the performance of the audio decoder apparatus by detecting whether a method of compression and encoding changes to another method of compression and encoding in the audio and downloading a different decoding program code when a change is detected. This decoding program code is then used to decode packetized, compressed, and encoded data sequence.

53. The '695 Patent provided a practical and desirable concrete way of processing audio in a computing device and is directed to a specific improvement of the audio processing capabilities of such devices and ties this improvement to specific arrangement of hardware that work in conjunction to provide the inventive concept of using multiple types of audio decoders that can be summoned on demand and without requiring extensive memory. The invention of the '695 Patent allows a device to operate in a more flexible manner and improves the capabilities of the computer system by allowing it to process additional types of audio.

54. A person of ordinary skill in the art would recognize that audio processing and audio decoding in computing devices—as claimed—includes implementing of complex hardware executing instructions to decode audio and to offload tasks from CPU to pull in additional decoders, as evidenced by audio processing tasks implemented in computing devices today:

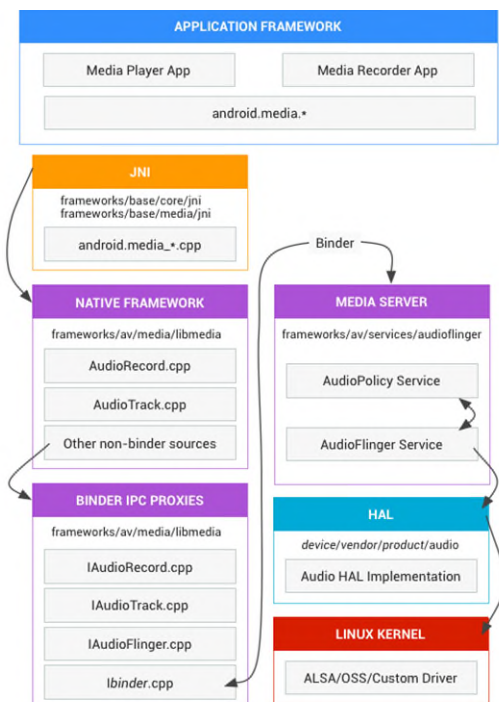


Figure 1. Android audio architecture

MediaCodec

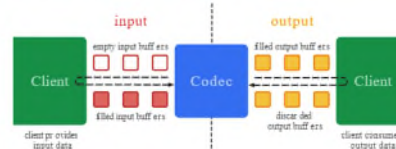
Added in API level 16

Kotlin | Java

```
public final class MediaCodec
extends Object

java.lang.Object
↳ android.media.MediaCodec
```

MediaCodec class can be used to access low-level media codecs, i.e. encoder/decoder components. It is part of the Android low-level multimedia support infrastructure (normally used together with [MediaExtractor](#), [MediaSync](#), [MediaMuxer](#), [MediaCrypto](#), [MediaDrm](#), [Image](#), [Surface](#), and [AudioTrack](#)).



In broad terms, a codec processes input data to generate output data. It processes data asynchronously and uses a set of input and output buffers. At a simplistic level, you request (or receive) an empty input buffer, fill it up with data and send it to the codec for processing. The codec uses up the data and transforms it into one of its empty output buffers. Finally, you request (or receive) a filled output buffer, consume its contents and release it back to the codec.

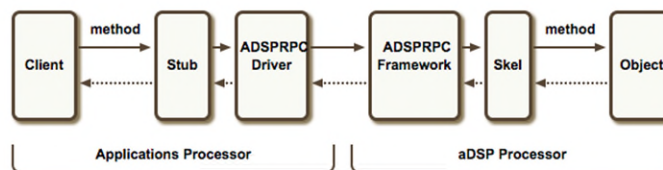
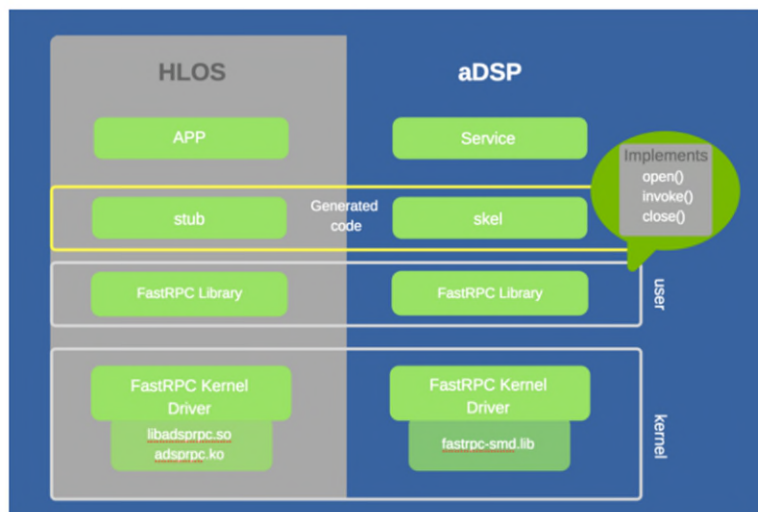
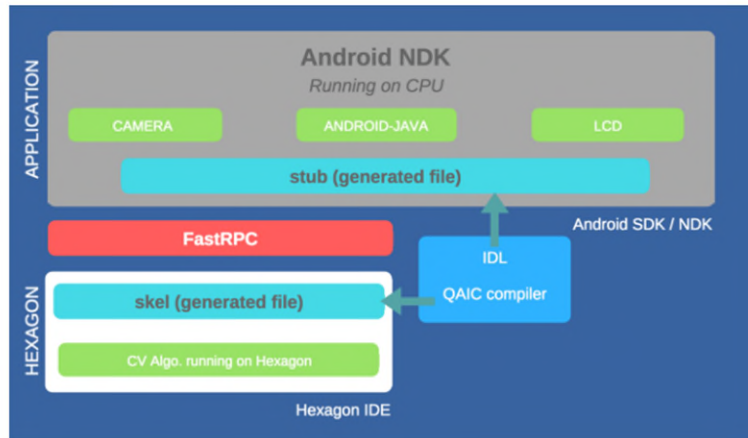
Data Types

Codecs operate on three kinds of data: compressed data, raw audio data and raw video data. All three kinds of data can be processed using [ByteBuffer](#)s, but you should use a [Surface](#) for raw video data to improve codec performance. Surface uses native video buffers without mapping or copying them to [ByteBuffer](#)s; thus, it is much more efficient. You normally cannot access the raw video data when using a [Surface](#), but you can use the [ImageReader](#) class to access unsecured decoded (raw) video frames. This may still be more efficient than using [ByteBuffer](#)s, as some native buffers may be mapped into [direct ByteBuffer](#)s. When using [ByteBuffer](#) mode, you can access raw video frames using the [Image](#) class and [getInput / OutputImage\(int\)](#).

See <https://source.android.com/devices/audio>; see also <https://developer.android.com/reference/android/media/MediaCodec>

On aDSP

To accelerate the computer vision application, CPU can offload the work to aDSP and pictorially it looks like following:



See <https://mdeore.medium.com/hexagon-dsp-cpu-offload-4fb8e4077fe8>

55. Lenovo has directly infringed one or more claims of the '695 Patent in this District and elsewhere in Texas, including at least claims 1 and 4 literally and/or under the doctrine of equivalents, by or through making, using, importing, offering for sale and/or selling its telecommunications technology, including at least Lenovo products having materially similar functionality while implementing a multiplexed audio decoder within smartphones including, without limitation, the Moto E Family (E⁶, E⁵ Supra, E⁵ Plus, E⁵ Play, E⁵ Go, E⁵ Cruise, E⁵, E⁴ Plus, and E⁴); Moto Edge Family (edge and edge+), Moto G Family (G Play, G Power, G⁷ Play, G⁷ Play with Amazon Alexa, G⁷ with Amazon Alexa, G Fast, G⁷ Supra, G⁷ Power, G⁷ Plus, G⁷ Optimo Maxx, G⁷ Optimo, G⁷, G⁶ Play, G⁶ Forge, G⁶, G^{5s} Plus, G⁵ Plus); Moto One Family (One 5G, One Action, One Hyper, One Fusion+, One Zoom, and One); Moto Razr Family (razr (1st gen) and razr (2nd gen)); and Moto Z Family (Z⁴ with Amazon Alexa, Z⁴, Z³ Play, Z³, Z² Play, and Z² Force) (collectively, "the '695 Accused Products"). Maxell reserves the right to discover and pursue any additional infringing devices that incorporate infringing functionalities. For the avoidance of doubt, the '695 Accused Products are identified to describe Lenovo's infringement and in no way limit the discovery and infringement allegations against Lenovo concerning other devices that incorporate the same or reasonably similar functionalities.

56. Each of the '695 Accused Products is observed receiving encoded data, *e.g.* multimedia and/or audio-video files, which are compressed, encoded, in multiple formats, and containing multiplexed audio data sequences. Further, each of the '695 Accused Products includes a processor programmed to demultiplex the audio data sequence from the multimedia or audio-video files selected by the user, and decode the encoded data using information included in the audio data sequence. The information in the audio data sequence provides instructions on the type of encoding and compression associated with the corresponding multiplexed audio data sequence,

such that processor and/or CPU will retrieve and read the appropriate decoding algorithm from memory and decode the corresponding audio data sequence. When a different decoding algorithm is required, the processor and/or CPU will then retrieve a different decoding algorithm for decoding. Further, an error detection method is implemented to confirm correct retrieval of the decoding algorithm.





57. For example, the following excerpt from Lenovo's website provides non-limiting examples of the '695 Accused Products infringing at least claims 1 and 4 of the '695 Patent by implementing various audio decoders (*e.g.*, PCM, WAV, FLAC, MP3, AAC) to support a variety of audio formats and/or audio functions to play audio and video files, send or receive audio calls, and/or implement sound profiles for Music, Movie, Game, or Podcast such that when the '695 Accused Products switch from one function to another, a different audio decoder is used to process the audio. See https://motorola-global-en-roe.custhelp.com/app/answers/detail/a_id/152860. Specifically, the '695 Accused Products implement "Moto Audio" such that Lenovo's smartphones "automatically identif[y] the type of media you're playing . . . and adjusts sounds for that experience." *Id.*

Enhance sound with Moto Audio

Your phone automatically identifies the type of media you're playing and how you're listening (phone's speaker, headphones, or other connected audio device), and adjusts sound for that experience. You don't have to do anything. Moto Audio is always on, unless you turn it off.


Manually select sound profile for headphones

You can manually select a preset sound profile for your headphones or other connected device, and your phone will remember the setting the next time you connect it.

1. Go to **Settings > Sound > Moto Audio**
2. Choose how to adjust sound:
 - To automatically adjust based on the media playing, turn **Auto** on 
 - To use a preset sound profile, select **Music, Movie, Game, or Podcast**
3. To customize a selected sound profile, next to the profile name touch , then:
 - Choose an equalizer preset to enhance treble, bass, or vocals.
 - To get a surround sound experience on your connected headphones, turn **Surround virtualizer** on.
 - To keep the same volume level when you switch between audio sources, turn **Volume leveler** on.
 - To learn more about these settings, touch  > **Help**
 - To revert to original settings, touch  > **Reset**

Lenovo

Open Moto Audio as app or quick setting**To find Moto Audio as an app:**

1. Go to **Settings > Sound > Moto Audio**
2. Touch  > **Show icon in the app tray**

To add Moto Audio to quick settings:

1. Open quick settings.
2. Touch  and drag  where you want it.

Turn Moto Audio off


To turn Moto Audio off for headphones or another connected device:

1. Go to **Settings > Sound > Moto Audio**
2. Turn it off 

See https://motorola-global-en-roe.custhelp.com/app/answers/detail/a_id/152860

58. Further, the following excerpts from the User Guide of one of the '695 Accused Products provides non-limiting examples of the '695 Accused Products infringing at least claims 1 and 4 of the '695 Patent by implementing various audio decoders (e.g., PCM, WAV, FLAC, MP3, AAC) to support a variety of audio formats and/or audio functions to play audio and video files and/or send or receive audio calls such that when the '695 Accused Products switch from one function to another, a different audio decoder is used to process the audio:






Apps

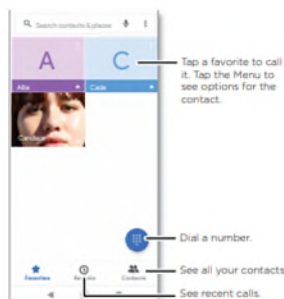
Your phone comes ready with some great apps. To find and add more apps, tap  **Play Store**. To learn more, see [App safety](#).




Phone

Keep in touch by choosing a contact, returning a missed call, or using a voice command to start a call.

Make a call**Find it:**  **Phone**

- » **Call a contact:** To call a contact or recent call, tap the contact name.
 - » **Dial a phone number:** To open the dialpad, tap . Enter a number, then tap  to call it.
 - » **Voice dial:** To voice dial, tap  on the home screen or say "Ok Google", then say "Call <name>".
 - » **Voicemail:**  appears in the status bar when you have new voicemail. To hear it, swipe down and tap the notification.
 - » **Make a contact widget:** Touch and hold an empty spot on the home screen, tap **Widgets**, then touch and hold the **Direct dial** widget. Drag it to your home screen, then select the contact. Tap the widget to call the person.
- Tip:** To enter the international dialing code (+), touch and hold **0**. To add a pause or wait after numbers, tap **Menu** .

**Receive a call**

- » **Answer a call:** When your phone is locked, swipe  up to answer. When the phone is unlocked, tap **ANSWER**.
 - » **Ignore a call:** When your phone is locked, swipe  down to reject the call and send it to voicemail. When the phone is unlocked, tap **DECLINE**.
- Tip:** You can also press the Power button to ignore the call, or press a volume button to silence the ringer.
- » **Respond with a text:** When your phone is locked, swipe up  and select a message to respond.
- Note:** When you hold your phone to your ear, the touchscreen goes dark to avoid accidental touches. When you move the phone away from your ear, the screen lights up again. Don't use covers or screen protectors (even clear ones) that cover the proximity sensor above the touchscreen.

See Motorola E6 User Manual at 12 (available at <https://ss7.vzw.com/is/content/VerizonWireless/Catalog%20Assets/Devices/Motorola/moto-e6-postpaid/motorola-moto-e6-postpaid-ug.pdf>)

Music, movies, TV & YouTube

Music

Music everywhere—stream it, buy it, save it, play it. Listen and create playlists anytime.

Find it: Swipe up ^ > **Play Music**

To upload your music library to Google Play Music, from a computer, visit www.google.com/music

Tip: Share songs directly with your contacts. Tap Menu next to a song and tap **Share**. See [Direct Share](#).

For more on the Play Music app, see support.google.com/music.

Note: Copyright—do you have the right? Always follow the rules. See “**Content Copyright**” in the legal and safety information on your phone.

FM Radio

Find it: Swipe up ^ > **FM Radio**

Plug in a headset, then use the arrows to tune to a higher/lower frequency station.

Note: Your phone has the Frequency Modulation (FM) broadcast receiver functionality for reception without data usage. The phone will perform an auto tuning for the radio

Movies & TV

Find and rent movies and TV shows to watch on your phone, tablet, or computer:

Find it: Swipe up ^ > **Play Movies & TV**

To shop, rent, or watch on a computer, go to play.google.com/store/movies.

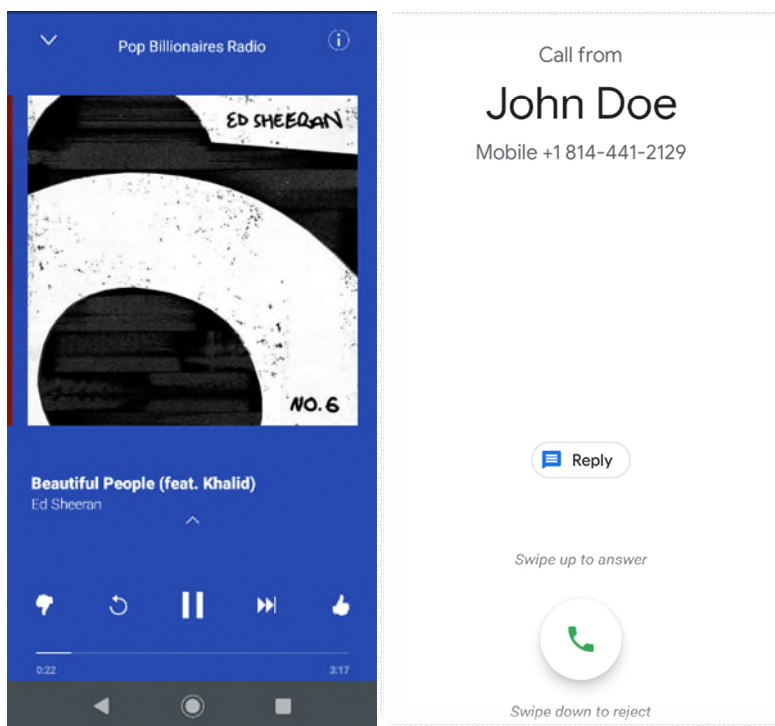
YouTube™

Watch videos and podcasts from YouTube users everywhere—or log in to your account to share your own.

Find it: Swipe up ^ > **YouTube**

See Motorola E6 User Manual at 23 (available at <https://ss7.vzw.com/is/content/VerizonWireless/Catalog%20Assets/Devices/Motorola/moto-e6-postpaid/motorola-moto-e6-postpaid-ug.pdf>)

59. Further, the following screenshots show non-limiting examples of one of the '695 Accused Products implementing various audio decoders when switching from playing an audio file to playing a ringtone to answering a phone call:



Motorola E6 Functionality

https://motorola-global-en-roe.custhelp.com/app/answers/detail/a_id/152860

60. The foregoing features and capabilities of each of the '695 Accused Products and Lenovo's description and/or demonstration thereof, including in user manuals and advertising, reflect Lenovo's direct infringement by satisfying every element of at least claims 1 and 4 of the '695 Patent, under 35 U.S.C. § 271(a).

61. Lenovo has indirectly infringed at least claims 1 and 4 of the '695 Patent in this District and elsewhere in the United States by, among other things, actively inducing the use, offering for sale, selling, or importation of at least the '695 Accused Products. Lenovo's customers who purchase devices and components thereof and operate such devices and components in accordance with Lenovo's instructions directly infringe one or more claims of the '695 Patent in violation of 35 U.S.C. § 271(b). Lenovo instructs its customers through at least user guides or websites, such as those located at: https://motorola-global-en-roe.custhelp.com/app/answers/detail/a_id/152860, <https://ss7.vzw.com/is/content/VerizonWireless/Catalog%20Assets/Devices/Motorola/moto-e6-postpaid/motorola-moto-e6-postpaid-ug.pdf>, and <https://www.motorola.com/us/smartphones-moto-e6/p?skuId=334>.





62. For example, as noted above, Lenovo instructs its customers to "Enhance sound with Moto Audio," "turn Auto on" to "automatically adjust based on media playing," "Make a call," "Receive a call," "Play Music," "stream it, buy it, save it, play it," and "Play Movies & TV."

Enhance sound with Moto Audio

Your phone automatically identifies the type of media you're playing and how you're listening (phone's speaker, headphones, or other connected audio device), and adjusts sound for that experience. You don't have to do anything. Moto Audio is always on, unless you turn it off.

Manually select sound profile for headphones

You can manually select a preset sound profile for your headphones or other connected device, and your phone will remember the setting the next time you connect it.

1. Go to **Settings > Sound > Moto Audio**
2. Choose how to adjust sound:
 - To automatically adjust based on the media playing, turn **Auto** on 
 - To use a preset sound profile, select **Music**, **Movie**, **Game**, or **Podcast**
3. To customize a selected sound profile, next to the profile name touch , then:
 - Choose an equalizer preset to enhance treble, bass, or vocals.
 - To get a surround sound experience on your connected headphones, turn **Surround virtualizer** on.
 - To keep the same volume level when you switch between audio sources, turn **Volume leveler** on.
 - To learn more about these settings, touch  > **Help**
 - To revert to original settings, touch  > **Reset**

See https://motorola-global-en-roe.custhelp.com/app/answers/detail/a_id/152860

Apps






Your phone comes ready with some great apps. To find and add more apps, tap  **Play Store**. To learn more, see [App safety](#).

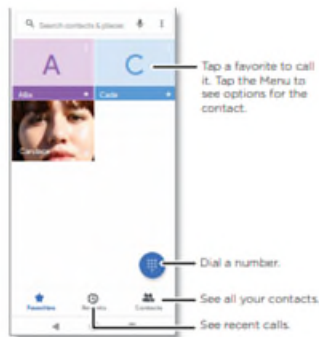
Phone

Keep in touch by choosing a contact, returning a missed call, or using a voice command to start a call.



Make a call


Find it: Phone

- » **Call a contact:** To call a contact or recent call, tap the contact name.
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 - » **Voicemail:**  appears in the status bar when you have new voicemail. To hear it, swipe down and tap the notification.
 - » **Make a contact widget:** Touch and hold an empty spot on the home screen, tap **Widgets**, then touch and hold the **Direct dial** widget. Drag it to your home screen, then select the contact. Tap the widget to call the person.
- Tip:** To enter the international dialing code (+), touch and hold **0**. To add a pause or wait after numbers, tap **Menu** .



Receive a call

- » **Answer a call:** When your phone is locked, swipe  up to answer. When the phone is unlocked, tap **ANSWER**.
 - » **Ignore a call:** When your phone is locked, swipe  down to reject the call and send it to voicemail. When the phone is unlocked, tap **DECLINE**.

Tip: You can also press the Power button to ignore the call, or press a volume button to silence the ringer.
 - » **Respond with a text:** When your phone is locked, swipe up  and select a message to respond.
- Note:** When you hold your phone to your ear, the touchscreen goes dark to avoid accidental touches. When you move the phone away from your ear, the screen lights up again. Don't use covers or screen protectors (even clear ones) that cover the proximity sensor above the touchscreen.


See Motorola E6 User Manual at 12 (available at <https://ss7.vzw.com/is/content/VerizonWireless/Catalog%20Assets/Devices/Motorola/moto-e6-postpaid/motorola-moto-e6-postpaid-ug.pdf>)

Music, movies, TV & YouTube**Music**

Music everywhere—stream it, buy it, save it, play it. Listen and create playlists anytime.

Find it: Swipe up  >  **Play Music**

To upload your music library to Google Play Music, from a computer, visit www.google.com/music.

Tip: Share songs directly with your contacts. Tap Menu  next to a song and tap **Share**. See [Direct Share](#).

For more on the Play Music app, see support.google.com/music.

Note: Copyright—do you have the right? Always follow the rules. See **"Content Copyright"** in the legal and safety information on your phone.

FM Radio

Find it: Swipe up  >  **FM Radio**

Plug in a headset, then use the arrows to tune to a higher/lower frequency station.

Note: Your phone has the Frequency Modulation (FM) broadcast receiver functionality for reception without data usage. The phone will perform an auto tuning for the radio.

Movies & TV

Find and rent movies and TV shows to watch on your phone, tablet, or computer.

Find it: Swipe up  >  **Play Movies & TV**

To shop, rent, or watch on a computer, go to play.google.com/store/movies.

YouTube™

Watch videos and podcasts from YouTube users everywhere—or log in to your account to share your own.

Find it: Swipe up  >  **YouTube**

See Motorola E6 User Manual at 23 (available at <https://ss7.vzw.com/is/content/VerizonWireless/Catalog%20Assets/Devices/Motorola/moto-e6-postpaid/motorola-moto-e6-postpaid-ug.pdf>)

63. Lenovo is thereby liable for infringement of the '695 Patent pursuant to 35 U.S.C. § 271(b).

64. Lenovo has indirectly infringed at least claims 1 and 4 of the '695 Patent, by, among other things, contributing to the direct infringement of others, including customers of the '695 Accused Products by making, offering to sell, or selling, in the United States, or importing a component of a patented machine, manufacture, or combination, or an apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in infringement of the '695 Patent, and not a staple article or commodity of commerce suitable for substantial non-infringing use.

65. For example, the '695 Accused Products include a decoder that supports multiplexed audio/video packets in the form of at least PCM, WAV, FLAC, MP3, and AAC, etc. These are components of a patented machine, manufacture, or combination, or an apparatus for use in practicing a patented process. Furthermore, such components are a material part of the invention and upon information and belief are not a staple article or commodity of commerce

suitable for substantial non-infringing use. Thus, Lenovo is liable for infringement of the '695 Patent pursuant to 35 U.S.C. § 271(c).

66. Lenovo has been aware of the '695 Patent family since, [REDACTED]

[REDACTED]

[REDACTED] Further, Lenovo has been on notice of its infringement of the '695 Patent since at least May 17, 2018, based on correspondence directed to Courtney VanLonKhuyzen Welton. *See* Letter from J. Beaber to C. Welton dated May 17, 2018 (Exhibit 1). That correspondence set forth Maxell's belief that Lenovo makes, uses, sells, offers to sell, or imports products that infringe certain of Maxell's patents, and specifically identified the '695 Patent as well as exemplary claims and exemplary accused products for that patent. By the time of trial, Lenovo will thus have known and intended (since receiving such notice), that its continued actions would actively induce and contribute to actual infringement of at least claims 1 and 4 of the '695 Patent.

67. Lenovo undertook and continued its infringing actions despite an objectively high likelihood that such activities infringed the '695 Patent, which has been duly issued by the USPTO, and is presumed valid. For example, at least since it received Maxell's letter on May 17, 2018, [REDACTED]

[REDACTED] Lenovo has been aware of an objectively high likelihood that its actions constituted and continue to constitute infringement of the '695 Patent, and that the '695 Patent is valid. On information and belief, Lenovo could not reasonably, subjectively believe that its actions do not constitute infringement of the '695 Patent, nor could it reasonably, subjectively believe that the patent is invalid. Despite that knowledge and subjective belief, and the objectively high

likelihood that its actions constitute infringement, Lenovo has continued its infringing activities. As such, Lenovo willfully infringes the '695 Patent.

68. Maxell has been damaged by Lenovo's infringement of the '695 Patent.

COUNT 2 - INFRINGEMENT OF U.S. PATENT NO. 7,577,417

69. Maxell incorporates paragraphs 1-68 above by reference.

70. U.S. Patent No. 7,577,417 (the "'417 Patent," attached hereto at Exhibit 6) duly issued on August 18, 2009 and is entitled *Mobile Terminal*.

71. Maxell is the owner by assignment of the '417 Patent and possesses all rights under the '417 Patent, including the exclusive right to recover for past and future infringement.

72. At the time of the invention of the '417 Patent (which claims priority to April 3, 2002), conventional mobile devices did not account for battery depletion when enhancing processing speed. '417 Patent, 1:15-39. To improve processing power, mobile devices switched a clock frequency to a high-speed mode frequency higher than a normal frequency based on internal conditions, such as power source voltage and ambient temperature. *Id.* at 1:21-25. Such conditions left no room for interposition of the will of a user in switching the speed of the clock signal and drove the central processing unit (CPU) at a higher frequency—increasing the device's current consumption. *Id.* at 1:27-34. The '417 Patent provided a new power management solution and taught a controlled clock signal frequency fed to the CPU. *Id.* at 3:3-6. This clock frequency-based power management provided a mechanism to control processing speed and to reduce current consumption, which thereby prevented battery depletion. *Id.* at 1:44-52.

73. Other inventors had proposed particular solutions in the field of power management, but these alternative solutions did not solve all of the problems that would face a person of ordinary skill in the art. For example, inventors at Nokia Mobile Phones, Ltd. disclosed adjusting the operating voltage and the clock frequency simultaneously on the basis of the

performance required by the application used at a given time. *See* U.S. Patent No. 6,484,041 at 3:30-4:3. This solution was not sufficient at least because it failed to adjust the frequency of the clock signal when a specific processing is executed when the mobile terminal is in a closed condition (*i.e.*, standby or waiting for cellular phone communication), which would lead to slower processing speed paired with an increase in current consumption. Thus, other solutions in this field had been proposed, but were inadequate.

74. As part of its solution, the '417 Patent teaches at least the use of a clock manipulation unit and/or an operation panel and a clock controller able to change a clock frequency to be fed to the CPU. '417 Patent at 3:2-13. The '417 Patent provided a practical and desirable concrete way of allowing the user to change the frequency of the clock signal in every processing, even with the device in a closed condition. Thus, the '417 Patent is directed to a specific improvement of the power management capabilities of a cellular phone and ties this improvement to the additional inventive concept of user-directed clock frequency manipulation.

75. The '417 Patent is directed to power management and specifically teaches changing clock frequencies to lower a device's current consumption. The frequency of the clock signal delivered to the second CPU is raised when the user requests specific processing and then lowered upon completion to reduce current consumption. *Id.* at 4:32-40. The '417 Patent teaches and claims a clock controller changing the clock frequency fed to the processor by increasing the frequency during the execution of a specific processing, even if the mobile device is in a closed condition, and then decreasing the frequency once completed. *Id.* at claim 1. Thus, the invention of the '417 Patent allows a mobile device to operate in a more efficient manner and improves battery life by controlling clock frequency.

76. Lenovo has directly infringed one or more claims of the '417 Patent in this District and elsewhere in Texas, including at least claims 1 and 3 literally and/or under the doctrine of equivalents, by or through making, using, importing, offering for sale and/or selling its telecommunications technology, including at least Lenovo products having materially similar functionality while implementing a clock controller to vary the frequency of operation of a processor for power management within smartphones including, without limitation, the Moto E Family (e (2020), E⁶, E⁵ Supra, E⁵ Plus, E⁵ Play, E⁵ Go, E⁵ Cruise, E⁵, E⁴ Plus, and E⁴); Moto Edge Family (edge and edge+), Moto G Family (G Stylus (2021), G Power (2021), G Play, G Power, G Stylus, G⁷ Play, G⁷ Play with Amazon Alexa, G⁷ with Amazon Alexa, G Fast, G⁷ Supra, G⁷ Power, G⁷ Plus, G⁷ Optimo Maxx, G⁷ Optimo, G⁷, G⁶ Play, G⁶ Forge, G⁶, G^{5s} Plus, G⁵ Plus); Moto One Family (One 5G, One Action, One 5G Ace, One Hyper, One Fusion+, One Zoom, and One); Moto Razr Family (razr (1st gen) and razr (2nd gen)); and Moto Z Family (Z⁴ with Amazon Alexa, Z⁴, Z³ Play, Z³, Z² Play, and Z² Force) (collectively, "the '417 Accused Products"). For example, each of these products also includes hardware (*e.g.*, Application Processor, CPU, clock controller, and/or camera) and software (*e.g.*, Phone and Camera applications) as advertised on Lenovo's website. Maxell reserves the right to discover and pursue any additional infringing devices that incorporate infringing functionalities. For the avoidance of doubt, the '417 Accused Products are identified to describe Lenovo's infringement and in no way limit the discovery and infringement allegations against Lenovo concerning other devices that incorporate the same or reasonably similar functionalities.

77. Each of the '417 Accused Products is a mobile terminal capable of being changed from an open condition to a closed condition and include a processor (*e.g.*, CPU or Application Processor) which executes program processing and operates at different frequencies based on a

variable clock signal. Further, each of the '417 Accused Products includes a clock controller capable of changing a frequency of a clock signal to be fed to the processor (*e.g.*, clock circuitry external or internal to the CPU). Further, the clock circuitry in each of the '417 Accused Products controls the frequency of the clock signal so as to become a first frequency when the mobile terminal is in the open condition, and controls the frequency of the clock signal so as to become a second frequency lower than the first frequency when the mobile terminal is in the closed condition. Further, the clock circuitry in each of the '417 Accused Product controls the frequency of the clock signal so as to become a frequency higher than the second frequency when a specific processing is executed even if the mobile terminal is in the closed condition, and controls the frequency of the clock signal so as to become the second frequency after the execution of the specific processing is completed. For example, each of the '417 Accused Products include a camera to execute a specific processing of image decoding while in closed condition.

78. For example, the following reports of some of the '417 Accused Products provide non-limiting examples of the '417 Accused Products infringing at least claims 1 and 3 of the '417 Patent:

<<< CPU >>>

SoC Model: Qualcomm Snapdragon 632
Core Architecture: 4x Qualcomm Kryo 250 LP @ 1804 MHz
4x Qualcomm Kryo 250 HP @ 1804 MHz
Manufacturing Process: 14 nm
Instruction Set: 64-bit ARMv8-A (32-bit Mode)
CPU Revision: r10p2
CPU Cores: 8
CPU Clock Range: 614 - 1804 MHz
Core 1 Clock: 1804 MHz
Core 2 Clock: 1804 MHz
Core 3 Clock: 1804 MHz
Core 4 Clock: 1536 MHz
Core 5 Clock: 1804 MHz
Core 6 Clock: 1804 MHz
Core 7 Clock: 1804 MHz
Core 8 Clock: 1804 MHz

Motorola e implementing clock circuitry and controlling the processor to operate at varying frequencies

<<< CPU >>>

SoC Model: Qualcomm Snapdragon 765/765G
Core Architecture: 6x Qualcomm Kryo 475 Silver @ 1804 MHz
Qualcomm Kryo 475 Gold @ 2208 MHz
Qualcomm Kryo 475 Gold @ 2304 MHz
Manufacturing Process: 7 nm
Instruction Set: 64-bit ARMv8-A
CPU Revision: r15p14
CPU Cores: 8
CPU Clock Range: 300 - 2304 MHz
Core 1 Clock: 1804 MHz
Core 2 Clock: 1804 MHz
Core 3 Clock: 1804 MHz
Core 4 Clock: 1804 MHz
Core 5 Clock: 1804 MHz
Core 6 Clock: 1804 MHz
Core 7 Clock: 2208 MHz
Core 8 Clock: 2304 MHz

Motorola One 5G implementing clock circuitry and controlling the processor to operate at varying frequencies

PUBLIC VERSION

<<< CPU >>>

SoC Model: Qualcomm Snapdragon 865 (SM8250)
Core Architecture: 4x Qualcomm Kryo 585 Silver @ 1804 MHz
3x ARM Cortex-A77 @ 2419 MHz
ARM Cortex-A77 @ 2841 MHz
Manufacturing Process: 7 nm
Instruction Set: 64-bit ARMv8-A
CPU Revision: r1p0
CPU Cores: 8
CPU Clock Range: 300 - 2841 MHz
Core 1 Clock: 1171 MHz
Core 2 Clock: 1171 MHz
Core 3 Clock: 1171 MHz
Core 4 Clock: 1171 MHz
Core 5 Clock: 1766 MHz
Core 6 Clock: 1766 MHz
Core 7 Clock: 1766 MHz
Core 8 Clock: 1516 MHz

Motorola Edge+ implementing clock circuitry and controlling the processor to operate at varying frequencies

<<< CPU >>>

SoC Model: Qualcomm Snapdragon 765/765G
Core Architecture: 6x Qualcomm Kryo 475 Silver @ 1804 MHz
Qualcomm Kryo 475 Gold @ 2208 MHz
Qualcomm Kryo 475 Gold @ 2304 MHz
Manufacturing Process: 7 nm
Instruction Set: 64-bit ARMv8-A
CPU Revision: r15p14
CPU Cores: 8
CPU Clock Range: 300 - 2304 MHz
Core 1 Clock: 1075 MHz
Core 2 Clock: 1075 MHz
Core 3 Clock: 1075 MHz
Core 4 Clock: 1075 MHz
Core 5 Clock: 1075 MHz
Core 6 Clock: 1075 MHz
Core 7 Clock: 2208 MHz
Core 8 Clock: 2304 MHz

Motorola Edge implementing clock circuitry and controlling the processor to operate at varying frequencies

<<< CPU >>>

SoC Model: Qualcomm Snapdragon 460/662
Core Architecture: 4x Qualcomm Kryo 240/250/260/280 LP @ 1804 MHz
4x Qualcomm Kryo 240/250/260/280 HP @ 2016 MHz
Manufacturing Process: 11 nm
Instruction Set: 64-bit ARMv8-A
CPU Revision: r10p2
CPU Cores: 8
CPU Clock Range: 300 - 2016 MHz
Core 1 Clock: 1804 MHz
Core 2 Clock: 1804 MHz
Core 3 Clock: 1804 MHz
Core 4 Clock: 1804 MHz
Core 5 Clock: 2016 MHz
Core 6 Clock: 2016 MHz
Core 7 Clock: 2016 MHz
Core 8 Clock: 2016 MHz

Motorola g Power implementing clock circuitry and controlling the processor to operate at varying frequencies



79. Further, the following excerpts from Lenovo's website provide non-limiting examples of the '417 Accused Products infringing at least claims 1 and 3 of the '417 Patent by implementing a specific processing of capturing a picture in closed condition:







[Back to Previous Page](#)

Taking photos with the moto z³

To open the camera, do any of the following:

- Touch 
- Twist your phone twice from any screen.
- From the lock screen, swipe  left.

To take a photo

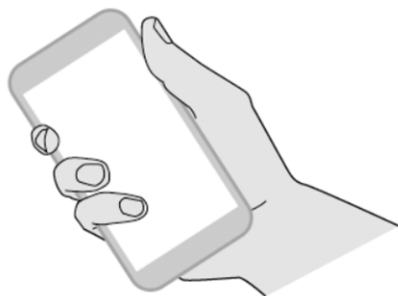
1. If needed, adjust settings.
2. Frame your subject:
 - To zoom, drag the viewfinder up or down.
 - To set focus location, touch the viewfinder then drag the focus ring.
 - To change the exposure, touch the viewfinder then slide  to the desired exposure.
3. To take the photo, do one of the following:
 - Touch 
 - Touch & hold  to take a rapid series of photos.
 - Touch  for a timer.

See https://motorola-global-portal-en-ca.custhelp.com/app/answers/prod_answer_detail/a_id/130378

Flick your phone to open Camera

Don't miss a shot. Open your camera instantly from any screen, even your lock screen, with Quick capture.

Flick your phone twice like this:



Your viewfinder opens, and you're ready to shoot.

See <https://help.motorola.com/hc/3309/444/global/en-gb/jcb070213930.html>

You can add widgets to your device's lock screen and swipe between them. Lock screen widgets make it easy to get important updates and notifications without unlocking your phone.

Add lock screen widgets

1. Swipe right from the left edge of the lock screen until you see a large plus icon.




2. Touch the plus icon. If prompted, enter your PIN, pattern, or password.

A list of widgets appears. Apps that support lock screen widgets can add their own widgets to this list.

3. Touch the widget you want to add.
4. To resize a widget, drag the bottom down to expand it or up to reduce it.

Use lock screen widgets

1. When the screen is asleep, press the Power key to view the lock screen.
2. From the left edge of the lock screen, swipe right to see the widgets.

3. To unlock the screen when a widget is expanded, touch  then unlock as usual.

See <https://help.motorola.com/hc/3200/42/verizon/en-us/jcb09042013.html?topic=jcb09042013>

80. The foregoing features and capabilities of each of the '417 Accused Products and Lenovo's description and/or demonstration thereof, including in user manuals and advertising, reflect Lenovo's direct infringement by satisfying every element of at least claims 1 and 3 of the '417 Patent, under 35 U.S.C. § 271(a).

81. Lenovo has indirectly infringed at least claims 1 and 3 of the '417 Patent in this District and elsewhere in the United States by, among other things, actively inducing the use, offering for sale, selling, or importation of at least the '417 Accused Products. Lenovo's customers who purchase devices and components thereof and operate such devices and components in accordance with Lenovo's instructions directly infringe one or more claims of the '417 Patent in violation of 35 U.S.C. § 271(b). Lenovo instructs its customers through at least user guides or websites, such as those located at: https://motorola-global-portal-en-ca.custhelp.com/app/answers/prod_answer_detail/a_id/130378, <https://help.motorola.com/hc/3309/444/global/en-gb/jcb070213930.html>, or <https://help.motorola.com/hc/3200/42/verizon/en-us/jcb09042013.html?topic=jcb09042013>. For example, Lenovo instructs its customers to use the camera application and take pictures from the locked screen.

82. Lenovo has indirectly infringed at least claims 1 and 3 of the '417 Patent, by, among other things, contributing to the direct infringement of others, including customers of the '417 Accused Products by making, offering to sell, or selling, in the United States, or importing a component of a patented machine, manufacture, or combination, or an apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in infringement of the '417 Patent, and not a staple article or commodity of commerce suitable for substantial non-infringing use.

83. For example, the '417 Accused Products include hardware (application processor, CPU, clock circuitry, camera) and software (power management and image capture and decoding algorithms). These are components of a patented machine, manufacture, or combination, or an apparatus for use in practicing a patented process. Furthermore, such components are a material part of the invention and upon information and belief are not a staple article or commodity of commerce suitable for substantial non-infringing use. Thus, Lenovo is liable for infringement of the '417 Patent pursuant to 35 U.S.C. § 271(c).

84. Lenovo has been aware of the '417 Patent since, [REDACTED]

[REDACTED] Further, Lenovo has been on notice of its infringement of the '417 Patent since at least June 3, 2021, based on correspondence directed to Lenovo's Directors of Intellectual Property—Fergal Clarke and Robert Renke. *See* Letter from J. Beaber to F. Clarke and R. Renke dated June 3, 2021 (Exhibit 3). That correspondence set forth Maxell's belief that Lenovo makes, uses, sells, offers to sell, or imports products that infringe certain of Maxell's patents, and specifically identified the '417 Patent as well as exemplary claims and exemplary accused products for that patent. By the time of trial, Lenovo will thus have known and intended (since receiving

such notice), that its continued actions would actively induce and contribute to actual infringement of at least claims 1 and 3 of the '417 Patent.

85. Lenovo undertook and continued its infringing actions despite an objectively high likelihood that such activities infringed the '417 Patent, which has been duly issued by the USPTO, and is presumed valid. For example, at least since it received Maxell's letter on June 3, 2021, [REDACTED]

[REDACTED] Lenovo has been aware of an objectively high likelihood that its actions constituted and continue to constitute infringement of the '417 Patent, and that the '417 Patent is valid. On information and belief, Lenovo could not reasonably, subjectively believe that its actions do not constitute infringement of the '417 Patent, nor could it reasonably, subjectively believe that the patent is invalid. Despite that knowledge and subjective belief, and the objectively high likelihood that its actions constitute infringement, Lenovo has continued its infringing activities. As such, Lenovo willfully infringes the '417 Patent.

86. Maxell has been damaged by Lenovo's infringement of the '417 Patent.

COUNT 3 - INFRINGEMENT OF U.S. PATENT NO. 7,072,673

87. Maxell incorporates paragraphs 1-86 above by reference.

88. U.S. Patent No. 7,072,673 (the "'673 Patent," attached hereto at Exhibit 7) duly issued on July 4, 2006 and is entitled *Radio Handset and Position Location System*.

89. Maxell is the owner by assignment of the '673 Patent and possesses all rights under the '673 Patent, including the exclusive right to recover for past and future infringement.

90. At the time of the invention of the '673 Patent (which claims priority to July 24, 2001), conventional mobile communication systems relied on signals received from multiple base stations to detect a position of a radio handset. '673 Patent at 1:16-24. The conventional mobile

communications systems used the propagation delay time differences between the signals from different base stations to determine position. *Id.* Base stations, however, may have an offset—a transmission time difference predetermined for each base station which time-shifts the transmission of signals by an offset value—which, in an environment with a higher density of base stations may result in received signals having almost the same time delay. *Id.* at 1:34-45; 2:11-16. This may result in mistakes by the communication system as to the base station transmitting the signal, the propagation delay of the signal, and therefore an inaccurate location determination. *Id.* at 2:14-21. Thus, there was a problem rooted in the field of position determination in mobile communication systems.

91. Other inventors had proposed other solutions to the inaccuracies resulting from indistinguishable offset delays, however their proposed solutions failed to prevent the mistakes in systems using radio signals and base stations. For example, inventors at NTT Mobile Communications Network Inc. provided one solution in U.S. Patent No. 5,953,326. Specifically, the inventors provided a method to use signals from satellites with identical offsets. *See* U.S. Patent No. 5,953,326 at Figs. 9A-9C; 11:9-16. However, this solution is inadequate in addressing the issues specific to congested base stations because the solution offered in U.S. Patent No. 5,953,326 depends on knowing which base stations share a common offset in advance. Additionally, the inventors for U.S. Patent No. 5,912,644 relied on a central station capable of changing the offset of signals, rather than distinguishing between identical signals as in the '673 Patent.

92. The inventors of the '673 Patent instead solved this problem by designing a system that, where reception timings of signals from multiple base stations cannot be separated from each other, the system excludes a signal from the base stations used in the location determination. '673 Patent at 3:21-30. For example, the claimed methodology requires determining the offset of

each base station as part of the creation of delay profile for received signals. *Id.* at 4:32-48. When multiple base stations have the same offset, then the system may exclude one or all of the base stations. *Id.* at 5:1-11; 9:28-34. The '673 Patent thereby discloses a specific improvement in the determination of location using radio signals. Furthermore, the solution of the '673 Patent involves calculating a delay profile for received signals, determining when the offset of multiple signals is the same, and excluding the signals from at least one base station from the position calculation. This solution provides a practical and desirable concrete way of determining location using radio signals and is directed to a specific improvement of the position determination capabilities of such systems by providing increased accuracy unattainable by conventional systems.

93. A person of ordinary skill in the art would recognize that position calculation in radio handsets—as claimed—includes implementing of complex hardware executing instructions to perform position calculation while not using one of the signals with the same PN offset, as evidenced by position calculation methods implemented in smartphones today:

4.1 Introduction

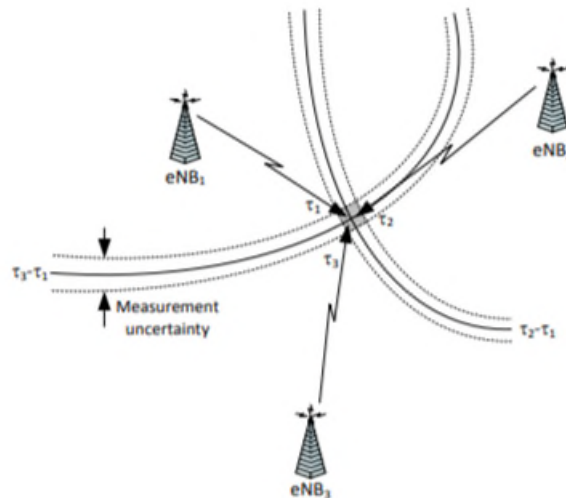
Observed Time Difference Of Arrival (OTDOA) is a downlink positioning method in LTE Rel-9. It is a multilateration method in which the User Equipment (UE) measures the time of arrival (TOA) of signals received from multiple base stations (eNodeB's).

The TOAs from several neighbour eNodeB's are subtracted from a TOA of a reference eNodeB to form Observed Time Difference Of Arrival's.

Geometrically, each time (or range) difference determines a hyperbola, and the point at which these hyperbolas intersect is the desired UE location.

At least three timing measurements from geographically dispersed eNodeB's with good geometry are needed to solve for two coordinates (x,y or latitude/longitude) of the UE.

The OTDOA positioning method is illustrated in Figure 4-1, where the UE measures three TOA's relative to the UE internal time base, τ_1 , τ_2 , and τ_3 . The measurement from eNodeB₁ is selected as reference base station, and two OTDOA's are formed: $t_{2,1} = \tau_2 - \tau_1$ and $t_{3,1} = \tau_3 - \tau_1$.



See <https://www.qualcomm.com/media/documents/files/otdoa-positioning-in-3gpp-lte.pdf>

94. Upon information and belief, Lenovo has and continues to directly infringe at least claims 5, 6, 7, and 9 of the '673 Patent in this District and elsewhere in Texas, by or through making, using, importing, offering for sale and/or selling within the United States, its telecommunications technology that practice at least claims 5, 6, 7, and 9. Lenovo also has continued to directly infringe at least claims 5, 6, 7, and 9 by practicing claims 5, 6, 7, and 9 through the its products, and by causing Lenovo's products to practice the patented inventions (e.g., performing location testing). For example, at least the following Lenovo products practice claims 5, 6, 7, and 9 of the '673 Patent by having materially similar functionality of performing


position calculation: the Moto E Family (e (2020), E⁶, E⁵ Supra, E⁵ Plus, E⁵ Play, E⁵ Go, E⁵ Cruise, E⁵, E⁴ Plus, and E⁴); Moto Edge Family (edge and edge+), Moto G Family (G Stylus (2021), G Power (2021), G Play, G Power, G Stylus, G⁷ Play, G⁷ Play with Amazon Alexa, G⁷ with Amazon Alexa, G Fast, G⁷ Supra, G⁷ Power, G⁷ Plus, G⁷ Optimo Maxx, G⁷ Optimo, G⁷, G⁶ Play, G⁶ Forge, G⁶, G^{5s} Plus, G⁵ Plus); Moto One Family (One 5G, One Action, One 5G Ace, One Hyper, One Fusion+, One Zoom, and One); Moto Razr Family (razr (1st gen) and razr (2nd gen)); and Moto Z Family (Z⁴ with Amazon Alexa, Z⁴, Z³ Play, Z³, Z² Play, and Z² Force) (collectively, “the ’673 Accused Products”). Maxell reserves the right to discover and pursue any additional infringing devices that incorporate infringing functionalities. For the avoidance of doubt, the ’673 Accused Products are identified to describe Lenovo’s infringement and in no way limit the discovery and infringement allegations against Lenovo concerning other devices that incorporate the same or reasonably similar functionalities.

95. Each of the ’673 Accused Products is a radio handset that implements a method of position calculation by storing information of a plurality of radio stations, receiving signals transmitted from at least a part of said plurality of radio stations, creating delay profiles for said received signals, extracting signal reception timings of the received signals from the delay profiles, and selecting radio stations to be used for position calculation by determining not to use at least one of radio stations having a same PN offset value. Specifically, each of the ’673 Accused Products includes a RF-front end circuitry for receiving signals from cellular base stations and further includes a processor for executing position calculation algorithms such that the ’673 Accused Products determine not to use at least one of the radio stations’ signal when calculating the position.

96. For example, the following excerpts from Lenovo’s websites provide non-limiting examples of the ’673 Accused Products infringing at least claims 5, 6, 7, and 9 of the ’673 Patent when, for example, using mobile networks to calculate location:

Use location services and GPS

You can let your phone use GPS, Wi-Fi networks and mobile networks to estimate your location. Apps that have your permission can use this information to deliver location-based services, such as the ability to check in, view commute traffic, find nearby restaurants or tag your photos with the location where you took them.

You'll see  in the status bar when any app is using your precise location.

To control what location information your phone can use:

1. Go to **Settings > LOCATION**.
2. Use the **ON/OFF** toggle to give or remove permission to use your location information. When the switch is off, your phone can't find your precise location or share it with any apps. However, turning this off disables many useful features and apps.
3. Touch **Mode** and choose how to estimate your location:
 - **High accuracy** uses GPS, Wi-Fi, mobile networks and Google's location service to get the most accurate location.
 - **Battery saving** uses less battery-intensive location sources (Wi-Fi, mobile networks and Google's location service).
 - **Device only** uses GPS only. It doesn't use Google's location service. This mode may use more battery power and take longer.

See <https://help.motorola.com/hc/3083/44/luge/en-gb/d0e578.html>



The screenshot displays the following connectivity specifications:

- connectivity**
- Networks + Bands**
 Networks: 5G: NR Sub-6GHz | 4G: LTE (UL Cat 13 / DL Cat 18)
 3G: UMTS / HSPA+
 2G: GSM / EDGE
 Bands: 5G: 2/5/12/25/41/41(HPUE)/66/71
 4G: LTE band 1/2/3/4/5/7/8/12/13/17/20/25/26/38/39/40/41/41(HPUE)/66/71
 3G: UMTS band 1/2/4/5/8 | 3G: CDMA band bc0/bc1/bc10
 2G: GSM band 2/3/5/8
 Compatible with T-Mobile's 5G network now. *5G service plan and 5G network coverage required; available only in select areas; device not compatible with all 5G networks; coverage/compatibility may be expanded to additional areas in the future. Contact your service provider for details.
- Bluetooth Technology**
Bluetooth* 5.1
- NFC**
Yes
- Wi-Fi**
Wi-Fi 802.11 a/b/g/n/ac | 2.4GHz & 5GHz | Wi-Fi hotspot
- Location Services**
GPS, AGPS, LTEPP, SUPL, GLONASS, Galileo
- SIM Card**
Single SIM (Nano SIM)

See <https://www.motorola.com/us/smartphones-motorola-edge/p?skuId=352>



See <https://www.motorola.com/us/smartphones-motorola-one-5g/p?skuId=459>



See <https://www.motorola.com/us/smartphones-moto-e/p?skuId=414>

97. Further, the following excerpt from the User Guide of one of the '673 Accused Products provides non-limiting examples of the '673 Accused Products infringing at least claims 5, 6, 7, and 9 of the '673 Patent by implementing calculating location using, for example, “mobile networks”:



Use location services

About location information


You can let your phone use GPS, Wi-Fi networks, mobile networks, and sensors to estimate your location. Apps that have your permission can use this information to deliver location-based services, such as the ability to check in, view traffic, find nearby restaurants, or tag your photos with the location where you took them.

Turn location on or off

To control what location information your phone can use:

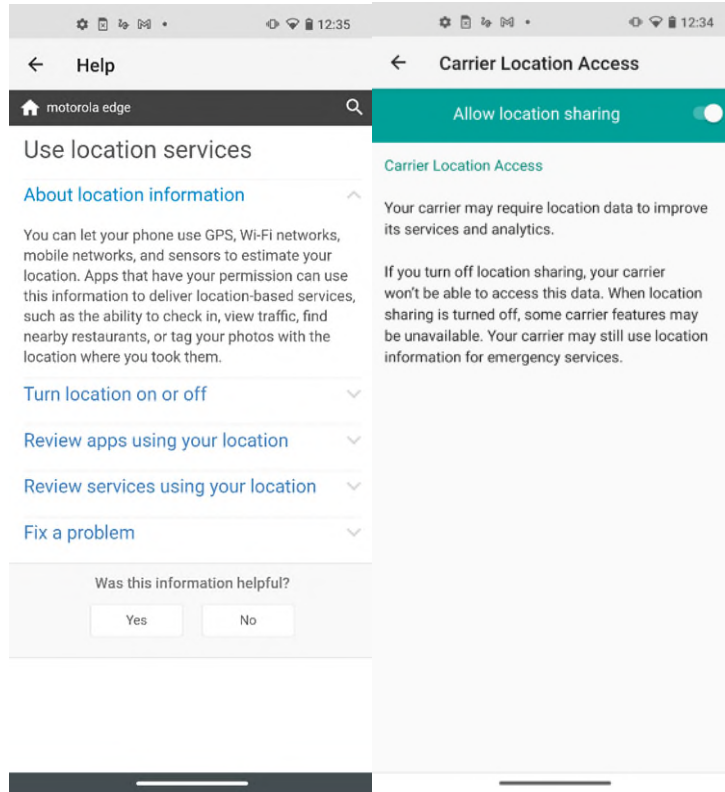
1. Go to **Settings > Location**.
2. Turn **Use location** on  or off  to give or remove permission to use your location information.

When it's off, your phone can't find your precise location or share it with any apps. However, turning this off disables many useful features and apps.

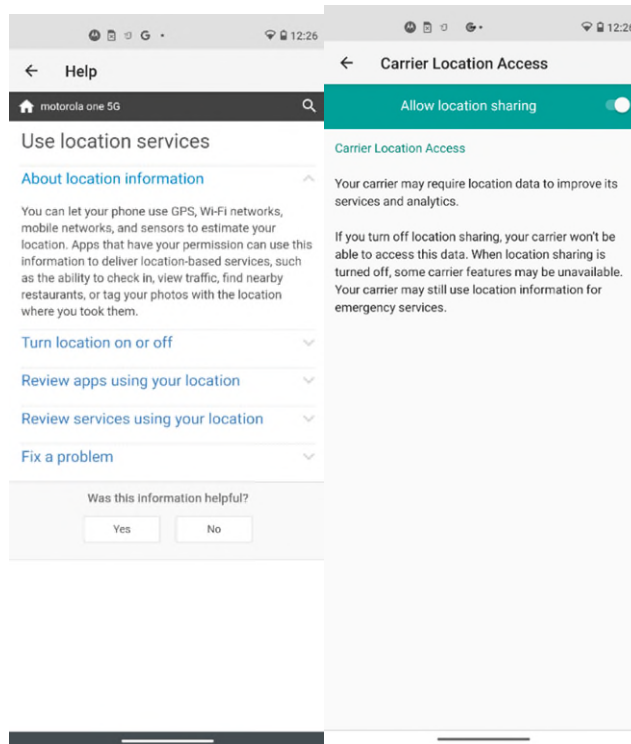
Tip: To add a Location tile to quick settings, **open quick settings**. Touch . Then drag the Location tile where you want it.

See Motorola Edge+ User Manual at 164 (available at <https://www.motorola.com/us/smartphones-motorola-edge-plus/p>)

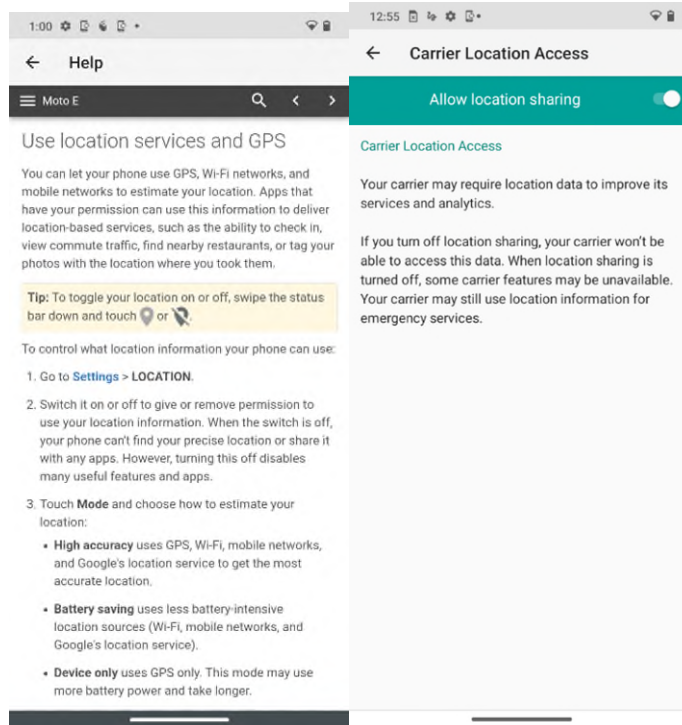
98. Further, the following screenshots show non-limiting examples of some of the '673 Accused Products implementing position calculation using one or more of GPS, Wi-Fi networks, and mobile networks, such that, upon information and belief, one of the signals is not used under certain conditions:



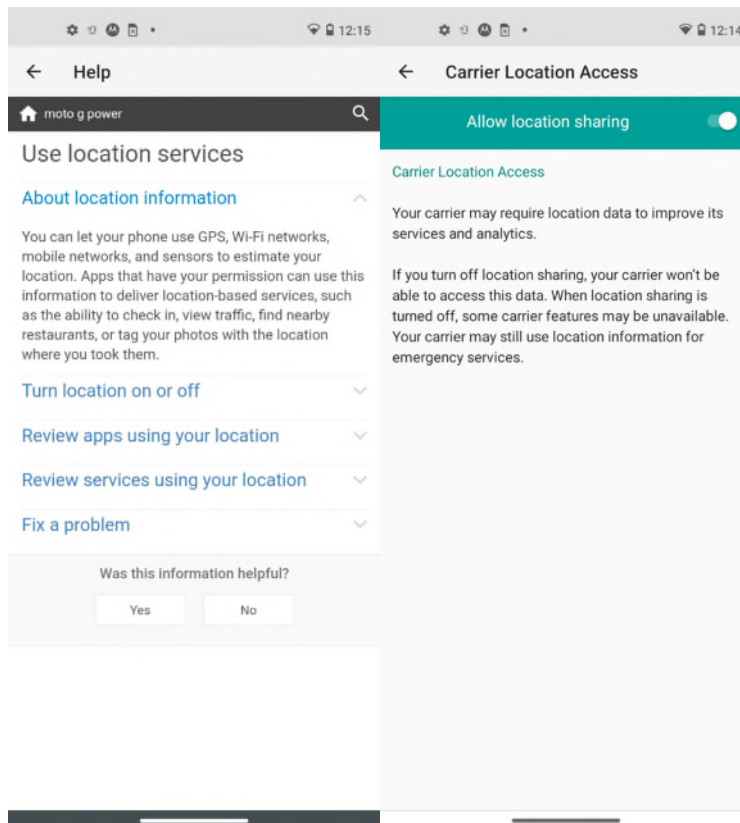
Motorola Edge Functionality



Motorola One 5G Functionality



Motorola E (2020) Functionality



Motorola G Power Functionality

99. The foregoing features and capabilities of each of the '673 Accused Products and Lenovo's description and/or demonstration thereof, including in user manuals and advertising, reflect Lenovo's direct infringement by satisfying every element of at least claims 5, 6, 7, and 9 of the '673 Patent, under 35 U.S.C. § 271(a) when position calculation is practiced by Lenovo.

100. Further, Lenovo has indirectly infringed at least claims 5, 6, 7, and 9 of the '673 Patent in this District and elsewhere in the United States by, among other things, actively inducing the use, offering for sale, selling, or importation of at least the '673 Accused Products. Lenovo's customers who purchase devices and components thereof and operate such devices and components in accordance with Lenovo's instructions directly infringe one or more claims of the '673 Patent in violation of 35 U.S.C. § 271(b). Lenovo instructs its customers through at least user guides or websites, such as those located at: <https://www.motorola.com/us/smartphones-motorola-edge-plus/p>; or <https://www.motorola.com/us/smartphones-moto-e/p?skuId=414>; <https://help.motorola.com/hc/3083/44/luge/en-gb/d0e578.html>. For example, Lenovo instructs its customers to use the mobile networks "to estimate your location."

101. Upon information and belief, the '673 Accused Products are used, marketed, provided to, and/or used by or for Lenovo's partners, clients, customers/subscribers and end users across the country and in this district.

102. Upon information and belief, Lenovo has induced and continues to induce others to infringe at least claims 5, 6, 7, and 9 of the '673 Patent under 35 U.S.C. § 271(b) by, among other things, and with specific intent or willful blindness, actively aiding and abetting others to infringe, including, but not limited to Lenovo's partners, clients, customers/subscribers, and end users, whose use of the '673 Accused Products constitutes direct infringement of at least one claim of the '673 Patent.

103. Lenovo has indirectly infringed at least claims 5, 6, 7, and 9 of the '673 Patent, by, among other things, contributing to the direct infringement of others, including customers of the '673 Accused Products by making, offering to sell, or selling, in the United States, or importing a component of a patented machine, manufacture, or combination, or an apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in infringement of the '673 Patent, and not a staple article or commodity of commerce suitable for substantial non-infringing use.

104. For example, the '673 Accused Products include hardware (RF front-end circuitry and processor) and software (position calculation). These are components for use in practicing a patented process. Furthermore, such components are a material part of the invention and upon information and belief are not a staple article or commodity of commerce suitable for substantial non-infringing use. Thus, Lenovo is liable for infringement of the '673 Patent pursuant to 35 U.S.C. § 271(c).

105. In particular, Lenovo's actions that aid and abet others such as Lenovo's partners, customers/subscribers, clients, and end users to infringe include advertising and distributing the '673 Accused Products, and providing instruction materials, training and services regarding the '673 Accused Products.

106. Lenovo has been aware of the '673 Patent since, [REDACTED]

[REDACTED] Further, Lenovo has been on notice of its infringement of the '673 Patent since at least June 3, 2021, based on correspondence directed to Lenovo's Directors of Intellectual Property—Fergal Clarke and Robert Renke. *See* Letter from J. Beaber to F. Clarke and R. Renke dated June 3, 2021 (Exhibit 3). That correspondence set forth Maxell's belief that Lenovo makes,

uses, sells, offers to sell, or imports products that infringe certain of Maxell's patents, and specifically identified the '673 Patent as well as exemplary claims and exemplary accused products for that patent. By the time of trial, Lenovo will thus have known and intended (since receiving such notice), that its continued actions would actively induce and contribute to actual infringement of at least claims 5, 6, 7, and 9 of the '673 Patent.

107. Lenovo undertook and continued its infringing actions despite an objectively high likelihood that such activities infringed the '673 Patent, which has been duly issued by the USPTO, and is presumed valid. For example, at least since it received Maxell's letter on June 3, 2021, [REDACTED]

[REDACTED] Lenovo has been aware of an objectively high likelihood that its actions constituted and continue to constitute infringement of the '673 Patent, and that the '673 Patent is valid. On information and belief, Lenovo could not reasonably, subjectively believe that its actions do not constitute infringement of the '673 Patent, nor could it reasonably, subjectively believe that the patent is invalid. Despite that knowledge and subjective belief, and the objectively high likelihood that its actions constitute infringement, Lenovo has continued its infringing activities. As such, Lenovo willfully infringes the '673 Patent.

108. Maxell has been damaged by Lenovo's infringement of the '673 Patent.

COUNT 4 - INFRINGEMENT OF U.S. PATENT NO. 7,551,209

109. Maxell incorporates paragraphs 1-108 above by reference.

110. U.S. Patent No. 7,551,209 (the "'209 Patent," attached hereto at Exhibit 8) duly issued on June 23, 2009 and is entitled *Imaging Apparatus and Method for Controlling White Balance*.

111. Maxell is the owner by assignment of the '209 Patent and possesses all rights under the '209 Patent, including the exclusive right to recover for past and future infringement.

112. The '209 Patent is directed to an imaging apparatus that has the ability to capture pictures with the correct color effect. Specifically, in order for a camera to capture and generate a picture of high quality with proper color, the camera needs to balance the different portions of the image. For example, if the camera is photographing a subject that is wearing a white shirt and has a colorful background, the camera will need to process the image signals in such a way that the white portion of the image is balanced with the colorful portion. This processing is referred to as white balancing of an image or white balance correction.

113. Conventional techniques prior to the '209 Patent performed white balance corrections by constructing a feedback loop such that signals corresponding to the white portion and colored portions are distinguished to detect a white balance deviation and this detected deviation is then used to adjust the signals corresponding to the colored portions. But this technique does not create pictures of high quality under all conditions as the detected deviation may not be accurate if the colored portions of the image include a large part of the picture. Further, this technique does not account for additional variations during photography including brightness of the object being photographed, distance of the object from the camera, and zoom value.

114. The '209 Patent solves these problems by implementing white balance correction that takes into account the distance of the object being photographed, a zoom value, and brightness of the object being photographed. For example, the '209 Patent discloses an imaging apparatus that includes an object distance detecting means, a zoom detecting means, and a brightness detecting means such that the apparatus corrects the white balance of the image signals based on the detected brightness, zoom, and distance values. The '209 Patent discloses an imaging apparatus

that is able to keep object distance fixed and then determine whether to adjust white balance when zoom changes and object brightness information is a first value or a second value. Further, the '209 Patent discloses an imaging apparatus that is able to keep object distance fixed and then determine whether to adjust white balance when object brightness changes and zoom value is a first value or a second value. Incorporating such a white balance correction technique ensures that the imaging apparatus generates high quality pictures despite varying conditions and control parameters.

115. Lenovo has directly infringed one or more claims of the '209 Patent in this District and elsewhere in Texas, including at least claims 1 and 3 literally and/or under the doctrine of equivalents, by or through making, using, importing, offering for sale and/or selling its telecommunications technology, including at least Lenovo products having materially similar functionality while implementing color corrections and white balance corrections within smartphones including, without limitation, the Moto E Family (E⁶, E⁵ Supra, E⁵ Plus, E⁵ Play, E⁵ Go, E⁵ Cruise, E⁵, E⁴ Plus, and E⁴); Moto Edge Family (edge and edge+), Moto G Family (G Play, G Power, G⁷ Play, G⁷ Play with Amazon Alexa, G⁷ with Amazon Alexa, G Fast, G⁷ Supra, G⁷ Power, G⁷ Plus, G⁷ Optimo Maxx, G⁷ Optimo, G⁷, G⁶ Play, G⁶ Forge, G⁶, G^{5s} Plus, G⁵ Plus); Moto One Family (One 5G, One Action, One Hyper, One Fusion+, One Zoom, and One); Moto Razer Family (razr (1st gen) and razr (2nd gen)); and Moto Z Family (Z⁴ with Amazon Alexa, Z⁴, Z³ Play, Z³, Z² Play, and Z² Force) (collectively, "the '209 Accused Products"). Maxell reserves the right to discover and pursue any additional infringing devices that incorporate infringing functionalities. For the avoidance of doubt, the '209 Accused Products are identified to describe Lenovo's infringement and in no way limit the discovery and infringement allegations against Lenovo concerning other devices that incorporate the same or reasonably similar functionalities.

116. Each of the '209 Accused Products is observed to include an imaging apparatus with a display that displays images that are picked up by an image pick up device and processed by the image processor. The '209 Accused Products have a white balance circuit that ensures that white objects in images picked up by the image sensor appear white. The '209 Accused Products also includes a circuit and/or processor for detecting object distance, detecting a zoom value, and detecting object brightness. For example, the '209 Accused Products have autofocus functions, brightness measurement functions, zooming functions, color correction functions, and white balance functionalities. The '209 Accused Products control white balance in an image based on these distance, zoom, and brightness values. The '209 Accused Products also have a circuit for setting a threshold on the basis of object brightness, zoom, and distance and adjusting white balance according to the threshold. The '209 Accused Products also have a circuit for determining to adjust white balance when object distance detection information is fixed, zoom value information is changed, and object brightness information is a first value and/or second value. The '209 Accused Products also have a circuit for determining to adjust white balance when object distance detection information is fixed, object brightness is changed, and zoom is a first value and/or second value.

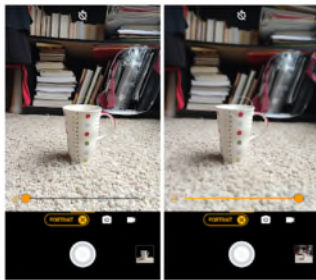
117. For example, the following excerpt from Lenovo's website provides non-limiting examples of the '209 Accused Products infringing at least claims 1 and 3 of the '209 Patent by performing white balance corrections after capturing pictures including, for example, with the implementation of Portrait mode.

Take a photo with blurred background on the moto g²⁵ plus


Portrait mode allows your photo subject to stand out! Use it to blur the background or creative selective black & white photos.

Portrait mode works best when your subject is one to two feet away from the background and you are one to two feet away from the subject. Different subjects look better at different distances. Play around to get the best shot!

To enter portrait mode, select  followed by **Portrait**.



Lenovo

Use the  to increase or decrease the blur of the background.

See https://motorola-global-portal.custhelp.com/app/answers/prod_answer_detail/a_id/127634

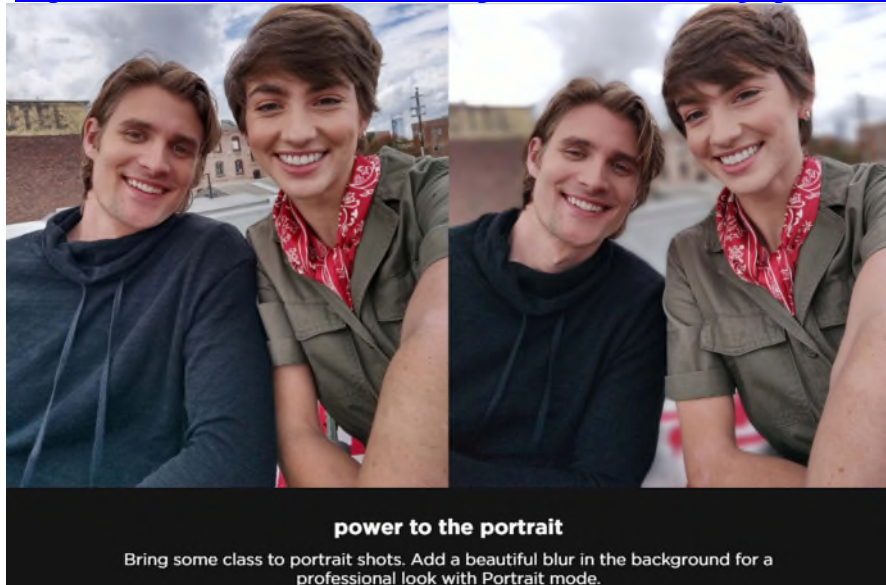
Rear Camera Software

Shot optimization, Auto smile capture, Gesture selfie, Smart composition, HDR, Timer, Active photos, Manual mode, **Portrait** mode, Cutout, Macro, Spot color, Cinemagraph, Long Exposure, Panorama, Live filter, High-res zoom, RAW photo output, Best shot, Google Lens™ integration, Night Vision

Front Camera Software

Screen flash, HDR, Timer, Face beauty, Auto smile capture, Gesture selfie, Active photos, Manual mode, **Portrait** mode, Spot colour, Cinemagraph, Group selfie, Live filter, Night Vision

See <https://www.motorola.com/us/smartphones-motorola-edge/p?skuId=352>



See <https://www.motorola.com/us/smartphones-motorola-edge-plus/p#shootpro>

118. The foregoing features and capabilities of each of the '209 Accused Products and Lenovo's description and/or demonstration thereof, including in user manuals and advertising, reflect Lenovo's direct infringement by satisfying every element of at least claims 1 and 3 of the '209 Patent, under 35 U.S.C. § 271(a).

119. Lenovo has indirectly infringed at least claims 1 and 3 of the '209 Patent in this District and elsewhere in the United States by, among other things, actively inducing the use, offering for sale, selling, or importation of at least the '209 Accused Products. Lenovo's customers who purchase devices and components thereof and operate such devices and components in accordance with Lenovo's instructions directly infringe one or more claims of the '209 Patent in violation of 35 U.S.C. § 271(b). Lenovo instructs its customers through at least user guides or websites, such as those located at: https://motorola-global-portal.custhelp.com/app/answers/prod_answer_detail/a_id/127634, <https://www.motorola.com/us/smartphones-motorola-edge/p?skuId=352>, and <https://www.motorola.com/us/smartphones-motorola-edge-plus/p#shootpro>.

120. For example, as noted above, Lenovo instructs its customers to "Take a photo" with Portrait mode and/or "Add a beautiful blur in the background for a professional look with Portrait mode." Lenovo is thereby liable for infringement of the '209 Patent pursuant to 35 U.S.C. § 271(b).

121. Lenovo has indirectly infringed at least claims 1 and 3 of the '209 Patent, by, among other things, contributing to the direct infringement of others, including customers of the '209 Accused Products by making, offering to sell, or selling, in the United States, or importing a component of a patented machine, manufacture, or combination, or an apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be

especially made or especially adapted for use in infringement of the '209 Patent, and not a staple article or commodity of commerce suitable for substantial non-infringing use.

122. For example, the '209 Accused Products include a white balance correction circuit and additional image correction and processing components. These are components of a patented machine, manufacture, or combination, or an apparatus for use in practicing a patented process. Furthermore, such components are a material part of the invention and upon information and belief are not a staple article or commodity of commerce suitable for substantial non-infringing use. Thus, Lenovo is liable for infringement of the '209 Patent pursuant to 35 U.S.C. § 271(c).

123. Lenovo has been aware of the '209 Patent since, at least, [REDACTED]

[REDACTED] Further, Lenovo has been on notice of its infringement of the '209 Patent since at least June 3, 2021, based on correspondence directed to Lenovo's Directors of Intellectual Property—Fergal Clarke and Robert Renke. *See* Letter from J. Beaber to F. Clarke and R. Renke dated June 3, 2021 (Exhibit 3). That correspondence set forth Maxell's belief that Lenovo makes, uses, sells, offers to sell, or imports products that infringe certain of Maxell's patents, and specifically identified the '209 Patent as well as exemplary claims and exemplary accused products for that patent. By the time of trial, Lenovo will thus have known and intended (since receiving such notice), that its continued actions would actively induce and contribute to actual infringement of at least claims 1 and 3 of the '209 Patent.

124. Lenovo undertook and continued its infringing actions despite an objectively high likelihood that such activities infringed the '209 Patent, which has been duly issued by the USPTO, and is presumed valid. For example, at least since it received Maxell's letter on June 3, 2021, [REDACTED]

██████████ Lenovo has been aware of an objectively high likelihood that its actions constituted and continue to constitute infringement of the '209 Patent, and that the '209 Patent is valid. On information and belief, Lenovo could not reasonably, subjectively believe that its actions do not constitute infringement of the '209 Patent, nor could it reasonably, subjectively believe that the patent is invalid. Despite that knowledge and subjective belief, and the objectively high likelihood that its actions constitute infringement, Lenovo has continued its infringing activities. As such, Lenovo willfully infringes the '209 Patent.

125. Maxell has been damaged by Lenovo's infringement of the '209 Patent.

COUNT 5 - INFRINGEMENT OF U.S. PATENT NO. 6,928,292

126. Maxell incorporates paragraphs 1-125 above by reference.

127. U.S. Patent No. 6,928,292 (the "'292 Patent," attached hereto at Exhibit 9) duly issued on August 9, 2005 and is entitled *Mobile Handset with Position Calculation Function*.

128. At the time of the invention of the '292 Patent (which claims priority to March 19, 2001), conventional mobile communication systems did not have built-in GPS receivers. The inventors of the '292 Patent recognized the need for a better way for mobile phones to calculate their positions. '292 Patent, 1:11-12. The inventors foresaw that, even when GPS receivers were integrated into mobile devices, that technology could not provide sufficient geo-location capabilities. Indeed, GPS signals were often weak and attenuated, particularly indoors where they were frequently blocked by topology or architectural obstacles, such as ceilings, walls, or tall buildings. *Id.* at 1:30-43.

129. To overcome these shortcomings, the inventors proposed supplementing the GPS data with a complementary source of location information—cellular signals. The mobile handset could generate two estimates of its location, one based on GPS signals from satellites and a second

based on “synchronization acquisition and reception timing measurements” of cellular signals. *Id.* at 2:66-3:6. The handset could then merge the two estimates based on the reliability of each.

130. Further, the inventors proposed determining the reliability of each estimate based on particular factors outlined in the patent. For example, the mobile device could determine the reliability of the GPS-based estimate using the number of GPS satellites used and the signal quality (*e.g.*, signal-to-noise ratio in decibels) from each satellite. *Id.* at 2:57-64. It could calculate the reliability of the cellular-based estimate based on the number of cellular base stations used and on signal quality from those stations. *Id.* at 3:6-11. The handset could then use the two reliability measures to merge the GPS-based and cellular-based estimates into a single, “final” location. *Id.* at 3:12-17. By using both GPS signals and cellular signals in this way, the mobile device could offer more accurate location services indoors, under cloud cover, and/or in proximity to a tall building or other obstructions. *Id.* at 5:3-12.

131. Claim 2 of the '292 Patent recites this solution, as described in the specification. *Id.* at 5:31-6:38. Indeed, claim 1 of the '292 patent is a means-plus-function apparatus claim limited to the specific structure and function disclosed in the specification. That structure includes the specific physical devices described in the specification, including a “GPS receiver [that] executes the receive operations required for position determination” and “a cellular receiver 300 executes the receive operations required for position determination.” *Id.* at 3:26-32, 4:4-9. Thus, the '292 Patent claims disclose specific ways in which mobile phones calculate their locations using a combination of GPS and cell-tower data. The claims are directed to an improvement in the field of position calculation in mobile devices and solving a problem in the realm of position calculation accuracy of mobile devices.

132. Upon information and belief, Lenovo has and continues to directly infringe at least claim 2 of the '292 Patent in this District and elsewhere in Texas literally and/or under the doctrine of equivalents, by or through making, using, importing, offering for sale and/or selling its telecommunications technology that practice at least claim 2. Lenovo also has continued to directly infringe at least claim 2 by practicing claim 2 through the its products, and by causing Lenovo's products to practice the patented inventions (*e.g.*, performing position calculation testing). For example, at least the following Lenovo products practice claim 2 of the '292 Patent by having materially similar functionality of performing position calculation: the Moto E Family (E⁶, E⁵ Supra, E⁵ Plus, E⁵ Play, E⁵ Go, E⁵ Cruise, E⁵, E⁴ Plus, and E⁴); Moto Edge Family (edge and edge+), Moto G Family (G Play, G Power, G⁷ Play, G⁷ Play with Amazon Alexa, G⁷ with Amazon Alexa, G Fast, G⁷ Supra, G⁷ Power, G⁷ Plus, G⁷ Optimo Maxx, G⁷ Optimo, G⁷, G⁶ Play, G⁶ Forge, G⁶, G^{5s} Plus, G⁵ Plus); Moto One Family (One 5G, One Action, One Hyper, One Fusion+, One Zoom, and One); Moto Razr Family (razr (1st gen) and razr (2nd gen)); and Moto Z Family (Z⁴ with Amazon Alexa, Z⁴, Z³ Play, Z³, Z² Play, and Z² Force) (collectively, "the '292 Accused Products"). Maxell reserves the right to discover and pursue any additional infringing devices that incorporate infringing functionalities. For the avoidance of doubt, the '292 Accused Products are identified to describe Lenovo's infringement and in no way limit the discovery and infringement allegations against Lenovo concerning other devices that incorporate the same or reasonably similar functionalities.


133. Each of the '292 Accused Products is observed to include an hardware and pre-installed software that implements a method of position calculation by allowing the device to receive GPS information, cellular network information, and Wi-Fi network information, and to generate corresponding location data from the received information. The '292 Accused Products

are advertised as having GPS receiving capability, cellular network positioning capability, and Wi-Fi positioning capability. Further, each of the '292 Accused Products is observed to operate in an autonomous mode or in a dependent mode to calculate its own location using the location data received from GPS networks, cellular networks, and/or Wi-Fi networks and assess the reliability of the received data. The '292 Accused Products provide the option of using GPS positioning information in combination with at least the cellular network positioning information for highly accurate positioning.

134. For example, the following excerpt from Lenovo's website provides non-limiting examples of the '292 Accused Products infringing at least claim 2 of the '292 Patent by performing position calculation using, for example, GPS and network signals.

Use location services and GPS

You can let your phone use GPS, Wi-Fi networks and mobile networks to estimate your location. Apps that have your permission can use this information to deliver location-based services, such as the ability to check in, view commute traffic, find nearby restaurants or tag your photos with the location where you took them.

You'll see  in the status bar when any app is using your precise location.

To control what location information your phone can use:

1. Go to **Settings** > **LOCATION**.
2. Use the **ON/OFF** toggle to give or remove permission to use your location information. When the switch is off, your phone can't find your precise location or share it with any apps. However, turning this off disables many useful features and apps.
3. Touch **Mode** and choose how to estimate your location:
 - **High accuracy** uses GPS, Wi-Fi, mobile networks and Google's location service to get the most accurate location.
 - **Battery saving** uses less battery-intensive location sources (Wi-Fi, mobile networks and Google's location service).
 - **Device only** uses GPS only. It doesn't use Google's location service. This mode may use more battery power and take longer.

See <https://help.motorola.com/hc/3083/44/luge/en-gb/d0e578.html>

connectivity	Networks + Bands Networks: 5G: NR Sub-6GHz 4G: LTE (UL Cat 13 / DL Cat 18) 3G: UMTS / HSPA+ 2G: GSM / EDGE Bands: 5G: 2/5/12/25/41/41(HPUE)/66/71 4G: LTE band 1/2/3/4/5/7/8/12/13/17/20/25/26/38/39/40/41/41(HPUE)/66/71 3G: UMTS band 1/2/4/5/8 3G: CDMA band bc0/bc1/bc10 2G: GSM band 2/3/5/8 Compatible with T-Mobile's 5G network now. *5G service plan and 5G network coverage required; available only in select areas; device not compatible with all 5G networks; coverage/compatibility may be expanded to additional areas in the future. Contact your service provider for details.	Bluetooth Technology Bluetooth* 5.1	
	NFC Yes	Wi-Fi Wi-Fi 802.11 a/b/g/n/ac 2.4GHz & 5GHz Wi-Fi hotspot	Location Services GPS, AGPS, LTEPP, SUPL, GLONASS, Galileo
	SIM Card Single SIM (Nano SIM)		

See <https://www.motorola.com/us/smartphones-motorola-edge/p?skuId=352>

connectivity	Networks + Bands 5G: 2/5/25/41/66/71 4G: 1/2/3/4/5/7/8/12/13/14/17/18/19/20/25/26/29/30/38/39/40/41/66/71 3G: 1/2/4/5/8 2G: 0/1/2/3/4/5/8/10	Bluetooth Technology Bluetooth* 5.1	
	NFC Yes	Wi-Fi Wi-Fi 802.11 a/b/g/n/ac 2.4 GHz & 5GHz Wi-Fi hotspot	Location Services Dual frequency GPS (L1+L5), A-GPS, LTEEP, SUPL, GLONASS, Galileo
	SIM Card Single SIM (1 nano SIM + 1 microSD)		

See <https://www.motorola.com/us/smartphones-motorola-one-5g/p?skuId=459>

connectivity	Networks + Bands 2G: GSM band 2/3/5/8; 2G: CDMA BCO/1/10; 3G: UMTS band 1/2/4/5/8; 4G: LTE band 1/2/3/4/5/7/8/12/13/14/17/25/26/29/30/38/41/66/71	Bluetooth Technology Bluetooth* 5.0	
	NFC No	Wi-Fi Wi-Fi 802.11 a/b/g/n/ac 2.4 GHz & 5 GHz Wi-Fi hotspot	Location Services GPS, A-GPS, LTEPP, SUPL, GLONASS, Galileo
	SIM Card Single SIM (1 Nano SIM + 1 microSD);		
	USB Type-C port (USB 2.0)		

See <https://www.motorola.com/us/smartphones-moto-e/p?skuId=414>

135. Further, the following excerpt from the User Guide of one of the '292 Accused Products provides non-limiting examples of the '292 Accused Products infringing at least claim 2

of the '292 Patent by implementing position calculation using GPS and network signals along with the reliabilities of the signals:

Use location services

About location information


You can let your phone use GPS, Wi-Fi networks, mobile networks, and sensors to estimate your location. Apps that have your permission can use this information to deliver location-based services, such as the ability to check in, view traffic, find nearby restaurants, or tag your photos with the location where you took them.

Turn location on or off

To control what location information your phone can use:

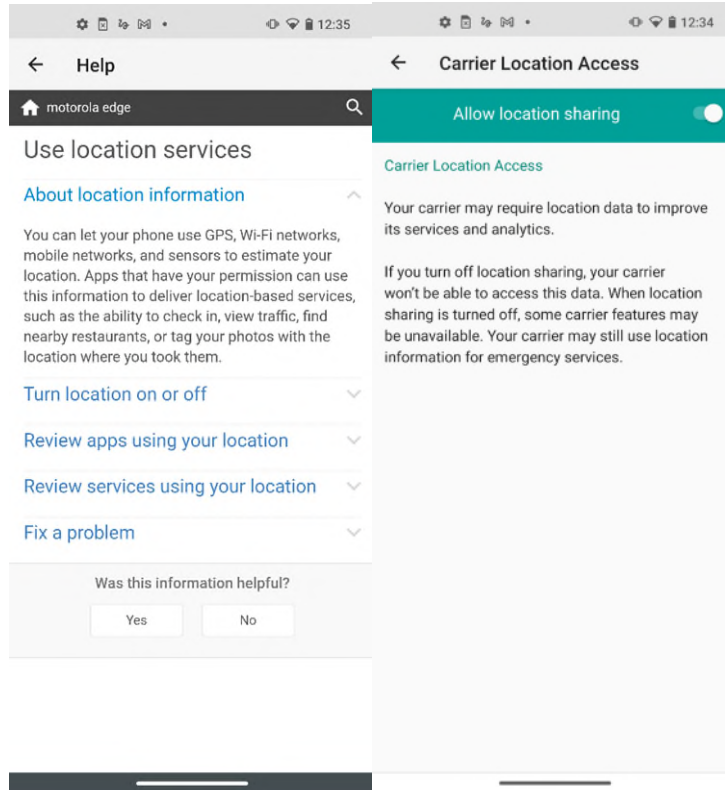
1. Go to **Settings > Location**.
2. Turn **Use location** on or off to give or remove permission to use your location information.

When it's off, your phone can't find your precise location or share it with any apps. However, turning this off disables many useful features and apps.

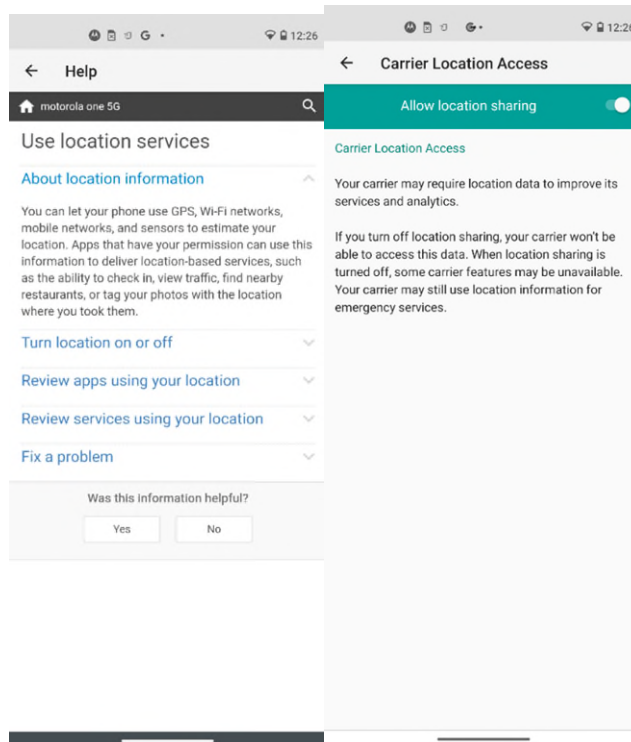
Tip: To add a Location tile to quick settings, [open quick settings](#). Touch . Then drag the Location tile where you want it.

See Motorola Edge+ User Manual at 164 (available at <https://www.motorola.com/us/smartphones-motorola-edge-plus/p>)

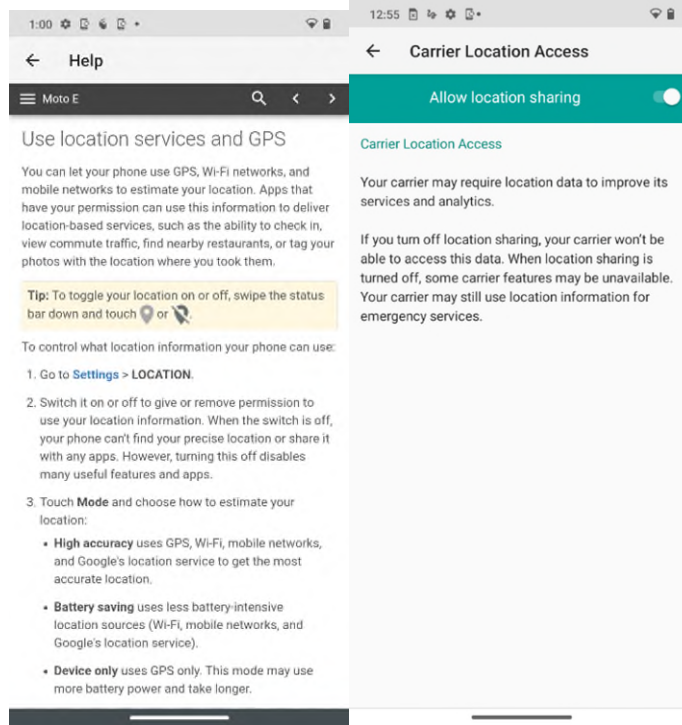
136. Further, the following screenshots show non-limiting examples of some of the '292 Accused Products implementing the method of claim 2 by using two of GPS, Wi-Fi networks, and mobile networks, such that, upon information and belief, two signals are combined for position calculation under certain conditions:



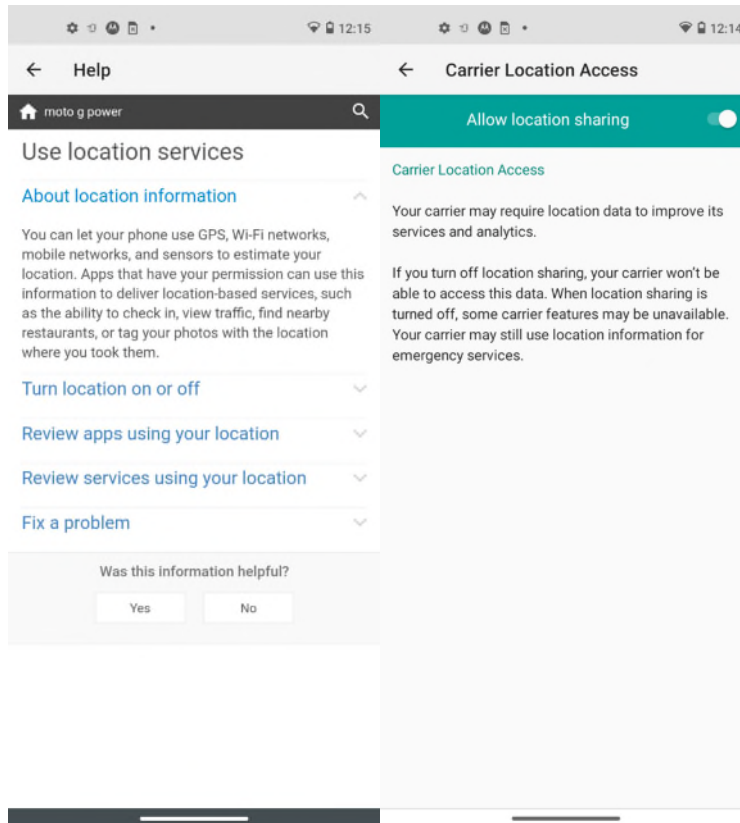
Motorola Edge Functionality



Motorola One 5G Functionality



Motorola E (2020) Functionality



Motorola G Power Functionality

137. The foregoing features and capabilities of each of the '292 Accused Products and Lenovo's description and/or demonstration thereof, including in user manuals and advertising, reflect Lenovo's direct infringement by satisfying every element of at least claim 2 of the '292 Patent, under 35 U.S.C. § 271(a) when position calculation combining two signals is practiced by Lenovo.

138. Further, Lenovo has indirectly infringed at least claim 2 of the '292 Patent in this District and elsewhere in the United States by, among other things, actively inducing the use, offering for sale, selling, or importation of at least the '292 Accused Products. Lenovo's customers who purchase devices and components thereof and operate such devices and components in accordance with Lenovo's instructions directly infringe one or more claims of the '292 Patent in violation of 35 U.S.C. § 271(b). Lenovo instructs its customers through at least user guides or websites, such as those located at: <https://www.motorola.com/us/smartphones-motorola-edge-plus/p>; or <https://www.motorola.com/us/smartphones-moto-e/p?skuId=414>; <https://help.motorola.com/hc/3083/44/luge/en-gb/d0e578.html>. For example, Lenovo instructs its customers to "Use location services **and** GPS."

139. Upon information and belief, the '292 Accused Products are used, marketed, provided to, and/or used by or for Lenovo's partners, clients, customers/subscribers and end users across the country and in this district.

140. Upon information and belief, Lenovo has induced and continues to induce others to infringe at least claim 2 of the '292 Patent under 35 U.S.C. § 271(b) by, among other things, and with specific intent or willful blindness, actively aiding and abetting others to infringe, including, but not limited to Lenovo's partners, clients, customers/subscribers, and end users,

whose use of the '292 Accused Products constitutes direct infringement of at least one claim of the '292 Patent.

141. Lenovo has indirectly infringed at least claim 2 of the '292 Patent, by, among other things, contributing to the direct infringement of others, including customers of the '292 Accused Products by making, offering to sell, or selling, in the United States, or importing a component of a patented machine, manufacture, or combination, or an apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in infringement of the '292 Patent, and not a staple article or commodity of commerce suitable for substantial non-infringing use.

142. For example, the '292 Accused Products include hardware (RF front-end circuitry, cellular processor, GPS receiver, and CPU) and software (position calculation). These are components for use in practicing a patented process. Furthermore, such components are a material part of the invention and upon information and belief are not a staple article or commodity of commerce suitable for substantial non-infringing use. Thus, Lenovo is liable for infringement of the '292 Patent pursuant to 35 U.S.C. § 271(c).

143. In particular, Lenovo's actions that aid and abet others such as Lenovo's partners, customers/subscribers, clients, and end users to infringe include advertising and distributing the '292 Accused Products, and providing instruction materials, training and services regarding the '292 Accused Products.

144. Lenovo has been aware of the '292 Patent since, [REDACTED]

[REDACTED] Further, Lenovo has been on notice of its infringement of the '292 Patent since at least May 17, 2018, based on correspondence directed to Courtney VanLonKhuyzen Welton. *See*

Letter from J. Beaber to C. Welton dated May 17, 2018 (Exhibit 1). That correspondence set forth Maxell's belief that Lenovo makes, uses, sells, offers to sell, or imports products that infringe certain of Maxell's patents, and specifically identified the '292 Patent as well as exemplary claims and exemplary accused products for that patent. By the time of trial, Lenovo will thus have known and intended (since receiving such notice), that its continued actions would actively induce and contribute to actual infringement of at least claim 2 of the '292 Patent.

145. Lenovo undertook and continued its infringing actions despite an objectively high likelihood that such activities infringed the '292 Patent, which has been duly issued by the USPTO, and is presumed valid. For example, at least since it received Maxell's letter on May 17, 2018, [REDACTED]

[REDACTED] Lenovo has been aware of an objectively high likelihood that its actions constituted and continue to constitute infringement of the '292 Patent, and that the '292 Patent is valid. On information and belief, Lenovo could not reasonably, subjectively believe that its actions do not constitute infringement of the '292 Patent, nor could it reasonably, subjectively believe that the patent is invalid. Despite that knowledge and subjective belief, and the objectively high likelihood that its actions constitute infringement, Lenovo has continued its infringing activities. As such, Lenovo willfully infringes the '292 Patent.

146. Maxell has been damaged by Lenovo's infringement of the '292 Patent.

COUNT 6 - INFRINGEMENT OF U.S. PATENT NO. 9,420,212

147. Maxell incorporates paragraphs 1-146 above by reference.

148. U.S. Patent No. 9,420,212 (the "'212 Patent," attached hereto at Exhibit 10) duly issued on August 16, 2016 and is entitled *Display Apparatus and Video Processing Apparatus*.

149. Maxell is the owner by assignment of the '212 Patent and possesses all rights under the '212 Patent, including the exclusive right to recover for past and future infringement.

150. Prior to the inventions disclosed in the '212 Patent, conventional techniques connected display apparatuses with each other by establishing analog connections to transmit video and audio signals. '212 Patent at 1:38-42. But as digital devices became more common, the inventors realized that there was a need for the ability to establish digital connections which allow the user to view high-quality videos while simultaneously connecting to the internet or home network. *Id.* at 1:42-48.

151. Previous inventors had proposed particular solutions in the field of wireless communications, but these alternative solutions did not solve all of the problems that a person of ordinary skill in the art faced. For example, an inventor at Apple, Inc. provided one solution in U.S. Patent App. Pub. No. 2008/0139118 (“Sanguinetti”). Specifically, Sanguinetti disclosed a first and second communication circuit with simultaneous reception functions that allowed multiple communications in a single communications band. *See, e.g.*, Sanguinetti at Abstract. This solution was not adequate at least because it required “power reduced versions of the incoming radio-frequency signals” (*Id.* at [0009]) and created co-existence/interference issues associated with operation in a single communications band. Thus, other solutions in this field had been proposed, but were inadequate.

152. The inventors of the '212 Patent solved this problem by creating and configuring devices with a novel arrangement of hardware components, including “a first radio communication unit capable of transmitting video information by radio to an external display apparatus, a second radio communication unit capable of connecting by radio to a network, and a connection assignment control unit for controlling assignment of connection by radio transmission for each of

the first and second radio communication units.” ’212 Patent at 1:50-56, 2:34-36. The first radio communication unit and the second radio communication unit differ from each other in frequency bandwidth and modulation/demodulation method. *Id.* at 8:48-52, 12:45-52, Figs. 4, 9, and 11. The control unit controls the assignment of the transmission rate for the first and second radio communication units “such that the transmission rate between the first radio communication unit and the external video processing apparatus is more than the transmission rate between the second radio communication unit and the network.” *Id.* at 1:56-63.

153. Accordingly, the ’212 Patent discloses a display apparatus using two circuits and one controller that perform specific functions to provide a solution of facilitating particular forms of simultaneous wireless communications. The particular combination of components in claim 1 of the ’212 Patent taken together allowed a display apparatus to do things that it could not previously do: simultaneously receive high-quality video information and connect to the internet or home network using a particular type of claimed device through an additional device. The inventions of the ’212 Patent constitute improvements to a display apparatus because a display apparatus is now able to receive video from another device while multi-tasking to provide additional functionalities, such as connecting to the internet. Such a coexistence solution involving simultaneous communications requires a specific configuration, as claimed in the ’212 Patent.

154. Lenovo has directly infringed one or more claims of the ’212 Patent in this District and elsewhere in Texas, including at least claim 1 literally and/or under the doctrine of equivalents, by or through making, using, importing, offering for sale and/or selling its telecommunications technology, including at least Lenovo products having materially similar functionality while implementing Bluetooth tethering and receiving video over cellular networks within smartphones including, without limitation, the Moto E Family (E⁶, E⁵ Supra, E⁵ Plus, E⁵ Play, E⁵ Go, E⁵ Cruise,

E⁵, E⁴ Plus, and E⁴); Moto Edge Family (edge and edge+), Moto G Family (G Play, G Power, G⁷ Play, G⁷ Play with Amazon Alexa, G⁷ with Amazon Alexa, G Fast, G⁷ Supra, G⁷ Power, G⁷ Plus, G⁷ Optimo Maxx, G⁷ Optimo, G⁷, G⁶ Play, G⁶ Forge, G⁶, G^{5s} Plus, G⁵ Plus); Moto One Family (One 5G, One Action, One Hyper, One Fusion+, One Zoom, and One); Moto Razr Family (razr (1st gen) and razr (2nd gen)); and Moto Z Family (Z⁴ with Amazon Alexa, Z⁴, Z³ Play, Z³, Z² Play, and Z² Force) (collectively, “the ’212 Accused Products”). Maxell reserves the right to discover and pursue any additional infringing devices that incorporate infringing functionalities. For the avoidance of doubt, the ’212 Accused Products are identified to describe Lenovo’s infringement and in no way limit the discovery and infringement allegations against Lenovo concerning other devices that incorporate the same or reasonably similar functionalities.


155. Each of the ’212 Accused Products is observed to include a first radio communication circuit receiving digital video information and a second radio communication circuit connecting to an external video processing apparatus and connecting to an internet or home network through the external video processing apparatus. For example, each of the ’212 Accused Products include a Bluetooth circuit and a cellular chipset. Further, each of the ’212 Accused Products have a control unit for controlling assignment of connection by radio transmission for each of the first and second radio communication units, so that the first radio communication unit receives digital video information from the external video processing apparatus and the second radio communication unit connects to the internet or the home network simultaneously. For example, the ’212 Accused Products can perform Bluetooth tethering and also receive video over cellular network. Further, the ’212 Accused Products include a control unit that controls assignment of a transmission rate between the first radio communication unit and the external video processing apparatus, and assignment of a transmission rate between the second radio

communication unit and the internet or the home network, and the control unit controls the assignment of the transmission rate such that the transmission rate between the first radio communication unit and the external video processing apparatus, is more than the transmission rate between the second radio communication unit and the internet or the home network, when a user issues an indication to receive video information by using the first radio communication unit from the video processing apparatus while acquiring information from the Internet by use of the second radio communication unit. For example, the '212 Accused Products includes an application processor/CPU for executing control functions during Bluetooth tethering and video reception functions.

156. For example, the following excerpts from Lenovo's website provide non-limiting examples of the '212 Accused Products infringing at least claim 1 of the '212 Patent by performing Bluetooth tethering and receive video via MMS.

Bluetooth tethering

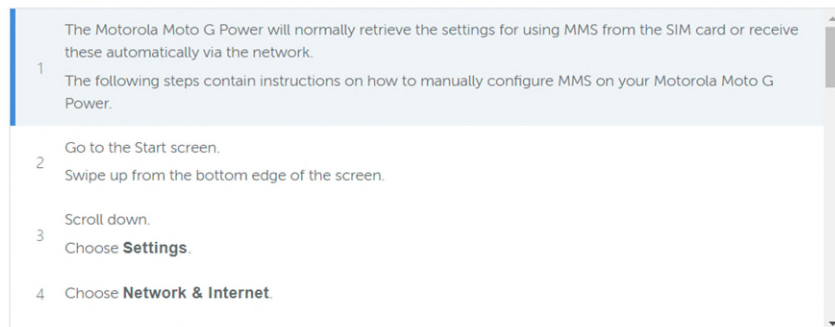
To connect a device to the internet using your phone's cellular data and a Bluetooth connection:

1. Check that cellular data is on. If cellular data is off, your phone doesn't have an internet connection to share.
2. Turn on Bluetooth on your phone and pair with the other device.
3. Set up the other device to get its network connection via Bluetooth.
4. On your phone, go to **Settings**.
5. Touch **Network & internet > Hotspot & tethering**.
6. Turn on **Bluetooth tethering** to start the connection.
You'll see  in your notifications.

Lenovo

To stop the connection, touch the notification and turn off **Bluetooth tethering**.

See https://motorola-global-en-roe.custhelp.com/app/answers/detail/a_id/139898/~hotspot---motorola-one-vision



See <https://www.motorola-support.com/us-en/?page=device/motorola/moto-g-power/topic/mms/manual-configuration/choice/at-amp-t/1>

157. Further, the following excerpts from the User Guides of two of the '212 Accused Products provide non-limiting examples of the '212 Accused Products infringing at least claim 1 of the '212 Patent by implementing Bluetooth tethering with additional functionalities:

• **Security:** Select the type of security you want: **None** or **WPA2-Personal**. For **WPA2-Personal**, enter a unique password (8 characters) that others will need to access your Wi-Fi hotspot.

Note: To change your hotspot password or turn off hotspot automatically, tap **Advanced**.

Connect with Bluetooth wireless

Turn Bluetooth power on

To turn Bluetooth on, swipe the status bar down and touch . Touch and hold it to open Bluetooth settings.

Note: Your phone automatically turns on Bluetooth power when you connect to a paired device.

Tip: To extend battery life or stop connections, turn Bluetooth off when you're not using it.

Connect devices

The first time you connect a Bluetooth device, follow these steps:

- 1 Make sure the device you are pairing with is in discoverable mode (for details, refer to the guide that came with the device).
- 2 Swipe up > **Settings** > **Connected devices** > **Pair new device**.
- 3 With Bluetooth turned on, tap a found device to connect it (if necessary, tap **Pair** or enter a passkey like 0000). You can tap to rename the device and choose what the device will be used for.

When the device connects, the Bluetooth connected indicator appears at the top of the screen.

To automatically **disconnect** or **reconnect** a device, just turn the device off or on.

Note: Using a mobile device or accessory while driving may cause distraction and may be illegal. Always obey the laws and drive safely.

Transfer files

» **Photos or videos:** Open the photo or video, then tap > **Bluetooth**.

» **Contacts:** Swipe up > **Contacts**, tap a person, then tap Menu > **Share** > **Bluetooth**.

Bluetooth tethering

To share your phone's internet connection via Bluetooth, swipe up > **Settings** > **Network & Internet** > **Hotspot & tethering** and tap the switch to turn on **Bluetooth tethering**.

Share files with your computer

Note: Copyright—do you have the right? Always follow the rules. See "Content Copyright" in the legal and safety information on your phone.

USB

To load music, pictures, videos, documents, or other files from your computer, connect your phone to your computer with a USB cable. To change the type of USB connection, swipe the status bar down and tap **Android System** > **USB Preferences** > **File transfer**.

Tip: Make sure to connect the phone to a high power USB port.

Note: The first time you use a USB connection, your computer may indicate that drivers are being installed. Follow any prompts you see to complete the installation. This may take a few minutes.

» For Microsoft® Windows®: On your computer, choose Start > Windows Explorer. Your phone will appear as a connected drive where you can drag and drop files. For more instructions or driver files, visit www.motorola.com/support.

» For Apple™ Macintosh™: Use Android File Transfer, available at www.android.com/filetransfer.

Virtual Private Network (VPN)

A VPN lets you access files on a secured network (like an office network with a firewall). Contact the network administrator for VPN settings, and any additional apps or requirements.


To enter VPN settings, swipe up > **Settings** > **Network & Internet** > **Advanced** > **VPN**. Tap to add a new VPN. Choose the type of VPN and enter settings from the network administrator. Select the VPN name to connect.

Connect, share & sync

Motorola Edge User Guide at p. 30.

Connect with Bluetooth wireless

Turn Bluetooth power on


To turn Bluetooth on, swipe the status bar down and touch . Touch and hold it to open Bluetooth settings.

Note: Your phone automatically turns on Bluetooth power when you connect to a paired device.

Tip: To extend battery life or stop connections, turn Bluetooth off when you're not using it.

Connect devices





The first time you connect a Bluetooth device, follow these steps:

- 1 Make sure the device you are pairing with is in discoverable mode (for details, refer to the guide that came with the device).
- 2 Swipe up  >  **Settings** > **Connected devices** > **Pair new device**.
- 3 With Bluetooth turned on, tap a found device to connect it (if necessary, tap **Pair** or enter a passkey like **0000**). You can tap  to rename the device and choose what the device will be used for.



To automatically **disconnect** or **reconnect** a device, just turn the device off or on.

Note: Using a mobile device or accessory while driving may cause distraction and may be illegal. Always obey the laws and drive safely.

Share files

- » **Photos or videos:** Open the photo or video, then tap  > **Bluetooth**.
- » **Contacts:** Swipe up  >  **Contacts**. Touch and hold a contact, then tap  > **Bluetooth**.

Bluetooth tethering

To share your phone's internet connection via Bluetooth, swipe up  >  **Settings** > **Network & internet** > **Hotspot & tethering** and tap the switch to turn on **Bluetooth tethering**.

Motorola One 5G User Guide at p. 30-31.

158. The foregoing features and capabilities of each of the '212 Accused Products and Lenovo's description and/or demonstration thereof, including in user manuals and advertising, reflect Lenovo's direct infringement by satisfying every element of at least claim 1 of the '212 Patent, under 35 U.S.C. § 271(a).

159. Lenovo has indirectly infringed at least claim 1 of the '212 Patent in this District and elsewhere in the United States by, among other things, actively inducing the use, offering for sale, selling, or importation of at least the '212 Accused Products. Lenovo's customers who purchase devices and components thereof and operate such devices and components in accordance with Lenovo's instructions directly infringe one or more claims of the '212 Patent in violation of 35 U.S.C. § 271(b). Lenovo instructs its customers through at least user guides or websites, such as those located at: https://motorola-global-en-roe.custhelp.com/app/answers/detail/a_id/139898/~hotspot---motorola-one-vision, <https://www.motorola-support.com/us-en/?page=device/motorola/moto-g-power/topic/mms/manual-configuration/choice/at-amp-t/1>, and <https://www.motorola.com/us/smartphones-motorola-edge/p?skuId=352>.

160. For example, as noted above, Lenovo instructs its customers to "share your phone's internet connection via Bluetooth." Lenovo is thereby liable for infringement of the '212 Patent pursuant to 35 U.S.C. § 271(b).

161. Lenovo has indirectly infringed at least claim 1 of the '212 Patent, by, among other things, contributing to the direct infringement of others, including customers of the '212 Accused Products by making, offering to sell, or selling, in the United States, or importing a component of a patented machine, manufacture, or combination, or an apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or

especially adapted for use in infringement of the '212 Patent, and not a staple article or commodity of commerce suitable for substantial non-infringing use.

162. For example, the '212 Accused Products include a first radio communication circuit, a second radio communication circuit, and a control unit. These are components of a patented machine, manufacture, or combination, or an apparatus for use in practicing a patented process. Furthermore, such components are a material part of the invention and upon information and belief are not a staple article or commodity of commerce suitable for substantial non-infringing use. Thus, Lenovo is liable for infringement of the '212 Patent pursuant to 35 U.S.C. § 271(c).

163. Lenovo has been aware of the '212 Patent family since, [REDACTED]

[REDACTED] Further, Lenovo has been on notice of its infringement of the '212 Patent since at least May 17, 2018, based on correspondence directed to Courtney VanLonKhuyzen Welton. *See* Letter from J. Beaver to C. Welton dated May 17, 2018 (Exhibit 1). That correspondence set forth Maxell's belief that Lenovo makes, uses, sells, offers to sell, or imports products that infringe certain of Maxell's patents, and specifically identified the '212 Patent as well as exemplary claims and exemplary accused products for that patent. By the time of trial, Lenovo will thus have known and intended (since receiving such notice), that its continued actions would actively induce and contribute to actual infringement of at least claim 1 of the '212 Patent.

164. Lenovo undertook and continued its infringing actions despite an objectively high likelihood that such activities infringed the '212 Patent, which has been duly issued by the USPTO, and is presumed valid. For example, at least since it received Maxell's letter on May 17, 2018, [REDACTED]

[REDACTED] Lenovo has been aware of an objectively high likelihood that its actions

constituted and continue to constitute infringement of the '212 Patent, and that the '212 Patent is valid. On information and belief, Lenovo could not reasonably, subjectively believe that its actions do not constitute infringement of the '212 Patent, nor could it reasonably, subjectively believe that the patent is invalid. Despite that knowledge and subjective belief, and the objectively high likelihood that its actions constitute infringement, Lenovo has continued its infringing activities. As such, Lenovo willfully infringes the '212 Patent.

165. Maxell has been damaged by Lenovo's infringement of the '212 Patent.

COUNT 7 - INFRINGEMENT OF U.S. PATENT NO. 7,952,645

166. Maxell incorporates paragraphs 1-165 above by reference.

167. U.S. Patent No. 7,952,645 (the "'645 Patent," attached hereto at Exhibit 11) duly issued on May 31, 2011 and is entitled *Video Processing Apparatus and Mobile Terminal Apparatus*.

168. Maxell is the owner by assignment of the '645 Patent and possesses all rights under the '645 Patent, including the exclusive right to recover for past and future infringement.

169. At the time of the invention of the '645 Patent (which claims priority to November 24, 2005), visual display signal processing posed unique problems in the field of mobile apparatuses, which were limited in both processing power and, critically, battery life. '645 Patent at 1:31-37. Furthermore, the nature of use of mobile apparatuses meant that they might be viewed outdoors, in the sun, which could pose other problems not typically present for indoor computers. *Id.* at 1:37-40. Finally, images viewed on mobile apparatuses may be difficult to view if particular images are focused on but the surrounding areas are not color-corrected in accordance with optimal viewing conditions. *Id.* at 1:45-56.

170. Conventional solutions for visual display signal processing were not well suited for these circumstances. For example, as disclosed in JP-A-2002-132225, an input RGB signal might be converted to a luminance signal and a color-difference signal every frame, a characteristic data point may be extracted from each frame, and the luminance signal and a color-difference signal might be corrected according to a user's preference. However, this is an energy intensive process, and does not solve the issue of the difference between color-correcting an overall image. '645 Patent at 1:31-37. In another example, JP-A-2005-026814 discloses the use of a side panel detection circuit which detects a side panel and conduct picture quality according to a result of the side panel detection and a result of video luminance level detection, but this too did not solve the problems facing users of a mobile apparatus that displayed a visual signal at least because such an invention was limited to side panels for these use of a static digital broadcast receiver, which would not have faced users of mobile apparatuses, and if applied to mobile apparatuses, would create an output that would be difficult for users to view. '645 Patent at 1:41-50.

171. Other inventors had proposed other solutions to problems arising for visual display signal processing, but none were adequate to address the problems that the inventors of the '645 Patent were considering. For example, U.S. Patent No. 5,298,995 to Monta et al., filed by the Panasonic Corporation, discusses a solution in the field of visual display signal processing, but this solution was directed to detecting and moving subtitles, for example for a television receiver, and would not apply to the types of visual display signals frequently viewed on a mobile apparatus. As another example, U.S. Patent No. 7,046,302 to Konuma, filed by the Sony Corporation, discloses a signal processing method for multiple images shown in combination, but this would not solve the problems viewing a single image in the context of a mobile apparatus.

172. And even today, particular solutions to these problem for visual display signal processing are implemented across the mobile apparatus industry. For example, Android uses a particular form of visual display signal processing to optimize displays for viewing on mobile apparatuses. *See, e.g.,*

https://developer.android.com/reference/android/hardware/camera2/CaptureRequest#COLOR_CORRECTION_MODE;

https://developer.android.com/reference/android/hardware/camera2/CaptureRequest#COLOR_CORRECTION_GAINS.

COLOR_CORRECTION_MODE

Added in API level 21

```
public static final Key<Integer> COLOR_CORRECTION_MODE
```

The mode control selects how the image data is converted from the sensor's native color into linear sRGB color.

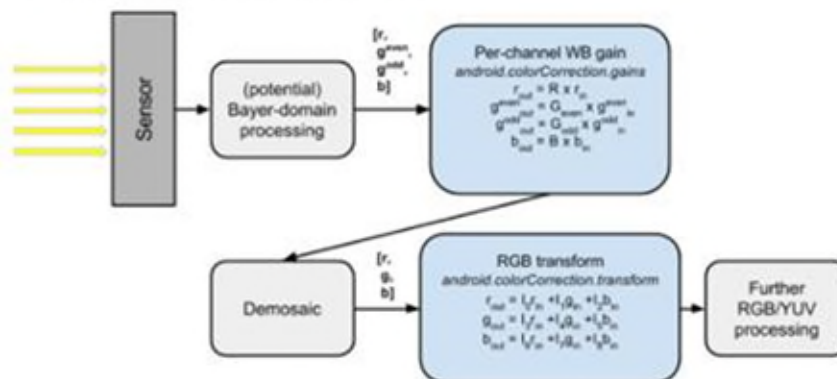
When auto-white balance (AWB) is enabled with `android.control.awbMode`, this control is overridden by the AWB routine. When AWB is disabled, the application controls how the color mapping is performed.

We define the expected processing pipeline below. For consistency across devices, this is always the case with `TRANSFORM_MATRIX`.

When either `FAST` or `HIGH_QUALITY` is used, the camera device may do additional processing but `android.colorCorrection.gains` and `android.colorCorrection.transform` will still be provided by the camera device (in the results) and be roughly correct.

Switching to `TRANSFORM_MATRIX` and using the data provided from `FAST` or `HIGH_QUALITY` will yield a picture with the same white point as what was produced by the camera device in the earlier frame.

The expected processing pipeline is as follows:



173. These particular solutions to problems arising in mobile apparatuses that capture and display visual signals, like the solutions disclosed and claimed in the '645 Patent, enhance the

capabilities of mobile apparatuses, and perform types of operations (visual signal processing) that are unique to computers and incapable of being performed by hand or without computers.

174. The '645 Patent discloses and claims a particular solution to these problems that arise in the field of mobile apparatuses. For example, the '645 Patent discloses an energy efficient manner of processing a signal such that it can be optimally viewed by a user of a mobile apparatus. One solution that the '645 Patent proposes is the use of a controller to distinguish between pattern portions, including in a no-picture area, and thereby control the visual display signal processing to focus on the single image of importance to the user of the mobile apparatus. This may limit the use of processing power, but also create an optimal aesthetic to the user. Such an invention improved the then-capabilities of mobile apparatuses, and enabled better devices to be available in the growing field of mobile apparatuses.

175. Lenovo has directly infringed one or more claims of the '645 Patent in this District and elsewhere in Texas, including at least claims 1-3 literally and/or under the doctrine of equivalents, by or through making, using, importing, offering for sale and/or selling its telecommunications technology, including at least Lenovo products having materially similar functionality while implementing color correction and image processing including in Portrait mode including, without limitation, the Moto E Family (E⁶, E⁵ Supra, E⁵ Plus, E⁵ Play, E⁵ Go, E⁵ Cruise, E⁵, E⁴ Plus, and E⁴); Moto Edge Family (edge and edge+), Moto G Family (G Play, G Power, G⁷ Play, G⁷ Play with Amazon Alexa, G⁷ with Amazon Alexa, G Fast, G⁷ Supra, G⁷ Power, G⁷ Plus, G⁷ Optimo Maxx, G⁷ Optimo, G⁷, G⁶ Play, G⁶ Forge, G⁶, G^{5s} Plus, G⁵ Plus); Moto One Family (One 5G, One Action, One Hyper, One Fusion+, One Zoom, and One); Moto Razr Family (razr (1st gen) and razr (2nd gen)); and Moto Z Family (Z⁴ with Amazon Alexa, Z⁴, Z³ Play, Z³, Z² Play, and Z² Force) (collectively, "the '645 Accused Products"). Maxell reserves the right to discover

and pursue any additional infringing devices that incorporate infringing functionalities. For the avoidance of doubt, the '645 Accused Products are identified to describe Lenovo's infringement and in no way limit the discovery and infringement allegations against Lenovo concerning other devices that incorporate the same or reasonably similar functionalities.

176. Each of the '645 Accused Products is observed to include an input unit to which a video signal is input. For example, each of the '645 Accused Products includes an image sensor and/or a cellular or WiFi circuit for receiving a video signal. Further, each of the '645 Accused Products is observed to include a detector which detects whether pattern portions other than contents are contained in the video signal input to the input unit. For example, the '645 Accused Products include an image signal processor (ISP) and/or a CPU. The '645 Accused Products are further observed to include a corrector which corrects the video signal input to the input unit and a controller which controls the corrector to cause the corrector to correct the video signal input to the input unit when the pattern portions are not contained, and which controls the corrector to cause the corrector not to correct the video signal when the pattern portions are contained. For example, in Portrait Mode, the '645 Accused Products do not perform certain color corrections to the pattern portions in Portrait mode. Similarly, the '645 Accused Products do not perform certain corrections to the pattern portions when performing scanning of documents.

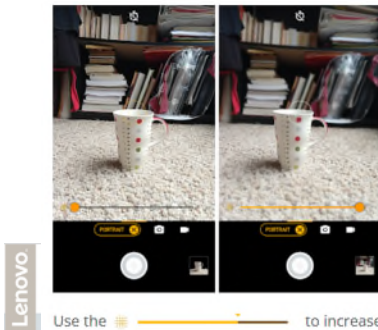
177. For example, the following excerpt from Lenovo's website provides non-limiting examples of the '645 Accused Products infringing at least claims 1-3 of the '645 Patent by implementing Portrait Mode and document scanning via the camera.


Take a photo with blurred background on the moto g^{5s} plus

Portrait mode allows your photo subject to stand out! Use it to blur the background or creative selective black & white photos.

Portrait mode works best when your subject is one to two feet away from the background and you are one to two feet away from the subject. Different subjects look better at different distances. Play around to get the best shot!

To enter portrait mode, select  followed by **Portrait**.



Use the  to increase or decrease the blur of the background.

See https://motorola-global-portal.custhelp.com/app/answers/prod_answer_detail/a_id/127634

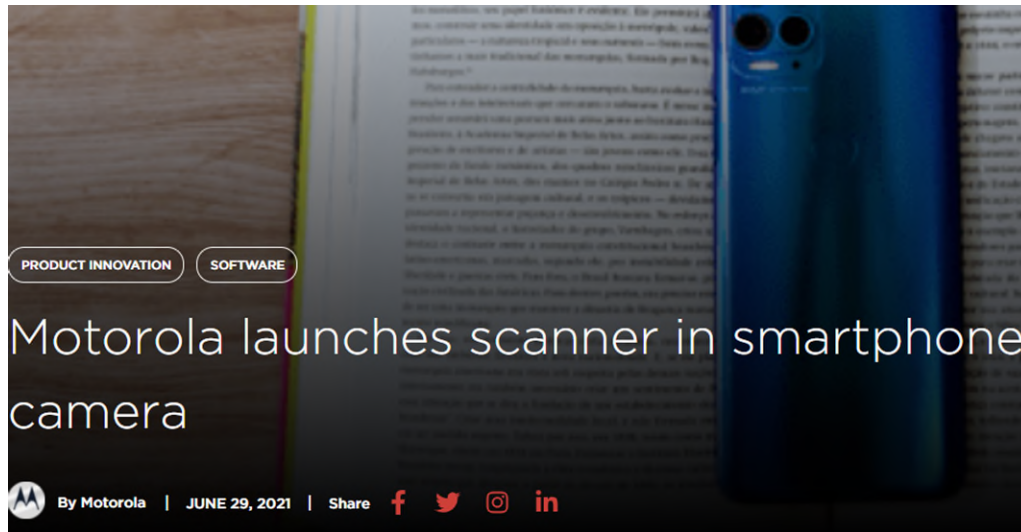
Rear Camera Software
Shot optimization, Auto smile capture, Gesture selfie, Smart composition, HDR, Timer, Active photos, Manual mode, **Portrait** mode, Cutout, Macro, Spot color, Cinemagraph, Long Exposure, Panorama, Live filter, High-res zoom, RAW photo output, Best shot, Google Lens™ integration, Night Vision

Front Camera Software
Screen flash, HDR, Timer, Face beauty, Auto smile capture, Gesture selfie, Active photos, Manual mode, **Portrait** mode, Spot colour, Cinemagraph, Group selfie, Live filter, Night Vision

See <https://www.motorola.com/us/smartphones-motorola-edge/p?skuId=352>



See <https://www.motorola.com/us/smartphones-motorola-edge-plus/p#shootpro>



See <https://www.motorola.com/blog/post?id=288>

178. The foregoing features and capabilities of each of the '645 Accused Products and Lenovo's description and/or demonstration thereof, including in user manuals and advertising, reflect Lenovo's direct infringement by satisfying every element of at least claim 1-3 of the '645 Patent, under 35 U.S.C. § 271(a).

179. Lenovo has indirectly infringed at least claims 1-3 of the '645 Patent in this District and elsewhere in the United States by, among other things, actively inducing the use, offering for sale, selling, or importation of at least the '645 Accused Products. Lenovo's customers who purchase devices and components thereof and operate such devices and components in accordance with Lenovo's instructions directly infringe one or more claims of the '645 Patent in violation of 35 U.S.C. § 271(b). Lenovo instructs its customers through at least user guides or websites, such as those located at: <https://www.motorola.com/us/smartphones-motorola-edge-plus/p#shootpro>, <https://www.motorola.com/blog/post?id=288>, https://motorola-global-portal.custhelp.com/app/answers/prod_answer_detail/a_id/127634, and <https://www.motorola.com/us/smartphones-motorola-edge/p?skuId=352>.

180. For example, as noted above, Lenovo instructs its customers to “Take a photo” with Portrait mode and/or “Add a beautiful blur in the background for a professional look with Portrait mode.” Lenovo further instructions its customers to “open the camera application and swipe from right to left to access camera modes and choose Scanner mode in the ‘Photo’ section.” Lenovo is thereby liable for infringement of the ’645 Patent pursuant to 35 U.S.C. § 271(b).

181. Lenovo has indirectly infringed at least claims 1-3 of the ’645 Patent, by, among other things, contributing to the direct infringement of others, including customers of the ’645 Accused Products by making, offering to sell, or selling, in the United States, or importing a component of a patented machine, manufacture, or combination, or an apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in infringement of the ’645 Patent, and not a staple article or commodity of commerce suitable for substantial non-infringing use.

182. For example, the ’645 Accused Products include an image sensor, an image signal processor, an application processor/CPU, and software for implementing color corrections. These are components of a patented machine, manufacture, or combination, or an apparatus for use in practicing a patented process. Furthermore, such components are a material part of the invention and upon information and belief are not a staple article or commodity of commerce suitable for substantial non-infringing use. Thus, Lenovo is liable for infringement of the ’645 Patent pursuant to 35 U.S.C. § 271(c).

183. Lenovo has been aware of the ’645 Patent family since, [REDACTED]

[REDACTED]
Further, Lenovo has been on notice of its infringement of the ’645 Patent since at least June 3, 2021, based on correspondence directed to Lenovo’s Directors of Intellectual

Property—Fergal Clarke and Robert Renke. *See* Letter from J. Beaber to F. Clarke and R. Renke dated June 3, 2021 (Exhibit 3). That correspondence set forth Maxell’s belief that Lenovo makes, uses, sells, offers to sell, or imports products that infringe certain of Maxell’s patents, and specifically identified the ’645 Patent as well as exemplary claims and exemplary accused products for that patent. By the time of trial, Lenovo will thus have known and intended (since receiving such notice), that its continued actions would actively induce and contribute to actual infringement of at least claims 1-3 of the ’645 Patent.

184. Lenovo undertook and continued its infringing actions despite an objectively high likelihood that such activities infringed the ’645 Patent, which has been duly issued by the USPTO, and is presumed valid. For example, at least since it received Maxell’s letter on June 3, 2021, [REDACTED]

[REDACTED] Lenovo has been aware of an objectively high likelihood that its actions constituted and continue to constitute infringement of the ’645 Patent, and that the ’645 Patent is valid. On information and belief, Lenovo could not reasonably, subjectively believe that its actions do not constitute infringement of the ’645 Patent, nor could it reasonably, subjectively believe that the patent is invalid. Despite that knowledge and subjective belief, and the objectively high likelihood that its actions constitute infringement, Lenovo has continued its infringing activities. As such, Lenovo willfully infringes the ’645 Patent.

185. Maxell has been damaged by Lenovo’s infringement of the ’645 Patent.

COUNT 8 - INFRINGEMENT OF U.S. PATENT NO. 8,059,177

186. Maxell incorporates paragraphs 1-185 above by reference.

187. U.S. Patent No. 8,059,177 (the “’177 Patent,” attached hereto at Exhibit 12) duly issued on November 15, 2011 and is entitled *Electric Camera*.

188. Maxell is the owner by assignment of the '177 Patent and possesses all rights under the '177 Patent, including the exclusive right to recover for past and future infringement.

189. Electric (or, digital) cameras operate using image sensing devices sometimes called “image sensors.” '177 Patent at 1:17-23. An exemplary image sensor disclosed in the '177 Patent contains an array of picture elements (or, pixels) arranged in a two-dimensional grid. *Id.* at Fig. 2. Each pixel in the image sensor array will generate a digital signal in response to light incident on a photodiode within the pixel. These signals are collected by specialized circuitry and output as a digital image.

190. Prior to the inventions disclosed in the '177 Patent (which claims priority to January 11, 2000), conventional electric cameras could not effectively capture both still and moving images. For example, when taking still pictures with a camera designed for taking moving images, the number of pixels was insufficient for a high-quality still image. *Id.* at 2:67-3:2. Conversely, when taking moving images with a camera designed for taking still images, the dynamic image quality of the moving image would deteriorate, and the required circuitry would increase. *Id.* at 2:67-3:2.

191. The inventors of the '177 Patent solved these problems. For example, one problem affecting the quality of moving images is the amount of image instability due to vertical and horizontal movement of the electric camera. The '177 Patent solves this problem by changing an effective set of pixels based on a detected amount of image instability and providing different set of effective set of pixels for different camera modes. This allows electric cameras that practice this patent to focus the effective set of pixels on where it is needed most, as opposed to conventional cameras that utilized a static effective pixel area. In this way, an electric camera that practices the

'177 Patent can achieve higher-resolution images and better dynamic image quality with a smaller number of pixels in the image sensor array.

192. Lenovo has directly infringed one or more claims of the '177 Patent in this District and elsewhere in Texas, including at least claim 1 literally and/or under the doctrine of equivalents, by or through making, using, importing, offering for sale and/or selling its telecommunications technology, including at least Lenovo products having materially similar functionality while implementing image capture and processing in still picture mode and video mode including, without limitation, the Moto E Family (E⁶, E⁵ Supra, E⁵ Plus, E⁵ Play, E⁵ Go, E⁵ Cruise, E⁵, E⁴ Plus, and E⁴); Moto Edge Family (edge and edge+), Moto G Family (G Play, G Power, G⁷ Play, G⁷ Play with Amazon Alexa, G⁷ with Amazon Alexa, G Fast, G⁷ Supra, G⁷ Power, G⁷ Plus, G⁷ Optimo Maxx, G⁷ Optimo, G⁷, G⁶ Play, G⁶ Forge, G⁶, G^{5s} Plus, G⁵ Plus); Moto One Family (One 5G, One Action, One Hyper, One Fusion+, One Zoom, and One); Moto Razr Family (razr (1st gen) and razr (2nd gen)); and Moto Z Family (Z⁴ with Amazon Alexa, Z⁴, Z³ Play, Z³, Z² Play, and Z² Force) (collectively, “the '177 Accused Products”). Maxell reserves the right to discover and pursue any additional infringing devices that incorporate infringing functionalities. For the avoidance of doubt, the '177 Accused Products are identified to describe Lenovo's infringement and in no way limit the discovery and infringement allegations against Lenovo concerning other devices that incorporate the same or reasonably similar functionalities.

193. Each of the '177 Accused Products is observed to include front and rear-facing cameras, each of which incorporates a light-receiving sensor or imaging sensor (*e.g.*, CMOS sensor) with an array of pixels arranged vertically and horizontally in a grid pattern. The '177 Accused Products can record an image in a static mode, for example recording photographs and snapshots in photo camera modes, and in a moving video mode, for example recording a video clip in video camera mode.

194. The '177 Accused Products further include a processor (*e.g.*, application processor or CPU) that processes signals from one or more cameras and sensors to generate image signals for displaying on the display, where the generated image can be manipulated in accordance with a select pixel arrangement and/or image stabilization correction factor using a portion of the pixel lines available. Further, each of the '177 Accused Products include a driver implementing a first driver mode to vertically mix or cull signal charges accumulated in individual pixels of every K pixels to produce a number of lines of output signals which corresponds to the number of effective scanning lines M , K being at least one of integers equal to or less than an integral part of a quotient of N divided by M . Further, the '177 Accused Products also include a driver implementing a second driver mode to vertically mix or cull signal charges accumulated in individual pixels of every K pixels to produce a number of lines of output signals which corresponds to $1/K$ the number of vertically arranged pixels N of the image sensing device, K being at least one of integers equal to or less than an integral part of a quotient of N divided by M .

195. For example, the following excerpts from Lenovo's websites provide non-limiting examples of the '177 Accused Products infringing at least claim 1 of the '177 Patent by way of implementing a dual-camera system, CMOS sensors, and an image signal processor that arranges an array of pixels in a grid pattern and processes the pixels for each of a static image mode (*e.g.*, still pictures), monitoring mode (*e.g.*, preview of pictures/videos), and moving video mode (*e.g.*, videos) as claimed:



designed to take the best smartphone photos ever

You don't need a professional DSLR camera to take amazing photos and videos. Get pro-caliber results every time with the 108 MP triple camera system, dual OIS, AI, and 6K video recording.

[see the results](#)

<https://www.motorola.com/us/smartphones-motorola-edge-plus/p> (Motorola Edge+ website)



[Watch the video >](#) [View tech specs >](#)

a lens for every shot

Extreme close-ups, ultra-wide landscapes and everything in between—you have the lens to make it great thanks to a triple camera system.



<https://www.motorola.com/us/smartphones-motorola-edge-plus/p#shootpro> (Motorola Edge+ website)

triple camera system

The 108 MP Quad Pixel main camera sensor delivers unmatched quality while the triple camera system provides countless ways to use it. Get incredibly detailed close-ups with a built-in Macro Vision that catches every detail. When you can't get up-close-and-personal with your subject, the 8 MP telephoto lens uses high-res optical zoom to capture details that would otherwise be missed at a distance. A 16 MP ultra-wide angle lens lets you fit 4x more of the scene into your shot.

<https://www.motorola.com/us/smartphones-motorola-edge-plus/p#shootpro> (Motorola Edge+ website)

64 MP triple camera system

Take remarkably sharp pictures with the 64 MP sensor, the highest camera resolution in its class¹. The ultra-wide angle lens, high-res optical zoom, and Macro Vision let you capture incredible shots no matter the environment.

<https://www.motorola.com/us/smartphones-motorola-edge/p?skuId=352#shootpro> (Motorola Edge website)

<p>Rear Camera Hardware 64MP (f/1.8, 0.8µm) 1/1.72" sensor size Quad Pixel technology for 1.6µm</p> <p>Ultra-wide angle & Macro Vision 16MP (f/2.2, 1.0µm) FOV 117° ultra-wide angle</p> <p>Telephoto 8MP (f/2.4, 1.12µm) 2x high-res optical zoom</p> <p>Time of flight sensor</p>	<p>Rear Camera Video Software Macro video, Slow motion video, Timelapse video, Hyperlapse video, Electronic video stabilization</p>	<p>Front Camera Video Capture FHD (30fps) HD (30fps)</p>
<p>Rear Camera Software Shot optimization, Auto smile capture, Gesture selfie, Smart composition, HDR, Timer, Active photos, Manual mode, Portrait mode, Cutout, Macro, Spot color, Cinemagraph, Long Exposure, Panorama, Live filter, High-res zoom, RAW photo output, Best shot, Google Lens™ integration, Night Vision</p>	<p>Front Camera Hardware 25 MP sensor (f/2.0, 0.9 µm) Quad Pixel technology for 1.8 µm</p>	<p>Rear Camera Video Capture Rear main camera: UHD (30fps) FHD (60/30fps) HD (30fps)</p> <p>Rear ultra-wide angle camera: UHD (30fps) FHD (30/60fps) HD (30fps)</p> <p>Rear telephoto camera: FHD (30fps) HD (30fps)</p>

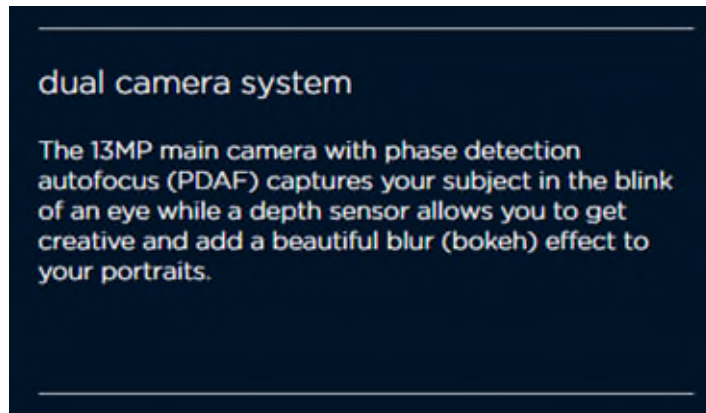
<https://www.motorola.com/us/smartphones-motorola-edge/p?skuId=352#shootpro> (Motorola Edge website)

<p>48 MP[†] rear quad camera system</p> <p>Be ready with the perfect camera for every picture, and capture sharper, brighter photos in any light.</p>	<p>ultra-wide selfie camera system</p> <p>Fit more in the frame using the ultra-wide selfie cam and look your best in any light with the front-facing 16 MP^{††} Quad Pixel camera.</p>
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<https://www.motorola.com/us/smartphones-motorola-one-5g/p?skuId=459> (Motorola One 5G website)

Rear Camera Hardware 48MP (f/1.8, 1.6µm) Quad pixel technology Macro Vision + Ring Light 5MP (f/2.2, 1.12µm) minimum 2cm focus distance Ultra-Wide Angle 8MP (f/2.2, 1.12µm) 118° ultra-wide angle Depth Camera 2MP (f/2.2, 1.75µm)	Rear Camera Video Software Macro video, Slow motion video, Timelapse video, Hyperlapse video, Electronic video stabilization, Video HDR, Video snapshot	Front Camera Video Capture FHD (30 fps) HD (30 fps)
Rear Camera Software Shot optimization, Auto smile capture, Gesture selfie, Smart composition, HDR, Timer, Active photos, Manual mode, Portrait mode, Portrait lighting, Cutout, Macro, Spot color, Cinemagraph, Panorama, Live filter, High-res zoom, RAW photo output, Best shot, Google Lens™ integration, Night Vision	Front Camera Hardware 16MP (f/2.0, 1.0µm) Ultra-wide Angle 8MP (f/2.2, 1.12µm)	Rear Camera Video Capture Rear main camera: UHD (30fps) FHD (60/30fps) HD (30fps) Rear ultra-wide angle camera: FHD (30fps) HD (30fps) Rear macro camera: FHD (30fps) HD (30fps)

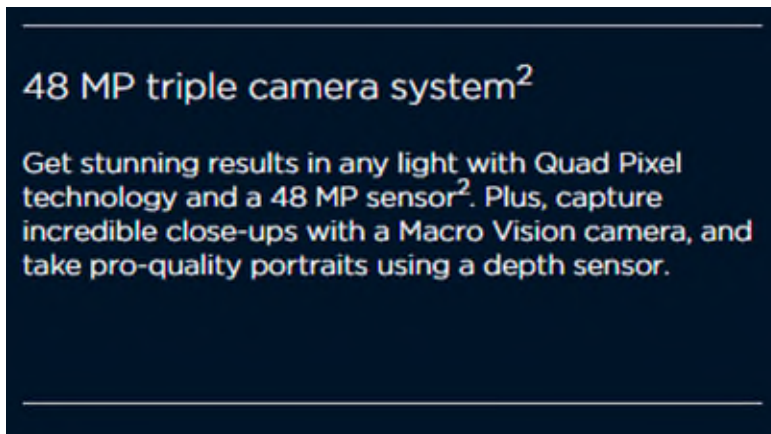
<https://www.motorola.com/us/smartphones-motorola-one-5g/p?skuId=459> (Motorola One 5G website)



<https://www.motorola.com/us/smartphones-moto-e/p?skuId=414> (Motorola Moto E (2020) website)

Rear Camera Hardware 13MP (f/2.0, 1.12µm) PDAF, 2MP (f/2.2, 1.75µm) depth, Single LED flash	Rear Camera Video Software Slow motion, Timelapse video, Hyperlapse video	Front Camera Video Capture FHD (30fps) HD (30fps)
Rear Camera Software Auto smile capture, High-res zoom, HDR, Timer, Manual mode, Portrait mode, Cutout, Spot color, Panorama, Live filter, RAW photo output, Watermark, Burst shot, Best shot, Google Lens™ integration	Front Camera Hardware 5MP (f/2.0, 1.12µm)	Rear Camera Video Capture FHD (60/30fps) HD (30fps)

<https://www.motorola.com/us/smartphones-moto-e/p?skuId=414> (Motorola Moto E (2020) website)



<https://www.motorola.com/us/smartphones-moto-g-power-gen-2/p?skuId=539> (Motorola Moto G Power (2021) website)



<https://www.motorola.com/us/smartphones-moto-g-power-gen-2/p?skuId=539> (Motorola Moto G Power (2021) website)

196. The foregoing features and capabilities of each of the '177 Accused Products and Lenovo's description and/or demonstration thereof, including in user manuals and advertising, reflect Lenovo's direct infringement by satisfying every element of at least claim 1 of the '177 Patent, under 35 U.S.C. § 271(a).

197. Lenovo has indirectly infringed at least claim 1 of the '177 Patent in this District and elsewhere in the United States by, among other things, actively inducing the use, offering for sale, selling, or importation of at least the '177 Accused Products. Lenovo's customers who purchase devices and components thereof and operate such devices and components in accordance with Lenovo's instructions directly infringe one or more claims of the '177 Patent in violation of 35 U.S.C. § 271(b). Lenovo instructs its customers to capture pictures and videos through at least user guides or websites, such as those located at: <https://www.motorola.com/us/smartphones-motorola-edge-plus/p>, <https://www.motorola.com/us/smartphones-motorola-edge-plus/p#shootpro>, <https://www.motorola.com/us/smartphones-motorola-edge/p?skuId=352#shootpro>, <https://www.motorola.com/us/smartphones-motorola-one-5g/p?skuId=459>, <https://www.motorola.com/us/smartphones-moto-e/p?skuId=414>, and <https://www.motorola.com/us/smartphones-moto-g-power-gen-2/p?skuId=539>.

198. Lenovo is thereby liable for infringement of the '177 Patent pursuant to 35 U.S.C. § 271(b).

199. Lenovo has indirectly infringed at least claim 1 of the '177 Patent, by, among other things, contributing to the direct infringement of others, including customers of the '177 Accused Products by making, offering to sell, or selling, in the United States, or importing a component of a patented machine, manufacture, or combination, or an apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in infringement of the '177 Patent, and not a staple article or commodity of commerce suitable for substantial non-infringing use.

200. For example, the '177 Accused Products include an image sensor, an image signal processor, an application processor/CPU, a driver and software for implementing image

processing. These are components of a patented machine, manufacture, or combination, or an apparatus for use in practicing a patented process. Furthermore, such components are a material part of the invention and upon information and belief are not a staple article or commodity of commerce suitable for substantial non-infringing use. Thus, Lenovo is liable for infringement of the '177 Patent pursuant to 35 U.S.C. § 271(c).

201. Lenovo has been aware of the '177 Patent since, [REDACTED]

[REDACTED] Further, Lenovo has been on notice of its infringement of the '177 Patent since at least May 17, 2018, based on correspondence directed to Courtney VanLonKhuyzen Welton. *See* Letter from J. Beaber to C. Welton dated May 17, 2018 (Exhibit 1). That correspondence set forth Maxell's belief that Lenovo makes, uses, sells, offers to sell, or imports products that infringe certain of Maxell's patents, and specifically identified the '177 Patent as well as exemplary claims and exemplary accused products for that patent. By the time of trial, Lenovo will thus have known and intended (since receiving such notice), that its continued actions would actively induce and contribute to actual infringement of at least claim 1 of the '177 Patent.

202. Lenovo undertook and continued its infringing actions despite an objectively high likelihood that such activities infringed the '177 Patent, which has been duly issued by the USPTO, and is presumed valid. For example, at least since it received Maxell's letter on May 17, 2018, [REDACTED]

[REDACTED] Lenovo has been aware of an objectively high likelihood that its actions constituted and continue to constitute infringement of the '177 Patent, and that the '177 Patent is valid. On information and belief, Lenovo could not reasonably, subjectively believe that its actions do not constitute infringement of the '177 Patent, nor could it reasonably, subjectively believe that

the patent is invalid. Despite that knowledge and subjective belief, and the objectively high likelihood that its actions constitute infringement, Lenovo has continued its infringing activities. As such, Lenovo willfully infringes the '177 Patent.

203. Maxell has been damaged by Lenovo's infringement of the '177 Patent.

PRAYER FOR RELIEF

WHEREFORE, Maxell prays for relief as follows:

204. A judgment declaring that Lenovo has infringed and is infringing one or more claims of the '695, '417, '673, '209, '292, '212, '645, and '177 Patents;

205. A judgment awarding Maxell compensatory damages as a result of Lenovo's infringement of one or more claims of the '695, '417, '673, '209, '292, '212, '645, and '177 Patents, together with interest and costs, consistent with lost profits and in no event less than a reasonable royalty;

206. A judgment awarding Maxell treble damages and pre-judgment interest under 35 U.S.C. § 284 as a result of Lenovo's willful and deliberate infringement of one or more claims of the '695, '417, '673, '209, '292, '212, '645, and '177 Patents;

207. A judgment declaring that this case is exceptional and awarding Maxell its expenses, costs, and attorneys' fees in accordance with 35 U.S.C. §§ 284 and 285 and Rule 54(d) of the Federal Rules of Civil Procedure;

208. A grant of preliminary and permanent injunctions enjoining Defendant from further acts of infringement of one or more claims of the '695, '417, '673, '209, '292, '212, '645, and '177 Patents; and

209. Such other and further relief as the Court deems just and proper.

JURY TRIAL DEMANDED

Maxell hereby demands a trial by jury.

Dated: February 4, 2022

By: /s/ Michael Chibib

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