



Pick Your Winner: 2024 Smartphone Lineup

This is the 10th annual State Bar of Wisconsin summary of the top smartphones currently available. This summary highlights key security aspects, overall performance, and battery life – the features identified as most important based on an informal survey of Wisconsin lawyers – and focuses on the year’s top manufacturers: Apple, Google, Samsung, and Motorola.

BY JAMES PEARSON

Smartphone manufacturers have made notable advancements in camera capabilities and operating system improvements in 2023. Meanwhile, 5G has become the standard in many phones, including all those reviewed this year. Screen sizes are relatively unchanged, and flip, fold, and expand are still the three techniques for transforming phones into tablet-like devices that have the potential to replace computers.

Overall Performance

Beginning with Apple, the standout performer undoubtedly is the iPhone 15 Pro Max. With its powerful Hexa-core processor and the choice of either 8GB or 12GB RAM, it establishes itself as a formidable contender.

For Google, the Pixel 8 Pro is the ultimate winner, thanks to its powerful Nona-core processor and impressive 12GB RAM.

The Motorola Razr+ boasts an impressive 8GB RAM and a powerful Snapdragon 8+ processor, making it a compact yet powerful device.

Within the lineup of Samsung models, the Galaxy S23 Ultra is the top performer, boasting an Octa-core processor and up to 12GB RAM. Whether juggling multiple tasks or streaming content, users will be covered with this phone.

Battery Life

When evaluating battery life, there are several key factors to consider. First, operating system updates and features often introduce new software improvements and efficiencies. Additionally, rapid charging plays a crucial role in enhancing overall battery quality and

performance and prolonging the battery’s lifespan. Most manufacturers use a combination of hardware and software solutions that affect battery life.

However, individual experiences may vary. Typically, battery life is measured in video playback hours, which sometimes yield lower numbers than what users observe, particularly for those who don’t heavily engage in video streaming. Furthermore, personal usage patterns and settings, such as screen brightness and screen-off timer, influence battery life.

Apple’s iPhones are equipped with a feature known as optimized battery charging. This intelligent feature learns from the phone user’s daily charging routines and slows down battery charging once it reaches 80%, effectively reducing battery aging. An iPhone typically



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will reach 80% in about 30 minutes. The iPhone 15 Pro Max offers 26 hours of continuous playback. Apple has significantly changed this year by replacing its lightning cable with a standard USB C cable. This update enhances compatibility with other devices and improves charging ease.

Samsung uses a similar strategy with its adaptive power-saving mode. This feature optimizes power consumption based on individual usage patterns, extending battery life by prioritizing functions according to their frequency. Think of it as a smart energy manager, intelligently allocating resources to maximize a phone's longevity. It can close unused applications or push them to the background, affecting performance. Notably, the Galaxy line of phones offers a video playback duration of 11-26 hours.

Google Pixel's battery saver and extreme battery saver features effectively manage power by learning phone users' app preferences and reducing power to unused apps, improving battery life. Battery saver mode limits background activity, turns off certain features, and switches to a dark theme. Extreme battery saver mode pauses most apps and optimizes power usage. Users can customize these settings in the settings app. The Pixels reviewed have 10-14 hours of battery life.

Motorola uses TurboPower Charging, offering a rapid charging time of as little as 15 minutes and a battery life of 30 hours or more for the Edge and 24 or more hours for the Razr models. Like other manufacturers, Motorola provides software settings that can be adjusted to optimize battery longevity, ensuring a high-quality user experience.

Screen Size and Quality

When purchasing a phone, there are several factors to consider regarding screen quality. Higher pixels per inch (ppi) density screens generally offer a superior, more precise image. Additionally, resolution plays a crucial

role in displaying finer details and enhancing sharpness. Screen size often comes with the trade-off of a larger and heavier phone. Considering these aspects, you can make an informed decision when selecting a phone with the optimal screen quality.

Apple, with its "Hollywood in your pocket" reputation, has consistently delivered some of the finest screens in the industry. This year's lineup offers a good choice for those seeking top-notch screen quality. Moreover, phones in the Pro and Max series, constructed with titanium, not only have large screen sizes but also weigh less compared to similar-sized counterparts like the Samsung Galaxy S23 Ultra.

If you're searching for a smartphone with a generous screen size without the bulk, consider the Samsung Z Flip 5 or Fold 5 and the Motorola Razr. These devices offer a unique flip-or-fold design, providing a compact form when closed while unveiling an impressive 7.6-inch display on the Samsung Galaxy Z Fold 5 when unfolded.

The Motorola Razr models feature a dual-display system consisting of a main display and a convenient small external display. With this setup, users can effortlessly view messages and receive alerts without fully opening the phone. The flex window, sized at 3.4 inches on the phone's cover, adds a touch of style and functionality to the user's mobile experience.

The Google Pixel 8 Pro has emerged as a formidable competitor, boasting a generous 6.7-inch display and an impressive pixel density of 425 ppi. With its sleek design and slightly lighter weight, it goes head-to-head with Apple's iPhone 15 Pro Max.

Operating System

Based on my professional experience and the informal polls I conduct yearly for this article, I've observed that individuals tend to align themselves with either the Android or Apple "ecosystem," sticking with their preferred brand over

time. This inclination is understandable, considering the familiarity and ease of use that comes with using a particular ecosystem and the seamless integration between devices within the same ecosystem.

Manufacturers are now offering valuable insights into the duration of software support for their products, reminiscent of Microsoft's end-of-life policies for Windows on personal computers. This is especially beneficial for users who hold onto their phones until they become outdated and, because operating system updates are crucial for maintaining security, for users who prioritize device security.

Apple's support policy has varied over the years; currently, they are known to provide support for older versions of iOS for up to seven years. This includes rapid security response and the delivery of important security updates as they are released, ensuring user safety. More information about Apple's support policy is at <https://support.apple.com/en-us/102657>.

In comparison, Google offers seven years of software updates for its Pixel phones, which includes OS upgrades and security patches. The latest Pixel 8 and Pixel 8 Pro come with Android 14 out of the box, introducing new features such as Magic Editor and Best Take to enhance photo editing and capture the best group shots. More details on Google's update policies can be found at <https://support.google.com/android/answer/7680439?hl=en>.

Samsung commits to providing updates for three years on their flagship models, ensuring users stay up to date with the latest features and security enhancements. More information about Samsung's update policies is at <https://www.androidauthority.com/phone-update-policies-1658633/>.

Motorola also offers longer updates for its flagship models, with security updates for up to three years. See <https://motosmartphones.com/how-long-does-motorola-support-their-phones/>

for more information about Motorola's support for phones.

Security

Addressing security concerns requires both hardware and operating system updates. I recommend enabling these updates and using the released security patches as is done for computers. Moreover, smartphones are now equipped with hardware security features, such as security chips similar to trusted platform module (TPM) chips found in Microsoft Windows desktop PCs.

All phone manufacturers have implemented some biometric security, usually in the form of fingerprint and facial recognition. These advancements enhance the overall security of devices, safeguarding users' valuable information.

Motorola phones offer several key security features designed to protect users' personal and work information. Secure folders are dedicated spaces for storing sensitive data and require a PIN for access. Additionally, the Moto Secure function is a comprehensive control panel, providing essential security and privacy features for phones. These include network protection, screen lock auto-locking, and phishing detection, among other capabilities. With these built-in features, Motorola phones ensure that data remains secure and protected.

Apple iPhones have earned a reputation for Apple's unwavering commitment to security. Among the notable features is Face ID, a cutting-edge facial recognition system. Additionally, Apple prioritizes data encryption and safeguards user privacy. In 2022, Apple introduced crash protection, a safety feature that effectively detects sudden and jarring incidents or accidents. This feature not only assists users but also facilitates emergencies by enabling quick access to dial 911.

Google has implemented impressive security measures this year, especially with their Google Pixel models. If security is a top concern, these devices may

be a good choice. Google phones have Titan M2 security chips. Google also added caller ID and spam-protection features. The On-Device Intelligence feature uses machine learning to continuously improve security while storing data securely on the phone. Additionally, Google included a built-in VPN powered by Google One, offering extra privacy and security. Users can customize privacy and security settings on the device.

The Samsung Galaxy S23 and Z series offer a range of impressive features. The security and privacy dashboard allows users to easily adjust and view security settings, assess whether data is at risk, and receive prompts to enhance security settings. Additionally, Samsung incorporates built-in hardware chips to provide added protection, similar to Google's approach. Other noteworthy features include a secure folder, secure Wi-Fi (similar to a VPN), and phishing blocking and defense. These enhancements ensure a more secure and enjoyable user experience. To learn more, you can refer to the source at <https://news.samsung.com/us/samsung-new-galaxy-s23-series-take-passions-further-designed-premium-experience-today-beyond-unpacked-2023/>.

Storage Space

Having files accessible even when offline is crucial. Among the phones reviewed, Motorola devices have comparatively smaller storage and memory capacities, with 8GB of RAM and 256GB of storage. In contrast, other brands offer the option of up to 1TB on select models.

The Apple iPhone 15 Pro Max, Google Pixel 8 Pro, Samsung Galaxy S23 Ultra, and Samsung Galaxy Z Fold 5 are all flagship smartphones with storage capacities of up to one terabyte. These devices provide ample space for storing photos, videos, apps, documents, and more. On the other end of the spectrum, the Motorola phones offer a maximum storage capacity of 256 gigabytes, which is still considerable. Most of these

manufacturers also offer models with 128 gigabytes of storage, giving users even more options.

The issue of storage space on the phone is less significant for users who are open to utilizing features such as Google Drive or Microsoft OneDrive, where files can be synchronized and stored in the cloud. However, users who anticipate needing access to data in places without an internet connection, especially in courtrooms, should opt for models with ample storage space.

Cameras

While not a top priority for most lawyers, camera quality and features are prioritized by all phone manufacturers. In this era of capturing every moment with an image, manufacturers continue to invest in hardware and software enhancements to improve overall photo, video, and audio quality. These advancements, from stability to night vision to higher megapixels, are designed to offer an improved user experience.

Additionally, recent advancements in software have made real-time editing easier than ever. Background noise can be eliminated, and multiple photos can be blended to create a higher-quality image. These improvements guarantee that users never again need worry about closed eyes or other imperfections in photos.

Apple introduced three optical zoom levels this year, including a two-times telephoto zoom for capturing distant subjects. Additionally, the new night mode enhances low-light photography. Apple also provides extra assistance for lighting, ensuring optimal image quality, and the camera supports recording 4K HDR videos with advanced stabilization for smooth footage and robust features for editing videos and images.

Samsung showcases a night photography mode, steady video capabilities, and stunning selfies. The Z Flip 5 phone takes it further with its innovative Flex Window design. Now, users can capture and edit pictures from the cover,

Pick Your Winning Smartphone Model ...

Phone	Release Date (U.S.)	Display Size (in.)	Size (mm)	Weight (oz)	Resolution (pixels)	Display Type
Apple iPhone 15 (standard)	9/12/23	6.1	147.6 x 71.6 x 7.8	6.03	1179 x 2556, 19.5:9 ratio, 461 ppi	Super Retina XDR OLED, HDR10, Dolby Vision, 1000 nits (HBM), 2000 nits (peak)
Apple iPhone 15 Plus	9/12/23	6.7	160.9 x 77.8 x 7.8	7.09	1290 x 2796, 19.5:9 ratio, 460 ppi	Super Retina XDR OLED, HDR10, Dolby Vision, 1000 nits (HBM), 2000 nits (peak)
Apple iPhone 15 Pro Max	9/12/23	6.7	159.9 x 76.7 x 8.3	7.80	1290 x 2796, 19.5:9 ratio, 460 ppi	LTPO Super Retina XDR OLED, 120Hz, HDR10, Dolby Vision, 1000 nits (typ), 2000 nits (HBM)
Google Pixel 8 Pro	10/12/23	6.7	162.6 x 76.5 x 8.8	7.51	1344 x 2992, 20:9 ratio, 489 ppi	LTPO OLED, 120Hz, HDR10+, 1600 nits (HBM), 2400 nits (peak)
Google Pixel 8	10/4/23	6.2	150.5 x 70.8 x 8.9	6.60	1080 x 2400, 20:9 ratio, 428 ppi	OLED, 120Hz, HDR10+, 1400 nits (HBM), 2000 nits (peak)
Google Pixel 8 Pro	10/4/23	6.8	162.6 x 76.5 x 8.8	7.51	1344 x 2992, 20:9 ratio, 489 ppi	LTPO OLED, 120Hz, HDR10+, 1600 nits (HBM), 2400 nits (peak)
Samsung Galaxy S23 Ultra	2/1/23	6.8	163.4 x 78.1 x 8.9	8.25	1440 x 3088, 19.3:9 ratio, 500 ppi	Dynamic AMOLED 2X, 120Hz, HDR10+, 1200 nits (HBM), 1750 nits (peak)
Samsung Galaxy Z Flip5	7/26/23	6.7	Unfolded: 165.1 x 71.9 x 6.9 Folded: 85.1 x 71.9 x 15.1	6.60	1080 x 2640, 425 ppi	Foldable Dynamic AMOLED 2X, 120Hz, HDR10+, 1750 nits (peak)
Samsung Galaxy Z Fold5	7/26/23	7.6	Unfolded: 154.9 x 129.9 x 6.1 Folded: 154.9 x 67.1 x 13.4	8.92	1812 x 2176, 373 ppi	Foldable Dynamic AMOLED 2X, 120Hz, HDR10+
Motorola Edge - 2023	10/11/23	6.6	158.4 x 72 x 7.6	5.93	2400 x 1080, 402 ppi	P-OLED, 1B colors, 144Hz, HDR10+, 1200 nits (peak)
Motorola Razr 2023	10/19/23		Unfolded: 73.95 x 170.82 x 7.35 Folded: 73.95 x 88.24 x 15.8	66.5	Main display: 2640 x 1080, 413 ppi External display: 194 x 368, 282 ppi	Main display: AMOLED, LTPO, HDR10+, 10-bit, Peak Brightness: 1400 nits External display: AMOLED, 8-bit, Peak Brightness: 1000 nits
Motorola Razr + 2023	10/15/23	6.9	Unfolded: 73.95 x 88.42 x 15.1 Folded: 73.95 x 170.83 x 6.99	6 to 6.5	Main display: 2640 x 1080, 413 ppi External display: 1066 x 1056, 413 ppi	LTPO, Foldable AMOLED, HDR10+, 10-bit, 120% DCI-P3 color gamut, up to 165Hz refresh rate, Touch rate: 240Hz/360Hz (game mode only), Peak Brightness: 1400 nits

Processor	Storage GB/RAM GB	Battery (mAh)	Battery Life (hours)	Price (full retail)	5G	Rear Camera (MP)	Features
Hexa-core	128/6, 256/6, 512/6	Li-Ion 3349 mAh, non-removable	11:05	\$779.99	Yes	48	Face ID, accelerometer, gyro, proximity, compass, barometer. Ultra Wideband 2 (UWB) support. Emergency SOS via satellite (SMS sending/receiving)
Hexa-core	128/6, 256/6, 512/6	Li-Ion 4383 mAh, non-removable	14:14	\$929.99	Yes	48	Face ID, accelerometer, gyro, proximity, compass, barometer. Ultra Wideband 2 (UWB) support. Emergency SOS via satellite (SMS sending/receiving)
Hexa-core	256/8, 512/8, 1TB/8	Li-Ion 4441 mAh, non-removable	26	\$1,199.99	Yes	48	Face ID, accelerometer, gyro, proximity, compass, barometer. Ultra Wideband 2 (UWB) support. Emergency SOS via satellite (SMS sending/receiving)
Nona-core	128/12, 256/12, 512/12, 1TB/12	Li-Ion 5050 mAh, non-removable	10:03	\$999.00	Yes	50	Fingerprint (under display, optical), accelerometer, gyro, proximity, compass, barometer, thermometer (skin temperature). Ultra Wideband (UWB) support
Nona-core	128/8, 256/8	Li-Ion 4575 mAh, non-removable	9:36	\$679.00	Yes	50	Fingerprint (under display, optical), accelerometer, gyro, proximity, compass, barometer
Nona-core	128/12, 256/12, 512/12, 1TB/12	Li-Ion 5050 mAh, non-removable	10:00	\$999.00	Yes	50	Fingerprint (under display, optical), accelerometer, gyro, proximity, compass, barometer, thermometer (skin temperature). Ultra Wideband (UWB) support
Octa-core	256/8, 256/12, 512/12, 1TB/12	Li-Ion 5000 mAh, non-removable	26	\$1,199.99	Yes	26	Fingerprint (under display, ultrasonic), accelerometer, gyro, proximity, compass, barometer. Samsung DeX, Samsung Wireless DeX (desktop experience support). Ultra Wideband (UWB) support
Octa-core	256/8, 512/8	Li-Po 3700 mAh, non-removable	15	\$999.99	Yes	12	Fingerprint (side-mounted), accelerometer, gyro, proximity, compass, barometer
Octa-core	256/12, 512/12, 1TB/12	Li-Po 4400 mAh, non-removable	10:55	\$1,799.99	Yes	50	Fingerprint (side-mounted), accelerometer, gyro, proximity, compass, barometer Samsung DeX (desktop experience support). Ultra Wideband (UWB) support
MediaTek Dimensity 7030	256/8	Li-Po 4400 mAh, non-removable	30	\$599.99	Yes	50	Fingerprint (under display, optical), accelerometer, gyro, proximity, compass, barometer, TurboPower charging
Snapdragon 7 Gen 1	128/8	4200mAh non-removable	24	\$699.99	Yes	64	Foldable, external and internal display, TurboPower charging, side fingerprint reader, face unlock
Snapdragon 8+ Gen 1	256/8	Li-Po 3800 mAh, non-removable	24	\$999.99	Yes	12	Foldable, external and internal display, TurboPower charging, side fingerprint reader, face unlock

TECHNOLOGY

eliminating the need to open the phone fully.

The Motorola Edge features a 50-megapixel camera, one of the highest number of pixels in the market. Its ultra-wide mode captures four times more within the frame than before, thanks to its 120-degree ultra-wide-angle lens. The macro vision offers four times zoom and boasts faster focus that is ready instantly. Additionally, the ambient light sensor enhances the overall photography experience. On the other hand, the Razors offer a 64-megapixel camera, Dolby Sound quality, and quad-pixel technology that significantly increases light sensitivity. This combination ensures great shots even in low-light conditions.

The Google Pixel 8 boasts a powerful camera setup, equipped with a 50-megapixel main camera, a 12-megapixel ultra-wide camera, and a 48-megapixel telephoto camera, all featuring

optical-image stabilization and fast autofocus. The phone has 4K video, and its AI technology enhances photos and videos with HDR+, Night Sight, portrait mode, and Super Res Zoom. Additionally, the Pixel 8 has a new feature called Magic Eraser, allowing users to effortlessly remove unwanted objects from shots with a simple tap.

Top Picks

In conclusion, choosing the right smartphone requires careful consideration of different aspects, such as security, storage space, camera quality, and the overall user experience. Whether the impressive camera features of the Google Pixel 8, the extensive storage options of the Apple iPhone 15 Pro Max, or the innovative security features of the Samsung Galaxy S23 Ultra, each device offers unique benefits. Remember that a smartphone is more than just a communication device; it is a tool that

can enhance productivity, creativity, and connectivity in the digital age.

Screen Size

Samsung Galaxy Z Fold5 (\$1,799.99) – Offers a remarkable 7.6-inch unfolded screen, yet conveniently folds to a compact size of 6.10 x 2.64 x 0.53 inches.

Security

Google Pixel 8 Pro (\$999.99) – Includes a security chip, software security features, and long-term patch commitment.

Storage Space

Google Pixel 8 Pro (\$999.99) – Of the three flagship models offering up to a TB of space, the best bang for the buck.

Cameras

Apple iPhone 15 Pro Max (\$1,199.99) – “Hollywood in your pocket” software and hardware features continue to make this my pick for video and photo enthusiasts.

Budget Conscious

Motorola Edge 2023 (\$599.99) – Still with 256GB of storage, a 6.6-inch screen, and a 50 MP camera, it should suit the most frugal attorney without sacrificing significant features.

Where to Get Product Specs

Go to the web pages listed below for product specifications. All web pages were last visited on Dec. 4, 2023.

- Samsung Galaxy Z Fold5: <https://www.samsung.com/us/smartphones/galaxy-z-fold5/>
- Google Pixel 8 Pro: https://store.google.com/product/pixel_8_pro?hl=en-US&pli=1
- Apple iPhone 15Pro Max: <https://www.apple.com/shop/buy-iphone>
- Motorola Edge 2023: <https://www.motorola.com/us/smartphones-motorola-edge-family> **WL**

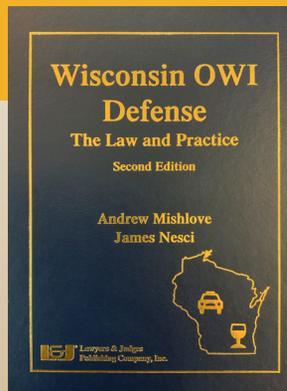
Wisconsin OWI Defense: The Law & Practice

By Andrew Mishlove & James Nesci

Mounting a successful OWI defense presents special challenges and is more difficult than ever.

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contains information on the chemical, biological and technological concepts and issues underlying OWI prosecution and defense and gives you important information to help you attain a successful verdict.



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