

EXHIBIT 119



Samsung Galaxy S 4G (T-Mobile)

REVIEW DATE: March 2, 2011

BOTTOM LINE:

The Samsung Galaxy S 4G, with its faster data connection, refreshed styling, and Android 2.2 OS, is a stellar performer that doubles as a great laptop modem.

PROS: Slim design. Gorgeous screen. Very fast 4G HSPA+ data speeds. Excellent music and video. Solid battery life.

CONS:

Buggy TV app. Only a modest refresh over the Vibrant.

COMPANY:

Samsung Electronics

SPEC DATA:

Service Provider: T-Mobile

Operating System: Android OS

Processor Speed: 1 GHz

Form Factor: Candy Bar

Physical Keyboard: No

Screen Size: 4 inches

Screen Details: 480-by-800-pixel, 16.7M-color Super AMOLED capacitive touch screen

Camera: Yes

Megapixels: 5 MP

Camera Flash: No

802.11x: Yes

Bluetooth: Yes

Storage Capacity (as Tested): 218 MB

Network: GSM, UMTS

Bands: 850, 900, 1800, 1900, 2100, 1700

High-Speed Data: GPRS, EDGE, UMTS, HSDPA, HSDPA+

Battery Life (As Tested): 17 hours 41 minutes

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By Jamie Lendino

Like your [smartphones](#) slim and super-speedy? At first glance, the new Samsung Galaxy S 4G doesn't look like a huge improvement over the original, popular and now-off-the-market [Samsung Vibrant](#) (4 stars). But the 4G data upgrade is screamingly fast, assuming you're in one of T-Mobile's HSPA+ coverage areas. The Galaxy S 4G also contains some other, more modest enhancements that, when taken together, make a powerful smartphone even better. It's enough to make the cut for our list of [The Best Android Phones](#), as well as [The 10 Best Touch-Screen Phones](#).

Design and Call Quality

The Galaxy S 4G measures 4.8 by 2.5 by 0.4 inches (HWD) and weighs 4.2 ounces. The new silver and chrome exterior finish looks nicer; the original Vibrant feels a bit cheap in comparison. The new sculpted back panel feels better to hold during calls, too. The Galaxy S 4G features the same 4-inch Super AMOLED capacitive touch screen as before, with 480-by-800-pixel resolution and bright, vibrant colors. The Galaxy S 4G uses Swype, a popular virtual keyboard that lets you swipe your finger between letters without picking it up to type.

Normally I'm not a Swype fan, but I had an easier time using it on the Galaxy S thanks to the large glass screen, even in portrait mode (which scrunches the keys together). Dialing numbers was also fast and responsive. One downside: unlocking the phone requires a deliberate, carefully positioned swipe from the bottom of the screen all the way to the top. This became old quickly.

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The Galaxy S 4G is a quad-band EDGE (850/900/1800/1900 MHz) and dual-band 4G HSPA+ (1700/2100 MHz) device with 802.11b/g/n Wi-Fi. T-Mobile's HSPA+ network promises theoretical download speeds of up to 21 Mbps, and in real life about half that speed. I saw 4.0 to 4.3 Mbps down and 1.6 Mbps up in a rural part of eastern Massachusetts, 5.0 to 5.5 Mbps down in a T-Mobile-recommend "ideal" coverage spot 20 minutes from my house, and a stellar

6.39 Mbps down while using the Galaxy S 4G as a mobile hotspot closer to my home. You also get Wi-Fi calling, which has to be turned on by launching an app, but is still useful in marginal coverage areas.

Call quality was excellent, particularly in HSPA+ mode. I heard no static or dropouts in switching between Wi-Fi, EDGE, and HSPA+ modes during voice calls, though Wi-Fi and EDGE calls sounded a bit brittle and harsh in comparison. Transmissions through the microphone were crystal clear, and reception was solid. Calls also sounded fine through an [Aliph Jawbone Icon](#) (\$99, 4 stars) Bluetooth headset. Voice dialing worked fine over Bluetooth. The speakerphone sounded clear and crisp, but could have used more volume. The oversized 1650mAh battery was good for an excellent 17 hours and 41 minutes of talk time in EDGE mode. That's one of the best battery results we've ever seen.

Operating System, TV, and Apps

Feature-wise, the Galaxy S 4G checks off all the right boxes. It runs Android 2.2.1, which brings a host of improvements over the Vibrant's original version 2.1, including faster speeds, the aforementioned (extra-cost) mobile Wi-Fi hotspot access, and a new dial screen. Let's hope Samsung has improved its widely panned OS upgrade process, as Android 2.3 "Gingerbread" is already beginning to make the rounds.

Samsung's TouchWiz UI layer also looks a little different, but it's never been much of a draw. The phone features seven customizable home screens you can swipe between, plus colorful little boxes around all of the menu icons. Scrolling is fast and seamless. Underneath the hood, there's the same 1GHz Cortex A8 Hummingbird processor as before; it's fast, but not class leading. The Galaxy S 4G benchmarked similar to the Vibrant once the Android 2.1/2.2 difference was factored in.

T-Mobile plays up the Galaxy S 4G's video capability by preloading T-Mobile TV, Samsung's Media Hub, and a standalone copy of the film Inception. Media Hub requires a somewhat tedious login creation process, but Inception played smoothly. Standalone video files played back smoothly and looked vibrant, even in 720p (although the display maxes out at 480 lines). T-Mobile's streamed HD video didn't look HD; it remained slightly pixelated even over Wi-Fi and still required occasional buffering. But the very fact that it works over Wi-Fi is a huge plus. That said, the app requires cellular authorization first, and kept losing track of the trial period registration. This required that I shut off Wi-Fi, re-register slowly over EDGE, and then rejoin my Wi-Fi network.

Otherwise, this is a powerful Android phone. The WebKit browser supports Flash, and you get Google's excellent, voice-enabled GPS navigation as before. The Galaxy S 4G is also a messaging powerhouse; it threads text messages, hooks into Facebook and Twitter, and syncs Google, Exchange, and Outlook e-mail, contacts, and calendars.

Multimedia, Camera, and Conclusions

This phone has a standard-size 3.5mm headphone jack, and T-Mobile throws in a roomy 16GB microSD card. My 32GB SanDisk card worked fine, and there's also 218MB of free internal memory. Music tracks sounded clear and crisp over [Motorola S9-HD](#) (\$129, 3.5 stars) Bluetooth headphones. There was a little hiss in the background, but it wasn't terrible. The music player was responsive and displayed large album art thumbnails, and the preloaded doubleTwist with AirSync lets you transfer media files wirelessly.

Two cameras are on board, including a front-facing VGA sensor for video calling. We haven't found any Android video calling app that works well, though. The rear-mounted 5-megapixel auto-focus camera still lacks an LED flash. Test photos were sharp, bright, and detailed, with good color balance and decent performance in shadowy areas both indoors and out. Shutter speeds were fast, including with the auto-focus in play. Recorded 1280-by-720-pixel and 720-by-480-pixel videos were both perfectly smooth at 29 frames per second. But the larger files looked a little soft, as if the camera sensor couldn't quite resolve details. Colors were also a bit flat in the videos. But all told, the Galaxy S 4G is an easy stand-in for a low-end digital camera.

The Samsung Galaxy S 4G gives T-Mobile subscribers another powerful Android smartphone. The obvious competition is the heavily promoted [T-Mobile myTouch 4G](#) (\$249, 4.5 stars). By a slim margin, the myTouch 4G retains the Editors' Choice crown, thanks to its faster processor, HTC's superior preloaded apps, and its classy metal and ceramic housing. But the myTouch 4G is heavier, its Internet speeds are slightly slower than the Galaxy's, and its screen is smaller and not as colorful. The [Google Nexus S](#) (\$199 at Best Buy, 4 stars) looks similar to the Galaxy S 4G, but it runs the latest Android 2.3. However, it lacks HSPA+, and it's not as good a voice phone. Finally, the [T-Mobile G2](#) (\$249, 4 stars) is another option for "stock Android" fans, and it includes a good slide-out QWERTY keyboard, although it's more expensive and not quite as fast as the other options.

Benchmarks

Continuous talk time: 17 hours 41 minutes

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