



March 7, 2024

BY ELECTRONIC FILING

Marlene H. Dortch, Secretary
Federal Communications Commission
45 L Street, N.E.
Washington, DC 20554

Re: *GN Docket No. 23-65; IB Docket No. 22-271*

Dear Ms. Dortch:

The initial launch and testing of SpaceX's direct-to-cellular satellites have been a massive success, meeting or exceeding testing objectives and demonstrating the strong potential of this innovative capability to provide ubiquitous mobile coverage for consumers everywhere. SpaceX attaches its initial test report to inform the Commission's draft *SCS Report and Order*.¹

Among other results, the satellites have been able to communicate with multiple models of unmodified Samsung, Apple, and Google devices using PCS G Block spectrum, including in urban and rural areas, indoors and outdoors, and in clear sky and under tree cover. SpaceX also has successfully sent and received text messages using traditional SMS, X, and WhatsApp, and made its first post on X, all solely using the direct-to-cellular system. The flexibility of the system will allow consumers to customize text messages and communicate through their platform of choice without being constrained to a few preselected message options—a flexibility that is particularly important to provide context in emergency situations. Over time, the network will support Internet of Things (“IoT”), voice, and web browsing that will further enhance the value of the system for consumers, enterprises, and first responders.

From a technical perspective, the system has performed nominally, aligning with expected link budgets and allowing SpaceX to offer robust connectivity to handsets. Over two months of daily testing, SpaceX has not received any notices of harmful interference from any in-band, out-of-band, or cross-border users, and has no reason to believe such interference has occurred.

Sincerely,

/s/ David Goldman

David Goldman
Vice President of Satellite Policy

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¹ See *Single Network Future: Supplemental Coverage from Space*, Report and Order and Further Notice of Proposed Rulemaking, FCC-CIRC-2403-03, ¶¶ 16-17 (circulated Feb. 22, 2024).



March 4, 2024

BY ELECTRONIC FILING

Marlene H. Dortch
Secretary
Federal Communications Commission
45 L Street, N.E.
Washington, DC 20554

Re: *ELS File Nos. 2398-EX-ST-2023 (call sign WW9XOX); 2479-EX-ST-2023 (call sign WW9XPI)*

Dear Ms. Dortch:

Pursuant to Special Condition 16 of its experimental authorizations, SpaceX is pleased to report that its tests of its direct-to-cellular system have met or exceeded all testing objectives, demonstrating that the system remains on track to offer commercial service in the United States this year. Just five days after launching the satellites on January 2, 2024, SpaceX successfully sent its first end-to-end SMS text messages over the direct-to-cell system. Since then, SpaceX has also posted on X and completed end-to-end messaging on X and WhatsApp through only the direct-to-cell system. Critically, these tests demonstrate that consumers will be able to customize their own text messages over different applications—reaching family, first responders, and even the general public—without being constrained to a few preselected options.

SpaceX's direct-to-cell spacecraft have begun to raise from their initial deployment altitude. SpaceX anticipates continuing to test the performance of these satellites at lower altitudes, where atmospheric drag on the vehicle is at its highest and passive decay will take a matter of weeks. In addition to the benefits for space sustainability from operating at these lower altitudes, these operations also improve service for consumers by lowering latency and improving link budget while remaining within its authorized power flux-density ("PFD") limits. SpaceX will continue to test at these lower altitudes to further validate its performance expectations at lower altitude shells within its ITU filing.

SpaceX has conducted device tests in its Redmond, WA; Mountain View, CA; and Kansas City, KS testing areas. Tests of unmodified commercial devices have occurred in urban and rural environments, with a variety of foliage conditions, from clear sky to oak-tree-filled valleys. Testing has been limited to non-commercial operations in the PCS G Block—i.e., 1910-1915 MHz (Earth-to-space) and 1990-1995 MHz (space-to-Earth)—with the consent of T-Mobile.

Testing has met or exceeded expectations:

- **Device Connection:** Testing has not been limited to a single device, model, or operating system. Instead, SpaceX has successfully attached several unmodified models of Samsung Galaxy, Apple iPhone, and Google Pixel smartphones to the eNodeB on the SpaceX

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satellites. These devices have properly communicated for the duration of the satellite pass and did not experience harmful interference from adjacent-band devices.

- **Link Budget:** SpaceX conducted tests up to its maximum authorized PFD of -80 dBW/m²/MHz. Measured downlink and uplink link budgets fell within 1-2 dB of SpaceX's modeled link budget, including realistic path losses, polarization losses, atmospheric losses, foliage losses, and human factors losses. This has enabled devices to communicate with the satellites through tree cover and indoors (although the direct-to-cell service is designed for outdoor use), and down to an elevation angle of 25 degrees. During the tests, SpaceX was able to demonstrate a peak download speed of over 17 Mbps.
- **Topology Software:** The satellite topology software has performed nominally, enabling beam pointing within the applicable STA test area while staying below authorized PFD limits.

Over the reporting period, SpaceX has not received any notices of harmful interference, and has no reason to believe that any in-band, adjacent-band, or cross-border user experienced harmful interference.

Should you have any questions, please direct them to me.

Sincerely,

/s/ Jameson Dempsey

Jameson Dempsey
Director, Satellite Policy

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