

REQUEST FOR SPECIAL TEMPORARY AUTHORITY

BlackSky Global LLC (“BlackSky”), pursuant to Section 25.120 of the Commission’s rules,¹ hereby requests Special Temporary Authority (“STA”) for permission for separately defined initial periods of thirty (30) days each² to operate each of its Global 7 and Global 8 satellites (internal tail numbers)³ at altitudes between 340 and 385 kilometers, an altitude range that is below the minimum orbital altitude of 385 kilometers as authorized in BlackSky’s constellation license.⁴⁵ Each thirty (30) day period is requested to commence from the point in time that, due to the anticipated loss of remaining propellant, each such satellite is not able to be maintained at or above 385 kilometers.

As set forth below:

[REDACTED]

- There would be no interference to third parties; coordination with federal government agencies to confirm this conclusion is ongoing;
- There would be no increase in the risk of orbital debris, including to the international space station;
- Allowing continued operation of the satellites (still within their three-year design lives) will service the public interest by maintaining services from these satellites in areas of crucial significance to BlackSky’s customers, including the U.S. government.

I. Emergency

[REDACTED]

¹ 47 C.F.R. §25.120.

² [REDACTED]

³ These were the fifth and sixth satellites launched into the constellation; launch date August 7, 2020.

⁴ *Stamp Grant*, BlackSky Global LLC, Granted in Part and Deferred in Part, FCC Call Sign S3032, IBFS File Nos. SAT-MOD-20211230-00205 and SAT-AMD-20220805-00078 (corrected and reissued Feb 9, 2023)

⁵ BlackSky’s use of “altitude” refers to the satellite’s average orbital altitude.

[REDACTED]

BlackSky originally did not seek authority to operate at an altitude below 385 kilometers because initial pre-operational analysis pointed to that as the limit of satellite operational stability due to atmospheric drag, disturbance torques, gravity gradient, and other factors. However, BlackSky's experience in operating very close to this floor has shown no indications of momentum management or attitude control problems. Taking into account this operational experience and BlackSky's engineering analysis based upon this experience, BlackSky is confident that it can operate the satellites as they descend below 385 kilometers while maintaining necessary stability at least until its satellites reach the new requested minimum altitude of 340 kilometers.

II. Frequency Considerations

As demonstrated below, BlackSky's proposed operations below 385 km should not raise interference concerns. If needed, however, BlackSky also notes below further steps it could take to avoid any possibility of concern.

For X-band downlink, though BlackSky's current license would permit it to operate at an Effective Isotropic Radiated Power (EIRP) of up to 23.2 dBW, it nominally downlinks at a power of 19.2dBW and it can control the transmit power in 1dB increments down to 16.2dBm. At BlackSky's current nominal downlink power, it would

⁶

[REDACTED]

stay within the Power Flux Density (“PFD”) on the earth permitted under its current license operating all the way down to an altitude of 243km. However, if there is concern on increased interference as the altitude decreases, BlackSky could drop the transmit power as it altitude drops and keep the PFD on earth within current operation. The below schedule would avoid any increase in PFD on the earth relative to nominal operation as the satellites descend.

Altitude (km)	EIRP (dBW)
385+	19.2
344 - 384	18.2
340 - 343	17.2

As BlackSky’s satellites decrease in altitude, they will also be getting further from the geostationary satellite belt, so their PFD in that direction will be reduced and, therefore, will be well within the compliance showing demonstrated by BlackSky in its license application.

As to BlackSky’s UHF downlink, while it does not have the ability to adjust the power as the satellites descend, the increase in PFD to the earth (from 385 km) will not exceed 1.1 dB at the lowest altitude (340 km) for which operation is requested. Particularly because the satellites are beyond the LEOP stage, the use of these frequencies will be exceedingly limited. The PFD at other satellites in higher altitude orbits will naturally decrease as separation increases. BlackSky will transmit on UHF frequencies only when over the limited number of mid-inclination earth stations for which transmissions will not exceed an 5% average duty cycle. These factors make the chances of any increase in potential interference exceedingly remote. The availability of multiple UHF channels in the band (Global-7 is currently using the 401.375 MHz channel, and Global-8 is currently using the 401.225 MHz channel) that could be switched with other satellites in the constellation that operate at higher altitudes gives BlackSky additional flexibility to avoid any potential interference.

As BlackSky’s satellites descend, simply as a matter of geometry, the geographic scope of its transmit beams also narrow and, therefore, fall within the broader scope of the beams presented in the application underlying BlackSky’s current grant.

III. Orbital Debris

Similarly, continuing to operate the satellites has no detrimental effect on the mitigation of orbital debris considerations that were presented in BlackSky's license application. BlackSky's orbital debris mitigation plan is, and has always been, that the satellites will descend to the earth by force of gravity after exhaustion of propulsion capability. Since the operational missions of the satellites will be extended for short periods after the loss of propulsion, the post-mission orbital lifetime of the satellites will be commensurately shortened.

BlackSky's ability to perform necessary end-of-life activities, as required under Section 25.283(c) of the Commission's rules, is not dependent on there being remaining propellant aboard the satellite. BlackSky retains the ability to fully comply with the requirements for de-energizing the satellite. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

BlackSky maintains a conjunction deconfliction agreement with NASA for coordination of operations in and around the International Space Station (ISS). Throughout their orbital life, both Global-7 and Global-8, have had mean altitudes operating below the ISS operational altitude range with apogees that have occasionally carried them into the orbital regime of the ISS. During these overlaps, coordination between BlackSky and NASA has operated effectively for conjunction avoidance. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

III. Coordination with other Federal Agencies

BlackSky has initiated coordination with NTIA and other federal agencies (NOAA, NASA, and DOD) to confirm that its proposed operations below 385 kilometers will not interfere with federal operations.

BlackSky also requires the authorization of NOAA in order to conduct imaging from an altitude below 385 km and presently is working with NOAA to obtain permission to do so.

IV. Public Interest Considerations

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Allowing BlackSky to continue operations as its satellites are capable of doing during the initial portion of their post-propellant descent to earth will alleviate this potential loss of service without harmful effect to its customers, particularly the U.S. government, and will therefore strongly serve the public interest.

V. Conclusion

Accordingly, for good cause as shown herein, BlackSky requests that the Commission grant BlackSky's STA request.