

Kuiper Systems LLC
Application for Special Temporary Authority
Amended Narrative Statement¹

Pursuant to Sections 5.51, 5.54(a)(1), and 5.61 of the rules² of the Federal Communications Commission (“Commission”), Kuiper Systems LLC, a wholly owned subsidiary of Amazon.com Services LLC (“Amazon.com” or “Amazon”), hereby respectfully requests Special Temporary Authority (“STA”) to operate in the 29.5-30.0 GHz and 19.6-20.1 GHz bands for a period of 6 months to conduct in-orbit transponder measurements within the permitted scope of services specified in Sections 5.3(e), (h), (j), and (k). In support of its request, Amazon provides the following additional information required by Section 5.61:

(1) Name, address, phone number (also email address and facsimile number, if available) of the applicant.

<i>Amazon Stop-Buzzer Contact</i>	<i>Amazon FCC Contact</i>
Arthur Wang 8500 Balboa Blvd. Northridge, CA, 91329 24 hr. contact: +1 714 308 1428 ywanarth@amazon.com	Kalpak Gude Amazon.com 525 14 th Street South Arlington, VA 22203 gudekal@amazon.com

(2) Explanation of why an experimental license is needed.

Amazon requires authority to conduct In-Orbit Tests (“IOT”) of its satellite transponders on its already authorized non-geostationary prototype satellites³ (the “prototype satellites”). Authorization to transmit a constant-power, variable bandwidth measurement signal or a continuous wave (“CW”) alignment signal from an IOT earth station located in Los Angeles, California to the prototype satellites and downlink the same signal from these proto-type satellites to the same location is necessary.

The measurements will form a vital part of Amazon’s Kuiper program to develop high-speed, innovative, satellite-delivered services to unserved and underserved customers worldwide. Accordingly, grant of the requested experimental authority would serve the public interest, convenience, and necessity.

¹ The original narrative listed the downlink frequencies from the prototype satellites as 19.7-20.2 GHz. This amended narrative provides the correct frequencies: 19.6-20.1 GHz.

² 47 C.F.R. § 5.51, 5.54(a)(1), 5.61.

³ See ELS File No. 0108-EX-CM-2023 (granted Sept. 1, 2023) (“Prototype Satellite Grant”).

(3) Description of the operation to be conducted and its purpose.

Amazon proposes to transmit to, and receive a test waveform from, its prototype satellites in a transponder loopback test for the purpose of characterizing their transponders.

(4) Station and Equipment types and Emission Characteristics

The experiment will transmit test signals from the station locations using equipment specified in Table 1 with the signal characteristics specified in Table 2.

Table 1. Stations and Equipment

	IOT Earth Station	Prototype Satellite
Station type	FIXED	MOBILE ⁴
Location	8500 Balboa Blvd, Northridge, Los Angeles, California. CA 91329. Los Angeles County. Latitude: 34° 13' 30.6" North Longitude: 118° 30' 0.5" West Height above the ground 10 m. Height above the building roof 3 m	Circular low-earth orbit Nominal altitude:500km Orbit inclination:30°
Equipment (qty) all co-located	- Cobham 1.3 m parabolic antenna (2) OR - Cobham 2.4m Tactical Tracker antenna (1) - Newtec MDM 9000 Modem (2, co-located)	Amazon prototype satellite (2)

Table 2. Carrier Signal (Emission) Characteristics

	IOT Earth Station	Prototype Satellite
EIRP/ERP dBW (kW)	59/56.9 (794/489)	36/33.8 (3.9/2.4)
Frequency bands (GHz)	29.5-30.0	19.6-20.1
Emission designators	50M0G7W to 500MG7W 50M0D7W to 500MD7W 1H00N0N	
Modulation types	Phase modulation (QPSK/PSK) Amplitude and phase modulation (APSK) Continuous wave (CW)	
Frequency tolerance	<+/-10ppm	<+/-10ppm
Gain and 3 dB beam-widths (H/V)	<u>1.3m antenna:</u> 49.7 dBi @29.5GHz 0.6° /0.6° circular beam <u>2.4m antenna:</u> 54.9 dBi @29.5GHz 0.32° /0.32° circular beam	35dBi @ 19.8GHz 2.8° /2.8° circular spot beam

⁴ Currently operational under ELS Call Sign WM2XKY.

Beam pointing direction	Uplink beam centered on either prototype satellite ⁵ Az =130-230° El =20-45°	Downlink spot beam centered on IOT earth station ⁶
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Amazon recognizes that experimental operations must not cause harmful interference to authorized facilities, and will maintain a 24hr/7day “stop-buzzer” contact to address any complaint of interference and cease operations.

(5) Time and dates of proposed operation.

Amazon seeks an STA for six months, commencing no later than April 16, 2024.

The experiment will be carried out for short periods when a satellite is visible and will last for a few minutes for each contact pass.

(6) Radiofrequency (“RF”) exposure compliance

Amazon’s IOT antennas are located on private property on a rooftop with controlled access preventing any exposure risk to the general population. Occupational workers will be properly trained on how to limit their exposure levels. In addition, signs will be installed to provide information on exposure risks.

⁵ Due to the earth station location, satellite altitude and inclination, the transmit beam is always pointing away from the GSO arc such that the experiment complies with Radio Regulations Article 22 EPFD↑ limits.

⁶ Due to the satellite beam pointing there is always sufficient angular separation with GSO earth stations such that the experiment complies with Radio Regulations Article 22 EPFD↓ limits.