Kuiper Systems LLC
Application for Experimental Radio Service
Special Temporary Authority
Narrative Statement

Pursuant to Sections 5.51, 5.54(a)(2), and 5.61 of the rules[1] 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 for an experimental license to operate in the 17.60 -19.30 GHz band for a period of six months to conduct airlink and antenna measurements. 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.

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(2) Explanation of why an STA is needed.

Amazon seeks special temporary authority to operate a mobile transmitter to transmit test signals to a measuring receiver for the purpose of measuring the radiated signal in the far field of a prototype antenna.

Amazon seeks to commence testing as soon as possible, by April 22, 2023.

These measurements form part of Amazon's test program to test and evaluate technology that will enable the delivery of 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.

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

Amazon proposes to transmit signals from a prototype Antenna Under Test ("AUT") to a measuring receiver located approximately 275 m at the end of an antenna test range using emission designators shown in section 6. The antenna beam is very narrow and will be directed within a 30° azimuth angular region centered on due West. The transmitter will be operated during normal

[1] 47 C.F.R. §§ 5.51, 5.54(a)(2), 5.61.

business hours and at low power except for brief periods when maximum power measurements are needed.

Amazon recognizes that its experimental operations must not cause harmful interference to authorized facilities, and, prior to commencing operations, Amazon will search for licensed radio stations to initiate coordination if needed. Amazon will ensure that its operations do not interfere with authorized operations throughout the period of operations.

Station	Station class	County/state	Center of operation latitude/longitude	Height above ground level
Mobile	Mobile Transmitter (AUT)	Woodinville, Washington	47° 42' 41.84" North 122° 07' 39.89" West Radial distance from center < 25 m	AGL=0 to 3m

Table 1. Location of the experimental transmitter (AUT) and measuring receiver.

(4) Time and dates of proposed operation.

Amazon requests special temporary authority for a 180-day period and seeks to commence testing April 22, 2023. During that period, the transmitters will be active for measurement periods but will not be continuously transmitting.

(5) Equipment to be used, manufacturer, model number and pointing directions.

Station	Manufacturer	Model number	Gain and 3dB beamwidth V/H (degrees)	Pointing direction	# units
AUT	Amazon	none	G=39 dBi 1.7°/1.7°	azimuth: 270±30° elevation: -5 to 10°	1
Measuring Receiver	RF SPIN	DRH50	G=14 dBi 60°/80°	Precisely aimed at AUT	1

(6) Frequency band, emission designator and EIRP

Frequency Band (GHz)	Frequency Tolerance	Emission Designator	Max Transmit Power into Antenna		Max EIRP	
			Watts	dBW	Watts	dBW
17.6-19.3	± 10ppm	1M56D7W (4 sub-carrier)	1.0	0.0	7943.0	39.0
		1M17D7W (3 sub-carrier)				
		781KD7W (2 sub-carrier)				
		391KD7W (1 sub-carrier)				
		25M0D7W (64 sub-carrier)				
		1H00N0N (CW)				

The modulated signals are 1, 2, 3 and 4 individual OFDM sub-carriers spaced apart at 390.625 kHz. The main multiplex is 25 MHz wide (25M0D7W) and comprises 64 sub-carriers.

(7) Radiofrequency ("RF") exposure compliance

The Commission's rules for RF exposure "reflect the best available information concerning safe levels of RF exposure for workers and members of the general public" and "specify methods that RF equipment operators can use to mitigate the risk of excess exposure."[2] Amazon will comply with these RF exposure guidelines with respect to all antennas operated during testing. The region of operation is private land which has restricted access to the public, however Amazon will comply with the uncontrolled (general population) environments, as specified by Section 1.1310 of the Commission's rules. All personnel operating and maintaining the equipment will be trained on proper handling of the equipment to mitigate radiofrequency exposure. Furthermore, during testing, all transmissions will be actively controlled by Amazon personnel, who will be able to cease transmissions at any time.

[2] *Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields*, 34 FCC Rcd 11687, paras. 2-3 (2019).