DESCRIPTION OF REQUEST

By the associated FCC Form 442 and pursuant to Section 5.54 of the Commission's rules,[1/] T-Mobile License LLC seeks experimental authorization for a period of two years from the date of grant of its application so that its affiliate, T-Mobile USA, Inc. ("T-Mobile"), can deploy and assess prototype wireless equipment in the 7125-7525 MHz band in and around T-Mobile's headquarters in Bellevue, Washington.[2/] Grant of the experimental authorization will serve the public interest because it will enable T-Mobile to explore the development of potential future spectrum options for evolving wireless technology without causing harmful interference to others. That, in turn, will help further promote the delivery of next-generation wireless services to consumers.

A. Purpose of Operation and Need for Experimental License

The purpose of the testing is to evaluate the operation of experimental prototype wireless equipment in the 7125-7525 MHz band. Use of the equipment will, among other things, allow T-Mobile to explore the use of band segmentation, frequency sharing mechanisms, and beamforming technologies in its network.

The testing will include the use of two fixed base stations and a maximum of five mobile devices. The base stations will transmit to, and receive from, mobile equipment on-board vehicles and fixed stations in and around Bellevue, Washington. The operating radios of the mobile and fixed test stations will be limited to within 2 km from the base stations' location. The location and installation attributes of the base stations are outlined below in Table 1.

Name	Longitude / Latitude	Antenna Height AGL (m)	Antenna AMSL (m)	Azimuth (deg)	Mechanical Down Tilt (deg)
Site A	47°34'39" N 122°10'00" W	30m	70m	260° TN	15°+
Mobile/fixed Device	Within 2 km area of all sites	-	-	-	-

Table 1

1/ *See* 47 C.F.R. § 5.54; *see also id.* § 5.71.

2/ Concurrently with this application, T-Mobile is filing a separate application for experimental authorization in the 6889-7289 MHz band. *See* Application of T-Mobile License LLC for Experimental Authorization, File No. 0207-EX-CN-2025 (file Mar. 4, 2025). T-Mobile is filing two separate applications because it recognizes the different spectrum environments in the 6889-7289 MHz and 7125-7525 MHz bands that may make separate Commission consideration of the applications more efficient. T-Mobile asks the Commission to process the applications separately and grant experimental authority for the 6889-7289 MHz band in the event the Commission is unable to promptly grant authority for the 7125-7525 MHz band.

The five mobile devices being tested will operate subject to the maximum power levels specified in Table 2 below, in both fixed and mobile modes, within the coverage of the site location listed in Table 1 above. Table 2 includes an overview of all transmitter RF characteristics.[3/]

Transmitter Type	EIRP /400MHz (dBm)	EIRP /400MHz (W)	ERP /400MHz (W)	EIRP /200MHz (dBm)	EIRP /200MHz (W)	EIRP /100MHz (dBm)	EIRP /100MHz (W)	Azimuth Scanning Range (deg)	Transmission Bandwidth	Frequency Tolerance
Mobile/fixed Device	33	2	1.22	30	1	27	0.5	-	60, 80, 100, 200, 400	0.001%
Macro RU	75	31622	19113	72	15848	69	7943	+/-60	60, 80, 100, 200, 400	> 0.001%

Table 2

The five mobile devices being tested will also utilize beam forming arrays. The massive MIMO radio angle definitions are show below in Table 3. The experimental Massive MIMO radios antenna arrays are designed for the transmission of narrow beamwidths as described in Table 3, Figure 1, and Figure 2 below, with the RF characteristics described in Table 2 above.

Minimum azimuth beamwidth (°), HPBW	Envelope azimuthal beamwidth (°)	Minimum elevation beamwidth (°), HPBW	Envelope elevation beamwidth (°), HPBW	Vertical electrical boresight angle
6° ±1°	±60° (10dB)	3° ±1°	11.5°	+6°

Table 3

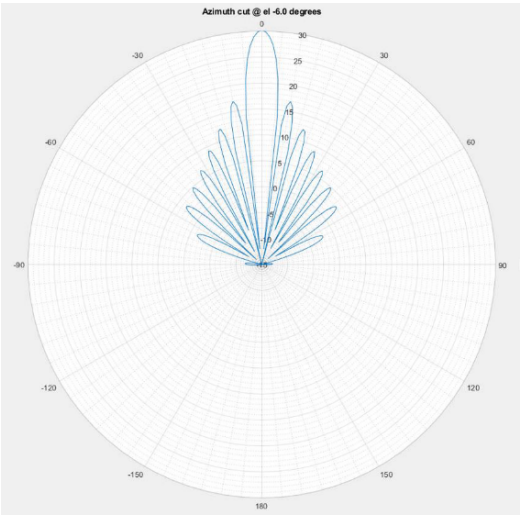


Figure 1

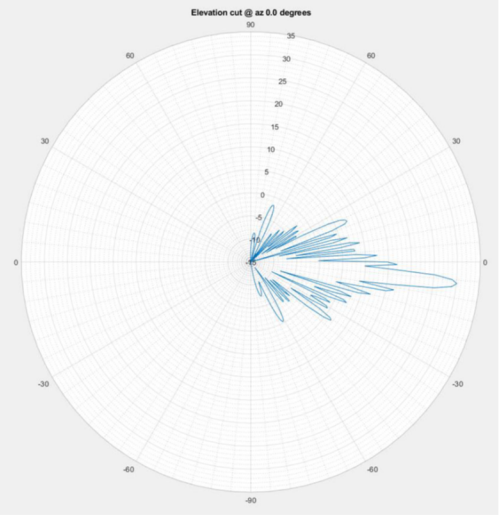


Figure 2

Grant of the experimental authorization will serve the public interest because it will allow T-Mobile to experiment and test equipment that will support the advancement of potential future

3/ The scanning range listed in Table 2 defines the range of angles in azimuth and elevation in which the active antenna system is optimized and intended to be operated.

wireless technologies. Indeed, the Commission has already granted experimental authority to others to conduct testing in frequencies that include the 7125-7525 MHz band for various innovative uses.[4/] Moreover, to the extent any or all of the 7125-7525 MHz band is made available in the future for commercial wireless services,[5/] grant of the experimental authorization will better enable T-Mobile to assess equipment using that spectrum under real-world conditions, which will help accelerate the delivery of advanced communications services to the public.

B. Restrictions on Operation

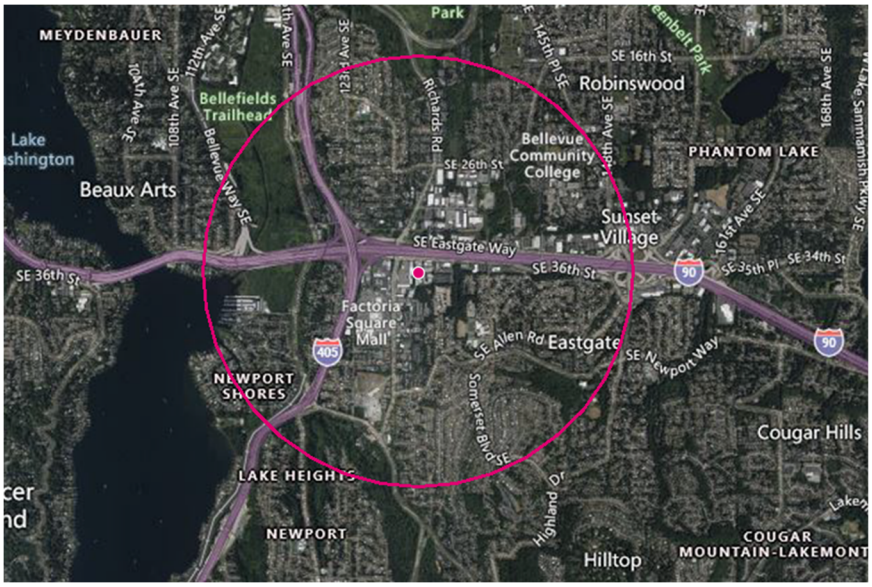
T-Mobile will restrict its experimental operations to only the 7125-7525 MHz band at its headquarters in Bellevue, WA, as depicted in the map below. The research will be conducted in a controlled environment and will not involve any commercial deployment or service provision. T-Mobile will also conduct its operations consistent with the Commission's equipment marketing and importation rules.[6/]

4/ *See, e.g.*, FCC Experimental Authorization (Call Sign WP2XES); FCC Experimental Authorization (Call Sign WY9XDD) (experimental authorization for Formula One Management Limited); FCC Experimental Authorization (Call Sign WN2XSB) (experimental authorization for HawkEye 360, Inc.); FCC Experimental Authorization (Call Sign WJ2XLO) (experimental authorization for Datron World Communications, Inc.).

5/ The National Telecommunications and Information Administration ("NTIA") recently announced that agency requests for funding to study the 7.125-8.4 GHz band, which includes the 7125-7525 MHz band, for wireless broadband use have been approved by the Technical Panel (composed of representatives from the Commission, NTIA, and the Office of Management and Budget) established by the Commercial Spectrum Enhancement Act. *See National Spectrum Strategy Update: Funding Approved for Lower 3 GHz and 7/8 GHz Band Studies*, NTIA (Dec. 20, 2024), https://www.ntia.gov/blog/2024/national-spectrum-strategy-update-funding-approved-lower-3-ghz-and-7/8-ghz-band-studies.

6/ *See* 47 C.F.R. § 2.803.

T-Mobile Campus Location



C. Protection Against Causing Interference

As discussed more fully below, there will be minimal, if any, impact on the spectrum environment by grant of the experimental authorization. T-Mobile has established a point of contact identified below with "kill switch" authority should any harmful interference occur:

Chris Wieczorek
T-Mobile USA, Inc.
601 Pennsylvania Ave., NW
Washington, DC 20004
202-654-5913
chris.wieczorek@t-mobile.com

T-Mobile also recognizes that experimental authorizations are issued on a secondary basis only and that grant of the authorization will provide it with no additional rights to permanently operate on the spectrum covered by the authorization.

Co-Channel Operations

The 7125-7525 MHz band is currently allocated for federal use, including federal fixed, mobile, mobile satellite, fixed satellite, earth exploration satellite, and meteorological satellite services.[7/] There are no non-federal incumbent operations in the 7125-7525 MHz band in Bellevue, WA, where T-Mobile's testing will take place. T-Mobile will take all practical technical steps to minimize interference to any incumbent operators in the 7125-7525 MHz band near T-Mobile's

7/ *See* 47 C.F.R. § 2.106.

proposed operations. For example, the downlink site listed above in Table 1 will be designed to downtilt greater than 15° to reduce the potential for interference with incumbent stations.[8/] To the extent necessary, T-Mobile will also coordinate its experimental testing with incumbent operators, as it has done in the past, to avoid instances of interference. T-Mobile will immediately cease transmissions if incumbent operators are identified, and they notify T-Mobile that they are experiencing harmful interference.

Adjacent-Channel Operations

Although there are two authorized non-federal operators in the adjacent 7075-7125 MHz band near Bellevue, WA,[9/] their licenses are for fixed point-to-point links, and the paths of those links are outside T-Mobile's proposed area of operation.[10/] In addition, there are no non-federal operators in the adjacent 7550-7750 MHz band.

8/ *See* FCC Experimental Authorization (Call Sign WP2XES).

9/ Unlicensed operations are also permitted in the 7075-7125 MHz band, but unlicensed operations are not entitled to protection from interference. *See Unlicensed Use of the 6 GHz Band, et al.*, Report and Order and Further Notice of Proposed Rulemaking, 35 FCC Rcd 3852, ¶¶ 17-18 (2020).

10/ *See* FCC Wireless License (Call Sign WHS565) (granted Aug. 6, 1991); Application for Renewal of Sinclair Seattle Licensee, LLC, LMS File No. 0000201821 (filed Oct. 3, 2022); FCC Wireless License (Call Sign WLE251) (granted Aug. 7, 1990); Application for Renewal of Fox Television Stations, LLC, LMS File No. 0000201519 (filed Oct. 3, 2022); Amended Application for Renewal of Fox Television Stations, LLC, LMS File No. 0000201519 (filed Jan. 16, 2025).