

**Exhibit**  
**T-Mobile License LLC**  
**FCC Form 442**

**Application for a New Experimental Authorization**

**DESCRIPTION OF APPLICATION AND EXPERIMENT**

T-Mobile License LLC (“T-Mobile”) hereby submits the attached application for a new experimental license authorizing operations in and around San Francisco, California. T-Mobile, including the MetroPCS brand, offers nationwide wireless voice, text, and data services to approximately 72.6 million subscribers.<sup>1/</sup> T-Mobile continues to lead growth in the wireless industry, with 1.1 million net additions in the first quarter of 2017.<sup>2/</sup> Additionally, the footprint for T-Mobile’s 4G Long-Term Evolution (“LTE”) network — the Nation’s fastest 4G LTE network — currently covers 314 million Americans, and T-Mobile projects that it will provide 4G LTE coverage to 321 million people by year-end 2017.<sup>3/</sup> As part of its efforts to be an industry leader and continue improving and increasing the capacity of its network, T-Mobile seeks this authorization to conduct further tests of Fifth Generation (“5G”) wireless technology in the millimeter wave bands.

T-Mobile’s proposed testing in San Francisco will complement its experimental operations authorized in the Bellevue, Washington area under call sign WI2XHR. T-Mobile expects that its 5G services will enable high bandwidth and throughput in urban areas using a combination of mid-band and millimeter wave spectrum.<sup>4/</sup> The proposed operations will involve tests at and around the three locations indicated on the corresponding FCC Form 442. Those tests will provide information on signal propagation between buildings and other critical data informing the broader design of 5G systems. Tests at each location will utilize fixed transmitters and mobile end-user equipment operating within a maximum radius of 2 kilometers of the fixed devices. In each case, T-Mobile will test signal strength, transmission and reception characteristics and other parameters that will be useful as it contemplates how it may incorporate millimeter wave spectrum in its network. Because the tests will be conducted in controlled environments and based on the current limited use of these bands, the tests will not cause harmful interference to licensees in the band. T-Mobile acknowledges that its operations will occur on a secondary basis and that it will mitigate any interference caused to primary users of the bands. The proposed operations will therefore further advance T-Mobile’s understanding of 5G technology and operations in the millimeter wave bands, and will ultimately potentially allow T-Mobile to deploy next-generation 5G mobile services in those bands.

---

<sup>1/</sup> Press Release, T-Mobile, T-Mobile Celebrates 4 Years as a Public Company with Industry Leading Customer & Financial Growth and Game-Changing Spectrum Auction Results (April 24, 2017), available at <https://newsroom.t-mobile.com/news-and-blogs/q1-2017-earnings.htm>.

<sup>2/</sup> *Id.*

<sup>3/</sup> *Id.*

<sup>4/</sup> Press Release, T-Mobile, T-Mobile Announces Plans for Real Nationwide Mobile 5G (May 2, 2017), available at <https://newsroom.t-mobile.com/news-and-blogs/nationwide-5g.htm>.

Based on the foregoing, T-Mobile requests that the Commission promptly grant the application to accelerate T-Mobile's 5G research efforts.