

## **Exhibit 1 - Response to Item 7 Questions & Request for a Four-Year License**

With this application, Carnegie Mellon University (“CMU”) is seeking an experimental license to enable it to examine the use of use of vacant spectrum in the television broadcast bands, *i.e.*, the “white spaces.”<sup>1</sup> Specifically, CMU proposes to conduct research to demonstrate the potential of wireless “white spaces” networks in order to investigate and develop improved wireless applications and services. Such research will be conducted in two locations. The first location is within the main CMU campus of 143 acres in Pittsburgh, PA, with a radius operation of 20 km. The Campus is located at 5000 Forbes Avenue, Pittsburgh, PA 15213. The second location is within the CMU Silicon Valley Campus at the NASA Ames Research Park, Bldg. 23 (MS 23-11), Moffett Field, CA 94035.

CMU’s experiments will utilize both geo-location and spectrum sensing techniques to minimize the risk of interference. Further, CMU will not transmit on any television channel in which there is an incumbent licensee and will engage in frequency coordination with the Society of Broadcast Engineers, and will limit operation to coordinated frequencies.

As a major engineering and science research university, CMU will conduct various short- and longer-term research, as permitted by FCC rules, which are expected increase knowledge of radio technology and potentially deliver new and innovative services using “white spaces” spectrum. The radio “network” that would be authorized through this application will serve as the “laboratory” for this research and experimentation.

CMU expects to share the results of its research through presentations at academic conferences, other events and in scientific and engineering papers and journals. This information to be shared would include: a) The complete program of research and experimentation proposed including description of equipment and theory of operation; b) The specific objectives sought to be accomplished and c) How the program of experimentation has a reasonable promise of contribution to the development, extension, expansion or utilization of the radio art, or is along line not already investigated.

Because CMU will be constructing an on-campus “network” for experimentation and conducting numerous individual investigations of technology and services, it respectfully requests, pursuant to Rule 5.71(a), 47 C.F.R. § 5.71(a), the Commission grant CMU an experimental license for a four (4) year period. Such longer period will better enable CMU to make efficient use of its investments and prior investigations.

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<sup>1</sup> The FCC adopted rules that allow unlicensed radio transmitters to operate in vacant television broadcast spectrum, while protecting television broadcasters and their viewers. *Unlicensed Operation in the TV Broadcast Bands*, Second Report & Order, 23 FCC Rcd 16807 (2008); Third Memorandum & Order, 27 FCC Rcd 3692 (2012).