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Exhibit Documenting Eligibility for a Program Experimental License in Accordance with 47C.F.R.§5.302 and 47 U.S.C. § 157.

This experimental license application is to request eligibility to conduct research at the University of California, Santa Barbara– main campus in the 137 +/- 15 GHz, at 210 +/- 15 GHz, and 280 +/- 15 GHz frequency ranges.

Wireless communications and imaging experiments will be conducted by members of University of California Santa Barbara Wireless Communications Research Center led by Professor Mark Rodwell. The University of California, Santa Barbara is an academic institution accredited by the Accreditation Board for Engineering and Technology. UCSB's Electrical and Computer Engineering department, which will oversee this experiment, has been accredited since 1967 to present, with next review year scheduled in 2020-20221 This may be verified on ABET Website:

<http://main.abet.org/aps/AccreditedProgramsDetails.aspx?OrganizationID=765&ProgramIDs=>

Communications and imaging systems in the 140-220 and 220-340 GHz bands is a very new topic. Professor Rodwell, at the University of California, Santa Barbara, is leading a 22-professor, 70-Ph.D.-student, 5-year research center seeking to explore the characteristics of such systems and to demonstrate their utility. The outcome of such communications and imaging experiments, that may be facilitated by this license, will ensure that the United States remains a world leader in the field of wireless communications and maintains its competitive lead in future high-speed wireless communication technologies

Professor Mark Rodwell is the Principal Investigator. Ph.D. students working under his guidance will conduct wireless communications and imaging experiments. Professor Rodwell's expertise in radio frequency experimentation and ability to manage wide variety of research projects are shown through published papers from earlier experiments [1]-[5].

UCSB: "This experiment operate between on frequencies between 137 +/- 15 GHz, at 210 +/- 15 GHz, and 280 +/- 15 GHz for research reasons as well as hardware requirements. The experiments will be conducted responsibly within the University of California Santa Barbara's main campus, located on (34.4140° N, 119.8489° W), with campus size of 4.269434 km² (map)." The applicant certifies that:

- The radio frequency experimentation will be conducted in a defined geographic area under the applicant's control; and
- The applicant has institutional process to monitor and effectively manage a wide variety of research projects; and
- The applicant has demonstrated expertise in radio spectrum management or partner with another entity that has such expertise.

The applicant further certifies that:

- All the statements in the application and exhibits are true, complete and correct to the best of the applicant's knowledge; and
- The applicant is willing to finance and conduct the experimental program with full knowledge and understanding of the limitations; and
- The applicant waives any claim to the use of any frequency or of the electromagnetic spectrum as against the regulatory power of the USA.



Figure 1: University of California, Santa Barbara, Main Campus.

References:

- [1] C. Sheldon, E. Torkildson, M. Seo, C.P. Yue, U. Madhow, and M. Rodwell, "A 60GHz Line-of-Sight 2x2 MIMO Link Operating at 1.2Gbps," IEEE International AP-S Symposium, July 2008.
- [2] C. Sheldon, E. Torkildson, M. Seo, C. P. Yue, M. Rodwell, and U. Madhow: "Spatial Multiplexing Over a Line-of-Sight Millimeter-Wave MIMO Link: A Two-Channel Hardware Demonstration at 1.2Gbps Over 40m Range", European Microwave Conference (EuMC), Amsterdam, The Netherlands, October 2008.
- [3] M. Seo, E. Torkildson, M. Rodwell, and U. Madhow , "Four-Channel Spatial Multiplexing Over a Millimeter-Wave Line-of-Sight Link," IEEE - MTT-S International Microwave Symposium, Boston, Massachusetts, June 2009
- [4] Colin Sheldon, Munkyo Seo, Eric Torkildson, Upamanyu Madhow and Mark Rodwell, "A 2.4 Gb/s Millimeter-Wave Link Using Adaptive Spatial Multiplexing" Antennas and Propagation Society International Symposium (APSURSI), 2010 IEEE , vol., no., pp.1-4, 11-17 July 2010
- [5] Munkyo Seo, Bharath Ananthasubramaniam, Mark Rodwell, and Upamanyu Madhow, "Millimeterwave Imaging Sensor Nets: A Scalable 60-GHz Wireless Sensor Network," 2007 IEEE MTT-S International Microwave Symposium , Honolulu, Hawaii, June 3-8,.