

101 North Wilmot Road, Suite 101
Tucson, Arizona 85711
Phone 520.519.4686
Fax 520.519.3153
www.rincon.com

5 November 2019

Federal Communications Commission
OET Experimental Licensing Branch

Subject: Amendment Details for Program Experimental License

Reference: Application File Number: 0002-EX-PN-2019 (Original Experimental License)

Reference: Application File Number: 0007-EX-PN-2019 (Amendment Request)

Reference: FRN: 0018271999

To Whom It May Concern:

I am pleased to provide background information and greater details regarding the purpose of amending Rincon Research Corporation's experimental program license.

The original license, with Application File Number 0002-EX-PN-2019, was granted on 8 April 2019. This license provides a Program License to perform experimentation on adjacent properties consisting of over 100 acres owned by the founder of Rincon Research Corporation. The purpose of amending the application is NOT to modify the location of the Program License. All experiments will be performed in accordance with the property location described in the original application for license.

The public note entered on 3 January 2019 with the original application stated "Rincon Research Corporation is interested in performing experiments in the following general categories: 5G New Radio communications standards, millimeter-wave radar and communications, Internet of Things radio protocols." The purpose of amending the application is NOT to modify these general categories of experiments.

In the original application, the applicant answered NO to the Program Experimental License Question "Do you intend to use any of the federal exclusive and shared frequencies?" At the time, the applicant had planned to operate entirely on non-federal frequency bands. However, as research into the category of millimeter-wave radar technology progressed in 2019, it became evident that the commercial hardware available for this technology is part of two bands of frequencies that are shared: 60-64 GHz and 76-81 GHz. The fundamental purpose of amending the original application IS to request approval to use the shared frequencies of 60-64 GHz and 76-81 GHz.

Rincon Research would like to perform experiments with two millimeter-wave radar evaluation boards both manufactured by Texas Instruments: IWR6843AOPEVM and AWR1642BOOST. The IWR6843AOPEVM module operates between 60.0 and 64.0 GHz while the AWR1642BOOST module operates between 76.0 and 81.0 GHz. The maximum output power of both of these modules is 0.2 W EIRP (peak). Each of these boards features a controllable transmit power backoff parameter that can be set to a value between 0 and 24 dB. This parameter can be used to reduce the output power in the event of any reported interference. To further minimize the possibility of interference, the experiments will be conducted on the interior portion of the property, no closer than 100 m from the boundary. The free space path loss at a distance of 100 m is 108.0 dB at 60 GHz and 110.1 dB at 76 GHz, so it is unlikely that there would be interference caused by our transmissions.

Rincon Research would like to perform these experiments on both fixed and moving platforms. Any fixed platforms would be located less than 6 m from ground level. The moving platform experiments would be of two types: hand-held and mounted to Rincon Research's small Unmanned Aircraft System, a hexcopter registered with the Federal Aviation Administration. All hexcopter flights are supervised by a Rincon Research employee with a remote pilot license to ensure compliance with safety and operating regulations. For the millimeter-wave experiments, the hexcopter altitude above ground would be restricted to no more than 20 m. To allow experiments on a moving platform, it is requested that the license be amended to permit a Mobile station class.

Your consideration of our amendment request is appreciated.

Thank you,

Michael Garcia
RINCON RESEARCH CORPORATION
Chief Engineer, Advanced Systems Business Unit