R2 Space, LLC
STA Request
March 2022

Explanatory Statement: Description of Ground Truth Emitter System

On February 7, 2022, the Experimental Licensing Branch granted R2 Space, LLC ("R2 Space") special temporary authority ("STA") for forty-five (45) days under Call Sign WT9XHH to conduct testing of a ground truth emitter system at the Burnet Municipal Airport. This STA was to be used in connection with R2 Space's airborne testing of Synthetic Aperture Radar technology under experimental license Call Sign WL2XGM (ELS File No. 0289-EX-CM-2021). The test dates were initially scheduled for February 15-18, 2022, but the grant covered the period until April 1, 2022. See ELS File No. 0141-EX-ST-2022.

Unfortunately, due to unforeseen technical delays, R2 Space was not able to deploy the required equipment to conduct the tests as initially scheduled, and now seeks a replacement STA to conduct identical operations beginning in April 2022. In order to avoid the need to seek an additional STA, R2 Space seeks a six-month term for this replacement STA, from April 1 to October 1, 2002, which will align the expiration date for this activity with the current expiration date for the related airborne SAR experimental license under Call Sign WL2XGM.

The ground truth emitter system consists of four (4) temporary transmitting ground stations located at fixed survey points at the Burnet Municipal Airport, which is also known as Kate Craddock Field, a public-use airport located one nautical mile (1.85 km) southwest of the central business district of Burnet, a city in Burnet County, Texas.

Each transmitter will be comprised of a Texas Instruments LMX2820EVM synthesizer board with Stanford Research Systems PRS-10 frequency standard and a Pasternack PE9856B/SF-10 10dBi horn. The purpose of these emitters is to provide a ground truth locating system for SAR testing purposes under a government contract HQ08452090004 with the Defense Innovation Unit. Each system will be physically located within one meter of the ground surface.

The emitters will be positioned on the Burnett Municipal airport premises and emit continuous wave radiation with EIRP < 10dBi+7dBm =+17dBm = -13dBW for the duration of the SAR in-flight testing periods. The horns will be pointed at a 45^{o} angle towards the sky in a westward direction. Each is a standard horn with approximate a +/-30-degree 3dB emission pattern. The emitter's operating frequency will be offset from each other by 10MHz and will include 9.21 GHz, 9.22 GHz, 9.23 GHz, 9.24 GHz. The emission will occur only during the contract's scheduled flight tests under the modified authority for current Call Sign WL2XGM (ELS File No. 0289-EX-CM-2021; granted 2/01/2022).