

Exhibit 1

APPLICATION FOR EXPERIMENTAL SPECIAL TEMPORARY AUTHORITY

Proposed Program of Use:

Gibbons Systems, Inc. (“GSI”) herein requests authorization to operate an experimental prototype on the basis of Special Temporary Authority (“STA”) under the Commission’s experimental rules.¹ GSI is seeking this STA in order to commence testing of a proposed air-to-air ranging system on the basis of a contract from Wright-Patterson Air Force Base² (“WPAFB”) within the Department of Defense (“DoD”). GSI requires an initial six months of testing to ascertain the viability of its program. If the initial testing proves successful, GSI will submit an application for permanent experimental authority permitting it to continue its testing under this program.

GSI’s request for experimental authority is supported by good cause. Specifically, GSI is developing the subject technology in order to fundamentally improve radio ranging among the C-130 fleet deployed by the United States Air Force. Currently, the C-130 fleet utilizes high powered radio transmissions, similar to radar, for maintaining formation, which nonetheless render the formation highly detectable and, thus, vulnerable to enemy monitoring. The GSI RF technology employs several techniques (including low duty cycle, low total signal energy, and high bandwidth) to render the signals difficult to detect, *i.e.* “low probability of detection” (“LPD”). These techniques address the current C-130 vulnerability, and also reduce or eliminate the possibility that these signals could interfere with other users. The DoD, in providing initial contract funds, has recognized that it is in the interests of the United States and its military to test and, if successful, deploy alternate radio ranging strategies in order to diminish vulnerability to its equipment and, especially, its personnel. (Given the current vulnerability to detection, formations of C-130s flying combat airdrop missions are vulnerable to advance detection by enemy passive electronic warfare systems, and therefore risk flying into prepared ambushes. Eliminating this vulnerability will substantially reduce the risks associated with such missions.)

GSI proposes in the initial phase of its current program to employ a series of one-way ranging transmissions. The nature of the operations is described below.

¹ 47 C.F.R. § 5.61.

² Contract FA8650-11-M-3116, Improved Station Keeping Equipment.

As a program affiliated with the United States Department of Defense, its ultimate use would be for to military operations. As identified above, the development of this technology is sponsored by WPAFB, and there is no intention of adopting the technology for commercial use. However, GSI, as a private commercial enterprise working in tandem with DoD, can only successfully operate its prototype devices for testing and further development under the FCC's experimental rules.

Nature of Operations:

As indicated above, under the proposed experimental authority, GSI would initiate one-way transmissions using a ground station near GSI's location in Redwood City, California. The proposed operations use a maximum bandwidth of ~300 MHz, centered initially around the 2500 MHz frequency, and if successful, moving to a similar bandwidth in the vicinity of 3.3 GHz, to be within an authorized radiolocation band.³

The maximum output power of the transmitter will be limited to 1 W, thus greatly decreasing the potential for spurious emissions. This low peak power, plus additional LPD features as mentioned above, make the GSI signal very difficult to detect; tests conducted for DARPA, for example, have shown that commonly available intercept equipment (intended to detect WIFI signals in the DARPA facility) are unable to detect the GSI 1 W signal in line of sight at ranges over 40 feet. (The intercept equipment was operating at the WIFI frequency, which is near the center of the GSI equipment band.)

The transmissions will consist of brief (<100 μ sec) low duty cycle bursts of short pulses. This pulse burst will consist of hundreds of pulses of 6.4 ns duration, i.e. 300 MHz bandwidth, randomly placed over an interval of about 0.1 ms. Even a thousand such pulses would occupy only 6.4 μ sec, giving a duty cycle of 6.4% within the burst. These bursts will be transmitted at planned intervals, for example once per second, so the overall signal presence would be limited to 6.4%/1000, or 0.0064%. The target military aircraft broadband receivers will capture the signal using a matched filter, measure range and bearing to the transmitter, and obtain a few bytes of data from each transmission. This will provide them with reliable data about their location relative to other military aircraft travelling in the same formation. The nature of the signals themselves is highly complex and would make it difficult for other receivers, even sophisticated intercept receivers, lacking the reference signal, to detect the

³ GSI notes that the instant application for Special Temporary Authority presumes operations only in the 2.5 GHz band. Following initial testing, and with the ongoing support of DoD, GSI would submit an application for permanent experimental authority in which it will include radiolocation frequencies.

communication. This feature of the operations ensures that there is no potential for interference with other devices in the adjacent spectrum.

Federal Funding Information:

The program sponsor is:

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