



Shannon - Modification

NARRATIVE STATEMENT

Lynk Global, INC.
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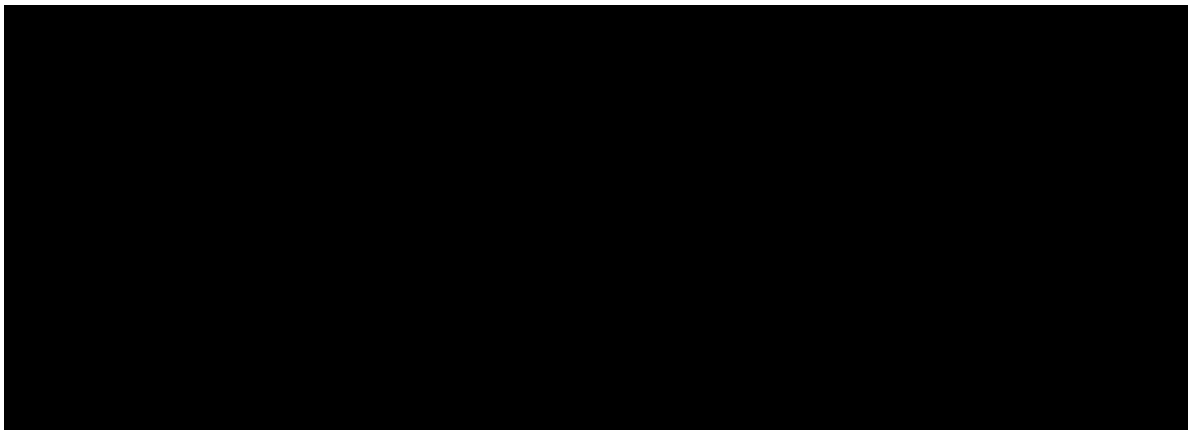


EXPERIMENTAL LICENSE MODIFICATION APPLICATION
NARRATIVE STATEMENT

(1) Applicant Information.

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(2) Description of why experimental authorization is needed.

Lynk Global, Inc. (“Lynk”) seeks modification of its experimental license under File Number 0088-EX-CN-2021 to add the international earth station sites listed in Question (6) below for testing Telemetry Tracking and Command (“TT&C”) capabilities in additional locations around the world.

(3) Description of the operation to be conducted and its purpose.

All operations at the additional, international earth station locations listed in Question (6) below will be identical to what is already authorized under File Number 0088-EX-CN-2021, which are limited to TT&C over specific, authorized S-band frequencies. As currently authorized, Lynk transmits via a SatLab duplex transceiver module and Lynk’s custom module on *Shannon* to specific earth station locations, which are third-party commercially licensed TT&C ground stations already approved for similar use. The service providers of these licensed ground stations maintain global shared networks, including domestic and international ground stations. In the immediate modification application, Lynk requests authorization to cover the space-to-Earth TT&C transmissions at the additionally listed international earth station sites.



(4) Timing of proposed operation.

Lynk requests authorization starting August 23, 2021, for the duration of its Experimental License under File Number 0088-EX-CN-2021, which expires June 01, 2023.

(5) Class(es) of station (fixed, mobile, fixed & mobile) and call sign of station (if applicable).

The earth stations will operate in a fixed mode, and the space station will operate in non-geostationary orbit at 500 km.

(6) Description of the location(s) and, if applicable, geographical coordinates of the proposed operation.

The following table lists the additional earth station sites for modification of Experimental License under File Number 0088-EX-CN-2021.

Location	Latitude	Longitude	Proposed Operation
██████████ UK	██████████	██████████	2260 MHz / 2080 MHz
██████████ Sri Lanka	██████████	██████████	
██████████ Iceland	██████████	██████████	

(7) Transmit equipment to be used for this modification.

# of Units	Equipment	Manufacturer	Model
1	SRS Transceiver (space station)	SatLab	SRS-3
1	S-band TT&C Transceiver (space station)	Lynk	Custom

(8) Frequencies.

Operations	Uplink	Downlink
S-band TT&C	2079.6625 - 2080.3375 MHz	2259.6625 - 2260.3375 MHz

(9) Maximum effective radiated power (ERP) or equivalent isotropically radiated power (EIRP).

See below, Question (13).

(10) Emission designator.

See below, Question (13).



(11) Overall height of antenna structure above the ground.

Ground stations are less than six meters above ground; not applicable to space station.

(12) Orbital Debris Mitigation.

The *Shannon* satellite is designed to eliminate the potential, to the extent possible, of creating orbital debris. The spacecraft contains no deployables and already in orbit. Lynk provided an orbital debris analysis in an exhibit under File Number 0088-EX-CN-2021.

(13) Supplemental Technical Information.

S-band TT&C Operations				
Parameters	Space Station		Earth Station	
	Tx	Rx	Tx	Rx
Frequencies*	2259.6625 - 2260.3375 MHz	2079.6625 - 2080.3375 MHz	2079.6625 - 2080.3375 MHz	2259.6625 - 2260.3375 MHz
Output Power	0.904 W	-	10.7 W	-
ERP at 2260 MHz	3.22 dBW 2.1 W	-	40.85 dBW 12171.7 W	-
Fixed / Mobile	Mobile		Fixed	
Frequency Tolerance	0.00001%			
Emission Designator	563KG1D (SatLab) 675KG1D (Lynk)**			
Modulating Signal	Digital on/off quantized			

* A factory default is programmed into the SatLab SRS-3 that can result in a reset of frequencies, but Lynk has taken the precaution of reprogramming the reset to the operating, requested frequencies.

** The modulated signal occupies slightly more bandwidth with the Lynk QPSK signal by an additional 56 KHz on each side of the carrier center frequency



(14) PFD Analysis.

Per Condition 12 to the Experimental License under File Number 0088-EX-CN-2021, LYNK is to provide a power flux density (“PFD”) analysis with this modification application of operations in the 2200-2290 MHz band, which includes the transmit frequencies from *Shannon* to the earth stations listed herein.

In accordance with the applicable Table 21-4 of ITU Radio Regulation 21.16:

Frequency Band	Service	Limit in dB(W/m ²) for angles of arrival (δ) above the horizontal plane			Reference Bandwidth
		0° – 5°	5° – 25°	25° – 90°	
2200-2300 MHz	Space operation (space-to-Earth)	-154	-154 + 0.5(δ – 5)	-144	4 kHz

LYNK’s transmissions in the requested frequencies comply with the PFD limits. S-band operations for *Shannon* are the same over any location on the planet, as such, the PFD analysis presented here ensures that the limits are met at any location on Earth. The figure below illustrates this.

