

## Request for Special Temporary Authority

Iridium Satellite LLC (“Iridium”) hereby requests a one-year experimental license, commencing on or before February 1, 2022, to transmit from its space stations to the GPX2 cubesat in the 1618.725–1626.5 MHz band.<sup>1</sup> To accommodate requirements set by the launch provider, Iridium requests that the experimental license be issued no later than January 15, 2022.

The National Telecommunications and Information Administration (“NTIA”) has authorized the National Aeronautics and Space Administration (“NASA”) to conduct experiments with the GPX2 under proposal number NASA212003. A copy of that authorization is attached hereto.

GPX2 is a technology demonstration mission that will provide a novel test bed for commercial off-the-shelf (“COTS”) differential global positioning (“dGPS”) systems that will enable future on-orbit assembly, docking, and formation-flying small satellite missions. While on-orbit, it will assess the capability of unmodified, multi-frequency COTS dGPS receivers. One receiver will operate as a base reference as well as assess absolute position accuracy from an on-orbit COTS receiver.

GPX2 seeks to use an NAL Research 9602-N modem in conjunction with the Iridium constellation for short burst data transmissions for telecommand and telemetry operations. The CubeSat will operate at 45° orbital inclination and at an apogee and perigee of 500 km for a mission duration of three to six months. Iridium is requesting a one-year experimental license to account for the possibility of launch delays and mission extension.

There will be no change during the experiment in the operating parameters of Iridium’s space stations, which are licensed as Part 25 space stations under Call Sign S2110. For this reason, no operating parameters, other than effective radiated power and emission designator, are used in the form that this exhibit accompanies. The only change for which Iridium seeks experimental authority is adding GPX2 as a point of communication. Iridium’s Part 25 space station license does not cover space-to-space communications.

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<sup>1</sup> Iridium’s constellation is comprised of 66 satellites, any one of which may be used as part of the experiment at any point in time.

10/19/2021

\*\*\*\*\* U N C L A S S I F I E D \*\*\*\*\*

Radio Frequency Authorization

This Authorization is granted pursuant to Chapter 1 Part 1.1 Section 6.i of the NTIA Manual by authority of the US National Aeronautics and Space Administration.

This Authorization expires on: February 1, 2023. For continued use of this equipment, MUST SUBMIT a request to your Frequency Manager by November 03, 2022.

Serial Number	FOI	MSD	BUR	NET	RVD	AUS	EXD
NASA212003			LARC		210810	J1708849	230201
FRQ	BIN	TME	SPD	STC	Bandwidth	Emission	Power
1616 MHz		1	-046	XT	41.70 kHz	Q7W	1 Watt(s)
-1626.5 MHz							
XAL, XSC			XRC	XLA, XLG		XCL	XAP XAZ
NONGEOSTATIONARY, SPCE			LARC				R
XAD							
05G060B							
RAL, RSC			RRC	RLA, RLG		ACL	RAP RAZ
NONGEOSTATIONARY, SPCE			I,NTIA-U				R
RAD							
22G020B							
Remarks							
*FRB,M01616.000000,M01626.500000							
*ORB,0045IN00500AP00500PE0001.6H01NRT01							
*ORB,86.5IN00780AP00780PE0001.7H66NRR01							
*EQT,U,NALRESEARCH 9602-N							
*EQT,U,\$NAL IRIDIUMANTENNA							
*POC,JOHN ZUZEK,2164333469,210720							
*EQR,U,IRIDIUM SATS							
*NTS,M015,IRAC 44806/1,SPS-24942/1							
*AGN,GPX-2 CUBESAT TLM							
*AGN,POC KURT WOODHAM,7578646067,210409							
*AGN,LAUNCH NET FEB 2022							

Restrictions (NTS, \*NTS, SUP)

S945 - THIS ASSIGNMENT SUPPORTS A CUBESAT OR NANOSAT SATELLITE WHOSE NAME IS RECORDED IN CIRCUIT REMARKS FIELD.

E039 - THE AUTHORIZED EMISSION BANDWIDTH SHALL BE SO LOCATED WITHIN THE BAND THAT IT DOES NOT EXTEND BEYOND THE UPPER OR LOWER LIMITS OF THE AUTHORIZED BAND SHOWN IN THE \*FRB ENTRY OF CIRCUIT REMARKS. IF A PORTION(S) OF THE AUTHORIZED BAND IS TO BE EXCLUDED (\*FBE) THE EMISSION BANDWIDTH MUST NOT EXTEND INTO ANY PORTION(S) OF THE EXCLUDED BAND(S).

M015,IRAC 44806/1,SPS-24942/1 - THE SYSTEM USING THIS ASSIGNMENT WAS REVIEWED BY THE SPS ACCORDANCE WITH CHAPTER 10 AND THE ASSIGNMENT IS BEING MADE SUBJECT TO

CONDITIONS STATED IN THE IRAC AND SPS DOCUMENTS REFERENCED IN THE CIRCUIT  
REMARKS FIELD(\*NTS).

Supplementary Details - GPX-2 MISSION IS A 3U FORM-FACTOR CUBESAT WITH TWO  
GPS RECEIVERS. GPX-2 OBJECTIVE IS TO ESTABLISH THE PERFORMANCE OF LOW- COST,  
COMMERCIAL OFF-THE-SHELF RECEIVERS FOR ON-ORBIT DIFFERENTIAL GPS MEASUREMENTS.  
GPX-2 COMMUNICATION LINKS WILL BE PROVIDED USING IRIDIUM SHORT BURST DATA (SBD) TO  
SUPPORT TELECOMMAND AND TELEMETRY

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Restrictions (NTS, \*NTS, SUP)  
SERVICES. S354 DOES NOT APPLY REQUIREMENT/ACCURACY VERIFIED BY S.HORAN.

SPECIAL HANDLING INSTRUCTIONS

None.

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