

PROPRIETARY INFORMATION

**National Oceanic and Atmospheric Administration
License to Operate a Private Remote Sensing Space System**



The National Oceanic and Atmospheric Administration (NOAA), an agency of the U.S. Department of Commerce, hereby grants this Tier 1 license authorizing University of Georgia to operate Multiview Onboard Computational Imager (MOCHI), a private remote-sensing space system comprised of 1 satellite with the following capabilities and described completely in Part D of this license:

Panchromatic (PAN) (400-900 nm) at 7.5 m Ground Sample Distance (GSD)
Panchromatic (PAN) (400-1000 nm) at 9.77 m Ground Sample Distance (GSD)

Please submit any communications, including all communications required by the regulations at 15 CFR Part 960 and this license to:

Commercial Remote Sensing Regulatory Affairs (CRSRA)
1335 East-West Highway SSMC-1/G-101
Silver Spring, MD 20910
Email: crsra@noaa.gov
Phone: 301-427-2560

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Part A: Determination and License Grant

The Assistant Administrator (AA) of the National Environmental Satellite, Data, and Information Service within the National Oceanic and Atmospheric Administration, an agency of the U.S. Department of Commerce, acting pursuant to authority delegated by the Secretary of Commerce (the Secretary), determines that University of Georgia, as described in Part C of this license, will comply with the requirements of the Land Remote Sensing Policy Act of 1992, as amended, codified at 51 U.S.C. 60101 et seq., (hereinafter Act), the regulations promulgated thereunder, 15 CFR Part 960 (the regulations); and the conditions in this license.

Accordingly, the AA hereby grants University of Georgia (hereinafter Licensee), as described in Part C of this license, this license to operate MOCHI (hereinafter the System), as described in Part D of this license, subject to the terms and conditions of this license. This license is valid until its term ends in accordance with the regulations. The Licensee must request and receive approval for a license modification before taking any action that would contradict a material fact listed in Part C or D of this license.

The AA makes this determination, and grants this license, under the authority delegated to him by the Secretary of Commerce through the Under Secretary of Commerce for Oceans and Atmosphere and Administrator of NOAA. The Secretary's authority is found in the Act and the regulations. This license does not authorize the System's use of spectrum for radio communications or the conduct of any non-remote sensing operations that are proposed to be undertaken by the Licensee. This license is not alienable and creates no property right in the Licensee.

IN WITNESS THEREOF, I hereby grant this License:

Stephen M. Volz Ph. D.
Assistant Administrator for
Satellite and Information Services

Date

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Part B: Tier 1 License Conditions

The Licensee must, at all times:

1. Comply with the Act, the Regulations, this license, applicable domestic legal obligations, and the international obligations of the United States.
2. Operate the system in such manner as to preserve the national security of the United States and to observe international obligations and policies, as articulated in conditions included in this license.
3. Upon request, offer to the government of any country (including the United States) unenhanced data collected by the system concerning the territory under the jurisdiction of such government without delay and on reasonable terms and conditions, unless doing so would be prohibited by law or license conditions.
4. Upon termination of operations under the license, make disposition of any satellites in space in a manner satisfactory to the President.
5. Notify the Secretary in writing of each of the following events, no later than seven days after the event:
 - i. The launch and deployment of each system component, to include confirmation that the component matches the orbital parameters and data collection characteristics of the system, as described in Part D of the license;
 - ii. Each disposal of an on-orbit component of the system;
 - iii. The detection of an anomaly; and
 - iv. The licensee's financial insolvency or dissolution;
6. Request and receive approval for a license modification before taking any action that would change a material fact in the license.
7. Certify that all material facts in the license remain accurate pursuant to the procedures in § 960.14 no later than October 15th of each year.
8. Cooperate with compliance, monitoring, and enforcement authorities described in the Act and this part, and permit the Secretary to access, at all reasonable times and with no shorter notice than 48 hours, any component of the system for the purpose of ensuring compliance with the Act, this part, and the license.
9. Refrain from disseminating unenhanced data, or processed data or products derived from the licensee's system, of the State of Israel at a resolution finer than the resolution most recently specified by the Secretary in the *Federal Register* as being available from commercial sources.
 - i. The most recent resolution specified by the Secretary is 0.4 m GSD, please see FR Doc.2020-15770, publish date: July 21, 2020.

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Part C: Description of Licensee

Every term below constitutes a material fact. You must request and receive approval of a license modification before taking any action that would contradict a material fact.

1. General Licensee Information:

a. Name of Licensee:

University of Georgia

b. Location and address of Licensee:

Athens, Georgia 30602

c. Licensee contact information:

Dr. David Lee

Vice President for Research

500 DW Brooks Dr.

Athens, GA 30602

706-542-5969

ovpr@uga.edu

Deepak Mishra

Research Scientist, Principal Investigator

210 Field Street

Athens GA, 30602

dmishra@uga.edu

d. Contact information for a specific individual to serve as the point of contact with Commerce:

Primary Contact

Deepak Mishra

Research Scientist, Principal Investigator

210 Field Street

Athens GA, 30602

dmishra@uga.edu

alternate contact:

Jason Reisfeld

310 E. Campus Rd. Rm 0401

Athens, GA 30602

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e. Place of incorporation and, if incorporated outside the United States, confirmation that the Licensee acknowledged as part of the application that the Licensee will operate its system within the United States and is therefore subject to the Secretary's jurisdiction under 15 CFR Part 960:

N/A

2. Identity of any subsidiaries and affiliates playing a role in the operation of the System, including a brief description of that role:

N/A

Part D: Description of System

Name of System: MOCI- Multiview Onboard Computational Imager

1. Brief mission description:

The system will use an onboard imager to capture images of land targets to use for an onboard Structure-from-Motion calculation. The satellite will also use the same imager to attempt onboard object recognition of various objects (e.g. ships, bridges, stadiums, etc.). All images will be of the Earth and only of the Earth. The majority Structure-from-Motion data and object recognition data will be downlinked as our primary mission requirement. This data will be used by the University of Georgia Department of Geography for research purposes. Downlink of actual images will occur occasionally as a secondary goal to test the efficiency of our onboard computation.

2. Remote Sensing Instrument(s) parameters (for each sensor):

Sensor type	Imaging/frame rate (FPS)	Spatial resolution (m)	Spectral range (nm)	Collection volume (km/unit of time)
PAN	N/A	7.5	400-900	7077.9km ² /min
PAN	N/A	9.77	400-1000	7077.9km ² /min

a. Ability of the remote sensing instrument to slew, point, or digitally look off-axis from the x, y, and z axes of travel:

TBD

3. If any entity or individual other than the Licensee will own, control, or manage any *remote sensing instrument* in the System:

Name	Address	Number	Relationship
N/A	N/A	N/A	N/A

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4. Spacecraft Upon Which the Remote Sensing Instrument(s) is (are) carried
- Description:
MOCI (Multiview Onboard Computational Imager), a 6U CubeSat.
 - Estimated launch date(s) in calendar quarter:
NET Q4 2021
 - Number of spacecraft (system total and maximum in-orbit at one time):
1
 - For each spacecraft, provide the following (or if an entire constellation will have substantially the same orbital characteristics, provide these values for the entire constellation and note whether or not all spacecraft will be evenly spaced):

Spacecraft or Constellation Characteristics			
Altitude (km)	Inclination (°)	Orbital Period (min)	Longitude (°)
450-550	40-50	95	113
Eccentricity	Argument of perigee (°)	Propulsion	
0	179.113	No	

- Ability of the spacecraft to slew, point, or digitally look off-axis from the x, y, and z axes of travel:
MOCI will have an Attitude Determination and Control System (ADCS) that will be capable of precision slews along all axes for imaging, downlinking, and general detumbling.
5. If any entity or individual other than the Licensee will own, control, or manage any *spacecraft* in the System

Name	Address	Number	Relationship	Citizenship Status
N/A	N/A	N/A	N/A	N/A

6. Ground Components: See Ground Station Appendix

7. If any entity or individual other than the Licensee will own, control, or manage any *mission control center(s)* with the ability to operate the System

Name	Address	Number	Relationship
Alexandria Lin - W.	N/A	404-662-9399	MOCI Systems Engineer
W. Conor McFerren	N/A	770-362-7341	MOCI Mission Operations Team Lead

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8. Information Applicable to Multi-Spectral Imaging (MSI) and/or Hyper-Spectral Imaging (HSI).

Number of spectral bands	Individual spectral bandwidths
TBD	TBD

9. Information Applicable to Light Detection and Ranging (LIDAR) if used for remote sensing.

Type	Laser Wavelength (nm) / Pulse Frequency (MHz)	Laser pulse width (FWHM)	Spectral linewidth (FWHM)	Z/Elevation accuracy (m)
N/A	N/A	N/A	N/A	N/A

10. Information Applicable to Synthetic Aperture Radar (SAR).

Azimuth resolution	Range resolution	Signal to Noise Ratio	Polarization
N/A	N/A	N/A	N/A

Ground Station Appendix

NOAA must approve any Ground Station prior to the commencement of operations.

Type	Location	Coordinates
MCC	University of Georgia 210 Field St., Athens, GA 30602	33.94873° N -83.37548° E
Domestic		
RGT	University of Georgia Sanford Drive, Athens, GA 30602	

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Administrative Record Appendix

	<u>Date</u>	<u>Description of Administrative Action Taken</u>
1.	03/05/21	Issuance of new License

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