

File # SAT-MOD-2014-0912-00100

Call Sign S2912 Grant Date 10/23/14
(or other identifier)

Approved by OMB
3060-0678

Term Dates see
To: conditions

From 10/23/14
Approved: Stephen J. Duall

Stephen J. Duall
Chief, Satellite Policy Branch



Date & Time Filed: Sep 12 2014 8:22:58:023PM
File Number: SAT-MOD-20140912-00100

FCC APPLICATION FOR SPACE AND EARTH STATION:MOD OR AMD - MAIN FORM
FCC Use Only

FCC 312 MAIN FORM FOR OFFICIAL USE ONLY

APPLICANT INFORMATION

Enter a description of this application to identify it on the main menu:
Flock 1d and future ISS Flocks

1-8. Legal Name of Applicant

Name:	Planet Labs Inc.	Phone Number:	415-829-3313
DBA Name:		Fax Number:	415-534-8992
Street:	490 2nd Street Suite 101	E-Mail:	mike@planet.com
City:	San Francisco	State:	CA
Country:	USA	Zipcode:	94107 -
Attention:	Mr. Michael Safyan		

Attachment to Grant
IBFS File No. SAT-MOD-20140912-00100
Call Sign S2912

The application of Planet Labs, Inc. for modification of its license to launch and operate non-geostationary orbit (NGSO) Earth Exploration Satellite Service (EESS) satellites IS GRANTED, as conditioned below.¹ Specifically, Planet Labs is authorized to launch up to 500 additional NGSO satellites to the International Space Station (ISS) that are physically and technically identical to those previously authorized under Call Sign S2912. They will be deployed from the ISS into circular orbits at altitudes between 380 and 410 kilometers, at an inclination of 51.6 degrees.² These additional satellites are authorized to transmit remote-sensing and telemetry data to fixed earth stations in the 8025-8400 MHz frequency band, receive command signals in the 2025-2110 MHz band, and may use the 401-402 MHz and 449.75-450.25 MHz bands for early-phase and emergency-backup telemetry, tracking, and command operations. Operations under this authorization must be in accordance with the legal and technical parameters of Planet Labs' application and the Federal Communications Commission's rules, except as waived herein, and are subject to the following conditions:

1. Planet Labs must prepare the necessary information, as may be required, for submission to the International Telecommunication Union (ITU) to initiate and complete the advance publication, international coordination, due diligence, and notification process for these space stations, in accordance with the ITU Radio Regulations. Planet Labs shall be held responsible for all cost-recovery fees associated with ITU filings. No protection from interference caused by radio stations authorized by other administrations is guaranteed unless coordination and notification procedures are timely completed or, with respect to individual administrations, by successfully completing coordination agreements. Any radio station authorization for which coordination has not been completed may be subject to additional terms and conditions as required to effect coordination of the frequency assignments of other administrations. See 47 C.F.R. § 25.111(b).
2. The number of operational satellites that are initially deployed into altitudes between 380 and 410 kilometers must not exceed 56.
3. Transmissions of remote-sensing and telemetry data in the 8025-8400 MHz frequency band may only be made to and when within sight of the specifically located, identified and coordinated Earth stations identified within the referenced applications or authorizations.

¹ Planet Labs has previously been authorized to launch and operate 67 NGSO EESS satellites. Fifty six of the additional satellites were authorized to operate in circular orbits at initial altitudes between 380 and 410 kilometers ("Flock 1a" and "Flock 1b"). The other 11 satellites were authorized to operate in circular orbit at an initial altitude of 620 kilometers ("Flock 1c"). IBFS File Nos. SAT-LOA-20130626-00087 (granted December 3, 2013); SAT-MOD-20140321-00032 (grant stamp dated June 18, 2014).


² The estimated lifetime of the satellites deployed at altitudes between 380 and 410 kilometers is approximately 7 months. At these low altitudes, the orbits of such satellites will naturally decay, and the satellites will completely burn up in the atmosphere. IBFS File No. SAT-MOD-20140912-00100, Exhibit 43 at 4.

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4. Power flux-density from operation in the 8025-8400 MHz band must not exceed the limits in No. 22.5 or Table 21-4 of the International Telecommunication Union's Radio Regulations or the limits in ITU-R Recommendation SA-1157. 3.
5. Operations pursuant to this authorization must not cause harmful interference to stations operating in the 2025-2110 MHz band in accordance with the U.S. Table of Frequency Allocations. See 47 C.F.R. § 2.106, Footnote US347.
6. Given the opportunity for additional entrants to operate in the 8025-8400 MHz band, we grant Planet Lab's request for waiver of the modified processing round requirements of 47 C.F.R. §§ 25.156 and 25.157. See *DigitalGlobe, Inc.*, Order and Authorization, 20 FCC Rcd 15696 (Sat. Div., Int'l Bur. 2005), at Paragraph 8.
7. Because Planet Labs must comply with technical requirements in Part 2 of the Commission's rules and the above-referenced power flux-density limits, which should prevent harmful interference to other operators in the band, we grant its request for a waiver of the default service rules in 47 C.F.R. § 25.217(b). See *DigitalGlobe, Inc.*, *supra*, at Paragraph 15
8. Within 30 days after deployment of each satellite pursuant to this authorization, Planet Labs must file a notification with the Commission specifying its apogee and perigee altitudes and orbital inclination.
9. This authorization to launch up to 500 additional NGSO satellites for initial deployment in the 380-410 kilometer altitude range, and to operate those satellites, will become null and void if, at any time during the license term, there are no such satellites operating. This authorization may be subject to additional conditions, or a reduction in the number of authorized satellites, in the event future deployment rates do not justify an authorization for 56 operational satellites.
10. Planet Labs is subject to milestone and bond obligations imposed as conditions to a previous grant of authority to operate up to 28 NGSO satellites in the 8025-8400 MHz band. See IBFS File No. SAT-MOD-20140321-00032 (grant stamp dated June 18, 2014). Because of the extremely short orbital lifetimes (less than one year) of the Planet Labs satellites in this altitude range, and the resulting need for Planet Labs to continuously replenish its satellite constellation within the duration of its license term, we will not modify the prior bond condition in connection with this license modification to require launch of 56 satellites. We find that, following discharge of the bond requirement associated with IBFS File No. SAT-MOD-20140321-00032, warehousing concerns are addressed in this situation through the imposition of condition #9 above.
11. The authority granted herein is subject to the existing license term for operation under S2912, which expires February 28, 2029.

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12. This action is issued pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective immediately. Petitions for reconsideration under Section 1.106 or applications for review under Section 1.115 of the Commission's rules, 47 C.F.R. §§ 1.106 and 1.115, may be filed within 30 days of the date of the public notice indicating that this action was taken.

 GRANTED* International Bureau *with conditions	File # <u>SAT-MOD-20140912-00100</u>
	Call Sign <u>S2912</u> Grant Date <u>10/23/14</u> (or other identifier)
	Term Dates <u>see</u> From <u>10/23/14</u> To: <u>conditions</u>
	Approved: <u>Stephen J. Duall</u> Stephen J. Duall Chief, Satellite Policy Branch

9-16. Name of Contact Representative

Name: Planet Labs Inc. **Phone Number:** 415-829-3313
Company: **Fax Number:** 415-534-8992
Street: 490 2nd St. **E-Mail:** mike@planet.com
Suite 101
City: San Francisco **State:** CA
Country: USA **Zipcode:** 94107-
Attention: Mr. Michael Safyan **Relationship:** Engineer

CLASSIFICATION OF FILING

17. Choose the button next to the classification that applies to this filing for both questions a. and b. Choose only one for 17a and only one for 17b.

- a1. Earth Station
- a2. Space Station

- (N/A) b1. Application for License of New Station
- (N/A) b2. Application for Registration of New Domestic Receive-Only Station
- b3. Amendment to a Pending Application
- b4. Modification of License or Registration
- b5. Assignment of License or Registration
- b6. Transfer of Control of License or Registration
- b7. Notification of Minor Modification
- (N/A) b8. Application for License of New Receive-Only Station Using Non-U.S. Licensed Satellite
- (N/A) b9. Letter of Intent to Use Non-U.S. Licensed Satellite to Provide Service in the United States
- (N/A) b10. Other (Please specify)
- (N/A) b11. Application for Earth Station to Access a Non-U.S. satellite Not Currently Authorized to Provide the Proposed Service in the Proposed Frequencies in the United States
- (N/A) b12. Application for Database Entry
- b13. Amendment to a Pending Database Entry Application
- b14. Modification of Database Entry

<p>17c. Is a fee submitted with this application? <input checked="" type="radio"/> If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114). <input type="radio"/> Governmental Entity <input type="radio"/> Noncommercial educational licensee <input type="radio"/> Other (please explain):</p>	<p>17d.</p>
<p>Fee Classification CGW – Space Station Modification (Non-Geostationary)</p>	<p>18. If this filing is in reference to an existing station, enter: (a) Call sign of station: S2912</p>
<p>19. If this filing is an amendment to a pending application enter both fields, if this filing is a modification please enter only the file number: (a) Date pending application was filed: (b) File number: SATMOD2014032100032</p>	

TYPE OF SERVICE

20. NATURE OF SERVICE: This filing is for an authorization to provide or use the following type(s) of service(s): Select all that apply:

- a. Fixed Satellite
- b. Mobile Satellite
- c. Radiodetermination Satellite
- d. Earth Exploration Satellite
- e. Direct to Home Fixed Satellite
- f. Digital Audio Radio Service
- g. Other (please specify)

21. STATUS: Choose the button next to the applicable status. Choose only one.

- Common Carrier
- Non-Common Carrier

22. If earth station applicant, check all that apply.

- Using U.S. licensed satellites
- Using Non-U.S. licensed satellites

23. If applicant is providing INTERNATIONAL COMMON CARRIER service, see instructions regarding Sec. 214 filings. Choose one. Are these facilities:

- Connected to a Public Switched Network
- Not connected to a Public Switched Network

24. FREQUENCY BAND(S): Place an 'X' in the box(es) next to all applicable frequency band(s).

- a. C-Band (4/6 GHz)
 - b. Ku-Band (12/14 GHz)
 - c. Other (Please specify upper and lower frequencies in MHz.)
- Frequency Lower: 401 Frequency Upper: 8400 (Please specify additional frequencies in an attachment)

TYPE OF STATION

25. CLASS OF STATION: Choose the button next to the class of station that applies. Choose only one.

- a. Fixed Earth Station
- b. Temporary-Fixed Earth Station
- c. 12/14 GHz VSAT Network
- d. Mobile Earth Station
- e. Geostationary Space Station
- f. Non-Geostationary Space Station
- g. Other (please specify)

26. TYPE OF EARTH STATION FACILITY:

- Transmit/Receive
- Transmit-Only
- Receive-Only
- N/A

"For Space Station applications, select N/A."

PURPOSE OF MODIFICATION

27. The purpose of this proposed modification is to: (Place an 'X' in the box(es) next to all that apply.)

- a --- authorization to add new emission designator and related service
- b --- authorization to change emission designator and related service
- c --- authorization to increase EIRP and EIRP density
- d --- authorization to replace antenna
- e --- authorization to add antenna
- f --- authorization to relocate fixed station
- g --- authorization to change frequency(ies)
- h --- authorization to add frequency
- i --- authorization to add Points of Communication (satellites & countries)
- j --- authorization to change Points of Communication (satellites & countries)
- k --- authorization for facilities for which environmental assessment and radiation hazard reporting is required
- l --- authorization to change orbit location
- m --- authorization to perform fleet management
- n --- authorization to extend milestones
- o --- Other (Please specify)

ENVIRONMENTAL POLICY

28. Would a Commission grant of any proposal in this application or amendment have a significant environmental impact as defined by 47 CFR 1.1307? If YES, submit the statement as required by Sections 1.1308 and 1.1311 of the Commission's rules, 47 C.F.R. 1.1308 and 1.1311, as an exhibit to this application. A Radiation Hazard Study must accompany all applications for new transmitting facilities, major modifications, or major amendments.

Yes No

Flock 1d ODAR

ALIEN OWNERSHIP Earth station applicants not proposing to provide broadcast, common carrier, aeronautical en route or aeronautical fixed radio station services are not required to respond to Items 30-34.

29. Is the applicant a foreign government or the representative of any foreign government?

Yes No

30. Is the applicant an alien or the representative of an alien?

Yes No N/A

31. Is the applicant a corporation organized under the laws of any foreign government?

Yes No N/A

32. Is the applicant a corporation of which more than one-fifth of the capital stock is owned of record or voted by aliens or their representatives or by a foreign government or representative thereof or by any corporation organized under the laws of a foreign country?

Yes No N/A

<p>33. Is the applicant a corporation directly or indirectly controlled by any other corporation of which more than one-fourth of the capital stock is owned of record or voted by aliens, their representatives, or by a foreign government or representative thereof or by any corporation organized under the laws of a foreign country?</p>	<p> <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> N/A </p>
<p>34. If any answer to questions 29, 30, 31, 32 and/or 33 is Yes, attach as an exhibit an identification of the aliens or foreign entities, their nationality, their relationship to the applicant, and the percentage of stock they own or vote.</p>	

BASIC QUALIFICATIONS

<p>35. Does the Applicant request any waivers or exemptions from any of the Commission's Rules? If Yes, attach as an exhibit, copies of the requests for waivers or exceptions with supporting documents.</p>	<p> <input checked="" type="radio"/> Yes <input type="radio"/> No </p>
<p>36. Has the applicant or any party to this application or amendment had any FCC station authorization or license revoked or had any application for an initial, modification or renewal of FCC station authorization, license, or construction permit denied by the Commission? If Yes, attach as an exhibit, an explanation of circumstances.</p>	<p> <input type="radio"/> Yes <input checked="" type="radio"/> No </p>

<p>37. Has the applicant, or any party to this application or amendment, or any party directly or indirectly controlling the applicant ever been convicted of a felony by any state or federal court? If Yes, attach as an exhibit, an explanation of circumstances.</p>	<p style="text-align: center;"> <input type="radio"/> Yes <input checked="" type="radio"/> No </p>
<p>38. Has any court finally adjudged the applicant, or any person directly or indirectly controlling the applicant, guilty of unlawfully monopolizing or attempting unlawfully to monopolize radio communication, directly or indirectly, through control of manufacture or sale of radio apparatus, exclusive traffic arrangement or any other means or unfair methods of competition? If Yes, attach as an exhibit, an explanation of circumstances</p>	<p style="text-align: center;"> <input type="radio"/> Yes <input checked="" type="radio"/> No </p>
<p>39. Is the applicant, or any person directly or indirectly controlling the applicant, currently a party in any pending matter referred to in the preceding two items? If yes, attach as an exhibit, an explanation of the circumstances.</p>	<p style="text-align: center;"> <input type="radio"/> Yes <input checked="" type="radio"/> No </p>
<p>40. If the applicant is a corporation and is applying for a space station license, attach as an exhibit the names, address, and citizenship of those stockholders owning a record and/or voting 10 percent or more of the Filer's voting stock and the percentages so held. In the case of fiduciary control, indicate the beneficiary(ies) or class of beneficiaries. Also list the names and addresses of the officers and directors of the Filer.</p>	

<p>41. By checking Yes, the undersigned certifies, that neither applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. See 47 CFR 1.2002(b) for the meaning of &quot;party to the application&quot;; for these purposes.</p>	<p style="text-align: right;"> <input checked="" type="radio"/> Yes <input type="radio"/> No </p>
<p>42a. Does the applicant intend to use a non-U.S. licensed satellite to provide service in the United States? If Yes, answer 42b and attach an exhibit providing the information specified in 47 C.F.R. 25.137, as appropriate. If No, proceed to question 43.</p>	<p style="text-align: right;"> <input type="radio"/> Yes <input checked="" type="radio"/> No </p>
<p>42b. What administration has licensed or is in the process of licensing the space station? If no license will be issued, what administration has coordinated or is in the process of coordinating the space station?</p>	
<p>43. Description. (Summarize the nature of the application and the services to be provided). (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>Planet Labs Inc. requests modification of its authorization to operate a NGSO EESS space station license, Call Sign S2912, to maintain up to 56 satellites in a 'ISS' orbit over the next 10 years, which requires launch authorization of up to 500 technically identical satellites over the 10 year duration. See Exhibit 43 for additional information.</p> </div> <p>Exhibit 43</p>	

43a. Geographic Service Rule Certification

By selecting A, the undersigned certifies that the applicant is not subject to the geographic service or geographic coverage requirements specified in 47 C.F.R. Part 25.

A

By selecting B, the undersigned certifies that the applicant is subject to the geographic service or geographic coverage requirements specified in 47 C.F.R. Part 25 and will comply with such requirements.

B

By selecting C, the undersigned certifies that the applicant is subject to the geographic service or geographic coverage requirements specified in 47 C.F.R. Part 25 and will not comply with such requirements because it is not feasible as a technical matter to do so, or that, while technically feasible, such services would require so many compromises in satellite design and operation as to make it economically unreasonable. A narrative description and technical analysis demonstrating this claim are attached.

C

CERTIFICATION

The Applicant waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and requests an authorization in accordance with this application. The applicant certifies that grant of this application would not cause the applicant to be in violation of the spectrum aggregation limit in 47 CFR Part 20. All statements made in exhibits are a material part hereof and are incorporated herein as if set out in full in this application. The undersigned, individually and for the applicant, hereby certifies that all statements made in this application and in all attached exhibits are true, complete and correct to the best of his or her knowledge and belief, and are made in good faith.

44. Applicant is a (an): (Choose the button next to applicable response.)

- Individual
- Unincorporated Association
- Partnership
- Corporation
- Governmental Entity
- Other (please specify)

45. Name of Person Signing
Michael Safyan



46. Title of Person Signing
Director of Launch and Regulatory

WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND / OR IMPRISONMENT
(U.S. Code, Title 18, Section 1001), AND/OR REVOCATION OF ANY STATION AUTHORIZATION
(U.S. Code, Title 47, Section 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, Section 503).

FCC NOTICE REQUIRED BY THE PAPERWORK REDUCTION ACT

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THE FOREGOING NOTICE IS REQUIRED BY THE PAPERWORK REDUCTION ACT OF 1995, PUBLIC LAW 104-13, OCTOBER 1, 1995, 44 U.S.C. SECTION 3507.

EXHIBIT 43

Planet Labs Inc.
License Application
FCC Form 312
September 2014

Description of Application

With this application, Planet Labs Inc. (“Planet Labs”) requests modification of its authorization to operate a non-geostationary (“NGSO”) Earth imagery satellite system, Call Sign S2912. As detailed in the application below, Planet Labs intends to continuously maintain and operate a constellation of up to **fifty six (56)** technically identical satellites via deployments from the International Space Station (“ISS”). Due to the low altitude of the ISS, and thus the short orbital lifetime of the Planet Labs satellites, a continuous series of replenishment launches is required to maintain such a constellation. In light of this need, Planet Labs requests authorization to launch a total of up to five hundred (500) technically identical satellites to the “ISS orbit” over the next 10 years, with the number of simultaneously operational satellites in the ISS orbit never exceeding fifty six (56). Along with the currently authorized eleven (11) satellites of Flock 1c, a total number of sixty seven (67) active Planet Labs satellites will be maintained on orbit. Further additions to the Planet Labs satellite network are still in the planning stages and will be addressed in future license modifications. Only new information is provided in this narrative; all other information remains identical to the currently authorized satellite systems.¹

Planet Labs anticipates launching an additional twenty six (26) identical satellites, collectively known as Flock 1d, as early as October 14, 2014, followed by a series of similar launches spaced approximately 6 months apart over the next 10 years. As was the case with Flock 1 and Flock 1b, Flock 1d (and all future “ISS Flocks”) will be transported to the ISS aboard a cargo resupply mission and ejected from the ISS to an altitude between 380 and 410 km, 51.6° inclination. As the orbit naturally decays, operations of the X-band and S-band links will continue down to 300 km altitude, and operations of the UHF links will continue down to 200 km altitude. Flock 1d is currently scheduled to deploy from the ISS as early as January 2015, and future “ISS Flocks” will typically deploy 1 to 3 months from the time of launch.

Planet Labs has already submitted an application for license from the National Oceanic and Atmospheric Administration (“NOAA”) to operate Flock 1d, which is a private remote sensing space system, and will continue to seek license from NOAA for all future launches. Planet Labs has previously received license to operate from NOAA for Flock 1, Flock 1b and Flock 1c.²

¹ See File No. SAT-LOA-20130626-00087 (granted 12/03/13, Call Sign S2912) and File No. SAT-MOD-20140321-00032 (granted 06/18/14, Call Sign S2912).

² See Planet Labs Inc. License from National Oceanic and Atmospheric Administration to Operate a Private Remote Sensing Space System for Flock 1, 1b and 1c (Access at <http://www.nesdis.noaa.gov/CRSRA/licenseHome.html>).

Timely deployment of the proposed satellite systems will enable Planet Labs to guarantee uninterrupted operations of the unique imaging services being provided to customers in the U.S. and around the world. To the extent necessary to enable Commission action prior to the launch of Flock 1d as early as October 14, 2014, Planet Labs respectfully requests expedited consideration of this request for launch and operation authority. In support of its request for authorization, Planet Labs offers the following information concerning its proposed satellite system.

I. Description of the Applicant

Planet Labs Inc. is a U.S. company funded by private investment and is headquartered in San Francisco, California. Planet Labs was initially incorporated in Delaware in December, 2010 under the name Cosmogia Inc., and the name of the corporation was legally changed to Planet Labs Inc. in June 2013. Planet Labs designs, constructs and operates small Earth imagery satellites, and provides Earth imagery products on a commercial basis to a variety of customers.

Planet Labs launched and operated two successful experimental missions, Dove 1 and Dove 2, in April 2013.³ Planet Labs also launched, and continues to operate, a third successful experimental mission, Dove 3, in November 2013.⁴

Once the satellite technology was matured via the experimental missions, Planet Labs began launching operational constellations. Planet Labs launched Flock 1, an operational constellation of 28 identical satellites, to the ISS in January 2014 under Call Sign S2912. Flock 1 was gradually deployed from the ISS throughout the month of February 2014 and successfully operated for approximately 5 months until the satellites began to deorbit and completely burn up via atmospheric decay. Planet Labs also launched Flock 1c in June 2014, a constellation of 11 identical satellites, to a 620 x 620 km Sun Synchronous Orbit (SSO), under Call Sign S2912, which continues to operate and has an expected operational lifetime of at least 2 years. Planet Labs then launched Flock 1b in July 2014 to the ISS, a constellation of 28 satellites to replace Flock 1, also under Call Sign S2912. The Flock 1b satellites are currently undergoing their deployment campaign, which is expected to complete sometime in January 2015. The physical and technical design of the proposed Flock 1d and future "ISS Flock" satellites are identical to that of Flock 1, Flock 1b and Flock 1c.

II. Information Required Under Section 25.114(d) of the Commission's Rules

A. General Description of Overall Facilities, Operations and Services

The proposed satellite system will consist of a space segment comprised of the following identical satellites:

- "ISS Flocks", up to 56 active satellites
- Flock 1c, 11 satellites
- Total of 67 satellites

And a ground segment comprised of earth stations located in:

- Brewster, WA⁵
- Fairbanks, AK (planned)⁶
- Maddock, ND (planned)
- Half Moon Bay, CA (UHF TT&C-only)⁷

³ See FCC OET file number 0898-EX-ST-2012 and 0100-EX-PL-2012, respectively.

⁴ See FCC OET file number 0548-EX-PL-2012.

⁵ See SES-MOD-20140630-00551 (filed 06/30/2014, Call Sign E990069).

⁶ The Fairbanks, AK earth station site will not be visible to Flock 1d or any other ISS Flocks. This site is planned for use with Flock 1c and any future SSO satellites.

- Fargo, ND (UHF TT&C-only)⁸
- Morehead, KY (UHF TT&C-only)⁹
- Las Cruces, NM (planned, UHF TT&C-only)

along with other earth stations located in:

- Goonhilly, United Kingdom
- Awarua, New Zealand
- Usingen, Germany
- Ningi, Australia

All 26 Flock 1d satellites will be transported to the International Space Station (ISS) via a single Resupply Flight on Orbital Science's Antares launch vehicle no earlier than October 14, 2014. Once the 26 satellites have been delivered to the ISS, they will gradually be deployed into orbit starting as early as January 2015. All future "ISS Flocks" will be delivered to the ISS and deployed into orbit in a similar manner. The orbital period of the "ISS Flock" satellites, including Flock 1d, will be approximately 92 minutes. The nominal lifetime of the "ISS Flock" satellites, including Flock 1d, will be approximately 7 months. As was the case with Flock 1, all "ISS Flock" satellites, including Flock 1d, will naturally decay and the satellites will completely burn up in the atmosphere.

B. Power Flux Density Calculation

1. Power Flux Density at the Surface of the Earth in the band 8025-8400 MHz

The "ISS Flock" satellites, including Flock 1d, will operate in the same altitude band as Flock 1, and thus the power flux density (PFD) levels at the surface of the Earth will be identical to that of Flock 1, which was shown under all scenarios to be within the limits set forth in the ITU Radio Regulations Table 21-4.¹⁰

2. Power Flux Density at the Geostationary Satellite Orbit

The "ISS Flock" satellites, including Flock 1d, will operate in the same altitude band as Flock 1, and thus the power flux density (PFD) levels at GSO will be identical to that of Flock 1, which was shown under all scenarios to be within the limits set forth in the ITU Radio Regulations No. 22.5.¹¹

⁷ See SES-LIC-20140318-00146 (granted 06/30/2014, Call Sign E140036)

⁸ See SES-LIC-20140411-00283 (granted 06/26/2014, Call Sign E140041)

⁹ See SES-LIC-20140411-00282 (granted 06/25/2014, Call Sign E140040)

¹⁰ See Planet Labs Inc., SAT-LOA-20130626-00087 (granted December 03, 2013).

¹¹ *Ibid.*

C. Interference Analysis

1. Interference between EESS systems operating in the band 8025-8400 MHz

Interference between the Planet Labs satellites and those of other systems is unlikely because EESS systems operating in the 8025-8400 MHz band normally transmit only in short periods of time while visible from the dedicated receiving earth stations. For the interference to happen, satellites belonging to different systems would have to travel through the narrow antenna beam of the receiving earth station and transmit at the same time. In such an unlikely event, the interference can be still be avoided by coordinating the satellite transmissions amongst the various EESS users so that they do not occur simultaneously.

D. Public Interest Considerations

The grant of this application will permit Planet Labs to continue to launch and operate a state-of-the-art remote sensing satellite system. The data produced by the Planet Labs satellites will empower users to make better decisions and will help enable a more sustainable planet. Planet Labs will provide a unique data set of global-coverage, frequently updated imagery that is currently unavailable from private sector or government remote sensing providers. In addition to traditional consumers of remote sensing data, Planet Labs will provide direct benefit to environmental and humanitarian organizations that historically have not had access to this extent of imagery. This service will compliment existing offerings in the remote sensing market and will help promote new users and applications.

E. Orbital Debris Mitigation

Planet Labs has conducted an Orbital Debris Assessment Report (“ODAR”) for the Flock 1d satellites in compliance with NASA-STD-8719.14, Appendix A, which is attached as a separate exhibit and is also representative of all future “ISS Flocks”. As discussed in the submitted ODAR, the Flock 1d satellite systems, and thus all future “ISS Flocks”, are compliant with all applicable orbital debris requirements as listed in Section 25.114(d)(14).

III. Additional/General Considerations

A. **Waiver Request of Modified Processing Round Rules**

Planet Labs requests that this application be processed pursuant to the first-come, first-served procedure adopted for “GSO-like satellite systems” under Section 25.158 of the Commission’s rules.¹² To the extent necessary to allow for such processing, Planet Labs also requests waiver of Sections 25.156 and 25.157 of the Commission’s rules, which stipulate the processing of “NGSO-like satellite systems” under a modified processing round framework.¹³¹⁴ The Commission has previously waived the modified processing round requirement and allowed a number of EESS NGSO satellite systems to be processed on a first-come, first-served basis, including the original Planet Labs authorization.¹⁵¹⁶¹⁷

Planet Labs’ system is fully capable of sharing with current and future NGSO systems operating in the same frequency bands, even with the proposed additional satellites. Spectrum sharing will be possible because the Planet Labs satellites and satellites in other systems transmit only in short periods of time while visible from a limited number of dedicated receiving earth stations. For harmful interference to occur, satellites belonging to different systems would have to travel through the narrow antenna beam of the receiving earth station and transmit at the exact same time. In such an unlikely event, the resulting interference can still be avoided by coordinating the satellite transmission so that they do not occur simultaneously. For these reasons, the waiver request here is fully warranted because waiving Sections 25.156 and 25.157 will not undermine the policy objectives of those rules.

B. **Waiver Request of Default Service Rules**

Planet Labs requests a waiver of the default service rules under Section 25.217(b) of the Commission’s rules¹⁸. Although the Commission has not adopted band-specific rules for EESS NGSO operations in the 8025-8400 MHz band, the Commission has previously granted a waiver of the default service rules contained in Section 25.217(b) to NGSO EESS system licensees, based on the fact that EESS operators in the 8025-8400 MHz band are required to comply with technical requirements in Part 2 of the Commission’s rules and applicable ITU rules¹⁹. In these cases, the Commission concluded that because the cited requirements had been sufficient to prevent harmful interference in the 8025-8400 MHz band, there was no need to impose additional technical requirements on operations in that band, and therefore granted the waiver requests. For these same reasons, the Commission should grant Planet Labs a waiver of the default service rules contained in Section 25.217(b).

¹² See 47 C.F.R. § 25.158.

¹³ See 47 C.F.R. §§ 25.156 & 25.157.

¹⁴ See 47 C.F.R. § 1.3; *WAIT Radio v. FCC*, 418 F.2d 1153 (D.C. Cir. 1969) (“*WAIT Radio*”); *Northeast Cellular Telephone Co. v. FCC*, 897 F.2d 1164 (D.C. Cir. 1990) (“*Northeast Cellular*”).

¹⁵ See *Space Imaging, LLC*, 20 FCC Rcd 11694, 11968 (2005). See also *Stamp Grant, Skybox Imaging, Inc., SAT-LOA-20120322-00058* (granted September 20, 2012).

¹⁶ *Id.* See also *DigitalGlobe, Inc.*, 20 FCC Rcd 15696, 15699 (2005) (waiving Sections 25.156 and 25.157). See also *Stamp Grant, Skybox Imaging, Inc., SAT-LOA-20120322-00058* (granted September 20, 2012).

¹⁷ See *Stamp Grant, Planet Labs Inc., SAT-LOA-20130626-00087* (granted December 03, 2013).

¹⁸ See 47 C.F.R. § 25.217.

¹⁹ See *Space Imaging*, 20 FCC Rcd at 11973; *DigitalGlobe*, 20 FCC Rcd at 15701-02 (2005). See also *Stamp Grant, Skybox Imaging, Inc., SAT-LOA-20120322-00058* (granted September 20, 2012).

C. Form 312, Schedule S

As required by the Commission's rules and policies, Planet Labs has completed the FCC Form 312, Schedule S submission that reflects the orbital and physical/electrical characteristics of the Planet Labs satellite network.

D. Implementation Milestones

Planet Labs intends to supply the Commission with information sufficient to demonstrate that it has already satisfied the first three implementation milestones under Section 25.164(b) for NGSO systems in a separate submission. Planet Labs understands that in the absence of a favorable Commission determination of milestone compliance issued with the grant of this application or within 30 days thereafter, the full amount of the bond specified in Section 25.165(a)(1) will be required.

E. ITU Advance Publication Materials and Cost Recovery

Planet Labs has prepared the International Telecommunication Union ("ITU") Advance Publication Information submission for its proposed non-geostationary EESS system, and will provide this information to the Commission under separate cover. In particular, Planet Labs will provide an electronic file with this information to the Satellite Engineering Branch of the Satellite Division of the Commission's International Bureau. Planet Labs will also provided a letter acknowledging that it is responsible for any and all cost recovery fees associated with filings for the proposed system under ITU Council Decision 482 (modified 2008), as it may be modified or succeeded in the future.

In sum, Planet Labs respectfully requests the Commission to grant the application for launch and operation authority as detailed herein. To the extent necessary, Planet Labs requests expedited consideration of this Application in order to ensure favorable Commission action in advance of the scheduled October 14, 2014 launch of Flock 1d.