

Approved by OMB  
3060-0678

Date & Time Filed:  
File Number: ---  
Callsign/Satellite ID:

<b>APPLICATION FOR EARTH STATION AUTHORIZATIONS</b>	<b>FCC Use Only</b>
<b>FCC 312 MAIN FORM FOR OFFICIAL USE ONLY</b>	

**APPLICANT INFORMATION**

Enter a description of this application to identify it on the main menu:  
Swarm Sussex NJ Gateway Earth Station Application

1-8. Legal Name of Applicant			
Name:	Swarm Technologies, Inc.	Phone Number:	608-225-3173
DBA Name:		Fax Number:	
Street:	845 Madonna Way	E-Mail:	sara@swarm.space
City:	Los Altos	State:	CA
Country:	USA	Zipcode:	94024 -
Attention:	Dr. Sara Spangelo		

9-16. Name of Contact Representative			
Name:	Kalpak Gude	Phone Number:	202-437-4484
Company:	Swarm Technologies, Inc.	Fax Number:	
Street:	845 Madonna Way	E-Mail:	kalpak@swarm.space
City:	Los Altos	State:	CA
Country:	USA	Zipcode:	94024-
Attention:	Kalpak Gude	Relationship:	Same

**CLASSIFICATION OF FILING**

<p>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.</p> <p>a.</p> <p><input checked="" type="radio"/> a1. Earth Station (N/A) a2. Space Station</p>	<p>b.</p> <p><input checked="" type="radio"/> b1. Application for License of New Station  <input type="radio"/> b2. Application for Registration of New Domestic Receive-Only Station  (N/A) b3. Amendment to a Pending Application  (N/A) b4. Modification of License or Registration  (N/A) b5. Assignment of License or Registration  (N/A) b6. Transfer of Control of License or Registration  (N/A) 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  <input type="radio"/> b10. Other (Please specify)  <input type="radio"/> 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.</p>
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<p>17c. Is a fee submitted with this application?</p> <p><input checked="" type="radio"/> If Yes, complete and attach FCC Form 159.</p> <p>If No, indicate reason for fee exemption (see 47 C.F.R.Section 1.1114).</p> <p><input type="radio"/> Governmental Entity <input type="radio"/> Noncommercial educational licensee  <input type="radio"/> Other(please explain):</p>
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17d.

## Fee Classification BAX - Fixed Satellite Transmit/Receive Earth Station

18. If this filing is in reference to an existing station, enter:

(a) Call sign of station:  
Not Applicable

19. If this filing is an amendment to a pending application enter:

(a) Date pending application was filed:

(b) File number of pending application:

Not Applicable

Not Applicable

## 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  N/A

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: 137.00 Frequency Upper: 149.95

## 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
- (N/A) e. Geostationary Space Station
- (N/A) f. Non-Geostationary Space Station
- g. Other (please specify)

26. TYPE OF EARTH STATION FACILITY: Choose only one.

 Transmit/Receive  Transmit-Only  Receive-Only  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.)

Not Applicable

## 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

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?	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> N/A
31. Is the applicant a corporation organized under the laws of any foreign government?	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> 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?	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> N/A
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?	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> N/A
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.	

**BASIC QUALIFICATIONS**

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.	<input type="radio"/> Yes <input checked="" type="radio"/> No
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.	<input checked="" type="radio"/> Yes <input type="radio"/> No
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.	<input type="radio"/> Yes <input checked="" type="radio"/> No
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	<input type="radio"/> Yes <input checked="" type="radio"/> No
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.	<input type="radio"/> Yes <input checked="" type="radio"/> No
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.	
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. <i>See 47 CFR 1.2002(b) for the meaning of "party to the application" for these purposes.</i>	
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.	<input type="radio"/> Yes <input checked="" type="radio"/> No
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?	
43. Description. (Summarize the nature of the application and the services to be provided). Swarm seeks authority for a new gateway earth station located in Sussex, NJ to communicate with its non-geostationary, non-voice mobile-satellite service system.	
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. <input checked="" type="radio"/> <b>A</b>	
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. <input type="radio"/> <b>B</b>	

C

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.

**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  
Dr. Sara Spangelo

46. Title of Person Signing  
CEO

47. Please supply any need attachments.

Attachment 1:

Attachment 2:

Attachment 3:

**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).**

**SATELLITE EARTH STATION AUTHORIZATIONS  
FCC Form 312 - Schedule B:(Technical and Operational Description)**

**FOR OFFICIAL USE ONLY**

Location of Earth Station Site

E1: Site Identifier:	Sussex NJ Gateway	E5: Call Sign:	
E2: Contact Name	Benjamin Longmier	E6: Phone Number:	608-225-3173
E3: Street:	11 Edsall Drive	E7: City:	Sussex
E4: State	NJ	E8: County:	Sussex
E10: Area of Operation:		E9: Zip Code	07462
E11: Latitude:	41 ° 23 ' 7.7 " N		
E12: Longitude:	74 ° 31 ' 37.9 " W		
E13: Lat/Lon Coordinates are:		<input type="radio"/> NAD-27	<input checked="" type="radio"/> NAD-83 <input type="radio"/> N/A
E14: Site Elevation (AMSL):	228.0 meters		

E15. If the proposed antenna(s) operate in the Fixed Satellite Service (FSS) with geostationary satellites, do(es) the proposed antenna(s) comply with the antenna gain patterns specified in Section 25.209(a) and (b) as

Yes  No  N/A

demonstrated by the manufacturer's qualification measurement? If NO, provide a technical analysis showing compliance with two-degree spacing policy.	
E16. If the proposed antenna(s) do not operate in the Fixed Satellite Service (FSS), or if they operate in the Fixed Satellite Service (FSS) with non-geostationary satellites, do(es) the proposed antenna(s) comply with the antenna gain patterns specified in Section 25.209(a2) and (b) as demonstrated by the manufacturer's qualification measurements?	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> N/A
E17. Is the facility operated by remote control? If YES, provide the location and telephone number of the control point.	<input checked="" type="radio"/> Yes <input type="radio"/> No
E18. Is frequency coordination required? If YES, attach a frequency coordination report as	<input type="radio"/> Yes <input checked="" type="radio"/> No
E19. Is coordination with another country required? If YES, attach the name of the country(ies) and plot of coordination contours as	<input type="radio"/> Yes <input checked="" type="radio"/> No
<b>E20. FAA Notification - (See 47 CFR Part 17 and 47 CFR part 25.113(c)) Where FAA notification is required, have you attached a copy of a completed FCC Form 854 and or the FAA's study regarding the potential hazard of the structure to aviation? FAILURE TO COMPLY WITH 47 CFR PARTS 17 AND 25 WILL RESULT IN THE RETURN OF THIS APPLICATION.</b>	<input type="radio"/> Yes <input checked="" type="radio"/> No

**POINTS OF COMMUNICATION**

Satellite Name: OTHER   OTHER   If you selected OTHER, please enter the following:	
E21. Common Name: Swarm 1	E22. ITU Name: USASAT-NGSO-7
E23. Orbit Location: NGSO	E24. Country: USA

**POINTS OF COMMUNICATION (Destination Points)**

E25. Site Identifier: Sussex NJ Gateway	
E26. Common Name:	E27. Country: USA

**ANTENNA**

Site ID	E28. Antenna Id	E29. Quantity	E30. Manufacturer	E31. Model	E32. Antenna Size	E41/42. Antenna Gain Transmint and/or Recieve(____ dBi at ____ GHz)
Sussex NJ Gateway	W1/2	1	Swarm	001	1.1	2.0 dBi at 0.138
						2.0 dBi at 0.148
	COLINEAR			002	3.0	5.5 dBi at 0.138
						5.5 dBi at 0.148
	QFH			003	1.6	0.0 dBi at 0.138
						0.0 dBi at 0.148
	YAGI			004	1.7	11.0 dBi at 0.138
						11.0 dBi at 0.148
	W1/4			005	0.55	2.0 dBi at 0.138
						2.0 dBi at 0.148

E28. Antenna Id	E33/34. Diameter Minor/Major(meters)	E35. Above Ground Level (meters)	E36. Above Sea Level (meters)	E37. Building Height Above Ground Level (meters)	E38. Total Input Power at antenna flange (Watts)	E39. Maximum Antenna Height Above Rooftop (meters)	E40. Total EIRP for al carriers (dBW)
W1/2	0.0/0.0	7.1	235.1	6.0	10.0	1.1	12.0
COLINEAR	0.0/0.0	9.0	237.0	6.0	10.0	3.0	15.5
QFH	0.0/0.0	7.6	235.6	6.0	10.0	1.6	10.0
YAGI	0.0/0.0	7.7	235.7	6.0	10.0	1.7	21.0

W1/4	0.0/0.0	6.6	243.6	6.0	10.0	0.6	12.0
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**FREQUENCY**

<b>E28. Antenna Id</b>	<b>E43/44. Frequency Bands(MHz)</b>	<b>E45. T/R Mode</b>	<b>E46. Antenna Polarization(H,V,L,R)</b>	<b>E47. Emission Designator</b>	<b>E48. Maximum EIRP per Carrier(dBW)</b>	<b>E49. Maximum ERIP Density per Carrier(dBW/4kHz)</b>
W1/2	137 138	R	Vertical	125KF1D	0.0	0.0
E50. Modulation and Services FSK / data (non-voice)						
W1/2	137 138	R	Vertical	7K80F1D	0.0	0.0
E50. Modulation and Services FSK / data (non-voice)						
W1/2	148 149.95	T	Vertical	250KF1D	12.0	-6.0
E50. Modulation and Services FSK / data (non-voice)						
W1/2	148 149.95	T	Vertical	7K80F1D	12.0	9.1
E50. Modulation and Services FSK / data (non-voice)						
COLINEAR	137 138	R	Vertical	125KF1D	0.0	0.0
E50. Modulation and Services FSK / data (non-voice)						
COLINEAR	137 138	R	Vertical	7K80F1D	0.0	0.0
E50. Modulation and Services FSK / data (non-voice)						
COLINEAR	148 149.95	T	Vertical	250KF1D	15.5	-2.5
E50. Modulation and Services FSK / data (non-voice)						
COLINEAR	148 149.95	T	Vertical	7K80F1D	15.5	12.6
E50. Modulation and Services FSK / data (non-voice)						
QFH	137 138	R	Left Hand Circular	125KF1D	0.0	0.0
E50. Modulation and Services FSK / data (non-voice)						
QFH	137 138	R	Left Hand Circular	7K80F1D	0.0	0.0
E50. Modulation and Services FSK / data (non-voice)						
QFH	148 149.95	T	Left Hand Circular	250KF1D	10.0	-8.0
E50. Modulation and Services FSK / data (non-voice)						
QFH	148 149.95	T	Left Hand Circular	7K80F1D	10.0	7.1
E50. Modulation and Services FSK / data (non-voice)						
YAGI	137 138	R	Vertical	125KF1D	0.0	0.0
E50. Modulation and Services FSK / data (non-voice)						
YAGI	137 138	R	Vertical	7K80F1D	0.0	0.0
E50. Modulation and Services FSK / data (non-voice)						
YAGI	148 149.95	T	Vertical	250KF1D	21.0	3.0
E50. Modulation and Services FSK / data (non-voice)						
YAGI	148 149.95	T	Vertical	7K80F1D	21.0	18.1
E50. Modulation and Services FSK / data (non-voice)						
W1/4	137 138	R	Vertical	125KF1D	0.0	0.0
E50. Modulation and Services FSK / data (non-voice)						
W1/4	137 138	R	Vertical	7K80F1D	0.0	0.0
E50. Modulation and Services FSK / data (non-voice)						
W1/4	148 149.95	T	Vertical	250KF1D	12.0	-6.0
E50. Modulation and Services FSK / data (non-voice)						
W1/4	148 149.95	T	Vertical	7K80F1D	12.0	9.1

## E50. Modulation and Services FSK / data (non-voice)

## FREQUENCY COORDINATION

E28. Antenna Id	E51. Satellite Orbit Type	E52/53. Frequency Limits(MHz)	E54/55. Range of Satellite Arc E/W Limit	E56. Earth Station Azimuth Angle Eastern Limit	E57. Antenna Elevation Angle Eastern Limit	E58. Earth Station Azimuth Angle Western Limit	E59. Antenna Elevation Angle Western Limit	E60. Maximum EIRP Density toward the Horizon(dBW/4kHz)
W1/2	Non-Geostationary	137 138	0.0/ 0.0	0.0	5.0	0.0	5.0	0.0
	Non-Geostationary	148 149.95	0.0/ 0.0	0.0	5.0	0.0	5.0	-39.9
COLINEAR	Non-Geostationary	137 138	0.0/ 0.0	0.0	5.0	0.0	5.0	0.0
	Non-Geostationary	148 149.95	0.0/ 0.0	0.0	5.0	0.0	5.0	-44.9
QFH	Non-Geostationary	137 138	0.0/ 0.0	0.0	5.0	0.0	5.0	0.0
	Non-Geostationary	148 149.95	0.0/ 0.0	0.0	5.0	0.0	5.0	-35.9
YAGI	Non-Geostationary	137 138	0.0/ 0.0	0.0	5.0	0.0	5.0	0.0
	Non-Geostationary	148 149.95	0.0/ 0.0	0.0	5.0	0.0	5.0	-47.9
W1/4	Non-Geostationary	137 138	0.0/ 0.0	0.0	5.0	0.0	5.0	0.0
	Non-Geostationary	148 149.95	0.0/ 0.0	0.0	5.0	0.0	5.0	-39.9

## REMOTE CONTROL POINT LOCATION

## REMOTE CONTROL POINT LOCATION

E61. Call Sign E190610 <b>NOTE: Please enter the callsign of the controlling station, not the callsign for which this application is being filed.</b>		E65. Phone Number 608-225-3173	
E62. Street Address 435 N Whisman Road Ste. 100			
E63. City Mountain View		E67. County Santa Clara	E64/68. State/Country CA/ USA
			E66. Zip Code 94043

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