

Date & Time Filed: Jun 19 2012 4:39:45:776PM
File Number: SES-AMD-INTR2012-01537

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:
Hub4/5 Amendment

1-8. Legal Name of Applicant

Name:	VSAT Systems, LLC	Phone Number:	330-785-2100 x104
DBA Name:		Fax Number:	419-818-1978
Street:	1520 South Arlington Street	E-Mail:	mike.kister@satventuresmanagement.com
City:	Akron	State:	OH
Country:	USA	Zipcode:	44306 -
Attention:	Michael Kister		

9-16. Name of Contact Representative

Name:	Donna Balaguer	Phone Number:	202-626-7719
Company:	Fish & Richardson P.C.	Fax Number:	202-783-2331
Street:	1425 K Street N.W. Suite 1100	E-Mail:	balaguer@fr.com
City:	Washington	State:	DC
Country:	USA	Zipcode:	20005-
Attention:		Relationship:	Legal Counsel

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?</p> <p><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).</p> <p><input type="radio"/> Governmental Entity <input type="radio"/> Noncommercial educational licensee</p> <p><input type="radio"/> Other(please explain):</p>	
<p>17d.</p> <p>Fee Classification CGB – Mobile Satellite Earth Stations</p>	
<p>18. If this filing is in reference to an existing station, enter:</p> <p>(a) Call sign of station: E090086</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:</p> <p>(a) Date pending application was filed: (b) File number:</p> <p>02/29/2012 SESMOD2012022900267</p>

TYPE OF SERVICE

<p>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:</p> <p><input checked="" type="checkbox"/> a. Fixed Satellite <input type="checkbox"/> b. Mobile Satellite <input type="checkbox"/> c. Radiodetermination Satellite <input type="checkbox"/> d. Earth Exploration Satellite <input type="checkbox"/> e. Direct to Home Fixed Satellite <input type="checkbox"/> f. Digital Audio Radio Service <input type="checkbox"/> g. Other (please specify)</p>	
<p>21. STATUS: Choose the button next to the applicable status. Choose only one.</p> <p><input type="radio"/> Common Carrier <input checked="" type="radio"/> Non-Common Carrier</p>	<p>22. If earth station applicant, check all that apply.</p> <p><input checked="" type="checkbox"/> Using U.S. licensed satellites <input type="checkbox"/> Using Non-U.S. licensed satellites</p>
<p>23. If applicant is providing INTERNATIONAL COMMON CARRIER service, see instructions regarding Sec. 214 filings. Choose one. Are these facilities:</p> <p><input type="radio"/> Connected to a Public Switched Network <input type="radio"/> Not connected to a Public Switched Network <input checked="" type="radio"/> N/A</p>	
<p>24. FREQUENCY BAND(S): Place an 'X' in the box(es) next to all applicable frequency band(s).</p> <p><input type="checkbox"/> a. C-Band (4/6 GHz) <input checked="" type="checkbox"/> b. Ku-Band (12/14 GHz) <input type="checkbox"/> c. Other (Please specify upper and lower frequencies in MHz.)</p> <p>Frequency Lower: Frequency Upper: (Please specify additional frequencies in an attachment)</p>	

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

<p>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.</p>	<p><input type="radio"/> Yes <input checked="" type="radio"/> No</p> <p>Radiation Report</p>
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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.

<p>29. Is the applicant a foreign government or the representative of any foreign government?</p>	<p><input type="radio"/> Yes <input checked="" type="radio"/> No</p>
<p>30. Is the applicant an alien or the representative of an alien?</p>	<p><input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> N/A</p>
<p>31. Is the applicant a corporation organized under the laws of any foreign government?</p>	<p><input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> N/A</p>
<p>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?</p>	<p><input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> 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?

Yes No 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.

Yes 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.

Yes 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.

Yes 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

Yes 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.

Yes 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. See 47 CFR 1.2002(b) for the meaning of "party to the application" for these purposes.

Yes No

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.

Yes 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). (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)

Amendment to pending application for addition of two hub sites to provide business-class Internet service

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 Kister	46. Title of Person Signing President
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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:	HUB4	E5. Call Sign:	E090086
E2. Contact Name	Mario Tomaselli	E6. Phone Number:	330-785-2100
E3. Street:	1520 S. Arlington	E7. City:	Akron
		E8. County:	Summit
E4. State	OH	E9. Zip Code	44306
E10. Area of Operation:	CONUS, Alaska, Hawaii, Bahamas, Caribbean, Guatemala, Panama, Cost Rica		
E11. Latitude:	41 °1 '50.8 "N		
E12. Longitude:	81 °29 '34.2 "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):	349.5 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 demonstrated by the manufacturer's qualification measurement? If NO, provide as a technical analysis showing compliance with two-degree spacing policy.

Yes No N/A

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
<p>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? HUB4 Form 854</p> <p>FAILURE TO COMPLY WITH 47 CFR PARTS 17 AND 25 WILL RESULT IN THE RETURN OF THIS APPLICATION.</p>	<input checked="" type="radio"/> Yes <input type="radio"/> No

POINTS OF COMMUNICATION

Satellite Name: ALSAT ALL AUTHORIZED U.S. ALSAT If you selected OTHER, please enter the following:	
E21. Common Name:	E22. ITU Name:
E23. Orbit Location:	E24. Country:

POINTS OF COMMUNICATION (Destination Points)

E25. Site Identifier: HUB4	
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E26. Common Name:	E27. Country: USA
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E25. Site Identifier: HUB4	
E26. Common Name:	E27. Country: USA

ANTENNA

Site ID	E28. Antenna Id	E29. Quantity	E30. Manufacturer	E31. Model	E32. Antenna Size<meters>	E41/42. Antenna Gain Transmint and/or Recieve (___dBi at ___GHz)	
HUB4	HUB4	1	Harris/Vertex	5349	8.1	58.0 dBi at 11.725	
HUB4	HUB4	1	Harris/Vertex	5349	8.1	59.7 dBi at 14.125	

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)
HUB4	0.0/0.0	8.1	357.6	0.0	100.0	0.0	79.7

FREQUENCY

E28. Antenna Id	E43/44. Frequency Bands (MHz)	E45. T/R Mode	E46. Antenna Polarization(H,V, L,R)	E47. Emission Designator	E48. Maximum EIRP per Carrier (dBW)	E49. Maximum ERIP Density per Carrier (dBW/4kHz)

HUB4	11700 12200	R	Horizontal	1M5G7W	0.0	0.0
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E50. Modulation and Services (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)

Digital Audio and Data, 8PSK DBS2

HUB4	14000 14500	T	Vertical	12M0G7W	79.7	44.91
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E50. Modulation and Services (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)

Digital Audio and Data, 8PSK DBS2

FREQUENCY COORDINATION

E28. Antenna Id	E51. Satellite Orbit Type	E52/53. Frequency Limits(MHz)	E54/55. Range of Satellite Arc Eastern/Western 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)
HUB4	Geostationary	11700 12200	37.0/124.0	123.8	24.7	244.0	26.0	0.0

	Geostationary	14000 14500	37.0/124.0	123.8	24.7	244.0	26.0	-22.2
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REMOTE CONTROL POINT LOCATION

E61. Call Sign NOTE: Please enter the callsign of the controlling station, not the callsign for which this application is being filed.		E66. Phone Number 440-238-7356	
E62. Street Address 12947 Webster Rd.			
E63. City Strongsville	E68. County Cuyahoga	E67/68. State/Country OH/ USA	E64. Zip Code 44136

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:	HUB5	E5. Call Sign:	E090086
E2. Contact Name	Mario Tomaselli	E6. Phone Number:	330-785-2100
E3. Street:	1520 S. Arlington	E7. City:	Akron
		E8. County:	Summit
E4. State	OH	E9. Zip Code	44306
E10. Area of Operation:	CONUS, Alaska, Hawaii, Bahamas, Caribbean, Guatemala, Panama, Costa Rica		
E11. Latitude:	41 °1 '50.6 "N		
E12. Longitude:	81 °29 '33.3 "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):	349.5 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 demonstrated by the manufacturer's qualification measurement? If NO, provide as a technical analysis showing compliance with two-degree spacing policy.	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A
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
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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
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POINTS OF COMMUNICATION

Satellite Name: ALSAT ALL AUTHORIZED U.S. ALSAT If you selected OTHER, please enter the following:	
E21. Common Name:	E22. ITU Name:
E23. Orbit Location:	E24. Country:

POINTS OF COMMUNICATION (Destination Points)

E25. Site Identifier: HUB5	
E26. Common Name:	E27. Country: USA

ANTENNA

Site ID	E28. Antenna Id	E29. Quantity	E30. Manufacturer	E31. Model	E32. Antenna Size<meters>	E41/42. Antenna Gain Transmint and/or Recieve (____ dBi at _____ GHz)	
HUB5	HUB5	1	Harris/Vertex	5349	8.1	58.0 dBi at 11.725	
HUB5	HUB5	1	Harris/Vertex	5349	8.1	59.7 dBi at 14.125	

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)
HUB5	0.0/0.0	8.1	357.6	0.0	100.0	0.0	79.7

FREQUENCY

E28. Antenna Id	E43/44. Frequency Bands (MHz)	E45. T/R Mode	E46. Antenna Polarization(H,V, L,R)	E47. Emission Designator	E48. Maximum EIRP per Carrier (dBW)	E49. Maximum ERIP Density per Carrier (dBW/4kHz)
HUB5	11700 12200	R	Horizontal	1M5G7W	0.0	0.0

E50. Modulation and Services (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)

Digital Audio and Data, 8PSK DBS2

HUB5	14000 14500	T	Vertical	12M0G7W	79.7	44.91
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E50. Modulation and Services (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)

Digital Audio and Data, 8PSK DBS2

FREQUENCY COORDINATION

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HUB5	Geostationary	11700 12200	37.0/124.0	123.8	24.7	244.0	26.0	0.0
	Geostationary	14000 14500	37.0/124.0	123.8	24.7	244.0	26.0	-22.2

REMOTE CONTROL POINT LOCATION

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E62. Street Address 12947 Webster Road			
E63. City Strongsville	E68. County Cuyahoga	E67/68. State/Country OH/ USA	E64. Zip Code 44136

FCC NOTICE REQUIRED BY THE PAPERWORK REDUCTION ACT

The public reporting for this collection of information is estimated to average 2 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the required data, and completing and reviewing the collection of information. If you have any comments on this burden estimate, or how we can improve the collection and reduce the burden it causes you, please write to the Federal Communications Commission, AMD-PERM, Paperwork Reduction Project (3060-0678), Washington, DC 20554. We will also accept your comments regarding the Paperwork Reduction Act aspects of this collection via the Internet if you send them to PRA@fcc.gov. PLEASE DO NOT SEND COMPLETED FORMS TO THIS ADDRESS.

Remember – You are not required to respond to a collection of information sponsored by the Federal government, and the government may not conduct or sponsor this collection, unless it displays a currently valid OMB control number or if we fail to provide you with this notice. This collection has been assigned an OMB control number of 3060-0678.

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.

Analysis of Non-Ionizing Radiation for a 8.1- Meter Earth Station System

This report analyzes the non-ionizing radiation levels for a 8.1-meter earth station system. The analysis and calculations performed in this report comply with the methods described in the FCC Office of Engineering and Technology Bulletin, No. 65 first published in 1985 and revised in 1997 in Edition 97-01. The radiation safety limits used in the analysis are in conformance with the FCC R&O 96-326. Bulletin No. 65 and the FCC R&O specifies that there are two separate tiers of exposure limits that are dependent on the situation in which the exposure takes place and/or the status of the individuals who are subject to the exposure. The Maximum Permissible Exposure (MPE) limits for persons in a General Population/Uncontrolled environment are shown in Table 1. The General Population/Uncontrolled MPE is a function of transmit frequency and is for an exposure period of thirty minutes or less. The MPE limits for persons in an Occupational/Controlled environment are shown in Table 2. The Occupational MPE is a function of transmit frequency and is for an exposure period of six minutes or less. The purpose of the analysis described in this report is to determine the power flux density levels of the earth station in the far-field, near-field, transition region, between the subreflector or feed and main reflector surface, at the main reflector surface, and between the antenna edge and the ground and to compare these levels to the specified MPEs.

Table 1. Limits for General Population/Uncontrolled Exposure (MPE)

Frequency Range (MHz)	Power Density (mW/cm ²)
30-300	0.2
300-1500	Frequency (MHz)*(0.8/1200)
1500-100,000	1.0

Table 2. Limits for Occupational/Controlled Exposure (MPE)

Frequency Range (MHz)	Power Density (mW/cm ²)
30-300	1.0
300-1500	Frequency (MHz)*(4.0/1200)
1500-100,000	5.0

Table 3. Formulas and Parameters Used for Determining Power Flux Densities

Parameter	Symbol	Formula	Value	Units
Antenna Diameter	D	Input	8.1	m
Antenna Surface Area	A _{surface}	$\pi D^2 / 4$	51.53	m ²
Subreflector Diameter	D _{sr}	Input	105	cm
Area of Subreflector	A _{sr}	$\pi D_{sr}^2 / 4$	8659.01	cm ²
Frequency	F	Input	14250	MHz
Wavelength	λ	300 / F	0.021053	m
Transmit Power	P	Input	100.00	W
Antenna Gain (dBi)	G _{es}	Input	59.7	dBi
Antenna Gain (factor)	G	10 ^{G_{es}/10}	933254.30	n/a
Pi	π	Constant	3.1415927	n/a
Antenna Efficiency	η	$G\lambda^2 / (\pi^2 D^2)$	0.64	n/a

Far Field Distance Calculation

The distance to the beginning of the far field can be determined from the following equation:

$$\begin{aligned} \text{Distance to the Far Field Region} \quad R_{ff} &= 0.60 D^2 / \lambda \\ &= 1869.9 \text{ m} \end{aligned} \quad (1)$$

The maximum main beam power density in the far field can be determined from the following equation:

$$\begin{aligned} \text{On-Axis Power Density in the Far Field} \quad S_{ff} &= G P / (4 \pi R_{ff}^2) \\ &= 2.124 \text{ W/m}^2 \\ &= 0.212 \text{ mW/cm}^2 \end{aligned} \quad (2)$$

Near Field Calculation

Power flux density is considered to be at a maximum value throughout the entire length of the defined Near Field region. The region is contained within a cylindrical volume having the same diameter as the antenna. Past the boundary of the Near Field region, the power density from the antenna decreases linearly with respect to increasing distance.

The distance to the end of the Near Field can be determined from the following equation:

$$\begin{aligned} \text{Extent of the Near Field} \quad R_{nf} &= D^2 / (4 \lambda) \\ &= 779.1 \text{ m} \end{aligned} \quad (3)$$

The maximum power density in the Near Field can be determined from the following equation:

$$\begin{aligned} \text{Near Field Power Density} \quad S_{nf} &= 16.0 \eta P / (\pi D^2) \\ &= 4.958 \text{ W/m}^2 \\ &= 0.496 \text{ mW/cm}^2 \end{aligned} \quad (4)$$

Transition Region Calculation

The Transition region is located between the Near and Far Field regions. The power density begins to decrease linearly with increasing distance in the Transition region. While the power density decreases inversely with distance in the Transition region, the power density decreases inversely with the square of the distance in the Far Field region. The maximum power density in the Transition region will not exceed that calculated for the Near Field region. The power density calculated in Section 1 is the highest power density the antenna can produce in any of the regions away from the antenna. The power density at a distance R_t can be determined from the following equation:

$$\begin{aligned} \text{Transition Region Power Density} \quad S_t &= S_{nf} R_{nf} / R_t \\ &= 0.496 \text{ mW/cm}^2 \end{aligned} \quad (5)$$

Region between the Main Reflector and the Subreflector

Transmissions from the feed assembly are directed toward the subreflector surface, and are reflected back toward the main reflector. The most common feed assemblies are waveguide flanges, horns or subreflectors. The energy between the subreflector and the reflector surfaces can be calculated by determining the power density at the subreflector surface. This can be determined from the following equation:

$$\begin{aligned} \text{Power Density at the Subreflector} \quad S_{sr} &= 4000 P / A_{sr} & (6) \\ &= 46.195 \text{ mW/cm}^2 \end{aligned}$$

Main Reflector Region

The power density in the main reflector is determined in the same manner as the power density at the subreflector. The area is now the area of the main reflector aperture and can be determined from the following equation:

$$\begin{aligned} \text{Power Density at the Main Reflector Surface} \quad S_{\text{surface}} &= 4 P / A_{\text{surface}} & (7) \\ &= 7.762 \text{ W/m}^2 \\ &= .776 \text{ mW/cm}^2 \end{aligned}$$

Region between the Main Reflector and the Ground

Assuming uniform illumination of the reflector surface, the power density between the antenna and the ground can be determined from the following equation:

$$\begin{aligned} \text{Power Density between Reflector and Ground} \quad S_g &= P / A_{\text{surface}} & (8) \\ &= 1.941 \text{ W/m}^2 \\ &= 0.194 \text{ mW/cm}^2 \end{aligned}$$

7. Summary of Calculations

Table 4. Summary of Expected Radiation levels for Uncontrolled Environment

Region	Calculated Maximum Radiation Power Density Level (mW/cm²)		Hazard Assessment
1. Far Field ($R_{ff} = 164.2$ m)	S_{ff}	0.212	Satisfies FCC MPE
2. Near Field ($R_{nf} = 68.4$ m)	S_{nf}	0.496	Satisfies FCC MPE
3. Transition Region ($R_{nf} < R_t < R_{ff}$)	S_t	0.496	Satisfies FCC MPE
4. Between Feed Assembly and Antenna Reflector	S_{fa}	46.195	Potential Hazard
5. Main Reflector	$S_{surface}$	0.776	Satisfies FCC MPE
6. Between Reflector and Ground	S_g	0.194	Satisfies FCC MPE

Table 5. Summary of Expected Radiation levels for Controlled Environment

Region	Calculated Maximum Radiation Power Density Level (mW/cm²)		Hazard Assessment
1. Far Field ($R_{ff} = 164.2$ m)	S_{ff}	0.212	Satisfies FCC MPE
2. Near Field ($R_{nf} = 68.4$ m)	S_{nf}	0.496	Satisfies FCC MPE
3. Transition Region ($R_{nf} < R_t < R_{ff}$)	S_t	0.496	Satisfies FCC MPE
4. Between Feed Assembly and Antenna Reflector	S_{fa}	46.195	Potential Hazard
5. Main Reflector	$S_{surface}$	0.776	Satisfies FCC MPE
6. Between Reflector and Ground	S_g	0.194	Satisfies FCC MPE

8. Conclusions

VSAT-Systems, LLC. proposes to comply with the Maximum Permissible Exposure (MPE) limits of 1.0 mW/cm^2 for the Uncontrolled Areas, and the MPE limits of 5.0 mW/cm^2 for the Controlled Areas as explained below.

The antenna will be installed at the Applicant's facility near Akron, Ohio. The earth station facility is surrounded by a fence, which will restrict any public access. The earth station will be marked with the standard radiation hazard warnings, as well as the area in the vicinity of the earth station to inform those in the general population, who might be working or otherwise present in or near the direct path of the main beam.

The applicant will ensure that the main beam of the antenna will be pointed at least one diameter away from any building, or other obstacles in those areas that exceed the MPE levels. Since one diameter removed from the center of the main beam the levels are down at least 20 dB, or by a factor of 100, these potential hazards do not exist for either the public, or for earth station personnel.

Finally, the earth station's operating personnel will not have access to areas that exceed the MPE levels, while the earth station is in operation. The transmitter will be turned off during periods of maintenance, so that the MPE standard of 5.0 mW/cm^2 will be complied with for those regions in close proximity to the main reflector, which could be occupied by operating personnel.

FCC 854 Main Form	FCC Application for Antenna Structure Registration	Approved by OMB 3060 - 0139 Est. Public Burden per Response: 30 minutes File Number: A0736710
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Purpose of Filing

1. Purpose of this filing: Application for the registration of a new antenna structure
2A. For purpose codes of WD or AM , provide the file number of the pending application currently on file with the FCC: A0736710
2B. If purpose codes of MD, CA, AU, DI, NT, DU or OC provide FCC Antenna Structure Registration Number: 1280484
2C. If purpose code is MD or NT , provide date constructed or Last altered (mmddyyyy):
2D. If purpose code is DI , give date of dismantlement (mmddyyyy):

Antenna Structure Ownership Information

3) Owner/Assignee FCC Registration Number (FRN): 0018756155			
4) Assignor FCC Registration Number (FRN):			
5) Legal Owner of Structure/Assignee First Name (if individual):	Middle Initial:	Last Name:	Suffix:
6) Business Name (if other than Individual): VSAT Systems, LLC			
7) Attention To: Michael Kister			
8) P. O. Box:	And/Or	9) Street Address: 1520 S. Arlington	
10) City: Akron	11) State: OH	12) ZIP Code: 44306	
13) Telephone Number: (330)785-2100		14) E-Mail Address: Mkister@vsatsystems.com	

Contact Representative Information (If the Owner/Assignee is a business or contact representative is different from the Owner/Assignee)

15) First Name: Mario	MI: A	Last Name: Tomaselli	Suffix:
16) Business Name: VSAT Systems, LLC			
17) P.O. Box:	And/Or	18) Street Address: 1520 S. Arlington	
19) City: Akron	20) State: OH	21) Zip Code: 44306	
22) Telephone Number: (330)785-2100		23) E-Mail Address: Mtomaselli@vsatsystems.com	

Antenna Structure

24) NAD83 Antenna Structure Latitude (DD-MM-SS.S): 41-01-50.8 (N)N or S	25) NAD83 Antenna Structure Longitude (DDD-MM-SS.S): 081-29-34.2 (W)N or S
26) Address or Geographical Location: 961 East Waterloo	
27) City: Akron	28) State: OH
29) Elevation of site above mean sea level (refer to "a" in antenna structure examples):	349.5 meters
30) Overall (highest) height above ground (AGL) of an antenna structure INCLUDING all appurtenances (antennas, dishes, lightning rods, obstruction lighting, etc.) (refer to "c" in antenna structure examples):	8.1 meters
31) Overall height above mean sea level (sum total of items 29 and 30):	357.6 meters
32) Overall height above ground level (AGL) of the supporting structure itself WITHOUT appurtenances (refer to "b" in antenna structure examples):	8.1 meters
33) Indicate the code for the type of structure on which antenna will be mounted (i.e., pole, building, water tank, silo, tower, etc.) (See Instructions): TOWER	

34-35) If type of structure is an Array, provide coordinates for center of the array below:	
34) NAD83 Array Center Latitude (DD-MM-SS.S): -- (N)N or S	35) NAD83 Array Center Longitude (DDD-MM-SS.S): -- (W)N or S

FAA Notification

36) FAA Study Number: 2011-AGL-4388-OE	37) Date Issued (mmddyyyy): 08/22/2011
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Environmental Assessment

38) (N)	Yes	Would a Commission grant of Authorization for this location be an action which may have significant environmental effect? See Section 1.1307 of 47 CFR. If 'YES', submit an environmental assessment as required by 47 CFR, Sections 1.1308 and 1.1311.
	No	

Certification Statements

1) The applicant certifies that all statements made in this application and in the exhibits, attachments, or documents incorporated by reference are material, are part of this application, and are true, complete, correct, and made in good faith.
2) The applicant certifies that neither the applicant nor any other party to the application is subject to a denial of Federal benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. § 862, because of a conviction for possession or distribution of a controlled substance. See Section 1.2002(b) of the rules, 47 CFR § 1.2002(b), for the definition of 'party to the application' as used in this certification.

Signature

39) Typed or Printed Name of Party Authorized to Sign

First Name: Mario	MI: A	Last Name: Tomaselli	Suffix:
40) Title: RF Engineer			
41) Signature: Mario A Tomaselli		42) Date (mmddyyyy): 09/14/2011	
WILLFUL FALSE STATEMENTS MADE ON THIS FORM OR ANY ATTACHMENTS ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. Code, Title 18, Section 1001) AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. Code, Title 47, § 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, § 503).			

REFERENCE COPY

This is not an official FCC license. It is a record of public information contained in the FCC's licensing database on the date that this reference copy was generated. In cases where FCC rules require the presentation, posting, or display of an FCC license, this document may not be used in place of an official FCC license.



**UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION
ANTENNA STRUCTURE REGISTRATION**



OWNER: VSAT SYSTEMS, LLC

FCC Registration Number (FRN): 0018756155

ATTN: MICHAEL KISTER VSAT SYSTEMS, LLC 1520 S. ARLINGTON AKRON, OH 44306	Antenna Structure Registration Number 1280484						
	Issue Date 09-14-2011						
Location of Antenna Structure 961 East Waterloo Akron, OH	Ground Elevation (AMSL) 349.5 meters						
	Overall Height Above Ground (AGL) 8.1 meters						
<table border="0"> <tr> <td>Latitude</td> <td>Longitude</td> <td>NAD83</td> </tr> <tr> <td>41-01-50.8 N</td> <td>081-29-34.2 W</td> <td></td> </tr> </table>	Latitude	Longitude	NAD83	41-01-50.8 N	081-29-34.2 W		Overall Height Above Mean Sea Level (AMSL) 357.6 meters
Latitude	Longitude	NAD83					
41-01-50.8 N	081-29-34.2 W						
Painting and Lighting Requirements: NONE Paint and Light in Accordance with FAA Circular Number							
Conditions:							

This registration is effective upon completion of the described antenna structure and notification to the Commission. **YOU MUST NOTIFY THE COMMISSION WITHIN 24 HOURS OF COMPLETION OF CONSTRUCTION OR CANCELLATION OF YOUR PROJECT, please file FCC Form 854.** To file electronically, connect to the antenna structure registration system by pointing your web browser to <http://wireless.fcc.gov/antenna>. Electronic filing is recommended. You may also file manually by submitting a paper copy of FCC Form 854. Use purpose code "NT" for notification of completion of construction; use purpose code "CA" to cancel your registration.

The Antenna Structure Registration is not an authorization to construct radio facilities or transmit radio signals. It is necessary that all radio equipment on this structure be covered by a valid FCC license or construction permit.

You must immediately provide a copy of this Registration to all tenant licensees and permittees sited on the structure described on this Registration (although not required, you may want to use Certified Mail to obtain proof of receipt), and display your Registration Number at the site. See reverse for important information about the Commission's Antenna Structure Registration rules.

You must comply with all applicable FCC obstruction marking and lighting requirements, as set forth in Part 17 of the Commission's Rules (47 C.F.R. Part 17). These rules include, but are not limited to:

- **Posting the Registration Number:** The Antenna Structure Registration Number must be displayed in a conspicuous place so that it is readily visible near the base of the antenna structure. Materials used to display the Registration Number must be weather-resistant and of sufficient size to be easily seen at the base of the antenna structure. Exceptions exist for certain historic structures. See 47 C.F.R. 17.4(g)-(h).
- **Inspecting lights and equipment:** The obstruction lighting must be observed at least every 24 hours in order to detect any outages or malfunctions. Lighting equipment, indicators, and associated devices must be inspected at least once every three months.
- **Reporting outages and malfunctions:** When any top steady-burning light or a flashing light (in any position) burns out or malfunctions, the outage must be reported to the nearest FAA Flight Service Station, unless corrected within 30 minutes. The FAA must again be notified when the light is restored. The owner must also maintain a log of these outages and malfunctions.
- **Maintaining assigned painting:** The antenna structure must be repainted as often as necessary to maintain good visibility.
- **Complying with environmental rules:** If you certified that grant of this registration would not have a significant environmental impact, you must nevertheless maintain all pertinent records and be ready to provide documentation supporting this certification and compliance with the rules, in the event that such information is requested by the Commission pursuant to 47 C.F.R. 1.1307(d).
- **Updating information:** The owner must notify the FCC of proposed modifications to this structure; of any change in ownership; or, within 30 days of dismantlement of the structure.

Copies of the Code of Federal Regulations (which contain the FCC's antenna structure registration rules, 47 C.F.R. Part 17) are available from the Government Printing Office (GPO). To purchase CFR volumes, call (202) 512-1800. For GPO Customer Service, call (202) 512-1803. For additional FCC information, consult the Antenna Homepage on the internet at <http://wireless.fcc.gov/antenna> or call (877) 480-3201 (TTY 717-338-2824).

REFERENCE COPY

This copy is intended to be used as a reference copy only and MAY NOT be submitted to the FCC as an application for manual filing.

FCC 854 Main Form

FCC Application for Antenna Structure Registration

Approved by OMB

3060 - 0139

Est. Public Burden per Response: 30 minutes

File Number: A0756245

Purpose of Filing

1. Purpose of this filing: New
2A. For purpose codes of WD or AM, provide the file number of the pending application currently on file with the FCC:
2B. For purpose codes of MD, CA, AU, DI, NT, DU or OC provide FCC Registration Number:
2C. If purpose code is MD or NT, provide date constructed or Last altered (mm/dd/yy):
2D. If purpose code is DI, give date of dismantlement (mm/dd/yy):

Antenna Structure Ownership Information

3A. FCC ID of Owner/Assignee: L01661443	3B. Sub-Group Identification Number (SGIN) of Owner/Assignee: 000	3C. FCC Registration Number (FRN) of Owner/Assignee: 0018756155
4A. FCC ID of Assignor (for purpose code OC only):	4B. Sub-Group Identification Number (SGIN) of Assignor:	4C. FCC Registration Number (FRN) of Assignor:
5. Legal Owner of Structure/Assignee First Name (if individual):	MI:	Last Name:
6. Business Name (if other than Individual): VSAT Systems, LLC		
7. Attention To: Michael Kister		
8. P.O. Box	And/Or	9. Street Address: 1520 S. Arlington
10. City: Akron	11. State: OH	12. Zip Code: 44306
13. Telephone Number: (330)785-2100	14. E-Mail Address: mkister@vsatsystems.com	

Contact Representative Information

(If different from the Owner/Assignee)

15. First Name: Mario	MI: A	Last Name: Tomaselli	Suffix:
16. Business Name: VSAT Systems, LLC			
17. P.O. Box:	And/Or	18. Street Address: 1520 S. Arlington	
19. City: Akron	20. State: OH	21. Zip: 44306	
22. Telephone Number: (330)785-2100	23. E-Mail Address: mtomaselli@vsatsystems.com		

Antenna Structure

24. NAD83 Antenna Structure Latitude (DD-MM-SS.S): 41-01-50.6 N (N) <u>N</u> or <u>S</u>	25. NAD83 Antenna Structure Longitude (DDD-MM-SS.S): 081-29-33.3 W (W) <u>W</u> or <u>E</u>
---	--

26. Address or Geographical Location: 961 East Waterloo	
27. City: Akron	28. State: OH
29. Elevation of site above mean sea level (refer to "a" in antenna structure examples): 349.5 meters	
30. Overall (highest) height above ground (AGL) of an antenna structure INCLUDING all appurtenances (antennas, dishes, lightning rods, obstruction lighting, etc.) (refer to "c" in antenna structure examples): 8.1 meters	
31. Overall height above mean sea level (sum total of items 29 and 30): 357.6 meters	
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33. Indicate the code for the type of structure on which antenna will be mounted (i.e., pole, building, water tank, silo, tower, etc.) (See Instructions): TOWER -	
34-35. If type of structure is an Array, provide coordinates for center of the array below:	
34. NAD83 Array Center Latitude (DD-MM-SS.S): (N) or S	35. NAD83 Array Center Longitude (DDD-MM-SS.S): (W) or S

FAA Notification

36. FAA Study Number: 2011-AGL-5519-OE	37. Date Issued (mm/dd/yy): 10/20/2011
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Environmental Assessment

38. (No)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Would a Commission grant of Authorization for this location be an action which may have significant environmental effect? See Section 1.1307 of 47 CFR. If 'YES', submit an environmental assessment as required by 47 CFR, Sections 1.1308 and 1.1311.
----------	--	---

Certification Statements

<p>1. The applicant certifies that all statements made in this application and in the exhibits, attachments, or documents incorporated by reference are material, are part of this application, and are true, complete, correct, and made in good faith.</p>
<p>2. The applicant certifies that neither the applicant nor any other party to the application is subject to a denial of Federal benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. § 862, because of a conviction for possession or distribution of a controlled substance. See Section 1.2002(b) of the rules, 47 CFR § 1.2002(b), for the definition of 'party to the application' as used in this certification.</p>

Signature

39. Typed or Printed Name of Party Authorized to Sign

First Name: Mario	MI: A	Last Name: Tomaselli	Suffix:
40. Title: RF Engineer			
41. Signature: Tomaselli , Mario A		42. Date (mmddyy): 02/29/2012	
WILLFUL FALSE STATEMENTS MADE ON THIS FORM OR ANY ATTACHMENTS ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. Code, Title 18, Section 1001) AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. Code, Title 47, § 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, § 503).			

CLOSE WINDOW



**UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION
ANTENNA STRUCTURE REGISTRATION**



OWNER: VSAT Systems, LLC

FCC Registration Number (FRN): 0018756155

ATTN: Michael Kister VSAT Systems, LLC 1520 S. Arlington Akron, OH 44306	Antenna Structure Registration Number <p align="right">1283084</p>						
	Issue Date <p align="right">02/29/2012</p>						
Location of Antenna Structure 961 East Waterloo Akron, OH 44306 SUMMIT	Ground Elevation (AMSL) <p align="right">349.5 meters</p>						
	Overall Height Above Ground (AGL) <p align="right">8.1 meters</p>						
<table border="0"> <tr> <td align="center">Latitude</td> <td align="center">Longitude</td> <td align="center">NAD83</td> </tr> <tr> <td align="center">41° 01' 50.6" N</td> <td align="center">081° 29' 33.3" W</td> <td></td> </tr> </table>	Latitude	Longitude	NAD83	41° 01' 50.6" N	081° 29' 33.3" W		Overall Height Above Mean Sea Level (AMSL) <p align="right">357.6 meters</p>
Latitude	Longitude	NAD83					
41° 01' 50.6" N	081° 29' 33.3" W						
Painting and Lighting Requirements: FAA Chapters NONE							
Conditions:							

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Reporting outages and malfunctions: When any top steady-burning light or a flashing light (in any position) burns out or malfunctions, the outage must be reported to the nearest FAA Flight Service Station, unless corrected within 30 minutes. The FAA must again be notified when the light is restored. The owner must also maintain a log of these outages and malfunctions.

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