Approved by OMB
3060-0678

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

APPLICATION FOR EARTH STATION AUTHORIZATIONS FCC 312 MAIN FORM FOR OFFICIAL USE ONLY	FCC Use Only

APPLICANT INFORMATION

Enter a description of this application to identify it on the main menu:
Ka-band Aero License August 2024

1-8. Legal Name of Applicant

Name:	Viasat, Inc.	Phone Number:	760-476-2583
DBA Name:		Fax Number:	760-929-3941
Street:	6155 El Camino Real	E-Mail:	daryl.hunter@viasat.com
City:	Carlsbad	State:	CA
Country:	USA	Zipcode:	92009 -
Attention:	Mr Daryl T Hunter P.E.		

9-16. Name of Contact Representative

Name:	Daryl T. Hunter	Phone Number:	760-476-2583
Company:	Viasat, Inc.	Fax Number:	760-929-3941
Street:	6155 El Camino Real	E-Mail:	daryl.hunter@viasat.com
City:	Carlsbad	State:	CA
Country:	USA	Zipcode:	92009-
Attention:	Mr Daryl T Hunter	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.

a.
- a1. Earth Station
- (N/A) a2. Space Station

b.
- b1. Application for License of New Station
- 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
- b10. Other (Please specify)
- 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.

17c. Is a fee submitted with this application?
- If Yes, complete and attach FCC Form 159.

If No, indicate reason for fee exemption (see 47 C.F.R.Section 1.1114).

○ Governmental Entity ○ Noncommercial educational licensee

○ Other(please explain):

17d.
Fee Classification

18. If this filing is in reference to an existing station, enter:	19. If this filing is an amendment to a pending application enter:	
(a) Call sign of station:	(a) Date pending application was filed:	(b) File number of pending application:
Not Applicable	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 providng 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: 18300 Frequency Upper: 30000

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)Ka-band ESIM Network

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**

Exhibit A

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
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 explination 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 explination 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 attemptiing 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 exhinit, 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?Permitted List	
43. Description. (Summarize the nature of the application and the services to be provided). See narrative.Narrative	

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	46. Title of Person Signing
Daryl T. Hunter	CTO, Regulatory Affairs

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:	M40	E5. Call Sign:	
E2: Contact Name	Daryl T. Hunter	E6. Phone Number:	760-476-2583
E3. Street:		E7. City:	
		E8. County:	
E4. State		E9. Zip Code	
E10. Area of Operation:		CONUS and OCONUS	
E11. Latitude:	0 ° 0 ' 0.0 "		

E12. Longitude:	0 ° 0 ' 0.0 "
E13. Lat/Lon Coordinates are:	○ NAD-27 ○ NAD-83 ◉ N/A
E14. Site Elevation (AMSL):	0.0 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 demonstrated by the manufacturer's qualification measurement? If NO, provide asa 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?	○ Yes ○ No ◉ N/A
E17. Is the facility operated by remote control? If YES, provide the location and telephone number of the control point.	◉ Yes ○ No
E18. Is frequency coordination required? If YES, attach a frequency coordination report as	○ Yes ◉ No
E19. Is coordination with another country required? If YES, attach the name of the country(ies) and plot of coordination contours as	○ Yes ◉ No
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.	○ Yes ◉ No

POINTS OF COMMUNICATION

Satellite Name:PERMITTED LIST | | 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:	
E26. Common Name:	E27. Country:

ANTENNA

Site ID	E28. Antenna Id	E29. Quantity	E30. Manufacturer	E31. Model	E32. Antenna Size	E41/42. Antenna GainTransmint and/or Recieve(____dBi at _____GHz)
M40	M40	999999	Viasat, Inc.	M-40	0.397	33.4 dBi at 18.3
						34.0 dBi at 20.2
						37.35 dBi at 29.5
						37.5 dBi at 30.0
						37.0 dBi at 28.35

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)
M40	0.1575/0.7874	0.0	0.0	0.0	4.0	0.0	43.5

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)
M40	18300 18800	R	Left and Right Circular	52M1G7D	0.0	0.0
E50. Modulation and Services 52.1 MBd M-ary PSK Digital Data						
M40	19700 20200	R	Left and Right Circular	52M1G7D	0.0	0.0
E50. Modulation and Services 52.1 MBd M-ary PSK Digital Data						
M40	18300 18800	R	Left and Right Circular	417MG7D	0.0	0.0
E50. Modulation and Services 416.6 MBd M-ary PSK Digital Data						
M40	19700 20200	R	Left and Right Circular	417MG7D	0.0	0.0
E50. Modulation and Services 416.6 MBd M-ary PSK Digital Data						
M40	28350 28600	T	Left and Right Circular	5M00G7D	43.5	12.5
E50. Modulation and Services 5 MBd PSK, Digital Carrier						
M40	28350 28600	T	Left and Right Circular	10M0G7D	43.5	9.5
E50. Modulation and Services 10 MBd PSK, Digital Carrier						
M40	28350 28600	T	Left and Right Circular	20M0G7D	43.5	6.5
E50. Modulation and Services 20 MBd PSK, Digital Carrier						
M40	28350 28600	T	Left and Right Circular	2M50G7D	43.5	15.5
E50. Modulation and Services 2.5 MBd PSK, Digital Carrier						
M40	28350 28600	T	Left and Right Circular	625KG7D	43.5	21.5
E50. Modulation and Services 625 kBd PSK, Digital Carrier						
M40	29500 30000	T	Left and Right Circular	2M50G7D	43.5	15.5
E50. Modulation and Services 2.5 MBd PSK, Digital Carrier						
M40	29500 30000	T	Left and Right Circular	5M00G7D	43.5	12.5
E50. Modulation and Services 5.0 MBd PSK, Digital Carrier						
M40	29500 30000	T	Left and Right Circular	625KG7D	43.5	21.5
E50. Modulation and Services 625 kBd PSK, Digital Carrier						
M40	29500 30000	T	Left and Right Circular	10M0G7D	43.5	9.5
E50. Modulation and Services 10.0 MBd PSK, Digital Carrier						
M40	29500 30000	T	Left and Right Circular	1M25G7D	43.5	18.5
E50. Modulation and Services 1.25 MBd PSK, Digital Carrier						
M40	29500 30000	T	Left and Right Circular	20M0G7D	43.5	6.5
E50. Modulation and Services 20.0 MBd PSK, Digital Carrier						
M40	28350 28600	T	Left and Right Circular	1M25G7D	43.5	18.5
E50. Modulation and Services 1.25 MBd PSK, Digital Carrier						

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)

M40	Geostationary	18300 18800	5.0/ 178.0	90.0	5.0	270.0	5.0	0.0
	Geostationary	19700 20200	67.15/ 178.0	90.0	5.0	270.0	5.0	0.0
	Geostationary	28350 28600	5.0/ 178.0	90.0	5.0	270.0	5.0	-4.5
	Geostationary	29500 30000	5.0/ 178.0	90.0	5.0	270.0	5.0	-4.5

REMOTE CONTROL POINT LOCATION
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.	E65. Phone Number 720-493-7300

E62. Street Address 349 Inverness Drive South			
E63. City Englewood	E67. County Arapahoe	E64/68. State/Country CO/ USA	E66. Zip Code 80112

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:	GM40	E5. Call Sign:	
E2: Contact Name	Daryl T. Hunter	E6. Phone Number:	760-476-2583
E3. Street:		E7. City:	
		E8. County:	
E4. State		E9. Zip Code	
E10. Area of Operation:		CONUS and OCONUS	
E11. Latitude:	0 ° 0 ' 0.0 "		
E12. Longitude:	0 ° 0 ' 0.0 "		
E13. Lat/Lon Coordinates are:		○ NAD-27	○ NAD-83 ◉ N/A
E14. Site Elevation (AMSL):		0.0 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 demonstrated by the manufacturer's qualification measurement? If NO, provide asa 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?	○ Yes ○ No ◉ N/A
E17. Is the facility operated by remote control? If YES, provide the location and telephone number of the control point.	◉ Yes ○ No
E18. Is frequency coordination required? If YES, attach a frequency coordination report as	○ Yes ◉ No

E19. Is coordination with another country required? If YES, attach the name of the country(ies) and plot of coordination contours as	○ Yes ◉ No
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.	○ Yes ◉ No

POINTS OF COMMUNICATION

Satellite Name:PERMITTED LIST | | 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:	
E26. Common Name:	E27. Country:

ANTENNA

Site ID	E28. Antenna Id	E29. Quantity	E30. Manufacturer	E31. Model	E32. Antenna Size	E41/42. Antenna GainTransmint and/or Recieve(____dBi at _____GHz)
GM40	GM40	999999	Viasat, Inc.	GM-40	0.397	40.5 dBi at 30
						36.6 dBi at 19.7
						36.8 dBi at 20.2
						40.35 dBi at 29.5
						36.8 dBi at 18300
						40.1 dBi at 28.35

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)
GM40	0.1575/0.7874	0.0	0.0	0.0	31.6	0.0	55.5

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)
GM40	18300 18800	R	Left and Right Circular	417MG7D	0.0	0.0
E50. Modulation and Services 500 MBd M-ary PSK Digital Data						
GM40	18300 18800	R	Left and Right Circular	52M1G7D	0.0	0.0
E50. Modulation and Services 52.1 MBd M-ary PSK Digital Data						
GM40	19700 20200	R	Left and Right Circular	52M1G7D	0.0	0.0
E50. Modulation and Services 52.1 MBd M-ary PSK Digital Data						
GM40	19700 20200	R	Left and Right Circular	417MG7D	0.0	0.0
E50. Modulation and Services 416.6 MBd M-ary PSK Digital Data						
GM40	28350 28600	T	Left and Right Circular	5M00G7D	55.5	24.5

E50. Modulation and Services 5 MBd PSK, Digital Carrier						
GM40	29500 30000	T	Left and Right Circular	5M00G7D	55.5	24.5
E50. Modulation and Services 5 MBd PSK, Digital Carrier						
GM40	28350 28600	T	Left and Right Circular	20M0G7D	55.5	18.5
E50. Modulation and Services 20 MBd PSK, Digital Carrier						
GM40	28350 28600	T	Left and Right Circular	40M0G7D	55.5	15.5
E50. Modulation and Services 40 MBd PSK, Digital Carrier						
GM40	28350 28600	T	Left and Right Circular	80M0G7D	55.5	12.5
E50. Modulation and Services 80 MBd PSK, Digital Carrier						
GM40	28350 29600	T	Left and Right Circular	10M0G7D	55.5	21.5
E50. Modulation and Services 10 MBd PSK, Digital Carrier						
GM40	29500 30000	T	Left and Right Circular	10M0G7D	55.5	21.5
E50. Modulation and Services 10 MBd PSK, Digital Carrier						
GM40	29500 30000	T	Left and Right Circular	20M0G7D	55.5	18.5
E50. Modulation and Services 20 MBd PSK, Digital Carrier						
GM40	29500 30000	T	Left and Right Circular	40M0G7D	55.5	15.5
E50. Modulation and Services 40 MBd PSK, Digital Carrier						
GM40	29500 30000	T	Left and Right Circular	80M0G7D	55.5	12.5
E50. Modulation and Services 80 MBd PSK, Digital Carrier						
GM40	28350 28600	T	Left and Right Circular	160MG7D	55.5	9.5
E50. Modulation and Services 160 MBd PSK, Digital Carrier						
GM40	29500 30000	T	Left and Right Circular	160MG7D	55.5	9.5
E50. Modulation and Services 160 MBd PSK, Digital Carrier						

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)
GM40	Geostationary	18300 18800	5.0/ 178.0	90.0	5.0	270.0	5.0	0.0
	Geostationary	19700 20200	5.0/ 178.0	90.0	5.0	270.0	5.0	0.0
	Geostationary	28350 28600	5.0/ 178.0	90.0	5.0	270.0	5.0	-4.5
	Geostationary	29500 30000	5.0/ 178.0	90.0	5.0	270.0	5.0	-4.5

REMOTE CONTROL POINT LOCATION
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.	E65. Phone Number 720-493-7300
E62. Street Address 349 Inverness Drive South	

E63. City	E67. County	E64/68. State/Country	E66. Zip Code
Englewood	Arapahoe	CO/ USA	80112

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:	Ref Ant	E5. Call Sign:	
E2: Contact Name	Daryl T Hunter, P.E.	E6. Phone Number:	760-476-2583
E3. Street:		E7. City:	
		E8. County:	
E4. State		E9. Zip Code	
E10. Area of Operation:		CONUS	
E11. Latitude:	0 ° 0 ' 0.0 "		
E12. Longitude:	0 ° 0 ' 0.0 "		
E13. Lat/Lon Coordinates are:		○ NAD-27	○ NAD-83 ◉ N/A
E14. Site Elevation (AMSL):		0.0 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 demonstrated by the manufacturer's qualification measurement? If NO, provide asa 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?	○ Yes ○ No ◉ N/A
E17. Is the facility operated by remote control? If YES, provide the location and telephone number of the control point.	◉ Yes ○ No
E18. Is frequency coordination required? If YES, attach a frequency coordination report as	○ Yes ◉ No
E19. Is coordination with another country required? If YES, attach the name of the country(ies) and plot of coordination contours as	○ Yes ◉ No
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.	○ Yes ◉ No

POINTS OF COMMUNICATION

Satellite Name:PERMITTED LIST | | 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:	
E26. Common Name:	E27. Country:

ANTENNA

Site ID	E28. Antenna Id	E29. Quantity	E30. Manufacturer	E31. Model	E32. Antenna Size	E41/42. Antenna GainTransmint and/or Recieve(____dBi at _____GHz)
Ref Ant	Ref Ant	10	Viasat	RA-40750	0.75	44.5 dBi at 30
						40.1 dBi at 18.3
						40.2 dBi at 18.8
						40.4 dBi at 20.2
						44.35 dBi at 29.5
						43.9 dBi at 28.35

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)
Ref Ant	0.72/0.77	1.2	0.0	0.0	25.0	0.0	58.5

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)
Ref Ant	18300 18800	R	Left and Right Circular	52M1G7d	0.0	0.0
E50. Modulation and Services 52.1 MBd M-ary PSK Digital Data						
Ref Ant	19700 20200	R	Left and Right Circular	52M1G7D	0.0	0.0
E50. Modulation and Services 52.1 MBd M-ary PSK Digital Data						
Ref Ant	18300 18800	R	Left and Right Circular	417MG7d	0.0	0.0
E50. Modulation and Services 416.6 MBd M-ary PSK Digital Data						
Ref Ant	19700 20200	R	Left and Right Circular	417MG7D	0.0	0.0
E50. Modulation and Services 416.1 MBd M-ary PSK Digital Data						
Ref Ant	28350 28600	T	Left and Right Circular	5M00G7D	58.5	27.5
E50. Modulation and Services 5 MBD M-ary PSK Digital Data						
Ref Ant	29500 30000	T	Left and Right Circular	5M00G7D	58.5	27.5
E50. Modulation and Services 5 MBD M-ary PSK Digital Data						
Ref Ant	28350 28600	T	Left and Right Circular	10M0G7D	58.5	24.5
E50. Modulation and Services 10 MBD M-ary PSK Digital Data						
Ref Ant	28350 28600	T	Left and Right Circular	20M0G7D	58.5	21.5
E50. Modulation and Services 20 MBD M-ary PSK Digital Data						
Ref Ant	28350 28600	T	Left and Right Circular	40M0G7D	58.5	18.5
E50. Modulation and Services 40 MBD M-ary PSK Digital Data						
Ref Ant	28350 28600	T	Left and Right Circular	80M0G7D	58.5	15.5
E50. Modulation and Services 80 MBD M-ary PSK Digital Data						
Ref Ant	29500 30000	T	Left and Right Circular	10M0G7D	58.5	24.5
E50. Modulation and Services 10 MBD M-ary PSK Digital Data						

Ref Ant	29500 30000	T	Left and Right Circular	20M0G7D	58.5	21.5
E50. Modulation and Services 20 MBD M-ary PSK Digital Data						
Ref Ant	29500 30000	T	Left and Right Circular	40M0G7D	58.5	18.5
E50. Modulation and Services 40 MBD M-ary PSK Digital Data						
Ref Ant	29500 30000	T	Left and Right Circular	80M0G7D	58.5	15.5
E50. Modulation and Services 80 MBD M-ary PSK Digital Data						
Ref Ant	28350 28600	T	Left and Right Circular	160MG7D	58.5	12.5
E50. Modulation and Services 160 MBD M-ary PSK Digital Data						
Ref Ant	28350 28600	T	Left and Right Circular	2M50G7D	48.8	20.9
E50. Modulation and Services 2.5 MBD M-ary PSK Digital Data						
Ref Ant	28350 28600	T	Left and Right Circular	625KG7D	45.8	23.9
E50. Modulation and Services 625 kBD M-ary PSK Digital Data						
Ref Ant	29500 30000	T	Left and Right Circular	160MG7D	58.5	12.5
E50. Modulation and Services 160 MBD M-ary PSK Digital Data						
Ref Ant	29500 30000	T	Left and Right Circular	2M50G7D	48.8	20.9
E50. Modulation and Services 2.5 MBD M-ary PSK Digital Data						
Ref Ant	29500 30000	T	Left and Right Circular	625KG7D	45.8	23.9
E50. Modulation and Services 625 kBd M-ary PSK Digital Data						
Ref Ant	29500 30000	T	Left and Right Circular	1M25G7D	48.8	23.9
E50. Modulation and Services 1.25 MBd M-ary PSK Digital Data						

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)
Ref Ant	Geostationary	18300 18800	5.0/ 178.0	90.0	5.0	270.0	5.0	0.0
	Geostationary	19700 20200	5.0/ 178.0	90.0	5.0	270.0	5.0	0.0
	Geostationary	28350 28600	5.0/ 178.0	90.0	5.0	270.0	5.0	-5.0
	Geostationary	29500 30000	5.0/ 178.0	90.0	5.0	270.0	5.0	-5.0

REMOTE CONTROL POINT LOCATION
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.			E65. Phone Number 720-493-7300
E62. Street Address 349 Inverness Drive South			
E63. City Englewood	E67. County Arapahoe	E64/68. State/Country CO/ USA	E66. Zip Code 80112

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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.

Attachment 1
NARRATIVE EXHIBIT
(Response to Question 43)
Ka Band Aeronautical Terminals

By this application, Viasat, Inc. ("Viasat") requests blanket authority to operate transmit/receive earth stations in motion ("ESIMs") on aircraft, specifically (i) M40 earth stations, (ii) GM40 earth stations, and (iii) 10 fixed earth station reference antennas (collectively, the "Terminals"). The Terminals would provide service to aircraft throughout the United States and to U.S.-flagged aircraft outside the United States using satellites on the Permitted Space Station List ("Permitted List") in portions of the Ka band, specifically the 18.3-18.8 GHz (space-to-Earth), 19.7-20.2 GHz (space-to-Earth), 28.35-28.6 GHz (Earth-to-space), and 29.5-30.0 GHz (Earth-to-space) band segments.[1] Grant of the application would serve the public interest by enabling Viasat to augment existing services to customers on aircraft and offer new services to customers.

Compliance with Technical Rules

Operation of the Terminals would be consistent with the Commission's regulatory framework for the Ka band. Under that framework, the key elements for ensuring compatibility with the Commission's two-degree spacing policy are: (i) compliance with the off-axis-EIRP density levels specified in Section 25.218 in the uplink direction, (ii) compliance with the power flux density ("PFD") levels referenced in Section 25.208 in the downlink direction, and (iii) coordination with potentially affected satellite systems in the case of any exceedance of those levels. Operations of the Terminals with Permitted List satellites would be consistent with this framework.

The M40 earth stations are currently authorized for operation with the ViaSat-1, ViaSat-2, and WildBlue-1/Anik-F2 satellites under Call Signs E120075 and E180006, and the GM40 is also authorized for operation with ViaSat-2 under Call Sign E180006. The reference antenna earth stations are currently authorized for operation with ViaSat-1 and WildBlue-1/Anik-F2 satellites under Call Sign E100143 and with the ViaSat-2 satellite under Call Sign E170088. Because M40 and GM40 earth stations would communicate with Permitted List satellites under the same technical parameters as currently authorized for communications with the ViaSat-2 satellite, Viasat incorporates by reference the information submitted with its prior applications, including the Section 25.209 demonstration among other technical information.[2] However,

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[1] Under the Commission's rules applicants for blanket-licensed Ka band earth stations are not required to specify the number of terminals to be deployed. *See Comprehensive Review of Licensing and Operating Rules for Satellite Services*, 30 FCC Rcd 14713, ¶ 291 (2015). Viasat has entered "999,999" in response to question E29 on Form 312 Schedule B for form validation purposes only.

[2] *See* Viasat, Inc., Call Sign E180006, ICFS File Nos. SES-LIC-20180123-00055 (granted Apr. 17, 2018); SES-MOD-20190212-00172 (granted Nov. 25, 2019). For the fixed reference antennas, Viasat incorporates by reference information submitted with Viasat, Inc.,

Viasat is filing a revised radiation hazard analysis as Exhibit A to reflect changes in Commission policy since those prior applications were granted.

The 18.3-18.8 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz, and 29.5-30.0 GHz band segments are allocated to GSO FSS on a primary basis and the Commission's rules permit blanket licensing of GSO FSS earth stations in these band segments.[3] All of these band segments are eligible for communications with Permitted List satellites. All communications with Permitted List satellites would comport with the applicable terms and conditions of the relevant satellite authorization.

Additionally, Viasat certifies that the Terminals would use a contention protocol, and that such contention protocol usage would be reasonable.[4]

Compatibility with GSO Networks

Operation of the Terminals in the 18.3-18.8 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz, and 29.5-30.0 GHz band segments with Permitted List satellites would be compatible with other GSO networks in these band segments. Viasat has already operated the earth stations subject to this application for ten years in the requested band segments with the ViaSat-1 and WildBlue-1/Anik-F2 satellites, and for five years in those band segment with the ViaSat-2 satellite, and has received no reports of interference with respect to those operations.[5] There is no reason to expect this situation to be any different for communications with Permitted List satellites.

Viasat has already coordinated operation of the Terminals with all other GSO satellites within ±30° of the 69.9º W.L. orbital location. Authorizing Viasat to communicate with Permitted List satellites would be consistent with, and have no impact on, previous coordination agreements. Viasat has no reason to believe that operations outside this coordinated arc would be negatively impacted by operation of the Terminals with Permitted List satellites, but to the extent necessary Viasat would accept a limitation on its operations to Permitted List satellites ±30° of the 69.9º W.L. orbital location.

Call Sign E100143, ICFS File Nos. SES-LIC-20101217-01585 and SES-AMD-20110128-00074 (granted Oct. 20, 2011) and Call Sign E170088, ICFS File No. SES-LIC-20170401-00357 (granted Nov. 9, 2017).

3 *See* 47 C.F.R. § 2.106; *see also* 47 C.F.R. § 25.202(a)(10)(ii).

4 *See* 47 C.F.R. § 25.115(i).

5 Viasat has also operated the Terminals with the SES-17 satellite in portions of this spectrum for over a year pursuant to grants of special temporary authority. *See, e.g.*, Viasat, Inc, Call Sign E230145, ICFS File Nos. SES-STA-20240528-01089 (granted Aug. 15, 2024) (grant of STA extension for operation of M40, GM40, and reference terminals in portions of the Ka band, including 19.7-20.2 GHz and 29.5-30 GHz; SES-STA-20240624-01411 (granted Aug. 15, 2024) (grant of STA for operation of M40, GM40, and reference terminals in the 18.2-18.8 GHz portion of the Ka band). Viasat has likewise received no reports of interference with respect to communications with SES-17.

Compliance with ESIM Rules

Viasat would operate the Terminals consistent with the Commission's rules applicable to aeronautical ESIMs. Specifically:

1. All transmissions from the Terminals would comport with the applicable EIRP density limits in Section 25.218 of the Commission's rules unless coordinated pursuant to the requirements in Section 25.220.[6]
2. Each Terminal is self-monitoring and, should a condition occur that causes the Terminal to exceed its authorized off-axis EIRP density limits, would automatically cease transmissions within 100 milliseconds and would not resume transmissions until the condition that caused the limits to be exceeded is corrected.[7]
3. Each Terminal is monitored and controlled by a network control and monitoring center ("NCMC"). Each Terminal is able to comply with a "disable transmission" command from the NCMC within 100 milliseconds of receiving the command. The NCMC monitors the operation of each antenna in the network, and transmits a "disable transmission" command to any antenna that operates in such a way as to exceed the authorized off-axis EIRP density limit. The NCMC would not allow the antennas under its control to resume transmissions until the condition that caused the limits to be exceeded is corrected.[8]
4. Installation of the Terminals on aircraft would be performed by qualified installers who have an understanding of the antenna's radiation environment and the measures best suited to maximize protection of the general public and persons operating the vehicle and equipment.[9]
5. Viasat would maintain a 24/7 point of contact in the United States who can be reached at the following:[10]

    349 Inverness Drive South
    Englewood, CO 80112
    Tel: 720-493-7300

Radiation Hazard Analysis

A radiation hazard analysis for the Terminals is attached hereto as Exhibit A. As demonstrated in Exhibit A, the general population would not be exposed to RF levels in excess

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6 47 C.F.R. § 25.228(a).

7 47 C.F.R. § 25.228(b).

8 47 C.F.R. § 25.228(c).

9 47 C.F.R. § 25.228(d).

10 47 C.F.R. § 25.228(g)(1).

of the Commission's standard, and the Terminals do not present a risk to trained personnel in the controlled area in the immediate vicinity of the Terminals.

EXHIBIT A

RADIATION HAZARD ANALYSIS AND REPORT

Overview

This exhibit contains a report of the analysis of the radio frequency (RF) exposure environment present during the operation of each of the following Viasat earth station antenna systems:

75 cm class fixed earth station operating as a reference terminal
M40 aeronautical earth station
GM40 aeronautical earth station

The reference terminal earth stations employ the same Viasat 75 cm class (77 cm x 72 cm) reflector and outdoor electronics used for other Viasat fixed user licenses but operate as network reference terminals rather than as normal end user traffic terminals. The radio frequency exposure analyses here while largely the same as for the currently licensed 75 cm class user terminals, is being updated to reflect FCC/OET staff direction to use a revised formula from Table D.5 of IEEE standard C95.3-2021 for near field power density in lieu of formula (13) in the currently published version (August 1977) of OET 65.

The following analyses consider two versions of the Viasat Transmit Receive Integrated Assembly (TRIA), the outdoor electronics, used with the reference terminal. The first-generation TRIA with a 2.8 W output and the newer generation pTRIA with a 25 W output. Because these earth stations operate with the Viasat MF-TDMA system (Surfbeam or Afterburner) operating on the respective satellites, the typical burst duty cycle over the averaging period for fixed user terminals depends on which network type it operates with (10% for Surfbeam and 1.5% for Afterburner) and is also taken into consideration.

Similarly, the analyses for the M40 and GM40 antenna systems is also being revised here to follow the above referenced FCC/OET staff guidance with respect to formula (13) of OET 65. As is the case with the reference terminal above, the nominal duty cycle over the averaging period depends on the Viasat MF-TDMA network type and satellite with which it operates, Surfbeam (typically 30%) or Afterburner (typically 6.25%).

In addition to MF-TDMA network duty cycle, the Viasat earth stations above each incorporate an automatic transmit inhibit feature which further reduces the effective duty cycle should a blockage of the antenna occur in proximity to the near field, feed, or reflector surface. If a blockage occurs, such as when a person is between the antenna and satellite, the earth station transmissions will remain inhibited until the blockage is cleared. Once cleared the transmissions will not resume until approximately 10 seconds have elapsed, effectively limiting the duty cycle to near 0%.

75 cm Reference Terminal on Surfbeam Networks

Summary of expected radiofrequency exposure levels for the 77 cm x 72 cm antenna using a 2.8 W PA in an Uncontrolled environment

Region	Maximum Power Density	Hazard Assessment
Far field (R_{ff}) = 35.6 m	0.1 mW/cm^2	Satisfies FCC MPE
Near field (R_{nf}) = 14.8 m	0.5 mW/cm^2	Satisfies FCC MPE
Transition region (R_t) (R_t) = $R_{nf} < R_t < R_{ff}$	0.5 mW/cm^2	Satisfies FCC MPE
Main Reflector Surface ($S_{surface}$)	0.3 mW/cm^2	Satisfies FCC MPE

Summary of expected radiofrequency exposure levels for the 77 cm x 72 cm antenna using a 2.8 W PA in a Controlled environment

Region	Maximum Power Density	Hazard Assessment
Far field (R_{ff}) = 42.652 m	0.1 mW/cm^2	Satisfies FCC MPE
Near field (R_{nf}) = 17.652 m	0.5 mW/cm^2	Satisfies FCC MPE
Transition region (R_t) (R_t) = $R_{nf} < R_t < R_{ff}$	0.5 mW/cm^2	Satisfies FCC MPE
Main Reflector Surface ($S_{surface}$)	0.3 mW/cm^2	Satisfies FCC MPE

Conclusions

Based on this analysis it is concluded that harmful radiation levels will not be present during servicing or normal operation, nor will harmful levels exist in regions normally occupied by the public.

Radiofrequency Exposure Analysis for a 75 cm class (77 cm x 72 cm) Earth Station System with 2.8 W PA.

This report analyzes the non-ionizing radiation levels for a 75 cm class (77 cm x 72 cm) earth station system employing a 2.8 W power amplifier. The analysis and calculations performed in this report follow the methods described in the most recent version of FCC Office of Engineering and Technology Bulletin No. 65 (August 1977) apart from formula 13 for near field power density. The formula for near field power density in this report is replaced per FCC/OET staff guidance with a new formula derived from Table D.5 of IEEE Standard C95.3-2021.

Bulletin No. 65 specifies that there are two separate tiers of exposure limits that are dependent upon the situation in which the exposure takes place and/or the status of the individuals who are subject to the exposure. The two tiers are General Population / Uncontrolled environment, and an Occupational / Controlled environment.

The applicable exposure limit for the General Population / Uncontrolled environment at this frequency of operation is 1 mW/cm^2 averaged over a 30-minute period.

The applicable exposure limit for the Occupational / Controlled environment at this frequency of operation is 5 mW/cm^2 averaged over a 5-minute period.

Definition of terms

The terms are used in the formulas here are defined as follows:

$S_{surface}$ = maximum power density at the antenna surface
S_{nf} = maximum near-field power density
S_t = power density in the transition region
S_{ff} = power density (on axis)
R_{nf} = extent of near-field
R_{ff} = distance to the beginning of the far-field
R = distance to point of interest

P = 2.8 W	power fed to the antenna in Watts
A = 0.44 m^2	physical area of the aperture antenna
G = 28492.3	power gain relative to an isotropic radiator
D_{maj} = 0.77 m	diameter of major axis of the antenna in meters
D_{eff} = 0.75 m	effective diameter of antenna in meters
F = 30 GHz	frequency in GHz
λ = 0.01 m	wavelength in meters (c/F_{MHz})
η = 0.52	aperture efficiency
Dc = 10%	typical duty cycle over 30-minute averaging period

Antenna Surface. The maximum power density directly in front of an antenna (e.g., at the antenna surface) can be approximated by the following equation:

$S_{surface} = (4 * P) / A$

$= (4 * 2.8\ W) / 0.44\ m^2$

$= 0.3$ mW/cm2 at 10% duty cycle

Near Field Region. In the near-field or Fresnel region, of the main beam, the power density can reach a maximum before it begins to decrease with distance. The extent of the near field can be described by the following equation **(**D and λ in same units). Note the diameter of the major axis is used as the most conservative value:

$R_{nf} = D_{maj}^2 / (4 * \lambda)$

$= (0.77\ m)^2 / (4 * 0.01\ m)$

$= 14.8$ m

The magnitude of the on-axis (main beam) power density varies according to location in the near field. However, the maximum value of the near-field, on-axis, power density can be expressed by the following equation:

$S_{nf} = (16 * P) / (\eta * \pi * D_{maj}^2)$

$= (16 * 2.8\ W) / (0.52 * \pi * (0.77\ m)^2)$

$= 0.5\ mW/cm^2$ at 10% duty cycle

Far-Field Region. The power density in the far-field or Fraunhofer region of the antenna pattern decreases inversely as the square of the distance. The distance to the start of the far field can be calculated by the following equation:

$R_{ff} = (0.6 * D_{maj}^2) / \lambda$

$= (0.6 * (0.77\ m)^2) / 0.01\ m$

$= 35.6$ m

The power density at the start of the far-field region of the radiation pattern can be estimated by the equation:

$S_{ff} = (P * G) / (4 * \pi * R_{ff}^2)$

$= (2.8 \text{ W} * 28492.3) / (4 * \pi * (35.6 \text{ m})^2)$

$= 0.05 \text{ mW/cm}^2$ at 10% duty cycle

Transition Region. Power density in the transition region decreases inversely with distance from the antenna, while power density in the far field (Fraunhofer region) of the antenna decreases inversely with the ***square*** of the distance. The transition region will then be the region extending from R_{nf} to R_{ff}. If the location of interest falls within this transition region, the on-axis power density can be determined from the following equation:

$S_t = (S_{nf} * R_{nf}) / R$ where R is the location of interest in meters

$= (4.6 \text{ mW/cm}^2 * 14.8 \text{ m}) / R$

$= (6.9 \text{ m} * \text{mW/cm}^2) / R$ at 10% duty cycle

75 cm Reference Terminal on Afterburner Networks

Summary of expected radiofrequency exposure levels for the 77 cm x 72 cm antenna using a 25 W PA in an Uncontrolled environment

Region	Maximum Power Density	Hazard Assessment
Far field (R_{ff}) = 35.6 m	0.07 mW/cm^2	Satisfies FCC MPE
Near field (R_{nf}) = 14.8 m	0.62 mW/cm^2	Satisfies FCC MPE
Transition region (R_t) (R_t) = $R_{nf} < R_t < R_{ff}$	0.62 mW/cm^2	Satisfies FCC MPE
Main Reflector Surface ($S_{surface}$)	0.34 mW/cm^2	Satisfies FCC MPE

Summary of expected radiofrequency exposure levels for the 77 cm x 72 cm antenna using a 25 W PA in a Controlled environment

Region	Maximum Power Density	Hazard Assessment
Far field (R_{ff}) = 42.652 m	0.07 mW/cm^2	Satisfies FCC MPE
Near field (R_{nf}) = 17.652 m	0.62 mW/cm^2	Satisfies FCC MPE
Transition region (R_t) (R_t) = $R_{nf} < R_t < R_{ff}$	0.62 mW/cm^2	Satisfies FCC MPE
Main Reflector Surface ($S_{surface}$)	0.34 mW/cm^2	Satisfies FCC MPE

Conclusions

Based on this analysis it is concluded that harmful radiation levels will not be present during servicing or normal operation, nor will harmful levels exist in regions normally occupied by the public.

Radiofrequency Exposure Analysis for a 75 cm class (77 cm x 72 cm) Earth Station System with 25 W PA.

This report analyzes the non-ionizing radiation levels for a 75 cm class (77 cm x 72 cm) earth station system employing a 25 W power amplifier. The analysis and calculations performed in this report follow the methods described in the most recent version of FCC Office of Engineering and Technology Bulletin No. 65 (August 1977) apart from formula 13 for near field power density. The formula for near field power density in this report is replaced per FCC/OET staff guidance with a new formula derived from Table D.5 of IEEE Standard C95.3-2021.

Bulletin No. 65 specifies that there are two separate tiers of exposure limits that are dependent upon the situation in which the exposure takes place and/or the status of the individuals who are subject to the exposure. The two tiers are General Population / Uncontrolled environment, and an Occupational / Controlled environment.

The applicable exposure limit for the General Population / Uncontrolled environment at this frequency of operation is 1 mW/cm^2 averaged over a 30-minute period.

The applicable exposure limit for the Occupational / Controlled environment at this frequency of operation is 5 mW/cm^2 averaged over a 5-minute period.

Definition of terms

The terms are used in the formulas here are defined as follows:

$S_{surface}$ = maximum power density at the antenna surface
S_{nf} = maximum near-field power density
S_t = power density in the transition region
S_{ff} = power density (on axis)
R_{nf} = extent of near-field
R_{ff} = distance to the beginning of the far-field
R = distance to point of interest

P = 25 W	power fed to the antenna in Watts
A = 0.44 m^2	physical area of the aperture antenna
G = 28492.3	power gain relative to an isotropic radiator
D_{maj} = 0.77 m	diameter of major axis of the antenna in meters
D_{eff} = 0.75 m	effective diameter of antenna in meters
F = 30 GHz	frequency in GHz
λ = 0.01 m	wavelength in meters (c/F_{MHz})
η = 0.52	aperture efficiency
Dc = 1.5%	typical duty cycle over 30-minute averaging period

Antenna Surface. The maximum power density directly in front of an antenna (e.g., at the antenna surface) can be approximated by the following equation:

$S_{surface} = (4 * P) / A$

$= (4 * 25\ W) / 0.44\ m^2$

$= 0.34$ mW/cm2 at 1.5% duty cycle

Near Field Region. In the near-field or Fresnel region, of the main beam, the power density can reach a maximum before it begins to decrease with distance. The extent of the near field can be described by the following equation **(**D and λ in same units). Note the diameter of the major axis is used as the most conservative value:

$R_{nf} = D_{maj}^2 / (4 * \lambda)$

$= (0.77\ m)^2 / (4 * 0.01\ m)$

$= 14.8$ m

The magnitude of the on-axis (main beam) power density varies according to location in the near field. However, the maximum value of the near-field, on-axis, power density can be expressed by the following equation:

$S_{nf} = (16 * P) / (\eta * \pi * D_{maj}^2)$

$= (16 * 25\ W) / (0.52 * \pi * (0.77\ m)^2)$

$= 0.62\ mW/cm^2$ at 1.5% duty cycle

Far-Field Region. The power density in the far-field or Fraunhofer region of the antenna pattern decreases inversely as the square of the distance. The distance to the start of the far field can be calculated by the following equation:

$R_{ff} = (0.6 * D_{maj}^2) / \lambda$

$= (0.6 * (0.77\ m)^2) / 0.01\ m$

$= 35.6$ m

The power density at the start of the far-field region of the radiation pattern can be estimated by the equation:

$S_{ff} = (P * G) / (4 * \pi * R_{ff}^2)$

= (25 W * 28492.3) / (4 * π * 35.6 m)

= 0.07 mW/cm^2 at 1.5% duty cycle

Transition Region. Power density in the transition region decreases inversely with distance from the antenna, while power density in the far field (Fraunhofer region) of the antenna decreases inversely with the ***square*** of the distance. The transition region will then be the region extending from R_{nf} to R_{ff}. If the location of interest falls within this transition region, the on-axis power density can be determined from the following equation:

S_t = (S_{nf} * R_{nf}) / R where R is the location of interest in meters

= (41.3 mW/cm^2 * 14.8 m) / R

= (91.7 m * mW/cm^2) / R at 1.5% duty cycle

M40 Aero Earth Station on Surfbeam Networks

Summary of expected radiofrequency exposure levels for the M40 Aero earth station antenna using a 4 W PA in a Controlled environment

Region	Maximum Power Density	Hazard Assessment
Far field (R_{ff}) = 37.2 m	0.04 mW/cm^2	Satisfies FCC MPE
Near field (R_{nf}) = 15.5 m	1.4 mW/cm^2	Satisfies FCC MPE
Transition region (R_t) (R_t) = $R_{nf} < R_t < R_{ff}$	1.4 mW/cm^2	Satisfies FCC MPE
Main Reflector Surface ($S_{surface}$)	0.02 mW/cm^2	Satisfies FCC MPE

Conclusions

Based on this analysis it is concluded that harmful radiation levels will not be present for Occupational workers during servicing or normal operation, nor will harmful levels exist in regions normally occupied by the public.

Radiofrequency Exposure Analysis for the M40 Aero Earth Station Antenna with 4 W PA.

This report analyzes the non-ionizing radiation levels for the M40 Aero earth station antenna employing a 4 W power amplifier. The analysis and calculations performed in this report follow the methods described in the most recent version of FCC Office of Engineering and Technology Bulletin No. 65 (August 1977) apart from formula 13 for near field power density. The formula for near field power density in this report is replaced per FCC/OET staff guidance with a new formula derived from Table D.5 of IEEE Standard C95.3-2021.

Bulletin No. 65 specifies that there are two separate tiers of exposure limits that are dependent upon the situation in which the exposure takes place and/or the status of the individuals who are subject to the exposure. The two tiers are General Population / Uncontrolled environment, and an Occupational / Controlled environment.

Because the M40 antenna is mounted on top of aircraft fuselages in a controlled environment with no access by the general population, compliance with the General Population/Uncontrolled Access limit is not being evaluated here.

The applicable exposure limit for the Occupational / Controlled environment at this frequency of operation is 5 mW/cm^2 averaged over a 5-minute period.

Definition of terms

The terms are used in the formulas here are defined as follows:

$S_{surface}$ = maximum power density at the antenna surface
S_{nf} = maximum near-field power density
S_t = power density in the transition region
S_{ff} = power density (on axis)
R_{nf} = extent of near-field
R_{ff} = distance to the beginning of the far-field
R = distance to point of interest

P = 4 W	power fed to the antenna in Watts
A = 0.124 m^2	physical area of the aperture antenna
G = 5618.1	power gain relative to an isotropic radiator
D_{maj} = 0.79 m	diameter of major axis of the antenna in meters
D_{min} = 0.16	diameter of minor axis of the antenna in meters
D_{eff} = 0.40 m	effective diameter of antenna in meters
F = 30 GHz	frequency in GHz
λ = 0.01 m	wavelength in meters (c/F_{MHz})
η = 0.72	aperture efficiency
Dc = 30%	typical duty cycle over 5-minute averaging period

Antenna Surface. The maximum power density directly in front of an antenna (e.g., at the antenna surface) can be approximated by the following equation:

$S_{surface} = (4 * P) / A$

$= (4 * 4.0\ W) / 0.124\ m^2$

$= 3.9\ mW/cm^2$ at 30% duty cycle

$= 0.015\ mW/cm^2$ with blockage safety inhibit active

Near Field Region. In the near-field or Fresnel region, of the main beam, the power density can reach a maximum before it begins to decrease with distance. The extent of the near field can be described by the following equation **(**D and λ in same units). Note the diameter of the major axis is used as the most conservative value:

$R_{nf} = D_{maj}^2 / (4 * \lambda)$

$= (0.78\ m)^2 / (4 * 0.01\ m)$

$= 15.5\ m$

The magnitude of the on-axis (main beam) power density varies according to location in the near field. However, the maximum value of the near-field, on-axis, power density can be expressed by the following equation:

$S_{nf} = (16 * P) / (\eta * \pi * D_{maj}^2)$

$= (16 * 4\ W) / (0.72 * \pi * (0.79\ m)^2)$

$= 1.4\ mW/cm^2$ at 30% duty cycle

Far-Field Region. The power density in the far-field or Fraunhofer region of the antenna pattern decreases inversely as the square of the distance. The distance to the start of the far field can be calculated by the following equation:

$R_{ff} = (0.6 * D_{maj}^2) / \lambda$

$= (0.6 * (0.79\ m)^2) / 0.01\ m$

$= 37.2\ m$

The power density at the start of the far-field region of the radiation pattern can be estimated by the equation:

S_{ff} = $(P * G) / (4 * \pi * R_{ff}^2)$

= $(4.0 \text{ W} * 5618.1) / (4 * \pi * (37.2 \text{ m})^2)$

= 0.04 mW/cm^2 at 30% duty cycle

Transition Region. Power density in the transition region decreases inversely with distance from the antenna, while power density in the far field (Fraunhofer region) of the antenna decreases inversely with the ***square*** of the distance. The transition region will then be the region extending from R_{nf} to R_{ff}. If the location of interest falls within this transition region, the on-axis power density can be determined from the following equation:

S_t = $(S_{nf} * R_{nf}) / R$ where R is the location of interest in meters

= $(4.6 \text{ mW/cm}^2 * 15.5 \text{ m}) / R$

= $(21.2 \text{ m} * \text{mW/cm}^2) / R$ at 30% duty cycle

GM40 Aero Earth Station on Afterburner Networks

Summary of expected radiofrequency exposure levels for the GM40 Aero earth station antenna using a 31.6 W PA in a Controlled environment

Region	Maximum Power Density	Hazard Assessment
Far field (R_{ff}) = 37.2 m	0.04 mW/cm^2	Satisfies FCC MPE
Near field (R_{nf}) = 15.5 m	1.4 mW/cm^2	Satisfies FCC MPE
Transition region (R_t) (R_t) = $R_{nf} < R_t < R_{ff}$	1.4 mW/cm^2	Satisfies FCC MPE
Main Reflector Surface ($S_{surface}$)	0.02 mW/cm^2	Satisfies FCC MPE

Conclusions

Based on this analysis it is concluded that harmful radiation levels will not be present for Occupational workers during servicing or normal operation, nor will harmful levels exist in regions normally occupied by the public.

Radiofrequency Exposure Analysis for the GM40 Aero Earth Station Antenna with 31.6 W PA.

This report analyzes the non-ionizing radiation levels for the GM40 Aero earth station antenna employing a 31.6 W power amplifier. The analysis and calculations performed in this report follow the methods described in the most recent version of FCC Office of Engineering and Technology Bulletin No. 65 (August 1977) apart from formula 13 for near field power density. The formula for near field power density in this report is replaced per FCC/OET staff guidance with a new formula derived from Table D.5 of IEEE Standard C95.3-2021.

Bulletin No. 65 specifies that there are two separate tiers of exposure limits that are dependent upon the situation in which the exposure takes place and/or the status of the individuals who are subject to the exposure. The two tiers are General Population / Uncontrolled environment, and an Occupational / Controlled environment.

Because the GM40 antenna is mounted on top of aircraft fuselages in a controlled environment with no access by the general population, compliance with the General Population/Uncontrolled Access limit is not being evaluated here.

The applicable exposure limit for the Occupational / Controlled environment at this frequency of operation is 5 mW/cm^2 averaged over a 5-minute period.

Definition of terms

The terms are used in the formulas here are defined as follows:

$S_{surface}$ = maximum power density at the antenna surface
S_{nf} = maximum near-field power density
S_t = power density in the transition region
S_{ff} = power density (on axis)
R_{nf} = extent of near-field
R_{ff} = distance to the beginning of the far-field
R = distance to point of interest

P = 31.6 W	power fed to the antenna in Watts
A = 0.124 m^2	physical area of the aperture antenna
G = 11236.2	power gain relative to an isotropic radiator
D_{maj} = 0.79 m	diameter of major axis of the antenna in meters
D_{min} = 0.16	diameter of minor axis of the antenna in meters
D_{eff} = 0.40 m	effective diameter of antenna in meters
F = 30 GHz	frequency in GHz
λ = 0.01 m	wavelength in meters (c/F_{MHz})
η = 0.72	aperture efficiency
Dc = 6.25%	typical duty cycle over 5-minute averaging period

Antenna Surface. The maximum power density directly in front of an antenna (e.g., at the antenna surface) can be approximated by the following equation:

$S_{surface} = (4 * P) / A$

$= (4 * 31.6\ W) / 0.124\ m^2$

$= 6.4\ mW/cm^2$ at 6.25% duty cycle

$= 0.025\ mW/cm^2$ with blockage safety inhibit active

Near Field Region. In the near-field or Fresnel region, of the main beam, the power density can reach a maximum before it begins to decrease with distance. The extent of the near field can be described by the following equation **(**D and λ in same units). Note the diameter of the major axis is used as the most conservative value:

$R_{nf} = D_{maj}^2 / (4 * \lambda)$

$= (0.78\ m)^2 / (4 * 0.01\ m)$

$= 15.5\ m$

The magnitude of the on-axis (main beam) power density varies according to location in the near field. However, the maximum value of the near-field, on-axis, power density can be expressed by the following equation:

$S_{nf} = (16 * P) / (\eta * \pi * D_{maj}^2)$

$= (16 * 31.6\ W) / (0.72 * \pi * (0.79\ m)^2)$

$= 2.25\ mW/cm^2$ at 6.25% duty cycle

Far-Field Region. The power density in the far-field or Fraunhofer region of the antenna pattern decreases inversely as the square of the distance. The distance to the start of the far field can be calculated by the following equation:

$R_{ff} = (0.6 * D_{maj}^2) / \lambda$

$= (0.6 * (0.79\ m)^2) / 0.01\ m$

$= 37.2\ m$

The power density at the start of the far-field region of the radiation pattern can be estimated by the equation:

S_{ff} $= (P * G) / (4 * \pi * R_{ff}^2)$

$= (31.6\ W * 11236.2) / (4 * \pi * (37.2\ m)^2)$

$= 0.13\ mW/cm^2$ at 6.25% duty cycle

Transition Region. Power density in the transition region decreases inversely with distance from the antenna, while power density in the far field (Fraunhofer region) of the antenna decreases inversely with the ***square*** of the distance. The transition region will then be the region extending from R_{nf} to R_{ff}. If the location of interest falls within this transition region, the on-axis power density can be determined from the following equation:

S_t $= (S_{nf} * R_{nf}) / R$ where R is the location of interest in meters

$= (36.1\ mW/cm^2 * 15.5\ m) / R$

$= (6.37\ m * mW/cm^2) / R$ at 6.25% duty cycle

Approved by OMB
3060-0678

Date & Time Filed:
File Number: ---

FCC APPLICATION FOR SPACE AND EARTH STATION:MOD OR AMD - MAIN FORM FCC 312 MAIN FORM FOR OFFICIAL USE ONLY	FCC Use Only

APPLICANT INFORMATION

Enter a description of this application to identify it on the main menu:
E240159 Add PoC and Frequencies September 2024

1-8. Legal Name of Applicant

Name:	Viasat, Inc.	Phone Number:	760-476-2583
DBA Name:		Fax Number:	760-929-3941
Street:	6155 El Camino Real	E-Mail:	daryl.hunter@viasat.com
City:	Carlsbad	State:	CA
Country:	USA	Zipcode:	92009 -
Attention:	Mr Daryl T Hunter P.E.		

9-16. Name of Contact Representative

Name:	Viasat, Inc.	Phone Number:	760-476-2583
Company:		Fax Number:	760-929-3941
Street:	6155 El Camino Real	E-Mail:	daryl.hunter@viasat.com
City:	Carlsbad	State:	CA
Country:	USA	Zipcode:	92009-
Attention:	Daryl T. Hunter, P.E.	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.

17c. Is a fee submitted with this application?

(●) If Yes, complete and attach FCC Form 159.

If No, indicate reason for fee exemption (see 47 C.F.R.Section 1.1114).

( ) Governmental Entity ( ) Noncommercial educational licensee
( ) Other(please explain):

17d.
Fee Classification

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

(a) Call sign of station:
E240159

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: 08/20/2024

(b) File number: SESLIC2024082101801

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:

- [x] 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.

- [x] Using U.S. licensed satellites
- [x] Using Non-U.S. licensed satellites

23. If applicant is providng 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)
- [x] c.Other (Please specify upper and lower frequencies in MHz.)

Frequency Lower: 17800 Frequency Upper: 30000 (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) Ka-band ESIM

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)
- [x] h -- authorization to add frequency
- [x] 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**

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
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 explination 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 explination 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 attemptiing 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 exhinit, 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?UK Isle of Man	
43. Description. (Summarize the nature of the application and the services to be provided). See narrative.Narrative	
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

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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	46. Title of Person Signing
Daryl T. Hunter, P.E.	CTO, Regulatory Affairs

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:	M40	E5. Call Sign:	
E2: Contact Name	Daryl T. Hunter	E6. Phone Number:	760-476-2583
E3. Street:		E7. City:	
		E8. County:	
E4. State		E9. Zip Code	
E10. Area of Operation:		OCONUS	
E11. Latitude:	0 ° 0 ' 0.0 "		
E12. Longitude:	0 ° 0 ' 0.0 "		
E13. Lat/Lon Coordinates are:		○ NAD-27	○ NAD-83 ◉ N/A
E14. Site Elevation (AMSL):		0.0 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 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?	○ Yes ○ No ◉ N/A
E17. Is the facility operated by remote control? If YES, provide the location and telephone number of the control point.	◉ Yes ○ No
E18. Is frequency coordination required? If YES, attach a frequency coordination report as	○ Yes ◉ No
E19. Is coordination with another country required? If YES, attach the name of the country(ies) and plot of coordination contours as	○ Yes ◉ No
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.	○ Yes ◉ No

POINTS OF COMMUNICATION

Satellite Name: 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:	
E26. Common Name:	E27. Country:

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)
M40	M40	999999	Viasat, Inc.	M-40	0.397	33.3 dBi at 17.8
M40	M40	999999	Viasat, Inc.	M-40	0.397	33.4 dBi at 18.3
M40	M40	999999	Viasat, Inc.	M-40	0.397	33.3 dBi at 17.8
M40	M40	999999	Viasat, Inc.	M-40	0.397	33.4 dBi at 18.3

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)
M40	0.1575/0.7874	0.0	0.0	0.0	4.0	0.0	43.5
M40	0.1575/0.7874	0.0	0.0	0.0	4.0	0.0	43.5

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)
M40	17.8 18.3	R	Left and Right Circular	52M1G7D	0.0	0.0
E50. Modulation and Services 52.1 MBd M-ary PSK Digital Data						
M40	17.8 18.3	R	Left and Right Circular	417MG7D	0.0	0.0
E50. Modulation and Services 416.6 MBd M-ary PSK Digital Data						
M40	17800 18300	R	Left and Right Circular	52M1G7D	0.0	0.0
E50. Modulation and Services 52.1 MBd M-ary PSK Digital Data						
M40	17800 18300	R	Left and Right Circular	417MG7D	0.0	0.0
E50. Modulation and Services 416.6 MBd M-ary PSK Digital Data						

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)
M40	Geostationary	17700 18300	5.0/178.0	90.0	5.0	270.0	5.0	0.0
	Geostationary	17800 18300	5.0/178.0	90.0	5.0	270.0	5.0	0.0

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 720-493-7300
E62. Street Address 349 Inverness Drive South	

E63. City	E68. County	E67/68. State/Country	E64. Zip Code
Englewood	Arapahoe	CO/ USA	80112

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:	GM40	E5. Call Sign:	
E2: Contact Name	Daryl T. Hunter	E6. Phone Number:	760-476-2583
E3. Street:		E7. City:	
		E8. County:	
E4. State		E9. Zip Code	
E10. Area of Operation:		OCONUS	
E11. Latitude:	0 ° 0 ' 0.0 "		
E12. Longitude:	0 ° 0 ' 0.0 "		
E13. Lat/Lon Coordinates are:		○ NAD-27	○ NAD-83 ◉ N/A
E14. Site Elevation (AMSL):		0.0 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 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?	○ Yes ○ No ◉ N/A
E17. Is the facility operated by remote control? If YES, provide the location and telephone number of the control point.	◉ Yes ○ No
E18. Is frequency coordination required? If YES, attach a frequency coordination report as	○ Yes ◉ No
E19. Is coordination with another country required? If YES, attach the name of the country(ies) and plot of coordination contours as	○ Yes ◉ No
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.	○ Yes ◉ No

POINTS OF COMMUNICATION

Satellite Name: 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:	
E26. Common Name:	E27. Country:

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)
GM40	GM40	999999	Viasat, Inc.	GM-40	0.397	35.7 dBi at 17.8
GM40	GM40	999999	Viasat, Inc.	GM-40	0.397	35.8 dBi at 18.3

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)
GM40	0.1575/0.7874	0.0	0.0	0.0	31.6	0.0	55.5

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)
GM40	17800 18300	R	Left and Right Circular	52M1G7D	0.0	0.0
E50. Modulation and Services 52.1 MBd M-ary PSK Digital Data						
GM40	17800 18300	R	Left and Right Circular	417MG7D	0.0	0.0

E50. Modulation and Services 416.6 MBd M-ary PSK Digital Data

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)
GM40	Geostationary	17800 18300	5.0/178.0	90.0	5.0	270.0	5.0	0.0

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 720-493-7300
E62. Street Address 349 Inverness Drive South			
E63. City Englewood	E68. County Arapahoe	E67/68. State/Country CO/ USA	E64. Zip Code 80112

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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.

Attachment 1
AMENDMENT NARRATIVE EXHIBIT
(Response to Question 43)
Ka Band Aeronautical Terminals E240159

Viasat, Inc. ("Viasat") hereby amends its application for blanket authority to operate M40 and GM40 transmit/receive earth stations in motion ("ESIMs") on aircraft with space stations on the Permitted Space Station List ("Permitted List"). Specifically, Viasat amends its application to add the Telstar 19 VANTAGE ("T19V") satellite at the 63º W.L. orbital location as a point of communication in the 17.8-18.3 GHz (space-to-Earth) portion of the Ka band.[1] Operations pursuant to this application with the T19V satellite in the 17.8-18.3 GHz band segment would be limited to serving U.S.-flagged aircraft at locations outside the United States. Grant of the application as amended would serve the public interest by enabling Viasat to augment existing services to customers on aircraft and offer new services to customers. Except for the addition T19V as a point of communication in the band segment described in this amendment, all other information submitted with the initial application remains unchanged.

The T19V satellite is already authorized to serve the U.S. market in other portions of the Ka-band.[2] As described in Viasat's underlying application for permanent authority, all operations with satellites on the Permitted List, including the T19V satellite, would be consistent with the Commission's regulatory framework for the Ka band and rules applicable to aeronautical ESIMs, and with the same technical parameters for the M40 and GM40 terminals currently authorized for communications with other satellites.[3] When communicating with the T19V satellite, all communications would comport with the applicable terms and conditions of the T19V satellite authorization.[4]

Viasat acknowledges that the 17.8-18.3 GHz band segment is allocated for FSS on a secondary basis with respect to primary fixed services. Although Telesat did not seek market access for operations in the 17.8-18.3 GHz band segment, in its application for the T19V satellite Telesat provided technical information for operations in this band segment, and certified that all operations from the satellite would be consistent with applicable power-flux density limits at the earth's surface.[5] Viasat's operations in the 17.8-18.3 GHz band segment would comport with the technical parameters described in the petition for declaratory ruling for the T19V satellite.

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1 Viasat would also communicate with the T19V satellite in the 18.3-18.8 GHz (space-to-Earth) and 29.5-30.0 GHz (Earth-to-space) band portions of the Ka band. Because T19V is authorized as a space station on the Commission's Permitted List in these band segments, operations with T19V in these band segments are covered by Viasat's initial application.

2 *See* Telesat International Limited, Call Sign S2955, ICFS File Nos. SAT-PPL-20160225-00020 and SAT-MPL-20211119-00163 (granted Aug. 31, 2016) ("T19V PDR").

3 *See* Viasat, Inc., Call Sign E240159, ICFS File No. SES-LIC-20240821-01801, Narrative Exhibit.

4 *See* T19V PDR, Grant Stamp.

5 *See* T19V PDR, Technical Exhibit at 4.

Further, the potential for harmful interference to terrestrial operators is limited by the fact that operations with the T19V satellite in the 17.8-18.3 GHz band segment would be limited to certain beams on the T19V satellite with no coverage of the United States.[6]

[6] Specifically, operations in 17.8-18.3 GHz would be limited to beams 44, 46, 47, and 49 on the T19V satellite. *See* T19V PDR, Technical Exhibit at 5, Figure 1.