

APPLICATION FOR EARTH STATION SPECIAL TEMPORARY AUTHORITY

APPLICANT INFORMATION Enter a description of this application to identify it on the main menu:
STA Request for AMC-2 (80.85 WL) - March 2015

1. Applicant

Name:	Row 44 Inc.	Phone Number:	818-706-3111
DBA Name:		Fax Number:	
Street:	4353 Park Terrace Drive	E-Mail:	smcLellan@globaleagteent.com
City:	Westlake Village	State:	CA
Country:	USA	Zipcode:	91361
Attention:	Mr. Simon McLellan		

SES-STA-20150319-00172

Call Sign: E080100 Grant Date: 3-24-15

(or other Identifier)

Term Dates From: 3-25-15 To: 3-24-15

Approved: [Signature]

GRANTED

International Bureau

2. Contact	
Name: David S. Keir	Phone Number: 202-429-8970
Company: Lerman Senter PLLC	Fax Number: 202-293-7783
Street: 2000 K Street, NW Suite 600	E-Mail: dkeir@lermansenter.com
City: Washington	State: DC
Country: USA	Zipcode: 20006 -1809
Attention:	Relationship: Legal Counsel
(If your application is related to an application filed with the Commission, enter either the file number or the IB Submission ID of the related application. Please enter only one.)	
3. Reference File Number SESMFS2015031800164 or Submission ID	
4a. Is a fee submitted with this application?	
<input checked="" type="radio"/> If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114).	
<input type="radio"/> Governmental Entity <input type="radio"/> Noncommercial educational licensee	
<input type="radio"/> Other (please explain):	
4b. Fee Classification: CGB – Mobile Satellite Earth Stations	
5. Type Request	
<input checked="" type="radio"/> Use Prior to Grant <input type="radio"/> Change Station Location <input type="radio"/> Other	
6. Requested Use Prior Date 03/25/2015	
7. City	
8. Latitude (dd mm ss.s h) 0 0 0.0 N	

9. State	10. Longitude (dd mm ss.s h) 0 0 0.0 W
11. Please supply any need attachments. Attachment 1: Explanatory Statement Attachment 2: Mod. Application Attachment 3:	
12. Description. (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.) <div style="border: 1px solid black; padding: 5px; margin: 5px 0;">Row 44, Inc. requests authority commencing March 25, 2015 to use conventional Ku-band capacity on the AMC-2 satellite at 80.85 degrees W.L. in advance of final action on Row 44's pending license modification application. See Attached Narrative.</div>	
13. 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 <input checked="" type="radio"/> No <input type="radio"/>	
14. Name of Person Signing Simon McLellan	15. Title of Person Signing Senior Engineer
WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND / OR IMPRISONMENT (U.S. Code, Title 18, Section 1001), AND/OR REVOCATION OF ANY STATION AUTHORIZATION (U.S. Code, Title 47, Section 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, Section 503).	

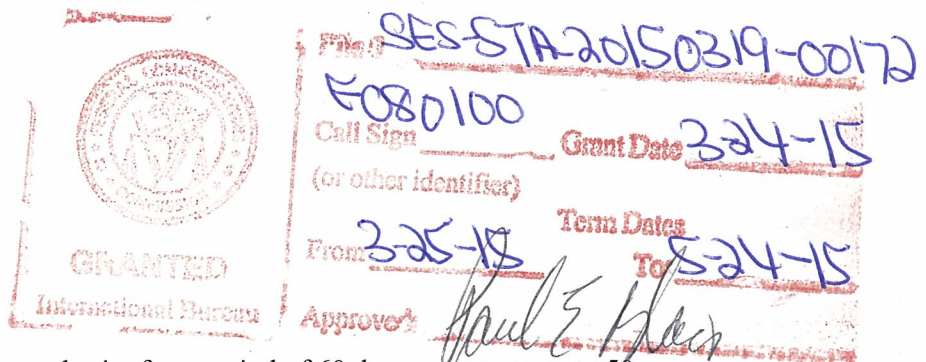
FCC NOTICE REQUIRED BY THE PAPERWORK REDUCTION ACT

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.

Applicant: Row 44, Inc.
Call Sign: E080100
File No.: **SES-STA-20150319-00172**
Special Temporary Authority (STA)



The stamp is a rectangular document with a red border. At the top left is the FCC seal. Below it, the word "GRANTED" is printed in large, bold, red letters. Underneath "GRANTED" is the text "International Bureau". To the right of the seal, the file number "SES-STA-20150319-00172" is handwritten in blue ink. Below the file number, the call sign "E080100" is handwritten in blue ink. To the right of the call sign, the grant date "3-24-15" is handwritten in blue ink. Below the call sign, the text "(or other identifier)" is printed. To the right of this text, the term dates "From 3-25-15 To 5-24-15" are handwritten in blue ink. At the bottom right, the word "Approved" is printed, followed by a signature in blue ink.

Row 44, Inc. is granted special temporary authority for a period of 60 days to operate up to 50 aeronautical terminals (0.62 meter TECOM Ku-Stream antenna) to communicate with AMC-2 (Call Sign S2134) at the 80.85° W.L. orbital location using the 14.2-14.47 GHz (Earth-to-space) and 11.7-12.2 GHz (space-to-Earth) frequency bands. Operations must be in accordance with the technical specifications contained in Row 44, Inc.'s application and are subject to the following conditions:

1. Operations under this grant of special temporary authority must be on an un-protected, non-harmful interference basis, *i.e.*, while operating under this temporary authority Row 44, Inc. must not cause harmful interference to, and must not claim protection from interference caused to it by, any other lawfully operating radiocommunication system. Row 44, Inc. must cease operations immediately upon notification of such interference and must immediately inform the Commission, in writing, of such an event.
2. ESAA operations in the 14.2-14.47 GHz band shall not exceed the EIRP density limits specified in the current earth station authorization, Call Sign E080100, IBFS File No. SES-MOD-20121023-00963. We note that this grant does not authorize any higher power density levels as requested in SES-MFS-2015031800164.
3. Operation pursuant to this authorization outside the United States in the 14.2-14.47GHz band must be in compliance with the provisions of Annex 1, Part C of Recommendation ITU-R M.1643, with respect to any radio astronomy station performing observations in the 14.47-14.5 GHz band.
4. When operating in international airspace within line-of-sight of the territory of a foreign administration where Fixed Service networks have a primary allocation in the 14.0-14.5 GHz band, an aircraft earth station must not produce ground-level power flux density (pfd) in such territory in excess of the following values unless the foreign administration has imposed other conditions for protecting its FS stations: $-132 + 0.5 \times \text{THETA}$ dB(W/(m² MHz)) for $\text{THETA} \leq 40^\circ$; -112 dB(W/(m² MHz)) for $40^\circ < \text{THETA} \leq 90^\circ$. Where: THETA is the angle of arrival of the radio-frequency wave in degrees above the horizontal, and the aforementioned limits relate to the pfd and angles of arrival that would be obtained under free space propagation conditions.
5. Operations pursuant to this authorization must conform with the terms of coordination agreements between the operator of AMC-2 and operators of other Ku-band geostationary satellites within six angular degrees of AMC-2. In the event that another GSO Fixed-Satellite Service (FSS) space station commences operations in the 14.0-14.5 GHz band at a location within six degrees of any of these space stations, aircraft earth stations operating pursuant to this temporary authority shall cease transmitting to that space station unless and until such operation has been coordinated with the new space station's operator or Row 44, Inc. demonstrates that such operation will not cause interference to the new co-frequency space station.

6. Row 44, Inc. must take all necessary measures to ensure that the antenna does not create potential exposure of humans to radiofrequency radiation in excess of the FCC exposure limits defined in 47 CFR §§ 1.1307(b) and 1.1310 wherever such exposures might occur. Measures must be taken to ensure compliance with limits for both occupational controlled exposure and for general population/uncontrolled exposure, as defined in these rule sections. Requirements for restrictions can be determined by predictions based on calculations, modeling or by field measurements. The FCC's OET Bulletin 65 (available on-line at www.fcc.gov/oetlrfafety) provides information on predicting exposure levels and on methods for ensuring compliance, including the use of warning and alerting signs and protective equipment for workers. The licensee shall ensure installation of terminals on aircraft 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 aircraft and equipment. A terminal exhibiting radiation exposure levels exceeding 1.0 mW/cm² in accessible areas, such as at the exterior surface of the radome, shall have a label attached to the surface of the terminal warning about the radiation hazard and shall include thereon a diagram showing the regions around the terminal where the radiation levels could exceed 1.0 mW/cm².
7. Row 44, Inc. must maintain a U.S. point of contact available 24 hours per day, seven days per week, with the authority and ability to terminate operations authorized herein. The licensee shall have available, at all times, the technical personnel necessary to perform supervision of remote station operations.
8. Aircraft earth stations authorized herein must employ a tracking algorithm that is resistant to capturing and tracking adjacent satellite signals, and each station must be capable of inhibiting its own transmission in the event it detects unintended satellite tracking.
9. Aircraft earth stations authorized herein must be monitored and controlled by a ground-based network control and monitoring center. Such stations must be able to receive "enable transmission" and "disable transmission" commands from the network control center and must cease transmission immediately after receiving a "parameter change" command until receiving an "enable transmission" command from the network control center. The network control center must monitor operation of each aircraft earth station to determine if it is malfunctioning, and each aircraft earth station must self-monitor and automatically cease transmission on detecting an operational fault that could cause harmful interference to a fixed-satellite service network.
10. Stations authorized herein must not be used to provide air traffic control communications.
11. Operation in the territory or airspace of any country other than the United States must be in compliance with the applicable laws, regulations, and licensing procedures of that country, as well as with the conditions of this authorization.
12. For each ESAA transmitter, Row 44, Inc. must maintain records of the following data for each operating aircraft earth station (AES), a record of the aircraft location (i.e.,

latitude/longitude/altitude), transmit frequency, channel bandwidth and satellite used shall be time annotated and maintained for a period of not less than one year. Records shall be recorded at time intervals no greater than one (1) minute while the AES is transmitting. The ESAA operator shall make this data available, in the form of a comma delimited electronic spreadsheet, within 24 hours of a request from the Commission, NTIA, or a frequency coordinator for purposes of resolving harmful interference events. A description of the units (i.e., degrees, minutes, MHz ...) in which the records values are recorded will be supplied along with the records.

13. Antenna elevation for all operations must be at least 5 degrees above the geographic horizon while the aircraft is on the ground.
14. Row 44, Inc. must comply with any pertinent limits established by the International Telecommunication Union to protect other services allocated internationally.
15. Grant of this authorization is without prejudice to any determination that the Commission may make regarding pending applications or future requests for special temporary authority. *E.g.* IBFS File No. SES-MFS-20150318-00164.
16. Any action taken or expense incurred as a result of operations pursuant to this special temporary authority is solely at Row 44, Inc.'s risk.

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

EXPLANATORY STATEMENT

Row 44, Inc. hereby requests Special Temporary Authority (“STA”) for a period of sixty (60) days, pursuant to Section 25.120(b) of the FCC’s Rules, to operate its licensed Ku-band network of Earth Stations Aboard Aircraft (“ESAA”), under Call Sign E080100, with an additional satellite point of communication, AMC-2 at 80.85° W.L. Row 44 has recently filed an application seeking permanent authority to operate with this satellite (as well as another satellite, SES-6 at 40.5° W.L.) as a new point of communication, and to modify operating parameters for use of two other satellites already authorized for Row 44’s use (AMC-9 at 83° W.L. and SES-1 at 101° W.L.). *See* File No SES-MFS-20150318-00064 (“Modification Application”), copy attached hereto. In this STA application, Row 44 seeks authority to permit initiation of service on AMC-2 using up to fifty (50) operating earth stations while this underlying application remains pending. Row 44’s STA operation would change its current authority only through the addition of AMC-2 as a point of communication for this limited number of units under the operating approach outlined in the Modification Application, and its operations would otherwise remain consistent with all terms and conditions of its current license. Proposed operations on AMC-2 would be limited to conventional Ku-band capacity frequencies at 11.7 to 12.2 GHz (downlink) and 14.0 to 14.5 GHz (uplink), as proposed in the pending Modification Application.

All technical and other required information concerning Row 44’s planned use of AMC-2 is contained in the underlying application. *See* Modification Application, File No. SES-MFS-20150318-00064. Row 44’s Modification Application includes a coordination certification letter from SES confirming that its proposed ESAA operations are consistent with coordination arrangements with operators of the satellites within six degrees on either side of AMC-2. *Id.* at Exhibit B. Row 44’s planned operations will also be fully consistent with its existing agreements with the National Science Foundation and the National Aeronautics and Space Administration, and will adhere to the terms and conditions of Row 44’s current license.

Under Section 25.120(b)(1) of the FCC’s Rules, the International Bureau may grant an STA when the public interest supports the relief requested, and/or delay in the institution of temporary operations would be contrary to the public interest. *See* 47 C.F.R. § 25.120(b)(1). Such authority may be granted for a period not to exceed 60 days if the STA Request itself has not appeared on public notice but the applicant has filed a request for permanent authority for the parameters and facilities requested. *See* 47 C.F.R. § 25.120(b)(3).

Grant of the authority requested in this instance will affirmatively serve the public interest by permitting Row 44 to continue to serve existing customers and to expand its ESAA network for the broader benefit of air travelers and airline crew members. Access to this new capacity is urgently needed at this time because higher than expected demand from airline passengers has caused severe congestion on the network, and there are not currently additional capacity options on satellites for which Row 44 has already obtained authorization. If Row 44 finds that it has insufficient bandwidth to operate normally, service availability would be

impaired and the in-flight user experience significantly degraded. Due to these circumstances, Row 44 has been forced to seek authority to add new satellite capacity in a much shorter timeframe than would normally be expected. Addition of AMC-2 to Row 44's existing authority will provide more effective coverage of its primary U.S. service area (CONUS), as well as parts of Central America, the Caribbean and the Atlantic Ocean. This will provide enhanced performance and also make new areas of operation available to U.S. airline passengers that use the Row 44 service. Grant of the requested STA is consistent with Commission policy and will not adversely affect other authorized operations.

Row 44 acknowledges that favorable FCC action on this STA request would be without prejudice to the ultimate determination the FCC will make regarding the Modification Application. In addition, Row 44 acknowledges that any action taken pursuant to a grant of the requested STA will be at its own risk.

The conventional Ku-band capacity that Row 44 seeks to use on AMC-2 will be available in the very near term. Accordingly, Row 44 respectfully requests that the FCC grant it authority for a period of sixty (60) days commencing on or before March 25, 2015 to use the AMC-2 satellite as a point of communication in the conventional Ku-band for up to 50 antennas operating under its FCC ESAA network license. Row 44 desires to begin testing on that date with the objective of commencing service to users during the first week of April.

FCC IBFS - Electronic Filing**Submission_id :IB2015000519****Successfully filed on :Mar 18 2015 2:40:29:336PM**

The current authorization of Call Sign E080100 expires on Aug 5 2024 1:10:00:000PM. The filing of a modification application does not automatically extend the expiration date of an authorization. In addition, grant of a modification will not extend the expiration date unless that is the modification sought. In general, an application for renewal of the authorization must be filed separately in order to extend the expiration date.

[Return to Main Menu](#)

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)
 ESAA application of FSS

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

- Common Carrier Non-Common Carrier

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

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

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

- Connected to a Public Switched Network Not connected to a Public Switched Network N/A

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

- a. C-Band (4/6 GHz) b. Ku-Band (12/14 GHz)
 c. Other (Please specify upper and lower frequencies in MHz.)

Frequency Lower: Frequency Upper: (Please specify additional frequencies in an attachment)

TYPE OF STATION

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

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

26. TYPE OF EARTH STATION FACILITY:

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

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

PURPOSE OF MODIFICATION

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

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

ENVIRONMENTAL POLICY

28. Would a Commission grant of any proposal in this application or amendment have a significant environmental impact as defined by 47 CFR 1.1307? If YES, submit the statement as required by Sections 1.1308 and 1.1311 of the

Yes No

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.

Exhibit C

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?

Yes No

If Yes, attach as an exhibit, copies of the requests for waivers or exceptions with supporting documents.

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

Exhibit B

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). Row 44 seeks to expand its aeronautical mobile-satellite service network capacity and availability by increasing EIRP, modifying the maximum skew angle for and adding both new emission designators and additional satellite points of communication to its licensed ESAA network. See Attached Narrative. Description

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

Exhibit A

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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
Simon McLellan

46. Title of Person Signing
Senior Engineer

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: Remote Terminal #1	E5: Call Sign:	E080100
E2: Contact Name Simon McLellan	E6: Phone Number:	(949) 636-0732
E3: Street:	E7: City:	
E4: State	E8: County:	
E10: Area of Operation:	E9: Zip Code	
E11: Latitude: 0 ° 0 ' 0.0 " N	CONUS + Territorial & International Waters (within Designated Satellite Footprints)	
E12: Longitude: 0 ° 0 ' 0.0 " 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):	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.	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> N/A
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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
--	---

	<input type="radio"/> Yes <input checked="" type="radio"/> No
--	---

E18. Is frequency coordination required? If YES, attach a frequency coordination report as	
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
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.	<input type="radio"/> Yes <input checked="" type="radio"/> No

POINTS OF COMMUNICATION

Satellite Name: OTHER OTHER If you selected OTHER, please enter the following:	
E21. Common Name:	E22. ITU Name:
E23. Orbit Location:	E24. Country: USA
Satellite Name: OTHER OTHER If you selected OTHER, please enter the following:	
E21. Common Name:	E22. ITU Name:
E23. Orbit Location:	E24. Country: USA

POINTS OF COMMUNICATION (Destination Points)

E25. Site Identifier: Remote Terminal #1	
E26. Common Name:	E27. Country: USA

ANTENNA

Site ID	E28. Antenna Id	E29. Quantity	E30. Manufacturer	E31. Model	E32. Antenna Size	E41/42. Antenna Gain Transmint and/or Recieve(____dBi at ____GHz)	
Remote Terminal #1	A	1000	Aerosat Avionics	70-100-0000-01	0.6	31.8 dBi at 11.7	
Remote Terminal #1	A	1000	Aerosat Avionics	70-100-0000-01	0.6	28.6 dBi at 14.47	

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)
A	0.0/0.0	0.0	0.0	0.0	10.0	0.0	41.8

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 EIRP Density per Carrier(dBW/4kHz)
A	11700 12200	R	Horizontal and Vertical	36M0G7D	0.0	0.0

E50. Modulation and Services QPSK or octal PSK						
A	14050 14470	T	Horizontal and Vertical	1M60G7D	38.6	14.6
E50. Modulation and Services QPSK or octal PSK						

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)
A	Geostationary	11700.0000 12200.0000	83.0/127.0	206.6	35.0	138.7	11.2	0.0
	Geostationary	14050.0000 14470.0000	83.0/127.0	206.6	35.0	138.7	11.2	5.4

REMOTE CONTROL POINT LOCATION

E61. Call Sign	E66. Phone Number
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E21. Common Name:	E22. ITU Name:
E23. Orbit Location:	E24. Country:

POINTS OF COMMUNICATION (Destination Points)

E25. Site Identifier: Remote Terminal #2	
E26. Common Name:	E27. Country: USA

ANTENNA

Site ID	E28. Antenna Id	E29. Quantity	E30. Manufacturer	E31. Model	E32. Antenna Size	E41/42. Antenna Gain Transmint and/or Recieve(____dBi at ____GHz)
Remote Terminal #2	B	1000	TECOM	Ku-Stream	0.62	28.8 dBi at 14.25
Remote Terminal #2	B	1000	TECOM	Ku-Stream	0.62	31.1 dBi at 11.75

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)
B	0.0/0.0	0.0	0.0	0.0	31.6	0.0	43.8

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 EIRP Density per Carrier(dBW/4kHz)
B	11450 11700	R	Horizontal and Vertical	36M0G7D	0.0	0.0

E50. Modulation and Services QPSK or octal PSK

B	11700 12200	R	Horizontal and Vertical	36M0G7D	0.0	0.0
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E50. Modulation and Services QPSK or octal PSK

B	12250 12750	R	Horizontal and Vertical	36M0G7D	0.0	0.0
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E50. Modulation and Services QPSK or octal PSK

B	14050 14470	T	Horizontal and Vertical	3M20G7D	41.8	14.8
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E50. Modulation and Services QPSK or octal PSK

B	10950.0000 11200.0000	R	Horizontal and Vertical	36M0G7D	0.0	0.0
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E50. Modulation and Services QPSK or octal PSK

B	14050.0000 14470.0000	T	Horizontal and Vertical	1M60G7D	36.0	11.9
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E50. Modulation and Services QPSK or octal PSK

B	14050.0000 14470.0000	T	Horizontal and Vertical	3M20G7D	43.3	16.2
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E50. Modulation and Services QPSK or octal PSK

B	14050.0000 14470.0000	T	Horizontal and Vertical	6M40G7D	43.8	13.7
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E50. Modulation and Services QPSK or octal PSK

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)
B	Geostationary	10950.0000 11200.0000	40.5/40.5	323.4	28.7	299.2	17.5	0.0
	Geostationary	11450.0000 11700.0000	37.5/127.0	194.4	20.9	119.5	2.6	0.0

	Geostationary	11700.0000 12200.0000	37.5/194.0	194.4	20.9	259.8	6.3	0.0
	Geostationary	12250.0000 12750.0000	55.5/194.0	127.5	39.6	259.8	6.3	0.0
	Geostationary	14050.0000 14470.0000	37.5/194.0	194.4	20.9	259.8	6.3	13.3

REMOTE CONTROL POINT LOCATION

E61. Call Sign E940460 NOTE: Please enter the callsign of the controlling station, not the callsign for which this application is being filed.		E66. Phone Number (301) 601-7205	
E62. Street Address One Aerojet Way			
E63. City North Las Vegas	E68. County Clark	E67/68. State/Country NV/ USA	E64. Zip Code 89030

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-PER, 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.

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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

Description of Application for Modification of License

1.0 OVERVIEW

This application seeks to modify the current Row 44, Inc. (“Row 44”)¹ Ku-band Earth Stations Aboard Aircraft (“ESAA”) license to increase EIRP for transmit conditions with 25° skew or less to the receiving satellite, add new emission designators, and to transmit at lower EIRP than is presently authorized at skew angles ranging up to 55°, angles of arrival at which Row 44 does not currently operate. In addition, Row 44 seeks authority to add two additional satellites as points of communication – AMC-2 at 80.85° W.L. and SES-6 at 40.5° W.L. These additional points of communication are both space stations licensed to and operated by SES, S.A. SES-6 is a non-U.S. satellite, but is already included on the FCC’s Ku-band Permitted List.

All of the requested changes relate solely to the 0.62 meter TECOM Ku-Stream antenna, which is identified as Remote Terminal #2 in the existing Row 44 license (Call Sign E080100). No other changes in the technical parameters contained in the current ESAA license are proposed except as set forth herein, in Form 312 and Schedule B thereto, and in the Technical Appendix, Exhibit A to this application. To the extent practicable, the Form 312 includes only information that is changing due to the requested modification (e.g., it includes both the new satellite points of communication and those previously-authorized satellites for which changes in operating parameters are requested, but not the other satellites included as points of communication under Row 44’s current license for which no operational modification is sought herein).

The proposed modifications to Row 44’s existing authority apply only to certain satellite points of communication that are currently part of the Row 44 license – specifically AMC-9 and SES-1, operated by SES – as well as to the newly-requested satellites identified above. The requested changes in operating parameters will provide enhanced service to airline passengers on flights operating over North American airspace and in the Atlantic and Pacific Ocean regions by allowing increased system capacity and service availability. Except as specifically set forth herein, Row 44 seeks these modifications subject to all terms and conditions set forth in its current license.²

¹ The in-flight connectivity business established by Row 44 now operates under the name Global Eagle Entertainment, which is the parent company of Row 44 (*see* IBFS File No. SES-T/C-20121203-01063). As Row 44 remains the name of the FCC licensee, that designation is used in this application.

² *See* Row 44 Inc., Radio Station Authorization, Call Sign E080100, File No. SES-MOD-20121023-00963, as amended by SES-AFS-20130920-00833 & SES-AFS-20140203-00029 (Sat. Div., granted Aug. 29, 2014).

Row 44 seeks to implement service on one or more of the satellites subject to its amended modification application as soon as practicable, and respectfully requests that this modification application be placed on public notice as quickly as possible in order to facilitate this projected implementation schedule. To the extent necessary, Row 44 will seek Special Temporary Authority to permit modified service using certain satellites in advance of final action on the entirety of the current request for modification.

2.0 TECHNICAL DESCRIPTION, LINK BUDGETS AND PREDICTED COVERAGE AREA

Exhibit A includes a technical description of the proposed changes, a depiction of the coverage contours in relation to combinations of EIRP and skew angle (skew angle ranging from 25° to 55°), as well as representative link budgets. *See* 47 C.F.R. § 25.227(b)(4).

3.0 COORDINATION LETTER

Row 44's intended operations are within the scope that SES has coordinated with the adjacent satellite operators, and should not cause harmful interference into adjacent satellites operating in accordance with FCC's two-degree spacing policy. A copy of a supplemental coordination letter covering Row 44's proposed new operations with the identified SES satellites is attached hereto as Exhibit B. *See* 47 C.F.R. §25.227(b)(2).

Row 44's operations, as modified, will continue to conform to the terms of its existing coordination agreements with the National Aeronautics and Space Administration ("NASA") and the National Science Foundation ("NSF"), as required under Condition 90057 its current ESAA license.³

³ Row 44's coordination agreements with NASA and NSF pre-date the adoption of current rule Sections 25.227(c)(1) & (d)(1), which provide for Public Notice to allow comment on coordination agreements governing operations of ESAA networks in frequency bands shared with NASA and NSF facilities. Accordingly, to the extent necessary, Row 44 requests that the Public Notice issued announcing acceptance of this modification application include the referenced notifications concerning Row 44's existing coordination agreements with NASA and NSF.

4.0 RADIATION HAZARD STUDY

Exhibit C to this application is a revised radiation hazard assessment, submitted pursuant to Section 25.227(b)(8) of the Commission's Rules, reflecting the changed operating parameters requested for the TECOM antenna.

5.0 SPACECRAFT, FREQUENCY & BEAM COVERAGE


See chart on next page


**Spacecraft, Frequency & Beam Coverage Table
 (All Provide Some Coverage to U.S. Locations)**

Satellite	Location	Beam Coverage Area	Tx (GHz)	Rx (GHz)	Satellite Operator
AMC-2	80.85W	North America, Central America, Caribbean and North Atlantic	14.05-14.47	11.7-12.2	SES
AMC-9	83.0W	North America, Caribbean and North Atlantic	14.05-14.47	11.7-12.2	
SES-1	101.0W	North America, Central America, and Caribbean	14.05-14.47	11.7-12.2	
SES-6*	40.5W	Atlantic Ocean	14.05-14.47	10.95-11.2; 11.45-11.7	
IS-19	166.0E	Pacific Ocean	14.05-14.47	12.25-12.75	Intelsat
Eutelsat 115WA (Satmex 5)*	114.9W	North America and Pacific Ocean	14.05-14.47	11.7-12.2	Eutelsat
Eutelsat 117WA (Satmex 8)*	116.8 W	North America and Caribbean	14.05-14.47	11.7-12.2	
T11N†	37.5W	North Atlantic Ocean	14.05-14.47	11.45-11.7; 11.7-12.2	Telesat
Estrella do Sul (T14R)*	63.0W	North Atlantic Ocean, Canada and Caribbean	14.05-14.47	11.7-12.2	
Horizons 1*	127.0W	North America and Pacific Ocean	14.05-14.47	11.7-12.2	JSAT

* = Non-U.S.-licensed satellites included on Ku-band Permitted List

† = T11N is a U.S.-licensed satellite (Call Sign S2357) operated by Telesat Canada

 = New Points of Communication requested in this modification application

 = Existing Points of Communication, changed operating parameters requested

6.0 LICENSEE CERTIFICATION

I, Simon McLellan, VP Engineering of Row 44, Inc., hereby certify as follows:

1. The target space station operator for the satellites subject to this modification application has confirmed that proposed Earth Stations Aboard Aircraft operations are within coordinated parameters for adjacent satellites up to 6 degrees away on the geostationary arc; and
2. The licensee will continue to comply with the requirements of paragraphs (a)(6), (a)(9), (a)(10), and (a)(11) of Section 25.227 of the Commission's Rules and the conditions of its existing license.



Simon McLellan
VP Engineering
Row 44, Inc.

March 17, 2015

EXHIBIT A

Approach

Row 44's present implementation involves a single EIRP and skew-limit. Row 44 proposes to augment its operation by establishing four EIRP-skew limit combinations and 3 emission bandwidth combinations.

Table 1 depicts the present Row 44 authorization:

Table 1 - Present Authorization

EIRP Limit (in a 1.024 MHz emission bandwidth)	Skew Limit
38.8 dBW (14.7 dBW/ 4 kHz, 40.0 dBm TX power)	35 degrees

Table 2 depicts the proposed authorizations involving skew angle, EIRP density / TX power, and emission bandwidth:

Table 2 - Proposed Authorization

EIRP Density and TX Power (1.024 MHz emission bandwidth)	EIRP Density and TX Power (2.048 MHz emission bandwidth)	EIRP Density and TX Power (4.096 MHz emission bandwidth)	Skew Limit
16.2 dBW/ 4 kHz (41.5 dBm TX power)	16.2 dBW/ 4 kHz (44.5 dBm TX power)	13.7 dBW/ 4 kHz (45.0 dBm TX power)	25 degrees
14.7 dBW/ 4 kHz (40.0 dBm TX power)	14.7 dBW/ 4 kHz (43.0 dBm TX power)	13.7 dBW/ 4 kHz (45.0 dBm TX power)	35 degrees
13.7 dBW/ 4 kHz (39.0 dBm TX power)	13.7 dBW/ 4 kHz (42.0 dBm TX power)	13.7 dBW/ 4 kHz (45.0 dBm TX power)	45 degrees
11.9 dBW/ 4 kHz (37.2 dBm TX power)	11.9 dBW/ 4 kHz (40.2 dBm TX power)	11.9 dBW/ 4 kHz (43.2 dBm TX power)	55 degrees

Introducing the revised limits and emission bandwidths in Table 2 will allow:

- (1) Row 44 to transmit at higher EIRP densities within geographic areas limiting skew to 25 degrees, facilitating higher inroute data rates for users / aircraft within those areas
- (2) Row 44 to continue to transmit at existing EIRP densities (and facilitating existing data rates), within geographic areas where skew is limited to 35 degrees

(3) Row 44 to transmit at lower EIRP densities within geographic areas limiting skew to 45 and 55 degrees, thereby facilitating services for users / aircraft where data communications were previously unavailable

(4) Row 44 to transmit at a variety of combinations of EIRP and emission bandwidths, thereby optimizing bandwidth usage, and providing users higher data rates than those of the present.

In all cases of skew limits of 25, 35, 45, or 55 degrees, Row 44 shall comply with the EIRP density limits established in Section 25.227.

Table 3 depicts the proposed applicability of the Table 2 categories between satellites and skew angles:

Table 3 – Applicability of Table 2 Skew-EIRP Limits

Satellite	25 degrees	35 degrees	45 degrees	55 degrees
SES-1	yes	yes	yes	N/A
AMC-9	yes	yes	yes	N/A
AMC-2	yes	yes	yes	N/A
SES-6	yes	yes	yes	yes

This Exhibit also includes sample link budgets pertaining to each of the combinations of EIRP, emission bandwidth, skew limit, and satellite. These are located at the end of this Exhibit. Note that in all cases, the link budgets for 1.024 MHz emission bandwidths apply to those for 2.048 MHz as well, as the EIRP densities are the identical, and link performance subsequently the same.