S3033 SAT-RPL-20180430-00033 Sirius XM Radio Inc.

IB2018001130

SXM-7

GRANTED International Bureau

Call Sign <u>\$3033</u> Grant Date 10/03/18

File # SAT-RPL-20180430 - 00033

(or other identifier)

Approved:

see From conditions

Term Dates see To: conditions Approved by OMB 3060-0678

Date & Time Filed: Apr 30 2018 4:35:44:626PM

File Number: SAT-RPL-20180430-00033

Callsign/Satellite ID: S3033

*with conditions

Stephen J. Duall Chief, Satellite Policy Branch

APPLICATION FOR SATELLITE SPACE 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:

SXM-7 Replacement Satellite License Application

1-8. Legal Name of Applicant

Name:

Sirius XM Radio Inc.

Phone Number:

202-380-4000

DBA Name:

Fax Number:

202-380-4981

Street:

1290 Avenue of the Americas

E-Mail:

james.blitz@siriusxm.com

11th Floor

City:

New York

State:

NY

Country:

USA

Zipcode:

10104

Attention:

James S Blitz

9-16. Name of Contact Representative

Name:

Karis A. Hastings

Phone Number:

202-599-0975

Company:

SatCom Law LLC

Fax Number:

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E-Mail:

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Suite 400

City:

Washington

State:

DC

Country:

USA

Zipcode:

20004

Attention:

Relationship:

Legal Counsel

CLASSIFICATION OF FILING

17. Choose the buttonnext 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.

(N/A) a1. Earth Station

a2. Space Station

D.

o b1. Application for License of New Station

(N/A) 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

6 b9. Letter of Intent to Use Non-U.S. Licensed Satellite to Provide Service in the United States

b10. Replacement Satellite Application − no new frequency bands

○ b11. Replacement Satellite Application – new frequency bands (Not eligible for streamlined processing)

o b12. Petition for Declaratory Ruling to be Added to the Permitted List

(N/A) b13. Other (Please specify)

Sirius XM Radio Inc. IBFS File No.SAT-RPL-20180430-00033

IBFS File No(s):	SAT-RPL-20180430-00033	GRANTED-	
Licensee/Grantee:	Sirius XM Radio Inc.	With Conditions	
Call Sign:	S3033		
Satellite Name:	SXM-7	COMMUNICA	
Orbital Location:	85.15° W.L.		
(required station-	(+/- 0.1 degrees east/west)	to A Was	
keeping tolerance)		COMMISSION	
Administration:	United States of America		
Nature of Service:	Satellite Digital Audio Radio Service (SDARS)	International Bureau	
		Satellite Division	
Scope of Grant:	Authority to: (1) construct, deploy, and operate the SXM-7 space station at the 85.15° W.L. orbital location to provide SDARS; (2) perform in-orbit testing (IOT) of SXM-7 at 120° W.L.; (3) operate a test payload aboard SXM-7; and (4) conduct telemetry, tracking and command operations in connection with maintaining SXM-7 at 120° W.L. during IOT and with the drift the SXM-7 to its assigned orbital position of 85.15° W.L.		
Previous Grant(s):	N/A		
Service Area(s):	Schedule S Tech Report at 5-12.		
Frequencies:	2320-2345 MHz (space-to-Earth) 7025-7075 MHz (Earth-to-space) Tracking, telemetry and command (TT&C): Orbit Raising Only: 4196-4198.5 MHz (Space-to-Earth) a Space) On-orbit Operations: 2320-2345 MHz (space-to-Earth), 7025-7075 MHz (Earth-to-space)	and 6422-6425 MHz (Earth-to-	

Unless otherwise specified herein, operations under this grant must comport with the legal and technical specifications set forth by the applicant or petitioner and with Federal Communication Commission's rules not waived herein. This grant is also subject to the following conditions:

- 1. Sirius XM must prepare the necessary information, as may be required, for submission to the International Telecommunication Union (ITU) to initiate and complete the advance publication, coordination, due diligence, and notification process of this space station, in accordance with the ITU Radio Regulations. Sirius XM will be held responsible for all cost-recovery fees associated with ITU filings. No protection from interference caused by radio stations authorized by other administrations is guaranteed unless coordination and notification procedures are timely completed or, with respect to individual administrations, coordination agreements are successfully completed. Any radio station authorization for which coordination has not been completed may be subject to additional terms and conditions as required to effect coordination of the frequency assignments of other administrations. See 47 CFR § 25.111(b).
- 2. In connection with the provision of service in any particular country, Sirius XM is obliged to comply with the applicable laws, regulations, rules, and licensing procedures of that country.
- 3. Sirius XM must operate SXM-7 at the 85.15° W.L. orbital location in compliance with all existing or future coordination agreements for this location. In the absence of a coordination agreement, such operations must comply with applicable provisions of the ITU Radio Regulations as the Commission cannot guarantee the success of the required coordination.
- 4. Sirius XM must maintain the SXM-7 space station within an east/west longitudinal station-keeping tolerance of +/- 0.1 degrees of the 85.15° W.L. orbital location.

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- 5. Sirius XM must operate SXM-7 at the 85.15° W.L. orbital location in the 7025-7075 MHz frequency band (Earth-to-space), which is designated for SDARS feeder-link use, in accordance with the technical specifications set forth in its application, and consistent with our rules. Prior to operating SXM-7 in the 7025-7075 MHz band at 85.15° W.L., Sirius XM must successfully coordinate these operations with Fixed and Mobile service stations that are lawfully operating in this band.
- 6. Sirius XM must coordinate the operations of SXM-7 with existing geostationary space stations to ensure that no unacceptable interference results from its IOT operations at the 120.0° W.L. orbital location or during its drift from the 120.0° W.L. orbital location to the 85.15° W.L. orbital location.
- 7. Sirius XM's operations at the 120.0° W.L. orbital location must be limited to IOT and must not include the provision of commercial services.
- 8. During in-orbit testing, Sirius XM must maintain the of SXM-7 space station within an east-west longitudinal station-keeping tolerance of ± 0.1 degrees of the 120.0° W.L orbital location.
- 9. Sirius XM's request for waiver of Section 25.202(g) of the Commission's rules is granted, as conditioned. Section 25.202(g) requires in relevant part, that telemetry, tracking, and command signals be transmitted within the assigned bands. Sirius XM seeks waiver of this rule to operate SXM-7's TT&C communications in the 4196-4198.5 MHz and 6422-6425 MHz frequency bands, which are outside the frequency bands in which SXM-7 will be providing service, for orbit raising TT&C communications. This waiver grant is based upon the following findings:
 - a. The 4196-4198.5 MHz and 6422-6425 MHz frequency bands will be used only for orbit raising and will not be used for regular operation;
 - b. During orbit raising, Sirius XM needs to be able to reliably send commands and receive telemetry signals in order to ensure the safe global transit of the spacecraft, which currently is not feasible using the S-band SDARS downlink spectrum at 2320-2345 MHz and uplink spectrum at 7025-7075 MHz that SXM-7 will use for on station operation, hence its use of C-band spectrum during orbit raising.
 - c. As a condition of the grant of this waiver, Sirius XM shall coordinate TT&C operations of SXM-7 during orbit raising with all potentially affected operators of other communication systems. Sirius XM's TT&C operations in the 4196-4198.5 MHz and 6422-6425 MHz frequency bands shall be on a non-harmful interference basis (i.e., Sirius XM shall not cause harmful interference to, and shall not claim protection from interference caused to it by, any other lawfully operating radiocommunication system). Additionally, Sirius XM must accommodate future space station networks that are compliant with Section 25.202(g) of the Commission's rules.
- 10. Sirius XM is granted a waiver of Section 25.210(j) of the Commission's rules, 47 CFR. § 25.210(j). Section 25.210(j) requires geostationary space stations to be "be maintained within 0.05° of their assigned orbital longitude in the east/west direction, unless specifically authorized by the Commission to operate with a different longitudinal tolerance." Sirius XM proposes to operate SXM-7 at the 85.15° W.L. orbital location with an east-west station-keeping tolerance of +/-0.1 degrees. Sirius XM states that the only satellites with which SXM-7's stationkeeping volume will overlap are other spacecraft in the Sirius XM fleet and thus SXM-7's operations will not adversely affect the operations of other spacecraft. Sirius XM also states that allowing SXM-7 to be flown in formation with the XM-5 and XM-3 spacecraft in an east-west station-keeping volume of +/-0.1 degree will result in fuel savings for all spacecraft, thus prolonging their service life. This waiver and the operations it permits shall terminate in the event that a satellite is launched into a location such that its station-keeping volume would overlap SXM-7's +/-0.1 degree

¹ Sirius XM also proposes to maintain SXM-7 with a +/- 0.1-degree stationkeeping tolerance at 120° W.L. during IOT to minimize interruptions to the payload testing operations due to stationkeeping maneuvers. We permit Sirius XM to operate SXM-7 at 120° W.L with this +/- 0.1-degree stationkeeping tolerance subject to the same conditions we impose on the operation of SXM-7 at 85.15° W.L.

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station-keeping volume, but would not overlap SXM-7's +/-0.05 degree station-keeping volume, unless Sirius XM has successfully coordinated SXM-7's physical operations with those of the other spacecraft. This waiver is limited to the SXM-7 spacecraft and any other Sirius XM spacecraft that is authorized to operate at the 115.25° W.L. orbital location.

- 11. Sirius XM is granted authority to construct and deploy SXM-7 and SXM-8 with a test beam payload. Sirius states, that in addition to SDARS payloads, SXM-7 and SXM-8 are equipped with a test beam payload with coverage of a limited area not within Sirius XM's SDARS service area that will use the same operating frequencies of 2320-2345 MHz (space-to-Earth) and 7025-7075 MHz (Earth-to-space). Sirius XM proposes to operate this test beam payload only at the 115.25° W.L. orbital location, but is capable of operating it at either the 85.15° W.L. or 115.25° W.L. orbital location. Sirius XM is authorized to operate the test payload at either location on either SXM-7 or SXM-8, subject to the conditions herein.
- 12. Sirius XM is granted a partial waiver of Section 25.118(e) of the Commission's rules, 47 CFR § 25.118(e). Section 25.118(e) allows a space station licensee to relocate a GSO space station without prior authorization, but upon 30 days prior notice to the Commission and any potentially affected licensed spectrum user, provided that the operator meets certain requirements. Sirius XM requests a waiver of two of the provisions of Section 25.118(e). First, the rule requires that Sirius XM provide 30 days' notice to the Commission prior to any relocation of SXM-7. Sirius XM seeks advance authority to reposition the satellite subject only to a requirement to notify the Commission within two business days after commencing a move. Second, Sirius XM requests a waiver of subsection (4) of the rule to allow SDARS operations, not just TT&C functions, during any satellite relocation. This waiver grant is based upon the following findings:
 - a. Sirius XM is the sole licensee in the SDARS frequency bands, and the 85.15° W.L. and 115.25° W.L. orbital locations are both already assigned to Sirius XM;
 - b. Repositioning SXM-7 between these two orbital locations, and operating the satellite's SDARS payload during the drift, would not create interference issues affecting other satellite operators;
 - c. Allowing Sirius XM to manage its spacecraft as needed will facilitate service continuity for SDARS subscribers.
 - d. Sirius XM must coordinate the operations of SXM-7 with existing geostationary space stations to ensure that no unacceptable interference results from its operations during its drift from the 85.15° W.L. orbital location to the 115.25° W.L. orbital location.
- 13. The operations of SXM-7 and associated earth stations must comport with the applicable uplink and downlink limits in 47 CFR § 25.140(a)(3) of the Commission's rules, unless Sirius XM coordinates any non-conforming operations with the operations of U.S.-licensed geostationary orbit space stations within 6 degrees of the 85.15° W.L. orbital location. Non-conforming operation must also be coordinated with respect to those operations of non-U.S.-licensed space stations within 6 degrees of 85.15° W.L. involving approved communications with U.S.-licensed earth stations.
- 14. Sirius XM must operate the SXM-7 space station in compliance with international coordination agreements with Canada and Mexico that limit the power flux density level from U.S.-licensed SDARS space stations into Canada and Mexico.
- 15. SXM-7 must begin providing service at the 85.15° W.L. orbital location in the 2320-2345 MHz (space-to-Earth) and 7025-7075 MHz (Earth-to-space) frequency bands before the satellite it is replacing, XM-3 (Call Sign S2617), discontinues service at the 85.15° W.L. orbital location. Failure to meet this condition will render this authorization to operate in these frequency bands NULL and VOID.
- 16. The license term for the space station is 8 years and will begin on the date that Sirius XM certifies to the Commission that SXM-7 has been successfully placed into orbit and its operations fully conform to the terms and conditions of this authorization. Sirius XM is directed to file its certification of

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commencement of operation with the Commission within five business days of SXM-7 being placed into operation at the 85.15° W.L. orbital location.

Licensee/grantee is afforded thirty (30) days from the date of release of this action to decline the grant as conditioned. Failure to respond within this period will constitute formal acceptance of the grant as conditioned.

This action is taken pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 CFR § 0.261, and is effective upon release.

Station licenses are subject to the conditions specified in Section 309(h) of the Communications Act of 1934, as amended, 47 U.S.C. § 309(h).

Action	October 3, 2018	
Date:		•
Term Dates	From: see conditions	To: see conditions

Approved:

Stephen/J. Duall

Chief, Satellite Policy Branch

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 Other(please explain):	I•
17c. Fee Classification BNY - Space Station (Geostationary)	
18. If this filing is in reference to an existing station, enter:(a) Call sign of station:Not Applicable	
19. If this filing is an amendment to a pending application enter: (a) Date pending application was filed: Not Applicable	(b) File number of pending application: 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:
F' 10 . 10	
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 thebutton next to the applicable status. Choose	22 If couth station amplicant about 1141-4
only one.	22. If earth station applicant, check all that apply. Not Applicable
Common Carrier Non-Common Carrier	TVOUTEPPHOUDIO
-	·
23. If applicant is providng INTERNATIONAL COMMON CARRIER so facilities:	ervice, see instructions regarding Sec. 214 filings. Choose one. Are these
O Connected to a Public Switched Network Not connected to	to a Public Switched Network N/A
24. FREQUENCY BAND(S): Place an "X" in the box(es) next to all a	pplicable 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: 2320 Frequency Upper: 7075	(Please specify additional frequencies in an attachment)

TYPE OF STATION

TIPE OF STATION		
25. CLASS OF STATION: Choose the	button next to the class of station that applies.	Choose only one.
(N/A) a. Fixed Earth Station (N/A) b. Temporary-Fixed Earth Station (N/A) c. 12/14 GHz VSAT Network (N/A) d. Mobile Earth Station e. Geostationary Space Station.	on	
of. Non-Geostationary Space Station	on	
o g. Other (please specify)		
•	•	
26. TYPE OF EARTH STATION	FACILITY: Not Applicable	
PURPOSE OF MODIFICATION		
27. The purpose of this proposed modi apply.)	fication is to: (Place an "X" in the box(es) next t	to all that 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.

O 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?	O Yes	⊚ No
30. Is the applicant an alien or the representative of an alien?	O Yes	● No ◆ N/A
31. Is the applicant a corporation organized under the laws of any foreign government?	O Yes	● No O 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?	O 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?	O 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.	O 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.	O 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	O 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 n 39 Response

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.	Item 40 Response
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.	O Yes ⊚ No
42b. What administration has licensed or is in the process of licensing the space station? If no license will be issued, what administration has coordinated or is in the process of coordinating the space station?	

43. Description. (Summarize the nature of the application and the services to be provided).	(If the complete description does not appear in th	is
box, please go to the end of the form to view it in its entirety.)		

Sirius XM Radio Inc. requests authority to launch and operate the SXM-7 replacement satellite for SDARS operations at the nominal 85 deg. W.L. orbital location.

Narr and Tech App

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.	O 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.	o 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.)			
O Individual			
Unincorporated Association			
O Partnership			
© Corporation			
Governmental Entity			
Other (please specify)			
45. Name of Person Signing James S. Blitz		46. Title of Person Signing VP, Regulatory Counsel	
47. Please supply any need attachments.			
1:	2:	3:	
(U.S. Code, Title 18, S	ection 1001), AND/OR RE	I ARE PUNISHABLE BY FINE AND / OR IMPRISONMENT VOCATION OF ANY STATION AUTHORIZATION FORFEITURE (U.S. Code, Title 47, Section 503).	

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