Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
XM Radio Inc.	)	File No. SAT-MOD-20000131-00051
	)	
for Minor Modification of License	)	
to Construct, Launch and Operate a	)	
Geostationary Satellite Digital Audio	)	
Radio Service System	)	

ORDER AND AUTHORIZATION

Adopted: March 15, 2001 Released: March 16, 2001

By the Chief, Satellite and Radiocommunication Division

Introduction

1. With this Order, we grant the application of XM Radio Inc. ("XM Radio"; formerly American Mobile Radio Corporation) to modify its space station authorization.[1] XM Radio holds a license to construct, launch, and operate a satellite system that will provide satellite digital audio radio service (hereinafter "satellite DARS" or "SDARS") in the 2332.5-2345 MHz frequency band. The application will allow XM Radio to modify certain technical aspects of its SDARS system in order to achieve an approximately one-third increase in system capacity and will permit XM to offer better quality satellite DARS than the originally authorized system.[2]

Background

2. In October 1997, XM Radio was authorized to construct, launch, and operate two geostationary satellites located at 85° and 115° West Longitude to provide satellite DARS.[3]

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[1] *In the Matter of American Mobile Radio Corporation,* 13 FCC Rcd. 8829 (1997) (*"XM space station license"*).

[2] *Application of XM Radio Inc. to Modify Authorization,* File No. SAT-MOD-20000131-00051, January 31, 2000 (*"XM modification application*") at 1.

[3] The current authorization permits the use of 2332.5-2345 MHz for the downlink operations and 7025-7075 MHz for the feeder-link operations and tracking, telemetry and control ("TT&C").

Satellite DARS is a "radiocommunication service in which audio programming is digitally transmitted by one or more space stations directly to fixed, mobile, and/or portable stations and which may involve complementary repeating terrestrial transmitters, telemetry, tracking and control facilities."[4] Beginning in 2001, XM will operate a satellite system providing coverage to the contiguous 48 United States ("CONUS"). It proposes to offer these services as a private satellite operator, providing neither common carrier nor broadcast service. By this application to modify its authorization, XM proposes enhancements to its planned satellite system that it asserts will serve the public interest by facilitating the development and deployment of XM Radio's DARS system in an expeditious fashion.[5]

3. BellSouth filed comments on XM Radio's modification application. As a licensee in the Wireless Communications Service (WCS), BellSouth is authorized to operate in the 2305-2320 and 2345-2360 MHz frequency bands, which are immediately adjacent to the SDARS band. At the time the comments were filed, negotiations between the United States and Mexico were being conducted on the use of the 2310-2360 MHz frequency band. BellSouth indicated its concern "that favorable action upon the XM application could have serious adverse consequences on the ongoing efforts of the United States to coordinate usage of the adjacent SDARS and WCS bands with the government of Mexico."[6] Since that time, the negotiations with Mexico have been concluded and an agreement has been signed.[7] Therefore, the only issue raised in BellSouth's comments is moot.

Discussion

4. To grant XM's modification application, the Commission must find that the public interest, convenience, and necessity will be served by such a grant.[8] Because of the long lead time needed to construct satellites and implement service, the Commission often receives requests from licensees to modify the technical designs of their satellite systems during construction. The Commission has repeatedly recognized that:

> Given the fairly lengthy time period to construct a satellite, licensees often file requests to modify the technical design of their satellites as they are being built. If the proposed modification does not present any significant interference problems

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4 47 C.F.R. § 25.201.

5 XM modification application at 2.

6 BellSouth comments at 1.

7 Agreement between the Government of the United Mexican States and the Government of the United States of America concerning the Use of the 2310-2360 MHz band signed in Mexico City on July 24, 2000.

8 47 U.S.C. Section 309(a).

and is otherwise consistent with Commission policies, it is generally granted.[9]

Such decisions "allow the licensee to take advantage of the latest technology in providing service to the public."[10]

5. XM requests authority to modify its system in three respects: (1) to increase the maximum Equivalent Isotropically Radiated Power (EIRP) of each of its DARS satellites from 62 dBW to 68.5 dBW; (2) to revise its downlink channelization plan by increasing the number of channels from five to six, including four carrier frequencies (two per satellite) of 1.84 MHz each and two frequencies for terrestrial repeaters of 2.53 MHz each; and (3) to increase the transmission rate of each of its satellite carriers to 3.28 Mbits/s.[11]

6. The satellite EIRP is 62 dBW in XM's current authorization. The modification application requests a 6.5 dB EIRP increase to 68.5 dBW. This increase in radiated power will provide a stronger signal to the receivers on the earth's surface, which will improve reception and increase service availability. A stronger signal from the satellites may reduce the number of terrestrial repeaters[12] needed and this would enhance the quality and the cost of the service. In addition, since XM was assigned exclusive use of the spectrum through an auction, there are no other radio operators in the frequency band to be affected by the satellite power increase. XM will continue to be required to abide by the out-of-band emission limits of Section 25.202(f) of the Commission's rules.

7. The new channelization plan and the increase in the transmission rate will provide more information in the authorized bandwidth than that available in the current authorization. This data increase may be used in several ways to provide better service. First, the data rate increase may be used to provide additional channels that can increase the diversity of the programming. Second, the data rate increase may be used to provide existing channels with a higher level of audio quality. These benefits are not exclusive; a combination of both may be used depending upon the need to provide a better quality service to the consumer.

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9 *See e.g.* GTE Spacenet Corp. 5 FCC Rcd. 4112, 4112 (Com. Car. Bur. 1990) (GTE was allowed to increase the power on one transponder from 20 watts to 27 watts); *American Satellite Company*, 5 FCC Rcd. 1186, 1186 (Com. Car. Bur. 1990) (American Satellite Company was permitted to increase the power level on two of its transponders from 16.5 watts to 30 watts); and *Hughes Communications Galaxy, Inc.*, 5 FCC Rcd. 1653 (Com. Car. Bur. 1990) (Hughes was permitted to increase power of two satellites from 10 watts to 16 watts.).

10 *American Satellite Company*, 5 FCC Rcd. 1186, 1186 (1990).

11 XM modification application at 1.

12 Terrestrial repeaters are sound broadcasting stations that re-transmit the same programming provided by the satellites to subscribers in areas where the satellite signal may be difficult to receive. These areas include "urban canyons" between tall buildings, heavily foliaged areas, tunnels, and other places where obstructions could limit satellite visibility and cause multipath interference from reflected signals.

Conclusion

8. We find that XM's requested modifications will provide the public with an improved satellite DARS system that offers more capacity within the existing spectrum allocation. We conclude that the public interest is served by granting XM authority to modify its satellite system. We further conclude that our action today is consistent with Commission policy to encourage technical innovation and spectrum efficiency.

Ordering Clauses

9. Accordingly, pursuant to authority delegated by Section 0.261 of the Commission's rules, 47 C.F.R. § 0.261, IT IS ORDERED, that the Application for Modification to Order and Authorization for XM Radio Inc., SAT-MOD-20000131-00051, IS GRANTED and XM Radio Inc. IS AUTHORIZED to increase the maximum EIRP of each of its DARS satellites to 68.5 dBW; to revise its downlink channelization plan by increasing the number of channels from five to six, including four carrier frequencies (two per satellite) of 1.84 MHz each and two frequencies for terrestrial repeaters of 2.53 MHz each; and to increase the transmission rate of each of its satellite carriers to 3.28 Mbits/s. XM Radio Inc. IS AUTHORIZED to launch two satellites into geostationary orbit for the purpose of providing satellite digital audio radio service (DARS) in the United States in the 2332.5-2345 MHz (space-to-Earth) frequency band, to the extent indicated herein, in accordance with the technical specifications set forth in the application and in supplemental filings by the applicant, and consistently with the Commission's rules.

10. IT IS FURTHER ORDERED that XM Radio Inc. is required to abide by all provisions and conditions of its original space station authorization[13] unless specifically modified by this Order.

11. IT IS FURTHER ORDERED that XM Radio Inc. is afforded thirty days from the date of release of this Order and Authorization to decline this modification authorization. Failure to respond within that period will constitute formal acceptance of the authorization.

12. IT IS FURTHER ORDERED that this Order is effective upon release.

FEDERAL COMMUNICATIONS COMMISSION

Thomas S. Tycz
Chief, Satellite and Radiocommunication Division

[13] *XM space station license.*