

SAT-STA-20051109-00214
XM Radio Inc.

IB200500258

Approved by OMB
3060-0678

Date & Time Filed: Nov 9 2005 7:05:43:463PM
File Number: SAT-STA-20051109-00214
Callsign:

FEDERAL COMMUNICATIONS COMMISSION
APPLICATION FOR SPACE STATION SPECIAL TEMPORARY AUTHORITY
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APPLICANT INFORMATION

Enter a description of this application to identify it on the main menu:
Request for Lower Power Repeater STA

1. Applicant

Name:	XM Radio Inc.	Phone Number:	202-380-4000
DBA Name:		Fax Number:	202-380-4500
Street:	1500 Eckington Place, NE	E-Mail:	bill.bailey@xmradio.com
City:	Washington	State:	DC
Country:	USA	Zipcode:	20002 -
Attention:	William J Bailey		



File # SAT-STA-20051109-00214

Call Sign _____ Grant Date 1/4/06
(or other identifier)

Term Dates
From 12/6/05 To: 12/13/05

Approved: [Signature]

w/conditions

Polina Brown, chief

Terms and Conditions of Grant: File No. SAT-STA-20051109-00214

- (a) Any actions taken as a result of this STA are solely at the applicants' own risk. This STA shall not prejudice the outcome of the final rules adopted by the Commission in IB Docket No. 95-91;
- (b) Operation of all SDARS repeaters authorized pursuant to this STA is on a non-interference basis with respect to all permanently authorized radiocommunication facilities. XM Radio shall provide the information and follow the process set forth in paragraphs 14 and 17 in 16 FCC Rcd 16773 (Int'l Bur. 2001) and 16 FCC Rcd 16781 (Int'l Bur. 2001), as modified by 16 FCC Rcd 18481 (Int'l Bur. 2001) and 16 FCC Rcd 18484 (Int'l Bur. 2001);
- (c) SDARS repeaters are restricted to the simultaneous retransmission of the complete programming, and only that programming, transmitted by the satellite directly to SDARS subscriber's receivers;
- (d) Coordination of SDARS repeater operations shall be completed with all affected Administrations prior to operation, in accordance with all applicable international agreements including those with Canada and Mexico;
- (e) SDARS repeaters shall comply with Part 17 of the Commission's rules – Construction, Marking, and Lighting of Antenna Structures;
- (f) SDARS repeaters shall comply with Part 1 of the Commission's rules, Subpart I – Procedures Implementing the National Environmental Policy Act of 1969, including the guidelines for human exposure to radio frequency electromagnetic fields as defined in Sections 1.1307(b) and 1.1310 of the Commission's rules;
- (g) SDARS repeater out-of-band emissions shall be limited to $75 + \log(\text{EIRP})$ dB less than the transmitter EIRP;
- (h) This STA expires on December 13, 2005.



File # SAT-STA-20051109-00214

Call Sign _____ Grant Date 1/4/06
(or other identifier)

Term Dates
From 12/6/05 To: 12/13/05

Approved: [Signature]
w/conditions
Policy Branch Chief.

2. Contact

Name:	Bruce D. Jacobs	Phone Number:	202-663-8077
Company:	Pillsbury Winthrop Shaw Pittman LLP	Fax Number:	202-663-8007
Street:	2300 N Street, NW	E-Mail:	bruce.jacobs@pillsburylaw.com
City:	Washington	State:	DC
Country:	USA	Zipcode:	20037 -1128
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 or Submission ID

4a. 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):

4b. Fee Classification CRY - Space Station (Geostationary)

5. Type Request

Change Station Location

Extend Expiration Date

Other

6. Temporary Orbit Location

7. Requested Extended Expiration Date

8. 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.)

XM Radio Inc. (XM) requests Special Temporary Authority (STA) to operate one lower power terrestrial repeater from December 6, 2005 through December 12, 2005 at the Target World Challenge presented by Countrywide PGA Tour event to be held at Sherwood Country Club in Thousand Oaks, California, pursuant to the technical parameters listed in Exhibit A.

9. 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

10. Name of Person Signing
William Bailey

11. Title of Person Signing
Senior Vice President

12. Please supply any need attachments.

Attachment 1: Narrative

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).

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November 9, 2005

Via IBFS

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

**Re: XM Radio Inc.
Request for Special Temporary Authority to Operate a Lower Power
Terrestrial Repeater from December 6, 2005 through December 12, 2005**

Dear Ms. Dortch:

XM Radio Inc. ("XM"), one of the two Satellite Digital Audio Radio Service ("SDARS" or "satellite radio") licensees in the United States, pursuant to Section 25.120 of the Commission's rules,¹ hereby requests Special Temporary Authority ("STA") to operate one lower power terrestrial repeater from December 6, 2005 through December 12, 2005 at the "Target World Challenge presented by Countrywide" PGA Tour event to be held at Sherwood Country Club in Thousand Oaks, California, pursuant to the technical parameters listed in Exhibit A. On June 9, 2005, the International Bureau ("Bureau") granted XM an STA to operate a lower power repeater at various PGA Tour events for a 180-day period.² This STA expires on December 6, 2005, prior to the "Target World Challenge presented by Countrywide."³ Grant of this STA for a seven-day period will enable XM to continue its acclaimed coverage of PGA Tour events. The lower power repeater will transmit at a maximum Effective Isotropically Radiated Power ("EIRP") of 2 kW, a power level which adjacent band licensees have stated does not present an interference concern. Because this repeater will transmit at a maximum EIRP of 2 kW and will be limited to coverage of a golf course for a limited duration, there will be no risk of harmful interference to other communications services.

¹ 47 C.F.R. § 25.120.

² See *XM Radio Inc., Order*, DA 05-1642 (June 9, 2005) ("*XM PGA STA Order*").

³ The "Target World Challenge presented by Countrywide" was listed in XM's original STA application as one of the PGA Tour events at which it requested to operate a lower power repeater. See *XM Radio Inc., Application for Special Temporary Authority*, File No. SAT-STA-20050418-00086 (April 18, 2005), at Exhibit A. Because this STA expires on December 6, 2005, however, XM's current STA does not authorize it to operate a lower power repeater at this event.

Background. The Commission has recognized that terrestrial repeaters are critical to satellite radio to overcome the effects of signal blockage and multipath interference.⁴ Consistent with this policy, the International Bureau ("Bureau") in September 2001 granted XM an STA to operate terrestrial repeaters while the Commission concludes its rulemaking proceeding regarding final technical rules.⁵ In granting this STA, the Bureau noted that XM "needs to employ terrestrial repeaters to provide adequate service." See *XM Radio STA Order* ¶ 7. Soon after grant of this STA, XM began commercial service. Since that time, satellite radio in general and XM in particular have proven to be unmitigated successes, confirming the Commission's vision in establishing the satellite radio service. By the end of the third quarter of 2005, XM had over 5 million subscribers.

In March 2005, XM announced the addition of a PGA Tour Network channel to its channel line-up, which airs coverage of the weekly PGA Tour event along with daily programs designed for golf enthusiasts. Moreover, at the weekly PGA Tour event, XM offers its portable, hand-held satellite radios for sale or rental to spectators. By tuning to the XM PGA Tour Network channel, spectators are able to keep track of the leader board and real-time action around the course. The portable radios also allow spectators to be aware of impending severe weather.

Request for STA. XM requests an STA to operate one lower power terrestrial repeater from December 6th through December 12th at the "Target World Challenge presented by Countrywide" PGA Tour event to be held at Sherwood Country Club in Thousand Oaks, California, pursuant to the technical parameters listed in Exhibit A. Grant of this STA will serve the public interest by ensuring that spectators at this event receive adequate satellite radio service. While many areas on a golf course, such as fairways and greens, provide an

⁴ See *Establishment of Rules and Policies for the Digital Audio Radio Satellite Service in the 2310-2360 MHz Frequency Band, Report and Order, Memorandum Opinion and Order, and Further Notice of Proposed Rulemaking*, 12 FCC Rcd 5754 (1997) ("*DARS Order and FNPRM*").

⁵ *XM Radio, Inc., Application for Special Temporary Authority to Operate Satellite Digital Audio Radio Service Complimentary Terrestrial Repeaters, Order and Authorization*, DA 01-2172, at ¶ 18 (rel. September 17, 2001) ("*XM Radio STA Order*"). Since this time, the Bureau has granted XM four additional STAs to operate terrestrial repeaters. See *XM Radio Inc. Request for Special Temporary Authority*, File No. SAT-STA-20020815-00153 (filed August 13, 2002; granted September 30, 2002); *XM Radio Inc., Request for Special Temporary Authority*, File No. SAT-STA-20030409-00076 (granted June 23, 2003); *XM Radio Inc., Order and Authorization*, DA 04-2987, File No. SAT-STA-20031112-00371 (Deputy Chief, Satellite Division, International Bureau, September 15, 2004); *XM Radio Inc., Order*, DA 05-1642 (June 9, 2005).

unobstructed view of XM's satellites, there are many other areas on a golf course where the view may be obstructed, particularly by trees and foliage. It is in these obstructed areas where spectators at a golf tournament are located so as to avoid interfering with the golfers. By operating one lower power repeater, XM will be able to mitigate the potential blockage of its satellite signal by trees and foliage, thereby providing spectators with adequate satellite radio service.

Operation of one lower power repeater for a seven-day period at the "Target World Challenge presented by Countrywide" will not cause harmful interference to adjacent-band Wireless Communications Service ("WCS") licensees or any other communications service.⁶ First, the repeater will be deployed in a manner intended to allow for coverage primarily of the golf course. Most of the WCS applications that have been contemplated to date are for fixed services to homes and businesses. Although it is XM's understanding that there are no WCS facilities in operation today, even if there were, it is extremely unlikely that WCS equipment would be used on a golf course. Second, the EIRP of the repeater will never exceed 2 kW EIRP. The adjacent-band WCS licensees are permitted to operate base stations at a power level of 2 kW EIRP and therefore must be able to withstand potential interference from such operations. Moreover, as the Bureau acknowledged in granting XM's original repeater STA request, the WCS licensees have confirmed that operation of terrestrial repeaters at an EIRP of 2 kW or less is not an interference concern.⁷

Attached as Exhibit A is the following technical information for the lower power repeater XM seeks to operate pursuant to this STA: (1) maximum EIRP; (2) maximum antenna height; (3) possible antenna types; (4) range of antenna beamwidth; and (5) range of orientation. XM has also attached as Exhibit B the specification sheets for each of the possible antenna types listed. Because the terrain and foliage of each golf course will vary, XM is unable to specify precisely prior to operation the type of antenna, antenna beamwidth, or antenna orientation it will deploy.⁸ XM accordingly requests the flexibility to operate one lower power repeater within the range of technical parameters listed in Exhibit A.

⁶ XM previously notified Sirius Satellite Radio Inc. of a similar request, and it did not object.

⁷ *XM Radio STA Order* ¶ 12 ("The comments from WCS licensees express concern about blanketing interference from DARS repeaters that operate with an Equivalent Isotropically Radiated Power (EIRP) above 2 kW.").

⁸ For this reason, to the extent necessary, XM requests a waiver of Section 25.120(a) of the Commission's rules which requires an STA request to include the "full particulars of the proposed operation." 47 C.F.R. § 25.120(a). In granting XM's original STA to operate a lower power repeater at PGA Tour Events, the Bureau did not require XM to provide the full particulars of operation for the repeaters it proposed to operate.

XM certifies that its operation of the lower power repeater will comply with the same conditions the Bureau imposed on XM in granting its original STA to operate a lower power repeater at PGA Tour events. *See XM Radio PGA STA Order* ¶ 11. Specifically, XM Radio certifies the following:

- (a) Any actions taken as a result of this STA are solely at XM Radio's own risk. This STA will not prejudice the outcome of the final rules adopted by the Commission in GEN Docket 95-91;
- (b) Operation of the lower power repeater authorized pursuant to this STA is on a non-interference basis with respect to all permanently authorized radiocommunication facilities;
- (c) The lower power repeater is restricted to the simultaneous retransmission of the complete programming, and only that programming, transmitted by the satellite directly to SDARS receivers;
- (d) Where applicable, coordination of the lower power repeater shall be completed with all affected Administrations prior to operation, in accordance with all applicable international agreements including those with Canada and Mexico;
- (e) The lower power repeater will comply with Part 17 of the Commission's rules regarding antenna structures;
- (f) The lower power repeater will comply with Part 1 of the Commission's rules, Subpart I - Procedures Implementing the National Environmental Policy Act of 1969, including the guidelines for human exposure to radio frequency electromagnetic fields as defined in Sections 1.1307(b) and 1.1310 of the Commission's rules;
- (g) The out-of-band emissions of the lower power repeater will be limited to $75 + \log(\text{EIRP})$ dB less than the transmitter EIRP.

One of the conditions imposed in the original STA grant was the requirement that XM pre-coordinate with WCS licensees any repeater affecting an operational WCS base station. *See XM Radio STA Order* ¶ 14. XM is not aware of any operational WCS base station in or around Sherwood Country Club, Thousand Oaks, California.

XM hereby certifies that no party to this application is subject to a denial of Federal benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. § 853(a).

Ms. Marlene H. Dortch
November 9, 2005
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XM has attached hereto a check made payable to the Federal Communications Commission for the sum of Seven Hundred Thirty-Five Dollars (\$735.00). This filing fee amount is applicable to requests for STAs for geostationary ("GSO") satellites. *See International and Satellite Services Fee Filing Guide (September 2004).*

Please direct any questions regarding this matter to the undersigned.

Very truly yours,

/s/William Bailey
William Bailey
Senior Vice President, Regulatory and
Government Affairs

cc: Stephen Duall, FCC

Exhibit A

Maximum EIRP:	2 kW
Maximum antenna height:	25 meters
Possible antenna types:	Omni (DAB-2350) or Panel (DAB-2304)
Range of antenna beamwidth:	360, 160, 120, 90, 60, or 45
Range of orientation:	any point from 0 to 359

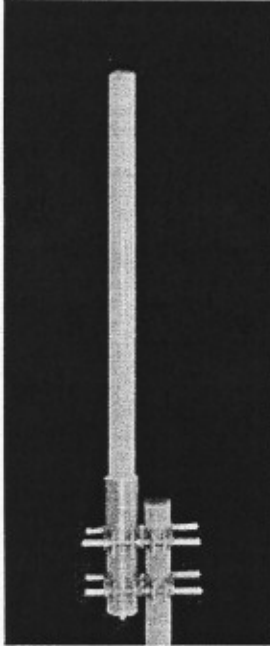
Appendix B

Antenna Specification Sheets



TIL-TEK

TA-2350-DAB Omnidirectional 2330 - 2345 MHz



The TA-2350-DAB is a medium power vertically polarized omnidirectional antenna specifically designed for Digital Audio Broadcast transmission. The antenna consists of a phased corporately fed broadband dipole array which is configured to provide electrical beam downtilt and null fill. The antenna elements are at DC ground to aid in lightning protection.

Electrical Specifications

Frequency Range: 2330-2345 MHz
Gain: (dBi) 10
VSWR: 1.4:1 max.
Polarization: Linear Vertical
Power Rating: 200 Watts average, 800 Watts peak
H-Plane Beamwidth: 360 degrees
E-Plane Beamwidth: 8 degrees
Electrical Downtilt: 2 degrees
Cross Pol. Discrimination: 20 dB min.
Null Fill: -20 dB (1st Null)
Impedance: 50 ohms nominal
Termination: 7/16 DIN female

Typical Mid band values. (For details, contact factory)

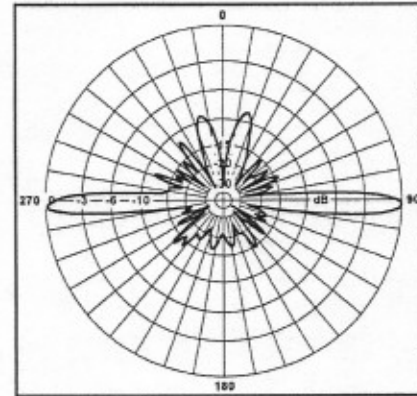
Mechanical Specifications

Length: 70 in. (1778 mm)
Diameter: 2.25 in. (57 mm)
Weight (Incl. Clamps): 15 lb. (6.8 kg)
Rated Wind Velocity: 125 mph (200 km/h)
Hor. Thrust at rated wind: 31 lb. (14 kg)
Mounting Pipe: 1.75 - 4.0 in. (44.5 - 102 mm)

Materials

Radiating Elements: Nickel plated copper array
Radome: Gray UV stabilized fiberglass
Base: Irridited Aluminum
Clamps: HDG steel

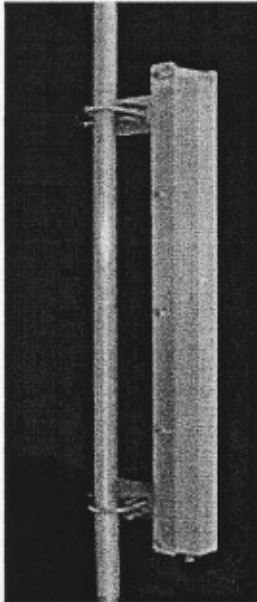
E-Plane





TIL-TEK

TA-2304-2-DAB Adjustable Sector 2330 - 2345 MHz



The TA-2304-2-DAB is a medium power vertically polarized Sectoral antenna specifically designed for Digital Audio Broadcast transmission. The antenna is designed to provide field adjustable azimuth beamwidths of 45, 60, 90, 120 or 160 degrees by use of side panels. The antenna elements are at DC ground to aid in lightning protection.

Electrical Specifications

Frequency Range: 2330-2345 MHz
Gain: (dBi) 18 @ 45° 17 @ 60° 15 @ 90°
14 @ 120° 13 @ 160°
VSWR: 1.3:1 max.
Front/Back Ratio: 15 dB @ 180° ± 35°
Polarization: Linear Vertical
Power Rating: 200 Watts average, 800 Watts peak
H-Plane Beamwidth (-3 dBd):
Field Adjustable 45, 60, 90, 120, 160 degrees
E-Plane Beamwidth (-3 dBd): 7.5 degrees
Cross Pol. Discrimination: 15 dB
Impedance: 50 ohms nominal
Termination: 7/16 DIN female

Typical Mid band values. (For details, contact factory)

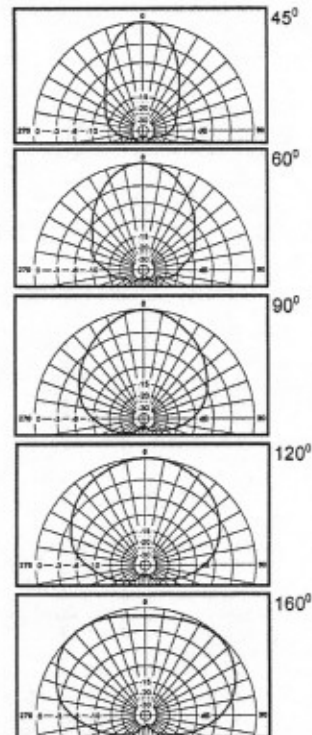
Mechanical Specifications

Length: 40 in. (1016 mm)
Width: 6.5 in. (165 mm)
Depth: 3.5 in. (89 mm)
Weight (Incl. Clamps): 10 lb. (4.5 kg)
Rated Wind Velocity: 125 mph (200 km/h)
Hor. Thrust at rated wind: 150 lb. (68 kg)
Mounting Pipe: 0.75 - 3.0 in. (19 - 76 mm)

Materials

Radiating Elements: Tin plated copper on PCB
Reflector: Iridited aluminum
Radome: Gray UV stabilized ASA
Clamps: HDG steel

H-Plane



E-Plane

