

Approved by OMB
3060-0678

Date & Time Filed: Apr 18 2005 8:16:49:396PM
File Number: SAT-STA-20050418-00086
Callsign:

FEDERAL COMMUNICATIONS COMMISSION
APPLICATION FOR SPACE STATION SPECIAL TEMPORARY AUTHORITY
FOR OFFICIAL USE ONLY

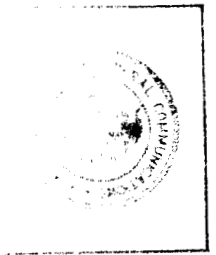
APPLICANT INFORMATION

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:	Bill Bailey		

w/ron didious.
Closes applications of STA
not resolved by Portia/PGA
XM Grant released on 6/9/05



File # SAT-STA-20050418-00086

Applicant: N/A Grant Date: 9/22/05

Issue Date: 9/22/05

[Signature]

ATTACHMENT

XM Radio Inc.
Request for Special Temporary Authority
To Operate a Lower Power Terrestrial Repeater at PGA Tour Events
(IBFS No. SAT-STA-20050418-00086)

The portion of XM Radio Inc.'s (XM Radio) request for special temporary authority (STA) seeking authority to operate a terrestrial repeater with a maximum power of 2 kW EIRP at a Professional Golf Association (PGA) tour event, the Presidents Cup, to be held on September 19-25, 2005, IS GRANTED, effective September 22, 2005.¹ At the same time, we DISMISS as moot the portion of the STA request seeking to operate a terrestrial repeater at PGA tour events that have passed and were not part of the prior *Partial PGA XM STA Grant*.² Accordingly, XM Radio is authorized to operate a terrestrial repeater with a maximum power of 2 kW EIRP at the Presidents Cup, effective from September 22 until September 25, 2005, in accordance with the terms, conditions, and technical specifications set forth in its application, this Attachment and the Federal Communications Commission's Rules, and subject to the following conditions:

- (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;

¹ XM Radio Inc., Request for Special Temporary Authority to Operate a Lower Power Terrestrial Repeater at PGA Tour Events, IBFS No. SAT-STA-20050418-00086 (filed April 18, 2005). On June 9, 2005, the Satellite Division granted, in part, XM Radio's request for special temporary authority to operate a terrestrial repeater with a maximum power of 2 kW EIRP at certain PGA tour events for 180 days. See XM Radio Inc., *Order*, DA 05-1641, 20 FCC Rcd 10661 (Sat. Div. Int'l Bur. June 9, 2005) ("*Partial PGA XM STA Grant*"). The Satellite Division deferred those portions of the XM Radio's STA request that were opposed by Total RF Marketing Inc. (Total RF). *Id.* at n.15. On September 21, 2005, Total RF filed a letter withdrawing its opposition to the remaining portions of XM Radio's STA request. See Letter from Fred Fellmeth, General Counsel, Total RF Marketing Inc., to Marlene Dortch, FCC, dated September 21, 2005.

² Nothing in this authorization grants XM Radio authority to operate at events that occur more than 180 days from June 9, 2005. XM Radio must seek additional special temporary authority for such events.

- (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 will expire on December 9, 2005, or on the date on which permanent rules governing repeater operations become effective, whichever occurs first.³
- (i) XM Radio Inc. is afforded 30 days from the date of release of this STA to decline this authorization as conditioned. Failure to respond within that period will constitute formal acceptance of the authorization as conditioned.
- (j) This action is taken pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective upon release. Petitions for reconsideration under Section 1.106 or applications for review under Section 1.115 of the Commission's rules, 47 C.F.R. §§ 1.106, 1.115, may be filed within 30 days of the date of the public notice indicating that this action was taken.

SAT-STA-20050418-0006

9/22/05

9/22 9/25

Arthur J. Coy

w/conditions.
 closes out portions of STA
 not resolved by Partial PGA XM
 STA Grant released on 9/9/05

³ December 9, 2005, is 180-days after the released date of the *Partial PGA XM STA Grant*.

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
Contact Title:		Relationship:	Legal Counsel
(If your application is related to an application filed with the Commission, enter the file number below.)			
3. Reference File Number			
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 CRY – Space Station (Geostationary)			
5. Type Request			
<input type="radio"/> Change Station Location <input type="radio"/> Extend Expiration Date <input checked="" type="radio"/> 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 (less than 2 kW EIRP) at the weekly PGA Tour event occurring at the locations and during the dates listed in Exhibit A and pursuant to the technical parameters listed in Exhibit B attached hereto.

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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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.



April 18, 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 at PGA Tour Events**

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(b)(2) of the Commission's rules,¹ hereby requests Special Temporary Authority ("STA") to operate one lower power terrestrial repeater at the weekly PGA Tour event occurring at the locations and during the dates listed in Exhibit A and pursuant to the technical parameters listed in Exhibit B. This 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.

Background. The Commission has recognized that terrestrial repeaters are critical to satellite radio to overcome the effects of signal blockage and multipath interference.² 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.³ In granting this STA, the Bureau noted that XM "needs to

¹ 47 C.F.R. § 25.120.

² 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").

³ *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

Footnote continued on next page

Ms. Marlene H. Dortch
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Page 2

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. As of April 1, 2005, XM had approximately 3.77 million subscribers.

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

Request for STA. XM requests an STA to operate one terrestrial repeater at the weekly PGA Tour event at the locations and during the dates listed in Exhibit A. XM requests this STA for a period of 180 days after grant⁴ or until the date on which permanent rules become effective for the operation of terrestrial repeaters, whichever occurs first. Grant of this STA will serve the public interest by ensuring that spectators at the weekly PGA Tour event receive adequate satellite radio service. While many areas on a golf course, such as fairways and greens, provide an 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.

Footnote continued from previous page

has granted XM three 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).

⁴ XM requests authority to operate a lower power repeater only at those events listed in Exhibit A that occur within 180 days after grant of this request. XM will file a new STA request prior to the expiration of this request for authority to operate a lower power repeater at those PGA Tour events that occur beyond 180 days after grant of this request.

Operation of one lower power repeater at each weekly PGA Tour event will not cause harmful interference to adjacent-band Wireless Communications Service (“WCS”) licensees or any other communications service.⁵ 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.⁶

Attached as Exhibit B 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 C 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 the type of antenna, antenna beamwidth, or antenna orientation it will deploy at each golf course.⁷ XM accordingly requests the flexibility to operate one lower power repeater at the events listed in Exhibit A within the range of technical parameters listed in Exhibit B.

⁵ XM has notified Sirius Satellite Radio Inc. of this request, and it does not object.

⁶ *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.”).

⁷ 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). The good cause for this waiver is that requiring XM to file for and receive an STA for each individual PGA Tour event will require both the Commission and XM to expend significant resources with no concomitant benefit. This is especially the case because the Bureau has acknowledged that the interference concerns of adjacent-band WCS licensees are limited to repeaters operating with an EIRP greater than 2 kW. *XM STA Order* ¶ 12. Such a waiver is also consistent with precedent. In granting XM’s original repeater STA, the Bureau held that XM was not required to provide the full particulars of operation for the repeaters it proposed to operate with an EIRP of 2 kW or less because these repeaters would not impact adjacent-band WCS licensees. *Id.* ¶ 9.

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XM certifies that its operation of the lower power repeater will comply with the same conditions the Commission imposed on XM in granting its original STA. *See XM Radio STA Order* ¶ 18. 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 any of the locations listed in Exhibit A.

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).

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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,

A handwritten signature in black ink, appearing to read "William Bailey". The signature is stylized with a large, looped initial "W" and a long, sweeping tail.

William Bailey
Senior Vice President, Regulatory and
Government Affairs

cc: Stephen Duall, FCC

Exhibit A

XM requests Special Temporary Authority to operate one lower power repeater with a maximum EIRP of 2 kW at the locations and during the dates listed below.

Event	Location	Dates
Booz Allen Classic	Congressional CC Potomac, Md.	June 6-12
U.S. Open	Pinehurst Resort & CC Pinehurst, N.C.	June 13-19
Barclays Classic	Westchester CC Harrison, N.Y.	June 20-26
Cialis Western Open	Cog Hill G&CC Lemont, Ill.	June 27-July 3
John Deere Classic	TPC at Deere Run Silvis, Ill.	July 4-10
B.C. Open	En-Joie GC Endicott, N.Y.	July 11-17
U.S. Bank Championship in Milwaukee	Brown Deer Park GC Milwaukee, Wis.	July 18-24
Buick Open	Warwick Hills G&CC Grand Blanc, Mich.	July 25-31
The International	Castle Pines GC Castle Rock, Colo	Aug. 1-7
PGA Championship	Baltusrol GC Springfield, N.J.	Aug. 8-14
WGC-NEC Invitational	Firestone CC Akron, Ohio	Aug. 15-21
Reno-Tahoe Open	Montreux G&CC Reno, Nev.	Aug. 15-21

Buick Championship	TPC at River Highlands Cromwell, Conn.	Aug. 22-28
Deutsche Bank Championship	TPC of Boston Norton, Mass.	Aug. 29-Sept. 5
84 Lumber Classic	Nemacolin Woodlands Resort Farmington, Pa.	Sept. 12-18
The Presidents Cup	Robert Trent Jones GC Lake Manassas, Va.	Sept. 19-25
Valero Texas Open	LaCantera GC San Antonio, Texas	Sept. 19-25
Chrysler Classic of Greensboro	Forest Oaks CC Greensboro, N.C.	Sept. 26-Oct. 2
WGC-American Express Championship	Harding Park GC San Francisco, Calif.	Oct. 3-9
Southern Farm Bureau Classic	Annandale GC Madison, Miss.	Oct. 3-9
Michelin Championship at Las Vegas	Tournament Players Club at Summerline Las Vegas, Nev.	Oct. 10-16
Funai Classic at the Walt Disney World Resort	Walt Disney World Resort Lake Buena Vista, Fla.	Oct. 17-23
Chrysler Championship	Westin Innisbrook Resort (Copperhead Course) Palm Harbor, Fla.	Oct. 24-30
The Tour Championship presented by Coca-Cola	East Lake GC Atlanta, Ga.	Oct. 31-Nov. 6
Tommy Bahama Challenge	Grayhawk GC Scottsdale, Ariz.	Nov. 7-8

Franklin Templeton Shootout	Tiburon GC Naples, Fla.	Nov. 7-13
Merrill Lynch Skins Game	Trilogy GC at La Quinta La Quinta, Calif.	Nov. 21-27
Target World Challenge	Sherwood CC Thousand Oaks, Calif.	Dec. 5-11
Wendy's 3-Tour Challenge	To be determined ¹	Dec. 12-18
ADT Golf Skills Challenge	Trump International Palm Beach, Fla.	Dec. 24-25

¹ XM will inform the Bureau as to the location of this event when the information becomes available.

Exhibit B

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

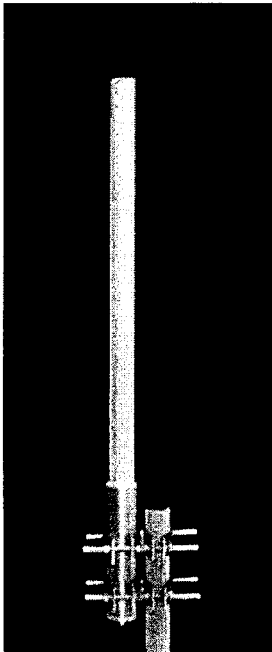
Antenna Specification Sheets

Appendix C



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)

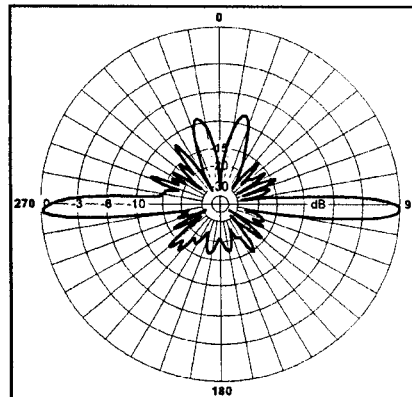
Mechanical Specifications

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

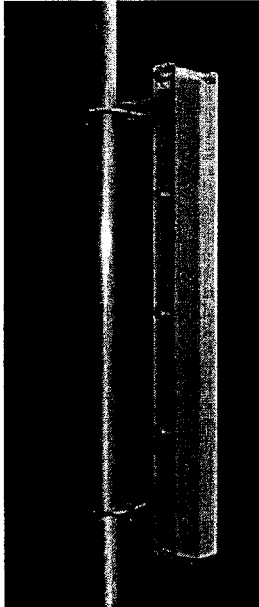
E-Plane





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)

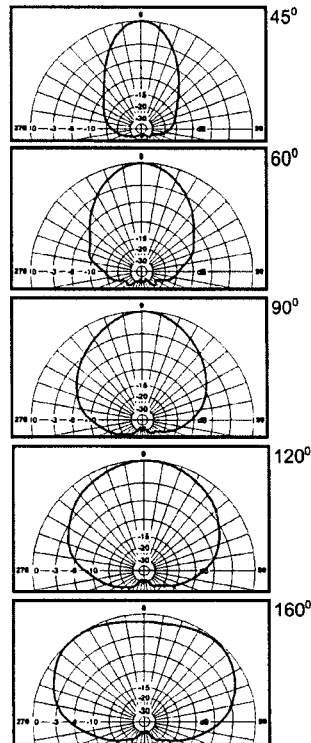
Mechanical Specifications

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: Irridited aluminum
Radome: Gray UV stabilized ASA
Clamps: HDG steel

H-Plane



E-Plane

