

Approved by OMB  
3060-0678

Date & Time Filed: Dec 11 2007 3:16:42:160PM  
File Number: SAT-STA-20071211-00172  
Callsign:

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

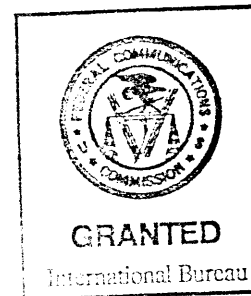
APPLICANT INFORMATION

Enter a description of this application to identify it on the main menu:

Request for Special Temporary Authority to Operate a Low Power Terrestrial Repeater at PGA Tour Events

1. Applicant

<b>Name:</b>	XM Radio Inc.	<b>Phone Number:</b>	202-380-4000
<b>DBA Name:</b>		<b>Fax Number:</b>	202-380-4981
<b>Street:</b>	1500 Eckington Place, NE	<b>E-Mail:</b>	james.blitz@xmradio.com
<b>City:</b>	Washington	<b>State:</b>	DC
<b>Country:</b>	USA	<b>Zipcode:</b>	20002 -
<b>Attention:</b>	James S. Blitz		



File # SAT-STA-20071211-00172

Call Sign \_\_\_\_\_ Grant Date 1/25/08  
(or other identifier) Term Dates

From 1/28/08 To: 7180 days

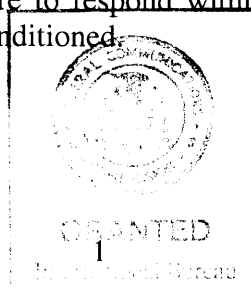
Approved: [Signature]  
Policy Branch Chief

w/conditions

**Application of XM Radio Inc.  
for Special Temporary Authority  
IBFS File No. SAT-STA-20071211-00172**

Special temporary authority (STA) IS GRANTED to XM Radio Inc. (XM Radio) to operate one terrestrial repeater at power levels at or below 2 kW EIRP for a period of 180 days, at weekly PGA Tour events occurring at various locations from January 28, 2008 through July 6, 2008 as set forth in Exhibit A to its application, with the technical parameters specified in its application, and subject to the following conditions:

1. Any actions taken as a result of this STA are solely at XM Radio's own risk. This STA shall not prejudice the outcome of the final rules adopted by the Commission in IB Docket No. 95-91. The issue concerning EIRP raised by the WCS Coalition will be addressed in that proceeding. Operations prior to such action will be subject to condition 2 below.
2. 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).
3. 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.
4. 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.
5. SDARS repeaters shall comply with Part 17 of the Commission's rules – Construction, Marking, and Lighting of Antenna Structures.
6. 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.
7. SDARS repeater out-of-band emissions shall be limited to 75+log(EIRP) dB less than the transmitter EIRP.
8. This STA commences on January 28, 2008 and expires after 180 days, or on the date on which permanent rules governing repeater operations become effective, whichever occurs first.
9. XM Radio is granted 30 days from the date of the release of this authorization to decline the authorization as conditioned. Failure to respond within that period will constitute formal acceptance of the authorization as conditioned.



CONDITIONS

File # ~~SAT-STA-20071211-00172~~

Call Sign \_\_\_\_\_ Grant Date 1/24/08  
(or other identifier)

Term Dates  
From 1/28/08 To: +180 days

Approved: [Signature]

Police Branch Chief

2. Contact

<b>Name:</b>	James S. Blitz	<b>Phone Number:</b>	202-380-4000
<b>Company:</b>	XM Satellite Radio Inc.	<b>Fax Number:</b>	202-380-4981
<b>Street:</b>	1500 Eckington Place NE	<b>E-Mail:</b>	james.blitz@xmradio.com
<b>City:</b>	Washington	<b>State:</b>	DC
<b>Country:</b>	USA	<b>Zipcode:</b>	20002 -
<b>Attention:</b>		<b>Relationship:</b>	Same

(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

<p>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.)</p>		
<div style="border: 1px solid black; padding: 10px; margin: 0 auto; width: 80%;"> <p>XM Radio Inc. (XM) requests Special Temporary Authority (STA) to operate one low power terrestrial repeater (less than 2kW EIRP) at the weekly PGA Tour events occurring at the locations and during the dates listed in Exhibit A and pursuant to the technical parameters listed in Exhibit B attached hereto.</p> </div>		
<p>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.</p>		
<p>10. Name of Person Signing James S. Blitz</p>	<p>11. Title of Person Signing Vice President, Regulatory Counsel</p>	
<p>12. Please supply any need attachments.</p>		
<p>Attachment 1: STA Request</p>	<p>Attachment 2:</p>	<p>Attachment 3:</p>
<p><b>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).</b></p>		

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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.**

December 11, 2007

**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  
Low 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, 47 C.F.R. § 25.120, hereby requests Special Temporary Authority ("STA") to operate one low power terrestrial repeater at the weekly Professional Golfers' Association ("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 hereto.<sup>1</sup> The Commission's International Bureau (the "Bureau") has previously granted XM six similar STA's for coverage of PGA events, the latest of which it granted on June 28, 2007, and which covers events occurring through December 31, 2007.<sup>2</sup>

Because this repeater will transmit at a power level of 2 kW average Effective Isotropically Radiated Power ("EIRP") 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. The low power repeater authorized under this STA will operate at 2 kW average will EIRP, a power level which adjacent band licensees have stated does not present an interference concern.

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<sup>1</sup> To the extent a particular tournament involves play at more than one golf course, XM intends to operate a low power repeater at each course.

<sup>2</sup> See *XM Radio Inc.*, File No. SAT-STA-20050418-00086 (DA 05-1642) (granted June 9, 2005); File No. SAT-STA-20051108-00213 (granted January 4, 2006); File No. SAT-STA-20051109-00214 (granted January 4, 2006); File No. SAT-STA-20060421-00046 (June 9, 2006), File No. SAT-STA-20061114-00138 (granted February 7, 2007) and File No. SAT-STA-20070508-00068 (granted June 28, 2007).

**Background.** The Commission has recognized that terrestrial repeaters are critical to satellite radio to overcome the effects of signal blockage and multipath interference.<sup>3</sup> Consistent with this policy, in September 2001 the Bureau granted XM an STA to operate terrestrial repeaters while the Commission concludes its rulemaking proceeding regarding final technical rules.<sup>4</sup> 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 providing commercial service. Since that time, satellite radio in general and XM in particular have proven to be a highly attractive service to American consumers, confirming the Commission’s vision in establishing the satellite radio service. As of now, XM serves over 8.5 million subscribers.

In March 2005, XM announced the addition of a PGA Tour Network channel to its channel lineup, to provide coverage of the weekly PGA Tour event along with daily programs designed for golf enthusiasts. Moreover, at the weekly PGA Tour event, XM offers 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 follow real-time action around the course. The portable radios also inform spectators 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 grant<sup>5</sup> 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 low power repeater, XM will be able to mitigate the potential blockage of its

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<sup>3</sup> 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).

<sup>4</sup> *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*”).

<sup>5</sup> XM requests authority to operate a low power repeater at those events listed in Exhibit A, all of which would occur within 180 days after grant of this request. XM intends to file a new STA request prior to the expiration of this request for authority to operate this repeater at those PGA Tour events that occur following 180 days after grant of this request.

satellite signal by trees and foliage, thereby providing spectators with adequate satellite radio service.

*Interference Considerations.* Operation of one low 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.<sup>6</sup> First, one of the conditions the Commission imposed in its original STA grant was the requirement that XM pre-coordinate with WCS licensees any repeater affecting an operational WCS base station.<sup>7</sup> To the extent that STA requires such coordination, XM is sending a copy of this application to counsel for Horizon Wi-Com, LLC (“Horizon”) and Comcast Corporation (“Comcast”), in satisfaction of this requirement.<sup>8</sup> Second, the repeater will be deployed in a manner intended to allow for coverage primarily of the golf course used for the weekly event. Even where there are WCS operations in the markets listed in Exhibit A, it is extremely unlikely that WCS equipment would be used on a golf course consistent with the current WCS rules. Third, the potential for interference is further minimized by the fact that the average EIRP of the repeater will not 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.<sup>9</sup> The WCS Coalition reiterated this position in March 2007.<sup>10</sup>

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

<sup>7</sup> See *XM Radio STA Order* ¶ 14.

<sup>8</sup> Despite the Bureau’s statement in the *XM STA Order* (at ¶ 14) that it expects “WCS licensees to provide a schedule or as much advance notice as possible of when their stations are to be placed in operation,” XM has not received information directly from any WCS licensee regarding plans for WCS deployment in these markets. However, XM’s own review of Commission files show that Comcast has certified that it operates two WCS stations in the Detroit market (which includes Grand Blanc) -- Call Signs WPQL632 and KNLB278, File Nos. 0003107370 and 0003107373 respectively, both filed July 12, 2007 – and Horizon has certified that it operates a WCS station in the Washington, D.C. market (which includes Bethesda, MD) -- Call Sign KNLB315, File No. 0003045282 (filed May 29, 2007). It is unclear from these certifications whether these base stations receive transmissions from CPE or are engaged in transmit-only operations; if only the latter, potential interference to the WCS base stations is not an issue. In any event, XM has conducted an interference analysis and determined that this repeater, when used locally, will not create interference to any of these operating WCS sites.

<sup>9</sup> *XM 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”).



*Technical Information.* Attached as Exhibit B is the following technical information for the low 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 omni and panel antennas. Because the terrain and foliage of each golf course will vary, XM is unable to specify in advance whether it will use the omni or the panel antenna and how it will orient the antenna at each golf course.<sup>11</sup> XM accordingly requests the flexibility to operate one low power repeater at the events listed in Exhibit A within the range of technical parameters listed in Exhibit B.

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

- a) Any actions taken as a result of this STA are solely at XM'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 low power repeater authorized pursuant to this STA is on a non-interference basis with respect to all permanently authorized radiocommunication facilities. XM will provide the information and follow the process set forth in paragraphs

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Footnote continued from previous page

<sup>10</sup> The WCS Coalition has expressly said that it will defer from objecting to STA requests that propose operations of no more than 2 kW EIRP, even if they do not specify peak or average EIRP, provided that grant of the STA (i) is conditioned on operation on a non-interference basis; and (ii) is subject to the condition that the issue of peak versus average EIRP will be addressed in the pending DARS rulemaking (IB Docket No. 95-91). *See Letter from Paul J. Sinderbrand, Counsel to the WCS Coalition, to Ms. Helen Domenici, FCC, File No. SAT-STA-20061207-00145 (filed March 19, 2007).* XM agrees to these conditions.

<sup>11</sup> 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 said 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.

Ms. Marlene H. Dortch  
December 11, 2007  
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14 and 17 in 16 FCC Rcd 16781 (Int'l Bur. 2001) as modified by 16 FCC Rcd 18484 (Int'l Bur. 2001).

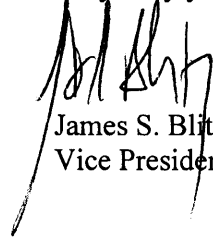
- c) The low power repeater is restricted to the simultaneous retransmission of the complete programming, and only that programming, transmitted by the satellite directly to SDARS receivers.
- d) Where applicable, coordination of the low power repeater shall be completed with all affected Administrations prior to operation, in accordance with all applicable international agreements including those with Canada and Mexico.
- e) The low power repeater will comply with Part 17 of the Commission's Rules regarding antenna structures.
- f) The low 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 low power repeater will be limited to 75+log (EIRP) dB less than the transmitter EIRP.

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).

XM will provide payment to the Federal Communications Commission for the sum of Seven Hundred Ninety Dollars (\$790.00). This filing fee amount is applicable to requests for STAs for geostationary ("GSO") satellites. *See* International and Satellite Services Fee Filing Guide (September 2006).

Please direct any questions regarding this matter to the undersigned.

Very truly yours,



James S. Blitz  
Vice President, Regulatory Counsel

cc: Stephen Duall, FCC  
Alyssa Roberts, FCC  
Shabnam Javid, FCC  
Thomas Gutierrez, Lukas Nace Gutierrez & Sachs (counsel for Horizon Wi-Com)  
David Don (Comcast Corporation)

### Exhibit A

XM requests Special Temporary Authority to operate one low power repeater with an average EIRP of 2 kW at the locations and during the dates listed below.<sup>1</sup>

Event	Course	Location	Dates (All are 2008)
FBR Open	TPC Scottsdale	Scottsdale, AZ	January 28- February 3
AT&T Pebble Beach National Pro-Am	Pebble Beach Golf Links, Spyglass Hill, Poppy Hills	Pebble Beach, CA	February 4-10
World Golf Championships – Accenture Match Play Championship	The Gallery at Dove Mountain	Marana, AZ	February 18-24
The Honda Classic	PGA National (Champion Course)	Palm Beach Gardens, FL	February 25- March 2
Arnold Palmer Invitational	Bay Hill Golf Club and Lodge	Orlando, FL	March 10-16
World Golf Championships – CA Championships	Doral Golf Resort and Spa	Doral, FL	March 17-23
Zurich Classic of New Orleans	TPC Louisiana	Avondale, LA	March 24-30
Shell Houston Open	Redstone Golf Club	Houston, TX	March 31-April 6
Verizon Heritage	Harbour Town Golf Links	Hilton Head Island, SC	April 14-20
The Players Championship	TPC Sawgrass	Ponte Vedra Beach, FL	May 5-11
AT&T Classic	TPC Sugarloaf	Duluth, GA	May 12-18
US Open	Torrey Pines Golf Course	La Jolla, CA	June 9-15
Buick Open	Warwick Hills Golf and Country Club	Grand Blanc, MI	June 23-29
AT&T National	Congressional Country Club	Bethesda, MD	June 30-July 6

<sup>1</sup> To the extent a particular tournament involves play at more than one golf course, XM intends to operate the low power repeater at each course.

## Exhibit B

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

**Exhibit C**

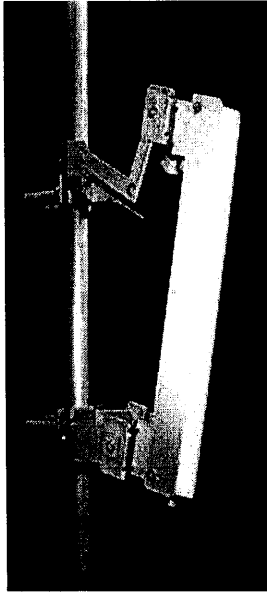
**Antenna Specification Sheets**



# TA-2304-DAB

## Medium Power Adjustable Sector

### 2330-2345 MHz



The TA-2304-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:** 15dBi @45°, 14dBi @60°, 12.5dBi @90°  
 12dBi @120°, 10.5dBi @160°  
**VSWR:** 1.4:1 max.  
**Front to Back Ratio:** 20 dB @ 180° +/- 35°  
**Polarization:** Vertical  
**Power Rating:** 200 W avg., 800 W peak  
**H-Plane Beamwidth:** 45°, 60°, 90°, 120°, 160°  
**E-Plane Beamwidth:** 15 degrees  
**Cross Pol. Discrimination:** 15 dB  
**Impedance:** 50 ohms nominal  
**Termination:** 7/16 DIN female

#### Mechanical Specifications

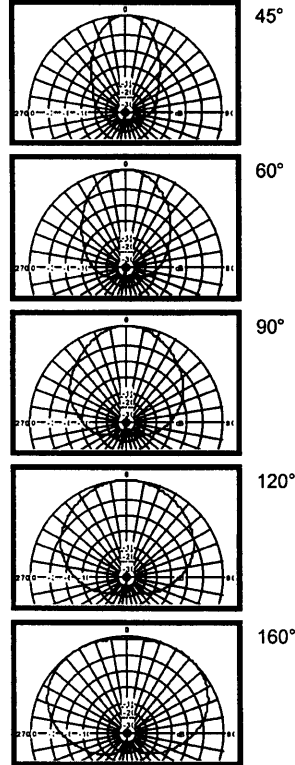
**Length:** 20.5 in. (521 mm)  
**Width:** 6.5 in. (165 mm) with 45° side panels  
 4.9 in. (124 mm) without 45° side panels  
**Depth:** 3.5 in. (89 mm)  
**Weight (incl. Clamps):** 6 lb. (2.7 kg)  
**Rated Wind Velocity:** 125 mph (200 km/h)  
**Hor. Thrust at rated wind:** 44 lb. (20 kg)  
 with 45° side panels: 56 lb. (25 kg)  
**Mechanical Tilt:** +5° to -15°  
**Mounting Pipe:** 0.75 - 3.0 in. (19 - 76 mm)

#### Materials

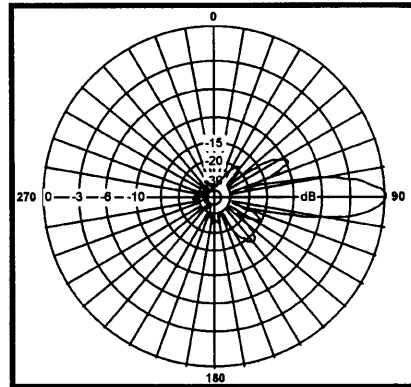
**Radiating Elements:** Tin plated copper on PCB  
**Reflector:** Iridited aluminum  
**Radome:** Gray UV stabilized ASA  
**Clamps:** Iridited aluminum and HDG steel

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

#### H-Plane



#### E-Plane

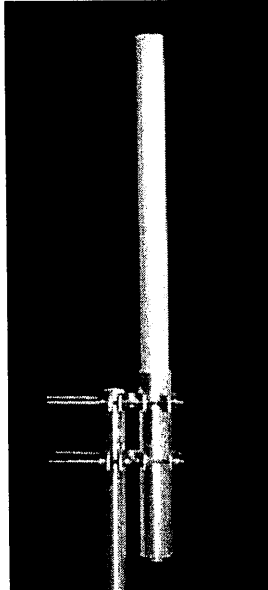




# TA-2350-DAB

## Medium Power 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:** 10 dBi  
**VSWR:** 1.4:1 max.  
**Polarization:** Vertical  
**Power Rating:** 200 W avg., 800 W peak  
**H-Plane Beamwidth:** 360 degrees  
**E-Plane Beamwidth:** 8 degrees  
**Electrical\_Downtilt:** 2, 4, 6 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  
**Clamps:** HDG steel

E-Plane

