

SAT-STA-20051108-00213 IB2005002571  
XM Radio Inc.

Approved by OMB  
3060-0678

Date & Time Filed: Nov 8 2005 6:52:39:883PM  
File Number: SAT-STA-20051108-00213  
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

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



File # SAT-STA-20051108-00213

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

Term Dates  
From 1/16/06 To: 7/15/06

Approved: Arthur J. Kelly  
w/conditions  
Policy Branch Chief.

Terms and Conditions of Grant: File No. SAT-STA-20051108-00213

- (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(EIRP) dB less than the transmitter EIRP;
- (h) This STA will expire after 180 days, or on the date on which permanent rules governing repeater operations become effective, whichever occurs first. The authority granted is limited to events listed as Exhibit A to the STA letter request, commencing on January 16, 2006, and continuing until July 15, 2006. XM Radio must seek additional special temporary authority for events that occur outside of this time period.



File # SAT-STA-20051108-00213

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

Term Dates  
From 1/16/06 To: 7/15/06

Approved: [Signature]  
w/conditions

Policy Branch Chief

2. Contact			
<b>Name:</b>	Bruce D. Jacobs	<b>Phone Number:</b>	202-663-8077
<b>Company:</b>	Pillsbury Winthrop Shaw Pittman LLP	<b>Fax Number:</b>	202-663-8007
<b>Street:</b>	2300 N Street, NW	<b>E-Mail:</b>	bruce.jacobs@pillsburylaw.com
<b>City:</b>	Washington	<b>State:</b>	DC
<b>Country:</b>	USA	<b>Zipcode:</b>	20037 -1128
<b>Attention:</b>		<b>Relationship:</b>	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?			
<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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November 8, 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,<sup>1</sup> 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.<sup>2</sup> The Bureau granted XM a similar STA request on June 9, 2005, which expires on December 6, 2005.<sup>3</sup> 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.

**Background.** The Commission has recognized that terrestrial repeaters are critical to satellite radio to overcome the effects of signal blockage and multipath interference.<sup>4</sup> Consistent with this policy, the International Bureau ("Bureau") in September 2001 granted XM an STA to

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<sup>1</sup> 47 C.F.R. § 25.120.

<sup>2</sup> To the extent a particular tournament involves play at more than one course, XM intends to operate the lower power repeater at each course.

<sup>3</sup> See *XM Radio Inc., Order*, DA 05-1642 (June 9, 2005) ("*XM PGA STA Order*").

<sup>4</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) ("*DARS Order and FNPRM*").

operate terrestrial repeaters while the Commission concludes its rulemaking proceeding regarding final technical rules.<sup>5</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 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 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>6</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 lower power repeater, XM will be able to mitigate the potential blockage of its

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<sup>5</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*”). 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).

<sup>6</sup> 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.

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

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.<sup>7</sup> 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.<sup>8</sup>

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.<sup>9</sup> 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.

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<sup>7</sup> XM previously notified Sirius Satellite Radio Inc. of a similar request, and it did not object.

<sup>8</sup> *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.").

<sup>9</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 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.



XM certifies that its operation of the lower power repeater will comply with the same conditions the Bureau imposed on XM in granting its current 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  $75 + \log$  (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).

Ms. Marlene H. Dortch  
November 8, 2005  
Page 5

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

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.<sup>1</sup>

<b>Event</b>	<b>Course</b>	<b>Location</b>	<b>Dates</b>
Bob Hope Chrysler Classic	The Classic Course at Northstar, PGA West-Palmer Private, LaQuinta, Bermuda Dunes	Palm Desert, CA	1/16-1/22
Buick Invitational	Torrey Pines Golf Course	San Diego, CA	1/23-1/29
FBR Open	TPC of Scottsdale	Scottsdale, AZ	1/30-2/5
AT&T Pebble Beach National Pro-Am	Pebble Beach Golf Links, Spyglass Hill, Poppy Hills	Pebble Beach, CA	2/06-2/12
Nissan Open	Riviera Country Club	Pacific Palisades, CA	2/13-2/19
WGC – Accenture Match Play Championship	La Costa Resort and Spa	Carlsbad, CA	2/20-2/26
Chrysler Classic of Tucson	Omni Tucson National Golf Resort and Spa	Tucson, AZ	2/20-2/26
Ford Championship of Doral	Doral Golf Resort and Spa	Miami, FL	2/27-3/5
The Honda Classic	Country Club at Mirasol	Palm Beach Gardens, FL	3/6-3/12

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

<b>Event</b>	<b>Course</b>	<b>Location</b>	<b>Dates</b>
Bay Hill Invitational presented by MasterCard	Bay Hill Country Club and Lodge	Orlando, FL	3/13-3/19
The PLAYERS Championship	TPC Sawgrass	Ponte Vedra Beach, FL	3/20-3/26
BellSouth Classic	TPC at Sugarloaf	Duluth, GA	3/27-4/2
The Masters	Augusta National Golf Club	Augusta, GA	4/3-4/9
MCI Heritage	Harbour Town Golf Links	Hilton Head Island, SC	4/10-4/16
Shell Houston Open	Redstone Golf Club	Houston, TX	4/17-4/23
Zurich Classic of New Orleans	TBA	New Orleans, LA	4/24-4/30
Wachovia Championship	Quail Hollow Club	Charlotte, NC	5/1-5/7
EDS Byron Nelson Championship	TPC at Four Seasons Resort and Cottonwood Valley	Irving, TX	5/8-5/14
Bank of America Colonial	Colonial Country Club	Ft. Worth, TX	5/15-5/21
FedEx St. Jude Classic	TPC at Southwind	Memphis, TN	5/22-5/28
The Memorial Tournament presented by Morgan Stanley	Muirfield Village Golf Club	Dublin, OH	5/29-6/4
Barclays Classic	Westchester Country Club	Harrison, NY	6/5-6/11

Event	Course	Location	Dates
U.S. Open	Winged Foot Golf Club	Mamaroneck, NY	6/12-6/18
Booz Allen Classic	TPC at Avenel	Potomac, MD	6/19-6/25
Buick Championship	TPC at River Highlands	Cromwell, CT	6/26-7/2
Cialis Western Open	Cog Hill Golf and Country Club	Lemont, IL	7/3-7/9
John Deere Classic	TPC at Deere Run	Silvis, IL	7/10-7/16
B.C. Open	En-Joie Golf Club	Endicott, NY	7/17-7/23
U.S. Bank Championship in Milwaukee	Brown Deer Park Golf Course	Milwaukee, WI	7/24-7/30
Buick Open	Warwick Hills Golf and Country Club	Grand Blanc, MI	7/31-8/6

last day of John Deere Classic 7/16/05  
not covered by STA.

BC Open, U.S. Bank Championship in Milwaukee  
and Buick Open all not covered by STA.

*Amela L. King* 1/4/06  
Policy Branch Chief  
see conditions of STA

## Exhibit B

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

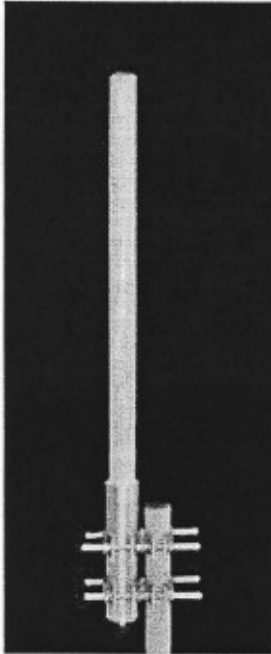
## Appendix C

### 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 (1<sup>st</sup> Null)  
**Impedance:** 50 ohms nominal  
**Termination:** 7/16 DIN female

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

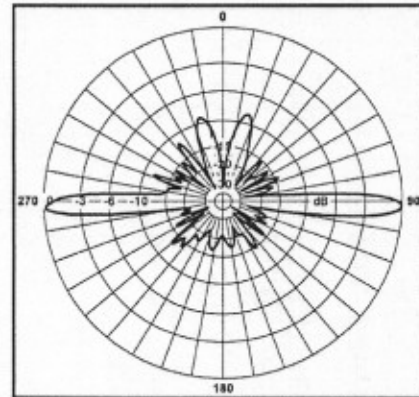
### Mechanical Specifications

**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

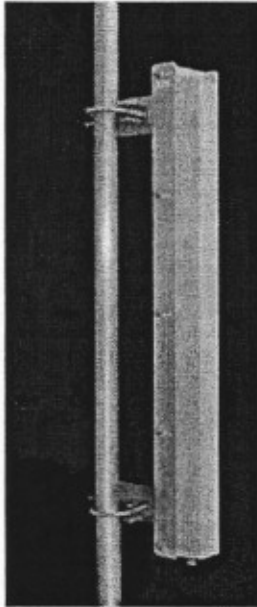






TIL-TEK

# 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)

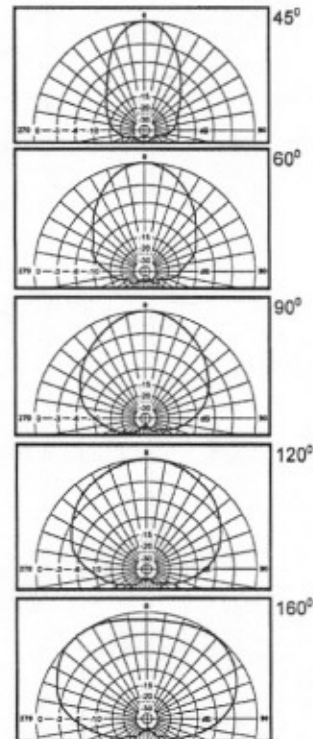
### Mechanical Specifications

**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

