



Received

MAR 25 2002

Satellite Engineering Branch
International Bureau

Sirius Satellite Radio
1221 Avenue of the Americas
New York, NY 10020
tel 212 584 5100
fax 212 584 5200
www.siriusradio.com

March 12, 2002

VIA HAND DELIVERY

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
236 Massachusetts Avenue, NE
Washington, DC 20002

**Re: Request To Extend Special Temporary Authority To Operate Satellite
DARS Terrestrial Repeaters; File No. SAT-STA-20010724-00064**

Dear Mr. Caton:

Pursuant to Section 25.120 of the Federal Communications Commission's ("FCC" or "Commission") rules,¹ Sirius Satellite Radio Inc. ("Sirius"), one of the two satellite digital audio radio service ("satellite DARS") licensees in the United States, hereby requests an extension of its special temporary authority ("STA") to operate its terrestrial repeater network.² Sirius requests an extension of its STA for 180 days or until such time as the Commission issues final rules governing the use of satellite DARS terrestrial repeaters.³ Grant of Sirius' extension request would serve the public interest by allowing Sirius to continue its roll-out of uniformly high quality commercial satellite DARS programming nationwide. Attached is a FCC Form 159, with a check payable to the FCC in the amount of \$145.00.

Attached as Exhibit A is a list of sites, including three minor revisions noted below, in which Sirius operates terrestrial repeaters pursuant to its STA and for which Sirius seeks an extension of its STA. Sirius has included the following

¹ 47 C.F.R. § 25.120.

² *Sirius Satellite Radio Inc. Application for Special Temporary Authority to Operate Satellite Digital Audio Radio Service Complementary Terrestrial Repeaters, Order and Authorization, File No. SAT-STA-20010724-00064, DA 01-2171 (Sept. 17, 2001) ("Sirius STA Order").*

³ *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, 5810-12 (1997) ("Terrestrial Repeater NPRM").*

Mr. William F. Caton
March 12, 2002
Page 2

information for each of the repeaters it operates pursuant to its STA:⁴ (1) geographic coordinates; (2) antenna type; (3) antenna orientation; (4) antenna radiation pattern vertical downtilt; (5) total EIRP; and (6) height Above Ground Level (AGL). This list reflects certain changes to the technical parameters of one of Sirius' repeaters in Detroit, Michigan, and one of its repeaters in Las Vegas, Nevada,⁵ and the addition of a low power repeater in Jackson, Mississippi.⁶ Otherwise, it is identical to the list attached to Sirius' original STA request.⁷ Attached as Exhibit B are specification sheets for each of the antenna types described in Exhibit A.

For the same reasons that grant of Sirius' original STA request served the public interest, grant of Sirius' request to extend its STA will serve the public interest.⁸ The extension will allow Sirius to continue to offer "high quality radio signals to listeners in areas that have limited radio service," and ensure that no reduction in the quality of this service occurs.⁹ Further, grant of the extension request would allow the public to continue to take advantage of long-awaited satellite DARS service, which offers both an increase in listening choices and greatly improved digital quality sound.

⁴ These include 151 high and medium power terrestrial repeaters and one low power terrestrial repeater in 105 sites.

⁵ Sirius notified the FCC of these changes on February 11, 2002. Letter from Carl R. Frank, Wiley Rein & Fielding LLP, to William F. Caton, Acting Secretary, Federal Communications Commission (dated Feb. 11, 2002).

⁶ Sirius informed the Commission of its plans to install and operate a very low power repeater in Jackson, Mississippi, on February 22, 2002. Letter from Carl R. Frank, Wiley Rein & Fielding LLP, to William F. Caton, Acting Secretary, Federal Communications Commission (dated Feb. 22, 2002).

⁷ *Sirius Satellite Radio Inc. Application for Special Temporary Authority to Operate Satellite Digital Audio Radio Service Complementary Terrestrial Repeaters*, File No. SAT-STA-20010724-0064 (filed July 24, 2001).

⁸ *Sirius STA Order*, ¶ 9.

⁹ *Id.*

In granting Sirius' original request, the Commission itself noted that "Sirius has proceeded with satellite construction, has in fact launched both of its satellites, and needs to employ terrestrial repeaters to provide adequate service" and that it has not yet issued final rules governing the operation of satellite DARS terrestrial repeaters.¹⁰ The FCC concluded that "this situation has created the extraordinary circumstances required by the statute and our rules to justify grant of an STA" and noted that "it would be unfair to penalize Sirius for complying with our required milestone schedule on the one hand but on the other hand force it to seriously delay initiation of service because there are no final repeater rules."¹¹ These considerations apply with equal force here as the FCC still has not issued final repeater rules.

Sirius has established that its terrestrial repeaters will not cause harmful interference to other radio services.¹² Nevertheless, Sirius will continue to comply with the condition placed upon its STA that it protect "all existing authorized radiocommunication facilities that are in operation during the period the STA is in effect" from interference caused by its terrestrial repeaters.¹³ Sirius notes that the Commission had proposed to require satellite DARS licensees to bear the cost of remedying interference to certain Multipoint Distribution Service ("MDS") and Instructional Television Fixed Service ("ITFS") facilities if MDS or ITFS licensees lodged interference complaints prior to *February 20, 2002*.¹⁴ In granting Sirius' STA request, the Commission required Sirius to provide MDS and ITFS licensees with information regarding the locations and technical parameters of all repeaters

¹⁰ *Id.*, ¶ 7.

¹¹ *Id.*

¹² *Establishment of Rules and Policies for the Digital Audio Radio Service in 2310-2360 MHz Frequency Band*, Supplemental Comments of Sirius Satellite Radio (Jan. 18, 2000).

¹³ *Sirius STA Order*, ¶¶ 13, 18(b).

¹⁴ *Request For Further Comment On Selected Issues Regarding The Authorization Of Satellite Digital Audio Radio Service Terrestrial Repeater Networks*, Public Notice, IB Docket No. 95-91, RM No. 8610, DA 01-2570, at 7 (Nov. 1, 2001). The FCC proposal would apply with respect to MDS or ITFS facilities installed prior to August 20, 1998, and located within a satellite DARS repeater's free space power flux density contour of -34 dBW/m². *Id.*

Mr. William F. Caton
March 12, 2002
Page 4

operating pursuant to the STA in order to facilitate coordination with these MDS and ITFS operations.¹⁵ Thus, in granting Sirius STA, the FCC extended the procedural aspects of its proposed rules requiring interference protection for certain MDS and ITFS facilities but did not extend the substantive aspects of those proposed rules beyond the proposed February 20, 2002 expiration date. While Sirius views further extension of the notification requirement as unnecessary, out of an abundance of caution, it will continue to comply with these procedural requirements with respect to MDS and ITFS facilities.

Sirius also will comply with the requirements that it not (1) originate any original programming, (2) transmit signals other than those used by its satellites or (3) extend satellite DARS coverage outside of the satellites' authorized service area.¹⁶ Sirius certifies that the out-of-band emissions of these terrestrial repeaters will be attenuated below the transmitted EIRP by no less than $75 + 10 \log (P)$.¹⁷

In accordance with Part 17 of the Commission's Rules, Sirius has or will notify the Federal Aviation Administration ("FAA") of antenna structures for which such notification is required. 47 C.F.R. § § 17.7-17.17. Sirius hereby certifies that operation of these repeaters will not have a significant environmental effect, as defined by 47 C.F.R. § § 1.1301-1.1319, and 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. § 862(a).

As Sirius' extension request is timely filed, Sirius understands that, pursuant to Section 1.62 of the FCC's Rules, 47 C.F.R. § 1.62, its STA will continue in effect without further action by the Commission until such time as the Commission shall make a final determination with respect to its request. Sirius urges the FCC to grant its extension request in order to provide Sirius with STA to make the proposed changes to its Detroit and Las Vegas repeaters and to operate its Jackson repeater.

¹⁵ *Sirius Satellite Radio Inc. Application for Special Temporary Authority to Operate Satellite Digital Audio Radio Service Complementary Terrestrial Repeaters*, Order, File No. SAT-STA-20010724-00064, DA 01-2383 (Oct. 15, 2001).

¹⁶ *Sirius STA Order*, ¶ 18(c). See also *Terrestrial Repeater NPRM*, 12 FCC Rcd at 5845-46 (Appendix C).

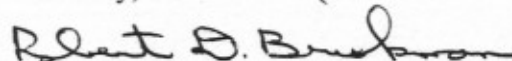
¹⁷ *Sirius STA Order*, ¶ 18(g).

Mr. William F. Caton
March 12, 2002
Page 5

Alternatively, the Commission should grant the modification request related to the Detroit and Las Vegas repeaters filed on February 11, 2002 and let the notification regarding the Jackson repeater filed on February 22, 2002 become effective.

If there are any questions concerning this request, please do not hesitate to contact the undersigned.

Sincerely,



Robert D. Briskman
Technical Executive
Sirius Satellite Radio Inc.

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing "Request to Extend Special Temporary Authority To Operate Satellite DARS Terrestrial Repeaters" was delivered via hand-delivery, on this 12th day of March, 2002, to each of the following:

Donald Abelson
International Bureau
Federal Communications Commission
445 Twelfth Street, SW, Room 6-C750
Washington, DC 20554

Ron Repasi
International Bureau
Federal Communications Commission
445 Twelfth Street, SW, Room 6-A505
Washington, DC 20554

Chris Murphy
International Bureau
Federal Communications Commission
445 Twelfth Street, SW, Room 6-C437
Washington, DC 20554

Jennifer Gilsean
International Bureau
Federal Communications Commission
445 Twelfth Street, SW, Room 6-A520
Washington, DC 20554

Rosalee Chiara
International Bureau
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20554

Rockie Patterson
International Bureau
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20554

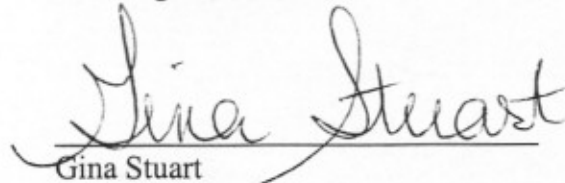

Gina Stuart

EXHIBIT A

Sirius Satellite Radio

Market	No Of Sectors	Antenna Type	Sector 1				Sector 2				Sector 3				Coordinates		Antenna Height (feet)
			Antenna Beamwidth	Orientation	Downtilt	EIRP (Watts)	Antenna Beamwidth	Orientation	Downtilt	EIRP (Watts)	Antenna Beamwidth	Orientation	Downtilt	EIRP (Watts)	Longitude (W)	Latitude (N)	
Akron	1	HMD8V90-R05-H	90	320	0	14125.38	-	-	-	-	-	-	-	81-30-14.00	41-03-53.00	150	
Albany	1	HMD8V360-R05-H	Omni	-	-	8511.38	-	-	-	-	-	-	-	73-45-55.80	42-39-32.18	178	
Albuquerque	1	HMD8V90-R05-H	90	230	0	22387.21	-	-	-	-	-	-	-	106-26-58.50	35-12-46.50	65	
Atlanta	2	HMD8PV180-R05-H	180	0	0	6309.57	180	180	0	7943.28	-	-	-	84-23-13.19	33-45-39.46	1016	
Atlanta	1	HMD8V120-R05-H	120	250	0	19952.62	-	-	-	-	-	-	-	84-20-07.00	33-55-16.00	443	
Atlanta	2	HMD8V90-R05-H	90	30	0	8317.64	90	150	0	7585.78	-	-	-	84-28-25.09	33-53-59.70	228	
Atlanta	2	HMD8V90-R05-H	90	45	0	10715.19	90	180	0	10964.78	-	-	-	84-22-39.00	33-51-07.00	231	
Atlanta	2	HMD8PV180-R05-H	180	0	0	7585.78	180	180	0	7413.10	-	-	-	84-23-25.80	33-47-54.60	154	
Austin	1	HMD8V120-R05-H	120	175	0	12589.25	-	-	-	-	-	-	-	97-44-29.00	30-17-00.00	292	
Baltimore	1	HMD8PV180-R05-H	180	0	0	9332.54	-	-	-	-	-	-	-	76-36-50.12	39-17-15.41	526	
Birmingham	1	HMD8V360-R05-H	Omni	-	-	8241.38	-	-	-	-	-	-	-	86-48-30.00	33-31-04.00	537	
Boston	1	HMD8V360-R05-H	Omni	-	-	7943.28	-	-	-	-	-	-	-	71-03-41.2	42-21-30.60	554	
Buffalo	1	HMD8V90-R05-H	90	30	0	9332.54	-	-	-	-	-	-	-	78-52-35.00	42-52-47.00	580	
Charlotte	1	HMD8PV180-R05-H	180	65	0	10471.29	-	-	-	-	-	-	-	80-50-49.74	35-13-29.49	524	
Chicago	2	HMD8V90-R05-H,HMD8V120-R05-H	120	235	0	3090.30	90	340	0	3019.95	-	-	-	87-37-17.81	41-53-6.88	998	
Chicago	2	HMD8V120-R05-H	120	170	0	5623.41	120	340	0	5128.61	-	-	-	87-38-21.13	41-55-33.28	286	
Chicago	2	HMD8V90-R05-H	90	180	0	4265.80	90	310	0	3368.44	-	-	-	87-39-18.00	41-58-50.00	489	
Cincinnati	2	HMD8PV180-R05-H	180	170	0	8511.38	180	350	0	7585.78	-	-	-	84-30-51.00	39-06-24.00	308	
Cleveland	2	HMD8V120-R05-H	120	70	0	7585.78	120	260	0	6606.93	-	-	-	81-41-34.37	41-29-58.50	656	
Columbus	1	HMD8V360-R05-H	Omni	-	-	5370.32	-	-	-	-	-	-	-	82-59-46.00	39-57-47.00	442	
Dallas	2	HMD8V120-R05-H	120	80	0	8511.38	120	260	0	8511.38	-	-	-	96-47-52.23	32-47-8.95	489	
Dallas	1	HMD8PV180-R05-H	180	240	0	10000.00	-	-	-	-	-	-	-	97-19-46.00	32-45-11.00	525	
Dayton	1	HMD8V120-R05-H	120	115	0	5888.44	-	-	-	-	-	-	-	84-11-46.00	39-45-39.00	240	
Denver/Boulder	2	HMD8PV180-R05-H	180	150	0	6309.57	180	330	0	7585.78	-	-	-	104-59-22.06	39-44-52.04	598	
Detroit	1	HMD8V120-R05-H	120	330	6	16218.10	-	-	-	-	-	-	-	83-02-51.00	42-19-50.00	648	
Detroit	2	HMD8V45-R05-H	45	90	0	19952.62	45	315	0	19952.62	-	-	-	83-14-35.42	42-28-28.15	389	
Fresno	1	HMD8V90-R05-H	90	120	0	22387.21	-	-	-	-	-	-	-	119-52-56.90	36-48-59.50	180	
Greensboro	1	HMD8V90-R05-H	90	240	0	14125.38	-	-	-	-	-	-	-	79-45-38.10	36-05-10.30	504	
Harrisburg	1	HMD8V90-R05-H	90	140	0	22387.21	-	-	-	-	-	-	-	76-56-45.00	40-19-07.00	178	
Hartford	1	HMD8V360-R05-H	Omni	-	-	6309.57	-	-	-	-	-	-	-	72-40-32.00	41-46-06.00	383	
Houston	2	HMD8V90-R05-H	90	175	0	9772.37	90	295	0	9772.37	-	-	-	95-21-50.00	29-45-37.00	1060	
Indianapolis	1	HMD8V360-R05-H	Omni	-	-	8709.64	-	-	-	-	-	-	-	86-09-20.00	39-46-13.00	532	
Jackson	1	Mobile Mark OD12-2400	Omni	-	0	317.00	-	-	-	-	-	-	-	90-11-09.38	32-18-01.47	324	
Jacksonville	1	HMD8PV180-R05-H	180	345	0	6918.31	-	-	-	-	-	-	-	81-39-24.00	30-19-08.00	436	
Kansas City	2	HMD8V90-R05-H	90	115	0	12302.69	90	205	0	11481.54	-	-	-	94-34-57.00	39-06-12.00	558	
Knoxville	1	HMD8V90-R05-H	90	90	0	22387.21	-	-	-	-	-	-	-	84-01-22.60	35-57-46.20	265	
Las Vegas	2	HMD8PV180-R05-H	180	20	0	4465.84	180	200	0	4570.88	-	-	-	115-08-31.00	36-10-10.10	466	
Las Vegas	1	HMD8V120-R05-H	120	135	7	15848.90	-	-	-	-	-	-	-	115-10-00.00	36-07-57.00	401	
Little Rock	1	HMD8V360-R05-H	Omni	-	-	5623.41	-	-	-	-	-	-	-	92-16-32.46	34-44-37.67	586	
Los Angeles	3	HMD8V120-R05-H	120	0	3	3715.35	120	120	3	3715.35	120	240	3	3715.35	118-15-22.00	34-02-58.00	868
Los Angeles	2	HMD8V90-R05-H	90	60	0	7943.28	90	215	0	7943.28	-	-	-	118-27-35.00	34-03-03.00	273	
Los Angeles	2	HMD8PV180-R05-H	180	110	0	5011.87	180	290	0	5011.87	-	-	-	118-23-55.00	34-03-20.00	158	
Los Angeles	2	HMD8PV180-R05-H	180	45	0	4265.80	180	225	0	4677.35	-	-	-	118-21-04.55	34-03-44.18	372	
Los Angeles	2	HMD8PV180-R05-H	180	90	0	4365.16	180	270	0	5623.41	-	-	-	118-18-34.00	34-03-41.00	302	
Los Angeles	1	HMD8V45-R05-H	45	110	0	16595.87	-	-	-	-	-	-	-	118-11-44.00	34-09-48.00	78	
Los Angeles	1	HMD8V90-R05-H	90	10	0	10232.93	-	-	-	-	-	-	-	118-15-26.39	34-08-29.27	98	
Los Angeles	2	HMD8V90-R05-H	90	135	0	7943.28	90	225	0	7943.28	-	-	-	118-11-09.00	33-46-03.00	146	
Los Angeles	2	HMD8V90-R05-H	90	0	0	7943.28	90	180	0	7943.28	-	-	-	117-52-8.01	33-45-34.23	120	
Los Angeles	2	HMD8PV180-R05-H	180	135	0	5011.87	180	315	0	5011.87	-	-	-	117-52-52.00	33-41-22.00	159	
Los Angeles	2	HMD8V90-R05-H	90	30	0	6918.31	90	290	0	6918.31	-	-	-	118-22-03.00	34-07-34.00	50	
Los Angeles	1	HMD8V120-R05-H	120	290	0	7079.46	-	-	-	-	-	-	-	118-27-55.86	34-09-15.13	218	
Louisville	1	HMD8V360-R05-H	Omni	-	-	5623.41	-	-	-	-	-	-	-	85-45-28.00	38-15-20.00	560	
Memphis	1	HMD8V360-R05-H	Omni	-	-	21379.63	-	-	-	-	-	-	-	90-2-59.80	35-8-39.70	358	
Miami	2	HMD8V90-R05-H	90	0	0	12022.64	90	230	0	12862.50	-	-	-	80-11-31.00	25-46-19.00	596	
Miami	1	HMD8V90-R05-H	90	0	0	18620.87	-	-	-	-	-	-	-	80-06-30.84	26-06-50.67	640	
Milwaukee	1	HMD8PV180-R05-H	180	310	0	15488.17	-	-	-	-	-	-	-	87-54-06.69	43-02-17.95	588	
Minneapolis	2	HMD8V120-R05-H	120	90	0	5370.32	120	270	0	4466.84	-	-	-	93-16-16.00	44-58-36.00	775	

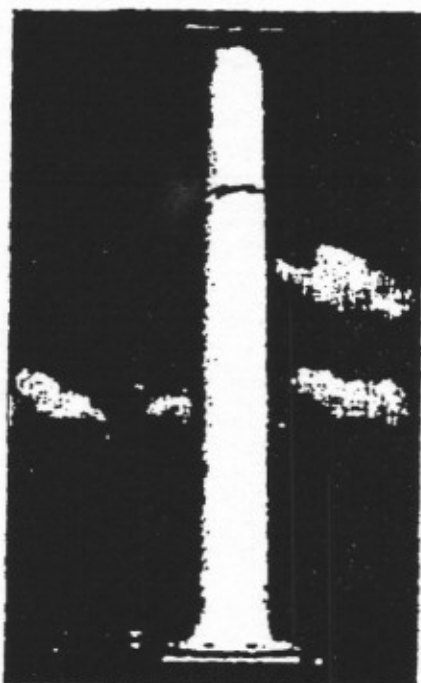
Sirius Satellite Radio

Market	No Of Sectors	Antenna Type	Sector 1				Sector 2				Sector 3				Coordinates		Antenna Height (feet)
			Antenna Beamwidth	Orientation	Down tilt	EIRP (Watts)	Antenna Beamwidth	Orientation	Down tilt	EIRP (Watts)	Antenna Beamwidth	Orientation	Down tilt	EIRP (Watts)	Longitude (W)	Latitude (N)	
Minneapolis	1	HMD8V90-R05-H	90	135	0	8912.51	-	-	-	-	-	-	-	93-05-43.00	44-56-52.00	500	
Monterey	1	HMD8PV180-R05-H	180	180	0	8912.51	-	-	-	-	-	-	-	121-51-24.00	36-36-26.00	135	
Nashville	1	HMD8V360-R05-H	Omni	-	-	6165.95	-	-	-	-	-	-	-	86-46-55.09	36-09-48.85	868	
New Haven	1	HMD8PV180-R05-H	180	250	0	10715.19	-	-	-	-	-	-	-	72-55-20.00	41-18-33.00	243	
New Orleans	1	HMD8V360-R05-H	Omni	-	-	10351.42	-	-	-	-	-	-	-	90-04-16.00	29-57-00.00	626	
New York	1	HMD8V360-R05-H	Omni	-	-	8912.51	-	-	-	-	-	-	-	73-58-55.20	40-45-33.00	670	
New York	2	HMD8V90-R05-H	90	140	0	12589.25	90	340	0	12589.25	-	-	-	73-57-01.70	40-46-30.00	560	
New York	1	HMD8PV180-R05-H	180	210	0	15848.93	-	-	-	-	-	-	-	74-00-40.32	40-42-29.88	524	
New York	1	HMD8V360-R05-H	Omni	-	-	8912.51	-	-	-	-	-	-	-	73-59-48.00	40-42-54.00	474	
New York	2	HMD8PV180-R05-H	180	30	0	6165.95	180	210	0	6606.93	-	-	-	73-54-19.50	40-51-57.50	170	
New York	2	HMD8PV180-R05-H	180	0	0	5754.40	180	180	0	5888.44	-	-	-	73-56-36.00	40-48-54.00	180	
New York	2	HMD8PV180-R05-H	180	110	0	6309.57	180	290	0	7943.28	-	-	-	73-58-22.53	40-51-18.12	210	
New York	1	HMD8PV180-R05-H	180	110	0	16218.10	-	-	-	-	-	-	-	74-00-03.00	40-47-25.00	438	
New York	2	HMD8PV180-R05-H	180	90	0	7943.28	180	270	0	7943.28	-	-	-	73-45-44.75	41-01-51.38	261	
Newark	1	HMD8V360-R05-H	Omni	-	-	8912.51	-	-	-	-	-	-	-	74-10-11.00	40-44-07.00	334	
Norfolk	1	HMD8V360-R05-H	Omni	-	-	6760.83	-	-	-	-	-	-	-	76-17-29.21	36-50-44.47	270	
Oklahoma City	1	HMD8V90-R05-H	90	190	0	22387.21	-	-	-	-	-	-	-	97-29-22.00	35-35-52.00	400	
Orlando	2	HMD8PV180-R05-H	180	0	0	2511.89	180	180	0	2630.27	-	-	-	81-22-44.32	28-32-37.45	312	
Philadelphia	2	HMD8V120-R05-H	120	120	0	8317.64	120	280	0	9332.54	-	-	-	75-10-11.00	39-57-13.00	758	
Phoenix	2	HMD8PV180-R05-H	180	0	0	5888.44	180	180	0	7585.78	-	-	-	112-04-23.66	33-28-37.70	298	
Pittsburgh	2	HMD8V120-R05-H	120	90	0	9332.54	120	270	0	10000.00	-	-	-	79-59-42.00	40-26-29.00	690	
Portland	2	HMD8V90-R05-H	90	0	0	3801.89	90	190	0	3715.35	-	-	-	122-40-33.74	45-30-47.16	464	
Providence	1	HMD8V360-R05-H	Omni	-	-	8912.51	-	-	-	-	-	-	-	71-24-36.94	41-49-29.33	421	
Raleigh	1	HMD8PV180-R05-H	180	0	0	10000.00	-	-	-	-	-	-	-	78-38-25.00	35-46-27.00	458	
Richmond	2	HMD8V120-R05-H	120	65	0	6456.54	120	305	0	5370.32	-	-	-	77-26-06.00	37-32-11.94	369	
Rochester	2	HMD8V90-R05-H	90	130	0	10471.29	90	220	0	11481.54	-	-	-	77-36-33.00	43-09-23.00	365	
Sacramento	1	HMD8PV180-R05-H	180	5	0	15848.93	-	-	-	-	-	-	-	121-29-27.00	38-34-28.00	140	
Salt Lake City	1	HMD8V90-R05-H	90	290	0	8912.51	-	-	-	-	-	-	-	111-51-02.40	40-45-28.80	135	
San Antonio	1	HMD8V90-R05-H	90	110	0	10471.29	-	-	-	-	-	-	-	98-29-32.00	29-25-42.00	428	
San Diego	2	HMD8V120-R05-H	120	60	0	6309.57	120	240	0	6309.57	-	-	-	117-09-43.28	32-42-57.70	450	
San Francisco	2	HMD8V45-R05-H,HMD8V120-R05-H	120	25	0	10000.00	45	130	0	19952.62	-	-	-	122-26-03.00	37-41-12.00	100	
San Francisco	1	HMD8V120-R05-H	120	50	0	15848.93	-	-	-	-	-	-	-	122-27-05.00	37-45-20.00	382	
San Jose	1	HMD8V90-R05-H	90	270	0	25118.86	-	-	-	-	-	-	-	121-45-11.23	37-19-20.08	20	
Santa Cruz	1	HMD8PV180-R05-H	180	180	0	8912.51	-	-	-	-	-	-	-	121-59-45.00	36-59-35.50	60	
Seattle	2	HMD8V120-R05-H	120	180	0	9549.93	120	330	0	8709.64	-	-	-	122-19-41.77	47-36-16.71	943	
Springfield	1	HMD8V90-R05-H	90	90	0	14125.38	-	-	-	-	-	-	-	72-35-33.50	42-06-09.50	445	
St. Louis	2	HMD8V90-R05-H	90	135	0	9549.93	90	225	0	10232.93	-	-	-	90-11-26.00	38-37-48.00	482	
Syracuse	2	HMD8V90-R05-H	90	160	0	6918.31	90	280	0	6025.60	-	-	-	76-08-32.00	43-02-49.00	207	
Tampa	1	HMD8V360-R05-H	Omni	-	-	10000.00	-	-	-	-	-	-	-	82-27-33.00	27-56-48.00	576	
Tucson	1	HMD8V120-R05-H	120	135	0	11220.18	-	-	-	-	-	-	-	110-58-16.50	32-13-20.10	265	
Tulsa	1	HMD8V90-R05-H	90	240	0	15848.93	-	-	-	-	-	-	-	95-57-10.85	36-10-10.02	400	
Washington D.C.	1	HMD8V360-R05-H	Omni	-	-	6918.31	-	-	-	-	-	-	-	77-00-41.00	38-53-48.00	156	
Washington D.C.	1	HMD8V360-R05-H	Omni	-	-	10715.19	-	-	-	-	-	-	-	77-04-35.08	38-53-43.60	198	
Washington D.C.	2	HMD8V120-R05-H	120	90	0	9549.93	120	250	0	8912.51	-	-	-	77-03-39.00	38-51-45.00	208	
Washington D.C.	1	HMD8V360-R05-H	Omni	-	-	4897.79	-	-	-	-	-	-	-	77-06-55.87	38-50-36.60	208	
Washington D.C.	3	HMD8V120-R05-H	120	90	0	6025.60	120	210	0	6165.95	120	330	0	77-05-44.00	38-59-07.00	200	
Wilmington	1	HMD8V90-R05-H	90	225	0	14125.38	-	-	-	-	-	-	-	75-32-49.00	39-44-53.00	430	
Winston-Salem	1	HMD8V90-R05-H	90	30	0	14125.38	-	-	-	-	-	-	-	80-15-05.00	36-05-24.00	330	

EXHIBIT B



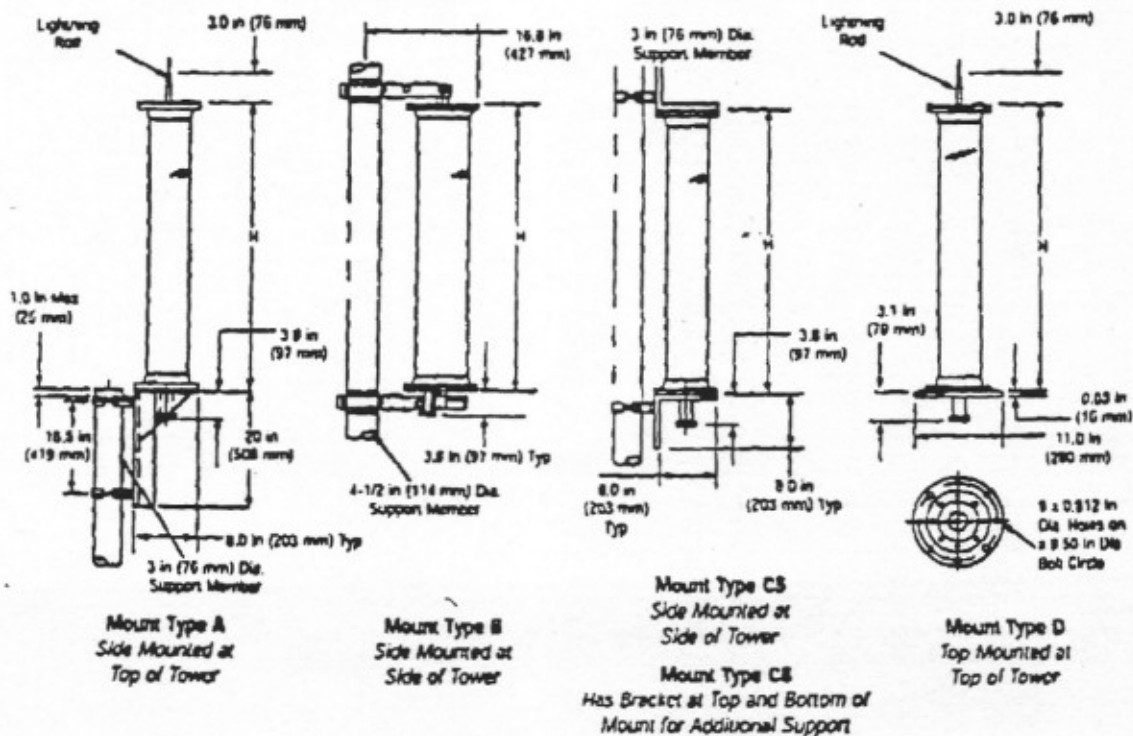
HMD Series Antennas for MMDS/ITFS and Wireless Cable Applications



Features

- Pressurizable, radome enclosed for long, trouble-free life
- Excellent VSWR performance
 - 1.35:1 max for W-Band
 - 1.5:1 max for other bands
- Optimized beam tilt
 - 0.5° Standard for 8, 12, and 16 bay
 - 0.75° Standard for 24 and 32 bay
 - Others available on request
- High power handling - 800 watts typical
- Wide selection of frequency bands and patterns
- Horizontal or vertical polarization
- Suitable for analog or digital transmission
- Null fill for excellent coverage

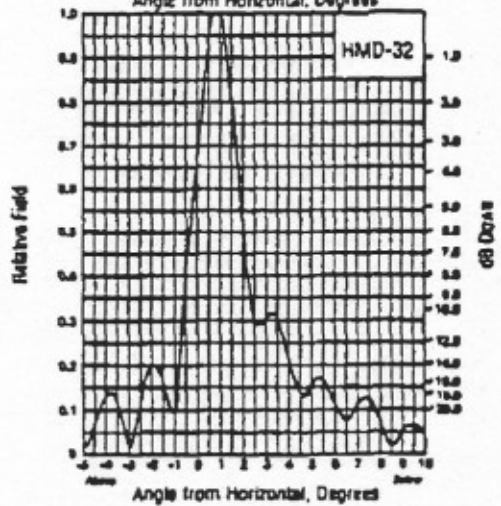
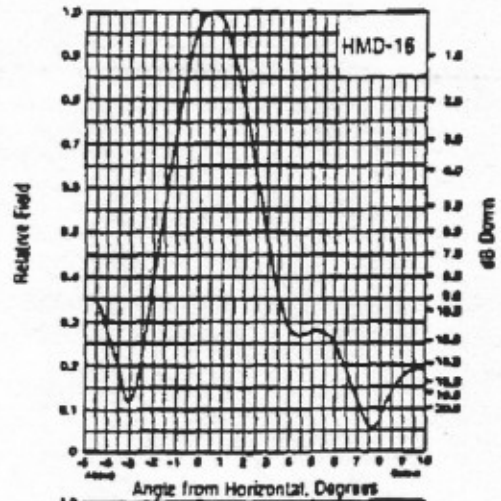
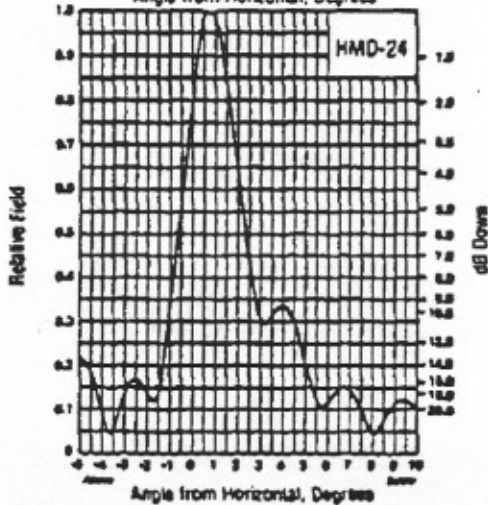
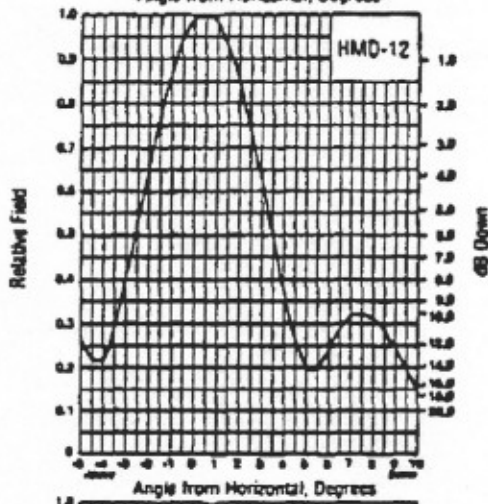
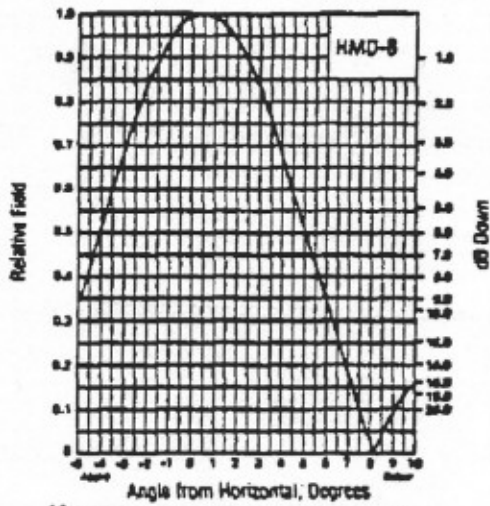
Standard Mounting Configurations



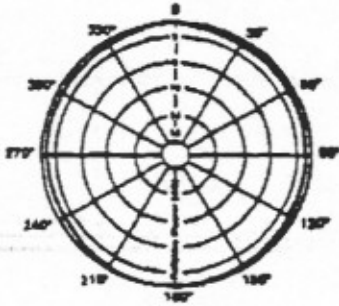


HMD Series Antennas

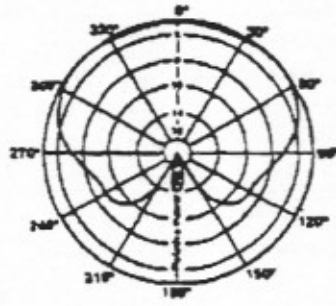
Elevation Patterns



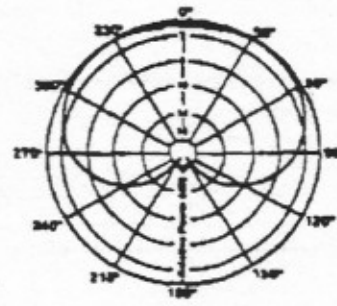
HMD Series Antennas Azimuth Patterns



Omnidirectional



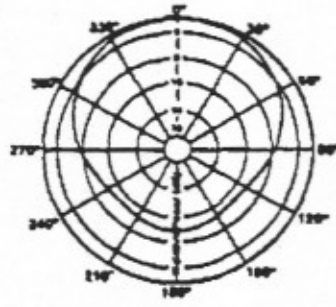
Horizontal Cardioid



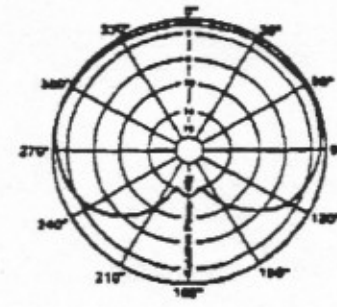
Vertical Cardioid



Wide Horizontal Cardioid



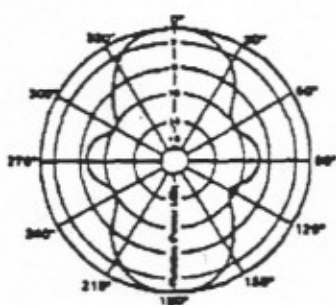
Narrow Horizontal Cardioid



Wide Vertical Cardioid



Narrow Vertical Cardioid



Horizontal Peanut

List for Andrew Antennas for Sirius Radio Deployment

Andrew Corporation Products Antennas	Product Description	Power Gain (dBi)	Average Input Power (W)	Null Fill (%)	E-Plane Beamwidth (-3 dB)	Total Length (in)	Weight (lbs.)	Radome Diam. (in)
45 DEGREE ANTENNA								
HMD8V45-R05-H	45 degree Az. Pattern, 8 Bays, Vertical Polarization, Standard Beamtilt (0.5 deg.), 2300 -2500 MHz Freq. Band, 50 Ohm, 7/8" EIA Flange, 1.38 :1 Max. VSWR	18 dBi	1000 W (rms)	None	7.0 - 7.5 deg.	57"	50 lbs	8"
60 DEGREE ANTENNA								
HMD8V60-R05-H	60 degree Azimuth pattern, 8 Bays, Vertical Polarization, Standard Beamtilt (0.5 deg.), 2300 -2500 MHz Freq. Band, 50 Ohm, 7/8" EIA Flange, 1.38 :1 Max. VSWR	17.0 dBi	1000 W (rms)	None	7.0 - 7.5 deg.	57"	40 lbs	5"
90 DEGREE ANTENNA								
HMD8V90-R05-H	90 degree Az. Pattern, 8 Bays, Vertical Polarization, Standard Beamtilt (0.5 deg.), 2300 -2500 MHz Freq. Band, 50 Ohm, 7/8" EIA Flange, 1.38 :1 Max. VSWR	16 dBi	1000 W (rms)	None	7.0 - 7.5 deg.	57"	40 lbs	5"

List for Andrew Antennas for Sirius Radio Deployment

120 DEGREE ANTENNA

120 degree Azimuth pattern, 8 Bays, Vertical Polarization, Standard Beamtilt (0.5 deg.), 2300 - 2500 MHz Freq. Band, 50 Ohm, 7/8" EIA Flange, 1.38 :1 Max.							
HMD8V120-R05	VSWR	15.0 dBi	1000 W (rms)	None	7.0 - 7.5 deg.	57"	40 lbs 5"

160 DEGREE ANTENNA

160 degree Azimuth pattern, 8 Bays, Vertical Polarization, Standard Beamtilt (0.5 deg.), 2300 - 2500 MHz Freq. Band, 50 Ohm, 7/8" EIA Flange, 1.38 :1 Max.							
HMD8V160-R05-H	VSWR	15.0 dBi	1000 W (rms)	None	7.0 - 7.5 deg.	57"	40 lbs 5"

180 DEGREE ANTENNA

180 degree Azimuth pattern, 8 Bays, Vertical Polarization, Standard Beamtilt (0.5 deg.), 2300 - 2500 MHz Freq. Band, 50 Ohm, 7/8" EIA Flange, 1.38 :1 Max.							
HMD8PV180-R05-H	VSWR	14.0 dBi	1000 W (rms)	None	7.0 - 7.5 deg.	57"	40 lbs 5"

Note: All Directional (Sector) Antennas come with Type 'C' Mount

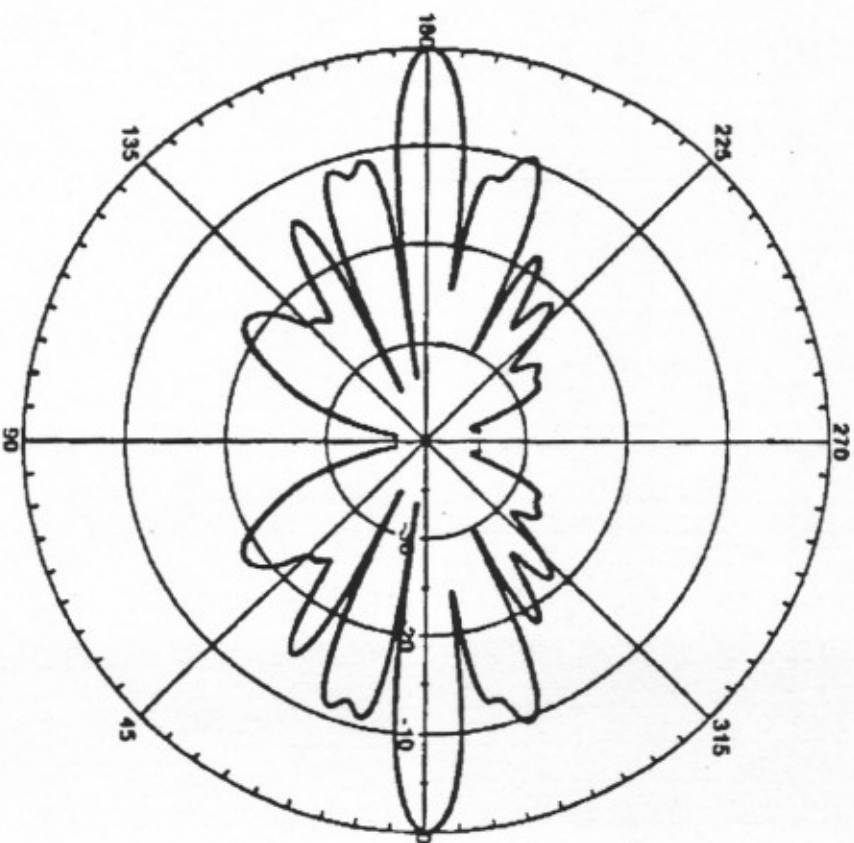
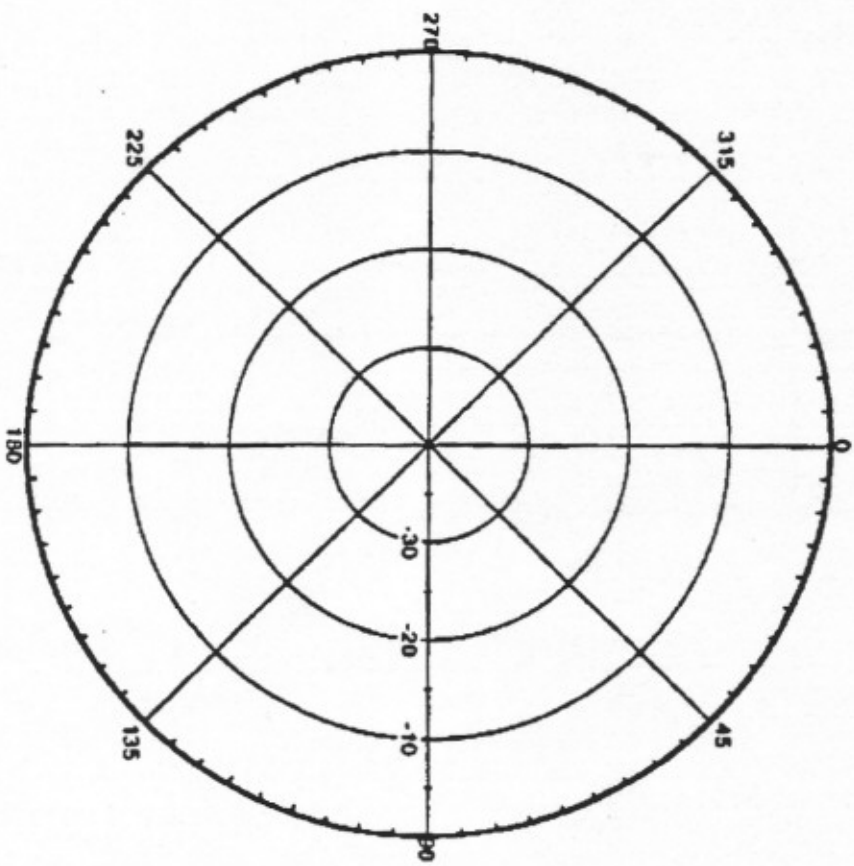
OMNI ANTENNAS

Omni pattern, 8 Bays, Standard Beamtilt (0.5 deg.), Vertical Polarization, 2300 -2500 MHz Freq. Band, 50 Ohm, 7/8" EIA Flange, 1.5 :1 Max.							
HMD8V360-R05-H	VSWR	11.5 dBi	1,000 W (rms)	None	7.0 - 7.5 deg.	44"	50 lbs 5"

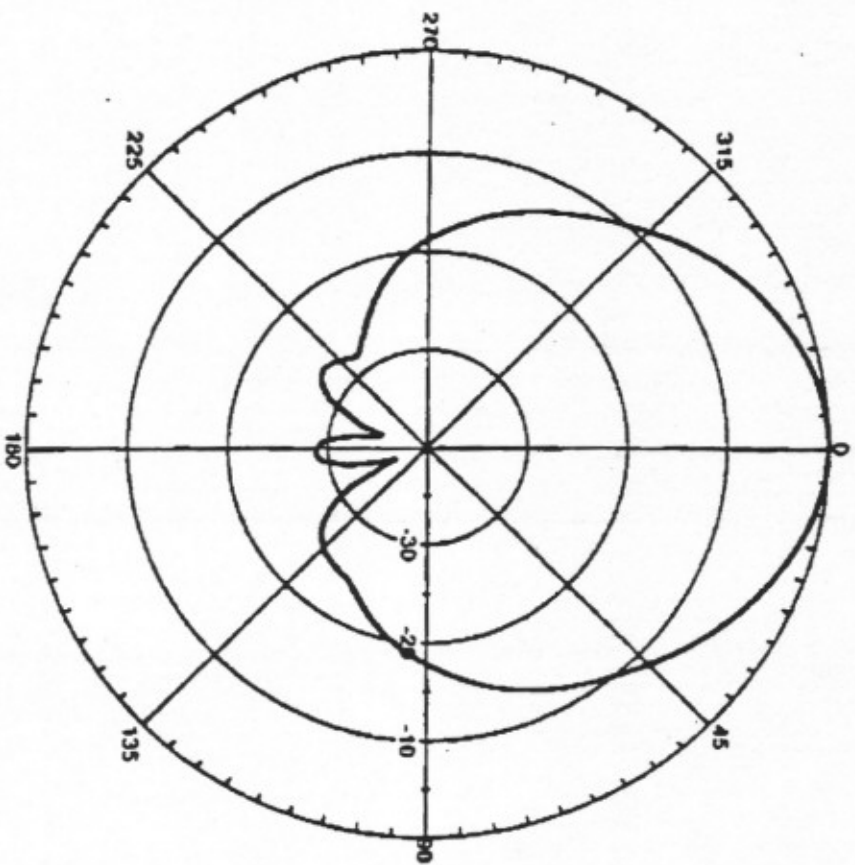
Note: All Omni antennas come with Type 'A' Mount (for Top Installation)

Boresight Gain: 0.00
Front to Back: 0.02 dB
H. Beamwidth: 360.00°

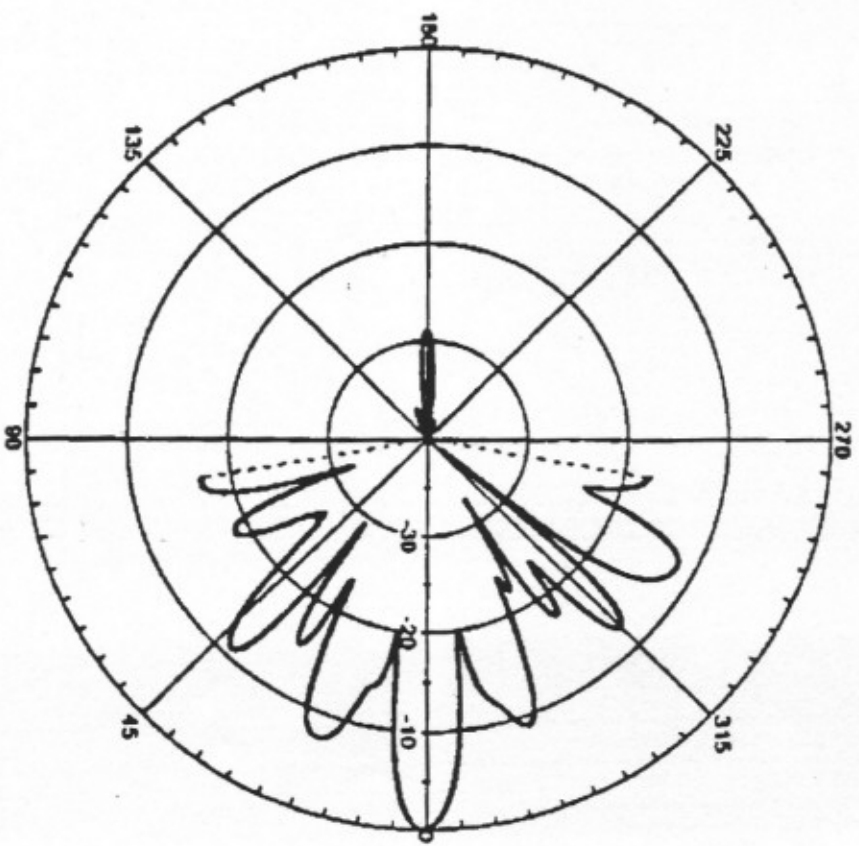
V. Beamwidth: 7.42°



Bore Sight Gain: 0.00
Front to Back: 29.07 dB
H. Beamwidth: 44.78°

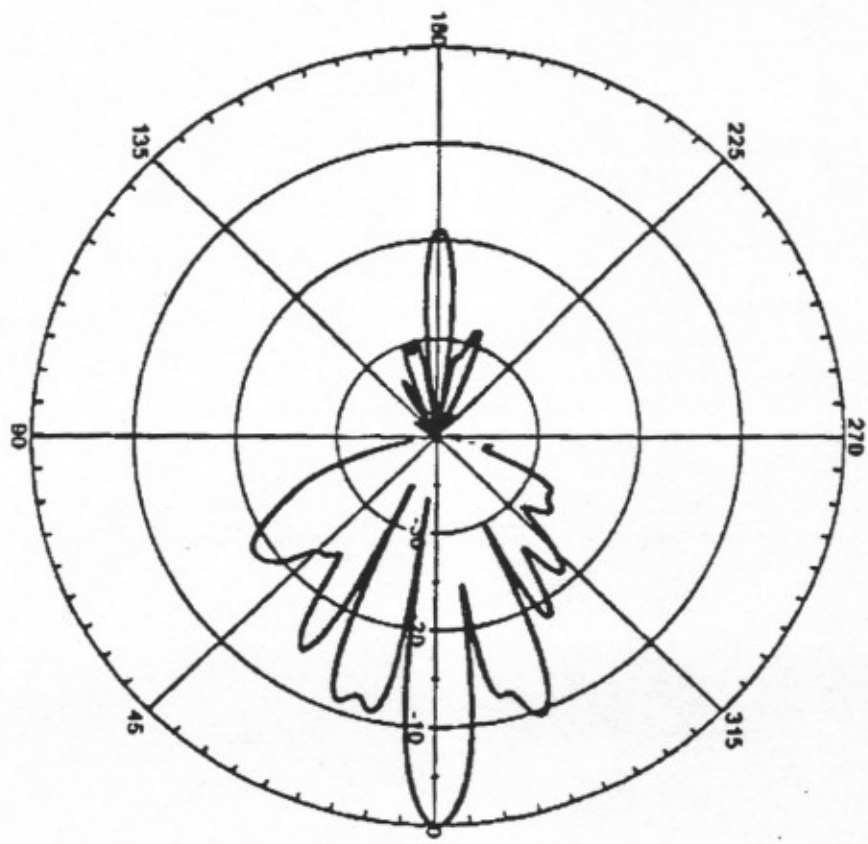
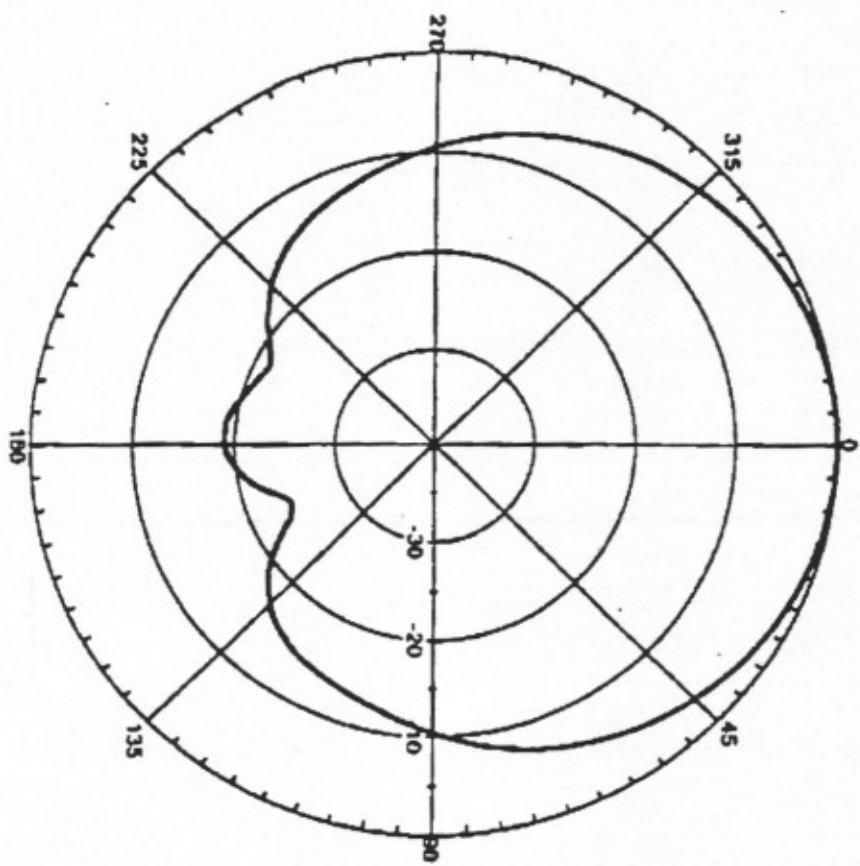


V. Beamwidth: 7.48°



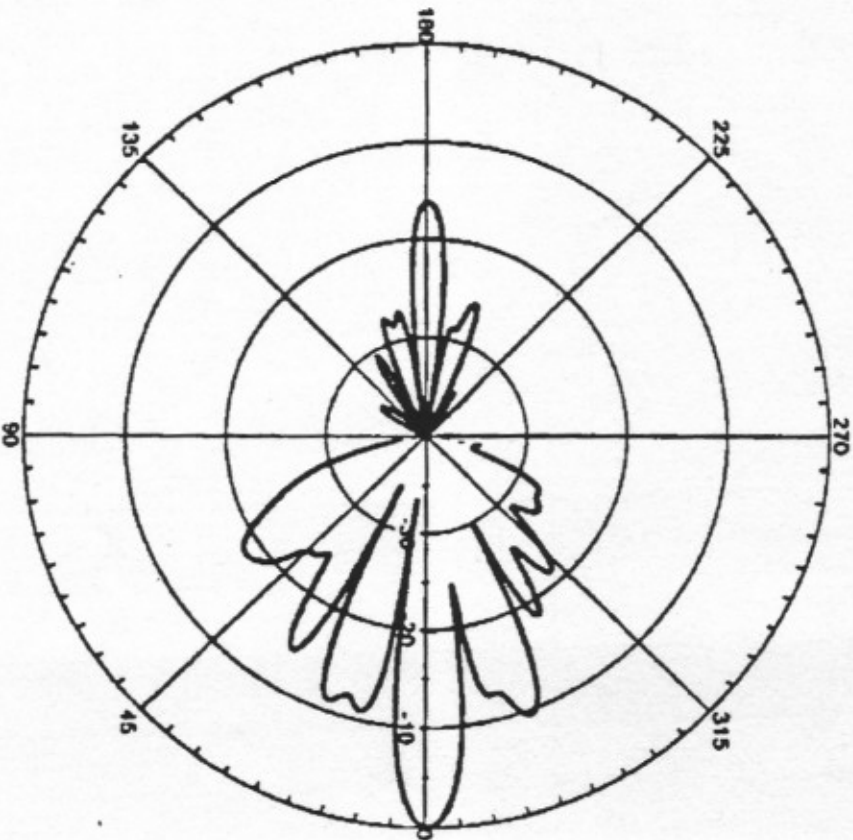
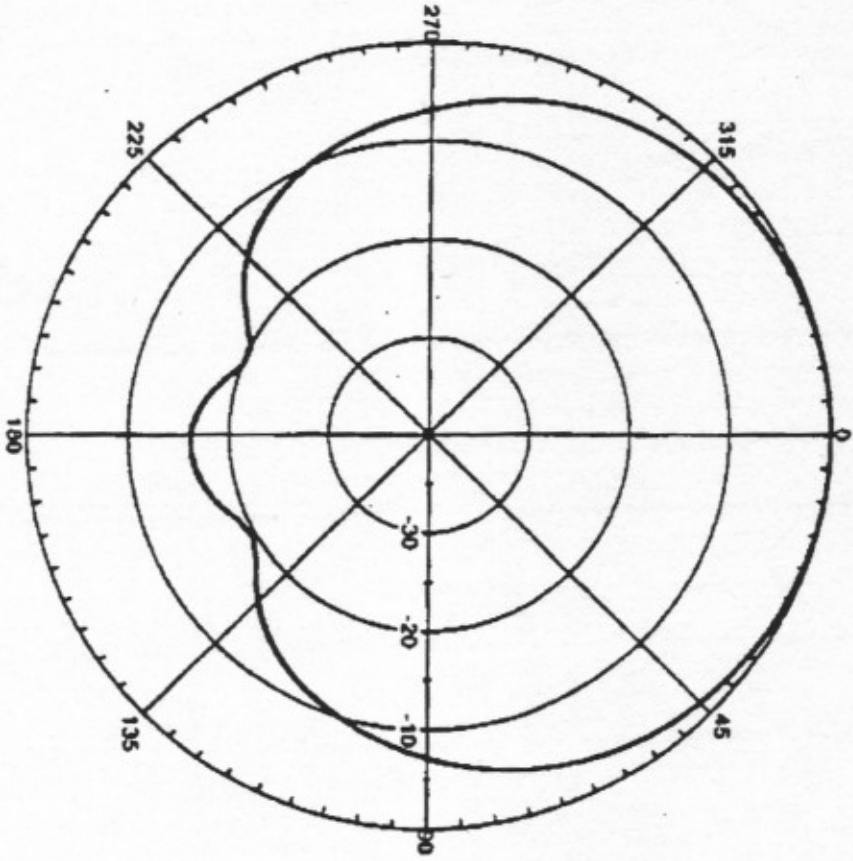
Boresight Gain: 10.62
Front to Back : 19.05 dB
H. Beamwidth : 88.75°

V. Beamwidth : 7.42°



Borelight Gain: 10.62
Front to Back : 16.31 dB
H. Beamwidth : 122.45°

V. Beamwidth : 7.42°



Front to Back : 12.48 dB
H. Beamwidth : 178.25°

V. Beamwidth : 7.42°

