

SAT-STA-20101118-00240

IB2010003543

Sirius XM Radio Inc.

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Callsign:

File # SAT-STA-20101118-00240

Call Sign (or other identifier) Grant Date 01/13/11

Term Dates see attached conditions
From 01/13/11 To: Approved by OMB 3060-0678

Approved: Stephen J. Duall
Chief, Satellite Policy Branch



*with conditions

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 for Co-Located Sirius and XM Terrestrial Repeaters at Six Locations for 180 Days

1. Applicant

Name:	Sirius XM Radio Inc.	Phone Number:	212-584-5100
DBA Name:		Fax Number:	212-584-5353
Street:	1221 Avenue of the Americas 36th Floor	E-Mail:	
City:	New York	State:	NY
Country:	USA	Zipcode:	10020
Attention:	Patrick L. Donnelly		

Application of Sirius XM Radio Inc. for Special Temporary Authority
IBFS File No. SAT-STA-20101118-00240

Special temporary authority (STA) is granted to Sirius XM Radio Inc. (Sirius XM) to operate, for a period of 180 days, six co-located Satellite Digital Audio Radio Service (SDARS) terrestrial repeaters having an average Effective Isotropically Radiated Power (EIRP) of up to 12,000 watts for use on both the Sirius network (2320-2332.5 MHz) and the XM network (2332.5-2345 MHz), at various locations throughout the United States, as set forth in Sirius XM's application. This authorization is granted according to the technical parameters specified in Sirius XM's application and is subject to the conditions below.

1. Any actions taken as a result of this STA are solely at the applicant's own risk. This STA shall not prejudice the outcome of the final rules adopted by the Commission in IB Docket No. 95-91.
2. SDARS terrestrial repeaters are restricted to the simultaneous retransmission of the complete programming, and only that programming, transmitted by the SDARS licensee's satellite(s) directly to the SDARS licensee's subscribers' receivers, and may not be used to distribute any information not also transmitted to all subscribers' receivers.
3. Coordination of the operations of the terrestrial repeaters shall be completed with all affected Administrations prior to operation, in accordance with all applicable international agreements including those with Canada and Mexico.
4. The terrestrial repeaters shall comply with Part 17 of the Commission's rules – Construction, Marking, and Lighting of Antenna Structures.
5. The terrestrial 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.
6. Any SDARS terrestrial repeater operating at a power level greater than 2 watts average EIRP is required to attenuate its out-of-band emissions below the transmitter power P by a factor of not less than $90 + 10 \log (P)$ dB in a 1-megahertz bandwidth outside the 2320-2345 MHz band, where P is average transmitter output power in watts. Any SDARS terrestrial repeater operating at a power level equal to or less than 2 watts average EIRP is required to attenuate its out-of-band emissions below the transmitter power P by a factor of not less than $75 + 10 \log (P)$ dB in a 1-megahertz bandwidth outside the 2320-2345 MHz band, where P is average transmitter output power in watts.
7. This STA expires after 180 days, or on the date that permanent authority to operate the covered repeater operations becomes effective, whichever occurs first.
8. Sirius XM 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.
9. This action is taken on delegated authority pursuant to 47 C.F.R. § 0.261 and is effective upon release. Petitions for reconsideration under 47 C.F.R. § 1.106 or applications for review under 47 C.F.R. § 1.115 may be filed within 30 days of the date of the Public Notice announcing this action.



*with conditions

File # SAT-STA-20101118-00240
Call Sign _____ Grant Date 01/13/11
(or other identifier) _____
Term Dates see
From 01/13/11 To: conditions
Approved: Stephen J. Duall

Stephen J. Duall
Chief, Satellite Policy Branch

2. Contact	
Name: James S. Blitz	Phone Number: 202-380-4000
Company: Sirius XM Radio Inc.	Fax Number: 202-380-4981
Street: 1500 Eckington Place NE	E-Mail: james.blitz@siriusxm.com
City: Washington	State: DC
Country: USA	Zipcode: 20002 -
Attention:	Relationship: 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?	
<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 CXW - Space Station (Non-Geostationary)	
5. Type Request	
<input checked="" 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.)

Sirius XM Radio Inc. requests Special Temporary Authority to co-locate Sirius and XM terrestrial repeaters at six locations for a period of 180 days pursuant to the technical parameters listed in Exhibit A.

9. By checking Yes, the undersigned certifies that neither applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. See 47 CFR 1.2002(b) for the meaning of "party to the application"; party to the application; for these purposes.

Yes No

10. Name of Person Signing
James S. Blitz

11. Title of Person Signing
Vice President, Regulatory Counsel

12. Please supply any need attachments.

Attachment 1: STA Request

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.

SIRIUS XM

RADIO INC.

1500 Eckington Place, N.E.
Washington, D.C. 20002
Tel: 202-380-4000
Fax: 202-380-4500
www.sirius.com www.xmradio.com

November 18, 2010

Via IBFS

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

**Re: Sirius XM Radio Inc.
Request for 180-Day Special Temporary Authority
For Co-Located Sirius and XM Network Terrestrial Repeaters At Six Locations**

Dear Ms. Dortch:

Pursuant to Section 25.120(b)(2) of the Commission's rules, 47 C.F.R. § 25.120(b)(2), Sirius XM Radio Inc. ("Sirius XM"), a satellite radio licensee in the Satellite Digital Audio Radio Service ("SDARS"), hereby requests 180-Day Special Temporary Authority ("STA") to operate co-located terrestrial repeaters at six different locations in the former Sirius Satellite Radio Inc. ("Sirius") frequency band (2320-2332.5 MHz) and the former XM Radio Inc. ("XM") frequency band (2332.5-2345 MHz).¹ None of these repeaters will exceed 12 kw average EIRP with a maximum peak-to-average power ratio of 13 dB, which is the maximum power level the Commission permits in its new rules for satellite radio terrestrial repeaters.²

¹ The Commission adopted formal rules for satellite radio terrestrial repeaters in *Amendment of Part 27 of the Commission's Rules to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band; Establishment of Rules and Polices for the Digital Audio Radio Satellite Service in the 2310-2360 MHz Frequency Band*, 25 FCC Rcd 45058 (2010) (the "WCS/SDARS Order"). The WCS/SDARS Order authorizes the Bureau "to continue to grant STAs for new or modified repeaters ... [until] any permanent authorization to operate SDARS repeaters becomes effective." See Para. 264. However, no such permanent authorization can become effective until after the new rules have been approved by the Office of Management and Budget, which has not yet occurred. See 75 Fed. Reg. 45058, 45058 (Aug. 2, 2010).

² 47 C.F.R. § 25.214(d)(1).

The Commission has recognized that SDARS operators require terrestrial repeaters to provide high-quality service nationwide.³ Consistent with this policy, in September 2001, the Bureau granted STAs to Sirius XM to operate a nationwide network of terrestrial repeaters.⁴ In the years since, the Bureau has granted Sirius XM additional STAs to operate terrestrial repeaters, pending issuance of final rules governing the deployment and use of repeaters.⁵

Public Interest Considerations. Sirius XM seeks to operate terrestrial repeaters at the locations identified on Exhibit A hereto, all of which are sites at which Sirius XM will co-locate repeaters for use on the legacy Sirius network and the legacy XM network. Co-locating Sirius XM terrestrial repeaters offers efficiencies in constructing and operating the Sirius XM repeater network while providing the level of service that the Commission has recognized is necessary in connection with the provision of quality satellite radio service.

Technical Information for the New Low Power Repeaters. The following technical information pertaining to the repeaters is provided in Exhibit A: (1) antenna type; (2) antenna orientation;

³ 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, 5770 ¶ 37 (1997).

⁴ See *Sirius Satellite Radio, Inc., Application for Special Temporary Authority to Operate Satellite Digital Audio Radio Service Complimentary Terrestrial Repeaters, Order and Authorization*, 16 FCC Rcd. 16773 ¶ 18 (2001) (“*Sirius STA Order*”). *XM Radio, Inc., Application for Special Temporary Authority to Operate Satellite Digital Audio Radio Service Complimentary Terrestrial Repeaters, Order and Authorization*, 16 FCC Rcd. 16781 ¶ 18 (2001) (“*XM STA Order*”).

⁵ See, e.g., *Sirius Satellite Radio Inc.; Request to Modify Special Temporary Authority to Operate Additional Satellite Digital Audio Radio Service Terrestrial Repeaters, Order and Authorization*, 19 FCC Rcd. 18140 (2004) (granting File No. SAT-STA-20031106-00370, effective Sept. 15, 2004). Since that time, the Commission has extended the STA several times, pending the issuance of final rules governing the use of satellite DARS terrestrial repeaters. In September 2004, the Commission granted Sirius a new STA to operate for 180 days or until the Commission issues final rules governing the use of satellite DARS terrestrial repeaters. See *Sirius Satellite Radio Inc. Request to Modify Special Temporary Authority to Operate Satellite DARS Terrestrial Repeaters, Order and Authorization*, 19 FCC Rcd 18149 (2004). See also, *XM Radio, Inc.; Request for Special Temporary Authority to Operate Additional Satellite Digital Audio Radio Service Terrestrial Repeaters, Order and Authorization*, 19 FCC Rcd. 18140 (2004) (granting File No. SAT-STA-20031112-00371, effective Sept. 15, 2004); *Public Notice*, 2002 FCC Lexis 5670 (rel. Oct. 30, 2002) (granting XM an STA, File No. SAT-STA-20020815-00153, effective Sept. 30, 2002); *Public Notice*, 2003 FCC Lexis 4803 (rel. Aug. 29, 2002) (granting File No. SAT-STA-20030409-00076, effective June 26, 2003). The Commission has renewed all of these STA authorizations. See Report No: SAT-00722, DA No. 10-1756 (rel. Sept. 17, 2010).

(3) average EIRP; (4) height above ground level (“AGL”); and (5) antenna downtilt.⁶ Exhibits B and C consist respectively, of Google™ satellite images and topographic maps showing the location of the proposed facilities. The specification sheet for the antenna to be used by the repeater is attached as Exhibit D.

Interference Considerations. The repeaters proposed in this application will all operate below 12 kw EIRP. The Commission recognized in the *WCS/SDARS Order* “that SDARS terrestrial repeaters can operate at an average EIRP of 12 kw with maximum PAPR of 13 dB without causing harmful interference to WCS base station receivers.”⁷ Moreover, because Sirius XM has exclusive use of its licensed band, it is highly unlikely that these repeaters will create interference to other licensees. The WCS licensees have confirmed that operating terrestrial repeaters at an EIRP of even 2 kW or less is not an interference concern⁸ and the Commission said in the *WCS/SDARS Order* that “repeaters operating at average 12-kW EIRP and a maximum PAPR of 13 dB will not cause substantially more interference to actual WCS operations than repeaters operating at 2-kw EIRP.”⁹ To the extent Sirius XM’s original 2001 STAs require it to coordinate with affected Wireless Communications Services (“WCS”) licensees prior to operating any repeater, Sirius XM is sending a copy of this STA application to Comcast and Horizon Wi-Com in satisfaction of this coordination requirement.¹⁰ However, if prohibited interference does occur, Sirius XM will cease operation of the repeaters until such interference can be eliminated.¹¹

⁶ For purposes of Sirius XM’s repeater STA applications, “antenna downtilt” refers to an antenna’s mechanical downtilt, without reference to any electrical downtilt built into the antenna.

⁷ *WCS/SDARS Order* at Para. 243.

⁸ *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.”). Moreover the WCS Coalition has said it will defer from objecting to Sirius XM’s STA requests that propose operations of no more than 2,000 watts 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 (March 19, 2007). Sirius XM agrees to these conditions.

⁹ See *WCS/SDARS Order*, Para. 241 and 47 C.F.R. § 25.214(d)(1).

¹⁰ Despite the Bureau’s statement in the *XM STA Order* (at ¶ 14) and *Sirius 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,” Sirius XM has not received information directly from any WCS licensee regarding plans for WCS deployment in these markets. However, Sirius XM’s own review of Commission files shows that Comcast has certified that it operates WCS stations serving the Detroit area (Call Signs WPQL632 and KNLB278) and Horizon Wi-Com has certified that it operates WCS stations serving the Providence area (Call Sign KNLB210), the Bethesda area (Call Sign KNLB315), and the Norfolk area (Call Sign KNLB316). It is not clear from these certifications whether the base stations are receiving transmissions from CPE or are engaged in transmit-only operations. If only the latter, potential interference to the base station is

Ownership and Control of Repeaters. Sirius XM will own the repeaters and it will be responsible for the repeaters' installation and operation.

Certifications. Sirius XM certifies that it will operate the repeaters subject to the conditions and certifications set forth in the *Sirius STA Order* and *XM STA Order* granting Sirius XM's September 2001 requests for STAs to operate terrestrial repeaters. Specifically, Sirius XM certifies the following:

- (1) Sirius XM will operate this repeater at its own risk, and such operation shall not prejudice the outcome of the final rules adopted by the Commission in GEN Docket 95-91;
- (2) Sirius XM will operate these facilities on a non-interference basis with respect to all permanently authorized radiocommunication facilities;
- (3) The facilities will be restricted to the simultaneous retransmission of the complete programming, and only that programming, transmitted by the satellite directly to SDARS receivers;
- (4) Where applicable, coordination of the facilities will be completed with all affected Administrations prior to operation, in accordance with all applicable international agreements including those with Canada and Mexico;
- (5) The facilities will comply with Part 17 of the Commission's rules – Construction, Marking, and Lighting of Antenna Structures;
- (6) The facilities 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;
- (7) The out-of-band emissions of the facility will be limited to $75+10\log$ (EIRP) dB less than the transmitter EIRP;
- (8) Sirius XM will operate this repeater according to the technical parameters provided in this application;

not an issue. In any event, Sirius XM has determined the repeaters proposed in this application are highly unlikely to not create any interference concern for Horizon's and Comcast's operating WCS sites beyond any concerns that may exist from Sirius XM's existing repeaters in the vicinity, none of which have been the subject of any interference complaints from WCS licensees or users.

¹¹ The design of these repeaters includes several automated shutdown mechanisms that are triggered in the event of equipment major malfunctions. The transmit chain also includes a transmit output coupler which feeds a self-monitoring system detecting any transmission anomalies. Any such anomalies are automatically reported back to Sirius XM's National Repeater Control Center (202-380-4725), which is available on a continuous basis to receive any reports of any suspected interference and take immediate corrective action.

- (9) Sirius XM will maintain full ownership and operational control of this repeater; and
- (10) Sirius XM will immediately shut down this repeater upon a complaint of interference, upon direction from the Commission, or upon finding that a facility has not been properly installed.

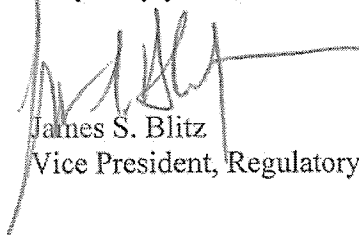
Granting this request will not alter Sirius XM's obligation to protect authorized radio-communications facilities from interference, nor will it prejudice the reconsideration of the Commission's ongoing rulemaking pertaining to the deployment and operation of terrestrial repeaters.

Sirius 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).

Sirius XM is submitting payment to the Federal Communications Commission in the amount of Two Thousand Eight Hundred Sixty Dollars (\$2860.00) -- the filing fee applicable to requests for STAs for non-geostationary ("NGSO") satellites.¹²

Please direct any questions regarding this matter to the undersigned.

Very truly yours,



James S. Blitz
Vice President, Regulatory Counsel

cc: Stephen Duall, FCC International Bureau
Jay Whaley, FCC International Bureau
Sankar Persaud, FCC International Bureau

David Don, Comcast Corporation (david_don@comcast.com)
Rajendra Singh, Horizon Wi-Com LLC (rsingh@tvllc.com)
Thomas Gutierrez, Lukas, Nace, Gutierrez & Sachs (tgutierrez@fcclaw.com)

¹² See International and Satellite Services Fee Filing Guide (February 2009).

Exhibit A

Technical parameters for repeaters

CITY	NETWORK AND ANTENNA NUMBER	SITE LATITUDE (N)	SITE LONGITUDE (W)	ANTENNA TYPE	ANTENNA ORIENTATION (AZIMUTH)	ANTENNA HEIGHT (FT. AGL)	ANTENNA DOWNTILT (DEGREES)	TOTAL AVERAGE EIRP(W)
Cleveland, OH	Sirius CLE 09-05 (Sector 1)	41-30-00	81-41-29	EMS FR90-16-00NVL	70	656	0	3500
Cleveland, OH	Sirius CLE 09-05 (Sector 2)	41-30-00	81-41-29	EMS FR90-16-00NVL	260	656	0	3500
Cleveland, OH	XM CLE002S (Sector 1)	41-30-00	81-41-29	TA-2335-DAB-H	90	613	0	3000
Cleveland, OH	XM CLE002S (Sector 2)	41-30-00	81-41-29	TA-2335-DAB-H	225	613	0	3000
Providence, RI	Sirius PRO 33-03 (Sector 1)	41-49-31	71-24-36	HMD8V360-R05-H	0	428	0	3000
Providence, RI	Sirius PRO 33-03 (Sector 2)	41-49-31	71-24-36	HMD8V360-R05-H	0	428	0	3000
Providence, RI	XM PRO001S (Sector 1)	41-49-31	71-24-36	HMD8V360-R05-H	0	428	0	2500
Bethesda, MD	Sirius WDC 46-26 (Sector 1)	38-59-04	77-05-45	EMS FR90-17-00NVL	90	192	7	3000
Bethesda, MD	Sirius WDC 46-26 (Sector 2)	38-59-04	77-05-45	EMS FR65-18-00NVL	210	192	7	3500
Bethesda, MD	Sirius WDC 46-26 (Sector 3)	38-59-04	77-05-45	EMS FR90-17-00NVL	330	192	0	3000

CITY	NETWORK AND ANTENNA NUMBER	SITE LATITUDE (N)	SITE LONGITUDE (W)	ANTENNA TYPE	ANTENNA ORIENTATION (AZIMUTH)	ANTENNA HEIGHT (FT. AGL)	ANTENNA DOWNTILT (DEGREES)	TOTAL AVERAGE EIRP(W)
Bethesda, MD	XM WDC312S (Sector 1)	38-59-04	77-05-45	TA-2350-DAB	0	206	0	2000
New Orleans, LA	Sirius NOX 26-01 (Sector 1)	29-57-00	90-04-16	HMD8V360-R05-H	0	709	0	3000
New Orleans, LA	Sirius NOX 26-01 (Sector 2)	29-57-00	90-04-16	HMD8V360-R05-H	0	709	0	3000
New Orleans, LA	XM NOX011S (Sector 1)	29-57-00	90-04-16	HMD8V360-R05-H	0	709	0	2500
Detroit, MI	Sirius DET 14-34 (Sector 1)	42-22-19	83-22-34	TA-2335-DAB-H	270	127	6	3500
Norfolk, VA	Sirius NOR 47-02 (Sector 1)	36-50-44	76-17-26	HMD8V360-R05-H	0	270	0	3000
Norfolk, VA	Sirius NOR 47-02 (Sector 2)	36-50-44	76-17-26	HMD8V360-R05-H	0	270	0	3000
Norfolk, VA	XM NOR002S (Sector 1)	36-50-44	76-17-26	HMD8V360-R05-H	0	270	0	2500

Exhibit B

Google™ Satellite Image of Repeater Location

Cleveland



Exhibit B

Google™ Satellite Image of Repeater Location

Providence



Exhibit B

Google™ Satellite Image of Repeater Location

Bethesda

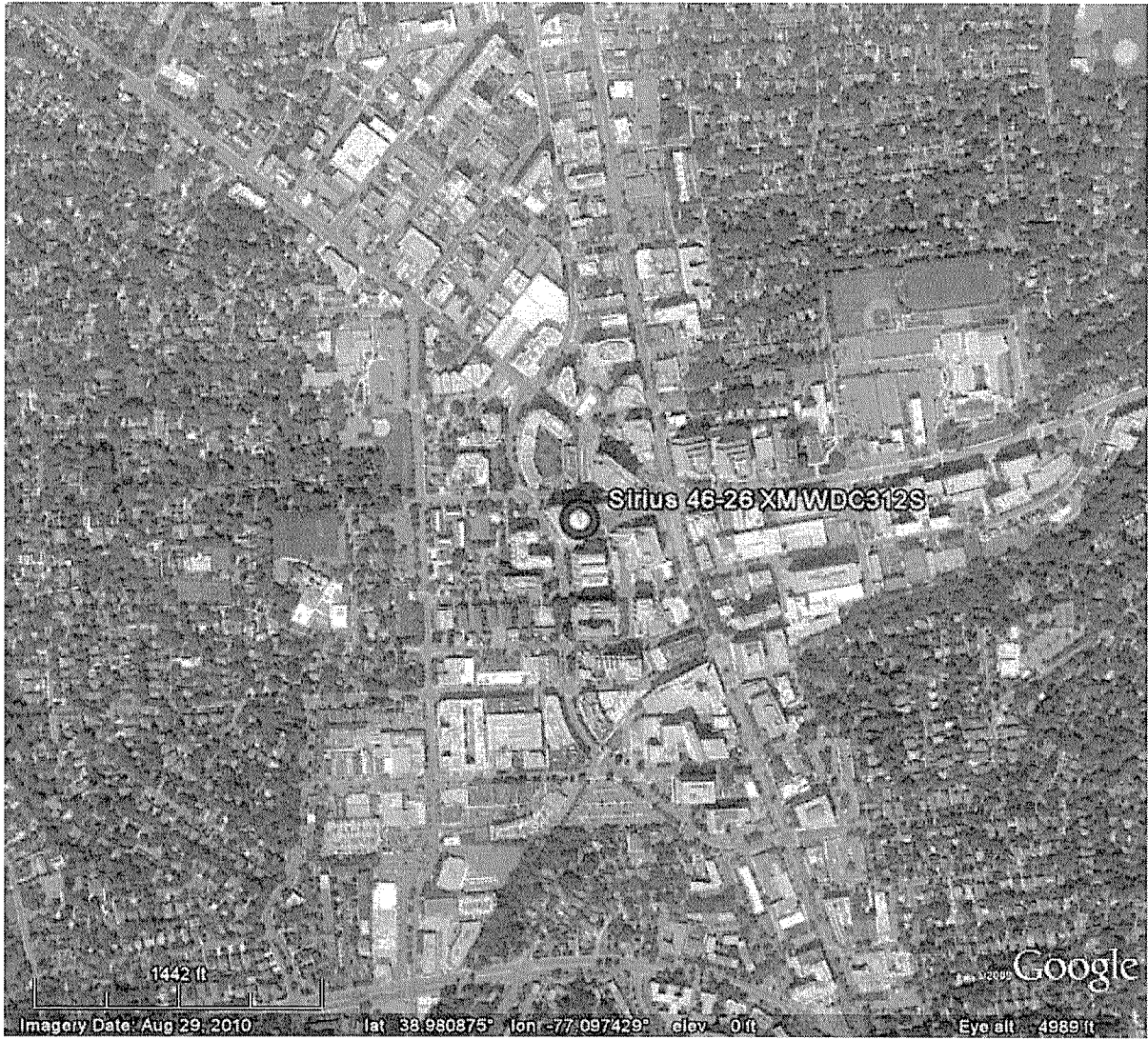


Exhibit B

Google™ Satellite Image of Repeater Location

New Orleans



Exhibit B

Google™ Satellite Image of Repeater Location

Detroit



Exhibit B

Google™ Satellite Image of Repeater Location

Norfolk

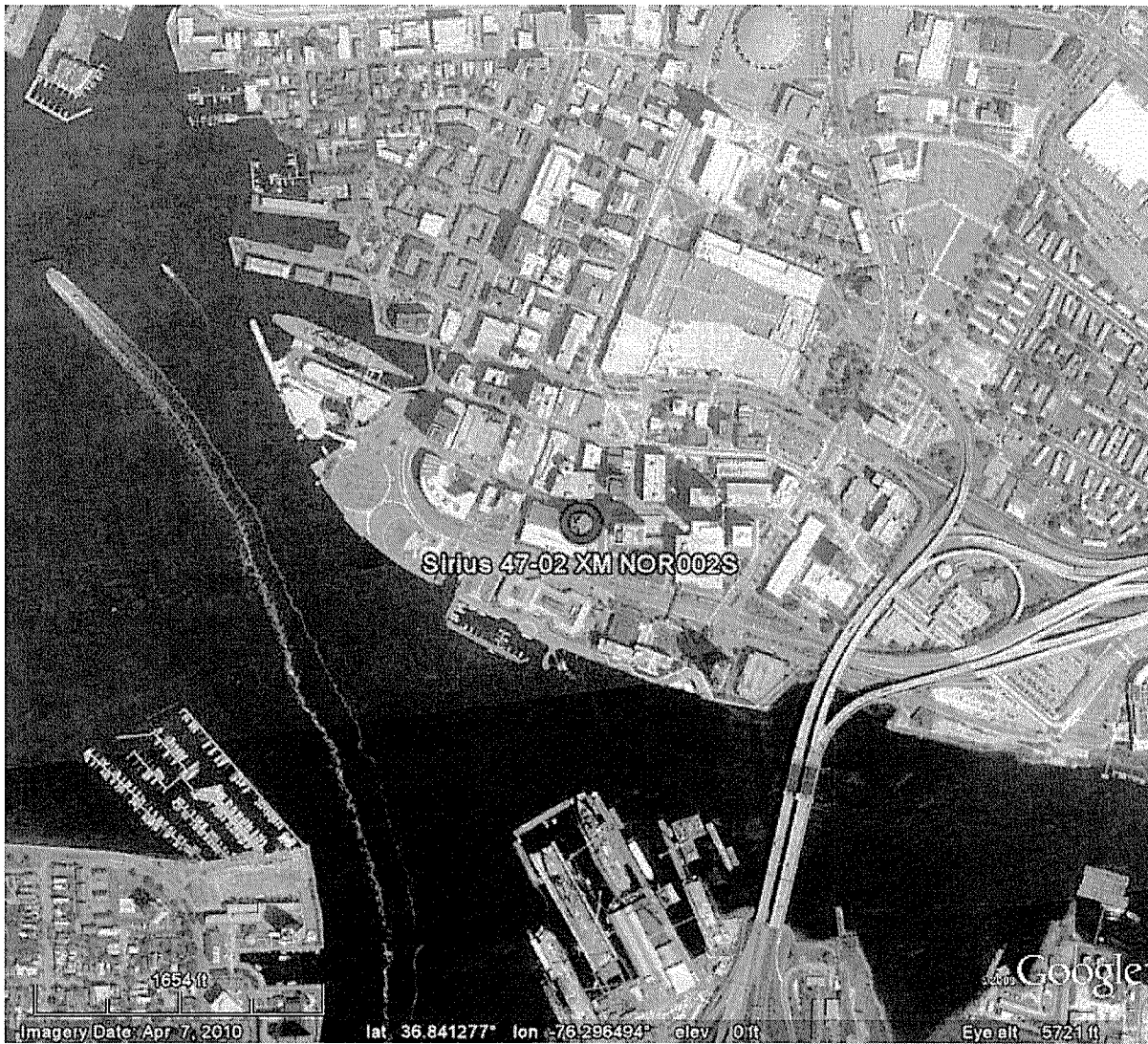


Exhibit C

Topographic Map of Repeater Location

Cleveland

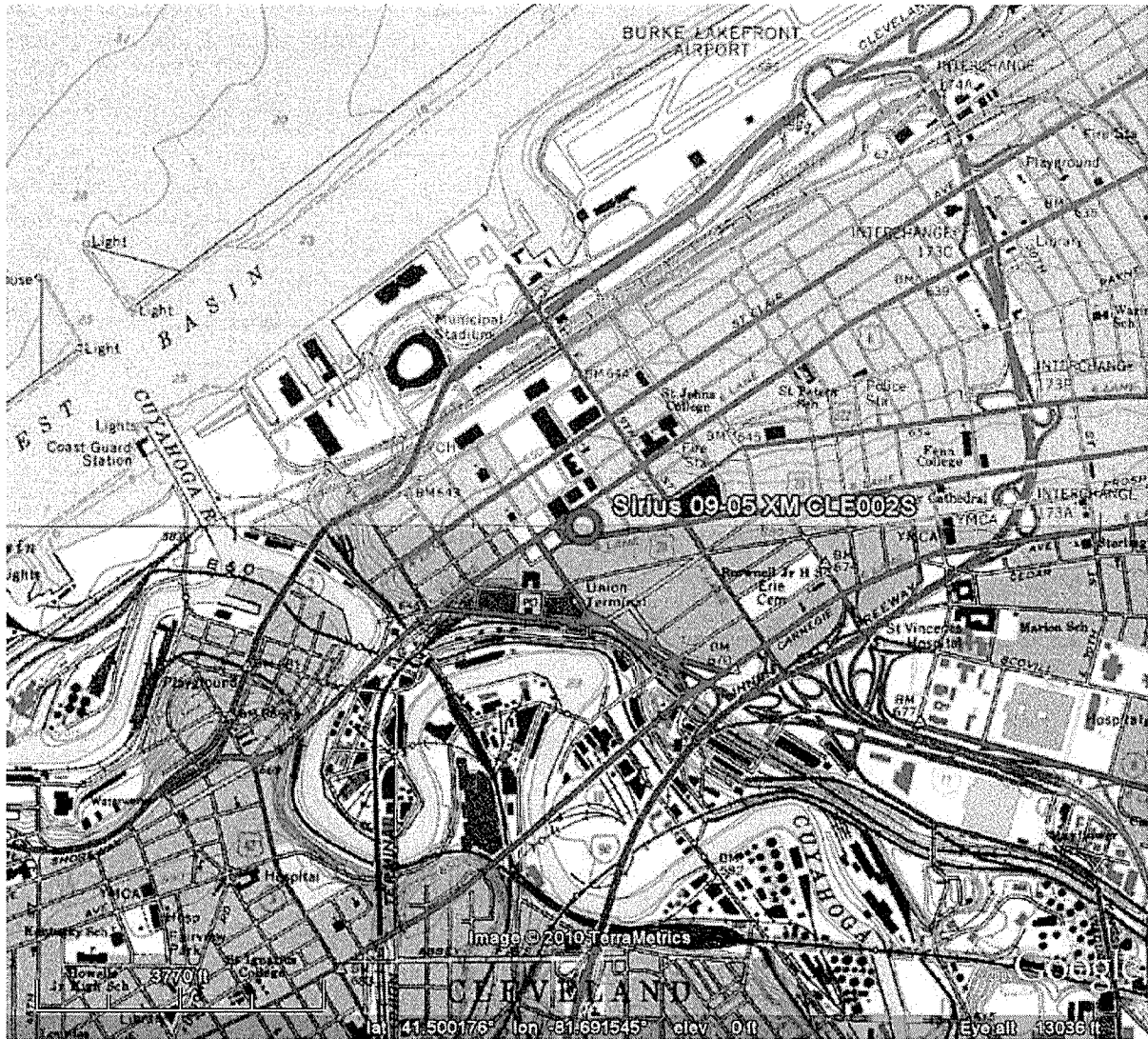


Exhibit C

Topographic Map of Repeater Location

Providence



Exhibit C

Topographic Map of Repeater Location

Bethesda

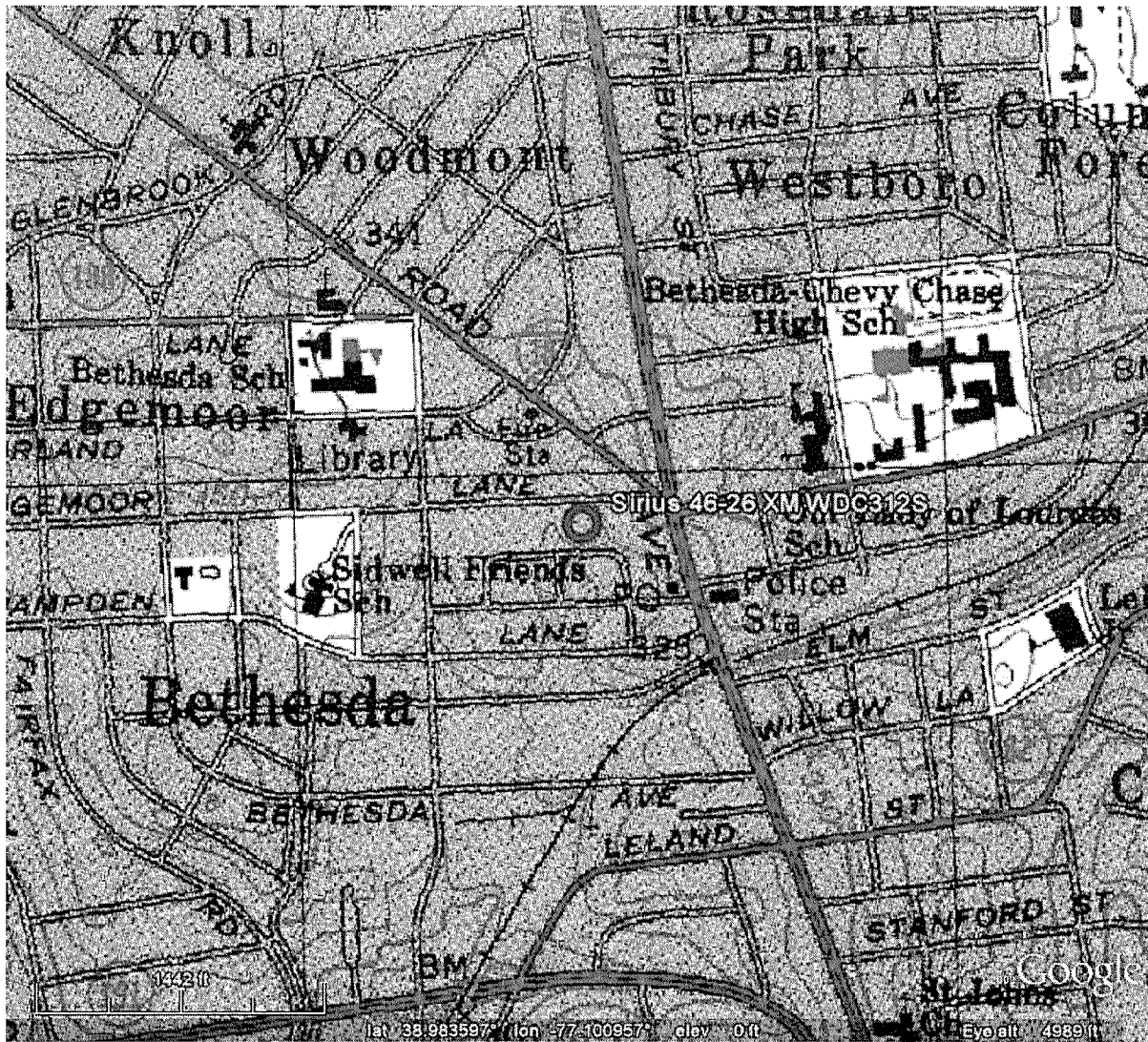


Exhibit C

Topographic Map of Repeater Location

New Orleans

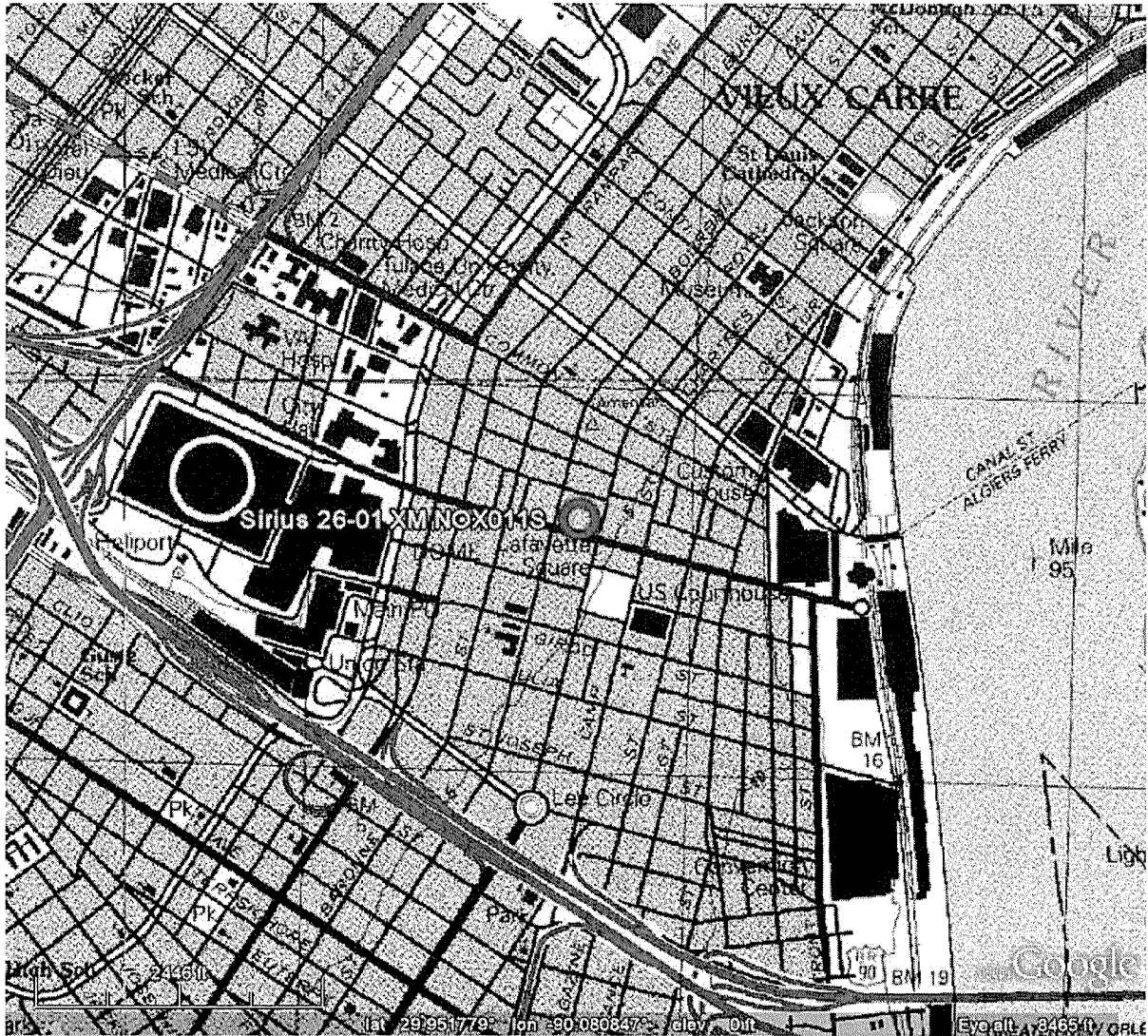


Exhibit C

Topographic Map of Repeater Location

Detroit

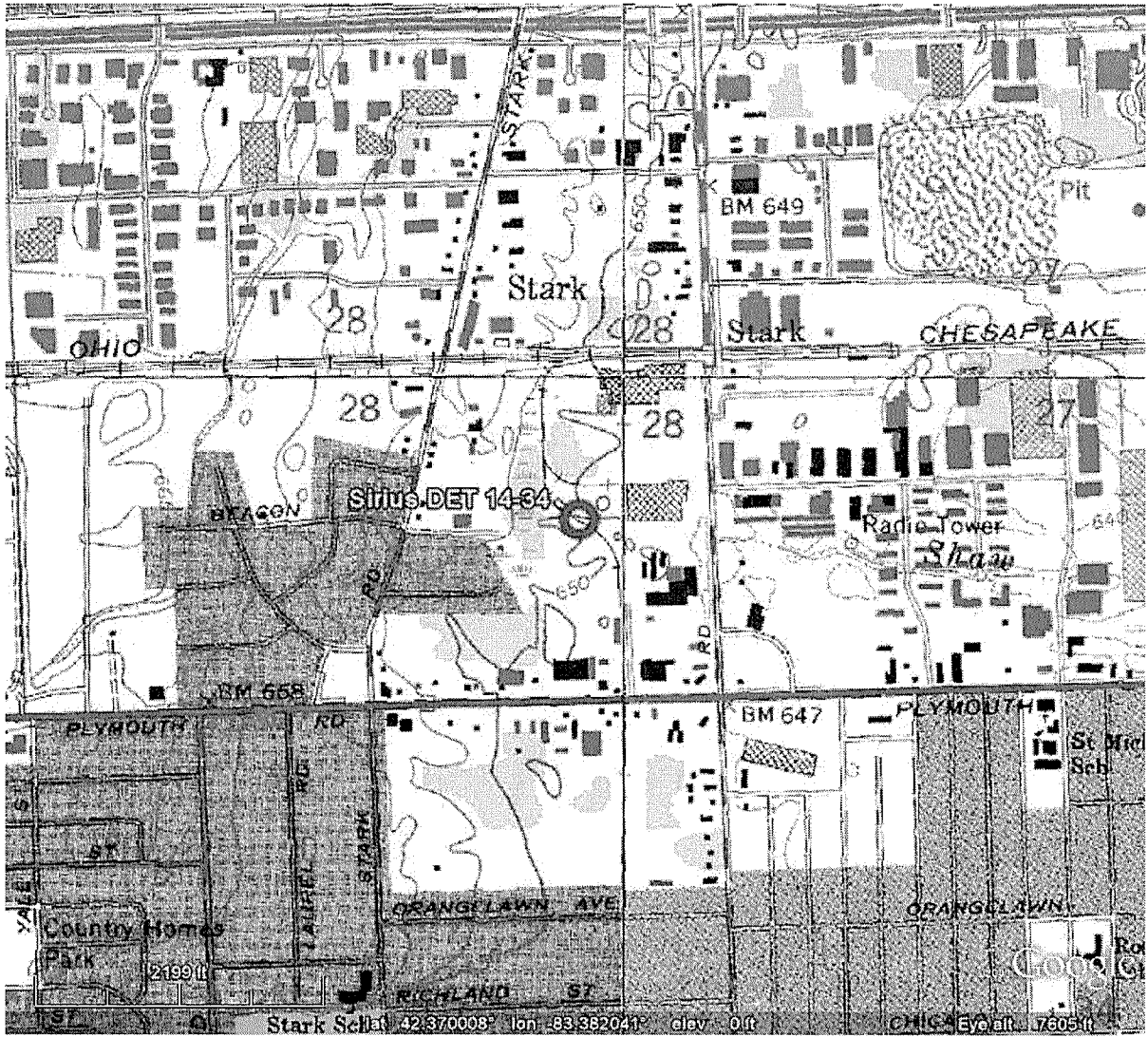


Exhibit C

Topographic Map of Repeater Location

Norfolk

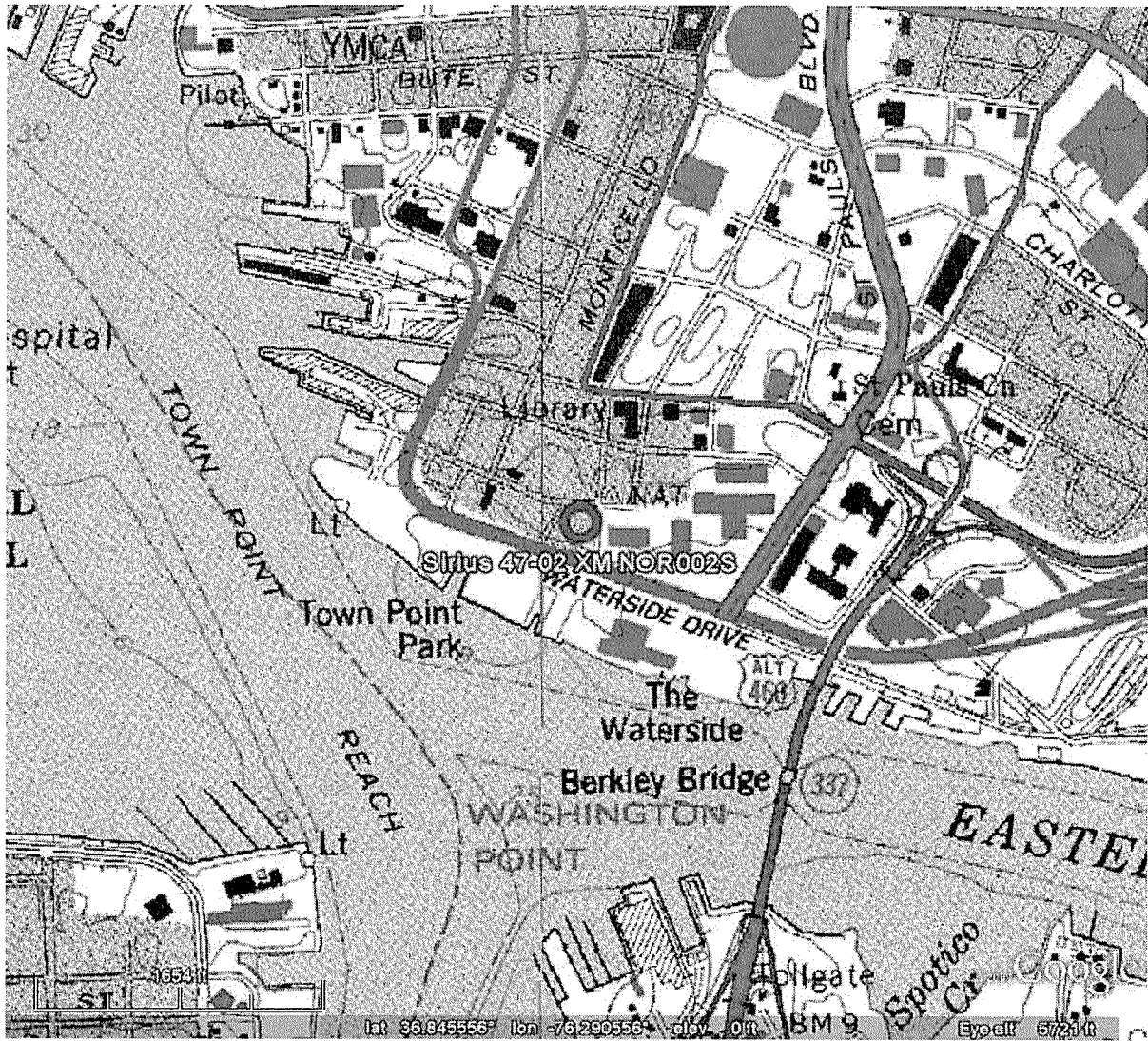
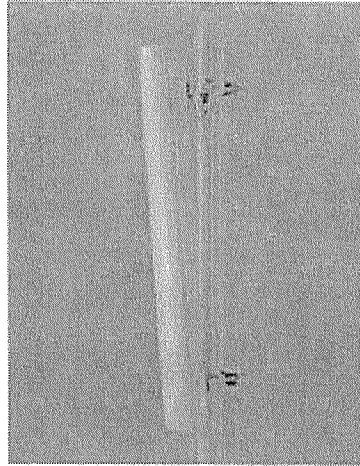
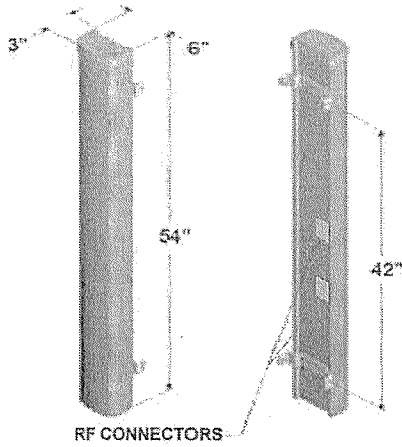


Exhibit D

Antenna Specification Sheet for Repeater

2305 MHz - 2360 MHz (N)



90° beamwidth

16.0 dBi gain

DualPol[®]

54 inch

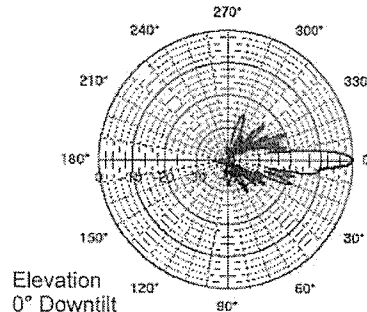
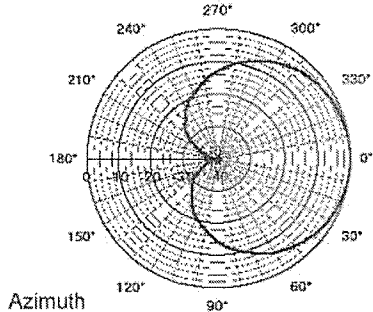
SPECIFICATIONS

Electrical		Mechanical	
Azimuth Beamwidth (-3 dB)	90° ± 5°	Dimensions (L x W x D)	54in x 6in x 3in (137.2 cm x 15.2 cm x 7.6 cm)
Elevation Beamwidth (-3 dB)	5.7°	Rated Wind Velocity	150 mph (241 km/hr)
Elevation Sidelobes (Upper)	>20 dB	Equivalent Flat Plate Area	2.3ft ² (.21 m ²)
Gain	16.0 dBi (13.9 dBd)	Front Wind Load @ 100 mph (161 kph)	65 lbs (288 N)
Polarization	Slant, ±45°	Side Wind Load @ 100 mph (161 kph)	31 lbs (139 N)
Front-to-Back Ratio	>25 dB (≥30 dB Typ.)	Weight	11 lbs (5.0 kg)
Electrical Downtilt Options	0°	Note: Patent Pending and US Patent number 5, 757, 246 & 5, 844, 529. Values and patterns are representative and variations may occur. Specifications may change without notice due to continuous product enhancements. Digitized pattern data is available from the factory or via the web site www.emswireless.com and reflect all updates.	
VSWR	1.33:1 Max (1.22:1 Typ)		
Connectors	2; 7-16 DIN (female), or Type N		
Power Handling	250 Watts CW		
Passive Intermodulation	≤ -147 dBc [2x20W (+43 dBm)]		
Lightning Protection	Chassis Ground		

MOUNTING OPTIONS

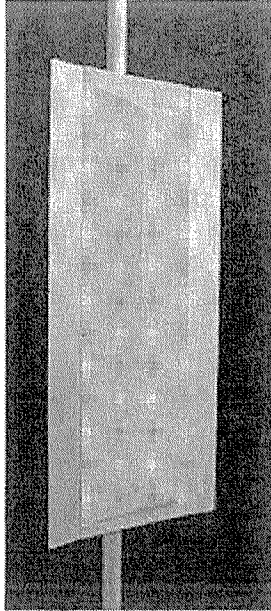
Model Number	Description	Comments
MTG-P00-10	Standard Mount (Supplied with antenna)	Mounts to Wall or 1.5 inch to 5.0 inch O.D. Pole (3.8 cm to 12.7 cm)
MTG-S02-10	Swivel Mount	Mounting kit providing azimuth adjustment.
MTG-DXX-20*	Mechanical Downtilt Kits	0° - 10° or 0° - 15° Mechanical Downtilt
MTG-CXX-10*	Cluster Mount Kits	3 antennas 120° apart or 2 antennas 180° apart
MTG-C02-10	U-Bolt Cluster Mount Kit	3 antennas 120° apart, 4.5" O.D. pole.
MTG-TXX-10*	Steel Band Mount	Pole diameters 7.5" - 45"

* Model number shown represents a series of products. See mounting options section for specific model number.





TA-2335-DAB-H
High Power Sector
2330-2345 MHz



The TA-2335-DAB-H is a high power vertically polarized sectoral antenna specifically designed for Digital Audio Broadcast transmission. The antenna is also designed to provide a shaped azimuth beamwidth of 95 degrees by use of shaped reflector phasing enabling multi-sector applications. The antenna elements are at DC ground to aid in lightning protection.

Electrical Specifications

Frequency Range: 2330-2345 MHz
Gain: 15 dBi
VSWR: 1.4:1 min.
Front to Back Ratio: 20 dB
Polarization: Vertical
Power Rating: 1000 W avg. 4000 W peak
H-Plane Beamwidth: 95° @ -3dB, 120° @ -10dB
E-Plane Beamwidth: 7 degrees
Cross Pol. Discrimination: 20 dB
Impedance: 50 ohms nominal
Termination: 7/16 DIN female

Typical mid band values. (For details, contact factory)
 Specifications subject to change without notice

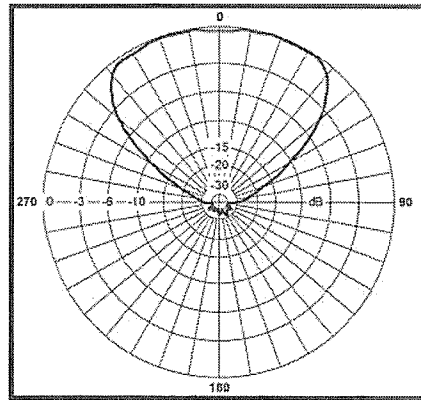
Mechanical Specifications

Length: 38 in. (965 mm)
Width: 21 in. (533 mm)
Depth: 8 in. (203 mm)
Weight (incl. Clamps): 33 lb. (15 kg)
Rated Wind Velocity: 125 mph (200 km/h)
Hor. Thrust at rated wind: 344 lb. (156 kg)
Mechanical Tilt: +5° to -15°
Mounting (O.D.): 0.75 - 3.0 in. (19 - 76 mm)

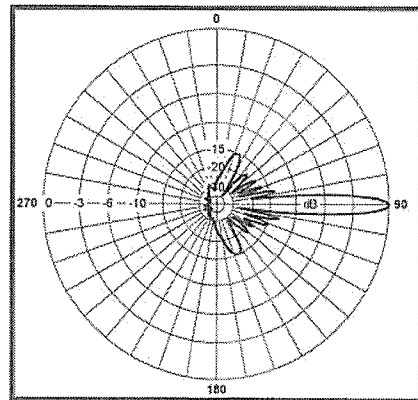
Materials

Radiating Elements: Gold-plated copper on PCB
Reflector: Irridited aluminum
Radome: Gray UV stabilized ASA
Clamps: HDG steel

H-Plane



E-Plane



Antenna Type: HMD8V360-R05-H



Description: HMD Antenna, R Band Narrow, 8 Bay, Vertical
Polarization, Omnidirectional Pattern, High Power, 0.5
Degrees Beamtilt

Electrical Specifications

Frequency Designation	R Band Narrow
Frequency Band, MHz	2320 - 2345
Number of Bays	8
Gain, dBi	11.0
Azimuth Pattern Type	Omnidirectional
Elevation Beamwidth, degrees	7
Polarization Type	Single, Vertical
Beamtilt, degrees	0.5
Impedance, nominal ohms	50
Return Loss, dB (VSWR)	> 14 (< 1.5)
Maximum Input Power, Watts	750
Lightning Protection	Top Mounted Finial Included
Connector	7/8 " EIA
Connector Position	Bottom

Mechanical Specifications

Dimensions H x Radome Diameter, mm (in)	1118 (44.0) x 127 (5.0)
Weight, kg (lb)	25.0 (55.0)
Radome Material	Fiberglass, Pressurizable
Radome Color	White
Pressurization, kPa (lb / sq in)	70 (10)

Environmental Specifications

Survival Wind Speed, km/h (mph)	180 (112)
Wind Shear, N (lbf)	614 (138)
Overturning Moment, N.m (ft-lb)	495 (367)
Temperature Range	- 40° C to + 50° C
Humidity	Up to 100%

Mounting Information

Mount Type *	A Type Special With A djustment
Mount Description	Side Mounted at Top of Tower
Mounting Pipe Diameter, mm (in)	76 (3.0)

* See Catalog 38, pp 305 to 310 for further information

Andrew Corporation
10500 W. 153rd Street
Orland Park, IL 60462 USA

From North America: 1-800-255-1479
International: 1-708-873-2307
Fax: 1-708-349-5444

www.Andrew.com

26 February 2003

Specifications nominal and subject to change without notice

OTHER PRODUCTS



FR90-17-XXXVL

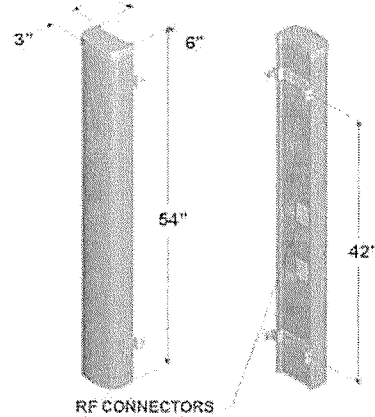
DualPol® Polarization

2305 MHz - 2360 MHz

OptiFill™
Suppressor™

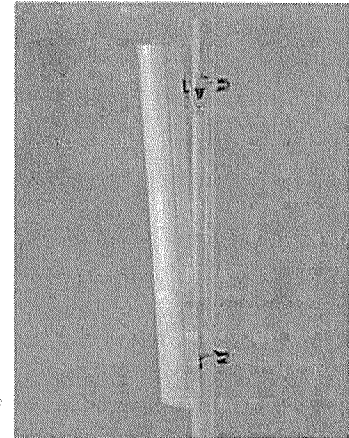
Electrical Specifications

Azimuth Beamwidth (-3 dB)	90° ± 5°
Elevation Beamwidth (-3 dB)	5.6°
Elevation Sidelobes (Upper)	> 20 dB
Gain	16.6 dBi (14.5 dBd)
Polarization	Slant, ±45°
Front-to-Back Ratio	> 25 dB (> 30 dB Typ.)
Electrical Downtilt Options	0°
VSWR	1.33:1 Max (1.22:1 Typ)
Connectors	2; 7-16 DIN (female), or Type N
Power Handling	250 Watts CW
Passive Intermodulation	< -147 dBc [2 x 20 W (+ 43 dBm)]
Lightning Protection	Chassis Ground



Mechanical Specifications

Dimensions (L x W x D)	54 in x 6 in x 3 in (137.2 cm x 15.2 cm x 7.6 cm)
Rated Wind Velocity	150 mph (241 km/hr)
Equivalent Flat Plate Area	2.3 ft² (.21 m²)
Front Wind Load @ 100 mph (161 kph)	66 lbs (294 N)
Side Wind Load @ 100 mph (161 kph)	33 lbs (147 N)
Weight (Without Mounting Options)	13 lbs (6.0 kg)

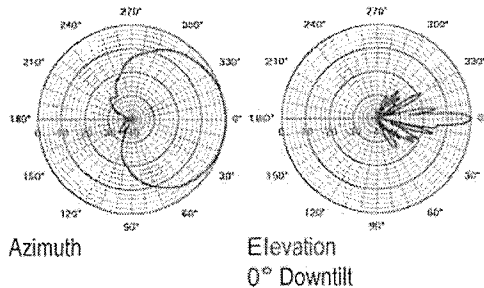


Mounting Options

MTG-P00-10, MTG-S02-10, MTG-DXX-20*, MTG-CXX-10*, MTG-C02-10, MTG-TXX-10*

Note: *Model number shown represents a series of products. See Mounting Options section for specific model number.

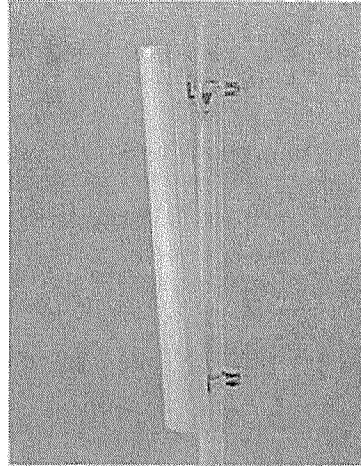
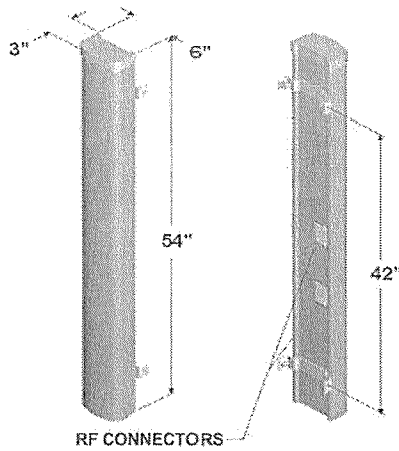
Patterns



EMS' antennas are protected by one or more of the following U.S. patents: 5,844,529; 6,067,053; 6,462,710; 6,392,600; 6,069,590; 5,966,102; 5,757,246. EMS' antenna designs may also be covered by pending U.S. patent applications and by pending & awarded international patents.

Revised 09/03/04

2305 MHz - 2360 MHz (V)



- 65° beamwidth
- 17.8 dBi gain
- DualPol
- 54 inch

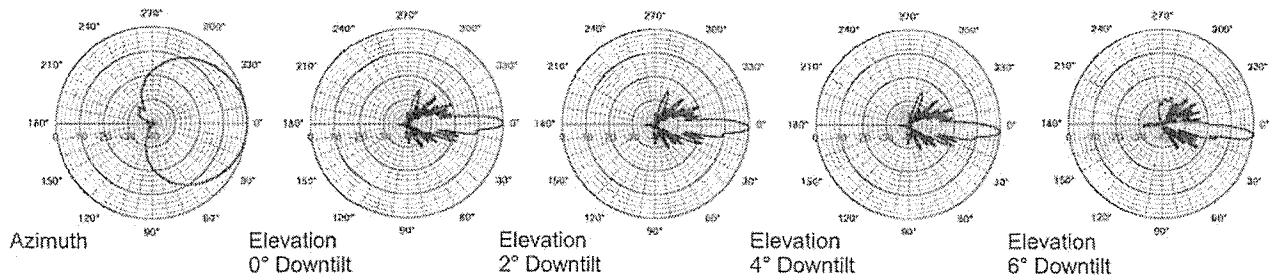
SPECIFICATIONS

Electrical		Mechanical	
Azimuth Beamwidth (-3 dB)	65°	Dimensions (L x W x D)	54in x 6in x 3in (137.2 cm x 15.2 cm x 7.6 cm)
Elevation Beamwidth (-3 dB)	5.7°	Rated Wind Velocity	150 mph (241 km/hr)
Elevation Sidelobes (Upper)	>20 dB	Equivalent Flat Plate Area	2.3ft ² (.21 m ²)
Gain	17.8 dBi (15.7 dBd)	Front Wind Load @ 100 mph (161 kph)	65 lbs (288 N)
Polarization	Slant, ±45°	Side Wind Load @ 100 mph (161 kph)	31 lbs (139 N)
Front-to-Back Ratio	>25 dB (≥30 dB Typ.)	Weight	11 lbs (5.0 kg)
Electrical Downtilt Options	0°, 2°, 4°, 6°	Note: Patent Pending and US Patent number 5, 757, 246 & 5, 844, 529. Values and patterns are representative and variations may occur. Specifications may change without notice due to continuous product enhancements. Digitized pattern data is available from the factory or via the web site www.emswireless.com and reflect all updates.	
VSWR	1.33:1 Max (1.22:1 Typ)		
Connectors	2; 7-16 DIN (female)		
Power Handling	250 Watts CW		
Passive Intermodulation	-147 dBc		
Lightning Protection	[2x20W (+43 dBm)] Chassis Ground		

MOUNTING OPTIONS

Model Number	Description	Comments
MTG-P00-10	Standard Mount (Supplied with antenna)	Mounts to Wall or 1.5 inch to 5.0 inch O.D. Pole (3.8 cm to 12.7 cm)
MTG-S02-10	Swivel Mount	Mounting kit providing azimuth adjustment.
MTG-DXX-20*	Mechanical Downtilt Kits	0° - 10° or 0° - 15° Mechanical Downtilt
MTG-CXX-10*	Cluster Mount Kits	3 antennas 120° apart or 2 antennas 180° apart
MTG-C02-10	U-Bolt Cluster Mount Kit	3 antennas 120° apart, 4.5" O.D. pole.
MTG-TXX-10*	Steel Band Mount	Pole diameters 7.5" - 45"

* Model number shown represents a series of products. See mounting options section for specific model number.



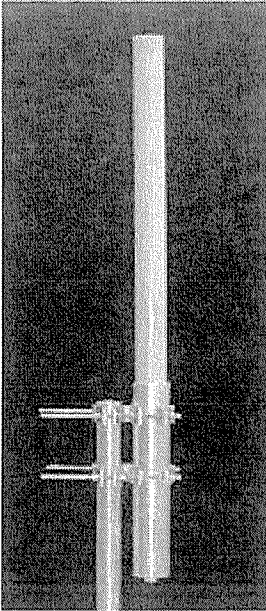


TIL-TEK

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

