

# SIRIUS XM

RADIO INC.

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June 23, 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 to Operate Two  
Low Power Terrestrial Repeaters in the Commonwealth of Puerto Rico**

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, hereby requests 180-Day Special Temporary Authority ("STA") to operate two low power terrestrial repeaters in its licensed frequency band, each of which has an average Effective Isotropically Radiated Power ("EIRP") of up to 2000 watts. Specifically, this application seeks authority to operate these new repeaters in the former Sirius Satellite Radio Inc. ("Sirius") frequency band (2320-2332.5 MHz) in various locations in the Commonwealth of Puerto Rico.<sup>1</sup>

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<sup>1</sup> On June 21, 2010, Sirius XM filed a request to operate these two repeaters under 60-Day Special Temporary Authority pursuant to Section 25.120(b)(3) of the Commission's rules. *See* FCC File No. SAT-STA-20100621-00141. That request remains pending. The Commission recently adopted formal rules for satellite radio terrestrial repeaters. *See* 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, *Report and Order and Second Report and Order*, FCC 10-82 (released May 20, 2010) (the "*May 20 Order*"). The *May 20 Order* authorizes the International Bureau "to continue to grant STAs for new or modified repeaters ... [until] any permanent authorization to operate SDARS repeaters becomes effective." *Id.* at Para. 264.

The Bureau has previously granted Sirius XM an STA to operate repeaters in Puerto Rico,<sup>2</sup> pursuant to the Commission's order approving the merger of Sirius Satellite Radio Inc. and XM Radio Inc.<sup>3</sup> As a condition of that merger, Sirius XM agreed to "file the necessary applications to provide the Sirius satellite radio service to the Commonwealth of Puerto Rico using terrestrial repeaters and ... upon grant of the necessary permanent authorizations, promptly introduce such satellite radio service to the Commonwealth."<sup>4</sup> The repeaters proposed herein will allow Sirius XM to enhance its service in the Commonwealth.

The Commission has recognized that SDARS operators require terrestrial repeaters to provide high-quality service nationwide.<sup>5</sup> Consistent with this policy, in September 2001, the Bureau granted STAs to Sirius XM to operate a nationwide network of terrestrial repeaters.<sup>6</sup> 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.<sup>7</sup>

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<sup>2</sup> See Sirius XM Radio Inc., *Order and Authorization*, IBFS File No. SAT-STA-20081027-00210 (Int'l. Bureau, Sept. 11, 2009); Sirius XM Radio Inc., *Order and Authorization*, IBFS File No. SAT-STA-20091030-00115 (Int'l. Bureau, Dec. 10, 2009).

<sup>3</sup> Applications for Consent to the Transfer of Control of Licenses XM Satellite Radio Holdings Inc., Transferor To Sirius Satellite Radio Inc., Transferee, 23 FCC Rcd 12348 (2008).

<sup>4</sup> *Id.*

<sup>5</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, 5770 ¶ 37 (1997).

<sup>6</sup> 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").

<sup>7</sup> 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 Sirius an STA in 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) ("2004 STA Grant Order"). Sirius timely filed an application for renewal of this STA on March 1, 2005. See File No. SAT-STA-20050301-00053. To date, the Commission has not acted on this application. 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

*Public Interest Considerations.* Grant of this STA will serve the public interest by allowing Sirius XM to improve SDARS service to the Commonwealth of Puerto Rico. Without terrestrial repeaters, service in Puerto Rico is unreliable or non-existent on many parts of the island. The Commission has recognized that the benefits of satellite radio and complementary terrestrial repeaters include the provision of “high quality radio signals to areas that have limited radio service,” continuous radio coverage for individuals on long-distance trips, and “[d]iverse program formats, including educational, ethnic and religious programming.”<sup>8</sup> These repeaters will ensure that residents of Puerto Rico will enjoy the same high-quality satellite radio service as the rest of the United States.

*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) average EIRP; (4) height above ground level (“AGL”); and (5) antenna downtilt.<sup>9</sup> 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 antennas to be used by the repeaters is attached as Exhibit D.

*Interference Considerations.* The new low power repeaters will each operate at an average EIRP of less than 2000 watts. Because Sirius XM has exclusive use of its licensed band, it is highly unlikely that these new low power repeaters will create interference to other licensees. To the extent XM’s original 2001 STAs require it to coordinate with affected Wireless Communications Services (“WCS”) licensees prior to operating any repeater, XM is not aware of any operational WCS facility in the Commonwealth of Puerto Rico.<sup>10</sup> Moreover, as the Bureau acknowledged in granting Sirius XM’s original repeater STA requests, the WCS licensees have confirmed that operating terrestrial repeaters at an EIRP of 2 kW or less is not an interference concern.<sup>11</sup> However, if

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(2004) (granting XM an STA in File No. SAT-STA-20031112-00371, effective Sept. 15, 2004); *Public Notice*, 2002 FCC Lexis 5670 (rel. Oct. 30, 2002) (granting XM an STA in File No. SAT-STA-20020815-00153, effective Sept. 30, 2002); *Public Notice*, 2003 FCC Lexis 4803 (rel. Aug. 29, 2002) (granting XM an STA in File No. SAT-STA-20030409-00076, effective June 26, 2003). XM has filed applications to renew its STAs, and those renewal applications remain pending.

<sup>8</sup> 2001 STA Grant Order at 16776 (¶ 9).

<sup>9</sup> For purposes of Sirius XM and XM Radio repeater STA applications, “antenna downtilt” refers to an antenna’s mechanical downtilt, without reference to any electrical downtilt built into the antenna.

<sup>10</sup> See *Sirius STA Order* ¶ 14. Despite the Bureau’s statement in the *Sirius STA Order* (at ¶ 14), the Bureau said it expects “WCS licensees to provide a schedule or as much advance notice as possible of when there stations are to be placed in operation.” Sirius XM has not received information from any WCS licensee regarding plans for WCS deployment in this market. Moreover, Sirius XM’s own review of “substantial service” filings does not show any operational WCS stations in this market.

<sup>11</sup> *XM STA Order* ¶ 12 (“The comments from WCS licensees express concern about blanketing interference from DARS repeaters that operate with an Equivalent Isotropically Radiated Power

prohibited interference does occur, Sirius XM will cease operation of the new repeaters until such interference can be eliminated.<sup>12</sup>

*Ownership and Control of Repeaters.* Sirius XM will own the new low power repeaters and it will be responsible for their installation and operation.

*Certifications.* Sirius XM certifies that it will operate the new low power 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 these repeaters 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;

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(EIRP) above 2 kW.”). Moreover, in March 2007, the WCS Coalition said that it will defer from objecting to 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. In the *May 20 Order*, the Commission concluded “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.” *Id.* at Para. 243.

<sup>12</sup> These repeaters' design 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.

- (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+10log (EIRP) dB less than the transmitter EIRP;
- (8) Sirius XM will operate these repeaters according to the technical parameters provided in this application;
- (9) Sirius XM will maintain full ownership and operational control of these repeaters; and
- (10) Sirius XM will immediately shut down these repeaters upon a complaint of interference, upon direction from the Commission, or upon finding that a facility has not been properly installed.

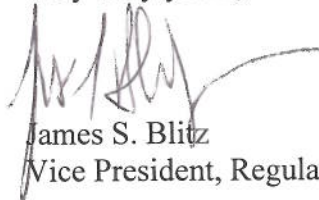
Granting this request will not alter Sirius XM's obligation to protect authorized radiocommunications facilities from interference, nor will it prejudice the outcome of the Commission's ongoing rulemaking pertaining to the deployment and operation of terrestrial repeaters.

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.<sup>13</sup>

Please direct any questions regarding this matter to the undersigned.

Very truly yours,



James S. Blitz  
Vice President, Regulatory Counsel

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<sup>13</sup> See International and Satellite Services Fee Filing Guide (February 2009).

Ms. Marlene H. Dortch

June 23, 2010

Page 6

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

## Exhibit A

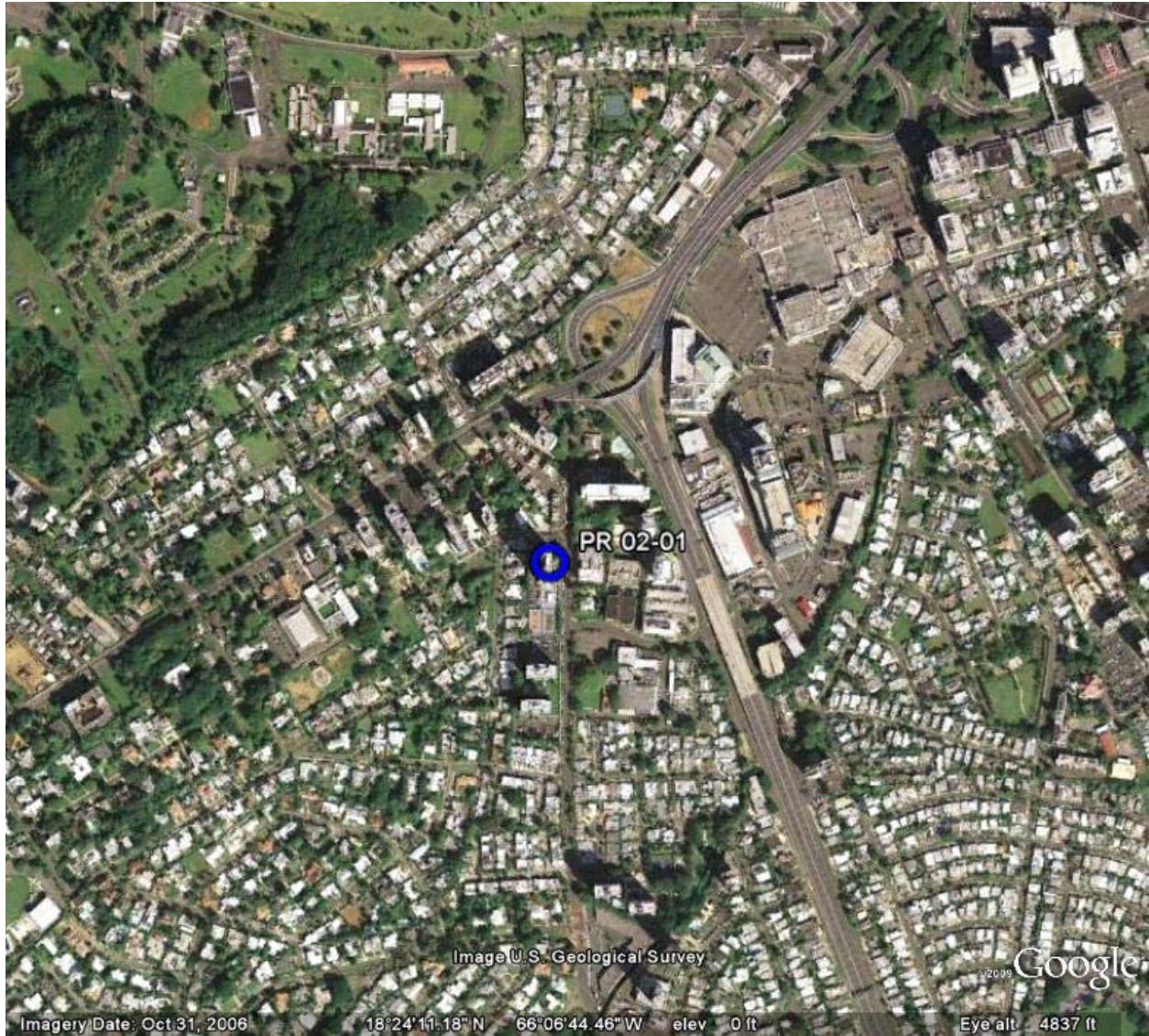
### Technical parameters for repeaters

<b>CITY</b>	<b>ANTENNA NUMBER</b>	<b>SITE LATITUDE (N)</b>	<b>SITE LONGITUDE (W)</b>	<b>ANTENNA TYPE</b>	<b>ANTENNA ORIENTATION (AZIMUTH)</b>	<b>ANTENNA HEIGHT (FT. AGL)</b>	<b>ANTENNA DOWNTILT (DEGREES)</b>	<b>TOTAL AVERAGE EIRP(W)</b>
Guaynabo, PR	PR02-01 Sector 1	18-24-18	66-06-33	SA2500-090X-16	225	230	0	2000
Guaynabo, PR	PR02-01 Sector 2	18-24-18	66-06-33	SA2500-090X-16	315	230	0	2000
Carolina, PR	PR03-01 Sector 1	18-24-26	65-58-43	SA2500-090X-16	45	195	0	2000
Carolina, PR	PR03-01 Sector 2	18-24-26	65-58-43	SA2500-090X-16	135	195	0	2000



## Exhibit B

### Google™ Satellite Image of Repeater Locations





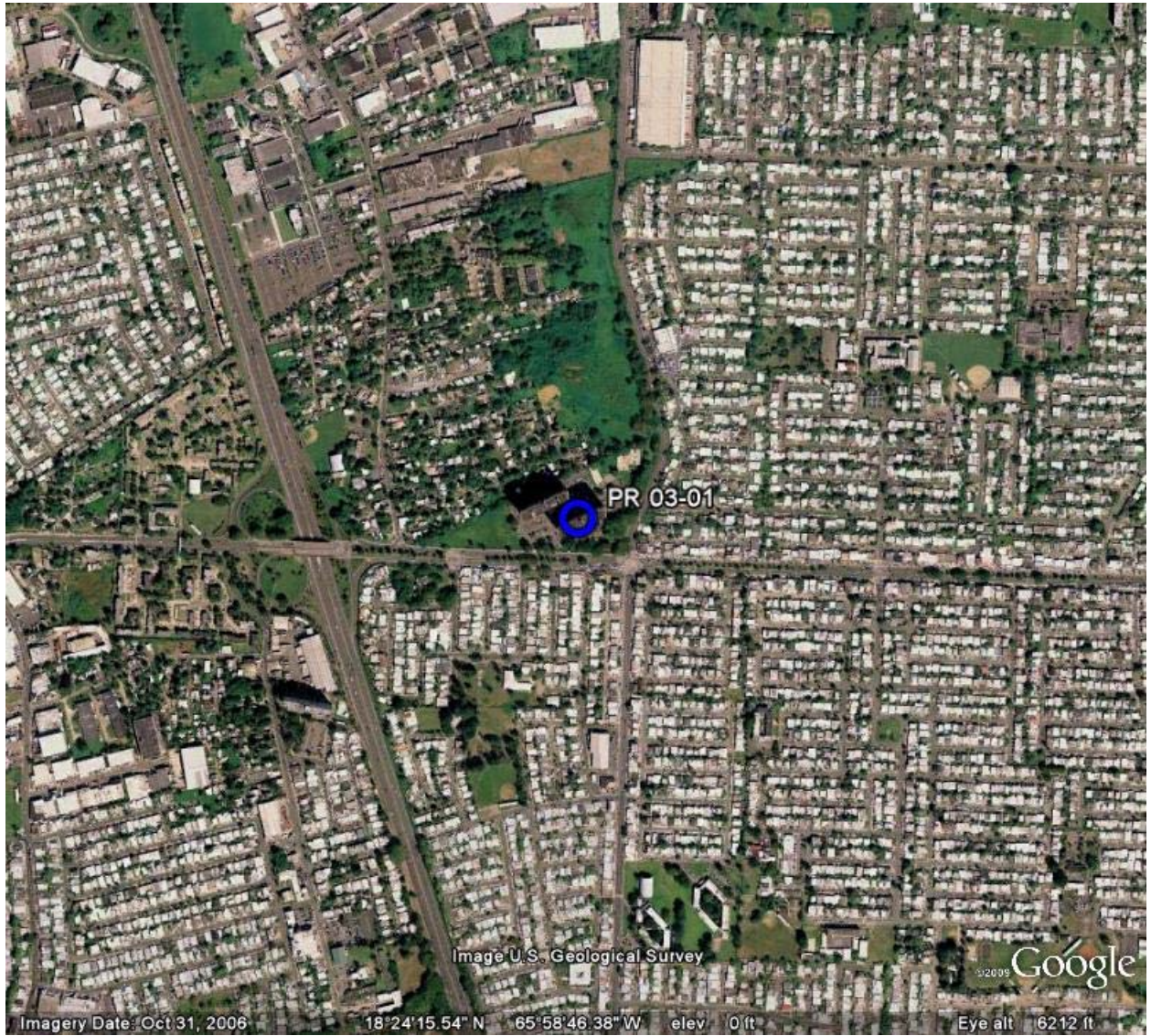
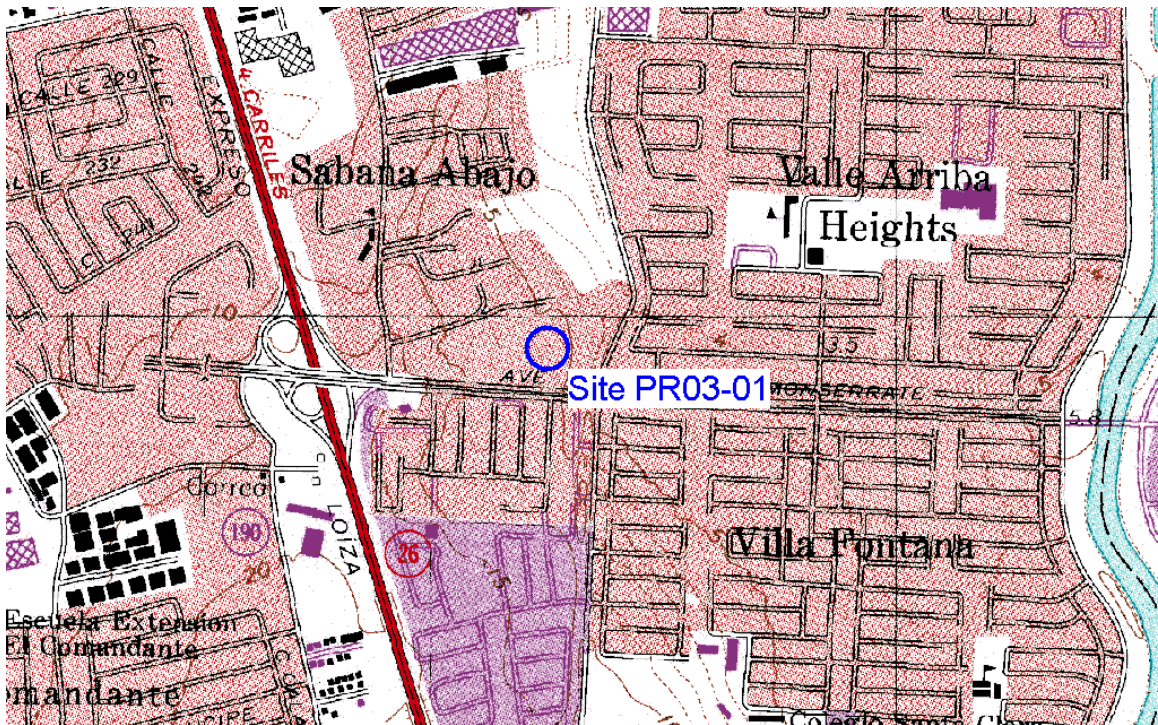
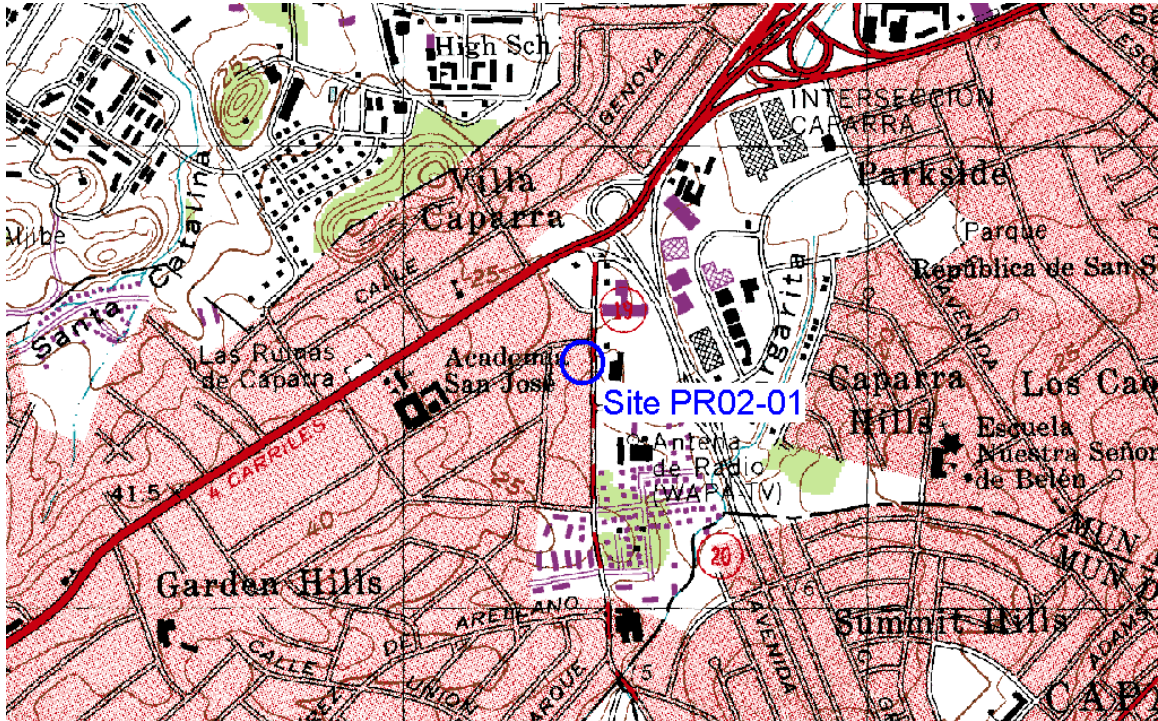




Exhibit C

Topographic Map of Repeater Locations



**Exhibit D**

**Antenna Specification Sheets for Repeaters**





# SA2500-090X-16

DualPol® Antenna

**Decibel®**  
Base Station Antennas

- Broadband Sector Antenna ideally suited for WiMax applications
- High performance in a small, lightweight package
- Superior front to back ratio
- Rugged reliable design

## ELECTRICAL

Frequency (MHz) :	2300 - 2700
Polarization :	±45°
Gain (dBd/dBi) :	14.5/16.6
Azimuth BW (Deg.):	90
Elevation BW (Deg.):	5.6
Beam Tilt (Deg.):	2
USLS* (dB) :	18
Front-To-Back Ratio* (dB) :	34
Isolation (dB) :	>30
VSWR :	<1.4:1
PIM3 @ 2 x 20w (dBc) :	-140
Max. Input Power (Watts) :	80
Impedance (Ohms) :	50
Lightning Protection :	DC Ground

Notes: Antenna mount is included with antenna.

## MECHANICAL

Weight :	3.9 kg (8.7 lb)
Dimensions (LxWxD) :	1,219 x 165 x 84 mm (48 x 6.5 x 3.3 in)
Max. Wind Area :	0.10 m <sup>2</sup> (1.1 ft <sup>2</sup> )
Max. Wind Load (@ 100 mph) :	271.7 N (61.1 lbf)
Max. Wind Speed :	241 km/h (150 mph)
Hardware Material :	Stainless Steel
Connector Type :	N - Type Female (2, Bottom)
Color :	Light Gray
Standard Mounting Hardware :	602030WM



Andrew Corporation  
2601 Telecom Parkway  
Richardson, Texas U.S.A 75082-3521  
Tel: 214.631.0310

Fax: 214.631.4706  
Toll Free Tel: 1.800.676.5342  
Fax: 1.800.229.4706  
www.andrew.com

\* - Indicates Typical  
4/6/2007  
dbtech@andrew.com

Information correct at date of issue but may be subject to change without notice.



# SA2500-090X-16

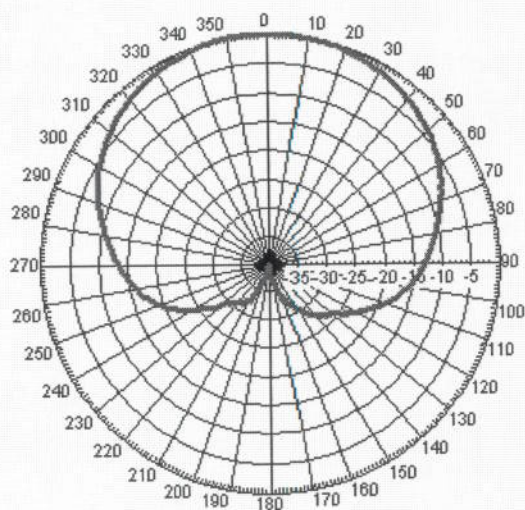
DualPol® Antenna

## Decibel®

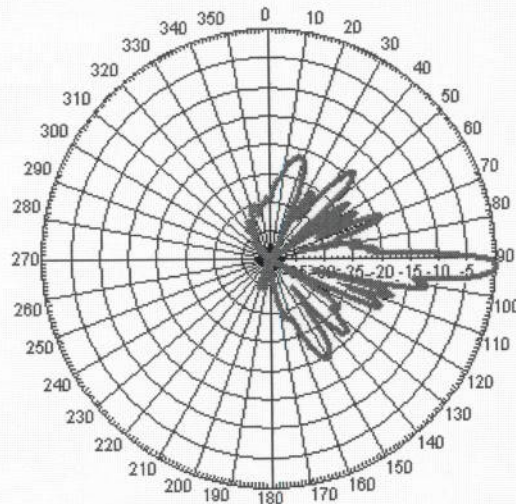
Base Station Antennas

### AZIMUTH PATTERN

### ELEVATION PATTERN



Freq: 2500 MHz, Tilt: 2



Freq: 2500 MHz, Tilt: 2