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International Bureau

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File # SAT-STA-20080213-00040

Call Sign _____ Grant Date 03/04/08
(or other identifier)

Term Dates
From 03/11/08 To 03/15/08

Approved by OMB
3060-0678

Approved: [Signature]
Chief, Satellite Policy Branch

Date & Time Filed: Feb 13 2008 3:57:19:886PM
File Number: SAT-STA-20080213-00040
Callsign:

FEDERAL COMMUNICATIONS COMMISSION
APPLICATION FOR SPACE STATION SPECIAL TEMPORARY AUTHORITY

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APPLICANT INFORMATION

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

Sirius Satellite Radio Inc. Request for STA to operate a repeater at the Electronic House Expo in Orlando, FL (March 11-15, 2008).

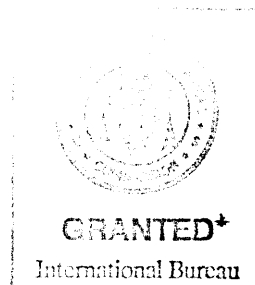
1. Applicant

Name:	Sirius Satellite 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:	Mr. Patrick L. Donnelly		

Application of Sirius Satellite Radio Inc. for Special Temporary Authority
IBFS File No. SAT-STA-20080213-00040

Special temporary authority (STA) IS GRANTED to Sirius Satellite Radio Inc. (Sirius) to operate an indoor terrestrial repeater with an Effective Isotropically Radiated Power (EIRP) of up to 200 watts (average) and up to five indoor terrestrial repeaters with an EIRP of 0.0001 watts (average) at the Electronic House Expo in Orlando, FL, from March 11-15, 2008, according to the technical parameters specified in its application, and subject to the following conditions:

1. Any actions taken as a result of this STA are solely at 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. Operation of the terrestrial repeaters authorized pursuant to this STA is on a non-interference basis with respect to all permanently authorized radiocommunication facilities. Sirius shall provide the information and follow the process set forth in paragraphs 14 and 17 in 16 FCC Rcd 16773 (Int'l Bur. 2001) and 16 FCC Rcd 16781 (Int'l Bur. 2001), as modified by 16 FCC Rcd 18481 (Int'l Bur. 2001) and 16 FCC Rcd 18484 (Int'l Bur. 2001);
3. The terrestrial repeaters are restricted to the simultaneous retransmission of the complete programming, and only that programming, transmitted by the satellite directly to SDARS receivers;
4. 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;
5. The out-of-band emissions of the terrestrial repeaters shall be limited to 75+log(EIRP) dB less than the transmitter EIRP;
6. Sirius will maintain full ownership and operational control of the terrestrial repeaters;
7. Sirius will immediately shut down the terrestrial repeaters upon a complaint of interference, upon direction from the Commission, or upon finding that the repeaters have not been properly installed;
8. This authorization is not one relating to an "activity of a continuing nature" for purposes of Section 1.62 of the Commission's rules and Section 558(c) of the Administrative Procedure Act. Continuation of operations beyond the term of this authorization will require prior affirmative authorization by the FCC.



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Approved: *[Signature]*
Chief, Satellite Policy Branch

2. Contact	
Name: Mr. Patrick L. Donnelly	Phone Number: 212-584-5100
Company: Sirius Satellite Radio Inc.	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:	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 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.)		
<div style="border: 1px solid black; padding: 10px; margin: 0 auto; width: 80%;"> Sirius Satellite Radio requests Special Temporary Authority to operate a terrestrial repeater and signal boosters at the Electronic House Expo in Orlando, FL from March 11, 2008 to March 15, 2008. </div>		
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. <input checked="" type="radio"/> Yes <input type="radio"/> No 		
10. Name of Person Signing Patrick L. Donnelly	11. Title of Person Signing Exec. VP, GC and Sec'y	
12. Please supply any need attachments.		
Attachment 1: Attachment	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).		

FCC NOTICE REQUIRED BY THE PAPERWORK REDUCTION ACT

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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.

Attachment

Sirius Satellite Radio Inc. (“Sirius”), pursuant to 47 C.F.R. § 25.120,¹ hereby requests Special Temporary Authority (“STA”) to operate in its licensed frequency band (2320-2332.5 MHz) (1) a low-power satellite DARS repeater with an Effective Isotropically Radiated Power (“EIRP”) of 200 watts; and (2) signal boosters with an EIRP of 0.0001 watts that have previously been approved for use in retail stores.² The low-power repeater and signal boosters will be utilized at the 2008 Electronic House Expo (“EHX”) in Orlando, FL from March 11-15, 2008. Sirius intends to operate the repeaters and signal boosters independently – *i.e.*, Sirius will *not* operate them in conjunction with XM Radio, Inc., the other satellite DARS licensee.

The repeater and boosters will be used by Sirius to carry out equipment and service demonstrations at EHX (including two days prior to the official start of the trade show for set-up and testing activities). Due to blockage from walls and ceilings, it is often difficult to provide quality reception of SDARS satellite and even terrestrial signals inside of trade show venues, such as the Orange County Convention Center, which often do not have line-of-sight views to receive Sirius’ signal. These difficulties with providing coverage inside the venues require radios to be displayed with hard wire connections, which limits the locations within a trade show venue that Sirius can set up its displays, creating difficulties for trade show organizers and Sirius. Because trade show venues typically consist of a large, often multi-level space, Sirius anticipates that the use of both a repeater and one or more (but fewer than five) strategically placed boosters will be necessary to ensure full coverage of the trade show. Accordingly, grant of the requested STA to use these repeaters for this limited period will serve the public interest.

Technical Information. In Exhibit A, Sirius provides a list of technical parameters, including the location and dates for the trade show repeaters it seeks to operate pursuant to this STA. Sirius has included the following information: (1) event; (2) event date; (3) event location (specifying the center longitude and latitude of the trade show venue); (4) market; (5) antenna type; (6) antenna beamwidth; (7) total EIRP; and (8) approximate maximum height Above Ground Level (AGL). Sirius will operate its signal booster(s) at the same event, dates, location, and market specified in Exhibit A. Exhibit B lists the technical parameters for the signal boosters, which are identical to those previously approved by the Commission for use in retail stores.³

¹ Because Sirius is requesting STA for only 30 days, the Commission can grant this application without placing it on Public Notice. 47 C.F.R. § 25.120(b)(4).

² To the extent this application is opposed, Sirius hereby requests that this proceeding be designated “permit-but-disclose” for purposes of the Commission's rules governing ex parte communications. 47 C.F.R. §§ 1.1200(a) and 1.1206.

³ See *Sirius Satellite Radio Inc. Request for Special Temporary Authority to Operate In-Store Signal Boosters in the Satellite Digital Audio Radio Service*, File No. SAT-STA-20030411-00075 (grant stamp with conditions issued June 26, 2003) (“2003 In-Store Booster Application”). In the 2003 application, Sirius also provided an interference analysis for the signal boosters that are the subject of this application. See *id.*, Exhibit C. That interference analysis is incorporated by reference herein, as permitted by 47 C.F.R. § 1.10009(c)(2). On June 5, 2003, Sirius further supplemented the application with a sample link budget for the signal

Specifically, Sirius has included the following information: (1) antenna type; (2) antenna beamwidth; (3) total EIRP; and (4) approximate maximum height Above Ground Level (“AGL”). Exhibit C provides an RF exposure analysis for the trade show, and demonstrates that any human radiofrequency exposure that might occur is well below acceptable limits.

Interference Considerations. Sirius does not anticipate that the repeater and boosters at this trade show will cause harmful interference to other radio services. Because Sirius has exclusive use of its licensed frequency band,⁴ there is no potential for in-band interference. Moreover, the repeater will operate at 200 watts, well below the threshold EIRP of 2000 watts that Wireless Communications Service (“WCS”) licensees have identified as acceptable to avoid any interference with their services. Sirius has also previously demonstrated that the proposed boosters will not cause adjacent band interference to WCS operations.⁵ In addition, the repeater and boosters will only be used for a limited time, further eliminating any opportunity for interference. Therefore, Sirius does not anticipate that the repeater and boosters will cause blanketing interference to any WCS receivers.

Ownership and Control of Repeaters. Sirius will own each repeater and booster installed at the venue and will retain full operational control of the repeater and boosters. Sirius will also be responsible for installation of each repeater and/or booster.

Public Interest Considerations. Prompt grant of this STA will promote the continued success of satellite radio and thereby serve the public interest. The demand for SDARS radios by the public has continued to increase over time. Accordingly, Sirius attends trade shows and conventions where it provides demonstrations of its equipment to consumers. Without repeaters and boosters to overcome signal blockage within the venues, however, Sirius cannot undertake real-time demonstrations of its equipment, especially demonstrations of the full mobility of SDARS service. The repeater and boosters will provide clear signal reception within this venue for these demonstrations, and will eliminate any need for a hard wire connection.

Sirius understands that its operation of the repeaters and boosters under STA is on a secondary, non-interference basis. While Sirius does not anticipate any interference, should interference occur, it will cease operation of the interfering repeater and/or booster until such interference can be eliminated.

(Continued . . .)

boosters. See Letter from Robert D. Briskman to Marlene H. Dortch, Secretary, FCC, Re: Sirius Satellite Radio Inc. Request for STA to Operate In-Store SDARS Signal Boosters, File No. SAT-STA-20030411-00075 (filed June 5, 2003). The link budget is also incorporated by reference herein.

⁴ 47 C.F.R. § 25.202(a)(6) (stating the 2320-2345 MHz band is allocated exclusively for SDARS).

⁵ 2003 In-Store Booster Application at 4 and Exhibit C.

Certifications. Sirius acknowledges that the conditions imposed in the 2001 Order granting Sirius' request for STA to operate terrestrial repeaters⁶ will continue to apply to any repeaters authorized as a result of this application. Sirius further certifies that its operation of signal boosters at trade shows will comply, as applicable, with the "Micro-Repeater STA Conditions" that the Commission imposed on Sirius in granting the June 26, 2003 STA to operate 5,000 in-store signal boosters. Specifically, Sirius certifies the following:

- (1) Sirius will operate the repeater and trade show signal boosters 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 will operate the repeater and trade show signal boosters on a non-interference basis with respect to all permanently authorized radiocommunication facilities;
- (3) The repeater and trade show signal boosters 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 repeater and trade show signal boosters 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 repeater and trade show signal boosters will comply with Part 17 of the Commission's rules – Construction, Marking, and Lighting of Antenna Structures;
- (6) The repeater and trade show signal boosters 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 repeater and trade show signal boosters will be limited to 75+log (EIRP) dB less than the transmitter EIRP;
- (8) Sirius will operate the repeater and trade show signal boosters according to the technical parameters provided in this application;
- (9) Sirius will maintain full ownership and operational control of each repeater and trade show signal booster; and

⁶ *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).*

Ms. Marlene H. Dortch

February 12, 2008

Page 4

- (10) Sirius will immediately shut down any repeater and any, or all, trade show signal boosters upon a complaint of interference, upon direction from the Commission, or upon finding that a repeater or trade show signal booster has not been properly installed.

SIRIUS SATELLITE RADIO INC.
EXHIBIT A

Event	Event Dates	Market	Location	No Of Setors	Antenna Type	Sector 1				Coordinates		Antenna Height (feet)
						Antenna Beamwidth	Orientation	Downliit	EIRP (Watts)	Longitude (W)	Latitude (N)	
2008 Electronic House Expo	March 11 - 15, 2008	Orlando, FL	Orange County Convention Center	1	Mobile Mark OD12-2400	Omni	0	0	200	81-28-8.6	28-25-28.9	45

EXHIBIT B

Attached is the following information for the signal booster Sirius seeks to operate pursuant to this STA.

- (1) antenna type;
- (2) antenna beamwidth;
- (3) total EIRP; and
- (4) approximate height Above Ground Level (AGL)

City	Antenna Type	Antenna Beamwidth	EIRP Total in Watts	Height AGL
Orlando, FL	Antenna Specialists XMSSR923WR	75 degrees	0.0001	< 50 feet

The transmitted carriers have a center frequency and frequency stability identical to the received SDARS satellite or terrestrial carriers. Frequency accuracy is controlled by the satellite or terrestrial repeater and not by the booster.

EXHIBIT C

RF Exposure Analysis

2008 Electronic House Expo Orange County Convention Center Orlando, Florida

This technical addendum is to support the STA request for the 2008 Electronic House Expo (EHX). This event is being held at the Orange County Convention Center, Orlando, Florida. A low-power transmitter and signal booster will be used to provide coverage at the event.

1. RF Exposure Analysis for Low-Power Transmitter

The transmitter set up for the show is illustrated in the figures below:

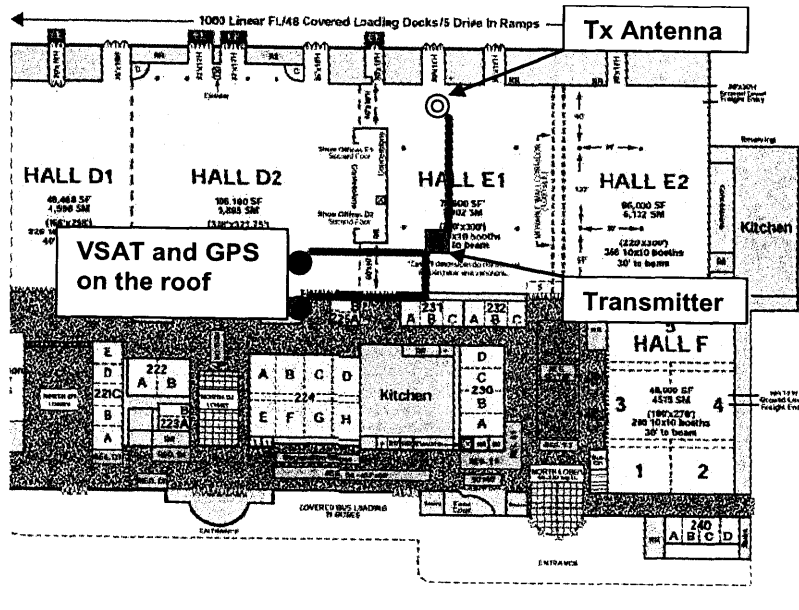


Figure 1. Diagram of Main hall

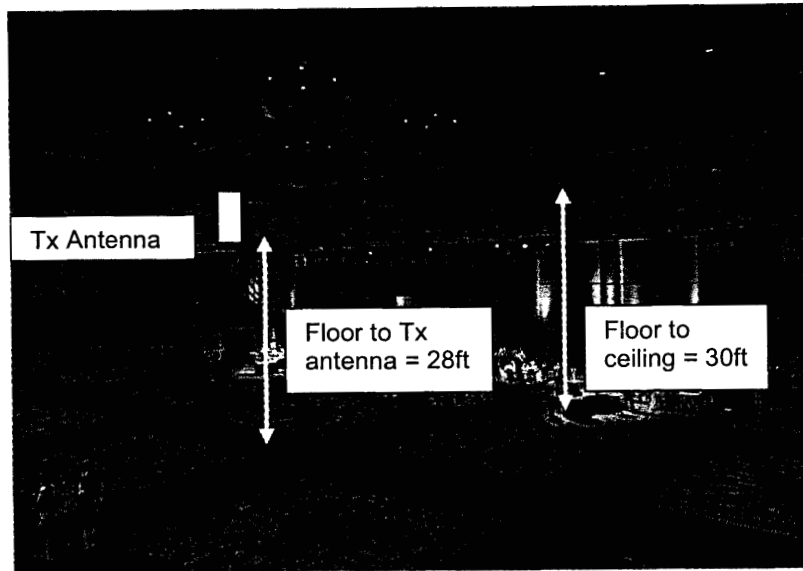


Figure 2. Main Exhibit hall

To establish the RF exposure environment for this request the following process has been used to establish that there is no general population exposure over the allowed limit:

1. The location of the antenna and the transmission parameters have been established. The antenna is placed 28 feet above the show floor as seen in Figure 2. A 20 watt (average), 90 watt (peak) power transmitter is used. Together with the assumed length and type of cable feeding the antenna (which is omni directional) and the type and gain of the antenna used, this leads to an effective isotropically radiated power (EIRP) of 200 watts (average) and 900 watts (peak). This calculation is summarized in Table 1. The transmitter operates at 2.32625 GHz which is the carrier frequency allocated to the Sirius repeater network. At this frequency the FCC has established a limit of 1 mW/square centimeter for general population exposure (OET 65).
2. Using the calculation methods described in OET 65 and the EIRP's derived as described in "1" a calculation is made of the power density at various distances from the antenna for both the average and peak powers involved. The distance of 21 feet was chosen as the minimum distance criteria for exposure by taking the height of the antenna (28 feet) and subtracting a 7 foot allowance for the height of any individuals who may be present on the show floor. This distance represents the closest point that a member of the general population could approach this repeater antenna. Table 2 summarizes the results of the normal calculation (using

the formula $\text{Power Density} = \text{EIRP} / (4 * \pi * R^2)$ from OET 65) and also a more conservative formula which takes into account reflection (the formula $\text{PD} = 2.56 * \text{EIRP} / (4 * \pi * R^2)$) also from OET 65. In order to provide a comprehensive view, values are included separately for the regular case (average and peak power based) and for the reflective case (peak power based).

Summary

Using a very conservative approach the calculated RF exposure levels from the proposed installation are well within the stated limits defined in OET 65. Several worst case assumptions were made as follows:

1. No allowance was made for the significant reduction in power density that will occur due to the attenuation of the antenna pattern at the location immediately under the antenna, the location to which the minimum distance of 21 feet applies.
2. No allowance was made in the case of peak level calculations for the fact that these levels occur a very small fraction of the overall time of transmission.
3. The maximum transmitter power of 20 watts was used although in practice Sirius has determined that the transmitter will be operated at a level at or below 10 watts which will provide adequate margin for the demonstrations involved.
4. There is no access to the ceiling area where the antenna is mounted except with a construction lift.
5. The highest level of exposure, involving the potential for additive reflection and peak level EIRP was used as the exposure criteria.

Table 1. Transmit chain loss budget

	Average (watts)	Average (dBW)	Peak (watts)	Peak (dBW)
Transmitter output power	20	13.0	90	19.5
Cable Loss (db)		2		2
Antenna gain dBi (max)		12		12
EIRP (max)	200.0	23.0	900.0	29.5

The effective isotropic radiated power (EIRP) is calculated by taking the transmitter output power, subtracting the cable loss and adding the antenna gain.

The peak power is determined by applying the peak to average factor of the OFDM waveform to the average power of the transmitter. This peak level occurs less than 1/1000th of the time for the Sirius waveform for this transmitter type.

Table 2. Calculations for power density

- $\text{Power Density} = \text{EIRP} / (4\pi R^2)$ (Equation 4 page 19 of OET 65)

- Power Density adjusted for reflection = 2.56*Power Density (Equation 7, page 21 of OET 65)

As can be seen from this table, even under very conservative transmission assumptions, the general population exposure limits are not exceeded at the worst case location.

Radial Distance from Antenna (Feet)	Power Density (Average) mW/square cm	Power density (Peak) mW/square cm	Peak power density with 2.56 multiplier (Max reflection)	Worst Case Safety Margin over exposure standard (times)
21	0.04010	0.18045	0.46195	2.16475
26	0.02616	0.11772	0.30136	3.31831
31	0.01840	0.08281	0.21199	4.71730
36	0.01364	0.06140	0.15719	6.36173
41	0.01052	0.04734	0.12119	8.25159
46	0.00836	0.03761	0.09628	10.38689
51	0.00680	0.03059	0.07832	12.76763
56	0.00564	0.02538	0.06496	15.39380
61	0.00475	0.02139	0.05475	18.26542
66	0.00406	0.01827	0.04677	21.38246
71	0.00351	0.01579	0.04041	24.74495
76	0.00306	0.01378	0.03527	28.35287
81	0.00270	0.01213	0.03105	32.20623
86	0.00239	0.01076	0.02754	36.30503
91	0.00214	0.00961	0.02460	40.64926
96	0.00192	0.00863	0.02210	45.23893
101	0.00173	0.00780	0.01997	50.07404
106	0.00157	0.00708	0.01813	55.15459
111	0.00144	0.00646	0.01653	60.48057
116	0.00131	0.00591	0.01514	66.05199
121	0.00121	0.00544	0.01391	71.86884
126	0.00111	0.00501	0.01283	77.93113
131	0.00103	0.00464	0.01187	84.23886
136	0.00096	0.00430	0.01101	90.79203
141	0.00089	0.00400	0.01025	97.59063
146	0.00083	0.00373	0.00956	104.63467
151	0.00078	0.00349	0.00893	111.92415

To establish the RF exposure environment for the signal boosters the following process has been used to confirm that there is no general population exposure over the allowed limit:

1. The transmit antenna is placed 18 feet above the meeting floor as seen in Figure 4. A 0.0001 Watt EIRP signal booster identical to boosters that have previously been approved for retail stores is used. The booster operates at 2320-2332.5MHz which is the carrier frequency allocated to the Sirius repeater network. At this frequency the FCC has established a limit of 1 mW/square centimeter for general population exposure (OET 65).
2. Using the calculation methods described in OET 65 and the EIRP's described in "1" a calculation is made of the power density at various distances from the transmit antenna. The distance of 11 feet was chosen as the minimum distance criteria for exposure by taking the height of the antenna (18 feet) and subtracting a 7 foot allowance for the height of any individuals who may be present on the show floor. This distance represents the closest point that a member of the general population could approach this transmit antenna. Table 4 summarizes the results of the normal calculation (using the formula Power Density= $EIRP/(4*\Pi*R^2)$ from OET 65) and also a more conservative formula which takes into account reflection (the formula $PD=2.56*EIRP/(4*\Pi*R^2)$) also from OET 65. In order to provide a comprehensive view, values are included separately for the regular case and for the reflective case.

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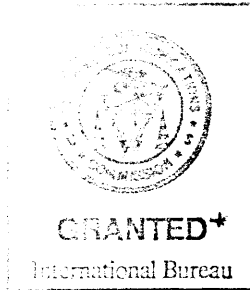
1. No allowance was made for the significant reduction in power density that will occur due to the attenuation beyond the 3 dB antenna beamwidth.
2. The highest level of exposure, involving the potential for additive reflection was used as the exposure criteria.

Table 3. Signal Booster specifications

Antenna Type	Antenna Beamwidth	Total EIRP in Watts
Antenna Specialists XMSSR923WR	75 degrees	0.0001

Table 4. Calculations for power density

- Power Density = $EIRP/(4\pi R^2)$ (Equation 4 page 19 of OET 65)



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Street:	1221 Avenue of the Americas 36th Floor	E-Mail:	
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2. Contact	
Name: Mr. Patrick L. Donnelly	Phone Number: 212-584-5100
Company: Sirius Satellite Radio Inc.	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:	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 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

<p>8. Description (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)</p> <div style="border: 1px solid black; padding: 10px; margin: 5px 0;"> <p>Sirius Satellite Radio requests Special Temporary Authority to operate a terrestrial repeater and signal boosters at the Electronic House Expo in Orlando, FL from March 11, 2008 to March 15, 2008.</p> </div>					
<p>9. By checking Yes, the undersigned certifies that neither applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. See 47 CFR 1.2002(b) for the meaning of "party to the application"; for these purposes. <input checked="" type="radio"/> Yes <input type="radio"/> No</p>					
<p>10. Name of Person Signing Patrick L. Donnelly</p>	<p>11. Title of Person Signing Exec. VP, GC and Sec'y</p>				
<p>12. Please supply any need attachments.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; padding: 5px;">Attachment 1: Attachment</td> <td style="width: 33%; padding: 5px;">Attachment 2:</td> <td style="width: 33%; padding: 5px;">Attachment 3:</td> </tr> </table>			Attachment 1: Attachment	Attachment 2:	Attachment 3:
Attachment 1: Attachment	Attachment 2:	Attachment 3:			
<p>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).</p>					

FCC NOTICE REQUIRED BY THE PAPERWORK REDUCTION ACT

The public reporting for this collection of information is estimated to average 2 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the required data, and completing and reviewing the collection of information. If you have any comments on this burden estimate, or how we can improve the collection and reduce the burden it causes you, please write to the Federal Communications Commission, AMD-PERM, Paperwork Reduction Project (3060-0678), Washington, DC 20554. We will also accept your comments regarding the Paperwork Reduction Act aspects of this collection via the Internet if you send them to jboley@fcc.gov. PLEASE DO NOT SEND COMPLETED FORMS TO THIS ADDRESS.

Remember – You are not required to respond to a collection of information sponsored by the Federal government, and the government may not conduct or sponsor this collection, unless it displays a currently valid OMB control number or if we fail to provide you with this notice. This collection has been assigned an OMB control number of 3060-0678.

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.

Attachment

Sirius Satellite Radio Inc. (“Sirius”), pursuant to 47 C.F.R. § 25.120,¹ hereby requests Special Temporary Authority (“STA”) to operate in its licensed frequency band (2320-2332.5 MHz) (1) a low-power satellite DARS repeater with an Effective Isotropically Radiated Power (“EIRP”) of 200 watts; and (2) signal boosters with an EIRP of 0.0001 watts that have previously been approved for use in retail stores.² The low-power repeater and signal boosters will be utilized at the 2008 Electronic House Expo (“EHX”) in Orlando, FL from March 11-15, 2008. Sirius intends to operate the repeaters and signal boosters independently – *i.e.*, Sirius will *not* operate them in conjunction with XM Radio, Inc., the other satellite DARS licensee.

The repeater and boosters will be used by Sirius to carry out equipment and service demonstrations at EHX (including two days prior to the official start of the trade show for set-up and testing activities). Due to blockage from walls and ceilings, it is often difficult to provide quality reception of SDARS satellite and even terrestrial signals inside of trade show venues, such as the Orange County Convention Center, which often do not have line-of-sight views to receive Sirius’ signal. These difficulties with providing coverage inside the venues require radios to be displayed with hard wire connections, which limits the locations within a trade show venue that Sirius can set up its displays, creating difficulties for trade show organizers and Sirius. Because trade show venues typically consist of a large, often multi-level space, Sirius anticipates that the use of both a repeater and one or more (but fewer than five) strategically placed boosters will be necessary to ensure full coverage of the trade show. Accordingly, grant of the requested STA to use these repeaters for this limited period will serve the public interest.

Technical Information. In Exhibit A, Sirius provides a list of technical parameters, including the location and dates for the trade show repeaters it seeks to operate pursuant to this STA. Sirius has included the following information: (1) event; (2) event date; (3) event location (specifying the center longitude and latitude of the trade show venue); (4) market; (5) antenna type; (6) antenna beamwidth; (7) total EIRP; and (8) approximate maximum height Above Ground Level (AGL). Sirius will operate its signal booster(s) at the same event, dates, location, and market specified in Exhibit A. Exhibit B lists the technical parameters for the signal boosters, which are identical to those previously approved by the Commission for use in retail stores.³

¹ Because Sirius is requesting STA for only 30 days, the Commission can grant this application without placing it on Public Notice. 47 C.F.R. § 25.120(b)(4).

² To the extent this application is opposed, Sirius hereby requests that this proceeding be designated “permit-but-disclose” for purposes of the Commission’s rules governing ex parte communications. 47 C.F.R. §§ 1.1200(a) and 1.1206.

³ See *Sirius Satellite Radio Inc. Request for Special Temporary Authority to Operate In-Store Signal Boosters in the Satellite Digital Audio Radio Service*, File No. SAT-STA-20030411-00075 (grant stamp with conditions issued June 26, 2003) (“2003 In-Store Booster Application”). In the 2003 application, Sirius also provided an interference analysis for the signal boosters that are the subject of this application. See *id.*, Exhibit C. That interference analysis is incorporated by reference herein, as permitted by 47 C.F.R. § 1.10009(c)(2). On June 5, 2003, Sirius further supplemented the application with a sample link budget for the signal

Specifically, Sirius has included the following information: (1) antenna type; (2) antenna beamwidth; (3) total EIRP; and (4) approximate maximum height Above Ground Level (“AGL”). Exhibit C provides an RF exposure analysis for the trade show, and demonstrates that any human radiofrequency exposure that might occur is well below acceptable limits.

Interference Considerations. Sirius does not anticipate that the repeater and boosters at this trade show will cause harmful interference to other radio services. Because Sirius has exclusive use of its licensed frequency band,⁴ there is no potential for in-band interference. Moreover, the repeater will operate at 200 watts, well below the threshold EIRP of 2000 watts that Wireless Communications Service (“WCS”) licensees have identified as acceptable to avoid any interference with their services. Sirius has also previously demonstrated that the proposed boosters will not cause adjacent band interference to WCS operations.⁵ In addition, the repeater and boosters will only be used for a limited time, further eliminating any opportunity for interference. Therefore, Sirius does not anticipate that the repeater and boosters will cause blanketing interference to any WCS receivers.

Ownership and Control of Repeaters. Sirius will own each repeater and booster installed at the venue and will retain full operational control of the repeater and boosters. Sirius will also be responsible for installation of each repeater and/or booster.

Public Interest Considerations. Prompt grant of this STA will promote the continued success of satellite radio and thereby serve the public interest. The demand for SDARS radios by the public has continued to increase over time. Accordingly, Sirius attends trade shows and conventions where it provides demonstrations of its equipment to consumers. Without repeaters and boosters to overcome signal blockage within the venues, however, Sirius cannot undertake real-time demonstrations of its equipment, especially demonstrations of the full mobility of SDARS service. The repeater and boosters will provide clear signal reception within this venue for these demonstrations, and will eliminate any need for a hard wire connection.

Sirius understands that its operation of the repeaters and boosters under STA is on a secondary, non-interference basis. While Sirius does not anticipate any interference, should interference occur, it will cease operation of the interfering repeater and/or booster until such interference can be eliminated.

(Continued . . .)

boosters. See Letter from Robert D. Briskman to Marlene H. Dortch, Secretary, FCC, Re: Sirius Satellite Radio Inc. Request for STA to Operate In-Store SDARS Signal Boosters, File No. SAT-STA-20030411-00075 (filed June 5, 2003). The link budget is also incorporated by reference herein.

⁴ 47 C.F.R. § 25.202(a)(6) (stating the 2320-2345 MHz band is allocated exclusively for SDARS).

⁵ 2003 *In-Store Booster Application* at 4 and Exhibit C.

Certifications. Sirius acknowledges that the conditions imposed in the 2001 Order granting Sirius' request for STA to operate terrestrial repeaters⁶ will continue to apply to any repeaters authorized as a result of this application. Sirius further certifies that its operation of signal boosters at trade shows will comply, as applicable, with the "Micro-Repeater STA Conditions" that the Commission imposed on Sirius in granting the June 26, 2003 STA to operate 5,000 in-store signal boosters. Specifically, Sirius certifies the following:

- (1) Sirius will operate the repeater and trade show signal boosters 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 will operate the repeater and trade show signal boosters on a non-interference basis with respect to all permanently authorized radiocommunication facilities;
- (3) The repeater and trade show signal boosters 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 repeater and trade show signal boosters 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 repeater and trade show signal boosters will comply with Part 17 of the Commission's rules – Construction, Marking, and Lighting of Antenna Structures;
- (6) The repeater and trade show signal boosters 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 repeater and trade show signal boosters will be limited to $75 + \log(\text{EIRP})$ dB less than the transmitter EIRP;
- (8) Sirius will operate the repeater and trade show signal boosters according to the technical parameters provided in this application;
- (9) Sirius will maintain full ownership and operational control of each repeater and trade show signal booster; and

⁶ *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).*

Ms. Marlene H. Dortch
February 12, 2008
Page 4

- (10) Sirius will immediately shut down any repeater and any, or all, trade show signal boosters upon a complaint of interference, upon direction from the Commission, or upon finding that a repeater or trade show signal booster has not been properly installed.

SIRIUS SATELLITE RADIO INC.
EXHIBIT A

Event	Event Dates	Market	Location	No Of Sectors	Antenna Type	Sector 1			Coordinates		Antenna Height (feet)	
						Antenna Beamwidth	Orientation	DownTilt	EIRP (Watts)	Longitude (W)		Latitude (N)
2008 Electronic House Expo	March 11 - 15, 2008	Orlando, FL	Orange County Convention Center	1	Mobile Mark OD12-2400	OmnI	0	0	200	81-28-8.6	28-25-28.9	45

EXHIBIT B

Attached is the following information for the signal booster Sirius seeks to operate pursuant to this STA.

- (1) antenna type;
- (2) antenna beamwidth;
- (3) total EIRP; and
- (4) approximate height Above Ground Level (AGL)

City	Antenna Type	Antenna Beamwidth	EIRP Total in Watts	Height AGL
Orlando, FL	Antenna Specialists XMSSR923WR	75 degrees	0.0001	< 50 feet

The transmitted carriers have a center frequency and frequency stability identical to the received SDARS satellite or terrestrial carriers. Frequency accuracy is controlled by the satellite or terrestrial repeater and not by the booster.

EXHIBIT C

RF Exposure Analysis

2008 Electronic House Expo Orange County Convention Center Orlando, Florida

This technical addendum is to support the STA request for the 2008 Electronic House Expo (EHX). This event is being held at the Orange County Convention Center, Orlando, Florida. A low-power transmitter and signal booster will be used to provide coverage at the event.

1. RF Exposure Analysis for Low-Power Transmitter

The transmitter set up for the show is illustrated in the figures below:

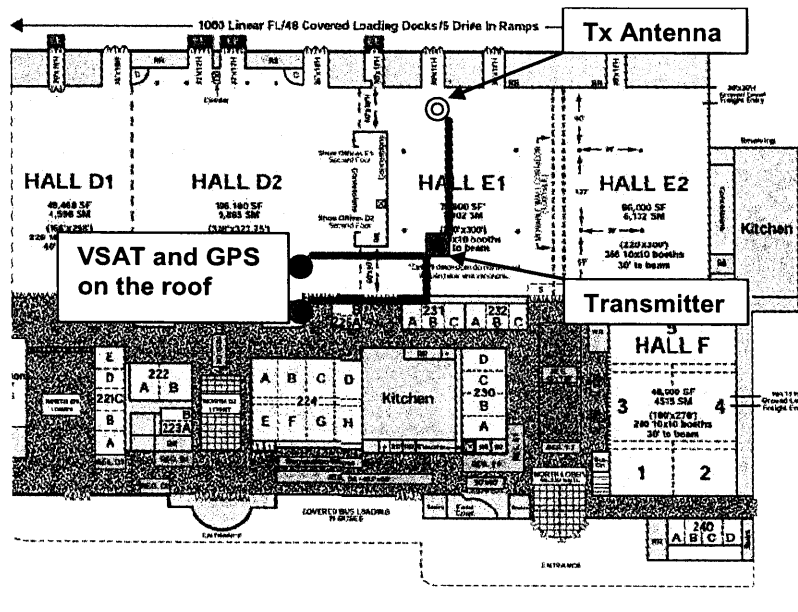


Figure 1. Diagram of Main hall

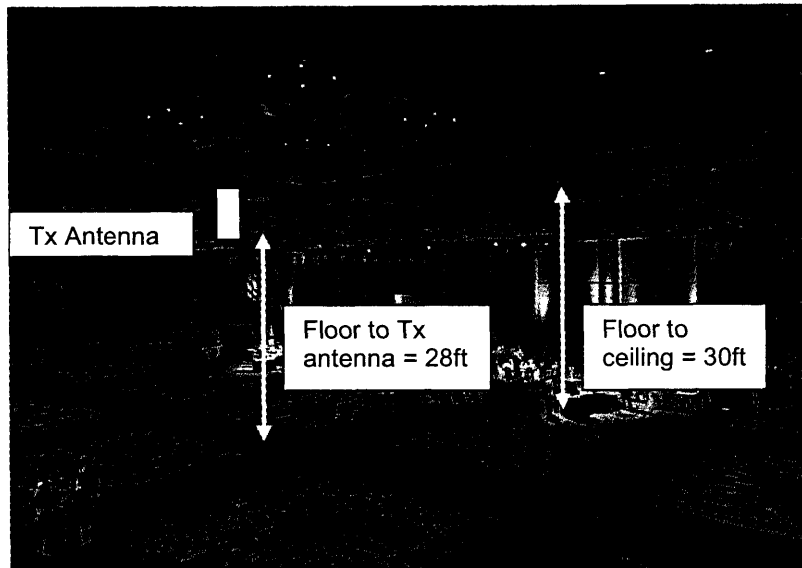


Figure 2. Main Exhibit hall

To establish the RF exposure environment for this request the following process has been used to establish that there is no general population exposure over the allowed limit:

1. The location of the antenna and the transmission parameters have been established. The antenna is placed 28 feet above the show floor as seen in Figure 2. A 20 watt (average), 90 watt (peak) power transmitter is used. Together with the assumed length and type of cable feeding the antenna (which is omnidirectional) and the type and gain of the antenna used, this leads to an effective isotropically radiated power (EIRP) of 200 watts (average) and 900 watts (peak). This calculation is summarized in Table 1. The transmitter operates at 2.32625 GHz which is the carrier frequency allocated to the Sirius repeater network. At this frequency the FCC has established a limit of 1 mW/square centimeter for general population exposure (OET 65).
2. Using the calculation methods described in OET 65 and the EIRP's derived as described in "1" a calculation is made of the power density at various distances from the antenna for both the average and peak powers involved. The distance of 21 feet was chosen as the minimum distance criteria for exposure by taking the height of the antenna (28 feet) and subtracting a 7 foot allowance for the height of any individuals who may be present on the show floor. This distance represents the closest point that a member of the general population could approach this repeater antenna. Table 2 summarizes the results of the normal calculation (using

the formula $\text{Power Density} = \text{EIRP} / (4 * \pi * R^2)$ from OET 65) and also a more conservative formula which takes into account reflection (the formula $\text{PD} = 2.56 * \text{EIRP} / (4 * \pi * R^2)$) also from OET 65. In order to provide a comprehensive view, values are included separately for the regular case (average and peak power based) and for the reflective case (peak power based).

Summary

Using a very conservative approach the calculated RF exposure levels from the proposed installation are well within the stated limits defined in OET 65. Several worst case assumptions were made as follows:

1. No allowance was made for the significant reduction in power density that will occur due to the attenuation of the antenna pattern at the location immediately under the antenna, the location to which the minimum distance of 21 feet applies.
2. No allowance was made in the case of peak level calculations for the fact that these levels occur a very small fraction of the overall time of transmission.
3. The maximum transmitter power of 20 watts was used although in practice Sirius has determined that the transmitter will be operated at a level at or below 10 watts which will provide adequate margin for the demonstrations involved.
4. There is no access to the ceiling area where the antenna is mounted except with a construction lift.
5. The highest level of exposure, involving the potential for additive reflection and peak level EIRP was used as the exposure criteria.

Table 1. Transmit chain loss budget

	Average (watts)	Average (dBW)	Peak (watts)	Peak (dBW)
Transmitter output power	20	13.0	90	19.5
Cable Loss (db)		2		2
Antenna gain dBi (max)		12		12
EIRP (max)	200.0	23.0	900.0	29.5

The effective isotropic radiated power (EIRP) is calculated by taking the transmitter output power, subtracting the cable loss and adding the antenna gain.

The peak power is determined by applying the peak to average factor of the OFDM waveform to the average power of the transmitter. This peak level occurs less than 1/1000th of the time for the Sirius waveform for this transmitter type.

Table 2. Calculations for power density

- Power Density = $\text{EIRP} / (4\pi R^2)$ (Equation 4 page 19 of OET 65)

- Power Density adjusted for reflection = 2.56*Power Density (Equation 7, page 21 of OET 65)

As can be seen from this table, even under very conservative transmission assumptions, the general population exposure limits are not exceeded at the worst case location.

Radial Distance from Antenna (Feet)	Power Density (Average) mW/square cm	Power density (Peak) mW/square cm	Peak power density with 2.56 multiplier (Max reflection)	Worst Case Safety Margin over exposure standard (times)
21	0.04010	0.18045	0.46195	2.16475
26	0.02616	0.11772	0.30136	3.31831
31	0.01840	0.08281	0.21199	4.71730
36	0.01364	0.06140	0.15719	6.36173
41	0.01052	0.04734	0.12119	8.25159
46	0.00836	0.03761	0.09628	10.38689
51	0.00680	0.03059	0.07832	12.76763
56	0.00564	0.02538	0.06496	15.39380
61	0.00475	0.02139	0.05475	18.26542
66	0.00406	0.01827	0.04677	21.38246
71	0.00351	0.01579	0.04041	24.74495
76	0.00306	0.01378	0.03527	28.35287
81	0.00270	0.01213	0.03105	32.20623
86	0.00239	0.01076	0.02754	36.30503
91	0.00214	0.00961	0.02460	40.64926
96	0.00192	0.00863	0.02210	45.23893
101	0.00173	0.00780	0.01997	50.07404
106	0.00157	0.00708	0.01813	55.15459
111	0.00144	0.00646	0.01653	60.48057
116	0.00131	0.00591	0.01514	66.05199
121	0.00121	0.00544	0.01391	71.86884
126	0.00111	0.00501	0.01283	77.93113
131	0.00103	0.00464	0.01187	84.23886
136	0.00096	0.00430	0.01101	90.79203
141	0.00089	0.00400	0.01025	97.59063
146	0.00083	0.00373	0.00956	104.63467
151	0.00078	0.00349	0.00893	111.92415

2. RF Exposure Analysis for Signal Booster

The set up of the signal booster in the meeting room is illustrated in the figures below:

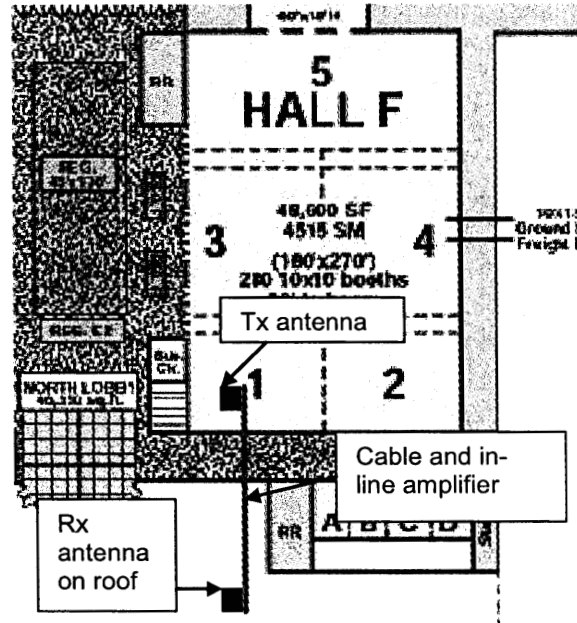


Figure 3. Diagram of meeting rooms

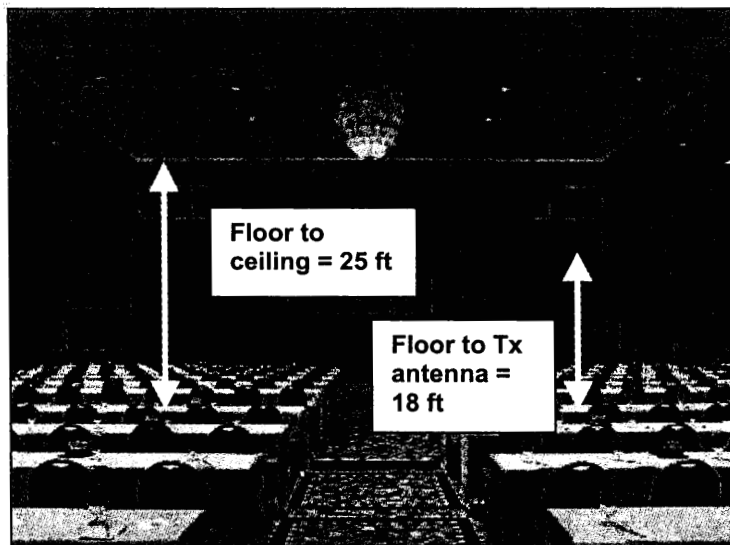


Figure 4. Generic Meeting room

To establish the RF exposure environment for the signal boosters the following process has been used to confirm that there is no general population exposure over the allowed limit:

1. The transmit antenna is placed 18 feet above the meeting floor as seen in Figure 4. A 0.0001 Watt EIRP signal booster identical to boosters that have previously been approved for retail stores is used. The booster operates at 2320-2332.5MHz which is the carrier frequency allocated to the Sirius repeater network. At this frequency the FCC has established a limit of 1 mW/square centimeter for general population exposure (OET 65).
2. Using the calculation methods described in OET 65 and the EIRP's described in "1" a calculation is made of the power density at various distances from the transmit antenna. The distance of 11 feet was chosen as the minimum distance criteria for exposure by taking the height of the antenna (18 feet) and subtracting a 7 foot allowance for the height of any individuals who may be present on the show floor. This distance represents the closest point that a member of the general population could approach this transmit antenna. Table 4 summarizes the results of the normal calculation (using the formula Power Density= $EIRP/(4*\Pi*R^2)$ from OET 65) and also a more conservative formula which takes into account reflection (the formula $PD=2.56*EIRP/(4*\Pi*R^2)$) also from OET 65. In order to provide a comprehensive view, values are included separately for the regular case and for the reflective case.

Summary

Using a very conservative approach the calculated RF exposure levels from the proposed installation are well within the stated limits defined in OET 65. Several worst case assumptions were made as follows:

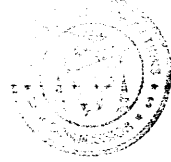
1. No allowance was made for the significant reduction in power density that will occur due to the attenuation beyond the 3 dB antenna beamwidth.
2. The highest level of exposure, involving the potential for additive reflection was used as the exposure criteria.

Table 3. Signal Booster specifications

Antenna Type	Antenna Beamwidth	Total EIRP in Watts
Antenna Specialists XMSSR923WR	75 degrees	0.0001

Table 4. Calculations for power density

- Power Density = $EIRP/(4\pi R^2)$ (Equation 4 page 19 of OET 65)



GRANTED*

International Bureau

* subject to conditions

File # SAT-STA-20080213-00040

Call Sign _____ Grant Date 03/04/08
(or other identifier)

Term Dates
From 03/11/08 To: 03/15/08

Approved by OMB
3060-0678

Approved: [Signature]
Chief, Satellite Policy Branch

Date & Time Filed: Feb 13 2008 3:57:19:886PM
File Number: SAT-STA-20080213-00040
Callsign:

FEDERAL COMMUNICATIONS COMMISSION
APPLICATION FOR SPACE STATION SPECIAL TEMPORARY AUTHORITY

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APPLICANT INFORMATION

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

Sirius Satellite Radio Inc. Request for STA to operate a repeater at the Electronic House Expo in Orlando, FL (March 11-15, 2008).

1. Applicant

Name:	Sirius Satellite 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:	Mr. Patrick L. Donnelly		

Application of Sirius Satellite Radio Inc. for Special Temporary Authority
IBFS File No. SAT-STA-20080213-00040

Special temporary authority (STA) IS GRANTED to Sirius Satellite Radio Inc. (Sirius) to operate an indoor terrestrial repeater with an Effective Isotropically Radiated Power (EIRP) of up to 200 watts (average) and up to five indoor terrestrial repeaters with an EIRP of 0.0001 watts (average) at the Electronic House Expo in Orlando, FL, from March 11-15, 2008, according to the technical parameters specified in its application, and subject to the following conditions:

1. Any actions taken as a result of this STA are solely at 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. Operation of the terrestrial repeaters authorized pursuant to this STA is on a non-interference basis with respect to all permanently authorized radiocommunication facilities. Sirius shall provide the information and follow the process set forth in paragraphs 14 and 17 in 16 FCC Rcd 16773 (Int'l Bur. 2001) and 16 FCC Rcd 16781 (Int'l Bur. 2001), as modified by 16 FCC Rcd 18481 (Int'l Bur. 2001) and 16 FCC Rcd 18484 (Int'l Bur. 2001);
3. The terrestrial repeaters are restricted to the simultaneous retransmission of the complete programming, and only that programming, transmitted by the satellite directly to SDARS receivers;
4. 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;
5. The out-of-band emissions of the terrestrial repeaters shall be limited to 75+log(EIRP) dB less than the transmitter EIRP;
6. Sirius will maintain full ownership and operational control of the terrestrial repeaters;
7. Sirius will immediately shut down the terrestrial repeaters upon a complaint of interference, upon direction from the Commission, or upon finding that the repeaters have not been properly installed;
8. This authorization is not one relating to an "activity of a continuing nature" for purposes of Section 1.62 of the Commission's rules and Section 558(c) of the Administrative Procedure Act. Continuation of operations beyond the term of this authorization will require prior affirmative authorization by the FCC.



* Subject to conditions

File # SAT-STA-20080213-00040
Call Sign _____ Grant Date 03/04/08
(or other identifier) _____
Term Dates
From 03/11/08 To: 03/15/08
Approved: *Anthony J. Kelly*
Chief, Satellite Policy Branch

2. Contact

Name:	Mr. Patrick L. Donnelly	Phone Number:	212-584-5100
Company:	Sirius Satellite Radio Inc.	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:		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?

- If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114).
- Governmental Entity Noncommercial educational licensee
- Other (please explain):

4b. Fee Classification CXW - Space Station (Non-Geostationary)

5. Type Request

- Change Station Location Extend Expiration Date 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 Satellite Radio requests Special Temporary Authority to operate a terrestrial repeater and signal boosters at the Electronic House Expo in Orlando, FL from March 11, 2008 to March 15, 2008.

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
Patrick L. Donnelly

11. Title of Person Signing
Exec. VP, GC and Sec'y

12. Please supply any need attachments.

Attachment 1: Attachment

Attachment 2:

Attachment 3:

WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND / OR IMPRISONMENT
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(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.

Attachment

Sirius Satellite Radio Inc. (“Sirius”), pursuant to 47 C.F.R. § 25.120,¹ hereby requests Special Temporary Authority (“STA”) to operate in its licensed frequency band (2320-2332.5 MHz) (1) a low-power satellite DARS repeater with an Effective Isotropically Radiated Power (“EIRP”) of 200 watts; and (2) signal boosters with an EIRP of 0.0001 watts that have previously been approved for use in retail stores.² The low-power repeater and signal boosters will be utilized at the 2008 Electronic House Expo (“EHX”) in Orlando, FL from March 11-15, 2008. Sirius intends to operate the repeaters and signal boosters independently – *i.e.*, Sirius will *not* operate them in conjunction with XM Radio, Inc., the other satellite DARS licensee.

The repeater and boosters will be used by Sirius to carry out equipment and service demonstrations at EHX (including two days prior to the official start of the trade show for set-up and testing activities). Due to blockage from walls and ceilings, it is often difficult to provide quality reception of SDARS satellite and even terrestrial signals inside of trade show venues, such as the Orange County Convention Center, which often do not have line-of-sight views to receive Sirius’ signal. These difficulties with providing coverage inside the venues require radios to be displayed with hard wire connections, which limits the locations within a trade show venue that Sirius can set up its displays, creating difficulties for trade show organizers and Sirius. Because trade show venues typically consist of a large, often multi-level space, Sirius anticipates that the use of both a repeater and one or more (but fewer than five) strategically placed boosters will be necessary to ensure full coverage of the trade show. Accordingly, grant of the requested STA to use these repeaters for this limited period will serve the public interest.

Technical Information. In Exhibit A, Sirius provides a list of technical parameters, including the location and dates for the trade show repeaters it seeks to operate pursuant to this STA. Sirius has included the following information: (1) event; (2) event date; (3) event location (specifying the center longitude and latitude of the trade show venue); (4) market; (5) antenna type; (6) antenna beamwidth; (7) total EIRP; and (8) approximate maximum height Above Ground Level (AGL). Sirius will operate its signal booster(s) at the same event, dates, location, and market specified in Exhibit A. Exhibit B lists the technical parameters for the signal boosters, which are identical to those previously approved by the Commission for use in retail stores.³

¹ Because Sirius is requesting STA for only 30 days, the Commission can grant this application without placing it on Public Notice. 47 C.F.R. § 25.120(b)(4).

² To the extent this application is opposed, Sirius hereby requests that this proceeding be designated “permit-but-disclose” for purposes of the Commission’s rules governing *ex parte* communications. 47 C.F.R. §§ 1.1200(a) and 1.1206.

³ See *Sirius Satellite Radio Inc. Request for Special Temporary Authority to Operate In-Store Signal Boosters in the Satellite Digital Audio Radio Service*, File No. SAT-STA-20030411-00075 (grant stamp with conditions issued June 26, 2003) (“2003 In-Store Booster Application”). In the 2003 application, Sirius also provided an interference analysis for the signal boosters that are the subject of this application. See *id.*, Exhibit C. That interference analysis is incorporated by reference herein, as permitted by 47 C.F.R. § 1.10009(c)(2). On June 5, 2003, Sirius further supplemented the application with a sample link budget for the signal

Specifically, Sirius has included the following information: (1) antenna type; (2) antenna beamwidth; (3) total EIRP; and (4) approximate maximum height Above Ground Level (“AGL”). Exhibit C provides an RF exposure analysis for the trade show, and demonstrates that any human radiofrequency exposure that might occur is well below acceptable limits.

Interference Considerations. Sirius does not anticipate that the repeater and boosters at this trade show will cause harmful interference to other radio services. Because Sirius has exclusive use of its licensed frequency band,⁴ there is no potential for in-band interference. Moreover, the repeater will operate at 200 watts, well below the threshold EIRP of 2000 watts that Wireless Communications Service (“WCS”) licensees have identified as acceptable to avoid any interference with their services. Sirius has also previously demonstrated that the proposed boosters will not cause adjacent band interference to WCS operations.⁵ In addition, the repeater and boosters will only be used for a limited time, further eliminating any opportunity for interference. Therefore, Sirius does not anticipate that the repeater and boosters will cause blanketing interference to any WCS receivers.

Ownership and Control of Repeaters. Sirius will own each repeater and booster installed at the venue and will retain full operational control of the repeater and boosters. Sirius will also be responsible for installation of each repeater and/or booster.

Public Interest Considerations. Prompt grant of this STA will promote the continued success of satellite radio and thereby serve the public interest. The demand for SDARS radios by the public has continued to increase over time. Accordingly, Sirius attends trade shows and conventions where it provides demonstrations of its equipment to consumers. Without repeaters and boosters to overcome signal blockage within the venues, however, Sirius cannot undertake real-time demonstrations of its equipment, especially demonstrations of the full mobility of SDARS service. The repeater and boosters will provide clear signal reception within this venue for these demonstrations, and will eliminate any need for a hard wire connection.

Sirius understands that its operation of the repeaters and boosters under STA is on a secondary, non-interference basis. While Sirius does not anticipate any interference, should interference occur, it will cease operation of the interfering repeater and/or booster until such interference can be eliminated.

(Continued . . .)

boosters. See Letter from Robert D. Briskman to Marlene H. Dortch, Secretary, FCC, Re: Sirius Satellite Radio Inc. Request for STA to Operate In-Store SDARS Signal Boosters, File No. SAT-STA-20030411-00075 (filed June 5, 2003). The link budget is also incorporated by reference herein.

⁴ 47 C.F.R. § 25.202(a)(6) (stating the 2320-2345 MHz band is allocated exclusively for SDARS).

⁵ 2003 In-Store Booster Application at 4 and Exhibit C.

Certifications. Sirius acknowledges that the conditions imposed in the 2001 Order granting Sirius' request for STA to operate terrestrial repeaters⁶ will continue to apply to any repeaters authorized as a result of this application. Sirius further certifies that its operation of signal boosters at trade shows will comply, as applicable, with the "Micro-Repeater STA Conditions" that the Commission imposed on Sirius in granting the June 26, 2003 STA to operate 5,000 in-store signal boosters. Specifically, Sirius certifies the following:

- (1) Sirius will operate the repeater and trade show signal boosters 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 will operate the repeater and trade show signal boosters on a non-interference basis with respect to all permanently authorized radiocommunication facilities;
- (3) The repeater and trade show signal boosters 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 repeater and trade show signal boosters 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 repeater and trade show signal boosters will comply with Part 17 of the Commission's rules – Construction, Marking, and Lighting of Antenna Structures;
- (6) The repeater and trade show signal boosters 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 repeater and trade show signal boosters will be limited to $75 + \log(\text{EIRP})$ dB less than the transmitter EIRP;
- (8) Sirius will operate the repeater and trade show signal boosters according to the technical parameters provided in this application;
- (9) Sirius will maintain full ownership and operational control of each repeater and trade show signal booster; and

⁶ *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).*

(10) Sirius will immediately shut down any repeater and any, or all, trade show signal boosters upon a complaint of interference, upon direction from the Commission, or upon finding that a repeater or trade show signal booster has not been properly installed.

SIRIUS SATELLITE RADIO INC.
EXHIBIT A

Event	Event Dates	Market	Location	No Of Setors	Antenna Type	Sector 1			Coordinates		Antenna Height (feet)	
						Antenna Beamwidth	Orientation	DownTilt	EiRP (Watts)	Longitude (W)		Latitude (N)
2008 Electronic House Expo	March 11 - 15, 2008	Orlando, FL	Orange County Convention Center	1	Mobile Mark OD12-2400	Omni	0	0	200	81-28-8.6	28-25-28.9	45

EXHIBIT B

Attached is the following information for the signal booster Sirius seeks to operate pursuant to this STA.

- (1) antenna type;
- (2) antenna beamwidth;
- (3) total EIRP; and
- (4) approximate height Above Ground Level (AGL)

City	Antenna Type	Antenna Beamwidth	EIRP Total in Watts	Height AGL
Orlando, FL	Antenna Specialists XMSSR923WR	75 degrees	0.0001	< 50 feet

The transmitted carriers have a center frequency and frequency stability identical to the received SDARS satellite or terrestrial carriers. Frequency accuracy is controlled by the satellite or terrestrial repeater and not by the booster.

EXHIBIT C

RF Exposure Analysis

2008 Electronic House Expo Orange County Convention Center Orlando, Florida

This technical addendum is to support the STA request for the 2008 Electronic House Expo (EHX). This event is being held at the Orange County Convention Center, Orlando, Florida. A low-power transmitter and signal booster will be used to provide coverage at the event.

1. RF Exposure Analysis for Low-Power Transmitter

The transmitter set up for the show is illustrated in the figures below:

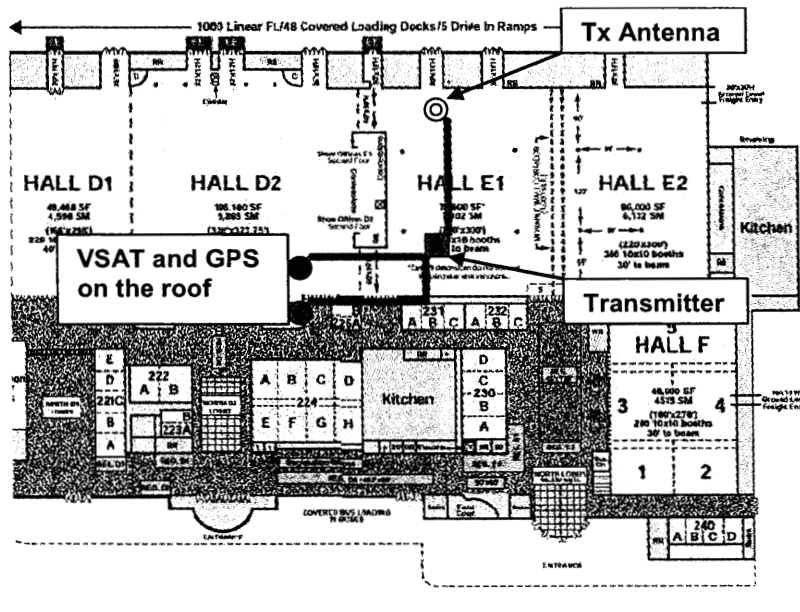


Figure 1. Diagram of Main hall

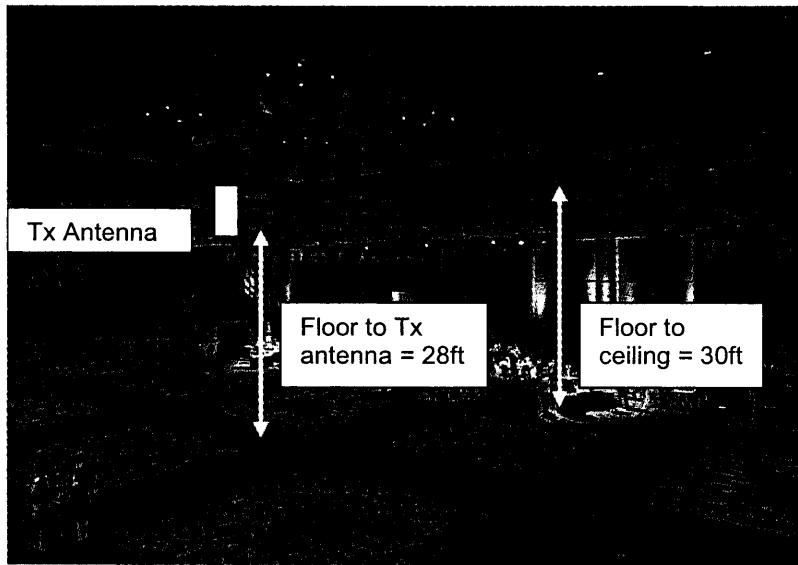


Figure 2. Main Exhibit hall

To establish the RF exposure environment for this request the following process has been used to establish that there is no general population exposure over the allowed limit:

1. The location of the antenna and the transmission parameters have been established. The antenna is placed 28 feet above the show floor as seen in Figure 2. A 20 watt (average), 90 watt (peak) power transmitter is used. Together with the assumed length and type of cable feeding the antenna (which is omnidirectional) and the type and gain of the antenna used, this leads to an effective isotropically radiated power (EIRP) of 200 watts (average) and 900 watts (peak). This calculation is summarized in Table 1. The transmitter operates at 2.32625 GHz which is the carrier frequency allocated to the Sirius repeater network. At this frequency the FCC has established a limit of 1 mW/square centimeter for general population exposure (OET 65).
2. Using the calculation methods described in OET 65 and the EIRP's derived as described in "1" a calculation is made of the power density at various distances from the antenna for both the average and peak powers involved. The distance of 21 feet was chosen as the minimum distance criteria for exposure by taking the height of the antenna (28 feet) and subtracting a 7 foot allowance for the height of any individuals who may be present on the show floor. This distance represents the closest point that a member of the general population could approach this repeater antenna. Table 2 summarizes the results of the normal calculation (using

the formula $\text{Power Density} = \text{EIRP} / (4 * \pi * R^2)$ from OET 65) and also a more conservative formula which takes into account reflection (the formula $\text{PD} = 2.56 * \text{EIRP} / (4 * \pi * R^2)$) also from OET 65. In order to provide a comprehensive view, values are included separately for the regular case (average and peak power based) and for the reflective case (peak power based).

Summary

Using a very conservative approach the calculated RF exposure levels from the proposed installation are well within the stated limits defined in OET 65. Several worst case assumptions were made as follows:

1. No allowance was made for the significant reduction in power density that will occur due to the attenuation of the antenna pattern at the location immediately under the antenna, the location to which the minimum distance of 21 feet applies.
2. No allowance was made in the case of peak level calculations for the fact that these levels occur a very small fraction of the overall time of transmission.
3. The maximum transmitter power of 20 watts was used although in practice Sirius has determined that the transmitter will be operated at a level at or below 10 watts which will provide adequate margin for the demonstrations involved.
4. There is no access to the ceiling area where the antenna is mounted except with a construction lift.
5. The highest level of exposure, involving the potential for additive reflection and peak level EIRP was used as the exposure criteria.

Table 1. Transmit chain loss budget

	Average (watts)	Average (dBW)	Peak (watts)	Peak (dBW)
Transmitter output power	20	13.0	90	19.5
Cable Loss (db)		2		2
Antenna gain dBi (max)		12		12
EIRP (max)	200.0	23.0	900.0	29.5

The effective isotropic radiated power (EIRP) is calculated by taking the transmitter output power, subtracting the cable loss and adding the antenna gain.

The peak power is determined by applying the peak to average factor of the OFDM waveform to the average power of the transmitter. This peak level occurs less than 1/1000th of the time for the Sirius waveform for this transmitter type.

Table 2. Calculations for power density

- Power Density = $\text{EIRP} / (4\pi R^2)$ (Equation 4 page 19 of OET 65)

- Power Density adjusted for reflection = 2.56*Power Density (Equation 7, page 21 of OET 65)

As can be seen from this table, even under very conservative transmission assumptions, the general population exposure limits are not exceeded at the worst case location.

Radial Distance from Antenna (Feet)	Power Density (Average) mW/square cm	Power density (Peak) mW/square cm	Peak power density with 2.56 multiplier (Max reflection)	Worst Case Safety Margin over exposure standard (times)
21	0.04010	0.18045	0.46195	2.16475
26	0.02616	0.11772	0.30136	3.31831
31	0.01840	0.08281	0.21199	4.71730
36	0.01364	0.06140	0.15719	6.36173
41	0.01052	0.04734	0.12119	8.25159
46	0.00836	0.03761	0.09628	10.38689
51	0.00680	0.03059	0.07832	12.76763
56	0.00564	0.02538	0.06496	15.39380
61	0.00475	0.02139	0.05475	18.26542
66	0.00406	0.01827	0.04677	21.38246
71	0.00351	0.01579	0.04041	24.74495
76	0.00306	0.01378	0.03527	28.35287
81	0.00270	0.01213	0.03105	32.20623
86	0.00239	0.01076	0.02754	36.30503
91	0.00214	0.00961	0.02460	40.64926
96	0.00192	0.00863	0.02210	45.23893
101	0.00173	0.00780	0.01997	50.07404
106	0.00157	0.00708	0.01813	55.15459
111	0.00144	0.00646	0.01653	60.48057
116	0.00131	0.00591	0.01514	66.05199
121	0.00121	0.00544	0.01391	71.86884
126	0.00111	0.00501	0.01283	77.93113
131	0.00103	0.00464	0.01187	84.23886
136	0.00096	0.00430	0.01101	90.79203
141	0.00089	0.00400	0.01025	97.59063
146	0.00083	0.00373	0.00956	104.63467
151	0.00078	0.00349	0.00893	111.92415

2. RF Exposure Analysis for Signal Booster

The set up of the signal booster in the meeting room is illustrated in the figures below:

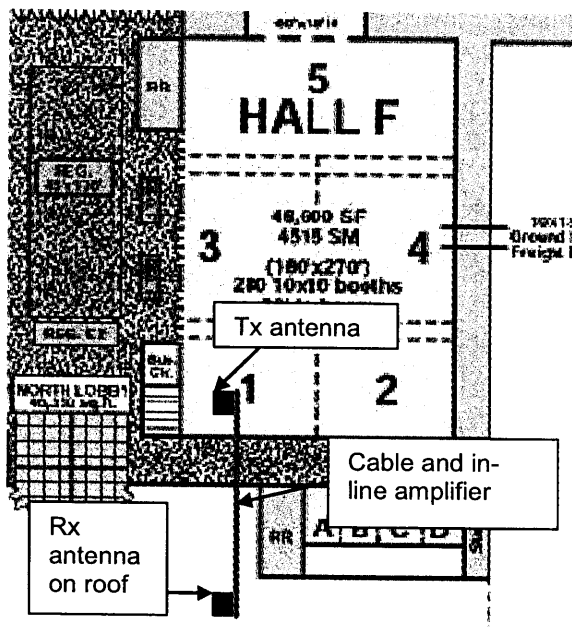


Figure 3. Diagram of meeting rooms

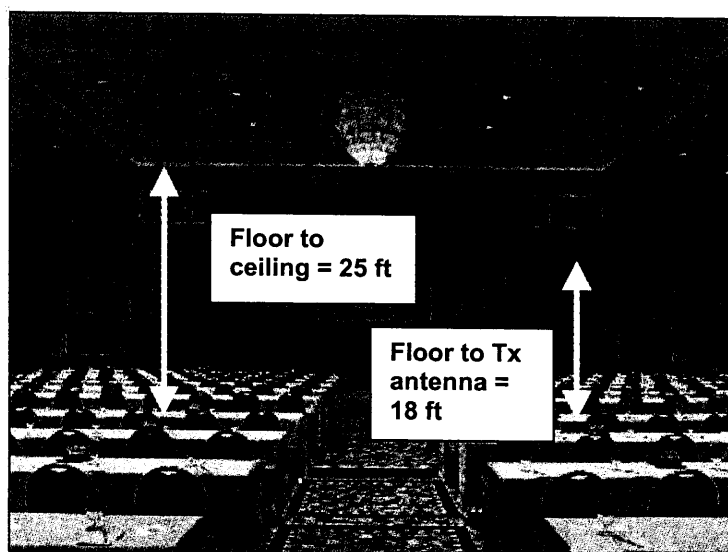


Figure 4. Generic Meeting room

To establish the RF exposure environment for the signal boosters the following process has been used to confirm that there is no general population exposure over the allowed limit:

1. The transmit antenna is placed 18 feet above the meeting floor as seen in Figure 4. A 0.0001 Watt EIRP signal booster identical to boosters that have previously been approved for retail stores is used. The booster operates at 2320-2332.5MHz which is the carrier frequency allocated to the Sirius repeater network. At this frequency the FCC has established a limit of 1 mW/square centimeter for general population exposure (OET 65).
2. Using the calculation methods described in OET 65 and the EIRP's described in "1" a calculation is made of the power density at various distances from the transmit antenna. The distance of 11 feet was chosen as the minimum distance criteria for exposure by taking the height of the antenna (18 feet) and subtracting a 7 foot allowance for the height of any individuals who may be present on the show floor. This distance represents the closest point that a member of the general population could approach this transmit antenna. Table 4 summarizes the results of the normal calculation (using the formula Power Density= $EIRP/(4*\Pi*R^2)$ from OET 65) and also a more conservative formula which takes into account reflection (the formula $PD=2.56*EIRP/(4*\Pi*R^2)$) also from OET 65. In order to provide a comprehensive view, values are included separately for the regular case and for the reflective case.

Summary

Using a very conservative approach the calculated RF exposure levels from the proposed installation are well within the stated limits defined in OET 65. Several worst case assumptions were made as follows:

1. No allowance was made for the significant reduction in power density that will occur due to the attenuation beyond the 3 dB antenna beamwidth.
2. The highest level of exposure, involving the potential for additive reflection was used as the exposure criteria.

Table 3. Signal Booster specifications

Antenna Type	Antenna Beamwidth	Total EIRP in Watts
Antenna Specialists XMSSR923WR	75 degrees	0.0001

Table 4. Calculations for power density

- Power Density = $EIRP/(4\pi R^2)$ (Equation 4 page 19 of OET 65)

- Power Density adjusted for reflection = 2.56*Power Density (Equation 7, page 21 of OET 65)

As can be seen from this table, even under very conservative transmission assumptions, the general population exposure limits are not exceeded at the worst case location.

Radial Distance from Antenna (Feet)	Power Density mW/square cm	Power Density with 2.56 multiplier (Max reflection)	Worst Case Safety Margin over exposure standard (times)
11	0.000000073	0.00000019	5345616
12	0.000000061	0.00000016	6361725
13	0.000000052	0.00000013	7466191
14	0.000000045	0.00000012	8659015
15	0.000000039	0.00000010	9940196
16	0.000000035	0.00000009	11309734
17	0.000000031	0.00000008	12767629
18	0.000000027	0.00000007	14313882
19	0.000000024	0.00000006	15948491
20	0.000000022	0.00000006	17671459
21	0.000000020	0.00000005	19482783
22	0.000000018	0.00000005	21382465
23	0.000000017	0.00000004	23370504
24	0.000000015	0.00000004	25446900
25	0.000000014	0.00000004	27611654
26	0.000000013	0.00000003	29864765
27	0.000000012	0.00000003	32206233
28	0.000000011	0.00000003	34636059
29	0.000000011	0.00000003	37154242
30	0.000000010	0.00000003	39760782
31	0.000000009	0.00000002	42455679
32	0.000000009	0.00000002	45238934
33	0.000000008	0.00000002	48110546
34	0.000000008	0.00000002	51070516
35	0.000000007	0.00000002	54118842