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Policy Branch  
International Bureau

March 24, 2003

**DELIVER VIA COURIER TO MELLON BANK**

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



File # SAT-STA-20030325-00056

Can Sign: MAR 24 2003 Grant Date 09/15/10  
(or other identifier)

From 09/15/10 Term Dates see conditions To: conditions

Approved: Stephen J. Duall  
Chief, Satellite Policy Branch

**Re: XM Radio Inc.  
File No. SAT-STA-20020815-00153  
Request for Extension of Special Temporary Authority to  
Operate Satellite Digital Audio Radio Service Terrestrial Repeaters  
in Little Rock, Arkansas and Tulsa, Oklahoma**

Dear Ms. Dortch:

XM Radio Inc. ("XM Radio"), one of the two Satellite Digital Audio Radio Service ("SDARS") licensees in the United States, hereby requests an extension of the above-captioned Special Temporary Authority ("STA") authorizing XM Radio to operate two SDARS terrestrial repeaters in its licensed band (one in Little Rock, Arkansas and one in Tulsa, Oklahoma). XM Radio requests that it be allowed to continue to operate these repeaters pursuant to the same technical parameters and conditions of the original STA<sup>1</sup> until the date on which permanent rules for the operation of SDARS terrestrial repeaters become effective.

On July 12, 2001, XM Radio filed a request for an STA to operate SDARS terrestrial repeaters for commercial service.<sup>2</sup> Included in this STA request were a list of the markets in which XM Radio sought to operate terrestrial repeaters pursuant to the STA. On September 17, 2001, the International Bureau granted this STA request pursuant to certain conditions.<sup>3</sup>

<sup>1</sup>See File No. SAT-STA-20020815-00153 (authorizing XM Radio to operate two additional SDARS terrestrial repeaters (one in Little Rock, Arkansas and one in Tulsa, Oklahoma) pursuant to the same terms and conditions as XM Radio's original SDARS terrestrial repeater STA granted in September 2001 (File No. SAT-STA-20010712-00063; DA 01-2172)).

<sup>2</sup>XM Radio Inc. Request for Special Temporary Authority, File No. SAT-STA-20010712-00063 (July 12, 2001).

<sup>3</sup>See XM Radio Inc., *Order and Authorization*, File No. SAT-STA-20010712-00063, DA 01-2172 (Sept. 17, 2001).

Attachment to Grant

Application of XM Radio Inc. for Special Temporary Authority

IBFS File Nos. SAT-STA-20020311-00049, SAT-STA-20030325-00056, SAT-STA-20031219-00373, SAT-STA-20050307-00056, SAT-STA-20070706-00095, SAT-STA-20070706-00096, SAT-STA-20080303-00056, SAT-STA-20080701-00139, SAT-STA-20081002-00196, SAT-STA-20081218-00234

Special temporary authority (STA) is granted to XM Radio Inc. (XM), for a period of 180 days, to continue to operate previously authorized terrestrial repeaters for use in the 2320-2345 MHz frequency band, as set forth in the above-referenced applications. This authorization is granted according to the technical parameters specified in these applications and is subject to the conditions below.

1. Any actions taken as a result of these STAs are solely at the applicant's own risk. These STAs shall not prejudice the outcome of the final rules adopted by the Commission in IB Docket No. 95-91.

2. SDARS terrestrial repeaters are restricted to the simultaneous retransmission of the complete programming, and only that programming, transmitted by the SDARS licensee's satellite(s) directly to the SDARS licensee's subscribers' receivers, and may not be used to distribute any information not also transmitted to all subscribers' receivers.

3. Coordination of the operations of the terrestrial repeaters shall be completed with all affected Administrations prior to operation, in accordance with all applicable international agreements including those with Canada and Mexico.

4. The terrestrial repeaters shall comply with Part 17 of the Commission's rules – Construction, Marking, and Lighting of Antenna Structures.

5. The terrestrial repeaters shall comply with Part 1 of the Commission's rules, Subpart I – Procedures Implementing the National Environmental Policy Act of 1969, including the guidelines for human exposure to radio frequency electromagnetic fields as defined in Sections 1.1307(b) and 1.1310 of the Commission's rules.

6. Any SDARS terrestrial repeater operating at a power level greater than 2-watt average EIRP is required to attenuate its out-of-band emissions below the transmitter power P by a factor of not less than  $90 + 10 \log (P)$  dB in a 1-megahertz bandwidth outside the 2320-2345 MHz band, where P is average transmitter output power in watts. Any SDARS terrestrial repeater operating at a power level equal to or less than 2-watt average EIRP is required to attenuate its out-of-band emissions below the transmitter power P by a factor of not less than  $75 + 10 \log (P)$  dB in a 1-megahertz bandwidth outside the 2320-2345 MHz band, where P is average transmitter output power in watts.

7. These STAs expire after 180 days, or on the date that permanent authority to operate the covered repeater operations becomes effective, whichever occurs first.

8. XM is granted 30 days from the date of the release of this authorization to decline the authorization as conditioned. Failure to respond within that period will constitute formal acceptance of the authorization as conditioned.


9. This action is taken on delegated authority pursuant to 47 C.F.R. § 0.261 and is effective upon release. Petitions for reconsideration under 47 C.F.R. § 1.106 or applications for review under 47 C.F.R. § 1.115 may be filed within 30 days of the date of the Public Notice announcing this action.

File # see above

Call Sign \_\_\_\_\_ Grant Date 09/15/10  
(or other identifier)

From 09/15/10 Term Dates see conditions  
To: \_\_\_\_\_

Approved: Stephen J. Duall  
Stephen J. Duall  
Chief, Satellite Policy Branch



**GRANTED\***  
International Bureau  
\*with conditions

Ms. Marlene H. Dortch  
March 24, 2003  
Page 2

Subsequent to the grant of this STA, XM Radio identified areas in Little Rock and Tulsa where it needed to supplement its satellite service with terrestrial repeaters in order to provide adequate service. Little Rock and Tulsa, however, were not among the markets for which XM Radio sought authority to operate repeaters in its July 2001 STA request. Thus, on August 13, 2002, XM Radio filed an application for STA to operate two additional SDARS terrestrial repeaters in its licensed band (one in Little Rock, Arkansas and one in Tulsa, Oklahoma) pursuant to the technical parameters listed in Exhibit A.<sup>4</sup> The International Bureau granted this STA request on September 30, 2002.<sup>5</sup>

This STA expires on the earlier of March 30, 2003 or the date on which permanent rules governing SDARS terrestrial repeater operations become effective. Because it is unlikely that permanent rules governing repeater operations will become effective prior to March 30, 2003, XM Radio hereby requests an extension of this STA pursuant to the same technical parameters and conditions as the original STA. XM Radio requests that it be allowed to operate pursuant to this STA until the date on which permanent rules for the operation of terrestrial repeaters become effective.

XM Radio 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). Attached hereto is a check made payable to the Federal Communications Commission for the sum of Seven Hundred Five Dollars (\$705.00) to cover the requisite filing fee.

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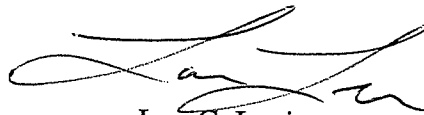
<sup>4</sup>XM Radio Inc. Request for Special Temporary Authority, File No. SAT-STA-20020815-00153 (August 13, 2002) (attached as Exhibit A).

<sup>5</sup>See Exhibit A.

Ms. Marlene H. Dortch  
March 24, 2003  
Page 3

Please direct any questions regarding this matter to the undersigned.

Very truly yours,

A handwritten signature in black ink, appearing to read "Lon C. Levin", written in a cursive style.

Lon C. Levin  
Senior Vice President

**Exhibit A**

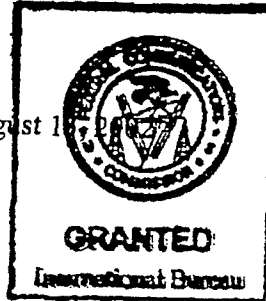


SATELLITE RADIO

ORIGINAL

FBI SAT-STA-20020815-0015

August 1



Call Sign \_\_\_\_\_ Grant Date 9/30/00  
(or other identifier) 3/30/03 cc unt  
From 9/30/00 Terms Date Final rules  
Approved [Signature] File accepted in  
16781 (Int. Bur. 2001)

Deliver Via Courier to Mellon Bank  
Ms. Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12th Street, S.W.  
Washington, D.C. 20554

Re: XM Radio Inc.  
Request for Special Temporary Authority to  
Operate Digital Audio Radio Service Terrestrial Repeaters in  
Little Rock, Arkansas and Tulsa, Oklahoma  
File Nos. SAT-STA-20010712-00063; SAT-STA-20020311-00049

Dear Ms. Dortch:

XM Radio Inc. ("XM Radio"), one of the two Satellite Digital Audio Radio Service ("SDARS") licensees in the United States, pursuant to Section 25.120 of the Commission's rules,<sup>1</sup> hereby requests a 180-day Special Temporary Authority ("STA") to operate two additional SDARS terrestrial repeaters in its licensed band (one in Little Rock, Arkansas and one in Tulsa, Oklahoma) pursuant to the technical parameters listed in Exhibit A.<sup>2</sup>

On July 12, 2001, XM Radio filed a request for an STA to operate SDARS terrestrial repeaters for commercial service in fifty-nine separate markets.<sup>3</sup> On September 17, 2001, the International Bureau ("IB") granted this STA request pursuant to certain conditions.<sup>4</sup> XM Radio has been providing commercial service pursuant to its STA.

<sup>1</sup>47 C.F.R. § 25.120.

<sup>2</sup>XM Radio has included the following technical information for each of the repeaters it seeks to operate pursuant to this STA: (1) geographic coordinates; (2) antenna type; (3) orientation; (4) downtilt; (5) total EIRP; and (6) Height Above Ground Level (AGL). XM Radio has also included antenna specification sheets for each of the antenna types listed.

<sup>3</sup>XM Radio Inc. Request for Special Temporary Authority, File No. SAT-STA-20010712-00063 (July 12, 2001).

<sup>4</sup>XM Radio, Inc., Application for Special Temporary Authority to Operate Satellite Digital Audio Radio Service Complimentary Terrestrial Repeaters, Order and Authorization, DA 01-2172, at ¶ 18 (rel. September 17, 2001) ("XM Radio STA Order").

Ms. Marlene H. Dortch  
August 13, 2002  
Page 2

Terrestrial repeaters are critical to an SDARS network to overcome the effects of signal blockage and multipath interference.<sup>5</sup> In granting XM Radio its original STA to operate repeaters, the IB noted that XM Radio "needs to employ terrestrial repeaters to provide adequate service." See *XM Radio STA Order* at ¶ 7.

Little Rock and Tulsa were not among the markets for which XM Radio sought authority to operate repeaters in its original STA request. XM Radio has identified areas in Little Rock and Tulsa where it needs to supplement its satellite service with terrestrial repeaters in order to provide adequate service. Grant of this STA will serve the public interest by ensuring that these areas receive adequate satellite radio service. XM Radio's competitor, Sirius, is operating repeaters in Little Rock and Tulsa.

XM Radio certifies that its operation of repeaters in Little Rock and Tulsa will comply with the same conditions the Commission imposed on XM Radio in granting its original STA. See *XM Radio STA Order* ¶ 18. One of the conditions imposed in the original STA grant was the requirement that XM Radio pre-coordinate with Wireless Communications Service ("WCS") licensees the operation of any repeater affecting an operational WCS base station. *Id.* at ¶ 14. XM Radio is not aware of any operational WCS base stations in Little Rock or Tulsa. In addition, on July 9, 2002, Phillip Barsky, System Engineering Consultant for XM Radio, contacted representatives of the WCS licensees in Little Rock<sup>6</sup> and Tulsa<sup>7</sup> via telephone as well as via electronic mail regarding this STA request. AT&T Wireless has informed XM Radio that it does not object to grant of this STA. XM Radio has not yet received a response from the other WCS licensees.

XM Radio 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).

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<sup>5</sup>See Report and Order, Memorandum Opinion and Order, and Further Notice of Proposed Rulemaking, Establishment of Rules and Policies for the Digital Audio Radio Satellite Service in the 2310-2360 MHz Frequency Band, 12 FCC Rcd 5754 (1997).

<sup>6</sup>The WCS licensees in Little Rock are BellSouth (C and D blocks), AT&T Wireless (A block), and Comcast (B block). XM Radio contacted Neale Hightower of BellSouth; William Wiltshire of Harris, Wiltshire, and Grannis, LLP, counsel for AT&T Wireless; and Christina Burrow of Dow Lohnes and Alberston, PLLC, counsel for Comcast.

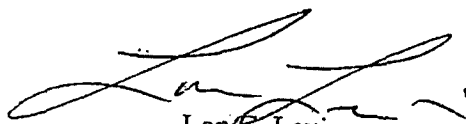
<sup>7</sup>The WCS licensees in Tulsa are AT&T Wireless (A and B block) and Metricom (C and D block). XM Radio contacted William Wiltshire of Harris, Wiltshire, and Grannis, LLP, counsel for AT&T Wireless, and Heidi Anderson of Akin, Gump, Strauss, Hauer, and Feld, LLP counsel for Metricom.

Ms. Marlene H. Dortch  
August 13, 2002  
Page 3

XM Radio has attached hereto a check made payable to the Federal Communications Commission for the sum of Six Hundred Seventy Dollars (\$670.00).<sup>8</sup> This filing fee amount is applicable to requests for STAs for geostationary satellites. See International and Satellite Services Fee Filing Guide (September 2000).

Please direct any questions regarding this matter to the undersigned.

Very truly yours,



Lon C. Levin  
Senior Vice President, Regulatory

cc: William Wiltshire, Counsel for AT&T Wireless  
Christina H. Burrow, Counsel for Comcast  
Charles Featherstun, BellSouth  
Heidi Anderson, Counsel for Metricom

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<sup>8</sup>XM Radio originally filed this STA request on July 23, 2002 with a filing fee of \$145. XM Radio is refiling this request with a fee of \$670.



**Exhibit A**

Attached is the following information for each of the repeaters XM Radio seeks to operate in Little Rock, Arkansas and Tulsa, Oklahoma pursuant to this STA.

- (1) geographic coordinates;
- (2) antenna type;
- (3) orientation;
- (4) downtilt;
- (5) total EIRP; and
- (6) Height Above Ground Level (AGL)

City	Site Number	Site Latitude	Site Longitude	Antenna Number	Antenna Type	Antenna Orientation (degrees)	Antenna Downtilt (degrees)	EIRP Total in Watts	Height AGL in Feet
Little Rock	001A	34.74444	-92.275000	Tx1	TA-2350-DAB	0	0	1285	484
Tulsa	001A	36.16222	-95.077780	Tx1	TA-2304-2-DAB-H (120)	150	5	29540	450

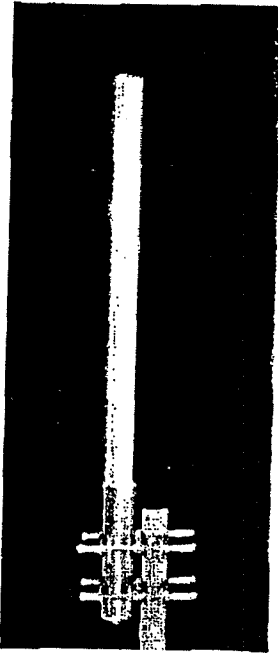
**Exhibit B**

**Antenna Specification Sheets**



TIL-TEK

# TA-2350-DAB Omnidirectional 2330 - 2345 MHz



The TA-2350-DAB is a medium power vertically polarized omnidirectional antenna specifically designed for Digital Audio Broadcast transmission. The antenna consists of a phased corporately fed broadband dipole array which is configured to provide electrical beam downtilt and null fill. The antenna elements are at DC ground to aid in lightning protection.

### Electrical Specifications

Frequency Range: 2330-2345 MHz  
Gain: (dBi) 10  
VSWR: 1.4:1 max.  
Polarization: Linear Vertical  
Power Rating: 200 Watts average, 800 Watts peak  
H-Plane Beamwidth: 360 degrees  
E-Plane Beamwidth: 8 degrees  
Electrical Downtilt: 2 degrees  
Cross Pol. Discrimination: 20 dB min.  
Null Fill: -20 dB (1° Null)  
Impedance: 50 ohms nominal  
Termination: 7/16 DIN female

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

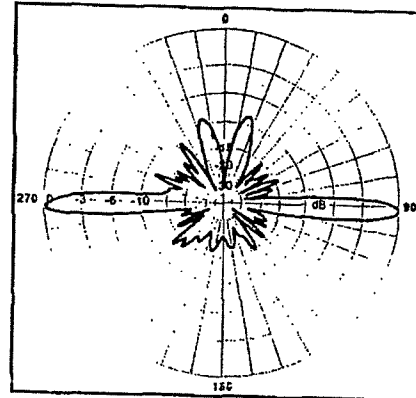
### Mechanical Specifications

Length: 70 in. (1778 mm)  
Diameter: 2.25 in. (57 mm)  
Weight (Incl. Clamps): 15 lb. (6.8 kg)  
Rated Wind Velocity: 125 mph (200 km/h)  
Hor. Thrust at rated wind: 31 lb. (14 kg)  
Mounting Pipe: 1.75 - 4.0 in. (44.5 - 102 mm)

### Materials

Radiating Elements: Nickel plated copper array  
Radome: Gray UV stabilized fiberglass  
Base: Irridited Aluminum  
Clamps: HDG steel

E-Plane

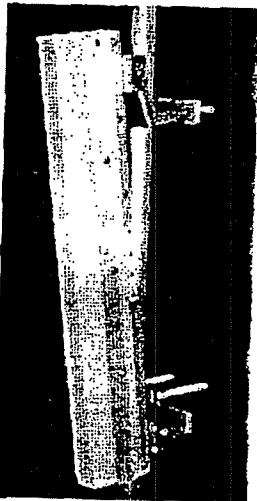




# TA-2304-2-DAB-H

## High Power Adjustable Sector

2330 - 2345 MHz



The TA-2304-2-DAB-H is a high power vertically polarized Sectoral antenna specifically designed for Digital Audio Broadcast transmission. The antenna is designed to provide field adjustable azimuth beamwidths of 45, 60, 90, 120 or 160 degrees by use of side panels. The antenna elements are at DC ground to aid in lightning protection.

### Electrical Specifications

Frequency Range: 2330-2345 MHz  
Gain: (dBi) 18 @ 45° 17 @ 60° 15 @ 90°  
14 @ 120° 13 @ 160°  
VSWR: 1.3:1 max.  
Front/Back Ratio: 15 dB min.  
Polarization: Linear Vertical  
Power Rating: 2000 Watts avg., 8000 Watts peak  
H-Plane Beamwidth (-3 dBd):  
Field Adjustable 45, 60, 90, 120, 160 degrees  
E-Plane Beamwidth (-3 dBd): 7 degrees  
Cross Pol. Discrimination: 20 dB  
Impedance: 50 ohms nominal  
Termination: 7/8" EIA

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

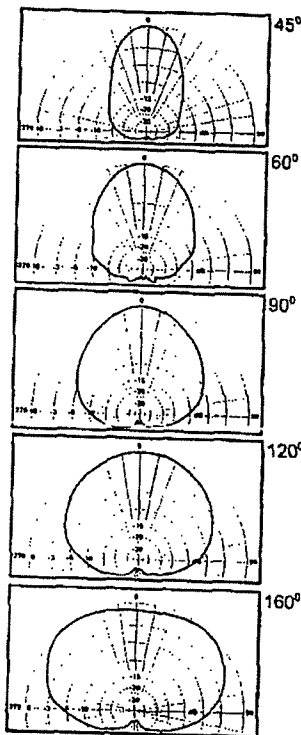
### Mechanical Specifications

Length: 40 in. (1016 mm)  
Width: 5 in. (127 mm)  
Depth: 8.1 in. (206 mm)  
Weight (Incl. Clamps): 15 lb. (6.8 kg)  
Rated Wind Velocity: 125 mph (200 km/h)  
Hor. Thrust at rated wind: 86 lb. (39 kg)  
Mechanical Tilt: 5° up, 15° down  
Mounting Pipe: 0.75 - 3.0 in. (19 - 76 mm)

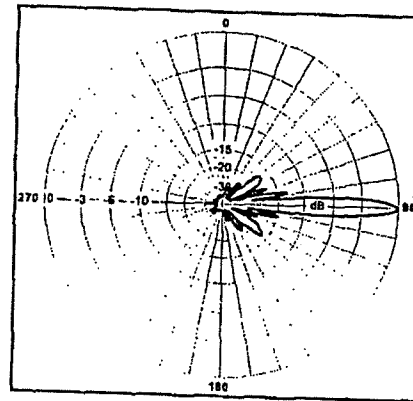
### Materials

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

H-Plane



E-Plane



READ INSTRUCTIONS CAREFULLY BEFORE PROCEEDING

FEDERAL COMMUNICATIONS COMMISSION REMITTANCE ADVICE

Approved by OMB 3060-0589

Page No 1 of 1

(1) LOCKBOX #

358210

SPECIAL USE

FCC USE ONLY

SECTION A - PAYER INFORMATION

(2) PAYER NAME (if paying by credit card, enter name exactly as it appears on your card) Shaw Pittman LLP

(3) TOTAL AMOUNT PAID (U.S. Dollars and cents) 705.00

(4) STREET ADDRESS LINE NO. 1 2300 N Street, NW

(5) STREET ADDRESS LINE NO. 2

(6) CITY Washington

(7) STATE DC (8) ZIP CODE 20037

(9) DAYTIME TELEPHONE NUMBER (include area code) (202) 663-8000

(10) COUNTRY CODE (if not in U.S.A.)

FCC REGISTRATION NUMBER (FRN) AND TAX IDENTIFICATION NUMBER (TIN) REQUIRED

(11) PAYER (FRN) 0004-9727-82

(12) PAYER (TIN) 53-0233137

IF PAYER NAME AND THE APPLICANT NAME ARE DIFFERENT, COMPLETE SECTION B IF MORE THAN ONE APPLICANT, USE CONTINUATION SHEETS (FORM 159-C)

(13) APPLICANT NAME AM Radio Inc.

(14) STREET ADDRESS LINE NO. 1 1500 Eckington Place, NE

(15) STREET ADDRESS LINE NO. 2

(16) CITY Washington

(17) STATE DC (18) ZIP CODE 20002

(19) DAYTIME TELEPHONE NUMBER (include area code) (202) 380-4000

(20) COUNTRY CODE (if not in U.S.A.)

FCC REGISTRATION NUMBER (FRN) AND TAX IDENTIFICATION NUMBER (TIN) REQUIRED

(21) APPLICANT (FRN) 0007-7145-79

(22) APPLICANT (TIN) 52-2259588

COMPLETE SECTION C FOR EACH SERVICE, IF MORE BOXES ARE NEEDED, USE CONTINUATION SHEET

(23A) CALL SIGN/OTHER ID

(24A) PAYMENT TYPE CODE CRY (25A) QUANTITY 1

(26A) FEE DUE FOR (PTC) 705.00

(27A) TOTAL FEE 705.00 FCC USE ONLY

A) FCC CODE 1

(29A) FCC CODE 2

(23B) CALL SIGN/OTHER ID

(24B) PAYMENT TYPE CODE (25B) QUANTITY

(26B) FEE DUE FOR (PTC)

(27B) TOTAL FEE FCC USE ONLY

(28B) FCC CODE 1

(29B) FCC CODE 2

SECTION D - CERTIFICATION

(30) CERTIFICATION STATEMENT

I, \_\_\_\_\_, certify under penalty of perjury that the foregoing and supporting information is true and correct to the best of my knowledge, information and belief.

SIGNATURE \_\_\_\_\_

DATE \_\_\_\_\_

SECTION E - CREDIT CARD PAYMENT INFORMATION

MASTERCARD/VISA ACCOUNT NUMBER:

Account number grid

EXPIRATION

Expiration date grid

(31)  MASTERCARD

VISA I hereby authorize the FCC to charge my VISA or MASTERCARD for the service(s)/authorization herein described.

SIGNATURE \_\_\_\_\_

DATE \_\_\_\_\_

Shaw Pittman, LLP

Vendor ID  
Check No.:

FED002  
180876

Voucher ID	Date	Invoice	GL Account	Description	Amount
1037679	03-10-03	031003FED002	0023012000000000000	Filing Fee	705.00

# ShawPittman LLP

2300 N Street, NW  
Washington, DC 20037  
Phone 202-663-8000

First Union  
of Washington, D.C. 20015  
15-122/540

Check Date 03/11/03  
Check No.: 180876

SEVEN HUNDRED FIVE AND 00/100 Dollar(s)

\$ 705.00

PAY  
TO THE  
ORDER OF

Federal Communications Commission

VOID AFTER 180 DAYS

⑈ 180876 ⑈

⑆054001220⑆ 2030000034277⑈

