



NATIONAL RADIO ASTRONOMY OBSERVATORY

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Comments from the National Radio Astronomy Observatory to the FCC

on

Iridium Constellation LLC & Iridium US LP

File Nos.:

SAT-MSC-20030515-00089
SES-MSC-20030515-00666

Received

JUN 03 2003

Policy Branch
International Bureau

Deputy Chief, Satellite Division
International Bureau
Federal Communications Commission
Washington, DC 20554

The National Radio Astronomy Observatory (NRAO) will comment briefly on the matter of the modification of licenses held by Iridium Constellation, LLC and Iridium, US LP, in which the spectrum within which Iridium is licensed to operate would be extended to include the band 1618.85-1621.35 MHz, for a period extending until June 12, 2003. The principal concern of the NRAO is to ensure that the conditions agreed to in the Memorandum of Understanding between the NRAO and Iridium dated January 2002 are maintained. The agreement within this MOU was a condition required in the issuance of the original license to Iridium, and the MOU has subsequently been confirmed by New Iridium. A copy of the MOU is included below.

In particular, please note Section 4 of the MOU, which specifies the protection that is to be afforded to NRAO sites in terms of maximum spectral power flux density and times of day. The continuing compliance of New Iridium with these specifications is prime concern of the NRAO. If, however, further extension of the period of use of the additional spectrum were to be considered, or if any extension were to be made permanent, NRAO would intend to make additional comments on the matter.

Respectfully submitted,

Fred K. Y. Lo
Director and Senior Scientist
National Radio Astronomy Observatory

/bmr

MEMORANDUM OF UNDERSTANDING

Iridium Constellation LLC ("ICLLC") and Iridium Satellite LLC ("ISLLC") (collectively "Iridium"), and the National Radio Astronomy Observatory ("NRAO"), operated by Associated Universities, Inc. under a cooperative agreement with the National Science Foundation and operator of the Green Bank, West Virginia Observatory and the VLA near Socorro, New Mexico, hereby enter into this Memorandum of Understanding (MOU) in order to establish principles for coordinating operations of the IRIDIUM[®] global low- Earth Orbit ("LEO") satellite system with radio astronomy observations at the above-referenced observatories in the 1610.6-1613.8 MHz frequency bands.

WHEREAS, applications for consent to the assignment of authorizations pertaining to the operation of the IRIDIUM[®] system from affiliates or wholly-owned subsidiaries of Motorola, Inc. to Iridium are currently pending before the United States Federal Communications Commission ("FCC"). The IRIDIUM[®] system currently provides wireless voice and data services, and may provide aeronautical mobile satellite (R) services in the future. The IRIDIUM[®] system currently is authorized to operate both uplink and downlink subscriber link channels in the 1621.35-1626.5 MHz band to and from mobile terminals roaming throughout the United States, and is capable of operating such channels in the 1616-1626.5 MHz band.

WHEREAS, the NRAO operates a collection of single aperture radio astronomy sites near Green Bank, West Virginia and multi-aperture instruments with collection sites scattered over the United States and its possessions. Among other observations these sites measure RF signals produced by interstellar clouds of the Hydroxyl ions within the frequency range 1610.6-1613.8 MHz. Within this band, the Radio Astronomy Service (RAS) has a primary domestic and international allocation, and is entitled to protection from harmful interference from other communications services.

WHEREAS, Iridium desires to operate the IRIDIUM[®] system in a spectrum efficient and economic manner without causing any harmful interference to the RAS at the above-referenced observation sites.

WHEREAS, the NRAO desires for its observatories to be protected from harmful interference during those periods that they are conducting radio astronomy observations in the 1610.6-1613.8 MHz band without unnecessarily inhibiting the ability of Iridium to operate the IRIDIUM[®] system in a spectrum efficient and economic manner.

NOW THEREFORE, in order to further the interests of Iridium and the NRAO, the parties hereto agree as follows:

1. To work cooperatively toward the establishment of detailed procedures for coordinating the operations of the IRIDIUM[®] system, including both uplink and downlink signals, with RAS observations in the 1610.6-1613.8 MHz band.
2. To recognize that the NRAO desires to conduct radio astronomy observations in accordance with the protection criteria recommended in Recommendation 769 of the ITU Radiocommunication Sector ("Recommendation 769").
3. To further recognize that during certain times of each day, the IRIDIUM[®] system will most likely exceed the protection levels set forth in Recommendation 769 at the aforementioned observatories. The interference power should be calculated by time averaging IRIDIUM[®] system radio frequency emissions in accordance with Recommendation 769 and assuming zero dBi as representative of RAS antenna sidelobes.
4. Iridium agrees not to exceed the following spectral power flux density ("SPFD") levels for the IRIDIUM[®] system downlink signals within the 1610.6-1613.8 MHz band at the indicated observatory sites during the stated times:
 - a) A level of -238 dB(W/m²/Hz) for at least a continuous four hour period between the late night and early morning hours (local time) for the Green Bank observatory site;
 - b.) A level of -223 dB(W/m²/Hz) at all times for the VLA site near Socorro, NM;
 - c) A level of -208 dB (W/m²/Hz) at all times for all of the NRAO observatory sites, including the ten VLBA sites.
5. In scheduling of observations in the 1610.6-1613.8 MHz band, the NRAO agrees to avoid, to the greatest extent practicable, the taking of observations during peak traffic periods of the IRIDIUM[®] system.
6. Should the SPFD levels of the IRIDIUM[®] system downlinks

exceed the limits set forth in paragraph 4 above during the time periods set forth in that paragraph, and should the parties be unable to work cooperatively to bring the IRIDIUM[®] system into compliance with such limits, then the parties agree that the matter shall be resolved by the FCC.

7. Any notice or other communication required or permitted under this Agreement shall be in writing and shall be delivered by messenger, overnight delivery service, or facsimile transmission followed by First Class U.S. mail to the following:

if to Iridium:

Eric Rosenberg
Director, Spectrum and Regulatory Affairs
Iridium Satellite LLC
1600 Wilson Boulevard, Suite 1000
Arlington, VA 22209
Tel: 703-465-1000
Fax: 703-465-1038

with a copy to:

Carl R. Frank
Wiley Rein & Fielding LLP
1776 K Street, NW
Washington, DC 20006
Tel: 202-719-7269
Fax: 202-719-7049

if to NRAO

Mark M. McKinnon
Deputy Assistant Director
National Radio Astronomy Observatory
Socorro Operations
P.O. Box O
Socorro, NM 87801
Tel: 505-835-7273
Fax: 505-835-7320

and

Dr. Darrel T. Emerson
National Radio Astronomy Observatory
Campus Building 65
949 North Cherry Avenue
Tucson, AZ 85721-0655
Tel: 520-882-8250 (x 117)
Fax: 520-882-7955

with a copy to:

Christopher J. Reynolds
Reynolds & Manning, P.A.
P.O. Box 2809
Prince Frederick, MD 20678
Tel: 410-535-9220
Fax: 410-535-9171

This Memorandum of Understanding shall be binding on Iridium and NRAO, and all of their respective subsidiaries, affiliates, assigns, and successors in interest.

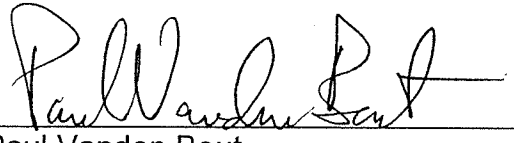
This Memorandum of Understanding may only be changed or modified by a written agreement of the parties; provided however, that either party may request that the other party enter into negotiations to modify any terms and conditions in light of changed circumstances and that both parties agree to negotiate a new agreement in good faith.

The persons executing this Memorandum of Understanding hereby certify that they are authorized to sign this document on behalf of their respective organizations.

ACCEPTED AND AGREED:



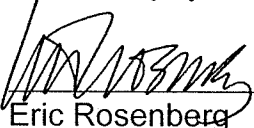
Michael Deutschman
Chief Administrative Officer and
Senior Counsel
Iridium Constellation LLC



Paul Vanden Bout
Director
National Radio Astronomy Observatory

Date: 1/4/02

Date: 1-22-2



Eric Rosenberg
Director, Spectrum and Regulatory Affairs
Iridium Satellite LLC

Date: 1/4/02