FOR AGENDA

ET Docket 98-206

Doc. 31573/1

National Aeronautics and
Space Administration

Headquarters
Washington, DC 20546-0001

Ref. Doc. 31559/1

Reply to Attn of:

August 7, 2000

Mr. Norbert Schroeder
Acting Chairman, IRAC
National Telecommunications and
Information Administration
Department of Commerce
Washington, D.C. 20230

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OFFICE OF THE SECRETARY

Dear Mr. Schroeder:

Please add the following comments and attached mark up of IRAC Doc. 31559 to the August 8, 2000 IRAC agenda.

IRAC Doc. 31559 provides a possible IRAC response in anticipation of a draft FCC Report and Order on the use of the 13.75-14 GHz band for non-geostationary-satellite orbit fixed-satellite service (NGSO FSS) operations. NASA commends NTIA for its initiative in this regard and offers a few edits to the attachment contained in Doc. 31559 to accommodate NASA's future near term requirements. These changes can be found in the attached strikethrough revision of Doc. 31559 and primarily concern changes to the bandwidth identified in condition 3 under "Conditions for NGSO FSS Systems".

The Ku-band forward link for NASA's Tracking and Data Relay Satellite System (TDRSS) operates in the 13.75-13.8 GHz band and can support data rates up to 25 Mbps. Footnote S5.503, originally drafted at WARC-92 and recently revised by WRC-00, identifies an e.i.r.p. density limit across a specific band segment, 13.772-13.778 GHz. This band segment was identified at WARC-92 in order to protect the TDRSS forward link to NASA's Space Shuttle. This same link will be used in the interim communications system on the International Space Station (ISS). A permanent Ku-band transceiver is scheduled for implementation aboard the ISS in September 2003 that will require 10 MHz bandwidth of operation centered at 13.775 GHz. The changes to the attachment in Doc. 31559 therefore reflect the broader bandwidth over which the e.i.r.p. density limit should apply.

Provided the e.i.r.p. density limit of 51 dBW per any 6 MHz is applied over the 13.77-13.78 GHz band needed to support future ISS operations as shown in the attached revisions, NASA could support allowing NGSO FSS use in the 13.75-13.8 GHz band.

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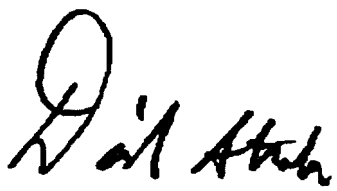
List A B C D E

One further revision to the attachment in Doc. 31559 is the deletion of the entire section dealing with "Conditions for GSO FSS Systems". NASA believes that this could cause confusion as the FCC Report and Order will be addressing NGSO FSS only and not GSO FSS. We note that JTG 4-7-8 has been formed to examine sharing conditions between the systems operating in the services allocated to the frequency band 13.75-14.00 GHz. Issues concerning GSO FSS will be taken up by the JTG and would possibly result in a future FCC Report and Order.

Sincerely,



David P. Struba
NASA IRAC Representative
Office of Space Flight

cc:
NASA HQ/M/W. Readdy
/M/J. Rush
/M/R. Spearing
NASA Glenn/M/W. Whyte, MS 54-2
/M/J. Hollansworth, MS 54-2

August 1, 2000

MEMORANDUM TO: Executive Secretary, IRAC

FROM: Edward M. Davison
Program Manager, Space Coordination and Policy

SUBJECT: Non-Geostationary-Satellite Orbit (NGSO) Fixed-Satellite service (FSS) Use of the band 13.75-14.0 GHz

On November 24, 1998, the FCC released a Notice of Proposed Rulemaking ("Notice") titled, Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency GSO and Terrestrial Systems in the Ku-Band Frequency and Amendment of the Commission's Rules to Authorize Subsidiary Terrestrial Use of the 12.2-12.7 GHz Band by Direct Broadcast Satellite Licensees and Their Affiliates (FCC 98-310, ET Docket no. 98-206; IRAC Doc. 30858/2). Based on a letter from NTIA to the FCC (William T. Hatch-to-Richard Smith dated May 21, 1998; IRAC Doc. 30631) concerning interference from NGSO FSS earth stations into TDRS-to-LEO communications, the FCC did not propose to allow NGSO FSS operation in the 13.75-13.8 GHz band in the Notice. As a result of ITU-R Study Group work (e.g., JTG 4-9-11) and the results of WRC-00, it appears that 1) under certain constraints that NGSO FSS operations may be compatible with TDRS and 2) Government radiolocation stations operating on a primary basis in the band 13.75-14.0 GHz have the potential to interfere with receiving NGSO FSS space stations.

It is expected that shortly the FCC will be submitting a draft Report and Order ("R&O) on NGSO FSS to the IRAC. Concerning the band 13.75-14.0 GHz, the attachment to this memorandum contains an outline of how the Government agencies could respond to this draft R&O. Since the draft R&O may have a short turn-around time for IRAC input, I request comments from the agencies by the next IRAC meeting.

Attachment

ATTACHMENT

POSSIBLE OUTLINE FOR RESPONSE ON DRAFT FCC R&O (13.75-14.0 GHZ)

TEXT IN ITEM

1. Should reflect that there were changes at WRC-00
   a. Until national implementation of WRC-00 is completed, it is not ~~known~~ known how WRC-00 will affect the national arena
2. Should reflect that an ITU JTG has been formed to study the sharing issues in this band
3. As a result of WRC-00 and the JTG, there may be future changes nationally

CONDITIONS FOR NGSO FSS SYSTEMS

1. the minimum antenna diameter of all earth stations shall be 4.5 m (**S5.502** (WRC-97)); and
2. the e.i.r.p. of any emission from all earth stations shall be at least 68 dBW (**S5.502** (WRC-97)); and
3. the e.i.r.p. density of emissions from any earth station shall not exceed 51 dBW in ~~the~~ any 6 MHz band from 13.77 to 13.78 GHz. (Automatic power control may be used to increase the e.i.r.p. density in ~~the 6 MHz band in~~ this frequency range to compensate for rain ~~earth station~~ attenuation, to the extent that the power-flux density at the fixed-satellite service space station does not exceed the value resulting from use by an earth station of an e.i.r.p. 51 dBW ~~in the~~ per 6 MHz ~~band~~ in clear-sky conditions.) ~~+ limitation taken from S5.502 (WRC-00)~~; and
4. receiving space stations shall accept interference from all radiolocation stations that are operating in accordance with **S5.502** (WRC-97).

~~CONDITIONS FOR GSO FSS SYSTEMS - NOTE THAT WILL CONCERN NGSO FSS ONLY. THIS IS THE INTERNATIONAL LIMIT~~

~~the minimum antenna diameter of all earth stations shall be 4.5 m (S5.502 (WRC-97)); and~~

~~the e.i.r.p. of any emission from all earth stations shall be at least 68 dBW (S5.502 (WRC-97)); and~~

~~the e.i.r.p. density of emissions from any earth station shall not exceed 51 dBW in the 6 MHz band from 13.77 to 13.78 GHz. (Automatic power control may be used to increase the e.i.r.p. density in the 6 MHz band in this frequency range to compensate for rain earth station attenuation, to the extent that the power-flux density at the fixed-satellite service space station does not exceed the value resulting from use by an earth station of an e.i.r.p. 51 dBW in the 6 MHz band in clear-sky conditions.) (S5.503 (WRC-00)); and~~

~~receiving space stations shall accept interference from all radiolocation stations that are operating in accordance with S5.502 (WRC-97).~~