UNITED STATES DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Washington, D.C. 20230

MAY 13 2009

Mr. Julius Knapp
Chief, Office of Engineering and Technology
Federal Communications Commission
445 12th Street, SW
Washington, D.C. 20554

Dear Mr. Knapp:

The Federal Communications Commission (FCC) in coordination with the National Telecommunications and Information Administration (NTIA) has granted waivers for half-duplex mobile-satellite service (MSS) mobile earth terminals (METs) that could not meet the minimum time to cease transmissions necessary to ensure the priority access with real-time preemptive capabilities for Aeronautical Mobile-Satellite (Route) Service (AMS(R)S) and the Global Maritime Distress Safety System (GMDSS) emergency communications. In granting these waivers the FCC and NTIA have not established a consistent set of conditions, which has caused confusion for MSS providers. In this letter NTIA recommends establishing a new requirement of three seconds for an MET to cease transmissions that will be used to ensure compliance with the real-time preemptive requirements for aeronautical and maritime emergency communications. NTIA also recommends a set of conditions that can be used in granting future wavier requests for METs that cannot comply with the three second minimum time to cease transmissions.

Prior to the 1992 World Administrative Radio Conference (WARC-92), the International Telecommunication Union had subdivided the MSS into three categories - aeronautical, land, and maritime, each with its own allocations in the 1525-1559 MHz and 1626.5-1660.5 MHz bands. At WARC-92, the United States proposed that these separate allocations be merged into a single "generic" allocation. This proposal was based on the belief that the current service specific allocations in these bands were too restrictive to permit flexible usage to adapt to dynamic changes in communication needs. The proposal also recognized that special provisions were necessary to ensure that aeronautical and maritime safety services had priority access over other communications in these bands.

The NTIA and FCC believed that the division of MSS spectrum, i.e., land, maritime, and aeronautical, led to inefficient use of the spectrum because frequencies could not be transferred within the same system or between different systems quickly enough for the use by the most-demanded services. This limitation, in all likelihood, would leave some services with too much spectrum, while others faced spectrum shortages and congestion. In order to eliminate this form of structural inefficiency, the United States, in its domestic table of frequency allocations, merged aeronautical, land, and maritime into generic MSS, while providing special protections and preemptive access to the aeronautical and maritime safety services. NTIA and the FCC provided safeguards to protect the aeronautical and maritime safety services via the following footnotes to the United States table of allocations:

US308--In the frequency bands 1549.5-1558.5 MHz and 1651-1660 MHz, the Aeronautical-Satellite (R) requirements that cannot be accommodated in the 1545-1549.5 MHz, 1558.5-1559 MHz, 1646.5-1651 MHz and 1660-1660.5 MHz bands shall have priority access with real-time preemptive capability for communications in the mobile satellite service. Systems not interoperable with the aeronautical mobile-satellite (R) service shall operate on a secondary basis. Account shall be taken of the priority of safety-related communications in the mobile-satellite service.

US315--In the frequency bands 1530-1544 MHz and 1626.5-1645.5 MHz maritime mobile-satellite distress and safety communications, e.g., GMDSS shall have priority access with real-time preemptive capability in the mobile-satellite service. Communications of mobile-satellite system stations not participating in the GMDSS shall operate on a secondary basis to distress and safety communications of stations operating in the GMDSS. Account shall be taken of the priority of safety-related communications in the mobile-satellite service.

In order to ensure compliance with the priority access and real-time preemptive requirements called for in footnote US315, Section 25.136(d) of the FCC rules mandates the following minimum set of capabilities for MSS METs operating in the 1530-1544 MHz and 1626.5-1645.5 MHz band:[1]

- all MET transmissions shall have a priority assigned to them that preserves the priority and preemptive access given to maritime distress and safety-related communications sharing the band;

- each MET shall be assigned access to a unique technical identification number that will be transmitted upon any attempt to gain access to a satellite system;

- after a MET has gained access to a satellite system, the mobile terminal shall be under the control of a land earth station and shall obtain all channel assignments from that land earth station;

- all METs that do not continuously monitor a separate signaling channel shall have provisions for signaling within the communications channel;

- each MET shall automatically inhibit its transmissions if it is not correctly receiving a separate signaling channel or signaling within the communications channel from its associated land earth station; and

1. *See* TMI Communications and Company, L.P., For Modification of its Blanket Authorization to Operate up to 100,000 Mobile-Satellite Earth Terminals (METs) Through Canadian Licensed Satellite MSAT-1 at 106.5 Degrees W. L., in Frequency Bands 1646.5-1660 MHz (Transmit) and 1545-1558.5 MHz (Receive), Federal Communications Commission, *Order and Authorization*, File No. SES-MOD-20000307-00345 (released December 11, 2000).

- each MET shall automatically inhibit its transmission on any or all channels upon receiving a channel-shut-off command on a signaling or communications channel it is receiving from its associated land earth station.

These capabilities also ensure that METs operating in the 1549.5-1558.5 MHz and 1651-1660 MHz bands comply with the priority and preemptive access requirements in footnote US308.

NTIA is concerned that an increase in MSS operations may limit spectrum access for the future growth of AMS(R)S and GMDSS emergency communications. Also, all MSS systems do not have the capability to provide AMS(R)S or GMDSS communications, and systems providing AMS(R)S and GMDSS may limit the channels assigned for these services. Spectrum utilized in these ways limit the amount of spectrum available for the future growth of emergency communications. If this becomes an issue, further discussions on intra- and inter-system priority access with real-time preemptive capability may be necessary. Furthermore, METs operating in half-duplex mode cannot receive signals while transmitting, which can delay response to an instruction to cease transmitting. As the message length of a half duplex transmission increases this risk increases.[2]

In addressing these concerns NTIA established the following requirements for half-duplex MET waiver applications:[3]

- all operating METs must be capable of ceasing transmission and inhibiting any further transmissions within one second of a command from the network LES, or by cessation of a command signal under all circumstances;

- each MET, as a minimum, must be capable of selectively operating on a number of discrete channels within the operating band in order to accommodate the need to possibly modify frequency use due to traffic growth and ongoing intersystem frequency coordination; and

- all other requirements for full-duplex operation will apply to half-duplex METs.

The FCC in coordination with NTIA has granted waivers for the half-duplex METs. These waivers contain limitations on the time period that MET transmissions must cease and on the number of METs that can be operated during a specified time frame after which the waiver is

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2. If the transmissions are kept short their length will have no significant impact on the amount of time required to shift resources for AMS(R)S and GMDSS communications. There are new approaches for half-duplex METs employing shorter transmission bursts and improved protocols that can simulate full duplex operation.[2] System operators are encouraged to implement techniques that will minimize the length of transmission to enable compliance with the priority and preemptive access requirements. For example, METs can also operate in a packet-data mode with packet switched connections, where a physical path is not dedicated to a particular connection during a call. Since the connection is based on packet switching, the MET can be directed to cease transmitting at any time by using an appropriate command to accommodate AMS(R)S and GMDSS.

3. *See* Letter from William T. Hatch, Associate Administrator, Office of Spectrum Management, to Mr. Donald Abelson, Chief, International Bureau, Federal Communications Commission (August 25, 2000).

terminated (*e.g.*, two years). The FCC placed these conditions on the waivers to allow NTIA to work with the Federal Aviation Administration (FAA) and United States Coast Guard (USCG) to periodically evaluate the spectrum requirements to support AMS(R)S and GMDSS emergency communications. NTIA, in coordination with the FAA and USCG, believe these waiver conditions are necessary to ensure that safety related functions continue to have access to spectrum to meet their emergency communications requirements, consistent with the intent of footnotes US308 and US315. For METs that are not capable of ceasing transmission and inhibiting any further transmissions within three seconds of a command from the network, or by cessation of a command signal that can occur under all circumstances, NTIA recommends that the following conditions be applied:

- for each applicant the FCC place an aggregate limit of 10,000 on the construction and operation of half-duplex METs that cannot comply with the priority access with real-time preemptive capability requirements necessary for AMS(R)S and GMDSS emergency communications;

- the waivers should be limited to a period not to exceed two years; and

- the FCC include, for any waiver granted that allows half-duplex transmissions exceeding 3 seconds, a condition that the MSS operator submit an analysis of its MET operations in the United States showing the number of packets each month that exceed 3 seconds in duration.

As NTIA continues to work with the FAA and USCG, we will review the number of waivers granted for non-conforming METs. Based on this review, we will re-evaluate our position and may request alternate conditions be established to preserve use of this spectrum for AMS(R)S and GMDSS emergency communications.

Sincerely,

Karl B. Nebbia
Associate Administrator
Office of Spectrum Management