

**Before the
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554**

In the Matter of)
)
Review of Part 87 of the Commission’s) WT Docket No. 01-289
Rules Concerning the Aviation Radio Service)

COMMENTS OF INMARSAT VENTURES LIMITED

Inmarsat Ventures Limited (“Inmarsat”) submits comments in response to the Commission’s Second Report and Order and Second Further Notice of Proposed Rule Making (“*Order and Further Notice*”) in the above-captioned proceeding.¹

Inmarsat supports the Commission’s efforts to ensure that its Part 87 rules continue to “further the Commission’s goals of accommodating new technologies, facilitating the efficient and effective use of aeronautical spectrum, avoiding unnecessary regulation, and, above all, enhancing the safety of flight.”² In particular, Inmarsat agrees with the Commission’s view that the public interest would be served by broadening the Part 87 rules governing the Aeronautical Mobile Satellite (Route) Service (AMS(R)S) to allow the provision of AMS(R)S in a wider range of frequencies than currently permitted.³ To that end, Inmarsat proposes that the Commission include the lower half of the L-Band (1525-1545 MHz and 1626.5-1646.5 MHz) within the frequency ranges in which AMS(R)S may be provided pursuant to Part 87. The Commission also should ensure that it applies priority and preemptive access requirements for

¹ *Review of Part 87 of the Commission’s Rules Concerning the Aviation Radio Service*, Second Report and Order and Second Further Notice of Proposed Rule Making, WT Docket No. 01-289, FCC 06-148 (rel. Oct. 10, 2006) (“*Order and Further Notice*”).

² *Id.* ¶ 1.

³ *Id.* ¶¶ 10, 13.

AMS(R)S consistently, so that all bands in which AMS(R)S may be provided are subject to the same regulatory framework. Furthermore, as detailed below, Inmarsat urges the Commission to update its Part 87 rules to allow the latest types of technology to be used to provide AMS(R)S and other aviation services.

I. THE COMMISSION SHOULD ALLOW AMS(R)S TO BE PROVIDED IN A WIDER RANGE OF FREQUENCY BANDS

The Commission's rules currently allow AMS(R)S only in the 1545-1559 MHz and 1646.5-1660.5 MHz portions of the L-Band.⁴ In its *Order and Further Notice*, the Commission proposes to allow AMS(R)S in additional frequency bands, namely the 1.6 GHz, 2 GHz and 5 GHz bands,⁵ and appears to also consider the possibility of allowing AMS(R)S in the Ku band (12/14 GHz). The Commission *already* has found that allowing AMS(R)S in additional frequency bands would serve the public interest and that commenters "unanimously favored such an amendment" to accommodate additional frequency bands for AMS(R)S in the Commission's rules.⁶ In making its determination, the Commission correctly noted that expanding the reach of Part 87 will "allow the use of a well-established licensing system to expand options available for aircraft operators."⁷

Inmarsat agrees with the Commission's proposal, and urges the Commission to also open the *entire* L-Band for AMS(R)S (including the lower L-Band at 1525-1545 MHz and

⁴ *Id.* ¶ 11.

⁵ *Id.* ¶¶ 13, 30.

⁶ *Id.* ¶ 11. Although Inmarsat does not oppose inclusion of the 5 GHz band for use in AMS(R)S, Inmarsat believes that this band is unlikely to be used for any mobile satellite services, including AMS(R)S, due to use of that band by other services.

⁷ *Id.* ¶ 10.

1626.5-1646.5 MHz).⁸ Today, the lower L-Band is not authorized for AMS(R)S. Allowing AMS(R)S operations throughout the entirety of the L-Band would provide L-Band operators the same flexibility the Commission proposes to allow in the 1.6 GHz and 2 GHz bands.⁹ In Inmarsat's case, doing so would promote the expanded use of Inmarsat's Swift64 and SwiftBroadband terminals, which (i) are designed specifically for aeronautical use, (ii) offer far more robust communications capabilities than earlier generation aviation services, and (iii) already are capable of operations throughout the entire L-Band.

Furthermore, Inmarsat has long supported the Commission's recent move toward "generic" MSS allocations (*i.e.*, not limiting the services that can be provided on any given frequency) to maximize the ability for MSS providers to most efficiently manage the limited spectrum resource.

However, extending Part 87 to cover new frequency bands would present particular challenges if AMS(R)S is authorized to be provided in bands (such as the Ku-Band) in which the uplink or downlink is allocated to MSS on a secondary basis.¹⁰ AMS(R)S is a subset of MSS, and thus would also need to be provided on a secondary basis in bands in which MSS is secondary. Therefore, authorization for AMS(R)S in such bands where MSS is secondary may not be appropriate.

The allocation status of certain services in certain bands, be it primary or secondary, places important rights and obligations on that service and other services which share the bands. In particular, a secondary service station cannot claim protection from harmful

⁸ The Commission should therefore, at a minimum, amend Sections 87.173 and 87.187(q)(1) to permit Part 87 licensing of AMS(R)S in the lower L-Band.

⁹ *Order and Further Notice*, ¶ 3 n.5.

¹⁰ *Id.* ¶ 31.

interference from the stations of a primary service. If AMS(R)S communications are authorized in MSS bands with a secondary allocation, that should not change the allocation status of either MSS or AMS(R)S in that band. Elevating the secondary use of any such band to primary status could adversely affect the interests of primary users of the spectrum.

II. PRIORITIZATION AND PREEMPTION

In connection with its proposals to expand the ability to provide AMS(R)S in additional MSS frequency bands, the Commission invited comment on priority and preemptive access provisions for AMS(R)S.¹¹ Inmarsat recognizes the critical importance of AMS(R)S communications to safety of flight, and is committed to continuing to serve those needs. The Aero H and Aero L services (together, referred to herein as “Classic Aero”) successfully implement priority and preemption in both the ground stations and in the aircraft terminal through a mixture of (i) dedicated spectrum (*i.e.*, different from spectrum used by other Inmarsat land and maritime users) and (ii) by signaling such that the pilot communications have priority and can preempt lower priority communications (*e.g.*, from passengers) on the same or other aircraft. Multi-service terminals supporting Classic Aero together with Swift64 and/or SwiftBroadband service employ technology that provides priority and real-time preemptive access for Classic Aero AMS(R)S in conformance with current Commission rules.¹²

Inmarsat agrees that priority and preemption is required for AMS(R)S service to ensure the flow of information necessary to the safety of flight. However, today, AMS(R)S equipment and services are subject to several regimes, including regulation by the ITU, ICAO and FAA. Inmarsat therefore urges the Commission to ensure that its rules are consistent with the regulatory provisions across agencies and jurisdictions. Consistency in the treatment of

¹¹ *Id.* ¶ 32.

¹² *See* 47 C.F.R. §§ 87.189(d)-(e).

AMS(R)S is essential to provide industry certainty, which also will promote safety. At the same time, the Commission should apply any requirements for AMS(R)S consistently across frequency bands made available for AMS(R)S under Part 87. The Commission should ensure regulatory parity among all operators providing AMS(R)S. In other words, if the Commission expands the Part 87 rules governing AMS(R)S to additional frequency bands, there is simply no reason to adopt different priority and preemption frameworks for different frequency bands.

III. PART 87 SHOULD BE UPDATED TO ALLOW USE OF THE LATEST TECHNOLOGY

Inmarsat urges the Commission to update or eliminate the Part 87 technical requirements that currently restrict introduction of new, higher-data-rate services on aircraft in frequency bands authorized under Part 87 for the aviation radio service.

Commenters in prior related proceedings have made similar requests to modify the Part 87 technical requirements for good reason: the current limitations were written to facilitate low-data-rate MSS services to aircraft, namely Inmarsat Aero-H and Aero-L services. These limitations simply do not support the provision of broadband services to aircraft.¹³

Today, Inmarsat offers Swift64 and will soon introduce SwiftBroadband. These services are capable of supporting communications needs that earlier generation aviation services cannot, including aircraft security through real-time video, Internet access, and transfer of large data files, among other things. Swift64 and SwiftBroadband operate across the whole L-Band spectrum (1525-1559 MHz and 1626.5-1660.5 MHz) and are not designed for AMS(R)S service, since appropriate signaling is not implemented in the ground network to provide real-time priority and preemption, although Inmarsat is investigating the feasibility of making small changes to SwiftBroadband so that it could be used in the future for AMS(R)S.

¹³ See *Order and Further Notice*, ¶ 9 & n.30.

Swift64 and SwiftBroadband terminals, however, cannot be used under current rules without first seeking a waiver of certain technical requirements.¹⁴ For example, these services require a waiver because the higher-data rates provided by the Swift64 and SwiftBroadband services are made possible by 16 Point Quadrature Amplitude Modulation (“16-QAM”), which is not contemplated by the Commission’s rules, and which is more spectrally efficient than other emission types that are contemplated by the Commission’s rules (*i.e.*, Bi-Phase Shift Key (“BPSK”) or Quadrature Phase Shift Key (“QPSK”)). The Commission should remove the need for such waivers by eliminating all Part 87 data rate and modulation limitations.

In the alternative, and at the very least, the Commission should amend its rules to accommodate the Swift64 and SwiftBroadband services to permit use of these terminals without waiver. Specifically, Inmarsat proposes that the Commission amend the following rules to permit the deployment of Classic Aero, Swift64 and SwiftBroadband terminals, and all combinations thereof: Sections 87.131 (Power and Emissions); 87.133 (Frequency Stability); 87.137 (Types of Emissions); 87.139(i) (Emissions Limitations); 87.141 (Modulation Requirements); and Section 87.145 (Acceptability of Transmitters for Licensing). Inmarsat aeronautical terminals support one or more of the Classic Aero, Swift64 and SwiftBroadband services. Terminals supporting *all* possible combinations of these services exist or are being developed, ultimately leading to seven possible terminal types.¹⁵ Part 87 should provide the technical flexibility necessary for all seven terminal types.

¹⁴ *See, e.g.*, Request for a Waiver of Part 87 Rules to Allow Type Acceptance of Rockwell Collins’ Aeronautical Satellite Communications System Utilizing Swift64 Service (filed Nov. 15, 2002) (approved by stamp grant, April 21, 2003).

¹⁵ The seven potential terminal types include three that are available today (Swift64 only; Classic Aero only; and Classic Aero plus Swift64) and four additional terminals types that are being developed (SwiftBroadband only; Classic Aero plus SwiftBroadband; Swift64 plus SwiftBroadband; and Classic Aero plus Swift64 plus SwiftBroadband).

Inmarsat understands that other commenters are proposing specific amendments to these sections that may achieve the objective of allowing greater flexibility for terminals in the aviation services, and Inmarsat may comment further in the Reply phase of this proceeding.

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Expanding the scope of Part 87, and updating Part 87's technical limitations, will facilitate the introduction and proliferation of new, innovative Inmarsat aviation services into the United States market, and facilitate competition from *all* MSS providers. For the reasons discussed above, the Commission should (i) amend its Part 87 rules to include the lower L-Band (1525-1545 MHz and 1626.5-1646.5 MHz), (ii) apply priority and preemptive access requirements in a manner that is consistent across all bands used for AMS(R)S, and (iii) amend the technical parameters set forth in Part 87 to facilitate the provision of broadband services to aircraft.

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