

The Boeing Company

Presentation to Legal Advisors

WT Docket No. 03-103

October 1, 2004

Introduction

- Connexion by Boeingsm provides broadband AMSS service on international flights using Ku-band spectrum.
 - Eight airline customers.
 - Commercial launch on May 17, 2004.
 - Initial penetration and customer experience meeting expectations.
- Boeing faces competition from ARINC, Inmarsat and others.
- Terrestrial ATG complements satellite-delivered AMSS, and is well-suited to provide voice and data services to the domestic aeronautical communications market.

Overview

- Licensing scheme that allows competition among broadband ATG providers requires only a few simple rules.
- The difficulty of implementing those rules has been exaggerated by the existing ATG provider.
- The alternative – exclusive licensing – will impose a monopoly in broadband ATG services.
- Existing sharing proposals provide basis for further discussions.
- Nothing less than the future of competitive broadband ATG service is at stake.

The FCC has Already Recognized Benefits of Competition in ATG Services

- The NPRM (para. 17) sought comment on “whether any changes to our rules could provide greater opportunities for the competitive provision of air-ground services, leading to lower prices to consumers and increased choices in wireless services and enhancements while traveling by commercial airliner.”
- The NPRM (para. 3) also requested parties to “make suggestions for rules and policies that would achieve more effective consumer choice and efficient spectrum use.”

Frequency Sharing Ensures Spectral Efficiency and Choice

- FCC routinely establishes rules to permit multiple licensees in a band.
 - Virtually all wireless services are governed by power limitations, base station separation and similar requirements.
 - Satellite providers must observe technical limitations to permit 2-degree spacing of orbital slots.
 - In recent AWS allocation decision (H-block), FCC determined that interference could be managed, in order to permit more intense use of spectrum.
- Benefits are spectral efficiency and competition.

ATG Competition Requires only a few Simple Rules

- Fundamental technical requirements proposed by Boeing:
 - Power limitations from aircraft and base stations.
 - Antenna performance requirements.
 - Base station separation.
- Minimal technical requirements needed to permit sharing are commonplace in the FCC's regulation of wireless services.

Competition will Enhance Choice without Degrading the Seat Experience

- User experience does not vary with the number of ATG service providers
- Transmission speed to the seat is a function of sector loading, throughput limitations of the communications standard and self-interference.
- All of these factors are under the ATG provider's control.

Boeing Proposal to WTB - Straightforward, Technology-Neutral and Cost Effective

- Emissions limits
 - Base station EIRP = -38.6 dBW/Hz
 - Aircraft EIRP = -68 dBW/Hz
 - Additional EIRP limitation of 14 dBW/Hz below 10,000' and within 20 miles
- Antenna performance requirements
 - Easily met by off-the-shelf equipment and technology
 - Existing six-sector base stations
 - Simple and inexpensive directional aircraft antenna, similar to what Airfone is already testing.
- Base station separation
 - Intersystem >102 miles
 - Intrasystem > 227 miles
- Existing Airfone system can continue to operate by relocating a relatively few stations and decommissioning others.

Sharing Problems Have Been Exaggerated

- The existence of multiple ATG providers will have no effect on user experience.
- The “Near-Far” issue is solved through Boeing’s recommended technical rules.
- No need for FCC to specify base station grid.
- Service below 10,000 feet
 - Requires only coordination among providers.
 - Commercial aircraft and business jets (the target market for broadband services) are almost always above 10,000 feet.
 - FAA regulations require electronic devices to be stowed below 10,000 feet in any case.

Exclusive Licensing Scheme Imposes Monopoly

- With its existing ATG monopoly and dominant position on the U.S. telecommunications marketplace generally, Verizon will outbid rivals for an exclusive broadband ATG authorization.
- Price for service and the pace of innovation will be up to the monopoly provider.
- Verizon could leverage monopoly in ATG to gain unfair advantage over terrestrial competitors.
- Competition is far more likely than monopoly to drive improvements in technology and reductions in cost.

Terrestrial ATG Is Well-Suited for Certain Domestic Services

- AMSS most appropriately viewed as complementary rather than competitive with terrestrial ATG.
- AMSS is particularly well-suited to the provision of service on long-haul flights over water or other harsh terrain where terrestrial networks are impractical or impossible.
- Satellites are a more efficient means of delivering point-to-multipoint services like multi-channel video services.
- For broadband service within the continental United States, however, spectrum re-use capability and cost structure makes terrestrial ATG system more appropriate as customer demand grows.

Existing Sharing Proposals Provide a Basis for Further Discussions

- The benefits of competition over monopoly are undisputed.
- Boeing and AirCell continue to refine plans that would allow the provision of competitive services.
- “Rush to judgment” without full exploration of possible means to offer competitive services will forever unnecessarily deprive consumers of provider choice.
- Verizon’s incumbent narrowband ATG operations can be accommodated on a transitional basis.