Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C.

In the Matter of	)	
	)	
Amendment of Part 22 of the Commission's Rules	)	WT Docket No. 03-103
To Benefit the Consumers of Air-Ground	)	
Telecommunications Services	)	
	)	
Biennial Regulatory Review – Amendment of	)	
Parts 1, 22, and 90 of the Commission's Rules	)	

VERIZON AIRFONE'S REPLY COMMENTS ON NOTICE OF PROPOSED RULEMAKING

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In-flight broadband service would allow airline passengers to access company networks, business news, business research, online banking, and e-commerce; print documents; participate in video conferencing; and play networked games. In short, in-flight broadband service will transport passengers' home and office computer experience into the airline cabin.

Verizon Airfone is striving to make this a reality, but the current regulatory regime applicable to the air-ground band imposes significant impediments. The Commission's rules should encourage, rather than hamper, Verizon Airfone's ability to compete in this emerging market. Therefore, as Verizon Airfone explained in its initial comments, the Commission should adopt an "exclusive use" licensing approach that will enable Verizon Airfone to offer broadband services. The revised rules should also facilitate Verizon Airfone's transition to the provision of broadband while minimizing disruption of current service.

I. The Commission Should Modify Its Rules to Permit Verizon Airfone the Flexibility to Bring Innovative, New Broadband Services To Market.

The Commission should encourage carriers to bring innovative, new services to market. To that end, the Commission should modify its rules to permit Verizon Airfone to provide broadband service in the air-ground band by adopting the "exclusive use" licensing approach proposed in Verizon Airfone's initial comments. Verizon Airfone Comments at 10-11. Assigning Verizon Airfone exclusive use of a sufficient amount of the 800 MHz air-ground spectrum to accommodate broadband would be pro-competitive, rather than anti-competitive, because it would enable Verizon Airfone to compete with satellite providers and others in the burgeoning air-ground communications marketplace as well as provide consumers innovative new communications choices while airborne. In

this regard, Verizon Airfone's proposal is entirely consistent with the Commission's public interest goals of enhancing consumer choice and increasing competition. It is also entirely appropriate and equitable for the Commission, when fashioning a regulatory solution, to credit Verizon Airfone's unique and substantial past and ongoing expenditures of time, energy, resources, and capital to develop service in the air-ground band. Verizon Airfone Comments at 11-12. Providing Verizon Airfone with the flexibility to provide broadband services would do so.

Aircell incorrectly refers to Verizon Airfone as a "monopoly" provider. Aircell Comments at 2-3. While Verizon Airfone is the only licensee currently operating in the 800 MHz air-ground spectrum, the existence of Aircell and other intermodal competitors shows that Verizon Airfone is far from a "monopoly" provider. As Verizon Airfone explained in its initial comments, the relevant market is the provision of public air-ground communications services, and there are a number of intermodal competitors in that market. Verizon Airfone Comments at 5-7. For example, Boeing and Iridium have mobile phone services that offer voice and data services on aircraft. *Id*. Indeed, Aircell's own comments underscore the existence of competition by indicating that Aircell itself competes in the in-flight communications market, notwithstanding its lack of access to the air-ground band. Aircell Comments at 5, 9-10.

Since Verizon Airfone's initial comments, the Commission has sought comment on Boeing's Petition for Rulemaking asking the Commission to amend Parts 2 and 25 of its Rules to allocate the Aeronautical Mobile-Satellite Service ("AMSS") in the 14-14.5 GHz band on a secondary basis and to adopt licensing and service rules for AMSS

operation in the Ku-band.[1] This request shows Boeing's commitment to being a viable competitor in the air-ground communications market. Aircell is also wrong when it claims that satellite networks have dramatically less channel capacity than terrestrial networks, and are therefore inadequate to serve airborne passengers. Aircell Comments at 5. Boeing's Connexion service and its efforts to expand its in-flight communications business demonstrate that satellite-based competitors are technically well-suited to compete in this market and have ample spectrum to provide broadband service to airborne customers. Further, there are other competitors in addition to those identified in Verizon Airfone's initial comments. For example, Globalstar has targeted the aviation market for satellite-based voice and data services.[2] Additionally, last month, Aeronautical Radio Inc. ("AIRINC") sought Commission authorization to offer two-way in-flight broadband service to airborne customers, including passengers and crew on commercial aircraft and persons on corporate business aircraft, via satellite.[3] This service would use transmit and receive mobile earth stations on aircraft to communicate with an earth station connected to AIRINC's terrestrial network. *Id.* at 2. The downlinks and

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1 Amendment of Parts 2 and 25 of the Commission's Rules to Allocate Spectrum in the 14-14.5 GHz Band to the Aeronautical Mobile-Satellite Service ("AMSS") and To Adopt Licensing and Service Rules for AMSS Operations in the Ku-Band, *Petition for Rulemaking*, RM-10800, filed July 21, 2003. FCC Public Notice, Rep. No. 2632, October 2, 2003.

2 See http://www.arnav.com/Directories/Globalstar%20TOC.htm

3 FCC Public Notice Rep. No. SES-00541, October 15, 2003 ("ARINC seeks blank authorization to operate up to 1000 technically identical transmit and receive mobile earth stations aboard aircraft operating within the United States and adjacent waters to provide two-way, wideband services to aircraft passengers and crew."). *See generally* In the Matter of Aeronautical Radio, Inc., Application for Blanket Authority to Operate Aboard Aircraft Up To 1000 Technically-Identical Transmit and Receive Mobile Earth Stations in the 11.7-12.2 and 14.0-14.5 GHz Frequency Bands, *Application*, filed September 2, 2003 ("AIRINC Application").

uplinks are proposed to operate in the 11.7-12.2 GHz and 14.0-14.5 GHz frequency bands respectively. *Id.* If AIRINC's service is approved by the Commission, it would represent yet another intermodal competitor in the in-flight broadband market. Thus, while Verizon Airfone is the only licensee currently operating in the 800 MHz air-ground spectrum, the existence of other providers of in-flight communications ensures that Verizon Airfone faces and will continue to face competition in the air-ground communications market. Moreover, if the Commission were to modify its rules to provide Verizon Airfone with an "exclusive use" license in the 800 MHz spectrum, Verizon would not necessarily be the only "carrier" in the 800 MHz band. Instead, Verizon Airfone expects that resale of 800 MHz air-ground broadband may well develop as others see market opportunities flowing from the efficient operation of one system with the 800 MHz air-ground band. [4]

After mischaracterizing Verizon Airfone as a "monopoly" provider, Aircell hints that Verizon Airfone's current service prices flow from that "monopoly" status. Aircell Comments at 2. But Verizon Airfone's current costs, and therefore its current prices, reflect the fact that Verizon Airfone is unable to deploy a more cost-efficient broadband product in the current regulatory environment. However, the regulatory changes outlined in Verizon Airfone's initial comments would allow Verizon Airfone the flexibility to offer a wider-range of services at more competitive rates because broadband technology will allow higher density of users per radio base station. To provide a wide range of broadband services at reasonable rates, deployment costs must be held to a minimum.

[4] In a resale context, however, Verizon Airfone would not endorse the use of pico-cells aboard aircraft because significant terrestrial interference could occur as handsets also attempt to communicate with cellular base stations located on the ground. Instead, in any resale scenario, Verizon Airfone would propose the use of 802.11-enabled phones or other equipment on board the aircraft.

This requires using existing infrastructure, as Aircell notes, (Aircell at 9-10) and deploying off-the-shelf technologies as much as possible. Verizon Airfone's proposal, as outlined in its initial comments, follows this approach. Verizon Airfone at 10-11. Verizon Airfone must be able to use its existing air-ground spectrum, digital technologies, and terrestrial network to provide the consumer the widest variety of communications choices at a competitive cost. Additionally, as technology matures, improvements can economically be integrated into the network, minimizing costs and lag time. However, in order to build on its existing network and upgrade it in a way that will accommodate broadband, the Commission's rules must be modified to facilitate Verizon Airfone's "exclusive use" of a sufficient amount of spectrum to support broadband services. As Verizon Airfone indicated in its comments, it will require access to all or most of the 800 MHz air-ground band to become a viable broadband competitor. *Id.*

While the Commission certainly should modify its rules as Verizon Airfone has proposed to facilitate deployment of broadband services, it is important to note that contrary to Qualcomm's claims, (Qualcomm at 5-7) the 800 MHz band is capable of supporting the accelerated data speeds that are consistent with broadband technology. Qualcomm asks the Commission to allocate additional spectrum to air-ground operations to accommodate broadband technology. *Id.* at 4, 7-8. While Verizon Airfone agrees that the current channelization of the 800 MHz band will not support broadband and certainly would not oppose the Commission's allocation of additional spectrum to air-ground operations, the current 4 MHz allocated to air-ground spectrum is capable of supporting broadband technology provided the Commission modifies its rules consistent with Verizon Airfone's proposal. Verizon Airfone has demonstrated its commitment to making broadband work in the existing spectrum allocation by obtaining an experimental

license to conduct digital testing in the 800 MHz air-ground bands. By taking this action, Verizon Airfone is making the necessary investments to test technologies that will produce a terrestrial-based broadband service in the 800 MHz band.

II. Miscellaneous Technical Issues.

A. Cingular's Comments Concerning Distance Computation Under New FCC Rule 1.958 Are Correct.

. Verizon Airfone agrees with Cingular Wireless LLC that the Commission should adopt the "Great Circle Route" method for computing distances between base stations because that method's reliance on a spherical earth, as opposed to a flat earth, makes it a more accurate methodology for computing all distances but particularly so for long distances that exceed 475 kilometers. Cingular Comments at 18. The Commission acknowledges that its proposed distance calculation method is sufficiently accurate only for distances *not exceeding* 475 km (295 miles).[5] However, in the aviation arena, the Commission's rules often require separation distances that exceed 475 kilometers. For example, Section 22.813(a) specifies a co-channel separation distance of at least 800 km (497 miles) for general aviation air-ground service. Similarly, Section 22.859(a) specifies a co-channel separation distance for low-power ground stations of at least 483 km (300 miles), while Section 22.859(b) specifies co-channel separation distances for full-power ground stations of at least 885 km (550 miles). Because these distances all exceed 475 kilometers (295 miles), the distance limitations inherent in the Commission's proposed method would render it unable to provide distance calculations that are as accurate as those produced by the spherical approach contained in the "Great Circle

[5] Amendment of Part 22 of the Commission's Rules To Benefit the Consumers of Air-Ground Telecommunications Services, WT Docket No. 03-103, FCC 03-95 (Apr 28, 2003), Appendix B (Proposed Rule Changes), ¶ 4.

Route" method, which is simply better equipped to calculate long distances. Therefore, even if the Commission decides to use its proposed methodology for shorter distances, at least for purposes of calculating distances that exceed 475 kilometers, the Commission should codify the "Great Circle Route" approach in its rules.

B. The Commission *Should Not* Realign The Air-Ground Band As Cingular Suggests.

Cingular's proposal that the Commission realign the air-ground band, (Cingular at 10) would result in intolerable interference to air-ground operations. In the 800 MHz air-ground spectrum, ground stations currently transmit on 849-851 MHz while mobile units transmit on 894-896 MHz. Cingular argues that this configuration is inconsistent with other 800 MHz services, and therefore suggests that "… the Commission . . . consider reversing the uplink and downlink bands for 800 MHz air-ground service." *Id.* But the current configuration is necessary due to the nature of the 800 MHz air-ground service. The mobile units in this service operate at elevations up to 45,000 feet above ground level providing an unobstructed radio path up to or exceeding 275 miles. Airborne mobile units are therefore vulnerable to interference from a shipboard radar system operated by the U.S. Navy. The purpose of this shipboard radar system, which operates on selectable bands in the 850 - 942 MHz frequency range, is to detect long-range airborne targets. While the radar system is not supposed to be operated when within 100 miles of the U.S. coastline, ships operating in coastal waters do not always observe this prohibition, and Verizon Airfone has on numerous occasions experienced interference to ground station receivers in the 894 - 896 MHz band located along the coast.

Thus, reversing the 800 MHz air-ground uplink and downlink bands to make the service arguably more compatible with other 800 MHz services would place 800 MHz

air-ground mobile receivers in the middle of the shipboard radar system's operating spectrum, exposing the air-ground service to significant interference potential when mobiles are airborne on coastal routes. To avoid this unacceptable result, the current configuration of the bands should be maintained.

Conclusion

This proceeding presents the Commission with the opportunity to move forward with rule changes that will hasten the advent of terrestrially-based broadband air-ground service that will facilitate a host of additional services for the aviation community and those served by it. The Commission should therefore act promptly to modify its rules consistent with Verizon Airfone's proposal.

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