VERIZON AIRFONE

Presentation to
Sam Feder, Legal Advisor to Commissioner Martin
Regarding

WT Docket No. 03-103
"Air-to-Ground Service Rules"

September 27, 2004

Airfone's Commitment to the Customer

- Airfone has a long history of serving the flying public.
  - Invested considerable capital in Air-to-Ground (ATG) network.
  - Committed to the development and growth of ATG business.
- Airfone has pushed the limits of technological capability within the bounds of current regulations.
- Customers are demanding a wider breadth of services beyond what narrowband technology permits.
- Airfone is ready, willing, and able to meet this demand (with a commercial launch in 2005) if the Commission's rules permit it.

Airfone Services

Voice

Air-to-ground
Ground-to-air
Seat-to-seat
Air-to-air
Seat-to-flight deck
Speed dialing
3-Way Calling
Collect Calling
Info Services
Cellular Call Forwarding
WIFI

Potential Federal Features

Emergency Broadcast
Video Surveillance
Encryption
Call Priority
Federal Portal
(JetConnect)
Connection to NOC
Others TBD

Data

Email
Instant Messaging
Text Messaging
WIFI
Web Browsing
Other Broadband

STAY CONNECTED IN THE AIR

Broadband is the Goal

- Consumers want in-flight access to the same kinds of broadband services they get on the ground.
- Airlines want broadband to improve operational efficiency.
- Law enforcement agencies want broadband for safety and national security purposes.
- Broadband service must be high-quality and available from takeoff to landing ("deck to deck" service).
- Satellite operators (Boeing, Inmarsat, ARINC) already offer or are planning to offer broadband services, and ATG rules must be changed to allow terrestrial alternatives.

Importance of "Deck-to-Deck" Service

- Full service (voice, data, video) required from take-off to landing ("deck-to-deck" service).
  - "Deck-to-deck" permitted today for narrowband via seat-back phones on commercial flights
  - Available today for narrowband services to private, military and governmental aircraft (50% of Airfone customers)
  - Required on commercial flights for official airline and law enforcement communications
- Band-sharing proposed by AirCell and Boeing would preclude "deck-to-deck" delivery of Broadband ATG.
  - Both admit interference will limit service below 10k feet.

Verizon Airfone Proposal

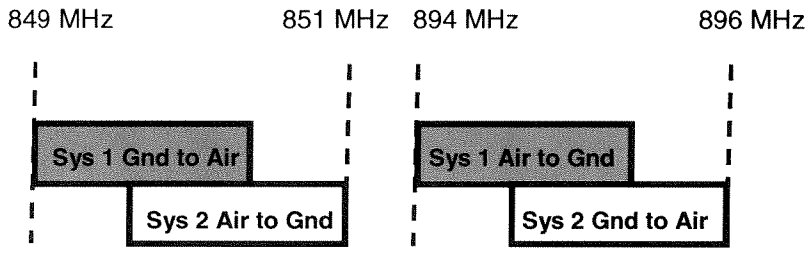
- Airfone needs sufficient unencumbered spectrum to deliver Broadband – that is the business imperative.
  - Flexibility to innovate and respond to market forces
  - Protection from interference that impedes delivery of high-quality advanced services to consumers
- Infrastructure vendors unanimously agree that minimum of 3 MHz is required and band sharing won't work.
  - Airfone's plan supports rapid deployment of Broadband ATG using "off-the-shelf" technology.
- Flexible, exclusive licenses are the only way to get Broadband to ATG customers. (PCS model)

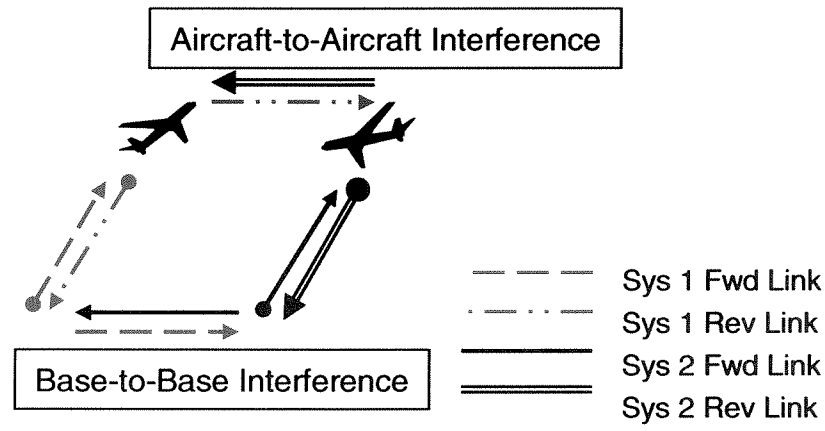
AirCell & Boeing Proposals

- AirCell and Boeing propose band-sharing arrangements that would have up to four licensees share the ATG band.
- Each relies on equipment that is not available today.
- Each relies on inflexible and highly prescriptive rules that would restrict technology choices and service evolution.
- Neither would allow delivery of Broadband ATG.

Reverse Banding (Cross Duplex)

- Air-to-ground and ground-to-air assignments are reversed, resulting in significant potential for interference.

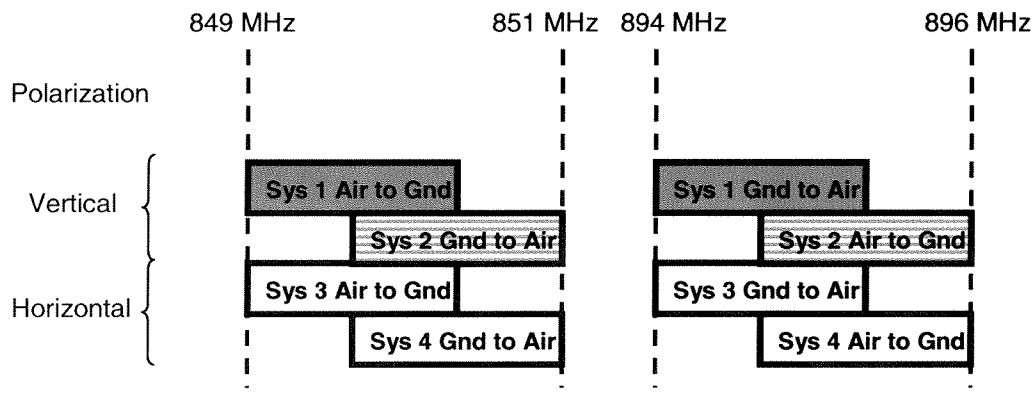




- AirCell proposes strict rules to minimize interference, which would preclude delivery of Broadband ATG.
- Even under these restrictions, ATG licensee would be subject to **substantial interference from Navy radar**.

Cross Polarization

- AirCell recommends the use of cross polarization, in addition to reverse-banding, to permit up to four systems to coexist.



- Can't ensure polarization purity in mobile environment.
- Can't monitor polarization isolation to know when objective isn't met.
- Cross polarization results in unacceptable noise levels at the base station, and **<u>would preclude service in areas around airports</u>**.

Inflexible Operating Requirements

AirCell and Boeing propose:

- Use of **specialized antennas** that are not commercially feasible, and would not address all interference concerns.
- **Strict power limits** that would severely limit data rates (48 kbps) and preclude the delivery of Broadband ATG.
- **Mandatory base station separation** (102 mi) that would permit only one provider to serve airports, constrain system growth, and require the FCC to manage the process for locating ground stations.

Incumbency Issues

- Airfone has invested considerable time and money in pioneering the ATG service.
- Airfone should be allowed to continue its existing service for as long as the market supports it.
  - Right to a reasonable renewal expectancy
  - No revocation or arbitrary termination date
- If relocated, Airfone should be compensated for costs to relocate to comparable spectrum.
- Airfone should be permitted to bid on any ATG license.

Conclusions

- There is a high demand for Broadband ATG, and FCC rules must be changed to enable terrestrial alternatives to existing satellite-based services.
- Broadband service must be high-quality and available from takeoff to landing ("deck to deck" service).
- "Exclusive use" licenses are the only way to ensure provision of high-quality Broadband ATG service.
- Band-sharing scenarios proposed by AirCell and Boeing would undermine delivery of Broadband ATG.
- Commission must protect Airfone's incumbency rights.