U.S. Federal Communications Commission

In-flight Mobile Connectivity -- Enhancing Mobile Broadband Competition and Spectrum Efficiency

30th October 2014

AeroMobile Communications Ltd

- Providing in-flight mobile connectivity (IMC) systems since March 2008
- UK subsidiary of Panasonic Avionics Corporation (Lake Forest, CA)
- IMC extends mobile broadband competition to the aircraft cabin without adversely affecting other spectrum users
- Enables IMC virtually everywhere in the world…but must turn off as equipped aircraft, with many U.S. subscribers, approach U.S. airspace

SMS
text

Mobile data &
emails

Voice (calls, call
alerts, voicemail)

Business overview

- **13 airlines currently provide our IMC offering**
- **269 aircraft, 500+ flights daily**
- **270 roaming partners, including AT&T and T-Mobile**
- **Significant percentage of users are from the U.S. but can only access the offering outside U.S. airspace**

How do passengers use their mobile devices in-flight?

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Number of IMC Users on airlines with flights to/from the U.S.

Airline	Number of Customers	Number of US Customers	% US Customers
A	22,127	5,211	24%
B	254,717	8,986	4%
C	118,341	15,671	13%
D	72,127	6,933	10%

Of these, the percentage of customers who made an activity were:

	All Customers	US Customers
Data	54%	60%
SMS	42%	38%
Calls	4%	2%

For Airlines who are IMC-Activated only

	All Customers	US Customers
Data	52%	55%
SMS	42%	41%
Calls	6%	4%

- **U.S. subscribers make up a significant percentage of total IMC users**

How do passengers use their mobile devices in-flight?

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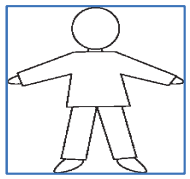
2013 and *2014 year-to-date*



529,000/*637,506*
users

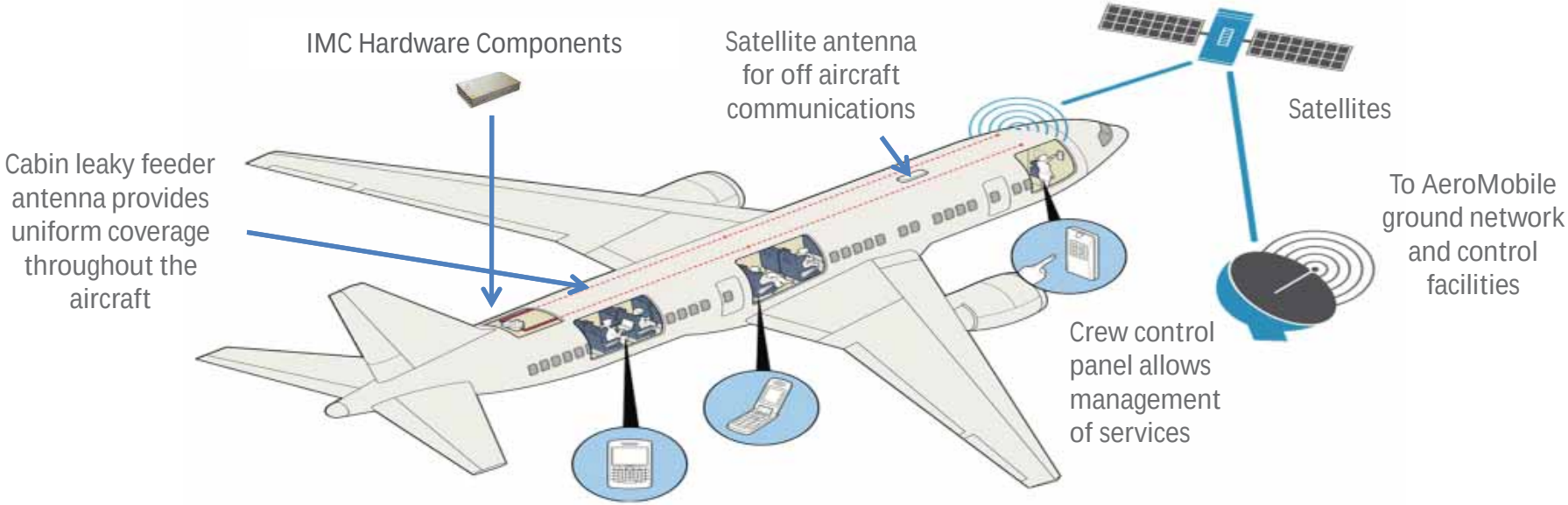
1.2M/*1.1M*
sent

303,000/*284,174*
calls made or received

403,000/*594,593*
minutes

- **Passenger connections to the AeroMobile system are increasing**
- **Overall usage of all IMC applications is increasing**
- **The FCC can enhance mobile broadband competition by taking immediate action to allow IMC on international flights**

How it works



- **The IMC system: GSM picocell, CRFMU and leeky feeder antenna (connected via satellite)**
- **Operates only at cruise altitude (automatically disabled below cruise altitude) pursuant to international standards designed to prevent interference to other systems and services**
- **IMC system and handsets operate at very low powers akin to Part 15 device levels**
- **Service provided exclusively through passenger's licensed home wireless carrier**
- **Rules and policies should enable operation of IMC equipment onboard U.S. and foreign aircraft**

International passenger access to IMC

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- **Offering is available on long-haul international flights of foreign airlines (there are no standards for U.S. domestic IMC operations)**
- **An international roaming model – akin to using your mobile device overseas**
  - **Passenger's wireless provider must have a roaming agreement with AeroMobile**
  - **The passenger must have a world phone with international roaming enabled**
  - **Prices are set and charged by the passenger's wireless service provider**
- **IMC significantly enhances the passenger experience**
  - **IMC provides a familiar, cost-effective alternative to Wi-Fi connectivity**
  - **Enhances competition in mobile broadband and in-flight connectivity markets**
  - **Many U.S. subscribers use IMC today but are deprived of the benefits of such connectivity in U.S. airspace**
- **The Commission should expand the benefits of additional mobile broadband competition to the U.S. market at the earliest possible time**

IMC and Mobile Broadband Competition

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- **IMC enables the same types of real-time mobile connectivity used today on the ground and in the air**
- **IMC extends mobile broadband networks to the aircraft cabin**
  - **IMC is an enabling technology, not a new service**
  - **The passenger's home service provider controls access to the IMC offering, retail pricing and related regulatory requirements**
  - **IMC equipment operates on an unprotected, non-interference basis**
- **The FCC can enhance competition and expand the benefits of IMC**
  - **Existing international standards should be adopted for international flights**
  - **Industry should be permitted to develop a U.S. domestic IMC standard**
  - **Signals FCC commitment to in-flight mobile broadband competition and will spur U.S. industry action**

IMC in the United States – A Way Forward…

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- **The FCC should recognize foreign licensing of IMC systems**
  - **Adopt an interim policy for operation consistent with international standards**
  - **Consistent with Section 301 of the Communications Act**
- **Adopt existing international standards in Part 15 of the Rules**
  - **The record establishes low-power IMC systems can operate on a non-interference basis in U.S. airspace**
  - **IMC systems on international flights must comply with international standards**
  - **Consistent with wireless carrier and U.S. government access to spectrum**
  - **The FCC has adopted new Part 15 rules in analogous circumstances**
- **Issue a further NPRM to develop rules for a domestic IMC operations**
  - **Permits U.S. industry to develop a U.S.-specific standard to expand IMC access to U.S. consumers while enabling international IMC operations**
  - **Allows consideration of additional issues associated with new business models**

IMC in the United States – A Way Forward… (2)

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- **Part 15 is a viable, long-term approach to enable IMC**
  - **IMC systems operate at very low power and on a non-interference basis**
  - **Existing IMC standards protect other spectrum users**
  - **IMC systems merely extend the reach of existing mobile broadband services**
  - **Possible interim experimental authority to confirm non-interference**
- **In the IMC context, "unlicensed" does not means uncontrolled**
  - **IMC systems do not operate in a ubiquitous, uncontrolled manner**
    - **A very small number of IMC systems will operate in U.S. airspace**
    - **Large separation distances and one IMC system per equipped aircraft**
    - **Extremely predictable operational patterns**
  - **IMC systems have sophisticated control capabilities, making regulatory oversight and enforcement quite straightforward**
  - **Part 15 remains the most viable way forward to enable IMC operations**
- **Record of the proceed supports adoption of new Part 15 rules**

IMC in the United States – A Way Forward... (3)

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- **International IMC offerings exist today**
  - There are many U.S. subscribers on flights to and from the United States
  - Enhanced competition on international routes can be introduced today
- **U.S. domestic IMC implementation will take additional time**
  - No U.S.-specific standard has been developed
  - Standards development, equipment design, FAA certification lead-times, airline decision-making and installation schedules will affect deployment
  - Don't delay the benefits of existing IMC offerings
- **FCC action essential from a mobile broadband competition standpoint**
  - Effects of inaction are evident in the marketplace today
  - Enabling international IMC will promote U.S. domestic interest and action
  - IMC and new in-flight connectivity offerings (AT&T proposal, SmartSky, 14 GHz air-ground, etc.)

In conclusion

- **IMC operates throughout the world on a non-interference basis and provides a competitive and complementary alternative to existing WiFi-based connectivity options**
- **U.S. subscribers are frequent users of IMC, albeit only on foreign airlines and outside U.S. airspace**
- **Part 15 provides a viable, long-term basis to enable IMC in the U.S.**
- **International IMC operations should be authorized while industry develops U.S.-specific standards for domestic IMC operations**
- **U.S. consumers should be afforded the benefits of competition and expanded mobile broadband options at the earliest possible time**