Abstract for European Telemetry Conference:

The Economic Importance of Adequate Aeronautical Telemetry (ATM) Spectrum

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New and existing aircraft programs conduct flight tests to evaluate the performance of a new prototype aircraft or a new piece of avionics equipment on an existing aircraft. These flight tests rely on ATM to transmit real-time data from test vehicles to ground stations. ATM cannot exist without RF spectrum, and the amount of spectrum now available for ATM is not sufficient to meet today's needs and requirements. This problem only worsens with the sharp rise in demand of ATM spectrum expected in the future.

A multi-faceted approach is needed to try and ensure adequate spectrum accessibility for testing. First, we must protect the spectrum we have now. Twenty-two percent of the bandwidth available in 1980 has already been reallocated from telemetry to consumer applications. Second, we should continue to develop technologies to meet near-term growth in ATM bandwidth demand. Third, it is essential to pursue initiatives to meet long-term growth in ATM bandwidth demand.

There is an opportunity at the World Radio Conference (WRC) 2007 to help meet long-term growth of telemetry spectrum demand. WRC Agenda Item 1.5, proposing worldwide allocation of additional spectrum for wideband ATM in the 3-30 gigahertz (GHz), will be voted on by ambassadors of over 150 nations. We are working to gain national and international support for this initiative. Economic considerations are important to the WRC proposal because there is an economic value of ATM to national economies. This paper shows the vital economic importance of having adequate accessibility to ATM spectrum. The study was requested by Mr. Derrick Hinton who represents the Director, Operational Test and Evaluation (DOT&E) office.

In the United States (US), the national aerospace industry generates 15 percent of the Gross National Product and over 11 million jobs. Aerospace products account for the largest positive balance of payments contribution of any sector of the nation's economy. Over 40 percent of the US industry's products are exported. The US relies on aeronautical products to support its large commercial and military sectors. Each year, US airlines move 600M+ passengers and pieces of cargo[i]. Aircraft and aeronautical products are critical to the US economy. They are critical to the international economy. Every country that purchases aircraft and aeronautical products will pay a premium in cost and schedule as the flight test of these devices drive up the price and schedule of product due to telemetry limitations. Product development and testing costs are reflected in the ultimate product price.

Figure 1 is a graphical representation of how telemetry bandwidth limitation will affect the aircraft industry. Reduction in availability of required telemetry spectrum is estimated based on reduction in relative quality of flight testing. Estimated annual loss due to telemetry spectrum shortfall is projected at $104M in 2020[ii].

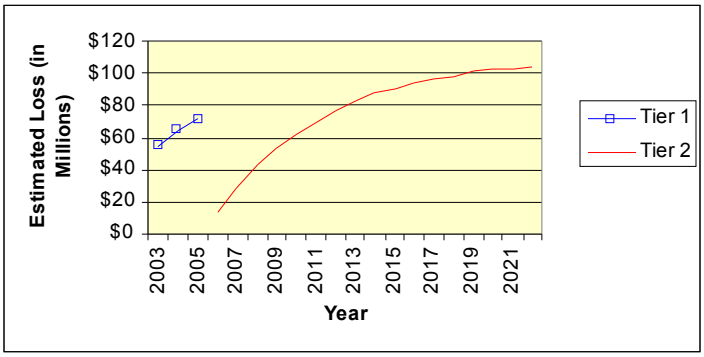

Figure 1. Economic Impact of ATM Bandwidth Limitation

In addition to these direct costs, there are also indirect impacts due to insufficient ATM spectrum. Schedule delays significantly reduce the time it takes to field a new aeronautical product, and this may further multiply costs by a factor of ten. In the competitive aerospace industry, time-to-market can make or break a program. The quality of testing may also suffer without adequate ATM spectrum.

Flight test telemetry spectrum is, and will continue to be, a vital component that must not only be defended, but also augmented to meet future requirements. WRC 2007 Agenda Item 1.5 and the allocation of additional telemetry spectrum will help avoid the adverse effects from insufficient ATM spectrum.

[i] Walker, Robert S. "US Aerospace Commission Letter to President Bush," Commission on the Future of the US Aerospace Industry, 20 March 2002.

[ii] Carolyn Kahn, *Economic Impact of Telemetry,* The MITRE Corporation, March 2004.