

EXHIBIT 1
NARRATIVE STATEMENT

1. OVERVIEW

Aeronautical Radio Inc. (ARINC) previously applied for and received an Experimental Radio Station Construction Permit and License (Call Sign WC2XPE). *See* File Number 0054-EX-PL-2001. Under this license, ARINC has been developing a Ku-band (11.7 to 12.2 GHz and 14.0 to 14.5 GHz) two-way wideband system to communicate between commercial aircraft and a Ground Earth Station. ARINC also has been developing a smaller, lighter, but equally wideband system for executive jet aircraft called “SKYLinkSM.”

In this application, ARINC seeks FCC authorization to begin the next phase of its testing and development of the SKYLink service—a Limited Market Study. As detailed below, ARINC proposes to conduct the Limited Market Study within CONUS and on several different types of domestic business jets which seat up to sixteen passengers. Initial installations will be on Gulfstream IV, V and Cessna Citation X aircraft. Through this Limited Market Study, ARINC seeks to determine how the SKYLink service will be used by, among others, business customers.

Grant of this application would be consistent with the U.S. position on World Radio Conference 2003 Agenda Item 1.11, which supports broadening the secondary MSS allocation at 14-14.5 GHz to include AMSS. Furthermore, the FCC previously granted authority similar to, but broader than, that requested herein to Qualcomm, Inc. (Qualcomm) and The Boeing Company (Boeing). In 1989, the FCC granted Qualcomm blanket authority to construct and operate a 12/14 GHz network of up to 20,600 mobile and transportable earth stations and a fixed hub station, which provides two-way satellite-based data communications. Further, in December 2001, the Commission authorized Boeing to provide two-way broadband connectivity to commercial aircraft using up to eight hundred (800) technically identical transmit and receive mobile earth stations aboard aircraft in the 14.0-14.5 GHz uplink band and the 11.7-12.2 GHz downlink band.

2. DESCRIPTION OF LIMITED MARKET STUDY

ARINC developed its SKYLink system for a target market of business travelers. These travelers expect to have all of the tools of their trade at their fingertips, including a high-speed Internet connection. SKYLink will provide downstream speeds between .5 and 3.5 megabits per second and upstream speeds of 32, 64 or 128 kilobits per second.

While the need for high-speed connections for commercial airliners is well-established, privately owned business jet aircraft differ considerably from commercial airliners with respect to air routing, usage patterns, passenger capacity and, to some extent, user requirements for communications links. Thus, ARINC proposes a Limited Market Study designed to evaluate the commercial viability and usage characteristics of SKYLink service on business jet aircraft. Through the study, ARINC seeks to obtain information regarding the frequency and duration of use during a flight, data rates achieved to and from each aircraft and aggregate data rates achieved through the transponder. ARINC also seeks to validate the system’s performance by collecting data relating to quality of service, including bit error rates, latency and possible degradation of service at the edge of service contours.

ARINC proposes to apportion the Limited Market Study among several different models of aircraft manufactured by at least two different manufacturers. The aircraft will include FAA designated “experimental” aircraft and also privately owned aircraft whose owners agree to take part in the Limited Market Study. Because executive jet aircraft typically fly only two or three days a week, and some may be out of CONUS for extended periods, ARINC proposes to test its SKYLink service on up to fifteen (15) aircraft. This will permit ARINC to collect data from one (1) to perhaps seven (7) simultaneous flights. ARINC will closely monitor each flight to ensure that the aggregate satellite power densities remain within acceptable, non-interference limits for the selected data rates of the service. Further, satellite transmit and receive footprints will be verified within CONUS by monitoring the quality of service, including bit error rates, data rates, throughput and latency.

ARINC seeks authority to perform an 18 month study. ARINC will retain ownership of the Airborne Integrated SATCOM Terminals (AISTs) for the duration of the Limited Market Study. ARINC will be responsible for revising and upgrading the terminals based upon the results of the Limited Market Study. Thereafter, the airborne terminals will be available for purchase by the aircraft owner/operator.

DESCRIPTION OF SKYLINK SYSTEM

The major elements of the SKYLink system are the AIST, the Ground Earth Station (GES), the Network Operations Center (NOC) and the Fixed Satellite Service (FSS) transponder. With a single exception, discussed in the next sub-section, the ARINC Limited Market Study will employ the same system architecture and equipment covered by its existing experimental authority. A complete technical description of the experimental system is provided as Attachment A.

2.1 Airborne Integrated SATCOM Terminal

Each AIST will consist of a steerable antenna capable of accurately tracking a Ku-band Geo-Stationary Orbit Satellite in the FSS and a Transceiver, with a Router interface to the user. The antenna will be mounted on a top surface of the aircraft, such as the peak of the vertical stabilizer, with an unobstructed view of the sky. The AIST ARINC will use is an improvement on the prior model. Full technical details, including proof that transmissions will *not* interfere with adjacent Ku-band satellite networks, can be found in Attachment A.

The antenna control unit will direct the antenna by commanding the azimuth, elevation and polarization motors to pre-determined satellite coordinates, based upon aircraft coordinates obtained from the aircraft’s inertial navigation system. Upon acquiring the correct service satellite and transponder, the Transceiver will receive and recognize a forward data stream containing a configuration message that indicates the authorized return link frequency, frequency reference and data rate. Only then will the Transceiver transmit a “log-in” burst to the GES and to the NOC via satellite. The network management system (NMS) in the NOC will retain positive control over the power and frequency of that Transceiver until it is “logged-out.” Once an authorized link has been established, users can connect their laptop computers or other personal digital assistant (PDA) devices, to the Transceiver Router via standard Ethernet connections and begin two-way communications with the ground network.

2.2 Ground Earth Station

The GES for the Study and for future operations will be located in Carlsbad, California at 33.1°N, 117.2°W. The uplink/downlink antenna is a dedicated 4.5 meter dish, which is being licensed and built by ViaSat under separate cover, apart from this modification request. Viasat is coordinating the design and installation of the earth station with the satellite operator, SES Americom, who have been providing the GES for the Experimental License testing from their Woodbine, MD. facility. The new, secure antenna site, which will be dedicated to the SKYLink system, is adjacent to the controlling NOC, a facility that currently oversees other VSAT network services provided by ViaSat.

2.3 Network Operations Center

As mentioned above, the NOC will be located adjacent to the GES in Carlsbad, California. The NOC will control the GES and regulate the data traffic through each satellite transponder assigned to it. As SKYLink AIST units are certified for aircraft installation, the NOC commissions each one. This entails the performance of all built-in tests and additional tests designed to ensure compliance with FCC regulations. If a unit successfully completes these tests, it will be entered into the Commissioned Unit database. Only commissioned AISTs, which are receiving the designated forward link transponder and are locked to it, can receive authorization from the NOC to transmit.

The NOC regulates the transmit power and data rate of each AIST and will terminate any or all transmissions which exceed individual or aggregate tolerances for the return link. The NOC routes the in-tolerance, authorized users to the ARINC Global Network (AGN), the ARINC Direct Network Operations Center and to the Internet through Internet Service Providers.

2.4 Satellite Transponder

SES Americom, a partner with ARINC in the SKYLink program, is providing a transponder on AMC-1 (formerly GE-1), a satellite located at 103° W.L., for service. A single, mid-band transponder will handle the bi-directional data traffic to and from the aircraft participating in the study, within the satellite's CONUS footprint. The use of a mid-band transponder will ensure that there is no interference to Radionavigation in the 14.0 to 14.2 GHz band or to Radio Astronomy in the 14.47 to 14.50 GHz band of the FSS spectrum. SES Americom and ARINC jointly will coordinate transmissions pursuant to the proposed Limited Market Study with adjacent FSS satellite operators. SES Americom will secure signed coordination agreements with adjacent operators.

Frequency Plan

On the Forward link from the GES to the aircraft, ARINC proposes to use the 14.05 to 14.47 GHz band for transmissions from the GES to the satellite and the 11.7 to 12.2 GHz band for transmissions from the satellite to all aircraft within the satellite footprint. On the Return link from the aircraft to the NOC, ARINC proposes to use the 14.0 to 14.5 GHz band for transmission from the aircraft to the satellite and the 11.7 to 12.2 GHz band for transmissions from the satellite to the NOC. Proprietary technology will separate the two data streams and route the Return link to its proper destination. Frequency re-use between the service and feeder links will permit more efficient operation and tighter control of the assigned bandwidth.

3. CONCLUSION

ARINC respectfully requests that the Commission grant this application to enable it to perform a Limited Market Study of the SKYLink system, a system designed and tested under ARINC's existing Experimental License.