Verizon Airfone Inc.
Experimental License Application
File No. 0186-EX-PL-2003
Exhibit 1

Objective: Verizon Airfone, Inc., seeks authority to test broadband wireless technologies in an air-to- ground and ground to air environment. Information obtained from these experiments is expected to be available for consideration by the Commission as it reviews the issues raised in the *Notice of Proposed Rule Making* in WT Docket No. 03-103.

This application proposes only technical evaluations and does not seek authority for a limited market study. If authority for a limited market study is ever desired, a new authorization or necessary modification of the requested authority will be sought.

Background: The current Commercial Air-Ground Radiotelephone Service authorized under Section 22.857 *et. seq*. of the Commission's Rules has been allocated the bands 849 – 851 MHz for ground-to-air and 894 – 896 MHz for air-to-ground service. Airfone is the only licensee providing regular public air-ground service in these bands. The current service is narrowband and effectively limited to a maximum data rate of 9.6 kbs in a 6 kHz channel. With the development of the internet and the demand for higher speed connectivity, Airfone believes that a need exists for higher speed public air-ground circuits using a terrestrially based infrastructure that could evolve from the current narrowband infrastructure. The program of experimentation will evaluate the feasibility of such a system.

Experimental Plan: Airfone intends to test the feasibility of leading edge technologies for the purpose of validating their applicability within the aerospace environment. Specifically, this includes technologies that can:

- Tolerate high rates of speed, in some cases in excess of 700 miles per hour
- Minimize transmission latency, *i.e*., provide high audio qualities
- Utilize high spectral efficiency
- Be deployed inexpensively in comparison to satellite-based systems
- Offer economical upgradeability
- Support a wide range of customer needs, *i.e*., internet access, email, streaming video and audio, on-line entertainment including games.

To support this feasibility testing, Airfone intends to conduct in-band testing involving aircraft and up to three base stations.

During these tests, the following parameters will be evaluated:

System end-to-end data rates
System latency
Co-located base station interference and its effects on system performance
The benefits of various airborne antenna schemas
Hand-off robustness
System link budgets

Testing will take place on business jets and/or or commercial airliners. Tests will be conducted during the period of 12:00a.m. to 3:00 a.m. Central Time. Airfone expects that during most weeks, testing will be conducted not more than two nights per week. Broadband transmitting and receiving equipment will be co-located within existing Airfone radio base stations and operate within the 849 – 851 MHz and 894 – 896 MHz bands.

The testing period is expected to last one year from the commencement of the first flight test or until enough data is collected to substantiate or dismiss the technology under evaluation.

Interference Considerations: As noted above, Airfone is the only licensee currently providing regular public air-ground service in the 849 – 851 and 894 – 896 MHz bands. The testing will "busy-out" the Airfone system over approximately one-third of the land area of the conterminous United States during the limited early morning hours of the test. During the test narrowband Airfone handsets aboard commercial aircraft will display a message stating that service is not available.

The ground stations will be temporary installations. Existing Airfone ground station locations specified under the license for station KNKG804 will be employed. Only locations that are 550 miles or more from both the Canadian and the Mexican borders will be used. If ground station locations within 550 miles of the border are required, an appropriate modification will be sought in order that any necessary international coordination may be undertaken.

The effective radiated power to be employed at ground stations will be 315 Watts (55 dBm). Although this is more than the 100 Watts authorized under Section 22. 867, the power spectral density will be far less than narrowband signals because the power will be distributed within a 1.25 MHz wide channel. The aircraft stations will operate with 7 Watts (38.5 dBm) or less of effective radiated power within a 1.25 MHz wide channel. This is approximately 12 dB lower than the narrowband ERP limit of 30 watts set forth in Section 22.867 of the Commission's Rules.

Antennas: Airfone seeks the flexibility to employ a variety of antennas at both ground stations and aboard aircraft. The maximum gain for ground stations is not expected to exceed 17 dBi. Antenna beamwidth at the half power points is expected to be 65 degrees. The maximum gain of aircraft antennas is not expected to exceed 6 dBi at horizontal and

1.5 dBi at a 5 degree bank. Both air and ground antennas that employ directivity are under consideration and are expected to be evaluated in addition to nondirectional antennas.

RF Exposure: The transmitting antennas for the ground stations will be located at existing Airfone sites. The antennas will be mounted and operations conducted in such a way as to restrict access to areas in which personnel assisting in the experiment would be exposed to RF energy in excess of the occupational limit set forth in Section 1.1310 of the Commission's Rules. The proposed operation will also comply with the exposure limits set forth in Section 1.1310 with respect to the general population, including workers not employed in the experimental operations. In order to meet these conditions, access to the areas in which the exposure limits could be exceeded will be prevented by appropriate security measures including, as required, fencing, locked doors, antenna elevation, and signage.

Public Interest Statement: The development of broadband air-ground services will benefit air travelers and the airlines that serve them. The technology to be evaluated under the authority sought herein could provide a basis for the development of new services that will provide high-speed internet connectivity to aircraft to facilitate a wide variety of business, personal, and security applications. As such, grant of this application for an experimental license will serve the public interest by helping to advance the state of the radio art.