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May 15, 2001

VIA FEDERAL EXPRESS

Federal Communications Commission
Experimental Radio Service
P.O. Box 358320
Pittsburgh, PA 15251-5320

RE: SPECIAL TEMPORARY AUTHORITY REQUEST
FOR SKYTOWER INC. TO TEST IMT-2000 AND BROADCAST
TRANSMISSIONS FROM HIGH ALTITUDE PLATFORM

Dear Madam or Sir:

SkyTower, Inc. ("SkyTower") hereby requests a Special Temporary Authority ("STA") to operate radio transmitters from a stratospheric platform, and to operate associated uplink transmitters, in the flight range of the U.S. Navy Pacific Missile Range Facility ("PMRF") on the Island of Kauai in Hawaii. SkyTower requests this STA for a period of four months (August 1, 2001- November 30, 2001). Grant of this STA will serve the public interest by permitting SkyTower to validate performance data for use of stratospheric platforms to provide both wireless communications on IMT-2000 frequencies and digital broadcast signals on UHF frequencies. In support of this request, the following information is submitted:

1. Applicant's Name, Address, and Contact Information

SkyTower, Inc.

Contact Technical Questions:

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Contact SkyTower's FCC Counsel: Holland & Knight LLP

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2. Description of Why an STA is Needed

SkyTower requests an STA in order to test the performance of its stratospheric platform for IMT-2000 communications and digital television transmission. Stratospheric platforms have significant advantages over terrestrial towers and satellites for certain applications. Stratospheric platform technology has the potential to economically deliver wireless data and video services to urban, suburban and even rural residential, business, and government customers. Because of their relatively large focused footprint, stratospheric platforms may be the most cost-effective way to bring wireless data and video services to remote locations.

SkyTower's parent company, AeroVironment, Inc., together with NASA and others, has developed an unmanned solar-electric airplane named "Helios." Helios will be capable of continuous flights of up to six-months at an altitude of 60,000 feet. SkyTower is developing various telecommunications applications for the Helios platform. AeroVironment has developed Helios and earlier prototypes as part of NASA's ERAST¹ Project which supports NASA's objectives:

Through ERAST many new propulsion, materials, control, instrumentation, and sensor technologies are being pioneered which could enable the development of a fleet of high-flying aircraft that could conduct a wide variety of Earth and atmospheric missions . . . [and] serve as relay platforms for telecommunications systems.²

In addition, the Director of the NASA Dryden Flight Research Center has pledged NASA's support for the telecommunications demonstration flights, which, if approved, will take place immediately after flight tests also taking place at the PMRF. It is critical for the success of stratospheric platforms that transmission be tested under realistic flight conditions. Further, SkyTower will agree to provide to the Commission, subject to protection or redaction of proprietary information, a report on the results of its testing.

3. Type of Operation to Be Conducted and Purpose.

The operations will be for the purpose of demonstrating and validating the following communications:

¹ Environmental Research Aircraft and Sensor Technology.

² NASA Facts, Helios Prototype: The Forerunner of Solar-Powered Flight in the 21st Century (NASA Dryden Research Center), available at <http://www.dfrc.nasa.gov/PAO/PAIS/HTML/FS-068-DFRC.html>.

- Bi-directional IMT-2000 feeder links between a gateway station and Helios;
- Bi-directional IMT-2000 mobile links between a fixed or mobile remote user and Helios;
- Uni-directional digital television broadcast links (uplink) from a gateway station to Helios;
- Uni-directional digital television broadcast links (downlink) from Helios to remote users.

Communications Research Laboratories ("CRL"), a research agency of the Japanese government, has requested and will be partially funding operational tests on the requested frequencies for its international applications. NASA Dryden Flight Research Center will provide aircraft safety certification and will participate in the testing. The U.S. Navy PMRF will provide flight clearance and use of this facility will ensure safety and reduce possible interference. Aircraft control and telemetry frequencies are NASA allocations and have been approved for use on the flight-test range at PMRF. (See attached).

4. Time and Dates of Proposed Operation.

The proposed operations will be from August 1, 2001 – November 30, 2001, on a non-continuous basis, primarily during daylight-hours. Use of the PMRF has been confirmed for the period.

5. Class of Station/Call Sign.

SkyTower seeks an experimental station license and requests separate call signs be assigned for the IMT-2000 transmitter and the UHF-DTV transmitter.

6. Location of Transmitter and/or Mobile Area, Including Geographical Coordinates

The transmitters will be tested from the Helios Platform while on the ground at the PMRF and from an airborne loiter station at approximately 60,000 feet within a 50-mile radius of: 22 02 2.51 N and 159 47 21.74 W NAD83 (within the PMRF flight range). The Gateway Uplink transmitter(s) will be located at the PMRF at the above coordinates. Mobile IMT-2000 handsets will be tested with the PMRF within the 50-mile radius.

7. Equipment to Be Used.

The Helios Platform will be used to test two transmitters: a 2 GHz transmitter manufactured by NEC to test IMT-2000 applications and an UHF transmitter manufactured by Toshiba to test UHF digital signal broadcasting. Both of these transmitters are custom designed prototypes. Gateway uplink will be provided using NEC equipment. The IMT-2000 handsets will be prototypes provided by NEC that have been modified slightly to communicate with stratospheric platforms.

8. Frequency Desired.

Preferred:

<u>Frequency (MHz)</u>	<u>Guard Band (MHz)</u>	<u>direction</u>
<i>IMT-2000</i>		
1985 - 1990	1982.5 - 1992.5	ground to air (feeder uplink)
1935 - 1940	1932.5 - 1942.5	ground to air (mobile uplink)
2140 - 2145	2137.5 - 2147.5	air to ground (feeder downlink)
2125 - 2130	2122.5 - 2132.5	air to ground (mobile downlink)
2000 - 2006	1997.5 - 2008.5	ground to air (TV feeder uplink)
<i>Digital Broadcast</i>		
530-536		air to ground (DTV broadcast downlink -Ch. 24)

Alternates:

<u>Frequency (MHz)</u>	<u>direction</u>
<i>IMT-2000</i>	
Any 5 MHz bandwidth with 2.5 MHz guard bands on either side within:	
1980 - 2010	ground to air (feeder uplink)
1945 - 1965	ground to air (mobile uplink)
2170 - 2200	air to ground (feeder downlink)
2135 - 2150	air to ground (mobile downlink)
2000 - 2006	ground to air (TV feeder uplink)
<i>Digital Broadcast</i>	
Any UHF DTV Channel	air to ground (DTV broadcast downlink)

SkyTower is requesting the 2 GHz bands specified above for several reasons:
(i) these bands are IMT-2000 bands for which there are compatible user equipment

and transmitters that can be modified for the tests; (ii) these tests will help validate service in the 2 GHz range in specific bands requested by foreign customers for international applications; and (iii) frequencies in the 2 GHz band are likely to be used for third-generation wireless applications that may include stratospheric platforms as integral components. For example, the Commission has decided to reallocate 1990-2025 MHz and 2165-2200 MHz to a new Mobile Satellite Services (MSS). One MSS applicant has proposed utilizing "High Altitude Platforms" to augment its satellite signal.³ In addition, the Commission also has an ongoing rulemaking to reallocate certain spectrum including 2110-2150 MHz and 2160-2165 MHz for third-generation wireless applications.⁴

The 530 to 536 MHz request is for UHF TV channel 24. However, any free UHF Digital TV channel will suffice for this experiment. SkyTower has only located one station in the Hawaiian Island operating on Channel 24. This station, a low-power UHF translator station, KUKO-LP (Fac. Id. 41612), is located in Haleakala on the island of Maui approximately 243 miles from the PMRF.

9. Output Power and ERP of Transmitter.

The effective radiated power ("ERP") of the 2 GHz transmitter will be less than 5 dBW. The ERP of the UHF system will be less than 10 dBW.

10. Proposed Type of Emission.

All of the 2 GHz mobile system transmitters (uplink and downlink) will transmit CDMA spread QPSK signals, circularly polarized. (The mobile handsets used will also be CDMA spread QPSK, but linearly polarized dipole). The UHF transmitter will downlink an OFDM signal, circularly polarized from Helios with a uplink feeder transmitting an OFDM signal.

11. Antenna Height Above Ground.

The Uplink transmitter will be less than two meters above ground. The airborne transmitters will operate from an altitude of approximately 60,000 feet.

³ Notice filed by ICO March 8, 2001 in IB Docket 99-81, p. 7 (2 GHz MSS Service Rules Proceeding).

⁴E.T. Docket 00-258 (3G Rulemaking).

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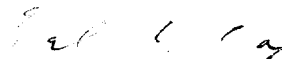
12. Anti-Drug Abuse Act Certification.

The applicant certifies that no party to this application is subject to a denial of federal benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. § 862a.

Enclosed with this letter are the requisite FCC Form 159 and a check in the amount of \$50.00 to cover the filing fee. An extra copy of this filing is enclosed. Please date-stamp the extra copy and return it to me in the enclosed self-addressed, stamped envelope. Please direct any technical or other questions to the contact persons identified above.

Very truly yours,

SKYTOWER, INC.



Earl C. Cox
Director of Communications