

NARRATIVE STATEMENT

By this application, MeshNetworks, Inc., seeks to modify its experimental license for station WC2XUE, which was recently renewed under File No. 0190-EX-RR-2003, by adding certain bands and deleting unneeded station locations. Attached for the staff's convenience is a copy of the current authorization marked with the changes requested by this modification application.

Specifically, MeshNetworks requests authority to test the functionality and customer suitability of new generations of innovative wireless equipment for use in the 2.5, 4.9, and 5.9 GHz bands in addition to the 2.4 and 5.8 GHz bands already authorized under its license. It also seeks to delete the company's authority to conduct scalability tests at three locations (Washington, DC; Dallas-Fort Worth, Texas; and Denver, Colorado), as such authority is no longer needed. Last, MeshNetworks requests an increase in the term of its license from 2 to 5 years, so that it may continue conducting tests over the course of the next several years.

In support of this application, the following is shown:

(1) Applicant's Name and Address:

MeshNetworks, Inc.
485 North Keller Road, Suite 250
Maitland, FL 32751

General Contact:
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(2) Description and Purpose of Operation:

MeshNetworks has developed a data-centric wireless communication system that provides multimedia services (voice, data, video, and location) to mobile personal Internet devices such as personal digital assistants (PDAs) and laptop computers. Its system achieves this through the use of advanced, patented IP-based peer-to-peer ad hoc networking technologies and high performance wireless modems. Among its many applications, this technology lends itself especially well to public safety and homeland security where precise geo-location of users, mobility, and the ability to operate without connectivity to a central communication facility can be of utmost importance.

The system supports connection between subscribers within a neighborhood, metropolitan area, or region via a QDMA LAN/WAN and between subscribers via the public switched telephone network, the wired Internet, and other networks. Like cellular systems, it is designed to support mobile users.

Currently, MeshNetworks holds equipment authorizations for such equipment to operate on a Part 15 basis in the 2.4 GHz band. The authority sought herein will allow MeshNetworks to continue with the development of 2.4 GHz equipment while also developing equipment to operate in other bands.

(3) Need for a 5-Year License:

MeshNetworks proposes to display, test, and operate prototype wireless equipment so that it may meet competitive challenges, investor expectations, and user needs. This modification application seeks a five-year license to accommodate ongoing tests of equipment that is expected to change or evolve over the next five years as a result of the company's research and development. The company's experience has demonstrated that the development life cycle of the public safety and homeland security markets is longer than other applications given its embryonic state and absence of a dominant technical solution. Thus, the issuance of a five-year license is in the public interest, convenience, and necessity.

(4) Specific and Nationwide Locations of Proposed Operation:

MeshNetworks proposes to conduct experimental operations centered primarily at its company headquarters, located at 485 North Keller Road, Suite 250, Maitland, Florida (NAD-83 coordinates: 28-37-55.5 N; 81-23-57.3 W). Fixed units could be placed on rooftops, billboards, water towers, cell towers, utility poles, and streetlight poles within 80 kilometers of this address. Mobile units will be used by persons in vehicles and by pedestrians and will traverse the area in which coverage is provided by the fixed units.

Although it will conduct tests primarily at the location listed above, MeshNetworks also plans to demonstrate equipment at other locations in the United States. As it cannot at this time determine the specific locations of such demonstrations, MeshNetworks seeks authority to operate nationwide (within the United States and its territories). Specifically, MeshNetworks seeks authority to demonstrate, test, and operate products (1) at its own premises; (2) at the premises of entities working under MeshNetworks' authorization in the design and development of the devices and related products; (3) at trade shows or non-residential exhibitions; and (4) at non-residential, business, commercial, industrial, scientific, or medical locations during the design, development, test, and pre-production stages. Indeed, these operations would be consistent with the requirements set forth in Section 2.803 of the Commission's marketing rules. 47 C.F.R. § 2.803 (2002); *see also* Revision of Part 2 of the Commission's Rules Relating to the Marketing and Authorization of Radio Frequency Devices, ET Docket No. 94-45, Report and Order, released Feb. 12, 1997, at 11-13, 19-20 ("Marketing Rule Revisions").

Finally, MeshNetworks seeks authority to operate devices at residential locations. It submits that grant of such authority is in the public interest and convenience. The nature of the services and devices typically involves such usage and, therefore, the equipment should be tested at residential locations.

None of the units would be marketed to the public under this experimental license. Moreover, MeshNetworks would inform entities participating in the experiments that operation is for experimental purposes only and may be cancelled at any time. In addition, MeshNetworks would label any unauthorized equipment or user information as follows:

This device has not been authorized as required by the rules of the FCC. This device is not, and may not be, offered for sale or lease, or sold or leased until authorization is obtained.
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(5) Equipment to Be Used:

MeshNetworks proposes to conduct scalability, throughput and loading tests on both base stations and mobiles. To obtain accurate data regarding real-world operations, MeshNetworks must employ a sufficient number of units during its studies to simulate actual usage. It expects that it will be able to conduct most of its experimentation with a maximum of 1,000 unapproved fixed and mobile units as part of its Maitland, Florida, operations proposed above. MeshNetworks notes that this number represents a *decrease* in the number of units (3950) authorized under its original authorization.

Many of the consumer products MeshNetworks proposes to test are typically sold in quantities of hundreds of thousands. For example, the potential market for its products include the entities that service over one hundred fifty million consumers that subscribe to cellular and

cellular-like services in the United States. Accordingly, in addition to the demonstrations described above, MeshNetworks proposes to operate not more than 200 unapproved fixed and mobile units at each of not more than five sites at any given time for demonstration purposes. In other words, at no time would MeshNetworks demonstrate and operate more than a total of 1,000 unapproved fixed and mobile units under the nationwide portion of the authority requested herein.

In sum, MeshNetworks seeks authority to conduct scalability tests in Maitland, Florida, using 1,000 or fewer fixed and mobile units and to demonstrate 200 or fewer fixed and mobile units at each of five or fewer locations nationwide (for a total of 1,000 or fewer fixed and mobile units). It will limit the number of units, as well as the power, area of operation, and transmitting times of these units to the minimum necessary to evaluate the system, however. As required, MeshNetworks would seek separate and specific authority if additional units or other operating capabilities are needed to conduct a particular experiment.

(6) Frequencies Desired:

MeshNetworks' wireless equipment will operate in the following bands:

2.400 – 2.4835 GHz (“2.4 GHz band”)
2.500 – 2.686 GHz (“2.5 GHz band”)
4.940 – 4.990 GHz (“4.9 GHz band”)
5.725 – 5.875 GHz (“5.8 GHz band”)
5.850 – 5.925 GHz (“5.9 GHz band”)

Operations in the 2.4 and 5.8 GHz bands will be conducted according to Part 15 and 18 guidelines. Operations in the other bands will be conducted in a manner designed to meet the requirements of Section 15.247 of the FCC Rules except for the frequencies of the bands of operation. In the case of the 2.5 GHz band, operations will be conducted in cooperation with existing MMDS and/or ITFS licensees, who hold authorizations for licensed operation in the spectrum to be employed. Operations in the 4.9 GHz band will be conducted in cooperation with regional public safety frequency coordination committees, and operations in the 5.9 GHz band will be conducted in cooperation with state and/or local authorities eligible to operate direct short range communications systems in the areas of the tests.

(7) **Radiated Power:**

MeshNetworks' wireless equipment will meet the output power guidelines of Part 15 of the Commission's Rules for spread spectrum operation set forth in Section 15.247 of the FCC Rules, except where modifications are needed to conform to the technical requirements for operation in the 4.9 GHz band or the 5.9 GHz band under Sections 90.1215 and 90.205(p), respectively. 47 C.F.R. §§ 90.205(p), 90.1215. Thus, the following maximum powers are proposed:

<u>Band</u>	<u>Power</u>
2.4 GHz	1 watt tpo, 4 watts e.i.r.p.
2.5 GHz	1 watt tpo, 4 watts e.i.r.p.
4.9 GHz	33 dBm (peak tpo), 42 dBm (e.i.r.p.)
5.8 GHz	1 watt tpo, 4 watts e.i.r.p.
5.9 GHz	750 mW (peak tpo); 30 watts e.i.r.p.

(8) **Type of Emission:**

The emission type is 20M0G7D, in accordance with Section 2.201 of the Commission's Rules. Other emission modes may be utilized, but in no event will the emissions extend beyond the frequency band requested.

(9) **Overall Height of Antenna Above Ground:**

The antennas will not extend more than 6 meters above the ground or, if mounted on an existing building, will not extend more than 6 meters above the building. If the antennas are mounted on existing structures other than buildings, they will be installed in accordance with FAA and FCC rules and regulations.

(10) **Anti-Drug Abuse Certification:**

MeshNetworks hereby certifies that it, its officers and directors, and any party with five percent or greater interest in this application is not subject to a denial of Federal benefits requested herein pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. §862.

United States of America
FEDERAL COMMUNICATIONS COMMISSION
EXPERIMENTAL
RADIO STATION CONSTRUCTION PERMIT
AND LICENSE

EXPERIMENTAL

(Nature of Service)

XD FX MO

(Class of Station)

WC2XUE

(Call Sign)

~~0190-EX-RR-2003~~

(File Number)

NAME MeshNetworks, Inc.

Subject to the provisions of the Communications Act of 1934, subsequent acts, and treaties, and all regulations heretofore or hereafter made by this Commission, and further subject to the conditions and requirements set forth in this license, the licensee hereof is hereby authorized to use and operate the radio transmitting facilities hereinafter described for radio communications in accordance with the program of experimentation described by the licensee in its application for license.

Operation: In accordance with Sec. 5.3(dfj) of the Commission's Rules

Station Locations

- (1) US; MOBILE: Nationwide demonstrations
- (2) Maitland, FL; MOBILE: within 80 km, centered around NL 28-37-55; WL 81-23-57
- (3) Washington, DC; MOBILE: within 80 km, centered around NL 38-54-08; WL 77-02-26
- (4) Denver-Boulder, CO; MOBILE: within 80 km, centered around NL 39-52-53; WL 105-03-02
- (5) Dallas-Ft. Worth, TX; MOBILE: within 80 km, centered around NL 32-47-09; WL 96-47-38

Frequency Information

US; MOBILE: Nationwide demonstrations

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
5725-5875 MHz	FX	20M0G7D		
5725-5875 MHz	MO	20M0G7D		
2.4-2.4835 GHz	FX	20M0G7D		
2.4-2.4835 GHz	MO	20M0G7D		
5850-5925 MHz	FX, MO	20M0G7D		
4940-4990 MHz	FX, MO	20M0G7D		
2500-2686 MHz	FX, MO	20M0G7D		

Maitland, FL; MOBILE: within 80 km, centered around NL 28-37-55; WL 81-23-57

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
5725-5875 MHz	FX	20M0G7D		

This authorization effective January 01, 2004 and
will expire 3:00 A.M. EST January 01, 2006

FEDERAL
COMMUNICATIONS
COMMISSION



Frequency Information

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Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
5725-5875 MHz	MO	20M0G7D		
2.4-2.4835 GHz	FX	20M0G7D		
2.4-2.4835 GHz	MO	20M0G7D		
5850-5925 MHz	FX, MO	20M0G7D		
4940-4990 MHz	FX, MO	20M0G7D		
2500-2686 MHz	FX, MO	20M0G7D		

Washington, DC; MOBILE:within 80 km, centered around NL 38-54-08; WL 77-02-26

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
5725-5875 MHz	FX	20M0G7D		
5725-5875 MHz	MO	20M0G7D		
2.4-2.4835 GHz	FX	20M0G7D		
2.4-2.4835 GHz	MO	20M0G7D		

Denver-Boulder, CO; MOBILE:within 80 km, centered around NL 39-52-53; WL 105-03-02

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
5725-5875 MHz	FX	20M0G7D		
5725-5875 MHz	MO	20M0G7D		
2.4-2.4835 GHz	FX	20M0G7D		
2.4-2.4835 GHz	MO	20M0G7D		

Dallas-Ft. Worth, TX; MOBILE:within 80 km, centered around NL 32-47-09; WL 96-47-38

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
5725-5875 MHz	FX	20M0G7D		
5725-5875 MHz	MO	20M0G7D		
2.4-2.4835 GHz	FX	20M0G7D		
2.4-2.4835 GHz	MO	20M0G7D		

Special Conditions:

- (1) The station identification requirements of Section 5.115 of the Commission's Rules are waived.
- (2) All customers participating in the experiment shall be informed that this operation is for experimental purposes only and can be cancelled at any time.

Special Conditions:

- (3) Prior to equipment authorization or a determination of compliance, the device must be accompanied by a conspicuous notice worded as follows: "This device has not been authorized as required by the rules of the Federal Communications Commission. This device is not, and may not be, offered for sale or lease, or sold or leased, until authorization is obtained."
- (4) Licensee is required to file a PROGRESS REPORT every 6 months from the date of grant. This progress report shall be filed with Federal Communications Commission; Experimental Licensing Branch, MS 1300E1; 445 12 Street, S.W.; Washington, DC 20554.
- (5) Operating powers must comply with the limits authorized under Part 15 of the FCC rules.
- (6) Licensee is authorized to operate up to ~~500~~ ¹⁰⁰⁰ unapproved devices for demonstration purposes only on a nationwide basis. No more than ~~100~~ ²⁰⁰ devices may be operated at a time for each demonstration.
- (7) Licensee is authorized to operate up to ~~50 fixed stations and 3950 mobile stations~~ ^{1000 unapproved devices at Station Location No. (2) stated above.} for each test at the locations stated above. Testing shall be conducted at only one ~~location at a time.~~