



4655 Great America Parkway
Santa Clara, California 95054
www.nortelnetworks.com

To: Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Subject: Experimental License / Public Exhibit I

Date: 17 October 2004

Gentlemen,

An experimental license is being sought for the engineering evaluation of an IEEE802.11 A network for a specialized commercial data communications network. The main objective of the experimentation / testing is to determine if the newly allocated UNII spectrum (allocated with Report and Order Report and Order released on November 18 2003 (ET Docket No. 03-122)) is required to relieve network congestion and increase efficiency one of the networks that Nortel is implementing for one of its high profile customers.

Please see the additional information that follows and if additional information / clarification is required, please do not hesitate to contact me.

Regards,

A handwritten signature in black ink, appearing to read "David Waitt".

David Waitt
Consultant Representing Nortel Networks
david@waitt.us

1. Complete program of research and experimentation proposal including description of equipment and theory of operation:

The main objective of the experimentation / testing is to determine if the newly allocated UNII spectrum (allocated with Report and Order Report and Order released on November 18 2003 (ET Docket No. 03-122)) is required to relieve network congestion and increase efficiency in a commercial indoor IEEE802.11 network that Nortel is implementing for one of its customers.

A network is currently installed and being evaluated by the Nortel customer on the East coast of the US. In order to perform engineering evaluation of the network, Nortel wishes to install similar network at its Engineering facilities in Santa Clara, California. This will allow Nortel Networks to carry out necessary experimentation at its home office and, more importantly, not interrupt the usage of the network currently installed at the customer premises.

The proposed experiment / testing will be utilizing pre-certified, standards based IEEE 802.11 A, 5GHz radios that are certified for operation on 5.15-5.35 and 5.725-5.850 GHz. Under part 15.407 and Part 15.247.

The radios in the engineering network will be loaded with software at Nortel Networks that will allow operation on the newly allocated UNII band.

2. Specific Objectives sought to be accomplished:

The main objective is to determine, given the load demands placed on the network, if it is necessary to utilize the newly allocated UNII bands or if the previous spectrum allocation provides enough bandwidth to support the anticipated data throughput requirements.

3. How the program of experimentation has a reasonable promise of contribution to the development, extension, expansion, or utilization of the radio art, or is along the line not already investigated:

It is not economically sound nor develop, test and certify the network infrastructure nor the network clients to utilize the additional spectrum if it is not necessary. It is becoming apparent that Certification testing of the additional spectrum may be quite costly. At least in some part, these costs would be reflected in the cost of the equipment. If there is not need for the additional spectrum, then there is no need to absorb the added costs associated with the hardware or the certification.

The certification test procedure itself is the topic of much discussion between the FCC, DOD and Industry. The discussions have been ongoing for some time and may continue for several more months before an acceptable procedure is determined. If the new UNII bands are not required, Nortel does not have to wait for the procedures to be finalized, nor apply for an additional Experimental License in order to move forward with the network installation.

Additionally, it is simply not spectrally efficient to utilize spectrum that is not required. If the 2.4 and 5 GHz spectrum that the hardware is currently certified for will meet the current network load demands now and for the foreseeable future, it makes no sense to utilize a band that is not required.

Location of Test Radios

The proposed system testing would take place in an engineering lab environment located at 4655 Great America Parkway, Santa Clara California. The experiments and evaluation will take place indoors.

Proposed Certification Procedure

If it apparent that the newly allocated UNII spectrum is required in order for the network to provide the required data throughput, the units will be certified with the Commission for operation in that band as soon as an acceptable certification test procedure is determined by the Commission, the DOD and Industry groups. If it becomes apparent that the additional spectrum is not required, the units will be loaded with “production” software that only allows operation on the bands for which the devices are currently certified.

Technical Summary 5.8 GHz (IEEE 802.11 A)

Modulation: OFDM
 Occupied Bandwidth: 22 MHz
 Necessary Bandwidth: 18 MHz
 Emission Designator: 18MW7D
 Frequency Tolerance: 25 ppm
 Current Certifications: FCC ID: RVW2230
 Operation on 5.15 - 5.35 GHz and 5.725 to 5.825GHz under Part15.407
 Operation on 5.825 - 5.850 GHz under Part15.247
 Exp Lic Operation: 5.47 - 5.725 GHz under Part 15.407(a)(2)
 Approx Qty of Exp Lic Radios: 50 (Max)

Outline of Nortel Networks Compliance with FCC Regulations:

5 GHz Compliance

Sec. 15.407(a) General technical requirements. (5GHz UNII)

(2) For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

How Nortel Networks Complies:

	FCC Regulations	Nortel Operation
Operating Frequency Band	5.47 - 5.725 GHz	5.47 - 5.725 GHz
Transmit power (MAX)	1.0 Watt EIRP	Approx 0.5 W EIRP
Antenna Gain (MAX, point to multipoint)	6 dBi	7 dBi, in Compliance because it is below the EIRP limit.

Justification of the quantity of units requested for experimentation.

The main objective of the proposal is to evaluate if the newly allocated UNII spectrum is required to meet the data throughput objectives of the network installed at the customer location. In order to do this with a high degree of confidence, it is necessary to replicate the network in an engineering environment. The current network has approximately 37 radios. A quantity of 50 is requested in this experimental license application to cover any necessary additional radios that may be required in the future.

Disposition of radios after evaluation:

If the additional spectrum is not required for the network to operate satisfactorily, then “production” software will be downloaded to the radios and they will be returned to their normal “certified” state.

Otherwise, the radios will be certified for operation within the new band once the FCC / DOD and Industry develop a suitable certification test procedure and pass / fail criteria.