

HARRIS CORPORATION
EXPERIMENTAL SPECIAL TEMPORARY
AUTHORITY APPLICATION
1.8 GHz and 2.4 GHz
NAVAL UNDERSEA WARFARE CENTER
NEWPORT, RHODE ISLAND AREA

DESCRIPTION OF EXPERIMENT

Response to Question 4.

Applicant is requesting Special Temporary Authority (STA) to permit operation of the equipment specified in section 8 of this application. At the conclusion of the experimental tests contemplated herein, the equipment is intended to be used by the United States military. Harris submits that a grant of this experimental request is necessary in the public interest because the proposed operations will forward national security interests by assisting in the advancement of the tactical capabilities of the U.S. Armed Forces.

Response to Question 5.

The experimental STA being requested by Harris Corporation ("Harris") is necessary for testing purposes in connection with contracts with the United States Armed Forces. Specifically, Harris has been contracted by the Naval Undersea Warfare Center ("NUWC") near Newport, Rhode Island to conduct experiments of Harris equipment using non-federal government (2.4 GHz) and federal government (1.8 GHz) frequency bands.

The experiments are designed to determine the extended capabilities of 802.11 wireless LAN devices. Harris will evaluate and demonstrate a high data rate wireless communication network-centric RF radio link. A theoretical link budget will be generated to predict the practicability and feasibility of the communication system and its ranges. Various scenarios will be employed. Transmissions will be conducted between a ship facility and a shore facility. The ship will be mobile and located in the ocean approximately 15 kilometers from shore. The ship will carry an omni antenna with a maximum ERP of 20 watts. The shore facility is located at the oceanfront, and will employ a directional antenna aimed toward the ship in the ocean with a maximum beamwidth of 40 degrees. The front-to-back isolation on the shore antenna is approximately 342 milliwatts.

The testing performed in non-government spectrum is required because there is currently no equipment designed to operate on federal government spectrum that is sufficiently robust to meet required NUWC operations. Thus, Harris intends to utilize non-governmental spectrum for testing equipment that will ultimately be operated on Federal Government spectrum by the United States Armed Forces, assuming that the technology for doing so becomes

available. Other performance-based tests will be conducted using the federal government 1.8 GHz band.

The technology being tested does not consist of commercial off-the-shelf (COTS) devices; rather, the devices being used are highly experimental. The demonstration will include transmission of encrypted information. The level of encryption protection required by the United States Armed Forces is only available in the SecNet-11 card, which utilizes the 802.11-b technology/waveform operating in the 2.4 GHz band. To date, there are no COTS frequency converters that will handle this scenario. Encrypted frequency conversion is one of the areas included within the Harris study, and the study is in the very earliest stages of pre-development. The final system, once it has been fully developed, will be designed to operate in the 1.8 GHz frequency range, which is reserved for Federal Government use. However, the manufacture and operation of encrypted frequency conversion devices for use in the 1.8 GHz band is not available currently, and probably will not be available until several more years of testing and development are completed. Thus, Harris also intends to conduct experiments in the 2.4 GHz band during this project.

Response to Question 8:

	<u>Manufacturer</u>	<u>Model Number</u>	<u>No. of Units</u>	<u>Experimental?</u>
1.	Harris Corp.	802.11g Blue Box	2	YES
2.	HyperAmp	(10 watt) HA2410	2	YES

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