Empire Offshore Wind LLC
Application for Conventional Experimental License
Narrative Statement

Pursuant to Sections 5.51 and 5.54(a)(1) of the rules[1] of the Federal Communications Commission ("Commission"), Empire Offshore Wind LLC ("Empire Wind") hereby respectfully requests a conventional experimental license for 24 months to operate in the 2110-2155 MHz and 2496-2690 MHz bands to deploy and test private wireless network communications in support of planned Empire Offshore Wind Farm programs. Empire Wind provides the following information in support of its request:

1. Planned Operations and Public Interest Benefits

Empire Wind plans to deploy and test a private 4th and 5th Generation (4G/5G) wireless network offshore of New York City for voice, video, data, and industrial internet of things communications support of the Empire Offshore Wind Farm program. The Renewable Energy Lease Area OCS-A 0512 has been designated for Empire Wind's operations ("Lease Area"). The Lease Area covers approximately 79,350 acres, and is located approximately 12 nautical miles ("nm") south of Long Island, New York and 16.9 nm east of Long Branch, New Jersey. The licensed transmissions will radiate from a fixed Offshore Substation, which will be located about 15 nm offshore. The network's primary use is anticipated to be more than 12 nm offshore, though eventually some user equipment may fall just inside the 12 nm mark. As detailed below, the Offshore Substation will be comprised of two sectors radiating in two directions.

The Empire Offshore Wind Farm project is comprised of two phases, Empire 1 and Empire 2, which together will be capable of providing 2.1 gigawatts of power annually to approximately one million households in New York. The windfarm will be operated from a Service Operations Vessel ("SOV"), which requires a highly reliable wireless broadband network for optimal performance, reliability, and safety. Accordingly, Empire Wind plans to install a base station approximately 15 nm offshore to provide the SOV and wind farm employees with private network access. Grant of the experimental license will enable Empire Wind to design, deploy, and test this network. The targeted integration of the private 4G/5G network will be primarily for administrative office communications, digital field workers, document handling, and welfare applications like internet browsing, social media, and streaming for windfarm workers. Future opportunities could include drones, emergency communications, and asset and people tracking. Following the successful deployment and experimentation phase, Empire Wind will seek a permanent spectrum license for the Leased Area to support operations when the windfarm becomes fully operational.[2]

Empire Wind submits that grant of the experimental license will provide substantial public interest benefits by facilitating the deployment and advancement of wind energy in the

[1] 47 C.F.R. §§ 5.51, 5.54(a)(1).
[2] Empire Wind recognizes that the Commission has launched a proceeding to address offshore spectrum licensing issues and will comply with any rules and authorization procedures that the Commission ultimately adopts. *See Facilitating Access to Spectrum for Offshore Uses*, Notice of Inquiry, WT Dkt. No. 22-204, FCC 22-41 (rel. June 9, 2022).

United States. Wind power is a cost-effective, sustainable, domestic source of clean energy. It creates jobs and enables U.S. growth and competitiveness. To this end, grant of the experimental license will enable Empire Wind to deploy and test a private wireless network to support the safe and efficient operation of a substantial new wind farm project.

2. Transmission Equipment

The transmission devices in consideration for this experiment are Nokia models FWIB 2T2R and AWHHF 4T4R, which are FCC-certified, generally available Nokia products. These devices will primarily communicate with standard, off-the-shelf LTE/5G user equipment. The devices may be configured in either of two mutually exclusive ways ("Scenario 1" or "Scenario 2"), but will never operate under both scenarios simultaneously. The power level characteristics associated with each scenario are described below.

Directional characteristics:

Transmitter	Width of beam at the half-power point	Horizontal orientation	Vertical orientation
FWIB 2T2R	65 deg	Sector 1: 284 deg Sector 2: 120 deg	0 deg to horizon, maximum
AWHHF 4T4R	65 deg	Sector 1: 277 deg Sector 2: 102 deg	0 deg to horizon, maximum

Power level characteristics:

Transmitter	Scenario	Max Transmit Power	Antenna Gain	ERP Level
FWIB 2T2R	Scenario 1	10W	18 dBi	55.85 dBm
	Scenario 2	10W	6 dBi	43.85 dBm
AWHHF 4T4R	Scenario 1	20W	18 dBi	58.86 dBm
	Scenario 2	4W	10 dBi	43.87 dBm

3. Location of the Experiment

Transmissions will occur from a fixed Offshore Substation located at 40° 20' 25" N, 73° 26' 50" W. The coverage zone of the station is a polygon described by the following coordinates:

Coverage Zone Polygon Coordinates				
Point 1	Point 2	Point 3	Point 4	Point 5
40.3521057	40.2146062	40.3068243	40.3786359	40.3521057
-73.6408351	-73.2619149	-73.1431183	-73.598335	-73.6408351

4. Operational Safeguards

Empire Wind recognizes that operations pursuant to an experimental license must not cause harmful interference to authorized facilities. To prevent any interference to other licensed communications, Empire Wind will perform on-site RF analysis along with drive/boat testing to

adjust antenna power levels. Furthermore, Empire Wind is working closely with Nokia to ensure the RF equipment avoids harmful interference.

5. RF Exposure Compliance

The Commission's rules for radiofrequency (RF) exposure specify methods for RF equipment operators to mitigate risks to RF exposure by humans. Empire Wind will comply with these RF exposure guidelines for the installed transmitter equipment, for uncontrolled (general population) and controlled (occupational) environments, as specified by Section 1.1310 of the Commission's rules. The testing equipment will have restricted access only to authorized personnel, thus ensuring that emissions will not occur in proximity to the general population. All Empire Wind personnel operating and maintaining the equipment will be trained on proper handling of the equipment to mitigate radiofrequency exposure. Furthermore, all transmissions will be positively controlled by Empire Wind personnel who will be able to cease transmissions during the license period.

6. Stop Buzzer Contact

Once equipment is installed and operational, the following support center will be available 24/7 to stop transmission in the case of interference.

Phone: +47 67 247 365
Email: nor.support@netnordic.com