
Background

Neptune Technology Group (Neptune) is in the process of designing, manufacturing and marketing radio-based, utility water meter reading systems that will operate on licensed spectrum. Through the use of these products, utility companies will fully automate their meter reading activities. The system reduces errors in billing and administrative inefficiencies, lowering costs and providing a higher quality of service to the public. As part of its normal product development processes, the applicant must test these devices in the field to study performance of its products under real world conditions.

Therefore, NEPTUNE requests an experimental under Part 5 of FCC Rules. Specifically, the authority requested herein will allow NEPTUNE to:

- test the performance of its water meter reading systems in different types of meters to ensure device compatibility;
- test the new technology's ability to overcome difficulties associated with the varying placement of utility meters;
- test the viability and demand for various ancillary data collection services; and
- evaluate the performance of the new equipment in variety of operating environments.

Determining the degree to which utilities in various situations (such as described in this application) find NEPTUNE'S meter reading solutions useful in solving problems associated with data collection, and are willing to purchase accordingly, will allow NEPTUNE to tailor the system before the final product design and commercial rollout.

Fixed System Configuration

The NEPTUNE system allows for the collection of meter consumption data from fixed tower locations. One or more base stations are placed in the market of interest. These stations occasionally transmit a signal to acknowledge the meter module. The acknowledge signal is 10 watts effective radiated power (ERP) to overcome vegetation and other factors that could block the signal and to comply with FCC Rules. The meter modules (4 feet from ground level) respond with their consumption data, transmitting the information with approximately 1 watt ERP. The modulating signal is data at a nominal rate of 7200 bits per second (bps), with a minimum of 4200 bps and a maximum of 9600 bps.

Frequency Bands Requested

NEPTUNE will eventually operate in a variety of bands between 450 and 470 MHz. Current designs are optimized for this range in frequencies. For the testing detailed in this application, NEPTUNE has chosen channels licensed under Part 90 in the UHF band generally described as 450-470 MHz. The applicant has requested specific frequency range for each test area based on licensee usage in the areas. The channels requested were selected by the United Telecom Council (UTC), an FCC designated frequency advisory committee for channels in the Private Land Mobile Radio Services. The channels are available for secondary data transmissions, with voice systems having primary access to the band. NEPTUNE understands that these channels are secondary and will immediately cease operation if informed of harmful interference. NEPTUNE believes the short duty cycle of these transmissions will not negatively impact existing licensees in this band.

Channels Requested

NEPTUNE has clients willing to assist in the testing of the meter reading system in the following markets:

Site Name	Base Station (10 Watts) Frequency (MHz)	Meter Module (1 Watt) Frequency (MHz)	Radius for Meters
Barnett Blvd.	451.125	451.125/456.125	10 miles
West Main St.	451.125	451.125/456.125	10 miles
Tallassee Hwy.	451.125	451.125/456.125	10 miles
Frederick Rd.	451.125	451.125/456.125	10 miles

Two frequencies are requested for the meter modules so that the applicant may test both simplex and full duplex operations.

Site Locations

All the sites listed below are existing water tanks. The proposed antennas will not extend more than 6.1 meters (20 feet) from the top of the tanks. Therefore, FAA clearance is not required.

Barnett Blvd.

311 Barnett Blvd

Tallassee, AL

Latitude: 32-32-7.7 N

Longitude: 85-53-37.3 W

Ground Elevation AMSL: 420 feet (128 m)

Antenna Height AGL: 130 feet (39.6)

West Main St.

810 W Main

Tallasse, AL

Latitude: 32-32-49.2 N

Longitude: 85-54-59.0 W |

Ground Elevation AMSL: 424 feet (129.2 m)

Antenna Height AGL: 120 feet (36.6 m)

Tallasse Highway (RT 229 South)

89020 Tallasse Hwy

Tallasse, AL

Latitude: 32-34-24.2 N

Longitude: 85-23-43.6 W

Ground Elevation AMSL: 540 feet (164.6 m)

Antenna Height AGL: 135 feet (41.1 m)

Frederick Rd.

Opelika, AL

Latitude: 32-47-26.9 N

Longitude: 85-23-43.6 W

Ground Elevation AMSL: 750 feet (228.6 m)

Antenna Height AGL: 180 feet (54.9 m)

Number of Units Requested

A critical aspect of the testing involves testing the system under load conditions to model data collisions and other aspects of conducting a wide area data acquisition system. For this reason, the number of units requested in each market is:

Tallasse AL	500 units, plus three base stations
Opelika, AL:	500 units, plus two base stations

Testing Plan

NEPTUNE will test various scenarios in each market for a period not to exceed one year. It is anticipated that additional test authorizations will be requested in other markets.

Summary

NEPTUNE has provided a summary of the need for an experimental license, detailed the bands to be tested and provided a general test schedule. The applicant respectfully requests authorization of an experimental license under Part 5 of the FCC Rules.

Please direct questions regarding this filing to.

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