

Old Dominion University (ODU) operates and maintains 6 SeaSonde High Frequency Radar (HFR) stations as part of the Mid-Atlantic Regional Association Coastal Ocean Observing System (MARACOOS), one of eleven regional associations funded by the NOAA IOOS program office to provide coastal oceanographic data for a variety of government and societal stakeholders. The nationwide HFR network of approximately 170 stations provides critical ocean surface current maps to NOAA and the United States Coast Guard (USCG) for planning search and rescue missions and spill response in addition to other maritime domain awareness purposes and users.

The goal of this ELS application is to begin the transition of these 6 existing stations to the ITU designated bands for oceanographic HFR outlined in FCC order 17-33 (March 27, 2017). Each antenna registered has the two nearest ITU bands associated with it that will allow it to continue to provide the data necessary to continue to meet mission objectives.

ODU will be working with Freedom Technologies, Inc. (FTI, a NOAA contractor) and other regional operators to perform the following tests at existing HFR stations to prepare for the transition and aid in the national channeling plan being developed by FTI:

1. Identify the optimal ITU band at each station to continue to provide the best performance and to meet the needs of users of the surface current maps
 - Characterizing RFI environment within the ITU bands at each stations
 - Measuring performance of existing equipment at each station for the appropriate bands
 - Once the proper frequencies are identified, each operator will need to determine if their equipment needs to be returned to CODAR Ocean Sensors for retuning
2. At each station, waveform parameters need to be adjusted such as modulation multiplexing timing, sweep rates and pulse/gate timing in order to be synchronized with all other stations on the same band/channel to avoid interference
3. Determine the best channeling configuration that will work for all systems to operate simultaneously on the the limited ITU bands
4. Determine proper timing of call sign station identification by the HFR station and ensure that it does not impact the data

These tests must be performed incrementally and while still providing continuous measured ocean surface currents to NOAA and the United States Coast Guard (USCG). It is requested that the expiration of this ELS is March 2022, when all HFR systems are expected to be in compliance with FCC order 17-33.