Contract No: HR0011-14-C-0066

Contract Name: Retrodirective Applique for Coherent Transmission (REACT)

REACT is a Defense Advanced Projects Research Agency (DARPA) program focused on demonstrating the technologies to show that physically separated phased arrays can aggregate coherently combined power on a location through the use of precise timing and localization information distributed over a wireless network. The hardware to support is being developed by Raytheon BBN in order to provide a technology demonstrator that coherency can be achieved over the air. The hardware utilizes a TD-SDR that mates with a microTCA backplane via standard card edge connector and a custom RF transceiver with an instantaneous 40MHz bandwidth and a frequency tuning from 50MHz to 18GHz to provide the tunable frequency range needed. Based on the government requirements under the program, BBN is required to demonstrate coherent transmission of signals with increasingly wider bandwidth as a verification of the utility of the coordinated but separated arrays. The path toward scaling the array systems to increase ranges of operation for the collective system of radiators must be proven.

During Phase 1 of REACT, Raytheon BBN is required to demonstrate cooperative beamforming from separated transmitters subjected to independently-applied acoustic vibration and motion emulating that experienced at sea. Both the target and coherent transmitting hardware will be located on ground-based platforms. The coherence goal is a VHF through C-Band signal with an instantaneous bandwidth of at least 10 MHz but greater bandwidths are expected in subsequent phases.

To support these requirements, Raytheon BBN would like to modify its existing FCC license by adding two additional frequency bands. We'd like to operate near the ISM (Wi-Fi) bands since we already have the hardware to support testing in these bands but not have to deal with potential interference both from and to users in those bands. We're relatively flexible particularly with the 2nd band being requested. In addition, the upper band is necessary to demonstrate operation up to the limit of C-band, a requirement under the program. The additional bands include:

2605-2645MHz with 35MHz BW @ 0.5W - Emissions Designator: 35M0J0N/35M0J1N

(Could be any 35-40MHz band from 2500MHz to 2700MHz)

5625-5675MHz with 35MHz BW @ 0.5W - Emissions Designator: 35M0J0N/35M0J1N

(Could be any 35-50MHz band from 5200MHz to 5800MHz)

Radio Service:
MOBILE