

From: Richard Hibbeler

To: Hung Le

Date: September 17, 2021

Subject: Request for Info - File # 0170-EX-CM-2021

---

Message:

Cohere Technologies is working on field-proving the viability and advantages of our new Software Defined Radio Beamforming technology to be applied to 4G LTE and 5G waveforms. Leveraging our learnings from our proprietary OTFS (Orthogonal Time Frequency Space) modulation scheme, we can provide a deterministic picture of the wireless channel characteristic and provide static performance for today's current 4G LTE and 5G technologies.

Tests will be conducted:

1. Provide Band 3 LTE Cell coverage under multipath conditions in LOS, nLOS and NLOS links using 4x4 MIMO antennas.

2. Test MU-MIMO links with Multiple-Users (cell phones) and verify spectral efficiency improvement.

This operation will provide comprehensive measurements and test results for wireless radios operating in LOS, nLOS and NLOS environments for cell basestations. Provide experimental data on static radio link throughput performance. Expand the system's capabilities beyond the current 4x4 MIMO to much higher order MIMO configurations to provide unprecedented spectral efficiency of up to 4x of current 4G LTE capabilities.

In previous lab tests, our Beamforming technology has demonstrated capacities of up to 3x 4G LTE on LOS links. No current technology promises such an improvement. Our technology has the potential to solve the problem of spectrum shortage in the lower bands, while providing unprecedented capacities within small spectrum slices. Past tests which only indicate the potential of the technology have already proven throughputs higher than any current technology. In the simulated massive MIMO system envisioned, capacities of substantially more than 4x appear to be within reach.

NOTE: For CBRS band (3550-3700MHz) experiments, our system will coordinate with Google's CBRS Spectrum Access System to register and request available 10MHz channels at our test locations to avoid interference with GAA and incumbent radios. In addition, prior to running experiments, spectrum analyzer sweeps will be done at test locations to verify channel requested is available.