

Description of Application and Public Interest Statement
(Amended)

Cohere Technologies, Inc. (Cohere) is engaged in field-proving the viability and advantages of its new Software Defined Radio Beamforming technology to be applied to 4G LTE and 5G waveforms. Leveraging its research on proprietary (Orthogonal Time Frequency Space) OTFS modulation scheme, Cohere seeks to provide a deterministic picture of the wireless channel characteristic and provide mobile performance for today's current 4G LTE and 5G technologies in both Frequency Division Duplex (FDD) and Time-Division Duplex (TDD)

By this application, Cohere seeks to modify further its existing experimental license issued under call sign WM2XSN (granted under ELS File Nos. 0526-EX-CN-2022 and 0180-EX-CM-2022) to enhance its research and development by adding another location, centered at Sunnyvale (Santa Clara) California. Specifically, Cohere seeks authority to operate: (a) temporary fixed locations that will be located within 13 km of NAD83 coordinates 37-22-32.6 N; 122-02-40.7 W centered in Sunnyvale (Santa Clara) California, and (b) mobiles within 5 km of the temporary fixed sites. This location is required to supplement rather than replace the locations currently authorized under its existing experimental license.

Tests under Cohere's existing license (and, if granted, under its further modified license) will be conducted to evaluate:

1. Band/N 71 4G LTE and/or 5G NR cell coverage under multipath conditions in Line-of-Sight (LOS), near Line-of-Sight (nLOS) and Non-Line-of-Sight (NLOS) links using 4x4 multiple input multiple output (MIMO) antennas.
2. Multiuser MIMO (MU-MIMO) links with Multiple-Users (cell phones) to verify spectral efficiency improvements.

The proposed additional operations will allow the company to enhance its ability to: (a) compile comprehensive measurements and test results for wireless radios operating in LOS, nLOS and NLOS environments for cell base stations, (b) collect experimental data on mobile radio link throughput performance., and (c) evaluate the ability to expand system 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 / 5G NR capabilities.

In previous lab tests, the company's beamforming technology demonstrated capacities of up to 4x 4G LTE and 5G NR, which has the potential to solve problems of spectrum shortage in the lower bands, while providing unprecedented capacities within small spectrum slices. The operations Cohere proposes to conduct under the authority requested in this application will allow it to determine the performance of capabilities of increased MIMO system capacities.

Thus, the grant of the further modification requested herein would be in the public interest, as the proposed operations would serve to enhance research and development of communications capabilities needed by users.

The technical specifications of Cohere's proposed additional operations are provided in the attached application on Form 442. To accommodate the supplemental operations proposed in this modification application, Cohere also requests an increase the number of units that may be deployed during its experimentation. Specifically, Cohere seeks authority to operate up to three transmitters per temporary fixed location. Cohere anticipates that it will only need to deploy one or two transmitters at each temporary fixed location, but seeks the flexibility to operate up to three when needed to conduct its tests successfully. At no time would Cohere operate more than 15 transmitters in the aggregate, however, under the authority it seeks by this application. Should Cohere need to increase further the number of transmitters deployed, it will seek additional approval from the Commission.

In addition, Cohere recognizes that it must operate on a secondary basis and cannot cause interference to licensed operators. Accordingly, it will operate with the minimum power needed to conduct its experimentation, not to exceed the effective radiated power (ERP) shown in the attached application on FCC Form 442. Specifically, the base stations will operate with mean ERP levels not to exceed 100 Watts at Cohere's existing locations and not to exceed 600 Watts at it proposed location. In no event will the peak ERP levels exceed 940 Watts. Moreover, the primary emission designator of its proposed operations, as listed in the application, is 20M0W9W. Other emissions and modulation techniques might be used but will not extend beyond the bands requested in this application.

Should interference occur, which Cohere does not anticipate, it has designated the following person to serve as the "Stop Buzzer" contact. The Stop Buzzer contact is available to receive reports of any interference and is prepared to take immediate steps to resolve such interference, including if necessary arranging for the discontinuance of operation.

Stop Buzzer Contact Information:

Mr. Ram Prasad

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