October 12, 2018

Nokia Bell Labs
US LLC

Address:
600 Mountain Ave
Murray Hill, NJ 07974

RE: Addition of Station and Antenna Registration: Directional Antenna Information (Confidential)
License Service Application, File No. 0217-EX-CM-2018 (modification to existing experimental license, call sign WI2XFC, File No 0211-EX-CM-2018)

This is the exhibit for the directional antennas. The same exhibit has been provided in the already granted experimental license, call sign WI2XFC.

Fixed/Base Stations:

- Access Point (AP) will use multiple antennas:
  - No downtilt
  - No tilt in azimuth
  - Minimum azimuth beam width (-3dB to -3dB), 45 degrees
  - Maximum azimuth beam width (-3dB to -3dB), 90 degrees
  - Minimum elevation beam width (-3dB to -3dB), 8 degrees
  - Maximum elevation beam width (-3dB to -3dB), 22 degrees
  - Beam direction perpendicular to antenna array surface

User Devices:

- User Device (UD) will use multiple antennas
  - No downtilt
  - No tilt in azimuth
  - Minimum azimuth beam width (-3dB to -3dB), 45 degrees
  - Maximum azimuth beam width (-3dB to -3dB), 90 degrees
  - Minimum elevation beam width (-3dB to -3dB), 8 degrees
  - Maximum elevation beam width (-3dB to -3dB), 22 degrees
  - Beam direction perpendicular to antenna array surface

Nokia proposes to operate using BPSK, QPSK, 16QAM, 64QAM, and 256 QAM modulation.

Transmit bandwidths are: 400 and 800 MHz.

The primary emission designators are:
400MW7W
800MW7W

The equipment is configured to operate at a Maximum Transmit power of 47.8 Watts EIRP. Nokia

will vary the actual powers within the maximums noted above to test coverage results.

New Station added to Application with the same parameters as the existing stations.

City – New York

State – New York

Address – 211 Avenue A

Latitude North 40 49 49

Longitude West 73 4 38

Yours sincerely,
Glenn Steitz
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