

From: Antonio Forenza

To: Anthony Serafini

Date: July 09, 2015

Subject: Request for Info - File # 0275-EX-PL-2015

Message:

(resubmittal to correct "e to inches in bullet 1 below)

Question from OET: Please justify the number of units needed for testing.

RESPONSE: The technology we are testing is called pCell, which utilizes a large number of distributed antennas to achieve much higher spectral efficiency than conventional LTE, while remaining compatible with standard LTE devices and staying within a standard LTE spectral mask. pCell technology supports far more LTE devices concurrently using the same spectrum than conventional LTE networks (e.g. 32 LTE devices placed side-by-side can concurrently operate at peak data rate in the same spectrum) and, as such, a large number of concurrent devices are required to test the technology. Note that virtually all of the testing will be conducted with unmodified Apple iPhones and iPads; only a few test devices will be occasionally used for signal analysis. More information about pCell is available at www.artemis.com.

When filling out the experimental application form we did not see a way to specify how we planned to gradually roll-out this test, but the following is our plan:

1. We plan to start initially with just 2 to 3 rooftops, each with 8 to 32 very small antennas (our first antennas are 2.5x2.5 inches square), and with a relatively small number of devices (initially less than 50 iPhones or iPads at a time).
2. Next, we plan to move the antennas to a small number of different rooftops among the 59 locations listed in the application (a fixed wireless partner has antenna rights for all 59 rooftops).
3. Next, we plan to gradually increase the number of rooftops in concurrent operation, and also gradually increase the number of iPhones and iPads in concurrent operation. Although we specified in the application 1,000 of each kind of iPhone and iPad to allow for a large pool of devices to draw from, we expect the maximum number of iPhones and iPads concurrently transmitting to be at most a few hundred.

As previously noted, all pCell antennas and, of course, all iPhones and iPads will be transmitting within a standard LTE spectral mask. Also, out of band emission limitations will be maintained at all times.

If the OET requires us to limit the number of locations, antennas and/or devices for this experiment, then please let us know how many locations, antennas and devices are acceptable.

Question from OET: Please also certify and attest that this license will not be used to build out a system and all units will be retrieved at the end of the term of the license.

RESPONSE: The current plan is to build out a pCell LTE system for testing only. None of the equipment is being installed permanently (indeed, the same antennas and iPhones/iPads will be moved around to different locations throughout the testing). The test equipment can be retrieved at any time. Also, pCell is an SDR C-RAN with centralized control, so any antenna, any rooftop, or the entire network can be shut down immediately with a single console and/or remote command whenever required.