

**STA REQUEST
AND DESCRIPTION OF OPERATIONS**

1. **Introduction**

By the instant application (“STA Request”), Trans Metro Broadband, Inc. (“Trans Metro”) requests that the Commission grant special temporary authority (“STA”) to permit Trans Metro to operate the facilities (the “Facilities”) specified in the instant STA Request. STA is requested for a period of six (6) months, with a commencement date of February 22, 2007.

2. **Need for STA/Program of Research/Objectives/Contribution to the Radio Art**

Trans Metro was created with the goal of developing, constructing and managing networks involving the provision of high speed broadband service utilizing WiMax 802.16 Fixed and 802.16e technologies in the 3.65-3.70 GHz band. Although the Commission has supported the development of WiMax technologies in recent decisions (see e.g., FCC 05-56), the Commission has not yet opened the licensing process for this technology. Until such time as the licensing process commences, network architects such as Trans Metro, working in conjunction with equipment manufacturers, must develop the appropriate radio techniques, and gather the appropriate equipment and engineering data for this anticipated service, to ensure that deployment of WiMax technology succeeds in the manner and scope envisioned by the Commission and industry. In order to timely and fully prepare for the Commission’s ultimate commencement of licensing for the WiMax 3.65-3.70 GHz band, STA is required to permit Trans Metro to conduct the above-described experiment for a period anticipated not to exceed six months. Trans Metro is taking a leadership role in the investigation and deployment of this technology and this research effort is necessary to fulfill the Commission’s mandates to deploy of this technology to underserved populations.

To that end, in the experiment proposed in this STA Request, Trans Metro will evaluate the system level performance of technology and equipment designed to meet WiMax performance criteria, and the performance of the Network Operations Center, and systems, in three geographic areas characterized by very different terrains and propagation potential. The experiment is to be conducted using Airspan HiperMax equipment that is in the experimental phase of development and is not yet commercially available.

This STA Request seeks authority to operate the following tests in the following terrains:

- **Rolling Terrain/Heavy Foliage Test** – In this rural area of the Lake of the Ozarks region of Missouri, Trans Metro will test – using point to point connections between towers and/or commercial or residential test locations - the long distance capabilities of the technology over a terrain marked by rolling hills and heavy foliage. Each shot will be directional and controlled, thereby ensuring transmission solely within the requested area of operation: 85 km radius around the centerpoint coordinates of: 38-17-21 N.Lat.; 092-35-22 W.Long. [NAD 83] (See Figure 1 attached hereto).

- **Highway Mobility Test** – In an area of operations designed to track a portion of I-44, Trans Metro will initially test the ability of the technology to satisfactorily perform seamless

hand-offs of transmissions between multiple base stations in a relatively flat terrain devoid of significant interference potential. Additional tests may be conducted to test the ability to maintain seamless connections between fixed base station locations and units moving between such towers. Such experiments will, specifically, permit the evaluation of system level performance of equipment designed to meet the WiMAX 802.16e performance criteria. The requested area of operation is: 85 km radius around the centerpoint coordinates of: 37-4-3 N.Lat.; 093-58-14 W.Long. [NAD 83] (See Figure 1 attached hereto). It is noted that due to the highly directional nature of the equipment to be used, the area of operation will have an 85 km radius only in an area parallel with the highway, while in other directions, the radius of operation will be no more than 28 km.

- Urban Test – The unique propagation challenges associated with urban terrain will be tested in this third area of operation: 10 km radius around the centerpoint coordinates of: 38-39-44 N.Lat.; 090-15-42 W.Long. [NAD 83] (See Figure 1, and close-up at Figure 2 attached hereto).

Additional/related investigations and contributions are hoped to include the following:

- To test the range, signal strength and band width of the Wi-Max technology at 3.65 in fixed D specification. The current version of 802.16 Fixed WiMAX, which supersedes previous standards is the 802.16d or as it is sometimes called 802.16-2004. Its product profile utilizes the OFDM 256-FFT (Fast Fourier Transform) system profile, which is just different enough from its sister standard of Mobile WiMAX (802.16e) that the two appear to be incompatible. Interestingly, both standards support both protocols within the technology protocol as well as the one chosen for Mobile WiMAX and the Korean WiBro/Mobile WiMAX standard. If the Forum had elected to use an OFDMA version in Fixed WiMAX, it would have been far easier to provide an upgrade path.

- To test the range, signal strength and band width of the Wi-Max technology at 3.65 at Mobile E specification. The true Mobile WiMAX standard of 802.16e is divergent from Fixed WiMAX. While clearly based on the same OFDM base technology adopted in 802.16-2004, the 802.16e version is designed to deliver service across many more sub-channels than the OFDM 256-FFT. It is important to note that both standards support single carrier, OFDM 256-FFT and at least OFDMA 1K-FFT. The 802.16e standard adds OFDMA 2K-FFT, 512-FFT and 128-FFT capability. Sub-channelization facilitates access at varying distance by providing operators the capability to dynamically reduce the number of channels while increasing the gain of signal to each channel in order to reach customers farther away. The reverse is also possible. For example, when a user gets closer to a cell site, the number of channels will increase and the modulation can also change to increase bandwidth. At longer ranges, modulations like QPSK (which offer robust links but lower bandwidth) can give way at shorter ranges to 64 QAM (which are more sensitive links, but offer much higher bandwidth) for example. Each subscriber is linked to a number of subchannels that obviate multi-path interference. The upshot is that cells should be much less sensitive to overload and cell size shrinkage during the load than before. Ideally, customers at any range should receive solid QOS without drops that 3G technology may experience. The 802.16e standard will most likely be utilized for pure mobile applications.

- To test the system level performance of the Airspan equipment at 3.65 802.16 fixed D and e specification, and to test backhaul equipment and capability over several methods and terrain (fiber; radio shots).

3. Other Issues

A. Transmitting Equipment

The following information is provided with respect to the transmitting equipment to be involved in the experiment. It is noted that each of these transmitters is non-experimental in nature:

Manufacturer	Model	Quantity	Experimental
Airspan Networks	HiperMAX-2 3.65 GHz TDD Base Station	20	Y
Airspan Networks	ProST 3.65 GHz TDD Outdoor CPE	40	Y
Airspan Networks	EasyST 3.65 GHz TDD Indoor CPE	40	Y

B. Directionality/Orientation of Antennas

Antenna	Orientation in the Horizontal Plane	Orientation in the Vertical Plane	Width of Beam at Half Power Point
HiperMAX-2	120 degree	8 degree	120 degree
ProST	20 degree	20 degree	20 degree
EasyST	90 degree	45 degree	90 degree

C. Antennas Above 6 Meters

For both the “Rolling Terrain/Heavy Foliage Test” and the “Highway Mobility Test”, the base station antennas are to be located on a temporary fixed basis on various existing communications tower locations within the requested area of operation. The values provided in the attached Form, therefore, represent: the highest “ground to tip” antenna height for the available towers within the specified areas of operation; the average ground elevation AMSL for the area of operation; and the nearest aircraft landing area with respect to any tower located in the specified area of operation. See attached Antenna Sketch Exhibit. All towers to be used in this experiment are in full compliance with all FAA and FCC registration and related requirements, thereby obviating interference concerns with respect to such operations.

D. Stop Buzzer

Trans Metro’s Richard Eaton will be available by wireless telephone at (678) 595-7414 and will act as a “stop buzzer” if any issues regarding interference arise during testing.

For the foregoing reasons, approval of this STA Request is in the public interest, convenience and necessity.

FIGURE 1

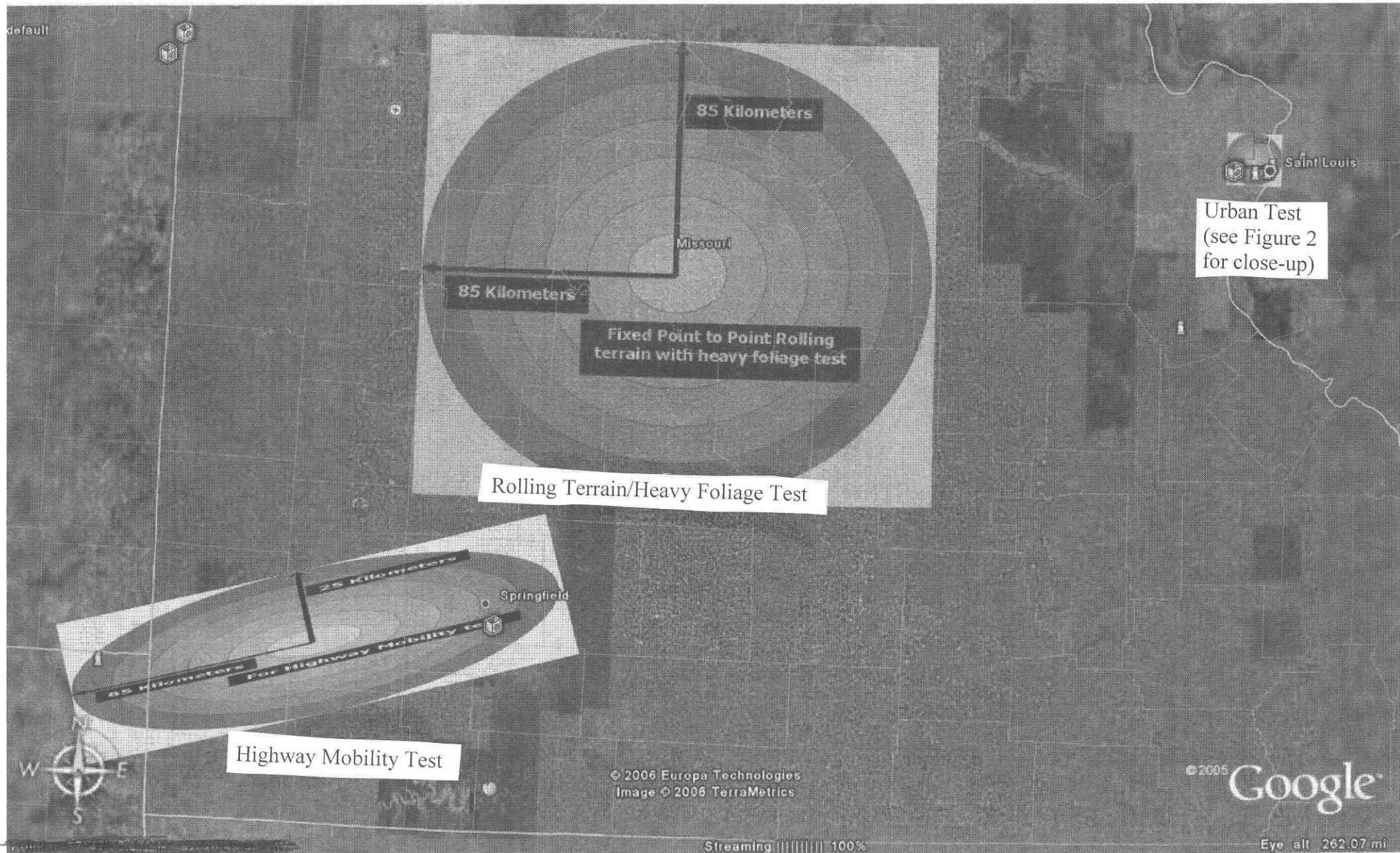


FIGURE 2 Urban Test

