

Date: August 26, 2008
Point of Contact: Richard W. Ridgway, Ph.D.
Battelle
505 King Ave
Columbus, OH 43201

Email: ridgway@battelle.org
Phone: 614-424-5140

STA File Number: 0397-EX-ST-2008
STA Confirmation Number: EL835425

Battelle is seeking a Special Temporary Authority to operate an experimental point-to-point communications link operating at millimeter-wave frequencies. The link uses optical components to generate and modulate millimeter waves and has the capability of transmitting 10 Gb/s on a 100 GHz carrier.

The initial test will be for a 2.0 Gb/s system operating at 93 GHz with a 3 dB bandwidth of 2 GHz.

The system uses high gain Cassegrain antennas (53 dBi) at both the transmitter and receiver site. Transmitter power would be less than 10 mW. Experience with this system has shown that the highly directional antennas will generate a very narrow beam (0.6 degrees) which is nearly impossible to detect, unless the receiving antenna (with 53 dBi gain) is perfectly aligned. Therefore it is unlikely that the experimental system will interfere with existing millimeter-wave systems.

Test Site 1: Battelle's West Jefferson Facility, West Jefferson, OH
The initial tests would be conducted on Battelle-owned land in West Jefferson Ohio. Figure 1 shows two configurations for the field test.

Test Site 2: Darby Dan Airport, West Jefferson, OH
Figure 2 shows the proposed test configuration for the Darby Dan Airport. This is a small, privately-owned airport with very little traffic. The airport would be rented and shut down for the day. Additional information on the airport can be obtained at:

<http://www.airnav.com/airport/616>

The data transmitter link is being developed on a DARPA funded program being administered by Navy SSC in San Diego.

Summary of the DARPA-funded program is as follows:

Contract Number: N66001-08-C-2072
Title "Photonic Approaches to Spectrally Efficient Millimeter-wave Communications

Scope:

The scope of project is an investigation of photonic approaches to provide high data rate spectrally-efficient wireless transmission on a millimeter-wave carrier. The proposed study

includes: investigation of candidate modulation formats; spectrally efficient modulation laboratory demonstration; a field test at distances up to 1 km.

DARPA/MTO:

Sponsor / Program Manager (PM):

Ron Esman <ronald.esman@darpa.mil>

NAVY (SSC San Diego):

Administrating Officer:

Al Navasca, <al.navasca@navy.mil >, 619-553-4506

Contract Officer Representative (COR):

Bill Jacobs <jacobs@spawar.navy.mil>; 619-553-1614

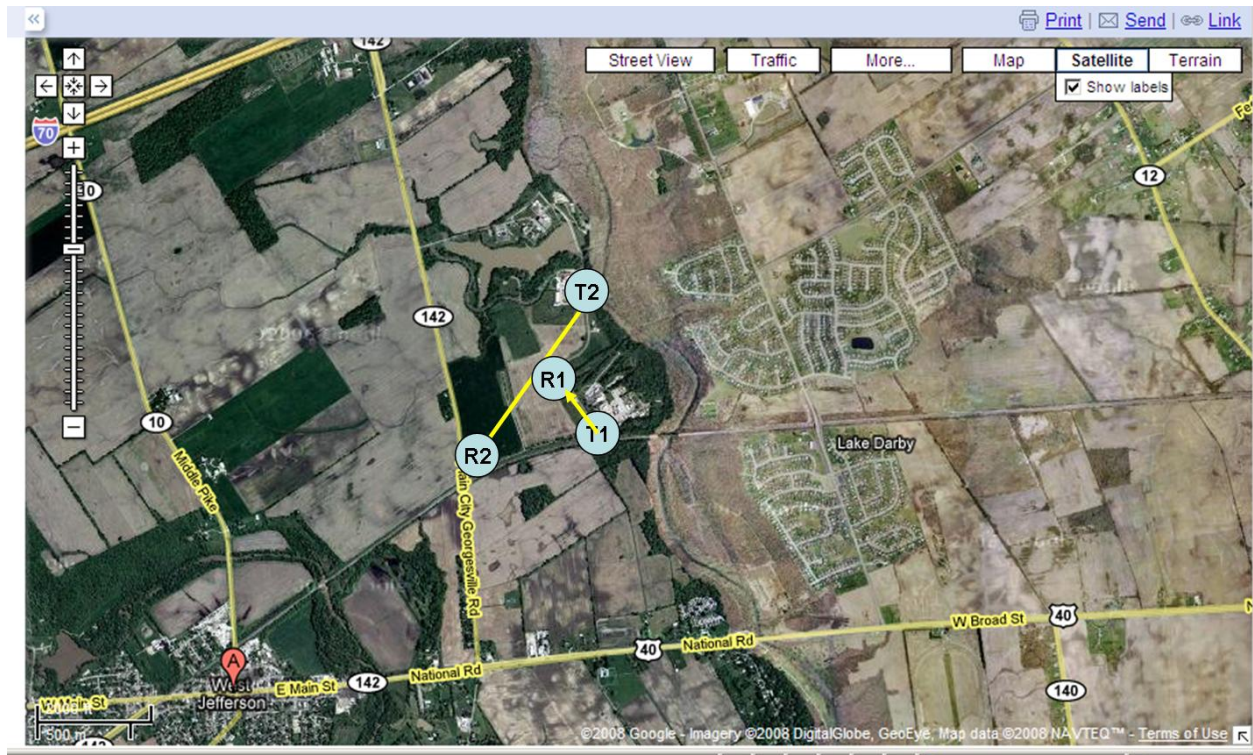


Figure 1. Map of Field Test Site 1. T1: First Transmitter Site; R1: First Receiver location; T2: Second Transmitter Site; R2: Second Receiver Site. All sites are located on Battelle-owned land.

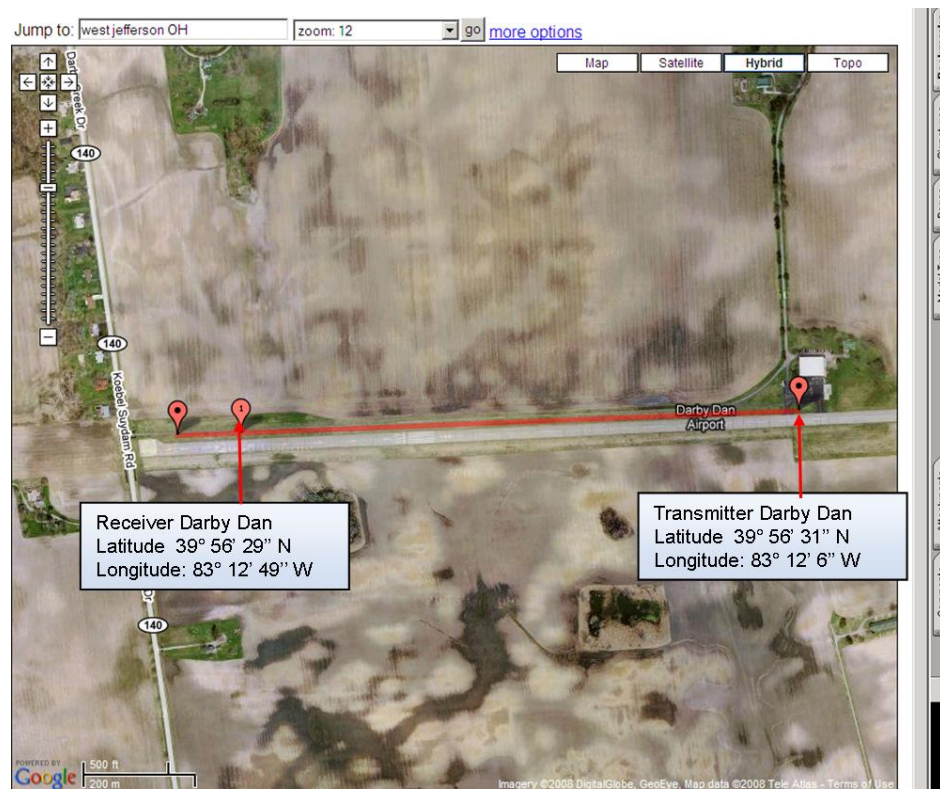


Figure 2. Map of Field Test Site 2. Darby Dan Airport.