

Public Interest Statement

I. Introduction

By the instant application ("application"), BAE Systems Information and Electronic Systems Integration Inc. ("BAE Systems") requests the commission grant a two year experimental license for the facilities specified in the instant Form 442.

2. Purpose of Operation

BAE Systems Identification & Surveillance (IS), a business unit of the Electronics, Intelligence & Support Inc. sector within BAE Systems Inc., will conduct the testing specified in this application. IS is a leader in building technical systems for the U.S. Department of Defense and our allies in avionics, navigation, and military communications. IS's lines of business include Identification Friend and Foe, surveillance camera systems, and command and control computer systems.

As a leader in technological advancements, BAE Systems continually drives new research efforts in support of the war fighter. BAE Systems' antenna testing is a critical part of the development, manufacture and deployment of antennas for the combat identification system for the U.S military forces.

This experiment, in general, is intended to respond to the needs of BAE Systems' customer, the U.S Army, for the fielding a battlefield identification system with the Ka band from 36.7 GHz to 37.0 GHz as the communications band for this system. BAE Systems intends to utilize its outdoor West Range for testing of such system, of which antennas are a key component.

3. Support for Military Contracts and IR&D

The testing for which authority is requested in this case will support three specific programs related to the development of the combat identification system, as follows:

Joint Cooperative Target Identification – Ground – Risk Reduction¹

Relevant Contract Information: CERDEC I2WD

Contract – W15P7T-09-C-S010

Marjorie Muller, 732-427-3973

FY08 Net-Centric Combat ID Capability²

Relevant Contract Information: CERDEC I2WD

Contract – W15P7T-08-C-V001

Manuel Bobbio, 732-532-4758

FY07 Net-Centric Combat ID Capability³

Relevant Contract Information: CERDEC I2WD

Contract – W15P7T-07-C-P427

Manuel Bobbio, 732-532-4758

In addition, the license is to be used to support internal research and development (IR&D), in anticipation of future contract requirements in support of military activities.

¹ The JCTI-G system is used to prevent fratricide on the battlefield. It is a Question and Answer Cooperative Target Identification (CTI) system that is Standardization Agreement (STANAG) 4579 compliant. The JCTI-G capability for direct fire ground platforms, ground vehicles, vehicle-mounted Anti-Tank Guided Missile systems, and vehicle-mounted heavy weapon systems will provide an interoperable ground platform level cooperative Combat Identification (CID) capability supporting the individual shooters', engage/do-not-engage, decision process for detected ground entities. This automated, point-to-point Cooperative Target Identification (CTI) system will support timely, accurate identification of ground friendly platforms, vehicles, and ground forces at main weapon maximum effective ranges in order to maintain force effectiveness, support force sorting, and avoid fratricide. This system should interoperate with Joint/Coalition Ground Cooperative Identification Systems.

² The program consists of activities to make advances in developing a net-centric combat identification (NC-CID) capability. The following work is included: (A) Develop and Demonstrate Integrated Combat ID/ Command and Control/ Situational Awareness (CID/C2/SA) capabilities which may include an integrated CID/C2/SA capability at a government sponsored demonstration venue such as C4ISR OTM and AAEF; (B) Study and propose how to integrate JTACs, FACs, and FOs into a net-centric air-to-ground CID capability; (C) Soldier ID - Development and demonstration of a soldier ID capability via interoperability of a JCTI-G system w/ a low cost Ka-band radar tag in both a lab and field environment.

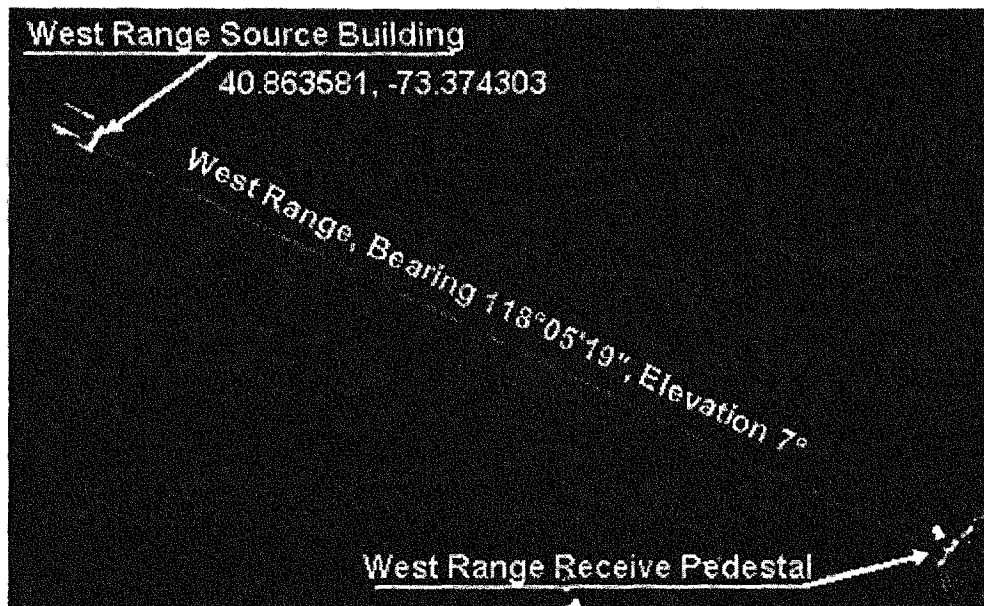
³ The program consists of multiple elements of Combat ID including: (A) Demonstrations of Integrated CID/C2/SA capabilities to include full integration of RBCI/RBSA; (B) Demonstrations of Soldier ID capabilities via proof of concept lab demos; (C) Modeling & Simulation experiments with development of supporting Department of Defense Architecture Framework (DoDAF) artifacts in support of net-centric combat ID capabilities development and support for the Coalition Combat ID (CCID) Advanced Technology Demonstration extension; (D) Joint Capabilities Integration and Development System (JCIDS) analysis to conduct studies and create appropriate artifacts in support of the US Army Training and Doctrine Command and US Army Communications Electronics Research and Development Center; (E) Air to Ground and Combat ID Server – To support in planning for development and demonstration of a net-centric approach to A to Ground Combat ID and further enhance the Combat ID Server Capability.

4. Directionality/Beamwidth and Orientation of Antennas

The transmitting system, i.e., the antenna test source horn, will be located in the West Range Source Building (Lat/Long $40^{\circ} 51' 48.8916''$, $-73^{\circ} 22' 27.4902''$) aimed at the West Range Receive Pedestal at a bearing of $118^{\circ}05'19''$, elevation 7° . The source horn has a 3 dB beamwidth of 9 degrees (E-plane), oriented vertically, and 10 degrees (H-plane), oriented horizontally, and a nominal gain of 24.9 dB. The test signal emission designator is a non-modulated CW signal (NON). The receive antennas will be mounted on the West Range Receive Pedestal, and potentially rotated over the full 360° azimuth sweep and $\pm 30^{\circ}$ elevation.

The spatial layout (See Figure 1 below) consists of the transmitting source horn on the ground at the West Range Source Building aimed at the pedestal on the northwest corner of the Communication and Antenna Systems Laboratory (CASL) roof. Only the source horn will be used for transmission:

FIGURE 1

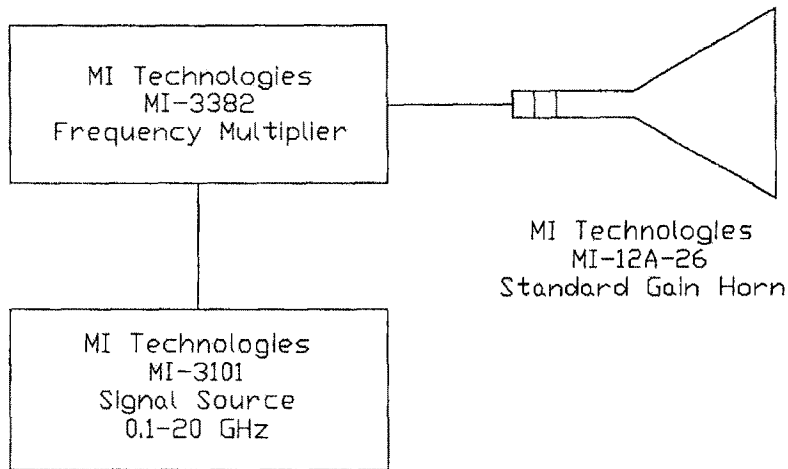


The West Range Source Building is 45 Feet below the Receive Pedestal at a Range of 400 Feet, an Up Elevation Angle of 7 Degrees.

The source horn has a 3 dB beamwidth of:

- 9 degrees (E-plane); and
- 10 degrees (H-plane); and
- A nominal gain of 24.9 dB.

5. Transmitter – Block Diagram



**Antenna Range System Block Diagram
for 37 GHz Source, Detection, and Measurement**

6. Prevention of Interference/Stop Buzzer

Three aspects of the range implementation will prevent interference of the test signal with other applications at this frequency:

- Horn 3 dB beamwidth of 9 degrees;
- Horn upward elevation angle of 7°; and
- The high absorption losses at this frequency.

BAE Systems' Mike Latham will be personally conducting the test and will be available by telephone at 631-262-8333. Mr. Latham will act as a "stop buzzer" if any issues regarding interference arise during testing.