

L-3 COMMUNICATIONS CYTERRA CORPORATION

Section 5.63 Narrative Statement

Introduction

L-3 Communications CyTerra Corporation ("CyTerra") applies for an experimental license to cover ten units (total) of its EMMDAR device at six specified locations.

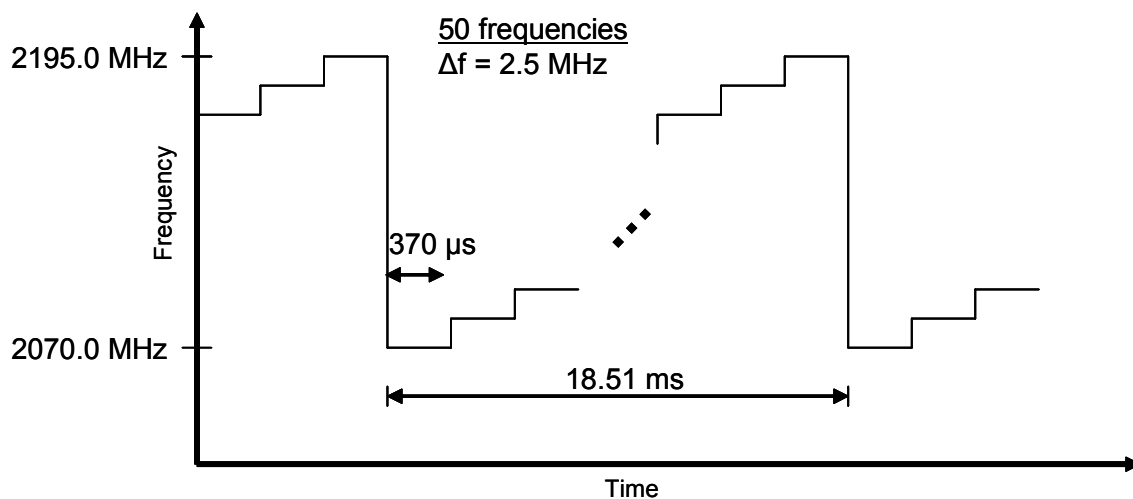
Description of the Technology

EMMDAR (ElectroMagnetic Motion Detection And Ranging) is a compact (8.9"L x 4"W x 2.7"H), light-weight (1.2lbs) handheld sensing device able to "see through the walls" into structures. It detects both moving targets and targets that are lying very still but breathing, such as unconscious accident or terrorism victims.



In use, the operator places the device against the wall of a structure and depresses the scan buttons. Within 1 second for moving targets, or 3 seconds for a stationary breathing target, the display shows the range to the nearest target.

The device emits a stepped frequency continuous wave signal consisting of 50 equally spaced 2.5MHz steps from 2070 to 2195MHz. Dwell time on each 2.5MHz segment is 370μsec. The cycle repeats every 18.51msec. The stepped signal allows the use of Fourier transforms to determine both the velocity and range of the target.



The average power is -6.0dBm/MHz. Peak instantaneous power is +15dBm.

EMMDAR's unique software algorithms provide filtering that allow detection of even very slight movement, such as the chest motions of a person breathing or the slight sway

of a standing person trying to remain still. A rear-looking receive antenna eliminates false targets due to reflections.

Potential Applications

The EMMDAR has the unique ability to sense, through walls or structure, both fast movement, such as a person walking or running, or very slight movement, such as an unconscious person breathing.

Police department SWAT or fugitive teams can use the EMMDAR prior to entry to confirm that subjects are inside a dwelling, and to determine where in the structure they are located. Police can observe and record movement patterns to gain entry at the most opportune time. Where a site has multiple structures, the EMMDAR can expedite the search by identifying those that are empty.

In a hostage situation, law enforcement authorities can scan a structure from different positions for "breathers" and "movers," using the assumption that hostages would be confined to one area.

The EMMDAR can aid searches in cases of suspected prison escapes, for example, by scanning hidden passages behind walls, and can scan outbound vehicles or trucks to ensure that no convicts have hidden in the cargo.

Fire departments can use the EMMDAR to locate victims at the scene of a fire or accident. (Current practice has firefighters follow the "right hand rule" when they enter a building, which requires a room-by-room search in a counter-clockwise direction. While thorough, this consumes precious time.) The EMMDAR can also help to locate downed firefighters after a structural collapse. Current firefighter tracking devices give locations only to within about 6 meters, which could place the victim in any of multiple rooms. The EMMDAR in conjunction with current equipment can pinpoint locations much more precisely.

Similarly, Search & Rescue teams can use the EMMDAR to detect victims who are still alive under non-metallic piles of rubble, and through up to 12" of concrete or similar material. The wide beam angle of the EMMDAR can efficiently search a large area, and then pinpoint victims by moving the device in a systematic pattern while tracking distances to the target.

Public Interest

Although other devices share some of the EMMDAR's characteristics, its particular combination of capabilities is unique. Continuing development and improvement of the device will increase its potential to save lives. A grant of the requested license is unquestionably in the public interest.

Proposed Activities under the License

- improvement of the EMMDAR technology
- research into additional applications
- demonstrations to potential users
- trials and operating tests by potential users.