



DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY (AFRL)

20 September 2002

MEMORANDUM FOR FCC

Office of Engineering and Technology
Attn: John Kennedy
Electronics Engineer
445 12th Street, SW
Washington, DC 20554

FROM: AFRL/SNRT
26 Electronics Parkway
Rome, NY 13441

SUBJECT: Radiation License for Experimental Radar System

1. The AFRL Sensors Directorate in Rome, NY entered into a Technology Investment Agreement (TIA) with Lockheed Martin Naval Electronics & Surveillance Systems – Radar Systems in Syracuse, NY on 17 January 2001. The goal of this three-year program is to develop a radar test bed to investigate, through the use of varied waveforms and processing techniques, the ability to provide high-resolution images of 'deep' subsurface structures. Successful development of this technology has important benefits to the military for both Overseas Operations, as well as for Homeland Security .
2. The military's interest in this technology stems from our desire to detect and identify subsurface structures such as underground command and control posts, tunnels, bunkers for conventional / nuclear weapons, and facilities for the manufacture and storage of weapons of mass destruction. The existence of these facilities in 'unfriendly' nations, compounded by our current inability to locate them effectively, represents a significant threat to our national security. A ground penetrating radar may also provide the means for bomb damage assessment of underground targets, possibly reducing the number of follow-on reconnaissance or attack sorties necessary to ensure target destruction. These benefits vary from saving both time and money to possibly saving lives. The uses identified herein only 'scratch the surface' of potential applications for which this technology may be employed.
3. Lockheed Martin has applied for an experimental radiation license to investigate how waveform selection and signal processing may be used to improve the capabilities of radar to image subsurface structures. The imposition of restrictions on the use of the frequency spectrum, especially in the region from 5 to 66 MHz, would severely limit their ability to compare and contrast different implementations of this technology. The lower frequencies are especially important for deeper penetration. The test bed hardware / software developed under this TIA is nearly ready for field-testing and data collection.
4. We encourage the FCC to approve the experimental license so that field-testing of this important technology may begin without delay before inclement weather hampers continued progress. If additional information is required, please contact Doug Lynch, AFRL/SNRT, 315.330.4515, dougl@rl.af.mil.

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GERARD J. GENELLO
Chief, Radar Signal Processing Branch