Narrative: FCC Form 442 - File Number 0471-EX-PL-2007

Dated: 09/19/2007

The Town of Orangetown, NY (the applicant) has entered into a formal agreement with NIJ CommTech program, via the National Law Enforcement & Corrections Technology Center – Northeast (NLECTC-NE), to **demonstrate, exercise, and derive lessons learned from the application of multiband/software defined radio (SDR), technology to address multi-band voice interoperability in a public safety environment. This project has been facilitated to demonstrate and test multiband (SDR) end user radio equipment not currently available to FCC Part 90 users** (currently not Part-90 type accepted). Specifically, the purpose of this project is to demonstrate technology as outlined in

- CFR47 §5.3(d); Technical demonstrations of equipment or techniques and
- CFR47 §5.3(k); Types of experiments that are not specifically covered under paragraphs (a) through (j).

For the purposes of this application, **all of the requested frequencies associated with this application are already coordinated and authorized by the FCC**. The applicant is currently an FCC Part-90 licensee, and all agencies that are associated with this project via cooperative agreements (MOU's) are also currently Part-90 licensees. No new frequencies are being requested. Frequency sharing agreements, for the purpose of mutual aid, are authorized cooperatively by way of inter-agency written cooperative agreements or memorandum of understanding (MOU) as outlined in FCC rules: FCC CFR47 §90.421 – Operation of mobile station units not under the control of the licensee. All operations will be in compliance with existing FCC Part-90 authorizations and rules, as if Part-90 type accepted end user equipment was being employed (see attached for current FCC license information associated with these inter-agency agreements.)

The research project associated with this application is sponsored through the Department of Justice (DOJ), specifically, via a cooperative agreement sponsored by the National Institute of Justice (NIJ), via the National Law Enforcement and Corrections Technology Center, Northeast (NLECTC-NE). The NIJ (via NLECTC-NE and the NIJ CommTech program) has sponsored support for this activity through the funding of technical support, manpower, and materials to demonstrate the potential of this technology in regard to public safety interoperability. As a result, NLECTC-NE and the Town of Orangetown, NY have executed a formal cooperative agreement/Memorandum of Understanding (MOU) to participate this pilot, or demonstration program. NLECTC-NE will document the results of this program in the form of an operational assessment for the benefit of the public safety community and the CommTech Technical Working Group (TWG). The TWG is comprised of a group of sworn public safety practitioners that define key topics/areas of interest for the NIJ Communication Technology Research and

Development program. For reference and additional information in regard to NIJ CommTech and NLECTC-NE programs:

- NIJ CommTech Program
  http://www.ojp.usdoj.gov/nij/topics/technology/communication/welcome.htm

- National Law Enforcement & Corrections Technology Center (NLECTC-NE)
  http://www.justnet.org/nlectcne/

The CommTech TWG, has recognized multiband and/or multiband SDR technology as a technological category with significant potential to solve many current public safety interoperability problems. This application is submitted for the purpose of demonstrating non-Part-90 multiband, Military off The Shelf (MOTS), radio technology in a public safety environment. Specifically, a mature military radio product will be demonstrated; The Thales MBITR radio is one example of end user portable radio technology that provides continuous coverage from 30-512MHz. Multiband capabilities (multiband, in the sense of current Part-90 public safety allocations) represent a significant technological advantage when considering many of the impediments radio interoperability between public safety agencies that currently employ end user equipment limited to operation a single public safety band. The multi-band technology demonstrated in this project will eliminate many of the cross-band voice interoperability issues associated with existing, single-band, Part-90 end user equipment Multiband radio technology is a well-proven technology for many Federal users, specifically as a tactical communications tool for the Department of Defense and other Federal agencies operating under NTIA authorization.

As a project participant, the Town of Orangetown, NY has agreed to apply for an experimental, FCC Part-5, authorization for use of this MOTS technology for the purpose of technology demonstration in an otherwise FCC Part-90 public safety environment. Note that it is ***not*** the intent of the applicant to seek authorization to transmit on all Part-90 frequencies that this radio is capable of operating on, but rather to apply multiband radio technology to Part-90 channels that are already coordinated, and authorized by the FCC directly to the applicant or authorized to nearby cooperative agencies (via existing inter-agency MOU's).

Access to these specific frequencies/channels shall be made available only through pre-configured of the radios via memory channels. Field-programming of equipment by the end users is not envisioned. Radio configuration will be limited to qualified project support personnel.

Initial vision of this project does not include operational front line use of the equipment, but operational scope will be defined solely by the Orangetown Police Department.

Project Background

This program was initially conceived in mid-2005, shortly after this technology was initially put into service by Federal users. In June 2005 Mr. Philip Harris, representing the NIJ CommTech program, participated in a telephone conference with the FCC Experimental Bureau (Mr. Jim Burtle, Chief) to introduce the concept and the overall goals associated with the project. Mr. Burtle discussed the concept and provided some general guidelines for application submittal.

General guidelines & assumptions are as follows:

- **Use of Federal/NTIA frequencies is not part of this request.** Direct, routine, interoperation with Federal Law Enforcement Agencies is beyond the scope of this project and request.
- FCC Part-90 land-mobile radio channels included in this request are located in the 30-50 MHz (Low-band VHF), 148-174 MHz (High-Band VHF), and in the 450-512 MHz bands (UHF, and T-band UHF)
- FCC Part-90 land mobile radio channels currently licensed to the applicant.
- FCC Part-90 interoperability/mutual aid channels authorized to all Part-90 licensees, and not specifically to any one user.
- FCC Part-90 land-mobile radio frequencies/channels licensed to public safety agencies, which are authorized to the applicant via cooperative regional interoperability/mutual aid. This includes frequency sharing agreements for emergency intercommunication between State, County and Municipal Public Safety agencies facilitated via authorization and governance guidelines provided through regional inter-agency agreements or Memoranda of Understanding (MOU) - ref: FCC CFR47 §90.421 (see attached for copies of supporting inter-agency agreements).
- Interoperability with the US Coast Guard, if required, should be facilitated via standard channels in the FCC marine band. This will require operation within the bands regulated through CFR 47 Part 80 rules.
- Use of this technology for emergency communications, will be limited to operations specifically defined within the FCC and NTIA rules.

As noted above, project discussions started as early as mid-2005. In the intervening timeframe negotiations with interested public safety agencies were conducted, and in February 2007 the Town of Orangetown, NY and NLECTC-NE executed a formal MOU agreement, on behalf of NIJ. This MOU defined the project goals and deliverables.

Once the Orangetown/NLECTC-NE agreement was established, the Town of Orangetown Police Department (OPD), began a process of documenting existing, and formally establishing inter-agency MOU's that allow frequency sharing among agencies that currently operate under FCC authorization via Part-90 rules. These agreements are provided as exhibits, and for the basis for the frequencies that will be exercised in this demonstration program. These agreements facilitate cross-programming and sharing of

frequencies via existing subscriber equipment, for interoperability, regardless of the success or failure of this project.

Feasibility & Background

The stated scope of operation seeks to facilitate voice interoperation with State, County and local agencies within the Part 90 VHF Low (30-50MHz) and VHF High (148-174MHz) and UHF (450-512MHz) bands as defined by inter-agency MOU or FCC Part-90 Rules. ***Operation within all Part-90 public Safety bands below 512MHz is within the operational frequency range of the Thales MBITR***. Bands above 512MHz, including the 700MHz, 800MHz and 4.9GHz bands exceed the capabilities of this radio (See Figure 1.)

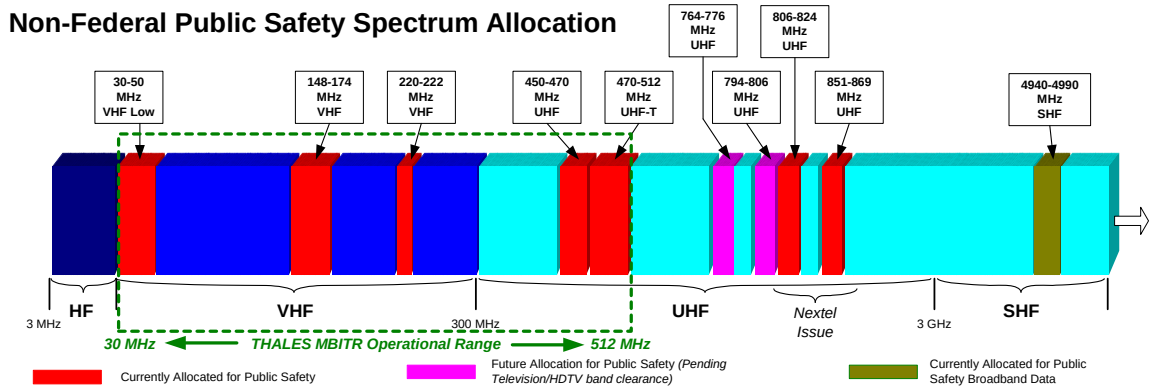

Figure 1 – FCC Part 90 Non-Federal Public Safety Bands.

Technical Evaluation

The Thales MBITR represents the state-of-the art in regard to multiband (SDR-based) land-mobile portable radio technology, and represents technology that is not normally available to Public Safety Agencies. As noted above, the THALES MBITR radio is a mature, tactical, multi-band portable handheld radio product that is currently extensively deployed with personnel from the US Department of Defense (Thales recently announced that unit number 100,000 was shipped to the Department of Defense, making this a very mature product from a technology perspective). This multiband radio device is currently not Part-90 type accepted for Public Safety use. ***The specific devices employed will be representative of a category of technology enabling multiband voice communications interoperability, and this project will not be used to evaluate a specific product for commercial purposes.***

Note that the MBITR product being employed is a “clear-mode” version which is compatible with some, but not all, systems in use by civilian public safety agencies. All NSA-controlled, and Federally-controlled features such as TYPE-1 encryption and frequency-hopping operational modes have not been installed in the “clear-mode” version of the Thales MBITR equipment that will be used to initially facilitate this pilot. Since the Thales MBITR being employed operates only in conventional AM or FM modes, so ***inter-operation with encrypted radio systems, or trunked public safety radio systems will not be possible with the current generation of this specific device.***

The applicant, and the NIJ team, understands that technology is rapidly changing, and that the specific device initially employed, the Thales MBITR, represents an SDR technology that is quickly maturing. The applicant may, at some time in the future modify/augment this evaluation with similarly mature but more technically capable products that are currently deployed in non Part-90 environments. For instance the upper UHF region (bands in the 700-800MHz region) currently falls outside the operational range of this technology. Also, many digital waveforms (such as Project -25) have yet to be implemented, but may be soon available in products as this technology matures.

Project goals

This Experimental authorization will facilitate the demonstration of multiband software defined radio technology within a public safety environment whereby candid operational feedback will be provided by the licensee to the National Institute of Justice, via NLECTC-NE, on behalf of the NIJ CommTech program. The equipment demonstrated via this Part-5 experimental authorization will be utilized and configured as if it were directly analogous to currently operational, licensed, Part-90 multiband end user equipment (as if it were type certified .)

It is expected that non-technical operational issues will be discovered and documented, as well as specific technical issues associated with this particular radio device. For instance, the ability to configure the MBITR to operate on virtually any authorized frequency associated with operational channels within the public safety bands (between 30 and 512MHz will potentially enhance the command and control capabilities, and situational awareness for the public safety users of this technology. Conversely, use may create unforeseen operational issues that will require additional operator training and awareness.

Potential lessons derived from this pilot program may include:

- Operational benefits associated with multiband radio technology.
- Operational issues/limitations associated with multiband radio technology.
- Information in regard to technical, operational, and regulatory matters.
- Operational issues associated with the user interface (configuring and using the radio) within public safety bands,
- Applying public safety channelization and associated channel access parameters to MOTS SDR devices.
- Limitations associated with features and operational waveforms installed in the product (for instance no current support for digital waveforms, and no support for trunking operations in land mobile radio systems.
- Performance trade-offs associated with multiband antenna systems and
- Receiver/transmitter performance when compared to a device optimized for single-band operation.

Feedback from the project team to both the public safety community and the technology suppliers will include future requirements for similar multiband radio products that may be marketed directly to public safety in the future. For instance, during

the process of formulating this pilot project, preliminary discussions has provided an initial “wish-list” of desired operational requirements for future generations of equipment that are not currently available. Requirements such as:

- MDC-1200 unit ID encoding/decoding and display.
- MDC-1200 emergency ID/”code-99”/”man down” emergency alert functionality.
- Project 25 Common Air Interface (CAI) waveform and functionality.
- Type II encryption, to include DES-OFB within the Project 25 CAI.
- LCD display of channel names, up to 14 alphanumeric characters.
- etc.,

Attachments:

- Table 1, Frequencies & Part-90 authorizations sorted by Frequency.
- Table 2, Frequencies & Part-90 authorizations sorted by MOU number.
- FCC Authorizations – the Town of Orangetown.
- Inter-agency cooperative agreements & associated Part 90 FCC Authorizations
    1. Borough of Alpine, NJ
    2. Borough of Closter, NJ
    3. Town of Haverstraw, NY
    4. Borough of Montvale, NJ
    5. New York State Police
    6. Borough of Norwood, NJ
    7. Orangeburg, NY Fire District
    8. Park Ridge, NJ
    9. Town of Ramapo, NY
    10. Township of RiverVale, NJ
    11. New York State Office of Mental Hygiene, Rockland Psychiatric Center
    12. Village of South Nyack, NY
    13. Village of Spring Valley NY
    14. Town of Stony Point, NY
    15. Borough of Upper Saddle River, NJ
    16. Village of Nyack, NY
    17. Wyeth Pharmaceuticals
- Orangetown/NLECTC-NE Memorandum of Understanding for reference.