



ISSI Test Tool (ITT) Development

Project Description

SNAPSHOT

The Inter-RF Subsystem Interface (ISSI) Test Tool (ITT), which is currently under development, will allow public safety users to ensure that systems they purchase will meet their requirements and satisfy the applicable standards developed for the ISSI, a key interface for interoperability. Since these types of test tools are highly specialized, the market for selling them is extremely narrow and limited. Test tools for the ISSI developed by commercial vendors do not currently exist.

BACKGROUND

Because land mobile radio (LMR) systems from some manufacturers use proprietary protocols that are not capable of communicating with another manufacturer's LMR system, the Project 25 (P25) ISSI was developed by the Telecommunications Industry Association (TIA) in conjunction with the P25 Steering Committee. The ISSI enables Radio-Frequency Sub-Systems (RFSS) from different manufacturers to be connected together. However, emergency response organizations that are purchasing radio systems lack tools to help them execute ISSI conformance, performance, and interoperability tests on the systems they purchase. PSCR is developing the open-source ISSI Test Tool to stimulate this testing of P25 LMR systems containing an ISSI interface.

AN INNOVATIVE APPROACH

PSCR, on behalf of the Department of Homeland Security Office for Interoperability and Compatibility, is developing the ITT to test emerging ISSI implementations, but testing wireline-based interfaces—such as the ISSI—poses special challenges, including the need for new test equipment and metrology. The ITT architecture is capable of supporting conformance and performance testing for other P25 interfaces (Fixed Station and Console), though this functionality is not developed. Once complete, the tool:

- Will emulate a P25 RFSS and exercise the protocol defined in the ISSI standard.
- Will implement all of the ISSI conformance test standards being developed. Future incremental enhancements to ITT will enable it to support ISSI performance testing.
- Will include a packet capture and visualization tool that will support system analysis and troubleshooting.

VALUE TO PUBLIC SAFETY

Emergency response agencies can use ITT to verify that they are receiving a P25 LMR system that contains an ISSI that meets the P25 standards. This will help to ensure interoperability between radio systems that are produced by different manufacturers. When vendor implementations interoperate, customers have choices, which in turn drives down equipment costs. The ISSI Test Tool, in its current version, is available open-source, free of charge.

RESULTS

Both manufacturers and users are excited about the ITT. Vendors see it as a way to help improve the robustness of their implementations, and users see it as a way to ensure that the systems they purchase satisfy their requirements and meet important interoperability-related standards. Several vendors have implemented the ITT in their work environment, and they have provided feedback to help refine the tool.

The P25 ITT project received the Department of Commerce Gold Medal Award for Scientific/Engineering Achievement on November 18, 2008. The Department cited ITT's "exceptional ingenuity and initiative." The Gold Medal is the highest honor given by the Department.