Transitioned

DHS Science and Technology Directorate

Multi-Band Radio

Single-band radios make communications a challenge during multi-agency response

Today's hand-held emergency response radios typically operate on a single band and cannot directly access other frequency bands. This means that most agencies cannot communicate with those outside of their jurisdiction—or even within their jurisdictions, sometimes—if they operate on different radio bands.

In a multi-agency response, it is rare that everyone will be using the same band. Therefore, to communicate with their colleagues, responders often resort to swapping or sharing radios, using a patching system, relaying messages through dispatchers, or even using runners to hand-carry messages. None of these solutions is practical, and many can be time-consuming in a time-critical situation. To provide a successful coordinated response, first responders must be able to effectively communicate with all partners across jurisdictional lines, including local, regional, state, and federal entities.

S&T, responders, and industry partners develop the MBR

At the request of first responders, the Department of Homeland Security Science and Technology Directorate (S&T) launched the Multi-Band Radio (MBR) initiative. Partnering with responders, S&T determined requirements for a single mobile radio capable of operating across disparate radio bands. Based on these requirements, manufacturers developed the hand-held MBR. At a cost comparable to a high-end portable radio, the MBR provides responders with the cutting-edge communications capabilities necessary to respond to emergencies.

The primary users of MBR will be responders in command and control or special operations roles that need to interoperate with multiple entities, including incident commanders, first responders, and federal officials. The MBR is capable of operating in bands between 136 and 870 megahertz (MHz), including the primary public safety VHF and UHF bands and the 700 MHz and 800 MHz bands. When authorized, it can also operate in the Department of Defense (DoD) bands and two federal bands. By simply selecting one of the pre-programmed channels, or by programming other authorized channels directly into their radio, MBR users can communicate with other agencies on other radio bands.

The MBR hits the streets

S&T tested and evaluated the MBR with responders through test demonstrations and pilots nationwide. Evaluations were conducted by police officers, firefighters, emergency medical technicians, emergency managers and others to test the radio's ability to communicate across different systems (analog, conventional, digital, and Project 25 trunked) and agencies (local, tribal, state, and federal). S&T collected feedback and revised the MBR to ensure responder requirements were addressed. In February 2013, after completion of final test and evaluation, S&T published a final report of the pilot findings and a procurement guide to assist agencies in equipment procurements. The report and procurement guide can be found on www.firstresponder.gov.

The MBR initiative sparked industry development of a much-needed tool for responders. Now able to seamlessly communicate regardless of the band on which they operate, responders will be able to rapidly and more effectively coordinate operations. MBR equipment is now commercially available from three manufacturers, with more on the horizon. As the production of equipment with similar or advanced features enters the market, agencies will have the option of selecting MBR equipment and accessories from multiple vendors.

Both mobile and portable radio equipment are listed on FEMAs Lessons Learned Information Sharing **LLIS**.gov.

Frequency Bands	138-144 MHz	150-174 MHz	162-174 MHz	380-400 MHz	406-420 MHz	450-470 MHz	470-512 MHz	700 MHz	800 MHz
Local and State Public Safety Agencies		✓				✓	✓	✓	✓
U.S. Department of Defense (DoD)	✓			✓					
Other Federal Agencies (non-DoD)			✓		✓				
Multi-Band Radio	✓	✓	✓	✓	✓	✓	✓	✓	✓

Homeland Security
Science and Technology

To learn more about the Multi-Band Radio initiative, contact SandTFRG@dhs.gov.

2013-10-28