

***BlueBox* Public Safety Solutions**



A White Paper by



WhitePaper

An Introduction to BlueBox

Background

Many VHF and UHF communications users, since narrow banding, have found that their analog 2-way radio systems no longer perform as well as they did prior to narrow banding, either in terms of operating range or audio output. In many cases this has jeopardized the personal safety of first responders and that is an unacceptable situation.

Another common problem has developed as large urban areas and statewide trunking systems operate in the 700 or 800 MHz band which is significantly more costly than conventional VHF or UHF radio systems commonly used in rural areas. Additionally the 700/800 MHz band systems are not compatible with low cost emergency detection and reporting systems.

The need to provide a low cost solution to the aforementioned needs was the reason for the development of the BlueBox which was designed produced in Birmingham, Alabama by Falcon Wireless, a sister company of Falcon Community Services. See www.info4u.us/BlueBox4u.pdf for pricing and technical specifications.

System Configurations

There are five basic applications for the *BlueBox* starting with *SecurityLink* which provides connectivity between the VHF or UHF system used as a part of the No Time For Crime program offered by Falcon Community Services. Additional information on this program is available at www.info4u.us/NTFC.Overview.pdf.

SecurityLink

Police departments operating on VHF would not need a BlueBox since the No Time For Crime devices normally transmit on VHF with UHF being available as a no charge option. However, if the law enforcement agency is operating on the Mississippi MSWIN system, the *BlueBox* is required to transition VHF calls to 700 MHz. If some officers are using VHF radios and others are using MSWIN radios, the calls from originating devices can be heard on BOTH radio systems! In the example below, you will note that a person in trouble can use a device such as the HelpAlert II personal calling unit to send a message directly to law enforcement via VHF radio or through the MSWIN system using a *BlueBox*.



The user of the *HelpAlert II* (\$349) simply presses a button on the side of the sending unit to transmit a pre-recorded message such as *Assistance Needed at Middle School* (See **black** arrow). The message is sent directly over the VHF law enforcement radio system (See **red** arrow). If law enforcement uses 700 MHz radios, the call is transitioned through the optional *BlueBox* system (\$3,595) with associated radio, power supply and antennas (See **blue** arrow).



Any one of three wireless calling devices could be used in this example. The *HelpAlert II* shown is our most popular unit. A desktop model is available at the same price (\$349) as well as two key fob type call buttons and associated sending unit (\$749). See www.info4u.us/NoTimeForCrime.bro.pdf for additional pricing information.

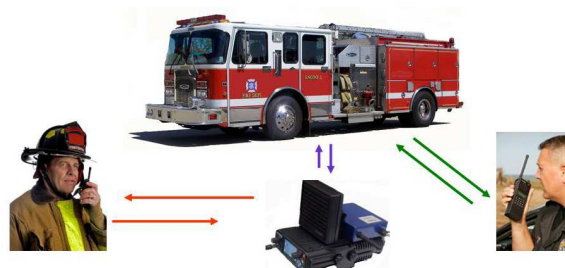
As an item of note, we should explain that our major business focus is in the states of Alabama and Mississippi with a secondary emphasis on Indiana and Ohio (a story for another time). With that being said, we have referenced the BlueBox being used in conjunction with the MSWIN system in Mississippi which is by far the largest 700 MHz non-VHF or UHF system in our primary business area. There are other systems that are incompatible with VHF or UHF analog radios and security devices.

The MotoTRBO system by Motorola as well as similar DMR (Digital Mobile Radio) systems by others including NXDN by ICOM and Kenwood as well as 800 MHz systems can be used with *No Time For Crime* devices through the use of our *BlueBox* using a compatible radio for the desired system. Call us at 800.489.2611 for pricing and additional information.

MobileLink

is the name we have given for the use of a BlueBox mounted in a vehicle to extend portable radio operating range. As mentioned previously, narrow banding reduces range and audio on analog radio system, in particular for portable 2-way radios which are limited in both transmit and audio output power. In many cases, operating range after narrow banding may still be acceptable, but the portables may have difficulty in both hearing (reduced audio - typically about 20% of mobile audio) and talking back to dispatch (limited transmit power compared to a mobile).

Another problem with portables is loss of operating range between portables. This can be a problem both for fire departments and police departments when working with each other when communicating with portable radios. The BlueBox can provide a solution by acting as an inexpensive mobile "repeater" as shown in the diagram below.

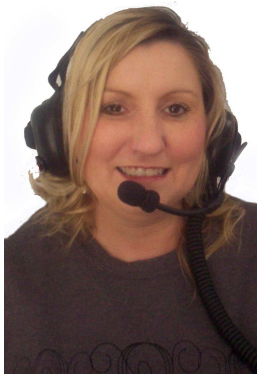


In this example, a fireman, talking of the fire department channel (either VHF or UHF) can talk to a law enforcement officer even though the police department may use a different frequency or even different frequency band. The *BlueBox* simply plugs into the accessory connector of a vehicle radio used by the fire department (in this example, a fire engine which offers the benefit of greater height than a car or van, plus better ground through the larger metal mass).

In this configuration, portable radios, either between users of the fire department or when communicating with other agencies have the operating range of a mobile when talking to other portables. The difference can be significant! The cost is reasonable, typically less than a thousand dollars for the *BlueBox* with custom cable for most mobile radios, antenna, and programming for both the *BlueBox* and associated portables used for communicating through the *BlueBox*.

DoubleTalker

Fire departments spend thousands of dollars to protect the hearing of firefighters from pump and siren noise to comply with applicable NFPA and OSHA requirements (or do nothing at all which causes hearing loss, possible litigation, and reduced intelligibility for communications with dispatch and other radio users).



DoubleTalker is a wireless headset system that works! There is no complicated installation - just connect the *BlueBox* transceiver to the accessory connector of most popular mobile radios - no wiring, no syncing, no external antenna, and it talks to associated headsets up to a mile away from the vehicle! *DoubleTalker* works with any mobile radio - analog or digital (DMR, NXDN, P25 Phase 1 or 2) on any frequency band (VHF, UHF, 700, or 800 MHz). The price of the *BlueBox* vehicular headset transceiver is just \$695 including cable to fit your mobile radio.

You don't have to mount chargers in the vehicle, and you don't have to use expensive portables or special products to communicate with the headsets. You pay just \$398 per headset combination. (The radio for use with the headset is INCLUDED!)

Just turn your headset radio, select the desired channel on your associated mobile radio on, and you are ready to talk to dispatch or with other headsets with the full power of the mobile for talking back to dispatch with the maximum allowable power in your choice of VHF or UHF for talking on-scene and in buildings.

Headset systems can be programmed to function as command units (extended range to dispatch through the associated mobile radio) or as incident specific (vehicle intercom for on-scene) communications. You can purchase one headset unit or a hundred. The system can expand as your needs grow. And you save money on maintenance! The reason? The headset units stay at the station until needed. The batteries will be fully charged and every firefighter will have an on scene communicator when needed.

You'll rarely have to deal with dead batteries, lost units, or units left at home. Now, for a special offer!

If you want to purchase just one system (a vehicle unit, and a headset unit), we are making a one-time offer of just \$995 for EVERYTHING! Or, if you purchase a minimum of four units, we will throw in a six unit master charger FREE! But this is not the real value. The REAL value is in protecting the hearing of your fire fighters! The fact is that you will now be in compliance with NFPA and OSHA standards which may qualify your city or fire district for lower fire insurance rates.. That fact that you have also reduced the possibility of litigation (we'll be glad to explain this in more detail) which can save your department thousands, if not HUNDREDS of thousands of dollars in legal fees, damages, and lost productivity. To order on line, go to www.bestpriceradio.com, then type in *DoubleTalker* in the Search box, or just click [here](#) if you are reading this on line.

MobileLink

is essentially a BlueBox connected to a mobile radio in a first responder vehicle which could be a fire truck, rescue vehicle, police car, or utility truck - any vehicle where there is a need for the driver to be able to talk back to dispatch and/or other radios from a portable with the power of a mobile!



Operationally, the *MobileLink* system works in the same way as the *DoubleTalker* system. The main difference is that any VHF or UHF analog portable radio can be connected to most any mobile radio, whether analog or digital, in any frequency band from 20 to 800 MHz.

If added to an existing VHF or UHF analog radio system, you would use one of your existing frequencies for control of the BlueBox used as a part of the system. Or, a dedicated control frequency can be programmed into existing radios at minimal cost. If your portables are in the "long of tooth" category, you may want to consider using a new portable. We offer MIL-SPEC quality portable radios for as little as \$149 and DMR type digital radios for as low as \$285. Additional information is available at www.bestradios.us.

As you will note from the diagram above, the fireman talking from his VHF radio (**red** arrows) talks to the *BlueBox* which connects via the mobile radio accessory connector, represented by the **gray** lines. The **orange** line represents the input frequency to the 700 MHz MSWIN network with the **green** line representing the dispatch operating talking back to the fireman.

The price of the *BlueBox* with custom connector for the associated mobile is only \$695. The only additional cost would be for programming a control frequency in the associated portables, or new portables as applicable.

PageLink

provides a solution to a very common problem in rural areas where paging reception has suffered as a result of narrow banding. You will recall that we mentioned a loss of audio as a result of narrow banding. This problem is especially troublesome with voice pagers and even pager-radios since the audio output levels are substantially lower than mobile radios. This is mainly because smaller speakers are used, and space/battery capacity does not allow the use of internal audio amplifiers. The net result? Poor reception!

When you couple the audio problems plus the lower effective transmitter output power reduced by noise caused by reduced bandwidth, the performance can suffer dramatically.

Common solutions recommended by most radio dealers is to "add a repeater or two" (wonder why they came up with that solution?). Sometimes a new digital radio system is recommended (which have no paging capability at all!). All too often, users learn about this missing feature on their new digital system after they have made the purchase. Still others learn too late that the new digital system is totally incompatible with any brand of radio than the one they have trustingly purchased. An interesting comment on this subject is available to on line readers by clicking [here](#).

The better solution, in our opinion, is to use a BlueBox Base at the fire station in weak signal areas. The cost with the *BlueBox*, AC Power supply, VHF or UHF radio and an antenna capable of covering the local fire district will rarely cost over \$2,500 plus the cost of reprogramming the pagers on the BlueBox output frequency. If a base radio already exists at the fire station, the cost would be only \$695 plus the cost of reprogramming pagers and/or pager-radios. That is a LOT less than a new repeater or a new digital radio system!



Having a *BlueBox Base Station* not only provides extended paging reception, it can also extend the talk-back power from both mobile and portable radios to dispatch, or between each other as shown in the diagram at the right. *PageLink* can provide an affordable solution for a variety of needs!

There are probably other uses for the BlueBox that we haven't addressed, but hopefully we have given you some ideas on how this simple and affordable device can address some of the more common problems generally though to require much more expensive solutions.

BlueLink

Speaking of solutions, there is one other communications need that is worthy of mention. The availability of Federal grant money for fire departments has resulted in the construction of county wide radio systems costing up to a million dollars or more. All too often these new high tech systems take years to install. Many have never been completed.

Others cannot be maintained because no provision was made for necessary periodic maintenance. Somewhere along the way, the need for common sense vanished since there was little or no direct cost to the users. Unfortunately, or maybe fortunately, these funds have been drastically reduced and there are signs that common sense may be returning.

One of the requirements formerly thought of as requiring big buck funding was linking two or more radio transmitter sites to accomplish functions commonly addressed as simulcasting or trunking. *BlueLink* is a simple and affordable alternative.

Actually, there are three basic systems - *BlueLink*, *CloudLink*, and *PowerLink*. *BlueLink* and *PowerLink* are primarily for use with analog radio systems although they can be used with digital radio systems if necessary. The main difference between the two is power output. *BlueLink* is for use with systems authorized by the FCC for power output levels of 2 to 5 watts, VHF or UHF using licensed frequencies.

PowerLink is for use with systems authorized for power levels of up to 50 watts or as approved by the FCC.

CloudLink is for use with digital radio systems, primarily for DMR radio systems (See <http://info4u.us/DMR.pdf> for more information). *CloudLink* uses the Internet for connectivity, rather than radios, based on the requirement for a static IP address on the Master fixed station PC and associated radio with static IP addresses for other computers. Additional information on configuring the *CloudLink* (generically known as Multi-Site) is available at <http://info4u.us/HyteraMultiSite.pptx>. If you want more detailed technical information, please visit <http://info4u.us/DMR-MultiSite-Planner.pdf>.

Additional information on *BlueLink*, *CloudLink*, and *PowerLink* is available at www.ourlibrary.us in the [White Papers](#) section.

Thanks for taking the time to review our *BlueBox* solutions. We hope one or more of them will be beneficial. We look forward to working with you. In the meantime, if this whole narrow band thing has resulted in more questions, you may want to review our Narrow band eBook Planner which is available at www.info4u.us/nbeb.pdf

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