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# FCC regulations call for narrow frequencies in 2013

By Kevin McGinnis, MPS, EMT-P  
Communications Technology Advisor  
Joint National EMS Leadership Conference

Historically, radio systems, including those used by emergency responders, use 25 kHz-wide channels. That's about to change. The Federal Communications Commission (FCC) has mandated that agencies operating below 512 MHz move to 12.5kHz "narrowband" voice channels.

Megahertz is a unit of bandwidth in the overall range of bandwidth. The very high frequency (VHF) range includes the traditional EMS frequencies 155.340, 155.325, 155.355, 155.385 and 155.400 MHz and ultra high frequencies (UHF) in the 450-470 MHz range (once used widely for EKG telemetry sent to hospitals).

What is narrowbanding? Today, your license for an EMS frequency (say 155.340) would include a bandwidth 25 KHz (kilohertz) wide around the center frequency 155.340 (we'll call this "wideband" or WB). After 2013, your equipment can emit frequency 155.340 with only a 12.5 KHz width (we'll call this "narrowband" or NB). Eventually, the FCC intends to make these bandwidths 6.25 KHz wide. The purpose is to relieve congestion by creating new, narrower frequencies. It is not guaranteed that you will get two frequencies to use for each one "narrowed," according to the FCC. Nor are you automatically entitled to the frequencies created around yours...an issue which may cause interference down the road.

Every EMS provider (prehospital and hospital emergency department) is potentially affected by narrowbanding and must comply with its provisions by January 1, 2013. Because the narrowbanding rules may require the replacement of portable and mobile radios, as well as hospital and other radio consoles and other infrastructure, the need to plan for these changes in the budgetary cycles of most EMS agencies and the municipalities that support us means starting the research now. If you have an

EMS frequency radio, this means you! This does not affect 700 and 800 MHz systems.

Despite the fact that the FCC has provided many years of advance warning on this, a surprisingly large number of people in public safety systems across the country are just now taking notice. So, be concerned if you haven't started to think about this, but know that you are not alone in the boat.

How big is this problem for you? Depends. Most radios and equipment purchased after 1997 should be narrowband capable and may require no more than reprogramming. Older equipment will need to be replaced. One of the first steps in your narrowbanding process will be to decipher whether your equipment is narrowband capable or not. In all likelihood, you are not the one to do this. It is not straightforward for most of us. For instance, different models of one of Motorola's most popular handheld units may or may not be narrowband capable and there are a gazillion of them out there.

My point in emphasizing this is that, unless you are a radio communications engineer or technician, you need help. To successfully go through the narrowbanding process, you must have either a staff communications support tech or a radio service vendor with a clue (about narrowbanding).

Once you have confirmed that your radio tech is up-to-speed on narrowbanding, there are some general steps to take. The information that follows was adapted from a smart radio guy named Nick Ruark, [www.qualitymobile.com/Part90NBNav.htm](http://www.qualitymobile.com/Part90NBNav.htm) and [www.wirelessradio.net/](http://www.wirelessradio.net/); the latter is a frequently updated website on narrowbanding.

(1) Verify that your agency or facility has a current and valid FCC Part 90 radio station license. Your service tech should be able to help you with this and, if necessary, can contact your FCC-certified frequency coordinator. The list of licenses (they vary by type of public safety agency), is at [www.fcc.gov/pshs/public-safety-spectrum/coord.html](http://www.fcc.gov/pshs/public-safety-spectrum/coord.html). The International Municipal Signal Association (IMSA) is the frequency coordinator for EMS; go to [fireems@imsasafety.org](mailto:fireems@imsasafety.org) for more information. These folks can help track down the license, coordinate revising it to add the narrowband (NB) emitter designation and remove the wideband (WB) emitter designation. Some people have suggested changing the license in two steps — add the NB so that you can operate in mixed WB/NB mode as you change and cutover equipment, and then (before January, 2013) remove the WB and operate solely on NB. Others discourage mixed WB/NB operation because of potential interference. Also, there is a frequency coordination fee each time you change your license. How you handle this will depend on the complexity

of your system and your inventory of equipment. Your service tech should have the final say in the conversion and relicensing process.

(2) Conduct a full inventory of all radios in your system, including all portable, mobile, dispatcher-used, wireless data, and on- or off-site base or repeater radios (include makes and models and, if possible, serial numbers).

(3) With your service tech, determine which equipment can be re-programmed and which must be replaced.

(4) Establish the necessary budget figures to cover the services and equipment required for NB transition, including all licensing fees. Make sure that the budget cycle supports complete transition and relicensing before January 1, 2013.

(5) Develop a WB to NB system conversion plan that addresses the following key steps.

a. The elimination of WB-only equipment and installation of NB-capable off-site base or repeater stations and all other needed radio equipment.

b. The actual reprogramming of all radios in the system as close to simultaneously as possible.

c. Coordination with agencies/hospital facilities that routinely communicate with you on these frequencies.

(6) Schedule and coordinate the actual system conversion. Verify that all radio users have been advised in advance and are aware of the process. Again, all hospitals and local EMS agencies should coordinate with you during the process as much as possible. Be aware that mixed WB/NB operations in any given locale can cause interference.

(7) Modify your FCC radio station license to remove any WB emission designators, replacing them with the correct NB emission designators. Make any other changes or updates to a license that may be required (see 1 above).

Again, given the long and difficult budgeting processes that most of us have, this process should have started yesterday — **wait no longer!**

The following are additional resources that may be helpful as you address the FCC narrowbanding mandate:

**International Association of Fire Chiefs (IAFC)**

FCC Narrowbanding Mandate: A Public Safety Guide For Compliance  
[www.iafc.org/associations/4685/files/comm\\_Narrowbanding.pdf](http://www.iafc.org/associations/4685/files/comm_Narrowbanding.pdf)

**FCC**

Tech Topic 16: Narrow Banding Public Safety Communication Channels

<http://www.fcc.gov/pshs/techtocics/techtocics16.html>

FCC “refarming” history (with jpegs)

[http://wireless.fcc.gov/services/index.htm?job=operations&id=private\\_land\\_radio](http://wireless.fcc.gov/services/index.htm?job=operations&id=private_land_radio)

FCC’s “narrowbanding” mandate

[http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/FCC-04-292A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-292A1.pdf) (2004 Order)

[http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-271692A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-271692A1.pdf) (2007 Order)

[http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/FCC-08-127A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-08-127A1.pdf) (2008 6.25 KHz Migration Clarification)

**Association of Public-Safety Communications Officials (APCO)**

[www.apcointl.org/frequency/documents/NBFLIER.pdf](http://www.apcointl.org/frequency/documents/NBFLIER.pdf)

**Yahoo Forum (this is an on-going forum on NB)**

[http://groups.yahoo.com/group/LMR\\_Narrowbanding](http://groups.yahoo.com/group/LMR_Narrowbanding)

**National Institute of Justice (NIJ)**

Understanding Narrowbanding

[www.ojp.usdoj.gov/nij/topics/technology/communication/fcc-narrowbanding.htm](http://www.ojp.usdoj.gov/nij/topics/technology/communication/fcc-narrowbanding.htm)

*Kevin McGinnis is communications technology advisor to four national EMS associations (the National Association of State EMS Officials, the National Association of EMS Physicians, the National Association of EMTs, and the National Association of EMS Educators). This article is adapted, with permission, from an article McGinnis wrote for the National Association of State EMS Officials. He also wrote “Guide to Emergency Medical Services Information Communications Technology (ICT) Systems For EMS Officials” which may be downloaded at [www.nasemso.org/Projects/CommunicationsTechnology/index.asp](http://www.nasemso.org/Projects/CommunicationsTechnology/index.asp). (Warning the PDF is 76 MB because it is full of embedded files. A section and materials on narrowbanding is part of the guide.*

**“Narrowbanding” deadline**

**January 1, 2013**