



# Frequently Asked Questions

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For Life Safety System Designers, Building Owners, and Installers

P/N 85000-0395



## Introduction

Provisions in NFPA 72 (*The National Fire Alarm and Signaling Code*) now require low frequency 520 Hz signaling in newly constructed and some renovated commercial sleeping areas. Questions remain concerning its deployment, implementation, compliance, and efficacy. This document is intended to answer some of the more general questions. Edwards also recommends close review of product literature, installation documentation, system compatibility lists, and above all, consulting your local Authority having Jurisdiction (AHJ) for further information.

**Q: *What is 520 Hz Signaling?***

520 Hz signaling, also known as low frequency signaling, describes an audible warning signal that meets the UL standard for a 520 Hz square wave tone.

**Q: *Where is it required?***

**A:** It is required for new construction in specific sleeping areas. The use of low frequency signals in adjacent areas, such as hallways is optional. It addresses notification appliances connected to and controlled by a fire alarm or emergency communications system.

**Q: *Are there any exemptions?***

**A:** Exemptions apply to healthcare settings, correctional/detention facilities and other occupancies where private mode signaling is employed and where staff are trained to alert and evacuate occupants according to established protocols. In addition, this section does not apply to dwelling unit protection. Requirements for single- and multiple-station alarms and household fire alarm systems can be found in Chapter 29 of NFPA 72. Check with your AHJ for details.

**Q: *Why are these signals needed?***

Studies have shown that the 520 Hz square wave tone, which is technologically and commercially feasible for commercial hard-wired systems, is the most effective signal for awakening people, particularly the hearing impaired and young children.

**Q: *How do I know if it's needed in my jurisdiction?***

**A:** As of January 1, 2014, NFPA 72 (The National Fire Alarm Code), requires low frequency signaling. It is also a requirement of NFPA 720 (Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment), effective January 1, 2015. These codes are referenced by The International Fire Code and The International Building Code. Check with your AHJ to determine if any of these codes have been adopted in your jurisdiction.

**Q: *Do they need to be installed throughout the building where there are sleeping rooms?***

**A:** These signals are only for awakening people in specific sleeping areas. They are not required in hallways or other areas.

**Q: *Do these signals make strobes unnecessary?***

**A:** No. See NFPA \_\_\_\_ for details.

**Q: *How do I implement 520 Hz signaling?***

**A:** For Edwards systems that do not include integrated voice audio, simply specify low frequency horns, horn-strobes, and sounder bases for applicable sleeping areas.

*For Edwards systems that include integrated voice audio, simply specify Edwards high fidelity speakers and speaker-strobes for applicable sleeping areas and ensure that the pre-announce tone used is supplied by Edwards for 520 Hz signaling purposes.*

**Q: *How do I achieve end-to-end compliance?***

**A:** Currently supported Edwards amplifiers, control units, and .wav files have been UL tested and certified for low frequency signaling together with the Edwards line of high fidelity speakers and speaker-strobes. As long as the high fidelity line is specified (G4HF, GCHF), all the other audio system components will meet UL specifications for end-to-end compliance.

**Q: *What 520 Hz equipment is available now?***

**A:** Edwards has a full range of 520 Hz horns, sounder bases, and high fidelity speakers available. G4LF horns are available on their own or as combination horn-strobes. G4HF wall speakers and GCHF ceiling speakers are available for fire or mass notification applications, and are also available as combination horn-strobe appliances. A range of sounder bases for Edwards smoke and CO detectors combines UL listed 520 Hz signaling with the convenience of integrated detector/sounders. See the applicable data sheets for details.

**Q: *Is there a line of low frequency signals suitable for mass notification applications?***

**A:** Yes. Edwards low frequency notification appliances are available with “ALERT” markings, and low frequency horn-strobes and speaker-strobes are available with amber lenses.

**Q: *Can I achieve end-to-end compliance using a third-party audio system?***

**A:** No. Edwards control systems with integrated audio have been tested and certified for end-to-end audio compliance for 520 Hz signaling. Specifically: EST3, EST3X, VM Series fire alarm control systems.

**Q: *How can I demonstrate 520 Hz compliance to my AHJ?***

**A:** Notification appliances state on their nameplate labels that they are UL listed and that they are low frequency signals. The system compatibility list also specifies which devices are approved, and outlines the audio and control equipment that must be used in order to achieve end-to-end compliance.

**Q: *Can the frequency response rating be used to demonstrate 520 Hz compatibility?***

**A:** Frequency response is a technical specification for speakers commonly found on data sheets and installation instructions. A typical value is 400 — 4,000 Hz, which refers to the speaker’s ability to reproduce sound. Because 520 Hz falls within this range does not mean the speaker qualifies. Look for a statement that clearly states that the device is UL 464 listed for low frequency signaling, or check its nameplate label, or consult the appropriate compatibility list. As with all such matters, if any doubt remains, speak with the AHJ.

**Q: *Where can I get the approved 520 Hz tone?***

**A:** It is available with the system configuration utility software package.

**Q: *Can I broadcast an approved 520 Hz tone over non-520 Hz approved speakers?***

**A:** Yes. However, that would not meet the requirement that went into effect on January 1, 2014. Only approved devices that appear on the system compatibility list can be used for 520 Hz compliance.

**Q:** *What about non-sleeping areas or grandfathered sleeping areas?*

**A:** Nothing precludes the use of a 520 Hz pre-announce tone with standard equipment in other rooms as long as sound pressure level and intelligibility requirements are met.

**Q:** *Is low frequency signaling required in retrofit situations?*

**A:** The new provisions apply to new construction. Depending on local building standards, extensive building renovations may qualify the facility as new construction for life safety system purposes. Frequently, a life safety system overhaul, such as the replacement of the main control panel, will also trigger new construction requirements.

**Q:** *How would a retrofit to 520 Hz signaling be carried out?*

**A:** For Edwards systems, simply replace the older model notification appliances with the new low frequency horns or high fidelity speakers. Use the approved tone recording for broadcasting the 520 Hz pre-announce signal. All other components of currently supported Edwards integrated audio systems are listed for use with low frequency signaling. Consult the system compatibility list for verification.

**Q:** *Are there any drawbacks to 520 Hz signals?*

**A:** 520 Hz horns and high fidelity speakers cost more. Also, achieving 520 Hz in a horn requires more current.

**Q:** *Is it advisable to use low frequency signals throughout a facility?*

If the system uses only horn signals, and if it has enough room with respect to backup power and wire capacity, then 520 Hz signaling can be achieved. For voice audio systems the same holds true. In exchange for the extra expense, low frequency signaling and high fidelity audio offer improved signal audibility and voice intelligibility.