3M | PELTOR™ Protection & Communication

Technical Data Sheet
Revision 2, July 2026

3M™ PELTOR™ Natural Interaction Behavior (NIB) Overview

Description

NIB is designed to help improve near proximity communication in high noise without the need for an external communications radio or vehicle/boat/aircraft intercom system when in transport. The NIB function allows for 4 team members to transmit simultaneously, and over 60 people to receive, within about 30 feet/10-meter radius of the talker(s). Technically, it can be described as a very low wattage, baseless, connectionless, broadcasting single hop mesh, using Time Division Multiple Access (TDMA) to create several dynamically allocated and reusable virtual communication channels. More detailed technical data can be found later in this document.

Audio transmit is activated by either a voice activated switch (VOX), for hands free operations, or by a push-to-talk (PTT) button located on the left earcup. The NIB PTT button also serves as a mode button allowing the user to switch between four NIB settings: NIB Off, NIB VOX 1, NIB VOX 2, and NIB PTT On. Each mode is described in greater detail below in the Operation Section. NOTE: NIB VOX 2 is available in ComTac IX and later NIB Headsets.

The NIB function is easy to use. Team members in proximity of each other (about 30 feet/10 meters) will be automatically connected when the NIB function is on.

Operation

There are four NIB operating modes:

1. **NIB Off:** The NIB feature is powered off and no signal is being emitted.
2. **NIB VOX 1:** The NIB is powered on and active, and hands-free transmissions are possible in noise levels above approximately 80dB SPL. In noise levels lower than approximately 80dB, NIB transmission is possible via the NIB PTT button.
3. **NIB VOX 2:** The NIB is powered on and active, and hands-free transmissions are possible in quiet. No noise is required. NOTE: NIB VOX 2 is available in ComTac IX and later NIB Headsets.
4. **NIB PTT On:** The NIB is powered on and NIB transmissions require the use of the NIB PTT button.

To change NIB modes, quickly double press the NIB PTT button. Voice guidance alerts the user to the current setting. Double pressing the NIB PTT button quickly will cycle through the four NIB modes. To transmit using the NIB PTT button, press and hold the NIB PTT button until the transmission is complete, and then release.

NOTE: NIB Headsets prior to the ComTac IX have three NIB modes.

As stated, up to four talkers can transmit via NIB simultaneously. Once all four transmit slots are filled, users attempting to transmit via NIB will hear a series of beeps, alerting them that their transmission was not sent. The four NIB transmit slots are first-come-first-served. Once a transmission is completed, that slot becomes available for the next user to transmit.

NIB Signal

NIB transmissions are not encrypted. The NIB uses a Time Division Multiple Access (TDMA) protocol which makes it more challenging to decode. The low output power (0.2mW at 915mHZ), short-range transmitting distance also makes the signal more difficult to detect. For reference, a long-range parabolic microphone can intercept normal speech conversations up to distances of around 200 meters. Ambient radio frequencies in the environment also make it difficult to isolate the relatively weak NIB signal. In situations when Radio Frequency (RF) and Electromagnetic Emission (EM) signature is of concern, NIB can be quickly and easily turned off.

NIB Range

The NIB signal will start to fade at 5 meters and fade out at approximately 10 meters from the talker. A 3-5 meter radius is best to optimize NIB communications. The environment, the direction of the antenna and other equipment used can also affect actual range. Standing on and near radio reflective surfaces can redirect the signal and may increase the transmission range. The NIB antenna is in the left earcup. Therefore, NIB transmission may travel further to the talker's left side, than to their right, due to a head shadow effect. Under certain conditions, a NIB transmission may travel further than 10 meters, and conversely, the signal may travel less than 10-meters if, for example, obstructed by physical barriers.

NIB Headset Variants

Single and dual frequency headset variants are available based on customer classification. 915.5 MHz and 864 MHz NIB frequencies are available in the dual frequency variant. The single frequency variant offers 915.5 MHz only. 915MHz is authorized for use in the United States, Australia and New Zealand. 864 MHz is approved for use in Europe. US Federal Agencies can purchase the dual frequency version which allows the end user to change the NIB frequency based on area of operation. **The dual frequency variant is to be used by federal agencies only.** All customers in the U.S. can purchase the single frequency version.

NIB Network

To manage the wireless audio communication between headsets, 3M PELTOR has developed a new proprietary beacon protocol. Through the beacon system, NIB enabled headsets are configured to synchronize with each another more effectively within a wireless communication network. This enables headsets to seamlessly join the network without any additional configuration, and to become a team member for purposes of group audio communication with other headsets in the network. The wireless communication protocol enables wireless full-duplex voice conferencing functionality without the use of a base station. NIB specifications are provided in the following chart.

Frequency Range	915.5 MHz (North America, Australia and New Zealand) or 864 MHz (Europe)
Tunable Bands	None
Channels	1
Operating Modes	Transceiver
Type of Modulation	4GFSK
User Frequency Adjustment	None
Rated Output Power Supply	≤0.2mW for 915.5 MHz; ≤5mW for 864 MHz
Type of Power Supply	2 x 1.5V AAA/LR03 batteries
Antenna Connector	None; PCB antenna
Antenna Diversity Supported	No

FAQ

1. **Does NIB use Bluetooth?** NIB is not Bluetooth, but rather a low wattage (≤0.2mW for 915.5 MHz; ≤5mW for 864 MHz) radio operating on a singular radio frequency.
2. **Are NIB transmissions encrypted?** NIB transmissions are not encrypted but are transmitted using a TDMA protocol which potentially makes it more challenging to decode. The low wattage, short range transmitting distance also makes the signal potentially more difficult to intercept.
3. **What is VOX?** VOX utilizes a voice activation technology to open a radio channel so the user can transmit hands free. When using NIB VOX, the user should ensure the comms mic is placed closely to the mouth and should speak slightly louder than normal to ensure their voice opens the radio channel. In NIB VOX 1, transmissions become hands free in approximately 80dB of noise. In NIB VOX 2, transmission are handsfree regardless of the noise level. **NOTE:** NIB VOX 2 is available in ComTac IX and later NIB Headsets.
4. **If NIB is set to NIB VOX 1 mode, is the NIB powered off at noise levels less than ≈80dB SPL?** No. Unless set to NIB Off, the NIB is powered on and will receive NIB transmissions. At levels below ≈80dB, the user can still transmit on an open NIB channel by utilizing the NIB PTT button.

5. **What takes priority, NIB or radio communication?** An incoming NIB communication and an incoming radio communication will both be heard in the headset. If NIB is set to one of the two VOX modes and VOX is activated (greater than 80dB of noise if in VOX 1), any outgoing radio transmission will also be heard over NIB, just as someone standing next to a person sending a radio transmission would hear the out-bound message. Incoming messages, however, will not be transmitted over NIB.
6. **Will NIB move from one 10-meter bubble to another?** A NIB signal will travel approximately 10 meters from the sender to headsets within that approximate 10-meter radius. The distance from the sender is what defines the NIB "bubble." The NIB signal does not "hop" from one user to another.
7. **Can I increase the range of the NIB?** A distance setting is not available with NIB. However, under certain conditions, a NIB transmission may travel further than 10 meters, and conversely, the signal may not travel 10 meters if obstructed by physical barriers.
8. **Can more than 4 people talk at once?** NIB is designed with 4 talker slots and is therefore limited to 4 simultaneous talkers. Once a NIB transmission ends, the slot being used opens and can be filled by the next talker.
9. **I received a busy signal. What does that mean?** NIB is designed with a warning signal to alert the user that their transmission was not sent. A user attempting to transmit will receive this warning signal when all four NIB slots are being used or if no other NIB headsets are within range.
10. **Should/Can I use VOX when shooting on a range?**The randomness and intensity of the weapon firing can "trick" NIB into thinking the user is attempting to open a channel with their voice. This can be especially challenging when there are more than 4 NIB user's firing weapons. In this environment, all the headsets may produce busy channel warning signals due to channels being opened by impulse noise. When using NIB on a firing range, it is best to set NIB to NIB PTT ON and use the NIB PTT button to transmit.

For additional information, please contact 3M PELTOR Technical Support at +1 800-665-2942, option #1.

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