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MIDLAND®

8001 PRO

INSTRUCTIONS

USER MANUAL

About this guide

The content in this document is for information purpose and is subject to change without prior notice. We made every effort to ensure that this User Guide is accurate and complete. However, no liability is assumed for any errors and omissions that may have occurred. The manufacturer reserves the right to change the technical specifications without prior notice.

Thank you for choosing Midland products!

8001 PRO,

The AM/FM/SSB Multiband CB Transceiver..

Step into a new dimension of CB communication.

Discover a transceiver designed for those who accept no compromises. Thanks to SSB (Single Side Band) modulation, you can rely on exceptional range, crystal-clear audio, and minimal interference even in the most challenging conditions.
Equipped with advanced features from the stunning 4,25" multicolour LCD display to the AI-powered NR filter this device is the perfect companion for all your adventures.

Get ready to experience communication like never before!

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PACKAGE CONTENTS

- 8001 PRO transceiver
- Microphone
- Microphone holder
- Power cable
- Spare fuse
- Mounting bracket
- Screws to fix the radio to the bracket
- Mounting washers
- Bracket fixing screws

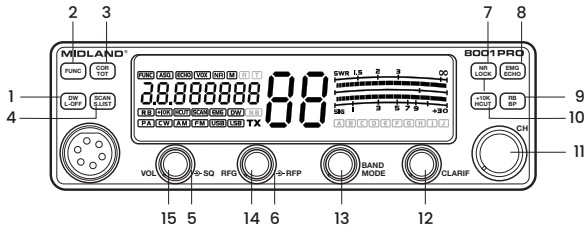
If any item is missing, please contact your Midland dealer.

FEATURES

- Large 4.25" multicolour LCD with VA technology
- Creation of private channels (CTCSS/DCS tones)
- Dual-function NR filter, with DSP and AI (Artificial Intelligence) for RX/TX
- VOX adjustable in 9 levels
- ECHO function with 6 levels
- HI-CUT filter adjustable in 6 levels
- Backlight brightness adjustable in 10 levels
- Customizable roger beep
- Keypad beep ON/OFF with adjustable volume
- Emergency channel 9/19
- Keypad lock
- 7 selectable display colours
- Channel scan
- Skip channel during scan
- Dual Watch (DW), monitor two channels
- Display ON/OFF
- Customizable TOT (Time-Out Timer) from 30 to 600 seconds
- Clarifier function
- Microphone with ▲/▼ - ASQ | 🔒 buttons
- Automatic squelch adjustable in 9 levels
- Battery level display; TOT countdown; SWR level
- Visual over/under voltage warning
- SWR protection activation – customizable protection threshold
- Monitor function with adjustable pre-listening level
- Microphone sensitivity adjustment for AM, USB, LSB, FM

CONTROL DESCRIPTION

Front Panel



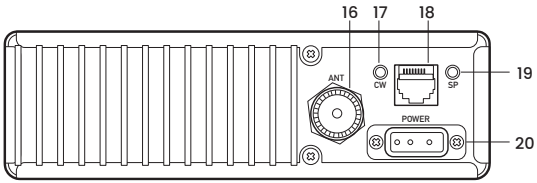
1. **Dual Watch (DW)/L-OFF button.** ***Short press:*** Monitors two channels simultaneously (DW). ***Long press:*** completely turns off the display (L-OFF).
2. **FUNC Button.** ***Short press:*** Activates the **FUNC** mode. When pressed together with another button, it allows quick access to certain settings. The following key combinations are available:
   - **FUNC + COR/TOT:** Enables/disables the TOT function.
   - **FUNC + DW/L-OFF:** Turns the display on/off.
   - **FUNC + SCAN/B.LIST:** Adds/removes a channel from scanning.
   - **FUNC + NR/LOCK:** Enables/disables keypad lock.
   - **FUNC + EMG/ECHO:** Enables/disables the ECHO function.
   - **FUNC + RB/BP:** Enables/disables the keypad beep sound.
   - **FUNC + HCUT:** Enables/disables the Hi-Cut filter.

   Long press: Enters the radio's settings menu.
3. **COR/TOT Button.** ***Short press:*** Changes the backlight colour of the screen. ***Long press:*** Enables/disables the TOT (Time-Out Timer) function.
4. **SCAN/S.LIST button.** ***Short press:*** starts channel scanning and stops on the busy one. ***Long press:*** temporarily excludes the current channel from the scan sequence. Activation is indicated by a dot displayed after the first digit of the frequency.
5. **SQ knob.** ***Rotate clockwise/counterclockwise*** to adjust the threshold level at which the audio opens, eliminating background noise when no signal is present.
6. **RFP knob.** ***Rotate clockwise*** to set the maximum transmission power.
7. **NR/LOCK button.** ***Short press:*** enables/disables DSP (USB/LSB)/AI (AM/FM) noise reduction. ***Long press:*** enables/disables keypad lock.
8. **EMG/ECHO button.** ***Short press:*** cycles through emergency channels 9, 19, and the current channel. ***Long press:*** enables/disables the ECHO function.
9. **RB/BP button.** ***Short press:*** Enables/disables the Roger Beep function. ***Long press:*** enables/disables the keypad tone.
10. **+10kHz/HCUT button.** ***Short press:*** increases the current frequency by 10 kHz

(function available only in non-EU markets). ***Long press:*** enables/disables the Hi-Cut filter.

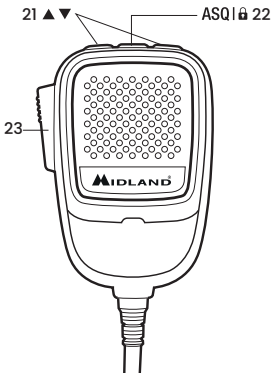
11. **CH knob.** ***Rotate clockwise*** to increase the current channel. ***Rotate counterclockwise*** to decrease the current channel. In the menu: rotate the knob to navigate between options.
12. **CLARIF (Clarifier).** ***Short press:*** activates frequency offset adjustment in RX AM/LSB/USB/CW from a minimum of 10 Hz up to a maximum of 1 MHz for improved tuning. ***Rotate:*** increases/decreases the offset in RX AM/LSB/USB/CW.
13. **BAND MODE.** ***Short press:*** allows activation of the band change function; subsequent rotation enables switching the Operating Band. ***Rotate clockwise/counterclockwise:*** allows changing the modulation type (PA, CW, AM, FM, USB, LSB). **PA Mode (Public Address)**
14. **RFG (RF Gain) knob.** ***Rotate clockwise*** to increase reception sensitivity. ***Rotate counterclockwise*** to decrease reception sensitivity.
15. **Power/Volume Knob (PWR/VOL).** ***Rotate clockwise*** to power on the device. ***Rotate fully counterclockwise until a "click"*** is heard to power off the device. ***Rotate clockwise/counterclockwise*** to adjust the volume.

Rear Panel



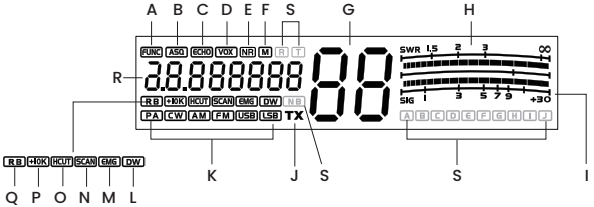
16. **Antenna connector:** PL-259 type.
17. **CW Jack:** For Morse code operation.
18. **RJ connector:** For firmware programming.
19. **SP: External speaker output.**
20. **Power supply socket.**

Microphone



21. **▲/▼ button.** ***Short press:*** Increases or decreases the selected channel. ***Long press:*** Quickly scrolls through channels. Into the menu: Press **▲/▼** to navigate through options.
22. **ASQ | 🔒 button.** ***Short press:*** enables/disables the ASQ (Automatic Squelch) function. ***Long press:*** enables/disables the keypad lock.
23. **PTT Button.** ***Press and hold:*** Transmits on the current channel. ***Release:*** Returns to receive mode.

Display



A. FUNC function active
B. ASQ active
C. ECHO function active
D. VOX active
E. Noise Reduction (NR) active
F. Icons for selected operating band
G. Channel number and active band
H. SWR value during transmission
I. RSSI signal strength indicator in RX or TX
J. Transmission active icon
K. Operating mode
L. Dual Watch active
M. EMG – Emergency channel
N. Scan active
O. Hi-Cut filter active
P. +10 kHz – Function available only for non-EU markets
Q. Roger Beep active
R. Menu navigation / current frequency / system alerts
S. Icons valid only for non-EU markets

WARNINGS AND SAFETY

The 8001 PRO is an electronic device and should be handled with care. The following guidelines will help you meet all warranty conditions and ensure many years of reliable use.

- Do not attempt to open the radio under any circumstances! Unauthorized opening of the transceiver will void the warranty.
- Do not store the radio in direct sunlight or in hot environments. High temperatures can shorten the lifespan of electronic components and may deform or melt some plastic parts.
- Do not store the radio in dusty or dirty environments.
- Keep the radio dry. Water or moisture can corrode electronic circuits.
- If smoke comes out of the radio, turn it off immediately.
- Do not transmit without an antenna.
- Do not attempt to configure the transceiver while driving; it is extremely dangerous.

INSTALLATION

Positioning

Determine the position of the transceiver and the microphone bracket before starting the installation. Choose a location that allows for easy operation and does not interfere with the driver or passengers. In cars, the transceiver is usually mounted under the dashboard, with the microphone bracket installed nearby.

Connections

The transceiver comes with a mounting bracket. When installing the bracket and the radio in the vehicle, make sure the setup is mechanically stable. Additionally, it should ensure a good electrical connection to the vehicle's chassis. For installation, follow these steps:

1. After identifying the most suitable position in the vehicle, hold the transceiver with the bracket in the desired location and check for any obstructions or issues. Mark the hole positions and drill accordingly for secure mounting.
2. Connect the antenna cable plug to the standard connector (usually PL-259) on the rear panel of the transceiver. Most CB antennas come with this type of connector.
3. Connect the red wire with the fuse to the positive terminal of the battery. This wire comes out of the rear panel. In vehicle installations, it can also be connected to the auxiliary terminal of the ignition switch (13.8 VDC), to prevent the device from staying on when the vehicle is turned off and to allow use even with the engine off.
4. Connect the black wire to the negative terminal of the battery, which usually corresponds to the vehicle chassis.
5. Attach the microphone bracket using the provided screws. In vehicle installations, mount the bracket under the dashboard so that the microphone remains easily accessible.

Antenna tuning and optimal SWR

Since there is a wide range of base and mobile antennas available, this section focuses specifically on adjustable mobile antenna models.

Antenna with adjustment screws

- Slightly loosen the tuning screw so that it can be easily adjusted by hand.
- Set the transceiver to channel 20.
- Press the **PTT** button and begin shortening the antenna.
- The SWR meter will show a progressively lower reading as the antenna is properly tuned.
- As you continue shortening, the SWR (Standing Wave Ratio) will reach a minimum point and then start increasing again this indicates you've passed the optimal tuning point for channel 20. Repeat the process as described above until proper tuning is achieved.

Cut-to-length antennas

- Follow the same procedure as above but adjust the antenna length by cutting 2–3 mm at a time until proper tuning is achieved.
- Be careful not to cut too much at once, as once the antenna rod is shortened, it cannot be lengthened again.
- To cut the rod, score it with a file and then break off the marked section using pliers.

External speaker

The external speaker jack (SP) on the rear panel is used for remote receiver monitoring.
The external speaker should have an **8-ohm** impedance and be capable of handling at least **4 watts** of power.
When the external speaker plug is inserted, the device automatically detects the connection and disables the internal speaker, redirecting the audio output to the connected speaker.

Fuse replacement

Replace the fuse in the power cable with a similar type: **F 16A 250V**.

OPERATION

Power On/Off and volume adjustment

- Turn the **PWR/VOL** knob clockwise to power on the CB radio.
- Once the device is on, rotate the **PWR/VOL** ***knob clockwise or counterclockwise*** to adjust the volume to your preference.
- To turn off the radio, ***rotate*** the **PWR/VOL** knob fully ***counterclockwise*** until you hear a "click," indicating the device is off.

Channel selection

The device allows communication over multiple channels. To ensure proper communication between two or more devices, all units must be set to the same channel.

Channel selection procedure:

1. Turn on the device by rotating the **PWR/VOL** knob ***clockwise.***
2. Use the ▲/▼ arrow buttons on the microphone or the **CH** knob to scroll through the available channels until you reach the desired one.
3. The selected channel number will be displayed on the screen.

Squelch

The squelch function eliminates background noise when no signal is being received. By properly adjusting the squelch level, you can improve listening quality.

Manual adjustment using the knob

To quickly adjust the analog squelch level, simply **turn the SQ knob** located on the front panel of the device.

- ***Turning the knob clockwise*** increases the squelch level, filtering out even weaker signals.
- ***Turning the knob fully counterclockwise*** decreases the squelch level, allowing even weaker signals to be heard.

The device is also equipped with an **automatic digital squelch** that adapts itself to different operating conditions.

Activating automatic digital squelch (ASQ)

Briefly press the ASQ | 🔒 button on the microphone.
The ASQ icon on the display confirms activation.

Deactivating automatic digital squelch (ASQ)

Briefly press the ASQ | 🔒 button on the microphone again.
The disappearance of the **ASQ** icon on the display confirms deactivation.

RF Gain control

The device is equipped with an RF Gain adjustment function, which allows you to reduce the receiver's sensitivity and improve audio quality, even when very strong signals are present.

How to Adjust RF Gain

Turn the RFG knob:

- ***Clockwise*** to increase reception sensitivity
- ***Counterclockwise*** to decrease reception sensitivity

The strength of the received signal is shown on the display via the SIG level bar.

Tips:

- *If the person you're communicating with is nearby, it is recommended to reduce the reception sensitivity.*
- *If the person is far away, set the sensitivity to maximum.*

RFP – RF Power

This function allows you to **adjust the transmission power** based on the selected modulation type.
Turning the knob clockwise progressively increases the transmission power.
The maximum available power is **4 Watts in AM/FM and 12 Watts in SSB**.
When the knob is turned fully counterclockwise, the transmitted power is at its minimum, approximately **1 Watt**.

+10 kHz Frequency step (function available only for non-EU markets)

The +10 kHz function allows you to quickly increase the channel frequency by 10 kHz.

Activating/deactivating the function

- By briefly pressing the **+10K/CUT** button, the operating frequency will increase by 10 kHz.
- Pressing the same button again will return the frequency to its previous value.

CLARIF

The **CLARIFIER** function allows for frequency adjustment during reception in LSB and USB, improving the clarity of the incoming voice.
It is also active in AM mode, though it is not commonly used there. It is not available in FM mode.

The frequency offset can be adjusted in two ways:

- Pressing the **CLARIF** knob allows you to vary the receive frequency (RX) from a minimum **of 10 Hz up to 1 MHz**.
- **Rotating the knob** without pressing adjusts the frequency in **10 kHz steps**.

For non-EU markets, the CLARIFIER can also be enabled during transmission (TX).

BAND MODE

This function is designed to perform three operations: switching the operating band, changing the modulation mode, and activating the PA (Public Address) mode.

Activating the functions:

- **By briefly pressing the BAND MODE knob,** you access the band selection menu. Rotating the knob allows you to choose the desired band from: I1, I2, E1, PL, UK, US, DE, EU, EC.
- **Rotating the BAND MODE knob** also lets you select the desired modulation type: CW, AM, FM, USB, LSB.
- Additionally, **rotating the BAND MODE knob** allows you to select the PA (Public Address) function, which enables the CB radio to be used as an audio amplifier.

Frequency band table

Code	Country	Available band
I1	Italy	40 CH AM-FM-SSB
I2	Italy	34 CHAM-FM-SSB
E1	Europe	40 CH AM-FM-SSB
PL	Poland	40 CH AM-FM-SSB (Poland; -5 kHz)
UK	United Kingdom	40 CH FM
US	USA	40 CH AM-FM-SSB
DE	Germany	80 CH FM - 40 CH AM - 80 CH SSB
EU	Europe	40 CH AM-FM-SSB
EC	Europe	40 CH FM

Dual Watch (dual channel monitoring)

The Dual Watch function allows the device to monitor two channels alternately, enabling simultaneous monitoring of a primary and a secondary channel.

How to enable or disable the function:

1. Briefly press the **DW/L-OFF** button.
2. A blinking indicator will appear on the screen; rotate the **CH** knob or use the **▲/▼** buttons to select the second channel to monitor.
3. Briefly press the **DW/L-OFF** button again. At this point, the ***DW*** icon will stay fixed, and the radio will start alternately monitoring two channels:
   - The currently selected channel
   - The second selected channel

If an active transmission is detected on either channel, scanning will pause and automatically resume after the transmission/reception ends.

Scan function (SCAN)

The scan function allows the transceiver to automatically monitor all available channels, stopping on active ones to facilitate listening to ongoing communications. This enables quick detection of conversations without manually selecting each channel.

To enable this function:

1. Briefly press the **SCAN/S.LIST** button until the ***SCAN*** icon appears on the screen.
2. The radio will begin scanning all available channels sequentially, stopping automatically on any channel where it detects an active transmission.
3. To stop scanning, briefly press the **SCAN/S.LIST** button again.
4. During scanning, you can change the direction:
5. Press the ▲ to scan forward (towards higher channel numbers).
6. Press the ▼ to scan backward (towards lower channel numbers).

S. LIST function

The S.LIST function allows you to temporarily remove the currently displayed channel from the scan list.

Activating the function:

- Press and hold the **SCAN/S.LIST** button for about 2 seconds.
- A dot after the first digit of the frequency on the screen confirms activation.

Deactivating the function:

- Press and hold the **SCAN/S.LIST** button for about 2 seconds again.
- The disappearance of the dot after the first digit of the frequency confirms deactivation.

Emergency channels

The device features quick access to emergency channels, designed to enable immediate communication in critical or emergency situations.
Channels 9 and 19 are international standards commonly used in CB bands for distress calls or priority communications:

- **Channel 9:** Emergency and rescue calls
- **Channel 19:** Traffic information, accidents, road conditions

This function allows fast selection of one of these channels without manually searching through the available channels.

To quickly access the preset emergency channels:

1. Briefly press the **EMG/ECHO** button once to select channel 9.
2. Press the **EMG/ECHO** button a second time to switch to channel 19.
3. Press the **EMG/ECHO** button a third time to return to the previously used channel.

Hi-CUT

The **Hi-CUT** function is a filter that eliminates high-frequency interference during reception, reducing static noise and improving signal clarity. This feature is especially useful in challenging reception conditions where background noise can make communication difficult to understand.

Activating the function:
Press and hold the **+10K/CUT** button for about 2 seconds.
The ***HICUT*** icon on the screen confirms activation.

Deactivating the function:
Press and hold the **+10K/CUT** button for about 2 seconds.
The disappearance of the ***Hi-CUT*** icon from the screen confirms deactivation.

Noise reduction (NR)

The device is equipped with an AI/DSP noise cancellation function designed to significantly enhance voice transmission quality, especially in noisy environments or while in motion.
This technology filters out unwanted background noise, allowing a clearer and cleaner voice signal to reach the listener.
Depending on the selected modulation mode, the most appropriate filter is automatically activated:

- **In AM/FM modulation**, the AI-controlled filter is enabled.
- **In USB/LSB modulation**, the DSP filter is enabled.

Activating the function:

- Briefly press the **NR/LOCK** button.
- The ***NC*** icon on the screen confirms activation.
- Deactivating the function:
- Briefly press the **NR/LOCK** button again.
- The disappearance of the ***NC*** icon from the screen confirms deactivation.

ECHO function

The **ECHO** function adds an echo effect to the transmitted voice, enhancing the perceived quality of the signal or giving it a deeper and more defined tone.

Activating the function:

- Press and hold the **EMG/ECHO** button for about 2 seconds.
- The ***ECHO*** icon on the screen confirms activation.

Deactivating the function:

- Press and hold the **EMG/ECHO** button for about 2 seconds.
- The disappearance of the ***ECHO*** icon from the screen confirms deactivation.

Roger beep

When the **PTT** (push-to-talk) button is released, at the end of each transmission, a tone is emitted to signal to your interlocutor that they can begin speaking.

Activating the function:

- Briefly press the **RB/BP** button.
- The ***RB*** icon on the screen confirms that the function has been activated.

Deactivating the function:

Briefly press the **RB/BP** button.
The disappearance of the ***RB*** icon from the screen confirms that the function has been deactivated.

FUNC function

The **FUNC** function allows access to the menu and lets you quickly adjust the radio settings.

How to change radio settings:

- To access the settings menu, hold down the **FUNC** button for about 2 seconds, until ***"AInr"*** appears on the screen.
- Use the ▲/▼ arrow buttons or the **CH** knob to scroll through the menu options.
- By briefly pressing the **FUNC** button, you activate the **FUNC** quick access function. When this function is active, pressing another button allows for fast changes to some radio settings. The available combinations are:

FUNC + COR/TOT: Enables/disables the TOT function.
FUNC + **DW/L-OFF**: Turns the screen on/off.
FUNC + SCAN/B.LIST: Adds/removes a channel from the scan list.
FUNC + **NR/LOCK**: Enables/disables the keypad lock.
FUNC + **EMG/ECHO**: Enables/disables the ECHO function.
FUNC + **RB/BP**: Enables/disables keypad sound alerts.
FUNC + HCUT: Enables/disables the Hi-Cut filter.

Once the desired setting is selected:

- Turn the **BAND MODE** knob to adjust the setting.
- Press the **CLARIF** knob or the **PTT** button to confirm.

COR – Backlight color

This function allows customization of the screen backlight colour, offering better adaptability to user preferences or environmental conditions.
There are 7 selectable colours available:

- Cyan
- Purple
- Red

- White
- Green
- Blue
- Orange

Setting procedure:
- Briefly press the **COR/TOT** button.
- The change in screen colour confirms the activation of the setting.

L-OFF – Screen off

The **L-OFF** function allows you to turn off the screen completely while keeping all radio functions active. This means that even with the screen off, all other settings and operations remain fully functional.

How to enable the function:
- Press and hold the **DW/L-OFF** button for about 2 seconds.
- The screen turning off confirms successful activation.

How to disable the Function:
- Press and hold the **DW/L-OFF** button for about 2 seconds.
- The screen turning back on confirms successful deactivation.

TOT – Time out timer

The time out timer is a safety feature that limits the maximum duration of continuous transmission. If the set time is exceeded, the radio will automatically stop transmitting. The timer resets as soon as the **PTT** (push-to-talk) button is released.

To activate the function:
- Press and hold the **COR/TOT** button for about 2 seconds.
- The appearance of ***"tot on"*** on the screen confirms activation.

To deactivate the function:
- Press and hold the **COR/TOT** button for about 2 seconds.
- The appearance of ***"tot of"*** on the screen confirms deactivation.

Keypad lock

The keypad lock function is designed to prevent accidental key presses while transporting or using the device on the move.

To activate the keypad lock:
- Press the **NR/LOCK** button for about 2 seconds.
- The message ***"lock on"*** on the screen confirms activation.
- All buttons, except the **PTT** button, the power/volume knob (**PWR/VOL**), and the **FUNC** and **RFG/RFP** controls, will be disabled.

To deactivate keypad lock:
- Press the **NR/LOCK** button for about 2 seconds.
- The message ***"lock of"*** on the screen confirms the deactivation.
- You can also activate the keypad lock using the microphone.
- To activate keypad lock from the microphone:
- Press the ASQ | 🔒 button on the microphone for about 2 seconds.
- The message ***"lock on"*** on the screen confirms the activation.

To deactivate keypad lock from the microphone:
Press the ASQ | 🔒 button on the microphone for about 2 seconds.
The message ***"lock of"*** on the screen confirms the deactivation.

Keypad beep (BP)

This function emits a short beep every time a button on the radio is pressed.

To activate the function:

- Press and hold the **RB/BP** button for about 2 seconds.
- A confirmation tone will indicate that the function has been activated.

To deactivate the function:

- Press and hold the **RB/BP** button for about 2 seconds.
- Once released, pressing buttons will no longer produce any sound.

Factory reset

This function allows you to restore the device to its factory settings, erasing all user changes. To reset the device, press and hold the **FUNC** button while turning the device on. The word ***"rESEt"*** will appear on the display for about 5 seconds.
After that, the device will automatically revert to the default CB band.

MENU FUNCTIONS

AInr filter (enable/disable)

This setting allows you **to enable or disable the AI/DSP filter** based on the selected modulation type.

How to enable or disable the function:

- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **BAND MODE** knob to select ***ON*** or ***OFF***.
- Press the **CLARIF** knob or the **PTT** button to confirm.

AInr (NR filter level)

This setting lets you **adjust the intervention level of the AI/DSP filter** depending on the selected modulation type.

How to change the setting:

- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ button to select ***AInr 02***.
- Turn the **BAND MODE** knob to choose a level between 1 and 15 (default: 6).
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Note:

- *The AInr filter works during both transmission and reception.*
- *Higher values increase filter effectiveness but may also alter the transmitted and received useful signal.*

UoH setting (VOX activation)

This setting **enables or disables the VOX** (voice-activated transmission) function. VOX allows automatic voice transmission without pressing the **PTT** button.

How to enable or disable the function:

- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ to select ***UoH 03***.
- Turn the **BAND MODE** knob to choose ON or OFF.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

UoHS setting (VOX sensitivity)

This setting allows you **to adjust the sensitivity of the VOX function**.
You can choose from 9 sensitivity levels (default: 3).

How to change the setting:

- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ to select ***UoHS 04***.
- Turn the **BAND MODE** knob to choose a level between 1 and 9 (default: 3).
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

When adjusting the VOX sensitivity, consider factors such as:

- The distance between the microphone and the speaker
- The operator's voice tone
- Background noise, which may interfere with voice detection. If the noise level is too high, the DSP may not be able to distinguish the voice, preventing transmission.

UoHt setting (VOX return-to-receive delay)

This setting **adjusts the delay** before switching back to receive mode after VOX transmission ends.
It prevents frequent switching during conversations with pauses or slow speech patterns.
There are **9 levels available** (default: 5).

How to adjust the setting:

- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ w to select ***UoHt 05***.
- Turn the **BAND MODE** knob to select a level between 1 and 9 (default: 5).
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Dual noise filter (Nr)

This setting allows you to enable or disable the dual noise filter.
The two available filters are:

- **AI (Artificial Intelligence):** Significantly reduces noise in RX and TX, improving communication quality. Active in AM and FM modes.
- **DSP:** Used in SSB mode, it "cleans" transmitted and received signals, enhancing clarity.

How to enable or disable the function:

- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ to select ***Nr 06***.
- Turn the **BAND MODE** knob to choose ***ON*** or ***OFF***.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Dual noise filter sensitivity (NrL)

This setting **adjusts the intervention level of the dual noise filter.**

How to change the setting:

- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ to select ***NrL 07***.

- Turn the **BAND MODE** knob to choose a level between 1 and 9 (default: 3).
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Note:
- *The highest level can reduce noise by up to 95% but may also affect voice fidelity.*
- *Optimal adjustment ensures the cleanest possible signal without compromising natural voice quality.*

ECHO repeat count (Ect)

This setting allows you **to set the number of ECHO effect repetitions** during transmission, determining how many times a word is echoed.
You can choose between 6 repetition levels (default value: 3).

How to adjust the setting:
- Press and hold the **FUNC** button for about 2 seconds, until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ button to select setting ***Ect 08***.
- Turn the **BAND MODE** knob to select a level between 1 and 6 (default: 3).
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

ECHO duration (Ecd)

This setting allows you **to set the duration of the ECHO effect** during transmission.
You can choose between 6 duration levels (default value: 3).

How to adjust the setting:
- Press and hold the **FUNC** button for about 2 seconds, until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ button to select setting ***Ecd 09***.
- Turn the **BAND MODE** knob to select a level between 1 and 6 (default: 3).
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Hi-CUT filter (HIC)

This setting allows you to **adjust the sensitivity of the Hi-CUT filter**.
This filter removes high-frequency interference and should be used depending on reception conditions. Digital tuning adapts the audio bandwidth to the quality of the received radio signal. With a weak signal, it mainly reduces high-frequency noise (HI-CUT). With a strong signal, it allows a wider dynamic listening range.
You can choose from 6 sensitivity levels (default value: 2).

How to adjust the setting:
- Press and hold the **FUNC** button for about 2 seconds, until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ button to select setting ***HIC 10***.
- Turn the **BAND MODE** knob to select a level between 1 and 6 (default: 2).
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Display brightness (Ld)

This setting allows you **to adjust the screen brightness** according to your needs.
The user can choose from 10 brightness levels, where 1 is the minimum and 10 is the maximum. The default value is set to 10.

How to adjust the setting:

- Press and hold the **FUNC** button for about 2 seconds, until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ button to select setting ***Ld 11***.
- Turn the **BAND MODE** knob to select a level between 1 and 10 (default: 10).
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

CLARIFIER frequency step (St)

This setting allows you **to adjust the frequency step** via the rotary knob.
It is active only during reception (for non-EU markets, it is available for both TX and RX).
Available options: 10 Hz, 100 Hz, 1 kHz, 10 kHz, 100 kHz, and 1 MHz.
The default value is 10 Hz.
The function is available in AM, SSB, and CW modes.

How to adjust the setting:

- Press and hold the **FUNC** button for about 2 seconds, until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ button to select setting ***St 12***.
- Turn the **BAND MODE** knob to select one of the available options (default: 10 Hz).
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

CLARIFIER operation mode (CL)

(function available only for non-EU markets)

In the EU market, the **CLARIFIER** operates only in receive mode, as indicated by the default setting "r". You can choose to enable it in receive (r), transmit (t), or both (rt) modes.

How to adjust the setting:

- Press and hold the **FUNC** button for about 2 seconds, until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ button to select setting ***CL 13***.
- Turn the **BAND MODE** knob to select the operation mode: receive (r), transmit (t), or transmit/receive (rt).
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Automatic squelch (ASQ)

This setting allows you **to enable or disable the automatic squelch**.

How to enable or disable the function:

- Press and hold the **FUNC** button for about 2 seconds, until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ button to select setting ***ASQ 14***.
- Turn the **BAND MODE** knob to enable (ON) or disable (OFF) the function.
- Press the **CLARIF** knob or the **PTT** button to confirm.

Automatic squelch sensitivity (ASQ)

This setting allows you **to adjust the intervention level of the automatic squelch**.
You can choose from 9 sensitivity levels (default value: 5).

How to adjust the setting:

- Press and hold the **FUNC** button for about 2 seconds, until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ button to select setting ***ASQ 15***.

- Turn the **BAND MODE** knob to select a level between 1 and 9 (default: 5).
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Time out timer (Tot)

This setting allows you **to adjust the maximum transmission time**.
You can set the time from 30 seconds up to a maximum of 600 seconds (default value: 60 seconds).

How to adjust the setting:
- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ key to select setting ***tot 16***.
- Turn the **BAND MODE** knob to select a time between 30 and 600 seconds (default: 60 seconds).
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Scan type (SC)

This setting allows you **to choose the type of scanning used**.
You can choose between two options:
- **S9:** Scanning stops when a signal/communication is received. It resumes after the signal ends, approximately 5 seconds later.
- **TI:** Scanning stops when a signal/communication is received. It resumes after 5 seconds, regardless of whether the signal is still present.

How to adjust the setting:
- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ key to select setting ***SC 17***.
- Turn the **BAND MODE** knob to choose between S9 and TI modes.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

SWR protection in CW mode (Ct)

This setting **enables or disables SWR protection**.
When enabled, the radio will not transmit if the SWR exceeds the value set in the SPO setting (maximum SWR threshold), and the message ***"S HI"*** will appear on the radio display, indicating a high SWR level. This menu activates the function for CW mode.

How to modify the setting:
- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ key to select setting ***Ct 18***.
- Turn the **BAND MODE** knob to enable (ON) or disable (OFF) the function.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

SWR protection in AM mode (At)

This setting **enables or disables the SWR protection**.
When enabled, the radio will not transmit if the SWR exceeds the value set in the SPO setting (maximum SWR threshold), and the message ***"S HI"*** will appear on the radio display, indicating a high SWR level. This menu activates the function for AM mode.

How to modify the setting:
- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ key to select setting ***At 19***.

- Turn the **BAND MODE** knob to enable (ON) or disable (OFF) the function.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

SWR protection in FM mode (Ft)

This setting **enables or disables the SWR protection**.
When enabled, the radio will not transmit if the SWR exceeds the value set in the SPO setting (maximum SWR threshold), and the message ***"S HI"*** will appear on the radio display, indicating a high SWR level. This menu activates the function for FM mode.

How to modify the setting:

- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ key to select setting ***Ft 20***.
- Turn the **BAND MODE** knob to enable (ON) or disable (OFF) the function.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

SWR protection in USB mode (Ut)

This setting **enables or disables the SWR protection.**
When enabled, the radio will not transmit if the SWR exceeds the value set in the SPO setting (maximum SWR threshold), and the message ***"S HI"*** will appear on the radio display, indicating a high SWR level. This menu activates the function for USB mode.

How to modify the setting:

- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ key to select setting ***Ut 21***.
- Turn the **BAND MODE** knob to enable (ON) or disable (OFF) the function.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

SWR protection in LSB mode (Lt)

This setting **enables or disables the SWR protection**.
When enabled, the radio will not transmit if the SWR exceeds the value set in the SPO setting (maximum SWR threshold), and the message ***"S HI"*** will appear on the radio display, indicating a high SWR level. This menu activates the function for LSB mode.

How to modify the setting:

- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ key to select setting ***Lt 22***.
- Turn the **BAND MODE** knob to enable (ON) or disable (OFF) the function.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Low/high voltage protection (dC)

This setting **enables or disables the protection** against low and high input voltage.
When this function is enabled and the voltage drops below 9 V, the message ***"dC LO"*** will appear on the display. If the voltage exceeds 16 V, ***"dC HI"*** will be displayed. This function is enabled by default.

How to modify the setting:

- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ key to select setting ***dC 23***.
- Turn the **BAND MODE** knob to enable (ON) or disable (OFF) the function.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Transmission display indication (td)

This setting allows you to choose what information is shown on the screen during transmission.
The available options are:

- **bAt:** Battery level
- **tot:** Transmission time countdown
- **Sr:** SWR indication
- **tF:** Transmission frequency (default)

How to adjust the setting:

- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ button to select setting ***td 24***.
- Turn the **BAND MODE** knob to choose between ***bAt, tot, Sr,*** and ***tF***.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Roger beep frequency (rbF)

This setting allows you to **select the frequency used for the roger beep**.
You can adjust the frequency from 300 Hz up to a maximum of 3000 Hz, in 10 Hz increments (default value: 850 Hz).

How to adjust the setting:

- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ button to select setting ***td 25.***
- Turn the **BAND MODE** knob to adjust the frequency.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Roger beep tone length (rbt)

This setting allows you **to adjust the duration of the roger beep tone.**
You can set the length from 50 milliseconds up to 1000 milliseconds (default: 150 milliseconds).

How to adjust the setting:

- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ button to select setting ***td 26***.
- Turn the **BAND MODE** knob to adjust the duration.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Transmission audio frequency (tF)

This setting allows you **to select the audio transmission frequency** associated with the ASQ button. When the **PTT** button is pressed, if you press the ASQ button on the microphone, the set frequency will be transmitted. This tone will be transmitted if both **PTT** and ASQ buttons are held simultaneously.
The frequency can be set from 300 Hz to 3000 Hz (default: 1500 Hz).

How to adjust the setting:

- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ button to select setting ***tf 27***.
- Turn the **BAND MODE** knob to adjust the frequency.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Transmission monitor level (tb)

This setting allows you **to adjust the volume level** of your voice during transmission (monitor function). You can choose from 9 sensitivity levels (default: OFF).

How to adjust the setting:

- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ button to select setting tb 28.
- Turn the **BAND MODE** knob to choose a level between 1 and 9 (default: OFF).
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Microphone sensitivity adjustment - AM mode (AICG)

This setting allows you **to adjust the microphone sensitivity level** for AM mode. You can choose from 15 levels (default: 15).

How to adjust the setting:

- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ button to select setting ***td 29***.
- Turn the **BAND MODE** knob to adjust the level.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Microphone sensitivity adjustment - FM mode (FICG)

This setting allows you **to adjust the microphone sensitivity level** for FM mode. You can choose amongst 15 levels (default: 15).

How to adjust the setting:

- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ button to select setting ***td 30***.
- Turn the **BAND MODE** knob to adjust the level.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Microphone sensitivity adjustment - USB mode (UICG)

This setting allows you **to adjust the microphone sensitivity level** for USB mode. You can choose from 15 levels (default: 15).

How to adjust the setting:

- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ button to select setting ***td 31***.
- Turn the **BAND MODE** knob to adjust the level.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Microphone sensitivity adjustment - LSB mode (LICG)

This setting allows you **to adjust the microphone sensitivity level** for LSB mode. You can choose from 15 levels (default: 15).

How to adjust the setting:

- Press and hold the **FUNC** button for about 2 seconds until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ button to select setting ***td 32***.
- Turn the **BAND MODE** knob to adjust the level.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Key tone volume adjustment (bp)

This setting allows you **to adjust the volume of the keypress tones**.
You can choose between 4 volume levels (default value: 3).

How to change the setting:

- Hold down the **FUNC** button for about 2 seconds, until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ key to select setting ***bp 33***.
- Turn the **BAND MODE** knob to adjust the volume.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Side tone frequency (CF)

This setting allows you **to adjust the side tone frequency during CW transmission**, the sound heard by the operator through the speaker or headphones while sending the signal.
Three options are available (default value: 1), each corresponding to a different frequency group.

How to change the setting:

- Hold down the **FUNC** button for about 2 seconds, until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ key to select setting ***CF 34***.
- Turn the **BAND MODE** knob to choose one of the available options.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

SWR maximum threshold setting (SPO)

This setting allows you **to set the maximum allowable SWR** (Standing Wave Ratio) value during transmission. It is associated with settings 18/19/20/21/22, where the function can be enabled for each transmission mode. When the SWR value exceeds the set threshold, the radio will block transmission and display the message ***"S HI"*** preventing damage from a poorly installed or damaged antenna system.
You can set the threshold between 3 and 20 (default value: 5).

How to change the setting:

- Hold down the **FUNC** button for about 2 seconds, until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ key to select setting ***SPO 35***.
- Turn the **BAND MODE** knob to adjust the value.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Subtone setting for RX and TX (ALL-qt)

This setting allows you **to choose the subtone** to be used for both reception and transmission.
You can choose an analogic subtone (CTCSS) with frequencies between 67 Hz and 254.1 Hz, or a digital subtone (DCS) with codes between 023 and 754.
DCS can be set in Normal (N) or Inverted (I) mode.

How to change the setting:

- Hold down the **FUNC** button for about 2 seconds, until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ key to select setting ***ALL-qt 36***.
- Briefly press the **BAND MODE** knob to enter the setting.
- Turn the **CH** knob to select the desired subtone type.

- Turn the **BAND MODE** knob to set the frequency or choose the DCS code.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Once the desired tone is set, the display will alternate the channel display with:
- **"cd":** digital subtone set
- **"ct":** analogic subtone set

By default, this function is disabled.

Note: *CTCSS/DCS subtones do not work in AM/SSB bands.*

Subtone setting for reception (r-qt)

This setting allows you **to choose the subtone for reception**.
You can choose an analogic subtone (CTCSS) with frequencies between 67 Hz and 254.1 Hz, or a digital subtone (DCS) with codes between 023 and 754.
DCS can be set in Normal (N) or Inverted (I) mode.

How to change the setting:
- Hold down the **FUNC** button for about 2 seconds, until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ key to select setting ***r-qt 37***.
- Briefly press the **BAND MODE** knob to enter the setting.
- Turn the **CH** knob to select the desired subtone type.
- Turn the **BAND MODE** knob to set the frequency or DCS code.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Once the desired tone is set, the display will alternate the channel display with:
- **"cd":** digital subtone set
- **"ct":** analogic subtone set

By default, this function is disabled.

Note: *CTCSS/DCS subtones do not work in AM/SSB bands.*

Subtone setting for transmission (t-qt)

This setting allows you **to choose the subtone for transmission**.
You can choose an analogic subtone (CTCSS) with frequencies between 67 Hz and 254.1 Hz, or a digital subtone (DCS) with codes between 023 and 754.
DCS can be set in Normal (N) or Inverted (I) mode.

How to change the setting:
- Hold down the **FUNC** button for about 2 seconds, until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ key to select setting ***t-qt 38***.
- Briefly press the **BAND MODE** knob to enter the setting.
- Turn the **CH** knob to select the desired subtone type.
- Turn the **BAND MODE** knob to set the subtone frequency.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Once the desired tone is set, the display will alternate the channel display with:
- **"cd":** digital subtone set
- **"ct":** analogic subtone set

By default, this function is disabled.

Note: *CTCSS/DCS subtones do not work in AM/SSB bands.*

Transmission direction (oS)

This setting allows you **to set the transmission direction based** on the value defined in the oFFSEt menu. You can choose whether the frequency shift during transmission should be higher (ADD) or lower (SUB) than the frequency displayed on the screen.
If ADD is selected, the transmission frequency will be higher than the displayed frequency.
If SUB is selected, the transmission frequency will be lower than the displayed frequency.
This function is especially useful in certain transmission modes that require a frequency offset (such as FM, SSB, or CW communication), but it is only active for non-EU markets.

How to change the setting:

- Hold down the **FUNC** button for about 2 seconds, until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ key to select setting ***oS 39***.
- Turn the **BAND MODE** knob to select ADD or SUB.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Transmission frequency shift (oFFSEt)

This setting allows you to set the frequency offset.
This function is only active for non-EU markets.

How to change the setting:

- Hold down the **FUNC** button for about 2 seconds, until ***AInr 01*** appears on the display.
- Turn the **CH** knob or press the ▲ key to select setting ***oFFSEt 40***.
- Turn the **BAND MODE** knob to adjust the frequency offset.
- Briefly press the **CLARIF** knob or the **PTT** button to confirm.

Once the frequency offset is set, ensure that the Transmission Direction option is enabled.

TECHNICAL SPECIFICATIONS

Channel	see frequency band table
Frequency bands*	26.565-27.99125 MHz FM (RX/TX) 26.965-27.405 MHz AM (RX/TX)
Power supply	12.6 Vdc +/- 10%
Consumption	<6A
Operating Temperature	-10ºC to +55ºC
Antenna Connector	UHF, SO239
Output Power	4W AM/FM, 12W SSB
Modulation	A3E (AM), F3E (FM),
Maximum Frequency Deviation (FM)	≤ 1.9KHz
Spurious emissions	< -54dBm
Adjacent Channel Power	< 20 uW
Frequency Stability	±5.0 ppm
Receiver sensitivity @12dB SINAD	< 1uV
Audio output power	≥ 3W (8 Ohms)
Adjacent channel rejection	Better than 60 dB
Frequency response	300-3000Hz
Dimensions	175x135x55 mm (LxWxH)
Weight (including microphone)	1.2 kg

* Based on authorized EU frequency bands

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