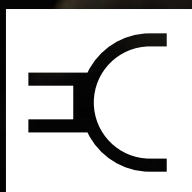


# 2110 MANPACK DV



CODAN  
RADIO COMMUNICATIONS

**With Digital Voice the Difference is Clear**



# CODAN 2110 MANPACK SERIES

The CODAN™ 2110 Manpack series transceivers are a reliable, rugged and secure solution for your portable long-distance HF voice and data communications.

With second-generation Digital Voice, you have the confidence to communicate anywhere and anytime without the need for existing infrastructure. Codan manpacks are extremely light and deliver the lowest power consumption of any available manpack transceiver, meaning you can operate continuously on a single charge for up to 65 hours. Comfortable to carry and packed with easy-to-use features, Codan manpacks are ideal for all types of terrain and weather conditions, complying with the toughest environmental standards including MIL-STD-810F. The manpack transceiver and battery compartment are made from lightweight alloys and high-impact plastics, both capable of withstanding immersion to a depth of 1 m.

With Codan's cryptor options, the 2110 Series Manpacks incorporate AES-256 or CES-128 encryption to ensure sensitive information can be communicated with confidence. 2110 series models have an option for internal Frequency Hopping to prevent third party interference and monitoring of classified communications. Codan's 3G ALE option enables robust and efficient on-air linking, providing capabilities for reliable voice and data communications, as well as enhanced GPS tracking.

## Antennas

Codan has a reputation for building superior and reliable HF antennas, and our range of tactical antennas for the 2110 Manpack series are no exception. They provide maximum durability and mobility with quick deployment for short and long range communications.

**Tactical Whip Antenna:** lightweight, rapidly deployable and operates with the manpacks' built-in antenna tuner. A collapsible design makes it simple to stow.

**Tactical Long Wire Antenna:** a rugged kevlar design provides improved communications performance over short to medium ranges (1.6 to 30 MHz).

**Broadband Antenna:** a kit solution to suit multi-frequency operation, and guarantees best performance over a broad range of frequencies and distances

**Dipole Antenna:** a kit solution customisable to the required frequency range, indicated by the 2110 transceiver display.



## FEATURES & OPTIONS

- 1.6 to 30 MHz continuous, 25 W (125 W with amplifier)
- Second generation Digital Voice technology
- Lightweight (2.9 kg without battery)
- Long battery life (up to 65 hours) with intelligent battery management
- Rugged (shock, vibration and immersion), MIL-STD-810F
- Advanced Automatic Link Establishment (ALE):
  - MIL-STD-188-141B
  - 3G ALE (STANAG 4538)
- CES-128 voice and AES-256 digital voice and data encryption
- Smart and fast internal fully automatic antenna tuner
- Clear communications with DSP noise reduction — *Easitalk™*
- Internal MIL-STD-188-110A/B high-speed Data Modem
- Integrated GPS receiver and antenna, and integrated speaker
- Intuitive and user-friendly interface
- 3 year warranty



### DIGITAL VOICE

2110 series second generation Digital Voice capability delivers clearly intelligible speech no matter the conditions, ensuring you're always heard, loud and clear.



### LONGER LIFE, LIGHTWEIGHT AND TOUGH

2110s eliminate the need to carry heavy spare batteries, and operate continuously for up to 65 hours. Weighing only 2.9 kg, they are 1 kg lighter than competitors and fully comply with MIL-STD-810F standards.



### INTEGRATED GPS

With a unique one-button emergency facility, no-go proximity warning messages and encrypted position information, the 2110's internal GPS gives you an eagle-eye view of your HF network.



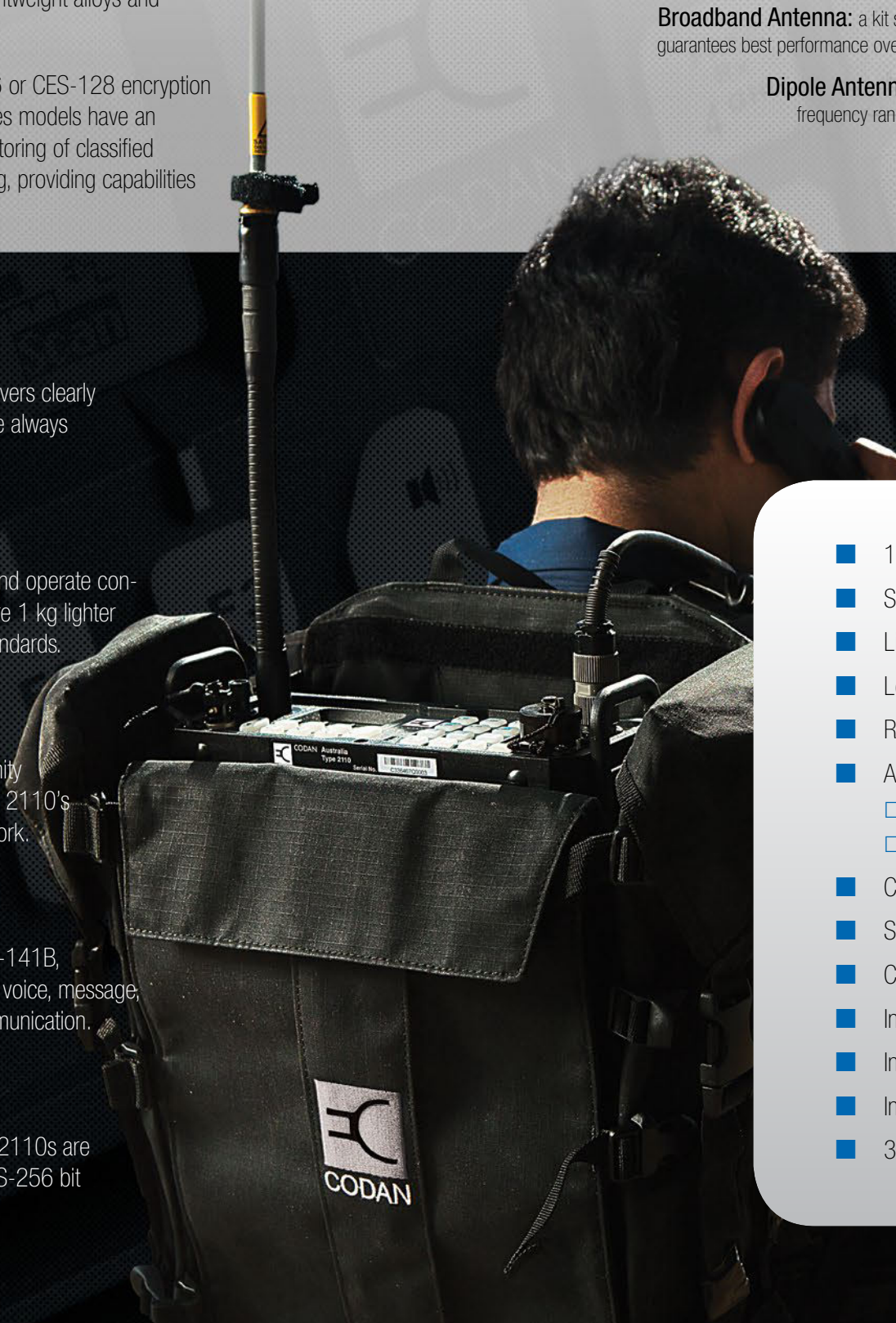
### ADVANCED ALE

2110s support standards FED-STD-1045, MIL-STD-188-141B, and 3G ALE STANAG 4538 with advanced capabilities for voice, message, GPS tracking and radio status for simple and reliable communication.



### INTERNAL DATA MODEM

With an optional fully integrated high-speed data modem, 2110s are capable of data-rates of up to 9600 bps, secured with AES-256 bit encryption to ensure your information remains confidential.







## 2110 MANPACK

Codan 2110 Manpacks deliver secure voice and data communications, and ensure interoperability with other transceivers. With an optional internal high-speed modem that supports AES-256 encryption for secure email and data capability, 2110 Manpacks provide supreme capability for mission critical communications.



## 2110v MANPACK

The Codan 2110v Manpack suits voice only operations, providing a cost effective, reliable and rugged portable communications solution. Available with FED-STD-1045 ALE for automated channel selection and linking, and secure voice modes, the Codan 2110v Manpack is a smart choice for highly portable long distance voice communications.

# FEATURE COMPARISON

- ✓ STANDARD
- OPTIONAL
- ✗ NOT AVAILABLE

	2110v MANPACK	2110 MANPACK
Channels	400	400
Digital Voice	✗	✓
External Accessory Support	✗	✓
FED-STD-1045 ALE	●	●
MIL-STD-188-141B ALE	✗	●
3G ALE (STANAG 4538)	✗	●
Internal GPS	●	●
Voice Encryption	●	●

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**CODAN**  
 RADIO COMMUNICATIONS

## 2110 MANPACK TRANSCEIVER

### ➤ FEATURES AT A GLANCE



- **Lightweight & rugged design**
- **Digital voice**
- **CES-128 & AES-256 Voice Encryption**
- **Internal high speed Data Modem**
- **Advanced ALE**
  - 3G ALE (STANAG 4538)
  - MIL-STD-141B
  - FED-STD-1045
- **Long battery life**
- **Intelligent battery system**
- **Interoperability with advanced calling facilities**
- **Smart, fast & fully automatic antenna tuner**
- **Clear communications with DSP noise reduction — *Easitalk*<sup>™</sup>**
- **Innovative & user-friendly interface**
- **Integrated GPS receiver**
- **3 year warranty**

The CODAN™ 2110 Manpack series Transceivers are extremely light and rugged, and are designed for long distance communications, whilst on the move. There are two versions available: the 2110v for basic voice only operations and the 2110 with more advanced capabilities. The 2110 supports Codan's second generation Digital Voice technology, providing outstanding voice clarity in demanding conditions. Coupled with high speed data and advanced ALE capabilities, the 2110 represents a full feature man-portable HF transceiver solution.

### DIGITAL VOICE

Codan's second generation Digital Voice technology provides a quantum leap in HF voice communications. A full digital mode coupled with highly optimised vocoder technology provides voice quality similar to that experienced with cellular phones. Optional AES-256 encryption can be added to deliver a fully secure, high quality voice capability.

### ADVANCED ALE

The 2110 Manpack includes the latest generation 3G ALE technology providing the tactical user with fast linking and data capabilities. Mission critical messages are transferred securely by employing link protection and data encryption. Synchronised scanning provides more efficient use of existing bandwidth.

The 2110 Manpack Transceiver is fully interoperable with military transceivers using JITC certified MIL-STD-188-141B ALE. You can initiate NET, GROUP, and WILDCARD selective calls, along with a number of advanced calls including, Phone, Message, GPS, and Status Calls. The 2110 is also interoperable with a number of commercial HF transceivers that are used by many non-government and humanitarian organisations.

### LIGHTWEIGHT & RUGGED DESIGN

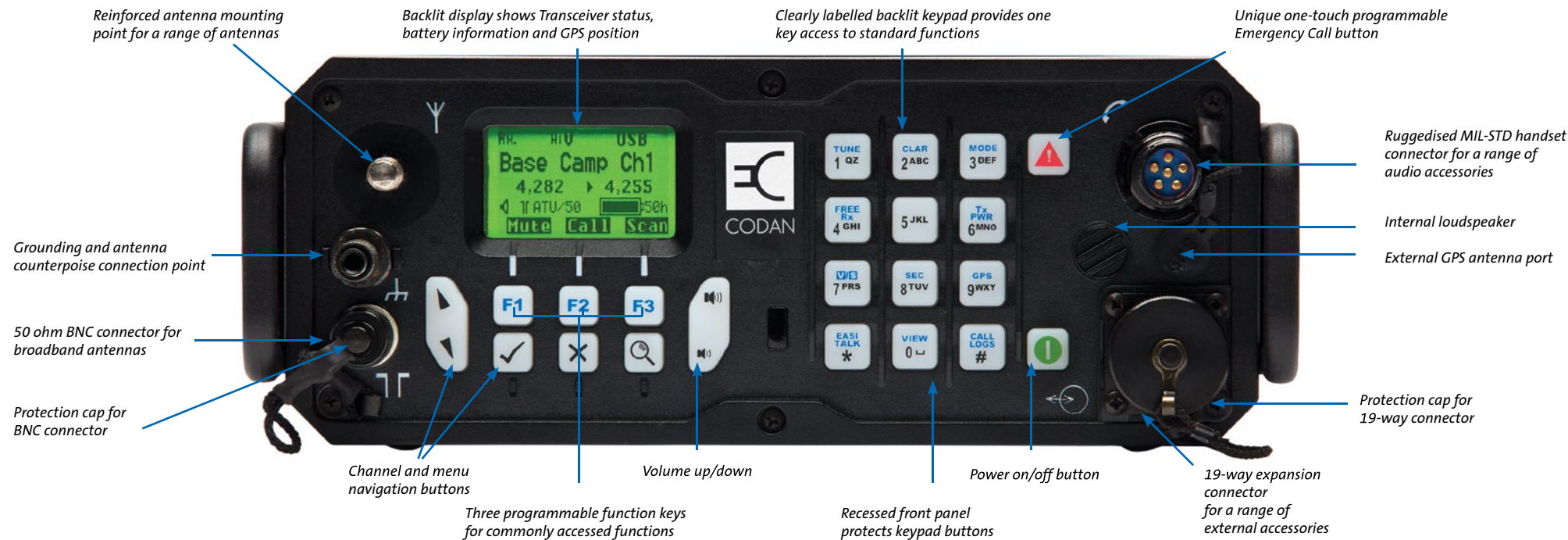
Codan's 2110 series Transceivers are designed for harsh field conditions and comply with the most demanding environmental standards including MIL-STD-810F.

The Transceivers and battery compartments are made from lightweight alloys and high impact plastics. Both are capable of withstanding immersion to a depth of one metre.

At 2.9 kg Codan's 2110v and 2110 are among the lightest yet fully featured manpacks available today.



# 2110 MANPACK TRANSCEIVER



Please note that the picture shown (above) is not to scale

## LONG BATTERY LIFE

Using state of the art technology, Codan's 2110 series Transceivers have by far the lowest current consumption of any available Manpack Transceiver. This enables continuous operation for several days on a single battery charge, which can save some users from carrying spare batteries.

## INTELLIGENT BATTERY SYSTEM

Codan's unique battery management technology continuously monitors the battery condition and remaining capacity. The Transceivers' front panel shows remaining operating hours, reassuring users of their ability to communicate in mission critical operations.

The intelligent monitoring system also monitors battery charging and prevents batteries from being overcharged. This ensures maximum battery life and minimises operational costs.

Users can charge batteries via the Transceivers' front panels either while they are operating the manpacks or separately.

The 2110v and 2110 are compatible with a range of battery charging solutions for either AC or DC sources.

## INTEROPERABILITY WITH ADVANCED CALLING FACILITIES

The 2110 series Transceivers provide seamless operation with Codan's NGT™ base and vehicle Transceivers. They are fully interoperable with NGT™ 4 and 6 digit calling facilities including Phone call, Message call, GPS call, Get Status call, and Over-The-Air (OTA) remote configuration and remote disable capabilities.

## SMART, FAST & FULLY AUTOMATIC ANTENNA TUNER

Both the 2110v and 2110 feature an integrated antenna tuner that provides smart, fast and fully automatic tuning of whip and long wire antennas.

From the moment an antenna is connected, the Transceivers automatically detect the antenna and tune it to the operating frequency.

Users no longer have to select tuning modes, antenna types or manually initiate the tune cycle.

Initial tuning typically occurs within 2.5 seconds and takes only 50 milliseconds when tuning from memory.

The tuner is fully protected against unexpected antenna loads and mismatches, overvoltage, or continuous use.

A separate 50 ohm BNC connection is also available for broadband and other untuned antennas.

The 2110 supports connection to external antenna tuners such as the 9350 Automatic Tuning Whip Antenna.

## CLEAR COMMUNICATIONS WITH DSP NOISE REDUCTION — EASITALK™

Codan's Digital Signal Processing (DSP) techniques greatly reduce the effect of interference and channel noise to provide clearer communications. *Easitalk*™ operates at the press of a button and the result is a loud and clear signal at all times.

## INNOVATIVE & USER-FRIENDLY INTERFACE

Codan's intuitive interface is easy to use right from the start and minimises training time and costs. The Transceivers' menu driven interface includes a smart address book containing up to 100 names, call locations, and even pre-programmed text messages. It also features one key access to standard functions and pre-programmed sequences.

The front panel includes an internal speaker, full alpha-numeric keypad, and a large display that are backlit for night time operations.

The Transceivers are highly configurable and support both user and administrative access levels. This includes the ability to simplify the user interface by restricting a user to only those functions that are necessary to operate the Transceivers.

## INTEGRATED GPS RECEIVER

Both the 2110v and 2110 support an integrated GPS receiver option, which enables you to monitor your own location, and your distance and

bearing from other transceivers within a network.

Emergency calls sent through the unique one button emergency facility automatically include GPS position information.

Using CODAN™ GPS and tracking software, a base station operator can track manpack units on a single map. Warning messages can be issued if the field operator enters a no-go area for added security. For extra protection, GPS data can be encrypted so positions are only seen by authorised users.

## VOICE & DATA SECURITY

Codan's *Voice Encryptor* option is available with both Manpack Transceivers, and can prevent third party monitoring of communications that may otherwise jeopardise an operation. It uses a patented voice encryption technology to ensure sensitive information remains confidential.

For added security, the 2110 series Transceivers also support encryption of transmitted text messages and GPS position information.

## WORLDWIDE SUPPORT

Codan customers are supported with our worldwide network of Accredited Service Centres, agents and distributors — 24 hours a day. Regular auditing and training by Codan technical staff ensure the best after sales service. The 2110 series Transceivers are backed by a 3 year warranty.

## UPGRADABILITY & EASY SERVICE

The 2110 series Transceivers are designed to preserve your investment in the equipment by supporting future features and capabilities. Their large memory capacity and digital signal processing capabilities enable them to be extended easily through software updates.

The Transceivers' modular design makes them simple to service and repair with a minimum of tools. A range of built-in test capabilities makes it easy to test and report on the Transceivers' performance.

All CODAN™ Transceivers are fully protected from faults such as antenna damage, overvoltage and reverse polarity, which can destroy other transceivers.

## OPTIONS

- Digital Voice (MELPe & TWELP vocoders)
- Data Modem, Internal STANAG 4539 / MIL-STD-188-110A/B (75–9600 bps)
- RC50-C Email Software for above
- 3G ALE (STANAG 4538) ALE
- MIL-STD-188-141B ALE
- FED-STD-1045 ALE (CALM™)
- Voice Encryption, CES-128 or AES-256
- Morse Key
- High Stability Receiver\*
- GPS
- 500 Hz Bandwidth Filter
- 2700 Hz Bandwidth Filter\*\*

\* Required for MIL-STD-ALE

\*\* Required for use with Data and Digital Voice

# 2110 MANPACK TRANSCEIVER

## SPECIFICATIONS

### GENERAL

<b>Channel capacity</b>	2110v: 400 channels, 10 networks 2110: 600 channels, 20 networks with MIL-STD-188-141B ALE option or 3G ALE option
<b>Scanning</b>	Configurable up to 8 channels per second
<b>Linking &amp; data</b>	3G ALE (STANAG 4538) including FLSU, HDL, LDL, CAST (Codan Adaptive Signalling Technology) MIL-STD-188-141B ALE MIL-STD-188-110A/B STANAG 4539, 75 to 9600 bit/s
<b>Vocoder</b>	MELPe (1200/2400 bit/s); TWELP (600/1200/2400 bit/s)
<b>Operating temperature range</b>	-40 to +70°C, full spec -30 to +60°C
<b>Frequency stability</b>	±1.5 ppm (-30 to +60°C)
<b>Clarifier</b>	10 Hz
<b>Power source</b>	12 V DC (10.8 to 15 V operational)
<b>Size</b>	Transceiver: 245 mm W x 250 mm D x 92 mm H, with battery 245 mm W x 350 mm D x 92 mm H
<b>Weight</b>	Transceiver: 2.9 kg (5.0 kg with 8 Ah NiMH battery)
<b>Environmental</b>	Per MIL-STD-810F including shock, vibration, humidity, immersion (1 hr at 1 m), altitude, fungus, salt fog, sand and dust, blowing dust, and rough handling
<b>EMC</b>	Complies with MIL-STD-461
<b>Cooling</b>	Convection from case
<b>Transceiver conformance</b>	Exceeds or meets requirements of AS/NZS 4770:2003, CE, NTIA and FCC Per MIL-STD-188-141B (required for ALE) (2110 only)
<b>Interfaces</b>	USB (full opto-isolation) or RS232
<b>Approximate battery life</b>	Approx. 50 hr (13 Ah NiMH), 1:9 Tx:Rx Approx. 65 hr (17 Ah Li-FePO <sub>4</sub> ), 1:9 Tx:Rx

### RF

<b>Frequency range</b>	<b>Transmit:</b> 1.6 to 30 MHz, 10 Hz steps <b>Receive:</b> 250 kHz to 30 MHz, 10 Hz steps
<b>Modes</b>	2110v: Voice, USB/LSB (J3E), AM (H3E), AFSK (J2B), CW (J2A) 2110: Voice/Data, USB/LSB (J3E), AM (H3E), AFSK (J2B), CW (J2A)
<b>RF input/output impedance</b>	Whip/long wire antenna via internal Automatic Antenna Tuner, or 50 Ω nominal
<b>Antenna tuner</b>	<b>Tuning:</b> 2.5 s typical first tune (fully automatic), 50 ms for memory recall Last tune stored for 100 frequencies
<b>Transmitter specifications</b>	<b>Power output:</b> 25 W PEP (High)/5 W PEP (Low) selectable <b>Duty cycle:</b> 50% with over temperature protection <b>Audio bandwidth:</b> 300 to 2700 Hz (standard filter) 300 to 3000 Hz (optional 2.7 kHz BW filter) (2110 only)
<b>Receiver specifications</b>	<b>Operating current:</b> 120 mA typical (speaker muted) <b>Sensitivity:</b> 0.14 µV for 10 dB SINAD <b>Image &amp; IF rejection:</b> 85 dB <b>Spurious response:</b> ≥70 dB <b>Mute:</b> Syllabic Voice Detect <b>Audio output:</b> Waterproof internal speaker; 0.5 W into 8 Ω, 10% THD External speaker on GPIO connector; 1 W into 4 Ω, 10% THD

### ENCRYPTION

CES-128, 97 x programmable 16-digit keys, 4-digit PIN  
AES-256, 256 x programmable 256-bit keys

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Values noted are typical. Equipment descriptions and specifications subject to change without notice or obligation.



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