HT446

V04/06

PMR446 submersible transceiver

OWNERS MANUAL

Entel

CALL SCMB SCAN
DCS
CTC 8 8
8 8 CH
VOX VIB 🔒 ♫

FCN SCAN ⌒
↵
CALL VOX ⌄
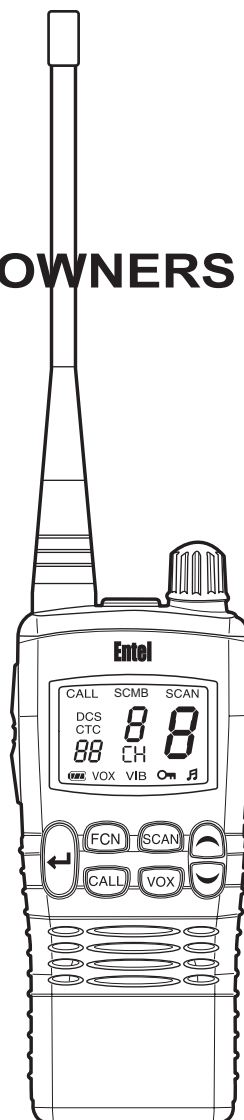
Submersible

Dependable

Tough

Entel UK

CE COMPLIANCE STATEMENT

The **HT446** transceiver displays "CE" on the serial number label, indicating its compliance with the essential requirements of the EEC directive for Electromagnetic Compatibility.

DECLARATION OF CONFORMITY

We Entel UK Limited,

OF:
4 Elstree Gate, Elstree Way
Borehamwood, Herts
WD6 1JD
United Kingdom

Declare under our sole responsibility that the product:-
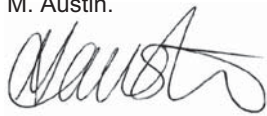**HT446** series UHF PMR446 handheld transceiver

Serial Number ---
To which this declaration relates, is in accordance with directive 95/5/EC and conforms to the following standard or other nominative documents:-
EN 300 296 (March 2001) EN 301 489-1 V1.5.1:2003, EN 60065:2002
Following provisions of the R&TTE directive.

M. Austin.

Quality Manager

QMS
ISO 9001
REGISTERED FIRM

INDEX

1.1 INTRODUCTION

The Entel HT446 is a professional PMR446 handheld transceiver that operates on the licence exempt UHF band. The HT446 has 8 radio channels (maximum available on PMR446). To minimise interference each channel may be used with any of 38 CTCSS or 83 DCS tones. This makes over 900 channel combinations available to the user.

1.2 GENERAL FEATURES

1. Heavy duty, commercial grade construction
2. Submersible to 1 metre (IP67)
3. Lithium-Ion battery technology
4. 24 hour battery endurance (5%TX/5%RX/90%STDBY)
5. VOX (Voice operated transmit) - 9 levels
6. Battery indicator, with battery low warning bleep
7. Call feature with 20 different alert tones
8. Vibrate
9. Squelch adjustment (used to increase range or remove interference)
10. Voice scrambler. (Not available in some countries)

1.3 PACKING LIST

The supplied package:

- ► **HT446**   HT446 PMR446 transceiver
- ► **CNB640E**   1800mAh rechargeable lithium-Ion battery pack
- ► **CCA230**   Drop in 6 hour trickle charger, 230v
- ► **CBH640**   Spring loaded belt clip
- ► **CCA12**   12v charger lead
- ► **Carry strap**
- ► **Owner's manual**

1.4 OPTIONAL ACCESSORIES

The HT446 is supported by a wide range of essential accessories.
For an up to date list visit our web site at www.entel.co.uk

CSA640E	Single pod intelligent rapid charger, 110/230v operation
CSB640E	Six pod intelligent rapid charger, 110/230v operation
CCA230	230v drop in trickle charger. (Also available as 110v - CCA110)
CCA12	12v drop in trickle charger
CNB640E	7.4V 1800mAh rechargeable lithium-Ion battery pack, with rear clip
CMP640	Submersible, noise cancelling speaker microphone (heavy duty)
CMP1/640	Compact speaker microphone with earpiece jack
EA15/640	Covert style ear/microphone with transparent acoustic tube/ PTT
EA12/640	D Shaped ear microphone with in-line PTT
EPT40/640	Bone conductive earpiece microphone
CHP1/640	Single earpiece lightweight headset with in-line PTT (vox)
CHP640HD	Heavy duty double ear defender for hardhat with PTT (vox)
CHP640HS	Heavy duty single ear defender for hardhat and PTT (vox)
CHP640D	Heavy duty double ear defender with headband and PTT (vox)
CXR5/640	Skull microphone (vox)
CXR16/640	Throat microphone (vox)
CFC640	Soft, real leather case with carry strap - blue, red or yelllow
CLC640	Heavy duty transparent case with carry strap
CLC940	Heavy duty leather case with carry strap
EHP640	Covert style earpiece
CBH640	Spring loaded rear clip

> **Accessories suitable for vox operation have been marked (vox)**

1.4.1 ATTACHING AUDIO ACCESSORIES

Locate accessory connector cover marked "ACC". Lift cover and rotate (screw) the connector clockwise.
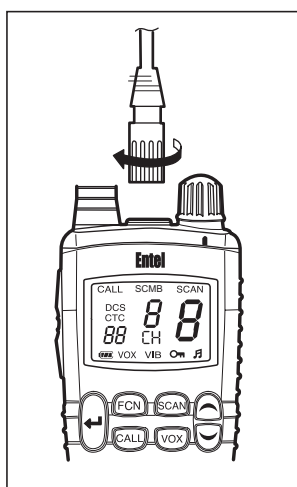
Note: The accessory socket is waterproof without the ACC cover in place. However, when not using an audio accessory we strongly advise keeping the ACC cover firmly pressed in its recess to prevent foreign objects from getting into the socket.

Figure 1. Attaching the accessory connector prior to use

Preparation prior to use

1. Attaching the belt clip. Align the belt clip with the plastic slots on the rear of the battery pack. Slide the belt clip onto the battery pack, pushing firmly until a click is heard.

2. BATTERY REMOVAL / ATTACHMENT

1. Turn the transceiver off.
2. Using a coin, rotate the battery screw anti-clockwise 2 or 3 turns.
   **Ensure that you do not hold the battery pack when unscrewing the release screw!

3. To attach the battery: firstly, place the battery against the bottom of the radio, then hinge the battery into place against the transceiver. Rotate the battery locking screw clockwise taking care not to over tighten the screw.
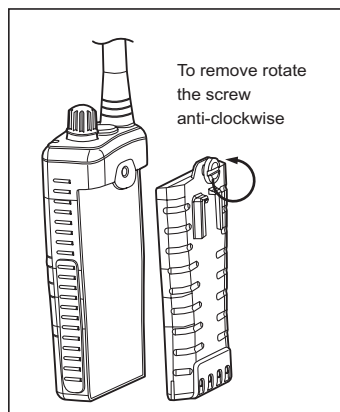

To remove rotate the screw anti-clockwise

Figure 2.
Battery removal / Attachment

1.5 CONTROLS AND INDICATORS

1. **POWER SWITCH / VOLUME CONTROL**
   Rotate clockwise to power the transceiver on and increase received volume. Rotate anticlockwise to reduce received volume and switch off.

2. **PUSH TO TALK SWITCH**
   Press and hold to transmit, release to receive.

3. **UP/DOWN button**
   Select the desired channel by pressing the UP/DOWN buttons. For fast channel selection hold down for more than 1 second.

4. **MONITOR button**
   To monitor the channel press and hold the monitor button for one second . You will hear a rushing noise & any other channel users, to return to normal mode press and hold the monitor button again.

5. **BATTERY PACK**
   A high performance rechargeable lithium-lon battery pack is supplied as standard with your radio.
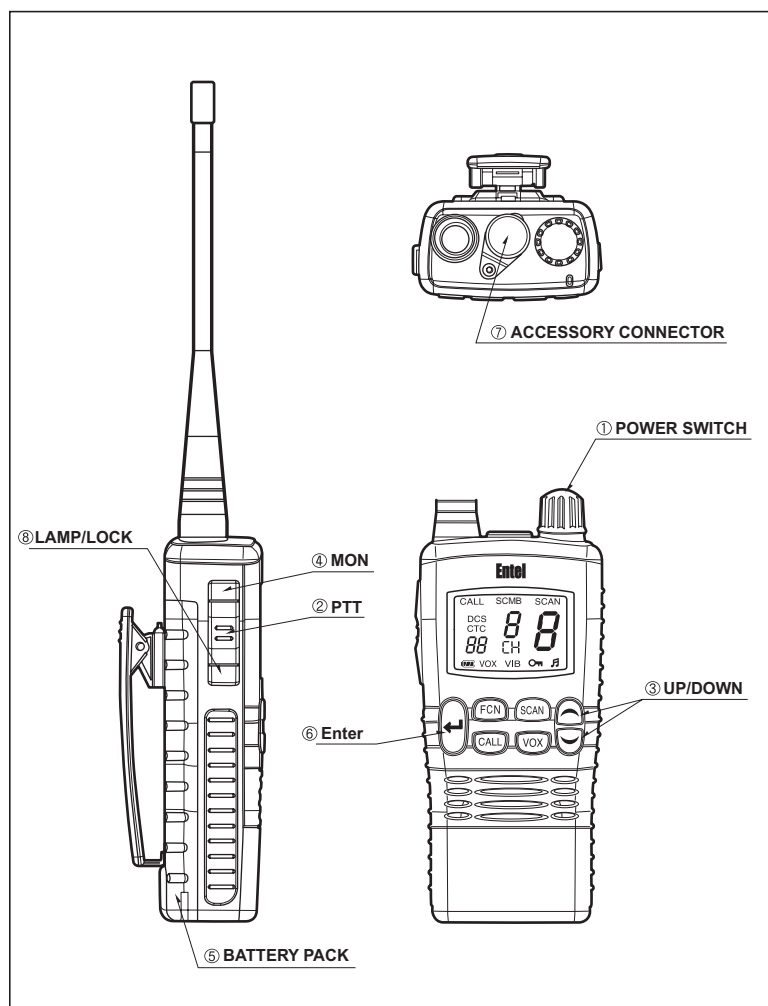
⑦ ACCESSORY CONNECTOR

① POWER SWITCH

⑧ LAMP/LOCK

④ MON

② PTT

CALL   SCMB   SCAN
DCS
CTC 88 CH
VOX VIB

③ UP/DOWN

⑥ Enter

FCN   SCAN

CALL   VOX

⑤ BATTERY PACK

Entel

Figure 3. CONTROLS & INDICATORS

6. ENTER BUTTON

Used to save your settings.

7. ACCESSORY CONNECTOR

Allows you to connect any Entel approved audio accessory to your HT446 radio.

8. LAMP/LOCK BUTTON

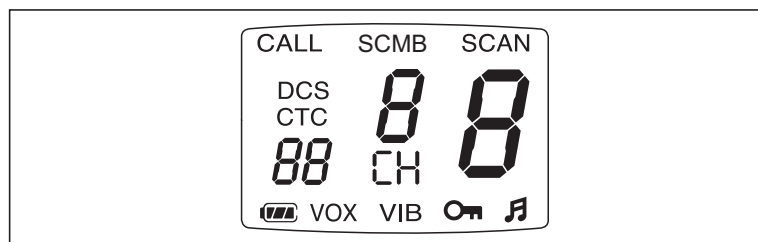Used to illuminate display and lock/unlock keypad.

1.6 LCD INDICATORS

Figure 4. LCD indications

CHANNEL DISPLAY
The far right (largest) number indicates the operating channel (1-8).

♬   Appears when the key bleep sound is turned on.

CTC/DCS
Indicates if CTCSS or DCS interference suppression tones are enabled.
The CTCSS or DCS tone number is indicated in the botom left of the LCD.

SCAN   Appears when scan is activated.

VOX   Voice operated mode enabled.

⚿   The keypad is locked.

🔋
The status of the lithium-Ion battery of your transceiver is continually monitored and displayed for your convenience and safety.

VIB
Indicates vibrate mode enabled, the transceiver will Vibrate during the initial call.

SCMB
Scrambler enabled. Feature only available in certain countries

CALL
Call alert feature. You may select one of 20 individual call tones.

1.7 RECEPTION

1. Turn the transceiver on by rotating the volume control in a clockwise direction. A power on tone is generated after 1 second to indicate the transceiver has passed its self-diagnostic test. Select the desired receive volume level by further rotating the control clockwise.
   After power on, the transceiver will always default to the last channel selected.
2. Select the desired channel using the [UP/DOWN] buttons.
3. When receiving a signal the LED indicator illuminates green.

1.8 TRANSMISSION

1. Perform steps 1 through 3 of RECEPTION.

2. Before transmitting, monitor the channel and make sure it is clear.

3. When receiving a signal, wait until the signal stops before transmitting. The transceiver cannot transmit and receive simultaneously.

4. Press the [PTT] (push-to-talk) switch to begin your transmission. To confirm transmission in progress the LED illuminates RED.

5. Holding the transceiver 2 inches from your mouth speak slowly and clearly into the microphone.

6. When the transmission is finished, release the [PTT] switch.

1.9 ADDITIONAL FEATURES

The **HT446** transceiver incorporates a number of unique features which will enhance the overall performance of your radio system.

With the power switched on press the "FCN" function key until the desired function is displayed. The functions are displayed in the following sequence:

CTC/DCS CTCSS/DCS sub audio tones

CALL   Call alert

VOX   Voice operated transmit

VIB   Vibrate

SCMB   Voice Scrambler

SCAN   Channel scan mode

♫   Button bleep

SL   SQUELCH LEVEL.

CTCSS/DCS (CTC/DCS)

There are two types of tone offered; CTCSS abbreviated CTC and DCS. Both these tones work in conjunction with the channel to prevent interference from other users who may be working on the same channel. To change the CTC or DCS tone press "FCN" once, the CTC/DCS display will flash. Use the up/down keys to select the CTC/DCS tone you require and press the "ENTER" key to save your setting. DCS tones are located after CTCSS 38.

> **Note** : If two groups are communicating within range of each other using the same channel, despite using different tone codes only one group can use the same channel at any one time. When the channel is being used by a different group the green LED will flash, but no speech will be heard from the speaker.

If using this feature please ensure that all users in the system have the same tone code programmed.

CALL

The call alert feature allows you to send one of 20 distinctive alert tones to another user in your system.

To enable the CALL feature press "FCN" twice. CALL will flash on the LCD. As default it is switched off. To switch this feature on press either the UP or DOWN channel button to scroll through the alert tones.

Once you select your alert tone press the ENTER key to save.

From the front keypad each time you wish to send the CALL tone simply press the CALL button.

1.10 Voice operated transmit (VOX)

In VOX mode the transceiver will react to your voice and transmit automatically without you having to press the PTT button.

There is always a slight delay for the electronic switching, therefore starting a transmission with an exaggerated length, throwaway, first word is recommended e.g. "H-e-l-l-o Charlie One do you receive, over".

To enable the VOX feature press the "FCN" button three times.

VOX will flash on the LCD display. As default it is switched off.

To switch this feature on press either the UP or down button to scroll through the levels. When the desired level is selected press the ENTER button to confirm. Level 9 is the most sensitive setting and should be used in low ambient noise environments. Level 1 is least sensitive and should be used in a high ambient noise environment.

Once this feature is enabled in the menu you can turn it on and off by pressing the VOX button located on the front panel. If you press and hold this button you can change the levels.

> **Note** : to get optimum performance from the VOX feature you should use a noise cancelling headset or earpiece microphone (see accessory options marked VOX)

VIBRATE (VIB)

There may be occasions where you would want the HT446 to vibrate on receipt of a valid call, or indeed set it up to vibrate in addition to an audible alert. To enable the vibrate feature press "FCN" key four times. VIB and OF (OFF) are displayed on the LCD. This indicates vibrate is switched to off. To switch on press either the UP or DOWN channel buttons then press ENTER to save your setting.

Voice scrambler (SCMB)

To avoid the potential eavesdropping of other users, HT446 offers a built in voice scrambler. Press "FCN" five times, select ON or OF (OFF) and then press "ENTER" to save the setting.
*Due to local regulation, in some countries the scrambler feature may not be available, please check with your dealer prior to purchase.

SCAN

Scanning allows you to efficiently monitor radio activity. To enable SCAN press the "FCN" button six times. SCAN is displayed on the LCD. As default it is switched off. Press the UP or DOWN buttons to switch on. 1 is normal channel scan 2 is CTCSS/DCS scan. To start scanning, momentarily press the scan button.

Channel Scan (1)

All channels will be scanned in sequence. If a signal is received the HT446 will stop on the channel. If you wish to skip active channels press either the UP or DOWN keys to resume scanning.
Alternatively, press the PTT to reply. If you have programmed any tone codes then the scan will look for those specific tones only.

CTCSS/DCS Scan (2)

If you selected CTCSS/DCS scan in scan setup then the HT446 will scan the selected channel for any activity on all the CTCSS/DCS tones.

♬

With the exception of PTT each time a you press any of HT446 buttons
a single beep tone is emitted. This can be disabled should you wish.
To disable the beep tone press "FCN" button seven times.
As default this feature is set to ON. By pressing the UP or DOWN button
you can tun this feature ON or OFF. Press the enter key to store the setting.

SQUELCH LEVEL (SL)

A squelch circuit allows muting of undesired noise while receiving no
signal, and emits audio when receiving signal. If operating HT446
directly next to machinery or computer equipment you may get squelch
breakthrough. Either move away from the equipment, or change the
squelch level to a lower setting.

Note : If using CTCSS or DCS on your HT446 you will not get squelch breakthrough.

To change the squelch level press "FCN" eight times. As default the
squelch level is set to 5. It can be increased or decreaed by pressing
the UP or DOWN buttons.
Press the ENTER button to confirm your setting.

⚷

A key lock feature is available should you wish to lock the keypad.
Located under the PTT button there is a X button. Holding this button
for just over a second locks the front keypad. When locked the only
button that continues to operate is the PTT button. To release the lock
simply press the X button.

Lamp X

A momentary press of the X button will illuminate the LCD for approximately 3 seconds.

Monitor button <>

The monitor button defeats any CTCSS or DCS tone programmed into your HT446. In addition to radio etiquette the monitor facility is used to listen to weak signals.

1.11 SIMPLE MODE

We understand that some users would find the commercial grade, submersible construction of HT446 appealing but prefer not to have the feature rich options offered by the HT446.

For these users you can set operation mode "B". The "B" version allows you to enable or disable any of the key features, and fix CTCSS/DCS tones per channel.

To access B version

1. Hold down the ENTER and UP buttons whilst turning the radio on. Select version B using the UP or DOWN button. Press ENTER to confirm.

2. Then hold down CALL and VOX and switch radio on. From here you can enable or disable any of the features, you can also set the CTCSS or DCS tone per channel. Once finished switch the radio off and on. Those features selected will be fixed. Should you wish to change any of the features fixed simply follow step 2 again.
   Should you wish to return to mode A you need to follow step 1 to and select mode A.

In B version, you are able to disable the monitor button. If you press the "FNC" 9 times, the "nn" symbol is displayed. You can then select this feature on or off.

2.0 TRICKLE CHARGER model CCA230 (CCA110 for 110VAC)

1. Connect the CWC640 AC adaptor to the CCA230 charger pod. The LED status light will illuminate green indicating ready for charge.
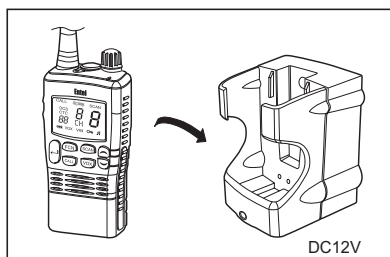

Figure 5. CCA230 Charger pod

2. Turn the transceiver off.

3. Insert the battery pack into the CCA230 pod, either with or without the transceiver attached. The LED status light changes from green to RED and trickle charge begins.

4. A fully discharged battery pack will take approximately 6 hours to charge, depending on the remaining power condition. When charge is complete, the LED status light turns green.

> **Note** : The CWC640 AC adaptor can be replaced by the included CMC640 12v charger cable. Charge time remains at 6 hours.

2.1 OPTIONAL RAPID CHARGER model CSA640E

1. Connect the CSA640E to a mains supply (110 to 230V). When switching on, the LED flashes orange briefly to confirm self-diagnostic test complete.
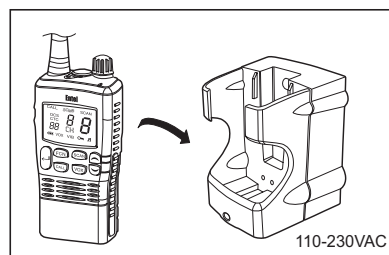

Figure 5-1. OPTIONAL CSA640E Rapid charger

2.1 CSA640E RAPID CHARGER Continued:

2. Turn the transceiver off.

3. Insert the battery pack into the CSA640E charger, either with or without the transceiver attached. The LED will illuminate red to indicate rapid charge in progress.

4. Charge time for a fully discharged battery pack will take up to 120 minutes. On completion the LED turns green.

2.2 BATTERY INDICATOR

For your safety and convenience your transceiver continually monitors the battery pack and gives an indication on the LCD:

3 Segments : 24 hours remaining

2 Segments :   1 hour remaining

1 Segment : 30 mins remaining

Figure 6. Battery Indicator

2.3 BATTERY SAFETY

The battery pack of your transceiver contains lithium-Ion cells.
This type of battery stores a charge powerful enough to be dangerous
if misused or abused, especially when removed from the transceiver.
Please observe the following precautions:

DO NOT SHORT BATTERY PACK TERMINALS

Shorting the terminals that power the transceiver can cause sparks,
severe over heating, burns, and battery cell damage. If the short is of
sufficient duration, it is possible to melt the battery components.
Do not place a loose battery pack on or near a metal surface or objects
such as paper clips, keys, tools etc.
When the battery pack is installed on the transceiver, the terminals
that transfer current to the transceiver are not exposed.
The terminals that are exposed on the battery pack when it is mounted
on the transceiver are charging terminals only and do not constitute a
hazard.

DO NOT INCINERATE

Do not dispose of your CNB640 battery in a fire or incinerator.
The heat of fire may cause battery cells to explode and/or release
dangerous gases.

DISPOSE OF BATTERY PACKS PROPERLY

Lithium-Ion battery packs must be recycled or disposed of properly.
For requirements in your area, check with the dealer from whom you
purchased your transceiver.

2.4 TROUBLE SHOOTING GUIDE

PROBLEM	PROBABLE CAUSE	SOLUTION
Radio will not power on	Battery needs charging Battery is exhausted	Recharge battery pack Replace the battery pack
Radio will not talk with others	Radios may be on different channel or tone code	Check that all radios in same group are using the same channel and tone
Hearing others conversations	Sharing same channel and tones as other users	Select a different channel and tone
Control buttons not functioning	Keylock activated Mode B Selected	Turn keylock off Enable mode A
Radio transmits without pressing PTT button. Buttons seem to work intermittently	Vox has been enabled	Press assigned vox button to switch vox off
Unintelligible Audio signal received or transmitted	Voice scrambler not enabled on receiving HT446	Ensure scrambler either enabled or disabled to be compatible with other radios
Status LED flashes green but no audio received	The channel is active but your radio is programmed with a different tone code	Press monitor button to establish if the channel activity is from your group. If so change tone code to match the other radios in your group
Limited Talk Range	Using the radio in a vehicle, basement, steel structure or concrete building reduces range	Where possible use your radio outside these areas
LED on charger does not illuminate when charging	Defective battery Dirty Terminal contact on charger	Contact your dealer Clean contacts with dry clean cloth
Accessory does not work with radio	Accessory plug not seating correctly in accessory socket Incompatible accessory being used	Check connection into accessory socket Ensure only genuine approved Entel accessory used Replace faulty accessory

2.5 SPECIFICATION (General, receive and transmit)

Performance specifications are nominal, unless otherwise indicated, and are subject to change without notice.

GENERAL

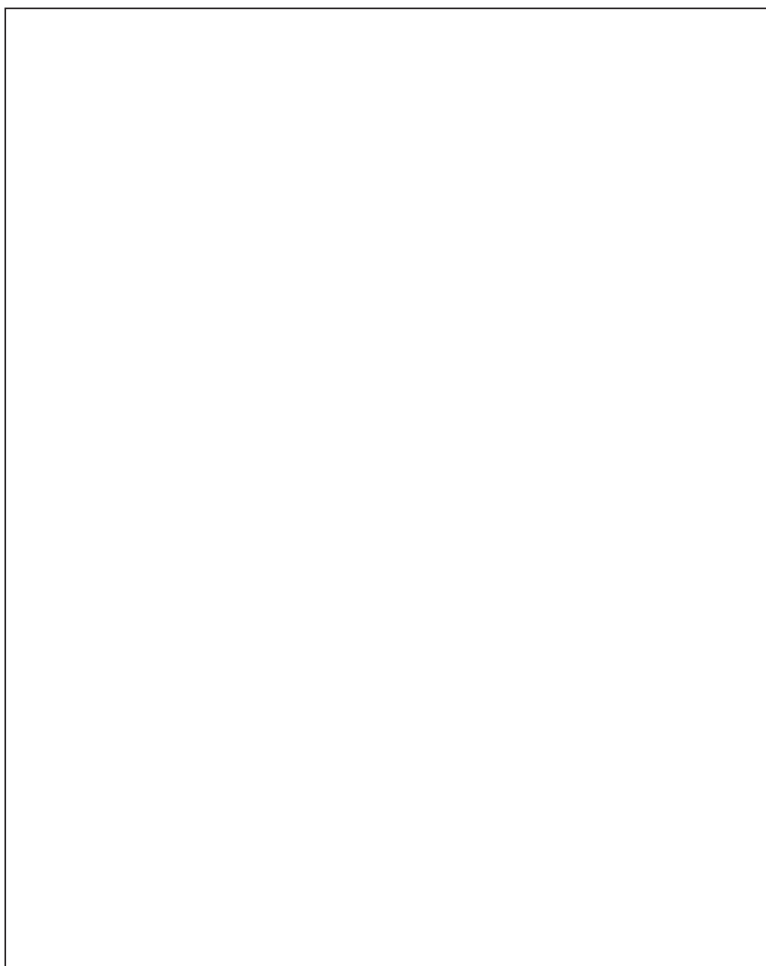|	
Number of Channels	8ch
Frequency Range	446.00625MHz ~ 446.09375MHz
Channel Spacing	12.5KHz
Channel Increments	6.25KHz
Size (WxDxH)	59 x 33 x 130mm
Weight (With Battery and Antenna)	296g
Battery Voltage	7.4V, Nominal
Current Drain	
Squelched	60mA, Max.
Rated Audio	160mA, Max.
Transmit-0.5Watt	350mA, Max.
Antenna impedance	50 ohms
Speaker impedance	8 ohms
Frequency Stability	$\pm$2.5ppm Max.
Operation Temperature	-20 ℃ to +55℃

RECEIVER

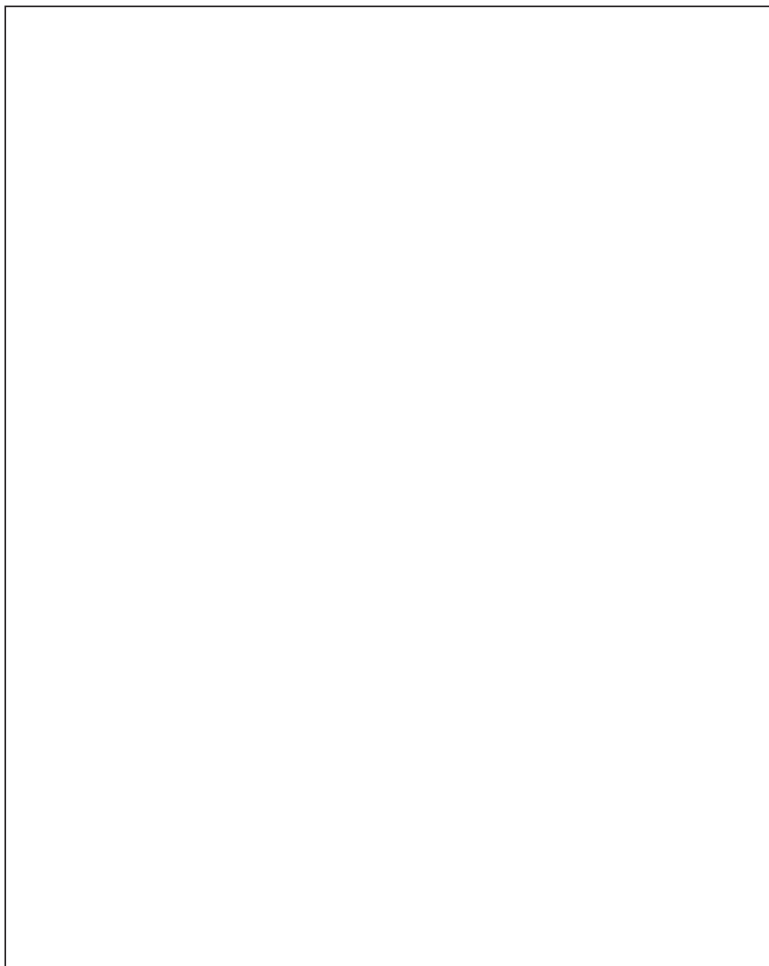|	
Sensitivity (12dB SINAD)	>0.35uV Max.
Squelch Sensitivity	>User adjustable
Adjacent Channel Selectivity (ETS)-Wide Band	70dB Min.
Spurious Rejection (ETS)	70dB Min.
Intermodulation (ETS)	65dB Min.
Hum and Noise Ratio	40dB Min.
Rated Audio Output at 5% T.H.D.(1KHz)	500mW Typical

TRANSMITTER

RF Output Power-(ERP)	500mW
Spurious/Harmonic Emissions	-36dBm<1GHz
	-30dBm>1GHz
Modulation- Narrow Band	$\pm$2.5KHz
FM Hum and Noise	38dB Typical
Audio Distortion	5% Max.
Adjacent Channel Power-Lo Power	60dB

2.6 NOTES

Use this page to record important information, such as the serial number of your **HT446** transceiver, and any of the frequencies and sub-tones programmed by your dealer.

<Intended Country of Use>

☐ GER	☐ NED	☐ ITA	☐ NOR
☐ AUT	☐ BEL	☐ GRE	☐ SUI
☐ GBR	☐ LUX	☐ SWE	☐ CZ
☐ IRL	☐ ESP	☐ DEN	
☐ FRA	☐ POR	☐ FIN	

CE 0891 ①

Registered Community Design Application 000044375
U.S. Design Patent Pending No. 29/183,829
Copyright and Unregistered Design Right Entel UK 2003.

Copyright Entel UK Ltd, London