uniden®

WORLDBAND RADIO MODEL CR-2021

OWNER'S MANUAL

PACKING LIST

1— Model CR-2021 Communications Receiver
1— 120 Volt AC Power Cord
1 — Accessory AM/SSB/CW Antenna Wire
1— Instruction Manual/Wave Guide
1— Warranty Card — Fill out and return to:
UNIDEN CORPORATION OF AMERICA
6345 Castleway Court
Indianapolis, IN 46250

WARNING

UNIDEN DOES NOT REPRESENT THE UNIT TO HAVE BEEN WEATHERPROOFED. TO REDUCE THE RISK OF FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THE UNIT TO RAIN OR MOISTURE.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK. DO NOT REMOVE COVER (OR BACK). NO USER-SERVICE-ABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrow-head, within an equilateral trian-gle, is intended to alert the user of the presence of uninsulated "dangerous voltage" within the product's enclosure: that may be of sufficient magnitude to con-stitute a risk of electric shock to persons.

The exclamation point within the equilateral triangle is intended to alert the user of the presence of important operating and mainte-nance (servicing) instructions in the literature accompanying the appliance.

IMPORTANT CONSUMER INFORMATION

1. INTRODUCTION

Welcome to the exciting world of truly "Global" communications! Your new Uniden Worldband Radio model CR-2021 is designed to offer you optimum enjoyment of communications transmissions originating from practically anywhere in the world. We recommend that you read through this instruction manual carefully in order to utilize this microprocessor controlled Communications Receiver to its maximum potential.

2. POWER SOURCES

This radio can work from 3 different sources of power: regular 120 Volt AC house current, internal batteries or from a car battery. A 120 Volt AC power cord is supplied with the unit for household current operations. Internal batteries are NOT supplied and thus must be purchased separately. If you wish to run the unit off a car battery, you must purchase a 12 volt DC car cigarette lighter adapter from Uniden Corporation of America, Parts Department. Ask for part number 1200-0014.

3. BATTERY PRECAUTIONS

On the back of the unit you will find 2 separate battery compartments. The smaller compartment is for the computer back-up batteries, and takes 2 size AA standard batteries. These batteries must be installed for the radio to function. The purpose of the computer back-up batteries is to keep the set's memory circuits from being erased when the radio is turned off. For replacing old computer back-up batteries, make sure the set is plugged in and "on". Otherwise the memory circuit of the computer will be erased and you will have to reprogram your selected frequencies into the memory.

The larger compartment is for the set's main battery power. It takes 6 size C standard batteries. It is recommended that these batteries should be removed when the set will not be in use for long periods of time or when AC power outlets are used exclusively.
NOTE: this radio is NOT designed to use rechargeable batteries.

4. ENVIRONMENTAL PRECAUTIONS

Never leave the set close to heat emitting sources such as ovens, heat ducts or direct intense sunlight. Be sure to disconnect the AC power cord during an electrical storm, and never touch the antenna wire in such weather conditions.

RADIO CONTROLS
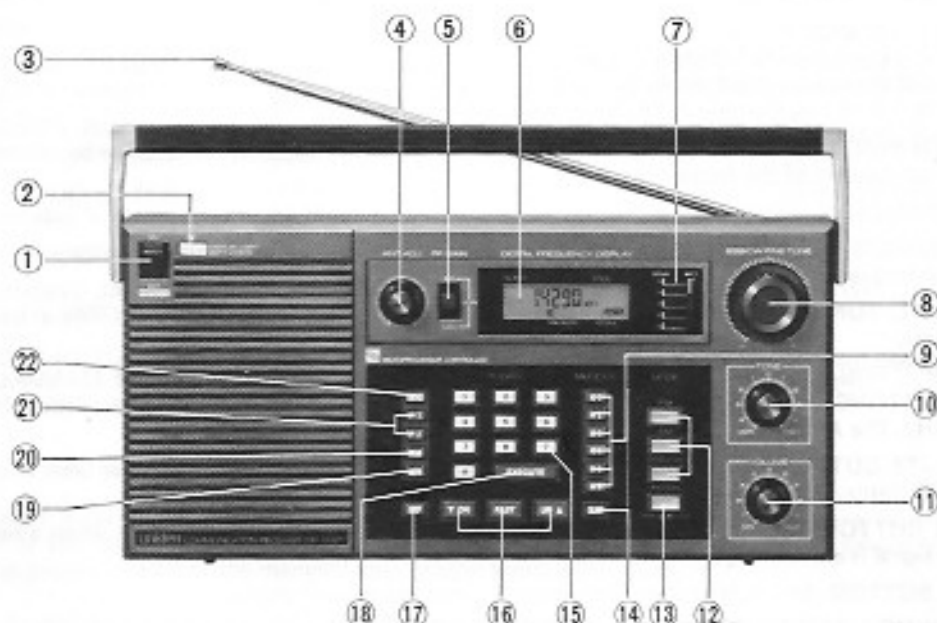
1. **POWER SWITCH**--Must be in the ON position to operate the unit.

2. **BATTERY CHECK BUTTON**--Depress this button while unit is ON and LED display will indicate main battery strength.

3. **TELESCOPIC ANTENNA**--Extend fully for optimum reception of both AM/SSB/CW and FM bands.

4. **ANTENNA ADJUSTMENT CONTROL**--Used for adjusting the AM/SSB/CW Antenna. Rotate this control to get better reception on the AM/SSB/CW band.

5. **RF GAIN CONTROL SWITCH (FOR AM/SSB/CW ONLY)**--Three position switch. Set at DX to receive distant signals. NOR position is for medium range signals and LOC is sufficient to receive local signals.

6. **LCD DISPLAY**--Readouts are as shown below.
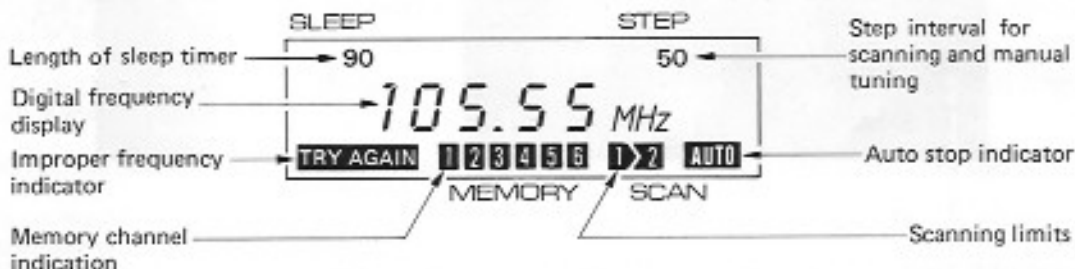
7. **SIGNAL STRENGTH INDICATOR**--The LED indicator lights to show the strength of a received signal. If only bottom LED lights, signal is weak. If all LEDs light, signal is strong.

8. **SSB/CW FINE TUNE CONTROL**--Rotate this control to accurately tune in received single side band/continuous wave (SSB/CW) signals.

9. **MEMORY PRESET BUTTONS**--While depressing the ENTER button depress one of the six buttons to enter a selected frequency into the computer memory. Each button can enter 1 AM and 1 FM frequency into the unit's computer memory.

10. **TONE CONTROL**--Rotate the control to adjust the tone quality of a received signal.

11. **VOLUME CONTROL**--Rotate this control to adjust for desired volume.

12. **MODE BUTTONS**--Depress to select desired frequency mode.
    FM = FM Reception (87.40MHz to 108.00MHz)
    AM = AM Reception (150KHz to 29,999KHz)
    SSB/CW = A function of the AM band (150KHz to 29,999KHz)

13. **FILTER BUTTON**--When depressed, this button eliminates unwanted channel noise by zeroing in on just a narrow part of the frequency.

14. **SLEEP BUTTON**--Allows for automatic shut off of the radio after up to 90 minutes of listening.

15. **FREQUENCY SELECT KEYS**--Allows for direct frequency selection. Depress buttons to select a specific frequency.

16. **MANUAL TUNING BUTTONS**--Depress these buttons to move either UP or DOWN a frequency spectrum.

17. **STEP BUTTON**--This button selects the frequency interval by which the SCAN or MANUAL TUNING BUTTONS will pass through a radio spectrum. The FM band interval will be either 100KHz or 50KHz. The AM/SSB/CW band interval choices are either 1KHz or 3KHz.

18. **EXECUTE BUTTON**--This button activates the radio to receive a frequency that has been entered on the LCD display via the FREQUENCY SELECT BUTTONS.

19. **AUTO BUTTON**--When this button is depressed, the scanning function will stop when a relatively strong signal is encountered.

20. **SCAN BUTTON**--This button starts and stops the scan function of the radio.

21. **SCANNING LIMIT BUTTONS**--Use the "F1" button to set the lower limit of the AM/SSB/CW band to be scanned and use the "F2" key to set the higher limit of the AM/SSB/CW band to be scanned. While depressing ENTER BUTTON, depress the "F1" or "F2" button to set the scanning limits.

22. **ENTER BUTTON**--Use this button to enter either memorized frequencies (see #9) or scanning limits (see #21) into the computer memory.

REAR AND SIDE PANEL FEATURES
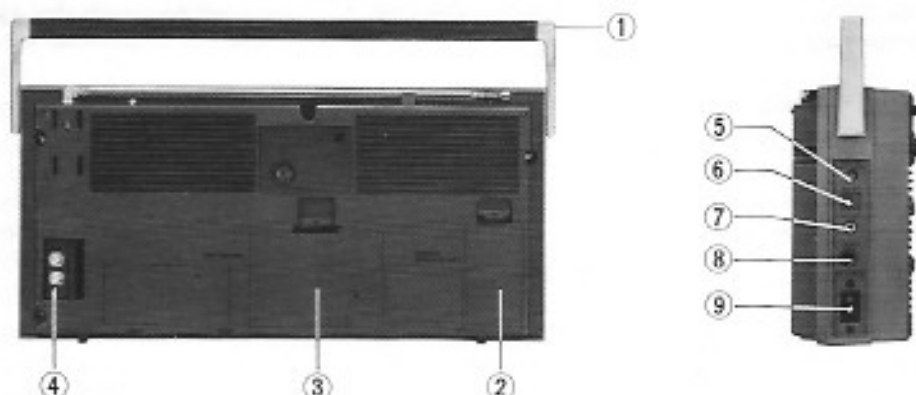
1. **HANDLE**--Used to conveniently carry the set. It also can be used to position the set at a convenient low angle as shown below.
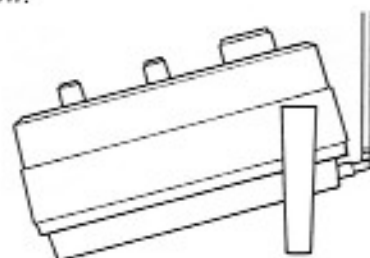

CAUTION: Before setting the radio to this angle, be sure to pull out and adjust the antenna as shown.

2. **COMPUTER BATTERY COMPARTMENT**--Push down on arrow then pull back for easy opening.

3. **RADIO BATTERY COMPARTMENT**--Push down on arrow then pull back for easy opening.

4. **EXTERNAL ANTENNA & GROUND CONNECTION TERMINALS**--The " �🌱 " terminal is for connecting an external antenna and the " ⏚ " terminal is for connecting a grounding wire.

5. **COMPUTER BATTERY CHECK BUTTON**--Depress this button and front panel LED display will indicate computer battery strength.

6. **12 VOLT DC EXTERNAL POWER INPUT JACK**--Use this jack to connect an external 12 volt DC power source.

7. **EXTERNAL SPEAKER JACK**--Use this jack to connect an external speaker.

8. **HEADPHONE JACK**--Connect a headphone plug to this jack for private listening. When this plug is used, the front speaker is automatically disconnected.

9. **120 VOLT AC POWER SOURCE JACK**--Use this jack to operate the unit from standard house current. Insert power cord plug (supplied) into this jack and connect power cord's 2 prong plug into standard electrical wall outlet.

RADIO POWER SOURCES

The CR-2021 is controlled by a microcomputer. This microcomputer must remain powered when using the radio. If the computer power source is weak or interrupted, and the main power source is off, AM frequencies programmed into the memory keys or scan limits will be lost.

1. Install 2 size "AA" alkaline batteries into the small computer battery compartment.
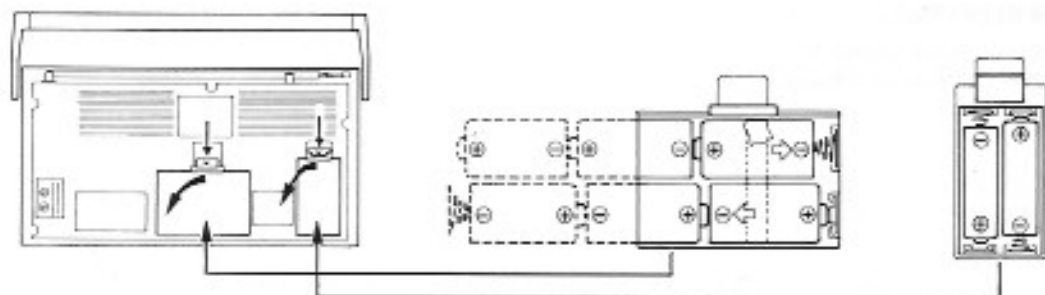
NOTE: The computer batteries should be changed annually to prevent damage from battery leakage.

The CR-2021 receiver may be powered by the AC power cord, 6 size "C" non rechargeable batteries, or a car battery.

2. To install the batteries remove the large battery door, lay the ribbon flat in the cavity and install 6 "C" cells as shown.

NOTE: The radio batteries should be changed regularly to prevent damage from battery leakage.

3. To use the AC source, plug it into a standard 120 Volt AC wall outlet and plug the jack into AC power connector on the side of the radio.
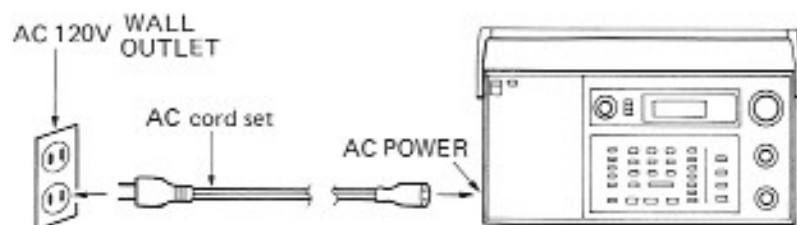
For AC Power use

4. To power the set from a car battery, purchase a 12 volt DC car cigarette lighter adapter through Uniden Corporation of America, Parts Department. The cigarette lighter adapter connects easily as shown below.

Cigaret lighter

Cat No. 1200—0014
DC cord set

AC 12V

For Car Battery use
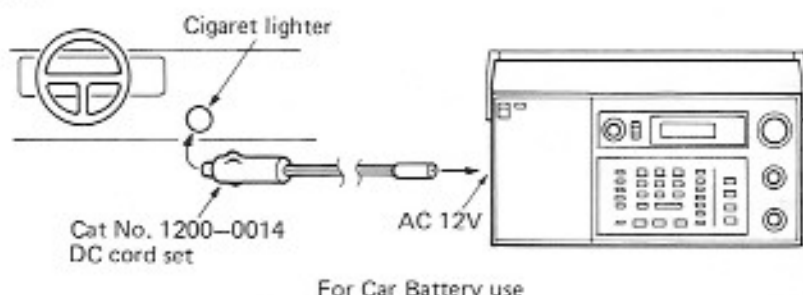
ANTENNA ADJUSTMENT

1. AM (LW/MW/SW) RECEPTION

Pull the telescopic antenna out to its full length. For AM reception of 360KHz to 2.199KHz, the built-in ferrite bar also operates. Since this antenna is directional, lay the set down and rotate it to find best reception.

2. FM RECEPTION

Pull out the telescopic antenna and adjust its length, angle, and direction for the best reception.
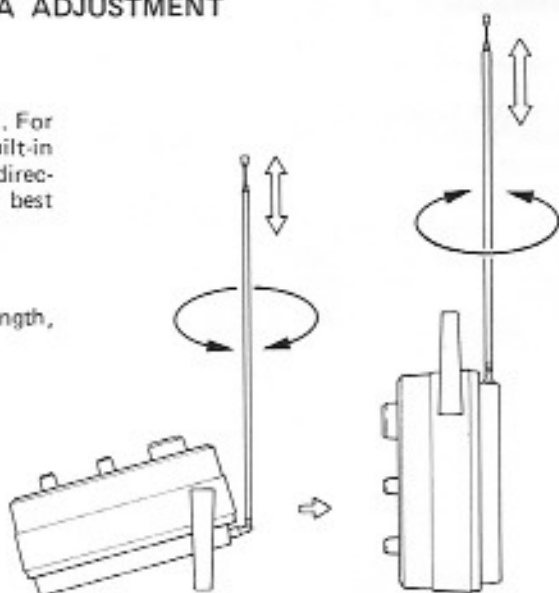
MANUAL TUNING

Use Manual Tuning when you do not know the specific frequency of the station you want to tune in, or when you want to fine tune a station located by scan tuning.

To tune the CR-2021 manually:

1. Set the POWER switch to "ON".

2. Select the desired band.

3. Press `UP ▶` to increase frequency.
   `◀ DOWN` to decrease frequency.
   If you press `FAST` `UP ▶` or `◀ DOWN` `FAST` simultaneously, the rate of frequency change increases.

   Also, by using the `STEP` key, the frequency change rate is selectable between 1 or 3KHz on AM and SSB/CW modes, and 50 or 100KHz on FM mode.

4. Adjust the telescopic antenna. For AM reception, also adjust the AM antenna adjustment control.

5. Adjust the volume and tone.

DIRECT ENTRY TUNING

You can easily tune in a station with a frequency you know by direct tuning.

1. Set the POWER switch to "ON".

2. Select the desired band using the mode selector switches. Possible frequency ranges:
   FM — 87.40 to 108.00MHz
   AM — 150 to 29,999KHz

3. Input the frequency by depressing the frequency select keys in the order of the desired frequency. Then within 5 seconds depress the EXECUTE key.

   EXAMPLE: To input 7335KHz (AM mode)
   Depress   **7** ·· **3** ·· **3** ·· **5** ·· **EXECUTE**

   The frequency is shown on the LCD frequency display.

   SLEEP   STEP

   ## 7335 KHz

   MEMORY   SCAN

4. Adjust the telescopic antenna.
   For AM and SSB/CW reception, also adjust the antenna adjustment contro (ANT. ADJ.)
   SEE ANTENNA ADJUSTMENT on page 5.

5. Adjust the volume and tone controls.

When you input frequency whose figures to the right of the decimal point are 00, such as FM 80.00MHz, you need only depress   **8** ·· **0** ·· **EXECUTE**

When you input an AM or SSB/CW frequency whose right hand digits are 000, they do not have to be entered.

EXAMPLE: AM 5,000KHz
   Depress   **5** ·· **EXECUTE**

If you input a wrong frequency, depress the   **EXECUTE**   key and input the correct frequency.

TRY AGAIN INDICATION

If you input a frequency outside the frequency range of the selected band (FM 87,4MHz to 108MHz, AM 150KHz to 29,999KHz) the **TRY AGAIN** indicator will flash on and off in the LCD display. When you input a proper frequency, the **TRY AGAIN** indication will disappear. If you leave the **TRY AGAIN** indication flashing, it will disappear after about 5 seconds, and the previously tuned frequency will reappear.

NOTE: For FM reception, the right end digit should be 5 or 0, otherwise the **TRY AGAIN** indicator will appear.

SCAN TUNING

Use Scan Tuning to locate new frequencies or to monitor several broadcasts within a selectable frequency range.

1. Set POWER switch to "ON".

2. Select the desired band.

3. Adjust the VOLUME knob towards MAX to get sound.

4. Input the low and high limits of the desired frequency range (AM and SSB/CW modes only).

   EXAMPLE: To input the frequency range of the SSB/CW 14,200 to 14,350KHz amateur 20 meter band:

   1. Enter 14,200KHz to the **F1** key.
      Depress **1** —— **4** —— **2** —— **0** —— **0** —— **EXECUTE**
      Hold down **ENTER** then depress **F1**
      The lower scan limit has now been set.
      | 14200 KHz | indicates that the frequency is entered into the **F1** key.

   2. Enter 14,350KHz to the **F2** key.
      Depress **1** —— **4** —— **3** —— **5** —— **0** —— **EXECUTE**
      Hold down **ENTER** then depress **F2**
      The upper scan limit has now been set.
      | 14350 KHz | indicates that the frequency is entered into the **F2** key.

5. Set the AUTO scan-stop function to "ON" or "OFF" by depressing **AUTO** key: Auto scan-stop function is on when indicated by the word Auto appearing on the LCD display.

```
SLEEP                    STEP




                                  AUTO

     MEMORY        SCAN
```
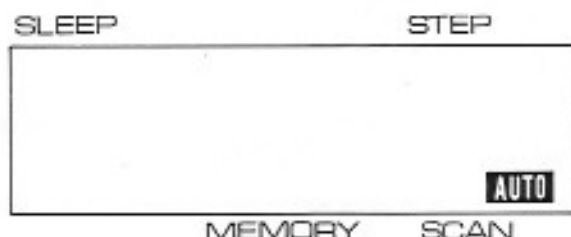
6. Depress the **SCAN** key to begin scanning.
   ○ With scan set to **AUTO** , scanning stops automatically when a station is tuned in.
   ○ When the Auto scan-stop function is not on, scanning does not stop automatically. To stop scanning, depress **SCAN** again.

7. To tune a station more precisely when scanning stops, press the **UP▶** or **◀DOWN** key one or more times, while checking the signal strength meter for the strongest signal.

Notes on inputting a frequency to the F1 and F2 keys:

★ To check limits depress the **F1** or **F2** key.
★ Once entered, the frequency will not be cancelled until another frequency is entered.
★ Either F1 or F2 can be changed independently.
★ F1 and F2 cannot be entered on FM frequencies. But the FM band can be scanned regardless.

SCAN KEY AND SCAN TUNING

When the **SCAN** key is depressed, scanning starts from the low limit of the frequency range. When scanning reaches the high limit, it will return to the low limit and begin scanning again. The frequency change interval is 50KHz or 100KHz on FM and 1KHz or 3KHz on AM and SSB/CW. To stop scanning depress the **SCAN** key again.

PRECISE TUNING

* When AM or SSB/CW reception is difficult, check that the RF Gain Selector is set to position other than local.

* When scan tuning, scanning stops shortly after the exact frequency of the station. Depress `UP ▶` or `◀ DOWN` as necessary to tune the receiver precisely.

SCAN TUNING AND OTHER TUNING METHODS

During scan tuning, you can tune in a station by any of three other methods — direct, manual, or preset tuning. When you start to scan after using another method, scanning begins from the frequency of the last station tuned if that station is inside the scanning frequency range.

MEMORY TUNING

Your Uniden Worldband Radio is equipped with programmable memory circuits for 1-button tuning. Each MEMORY button can enter 1 AM or SSB/CW and 1 FM frequency in the computer memory. This allows a total of 12 preset selections. In addition, the F1 and F2 SCANNING LIMIT buttons can be used as memory presets for AM and SSB/CW stations.

HOW TO PRESET:

1. Set the POWER switch to "ON".

2. Select the desired band,

3. Tune in the station you want to preset using any tuning method.

4. To program the station into memory, hold down the `ENTRY` key and depress one of the six MEMORY buttons. The display will verify your selection is programmed with the memory number displayed.

TO TUNE IN A PRESET STATION:

1. Set the POWER switch to "ON".

2. Select the desired band.

3. Press the appropriate MEMORY button.
   The preset station will be tuned in.

NOTE: The AM/SSB/CW 150KHz or FM 87.4MHz frequency is factory preset to all MEMORY buttons.

SLEEP FUNCTION

You can use the sleep timer of this radio to turn it off automatically.

TO USE THE SLEEP FUNCTION:

1. Set the POWER switch to "ON".

2. Tune in the desired frequency.

3. Depress `SLEEP` button to set the sleep timer.

Number of
minutes to Auto ──── `SLEEP` ──── `90`
shut-off

SLEEP   STEP

MEMORY   SCAN
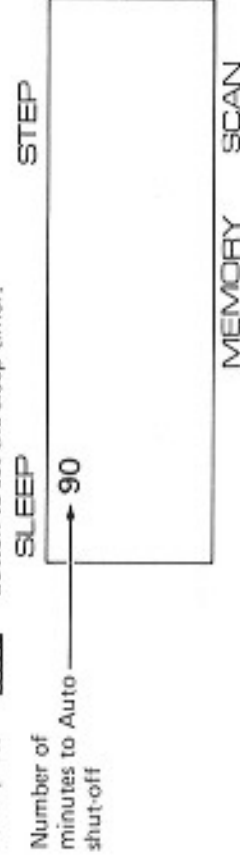
4. Set the POWER switch to "OFF". The radio will then turn off automatically after the time on the display has elapsed.

5. The number of minutes can be reduced by 10 each time the   SLEEP   button is depressed. If the key is depressed when 10 is displayed, the time indication on the LCD display will disappear and the radio will turn off.
   * To turn off the radio before the end of the sleep timer operation, set the POWER switch to "ON" and return it to "OFF" when the time indication on the LCD display disappears.
   * If you set the POWER switch to "ON" during the sleep timer operation, the sleep timer will be cancelled and the radio will not turn off automatically.

   NOTE: Do not disconnect power source with power switch on to save any trouble.

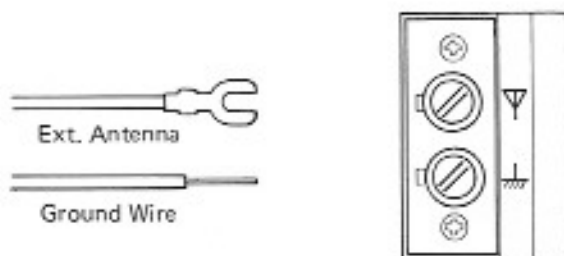# EXTERNAL ANTENNA

FM RECEPTION

The telescopic antenna may be unsatisfactory for FM reception in a steel frame building, mountainous area, at a distance from the transmitter, or in a location where ignition noise is severe. In this case, connect a commercially available external FM antenna to the external antenna terminals located on the back side of the radio as shown. Use a 75 ohm coaxial cable for the lead-in.

External FM Antenna

75-ohm coaxial cable

To External Antenna
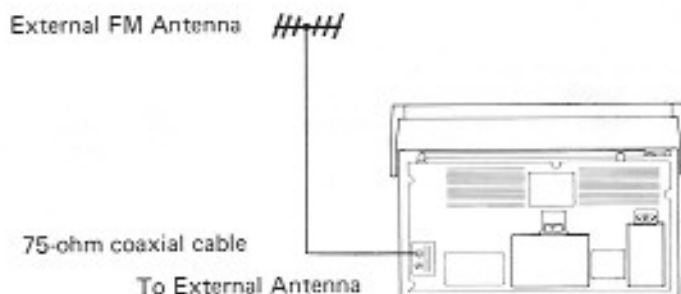
AM and SSB/CW RECEPTION

The telescopic antenna is usually sufficient for AM and SSB/CW reception. However, in a building or for more stable reception, the use of the External Antenna (supplied) is recommended. Connect the spade lug to the ¥ terminal on the back of the set. Extend the wire OUTDOORS as high as possible.

When reception is noisy, connect a ground wire. Connect one end of the wire to the ⏚ terminal on the radio back, and the other end directly to a convenient earth ground.

Ext. Antenna

Ground Wire

CAUTION

○ DO NOT connect a ground wire to a gas pipe.
○ When there is lightning and you are using an external antenna, disconnect the AC power cord from the wall outlet. Never touch the antenna wire when there is a lightning storm.

TROUBLESHOOTING GUIDE

Please perform the simple checks indicated below in the event you experience a problem with the set.

Trouble	Check
No frequency display or incorrect frequency display	1. New computer back-up batteries were inserted less than 1 minute after removing old ones. Must wait at least 1 minute when replacing computer batteries.
Dim LCD Dsplay	1. Replace weak radio batteries. 2. Do not use set around extreme cold position or moisture.
No audio is heard from radio speaker	1. Adjust volume control. 2. Headphone is connected. 3. Incorrect polarity of radio batteries. 4. Radio batteries are weak and need to be replaced. 5. AC power cord is not plugged in without radio battery. 6. Mode switch is not pushed.
Weak sound or reception	1. Replace weak radio batteries. 2. Readjust tuning or antenna control. 3. Signal is weak, try listening close to a window if indoors or in a vehicle. 4. RF Gain is set at LOC position.
Unable to input frequencies when direct tuning	1. The EXECUTE key must be depressed within 5 seconds after depressing FREQUENCY SELECT keys.
Cannot input scanning limits or frequencies into memory	1. Must depress EXECUTE key after depressing FREQUENCY SELECT keys. 2. ENTER button must be pushed simultaneously with MEMORY PRESENT buttons or SCANNING LIMIT buttons.

SPECIFICATIONS

AM/SSB/CW Frequency Range—150KHz to 29,999KHz

FM Frequency Range—87.4 MHz to 108MHz

AM/SSB/CW Circuit—Triple Super Heterodyne

FM Circuit—Single Super Heterodyne

Semiconductors—11 IC's, 5 FET's, 50 Transistors and 57 Diodes

Power Source—AC 120 volts, 60 Hz
                Battery (6 "C" Size Batteries);
                11 to 16 Volts DC (EXT DC Jack);

Computer back-up batteries—2 "AA" Size Batteries

Power Output— 1.8 watt maximum

Power Consumption—15 watts on AC 120 Volts

Battery Life—8 hours

Speaker—92 m/m, 4 ohm, 1.0 (W) Dynamic Type

Bar Antenna-360KHz to 2,199KHz

Rod Antenna Terminal—All Frequency Range

EXT Antenna Terminal—All Frequency Range

Size—320mm x 155mm x 65mm

Weight— 2,100g (With Batteries)

Optional Accessories— 12 Volt DC Car Cigarette Lighter Adapter
                (Uniden Part Number 1200 — 0014)

In this age of instant communications, there is truly much more information at our disposal than we can ever hope to digest. Satellite assisted radio and television transmissions put late-breaking news events in our homes as they happen. Television networks constantly update their programming as they fiercely compute for our leisure time. It would seem that the "popular media" adequately satisfy our need to be entertained and informed... not true.

Congratulations on joining the growing number of individuals who realize the immense entertainment and informational values of distant shortwave radio listening (DXing). When you break through the limits of standard AM/FM radio, you will discover a whole new realm of shortwave listening enjoyment. Sit back, relax and let your new Uniden Worldband Radio be your passport to curious for away places and interesting people. And you need not fear the complexities of radio transmission or reception. The set is easy enough to use, and with the help of this booklet, you can start eavesdropping on the world today!

"What is shortwave?"

In the strictest sense, shortwave refers to those radio frequencies arbitrarily defined as having short wavelengths. A wavelength is exactly what it implies: the length of a radio wave, from its beginning to its end. Without getting too technical, this Uniden Worldband Radio receives long-wave, medium-wave and shortwave plus the FM broadcast band which is in the Very High Frequency (VHF) range.

Wave Designation	Frequency Range	Type of Transmission
Long-wave	30 to 550KHz	Broadcast, Utility
Medium-wave	550 to 1,605KHz	Domestic Broadcast
Shortwave	2,300 to 29,700KHz	Broadcast, Amateur, Utility

Note: The shorter the wavelength, the higher the frequency.

The shortwave band has traditionally been the band encompassing most of the overseas broadcasts as well as amateur "ham" transmissions.

## "What kind of transmissions are available?"

There are three broad categories of stations you can listen to. First, there are broadcast stations which air informational and entertainment programs. These are by far the most challenging and enjoyable stations for most shortwave listeners. Shortwave is the primary source of information for most of the developing countries. In many countries, it is the only reliable means of conveying government news or educational information.

Second, there are the radio amateurs, hobbyists who operate on shortwave and higher frequencies. These individuals operate their own private, licensed stations. Amateur "ham" operators transmit across state lines or across oceans on the shortwave band.

Lastly, there are "utility" broadcasts which cover a combination of miscellaneous activity such as ship-to-shore, aeronautical signals, government, military and embassy point-to-point trans-Atlantic phone calls and radio teleprinters.

"How is it possible to receive such far away signals?"

A natural phenomenon called propagation makes this possible. Low frequency (long-wave and medium -wave) signals travel parallel to the earth. However, high frequency (shortwave) signals are beamed upwards and have characteristics which allow them to be literally "bounced" off of a layer of our atmosphere called the ionoshere. This bounce of "skip" as it is called, allows shortwave signals to cover such great distances.
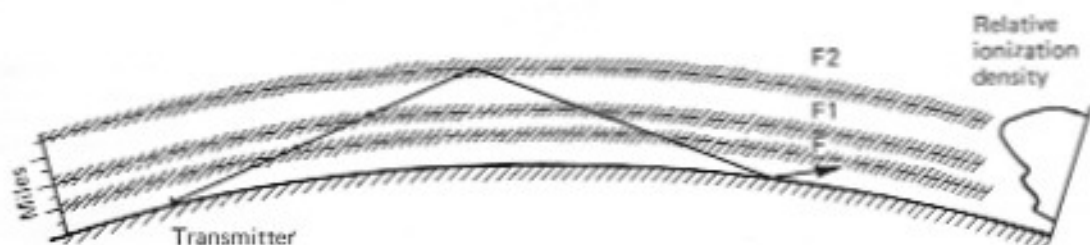
Drawing above shows location of various ionospheric layers, approximate distribution of ionization, and typical path of a wave refracted from the F layer.

The United States Bureau of Standards transmits time, propogation, and weather information on radio station WWV from Ft. Collins, Colorado on 2500, 5000, 10000, 15000, 20000, and 25000KHz. Listen to WWV for occurence of tropical disturbances or bad weather over the oceans. See how many frequencies on which you can hear WWV at your location. It is a good way to become familiar with propogation characteristics.

Limiting Factors of Signal Reception

It must be pointed out that receiving shortwave signals is not as simple as tuning in your favorite AM or FM station. Certain factors hinder your ability to receive shortwave signals.

SUN SPOTS: Simply put, periodic (11 year cycle) solar activity enhances the ionosphere's ability to reflect shortwave signals back to earth. However, ionospheric storms, lower layer absorption and fade outs (short term phenomena of hours to several days duration) can make reception difficult.

WEATHER & . Seasonal ionospheric changes also alter your ability to receive shortwave signals.
SEASONS

Most best known shortwave stations take these factors into consideration and periodically change the frequencies on which they broadcast.

Antenna

Another important consideration for optimum signal reception is, of course, an effective antenna. The telescopic antenna and external antenna wire supplied with this set should be sufficient for most applications. Basic rules for installing external antennas are:

1. Erect your antenna as high as possible.

2. Keep your antenna far away from any power lines.

3. Keep your antenna at right angles from power lines for better reception.

4. Make sure an external antenna is properly grounded and insulated to protect against voltage surges and built up static charges.

5. Make sure your antenna is built sturdy enough to withstand severe weather.

Please refer to the one page safety sheet entitled, "A Consumer Guide to Product Safety," which is packed with your Uniden Worldband Radio.
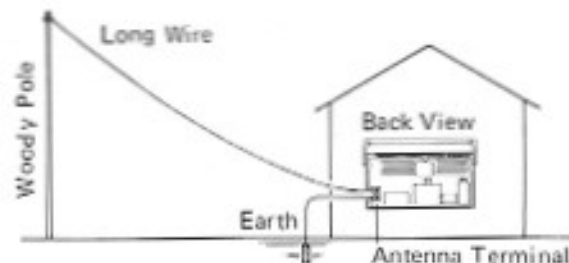
Caution: Always be sure to disconnect the set's AC power cord when thunderstroms are expected. And never touch the bare antenna wire during such weather conditions.

Broadcast and Amateur Bands

The following is a brief overview of the kind of transmission activity to be expected on given bands covered by this radio.

1. Broadcast bands:

120-Meter Band, 2,300 to 2,495KHz--Used in tropical regions, and receivable only at night. Typically, consists of low power signals that are difficult but not impossible to tune in.

90-Meter Band, 3,200 to 3,400KHz--Used in tropical regions only. Interference causes annoyance, but this band offers more activity than the 120-Meter band. Night reception only.

75-Meter Band, 3,800 to 4,000KHz--Not considered broadcast band in the U.S. since this channel is shared with "ham" operators. This band is used for short distance broadcasting in tropical regions. Night reception only.

60-Meter Band, 4,750 to 5,060KHz--Plenty of transmission activity available from tropical countries. Night only, expect some interference.

49-Meter Band, 5,950 to 6,200KHz--Very active band. Crowded frequencies, but a good variety of signals. Here you can receive the BBC in England and the Deutsche Welle in West Germany, as well as local African and South American stations. Late afternoon and night listening.

41-Meter Band, 7,100 to 7,300KHz--This band is shared between international broadcasters and amateur radio operators. Much activity can be received here, but generally it is used for shorter distance communications than the 49-Meter Band. Late afternoon and night listening.

31-Meter Band, 9,500 to 9,775KHz--Good band for beginning DXers. Many international broadcasts here. It is used extensively by international broadcasters. Best reception is late afternoon and all night.

19-Meter Band, 15,100 to 15,450KHz--Good reception in daylight hours. You can receive several powerful European stations, as well as some Mideastern and South American broadcast stations.

16-Meter Band, 17,700 to 17,900KHz--Same as 19-Meter Band. Good daytime listening, powerful international broadcasters.

13-Meter Band, 21,450 to 21,750KHz--Also Good daytime listening, powerful international broadcasters.

11-Meter Band, 25,600 to 26,100KHz--Excellent long distance reception during daytime in peak solar-cycle years. Otherwise, this band is good for short range reception only.

2. Amateur Bands:

Note: The Amateur Bands are highly susceptible to atmospheric conditions such as sun spot activity. Ham operators typically move through several bands periodically to achieve the best signal response. A complete list of the amateur bands are presented below.

Wavelength in Meters	Frequency in KHz
160	1,800 to 2,000
75 to 80	3,500 to 4,000
40	7,000 to 7,300
20	14,000 to 14,350
10	28,000 to 29,700

Single Sideband (SSB) and Continuous Wave (CW)

Most amateur operators transmit in a mode known as Single Sideband, or SSB. Its advantage is that it allows them to reduce the frequency width of their signal, thereby allowing more signals to occupy the crowded bands.

The Continuous Wave (CW) mode is used by government and amateur operators who prefer to transmit Morse Code signals. For amateur operators, an obvious advantage is the ease of communications with amateur operators in other countries who may have only limited English language capabilities. Once you learn Morse code, listening to these signals can be quite interesting.

Becoming an "Active" listener

Most international broadcasting stations highly value the feedback they receive from their listeners. Over the years, a procedure has been developed by which shortwave listeners supply stations with their listeners with attractive "verification cards" and broadcasting timetables. Active shortwave listeners have impressive collections of these verification cards from all over the world. The complementary broadcasting timetables given by the broadcasters are a vital element which allows DXers to keep abreast with seasonal station frequency shifts and adjustments.

The first step to becoming an active listener depends on you. As you tune across a given band, you may locate an interesting station broadcast. Periodically during the broadcast, the station will identify itself with a station identification such as "This is the Voice of Malaysia" or "This is Radio Budapest, Hungary."

Reporting to a Station (Requesting a Verification Card)

After identifying a station, record, in simple English, the following information:

1. Name of the station.
2. Date and time of reception.
3. Frequency.
4. Signal receiving condition (SINPO Code).
5. Receiving equipment (radio brand, model number & antenna type).
6. Your name and address.

The SINPO Code

The SINPO code is the internationally accepted method for judging the signal receiving condition of a station. There are five variables which are judged on a scale of 1 to 5, as follows:

S = Signal Strength . . . . .5 — Very Good
(How strong is the   4 — Good
signal relative to   3 — Fair
other signals.)   2 — Weak
                            1 — Very Weak

I = Interference . . . . .5 — None
(Refers to man-   4 — Slight
made interference   3 — Moderate
from other radio   2 — Severe
signals.)   1 — Extreme

N = Noise . . . . .5 — None
(Natural atmospheric   4 — Slight
electrostatic Noise.)   3 — Moderate
                            2 — Severe
                            1 — Extreme

P = Propogation . . . . .5 — None
(Fading as a result   4 — Slight
of multiple skip.)   3 — Moderate
                            2 — Severe
                            1 — Extreme

O = Overall Merit . . . . .5 — Excellent
(How the station   4 — Good
signal compares with   3 — Fair
other station signals   2 — Poor
in general terms.)   1 — Unusable

A typical SINPO notation may be expressed as simply as " S I N P O
4 4 3 2 4 "

However, your chances of receiving a verification card promptly from smaller regional broadcasters may be improved by submitting a full unabbreviated report. Always send your report with a courteous request for a verification card, such as, "Please send me your verification card if this report is in order."

Note: It is wise to keep your English simple and direct when writing to countries where English is not the primary language.

International Shortwave Broadcast Stations

The following is a short list of some major international shotwave broadcast stations and some frequencies on which they are known to transmit.

Afganistan
15077, 6230

Radio Afganistan
P.O. Box 554, Kabul

Argentina
15345, 15290, 11755,
6120, 6060

Radiodifusora Argentina al Exterior (RAE)
Sarmineto, 151, Buenos Aires

Australia
21525, 17755

Radio Australia
Box 4826, G.P.O., Melbourne

Belgium
15385, 15175

Belgian Radio & TV, Int'l Service OSL Bureau
P.O. Box 26, B-1000 Brussels

Brazil
15280, 15125

Radio Nacional de Brasilia
P.O. Box 1620, Brasilia

Bulgaria
17825, 15385, 15310

Radio Sofia
4Bd. Dragan Tsankov, Sofia

Canada
17820, 15440, 15190
11960, 9760, 7155

Radio Canada Int'l
P.O. Box 6000, Montreal, H3C 3A8

China
17700, 15280, 15165
11650, 11515, 9440

Radio Peking
Peking

China (Taiwan)
17890, 17720, 15345
15225, 11860, 11825
9760, 9600

Voice of Free China
Broadcasting Corp. of China, Overseas Dept.,
53 Sec. 111, Jen Ai Rd., Taipei

Cuba
17750, 15155, 11970
11760, 9525, 6060

Radio Havana Cuba
Apartado, 7062, La Havana

Czechoslovakia
21705, 21505, 17840
11990, 11855, 9540

Radio Prague,
Prague 2

Equador
15295, 15115, 11960

Voice of the Andes (HCJB)
Casilla 691, Quito

Egypt
15360, 11715, 9740

Radio Cairo
P.O. Box 1186, Cairo

Germany, East
21465, 17700, 11920
9730, 1385

Radio Berlin Int'l
Nalepastrasze 18-50, Berlin 116

Germany, West
21680, 21590, 17895
17720, 15410, 11765

Deutsche Welle, Voice of Germany
P.O. Box 344, Cologne 5

India
15280, 15165, 15110
11830, 11765, 9605

All India Radio
External Services, P.O. Box 500
New Delhi 1

Israel 27790, 25640, 21710 15582, 11637, 9815	Israel Broadcasting Authority P.O. Box 7139, Jerusalem
Japan 21640, 17825, 17785 17755, 17725, 15310	Radio Japan Jinnan 2-2-1, Shibuya-ku, Tokyo 100
Korea, North 11905, 9977, 9420 3840	Radio Pyongyang, Pyongyang, Democratic People's Republic
Korea, South 15575, 11830, 11810 11725, 9720, 9570	Radio Korea, 8 Yejangdong Joong-yu, Seoul Republic of Korea
Lebanon 21610, 17750	Radio Lebanon, Ministry of Information, Beirut
Malaysia 15295, 11900	Radio Malaysia, Federal House, PO Box 1074 Kuala Lumpur
Mexico 17765, 15430, 11770 9705, 5985	Radio Mexico, XERMX, Apartado 20100, Mexico 20
Netherlands 17605, 15220, 6020	Radio Nederland, PO Box 222, Hilversum
New Zealand 17860, 15485, 11945	Radio New Zealand, PO Box 2396, Wellington
Portugal 15170, 11840, 9620	Radio Portugal, Rue de Quelhas 21, Lisbon
Romania 17730, 11940, 9690	Radio Bucharest, PO Box 111, Bucharest
Sweden 11705, 9695	Radio Sweden, S-10510, Stockholm 1
Switzerland 21585, 17830, 17750 15305, 9535, 6165	Swiss Broadcasting Corp., Ooverseas Service, CH3000, Berne 16
United Kingdom 15260, 15070, 11910 9590, 9510, 7325	Bush House, Strand, London WC2B 4PH
U.S.A. 17730, 15205, 11740 9680, 9650, 9615	Voice of America, C/O Frequency Division, Washington, D.C. 20547
U.S.S.R. 21740, 17765, 15385 11710, 9800, 9500	Radio Moscow, U.S.S.R.

For converting the Greenwich mean time (GMT) into a local time indicated in the map, add or subtract the value indicated on top to or from the GMT.
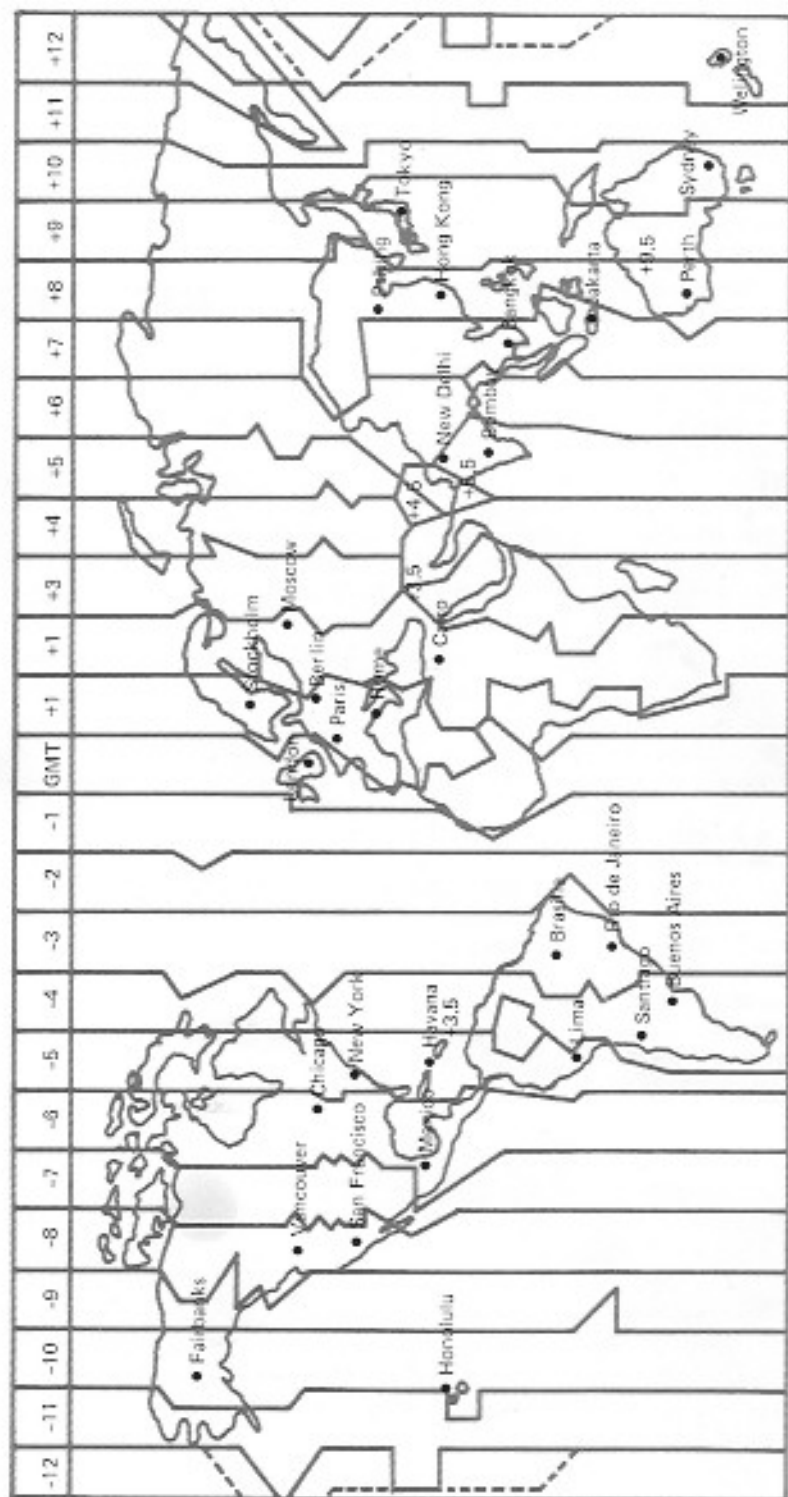
GMT TIME

GMT stands for Greenwich mean time. It is the Internationally accepted method for computing time worldwide. All international broadcasting station list their programs in GMT. To find out what a listed GMT time is in your local time, simply either add or substact the number of hours shown on your time zone from the listed GMT time.

ONE YEAR LIMITED WARRANTY

WARRANTOR: Uniden Corporation of America.

ELEMENTS OF WARRANTY: Uniden Corporation of America, ("Uniden") warrants, for the duration of this warranty, worldband radios (hereinafter referred to as the Product) to be free from defects in materials and craftsmanship with only the limitations or exclusions set out below.

WARRANTY DURATION: This warranty shall terminate and be of no future effect one (1) year after the date of the original purchase of the Product or at the time the Product is (A) damaged or not maintained as reasonable and necessary, (B) modified, (C) improperly installed, (D) repaired by someone other than warrantor for a defect or malfunction covered by this warranty, (E) used in a manner or purpose for which the Product was not intended, or (F) sold by the original purchaser.

STATEMENT OF REMEDY: In the event that the Product does not conform to this warranty at any time while this warranty is effective, warrantor will repair the defect and return it to you without charge for parts, service, or any other costs incurred by warrantor or its representatives in connection with the performance of this warranty. THIS WAR-RANTY DOES NOT COVER OR PROVIDE FOR THE REIMBURSEMENT OF PAYMENT OF INCIDENTAL OR CONSEQUENTIAL DAMAGES. Some states do not allow this exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you.

WARRANTY REGISTRATION CARD: In order to facilitate the servicing of this warranty by warrantor, the Warranty Registration Card should be returned to warrantor. However, return of the Warranty Registration Card is not a precondition of this warranty, and this warranty will be observed by warrantor whether or not the Warranty Registration Card is returned, provided that other satisfactory evidence of the date of purchase is provided.

PROCEDURE FOR OBTAINING PERFORMANCE OF WARRANTY: In the event that the Product does not conform to this warranty, the Product should be shipped or delivered, freight prepaid, to warrantor at Uniden Service Center, 15161 Triton Lane, Huntington Beach, CA 92649 or Uniden Service Center, 8034 Castleway Drive, Indianapolis, IN 46250, with evidence of original purchase.

LEGAL REMEDIES: This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

uniden®

CORPORATION OF AMERICA

6345 Castleway Court
Indianapolis, IN 46250