

EMERGENCY
MOBILE

40-CHANNEL
TRANSCEIVER



TRC-411

**OWNER'S
MANUAL**

PLEASE READ BEFORE
USING THIS EQUIPMENT

REALISTIC®

**Cat. No.
21-1505**

CUSTOM MANUFACTURED IN KOREA FOR TANDY CORPORATION

Your **REALISTIC**[®] TRC-411 40-Channel Emergency Mobile CB Transceiver gives you security and peace of mind whenever you're on the road! It's ultra-simple to set up and use — just connect the supplied magnetic-mount antenna and plug the 12V DC power adapter into your car's cigarette lighter socket. You're then ready to report accidents ... ask for assistance ... find out about traffic conditions ... or any other communications you need. And when not in use, you can store your TRC-411 under a car seat, in the glove compartment or in the trunk — until you need it again!

Your TRC-411 uses a built-in 40-channel PLL synthesizer circuit. The Phase Lock Loop is a new technique for generating all the required frequencies with a single crystal. The result is much tighter frequency control with superior reliability.

FEATURES

- Plug-in powerful magnetic-base antenna (for use on metal car roof or hood)
- Plug in 12V DC car adapter (plugs into cigarette lighter holder)
- EMERGENCY Switch instantly selects Channel 9 for emergency use.
- Travel case (for easy portability and storage)
- Bright green ON THE AIR LED indicator lights when transmitting and modulating.
- Bright red CHANNEL 9 monitor LED indicator
- Phase Lock Loop circuitry for precise frequency control and stability over all 40 channels
- Three ceramic filters for superior selectivity and freedom from adjacent channel interference
- Bright red LED channel indicator
- Built-in Automatic Modulation Control
- Hysteresis-type squelch circuit (RECEIVING RANGE CONTROL) automatically compensates for signal fading, to eliminate signal "chopping" during message reception.
- EXTERNAL ANTenna Jack
- Works with negative ground 12-volt DC system
- Built-in Automatic Noise Limiting circuit
- Uses 3 ICs, 17 Transistors, 1 FET and 16 Diodes

For your own protection, we urge you to record the Serial Number of this unit in the space provided. You'll find the Serial Number on the back panel of the unit.

Serial Number:

C.R.S. LICENCE (AUSTRALIA)

Before transmitting with your Transceiver, you must obtain a Department of Communications Citizens Radio Service Licence. Obtain an application form, from the D.O.C. Before completing the form you should read the conditions governing the licensing and operation of the Citizens Radio Service (Department of Communications brochure RB-249). This brochure also can be obtained from the Department of Communications. After completing the application form, mail it with the appropriate fee to the Superintendent, Regulatory and Licensing in the state or territory in which the station will be operated.

BEFORE YOU CALL FOR HELP

Our repair centers receive many returned products which are actually working perfectly. Maybe the owner just did not read the instructions, or overlooked something. Or perhaps the problem was a blown fuse (in the built-in 12V DC Car Adapter) that the owner could have easily replaced. So read this manual carefully and be sure **you** understand all the basic features of this CB — and the special ones, too! And before you assume your Transceiver needs repair, refer to the Service and Maintenance section of this manual, to see if the problem is something *you* can eliminate.

Enjoy your Realistic TRC-411!

SPECIFICATIONS

RECEIVER

Frequency Coverage	: All 40 CB Channels (Class D) 26.965 to 27.405 MHz
Sensitivity	: 0.5 μ V or better for 10dB S + N/N
Adjacent Channel Rejection	: 60dB (at 10kHz) greater than 100dB (for 20kHz)
Intermediate Frequency	: 1st IF = 10.695 MHz, 2nd IF = 455 kHz
Audio Output	: 4 watts (max.)
Frequency Response	: 450 — 2500 Hz
Cross Modulation	: 50dB (or better)
Squelch	: Adjustable from 0.5 μ V to 1mV

TRANSMITTER

Frequency Coverage	: All 40 CB Channels (Class D) 26.965 to 27.405 MHz
Power Output	: 4 watts (maximum)
Emission	: 8A3
Modulation Capabilities	: + 90%, — 100%
Spurious Radiation	: Less than — 65dB
Frequency Tolerance	: Better than 0.002%
Antenna Impedance	: 50 ohms
Current Drain (13.8 volt supply)	: 850 mA (no modulation) 1500 mA (full modulation)
Accessories	: Magnetic-Base Antenna 12V DC Adapter Travel case



CONTROLS AND THEIR FUNCTIONS

Front

ON THE AIR LED (GREEN)

Lights up when transmitting and modulating.

CHANNEL 9 LED (RED)

Lights when EMERGENCY switch is at CH9 position.

EMERGENCY Switch

Instantly selects Emergency Channel 9.

Microphone

Talk here.

VOLUME ON/OFF Switch

Turn clockwise to apply power to the Transceiver and then adjust for desired sound level.

LED CHANNEL Display

Indicates which channel you are operating on.

Channel Selector

Use to select any one of the 40 channels available.

RECEIVING RANGE

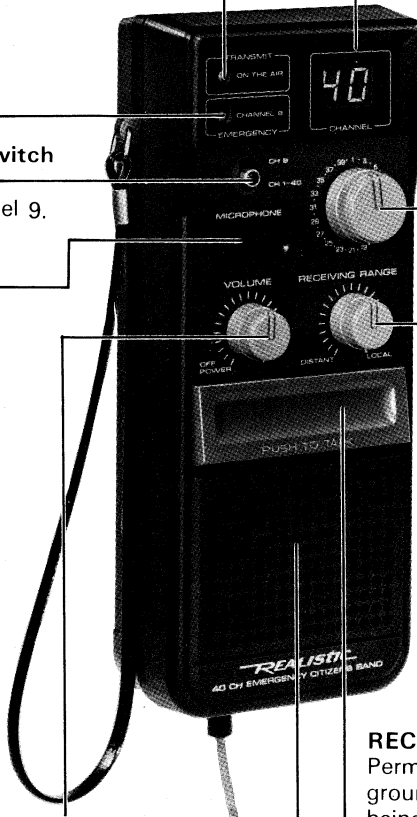
Permits you to cut annoying background noise when no station is being received. When properly set, your radio will remain silent until an audible message comes through.

PUSH TO TALK Bar

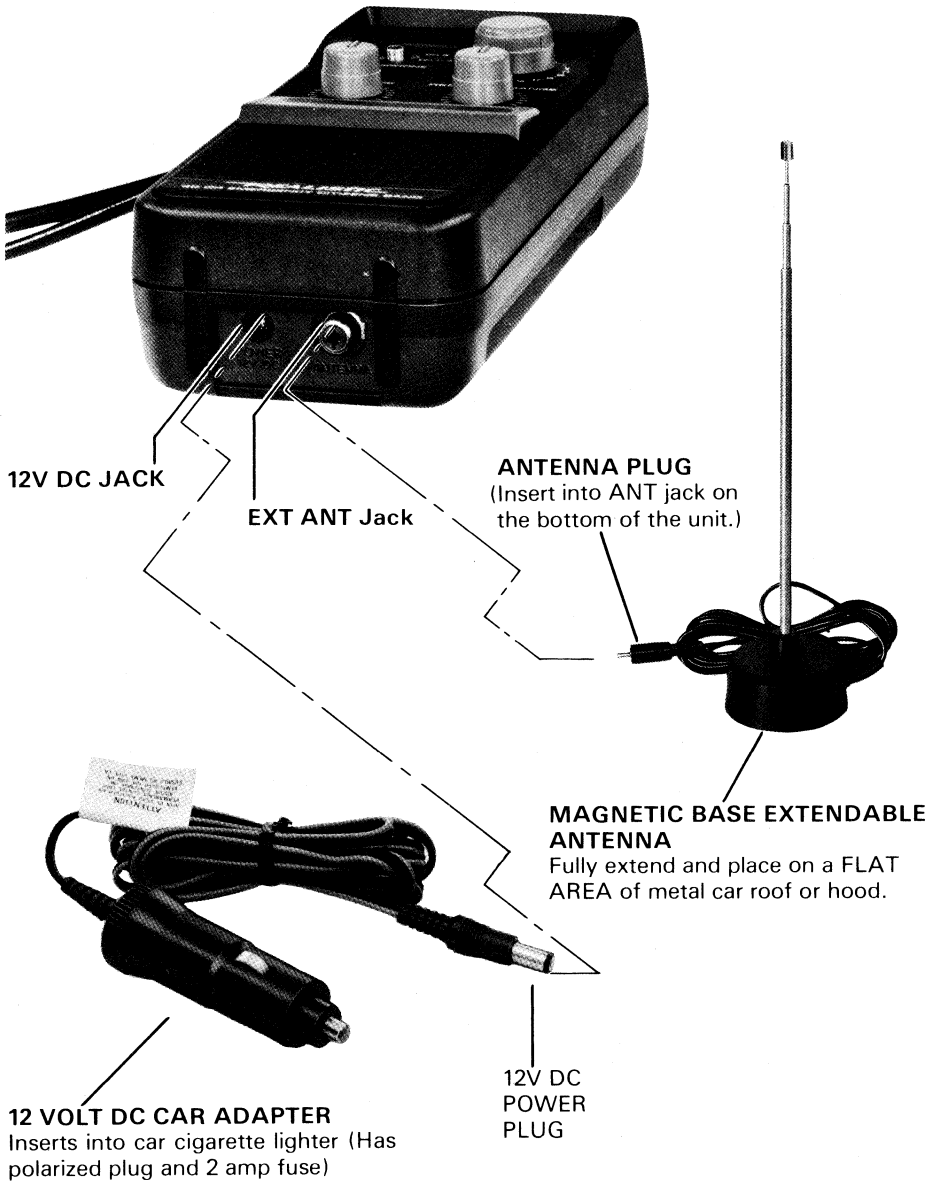
Press to transmit. Release to listen.

Speaker

Listen



Bottom



USING YOUR TRANSCEIVER

Note: The magnetic-mount antenna supplied with your TRC-411 is designed for use while your car is not moving. If you want to use your TRC-411 while your vehicle is in motion, see your local Tandy for a mobile CB antenna.

Do not transmit without a suitable antenna connected to the ANTenna Jack.

Setting Up

1. Remove the Antenna and Car Adapter from the Travel Case.
2. Fully extend the antenna and place its magnetic base on the vehicle's roof — if vinyl roof or convertible top, place magnetic base on hood of vehicle. Insert the antenna plug into the **ANTENNA** Jack on the bottom of the Transceiver.
3. Insert the 12V DC Car Adapter into your vehicle's cigarette lighter socket. Plug the other end into the **12V DC** Jack on the bottom of your unit.

Note: This unit is designed for operation with a 12V, negative ground system only.

Since all cigarette lighter sockets are not identical, it may be necessary to pull the Car Adapter out, slightly rotate it and then re-insert for positive contact.

TO RECEIVE (listen)

1. Set **RECEIVING RANGE** Control to **DISTANT** position (maximum counterclockwise).
2. Turn power ON (by rotating **VOLUME** clockwise).
3. Select the desired channel by rotating Channel Selector. Or, in an emergency, flip the **EMERGENCY** switch to CH9. (After communications are over, be sure to set **EMERGENCY** switch to "down" position (CH1-40) so you can listen to other channels.)
4. Adjust **VOLUME** for a suitable listening level.
5. Adjust **RECEIVING RANGE** Control to cut out annoying background noise when no signal is being received. To do this, set Channel Selector to a channel where no signals are present (or wait till signals cease on your channel). Then, rotate **RECEIVING RANGE** Control in a clockwise (**LOCAL**) direction to the point where the background noise just stops. Now, when a signal is present, you will hear it, but you will not be disturbed by noise on the channel in between signals.

When properly set, **RECEIVING RANGE** Control will keep the receiver "dead" until a signal comes in on that channel. Do not set **RECEIVING RANGE** Control too high, or weak signals will not be able to "open" the Squelch circuit. To receive weak signals, it is best to leave **RECEIVING RANGE** Control set to **DISTANT** (minimum position).

NOTE: The **RECEIVING RANGE** Control circuit in your Transceiver is a special advanced development. It uses two extra transistors to accomplish a hysteresis action. The result is that when you set **RECEIVING RANGE** Control for precise signal level, if that signal level fades (decreases or increases in strength), the circuit will follow this change. With conventional squelch circuits, often a signal which changes strength gets "chopped" by squelch and you lose a portion of the message; with hysteresis **RECEIVING RANGE**, you get it all.

You've also got a built-in Automatic Noise Limiter (ANL) circuit which helps to reduce or eliminate low-level impulse-type external noise. This special circuit is always active.

TO TRANSMIT

1. Select the desired channel (either using Channel Selector or **EMERGENCY** switch).
2. Press the **PUSH-TO-TALK** bar. Hold the unit at a slight angle about 2" — 3" (5 — 7.5cm) from your mouth and speak in a normal voice. **ON THE AIR LED** will light up and flicker as you talk.
3. To Receive, release the **PUSH-TO-TALK** bar.

NOTES ABOUT CHANNEL 9

Channel 9 has been set aside by the DOC for emergency communications only, and is to be used only for emergency communications involving the safety of people and property — it is especially useful for motorists who need assistance.

We've incorporated a special switch that puts you on Channel 9 instantly. In an emergency you don't want to spend time turning the Channel Selector until you reach Channel 9. Just flip up the **EMERGENCY** switch and you're on Channel 9. A red LED will show you the unit is operating on Channel 9. Be sure to flip the switch down to the CH1 - 40 position after you're finished using Channel 9.

Many persons have CB base stations in their homes. If you need assistance, you can try to reach a home base station, and ask the person who responds to call your relative or friend to come to your aid. However, **DON'T USE CHANNEL 9** for this. Remember, channel 9 is used only for emergencies.

SOME HINTS TO HELP YOU ENJOY YOUR CB

- Wait for a pause in transmission before asking for a break.
- If you do not receive an answer after a second call to another station, sign off and allow others to use the channel — wait a while, ask for a break and try again.
- Do not Dead Key (hold **PUSH TO TALK** bar in).
- Assist callers with directions, road conditions or other requested information.
- Keep harassment off the air. This is unnecessary and causes problems for everyone including you.
- Be courteous — treat others the way you wish to be treated.

OPTIONAL ANTENNAS FOR PERMANENT INSTALLATION

If you desire permanent antenna installation for your CB Transceiver, use an antenna especially designed for CB frequency of 27 MHz. See your local Tandy store for appropriate antennas. To use standard CB antennas, you have to use an adapter, such as our 278-208.

STRAIGHT TALK ABOUT CB

- The effective range depends on several factors:
 - a) the type of antenna used
 - b) antenna mounting height
 - c) terrain, city with tall building, hills or other obstructions reduces range. Best range is over water or flat land.
 - d) weather conditions and
 - e) number of other CB'ers on the same channel at the same time.
- Weather and atmospheric conditions such as lightning, sun spots and other electrical interference will result in strong static and limit TRANSMIT and RECEIVE range.
- "Skip" (long distance communications) is possible when CB signal is reflected back from ionized atmosphere.

The relative range, under normal and favorable conditions, is shown below. This should not be taken as a minimum range of performance, but rather as what can be expected under favorable circumstances and proper antenna mounting.

MOBILE TO MOBILE: 2 to 8 km (1-5 mi.) on land and up to 16 km (10 mi.) across water.

BASE TO MOBILE: 8 to 16 km (5-10 mi.) on land and up to 24 km (15 mi.) across water.

BASE TO BASE: Up to 32 km (20 mi.), depending on type of antenna, height and terrain.

NOISE

In Mobile operation, your vehicle or boat can be the cause of much noise interference. Since the receiver section of your transceiver is very sensitive, it will pick up even the smallest noise signals and amplify them. Any noise that you hear in the transceiver is almost totally from external sources. The receiver itself is exceptionally quiet. If the noise is continuous and fairly loud, it cannot be totally eliminated by the Automatic Noise Limiter circuit. You must solve the problem at its source.

To find out if the noise is from your ignition system, try this simple test. Turn off your ignition switch and set it to ACC (accessories). This turns off the ignition, but supplies power to the Transceiver. Most of the noise will probably disappear, indicating that the source of noise is your vehicle's ignition or other electrical systems.

IGNITION SYSTEM

Ignition-type noise can be identified by the fact that it varies with the speed of the engine. It consists of a series of popping sounds. There are a number of things that can be done to reduce this type of noise.

1. Use only the "radio suppression type" high-voltage ignition wire. Most new cars come already equipped with this type of wire.
2. Inspect the high voltage ignition wire and all connections made with this wire. Old ignition wire may develop leakage, resulting in hash.
3. If noise persists, replace the spark plugs with the spark plugs that have suppressor resistors built-in. Be sure to use the correct type for your vehicle.

Other sources of noise are: generator/alternator, regulator, gauges and static discharge. Most of these types of noise can be efficiently reduced or eliminated by using bypass capacitors at the various output voltage points. We suggest you check your Radio Shack store for a selection of noise reduction accessories.

EXCESSIVE NOISE INTERFERENCE

Position antenna as far away from CB as possible.

The hissing or static received with **RECEIVING RANGE** control in **DISTANT** position is normal.

Atmospheric conditions sometimes cause signals to "skip," resulting in unwanted interference from distant CB transmissions.

Garbled "Donald Duck" type voice may indicate SSB (single side band) transmission on your channel. Select an alternate clear channel. (Common SSB channels are channel 16 and 36 through 40.)

SERVICE AND MAINTENANCE

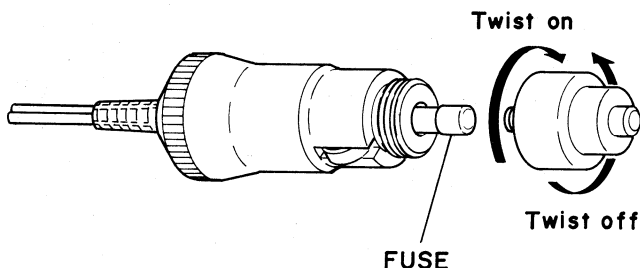
Your Transceiver has been built in accordance with Radio Shack's exacting quality control standards. However, it should be treated with reasonable care accorded any electrical equipment. Avoid exposing it to severe shock, dirt or moisture.

If you run into problems with the unit, we recommend you check the following:

1. If trouble is experienced with receiving:
Check the VOLUME ON/OFF switch setting.
Be sure RECEIVING RANGE is adjusted properly.
Check if the unit is switched to an active channel.
2. If trouble is experienced with transmitting:
Check if the transmission line is securely connected to the Antenna Jack.
Check if the antenna is properly installed.
Are all transmission line connections secure and free of corrosion?
Make sure you are fully pressing the PUSH TO TALK Bar.
3. If the Transceiver is completely inoperative:
Check the 12 VOLT DC CAR ADAPTER and in-line fuse (Replace only with an identical 2-amp fuse).

FUSE REPLACEMENT

Twist to open 2 Amp fuse holder.



If these checks do not solve the trouble, do NOT attempt repairs or adjustments yourself. The unit should be serviced only by a qualified radio technician. Whenever possible, return the unit to the store from which it was purchased.

WARNING

Do not open the Transceiver to make any internal adjustments.

Internal adjustment and/or modifications can lead to illegal operations as defined by DOC Rules and Regulations. Such illegal operation can lead to very serious consequences.

TO BE SAFE AND SURE:

1. You should never open up the case of your Transceiver.
2. Never change or replace anything in your Transceiver.

OTHER APPLICATIONS FOR YOUR CB

Personal and family:

Keep in touch with home while driving to work, to the store or social activity. Let your family know you are tied up in traffic or that you will stop by the market on the way home.

If you are a two-car (or more) family, CB is great for communication between members of your family while they are in their cars.

Contact friends and neighbors — find out “what’s happening” or plan a get-together. You can even meet new friends this way.

Ever have car trouble or run out of gas on the highway? What an assurance it is to be able to radio for assistance.

Camping, hunting, fishing or other sports are more fun with CB. Locate a buddy or find out “what’s cooking back at camp.”

Business Uses:

Call your office or coordinate field employee activities.

Sales and Service people save valuable time and cut down on missing contacts and appointments.

Doctors and Nurses can call their office or hospital to check on important calls or a particular patient.

With Security Policemen 2-way radio is more than a convenience, it is a must for both safety and efficiency.

Truckdrivers and Deliverymen learn road and traffic conditions and obtain assistance in locating destinations. CB is also a lot of company on those "long hauls".

In Construction Crews, CB quickly pays for itself when you are calling for additional materials or coordinating the activities of various work crews.

CITIZENS BAND FREQUENCY CHART

CHANNEL	FREQUENCY (MHz)	CHANNEL	FREQUENCY (MHz)
1	26.965	21	27.215
2	26.975	22	27.225
3	26.985	23	27.255
4	27.005	24	27.235
5	27.015	25	27.245
6	27.025	26	27.265
7	27.035	27	27.275
8	27.055	28	27.285
9	27.065	29	27.295
10	27.075	30	27.305
11	27.085	31	27.315
12	27.105	32	27.325
13	27.115	33	27.335
14	27.125	34	27.345
15	27.135	35	27.355
16	27.155	36	27.365
17	27.165	37	27.375
18	27.175	38	27.385
19	27.185	39	27.395
20	27.205	40	27.405

10-CODES

Citizens band radio operators have largely adopted the 10-codes for standard questions and answers. Its use permits faster communication and better intelligibility in noisy areas. The following table lists some of the more common codes and their meanings.

Code	Meaning	Code	Meaning
10-1	Receiving poorly	10-10	Standing by
10-2	Receiving well	10-13	Advise road/weather conditions.
10-3	Stop Transmitting	10-20	What is your location?
10-4	OK	10-33	Emergency traffic
10-7	Out of Service	10-36	Correct time
10-8	In Service	10-41	Switch to Channel.
10-9	Repeat	10-62	Cannot copy you.

TANDY WARRANTY

This equipment is warranted against defects for 90 days from date of purchase. Within this period, we will repair it without charge for parts and labor. Simply **bring your sales slip** as proof of purchase date to any TANDY store. Warranty does not cover transportation costs. Nor does it cover equipment subjected to misuse or accidental damage.

This Warranty gives you specific legal rights and you may also other rights which vary from state to state.

We Service What We Sell

For service, return this set to your nearest TANDY Electronics store.

TANDY CORPORATION

Head office AUSTRALIA

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