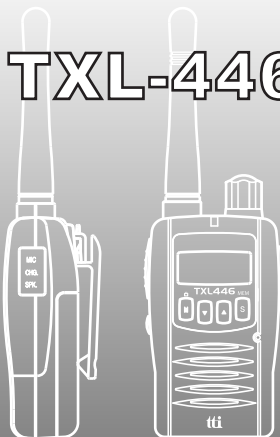


TXL-446



PMR 446 TRANSCEIVER **INSTRUCTION MANUAL**



www.ttikorea.co.kr

Thank you for purchasing this radio.

All our products are built to offer excellent value by combining advanced features, great design and manufacturing quality.

To ensure you are familiar with the operation and features of your radio, and in order to obtain the best performance, please read this manual carefully before operation.

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Caution

IMPORTANT - READ ALL INSTRUCTIONS carefully and completely before operating your radio and retain this manual for future reference.

NEVER charge Alkaline batteries.

NEVER connect the radio to a power source other than the supplied battery. This may damage your product.

NEVER operate your radio with the antenna less than 5cm from exposed parts of the body.

NEVER use the radio in or near a mining facility or other area which uses remotely triggered explosives or an area labelled "Blasting Area".

NEVER carry the radio in the pocket with metallic or inflammable objects such as coin or gas lighter etc.

NEVER use or charge your radio in a potentially explosive atmosphere.

DO NOT place your radio in front of a vehicle airbag.

DO NOT operate your radio on board an aircraft.

DO NOT use your radio with a damaged antenna.

DO NOT attempt to modify your radio in any way.

ALWAYS charge your radio at normal room temperature.

ALWAYS switch off your radio where notices restrict the use of two-way radio or mobile telephones.

ALWAYS replace the accessory jack cover (if applicable) when the jack is not in use.

ONLY use TTI approved rechargeable batteries with the supplied charger.

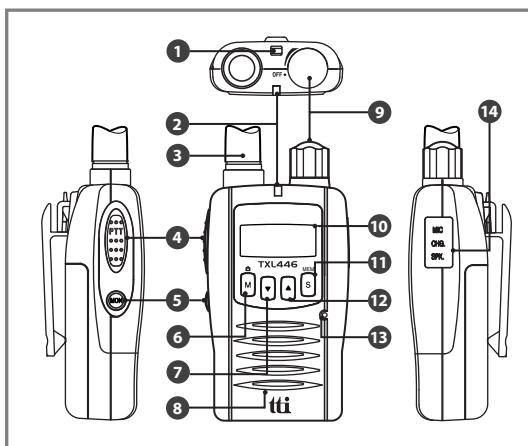
AVOID exposing your radio to water. It can withstand spray water and some rain, but has no higher waterproof class.

AVOID storing or charging your radio in direct sunlight.

AVOID storing or using your radio where temperatures are below -20°C or above +60°C.

1. Radio Controls

1	Strap Hole	10	LCD Display
2	TX/RX Indicator	11	Scan & Scan Memory Button
3	Antenna	12	Up Button
4	PTT Button	13	Microphone
5	Monitor Button	14	Accessory / Hanger Jack
6	Mode & Key lock Button		
7	Down Button		
8	Speaker		
9	Power On/Off & Volume Control Knob		



2. Equipment and Accessories Supplied

1. TXL-446 radio (with fixed antenna)	1 unit
2. Ni-MH Battery pack (1500mAh)	1 unit
3. Charging Cradle	1 unit
4. Power Adaptor	1 unit
5. Instruction Manual	1 unit

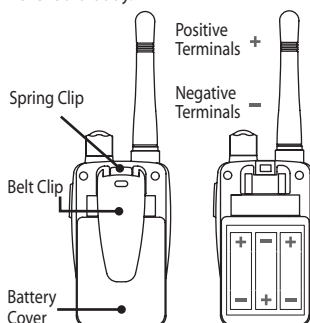
3. Powering the Radio

Your TXL-446 is powered by three AA batteries (Ni-MH). If left unused, the batteries will discharge within a few months. If you have not used your TXL-446 for sometimes, you will need to recharge your batteries before use.

Installing the Batteries

Battery installation is more convenient when the belt clip is removed. To do this, release the spring clip and slide the belt clip downward and away from the radio body.

1. Press the center top area of the battery cover and slide downwards.
2. Install the three rechargeable batteries as indicated on the battery housing, slide cover back into position until it 'clicks' into place.



Battery Low Alert

When the battery icon blinks on the display, the battery level is low and the batteries should be recharged or replaced. If the batteries are not charged, an audio tone will then sound to warn the user that the batteries are almost discharged.

Battery Usage

The time taken to discharge the batteries will depend on how you use the TXL-446. The 1500mAh batteries supplied are powerful enough for a full days use under average conditions.

Conserving Battery Power

The TXL-446 has built-in power saving features to help you get the maximum amount of time between charges. If you need to operate your TXL-446 in a situation where you require maximum battery life (e.g. a remote site where there is no convenient recharging facility nearby) the following hints can greatly reduce the amount of the power drawn from the batteries.

Standby Mode

The TXL-446 will automatically enter the 'Standby' mode when it is inactive (i.e. not transmitting or receiving signals). While in Standby mode it will still check for incoming signals but it will draw considerably less power from the batteries. As soon as a signal is heard or the keys are pressed the TXL-446 will 'wake up' again. This Standby mode is automatic and by itself can extend the battery life by many hours.

Using CTCSS

If you are expecting to receive signals on a busy channel, you can program that channel for CTCSS operation and get the other person to call you using the same CTCSS tone. Your radio will then remain in Standby and ignore all other signals until your selected CTCSS tone is received.

Scanning

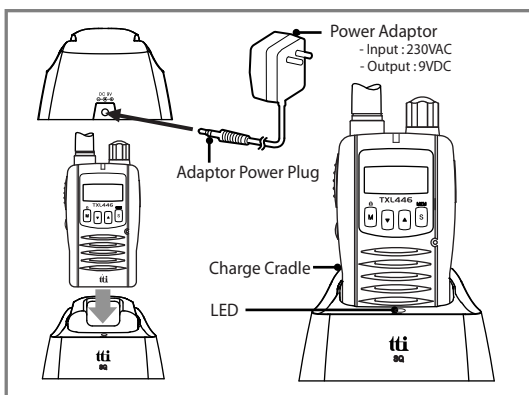
The TXL-446 draws more power from the batteries when scanning than when monitoring a single channel. This is because it must 'wake up' more

often to monitor each channel for activity. You can lengthen the battery life by avoiding any unnecessary scanning. In addition, scanning increases the chance of finding a signal thereby keeping the receiver 'awake' and the Squelch open more often.

4. Battery Charging

To charge your radio, carefully follow these instruction :

1. Connect the power adaptor to the mains power supply and connect the adaptor power plug to the charging cradle.
2. Disconnect any radio accessories and ensure the radio is switched off.
3. Insert the radio into the charging cradle until it 'Clicks' home.
The charger LED will blink red and green or the charger LED does not light, re-insert the radio into the charging cradle.
4. The battery charging time is typically 4 to 5 hours. When the battery is fully charged the charger LED will turn green.



5. Radio Controls

1. Power On/Off/Volume control



Turn the knob clockwise to switch on and increase the volume and counter-clockwise to decrease the volume and switch off the radio. The radio will emit a confirmation tone when it switches on.

2. Push-To-Talk (PTT) button



Press and hold this button to speak (transmit) and release the button to hear (receive) messages. You can only communicate with other PMR446 radios when the channel and privacy code settings are the same as yours.

3. DOWN button



Pressing this button will increase the channel number. In some modes this button is used to adjust the function setting.

4. UP button



Pressing this button will decrease the channel number. In some modes this button is used to adjust the function setting.

5. Menu (Function Mode) and Keypad Lock button



Press this button briefly to activate the function mode. Press the button again (repeatedly) to step through the function menu. Press and hold this button to activate or de-activate the Keypad Lock function.

6. Monitor button



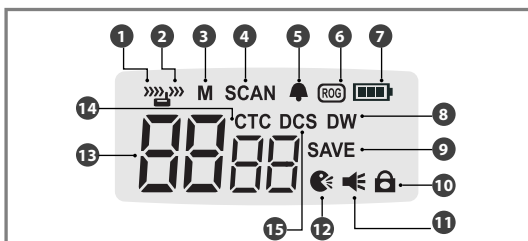
Press and hold this button to activate or de-activate the MONITOR function.





7. Scan/Scan Memory button



Press this button briefly to activate or de-activate the scan mode. Press and hold this button to memorize the displayed channel into the scan memory list or erase the displayed channel from the scan memory list.

6. LCD Display



1	Receiver Busy Icon		9	Power Save Icon	
2	Transmit Icon		10	Key Lock Icon	
3	Scan Memory Icon		11	Monitor Icon	
4	Scan Icon		12	VOX Icon	
5	Keytone Icon		13	Channel Display	
6	Roger Beep Icon		14	CTCSS Icon / Display	
7	Battery Icon		15	DCS Icon / Display	
8	Dual Watch Icon				

7. Basic Radio Operation

The PMR446 service which this radio uses shares channels on a 'take turns' basis. This means that other users and groups may be using any channel and privacy code combination.

To communicate with other PMR446 radios, all units must be switched to the same channel (8 choices) and privacy code (38 CTCSS and 104 DCS choices). If the combination you have chosen is already in use please make an alternative selection.

1. Switch on your radio.
2. Check and if necessary change the channel and privacy code settings (see Function Mode).
3. To speak, hold the radio upright, about 10cm from your mouth and press the PTT. Speak slowly and clearly towards the radio. Release the PTT when you finish speaking.

You will hear messages from other radios that are within range and have the same channel and privacy code setting.

The appropriate icon will appear in the radio display when you receive or transmit a message.

8. Fuction Mode

The user mode allows you to set-up and edit the basic functions (see Radio Features Explained).

To access the consumer mode, press the MODE button briefly.

Each press of the MODE button steps the radio sequentially through the different functions. The radio display indicates the current function. The present setting and associated icon flash.

Use the UP or DOWN button to change the setting. Press the PTT or MODE button or wait for 5 seconds to store your choice. If you do not press any key for 5 seconds your radio will return to standby mode automatically.

Display	Functions	Settings
	Change Privacy Tone Code (CTCSS)	1 to 38, OFF
	Change Digital Privacy Tone Code (DCS)	1 to 99, OFF
	Select Hands Free Mode (VOX)	1 to 3, OFF
	Select Dual Watch Mode	1 to 8, OFF

59 8888	Change Squelch Level	1 to 3
rb 888 ⁸⁰⁰	Activate Roger Beep	on, off
bP 888	Activate Key Beep	on, off
CP 888	Activate Compander Circuit	on, off
C 888	Change Call Alert Tone	1 to 5, off

9. Radio Features Explained

Volume Level

To adjust the volume level, use the POWER On/Off/VOLUME control. To increase the volume turn this control clockwise, to decrease the volume turn this control counter-clockwise.

Channels

This radio operates on any one of the 8 PMR446 licence free channels. To communicate with other PMR446 radios, all units must be switched to the same channel and privacy code. To change the radio channel, press the UP or DOWN button when the radio is in stand-by mode.

Privacy Codes (CTCSS and DCS Tone Codes)

This radio is fitted with 38 Analogue Privacy codes (also known as CTCSS, sub-codes or sub-channels) and 104 Digital Privacy codes (also known as DCS codes).

Only one type of Privacy code can be used on each channel. Selecting a Digital Privacy code will override any Analogue Privacy code settings. If the other unit(s) do not have privacy codes ensure your units privacy codes (analogue and digital) are set to 'Off'.

Please note that privacy codes do not prevent other radio users from hearing your conversation. They simply allow you to ignore messages that are using a different privacy code.

Selecting an Analogue Privacy Code

To change the Analogue Privacy Code, press the MODE button until the CTCSS icon and privacy code number flash. Use the UP or DOWN button to select the desired code. Press the PTT or MODE button or wait for 5 seconds to store your choice. The CTCSS icon will appear when an Analogue Privacy Code is selected.

Selecting a Digital Privacy Code

To change the Digital Privacy Code, press the MODE button until the DCS icon and privacy code number flash. Use the UP or DOWN button to select the desired code. Press the PTT or MODE button or wait for 5 seconds to store your choice. The DCS icon will appear when a Digital Privacy Code is selected.

Hands Free (VOX) Mode

When Hands Free (VOX) Mode is selected the radio will automatically transmit when the microphone detects your voice (or other noise). It can be used with the internal microphone or a suitable audio accessory (available separately). To avoid accidental operation and reduce the effect of background noise, there are 3 microphone sensitivity settings.

To select the VOX sensitivity level, press the MODE button until the VOX icon and current setting flashes. Use the UP or DOWN button to change the sensitivity level (3 is the most sensitive). Press the PTT or MODE button or wait for 5 seconds to store your choice.

Dual Watch Mode

Dual Watch mode allows you to monitor two channels; a primary channel and the dual watch channel. When a signal is received on either channel the unit will pause for 5 seconds before resuming the dual watch.

To activate the dual watch mode, first select a radio channel (see Channels) as the primary channel. To select the dual watch channel press the MODE button until the Dual Watch Icon and current setting flashes. Use the UP or DOWN button to select the desired dual watch channel. Press the PTT or MODE button or wait for 5 seconds to store your choice and activate the dual watch.

The radio display will alternate between the primary and dual watch channels and the dual watch icon will appear.

To deactivate the dual watch press the SCAN button.

If you press the PTT button whilst receiving a signal in Dual Watch Mode the radio will transmit on the currently displayed channel. If you press the PTT button when no signal is present the radio will transmit on the primary channel.

Squelch Level Adjustment

This function allows you to adjust the squelch level of your radio.

To change the squelch level. Press the MODE button until the squelch icon and current setting flashes. Use the Up or Down button to change the sensitivity level (1 is the most sensitive). Press the PTT or MODE button or wait for 5 seconds to store your choice.

There are 3 squelch levels. Level 1 is the most sensitive (open) and level 3 is the least sensitive (closed). The factory presetting is Level3.

Roger Beep

The Roger Beep is a short tone that is automatically added to the end of your transmissions to tell other users that you have finished speaking. You can activate or deactivate the Roger Beep as required.

To change the Roger Beep setting, press the MODE button until the Roger Beep icon and current setting flashes. Use the UP or DOWN button to change the setting. Press the PTT or FUNCTION button or wait for 5 seconds to store your choice.

The Roger Beep icon will appear when Roger Beep is active.

Key Beep

If the Key Beep is activated, your radio will emit a confirmation tone whenever you use the keypad. You can activate or deactivate the Key Beep as required.

To change the Key Beep setting, press the MODE button until the Key Beep icon appears. Use the UP or DOWN button to change the setting. Press the PTT or FUNCTION button or wait for 5 seconds to store your choice.

The Key Beep icon will appear when Key Beep is active.

Componder

If the compander is activated, your radio will eliminate the background noise and generate clearer sound by cutting off the high and low frequencies. The users who prefer the unrefined sound are recommended to use the radio with this compander unactivated.

Call Alert

To alert other users to your message and gain their attention you can send a Call Alert melody by pressing the PTT button twice in quick succession.

There are five different call alert tones and off.

To change the Call Alert melody, press the FUNCTION button until 'CA' appears. Use the UP or DOWN button to change the setting. Press the PTT or FUNCTION button or wait for 5 seconds to store your choice.

Monitor

The Monitor function is used to briefly check for activity on the current channel, regardless of privacy code settings. It is the same as setting the squelch level to 'Off'.

To activate or deactivate the Monitor press the Monitor button for about 2 seconds. The Monitor icon will appear when the Monitor is active. It is normal to hear background static noise.

Display & Keypad Backlight

The display and keypad backlight will illuminate for 5 seconds whenever any buttons (except for the PTT button) are pressed.

Channel Scan

The Channel Scan can be used to find or detect users on other radio channels.

To activate/deactivate the channel scan, press the SCAN button briefly. The Scan icon will appear when the channel scan is active. Scanning will only stop when you deactivate the scan function.

The radio will scan through the 8 channels. If your radio detects a valid signal the scan will pause and stay on the channel for about 5 seconds before resuming the scan.

If you press the PTT button when your radio detects a signal, the radio will transmit on the same channel. Scanning will resume after approximately 15 seconds. Press the UP or DOWN button to resume scanning immediately.

If you press the PTT button during scanning, the radio will return to your original channel. Scanning will resume after approximately 15 seconds.

Privacy Code (CTCSS/DCS) Scan and Decode

Privacy Code Scan is used to determine which Privacy Code is in use on the current channel.

To activate the privacy code scan press the MODE button until the privacy code number flashes, then press the SCAN button briefly. The Scan icon will blink when the privacy code scan is active.

The radio will scan through the 38 CTCSS and 104 DCS codes. If your radio detects a valid signal the scan will pause for 5 seconds.

If you press the PTT button when your radio detects a signal, the radio will transmit on the same privacy code and the privacy code will be automatically selected.

If you press the PTT button during scanning, the radio will return to your original privacy code. Scanning will resume when the PTT button is released.

To stop scanning, press the SCAN button again.

To increase battery life use the scan modes sparingly.

Keypad Lock

To toggle the key lock, press and hold the KEYPAD LOCK button. The key lock icon appears when the lock is activated. All the buttons and keys are locked and deactivated except for the PTT, power on/off and Volume.

Battery Level

The Battery icon indicates what the current battery level is and when the battery needs recharging. If necessary, refer to the instructions to recharge the battery.

Scan Memory

To memorize and erase the displayed channel in the scan memory list, press and hold this button. For user convenience, all the channels are memorized upon shipment from the factory.

10. Troubleshooting

If you experience problems with your TXL-446 first check the battery power level as low batteries can cause problems such as poor transmission, weak reception and reduced sound quality.

Then check the manual and radio display to ensure that a function (such as VOX or Lock) has not been activated by accident.

1. Switch off the radio.
2. Press Monitor button and PTT button together, and switch on the radio.

This will reset the radio to the factory settings and should resolve most problems.

In case of further difficulty please consult your dealer or visit our websites at www.ttikorea.co.kr.

11. CE Declaration

CE 0700 CE version of the TXL-446 which displays the CE symbol on the product label, complies with the essential requirements of the European Radio and Telecommunications Terminal Directive 1999/5/CE.



This warning symbol indicates that this equipment operates in non-harmonized frequency bands and/or may be subject to licensing conditions in the country of use.

Be sure to check that you have the correct version of this radio or the correct programming of this radio, to comply with your national licensing requirements.

This radio can be used without license and charges in ;
Austria, Belgium, cyprus, Czech, Denmark, Estonia, Finland, France, Germany,
Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg,
Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain,
Sweden, Switzerland and U.K.

12. Safety Requirements

For charging the rechargeable batteries, only a CE approved AC adaptor complying with the following specifications must be used :

INPUT : 230VAC 50Hz
OUTPUT : 9VDC 500mA

13. Technical Specifications

1) Operating Frequencies (frequency shown in MHz):

Channel	Frequency	Channel	Frequency
1	446.00625	5	446.05625
2	446.01875	6	446.06875
3	446.03125	7	446.08125
4	446.04375	8	446.09375

2) Channel Spacing: 12.5kHz

3) Power Source: 3 x AA Ni-MH battery

4) Privacy Codes (CTCSS Tone Codes) Table (in Hz):

Ch	Freq.	Ch	Freq.	Ch	Freq.	Ch	Freq.
1	67.0	11	97.4	21	136.5	31	192.8
2	71.9	12	100.0	22	141.3	32	203.5
3	74.4	13	103.5	23	146.2	33	210.7
4	77.0	14	107.2	24	151.4	34	218.1
5	79.7	15	110.9	25	156.7	35	225.7
6	82.5	16	114.8	26	162.2	36	233.6
7	85.4	17	118.8	27	167.9	37	241.8
8	88.5	18	123.0	28	173.8	38	250.3
9	91.5	19	127.3	29	179.9		
10	94.8	20	131.8	30	186.2		

5) Digital Privacy Codes Table (DCS Tone Codes):

No	Code	No	Code	No	Code	No	Code	No	Code
1	023	22	131	43	251	64	371	85	532
2	025	23	132	44	252	65	411	86	546
3	026	24	134	45	255	66	412	87	565
4	031	25	143	46	261	67	413	88	606
5	032	26	145	47	263	68	423	89	612
6	036	27	152	48	265	69	431	90	624
7	043	28	155	49	266	70	432	91	627
8	047	29	156	50	271	71	445	92	631
9	051	30	162	51	274	72	446	93	632
10	053	31	165	52	306	73	452	94	654
11	054	32	172	53	311	74	454	95	662
12	065	33	174	54	315	75	455	96	664
13	071	34	205	55	325	76	462	97	703
14	072	35	212	56	331	77	464	98	712
15	073	36	223	57	332	78	465	99	723
16	074	37	225	58	343	79	466	100	731
17	114	38	226	59	346	80	503	101	732
18	115	39	243	60	351	81	506	102	734
19	116	40	244	61	356	82	516	103	743
20	122	41	245	62	364	83	523	104	754
21	125	42	246	63	365	84	526		

TTI products are manufactured by TTI Tech Co., Ltd.

Tel: 82-2-5170043, Website: www.ttikorea.co.kr

REV.00

Declaration of Conformity

CE0700

Model : TXL-446PM Type : 2-Way Portable Handheld Radio
(Name of product, type or model, batch or serial number)

satisfies all the technical regulations applicable to the product within the scope of Council Directives 2006/95/EC, 2004/108/EC and 99/5/EC:

Radio : EN 300 296-2 V1.1.1
EMC : EN 301 489-1 V1.6.1, EN 301 489-5 V1.3.1
Safety : EN 60950-1:2001+A11:2004
(Title(s) of regulations, standards, etc.)

All essential radio test suites have been carried out.

NOTIFIED BODY: PHOENIX TESTLAB GmbH

Address: Königswinkel 10
D-32825 Blomberg, Germany
Identification Number: 0700

MANUFACTURER or AUTHORISED REPRESENTATIVE:

Address: TTI TECH CO., LTD.
TTI House, 163-4, Poi-dong, Kangnam-ku, Seoul,
Korea 135-260

This declaration is issued under the sole responsibility of the manufacturer and, if applicable, his authorised representative.

Point of contact:

TTI TECH CO., LTD. Tel.82-2-517-0043 Fax.82-2-518-2419

(Name, telephone and fax number)

Seoul , Korea / July 3, 2008

(Place, date of issue)

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