The World in Communication

User Manual

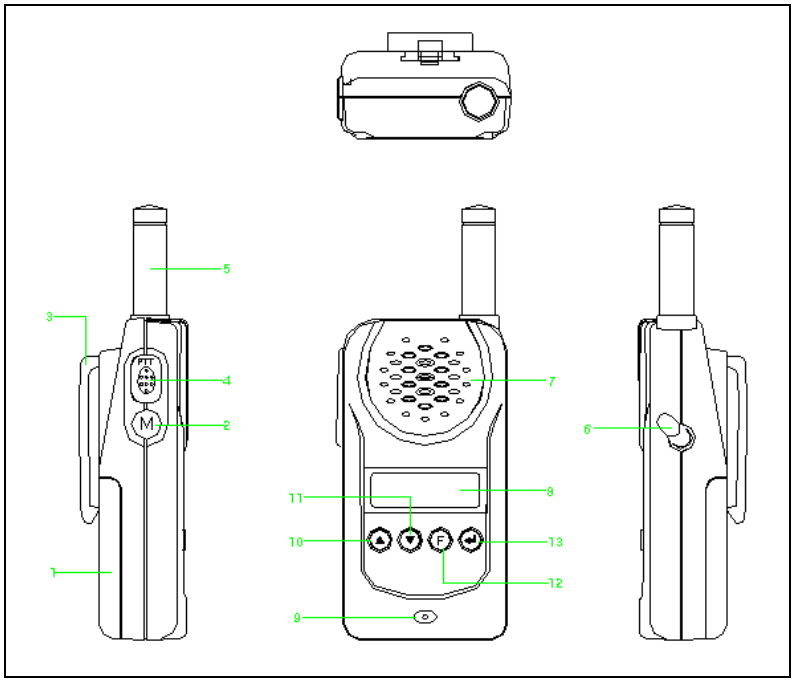
8 Channel PMR 446 handheld 2-way radio

Tec*talk*

OPERATING INSTRUCTIONS

FUNCTIONS AND CONTROLS

1. Battery Door
2. Monitor Button
3. Detachable Belt Clip
4. Push-To-Talk (PTT) Button
5. Antenna
6. External Mic / Speaker
7. Built-in Speaker
8. LCD Panel
9. Built-in Microphone
10. Up Button & Volume Control
11. Down Button & Volume Control
12. Function Button
13. Power On/Off & Enter Button



BATTERY INSTALLATION

Each Communicator unit operates on four 'AAA' size batteries.

1. Remove the Battery Door (#1) from the back cabinet by unclipping the lock at the bottom of the door and lifting it upwards.
2. Following the polarity diagram shown inside the battery compartment, insert four 'AAA' size batteries. Replace the Battery Door (#1) and lock.

   IMPORTANT: Be sure that the batteries are installed correctly. Wrong polarity may damage the unit.

3. For better performance and longer operating time, we recommend the use of alkaline-type batteries.
4. Do not mix old and new batteries.
5. Do not mix alkaline, standard (carbon-zinc) or rechargeable (Ni-MH) batteries.
6. If the unit is not to be used for an extended period of time, remove the batteries. Old or leaking batteries can cause damage to the unit and will void the warranty.

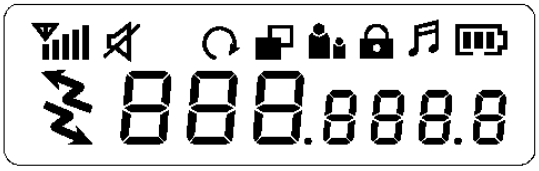
WRIST STRAP AND DETACHABLE BELT CLIP INSTALLATION

The Wrist Strap and Detachable Belt Clip are provided to enable you to carry the palm-sized Communicator easily and safely.

1. To use the Wrist Strap, simply attach it to the hole just above the Belt-clip (#3). Feed the small loop on the end of the strap through the hole and then pass the strap through the loop and pull tight.

2. The Detachable Belt Clip is already attached to your Communicator and locates into the slot on the back of the unit. If you want to remove the belt clip, press the locking lug at the top away from the unit and slide the belt clip upwards to remove. To re-install, just slide the belt clip into the slot and snap in place.

LCD PANEL ICON DESCRIPTIONS



1. RSSI (Receiving Signal Strength Indicator) or TX Bar Icon

   Indicates the receiving signal strength and blinks during transmission.

2. Monitor Indicator

   Appears when the monitor button is used.

3. CTCSS Indicator

   Appears when the correct CTCSS tone is entered.

4. Auto Channel Scan Indicator

   Appears in the auto scan mode or when the auto scan mode is activated.

5. Dual Watch Scan Indicator

   Blinks in dual watch scan mode or Appears when the dual watch scan mode is activated.

6. Key Lock Indicator

   Blinks in auto lock selection mode or Appears when the key lock is activated.

7. VOX Indicator

   Blinks in VOX selection mode or appears when VOX is activated.

8. Battery Level Indicator

Battery Level Meter indicates the remaining battery strength. If a battery becomes too weak for transmit operation, You will be warned additionally by flashing the red LED every 5 seconds. At a too weak battery state the CPU may switch off the TX operation for some seconds to allow the batteries to recover.

9. Power Save Display

Blinks when the power save is activated. The rate at which the icon blinks varies with the power saving ratio. Fast indicates a lower power saving while slow indicates a higher power saving ratio.

10. Tx Indicator

Appears when a signal is being transmitted.

11. Rx Indicator

Appears when a signal is being received.

12. Large Segment Display

Indicates the channel number in use at the normal mode. When the Function Button is pressed, it displays the function menu in sequence: CH / cTc / SC / dW / VO / Vdt / ALo / CAL / ton

13. Small Segment Display

Displays the CTCSS tone option at the normal mode. CTCSS option is displayed in “Hz”.
Displays the SUBMENU of each MENU in the function mode. (e.g. CH 1-8 / cTc: hz / SC: up, dn / dW: channel number / VO: high, off, low / Vdt 5sec, 3sec, 2sec, 1sec / ALo off, auto / CAL number 1-7 / ton : no - freq)

CONTROL BUTTON FUNCTIONS

Power ON/OFF (#13) (↵)

- Power On - Short Touch
  Press this button (#13) briefly to turn the unit on. A short confirming melody will play.

- Power Off - Long Touch
  Press this button (#13) for longer than 1.5 seconds to turn the unit off. A short confirming melody will play.

ENTER BUTTON (#13) (¿)

Press it to confirm the required option for respective functions during function edit mode.
Press it briefly in standby mode to convert the display of CTCSS sub code from frequency to

number or number to frequency in about 1 second.

PUSH-TO-TALK (PTT) BUTTON (#4)

1. Press it firmly and speak into the Built-in Microphone (#9) to transmit. The red Tx LED Indicator at the right side of the LCD Panel (#8) will light.
2. Release it to revert to standby mode. When an incoming call is received, the green Rx LED Indicator on the left side of the LCD Panel (#8) will light.
3. 2-Way Call Ringer: Press the PTT Button twice quickly to call another party on the same channel. The word "CALL" and the Tx icon will appear in the display. The user selected call ringer melody will play (see page 6 to change call melody). The Call melody can be switched off with the same menu step to avoid accidential activation.

VOLUME CONTROL (#10 (▲)& #11(▼))

In the standby mode, adjust volume to a comfortable level by pressing the **UP** (#10 ▲) & the **DOWN** button (#11 ▼) and adjusting the volume control at the same time.

UP BUTTON (#10) (▲)

- Short Touch
  In the standby mode, press this button briefly to move to the next higher main volume level.
  In the function edit mode, press briefly to shift from the current option in each submenu to the next option in the same submenu.
- Long Touch
  Pressing this button for more than 1.5 seconds will allow you to navigate at a more rapid rate through different volume level in the standby mode or through different menus in the function edit mode.

DOWN BUTTON (#11) (▼)

- Short Touch
  In the standby mode, press this button briefly to move to the previous lower main volume level.
  In the function edit mode, press briefly to shift from the current option in each submenu to the previous option in the same submenu.
- Long Touch
  Pressing this button for more than 1.5 seconds will allow you to navigate at a more rapid rate through different volume level in the standby mode or through different menus in the function edit mode.

FUNCTION BUTTON (#12) (**F**)

- Short Touch
  Press this button briefly to enter function edit mode in standby mode.

- Long Touch
  Press for longer than 1.5 seconds to activate or deactivate the KEY LOCK in the standby mode. Please note all buttons will be disabled except the Monitor Button (#2) and PTT Button (#4) will remain fully operational (see menu description to activate and disable the auto key lock function).

MONITOR BUTTON (#2) (=disable automatic squelch)

- Press it to check activity on the current channel before you try to transmit.

- You can use the Monitor button when You receive weak or interrupted signals. If You press Monitor only for a short time, the squelch opens for the time pressed.
- If You press the button longer than 7 seconds continuously, the squelch will remain open. You may use this function if Your distant party's signal remains weak for a longer time period.
- Pressing again Monitor closes the squelch again.
- Adjust the Volume Control (#10 ▲ & #11 ▼) if necessary.

Other functions of the monitor button

- When you press the Monitor Button, the LCD Panel (#8) will be illuminated with an amber color back-light and both the Tx and Rx LED Indicators will light. After some seconds the LED will switch off again.
- If you press the Monitor Button during the function edit mode, you will return to standby mode directly.
- In the Auto channel scan mode, if you press it during Rx or scan wait time (about 5 seconds) in specific channel, it skips the channel in the auto channel scan after that.
- If You press Monitor longer during SCAN mode until You hear a beep tone, the channel will be skipped during all following scan cycles, as long as scanning remains activated.
- When you press it during VOX operation, discontinue it in about 10 seconds.

EXTERNAL MIC/SPEAKER (#6)
This jack accepts an optional headset/microphone for totally handsfree operation. Please refer to the latest Albrecht accessory item listen in catalogue or internet (www.albrecht-online.de) or ask Your dealer.

OPERATION / FUNCTION EDIT MODE

2. CHANNEL SELECT MODE

This feature allows you to select main channels to communicate with the party.
To access the Channel Select Mode,

- Press the Function Button (#12) until "CH" appears in the LCD Panel (#8).
- Press the Up Button (#10) or the Down Button (#11) to choose channels up or down from the current channel number.
- Press the Enter Button (#13) to confirm your selection.

3. CTCSS (Coded Tone Controlled Squelch System) SUBCHANNEL SELECTION MODE

This feature allows you to utilize a less used channel range (00-38) within a main channel. This enables you to communicate with another party on the same main channel using the same subcode. This helps to avoid congestion on the main channel and filters out unwanted noise and static. There are 38 CTCSS subchannels for each main channel.
To change the CTCSS subchannel,

- Press the Function Button (#12) until the word "cTc" appears in the LCD Panel (#8).
- Press the Up Button (#10) or the Down Button (#11) to choose the desired subchannel to use. The corresponding subcode frequency will be displayed in the lower right corner.
- Press the Enter Button (#13) to confirm your selection.

***NOTE**: To communicate with other PMR units, they must be switched to the same channel and CTCSS subcode. To communicate with other PMR units that do not have subcodes, switch your unit to the same channel with the subcode set to "OFF".*

4. AUTO CHANNEL SCAN MODE

This feature allows you to scan for an active channel and communicate with the party transmitting.

To access the Auto Channel Scan menu,

- Press the **Function** Button (#12) until the auto channel icon blinks and "**SC**" appears in the LCD Panel (#8).
- Press the **Up** Button (#10) or the **Down** Button (#11) to choose scanning up or down from the current channel number.
- Press the **Enter** Button (#13) to confirm your selection.
- The unit will begin scanning for an active main channel. If a transmission is detected, the Rx and RSSI icons will appear in the LCD Panel (#8).
- To turn off the auto channel scan feature in the standby mode, simply press the **Function** Button (#12) once.
- Continuously busy or undesired channels can be skipped from scanning after scanner has stopped on such a channel by pressing the **MONITOR** button:
- Short pressing: channel will be skipped immediately for the same scan cycle
- Long pressing (until You hear beep tone): channel will be skipped for all further scan cycles, as long as scanning remains activated.

5. DUAL WATCH SCAN MODE

This feature allows you to monitor two different channels at the same time. If you pre-set any priority channel other than the current channel in use, the pre-set channel will be scanned every 0.5 second and signals you when a call is received.

To access the Dual Watch scan menu,

- Press the **Function** Button (#12) until the dual watch icon blinks and "**dW**" appears in the LCD Panel (#8).
- Press the **Up** Button (#10) or the **Down** Button (#11) to select the desired channel number you wish to closely monitor.
- Press the **Enter** Button (#13) to confirm your selection.
- To turn off the dual watch feature in the standby mode, simply press the **Function** Button (#12) once.

6. VOX SELECTION MODE

The Voice Activated Transmission (VOX) function allows your voice to activate transmission automatically when the Communicator is used with the optional handsfree mic/headset (refer to enclosed Accessory Order Form). It also allows handsfree use when a mic/headset is not being used without having to use the PTT Button (#4). The Vox menu allows not only different vox sensing trigger levels, but is even coupled with automatic MIC sensitivities dependimg on the surrounding noise conditions.

To access the VOX Selection menu,

- Press the Function Button (#12) until the **VOX** icon blinks and "**UO**" appears in the LCD Panel (#8).
- Press the Up Button (#10) or the Down Button (#11) to select from **High**, **Mid**, **low** or **OFF.** High, Mid or low setting determines **VOX and mic** response sensitivity. While High is for **high surrounding noise**, this position has the lowest sensitivity and is designed for louder

speaking volules in such a high noise surrounding (preferable for **motor bike drivers**)

- For **baby monitoring** use **LOW** position for highest sensitivity in the baby's room.
- Press the Enter Button (#13) to confirm your selection.
- To turn off the VOX feature, enter the VOX selection mode and then select "**OFF**".

7. VOX RECOVERY TIME SELECTION MODE

This allows the response characteristics of the VOX function to be precisely adjusted to suit individual needs.

To access the VOX Recovery Time Selection menu,

- Press the **Function** Button (#12) until "**Udt**" appears in the LCD Panel (#8) with the VOX icon blinking.
- Press the **Up** Button (#10) or the **Down** Button (#11) to select from 5, 3, 2 or 1 second setting. This setting determines the delay time between transmitting and receiving.
- Press the **Enter** Button (#13) to confirm your selection.
- Please note you may need to try different VOX time settings to determine the best value to suit your speaking habit.
- To turn off the VOX feature, enter the VOX selection mode and then select "**Off**".

8. AUTO KEY LOCK SELECTION MODE

This feature prevents accidental channel change and disturbance to the preferred settings of the Communicator. Auto Key Lock temporarily disables the Up, Down and Enter Buttons.

To access the Auto Key Lock Selection menu,

- Press the **Function** Button (#12) until the auto lock icon blinks and "**ALo**" appears in the LCD panel (#8).
- Press the **Up** Button (#10) or **Down** Button (#11) to select the "Auto" option.
- Press the **ENTER** key to confirm your selection.
- If you do not press any key for more than 15 seconds in the standby mode, all respective keys will automatically be locked.
- To turn the auto key lock on or off in standby mode, simply press and hold the Function Button (#12) for more than 1.5 seconds.
- To quickly activate the Key Lock, hold the Function Button (#12) for more than 1.5 seconds.

9. CALL RINGER MELODY (and Call OFF) SELECTION MODE

This feature provides 7 user selectable call ringer melodies to alert you of a calling party.

To select your favorite Call Ringer melody,

- Press the Function Button (#12) until the call icon blinks and "**CAL**" appears in the LCD panel (#8).
- Press the Up Button (#10) or Down Button (#11) to preview the **7 available melodies** or select **CAL OFF**, if You do not desire to have this function (recommended for motor bike use).
- Press the **ENTER** key to confirm your selection.

10. CTCSS SUB CODE DISPLAY SELECTION MODE

To select your favorite CTCSS sub code display, press the button in standby mode.

10. Beep tone switching

There is also a menu point which allows deactivation of the key beep tones. Beep tones are good with loudspeaker operation, but should be switched off during ear phone operation.

- Press the Function Button (#12) until the call icon blinks and "**bEp ON**" appears in the LCD panel (#8).
- Press the Up Button (#10) or Down Button (#11) to select between **bEp ON and bEp OFF** use).
- Press the **ENTER** key to confirm your selection.

11. Squelch tail noise elimination

A software switch can reduce the disturbing noise which happens after a distant party stops transmission and releases the PTT button. The elimination function can be enabled among tectalk models only and can reduce the noise burst in receive mode. Technically, the transmission stop will be delayed for about 400 mseconds after releasing the PTT button.
The effect will be optimized together with CTCSS use.

- Press the **Function** Button (#12) until the call icon blinks and "**t Al OFF**" appears in the LCD panel (#8).
- Press the **Up** Button (#10) or **Down** Button (#11) to select between **tAl OFF or tAl ON**.
- Press the **ENTER** key to confirm your selection.

NOTES FOR GOOD COMMUNICATION

1. Your Communicator unit's 8 channels are shared on a "take turns" basis. This means other groups may be talking on any of the channels. A common code of ethics/courtesy is to switch to another vacant channel and not to attempt to talk over someone who is already using the channel you first selected.
2. Your Communicators have been designed to maximize performance and improve transmission range in the field. To avoid interference, it is recommended that you do not use the units closer than 5 feet apart.
3. For best transmission results, always keep your mouth about 2-3 inches from the Microphone (#9) and speak slowly in a normal voice.

CARE AND MAINTENANCE

- Clean your unit with a damp (never wet) cloth. Solvent or detergent should never be used.
- Avoid leaving your unit in direct sunlight or in hot, humid or dusty places.
- Keep your unit away from heating appliances and sources of electrical noise such as fluorescent lamps or motors.

SPECIFICATIONS

Operating Main Channels	8 CH (European international agreement)
CTCSS Subchannels	38 for each main channel
Operating Frequency Range	UHF 446.00625MHz to 446.09375 MHz
Talk Range	Up to 2 –3 miles / 5 km
Output Power	0.5 Watts max
Power Source	'AAA' alkaline batteries X 4, 6 VDC

	NiMH Rechargeable Battery AAA X 4, 4.8VDC
Battery Life	About 35 hours (5/5/90 duty cycle)

MAIN CHANNEL FREQUENCY TABLE (in MHz)

Main Channel No.	Frequency (in MHz)
1	446.00625
2	446.01875
3	446.03125
4	446.04375
5	446.05625
6	446.06875
7	446.08125
8	446.09375

CTCSS SUBCHANNEL FREQUENCY TABLE (in Hz)

CTCSS Subchannel No.	Frequency (in Hz)	CTCSS Subchannel No.	Frequency (in Hz)
1	67.0	20	131.8
2	71.9	21	136.5
3	74.4	22	141.3
4	77.0	23	146.2
5	79.7	24	151.4
6	82.5	25	156.7
7	85.4	26	162.2
8	88.5	27	167.9
9	91.5	28	173.8
10	94.8	29	179.9
11	97.4	30	186.2
12	100	31	192.8
13	103.5	32	203.5
14	107.2	33	210.7
15	110.9	34	218.1
16	114.8	35	225.7
17	118.8	36	233.6
18	123.0	37	241.8
19	127.3	38	250.3

CARE AND SAFETY

To assure optimal radio performance and to ensure RF energy exposure is within the guidelines of the above standards, the following operating procedures should be observed:

FOR PORTABLE 2-WAY RADIOS

- When transmitting with a portable radio, hold radio in a vertical position with its microphone 1-2 inches away from your mouth. Keep antenna at least 1 inch from your head and body.

- If you wear a portable radio on your body, ensure the antenna is at least 1 inch from your body when transmitting.

ELECTROMAGNETIC INTERFERENCE / COMPATIBILITY

Most electronic devices are susceptible to electromagnetic interference (EMI) if inadequately shielded, designed or otherwise configured for electromagnetic compatibility.

- Turn off your radio in any facilities where posted notices instruct you to do so. Hospitals or health care facilities may be using equipment that is sensitive to external RF energy.
- Turn off your radio when on board aircraft when instructed to do so. Any use of the radio must be in accordance with airline regulations or crew instructions.
-

CAUTION

Damaged Antenna

Do not use any radio with a damaged antenna. If a damaged antenna comes in contact with the skin, a minor burn may result.

Batteries

Do not short circuit exposed terminals of any batteries with any conductive materials. In doing so, the material may become quite hot and cause property damage and/or body injury such as burns.

WARNING

Parts Replacement or Substitution

Replacement or substitution of parts other than those recommended by CP Tech may cause a violation of the technical regulations of the ETS-300-296 Rules, or violation of Type Acceptance requirements of the ETS-300-296 Rules.

Vehicles with an Air Bag

Do not place a portable radio in the area over an air bag or in the air bag deployment area. Air bags inflate with great force. If a portable radio is placed in the air bag deployment area and the air bag inflates, the radio may be propelled with great force and cause serious injury to occupants of vehicle.

Potentially Explosive Atmospheres

Turn your radio off when in any area with a potentially explosive atmosphere, unless it is a type especially qualified for such use. Sparks in such areas could cause an explosion or fire resulting in body injury or even death.

Batteries

Do not replace or charge batteries in a potentially explosive atmosphere. Contact sparking may occur while installing or removing batteries and cause an explosion.

Blasting Caps and Areas

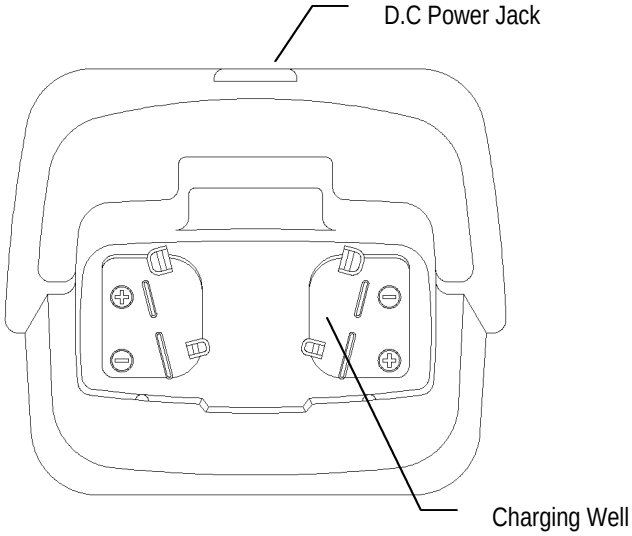
To avoid possible interference with blasting operations, turn your radio off near electrical blasting caps or in a “blasting area” or in areas posted:” Turn off 2-way radio”. Obey all signs and instructions.

Note: Areas with potentially explosive atmospheres are often, but not always, clearly marked. They include fuelling areas such as below deck on boats, fuel or chemical transfer or storage facilities; areas where the air contains chemicals or particles, such as grain, dust, or metal powders; and any other area where you would normally be advised to turn off your vehicle engine.

Accessory – Desktop Charger

After removing the charger base and power supply from the packaging, plug the power supply’s DC connector into the jack on the back of the base.

To charge a battery, simply place the radio into the front charging well. Cycle lasts up to 10 hours. As option, a 12 V DC cable for Car use is available. This will allow charging the radio from car 12 V supply.



European 2 years warranty

The distributor, dealer or retail shop warrants to the original retail purchaser of this product that should this product or any part of it, under normal use and conditions, be proven defective in material or workmanship within 2 years from the date of original purchase, such defect(s) will be repaired or replaced with new or reconditioned product (at the company's option) without charge for parts and repair labor. To obtain repair or replacement within the terms of this warranty, the product is to be delivered with proof of warranty coverage (e.g. dated bill of sale), specification of defect(s), to the distributor, dealer or his authorized repair center.

The Company disclaims liability for communications range of this product. The warranty does not apply to any product or part there of which, in the opinion of the company, has suffered or been damaged through alteration, improper installation, mishandling, misuse, neglect, accident, or by removal or defacement of the factory serial number/bar code label(s). The warranty does not apply to accessory parts or problems caused through not authorized or not recommended accessories like of the units like batteries, external power supplies and over voltage caused through external power supplies, light bulbs, broken antennas, broken swivel belt clips, broken or damaged acrylic glass windows and cabinet parts.

Please contact the dealer or person where You have purchased Your Tectalk.

Where to find service hints and documentation
The complete technical documentation is updated regularly. You can download the latest versions of user manuals, technical documents and conformity declaration, as well as service hints or FAQ's any time from our server under

http://www.albrecht-online.de/service

If You should have a problem, please have a look to the service hints or frequently asked questions (FAQ) before You send Your Tectalk back to the service center.

CE- Declaration of Conformity
Albrecht Tectalk / JDP-408 HX

This unit complies to all relevant European Standards and Regulations for PMR 446 radio service. This radio may be used only in EU countries and some other states applying the R&TTE directive of the European Community. However, there are still some restrictions (as of date of this user manual) to use PMR 446 in following countries:

Italy and Norway: PMR 446 is not yet established in these countries. Other radio services are still legally using these frequencies. Travellers may take the radios with them, but not operate them. Please ask local authorities for further informations!

France: Channels 1 and 2 are not yet allowed to be used.

Belgium: No restrictions for travellers using the radio in Belgium free of charge and licence for less than 3 months. ***Residents of Belgium*** must apply for a radio operating licence according to Belgian regulations.

Eastern Europe Please ask the local authorities before using the radio, because only few countries outside EU apply already the european R&TTE directive. Following countries still apply special national approval regulations, not (yet) valid for PMR 446 radio **Poland**, Estonia, Letavia, Lithuania, Ukraine, Russia, Belarus, Slowenia and some others.

This unit fully complies to the following European standards **ETS 300 296, ETS 300 279, EN 60 950** . The **notified body 0499** (SEE Luxembourg) had been involved for the expert's opinion about the conformity of this radio. The unit is intended to be used in following European countries:

A, B, CH, CZ, D, DK, E, F, FIN, GB, GR, H, HR, IS, IR, L, NL, P, S, TR (JDP-408HX)

Lütjensee, 13.05.2002
ALAN Electronics GmbH

CE 0499 ⓘ

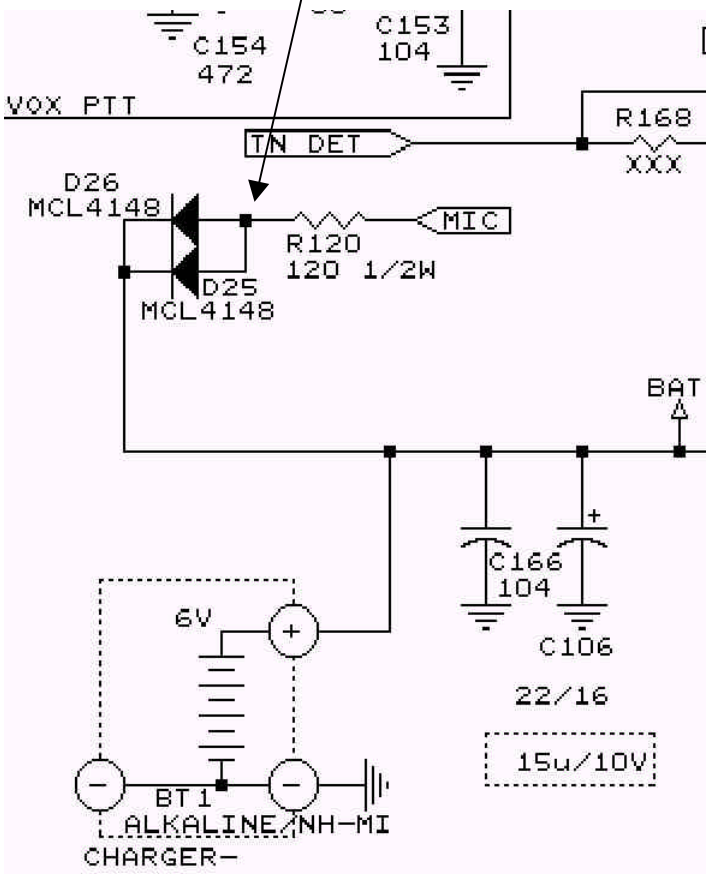
Note: The latest actual version of our „EC Declaration of Conformity" may be downloaded from our Internet server under **http://www.albrecht-online.de/service** .

www.albrecht-online.de

service-hotline: (+49) 4154 849 180
service-fax: (+49) 4154 849 288
service-e mail: service@albrecht-online.de

Technische Information
Probleme mit den Ladekontakten beim Tectalk/Sporty Space

Der in der Produktion gewählte Anschlußpunkt des Bodenkontakts zwischen R 120 und D 25/26 (im Schaltbild nicht eingezeichnet!) führt unter bestimmten Umständen zu Problemen:
De Facto ist der Ladeanschluß über 120 Ohm (R 120) ständig parallel zum Mikrofoneingang geschaltet!



Diese Schaltung hat folgenden Einflüsse:

1.Bei Anliegen von Ladespannung ist kein Mikrofonbetrieb möglich (z.B. Babysitter bei gleichzeitigem Einsetzen in Ladeschale, kein gleichzeitiger Ladebetrieb und Betrieb über Headset)

2. Bei Wegfall der Ladespannung hat die Ladebuchse volle NF-Empfindlichkeit und wirkt wie ein Mikrofonanschluß inc. PTT Taste. Man kann sogar ein Mikrofon an die Ladeschale einstecken und das funktioniert. Fatale Folge: **Mit einem Auto-Ladekabel, das keine Sperrdiode hat, wirkt das Autonetz bei abgeschalteter Zündzung wie eine PTT-Taste und führt zu Dauersenden.**

Lösung:

Es wird vorgeschlagen, den 120 Ohm Widerstand (R 120, leicht zu finden neben der Mikrofonbuchse, zu entfernen. Dann ist die wenig nützliche Stromverbindung zur Mikrofonbuchse unterbrochen, Laden über Mikrobuchse geht dann zwar nicht mehr, aber das hat Albrecht auch nie propagiert.

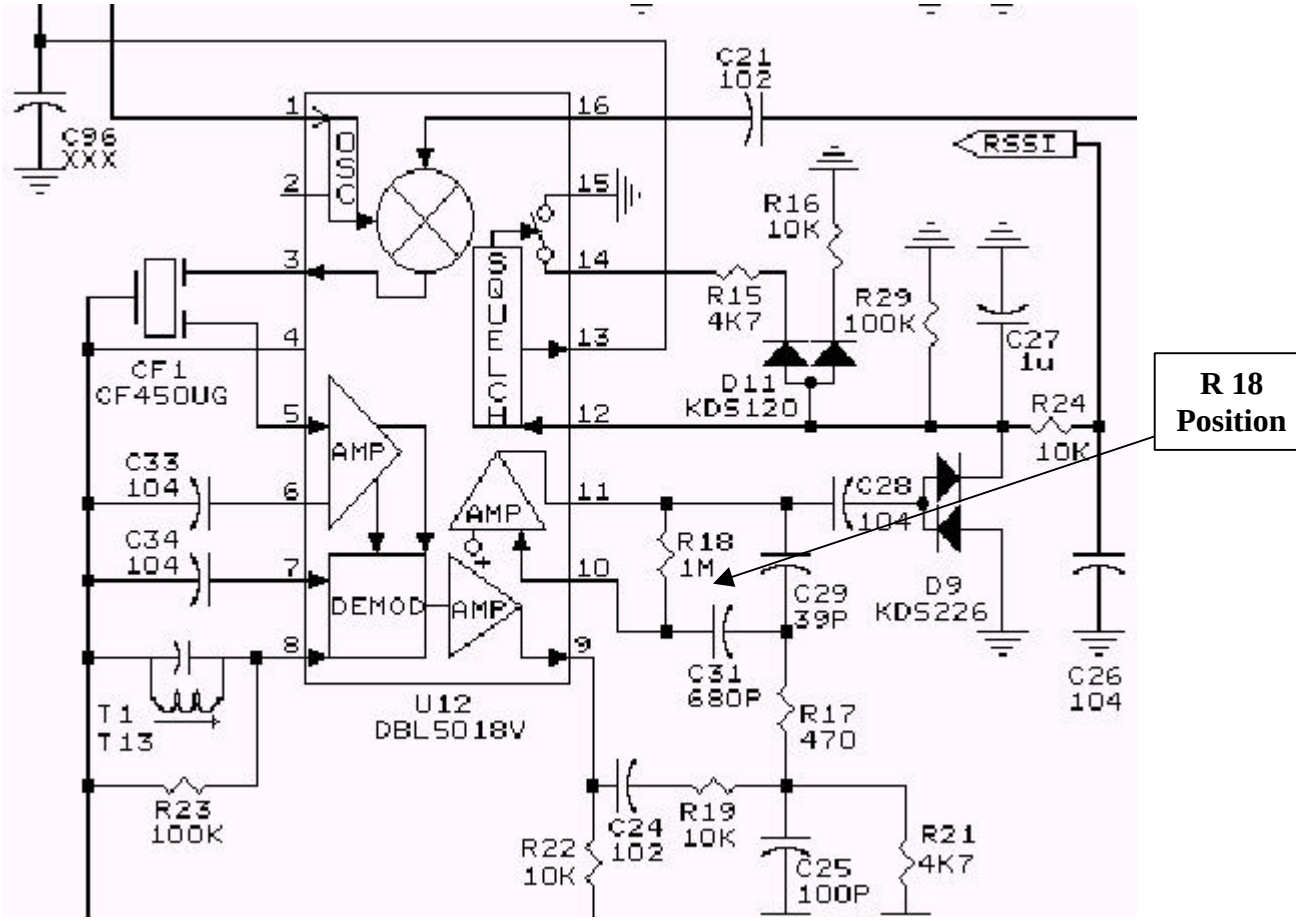
gez. 14.4.2000 W. Schnorrenberg/Albrecht

Service Hints for Tectalk/ Servicehinweis Tectalk

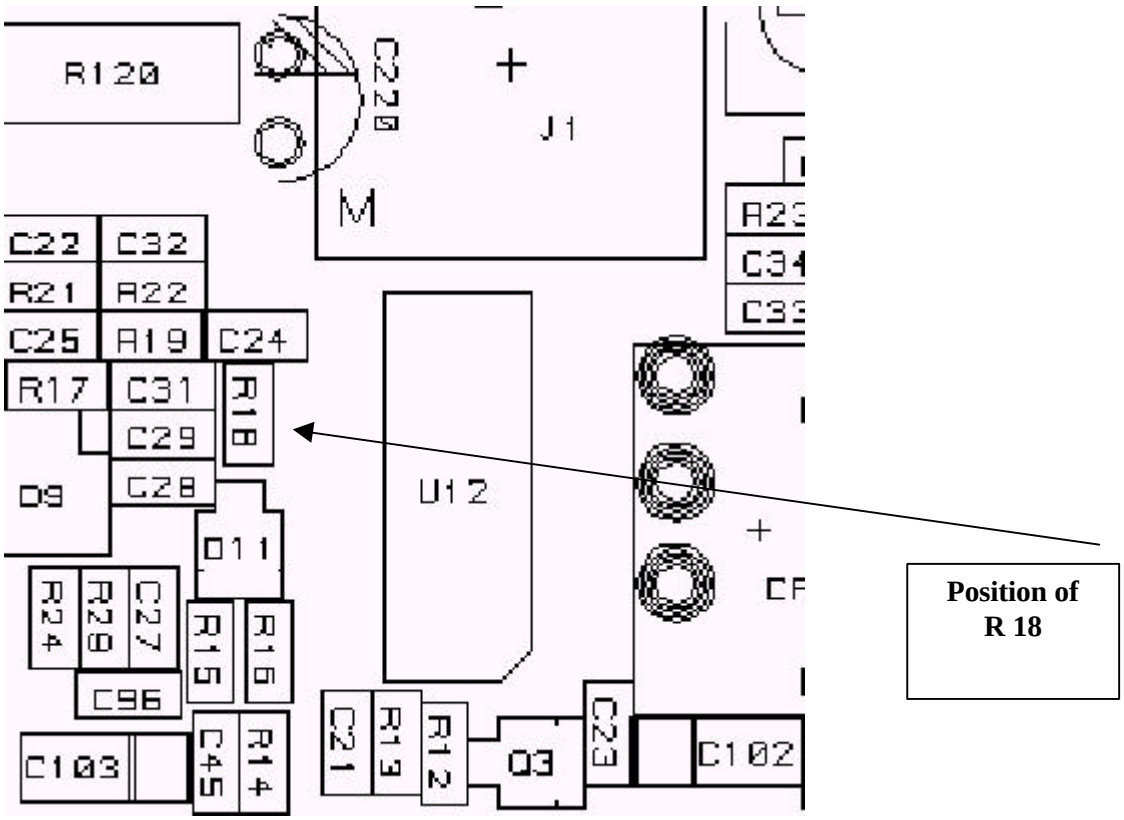
1. Squelch adjustment /Squelcheinstellung

Due to low parts tolerances, normally a squelch threshold point adjustment will not be necessary. In case of tolerance problems, the squelch closing point can only be adjusted by changing the value of **R 18.**

Normalerweise braucht der Squelch wegen geringer Teiletoleranzen keine veränderbaren Einstellelemente (z.B. Trimmpoti). Sollte jedoch im Service das Problem bestehen, dass z.B. der Squelch nicht öffnet oder andauernd offen bleibt, kann durch Verändern von **R 18** der Schaltpunkt verschoben werden.



The following drawing shows where to find **R 18** on the printed circuit board.
Auf der folgenden Zeichnung sieht man die Lage des Widerstands **R 18**



2. CPU-Reset

In the case that the CPU hangs or LCD shows abnormal digits, the CPU can be reset: Switch off unit, press and keep **UP** and **F** button pressed, switch on unit and release all buttons.
Für den Fall, dass die CPU blockiert (keine Reaktion auf Tastendruck oder ungewöhnliche Anzeigen), kann die CPU wie folgt zurückgesetzt werden: Gerät ausschalten. **Auf** und **F**-Taste gleichzeitig drücken und festhalten. Bei gedrückt gehaltenen Tasten Gerät wieder einschalten und alle Tasten wieder loslassen.

Reset-Möglichkeiten für Tectalk, Tectalk FM:

Sollte der Prozessor einmal "hängen", kann man folgenden Reset durchführen:

Gerät ausschalten.
Dann **UP** , **F** und **ENTER** Tasten zusammen drücken und gedrückt halten, bis sicl
Gerät eingeschaltet hat.
Tasten loslassen.

Achtung: Bei neueren Tectalk mit 3 Vox-Stufen verschwindet nach einem
zunächst die VOX Umschaltung Middle und Low. Nach einem Aus -
Wiedereinschalten sind aber alle Funktionen jedoch wiederhergestellt.

GP1
Gerät ausschalten. Drücken Sie **Monitor**, **Power** und **Enter** (den Knopf i
Mittelstelllung des auf- ab Schalters) gleichzeitig, bis sich das Gerät eingeschalt
Alle Knöpfe loslassen. der reset Vorgang löscht alle vom Benutzer vorher gespei
Daten! Das Gerät startet dann wieder mit der Werkseinstellung.

Tectalk (New & Old), Tectalk FM Reset Procedure

PROCEDURE : Pressing the **Up**, **F** and **ENTER** (Power) button at the same time
the unit is off.
This reset procedure makes the unit return to the ' factory default ' values.

In the newer Tectalk version with 3 level vox, it was found that the Med and Low p
is disappeared in the vox mode when reset is done. But, if you turn off and turn
unit again, this two positions are restored automatically and re-appear in the LCD.

GP1
PROCEDURE : Pressing the **Monitor**, **Power** and **Wheel(Enter)** button at the
time while the unit is off. Resetting the unit will erase all data in the EEPROM and
to the default value.

Amendment to User Manual
Tec*talk*
New Software Functions

VOX function:
It is now possible to select between 3 sensitivity levels:

Activate Vox function:
Press **F** so often, until display will show **Uo OFF** .
Select desired sensitivity range by pressing
▲ or ▼
according to the actual **environment noise level** between:

UoLoW, **UoMId** or **UoHIgh**.

Confirm with ↵ .

To deactivate the VOX, procede in the same way, but select **Uo OFF**

Deactivating Calling Tone (melody)
If calling tone transmission should not be desired, it can be deactivated (double clicking on PTT key may be inconvenient especially for bike drivers). You can disable the Calling function:

Press **F** so often, until You see one of the **CAL 1, 2, 3, 4, 5, 6** or **7** Icons.

With ▲ or ▼ select **CAL OFF**.

Confirm with ↵

Deactivating Beep Tones:
Der beep tones can disturb if You use the Tec*talk* as baby monitor oder with earphones.

Press **F** so often, until You see **bEP ON** in the display.

With ▲ or ▼ select between

bEP ON or bEP OFF.

Confirm with ↵

Modified Battery Low management
Before the CPU will switch off the radio completely if battery cells become totally discharged, the new software has introduced a warning system not only by blinking icons, but also by flashing the red LED every 5 seconds. A Time-out-timer will also disable longer transmit periods and requests a transmitting pause to allow batteries to recover, if their voltage will reach the low cell state.

Automatic squelch tail noise elimination:
Current squelch circuits produce disturbing switching noise when distant party stops transmission. The new Tec*talk* squelch software enables a noise elimination, if all distant parties in Your communication network use the same Tectalk model and have the noise elimination activated.
Press **F** so often, until You see **tAL OFF**.

With ▼ or ▲ You can now select beween **tAL ON** (activated) or **tAL OFF** (noise elimination off) Confirm selection with:
↵

Enhanced Monitor function:
During bad receiving conditions, You may open the squelch **temporarily** by pressing the monitor key (below PTT button) until the signal becomes stronger again.
If You press the monitor key longer than 7 seconds, the squelch will remain **continuously** open, the speaker icon will stay on.
To return to normal squelch, operation, just press **Monitor** again for a short time.

Channel skip or lock-out during Scan mode
In scan mode the frequency scanner stops at any busy channel. Sometimes it may be possible that channels are permanently busy or that You do not like to listen to conversations on such a channel. To skip a busy channel, just press M**onitor** during scan mode for a short time. If You keep M**onitor pressed longer**, the channel will be deleted from the scanning list as long as scan mode is further active.

Albrecht Electronic GmbH
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Service-Hotline 04154 849 180
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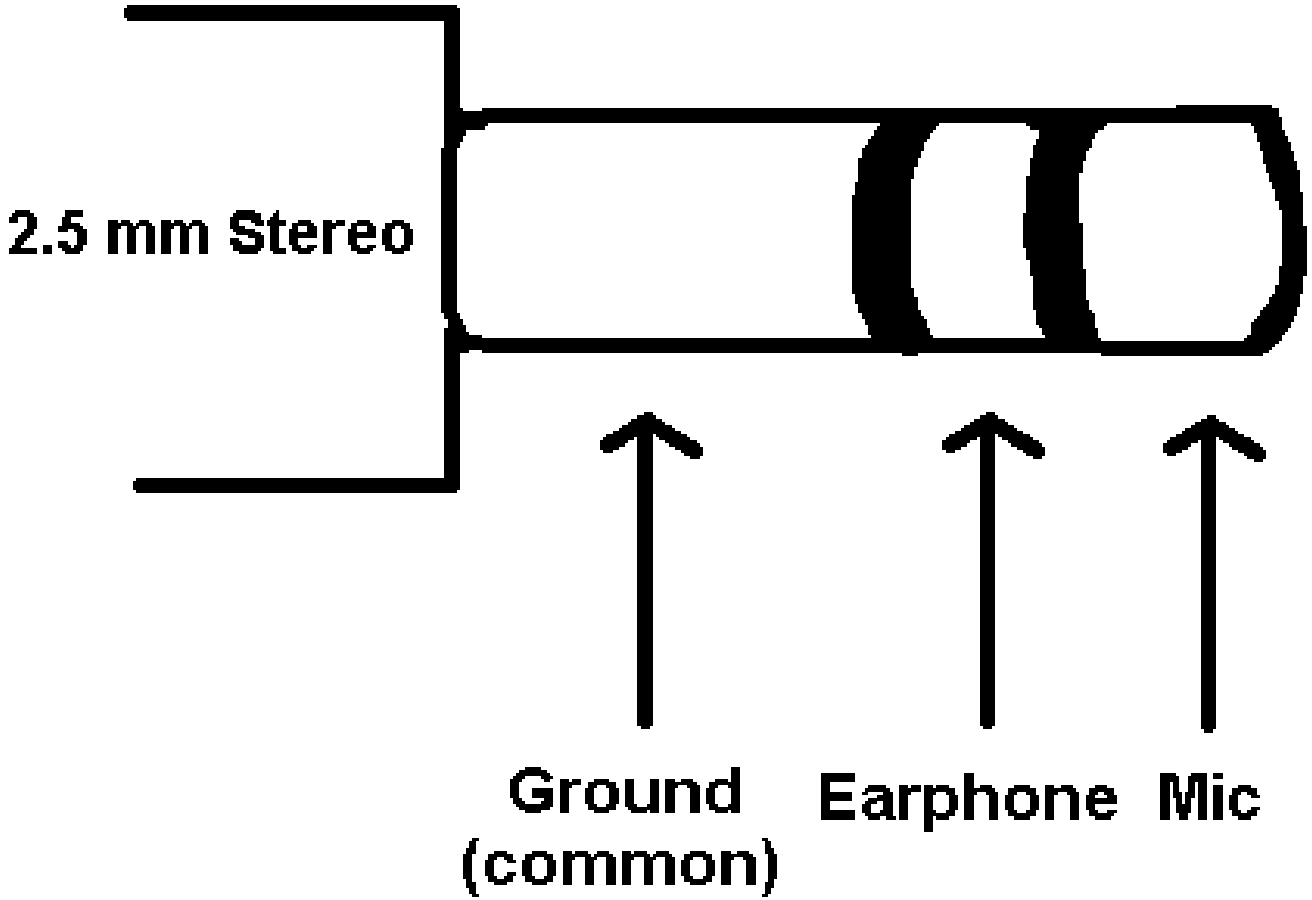
Audio socket wiring

Tectalk, Sporty Space and Tectalk-Freestyle



Note:

For VOX operation, any electret mic without parallel resistor may be used. For PTT operation, mic capsule needs parallel resistor 2.2 k Ohm and PTT switch in series in the mic cable.

Albrecht®
Kommunikationstechnik aus Norddeutschland

SERVICE MANUAL

2-WAY PORTABLE HANDHELD PMR RADIO

TEC*talk*

Jan. 2000

CONTENTS

1. GENERAL

1.1 GENERAL

TECtalk is a minimum sized two-way portable handheld radio.
The frequency range is 446.00625 ~ 446.09375MHz, 8 UHF operating channels according to European PMR 446 international agreement are available.

1.2 CHARACTERISTICS AND FEATURES

a) All active devices in this radio are semiconductors and high density IC.
b) The radio is designed very compact and the weight is approximately 140g including battery.
c) The unit is equipped with CPU HD404889 from HITACHI.
d) Power supply is designed for battery operation with 4 cells alkaline (1.5V AAA) batteries or
4 cells rechargeable NiMH batteries of the same size.

e) The radio is shipped with fixed (non-detachable) rubber duck antenna and belt clip and carrying strip. It comes without batteries. Other equipment is optional.

2. SPECIFICATION

2.1 GENERAL SPECIFICATIONS

a) Frequency Range : 446.00625 ~ 446.09375 MHz
b) Output Impedance : 50Ω unbalanced
c) Modulation Type : 8K0F3E
d) Communication Mode : semi-duplex
e) Channel Capacity : 8 channels
f) Channel spacing : 12.5 kHz
g) Power : 6.0V(alkaline), 4.8 V (NiMH)
h) Battery Life : ALKALINE: at 1000mAh >30 hours (Tx5%, Rx5%, Stand-by 90%)
i) Operating Temperature : -20 degrees C to +60 degrees C
j) Dimension : 95.5(H)x 50(W)x 26(D)mm
k) Weight : 132 g (with Battery)

2.2 ELECTRICAL SPECIFICATION

a) TRANSMITTER

1) Output power : Max. 500 mW
2) Frequency Stability : ±5 ppm(-20℃~+60℃)
3) Modulation Method : FM
4) Oscillation Method : PLL SYNTHESIZER
5) Max. Frequency Deviation : < +/- 2.5 kHz (with tone)
6) Cooling Method : air-cooling Method
7) Spurious Emission : < -36dBm /-30dBm
8) FM Hum/Noise : > -40dB (1kHz 60% modulation,w/CCITT)
9) Distortion : < 5% (1kHz 60% modulation)
10) Tx Audio Response : 6dB /OCT +/- 3dB PRE-EMPHASIS (300Hz~2.5kHz)

b) RECEIVER

1) Receive Method : Double Super Heterodyne
2) Receive Sensitivity : < 0.28uV(20dB SINAD w/CCITT)
3) Squelch Sensitivity : 6 to 8 dB at 12dB SINAD
4) Bandwidth : > 3kHz (6dB ATT point)
5) Selectivity : < -60dB (25kHz)
6) Local Frequency Stability :+/- 5 ppm(between –20 degrees C and +60 degrees C)
7) Spurious Response : > 40dB
8) Audio output : 200mW (Internal 8 Ohms load THD 10%) Ext: 100mW
9) Distortion : < 5% (1kHz 60% Modulation)
10) RX Audio Response : 6dB/OCT +/- 3dB DE-EMPHASIS (300Hz to 2.5kHz)
11) S/N Ratio : < 40dB (1kHz 60% modulation w/CCITT)

12) IF : 1'st IF = 21.7MHz

2'nd IF = 450kHz

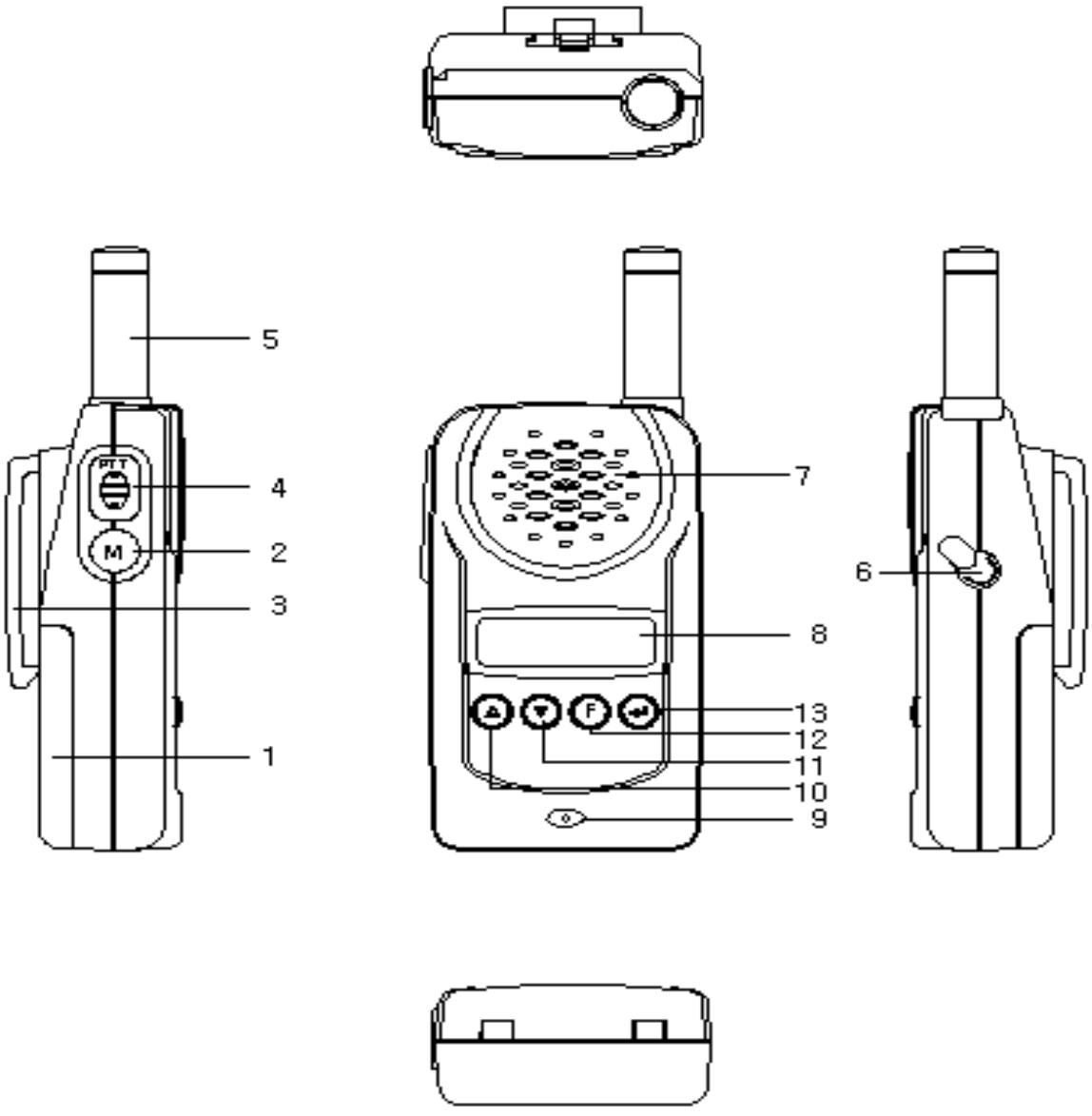
13) Local Frequency :

1st Local Frequency = fc - 21.7MHz

2nd Local Frequency = 21.25MHz

3. OPERATION

3.1 Push Buttons and Controls



1) Battery Door

2) Monitor Button

3) Detachable Belt Clip

4) Push-To-Talk (PTT) Button

5) Antenna

6) External Mic / Speaker

7) Built-in Speaker

8) LCD Panel

9) Built-in Microphone

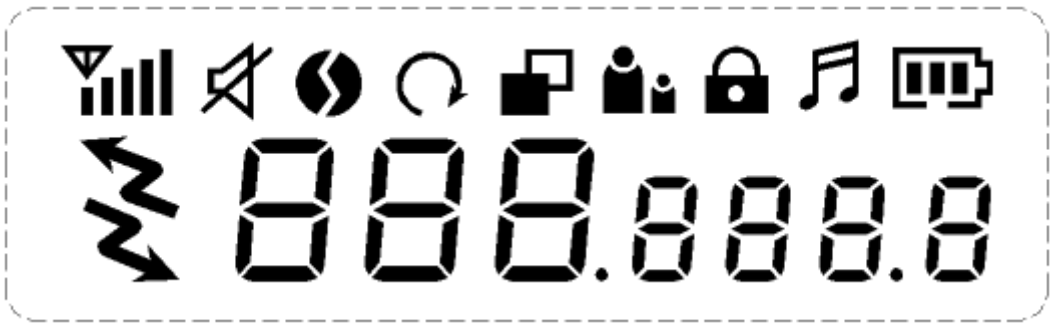
10) Up Button & Volume Control

11) Down Button & Volume Control

12) Function Button

13) Power On/Off & Enter Button

3.2 ICONS on LCD



1) RSSI (Receiving Signal Strength Indicator) or TX Bar Icon

Indicates the receiving signal strength and blinks during transmission.

2) Monitor Indicator

Appears when the monitor button is used.

3) CTCSS Indicator

Blinks when the correct CTCSS tone is entered.

4) Auto Channel Scan Indicator

Appears in the auto scan mode or when the auto scan mode is activated.

5) Dual Watch Scan Indicator

Appears in dual watch scan mode or when the dual watch scan mode is activated.

6) Key Lock Indicator

Blinks in auto lock selection mode or when the key lock is activated.

7) VOX Indicator

Blinks in VOX selection mode or appears when VOX is activated.

8) Battery Level Indicator

Battery Level Meter indicates the remaining battery strength.

9) Power Save Display

Blinks when the power save is activated.
The rate at which the icon blinks varies with the power saving ratio.
Fast indicates a lower power saving while slow indicates a higher Power saving ratio.

10) Tx Indicator

 Appears when a signal is being transmitted.

11) Rx Indicator

 Appears when a signal is being received.

12) Large Segment Display

Indicates the channel number in use at the normal mode.

When the Function Button is pressed, it displays the function menu in sequence: CH / SC / dW / UO / Udt / ALo / CAL / ton

13) Small Segment Display

Displays the CTCSS tone option at the normal mode.
CTCSS option is displayed in Hz.
Displays the SUBMENU of each MENU in the function mode.
(e.g. CH 1~69 / SC: up, dn / dW: channel number /
UO: high, off,low / Udt: 5sec, 3sec, 2sec, 1sec / ALo: off, auto /
CAL number:1-7 / ton:no-Freq) 3.3 Key Function

3.3 Key Functions

3.3.1 ENTER BUTTON (#13)

1) Short Touch - Power On
Press this button (#13) briefly to turn the unit on.
A short confirming melody will play.

2) Long Touch - Power Off
Press this button (#13) for longer than 1.5 seconds to turn the unit off.
Note: Press it to confirm the required option for respective functions during function edit mode.

3.3-2 FUNCTION BUTTON (#12)

1) Short Touch
Press this button briefly to enter function edit mode in standby mode.

2) Long Touch
Press for longer than 1.5 seconds to activate the KEY LOCK in the standby mode.

Please note all buttons will be disabled except the Monitor Button (#2) and PTT Button (#4) will remain fully operational.

3.3.3 UP BUTTON (#10)

1) Short Touch
In the standby mode, press this button briefly to move to the next higher main volume level.
In the function edit mode, press briefly to shift from the current option in each submenu to the next option in the same submenu.

2) Long Touch
Pressing this button for more than 1.5 seconds will allow you to navigate at a more rapid rate through different volume level in the standby mode or through different menus in the function edit mode.

3.3.4 DOWN BUTTON (#11)

1) Short Touch
In the standby mode, press this button briefly to move to the next higher main volume level.
In the function edit mode, press briefly to shift from the current option in each submenu to the previous option in the same submenu.

2) Long Touch

Pressing this button for more than 1.5 seconds will allow you to navigate at a more rapid rate through different volume level in the standby mode or through different menus in the function edit mode.

3.3.5 PUSH-TO-TALK (PTT) BUTTON (#4)

Press it firmly and speak into the Built-in Microphone (#9) to transmit. The red Tx LED Indicator at the right side of the LCD Panel (#8) will be on.

Release it to revert to standby mode. When an incoming call is received, the green Rx LED Indicator on the left side of the LCD Panel (#10) will be on.

Call Tone Transmission
Press the PTT Button twice quickly to call another party on the same channel. The word CALL and the Tx icon will appear in the display. The user selected call ringer melody will play.

3.3.6 MONITOR BUTTON (#2)
Press it to check activity on the current channel before you try to transmit.
Adjust the Volume Control (#10, #11) if necessary.
When you press the Monitor Button, the LCD Panel (#8) will be illuminated with an amber color back-light and both the Tx and Rx LED Indicators will be on.
If you press the Monitor Button during the function edit mode, you will return to standby mode directly.

3.3.7 EXTERNAL MIC/SPEAKER (#6)

This jack accepts an optional headset/microphone for totally handsfree operation.
Please refer to the user manual or Albrecht catalogue.
See also section regarding VOX SELECTION MODE.

3.4 Setting and Operation

3.4.1 BASIC CHANNEL SELECTION

In order to communicate with other PMR units, both you and the receiving party must be on the same channel. Tectalk has 8 channels (1-8) as indicated by the large digits in the LCD Display Panel (#8).
Before, trying to transmit on the selected channel, you should press the Monitor Button (#2) to check the activity on that channel.
If someone is already on the selected channel, you should try another channel which is not occupied.

To change the basic channel, in the standby mode, press the **Up Button (#10)** briefly to move to the next higher main channel number.

Press the **Down Button (#11)** briefly to move to the next lower main channel number.

3.4.2 CTCSS (Coded Tone Controlled Squelch System) SUB-CHANNEL SELECTION MODE

This feature allows you to have more privacy on the main channel by using tone codes (international numbering system 00-38) within a main channel. This enables you to communicate with Your partners on the same main channel when all partner stations use the same subcode. This helps to avoid congestion on the main channel and filters out unwanted noise, static and other stations using different codes.

There are 38 CTCSS subchannels for each main channel.

To change the CTCSS subchannel,
Press the Function Button (#12) until the word cTc appears in the LCD Panel (#8).
Press the Up Button (#10) or the Down Button (#11) to choose the desired subchannel to use. The corresponding subcode frequency will be displayed in the lower right corner.
Press the Enter Button (#13) to confirm your selection.

NOTE:

To communicate with other PMR units, they must be switched to the same channel and CTCSS subcode. To communicate with other LPD units that do not have subcodes, switch your unit to the same channel with the subcode set to OFF.

3.4.3 AUTO CHANNEL SCAN MODE

This feature allows you to scan for an active channel and communicate with the party transmitting.

To access the Auto Channel Scan menu, press the Function Button (#12) until the auto channel icon blinks and SC appears in the LCD Panel (#8).

Press the Up Button (#10) or the Down Button (#11) to choose scanning up or down from the current channel number.

Press the Enter Button (#13) to confirm your selection.

The unit will begin scanning for an active main channel. If a transmission is detected, the Rx and RSSI icons will appear in the LCD Panel (#8).

To turn off the auto channel scan feature in the standby mode, simply press the Function Button (#12) once.

3.4-4 DUAL WATCH SCAN MODE

This feature allows you to monitor two different channels at the same time. If you pre-set any priority channel other than the current channel in use, the pre-set channel will be scanned every 0.5 second and signals you when a call is received.

To access the Dual Watch Scan menu,
Press the Function Button (#12) until the dual watch icon blinks and dW appears in the LCD Panel (#8).

Press the Up Button (#10) or the Down Button (#11) to select the desired channel number you wish to closely monitor.

Press the Enter Button (#13) to confirm your selection.

To turn off the dual watch feature in the standby mode, simply press the Function Button (#12) once.

3.4-5 VOX SELECTION MODE

The Voice Activated Transmission (VOX) function allows your voice to activate transmission automatically when the Communicator is used with an optional handsfree mic/headset, or even with the built- in Microphone.tton (#4) without using the PTT button.

To access the VOX Selection menu,
Press the Function Button (#12) until the VOX icon blinks and UO appears in the LCD Panel (#8).

Press the Up Button (#10) or the Down Button (#11) to select from high, low or off. High or low setting determines VOX response sensitivity.

Press the Enter Button (#13) to confirm your selection.

To turn off the VOX feature, enter the VOX selection mode and then select Off.

3.4.6 VOX RECOVERY TIME SELECTION MODE

This allows the response characteristics of the VOX function to be precisely adjusted to suit individual needs.

To access the VOX Recovery Time Selection menu,
press the Function Button (#12) until Udt appears in the LCD Panel (#8) with the VOX icon blinking.

Press the Up Button (#10) or the Down Button (#11) to select from 5, 3, 2 or 1 second setting. This setting determines the delay time between transmitting and receiving.
Press the Enter Button (#13) to confirm your selection.
Please note you may need to try different VOX time settings to determine the best value to suit your speaking habit.

To turn off the VOX feature, enter the VOX selection mode and then select Off.

3.4.7 AUTO KEY LOCK SELECTION MODE

This feature prevents accidental channel change and disturbance to the preferred settings of the Communicator. Auto Key Lock temporarily disables the Up, Down and Enter Buttons.

To access the Auto Key Lock Selection menu,
press the Function Button (#12) until the auto lock icon blinks and ALo appears in the LCD panel (#8).

Press the Up Button (#10) or Down Button (#11) to select the Auto option.

Press the ENTER key to confirm your selection.

If you do not press any key for more than 15 seconds in the standby mode, all respective keys will automatically be locked.

To turn the auto key lock on or off in standby mode, simply press and hold the Function Button (#12) for more than 1.5 seconds.

To quickly activate the Auto Key Lock, hold the Function Button (#12) for more than 1.5 seconds.

3.4.8 CALL RINGER MELODY SELECTION MODE

This feature provides 7 user selectable call ringer melodies to alert you of a calling party.

To select your favorite Call Ringer melody,
press the Function Button (#12) until the call icon blinks and CAL appears in the LCD panel (#8).

Press the Up Button (#10) or Down Button (#11) to preview the 7 available melodies.

Press the ENTER key to confirm your selection.

4. SERVICE AND ADJUSTMENT

4.1 Frequency synthesizer (PLL)

a) Open the radio, disconnect the antenna and connect apower meter And a 50 Ohms dummy load with the internal antenna connecting point of TECtalk.

b) Check the voltage between TP & GND in digital volt meter.

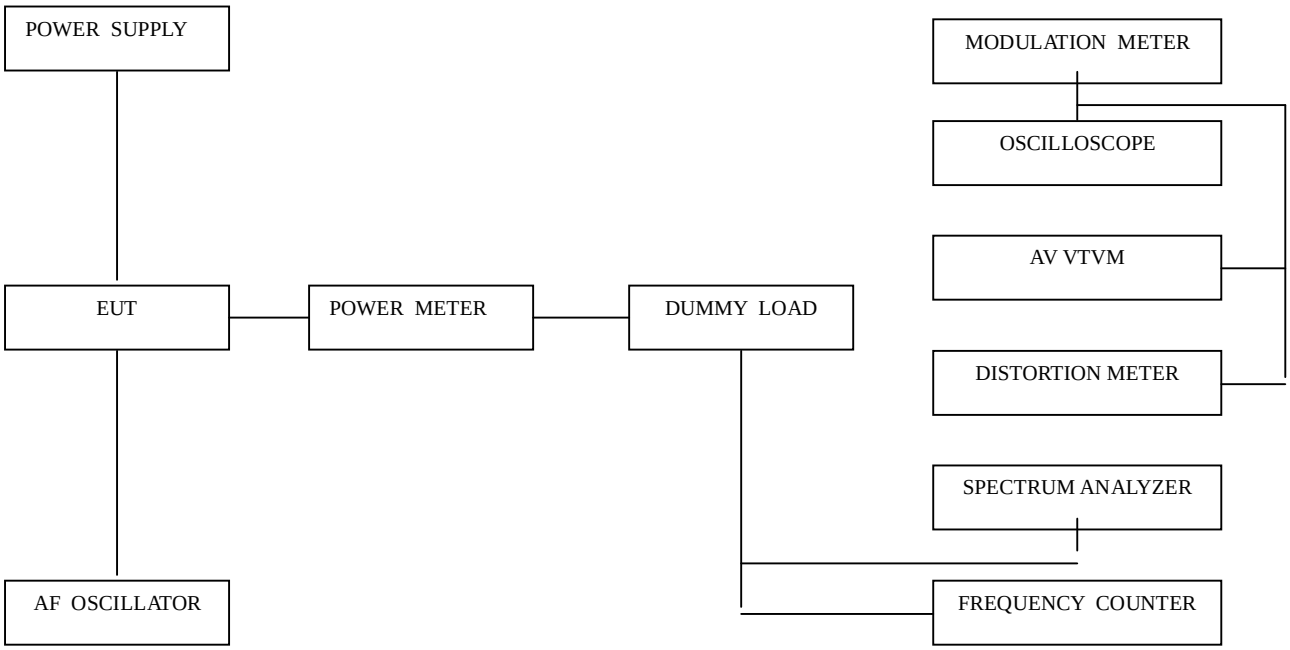
c) Then set the low channel of TECtalk the lowest frequency.

d) After pressed PTT key of TECtalk , trim VC1 for adjusting the lowest frequency of Tx channel to DC 1.5V in the voltage of TP1.

e) After releasing the PTT key, And then check if the highest frequency of Rx channel is within DC 1.0V in the voltage of TP,

4.2 TRANSMITTER

a) Connect EUT & measure equipment according to block diagram below.



b) Connect DC 6.0V, voltage preset to EUT.

c) Connect "power meter" & "dummy load (50 Ohms)".

d) Adjust Tx frequency according to trimming trimmer VC2.

e) Connect AF oscillator to mic terminal for conform modulation degree.

f) Adjust the frequency of AF oscillator to 1kHz and adjust AF level should be 100mV.

g) Checking oscilloscope and modulation meter. max. frequency deviation should be in +/- 2.5 kHz.

4.3 TRANSMITTER TEST

a) Output Power Test

power(6.0V DC) should be Max.500mW and in -50% range.

b) Audio Response

Connect AF oscillator to Mic terminal and then firm the audio level that doesn't distortion the wave of oscilloscope in the frequency range, 300Hz to 3kHz. Check the audio level for 300Hz to 3kHz based on frequency standard, 1kHz.

c) Modulation Degree Test

1) Connect AF oscillator to the MIC terminal and then adjust the level to 100mV

2) Measure the oscilloscope wave and he point needle of modulation meter after pressing PTT key.

3) Sweep gradually the frequency of AF oscilloscope from 300Hz to 3kHz.

4) At this time, the point needle of modulation meter should be in the limit of +/- 2.5 kHz.

d) Spectrum Test

1) terminate antenna output with 50 Ohms and use a power attenuator of 20 dB, to avoid harmonics generated by analyzer overload.be 20dB more.

2) observe the spectrum with pressing PTT key. The harmonics should be less than -36/-30 dBm (with 20 dB external attenuator the reading will be –56/-30 dBm).

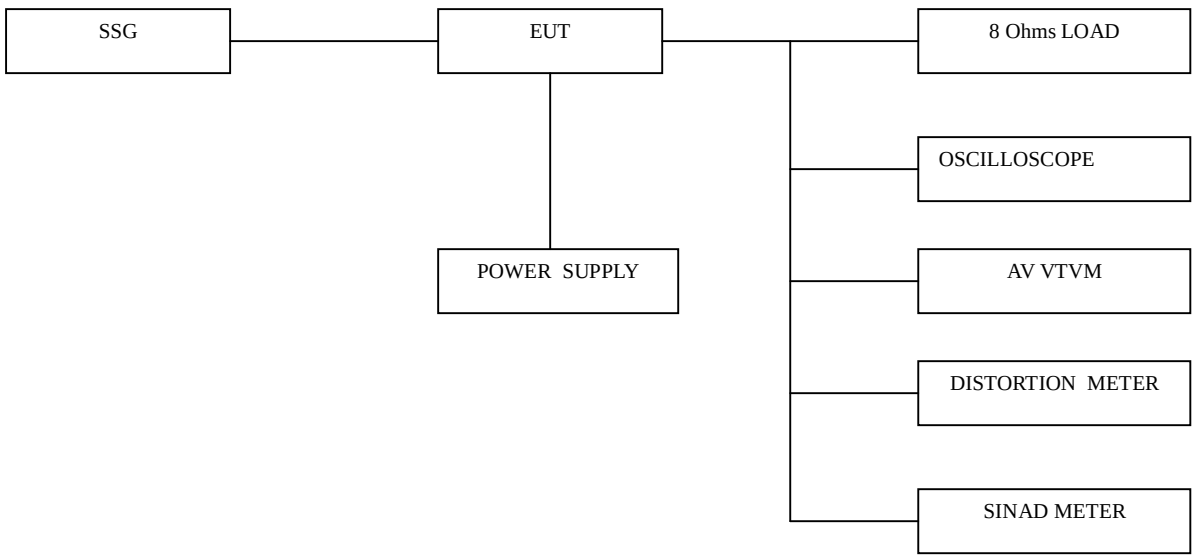
4.4 RECEIVER

a) Preparation

1) Adjust the power supply to DC 6.0V

2) Adjust Voltage level to 0.7Vrms(at 8 Ohms speaker output load) after power on.

b) Connection method



c) Signal generator Adjustment for RX sensitivity test

1) Adjust SSG to channel frequency.

2) Adjust modulation frequency, 1kHz to modulation degree, 1.5 kHz.

3) After adjusting the frequency of SSG to channel frequency, set RF level to -47dBm.

d) Check and adjust Squelch sensitivity

1) Set the standard channel.

2) In squelch mode, SQ volume RV1 must be turned counterclockwise to open the squelch.

3) After adjusting SSG to channel frequency, the RF level of SSG is set so that a SINAD of 8~ 6dB is obtained. Turn potentiometer carefully so that Squelch just opens at that point.

4.5 RECEIVER TEST

a) Rx sensitivity test

SSG should be adjusted to 12dB of SINAD's point needle

Observe waveform of oscilloscope at signal generator signal modulated with 1kHz audio and 1.5 kHz frequency deviation. The 12 dB Sinad point should be reached with an RF level of –110 to -107Bm. This is a good sensitivity.

b) Audio Distortion Test

1) SSG should be adjusted like way of point a) and RF level set to -47dBm.

2) Adjust to 0.7Vrms(at 8 Ohms load) observing audio wave form.

3) Read the needle of distortion meter (it should be less than 5% distortion).

c) Squelch Test

After RF level of SSG should be set to the lowest level, RF level should be gradually increased until speaker makes audio sound. At this point, check RF level(Check if the SINAD is 8~ 6dB). Check that squelch will close when Level is reduced to minimum. If not, readjust RV 1 and check again.

4.6 Symtoms, Check point & Correction

a) Diagnosis method

1) Check each switch to work well.

2) Check voltage of battery.

3) Problem whether problem comes from transmitter or receiver?

b) Troubleshooting

a)Transmitter

① Power key is on condition but does not work.

ⓐ Battery could completely be discharged.

ⓑ Battery cell wrong inserted?

ⓒ Contact problem between Battery and Radio?

② Fail to transmit

ⓐ Run out of battery or charge problem.

ⓑ Fault of PTT key

ⓒ Fault of Q4, Q5.

③Transmitter works but frequency is unmatched

ⓐ defective frequency synthesizer.

ⓑ defective X-tal (X2).

④ No audio modulation (Tx power and Tx frequency are normal)

ⓐ Problem of microphone or mic connector.

ⓑ IC U7 problem.

⑤ Tx is set when switch is on.

ⓐ Tx switch problem

2) RECEIVER

① Rx does not work

ⓐ Speaker line open problem or connector problem.

ⓑ Receiver power circuit problem.

ⓒ Audio amplifier Base band IC U4 problem.

② Only noise sound

ⓐ U12 problem.

ⓑ VCO problem.

③ Rx sensitivity is weak

ⓐ Antenna mounting problem.

ⓑ Front-End circuit problem.

ⓒ Local oscillation frequency deviation.

ⓓ SF1 SAW filter fail.

ⓔ VCO problem.

④ Squelch does not work

ⓐ U12 problem.

ⓑ Control logic problem.

5. DESCRIPTION OF RADIO CIRCUIT

5.1 Frequency synthesizer

Frequency synthesizer consists of VCO, PLL IC(built in PRESCALER) and loop filter.

a) VCO

VCO is composed of ONE VCO. Oscillation circuit takes colpitts circuit using variable Diode. And VCO is composed of D1,Q8,Q9,C81,C75,VC1,L1,C74,C76. VCO control voltage through loop filter adjusts frequency and microphone signal through modulation terminal generates FM modulation.

b) PLL IC

PLL IC is adjustable IC to produce the desired frequency which VCO provides through loop filter. It has internal counter using 21.25MHz reference frequency to generate 6.25kHz as reference Signal. VCO frequency from prescaled input is divided signal and compared with reference signal phase in phase comparator. Built-in charger pump changes voltage (until two signals are in phase) and charged voltage supplies VCO through loop filter to produce the desired frequency.
Frequency data associated with channel goes to PLL IC by CPU through CLOCK, DATA. PLL IC enables by strobe line of CPU.

c) Loop Filter

Loop filter is composed of R48,R49,C84,C85 and forms pulses from pin14 Into to DC and eliminates harmonic components in pulses.
It helps VCO oscillate clearly as DC voltage is supplied into Varicap.

5.2 RECEIVER

This is composed of Dual Conversion Super Heterodyne. First IF is 21.7MHz. Local oscillator frequency is lower in 1'st IF than Rx frequency. It is called low side injection. Second IF is 450kHz. 2nd local oscillator frequency comes to 21.25MHz.

a) Rx/Tx Conversion Circuit

Rx signal goes to Rx/Tx conversion circuit through FIXED antenna connector, low pass filter(L5,L6,L7,C42,C43,C46,C47) and receiver resonance circuit composed of L8,C1. When transmitting, voltage through R25,L12,D6 supplies, D7 of receive input is short and Tx is on condition. When PIN diode is off in condition of Rx, L8 and C1 resonate serially and make impedance matching at receiver bandpass filter. (SF1).

b) Front End

Front-End has Q1 to provide a high sensitivity and low noise feature. It employs SAW filter as band pass filter to eliminate image frequency frequency and to produce enough pass band by Q1 input and output.

c) Mixer

Mixer has one base BFQ 67W(Q2) to feature high low noise quality. It has RF signal through L7, L8, SF1,SF2 and Q1 RF signal from Local oscillator mixed.
It develops 1'st IF ,21.7MHz. 1st IF goes to 1st IF amplifier Q3(KTC4080) base through X-tal filter XF1.
IF of mixing signals is selected and enters the X-tal filter.
Output impedance of mixer is direct matched with input impedance of X-tal filter.
Matching of filter satisfies pass bandwidth of filter, ripple elimination within the pass band, and attenuation characteristic of stop band. X-tal filter is composed of two pole monolithic X-tal filter, with 8kHz of IF bandwidth. R11 is used as impedance matching with 1'st IF Amp Q3.

d) IF AMP and Detection

1'st IF AMP Q3 supplies IF(U12) mixer input pin16 through output resistor R13 and C21 to need gain in insertion loss of X-tal filter and last stage circuit. Multi-use IF IC makes up of mixer IF AMP.
pin1 2'nd local frequency enter to pin 1.
It supplies mixer of internal IC. Mixer output of IC through pin3 passes 450kHz ceramic filter, supplies 2'nd IF amplifier and limits.
After 2'nd IF AMP has a process of enough gain and AM rejection, it comes to quadrature detection. Demodulated audio signal by T1(Quad Coil) is amplified and comes out to pin 9.
Detected audio signal through R22, VR1 and input in audio amp IC U4 through C22.

e) Squelch Circuit

Noise component of detected outputs has amplification

Squelch threshold is controlled by Resistor R18,C31,R15

f) Audio Amplifier

Demodulated audio signal enters to pin2 of U4. After above signal is amplified in U4 the audio output for the speaker is reached at pin 5 (through C220).

5.3 Transmitter

When Tx starts with pressing PTT switch, VCO output amplifies through Q4,Q5 transmits by antenna through low pass filter.

Tx RF signal produced from Tx VCO is amplified by DRIVER Q5 through C53 and entered Q4 POWER TR input terminal with final amplification.

After this stage, the signal is emitted at antenna through 50 Ohms matching circuit to low pass filter(L7,L6,L5,C42,C43,C44,C46,C47) to eliminate harmonics.

5.3.1 Audio Modulation and Audio Amplification

Audio signal produced by external or internal microphone is amplified and limitted by IC U7. The output signal enters to VCO through low pass filter and U2. Max. Frequency modulation deviation is adjusted by VR1

Audio modulation and audio amplification has preemphasis characteristic of 6dB/OCT by U7(NJM324V).

11. CHANNEL DATA

CH	Frequency (MHz)		CH	Local Oscillator (MHz)
1	446.00625		1	424.30625
2	446.01875		2	424.31875
3	446.03215		3	424.33215
4	446.04375		4	424.34375
5	446.05625		5	424.35625
6	446.06875		6	424.36875
7	446.08125		7	424.38125
8	446.09375		8	424.39375

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Declaration of Conformity

CE 0499 !

Herewith we declare that our product:

PMR 446 transceiver " Tectalk"

corresponds to our Technical Construction Files and Test Reports and is conform to all relevant essential requirements of the R&TTE-Directive 1999/5/EC, issued March 9,1999. According to Annex II (receiving part of the product) and Annex IV (transmitting part of the product) of the R&TTE Directive we have involved the **Notified Body 0499 (SEE Luxembourg)** and applied the following European standards to demonstrate the conformity of the product:

Radio and Spectrum engineering parameters: ETS 300 296 (EN 300 296-2)
Electromagnetic Compatibility EMC: EN 301 489-1 / -5 (2000)
Electrical safety (without application of voltage limits according to Art. 3 (1) (a) of R&TTE Direktive): IEC 60950 / EN 60950 (1997-11 with A 11 (1998-08))

This declaration of Conformity replaces all former issues of this document.

The radio may be used in following European countries (notified where requested):

Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Netherlands, Portugal; Spain; Sweden, United Kingdom, and the non-EU-countries Croatia, Iceland, Norway and Switzerland

"ALAN Electronics GmbH declara, bajo su responsabilidad, que este aparato cumple con lo dispuesto en la Directiva 99/05/CE, del Parlamento Europeo y del Consejo de 9 de marzo de 1999, transpuesta a la legislacion espanola mediante el Real Decreto 1890/2000, de 20 de Noviembre"

Company, placing the product on the market:

Name:	Alan Electronics GmbH
Address:	Dovenkamp 11 D-22952 Lütjensee
Contact person:	Dipl.-Phys. Wolfgang Schnorrenberg
Date:	21.07.2005

W. Schnorrenberg

Wolfgang Schnorrenberg
Alan Electronics GmbH

Wichtiger Hinweis für Benutzer in bestimmten Europäischen Ländern:

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Alan Electronics GmbH
Dezember 2005

Important notes for users in European countries:

After printing of gift box & user manual of this radio has been completed, in some European countries the regulations for PMR 446 have been updated:

1. **France:** No restrictions any more on Ch 1 and CH 2 apply in France. AllPMR 446 channels may be used.

2. **Belgium:** No licence fees will be required any more for use in Belgium.

3. **Italy:** In Italy the use of PMR 446 is allowed, but "general licence" is required from residents using PMR 446 on fixed locations in Italy. No licence is required from foreign travellers using PMR 446 temporarily in Italy.

4. **Norway:** PMR 446 radios may be used free of individual licence and fees in Norway.

5. **New EU member States:** PMR 446 radios can now be used by travellers in Poland, Latvia, Estonia, Lithuania, Czech and Slovak Republics, in Slovenia and Malta. For other countries we have no reliable information about the application of the European PMR 446 regulations.
Please contact the local authorities before using the radio during travelling into these countries.

You will find our updated "Declaration of Conformity", if not attached to the radio, for all relevant models on our download server under **www.hobbyradio.de**

Alan Electronics GmbH
December 2005