

DO YOU SPEAK DIGITAL?

DTR GEN 3 Product Training
February 2011



MOTOROLA SOLUTIONS

AGENDA



- **DTR 650™ GEN 3**
- **DTR 650™ Radio Programming**
- **DTR 650™ Specifications**



DTR 650™ DESIGN



FIRMWARE Version: R5E.06.00
CODEPLUG Version: CP03.10.0E



NEW GEN3 FEATURES



- **NEW RADIO FEATURES**

- Whip Antenna standard for improved coverage
- Private Reply with a Group Call
- Voice VibraCall

- **NEW PROGRAMMING FEATURES**

- Talk Permit Tone (TPT) independent volume control (earpiece)
- Disable Radio PTT when connected to accessory with remote PTT
- OTA Fleet Cloning
- Option to disable the front panel of radio programming
- Backward Compatible with old firmware Radio



NEW FEATURE BRIEF



Whip Antenna standard

- 20% more coverage than stubby

Private Reply with a Group Call

- Respond via private call to person who initiated the group call

Voice VibraCall

- Vibration alert when any communication is received

Talk Permit Tone (TPT) independent volume control

- The volume of the TPT can be reduced in the for end user comfort with audio accessories

Disable Radio PTT when connected to accessory with remote PTT

- Prevents unwanted PTT activations



NEW FEATURE BRIEF



OTA Fleet Cloning

- Send complete revised codeplug to other units in the fleet.
- Simplifies adding or replacing units in the field.
- Removes need of individually programming each code plug through the CPS Program.

Option to disable the front panel of radio programming

- Increases fleet security

Backward Compatible with old firmware Radio

- Fielded radios can be upgraded to Gen 3 software using a flash cable and software package



OUT OF BOX FEATURES

- **Public Group Call with Private-call Reply**
- **Private-call reception**
- **VibraCall® vibration alert.**
- **Short Messaging Service (SMS) Texting Messaging reception and origination (preset or via keypad accessory)**
- **Unit Numeric Caller ID**
- **Clock / Date**
- **900 MHz ISM Band No License Required**
 - 500 frequencies divided in 10 zones of 50 each
- **Indoor Range up to 325,000 ft² or 25 Floors**
- **Battery Life of 14.5 hours (up to 19 Hours with 1500 mAh battery)**
- **Frequency Hopping Spread Spectrum (FHSS) Technology**
- **Ambient noise adjustment**
- **Loud and Clear, Right Up to the Edge of Coverage**
- **No Monthly Fees or Per-Minute Charges**



PROGRAMMABLE FEATURES

- **Caller ID Alias**
- **Contact list**
- **Private Groups**
- **Private-call origination, reception, return**
- **Public Group Scan**
- **Quick access Scroll List**
- **Call Forwarding**
- **150 Group/private Contact list**
- **Over the Air Fleet Management**
 - Unit to Unit Configuration Cloning
 - Remote Disable/Enable
 - Remote Monitor
 - Time Update
- **Radio Configuration (codeplug) security password**
- **Disable Front Panel Programming**



CALL TYPES



- While analog radio have only one call type, DTR 650™ radios have four:

TYPE	EXAMPLE
PUBLIC GROUP	One- to- many
PRIVATE GROUP	One- to- many (Increased privacy)
PRIVATE	One- to- one
DATA	SMS, Alert...

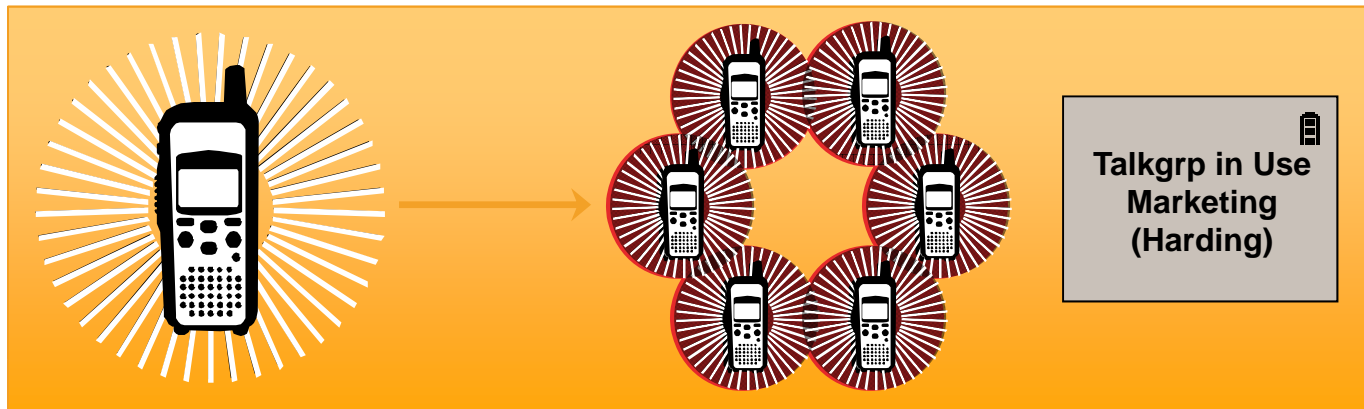
- All call types rely upon the 11 digit unit ID assigned at the factory to a unit or by the user to a group
- A User or Group name (alias) can be created for each contact ID

PUBLIC GROUP CALL



- **Digital One-to-Many Calling**

- All other DTR Series™ radios on the same group ID and channel hear communications, similar to analog radio operation.
- The receiving radio displays the transmitting radio name or ID and group.

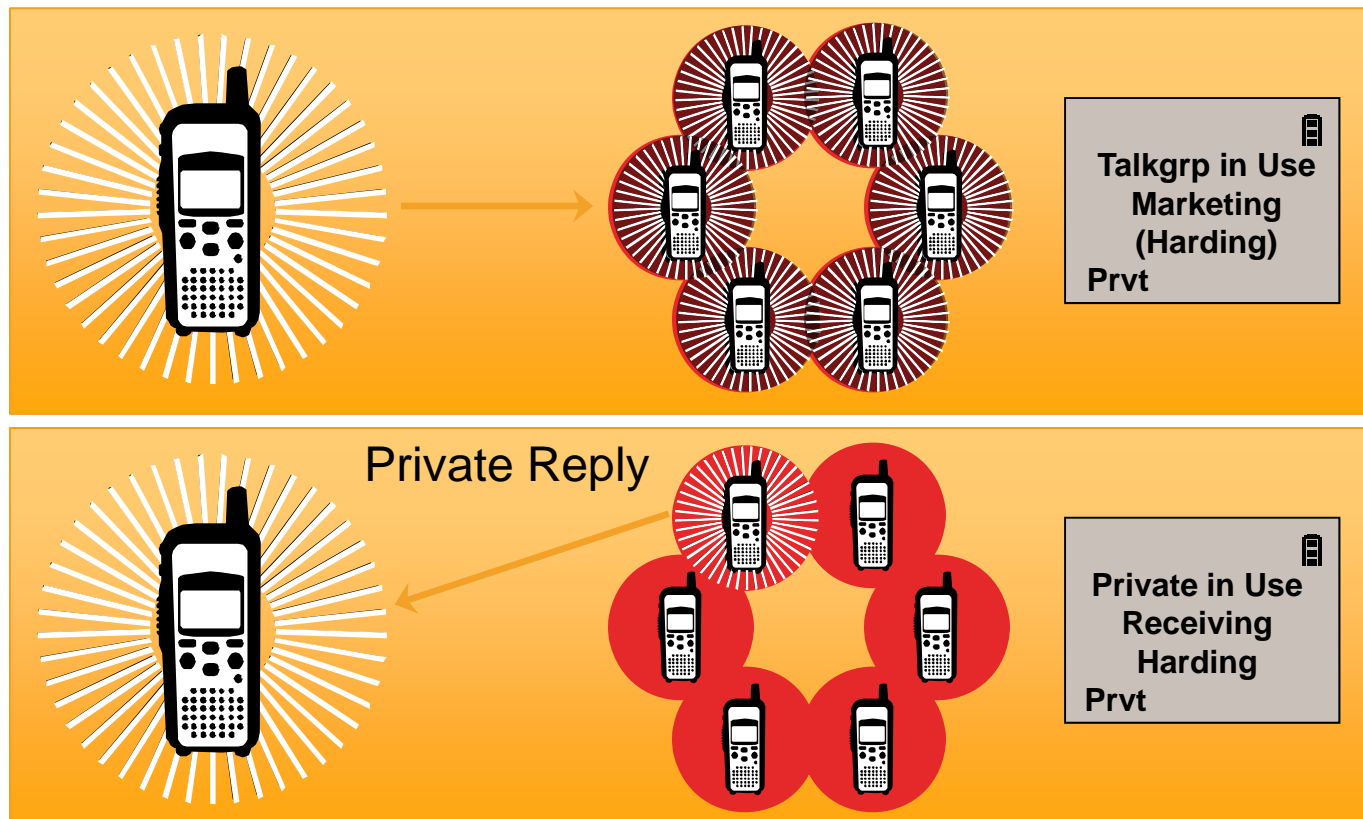


PUBLIC GROUP CALL



- **Group Call with Private Reply**

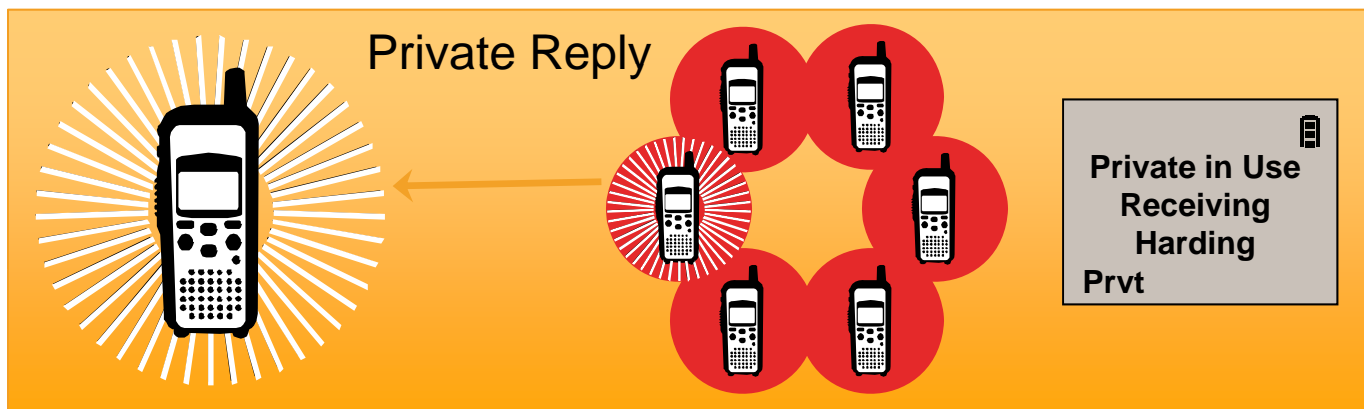
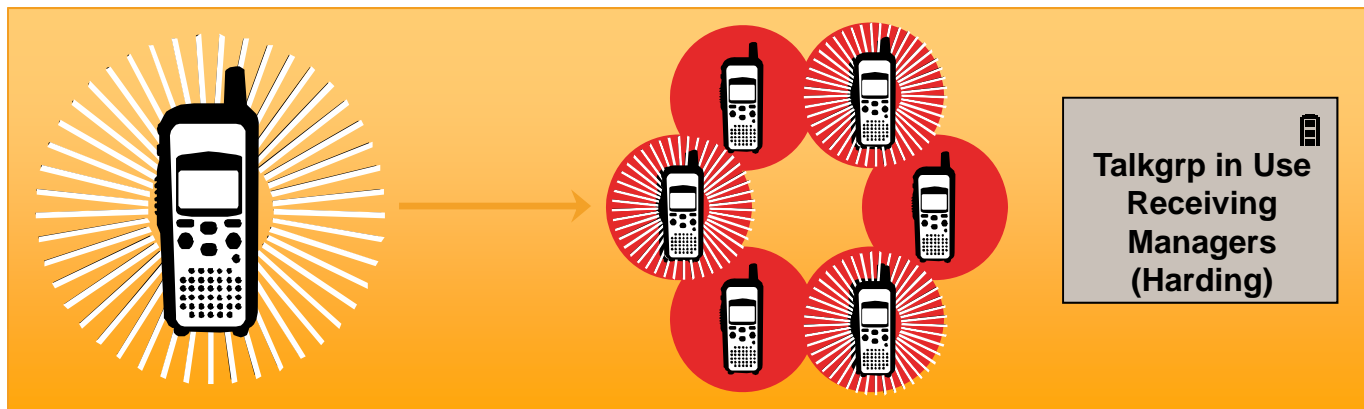
- All other DTR Series™ radios on the same group ID and channel hear communications, similar to analog radio operation.
- The receiving radio displays the transmitting radio name or ID and group.



PRIVATE GROUP CALL



- **Digital One-to-Some Calling with Increased Privacy**
 - Communicate with specific group members, by forming a Private Group from members of your contact list.

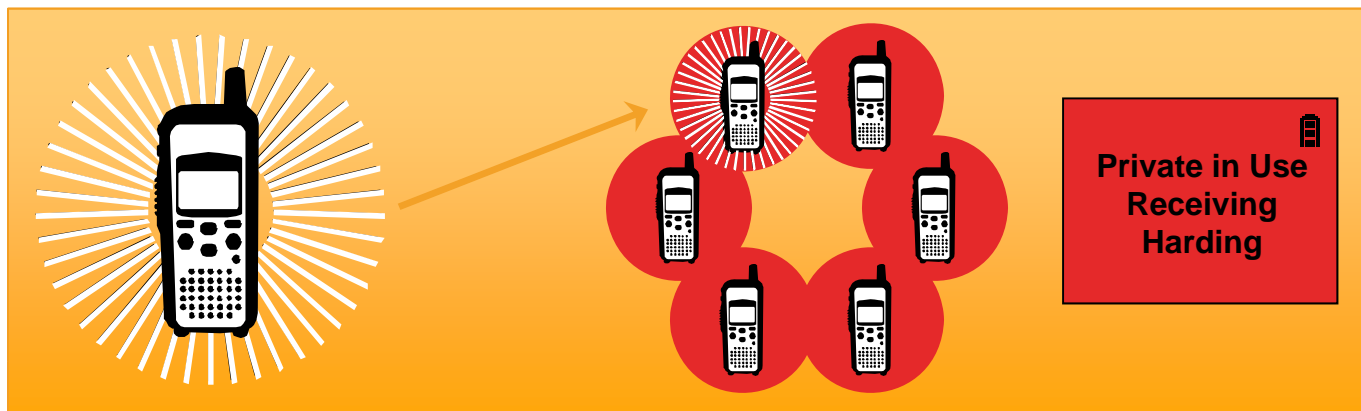


PRIVATE CALL



- **Digital One-to-One Calling**

- Allows you to call and talk privately with a specific radio.
- DTR Series™ radios always scan their Channel for Private Calls

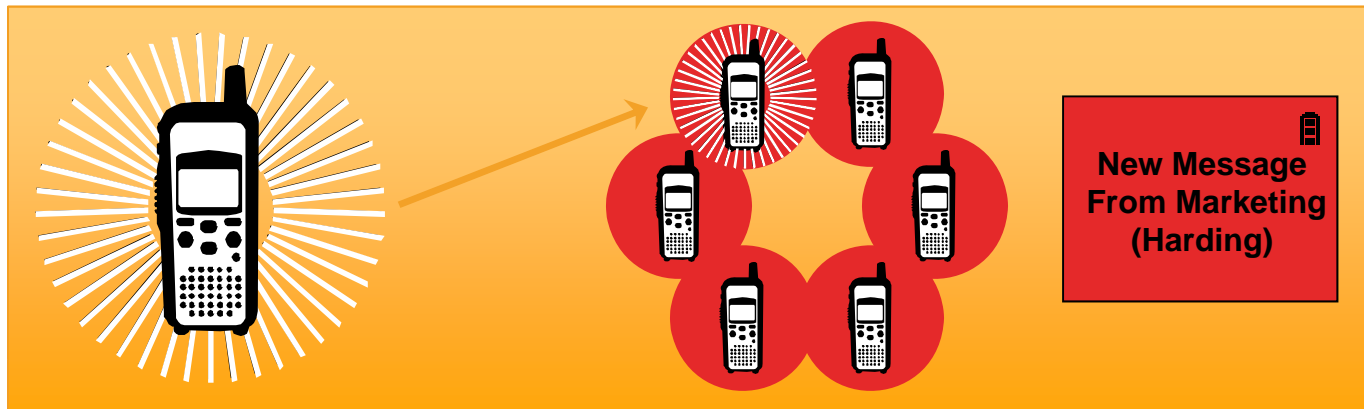


DATA CALL



- **Enhanced Communications**

- Allows you to send an alert to a single unit, a text message to an individual or group, or add a contact to a radio over-the-air (OTA).
- Data features expand the definition of two-way radio.



AGENDA



- **DTR 650™ GEN 3**
- **DTR 650™ Radio Programming**
- **DTR 650™ Specifications**

TRAINING OBJECTIVES



- **Programming a fleet of 6 DTR radios**
- **Replace damaged/lost units in the fleet**
- **Master Unit Configuration**
- **Add additional units to the master configuration**
- **Send ID over the air**
- **Assign Units to Manager Mode**
- **Create Private Groups**
- **Programming Master Unit**
- **Programming fleet through cloning**
- **Detail Reports of Fleet and Unit**



INITIAL STEPS



- Charge unit batteries.
- Install the DTR CPS to your computer
- Connect cable(0105950U15) to serial port

NOTE:

If your computer doesn't have a COM port, you must use a USB serial cable. Belkin USB/serial (F5U409-CU) adapter or Radio Shack USB-to-serial cable is recommended.



CONNECT UNIT



NOTA:

To program the fleet, you only need to connect one unit to the computer. To more efficiently program other units, use the cloning cable.

INITIATE CPS



DTR Series™

Customer Program Software
Version R02.00



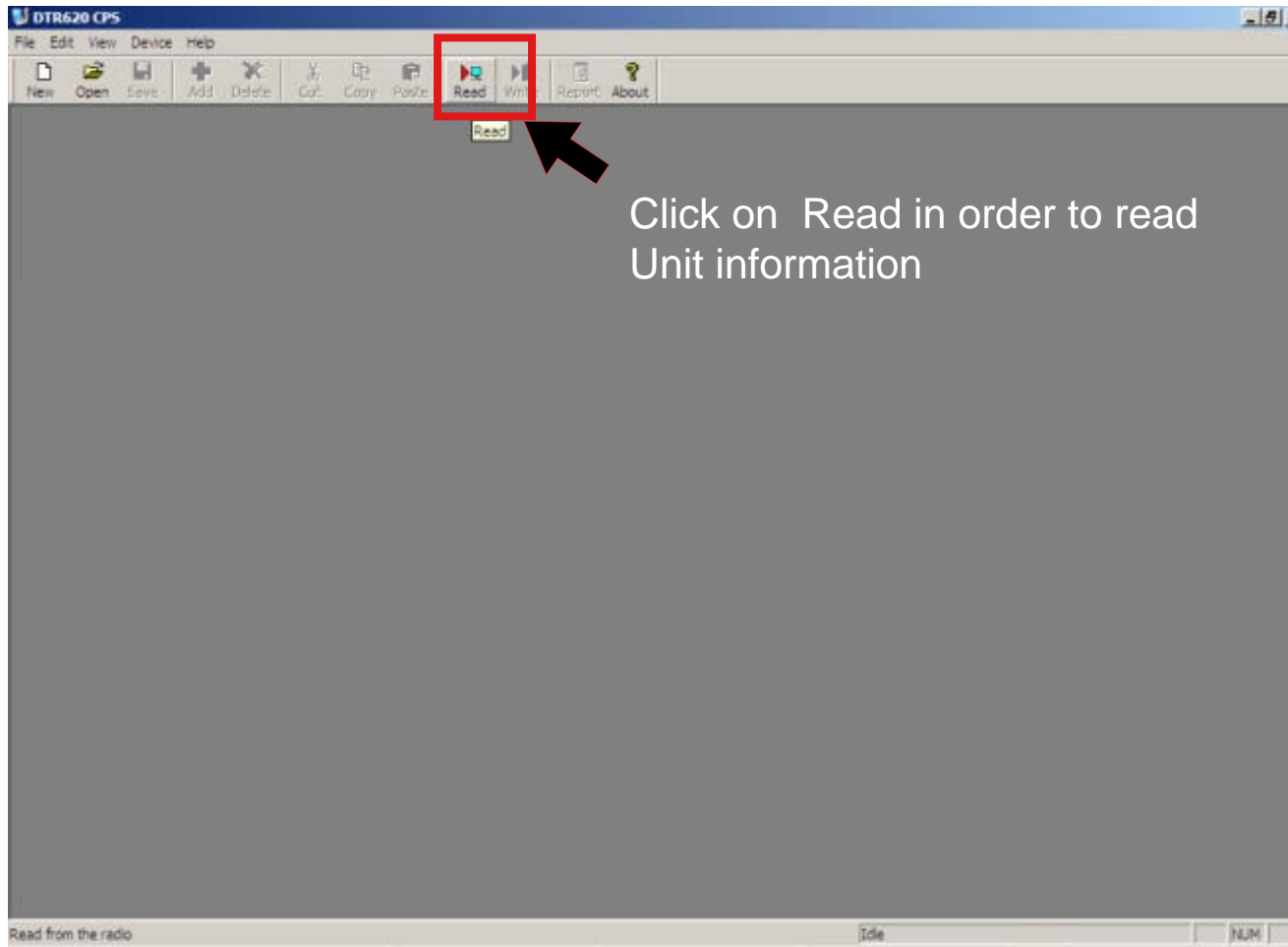
MOTOROLA

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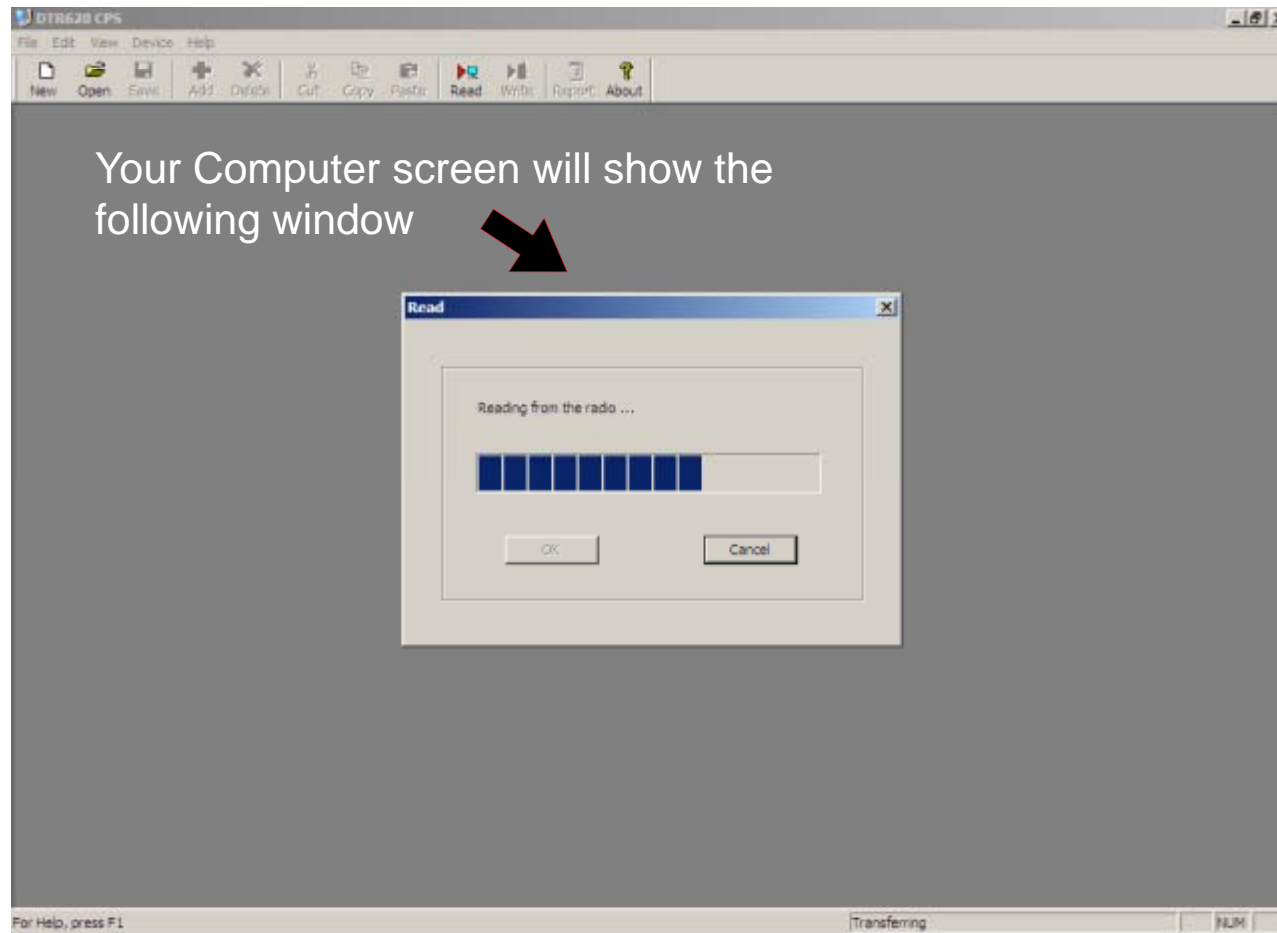
The advertisement features three small images on the left: a construction worker in a yellow hard hat, a woman in a business suit holding a mobile phone, and a man in a blue jacket with his arms crossed. The background is white with a large, faint, light-colored 'M' shape.



CPS INITIAL SCREEN



CPS INITIAL SCREEN



UNIT INFORMATION



The screenshot shows the DTR620 CPS software interface. On the left, a tree view under '17179867633' shows 'Private' with a checkmark and a red box around it, with an arrow pointing to it. The main window displays 'DTR Radio Information' with a red box around the following details: Unit Private ID: 17179867633, Name: 17179867633, Firmware Version: D5E.03.21, and Codeplug Version: CP03.10.0A. An arrow points to the red box. Below the screenshot are two numbered instructions: '1) The Unit Information is read from here' and '2) Click on the name/ number of the read unit'. The status bar at the bottom shows 'For Help, press F1', 'Idle', and 'NUM'.

1) The Unit Information is read from here

2) Click on the name/ number of the read unit



UNIT NAME



DTR CPS - 17179661576

File Edit View Device Report Window Help

New Open Save Add Scan Delete Cut Copy Paste Read Write Report About

17179661576

DTR650

- Contacts
 - Privates
 - 17179661576
 - Private Groups
 - Public Groups
 - Public 1
 - Public 2
 - Public 3
 - Public 4
 - Public 5
- Settings
- Lists
 - Scroll (5)
 - Scan List
 - Channel 1 (5)
 - Channel 2 (0)
 - Channel 3 (0)
 - Channel 4 (0)
 - Channel 5 (0)
 - Channel 6 (0)
 - Channel 7 (0)
 - Channel 8 (0)
 - Channel 9 (0)
 - Channel 10 (0)
- Text Messages
 - Are you at work?
 - Can you meet today?
 - I can't take your ca...
 - No.
 - On my way.

17179661576

Name: 17179661576

Channel: Channel 1

ID: 17179661576 Read Private ID from Radio

Home Group: None

Group Only:

Ringer: Ringer 1

Delete Current Contact

Change the name of the Unit to:
DEMO 1 Manager
Or to a name of your choosing

For Help, press F1 | Idle | NUM



UNIT NAME



The screen of your computer will show the name you choose

NOTE:
The Unit name can be up to 20 characters

For Help, press F1 | Idle | NUM



ADDITIONAL UNITS



DTR CPS - 17179661576

File Edit View Device Report Window Help

New Open Save Add Scan Delete Cut Copy Paste Read Write Report About

17179661576

Privates

Add Privates Add Privates with a Scanner

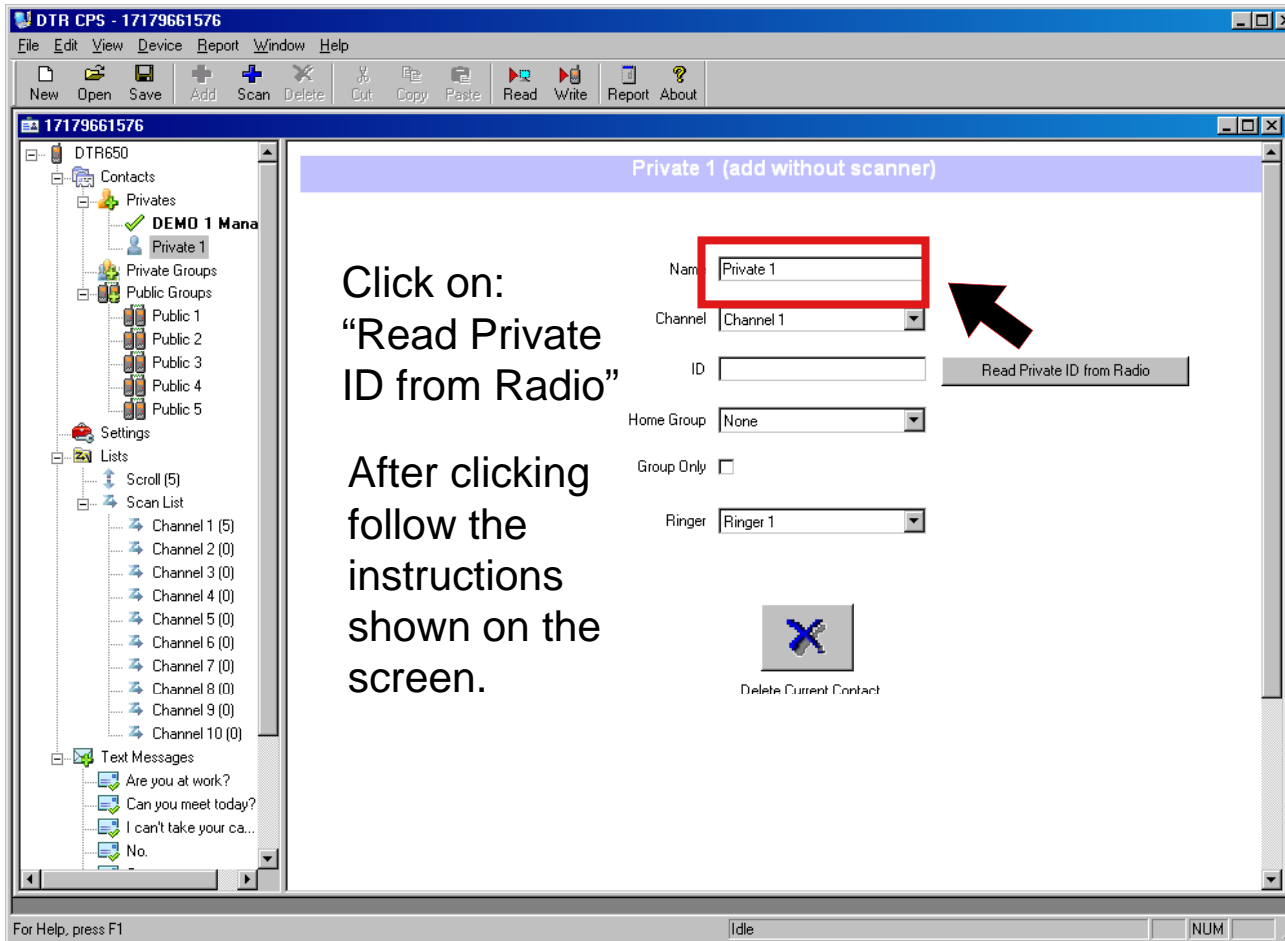
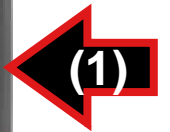
Click on:
"Add Privates"

NOTE:
To add additional units to the fleet, it is not necessary to disconnect active unit. The programming of the ID is effective over the air.

For Help, press F1 Idle NUM



ADDITIONAL UNITS

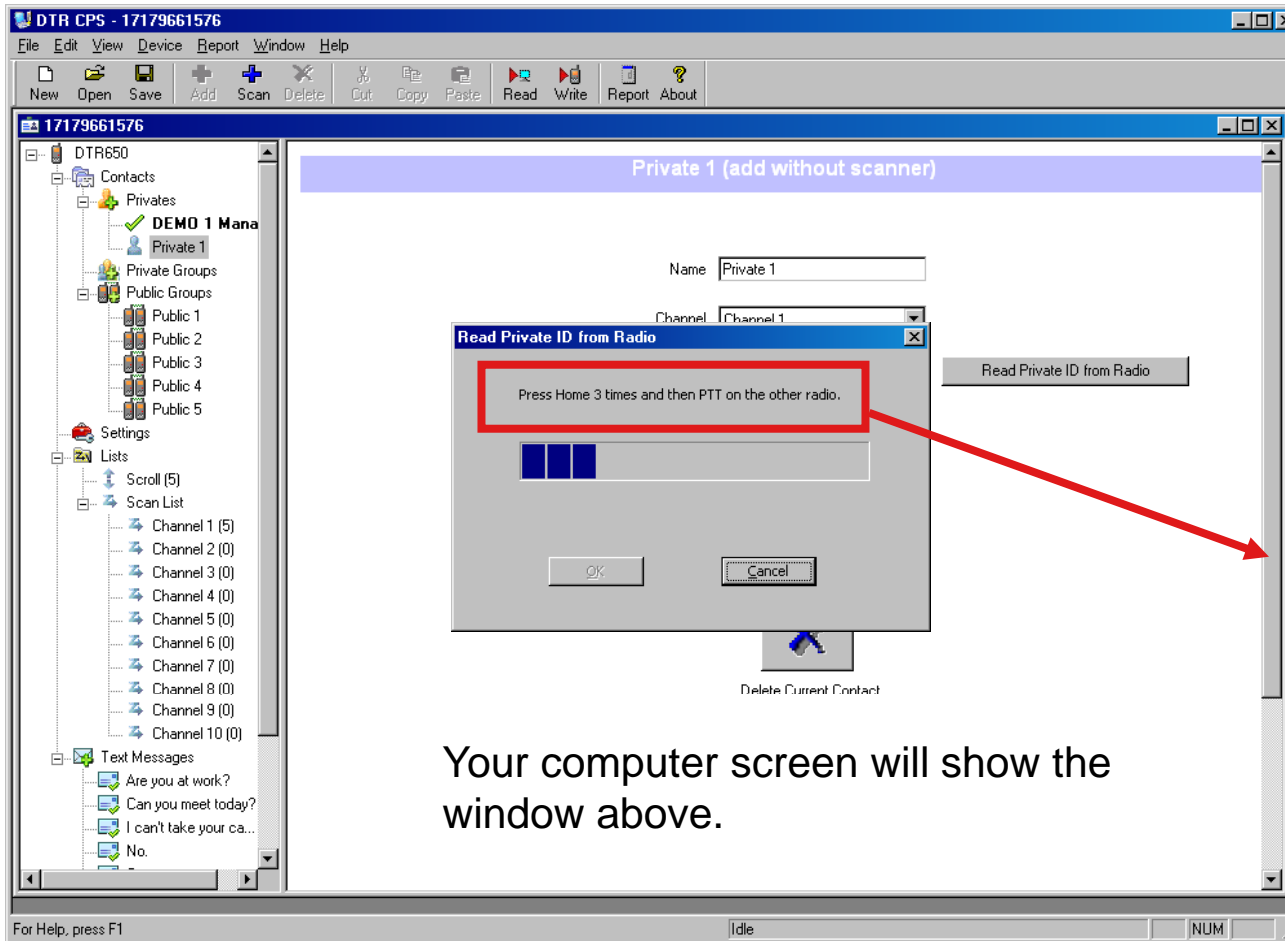


To send the unique ID of the next Unit rapidly press (1) the Home button 3 times and immediately press (2) the PTT button

The screen will show the following:



ADDITIONAL UNITS



Your computer screen will show the window above.

To send the unique ID of the next Unit rapidly press (1) the Home button 3 times and immediately press (2) the PTT button

The screen will show the following:



ADDITIONAL UNITS



The screenshot shows the DTR CPS software interface. The main window is titled '17179661576' and displays a tree view on the left with categories like Contacts, Privates, Private Groups, Public Groups, Settings, Lists, and Text Messages. A 'Private 1' contact is selected. A dialog box titled 'Private 1 (add without scanner)' is open, showing fields for 'Name' (Private 1) and 'Channel' (Channel 1). A 'Read Private ID from Radio' button is visible. A smaller dialog box titled 'Reading successful!' is overlaid on top, displaying a progress bar and the text 'Press Home 3 times and then PTT on the other radio.' Below the progress bar, it says 'Reading successful!' and has 'OK' and 'Cancel' buttons. A red arrow points to the 'OK' button. A 'Delete Current Contact' button is also visible at the bottom of the main window.

Your computer screen will show the above window.
Click on "OK"



ADDITIONAL UNITS



The screenshot shows the DTR CPS software interface. The main window is titled 'Private 1 (add without scanner)'. The left sidebar shows a tree view with 'DTR650' expanded to show 'Contacts', 'Privates', 'Private Groups', 'Public Groups', 'Settings', 'Lists', and 'Text Messages'. The 'Private 1' contact is selected. The main area displays the following fields:

- Name: Private 1
- Channel: Channel 1
- ID: 17179661538 (highlighted with a red box)
- Home Group: None
- Group Only:
- Ringer: Ringer 1

A 'Read Private ID from Radio' button is located to the right of the ID field. Below the fields is a 'Delete Current Contact' button with a blue 'X' icon. The status bar at the bottom shows 'Idle' and 'CAP NUM'.

The unique ID of the unit was read successfully.



ADDITIONAL UNITS



The screenshot shows the DTR CPS software interface. The main window displays the configuration for a contact named 'Private 1'. The 'Name' field is highlighted with a red box. Below it, the 'Channel' is set to 'Channel 1', the 'ID' is '17179661538', and the 'Home Group' is 'None'. There is a 'Read Private ID from Radio' button next to the ID field. The 'Group Only' checkbox is unchecked, and the 'Ringer' is set to 'Ringer 1'. A 'Delete Current Contact' button is visible at the bottom of the configuration area. The left sidebar shows a tree view of the software's structure, including 'Contacts', 'Privates', 'Private Groups', 'Public Groups', 'Settings', 'Lists', and 'Text Messages'. The status bar at the bottom indicates 'Idle' and 'CAP NUM'.

Change the name of Demo 2 to the name of your choosing



ADDITIONAL UNITS

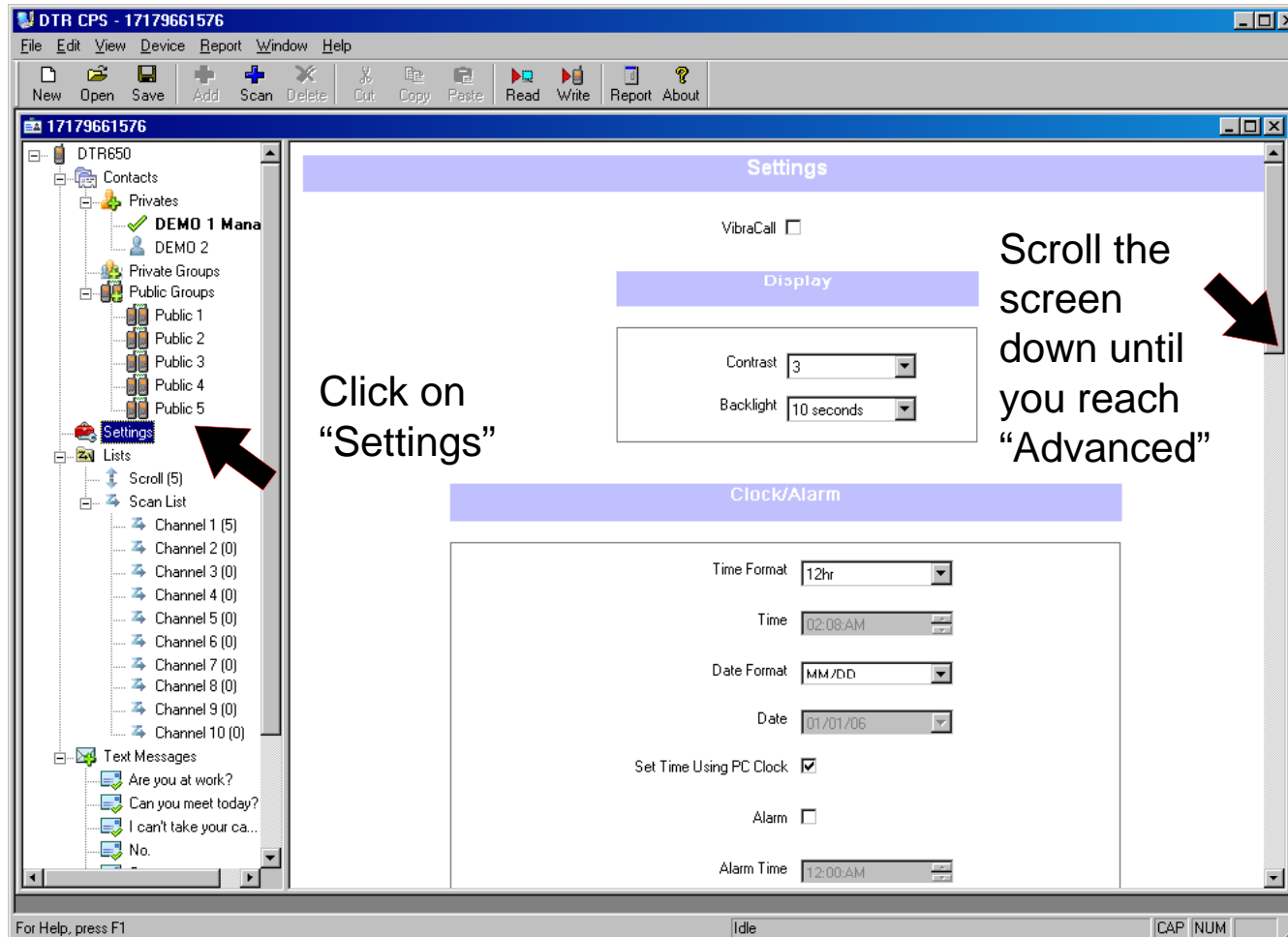


The screenshot shows the DTR CPS software interface for unit 17179661576. The left sidebar displays a tree view with folders for Contacts, Private Groups, Public Groups, Settings, Lists, and Text Messages. The main window shows the configuration for a contact named 'DEMO 2'. The 'Name' field is highlighted with a red box. Below it are fields for 'Channel' (Channel 1), 'ID' (17179661538), 'Home Group' (None), 'Group Only' (unchecked), and 'Ringer' (Ringer 1). A 'Read Private ID from Radio' button is next to the ID field. At the bottom of the configuration area is a 'Delete Current Contact' button with a blue 'X' icon.

Note:
To add more units repeat the process described before



MANAGER MODE

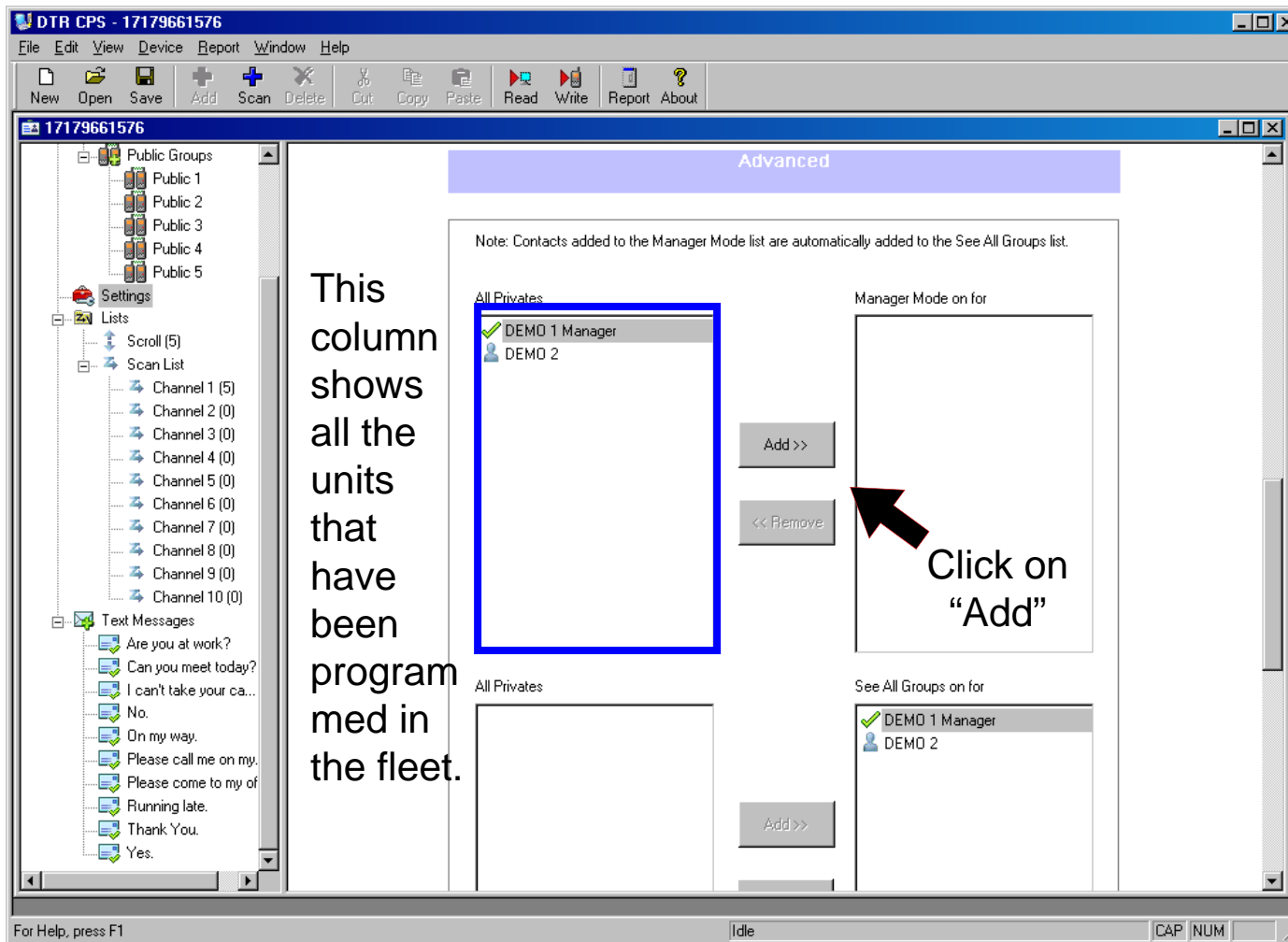


Manager Mode allows advanced functions to manage the fleet, such as:

Deactivation of Units
Remote Monitoring
Time Synchronization



MANAGER MODE



This column shows all the units that have been programmed in the fleet.

Choose the units in which the Manager Mode will be activated in the left column

NOTE: Manager Mode can be activated in every unit you wish. To remain in control of the fleet it is recommended to limit the number units with these capabilities.



MANAGER MODE



The screenshot shows the DTR CPS software interface for unit 17179661576. The interface is divided into several sections:

- Left Panel:** A tree view showing 'Public Groups' (Public 1-5), 'Settings', 'Lists' (Scroll, Scan List, Channel 1-10), and 'Text Messages' (various status messages).
- Advanced Section:** A purple header with a note: "Note: Contacts added to the Manager Mode list are automatically added to the See All Groups list."
- All Privates:** A list containing 'DEMO 2'.
- Manager Mode on for:** A list containing 'DEMO 1 Manager', which is highlighted with a red box and a checkmark.
- See All Groups on for:** A list containing 'DEMO 1 Manager' (checked) and 'DEMO 2'.
- Buttons:** 'Add >>', '<< Remove', and 'Add >>' buttons are visible between the lists.

At the bottom of the window, it says "For Help, press F1" and "Idle" status is shown.

Units with Manager Mode activated will be listed on the Right Column



PRIVATE GROUPS



The screenshot shows the DTR CPS software interface. The left sidebar contains a tree view with folders for Contacts, Privates, Public Groups, Settings, Lists, and Text Messages. The 'Private Groups' folder is selected and highlighted. The main window displays a 'Private Groups' header and a button with a blue plus sign and the text 'Add Private Group'. Two arrows point to the 'Private Groups' folder in the sidebar and the 'Add Private Group' button. The status bar at the bottom shows 'For Help, press F1', 'Idle', and 'CAP NUM'.

1) Click on "Private Groups"

2) Click on "Add Private Groups"



PRIVATE GROUPS



The screenshot shows the DTR CPS software interface for configuring a private group. The window title is "DTR CPS - 17179661576". The interface includes a menu bar (File, Edit, View, Device, Report, Window, Help) and a toolbar with icons for New, Open, Save, Add, Scan, Delete, Cut, Copy, Paste, Read, Write, Report, and About. On the left, a tree view shows the device structure: DTR650, Contacts, Privates (with sub-items DEMO 1 Manager and DEMO 2), Private Groups (with sub-item Group 1), Public Groups (with sub-items Public 1-5), Settings, and Lists (with sub-items Scroll, Scan List, and Text Messages). The main area displays the configuration for "Group 1". It has a "Name" field containing "Group 1", a "Channel" dropdown set to "Channel 1", and an "ID" dropdown set to "17179661576". Below this, there are two columns: "All Privates" and "Group Members". The "All Privates" column contains two entries: "DEMO 1 Manager (5 Group(s) Left)" and "DEMO 2 (5 Group(s) Left)". The "Add >>" button is highlighted with a red box, and an arrow points to it from a text box. The "Delete Current Contact" button is also visible. At the bottom, the status bar shows "Idle" and "CAP NUM".

1) Change the name of the Private Group to MOTODIGITAL or to what you want

2) Choose the unit that will be part of the group in the left column.

3) Click on "Add" to add units to the group

4) Repeat for each unit.



PRIVATE GROUPS



NOTE:

To achieve a fully private communication, it is necessary that the ID assigned to the private group is the ID of one of the units that are part of the group.

For example, the id for Group 1 should match the radio ID of either Demo 1 or Demo 2 radio or any other group member .

2) Assign an ID to the Private group

1) Units that are programmed in the private group are listed in the right column

PRIVATE GROUPS



The screenshot shows the DTR CPS software interface. The title bar reads "DTR CPS - 17179661576". The menu bar includes "File", "Edit", "View", "Device", "Report", "Window", and "Help". The toolbar contains icons for "New", "Open", "Save", "Add", "Scan", "Delete", "Cut", "Copy", "Paste", "Read", "Write", "Report", and "About". The main window is titled "17179661576" and displays a tree view on the left and a main content area on the right. The tree view includes "Contacts", "Privates", "Public Groups", "Settings", "Lists", and "Text Messages". The "Private Groups" folder is selected, and the main content area shows a "Private Groups" header and a button with a blue plus sign and the text "Add Private Group". A red box highlights the button, and a black arrow points to it.

NOTE:
To create additional private groups click on "Add Private Groups" and repeat the process.



PRIVATE GROUPS



DTR CPS - 17179661576

File Edit View Device Report Window Help

New Open Save Add Scan Delete Cut Copy Paste Read Write Report About

17179661576

MOTOGROUP

The new group is displayed in the margin.

Name: MOTOGROUP
Channel: Channel 1
ID: 17179661576

All Privates: DEMO 1 Manager (4 Group(s) Left)

Group Members: DEMO 2

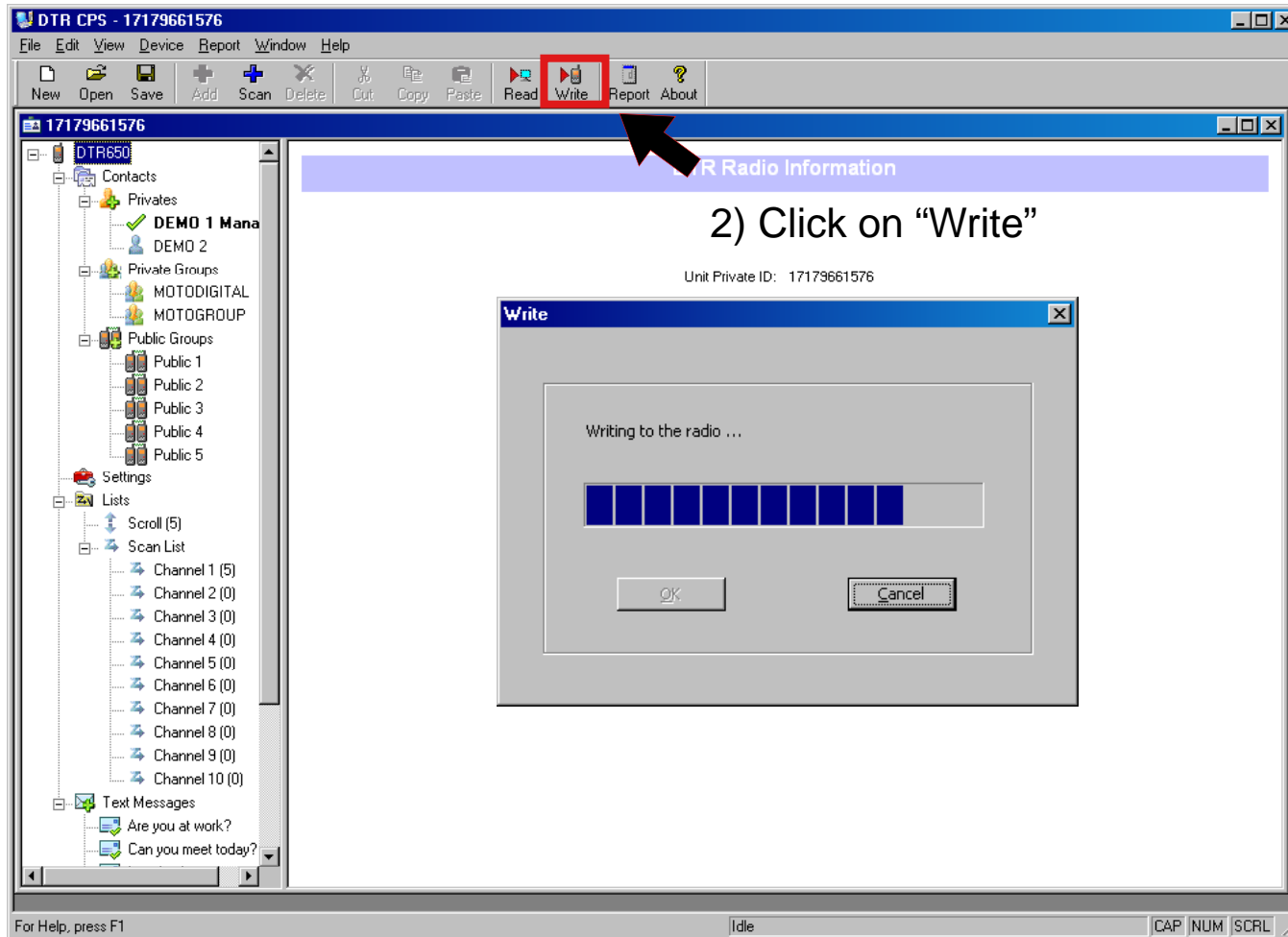
Add >> << Remove

Delete Current Contact

For Help, press F1 Idle CAP NUM



MASTER PROGRAMMING



2) Click on "Write"

1) After the configuration of the fleet, continue to program the Master Unit



MASTER PROGRAMMING



DTR CPS - 17179661576

File Edit View Device Report Window Help

New Open Save Add Scan Delete Cut Copy Paste Read Write Report About

17179661576

DTR650

- Contacts
- Privates
 - DEMO 1
 - DEMO 2
- Private Groups
 - MOTODIGITAL
 - MOTOGROUP
- Public Groups
 - Public 1
 - Public 2
 - Public 3
 - Public 4
 - Public 5
- Settings
- Lists
 - Scroll (5)
 - Scan List
 - Channel 1 (5)
 - Channel 2 (0)
 - Channel 3 (0)
 - Channel 4 (0)
 - Channel 5 (0)
 - Channel 6 (0)
 - Channel 7 (0)
 - Channel 8 (0)
 - Channel 9 (0)
 - Channel 10 (0)
- Text Messages
 - Are you at work?
 - Can you meet today?

Contacts

Maximum Contacts: 150	Current Number of Contacts: 9
Maximum Private Groups: 20	Current Number of Private Groups: 2
Maximum Public Groups: 50	Current Number of Public Groups: 5
Maximum Privates: 150	Current Number of Privates: 2

For Help, press F1 | Idle | CAP NUM SCRL



MASTER PROGRAMMING



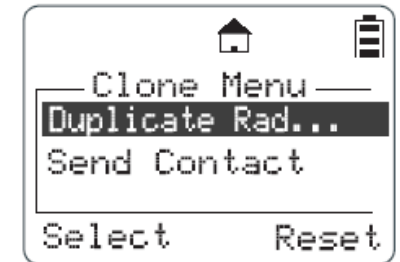
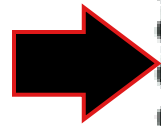
OVER THE AIR FLEET PROGRAMMING



Master Unit DEMO 1 Manager

To enter cloning mode run the following steps in the order listed:

- I. Keep pressed (a) HOME and at the same time press 3 times (b) the PTT button.
- II. Immediately press (c) the left button;
- III. followed by (d) Up Arrow; then (e) the right button.
- IV. Again keep pressed HOME (a) and press three time the PTT button (b).



OVER THE AIR FLEET PROGRAMMING



Clone Menu
Duplicate Rad...
Remote Add C...
Remote Delet...
Select Exit

Remote Add C...
Add: All
To: All
Change Prgm



OVER THE AIR FLEET PROGRAMMING



Press Go to
Add:All
To:All
Over the Air

Go

Back



The process will repeat until all units are completed and the fleet is programmed.

UNIT REPORTS



The screenshot displays the DTR CPS software interface for unit 17179661576. The main window shows a tree view on the left with categories like Contacts, Privates, Public Groups, and Lists. The main area displays statistics for Contacts and Private Groups. A 'Reports' dialog box is open, allowing the user to choose a report template.

Category	Maximum	Current Number
Contacts	150	9
Private Groups	20	2
Public Groups	-	5
Privates	-	2

Reports dialog box options:

- Radio-Specific Report (Selected)
- Overview Report

Buttons: OK, Cancel



UNIT REPORTS



Report

MOTOROLA

Unit Private ID: 17179661576	Name: DEMO 1 Manager
Firmware Version: R5E.03.03	Codeplug Version: CP03.10.0A
Model: DTR650	Home Channel: 1
Home Group: None	Group Only: Disabled
Ringer: 1	Manager Mode: Enabled
See All Groups: Enabled	Scan Mode: Disabled

Receive From
MOTODIGITAL

Transmit To
MOTODIGITAL
MOTOGROUP
Public 1
Public 2
Public 3
Public 4
Public 5

Scroll List
Public 1
Public 2
Public 3
Public 4
Public 5

Text Messages
Are you at work?
Can you meet today?



Print Preview Print Save As... Close



UNIT REPORTS



Report

MOTOROLA

All Privates

<u>Name</u>	<u>PID</u>	<u>Channel</u>	<u>G.O.</u>
DEMO 1 Manager	17179661576	1	No
DEMO 2	17179661538	1	No

All Public Groups

<u>Name</u>	<u>PID</u>	<u>Channel</u>
Public 1	1	1
Public 2	2	1
Public 3	3	1
Public 4	4	1
Public 5	5	1

All Private Groups

<u>Name</u>	<u>PID</u>	<u>Channel</u>
MOTODIGITAL	17179661538	1
MOTOGROUP	17179661576	1

Manager Mode Enabled
DEMO 1 Manager

See All Groups Enabled
DEMO 1 Manager DEMO 2

Group Only Enabled
None

Two Motorola mobile phones are shown side-by-side. They are black with a silver keypad and a small screen. The Motorola logo is visible at the top of each device.

Print Preview Print Save As... Close



UNIT REPORTS



The screenshot shows a software window titled "Report" with a blue header bar containing the Motorola logo and the word "MOTOROLA". The main content area is divided into two sections: "Private Groups" and "Public Groups".

Private Groups

- MOTODIGITAL (Channel 1)
 - Group Members
 - DEMO 1 Manager DEMO 2
- MOTOGROUP (Channel 1)
 - Group Members
 - DEMO 2

Public Groups

- Public 1 (Channel 1)
 - Receive List
 - DEMO 1 Manager DEMO 2
- Public 2 (Channel 1)
 - Receive List
 - DEMO 1 Manager DEMO 2
- Public 3 (Channel 1)
 - Receive List
 - DEMO 1 Manager DEMO 2
- Public 4 (Channel 1)
 - Receive List
 - DEMO 1 Manager DEMO 2
- Public 5 (Channel 1)
 - Receive List
 - DEMO 1 Manager DEMO 2

At the bottom of the window, there are four buttons: "Print Preview", "Print", "Save As...", and "Close".



AGENDA



- **DTR 650™ Defined**
- **DTR 650™ Radio Programming**
- **DTR 650™ Specifications**

DTR 650™ SPECIFICATIONS



GENERAL SPECIFICATIONS

Frequency	900 MHz ISM FHSS
Contact List Capacity	100 (Shared Group/Private)
Default Programming	5 Public Groups
Power Supply	3.8V ± 0.4V
Dimensions	132.3mm H x 57.2mm W x 35.4mm D (5.2" H x 2.3" W x 1.4" D)
Weight:	
with 1200 mAH Li-Ion Battery	200.2g (7.1 oz.)
with 1500 mAH Li-Ion Battery	205.7g (7.3oz.)
Average Battery Life @ 5-5-90 Duty Cycle:	
with 1200 mAH Li-Ion Battery	14.5 Hrs.
with 1500 mAH Li-Ion Battery	19 Hrs.
FCC Designation	AZ489FT5842
IC Designation	109U-89FT5842

RECEIVER SPECIFICATIONS

Sensitivity: (3% BER Sensitivity)	-125 dBm
Frequency Stability: (-30° C to +60° C)	± 0.0005% (± 5PPM)
Spur Rejection	55 dB
Blocking Immunity:	
Interferer from ±500 KHz to ±1 MHz	75 dB
Interferer from ±1MHz to ±15 MHz	80 dB
Audio Output @ < 5% Distortion	1W

TRANSMITTER SPECIFICATIONS

RF Output	1W
Channel Spacing	50 kHz
Frequency Stability: (-30° C to +60° C)	± 0.0005% (± 5PPM)
Spurs/Harmonics	500 uV/m (3m)
Audio Response:	
(from 6 dB/oct.Premphasis, 300 to 30000 Hz)	+1, -3 dB
Audio Distortion	
@ 1000 Hz, 60% Rated Max. Dev.	<3%
TX ACCPR	-50 dBc
FCC Modulation	8-level FSK 900 MHz ISM FHSS



THANK YOU