

**SELEX**  
Communications

**PUMAT3**

**TETRA HAND-HELD FAMILY RADIOS**



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Digital Mobile Radio Solution

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## PUMA T3 - TETRA hand-held family radios



PUMA-T3 handportable unit is a TETRA standard UHF radio, designed for professional users: it's very rugged and allows different operating modes, including operations in "covert mode", through the use of special accessories.

It includes both professional features necessary for equipment that must be used in any environmental and service conditions and those typical of mobile equipment for telephone usage.

It combines extreme sturdiness with a large keyboard that is easy to use even when wearing gloves. A large loudspeaker together with a high power audio amplifier allows the use in particularly noisy environments.

A well-placed separate small speaker allows use of PUMA T3 as standard cellular equipment for private calls. PUMA T3 is also a Bluetooth certified product .

### Overview

The PUMA T3 family is composed by:

- **PUMA-T3 S:** the TETRA equipment
- **PUMA-T3 DM** the unique "Dual-mode" equipment on the market: a full power TETRA radio that can operate also as conventional (analogue) equipment.
- **PUMA-T3 Ex:** the radio equipment for potentially explosive areas.

The PUMA-T3 family equipment has:

- > High contrast display with large fonts
- > Large keypad
- > A 11-step rotary knob for audio volume selection
- > A continuous rotary knob with integrated pushbutton for group / channel selection
- > Emergency key (red colour) at the top side
- > Two conversation modes:
  - Loudspeaker, using a large speaker housed under the keypad, and
  - Earphone, using a specific small speaker.
- > Bluetooth

The keypad protects the powerful loudspeaker and the microphone located at the bottom, to allow optimum operation both in PMR standard conversation and during telephone type usage.

The large keys allow the use with gloves and all functions are accessible using a single hand, whether it is right or left.

Also the PTT key may be operated even while wearing gloves.

The pushbutton over the PTT is a dedicated key for fast calling the dispatcher and, during the conversation, it has the same function of the PTT.

The high contrast LCD display with large fonts (about 2,5 x 4,5 mm) allows the best visibility in all light conditions.

The backlight of display and keypad may be set as continuous, timed or excluded.

All audio signals can be individually selected as off, low, medium or high and their levels are proportional to voice volume, so the volume rotary knob allows the tuning of the audio signals also.

The continuous rotary group knob allows a quick selection of groups and the pushbutton inside the knob provides an high level of protection against involuntary group change.



The PUMA T3 family are available in two frequency bands, 380 to 430 MHz and 410 to 470 MHz.

All PUMA-T3 are capable of operating on a TETRA standard digital network supporting different mode of operations:

- > **Trunking Mode (TMO):** communications through the TETRA network
- > **Direct Mode (DMO):** direct communications between terminal equipment, without the presence of the network
- > **Direct Mode under a DM Repeater coverage:** communication between terminals through a DM repeater, without the presence of the network
- > **Direct Mode under a DM Gateway coverage:** communication between radio and the network through a DM Gateway.

The user can quickly select the preferred mode between TMO and DMO through a dedicated mode selection key.



## PUMA-T3 - A TETRA standard UHF hand-held radio designed for professional users.

### PUMA-T3S

#### The TETRA unit

The PUMA-T3 S is the perfect solution for organisations focused on voice services and not needing the highest levels of security.

The PUMA-T3 S is fully compliant with the TETRA standard requirements and features and its "Human Machine Interface (HMI)" has been specifically designed to meet the Schengen Group's requirements for police terminal equipment.

PUMAT3<sup>Ex</sup>

PUMAT3<sup>DM</sup>

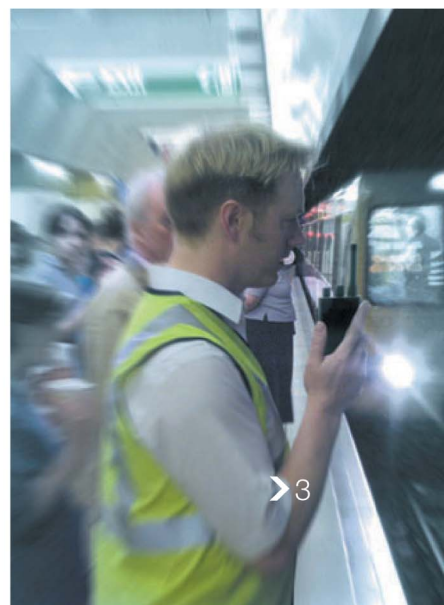
PUMAT3<sup>S</sup>



The PUMA-T3 family



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## PUMA-T3DM - The unique "Dual-mode" TETRA handheld

PUMA-T3DM dual mode represents a new milestone in the evolution of TETRA handportable: it is the first TETRA standard UHF radio that can operate also as a conventional FM radio, so the professional users are able to talk to both analogue and TETRA equipment.

The PUMA-T3 DM is the complete solution for the TETRA applications.

It supports Authentication, "Air interface Encryption" and "End-to-End Encryption" that offer a high degree of communication security and protect the critical speech and/or data communications by potential eavesdropper. Special tamper proof version of this model is available.

The PUMA-T3 DM supports the highest possible data rate capability (4 slot) for the TETRA equipment, with multi-slot Circuit Data and IP Packet Data, useful to improve file transfer, messaging, database interrogation/update, and image / video transfer applications.

This model is equipped with an internal switch called "Dead Man". It allows to detect the angle between the longitudinal axis of the radio and the vertical axis. If this angle is greater than 45° the mobile unit supposes that the user's not standing and a local alarm is activated. Optionally an emergency call toward a specific address is generated.

the PUMA-T3 DM can optionally be supplied with a Bluetooth® interface for audio and data accessories.

A SIM Card socket is housed at the rear side PUMA-T3DM and is protected by a rubber plug.

A lot of wired and wireless accessories are available.

### Selection of supported TETRA features

- > Full voice services
- > Individual calls
- > Group calls
- > Broadcast calls
- > Priority and Emergency calls
- > PABX, PSTN, PDN Interconnection
- > Direct Mode Operation (also with Repeater 1A and Gateway) including individual and group calls, status and text messages, E2E encryption
- > Short Data Service
- > Localization Services
- > End-to-End Encryption
- > TETRA Supplementary Services
- > Up to 4 time slots transmission data calls
- > Single and multi slot Circuit Data services
- > Single and multi slot IP Packet Data services
- > Dynamic key "Air interface Encryption"
- > Man-down switch



### Data storage capacity

- > 1472 TMO/DMO talk groups
- > 1000 static entries in the phone directory
- > 200 phone book entries
- > 10 predefined or user defined text messages
- > 72 predefined status messages
- > 20 recent individual calls
- > 20 recent received messages.

### Selection of supported features In "Conventional Mode"

#### Channels

- > Single frequency / dual frequency channels
- > 50 channels defined during the setup phase of the equipment
- > Standard CTCSS sub-audio tone
- > 12.5 kHz / 25 kHz channel spacing

#### Audio services

- > Individual call
- > Group call
- > Emergency call
- > Man-down switch
- > Volume Control
- > Loudspeaker/earphone audio mode toggle
- > Keypad tones volume control
- > Alert tones volume control
- > Higher possible audio volume (1 Watt speaker) in loudspeaker mode
- > Automatic recognition of the audio accessories

#### Data services

- > Status message
- > Text message

#### Facilities

- > Organization phone book
- > User's defined phone book
- > Backlight options (disabled, automatic and manual)
- > Connector for audio and data accessories
- > Status message list
- > Call history received / dialled lists
- > Text message notification during calls (if supported by signaling protocol)
- > Status message notification during calls (if supported by signaling protocol)
- > Ability to read, compose and edit text messages during calls
- > Ability to read and compose status messages during calls

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## PUMA-T3Ex - The "Intrinsically Safe" version

PUMA-T3Ex has been designed to be "Intrinsically Safe" according to ATEX standard, in order to guarantee operations in any potentially explosive environment.

It's also the unique dual mode ATEX approved mobile terminal: it can operate in potentially explosive atmosphere both in TETRA Mode (TMO and DMO) and in Conventional (FM) Mode.

*Thanks to its fluorescent red case is visible in critical light conditions.*

The PUMA-T3 Ex has the same capabilities and features of the PUMA-T3DM and additionally it's certified as "II 2G EEx ib IIC T4" for the extended operative range -20° +55°C.



### Bluetooth Bluetooth Qualified Product Listing

**Bluetooth® Qualification Body (BQB): Mario Tanc**  
Centro de Tecnología de las Comunicaciones, S.A. (CETECOM)

Applicant details	Person responsible	No. of products
Applicant: OTE S.p.A.	Phone: +39 (0) 54381 458	
Address: Via Eugenio Baronti, 8, 50127 Firenze, Italy	Fax: +39 (0) 54381 453	
URL: <a href="http://www.ote.com">http://www.ote.com</a>	E-mail: <a href="mailto:info@ote.com">info@ote.com</a>	

Product identification	Software version	Hardware version
Product name: Puma T3		774-0200100
Product ID: Puma T3	Software version: 4.3	
Product category: End Product		
Description: TETRA terminal		

Reference document	Version
Bluetooth Specification Version:	Version 1.1
Qualification Program Reference Document (PRD):	Version 1.0 + PRD Addendum (2004-04-23) v1.0-1
Test Case Reference List Document (TCRL):	TCRL_1-1 Release: 2004-04-01 TCRL_1-1 Addendum: N/A
	TCRL_2-1 Release: 2004-04-01 TCRL_2-1 Addendum: N/A

Bluetooth Product 1 (initial identification)	Bluetooth Product 2 (initial identification)
OPIN Ref. N°:	OPIN1406_Puma T3_CTCM
Assessment date: 2005-08-29	Living date: 2005-08-29
	Last revision date: 2005-08-29

This notice is an essential part of the Bluetooth Qualification program and shows the acceptance of the product as a qualified Bluetooth product.  
On the basis of the received information compliance folder for the above mentioned product, I certify that the product has passed all requirements to be listed as qualified End Product in accordance to section 6.2.1 of the PRD, for Compliance Portion specified in the corresponding Compliance Portion Declaration posted in the OPIN.

Milano, 2005-08-29

place, date

**CETECOM™**

*[Signature]*

signature

Mario Tanc  
Bluetooth Qualification Body (BQB)  
Centro de Tecnología de las Comunicaciones, S.A. (CETECOM)  
C/ Avenida de Europa, 2, 28014 Madrid (Spain)  
Email: [mario.tanc@cetecom.es](mailto:mario.tanc@cetecom.es)  
Web: <http://www.cetecom.es>

### EC-TYPE EXAMINATION CERTIFICATE

- (1) EC-TYPE EXAMINATION CERTIFICATE
- (2) Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC
- (3) EC-Type Examination Certificate Number

**TÜV 04 ATEX 2380 X**

- (4) Equipment: Professional Mobile Radio type PUMA T3 Ex
- (5) Manufacturer: OTE S.p.A.
- (6) Address: Via Eugenio Baronti 8, 50127 Firenze

- (7) This equipment or protective system and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

- (8) The TÜV NORD CERT GmbH & Co. KG, TÜV CERT-Certification Body, notified body number N° 0052 in accordance with Article 9 of the Council Directive of the EC of March 23, 1994 (94/9/EC), certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:  
EN 50 014: 1997 EN 50 020: 2002

- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

- (11) This EC-type examination certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of the equipment. These are not covered by this certificate.

- (12) The marking of the equipment or protective system must include the following:

II 2G EEx ib IIC T4

Hannover, 2004-01-29

TÜV NORD CERT GmbH & Co. KG  
TÜV CERT-Certification Body  
Am TÜV 1  
D-36109 Hannover  
Tel.: 0511 986-4433  
Fax: 0511 986-2555

*[Signature]*  
Head of the Certification Body

**TÜV NORD CERT**

TÜV CERT Nr. 01.00.01.000.001

This certificate may only be reproduced without any change, schedule included.  
Example or changes shall be allowed by the TÜV NORD CERT GmbH & Co. KG

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### SCHEDULE

#### EXAMINATION CERTIFICATE N° TÜV 0

The PUMA T3 Ex may be operated in any 2 and 3. It is able to operate in 352 / ETS 300 398) and in FM mode. The ambient temperature is 55°C.

2 pc. Li Ion parallel connect  
U = 4.2 V, 1800 mAh  
(modified accumulator of the type 771-0997/01.01)

In type of connection "Intrinsic Safety" EEx ib IIC only for the connection of earphone set type 975-0635/01.01

Test report No.: 04 YEX 551207.

replace the accumulator pack outside of the hazardous area.

771-0997/01.01 must be used only.

requirements





	PUMA-T3S	PUMA-T3DM	PUMA-T3Ex
Frequency band:	380 to 430 MHz and 410 to 470 MHz		
Equipment type:	TETRA handportable	TETRA handportable with FM capability ETSI EN 300 086	
Data rate (max):	1 slot/7.2 kbit/s half-duplex	up to 28.8 kbps half-duplex	
Static Rx sensitivity:	-112 dBm (normal conditions, ETSI EN 300 392-2)		
Dynamic Rx sensitivity:	-103 dBm (normal conditions, ETSI EN 300 394-1)		
RF channel spacing:	25 KHz	12,5 kHz-25 kHz	
Audio max power:	1 W on 8 ohm		
Power class: TETRA mode	ETSI EN 300 392-2/396-2 class 4 (1W)		
Conventional FM mode:	---	1 W nominal	
Power control (TETRA mode):	Compliant ETSI EN 300 392-2		
Receiver class:	ETSI EN 300 392-2/396-2 class A + B (referred to TETRA mode)		
SIM card:	---	Incorporated for support	
Power supply:	Li-Ion 2000 mAh		ATEX Li-Ion 1800 mAh ATEX Li-Ion 2800 mAh
Dimensions & weight:	(HxWxD) 134 x 62 x 36 mm, 320 g (with battery, without antenna)		134x62x40 mm, 335 g (std. batt.)
Air Interface protocol:	TETRA V+D MS (ETSI EN 300 392-2) TETRA DM MS (ETSI EN 300 396-2) Air Interface Encryption ( TEA 1-2)		
	---	End-to-End encryption	
EMC specifications:	ETSI EN 301 489-18		
Data terminal interface:	TETRA Peripheral Equipment Interface (ETSI EN 300 392-5)		
Bluetooth® interface:	---	bluetooth 1.1; serial port, handset and DUN profiles	

## User devices

Keys:	PTT key, pre-defined call key, emergency call key, 6 function/navigation keys, telephonic standard keypad
Rotary knobs:	1 for volume, 1 for group selection
Display:	Graphic (96x64 pixel) backlighted able to display three lines of 11 characters rec. Schengen icon

## Environmental specifications for all models

Climatic condition:	ETSI EN 300 019-1-7 Class 7.3 (-25° to +70° C)
Conformance testing specifications for TETRA equipment:	ETSI EN 300 394-1 (-20° to +55° C)
Water and Dust protection:	IEC 60529 class IP54
Mechanical conditions:	<ul style="list-style-type: none"> <li>&gt; ETSI EN 300 019-1-7 &amp; IEC 721-3-7 class 7M3</li> <li>&gt; MIL STD 810 E/F - Method 516.4/5, procedures I/IV/V</li> <li>&gt; MIL STD 810 E/F - Method 514.4/5, procedure I, category 20 (Vibration Tests for U.S. highway truck transportation and composite wheeled vehicle transp.).</li> <li>&gt; EN 60068-2-32 - Free fall 1 m. height on concrete surface</li> </ul>
Transportation Temperature:	ETSI EN 300 019-1-2 class 2.3

## Accessories for all models

- > Leather Bag (different models)
- > Shoulder belt
- > Batteries (also ATEX)
- > Desktop charger (single and multiple)
- > Travel and Car charger

## Audio accessories

A lot of audio accessorier (also ATEX)

- > Audio Kit
- > Audio Kit for covert mode
- > Neckband
- > Throat Microphone
- > Remote speaker Microphone
- > Earbud
- > Bluetooth light headset



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