

**TETRA RADIO TERMINALS**

The communications module for vehicles consist of:

- 1 (One) TETRA standard radio terminal for installation in the vehicles, **Motorola MXM600**.
- 6 (Six) portable TETRA standard radio terminals, **Motorola MXP600**.

**I. TECHNICAL SPECIFICATION**  
*“TETRA radio terminals for installation in special vehicles”*

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
1	<b>Compatibility</b>  All the terminals offered shall be compatible with the services available on the operational TETRA system infrastructure in the Republic of Moldova.	<b>Compatibility</b>  All the terminals offered shall be compatible with the services available on the operational TETRA system infrastructure in the Republic of Moldova.	Technical data sheet and Declaration of Conformity	
2	<b>Applicable technical requirements</b>	<b>Applicable technical requirements</b>		
2.1.	<b>Environmental Requirements</b>  The offered TETRA terminals shall have the following environmental characteristics:  <ul style="list-style-type: none"> <li>- Operating temperature: -30 / +60° C</li> <li>- Humidity: ETSI 300 019-1-5 CLASS 5.2</li> <li>- Shocks and vibrations: ETSI 300 019-1-5 CLASS 5M3</li> <li>- Dust and water protection: minimum IP 54.</li> </ul>	<b>Environmental Requirements</b>  The offered TETRA terminals shall have the following environmental characteristics:  <ul style="list-style-type: none"> <li>- Operating temperature: -30 / +70° C</li> <li>- Humidity: ETSI 300 019-1-5 CLASS 5.2</li> <li>- Shocks and vibrations: ETSI 300 019-1-5 CLASS 5M3</li> <li>- Dust and water protection: • IP54 for all transceiver models (even with cables connected) <ul style="list-style-type: none"> <li>- • IP54 for IP54 RECH</li> <li>- • IP55 for TSCH</li> <li>- • IP67 for IP67 RECH</li> </ul> </li> </ul>		
2.2.	<b>Configuration</b>	<b>Configuration</b>  The mobile terminal will be in "dash mount"		

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	For easy installation, the mobile terminal shall be in "dash mount" or "remote mount" configuration depending on the vehicle model and installation possibilities in the cabin			
2.3.	<p><b>RF</b></p> <p>The offered TETRA terminals shall have the following RF characteristics:</p> <p>a) RF band (TMO&amp;DMO): 380-400 MHz  b) Modulation: <math>\pi/4</math> DQPSK  c) Receiver: Class A and B  d) Power Tx terminal: minimum 10 W</p>	<p><b>RF</b></p> <p>The offered TETRA terminals shall have the following RF characteristics:</p> <p>a) RF band (TMO&amp;DMO): 350-470 MHz  b) Modulation: <math>\pi/4</math> DQPSK  c) Receiver: Class A and B  d) Power Tx terminal: 10 W</p>	Technical data sheet and Declaration of Conformity	
2.4.	<p><b>TETRA services and functionalities</b></p> <p><b><u>2.4.1. Voice services</u></b></p> <p>a) Group call (minimum 200 pre-programmed TMO groups);  b) Semi-duplex and full duplex individual call;  c) Emergency call;  d) Full duplex telephone call;  e) Call in DMO mode (at least 100 pre-programmed DMO groups).</p> <p><b><u>2.4.2. Additional services</u></b></p> <p>a) TPI, CLIP, DGNA, Late entry, Priority call; Tx inxibit;  b) Group scanning (minimum 10 groups);  c) Operation as a "DMO repeater";  d) Operation as "TMO/DMO and DMO/TMO gateway".</p> <p><b><u>2.4.3. Data Services</u></b> - SDS/SDS-TL, Status messages, IP PDS.</p>	<p><b>TETRA services and functionalities</b></p> <p><b><u>2.4.1. Voice services</u></b></p> <p>a) Group call (1000 pre-programmed TMO groups);  b) Semi-duplex and full duplex individual call;  c) Emergency call;  d) Full duplex telephone call;  e) Call in DMO mode (2000 pre-programmed DMO groups).</p> <p><b><u>2.4.2. Additional services</u></b></p> <p>a) TPI, CLIP, DGNA, Late entry, Priority call; Tx inxibit;  b) Group scanning (minimum 20 groups);  c) Operation as a "DMO repeater";  d) Operation as "TMO/DMO and DMO/TMO gateway".</p> <p><b><u>2.4.3. Data Services</u></b> - SDS/SDS-TL, Status messages, IP PDS.</p>		
2.5.	<p><b>Mobility</b></p> <p>a) Cell selection/reselection: type 3 or higher (according to the ETSI TETRA 300 392-2 standard);  b) Supports multiple networks (MNC) based on a list programmed in the terminal.</p>	<p><b>Mobility</b></p> <p>a) Cell selection/reselection: type 3 or higher (according to the ETSI TETRA 300 392-2 standard);  b) Supports multiple networks (MNC) based on a list programmed in the terminal.</p>		

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
2.6.	<p><b>Security</b></p> <ul style="list-style-type: none"> <li>a) The authentication keys shall be provided in a format that complies with TETRA MoU recommendations. The authentication keys shall be provided respecting the security rules established by the TETRA MoU SFPG recommendations.</li> <li>b) Air Interface Encryption;</li> <li>c) Encryption on the radio interface – TEA1 (<b>Terminals shall be supplied with the TEA1 algorithm</b>);</li> <li>d) Security class: class 1 (Clear), class 2 (SCK) and class 3 (DCK and CCK);</li> <li>e) Disable/Enable terminals (Remote disable/enable).</li> </ul>	<p><b>Security</b></p> <ul style="list-style-type: none"> <li>a) The authentication keys will be provided in a format that complies with TETRA MoU recommendations. The authentication keys will be provided respecting the security rules established by the TETRA MoU SFPG recommendations.</li> <li>b) Air Interface Encryption;</li> <li>c) Encryption on the radio interface – TEA1 (<b>Terminals will be supplied with the TEA1 algorithm</b>);</li> <li>d) Security class: class 1 (Clear), class 2 (SCK) and class 3 (DCK and CCK);</li> <li>e) Disable/Enable terminals (Remote disable/enable).</li> </ul>		
2.7.	<p><b>Other features</b></p> <ul style="list-style-type: none"> <li>a) Transmission inhibition in special environments (function to prevent transmission in sensitive areas to radio frequencies).</li> </ul>	<p><b>Other features</b></p> <ul style="list-style-type: none"> <li>a) Transmission inhibition in special environments (function to prevent transmission in sensitive areas to radio frequencies).</li> </ul>		
3.	<b>Specific technical requirements for the mobile TETRA terminal</b>	<b>Specific technical requirements for the mobile TETRA terminal</b>		
3.1.	<b>Nominal power supply conditions:12 V DC</b>	<b>Nominal power supply conditions:12 V DC</b>		
3.2.	<p><b>User interface (MMI)</b></p> <ul style="list-style-type: none"> <li>a) <u>Display</u> <ul style="list-style-type: none"> <li>- color display, number of display colors: minimum 65K;</li> <li>- backlight, flip screen, large icons and scalable text font options;</li> <li>- multiple display languages, user selectable;</li> <li>- indicators displayed on the display for working modes (eg: TMO, DMO, Tx inhibit, etc.);</li> <li>- menu navigation with intuitive operation.</li> </ul> </li> <li>b) <u>Keypad</u> <ul style="list-style-type: none"> <li>- alphanumeric keypad;</li> <li>- menu navigation keys;</li> <li>- emergency call initiation button/key;</li> <li>- button/key for group selection;</li> <li>- volume button/key.</li> </ul> </li> <li>c) <u>Phonebook</u></li> </ul>	<p><b>User interface (MMI)</b></p> <ul style="list-style-type: none"> <li>a) <u>Display</u> <ul style="list-style-type: none"> <li>- color display, number of display colors: 65K;</li> <li>- backlight, flip screen, large icons and scalable text font options;</li> <li>- multiple display languages, user selectable;</li> <li>- indicators displayed on the display for working modes (eg: TMO, DMO, Tx inhibit, etc.);</li> <li>- menu navigation with intuitive operation.</li> </ul> </li> <li>b) <u>Keypad</u> <ul style="list-style-type: none"> <li>- alphanumeric keypad;</li> <li>- menu navigation keys;</li> <li>- emergency call initiation button/key;</li> <li>- button/key for group selection;</li> <li>- volume button/key.</li> </ul> </li> <li>c) <u>Phonebook</u></li> </ul>		

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
	<ul style="list-style-type: none"> <li>- phonebook (tel. no. + private no. up to. 1000 contacts);</li> <li>- easy calling (e.g. by searching in the phone book, the last dialed numbers, etc.)</li> </ul> <p>d) <b>Interfaces:</b></p> <ul style="list-style-type: none"> <li>- for connecting audio accessories;</li> <li>- multifunctional interface for programming / data transmissions / AT commands.</li> </ul>	<ul style="list-style-type: none"> <li>- phonebook (tel. no. + private no. up to. 1000 contacts);</li> <li>- easy calling (e.g. by searching in the phone book, the last dialed numbers, etc.)</li> </ul> <p>d) <b>Interfaces:</b></p> <ul style="list-style-type: none"> <li>- for connecting audio accessories;</li> <li>- multifunctional interface for programming / data transmissions / AT commands.</li> </ul>		
3.3.	<p><b>Integrated GPS receiver</b></p> <p>a) The TETRA mobile terminal shall be equipped with an integrated GPS receiver with the following specifications:</p> <ul style="list-style-type: none"> <li>- satellites received simultaneously: minimum 10;</li> <li>- sensitivity: min. – 152 dBm;</li> <li>- precision/accuracy: max 5 m.</li> </ul> <p>b) The TETRA mobile terminal shall support the ETSI LIP protocol.</p> <p>c) The TETRA mobile terminal shall support simultaneous location data transmission (from the user's point of view) using the TETRA Packet Data service.</p>	<p><b>Integrated GPS receiver</b></p> <p>a) The TETRA mobile terminal shall be equipped with an integrated GPS receiver with the following specifications:</p> <ul style="list-style-type: none"> <li>- satellites received simultaneously: minimum 12;</li> <li>- sensitivity: min. – 163 dBm;</li> <li>- precision/accuracy: max 1.2 m.</li> </ul> <p>b) The TETRA mobile terminal supports the ETSI LIP protocol.</p> <p>c) The TETRA mobile terminal supports simultaneous location data transmission (from the user's point of view) using the TETRA Packet Data service.</p>	Technical data sheet and Declaration of Conformity	
4.	<p><b>Accessories and installation kit</b></p> <p>For each terminal the Seller shall provide accessories and installation kit. These shall include:</p> <ul style="list-style-type: none"> <li>- standard microphone with PTT and fixing support;</li> <li>- speaker with connecting cable and fixing support;</li> <li>- power cable with fuse and suitable connectors (adapted to practical situations);</li> <li>- fixing support in the vehicle;</li> <li>- omnidirectional car antenna, band 380...400 MHz, VSWR&lt;1.5 in the band of interest, impedance 50 ohms, type of fixation on the body, provided with an installation kit (fixation, RF cable, connectors, etc.);</li> <li>- converter from 24V DC to 12V DC (if the voltage available on the vehicle requires it);</li> </ul>	<p><b>Accessories and installation kit</b></p> <p>For each terminal the Seller will provide accessories and installation kit. These will include:</p> <ul style="list-style-type: none"> <li>- standard microphone with PTT and fixing support;</li> <li>- speaker with connecting cable and fixing support;</li> <li>- power cable with fuse and suitable connectors (adapted to practical situations);</li> <li>- fixing support in the vehicle;</li> <li>- omnidirectional car antenna, band 380...400 MHz, VSWR&lt;1.5 in the band of interest, impedance 50 ohms, type of fixation on the body, provided with an installation kit (fixation, RF cable, connectors, etc.);</li> <li>- converter from 24V DC to 12V DC (if the voltage available on the vehicle requires it);</li> </ul>		

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
	<ul style="list-style-type: none"> <li>- active GPS antenna integrated on the same support as the UHF antenna, band 1.5...1.6GHz, VSWR&lt;1.5 in the band of interest, impedance 50 ohm, type fixing on the vehicle chassis body, provided with an installation kit (fixing, RF cable, connectors, etc.).</li> </ul>	<ul style="list-style-type: none"> <li>- active GPS antenna integrated on the same support as the UHF antenna, band 1.5...1.6GHz, VSWR&lt;1.5 in the band of interest, impedance 50-ohm, type fixing on the vehicle chassis body, provided with an installation kit (fixing, RF cable, connectors, etc.).</li> </ul>		
5.	<p><b>Terminal installation</b></p> <ul style="list-style-type: none"> <li>- The contractor shall carry out the installations of mobile TETRA terminals.</li> <li>- The installation shall be based on a prototype installation agreed between the Contractor and the Beneficiary;</li> <li>- The installation of the equipment (radio terminal and accessories), the DC power supply solution, the RF and DC cable routes, the power supply solution, shall be established/carried out on the basis of solutions coordinated with the Beneficiary as well as with the manufacturer (official representative) of the vehicle so as not to affect the warranty for the vehicle;</li> <li>- All installations shall allow easy access to the radio unit of the terminal</li> </ul>	<p><b>Terminal installation</b></p> <ul style="list-style-type: none"> <li>- The contractor will carry out the installations of mobile TETRA terminals.</li> <li>- The installation will be based on a prototype installation agreed between the Contractor and the Beneficiary;</li> <li>- The installation of the equipment (radio terminal and accessories), the DC power supply solution, the RF and DC cable routes, the power supply solution, will be established/carried out on the basis of solutions coordinated with the Beneficiary as well as with the manufacturer (official representative) of the vehicle so as not to affect the warranty for the vehicle;</li> <li>- All installations will allow easy access to the radio unit of the terminal</li> </ul>	Technical data sheet and Declaration of Conformity	

**II. TECHNICAL SPECIFICATION**  
*“Portable (handheld)TETRA radio terminals”*

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
1	<b>Interoperability</b> All the terminals offered shall be compatible with the services available on the operational TETRA system infrastructure in the Republic of Moldova.	<b>Interoperability</b> All the terminals offered will be compatible with the services available on the operational TETRA system infrastructure in the Republic of Moldova.	Technical data sheet and Declaration of Conformity	
2	<b>Applicable technical requirements</b>	<b>Applicable technical requirements</b>		
2.1.	<b>Environmental Requirements</b> The offered TETRA terminals shall have the following environmental characteristics: - Operating temperature: -30 / +70° C - Humidity: ETSI 300 019-1-7 CLASS 7.3E - Shocks and vibrations: ETSI 300 019-1-7 CLASS 5M3 - Dust and water ingress protection: IP 65/66/67	<b>Environmental Requirements</b> The offered TETRA terminals shall have the following environmental characteristics: - Operating temperature: -30 / +70° C - Humidity: ETSI 300 019-1-7 CLASS 7.3E - Shocks and vibrations: ETSI 300 019-1-7 CLASS 5M3 - Dust and water ingress protection: IP 65/66/67/68		
2.2.	<b>RF</b> The offered TETRA terminals shall have the following RF characteristics: a) RF band (TMO&DMO): 380-400 MHz b) Modulation: $\pi/4$ DQPSK c) Receiver: Class A și B d) Power Tx terminal: adjustable in steps up to <b>1.8W</b> (class 3L);	<b>RF</b> The offered TETRA terminals shall have the following RF characteristics: a) RF band (TMO&DMO): 380-400 MHz b) Modulation: $\pi/4$ DQPSK c) Receiver: Class A și B d) Power Tx terminal: adjustable in steps up to <b>1.8W</b> (class 3,3L,4);		
2.5.	<b>TETRA services and functionalities</b> <u><b>2.5.1. Voice services</b></u> a) Group call (minimum 200 pre-programmed TMO groups); b) Semi-duplex and full duplex individual call; c) Emergency call; d) Full duplex telephone call;	<b>TETRA services and functionalities</b> <u><b>2.5.1. Voice services</b></u> a) Group call (10000 pre-programmed TMO groups); b) Semi-duplex and full duplex individual call; c) Emergency call; d) Full duplex telephone call; e) Call in DMO mode (2000 pre-programmed DMO groups).		

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
	<p>e) Call in DMO mode (at least 100 pre-programmed DMO groups).</p> <p><b><u>2.5.2. Additional services</u></b></p> <p>a) TPI; b) CLIP; c) DGNA; d) Late entry; e) Priority Call; f) Group scanning (minimum 10 groups in scanning); g) Operation in "repeater" mode; h) Operation in "gateway interface" mode.</p> <p><b><u>2.5.3. Data Services</u></b></p> <p>a) SDS/SDS-TL; b) Status messages c) IP PDS; d) AT Commands.</p>	<p><b><u>2.5.2. Additional services</u></b></p> <p>a) TPI; b) CLIP; c) DGNA; d) Late entry; e) Priority Call; f) Group scanning (minimum 10 groups in scanning); g) Operation in "repeater" mode; h) Operation in "gateway interface" mode.</p> <p><b><u>2.5.3. Data Services</u></b></p> <p>a) SDS/SDS-TL; b) Status messages c) IP PDS; d) AT Commands.</p>		
2.6.	<p><b>Mobility</b></p> <p>a) Cell reselection: type 3 or higher; b) Supports multiple networks (MNC) based on a list programmed in the terminal.</p>	<p><b>Mobility</b></p> <p>a) Cell reselection: type 3 or higher; b) Supports multiple networks (MNC) based on a list programmed in the terminal.</p>	Technical data sheet and Declaration of Conformity	
2.7.	<p><b>Security</b></p> <p>a) The authentication keys shall be provided in a format that complies with TETRA MoU recommendations. The authentication keys shall be provided respecting the security rules established by the TETRA MoU SFPG recommendations; b) Air Interface Encryption; c) Encryption on the radio interface – TEA1 (<b>Terminals shall be provided with the TEA1 encryption algorithm</b>); d) Security class: class 1 (Clear), class 2 (SCK) and class 3 (DCK and CCK); e) Disable/Enable terminals (<i>Remote disable/enable</i>).</p>	<p><b>Security</b></p> <p>a) The authentication keys will be provided in a format that complies with TETRA MoU recommendations. The authentication keys will be provided respecting the security rules established by the TETRA MoU SFPG recommendations. b) Air Interface Encryption; c) Encryption on the radio interface – TEA1 (<b>Terminals will be provided with the TEA1 encryption algorithm</b>); d) Security class: class 1 (Clear), class 2 (SCK) and class 3 (DCK and CCK); e) Disable/Enable terminals (<i>Remote disable/enable</i>).</p>		

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
2.8	<b>Other features</b> a) Transmission inhibition in special environments (function to prevent transmission in sensitive areas to radio frequencies).	<b>Other features</b> a) Transmission inhibition in special environments (function to prevent transmission in sensitive areas to radio frequencies).		
3.	<b>Connectivity</b>	<b>Connectivity</b>		Technical data sheet and Declaration of Conformity
3.1.	<b>Wi-Fi</b> - supported IEEE Standards 802.11 a, b, g, n, ac; - Wi-Fi bands: 2.4GHz and 5GHz; - authentication and encryption; - security TLS 1.2.	<b>Wi-Fi</b> - supported IEEE Standards 802.11 a, b, g, n, ac; - Wi-Fi bands: 2.4GHz and 5GHz; - authentication and encryption; - security TLS 1.2.		
3.2.	<b>Bluetooth</b> - supported versions: at list Bluetooth 4.0, and 2.1; - headset profile (HSP), fast PTT with accessories.	<b>Bluetooth</b> - supported versions: at list Bluetooth 5.0, 4.2, 4.1, 4.0, and 2.1 + EDR; - headset profile (HSP), fast PTT with accessories.		
4.	<b>User interface (MMI)</b> a) <u>Display</u> - color screen with the possibility of rotating the image; - color display minimum 1.7 inches; - backlight, flip screen, large icons and scalable text font options; - multiple display languages, user selectable; - indicators shown on the display for working modes (eg: TMO, DMO, etc.); - menu navigation with intuitive operation. b) <u>Keypad</u> - alphanumeric keypad; - menu navigation keys; - emergency call initiation button/key; - button/key for selecting group and volume; - user configurable one touch buttons and keys; - keypad lock. c) <u>Phonebook</u>	<b>User interface (MMI)</b> a) <u>Display</u> - color screen with the possibility of rotating the image; - color display minimum 2.4 inches; - backlight, flip screen, large icons and scalable text font options; - multiple display languages, user selectable; - indicators shown on the display for working modes (eg: TMO, DMO, etc.); - menu navigation with intuitive operation. b) <u>Keypad</u> - alphanumeric keypad; - menu navigation keys; - emergency call initiation button/key; - button/key for selecting group and volume; - user configurable one touch buttons and keys; - keypad lock. c) <u>Phonebook</u>		

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
	<ul style="list-style-type: none"> <li>- phonebook (tel. no. + private no. up to 1000 contacts);</li> <li>- easy dialing (e.g. by searching in the phone book, the last dialed numbers, etc.)</li> </ul> <p>d) <u>Audio &amp; programming interface/data transmissions</u></p> <ul style="list-style-type: none"> <li>- audio amplifier and speaker (the amplifier and speaker shall have sufficient power to ensure the terminal is usable in noisy environments);</li> <li>- audio mode: loudspeaker / discrete (loud / discrete) selectable from the MMI. The audio volume shall be controllable from the MMI;</li> <li>- possibility of using audio accessories;</li> <li>- multifunctional interface for programming/data transmissions;</li> <li>- supports Over-The-Air Programming.</li> </ul>	<ul style="list-style-type: none"> <li>- phonebook (tel. no. + private no. up to 2000 contacts);</li> <li>- easy dialing (e.g. by searching in the phone book, the last dialed numbers, etc.)</li> </ul> <p>d) <u>Audio &amp; programming interface/data transmissions</u></p> <ul style="list-style-type: none"> <li>- audio amplifier and speaker (the amplifier and speaker shall have sufficient power to ensure the terminal is usable in noisy environments);</li> <li>- audio mode: loudspeaker / discrete (loud / discrete) selectable from the MMI. The audio volume shall be controllable from the MMI;</li> <li>- possibility of using audio accessories;</li> <li>- multifunctional interface for programming/data transmissions;</li> <li>- supports Over-The-Air Programming.</li> </ul>		
5.	<p><b>Integrated GPS receiver</b></p> <p>a) The portable TETRA terminal shall be equipped with an integrated GPS receiver with the following specifications:</p> <ul style="list-style-type: none"> <li>- satellites received simultaneously: minimum 8;</li> <li>- sensitivity: min. – 163 dBm;</li> <li>- precision/accuracy: max 5 m (50% probability);</li> </ul> <p>b) Active GPS antenna, integrated in the TETRA antenna or in the terminal;</p> <p>c) The TETRA portable terminal shall support ETSI LIP.</p>	<p><b>Integrated GPS receiver</b></p> <p>a) The portable TETRA terminal shall be equipped with an integrated GPS receiver with the following specifications:</p> <ul style="list-style-type: none"> <li>- satellites received simultaneously: minimum 8;</li> <li>- sensitivity: min. – 163 dBm;</li> <li>- precision/accuracy: max 1.2 m (95% probability);</li> </ul> <p>b) Active GPS antenna, integrated in the TETRA antenna or in the terminal;</p> <p>c) The TETRA portable terminal shall support ETSI LIP.</p>	Technical data sheet and Declaration of Conformity	
6.	<p><b>Battery</b></p> <p>a) Battery type: Lithium-Ion or Lithium-Polymer;</p> <p>b) Capacity: minimum 1950 mAh;</p> <p>c) Autonomy for mode 5/5/90 (Tx/Rx/Standby): ≥ 18 hours.</p>	<p><b>Battery</b></p> <p>a) Battery type: Lithium-Ion or Lithium-Polymer;</p> <p>b) Capacity: 2900 mAh;</p> <p>c) Autonomy for mode 5/5/90 (Tx/Rx/Standby): ≥ 18 hours.</p>		
7.	<p><b>Accessories</b></p> <p>Each terminal shall be supplied with the following accessories:</p> <ul style="list-style-type: none"> <li>- compact RF Antenna;</li> </ul>	<p><b>Accessories</b></p> <p>Each terminal will be supplied with the following accessories:</p> <ul style="list-style-type: none"> <li>- compact RF Antenna;</li> </ul>		

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
	<ul style="list-style-type: none"> <li>- handsfree accessory with integrated microphone, loudspeaker and PTT button, equipped with a rotating clip for attachment to the lapel;</li> <li>- clip for fixing the portable terminal to the belt;</li> <li>- dual charger for simultaneous charging of terminal and battery (EU plug);</li> <li>- vehicle charger;</li> <li>- spare battery with specifications according to point 6.</li> </ul>	<ul style="list-style-type: none"> <li>- handsfree accessory with integrated microphone, loudspeaker and PTT button, equipped with a rotating clip for attachment to the lapel;</li> <li>- clip for fixing the portable terminal to the belt;</li> <li>- dual charger for simultaneous charging of terminal and battery (EU plug);</li> <li>- vehicle charger;</li> <li>- spare battery with specifications according to point 6.</li> </ul>		

**III. Terminal programming and general requirements for all TETRA radio terminals**  
(for vehicle and handheld terminals mentioned)

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
1.	<p><b>Programming</b></p> <p><b>1.1</b> The programming of the TETRA terminals shall be possible by the Beneficiary through a PC/laptop equipped with a USB port.</p> <p><b>1.2</b> A programming set shall be provided for the entire quantity of TETRA mobile terminals. This shall contain all the necessary elements for programming the</p> <p>TETRA mobile terminals provided, namely:</p> <ul style="list-style-type: none"> <li>- USB programming cable;</li> <li>- programming application (including radio software versions);</li> <li>- the license/hardware key for the programming application (if applicable);</li> </ul>	<p><b>Programming</b></p> <p><b>1.1</b> The programming of the TETRA terminals will be possible by the Beneficiary through a PC/laptop equipped with a USB port.</p> <p><b>1.2</b> A programming set will be provided for the entire quantity of TETRA mobile terminals. This will contain all the necessary elements for programming the</p> <p>TETRA mobile terminals provided, namely:</p> <ul style="list-style-type: none"> <li>- USB programming cable;</li> <li>- programming application (including radio software versions);</li> <li>- the license/hardware key for the programming application (if applicable);</li> </ul>		

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
	<ul style="list-style-type: none"> <li>- for the programming application, the User Guide shall be delivered, which shall include the description of how to install and operate the application, in English;</li> </ul> <p>For TETRA terminals, an instance of the software application and / or hardware device shall be provided for uploading the authentication / encryption keys (<b>only if the TETRA radio communication system administrator does not have such software / hardware products</b>), so that the keys authentication / encryption can be loaded by the Beneficiary on any of the types of terminals provided. If uploading authentication/encryption keys is done with a software application, it shall work on any PC/laptop with Windows 10/11 64-bit operating system.</p>	<ul style="list-style-type: none"> <li>- for the programming application, the User Guide will be delivered, and will include the description of how to install and operate the application, in English;</li> </ul> <p>For TETRA terminals, an instance of the software application and / or hardware device will be provided for uploading the authentication / encryption keys (<b>only if the TETRA radio communication system administrator does not have such software / hardware products</b>), so that the keys authentication / encryption can be loaded by the Beneficiary on any of the types of terminals provided. If uploading authentication/encryption keys is done with a software application, it shall work on any PC/laptop with Windows 10/11 64-bit operating system.</p>		
2.	<p><b>General requirements</b></p> <p><b>2.1</b> The terminals shall be programmed by the Beneficiary with the support of the Seller, in collaboration with the administrator of the TETRA radio communication system, in which they are to be integrated. The Bidder undertakes that, at the Beneficiary's request, it shall provide technical assistance free of charge, whenever necessary, during the entire programming period of the terminals, including the phase of entering the authentication/encryption keys, respectively of registering the terminals in the TETRA infrastructure.</p> <p><b>2.2</b> The delivered products shall be new and unused. Equipment declared by the manufacturer as EoS (End of Sale) or EoL (End of Life), or to be declared as EoS or EoL in the year of purchase, shall not be accepted.</p> <p><b>2.3</b> Any software/firmware license required for the operation of the equipment according to the technical specifications within this specification shall be provided and included in the equipment price</p> <p><b>2.4</b> Any material or accessory, device or sub-assembly and any other similar materials, which are necessary for the correct installation and operation at the parameters specified in this</p>	<p><b>General requirements</b></p> <p><b>2.1</b> The terminals will be programmed by the Beneficiary with the support of the Seller, in collaboration with the administrator of the TETRA radio communication system, in which they are to be integrated. The Bidder undertakes that, at the Beneficiary's request, it will provide technical assistance free of charge, whenever necessary, during the entire programming period of the terminals, including the phase of entering the authentication/encryption keys, respectively of registering the terminals in the TETRA infrastructure.</p> <p><b>2.2</b> The delivered products will be new and unused. Equipment declared by the manufacturer as EoS (End of Sale) or EoL (End of Life), or to be declared as EoS or EoL in the year of purchase, shall not be accepted.</p> <p><b>2.3</b> Any software/firmware license required for the operation of the equipment according to the technical specifications within this specification will be provided and included in the equipment price</p> <p><b>2.4</b> Any material or accessory, device or sub-assembly and any other similar materials, which are necessary for the correct installation and operation at the parameters specified in this</p>		

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	<p>specification shall be considered a priori requested, and the equipment shall be delivered with all of them.</p> <p><b>2.5</b> A user manual in English shall be provided for each portable terminal.</p>	<p>specification shall be considered a priori requested, and the equipment shall be delivered with all of them.</p> <p><b>2.5</b> A user manual in English will be provided for each portable terminal.</p>		
3.	<p><b>Warranty</b></p> <p>The warranty for the supplied equipment, including its accessories, is a minimum of 24 months from the date of final acceptance.</p>	<p><b>Warranty</b></p> <p>The warranty for the supplied equipment, including its accessories, is 24 months from the date of final acceptance.</p>		
4.	<p><b>Abbreviations for all TETRA radio terminals:</b></p> <p>AL - Ambience Listening ARL - Automatic Resource Location AVL - Automatic Vehicle Location CLIP - Calling Line Identification Presentation DGNA - Dynamic Group Number Assignment DMO - Direct Mode Operation DTE - Data Terminal Equipment ETSI - European Telecommunications Standards Institute GC - Group Call GPS - Global Positioning System IC - Individual Call IP - Internet Protocol ISCOM - Istituto Superiore delle Comunicazioni e delle Tecnologie de informazione (Italian Ministry of Communications Laboratory) LIP - Location Information Protocol MCC - Mobile Country Code MNC - Mobile Network Code MoU - Memorandum of Understanding PC - Personal Computer PDS - Packet Data Services PEI - Peripheral Equipment Interface PIN - Personal Identification Number PTT - Push To Talk PSU - Power Supply Unit RF - Radio Frequency Rx - Receive SDS - Short Data Services SFPG - Security and Fraud Prevention Group ST - Technical Specification SwMI - Switching and Management Infrastructure TEA - Tetra Encryption Algorithm TETRA - Terrestrial Trunked Radio</p>	<p><b>Abbreviations for all TETRA radio terminals:</b></p> <p>AL - Ambience Listening ARL - Automatic Resource Location AVL - Automatic Vehicle Location CLIP - Calling Line Identification Presentation DGNA - Dynamic Group Number Assignment DMO - Direct Mode Operation DTE - Data Terminal Equipment ETSI - European Telecommunications Standards Institute GC - Group Call GPS - Global Positioning System IC - Individual Call IP - Internet Protocol ISCOM - Istituto Superiore delle Comunicazioni e delle Tecnologie de informazione (Italian Ministry of Communications Laboratory) LIP - Location Information Protocol MCC - Mobile Country Code MNC - Mobile Network Code MoU - Memorandum of Understanding PC - Personal Computer PDS - Packet Data Services PEI - Peripheral Equipment Interface PIN - Personal Identification Number PTT - Push To Talk PSU - Power Supply Unit RF - Radio Frequency Rx - Receive SDS - Short Data Services SFPG - Security and Fraud Prevention Group ST - Technical Specification SwMI - Switching and Management Infrastructure TEA - Tetra Encryption Algorithm TETRA - Terrestrial Trunked Radio</p>		

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	TL - Transport Layer TMO -Trunk Mode Operation TPI - Talking Party Identification Tx - Transmit URL - Uniform Resource Locator V+D - Voice + Data VSWR - Voltage Standing Wave Ratio	TL - Transport Layer TMO -Trunk Mode Operation TPI - Talking Party Identification Tx - Transmit URL - Uniform Resource Locator V+D - Voice + Data VSWR - Voltage Standing Wave Ratio		

Date: 28/01/2026