



**FLEXIBLE MIGRATION TO CRITICAL BROADBAND COMMUNICATION**

# TETRA AND LTE WORKING TOGETHER

The MTS4L TETRA/LTE Base Station provides a flexible path for the addition of LTE to complement a TETRA system. By provisioning for the addition of an eNodeB into the TETRA Base Station cabinet, Motorola is offering a highly flexible migration solution for TETRA operators.

The MTS4L can be installed as a TETRA only base station, but it can include the services for the eNodeB such as shared backhaul, common power supply and battery backup. These services can be installed at the start or they can be upgraded at a later time when needed by customers. Most importantly the MTS4L footprint is unchanged when the eNodeB is installed and so the upgrade is very simple and fast.

### MTS4 TETRA BTS IN THE MTS4L CABINET

#### DESIGNED FOR THE FUTURE

Built and designed for future communications needs, the MTS4 supports TETRA Enhanced Data Services (TEDS) - the platform for secure mission critical high speed data services.

Providing support for E1 and IP-over-Ethernet, the MTS4 enables operators to utilize the most efficient and cost effective transmission networking technologies available today and in the future.

#### FLEXIBLE CAPACITY AND COVERAGE

The compact MTS4 is a high performance base station with state of the art capacity and coverage enhancing capabilities:

- C-SCCH – additional control channels on the main carrier, quadrupling existing capacity.
- Best-in-class transmitter output power and receiver sensitivity, together with various diversity options, enabling a reduction in the number of sites required to achieve a given level of coverage, and increased data performance and enhanced audio quality.
- The flexibility of connecting up to 8 BR's to just one Rx/Tx antenna, easing implementation costs and reducing cycle time.

#### MTS4 ADDITIONAL FEATURES

- Provision for eNode B in the same cabinet as the TETRA BTS
- Rapid installation of eNode B as a future upgrade with minimum cost and disruption
- Migration flexibility, choose frequency and roll-out when appropriate
- Interference Detection and Correction
- Air Interface Encryption
- Multi-Slot Packet Data (MSPD) for enhanced data services
- Hot swappable modules
- Traffic Channel Rotation
- Dynamic Channel allocation between voice and packet data
- Lockable door equipped with standard alarm contacts – an effective intrusion detection system.

**OPTIMISED TOTAL COST OF OWNERSHIP**

The running costs of basestation sites typically account for a significant portion of the total cost of ownership of any TETRA network. MTS4 basestations are specifically designed with advanced features that help to minimise operational expenditures. Such features enable:

- Better power consumption through use of high efficiency processing and amplification platforms – delivering significant operational cost savings over the network’s lifetime.
- Reduced transmission costs – native support using IP-over-Ethernet capability means that the MTS4 can enable up to 70% savings compared with non-IP based transmission.
- Reduced battery capacity requirement and low heat dissipation due to excellent power efficiency. With a strong integrated battery charger, power supply costs are kept to an absolute minimum.

**RELIABLE AND EASY TO MAINTAIN**

The MTS4 offers supreme reliability plus flexible access for easy servicing. Key features include:

- Two E1 or Ethernet interfaces can be provided with the MTS4 to facilitate implementing link redundancy using ring configurations. Redundant E1 and Ethernet ports can be activated in the event of link failure, ensuring continuous connectivity.

- Local Site Trunking – in the event of site link failure, the base station is able to operate independent of the mobile switching office, maintaining secure talkgroup communications throughout.
- Non-GPS operation – supports operation in the absence of a GPS signal, ideally suited to underground applications.
- Full redundancy of site controller and base radio subsystems including support for automatic Main Control Channel switching.

**TOTALLY SECURE...DAY AND NIGHT**

With the MTS4, there is no need to worry about theft or vandalism. The basestation equipment includes the latest security features for total peace of mind:

- External alarm interface supports 15 alarm inputs and 2 external control outputs.
- The MTS4L supports site link encryption in release 8.1, and air interface encryption with TEA1, TEA2 and TEA3.



|   | UHF   | 800MHz   |
|---|---|--|
| Frequency Bands                               | 350 - 430 MHz, 380- 470 MHz   | 851 to 870 (Tx), 806 to 825 (Rx) MHz   |
| Transmit Power at top of base station cabinet | 25W (10W TEDS) 40W (with combiner bypass) (20W TEDS)  | 25W (10W TEDS) 40W (with combiner bypass) (20W TEDS)   |
| Power   | Input Power<br>- 48V DC<br>- Equipped with integrated battery chargers  | Input Power<br>- 48V DC<br>- Equipped with integrated battery chargers   |
| Sensitivity at top of base station cabinet    | -120 dBm typical (static at 4% BER) -113.5 dBm typical (faded at 4% BER)  | -119.5 dBm typical (static at 4% BER) -113.5 dBm typical (faded at 4% BER)   |
| Operating Ambient Temperature                 | -30 to 60°C (5 to 50°C When eNodeB fitted)  | -30 to 55°C (5 to 50°C When eNodeB fitted)   |
| Weight (max, fully equipped with 4 BR)        | 408 kg (est.) (Seismic Rack 426 kg (est.))  | 408 kg (est.) (Seismic Rack 426 kg (est.))   |
| Width x Height x Depth                        | 60 x 65 x 183 cm (WxDxH)<br>60 x 65 x 186 cm (WxDxH) Seismic Rack<br>207 kg typ. @ 4 BR, ATCC<br>306 kg typ. @ 4 BR, ATCC + full eNodeB+Switch  | 60 x 65 x 183 cm (WxDxH)<br>60 x 65 x 186 cm (WxDxH) Seismic Rack<br>207 kg typ. @ 4 BR, ATCC<br>306 kg typ. @ 4 BR, ATCC + full eNodeB+Switch   |
| Power Consumption                             | Power consumption 760 Watt (Low Power BR)<br>- Equipped with 4 Base Radios<br>- 10 Watt transmit power (after combiner)<br><br>Power consumption 1300 Watt (High Power BR)<br>- Equipped with 4 Base Radio<br>- 25 Watt transmit power (after combiner)<br><b>Note:</b> High Power BR Tx is 40W - bypassing combiners.<br>TEDS available with High Power BR | Power consumption 1080 Watt (Low Power BR)<br>- Equipped with 4 Base Radios<br>- 10 Watt transmit power (after combiner)<br><br>Power consumption 1445 Watt (High Power BR)<br>- Equipped with 4 Base Radio<br>- 25 Watt transmit power (after combiner)<br><b>Note:</b> High Power BR Tx is 40W - bypassing combiners.<br>TEDS operation with High Power BR |
| Diversity Reception                           | Dual or triple-diversity, duplexed or non-duplexed  | Dual or triple-diversity, duplexed or non-duplexed   |
| High Speed Data                               | TEDS QAM modulation schemes with 25 / 50 kHz channel bandwidths   | TEDS QAM modulation schemes with 25 / 50kHz channel bandwidths   |
| Combiner Options                              | Combiner Bypass, Hybrid combiner, Auto Tune Cavity, Manual Tune Cavity  | Combiner Bypass, Hybrid combiner, Auto Tune Cavity, Manual Tune Cavity   |
| Carrier Spacing                               | 25 kHz (25 / 50 kHz for TEDS)   | 25 kHz (25 / 50 kHz for TEDS)  |
| Operating Bandwidth                           | 5 MHz   | 19 MHz   |
| Transmission                                  | • IP Over Ethernet, Fractional E1 connection • Two Ethernet or Two E1 ports with in built multiplexer for either loop protection or redundancy (up to 10 base stations can be connected in loop) • Support for satellite transmission   | • IP Over Ethernet, fractional E1 connection • Two Ethernet or Two E1 ports with in built multiplexer for either loop protection or redundancy (up to 10 base stations can be connected in loop) • Support for satellite transmission  |

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