



MTS1 TETRA Base Station

Providing seamless TETRA coverage everywhere





The Future of TETRA Technology

TETRA has been designed as a trunked system that effectively and economically supports shared usage of the network by several organizations, yet maintaining privacy and mutual security. Now present in more than 100 countries, the increasing adoption of TETRA amongst public safety agencies and commercial users is having a profound effect on network infrastructure needs and performance. As traffic in TETRA networks continues to increase, operators need solutions that offer flexibility in delivering enhanced coverage and capacity.

Successful TETRA network deployments require an in-depth understanding of RF system planning and design as well as management tools to optimize long-term network performance, reliability and efficient operations. With a leadership position in mission critical networks, terminals, applications and services, Motorola is uniquely positioned to deliver on these needs, helping to ensure that end users can focus on their mission, not the technology.

Motorola is committed to investing in products that support the needs of TETRA operators and users, providing customers with the most up-to-date, future-ready technology available.

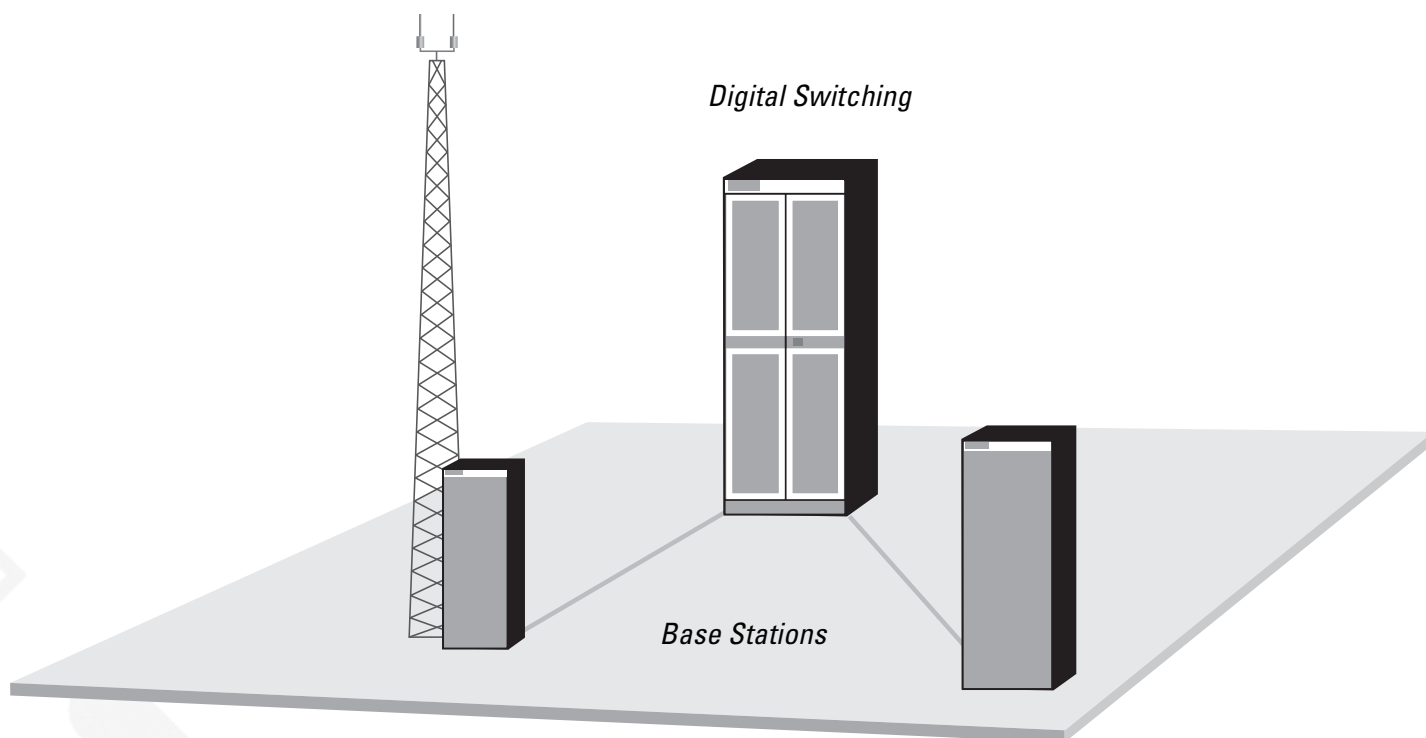


Motorola's TETRA Base Stations

Motorola's new generation of smaller and lighter TETRA base stations is designed to reduce site rental, installation and operating costs. Further operational benefits are achieved through "drop & insert" E1 and Ethernet interfaces, which enable cost efficient, flexible and resilient connections to the switching centre. Additionally, the use of two lines of connection between the base station and the central switching equipment provides two clear benefits for operators and users:

- It allows more base stations to be added to a network ring, reducing the length of connections between base stations that, in turn, lowers line rental costs.
- The use of two lines provides a redundant connection in case one fails, ensuring always-on connectivity.

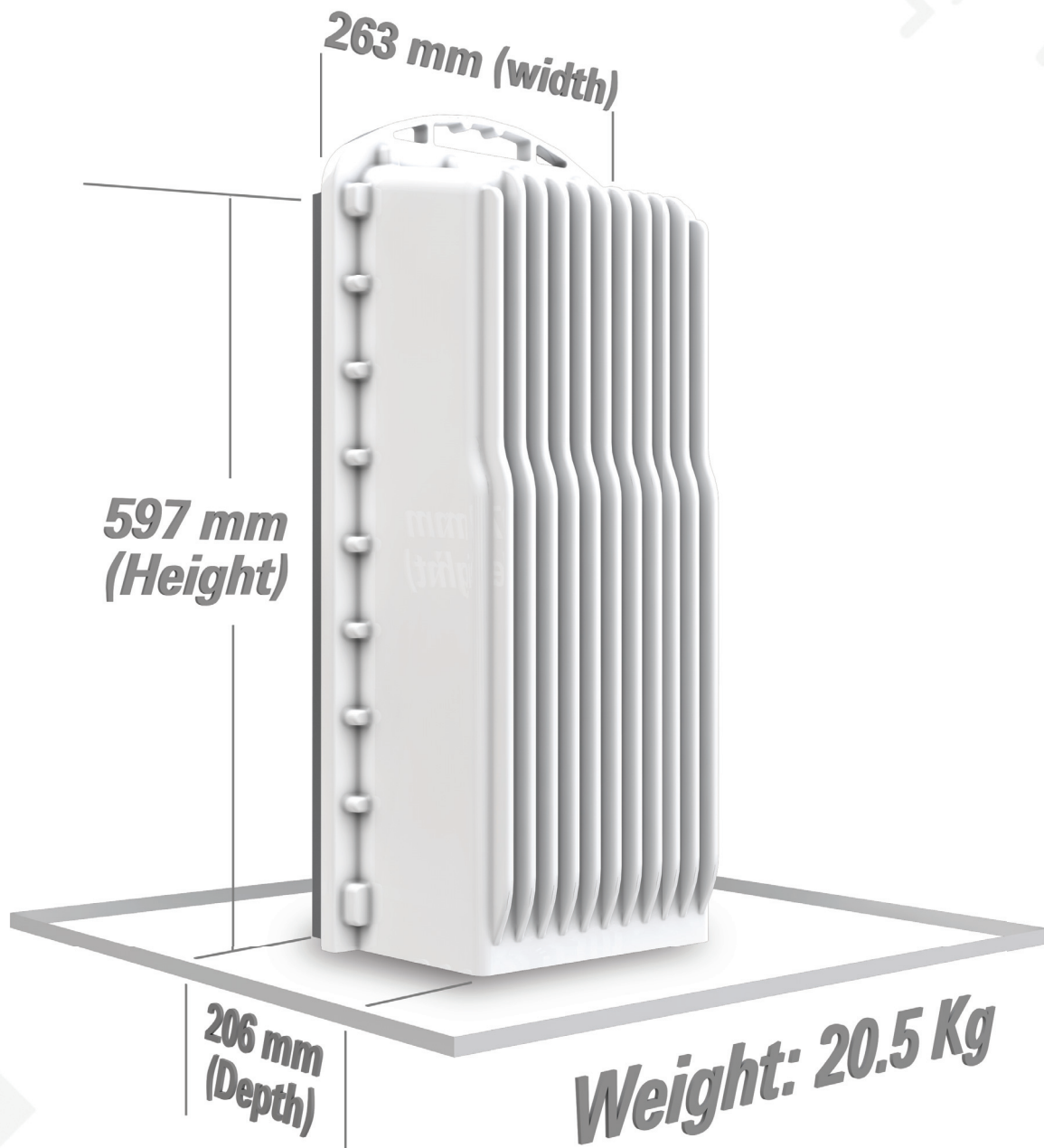
These base stations also deliver "Best-in-Class" receiver sensitivity performance that allows network operators to provide TETRA coverage with fewer sites and gives users better quality of service.



The New MTS1 Base Station

Introducing the World's Smallest TETRA Base Station

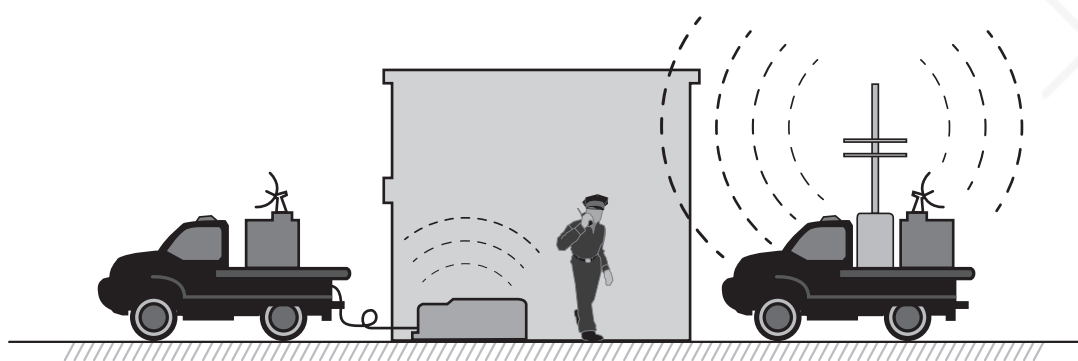
The new MTS1 base station offers network operators a comprehensive coverage solution that can be rapidly installed and commissioned. With its IP66 weather resistant enclosure, small form factor, lightweight and ergonomic design, the MTS1 offers a wide variety of implementation options. Whether it be for indoor or outdoor wide area coverage applications, the MTS1 provides complete flexibility, covering wall and pole mounted installations.



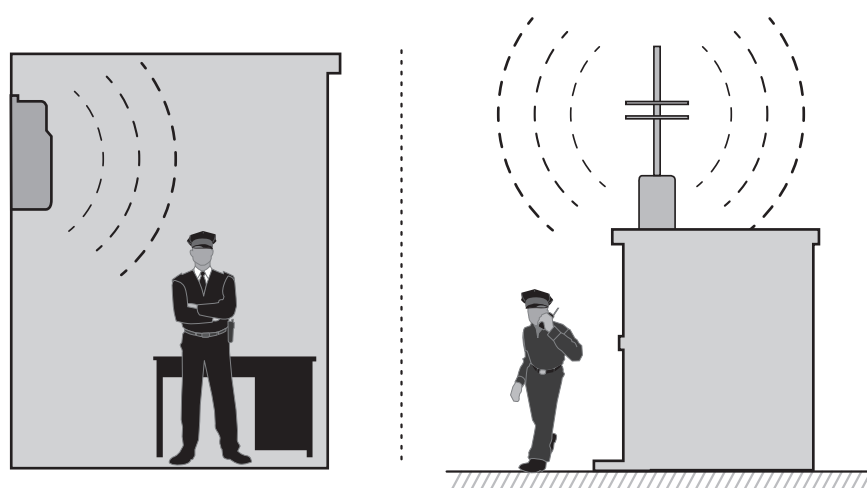


Seamless “TETRA Everywhere” Experience

The light and easily transportable MTS1 base station, with its small, ruggedized form factor, compatibility with 6.x and later Dimetra system platforms and wide operating range from -40 to +55 Celsius, has the ability to provide seamless TETRA coverage everywhere, in temporary as well as permanent indoor and outdoor deployments.



Temporary Deployments



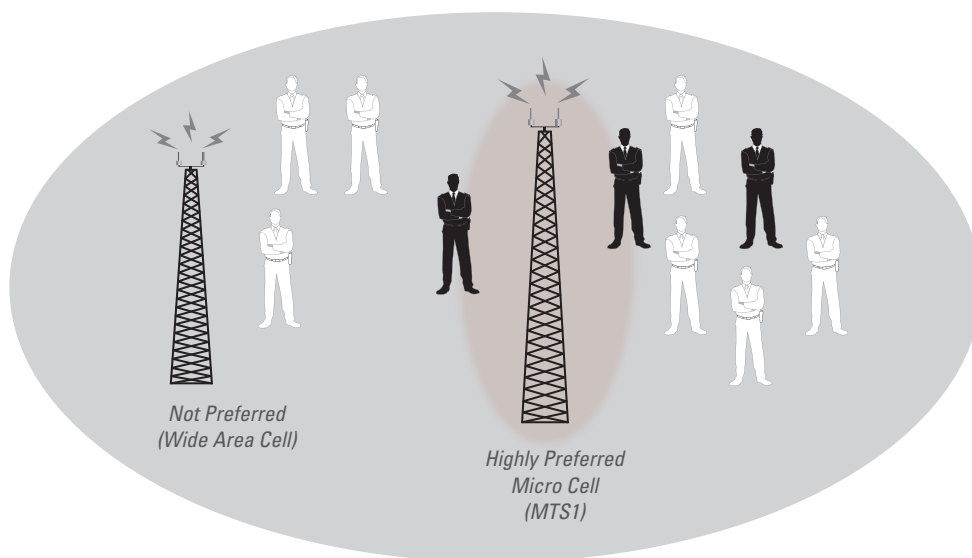
Permanent Deployments

The MTS1 ensures **transparent end-user operations**, enables **increased use of system services** and provides **longevity of technology and investment**.

Better coverage. More capacity

Increased spectrum efficiency allows more users to be served within the allocated radio spectrum. By deploying low power MTS1 base stations in traffic hotspots, wide area cell frequencies can be re-used, enabling significantly enhanced system capacity. Also, by applying additional features from Motorola's portfolio of capacity management solutions, traffic can be intelligently managed between micro and wide area cells to further increase trunking efficiency and avoid congestion.

By invoking capabilities such as Neighbour Cell Broadcast, Preferred Subscriber Class and Valid Sites, localised congestion can be minimised. Such advanced features set the MTS1 apart from conventional cell enhancer solutions.



Effective Congestion Management

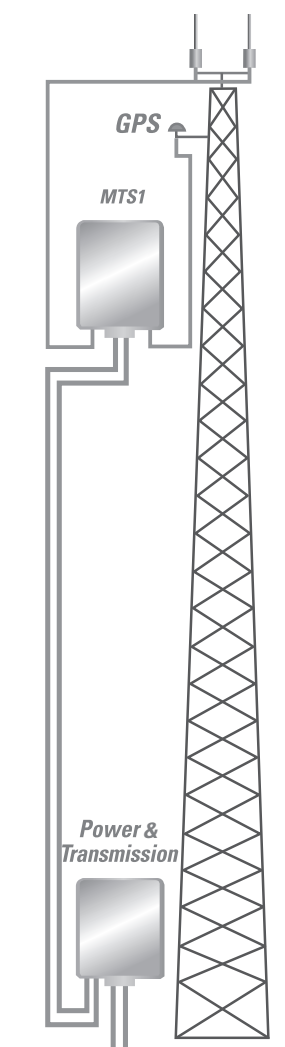
Remote Monitoring and Control

Motorola provides an extensive portfolio of tools for the remote supervision and control of its base stations. The flexibility of remote software downloads together with comprehensive remote diagnostics capability mean that expensive site visits are kept to an absolute minimum, reducing operational costs.

Remote diagnostics cover all aspects of the MTS1 base stations operation, including RF antenna VSWR measurement and equipment status alarms.

Advanced Data Capabilities

As well as support for MSPD, and in common with all Motorola MTS base stations, the MTS1 hardware comes equipped to support the TETRA Enhanced Data Service from TETRA Release 2. This will enable more data users to be served in the available spectrum and provide a step change in the performance of data applications such as data base lookups and image downloads, making the secure, reliable mobile office a reality.



Even Greater Levels of Resilience & Robustness

As the MTS1 supports the full functionality of a TETRA base station, service to local users is not dependent on wide area cells. High availability solutions can be readily enabled by simply connecting two MTS1 base stations to create a highly resilient two-carrier configuration.

In the event of site link failure, user communications are maintained through the activation of the local site trunking feature. This setup ensures robust coverage by offering full redundancy of site controller, base radio carriers and site links.

Safe & Secure

The new MTS1 base station provides complete end-to-end security with full support for static, dynamic and group based air interface encryption, authentication and end-to-end encryption. Further, the MTS1 accepts no compromises and full end-to-end security is maintained even when there is a site link failure causing the base station to operate in local site trunking mode.

Lower Cost of Ownership

The MTS1 sports a highly integrated one-box design that delivers significant savings in total cost of ownership. This is achieved through the support for IP-over-Ethernet transmission technologies, native support for MPLS, as well as traditional E1 connectivity, and the ability to install the equipment in an outdoor environment. Added to this, the MTS1 uses direct AC power input and so eliminates the need for expensive rectifiers, simplifying installation.

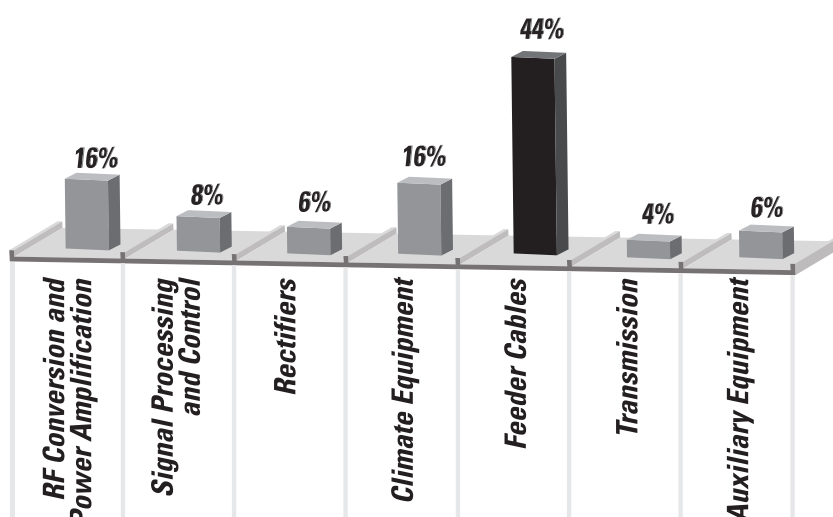
When Size Counts. The MTS1 Advantage

This very small and extremely powerful one-box solution revolutionises base station operation. Optimised to adapt to the most diverse deployment environments, the lightweight MTS1 can be easily mounted at the top of a mast, close to the antennas, requiring short feeder cables. This configuration significantly reduces the RF losses associated with the feeder cables, to the extent that the MTS1 can provide equivalent coverage performance to a higher power base station placed at the bottom of the mast.

The ability to mount the MTS1 at the top of a mast also reduces operating costs. Research has shown that the minimization of feeder losses significantly lowers the power consumption of a base station site due to the reduced transmit power required to provide coverage over a given area.

Contribution to Base Station Power Consumption

"... the primary components that must be looked at in order to reduce power consumption in base stations are: feeder, climate equipment and power amplification and conversion (in that order)" Source: ABI Research (2008) "Mobile Networks Go Green: Minimizing Power Consumption and Leveraging Renewable Energy."





Plug and Play Communications

When integrated with Dimetra IP systems, the world's most widely deployed TETRA platform, the MTS1 can offer a highly cost effective communications solution for commercial and enterprise users. As the MTS1 offers MPLS and IP-over-Ethernet support, an existing IP backbone can be leveraged to significantly reduce operational costs.

A Complete Coverage Solution

Whether it's identifying where to locate sites for the best possible coverage or putting together an integrated end to end solution, Motorola's communications experts are available to support the unique requirements of network operators. We work closely with customers to understand their environment, the areas they wish to cover and numerous other ancillary factors to deliver the best solution.

Motorola offers a spectrum of services to ensure peak performance, cost effective operations and high availability throughout the full lifecycle of the system. Integration services span the initial concept through to system planning and from design to implementation and integration. Also available are support services ranging from standard network and terminal support services to value added services such as performance monitoring, security and optimisation services. For customers that wish to limit their involvement in network operations, Motorola can even offer managed services based on agreed performance indicators.

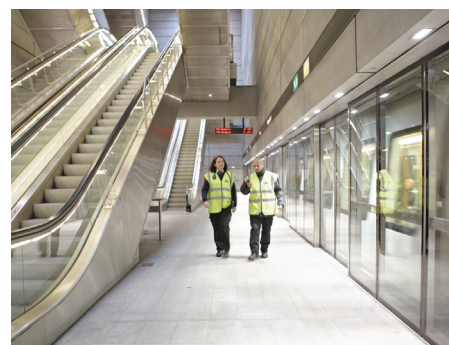


Applications

With its scalable power range and great ease of deployment, the versatile MTS1 enables a variety of applications.

Indoor Coverage

With its quiet operation and dynamic range to support transmit powers as low as 1W, the MTS1 keeps your indoor operations fully covered.



Near-building Coverage

The MTS1 provides robust and reliable near-building coverage and complete end-to-end security with full support for air interface encryption.



Mobile Coverage

Effortless transportability and rapid deployment ensure secure and seamless coverage on the go whenever it is needed.



Rural Coverage

As MTS1 supports the full functionality of a TETRA base station, service is not dependent on wide area cells making it an ideal solution for remote area coverage.



Specifications

Frequency Bands	380 - 400 MHz, 410- 430 MHz
Transmit Power at top of base station cabinet	10 W (4 W TEDS)
Power	- Input Power 115/230 V AC, 50/60 Hz
Rx Sensitivity at top of base station	Static 4% BER: - 119.5 dBm typical, -117.5 dBm guaranteed Typical Dynamic TU50 4% BER: - 113 dBm typical, -111 dBm guaranteed
Operating Ambient Temperature	- 30 to 55°C
Weight	20.5 kg (Excluding mounting bracket)
Width x Height x Depth	263mm x 597mm x 206mm
Power Consumption	Power consumption - 100W (at 10W Tx) - 75W (at 1W Tx)
Diversity Reception	Dual diversity
High Speed Data	TEDS QAM modulation schemes with 25 / 50 kHz channel bandwidths [Requires installation of 2 MTS1 base stations]
Number of Carriers	Single Carrier (2 carrier configuration requires connecting 2 MTS1 base stations)
Carrier Spacing	25 kHz (25 / 50 kHz for TEDS)
Operating Bandwidth	5 MHz
Transmission	<ul style="list-style-type: none"> • Support for satellite transmission • IP Over Ethernet, MPLS or fractional E1 connection • Two Ethernet ports or Two E1 ports with inbuilt multiplexer for either loop protection or redundancy

Additional Features

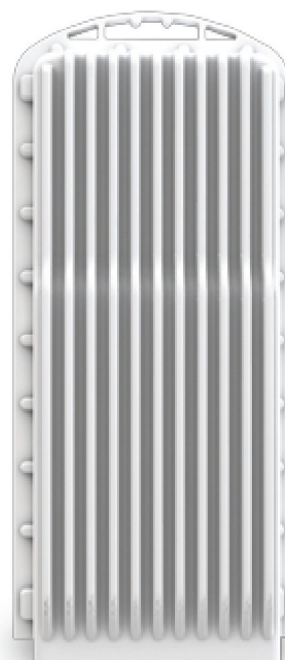
- Interference Detection and Correction
- Air Interface Encryption and Authentication
- End-to-End Encryption
- Multi-Slot Packet Data (MSPD) for enhanced data services*
- Traffic Channel Rotation
- Dynamic Channel allocation between voice and packet data

* Use of TEDS and MSPD requires two (combined) MTS1 base station deployments.



Why Motorola?

Selecting the right coverage solution requires planning and expertise. With over 70 years of experience of serving public safety agencies, Motorola is uniquely positioned to deliver mission critical communications. Motorola is recognised as the leading provider of TETRA communications systems. Our experience, along with our skills, people, partnerships and alliances, allow us to build innovative, fully integrated technologies that let organisations share vital information with ease and confidence. We've been doing it for over 70 years and we'll be standing by our customers for years to come.





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