MTM5000 SERIES

SAFER
• Hear and be heard in difficult environments with enhanced audio
• Stay in touch with great coverage, improved Rx sensitivity and high power options

SMARTER
• Versatile installation connects end users in and around the vehicle, up to 40m from the radio with the MTM5500
• Control the radio and make voice and data calls inside or outside the vehicle with the TSCH (Telephone Style Control Head)

FASTER
• TEDS (TETRA Enhanced Data Services) ready, for faster data communications to improve efficiency and safety
• Link to data devices for flexibility and powerful applications

EXTENDED OPERATIONAL RANGE
• Up to 10W transmit power (MTM5400/5500), with class leading receiver sensitivity delivers comprehensive network coverage
• Integrated DMO Gateway, DMO Repeater capabilities (MTM5400/5500), ensure secure and resilient communications where needed most

SUPERIOR AUDIO PERFORMANCE
• Next generation audio architecture delivering the loudest and clearest audio performance of any Motorola TETRA mobile available on the market*

HIGH SPEED DATA CONNECTIVITY
• TEDS Ready hardware - with a simple software license upgrade, enables 20x faster data connectivity for accessing back-office systems and databases
• Integrated USB 2.0 PEI, enabling rapid radio programming and standardised interfacing to data terminals and accessories. For additional flexibility, USB host and slave modes are also supported

LOW USER MIGRATION COSTS
• Familiar cellular style user interface and VGA colour display for enhanced usability and reduced staff training costs
• Same intuitive user interface as latest MTP3000 Series and MTP6000 Series TETRA portable radios
• Re-use of common accessories using GCAI connector

ENHANCED END TO END ENCRYPTION OPTIONS
• Integrated hardware for SIM based end to end encryption
• Universal Crypto Module option**

LOCATION SERVICES
• The MTM5000 Series supports Global Navigation Satellite Systems (GNSS) based location services for GPC, GLONASS and BeiDou, as well as Satellite Based Augmentation Systems (SBAS) including WASS, EGNOS, MSASA, GAGAN and QZESS (Japan)

ADVANCED TERMINAL MANAGEMENT
• USB 2.0 interface for fast radio programming via Motorola’s Integrated Terminal Management (ITM) solution

FLEXIBLE INSTALLATION OPTIONS
• Fully DIN compatible and available in Dash, Desk, Remote Head and Motorcycle mount formats
• Supports multiple control heads - an ideal solution for installations in trains, ambulances and fire vehicles where more than one control point might be required
• Supports multiple transceivers - an ideal solution for multiple agency, joint operations, or multi-task communications including bilateral such as cross-border operations
• MTM5500 ethernet style connections enable up to 40m separation to either the new ReCH Control Head or the TSCH (IP55)
• Other Equipment Manufacturer (OEM) control head solutions can be developed using the Remote Display Controls (RDC) protocols

RUGGED DESIGN WITH EXCEPTIONAL RELIABILITY
• Includes IP67 control head option (MTM5200/5400), for exposed and challenging environments
• Front and Rear rugged GCAI connector for reliable connection of audio and data peripheral equipment
• Mobile radio and accessories are performance matched for enhanced reliability

* Assuming the appropriate audio accessory is used  ** Model specific
The MTM5500 is a highly flexible and capable system radio which permits the installation of multiple control heads up to 40m from the transceiver and 80m from each other. The TSCH also provides an alternative method to control the radio and make voice and data calls. Alternatively multiple transceivers can be supported by a single control head – either the Remote Ethernet Control Head (ReCH) or the TSCH. The ability to control multiple radios is essential for multiple agency, joint operations or bilateral cross border operations.

In addition to enhanced audio and receiver sensitivity, the MTM5400 includes high power modes and Gateway Repeater functionality features required by end users, as well as being TEDS ready.

The MTM5200 is the base model in the MTM5000 Series of TETRA radios. It shares the enhanced audio and receiver sensitivity, as well as being TEDS-ready for high speed data service which will enhance operation.

In addition to enhanced audio and receiver sensitivity, the MTM5400 includes high power modes and Gateway Repeater functionality features required by end users, as well as being TEDS ready.

The MTM5500 is a highly flexible and capable system radio which permits the installation of multiple control heads up to 40m from the transceiver and 80m from each other. The TSCH also provides an alternative method to control the radio and make voice and data calls. Alternatively multiple transceivers can be supported by a single control head – either the Remote Ethernet Control Head (ReCH) or the TSCH. The ability to control multiple radios is essential for multiple agency, joint operations or bilateral cross border operations.
The MTM5000 Series has a wide range of installation options with multiple expansion head options and multiple control head options, as well as the ability to connect two transceivers to one control head or connect an OEM control head.

MTM5200 AND MTM5400

EXPANSION HEAD OPTIONS

EXPANSION HEAD
SINGLE STD CONNECTION

EXPANSION HEAD ENHANCED
STD AND AUXILIARY 25 PIN AND RS232

CONTROL HEAD OPTIONS

STANDARD CONTROL HEAD
REMOTE CONTROL HEAD
IP67 CONTROL HEAD

INSTALLATION OPTIONS

DASH MOUNT
CAR, TRUCK

REMOTE HEAD MOUNT
CAR, AMBULANCE, FIRE TRUCK

UP TO 10m

IP67 MOUNT
BOAT, MOTORCYCLE

UP TO 10m

DESK MOUNT
CONTROL CENTRE

DATA ONLY

DATA TERMINAL
**MTM5500**

**EXPANSION HEAD OPTIONS**

ETHERNET EXPANSION HEAD
2X STD, ETHERNET TYPE, ETHERNET SIM READER AND RS232

**CONTROL HEAD OPTIONS**

REMOTE ETHERNET CONTROL HEAD (ReCH)
SUPPORTS EXTERNAL SPEAKERS AND PTT

TELEPHONE STYLE CONTROL HEAD
SUPPORTS EXTERNAL ACCESSORIES

**INSTALLATION OPTIONS**

MULTIPLE CONTROL HEADS  
AMBULANCE, FIRE TRUCK, INCIDENT CONTROL VEHICLE, METRO TRAIN

DATA ONLY

MULTIPLE TRANSCIEVERS

OEM CONTROL HEAD
Combining class leading robustness with a sleek ergonomic design, the discreet TSCH provides flexibility and ease of operation, making it well suited for in-vehicle applications.

Fully compatible with MTM5500 radios, the design attributes of the TSCH ensure uncompromising performance for mission critical operations.

**INSTALLATION FLEXIBILITY**
For installations in long vehicles, buses or trains, the TSCH can be conveniently located as far as 40m way from the transceiver. To further simplify the installation, the TSCH is remotely powered via a single cable, from the transceiver.

The TSCH can be used in a dual control head configuration and also in conjunction with our other control head options. In addition to the TSCH, Motorola offers a wide range of control head options including pump bay terminals for fire trucks, custom control solutions and standard control heads.

The screen orientation is easily adjusted to accommodate different fitting options. For example, a horizontal screen orientation can be applied when the device is fitted onto a windscreen.

**EASE OF USE**
The TSCH is well suited for telephone style communications, supporting full duplex private calls as well as half duplex communications.

A vibrant, colour display makes it easy to read text and view images on the device.

To minimise training requirements, the TSCH uses the same user interface found in our proven range of portable radios. To enable a quick response in critical situations, a clearly visible emergency button and a rotary control for volume and talk group changes are easily accessed on the handset cradle.

With its sleek design, the TSCH can be comfortably used underneath a helmet and has been designed so that it completely encloses the ear - this ensures that background noise is minimized.

**UNCOMPROMISING PERFORMANCE**
Exceptional audio performance is achieved thanks to the digital connections between the transceiver and the TSCH. The enhanced audio processing enables louder and clearer audio from the TSCH and connected loudspeakers.

With its IP55 environmental protection rating, the TSCH is designed with the ruggedness and weather resistance needed for operation in harsh environments.
MTM5000 ACCESSORIES

ANTENNAS

- **GMAE4253**
  - ANTENNA TETRA GLASS MOUNT
  - 380-400 MHz

- **GMAE4255**
  - ANTENNA TETRA PANEL MOUNT
  - 380-430 MHz

- **GMAE4257**
  - ANTENNA TETRA MAG MOUNT
  - 410-430 MHz

- **GMAE4260**
  - ANTENNA TETRA LOW PROFILE
  - 380-400 MHz

- **GMAE4258B**
  - ANTENNA TETRA COVERT STRP
  - 380-410 MHz

- **GMAE4258B**
  - ANTENNA TETRA COVERT STRP
  - 380-410 MHz
# MOBILE MICROPHONES

- **RMN5054**
  - SMART VISOR MIC
  - Requires external PTT such as RLN5926A

- **MDHLN7016**
  - IMPRES TELEPHONE STYLE HANDSET KIT

- **RMN5106**
  - DESKTOP MICROPHONE

- **RMN5107**
  - COMPACT MOBILE MICROPHONE

- **RMN5111**
  - HEAVY DUTY MICROPHONE

- **PMMN4087**
  - VISOR MICROPHONE

# INSTALLATION ACCESSORIES

- **PMLN4912**
  - REMOTE MOUNT TRUNNION KIT

- **GLN7318**
  - BASE TRAY WITHOUT SPEAKER

# LOUD SPEAKER

- **RSN4002A**
  - 13W EXTERNAL SPEAKER

# POWER SUPPLIES

- **PMPN4055**
  - POWER SUPPLY
  - Small Power Supply with integrated wall bracket. Requires Cable PMK4165A and Line Cord.

- **PMPN4076**
  - WEDGE POWER SUPPLY
  - Requires DC Cable PMK4165A and Line Cord.

*Radios not included*
MTM5000 SERIES SPECIFICATIONS

MODELS - COMPLIANT WITH DIN 75490 (ISO 7736)

<table>
<thead>
<tr>
<th>MODEL</th>
<th>Dash</th>
<th>Desk</th>
<th>Multiple Remote Control Head</th>
<th>Multiple Transceiver or Control Head</th>
<th>Motorcycle</th>
<th>Expansion head “Databox”</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTM5200</td>
<td>Compact radio for fast vehicle installation</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>Radio without a control head, for data applications, or customised application development</td>
</tr>
<tr>
<td>MTM5400</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>MTM5500</td>
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<td></td>
</tr>
</tbody>
</table>

GENERAL

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimensions HxWxD (mm)</th>
<th>Weight Typical (g)</th>
<th>Dimensions HxWxD (mm)</th>
<th>Weight Typical (g)</th>
<th>Dimensions HxWxD (mm)</th>
<th>Weight Typical (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dash and Desk models (transceiver + control head)</td>
<td>60x188x198</td>
<td>1300</td>
<td>60x188x198</td>
<td>1300</td>
<td>N.A.</td>
<td></td>
</tr>
<tr>
<td>Transceiver only</td>
<td>45x170x169</td>
<td>1070</td>
<td>45x170x169</td>
<td>1070</td>
<td>45x170x169</td>
<td>1070</td>
</tr>
<tr>
<td>Standard control head</td>
<td>60x188x39</td>
<td>300</td>
<td>60x188x39</td>
<td>300</td>
<td>60x188x39</td>
<td>300</td>
</tr>
<tr>
<td>Remote control head</td>
<td>60x188x39</td>
<td>320</td>
<td>60x188x39</td>
<td>320</td>
<td>N.A.</td>
<td></td>
</tr>
</tbody>
</table>

USER INTERFACE & DISPLAY

**Display**
- Diagonal dimension: 2.8"
- Type: VGA - 640x480 pixels, 65,000 colours
- Backlight: Variable backlight, User configurable
- Font sizes: Standard & Zoom mode (90 pixels, 4.5mm high) characters
- TSCH: N.A.

**Buttons & Keypad**
- Numeric: Integral backlit numeric keypad of 12 keys, with keypad lock option
- International keypad versions: Roman, Arabic, Cyclic, Korean, Chinese, Taiwanese characters
- Programmable function keys: 3 programmable function keys (plus 16 programmable numeric keys)
- Navigation: 4-way navigation key, menu and soft keys
- Emergency: Emergency button with backlight
- Shortcuts: User configurable shortcuts to menus and common features using “One-Touch-Button” feature
- Rotary: Dual Function
- Indication: LED Tri-colour LED
- Tones: Configurable notification tones

**User Interface Languages**
- Standard Options*: Arabic, Chinese Simplified, Chinese Traditional, Croatian, Danish, Dutch, English, French, German, Greek, Hebrew, Hungarian, Italian, Korean, Lithuanian, Macedonian, Mongolian, Norwegian, Portuguese, Russian, Spanish, Swedish
- User defined: User programmable, using ISO 8859-1 character

**Contact Management**
- Type: Cellular Type
- Menu: Tailored to user needs
- Menu Shortcuts
- Menu Configuration

**Contact List**
- Up to 1000 contacts
- Up to 6 numbers per contact, Max 2000 numbers

**Multiple Dialling Methods**
- Fast/Flexible Call Response: Private Call Response to a Group Call via one Touch Button
- Multiple Ring Tones: Configurable with DCS

**Message Manager**
- Cellular Type
- Text message list: 20
- Intelligent Keypad Text Input: All Control Heads
- Status list: 400
- Country/Network Code List: 100
- Scan lists: 40 lists of 20 groups
- Discrete Mode: All Control Heads
- Screen Saver: gif image & text (any user’s selection)
- Universal Time Display: All Control Heads

**Keypad Lock**
- All Control Heads

**Talkgroup Folders**
- Dual layer folder structure (folder/subfolder): 256 folders

**Favourite Folders**
- Up to 3 (to store any favourite talkgroup)

* For availability of other language keypads please contact your local Motorola Solutions representative
MTM5000 SERIES SPECIFICATIONS

ELECTRICAL SPECIFICATIONS

Voltage Range
- MTM5200: 10.8 to 15.6 V DC
- MTM5400: 10.8 to 15.6 V DC
- MTM5500: 10.8 to 15.6 V DC

Current Consumption (A, typ.)
- Idle / Rx / Tx @ 10W: N.A. / 0.5 / 1.0 / 1.2 (TX 3.4A Peak)
- Idle / Rx / Tx @ 3W: N.A. / 0.5 / 1.0 / .9 (TX 2.2A Peak)
- Tx - Multi Slot PD (4 slots) @ 5.6W: N.A. / 2.7
- Tx - TEDS @ 3W: 2.3

Using USB host: Adds 0.5A

RF SPECIFICATIONS

Frequency Bands (MHz)
- 350 - 390, 380 - 430, 410 - 470, 806 - 870

Transmitter RF Power
- TETRA Release 1: N.A. (3W only) 10W (Class 2) and 3W (Class 3)
- TETRA Release 2 (TEDS): 3W, Class 3

RF Power Control: 6 Power Step Levels (steps of 5 dBm) Starting at 15 dBm; finishing at 40 dBm

Receiver Class: A & B

Receiver Static Sensitivity (dBm)
- -114 minimum, -116 typical (ETSI 300-392-2)

Receiver Dynamic Sensitivity (dBm)
- -105 minimum, -107 typical (ETSI 300-392-2)

GNSS SPECIFICATIONS

Simultaneous Satellite Systems
- GPS plus one other GNSS, eg GLONASS, Beidou

Mode of Operation
- Concurrent tracking, SBAS capable, 72 channel

GNSS Antenna
- Supports active antenna (5V, 25mA supply)

Tracking Sensitivity
- -157 dBm

Accuracy
- 3m (50% probable) @-150dBm

Voice Services

Talkgroups
- 10,000 TMO, 2000 DMO

Phone book entries
- 1000 persons. Up to 8 numbers per entry (mobile, office etc). Max 2000 entries

Scan lists
- 40 lists of 20 talkgroups

Trunked Mode (TMO) Services
- Group call
- Private call
- Telephony (IPBX, PSTN, MS-ISDN)
- SGNA
- Scanning
- Emergency (tailored by users)

Direct Mode (DMO) Services
- Group call
- Private call
- Tactical
- Non-Tactical
- Individual
- Smart emergency
- Hot Mic
- Location
- Target Address
- Alarm

DATA SERVICES

Status
- Alias messages: 400 Entries
- Options

Short Data Service (SDS)
- Inbox/Outbox
- Predictive text
- Target Address
- Voice Call Interaction

Packet Data (PD)
- Multi-slot PD

TEDS (capable)
- QAM Channels: 25 kHz and 50 kHz (but not D8PSK channels)

WAP (capable)
- WAP 1.2.x and WAP 2.0 compatibility for UDP/IP Stack
- AT Commands - Full Set ETSI Mandatory Compliant

Peripheral Equipment Interface (PEI)
- Interface Protocol

Terminal Management
- Programmable via Motorola Integrated Terminal Management (ITM) solution

* Long messages of up to 1000 characters
### GATEWAY SERVICES

<table>
<thead>
<tr>
<th></th>
<th>MTM5200</th>
<th>MTM5400</th>
<th>MTM5500</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMO/DMO Gateway</td>
<td>N.A.</td>
<td>Group voice calls from DMO to TMO</td>
<td>N.A.</td>
</tr>
<tr>
<td></td>
<td>N.A.</td>
<td>Group voice calls from TMO to DMO</td>
<td>N.A.</td>
</tr>
<tr>
<td></td>
<td>N.A.</td>
<td>Emergency group call from DMO to TMO</td>
<td>N.A.</td>
</tr>
<tr>
<td></td>
<td>N.A.</td>
<td>Emergency group call from TMO to DMO</td>
<td>N.A.</td>
</tr>
<tr>
<td></td>
<td>N.A.</td>
<td>Call Pre-emption (in either direction)</td>
<td>N.A.</td>
</tr>
<tr>
<td></td>
<td>N.A.</td>
<td>SDS messaging through the gateway from DMO to TMO or TMO to DMO</td>
<td>N.A.</td>
</tr>
<tr>
<td></td>
<td>N.A.</td>
<td>Configurable routing of SDS messages to console or PEI*</td>
<td>N.A.</td>
</tr>
<tr>
<td></td>
<td>N.A.</td>
<td>Provisioning Secure provisioning tool via Key Variable Loader (KVL)</td>
<td>N.A.</td>
</tr>
<tr>
<td>REPEATER SERVICES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DMO Repeater</td>
<td>N.A.</td>
<td>Repeats DMO voice calls on selected talkgroup</td>
<td>N.A.</td>
</tr>
<tr>
<td></td>
<td>N.A.</td>
<td>Repeats SDS and Status messaging on selected talkgroup</td>
<td>N.A.</td>
</tr>
<tr>
<td></td>
<td>N.A.</td>
<td>ETSI type 1A DMO Repeater for channel efficient operation</td>
<td>N.A.</td>
</tr>
<tr>
<td></td>
<td>N.A.</td>
<td>Transmission of Repeater Presence Signal</td>
<td>N.A.</td>
</tr>
<tr>
<td></td>
<td>N.A.</td>
<td>Priority Call</td>
<td>N.A.</td>
</tr>
<tr>
<td></td>
<td>N.A.</td>
<td>Emergency Call (Pre-emption Priority Call)</td>
<td>N.A.</td>
</tr>
<tr>
<td></td>
<td>N.A.</td>
<td>E2EE Encrypted DMO traffic</td>
<td>N.A.</td>
</tr>
<tr>
<td></td>
<td>N.A.</td>
<td>Monitoring of and participation in calls whilst in Repeater mode</td>
<td>N.A.</td>
</tr>
<tr>
<td></td>
<td>N.A.</td>
<td>Configurable Repeater Power Levels</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

### INTERFACES

<table>
<thead>
<tr>
<th></th>
<th>MTM5200</th>
<th>MTM5400</th>
<th>MTM5500</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS232</td>
<td>Four Virtual Ports via AT Multiplexer enable PC applications to run simultaneously Packet Data, AT Commands, SDS, SCOUT</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>USB 2.0 support for PEI (Two Virtual Ports via standard Windows drivers enable PC applications to run simultaneously Packet Data and AT Commands)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>USB</td>
<td>USB 2.0 support for PEI (Four Virtual Ports via AT Multiplexer enable PC applications to run simultaneously Packet Data, AT Commands, SDS, SCOUT, rapid programming)</td>
<td>USB On-The-Go (host &amp; slave) capability for intelligent PEI applications</td>
<td>USB 1.1 support (Host Mode) to manage USB Slave Devices (e.g. SIM CARD READER)</td>
</tr>
<tr>
<td>Rugged Accessory Connector (GCAI)</td>
<td>GCAI - Motorola accessory and ancillary interface for connection of accessories, data terminals and programming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Purpose Input/Output</td>
<td>Digital I/O</td>
<td>7 (4 on remote and motorcycle control head, 3 on transceiver)</td>
<td>4 (1 on remote and motorcycle control head, with 4 levels)</td>
</tr>
<tr>
<td>Analog input</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SECURITY FEATURES

<table>
<thead>
<tr>
<th></th>
<th>MTM5200</th>
<th>MTM5400</th>
<th>MTM5500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Interface Encryption</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Algorithms</td>
<td>TEA1, TEA2, TEA3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security Classes</td>
<td>Class 1 (Clear), Class 2 (GCK), Class 3G</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authentication</td>
<td>Infrastructure initiated and made mutual by terminal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provisioning</td>
<td>Secure provisioning tool via Key Variable Loader (KVL)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PIN/PUK code access</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User Access Control</td>
<td>Service Profile Selection for Radio User Assignment / Radio User Identity (RUA/RUI) Operation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Based on login credentials, a radio user can be limited to only those radio capabilities defined in pre-installed service profiles, selected by the infrastructure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data</td>
<td>Packet Data user authentication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>End to End Encryption (E2EE)</td>
<td>Voice E2EE</td>
<td></td>
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</tr>
<tr>
<td>Short Data (SDS) E2EE</td>
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</table>

### REGULATORY COMPLIANCE

<table>
<thead>
<tr>
<th></th>
<th>MTM5200</th>
<th>MTM5400</th>
<th>MTM5500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio (RED Article 3.2)</td>
<td>EN 302 561</td>
<td></td>
<td></td>
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<tr>
<td>EMC (R&amp;TTE Article 3.1 a)</td>
<td>EN 301 489-1</td>
<td>EN 301 489-18</td>
<td></td>
</tr>
<tr>
<td>Electrical Safety (R&amp;TTE Article 3.1 a)</td>
<td>EN 50565</td>
<td></td>
<td>EN 50560 EME</td>
</tr>
<tr>
<td>Environmental</td>
<td>WEEE Directive</td>
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</tr>
<tr>
<td>Automotive</td>
<td>E-mark, ECE Regulation No 10 for Electrical/Electronic Subassembly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rail Certification (EMC)</td>
<td>EN 50121-3-2 (IEC 62236-3-2 Ed 2.0)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Future software release
For more information on the MTM5000 Series radios, please visit us on the web at:
www.motorolasolutions.com/MTM5000