



**MOTOROLA SOLUTIONS**

# APX™ 8500

**ALL-BAND P25 MOBILE RADIO**

**UNLIMITED MOBILITY.  
MAXIMUM CONNECTIVITY.**



**FIRST RESPONDERS  
MUST BE READY  
TO COMMUNICATE  
AT A MOMENT'S  
NOTICE IN ANY  
SITUATION**



# APX 8500

**UNLIMITED MOBILITY.  
MAXIMUM CONNECTIVITY.**

During an emergency - a highspeed chase, massive traffic accident, or natural disaster - public safety officials from different agencies must be able to effectively communicate with each other to coordinate personnel and improve response time.





The APX 8500 all-band mobile radio enables first responders to use a single mobile radio to exchange critical voice and data communications seamlessly with multiple agencies and jurisdictions operating on different radio bands.

The APX 8500 combines unlimited interoperability, secure Wi-Fi® connectivity and purpose-built design enabling ease of installation and removal. It can easily connect to the VML750 LTE vehicle modem via micro USB interface and utilize the (4G/3G) commercial network to create an in-vehicle ecosystem for offloading data applications in the field increasing the safety and efficiency of public safety users in and around the vehicle.



## KEY FEATURES

- All-band functionality expands voice and data communications across multiple agencies
- Secure Wi-Fi configures the APX 8500 all-band mobile radio with software updates in seconds
- Data Modem Tethering feature allows Wi-Fi connection to broadband LTE modems
- Mission Critical Geofence ensures fast communication across personnel arriving on-scene
- Leverage LTE network (4G/3G) with VML 750 and Sierra Wireless GX450 (sold separately)
- Purpose built design for ease of installation and removal
  - Available in dash, remote, motorcycle, and control station configurations
  - Compatible with 09, 07, 05, 03, and 02 control heads
  - IP56 and MILSTD 810 Rated G





## IMPROVE RESPONSE TIMES WITH THE APX 8500 ALL-BAND RADIO



### ALL-BAND

#### Unlimited Mobility

With a 4-in-1 mobile radio and an all-band antenna, you now have the ability to stay connected and expand voice and data communications across multiple agencies with one device. Improve response time by instantly operating on digital or analog networks, in 7/800, VHF, UHF Range 1 and UHF Range 2 bands at any given time.



### SECURE Wi-Fi

#### Voice and Data, All at Once

Update your radio fleet without interrupting voice communications with secure Wi-Fi. This dramatically improves the speed of configuring new codeplugs, firmware and software features over-the-air via Radio Management<sup>1</sup>. Agencies can pre-provision up to 20 secure Wi-Fi hotspots so personnel can easily access updates at the facility or in the field.

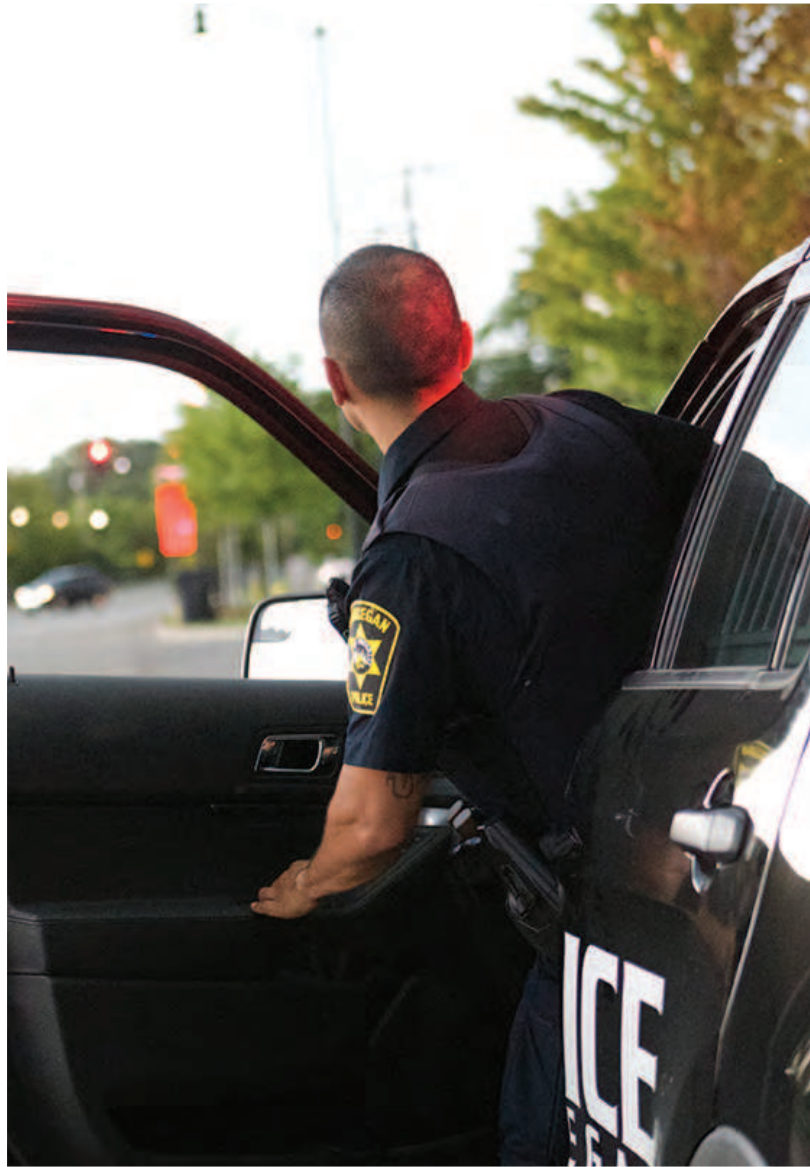


### MISSION CRITICAL GEOFENCE

#### Seamless On-scene Communication

Ensure fast and seamless communication and collaboration across all responders arriving on a scene. The Mission-Critical Geofence feature can automatically change a radio's settings based on its GPS location relative to an agency-defined virtual barrier. For example, an administrator can create a geofence around a hazardous location so all on-scene personnel are automatically moved to a single talkgroup.

<sup>1</sup>Radio Management application simplifies APX radio configuration and management by programming up to 16 radios at one time and tracking which radios have been successfully programmed, providing a clear view of the entire radio fleet and a codeplug history for each radio.



APX 8500 All-Band Mobile Radio



VML750 LTE Vehicle Modem



## DATA MODEM CONNECTION

### Leverage LTE network

The APX 8500 can easily connect to the VML750 LTE vehicle modem via micro USB interface. The VML750 provides cellular carrier network (4G/3G) access so personnel have the flexibility to instantly offload/update the APX 8500 with radio data software applications such as: GPS, OTAR (over-the-air-rekeying), advanced messaging solution (text message), firmware refreshes, flashport, etc. without voice interruption. Fall back on Integrated Voice and Data (IV&D) when the cellular network is unavailable.



## PURPOSE-BUILT DESIGN

### Ease of Installation and Removal

Since vehicle space is limited for communication equipment, we designed the APX 8500 to allow for all cables to be wired on one side of the mobile, providing additional flexibility for installation. Agencies can also reuse the existing mounting holes, cables and install space of an APX 7500 mobile for easier access, installation and removal. The mid-power trunnion was completely redesigned to provide better engagement into the tray and secure grip. The APX 8500 supports dash, remote, motorcycle, and control station configurations.

# APX 8500 ALL-BAND P25 MOBILE RADIO

## CONTROL HEAD PORTFOLIO



02 RUGGED CONTROL HEAD	03 HAND HELD CONTROL HEAD	05 STANDARD CONTROL HEAD	07 ENHANCED CONTROL HEAD	09 INTEGRATED CONTROL HEAD
Large color display with intelligent lighting	Large color display with intelligent lighting	Tri-color display with intelligent lighting	Large color display with intelligent lighting	Extra-large full color display with intelligent lighting
3 lines of text 14 characters max / 1 line of icons / 1 line of menus	2 lines of text 14 characters max / 1 line of icons / 1 line of menus	2 lines of text 14 characters max / 1 line of icons / 1 line of menus	3 lines of text 14 characters max / 1 line of icons / 1 line of menus	2 lines of text 14 characters max / 1 line of icons / 1 line of menus
Built in 7.5 W speaker	Integrated full size DTMF keypad	Available with keypad microphone	Available with lighting & siren controls or DTMF keypad	Integrated full size DTMF keypad
Multiple control head configuration (up to 4)	Hand-held control head with intuitive user interface	Multiple control head configuration (up to 4)	Multiple control head configuration (up to 4)	Large programmable one-touch buttons
Motorcycle configuration available	Two quick-access side buttons	Motorcycle configuration available	Configuration available	Dedicated siren controls
Multi-function volume/channel knob	Display contrast selector	Display contrast selector	Multi-function volume/channel knob	Integrated response selector
Night/day mode button			Night/day mode button	Night/day mode button

# APX 8500 ALL-BAND P25 MOBILE RADIO SPECIFICATIONS

## RF BANDS

700/800 MHz, VHF, UHF Range 1 & UHF Range 2

9600 Baud Digital APCO P25 Phase 1 FDMA and Phase 2 TDMA Trunking

3600 Baud SmartZone®, Omnilink Trunking

Digital APCO 25, Conventional, Analog MDC 1200, Quik Call II System Configurations

Narrow and Wide Bandwidth Digital Receiver (6.25/25/20/12.5 kHz)<sup>1</sup>

## STANDARD FEATURES

All-Band Antenna

Up to 3000 Channels

Text Messaging

ASTRO 25 Integrated Voice & Data

Dynamic Zone

Integrated GPS/GLONASS for Outdoor Location Tracking

Intelligent Priority Scan

Single-key ADP Encryption

Software Key

Radio Profiles

Unified Call List

Expansion Slot Standard

Meets Applicable MIL-specs 810C, D, E, F and G

Ships Standard IP56

Tactical Inhibit

Instant Recall

Reuse of XTL™ Accessories

## PROGRAMMING

Customer Programming Software (CPS) supported on Windows 7, 8 and 10

## OPTIONAL FEATURES

Wi-Fi 802.11 b/g/n

Data Modem Connection (wired or Wi-Fi)

Mission Critical Geofence

12 Character RFID Asset Tracking

Multi-key for 128 Keys and MultiAlgorithm

Programming Over Project 25 (OTAP)

Over the Air Rekey (OTAR)

Digital Tone Signaling

Siren and Light Interface Module



# APX 8500 ALL-BAND P25 MOBILE RADIO

## SPECIFICATIONS

### SIGNALING (ASTRO MODE)

Signalling Rate	9.6 kbps
Digital ID Capacity	10,000,000 Conventional / 48,000 Trunking
Digital Network Access Codes	4,096 network site addresses
ASTRO Digital User Group Addresses	4,096 network site addresses
Project 25 – CAI Digital User Group Addresses	65,000 Conventional / 4,094 Trunking
Error Correction Techniques	Golay, BCH, Reed-Solomon codes
Data Access Control	Slotted CSMA: Utilizes infrastructure-sourced data status bits embedded in both voice and data transmissions.

### DIMENSIONS AND WEIGHT

	Inches	Millimeters
Mid Power Radio Transceiver	2.0 x 7.0 x 8.4	51 x 178 x 213
O5 Control Head	2.0 x 7.0 x 2.9	51 x 178 x 74
O2 Control Head	2.7 x 8.1 x 3.8	68 x 206 x 96
O7 Control Head	2.0 x 7.0 x 3.2	51 x 178 x 81
Mid Power Radio Transceiver and O5 Control Head - Dash Mount	2.0 x 7.0 x 9.8	51 x 178 x 250
Mid Power Radio Transceiver and O2 Control Head - Dash Mount	2.7 x 8.1 x 10.7	68 x 206 x 271
Mid Power Radio Transceiver and O7 Control Head - Dash Mount	2.0 x 7.0 x 10.1	51 x 178 x 256
Mid Power Radio Transceiver and Remote Mount	2.0 x 7.0 x 9.1	51 x 178 x 232
High Power Radio Transceiver and Remote Mount	3.4 x 9.7 x 12.6	88 x 248 x 320
	lbs	kg
Mid Power Radio Transceiver and O5 Control Head	6.8	3.1
Mid Power Radio Transceiver and O2 Control Head	7.23	3.3
Mid Power Radio Transceiver and O7 Control Head	6.8	3.1
High Power Radio Transceiver and Remote Mount	17.6	8.0

### TRANSMITTER - TYPICAL PERFORMANCE SPECIFICATIONS

	700 MHz		800 MHz		VHF		UHF Range 1		UHF Range 2	
Frequency Range/Bandsplits	764-776, 794-806 MHz 806-825, 851-870 MHz		764-776, 794-806 MHz 806-825, 851-870 MHz		136-174 MHz		380-470 MHz		450-520 MHz	
Channel Spacing	25/20/12.5 kHz		25/20/12.5 kHz		30/25/12.5 kHz		25/20/12.5 kHz		25/20/12.5 kHz	
Maximum Frequency Separation	Full Bandsplit		Full Bandsplit		Full Bandsplit		Full Bandsplit		Full Bandsplit	
Rated RF Output Power <sup>1</sup> (Adjustable)	1-30 W		1-35 W		1-50 W (Mid Power) 1-100 W (High Power)		1-40 W (Mid Power) 1-100 W (High Power)		1-45 W (450-485 MHz) 1-40 W (485-512 MHz) 1-25 W (512-520 MHz)	
Frequency Stability <sup>1</sup> (-30°C to +85°C; +25°C Ref.)	±0.8 PPM		±0.8 PPM		±0.8 PPM		±0.8 PPM		±0.8 PPM	
Modulation Limiting <sup>1</sup>	±5/±2.5 kHz		±5/±4 (NPSPAC) /±2.5 kHz		±5/±2.5 kHz		±5/±2.5 kHz		±5/±2.5 kHz	
Modulation Fidelity (C4FM) 12.5 kHz Digital Channel	1.10%		1.10%		1.10%		1.10%		1.10%	
Emissions <sup>1</sup>	Conducted -75/-85 dBc	Radiated -20/-40 dBm	Conducted -75 dBc	Radiated -20 dBm	Conducted -85 dBc	Radiated -20 dBm	Conducted -85 dBc	Radiated -20 dBm	Conducted -85 dBc	Radiated -20 dBm
Audio Response <sup>1</sup>	+1, -3 dB (EIA)		+1, -3 dB (EIA)		+1, -3 dB (EIA)		+1, -3 dB (EIA)		+1, -3 dB (EIA)	
FM Hum & Noise <sup>1</sup>	25 kHz	50 dB	50 dB	53 dB	53 dB	53 dB	53 dB	53 dB	53 dB	53 dB
	12.5 kHz	48 dB	48 dB	52 dB	50 dB	50 dB	50 dB	50 dB	50 dB	50 dB
Audio Distortion <sup>1</sup>	25 & 20 kHz	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
	12.5 kHz	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%

# APX 8500 ALL-BAND P25 MOBILE RADIO

## SPECIFICATIONS

RECEIVER – TYPICAL PERFORMANCE SPECIFICATIONS										
	700 MHz		800 MHz		VHF		UHF Range 1		UHF Range 2	
Frequency Range/Bandsplits	764-776 MHz	799-806 MHz	851-870 MHz		136-174 MHz		380-470 MHz		450-520 MHz	
Channel Spacing	25/20/12.5 kHz		25/20/12.5 kHz		30/25/12.5 kHz		25/20/12.5 kHz		25/20/12.5 kHz	
Maximum Frequency Separation	Full Bandsplit		Full Bandsplit		Full Bandsplit		Full Bandsplit		Full Bandsplit	
Audio Output Power 3% distortion, 8/3.2 Ohm speakers	7.5 W/15 W		7.5 W/15 W		7.5 W/15 W		7.5 W/15 W		7.5 W/15 W	
Frequency Stability <sup>1</sup> (-30 °C to +85 °C; +25 °C Ref.)	±0.8 PPM		±0.8 PPM		±0.8 PPM		±0.8 PPM		±0.8 PPM	
Analog Sensitivity <sup>1</sup> 12 dB SINAD	-121 dBm (0.199 µV)	-120 dBm (0.224 µV)	-121 dBm (0.199 µV)		Pre-Amp -123 dBm (0.158 µV)	Standard -119 dBm (0.251 µV)	Pre-Amp -123 dBm (0.158 µV)	Standard -119 dBm (0.251 µV)	Pre-Amp -123 dBm (0.158 µV)	Standard -119 dBm (0.251 µV)
Digital Sensitivity 5% BER	-121.5 dBm (0.188 µV)	-120 dBm (0.224 µV)	-121.5 dBm (0.188 µV)		-123 dBm (0.158 µV)	-119 dBm (0.251 µV)	-123 dBm (0.158 µV)	-119 dBm (0.251 µV)	-123 dBm (0.158 µV)	-119 dBm (0.251 µV)
Intermodulation	25 kHz 12.5 kHz	85 dB 85 dB	85 dB 85 dB		84 dB 85 dB	86 dB 86 dB	82 dB 83 dB	86 dB 86 dB	82 dB 83 dB	86 dB 86 dB
Spurious Rejection	100 dB		100 dB		90 dB		90 dB		90 dB	
Audio Response <sup>1</sup>	+1, -3 dB (EIA)		+1, -3 dB (EIA)		+1, -3 dB (EIA)		+1, -3 dB (EIA)		+1, -3 dB (EIA)	
Audio Distortion at rated <sup>1</sup>	1.20%		1.20%		1.20%		1.20%		1.20%	
Selectivity <sup>1</sup>	25 kHz 12.5 kHz 30 kHz	82.5 dB 72 dB —	82.5 dB 72 dB —		87 dB 76 dB 90 dB		82 dB 76 dB —		82 dB 76 dB —	

POWER AND BATTERY DRAIN										
Model Type	136-174 MHz, 380-470 MHz, 450-520 MHz, 764-870 MHz									
Minimum RF Power Output	Mid Power: 1-35 W (764-870 MHz), 1-50 W (136-174 MHz), 10-40 W (380-470 MHz), 1-45 W (450-485 MHz), 1-40 W (485-512 MHz), 1-25 W (512-520 MHz) High Power: 1-100 W (136-174 MHz), 1-100 W (380-470 MHz)									
Operation	13.8 V DC ±20% Negative Ground									
Standby at 13.8 V	1.4 A									
Receive Current at Rated Audio at 13.8 V	3.2 A									
Transmit Current (A) at Rated Power	136-174 MHz (1-50 W) 380-470 MHz (1-40 W) 450-520 MHz (1-45 W)	15 A (50 W) 15 A (40 W) 13 A (45 W)	8 A (15 W) 8 A (15 W) 8 A (15 W)		764-870 MHz (1-35 W) 136-174 MHz (1-100 W) 380-470 MHz (1-100 W)	13 A (50 W) 30 A (40 W) 30 A (45 W)	8 A (15 W) 8 A (15 W) 8 A (15 W)			

GPS SPECIFICATIONS	
Channels	12
Tracking Sensitivity	-164 dBm
Accuracy <sup>2</sup>	<5 meters (95%)
Cold Start	<60 seconds (95%)
Hot Start	<5 seconds (95%)
Mode of Operation	Autonomous (Non-Assisted) GNSS or SBAS

# APX 8500 ALL-BAND P25 MOBILE RADIO

## SPECIFICATIONS

MOBILE MILITARY STANDARDS 810 C, D, E , F & G										
	MIL-STD 810C		MIL-STD 810D		MIL-STD 810E		MIL-STD 810F		MIL-STD 810G	
	Method	Proc./Cat.	Method	Proc./Cat.	Method	Proc./Cat.	Method	Proc./Cat.	Method	Proc./Cat.
Low Pressure	500.1	I	500.2	II	500.3	II	500.4	II	500.5	II
High Temperature	501.1	I, II	501.2	I/A1, II/A1	501.3	I/A1, II/A1	501.4	I/Hot, II/ Hot	501.5	I/A1, II/A1
Low Temperature	502.1	I	502.2	I/C3, II/C1	502.3	I/C3, II/C1	502.4	I/C3, II/C1	502.5	I/C3, II/C1
Temperature Shock	503.1	1 Proc	503.2	I/A1C3	503.3	I/A1C3	503.4	I	503.5	I/C
Solar Radiation	505.1	II	505.2	I	505.3	I	505.4	I	505.5	I/A1
Rain	506.1	I, II	506.2	I, II	506.3	I, II	506.4	I, III	506.5	I, III
Humidity	507.1	II	507.2	II	507.3	II	507.4	1 Proc	507.5	II/Aggravated
Salt Fog	509.1	1 Proc	509.2	1 Proc	509.3	1 Proc	509.4	1 Proc	509.5	1 Proc
Blowing Dust	510.1	I	510.2	I, II	510.3	I, II	510.4	I, II	510.5	I, II
Vibration	514.2	VIII/F, Curve-W	514.3	I/10, II/3	514.4	I/10, II/3	514.5	I/24	514.6	I/24
Shock	516.2	I, III, V	516.3	I, V, VI	516.4	I, V, VI	516.5	I, V, VI	516.6	I, V, VI

ENCRYPTION	
Supported Encryption Algorithms	ADP, AES, DES, DES-XL, DES-OFB, DVP-XL
Encryption Algorithm Capacity	8
Encryption Keys per Radio	Module capable of storing 1024 keys. Programmable for 128 Common Key Reference (CKR) or 16 Physical Identifier (PID)
Encryption Frame Re-sync Interval	P25 CAI 300 mSec
Encryption Keying	Key Loader
Synchronization	XL – Counter Addressing OFB – Output Feedback
Vector Generator	National Institute of Standards and Technology (NIST) approved random number generator
Encryption Type	Digital
Key Storage	Tamper protected volatile or non-volatile memory
Key Erasure	Keyboard command and tamper detection
Standards	FIPS 140-2 Level 3 FIPS 197

ENVIRONMENTAL SPECIFICATIONS	
Operating Temperature	-30°C/+60°C
Storage Temperature	-40°C/+85°C
Humidity	Per MIL-STD
ESD	IEC 801-2 KV
FCC/IC TYPE ACCEPTANCE ID	
FCC/IC ID	BAND AND POWER LEVEL
FCC ID: AZ492FT7089	764-776 MHz (10-30 W)
IC ID: 109U-92FT7089	794-806 MHz (10-30 W)
	806-824 MHz (10-35 W)
	851-870 MHz (10-35 W)
	136-174 MHz (10-50 W)
	380-470 MHz (10-40 W)
	450-485 MHz (10-45 W)
	485-512 MHz (10-40 W)
	512-520 MHz (10-25 W)
FCC ID: TBC	136-174 MHz (1-100 W)
IC ID: TBC	380-470 MHz (1-100 W)

<sup>1</sup> Measured in the analog mode per TIA / EIA 603 single-tone method under nominal conditions

<sup>2</sup> Measured conductivity with >6 satellites visible at a nominal -130 dBm signal strength.

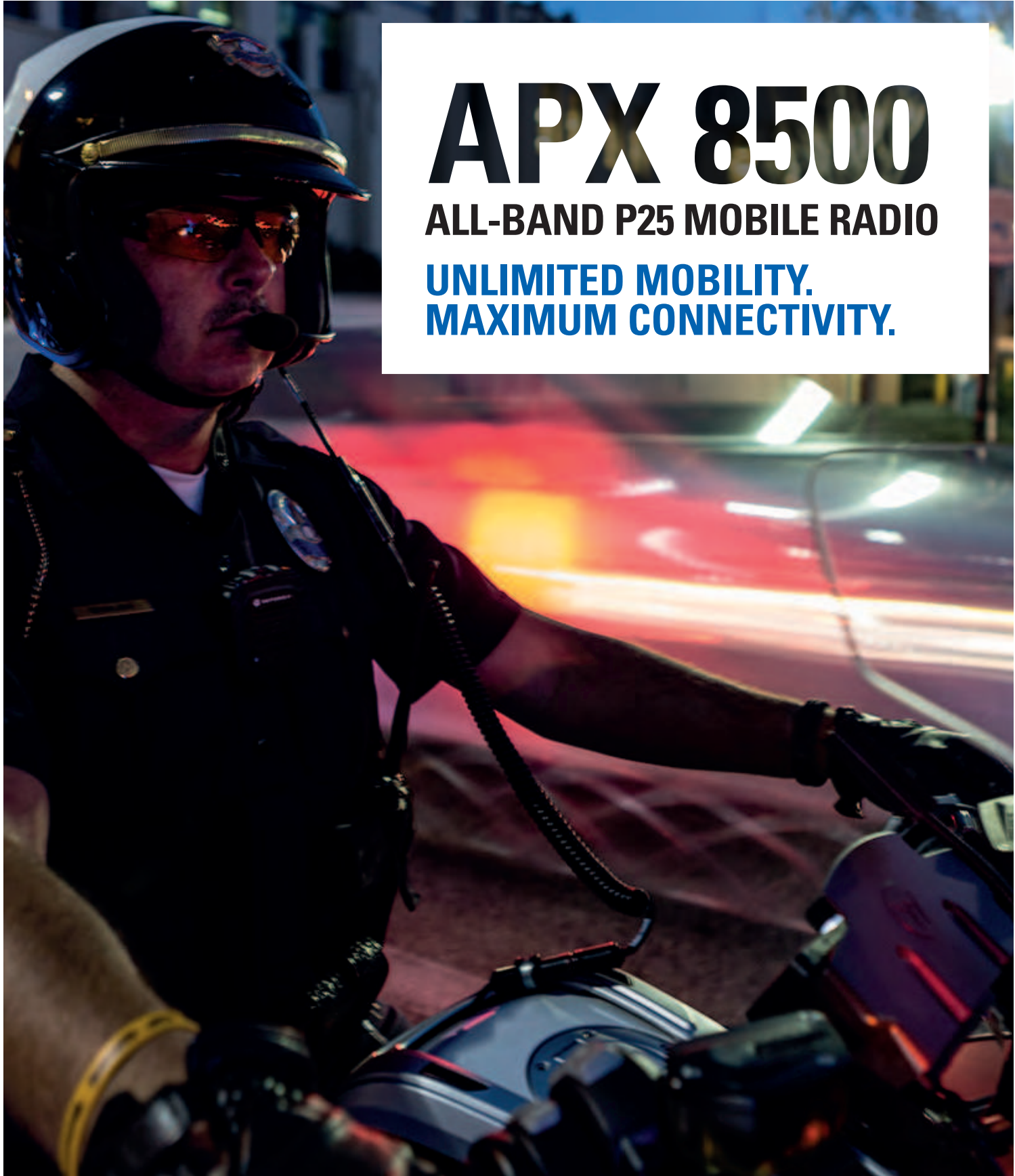
Specifications subject to change without notice. All specifications shown are typical. Radio meets applicable regulatory requirements.



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For more information, please visit: [www.motorolasolutions.com/APX8500](http://www.motorolasolutions.com/APX8500)

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