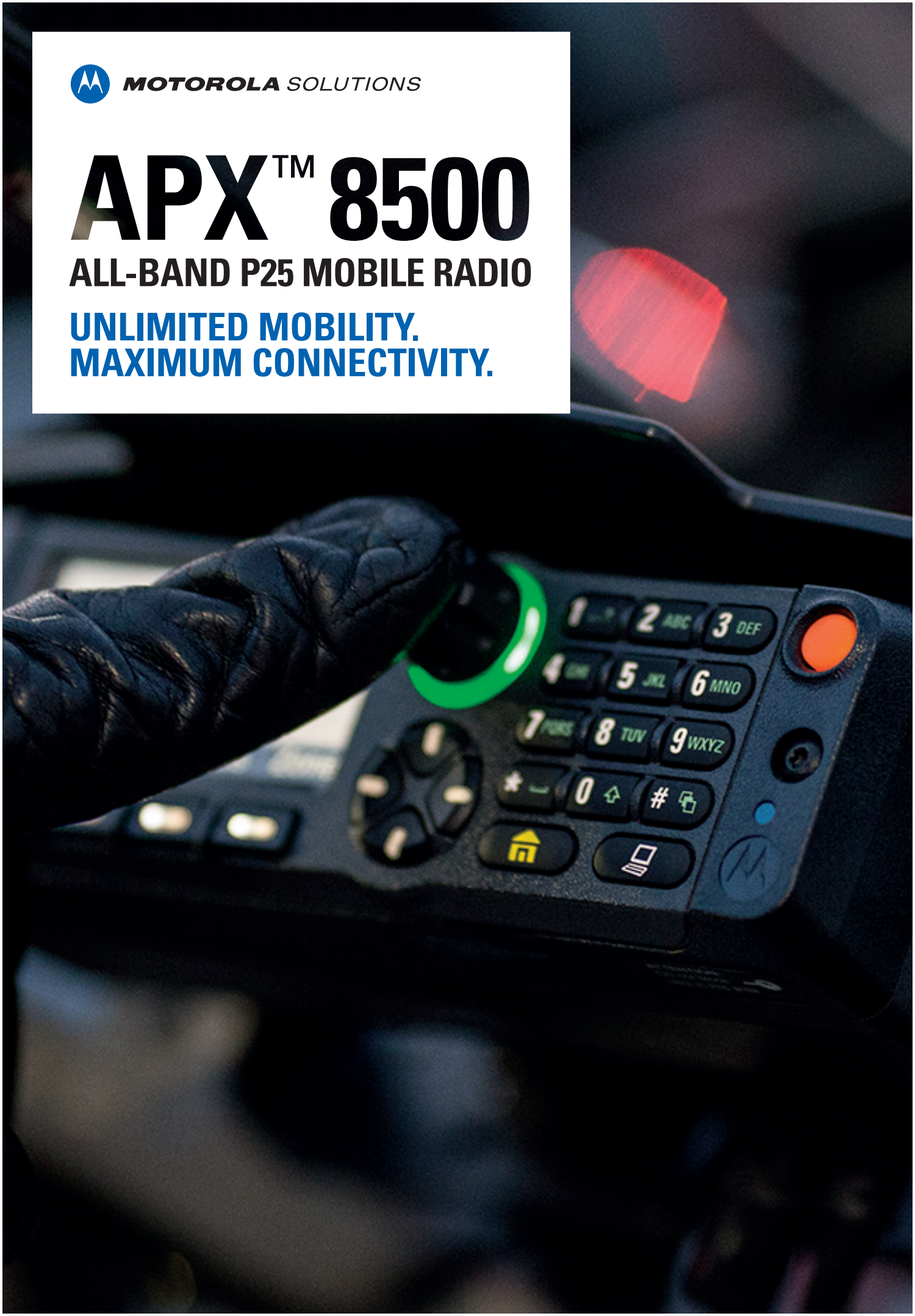
MOTOROLA SOLUTIONS

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
- 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 O9, O7, O5, O3, and O2 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

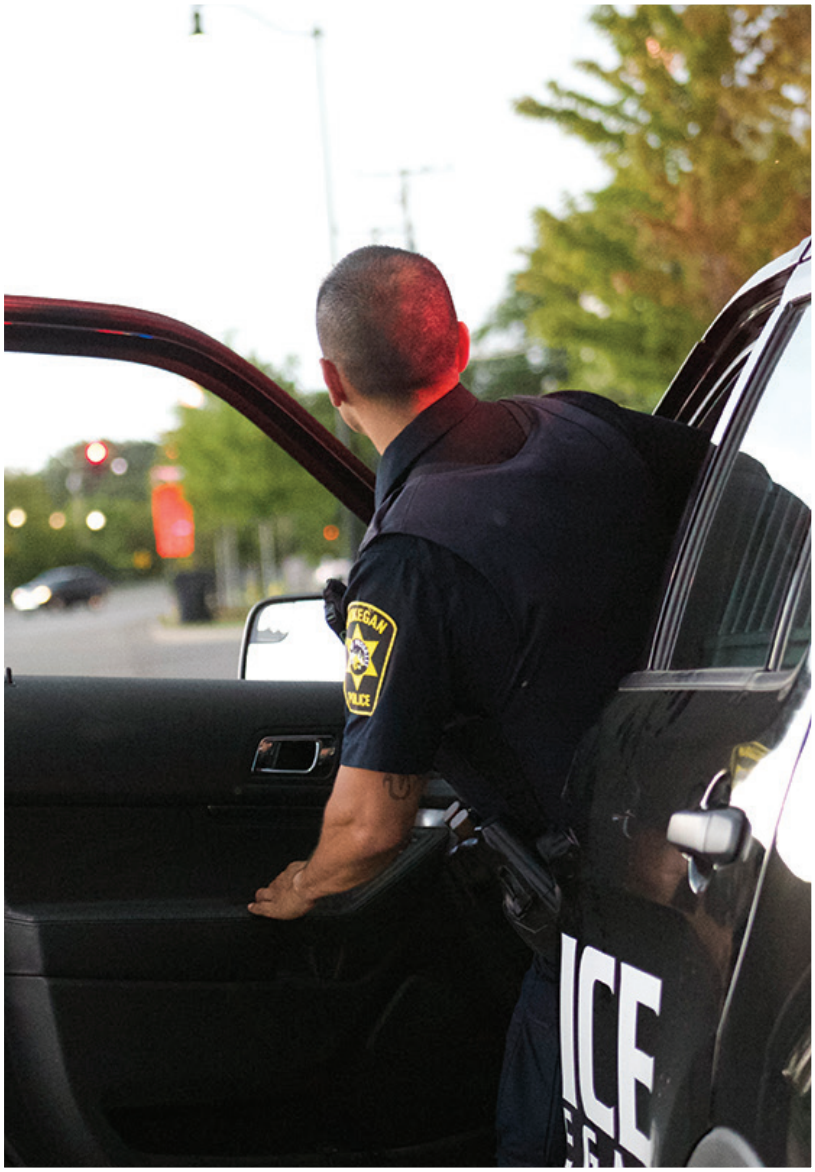
Update your radio fleet without interrupting voice communications with secure Wi-Fi. This dramatically improves the speed of configuring new codeplugs, firmware and software features over-the-air via Radio Management[1]. Agencies can pre-provision up to 20 secure Wi-Fi hotspots so personnel can easily 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. Mission Critical Geofence (also referred to as Enhanced Geoselect) automatically changes a radio's active talkgroup based on its GPS location and an agency-defined virtual barrier. For example, an incident commander can create a geofence around the 3-block radius of a burning building so that all arriving first responders are automatically placed in the same talkgroup.

[1]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 trunion 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 watt 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, Quick Call II System Configurations

Narrow and Wide Bandwidth Digital Receiver (6.25 kHz equivalent/25/20/12.5 KHz)[1]

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

Single-key ADP Encryption

Software Key

Radio Profiles

Unified Call List

Expansion Slot Standard

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

IP56

Reuse of Most XTL/APX™ Accessories

PROGRAMMING

Utilizes Windows 7,8 and 10 Customer Programming Software (CPS) with Radio Management[2]

OPTIONAL FEATURES

Wi-Fi 802.11 b/g/n

Data Modem Connection

Mission Critical Geofence

12 Character RF ID 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

[1] Per the FCC Narrowbanding rules, new products (APX6000 UHFR1, UHFR2) submitted for FCC certification after January 1, 2011 are restricted from being granted certification at 25KHz for United States - State & Local Markets only.

[2] CPS version R12.00.00 and greater ordered after June 2014 will only support Windows 7 and 8.

APX 8500 ALL-BAND P25 MOBILE RADIO
SPECIFICATIONS

SIGNALLING (ASTRO MODE)

Signalling Rate Digital ID Capacity	9.6 kbps 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.

MOBILE APX 8500

	Inches	Millimeters
Mid Power Radio Transceiver	2 x 7 x 8.4	50.8 x 178 x 213
O5 Control Head	2 x 7 x 2.93	50.8 x 178 x 74.4
O2 Control Head	2.7 x 8.1 x 3.8	68.4 x 206.3 x 96.4
O7 Control Head	2 x 7 x 3.2	50.8 x 178 x 81.4
Mid Power Radio Transceiver and O5 Control Head - Dash Mount	2 x 7 x 9.8	50.8 x 178 x 250
Mid Power Radio Transceiver and O2 Control Head - Dash Mount	2.7 x 8.1 x 10.7	68.4 x 206.3 x 270.6
Mid Power Radio Transceiver and O7 Control Head - Dash Mount	2 x 7 x 10.1	50.8 x 178 x 255.5
Mid Power Radio Transceiver and Remote Mount	2.0 x 7 x 9.1	50.8 x 178 x 231.5
	lbs	**kg**
Mid Power Radio Transceiver and O5 Control Head Weight	6.8 lbs	3.1 kg
Mid Power Radio Transceiver and O2 Control Head Weight	7.23 lbs	3.28 kg
Mid Power Radio Transceiver and O7 Control Head Weight	6.8 lbs	3.1 kg

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 Adj[1]	1-30 Watts	1-35 Watts	1-50 Watts	1-40 Watts	1-45 Watts (450-485 MHz) 1-40 Watts (485-512 MHz) 1-25 Watts (512-520 MHz)
Frequency Stability[1] (–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[1]	±5 kHz / ±2.5 kHz	±5 kHz/±4 kHz (NPSPAC) /±2.5 kHz	±5 kHz / ±2.5 kHz	±5 kHz / ±2.5 kHz	±5 kHz / ±2.5 kHz
Modulation Fidelity (C4FM) 12.5kHz Digital Channel	1.10%	1.10%	1.10%	1.10%	1.10%
Emissions[1]	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[1]	+1, –3 dB (EIA)	+1, –3 dB (EIA)	+1, –3 dB (EIA)	+1, –3 dB (EIA)	+1, –3 dB (EIA)
FM Hum & Noise[1] 25 kHz 12.5 kHz	50 dB 48 dB	50 dB 48 dB	53 dB 52 dB	53 dB 50 dB	53 dB 50 dB
Audio Distortion[1] 25 & 20 kHz 12.5 kHz	0.50% 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	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 at 3% distortion[1]	7.5 W or 15 W [4]	7.5 W or 15 W [4]	7.5 W or 15 W [4]	7.5 W or 15 W [4]	7.5 W or 15 W [4]
Frequency Stability[1] (–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[1] 12 dB SINAD	-121 dBm	-121 dBm	Pre-Amp -123 dBm / Standard -119 dBm	Pre-Amp -123 dBm / Standard -119 dBm	Pre-Amp -123 dBm / Standard -119 dBm
Digital Sensitivity 5% BER	-121.5 dBm	-121.5 dBm	-123 dBm / -119 dBm	-123 dBm / -119 dBm	-123 dBm / -119 dBm
Intermodulation 25 kHz	85 dB	85 dB	84 dB / 86 dB	82 dB / 86 dB	82 dB / 86 dB
Intermodulation 12.5 kHz	85 dB	85 dB	85 dB / 86 dB	83 dB / 86 dB	83 dB / 86 dB
Spurious Rejection	100 dB	100 dB	90 dB	90 dB	90 dB
Audio Response[1]	+1, –3 dB (EIA)	+1, –3 dB (EIA)	+1, –3 dB (EIA)	+1, –3 dB (EIA)	+1, –3 dB (EIA)
Audio Distortion at rated[1]	1.20%	1.20%	1.20%	1.20%	1.20%
Selectivity[1] 25 kHz	85 dB	85 dB	87 dB	82 dB	82 dB
Selectivity[1] 12.5 kHz	72 dB	72 dB	76 dB	76 dB	76 dB
Selectivity[1] 30 kHz	—	—	90 dB	—	—

POWER AND BATTERY DRAIN

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

GPS SPECIFICATIONS

Channels	12
Tracking Sensitivity	-164 dBm
Accuracy[2]	<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 Watts)
IC ID: 109U-92FT7089	794-806 MHz (10-30 Watts)
	806-824 MHz (10-35 Watts)
	851-870 MHz (10-35 Watts)
	136-174 MHz (10-50 Watts and 25-110 Watts)
	380-470 MHz (10-40 Watts and 25-110 Watts)
	450-485 MHz (10-45 Watts)
	485-512 MHz (10-40 Watts)
	512-520 MHz (10-25 Watts)

[1] Measured in the analog mode per TIA / EIA 603 single-tone method under nominal conditions

[2] Measured conductivity with > 6 satellites visible at a nominal -130 dBm signal strength. Specs provided are 95th percentile values.

[3] Specs includes performance for the non-GNSS/GNSS bands

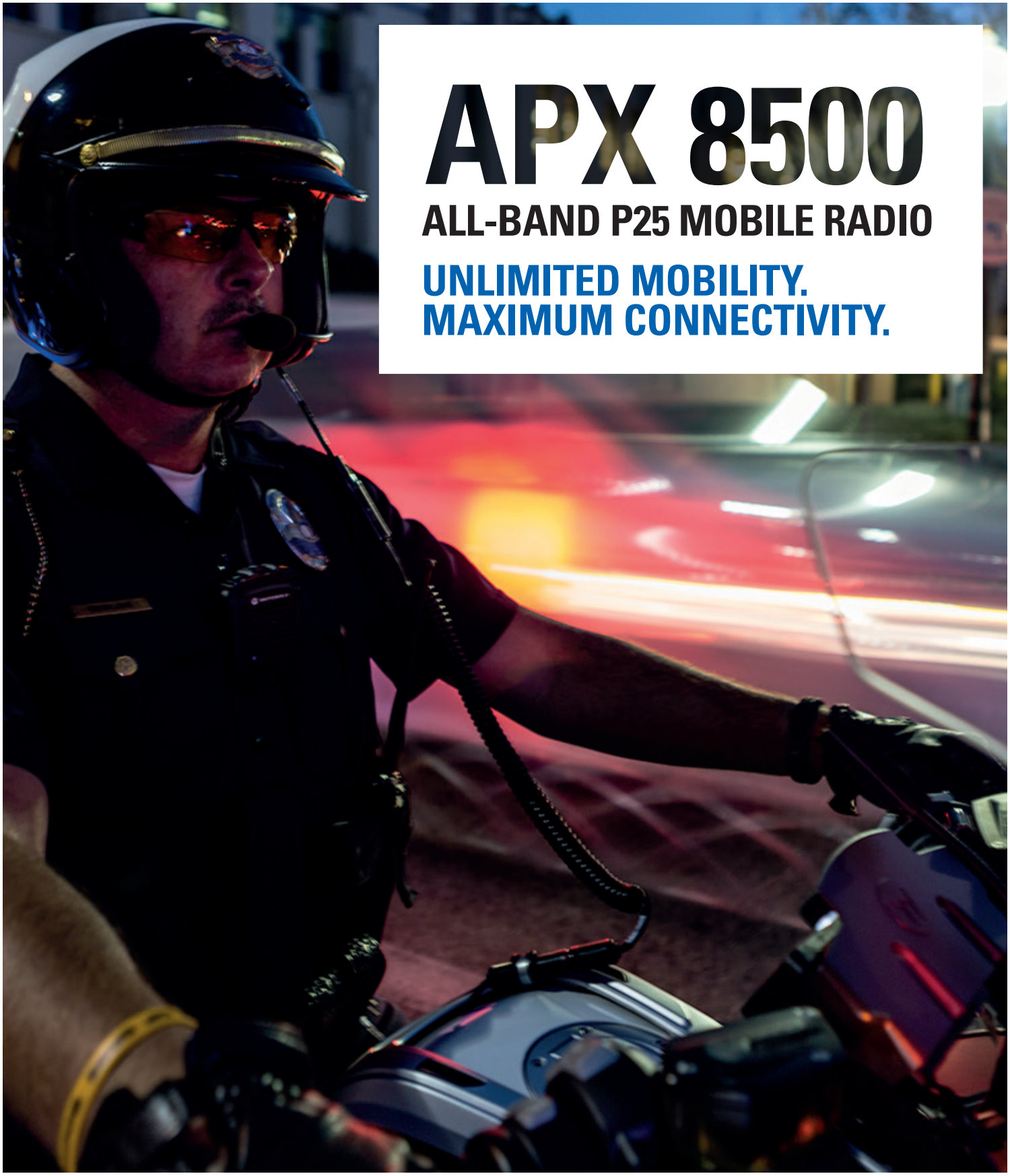
[4] Output power in to 8 and 3.2 Ohm external speakers respectively

Specifications subject to change without notice. All specificationsshown are typical.

Radio meets applicable regulatoryrequirements.

APX 8500

UNLIMITED MOBILITY. MAXIMUM CONNECTIVITY.



For more information, please visit: www.motorolasolutions.com/APX8500

MOTOROLA, MOTO, MOTOROLA SOLUTIONS and the Stylized M Logo are trademarks or registered trademarks of Motorola Trademark Holdings, LLC and are used under license. All other trademarks are the property of their respective owners. ©2016 Motorola, Inc. All rights reserved. 12 -2016

MOTOROLA SOLUTIONS