

# APX™ 7500

## Project 25 Multi-Band Mobile Radio



### STANDARD FEATURES

Available in 700/800 MHz and VHF bands

Up to 1250 Channels

Optional multi-band operation

Trunking Standards supported:

- Clear or digital encrypted ASTRO® 25 Trunked Operation
- Capable of SmartZone®, SmartZone Omnilink, SmartNet®

Analog MDC-1200 and Digital APCO P25 Conventional System Configurations

Narrow and wide bandwidth digital receiver (6.25kHz/12.5kHz/25kHz)

Embedded digital signaling (ASTRO and ASTRO 25)

Integrated GPS capable

Integrated Encryption Hardware

Seamless wideband scan

Intelligent lighting

Radio profiles

Unified Call List

Expansion Slot Standard

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

Ships standard IP54

Utilizes Windows XP and Vista Customer Programming Software (CPS)

- Supports USB Communications
  - Built in FLASHport™ support
- Re-use of most XTL™ accessories

### OPTIONAL FEATURES

Enhanced Encryption Software Options

Programming over Project 25 (POP25)

Text Messaging

Over the Air Re-Key (OTAR)

12 character RF ID asset tracking

The APX 7500 mobile exemplifies Motorola's commitment to meet the voice and data demands of today's first responders in mission critical environments—to enable, anywhere, anyplace, anytime connectivity. With integrated voice and data capabilities, these radios offer improved communications between multiple agencies, as well as neighboring communities, from everyday operations to disaster response.

Motorola's newest P25 mobile is multi-band (700/800 MHz and VHF), communicates with current and future networks (FDMA and TDMA)



**SPECIFICATION SHEET**

APX 7500  
Project 25 Multi-Band Mobile Radio



**O3 HANDHELD CONTROL HEAD FEATURES**

4 lines: 2 lines text (14 characters), 1 line icons, 1 line soft menu keys  
3 x 6 keypad with up to 24 programmable soft keys  
Cellular style user interface and color display



**O5 CONTROL HEAD FEATURES**

Tri-color LCD display  
4 lines: 2 lines text (14 characters), 1 line icons, 1 line soft menu keys  
3 x 6 keypad microphone accessory with 3 programmable soft keys  
5 programmable soft key buttons and 5 scroll-through menus with up to 24 programmable soft keys  
Multiple control head configuration to fully control a single radio with up to 4 different wired locations  
Motorcycle configuration available

**O9 INTEGRATED CONTROL HEAD AVAILABLE AS A FUTURE RELEASE.**

**SIGNALLING (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.

**MOBILE APX7500**

Dimensions	<b>Mid Power Radio Transceiver</b> 2" x 7" x 8.6" (50.8 x 177.8 x 218.4 mm)
	<b>O5 Control Head</b> 2" x 7" x 2.5" (50.8 x 180.3 x 63.5 mm)
	<b>Mid Power Radio Transceiver and O5 Control Head–Dash Mount</b> 2" x 7" x 9.6" (50.8 x 180.3 x 243.8 mm)
	<b>Mid Power Radio Transceiver and Remote Mount</b> 2.0" x 7" x 9.6" (50.8 x 180.3 x 243.8 mm)
	<b>High Power Radio Transceiver</b> 2.9" x 11.5" x 8.8" (74 x 293 x 223 mm)
	<b>High Power Radio Transceiver with Handle</b> 3.4" x 11.5" x 8.8" (87 x 293 x 223 mm)
Weight	<b>Mid Power Radio Transceiver and Control Head</b> 7.0 lbs (3.17 kg)
	<b>High Power Radio Transceiver</b> 14.2 lbs with trunnion (6.4 kg) 12 lbs without trunnion (5.4 kg)

## SPECIFICATION SHEET

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### TRANSMITTER – TYPICAL PERFORMANCE SPECIFICATIONS

	700MHz	800MHz	VHF
Frequency Range/Bandsplits	764-776 794-806	806-824 851-870	136-174
Channel Spacing	25/12.5 kHz	25/20/12.5 kHz	30/25/12.5 kHz
Maximum Frequency Separation	Full Bandsplit	Full Bandsplit	Full Bandsplit
Rated RF Output Power Adj*	10-30 Watts	10-35 Watts	25-100 Watts
Frequency Stability* (-30°C to +60°C; +25°C Ref.)	±0.00015 %	±0.00015 %	±0.0002 %
Modulation Limiting*	±5 kHz/±2.5 kHz	±5 kHz/±4 kHz (NPSPAC) /±2.5 kHz	±5 kHz/±2.5 kHz
Modulation Fidelity (C4FM) 12.5kHz Digital Channel	±2.8 kHz	±2.8 kHz	±2.8 kHz
Emissions*	Conducted+ -70/-85 dBc	Radiated+ -20/-40 dBm	Conducted -70 dBc
			Radiated -20 dBm
Audio Response*	+1, -3 dB (EIA)	+1, -3 dB (EIA)	+1, -3 dB (EIA)
FM Hum & Noise (25 & 20 KHz/12.5 KHz)	40/34 dB	40/34 dB	50/40 dB
Audio Distortion*	2%	2%	2%

### RECEIVER – TYPICAL PERFORMANCE SPECIFICATIONS

	700MHz	800MHz	VHF
Frequency Range/Bandsplits	764-776	851-870	136-174 MHz
Channel Spacing	25/12.5 kHz	25/20/12.5 kHz	30/25/12.5 kHz
Maximum Frequency Separation	Full Bandsplit	Full Bandsplit	Full Bandsplit
Audio Output Power at 3% distortion*	7.5 W or 13 W **	7.5 W or 13 W **	7.5 W or 13 W **
Frequency Stability* (-30°C to +60°C; +25°C Ref.)	±0.00015 %	±0.00015 %	±0.0002 %
Analog Sensitivity* 12 dB SINAD	0.25 µV	0.25 µV	Pre-Amp 0.2 µV Standard 0.3 µV
Digital Sensitivity 1% BER	0.3 µV	0.3 µV	0.25 µV 0.4 µV
5% BER	0.25 µV	0.25 µV	0.2 µV 0.3 µV
Intermodulation	80 dB	80 dB	80 dB 85 dB
Spurious Rejection	90 dB	90 dB	90 dB
Audio Distortion at rated*	3.00%	3.00%	3.00%
Selectivity* 25 kHz/30 kHz	80 dB	80 dB	90 dB
12.5 kHz	65 dB	65 dB	70 dB

### GPS SPECIFICATIONS

Channels	12
Tracking Sensitivity	-153 dBm
Accuracy**	<10 meters (95%)
Cold Start	<60 seconds (95%)
Hot Start	<10 seconds (95%)
Mode of Operation	Autonomous (Non-Assisted) GPS

### POWER AND BATTERY DRAIN

Model Type	136-174 MHz 764-870 MHz
Minimum RF Power Output	10-35 Watt (764-870 MHz) 25-100 Watt (136-174 MHz)
Operation	13.8V DC ±20% Negative Ground
Standby at 13.8V	764-870 MHz (10-35 Watt) 0.85A 136-174 MHz (25-100 Watt) 0.85A
Receive at Rate Audio at 13.8V	764-870 MHz (10-35 Watt) 3.2A 136-174 MHz (25-100 Watt) 3.2A
Transmit Current (A) at Rated Power (W)	764-870 MHz (10-35 Watt) 12A (35W), 8A (15W) 136-174 MHz (25-100 Watt) 20A (100W)

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### 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
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
Temperature Shock	503.1	-	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	-	507.5	II - Aggravated
Salt Fog	509.1	-	509.2	-	509.3	-	509.4	-	509.5	-
Blowing Dust	510.1	I	510.2	I,II	510.3	I,II	510.4	I,II	510.5	I, II
Vibration	514.1	VIII/F, Curve-W	514.3	I/10, II/3	514.4	I/10, II/3	514.5	I/24	514.6	I-cat.24
Shock	516.1	I,II	516.3	I,IV	516.4	I,IV	516.5	I,IV	516.6	I, V, VI

### ENCRYPTION

Supported Encryption Algorithms	ADP, AES, DES, DES-XL, DES-OFB, DVP-XL
Encryption Algorithm Capacity	7
Encryption Keys per Radio	Module capable of storing 1024 keys. Programmable for 48 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 FIPS 197

\* Measured in the analog mode per TIA/EIA 603 under nominal conditions

\*\* Accuracy specs are for long-term tracking (95th percentile values >5 satellites visible at a nominal -130 dBm signal strength)

\* Specs includes performance for the non-GNSS/GNSS bands

\*\* Output power in to 8 and 3.2 Ohm external speakers respectively

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

### ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-30°C / +60°C
Storage Temperature	-40°C / +85°C
Humidity	Per MIL-STD
ESD	IEC 801-2 KV
Water & Dust Intrusion	IP54, MIL-STD

### FCC TYPE ACCEPTANCE ID

Band	Output Power	Transmitter Number
136-174 MHz	25-100 Watt	AZ492FT3821
764-870 MHz	10-35 Watt	AZ492FT5858



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