

# APX™ 7000

## Project 25 Multi-Band Portable Radio



### Top Display Model:

Up to 96 channels  
 Universal Push-to-Talk  
 T-Grip  
 Dual Battery Latch  
 Orange emergency button  
 16 position rotary knob  
 2 position concentric switch  
 3 position toggle switch  
 3 programmable side buttons  
 Transmit LED indicator  
 Full Bitmap Top Display
 

- 1 line of icons
- 1 line x 8 characters of text

 No keypad



### Dual Display Model:

Same as APX Top Display model plus the following features:  
 1250 channels  
 Dial from pre-stored lists or free-form entry  
 Programmable soft keys for easy access to radio menus  
 Backlit Keypad
 

- Home and Data buttons
- 3 soft keys
- 4 direction navigation key
- 4 x 3 keypad

 Full Bitmap Display
 

- 2 lines of icons
- 4 lines x 14 characters of text
- Status icons

The APX 7000 Multi-Band P25 Portable Radio delivers exceptional performance combining advanced voice and data technology driven by the challenges of mission critical users.

Motorola's 4th generation P25 subscriber is multi-band capable, operating in any 2 frequency bands (700/800 MHz, VHF, UHF Range 1, and UHF Range 2), communicates with current and future networks (Phase 1 FDMA and Phase 2 TDMA) and has integrated GPS. Designed specifically for first responders the dual-sided mission critical design has both an audio and data side providing optimal functionality and loud and clear audio in a compact rugged form factor.



## SPECIFICATION SHEET

APX 7000  
Project 25 Multi-Band Portable Radio

### FEATURES AND BENEFITS:

Available in 700/800 MHz, VHF, UHF Range 1, and UHF Range 2 bands

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 (6.25 kHz / 12.5 kHz / 25 kHz)

Embedded digital signaling (ASTRO & ASTRO 25)

Integrated GPS capable

Seamless wideband scan

Intelligent Lighting

Radio Profiles

Unified Call List (Dual Display model only)

Expansion Slot

Micro SD removable memory card

User programmable voice announcement

Meets Applicable Mil Specs 810C, D, E, F, and G

Ships standard IP67 (Submersible at 1 meter, 30 minutes)

Rugged option available

Public Safety Yellow and High Impact Green Rugged Housing options

Custom recessed label areas

Superior Audio Features:

- 1W high audio speaker
- Dual speakers (Dual Display model only)
- Dual microphones
- 2-mic noise canceling technology

Utilizes Windows XP and Vista Customer Programming Software (CPS)

- Supports USB communications
- Built in FLASHport™ support

Full portfolio of accessories including IMPRES batteries, chargers and audio devices

### OPTIONAL FEATURES:

Enhanced Encryption capability

Programming Over Project 25

Over the Air Rekey

Text Messaging

Mission Critical Wireless

### TRANSMITTER – TYPICAL PERFORMANCE SPECIFICATIONS

	700 MHz	800 MHz	VHF	UHF Range 1	UHF Range 2
Frequency Range/Bandsplits	764-776 793-805	806-825 851-870	136-174 MHz	380-470 MHz	450-520 MHz
Channel Spacing	25/20/12.5 kHz	25/20/12.5 kHz	25/12.5 kHz	25/12.5 kHz	25/12.5 kHz
Maximum Frequency Separation	Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit
Rated RF Output Power Adj <sup>1</sup>	1-3 Watts Max	1-3 Watts	1-6 Watts	1-5 Watts	1-5 Watts
Frequency Stability <sup>1</sup> (-30°C to +60°C; +25°C Ref.)	±0.00010 %	±0.00010 %	±0.00010 %	±0.00010 %	±0.00010 %
Modulation Limiting <sup>1</sup>	±5 kHz / ±4 kHz / ±2.5 kHz	±5 kHz / ±4 kHz / ±2.5 kHz	±5 kHz / ±2.5 kHz	±5 kHz / ±2.5 kHz	±5 kHz / ±2.5 kHz
Emissions (Conducted and Radiated) <sup>1</sup>	-75 dB	-75 dB	-75 dB	-75 dB	-75 dB
Audio Response <sup>1</sup>	+1, -3 dB	+1, -3 dB	+1, -3 dB	+1, -3 dB	+1, -3 dB
FM Hum & Noise	25 kHz 12.5 kHz	-48 dB -46 dB	-47 dB -45 dB	-47 dB -45 dB	-47 dB -45 dB
Audio Distortion <sup>1</sup>	0.60 %	1 %	0.50 %	0.50 %	0.50 %

### BATTERIES FOR APX 7000

Battery Capacity / Type	Dimensions (HxWxD)	Weight	Battery Part Numbers	Battery Capacity
Li-Ion IMPRES 2900 mAh (Ruggedized)	3.07" x 2.34" x 1.65"	6.53 oz	NNTN7038	2900 mAh
Li-Ion IMPRES 4200 mAh Ruggedized (IP67)	5.12" x 2.34" x 1.65"	11.29 oz	NNTN7034	4200mAh
Li-Ion IMPRES 4100 FM <sup>2</sup> Ruggedized (IP67)	5.12" x 2.34" x 1.65"	11.29 oz	NNTN7033	4100 mAh
NiMH IMPRES 2100 mAh Ruggedized (IP67)	5.07" x 2.34" x 1.57"	11.82 oz	NNTN7037	2100 mAh
NiMH IMPRES 2000 mAh FM <sup>2</sup> Ruggedized (IP67)	5.07" x 2.34" x 1.57"	11.82 oz	NNTN7036	2000 mAh
NiMH IMPRES 2000 mAh FM <sup>2</sup> Ruggedized PLUS	5.07" x 2.34" x 1.57"	11.82 oz	NNTN7035	2000 mAh
NiMH IMPRES 2100 mAh Ruggedized PLUS	5.07" x 2.34" x 1.57"	11.82 oz	NNTN7573	2100 mAh

## SPECIFICATION SHEET

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### RECEIVER – TYPICAL PERFORMANCE SPECIFICATIONS

	700 MHz	800 MHz	VHF	UHF Range 1	UHF Range 2
Frequency Range/Bandsplits	764-776	851-870	136-174 MHz	380-470 MHz	450-520 MHz
Channel Spacing	12.5/25 kHz	12.5/25 kHz	12.5/25 kHz	12.5/25 kHz	12.5/25 kHz
Maximum Frequency Separation	Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit
Audio Output Power at Rated <sup>1</sup>	1000 mW	1000 mW	1000 mW	1000 mW	1000 mW
Frequency Stability <sup>1</sup> (-30°C to +60°C; +25°C Ref.)	±0.00010 %	±0.00010 %	±0.00010 %	±0.00010 %	±0.00010 %
Analog Sensitivity <sup>3</sup> 12 dB SINAD	0.250 µV	0.250 µV	0.216 µV	0.234 µV	0.234 µV
Digital Sensitivity <sup>4</sup> 1% BER	0.347 µV	0.333 µV	0.277 µV	0.307 µV	0.307 µV
5% BER	0.251 µV	0.251 µV	0.188 µV	0.207 µV	0.207 µV
Selectivity <sup>1</sup> 25 kHz channel	75.7 dB	75.7 dB	79.3 dB	78.3 dB	78.3 dB
12.5 kHz channel	67.5 dB	67.5 dB	70 dB	68.1 dB	67.5 dB
Intermodulation	80 dB	80 dB	80.5 dB	80.2 dB	80.2 dB
Spurious Rejection	76.6 dB	76.6 dB	93.2 dB	80.3 dB	80.3 dB
FM Hum and Noise 25 kHz	-54 dB	-54 dB	-53.8 dB	-53.5 dB	-53.5 dB
12.5 kHz	-48 dB	-48 dB	-48 dB	-47.4 dB	-47.4 dB
Audio Distortion <sup>1</sup>	.9 %	.9 %	1.20 %	0.91 %	0.91 %

### GPS SPECIFICATIONS

Channels	12
Tracking Sensitivity	-151 dBm
Accuracy <sup>5</sup>	<10 meters (95%)
Cold Start	<60 seconds (95%)
Hot Start	<10 seconds (95%)
Mode of Operation	Autonomous (Non-Assisted) GPS

### RADIO MODELS

	Display	Keypad	Channel Capacity	FLASHport Memory	700/800 MHz (764-870 MHz)	VHF (136-174 MHz)	UHF Range 1 (380-470 MHz)	UHF Range 2 (450-520 MHz)	Embedded Buttons/Switches	GPS	LED
Top Display	Full bitmap monochromatic LCD display 1 line text x 8 characters 1 line of icons No menu support Multi-color backlight	None	96 (using zone bank feature)	64 MB	H97TGD9PW1_N QA00569	H97TGD9PW1_N QA00570	H97TGD9PW1_N QA00571	H97TGD9PW1_N QA00572	Large PTT button Angled On/Off Volume knob Orange emergency button 16-position top-mounted rotary knob 2-position concentric switch 3-position toggle switch 3 programmable side buttons	Yes	Multi-color
Dual Display	Top display, plus: Full bitmap color LCD display: 4 lines text x 14 characters 2 lines of icons 1 menu line x 3 menus White backlight	Multi-color backlight Keypad 3 soft keys 4-direction navigation key 4x3 keypad Home and Data buttons	1250	64 MB	H97TGD9PW1_N QA00569 QA00577	H97TGD9PW1_N QA00570 QA00577	H97TGD9PW1_N QA00571 QA00575	H97TGD9PW1_N QA00572 QA00576	Large PTT button Angled On/Off Volume knob Orange emergency button 16-position top-mounted rotary knob 2-position concentric switch 3-position toggle switch 3 programmable side buttons	Yes	Multi-color
Transmitter Certification					AZ489FT7036	AZ489FT7036	AZ489FT7040 (UHF/700/800) AZ489FT4886 (UHF/VHF)	AZ489FT7040 (UHF/700/800) AZ489FT4886 (UHF/VHF)			
FCC Emissions Designators	11K0F3E, 16K0F3E, 8K10F1D, 8K10F1E, 8K10F1W, 20K0F1E										
Power Supply	One rechargeable Li-Ion 2900 mAh battery, or one optional NiMH										

**SPECIFICATION SHEET**

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**DIMENSIONS OF THE RADIOS WITHOUT BATTERY**

	Inches	Millimeters
Length	6.29	159.71
Width Push-to-Talk button	2.31	58.69
Depth Push-to-Talk button	1.34	34
Width Top	2.98	75.69
Depth Top	1.6	40.52
Depth Bottom of Battery	1.65	41.78
Weight of the radios without battery	12.2 oz	

**PORTABLE 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/Basic Hot	501.5	I/A1, II/A2
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	-	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, II	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	I	509.3	I	509.4	-	509.5	-
Blowing Dust	510.1	I	510.2	I	510.3	I	510.4	I	510.5	I
Blowing Sand	-	-	510.2	II	510.3	II	510.4	II	510.5	II
Immersion <sup>6</sup>	512.1	I	512.2	I	512.3	I	512.4	I	512.5	I
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
Shock (Drop)	516.2	II	516.3	IV	516.4	IV	516.5	IV	516.6	IV

**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 64 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 140-3 FIPS 197

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

**RUGGED OPTION SPECIFICATIONS**

Leakage (immersion) <sup>6</sup>	MIL-STD-810 C, D, E, F, G Method 512.X Procedure I
Housing Availability	Standard, Public Safety Yellow and High Impact Green

**ENVIRONMENTAL SPECIFICATIONS**

Operating Temperature	-30° C / +60° C
Storage Temperature <sup>7</sup>	-40° C / +85° C
Humidity	Per MIL-STD
ESD	IEC 801-2 KV
Water & Dust Intrusion	IP67 MIL-STD

<sup>1</sup> Measured in the analog mode per TIA / EIA 603 under nominal conditions  
<sup>2</sup> When used with an FM approved intrinsically safe radio.  
<sup>3</sup> Measured conductively in analog mode per TIA / EIA 603 under nominal conditions  
<sup>4</sup> Measured conductively in digital mode per TIA / EIA IS 102.CAAA under nominal conditions  
<sup>5</sup> Accuracy specs are for long-term tracking (95th percentile values >5 satellites visible at a nominal -130 dBm signal strength)  
<sup>6</sup> For rugged models only  
<sup>7</sup> Temperatures listed are for radio specifications. Battery storage is recommended at 25°C, ±5°C to ensure best performance



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