

Specification Sheet

ASTRO® XTL™ 5000 UHF R1 (25W-110W) Digital Mobile Radio



MODEL FEATURES

- 380-470 MHz Frequency Band in one radio
- 25-110 watt variable power
- Multiple modes of operation in a single radio (ASTRO digital clear, encrypted, and Analog)
- 9600 Baud/P25 Features
- 3600 Baud Features
- Project 25 capable on Trunking systems
- Project 25 compliance interoperable voice signaling features
- 12.5/25 kHz bandwidth receiver – analog
- 12.5 kHz bandwidth receiver – digital
- Type III Encryption capability (optional):
 - ▶ 48 Encryption keys
 - ▶ 6 Encryption algorithms: DVI-XL, DVP-XL, DES, DES-XL, DES-OFB, AES
- Advanced Digital Privacy (ADP)
 - ▶ 8 Encryption keys

- Integrated voice and data capable
- Meets Mil Specs 810 (C, D, E and F)
- Programmable Buttons
- Remote Mount Configuration
- Utilizes Windows®-based Customer Programming Software (CPS)
- Built in FLASHport™ support
- Optional Siren/PA
- Dual Control Head Operation (optional for W4, W5, W7, W9 control heads)

Motorola's XTL 5000 Project 25 compliant Mobile Radio is one tough performer for local law enforcement groups, utility and transportation users. Whether you are enroute or on site, across the street or across the state, this robust mobile radio assures crisp, continuous and high quality communication.

The XTL 5000 digital mobile radio supports APCO Project 16 and 25 and is available in 380-470 MHz in one frequency band.

It also supports ASTRO Spectra legacy Accessories and existing ASTRO Spectra Control Heads.

Specially designed for your organization's most demanding needs the XTL 5000 digital mobile radio is the most preferred radio for users who need high performance, quality and reliability in their daily communications.



GENERAL PERFORMANCE SPECIFICATIONS

Modulation	C4FM of QPSK-C family (Compatible Quadrature Phase Shift Keying)
Protocol Project 25-CAI	4.4 kbps IMBE, 2.8 kbps Error Correction Coding, 2.4 kbps Embedded Signaling
Channel Bandwidth Analog	12.5/25 kHz
Digital	12.5 kHz

VOICE CODER

Voice Coding Method IMBE (CAI)	Improved Multi Band Excitation
CVSD	Continuously Variable Slope Delta Modulation (for SECURENET mode)
Voice Truncation	None (250 mSec for SECURENET Mode)
Frame Re-sync Interval	180 mSec (Clear Digital Mode)
Forward Error Correction	Golay code
Error Mitigation Project 25-CAI (IMBE) Dual Level	Level 1: Extrapolates and replaces 20 mSec voice frames that exceed the error correction algorithm tolerance. Level 2: Progressive muting of 20 mSec voice frames that are too severely damaged for Level 1 replacement.
Code Book Structure	APCO Project-25 (IMBE): No Code book

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/4094 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.

ENCRYPTION

Encryption Algorithm Capacity	6 algorithms per radio
Encryption Keys per Radio	48 keys (ASTRO compatible)
Encryption Frame Re-sync Interval	Project 25-CAI: 360 mSec
Encryption Keying	Key Variable Loader
Synchronization	Counter Addressing and Cipher Feedback and Output Feedback
Code Key Generator	External hand held microprocessor controlled Key Variable Loader and Key Management Controller
Encryption Key Tag Capacity per System	65,000
Number of Unique Keys	Dependent on encryption algorithm
Code Key Initialization	Internally derived pseudo-random initializing vector
Key Storage	Volatile electronic memory or non-volatile electronic memory
Key Erasure	Keyboard command and tamper detection

SPEAKER	
Dimensions	5.5" x 5.5" x 2.5" (139.7 x 139.7 x 63.5 mm) (Excluding mounting bracket)
Weight	1.5 lbs. (0.7 kg)

TRANSMITTER		
Frequencies	380-470 MHz	
RF Power Output 380-470 MHz Mobile	25W-110W	
Maximum Frequency Separation	Full Bandsplit	
Frequency Stability Operating Frequency Accuracy (-30C to +60C; +25C Ref.)	+0.000020%	
Modulation Limiting 25 kHz channel	±5 kHz	
12.5 kHz channel	±2.5 kHz	
Modulation Fidelity (C4FM) 12.5 kHz digital channel	±2.8 kHz	
Channel Spacing Analog	12.5/25 kHz	
FM Hum and Noise 25 kHz	45 dB	
12.5 kHz	40 dB	
Emissions	Conducted -85 dBc	Radiated -20dBm
Audio Response (6 db/Octave Pre-emphasis from 300 to 3000 Hz)	+1, -3 dB (EIA)	
Audio Distortion per EIA	2%	

POWER AND BATTERY DRAIN	
Model Type	380-470 MHz
Minimum RF Power Output	25-110 W
Operation	12V DC Negative Ground
Standby at 13.8V	0.75A max.
Receive at Rated Audio at 13.8V	3.2A max.
Transmit at Rated Power	23A max.

RECEIVER		
Frequencies	380-470 MHz	
Channel Spacing	12.5 / 25 kHz	
Maximum Frequency Separation	Full Bandsplit	
Optional Pre-Amp	Yes	No
Analog Sensitivity 20 db Quieting	0.25 µV	0.40 µV
12 db SINAD per EIA	0.20 µV	0.30 µV
Digital Sensitivity 1% BER (12.5 kHz channel)	0.25 µV	0.40 µV
5% BER (12.5 kHz channel)	0.20 µV	0.30 µV
Intermodulation	80 dB	85 dB
Spurious Response Rejection	90 dB	90 dB
Audio Output Power at 3% distortion	7.5W into 8 Ohm 13W into 3.2 Ohm	
Adjacent Channel Rejection Selectivity (12.5 kHz/25 kHz)	75 dB / 82 dB	

TRANSMITTER TYPE ACCEPTANCE IDS		
Band	Transmitter Power Output	Number
380-470 MHz	25-110 W	AZ492FT4870

MODEL TYPE	W3	W4	W5	W7	W9
Display	2 Line/ 14-Characters per line Liquid Crystal Display	1 Line/ 8-Characters Vacuum Fluorescent Display	1 Line/ 8-Characters Vacuum Fluorescent Display	1 Line/ 8-Characters Vacuum Fluorescent Display	1 Line/ 11-Characters Vacuum Fluorescent Display
Hardware Configuration	Hand Held Control Head	Rotary Mode & Volume Select	Electronic Mode & Volume Select	Electronic Mode & Volume Select	Electronic Mode & Volume Select
Numeric Keypad	Yes	No	No	Yes	Yes
Channel Capability	512	512	512	512	512
Remote Mount Control Head Dimensions (HxWxD)	5.4" x 2.4" x 1.2"* (137.2 x 60.0 x 30.7 mm)	2.0" x 7.1" x 2.2" (50.8 x 180.3 x 55.9 mm)	2.0" x 7.1" x 2.2" (50.8 x 180.3 x 55.9 mm)	2.0" x 7.1" x 2.2" (50.8 x 180.3 x 55.9 mm)	3.4" x 6.5" x 1.7" (86.4 x 165.0 x 43.2 mm)
Transceiver Dimensions with Handle	2.65" x 8.08" x 12.31" (67.3 x 205.1 x 312.6mm)	2.65" x 8.08" x 12.31" (67.3 x 205.1 x 312.6mm)	2.65" x 8.08" x 12.31" (67.3 x 205.1 x 312.6mm)	2.65" x 8.08" x 12.31" (67.3 x 205.1 x 312.6mm)	2.65" x 8.08" x 12.31" (67.3 x 205.1 x 312.6mm)
without Handle	2.41" x 7.02" x 12.31" (61.2 x 178.2 x 312.6mm)	2.41" x 7.02" x 12.31" (61.2 x 178.2 x 312.6mm)	2.41" x 7.02" x 12.31" (61.2 x 178.2 x 312.6mm)	2.41" x 7.02" x 12.31" (61.2 x 178.2 x 312.6mm)	2.41" x 7.02" x 12.31" (61.2 x 178.2 x 312.6mm)
Transceiver Weight with Handle	8.0 lbs.-13.0 oz. (4 kg)	8.0 lbs.-13.0 oz. (4 kg)	8.0 lbs.-13.0 oz. (4 kg)	8.0 lbs.-13.0 oz. (4 kg)	8.0 lbs.-13.0 oz. (4 kg)
without Handle	8.0 lbs.-5.0 oz. (3.77 kg)	8.0 lbs.-5.0 oz. (3.77 kg)	8.0 lbs.-5.0 oz. (3.77 kg)	8.0 lbs.-5.0 oz. (3.77 kg)	8.0 lbs.-5.0 oz. (3.77 kg)

* Measurement shown is without Hang-up Clip. With Hang-up Clip W3 depth increases to 1.4".

NOTE: Analog specifications measured per TIA/EIA 603.

Digital mode specifications measured per TIA/EIA TSB102.CAAB.

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature -30°C / +60°C

Storage Temperature -55°C / +85°C

MILITARY STANDARDS 810 C, D, E, & F

	MIL-STD 810C		MIL-STD 810D		MIL-STD 810E		MIL-STD 810F	
	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
High Temperature Storage	501.1	I	501.2	I/A1	501.3	I/A1	501.4	I/Hot
High Temperature Operational	501.1	II	501.2	II/A1	501.3	II/A1	501.4	II/Hot
Low Temperature Storage	502.1	I	502.2	I/C3	502.3	I/C3	502.4	I/C3
Low Temperature Operational	502.1	I	502.2	II/C1	502.3	II/C1	502.4	II/C1
Temperature Shock	503.1	-	503.2	I/A1-C3	503.3	I/A1-C3	503.4	I/Hot-C3
Solar Radiation	505.1	II	505.2	I	505.3	I	505.4	I
Rain Blowing	506.1	I	506.2	I	506.3	I	506.4	I
Rain Steady	506.1	II	506.2	II	506.3	II	506.4	III
Humidity	507.1	II	507.2	II	507.3	II	507.4	-
Salt Fog	509.1	-	509.2	-	509.3	-	509.4	-
Blowing Dust	510.1	I	510.2	I	510.3	I	510.4	I
Blowing Sand	510.2	II	510.3	II	510.4	II		
Vibration Minimum Integrity	514.2	VIII/F, Curve-W	514.3	I/10	514.4	I/10	514.5	I/24
Vibration Loose Cargo	514.3	II/3	514.4	II/3	514.5	II/5		
Shock Functional	516.2	I	516.3	I	516.4	I	516.5	I
Shock Crash Hazard	516.2	III	516.3	V	516.4	V	516.5	V
Shock Bench Handling	516.2	V	516.3	VI	516.4	VI	516.5	VI



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