

SEALED BIDS
For
911/CENTRAL DISPATCH
Mobile Radios, Portable Radios, and Pagers
Wednesday, April 13, 2022 at 10:30 a.m.
Commissioners Conference Room
Alpena County has the right to accept or reject any and all bids.

Commissioners present: Bob Adrian

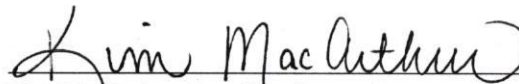
Others present: Central Dispatch Director Kim Elkie, Board Assistant Lynn Bunting

Business Name	Amount of Bid	
Motorola Solutions-Lindsay Schleicher	APX4000 Series	\$3200.81
	APX6000 Series	\$4689.67
	APX6000 XE	\$5267.17
	APX6500 Enhanced Series	\$5069.75
	APX6500 Enhanced Series Dual Head	\$5825.75
	Radio Programming and Installation	
	Programming	\$60.00
	Remote Mount Installation	\$680.00
	Dash Mount Installation	\$380.00
	Dual Head Installation	\$925.00
Grand Traverse Mobile Communications	Kenwood VP5430 Portable	\$1641.16
	Kenwood VP6430 Portable	\$2665.16
	Kenwood VP6340 Portable High Viz	\$2825.16
	Kenwood VM5000 Mobile	\$2721.30
	Kenwood VM6000 Mobile	\$4293.78
	Unication G4 Pager	\$676.50

Tele-Rad	Unication G4 Digital Voice Pager	\$580.50
	Unication G5 Dual Band Pager	\$670.50
	Unication STD Desktop Charger	\$81.00



Bob Adrian, Chairman
Alpena County Board of Commissioners



Kim MacArthur, Board Assistant
Alpena County Board of Commissioners



ALPENA COUNTY E-911 DIRECTOR

720 WEST CHISHOLM ST. - SUITE 13, ALPENA, MI 49707 • 354-9821/354-9111

April 18, 2022

To: Courts & Public Safety Committee

Re: Sealed Bid Vendor Selection

From: Kim Elkie, Director E911/Central Dispatch & Interim Emergency Services Coordinator

After reviewing the bids with Commissioner Osbourne and communicating with the fire chiefs regarding their level of satisfaction, or lack thereof, with the previous Kenwood purchase in 2019, it is my recommendation to accept Grant Traverse Mobile Communications' bid for Kenwood portable radios, mobile radios and G4 Unication Voice Pagers, all at state bid cost. Per our request, three models were submitted for each the portable and mobile configurations. The G4 Unication Voice Pager is the only pager on the state bid list.

The County is offering a match in the amount of \$31,115.17. When combined with the Township/City matching funds, this project will provide \$62,230.34 for radio and pager purchases in 2022.

Respectfully submitted,

A handwritten signature in blue ink that reads "Kim Elkie".

Kim Elkie
Director, E911/Central Dispatch



Alpena County, MI

2022 Radio Bids

April 8, 2022

The design, technical, and price information furnished with this proposal is proprietary information of Motorola Solutions, Inc. (Motorola). Such information is submitted with the restriction that it is to be used only for the evaluation of the proposal, and is not to be disclosed publicly or in any manner to anyone other than those required to evaluate the proposal, without the express written permission of Motorola Solutions, Inc.

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. © 2022 Motorola Solutions, Inc. All rights reserved.

April 8, 2022

Alpena County Commissioners' Office
720 W. Chisholm St
Suite 7
Alpena, MI 49707

Subject: 2022 Radio Project – Radio Bids

Dear Alpena County Commissioners:

Motorola Solutions, Inc. ("Motorola") is pleased to have the opportunity to provide Alpena County with quality communications equipment and services. The Motorola project team has taken great care to prepare this proposal to address your needs and provide exceptional value.

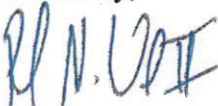
Motorola's solution for the 2022 Radio Project includes a combination of hardware, software, and services. Attached you will find pricing for Michigan Public Safety Communications (MPSCS) approved portable and mobile radios.

- Portable Radios - APX4000, APX6000 & APX6000XE
- Mobile Radios – APX4500 Enhanced, APX6000 Enhanced & APX6000 Enhanced Dual Head
- Programming, Remote Mount Installation, Dash Mount Installation & Dual Head Installation

Motorola's proposal is subject to the terms and condition in the MiDEAL contract #190000001544. A discount of 25% off list price will apply to any purchase made through December 31, 2029. A consolidated radio order can be financed through a lease purchase option. Any questions can be directed to Lindsay Schleicher, Account Executive, at 313.550.6163 or lindsay.schleicher@motorolasolutions.com.

We thank you for the opportunity to furnish Alpena County with our communications solutions, and we hope to strengthen our relationship by implementing this project. Our goal is to provide you with the best products and services available in the communications industry.

Sincerely,



Rich Uslan
Area Sales Manager
Motorola Solutions, Inc.
616.438.1942

Billing Address:
 ALPENA, COUNTY OF
 3283 W WASHINGTON AVE
 ALPENA, MI 49707
 US

Quote Date:03/28/2022
Expiration Date:06/24/2022
Quote Created By:
 Joshua Donnelly
 Joshua.Donnelly@
 motorolasolutions.com

End Customer:
 ALPENA, COUNTY OF

Line #	Item Number	Description	Qty
	APX™ 4000 Series	APX4000	
1	H51UCF9PW6AN	APX 4000 7/800 MHZ MODEL 2 PORT	1
1a	Q667BB	ADD: ADP ONLY (NON-P25 CAP COMPLIANT) (US ONLY)	1
1b	QA02756AB	ENH: 3600 OR 9600 TRUNKING BAUD SINGLE SYSTEM	1
1c	H885BK	ADD: 3Y ESSENTIAL SERVICE	1
2	PMPN4174A	CHGR DESKTOP SINGLE UNIT IMPRES, US/NA	1

Grand Total **\$3,200.81(USD)**

Notes:

- Unless otherwise noted, this quote excludes sales tax or other applicable taxes (such as Goods and Services Tax, sales tax, Value Added Tax and other taxes of a similar nature). Any tax the customer is subject to will be added to invoices.



Billing Address:
 ALPENA, COUNTY OF
 3283 W WASHINGTON AVE
 ALPENA, MI 49707
 US

Quote Date:04/06/2022
Expiration Date:06/24/2022
Quote Created By:
 Joshua Donnelly
 Joshua.Donnelly@
 motorolasolutions.com

End Customer:
 ALPENA, COUNTY OF

Line #	Item Number	Description	Qty
	APX™ 6000 Series	APX6000	
1	H98UCF9PW6BN	APX6000 700/800 MODEL 2.5 PORTABLE	1
1a	Q667BB	ADD: ADP ONLY (NON-P25 CAP COMPLIANT) (US ONLY)	1
1b	QA05570AA	ALT: LI-ION IMPRES 2 IP68 3400 MAH	1
1c	Q361AR	ADD: P25 9600 BAUD TRUNKING	1
1d	H38BT	ADD: SMARTZONE OPERATION	1
1e	Q58AL	ADD: 3Y ESSENTIAL SERVICE	1
1f	Q806BM	ADD: ASTRO DIGITAL CAI OPERATION	1
2	NNTN8860A	CHARGER, SINGLE-UNIT, IMPRES 2, 3A, 115VAC, US/NA	1

Subtotal	\$6,212.56
Total Discount Amount	\$1,522.89
Grand Total	\$4,689.67(USD)

Notes:

- Unless otherwise noted, this quote excludes sales tax or other applicable taxes (such as Goods and Services Tax, sales tax, Value Added Tax and other taxes of a similar nature). Any tax the customer is subject to will be added to invoices.



Any sales transaction following Motorola's quote is based on and subject to the terms and conditions of the valid and executed written contract between Customer and Motorola (the "Underlying Agreement") that authorizes Customer to purchase equipment and/or services or license software (collectively "Products"). If no Underlying Agreement exists between Motorola and Customer, the Motorola's Standard Terms of Use and Motorola's Standard Terms and Conditions of Sales and Supply shall govern the purchase of the Products.
 Motorola Solutions, Inc.: 500 West Monroe, United States - 60661 - #: 36-1115800

Quote Date:04/06/2022

Expiration Date:06/24/2022

Quote Created By:

 Joshua Donnelly
 Joshua.Donnelly@
 motorolasolutions.com

End Customer:

ALPENA, COUNTY OF

Line #	Item Number	Description	Qty
	APX™ 6000 Series	APX6000 XE	
1	H98UCF9PW6BN	APX6000 700/800 MODEL 2.5 PORTABLE	1
1a	Q667BB	ADD: ADP ONLY (NON-P25 CAP COMPLIANT) (US ONLY)	1
1b	Q361AR	ADD: P25 9600 BAUD TRUNKING	1
1c	QA02006AA	ENH: APX6000XE RUGGED RADIO	1
1d	Q58AL	ADD: 3Y ESSENTIAL SERVICE	1
1e	H38BT	ADD: SMARTZONE OPERATION	1
1f	Q806BM	ADD: ASTRO DIGITAL CAI OPERATION	1
2	NNTN8860A	CHARGER, SINGLE-UNIT, IMPRES 2, 3A, 115VAC, US/NA	1

Subtotal	\$6,982.56
Total Discount Amount	\$1,715.39
Grand Total	\$5,267.17(USD)

Notes:

- Unless otherwise noted, this quote excludes sales tax or other applicable taxes (such as Goods and Services Tax, sales tax, Value Added Tax and other taxes of a similar nature). Any tax the customer is subject to will be added to invoices.



Any sales transaction following Motorola's quote is based on and subject to the terms and conditions of the valid and executed written contract between Customer and Motorola (the "Underlying Agreement") that authorizes Customer to purchase equipment and/or services or license software (collectively "Products"). If no Underlying Agreement exists between Motorola and Customer, the Motorola's Standard Terms of Use and Motorola's Standard Terms and Conditions of Sales and Supply shall govern the purchase of the Products.

Motorola Solutions, Inc.: 500 West Monroe, United States - 60661 - #: 36-1115600

Billing Address:
 ALPENA, COUNTY OF
 3283 W WASHINGTON AVE
 ALPENA, MI 49707
 US

Quote Date:03/28/2022
Expiration Date:06/24/2022
Quote Created By:
 Joshua Donnelly
 Joshua.Donnelly@
 motorolasolutions.com

End Customer:
 ALPENA, COUNTY OF

Line #	Item Number	Description	Qty
	APX™ 6500 / Enh Series	ENHANCEDAPX6500	
1	M25URS9PW1BN	APX6500 ENHANCED 7/800 MHZ MOBILE	1
1a	G66BJ	ADD: DASH MOUNT E5 APXM	1
1b	G51AU	ENH: SMARTZONE OPERATION APX6500	1
1c	G78AT	ENH: 3 YEAR ESSENTIAL SVC	1
1d	GA01606AA	ADD: NO GPS/WI-FI ANTENNA NEEDED	1
1e	G444AH	ADD: APX CONTROL HEAD SOFTWARE	1
1f	W484AF	ALT: ANT 3DB GAIN 762-870MHZ	1
1g	G806BL	ENH: ASTRO DIGITAL CAI OP APX	1
1h	GA01670AA	ADD: APX E5 CONTROL HEAD	1
1i	W22BA	ADD: STD PALM MICROPHONE APX	1
1j	G193AK	ADD: ADP ONLY (NON-P25 CAP COMPLIANT) (US ONLY)	1
1k	G361AH	ENH: P25 TRUNKING SOFTWARE APX	1
1l	W432AG	ADD: AUXILIARY SPKR 13W (3.2OHM)	1

Subtotal \$6,701.00
Total Discount Amount \$1,631.25
Grand Total **\$5,069.75(USD)**



Any sales transaction following Motorola's quote is based on and subject to the terms and conditions of the valid and executed written contract between Customer and Motorola (the "Underlying Agreement") that authorizes Customer to purchase equipment and/or services or license software (collectively "Products"). If no Underlying Agreement exists between Motorola and Customer, the Motorola's Standard Terms of Use and Motorola's Standard Terms and Conditions of Sales and Supply shall govern the purchase of the Products.
 Motorola Solutions, Inc.: 500 West Monroe, United States - 60661 - #: 36-1115800

Notes:

- Unless otherwise noted, this quote excludes sales tax or other applicable taxes (such as Goods and Services Tax, sales tax, Value Added Tax and other taxes of a similar nature). Any tax the customer is subject to will be added to invoices.



Any sales transaction following Motorola's quote is based on and subject to the terms and conditions of the valid and executed written contract between Customer and Motorola (the "Underlying Agreement") that authorizes Customer to purchase equipment and/or services or license software (collectively "Products"). If no Underlying Agreement exists between Motorola and Customer, then Motorola's Standard Terms of Use and Motorola's Standard Terms and Conditions of Sales and Supply shall govern the purchase of the Products.
Motorola Solutions, Inc.: 500 West Monroe, United States - 60661 - #: 36-1115800

Billing Address:
 ALPENA, COUNTY OF
 3283 W WASHINGTON AVE
 ALPENA, MI 49707
 US

Quote Date:04/07/2022
Expiration Date:06/24/2022
Quote Created By:
 LINDSAY Schleicher
 LINDSAY.Schleicher@
 motorolasolutions.com

End Customer:
 ALPENA, COUNTY OF

Line #	Item Number	Description	Qty
	APX™ 6500 / Enh Series	ENHANCEDAPX6500	
1	M25URS9PW1BN	APX6500 ENHANCED 7/800 MHZ MOBILE	1
1a	G628AC	ADD: REMOTE MOUNT CABLE 17 FT APX	2
1b	G51AU	ENH: SMARTZONE OPERATION APX6500	1
1c	G67DT	ADD: REMOTE MOUNT E5 APXM	1
1d	G78AT	ENH: 3 YEAR ESSENTIAL SVC	1
1e	GA00092AU	ADD: APXM DUAL E5 CH	1
1f	G444AH	ADD: APX CONTROL HEAD SOFTWARE	1
1g	W484AF	ALT: ANT 3DB GAIN 762-870MHZ	1
1h	G806BL	ENH: ASTRO DIGITAL CAI OP APX	1
1i	GA01670AA	ADD: APX E5 CONTROL HEAD	1
1j	W22BA	ADD: STD PALM MICROPHONE APX	2
1k	G193AK	ADD: ADP ONLY (NON-P25 CAP COMPLIANT) (US ONLY)	1
1l	G361AH	ENH: P25 TRUNKING SOFTWARE APX	1
1m	GA01606AA	ADD: NO GPS/WI-FI ANTENNA NEEDED	1
1n	W432AG	ADD: AUXILIARY SPKR 13W (3.2OHM)	2

Subtotal \$7,709.00
Total Discount Amount \$1,883.25
Grand Total **\$5,825.75(USD)**



Any sales transaction following Motorola's quote is based on and subject to the terms and conditions of the valid and executed written contract between Customer and Motorola (the "Underlying Agreement") that authorizes Customer to purchase equipment and/or services or license software (collectively "Products"). If no Underlying Agreement exists between Motorola and Customer, the Motorola's Standard Terms of Use and Motorola's Standard Terms and Conditions of Sales and Supply shall govern the purchase of the Products.
 Motorola Solutions, Inc.: 500 West Monroe, United States - 60661 - #: 36-1115800

Notes:

- Unless otherwise noted, this quote excludes sales tax or other applicable taxes (such as Goods and Services Tax, sales tax, Value Added Tax and other taxes of a similar nature). Any tax the customer is subject to will be added to invoices.



PRICING

Alpena County Pricing

Radio Programming and Installation

- | | |
|-----------------------------|----------|
| ○ Programming | \$60.00 |
| ○ Remote Mount Installation | \$680.00 |
| ○ Dash Mount Installation | \$380.00 |
| ○ Dual Head Installation | \$925.00 |

*Michigan Public Safety Communications (MPSCS) separately charges a One Time \$250.00 Activation Fee per radio.

APX™ 6000XE SINGLE-BAND PORTABLE RADIO



From day one, the APX 6000XE P25 two-way portable radio has met agencies' most demanding performance expectations. It delivers trusted performance in a single-band solution without compromising on the extreme form factor or features that are required for routine activities and emergencies. Now, as the ever increasing needs of public safety personnel grow, we are evolving the APX 6000XE to support new technologies like Wi-Fi®, Adaptive Audio Engine, and Bluetooth® 4.0 wireless technology.

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*. Agencies can pre-provision up to 20 secure Wi-Fi hotspots so personnel can easily access updates at the facility or in the field.

HEAR AND BE HEARD

The APX 6000XE is equipped with a 3-watt speaker, 3 integrated microphones and Adaptive Audio Engine. This changes the level of noise suppression, microphone gain, windporting and speaker equalization to produce clear and loud audio in any environment.

EMERGENCY FIND ME

Bluetooth 4.0 places a wide range of wireless accessories at your disposal and provides personnel with an added level of security by improving response time in emergencies. With Emergency Find Me, a Bluetooth-enabled beacon signal guides other Bluetooth-enabled APX radios within range to assist the user in distress.

CLEAR IN-MASK COMMUNICATIONS

With Bluetooth 4.0 standard on all APX XE radios, we are able to partner with SCBA industry leaders to provide in-mask communications so you can clearly hear and be heard. Collaborations with both MSA and Scott Safety allow us to deliver intelligible voice and data communications.

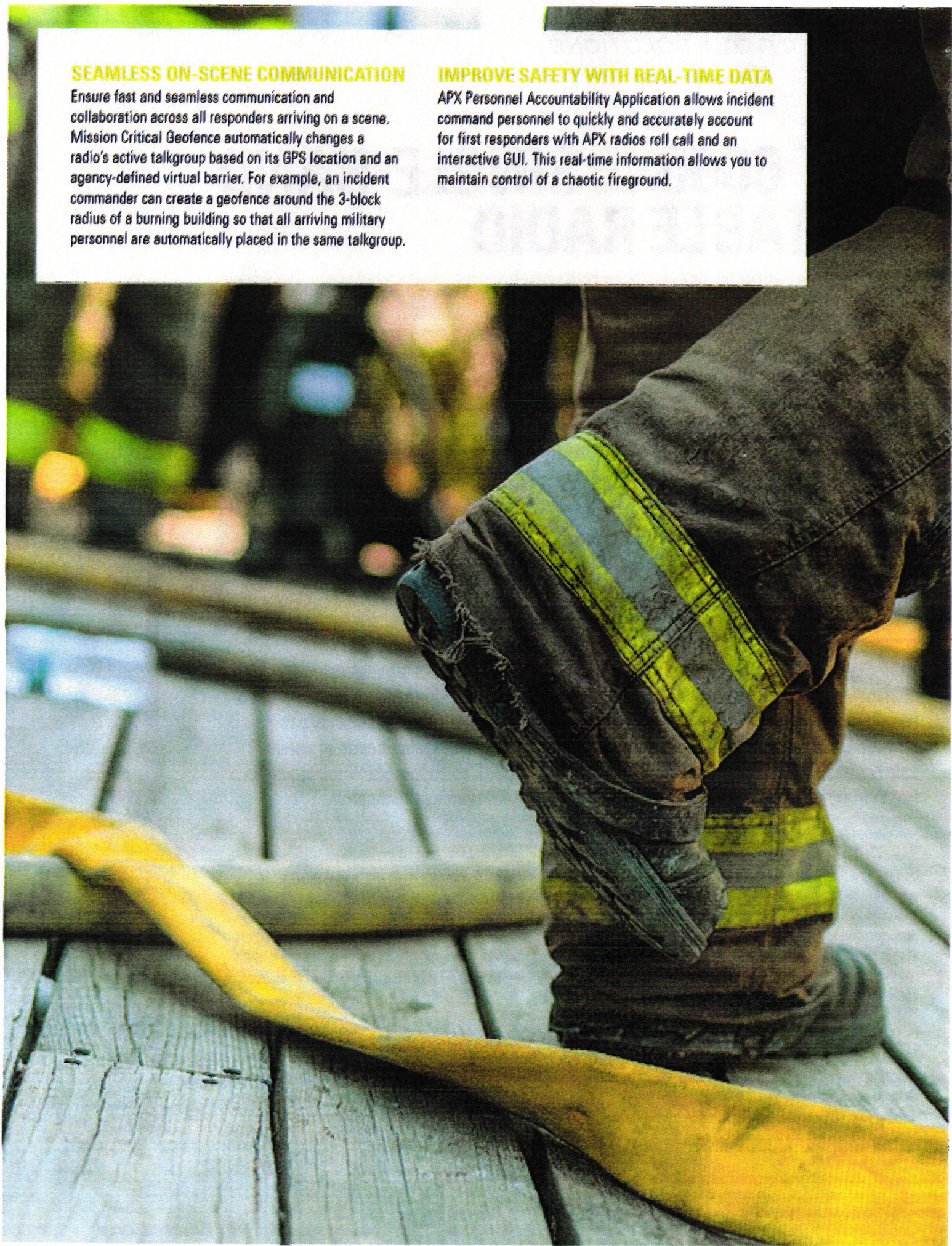


SEAMLESS ON-SCENE COMMUNICATION

Ensure fast and seamless communication and collaboration across all responders arriving on a scene. Mission Critical Geofence 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 military personnel are automatically placed in the same talkgroup.

IMPROVE SAFETY WITH REAL-TIME DATA

APX Personnel Accountability Application allows incident command personnel to quickly and accurately account for first responders with APX radios roll call and an interactive GUI. This real-time information allows you to maintain control of a chaotic fireground.





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 SmartNet®, SmartZone®, 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)

STANDARD FEATURES

- Mission Critical Wireless Bluetooth 4.0 (LE)¹
- Emergency Find Me¹
- IP68 (2m/4hr), Mil Std 512.X Delta - T
- Listed by UL to the standards ANSI/TIA 4950-A and CAN/CSA C22.2 NO. 157-92 Classification Rating: Class I, Division 1, Groups C, D; Class II, Division 1, Group E, F, G; Class III, Hazardous (Classified) Locations. ANSI/ISA 12.12.01-2015 and CAN/CSA C22.2 No. 213-15; Class I, Division 2, Groups A, B, C, D; T3C. Tamb = -25 °C to +60 °C. When used with Motorola Battery: NNTN8921A NNTN8930A (Standard on XE) 7.4V
- ASTRO 25 Integrated Voice & Data
- Integrated GPS/GLONASS for Outdoor Location Tracking
- Intelligent Priority Scan
- Voice Announcements
- Instant Recall
- ISSI 8000 Roaming
- Radio Profiles
- Dynamic Zone
- Intelligent Lighting

- Single-Key ADP Encryption
- IMPRES 2 Battery (NNTN8930)
- Text Message
- Software Key

PROGRAMMING

- Utilizes Windows 7 & 8 Customer Programming Software (CPS) with Radio Management²

ADAPTIVE AUDIO ENGINE (OPTIONAL)

- 3 Watt Speaker with Adaptive Equalization
- Adaptive Dual-Sided Operation
- Adaptive Noise Suppression Intensity
- Adaptive Gain Control
- Adaptive Windporting

OPTIONAL FEATURES

- Wi-Fi 802.11 b/g/n
- Data Modem Tethering
- RFID Volume Knob
- Multi-key for 128 keys and Multi-Algorithm
- Programming Over Project 25 (OTAP)
- Over the Air Rekey (OTAR)
- Digital Tone Signaling
- LEX L10 Collaboration
- P25 Authentication
- Man Down Sensor
- High Impact Green and Public Safety Yellow Colored Housing Options

¹ Per the FCC Narrowbanding rules, new products (APX6000XE UHF R1, UHF R2) submitted for FCC certification after January 1, 2011 are restricted from being granted certification at 25 kHz 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

TRANSMITTER - TYPICAL PERFORMANCE SPECIFICATIONS

		700/800	VHF	UHF Range 1	UHF Range 2
Frequency Range/Bandsplits	700 MHz 800 MHz	763-776, 793-806 MHz 806-824, 851-870 MHz	136-174 MHz	380-470 MHz	450-520 MHz
Channel Spacing		25/20/12.5 kHz	25/20/12.5 kHz	25/20/12.5 kHz	25/20/12.5 kHz
Maximum Frequency Separation		Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit
Rated RF Output Power Adj ¹		1-3 W Max	1-6 W Max	1-5 W Max	1-5 W
Frequency Stability ¹ (-30 °C to +60 °C; +25 °C Ref.)		±0.00010 %	±0.00010 %	±0.00010 %	±0.00010 %
Modulation Limiting ¹		±5 kHz / ±4 kHz / ±2.5 kHz	±5 kHz / ±4 kHz / ±2.5 kHz	±5 kHz / ±4 kHz / ±2.5 kHz	±5 kHz / ±4 kHz / ±2.5 kHz
Emissions (Conducted and Radiated) ¹		-75 dB	-75 dB	-75 dB	-75 dB
Audio Response ¹		+1, -3 dB	+1, -3 dB	+1, -3 dB	+1, -3 dB
FM Hum & Noise	25K 12.5k	-52 dB -47 dB	-55 dB -50 dB	-52 dB -47 dB	-52 dB -46 dB
Audio Distortion ¹	700 MHz 800 MHz	1.00 %	1.00 %	1.00 %	1.00 %

¹ Measured in the analog mode per TIA / EIA 603 under nominal conditions

BATTERIES FOR APX 6000XE

Battery Capacity / Type	Dimensions (HxWxD)	Weight	Battery Part Number	Battery Capacity
Li-Ion IMPRES 2 3400mAh	3.4" x 2.3" x 1.7"	6.5 oz	PMNN4486	3400 mAh
Li-Ion IMPRES 2 4850mAh	5" x 2.3" x 1.7"	11.0 oz	PMNN4487	4850 mAh
Li-Ion IMPRES 2 5100mAh	5" x 2.3" x 1.7"	11.0 oz	PMNN4494	5100 mAh
Li-Ion IMPRES 2 2650 mAh ¹	3.4" x 2.3" x 1.7"	5.7 oz	NNTN8930	2650 mAh
Li-Ion IMPRES 2 4500mAh	5" x 2.3" x 1.7"	11.0 oz	NNTN8921	4500 mAh
Li-Ion IMPRES 2, 3100 mAh, TIA 4950-A, IP68	3.4" x 2.3" x 1.7"	7.1 oz	PMNN4547	3100 mAh

¹ The standard shipping battery for the APX 6000XE

RADIO MODELS

MODEL 1.5



MODEL 2.5



MODEL 3.5



Display	Full bitmap monochromatic LCD top display 1 line text x 8 characters 1 line of icons No menu support Multi-color backlight	Top display plus: Full bitmap color LCD display 4 lines of text x 14 characters 2 lines of icons 1 menu line x 3 menus White backlight	Top display plus: Full bitmap color LCD display 4 lines of text x 14 characters 2 lines of icons 1 menu line x 3 menus White backlight
Keypad	none	Backlit keypad 3 soft keys 4 direction Navigation key Home and Data buttons	Backlit keypad 3 soft keys 4 direction Navigation key 4x3 keypad Home and Data buttons
Channel Capacity ¹	96	1000	1000
FLASHport Memory	64 MB	64 MB	64 MB
700/800 MHz (763-870 MHz)	H98UCD9PW5BN	H98UCF9PW6BN	H98UCH9PW7BN
VHF (136-174 MHz)	H98KGD9PW5BN	H98KGF9PW6BN	H98KGH9PW7BN
UHF Range 1 (380-470 MHz)	H98QDD9PW5BN	H98QDF9PW6BN	H98QDH9PW7BN
UHF Range 2 (450-520 MHz)	H98SDD9PW5BN	H98SDF9PW6BN	H98SDH9PW7BN
Buttons & Switches	Large PTT button ■ Angled On/Off volume control ■ Orange emergency button ■ 16 position top-mounted rotary switch ■ 2-position concentric switch ■ Multi-color backlight ■ 3-position toggle switch ■ 3 programmable side buttons		

Regulatory Information

	FCC ID	Industry Canada
700/800 (764-869 MHz)	AZ489FT7086	109U-89FT7086
VHF (136-174 MHz)	AZ489FT7087	109U-89FT7087
UHF Range 1 (380-470 MHz)	AZ489FT7077	109U-89FT7077
UHF Range 2 (420-520 MHz)	AZ489FT7085	109U-89FT7085

FCC Emissions Designators

FCC Emissions Designators 11K0F3E, 16K0F3E, 8K10F1D, 8K10F1E, 8K10F1W, 20K0F1E²

Power Supply

Power Supply One rechargeable Li-Ion IMPRES 2 2650 mAh Battery Standard (NNTN8930), with alternate battery options available.

¹ Enhancement package available
² For the FCC Narrowbanding rules, new products (APX6000 UHF91, UHF92) submitted for FCC certification after January 1, 2011 are restricted from being granted certification at 25KHz for United States - State & Local Markets only.

RECEIVER - TYPICAL PERFORMANCE SPECIFICATIONS

		700/800	VHF	UHF Range 1	UHF Range 2
Frequency Range/Bandsplits	700 MHz 800 MHz	763-776 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	25/20/12.5 kHz	25/20/12.5 kHz
Maximum Frequency Separation		Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit
Audio Output Power at Rated ¹		500 mW	500 mW	500 mW	500 mW
Analog Sensitivity ²	12 dB SINAD	0.25 µV	0.17 µV	0.224 µV	0.203 µV
Digital Sensitivity ³	1% BER (800 MHz) 5% BER	0.375 µV 0.24 µV	0.243 µV 0.15 µV	0.298 µV 0.200 µV	0.296 µV 0.204 µV
Selectivity ¹	25 kHz channel 12.5 kHz channel	-76 dB -70 dB	-78 dB -73 dB	-77 dB -67 dB	-76 dB -67 dB
Intermodulation		-80.1 dB	-80.2 dB	-80.3 dB	-80.2 dB
Spurious Rejection		-75 dB	-78 dB	-80.5 dB	-80.8 dB
FM Hum and Noise	25 kHz 12.5 kHz	-54 dB -79 dB	-54.3 dB -50.1 dB	-53.5 dB -47.5 dB	-52.5 dB -47.3 dB
Audio Distortion at Rated ¹		0.90%	0.90%	0.70%	0.70%

¹ Measured in the analog mode per TIA / EIA 603 under nominal conditions
² Measured conductively in digital mode per TIA / EIA 45 102 CAAA under nominal conditions
³ Accuracy specs are for long-term tracking (95th percentile values, ±5 satellites visible at a nominal -130 dBm signal strength)

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	I	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	I	509.2	I	509.3	I	509.4	1 Proc	509.5	1 Proc
Blowing Dust	510.1	I	510.2	I	510.3	I	510.4	I	510.5	I
Blowing Sand	1 Proc	1 Proc	510.2	II	510.3	II	510.4	II	510.5	II
Immersion	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	516.2	IV	516.4	IV	516.5	IV	516.6	IV



DIMENSIONS OF THE RADIOS WITHOUT BATTERY

Length	6.2 in	156 mm
Width Push-To-Talk button	2.4 in	61 mm
Depth Push-To-Talk button	1.4 in	36 mm
Width Top	3.3 in	84 mm
Depth Top	2.1 in	54 mm
Depth Bottom of Battery	1.2 in	32 mm
Weight of the radios without battery	13.7 oz	389 g

ENCRYPTION

Supported Encryption Algorithms	ADP, 256-bit 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 140-2 Level 3 FIPS 197

GPS/GPS/GNSS SPECIFICATIONS

Constellations	GPS & GLONASS
Tracking Sensitivity	-164 dBm
Accuracy ¹	<5 meters (95%)
Cold Start	<60 seconds (95%)
Hot Start	<5 seconds (95%)
Mode of Operation	Autonomous (Non-Assisted)

RUGGED SPECIFICATIONS

Leakage (submersion)	MIL-STD-810 C, D, E, F and G Method 512.X Procedure I, IP68 (2 meters, 4 hours)
----------------------	---

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature ²	-30 °C to +60 °C
Storage Temperature ²	-50 °C to +85 °C
Humidity Per MIL-STD	ESD IEC 801-2 KV
Water and Dust Intrusion	IP68 (2 meters, 4 hours)

HOUSING COLOR

Black (Standard), Public Safety Yellow, and High Impact Green

¹ Measured conductively in analog mode per TIA / EIA 603 under nominal conditions

² Temperatures listed are for radio specifications. Battery storage is recommended at 25 °C, ±5 °C to ensure best performance.

EMISSION DESIGNATORS

LMR: 8K10F1D, 8K10F1E, 8K10F1W, 11K0F3E, 16K0F3E, 20K0F1E

Bluetooth: 852KF1D, 1M17F1D, 1M19F1D, 1M04F1D

WLAN (Wi-Fi): 13M7G1D, 17M0D1D, 18M1D1D

WIRELESS CONNECTIVITY AND SECURITY

Frequency Range/Bandsplits:

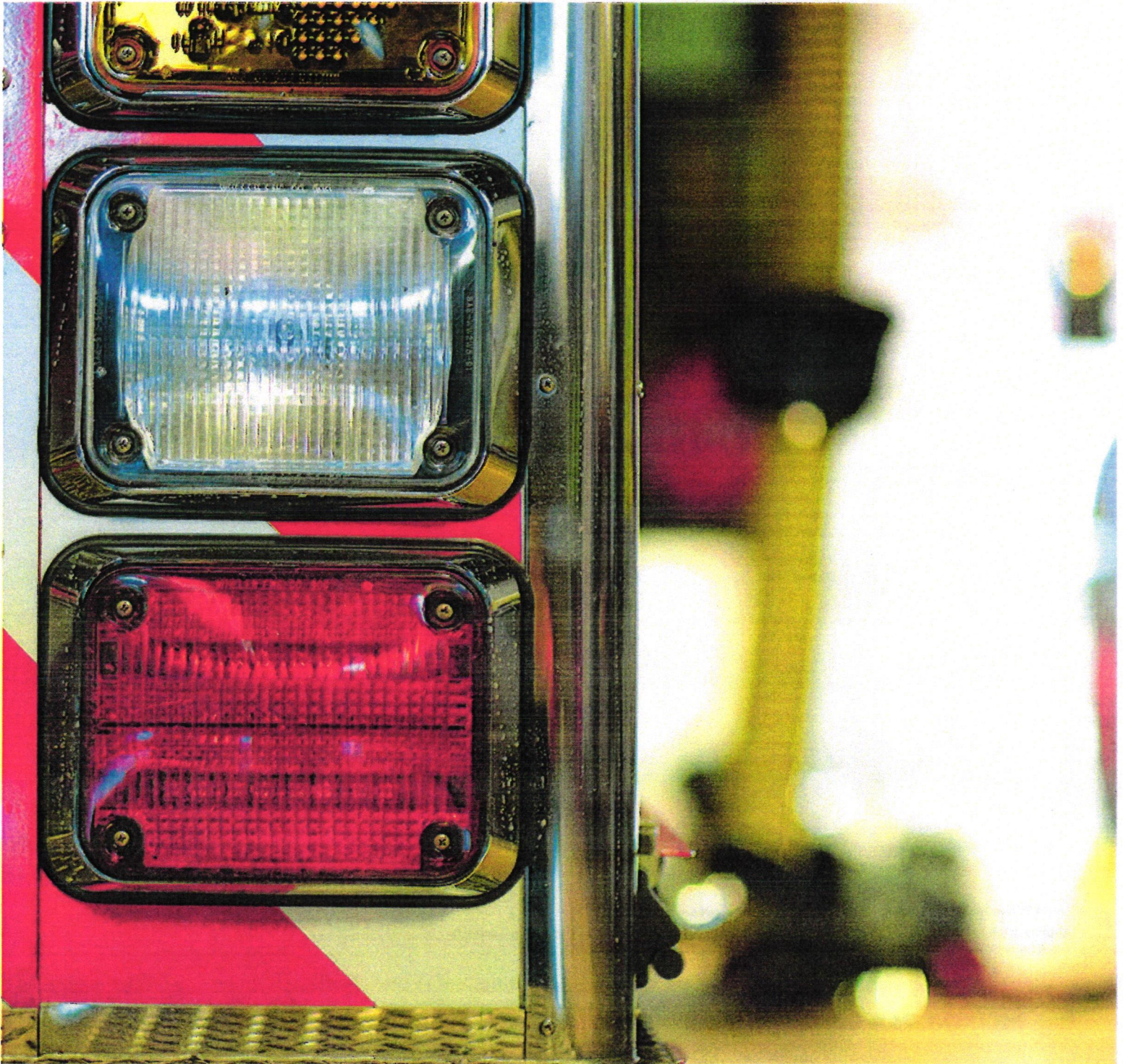
Bluetooth: 2402 - 2480 MHz, WLAN (Wi-Fi): 2400 - 2483.5 MHz

WLAN (Wi-Fi) 802.11 b/g/n supports WPA-2, WPA, WEP security protocols; radio can be pre-provisioned with up to 20 SSIDs¹

Mission Critical Wireless Bluetooth 2.1 uses 96 bit encryption for pairing & 128 bit encryption for voice, signaling and data. The radio BT supports up to 6 data connections and 1 audio connection

Bluetooth 4.0 Low Energy uses 128-bit AES-CCM encryption

¹ 2400 - 2483.5 MHz for EMEA region and includes guardband
Channels 1 - 11 used for FCC/IC region



Motorola Solutions Ltd. Nova South, 160 Victoria Street, London, SW1E 5LB, UK. motorolasolutions.com

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. © 2020 Motorola Solutions, Inc. All rights reserved. 02-2020



APX™ 6000 SINGLE-BAND PORTABLE RADIO



From day one, the single-band APX 6000 P25 portable radio has delivered legendary APX ruggedness and reliability, without compromising on the form factor or features required for routine activities and extreme emergencies. Now, as the ever-increasing needs of public safety personnel grow, we are evolving the APX 6000 to support newer technologies like Wi-Fi®, Adaptive Audio Engine, and Bluetooth® 4.0 wireless technology. These advances help improve the operational efficiency and response time of public safety agencies while enhancing the safety of personnel and communities.

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*. Agencies can pre-provision up to 20 secure Wi-Fi hotspots so personnel can easily access updates at the facility or in the field.

HEAR AND BE HEARD

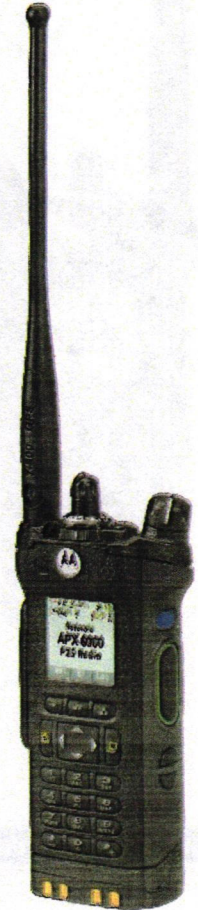
The APX 6000 is equipped with a 3-watt speaker, 3 integrated microphones and the Adaptive Audio Engine. This changes the level of noise suppression, microphone gain, windporting and speaker equalization to produce clear and loud audio in any environment.

SEAMLESS ON-SCENE COMMUNICATION

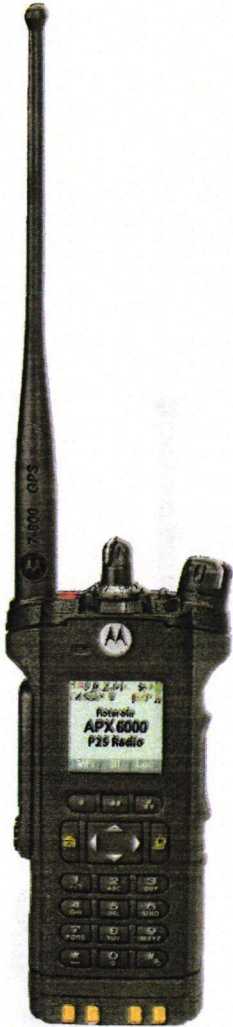
Ensure fast and seamless communication and collaboration across all responders arriving on a scene. Mission Critical Geofence automatically changes a radio's active talkgroup based on its GPS location and an agency-defined virtual barrier. For example, an incident commander can create a geofence around the 3-block radius of a burning building so that all arriving personnel are automatically placed in the same talkgroup.

EMERGENCY FIND ME

Bluetooth 4.0 places a wide range of wireless accessories at your disposal and provides personnel with an added level of security by improving response time in emergencies. With Emergency Find Me, a Bluetooth-enabled beacon signal guides other Bluetooth-enabled APX radios within range to assist the user in distress.



*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.



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
- 3800 Baud SmartNet®, SmartZone®, 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

- Mission Critical Wireless Bluetooth® 4.0 (LE)²
- Emergency Find Me²
- ASTRO® 25 Integrated Voice & Data
- Integrated GPS/GLONASS for Outdoor Location Tracking
- Voice Announcements
- ISSI 8000 Roaming
- Radio Profiles
- Dynamic Zone
- Intelligent Lighting
- Single-Key ADP Encryption
- IP68 submersion (2 meters, 2 hours)
- IMPRES 2 Battery (PMNN4485)
- Text Message
- Software Key

PROGRAMMING

- Utilizes Windows 7 & 8 Customer Programming Software (CPS) with Radio Management³

ADAPTIVE AUDIO ENGINE (OPTIONAL)

- 3-W Speaker with Adaptive Equalization
- Adaptive Dual-Sided Operation
- Adaptive Noise Suppression Intensity
- Adaptive Gain Control
- Adaptive Windporting

OPTIONAL FEATURES

- Wi-Fi 802.11 b/g/n
- LEX L10 Collaboration
- RFID Volume Knob
- Multi-key for 128 keys and Multi-Algorithm
- Programming Over Project 25 (OTAP)
- Over the Air Rekey (OTAR)
- Digital Tone Signaling
- Mission Critical Geofence
- P25 Authentication
- Man Down Capability
- High Impact Green and Public Safety Yellow Colored Housing Options
- Rugged Option: IP68 (2m/4hr), Mil Std 512.X Delta - T⁴
- Listed by UL to the standards ANSI/TIA 4950-A and CAN/CSA C22.2 NO. 157-92 Classification Rating: Class I, Division 1, Groups C, D; Class II, Division 1, Group E, F, G; Class III, Hazardous (Classified) Locations. ANSI/ISA 12.12.01-2015 and CAN/CSA C22.2 No. 213-15; Class I, Division 2, Groups A, B, C, D; T3C. Tamb = -25° C to +60° C, when used with Motorola Battery: NNTN8921A NNTN8930A 7.4V

¹ Per the FCC Narrowbanding rules, new products (APX6000 UHF R1, UHF R2) submitted for FCC certification after January 1, 2011 are restricted from being granted certification at 25 KHz for United States - State & Local Markets only.

² Compatible with BT 2.1, HSP, PAN, DUN and SPP Profiles found in off-the-shelf Bluetooth accessories and Bluetooth 4.x

³ CPS version R12.00.00 and greater ordered after June 2014 will only support Windows 7 and 8

⁴ Radios meet industry standards (IPx7) for submersion.

TRANSMITTER - TYPICAL PERFORMANCE SPECIFICATIONS

		700/800	VHF	UHF Range 1	UHF Range 2
Frequency Range/Bandsplits	700 MHz	763-776, 793-806 MHz			
	800 MHz	806-824, 851-870 MHz	136-174 MHz	380-470 MHz	450-520 MHz
Channel Spacing		25/20/12.5 kHz	25/20/12.5 kHz	25/20/12.5 kHz	25/20/12.5 kHz
Maximum Frequency Separation		Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit
Rated RF Output Power Adj ¹		1-3 Watts Max	1-6 Watts Max	1-5 Watts Max	1-5 Watts
Frequency Stability ¹ (-30°C to +60°C; +25°C Ref.)		±0.00010 %	±0.00010 %	±0.00010 %	±0.00010 %
Modulation Limiting ¹		±5 kHz / ±4 kHz / ±2.5 kHz	±5 kHz / ±4 kHz / ±2.5 kHz	±5 kHz / ±4 kHz / ±2.5 kHz	±5 kHz / ±4 kHz / ±2.5 kHz
Emissions (Conducted and Radiated) ¹		-75 dB	-75 dB	-75 dB	-75 dB
Audio Response ¹		+1, -3 dB	+1, -3 dB	+1, -3 dB	+1, -3 dB
FM Hum & Noise	25k	-52 dB	-55 dB	-52 dB	-52 dB
	25.5k	-47 dB	-50 dB	-47 dB	-46 dB
Audio Distortion ¹	700 MHz	1.00 %	1.00 %	1.00 %	1.00 %
	800 MHz				

BATTERIES FOR APX 6000

Battery Capacity / Type	Dimensions (HxWxD)	Weight	Battery Part Number	Battery Capacity
Li-Ion IMPRES 2 2550mAh ¹	3.4" x 2.3" x 1.5"	5.0 oz	PMNN4485	2550 mAh
Li-Ion IMPRES 2 3400mAh	3.4" x 2.3" x 1.7"	6.5 oz	PMNN4486	3400 mAh
Li-Ion IMPRES 2 4850mAh	5" x 2.3" x 1.7"	11.0 oz	PMNN4487	4850 mAh
Li-Ion IMPRES 2 5100mAh	5" x 2.3" x 1.7"	11.0 oz	PMNN4494	5100 mAh
Li-Ion IMPRES 2 2650 mAh ²	3.4" x 2.3" x 1.7"	5.7 oz	NNTN8930	2650 mAh
Li-Ion IMPRES 2 4500mAh ²	5" x 2.3" x 1.7"	11.0 oz	NNTN8921	4500 mAh

¹ The standard shipping battery for the APX6000
² HAZLOC approved.

RADIO MODELS

MODEL 1.5



MODEL 2.5



MODEL 3.5



	MODEL 1.5	MODEL 2.5	MODEL 3.5
Display	Full bitmap monochromatic LCD top display 1 line text x 8 characters 1 line of icons No menu support Multi-color backlight	Top display plus: Full bitmap color LCD display 4 lines of text x 14 characters 2 lines of icons 1 menu line x 3 menus White backlight	Top display plus: Full bitmap color LCD display 4 lines of text x 14 characters 2 lines of icons 1 menu line x 3 menus White backlight
Keypad	none	Backlit keypad 3 soft keys 4 direction Navigation key Home and Data buttons	Backlit keypad 3 soft keys 4 direction Navigation key 4x3 keypad Home and Data buttons
Channel Capacity ¹	96	1000	1000
FLASHport Memory	64 MB	64 MB	64 MB
700/800 MHz (763-870 MHz)	H98UCD9PW5BN	H98UCF9PW6BN	H98UCH9PW7BN
VHF (136-174 MHz)	H98KGD9PW5BN	H98KGF9PW6BN	H98KGH9PW7BN
UHF Range 1 (380-470 MHz)	H98QDD9PW5BN	H98QDF9PW6BN	H98QDH9PW7BN
UHF Range 2 (450-520 MHz)	H98SDD9PW5BN	H98SDF9PW6BN	H98SDH9PW7BN
Buttons & Switches	Large PTT button ■ Angled On/Off volume control ■ Orange emergency button ■ 16 position top-mounted rotary switch ■ 2-position concentric switch ■ Multi-color backlight ■ 3-position toggle switch ■ 3 programmable side buttons		
Regulatory Information	FCC ID	Industry Canada	
700/800 (764-869 MHz)	AZ489FT7086	109U-89FT7086	
VHF (136-174 MHz)	AZ489FT7087	109U-89FT7087	
UHF Range 1 (380-470 MHz)	AZ489FT7077	109U-89FT7077	
UHF Range 2 (420-520 MHz)	AZ489FT7085	109U-89FT7085	
FCC Emissions Designators	11K0F3E, 16K0F3E, 8K10F1D, 8K10F1E, 8K10F1W, 20K0F1E ²		
Power Supply	One rechargeable Li-Ion IMPRES 2 2550mAh battery standard (PMNN4485), with alternate battery options available.		

¹ 15 MHz bandwidth, 12.5 kHz channel spacing
² For the FCC, Non-Federal Frequency Allocation Table (NFAT) Part 97.303
 11K0F1, 16K0F1, 8K10F1D, 8K10F1E, 8K10F1W, 20K0F1E are derived from being granted certification, 21 CFR 101.101
 ©2011 Kenwood North America, Inc. All rights reserved.

RECEIVER - TYPICAL PERFORMANCE SPECIFICATIONS

		700/800	VHF	UHF Range 1	UHF Range 2
Frequency Range/Bandsplits	700 MHz 800 MHz	763-776 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	25/20/12.5 kHz	25/20/12.5 kHz
Maximum Frequency Separation		Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit
Audio Output Power at Rated ¹		500 mW	500 mW	500 mW	500 mW
Analog Sensitivity ²	12 dB SINAD	0.25 μ V	0.17 μ V	0.224 μ V	0.203 μ V
Digital Sensitivity ³	1% BER (800 MHz) 5% BER	0.375 μ V 0.24 μ V	0.243 μ V 0.15 μ V	0.298 μ V 0.200 μ V	0.296 μ V 0.204 μ V
Selectivity ¹	25 kHz channel 12.5 kHz channel	-76 dB -70 dB	-78 dB -73 dB	-77 dB -67 dB	-76 dB -67 dB
Intermodulation		-80.1 dB	-80.2 dB	-80.3 dB	-80.2 dB
Spurious Rejection		-75 dB	-78 dB	-80.5 dB	-80.8 dB
FM Hum and Noise	25 kHz 12.5 kHz	-54 dB -79 dB	-54.3 dB -50.1 dB	-53.5 dB -47.5 dB	-52.5 dB -47.3 dB
Audio Distortion at Rated ¹		0.90%	0.90%	0.70%	0.70%

¹ Measured in the analog mode per TIA / EIA 603 under nominal conditions

² Measured conductively in analog mode per TIA / EIA 603 under nominal conditions

³ Measured conductively in digital mode per TIA / EIA IS 102 CAAA under nominal conditions



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	I	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	I	509.2	I	509.3	I	509.4	1 Proc	509.5	1 Proc
Blowing Dust	510.1	I	510.2	I	510.3	I	510.4	I	510.5	I
Blowing Sand	1 Proc	1 Proc	510.2	II	510.3	II	510.4	II	510.5	II
Immersion	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	516.2	IV	516.4	IV	516.5	IV	516.6	IV



DIMENSIONS OF THE RADIOS WITHOUT BATTERY

Length	5.47 in	139 mm
Width Push-To-Talk button	2.39 in	60.7 mm
Depth Push-To-Talk button	1.40 in	35.6 mm
Width Top	2.98 in	75.7 mm
Depth Top	1.58 in	40.1 mm
Depth Bottom of Battery	1.24 in	31.5 mm
Weight of the radios without battery	10.9 oz	309 g

ENCRYPTION

Supported Encryption Algorithms	ADP, 256-bit 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 140-2 Level 3 FIPS 197

GPS/GPS/GNSS SPECIFICATIONS

Constellations	GPS & GLONASS
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)

RUGGED SPECIFICATIONS

Leakage (submersion)	MIL-STD-810 C, D, E, F and G Method 512.X Procedure I, IP68 (2 meters, 4 hours)
----------------------	---

HOUSING COLOR

Black (Standard), Public Safety Yellow, and High Impact Green

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature ¹	-30 °C to +60 °C
Storage Temperature ¹	-50 °C to +85 °C
Humidity Per MIL-STD	ESD IEC 801-2 KV
Water and Dust Intrusion	IP68 (2 meters, 4 hours)

¹ Temperatures listed are for radio specifications. Battery storage is recommended at 25 °C, ±5 °C to ensure best performance.

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

EMISSION DESIGNATORS

LMR: 8K10F1D, 8K10F1E, 8K10F1W, 11K0F3E, 16K0F3E, 20K0F1E

Bluetooth: 852KF1D, 1M17F1D, 1M19F1D, 1M04F1D

WLAN (Wi-Fi): 13M7G1D, 17M0D1D, 18M1D1D

WIRELESS CONNECTIVITY AND SECURITY

Frequency Range/Bandsplits:

Bluetooth: 2402 - 2480 MHz, WLAN (Wi-Fi): 2400 - 2483.5 MHz

WLAN (Wi-Fi) 802.11 b/g/n supports WPA-2, WPA, WEP security protocols; radio can be pre-provisioned with up to 20 SSIDs¹

Mission Critical Wireless Bluetooth 2.1 uses 96 bit encryption for pairing & 128 bit encryption for voice, signaling and data. The radio BT supports up to 6 data connections and 1 audio connection

Bluetooth 4.0 Low Energy uses 128-bit AES-CCM encryption

¹ 2400 - 2483.5 MHz for EMEA region and includes guardband
Channels 1 - 11 used for FCC/US region



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. ©2019 Motorola, Inc. All rights reserved. 11-2019



PRODUCT DATA SHEET | APX 6000 SINGLE-BAND PORTABLE RADIO



MISSION READY WHEN IT MATTERS MOST

APX™ 4000 PROJECT 25 PORTABLE RADIO

Chemical spill. Catastrophic storm. Power outage. When every minute matters, you must communicate instantly with other agencies and responders. But how do you prepare for a disaster and keep control of operating costs? That's where the APX 4000 P25 portable radio answers the call, expertly and affordably.

The APX 4000 delivers all the benefits of TDMA technology in the smallest P25 capable portable in the industry. Easy to use, tough as nails, a hard value to beat, it seamlessly connects agencies throughout your city for fast, interoperable communications.

TRUSTED APX QUALITY

The APX 4000 leverages the leading attributes of the APX family of P25 TDMA portables. From the 2-microphone design that reduces background noise so you can speak and hear clearly over heavy equipment, diesel engines and sirens to the high-spec RF performance for excellent coverage in challenging environments.

With its easy-to-use interface, color display, intelligent lighting and radio profiles, you get all the power of APX in a compact radio. Plus, you can extend the performance of your radio with a complete portfolio of industry-leading IMPRES™ smart energy and audio accessories.

COMPACT AND UNCOMPROMISING

A compact P25 Phase 2 capable portable, the APX 4000 gets the job done without getting in the way. With two dedicated knobs for volume and channel control, the APX 4000 provides readiness for any type of work setting. And its standard IP67 and MIL-STD certified to withstand dust, heat, shock, drops and water immersion, so you can count on it wherever you need it – at the factory line, power line or fire line.

P25 PERFORMANCE, INSIDE AND OUT

Loaded with key P25 features to increase safety, the APX 4000 features Mission Critical Wireless. This unique Bluetooth® solution provides an encrypted link to a high performance earpiece, GPS for quickly locating personnel outdoors, 256-bit AES encryption for improved security, and over-the-air programming to program radios in the field without interrupting voice operation.

IMPROVE RESPONSE AND EXPENSES

The APX 4000 is P25 Phase 2 capable for twice the voice capacity so you can add more users without adding more frequencies or infrastructure. And it's backwards and forwards compatible with all Motorola mission critical radio systems, so you can interoperate with confidence while you improve operating expenses.

POWER UP WITH APX 4000 ACCESSORIES

- Designed, tested and certified for optimum performance with your radio.
- Complete portfolio of remote speaker microphones, headsets and Mission Critical Wireless Bluetooth® accessories.
- High-powered IMPRES™ batteries that have a slim design to fit the compact radio size.

PRODUCT DATA SHEET
APX™ 4000



FEATURES AND BENEFITS

Available in 700/800 MHz, VHF, UHF R1, UHF R2 and 900 MHz bands

- 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 equivalent / 12.5 kHz / 30 kHz / 25 kHz)¹
- Standard with 2 dedicated control knobs for volume and channel changes
- Embedded digital signaling (ASTRO & ASTRO 25)
- Man Down
- Available in 2 models
- Lightbar with Intelligent Lighting
- Radio Profiles
- Unified Call List
- Software Key
- ASTRO 25 Integrated Voice & Data
- User programmable Voice Announcement
- Meets Applicable MIL-STD-810C, D, E, F and G
- IP67 standard

- Rugged Submersible housing (2 meters for 2 hours)²
- Superior Audio Features:
 - 0.5 W high audio speaker
 - 2-mic noise canceling technology
- GPS Outdoor Location Tracking
- Utilizes Windows XP, Vista and Windows 7 and 8 Customer Programming Software (CPS)
 - Supports USB communications
 - Built in FLASHport™ support
- Full portfolio of accessories including IMPRES batteries, chargers and audio devices³
- Mission Critical Wireless Bluetooth²

OPTIONAL FEATURES

- 256-bit AES Encryption
- Programming Over Project 25
- Text Messaging
- Man Down
- Site Selectable Alert Tones
- P25 Link Layer Authentication
- Enhanced Data
- Rugged Option: Mil Std 512.X, Delta - T

¹ Chargers and batteries for the APX 4000 radios are not compatible with other APX radios.
² Compatible with BT 2.1 HSP, PAN, DUN and SPP BT Profiles.
³ When used with a Hazardous Location tested radio.

TRANSMITTER - TYPICAL PERFORMANCE SPECIFICATIONS

		700/800	VHF	UHF Range 1	UHF Range 2	900 MHz ⁶
Frequency Range/ Bandplits	700 MHz 800 MHz	763-776, 793-806 MHz 806-824, 851-870 MHz	136-174 MHz	380-470 MHz	450-520 MHz	896-901, 935-940 MHz
Channel Spacing		25/12.5 kHz	30/25/12.5 kHz	25/12.5 kHz	25/12.5 kHz	12.5 kHz
Maximum Frequency Separation		Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit
Rated RF Output Power Adj ¹		1-3 Watts Max	1-5 Watts Max	1-5 Watts Max	1-5 Watts Max	1-2.5 Watts Max
Frequency Stability ¹ (-30°C to +60°C; +25°C Ref.)		±0.00010 %	±0.00010 %	±0.00010 %	±0.00010 %	±0.00010 %
Modulation Limiting ¹		±5 kHz / ±4 kHz / ±2.5 kHz	±5 kHz / ±4 kHz / ±2.5 kHz	±5 kHz / ±4 kHz / ±2.5 kHz	±5 kHz / ±4 kHz / ±2.5 kHz	±2.5 kHz
Emissions (Conducted and Radiated) ¹		-75 dB	-75 dB	-75 dB	-75 dB	-75 dB
Audio Response ¹		+1, -3 dB	+1, -3 dB	+1, -3 dB	+1, -3 dB	+1, -3 dB
FM Hum & Noise	25 kHz 12.5 kHz	-47 dB -45 dB	-47 dB -47 dB	-47 dB -45 dB	-47 dB -45 dB	-45 dB
Audio Distortion ¹	25 kHz 12.5 kHz	1.00%	1.00%	1.00%	1.00%	1.00%

BATTERIES FOR APX 4000

Battery Capacity / Type	Dimensions (HxWxD)	Weight	Battery Part Number	Battery Capacity
Li-Ion IMPRES 1900 mAh IP67	114.5x55.04x17.85	150 grams	NNTN8128A	1900 mAh
Li-Ion IMPRES 2300 mAh IP67 Non-HazLoc	114.5x55.04x23.15	160 grams	PMNN4424AR	2300 mAh
Li-Ion IMPRES 2300 mAh IP67 HazLoc ³	114.5x55.04x23.15	210 grams	NNTN8560A	2500 mAh
Li-Ion IMPRES 2700 mAh IP54 Non-HazLoc ³	114.5 x 55.04 x 23.15	160 grams	PMNN4448AR	2700 mAh



RADIO MODELS

MODEL 2

MODEL 3

Display	Full bitmap color LCD display 3 lines of text x 14 characters 1 line of icons 1 menu line x 3 menus White backlight	Full bitmap color LCD display 3 lines of text x 14 characters 1 line of icons 1 menu line x 3 menus White backlight
Keypad	Backlight keypad 3 soft keys 4 direction Navigation key Home and Data buttons	Backlight keypad 3 soft keys 4 direction navigation key 4x3 keypad Home and Data buttons
Channel Capacity	512	512
FLASHport Memory	64 MB	64 MB
700/800 MHz (763-870 MHz)	H51UCF9PW6AN Q360GK	H51UCH9PW7AN Q360GK
VHF (136-174 MHz)	H51KDF9PW6AN Q360GX	H51KDH9PW7AN Q360GX
UHF Range 1 (380-470 MHz)	H51QDF9PW6AN Q360GL	H51QDH9PW7AN Q360GL
UHF Range 2 (450-520 MHz)	H51SDF9PW6AN Q360HA	H51SDH9PW7AN Q360HA
900 MHz (896-940 MHz)	H51WCF9PW6AN Q360JF	H51WCH9PW7AN Q360JE

Large PTT button ■ Angled On/Off Volume Control ■ 18 position top-mounted rotary switch ■
Orange emergency button ■ 3 programmable side buttons

TRANSMITTER CERTIFICATION

700/800 (764-869 MHz)	AZ489FT7049
VHF (136-174 MHz)	AZ489FT3828
UHF Range 1 (380-470 MHz)	AZ489FT4905
UHF Range 2 (450-520 MHz)	AZ489FT4910
900 MHz (896-901, 935-940 MHz)	AZ489FT5864

FCC EMISSIONS DESIGNATORS

FCC Emissions Designators	11K0F3E, 16K0F3E, 8K10F1D, 8K10F1E, 8K10F1W, 20K0F1E*
FCC Emissions Designators for 900 MHz	11K0F3E, 8K10F1D, 8K10F1E, 8K10F1W

POWER SUPPLY

Power Supply One rechargeable Li-Ion 1900 mAh battery standard, or 2300 mAh/2700 mAh high cap Li-Ion.

RECEIVER - TYPICAL PERFORMANCE SPECIFICATIONS

		700/800	VHF	UHF Range 1	UHF Range 2	900 MHz
Frequency Range/Bandsplits	700 MHz 800 MHz	763-776 MHz 851-870 MHz	136-174 MHz	380-470 MHz	450-520 MHz	935-940 MHz
Channel Spacing		25/12.5 kHz	30/25/12.5 kHz	25/12.5 kHz	25/12.5 kHz	12.5 kHz
Maximum Frequency Separation		Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit
Audio Output Power at Rated ¹		500mW	500mW	500mW	500mW	500mW
Frequency Stability ¹ (-30°C to +60°C; +25°C Ref.)		±0.00010 %	±0.00010 %	±0.00010 %	±0.00010 %	±0.00010 %
Analog Sensitivity ³	12 dB SINAD	0.250µV	0.216µV	0.234µV	0.234µV	0.238µV
Digital Sensitivity ⁴	1% BER (800 MHz)	0.400µV	0.277µV	0.307µV	0.307µV	0.33µV
	5% BER	0.250µV	0.188µV	0.207µV	0.207µV	0.222µV
Selectivity ¹	25 kHz channel	-76 dB	-76 dB	-76 dB	-76 dB	-67 dB
	12.5 kHz channel	-67 dB	-70 dB	-67 dB	-67 dB	-67 dB
Intermodulation		-75 dB	-79 dB	-77 dB	-77 dB	-75 dB
Spurious Rejection		-76.8 dB	-80.5 dB	-80.3 dB	-80.3 dB	-80 dB
FM Hum and Noise	25 kHz	-53 dB	-51 dB	-50 dB	-50 dB	-47 dB
	12.5 kHz	-47 dB	-45 dB	-45 dB	-45 dB	-47 dB
Audio Distortion ¹		1.00%	1.00%	1.00%	1.00%	1.00%

PRODUCT DATA SHEET
APX™ 4000

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	I	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	I	509.2	I	509.3	I	509.4	1 Proc	509.5	1 Proc
Blowing Dust	510.1	I	510.2	I	510.3	I	510.4	I	510.5	I
Blowing Sand	1 Proc	1 Proc	510.2	II	510.3	II	510.4	II	510.5	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
Shock (Drop)	516.2	II	516.2	IV	516.4	IV	516.5	IV	516.6	IV

DIMENSIONS OF THE RADIOS WITHOUT BATTERY

	Inches	Millimeters
Length	5.42	137.7
Width Push-To-Talk button	2.42	61.4
Depth Push-To-Talk button	1.41	35.75
Width Top	2.62	66.55
Depth Top	1.84	46.7
Weight of the radios without battery	10.05 oz	285 g

GPS SPECIFICATIONS

Channels	12
Tracking Sensitivity	-159 dBm
Accuracy ⁶	<10 meters (95%)
Cold Start	<60 seconds (95%)
Hot Start	<10 seconds (95%)
Mode of Operation	Autonomous (Non-Assisted) GPS

ENCRYPTION

Supported Encryption Algorithms	256-bit AES, ADP
Encryption Algorithm Capacity	8
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 CA1 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

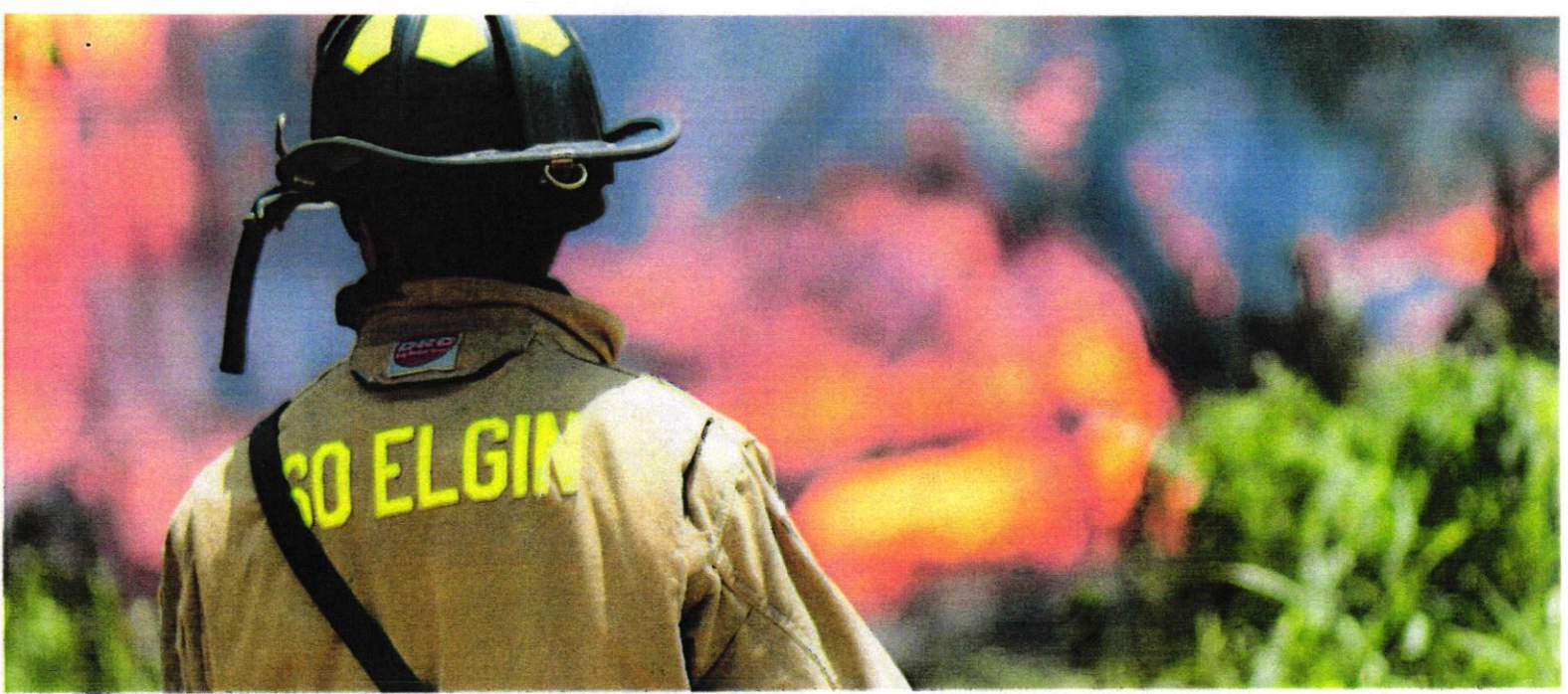
Operating Temperature ⁶	-30°C / +60°C
Storage Temperature ⁶	-40°C / +85°C
Humidity	Per MIL-STD
ESD	IEC 801-2 KV
Water and Dust Intrusion	IP67
Submersion	MIL-STD 512.X

⁶ Measured in the analog mode per TIA / EIA 609 under nominal conditions. When used with an UL approved intrinsically safe radio.
⁷ Measured conductively in analog mode per TIA / EIA 603 under nominal conditions.
⁸ Measured conductively in digital mode per TIA / EIA 603 / IEC 61010-010 under nominal conditions.
⁹ Accuracy specifications for long term tracking (95th percentile values) >5 kilometers visible at a nominal -130 dBm signal strength.
 Temperatures listed are for radio specifications. Battery operation is recommended at 25 °C, ±5 °C to ensure best performance.

¹⁰ Specifications Subject to Change without notice. All specifications shown are typical. Radio meets applicable regulatory requirements.

Motorola Solutions, Inc. 1301 East Algonquin Road Schaumburg, Illinois 60196, U.S.A. 800-367-2346
motorolasolutions.com

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. © 2020 Motorola Solutions, Inc. All rights reserved. 01-2020



APX 4500

SINGLE-BAND P25 MOBILE RADIO



UNCOMPROMISING PERFORMANCE. EFFECTIVE RESPONSE.

You need a P25 radio to communicate and collaborate effectively with other P25 radio users. And, you need the performance and reliability of an APX™ radio. That is why we built the APX 4500 single-band mobile radio.

Everyone has something to like with the APX 4500. We've paired it with our rugged O2 Control Head for confident, reliable radio communication that can stand up to everyday use.

The compact form factor simplifies vehicle installation. Integrated

hardware encryption protects your mission-critical communication. Impact detection automatically alerts dispatch to keep its users safer and integrated Wi-Fi helps to keep you current with fast and easy software updates. Integrated Bluetooth provides wireless communication with Commercial off the shelf (COTS) Bluetooth accessories.

Improve your operational efficiency with the performance and reliability of the APX 4500 mobile radio.





RUGGED AND RELIABLE

RESPOND WITH CONFIDENCE

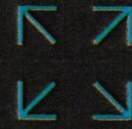
When out in the field, you face all types of conditions. Your radio shouldn't hold you back. Whether it be getting caught in a storm or undergoing extreme temperature shock, you can remain confident in the APX 4500 and know that it won't let you down in the moments that matter.



BUILT-IN Wi-Fi

VOICE AND DATA, ALL AT ONCE

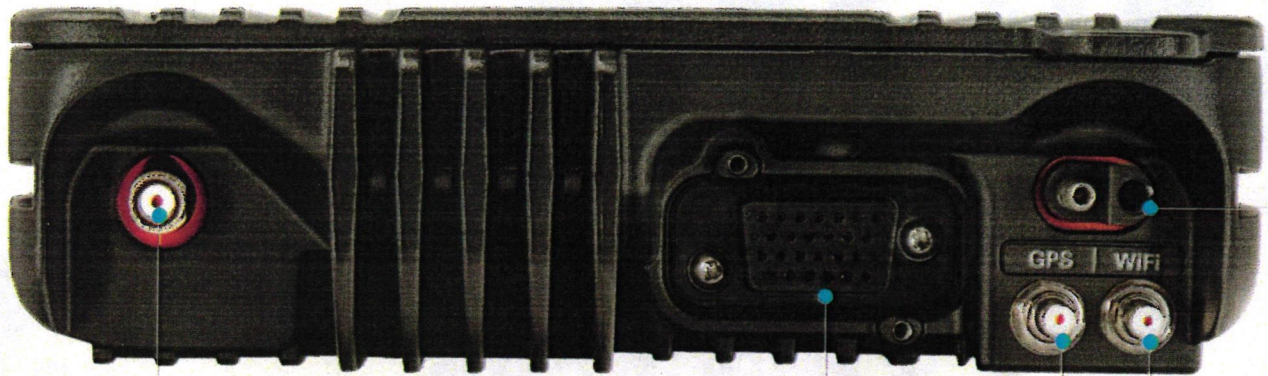
Integrated Wi-Fi helps to keep your radio update to date with over-the-air updates. Receive new codeplugs, firmware updates and software features at the speed of Wi-Fi—without interruptions to voice communications.



LIGHTWEIGHT, COMPACT DESIGN

FLEXIBLE, EASY INSTALLATION

The APX 4500 is ideal for a growing ecosystem of vehicle installations. Its small and lightweight form factor simplifies installation and its IP56 rating provides ample protection from dust and water intrusion.



RF antenna port

Accessory connector

GPS

Wi-Fi/Bluetooth

DC power



P25 COLLABORATION

COLLABORATE SEAMLESSLY

Although you are out of the office, you still need to communicate with others to get the job done. As a P25 mobile radio, the APX 4500 allows you to communicate with other P25 radio users. Seamlessly collaborate within your department or with other departments and organizations using the APX 4500 P25 mobile radio.



DEVICE MANAGEMENT SERVICES

ALL THE SUPPORT YOU NEED

Motorola Solutions offers three levels of service plans – Essential, Advanced and Premier. From simple support for technical troubleshooting to a complete transfer of optimization and maintenance services to Motorola Solutions, you choose the level of support that suits you best.

APX 4500 COMPATIBLE CONTROL HEAD

O2 CONTROL HEAD

EXTREME USABILITY

The O2 control head provides rugged simplicity for efficient and confident communication. Oversized controls with an easy to read color display and a built-in 7.5 watt speaker provides clear visual and audible user experiences. Available in high impact green or black.



Exaggerated design and rugged housing for extreme environments

Full color display with night mode and intelligent lighting

Integrated high density speaker for loud, clear audio



Programmable multi-select buttons

Enlarged multi-function channel / volume knob



FEATURES

GENERAL SPECIFICATIONS

Channel Capacity	512 standard, expandable to 1,000 channels
Encryption Algorithms	ADP, 256-bit AES

OPERATING MODES

Digital Trunking: 9600 Baud APCO P25 Phase 1 FDMA and Phase 2 TDMA
Analog Trunking: 3600 Baud SmartNet®, SmartZone®, Omnilink
Digital Conventional: APCO 25
Analog Conventional: Analog MDC 1200, Quik Call II System Configurations

INTEGRATED Wi-Fi AND DATA CONNECTIVITY

Wi-Fi (2.4GHz), 802.11 a/n/ac (5GHz) with up to 20 Wi-Fi networks provisioned in the radio ¹
Data Modem Tethering ¹
ASTRO 25 Integrated Voice and Data
Enhanced Data ¹
Integrated GPS/GLONASS for Outdoor Location Tracking
Mission Critical Geofence ¹
Personnel Accountability ¹
Bluetooth (Version 4.2)

MANAGEMENT

Customer Programming Software (CPS)
Radio Management
Over-the-air Programming (OTAP) ¹

SECURITY

P25 Authentication ¹
Software Key
Single-key ADP Encryption ¹
Multikey for 128 keys ¹

GPS/GNSS SPECIFICATIONS

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

¹ Optional ² Measured conductively with >6 satellites visible at a nominal -130 dBm signal strength



ENCRYPTION

Supported Encryption Algorithms	ADP, AES 256
Encryption Algorithm Capacity	8
Encryption Keys per Radio	Module capable of storing 1024 keys. Programmable for 128 Common KeY Reference (CKR) or 16 PhysicalIdentifier (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

OTHER FEATURES

Text Messaging
Radio Profiles
Dynamic Zone
Intelligent Priority Scan
Unified Call List
Instant Recall
Data Modem Connection (wired or Wi-Fi) ¹
12 Character RFID Asset Tracking ¹
Digital Tone Signaling ¹

INTEGRATED WI-FI, GPS, BLUETOOTH AND DATA CONNECTIVITY

Frequency Range/Band splits	WLAN (WiFi): 2412 - 2472 MHz; 5180 - 5320 MHz; 5500 - 5625 MHz	
WLAN (WiFi) 802.11 b/g/n	Security protocols	WPA-2, WPA, WEP
	SSIDs	Up to 20 pre-provisioned
Data Modem Tethering ¹		
Bluetooth version 4.2	2402-2480 MHz Compatible with HSP, PAN, DUN and SPP Profiles found in Off-the-shelf Bluetooth accessories. Supports up to 6 data connections and 1 audio connection.	

¹ Optional

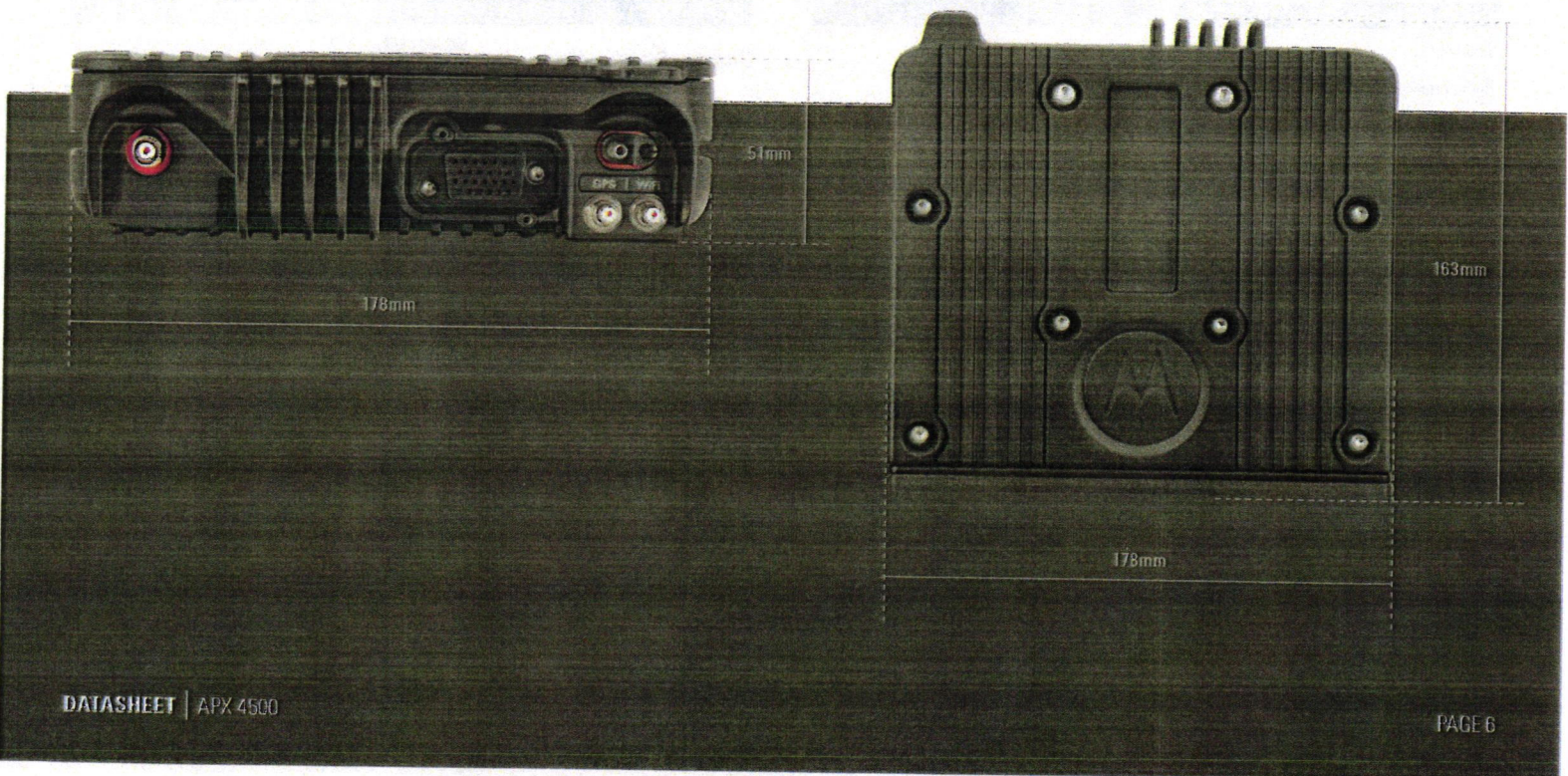


SIGNALING (ASTRO 25 MODE)

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	85,000 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

Mid Power Radio Transceiver	51 x 178 x 183 mm (2.0 x 7.0 x 6.4 in)	2.18 kg (4.80 lbs)
Radio Transceiver and O2 Control Head - Dash Mount	69 x 207 x 223 mm (2.7 x 8.1 x 8.8 in)	2.43 kg (5.36 lbs)
Mid Power Radio Transceiver and Remote Mount	51 x 178 x 193 mm (2.0 x 7.0 x 7.6 in)	2.18 kg (4.80 lbs)



PERFORMANCE AND REGULATORY

TRANSMITTER										
	VHF		UHF R1		UHF R2		700 MHz		800 MHz	
Frequency Range/Bandsplits	136-174 MHz		380-470 MHz		450-520 MHz		764-776, 794-806 MHz		806-825, 851-870 MHz	
Rated RF Output Power (Adjustable)	1-50 W		1-40 W		1-45 W		3-30 W		3-35 W	
Frequency Stability (-30°C to +60°C; +25°C Ref.)	±0.8 PPM		±0.8 PPM		±0.8 PPM		±0.8 PPM		±0.8 PPM	
Emissions	Conducted -85 dBc	Radiated -10 dBm	Conducted -85 dBc	Radiated -20 dBm	Conducted -85 dBc	Radiated -20 dBm	Conducted -75/-85 dBc	Radiated -20/-40 dBm	Conducted -75 dBc	Radiated -20 dBm
Modulation Limiting (12.5/20/25 kHz)	±5/±2.5 kHz		±5/±2.5 kHz		±5/±2.5 kHz		±5/±2.5 kHz		±5/±2.5 kHz	
Modulation Fidelity (C4FM) 12.5 kHz Digital Channel	2.5%		1.50%		1.50%		1.50%		1.50%	
Audio Response	+1, -3 dB (EIA)		+1, -3 dB (EIA)		+1, -3 dB (EIA)		+1, -3 dB (EIA)		+1, -3 dB (EIA)	
FM Hum & Noise (12.5 kHz/25 kHz)	-52 dB / -53 dB		-50 dB / -53 dB		-50 dB / -53 dB		-48 dB / -50 dB		-48 dB / -50 dB	
Audio Distortion (12.5 kHz/25 kHz)	0.50%		0.50%		0.50% / 0.50%		0.50% / 0.50%		0.50% / 0.50%	

RECEIVER										
	VHF		UHF R1		UHF R2		700 MHz		800 MHz	
Frequency Range/Bandsplits	136-174 MHz		380-470 MHz		450-520 MHz		764-776 MHz		851-870 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/Max	7.5 / 15 W		7.5 / 15 W		7.5 / 15 W		7.5 / 15 W		7.5 / 15 W	
Frequency Stability (-30 °C to +60 °C; +25 °C Ref.)	±0.8 PPM		±0.8 PPM		±0.8 PPM		±0.8 PPM		±0.8 PPM	
Analog Sensitivity (12db SINAD)	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)	-121 dB (0.199 µV)		-121 dB (0.199 µV)	
5% BER	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)	-121.5 dB (0.188 µV)		-121.5 dB (0.188 µV)	
Selectivity (12.5 kHz / 25 kHz / 30 kHz)	77 dB / 89 dB / 90 dB		72 dB / 83 dB / -		72 dB / 83 dB / -		75 dB / 85 dB / -		75 dB / 85 dB / -	
Intermodulation Rejection	Pre-Amp 84dB / 84 dB	Standard 86 dB / 86 dB	Pre-Amp 82 dB / 82 dB	Standard 86 dB / 86 dB	Pre-Amp 82 dB / 82 dB	Standard 86 dB / 86 dB	82 dB / 82 dB		82 dB / 82 dB	
Spurious Rejection	95 dB		93 dB		93 dB		91 dB		91 dB	
FM Hum & Noise (12.5 kHz / 25 kHz)	-50 dB / -59 dB		-50 dB / -55 dB		-50 dB / -55 dB		-50 dB / -59 dB		-50 dB / -59 dB	
Audio Distortion (12.5 kHz / 25 kHz)	1.20%		1.50%		1.50%		1.20%		1.20%	

POWER AND BATTERY DRAIN				
	VHF	UHF R1	UHF R2	700/800 MHz
Model Type	136-174 MHz	380-470 MHz	450-520 MHz	764-870 MHz
Minimum RF Power Output	1-50 W	1-40 W	450-485 MHz: 1-45 W 485-512 MHz: 1-40 W 512-520 MHz: 1-25 W	3-30 W (764-776 MHz) 3-30 W (794-806 MHz) 3-35 W (806-824 MHz) 3-35 W (851-870 MHz)
Operation	13.8 V DC ±20% Negative Ground	13.8 V DC ±20% Negative Ground	13.8 V DC ±20% Negative Ground	13.9 V DC ±20% Negative Ground
Standby at 13.8V	0.8 A	0.85 A	0.8 A	0.85 A (764-870 MHz)
Receive Current at Rated Audio at 13.8V	3.2 A	3.2 A	3.2 A	3.2 A (764-870 MHz)
Transmit Current (A) at Rated Power	8 A @ 15 W 13 A @ 50 W	11 A @ 40 W 8 A @ 15 W	11 A @ 40 W 8 A @ 15 W	12 A (35 W) 8 A (15 W)



ENVIRONMENTAL

Operating Temperature	-30°C/+60°C
Storage Temperature	-40°C/+85°C
Humidity	Per MIL-STD
ESD	IEC 61000-4-2
Water and Dust Intrusion	IP56, MIL-STD

RADIO MODEL NUMBER

VHF	M22KSS9PW1BN
UHF R1	M22QSS9PW1BN
UHF2	M22SSS9PW1BN
700/800 MHz	M22URS9PW1BN

FCC/IC TYPE ACCEPTANCE ID

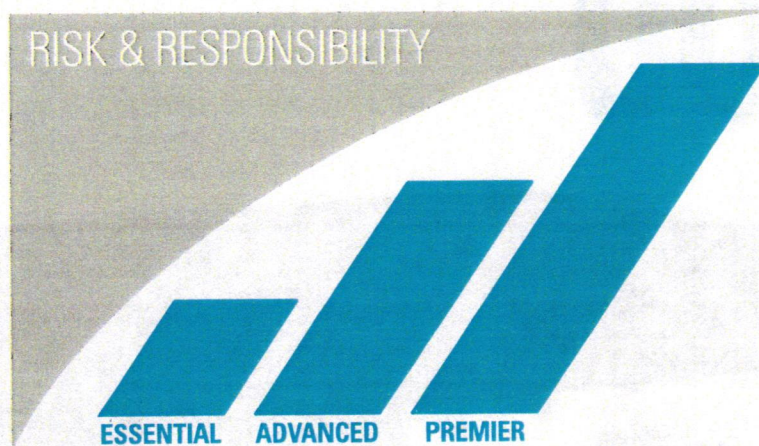
FCC/IC ID	Band and Power Level
FCC ID: AZ492FT7130 IC ID: 109U-92FT7130	136-174 MHz (1-50 W)
FCC ID: AZ492FT7129 IC ID: 109U-92FT7129	380-470 MHz (1-40 W)
FCC ID: AZ492FT4967 ISED ID: 109U-92FT4967	450-520 MHz (1-45 W)
	485-512 MHz (1-40 W)
	512-520 MHz (1-25 W)
	764-776 MHz (3-30 W)
FCC ID: AZ492FT7124 IC ID: 109U-92FT7124	794-806 MHz (3-30 W)
	806-824 MHz (3-35 W)
	851-870 MHz (3-35 W)

MOBILE MILITARY STANDARDS 810, C, D, E, F, G & H

	MIL-STD 810C		MIL-STD 810D		MIL-STD 810E		MIL-STD 810F		MIL-STD 810G		MIL-STD 810H	
	Method	Proc./Cat.	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	I/II	500.6	II	500.6	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	501.6	I/A1, II/A1	501.7	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	502.6	I/C3, II/C1	502.7	I/C3, II/C1
Temperature Shock	503.1	I	503.2	I/A1C3	503.3	I/A1C3	503.4	I	503.6	I/C	503.7	I/C
Solar Radiation	505.1	II	505.2	I	505.3	I	505.4	I	505.6	I/A1	505.7	I/A1
Rain	506.1	I, II	506.2	I, II	506.3	I, II	506.4	I, III	506.6	I, III	506.6	I, III
Humidity	507.1	II	507.2	II	507.3	II	507.4	-	507.6	II/Aggravated	507.6	II/Aggravated
Salt Fog	509.1	I	509.2	I	509.3	I	509.4	-	509.6	-	509.7	-
Blowing Dust	510.1	I	510.2	I	510.3	I	510.4	I	510.6	I	510.7	I
Blowing Sand	-	-	510.2	II	510.3	II		II	510.6	II	510.7	II
Vibration	514.2	VIII, F, W	514.3	I/10, II/3	514.4	I/10, II/3	514.5	I/24	514.7	I/24	514.8	I/24, II/5
Shock	516.2	I, III, V	516.3	I, V, VI	516.4	I, V, VI	516.5	I, V, VI	516.7	I, V, VI	516.8	I, V, VI



ACHIEVE MISSION CRITICAL PERFORMANCE WITH MANAGED AND SUPPORT SERVICES



ENSURE CONTINUITY • ENHANCE PRODUCTIVITY • REDUCE RISK

ESSENTIAL

Only Support When You Need It

When the unpredictable happens to your network, Essential Services provide you access to Motorola Solutions Technical Support teams and resources for troubleshooting and maintenance.

ADVANCED

Improve Response and Continuity

Motorola Solutions expert service teams help mitigate downtime and ensure network continuity. Get fast response to network issues by our qualified technicians who analyze and diagnose your network as well as deliver routine maintenance.

PREMIER

Maximize Performance and Reduce Risk

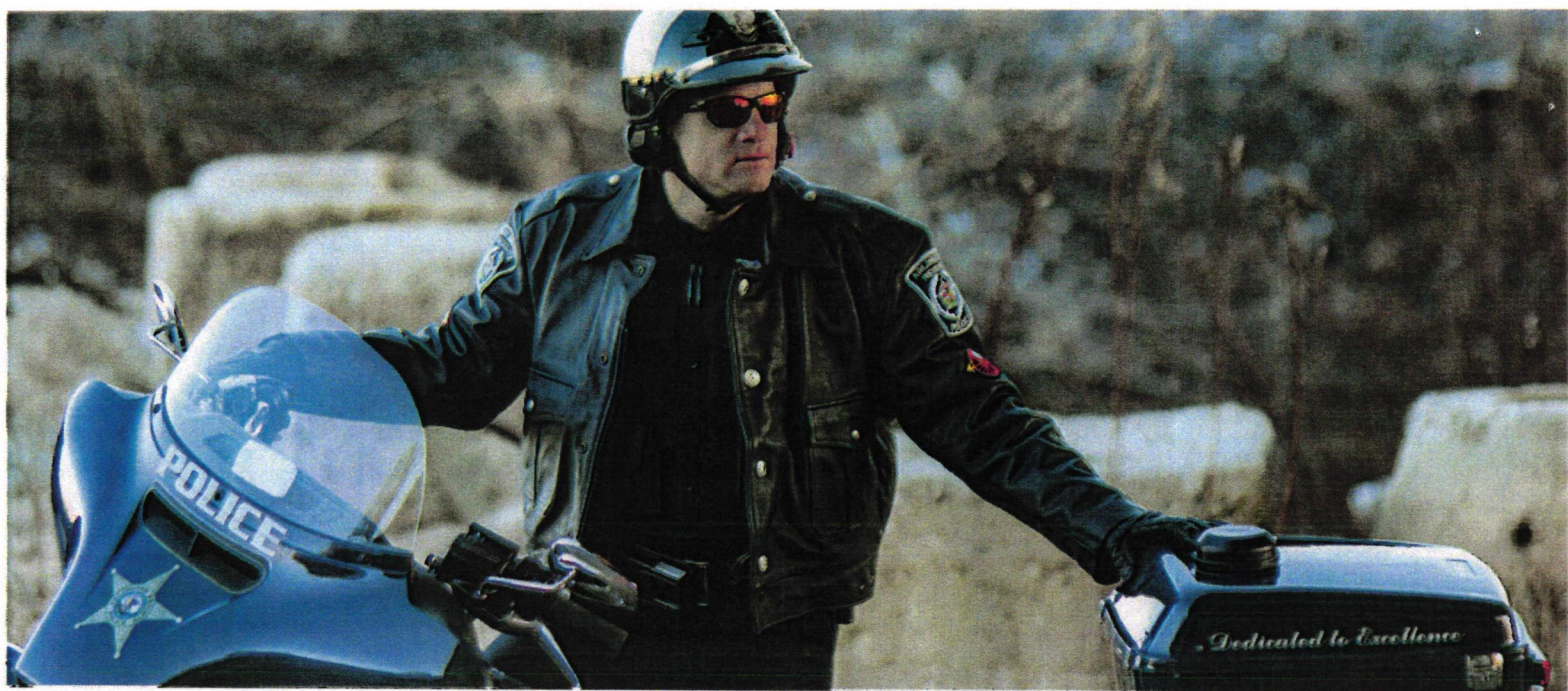
Motorola Solutions Managed Services team helps operate and optimize your mission critical system. With Premier Services, you fully transfer the risk to Motorola Solutions and ensure your system operates at maximum performance levels, allowing your team to keep focus on its primary responsibilities.

For more information, please visit
www.motorolasolutions.com/apx



Motorola Solutions, Inc. 590 West Monroe Street, Chicago, IL 60661 U.S.A. 800-467-2346 motorolasolutions.com

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. © 2022 Motorola Solutions, Inc. All rights reserved. 03-2022 [BG08]



APX 6500

SINGLE-BAND P25 MOBILE RADIO



STAY INFORMED. STAY SAFE.

You may not know what the next call will entail, but you do know that your team needs communication they can count on. Whether on a motorcycle, in a squad car or a fire truck, the rugged and compact design of the evolved APX™ 6500 mobile radio is designed to maximize the real estate in your vehicle and keep your entire agency safely connected. Now with integrated Wi-Fi, Bluetooth and SmartConnect, the APX 6500 gives you more ways to manage your radio and stay connected. And when your vehicle sustains a high impact, the radio can automatically alert dispatch.

Security is more important than ever. Criminals are testing you on the streets and over the air. Fight back with multiple levels of protection to encrypt and secure your voice and data communication against eavesdropping.

Stay connected, keep safe and secure your communications with the APX 6500 single-band mobile radio.





GET CONNECTED AND STAY CONNECTED

When the mission takes you out of range, you risk being left in the dark. The APX 6500, equipped with SmartConnect, can reroute P25 voice and data communication over broadband via built-in Wi-Fi or a tethered LTE/satellite router. Stay connected to your P25 radio system, even when outside of P25 coverage.



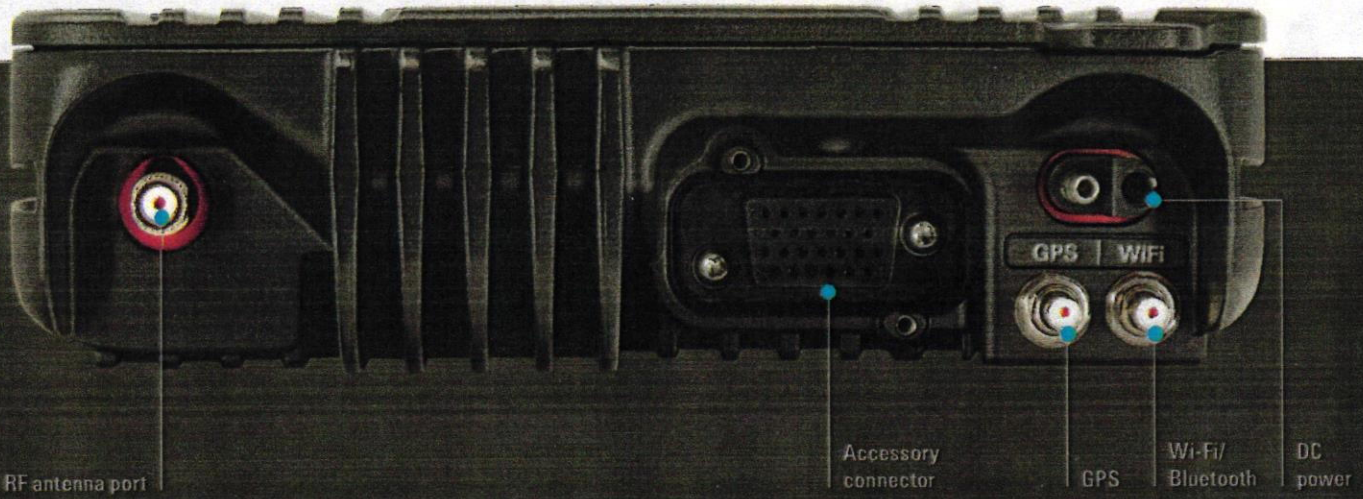
VOICE AND DATA, ALL AT ONCE

Packed with all the connections you need, the APX 6500 keeps your team in touch and within reach of over-the-air updates. Receive new codeplugs, firmware updates and software features at the speed of Wi-Fi— without interruptions to voice communications.



FAST INFORMATION RETRIEVAL

Running a routine database queries doesn't need to slow you down. Simply press a button on the keypad microphone and ask ViQi for the information you need. Keep your eyes on the situation and free up dispatchers to focus on more critical events. Move intelligence faster than ever with ViQi.



KEEP VOICE AND DATA PROTECTED

The APX 6500 secures voice and data using multiple hardware encryption algorithms and the ability to rekey over the air, so it's protected from scanners and eavesdroppers. What's more, P25 Radio Authentication ensures only valid users can access the system while the available two-factor authentication secures database logins.



FLEXIBLE, EASY INSTALLATION

The small and light form factor of the APX 6500 allows for easy installation across a growing ecosystem of vehicles and installations. Users can choose one of several interchangeable control heads to best fit their need. Dual control head configuration enables radio operation from multiple locations within the same vehicle, such as a large fire truck.



ALL THE SUPPORT YOU NEED

Motorola Solutions offers three levels of service plans – Essential, Advanced and Premier. From simple support for technical troubleshooting to a complete transfer of optimization and maintenance services to Motorola Solutions, you choose the level of support that suits you best.

O2 CONTROL HEAD

EXTREME USABILITY

The O2 control head provides rugged simplicity for efficient and confident communication. Extreme controls with easy to read color display and a built-in 7.5 watt speaker provides clear visual and audible user experiences. Available in high impact green or black.

Exaggerated design and rugged housing for extreme environments

Full color display with night mode and intelligent lighting

Integrated high density speaker for loud, clear audio



Programmable multi-select buttons

Enlarged multi-function channel / volume knob

O3 HANDHELD CONTROL HEAD

HANDHELD FLEXIBILITY

The O3 corded control head fits all your mobile controls in your hand. With the O3 your radio controls are never out of reach.

Programmable buttons all around



Full color display with intelligent lighting

Programmable menu buttons

Dedicated volume and channel rockers

Fully integrated DTMF keypad

Integrated control head and microphone design

APX 6500 COMPATIBLE CONTROL HEADS*

Dedicated volume and channel knobs for quick control

Easy to read, anti-reflective color display



Programmable menu buttons

Bluetooth MPP Pairing

Full color display with night mode and intelligent lighting

Multi-function channel / volume knob



Programmable multi-select buttons

Integrated controls for siren and lights, PA and gunlock or DTMF keypad

E5 CONTROL HEAD

UNMATCHED READABILITY. OPTIMIZED USABILITY.

A bright color display and intelligent lighting makes the E5 easy to read under any condition while the optimized tactility and button placement reduces inadvertent actuations.

O7 CONTROL HEAD

INTEGRATED MULTI-FUNCTIONALITY

The O7 is a sophisticated control head with a color display and built-in keypad. It can integrate your radio vehicle control into a single ergonomic interface and supports dual radio installations



FEATURES

GENERAL FEATURES

Channel Capacity	1,000 channels standard, expandable to 3,000 channels
Encryption Algorithms	256-bit AES, ADP, DES, DES-XL, DES-OFB, DVP-XL

OPERATING MODES

Digital Trunking: 9600 Baud APCO P25 Phase 1 FDMA and Phase 2 TDMA
Analog Trunking: 3600 Baud SmartNet®, SmartZone®, Omnilink
Digital Conventional: APCO 25
Analog Conventional: Analog MDC 1200, Quik Call II System Configurations
SmartConnect Connectivity

INTEGRATED WI-FI, GPS AND DATA CONNECTIVITY

Wi-Fi 802.11 b/g/n with up to 20 Wi-Fi networks provisioned in the radio ¹
Data Modem Tethering ¹
ASTRO 25 Integrated Voice and Data
Enhanced Data ¹
Integrated GPS/GLONASS for Outdoor Location Tracking
Mission Critical Geofence ¹
Personnel Accountability ¹
SmartConnect ¹
ViQi Virtual Partner ¹
Bluetooth (Version 4.2)

MANAGEMENT

Customer Programming Software (CPS)
Radio Management
Over-the-air Programming (OTAP) ¹

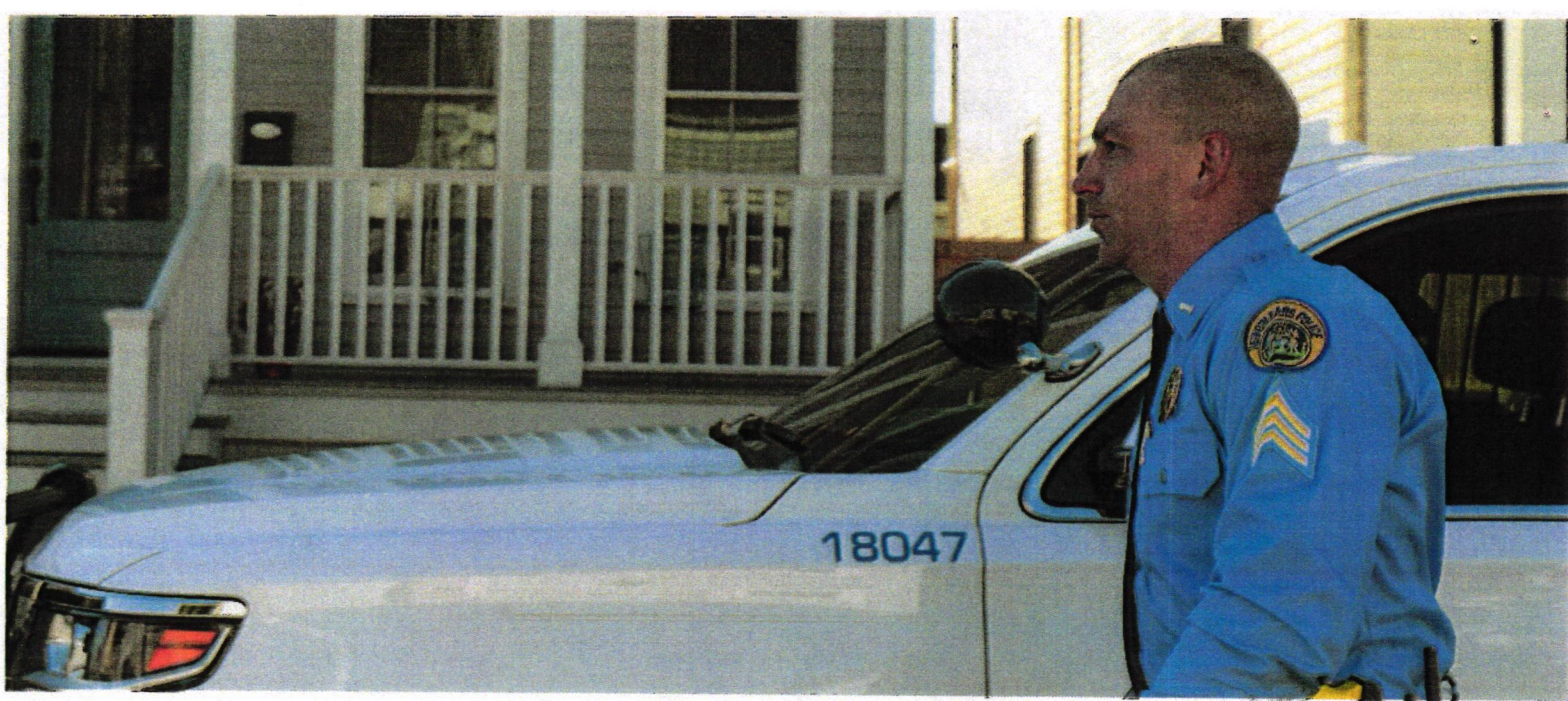
SECURITY

Tactical Inhibit ¹
P25 Authentication ¹
Software Key ¹
Single-key ADP Encryption ¹
Multikey for 128 keys and multi-algorithm ¹
Over-the-air Rekeying (OTAR) ¹

GPS/GNSS SPECIFICATIONS

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

¹ Optional ² Measured conductively with >6 satellites visible at a nominal -130 dBm signal strength



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

OTHER FEATURES

Text Messaging
Radio Profiles
Dynamic Zone
Intelligent Priority Scan
Unified Call List
Instant Recall
Data Modem Connection (wired or Wi-Fi) ¹
12 Character RFID Asset Tracking ¹
Digital Tone Signaling ¹

INTEGRATED WI-FI, GPS AND DATA CONNECTIVITY

Frequency Range/Band splits	WLAN (Wi-Fi): 2412 - 2472 MHz; 5180 - 5320 MHz; 5500 - 5625 MHz	
WLAN (WiFi) 802.11 b/g/n (2.4GHz) 802.11 a/n/ac (5GHz)	Security protocols	WPA-2, WPA, WEP
	SSIDs	Up to 20 pre-provisioned
Data Modem Tethering ¹		
Bluetooth Version 4.2	2402-2480 MHz Supports MPP Pairing ² and compatible with HSP, PAN, DUN and SPP Profiles found in Off-the-shelf Bluetooth accessories. Supports up to 6 data connections and 1 audio connection.	

SIGNALING (ASTRO 25 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

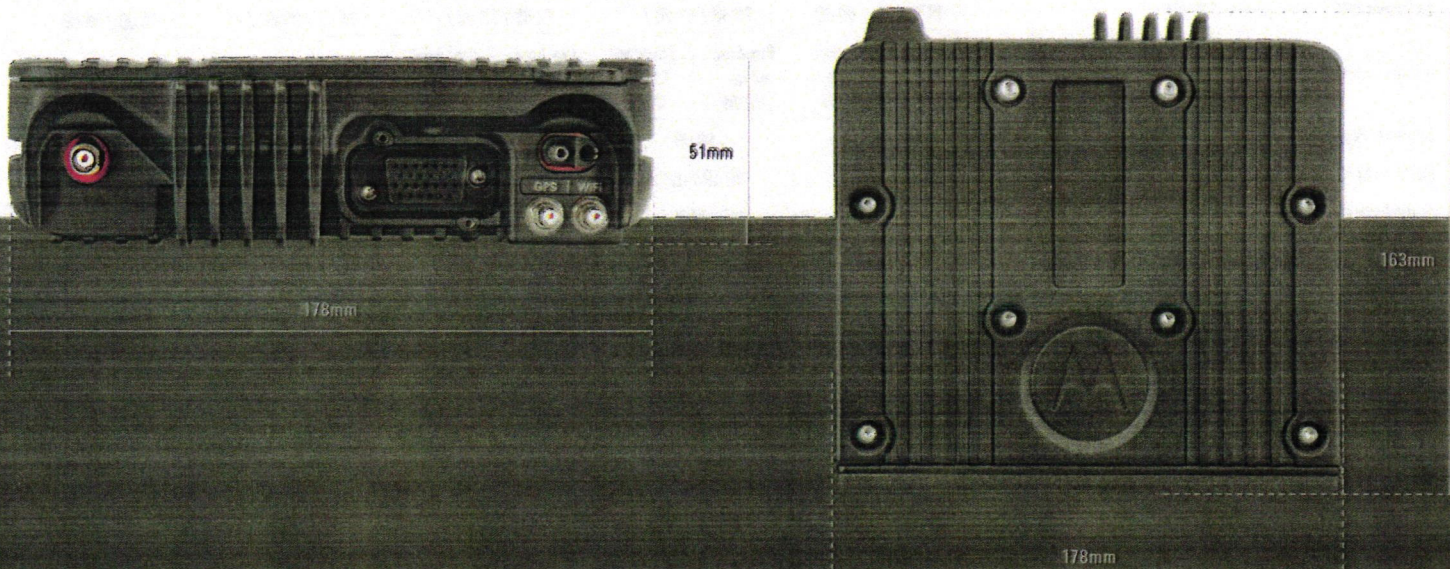
¹ Optional

² For E5 Control Head only



DIMENSIONS AND WEIGHT

Radio Transceiver	51 x 178 x 163 mm (2.0 x 7.0 x 6.4 in)	2.18 kg (4.80 lbs)
Radio Transceiver and O2 Control Head - Dash Mount	68 x 207 x 223 mm (2.7 x 8.1 x 8.8 in)	2.43 kg (5.36 lbs)
Radio Transceiver and O5 Control Head - Dash Mount	51 x 178 x 202 mm (2 x 7 x 8.0 in)	2.24 kg (4.94 lbs)
Radio Transceiver and E5 Control Head - Dash Mount	51 x 178 x 209 mm (2.0 x 7.0 x 8.2 in)	2.24 kg (4.94 lbs)
Radio Transceiver and O7 Control Head - Dash Mount	51 x 178 x 208 mm (2 x 7 x 8.2 in)	2.24 kg (4.94 lbs)
Radio Transceiver and Remote Mount	51 x 178 x 193.6 mm (2 x 7 x 7.6 in)	2.18 kg (4.80 lbs)
O2 Control Head Remote Mount	68 x 206 x 53 mm (2.7 x 8.1 x 2.1 in)	-
O5 Control Head Remote Mount	51 x 180.3 x 64 mm (2.0 x 7.0 x 2.5 in)	-
E5 Control Head Remote Mount	51 x 178.5 x 64 mm (2.0 x 7.0 x 2.5 in)	-
O7 Control Head Remote Mount	51 x 178 x 40 mm (2.0 x 7.0 x 1.5 in)	-

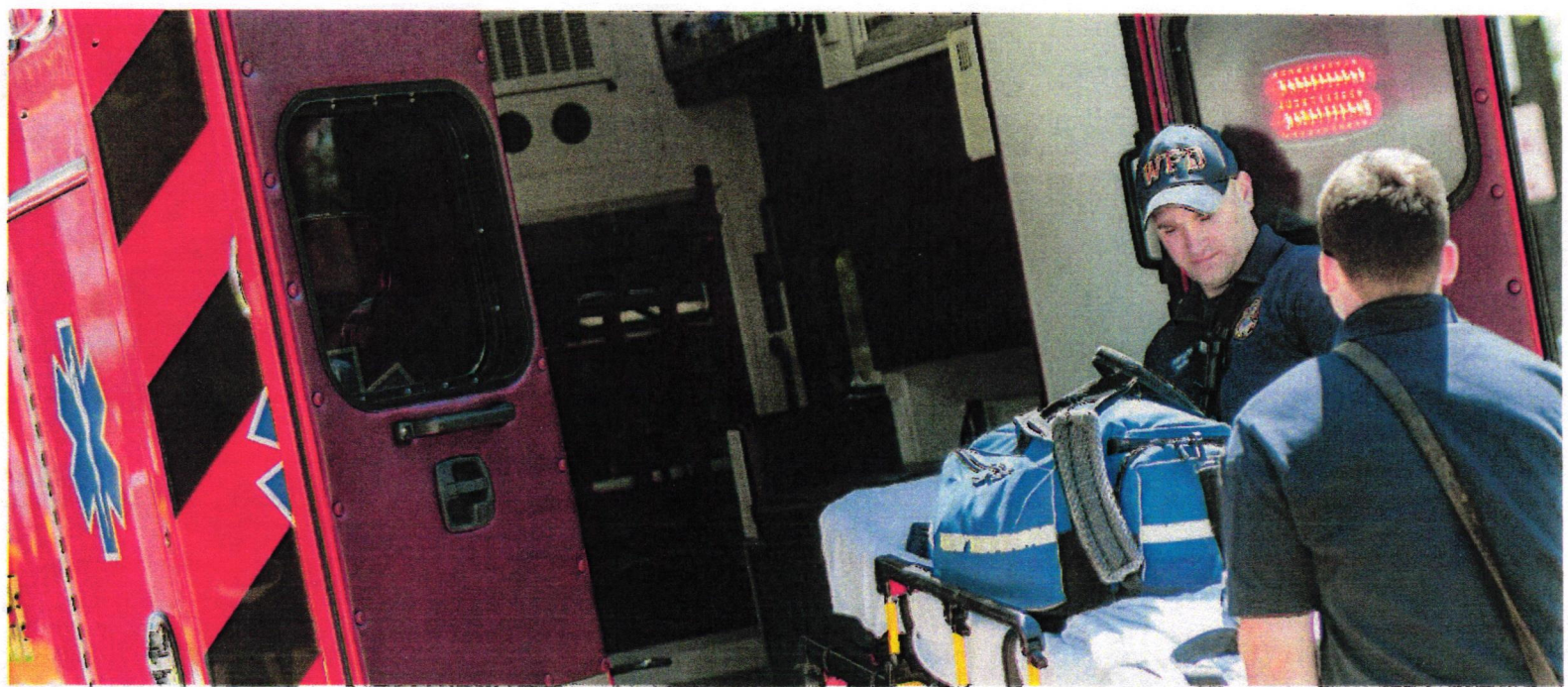


PERFORMANCE AND REGULATORY

TRANSMITTER										
	VHF		UHF R1		UHF R2		700 MHz		800 MHz	
Frequency Range/Bandsplits	136-174 MHz		380-470 MHz		450-520 MHz		764-776, 794-806 MHz		806-825, 851-870 MHz	
Rated RF Output Power (Adjustable)	1-50 W		1-40 W		1-45 W		3-30 W		3-35 W	
Frequency Stability (-30°C to +60°C; +25°C Ref.)	± 0.8 PPM		±0.8 PPM		±0.8 PPM		±0.8 PPM		±0.8 PPM	
Emissions	Conducted -85 dBc	Radiated -10 dBm	Conducted -85 dBc	Radiated -20 dBm	Conducted -85 dBc	Radiated -20 dBm	Conducted -75/-85 dBc	Radiated -20/-40 dBm	Conducted -75 dBc	Radiated -20 dBm
Modulation Limiting (12.5/20/25 kHz)	±5/±2.5 kHz		±5/±2.5 kHz		±5/±2.5 kHz		±5/±2.5 kHz		±5/±2.5 kHz	
Modulation Fidelity (C4FM) 12.5 kHz Digital Channel	2.5%		1.50%		1.50%		1.50%		1.50%	
Audio Response	+1, -3 dB (EIA)		+1, -3 dB (EIA)		+1, -3 dB (EIA)		+1, -3 dB (EIA)		+1, -3 dB (EIA)	
FM Hum & Noise (12.5 kHz/25 kHz)	-52 dB / -53 dB		-50 dB / -53 dB		-50dB / -53dB		-48 dB / -50 dB		-48 dB / -50 dB	
Audio Distortion (12.5 kHz/25 kHz)	0.50%		0.50%		0.50% / 0.50%		0.50% / 0.50%		0.50% / 0.50%	

RECEIVER										
	VHF		UHF R1		UHF R2		700 MHz		800 MHz	
Frequency Range/Bandsplits	136-174 MHz		380-470 MHz		450-520 MHz		764-776 MHz		851-870 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/Max	7.5 / 15 W		7.5 / 15 W		7.5 / 15 W		7.5 / 15 W		7.5 / 15 W	
Frequency Stability (-30 °C to +60 °C; +25 °C Ref.)	±0.8 PPM		±0.8 PPM		±0.8 PPM		±0.8 PPM		±0.8 PPM	
Analog Sensitivity (12db SINAD)	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)	-121 dB (0.199 µV)		-121 dB (0.199 µV)	
5% BER	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)	-121.5 dB (0.188 µV)		-121.5 dB (0.188 µV)	
Selectivity (12.5 kHz / 25 kHz / 30 kHz)	77 dB / 89 dB / 90 dB		72 dB / 83 dB / -		72 dB / 83 dB / -		75 dB / 85 dB / -		75 dB / 85 dB / -	
Intermodulation Rejection	Pre-Amp 84dB / 84 dB	Standard 86 dB / 86 dB	Pre-Amp 82 dB / 82 dB	Standard 86 dB / 86 dB	Pre-Amp 82 dB / 82 dB	Standard 86 dB / 86 dB	82 dB / 82 dB		82 dB / 82 dB	
Spurious Rejection	95 dB		93 dB		93 dB		91 dB		91 dB	
FM Hum & Noise (12.5 kHz / 25 kHz)	-50 dB / -59 dB		-50 dB / -55 dB		-50 dB / -55 dB		-50 dB / -59 dB		-50 dB / -59 dB	
Audio Distortion (12.5 kHz / 25 kHz)	1.20%		1.50%		1.50%		1.20%		1.20%	

POWER AND BATTERY DRAIN					
	VHF	UHF R1	UHF R2	700 MHz	800 MHz
Frequency Range / Bandsplits	136-174 MHz	380-470 MHz	450-520 MHz	764-775, 794-806 MHz	806-825, 851-870 MHz
RF Power Output	1-50 W	1-40 W	450-485 MHz: 1-45 W 485-512 MHz: 1-40 W 512-520 MHz: 1-25 W	3-30 W	3-35 W
Operation	13.8 V DC ±20% Negative Ground	13.8 V DC ±20% Negative Ground	13.8 V DC ±20% Negative Ground	13.9 V DC ±20% Negative Ground	13.9 V DC ±20% Negative Ground
Standby at 13.8V	0.85 A	0.85 A	0.85 A	0.85 A	0.85 A
Receive Current at Rated Audio at 13.8V	3.2 A	3.2 A	3.2 A	3.2 A	3.2 A
Transmit Current (A) at Rated Power	8 A @ 15 W 13 A @ 50 W	11 A @ 40 W 8A @ 15 W	11 A @ 40 W 8A @ 15 W	8 A @ 15 W	8 A @ 15 W 12 A @ 35 W



ENVIRONMENTAL

Operating Temperature	-30°C/+60°C
Storage Temperature	-40°C/+85°C
Humidity	Per MIL-STD
ESD	IEC 61000-4-2
Water and Dust Intrusion (w/ O2 control head)	IP56, MIL-STD

RADIO MODEL NUMBER

VHF	M25KSS9PW1BN
UHF R1	M25QSS9PW1BN
UHF2 R2	M22SSS9PW1BN
700/800 MHz	M25URS9PW1BN

FCC/IC TYPE ACCEPTANCE ID

FCC/IC ID	Band and Power Level
FCC ID: AZ492FT7124 IC ID: 109U-92FT7124	764-776 MHz (3-30 W)
	794-806 MHz (3-30 W)
	806-824 MHz (3-35 W)
	851-870 MHz (3-35 W)
FCC ID: AZ492FT7130 IC ID: 109U-92FT7130	136-174 MHz (1-50 W)
FCC ID: AZ492FT7129 IC ID: 109U-92FT7129	380-470 MHz (1-40 W)
FCC ID: AZ492FT4967 ISED ID: 109U-92FT4967	450-520 MHz (1-45 W)
	485-512 MHz (1-40 W)
	512-520 MHz (1-25 W)

MOBILE MILITARY STANDARDS 810, C, D, E, F, G & H

	MIL-STD 810C		MIL-STD 810D		MIL-STD 810E		MIL-STD 810F		MIL-STD 810G		MIL-STD 810H	
	Method	Proc./Cat.	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	I/II	500.6	II	500.6	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	501.6	I/A1, II/A1	501.7	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	502.6	I/C3, II/C1	502.7	I/C3, II/C1
Temperature Shock	503.1	I	503.2	1/A1C3	503.3	1/A1C3	503.4	I	503.6	I/C	503.7	I/C
Solar Radiation	505.1	II	505.2	I	505.3	I	505.4	I	505.6	I/A1	505.7	I/A1
Rain	506.1	I, II	506.2	I, II	506.3	I, II	506.4	I, III	506.6	I, III	506.6	I, III
Humidity	507.1	II	507.2	II	507.3	II	507.4	-	507.6	II/Aggravated	507.6	II/Aggravated
Salt Fog	509.1	I	509.2	I	509.3	I	509.4	-	509.6	-	509.7	-
Blowing Dust	510.1	I	510.2	I	510.3	I	510.4	I	510.6	I	510.7	I
Blowing Sand	-	-	510.2	II	510.3	II		II	510.6	II	510.7	II
Vibration	514.2	VIII, F, W	514.3	I/10, II/3	514.4	I/10, II/3	514.5	I/24	514.7	I/24	514.8	I/24, II/5
Shock	516.2	I, III, V	516.3	I, V, VI	516.4	I, V, VI	516.5	I, V, VI	516.7	I, V, VI	516.8	I, V, VI



For more information, please visit
www.motorolasolutions.com/apx



Motorola Solutions, Inc. 500 West Monroe Street, Chicago, IL 60661 U.S.A. 800-367-2346 motorolasolutions.com

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. © 2022 Motorola Solutions, Inc. All rights reserved. 03-2022 [BG08]

KENWOOD



Grand Traverse Mobile Communications

1670 Barlow Street, Ste 1, Traverse City, Michigan 49686
Phone: 231.947.9851 Fax: 231.947.9077
sales@fireradios.com

April 11th, 2022

Alpena County Board of Commissioners
720 W Chisholm Street
Alpena, MI 49707

Dear Sir/Madam,

Thank you for giving us the opportunity to bid this project.

Should you choose Grand Traverse Mobile Communications; you will receive the same exceptional service and support we have given our customers (Including Alpena County Agencies) since 1984.

This proposal includes pricing for all the radio subscriber units requested. A breakdown of pricing by model is attached to this proposal. Per unit pricing has been presented to allow the total project as funds allow. The equipment proposed is identical to that used by all Alpena County fire agencies from the 2019 project and many others in the region. Choosing the same series of radios will ensure a seamless user experience across agencies. A partial list of recent projects with these radios is attached as well. All radios proposed come with a standard 3-year manufacturer warranty.

All equipment proposed meets or exceeds RFP objective of MPSCS compliance and is of the same type provided to Alpena County, Antrim County, Missaukee County, Wexford County, Benzie County, Kalkaska County, Manistee County and Crawford County by Grand Traverse Mobile over the last several years. Please see included pricing and product notes contained within this proposal for further information.

We understand that the equipment and services proposed can be overwhelming. We encourage you to consider a presentation to discuss the benefits and features of how Kenwood and Grand Traverse Mobile can best serve Alpena County.

Sincerely,

Neil Pickard
Project Manager / Sales Manager
Grand Traverse Mobile Communications, Inc.

Warranty Descriptions for Hardware and Services

Kenwood Viking VP5430/6430 Portable Radios*

3-Year Transceiver

1-Year Accessories (Battery, Speaker/Mic, Charger)

Kenwood Viking VM5930/6930 Mobile Radios*

3-Year Transceiver

1-Year Accessories (External Speaker, Microphone)

Warranty on Installations and Labor

1-Year from Final Acceptance of System (Travel Included for first 90 Days)

*Customer will be responsible for shipping costs to manufacturer for depot repair.

Service Center Location

Grand Traverse Mobile Communications

1670 Barlow Street, Ste 1

Traverse City, MI 49686

Office: 231-947-9851

24/7 Toll Free: 800-305-5682

Office in Traverse City, MI facilitates most radio repairs on-site. In the event that repairs are necessary that affect immersion rating, factory services are required. Service technicians are available 24/7 for emergency service at our standard labor rate (Currently \$89.00/hr.). We currently service many Northern Michigan county central dispatch centers with this priority service including Benzie County, Manistee County, Kalkaska County, Crawford County, Oscoda County, Missaukee County and Alcona County. There is no service contract required for this level of service and our customers generally save significant dollars with this time and materials priority service. Grand Traverse Mobile Communications, Inc. carries a \$2M per incident insurance policy as our work frequently takes us in hazardous locations such as oil fields. An insurance certificate will be provided to Alpena County before commencement of any work.

Technicians:

Roland Schlagel – Installation Lead Technician

Jake Stinson – Installation Technician

Mike Vandermey – Installation Technician/Software Support/Console Support

Harold Carlton – General Manager/Technician

Neil Pickard – Project Manager/Sales Manager/Software Support/Program Support

Laura Carlton – Office Manager

Partial Customer References
(Those currently using primarily Kenwood Viking Radios)

Kalkaska County Sheriff Department

Undersheriff Dave Wagner

231-258-3350

(Complete County Radio System Service, Kenwood Viking 700/800MHz Radio Fleet)
(Radios Include: VP5430, VM5930, VM600, TK5930, VM6930 and FireSafe Software)
(2017-2018 Completed Transition for Law, Fire & EMS to MPSCS)

Benzie County 911

Rebecca Hubers

911 Director/Emergency Manager

231-882-4484

(Install and Maintain County Wide Radio System)(Kenwood Viking 700/800MHz Radio Fleet)
(Radios Include: VP6430, VM5930, & VP900)
(2018 Transition for Fire and EMS to MPSCS)(Law Portables and Mobiles 2018-2019)

Antrim County 911

Mike Gank

911 Director

231-350-9103

(Kenwood Viking 700/800MHz Radio Fleet)
(Radios Include: VP5430, VM5930 & VM6930)
(2020-21 Transition Law from Motorola Portables and Mobiles to Kenwood Viking)

Missaukee County Sheriff Department

Julie Stahl

911 Coordinator

231-839-4338 x8

(Install and Maintain 800MHz MPSCS Fleet)(Kenwood Viking 700/800MHz Fleet)
(Radios Include: VP6430, VP5430, VM5930)(2018-2019 Law/EMS MPSCS Transition)

City of Alpena Fire Department

Chief Bill Forbush

989-354-1850

(Kenwood Viking 700/800MHz Radio Fleet)
(Radios Include: VP5430, VP6430, TK5930, and FireSafe Software)
(2017 Transition Fire Department to MPSCS for Primary Communications)

Wexford County 911/Haring Township FD

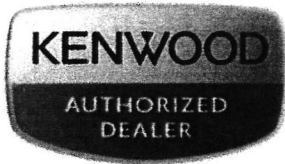
Duane Alworden

911 Director / Fire Chief

231-779-9213

(Kenwood Viking 700/800MHz Radio Fleet)
(Radios Include: TK5430, TK5930, VP5430, VM5930, VP900)
(2016-2019 Transition Department to MPSCS for Primary Communications)

Additional references available on request



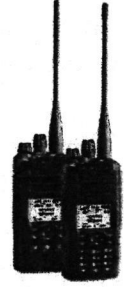
Grand Traverse Mobile Communications

1670 Barlow Street, Ste 1, Traverse City, Michigan 49686
 Phone: 231.947.9851 Fax: 231.947.9077
 sales@fireradios.com

4/11/2022

Alpena County Central Dispatch

MI Deal Contract # 21000000896



Kenwood VP5430 Portable with Standard MPSCS Configuration - Black Housing (Same as Last Purchase)
 1024 Talk Groups / 64 Zones, 762-870MHz Rebandable, Free ARC 4 (ADP Compatible) Encryption, 3-Year Manufacturer Warranty,
 Full Color Front Display, Next Generation AMBE+2 v1.6 Vocoder, IP68 Immersion Rated, P25 Phase II Compatible,
 TrueVoice Noise Cancellation, Loud 1W Rated Speaker Audio, MIL-STD 810G Rated, Integrated GPS Location

QTY	ITEM NUMBER	DESCRIPTION	LIST	MI DEAL	TOTAL
1	VP5430F2	700/800MHz P25 Portable Radio Limited Keypad 1024 Groups/128 Zones (Includes: Smart 3400mAh Li-Ion Battery, Antenna, & Belt Clip)	\$ 1,884.00	\$ 1,507.20	\$ 1,507.20
1	KSC-Y32K	Smart Rapid Rate Battery Charger	\$ 136.20	\$ 108.96	\$ 108.96
1	PROGRAM	Program Radio with Template from State of Michigan		\$ 25.00	\$ 25.00
1	MPSCS	MPSCS Activation Fee (Paid by Alpena to State of Michigan)		\$ -	\$ -
PORTABLE RADIOS TOTAL					\$ 1,641.16

Kenwood VP6430 Portable with Standard MPSCS Configuration
 1024 Talk Groups / 64 Zones, 762-870MHz Rebandable, Free ARC 4 (ADP Compatible) & DES-OFB Encryption, 3-Year Manufacturer Warranty,
 Full Color Front and Mono Top Display, Next Generation AMBE+2 v1.6 Vocoder, IP68 Immersion Rated, P25 Phase II Compatible,
 TrueVoice Noise Cancellation, Loud 1W Rated Speaker Audio, MIL-STD 810G Rated, Integrated GPS Location, Bluetooth



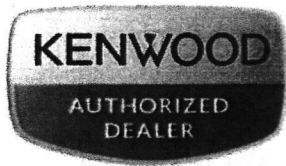
QTY	ITEM NUMBER	DESCRIPTION	LIST	MI DEAL	TOTAL
1	VP6430BLKF2	700/800MHz P25 Portable Radio Limited Keypad 1024 Groups/128 Zones (Includes: Smart 3400mAh Li-Ion Battery, Antenna, & Belt Clip)	\$ 3,164.00	\$ 2,531.20	\$ 2,531.20
1	KSC-Y32K	Kenwood Smart Rapid Rate Charger	\$ 136.20	\$ 108.96	\$ 108.96
1	PROGRAM	Programming of Radio with Template from State of Michigan		\$ 25.00	\$ 25.00
1	MPSCS-FEE	MPSCS Activation Fee (Paid by Alpena to State of Michigan)		\$ -	\$ -
PORTABLE RADIO TOTAL BLACK W/LIMITED KEYPAD (MODEL II)					\$ 2,665.16
PORTABLE RADIO TOTAL HIGH VIZ W/LIMITED KEYPAD (MODEL II)					\$ 2,825.16

Optional Accessories

2990600013	Kenwood Warranty extension from 3 to 5 years	\$ 175.00	\$ 140.00
KMC-70M	Kenwood IP68 Immersion Rated Speaker/Mic Black	\$ 139.00	\$ 111.20
KMC-70GR	Kenwood IP68 Immersion Rated Speaker/Mic High Viz	\$ 142.00	\$ 113.60
KNB-L3M	Kenwood Smart 3400mAh Li-Ion Battery Pack (Same as Supplied)	\$ 192.00	\$ 153.60

Quote By: Nell Pickard

Quote Valid: 90 Days (MI Deal discount of 20% will remain regardless of price increases by manufacturer)



Grand Traverse Mobile Communications

1670 Barlow Street, Ste 1, Traverse City, Michigan 49686
Phone: 231.947.9851 Fax: 231.947.9077
sales@fireradios.com

4/11/2022

MI Deal Contract # 21000000896

Alpena County Central Dispatch

Kenwood VM5000 Mobile with Standard MPSCS Configuration - Mobiles Radios (Dash Mount)
1024 Talk Groups / 64 Zones, 762-870MHz Rebandable, Free ARC 4 (ADP Compatible) Encryption, 3-Year Manufacturer Warranty, Advanced Viking Display, Next Generation AMBE+2 v1.6 Vocoder, P25 Phase II Compatible, Loud External Speakers



QTY	ITEM NUMBER	DESCRIPTION	LIST	MI DEAL	TOTAL
1	VM5930-KCH19	700/800MHz P25 Mobile Radio Dash Mount Control Head (Includes Large Speaker)	\$ 2,686.00	\$ 2,148.80	\$ 2,148.80
1	NMO-800-SYS	3dB Gain NMO Mount 700/800MHz Antenna System		\$ 57.50	\$ 57.50
1	MISC	Misc Install Supplies (Not to Exceed)(Includes Custom Vehicle Face Plate if Required)		\$ 45.00	\$ 45.00
1	PROGRAM	Custom Program Radio with Template from State of Michigan		\$ 25.00	\$ 25.00
1	INSTALL-DASH	Install and Test Dash Mount Radio (Includes Travel)(Not to Exceed) (Includes Headset interface if needed)(Does not include interface cables if required)		\$ 445.00	\$ 445.00
1	MPSCS	MPSCS Activation Fee (Paid by Alpena to State of Michigan)		\$ -	\$ -
DASH MOBILE RADIO SYSTEMS (DUAL REMOTE HEAD OPTION ADD \$1025.00/RADIO)					\$ 2,721.30



Kenwood VM6000 Mobile with Standard MPSCS Configuration - Mobiles Radios (Single Remote Head)
1024 Talk Groups / 64 Zones, 762-870MHz Rebandable, Free ARC 4 (ADP Compatible) & DES-OFB Encryption, 3-Year Manufacturer Warranty, Advanced Viking Display, Next Generation AMBE+2 v1.6 Vocoder, P25 Phase II Compatible, Loud External Speakers, Bluetooth

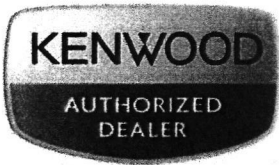
QTY	ITEM NUMBER	DESCRIPTION	LIST	MI DEAL	TOTAL
1	VM6930-VCH	700/800MHz P25 Mobile Radio Remote Mount Control Head (Includes Large Speaker)	\$ 4,651.60	\$ 3,721.28	\$ 3,721.28
1	NMO-800-SYS	3dB Gain NMO Mount 700/800MHz Antenna System		\$ 57.50	\$ 57.50
1	MISC	Misc Install Supplies (Not to Exceed)(Includes Custom Vehicle Face Plate if Required)		\$ 45.00	\$ 45.00
1	PROGRAM	Custom Program Radio with Template from State of Michigan		\$ 25.00	\$ 25.00
1	INSTALL-DASH	Install and Test Dash Mount Radio (Includes Travel)(Not to Exceed) (Includes Headset interface if needed)(Does not include interface cables if required)		\$ 445.00	\$ 445.00
1	MPSCS	MPSCS Activation Fee (Paid by Alpena to State of Michigan)		\$ -	\$ -
REMOTE HEAD MOBILE RADIO SYSTEMS (DUAL REMOTE HEAD OPTION ADD \$1,517.00/RADIO)					\$ 4,293.78

Optional Accessories

2990600013 Kenwood Warranty extension from 3 to 5 years \$ 175.00 \$ 140.00

Quote By: Neil Pickard

Quote Valid: 90 Days (MI Deal discount of 20% will remain regardless of price increases by manufacturer)



Grand Traverse Mobile Communications

1670 Barlow Street, Ste 1, Traverse City, Michigan 49686
Phone: 231.947.9851 Fax: 231.947.9077
sales@fireradios.com

4/11/2022

Alpena County Central Dispatch

MI Deal Contract # 071B6600085

Unication G4 700/800MHz P25 Voice Pager



QTY	ITEM NUMBER	DESCRIPTION	LIST	MI DEAL	TOTAL
1	G4VP	Unication 700/800MHz P25 Voice Pager	\$ 645.00	\$ 580.50	\$ 580.50
1	GS9XBRC-SXXXEN	Unication Drop-In Charger (Optional, but highly recommended)	\$ 90.00	\$ 81.00	\$ 81.00
1	PROGRAM	Custom Program Pager from Template (Unless programmed by customer)		\$ 15.00	\$ 15.00
PER PAGER TOTAL					\$ 676.50

Optional Features/Accessories

GS999CA-SXXXEN	Unication Amplified Charger Case (For users w/weak signal at home)	\$ 150.00	\$ 135.00
EXTWARRANTY-G4	Unication Warranty Extension from 2 to 5 Years	\$ 130.00	\$ 117.00
T65G428001-R	Unication 2800mAh Li-Ion Battery Pack (Spares)	\$ 30.95	\$ 27.90

Quote By: Neil Pickard

Quote Valid: 30 Days (MI Deal discount of 10% will remain regardless of price increases by manufacturer)

Approved Portable Radios

Manufacture	Model	Version	Features not Tested
EF Johnson	51xx Series **	ES, SL, LT	
EF Johnson	ASCEND **	ES	
EF Johnson	VP400		w/o IV&D or OTAR
EF Johnson	VP-600		w/o IV&D or OTAR
EF Johnson	VP-900		w/o IV&D or OTAR
EF Johnson	VP6430		w/o IV&D or OTAR
EF Johnson	VP5430		w/o IV&D or OTAR
ICOM	F7540		
ICOM	F7040		
Kenwood	TK5400 **	K1, K2	w/o IV&D or OTAR
Kenwood	TK5410 **	K1, K2	
Kenwood	TK5430	K1, K2	
Kenwood	VP5430		w/o IV&D or OTAR
Kenwood	NX5400		w/o IV&D or OTAR
MA/COM-Harris	P7200	MAPT-T7HXX	
MA/COM-Harris	XG-15P		Failsoft, IV&D, OTAR, & KVL not available
MA/COM-Harris	XG-25P		Failsoft, IV&D, OTAR, & KVL not available
MA/COM-Harris	Unity XG-75		IV&D, OTAR, & KVL not available
MA/COM-Harris	Unity XG-100P		Failsoft, IV&D, OTAR, & KVL not available
MA/COM-Harris	XL-185P		IV&D, OTAR not available
MA/COM-Harris	XL-200P		IV&D, OTAR, & KVL not available
MA/COM-Harris	XL-150P		
Motorola	APX900		
Motorola	APX1000	I, II, III	w/o IV&D or OTAR
Motorola	APX3000		w/o IV&D
Motorola	APX4000	I, II, III	w/o IV&D or OTAR
Motorola	APX6000	I, II, III	
Motorola	APX6000 Extreme	I, II, III	
Motorola	APX6000 Li	I, II, III	
Motorola	APX7000	1.5, 3.5	
Motorola	APX7000 Extreme	1.5, 3.5	
Motorola	APX8000	I, II, III	w/o IV&D
Motorola	Saber **	II, III	
Motorola	SRX2200		w/o IV&D or OTAR
Motorola	XTS1500	I, I.5	
Motorola	XTS2500	I, I.5, II, III	
Motorola	XTS3000 **	I, II, III	
Motorola	XTS5000	I, II, III	
Motorola	APX Next		LTE Functionality and Data
Relm/Bendix King	KNG-P800		
Tait	TP9100		
Tait	TP9400		w/o IV&D or OTAR
Tait	TP9600		w/o IV&D or OTAR
Thales	LIBERTY	4102023-501	

** No longer supported for State of Michigan agency users

Approved Mobile Radios

Manufacture	Model	Version/Control Head	Features not Tested
EF Johnson	53xx Series **	ES,EL	
EF Johnson	VM600	Standard, Lightning w/o IV&D or OTAR	
EF Johnson	VM900	Standard, Lightning	
EF Johnson	VM5930	w/o IV&D or OTAR	
EF Johnson	VM6930	w/o IV&D or OTAR	
EF Johnson	VM7930	w/o IV&D or OTAR	
Harris	XG-100M	Full-Spectrum Multiband	
Harris	XG-25M	Mobile Multi-Mode	
Harris	XG-75M	Mobile 764-870MHZ	
Harris	XG-75M / M7300	Mobile w/440-512MHZ	
Harris	XL-185M	Mobile	
ICOM	F7540		
Kenwood	NX5900		
Kenwood	TK5910 **		
Kenwood	TK5930		
Motorola	Spectra **	W3, W4, W4M, W5, W5M, W7, W9	
Motorola	Spectra Plus Consolette **	W4,W5,W9	
Motorola	Spectra Consolette **	W5,W7,W9	
Motorola	Spectra Plus Consolette **	W5,W7,W9	
Motorola	XTL1500	MX	
Motorola	XTL2500	M5	
Motorola	XTL5000	W3, W5, W5M, W7, W9, O3, O5	
Motorola	XTL5000 Consolette	W5, W7, W9, O5	
Motorola	APX1500	O2,O5 w/o IV&D or OTAR	
Motorola	APX4500	O2,O5 w/o IV&D or OTAR	
Motorola	APX6500	O2, O3, O5, O7, O9	
Motorola	AXP6500 Li	O2, O3, O5	
Motorola	APX7500	O2, O3, O5, O7, O9	
Motorola	APX7500 Consolette	O5,O7	
Motorola	APX8500	O9	
ReIm/Bendix King	KNG-P800		
Tait	TM9100		
Tait	TM94155		
Tait	TM9400		

** No longer supported for State of Michigan agency users

Approved Paging Receivers

Manufacture	Model	Serial #	Version
Unication	G4		700/800 Mhz

KENWOOD



P25 Mission Critical

VP5000

VHF · UHF (High & Low) · 700/800 MHz
P25 Phase 1 & 2 · Viking16

At just under 5.5 inches tall (140 mm), these small KENWOOD Viking portable radios are packed with advanced features for today's public safety agencies.

Features

- Mixed protocol operation (P25 Phase 1 & 2 Trunking, P25 Conventional, Viking16, FM Analog)
- Mixed protocol zones (each channel in a zone can be from a different system)
- 1024 channels
- 1 Watt audio output for high noise environments
- Voice annunciation & custom announcement creation
- Fully ruggedized - IP67/IP68 & MIL-STD-810 C/D/E/F/G
- Full key models (w/numeric keypad) & standard key models (w/o numeric keypad)
- Built-In GPS receiver/antenna for enhanced awareness!
- MDC-1200 & GE-Star signaling
- P25 Authentication
- Bluetooth*
- Man Down
- Instant Recording Replay (IRR)
- Voice Recording
- Text Messaging
- Radio Cloning
- Bluetooth Low Energy
- Encryption
 - ARC4™ software encryption; compatible w/Motorola ADP™
 - DES-OFB
 - AES-256 (FIPS 140-2) Single and Multi-Key
 - Over-the-Air-Rekeying (OTAR)
 - VK5000 or Motorola KVL3000/KVL4000 Keyloader



User Selectable Color Themes

- Multi-line text
- Multiple visual indicators including battery health & signal strength
- Day & night user selectable display options (8 themes available)



Day - High Contrast



Night - High Contrast

Compatible With P25 Systems

- ATLAS® P25 Phase 1 and Phase 2 System
- Motorola Astro® 25 - P25 Phase 1 & Phase 2
- Harris VIDA® - P25 Phase 1 & Phase 2
- Airbus (formerly Cassidian) VESTA™ Radio - P25 Phase 1 & Phase 2

Accessories

Complete line of accessories including microphones, speakers & antennas.
Download the accessory catalog at
<https://info.efjohnson.com/viking-accessory-catalog/>

We combine P25 design expertise with recognized quality & reliability along with advanced technology to make KENWOOD Viking radios simple to use & maintain.



Perpetual Software Licensing

Adds greater value to your radios by extending the life of the software into your next hardware platform — you own the software option forever, and your licenses are simple to manage with our cloud-based tool — Vault™.



Armada® Fleet Management

Update radios in a group rather than one at a time. One template programs both portables & mobiles. Supports either direct computer connection or Over-the-Air Programming (OTAP). Elite battery management enables wireless tracking of battery fleet.



TrueVoice™ Noise Cancellation

Software-based noise cancellation automatically filters out noise source frequencies and eliminates the need for extra configuration. Works in analog or digital mode and with any accessory.

VP5230/5330/5430 Portable Specifications

General		VP5230	VP5330	VP5430
Frequency Range		136-174 MHz (FCC ID K44431400)	Type 1: 450-520 MHz (FCC ID K44431500) Type 2: 380-470 MHz (FCC ID K44431501)	RX: 763-776, 851-870 MHz TX: 763-776, 793-806, 806-825, 851-870 MHz (FCC ID ALH442000)
Max. Channels Per Radio		1024		
Number of Zones		255		
Max. Channels Per Zone		255		
Channel Spacing	Analog	12.5/15/20/25*/30* kHz	12.5/25* kHz	12.5/25 kHz
	Digital	12.5 kHz	12.5 kHz	12.5 kHz
Power Supply		7.5 V DC ±20%		
Operating Temperature		-22 °F to +140 °F (-30 °C to +60 °C)		
Frequency Stability [-22 °F to +140 °F (-30 °C to +60 °C), +77 °F Ref. (+25 °C)]		±1.0 ppm		
Dimensions (W x H x D) Projections Not Included	KNB-L2 (2,600 mAh)	2.28 x 5.47 x 1.56 in. (58.0 x 138.9 x 39.5 mm)		
	KNB-L3 (3,400 mAh)	2.28 x 5.47 x 1.77 in. (58.0 x 138.9 x 44.9 mm)		
Weight with Battery	KNB-L2 (2,600 mAh)	14.3 oz (406 g)		
	KNB-L3 (3,400 mAh)	15.8 oz (449 g)		
Receiver		VP5230	VP5330	VP5430
Sensitivity	P25 Digital (5% BER)	-119 dBm (0.025 µV)		
	Analog (12 dB SINAD)	-119 dBm (0.025 µV)		
Selectivity	P25 Digital	60 dB		
	Analog @ 12.5 kHz	65 dB		
	Analog @ 25 kHz	73 dB		
Intermodulation		73 dB		75 dB
Spurious Rejection		80 dB	75 dB	
Audio Distortion		3%		
Audio Output Power		500 mW/8 Ω (3% Distortion)/1,000 mW/8 Ω (5% Distortion)		
Modulation		FM, C4FM, H-DQPSK		
Transmitter		VP5230	VP5330	VP5430
RF Output Power		1W/6W	1W/5W	1W/3W
Spurious Emission		-70 dB		
FM Hum & Noise	Analog @ 12.5 kHz	40 dB		
	Analog @ 25 kHz	45 dB		
Audio Distortion		2%		
Emission Designator		16K0F3E, 11K0F3E, 8K10F1E, 8K10F1D, 8K10F1W		16K0F3E, 14K0F3E, 11K0F3E, 8K10F1E, 8K10F1D, 8K10F1W
Modulation		FM, C4FM, H-CPM		

Mil Standard	810G
Low Pressure	500.5/ I, II
High Temperature	501.5/ I, II
Low Temperature	502.5/ I, II
Temp. Shock	503.5/ I
Solar Radiation	505.5/ I
Rain	506.5/ I, III
Humidity	507.5/ II
Salt Fog	509.5
Dust	510.5/ I
Vibration	514.6/ I
Immersion	512.5/ I
Shock	516.6/ I, IV

Encryption Options	
Supported Encryption	AES, DES-OFB, ARC4
Encryption Key/ Radio	126 Common Key Reference (CKR), 126 Physical Identifier (PID), Compatible w/ Motorola Key Variable Loader
Encryption Frame Re-sync Interval	P25 CAI 360 MSEC
Encryption Keying	External Key Loader, OTAR
Mode	OFB-Output Feedback
Encryption Type	Digital
Key Erasure	Keyboard Command
Standards	FIPS 46-3, FIPS 81, FIPS 140-2, FIPS 197

Hazardous Location Certification	
Certification Lab	CSA Group
Standard Applied	ANSI/TIA 4950-A-2014, UL913 5th Edition & ANSI/ISA-12.12.01-2011
Classification Rating	Intrinsically Safe: Classes I, II, III, Division 1, Groups D, E, F, G Non-incendive: Class I, Division 2, Groups A, B, C, D
Approved Battery	KNB-LS7
Approved Speaker Micro-phones	KMC-54WDM, KMC-70M

International Protection Standard

Dust & Water	IP54, IP55
Immersion	IP67**/68***

¹Refer to the Viking VP5000 operating manual for detailed requirements & conditions for proper GPS operation.

* 25/30 kHz in VHF/UHF Bands (except T-Band) are not included in the models sold in the USA or US territories.

** IP67/68 - Must have the Speaker Mic Universal Connector or Universal Connector Protector connected.

***IP68=1m/2H

Specifications shown are typical and subject to change without notice Please check the website for the latest version. V.09.25.21

© Copyright 2021 EF Johnson Technologies, Inc. (E.F. Johnson Company is operating entity) The Bluetooth word mark and logos are registered trademarks owned by the Bluetooth SIG, Inc.

EF Johnson Technologies, Inc.

a JVCKENWOOD Company

1440 Corporate Drive, Irving, TX 75038-2401
Phone: 800.328.3911 · efjohnson.com

KENWOOD



P25 Mission Critical

VP6000

VHF · UHF · 700/800 MHz
P25 Phase 1 & 2 · Viking16

The KENWOOD Viking 6000 series portable is specifically designed for today's public safety agencies with advanced features and ergonomics to meet the first responder's mission critical operational needs.

Features

- Mixed protocol operation (P25 Phase 1 & 2 Trunking, P25 Conventional, Viking16, FM Analog)
- Mixed protocol zones (each channel in a zone can be from a different system)
- 1024 channels (2048 and 4096 options)
- Public safety ergonomics: flare grip for control, large glove friendly knobs, large emergency button
- 1 Watt audio output for high noise environments
- Voice annunciation & custom announcement creation
- Fully ruggedized - IP67/68 & MIL-STD-810 C/D/E/F/G
- Full key models (w/ numeric keypad)
- Built-in GPS receiver/antenna for enhanced awareness¹
- MDC-1200 & GE-Star signaling
- P25 Authentication
- Bluetooth®
- Man Down
- Instant Recording Replay (IRR)
- Voice Recording
- Text Messaging
- Radio Cloning
- Bluetooth Low Energy
- Encryption
 - ARC4™ software encryption; compatible w/Motorola ADP™
 - P25/TIA defined: AES-256
 - DES OFB
 - Over-the-Air-Rekeying (OTAR)

¹Refer to the Viking VP6000 operating manual for detailed requirements & conditions for proper GPS operation.

Accessories

Complete line of accessories including microphones, speakers & antennas.
Download the accessory catalog at <https://info.efjohnson.com/viking-accessory-catalog/>

We combine P25 design expertise with recognized quality & reliability along with advanced technology to make KENWOOD Viking radios simple to use & maintain.



Perpetual Software Licensing

Adds greater value to your radios by extending the life of the software into your next hardware platform - you own the software option forever, and your licenses are simple to manage with our cloud based tool - Vault™.



Armada® Fleet Management

Update radios in a group rather than one at a time. One template programs both portables & mobiles. Supports either direct computer connection or Over the Air Programming (OTAP). File battery management enables wireless tracking of battery fleet.



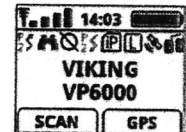
TrueVoice™ Noise Cancellation

Software based noise cancellation automatically filters out noise source frequencies and eliminates the need for extra configurations. Works in analog or digital mode and with any accessory.



User Selectable Color Themes

- Multi-line text
- Top flip display changes text orientation for viewing while in holster
- Multiple visual indicators including battery health & signal strength
- Backlight changes for event identification
- Day & night user selectable display options (8 themes available)



Day - High Contrast



Night - High Contrast

Compatible with Multiple P25 Systems

- ATLAS® P25 Phase 1 and Phase 2 System
- Motorola Astro® 25 - P25 Phase 1 & Phase 2
- Harris VIDA® - P 25 Phase 1 & Phase 2
- Airbus (formerly Cassidian) VESTA™ Radio - P25 Phase 1 & Phase 2

VP6230/6330/6430 Portable Specifications

General		VP6230	VP6330	VP6430
Frequency Range		136-174 MHz (FCC ID K44431400)	Type 1: 450-520 MHz (FCC ID K44431500) Type 2: 380-470 MHz (FCC ID K44431501)	RX: 763-776, 851-870 MHz TX: 763-776, 793-806, 806-825, 851-870 MHz (FCC ID ALH442000)
Max. Channels Per Radio		1024 (2048 and 4096 options)		
Number of Zones		255		
Max. Channels Per Zone		255		
Channel Spacing	Analog	12.5/15/20/25*/30* kHz	12.5/25* kHz	12.5/25 kHz
	Digital	12.5 kHz	12.5 kHz	12.5 kHz
Power Supply		7.5 V DC ±20%		
Operating Temperature		-22 °F to +140 °F (-30 °C to +60 °C)		
Frequency Stability [-22 °F to +140 °F (-30 °C to +60 °C), +77 °F Ref. (+25 °C)]		±1.0 ppm		
Case		Polycarbonate - black or high visibility (additional fee)		
Dimensions (W x H x D) Projections not included	KNB-L2 (2,600 mAh)	2.76/2.28 x 5.90 x 1.73 in. (70.0/58.0 x 149.8 x 44.0 mm)		
	KNB-L3 (3,400 mAh)	2.76/2.28 x 5.90 x 1.94 in. (70.0/58.0 x 149.8 x 49.4 mm)		
Weight with Battery	KNB-L2 (2,600 mAh)	17.1 oz (484.5 g)		
	KNB-L3 (3,400 mAh)	18.6 oz (527.5 g)		
Receiver		VP6230	VP6330	VP6430
Sensitivity	P25 Digital (5% BER)	-119 dBm		
	Analog (12 dB SINAD)	-119 dBm		
Selectivity	P25 Digital	60 dB		
	Analog @ 12.5 kHz	65 dB		
	Analog @ 25 kHz	73 dB		
Intermodulation		73 dB		75 dB
Spurious Rejection		80 dB	75 dB	
Audio Distortion		2.5%		
Audio Output Power		500 mW/8 Ω (3% Distortion)/1,000 mW/8 Ω (5% Distortion)		
Modulation		FM, C4FM, H-DQPSK		
Transmitter		VP6230	VP6330	VP6430
RF Output Power		1W/6W	1W/5W	1W/3W
Spurious Emission		70 dB		
FM Hum & Noise	Analog @ 12.5 kHz	40 dB		
	Analog @ 25 kHz	45 dB		
Audio Distortion		2%		
Emission Designator		16K0F3E, 11K0F3E, 8K10F1E, 8K10F1D, 8K10F1W		16K0F3E, 14K0F3E, 11K0F3E, 8K10F1E, 8K10F1D, 8K10F1W
Modulation		FM, C4FM, H-CPM		

MIL Standard 810G

Low Pressure	500.5/ I, II
High Temperature	501.5/ I, II
Low Temperature	502.5/ I, II
Temp. Shock	503.5/ I
Solar Radiation	505.5/ I
Rain	506.5/ I, III
Humidity	507.5/ II
Salt Fog	509.5
Dust	510.5/ I
Vibration	514.6/ I
Immersion	512.5/ I
Shock	516.6/ I, IV

Encryption Options	
Supported Encryption	AES, DES-OFB, ARC4
Encryption Key/ Radio	126 Common Key Reference (CKR), 126 Physical Identifier (PID), Compatible w/ Motorola Key Variable Loader
Encryption Frame Re-sync Interval	P25 CA1 360 MSEC
Encryption Keying	External Key Loader, OTAR
Mode	OFB-Output Feedback
Encryption Type	Digital
Key Erasure	Keyboard Command
Standards	FIPS 46-3, FIPS 81, FIPS 140-2, FIPS 197

Hazardous Location Standard

Certification Lab	CSA Group
Standard Applied	ANSI/TIA 4950-A-2014, UL913 5th Edition & ANSI/ISA-12.12.01-2011
Classification Rating	Intrinsically Safe: Classes I, II, III, Division 1, Groups D, E, F, G Non-incendive: Class I, Division 2, Groups A, B, C, D

Accessories

Approved Battery	KNB-LS7
Approved Speaker Microphones	KMC-54WDM, KMC-70M, KMC-70GR

International Protection Standard

Dust & Water	IP54, IP55
Immersion	IP67**, IP68***

* 25 and 30 kHz are not included in the models sold in the USA or US territories.
** IP67/IP68 - Must have the Speaker Mic UDC connector or UDC protector connected.
*** IP68 = 1m/2H

Specifications shown are typical and subject to change without notice Please check the website for the latest version.
V.09.25.21 © Copyright 2021 EF Johnson Technologies, Inc. (E.F. Johnson Company is operating entity)
The Bluetooth word mark and logos are registered trademarks owned by the Bluetooth SIG, Inc.

EF Johnson Technologies, Inc.

a JVCKENWOOD Company

1440 Corporate Drive, Irving, TX 75038-2401
Phone: 800.328.3911 · efjohnson.com

KENWOOD



P25 Mission Critical

VM5000

VHF · UHF (High & Low) · 700/800 MHz

P25 Phase 1 & 2 · Viking16

With uncompromised quality and performance, the VM5000 has built-in speakers to take the complexities out of mission-critical communications.

Features

- Mixed protocol operation (P25 Phase 1 & 2 Trunking, P25 Conventional, Viking16, FM Analog)
- 1024 channels
- Mixed protocol zones
- P25 Authentication (Link Layer Authentication)
- P25 IP packet data
- GPS AVL data (built in GPS)¹
- MDC-1200 & GE-Star signaling
- Analog & P25 Conventional vote scan
- Dash mount (KCH-19 control head only)
- Remote mount
- Dual control heads
- Internal or external speaker
- Fixed control station
- WiFi (remote mount configuration only)
- Bluetooth (Future)
- Instant Recording Replay (IRR)
- Voice Recording
- Text Messaging
- Bluetooth Low Energy
- Custom Transmit Power Levels
- Encryption
 - ARC4™ software encryption; compatible w/Motorola ADP™
 - DES-OFB
 - AES-256 (FIPS 140-2) Single and Multi-Key
 - Over-the-Air-Rekeying (OTAR)

¹Refer to the Viking VM5000 operating manual for detailed requirements & conditions for proper GPS operation.

Accessories

Complete line of accessories including microphones, speakers & antennas.

Download the accessory catalog at

<https://info.efjohnson.com/viking-accessory-catalog/>

We combine P25 design expertise with recognized quality & reliability along with advanced technology to make KENWOOD Viking radios simple to use & maintain.



Perpetual Software Licensing

Adds greater value to your radios by extending the life of the software into your next hardware platform — you own the software option forever, and your licenses are simple to manage with our cloud based tool — Vault™.



Armada® Fleet Management

Update your radios in a group rather than one at a time. One template programs both portables & mobiles. Supports direct computer connection, Over-the-Air Programming (OTAP), or Over-the-Internet Programming (OTIP).



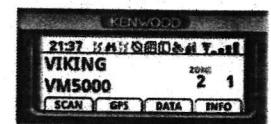
TrueVoice™ Noise Cancellation

Software-based noise cancellation automatically filters out noise source frequencies and eliminates the need for extra configuration. Works in analog or digital mode and with any accessory.



Basic Control Head

- Resolution of 422 x 154 pixel
- Viewing angle of 140°
- User selectable themes (8 themes available)
- Day & night display options



Day - High Contrast



Night - High Contrast

Compatible With P25 Systems

- ATLAS® P25 Phase 1 and Phase 2 System
- Motorola Astro® 25 - P25 Phase 1 & Phase 2
- Harris VIDA® - P25 Phase 1 & Phase 2
- Airbus (formerly Cassidian) VESTA™ Radio - P25 Phase 1 & Phase 2

VM5730/5830/5930 Mobile Specifications

General		VM5730	VM5830	VM5930
Frequency Range		136-174 MHz	Type 1: 450-520 MHz Type 2: 380-470 MHz	RX: 762-776, 851-870 MHz TX: 762-776, 792-806, 806-825, 851-870 MHz
Max. Channels Per Radio		1024		
Number of Zones		255		
Max. Channels Per Zone		255		
Channel Spacing	Analog	12.5/15/20/25*/30* kHz	12.5/25* kHz	12.5/25 kHz
	Digital	12.5 kHz	12.5 kHz	12.5 kHz
Power Supply		13.6 V DC ±15 %		
Current Drain	Standby	0.45 A		
	RX	2.3 A		
	TX	13 A		
Operating Temperature		-22 °F to +140 °F (-30 °C to +60 °C)		
Frequency Stability [-22 °F to +140 °F (-30 °C to +60 °C), +77 °F Ref. (+25 °C)]		±1.0 ppm		
Dimensions (W x H x D) Radio w/Control Head, Projections not included		6.73 x 1.89 x 6.93 in. (171 x 48 x 176 mm)		6.73x1.89x7.72 in. (171.0 x 48.0 x 196 mm)

Receiver		VM5730	VM5830	VM5930
Sensitivity	P25 Digital (5% BER)	-119 dBm (0.25 µV)		
	Analog (12 dB SINAD)	-119 dBm (0.25 µV)		
Selectivity	P25 Digital	60 dB		
	Analog @ 12.5 kHz	60 dB		
	Analog @ 25 kHz	75 dB		75 dB
Intermodulation		80 dB		
Spurious Rejection		85 dB		87 dB
Audio Distortion		2%		
Audio Output Power		4 W/4 Ω (Remote Control Head: 3 W/4 Ω)		
Modulation		FM, C4FM, H-DQPSK		

Transmitter		VM5730	VM5830	VM5930
RF Output Power		5W/50W	5W/45W - (Type 1: 450-485 MHz) 5W/40W - (Type 1: 485-520 MHz) 5W/40W - (Type 2: 380-470 MHz)	2W/30W (700 MHz) 2W/35W (800 MHz)
Spurious Emission		-73 dB	-75 dB	-80 dB
FM Hum & Noise	Analog @ 12.5 kHz	45 dB		40 dB
	Analog @ 25 kHz	50 dB		45 dB
Audio Distortion		2%		
Emission Designator		VM5730/5830: 16K0F3E, 11K0F3E, 8K10F1E, 8K10F1D, 8K10F1W VM5930: 16K0F3E, 14K0F3E, 11K0F3E, 8K10F1E, 8K10F1D, 8K10F1W		
Modulation		FM, C4FM, H-CPM		

Mil Standard	810C	810D	810E	810F	810G	Mil Standard	810C	810D	810E	810F	810G
Low Pressure	5001/ I	5002/ I, II	5003/ I, II	5004/ I, II	5005/ I, II	Humidity	5071/ I, II	5072/ II, III	5073/ II, III	5074	5075/ II
High Temperature	5011/ I, II	5012/ I, II	5013/ I, II	5014/ I, II	5015/ I, II	Salt Fog	5091/ I	5092/ I	5093/ I	5094	5095
Low Temperature	5021/ I	5022/ I, II	5023/ I, II	5024/ I, II	5025/ I, II	Dust	5101/ I	5102/ I	5103/ I	5104/ I, III	5105/ I
Temp. Shock	5031/ I	5032/ I	5033/ I	5034/ I, II	5035/ I	Vibration	5142/ VIII, X	5143/ I	5144/ I	5145/ I	5146/ I
Solar Radiation	5051/ I	5052/ I	5053/ I	5054/ I	5055/ I	Shock	5162/ I, V	5163/ I, V	5164/ I, V	5165/ I, V	5166/ I, V
Rain	5061/ I, II	5062/ I, II	5063/ I, II	5064/ I, III	5065/ I, III	INTERNATIONAL PROTECTION STANDARD					
						Dust & Water	IP54, IP55*				

*IP54: RI Deck of the mobile radio; IP55: Remote Control Head for the mobile radio.

Encryption Options	
Supported Encryption	AES, DES-OFB, ARC4
Encryption Key/ Radio	126 Common Key Reference (CKR), 126 Physical Identifier (PID), Compatible w/ Motorola Key Variable Loader
Encryption Frame Re-sync Interval	P25 CAI 360 MSEC
Encryption Keying	External Key Loader, OTAR
Mode	OFB-Output Feedback
Encryption Type	Digital
Key Erasure	Keyboard Command
Standards	FIPS 46-3, FIPS 81, FIPS 140-2, FIPS 187

*25/30 kHz in VHF/UHF Bands are not included in the models sold in the USA or US territories.
Analog measurements made per TIA 603 and specifications shown are typical. Digital measurements made per TIA 102CAAA and specifications shown are typical. All specifications are subject to change without notice. Please check the website for the latest version.
V.09.25.21 © Copyright 2021 EF Johnson Technologies, Inc. (E.F. Johnson Company is operating entity)

EF Johnson Technologies, Inc.

a JVCENWOOD Company

1440 Corporate Drive, Irving TX 75038-2401
Phone: 800.328.3911 · efgjohnson.com

KENWOOD



P25 Mission Critical

VM6000

VHF · UHF (High & Low) · 700/800 MHz
P25 Phase 1 & 2 · Viking16

Uncompromised quality and performance with public safety ergonomics, the KENWOOD Viking® is the industry's only mobile platform providing TrueVoice™ noise cancellation.

Features

- Mixed protocol operation (P25 Phase 1 & 2 Trunking, P25 Conventional, Viking16, FM Analog)
- 1024 channels (2048 and 4096 options)
- Mixed protocol zones
- P25 Authentication (Link Layer Authentication)
- P25 IP packet data
- P25 GPS data (built in GPS)¹
- MDC-1200 & GE-Star signaling
- Analog & P25 Conventional vote scan
- Remote mount only (Viking Control Head)
- Dual Viking Control Heads (option)
- External speaker
- Fixed control station
- WiFi
- Bluetooth
- Instant Recording Replay (IRR)
- Voice Recording
- Text Messaging
- Bluetooth Low Energy
- Custom Transmit Power Levels
- Encryption
 - ARC4™ software encryption; compatible with Motorola ADP™
 - DES-OFB
 - AES-256 (FIPS 140-2) Single and Multi-Key
 - Over-the-Air-Rekeying (OTAR)
 - VK5000 or Motorola KVL3000/KVL4000 Keyloaders

¹Refer to the Viking VM6000 operating manual for detailed requirements & conditions for proper GPS operation.

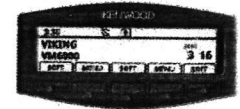
Accessories

Complete line of accessories including microphones, speakers & antennas.
Download the accessory catalog at
<https://info.efjohnson.com/viking-accessory-catalog/>



Viking Control Head

- Public safety knobs & ergonomics
- High contrast transmissive color display for direct sunlight & night time viewing; not compromised by polarized sunglasses
- Resolution of 480 x 128 pixels
- Viewing angle of 120°
- User selectable themes (8 themes available)
- Day & night display options
- An optional KCH-21RV Handheld Control Head (HHCH) can be used with the VM6000 radio



Day - High Contrast



Night - High Contrast

Compatible With P25 Systems

- ATLAS® P25 Phase 1 and Phase 2 System
- Motorola Astro® 25 - P25 Phase 1 & Phase 2
- Harris VIDA® - P25 Phase 1 & Phase 2
- Airbus (formerly Cassidian) VESTA™ Radio - P25 Phase 1 & Phase 2

We combine P25 design expertise with recognized quality & reliability along with advanced technology to make KENWOOD Viking radios simple to use & maintain.



Perpetual Software Licensing

Adds greater value to your radios by extending the life of the software into your next hardware platform — you own the software option forever, and your licenses are simple to manage with our cloud-based tool — Vault™.



Armada® Fleet Management

Update your radios in a group rather than one at a time. One template programs both portables & mobiles. Supports direct computer connection, Over-the-Air Programming (OTAP), or Over-the-Internet Programming (OTIP).



TrueVoice™ Noise Cancellation

Software-based noise cancellation automatically filters out noise source frequencies and eliminates the need for extra configuration. Works in analog or digital mode and with any accessory.

VM6730/6830/6930 Mobile Specifications

General		VM6730	VM6830	VM6930
Frequency Range		136-174 MHz	Type 1: 450-520 MHz Type 2: 380-470 MHz	RX: 762-776, 851-870 MHz TX: 762-776, 792-806, 806-825, 851-870 MHz
Max. Channels Per Radio		1024 (2048 and 4096 options)		
Number of Zones		255		
Max. Channels Per Zone		255		
Channel Spacing	Analog	12.5/15/20/25*/30* kHz	12.5/25* kHz	12.5/25 kHz
	Digital	12.5 kHz	12.5 kHz	12.5 kHz
Power Supply		13.6 V DC ±15 %		
Current Drain	Standby	1.2 A		
	RX	3.0 A		
	TX	14 A		
Operating Temperature		-22 °F to +140 °F (-30 °C to +60 °C)		
Frequency Stability [-22 °F to +140 °F (-30 °C to +60 °C), +77 °F Ref. (+25 °C)]		±1.0 ppm		
Dimensions (W x H x D) RF Deck + KRK-16B (not including VCH)		6.73 x 1.89 x 7.24 in. (171 x 48 x 184 mm)	6.73 x 1.89 x 8.03 in. (171 x 48 x 204 mm)	
Weight - RF Deck + KRK-16B (not including VCH)		3.44 lbs (1.56 kg)	3.88 lbs (1.76 kg)	

Receiver		VM6730	VM6830	VM6930
Sensitivity	P25 Digital (5% BER)	-119 dBm (0.25 µV)		
	Analog (12 dB SINAD)	-119 dBm (0.25 µV)		
Selectivity	P25 Digital	60 dB		
	Analog @ 12.5 kHz	60 dB		
	Analog @ 25 kHz	75 dB	75 dB	
Intermodulation		80 dB		
Spurious Rejection		85 dB	87 dB	
Audio Distortion		2%		
Audio Output Power		RF Deck: 4 W/4 Ω Viking Control Head: 15W		
Modulation		FM, C4FM, H-DQPSK		

Transmitter		VM6730	VM6830	VM6930
RF Output Power		5W/50W	5W/45W - (Type 1: 450-485 MHz) 5W/40W - (Type 1: 485-520 MHz) 5W/40W - (Type 2: 380-470 MHz)	2W/30W (700 MHz) 2W/35W (800 MHz)
Spurious Emission		-73 dB	-75 dB	-80 dB
FM Hum & Noise	Analog @ 12.5 kHz	45 dB		40 dB
	Analog @ 25 kHz	50 dB		45 dB
Audio Distortion		2%		
Emission Designator		VM6730/6830: 16K0F3E, 11K0F3E, 8K10F1E, 8K10F1D, 8K10F1W VM6930: 16K0F3E, 14K0F3E, 11K0F3E, 8K10F1E, 8K10F1D, 8K10F1W		
Modulation		FM, C4FM, H-CPM		

Mil Standard	810C	810D	810E	810F	810G	Mil Standard	810C	810D	810E	810F	810G
Low Pressure	5001/ I	5002/ I, II	5003/ I, II	5004/ I, II	5005/ I, II	Humidity	5071/ I, II	5072/ II, III	5073/ II, III	5074	5075/ II
High Temperature	5011/ I, II	5012/ I, II	5013/ I, II	5014/ I, II	5015/ I, II	Salt Fog	5091/ I	5092/ I	5093/ I	5094	5095
Low Temperature	5021/ I	5022/ I, II	5023/ I, II	5024/ I, II	5025/ I, II	Dust	5101/ I	5102/ I	5103/ I	5104/ I, III	5105/ I
Temp. Shock	5031/ I	5032/ I	5033/ I	5034/ I, II	5035/ I	Vibration	514.2/ VII, X	514.3/ I	514.4/ I	514.5/ I	514.6/ I
Solar Radiation	5051/ I	5052/ I	5053/ I	5054/ I	5055/ I	Shock	516.2/ I, V	516.3/ I, V	516.4/ I, V	516.5/ I, V	516.6/ I, V
Rain	5061/ I, II	5062/ I, II	5063/ I, II	5064/ I, III	5065/ I, III	International Protection Standard					

Dust & Water IP54, IP56¹
¹IP54: RF Deck of the mobile radio; IP56: Remote Control Head for the mobile radio.

Encryption Options	
Supported Encryption	AES, DES-OFB, ARC4
Encryption Key/ Radio	128 Common Key Reference (CKR), 128 Physical Identifier (PID), Compatible w/ Motorola Key Variable Loader
Encryption Frame Re-sync Interval	P25 CAI 360 MSEC
Encryption Keying	External Key Loader, OTAR
Mode	OFB-Output Feedback
Encryption Type	Digital
Key Erasure	Keyboard Command
Standards	FIPS 46-3, FIPS 81, FIPS 140-2, FIPS 187

*25/30 kHz in VHF/UHF Bands are not included in the models sold in the USA or US territories. Analog measurements made per TIA 603 and specifications shown are typical. Digital measurements made per TIA 102CAAA and specifications shown are typical. VM6730/6830/6930 Mobile SPECIFICATIONS All specifications are subject to change without notice. Please check the website for the latest version. V.09.25.21 © Copyright 2021 EF Johnson Technologies, Inc. (E.F. Johnson Company is operating entity)

EF Johnson Technologies, Inc.
a JVCKENWOOD Company

1440 Corporate Drive, Irving TX 75038 2401
 Phone: 800.328.3911 · efjohnson.com



Alpena County Board of Commissioners
720 W. Chisholm St
Suite 7
Alpena, MI 49707

April 8, 2022

Re: Radio Bids

Board Members,

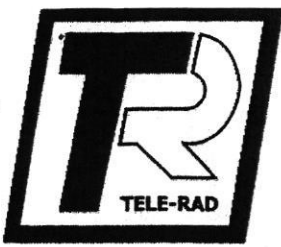
Thank you for this opportunity to provide you with a bid for radios and pagers. Since Motorola sells the 7/800 MHz radios under state contract pricing you would have received a bid from Lindsay Schleicher with Motorola as dealers act as manufacturer's representatives.

Tele-Rad is a dealer for Unication and as such I have provided a quote for Unication pagers and accessories attached. While we would love to provide you with a 3 year fixed price, we are unable to as Unication has a minimum floor policy that applies to all dealers. With this policy in mind, you should not see a lower price from any dealer as we are happy to provide you with the lowest possible pricing available. We would be happy to provide you with a refresh of this pricing as it becomes available from the manufacturer.

I would like to again thank you for the opportunity and consideration. I would welcome any questions that you may have.

Sincerely,

Jessica Spindler
Tele-Rad Inc.
231-740-2104
Jessica_Spindler@tele-rad.com



511 E. 8th St.

Holland MI 49423-3759

(616) 396-3541 Fax: (616) 392-9707

QUOTATION

QUOTE NO.: 54737 - 00 EC

DATE: 4/08/22

TERMS: NET 15 DAYS

DELIVERY:

Please reference Quote No. on

Correspondence & purchase orders.

Quote expires: 05/08/2022

TO: 1ALPCO
ALPENA COUNTY 911 CENTRAL DISP
720 W CHISHOLM ST
STE 2
ALPENA, MI 49707-2453

WE ARE PLEASED TO QUOTE YOU THE FOLLOWING:

QTY	DESCRIPTION	UNIT PRICE	DISC%	TOTAL
1	UNICATION G4 DIGITAL VOICE PAGER 700/800 MHZ	580.50		580.50
1	UNICATION G5 DUAL BAND PAGER VHF/800 24 MO WARRANTY	670.50		670.50
1	UNICATION STD DESKTOP CHARGER G4/G5 (PWR CBL/SPLY NOT INC)	81.00		81.00
1	UNICATION AMPLIFIED CHARGER G4/G5 PAGER COMES W/ANTENNA	135.00		135.00
1	UNICATION EXTENDED WARRANTY +3 YEARS	117.00		117.00
1	UNICATION 2800 MAH LITHIUM ION BATTERY G4/G5 PAGER	27.90		27.90
1	UNICATION ANTENNA FOR G4/G5	14.40		14.40

Continued on following page

ORDERS SUBJECT TO SHIPPING & HANDLING AND SALES TAX IF APPLICABLE.

TERMS SUBJECT TO CREDIT REVIEW

*Orders over \$50,000 may require a 25% down payment to be invoiced at time of order.

*Unpaid balances over 30 days are subject to 1.5% monthly interest charge (18% annually).

*Your purchase of MOTOTRBO radios includes a 5 year essential services warranty and software support package. Additional investment may be required to extend essential service after 5 years.

BY JESSICA SPINDLER /231-740-2104 7011

THIS QUOTATION DOES NOT CONSTITUTE A SALES ORDER UNLESS SIGNED BY YOU, OUR CLIENT. SEE TERMS AND CONDITIONS OF SALE ATTACHED.

Accepted

by

LEGAL NAME OF PURCHASER

P.O. No.

AUTHORIZED SIGNATURE

Date

QTY	DESCRIPTION	UNIT PRICE	DISC%	TOTAL
1	UNICATION G SERIES PREMIUM NYLON HOLSTER W/CLIP	36.90		36.90
1	LEATHER HOLSTER WITH SWIVEL * PLEASE EMAIL AND MAIL INVOICES * * ELKIEK@ALPENACOUNTY.ORG * * * * * *	54.90		54.90
THIS QUOTE IS BASED ON UNICATION'S MINIMUM FLOOR PRICING. PER THIS POLICY WE CANNOT PRICE ANY		Item summary		1,718.10
LOWER AND WILL REFRESH THIS PRICING AS IT REFRESHES FRO THE MANUFACTURER. THIS WILL ALLOW US TO SELL TO YOU AT THE LOWEST POSSIBLE PRICING.		Subtotal		1,718.10
		Sales Tax		.00
		GRAND TOTAL:		1,718.10

