



XPR™ 4500/4550/4300/4350 Mobile Radios

MOTOTRBO™



ACCELERATE PERFORMANCE.



Introducing MOTOTRBO™ Professional Digital Two-Way Radio System. The future of two-way radio.

The next-generation professional two-way radio communications solution is here, with more performance, productivity and value—thanks to digital technology that delivers increased capacity and spectrum efficiency, integrated data communications and enhanced voice communications. MOTOTRBO is ideal for professional organizations that need a customizable, business-critical communication solution using licensed spectrum.



Unique MOTOTRBO System Benefits for Enhanced Productivity

MOTOTRBO offers a private, standards-based, highly cost-effective solution that can be tailored to meet your unique coverage and feature needs. This versatile portfolio provides a complete system of portable radios, mobile radios, repeaters, accessories, applications and services—a complete solution. The MOTOTRBO mobile radio:

- Uses Time-Division Multiple-Access (TDMA) technology to provide **twice the calling capacity** (as compared to analog or FDMA radios) for the price of one license. A second call doesn't require a second repeater, saving you equipment costs.
- **Integrates voice and data** to increase your operational efficiency and support integrated applications including MOTOTRBO Text Messaging Services and MOTOTRBO Location Services (GPS location tracking).
- Provides **clearer voice communications** throughout the coverage area as compared to analog radios, rejecting static and noise.
- **Enables additional functionality** including dispatch data, enhanced call signaling, basic privacy-scrambling and option board expandability.
- Provides **easy migration** from analog to digital with the ability to operate in both analog and digital modes.
- Meets **demanding specifications**—U.S. Military 810 C, D, and E, and Motorola standards for durability and reliability.
- Supports unit-to-unit short free-form and **quick text messaging** with newly designed and durable IMPRES™ keypad microphone.
- Utilizes Motorola's **state-of-the-art IMPRES technology** in audio accessories, to provide clearer audio delivery.
- Is **fully backed** by a two-year Standard Warranty plus one-year Repair Service Advantage (US only)/ Extended Warranty (Canada only).

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MOTOTRBO™ System Components and Benefits



XPR™ 4500/4550 Display Mobile Radios

- 1 Accessory connector supports USB and IMPRES™ audio capability.
- 2 Multi-colored LED indicators for clear, visible feedback of calling, scanning and monitoring features.
- 3 Large, easy-to-use volume knob.
- 4 XPR 4550 includes integrated GPS modem.
- 5 160 channels.
- 6 Powerful, front-projecting speaker that transmits 12.5 kHz digital TDMA audio or 12.5/25 kHz analog audio.
- 7 Large, easy-to-use navigation buttons allow easy access to intuitive, menu-driven interfaces.
- 8 Flexible, menu-driven interface with user-friendly icons or two lines of text for ease of reading text messages and navigating through the menus.
- 9 Four programmable/replaceable buttons for easy access to favorite features. New features such as one-touch calling and text messaging are made even easier through programmable button access.
- 10 Compact and ergonomically friendly microphone.

Display Mobile Radio Standard Package

- Radio with Display Control Head
- Mounting Trunnion
- 10-Foot Power Cable
- Compact Microphone
- Replacement Button Kit: monitor, scan, backlight, emergency, talkaround, text message, contacts
- User and Installation Guide CD Kit (English and French Canadian)
- Two-year Standard Warranty plus one-year Repair Service Advantage (US only)/Extended Warranty (Canada only)

Additional Features

- Enhanced call management
Encode/decode: call alert, emergency, remote monitor, push-to-talk ID, radio check, private call, all call, radio disable
- With XPR 4550, in an emergency, location coordinates can be sent to the dispatcher using the MOTOTRBO Location Services application
- Dual-mode analog and/or digital scan—facilitates a smooth migration from analog to digital
- Option board expandable for added capabilities
- Basic privacy—built-in scrambling for increased security
- Short free-form (requires keypad microphone) and quick text messaging



XPR™ 4300/4350 Numeric Display Mobile Radios

- 1 Accessory connector supports USB and IMPRES™ audio capability.
- 2 Multi-colored LED indicators for clear, visible feedback of calling, scanning and monitoring features.
- 3 Large, easy-to-use volume knob.
- 4 XPR 4350 includes integrated GPS modem.
- 5 Large, easy-to-use channel navigation buttons.
- 6 Powerful, front-projecting speaker that transmits digital TDMA audio or 12.5/25 kHz analog audio.
- 7 32 channels; channel number is easy to read on large, clear numeric two-digit display.
- 8 Two programmable/replaceable buttons for easy access to favorite features. New features such as one-touch calling are made even easier through programmable button access.
- 9 Compact and ergonomically friendly microphone.

Numeric Display Mobile Radio Standard Package

- Radio with Numeric Display Control Head
- Mounting Trunnion
- 10-Foot Power Cable
- Compact Microphone
- Replacement Button Kit: monitor, scan
- User and Installation Guide CD Kit (English and French Canadian)
- Two-year Standard Warranty plus one-year Repair Service Advantage (US only)/Extended Warranty (Canada only)

Additional Features

- Enhanced call management
 - Encode/Decode: private call, call alert
 - Encode only: emergency, push-to-talk ID
 - Decode only: radio check, remote monitor, radio disable, all call
- With XPR 4350, in an emergency, location coordinates can be sent to the dispatcher using the MOTOTRBO Location Services application
- Dual-mode analog and/or digital scan—facilitates a smooth migration from analog to digital
- Option board expandable for added capabilities
- Basic privacy—built-in scrambling for increased security
- Send quick text messages via programmable buttons

MOTOTRBO™ Integrated Data Enables Advanced Applications

MOTOTRBO is changing the way businesses communicate. You can gain the productivity of powerful data applications such as MOTOTRBO Location Services and Text Messaging Services now. And with additional applications coming from Motorola's Application Developer Program, you'll be able to leverage ongoing new capabilities—and get the most from your communications investment.



MOTOTRBO Location Services

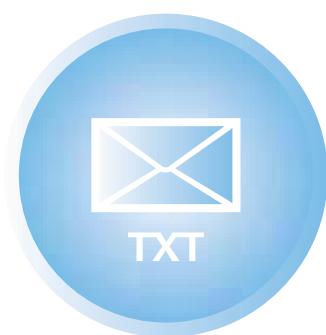
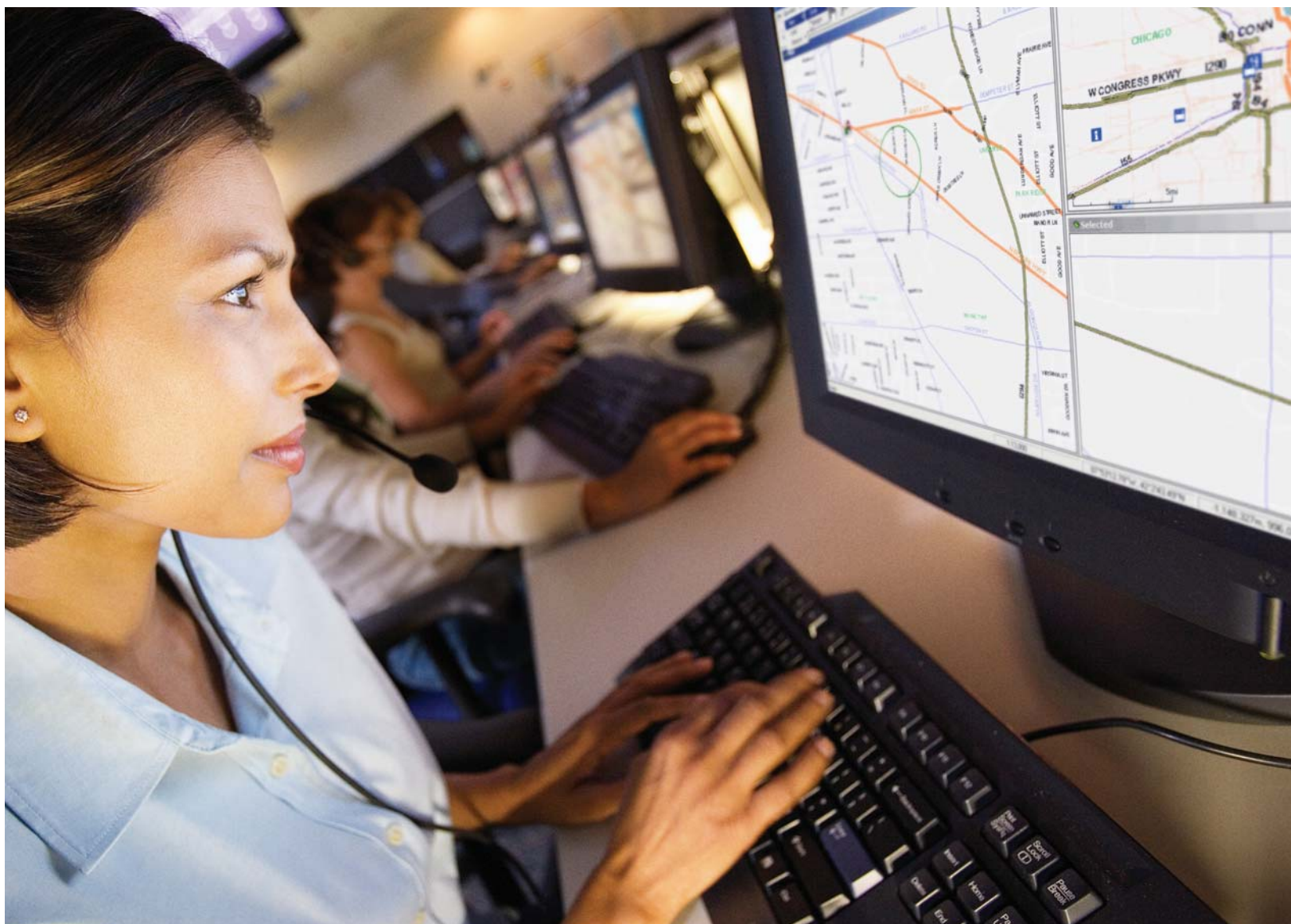
Location Services provides the ability to track people and assets, such as vehicles. This advanced approach takes advantage of the GPS modem and receiver integrated within both the portable and mobile radios, combined with the MOTOTRBO Location Services software application.

GPS-equipped portable and mobile radios can be configured so that dispatchers can obtain their geographical coordinates at pre-programmed intervals, on demand and in case of an emergency. MOTOTRBO Location Services software applications provide dispatchers with a real-time display of fleet activity on a customized, high-resolution, color-coded map. With MOTOTRBO Location Services, you can enjoy the benefits of location tracking with no monthly fees or cumbersome external GPS devices to install and maintain.



MOTOTRBO Application Developer Program

Third-party developers play an important role in supporting the market growth of the MOTOTRBO platform and in creating customized applications that will add value to you and your organization. Developers will extend the capabilities of MOTOTRBO and provide niche solutions that will satisfy a broad range of your



MOTOTRBO Text Messaging Services

The MOTOTRBO Text Messaging Services allows communication between radios and dispatch systems, between radios and email-addressable devices, and to remote PC clients attached to radios. This application allows you to utilize another form of communication for your business—whether it's the need for discreet communication or the ability to send quick text messages. Thus enabling you to focus on the business at hand. Furthermore, the dispatcher PC can act as a gateway to email, enabling messaging between email-addressable devices and radios.

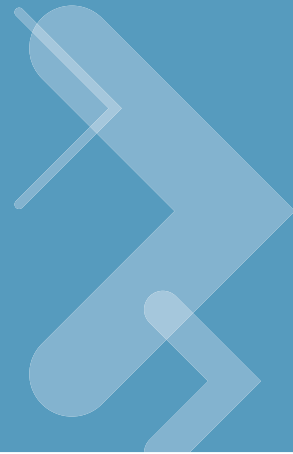
needs. To encourage the development of a broad portfolio of end-user focused solutions and continuing innovation, Motorola will provide support to its Application Developer Program, giving accredited developers access to the MOTOTRBO protocol and Application Programming Interface (API) documentation as well as online support. For more information, visit the MOTODEV website at <http://developer.motorola.com>.

Mobile Radio

Part #	Description	Benefits
Audio		
RMN5052	Compact Microphone	Standard microphone for MOTOTRBO.
RMN5065	IMPRES Keypad Microphone	The Enhanced Keypad Microphone allows the user to navigate radio menus from the microphone.
RMN5053	IMPRES Heavy Duty Microphone	For users who want a more durable microphone; also ideal for those who need a larger microphone that is easy to handle when operating while wearing gloves.
RMN5054	IMPRES Visor Microphone	Visor mic for use with external PTT accessories; mic mounts to vehicle's visor for hands-free radio operation.
RMN5050	Desktop Microphone	Intended to be used for a mobile radio that is being used in a desktop configuration.
HMN4098	IMPRES Telephone Style Handset	This handset allows for discreet communications while on the job. Updated Styling with IMPRES functionality. Automatic Gain Control ensures that the audio is received clear whether the user is shouting or whispering.
Loudspeakers		
RSN4002	13 Watt External Speaker	External speakers ideal for extremely noisy environments.
RSN4003	75 Watt External Speaker	
RSN4004	5 Watt External Speaker	
Desktop		
RSN4005	Desktop Tray with Speaker	A desktop tray that includes a speaker for increased volume when receiving calls in high-noise areas.
GLN7318	Desktop Tray without Speaker	Ideal for securing the mobile radio in place in a desktop configuration.
HPN4007	Power Supply and Cable (25 - 60 Watt Models)	Provides power when using a mobile from a desktop.
HPN4008	Power Supply and Cable (1 - 25 Watt Models)	
GPN6145	Switchmode Power Supply (1 - 25 Watt Models)	Has a provision for a back up battery hook up.
GKN6266	Power Supply Cable	Power cable for GPN6145 switchmode power supply.
HKN9088	Mobile Mini U Antenna Adapter - 8 ft Cable	
PMLN5072	Hardware Kit for Rear Accessory Connector	
Mounting		
RLN6077	Low Profile Trunnion Kit	
RLN6078	High Profile Trunnion Kit	
RLN6079	Key Lock Trunnion Kit	Key lock mount bracket allows the mobile to be mounted and locked giving radio users extra protection from theft by requiring the use of a key to lock/ unlock the radio from its position in the mounting bracket.
RLN5933	In Dash (DIN) Mounting Kit	
Cables		
RKN4136	Ignition Sense Cable	
HKN4137	Power Cable to Battery - 10 ft, 15 amp	
HKN4192	Power Cable to Battery - 20 ft, 20 amp	
PMKN4018	Mobile Rear Accessory Connector Universal Cable	
PMKN4013	Portable Telemetry Cable (10 feet)	
Antennas		
The following antennas combine UHF and GPS capability.		
PMAE4030	Combination UHF/GPS 403-430 MHz, 1/4 Wave Through-hole Mount	Combination GPS/Mobile antenna design with Mini U connector provides GPS tracking coverage and voice/ data wireless coverage capabilities for fleet monitoring or fleet tracking applications.
PMAE4032	Combination UHF/GPS 406-420 MHz, 3.5 dB Gain Through-hole Mount	
PMAE4031	Combination UHF/GPS 450-470 MHz, 1/4 Wave Through-hole Mount	
PMAE4033	Combination UHF/GPS 450-470 MHz, 3.5 dB Gain Through-hole Mount	
PMAE4034	Combination UHF/GPS 450-470 MHz, 5 dB Gain Through-hole Mount	
The following antennas combine VHF and GPS capability		
RAD4214	Combination VHF/GPS 136-144 MHz ¼ Wave Through-hole Mount Antenna	Combination GPS/Mobile antenna design with Mini U connector provides GPS tracking coverage and voice/ data wireless coverage capabilities for fleet monitoring or fleet tracking applications.
RAD4215	Combination VHF/GPS 146-150.8 MHz, ¼ Wave Through-hole Mount Antenna	
RAD4216	Combination VHF/GPS 150.8-162 MHz ¼ Wave Through-hole Mount Antenna	
RAD4217	Combination VHF/GPS 162-174 MHz ¼ Wave Through-hole Mount Antenna	
RAD4218	Combination VHF/GPS 146-172 MHz 3.0 dB Wave Through-hole Mount Antenna	

Part #	Description	Benefits
Antennas (continued)		
The following antennas are intended for customers who have existing mobile antennas and need to add GPS capability.		
PMAN4000	Through-hole Mount GPS Active Antenna	This discreet stand-alone GPS antenna has a semi-permanent mount easily assembled with minimal tools to a roof or trunk of a vehicle.
PMAN4002	Magnetic Mount GPS Active Antenna	This discreet stand-alone GPS antenna can be mounted either magnetically, via screw or via tape on the roof or trunk of a vehicle.
PMAN4001	Glass Mount GPS Active Antenna	This discreet stand-alone GPS antenna can be mounted on the window of a vehicle.
The following antennas are intended for customers who do not plan to use the GPS capability of the radio.		
HAE4002	UHF 403-430 MHz, 1/4 Wave Through-hole Mount	The signals for these antennas are radiated vertically, making them ideal for urban environments where buildings might obstruct the signal.
HAE4003	UHF 450-470 MHz, 1/4 Wave Through-hole Mount	
HAE4010	UHF 406-420 MHz, 3.5 dB Gain Through-hole Mount	These antennas are designed to direct the signal more towards the horizon, making them ideal for applications in more geographically flat regions where signal coverage is sparse and must cover a larger area.
HAE4011	UHF 450-470 MHz, 3.5 dB Gain Through-hole Mount	
RAE4004_RB	UHF 450-470 MHz, 5 dB Gain Through-hole Mount	
HAD4006	VHF 136-144 MHz ¼ Wave Antenna	The signals for these antennas are radiated vertically, making them ideal for urban environments where buildings might obstruct the signal.
HAD4007	VHF 146-150.8 MHz ¼ Wave Antenna	
HAD4008	VHF 150.8-162 MHz ¼ Wave Antenna	
HAD4009	VHF 162-174 MHz ¼ Wave Antenna	
HAD4014	VHF 146-172 MHz 3.0 dB Gain Antenna	This antenna is designed to direct the signal more towards the horizon, making it ideal for applications in more geographically flat regions where signal coverage is sparse and must cover a larger area.
Miscellaneous		
RLN5926	Push Button PTT	Push button with push-to-talk feature provides hands-free operation of a radio in a vehicle, allowing the user to transmit messages without using a mobile microphone. Push-to-talk button can be held in the hands or mounted in the vehicle with touch fasteners.
RLN5929	Emergency Footswitch	Emergency footswitch enables the user to notify the base station quickly and discreetly that he or she is in an emergency situation. Pressing the footswitch sends a signal to the base station and activates the microphone to allow communication with the base station.
HLN9073	Microphone Hang Up Clip (all microphones)	
HLN9414	Universal Microphone Hang Up Clip (all microphones)	
HKN9557	PL259 / Mini-U Antenna Adapter - 8' cable	

IMPRES™ Smart Audio System— A Unique Audio Technology that Enables the Highest



Motorola's state-of-the-art IMPRES audio technology allows communication between the radio and audio accessories, enabling enhanced performance and capabilities, both in analog and digital modes—now and into the future.

- **IMPRES™ Smart Audio System**—Enables enhanced audio performance and capabilities.

Optimal Audio Performance: When an IMPRES accessory is attached, accessory identification is sent to the radio enabling the radio to optimize its output for each type of audio accessory. This results in more consistent output across all audio accessory types.

Customization: IMPRES audio accessory programmable buttons can be programmed to any feature available in the radio CPS, rather than being linked to radio programmable button programming. This allows accessory programmable buttons to have independent programmable features. The radio can be customized to fit specific customer applications and needs.

Enhanced Audio Gain Capability: IMPRES audio accessories have significantly enhanced audio gain capability. When a user is either speaking quietly or is speaking in a normal volume but not directly into the microphone, IMPRES audio can detect that condition and will automatically increase the gain such that the person on the receiving end hears a clear transmission.

- **Future Applications**—The portable connector design also incorporates built-in USB capability to allow for the use of USB-capable accessories. The audio accessory interface is now the Motorola standard audio accessory interface for mid- to high-tier two-way radios. Future accessory development will be based upon this connector interface. Your customers will be able to take advantage of future releases of new audio accessories.



MOTOTRBO™ Mobile Radio Specifications



Display VHF/UHF

Non-GPS
XPR™ 4500

GPS
XPR™ 4550

Numeric Display VHF/UHF

Non-GPS
XPR™ 4300

GPS
XPR™ 4350

General Specifications

	Display XPR 4500 / XPR 4550		Numeric Display XPR 4300 / XPR 4350	
	VHF	UHF	VHF	UHF
Channel Capacity	160		32	
Typical RF Output				
Low Power	1-25 W	1-25 W	1-25 W	1-25 W
High Power	25-45 W	25-40 W	25-45 W	25-40 W
Frequency	136-174 MHz	403-470 MHz	136-174 MHz	403-470 MHz
Dimensions (HxWxL)	2.01 x 6.89 x 8.11 in (51 x 175 x 206 mm)		2.01 x 6.89 x 8.11 in (51 x 175 x 206 mm)	
Weight	4.0 lbs. (1.8 kg)		4.0 lbs. (1.8 kg)	
Current Drain:				
Standby	0.81 A max	0.81 A max	0.81 A max	0.81 A max
Rx @ Rated Audio	2 A max	2 A max	2 A max	2 A max
Transmit	1-25 W: 11.0 A max 25-45 W: 14.5 A max	1-25 W: 11.0 A max 25-40 W: 14.5 A max	1-25 W: 11.0 A max 25-45 W: 14.5 A max	1-25 W: 11.0 A max 25-40 W: 14.5 A max
FCC Description	1-25 W: ABZ99FT3083 25-45 W: ABZ99FT3082	1-25 W: ABZ99FT4081 25-40 W: ABZ99FT4080	1-25 W: ABZ99FT3083 25-45 W: ABZ99FT3082	1-25 W: ABZ99FT4081 25-40 W: ABZ99FT4080
IC Description	1-25 W: 109AB-99FT3083 25-45 W: 109AB-99FT3082	1-25 W: 109AB-99FT4081 25-40 W: 109AB-99FT4080	1-25 W: 109AB-99FT3083 25-45 W: 109AB-99FT3082	1-25 W: 109AB-99FT4081 25-40 W: 109AB-99FT4080

Receiver

	Display XPR 4500 / XPR 4550		Numeric Display XPR 4300 / XPR 4350	
	VHF	UHF	VHF	UHF
Frequencies	136-174 MHz	403-470 MHz	136-174 MHz	403-470 MHz
Channel Spacing	12.5 kHz / 25 kHz		12.5 kHz / 25 kHz	
Frequency Stability (-30° C, +60° C, +25° C)	+/- 1.5 ppm (XPR 4500) +/- 0.5 ppm (XPR 4550)		+/- 1.5 ppm (XPR 4300) +/- 0.5 ppm (XPR 4350)	
Analog Sensitivity (12dB SINAD)	0.3 uV 0.22 uV (typical)		0.3 uV 0.22 uV (typical)	
Digital Sensitivity	5% BER: 0.3 uV		5% BER: 0.3 uV	
Intermodulation (TIA603C)	78 dB	75 dB	78 dB	75 dB
Adjacent Channel Selectivity TIA603 TIA603C	65 dB @ 12.5 kHz, 80 dB @ 25 kHz 50 dB @ 12.5 kHz, 80 dB @ 25 kHz	65 dB @ 12.5 kHz, 75 dB @ 25 kHz 50 dB @ 12.5 kHz, 75 dB @ 25 kHz	65 dB @ 12.5 kHz, 80 dB @ 25 kHz 50 dB @ 12.5 kHz, 80 dB @ 25 kHz	65 dB @ 12.5 kHz, 75 dB @ 25 kHz 50 dB @ 12.5 kHz, 75 dB @ 25 kHz
Spurious Rejection (TIA603C)	80 dB	75 dB	80 dB	75 dB
Rated Audio	3 W (Internal) 7.5 W (External - 8 ohms) 13 W (External - 4 ohms)		3 W (Internal) 7.5 W (External - 8 ohms) 13 W (External - 4 ohms)	
Audio Distortion @ Rated Audio	3% (typical)		3% (typical)	
Hum and Noise	-40 dB @ 12.5 kHz -45 dB @ 25 kHz		-40 dB @ 12.5 kHz -45 dB @ 25 kHz	
Audio Response	TIA603C		TIA603C	
Conducted Spurious Emission (TIA603C)	-57 dBm		-57 dBm	

Specifications subject to change without notice. All specifications shown are typical. Radio meets applicable regulatory requirements. Version 6 12/07

Transmitter

	Display XPR 4500 / XPR 4550		Numeric Display XPR 4300 / XPR 4350	
	VHF	UHF	VHF	UHF
Frequencies	136-174 MHz	403-470 MHz	136-174 MHz	403-470 MHz
Channel Spacing	12.5 kHz / 25 kHz		12.5 kHz / 25 kHz	
Frequency Stability (-30° C, +60° C, +25° C)	+/- 1.5 ppm (XPR 4500) +/- 0.5 ppm (XPR 4550)		+/- 1.5 ppm (XPR 4300) +/- 0.5 ppm (XPR 4350)	
Power Output Low Power High Power	1-25 W 25-45 W	1-25 W 25-40 W	1-25 W 25-45 W	1-25 W 25-40 W
Modulation Limiting	+/- 2.5 kHz @ 12.5 kHz +/- 5.0 kHz @ 25 kHz		+/- 2.5 kHz @ 12.5 kHz +/- 5.0 kHz @ 25 kHz	
FM Hum and Noise	-40 dB @ 12.5 kHz -45 dB @ 25 kHz		-40 dB @ 12.5 kHz -45 dB @ 25 kHz	
Conducted / Radiated Emission	-36 dBm < 1 GHz -30 dBm > 1 GHz		-36 dBm < 1 GHz -30 dBm > 1 GHz	
Adjacent Channel Power (TIA603C)	60 dB @ 12.5 kHz 70 dB @ 25 kHz		60 dB @ 12.5 kHz 70 dB @ 25 kHz	
Audio Response	TIA603C		TIA603C	
Audio Distortion	3%		3%	
FM Modulation	12.5 kHz: 11K0F3E 25 kHz: 16K0F3E		12.5 kHz: 11K0F3E 25 kHz: 16K0F3E	
4FSK Digital Modulation	12.5 kHz Data Only: 7K60FXD 12.5 kHz Data & Voice: 7K60FXE		12.5 kHz Data Only: 7K60FXD 12.5 kHz Data & Voice: 7K60FXE	
Digital Vocoder Type	AMBE++		AMBE++	
Digital Protocol	ETSI-TS102 361-1		ETSI-TS102 361-1	

GPS

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

TTF (Time To First Fix) Cold Start	< 1 minute
TTF (Time To First Fix) Hot Start	< 10 seconds
Horizontal Accuracy	< 10 meters

Military Standards

Applicable MIL-STD	810E		810F	
	Methods	Procedures	Methods	Procedures
Low Pressure	500.3	II	500.4	II
High Temperature	501.3	I/A, II/A1	501.4	I/Hot, II/Hot
Low Temperature	502.3	I/C3, II/C1	502.4	I/C3, II/C1
Temperature Shock	503.3	I/A, 1C3	503.4	I
Solar Radiation	505.3	I	505.4	I
Rain	506.3	I,II	506.4	I, III
Humidity	507.3	II	507.4	-
Salt Fog	509.3	I	509.4	I
Dust	510.3	I	510.4	I
Vibration	514.4	I/10, II/3	514.5	I/24
Shock	516.4	I, IV	516.5	I, IV

Environmental Specifications

Operating Temperature	-30° C / +60° C
Storage Temperature	-40° C / +85° C
Thermal Shock	Per MIL-STD
Humidity	Per MIL-STD
ESD	IEC-801-2KV
Dust and Water Intrusion	IEC 60529 - IP54
Packaging Test	MIL-STD 810D and E

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