

Bid Package

2011 Kentucky Office of Homeland Security Regional Radio Project
and
Breckinridge County Vehicular Repeaters Project

Lincoln Trail Area Development District
Grant Recipient

On Behalf of Sub-recipients:

Breckinridge County

Hardin County

LaRue County

Marion County

Nelson County

Washington County

City of Bardstown

City of Elizabethtown

City of Loretto

City of Radcliff

City of Vine Grove

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Radio Equipment

Vehicular Repeaters

ADVERTISEMENT FOR BIDS

Lincoln Trail Area Development District (Recipient), will receive sealed bids for the following items, on behalf of eleven Sub-recipients:

Project Numbers: KOHS Lincoln Trail ADD 11-106 Radios
KOHS Lincoln Trail ADD 11-110 Vehicular Repeaters

Project Names: 2011 Kentucky Office of Homeland Security Grant
Award for Regional Radios
2011 Kentucky Office of Homeland Security Grant
Award for Breckinridge County Vehicular Repeaters

Project Description: Lincoln Trail Area Development District (LTADD) is looking to purchase two (2) TK-2170 Kenwood Portable Radios w/ NiCad Battery; twenty-six (26) TK-2312 Kenwood Portable Radios w/128 channel VHF, standard battery Li-ion, rapid 8/character display charger, standard VHF antenna, belt clip and 2-yr. manufacturer's warranty; nineteen (19) TK-5220 Kenwood P25 Portable Radios w/VHF operation, 50 watts of power, VHF ¼ wave antenna, full featured control head, military spec noise canceling microphone, alpha numeric display, 50 zones/512 channel capable, front panel programmable buttons, 136-174 MHz capable, analog & digital capable, complete installation and 3-yr. warranty; four (4) TK-5710 Kenwood Dual Head Mobile Radios w/VHF operation, 100 watts of power, VHF ¼ wave antenna, full featured control heads, military spec noise canceling microphone, alpha numeric display, 50 zones/512 channel capable, front panel programmable buttons, 5 watt cab speaker, channel voice guide, 136-174 MHz capable, full P25 capable, dual priority scan, FleetSync & MDC 1200 signaling, analog & digital capable, complete installation and 3-yr. warranty; thirty-four (34) TK-5720 P25 Kenwood Mobile Radios w/ 50 watts of power, VHF operation, VHF ¼ wave antenna, full featured control Head, military spec noise canceling microphone, alpha numeric display, 50 zones/512 channel capable, front panel programmable buttons, 136-174 MHz capable, full P25 capable, dual priority scan, FleetSync signaling capable, analog & digital capable, complete installation and 3-yr. warranty; two (2) Motorola XTL 2500 Mobile Radios w/remote mount, 50 watts of power, alphanumeric display, P25 digital conventional, extended warranty, palm microphone and external cab

speaker; two (2) TK 5720 P25 Kenwood Control Stations w/50 watts of power, VHF operation, power supply and desk microphone; twelve (12) Pyramid SVR 200VBN Vehicular Repeaters w/ installation and maintenance, and reprogramming of eighteen (18) portables.

All Bids shall be received at the Lincoln Trail Area Development Office, 613 College Street Road, P.O. Box 604, Elizabethtown, KY 42702, until 2 p.m., local time on August 24, 2012, when Bids will be opened, and read aloud publicly. All Bids shall be placed in an opaque envelope. The envelope shall have the project name and number as stated above and be directed to Mr. Wendell C. Lawrence, Executive Director, along with Bidders name and address clearly labeled on it.

The Bidding Documents can be reviewed and examined at the office of Lincoln Trail ADD, 613 College St. Rd., Elizabethtown, KY., 42702, during normal business hours.

Bidding Documents may only be downloaded from the Lincoln Trail ADD website (<http://www.ltadd.org>). No fee is required to download bidding documents.

A pre-bid conference will not be held. No Bidder may withdraw a Bid within fifteen (15) days of the actual Bid opening, except as addressed in the Instructions to Bidders.

Lincoln Trail ADD reserves the right to waive any irregularities and informalities to reject any or all Bids and award the Contract in the best interests of the Sub-recipients.

Lincoln Trail ADD is an "Equal Opportunity Employer," and encourages Female and Minority owned Bidders to respond.

Section 0002
Instructions to Bidders

Article 1. Defined Terms

- 1.01 Terms in these instructions to Bidders have the meanings defined below:
- A. Issuing Office: The office from which the Bidding Documents are to be issued and where the Bidding procedures are to be administered.
 - B. Bidder: The individual or entity that submits a Bid directly to the Recipient.
 - C. Successful Bidder: the Bidder submitting a responsive Bid to whom the Recipient makes an award.

Article 2. Copies of Bidding Documents

- 2.01 Complete sets of Bidding Documents in the number and for the deposit sum, if any, stated in the Advertisement or Invitation to Bid may be obtained from the Issuing Office.
- 2.02 Complete sets of Bidding Documents Shall be used in preparing Bids; neither the Recipient or Sub-recipients assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.03 Recipient and Sub-recipients, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer license for any other use.

Article 3. Qualifications of Bidders

- 3.01 To demonstrate Bidder's qualifications to perform the Work, within five (5) days of Recipient's request, Bidder shall submit written evidence such as financial data, previous experience, present commitments, and such other information as deemed necessary to determine the ability of the Bidder to perform the Work. Each Bidder shall submit to Recipient a list of references with information for projects of similar scope and cost. The List of References is included with the Bid Form and shall be completely filled out and submitted with the Bid. The Recipient reserves the right to reject any Bid if the evidence submitted by, or investigation of, such Bidders fails to satisfy the Recipient that such Bidder is properly qualified to carry out the obligations of the agreement and complete the scope of Work as specified.
- 3.02 Bidder is advised to carefully review those portions of the Bid Form that require Bidder's representations and certifications.

Article 4. Examination of Bidding Documents, Other Related Data

4.01 Prior to submitting a Bid, it is the responsibility of the each Bidder to:

- A. Examine and carefully study the Bidding Documents, and other related Information contained in the Bidding Documents.
- B. Determine that enough information is contained in the Bidding Documents to convey understanding of all terms and conditions for the performance of the Work.

4.02 Submission of a Bid will constitute an incontrovertible representation by the Bidder that the Bidder has complied with every requirement of Article 4, and without exception, the Bid is premised upon performing the Work required by the Bidding Documents. The Bidder has given the Recipient written notice of all errors, conflicts, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents. Written resolutions of these issues, received from the Recipient and Sub-recipients, are acceptable to the Bidder. Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and finishing Work.

4.03 Laws and Regulations: The Bidder's attention is directed to the fact that all applicable State laws, municipal ordinances and the rules and regulations of all authorities having jurisdiction over this project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written in full.

4.04 Equal Employment Opportunity: Successful Bidder must certify it is an Equal Employment Opportunity employer and compliance with Segregated Facilities and Non-discrimination.

Article 5. Interpretations and Addenda

5.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to the Recipient in writing. Clarification of questions considered necessary by Recipient in response to questions will be issued by Addenda mailed or delivered to all parties recorded by the Recipient as having received the Bidding Documents. Questions received less than ten (10) days prior to the date for opening Bids may not be answered. Only questions answered by Addenda will be binding.

5.02 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable to the Recipient in conjunction with affected Sub-recipients.

Article 6. Substitute and "Or Equal" Items

6.01 The contract, if awarded, will be based on materials and equipment specified and described in the Bidding Documents. No substitutions or "equal" pieces of

equipment will be accepted unless approved by Sub-recipient in writing, as an Addenda.

Article 7. Preparation of Bid

7.01 The Bid Form is included with the Bidding Documents. Additional copies may be obtained for the Recipient's issuing office.

7.02 All Blanks on the Bid Form shall be completed in ink, and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink, by the person signing the Bid Form. A Bid price shall be indicated for each Bid item and unit price item listed therein.

7.03 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be shown.

7.04 A Bid by a partnership shall be executed in the partnership name and signed by a partner, whose title appears under the signature, accompanied by evidence of authority to sign. The official address of the partnership shall be shown.

7.05 A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and official address of the firm shall be shown.

7.06 A Bid by an individual shall show the Bidder's name and official address.

7.07 A Bid submitted by a joint venture shall be executed by each member of the joint venture, in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.

7.08 All names shall be printed in ink below the signatures.

7.09 The Bid shall contain an acknowledgment of receipt of all Addenda, if applicable. The numbers of the Addenda shall be filled in on the Bid Form.

7.10 Postal and e-mail addresses and telephone numbers for communications regarding the Bid shall be shown.

7.11 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where project is located.

Article 8. Basis of Bid; Comparison of Bid

8.01 Unit Price

A. Bidders shall submit a Bid on a unit price Basis for each item of equipment listed in the Bid Schedule.

B. The total of all prices will be the sum of the products as determined by the quantity of each item and the corresponding unit price.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of unit prices. Discrepancies between the indicated sum of any column of figures and correct sum thereof will be resolved in favor of the correct sum.

Article 9. Submittal of Bid

9.01 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the advertisement or invitation to Bid and shall be enclosed in a plainly marked package with the Project title, the name and address of Bidder, and shall be accompanied by the other required documents. If a Bid is sent by mail or other delivery system, the sealed envelop containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be sent to the Recipient at the address set forth in the Advertisement for Bids.

Article 10. Modification and Withdrawal of Bid

10.01 A Bid may be modified or withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids.

10.02 If within 24 hours after Bids are opened, any Bidder files a duly signed written notice with Recipient and promptly thereafter demonstrates to the satisfaction of the Recipient that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid. Thereafter, if the Work is rebid, that Bidder will be disqualified from Further Bidding on the Work.

Article 11. Opening of Bids

11.01 Bids will be opened at the time and place indicated in the Advertisement for Bids and read aloud publicly.

Article 12. Bids to Remain Subject to Acceptance

12.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but the Recipient may, in its sole discretion, release any Bid prior to the end of this period.

Article 13. Evaluation of Bids and Award of Contract

13.01 Recipient reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Recipient also reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsive. Recipient may also reject the Bid of any Bidder if the Recipient believes that it would not be in the best interest of the Project to make an award to that Bidder. Recipient also reserves the right to waive all informalities not involving price, time, or changes in the scope of work and to negotiate contract terms with the Successful Bidder.

13.02 More than one bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

13.03 In evaluating the Bids, the recipient will consider whether the Bids comply with the prescribed requirements as well as the qualifications of the Bidder to complete the Work.

13.04 Recipient may conduct any investigation that the Recipient deems necessary to establish qualifications of the Bidder to accomplish the Work.

13.05 If the contract is to be awarded, Recipient will award the Contract to the Bidder whose Bid is in the best interest of the Project.

**SECTION 003
BID FORM**

Article 1. BID RECIPIENT

- 1.01 Proposal of _____ herein called
"Bidder."
- 1.02 This Bid is for: 2011 Kentucky Office of Homeland Security Grant
Award for Regional Radios and Breckinridge County Vehicular Repeaters.
- 1.03 Project Numbers: Lincoln Trail ADD 11-106 Regional Radios
Lincoln Trail ADD 11-110 Vehicular Repeaters
- 1.04 This Bid is submitted to : Lincoln Trail Area Development District
hereinafter called "Recipient."
- 1.05 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter
into an Agreement with Recipient to perform all Work as specified or
indicated in the Bidding Documents for the prices and within the times
indicated in this Bid and in accordance with the other terms of the Bidding
Document.

Article 2. BIDDER'S ACKNOWLEDGEMENTS

- 2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders.
This Bid will remain subject to acceptance for 60 days after the Bid opening, or for
such longer period of time that Bidder may agree to in writing upon request of
Recipient.

Article 3. BIDDER'S REPRESENTATIONS

- 3.01 In submitting this Bid, Bidder represents that:
- A. Bidder has examined and carefully studied the Bidding Documents, and
other related data identified in the Bidding Documents.
 - B. Bidder has studied the equipment list and enclosed specification sheets
and is familiar with and is satisfied as to the general conditions that may
affect cost, progress and performance of the Work.
 - D. Bidder is familiar with and is satisfied as to all Laws and Regulations that
may affect cost, progress and performance of the Work.
 - E. The Bidding Documents are generally sufficient to indicate and convey
understanding of all terms and conditions for the performance of the Work
for which this Bid is submitted.

Article 4. BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
- C. Bidder has not solicited or induced any individual or entity from Bidding.
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this paragraph 4.01.D:
 - 1. "Corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;
 - 2. "Fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the Bidding process to the detriment of Recipient, (b) to establish Bid prices at artificial non-competitive levels, or (c) to deprive Recipient of the benefits of free and open competition.
 - 3. "Collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of the Recipient, a purpose of which is to establish Bid prices at artificial, non-competitive levels.
 - 4. "Coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the Bidding process or affect the execution of the Contract.

Article 5. BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s).

BASE BID

Item Number	Description	Unit	Required Quantity	Bid Unit Price	Extended Price (quantity X unit Price)
2011 KOHS Regional Radios and Vehicular Repeaters					
1	Kenwood TK-2170 Portable Radio *	each	Two (2)		
2	Kenwood TK-2312 Portable Radio*	each	Twenty-six (26)		
3	Kenwood TK-5220 Portable Radio*	each	Nineteen (19)		
4	Kenwood TK-5710 Dual Head Mobile Radio*	each	Four (4)		
5	Kenwood TK-5720 Mobile Radio*	each	Thirty-four (34)		
6	Motorola XTL 2500 Mobile Radio*	each	Two (2)		
7	Kenwood TK-5720 P-25 Control Station w/control station desk microphone and power source*	each	Two (2)		
8	Pyramid SVR 200VBN Vehicular Repeater*	each	Twelve (12)		
* Installation and auxiliary parts/services as noted in Equipment Specifications					
Total Dollars =					

NOTE: Where installation and/or programming is part of the scope of Work, successful Bidder will provide voucher for such services at a time and place convenient to appropriate Sub-recipient.

DELIVERY: Delivery Date of Equipment shall be not more than 4 (four) weeks from the time of purchase by Lincoln Trail ADD.

Time to Deliver Equipment Once Notified _____ weeks.

Article 6. BID SUBMITTAL

Corporation/Business Name:_____

State of Incorporation or Business Headquarters:_____

By:_____

(Signature—attach evidence of authority to sign)

Name (typed or printed):_____

Title:_____

Attest:_____

Bidders Business Address:_____

Phone No._____ FAX No._____

E-mail:_____

Submitted on_____, 2012

Federal License No._____

Notes:

1. For partnerships, signature must be made by one of the general partners.
2. For joint venture project, a representative signature from each joint venture company must be provided. Attach appropriate signature pages as necessary.
3. The corporate or company seal shall be affixed over the signature for the incorporated businesses.

SPECIFICATIONS

Radio Equipment
Portable and Mobile
Control Stations

Vehicular Repeater Equipment

Equipment List

Project Description:

Lincoln Trail Area Development District (LTADD) is Looking to purchase two (2) TK-2170 Kenwood Portable Radios w/ NiCad Battery; twenty-six (26) TK-2312 Kenwood Portable Radios w/128 channel VHF, standard battery Li-ion, rapid 8/character display charger, standard VHF antenna, belt clip and 2-yr. manufacturer's warranty; nineteen (19) TK-5220 Kenwood P25 Portable Radios w/VHF operation, 50 watts of power, VHF ¼ wave antenna, full featured control head, military spec noise canceling microphone, alpha numeric display, 50 zones/512 channel capable, front panel programmable buttons, 136-174 MHz capable, analog & digital capable, complete installation and 3-yr. warranty; four (4) TK-5710 Kenwood Dual Head Mobile Radios w/VHF operation, 100 watts of power, VHF ¼ wave antenna, full featured control heads, military spec noise canceling microphone, alpha numeric display, 50 zones/512 channel capable, front panel programmable buttons, 5 watt cab speaker, channel voice guide, 136-174 MHz capable, full P25 capable, dual priority scan, FleetSync & MDC 1200 signaling, analog & digital capable, complete installation and 3-yr. warranty; thirty-four (34) TK-5720 P25 Kenwood Mobile Radios w/ 50 watts of power, VHF operation, VHF ¼ wave antenna, full featured control Head, military spec noise canceling microphone, alpha numeric display, 50 zones/512 channel capable, front panel programmable buttons, 136-174 MHz capable, full P25 capable, dual priority scan, FleetSync signaling capable, analog & digital capable, complete installation and 3-yr. warranty; two (2) Motorola XTL 2500 Mobile Radios w/remote mount, 50 watts of power, alphanumeric display, P25 digital conventional, extended warranty, palm microphone and external cab speaker; two (2) TK 5720 P25 Kenwood Control Stations w/50 watts of power, VHF operation, power supply and desk microphone; twelve (12) Pyramid SVR 200VBN Vehicular Repeaters w/ installation and maintenance, and reprogramming of portables.

KENWOOD

Listen to the Future

NEW PRODUCT • NEW PRODUCT • NEW PRODUCT • NEW PRODUCT • NEW PRODUCT • NEW PRODUCT • NEW PRODUCT • NEW PRODUCT • NEW PRODUCT • NEW PRODUCT • NEW PRODUCT



TK-5720/5820

VHF/UHF & P25 Digital Mobile Radio



FleetSync
KENWOOD

GENERAL FEATURES

- 50W (136-174 MHz)
- 45W (400-470, 450-520MHz)
- 128 Zones / 512 Channels
- Enhanced Kenwood Audio
- Emergency Features
- Public Address (KAP-2 Required)
- Time Out Timer
- Busy Channel Lockout
- Ignition Sense
- Timed Power Off
- DB-25 & 9-Pin Accessory Connectors
- 9 Programmable AUX I/Os
- 2 Programmable AUX Outputs
- Transceiver Password
- Date & 12/24 Hour Time Clock
- Windows® Programming & Tuning
- Windows® Firmware Uploading
- Easy Option Ports (26-pin)
- Voice Guide & Storage (option)
- MIL-STD 810 C/D/E/F, IP-54
- MIL-STD Mic (included)
- MIL-STD 12-Key DTMF Mic Option

FRONT PANELS/CONTROL HEADS

- Dash & Remote Mount
- 14 Character Alphanumeric Aliases
- Backlit Dot Matrix LCD
- 3-Digit Sub-Display
- Function/Status LCD Icons
- RSSI Indicator
- Transmit/Busy/Call Alert/Warn LED
- On/Off Power Control
- 4 Up/Down Selectors
- 6 Front PF Keys
- Emergency/AUX Key
- 4W Speaker Audio

SCAN TYPES (FM & P25)

- Single Zone/Multi-Zone Scan
- Scan Lists¹
- Conventional Scan
- Limited Talk Group Scan¹
- Priority Monitor Scan¹
- Dual Priority Scan

FM

- QT / DQT
- Operator Selectable Tone
- Two-Tone Decode / Encode
- DTMF Encode / Decode / Stun
- Special Alert Tone Patterns
- Encryption / ANI Board Control
- Companded Audio

FleetSync® / II (FM)

- PTT ID Digital ANI
- Caller ID Display
- Status Messaging
- Emergency & Stun Statuses
- Selective & Group Call
- Text Messaging
- Send/Display GPS

MDC-1200

- PTT ID Digital ANI
- Caller ID Display
- Emergency Status
- Radio Check
- Radio Inhibit















P25 DIGITAL

- P25 Digital Conventional
- AMBE+2™ Enhanced VOCODER
- Talk Group ID Lists
- Individual ID Lists
- Caller ID Display
- Remote Monitor / Check, Radio Inhibit
- Encryption Key Zeroize and Retention
- DES Encryption Module
- AES & DES Encryption Module
- KPG-115 KVL Key Loader Interface Cable
- P25 Digital Trunking Option*
- P25 GPS Location*

*Future availability



Options

<p>■ KMC-35 Microphone</p> 	<p>■ VGS-1 Voice Guide & Storage Unit</p> 	<p>■ KAP-2 Horn Alert/PA Relay Unit</p> 	<p>■ KCT-46 Ignition Sense Cable</p> 
<p>■ KMC-36 Microphone with Keypad</p> 	<p>■ KRK-10 Panel Remote Kit</p> 	<p>■ KCT-23M DC Cable (10 feet)</p> 	<p>■ KLF-2 Line Noise Filter</p> 
<p>■ KMC-9C Control Station Desktop Microphone</p> 	<p>■ KPS-15 DC Power Supply</p> 	<p>■ KCT-23M3 DC Cable (23 feet)</p> 	<p>■ KMB-10 Lock Key Adapter</p> 
<p>■ KES-5 External Speaker</p> 			<p>■ KPG-115 Keyloader Interface Cable</p> 

All accessories and options may not be available in all markets. Contact an authorized Kenwood dealer for details and complete list of all accessories and options.

Specifications

Model	TK-5720	TK-5820
GENERAL		
Frequency Range		
Type 1	136-174 MHz	450-520 MHz
Type 2		400-470 MHz
Number of Channels		512
Zones	128	
Max. Channels per Zone	250	
Channel Spacing		
Analog	12.5 / 15 / 25 / 30 kHz	12.5 / 25 KHz
Digital	12.5 kHz	12.5 kHz
Operating Voltage	13.6 V DC ± 20 %	
Operating Temperature Range	-22° F to +140° F (-30° C to +60° C)	
Frequency Stability	± 2.0 ppm	± 1.0 ppm
Antenna Impedance	50 Ω	
Dimensions (W x H x D) (projections not included)	6.30 x 1.77 x 6.18 in. (160 x 45 x 157 mm.)	
Weight (net)	3.04 lbs (1.38 kg)	
FCC ID		
Type 1	K44378601	K44378702
Type 2		K44378703
IC Certification		
Type 1	282F-378601	282F-378702
Type 2		282F-378703

Model	TK-5720	TK-5820
RECEIVER		
Sensitivity		
Digital (5 % BER)		0.25 μV
Digital (1 % BER)		0.40 μV
Analog 12 dB SINAD		0.25 μV
Selectivity		
Digital		-60 dB
Analog @ 25kHz		-80 dB
Analog @ 12.5 kHz		-70 dB
Intermodulation Distortion		
Digital		-73 dB
Analog		-75 dB
Spurious & Image	-90 dB	-85 dB
Audio Distortion	Less than 3.0 %	
Audio Output	4 W / 4 Ω	
TRANSMITTER		
RF Power Output	50 W to 10 W	45 W to 10 W*
Spurious & Harmonics	73 dB	75 dB
FM Hum & Noise		
Analog @ 25 kHz		50 dB
Analog @ 12.5 kHz		45 dB
Audio Distortion	Less than 3 %	
Modulation	11K0F3E, 16K0F3E, 8K10F1E, 8K10F1D	

FleetSync™ is a registered trademark of Kenwood Corporation.
Windows® is a registered trademark of Microsoft Corporation in the United States and other countries.
AMBE+2™ is a trademark of Digital Voice Systems Inc.
The P25 Logo is used under license and is a registered trademark of the Project 25 Technology Interest Group.
KPG-115 adapts the Motorola, KVL3000/3000 Plus Key Loader to the TK-5720/5820.

Kenwood follows a policy of continuous advancement in development. For this reason specifications may be changed without notice.

Analog measurements made per TIA/EIA 603
Digital measurements made per TIA/EIA 102CAAA

* Type 1: 45W to 10W for 450-490MHz.
40W to 10W for 490-512MHz.
35W to 10W for 512-520MHz.
Type 2: 45W to 10W for 400-470MHz.

Applicable MIL-STD & IP

Standard	MIL 810C Methods/Procedures	MIL 810D Methods/Procedures	MIL 810E Methods/Procedures	MIL 810F Methods/Procedures
Low Pressure	500 1/Procedure I	500 2/Procedure I, II	500 3/Procedure I, II	500 4/Procedure I, II
High Temperature	501 1/Procedure I, II	501 2/Procedure I, II	501 3/Procedure I, II	501 4/Procedure I, II
Low Temperature	502 1/Procedure I	502 2/Procedure I, II	502 3/Procedure I, II	502 4/Procedure I, II
Temperature Shock	503 1/Procedure I	503 2/Procedure I	503 3/Procedure I	503 4/Procedure I, II
Solar Radiation	505 1/Procedure I	505 2/Procedure I	505 3/Procedure I	505 4/Procedure I
Rain	506 1/Procedure I, II	506 2/Procedure I, II	506 3/Procedure I, II	506 4/Procedure I, III
Humidity	507 1/Procedure I, II	507 2/Procedure II, III	507 3/Procedure II, III	507 4
Salt Fog	509 1/Procedure I	509 2/Procedure I	509 3/Procedure I	509 4
Dust	510 1/Procedure I	510 2/Procedure I	510 3/Procedure I	510 4/Procedure I, III
Vibration	514 2/Procedure VIII, X	514 3/Procedure I	514 4/Procedure I	514 5/Procedure I
Shock	516 2/Procedure I, II, III, V	516 3/Procedure I, IV, V	516 4/Procedure I, IV, V	516 5/Procedure I, IV, V
International Protection Standard				
Dust & Water Protection	IP54: Radio Itself IP54/55: Remote Head with KRK-10			

footnotes from front

1 Scan Lists currently available in analog mode. Scan Lists (P25), Limited Talk Group Scan and Priority Monitor Scan available in a future P25 trunked option release.

KENWOOD

Kenwood U.S.A. Corporation
Communications Sector Headquarters
3970 Johns Creek Court, Suite 100, Suwanee, GA 30024-1265
Order Administration/Distribution
P.O. BOX 22745, 2201 East Dominguez St., Long Beach, CA 90801-5745

Kenwood Electronics Canada Inc.
Canadian Headquarters and Distribution
6070 Kestrel Road, Mississauga, Ontario, Canada L5T 1S8


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TK-5720/5820

VHF/UHF Analog & P25 Digital, Public Safety, Mobile Two-Way Radios

[General Features](#) [Downloads](#)

Kenwood's new VHF and UHF P25 Portable Radios feature a compact, rugged design rich with capability and performance. The new TK-5220/5320 portables join Kenwood's higher tier P25 radio models to offer an expanded group of P25 solutions for all levels of public safety and service agencies. These new mid-tier P25 models operate in FM Analog and P25 Digital modes and combine AMBE + 2 Enhanced Full Rate Vocoder technology along with Kenwood's decades of audio heritage to deliver unmatched audio performance in a two-way radio.

General Features

- 50W VHF & 45W UHF Compact Low Profile
- 128 Zones/512 Channels
- Analog Conventional (included)
- Analog FleetSync®/II or MDC-1200 ANI (one format per radio)
- P25 Phase I Conventional (included)
- P25 Phase I Trunking Option (Est. 2Q 2010)
- Dash or remote mount configurations
- 14-character alphanumeric backlit LCD
- programmable function/menu keys
- Internal Speaker / External Speaker options
- P25 AMBE+2 Enhanced Full Rate VOCODER
- P25 DES & AES/DES Encryption Modules (same as TK-5x10 Series)
- P25 Conventional OTAR Option (Est. 3Q 2010)
- P25 Trunking/OTAR Option (Est. 4Q 2010)
- Factory Mutula Intrinsically Safe Options

Note: Kenwood USA Corporation is committed to a policy of constant improvements in features, quality and performance. To accommodate these improvements, all technical information and specifications are subject to change without notice.

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- Portables
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TK-5710/5810

VHF FM Conventional & P25 Digital Mobile (shown w/ Remote Control Head)

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The TK-5710/5810 premium high specification heavy-duty offers conventional FM and conventional P25 digital operation for present and future interoperability requirements for law enforcement, fire and emergency services. Built on Kenwood's advanced 90-Series design, the TK-5710/5810 is available in dash mount, single head and dual head remote mount control with choice of 12 or 14-character high resolution backlit dot matrix LCD. The controls and customizable PF keys provide an intuitive user interface simplifying P25 and FM operation for all user types. The P25 trunked option permits operation on local, regional and statewide Project 25 compliant networked systems. The extra large capacity and Zone programming facilitate departmental, inter-agency interoperability, mutual aid and tactical channel organization. Encryption /ANI control permits basic to high level voice security and dispatch functions satisfying homeland security and confidentiality requirements. Standardized DES-OFB and AES encryption options permits advanced secure interoperable voice communications. The DB-25 and 15-pin accessory connectors permit interface with data modems, headset/intercom systems, police motorcycle headset/PTT systems for vehicular installations or remote control termination panels for base/control station fixed installations.

General Features

- 50W & 110W (136 - 174 MHz)
- 45W (450 - 520, 400 - 470 MHz)
- 50 Zones / 512 Channels
- Conventional FM & P25
- P25 Digital Trunking (Optional)
- Personality Lists
- Zone/CH Voice Announce
- Emergency Feature Set
- Single Zone/Multi-Zone Scan
- Dual Priority Scan
- Easy Option Ports (26-pin)
- DES 16-Key SCM Option
- AES/DES 16 Key Encryption Options
- Tactical Group
- VGS-1 Voice Guide Storage Capable
- Fleetsync® or FleetSync® II

Other Features

- MIL-STD 810 512.X Driven Rain
- MIL-STD C/D/E/F , IP-54
- Windows Programming & Tuning

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TK-5220/5320

VHF/UHF P25 Portable Two-Way Radios

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Kenwood's new VHF and UHF P25 Portable Radios feature a compact, rugged design rich with capability and performance. The new TK-5220/5320 portables join Kenwood's higher tier P25 radio models to offer an expanded group of P25 solutions for all levels of public safety and service agencies. These new mid-tier P25 models operate in FM Analog and P25 Digital modes and combine AMBE + 2 Enhanced Full Rate Vocoder technology along with Kenwood's decades of audio heritage to deliver unmatched audio performance in a two-way radio.

General Features

- 5 Watts (136-174 MHz)
- 5 Watts (400-470, 450-520 MHz)
- 128 Zones / 512 Channels
- Analog FleetSync/II or MDC-1200 (one format per radio)
- 14 Character Alphanumeric lighted dot matrix LCD
- 16-Position Selector Knob with detent feel & mechanical stop
- 8 Programmable Function/LCD menu keys
- RSSI Indicator
- Transmit/Busy/Call Alert/Warn LED
- 3-Digit Sub-Display*
- 12-Keypad Models
- VOX Ready
- Emergency Features
- Transceiver Password
- Easy Option Port
- Voice Guide & Storage (Option)
- MIL-STD 810 C/D/E/F
- IP 54/55 Water & Dust Intrusion
- Intrinsically Safe Option
- Single Zone/Multi-Zone Scan
- Dual Priority Scan

(FM)

- QT/DQT
- Two-Tone Decode/Encode
- DTMF Encode/Decode/Stun
- Companded Audio

FleetSync / II (FM)

- PTT ID Digital ANI
- Status Messaging
- Caller ID Display
- Send/Display GPS (KPG-38GPS)
- Selective & Group Call
- Emergency & Stun Statuses

MDC-1200

- PTT ID Digital ANI
- Caller ID Display
- Emergency Status
- Radio Check
- Radio Inhibit

P25 Digital

- P25 Digital Conventional
- AMBE+2 Enhanced Vocoder
- Talk Group ID Lists
- Individual ID Lists
- Caller ID Display
- Encryption Key Zeroize and Retention

- DES Encryption Module
- AES & DES Encryption Module

Future Availability

- P25 Digital Trunking Option
- P25 GPS Location

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TK-2312/3312

Compact VHF/UHF FM Portable Two-Way Radios

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TK-2170/3170

VHF/UHF Compact Portables

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Kenwood's compact mid-tier display portable line offers enhanced features for the budget conscious volunteer public safety, public service, government, industrial and SMR system user segments. Large capacity and Zone programming facilitate departmental, interoperability, mutual aid, tactical, regional and workgroup channel organization. Inversion scrambling provides first level voice security and Encryption/ANI control adds system-compliant higher level voice security and dispatch functions. Full FleetSync includes PTT ID, Caller ID and non-voice status and text messaging storage, recall and display. FleetSync, DTMF or Two-Tone Selective Call provides built-in talkback paging capability.

General Features

- 5 W (136 - 174 MHz)
- 4 W (450 - 490, 400 - 430 MHz)
- Conventional Zones
- 128 Channels / 128 Zones
- Single Priority Scan
- 8 Character Alphanumeric LCD
- VOX Ready
- DTMF & Two-Tone Decode/Encode
- FleetSync®
- MIL STD C/D/E/F (incl'd Driven Rain)
- IP54/55 Water & Dust Intrusion
- Intrinsically Safe Option
- Voice Inversion Scrambling
- Encryption / ANI Control
- Emergency Call; Emergency Man Down

Other Features

- MIL-STD 810 C/D/E/F
- MIL-STD "Driven Rain"
- IP54/55 Water & Dust Intrusion
- Field Programming & Tuning
- English/Spanish Program Screen Language
- Windows Programming & Tuning/Firmware Uploading
- PF Keys
- Emergency Call Features
- Emergency Man Down Option
- DTMF Auto-Dial (16 Numbers)

Note: Kenwood USA Corporation is committed to a policy of constant improvements in features, quality and performance. To accommodate these improvements, all technical information and specifications are subject to change without notice.

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ASTRO[®] XTL[™] 2500

Digital Mobile Radio

MODEL FEATURES

Frequency Bands

- 136-174 MHz
- 380-470 MHz
- 450-520 MHz
- 764-870 MHz

Power Levels

- 10-50 Watt (136-174 MHz)
- 10-40 Watt (380-470 MHz)
- 10-45 Watt (450-520 MHz)
- 10-35 Watt (764-870 MHz)
- 25-110 Watt (136-174 MHz)
- 25-110 Watt (380-470 MHz)

512 Channels (Standard)

Dual mode operation (ASTRO Digital and Analog)

9600 and 3600 Baud capable

Project 25 capability on Conventional and Trunking systems

Type II Trunking Only

Project 25 compliance interoperable voice signaling features

Integrated voice and data capable

Bandwidth Receiver

- 12.5/25/30 kHz (analog) – 136-174 MHz
- 12.5/25 kHz (analog) – 380-470 MHz and 450-520 MHz
- 12.5/20/25 kHz (analog) – 764-870 MHz

12.5 kHz bandwidth receiver (digital)

5 Programmable buttons x 4 deep in menu functions

14 digit character display

Tri-color Backlit LCD display

Emergency button

Multi level display dim button

Dash/Remote mount

Meets Military Specs 810 (C,D, E and F)



Utilizes Windows[®]-based customer software programming

Built in FLASHport[™] support

Optional Keypad microphone

External Speaker

USB/RS232 connectivity

Optional Siren PA

Optional DEK

Upgradable

Encryption Capable:

- Type III (optional)
- Allows for MultiKey for single algorithms ONLY
- Algorithms supported:
 - DVI-XL
 - DVP-XL
 - DES
 - DES-XL
 - DES-OFB
 - AES
 - Advanced Digital Privacy (ADP)

Dual Control Head

OTAP (Over-the-air programming)

Tactical OTAR (Over-the-air re-keying)

Text Messaging

Motorola's XTL 2500 Project 25 compliant mobile radio is tough and well suited for users in Police, Fire, EMS, State/Local/Federal Government agencies. Taking into consideration your work environment and various job responsibilities, this robust mobile radio will support the type of consistent, high quality communication you need. The XTL 2500 digital mobile radio supports APCO Project 25 and is available in 136-174 MHz,

380-470MHz, 450-520 MHz 764-870 MHz frequency bands and supports the accessories common to the XTL 5000 mobile radio.

The XTL 2500 digital mobile radio is specifically designed to meet the needs of your organization. When you want high performance, quality, and reliability in your daily communications, the XTL 2500 digital mobile radio is the radio of choice.

SPECIFICATION SHEET

ASTRO® XTL™ 2500
Digital Mobile Radio

RECEIVER – TYPICAL PERFORMANCE SPECIFICATIONS

Frequency	764-776 MHz 794-806 MHz 806-825 MHz 851-870 MHz	380-470 MHz (Range 1) and 450-520 MHz (Range 2)	136-174 MHz			
Channel Spacing	12.5 / 20 / 25 kHz	12.5 / 25 kHz	12.5 / 25 / 30 kHz			
Maximum Frequency Separation	Full Bandsplit	Full Bandsplit	Full Bandsplit			
Analog Sensitivity		Pre-amp	Standard	Pre-Amp	Standard	
20 dB Quieting	.30 µV	0.25 µV	0.40 µV	0.25 µV	0.40 µV	
12 dB SINAD per EIA	.25 µV	0.20 µV	0.30 µV	0.20 µV	0.30 µV	
Digital Sensitivity						
1% BER (12.5 kHz channel)	.30 µV	0.25 µV	0.40 µV	0.25 µV	0.40 µV	
5% BER (12.5 kHz channel)	.25 µV	0.20 µV	0.30 µV	0.20 µV	0.30 µV	
Intermodulation Distortion	80 dB	80 dB	85 dB	80 dB	85 dB	
Spurious Response Rejection	90 dB	90 dB	90 dB	90 dB	90 dB	
Audio Output Power at 3% distortion (External/Internal Speaker)	7.5 W (8 Ω ext. speaker) 13 W (3.2 Ω ext. speaker)	7.5 W (8 Ω ext. speaker) 13 W (3.2 Ω ext. speaker)	7.5 W (8 Ω ext. speaker) 13 W (3.2 Ω ext. speaker)			
Adjacent Channel Rejection Selectivity (12.5 kHz/25 kHz)	65 dB / 80 dB	75 dB / 82 dB	70 dB / 90 dB			
Audio Response (6 dB/Octave De-emphasis from 300 to 3000 Hz)	+1, -3 dB (EIA)	+1, -3 dB (EIA)	+1, -3 dB (EIA)			

MILITARY STANDARDS 810 C, D, E, & F

	MIL-STD 810C		MIL-STD 810D		MIL-STD 810E		MIL-STD 810F	
	Method	Proc./Cat.	Method	Proc./Cat.	Method	Proc./Cat.	Method	Proc./Cat.
Low Pressure	500.1	I	500.2	II	500.3	II	500.4	II
High Temperature Storage	501.1	I	501.2	I/A1	501.3	I/A1	501.4	I/Hot
High Temperature Operational	501.1	II	501.2	II/A1	501.3	II/A1	501.4	I/Hot
Low Temperature Storage	502.1	I	502.2	I/C3	502.3	I/C3	502.4	I/C3
Low Temperature Operational	502.1	I	502.2	II/C1	502.3	II/C1	502.4	II/C1
Temperature Shock	503.1	-	503.2	I/A1-C3	503.3	I/A1-C3	503.4	I/Hot-C3
Solar Radiation	505.1	II	505.2	I	505.3	I	505.4	I
Rain Blowing	506.1	I	506.2	I	506.3	I	506.4	I
Rain Steady	506.1	II	506.2	II	506.3	II	506.4	III
Humidity	507.1	II	507.2	II	507.3	II	507.4	-
Salt Fog	509.1	-	509.2	-	509.3	-	509.4	-
Blowing Dust	510.1	I	510.2	I	510.3	I	510.4	I
Blowing Sand			510.2	II	510.3	II	510.4	II
Vibration Minimum Integrity	514.2	VIII/F Curve-W	514.3	I/10	514.4	I/10	514.5	I/24
Vibration Loose Cargo			514.3	II/3	514.4	II/3	514.5	II/5
Shock Functional	516.2	I	516.3	I	516.4	I	516.5	I
Shock Crash Hazard	516.2	III	516.3	V	516.4	V	516.5	V
Shock Bench Handling	516.2	V	516.3	VI	516.4	VI	516.5	VI



Motorola, Inc. 1301 E. Algonquin Road, Schaumburg, Illinois 60196 U.S.A. www.motorola.com/governmentandenterprise 1-800-367-2346

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SPECIFICATION SHEET

ASTRO® XTL™ 2500
Digital Mobile Radio

GENERAL PERFORMANCE SPECIFICATIONS

Frequency range	136-174 MHz 380-470 MHz 450-520 MHz 764-870 MHz
Modulation	C4FM of QPSK-C family (Compatible 4-Level Frequency Modulation and Compatible Quadrature Phase Shift Keying)
Protocol	Project 25-CAI 4.4 kbps IMBE, 2.8 kbps Error Correction Coding, 2.4 kbps Embedded Signaling
Channel Bandwidth	Analog 12.5/25/30 kHz (136-174 MHz) 12.5/25 kHz (380-470 MHz and 450-520 MHz); 12.5/20/25 kHz (764-870 MHz)
Digital	12.5 kHz

VOICE CODER

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

SIGNALLING (ASTRO MODE)

Signalling Rate	9.6 kbps
Digital ID Capacity	10,000,000 Conventional / 48,000 Trunking
Digital Network Access Codes	4,096 network site addresses
ASTRO Digital User Group Addresses	4,096 network site addresses
Project 25 - CAI Digital User Group Addresses	65,000 Conventional / 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

SPEAKER

Dimensions	5.5" x 5.5" x 2.5" (139.7 x 139.7 x 63.5 mm) (Excluding mounting bracket)
Weight	1.5 lbs (0.68 kg)

MOBILE

Dimensions	Mid Power Radio Transceiver 2" x 7" x 7.8" (50.8 x 177.8 x 198.1 mm) Control Head 2.35" x 7.1" x 2.5" (59.7 x 180.3 x 63.5 mm) Mid Power Radio Transceiver and Control Head-Dash Mount 2.35" x 7.1" x 9.1" (59.7 x 180.3 x 231.1 mm) High Power Transceiver 2.765" x 8.08" x 12.31" (70.2 x 205.2 x 312.7 mm)
Weight	Mid Power Radio Transceiver and Control Head 6.1 lbs (2.77 kg) (764-870 MHz and 136-174 MHz) 6.1 lbs (2.77 kg) (380-470 MHz and 450-520 MHz) High Power Radio Transceiver with Handle 8.8 lbs (3.99 kg) (136-174 MHz and 380-470 MHz)

SPECIFICATION SHEET

ASTRO® XTL™ 2500
Digital Mobile Radio

TRANSMITTER – TYPICAL PERFORMANCE SPECIFICATIONS

Frequency	764-776 MHz 794-806 MHz 806-825 MHz 851-870 MHz	380-470 MHz (Range 1) and 450-520 MHz (Range 2)	136-174 MHz
RF Power	10-30W (764-806 MHz) 10-35W (806-870 MHz)	10-45W (450-500 MHz) 10-40W (500-512 MHz) 10-25W (512-520 MHz)	10-50W or 25-110W
Max Freq Separation	Full Bandsplit	Ref Above Bandsplit	Full Bandsplit
Freq Stability Operating Freq Accuracy (-30°C to +60°C; +25°C Ref) - 700/800 & UHF (± 2 ppm (-30°C to +60°C) - VHF	1.5 ppm	2 ppm	2 ppm
Modulation Limiting 25/20 kHz, 25 kHz, 25/30 kHz channel 12.5 kHz channel	±5 kHz, +/-4 kHz (NPSPEC) ±2.5 kHz	±5 kHz ±2.5 kHz	±5 kHz ±2.5 kHz
Modulation Fidelity (C4FM) 12.5 kHz digital channel	±2.8 kHz	±2.8 kHz	±2.8 kHz
Channel Spacing Analog	12.5/20/25 kHz	12.5/25 kHz	12.5/25/30 kHz
FM Hum and Noise 20/25 kHz, 25 kHz, 20/25 kHz 12.5 kHz	40 dB 34 dB	45 dB 40 dB	50 dB 40 dB
Emissions (GNSS=Global Navigation Satellite System)	Conducted -85 dBc (GNSS)	Radiated -40 dBm (GNSS)	Conducted Radiated -85 dBc -20 dBm
Audio Response (6 dB/Octave Pre-emphasis from 300 to 3000 Hz)	+1, -3 dB (EIA)	+1, -3 dB (EIA)	+1, -3 dB (EIA)
Audio Distortion per EIA	2%	2%	2%

POWER AND BATTERY DRAIN

Model Type	136-174 MHz 380-470 MHz 450-520 MHz 764-870 MHz
Minimum RF Power Output	10-50 Watt (136-174 MHz) 10-40 Watt (380-470 MHz) 10-45 Watt (450-520 MHz) 10-35 Watt (764-870 MHz) 25-110 Watt (136-174 MHz) 25-110 Watt (380-470 MHz)
Operation	12V DC Negative Ground
Standby at 13.8V	136-174 MHz (10-50 Watt) 0.85A 380-470 MHz (10-40 Watt) 0.85A 450-520 MHz (10-45 Watt) 0.85A 764-870 MHz (10-35 Watt) 0.85A 136-174 MHz (25-110 Watt) 0.85A 380-470 MHz (25-110 Watt) 0.85A
Receive at Rate Audio at 13.8V	136-174 MHz (10-50 Watt) 3.2A 380-470 MHz (10-40 Watt) 3.2A 450-520 MHz (10-45 Watt) 3.2A 764-870 MHz (10-35 Watt) 3.2A 136-174 MHz (25-110 Watt) 3.2A 380-470 MHz (25-110 Watt) 3.2A
Transmit Current (A) at Rated Power (W)	136-174 MHz (10-50 Watt) 13A (50W) 380-470 MHz (10-40 Watt) 11A (40W) 450-520 MHz (10-45 Watt) 11A (45W) 764-870 MHz (10-35 Watt) 12A (35W) 136-174 MHz (25-110 Watt) 20A (100W) 380-470 MHz (25-110 Watt) 24A (100W)

FCC TYPE ACCEPTANCE ID

Band	Output Power	Transmitter Number
136-174 MHz	10-50 W	AZ492FT3806
380-470MHz	10-40 W	AZ492FT4862
450-520 MHz	10-45 W	AZ492FT4867
764-870 MHz	10-35 W	AZ492FT5823
136-174 MHz	25-110 W	AZ492FT3808
380-470 MHz	25-110 W	AZ492FT4870

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-30°C / +60°C
Storage Temperature	-55°C / +85°C
Ingress Protection	IP54 certified

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Kenwood Mobile Radios

Kenwood NX-700 / NX-800
NEXEDGE VHF Digital & FM Mobile Radio

Kenwood is pleased to introduce NEXEDGE™ conventional and trunking technology featuring 6.25 kHz digital narrowband operation. NEXEDGE™ was designed to provide advanced communication solutions that meet the needs of private enterprise and public sectors today and in the future. NEXEDGE™ includes features such as FM Analog @ 25 and 12.5 kHz channels, NXDN™ digital @ 12.5 and 6.25 kHz channels, compliance with current frequency assignments, and NEXEDGE™ will easily convert to very narrow bandwidths in the future.

» [View Kenwood NX-700 / NX-800 Information](#)



Request A Quote

Speak to a Consultant

To request a free consultation by phone, call **800.617.2355**

Consultants are available Mon-Fri 8:00 AM - 5:00 PM PST

[Maps / Directions](#)

Kenwood TK-690 / TK-790 / TK-890

VHF/UHF Public Safety Mobile Radios

The 90-Series premium high specification heavy-duty mobiles meet the needs of public safety, public service, government, rail, transportation, utility and private industry sectors are available in dash mount, single head, dual head, dual band and dual head/dual band remote mount configurations. The dual head units are the perfect answer for fire, EMS, supervisor / command post vehicles requiring two full radio control points. The dual band and dual head/dual band allow seamless selection of channels on two different bands. All configurations offer a choice of 8 or 14-character high resolution backlit dot matrix LCD. The controls and customizable PF keys provide an intuitive user interface simplifying operation for all user types. The extra large capacity and dynamic channel group programming facilitate departmental, inter-agency interoperability, mutual aid and tactical channel organization. Encryption / ANI control permits basic to high level voice security and dispatch functions satisfying homeland security and confidentiality requirements. The DB-25 and 15-pin accessory connectors permit interface with data modems, headset/intercom systems, police motorcycle headset/PTT systems for vehicular installations or remote control termination panels for base/control station fixed installations.

» [View Kenwood TK-690 / TK-790 / TK-890 Information](#)



Kenwood TK-863G

UHF Trunking Mobile Radio

Kenwood's economy compact mobiles offer enhanced features for the budget conscious volunteer public safety, local government, industrial, manufacturing, resort/ hospitality and commercial / SMR radio system provider segments. The 8 Character LCD and priority scan features satisfy a vast majority of departmental and workgroup needs. DTMF or Two-Tone Selective Call provides built-in talkback paging capability. The DTMF ANI, DTMF Emergency footswitch input and auto dial features provide a cost-effective dispatch management and telephone interconnect for commercial / private radio systems.

» [View Kenwood TK-863G Information](#)



Kenwood TK-980 / TK-981

800 / 900 MHz Trunked Mobile Radios

The 80-Series legacy line continues to be embedded in thousands of public safety, public service, government, private industrial customers. This hallmark series provides rugged reliability, large capacity, conventional /LTR capabilities, full featured scan and signaling feature sets. The 80-Series supports Emergency Call (front panel & footswitch input), Encryption / ANI control, full FleetSync® PTT ID and messaging and FleetSync, DTMF and Two-Tone



Selective Calling for talkback paging. PassPort™ NTS Dispatch Network Trunking options are available for the TK-980 800 MHz model

» [View Kenwood TK-980 / TK-981 Information](#)

Kenwood TK-762G / TK-862G

Compact Conventional FM Mobile Radios

Kenwood's 8 channel numeric LCD economy compact mobiles offer basic features for the budget conscious volunteer public safety, local government, industrial, manufacturing, resort/ hospitality and commercial / SMR radio system provider segments. DTMF or Two-Tone Selective Call provides built-in talkback paging capability. The DTMF ANI and auto dial features provide a cost-effective dispatch management and telephone interconnect for commercial / private radio systems.



» [View Kenwood TK-762G / TK-862G Information](#)

Kenwood TK-6110

Compact Low Band Mobile Radio

The TK-6110 addresses the basic specifications, features and costs in a dash mount mobile for low band public safety, public service, government, utility, private industrial/business and local government and school bus sectors. The high 70W power, 8 Character alphanumeric display and front speaker and compact dash mount chassis facilitate easy installation into trucks, busses and sedans. The noise blanker function reduces sensitivity to vehicle ignition noise common with low band frequency radio equipment. Encryption /ANI control permits first level to high level voice security and dispatch functions satisfying homeland security and confidentiality requirements. Emergency Call (front panel & footswitch input) provides distress notification with MDC-1200/G-Star and DTMF ANI formats. DTMF or Two-Tone Selective Call provides built-in talkback paging capability. The accessory interface I/O's permit interface headset/intercom systems, police motorcycle headset/PTT systems for vehicular installations or remote control termination panels for base/control station fixed installations.



» [View Kenwood TK-6110 Information](#)

Kenwood TK-7102H / TK-8102H

Compact VHF / UHF / FM Mobile Radios

The TK-7102H VHF 50W and TK-8102H UHF 45W mobiles are equipped with 8 Channels (2 banks of 4 Channels) for conventional operation with multiple signaling formats - including Kenwood's FleetSync features.

» [View Kenwood TK-7102H / TK-8102H Information](#)



Kenwood TK-7150 / TK-8150

VHF / UHF Trunking & Conventional Mobile Radios

The 150-Series premium mobile line strikes a perfect balance of specifications, features and costs in this broad base platform designed for the public safety, public service, government and private industrial sectors. The wide frequency range, transceiver specifications and power are perfect for both metropolitan and suburban radio systems and environments. The large capacity and Zone programming facilitate departmental, inter-agency interoperability, mutual aid and tactical channel organization. The remote mount option permits easy aesthetically pleasing installation into existing radio consoles and contemporary sedans. Encryption /ANI control permits first level to high level voice security and dispatch functions satisfying homeland security and confidentiality requirements. Emergency Call (front panel & footswitch input) provides distress notification with FleetSync, MDC-1200/G-Star and DTMF ANI formats. Full FleetSync® or FleetSync® II includes PTT ID, Caller ID and non-voice status and text messaging. FleetSync, DTMF or Two-Tone Selective Call provides built-in talkback paging capability. The DB-25 and programmable interface I/O's permit interface with data modems, headset/intercom systems, police motorcycle headset/PTT systems for vehicular installations or remote control termination panels for base/control station fixed installations.



» [View Kenwood TK-7150 / TK-8150 Information](#)

Kenwood TK-7160 / TK-8160

VHF / UHF Conventional Mobile Radios

The 160-Series compact mid-tier mobile line offers full-featured simplicity for the volunteer public safety, public service, government, industrial and service industry users in a rugged 128 channel



platform. The extra large capacity and Zone programming facilitate departmental, inter-agency interoperability, mutual aid and tactical channel organization. Inversion scrambling for first level voice security is included. Inversion Scrambling and Encryption /ANI control permits first level to high level voice security and dispatch functions satisfying homeland security and confidentiality requirements. Emergency Call (front panel & footswitch input) provides distress notification with FleetSync®, MDC-1200/G-Star and DTMF ANI formats. Full FleetSync® includes PTT ID, Caller ID and non-voice status and text messaging. FleetSync®, DTMF or Two-Tone Selective Call provides built-in talkback paging capability. FleetSync®, DTMF or Two-Tone Selective Call provides built-in talkback paging capability. The accessory port option and programmable interface I/O's permit interface with data modems, headset/intercom systems, police motorcycle headset/PTT systems for vehicular installations or remote control termination panels for base/control station fixed installations.



» [View Kenwood TK-7160 / TK-8160 Information](#)

Kenwood TK-7180 / TK-8180

VHF / UHF Trunking & Conventional Mobile Radios

The 180-Series premium mobile line strikes a perfect balance of specifications, features and costs in this broad base platform designed for the public safety, public service, government and private industrial sectors. The wide frequency range, transceiver specifications and power are perfect for both metropolitan and suburban radio systems and environments. The extra large capacity and Zone programming facilitate departmental, inter-agency interoperability, mutual aid and tactical channel organization. The remote mount option permits easy aesthetically pleasing installation into existing radio consoles and contemporary sedans. Inversion Scrambling and Encryption /ANI control permits first level to high level voice security and dispatch functions satisfying homeland security and confidentiality requirements. Emergency Call (front panel & footswitch input) provides distress notification with FleetSync®, MDC-1200/G-Star and DTMF ANI formats. The VGS-1 option offers a unique zone / channel voice guide for no-look channel selection and a voicemail function for missed call recording while out of the vehicle. Full FleetSync® includes PTT ID, Caller ID and non-voice status and text messaging. FleetSync®, DTMF or Two-Tone Selective Call provides built-in talkback paging capability. The DB-25 and programmable interface I/O's permit interface with data modems, headset/intercom systems, police motorcycle headset/PTT systems for vehicular installations or remote control termination panels for base/control station fixed installations.



» [View Kenwood TK-7180 / TK-8180 Information](#)

Kenwood TK-7180 MPT / TK-8180 MPT

VHF / UHF Trunking & Conventional Mobile Radios

The 180-Series premium mobile line strikes a perfect balance of specifications, features and costs in this broad base platform designed for the public safety, public service, government and private industrial sectors. The wide frequency range, transceiver specifications and power are perfect for both metropolitan and suburban radio systems and environments. The extra large capacity and Zone programming facilitate departmental, inter-agency interoperability, mutual aid and tactical channel organization. The remote mount option permits easy aesthetically pleasing installation into existing radio consoles and contemporary sedans. Inversion Scrambling and Encryption /ANI control permits first level to high level voice security and dispatch functions satisfying homeland security and confidentiality requirements. Emergency Call (front panel & footswitch input) provides distress notification with FleetSync®, MDC-1200/G-Star and DTMF ANI formats. The VGS-1 option offers a unique zone / channel voice guide for no-look channel selection and a voicemail function for missed call recording while out of the vehicle. Full FleetSync® includes PTT ID, Caller ID and non-voice status and text messaging. FleetSync®, DTMF or Two-Tone Selective Call provides built-in talkback paging capability. The DB-25 and programmable interface I/O's permit interface with data modems, headset/intercom systems, police motorcycle headset/PTT systems for vehicular installations or remote control termination panels for base/control station fixed installations.

» [View Kenwood TK-7180 MPT / TK-8180 MPT Information](#)

Kenwood TK-5710 / 5810

VHF & UHF FM Conventional & P25 Digital Mobile Radios

The TK-5710/5810 premium high specification heavy-duty offers conventional FM and conventional P25 digital operation for present and future interoperability requirements for law enforcement, fire and emergency services. Built on Kenwood's advanced 90-Series design, the TK-5710/5810 is available in dash mount, single head and dual head remote mount control with choice of 12 or 14-character high resolution backlit dot matrix LCD. The controls and customizable PF keys provide an intuitive user interface simplifying P25 and FM operation for all user types. The P25 trunked option permits operation on local, regional and statewide Project 25 compliant networked systems. The extra large capacity and Zone programming facilitate departmental, inter-agency interoperability, mutual aid and tactical channel organization. Encryption /ANI control permits basic to high level voice security and dispatch functions satisfying homeland security and confidentiality requirements. Standardized DES-OFB and AES encryption options permits advanced secure interoperable voice communications. The DB-25 and 15-pin accessory connectors permit interface with data modems, headset/intercom systems, police motorcycle headset/PTT systems for vehicular installations or remote control termination panels for base/control station fixed installations.



» [View Kenwood TK-5710 / 5810 Information](#)

Kenwood TK-5720 / 5820

VHF / UHF FM & P25 Digital Mobile Radio

Kenwood's new VHF and UHF P25 Portable Radios feature a compact, rugged design rich with capability and performance. The new TK-5220/5320 portables join Kenwood's higher tier P25 radio models to offer an expanded group of P25 solutions for all levels of public safety and service agencies. These new mid-tier P25 models operate in FM Analog and P25 Digital modes and combine AMBE + 2 Enhanced Full Rate Vocoder technology along with Kenwood's decades of audio heritage to deliver unmatched audio performance in a two-way radio.



» [View Kenwood TK-5720 / 5820 Information](#)

Kenwood TK-5910

700/800 MHz FM & P25 Digital Mobile Radio

Kenwood's new 700/800 MHz radios fully expand our P25 Digital Public Safety Radio lineup. The TK-5410 portable and TK-5910 mobile were designed expressly for public safety agencies deploying 700 / 800 MHz P25 radio systems or expanding existing 800 MHz systems. Built on Kenwood's field-proven TK-5x10 hardware platform with enhanced micro processing, these rugged MIL-SPEC / IP-rated units cover the entire Public Safety 700 MHz and 800 MHz voice bands including NPSPEC channels.



» [View Kenwood TK-5910 Information](#)

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SVR 200 The Industry Standard

SINGLE CHANNEL

2 WATT COVERAGE

PRIORITY STRUCTURE



- ▲ Motorola PAC/RT Compatible
- ▲ "First Man Out" with Priority Sampling
- ▲ Synthesized Operation PC Programmable Frequencies and Tones
- ▲ LTR, EDACS and Motorola Trunking Compatible
- ▲ Factory Interface Cables for Most Popular Public Safety Radios
- ▲ Remote Channel Selector, Auxiliary Receiver, and In-Band Filtering Options

SVR 200 Single Channel Synthesized Vehicular Repeater

The Pyramid Communications model **SVR-200** is a μ P controlled, synthesized low power vehicle repeater. It is designed to **interface between a high power mobile radio and a low power handheld**. If the radio operator is out of the vehicle and the mobile radio is receiving a transmission, the SVR-200 will repeat the signal to the user's handheld. The user may also transmit back to the SVR-200 via their handheld, and the transmission will be repeated back to the base by the high power mobile radio, effectively **extending the range of the low power handheld** to that of the mobile radio. On-board logic control by the microprocessor ensures that only one vehicle will become active as the repeater, should several vehicles arrive at the same scene. The logic also **handles cases where**

the priority vehicle leaves the scene (or fails), or another priority vehicle arrives from another scene. The SVR-200 **remains the industry standard** in Public Safety Vehicular Repeaters with a complete line of accessories to ensure you get the most from your communications system. Factory interface cables for most popular public safety mobiles, **simplify installation and enhance reliability**. A complete line of filter products that **eliminates interference in crossband** and in-band applications. The RCS-200* allows personnel to remotely change the mobile channel from a DTMF keypad on the portable allowing **seamless communications with the appropriate agencies**.



714 901-5462
www.pyramidcomm.com

P Y R A M I D
COMMUNICATIONS

Specifications SVR 200



TRANSMITTER	VHF	UHF	700	800	900
Frequency Range	150–174 MHz	450–470 MHz 405–425 MHz [•]	764–776 MHz 794–806 MHz [•]	806–824 MHz 851–869 MHz	897–902 MHz [•] 936–941 MHz
RF power out	250mW - 2W	250mW - 2W	100mW - 600mW	100mW - 600mW	100mW - 600mW
Spurious emissions	-50dBc	-52dBc	-45dBc	-45dBc	-45dBc
Frequency stability -30°~+60°C	±1.5 PPM	±1.5 PPM	±1.5 PPM	±1.5 PPM	±1.5 PPM
Modulation	11KOF3E/16KOF3E	11KOF3E/16KOF3E	11KOF3E	11KOF3E/16KOF3E	11KOF3E
Hum and noise	-40dB	-40dB	-40dB	-40dB	-40dB
Audio response (300-3kHz)	Flat or -6dB/octave	Flat or -6dB/octave	Flat or -6dB/octave	Flat or -6dB/octave	Flat or -6dB/octave
Audio distortion	<3%@60% deviation	<3%@60% deviation	<3%@60% deviation	<3%@60% deviation	<3%@60% deviation
Local mic sensitivity	300mV - 5VPP	300mV - 5VPP	300mV - 5VPP	300mV - 5VPP	300mV - 5VPP
FCC Type Acceptance	LRUSVR-200VB	LRUSVR-200UD	LRUSVR-200M	LRUSVR-200M	LRUSVR-200M
Industry Canada Approval	2390 195 458A	2390 212 113A	2390A-SVR200M	2390A-SVR200M	2390A-SVR200M

RECEIVER	VHF	UHF	700	800	900
Frequency Range	150–174 MHz	450–470 MHz 405–425 MHz [•]	764–776 MHz 794–806 MHz [•]	806–824 MHz 851–869 MHz	897–902 MHz [•] 936–941 MHz
RF sensitivity	.35µV	.35µV	.35µV	.35µV	.35µV
Squelch sensitivity	.2µV to 2µV adjustable	.2µV to 2µV adjustable	.2µV to 2µV adjustable	.2µV to 2µV adjustable	.2µV to 2µV adjustable
Modulation acceptance	±3.75/±7.5kHz	±3.75/±7.5kHz	±3.75kHz	±3.75/±7.5kHz	±3.75kHz
Selectivity	72dB	60dB	50dB	50dB	50dB
Spurious/image rejection	70dB	60dB	60dB	60dB	60dB
IMD response	60dB	60dB	60dB	60dB	60dB
Frequency stability	1.5 PPM	1.5 PPM	1.5 PPM	1.5 PPM	1.5 PPM
Audio response (300-3kHz)	Flat or +6dB/octave	Flat or +6dB/octave	Flat or +6dB/octave	Flat or +6dB/octave	Flat or +6dB/octave
Audio output	0-5VPP AC coupled 600/2.2K	0-5VPP AC coupled 600/2.2K	0-5VPP AC coupled 600/2.2K	0-5VPP AC coupled 600/2.2K	0-5VPP AC coupled 600/2.2K
Local Rx audio	400 mW 8 Ohms@ <5% distortion	400 mW 8 Ohms@ <5% distortion	400 mW 8 Ohms@ <5% distortion	400 mW 8 Ohms@ <5% distortion	400 mW 8 Ohms@ <5% distortion



• SPECIAL ORDER

Power Requirements

DC Supply	13.6VDC negative ground ± 25%
Standby	170mA
Receive	250mA @ 400mW Rx Audio
Transmit	<1A @ rated output

Physical Dimensions	5.275"W x 6"L x 1.12"H
Weight	18 ounces
Case	One piece extruded aluminium

Mil-Std-810D/E Ratings

501.2	Procedure II High Temp +60°C
502.3	Procedure II Low Temp -30°C
507.2	Procedure II Humidity
510.2	Procedure II Blowing Dust
514.3	Procedure I Category 8 Vibration, Ground Vehicle
516.3	Procedure I Shock

"For years, security force personnel have had to endure the consequences of ineffective communications. Now we are able to constantly communicate in all previously identified dead spot areas."

– USAF Director of Security Forces

