

# RELM/BK Radio

## KNG P25 Mobile Radio



## Public Safety Communications

The KNG Series radio offers exceptional performance in a lightweight form. With industry leading RF and electrical specifications in a rugged, submersible housing, the KNG Series platform provides the performance needed for the most demanding applications making this the perfect radio for all aspects of government, public safety and first responder missions.

- ✓ P25 Trunking Option
- ✓ TDMA Phase II Compatible
- ✓ IP67 Water and Dust Protection
- ✓ USB PC Programmable
- ✓ NIST-Certified AES & DES/OFB
- ✓ MIL-STD 810 C/D/E/F/G
- ✓ Cloning to KNG & Legacy Series

## KNG Series Mobile Radio Models

		
	<b>KNG Mobile Radio</b>	<b>KNG Remote Control Head (KAA0660)</b>
<b>Display</b>	Alpha-numeric Touch Screen Display The first of its kind, the KNG Mobile's innovative color TFT touch screen display solves many issues seen in existing mobile radio control heads. Day or night, get all the information you need right at your fingertips.	
<b>Channel Capacity</b>	2048	2048
<b>Memory</b>	64 MB Volatile 256 MB Non-Volatile (Flash)	64 MB Volatile 256 MB Non-Volatile (Flash)
<b>700/800 MHz</b>	KNG-M800	Compatible
<b>VHF</b>	KNG-M150	Compatible
<b>UHF Range 1</b>	KNG-M400	Compatible
<b>UHF Range 2</b>	KNG-M500	Compatible

## Power and Current Drain

<b>Power Supply</b>	13.8 V DC $\pm$ 20% Negative Ground
<b>Transient Protection</b>	Per EIA-374-A
<b>Standby Current @ 13.8 V</b>	0.15A All models
<b>Receive Current Rated Audio @ 13.8 V</b>	2.5A All Models
<b>Transmit Current @ Rated Power</b>	VHF (50 W) 15A, VHF(110 W) 22A, UHF (50W) 15A, 700/800 MHz 10 A

## HCH - Handheld Control Head



800 MHz

Full Color Touch Screen  
5 Lines: 3 Lines text (14 Characters), 2 Lines Icons, programmable touch keys

Smart phone Style Contextual Display

Built in Speaker (on reverse side)

Easy to use, large back lit menu navigation buttons

Large back lit, programmable menu navigation buttons

Long 6' spring-like power cord

Compatible with VHF, UHF, & 800MHz KNG Radios, labels included.

Built in Microphone

800 MHz

Analog Test  
CHAN 0001  
763.01250

MENU  
ZONE  
MON PWR  
VOL CHAN

BK RADIO KNG HCH

OK  
H





## Some Key Benefits

- ▶ **Innovative Touch Screen Display**  
Touch screen display provides unparalleled level of end-user customizing, ease of use, and expansion as new technologies are integrated with Project 25 Standards
- ▶ **Enhanced Voice Quality**  
The KNG Series radio uses the Third Generation Enhanced IMBE Project 25 dual rate Vocoder (AMBE+2 V1.80) for robust performance in noisy environments. Software based noise cancellation preserves situational awareness lost with dual microphone systems.
- ▶ **5 Line Color Bitmap Display**  
Status Icons, three customizable display lines of 14 characters and soft key legends.
- ▶ **Environmental Reliability**  
Designed and tested to MIL-STD-810 and IP-54 rated.
- ▶ **DHS P25 CAP Approved**  
DHS P25 Compliance Assessment Program Tested and Approved Public Safety Grade (TIA Class A).
- ▶ **Robust Receiver**  
Improved range and less susceptibility to interference.
- ▶ **Simulcast Operation**  
C4FM and CQPSK modes for robust performance in simulcast (including LSM) systems.
- ▶ **Conventional Signaling**  
Analog MDC-1200 and digital APCO Project 25 for conventional operation.
- ▶ **Scan Modes**  
Dual priority scan, trunked priority scan, and dual mode scan
- ▶ **NIST FIPS-140-2 Certification**  
The KNG Series radios employ a NIST Certified Cryptographic module.
- ▶ **Multi-key/Multi-Algorithm**  
Multi-Key/Multi-Algorithm Encryption and Over-the-Air Rekey
- ▶ **Encryption Key Fill**  
TIA-102-AACD compliant and interoperable with commercially available keyfill devices.
- ▶ **Project 25 9600 Baud Trunking**  
The KNG Series radio operates on 9600 baud P25 Compliant Trunking Systems and has been Project 25 Compliance Assessment Program (P25CAP) tested and proven interoperable.
- ▶ **OTAP**  
KNG Series radios support Over-the-Air Programming (OTAP) for operational efficiency.
- ▶ **Phase 2 Ready**  
KNG Series 700/800 MHz platforms are Project 25 Phase 2 (TDMA) ready supporting double the voice capacity of Phase 1 trunking systems.
- ▶ **Radio Authentication**  
Project 25 Radio Authentication per TIA-102-AACE-A is supported.
- ▶ **GPS/Location Services**  
Project 25 Location Services per TIA-102-BAJB are supported.
- ▶ **Room to Grow**  
Currently uses less than 20% of available memory and processor cycles.

## Mobile Radio Options

The KNG platform meets today's demanding mission critical voice requirements is future ready and able to expand with changing standards and mission requirements.

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|----------------------|-------------------------------------|----------------------|--------------------------------------|
| ▶ <b>KZA0154</b>     | Option, High Power, 110W            | ▶ <b>KAA/KZA0589</b> | GPS Option for KNG Mobiles           |
| ▶ <b>KAA0660</b>     | Remote Control Head                 | ▶ <b>KAA/KZA0592</b> | Over the Air Reprogramming           |
| ▶ <b>KAA0670</b>     | Handheld Control Head               | ▶ <b>KAA/KZA0594</b> | P25 Phase II – 2 Slot TDMA Operation |
| ▶ <b>KAA/KZA0569</b> | P25 9600 Baud Trunking              | ▶ <b>KAA/KZA0596</b> | P25 Radio Authentication             |
| ▶ <b>KZA0576</b>     | DES OFB / AES Encryption FIPS-140-2 | ▶ <b>KAA0261</b>     | External Speaker 20W, 4 Ohm          |
| ▶ <b>KAA/KZA0580</b> | P25 Over the Air Rekeying (OTAR)    | ▶ <b>KAA0276</b>     | Standard Handheld Microphone KNG-M   |
| ▶ <b>KAA/KZA0583</b> | Multi-Cast Vote Scan Plus           | ▶ <b>KAA0290</b>     | Handheld Programming Microphone      |

## Receiver Minimum 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	440-520 MHz
Channel Spacing	25/12.5 KHz		30/25/12.5 KHz	25/12.5 KHz	25/12.5 KHz
Maximum Frequency Separation	Full Band		Full Band	Full Band	Full Band
Audio Output Power at Rated	500 mW		500 mW	500 mW	500 mW
Frequency Stability (-30°C to +60°C, +25°C Reference)	±.00015%		±.00015%	±.00015%	±.00015%
Analog Sensitivity	12dB SINAD	0.25µV	0.20µV	0.25µV	0.25µV
Digital Sensitivity	1% BER	0.32µV	0.27µV	0.32µV	0.32µV
	5% BER	0.25 µV	0.20 µV	0.25 µV	0.25 µV
Selectivity	25 KHz	75 dB	80 dB	78 dB	77 dB
	12.5 KHz	67 dB	70 dB	67 dB	67 dB
Intermediation	-75 dB		-78 dB	-75 dB	-75 dB
Spurious Rejection	-75 dB		-80 dB	-80 dB	-80 dB
FM Hum and Noise	25 KHz	-50 dB	-50 dB	-50 dB	-50 dB
	12.5 KHz	-44 dB	-44 dB	-44 dB	-44 dB
Audio Distortion @ 15 Watts	3%		3%	3%	3%

## Transmitter - Minimum 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	440-520 MHz
Channel Spacing	25/12.5 KHz		30/25/12.5 KHz	25/12.5 KHz	25/12.5 KHz
Maximum Frequency Separation	Full Band		Full Band	Full Band	Full Band
Rated RF Output Power	10-35 Watts		10-50 Watts 25-100 Watts	10-50 Watts	10-50 Watts
Frequency Stability (-30°C to +60°C, +25°C Reference)	±.00005%		±.00005%	±.00005%	±.00005%
Modulation Limiting	±5/4/2.5 KHz		±5/2.5 KHz	±5/2.5 KHz	±5/2.5 KHz
Emissions (Conducted and Radiated)	-75 dB		-75 dB	-75 dB	-75 dB
Audio Response	+1, -3 dB		+1, -3 dB	+1, -3 dB	+1, -3 dB
FM Hum & Noise	700 MHz 800 MHz	-45 dB	-45 dB	-45 dB	-45 dB
Audio Distortion	700 MHz 800 MHz	1.25%	1.25%	1.25%	1.25%

## GPS Specifications

Channels	50
Tracking Sensitivity	<-155 dBm
Accuracy	<6 meters (95%)
Cold Start	<32 seconds (95%)
Hot Start	<1 second (95%)
Mode of Operation	Autonomous (Non-Assisted) GPS

## Signaling

Signaling Rate	9.6Kbps(FDMA) / 12Kbps(TDMA) / 1.2Kbps (MDC)
Digital ID Capacity	16,777,216 (Conventional and Trunking)
Network Access Codes	4096 per TIA 102
Project 25 Talk Group IDs	65,535 (Conventional and Trunking)
Error Correction	Soft Decision, Golay, BCH, Reed-Solomon
Modulation	FM, C\$FM, C-QPSK, H-CPM, H-DQPSK



## KNG Mobile Buttons and Functions



## Standard Control Head

- ▶ Full Color Touch screen
- ▶ 5 Line display: Status Icons, three customized display lines of 14 characters, 4 programmable touch keys and menu touch key
- ▶ 3 x 4 Keypad microphone with navigation keys and 3 programmable function keys
- ▶ Dash and Remote Mount Configurations
- ▶ Multiple Control Heads supported: Single, dual and triple allow full control of the transceiver from multiple positions
- ▶ Dual 15 watt external speak outputs per control head

# KNG Mobile Military Standards 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/Hot	501.5	I, II
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, II
Temperature Shock	503.1	–	503.2	I/A1C3	503.3	I/A1C3	503.4	I	503.5	I (D)
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	–	507.5	--
Salt Fog	509.1	–	509.2	–	509.3	–	509.4	–	509.5	--
Blowing Dust	510.1	I	510.2	I	510.3	I	510.4	I	510.5	I, 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 (4), II
Shock	516.2	I, II	516.3	I, IV	516.4	I/IV	516.5	I, IV	516.6	I, II, V, VI

## Dimensions

	Inches	Millimeters
Mid Power Transceiver	2.5 x 6.5 x 8.5	63.5 x 165.1 x 215.9
High Power Transceiver	2.5 x 6.5 x 8.5	63.5 x 165.1 x 215.9
Remote Control Head	2.5 x 6.5 x 1.5	63.5 x 165.1 x 38.1
Mid/High Power Transceiver Weight	7.5 lbs	3.4 kg

## Encryption

Supported Algorithms	AES-256, AES-128, DES
Algorithm Capacity	Unlimited
Encryption Keys	64 Storage Location Number (SLN)/Common Key Reference (CKR)
Frame Re-sync Interval	P25 Common Air Interface 300 mS
Keyloading	IAW TIA-102-AACD (KVL-3000/4000)
Synchronization	OFB – Output Feedback
Vector Generator	National Institutes of Standards and Technology (NIST) approved random number generator
Type	Digital Encryption
Key Storage	Non-Volatile
Key Erasure	Keyboard Command and KMF
Standards	FIPS-140-2 FIPS 197

## Transmitter Certifications

700/800 MHz (FCC/IC)	K95KNGM800 / 2116A-KNGM800
VHF (FCC/IC/JF-12/NTIA)	K95KNGM150 / 2116A-KNGM150 / JF12-10289*
UHF Range 1 (FCC/IC/JF-12/NTIA)	K95KNGM400 / 2116A-KNGM400 / JF12-10289*
UHF Range 2 (FCC/IC)	K95KNGM500 / 2116A-KNGM500

## Other Certifications

P25 Compliance Assessment (P25CAP) Performance	Trunked and Conventional Performance Class A
P25 Compliance Assessment (P25CAP) Interoperability	Motorola, Harris, EFJohnson, Tait/Cassidian and Daniels
National Interagency Fire Certification (VHF and UHF)	KNG-M150 and KNG-M400