



Key Features and Benefits

Future Proof

- ▶ The 51SL ES protects your investment with a TDMA upgrade solution

Reliable and Rugged

- ▶ Magnesium casting and polycarbonate housing provide exceptional strength in a light weight package - feel the difference!
- ▶ Meets applicable Mil Standard 810C, D, E, and F specifications
- ▶ Approved by Factory Mutual as intrinsically safe for use in hazardous environments

Submersibility Option

- ▶ Immersible to a depth of 1 meter for 30 minutes (per MIL Spec 810F and IP67 standards)

Significant Product Flexibility

- ▶ Enables programming of up to 512 channel/talkgroups
- ▶ Supports narrowband (12.5 kHz) and wideband (25 kHz) channel spacing, and multiple system protocols
- ▶ Supports MDC1200 and GE-Star Signaling

Simplified Programming

- ▶ Over the Air Programming (OTAP) option enables you to program radios without having to send them to a service shop, saving time and costs
- ▶ Easy radio programming and feature updating using EFJohnson's PC Configure™ software for portable and mobile radios

Extensive Accessory Suite

Complete line of accessories including speaker microphones, headsets, surveillance kits, batteries, chargers, carrying apparatus, and encryption keyloading devices. Visit our website for the *EFJohnson Subscriber Accessories Catalog!*

Future-proof your radio investment.

The 51SL ES Portable Radio from EFJohnson Technologies provides a seamless evolution to next generation networks while offering investment protection for your present communications system, all in a powerful software-controlled device for first responders that is easy on your budget. The 51SL ES Series is packed with features that are normally found in radios costing thousands of dollars more. Specifically designed for public safety, the ES Series offers crisp and powerful digital audio with the Enhanced (AMBE+2) Project 25 Vocoder, Project 25 trunked and conventional operation, TDMA upgrade, and a sleek ergonomic design. Keep your fleet safe for the future – make the 51SL ES Series Portable Radio your right choice.

▶ Project 25 Compliance

Supports Project 25 CAI (Common Air Interface), Project 25 Trunked and Conventional system protocols, and Project 25 Over the Air Rekeying (OTAR) functionality.

▶ Enhanced (AMBE+2) P25 Vocoder for Outstanding Voice Quality and Noise Reduction

Hear the difference! EFJohnson is the only radio vendor with a full implementation of this second generation Enhanced (AMBE+2) P25 preferred vocoder.



▶ SMARTNET® II / SmartZone® Interoperability

EFJohnson is the only supplier licensed to support both analog and digital SMARTNET II and SmartZone trunking protocols.

▶ Numerous Encryption Protocols

Supports industry-standard encryption capabilities such as AES, DES-OFB and DES. Ask about our free Single Key DES-OFB encryption for P25.

EFJohnson Technologies focuses on innovating, developing and marketing the highest quality secure communications solutions to organizations whose mission is to protect and save lives.



51SL ES Series Portable Radio

700/800 MHz ·VHF·UHF

Typical Performance Specifications

GENERAL	700/800	VHF	UHF R1	UHF R2
Frequency Range	762–806 MHz 806–870 MHz	136–174 MHz	380–470 MHz	450–512 MHz
Channel Spacing	12.5 kHz, 25 kHz	12.5 kHz, 25 kHz	12.5 kHz, 25 kHz	12.5 kHz, 25 kHz
Maximum Frequency Separation	Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit
FCC Type Acceptance Certification	ATH2425171	ATH2425111	ATH2425131	ATH2425141
Canada Type Certification	IC: 933B-2425171	IC: 933B-2425112	IC: 933B-2425131	IC: 933B-2425141
FCC Emissions Designators	11K0F3E, 16K0F3E, 14K0F3E, 8K10F1E, 8K10F1D	16K0F3E, 11K0F3E, 8K10F1E, 8K10F1D	16K0F3E, 11K0F3E, 8K10F1E, 8K10F1D	16K0F3E, 11K0F3E, 8K10F1E, 8K10F1D
Input Voltage	7.2 V			
Dimensions (w/o antenna) (HxWxD)	6.7 x 2.52 x 1.8 (6.4 cm x 17.0 cm x 4.6 cm)			
Weight (without standard battery)	11 oz. (312 g)			
Case	Polycarbonate–black Immersion rated option available for all housings			
Temperature Range	–30°C to +60°C			
Vocoder	Enhanced (AMBE+2) Project 25 Vocoder			

TRANSMITTER				
RF Power Output	2.5/1 W (700 MHz), 3/1 W (800 MHz)	5/1 W	4/1 W	4/1 W
Frequency Stability (–30°C to +60°C)	±1.5 ppm	±1.5 ppm	±1.5 ppm	±1.5 ppm
Modulation Limiting				
25 kHz channels	±5 kHz	±5 kHz	±5 kHz	±5 kHz
12.5 kHz channels	±2.5 kHz	±2.5 kHz	±2.5 kHz	±2.5 kHz
Emissions (Conducted/Radiated)	–75 dBc	–75 dBc	–75 dBc	–75 dBc
Audio Response	+1, –3dB	+1, –3dB	+1, –3dB	+1, –3dB
FM Hum and Noise				
25 kHz channels	–40 dB	–45 dB	–45 dB	–45 dB
12.5 kHz channels	–35 dB	–40 dB	–40 dB	–40 dB
Audio Distortion	2%	2%	2%	2%

RECEIVER				
Audio Output Power	500 mW	500 mW	500 mW	500 mW
Frequency Stability (–30°C to +60°C)	±1.5 ppm	±1.5 ppm	±1.5 ppm	±1.5 ppm
Sensitivity				
Analog Mode: 12 dB SINAD	0.25 uV (–119 dBm)	0.25 uV (–119 dBm)	0.25 uV (–119 dBm)	0.25 uV (–119 dBm)
Digital Mode: 5% BER	0.25 uV (–119 dBm)	0.25 uV (–119 dBm)	0.25 uV (–119 dBm)	0.25 uV (–119 dBm)
Selectivity				
25 kHz channels	–75 dB	–75 dB	–75 dB	–75 dB
12.5 kHz channels	–63 dB	–63 dB	–63 dB	–63 dB
Intermodulation	–75 dB	–75 dB	–75 dB	–75 dB
Spurious & Image Rejection	–75 dB	–75 dB	–75 dB	–75 dB
FM Hum and Noise				
25 kHz channels	–40 dB	–40 dB	–40 dB	–40 dB
12.5 kHz channels	–35 dB	–35 dB	–35 dB	–35 dB
Audio Distortion	2%	2%	2%	2%

BATTERIES			
Battery Type	Dimensions (HxWxD)	Weight	Approx. Life (5/5/90)
Extra-High Capacity NiMH	6.0 x 2.3 x 0.85	12.96 ounces	UHF/VHF: Minimum 10 hours 700/800 MHz: Minimum 12 hours
Extra-High Capacity NiMH, IS	6.0 x 2.3 x 0.85	12.96 ounces	UHF/VHF: Minimum 10 hours 700/800 MHz: Minimum 12 hours
Alkaline Battery Clamshell	7.2 x 2.6 x 2.0	15.68 ounces (w/12 AA batt.)	14-16 hours
High Capacity Lithium Ion	6.5 x 2.3 x .78	8.1 ounces	12 hours

Specifications are measured per TIA 102.CAA-B, TIA 102.CAAB-B and per TIA 603-C.

All EFJohnson radios are made in the U.S.A.

Form S851 11/09 (Supersedes 9/09) Printed in U.S.A.

Specifications subject to change without notice.

© Copyright 2009 EFJohnson. PC Configure is a trademark of

EFJohnson. SMARTNET, SmartZone, and Motorola are trademarks of Motorola, Inc.



ENVIRONMENTAL SPECIFICATIONS

Environment	Mil Spec	810F
	M	P
Low Pressure	500.4	II
High Temp.	501.4	I, II
Low Temp.	502.4	I, II
Temp. Shock	503.4	I
Solar Radiation	505.4	I
Rain/Blown Rain	506.4	I, III
Humidity	507.4	NA
Salt Fog	509.4	NA
Dust and Sand	510.4	I
Vibration	514.5	I(24)
Shock	516.5	I, IV
Immersion*	512.4	I

M=Method P=Procedure

Also meets equivalent

superseded C, D, and

E standards

*Optional



ENCRYPTION OPTIONS

Supported Encryption Algorithms	AES, DES, DES-OFB
Encryption Keys/Radio	64 Common Key Reference (CKR) 64 Physical Identifier (PID) Compatible with Motorola Key Variable Loader
Encryption Frame Re-sync Interval	P25 CAI 360 msec
Encryption Keying	External Key Loader, OTAR
Synchronization	CFB – Cipher Feedback OFB – Output Feedback
Vector Generator	National Institute of Standards and Technology (NIST) approved random number generator
Encryption Type	Digital
Key Erasure	Keyboard Command
Code Key Initialization	Internal pseudorandom generator

FACTORY MUTUAL APPROVALS

Intrinsically Safe		
Class I	Division 1 An area where there is or could be an explosive atmosphere most of the time in normal conditions.	C Ethylene D Propane and Methane E Conductive metal F Carbonaceous material coal, coke dust G Grain dust and flour
Class II		
Class III	Division 1 Location in which easily ignitable fibers or materials producing combustible flyings are handled, manufactured, or used.	Ignitable fibers or flyings
Non-Incendive		
Class I	Division 2 An area where an explosive atmosphere exists only as a result of a fault.	A Acetylene B Hydrogen C Ethylene D Propane and Methane



1440 Corporate Drive, Irving, TX 75038-2401
Phone: 972-819-0700, 1-800-328-3911 Fax: 972-819-2307
www.EFJohnsonTechnologies.com