

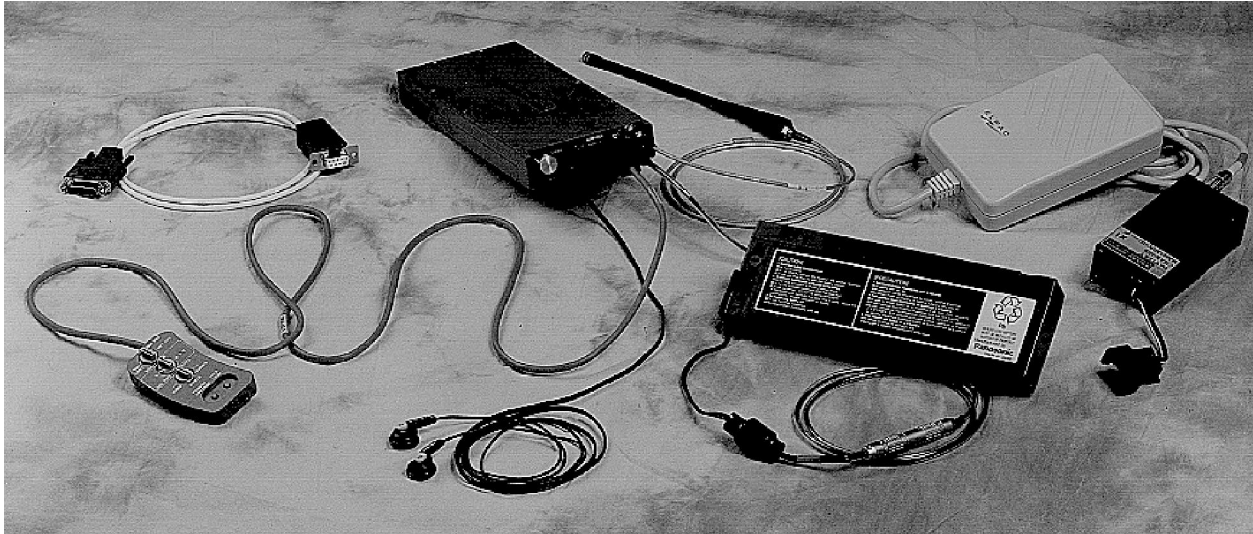
Technical Data



WATKINS-JOHNSON

May 1996

Miniature Receiver WJ-8653B



The WJ-8653B is a low-power compact receiver designed for intercepting and processing cellular signals in the 800 to 1000 MHz frequency range. The user can configure the unit in a variety of fashions for monitoring AMPS, EAMPS, TACS, or ETACS cellular systems. The receiver supports single-channel monitoring or, with additional receivers, a multichannel system to operate via computer control. The receiver uses a built-in microcontroller and AMPS/TACS processor chip that allows it to acquire, monitor, and track conversations with minimal additional hardware. WJ can also provide a complete signal monitoring system by adding a power supply (12-volt battery), antenna, and headset. Its small size and low-power consumption makes the WJ-8653B attractive for personal system acquisition, mobile monitoring, and hidden system operations.

The WJ-8653B supports four types of cellular system operations:

- Search for activity on any of up to 10 preprogrammed mobile phone numbers
- Search for largest reverse-voice (mobile) channel
- Search for any active reverse-voice channel
- Search for any active forward-voice channel (land)

Features

- ❑ Acquisition & monitoring capability of AMPS, EAMPS, TACS & ETACS systems
- ❑ Control code recognition, mobile identification numbers & frequency handoff commands
- ❑ Flexible search modes of operation
- ❑ Conversation targeting based on a list of up to 10 telephone numbers; conversations followed through frequency handoffs
- ❑ Local control through an IBM/PC-compatible computer
- ❑ Remote control via RS-232
- ❑ Low power: <6.5 W

HEIGHT	0.86 in (2.18 cm)	DEPTH	8 in (20.32 cm)
WIDTH	3.25 in (8.26 cm)	WEIGHT	<1.5 lbs (0.68 kg)

WATKINS-JOHNSON COMPANY

700 Quince Orchard Road, Gaithersburg, Maryland 20878-1794
Phone: (800) WJHELPS or +(301) 948-7550
FAX: +(301) 921-9479 Email: wj.helps@wj.com Website: www.wj.com

All International sales of WJ equipment are subject to USA export license approval.

This material provides up-to-date general information on product performance and use. It is not contractual in nature, nor does it provide warranty of any kind.

WJ-8653B

Capabilities of WJ-8653B Receiver

Mode	Operations	Capabilities
1	<ul style="list-style-type: none"> Monitors the strongest forward control channel for activity originating from, or directed to, a specific mobile telephone number (up to 10 unique telephone numbers simultaneously) 	<ul style="list-style-type: none"> When activity on one of the numbers occurs, the receiver begins to monitor & track the signal Operator can continue tracking the signal or return the receiver to the search for number mode
2	<ul style="list-style-type: none"> Searches the reverse-voice channels for the largest signal (Mobile-to-Land) 	<ul style="list-style-type: none"> Once the receiver determines the largest signal it begins to monitor & track the signal Operator can continue tracking the signal or resume searching for the largest signal
3	<ul style="list-style-type: none"> Searches all reverse-voice channels for any signal (Mobile-to-Land) 	<ul style="list-style-type: none"> When the receiver finds a signal over the threshold, it begins to monitor & track the signal Operator can continue tracking the signal or resume searching for the next signal over the threshold
4	<ul style="list-style-type: none"> Searches all forward-voice channels for a signal over threshold (Land-to-Mobile) 	<ul style="list-style-type: none"> When the receiver finds a signal over the threshold it begins to monitor & track the signal Operator can continue tracking the signal or resume searching for the next signal over the threshold

For any of these operations, once a call is acquired the receiver will monitor the call on the forward channel. While monitoring an acquired call, the WJ-8653B will follow the call as it is handed off from one channel to another. During the monitored operation, an operator may cause the receiver to return to the search mode. Also, if the monitored call is terminated or dropped, the receiver automatically returns to the search operation.

WJ provides several methods of control for the WJ-8653B Receiver. An RS-232 control port allows operation of the receiver with an IBM/PC-compatible computer loaded with WJ's MS/DOS application program. Once an operator has programmed an operating mode into the unit, the computer may be disconnected for unattended operation. After an operator *powers off* and then *powers on* the receiver, the unit resumes operating in the same mode as before *power off*.

If a computer is unavailable or impractical to use, an operator may select a mode of operation by externally switching a combination of TTL input signals. The TTL control signals are on the multipin-*D* connector

on the front panel of the unit. WJ also provides a handheld controller in the WJ-8653/SYS package to allow access to any of the four operational modes.

Receiver Control & Connectors

- Subminiature *D* for Control Signals
- SMA-type for RF input
- 1/8-inch stereo headphone jack for audio
- 12-Vdc power input

Optional System Configuration

WJ-8653/SYS (includes receiver)

- AC power supply
- Battery
- Charger
- Cellular antenna & cable
- Handheld controller
- Computer interface cable & software
- Attaché carrying case

Specifications

Frequency Range	800 to 1000 MHz
Frequency Resolution	2.5 kHz synthesized
RF Input Impedance	50 ohms
Image Rejection	60 dB, min
IF Rejection	70 dB, min
Frequency Accuracy	$\pm 2.5 \times 10^{-6}$
LO Level at RF Input	-90 dBm, max
Intermodulation	
2nd-order Intercept Point	+30 dBm, typical
3rd-order Intercept Point	-10 dBm, typical
IF Bandwidth	25 kHz, nominal
Detection Mode	FM
Sensitivity	-116 dBm for 12-dB SINAD @ 3-kHz deviation, 400-Hz rate
COR/Squelch	50-dB adjustment range
Operating Temperature Range	-10 to +55°C
Full Specification Compliance	20 to 30°C
Voltage Requirement	10 to 16 Vdc
Power Consumption	<6.5 W
Control Format	RS-232