

Communications Electronics, Inc. and Watkins Johnson Receiving Systems Guide

08/03/05

This is an ongoing project. I'm always looking for more information, particularly on the variants denoted by the -x suffixes.

Copyright 2005 by Terry O'Laughlin.

Contact me at watkins-johnson@terryo.org

Main web page <http://watkins-johnson.terryo.org>

Model	Description
AN/PRD-11	VHF/UHF radio DF system, 20-512 MHz, consists of WJ8640-1 receiver, WJ8975A DF processor, WJ-9180-1 SDU and WJ9880A antenna
AN/TLQ-504	communications jamming system, military version of WJ-4810
RS-112	microwave Pan-Man receiving system, continuous four band simultaneous scanning of 1-12GHz, components may include: MPP-101 microwave pan preselector, PTM-101 pan tuner module, PS-103 power supply, LIF-107 log IF demod, MC-103 master control, PD-602 pan display, EF-602 equipment frame, PD-102 pan display, PD-201 pan display, MT-112 microwave tuner, DM-112 demod, 112 microwave receiver, SM1622 SDU
RS-125	receiving system, coverage of 10-2000MHz available with four demodulators provide bandwidths ranging from 5kHz to 8MHz, basic system consists of SM-9401A, UT-1000C, VT-30C, SWP-104, DM-4C and S-9901, versatile sytem available in many configurations with no specialized components
RS-158	receiving system, allows simultaneous monitoring of up to 12 channels in 20-80MHz range using 410 series plug-in receivers, basic components include 410 receiver, DRO-270 counter and EF-158 equipment frame containing multicoupler and RF test signal generator
RS-160	Pan-Man receiving system, allows full band or sector scanning (pan/sector and remote with 205-2 or 215 receiver), basic single band configuration consists of 205 receiver, DRO-308 counter and SM-7301 SDU, uses HH-xx, VH-xx and UH-xx series tuning heads for 2-1000GHz coverage, DRX-308 frequency extender required for digital readout of UH- series tuners, TSU-160 tuner switching unit expands capacity to manual selection of up to 7 tuners, CSU-160 tuner switching unit permits sequential scanning (autostep) of up to 7 tuners, TSU-103B is similar to CSU-160 except it can only hold three tuning heads, additional options include VM-101, UM-101 and UM-160 marker generators, FS-101 2-300MHz synthesizer, FS-102 2-1000MHz synthesizer and EF-160 equipment cabinet, later versions of

the system include 205-2 receiver which adds pan/sector and remote scanning or 215 receiver which adds TTL digital control and the DRO-335 counter which counts to 1gHz w/o an extender

- RS-168 EMC version of RS-180, other specs unknown
- RS-180 receiving system, AM/FM (CW opt), 30-1000MHz with 480 series tuners, components include DRO-280A counter, WJ-9310 multicoupler and EF-180A equipment frame for up to six 480 series rcvrs or EF-182A for up to 12 rcvrs, receivers time share the counter and DAFC functions, all receivers can monitor from a single broadband antenna
- TDS-110 carrier demultiplexing system, for microwave telephone signals in the 3.7-4.2gHz, 960 channels in 16 CCITT super-groups, consists of FE-3442 tuner, IFD-210 IF-tape demod, SM-1622 SDU, TFC-101 supergroup converter, TFC-105 supergroup converter, TFC-212 basic supergroup converter, TDM-101 basic group demod, TDM-110 basic group demod, PR-101 LNA, ANT-101 antenna, APR-101 antenna/preamp
- WJ-1007 microwave collection system, 1-18gHz, surveillance set for detection and categorization emission parameters, computer controlled
- WJ-1026 electronically swept receiving system, 1-18gHz, ruggedized and remote controlled (up to 550 feet) for airborne or shipboard applications
- WJ-1047 dual channel receiving system, 0.5-12gHz, digitally tuned system designed for airborne DF and ELINT operation
- WJ-1088 airborne receiving system, 0.4-17.5gHz, designed for antenna pattern analysis, all data recorded digitally
- WJ-1140 modular microwave receiving system, 0.5-18gHz, extremely ruggedized compact system for ECM, ELINT, surveillance, tracking and broadband communications, digitally controlled
- WJ-1154 frequency synthesizer, 1-12.4gHz in 1MHz steps, BCD controllable by appropriate WJ receiver
- WJ-1920 Multi-parameter distributed processing system, dual reception using wide-band IFM receiver and a narrow-band superheterodyne receiver design creates high probability of signal intercept, frequency-domain and time-domain processing of signals.
- WJ-4810 communications jammer, 2-500MHz, amplifier modules from 20-1000w available, single, multiple and barrage jamming modes, microprocessor controlled.
- WJ-8737 receiving system, very similar to WJ-9028
- WJ-8940 receiving system, 5kHz-1gHz, (20Hz-18gHz opt), AM/FM/CW and log detection, 17 IF BWS from 200Hz-50MHz (5Hz w/ ELF opt), for EMC, EMI, Tempest and wideband RF ambient signal

surveys, similar configuration to newer WJ-9040

- WJ-8955 mobile ESM system, signal monitoring and netted direction finding capability over 2-1100MHz range, complete system consists of 3 vehicles, roof mounted DF antenna requires minimal deployment for set-up.
- WJ-8965A communications reconnaissance system, rapid detection of HF/VHF/UHF signals, unit will automatically determine line-of-bearing to VHF/UHF target transmitters, housed in transportable shelter or tactical vehicle, complete with antennas and masts.
- WJ-8976 three channel DF system, provides azimuth and elevation bearing information for many types of signals, monopulse, continuous and spread-spectrum, consists of three channel slave receiver, digital processor, master tuner and antenna system, basic operation from 20-500MHz, operation from 2MHz to 1.2GHz is also possible.
- WJ-8986 correlative vector 3-5 channel DF system, 2-512MHz range, (expandable to 2GHz), 50MHz/sec scan and DF rate, PC/AT design, graphical front panel displays including spectrum FFT, 8.75"h x 19"w x 20"d, 66lbs
- WJ-8990 manpack tactical intelligence system (MANTIS), WJ8972 receiver/DF processor and WJ9881 antenna, RF intercept and DF capability over 20-500MHz range, can be expanded for intercept use from 0.5-1200MHz and DF coverage 2-1200MHz, manual or automated control of search and DF operations, DF accuracy of 2 degrees, RS-232 controllable, 12VDC internal batteries or 24VDC vehicular power (120VAC opt), WJ8972: 6" X 11" X 16", 24lbs, WJ9881 (stowed) 14" X 14" X 35", 29lbs
- WJ-8991 manportable correlative vector DF system, consists of WJ-8996 DF processor, WJ-8997 covert/portable DF antenna, handheld controller, and optional handheld antenna for on-the-move operation, 1-1300MHz (2GHz opt), entire system fits into an ALICE pack, 19"h x 22"w x 12"d, 50lbs
- WJ-8996 correlative vector DF, 2 or 4 channel, 1-2000MHz, ruggedized, lower power consumption (10w) for covert/field deployment, options include RS-232 or ethernet interface and quick reaction analysis scan (100MHz/sec)
- WJ-8999 portable EMC/Tempest test receiver, 1kHz-1GHz coverage (1-12.4GHz opt), AM/FM/CW/Log, operating modes: fixed, scan/plot, scan/monitor, or remote, 18 IF BWs 100Hz-50MHz (100/200MHz opt), optional built-in signal monitor, designed for EMC, wideband ambient RF surveys, signal analysis, 7"h x 16.87"w x 15"d, 42lbs
- WJ-9023C wide range receiving system, 30MHz-12.4GHz, high resolution digital tuning, local or remote control, basic system: WJ-9023C/TSU tuner synthesizer unit, WJ-9023C/IFD IF demod, WJ-9023C/DCU digital control unit and WJ-9023C/ICU interface

control unit

- WJ-9028 receiving system, 20-1000MHz, AM/FM/CW/pulse, consists of two units, WJ-9028/RU receiving unit and WJ-9028/DU display unit, RU contains four tuners, COR, AFC, DAFC and provisions for up to 3 WJ-9930 IF amp/demod modules (10 BWs), DU contains counter and SDU, complete system is rack mount 5.25" high
- WJ-9040B receiving system, 5kHz-23GHz, multipurpose system for RFI/EMI compatibility investigations, wide-band surveillance and narrow-band analysis. Composed of digital control unit (DCU), tune/synthesizer unit (TSU), IF demodulator (IFD) and auxiliary synthesizer unit (ASU), TSUs provide coverage from 5kHz-1GHz (20Hz-23GHz opt), resolution 1Hz across the range, 11 fixed-tuned and varactor-tuned pre-selection bandpass filters, autoranging antenna attenuator, IFDs provide bandwidths ranging from 200Hz-50MHz centered on 100kHz, 21.4MHz & 160MHz, Operator interface consists of 32 key keyboard, tuning wheel, analog controls for audio and IF gain, 256 character LCD alphanumeric display
- WJ-9045 modular tactical receiving system, 5kHz-440MHz using a series of receivers, digital control, DF capable
- WJ-9088 frequency management system, signal collection, measurement, modulation identification, sorting and management of signals from 10kHz to 1GHz in 10Hz steps, AM/FM/FM phase/CW/OOK/LSB/USB and noise, tuning time of 20-250mS, controlled by PDP-11 computer which can record, sort and edit up to 30,000 signals via color monitor and function keys.
- WJ-9103 multichannel digital tuner, consists of up to 8 WJ-9103/DTM digital tuner modules, tunable LOs, equalization signal source, digital controller and support circuitry, 20-500MHz (20-2000MHz w/ extender opt), 2MHz instantaneous bandwidth (4MHz opt), for precision DF, spectral analysis, antenna beamforming, 5.25"h x 19"w x 22"d, 55lbs
- WJ-9104 multichannel digital tuner, similar to WJ-9103 except 20-2400MHz range for each channel, 10MHz instantaneous bandwidth, options include LF/HF capability (0-33MHz), programmable IF BWs (4kHz-10MHz), serial/fiber optic data output, ethernet or high-speed serial control interface, 20MHz instantaneous BW
- WJ-9195 rapid acquisition spectrum processor (RASP), digitally refreshed display unit, controls a specially configured WJ-8618B-2 or WJ-8618B-15 receiver for extremely fast display of radio spectrum. Will not operate properly with any other WJ-8618B receivers. Rack mount 8.75" high.
- WJ-9195C rapid acquisition spectrum processor (RASP), broadband receiver and spectrum display device, 20-512MHz (expandable 2MHz to 4GHz), 1GHz per second scan rate (!!!), 5 or 25kHz resolution, electroluminescent display, six programmable traces, manual or remote computer control, Can act as a system controller for up to 15 WJ904 receivers, rack mount

8.75" high, 89lbs.

WJ-32320 ELINT/ESM system, 0.5-18GHz, tells you everything you want to know about every kind of emitter in the area including its location as determined by triangulation and GPS. Not for mere mortals.

Edited by Terry O'Laughlin, WB9GVB

Additions, corrections, suggestions to:
e-mail - watkins-johnson@terryo.org
snail mail - P.O. Box 3247, Madison, WI, 53704