

Communications Electronics, Inc. and Watkins Johnson Receiving Systems Guide

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

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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-290 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 supergroups, 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 superhetrodyne 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"n 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.

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**Additions, corrections, suggestions to:
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