

Watkins Johnson WJ-861x Information

covering WJ-8615, WJ-8616, WJ-8617 and WJ-8618 receivers

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Notes

These receivers vary wildly in configuration, options, and coverage. Cannibalization is rampant. An option code on the rear panel or a configuration dash number is only an indication of the original state of the radio. Always check internally for appropriate option cards, filters, connectors and functions before assuming the radio has what is marked on the outside.

On the 8617 / 8618, the version number is rarely printed on the front panel. It is occasionally printed or handwritten on the rear panel option sticker. Sometimes it is written on the window cover of the microprocessor card EPROMs. These dash numbers appear to be more of an internal WJ code for designating the starting point in meeting a customers needs.

Notes on 8617 / 8618 versions:

The B versions of the 8617 and 8618 have a completely redesigned synthesizer/LO system that is not compatible with A versions. It is quieter and more stable.

The S1 versions of the 8617 / 8618 have a new processor board and improved bus system. The new 8609 processor boards are not compatible with earlier receivers. The S1 version of the receivers are often not marked externally. Look at the processor board to be sure or try holding the manual button in while you turn the radio on. An S1 will display the version number. See guide for format of power up display.

Note: Exact version is displayed in digital display for a few seconds at power-up

Version format XX.YY where
XX represents the Type **YY represents the Revision (0-99)**

Type

Type AA	WJ-8615	Amended "A" version used only with A.08 and AA.08
Type A	WJ-8615	Standard 8615 software
Type D	WJ-8615D	Standard 8615D software
Type E	WJ-8615/SSL	8615 with Scan/Step/Lockout option*
	WJ-8615D/SSL	8615/D with Scan/Step/Lockout option*
Types F & FD		No additional information available

* Scan/Step/Lockout adds associated scan functions and enables WJ-8610A controller to gather spectrum displays for system integration

Revision (software)

Original software was A.0 and has been revised a number of times. A brief overview follows:

Ver A.0.3

Rx power up sequence modified to improve 1st LO lock-up at all frequencies.
Gain normalization tables contained in RAM, were implemented to increase gain normalization across varying bandwidths.

Ver A.0.4

Tuning meter modified to accommodate spectrum reversal with implementation of Frequency Extender (FE) option and receiver is tuned above 500MHz

Ver A.0.5

Digital control section signature analysis subroutine relocated in memory, to provide increased reliability in the analysis results.

Ver A.0.6

Tuning meter subroutines modified to prevent meter self-centering after reaching endstop - eliminates false center readings.

2nd LO tuning subroutine modified for net increase in tuning lock speed.

Other modifications allow for recognition of following IF bandwidths: 3.2KHz, 15KHz, 30KHz, and 250KHz. Also bandwidth sizing is provided for SSB operation, allowing auto

selection of the 1st IF bandwidth greater than 6.4KHz when in SSB mode.

Ver A.0.7

Calibration subroutine added to operating system that generates a data table in RAM, providing optimum tuning of the 2nd LO synthesizer. This provides faster and more reliable 2nd LO synthesizer operation. Fifteen minutes after power-up, the 2nd LO CAL routine is executed. During the first 15 minutes of operation, the 2nd LO uses fixed ROM data. During a 2nd LO CAL operation, "2nd CAL" is displayed and front panel operation is disabled. Front panel operation is restored when 2nd LO CAL is completed.

The Front Panel Definitions mode allows the 2nd LO CAL routine to be enabled (2CAL ON) or disabled (2CAL OFF). When enabled, the 2nd LO uses data tables generated in RAM as a result of the 2nd CAL routine; when disabled, the 2nd LO uses fixed data tables factory loaded in ROM. Additional error codes have been added to service the 2nd LO CAL routine.

Ver A.0.8

The 488 busy bit is set while receiver is responding to a query. Additionally, the Master Receiver does not respond to selection of SSB or ISB if the slave receiver is not so equipped. Previously, this caused 488 control lockup.

Note: *Due to the hardware changes required to support SSL, version A.0.9 and later are not backward compatible with previous versions.*

Ver A.0.9

Step-Scan-Lock options are supported beginning with this revision.

Tuning meter operation is modified to allow half-step operation (manifested by illumination of two bars at various levels)...this tends to smooth the relationship between tuning meter readout and actual tuned position within bandpass.

Manual gain control limits are indicated with "--" at either end of the control range.

Automatic IF bandwidth control has been refined. Selecting SSB mode causes receiver to search installed filters to locate the the narrowest filter (equal or greater than 6.4KHz) regardless of its location. When exiting SSB mode, the bandwidth previously in use is reselected.

In Front Panel Definitions Mode, a mode change now requires a full 45 degree rotation of the tuning knob. This desensitizes this adjustment, requiring deliberate effort to effect a change.

The BFO and COR buttons toggle their associated functions on/off.

Pressing the BFO key while in CW or SSB or ISB, causes the BFO offset setting to replace the tuned frequency display. Pressing the BFO key again restores the frequency readout at its previous tuning resolution.

With COR enabled, the CHANGE pushbuttons vary the COR level.

In the TEST mode, the operator may observe actual synthesizer frequency in the tuning display for diagnostic purposes.

488 revisions include elimination of inconsistent responses to signal strength queries.

Commands and queries may now be formatted as strings, each command separated by a semi-colon. The receiver responds in same format.

Version A1.1/D1.1

Modified version of the A1.0/D1.0 software.

AGC AM detector is now 2V pk, allowing fast AGC. The AGC sample window is now 30msec.

In binary 488 mode, the semi-colon is removed from the VER? query.

Ver A.1.1

Software version may be used in either processor type in the 796242 assembly in U3 and U4, or in type 796495 processors in U9.

Ver D.0.9

Standard software based on ver A.0.9, incorporating SSL.

Ver D.1.0

The CAL2 operation was modified to allow operator to interrupt a Scanning calibration.

The Fast Scan LO (FSLO) and Extended Memory (EM) have been incorporated. BFO tuning can be exited by pressing any tune-related key.

Ver E.0.3

Version based on D.0.9 allows LOK command to lock out twice the selected IF bandwidth.

LCK and RLK commands require a question mark (?). SRQ is set after data is entered into the queue.

Ver E.0.4:

Version based on D.1.0. Changes as follows:

Scan parameters when going from Scan to Manual Scan. The sync pulse timing has been adjusted to maintain specified limits during the extra time required for the 5KHz interpolation.

It provides a calibration check at power-up, preserves receiver mode through power-down/up, and has added the SCM (Scan Manual) and STM (Step Manual) commands.

Ver E.0.5

Scan dwell time has been increased to 150msec during scan, allowing sufficient 2nd LO lock time when a signal greater than COR level is encountered.

The CLM command now only clears memory.

The BIN command is allowed during Step or Scan mode.

Ver E.0.6

Version based on E.0.5. Provides following additional capabilities:

The "start-of-sync-pulse" is enabled at the start of Scan; the BFO sign bit (+/-) is saved in channel memory.

The COR bit (in the status byte) is reset when a Scan or Step command is set and the CAL abort flag has been added.

Ver E.0.7

Implements new Calibration timers for @nd LO CAL routines.

Ver E.1.0

Allows processor type 796495-5 to provide EPROM selectable options.
Software selectable options are SSL and EM.

Ver E.2.0

Version based on E.0.4 for SSL: allows tuning to ZERO and provides LO lock check routine.

Ver F0.0.0

Special version based on ver E.0.6:
Resets COR output when Scan or Step command is received.

Ver FD.0.1

Special version
Provides a SSL routine (no further info found).

Ver FD.0.7

Allows option to cause signal acquisition by edge triggering, thus avoiding duplicate lockons possibly off-center tuned. (no further info found).

Ver FD.0.9

Added Auto Cal and Scan Increment subroutines in operating software.

WJ-8617 and WJ-8617A Receiver Versions

10-16-03

WJ-8617 Series

WJ-8617 Status = M 5/4/77
General purpose VHF/UHF receiver with 20 - 1000 MHz coverage. Synthesized, digitally controlled receiver with built-in signal monitor.

WJ-8617-2 Status = M 1/18/80
20 - 1100 MHz remotely controlled receiver. AM, FM, and CW reception. Voltage tuned preselectors (20% BW). Noise figure 20 - 500 MHz is 9 dB typical, 500 - 1100 MHz is 10 dB typical. Internal signal monitor data over 20 Hz - 20 kHz line. Control data received 300 - 2800 Hz. 600 Ohm video output. 6 RF inputs.

WJ-8617A Series

WJ-8617A Status= 1980
General purpose receiver. Digitally controlled. With VHF/UHF range of 20-1100 MHz

WJ-8617A-1 Status = M 8/14/80
Same as WJ-8617A without signal monitor. (Bruff)

WJ-8617A-3 Status= M 8/14/80
WJ-8617A with blank front panel. This is for remote control. Unit must have IEEE-488 or RS-232C interface option.

WJ-8617A-4 Status = M 8/15/80
WJ-8617A with signal monitor deleted. AGC threshold detector of 30 dB (-1 +2 dB). Analog AGC output. Wideband IF output of -13 to -33 dBm. FM detector accuracy to within 3% of straight line over 80% of the IF bandwidth. Antenna switch.

WJ-8617B Receiver Versions 10-17-03

- WJ-8617B** Status= 11/2/83
Frequency range 20 - 500 MHz (1100 MHz with FE option) Fully synthesized. 100 Hz tuning resolution. Synthesizer settling time 3 mS. AM, FM, CW & PULSE detection modes (SSB, LOG optional). LOG/LIN signal monitor. Low RFI design meets MIL-STD-461A. Five selectable IF bandwidths (many available options). Modular construction. Built for low mean time to repair (MTTR).
- WJ-8617B-1** Status = M 4/82
For customer *****. Modified WJ-827B for TCAS. Contains software changes that modify operation of dwell control and adds capability of manual logging and operating a real-time clock. Unique front panel. Software version must be less than v2.2. See file for list of options installed as standard.
- WJ-8617B-2** Status = M 3/26/82
Fast acquisition receiver. Designed to scan 1 MHz increments with settings: step size = 1 MHz; dwell = 0. Front panel will be blank. DRD display may not use entire SDU screen. Non-MHz digits in the memory channels will be ignored. Scan time will be 50 mS. See file for complete details.
- WJ-8617B-3** Status=
Same WJ-8617B except 794190-1 front panel display and controls sub-assembly replaced with WJ-8617B-3FP front panel. WJ-8617B-3FP contains on/off switch, power indicator, phone jack, and audio level control. Radio to be remote controlled from external device via IEEE-488 remote interface.
- WJ-8617B-4** Status= 4/82
Modified WJ-8617B with IF bandwidths of 10, 20, 50, and 100 KHz. "B" version Karakal receiver with NRT. Special designation for scan, step, lock out, etc. Options included: EM, DRD, IEEE-488, LOC, H/O, and M/S.
- WJ-8617B-5** Status= 3/1/83
The units are being developed for the TRQ-32 program. Special functions are: 1) 150 Hz recognition - with 150 Hz, without 150 Hz, and all signals. 2) Bandwidth output data - remote indication of active bandwidth. 3) Low frequency extension 0.5 - 20 MHz. 4) IF bandwidth of 3.2 kHz. (Bruff/Deeb)
- WJ-8617B-5** Rev. 1: 1/89
Updates standard equipment included in WJ-8617B-5 unit. Signal monitor, Digital refreshed display, Single sideband, IEEE-488 interface bus. IF BWs for WJ-8617B-5, IF amplifiers for 3.2 KHz, 10 KHz, and 50 KHz, FM demodulators for 3.2 KHz, 10 KHz, and 50 KHz.
- WJ-8617B-6** Status = P 4/29/83
This is a contract item for ***** Associates. Options installed: 488, SSB. IF BWs: 10 KHz, 25

8617B-10) and utilize LO master/slave (WJ-8617B-6); 2) Support fully functional front panel and SM, LOC, CUR, 488, 10, 20, 50 mS. Hardware modifications: 1) Rear panel identical to WJ-8617B-6. No front panel bezel change; 2) Add LO modules. See type number card.

WJ-8617B-13 Status= 3/5/84
(Configuration 5, DF box). Software same as WJ-8617B-12. Hardware reconfigured as follows: 1) remove A3A8 through A3A21 modules; A4A1 through A4A6 modules; A4 motherboard. Uses 8617B-3 front panel. New nameplate. Create new mainframe plate and schematic. Add 488 option only. Add 2nd LO amplifier. See type number card.

WJ-8617B-14 Status= 7/84
Similar to WJ-8617B with modified software to bias the display frequency with respect to the actual frequency. Units will have 10 IF BWs and buttons. New name plate. Generate CPL.

WJ-8617B-15 Status= 9/84
Same as WJ-8617B except that the IF output on the rear panel is provided through a BNC rather than a TNC connector.

WJ-8617B-16 Status= 10/84
WJ-8617B modified to provide noise figure of less than 6 dB. Decade tuning (TUN) and 10 IF bandwidths standard. Designed for narrowband tempest testing.

WJ-8617B(S1) Receiver Versions

The S1 version of the WJ-8617B will display version and EPROM revision information on boot-up. Hold the manual button down while turning on the power. The display will show:

Signal Strength	Memory Channel	Frequency	
		MHz	kHz
86	17	-XX	Y.YY

The radio is an **8617**.

XX is the dash number. **Y.YY** is the EPROM (software) revision number

WJ-8617B(S1) Status= 4/85
New microprocessor card uses MC6809 processor. Not backward compatible with old units. Most options supported in microprocessor board ROMs rather than on option card ROMs (latest major software upgrades).

WJ-8617B(SI)-3 Status= 6/25/85
Same as the WJ-8617B-3 except has new microprocessor board (WJ type 796353-2) installed. New board will improve RS-232 interface and communication.

WJ-8617B-17 Status= 10/84
Same as WJ-8617B(S1) but with low noise amplifier instead of antenna switch. Antenna 1 input is dedicated to 0.5 - 500 MHz and antenna 2 is dedicated to 500 - 1100 MHz input. The noise figure is typically 4 dB in VHF and 6 dB in UHF.

WJ-8617B-17 Rev. 1 2/87
Differences not known.

WJ-8617B-17 Rev. 2 1/89
Adds FE and SM as standard options.

WJ-8617B-18 Status=
Design per ***** specifications (see file). Front panel with green LEDs. Tuning range of 10KHz-500MHz (VLF converter). Video output level control on front panel with DAV option and concentric audio control for front & rear panel output level. WBO, but with 10.7 MHz center frequency (BW at least 8 MHz). AM detector dynamic range of 45 dB minimum with IF BW not greater than 50 KHz. frequency offset can be entered via front panel or RS-232 interface. Disable AGC ahead of spectrum monito. Positive video. IF BWs not less than 300KHz limited to the following selections (KHZ): 300, 400, 500, 600, 800, 1000, 1200, 1600, 2000, 3200, 4000.

WJ-8617B-18 Rev. 1

EM is required option

WJ-8617B-18 Rev. 2

SSB option is supported.

WJ-8617B-19

Status=

6/25/85

Controls WJ-8617B(SI)-3 through RS-232 communication link in normal mode. Same as WJ-8617B in master/slave. Sends out tuned frequency, antenna select, RF/IF manual gain, and AGC. Slave receiver sends 21.4 MHz IF signal through port 2. In master/slave, AFC, STEP & SCAN are prohibited.

WJ-8617B-20

Status=

WJ-8617B with ELF option (0.01-500 MHz), 10 IF BWs with 10, 50, 300 & 500 KHz, 1, 2, 4, 6, 8 & 10 MHz IFs supplied (widest available 10 MHz), and modified for external LO input of 4.4-5.4 MHz. Also includes: SM, 488, SCS, (for ESL) OA#300561.

WJ-8617B-20 Rev. 1

2/3/86

To include video output impedance of 50 ohms nominal.

WJ-8617B-20 Rev. 2

12/29/86

Removes LFE and changes to ELF and delete minimum documentation.

WJ-8617B-20 Rev. 3

6/22/87

Changes 20-500 MHz frequency range to 0.01-500 MHz and makes FE unsupported. See type form for options.

WJ-8617B-20 Rev. 4

Changes LOGV to unsupported.

WJ-8617B-20 Rev.5

Adds information on optional IF BW cards and type numbers.

WJ-8617B-21

Status=

1/20/86

Has standard IEEE-488 remote interface and real-time clock. 1st & 2nd LO outputs are provided. FE LO output provided when installed. Type 796233-4 audio/video COR board replaces standard audio/video COR board. Three-step AFC feature replaces standard AFC. Software modified to function with WJ-8976/DFPA. For details see OA#300544. Options supported: TUN, MS, 10IF, RLOG, BITE, VBFO, PKC, DRD, 488, WBO, FE, SSB, SM, DFC, IFBW, LOGV, HFE, LFE, RTC, 10MHz SCS, FP, Consult engineering on: PSM, 232, ASO, NRT, TPC

WJ-8617B-21 Rev. 4

3/87

Differences unknown

WJ-8617B-22

Status=

Project cancelled 8/1/86.

Customer's requirement will allow him to use a standard WJ-8617B.

WJ-8617B-23 Status= 11/86
Same as current WJ-8617B(S1) except modified to control WJ-9075 frequency extender. With WJ-9075 enabled, tuning above 1000 MHz is accomplished through the use of extender as a down converter for signals in the 1.0 - 4.5 GHz range. With extender disabled, receiver will function as a standard WJ-8617B(SI). Options supported: TUN, M/S, 10IF, RLOG, BITE, VBFO, PKC, DRD, PSM, 488, WBO, FE, SSB, SM, DFC, IFBW, HFE, LIFE, RTC, 10MHZ. Options excluded: VLF, NRT, PRE, TPC. Consult engineering on: LOGV, 232, ASO.

WJ-8617B-23 Rev. 1 3/88
Frequency readout option TUN is standard.

WJ-8617B-24 Status= 12/29/86 Rev. 10/15/87
WJ-8617B with LFE & FE covers 10.5-1100 MHz, 10 IF BWs (widest is 10 MHz), Modified for external LO input of 4.4-5.4 MHz and to include video output with an impedance of 50 ohms nominal. BWs include 10K, 50K, 300K, 500K, 1 M, 2M, 4M, 6M, 8M, 10M. Supported options include: TUN, MS, 10IF, VBFO, PKC, 488, 232, WBO, FE, SSB, SM, IFBW, HFE, LFE, RTC, 10MHz.

WJ-8617B-24 Rev. 2
Changes frequency range to 0.5-1100 MHz.

WJ-8617B-24 Rev. 3
Adds optional IF BW cards and type numbers (see file for complete information).

WJ-8617B-25 Status= 7/87
WJ-8617B receiver modified to operate with WJ-9073-2 tracking preselector. Installation of serial interface in option slot 5 or 6 precludes the use of certain options depending on which option slot is used. Consult engineering on the use of the following options: MS, RLOG, DAV, ASO, NRT, HFE, LFE. Options supported: TUN, 10IF, BITE, VBFO, PKC, DRD, PSM, 488, 232, WBO, FE, ISB, SSB, SM, DFC, IFBW, LOGV, RTC, 10MHZ, TPC, SCS, FP.

WJ-8617B-26 Status= 10/87
WJ-8617B receiver with VLF converter. Allows tuning down to 0.01 MHz. Has two dedicated antenna inputs: 0.01 -5.99 MHz AND 5.99-500 MHz. The VLF converter eliminates the FE option. Noise figure is typically 13 dB below 6 MHz and 3rd order intercept point is 0 dB.

WJ-8617B-26 Rev. 1: 10/87
Note: A 6 MHz IF was ordered. The voltage code for the 10 MHz IF BW will be used for the 6 MHz IF.

WJ-8617B-27 Status= 11/87
Same as WJ-8617B receiver (old microprocessor) except for the following:
(1) includes all modifications of the WJ-8617B-1 "TCAS" receiver.
(2) AGC dump, with fast attack.
(3) has the following standard options: RS-232, RLOG, RTC, SMO, BITE, EM, CUR, LOC, DRD.

(4) Software revision level 2.2.8

WJ-8617B-28 Status= 2/29/88

Same as WJ-8617B(S1) except software modified. Scan and step service request operation altered per customer requirement. All standard receiver options are supported. See type # file for customer specification.

WJ-8617B-29 Status= 5/88

Same as WJ-8617B except it will accept a 6 MHz IF BW and delete an 800 kHz BW as all bandwidth codes have been used in this receiver. Options requested: 10IF, BITE, DRD, 488, WBO-2, FE, SSB, SM, LOGV, LFE, Supported options: all except TPC

WJ-8617B-30 Status= 1/89

WJ-8617B receiver with VLF converter. Allows tuning down to 0.01 MHz and eliminates the FE option. Noise figure is typically <18 dB below 3 MHz, <15 dB from 3 MHz to 20 MHz and <11 dB above 20 MHz. Video output impedance is 50 ohms nominal. Ten IF BW's supplied including 25K, 75K, 100K, 200K, 300K, 500K, 1.5M, 4M, 10M. One RF input (ANT1). ISB is standard. This design was done for ESL.

WJ-8617B/FEDF Status=

For use with WJ-8976 DF system. Permits receivers to operate up to 1100 MHz.

WJ-8617B/FEXDF Status=

For use with WJ-8976 DF system. Permits receivers to operate up to 1200 MHz.

WJ-8618A Receiver Versions 10-17-03

WJ-8618A Status=
Receiver with 20-1100 MHz coverage designed to meet stringent EMI/RFI specifications.

WJ-8618A-1 Status = M 8/14/80
Same as WJ-8618A without signal monitor.

WJ-8618A-3 Status = M 8/14/80
WJ-8618A with blank front panel. This is for remote control and unit must have IEEE-488 or RS-232C option installed.

WJ-8618A-4 Status = M 12/16/82
Same as WJ-8618 with pulse stretching added. SIS/WTE.

WJ-8618B Receiver Versions 10-17-03

WJ-8618B-1 Status = 3/83

Same as WJ-8618B except new software allowing modified scan and special subroutines upon detection of signals. Added front panel upper case functions for "scan down" and complete "scan" activation from 1100 MHz down to 20 MHz.

WJ-8618B-2 Status = 7/83

WJ-8618B modified for use with WJ-9195 DRD unit. "MULTARS" special software. See file for complete details of program.

WJ-8618B-3 Status =

WJ-8618B with blank front panel. This is for remote control and unit must have IEEE-488 or RS-232C option installed.

WJ-8618B-4 Status = 11/83

SSQ-80 receiver spec. keys, mnemonics and software changes.

WJ-8618B-6 Status = 12/8/83

Master/slave LO outputs. Special group delay equalized filters. 50 kHz, 400 kHz, 800 kHz, 2 MHz, 4 MHz. Similar to WJ-8617B-6 but with normal front panel controls.

WJ-8618B-7 Status = 4/84

LSB (J28) and USB (J29) available on the rear panel. Spare fuseholder removed and "WB-IF OUT" installed in that position.

WJ-8618B-8 Status= 5/84

Modified software and 794137-8 extended control subassembly adds seven uppercase functions to front panel pushbuttons (labeled A through G). Frequency display and tuning knob active in scan mode, with frequency display changing only with knob rotation. See files for complete information.

WJ-8618B-9 Status = 7/84

10IF option increases IF bandwidths available to ten. Variable tuning resolution similar to WJ-8615D. See file for further details.

WJ-8618B-10 Status = 10/84

VHF/UHF receiver. Same as WJ-8618B except includes BCD parallel output of tuning frequency and selectable internal or external local oscillator, RS-232.

WJ-8618B-11 Status = 2/85

Same as WJ-8618B except modified to contain master-slave/local (MS/LO) capability

WJ-8618B-12 Status = 11/1/85

Same as WJ-8618B-10 except has IEEE-488 instead of RS-232 communications. No external LO capability. 10 IF bandwidths, 10 MHz IF bandwidth (4 MHz/8 MHz BW is a special). Note:

does not include RTC and RLOG.

WJ-8618B-12 Revs. 1, 2, 3, & 4

1/13/86

Differences not listed.

WJ-8618B-13

Status =

12/10/85

Same as WJ-8618B-12 which has IEEE-488, parallel BCD output, 10 IF bandwidths. Also adds built-in tracking preselector. Supports 10 MHz IF bandwidth and RLOG.

WJ-8618B-14

Status =

1/86

WJ-8618B changed to include: BCD parallel output of tuning frequency in option slot 6; RLOG in option slot 5; RTC in option slot 1; No external LO; 10 IF bandwidths supported up to 10 MHz IF bandwidth (4 MHz/8 MHz IF BW is special); Known options not supported: RS-232C interface; ASO; NRT; LOGV; BITE.

WJ-8618B-14 Rev 1

2/86

Differences not listed.

WJ-8618B-15

Status =

6/4/86

Same as WJ-8618B except modified for use with WJ-9195 DRD unit and to incorporate software changes per GTE specifications indicated on OA #300987, "High Noon" receiver. Enables receiver to work with WJ-9195 control unit. (See WJ-8168B-2 type number assignment form for details of WJ-9195 DRD modifications). Options supported: M/S, BITE, 488, WBO, FE, SM. (Has been seen with E-Systems tag and a light green front panel).

WJ-8618B-15 Rev. 1

7/86

M/S is not a supported option.

WJ-8618B-16

Status =

6/11/86

Similar to WJ-8617B with modified software to bias display frequency with respect to actual tuned frequency. All units have 10 IF bandwidths and buttons. New name plate. Nerate CPL. Also included: (1) 10 IF BWS selectable up to and including 10 MHz; (2) IF BWS supplied are: 10, 20, 50, 100, 250, 500 kHz AND 1, 2, 4, and 10 MHz. Consult engineering regarding: algorithm of frequency offset; Options supported; 10IF, RLOG, BITE, VBFO, PKC, DRD, PSM, 488, WBO-2, FE, SSB, SM, NRT, LOGV, HFE. OA

WJ-8618B-16 Rev 1.

6/19/86

Differences not listed.

WJ-8618B(S1) Receiver Versions 10-17-03

The S1 version of the WJ-8617B will display version and EPROM revision information on boot-up. Hold the manual button down while turning on the power. The display will show

Signal Strength	Memory Channel	Frequency	
		MHz	kHz
86	18	-XX	Y.YY

The radio is an **8618**.

XX is the dash number. **Y.YY** is the EPROM (software) revision number

WJ-8618B(S1) Status = 4/85

New microprocessor card using 8609. Not backward compatible with old units. (Latest major software updates included).

WJ-8618B-17 Status = 8/4/86

VHF/UHF receiver with modifications for the "Euphoria" program: (1) AGC dump; (2) Allow SRQ after frequency change if signal is present; (3) Decrease AGC attck time; (4) changed FM filter on interface board (AFC/FMO?)(Decreased time constant on FMDC); (5) software change to allow receiver to tune to "zero" frequency. Requested options: BITE, 488, SSB, SM, 10K, 20K, 50K, 300K, FP, AND SCS.

WJ-8618B-18 Status = 11/86

Same as current WJ-8618B(S1) except modified to control WJ-9075 1-4.5 GHz frequency extender. With WJ-9075 enabled, tuning above 1000 MHz is accomplished through the use of extender as down converter for signals in the 1 - 4.5 Ghz range. With extender disabled, receiver will functions as standard WJ-8618B(S1). Options supported: TUN, M/S, 10IF, RLOG, BITE, VBFO, PKC, DRD, PSM, 488, WBO, FE, SSB, SM, DFC, IFBW, HFE, LFE, RTC,10MHZ. Options excluded: VLF, NRT, PRE, TPC. Consult engineering for information on LOGV, 232, ASO.

WJ-8618B-18 Rev 1. 3/88

Indicates TUN is now standard.

WJ-8618B-19 Status = 7/87

WJ-8618B receiver modified to operate with WJ-9073-2 tracking preselector. Installation of serial interface in option slot 5 or 6 precludes the use of certain options depending upon which option slot is used. Consult engineering on the use of the following options: RLOG, DAV, ASO. Options supported: TUN, 10IF, BITE, VBFO, PKC, DRD, PSM, 488, 232, WBO, FE, ISB, SSB, SM, DFC, IFBW, LOGV, RTC, 10MHz, TPC, SCS, and FP. Consult engineering on M/S, RLOG, ASO, HFE, LFE, DAV.

WJ-8618B-20

Status =

10/88

Same as WJ-8618B(S1) except digital motherboard is wired to support the NRT option. Digital motherboard type number is 798039-13, schematic number is 580515. Note: the DAV option will not work in this receiver. OA #302500/BEAM.

WJ-861x Receiver Options 10-17-03

The WJ-8615, WJ-8617 and WJ-8618 receivers vary wildly in configuration, options, and coverage. The codes are the same for all receivers but the options themselves require different boards and, in some cases, different software versions for different radios.

Cannibalization is rampant. An option code on the rear panel or a configuration dash number is only an indication of the original state of the radio. Always check internally for appropriate option cards, filters, connectors and functions before assuming the radio has what is marked on the outside.

10IF	Ten IF (receiver has ten slots for IFs and Demods 8617-8618 only)
10MHz	10 MHz maximum IF bandwidth (8 MHz is standard)
150Hz	150Hz tone sensing squelch (for military VHF use)
232	RS-232 Remote Control Interface
488	IEEE-488 Remote Control Interface
ASO	Audio Scan Output (audio output tone locked to received frequency)
BITE	Built In Test Equipment (2 versions, one with RF, one w/o)
CUR	Cursor (tuning knob moves cursor over spectrum display to show frequency)
DAV	Digital Audio Video (set audio and video output levels by digit control)
DFC	Direction Finder Control (for use with WJ-8971A direction finding unit)
DRD	Digitally Refreshed Display
EM	Extended Memory (96 channels - standard issue is 16)
FE	Frequency Extender (to 1.1 GHz)
FEX	Frequency Extender (to 1.2 GHz)
FP	Fan attachment (adds 2 muffin fans to rear and 3" to depth of radio)
HFE	High Frequency Extender (down to HF frequencies of 2 MHz)
IFBW	IF Bandwidth & discriminator sets (designation for any special IF/demods ordered)
ISB	Independent Sideband
LFE	Low Frequency Extender (down to LF frequencies of 100 kHz)
LOC	Lockout (allows locking out memories during scan)
LOGV	60 dB Log Video
M/S	Master/Slave (allows remote control by or of other radios)
NRT	Noise Riding Threshold (specialized squelch)
PAS	Programmable Antenna Switch (use tuning knob to set frequency in memory for automatic switchover of antennas)
PKC	Pluggable Keyboard Control (almost standard on 8617-8618 - look for IDC jack by tuning knob)
PRE	Preselector (** details not known **)
PSM	Panoramic/Sector Marker Display
PSS	** details not known **
RLOG	Record Logging
RCS	Rotating Chassis Slides (for rolling out of a rack and rotating for servicing)

RTC	Real Time Clock
SCS	Straight Chassis Slides (for rolling out of a rack mount)
SM	Spectrum Monitor (usually standard, the display on the front panel)
SMO	Spectrum Monitor Output (21.4 MHz)
SSB	Single Sideband Demodulator (USB and LSB w/ 3.2 kHz filters)
SSL	Sacr/Step/Lockout (advanced scanning features for 8615 only)
TPC	** details not known ***
TUN	Tuning (allows tuning by flashing display digit or standard 100Hz/10kHz/1MHz - standard on S1 versions)
VBFO	Variable Beat Frequency Oscillator
VLF	Very Low Frequency (covers 10kHz-500MHz - has a built-in downconverter activated below 6 MHz - cannot be installed with FE or FEX)
WBO	Wide Band Output (10MHz wide @ 21.4MHz for external demods)
WBO2	Wide Band Output 2 **details not known**

WJ-8616A, WJ-8617A and WJ-8618A Option Switches (on motherboard)

Table 2-1. Synthesizer Interface Switch Configurations

Switch S1 on A5A2	Description
6 5 4 3 2 1	
1 - - - - *	Frequency Range 20-1100 MHz
0 - - - - *	Frequency Range 20-500 MHz
- 1 - - - -	Single Sideband
- 0 - - - -	Not Used
- - 0 0 0 0	Antenna Switches only by Front Panel Button
- - 0 0 0 1	Antenna Switches at upperband of 1st Preselector 30 MHz
- - 0 0 1 0	Antenna Switches at upperband of 2nd Preselector 47 MHz
- - 0 0 1 1	Antenna Switches at upperband of 3rd Preselector 75 MHz
- - 0 1 0 0	Antenna Switches at upperband of 4th Preselector 120 MHz
- - 0 1 0 1	Antenna Switches at upperband of 5th Preselector 187 MHz
- - 0 1 1 0	Antenna Switches at upperband of 6th Preselector 292 MHz
- - 0 1 1 1	Antenna Switches at upperband of 7th Preselector 382 MHz
- - 1 0 0 0	Antenna Switches at upperband of 8th Preselector 500 MHz
- - 1 0 0 1	Antenna Switches at 700 MHz
- - 1 0 1 0	Antenna Switches at 900 MHz
- - 1 0 1 1	Antenna Switches at 233 MHz

*1 0 0 0 0 0

Normal Shipping Positions (with FE installed)

*0 0 0 0 0 0

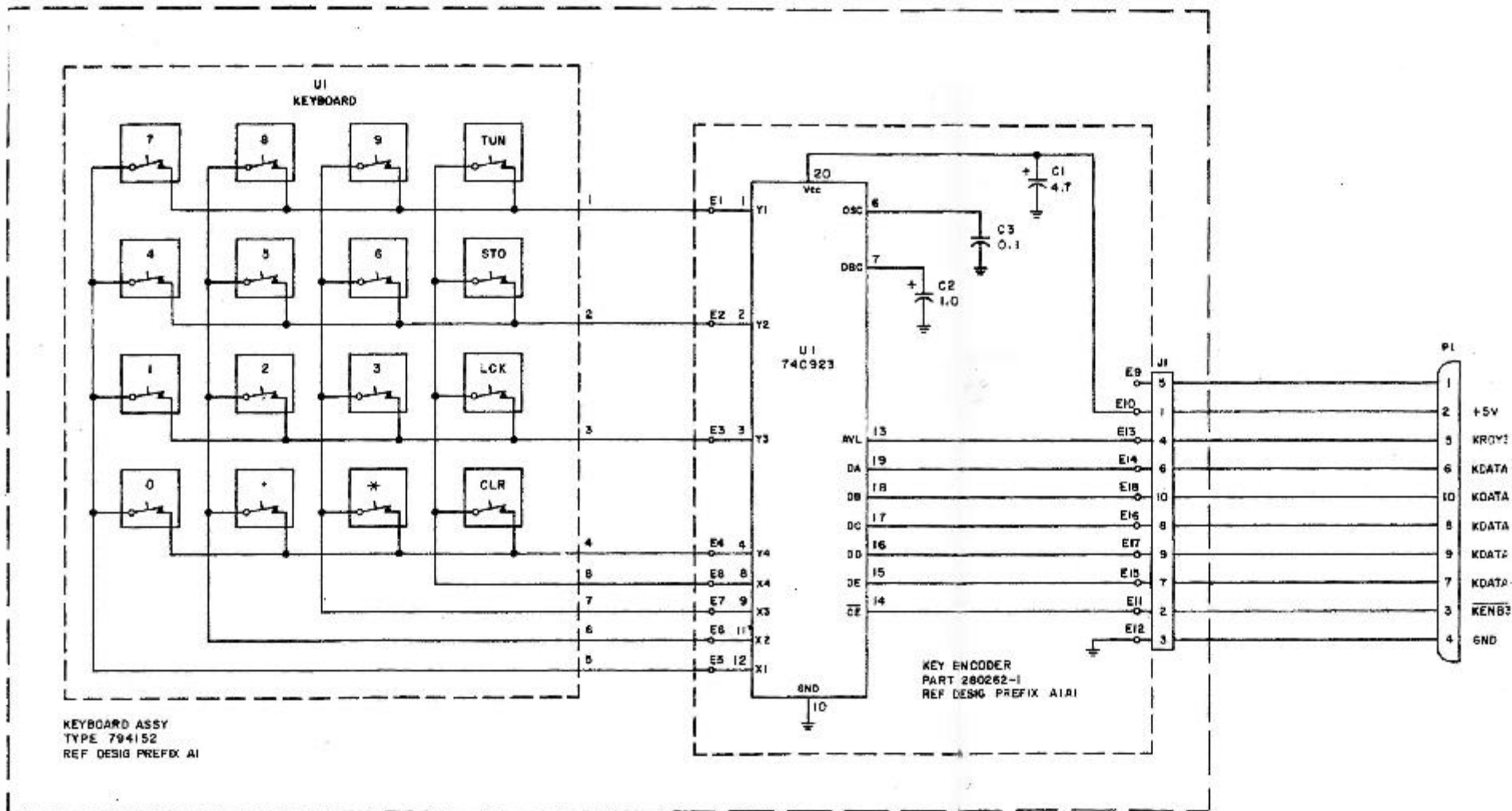
Normal Shipping Positions (without FE installed)

WJ-8617B(S1) and WJ-8618B(S1) Option Switches (on motherboard)

Table 2-1. Synthesizer Interface Switch Configurations

<u>S1</u> switch settings are listed below:								
<u>Switch S1 on A5A2</u>								
<u>6</u>	<u>5</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>1</u>	<u>Function Selected</u>		
1	-	-	-	-	-	Selects Variable Tuning Resolution (from 100 Hz to 10 MHz)		
0	-	-	-	-	-	Selects Normal Tuning Resolution (100 Hz, 10 kHz, 1 MHz only)		
-	1	-	-	-	-	Selects Dual IF Amplifiers (up to 10 IF bandwidths)		
-	0	-	-	-	-	Selects Single IF Amplifiers (up to 5 IF bandwidths)		
-	-	*	-	-	-	Spare (for future expansion)		
-	-	-	*	-	-	Spare (for future expansion)		
-	-	-	-	1	-	Enables SSB Option		
-	-	-	-	0	-	Disables SSB Option		
-	-	-	-	-	1	Frequency Extender Option Installed		
-	-	-	-	-	0	Frequency Extender Option Not Installed		
<u>S2</u> switch settings are listed below:								
<u>Switch S2 on A5A2</u>								
<u>8</u>	<u>7</u>	<u>6</u>	<u>5</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>1</u>	<u>Function Selected</u>
*	-	-	-	-	-	-	-	Spare (for future expansion)
-	1	-	-	-	-	-	-	Pre-dwell Selected
-	0	-	-	-	-	-	-	Post-dwell Selected
-	-	1	-	-	-	-	-	NRT Disabled
-	-	0	-	-	-	-	-	NRT Enabled
-	-	-	*	-	-	-	-	Spare (for future expansion)
-	-	-	-	*	-	-	-	Spare (for future expansion)
-	-	-	-	-	1	-	-	LOG 40 dB LOG Scale Selected
-	-	-	-	-	0	-	-	LOG 60 dB LOG Scale Selected
-	-	-	-	-	-	*	-	Spare (for future expansion)
-	-	-	-	-	-	-	*	Spare (for future expansion)

NOTE: 1 = OPEN
 0 = CLOSED
 * = NOT USED



PKC - Plug-in Keypad Controller

Building this circuit and plugging it into the front panel of your WJ-8617 or WJ-8618 receiver will add direct keypad entry with memory control (a welcome feature). I've built this and it works great. A higher resolution version of this schematic is available in the Schematics section of the Premium RX website.