

## **Addendum to 505DSP Installation and Operation Guide**

This addendum **corrects** errors or omissions in the 505DSP Installation and Operation Guide, as well as providing updates for software enhancements made since the Guide was printed.

### ***Add the following paragraph to Page 3, Section 1 - Introduction:***

This Installation and Operation Guide is not intended to provide a comprehensive explanation of every radio control and function. Full details of individual controls and their settings may be found in the on-screen User Guide, which may be accessed from within the KC505 control software by selecting User **Guide** from the **Help** menu.

It is possible to generate printed pages of the User Guide. From the Help menu select **User Guide**, then select a topic. Once the topic is displayed, press (P) to send the current page to your printer. Printing the User Guide in its entirety is best accomplished using the file manager (Windows 3.1) or WordPad (Windows 95), or your word processor. The User Guide file, KC505.MAN, is in **ASCII** format.

In addition, a complete theory of operation, and application notes containing useful operating tips, are provided on Kachina's internet web site at <http://www.kachina-az.com>. Kachina **also** has a policy of allowing you to download many software upgrades free of charge from the web site, so we suggest you check there periodically for updated versions of the control software **and** announcements regarding other product enhancements.

In preparing this manual, an assumption has been made that the user is already familiar with Windows 3.1, 95 or NT operating systems. If not, you should refer to the manuals provided with these programs for further information.

### ***Add to Page 4, Section 3 - Hardware Requirements:***

4-Ohm external speaker is recommended.

### ***Correction to Page 5, Section 5 - Last Paragraph should read:***

**Control Head - The 505DSP is supplied with a** control head containing the main power switch and microphone, speaker, Morse key and phone jacks. Cables are provided to install it in an unused drive bay of your PC, while cables allowing outboard use are available from Kachina.

### ***Correction to Page 11, Figure 70, ACC3 External Power Amplifier Connector chart:***

The functions of pins 11 and 13 are reversed in the Guide. Pin 11 is VR **while** Pin 13 is AMP PTT.

**Add to Page 12, Section 9 - Control Software Installation:**

The control software may not be opened a second time if already running on the same Com port. You can still start the software a second time on a different Com port, however, allowing you to control up to four radios in separate windows if you wish.

**Correction to Page 13- Replace Paragraph entitled "Current Settings Window" with the following:**

**Current Settings Window** - When in the **KC505** control program, a window showing the current transceiver settings is displayed. Beginning with software version 1.x3, most of the listed settings can be changed simply by clicking on the item you wish to access. Within this window, you must click on the green or yellow text to initiate a change. Clicking on White or gray text **Will** have no affect. These settings can also be changed using the pull-down menus and many also have dedicated "shortcut" keys, explained elsewhere in this Guide.

A word of caution when you have several windows active at the same time, i.e.the control program, antenna Smith chart, KCLOG, etc. It is a Windows™ convention to select a window by clicking your mouse anywhere in the window, but you must be careful not to click on these settings when you intend only to activate the control panel window.

**Add to Section 10 - Operation:**

**Note:** Additional details relating to all functions may be found in the on-screen User Guide. This Guide **may** be accessed by selecting User Guide from the Help menu.

**Coarse Tuning Slide Bar for RX Tuning** - A slide bar is displayed above the receive frequency display to provide a convenient way to quickly change frequency within the currently selected band. Clicking or dragging your left mouse button in the slide bar **will** cause the receiver frequency to change. This slider also serves as a convenient visual confirmation of where in the current band you are tuned.

**Speech Monitor** - The speech monitor control may be accessed from the **TX** menu. This feature allows your transmitted signal to be heard through the loudspeaker or headphones, allowing you to hear what affect other settings, such as speech processor or TX equalization, have on your signal. When **speech monitor on** is selected, a slider **will** appear to allow adjustment of the speakerphones volume. Since you may wish to have a different volume setting for CW sidetone, selecting **sidetone** **will** enable a separate slide bar. Settings of both slide bars are retained independently in memory.

If using an 8-Ohm external speaker you may find that the speech monitor audio level is too low. Use of a 4-Ohm speaker **will** give twice the audio output, assuming that both speakers are equally efficient. **Also** note that speech monitor audio quality is inferior to the actual transmitted signal. Speech monitor audio is 8 bit digital **while** the transmitted signal is 16 bit.

**Muting the Receiver** - The **.del** key on the numeric keypad toggles receiver muting on or off. The receive meter **will** display "MUTE" whenever muting is on. It is important to note that VOX is disabled whenever the receiver is muted.

**Mic/CW Gain Control** - The Mic/CW gain control may be **accessed** by selecting **Mic** from the TX menu or pressing m. The **Mic/CW** gain setting affects the transmitter power output in both voice and CW modes. The Mic/CW gain level may need to be increased if you experience low TX power output.

**Memory Channels and Groups** - **100** memory channels are available for storing radio settings. These channels are divided into 5 groups of 20 channels. Group 1 is comprised of channels 1-20, group 2 contains channels **21-40** and so on. The channel memory features are selected from the **Channel** menu. Refer to the on-screen user guide for details on how to save and recall memory channels and groups.

**Scanning Memory Channels and Groups** - Scanning is initiated under the **Channel** menu. The transceiver can be commanded to scan groups of up to 20 channels, numbered 1 through 5, stored in memory. Alternatively, the scan can be conducted between 2 selectable frequency ranges. See the on-screen User Guide for further details.

**Bandpass Filters** - The **505DSP** incorporates 11 DSP bandpass filters ranging from 100 kHz to 3.5 kHz in width. These may be selected from the Filters menu, by using the "0" (zero) **shortcut** key on the numeric keypad or by clicking the mouse on the BPF value in the current settings window. Two of these filters, labeled **DAT Hi** and **DAT Med**, are dedicated as data filters. The center frequencies (fc) of the data filters are:

DAT Hi	fc = 2210 Hz
DAT Med	fc = 1700 <b>Hz</b>

Bandwidth for both data filters is 500 Hz. On LSB the fc will be 1700 or 2210 Hz lower than the displayed receive frequency. On USB the fc will be 1700 or 2210 **Hz** higher than the displayed receive frequency. The center frequency can be altered using the IF shift control. For example:

IF shift = -1000 Hz
DAT Hi new fc is 2210-1000 = 1210 Hz
DAT Low new fc is 1700-1000 = 700 Hz

**Notch Filter** - The **505DSP** notch filter may be programmed to operate manually or automatically by selecting **Notch** from the **Filters** menu, by pressing **Shift** plus n to toggle between manual and automatic notch, or by clicking on the notch value in the current settings window. A horizontal slide bar will appear whenever manual notch is selected. **Adjust** the slide bar to select the notch center frequency. Clicking the mouse on the slide bar will always disable automatic notch and enable manual notch. See the on-screen User's Guide for further details.

Notch width is selected from the Filters menu. The choices are Wide (160 Hz), medium (**80Hz**) and narrow (40 Hz). When the notch width is set to narrow, be warned that because the slot is extremely sharp, it may be difficult to fit over the interfering signal. Zero the notch in a wider mode, then sharpen it **while** tuning the receiver about the frequency, using 1 Hz steps. **Practice** is required here to obtain the most from **this** function.

**CW Tx Buffers** - The 505DSP has nine, 59-character, CW message buffers or memories. To store a message in one of the CW buffers, select CW Tx **Buffers** from the CW menu. Select which of the nine buffers you wish to transmit by clicking the left mouse button on the appropriate number. Your message will be stored to the selected buffer when you click OK or depress the **Enter** key. Any one of the buffers can be transmitted as CW by pressing the **Ctrl** key plus a number 1 through 9 on the numeric keypad. **Note:** You **must be in CW mode to transmit a CW Tx buffer.**

**Frequency Display Reverse Video** - Beginning with software version 2.x1, several changes that affect the frequency display have been incorporated. First, the "up/down" buttons that identify the currently selected tuning digit have been replaced with a "+" and "-". If tuning with a mouse, click on the "+" to move the frequency upward, or the "-" to move the frequency downward. Second, to increase the visibility of the currently-selected digit, you may now choose to display it in reverse video green, reverse video yellow, or normal video green. This is accomplished by selecting **Tuning Digit Color** from the **Special** menu.

**Two-speed Cooling Fan** - The 505DSP is equipped with a two-speed cooling fan. The fan will normally operate at low speed unless the heat sink temperature exceeds 40° C, at which time the fan will switch automatically to high speed operation and a temperature fault message will light. This message will remain on screen until the operator reduces transmitter power output to  $\leq 10$  watts, presses the Reset button or telemetry goes off-line. A temperature fault message normally occurs only if the fan fails or the radio has been exposed to high temperatures, such as found in an enclosed automobile parked in direct sunlight.

**VSWR Alarm** - If the antenna VSWR exceeds 2:1, a VSWR alarm will be displayed above the transmit meter when transmitting. If the VSWR is between 2:1 and 3:1, the alarm will be yellow in color. If the VSWR is above 3:1, the alarm will be red in color. If the VSWR exceeds 3:1 you should discontinue transmission and check the antenna for faults.

**Setting the Parallel(Printer) Port** - You may select parallel port 1, 2 or 3. To change the parallel port select **Set Printer Port** from the **Special** menu.



## **KACHINA COMMUNICATIONS, INC.**

### **LIMITED WARRANTY ON AMATEUR RADIOS, ACCESSORIES AND OPTIONS**

Kachina Communications, Inc. ("Kachina") warrants its amateur radios, accessories and options, as follows:

#### **PERIOD OF THE WARRANTY**

This warranty Will remain in effect for two (2) years from the date of purchase by the original purchaser.

#### **WHO IS PROTECTED**

This warranty is enforceable only by the original purchaser.

#### **WHAT IS COVERED AND WHAT IS NOT COVERED**

Except as specified below, this Warranty covers all defects in materials and workmanship in Kachina amateur radios, accessories and options. The following are not covered by the warranty:

1. Damage, deterioration or failure resulting from:
  - a. Accident, misuse, abuse, neglect, unauthorized product modification or failure to follow instructions contained in your Installation and Operation Guide.
  - b. Water or other elements.
  - c. Repair or attempted repair by anyone not authorized by Kachina.
  - d. Installation of parts or accessories that do not conform to the quality or specifications of the original parts or accessories.
  - e. Installation of accessories or options from other manufacturers.
2. Damage or loss occurring during shipment of the product (claims must be presented to the carrier).
3. Any unit which is not new when **sold** to the first end user or upon which the serial number has been defaced, modified or removed.

#### **WHAT WE WILL PAY FOR AND WHAT YOU MUST PAY FOR**

Kachina Will pay all labor and material expenses for items covered by this warranty. If it is necessary to ship the product for Warranty service, you are responsible for the initial shipping charges, but, within the United States of America only, excluding Puerto Rico and other territories, we Will pay the return shipping charges if the product is repaired or replaced under Warranty. You are responsible for any charges incurred in removing the product from the vehicle or other site of use and for reinstallation of the repaired or replaced product.

#### **HOW TO OBTAIN WARRANTY SERVICE**

Within the United States your Kachina amateur radio, accessory or option should be returned to Kachina Communications, Inc., Attention: Service Department, 30 N. Alamos Drive, Cottonwood, Arizona, 86326. Outside of the U.S.A., the radio may be serviced by any authorized Kachina Amateur Radio Dealer or Service Center.

Whenever a product is presented for warranty service, you must supply a sales receipt or other evidence of the date of purchase. If you have difficulty obtaining service, please write or telephone Kachina Communications, Inc. at P.O. Box 1949, Cottonwood, Arizona, 86326, U.S.A., telephone: (520) 634-7828, facsimile: (520) 634-8053, internet e-mail address: [custsvc@kachina-az.com](mailto:custsvc@kachina-az.com).

#### **LIMITATION OF IMPLIED WARRANTIES**

ALL IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE LENGTH OF THIS WARRANTY.

#### **EXCLUSION OF DAMAGES**

KACHINA'S LIABILITY IS LIMITED TO REPAIR OR REPLACEMENT OF ANY DEFECTIVE PRODUCT. KACHINA SHALL NOT BE LIABLE FOR ANY DAMAGES, WHETHER INCIDENTAL, CONSEQUENTIAL OR OTHERWISE, BECAUSE OF ANY DEFECTIVE KACHINA PRODUCT, EVEN IF KACHINA HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS AND/OR DO NOT ALLOW THE EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS AND EXCLUSIONS MAY NOT APPLY TO YOU.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

This warranty is enforceable only if the product has been purchased in the United States of America.

KACHINA COMMUNICATIONS, INC,  
505DSP FINAL TEST REPORT

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RADIO SERIAL NUMBER: 91900XXX FIRMWARE VERSION: 3.490 SOFTWARE VERSION: 3.44  
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SSB RX SENSITIVITY, 2.4 kHz FILTER, PRE-AMP ON, 10dB SINAD: 0.10 uV  
SSB RX SENSITIVITY, 2.4 kHz FILTER, PRE-AMP OFF, 10dB SINAD: 0.25 uV  
AM RX SENSITIVITY, PRE-AMP ON, 10dB SINAD: 0.28 uV  
PRE-AMPLIFIER GAIN (15dB +/- 1dB): 15 dB  
ATTENUATOR (20dB +/- 1dB): 20 dB  
AGC KNEE, PRE-AMP OFF: -99 dBm  
S-METER CALIBRATION, 130 TO 0dBm: +/- 5 dB: OK  
FREQUENCY REFERENCE ACCURACY, POST-CALIBRATION, 10 Mz: OK  
TEMPSENS B VOLTAGE: 3.2 V  
TCXO VOLTAGE: 3.0 V  
AUDIO POWER, PIN @ -90dBm: 5 W  
AUDIO THD, POUT = 2.0W, 4 OHM: OK  
RX 3RD-ORDER INTERCEPT POINT, 20 kHz SPACING, ARRL METHOD: +19 dBm  
RX 2ND-ORDER INTERCEPT POINT, 8 + 6 MHz, ARRL METHOD: \*57 dBm  
AGC ATTACK TIME, PIN = -60dBm: <= 10 ms: OK  
PHASE JITTER, 1 kHz, PIN = -60dBm <= 50 us: 25 us  
SYNTHESIZER LOCK TIME, LARGE STEP: <= 20 ms: OK  
CW ALC ACTION, MIC GAIN FULL: 14 dB  
CW ALC OVERSHOOT, 100 WATT LEVEL: <= 1 dB: OK  
TX HARMONICS, SPURIOUS, 100W : OK  
LOCAL OSCILLATOR IMAGE REJECTION, 100W: OK  
SSB ALC ACTION, MIC GAIN FULL, TALK TEST: >= 5 dB: 6  
SSB TX LINEARITY, 2-TONE, 100W, 1W, 400 + 1800 Hz: OK  
SSB TX CARRIER SUPPRESSION, 100 WATT LEVEL: >= 60 dB: OK  
SSR TX OPPOSITE SIDEBAND SUPPRESSION, 100 WATT LEVEL: >= 60 dB: OK  
SSB TX SIGNAL-TO-NOISE RATIO, 100 WATT LEVEL: >= 50 dB: OK  
AM ALC ACTION, VIN = TALK TEST, MIC GAIN FULL: 17 dB  
TX METERS, PF, PR, ALC, VSWR: OK  
TX VSWR CUTBACK, VSWR = 3:1: OK  
OVERTEMP CUTBACK: OK  
ACC1, AUDIO I/O, PTT, CONT, +12 VDC: OK  
ACC2, ATUINIT, KEY, +12VDC: OK  
ACC3, BAND SELECT, EXT ALC, AMPPTT: OK  
BITE, SERIAL NUMBER PGMG, SEND, RECEIVE: OK  
ANTENNA TUNER: OK

QUALITY ASSURANCE

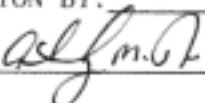
RX SENSITIVITY: OK  
S-METER CALIBRATION: OK  
CW/VOICE SIDETONE: OK  
TX GAIN, VOICE: OK  
TX GAIN, CW: OK  
AM CARRIER POWER: OK  
CW TALK TEST: OK  
VOICE TALK TEST: OK  
ANTENNA TUNER: OK  
WWV CALIBRATION: OK  
VIBRATION TEST: OK

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FACTORY CODE: 12347

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## 505 DSP Shortcut Keys

Quick Reference Sheet V1.0 August 1997

<b>A</b>	<u>A</u> M Mode	<b>Esc</b>	Abort activity
<b>B</b>	<u>B</u> and Select	<b>F12</b>	Help
<b>C</b>	<u>C</u> W Mode	<b>-</b>	Decrease volume
<b>D</b>	CW <u>D</u> ynamics	<b>+</b>	Increase volume
<b>E</b>	TX <u>E</u> qualization	<b>←</b> <b>→</b>	Tuning step size
<b>G</b>	<u>A</u> GC Speed	<b>↑</b> <b>↓</b>	Tune freq. up/dn
<b>I</b>	<u>I</u> F Shift	<b>↑</b> <b>Shift</b> <b>↑</b> <b>↓</b>	Tune freq. steps of 5
<b>K</b>	CW <u>K</u> eyer Speed	<b>0</b> <b>Ins</b>	Recall BPF menu
<b>Ctrl</b> <b>K</b>	Send CW Buffer	<b>+</b> <b>=</b>	TX freq. = RX freq.
<b>L</b>	<u>L</u> SB Mode	<b>&lt;</b> <b>&gt;</b>	Adj. horiz. slide pots
<b>M</b>	<u>M</u> icrophone Gain	<b>↑</b> <b>Shift</b> <b>&lt;</b> <b>&gt;</b>	Adj. slide pots lg steps
<b>N</b>	<u>N</u> otch Filter	<b>←</b> Backspace	Undo last command
<b>↑</b> <b>Shift</b> <b>N</b>	Automatic <u>N</u> otch	<b>Home</b>	Home the mouse ptr
<b>P</b>	<u>P</u> ower Output	<b>Tab</b>	Forward to next field
<b>Q</b>	<u>Q</u> SO Logging	<b>↑</b> <b>Shift</b> <b>Tab</b>	Backward to last field
<b>R</b>	<u>N</u> oise <u>R</u> eduction	<b>←</b> Enter	Toggle field value
<b>↑</b> <b>Shift</b> <b>R</b>	Noise <u>R</u> eduction Level	<b>Space Bar</b>	PTT, CW spot tone
<b>S</b>	<u>S</u> implex/Split VFO	<b>F1</b> - <b>F8</b>	Recall memory 1-8
<b>↑</b> <b>Shift</b> <b>S</b>	<u>S</u> quelch Mode	<b>↑</b> <b>Shift</b> <b>F1</b> - <b>F8</b>	Store memory 1-8
<b>T</b>	CW <u>S</u> idetone Level	<b>Ctrl</b> <b>F1</b> - <b>F8</b>	Recall memory 9-16
<b>U</b>	<u>U</u> SB Mode	<b>↑</b> <b>Shift</b> <b>Ctrl</b> <b>F1</b> - <b>F8</b>	Store memory 9-16
<b>V</b>	<u>V</u> FO RX/TX	<b>*</b>	Toggle UTC time
<b>W</b>	CW <u>W</u> eighting	<b>?</b> <b>/</b>	Pause/continue scan
<b>X</b>	Speech Processor On/Off	<b>Del</b>	Receiver audio mute
<b>Z</b>	<u>Z</u> ero IF Shift, TX EQ, Notch Filter off, AGC Speed slow, etc.		

### Channel Memory Keys

<b>↑</b> <b>↓</b>	Scroll 1 at a time	<b>Insert</b>	Include in scan
<b>Page Up</b> <b>Page Down</b>	Scroll 4 at a time	<b>Delete</b>	Exclude from scan
<b>Home</b>	Go to start of list	<b>←</b> Enter	Recall channel
<b>End</b>	Go to end of list	<b>Esc</b>	Exit list