RADAR II System Software - Version 2.48

Operating System Considerations:

If you plan to install more than 64 MB of memory in your RADAR unit, you will need to install the operating system patch which can be found on the Download page in the Support section of the web site. The patch is independent of the RADAR II System Software and only has to be installed once on each RADAR unit. See **Appendix II: RADAR II 64MB Patch** for details.

Hardware Considerations:

To fully utilize the features in version 2.48, you may need to upgrade your RADAR II unit as follows:

1) Ensure that your RADAR II system has sufficient memory (RAM) installed on the motherboard to support the disk drives that you have installed (or are planning to install). See **Appendix III: Approved SCSI Disk Drives** for the list of available drives and their capacities. You will need a minimum of 64 MB of RAM if you plan to use the waveform display feature.   See **Appendix I: System Memory Requirements** and **Appendix VI: Upgrading System Memory** for details.

2) Waveform display also requires that a high-speed processor be installed on the motherboard. The Intel Pentium 233MHz MMX P55C processor is recommended. Refer to **Appendix VII: Upgrading the System Processor** for details.

3) In rare circumstances, certain Exabyte Eliant 820 tape drives experience a firmware fault that can cause a backup operation to fail. Should this occur, contact tech support for instructions on upgrading your tape drive or turning off the backup optimization feature. For more information about tape drives and DVD RAM drives, refer to **Appendix V: Approved Backup Devices.**

4) Additional dedicated keys were implemented on the RE-8 II remote control for version 2.07. If you have not yet upgraded your RE-8 II, refer to **Appendix VIII: RE-8 II Remote Control Key Map** for the key locations.

Waveform Display Considerations:

When you upgrade your RADAR II system to Version 2.48, you must also upgrade all of your audio drives to 2.48 format. However, for each drive (or set of drives if you chain external drives to your RADAR), you may choose whether or not to display waveforms. Some of the steps in the Upgrade Procedure require you to perform different actions for drives that will display waveforms. If you have not previously converted your audio drives to waveform mode, you may do so during the upgrade by following the steps "for audio drives that are being converted from non-waveform to waveform mode". If you already converted to waveform mode in a previous version or if you will not be using waveforms in version 2.48, follow the steps "for other audio drives". You may later reinitialize drives to turn waveforms on or off as detailed in the instructions for "**Turning Waveforms On"** and "**Turning Waveforms Off".**

Note that *.WAV files imported from a floppy disk will not display waveforms on RADAR.

Due to memory limitations, waveforms are only displayed for audio that is in the first 4 to 5 hours of the 24 hour window.

Upgrade Procedure:

1) **Backup current sessions.** This is a standard precaution, but it is particularly essential for audio drives that are being converted to waveform mode, since you will be erasing all audio on these drives in step 3. When the upgrade is complete, and you restore from the backup, waveforms will be generated automatically for these projects.

2) If you are upgrading from Version 2.06 and you created macros in Version 2.06, you must delete the macro file from RADAR's IDE drive before upgrading. To delete the file, you will need to connect a QWERTY keyboard to your RADAR unit, then roboot and wait until the screen clears and the prompt "Run Radar? [NY]" appears. Type *N* to enter DOS mode, then type *del C:\MACROS.BIN* to delete the macro file.

3) **For audio drives that are being converted from non-waveform to waveform mode, choose "ERASE ALL DISKS"** from the PROJECT menu and answer "YES". Answer "YES" again to the "LOSE ALL AUDIO" prompt. You will then be prompted to create a project. Simply press enter to create an empty, untitled project. Repeat this step to erase each audio drive that is being converted to waveform mode.

   For other audio drives, choose "UPGRADE SYSTEM" from the SYSTEM menu and answer "YES". When you press the enter key, RADAR will save all projects on the audio drive in a version-independent (upgrade) format. This operation will take approximately 10 seconds per project. When it is complete, the RE-8 II LCD will say: "INSERT UPGRADE FLOPPY & REBOOT". If you have another audio drive on the shelf, swap it into the drive bay, reboot RADAR, and repeat this step. Continue until all audio drives have either been erased or put into upgrade mode.

4) **Insert the floppy disk** containing RADAR II Version 2.48 and reboot RADAR. The RE-8 II LCD will show the following status messages:

   > "RADAR DIGITAL 24 TRACK"   (about 30 seconds)
   > "Booting System. Please Wait…"
   > "Installing Radar Software v2.48" (1-2 minutes)

5) When the install is complete (the LCD displays "Install OK. Reboot System"), **remove the floppy disk** and reboot RADAR.

6) **For audio drives that are being converted from non-waveform to waveform mode,** you can ignore any "WRONG OP SYS S/W" messages since you are about to initialize the audio drive with the new software. Use the "**INIT DISK**" option in the DIAGNOSTICS menu to reinitialize the disk. Reply 'YES' to both the 'INIT FOR WAVES' prompt and the 'ERASE OLD DATA' prompt. Repeat this step for each audio drive that is being converted to waveform mode.

   For other audio drives, note that when RADAR mounts the drive, all projects will automatically be upgraded to version 2.48 format. This operation will take approximately 10 seconds per project. If you have another audio drive which you put into upgrade mode in step 3, unmount the current drive, swap the next audio drive into the drive bay, and mount it. Repeat this step for each additional audio drive.

7) **For audio drives that are being converted from non-waveform to waveform mode, restore current sessions from the backup**. RADAR will automatically generate waveforms for the restored projects.

Downgrade Procedure:

If you wish to revert to a previous version of software, it is not necessary to initialize drives. However, if you use a drive in version 2.06 or earlier, and you later wish to go back to waveform mode in version 2.48, you will have to reinitialize the drive at that point.

Turning Waveforms Off:

If you have an audio drive that has waveforms, and you want to turn the waveforms off (for example if you intend to use the drive for an extended live recording session), you must initialize the disk, erasing all audio. Therefore, make sure that all sessions on the disk have been backed up before proceeding. Use the 'INIT DISK' option in the DIAGNOSTICS menu to reinitialize the disk. Reply 'NO' to the 'INIT FOR WAVES' prompt and 'YES' the 'ERASE OLD DATA' prompt.

Turning Waveforms On:

If you have an audio drive that does not have waveforms, and you want to turn waveforms on, you must initialize the disk, erasing all audio. Therefore, make sure that all sessions on the disk have been backed up before proceeding. Use the 'INIT DISK' option in the DIAGNOSTICS menu to reinitialize the disk. Reply 'YES' to both the 'INIT FOR WAVES' prompt and the 'ERASE OLD DATA' prompt. If the RADAR unit has less than 64MB of installed memory, the disk cannot be initialized for waveforms, and the prompt 'INSUFFICIENT RAM, CONTINUE?' will appear. Reply 'YES' to initialize the disk without waveforms. Reply 'NO' to skip the initialization.

When you restore audio after initializing the drive for waves, waveforms will be generated automatically.

New Features Since Version 2.06:

Waveform Display

RADAR II now has the capability to display audio waveforms. The waveform begins to be displayed when the audio level surpasses the 'WAVE NOISE FLOOR' defined in the PROJECT menu. The default noise floor is –80db, but has user-selectable values between –60 and –90db. Setting the 'WAVE NOISE FLOOR' in the PREFERENCES menu will determine the default for new projects. Changing the noise floor setting will affect new recording, but will not change the waveforms for previously recorded audio.

Waveforms can be viewed in detail using the new zoom and scroll keys defined for the RE-8 II remote control or with the equivalent key combinations on the RE-8 remote:

New RE-8 II Keys	*RE-8 Key Combination Equivalents*
'**SCROLL UP**'	Press 'V' and 'up arrow' keys simultaneously
'**SCROLL DOWN**'	Press 'V' and 'down arrow' keys simultaneously
'**VERT ZOOM IN**'	Press 'V' and '+' (plus) keys simultaneously
'**VERT ZOOM OUT**'	Press 'V' and '-' (minus) keys simultaneously
'**ZOOM SOLO**'	Press 'Shift', then 'TRACK SOLO', then select the track(s) to be viewed

The "zoom solo" feature allows zooming to non-sequential track groupings. It can be used independently of track soloing, or the 'SOLO ZOOM AUDIO' preference may be selected. In this mode, only the tracks selected for zoom solo will be heard, superceding track solo.

Offset Calculate/Capture

A new '**INT/EXT SMPTE'** display mode has been created for situations where RADAR is under control of an external VTR or audio deck. In this mode, the first line of the LCD display will show RADAR's internal time (as it normally does) while the second line will show the time code plus the **Sync Offset**. This calculated value will appear as the main time counter on the RADARview screen.

By setting the sync offset to be the difference between RADAR's internal time and the SMPTE output of the external master deck, the calculated value will correspond to the time code of the external machine.

To make it easy to switch between 'SMPTE' and 'INT/EXT SMPTE' modes, a new '**DISPLAY'** button has been defined on the RE-8II remote controller. It will navigate directly to the project 'DISPLAY MODE' menu.

To make it easy to calculate the sync offset, a new '**TC CAP'** ('Time Code Capture') button replaces the 'AUTO RECLAIM' button. Pressing 'TC CAP' reads the incoming SMPTE time code, compares it to RADAR's internal time and sets the sync offset accordingly.

If adjustments are required, pressing '**CALC'** (shift and then 'TC CAP') invokes the **Offset Calculator** as shown below:

```
01:00:00:00.00
00:59:59:29.00 EX
```

The first line of the LCD display will show RADAR's internal time (as usual) while the second line will show the captured time code of the external master machine. Either of these time code values can then be adjusted or re-entered by the user. Upon pressing the enter key, the sync offset will be calculated and implemented based on the difference between the two values.

Macro Keys

Frequently used key sequences (for example, arming or zooming to a particular group of tracks, or navigating through menus to set preferences) can now be memorized so they can be done at the touch of a single button. Eight macro keys have been allocated on the RE-8 II remote control to allow the user to record eight different key sequences.

Recording of a macro can be initiated by pressing the shift button followed by a macro key ('MACRO 1' to 'MACRO 8'). The light on the macro key will begin flashing indicating that it is now recording key presses. Subsequent key presses (up to 128) are recorded, until the macro key is pressed again. (One exception: you cannot record jog wheel or transport control functions into a macro).

Once a sequence of key presses has been recorded, it can be executed by simply pressing the appropriate macro key. The light on the macro key will come on while it is playing back the recorded key sequence.

The macros are stored on the internal system drive rather than the audio drive, so they stay with the RADAR unit even if different audio drives are swapped in. However, they will need to be re-recorded after each system software upgrade.

Digital Track Assignment

There is a new **DIG IN TRACKS**' menu item under the routing section of the "DIG I/O" menu. With this feature, the user can select which tracks to input from the multi-channel digital inputs (TDIF or AESMULTI). The user can select all tracks to be digital input by choosing the 'ALL' option, or select specific tracks by choosing the 'SELECT' option and then selecting the "digital in" tracks with the track arm buttons. Any tracks not selected, as digital input will remain as analog inputs.

Salvage Partially-Restored Projects

If the user has to cancel the restore operation (for example if the backup continued on a second tape and only the first tape is available), the following prompt will appear:

```
SALVAGE PARTIAL
PROJ?  NO  YES
```

Answering 'YES' to the salvage prompt will create a project containing the portion of the audio that was restored so far. Missing audio tracks will be labeled 'Lost Trk x' in the list of locate points.

Answering 'NO' will invoke the 'reclaim space' utility to delete the partially restored audio.

DVD-RAM Backup

RADAR now supports DVD-RAM drives for backup as an alternative to tape.   Refer to **Appendix V: Approved Backup Devices** for the approved tape drives.

New Features Since Version 2.09:

Incoming Time Code Display

RADAR now detects the incoming time code format (24 / 25 / 30 frames per second) and displays it on the RADARview screen. When RADAR is syncing to time code, it also measures the incoming rate in real time to detect the difference between 29.97 and 30 frames per second. If the incoming time code is different from the project time code setting, it will flash to indicate the discrepancy.

New Features Since Version 2.12:

RE-8 II Track Buttons Fully Operational

All 48 track buttons on the RE-8 II remote control can now be used for individual track editing (cut, paste, etc) in RADARlink mode.

New Option to Show Backup Size

An option to "SHOW BACKUP SIZE" has been added to the PREFERENCES menu:

```
┌─────────────────────┐
│ SHOW BACKUP SIZE    │
│ OFF  MBYTES  TIME   │
└─────────────────────┘
```

Initially, this option is "OFF", so the backup menu tree will be the same as before. Users who want to see the size of the backup before it commences can set this preference to "MBYTES". This will cause a new prompt to appear after the user selects files to be backed up. For example:

```
┌─────────────────────┐
│ 720 MEGABYTES       │
│ PROCEED? NO  YES    │
└─────────────────────┘
```

For users who are more concerned with the amount of the time required to perform the backup, the preference can be set to "TIME". In this case the prompt will appear as:

```
┌─────────────────────┐
│ 12 MINUTES REQD     │
│ PROCEED? NO  YES    │
└─────────────────────┘
```

The time is estimated based on the typical throughput of the backup device installed in the RADAR unit. For example, using an Exabyte Eliant tape drive which has a typical throughput of 1.2 megabytes per second, a 720 MB backup will take about 600 seconds or 10 minutes. Allowing a minute each for loading and rewinding the tape, the total time estimate is 12 minutes.

SCSI ID for DVD backup

In previous versions, only SCSI ID 6 could be used for DVD backup devices. This restriction has been eliminated to allow SCSI ID's 1 through 5 to be available for backup devices. Note: if more than one backup device is connected, the device with the highest SCSI ID will be used.

TDIF configuration options moved from the DIG I/O ROUTING menu to the SYNC menu

Some of the TDIF clock selection parameters in the DIG I/O MENU were redundant. To avoid confusion, all TDIF sync parameters are now accessed via the sync menu.

TDIF interface with Mackie d8b

The Mackie d8b is now able to synchronize to RADAR via the TDIF interface. A new option has been added to provide phase alignment of digital audio when connecting to a d8b that has the current firmware version. To access this option, select the TDIF MENU from within the DIAGNOSTICS menu, then select the INPUT MODE submenu and use the ↑ cursor key to change mode to "MACKIE D8B". When connecting to any device other than a d8b, set the input mode to "NORMAL".

New Features Since Version 2.15:

Simplified Disk Configuration

The "24Trks/Disk" mode is now called "Standard" for RADAR II. The DISK CONFIG menu allows the user to select either "STANDARD (128K)" or "CUSTOM". When "CUSTOM" is selected, RADAR prompts for the custom options of Cluster Size, Tracks, and Grouping. The old RADAR I configurations (INT, EXT, INT+EXT, and MONDO-8) have been removed from the menu.

When a disk is mounted, RADAR now detects the cluster size and automatically sets itself to the correct configuration. If the user decides to change the cluster size, a prompt informs him that the disks must be initialized. If he declines, the configuration change is cancelled. If he accepts, all disks are initialized for the new cluster size, then automatically mounted in the new configuration.

New Features Since Version 2.16:

Faster Cueing Time

RADAR's performance when cueing to a particular location in a project (e.g. when using the "RECALL LOC" button) has been improved.

Enhanced SoundMaster Support

RADAR's SoundMaster .support has been enhanced to instantly output the timecode of the selected location when cueing or playing. New options 'FAKE SMPTE CUE' and 'FAKE SMPTE PLAY' have been added to the 9-PIN PREFERENCES menu to facilitate this feature.

RADAR Menu Structure

The full menu tree is listed on the following pages. Changes since version 2.06 are indicated in **BOLDFACE**, along with a brief description.

Note: The Sync Source menu is accessed by pressing the 'SYNC' button on the RE-8 II remote controller. All other menus are accessed by pressing the 'MENU / PREV' button.

```
SYNC SOURCE:
        EXT TIME CODE
        VIDEO
            TC REF:
        WORDCLK
            TC REF:
        DIG 2 CH FORMAT
            CLOCK REF:
            TC REF:
        AES-MULTI
            CLOCK REF:
            TC REF:
        TDIF
            CLOCK REF               Replaces the "RADAR CLOCK IS" option that
                                    was in the DIG I/O ROUTING: TDIFLINK menu

                INTERNAL
                TDIF L/R IN
                TDIF WORK SYNC
                WORDCLOCK
                VIDEO
            1-24 IN FRAMING REF     Replaces the "SYNC TO TRACKS" option that
                                    was in the DIG I/O ROUTING: TDIFLINK menu
            TC REF
        INTERNAL


MAIN MENU:
    MAIN/SYS MENU:
        SYSTEM VERSION
        SHOW DISK SPACE
        DIGITAL I/O
            DIG 2 CH OUTPUT:
            DIG I/O ROUTING:
                DIG IN TRACKS       Determines which tracks are digital or analog
                                    when syncing to either TDIF or AES-MULTI
                AES/EBU + S/PDIF
                AES-MULTI

                                    NOTE that the TDIFLINK menu that was here has been
                                    replaced by options in the SYNC menu described above

        DISK CONFIG                 The DISK CONFIG menu has been simplified
                STANDARD            "24Trks/Disk" mode is now called "STANDARD"
                CUSTOM              CUSTOM mode allows the cluster size to be changed
        RADARLINK
        RADARLINK SOLO
        MACHINE CONTROL
```

```
        SET TIME & DATE
        UPGRADE SYSTEM



    MAIN/PROJ MENU:
        BACKUP MENU:
            ALL PROJECTS
            CURRENT VERSIONS
            CURRENT PROJECT
            SELECTED PROJS
        RESTORE MENU:
            ALL DATA SETS
            SELECTED SETS
        GOTO PROJECT
        CREATE PROJECT
        NAME PROJECT
        COPY PROJECT
        DELETE PROJECT
        RENUMBER PROJECT
        SAMPLE RATE
        AUDIO FORMAT
        TC FORMAT
        TC RATE
        START TIME
        SYNC OFFSET
        SMPTE LOCK SPEED
        FREEWHEEL TIME
        DISPLAY MODE
        MIDI TEMPO MAP
        NAME TRACK
        RECLAIM SPACE
        RENUMBER LOCATES
        UNDO LEVEL
        WAVE NOISE FLOOR        Audio level at which waveforms begin to appear
        ERASE ALL DISKS


    MAIN/EDIT MENU:
        UNDO EDIT
        REDO EDIT
        MODIFY EDIT
        CUT
        COPY
        PASTE
        MOVE
        ERASE
        LOOP
        SLIDE
        INSERT
        REVERSE
        LISTEN
        MUTE TRACKS
        IMPORT *.WAV
        CROSSFADE TIME
        RECORD SAFE
```

```
MAIN/PREFS MENU:
    DEF SMPTE FIELD
    SHOW SUBFRAMES
    DEF SAMPLE RATE
    DEF AUDIO FORMAT
    DEF TC FORMAT
    DEF TC RATE
    DEF START TIME
    SYNC OUTPUT
    STATIC TC OUT
    RECHASE MODE
    9-PIN MENU
        DEVICE ID
        CHASE MODE
        TRACK ARM MODE
        VARISPEED MODE
        FAKE SMPTE CUE       Option to interpolate SMPTE time code while cueing
        FAKE SMPTE PLAY      Option to interpolate SMPTE time code while playing
    TRACK SOLO MODE
    LOW DISK WARNING
    SLIDE TIME UNITS
    RECORD MODE
    FFWD & REW RATE
    PEAK HOLD TIME
    CLIP HOLD TIME
    SAVE STATE DELAY
    SCRN-SAVER MENU
        SAVER DELAY
        IMAGE EFFECTS
        SELECT IMAGE
        SET CUSTOM IMAGE
    AUTO RECLAIM
    DEFAULT UNDO
    RADARLINK ID
    AUDIO LEVEL
    WAVE NOISE FLOOR     Default audio level at which waveforms begin to appear
    SOLO ZOOM AUDIO      Option to monitor the tracks selected for zoom solo
    SHOW BACKUP SIZE     Display an extra prompt before starting a backup


MAIN/DIAG MENU:
    SCAN SCSI BUS
    MOUNT / UNMOUNT
    INIT DISK
    CHECK DISK
    REPAIR DISK
    STRESS TEST MODE
    SHOW DEFECT LIST
    VERIFY DISKS
    COPY HARD DISKS
    SHOW FREE RAM
    CHECK PROJECT
    REALTIME ERRORS
```

```
TDIF MENU
     IN SAMPLE POINT
     INPUT MODE              Special mode for phase alignment with Mackie d8b
     SAMPLE RATE IN
     EMPHASIS IN
     EMPHASIS OUT
     CARD TYPE
CONFIGURE DEBUG
SHOW DEBUG
SAVE DEBUG
KEYLOG MENU                  Special mode to log keystrokes for tech support
METER TEST
KEY TEST
LED TEST
```

Bugs Fixed Since Version 2.06:

206C / 839   **Play in RADARlink solo mode plays slow**

A change was made to prevent Phase-Locked Loop dropout on the slave while syncing to external time code and entering Solo mode.

207A   **Restore and conversion to waveforms**

In Version 2.07, when restoring a project backed up in version 2.06 or earlier, the waveforms that were generated were visually distorted with a "cats eye" pattern that does not occur when recording new audio. This has been corrected.

207C / 842   **White noise burst when switching projects**

If the user switches to another project while tracks are armed, RADAR sends a ⅛ second white noise burst to its digital outputs. This noise has been essentially eliminated in version 2.48.

207E   **Track 25 will not arm from the RADARlink master**

In Version 2.07, track 25 (on the RADARlink slave) could not be individually armed from the master RE-8 II. This has been corrected

207F / 816   **Crossfade time reverts to previous setting**

The crossfade time randomly reverted to a previous setting. This has been fixed in version 2.48 so that the only situation where the crossfade time will jump back to its previous setting is when the user enters the "MODIFY EDIT" dialog. In this case, it will revert to the setting that was in effect at the time the original edit was performed.

207I / 836   **Disk Copy feature not working**

The 'COPY HARD DISKS' function in the DIAGNOSTICS menu was reporting "copy successful", but the new disk contained no audio . This has been corrected in version 2.48.

207K / 835   **Disabling tracks in Zoom Solo mode causes General Protection Fault**

RADAR will no longer crash when attempting to deselect tracks in zoom solo mode.

803   **Non-seamless punch out**

In versions 2.07 and earlier, RADAR would sometimes enter "WORKING" mode when punching out on multiple tracks even when there was sufficient bandwidth to punch out seamlessly.

829   Wiping an unused disk ID causes General Protection Fault

When using the "WIPE" mode of the INIT DISK function, RADAR would crash if a non-existent disk was selected to be initialized.

833   Invalid DosFileBuffer date

When writing a DOS file (for example a macro file), the date was previously not set correctly.

843   Auto Reclaim deletes audio files that are still in use

On extremely rare occasions, when attempting to go to a project that has been copied and edited a number of times, the time code on the RADARview screen would begin to flash, and the message "PROJECT HAS ERRS" would appear. After fixing the errors, some of the audio tracks would be erased. This bug has been fixed in version 2.48.

Bugs Fixed Since Version 2.09:

202H /   844   RADARlink sync problem

There was a bug in versions 2.02 to 2.09 when the RADARlink master was syncing to a tape machine. Occasionally, when the tape machine slowed to a stop, the RADARlink master would stop but the slave would continue to play. This has been corrected in version 2.48.

206D /   854   RADARlink phasing issues

In versions 2.04 to 2.09, the RADARlink slave would lag behind the master by about 1.5 milliseconds. This delay has been removed in version 2.48.

722   Custom disk configuration

In the DISK CONFIG MENU, it was not obvious whether the custom disk configuration was being changed or not. A new prompt "CHANGE CUSTOM CONFIG?" will now appear, and if the answer is 'NO', the message "CONFIG CANCELLED" will be displayed.

845   Transport controls don't work properly in Paste edit

When pasting audio from the clipboard, one of the ways to set the paste point is by using the transport control keys to locate the transport to the desired point. In versions 2.04 to 2.09, the Play key had to be pressed twice to get the transport moving from within the paste dialog. In version 2.48, it works the first time.

849   **Allow long recordings to be dissected into small segments**

When a recording made in version 2.09 or earlier is split into several separate projects, the backup for each individual project takes as long as backing up the entire recording. Recordings made in version 2.48 will not have this problem.

852   **Syncing to 2-channel AES causes display jumping or freezing**

In versions 2.07 to 2.09, the RADARview display was jerky when syncing to AES. It has been smoothed again in version 2.48.

859   **Can't restore 64K cluster tapes**

In version 2.09, tapes backed up with a custom cluster size of 64K could not be restored to a disk configured for 64K clusters. This has been fixed.

862   **Noise when syncing to S/PDIF but no cable is plugged in**

In version 2.09, if an attempt was made to sync to S/PDIF with no cable connected to RADAR's S/PDIF input jacks, noise would be heard on all armed tracks. This noise has been eliminated.

Bugs Fixed Since Version 2.11:

870   **RADAR runs out of memory while recording**

During extended continuous recording, RADAR would sometimes freeze with an "OUT OF MEMORY" error even though it had enough memory installed to meet the System Memory Requirements as per Appendix I. This problem has been corrected.

Bugs Fixed Since Version 2.12:

768   **Arming lights for tracks 25-48 don't flash during RADARlink edits**

When performing an edit (cut, paste, etc) in RADARlink mode, and selecting all tracks, the buttons on the RE8-II remote controller indicated tracks 1-24 selected, but did not indicate tracks 25-48. In Version 2.48, all 48 tracks will flash on the master's RE8-II, and tracks 1-24 will flash on the slave to indicate all tracks being edited.

863   SMPTE display out by .05 frames after recording in RADARlink mode

After recording on a RADARlink setup in which only one of the RADAR units had tracks armed, the SMPTE display on the RADAR unit that was not recording would stop .05 frames earlier than the RADAR that was recording. This difference has been eliminated.

866   Incoming time code display problem

When the project time code rate was set to 29.97DF and the incoming time code rate was 29.97DF as well, the Incoming Time Code Rate display on RADARview (labeled "In") incorrectly displayed a flashing "29.97" instead of a solid "29.97D". This has been corrected.

212A / 867   Divide Error

Occasionally, RADAR was crashing with "Divide Error" diagnostics appearing on the LCD and in the upper left corner of the RADARview display. This error has now been corrected.

212C / 871   Cannot restore or record waveforms on 36 GB drives

As listed in Appendix I: System Memory Requirements, a minimum of 128 MB of memory must be installed in order to display waveforms for a 36 GB audio drive. However, RADAR was only recognizing the first 64 MB. This problem has been corrected.

212G / 872   Solo mode set to ADDITIVE reverts to INTERLOCK

After changing the "TRACK SOLO MODE" in the PREFERENCES menu from "INTERLOCK" to "ADDITIVE", and rebooting RADAR, the track select mode would behave as if it were in interlock mode. This has now been corrected.

876   RADARlink slave detaches during sync to poor SMPTE

When the RADARlink master was syncing to an external time code source that had frequent dropouts in the SMTPE signal, the RADARlink slave would eventually become unlocked from the master. This will no longer occur; the RADARlink slave will always remain locked to the RADARlink master even if the sync source drops out.

877   Can't "INSERT TAPE" until previous tape ejects

When a tape becomes full during a backup, RADAR prompts for a new tape to be inserted to continue the backup. The problem was that the prompt appeared before the existing tape ejected from the tape drive. The LCD will now say "UNLOADING" until the existing tape ejects, then prompt to "INSERT TAPE".

Bugs Fixed Since Version 2.13:

547   RADARlink slave won't copy projects

When attempting to copy, create, delete, renumber or name a project, it only works on the RADARlink master. The slave ignores the command unless it is done in slave solo mode. In Version 2.48, all of these functions will be done on both the master and the slave without requiring solo mode.

860 / 861   RADARlink slave misalignment during jog/shuttle with vari-speed

When using the jog wheel in shuttle mode in a RADARlink setup with vari-speed enabled, the slave RADAR would drift out of sync with the master. This could cause further problems, including General Protection Faults.   The misalignment has been eliminated in Version 2.48.

206G / 868   RADARlink slave error during undo

In certain situations, when the RADARlink master is syncing to an external SMPTE source, attempting to undo a record causes the RADARlink slave to go into "ERR!" mode. When this happens, the record cannot be undone on the slave, and checking the realtime errors on the slave shows an "ASSERT" error. This problem has been fixed in Version 2.48.

212J / 873   RADARlink slave solo mode: cannot use jog/shuttle

After about two seconds of using the jog wheel in slave solo mode, the LCD would report "LOST RADARLINK COMM" and the slave machine would say "RADARLINK DISABLED"
In Version 2.48, the jog wheel will work properly in any RADARlink mode.

212D / 874   Waveforms do not move with audio when changing start time

When changing the start time of a project in a negative direction (for example from 1:00:00 to 00:00:00), all waveforms and blue bars would disappear. This has been corrected in Version 2.48.

212I / 875   Clipboard listen has no waveforms

When listening to the clipboard in a project which has a start time other than 00:00:00, waveforms on the RADARview screen would become distorted (would not correlate to the audio) or would disappear altogether. This problem has been eliminated in Version 2.48.

879   General Protection Fault when rebooting after errors

If realtime errors were encountered when running in waveform mode, and the errors were not cleared, RADAR would crash when attempting to reboot.   In Version 2.48, RADAR will reboot properly.

Bugs Fixed Since Version 2.14:

883   General Protection Fault during clipboard listen

Occasionally, when attempting to use the clipboard listen feature, RADAR would crash with a General Protection Fault. This fault has been removed in Version 2.48.

887   Assert errors occur when restoring a RADAR I backup to RADAR II

In some cases, when attempting to restore a RADAR I backup to a RADAR II system, the counter would begin flashing red due to ASSERT errors. These errors have been eliminated in Version 2.48.

Bugs Fixed Since Version 2.15:

888   Waveforms incorrect during editing

When copying and pasting from one track to another, the waveform for the copy didn't match the original waveform. This has been fixed in Version 2.48.

215C / 892   Multiple disk operation failure – drives mount in reverse order

After mounding drives in Version 2.15, audio was being recorded to external drives before drive 0 was full. In Version 2.48, drive 0 will always be used first until it is full, then drive 1 will be used, and so on.

Bugs Fixed Since Version 2.16:

215D / 830   General Protection Fault after attempting to import WAV file

RADAR imports WAV file audio by reading the file from a floppy disk into a 16-bit clipboard. Of course, the contents of such a clipboard can only be pasted into a 16-bit project. The problem occurred when the 'IMPORT *.WAV' feature was used while RADAR was in a 24-bit project. A new warning message 'IMPORT TO 16-BIT PROJECTS ONLY' has been added to inform the user that RADAR must be in a 16-bit project before attempting to import a WAV file.

216D / 894   Waveform disk size limitation

After rebooting a RADAR unit outfitted with 64MB of memory and an 18GB drive, waveforms would not appear although they should according to the System Memory Requirements set out in Appendix I.   This problem has been corrected in Version 2.48.

216A / 895   Multiple disk operation failure – backup / restore

When attempting to backup a session recorded on a RADAR outfitted with more than one audio drive, the message `'Can't find PWAVE file \BACKUP\PWAVE.BIN!'` would sometimes appear and the backup would fail. Other times, a restore operation would seem to be working, but no projects would be created. These problems have been eliminated in Version 2.48

896   Can't record after auto-switch to 64K clusters

After switching from an audio drive configured with the standard (128K) clusters to a 64K cluster disk, RADAR would not record properly. This has been fixed in Version 2.48.

898   SMPTE out timecode incorrect during reverse shuttle

The SMPTE time code output was not correct when in reverse shuttle mode. With non-drop frame code, it was approximately 2 seconds too high. This caused problems particularly when using external controllers. In Version 2.48, RADAR will output accurate timecode.

Bugs Fixed Since Version 2.17:

217B / 904   Waveforms made by restore have spikes and shadows

When restoring a tape from Version 2.06 (or any other version without waveforms), the waveforms generated during the restore were irregular with many spikes and shadows. The waveform generation has now been fixed to create accurate waveforms.

217A / 905   Multiple disk operation failure – Waveforms display does not match audio

In Version 2.17, when restoring a backup that spanned two audio drives, ASSERT errors occurred and some of the waveforms did not match the audio. This has been corrected in Version 2.48

906   Attempting to CUT empty space causes General Protection Fault

When attempting a CUT where there was no audio at the MARK IN or MARK OUT points a General Protection Fault would sometimes occur. This error has been eliminated in Version 2.48

Bugs Fixed Since Version 2.18:

218A / 908   **Waveforms missing when restoring RADAR I backup to RADAR II**

When a tape that was backed up on RADAR I was restored to RADAR II, the first few seconds of audio on each track had no waveforms. This has been corrected in Version 2.48.

909   **Restore freezes while ADJUSTING PROJ**

In Version 2.18, in certain circumstances, RADAR would freeze at the end of a restore operation with the message "ADJUSTING PROJ" on the LCD. This bug has been fixed in Version 2.48.

Appendix I: System Memory Requirements

Your system memory requirement can be determined from the chart below based your maximum total drive capacity and whether or not you implement waveforms.

Number of Drives	Drive Size	Total Drive Capacity	Memory Requirement Without Waveforms	Memory Requirement With Waveforms
1	9 GB	9 GB	16 MB	64 MB
2	9 GB	18 GB	16 MB	64 MB
3	9 GB	27 GB	16 MB	128 MB
4	9 GB	36 GB	16 MB	128 MB
5	9 GB	45 GB	32 MB	192 MB
6	9 GB	54 GB	32 MB	192 MB
1	18 GB	18 GB	16 MB	64 MB
2	18 GB	36 GB	16 MB	128 MB
3	18 GB	54 GB	32 MB	192 MB
4	18 GB	72 GB	32 MB	256 MB
5	18 GB	90 GB	32 MB	512 MB
6	18 GB	108 GB	64 MB	512 MB
1	36 GB	36 GB	16 MB	128 MB
2	36 GB	72 GB	32 MB	256 MB
3	36 GB	108 GB	64 MB	512 MB
4	36 GB	144 GB	64 MB	512 MB
5	36 GB	180 GB	64 MB	768 MB
6	36 GB	216 GB	64 MB	768 MB

If you determine that you need to upgrade your memory, the following page contains recommended configurations based on the type of motherboard. Since the memory capacity of older motherboards is more limited, you may also need to install a new motherboard to satisfy your requirements.

Note: If you plan to install more than 64 MB of memory in your RADAR unit, you will need to install the operating system patch as described in Appendix II.

Appendix II: RADAR II 64MB Patch

This operating system patch is required if you plan to install more than 64 MB of memory in your RADAR unit. It can be found on the Download page in the Support section of the web site. The patch is independent of the RADAR II System Software and only has to be installed once on each RADAR unit.

You will need the WinImage© utility to create the installation disk. If you need to download this utility, or if you are unfamiliar with its usage, check the "Helpful Hints" section of the Download page.

When you install the patch, it will automatically modify the "himem.sys" and "config.sys" files on RADAR's IDE drive.

Installation Instructions:

Step 1: Download the UpdCnfig.imz file from the web site.

Step 2: Use the WinImage© utility to create a floppy from the UpdCnfig.imz file

Step 3: Reboot RADAR with the diskette in the floppy drive

Step 4: Remove the diskette and reboot again when instructed to

Appendix III: Approved SCSI Disk Drives

The following audio drives are approved for use in RADAR II

#	Manufacturer (Name)	Size	Model Number	Mfg. Part Number	Availability
1	Seagate Cheetah	9 GB	ST39102LW	9J8005-001	Discontinued
2	Seagate Cheetah	9 GB	ST39103LW	9L9005-001	Available
3	Seagate Cheetah	18 GB	ST318203LW	9L8005-001	Available
4	IBM Ultrastar	9 GB	Ultrastar 9LZX	08L8261	Available
5	IBM Ultrastar	18 GB	Ultrastar 18LZX	09L3905	Available
6	IBM Ultrastar	36 GB	Ultrastar 36ZX	09L3903	Available

Appendix IV: Approved IDE Disk Drives

The following system drives are approved for use in RADAR II

#	Manufacturer (Name)	Model Number	Size
1	Seagate	CP3044	44 MB
2	Seagate	ST3630A	630 MB

Appendix V: Approved Backup Devices

Approved DVD-RAM Drives:

#	Manufacturer (Name)	Size	Model Number	Mfg. Part Number	Availability
1	Hitachi	5.2 GB	GF-1050	GF-1050	Available

Approved AIT Tape Drives:

#	Manufacturer (Name)	Size	Model Number	Mfg. Part Number	Availability
1	Seagate Sidewinder AIT	25 GB (170m)	STA250000W	70102600-001	Discontinued
2	Sony SDX-300C	25 GB (170m)	SDX-300C	315829-001	Available

For more information see: www.seagate.com/support/tape/specs/ait/sta250000ws.html

Approved Exabyte Tape Drives:

#	Manufacturer (Name)	Size	Model Number	Mfg. Part Number	Availability
1	Exabyte Mammoth	20 GB (170m)	EXB-8900-LVD	8900-899	Available
2	Exabyte Mammoth	20 GB (170m)	EXB-8900-SW	890210-000	Discontinued
3	Exabyte Mammoth-LT	14 GB (125m)	MAMM-LTLVD	270012-821	Available
4	Exabyte Eliant 820	7 GB (160m)	Eliant 820S	270001-23	Available
5	Exabyte 8505XL	7 GB (160m)	EXB-8505XLS	870013-000	Discontinued
6	Exabyte 8505	5 GB (112m)	EXB-8505S	870010-000	Discontinued

For more information see: www.exabyte.com/home/products.html

Exabyte Media Compatibility

Mammoth (8900): Read and Write support for 22m AME (2.5GB native), 125m AME (14GB native - requires new firmware that new drives are expected to contain) and 170m AME (20GB native) tapes.

Mammoth LT: Read and Write support for 22m AME (2.5GB native) & 125 m AME (14GB native) tapes.

Appendix VI: Upgrading System Memory

Fugu i430VX

This motherboard shipped with a total of 16 MB of memory in two 8 MB SIMMs

To upgrade this motherboard to 64 MB, remove the current memory and replace with two 32 MB SIMMs (Fast Page or EDO), or four 16 MB SIMMs (Fast Page or EDO), or two 32 MB DIMMs (PC66).

DO NOT mix SIMMs and DIMMs. DO NOT mix Fast Page and EDO SIMMs.

Matsonic MS5120

This motherboard shipped with a total of 16 MB of memory in two 8 MB SIMMs.

To upgrade this motherboard to 64 MB, remove the current memory and replace with two 32 MB SIMMs (Fast Page or EDO), or four 16 MB SIMMs (Fast Page or EDO), or two 32 MB DIMMs (PC66).

To upgrade this motherboard to 128 MB, remove the current memory and replace with two 64 MB SIMMs (Fast Page or EDO), or four 32 MB SIMMs (Fast Page or EDO)

DO NOT mix SIMMs and DIMMs. DO NOT mix Fast Page and EDO SIMMs.

EF Corp

This motherboard shipped with 64 MB of memory in one 64 MB DIMM (PC100).

To upgrade this motherboard, use PC100 DIMMs in any combination (up to 3 DIMMs) up to 768 MB.

Hardware Installation (do this before upgrading software):

1. Power down radar.

2. Use an anti-static wrist band when handling RAM in order to prevent damage due to ESD (electro-static discharge).

3. Remove 10 top cover screws (6 flathead screws on top, 2 on the left side, and 2 on the right side).

4. Remove RADAR top cover.

5. Remove the 2 existing 72pin SIMM RAM modules located next to the power supply. To do this, simply push the spring clip retainers down away from the SIMM, then angle the SIMM module towards the power supply for removal.

6. Install new RAM modules in the same SIMM slots as the old ones.

7. Replace the RADAR top cover.

8. Replace 10 top cover screws (6 flathead screws on top, 2 on the left side, and 2 on the right side).

9. Reboot RADAR and verify 64MB available RAM (displayed during the boot-up sequence).

Appendix VII: Upgrading the System Processor

Note: When you're swapping microprocessor chips in and out of their sockets (as you do when you're upgrading your CPU), you're in danger of bending a pin or a whole row of pins with the pressure you exert. When the chip is a Pentium worth hundreds of dollars, this is bad news, so the industry introduced ZIF sockets (Zero Insertion Force), which use leverage instead of brute force to seat and unseat chips--thus taking the pressure out of chip relocation.

1. Power down RADAR.

2. Use an anti-static wrist band when handling the processor in order to prevent damage due to ESD (electro-static discharge).

3. Remove 10 top cover screws (6 flathead screws on top, 2 on the left side, and 2 on the right side).

4. Remove RADAR top cover.

5. Identify motherboard type: Matsonic MS-5120 or Fugu i430VX (see drawings attached).

6. Set jumper configurations for your motherboard type, per the attached drawings.

7. Locate the Pentium processor using the attached drawings.

8. Unclip the Pentium heat sink retaining clip.

9. Remove the heat sink and fan assembly.

10. Lift the lever arm on the side of the CPU ZIF socket.

11. Remove the Pentium processor

12. Carefully install the new Pentium-233 processor into the ZIF socket. Find the flat corner on the processor, and be sure to line it up with the flat corner on the ZIF socket for insertion.

13. After the Pentium processor is properly inserted in the ZIF socket, lower the lever arm back down the side of the ZIF socket, and lock it securely into place.

14. Replace the Pentium processor heat sink and fan assembly. Be sure to re-clip the retaining clip.

15. Replace the RADAR top cover.

16. Replace 10 top cover screws (6 flathead screws on top, 2 on the left side, and 2 on the right side).

17. Reboot RADAR and note RAM and Pentium processor (displayed during the boot-up sequence).

Fugu i430VX
Jumper settings for 233MHz Intel MMX Processor
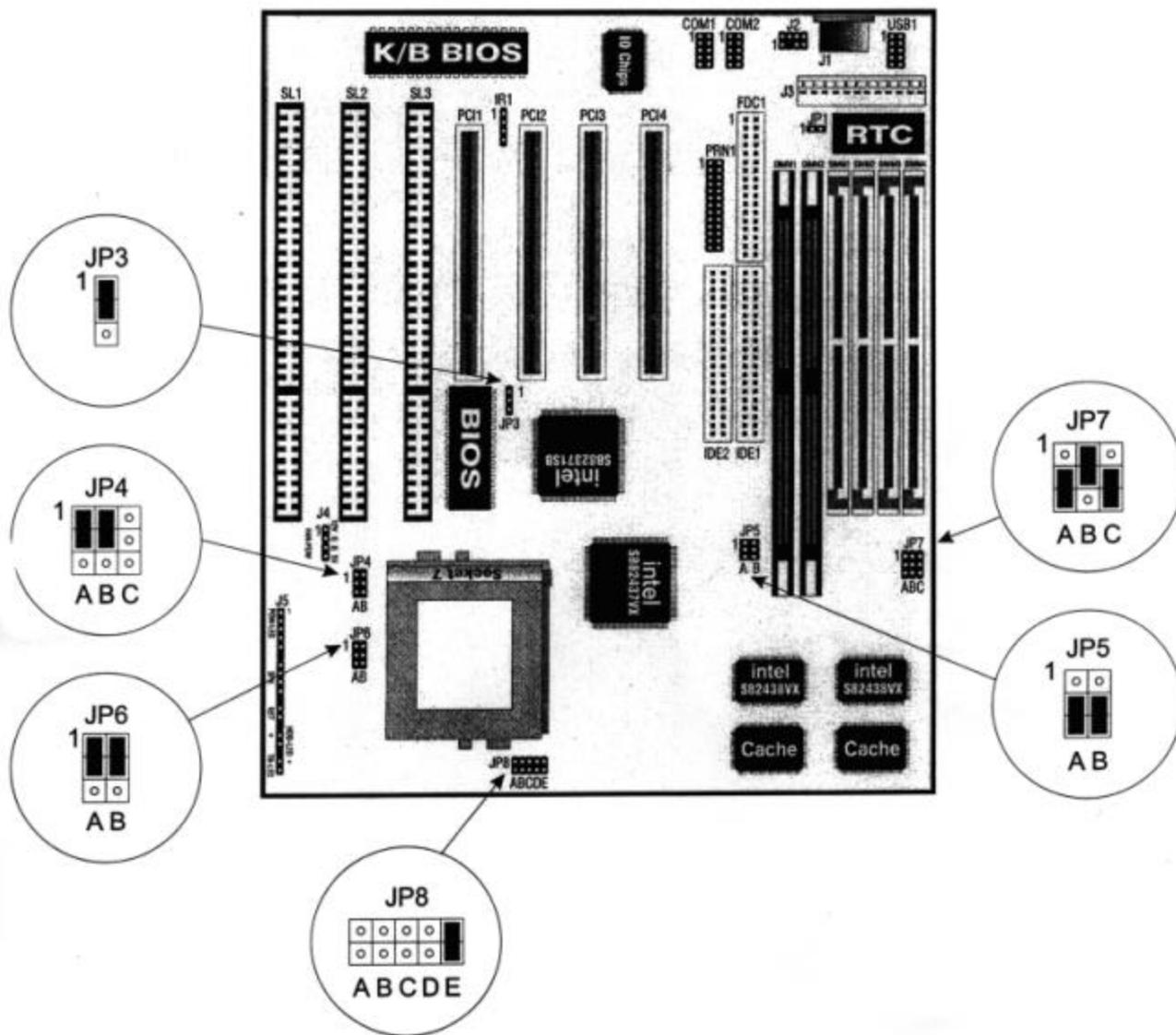
Matsonic MS-5120
Jumper settings for 233MHz Intel MMX Processor
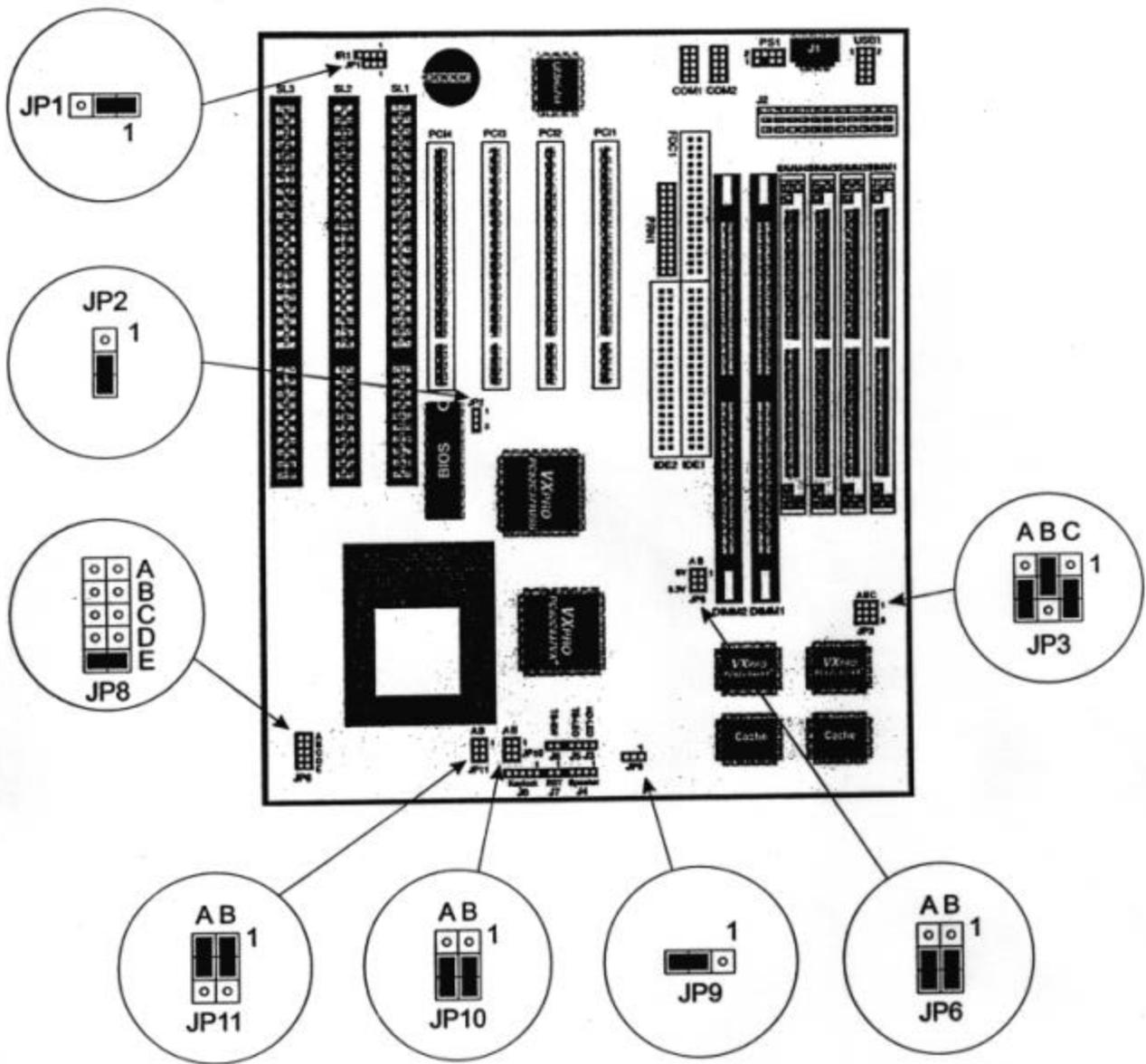
Appendix VIII: RE-8 II Remote Control Key Map
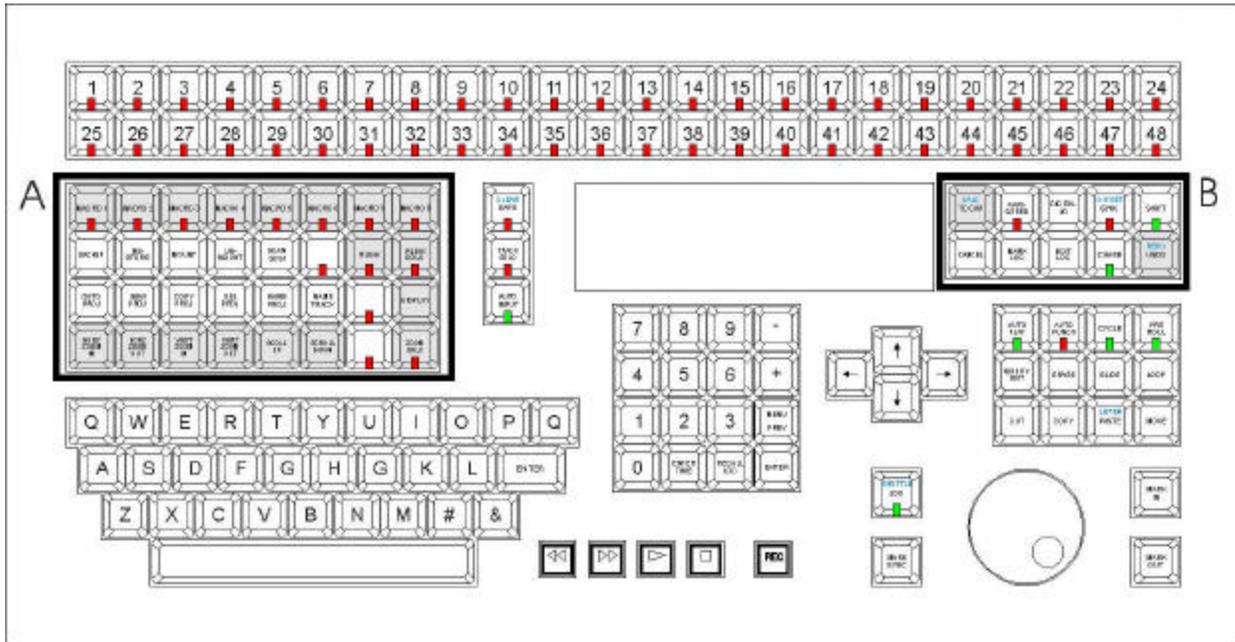
The shaded keys are new or have been repositioned since Version 2.06.