

**MFJ-1214PC**  
**MULTIMODE COMPUTER INTERFACE**  
**INSTRUCTION MANUAL**

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**Table of Contents**

• **INTRODUCTION**

Multi-Mode Computer Interface  
1-1

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MFJ-1214PC Multimode ,  
**INTRODUCTION**

Unpacking your 1214PC	
1-2	
System Requirements	
1-3	
Hardware Installation	
1-4	
Radio Interfacing	
1-6	
HT Interfacing	1-6
Transmit Audio Level	
1-6	
Cabling Accessories	
1-7	
MFJ-1272 Mic Switch	1-7
Software Installation	
1-8	
Formatting New Disks	
1-8	
Disk Backup	
1-10	
Installing the 1214PC Software	
1-11	

**SYSTEM SETUP**

MFJ-1214PC Main Menu	
2-1	
Step-by-Step System Setup	
2-2	
Graphics Configuration	
2-3	
Video Mode	
2-3	
X Size	
2-4	
Y Size	
2-4	
EGA or VGA	
2-5	
Super VGA Chipset Selection	
2-5	
Test	2-7
Auto	2-7
Serial Port Selection	
2-8	
COM 1-4	2-8
Int 1-4	
2-8	
Auto	2-8
Printer Port Selection	
2-9	
LPT 1-3	2-9

Remaining Options

2-9	
VGA Enhancer	2-9
DMA	2-9
Save	2-10
Exit	2-10
Quick Screen Redraw	
2-10	

**FREQUENCY MANAGER**

Frequency Manager

3-1	
Frequency Manager Commands	
3-2	
New	3-2
Edit	3-3
Save Frequency List	
3-4	
Reduce Frequency List	
3-4	
Print Frequency List	
3-5	
Exit	3-6

**FAX OPERATION**

Fax Operation

4-1	
Description of a FAX	
4-1	
Sending and Receiving FAX	
4-2	
File Manager Commands	
4-3	
Transmit	4-4
Configuration	
4-5	
Transmit File	
4-6	
Transmit Screen	
4-6	
Exit	4-6
Receive	4-7
Status Box	
4-7	
Skew Right	
4-8	
Skew Left	4-8
Manual Synchronization	
4-8	

**INTRODUCTION**

Normal Inverse	4-8
Engage Autosave	
4-9	
Engage Autoprint	
4-9	
Mark End Of Picture	
4-9	
Exit	4-9
Hauto	
4-10	
Mauto	
4-10	
RX Adjust	4-11
Receiving Tip	
4-11	
Tuning To A FAX Signal	
4-12	
Bandwidth Control	
4-13	
Start Frequency	
4-14	
Stop Frequency	4-14
Special Parameters	
4-15	
Use Start Frequency	
4-15	
Inverse Phasing	
4-15	
MFJ/BMET/NSK	4-16
Chan1, Chan2	
4-16	
H Mirr	
4-16	
V Mirr	
4-16	
Inverse	
4-16	
SW 5%	4-16
Exit	4-16
Timer Reception	
4-17	
Start at	
4-18	
Stop at	
4-18	
Exit	4-18
Auto Functions	4-19
Autosave	4-19
Disk Save Format	
4-19	

**INTRODUCTION**

Auto Print	
4-20	
Set Menu Color	4-21
Nice	4-22
Y Geo	
4-22	
267, 288, 352, 576	
4-22	
48, 60, 90, 120, 180, 240	
4-23	
Load FAX	4-23
Save FAX	4-24
Color Processing	
4-24	
Delete	
4-25	
Rename	4-25
BInfo	
4-25	
Display FAX	
4-25	
Global Display	4-26
Load	4-26
Rename	4-27
Delete	
4-27	
Exit	4-27
Print Fax	4-27
Printer Control	
4-27	
Configuration	
4-30	
Receiver Control String	
4-30	
Baudrate	4-30
Load	4-31
Save	4-31
Exit	4-31
Animate FAX	
4-31	
Create Animation	
4-32	
Show Animation	4-32
Exit	4-32
Picture Rotation	
4-32	
90 Rotation	
4-32	
180 Rotation	
4-33	

**INTRODUCTION**

270 Rotation	
4-33	
Exit	4-33
Step-by-Step: How To Receive A FAX	
4-34	
Step-by-Step: How To Transmit A FAX	
4-36	

**COLOR FAX**

Color FAX	5-1
Standards for Color FAX	
5-1	
Create Color FAX	
5-1	
Cyan	5-2
Magenta	5-2
Yellow	
5-3	
View Picture	
5-3	
Load Picture	
5-3	
Extract Functions	
5-4	
Define Extract	
5-4	
Mouse	
5-4	
Enter	
5-5	
F10	5-5
Extract Screen	
5-5	
Full Screen	
5-5	
Display Full	
5-5	
Load Extract Definition	
5-5	
Save Extract Definition	
5-5	
Display Functions	
5-5	
Mirror Picture	
5-5	
Synchron Picture	
5-6	
Invert Picture	
5-6	
Display Extract	
5-6	

---

MFJ-1214PC Multimode ,  
**INTRODUCTION**

Set Color Palette	
5-6	
Color Work	
5-7	
Define Color Point	
5-7	
Save Color Point	
5-7	
Escape to Picture	
5-7	
Tab to Main Menu	
5-7	
Save Picture	
5-7	
Delete	
5-8	
Rename	5-8
Binfo	
5-8	
90 Rotation	
5-8	
180 Rotation	
5-8	
270 Rotation	
5-8	
Print Picture	
5-8	
Setup Printer	
5-8	
Cyan Sequence	5-8
Magenta Sequence	
5-8	
Yellow Sequence	
5-9	
Intensity	5-9
Saturation	
5-9	
256 Color Picture	
5-9	
3600 Color Picture	
5-9	
4096 Color Picture	
5-10	
True Gray Picture	
5-10	
32K Color Picture	
5-10	
Save IFF 24 Bit	
5-11	
Nice Mode	5-11
Exit	5-11

**INTRODUCTION**

Step By Step: How to Create a Color FAX  
5-12

**RTTY/ASCII OPERATION**

System Setup for RTTY	
6-1	
Standards for RTTY Transmit and Receive	
6-1	
RTTY/ASCII Receive	
6-2	
Auto Converter	6-4
Full ADC Range	6-4
Auto ADC Adjust	
6-4	
Lo Level	6-5
Mi Level	6-5
Hi Level	6-5
RTTY Transmit	6-5
Tx All	
6-5	
Tx Cur	
6-5	
Text Editor	
6-6	
Editor Functions and Commands	
6-6	
TX All	
6-7	
TX Cur	6-7
Load Text	6-7
Save Text	6-9
Delete Line	
6-9	
Delete Text	
6-9	
Insert Text	
6-10	
Exit	6-10
Editor	
6-10	
Screen	
6-10	
PgUp PgDown	6-10
Home	
6-10	
End	6-10

**CW OPERATION**

Standards for CW Reception and Transmission	
7-1	
CW Tuning Procedure	7-1



---

MFJ-1214PC Multimode ,  
**INTRODUCTION**

CW Transmission

7-4

TX All

7-5

TX Cur

7-5

**CW/RTTY/ASCII FUNCTIONS**

Mode

8-1

Edit

8-1

Clr

8-1

Baud

8-1

Normal /Inverse

8-3

LE/FI

8-3

Save

8-3

Save Buffer Only

8-4

Save Buffer

8-4

Save Current

8-5

Print

8-5

Adjust

8-5

Analyzer

8-6

TX Params

8-6

Speaker

8-7

QRM Mode

8-7

Synchronous Mode

8-7

Accept

8-7

Cancel

8-7

Mark

8-8

Space

8-8

RX Params

8-8

Mark And Space

8-9

Space Only

8-9

Exit

8-9

Mode Configurations

8-9

Load Configurations

8-9

Save Configurations

8-10

**INTRODUCTION**

Timer

8-12  
Start  
8-12  
Stop

8-12

**APPENDIX**

Radio Hookup

A-1

Radio Port Connection

A-2

Hex To Decimal Conversion Chart

A-3

Troubleshooting

A-4

Order Form

A-5

**LIST OF FIGURES**

Fig. 1-1 9/25 Pin Configuration Jumper

Fig. 1-2 Grid Block/Direct Jumper

Fig. 2-1 VT Menu

Fig. 2-2 Configuration Screen

Fig. 2-3 Good Chip Set Selected

Fig. 2-4 Bad Chip Set Selected

Fig. 2-5 Testing Serial Ports

Fig. 2-6 Serial Test Port Complete

Fig. 2-7 Save Modifications Screen

Fig. 3-1 Frequency Manager Menu

Fig. 3-2 Enter Frequency Menu

Fig. 3-3 Stations Conditions Menu

Fig. 3-4 Print Frequency List Menu

Fig. 4-1 FAX Components

Fig. 4-2 Transmit Receive Fax Screen

Fig. 4-3 Transmit Selection Screen

Fig. 4-4 Statis Box

Fig. 4-5 Bar Graph

Fig. 4-6 Two Level Tuning Graph

Fig. 4-7 Multi Level Tuning Graph

Fig. 4-8 Special Parameters Menu

Fig. 4-9 Timer Menu

Fig. 4-10 Set Menu Color Menu

Fig. 4-11 Load Fax File Manager

Fig. 4-12 Save Fax File Manager

Fig. 4-13 Global Display Menu

Fig. 4-14 Scaling Examples

Fig. 4-15 Dither Example

**INTRODUCTION**

Fig. 4-16 Floyd Example  
Fig. 4-17 Animation Selection Menu

Fig. 5-1 Color Fax Menu  
Fig. 5-2 Extract Menu

Fig. 6-1 RTTY Character "D"  
Fig. 6-2 ASCII Character "S"  
Fig. 6-3 RTTY Tuning Indicator Receiving  
Fig. 6-4 Load Editor Text Menu  
Fig. 6-5 Save Editor Text Menu  
Fig. 7-1 Mode Select Menu  
Fig. 7-2 Receive Parameters Menu  
Fig. 7-3 Transmit Parameters Screen

Fig. 8-1 Baud Rate Select Table  
Fig. 8-2 Select WPM  
Fig. 8-3 Save Options  
Fig. 8-4 Tuning Indicator  
Fig. 8-5 Transmit Parameters  
Fig. 8-6 Receive Parameters

Fig. A-1 5 Pin Din Wire Colors

**LIST OF TABLES**

Table 2-1 Video Modes  
Table 2-2 Graphics Modes For Specific Chipsets  
  
Table 4-1 Printer Drivers  
  
Table A-1 Mic Cable Wiring  
Table A-2 Radio Cables  
Table A-3 Decimal to Hexadecimal Conversion Table

## Important Notes

### Hardware Compatibility

This new software is specifically for the New Model MFJ-1214 Rev. 4. This unit has expanded functions to work with this software which older MFJ-1214's do not have. If you own an older MFJ-1214 and use this software MFJ does not guarantee it's compatibility.

### Keyboard Conventions

Due to the lack of standardization for IBM-PC Compatible keyboards it is necessary to standardize keystroke instructions in this manual. The following chart tells how this instruction will denote different keystroke for all keyboards.

Manual Text	Keystrokes for all keyboards
<ENTER>	The Enter Key: Enter: Return or A large key with a bent arrow Press the Enter Key after typing in the preceding text
BackSpace	The Back Space Key: BackSpace or the Straight Arrow above Enter
Del	The Delete Key: Delete, Del, or . Del (must have Num Lock OFF)
Insert	The Insert Key: Insert or 0 Ins (Num Lock OFF)
Home	The Home Key: Home or 7 Home (Num Lock OFF)
End	The End Key: End or 1 End (Num Lock OFF)
PgUp	The PageUp Key: Page Up, PgUp or 9 PgUp (Num Lock OFF)
PgDown	The PageDown Key: Page Down, PgDn or 3 PgDn (Num Lock OFF)
Ctrl	The Control Key: Ctrl or Control Press and Hold Ctrl, Press and Release another Key, Release Ctrl
Alt	The Alternate Key: Alt Press and Hold Alt, Press and Release another Key, Release Alt

# MFJ-1214PC

## MULTI-MODE COMPUTER INTERFACE

We here at MFJ would like to welcome you the world of FAX, with your purchase of the MFJ-1214PC Multi-Mode Computer Interface. The MFJ-1214PC Multi-Mode Computer Interface, along with the software is one of the most advanced FAX interfaces available today. The MFJ-1214PC connects between a transceiver (or a receiver) and an IBM or compatible computer. The package comes complete with the MFJ-1214PC Multi-Mode Interface, 1214PC software, a power supply, and cables (no connector provided for the microphone input on the radio).

The 1214PC software was developed primarily for the reception and transmission of FAX pictures and data. In FAX mode, priority was given to picture quality when received. The full capabilities of the program become apparent only when the program is run on a fully compatible computer. Please refer to the **System Requirements** section of this manual for further details.

Using the FAX mode, the MFJ-1214PC is capable of receiving and transmitting both color FAX with up to 256 colors, using a standard VGA graphics card. Reception of FAX pictures, with 3600, 4096 or 32000 colors is possible, with a graphics system capable of 24-bit graphics. Pictures can also be received in black and white FAX in 16 gray levels. Using the text mode, the 1214PC is capable of receiving and transmitting Baudot (RTTY), ASCII, and CW.

The Fast-start manual provided gives you some basic information so that you can get the MFJ-1214PC up and running in a minimum amount of time. Detailed operation is given in the MFJ-1214PC Instruction Manual.

The software is composed of several separate programs that are accessed through a menu driven shell. Most of the individual programs have their own parameter files. This allows the user to alter the software to suit his/her needs. These parameters files contain things like baud rate for RTTY, picture resolution in FAX mode, and operating speed in the CW mode. This allows the program to come up the same way every time it is loaded.

## Unpacking Your MFJ-1214PC

Before we get into the **System Requirements** section let's unpack your MFJ-1214PC.

**NOTE:** Be careful when unpacking your MFJ-1214PC to make sure you do not lose any of the items!

Upon opening the packing carton, check to make sure that your MFJ-1214PC Package includes the following items:

- MFJ-1214PC Hardware Interface
- MFJ-1214PC Program Disks (1) DSHD 3.5 or 5.25 Disks \*\*
- Serial Cable (DB-25 Male to Female)  
(DB-9 Serial Cable Upon Request)
- Comprehensive Instruction Manual
- Fast-Start Guide
- Open-ended Radio Port Cable
- AC Adapter (12 VDC)

**NOTE:** Check to make sure your MFJ-1214PC Package is complete. Once you have done this, you are ready to begin installing your new MFJ-1214PC. The hardware should be installed first and then the software. Please follow the instructions for installation carefully.

Now why don't we get into the computer System Requirements for the different modes of operations.

**\*\* If your computer does not have high density disk drives refer to the order form in the Appendix to order another size.**

## System Requirements

The program is either mouse and or keyboard driven. To change any field in the program, either "click" the mouse on the field or press the related keyboard key.

A hard drive will be required to install the 1214PC software. The larger and faster that a hard drive is the better. FAX file on average are larger than 800KB. Obviously just a few FAX files will take a lot of hard drive space.

If you have a 9-pin serial port, you will need a 25 pin to 9 pin adapter. If you do not have one, MFJ will exchange a 25 pin to 9 pin cable for the standard cable we sent you, at no charge.

### **CW/RTTY/ASCII**

Below is a list of requirements for running the 1214PC software in **ONLY** CW, RTTY or ASCII.

- \* XT or above IBM PC Compatible Computer
- \* 8 MHz or faster
- \* 640Kb of Memory (Minimum Requirement)
- \* VGA or EGA graphics, (VGA **Highly** Recommended)
- \* Hard Drive (40 Mb or Higher Recommended)
- \* RS-232 serial port (COM 1,2,3, or 4)
- \* 1.2MB 5.25" or 1.44MB 3.25" Floppy Disk Drive

### **FAX**

For running FAX you must **also** meet the following requirements

- \* IBM 286, 386, or 486 IBM PC Compatible Computer
- \* 10 MHz or faster
- \* VGA

In order to operate and take full advantage of the MFJ-1214PC graphics capabilities for FAX graphics you must have VGA capability. The graphics requirements needed to operate the TEXT modes (RTTY, ASCII and CW) are not as critical.

If you wish to run the program on a Laptop you must have VGA, even with a monochrome display.

**NOTE:** If your computer does not meet these requirements you can order a suitable program to control your 1214 from MFJ. Refer to page 5 in the Appendix for an order form.

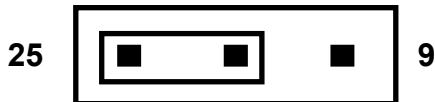
## Hardware Installation

The first step needed to set up the MFJ-1214PC is to connect it from the computer to your radio. Please follow the steps below to ensure a safe and quick installation process:

1. Ensure that the POWER switch for the computer is in the **OFF** position.
2. Ensure that the POWER switch on the MFJ-1214PC is in the **OFF** or (out) position.
3. Insert the 2.1mm coaxial plug from the AC adapter supplied into the Power Jack (J2) on the back of the MFJ-1214PC.

**NOTE:** For a 220 or 240 V wall outlet, you will need to use an AC Adapter that provides 12V DC @ 300 mA. Wire the 2.1mm plug with the inner sleeve positive and the outer sleeve to ground. If you do not have such an adapter, the MFJ-1315x 220/240 VAC is available as an optional accessory.

4. Connect the male end of the serial cable to the RS-232 serial port (J3), on the back panel of the MFJ-1214PC.
5. Connect the female end of the serial cable to the serial port, COM1, 2, 3, or 4 on the back of your computer. If you have a 9-pin serial port, MFJ will exchange your 25-pin cable for a 9-pin cable.
6. If you wish to use a 9-pin serial cable at the back of your computer, change the jumper (J6) at the back of the MFJ-1214PC to position 9 as shown below. If not, leave jumper (J6) at position 25 as shown below.



25 Pin Configuration

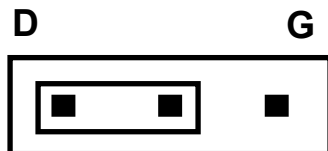


9 Pin Configuration

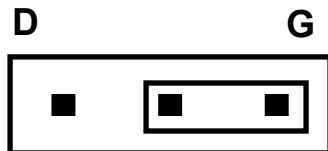
Fig 1-1                    9/25 Pin Configuration Jumper



7. Wire the open-end of the radio cable provided in your MFJ-1214PC package to a connector that matches your transceiver mic input. If you have a communications receiver, then wire a cable from the AUDIO INPUT (J7) on the MFJ-1214PC, to the speaker output on your receiver. The AUDIO INPUT jack (J7) is an RCA connector. Wire the center conductor of the RCA plug "HOT", and the outside conductor to "GROUND". Follow the Table A-1 in the Appendix to see which wires go where. To purchase a pre-wired cable from MFJ see Table A-2 in the Appendix for the appropriate cable.
8. Once the your radio interface cable is wired properly, connect the round, 5-pin DIN connector of the mic cable to the radio port J1 on the back of the MFJ-1214PC. The round end of the 5-pin cable is KEYED, so the cable can only be plugged in on way.
9. A shielded cable will be needed for transceiver keying in the CW mode. The cable will be connected from the **CW KEY** jack (J4), to the key input on the back of you transceiver. The CW KEY jack (J4) in an RCA connector. When you wire the shielded cable, wire the center conductor "HOT", this would be the insulated wire in the cable. Wire the outside of the RCA connector to the "GROUND", this would be the "BARE" wire in the cable.
10. The **GRID BLOCK/DIRECT** jumper (J5) comes configured for DIRECT keying. This will be sufficient for late model ICOM, KENWOOD and YEASU radios. If you intend to use this with an older model grid block keyed radio, just re-position (J5) for GRID BLOCK keying. Locate jumper J5 on the PCB in front of the 5 pin DIN jack. Move the jumper to the two pins closest the "G". Please see the diagrams below:



GRID BLOCK/DIRECT Jumper (J5) configured for Direct Keying



GRID BLOCK/DIRECT Jumper (J5) configured for Grid Block Keying

Fig 1-2

Grid Block Direct Jumper Diagram

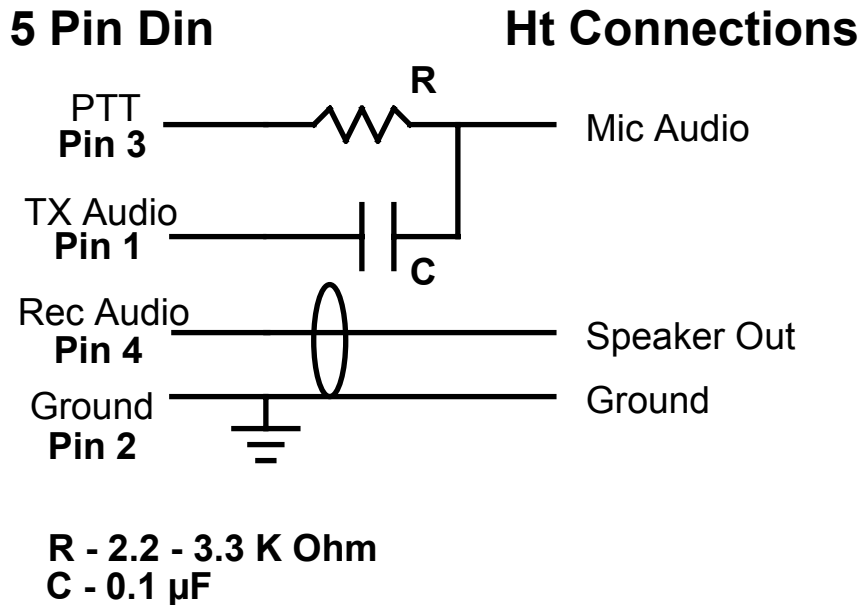
## Radio Interfacing

The first step in interfacing your radio to the MFJ-1214PC, is to wire the 5-pin DIN cable to your microphone input. This can also be wired to an accessory port on the radio. Please refer to Page 10 for pin assignments and Page 11 for wire colors of the 5-pin DIN cable.

Once the 5-pin DIN cable is wired properly, connect the DIN end (round end), to the radio port (J1), on the back panel of the MFJ-1214PC. The other end of the DIN cable should be connected to microphone input on the radio. As mentioned earlier you can connect it to an external accessory port on the back of the radio. This will enable you to keep the microphone and the interface connected at the same time. Another alternative is to use the MFJ-1272B TNC/MICROPHONE switch.

## **HT Interfacing**

Most HT's make the PTT circuit by conducting current on the same input pin as the TX Audio. If this is true for your HT, then you will need to install a capacitor and also a resistor as shown below:



**Fig F-3** **HT Keying Circuit**

## **Transmit Audio Level**

In order for the MFJ-1214PC to operate efficiently with your particular radio, you will need to adjust the transmit audio level, from the MFJ-1214PC to the radio. The following equipment is needed to perform this adjustment:

**Transceiver**-- This is the radio which you are going to interface with the MFJ-1214PC.

**Receiver**--This receiver should receive the frequency transmitted from the Transceiver.

**Small Flat-Tip Screwdriver**-- This will be used for adjusting R36 inside the MFJ-1214PC.

With all of the necessary equipment at hand, please perform the following procedure:

1. Connect the radio to a dummy load and listen to the transmission with the receiver.
2. Remove the cover from the MFJ-1214PC unit. Set the screws aside so they do not get lost.
3. Load the RTTYII.EXE program and go into the transmit mode. This is done through the Editor, using the F1 or F2 key functions.
4. With the small flat-tip screwdriver turn R36 all the way counter clockwise.
5. Adjust R36 clockwise until no increase in audio level is detected on the receiver. Do not go beyond this point, to prevent distortion of your transmitted signal.

Once you have adjusted the transmit audio level properly, you are then ready to operate the MFJ-1214PC.

#### **Cabling Accessories**

Here are some cables which are available from MFJ. These cables are listed in Table A-2 in the Appendix.

**MFJ-5082**, open end cable with 8-pin microphone plug

**MFJ-5224**, open end cable for ICOM/YAESU handhelds

**MFJ-5226**, open end cable for KENWOOD handhelds

**MFJ-5268**, open end cable with Modular telephone plug

(YAESU FT-2400, KENWOOD TM641A, TM741A, TM732A)

#### **MFJ-1272B Mic Switch**

The MFJ-1272B Microphone Switch will eliminate the frustration involved in changing cables (both mic and receive audio) when you switch from the MFJ-1214PC to your microphone.

Call **1-800-647-1800** to order any of the above or use the order form on page A-5.

## Software Installation

This is the Software Installation section of the MFJ-1214PC manual. If you are this far into the manual, this means that you have completed the Hardware Installation section. This should mean that everything in relation to the MFJ-1214PC such as cables, power supply besides software is all finished. Right?? If you have any doubts, go back and double-check everything from the introduction up to this point.

Now that you have DOUBLE CHECKED everything to this point, let's get right into **Software Installation**.

Before installing the 1214PC software, make a copy of the original disk. The software comes either a high-density 1.2MB, 5.25" or 1.44 MB, 3.5".floppy disks. You must copy the disks to a high density disk of the same size as your installation disks.

If you know how to copy a disk proceed to the section **Installing the 1214PC Software, after you have made a backup of the installation disk**. Otherwise, please follow the steps in the sections carefully and precisely.

### **Formatting New Disks**

To make a copy of the original, you must first **FORMAT** a new floppy disk. **PLEASE FOLLOW THE STEPS BELOW CAREFULLY!!** Whenever formatting a new floppy disk great care must be taken. You could erase disk files on a disk which you do not want to erase! Below are steps for formatting a new floppy disk.

1. Ensure the computer is turned OFF.
2. Turn your computer ON and allow it to BOOT UP and present the DOS prompt (either A: or C:) on your computer screen .

**NOTE: Whenever <ENTER> is used this means to press the ENTER or RETURN key on your keyboard.**

3. Once the DOS prompt is on your screen, please type one of the following:

<b>FORMAT A:</b>	<b>&lt;ENTER&gt;</b>	<b>if your A: drive has the same size disk as the 1214PC software</b>
<b>FORMAT B:</b>	<b>&lt;ENTER&gt;</b>	<b>if your B: drive has the same size disk as the 1214PC software</b>

**NOTE: You may have to change to the DOS directory if it is not specified in your path.**

**CD DOS                   <ENTER>**

If the FORMAT.COM file exists on your disk, the computer will display the following message:

**Insert new diskette for drive A: ( or B:)  
and press ENTER when ready....**

**NOTE:** The floppy disk used in step #5 must be of compatible type to the 1214PC software disks. If not, the backup will not be complete.

4. When the above message appears on the screen, remove any disk from the drive and insert the new disk into the drive to be formatted and press **Enter**. The disk you insert should be of the "**BRAND NEW NEVER BEEN USED**" brand. If not, you risk the loss of all data on the disk you insert.
5. When the new floppy disk is finished formatting, the computer will ask you to NAME the disk. If you want to name it type the NAME at the prompt. If not, then just press the **Enter** key.
6. After the computer has written the NAME you typed to disk, you will be prompted with the question:  
**FORMAT ANOTHER (Y/N)?**  
If you have no other disks to format press the N key then **Enter**. If so, then press the Y key then **Enter** and the format process will start over again.

This completes disk formatting. If further help is needed on this operation, please refer to your DOS manual.

## Disk Backup

If you are reading this, then everything must have gone well to this point. If not, then go back and double check and make everything right up to this point.

Well here we go into the process of making a copy of the original disk for the MFJ-1214PC.

The easiest way is to copy a disk is to use the DOS program called **DISKCOPY.COM**. Please follow the procedure below to use DISKCOPY:

1. Remove any floppy disks presently in your floppy drive.
2. To execute the DISKCOPY.COM type:  
**DISKCOPY A: A: <ENTER> if your A: drive has the same size disk as the 1214PC software**  
**DISKCOPY B: B: <ENTER> if your B: drive has the same size disk as the 1214PC software**
3. You will be prompted to insert the SOURCE disk into Drive (A or B). Insert the original MFJ-1214PC program disk and press **Enter**.
4. After the computer has read the files from SOURCE disk, you will be prompted for the TARGET disk. Insert the TARGET disk into the same drive and press the **Enter** key. The computer will then start writing the files it read off of the source disk to the TARGET disk.

The computer may ask for the SOURCE disk more than once. Repeat steps #3 and #4 until the disk copy process is complete.

When the copy process is finished the computer will ask you if you wish to make another copy. If so, then answer the question by pressing the Y key along the **Enter** key. Then repeat steps #3 and #4 for each disk to be copied. If not, then answer the question with an N and press **Enter**.

If everything has gone well to this point then you are finished making a copy of the original MFJ-1214PC program disk. Do not put a write-protect tab on the disk you just copied. The software needs to write data to disk during certain operations. Take the original program disk and put it in a safe place, free of dirt, dust, heat, moisture and away from magnetic fields.

The above example is only one of many ways of making a copy. If you need further help, please refer to your DOS system manual. Now lets proceed the software installation.

## Installing the 1214 Software

This section will show you how to install the MFJ-1214PC software on a computer equipped with a hard drive. Basically, our install programs are going to uncompress and copy all files from the working copy of the disk to the hard drive. Please follow the steps below:

1. Set your computer power switch to the ON position, and allow the computer to "boot up".

2. Once the computer has booted up, and you have your DOS prompt type:

```
C: <ENTER>
```

```
CD \ <ENTER>
```

This changes the hard drive directory to the "ROOT DIRECTORY".

3. Now make a sub-directory with any name you choose. This can be done by typing the following:

```
MD DIRECTORY NAME <ENTER>
```

where **DIRECTORY NAME** is the name you want for the sub-directory.

4. Now we want to change the hard drive directory, to the one which you created in step #3. To do this please type the following:

```
CD DIRECTORY NAME <ENTER>
```

where the **DIRECTORY NAME** is the name of your subdirectory, which you chose in step #3.

5. Insert the original floppy disk into drive A or B, and type either of the following:

```
A:1214 or B:1214 <ENTER>
```

This will extract all disk files from the floppy drive to the directory in drive C.

6. Once you obtain your DOS drive prompt back, make sure you are still in the directory you made for the MFJ-1214PC software.

7. Now we need to make another directory, one for the sample Fax pictures. Do this by typing the following statements:

```
MD PIC <ENTER>
```

```
CD PIC <ENTER>
```

This will create a sub-directory in your MFJ-1214PC program directory

8. Now install the sample Fax pictures to the **PIC** directory. In order to do this please type either of the following statements:

```
A:SMPLPIC (or) B:SMPLPIC <ENTER>
```

The installation of the sample Fax picture will now begin. After it is finished you will get your DOS drive prompt back. You should also still be in the **PIC** directory.

9. Change the hard disk directory back to your MFJ-1214 program directory. Do this by typing:

```
CD ..                                <ENTER>
```

You should get your DOS directory prompt, and you should be in the directory where you installed the MFJ-1214PC program files.

10. We will now make a directory to install the sample animation files in. To do this type the following:

```
MD ANI                               <ENTER>
```

```
CD ANI                               <ENTER>
```

11. In order to install the sample animation picture into the directory you just made please type either of the following statements:

```
A:SMPLANI (or) B:SMPLANI <ENTER>
```

```
then
```

```
CD ..                                <ENTER>
```

When the Animation sample is finished installing you will get your DOS drive prompt back.

This basically concludes the software installation section of the manual. If you have any problems with this section, please do not go any further, and contact our Technical Staff at 1-800-647-8324. They will be more than happy to help you out.



## Appendix

### Radio Hookup

RADIO	CONNECTOR TYPE	MIC AUDIO to pin 1 of J1	PTT to pin 3 of J1	RXAUDIO to pin 4 of J1	GROUND to pin 2 of J1
<b>KENWOOD</b>	4 pin	pin 1	pin 2	Speaker	pin 3,4
	5 pin	pin 1	pin 2	Speaker	pin 4,5
	6 pin	pin 1	pin 2	Speaker	pin 6
	8 pin	pin 1	pin 2	Speaker	pin 7,8
TR-2500	HTs	Tip-Lg	Sleeve-Lg	Tip-Sm	Sleeve-Sm
TR-x600	HTs	Ring-Lg	Sleeve-Lg	Tip-Sm	Sleeve-Sm
TR-x100	HTs	Ring-Lg	Sleeve-Lg	Tip-Sm	Sleeve-Sm
TR-x15	HTs	Ring-Lg	Sleeve-Lg	Tip-Sm	Sleeve-Sm
TR-x5	HTs	Ring-Lg	Sleeve-Lg	Tip-Sm	Sleeve-Sm
<b>ICOM</b>					
	5 pin	pin 1	pin 2	Speaker	pin 4,5
	5 pin	pin 1	pin 2	Spk or pin 8	pin 4,5
	HTs*	Tip-Sm	Tip-Sm	Tip-Lg	Sleeves
<b>YAESU</b>	5 pin	pin 1	pin 2	Speaker	pin 4,5
	5 pin	pin 1	pin 2	Speaker	pin 4,5
FT-208	HTs	pin 1	pin 3	pin 2	pin 4
FT-x09	HTs*	Tip-Sm	Tip-Sm	Tip-Lg	Sleeves
FT-x3	HTs*	Tip-Sm	Tip-Sm	Tip-Lg	Sleeves
FT-727	HTs*	Tip-Sm	Tip-Sm	Tip-Lg	Sleeves

(Sm=Small Plug Lg=Large Plug Spk=Speaker)  
 \* = Transmitter keyed by grounding microphone.

**Table A-1 Mic Cable Wiring**

**NOTE:** The radio connection information listed in the previous chart is believed to be accurate. However, you should check the accuracy of this information with the instruction manual of your radio. MFJ Enterprises is not responsible for any damage to radios as a result of inaccuracy of any information listed in the previous chart.

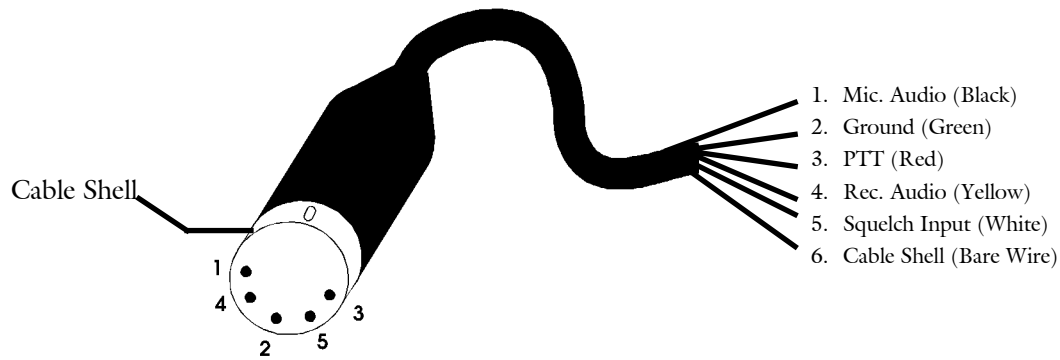
If your radio is not listed here, please refer to your radio manual for the microphone connector information. If you cannot find the microphone pin-out information, call the company that manufactures your particular radio.

**APPENDIX**

**Radio Port Connection**

A 5-pin DIN cable has been provided for you to wire for your particular radio. You will need to decide as to the wiring of this cable. The cable shell has a **ground wire** connected to it. The cable conductors inside the cable insulation have been wrapped with **metal** foil material. This will aid in the decrease of RFI being induced onto the cable conductors caused by stray RF. When wiring the appropriate radio microphone connector to the open end, wire the **BARE WIRE (Cable Shell)** to the **GREEN WIRE (Cable Ground)**. As we suggested previously, you may want to purchase the MFJ-1272B TNC/Microphone switch along with the pre-wired cables for your radio. This will make installation quicker and easier.

The pin assignments and wire colors for the 5-pin DIN cable which is provided are shown below:



**Fig. A-1 5 Pin Din Wire Colors**

MFJ offers pre-wired cables for most radios. A list of these cables are shown below:

RADIO TYPES	MFJ	PK-232 TM	PK-88 TM	KAM TM
ICOM* YAESU HTs	MFJ-5024	MFJ-5024X	MFJ-5024Z	MFJ-5024YV
KENWOOD HTs**	MFJ-5026	MFJ-5026X	MFJ-5026Z	MFJ-5026YV
YAESU 8 PIN RADIOS	MFJ-5080	MFJ-5080X	MFJ-5080Z	MFJ-5080YV MFJ-5080YH
ICOM*** 8 PIN RADIOS	MFJ-5084	MFJ-5084X	MFJ-5084Z	MFJ-5084YV MFJ-5084YH
KENWOOD/ALINCO 8 PIN RADIOS	MFJ-5086	MFJ-5086X	MFJ-5086Z	MFJ-5086YV MFJ-5086YH

**Table A-2 Radio Cables**

\*Does not include IC-W2A

\*\*Does not include 2500

\*\*\*Does not include 25A & 255A

**NOTE:** The YV models connect to the VHF port of KAM. The YH models connect to the HF port of KAM.

## APPENDIX

DECIMAL TO HEXADECIMAL CONVERSION

Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex
0	0	32	20	64	40	97	61	129	81	161	A1	193	C1	225	E1
1	1	33	21	65	41	98	62	130	82	162	A2	194	C2	226	E2
2	2	34	22	66	42	99	63	131	83	163	A3	195	C3	227	E3
3	3	35	23	67	43	100	64	132	84	164	A4	196	C4	228	E4
4	4	36	24	68	44	101	65	133	85	165	A5	197	C5	229	E5
5	5	37	25	70	46	102	66	134	86	166	A6	198	C6	230	E6
6	6	38	26	71	47	103	67	135	87	167	A7	199	C7	231	E7
7	7	39	27	72	48	104	68	136	88	168	A8	200	C8	232	E8
8	8	40	28	73	49	105	69	137	89	169	A9	201	C9	233	E9
9	9	41	29	74	4A	106	6A	138	8A	170	AA	202	CA	234	EA
10	A	42	2A	75	4B	107	6B	139	8B	171	AB	203	CB	235	EB
11	B	43	2B	76	4C	108	6C	140	8C	172	AC	204	CC	236	EC
12	C	44	2C	77	4D	109	6D	141	8D	173	AD	205	CD	237	ED
13	D	45	2D	78	4E	110	6E	142	8E	174	AE	206	CE	238	EE
14	E	46	2E	79	4F	111	6F	143	8F	175	AF	207	CF	239	EF
15	F	47	2F	80	50	112	70	144	90	176	B0	208	D0	239	EF
16	10	48	30	81	51	113	71	145	91	177	B1	209	D1	240	F0
17	11	49	31	82	52	114	72	146	92	178	B2	210	D2	241	F1
18	12	50	32	83	53	115	73	147	93	179	B3	211	D3	242	F2
19	13	51	33	84	54	116	74	148	94	180	B4	212	D4	243	F3
20	14	52	34	85	55	117	75	149	95	181	B5	213	D5	244	F4
21	15	53	35	86	56	118	76	150	96	182	B6	214	D6	245	F5
22	16	54	36	87	57	119	77	151	97	183	B7	215	D7	246	F6
23	17	55	37	88	58	120	78	152	98	184	B8	216	D8	247	F7
24	18	56	38	89	59	121	79	153	99	185	B9	217	D9	248	F8
25	19	57	39	90	5A	122	7A	154	9A	186	BA	218	DA	249	F9
26	1A	58	3A	91	5B	123	7B	155	9B	187	BB	219	DB	250	FA
27	1B	59	3B	92	5C	124	7C	156	9C	188	BC	220	DC	251	FB
28	1C	60	3C	93	5D	125	7D	157	9D	189	BD	221	DD	252	FC
29	1D	61	3D	94	5E	126	7E	158	9E	190	BE	222	DE	253	FD
30	1E	62	3E	95	5F	127	7F	159	9F	191	BF	223	DF	254	FE
31	1F	63	3F	96	60	128	80	160	A0	192	C0	224	E0	255	FF

Table A-3            Decimal to Hexadecimal Conversion Table

**TROUBLESHOOTING GUIDE**

**Q: My printer will not print my pictures. What do I do?**

A: Choose another printer driver. See PRINTER CONFIGURATION in the configuration section. If this does not fix it, check the printer(LPT) port set in configuration. Try to print using the other two possible values. The three choices are LPT1, LPT2, or LPT3.

**Q: When I try to view my pictures, they do not show up correctly on my screen. How can I fix it so I can see my pictures?**

A: Reconfigure your video by running setmode or by the F1 Configuration option at the main menu. See SETMODE in the configuration section.

**Q: The cable from the MFJ-1214PC to my computer won't fit to the serial port at the back of my computer. What should I do?**

A: You need to get a 25-pin to 9-pin serial port converter. Or if you prefer, send the serial cable back to MFJ for a 25-pin to 9-pin serial cable at no cost.

**Q: I can't get the cross-hair on the "TAB VIEW FAX" screen to move. How can I fix this?**

A: Try pressing "NUM LOCK" and using the arrow keys on the number keypad.

**Q: Everything seems to be OK when I press T for the Test Patterns in the System Setup, but NOTHING AT ALL--not even trash on the screen--is coming through to my computer when I try to Receive a FAX.**

A: 1) Follow the Step-by-Step Instructions on how to receive a FAX.  
2) Check the power to the MFJ-1214PC and to your radio, cable connections from the computer to the MFJ-1214PC and from the MFJ-1214PC to the radio.  
3) Try a different COM Port and Interrupt at the System Setup.

**Technical Assistance:**

If you have any problem with this unit first check the appropriate section of this manual. If the manual does not reference your problem or your problem is not solved by reading the manual, you may call *MFJ Technical Service* at **601-323-0549** or the *MFJ Factory* at **601-323-5869**. You will be best helped if you have your unit, manual and all information on your station handy so you can answer any questions the technicians may ask.

You can also send questions by mail to MFJ Enterprises, INC., 300 Industrial Park Road, Starkville, MS 39759; by FAX to **601-323-6551**; through Compuserve at 76206,1763; or by email to 76206.1763@Compuserve.com. Send a complete description of your

**APPENDIX**

problem, an explanation of exactly how you are using your unit, and a complete description of your station.

APPENDIX

**MFJ Order Form for MFJ-1214PC Accessories**

I need to order another size floppy disc with the **NEW** version of the 1214 Software  
 I have a  5.25" Floppy Drive  3.5" Floppy Drive  
 I need  360 KByte disks  720 KByte Disks   
 HighDensity Disks

I have a hardware incompatibility and need the **OLD** version of the 1214 Software  
 I have a  5.25" Floppy Drive  3.5" Floppy Drive  
 I need  360 KByte disks  720 KByte Disks  
 To exchange disks send the disk you have plus \$5.00 for shipping and handling with this form to MFJ. Copies of this form will not be accepted for disk exchanges.

I need a 9 Pin to 25 Pin Cable. I am returning mine for replacement.

- I need an **open end** cable for my radio.
  - MFJ-5082** Open end cable with 8-pin microphone plug **\$9.95**
  - MFJ-5224** Open end cables for ICOM/YAESU handhelds **\$9.95**
  - MFJ-5226** Open end cable for KENWOOD handhelds **\$9.95**
  - MFJ-5268** Open end cable with Modular telephone plug **\$9.95**

- I need a prewired cable Model \_\_\_\_\_ see Table A-2. **\$14.95**
- I would like a MFJ-1272B/1272M Mike Switch. see pages 1-6 **\$39.95**

Name _____	MS Residents Add 7%	_____
Address _____	Shipping 1 pc.	<b>\$6.00</b>
City & State _____ Zip _____	Shipping 2 pc. Add	<b>\$2.00</b>
Telephone No. _____	Shipping Disk	<b>\$5.00</b>
	<b>TOTAL</b>	_____

**Method of Payment**

- Check  Money Order  Master Card  American Express   
 Discover  VISA

Card Number \_\_\_\_\_ Expiration Date \_\_\_\_/\_\_\_\_

Signature of Card Holder \_\_\_\_\_

Send this completed form, plus check or money order with proof of purchase

(and disks or 25 pin cable) to

**MFJ Enterprises, INC.**  
**300 Industrial Park Road**  
**Starkville, MS 39759, USA**

## CW/RTTY/ASCII Functions

This section will outline the different functions of the software. These functions are in a menu on all of the CW/RTTY/ASCII receive screens. This menu is called the STATUS LINE.

### F1 Mode

This key allows you to select between 5 different modes. These modes appear in small sub-windows with a function key assigned to them. So depending on the MODE you wish to operate you press the appropriate function. For example if you want to operate CW, then you would press the **F5** key. Pressing the **F5** key will highlight the CW sub-window. After the CW sub-window is highlighted then press the **Esc** key to exit the MODE window, and enter the CW receive screen. This procedure is the same for the other modes which appear in the MODE window.

### F2 Edit

This is another great feature of the MFJ-1214PC software. This is a full featured editor which allows you to transmit text files of disk or form files as you are receiving in the CW/RTTY/ASCII modes. It utilizes a split screen feature which allows you to receive in the CW/RTTY/ASCII modes at the same time you are using the editor. For more information on the Editor please see the Editor section.

### F3 Clr

This function allows you to Clear the software Receive Buffer. When invoked the software will prompt you with a small window in the center of the screen.

If wish to delete the buffer contents then press the **Enter** key to ACCEPT, then the Receive portion of the screen will clear. If not then press the **Esc** key to CANCEL, then the window will disappear and the Receive screen will remain unchanged. This function also works in all CW/RTTY/ASCII modes.

### F4 Baud

The **F4** key allows the user to change the transmit speed in all CW/RTTY/ASCII modes. The graduations are in Baud Rate.

---

MFJ-1214PC Multimode  
**CW/RTTY/ASCII FUNCTIONS**

Since the RTTY/ASCII modes use Baud Rate for speed then just set the baud rate to the appropriate speed desired. However, CW uses Words-per-Minute (wpm). The **F4** key function is graduated in Words-per-Minute (WPM) in the CW mode. The Baud Rate or WPM can be changed with either the arrow keys or with a mouse. To change with a mouse, you click on the Baud Rate/WPM slider bar, hold down the left button and slide the bar up or down. As the slider bar is moved the Baud Rate or WPM will change. The **SELECT BAUDRATE** window will appear as shown below:

**PLACE BAUD RATE SELECT TABLE HERE**

**Fig. 8-1            Baud Rate Select Menu**

This window will change to WPM in the CW mode. The WPM will appear as shown below:

**Select WPM**



**Fig. 8.2            Select WPM Menu**

The numbers inside the small boxes correspond to the baud rates or WPM designated in the boxes. These baud rates and WPM are fixed and cannot be changed. To select one just press the corresponding number. The baud rate value will appear next to **CR ACCEPT**. This value is not adopted by the program until you press the **Enter**. Then you will notice the screen change to the CW Receive screen and the WPM value you selected will appear next **F4** on the STATUS LINE.

If you desire a different baud rate then return back to the SELECT WPM screen by pressing the **F4** key. You can change the baud rate to other values besides the fixed values. This is done by using the Up and Down arrow keys and the PgUp and PgDn keys. The baud rate is changed by 1 baud increments using the Up and Down arrow keys, and by 50 baud increments using the PgUp and PgDn keys. The baud rate can be varied from 30 to 1200 baud. The same procedure applies here as in the fixed values. If you want to use the value you selected then press the **Enter**, the SELECT BAUDRATE will disappear and the CW Receive screen will appear. The program will adopt the selected baud rate by placing it on the STATUS LINE next to **F4**. If not press the **Esc** key and the baud rate will remain unchanged. This is also functional in the RTTY/ASCII modes. The way this function works in the RTTY/ASCII modes is exactly the same as in CW.

## **F5 Normal/Reverse**

This function has the ability to invert the polarity of the Demodulated signal which goes to the computer. This must be set to **NORMAL** for CW operation, both receiving and transmitting. This is also functional in the RTTY/ASCII modes. So if in the RTTY mode and good copy is not received then try changing this function, to either **NORMAL** or **REVERSE** which ever is the opposite of the current operating setting. If good copy is still not obtained then set it back like it was.

## **F6 LE/FI**

This function is only for the RTTY/ASCII modes. This strictly an indicator of which type of characters are being received. This is going to have either **LE** for LETTERS or **FI** for FIGURES (NUMBERS). This indicator will vary with what is being received. This has no effect on CW copy or transmitting.

## **F7 Save**

This is a feature where the contents of the Receive Buffer is saved to disk under a specified filename. This function is good for all CW/RTTY/ASCII modes of operation. Upon invoking the **F7** key you will notice a small window appear in the center of the screen like the one below:

PUT SAVE OPTIONS SCREEN HERE

Fig.. 8-3      Save Options Menu

Now let's get into the different functions under this window.

### F1 Save Buffer Only

This function saves what is currently in the Receive buffer. To do this press the **F1** key and the **SAVE BUFFER CONTENTS** menu will appear. From here is where all buffer save routines start. Once you are in the **SAVE BUFFER CONTENTS** menu press the **TAB** key to put the cursor into the **DRIVE/PATH/FILENAME** options box. From here you can either delete the current filename with the **BACKSPACE** key and type in another filename and press the **Enter**, or just press the **Enter** key to use the current filename. Once **Enter** is pressed the text will be saved to disk under the specified filename.

### F2 Save Buffer

Pressing the **F2** key under the **SAVE OPTIONS** window will take you to the **SAVE BUFFER CONTENTS** menu. Once there use the **TAB** key to put the cursor into the **DRIVE/PATH/FILENAME** box. Here you can either use the current filename by pressing the **Enter** key or use the **BACKSPACE** key to delete the current filename and type in your own, and press the **Enter** key. Once the **Enter** key is pressed the program will open a file on the default disk drive, using the specified filename. After the

file is opened on disk the program return to the Receive screen, highlight **F7 SAVE** on the STATUS LINE. At that time all incoming text received by the program will be written to that file. When you wish to close the file just press the **F7** key again. The **F7 SAVE** will no longer be highlighted on the STATUS LINE. From there you can use the editor to go back and look at the file.

### **F3 Save Current**

Pressing the **F3** while under the SAVE OPTIONS window will take you to the AUTOSAVE BUFFER menu. Once in the menu you need to select a filename which to SAVE the incoming data to. To do this you can use the **TAB** key to put the cursor in the DRIVE\PATH\ FILENAME box on the right side of the menu. Then you can either use the current selection which may be in the box already, or you can use the **Del** key to delete the current selection. After deleting the DRIVE\PATH\FILENAME currently in the box, type in your own choice and press the ENTER key. The program will then return to the terminal screen and the **F7 SAVE** selection on the status line will be highlighted. After everything is setup properly, then all incoming data will be saved to disk, via the DRIVE\PATH\FILENAME which you specified.

When you wish to terminate the AUTOSAVE routine, then just press the **F7** key again.

## **F8 Print**

The PRINT function allows printing of CW/RTTY/ASCII text out on the printer. The printer must be connected to the computer at the parallel port, and must be ON-LINE. If the printer is not ON-LINE or connected, the computer will not lock-up. Then all you have to do is bring the printer ON-LINE and or connect it to the computer, then proceed with your printing operation. If it seems like the printer is not working quite right, then you may need to change the printer driver the program is using. The default printer driver is named **STANDARD.FPR**. In order to printer drivers rename the STANDARD.FPR file something else, then rename the printer driver file that matches the specifications of your printer **STANDARD.FPR**. The ten (10) printer driver files available are:

EPSON__8.FPR	LJ_75.FPR
STANDARD.FPR (DEFAULT)	LJ_150.FPR
EPSON_24.FPR	P7_COL_8.FPR
LJ_300.FPR	P7_COL24.FPR
LJ_100.FPR	EPSWX_24.FPR

## F9 Adjust

This is a very unique feature which gives the you an ON-SCREEN Tuning Indicator for the RTTY/ASCII modes. When the **F9** key is invoked the Tuning Indicator will appear in the center of your screen. It is a 16 increment "BAR GRAPH" indicator and is very useful in signal tuning. Below is an example of the ON-SCREEN tuning indicator:

PLACE THE TUNING INDICATOR EXAMPLE HERE

Fig. 8-4            Tuning Indicator

## F10 Analyzer

This feature gives you the ability to ANALYZE the baudrate of the incoming RTTY or ASCII signal.

## P TX Params

When the **P** key is pressed from any of the receive screens a small menu will appear in the center of the screen. The menu will appear as follows:

**PLACE THE TX PARAMS MENU HERE**

Fig. 8-5 Transmit Parameters Menu

While at the TX Params menu you will see two vertical bars on the right hand side of the menu. Below these bars you notice that one is labeled **MARK** and the other is labeled **SPACE**. Either the word **MARK** or **SPACE** below the bars will be highlighted. So whichever one is highlighted can be changed if desired. To highlight the word of the frequency to be changed use the **LEFT** or the **RIGHT** arrow keys. Whichever one is highlighted can be varied, by using the **Up** or **Down** arrows, **PgUp**, or the **PgDn** keys. The **Up** and **Down** arrow keys will vary the frequency by 1 Hz increments at a time, or you can hold them down and the frequency will constantly change until you release the key. The **PgUp** or **PgDn** key vary the frequency in the same manner only in 50 Hz increments. The screen may flicker slightly while changing the frequencies. This is normal, there is no malfunction.

An explanation of the menu functions follows.

### **F1 Speaker**

Pressing the **F1** key along with a **Enter** press from this menu will either activate or deactivate the speaker in the computer. Pressing the **F1** key at this menu you will notice the **F1 SPEAKER** sub-window become highlighted. At this point you need to press the **Enter** to accept the change. If you do not want to activate the internal speaker then press the **Esc** key to abort the change. Once activated all received signals will be heard on the computer's internal speaker

### **F2 Qrm Mode**

This function changes the way an RTTY/ASCII signal is transmitted. It changes the time duration between characters. This is useful when operating in high QRM conditions. In order to enter the **QRM MODE** press the **F2** key from the TX Params menu. You will notice the **F2 QRM MODE** sub-window become highlighted. For this change to take place you must press the **Enter** key. If not, then press the **Esc** key and the change will not be made.

### **F3 Synchronous Mode**

This mode when activated transmits the RTTY DIDDLE signal, when transmitting RTTY. In order to enter this mode press the **F2** key from the TX Params menu. You will notice the **F2 SYNCHRONOUS MODE** sub-window become highlighted. For any change to take place you must press the **Enter** key. If not, then press the **Esc** key and the change will not be made.

### **CR Accept**

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MFJ-1214PC Multimode  
**CW/RTTY/ASCII FUNCTIONS**

Pressing the **Enter** or **ENTER** key tells the software to adopt the changes you made while at the TX Params menu.

**Esc Cancel**

Pressing the **Esc** tells the software not to make any changes you made while you were in the TX Params menu.

**Mark 2125 Hz.**

This is the MARK frequency used by the MFJ-1214PC to transmit RTTY or ASCII. This frequency is variable which will be explained later on. This frequency is variable from 379 to 3000 Hz.

**Space 2295 Hz.**

This is the SPACE frequency used by the MFJ-1214PC to transmit RTTY or ASCII. This frequency is variable which will be explained later on. This frequency like the MARK frequency can be varied from 379 to 3000 Hz.

## **R- RX Params**

When the **R** key is pressed from any of the receive screens a small menu will appear in the center of the screen. The menu will appear as follows:

**PLACE THE RX PARAMS MENU HERE**

Fig. 8-6            Receive Parameters Menu

Under this menu you will see three (3) choices . Let explain these choices now so you will better understand them.

### F1 Mark and Space

Pressing the **F1** key while at the RX Params menu will set up the software to copy RTTY/ASCII signals, using both component frequencies, MARK and SPACE. This is known as the **ANALOG** mode, which we explained earlier in the RTTY/ASCII receive section of this manual. This is only to be used with RTTY or ASCII modes of operation, not in CW. Once pressed the **F1 MARK and SPACE** sub-window will become highlighted. Once you have made your selection, press the **Esc** to exit the RX Params menu.

### F2 Space Only

Pressing the **F2** key will highlight the **F2 SPACE ONLY** sub-window within the RX Params menu. This function will set the software into the **DIGITAL** mode for copying RTTY or ASCII signals, using only the SPACE frequency. This sometimes is an easier way to copy RTTY. This is what needs to be selected when copying CW. Once you have made your selection press the **Esc** key to exit the RX Params menu.

### Exit

Pressing the **Esc** key will exit the RX Params menu. When the menu is exited any changes made while in the menu will be adopted by the software.

## Mode Configurations

Here is a very nice feature where you can configure the MFJ-1214PC just about any way you choose. You can have as many configurations as you want. You can designate them with filenames of your choice. You can make up files using different combinations of either baudrate, RTTY shifts, CW speeds, etc. The files are made up with information from other software functions. These functions are as follows:

**F1 MODE**  
**RX PARAMS**  
**TX PARAMS**  
**F4 SELECT BAUDRATE**  
**F5 NORMAL/REVERSE**

There are several configuration files already on disk with pre-determined parameters. Let us get into how SAVE and LOAD configuration files.

### Load Conf

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MFJ-1214PC Multimode  
**CW/RTTY/ASCII FUNCTIONS**

This function will you to load configuration files in order to configure the MFJ-1214PC any way you desire. When the **L** key is pressed from any of the receive screens, another screen will appear.

From this screen you can load any of the configuration files on disk. In the upper left corner there will be a list of files with **RII** extensions. These are the configuration files. If you wish to use one of them, then press the Up or Down arrow keys to select the appropriate file. When the proper file is highlighted then press the **Enter** key twice. At that time the program will load the selected configuration. If you do not find the configuration desired then you can make your own. See the section on Save Conf.

### **Save Conf**

This feature will allow you to save your configuration files which you make up. Once you have your configuration setup, return to the receive screen. At the receive screen press the **S** key to save the configuration you just made. When the **S** key is pressed from any of the receive screens, the **SAVE CONFIGURATION** screen will appear. You will notice a list of files with **RII** extensions in the upper left corner. These are the configuration files. It is advisable that you do not write over the sample configuration files. You can enter a new filename by pressing the **TAB** key. When **TAB** is pressed you will see the cursor appear in the **DRIVE/PATH/FILENAME** box in the lower right portion of the screen. Enter the filename of your choice along with the extension desired, from the point where the cursor is, and press the **Enter** key once. When the **Enter** key is pressed the file is saved to disk under the specified name. The receive screen previously in use will appear.

There are a couple of functions within the Configuration screen which we need to discuss.

### **TAB**

Pressing the **TAB** key while at the Configuration screen will move the cursor to the **DRIVE/PATH/FILENAME** box in the lower left portion of the screen. This is where you can specify the **DRIVE/PATH/FILENAME** to which you want to either Load or Save a configuration file. So if you wanted to load a configuration file from Drive C, inside directory named HAM\RTTY, and the filename was 50RTTY.prm, follow the steps below:

1. Using the BACKSPACE key delete the exiting statement in the **DRIVE\PATH\FILENAME** box.
2. Type in the statement below and press the **Enter** key:  
**C:\HAM\RTTY\50RTTY.PRM**



**NOTE:** The file will not appear in the upper left corner until you tell the software what file extension to look for. So from here let us go to the next function.

### INS

This function is where you designate alternate file extensions. Pressing the **INS** or **INSERT** key on your will move the cursor to the **FILE EXTENSION** box, which is just above the **DRIVE\PATH\FILENAME** box. You will also notice the letters **INS** in the lower right corner of the box. In order to enter your file extension please follow the steps that follow

1. Use the **BACKSPACE** key to delete the default file extension.
2. Now using the example in the explanation on the **TAB** function here is what you would type in the **FILE EXTENSION** box:  
**.PRM**  
(Make sure that there is a period in front of the **PRM**.)

After entering the file extension for the software to look for, press the **Enter** key. The file extension is always defaulted to **RII**, regardless of what you change it to at the configuration screen. When the **Enter** key is pressed your filename **50RTTY.PRM** will appear in the upper left corner of the configuration screen. In order to **LOAD** the **50RTTY.PRM**, just use the **Up** or **Down** arrow keys to select the **50RTTY.PRM** file and press the **Enter** key twice. The software will load your configuration file and return to the receive screen.

Now you are ready to operate **RTTY** at 50 baud. As you just seen with the previous example, it is very easy to configure the MFJ-1214PC.

### Up & Down Arrows

The **Up** and **Down** arrow keys allow you to scroll backward or forward through either the receive text buffer or the text Editor. Scrolling is done 1 **line** at a time.

### PgUp or PgDn

The **PgUp** and **PgDn** keys allows you to scroll backward or forward through the receive text buffer or the text Editor. Scrolling is done 1 **page** at a time.

### Home

The **HOME** key allows you to return back to the very beginning of either the receive text buffer or text Editor. It does

not matter where you are in the receive text buffer or text Editor.

### End

The **END** key will allow you to jump ahead to the very end of the receive text buffer or text Editor. Here again it does not matter where you are, pressing the **END** key will take you all the way to the end of the buffer or Editor.

## T Timer

Here is a very nice feature which you can use to setup "Timed Reception" of CW/RTTY/ASCII signals. Pressing the **T** key from any of the receive screens will take you to the **START/STOP TIMER** menu.

At the top of the menu you will see three (3) function keys with particular functions next to them. Also below the **F1** and **F2** functions you notice small windows with two pair of zeros separated by a colons. The window below the **F1** function is highlighted. An explanation of each function follows.

### F1 Start

This is where you will set the **START** time in order to tell the software to start reception. Press the **F1** key with the **RIGHT** arrow key. When the **RIGHT** arrow key is pressed the **HH** in the lower right corner of the menu will highlight. All you have to do now is to press the Up arrow key to set the **HOUR** according to what you see in the **F1 STRT** window. The **HOUR** is variable from 00:00 to 23:00. Now to set the **MINUTE** at which to **START** reception. First press the right arrow key to highlight the **MM** in the lower right corner of the menu. All you have left to do is press the Up or Down arrow keys and set the actual minute. Let's go on to setting the **STOP** time.

### F2 Stop

This is where you will set the **STOP** time to tell the software to stop reception. So to set the stop time let us start by pressing the **F2** key. You will notice the small window below **F2 STOP** will become highlighted. Press the left arrow key to highlight the **HH** in the lower right corner of the menu. Now

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MFJ-1214PC Multimode  
**CW/RTTY/ASCII FUNCTIONS**

use the Up and Down keys to set the **HOURL** which you want to stop reception. The HOUR is set between 00:00 to 23:00. Just as in setting the START time, you need to press the right arrow key to highlight the **MM** in the lower right corner of the menu. All that is left to be done is use the Up or Down arrow keys to set the **MINUTE**.

Once you have set your START and STOP times, you will need to press the **Esc** key. This will exit the TIMER menu.

## CW Operation

In this section we will explain the CW options and operation. We will show you how to receive and transmit CW, and just basically how to use the software to obtain good overall results in operating CW.

One of the simplest and easiest ways to send information is by continuous-wave or CW. Each letter is identified by a particular sound. This sound is made up of several short and long sounds, which relate to DOTS and DASHES respectively. For instance the letter E is a short sound, a dot, and the letter T is a long sound, a dash. There is also a part of CW which is referred to as a BREAK. There are short breaks between letters and long breaks between words. So as you see there are three (3) different parts of a CW transmission, the SHORT sound, the LONG sound and the BREAK.

### Standards for CW Transmission and Reception

The MFJ-1214PC operates both modulated and true CW. Modulated CW is where you key the radio by grounding the PTT input at the Microphone jack, then send audio into the microphone at the Transmit audio pin.

True CW is where you key the radio through the KEY jack on the back of the radio. The MFJ-1214PC comes from the factory ready to operate FAX, RTTY, and CW.

Even though this CW program is capable of running RTTY, ASCII, and BAUDOT, you will get better performance from using the RTTY program.

## CW Tuning Procedure

In this procedure we will take you through the technique of how to tune in a CW signal and obtain good copy of all CW signals.

1. Position the FAX-RTTY/CW switch in the RTTY/CW position which is with the push-button out. Connect your radio to the MFJ-1214PC. Position the BANDWIDTH control so the pointer is in the straight up position.
2. Load the VT program.
3. Press the **F3** key ( Send/Receive RTTY ), at this time you will see the screen change to RTTY receive. This is normal.
4. Once you have the RTTY receive screen you will notice more choices at the bottom the screen. Look in the second block from the left on the STATUS LINE and you will notice a

- function referring to **F1** MODE. This is the next key press, so let's press the **F1** key.
5. After pressing the **F1** key you will notice a larger window like the one shown below appear in the center of the screen:

Place window here

**Fig. 7-1            Mode Select Menu**

6. Press the **F5** key. You will notice that the CW subwindow become highlighted.
7. Once the CW subwindow is highlighted press the **Esc** key to go to the CW Receive mode.
8. When the CW receive screen is present you will need to setup the RX Params. This is done by pressing the **R** key while at the CW receive screen. When the **R** key is pressed you will notice another window appear in the center of the screen, like the example below:

HERE

PLACE RECEIVE PARAMETERS SCREEN

**Fig. 7-2 Receive Parameters Menu**

9. You will need to press the **F2** key for SPACE ONLY. This is required for proper CW mode operation. After pressing **F2**, press the **Esc** key to return to the CW Receive screen.
10. Once back you are back at the CW receive screen you will need to check to see if the internal speaker is active. This is done by pressing the **P** key. When the **P** key is pressed the screen will change to the Transmit Parameters screen, which appears below:

**TRANSMIT PARAMETERS screen here**

**Fig. 7-3 Transmit Parameters Menu**

Once the Transmit Parameters screen is obtained in the manner described above then press the **F1** key. After pressing the **F1** key the box designated **F1 SPEAKER** will be highlighted. This means that if your computer has an internal speaker installed that it is now active. Active meaning that when a CW signal is tuned in properly the signal will be heard in the computer speaker and in the radio speaker at the same time. When you have pressed the **F1** key and highlighted the **F1** box, then exit the Transmit Parameters window with the **Enter** key.

At this point you should be back at the CW Receive screen, ready to receive some CW. Now in order to tune in a CW signal you must first set your radio to the CW mode. Then rotate your VFO knob on your radio until you find a CW signal. When the CW signal is found you must tune the radio starting on the HIGH side of the signal (HIGH PITCH), down toward the LOW side of the signal (LOW PITCH). This must be done very slowly, due to the fact that the filtering in the MFJ-1214PC is very sharp. The center frequency of the filter in the MFJ-1214PC is 800 Hz.

Now as you are tuning, listen for the CW signal in the speaker in your computer. When the signal is heard it should be clean with very little distortion, if not FINE tune your VFO until the signal heard is as clean as possible. If everything was done properly you should be getting good CW copy on your computer screen.

**NOTE:** If your radio has any filtering such as a NOTCH filter this could help eliminate background static and noise.

If you have any problems obtaining good copy then go back through the tuning procedure. If you still don't obtain copy the problem could related to any one of the following:

#### **Computer Cable**

The computer cable could be at fault here. The cable could be mis-wired or have bad continuity through the length of the cable. Also the cable may be connected to the wrong COMport. Try changing the cable or checking for continuity and shorts between the pins. Also check the physical connection to the COMport. Ensure that the COMport designated in the SETUP and the COMport you have the cable connected to is the same.

#### **Serial Card**

The serial card maybe bad or configured for the wrong COMport. Check your computer manual or the instruction sheets which came with the serial card for the proper COMport configuration.

#### **Power Input**

If the MFJ-1214PC does not have 12 VDC applied or if the supply has dropped then the internal voltage regulator will fail. This will cause the MFJ-1214PC not to copy CW.

If any problems are encountered in trying to receive CW and you have tried the three (3) items above then please feel free to contact our Technical Staff at 1-800-647-8324. They will be more than happy to help.

## **CW Transmission**

Now we are going to get into transmitting CW with the MFJ-1214PC. First you must setup the MFJ-1214PC and the software as mentioned in the CW Tuning procedure, in order to operate CW.

Once you have the MFJ-1214PC connected to the radio and the computer then you are ready to transmit CW.

In order to transmit CW you must go to the Editor. This is done by first going to the CW Receive screen as described in the CW Tuning procedure. Then if you look at the bottom of the screen you will see all of the functions available to you in the CW mode. One of these is **F2** EDIT. If you press **F2** the CW Receive

screen will split into two (2) parts. The upper portion is the receive screen and the bottom portion is the Editor. From here you can be receiving CW in the upper screen and be forming a message in the Editor in the bottom screen. You can also load the Editor with a text file from disk, edit it for transmission, then transmit it when ready. The way in which you actually transmit CW is by using the **F1** and **F2** keys in the Editor. Let's go into the actual functions of the **F1** and **F2** keys in the Editor.

### **F1 Tx All**

This function will allow you to transmit the entire Editor content. When **F1** is pressed the MFJ-1214PC will key the radio, then start transmitting the Editor contents. When finished you must press the **F1** key again in order to unkey the radio.

### **F2 Tx Cur**

This keystroke will key the radio and allow you to type your message. The message will be sent as you type it into the Editor. Here again when you are finished you must press the **F2** key to unkey the radio and stop sending.

If you have any problems or difficulties operating this section of the software please go back and re-check the following things:

#### **Radio Cable**

Ensure that the cable connected between your radio and the MFJ-1214PC. Check it for continuity and that all connections are secure and soldered well.

#### **Radio Setup**

Make sure the radio is setup properly for CW operation. If the radio is not setup right your operating will suffer.

#### **System Setup**

Ensure that the MFJ-1214PC is setup properly. Also make sure the software is setup right. Go and re-check setup according to the CW Tuning procedure.

If you check all items above please feel free to contact our Technical Staff at 1-800-647-8324. They will be more than happy to help you in any way they can.



## RTTY/ASCII Operation

In this section we will go over the operation and functions of the RTTY/ASCII modes. Here will go into the different ways of tuning in an RTTY/ASCII signal for good copy. Also we will talk about transmitting RTTY/ASCII signals in relation to the different frequency shifts, speeds, whether the signal needs to be inverted while transmitting, etc. We will also explore the different software functions in the RTTY/ASCII modes and what they will do for you during RTTY/ASCII operations.

### System Set-Up for RTTY

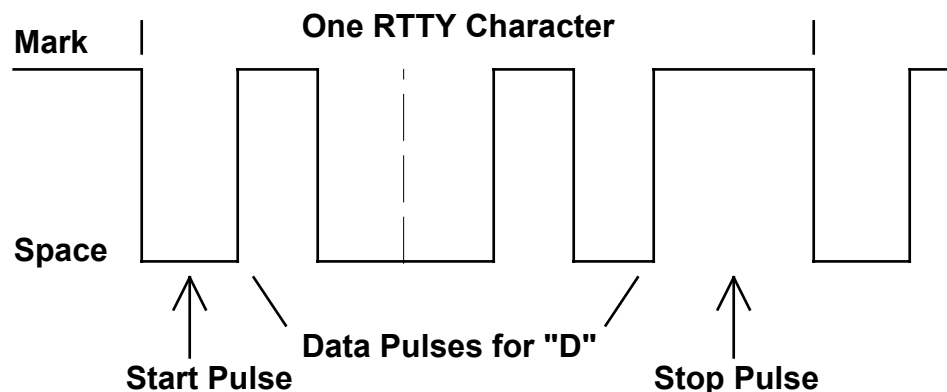
The only system setup required for RTTY operation is the selection of the serial COM port and the parallel LPT port. Ensure that the radio is all cabled up properly for full RTTY and ASCII operations, both receive and transmit. For more information on system setup for the MFJ-1214PC please refer to "F1- System Setup".

### Standards for RTTY Transmission and Reception

Radio TeleType is a fast and convenient way to send text. It is used by the Military, the commercial industry, as well as the Amateur Radio Operator.

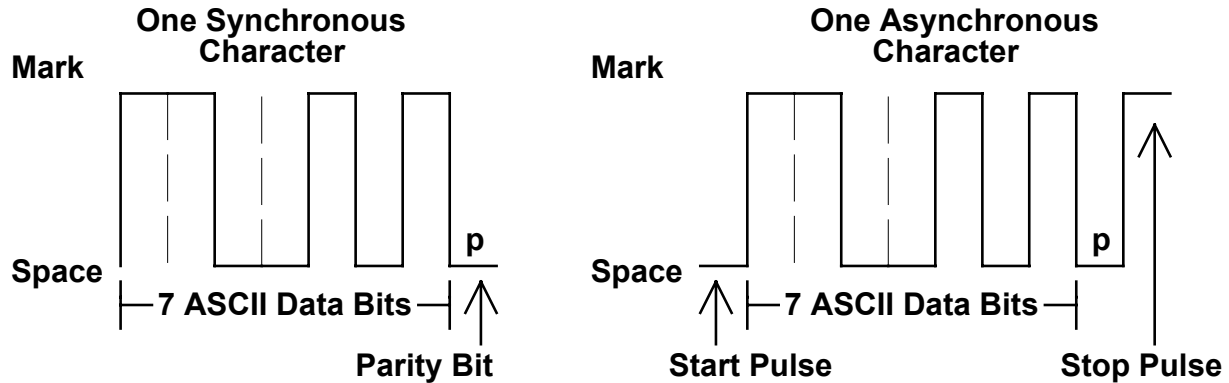
Information is sent via a combination of two different frequencies: Mark and Space. There are also two (2) other parts of the RTTY signal called START and STOP pulses. Each character or number is made up of a different combination of Marks and Spaces. The START and STOP pulses are always at the beginning and the end of each character or number.

First there is the Baudot RTTY mode, in which the characters and numbers are made up of 5 bits. Below is the letter D as would be seen on an oscilloscope as a Baudot RTTY signal.



**Fig. 6-1 RTTY Character "D"**

Secondly there is the ASCII mode the characters and numbers are made up of either 7 or 8 bits. Since the Baudot RTTY mode uses less bits, there is less chance of error due to bad reception. However, the 7 and 8 bit ASCII modes allow for upper and lower case letters as well as special characters. The ASCII mode can be run in a SYNCHRONOUS or an ASYNCHRONOUS mode. Below is an example of a synchronous and an asynchronous ASCII signal as it would be seen on an oscilloscope of the letter S:



**Fig. 6-2 Synchronous and Asynchronous ASCII Character "S"**

Now that you understand a little more about RTTY, let's look at how to receive RTTY and ASCII signals.

## RTTY/ASCII Receive

The MFJ-1214PC supports two modes of reception, analog and digital, and are very different in the way they operate. The analog mode copies the signal by using the MARK and SPACE frequencies. The digital mode copies the signal using only the SPACE frequency only. An on-screen Tuning Indicator has been provided for ease of use. This indicator is a 16 increment "Bar Graph" and can be accessed by pressing the **F9** function key. When **F9** is pressed you will see the tuning indicator displayed in the center of your screen. This indicator should be used to tune in signals until you get accustomed to the tuning procedure. During the reception of any RTTY/ASCII signals the radio and MFJ-1214PC must be set-up properly, if not your RTTY operations will be hampered. So without any further delay let us go into the different modes of receiving RTTY signals.

In order to copy RTTY you must first follow the procedure below to be successful:

1. Load the VT program.

2. When VT is loaded you will see the nine (9) small sub-windows on the screen.
3. With the VT screen on your computer monitor, press the **F3** function key, to receive RTTY. Upon pressing the **F3** function key you will notice the screen change to the RTTY Receive screen. The program will default to the Baudot RTTY mode at 45 Baud and Normal demodulation polarity for receiving.:
4. Turn the BANDWIDTH control all the way to the clockwise position. Position the FAX-RTTY/CW switch to the OUT position. Also push the POWER switch to the IN position.
5. Set your radio or receiver to USB (Upper Side Band) and the volume to a comfortable listening level.

This concludes the initial set-up of the program and the MFJ-1214PC, and the radio. So why don't we get into receiving an actual RTTY signal, starting with the ANALOG mode. There is no need to set the program into the ANALOG mode because the software already comes set up in the ANALOG mode of operation. So all you have to do is tune the radio to an RTTY signal, preferably a signal in the Amateur bands for initial testing.

Once you have a signal tuned in on the receiver press the **F9** function key. At this time you should see the Tuning Indicator in Figure 6-3.

Once the indicator is on-screen, tune the VFO on your radio starting from the low-side of the signal. While you are tuning the VFO from the low-side toward the high-side of signal watch the Tuning Indicator. Tune it very slowly until you can have both of the end BARS up, and there is a "VALLEY" between the two. Once you have the "VALLEY" you may need to vary the VFO slightly one way or the other to achieve good copy. This may be a little touchy due to the sharp filtering in the MFJ-1214PC, but do not give up. Once you achieve the optimum tuning point you should be receiving good copy. Here is an example of the on-screen Tuning Indicator when a RTTY signal is tuned in properly and the MFJ-1214PC is copying the signal well:

**PLACE THE TUNING INDICATOR EXAMPLE DURING COPYING RTTY HERE**

**Fig. 6-3 RTTY Tuning Indicator Receiving**

If your screen does not appear as shown on page 3 please go back and check the following items:

COMPORT

Ensure the COMport which the MFJ-1214PC is connected to is the same one as the program is configured for including the INTERRUPT. Remember to use Interrupt 4 for COM1 and Interrupt 3 for COM2. This can be easily checked by pressing the **Esc** key then the **Enter** to exit back to the VT screen. Then press the **F1** key to check the program setup. Please refer to the SETUP section of the software for further information on the program SETUP.

SERIAL CABLE

Make sure that the serial cable is in good condition. Ensure that the cable is connected to the proper COMport which is in the software configuration. If the cable is in doubt of being good or bad, then replace it.

HARDWARE SETUP

Ensure the MFJ-1214PC is setup properly as stated in this section. Make sure that is power applied, the radio is connected, and the computer serial cable is connected to the MFJ-1214PC. Also ensure that the MFJ-1214PC has it's power switch is in the ON position.

MODE CONFIGURATION

If you are not receiving good copy the problem could be that the software MODE CONFIGURATION may not be set properly. Refer to the CW/RTTY/ASCII functions section of this instruction manual as to how to setup the MODE CONFIGURATION. Make sure it is set properly for the mode which you trying to operate.

## **Auto Converter**

You also have the ability to compensate for incorrect radio tuning, and what the program sees coming from the analog-digital converter in the MFJ-1214PC. This is done via the **Auto-Converter** function mentioned in the RX Params in the RTTY program. When the Auto Converter is activated you have a few more functions available, so let's go over them now:

### **F Full ADC Range**

This allows you to use the entire range of the tuning indicator. The radio tuning must be precise. Here there is no room for error. The LO, MI, and HI frequency points do not change.

### **A Auto ADC Adjust**

This feature takes some of the guess work out of radio tuning. You do not need to be right on the received signal, just close. Once you are close to the signal just press the **A** key. The program will start to analyze the incoming signal, and will set the LO, MI, and HI points on the tuning indicator. This will assist in RTTY or ASCII reception. You can test this by tuning to an RTTY signal so the MFJ-1214PC copies it. Then slightly change the VFO on the radio so the MFJ-1214PC copy is bad, then press the **A** key. After the program is finished the MFJ-1214PC should again be copying the RTTY signal.

### **O Lo-Level**

This will allow you to manually change the **LO** frequency point. This can be changed with the arrow keys or a mouse. As you move the LO point the **LO** indicator on the tuning indicator will move.

### **Mi-Level**

This will allow you to manually change the **MI** frequency point. This can be changed with the arrow keys or a mouse. As you move the MI point the **MI** indicator on the tuning indicator will move.

### **Hi-Level**

This will allow you to manually change the **MI** frequency point. This can be changed with the arrow keys or a mouse. As you move the HI point the **HI** indicator on the tuning indicator will move.

## **RTTY Transmit**

All transmitting in the RTTY/ASCII modes is done out of the text Editor. You can transmit text files or just "RAGCHEW" with a friend. Before attempting to operate RTTY or ASCII please read the TEXT EDITOR section carefully. Get to know what the Editor commands will do. If you do not, then you could damage your equipment, by leaving the radio in a constant keyed down state. Below you will find a couple of the Editor functions used to transmit RTTY. However, before using them you must first be at the RTTY receive screen and accessed the Editor by pressing the **F2** function key.

### **F1 Tx All**

This function will allow you to transmit what is currently in the Text Editor. So what this means is you can already have a reply typed into the Editor during a QSO, then when needed press the **F1** key. When **F1** is pressed the MFJ-1214PC will key the radio, then start transmitting the Editor contents. When finished you must

press the **F1** key again in order to unkey the radio, otherwise the radio will stay in a keyed down state. Thus damage could result!

### **F2 Tx Cur**

This keystroke will key the radio and allow you to type your message. The message will be sent as you type it into the Editor. Here again when you are finished you must press the **F2** key to unkey the radio and stop sending. Otherwise, the radio could stay in a keyed down state and damage could result!

## **Text Editor**

Inside the MFJ-1214PC software is a very powerful TEXT EDITOR. This Editor is used to transmit information in the CW/RTTY/ASCII modes. You can edit text which has been received off, like a bulletin board, then save it to disk. It incorporates a split screen operation. This basically means you can be in a QSO with someone, receiving and be forming a message to transmit back to your contact at the same time. This would be great for field day or RTTY contesting.

Below you will find the Text Editor commands and an explanation as to their function. Please read them carefully, especially when transmitting in the CW/RTTY/ASCII modes. It can handle files greater than 100K.

### **Editor Functions & Commands**

This is the section where the Editor functions and commands will be discussed. We will take you through all functions and commands related to the Editor, and what they will do you while operating the different modes. The Text Editor is accessed by pressing the **F2** key from any of the receive screens. So without any further delay lets get started.

#### **ARROW KEYS**

The arrow keys allow you to move the cursor around within the Editor. You can scroll back or forward through text in the Editor or in the receive screens. The Up and Down arrow keys will scroll through text 1 line at a time. The cursor cannot be moved around in an empty space. If you need to move the cursor around in empty space you must use the SPACE BAR.

#### **HOME**

The **Home** key will take you back to the very beginning of a file or text, within the Editor. Also you can return the beginning of the receive screen buffer. This function applies no matter where you are at in the Editor or receive screen buffer.

END

The **End** key works like the **Home** key, but in reverse. When pressed it will take you all the way to the very **End** of the Editor text, or receive screen buffer. It does not matter where you are in the Editor or receive screen buffer.

PGUP OR PGDN

The PgUp and PgDn keys allow you to scroll back or forward through text in the Editor or the receive screen buffer. It will scroll 1 page at a time. This good if you are editing a very large file.

ENTER

Pressing the **Enter** will begin a new line in the Editor. The cursor will move down to the next line, along with any characters.

DELETE

The **Del** key will erase any characters to the right of the cursor, one character at a time. Be careful when using this because once characters are deleted, they are non-recoverable.

BACKSPACE

The **Backspace** key will erase any characters to the left of the cursor. Characters to right of the cursor are shifted to the left one space.

**F1 Tx All**

Pressing the **F1** key while in the Editor will cause the software to transmit the entire contents currently in the Editor. When pressed the **F1 TX ALL** on the EDITOR STATUS line will highlight. The transmitter will key up, then very shortly after that data will be transmitted. Once the transmission is complete then you must press the **F1** key again to unkey the transmitter.

**F2 Tx Cur**

Pressing the **F2** key while in the Editor will cause the transmitter to key up. When pressed the **F2 TX CUR** on the EDITOR STATUS line will highlight. After the transmitter keys up then you can start typing your message. It will be transmitted in "REAL TIME" as you are typing it. After transmission is completed, the **F2** key must be pressed again to unkey the transmitter.

**F3 Load Text**

This function is used to load the Text Editor with a text file from disk. When **F3** is pressed the LOAD EDITOR TEXT menu will appear. This menu will appear as shown below:

PLACE LOAD EDITOR TEXT MENU HERE

**Fig. 6-4            Load Editor Text Menu**

The large vertical box on the left side of the LOAD EDITOR TEXT menu is where all files and directories are displayed. Use the Up and Down arrow keys to select the file or change to the directory of your choice.

In the upper right corner you will see six (6) small boxes. These will display system disk drive designators. The program will support up to six (6) disk drives, both HARD and floppy drives. You can change disk drives just pressing the appropriate drive letter, without the :\. The program will automatically switch to the selected disk drive.

Within the LOAD EDITOR TEXT menu there are a few functions which you need to know about.

INS

The **INS** or **INSERT** key is used to change the FILE EXTENSION designator, which the software looks for upon entering the LOAD EDITOR TEXT menu. In order to use this function the NUM LOCK function must be deactivated. When the **INS** key is pressed the cursor is moved to the FILE EXTENSION box, and is positioned on the last character on the current file extension designator. To change the extension press the left arrow key once. This will move the cursor one space to the right. Now use the BACKSPACE key to delete to extension back to the period, then type your extension in. Make sure the first character is a period. The file extension should look like this: **.DOC**

The period must be the first character in the file extension you use. When finished press **Enter** to tell the software to look for your extension name. After the extension is entered, if there are any files with that extension on disk, they will be displayed on the right side of the menu.

UP AND DOWN ARROWS

The Up and Down arrow key are used to select the file or directory to load or use. After selecting the file or directory press the **Enter** key. To load the selected file press the **Enter** key twice. The LOAD EDITOR TEXT menu will be exited and the Editor will be loaded with the specified file. In order to use the selected directory press the **Enter** key once. The files or



directories will be listed on the left side of the menu. Then go through the same procedure to select the file of your choice.

#### BACKSPACE

The **BACKSPACE** key is used to list other directories on disk. This is good for switching to another directory you wish to use. The directories available will be listed on the left side of the LOAD EDITOR TEXT menu. Use of the Up and Down arrow keys to select the directory you want to use, and then press the **Enter** key. All files and directories within the selected directory will be listed on the left side of the menu. Use the same procedure to select as mentioned above to select other files or directories.

#### TAB

The **TAB** key is used to move the cursor down to the DRIVE\PATH\FILENAME box, in the lower right corner of the menu. Once the cursor is in this box you can use the **BACKSPACE** key to delete the current DRIVE\PATH\FILENAME and insert your own. Once entered this DRIVE\PATH\FILENAME will be used by the software until you exit the program.

#### CR ACCEPT

The **Enter** key is used to tell the software to load a file or use the selected directory. When **Enter** is pressed the LOAD EDITOR TEXT menu will disappear and the software will either load the Editor, or change directories.

#### ESC CANCEL

The **Esc** key is used to tell the software to abort the Editor load or directory change. When **Esc** is pressed the LOAD EDITOR TEXT menu will disappear and everything remains unchanged.

### **F4 SAVE TEXT**

This function is like the **F3** LOAD TEXT function, but in reverse, it saves the Editor text, instead of loading the Editor. When **F4** is pressed while in the Editor the SAVE EDITOR TEXT menu will be displayed on the screen. Here is how the SAVE EDITOR TEXT menu will appear:

**PLACE SAVE EDITOR TEXT MENU HERE**

**Fig. 6-5            Save Editor Text Menu**

The large vertical box on the left side of the SAVE EDITOR TEXT menu is where all files and directories are displayed. Use the Up and Down arrow keys to select the file to which you want to save text to or, change to the directory of your choice. In the upper right corner you will see six (6) small boxes. These will display system disk drive designators. The program will support up to six (6) disk drives, both HARD and floppy drives. You can change disk drives just pressing the appropriate drive letter, without the \. The program will automatically switch to the selected disk drive. The functions in this menu are the same as the F3 Load Text menu. Refer to that section for explanations of commands.

**F5 Del Line**

This function will delete the entire line which the cursor is currently on. The cursor will return back to the beginning of the line.

**F6 Del Text**

This is used to delete all text within the Text Editor. When **F6** is pressed a small window will pop up and ask you DELETE EDITOR TEXT? Then you must decide whether or not you want to delete the text. If so, then press the **Enter** or **Enter** key. If not, then press the **Esc** key to abort the process.

**Ins Insert**

This determines whether or not the Editor is in the OVERWRITE mode or the INSERT mode. If INS INSERT is highlighted on the EDITOR STATUS line, then the Editor is in the INSERT mode. This means that you can add words inside sentences or sentences inside paragraphs. This is done without deleting the present contents. If not highlighted, then the Editor is in the OVERWRITE mode. You can write over any of the present contents in the Editor. If you overwrite any text then it is gone.

**Exit**

Pressing the **Esc** key while in the Editor will tell the software to exit or leave the Editor. If any text is in the Editor, it will remain intact until you exit the program.

**F8 Editor**

If this is highlighted on the EDITOR STATUS line then you can scroll back and forth through the Editor text. You can use the Up and Down arrow keys, PgUp, PgDn, **HOME** or the **END** keys.

### **F9 Screen**

If this is highlighted on the EDITOR STATUS line, then you can scroll back and forth through the text in the receive screen buffer. You can use the Up and Down arrow keys, PgUp, PgDn, **HOME** and the **END** keys.

### **PgUp and PgDn**

These keys are used to scroll back and forth through text, either in the Editor or the receive screen buffer. They will scroll text 1 page at a time. The NUM LOCK function must be deactivated for this to work.

### **Up and Down Arrows**

The Up and Down arrow key allow you to scroll through text either in the Editor or the receive screen buffer. They scroll 1 line at a time. The NUM LOCK function may need to be deactivated for this to work, depending on the style of keyboard you have.

### **Home**

Pressing the **Home** key will take you back to the very beginning of either the Editor or the /receive screen buffer. It does not matter where you are. The NUM LOCK function must be deactivated for this to work.

### **End**

Pressing the **End** key will take you all the way to the end of the Editor or receive screen buffer. It does not matter where you are. The NUM LOCK function must be deactivated for this to work.

## Color Fax

In this section of the manual we will be concerned with Color FAX. We will first explain what makes a Color FAX. Next, we will explain to you how to process a Color FAX picture.

### Standards for Color FAX

WHEN TRANSMITTING a color FAX, it needs to be divided into three gray pictures, CYAN, MAGENTA and YELLOW. Then, these three gray pictures must be sent one at a time.

WHEN RECEIVING a color FAX picture, you must get the three gray pictures that make up a color picture one at a time. Then, on your computer, you can reassemble them to make the color picture. Therefore, the COLOR FAX part of the program does not receive or transmit any pictures. Instead, the COLOR FAX part of the program processes a color picture from the three gray pictures.

The three gray pictures represent the three basic colors used for color picture processing: cyan, magenta, and yellow. Any color picture can be produced or separated using these three colors.

As a standard, the filenames for the gray pictures end in "\_C.TIF", "\_M.TIF", and "\_Y.TIF". For example, the three gray pictures for a color picture of the earth would be "EARTH\_C.TIF", "EARTH\_M.TIF", and "EARTH\_Y.TIF". For renaming pictures received to match this standard, it is suggested to use the "G GLOBAL DISPLAY" option at the "SEND/RECEIVE FAX" Menu.

In order to process the three gray pictures, you must set a color processing reference point in each. This is to correctly position the three gray pictures "on top" of each other. It should be a point common to all three of the gray pictures. If the pictures are not overlaid properly, then the end result will suffer.

Also, an extract window size needs to be defined. The extract window size is the actual size of the color picture. You only need to set the extract window size once. This is done in one step by loading the magenta file and then defining and saving an extract window size. If your three gray pictures are different sizes, the extract window size in the magenta file should not be bigger than the smallest gray picture. You cannot overlay a larger file over a smaller file, because the software will not let you.

### F5 Create Color Fax

When you press the **F5** key, you enter the Create Color Fax mode. In Create Color FAX, you actually process three (3) gray level pictures into a real sharp looking Color picture. This menu will appear as shown on the next page.

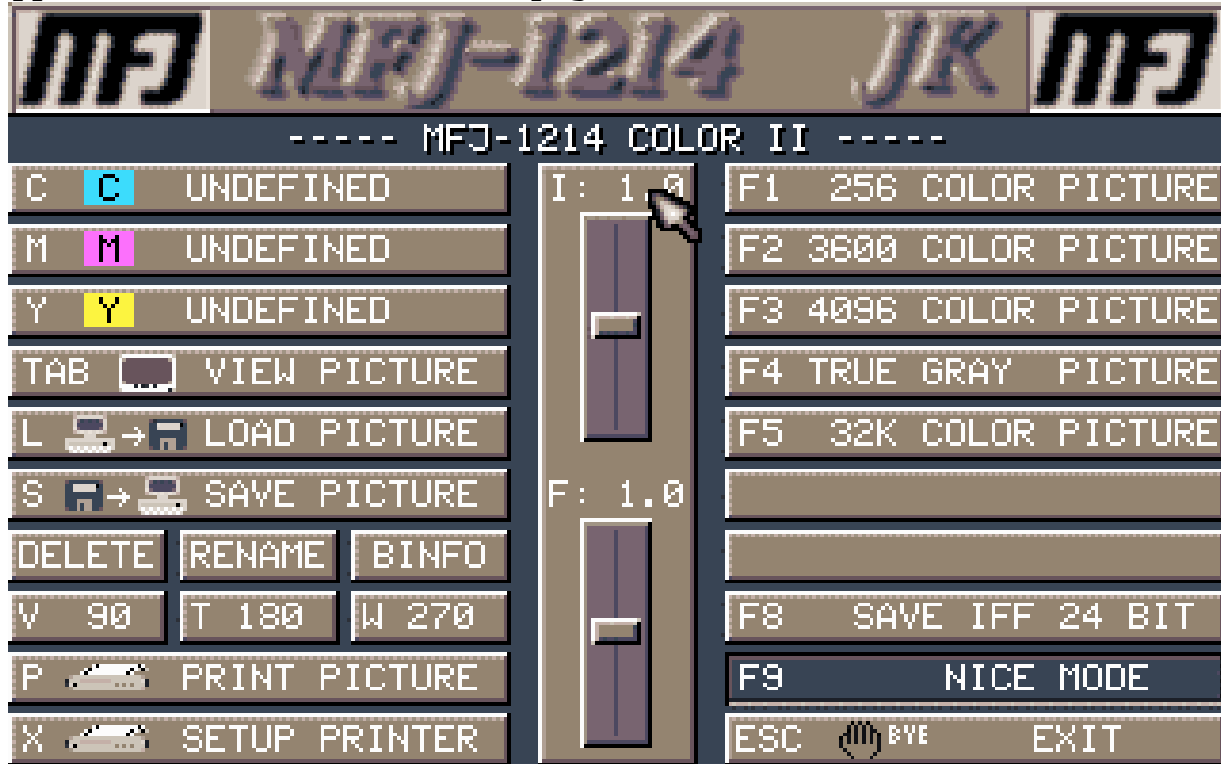


Fig. 5-1 Color FAX Menu

There are several functions related to the Color Fax menu. We will explain these functions on the following pages. Then, we will give you a step-by-step list of instructions on just how to go about creating a COLOR FAX.

### C Cyan

Pressing the **C** key allows you to enter the File Manager to select a CYAN filename. This would be a file with a **\_C.TIF** extension on the end. If you select the wrong file, then the end result will be wrong. Use the arrow keys to highlight the proper file, and press the **ENTER** key twice to load the file. The file is then loaded into memory and the file will appear just to the right in the C Cyan box. You have now defined the Cyan filename. If you use a mouse to define the C Cyan filename, then all three (3) C, M, and Y filenames will be defined at the same time. This only works by defining the C Cyan filename.

### M Magenta

Pressing the **M** key allows you to enter the File Manager to select a MAGENTA filename. This would be a file with a **\_M.TIF** extension

on the end. If you select the wrong file, then the end result will be wrong. Use the arrow keys to highlight the proper file, and press the **ENTER** key twice to load the file. The file is then loaded into memory and the file will appear just to the right in the M Magenta box. You have now defined the Magenta filename. If you use a mouse to define the Magenta filename, then only the Magenta filename is defined.

## Y Yellow

Pressing the **Y** key allows you to enter the File Manager to select a YELLOW filename. This would be a file with a **\_Y.TIF** extension on the end. If you select the wrong file, then the end result will be wrong. Use the arrow keys to highlight the proper file, and press the **ENTER** key twice to load the file. The file is then loaded into memory and the file will appear just to the right in the **Y** Yellow box. So this means you have defined the Yellow filename. If you use a mouse to define the Y Yellow filename, only the Yellow filename is defined.

## TAB View Picture

Pressing the **TAB** key displays the COLOR, Cyan, Magenta, or Yellow FAX picture which is residing in the screen memory. This mode is different from the TAB DISPLAY FAX function in the F2 SEND/RECEIVE operation. This one can view pictures before or after the Color Processing phase. This is not used to view a gray level loaded from the SEND/RECEIVE menu. While displaying a COLOR FAX picture, you can return to the main menu, by pressing the **ESC** key. From here you can do things like picture rotation, renaming or deleting the picture.

## L Load Picture

The LOAD PICTURE function allows you to load any Color Fax extract pictures, cyan, magenta or yellow. You can also load an actual Color Fax picture, which was already processed. When the **L** key is pressed, the Load File Manager will appear and you can select a file to load. For more information on the Load File Manager, see the LOAD PICTURE--File Manager in this section. This is done by using the Up and Down arrow keys or a mouse. Using the arrow keys, you would highlight the desired file and press the **ENTER** key twice, then the picture file will load. Once loaded the picture will appear on the computer screen. If you are using a mouse the process is much easier. Instead of pressing the **L** key, you would "click" on the L selection, then "click twice" on the desired file. The file will then load and be displayed. In the case of loading the cyan, magenta or yellow files, there are other functions which will allow you to put these files together. In doing so you will create a Color Fax picture. These functions are accessed by pressing the **F10** key or clicking the right mouse button, after the cyan, magenta or

yellow picture is loaded. Below is an explanation of these functions:

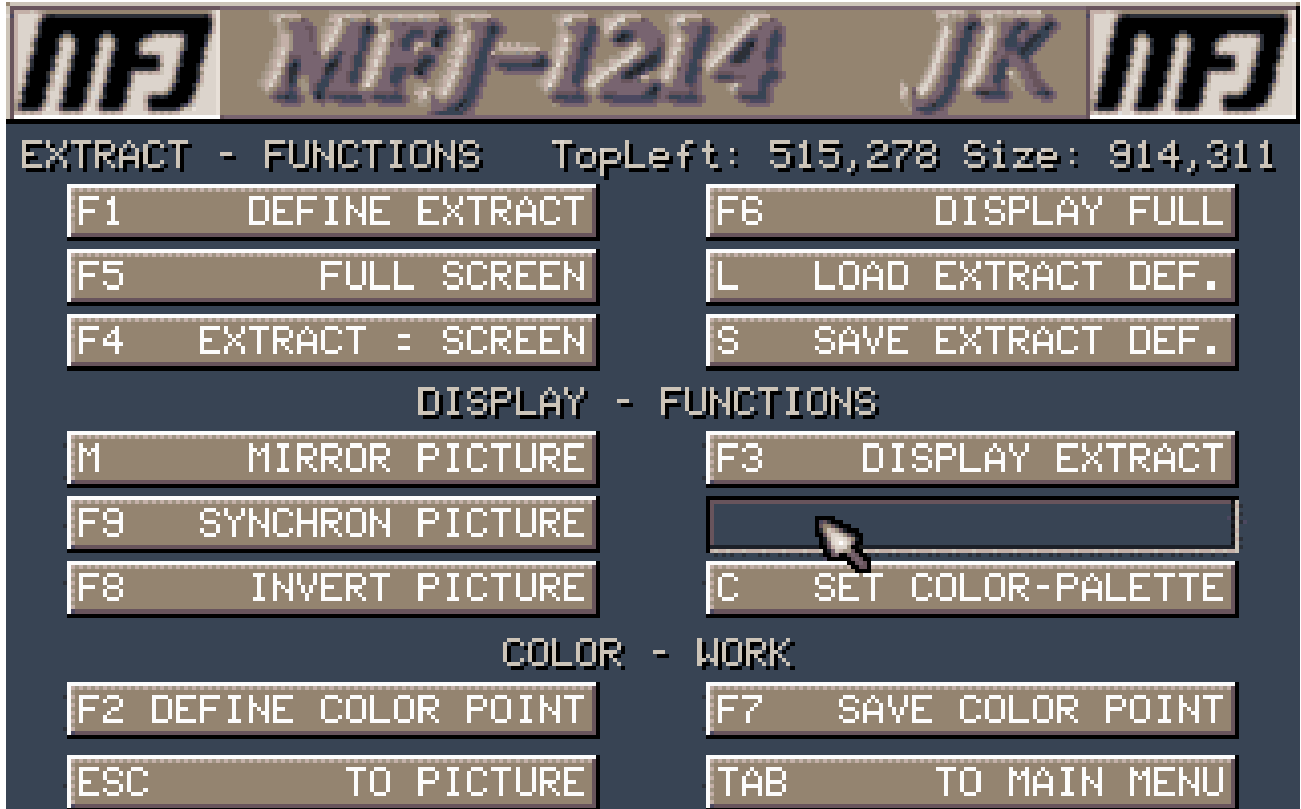


Fig. 5-2 Extract Menu

## Extract Functions

### F1 Define Extract

This defines the size of the picture extract. This extract will be whatever part of the picture you position within the red window. To size and move the window, use:

- |                  |  |
|------------------|--|
| Arrow Keys       | Moves the window or the selected edge of the window.           |
| Shift+Arrow Keys | Moves the selected window or edge at 10 times the normal rate. |
| 2 -              | Selects the bottom edge of the window.                         |
| 4 -              | Selects the left edge of the window.                           |
| 5 -              | Allows selection between Edge or Window positioning.           |
| 6 -              | Selects the right edge of the window.                          |
| 8 -              | Selects the top edge of the window.                            |

### Mouse

To move an edge or corner, place the cursor the edge you want to move. Press and hold down the left button, then move the mouse to position the selected edge where desired. To move the entire window, place cursor near center of the window. Press and hold



down the left button, then move the mouse to position the window where desired

### **Enter**

Defines the picture extract.

### **F10 or Right Mouse Button**

Returns back to the DISPLAY PICTURE Menu

### **F4 Extract Screen**

This will define the full screen as the extract, but only while viewing the complete picture. This extract can be viewed by using the F3 DISPLAY EXTRACT function as mentioned above.

### **F5 Full Screen**

This will cause the defined extract to displayed on a full screen when used in conjunction with the "F3 DISPLAY EXTRACT" function. You must first Define the picture extract as described in the F1 DEFINE EXTRACT function above. Then press the F5 FULL SCREEN and F3 DISPLAY EXTRACT keys respectively. The extract will then be displayed on the entire screen size.

### **F6 Display Full**

This will view the complete picture as when loaded, and reset the extract size to the full screen. This extract can be viewed by using the F3 DISPLAY EXTRACT function as mentioned above.

### **L Load Extract Definiton**

This loads the extract that you defined using the F1 DEFINE EXTRACT function. This is done by first loading the complete picture. Then press the F10 key or click the right mouse button. At this point the complete picture will be displayed, then the extract will be displayed within the complete picture via a small red window

### **S Save Extract Definition**

This saves the extract defined via the F1 DEFINE EXTRACT function. Once you define the picture extract press the F10 key, or click the right mouse button. The extract definition will be stored within the program for use later.

## **DISPLAY FUNCTIONS**

### **M Mirror Picture**

This produces a mirror image of the picture, which is residing in screen memory. A picture must be loaded first in order to reside

in screen memory. When the M MIRROR PICTURE key is pressed, the picture or extract will be displayed. Then the program will take and "paint" a mirror image over it.

### **F9 Synchron Picture**

This is used to center the picture. Upon pressing **F9**, a red line is displayed, which marks the left edge of the picture. To move the line and mark the left edge, use:

Left or Right Arrow Key	Moves the line left or right.
Shift+Left or Right Arrow Key	Moves the line left or right at 10 times the normal rate.
Enter	Defines the left side of the picture

To use a mouse place the cursor on the red line, press hold down the left button and move the mouse to where the red line is positioned properly.

### **F8 Invert Picture**

This inverts the picture image from black on white to white on black, or vice-versa.

### **F3 Display Extract**

This displays the extract defined for the picture, which was defined by using the F1 DEFINE EXTRACT function above.

### **C Set Color Palette**

This sets the 16 color levels for the picture. All 16 colors for the picture can be set using the RGB (Red, Green, Blue) levels.

In order to use this you must first load a complete picture or an extract, and press the **F10** key or click the right mouse button. From the menu displayed press the C SET COLOR PALETTE key. The picture will be displayed again and the RGB slider display will appear on the screen. From here you can change the colors of the picture displayed. If you are using a mouse, select one of the 16 colors then grab and slide the RGB levels. This can be done any one of three ways:

1. Use the mouse and click on one of the numbers or letters within the RGB display. Then click on either the R, G or B slider bars, then slide the bar up or down, until the desired color is achieved. Continue with this procedure until have the final results desired.
2. Using the mouse go over to the picture and click on the part of the picture you want to change. When you this you will see the RGB display change to indicate the shade of gray you just clicked on. Here again click on either the R, G or B slider bars and slide them up or down to achieve the desired color.

3. Find the 16 level gray bar in the picture. This will be a bar with all 16 gray levels, varying from white to black. Take the mouse and click on the shade of gray on the 16 level bar you wish to change. Proceed to change the color of the gray level you selected as stated in steps 1 and 2 above.

If you are using the keyboard, select one of the 16 colors using the numbers "0" through "9" and "A" through "F". Use the left and right arrow keys to select either R, G, or B. Use the up and down arrow keys to slide the RGB levels. Once finished, press **U** to keep the color changes or press **ESC** to use the original picture colors.

## Color - Work

### **F2 Define Color Point**

This engages or disengages a cross-hair to mark the color processing reference point. Upon pressing **F2**, you can move the cross-hair by using the following keys:

Arrow Keys Moves the cross-hair anywhere within the screen display.

Shift+Arrow Keys Moves the cross-hair on the screen at 10 times the normal rate.

F10 Returns back to the DISPLAY PICTURE Menu.

Right Mouse button Returns back to the DISPLAY PICTURE Menu.

The selection of the color is a very critical part of assembling a Color Fax picture. If the same point is not used throughout the color processing, the final color picture will not be a good sharp picture. Most of the time the cyan, magenta and yellow extracts will have alignment points. These will be in the form of another cross-hair. Color point selection is very easy, just position the cross-hair generated by the software, and position it precisely over the extract cross-hair. As mentioned earlier, the color point must be the same for all three color extracts!

### **F7 Save Color Point**

This saves the color processing reference point after it has been defined using "F2 DEFINE COLOR POINT". As stated before the color reference point must be the same for all three color extracts.

### **Escape to Picture**

This goes back to the picture.

### **Tab to Main Menu**

This exits back to the COLOR FAX Menu.

## **S Save Picture**

Pressing the **S** key enters the Save File Manager. Press the **INS** key and using the **DEL** or **DELETE** key, erase the current filename. Then type the filename of your choice to save the FAX that is residing in screen memory.

## **Delete**

Pressing the **D** key enters the Delete File Manager. The commands for this File Manager are identical to those in the other File Managers. For more information on the File Manager please refer to the File Manager section of this manual. Select a file to delete.

## **Rename**

Pressing the **R** key enters the Rename File Manager, whose commands are the same as the other File Managers. Please refer to the File Manager for information. This function basically enables you to Rename a Fax file already received. Pressing the **ENTER** executes the Rename routine. Select a file to rename and then enter the new filename.

## **BINFO**

Pressing the **B** key displays the MFJ-1214PC FAX program information.

## **V 90**

Pressing the **V** key enters the File Manager to select a FAX file to rotate 90 degrees clockwise. This is good because there are some Fax pictures which are transmitted upside down. This is true for Photo Fax pictures, which are transmitted from bottom to top.

## **T 180**

Pressing the **T** key enters the File Manager to select a FAX file to rotate 180 degrees clockwise.

## **W 270**

Pressing the **W** key enters the File Manager to select a FAX file to rotate 270 degrees clockwise.

## **P Print Picture**

Pressing **P** prints the picture residing in screen memory.

## **X Setup Printer**

This information has to do with your particular printer and can be found in your printer manual. To find more about configuring your printer see the Printer Configuration section in Chapter 4. However, there are three separate sections for color FAX.

### **F5 Cyan Sequence**

These hexadecimal numbers tell a color printer how to print the color cyan.

### **F6 Magenta Sequence**

These hexadecimal numbers tell a color printer how to print the color magenta.

### **F7 Yellow Sequence**

These hexadecimal numbers tell a color printer how to print the color yellow.

## **Intensity**

Pressing the **I** key sets the CONTRAST INTENSITY for the processed picture. The higher the number the higher the contrast. So a number of 1.8 is higher than 1.2, so your processed picture will have considerably more contrast. When the **I** key is pressed the Intensity window will appear, with the cursor on the first digit of the current setting. As you see from the window this parameter can be varied from 0.0 to 2.0. By using the DEL key erase the current setting, and then type in your own. If you are using a mouse, then using the left button click on the I slider bar at the menu, and slide the bar up or down to the proper setting. The number you would use is dependent on how much contrast is in your final picture, so this is an experimentation process. The default setting of 1.0 should work the best in most cases.

## **F Saturation**

Pressing **F** sets the SATURATION FOR COLOR INTENSITY for the processed picture. The higher the number the higher the color saturation there will be in your final picture. So a number of 1.8 is higher than 1.2, so your processed picture will have considerably more color saturation. When the **F** key is pressed the Saturation window will appear, with the cursor on the first digit of the current setting. As you see from the window this

**COLOR FAX**

parameter can be varied from 0.0 to 2.0. By using the DEL key erase the current setting, and then type in your own. If you are using a mouse, then using the left button click on the F slider bar at the menu, and slide the bar up or down to the proper setting. The number you would use is dependent on how much intense you want your colors to be in your final picture, so this is an experimentation process. The default setting of 1.0 should work the best in most cases.

## **F1 256 Color Picture**

Pressing the **F1** key creates a 256 color picture from the C, M, and Y files by using the extract window sizes and color reference points. This function is only used after you have processed the C, M, and Y files with the color reference points. If you have not done this do not even try to use this function, because it will not work properly. When you press the **F1** key the software will start loading each of the files, starting with the C or Cyan file. The file will be displayed on the screen as it is loading. After completely loaded, the software will build a "history", then the M or magenta file will be loaded. The software will do the same thing with the M file as it did with the C file. The very same procedure is done with the Y or yellow file. After all of the files have been processed in this manner, a "history" will be built as the final process. After building the history, the final result will be displayed in 256 color format.

## **F2 3600 Color Picture**

Pressing the **F2** key creates a 3600 color picture from the C, M, and Y files by using the extract window sizes and color reference points. This function is only used after you have processed the C, M, and Y files with the color reference points. If you have not done this do not even try to use this function, because it will not work properly. When you press the **F1** key the software will start loading each of the files, starting with the C or Cyan file. The file as it is loading will be displayed on the screen. After completely loaded, the software will build a "history" on it, then the M or magenta file will be loaded. The software will do the same thing with the M file as it did with the C file. The very same procedure is done with the Y or yellow file. After all of the files have been processed in this manner, a "history" will be built as the final process. After building the history, the final result will be displayed in 3600 color format.

## **F3 4096 Color Picture**

**NOTE:** In order to use this function you must have the VGA4K Enhancement adapter installed!!

Pressing the **F3** key creates a 4096 color picture from the C, M, and Y files by using the extract window sizes and color reference

points. This function is only used after you have processed the C, M, and Y files with the color reference points. If you have not done this do not even try to use this function, because it will not work properly. When you press the **F3** key the software will start loading each of the files, starting with the C or Cyan file. The file as it is loading will be displayed on the screen. After completely loaded, the software will build a "history" on it, then the M or magenta file will be loaded. The software will do the same thing with the M file as it did with the C file. The very same procedure is done with the Y or yellow file. After all of the files have been processed in this manner, a "history" will be built as the final process. After building the history, the final result will be displayed in full 4096 colors format.

### **F4 True Gray Picture**

Pressing the **F4** key creates a True Gray picture from the C, M, and Y files by using the extract window sizes and color reference points. This function is only used after you have processed the C, M, and Y files with the color reference points. If you have not done this do not even try to use this function, because it will not work properly. When you press the **F4** key the software will start loading each of the files, starting with the C or Cyan file. The file as it is loading will be displayed on the screen. After completely loaded, the software will build a "history" on it, then the M or magenta file will be loaded. The software will do the same thing with the M file as it did with the C file. The very same procedure is done with the Y or yellow file. After all of the files have been processed in this manner, a "history" will be built as the final process. After building the history, the final result will be displayed in a True Gray format.

### **F5 32K Color Picture**

**NOTE:** This function will not properly if your video graphics card does not support 24-bit 32,000 color format. It is not compatible with standard VGA or Super VGA color formats.

Pressing the **F5** key creates a 32,000 color picture from the C, M, and Y files by using the extract window sizes and color reference points. This function is only used after you have processed the C, M, and Y files with the color reference points. If you have not done this do not even try to use this function, because it will not work properly. When you press the **F5** key the software will start loading each of the files, starting with the C or Cyan file. The file as it is loading will be displayed on the screen. After completely loaded, the software will build a "history" on it, then the M or magenta file will be loaded. The software will do the same thing with the M file as it did with the C file. The very same procedure is done with the Y or yellow file. After all of the files have been processed in this manner, a "history" will

be built as the final process. After building the history, the final result will be displayed in full 32,000 color format.

### **F8 SAVE IFF 24 BIT**

Pressing **F8** saves the processed color picture in the IFF 24-bit 32,000 color format.

### **F9 NICE MODE**

Pressing **N** enables the NICE feature for displaying a FAX. With NICE on, the picture quality will look better for a full screen display (zoom out), but it will take the FAX longer to display. With NICE off, the FAX is displayed faster and will look better for small extract sizes (zoom in). After you are aware of this information, enable or disable this feature at your own discretion.

### **ESC EXIT**

Pressing **ESC** exits back to the MAIN MENU.



## Step By Step: How To Create A Color Fax

1. Load the 1214PC software.
2. Press the **F5** function key to enter the CREATE COLOR FAX Menu.
3. Make sure you have received three gray pictures. These pictures must be consecutively received. They will be the cyan, magenta, and yellow extract files. Once received you must name them with the proper filenames. The filename extensions should be `_C.TIF` for the cyan file, `_M.TIF` for the magenta file and `_Y.TIF` for the yellow file. Below are examples for a file named EARTH:  
EARTH\_C.TIF, EARTH\_M.TIF, and EARTH\_Y.TIF  
  
If not, rename them to match this `"_C.TIF"` `"_M.TIF"` `"_Y.TIF"` format. If you are not familiar as to how and rename files please refer to your DOS system manual for your computer. This will give you more information on renaming files.
4. Press the **L** key and you'll enter the Load Fax File Manager.
5. Select and load the CYAN ("`_C.TIF`") file using the File Manager. For further information on how to use the File Manager, please see "File Manager" section for keys to use.
6. Once the file loaded, it will be displayed. At this point, please Press the **F10** key.
7. Now we are at another menu, which is used for extracting parts of a picture, change display functions, or do some particular operation with a color picture. Being as we are going to process a color picture, you need to press the **F2** key.
8. You should now see your picture you loaded in step #5, along with a red cross-hair. Move the cursor using the arrow keys to a good reference point. The preferred reference point is the cross-hair points on the received Fax picture. You need align the cross-hair on the picture, and the red cross-hair as close as possible. If not done properly, then the colors will be off on the final color picture.
9. Now that you have set your color reference point, press the **F7** key to save this color point.
10. You should now have the picture back on the screen. Now look at the overall picture, meaning the uniformity. Is the picture uniform on all edges? If not, then you will have to define the extract size, proceed to step #14. If the picture is uniform, then proceed to step

11. If you are at this step, then you need to define the picture extract size. To define the size of the extract, start by pressing the **F1** key followed by an **S**. Now using the arrow keys set the size precisely by moving the edges to where they are exactly on the outside edge of the extract. For more information on defining the extract size please refer to the DEFINE EXTRACT explanation in this section.
12. Press the **ESC** twice to return to the main menu.
13. Press the **L** key, and you'll enter the Load Fax File Manager.
14. Select and load the MAGENTA ("\_M.TIF") file using the File Manager. For further information on how to use the File Manager, please see "File Manager" section for keys to use.
15. Once the file is loaded, it will be displayed. At this point, please press the **F10** key.
16. Now we are at another menu, which is used for extracting parts of a picture, change display functions, or do some particular operation with a color picture. As we are going to process a color picture, you need to press the **F2** key.
17. You should now see your picture you loaded, along with a red cross-hair. The cross-hair should be on the same reference point as in step #8. If not, then move the cursor using the arrow keys to a good reference point. The preferred reference point is the cross-hair points on the received Fax picture. You need align the cross-hair on the picture, and the red cross-hair as close as possible. If not done properly, then the colors will be off on the final color picture.
18. Now that you have defined your color reference point, press the **F7** key to save it.
19. You should now have the picture back on the screen. Now look at the overall picture, meaning the uniformity. Is the picture uniform on all edges? If not, then you will have to define the extract size, proceed to step #20. If the picture is uniform, then proceed to step 21.
20. If you are at this step, then you need to define the picture extract size. To define the size of the extract, start by pressing the **F1** key followed by an **S**. Now using the arrow keys set the size precisely by moving the edges to where they are exactly on the outside edge of the extract. For more information on defining the extract size please refer to the DEFINE EXTRACT explanation in this section.
21. Press the **ESC** key twice to return to the main menu.
22. Press the **L** key and you'll enter the Load Fax File Manager.

23. Select and load the YELLOW ("\_Y.TIF") file using the File Manager. For further information on how to use the File Manager, please see "File Manager" section for keys to use.
24. Once the file is loaded, it will be displayed. At this point, please press the **F10** key.
25. Now we at another menu, which is used for extracting parts of a picture, change display functions, or do some particular operation with a color picture. Being as we are going to process a color picture, you need to press the **F2** key.
26. If the cross-hair is not in the same reference point as defined in step 20, move it there using the arrow keys. You should now see your picture, along with a red cross-hair. Move the cursor using the arrow keys to a good reference point. The preferred reference point is the cross-hair points on the received Fax picture. You need align the cross-hair on the picture, and the red cross-hair as close as possible. If not done properly, then the colors will be off on the final color picture.
27. Now that you have defined your color reference point, press the **F7** to save this color point.
28. You should now have the picture back on the screen. Now look at the overall picture, meaning the uniformity. Is the picture uniform on all edges? If not, then you will have to define the extract size, proceed to step #29. If the picture is uniform, then proceed to step #30.
29. If you are at this step, then you need to define the picture extract size. To define the size of the extract, start by pressing the **F1** key followed by an S. Now using the arrow keys set the size precisely by moving the edges to where they are exactly on the outside edge of the extract. For more information on defining the extract size please refer to the DEFINE EXTRACT explanation in this section.
30. Press the **ESC** key twice to return to the main menu.
31. Now we are going to define Cyan or C file. Press the **C** key. This will take you to the Load Fax File Manager.
32. Using the File Manager editing keys, highlight the CYAN ("\_C.TIF") file. This means move the highlight bar to the file with the \_C.TIF file extension on the end. Once the Cyan file is highlighted, then press the **ENTER** twice. If the M and Y files had the proper file extensions on the end, then they will also be defined, when the C file is defined. If

not, they will have to be loaded and defined separately. This is why we mentioned at the very beginning to put the file extensions of \_C.TIF, \_M.TIF, and \_Y.TIF, on the ends of the files.

33. Once you have defined the C, M, and Y files, press the **F1** key to make a 256 color picture. If your graphics card and monitor supports more than 256 colors, then you can select **F2**, **F3**, **F4**, or **F5**.

**NOTE:** In order to use the F3 (4096 color) mode, you must have the VGA4K expansion. To use the F5 (32,000 color) mode your graphics card and monitor must be able to handle 24-bit color graphics.

34. After viewing the color picture, press **ESC**.
35. Press **S** to Save the color picture.
36. Press **INS**.
37. Type the name you wish to save the color picture as.
38. Press **Enter**.

That's it! Now you have created and saved a COLOR FAX. To view it again, simply press **L** to load it!

## **Fax Operation**

In this section we will only be talking about the FAX options: displaying, receiving, and transmitting FAX pictures.

### **Description of a FAX**

When a FAX is sent or received, there are certain guidelines which need to be followed. These guidelines are very similar to the sounds you hear when sending a FAX across a phone line. These sounds tell the other FAX machine where the FAX starts, where the left side is, and where the end of the FAX is.

To let the computer receiving a FAX know where the FAX starts, the computer sending the FAX sends a certain tone called the "**Start Frequency.**" In order to tell the computer where the left margin is the sending station transmits what is called the "**Synchronization Beam.**" Likewise, to indicate where the FAX ends, the computer sends another tone called the "**Stop Frequency.**"

### **Fig. 4-1 FAX Components**

FAX is sent from left to right across the screen, just like you read a sentence. Therefore, in order to put the left margin of the FAX on the left side of the screen (or left side of the paper for printing), a signal called the **Synchronization Beam** is sent. It sounds like this: "daaaaaah-dit, daaaaaah-dit.....". The "dit" represents the left margin of the FAX. Therefore, the computer (or a printer) puts this "dit" on the left-hand edge and continues across the screen until the entire line is printed. Then, it prints the next line, the line after that, the line after that, etc. It continues in this manner until it hears the stop frequency, which is the end of the FAX.

MFJ-1214PC Multimode  
**FAX OPERATION**

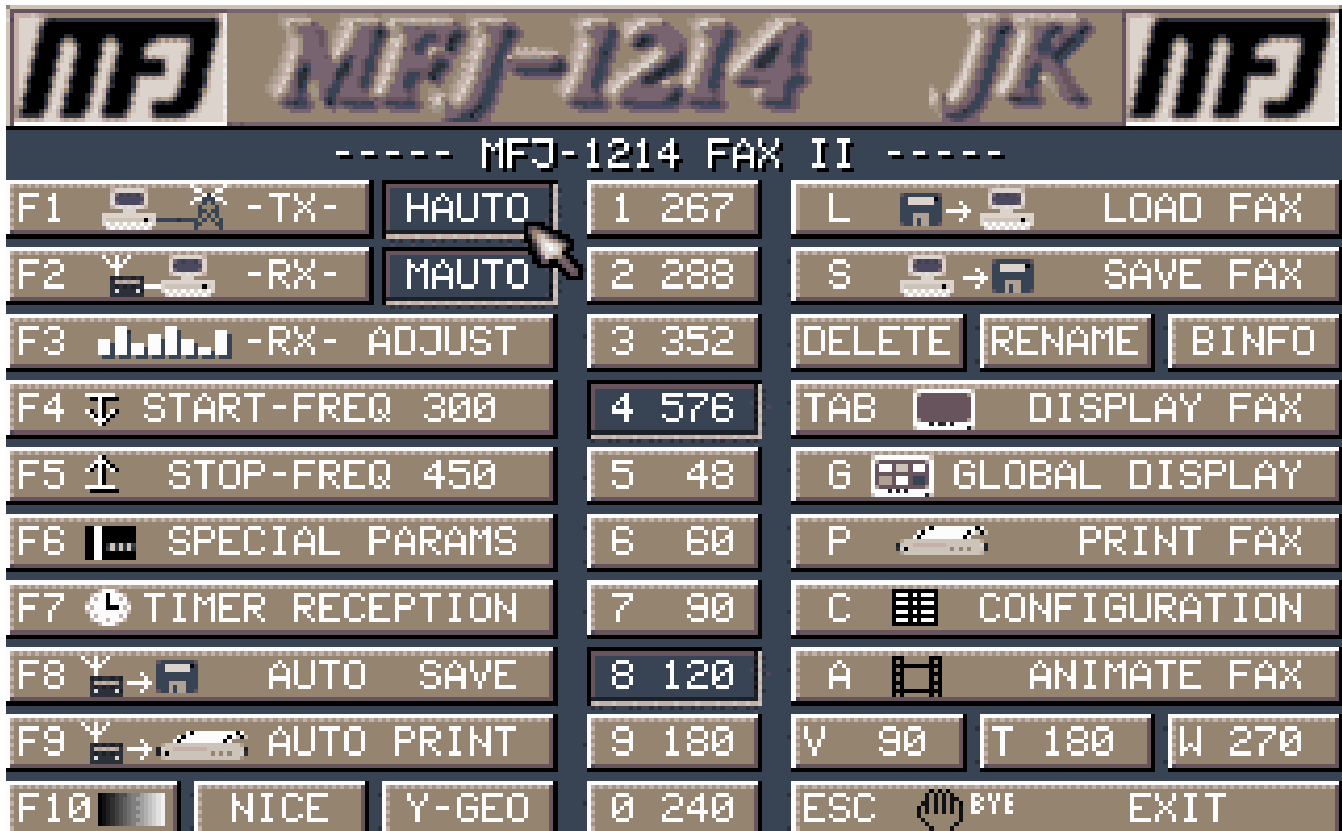
Color FAX cannot be sent directly because they contain too much information. To solve this problem, you have to separate a color FAX into three gray-scale FAX which represent the three basic colors. (Note that color picture processing consists of overlaying the three basic colors: cyan, magenta, and yellow.) Next, each of these gray-scale FAX are sent one at a time. Once received, these three gray-scale FAX can be combined to make the original color FAX.

Finally, FAX is sent at different speeds and resolutions. It is important to match the speed and resolution on the receiving end to that of the transmitting end. Otherwise, the FAX will probably end up looking like garbage.

**Sending and Receiving FAX**

In this section we will get into the actual FAX operation: receiving, transmitting. So let's not delay any longer and jump right in to FAX operation. All of the functions in this section are able to be selected either with a mouse or from the keyboard. This section is mainly written for the keyboard method of selection. However, a mouse will make the program easier to operate.

Pressing **F2** from the **Main Menu** or **VT** screen will display the following menu:



**Fig. 4-2 Transmit Receive Fax Screen**

This menu is the heart of all MFJ-1214PC FAX operations. Every function needed for handling FAX transmission and reception can be found here in a truly "user-friendly" menu.

Note that in order to protect the COM port, the mouse function is deactivated during transmission and reception so that the MFJ-1214PC can demand complete control of any COM port information. To enable the mouse again after a transmission or reception, keep pressing ESC until you get back to the Main Menu, then continue.

A description of each of the functions on this menu follows. Step by step instructions are also provided after the functions are described.

**File Manager Commands**

A **File Manager** is a routine which actually does what the name implies **Manages Files**. Throughout the MFJ-1214PC software the File Manager is used extensively, to control certain operations in the program. The File Manager screens used are all basically the same, except for the block in the lower left corner. This block will be different depending on the File Manager you are in at the time, such as **Save Fax File Manager**. In the Save Fax File Manager there will be the word **SAVE**, or **REN** for the **Rename Fax File Manager**. So you can always look down in the lower corner block, and see which File Manager you are in. Below are an explanation of the File Manager commands:

UP and DOWN ARROW KEYS

Use the **Up and Down** arrow keys to move the selection(highlight) bar. This bar identifies the current file.

ENTER

Press the **ENTER** key once to select the Fax file which the highlight bar is on. This only selects the file, it does not load it. The selected Fax file will appear in the lower left hand corner of the screen. After the Fax file is selected, you can press **ENTER** a second time to actually perform the operation, such as RENAMING, DELETING, etc. When the operation is completed the software will return back to the Fax Main Menu.

INS

Press **INSERT** to enter a filename from the keyboard. When **INSERT** is pressed the cursor will appear in the **FILENAME SELECTION** box in the lower left corner of the screen. Type in the filename you want to load, then press the **ENTER** key.

X SHOW

Pressing the **X** key allows you to enter a different file extension in the **"SHOW"** box. This tells the software what file extension to look for. When **X** is pressed the cursor will appear in the **SHOW** box, in the lower right corner of the screen. Use of the **DELETE** key will erase the current extension, then you just type your own in, and press **ENTER**. This will tell the software to

**FAX OPERATION**

adopt the file extension entered. This cannot be saved as a default, the software only supports **TIF** type files.

LOAD, SAVE, REN, DEL

This function applies only if you are using a mouse. These functions will appear in the lower left corner box. To use this you would first click on the file with the mouse, then click on the either the **LOAD, SAVE, REN, or DEL**.

G GET DIR

Press the **G** key will allow you to "get" the current directory listing. This listing will appear in the upper left corner of the File Manager screen. This is equivalent to the DOS command "DIR".

P PARENT

Press the **P** key allows you to back up to the parent directory of the directory you are in. This will list all files or sub-directories also. You can use the Up and Down arrow keys to go into the directory of your choice. This is equivalent to the DOS command "CD .."

F1, F2, F3, F4

Press **F1** to go to drive A, **F2** to go to drive B, **F3** to go to drive C, etc. This is equivalent to the DOS command "A:", "B:", "C:", etc. The software will support up to 6 disk drives, both floppy and fixed type.

ESC

Press the **ESC** key to exit back to the Fax Main Menu.

EXIT

This function applies only if you are using a mouse. If you click on the **EXIT** block, you will exit the Load Fax File Manager menu. The program will return to the Fax Main Menu.

## F1 Transmit

Pressing the **F1** key from the FAX Main Menu enters the TRANSMIT FAX mode. Pressing **F1** will give you the **Transmit Selection** menu. This menu will appear as shown below:





**Fig. 4-3 Transmit Selection Screen**

In this menu are four selections. These selections control various Fax Transmit functions: transmitting files, configurations, remote synchronization, etc. While we go through these you might want to load the program and step through it as we explain it.

**C Configuration**

When the **C** key is pressed the Fax Transmit Configuration Menu will appear. Here is where setup various things like transmitting the Start and Stop Frequencies, enter text to be inserted at the beginning and the end of a transmitted FAX, etc. Below is an explanation of these functions.

**F1 FAX-HEADER TEXT**

Allows you to enter any text that you want to appear at the start of the transmitted FAX. This will appear at the very top of the FAX, after the sending of the **Start Frequency**, as it is received. The text can be any combination of alpha-numeric and characters. The text can be up to 52 characters long.

**F2 FAX-TRAILER TEXT**

Allows you to enter any text that you want to appear at the very bottom of the FAX page, which you are transmitting. It appears at the bottom just before the **Stop Frequency**. This is usually for telling what to do if any errors occur or a description of the FAX. If any text is entered for the trailer text, the date and time are automatically added at the end of the trailer text. The text can be any combination of up to 52 alpha and numeric characters.

**B BLACK FREQUENCY**

Value for a frequency that corresponds to a solid black dot, which in turn is the start of the bandwidth. This frequency actually determines how black, black is. Don't change this unless you really know what you are doing. The default is 1500 Hz.

**W WHITE FREQUENCY**

Value for a frequency that corresponds to a solid white dot, which in turn is the end of the bandwidth. This frequency actually determines how white, white is. Again, do not change this unless you really know what you are doing. The default is 2300 Hz.

**S SPEAKER**

Turns the speaker on or off during transmission. There is no provision for volume control on the speaker. The audio may be a little too loud.

**T TX GRAYSCALE**

Transmits the 16-scale grayscale ladder, which in turn is the actual bandwidth. Send this to let the receiving end manually match your bandwidth. To stop, press any key.

**1 TX START FREQUENCY**

Allows transmission of the **Start Frequency** so that the receiving station can match it. To stop, press any key.

**2 TX STOP FREQUENCY**

Allows transmission of the **Stop Frequency** so that the receiving station can match it. To stop, press any key.

**ESC EXIT**

Pressing the **ESC** key while in the **FAX Transmit Configuration** menu will allow you to EXIT the FAX Transmit menu and return to the **FAX Main Menu**.

If you went through this with us while we were explaining it, then you must press the **Esc** key to return to the Fax Main Menu. Now we will explain the second selection under the **Transmit Selection** menu, **TRANSMIT FILE**.

### **F Transmit File**

Press **F** will take you into the **File Manager** to transmit a Fax file from disk. The File Manager will show you a list of Fax available to transmit, is any exist. In order to transmit a Fax file please follow the procedure below:

1. Press the Up or Down arrow keys and you will see the Highlight bar appear. If no files exist, then the Highlight bar will not show up.
2. Using the Up and Down position the Highlight bar over the file you want to transmit, then press the **ENTER** key. The FAX file is now loaded and ready for transmitting.
3. To transmit the FAX which is now loaded just press the **ENTER** key. The File Manager screen will disappear with the Fax Main menu coming back on the screen. Then a small window will appear indicating that the software is transmitting the file. When the software is finished transmitting the file the window will disappear.

The software will now proceed to transmit the loaded FAX file, providing the radio is powered up and cabled correctly. The FAX first starts with by sending the **Start Frequency**, which tells the receiving station to start receiving. Next comes the **Synchronization Beam**, which tells the computer at the receiving station where the left margin is. Then the actual FAX information is sent, which will last several minutes. When finished the **Stop Frequency** is sent, to tell the computer at the receiving station that the transmission is complete.

This is a short explanation of how to transmit a FAX file using the File Manager. For further information on the File Manager, please see the "File Manager" section.

### **S Transmit Screen**

Pressing the **S** key allows you to transmit the FAX file, which may be residing in screen memory. You can check to see if any FAX file is in screen memory, by pressing **TAB** from the Send/Receive FAX menu. Use the **TAB** key if you want to re-display a FAX picture you captured. The function of the **TAB** key will be explained later on in this instruction.

MFJ-1214PC Multimode  
**FAX OPERATION**

**Exit**

Finally the last selection on the **TRANSMIT SELECTION** menu is the **Esc** key. The **Esc** key is used to exit the **TRANSMIT SELECTION** menu, and return to the Fax Main Menu.

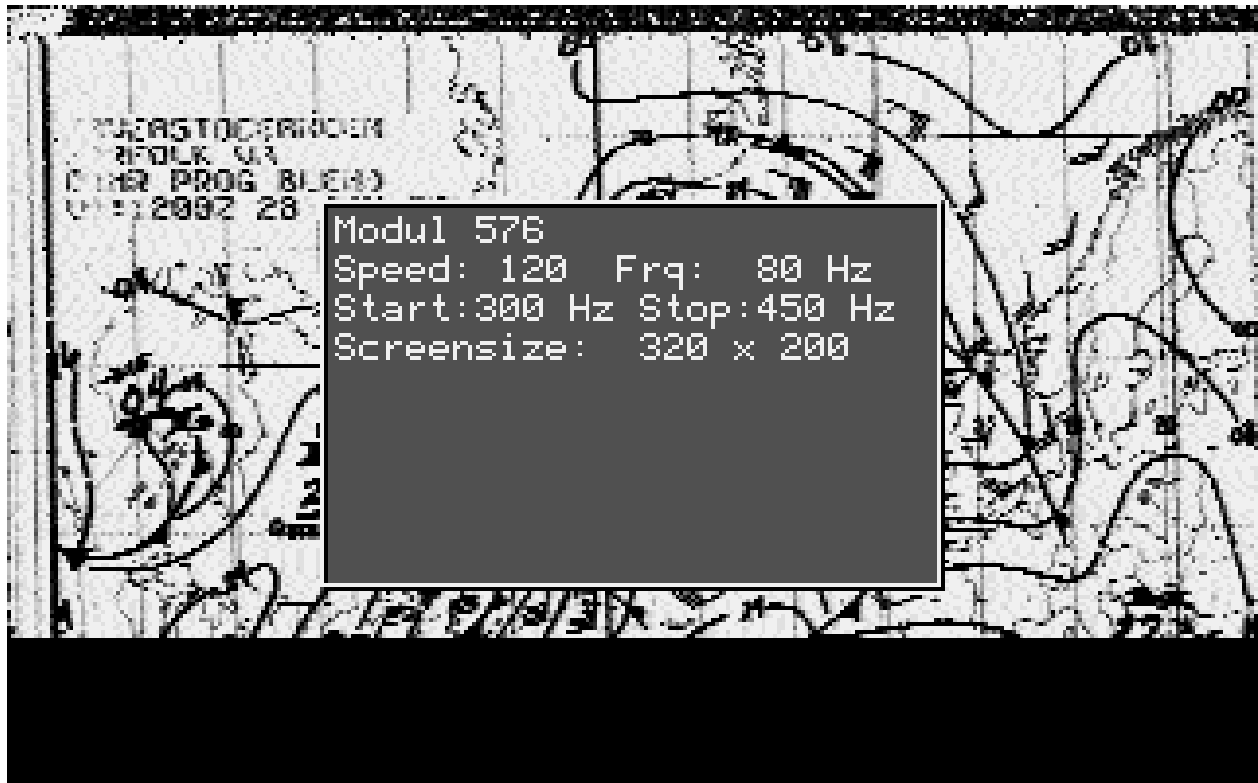
## **F2 Receive**

Pressing **F2** while at the Fax Main Menu allow you to receive FAX pictures. Receiving FAX pictures is interesting, because you get to see first what the weather is going to be like. You also learn from FAX pictures, such as knowing how HIGH and LOW pressure systems effect the weather, what the each streamer on a WIND flag mean, etc. You will also get to see weather maps and charts, like those you've only been able to see on television before. Also there are AP photograph pictures like evening NEWS casts use. All of these pictures are in high resolution form in order to give you more detail and clarity.

Upon pressing the **F2** the screen will clear and the software is in the RECEIVE mode. From the RECEIVE screen there are a few functions which can be performed.

### **Space Status Box**

Pressing the **SPACE BAR** during the receive of a FAX, will display a Receive FAX information box on the screen. This box will remain on the screen for 10 seconds. Fax reception will stop while the box is present, but no data is lost. After the box disappears the data will be put on the screen. This box will appear as shown below:



**Fig. 4-4**            **Space Status Box**

## **FAX OPERATION**

The information inside this box represents certain characteristics about the FAX signal being received. Here is a short explanation of each:

### Module:

This represents the number of the transmission module used to transmit the FAX being received. The MODULE value is made up of the product of the **DRUM** speed and **LINE DENSITY**. The MODULE is sometimes referred to as the **IOC** or the Index-Of-Cooperation. The reason for this is that the IOC must be the same at the receiving station, in order to get the pictures with the same length to width ratio, as the transmitting station.

### Speed:

This is the number of revolutions-per-minute that the **DRUM** at the transmitting station turns. For each revolution of the DRUM the transmitter sends 1 line of the FAX. So for Weather Fax the Drum turns at 120 rpm, thus the speed in the above for weather fax would be 120. This is commonly referred to as **LINES/MIN**.

### Start:

This is the value of the **START FREQUENCY** used to transmit the FAX being received. This frequency can be detected at the time of transmission, if you press the space bar. This frequency will be present in the small box on the screen.

### Stop:

This is the value of the **STOP FREQUENCY** which will be used in the FAX being received. This frequency can be detected at the time of the STOP FREQUENCY being received, by pressing the space bar. This frequency will be present in the small box on the screen.

### Screensize:

This is the screen resolution which the software is set to in the System Setup. So, if you set the screen resolution at 800x600 in the System Setup, then the screen size in the box will be 800x600.

## **+ Skew Right**

Corrects the skew to the right. Pressing the + key during FAX receive, will correct a picture which is skewed to the left, back to the right. Use **SHIFT +** for coarse adjustment ( x 10 speed), and + for fine adjustment. These corrections can be saved by using the **C FAX CONFIGURATION** function from the Fax Main Menu.

## **- Skew Left**

Corrects the skew to the left. Pressing the - key during FAX receive, will correct a picture which is skewed to the right, back to the left. Use **SHIFT -** for coarse adjustments (x 10 speed), and - for fine adjustments. These corrections can be saved by using the **C FAX CONFIGURATION** function from the Fax Main Menu.

## **S Manual Synchronization**

Draws a vertical line representing the left edge of the FAX. Move line left or right with arrow keys to move the line slowly, or

grab with mouse and drag. Use the **SHIFT** key along with the arrow keys to move the line faster.

### **I Normal/Inverse**

Pressing the **I** key during FAX receive, will invert the screen image from black-on-white to white-on-black image.

### **F8 Engage Autosave**

Pressing the **F8** key during engages the Autosave feature. This will start to save FAX pictures being received, to a pre-determined filename with a **TIF** extension. When initialized a small window will pop-up in the center of the screen. This window is verifying the **DRIVE\PATH\FILENAME** to which the pictures will be saved. You will need to look very quickly at the window, to see if the information is correct. If you wait too long (greater than 10 seconds), FAX data will be lost, thus the file you saved will be incomplete.

### **F9 Engage Autoprint**

Pressing the **F9** key during FAX receive will engage the Autoprint feature. This feature when activated will start printing the FAX being received on the printer. The printer must be attached to the computer, at the parallel port. You must be sure you have the proper printer driver selected. If the correct printer driver is not available, then you can make one very easily. For more information on how to make a printer driver see the explanation of the **PRINT FAX** command, in this instruction.

### **E Mark End of Picture**

You can manually end a FAX Autosave or Autoprint while in FAX receive mode, by pressing the **E** key. This is the equivalent of receiving a stop frequency.

### **Exit**

Pressing the **Esc** key during FAX receive stops FAX reception and returns to Send/Receive FAX Menu.

**NOTE:** You should not activate a function which actually stops the FAX receive for more than 10 seconds, such the **Manual Synchronization**. If you do, the FAX data will be lost and appear to be "cut", starting at the point at which the function was activated. Also, the computer may lock up. This happens because a 64K buffer is used to store the FAX while this function is activated.

## **HAUTO**

This feature makes the MFJ-1214PC almost impossible not to receive good FAX pictures. The **HAUTO** waits for the SYNC signal (that is 5% white within black), to automatically adjust the black and white levels. Also it helps in the detection of sync for the auto-start routine. The Auto-start routine is where, if you have the FAX signal tuned precisely, the program will automatically start copying the signal. The Auto-start routine also initiates the **Auto Functions, Auto Save and Auto Print**. If the FAX signal is not tuned in properly, then with **HAUTO** activated the program will automatically set sync detection. This will enable reception of FAX pictures which are straight and centered on the computer screen. This can also be saved in the program configuration by using the **C CONFIGURATION** selection from the FAX main menu.

## **MAUTO**

This is a very unique command which will help you in copying better FAX pictures. This analyzes the incoming FAX signal. It determines the correct **Fax Module** and **Drum Speed** to use when copying FAX pictures. This is very helpful if you do not know the **Module and Drum Speed** of the FAX being which you are copying. This feature takes all of the guess work out of setting these two important parameters properly. This can also be saved permanently in the program configuration by using the **C CONFIGURATION** function from the FAX main menu.

## F3 RX Adjust

Pressing **F3** during the FAX receive process will display the RECEIVER ADJUST Bar Graph. This "Bar Graph" greatly simplifies receiver tuning of a FAX station. It allows you to tune your receiver precisely, and set the bandwidth control on the MFJ-1214PC correctly. The FAX picture being received is displayed above the graph in the standard VGA resolution of 320x200. You can also analyze the incoming FAX signal, to see how often each of the 16 grayscales is received. Below is how the Receiver Adjust Bar Graph will appear:



**Fig. 4-5 Bar Graph**

Looking at the Bar Graph display you will see 16 "BARS" or segments. The first bar on the left represents "black". How dark black really is depends on whether or not the bar is totally filled in. The last bar on the right represents "white". How light white really is depends on whether or not the bar is totally filled. Of course, all of the bars in between "white" and "black" are the remaining 14 shades of gray.

### Receiving Tip

Here is a tuning tip for tuning in a FAX station. If you do not know what a FAX signal sounds like, then try transmitting the **GRAYSCALE LADDER** out of the Transmit Selection menu. You will hear only the FAX data being sent. If you want to hear the other parts, such as the start frequency, then do a Transmit Screen out of the **F2 Transmit** selection off of the FAX Main Menu. Here you hear the **Start** frequency, the **Synchronization** beam, the actual FAX data, which will be nothing but a solid tone, and the **Stop** frequency. The reason you hear a solid tone as the FAX data, is the program is transmitting what is in the 64K Fax receive buffer, which is nothing.



### Tuning To A Fax Signal

Now we are going to tell you the easiest method to TUNE to a FAX station. So, please follow the below steps carefully:

1. Ensure the MFJ-1214PC software is loaded.
2. Set the Bandwidth control for the type of FAX you are going to receive. Refer to the **Bandwidth Control** section a little later on in this section, for the Bandwidth Control setting.
3. Make sure your receiver is set to the proper "SIDEBAND" for type of FAX you are going to receive.
4. Tune to a FAX signal on your receiver.
5. Press the **F2** key from the Fax Main Menu. The screen will clear, which indicates you are in Fax Receive mode.

At this point you should be receiving a FAX picture on the computer. The picture will be going from left to right on the screen. Depending on the frequency that the signal is being transmitted on, you may need to fine tune the receiver dial, until you start seeing some picture details. In the case of a Weather Fax chart (2-Level) tuning will not be too difficult. Tuning in a Photo Fax or 16 level Weather Fax, tuning is still pretty easy. Tune the receiver, while watching your screen until the more finer details of the picture are able to be seen. Changes in the receiver frequency dial should be very slight. DO NOT vary the Bandwidth Control once it is set.

Now once you have a good looking picture, then press the **Esc** key to exit the Fax Receive screen, and return to the Fax Main Menu. From here press the **F3 RX ADJUST** key. Now you can see how the Bar Graph should look with a Fax signal being received. This is probably the best way to see how the Tuning Bar Graph should look like during receive. At the same time you will see the picture on the top half of the screen. It will be in lower resolution, but should still be pretty good looking. Also you can take note of the Tuning Bar Graph examples below to see how the graph should look like.

For two level FAX, you should tune until the RX ADJUST graph looks like this:



**Fig. 4-6 Two Level Tuning Graph**

For multi level FAX, you should tune until the RX ADJUST graph looks like this:



**Fig.4-7 Multi Level Tuning Graph**

**Bandwidth Control**

Typical values for the bandwidth knob to receive FAX with the MFJ-1214PC are as follows:

**16 Level Weather (Photo FAX)** 8 o'clock Position ( fully CCW )

**Weather FAX (Charts)** 11 o'clock (just to the left of center)

The purpose of the two different bandwidth settings is due to the fact that Photo FAX pictures are sent using all 16 of the grayscales. Weather FAX charts are only sent using 2 of the grayscales: black and white. However, note that some of the high quality Weather FAX pictures are sent using all of the 16 grayscales, which is equivalent to the format which the Photo FAX is sent. If this is the case, use the 8 o'clock setting. You may need to FINE TUNE the bandwidth control, very slightly to achieve the best results. Just be very patient and make very minute changes in the bandwidth setting. The bandwidth control on the front panel of the MFJ-1214PC increases or decreases the amount of information which is sent to the computer for processing. Turning the bandwidth knob to the left widens the bandwidth, which allows for more information (i.e. a multi-level FAX), to be processed. Likewise, turning bandwidth knob to the right narrows the bandwidth, which allows less information to be processed. To illustrate this, turn the bandwidth knob from left to right and watch how the detail of the incoming FAX is increased and decreased.

## **F4 Start Frequency**

Press **F4** to enter the start frequency. The default **Start Frequency** should be sufficient for most Fax reception. When the start frequency is received, the 1214PC software marks the start of the FAX when operating with the **Auto Functions: Autosave** and **Autoprint**. When **F4** is used with the **Automatic Functions** your radio must be tuned precisely so the 1214 can "hear" the start frequency. So, if you change the start frequency incorrectly these functions will not work properly. However, if you find it necessary to change the start frequency follow the procedure below:

1. Press the **F4** key and notice the cursor positioned over the first digit of the current value.
2. Press the **DELETE** key to erase all digits of the current **Start Frequency** value.
3. Type in your own value and press the **ENTER** key.

The start frequency can be saved by using the **Configuration** selection from the Fax Main Menu.

## **F5 Stop Frequency**

Press **F5** to enter the stop frequency. The default **Stop Frequency** should be sufficient for most Fax reception. When the stop frequency is received, the 1214PC software marks the end of the FAX when operating with the **Auto Functions: Autosave** and **Autoprint**. When **F5** is used with the **Automatic Functions** your radio must be tuned precisely so the 1214 can "hear" the stop frequency. If you change the stop frequency incorrectly, these functions will not work properly. However, if you find it necessary to change the stop frequency follow the procedure below:

1. Press the **F5** key and notice the cursor positioned over first digit of the current value.
2. Use the **DELETE** key to erase all digits of the current **Stop Frequency** value.
3. Type in your own value and press the **ENTER** key.

The stop frequency can be saved by using the **Configuration** selection from the Fax Main Menu.

## F6 Special Parameters

Pressing the **F6** from the Fax Main Menu, enters the **SPECIAL PARAMETERS** menu. This menu will appear as shown below:

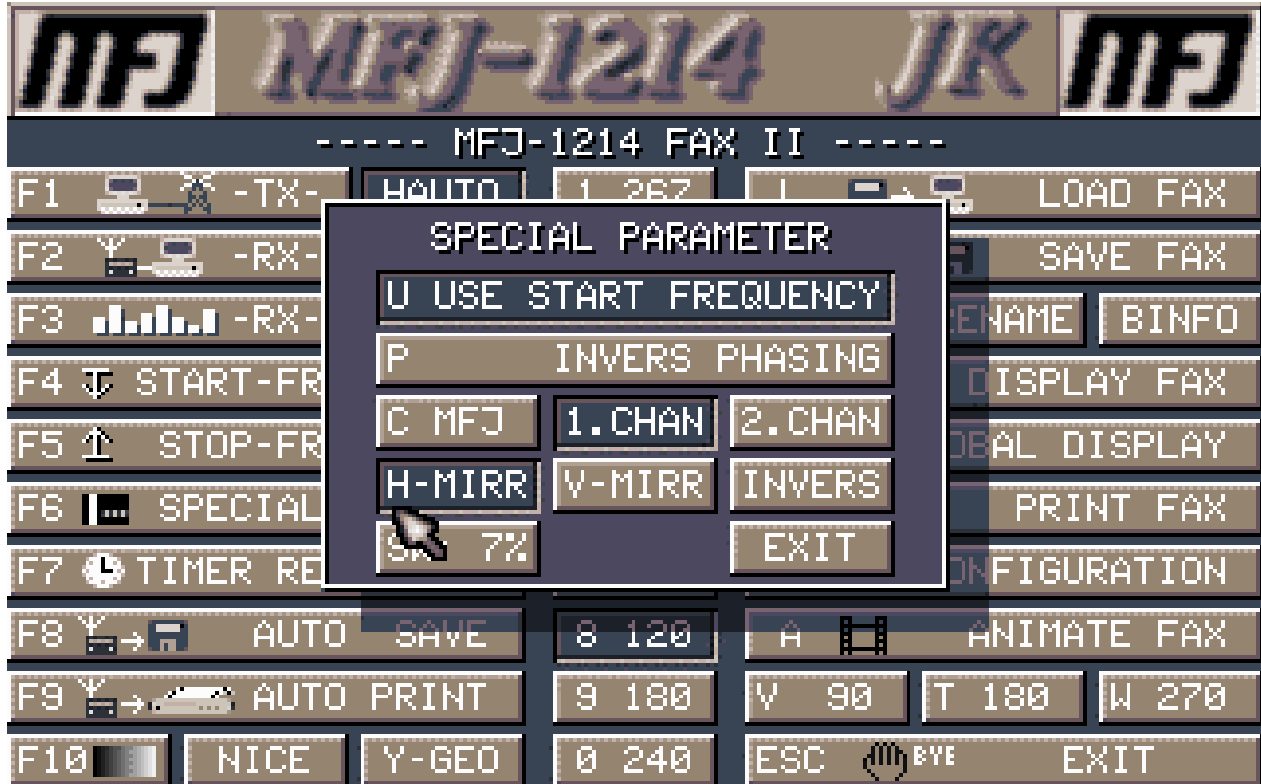


Fig. 4-8 Special Parameters Menu

From this menu you have several things you can do . These will help you in different ways in either receiving or transmitting FAX. Let's go over these functions now.

### U Use Start Frequency

Selects whether to use the start frequency or the synchronization beam to activate the auto functions: Auto Save and Auto Print. The default setting is to use the Start Frequency. When the **Start Frequency** is received, then the Automatic functions will start.

### P Inverse Phasing

Selects whether to invert the "PHASE" of the received Fax signal. For example: A satellite transmits an "inverse" picture, but the synchronization beam is "normal". To handle this type of signal you would activate **INVERSE PHASING**. The program will act as follows:

If the sync is inverse (95% white, 5% black), but the picture is normal,

**FAX OPERATION**

then activate "P Inverse PHASING"

If the sync is normal (95% black, 5% white), but the picture is inverse,

then activate "P Inverse PHASING" and "inverse".

The default setting is not to use inverse phasing.

**C MFJ (C BMET, C NSK)**

Selects the hardware interface to use. Press the **C** key to step through the hardware interfaces and select the one which applies to your setup. There should be no need to change this, you have an MFJ-1214PC. The default setting is MFJ, which is for the MFJ-1214PC.

**1.Chan, 2.Chan**

Selects the hardware interface channel to use. The MFJ-1214PC uses one channel. The default setting is channel 1.

**H Mirr**

Mirrors a FAX in the horizontal direction. This function will need to be changed, depending on the type of FAX you will be receive. For example, if you are receiving a Photo Fax, then select **H MIRR**. Photo Fax are transmitted mirror inverted most of the time. The default is not to use horizontal mirroring.

**V Mirr**

Mirrors a FAX in the vertical direction. This function will need to be changed, depending on the type FAX you will be receiving. For example, if you are receiving a Satellite Fax, then select **V-MIRR**. Satellite Fax is transmitted upside down most of the time. The default is not to use vertical mirroring.

**I Inverse**

Inverts the FAX image from black-on-white to white-on- black, or vice versa. This function applies to both transmit and receive. The default set for non-inversion.

**SW 5%**

Sets the synchronization bar width. The default is 5%.

**Esc Exit**

Press the **Esc** key or click on the **EXIT** block to exit back to the Fax Main Menu.

All of these functions can be saved in configuration files. Do this from the Configuration selection from the Fax Main Menu. Please refer to C CONFIGURATION explanation later on in this instruction manual, for further information.

## F7 Timer Reception

Pressing **F7** enters the **TIMER RECEPTION** Menu. The menu will appear as shown below:

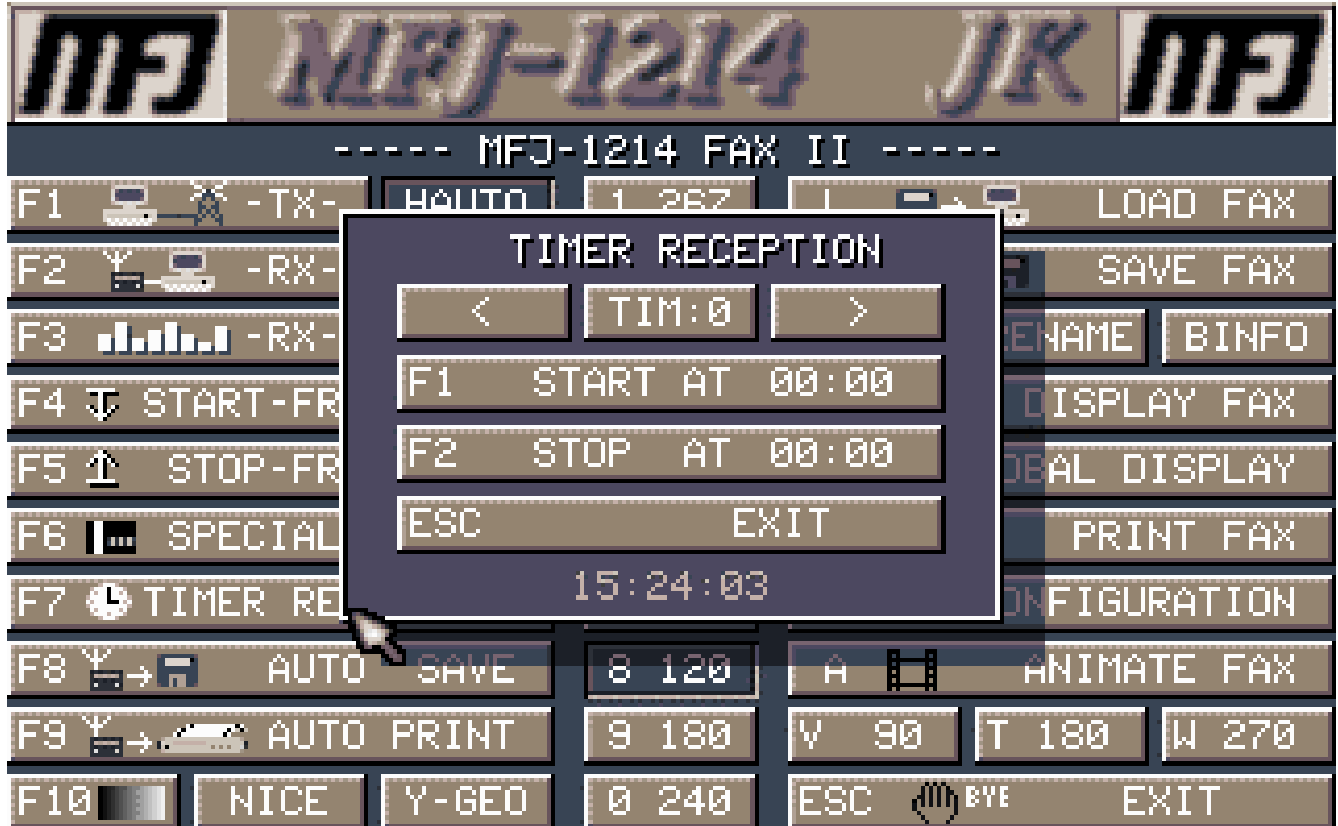


Fig. 4-9 Timer Menu

Under the **TIMER RECEPTION** menu you have the ability to setup specific times at which to activate the **Automatic Functions: AUTO SAVE** and **AUTO PRINT**. The Auto functions will activate if the software hears the 1200 Hz. Synchronization Beam at the specified Start Time. Your radio must be precisely tuned for the 1214 to "hear" the start frequency. This is handy if you want to receive a certain transmission which is going to be transmitted at 2 AM. All you would have to do is to set any one of the ten timers for 2 AM, leave the computer, radio and MFJ-1214PC **ON**, then just walk away. Inside the menu there are several functions, so let's go over them now.

### < >

Allows you to select any one of ten timers (0 thru 9) to activate the **AUTO SAVE** and **AUTO PRINT** functions. You can use either a mouse or the left and right arrow keys to select the timer. It does not matter which timer you set, the Auto functions will wake up on schedule.

### **F1 Start At 00:00**

Allows you to set the **Start Time** for the timer displayed. After pressing **F1**, the cursor will be positioned over the first digit of the default Start Time which is 00:00. The cursor can be moved left or right with the left or right arrow keys. The timer uses a 24 hour format. The current time can be erased by use of the **DELETE** key. If you want to set the Start Time to 8 PM, here is how you would proceed starting from the Fax Main Menu:

1. Press the **F7 TIMER RECEPTION** key. The Timer Reception menu will appear.
2. Press the **F1 START AT 00:00** key. Since the cursor is positioned over the first digit, just press the **DELETE** key once. Notice the first digit is deleted.
3. Press the **2** key and press **ENTER**. The **2** will be entered at the first digit. Now the software is setup to activate the Auto functions at 20:00 hours, or 8 PM.

### **F2 Stop At 00:00**

Allows you to set the **STOP TIME** for the timer displayed. After pressing **F1**, the cursor will be positioned over the first digit of the default Stop Time which will be 00:00. The cursor can be moved left or right with the left or right arrow keys. The timer uses a 24 hour format. The current time can be erased by use of the **DELETE** key. If you want to set the Stop Time to 9 PM, here is how you would proceed starting from the Fax Main Menu:

1. Press the **F7 TIMER RECEPTION** key. The Timer Reception menu will appear.
2. Press the **F1 STOP AT 00:00** key. Since the cursor is positioned over the first digit, just press the **DELETE** key twice. Notice the first two digits are deleted.
3. Press the **2** and **1** keys and press **ENTER**. The **2** and **1** will be entered at the first two digits. Now the software is setup to de-activate the Auto functions at 21:00 hours, or 9 PM.

### **Exit**

Exits the Timer Reception menu, and returns back to the Fax Main Menu. The timer parameters are retained only for the current session.

The Timer Reception parameters can be saved permanently by using the **C CONFIGURATION** selection from the Fax Main Menu. This is good if the signal you want to receive is transmitted daily at the same time.

Once the Stop and Start times are set use the **Esc** key function to exit the menu. Once back at the Fax Main Menu press the **F8** key to

## **FAX OPERATION**

enter the **AUTO SAVE** or **AUTO PRINT** mode. The only thing left to do is press the **F2 RECEIVE** key to enter the Fax receive mode. Now no data is saved until the Synchronization Beam is heard at the specified **Start Time**. The Timer Reception function can be deactivated by entering 00:00 at both **F1 START AT** and **F2 STOP AT** within the Timer Reception menu.

## **Auto Functions**

Within the MFJ-1214PC software there are a couple of **Auto Functions**. These are **Auto Print** and **Auto Save**. They are used to either Save Fax pictures to disk or Print Fax pictures to the printer, specified in the software SETUP.

### **F8 AUTOSAVE**

Pressing the **F8** key enables the **Auto Save** function. There are two ways to engage the Auto Save routine. The two ways perform basically the same thing however, they are initiated differently. So let's explain them for you now:

1. When initiated from the Fax Main Menu, the Auto Save routine is activated via the **Start** and **Stop** times setup in the Timer Reception menu. If no times are set in the Timer Reception menu, then the Auto Save will not work. When the **F8** key is pressed from the Fax Main Menu, the software will pop-up a small window to verify the **Auto Save Path**. At this point just verify the path and press the **Enter** key. This method will initiate upon hearing the Synchronization Beam at the specified time, which was setup in the Timer Reception menu.
2. The Auto Save routine can also be initiated from the Fax Receive mode, right from the receive screen. This enables "quick on-the-Fly", capture of FAX pictures. This does not require times to be set in the Timer Reception menu. When initiated from the Fax receive screen, a small window will appear in the center of the screen. This window again is verifying the **Auto Save Path**. You will need to verify the path quickly and press **Enter**, otherwise FAX data will be lost and the picture will appear to be cut.

In order for this function to work properly the FAX signal must be tuned so the software hears the 1200 Hz. sync signal properly. So precise radio tuning is essential here, and could take some practice.

### **Disk Save Format**

The FAX will be saved using the format "CCDDHHMM.TIF". "CC" is the first two letters of the configuration file you are using (see C CONFIGURATION). "DD" is the day of the month and "HHMM" is the



MFJ-1214PC Multimode

**FAX OPERATION**

hour and minute the FAX was saved. If you saved a Fax picture using the STANDARD configuration, on November 21, 1992, at 3:30 PM, the filename on disk would be **ST211530.TIF**

In order for this format to work properly the Time and Date in the system must correct.

## **F9 AUTOPRINT**

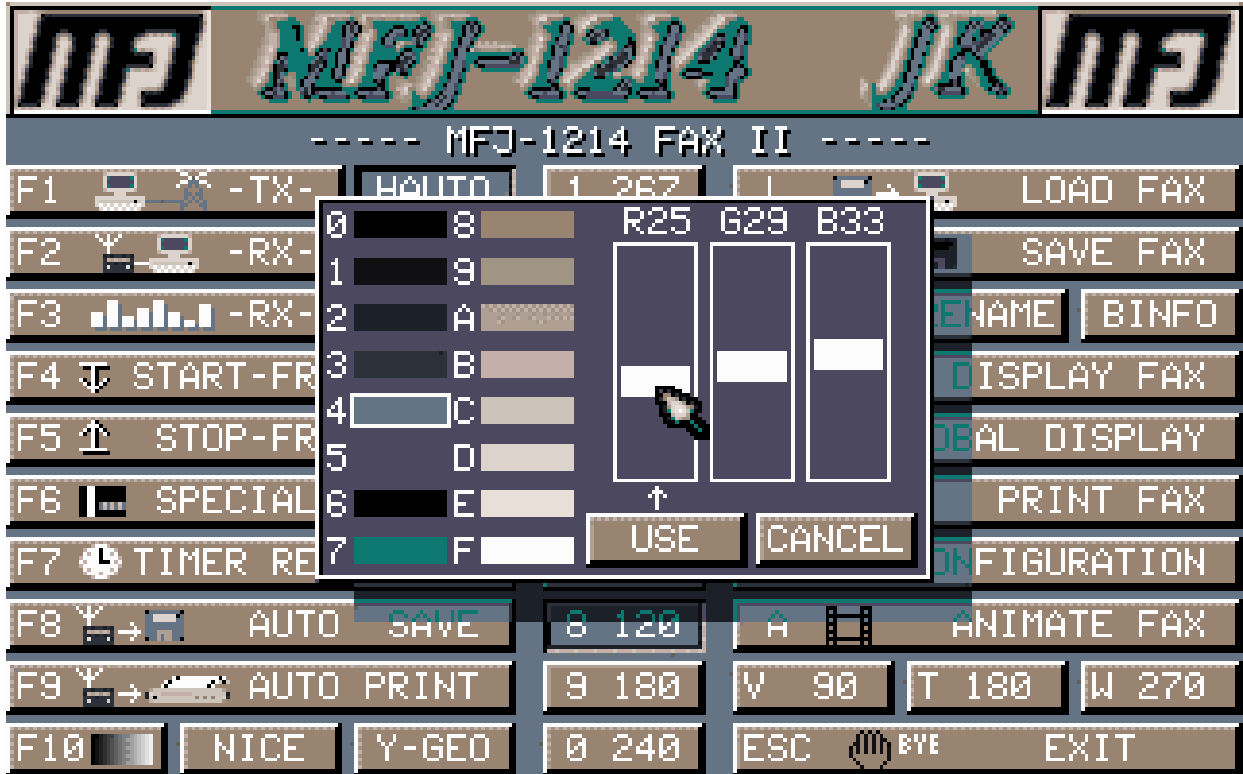
Pressing the **F9** key enables the **Auto Print** function. There are two ways to engage the Auto Print routine. The two ways perform basically the same thing however, they are initiated differently. So let's explain them for you now:

1. When initiated from the Fax Main Menu, the Auto Print routine is activated via the **Start** and **Stop** times setup in the Timer Reception menu. If no times are set in the Timer Reception menu, then the Auto Print will not work. When the **F9** key is pressed from the Fax Main Menu, the **F9 Auto Print** will activate on the menu. At this point just press the **F2 RECEIVE** key to go to the Fax receive screen. This function will activate when the Synchronization Beam is heard at the time specified in the Timer Reception menu. Printing will stop either when the **Stop Time** rolls around or when the **Esc** key is pressed.
2. The Auto Print routine can also be initiated from the Fax Receive mode, right from the receive screen. This enables "quick on-the-Fly", printing of Fax pictures. This does not require times to be set in the Timer Reception menu. Upon initialization the software will start sending Fax data to the printer. When the printer buffer fills, then the printer will print. While the software is printing, the Fax data will not be updated to the screen. However, nothing is being lost during the printing process. After the printing is finished the receive screen will be updated, with the Fax data stored in the software buffer. Printing can be stopped by pressing the **Esc** key to return to the Fax Main Menu, or by pressing the **F9** key.

In order for this function to work properly the FAX signal must be tuned so the software hears the 1200 Hz. sync signal properly. So precise radio tuning is essential here, and could take some practice.

## F10 Set Menu Color

Pressing the **F10** key enters the SET MENU COLOR Menu. This menu will appear as shown below:



**Fig. 4-10** Set Menu Color Menu

This menu allows you set the colors for all of the menus in the Program. This is done by setting the RGB (Red, Green, Blue) levels. This can be done via a mouse or from the keyboard. If you have a mouse, select one of the 16 colors then grab and slide the RGB levels. If you are using the keyboard, select one of the 16 colors using the numbers "0" through "9" and "A" through "F". Use the left and right arrow keys to select either R, G, or B. Use the up and down arrow keys to slide the RGB levels. Once you get the colors set to where you like them, then press the **U** key. Pressing the **U** key allows you to only use the colors for the current session only. If wish to not change the colors just press the **C** **CANCEL** key. If you want to save them permanently, then use the **C** **CONFIGURATION** selection off of the Fax Main Menu.

## Nice

Pressing the **N** key enables the **NICE** feature for displaying a FAX. With NICE activated the quality of the picture will be better, when displaying a FAX with zoom out, but it will take the FAX longer to display. With NICE deactivated, the FAX is displayed faster and will look better for smaller extract sizes with zoom in. After you are aware of this information, enable or disable this feature at your own discretion.

## Y-Geo

Pressing **Y** enables the Y-GEOMETRY feature. With Y-GEO on, the X to Y ratio of a FAX is displayed 1:1. In other words, the FAX is displayed symmetrically instead of oblong. Attention should be drawn to the fact that if the picture is printed or transmitted from the screen, it will be asymmetrical at the receiving end. This is because the picture was recalculated specially for your purpose. In order to keep this from happening, it is best to display the asymmetric picture, if it is to be symmetric when transmitted or printed. A resolution of 640x350 is recommended for this purpose. Enable Y-GEO if an object in a FAX looks distorted. After you are aware of this information, enable or disable this feature at your own discretion.

## 1 267, 2 288, 3 352, and 4 576

Pressing **1**, **2**, **3**, or **4** from the Fax Main Menu selects a specific FAX TRANSMISSION MODULE. These numbers just do not apply to FAX transmitting, but also for receiving. It is for this reason that the MODULE is sometimes referred to as the **IOC** or the Index-Of-Cooperation. This is because the IOC must be the same at the receiving station, in order to get the pictures with the same length to width ratio, as the transmitting station. The MODULE value is made up of the product of the **DRUM** speed and **LINE DENSITY** in units millimeters. This module relates to the horizontal resolution of the FAX.

Use the following modules:

**Weather FAX** Charts or Maps (black and white only) module 288 or 576

**Photo FAX (multi-gray level)** or **Weather FAX (multi-gray level)** module 352

Note that module 267 is not shown since it is for satellites, an option currently not supported by the MFJ- 1214PC.

## **5 48, 6 60, 7 90, 8 120, 9 180, 0 240**

Pressing **5, 6, 7, 8, 9,** or **0** from the Fax Main Menu, selects a specific FAX DRUM SPEED. The drum speed is commonly referred to as the number of lines per minute. A drum speed of "48" is the slowest speed, with a speed of "240" being the fastest. The receiving end drum speed must match the transmitting end drum speed. The drum speed is the most important parameter of FAX operations, both transmit and receive, so be sure to select the proper parameter for the type of FAX being transmitted or received.

Due to inconsistency in computer speeds, FAX will skew when being received at the "F2 RECEIVE" screen. Therefore, all of the drum speeds will need to be adjusted the same amount and saved. To do this, set the skew correctly for any drum speed using the "+" and "-" keys, at the "F2 RECEIVE" screen. Next, press **Esc** to go back to the "SEND/RECEIVE FAX" Menu. Then, while at the "SEND/RECEIVE FAX" Menu, press "SHIFT-F10". Note that this skew correction will not affect the RX ADJUST screen. Save this skew correction at the "C CONFIGURATION" Menu.

## **L Load Fax**

Pressing the **L** key enters the LOAD FAX File Manager, whose commands are listed below. The LOAD FAX File Manager menu will appear as shown below:

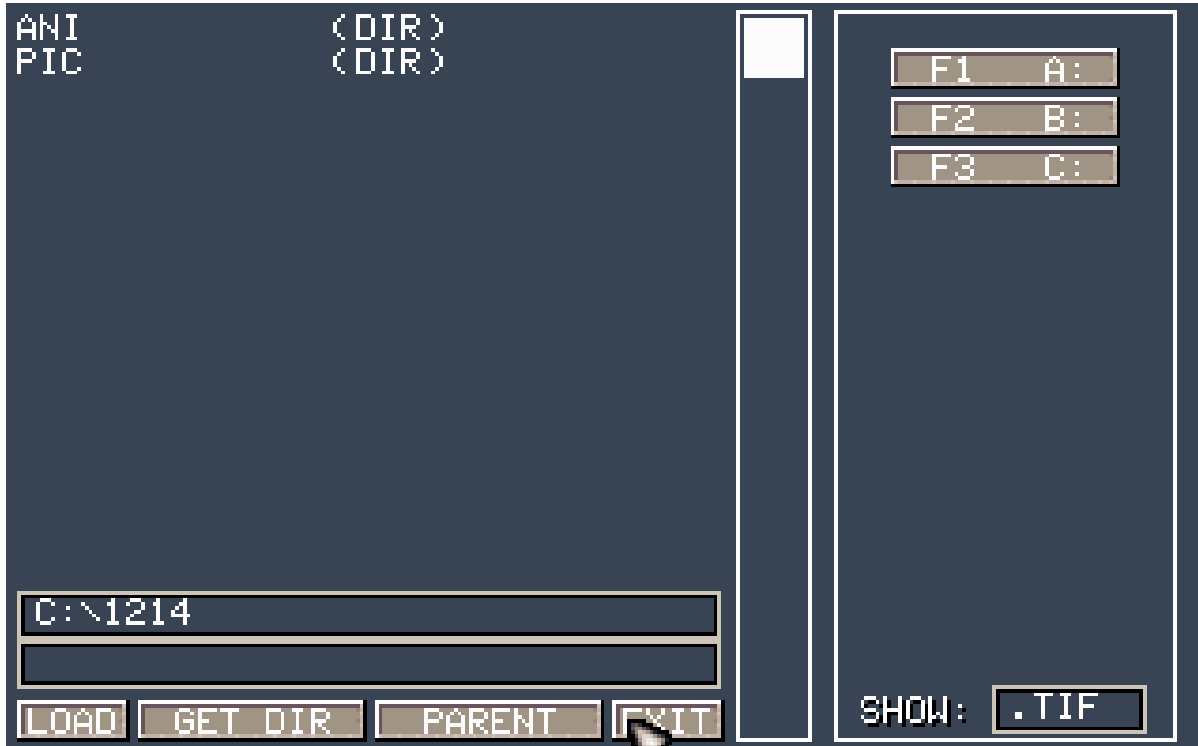
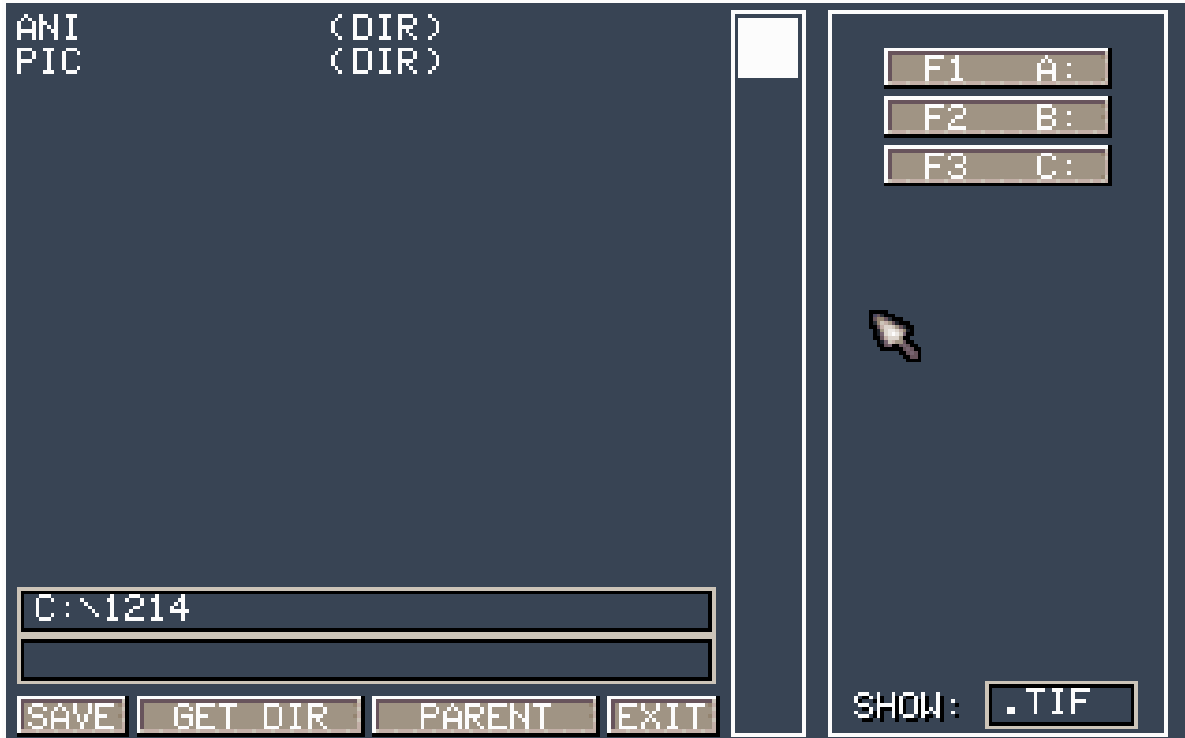


Fig. 4-11 Load FAX File Manager

When the Fax File Manager is entered there are several things you can do. Please see the File Manager section for an explanation of the commands.

### S Save Fax

Pressing the **S** key allows you to enter the SAVE FAX File Manager, whose commands are listed in the File Manager section of this manual.



**Fig. 4-12 Save FAX File Manager**

Type filename to save the FAX picture which is residing in picture retention buffer. Please see the File Manager section for an explanation of the File Manager commands.

## Color Processing

Here is a feature which everybody has been asking for, **Color Fax**. Now you can colorize the FAX pictures you receive before or after you save them to disk, either after you have saved the picture, or while it is still in the picture retention buffer.

To Color Process a FAX press the **C** key, either after loading a Fax file from disk or during a **DISPLAY FAX**. When the **C** key is pressed a small window will appear in the center of the Fax picture. This menu has functions that allow you change the colors in the Fax, by changing the individual shades of gray. Colors are manipulated by setting the RGB (Red, Green, Blue) levels. If you have a mouse, you can actually click on one of the 16 shades of gray in the picture itself, then press **C** and grab and slide the RGB levels. As you slide the RGB values the pixels of the chosen gray level will change. If you are using the keyboard, select one of the 16 colors using the numbers "0" through "9" and "A" through "F". Use the left and right arrow keys to select either R, G, or B. Use the up and down arrow keys to slide the RGB levels.

Once you get the colors set to where you like them, then press the **U** key. Pressing the **U** key only allows you to use the colors for the current session only. If you want to save them permanently, then use the **C CONFIGURATION** selection off of the Fax Main Menu. After you have colorized the picture the way you want it, then return to the Fax Main Menu, and use the **SAVE FAX** and the **INS** function to save your colorized fax to disk.

### **Delete**

Pressing the **D** key enters the Delete FAX File Manager, whose commands are listed in the File Manager section at the beginning of this section. Select a file to delete.

### **Rename**

Pressing the **R** key enters the Rename FAX File Manager, whose commands are listed in the File Manager section, which is at the very beginning of this section. Select a file to rename and then enter the new filename.

### **BINFO**

Pressing the **B** key displays the MFJ-1214PC FAX program information

### **Tab Display Fax**

Pressing the **TAB** enters the **DISPLAY FAX** mode, which displays the FAX picture which is residing in the picture retention buffer. After loading a FAX, the DISPLAY FAX mode is automatically entered. Press the **Esc** key to go return to the "Fax Main Menu. For a list of options at the display FAX mode, including zoom and set color palette, see "TAB VIEW PICTURE" in the "F5 CREATE COLOR FAX" section.



## G Global Display

Pressing the **G** key enters the **GLOBAL DISPLAY FAX** mode, which displays multiple FAX images on the screen at a time. Upon pressing **G**, you will be asked the path and wild card information for the FAX that you wish to display on the screen. The default information is what the Autosave function uses to save incoming FAX. The **GLOBAL DISPLAY FUNCTIONS** window will be displayed on the screen. This window appear as shown below:

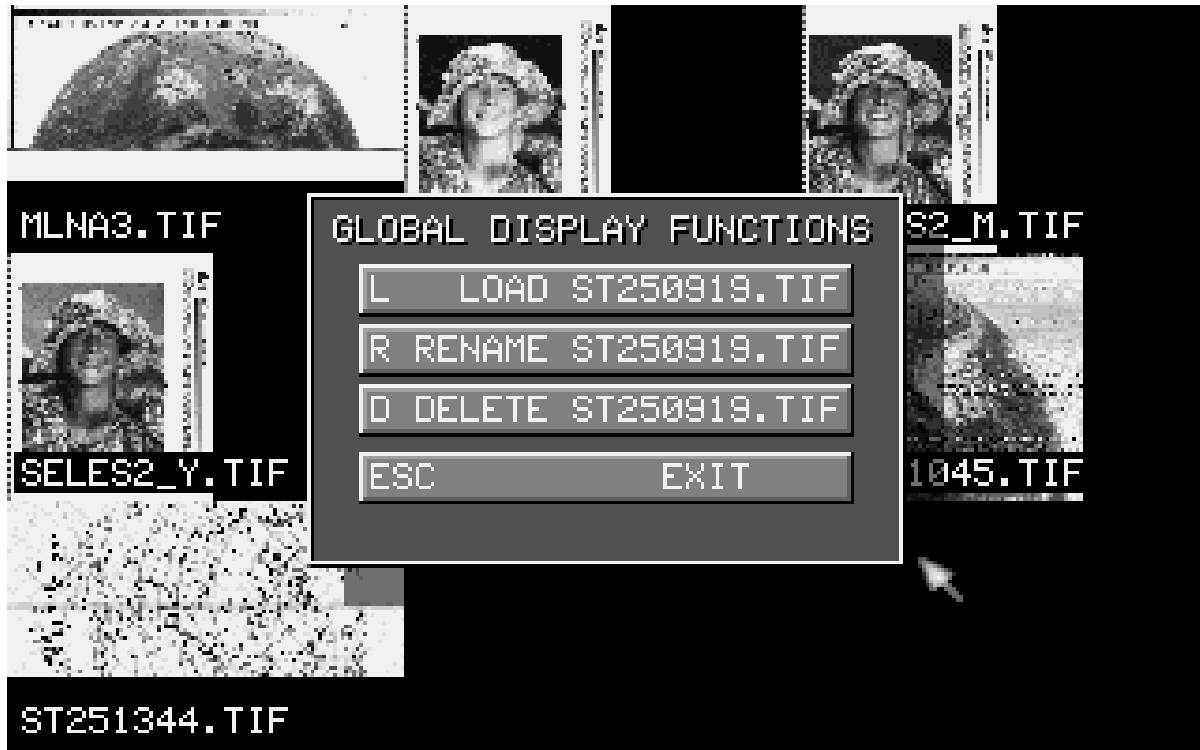


Fig. 4-13 Global Display Menu

Up to nine FAX can be displayed at one time. If there are more than nine FAX, press the **SPACE BAR** to view the next screen of FAX. This is an excellent feature if you set up the MFJ-1214PC to spool multiple pictures to disk. You can use this feature to "browse" over the pictures captured, to see which ones to keep or delete.

To load, rename, or delete a FAX, select a FAX by pressing the appropriate number key 1 through 9 or click on the FAX with a mouse. The FAX pictures are numbered from left to right, with number 1 being in the upper left corner of the screen. When the picture is selected the Global Display Functions window will appear in the center of the screen. Inside this window there are a few functions which we need to discuss, so here we GO!

### L LOAD

Pressing the **L** key will load the FAX picture which corresponds to the number you pressed. The Fax filename will be right to this

**FAX OPERATION**

function in the window. This would be used to look at the pictures you've captured, to see which to keep or delete.

**R RENAME**

Pressing the **R** key will let you to **Rename** the Fax picture, which corresponds to the number you pressed. When **R** is pressed, another window will appear. This is where you enter the filename of your choice, after using the **DEL** key to erase the original filename. After the filename is entered press the **ENTER** key.

**D DELETE**

This function will allow you to **DELETE** Fax files from disk. When the **D** key is pressed the file will be deleted immediately, and is unrecoverable, unless you have an UNDELETE utility program. So be very careful with this function.

**EXIT**

The **Esc** key serves three (3) functions here. First, when there are multiple pictures displayed, pressing it returns you back to the Fax Main Menu. Secondly, with multiple pictures displayed and the Global Display Functions menu on- screen it removes this menu from the screen. Lastly, if you choose load a Fax picture from the Global Display Functions menu, pressing **Esc** will take you back to the Global picture display.

**P Print Fax**

Pressing the **P** key enters the **PRINT FAX** Menu. Upon pressing **P**, the **PRINTER OPTIONS** menu will appear. From here there are four (4) selections, so why don't we explain these to now, and give you a little better understanding of controlling a printer. So AWAY WE GO!

**C PRINTER CONTROL**

This is probably the most important part of the **PRINTER OPTIONS** menu. This information has to do with your particular printer, about running graphics and text. This information can be found in your printer manual. Pressing the **C PRINTER CONTROL**, will take you to a menu so you can set the appropriate information. To load a printer driver with these values already set, press the **L LOAD PRINTER** selection. If your printer is not listed, try the ones listed to see if one is compatible with your printer. Otherwise, you will have to set the values below individually using your printer manual. These values are always given in your printer manual in Hexadecimal form.

**F1 PAGE INITIALIZATION SEQUENCE**

This sequence of numbers are sent only once before each **FAX** picture is printed. This sequence is always preceded by an **Esc** sequence first. This is basically telling the printer that this character is not to be printed. The best sequence to insert here

MFJ-1214PC Multimode  
**FAX OPERATION**

is for **UNI-DIRECTIONAL** type printing. This will way for the picture to be printed. A typical **Page Initialization** sequence for an 8 pin printer would be-- **0D**.

F2 GRAPHIC SEQUENCE

This sequence of numbers tells the printer what density to print FAX with. Here again this sequence is generally preceded by an ESCAPE code (1B). This basically tells the printer that this character is not to be printed. There is a **LO/HI byte** sequence, generally shown as **XL and XH** which describes the lengths of the graphics lines, which must be calculated. The program will calculate the LO/HI byte, then places them in the graphics sequence. Here is an example of a Graphic Sequence for an 8 Pin printer would like: **1B 2A 03 XL XH** , this may not work for your 8 Pin printer, so to be sure please your printer manual for more accurate information.

F3 LINEFEED SEQUENCE

This numeric sequence basically tells the printer how to move the paper after it has printed a line. The sequence always starts with an ESCAPE code (1B), and ends with a carriage return code. Here is an example of a Linefeed Sequence for an 8 Pin printer: **1B 4A 18 0D**

F4 PAGE END SEQUENCE

This hexadecimal number sequence is sent after the FAX is printed, usually a form feed. If the printer is set to **CR**, then a fixed linefeed (0A) must be used.

F5 WIDTH

This tells your printer how wide to make the picture. To find this number for a standard letter size page 8.5"x11", just multiply 8 inches times the number of dots per inch your printer can print. The dots-per-inch relates directly to the Graphics Mode being used. Take for instance an Epson 8 Pin wide carriage has four (4) different Graphics Modes, with printing densities of 60, 120, and 240 dots-per-inch. It has four modes, but modes 1 and 2 use the same density. If you use Mode 3 (240 dots-per-inch), with 8.5" paper, then the maximum number of dots which can be printed is 1920 or **8 x 240 = 1920**. The same mode used with 13" paper would yield 3264 dots. As you can see the dots-per-inch is related to paper size. This information can be found in the Graphics section of your printer manual.

F6 NEEDLES

This is the number of print head pins that are to be used. Certain 24 pin printers are controlled differently. So if the print on a 24 pin printer is inadequate, then try using the 8 pin mode. If you use the 8 pin mode on a 24 pin printer, then you will need to change the Graphics Sequence for 8 pin also. If you have a 9 pin printer, then use the 8 pin mode, which is standard for printing graphics on a 9 pin printer. For the HP Laserjet printers, use "1". This is because the data is issued horizontally.

F7 SCALE

This is the ratio of vertical dots to horizontal dots. Generally, the horizontal dot resolution is going to be greater than the vertical. For this reason you must use an offset, so your pictures are printed properly, or symmetrical. For example if you

are using a Horizontal resolution mode of 240 DPI, and a Vertical resolution mode of 72 DPI, then the **Vertical Scale** offset is calculated as **Scale = 72 / 240 or .30**

The scale, **.30** in our example, would be entered in the **F7 Scale** selection on the menu. This will allow your pictures to come out symmetrical or 1:1. Take look at the example below to see the differences in what the Scaling factor will do.

**PLACE THE .10, .30, .40 SCALING EXAMPLES HERE**

**Fig. 4-14           Scaling Examples**

DITHER

This is a method used to make grayscales on your printer. Try both dither and floyd to determine which method is best for your particular printer. Take a look at the example below to see what the differences are:

**Fig. 4-15           Dither Example**

FLOYD

This is a method used to make grayscales on your printer. Try both floyd and dither to determine which method is best for your particular printer. Take a look at the example below to see what the differences are:

PLACE THE **DITHER** and **FLOYD** EXAMPLES HERE

**Fig. 4-16           Floyd Example**

L LOAD PRINTER

This selects pre-configured printer for use. The available printers are:

<b>Printer Driver</b>	<b>Printer Type</b>
EPSON_24.FPR	Epson 24-pin
EPSON_8.FPR	Epson 8-pin
EPSWX_24.FPR	Epson Wide Carriage 24-pin
LJ_100.FPR	Laserjet 100 dots per inch
LJ_150.FPR	Laserjet 150 dots per inch
LJ_300.FPR	Laserjet 300 dots per inch
LJ_75.FPR	Laserjet 75 dots per inch
P7_COL24.FPR	Panasonic 24-pin
P7_COL_8.FPR	Panasonic 8-pin

STANDARD.FPR	Default printer driver for 24 pin printer
--------------	--

**Table 4-1          Printer Drivers**

S SAVE PRINTER

Once you have set the custom values for your printer, you can save them to a file so that you do not have to keep changing the values. You may want to name your Printer configuration file **STANDARD.FPR**. This way when you load the MFJ-1214PC software the printer configuration will load automatically. The printer configuration files end in **.FPR**. You can have as many printer configuration files as you want for any different printers you might have.

**FAX OPERATION**

T TEST

To test your printer with the current printer configuration, press T. The TEST function prints a gray-scale with a square at the end. The square must be symmetrical. If not, this means that the F7 Scale is not set properly. Also there may be some dot patterns near the end just before the square, these cannot look like they are trailing off. They must be in straight lines. If not, then the **Floyd or Dither** is wrong. Whatever setting you have should be changed to the opposite.

G GVT

This is for entering the grayscale values for your printer. Do not change these values unless you know what you are doing.

H HIST

This keeps a history or running record of all the FAX pictures that you have printed.

S PRINT SCREEN

Pressing the **S** key allows you to print the FAX picture which is residing in screen memory. If nothing is in screen memory, then nothing is printed.

F PRINT FILE

Pressing the **F** key allows you to print a file from disk. This will take you to the File Manager to select the file you wish to print. All you have to do is select the file to be printed, then the software does the rest. Make sure that you have the proper Printer Configuration file loaded.

EXIT

Pressing the **Esc** key allows you to exit the Print Options menu, and return to the Fax Main Menu.

## **C Configuration**

Pressing **C** enters the CONFIGURATION Menu. Upon pressing **C**, you can do the following:

**RECEIVER CONTROL STRING**

This is a special command to send to your receiver. Some receivers allow for a control string to be sent to set certain values. The default is no control string, so leave it this way unless you know what you are doing.

**BAUDRATE**

This is the baudrate or speed which the COM port that is connected to the 1214PC will operate. The default is 4800 baud, which is sufficient for efficient operations in all modes the MFJ-1214 is capable of performing. There is no need to go faster than 4800 baud, but some slower computers may need to lower this value to 2400, 1200, or 300.

### L LOAD

Press the **L** key to load a Fax Configuration file, which includes all of the changes that can be made at the Fax Main Menu. There can be as many of these files as you need, depending on the module, drum speed, timer settings, colors, etc.

### S SAVE

Press **S** to save the changes you have made at the SEND/RECEIVE FAX Menu. The default configuration filename is **STANDARD.FCG**, which loads automatically when the Fax Main Menu is loaded. All configuration filename must have a **.FCG** file extension on the end.

### EXIT

Pressing the **Esc** key exits back to the SEND/RECEIVE FAX Menu.

## **A Animate Fax**

Pressing the **A** key let's you enter the ANIMATE FAX Menu. The ANIMATE FAX Menu will appear as shown below:

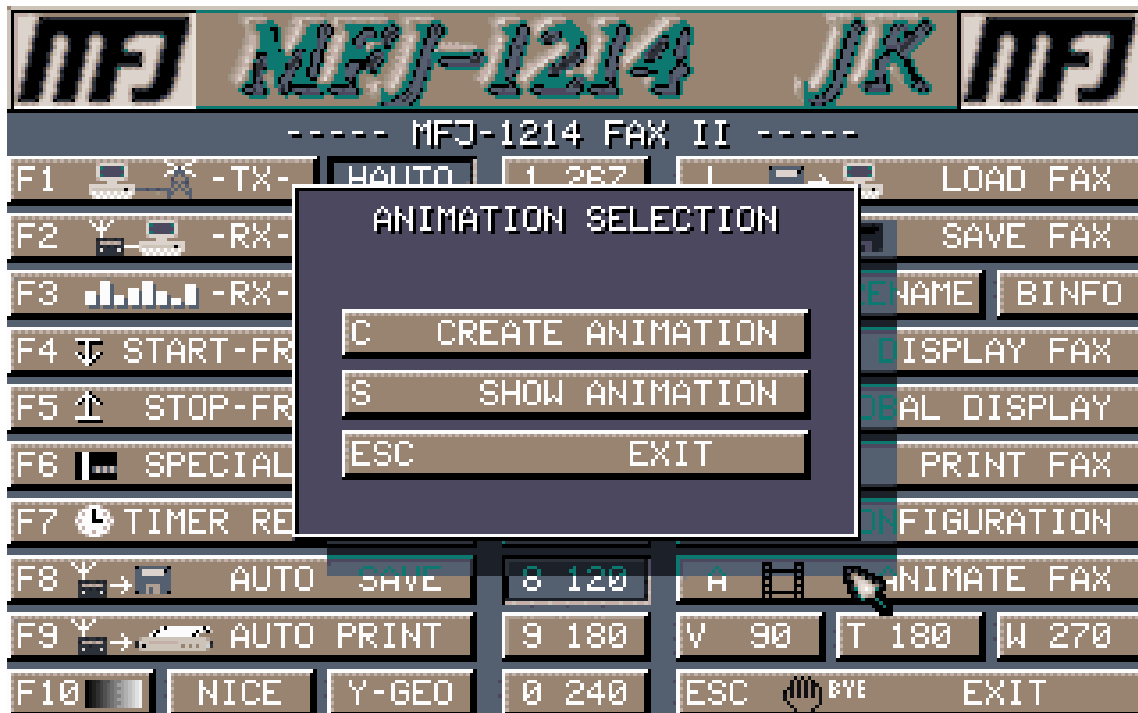


Fig. 4-17 Animation Selection Menu

Upon pressing the **A** key, you can do the following:

### **C CREATE ANIMATION \***

Pressing the **C** key allows you to create an animation. The Save Fax File Manager is loaded and you will be asked to name the animation file. Press the **INS** key, enter a new name or select an old name to re-create it. The default file extension is **.ANI**. Next you will be asked if you want to add a FAX to the animation. Select "YES" and load the FAX. Continue loading the FAX pictures in the animation in the same manner, as the first. Enter a "NO" when asked if you want to add a FAX to the animation when you are done. If help is needed on use of the **File Manager**, please see the section on the File Manager, in this manual.

\* Before creating an animation, an animation reference point needs to be set in all of the animation files. To do this, do the following:

1. Display the first animation file with "TAB DISPLAY FAX".
2. Set an extract size.
3. Press **P** to activate a cross-hair.
4. Move the cross-hair to the reference point.
5. Press **P** again to save the point.
6. Load the next animation file and press **G**.
7. Press **P** twice.
8. Continue steps 6 and 7 until all animation files are set.

### **S SHOW ANIMATION**

Press **S** to show an animation. A weather animation is provided called "METEOSAT.ANI". Select "METEOSAT.ANI" and watch as the clouds are put in motion as seen by a satellite orbiting the earth. This is identical to what you see on TV weather reports!

### **EXIT**

Pressing **Esc** exits back to the Fax Main Menu.

## **Picture Rotation**

The MFJ-1214PC software has a very unique feature which we refer to as PICTURE ROTATION. This feature is very useful in the case of received Satellite pictures. These type of pictures are normally received upside down. So, using the Picture Rotation function you can rotate the picture 180 degrees or right side up. Below is an explanation of the three (3) rotation processes.



**V 90**

Pressing the **V** key will allow you to rotate a Fax picture 90 degrees clockwise. Upon pressing the **V** key you enter the File Manager to select a FAX file to rotate. Using the File Manager functions, select the file to be rotated and press the ENTER key. The software will begin reading the file and rotate it. When finished the Fax Main Menu will appear.

**T 180**

Pressing the **T** key allows you to rotate a Fax picture. The **T** function works the same as the **V** functions, but rotates the picture 180 degrees.

**W 270**

Pressing the **W** key allows you to rotate a Fax picture. The **W** functions works the same as the other two **V and T**, accept it rotates the picture 270 degrees.

**Exit**

Pressing the **Esc** key returns you back to the Fax Main Menu.

## **Step-By-Step: How to Receive A Fax**

1. Load the 1214PC software.
2. After the program is loaded, press the **F2** function key to enter the Fax Main Menu.
3. Place the Mode Switch on the MFJ-1214PC to the **FAX** (pushed in) position. This switch is located on the front panel of the MFJ-1214PC. For older models, the switch is located on the rear panel.
4. Press the **F3** function key to enter the RX ADJUST Menu.

### **RX ADJUST PRELIMINARY**

In order to receive "good" Fax pictures with the MFJ-1214PC, the software must see all of the Fax data. To check this is very simple using the RX ADJUST bar graph. The MFJ-1214PC must be cabled up to the computer and the radio for this to work properly. Right now we are at the RX ADJUST bar graph, so please follow these next few steps:

- I. Tune the VFO dial on your radio until you find a transmission which sounds like a solid tone.
- II. Now watch the bar graph on your screen while tuning from one side of the signal to the other.
- III. You should be able to make each one of the bars on the graph rise and fall, just like a rolling wave. Each one must work, with no gaps at all. If not, the Fax pictures received will lack sharp resolution they should.

So if all is okay up to this point, then we can proceed to step 5.

5. Tune your receiver to a FAX signal. If you are unsure whether or not the signal being received is a FAX signal, check the Frequency Manager for a list of FAX frequencies.

**NOTE:** Remember that the frequency on the dial may vary up to about 3 KHz. For instance, on the Yaesu FT-747GX, the published carrier frequency of 10.865.0 MHz is received in USB with a dial frequency of approximately 10.863.2 MHz.

6. Refer to the "RX ADJUST-TUNING TO A FAX SIGNAL" in order to properly tune your receiver and the MFJ-1214PC bandwidth.
7. Once you have tuned using RX ADJUST, press **Esc**.
8. Press the **F2** function key to enter the RECEIVE FAX receive screen.

**FAX OPERATION**

9. Watch your screen and you'll see the FAX as it begins to display.
10. If the FAX is slanting right or left, press **+** to skew right or press **-** to skew left.
11. If you wish to save the Fax picture to disk as it is received then, press the **F8** function key to start saving the FAX. Note that none of the FAX will be saved UNTIL you press **F8**. Please refer to **AUTOSAVE** function in the **FAX** section
12. Press **F9** if you want to print the FAX. Please refer to the section on the **AUTOPRINT** feature
13. Press **E** to manually stop saving and printing the FAX. Note that if the stop frequency (end of FAX signal) for the FAX on the screen is received, the FAX will stop saving and printing automatically.

## **Step-By Step: How To Transmit A Fax**

1. Load the 1214PC software.
2. After the program is loaded, press the **F2** function key to enter the Fax Main Menu.
3. Place the Mode Switch to FAX (pushed in). This switch is located on the front panel of the MFJ-1214PC. On the older models, the switch is located on the rear panel.
4. Tune your receiver to the frequency you wish to transmit.
5. Turn the MFJ-1214PC bandwidth knob to the correct location. Use the 11 o'clock position for two level FAX. Use the 8 o'clock position for Multi-Level FAX. Please refer to **FAX RECEIVE** section for further information.
6. Press the **F1** function key to enter the **TRANSMIT FAX** Menu.
7. If you want to format your Fax picture before you transmit it, then press the **C** key, and proceed to step 8. If not, proceed to step 12.
8. Press **F1** and enter the text you want to appear at the top of the FAX.
9. Press **F2** and enter the text you want to appear at the bottom of the FAX
10. Press the **Esc** to return to the Fax Main Menu.
11. Press the **F1** function key to enter the **TRANSMIT FAX** Menu.
12. Press **F** to enter the **Transmit Fax** File Manager, and select a FAX file to transmit

**-or-**

Press the **S** key to transmit the FAX picture which is residing in screen memory.

## Frequency Manager

This section describes the operation of the Frequency Manager. We will explain how to look up a frequency among a list of the 920 frequencies provided. We will also show you how to save a frequency to the list. Finally, we will show how to print a selected group of frequencies from the frequency manager's list..

**PUT FREQ. MANAGER SCREEN HERE**

### **Fig 3-1                      Frequency Manager Menu**

Above is the Frequency Manager Menu. The frequencies are listed from left to right. Each station is listed with their frequency (in KHz), call sign, station, country, type, and modulation. However, each frequency listing also has an entry for parameters and comments. These two entries are not displayed with the listing on the screen. However, these can be viewed by pressing the **Enter** key while the a particular station is highlighted, providing the information has been entered for the station.

Use the **Up & Down Arrow Keys, PageUp, PageDown** to scroll through the listings. You can also use a mouse to scroll through the listing and highlight any particular station.

You can use the **Enter** key to view a station's parameters such as country, type of station, modulation, callsign, frequency, and station location. The screen which will appear is the STATION STATUS screen. Also you will see parameters like drum speed, transmission module, start and stop frequencies, etc. While viewing all of these parameters you have the option to go right to Fax receive. Notice in the example below the CR RECEIVE

option. Here is where you can press the **Enter** key to enter Fax receive mode. When Fax receive mode is entered in this manner, the parameters such as drum speed and module will be set into the software.

## **Frequency Manager Commands**

Within the Frequency Manager there are a few commands or functions which we need to talk about.

### **F1 New**

Pressing the **F1** key allows you to enter the NEW FREQUENCY editor. From here you can enter data for a new Fax frequency which you found. Once the **F1** key is pressed the **Enter** FREQUENCY menu will appear as shown below:

PLACE THE ENTER FREQUENCY MENU HERE

**Fig. 3-2          Enter Frequency Menu**

Upon pressing the **F1** key, you can enter station data in the following order:

F1 FREQUENCY (in KHz)

F2 CALLSIGN

F3 COUNTRY

This would be chosen from the pop-up menu of approximately 247 countries. Use the Up and Down arrow keys, **PgUp** and **PgDn** to scroll through the country listing to highlight the country. Press **Enter** to select.

F4 TYPE

This is chosen from a pop-up listing of 15 different station types. Here again use the Up and Down arrow keys, **PgUp** and **PgDn** to highlight the station type and press **Enter** to select.

F5 STATION

F6 MODULATION

You would select this from the pop-up listing of 17 modulation types. Use the Up and Down arrow keys, **PgUp**, and **PgDn** to highlight modulation type. Press the **Enter** key to select.

F7 PARAMETERS

To enter particular parameters for a frequency listing, you will need to press **F7**. Upon pressing **F7**, you can set the following parameters:

- F1 SPEED (48, 60, 90, 120, 180, 240)
- F2 MODULE (267, 288, 352, 576)
- F3 REVERSE (ON/OFF)
- F4 HORIZONTAL MIRROR (ON/OFF)
- F5 VERTICAL MIRROR (ON/OFF)
- F6 INVERSE PHASING (ON/OFF)
- F7 START FREQUENCY

The Start Frequency is the frequency the software uses to activate the AUTO functions. If not known you can find out what it is. To do this please refer to the FAX RECEIVE section of this manual. Generally, this frequency is 300 Hz.

F8 STOP FREQUENCY

The Stop Frequency is the frequency the software uses to deactivate the AUTO functions. If not known you can find out what it is. To do this please refer to the Fax Receive section of this manual. Generally this frequency is 450 Hz.

COMMENT

This section is just as it appears, COMMENTS. You can put any piece of information here up to 76 characters. This information can be saved via the **F3** SAVE FREQ.-LIST function. The comment line will appear at the bottom of the frequency listing. This will also appear STATION STATUS screen.

## **F2 Edit**

The Frequency Editor is entered once you press the **F2** key. This menu and all functions are the same as the Enter Frequency menu, but it is used to EDIT a particular station's data. Please refer to the **F1 NEW** section for further information.

### F3 Save Freq-List

This function is used to SAVE all of the Frequency Manager data.

### F4 Reduce Frequency List

Press the **F4** key to reduce the listings shown. You can limit the number of listings by a frequency range, a particular country, a particular type of station, and a particular modulation. Once you press the **F4** key the SHOW STATION CONDITIONS menu will appear as shown below:

PLACE STATION CONDITIONS MENU HERE

### **Fig. 3-3 Station Conditions Menu**

Upon pressing the **F4** key, you have the choice to enter the following listing limitations:

#### F1 LOW FREQUENCY & F2 HIGH FREQUENCY

The Low and High frequency values are used to limit the frequency range of the listing. You use the **Delete** key to erase the current values, then type in the new values, followed by pressing **Enter**.

#### F4 COUNTRY

If you want to limit the listing to a particular country, then use the **F4** key. When you press **F4** the countries list will pop-up. Using the Up and Down arrow keys highlight the desired country and press the **Enter** key.

#### F5 TYPE



This function will allow you to limit the listing to a particular type of station. When the **F5** key is pressed, the station types list will pop-up. Here again use the Up and Down arrow keys to highlight the station type desired, then press the **Enter** key.

F6 MODULATION

If you wish to limit the listing to a particular type of modulation, then use the **F5** function. When the **F5** key is pressed the modulation types list will pop-up . Just as in the previous two (2) functions, you can scroll through the modulation list and highlight the type desired. Press the **Enter** to accept the type highlighted.

CR REDUCE LIST

If you wish to reduce the list according to the changes made at the menu, then press the **Enter** key. If not, press the **Esc** key, then the list remains unchanged.

EXIT

Press **ESC** to exit the SHOW STATION CONDITIONS menu, and return to the frequency list.

**F5 Print Frequency List**

Press **F5** to go to the Print Frequency List Menu in order to print all of the frequencies defined by current limitations.

PLACE THE PRINT FREQ-LIST MENU HERE

**Fig. 3-4 Print Frequency List Menu**

Upon pressing **F5**, you can configure the Print Frequency list options by setting the following parameters:

F1 PRINTER (LPT1, LPT2, or LPT3)

Pressing the **F1** key allows you to set the parallel port for printing the frequency list. You have the ability to set the port to LPT1, 2, or 3 only. The port designation will change with each press of the **F1** key.

F2 PAGE LINES

Pressing the **F2** key allows you to set the number of printed lines per page. Use the **Delete** key to erase the current value, then type in your own. The default is 72 lines.

CR PRINT

Press the **Enter** key to print the list to parallel port and with the number of lines designated in the menu. At this time the list will be dumped to the printer for printing.

ESC EXIT

Pressing the **Esc** key will exit the print options menu and return to the frequency list.

DEL DELETE FREQUENCY

Press **Delete** to delete the station which is highlighted. The software will ask you if this is what you wish to do. Remember that once a station is deleted it is gone for good.

**Exit**

Press the **Esc** key to exit the Frequency Manager.

## MFJ-1214PC MAIN MENU

Now that you have installed the MFJ-1214PC software, you can start the MFJ-1214PC software with a couple of simple commands. Please enter the following commands from the DOS prompt of your computer:

```
CD \1214          <ENTER>
VT              <ENTER>
```

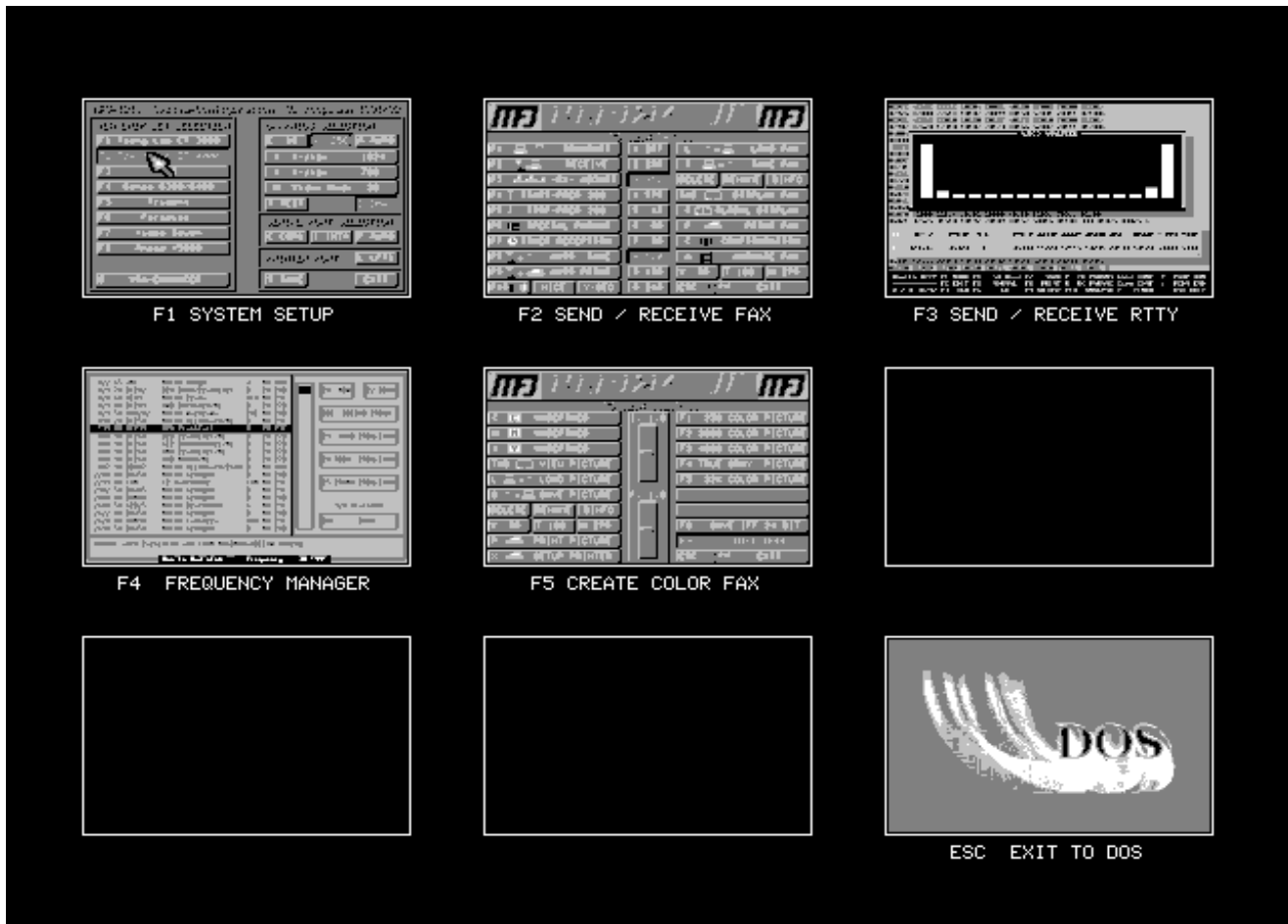


Fig. 2-1 VT Menu

This is the main menu for the MFJ-1214PC. From this menu, you can configure the MFJ-1214PC software, send or receive a FAX, run the frequency manager, operate RTTY/ASCII/CW, or combine the three color FAX extracts to make a color FAX. If you want to exit this menu and return to DOS, press **Esc**. You can also exit any menu by pressing **Esc**.

**BEFORE OPERATING ANY OF THE PROGRAMS, YOU MUST CONFIGURE YOUR SYSTEM. SEE "STEP BY STEP SYSTEM SETUP" ON THE NEXT PAGE.**

## STEP-BY-STEP SYSTEM SETUP

In order for your system to work correctly, the MFJ-1214PC needs to know what type of monitor, graphics card, COM port, and printer you have. This is the purpose of the System Setup section. You will need to know what kind of graphics your computer uses. It would be a good idea to have your monitor, graphics card, and printer manuals handy during this section, so you can refer to them during setup.

Choices can be made by the function keys and appropriate letters on the keyboard or by the left button of a mouse. Selections chosen appear to be "pushed in" or darker in color. If you want to exit this menu and return to the Main Menu press **Esc**.

The System Configuration is very important for FAX operation. An improper configuration will effect how the FAX pictures are displayed on the screen, or damage your computer monitor. So it is very important to configure the program correctly, in order to save a lot of PAIN and FRUSTRATION later. A VGA card is prerequisite whether you are going to run VGA or EGA. If you want to run EGA you need to setup the VGA card to emulate an EGA system. So without any more delay why not get into the System Configuration section.

Please read each instruction very carefully.

To enter the system setup menu press **F1**. The following screen will appear on you monitor.

MFJ-1214 System-Configuration J. Koopmann 1991/92

VGA CHIP SET SELECTION	GRAPHICS SELECTION
F1 Tseng Lab ET 3000	E 16   V 256   A AUTO
F2 Tseng Lab ET 4000	X X-size: 640
F3 ATI	Y Y-size: 350
F4 Genoa 6300/6400	M Video Mode: 10
F5 Trident	T TEST   D DMA
F6 Paradise	SERIAL PORT SELECTION
F7 Video Seven	C COM2   I INT3   F AUTO
F8 Ahead V5000	PRINTER PORT   L LPT1
E VGA-ENHANCER	S SAVE   EXIT

Configuration Screen

## Graphics Configuration

If you have a STANDARD VGA (default configuration), you can skip to the next section, Serial Port Selection. If your graphics system supports better than 640x480 graphics in 16 colors you should configure the 1214PC software to the best possible resolution. **ENTERING A VIDEO MODE THAT IS INCORRECT CAN RESULT IN DAMAGE TO YOUR MONITOR.**

### M Video Mode

Pressing **M** while at the System Setup menu, refer to Fig 2-2, allows you to select the video mode, which tells your graphics card what the screen should look like. Most graphics cards can show or emulate several different video modes, ranging from the best graphics your the card can handle to just plain old monochrome.

Using the Table 2-1 or 2-2, find the Video Mode number which corresponds to the Video resolution your system is running. If you do not know this number off hand, look at the specifications for the video graphics card in it's manual. Find out the resolution and number of colors. This number should be a HEXADECIMAL number (i.e. **12, 2A, 3E, 5E, 7C**, etc.). You might need to convert this number from your graphics card manual to a HEXADECIMAL number. The difference between normal (decimal) numbers and hexadecimal numbers is that hexadecimal numbers contain 16 different numbers (0-9 and A-F) while decimal numbers only 10 different numbers (0-9). A decimal to hexadecimal number conversion is available in the **APPENDIX** of this instruction manual. Below is a list of some of the most commonly used Video modes.

Video Format	Video Mode	Resolution	Gray Scales and Colors
<b>EGA</b>	<b>0E</b>	640x200	16 gray scales
	<b>10</b>	640x350	16 gray scales
<b>STANDARD VGA</b>	<b>12 25 73</b>	640x480	16 gray scales
	<b>13</b>	320x200	16 gray scales and 256 colors
<b>SUPER VGA</b>	<b>7C</b>	512x512	16 gray scales
	<b>27 59</b>	720x512	16 gray scales
	<b>2A 5A</b>	800x588	16 gray scales
	<b>29 79</b>	800x600	16 gray scales
	<b>7D</b>	512x512	16 gray scales & 256 colors
	<b>2D 5B</b>	640x350	16 gray scales & 256 colors
	<b>42</b>	640x400	16 gray scales & 256 colors
	<b>2E 43 5C</b>	640x480	16 gray scales & 256 colors
	<b>2F 5D</b>	720x512	16 gray scales & 256 colors

	<b>44</b>	720x540	16 gray scales & 256 colors
	<b>30 45 5E 62 6C</b>	800x600	16 gray scales & 256 colors
	<b>38</b>	1024x768	16 gray scales & 256 colors

**Table 2-1 Video Modes**

So if you were going to setup a Tseng Labs 4000 graphics card on a resolution of 1024x768 with 256 colors, you would use **38** as your VIDEO MODE setting.

Press the **Delete** key twice to delete the current value. All of the numbers which were in the box should be eliminated. Type the proper Video Mode value in at the cursor prompt, on the M VIDEO MODE bar.

If you have a VGA graphics card with 256K of memory, the best VGA graphic modes you can show are 640x480 with 16 colors or 320x200 with 256 colors. The more memory available on the VGA graphics card the higher resolution you will be able run, thus your FAX pictures will be sharper and have more clarity.

**X-Size (Picture Width)**

When you are talking about picture resolution, you are talking of the sharpness and clarity of the picture. The resolution is broken up into three (3) parts, WIDTH X size, HEIGHT Y size, and COLORS or GRAY SCALE. The width or X size is always the first number and is the largest of the three values. The X size or WIDTH refers to the picture WIDTH resolution in pixels. The format for resolution is as follows:

WIDTH \* HEIGHT \* COLORS

Pressing **X** while at the System Setup screen, refer to Fig 2-2, will allow you to enter the picture width. This number is in reference to screen width resolution (in number of pixels) that corresponds to the graphics mode you just chose. For instance if you are running your system with a 1024x768x256 resolution, then the X size or width is 1024. In order to change the screen width follow the steps below:

- A. Verify that you are still at the **F1 SETUP** screen.
- B. Once you are at the **F1 SETUP** screen, then press the **X** key. You will notice when the **X** key is pressed the cursor will show up on the first digit of the current width value.
- C. Press the **Delete** key three times. Verify that all of the numbers are eliminated.
- D. Type in the X SIZE value in accordance to the resolution you want to run, then press the **Enter** key to tell the program to adopt the setting.

**Y-Size (Picture Height)**

**SYSTEM SETUP**

Here we will talk about the second part of the picture resolution, PICTURE HEIGHT or Y SIZE. The Y value determines height resolution in pixels. Pressing **Y** while at the configuration screen, refer to Fig 2-2, will allow you to enter the picture height. This number is in reference to screen height resolution (in number of pixels) that corresponds to the graphics mode which you wish to run. As in our earlier example for running an 1024x768x256 resolution, then the screen HEIGHT would be 768. In order to change the PICTURE HEIGHT part of the screen resolution please follow the steps below:

- A. Verify that you still have the **F1 SETUP** screen selected.
- B. Press the **Y** key and you will notice the cursor appear on the first digit of the current setting.
- C. Press **Delete** three (3) times and verify that all numbers in the current setting are eliminated.
- D. Type in the setting for SCREEN HEIGHT for the resolution you wish to run, then press **Enter** to tell the program to adopt the setting.

**E - EGA or V - VGA**

This function determines whether or not the system runs EGA or VGA. Note that EGA does not necessarily mean that you have an EGA system, since a VGA can emulate an EGA. This choice corresponds to the graphics mode, X size, and Y size. So for the example, you selected mode **5C** for 640x480x256, which is a Super VGA setting, you would select **V** for VGA. You have two EGA modes available for FAX that both have an X-Size of 640. There are two (2) VGA modes available, one of which has an X-Size of 640. So you can run either VGA or EGA just by changing the Y-Size number and the **E** or **V** setting.

Press **E** or **V** to select the video mode which corresponds to the resolution you chose.

**SuperVGA Chip Set Selection**

Some VGA cards have the capability to show 256 colors at a better resolution than a standard VGA (320x200x256 or 640x480x16). This type of VGA is called **Super VGA**. However, there is no standard for a Super VGA. If you do indeed have a Super VGA, you will need to select a VGA chipset driver that is compatible with your graphics card. **F1** through **F8** chooses either **Tseng Labs 3000, Tseng Labs 4000, ATI, Genoa 6300/6400, Trident, Paradise, Video Seven, or Ahead V5000**. These are the only chip sets which are supported by the software. If you do not know what type of chipset your Super VGA uses, check your graphics card owners manual. If you still cannot find the chipset your SUPER VGA uses, you have two choices:

1. Call the company who manufactures the video card which you have.
2. Check the instruction manual which came with your computer or graphics card. Note that if you do not have a Video Seven graphics card and you try the Video



Seven chipset driver, the screen will sometimes go blank. To correct this, simply reboot and select another chip set.

**F1-F8** select the VGA chip set which is installed in your computer. If the correct chip set is not selected the other modes will run fine, but FAX will not work properly. You can tell if the chip set selected is correct by looking at the **T TEST PATTERN**. Below are two (2) test pattern examples. One is where the chip set is wrong and everything else is correct. The other is where everything is set properly.

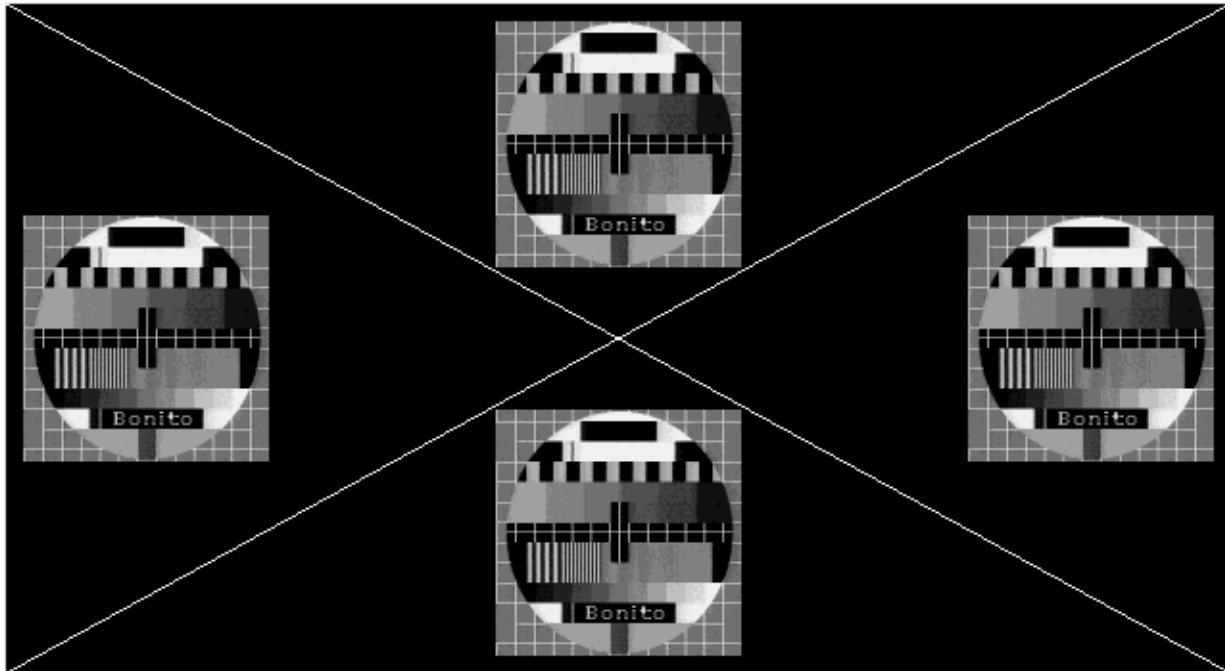
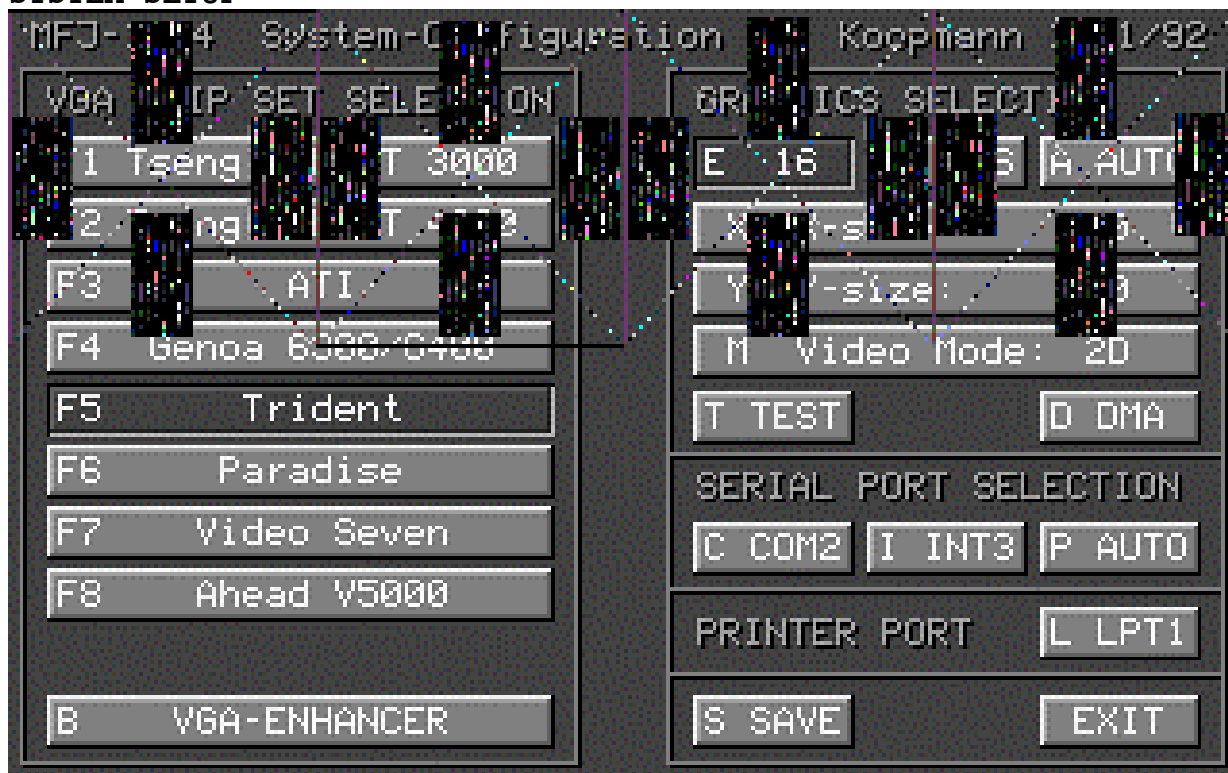


Fig 2-3 Good Chip Set Selected



**Fig 2-4 Bad Chip Set Selected**

So you can see in the two (2) examples above that the proper VGA Chip Set is essential for graphics operation.

Card Type	Resolution	Video Mode
Trident	800x600x256	5E
	320x200x256	13
Tseng Labs 4000	1024x768x256	38
	800x600x256	30
	640x480x256	2E
	640x350x256	2D
	320x200x256	13
Tseng Labs 3000	800x600x256	30
	640x480x256	2E
	320x200x256	13

**Table 2-2 Graphics Modes for Specific Chipsets**

Table 2-2 is a list of video modes for a specific graphics card. These may not work in every case. If you have problems you should contact your graphics card manufacturer.

**T TEST**

This tests the graphics mode settings. If all of the settings are correct, a good test pattern will appear. Refer back to Fig. 2-3 to see a correct test pattern. The TEST PATTERN must

**SYSTEM SETUP**

be exactly as shown, they cannot be just "half right", they must be exact. If not correct, the MFJ-1214PC program will not work properly. If one of the test patterns do not appear, go back to and re-configure your graphics.

**A AUTO**

The AUTO video configuration mode is used to automatically configure the software, according to the hardware installed. This may not always configure the system to the "highest" resolution available. This is because some systems do not store the video information in the system BIOS. If your system does store this information, pressing the **A** key will step through the best graphic configurations available. With every press of the **A** key you should go back and check for the proper TEST PATTERN.

**NOTE:** DO NOT GO beyond this point if configuration did not function properly! The configuration must work correctly before moving on!!

## Serial Port Selection

### C COM1-4

Pressing **C** while in the System Setup screen allows you to step through the choices for the COMport that the MFJ-1214PC is connected to. The choices are 1 through 4. This might be marked on the computer near the port the MFJ-1214PC is connected to. Note that if this is set to the same COMport a mouse is connected to, the mouse will not work. If you are not sure what port it is, try COM1 first and later, if that doesn't work, try COM2 and so on.

### I INT 3-4

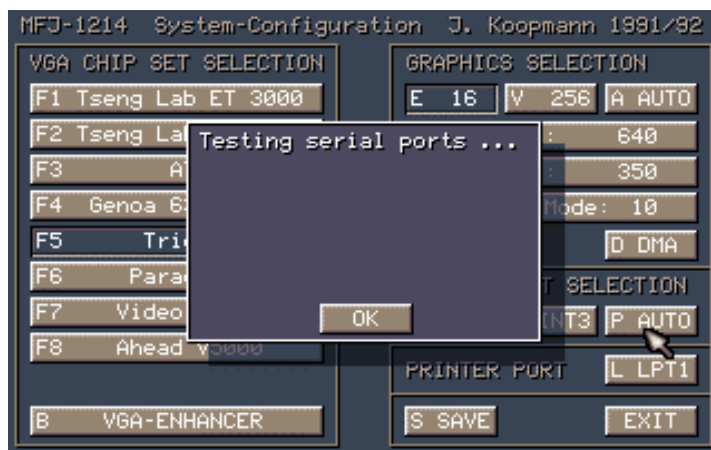
Pressing **I** while in the System Setup screen allows you to select the proper interrupt for the above chosen COMport. The choices are 3 or 4. A list of interrupts as they pertain to the COMport are listed below.

COM #	INTERRUPT
COM1	4
COM2	3
COM3	3 or 4
COM4	3 or 4

The interrupt must be correct in order for the MFJ-1214PC software to work properly. If not, then the MFJ-1214PC will not talk to the computer properly.

### P - AUTO

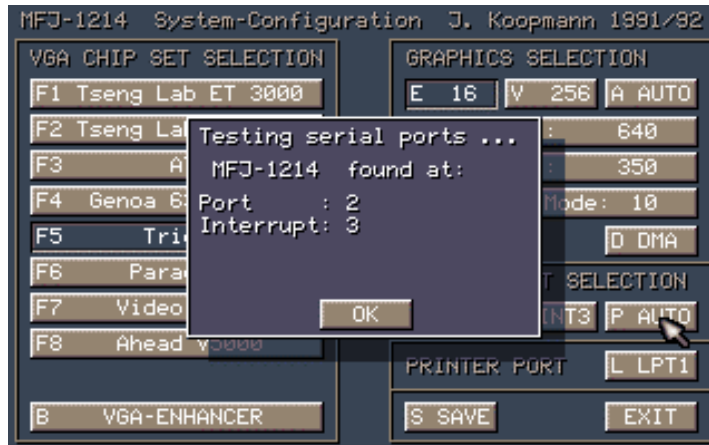
Pressing **P** will automatically sense the COM port if you are not sure which COM port the MFJ-1214 is connected to. For this automatic process to work, you must connect (mic audio) J1 pin 1 to (received audio) J1 pin 4, then press **P**. If not, then the automatic port analyzer will not work. When the **P** key is pressed the software will scan all available COMports, then reply with the following window:



**Fig. 2-5 Testing Serial Ports**

When the window in Fig. 2-5 appears you can tell the software to implement the COMport change immediately after analysis, by pressing the **O** key. Do this as soon as the window appears on the screen. However, you can wait for the software to finish it's analysis. If so,

then the following window will appear:

**SYSTEM SETUP****Fig. 2-6 Serial Port Test Complete**

The above window is where the COMport and interrupt will be after the analysis is finished. Where **n** is the COMport number, and **x** is the interrupt to be used. To tell the software to accept the analysis press the **O** key. When the **O** is pressed the window will disappear and

the COMport and interrupt are changed to reflect the software analysis.

Press the **RETURN** key and everything will remain unchanged.

## Printer Port Selection

### L - LPT 1-3

Pressing the **L** key while in the setup screen allows you to select the parallel port for connecting a printer to the computer. The choices are 1, 2, or 3. This might be listed at the back of your computer near the port your printer connects to. The gender for the parallel port is opposite of a serial port. If you are not sure what port it is, try LPT1. If you do not have a printer, omit this step.

Press **L** until the correct LPT port that your printer is connected to is shown (usually LPT1).

## Remaining Options

### B - VGA Enhancer

The VGA Enhancer is designed specifically for the 4096 Color VGA Enhancer Module which must be **physically wired** to your VGA graphics card. This module does not come on a standard VGA card. If you are unsure about whether or not you have this module then just leave the VGA ENHANCER de-activated.

### D - DMA

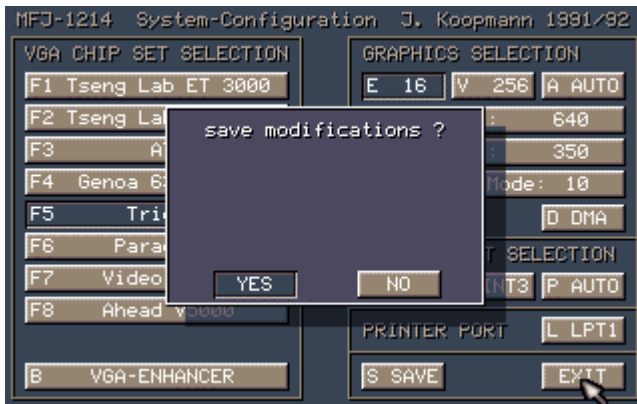
Pressing **D** enables the DMA (Direct Memory Access) option. If your computer supports DMA, choose this option to speed up the MFJ-1214PC program. If you are unsure whether or not your computer supports DMA, consult your computer dealer.

### S - Save

Pressing the S key allows you to save the System Setup which you just made in previous steps. Obviously, you will want to make sure the System Setup is correct by checking the Test pattern before saving. The Test Pattern must look like one of the examples as shown earlier in this instruction. Otherwise, the MFJ-1214PC program will not work properly.

### Exit

Pressing the **Esc** key allows you to exit System Setup. If you forget to save your changes before you press **Esc**, a small window will pop up asking if you wish to save the setup. The window will appear as below:



**Fig. 2-8 Save Modifications Menu**

If you wish to save the System Setup, then press the Y key. If not, then press the N key. The System Setup menu will remain on the screen and the System Setup will remain as it was before changed. After exiting the System Setup the software will return to the main menu or VT screen.

### Quick Screen Redraw

Notice how when calling up the main menu or the VT screen, how the menu is "painted" to the screen. Well this can be avoided by going back to DOS by pressing the **Esc** key. Then from the DOS prompt type the following statement:

**COPY MODE.DAT MENU.DAT** then press the **Enter** key.

When this is done the main menu becomes slightly smaller, but the speed at which it is put to the screen is faster. This same thing will hold true for all of the other menus throughout the program. They will let's say pop-up on the screen instead of being painted.

Once again, before leaving the System Setup menu, please make sure that your video configuration is correct by pressing T for a video test pattern similar to one on the previous page.

Also, note that your COM/INT and LPT ports may not be correct even if the test pattern is correct, but you can change them later if errors occur. (These are often selected on a trial and

**SYSTEM SETUP**

error basis, so don't be upset if you did not guess them right at first--just try again.)