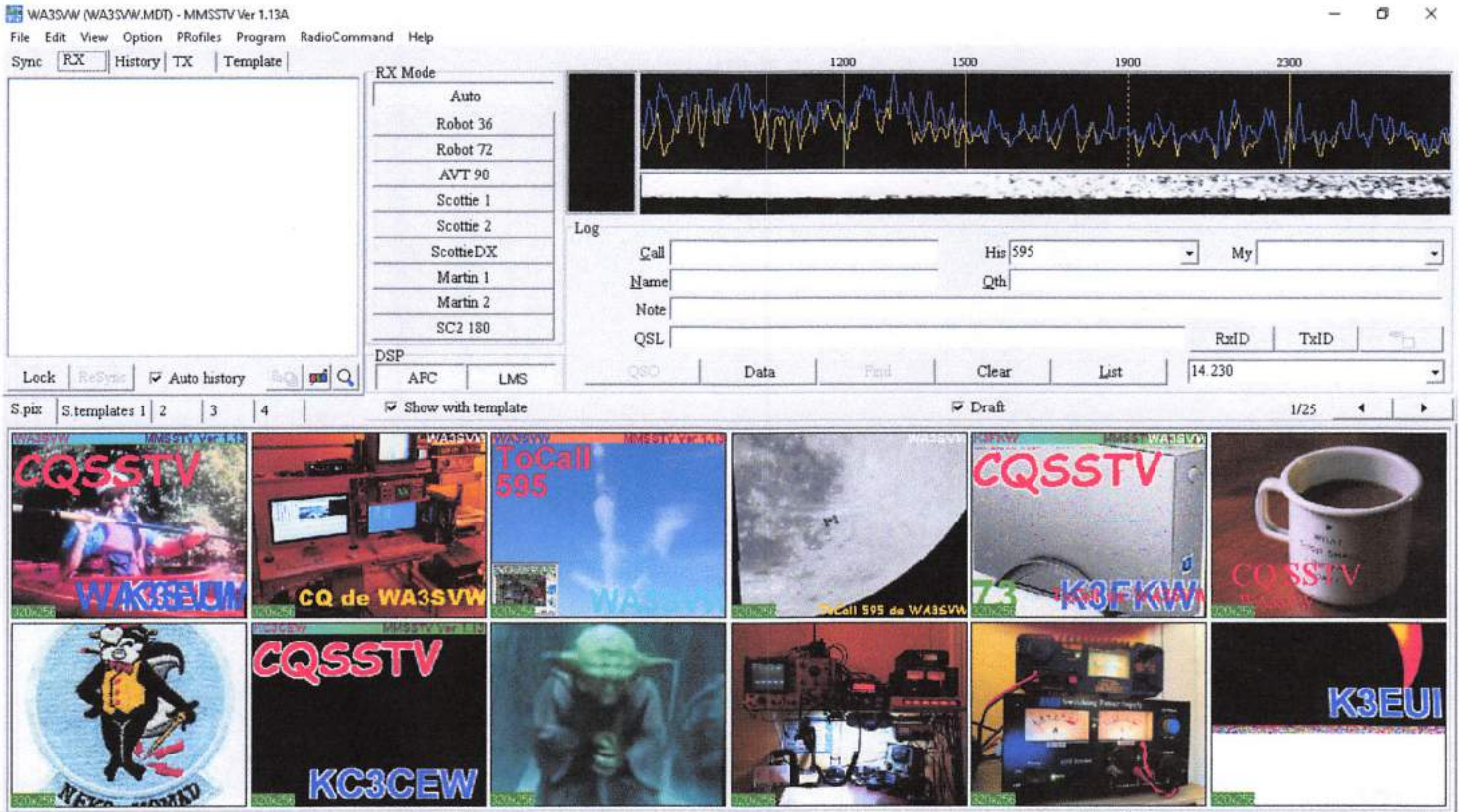


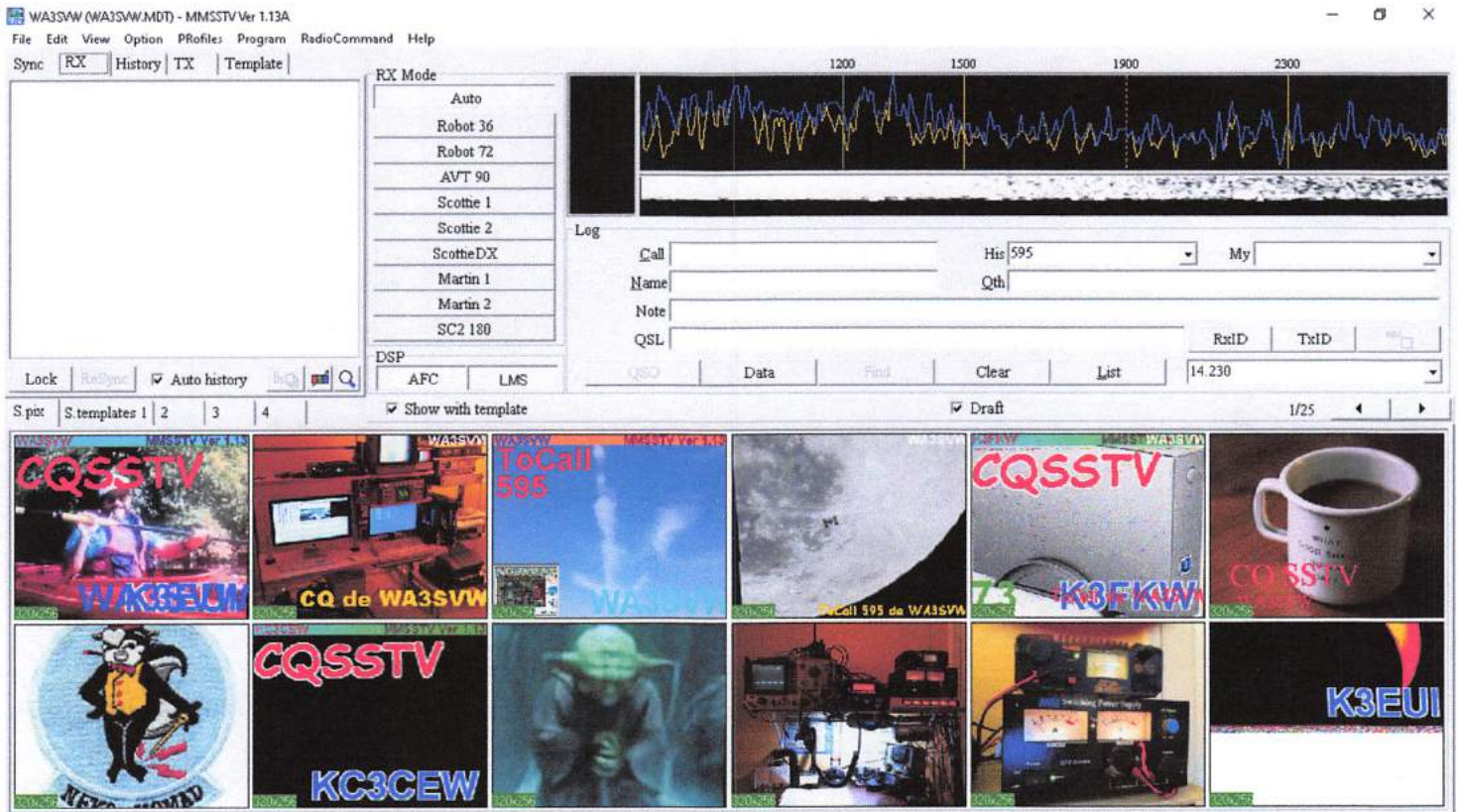
# MMSSTV PRIMER 2021



G. Mirkin  
WA3SVW  
October, 2021

## Introduction:

MMSSTV is an application that transmits photo images (jpg, bmp, png) over the ham radio bands, via a sound card configuration. This document is intended to cover the *basic* setup, and configuration of the program, and sound card interface.



## Tour Of The Main Screen:

The Main Screen contains all of the control access that is necessary for image transmission. Starting with the upper left quadrant (refer to MMSSTV Main Screen Layout separate sheet, for labels). As in all Windows programs, there is a series of drop down menus, beginning with **File**, and ending with **Help**. Below them, are the Selector Tabs for the Main Image Screen functions. The most useful of these, are the RX (Receive), and TX (Transmit) tabs, that allow you to view either your received images, as they are transmitted by the originating station, or to view the image you have selected for your transmission. The large White Rectangle is, of course, the



Main Image Screen. All transmitted and Received images can be viewed on this screen, with, or without, your template on transmitted pictures. On the lower right corner of the Main Image Screen are the Picture Adjustment & Image Viewer Icons, for viewing, and editing pictures.

Just to the Right of the Main Image Screen are the RX/TX Mode selectors. The sample screen has "Auto" selected, as the chosen mode.

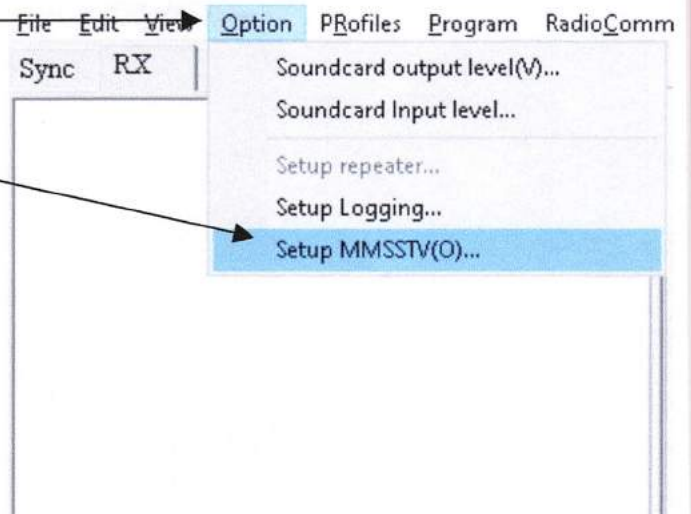
The Upper Right two thirds of the Main Screen Layout, is taken up by the Signal Waveform display, and under it, the Waterfall display. These function in both Receive & Transmit modes.

On the Left side, below the Main Image Screen, are the Picture/Template Image Viewer selection tabs, for the stored images, below the top half of the screen (in sets of 12). Above the stored image/templates, on the Right, is the Page Selector (Showing 1 of 25).

### Setting Up Your Sound Card:

The first thing that needs to be done, as in most digital types of sound applications, is making sure the program can "see", and access the Sound Card, associated with transmitting the desired signals. To setup your sound card:

1. Select **Options** from the **Main Menu** dropdowns.
2. Go to the bottom of the drop down screen
3. Select **Setup MMSSTV**
4. (See Next Page) On the **RX** tab, copy settings\*
5. Switch to **TX** tab, copy settings
6. Switch to **Misc** tab. Setup In/Out For **Your** Soundcard
7. Copy other **Misc.** parameters to your screen.



**Note:**

When setting up soundcard in step 6, above, make sure the settings are compatible with *your specific* card.

\* See Page 4

Setup MMSSTV

**RX** | TX | Misc

Demodulating method  
 PLL  Hilbert T.F.  
 Zero crossing

PLL  
 VCO Gain

LoopLPF (IIR)  
 Order  f  
 FC  Hz

OutputLPF (IIR)  
 Order  f  
 FC  Hz

Differentiator

Level converter  
 Polynomial  
 Offset   
 1500Hz   
 2300Hz   
 Calibration

Auto start  
 VIS only  
 VIS or Sync

Squelch level  
 Lowest  Higher  
 Lower  Highest

RxBPF  
 OFF  
 Broad  
 Sharp  
 Very sharp

Auto stop  
 Auto restart  
 Auto resync  
 Auto slant  
 Decode FSKID

Rx buffer  
 NONE  FILE  
 RAM

OK Cancel

Receive Tab

Setup MMSSTV

RX | **TX** | Misc

PTT  
 Port   
 Exclusive lock  
 RTS while Scan  
 Radio command

Digital output level  
 Vari SSTV

Template  
 Callsign

VOX tone  
 Standard  NONE  
 User defined

TxBPF/TxLPF  
 Tx BPF Tap  f  
 Tx LPF Freq  Hz

Loop back  
 OFF  
 Internal  
 External (full-duplex)

Fixed mode  
 Encode FSKID

Tune button  
 Freq  Hz  
 Time length  s  
 Auto TX (for SAT/UHF)

CWID  
 OFF  CW  MMV  Hz  
 Slow  Fast  
 Macro

OK Cancel

Transmit Tab

Setup MMSSTV

RX | TX | **Misc**

Sound Card  
 In   
 Out

FIFO  
 RX  TX

Priority  
 Normal  Highest  
 Higher  Critical

Source  
 Mono  Right  
 Left

Clock  
 Hz Adj  
 Tx offset  Hz

WaterFall  
 L  H

History max.

JPEG  
 Quality  %

Save window location  
 Always use DIB

System Font  
 Window  Size   
 Japanese  English  Other

FFT  
 Background   
 Signals   
 Trails   
 Sync marker   
 Freq marker

Priority of MMSSTV  
 Normal  Higher

OK Cancel

Misc Tab



**Receiving Images:**

Once your soundcard is properly setup, and your radio is on, and tuned to the receive frequency, you should see activity (movement & waveforms) on the Waveform & Waterfall. If you are listening on an HF frequency (ie 14.230 MHz, on 20 meters), make sure your radio is in SSB (Upper Side Band) on any HF “watering hole” you choose, even in the low HF bands (160, 80m, 40m). If you are listening on a 2m repeater, then your radio, of course, needs to be in FM mode, on the proper receive frequency, for that particular repeater. If you are looking for images from the ISS, your receive frequency should be 145.800 MHz, unless otherwise advised.

Since there are several MMSSTV modes, the best practice is to select **Auto**, from the **RX Mode** selection buttons, on the MMSSTV **Main Screen**. The program automatically switches to the matching mode chosen by the transmitting station (similar to FLDIGI Rx/Tx ID function).

To view an image, as it is received, make sure you are in the RX mode of the **Image Screen Selectors**. If you have **Auto History** checked, at the bottom of the **Main Image Screen**, MMSSTV automatically saves all received images to a Directory called **History** in the MMSSTV folder, on you PC. My MMSSTV program is installed on **C:\Ham\MMSSTV**, with the **History** (and other folders) under that. You can “scroll” through you’re history of received images, by choosing History, on the Main Image Screen selection tabs, and using the Right & Left arrows, on the bottom left:



History Selected

History Scroll Arrows

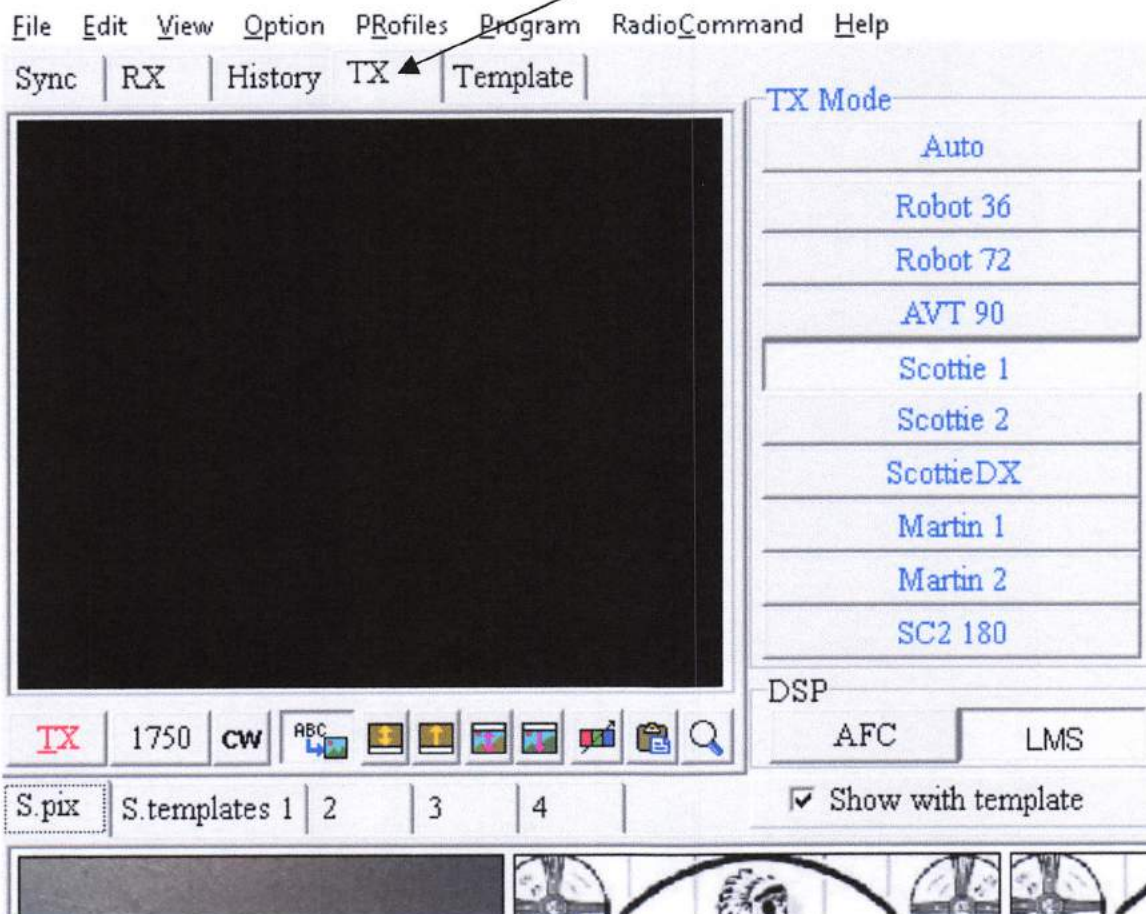
### Loading An Image For Transmission:

Going from receiving to transmitting images requires a little more preparation, and understanding, of the MMSSTV program. It's not all that complicated, but a good grasp of the file requirements, and other parameters are helpful.

Let's, first, discuss picture file requirements. MMSSTV can, easily, deal with bmp (bit map), jpg (Joint Photographic Expert Group – jpeg), and wmf (Windows Metafile Format). The images should not be larger than 320 x 256 pixels in size, a value that affords decent picture quality, while keeping transmit times to a reasonable level (especially if you are sending images on a repeater system, to avoid "time out". Larger images can be sent, however, transmit time becomes a factor, and usually is reserved for Simplex transmissions. If you have images that are larger than 320 x 256 pixels, you can use a picture editing application, like MS Paint, or other free software, at your disposal that can convert images to other sizes (in pixels), or can import other image formats, and convert then into one of the three aforementioned file types.

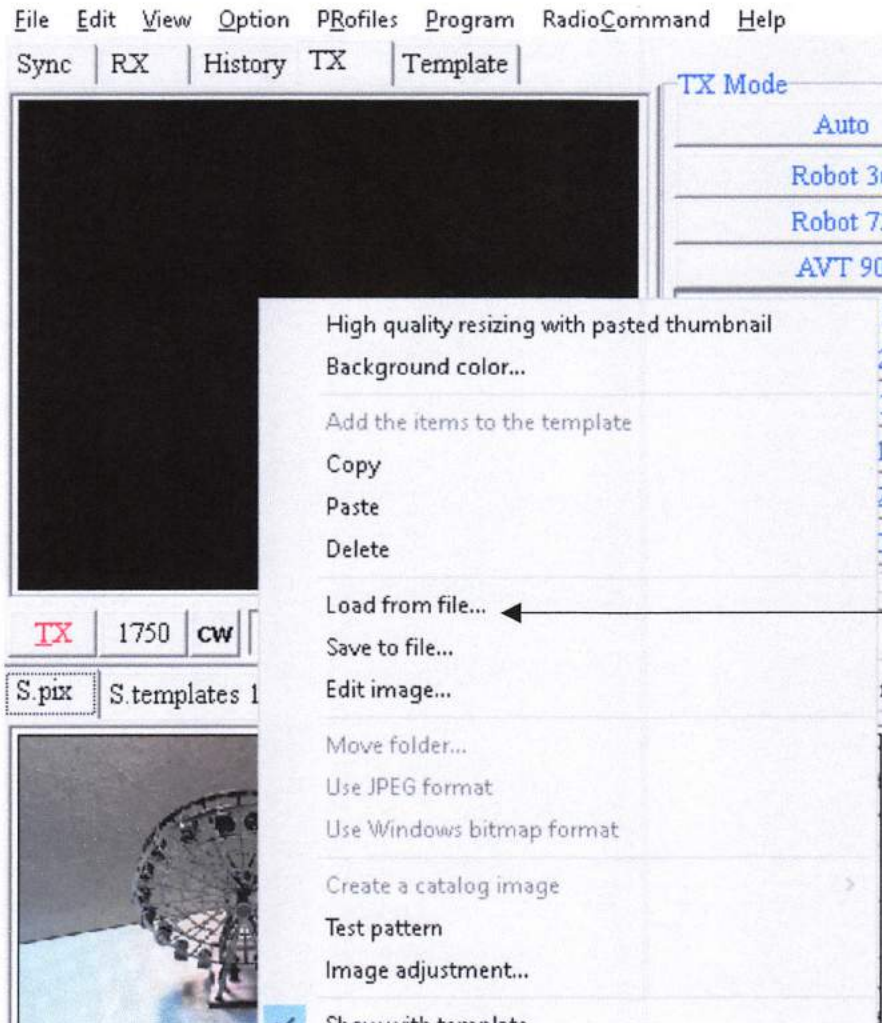
That said, let's bring our **First** image into the program for transmission. Images can be loaded into two locations. One is the **TX** screen selection of the **Main Image Screen**:

#### Main Image Screen w/ TX (Transmit) Selected

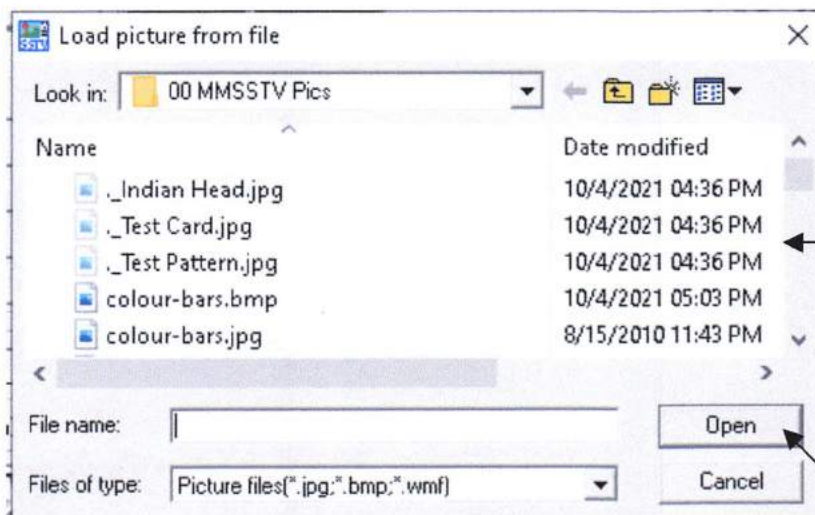




**Right Click** in the **Black Area**, on the **Main Image Screen** (TX tab selected):



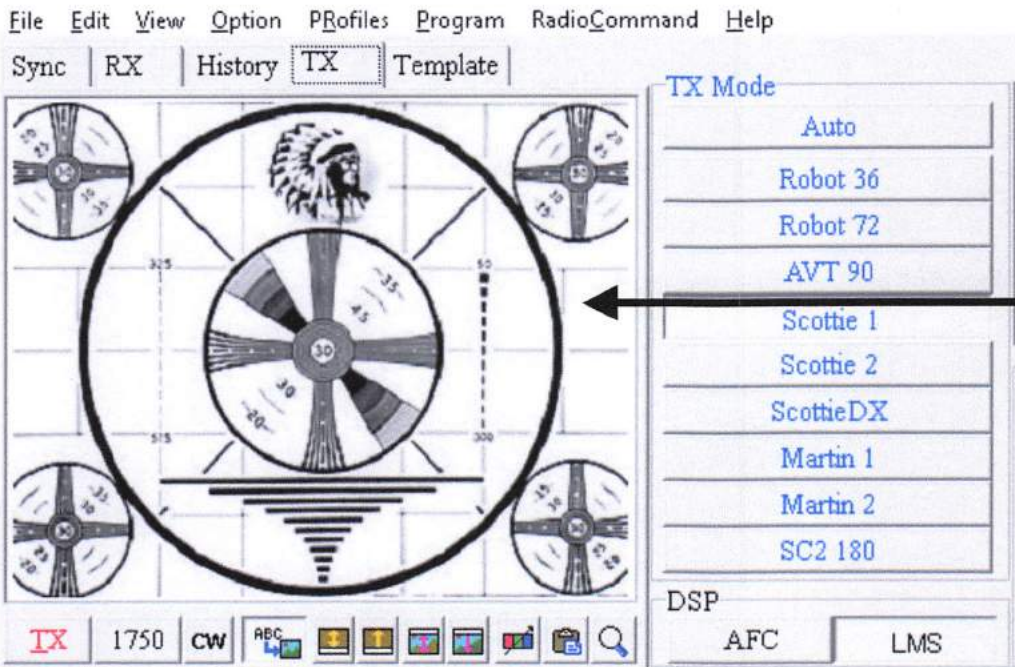
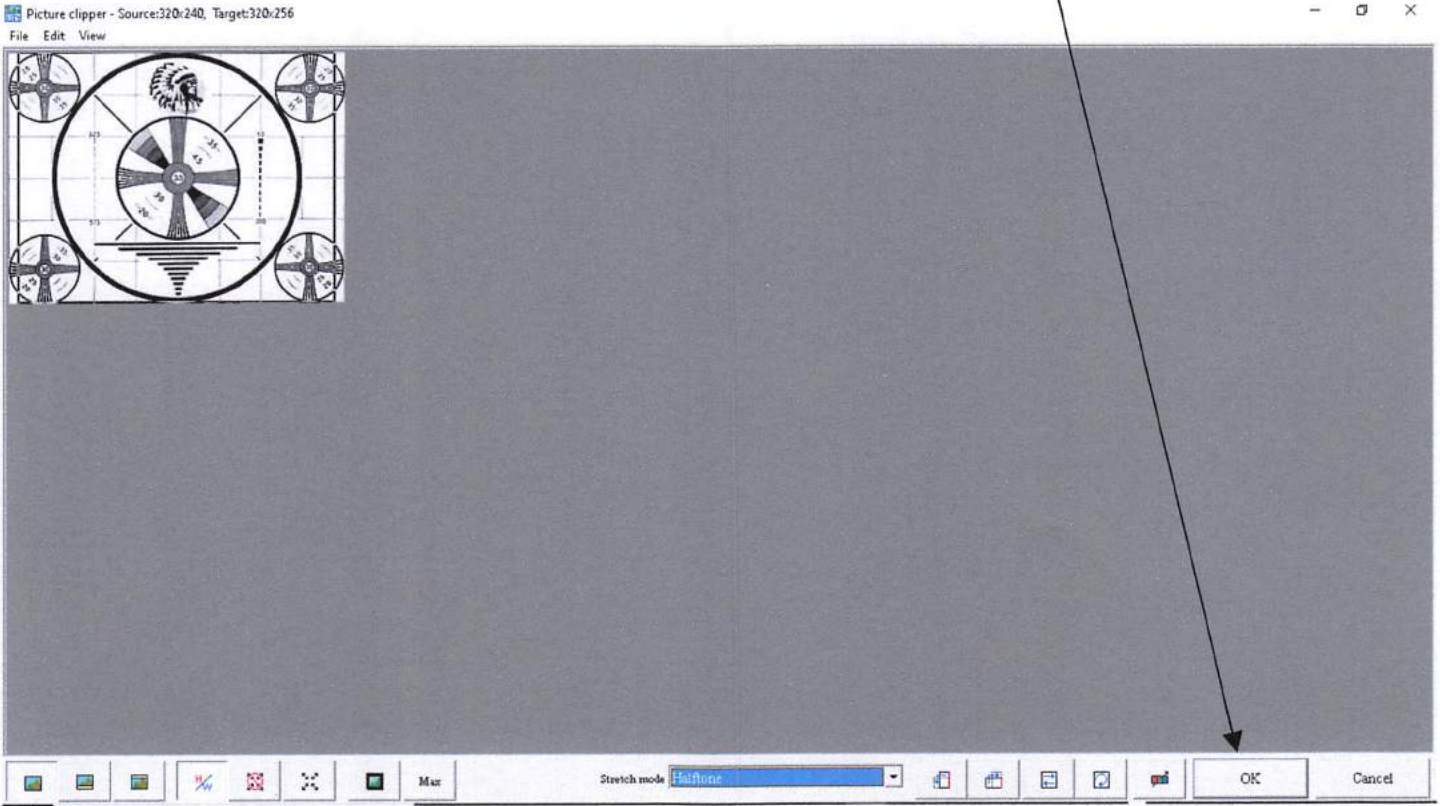
Left Click On Load from file



A file **Selection Screen** appears. It is advisable to prepare your desired files ahead of time. Content, size, format, and location should be predetermined, so you can, easily, find and select them. You can type in a file name if you know it, or select it from the list that is displayed in the selection screen. Notice that MMSSTV looks for the three types previously mentioned (jpg, bmp, wmf) files.

Once a file is selected, click **Open**

After an image is "Opened", the Picture Clipper screen displays, in case there are any needed adjustments. For this purpose, we are just going to accept the "defaults", by clicking **OK**, on the bottom right.



The selected image should now appear in the **Main Image Screen, TX** section.

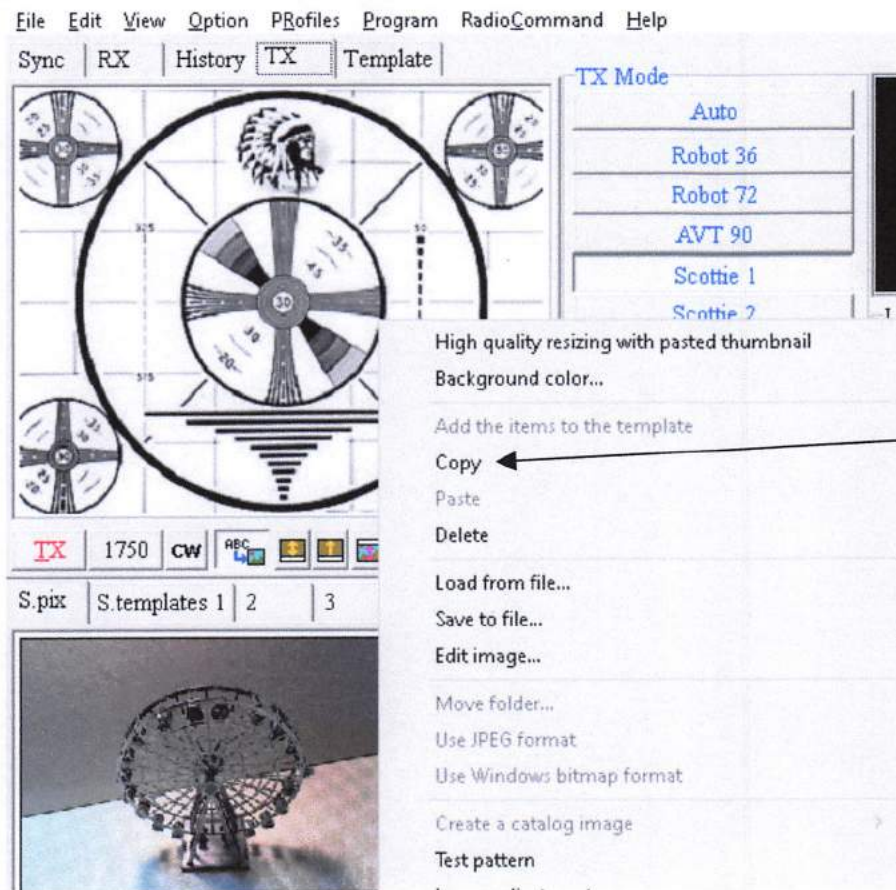
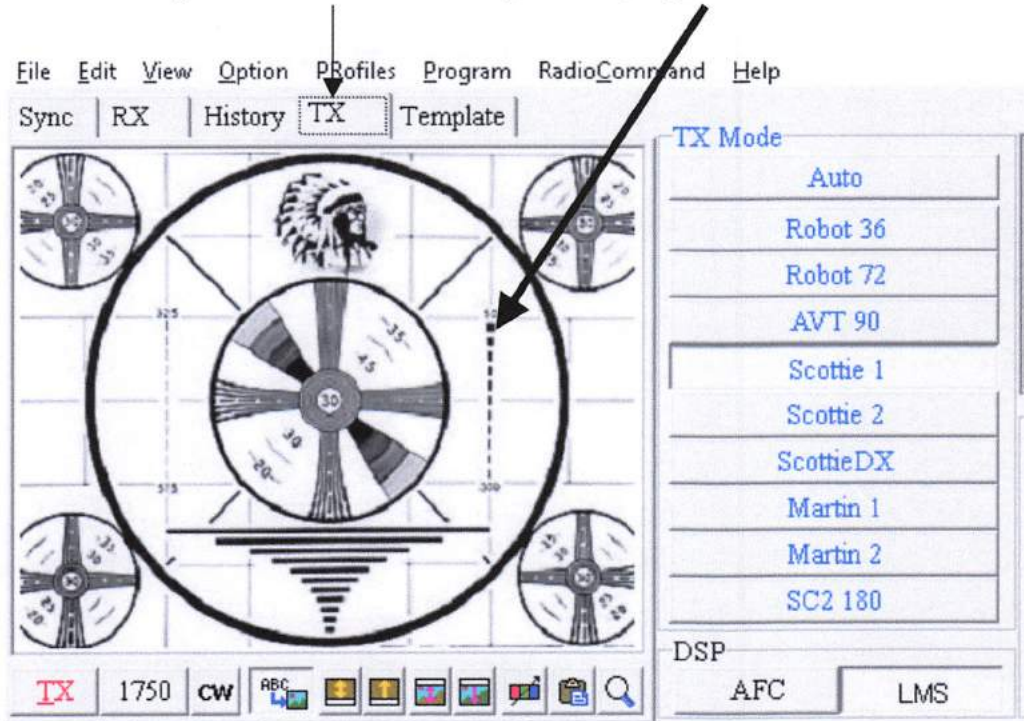
**See Page 11 for How To Transmit Image.**

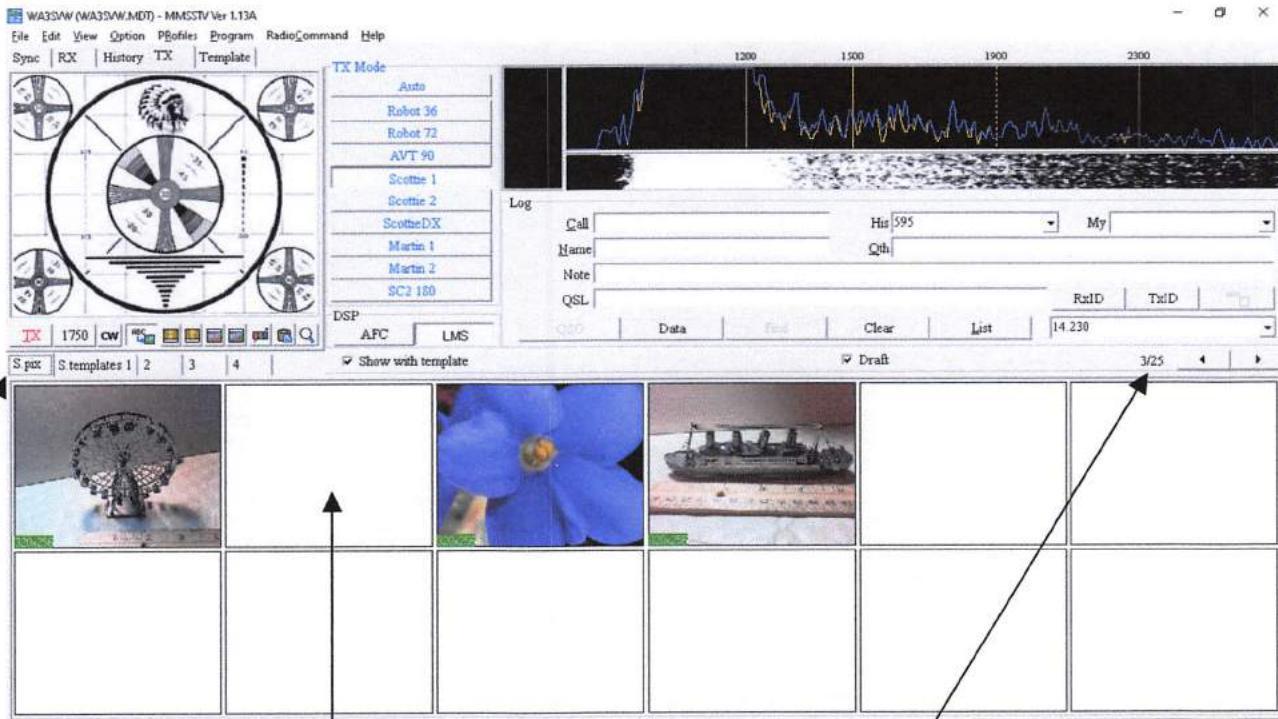
**NOTE:**  
Any image that is loaded into the TX screen for the first time, can be permanently stored in a Pix Block on the bottom of the MMSSTV Main Screen. (See Next Page)



### Storing Images Permanently (Easy):

While an image is in the TX Main Image Screen, **Right Click** on it...





Select S.pix Group

Select Blank Picture Box  
(Left Click on it)  
Once Pix Box & Page is  
selected, Right Click in  
Box, Choose *Paste* from  
Menu, to place picture.

Select S.pix Page

**Note:**

Any image that is already in a pix block, can be placed in the **TX** screen by simply **Right Clicking** in the desired block, selecting **Copy**, then moving the cursor to the **TX** screen, and **Right Clicking**, and selecting **Paste**.

To remove an image from the **Main Image**, or **Pix Box** Screen, **Right Click**, in the screen, and **Left Click** on **Delete**.



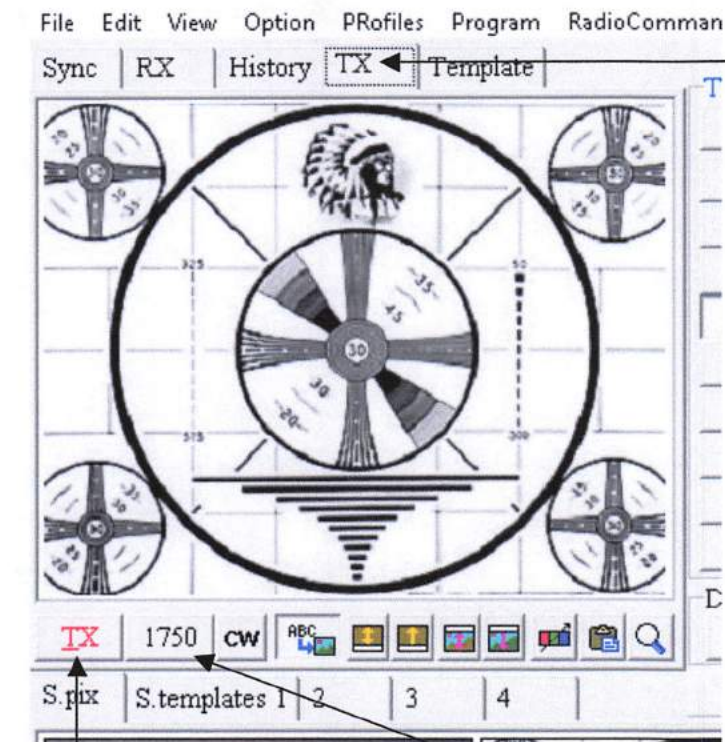
## Transmitting A Loaded Image:

We now, have arrived to the main reason we are utilizing MMSSTV. To transmit selected images, over the radio. As previously stated, images should be pre-formatted, as to file extension and size (in pixels), as well as, a *known* location folder, for efficient access. It is advisable to be familiar with Windows path & directory structure, along with comfort in working with image editing software, such as MS Paint, or PhotoShop types of applications., if you want to be able to adapt any type or size image files to work well with MMSSTV.

Page 3, of this document, gives the Basic steps to have your soundcard work with MMSSTV. We cannot go into detail for every type of card that may be used, with *your* radio and PC. A good rule of thumb, is: **If Your Radio And PC Works Well With Other “Digital” Programs, Like FLDIGI & Winlink, It Should Work With MMSSTV, Using The Same General Settings (USB, ComPorts, PTT, Etc.).** MMSSTV connects with these devices in the same way. One important thing to keep in mind, is: **Do Not Attempt To Run These Types Of Programs Simultaneously, They May Tend To “Fight” Each Other For the Soundcard.**

The first thing we want to confirm, before we attempt an image transmission is assure that MMSSTV is properly connected to your sound device. As mentioned on Page 5, a sign of PC/MMSSTV/Soundcard connectivity is observing active waveforms, and a moving (Top To Bottom) Waterfall. This is an indication that the receive audio from your radio is reaching your PC, and the MMSSTV application.

Once the above is confirmed, it is time to test the Transmit capabilities of your setup. Referring to the MMSSTV Main Screen handout page, locate the TX tab, and left click it to enter the Transmit Screen (the same screen where you should have an image of what you want to transmit from previous instructions, starting in Page 6).



### Main Image Screen In Transmit (TX) Mode

Let's, first see if MMSSTV is properly set to put the radio in transmit. Click on the **1750** button. Confirm Radio is in transmit, with a 1750 Hz Tone. **Press button, again, to end transmission.**

Now, let's transmit our image. Select (Left Click) a Transmission Mode from the list to the right of the Main Image Screen (see **MMSSTV Main Image Screen** handout). Scottie 2 is a good choice, for our first transmission. After making a Mode selection, Left Click on the TX button (lower left of the Main Image Screen) to start the transmission. Radio should go into Transmit, and a moving scan line appears from top to bottom of image. (see page 12)

**TX Button (Places Radio In Transmit) For Image Transmission**

**1750 Tone Button: Same Function As “Tune”, On Other Digital Applications**

Appearance of scan line, as picture is transmitted. Line moves from top to bottom of image during the transmission (Arrow does not appear, it is a graphic representation of the moving scan line). When line reaches bottom of image MMSSTV automatically terminates the Transmit mode.

Waveform & Waterfall display signal during picture transmission scan.

**NOTE:**

Once a library of saved images are built up in the S. pix blocks, double (Left) clicking on any image in a block, automatically places that image in the TX screen, for Transmission.

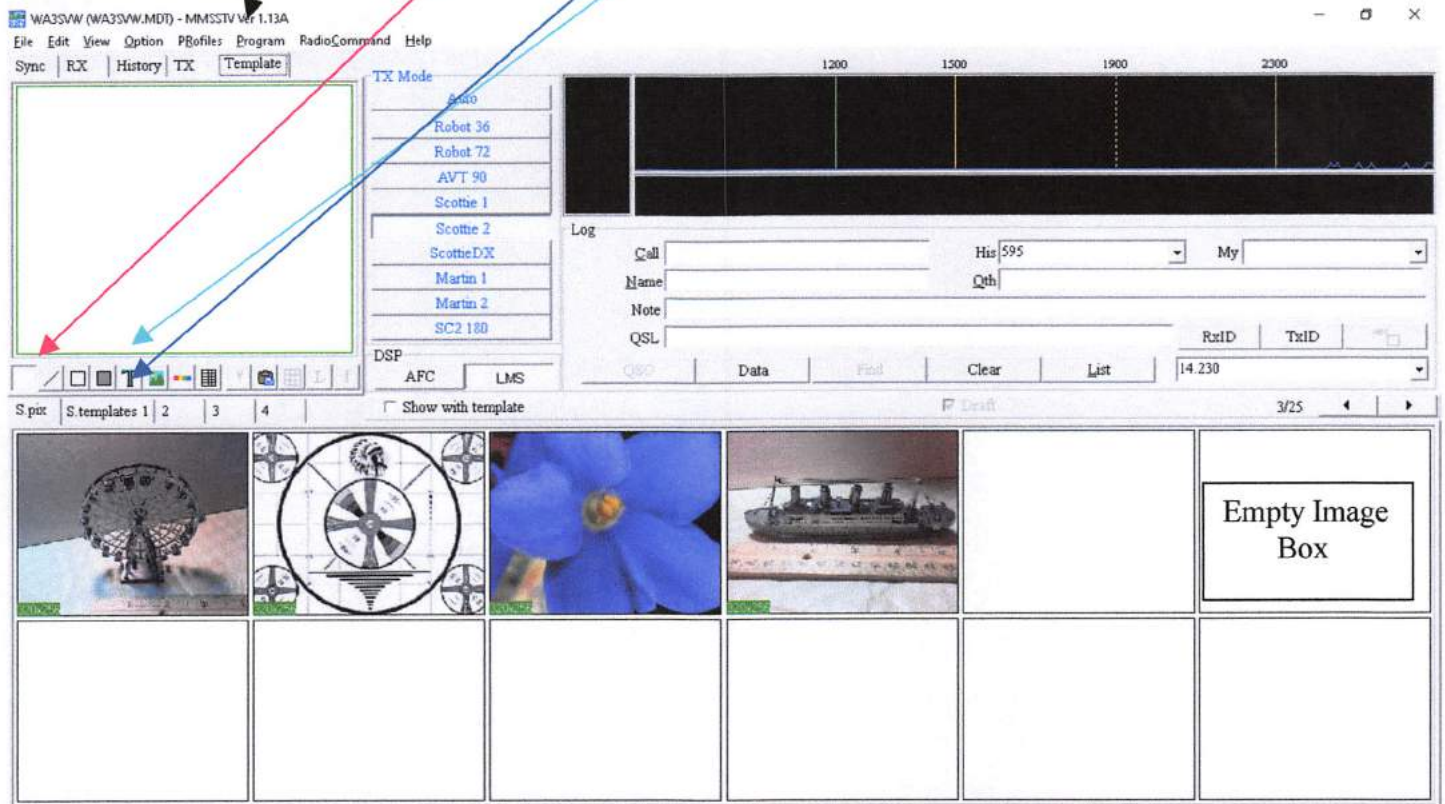


### Templates And Calling CQ:

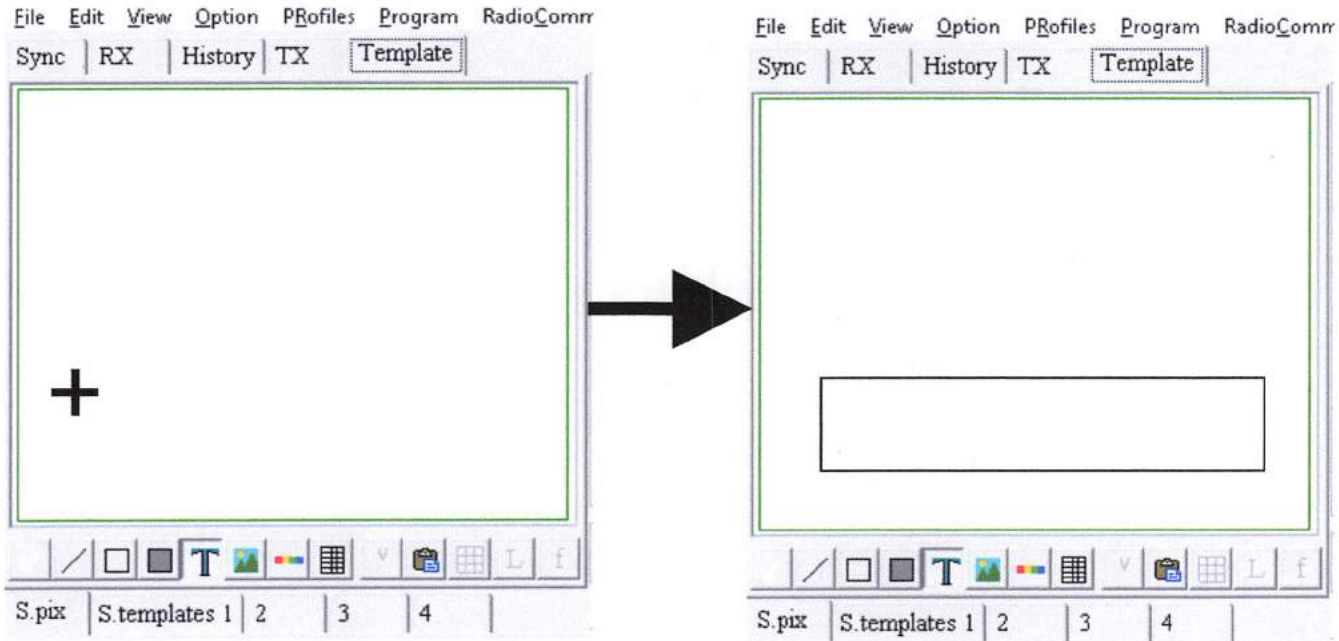
MMSSTV templates are a little tricky. I have not run across any clear description of how to create & save them. Therefore, the following is a very simple algorithm for this process that works, for me.

First, To clear the TX screen of any image, or color, Make sure the S. pics Tab is selected Double Left Click On any **Empty (White)** S.pix image box, to clear the TX Window. Then switch to the S. templates Tab, and do the same with an empty (White) template block. This turns these two screens White so you can easily see what you are Doing.

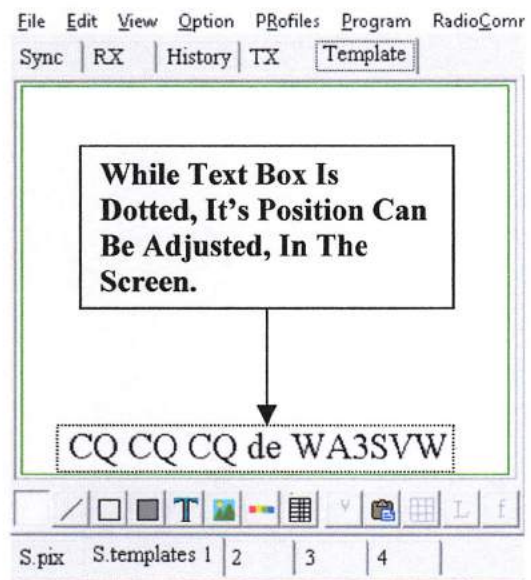
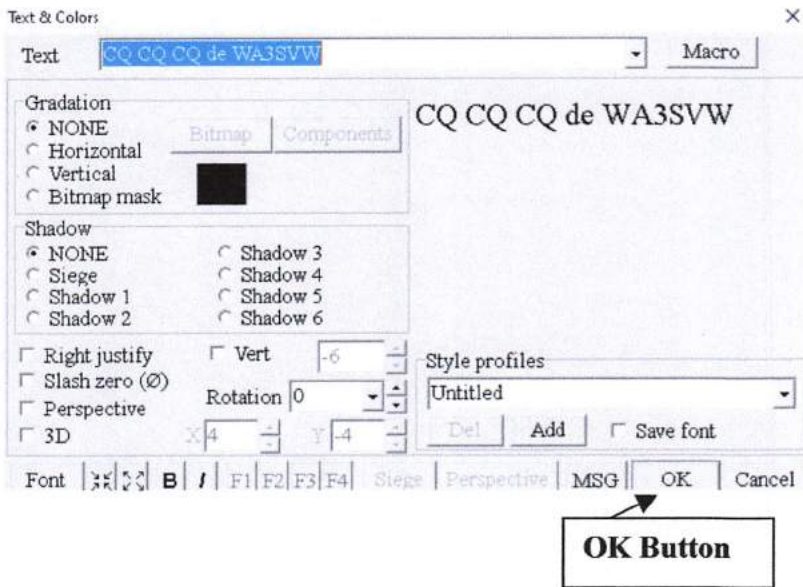
Left Click on the Template Tab on the Main Image Screen Sectors. Left Click on the Text tool, and move to the next page (page 14).



After selecting the **Text Tool**, in the **Template** screen, and placing the cursor on the screen, a cross hair appears. Press down, and hold the Left mouse button, then “drag and create a text rectangle (lower third usually works well), then release the Left button.

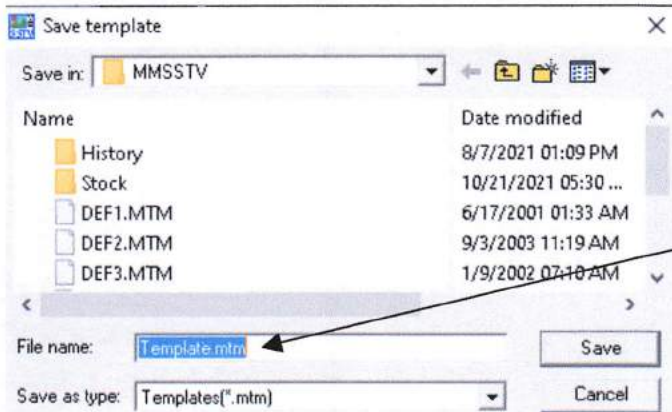
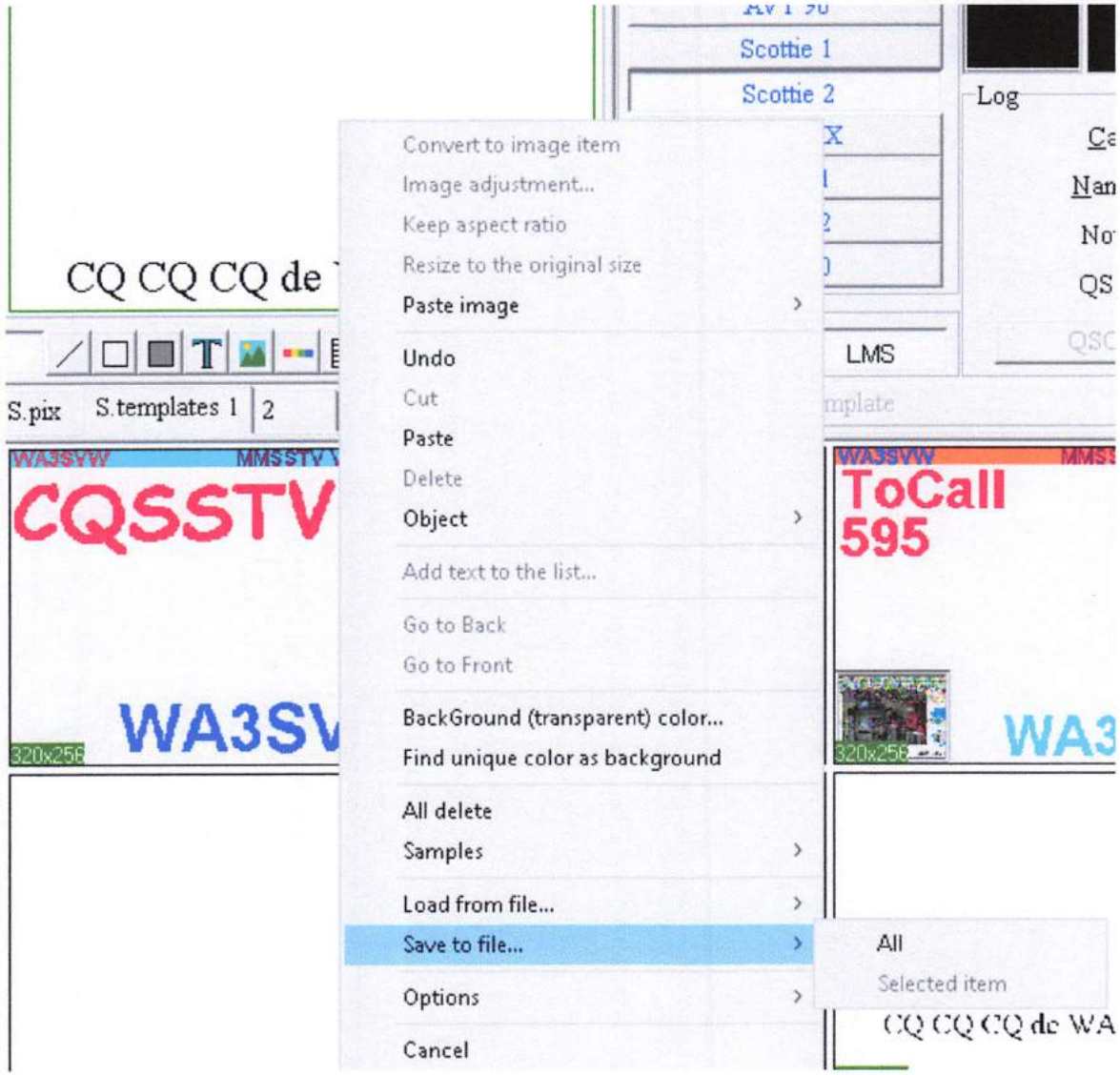


A Text & color Editing Screen also appears. Default text characters may appear, you can go into the Text window, and edit them to suit your needs, at the time. Color, Font, and other parameters may be adjusted. I suggest keeping it as simple as possible, at this time. You can experiment with it later, as you build, and save more Templates. When you are satisfied with the text, position, color (I would stick with Black, No Shadow (None), for now), Left Click the **OK** button, to save the template to the **Template** screen.



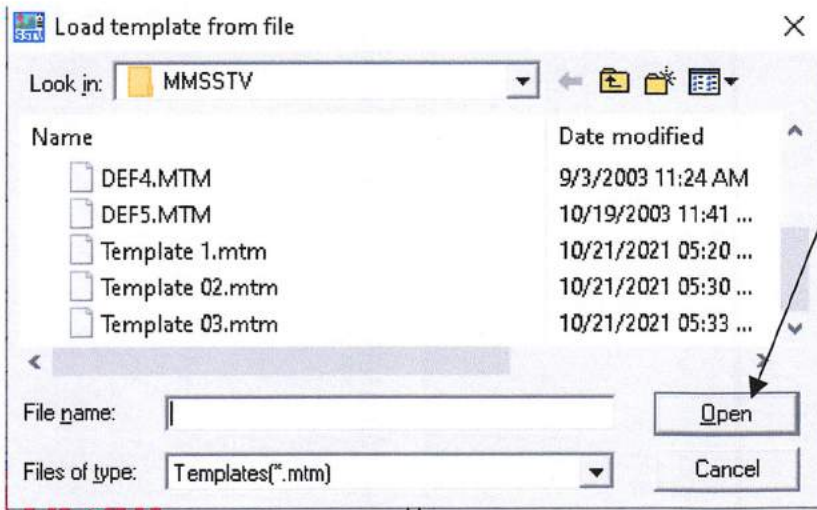


To save the template, permanently, Right click in the Template screen, scroll down to Save to file, All, give it an appropriate name (Template #)



**Note:**  
When saving a Template file, be sure to preserve the file extension (mtm), so MMSSTV “knows” it is a Template.

To save a file in a Template Block Window, **Right Click** in chosen window, and select **Load from file**, from the drop down menu, scroll, if needed, to the desired file, and **Left Click** on **Open**. The Template image appears in the selected Template Block window.



**Selected File To Save (Located In Template)**

CQ CQ CQ de WA3SVW

AVT 90  
Scottie 1  
Scottie 2  
ScottieDX  
Martin 1  
Martin 2  
SC2 180

DSP  
AFC LMS

Log  
Call  
Name  
Note  
QSL  
QSO

S.pix S.templates 1 2 3 4  Show with template

WA3SVW MMSSTV Ver 1.13  
**CQSSTV**  
WA3SVW

WA3SVW MMSSTV Ver 1.13  
**ToCall 595**  
WA3SVW

**Permanently Saved File In Template Block Window.**

CQ CQ CQ de WA3SVW

**Note:**

It may take some practice to create the Templates you want to use for calling CQ, 73, QTH Info, etc. Stick with it, and try to find Youtube videos that cover MMSSTV Template Creation.



### **Transmitting Templates And Images:**

When it's desired to use both a template and an image (ie. Calling CQ), this can be accomplished by first *double clicking* on an image in the **S.pics** group, then switching (using the **Image Screen Selectors**) to **Templates**, and *double clicking* on the desired **Template**. Both images should be visible on the **TX** screen, at that time. If the **TX** screen shows only the **Template**, it's probably due to the fact that the **Template** was created *without* a transparent background. An issue that shall be discussed during our **DigiNet** sessions.

### **Summary:**

This concludes the MMSSTV Primer document. We shall cover all these subjects, in upcoming **DigiNet** sessions. Additions, corrections, and modifications may manifest themselves, in our endeavor to work with this program. It is *highly* advisable to also download the PDF of the program's author **MMSSTV 1.6 Help** document, for further information, and technical details, although some of the information may be dated (the author passed away, a few years ago).

Keep in mind that all FCC rules and regulations apply to transmitting images via Ham Radio. Common sense should prevail, in choosing what images are going out, over the air. It is the operator's responsibility to assure they are "family friendly".

Some of the program's aspects are not clear, especially when it involves template creation & saving. We shall spend a significant amount of time working out "the bugs", and welcome comments, and suggestions from participants regarding experiences with the template aspect of the application.

Looking forward to "seeing" all interested parties, on the Monthly **DigiNet**, starting on November 1<sup>st</sup>, when we officially, begin experimenting with MMSSTV.

73,

Gary  
WA3SVW

## ALPHABETIC INDEX

SUBJECT	PAGE
Auto History	5
Auto Mode Selection	5
History Scroll Arrows	5
Introduction	2
Load Image From File	7
Loading An Image For Transmission	6
Main Image Screen	3
Main Image Screen TX Mode Delected	6
Main Screen Tour (Hand Out Sheet)	2
Picture Clipper Screen	8
Picture File Requirements	6
Picture Transmission Scan Line	12
picture/Template Viewer Selection Tabs	3
Placing An Image In A Pics Block To TX	10
Preparing Image Files Ahead Of Time	7
Receiving Images	5
RX/TX Mode Selectors	3
Saving A Template Permanently	15, 16
Saving A Template To Template Screen	14
Signal Waveform/Waterfall	3, 12
Sound Card Setup	3
Sound Card Setup Misc Tab	4
Sound Card Setup Receive Tab	4
Sound Card Setup Transmit Tab	4
Storing An Image From The TX Screen	9
Storing Images Permanently	9
Summary	17
Template Text Editor	14
Templates And Calling CQ	13
The <b>TX</b> Button	11
Tranmitting A Loaded Image	11
Transmit Mode Automatic Termination	12
Transmitting Templates & Images Together	17
Using The 1750 (Tune) Button	11
View A Received Image	5