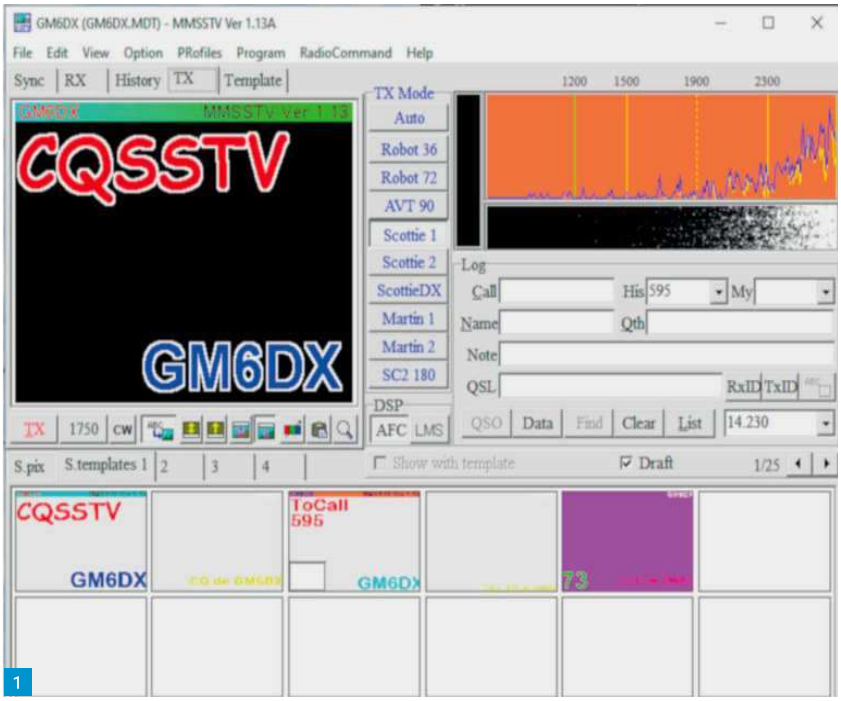
Billy McFarland GM6DX
gm6dx@outlook.com



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SSTV

Billy GM6DX says "It's not as hard as you think".

I am a great believer that amateur radio operators should try and use as many bands and modes as possible. One mode which has not lost mystique since its development in the late 1950s is Slow Scan Television (SSTV). How can you send a picture across the world using a transceiver and personal computer? How does it all work? I aim to cover the basics to get you started. SSTV signals are traditionally about 3kHz wide with the transmission time to send a picture varying from about 8 seconds (black and white image) to a few minutes, depending on the modulation type. As you can imagine, it could be difficult to have a QSO using SSTV if transmissions were all over the band, so like many data modes SSTV can be found at particular parts of the bands. A simple search online will tell you a list of frequencies but a few common ones are 14.230MHz (USB), 7.171MHz (LSB) and even on 50.680MHz (FM) for the VHF operators out there.

Let's get Started

Firstly, you will need a transceiver and the ability to modulate it using a PC sound card. Most modern transceivers will have a built-in sound card that offers connection to a PC using a USB-B connection, usually CAT control is also offered. If your transceiver does not have a built-in sound card or CAT control such as the Yaesu FT-857, for example, then you will require some form of interface, such as those produced by Rigexpert, Rigblaster or Tigertronics. You can also homebrew an interface but the construction of this would need to be covered another day. If you already utilise data modes such as FT8, FT4, RTTY or PSK, then the principles are the same and you are set up. If you are new to data modes, then you must ensure that you read the manual for the transceiver on AFSK or FSK keying. There are various ways of modulating the transceiver from the PC, but most modern rigs have a DATA setting that activates the rear USB-B connection for CAT and Sound modulation. In simple terms the CAT control puts the rig into TX and RX (like the PTT on a hand microphone) and also allows frequency control. The sound card for data modes replaces your ears and mouth as used in SSB. The sound card Mic connection listens (ears) and the sound card Speaker connection sends the modulated audio (mouth). Once you have the physical connections in place it's then time to get started on the software.

Visit the hamsoft website (URL below) and download the latest version of MMSSTV (note the latest version is 1.13A developed in 2010). Make sure it is MMSSTV that you download as there is a YONIQ-MMSSTV version. This version is in Spanish but looks and works physically the same. Once downloaded, simply install on your personal computer and run the software. You should have a display similar to that shown in **Fig. 1**. If you don't, simply click from the top, *VIEW > DESIGN > STANDARD*. On the program you will see the picture window to the left (RX and TX pictures) followed by a few common modulation types such as Scottie 2, or Martin 1, in the centre. Then to the right of these you will see the scope of the received signal and a short log below that. At the very bottom you will see various boxes, which is where you add the images that you want to send.

https://hamsoft.ca/pages/mmsstv.php

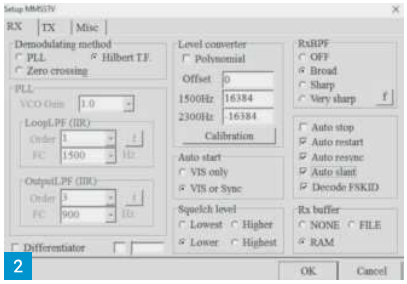
Software Setup

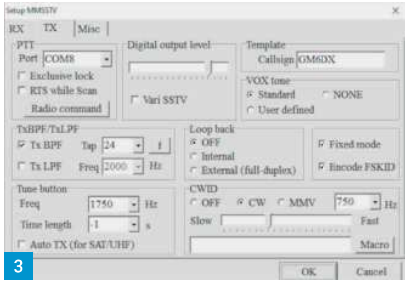
You need to set up the software as follows:

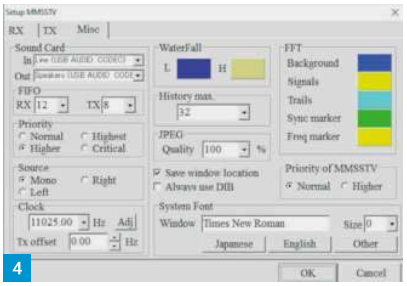
OPTION > SETUP MMSSTV> RX TAB. Now make sure all options are selected as in **Fig. 2**. Next click on the TX tab. If you have come out of that screen, simply select OPTION > SETUP MMSSTV> TX TAB. In this tab you will see a space for your callsign. Insert a callsign that you will be using for all images and templates. I recommend that you use a CW ID (sends CW callsign at end of SSTV transmission) and also select the Encode FSKID. You will see a PTT port where you select the COM PORT number, which puts your rig into PTT. If, like me, you want to use a different program for logging and manually turn the VFO on the rig to the correct frequency, then the settings displayed on **Fig. 3** are sufficient. However, if you want MMSSTV to control frequency for logging then click the 'Radio Command' tab under the PTT port and fill out the COMM PORT, STOP RATES BAUD rate etc. for CAT control. One final setting is to select which sound card to use, so again OPTION > SETUP MMSSTV> MISC TAB. In the soundcard box select the sound card you are using. Put JPEG quality to 100% and then you can change the colours of the scope and Waterfall. You can see this in **Fig. 4**. This covers the basic setup of the transceiver and software. If you want to use MMSSTV for logging, be sure to go to OPTION>SETUP LOGGING and complete the tabs.

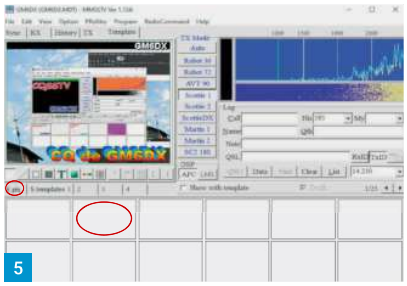
The Process

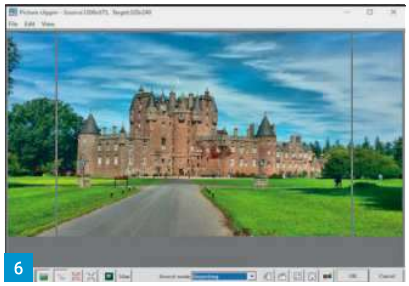
Before we can start to transmit we need to sort out the pictures and templates that overlay the images. On the main screen ensure you are on the S.PIX TAB. This can be seen just above the blank white squares, the red circles in **Fig. 5** show these areas. On one of these white squares, RIGHT CLICK > LOAD FROM FILE. Now select the image you want to use for transmission from your PC folder. An image editor will appear as seen in **Fig. 6** where you will need to crop or edit the selected photos for

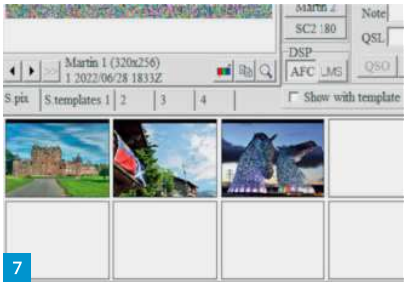


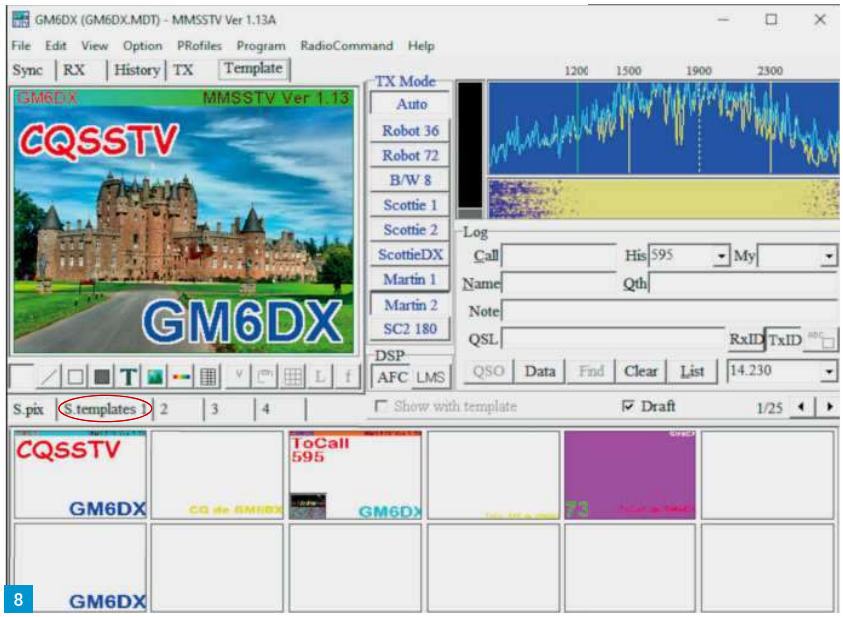












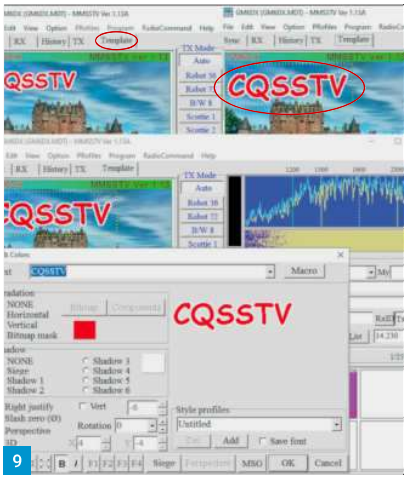


Fig. 1: The program display on startup.
Fig. 2: The receive setup screen.
Fig. 3: The transmit setup screen.
Fig. 4: The MISC setup screen, for other options.
Fig. 5: Selecting the S.pix tab.
Fig. 6: Using the image editor to select a picture, or part of one. Fig. 7: The S.pix tab partially populated with images. Fig. 8: Using an image as part of the template. Fig. 9: Changing the template using the editor facility.
Fig. 10: Selecting a transmission mode.
Fig. 11: Entering the callsign and report from the station worked. Fig. 12: Receiving the closing image from the station worked. Fig. 13: Received images vary in quality according to conditions.

use on air. Repeat this process until you have a few in the S.PIX TAB as seen in **Fig. 7**. Please be mindful of the type of images you have selected so as to ensure you are not breaching licence conditions or content regulations. In the S.PIX TAB double-click on the first image you want to send then select the S.TEMPLATES 1 TAB. In this tab you can see various pre-formed templates, which when you double-click on the relevant template, it will place this as an overlay of the picture as seen in **Fig. 8**. If you want to edit any part of the template such as font, colour or position, then select the TEMPLATE tab just above the picture window, double-click on the part of the template you want to edit and the editor window will appear. You can then change anything within the window editor. All this can be seen in **Fig. 9**.

The QSO

Having a QSO in SSTV is the same as any other mode. You have a CQ call, a report and a 73 final, a beginning, a middle and an end. Double-click the picture you want from the S.PIX TAB. Then select a CQ template from the S.TEMPLATES 1 TAB by double-clicking on it. Then above the picture window you will see a few other tabs, SYNC, RX, HISTORY, TX and TEMPLATES. Click on the TX TAB, select a mode such as Scottie 2, then click on the TX button at the bottom left of the picture window.

These are highlighted in **Fig. 10**. Your transceiver will transmit the SSTV signal. Once transmitted you then wait for a reply. The software should jump to the RX TAB when it starts to decode an SSTV signal. If not, select the RX TAB. Note that people may reply to you using a different modulation such as Martin 1. However, if you have AUTO selected, you will reply and decode in their mode. Once the other station's image has been received, then we select the exchange

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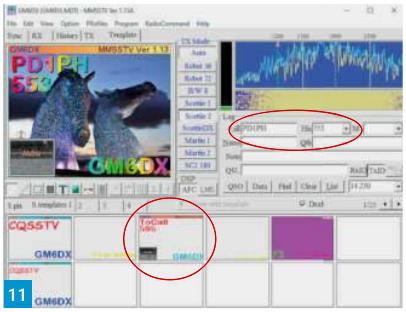

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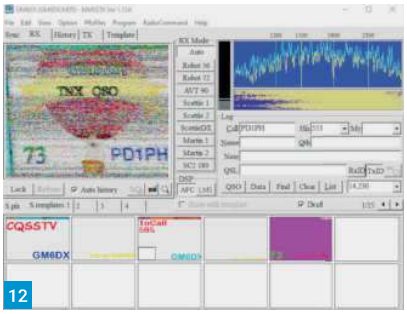

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template. Although you are not using MMSSTV software as a log you need to enter the station's callsign and signal report in the log boxes as seen in **Fig. 11**, the template takes and uses this information. If you do not have a station's callsign in there, it will send a transmission with blank information. We then wait for the station's final image, as seen in **Fig. 12,** before replying with our final picture. This process is then repeated for each QSO.

To summarise; select the images from the S.PIX tab that you want to send. Select the templates from the S.TEMPLATES tab that you want to use, whether CQ, exchange or 73. Be sure to use the TX and RX tabs above the picture windows to switch between transmit and receive picture windows. Like every method of transmission, if conditions are rubbish, then the picture quality that you receive will likely be rubbish and it certainly isn't HD quality (see **Fig. 13** for some images I have received), nonetheless this mode is challenging but very enjoyable. If you would like to see a video showing from install to QSO, then you can watch my video at:

shorturl.at/cfvCI

For more help using MMSSTV then visit here for the manual:

shorturl.at/csIOZ

As always, if anyone has any questions, please email me at **gm6dx@outlook.com.**

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