Thank you for downloading and use of KG-STV, thank you.
The KG-STV is receiving the software of the digital image using the radio.
This software decodes the signal by digital signal processing, an external
There is no need to connect the decoder, the sound input and output and the radio of
PC spin
Over mosquito-microphone jack, and you can send and receive when you connect the PTT
control RS232C.

KG-STV processes the image for each block, to be sent individually by adding
information
The overall picture receiving child just the way only some parts that missing data
will become black
Door is possible. Also to be reproduced from the middle of the image can be received
in the middle of the signal
It is possible.
For blocks that can not be received, it can be compensated by carrying out a
retransmission request (BSR)
I can.
Transmission and reception can in the image of 320x240pixcel about 2 minutes before
and after (by the image compression setting)
Vinegar.
Transmit power to the modem is a type of FSK which is a constant envelope MSK
(Minimum Shift Keying)
And 4L-FSK By using, as compared to the modulation of an OFDM or PSK system of the
final stage amplifier of the radio
It is possible to use a performance full, it can be expected that the transmission
distance is extended.

Installation uninstall ?
Installation Unzip the compressed file that you downloaded, file after thawing
As it is you only need to copy to any location or folder.
Decompression operation, compression Phi If there is a standard in the decompression
program in Windows
Open the le with a double-click, another of the folder files displayed in the folder
Thawing is completed by copying to. Decompression time displayed folder compressed
file
Because it is a temporary state of only display the contents of the Il, be sure to
copy to another folder
Please complete the thaw.
The right-click on the compressed file, an item called "Expand All" in the menu
In some cases, you can decompress by clicking on this.
line thawed by a separate decompression software if the standard in the
decompression program is not in
It is. It seems that even if you can not successfully thawing by decompression
software. Recommendation
decompression software that is Lhaplus1.56.
Please Note that without changing the structure and name of the folder from the
first state. Start
Part of the not or function tree it may become unusable.
Because the uninstall does not use any registry, each folder,
Please be as it is deleted.
If you want to save the image in the automatic image storage function in KG-STV,
automatically that AutoSave
Folder is created in the folder where the executable file.

Equipment necessary to receive ?
To receive requires the following equipment.
those 1. radio ········ SSB or FM mode is installed
2. antenna it is Torre antenna .... radio and integrity
3. that meets the personal computer .... following specs
4.PC radio connection cable General cable to be used for data communication software

? radio

KG-STV has become capable of transmitting and receiving image data in the FM and SSB. Other
Mode might (AM, etc.) in the transmission becomes unstable.
There case to deteriorate transmission characteristics and reception characteristics depending on the state of radio and wireless transmission path
Ri you. In that case, it is observed degradation condition in the eye pattern of KG-STV.

? antenna
Also it can be adjusted antenna transmission is required.

? PC
To operate the KG-STV requires a PC or more of the following specs.
OS: WindowsVista / XP
CPU: Celeron 1.06GHz or more
Memory: 1GByte more
Display: 1024x768pxcel more
Sound: 48kHz 16bit support

? PC radio connection cable
Connect the speaker terminal of the microphone terminal of the personal computer when it was only to receive and radio
Alone Although it is OK, and exit separately PC line from this as long as it also performs transmission to
And cable with attenuator to connect the microphone of power and radio, the path for the PTT control
Circuit connecting the PTT terminal of RS232C and radio of Sokon is required.
These wires same I as images and data communication software that uses a general PC Because, it is possible to divert their cable.
It should be noted that it is also possible to control the PTT using the VOX in the signal of KG-STV.

Setup ? KG-STV
Install the KG-STV, so that the connection with the wireless machine-to-use the KG-STV After completing
We will do the setting and adjustment to.
First you make the selection of the input and output device of sound. To set it to the KG-STV
Open the selection screen by clicking on the Set, and set the Input Device and Output Device turf
Vinegar.
Also you do setting of RS232C port here at the same time RS232C Port.
Also if you want to send to set the in Callsign field the call sign to be sent. Co
You do not set the Rusain and can not be done any send operation.
If you want to automatically save the image at the time of reception is completed,
    Save image automatically when received new one.
Check the check box.
When you finish the settings and click OK to reflect the setting.

Settings to adjust the modulation level by sending the actual radio waves When you have finished.
The following procedure of sending stepping is actually transmitted, sound and to monitor the signal on another receiver
the cable of the attenuator and KG-STV of the slide, when the extent that it is not distorted
Adjust the Windows volume.
Also received similarly output the input signal to the speaker in the personal computer, to the extent that sound is not distorted
Attenuators and radio volumes of cable, case by adjusting the Windows volume control And integer.

Method of operation ? KG-STV
Note: Because the button shown in red characters will send operation at KG-STV

screen, frequency
Or not the number is used, check whether the equipment has been successfully
operating and connection
Please send from.
Note: To send it is necessary to set the call sign. It is set call sign
Eradai When you try to send in a state that does not have that "Set your callsign"
Arogu appears.

• Receive
Reception does not need annoying adjusted only waits for a signal, but the other
party
Have and can not receive greatly shifted the frequency of the station and the local
station. In this case, Waugh
Look at the Taforu screen radio as the spectrum of the other party enters between
the yellow dotted line
Please adjust the reception frequency.
In the image received is displayed call sign of the sender in the green.

And transmission
To send the image will tread the following steps.
1. image file I drag-and-drop of KG-STV
Image files will be bmp or jpeg. Image size is automatically resized
It becomes 320x240pixcel Te. If the aspect ratio is different, extra up and down
also
Left and right of the image is cropped.
Copy from the clipboard is also available. Please see below for details.
2. confirmation of the transmission time and image quality adjustment
When you drag and drop the file name in the title of the KG-STV and the TxTime =
It will be displayed. TxTime is the expected time it takes to transmit. Although it
considered this time
Third image quality adjustment from the top of the pull-down menu to the right of
the Luo Send Image
To determine the quality of the transmission image by changing the.
3. Submit
Click the Send Image button Once these operations are complete and transmit image
You.
Interrupt the transmission in by clicking the Send Image button that was pressed in
the image transmission
You can also be.
Sending appears call sign in red letters.

· BSR of (retransmission request) how
If there are blocks that can not be received by the received image, Send BSR button
Ready
It becomes ability. If you now click on the Send BSR, it can not be received in the
other station
To request a retransmission of the necessary image block was by sending the
coordinates of the image block.
It should be noted that in the BSR transmission I will display the number of the
rest of the BSR to waterfall screen.

How to response-retransmission request
Since Resp BSR button when receiving the retransmission request will be available
for operation, and Resp BSR
Click to retransmit the image block data that the other station is insufficient.

When subjected to unnecessary repeat request from another station, as it is click
Resp BSR button
Then, it will go the response of the retransmission request to unnecessary
retransmission request of data or
Vinegar. Therefore, to receive the original retransmission request after receiving
an unnecessary retransmission request
Click to Invalid resend BSR CLR button next to the Resp BSR button if

Please clear the request.

? image complemented by the retransmission request will take effect only after sending a retransmission request. Retransmission required
If you have not done the required, image complement data of other stations will not be imaged. It should be noted that re-
Please ask them to resend the data immediately after that if you put the feed request. That
It will not be complemented image when receiving the other data in between.

? Send BSR and Resp BSR is you can receive the image anew, the image file to the KG-STV input
It will be reset if that was.
The BSR of information if interrupted during transmission of BSR request and BSR response will be discarded.

? confirmation of the transmitted image
To display the image to be transmitted when performing a drag and drop images, reception, etc.
After changed the conduct image, what image has been selected for transmission current "Check
You can check and click the TX Img "button.

Copy of the image to the clipboard ?
And clip the image that is currently displayed when you click the "To Clipboard" button
It will copy to Pubodo.

Read from the clipboard ? of image
Click the "From Clipboard" button the image that is currently on the clipboard
A read in KG-STV. Also, when you click Send Image button in this state
It will send the clipboard of the image. Response to the BSR is similar.
Image from the clipboard when you drag and drop the other image file
It will be canceled. The data, such as text other than the image is copied to the clipboard
When it is over clipboard image data of it will be erased.
Therefore, if the transmission is performed and the BSR from the clipboard, From Clipboard
You can drag and drop the image file Click the button, clip
Do not copy and other text in Pubodo.

? display of past received image
The Jpeg file recorded in the AutoSave folder is received in the past is left triangular or
Others will be able to be displayed in the right triangle button. At this time, the file at the bottom left of the screen
It will display the filename. The file name, now it has become a date _ hour _ call sign
Vinegar.

? waterfall and Eye pattern display
War to carry out the time-series display the frequency spectrum for confirmation of the received signal in the color shade of
To display the eye pattern for viewing the demodulation condition of Taforu display and data
I can. Click on the waterfall or eye pattern on the screen
switching by is possible.

? call sign display screen
Call a screen in the bottom of the waterfall screen (or eye pattern screen)
Sign display screen, reception in will display the call sign of the other in green and "RX ????"
You. Also during send me will be displayed in red as "TX ????".

The display of the mode that has been received in this addition to the call sign
display screen in the bottom left
Do you. Display type is following Toh.

IMG: image data
BSR: BSR request data
IMG (BSR): BSR response image data
TXT: character data

It should be noted that when the character transmission is that the data
transmission itself is short the call sign into the reception character
It does not call sign display from Ikoto.
There is also the case that in the lower right corner as "Img time out" is displayed
in red letters. This is
It indicates that the time-out process is performed. To San below for time-out
Irradiation please.

Imaging settings at the time of ? data error
In KG-STV and it is error detection for all of the data, image data
For in also initialized to processing performed for performing image reduction if
there is an error
It has been set. This is to some extent restore the image as well as it's error data
It is because there is a possibility that can.
However, since the image data of JPEG it is compacted by the Huffman code, Ella
Depending on the position and the number of over funny shades of the image block is
made or black-and-white of the strike
It will or become striped like.
Now it is provided an error screen to screen the lower right corner of the KG-STV in
order to confirm the position of the error
Vinegar. Data if accustomed to the green at the time of reception in this screen is
normal, the data to be accustomed to red
It indicates that but it is an error. It should be noted that black and indicates
that not able to detect the signal
Do.
And received remains of the black of the image block without the imaging if if the
data is in error
If you want to display the signal image screen, open the Settings screen by pressing
the Set button,
Decode only error free image data.
Check the check box.

For time-out ?
Can not be verified signal is within a predetermined time from no longer detect a
signal in KG-STV
Case, to complete the the determined reception processing the signal is interrupted
(time-out processing).
This naturally has determined the completion of the receiving process by detecting
the termination signal or the interrupt signal
Because, this in order to successfully perform processing of the image when the
signal is lost on the way
Processing is provided.
If the time-out process has been performed, waterfall screen (or Aipata
Lower right is displayed in red "Img time out" call sign screen under the over down
the screen)
Will.
Time until the timeout (time-out period), but is 30 seconds by default,
Sometimes better to change by the stability of the line is good, the changes in this
time setting
It has become possible.
To set the time-out period, open the Settings screen by pressing the Set button,
Click the up and down buttons to the right of "Time out" to set the value.
It should be noted that "Now time out" to click and forcibly timed the current
reception status

You can be sparse state.

? transmission in MSK and 4L-FSK
It is a kind of FSK system and MSK is a modulation method of digital signal, mark frequency of FSK
Between the frequency of the number and space frequency is what was the minimum (Minimum Shift Keying)
The 4L-FSK With the four values ??FSK, providing four points of the modulation frequency that can be assumed by one of the FSK
It is possible to obtain a transmission rate twice that of the MSK by.
Because inter frequency is narrower than the 4L-FSK in MSK is susceptible to noise,
Also it is susceptible to deterioration of the characteristics of the transmission line.
Although it is this two selection, for sending a fast image when the line conditions such as FM is good,
Or you think that it is better to select a 4L-FSK to send a good quality image.
Radio
Transmission in SSB line state in unstable HF is as data When you MSK
I think Kunar.
Pull-down from the top of the pull-down menu to the right of the Send Image of the first
MSK or 4L-FSK Kano selected in the New is possible.

? convolution transmission in code mode
Pull-down from the top of the pull-down menu to the right of the Send Image of the second
New is the choice of code processing. Here unsigned processing (NORM) or convolution code processing
Set You may need to do a (CONV).
will strongly against noise when you do the convolution code processing, but send the same data
About twice the time it takes for that.
While code processing to confirm the transmission state, please choose on a case-by-case basis.
Note that this setting can be changed even during transmission.

Send and receive text messages ?
Text of a maximum single-byte 510 characters in KG-STV in the transmission of the once (full-width 255 characters) message
You can send a message.
The characters in the input box at the bottom of the Resp BSR To send a text message
Enter, and then click the right of Send Text.
Upon receiving the text message, you will see the text in the box below.

? KG-STV transmission standard of
Modulation format: complex modulation of MSK or MSK and 4-level FSK
Modulation rate: 1200baud
Modulation frequency: MSK ...... space frequency 1200Hz mark frequency 1800Hz
4L-FSK ... '00 '1200Hz' 01 '1400Hz' 10 '1600Hz' 11 '1800Hz
Bandwidth: 500 ~ 2500Hz
Error correction: None or Viterbi code (NASA standard K = 7 code)
Whitening: Yes (added to the M-sequence code of period 127 bits to each bit)
Interleaver: None
Header: 256 01 repetitive signal of bit
Basic code configuration: synchronization code +54 bit length information chunk + arbitrary length data chunk
Error detection: Yes (CRC 16 CCITT)
Synchronization bit: 63-bit M-sequence code
Image compression: JPEG-compatible (16x16 pixels, thinning 4: 1: 1)
Character encoding: Shift JIS compatible
Radio format: F1D (operation in SSB mode)
: F2D (operating in FM mode)

Information chunk configuration (system code version '0')

```
+-----------------------+
¦sys ¦com ¦c ¦m ¦x ¦y ¦sc ¦size¦CRC ¦
+-----------------------+
0 4 8 9 10 16 22 26 38 54bit
```

sys: system code
com: command code
c: coding mode
m: modulation mode
x: image block position (X)
y: image block position (Y)
sc: JPEG scale size
size: data size
CRC: error detection code

? information chunk to perform always MSK modulation + convolution processing

Structure of the data chunk (system code version '0')

```
+-----------------------+
¦data ¦CRC ¦
+-----------------------+
```

Performs transmission ? data chunk following the CRC code information chunk

Command table (system code version '0')
```
+-------------+
¦ command value ¦ motion ¦
+-----+--------¦
¦ 0 ¦ text transmission ¦
+-----+--------¦
¦ 1 ¦ image transmission ¦
+-----+--------¦
¦ 2 ¦BSR response ¦
+-----+--------¦
¦ 3 ¦ end ¦
+-----+--------¦
¦ 4 ¦BSR request ¦
+-----+--------¦
¦ 5 ¦ stop (interruption) ¦
+-----+--------¦
¦ 6 ¦ call sign ¦
+-------------+
```

? I shall send the 01 of header code at the beginning upon to start the
transmission.
? 1 single data format (code configuration) is
Synchronization code + information chunk + data chunk
To. However, the end signal, stop signal, BSR signal Never contain data chunk
There.
? This data format is continuously only the number of image blocks in the case of
image data
It is supposed to be sent Te.
? In the case of text transmission shall be completed in one of the data format.
? The normal completion of the transmission is assumed to be sent finally to the end
signal three times.
? during suspension of transmission it is assumed to be sent finally to the cancel
signal three times.

Synchronization code
0000011100001001000110110010110101110111100110001010100111111010

White codes
11101100110001001001100111110010000010001101010100110110100101 0

00010110000110010111111010110111011110001101000101011 10000001

? KG-STV We need more experiments
KG-STV is what was born from the interest of the digital image communication of the author himself.
However, practical experience for example, due to competence of the person is missing.
Therefore slow transmission time, the image quality is poor, by failing Ukara quite, actual luck
I think often impractical scene on use.
Because its such a case, we would like to study as new challenges, by all means
And I am used to a lot of people, I think you'll like impressions.
The opinions received until maturity is higher and inconvenience bug bugs and operation
I apologize, but, by all means, thank you.

Author: K.G (JJ0OBZ Myoko, Niigata Prefecture)

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