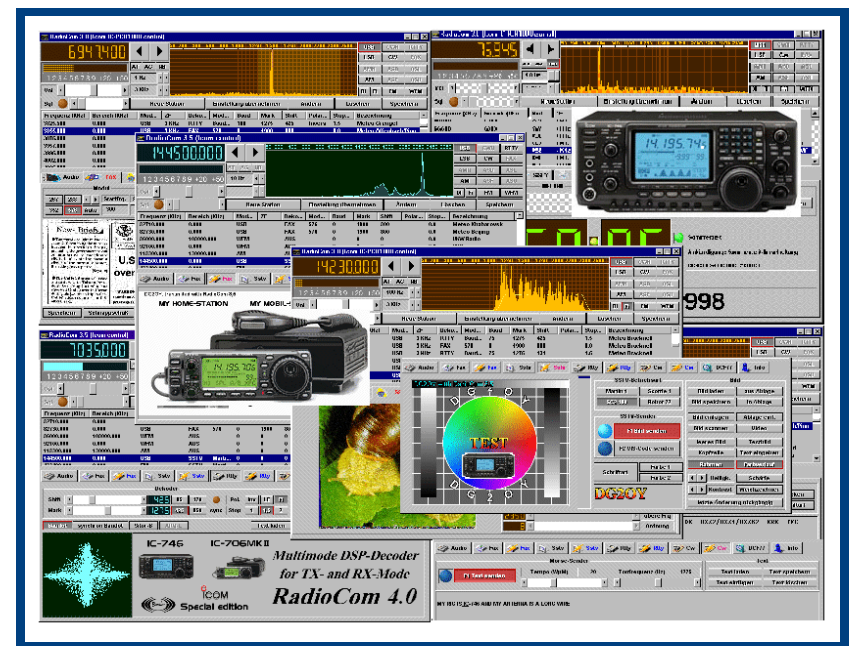


RadioCom 4.0

DSP-Decoder-Programm
receiving radio-communication
+ Transmit-Options



Operating-Instructions

CONTENTS

RadioCom 4.0 DSP-Decoder	1
First steps	1
Computer system adjustments	1
Soundsystem, receiver connection	2
Programm start	3
Short informations	3
RadioControl	4
TAB-TOOL windows	5
Audio and DSP-filter-system	6
Sound-adjustments	6
Audio and DSP-filter	7
Bandpass, notch filter	8
listening Audio	9
Stations and frequencies	10
Receiving, adjustments and set ups	11
Receiving and antenna	12
Adjust signals - What is an useful signal?	13
Adjustments helps	14
Frequency spectrum	14
X/Y tuning display	15
Speed problems of the tuning display	15
RTTY decoder	16
Save text, fonts	16
Modes	17
Baudrate	17
Shift & mark frequency	17
Stopbits	17
Polarity	17
Tuning	17
FAX Decoder	18
Saving	18
Save Fax-Buffer	19
IOC and slant correction	19
RpM	19
Shift and center frequency	19
Filter bandwidth	20
Spectrum-analyser	20

FAX view	21
Load FAX	21
Save and print FAX	21
+/- Zoom	22
FAX-overview and FAX edit	22
Synchronisize FAX	22
Slant correction	22
Cut FAX	22
Invert FAX	22
Rotate FAX	22
CW decoder	23
Save and print	23
Select Font	23
Adjust-display	23
SSTV decoder	24
SSTV slant correction	25
Picture requester	25
DCF77-decoder	26
Appendix sound-adjustments	27
Receiver connection	32

SENDE-OPTIONS

Transmit-Connections	35
FAX transmission	39
RTTYtransmission	40
CW transmission	41
SSTV transmission	42

RadioCom 4.0 - DSP-DECODER

FIRST STEPS

This programme use Windows`95, which found it's employment in amateur radio.

Basic conditions:

- any SSB-Receiver
- operating system Windows`95 or Windows-NT 4.0 SR/3
- with Intel-Pentium-CPU from 100 MHz
- min. High color (16 Bit)
- sound card 16 Bit stereo with an accessible line-in input.

Other basic conditions will be pretence from the system itself.

Install:

- Click on the field "start" (on the task-strip)
- Choose the adjustments, system-control and the software
- Put the first disk into the disk drive and start the installation
- Choose any receiver

Then you get a directory RadioCom.

Install the switch-modem:

A small switch-modem belongs to the software, named ??-SWL switchbox (IC-SWL ist only for ICOM-receiver and RC-SWL for all other receiver). The RC-HAM is exclusively for the Transmitting - version.

This you put in a free comport from the computer. The connection to the receiver usually is a mono jack / stereo jack wire and it has to put into the loudspeaker output from the receiver and the stereoside into the line-in input from the sound card of the computer. To control the receiver you need a connection from the 9-pol plug connection from the switchbox to the computer COM-Port.

COMPUTER SYSTEM-ADJUSTMENT

Basic condition of the software is, a soundcard must be installed in your computer. So your computer got a line-in input, to hear income signals from outside. The receiver got a EXT-SP-output, from which the received signal comes. This output you have to connect with the line-in or microphone-input from the soundcard. A bidirectional soundcard is recommed, to make the filter outputs hearable.

SOUNDSYSTEM, CONNECTION OF A RADIO

Control, if your windows-system has got a soundcard-driver. Otherwise you have to install the soundsystem now. The soundcard is installed correctly, when you hear soundtones after turning on your windows-system. After check, if your soundsystem is turned on. The basic usings are described in windows-help-system under soundcard, audio, multimedia, volume control. So here only some catchwords:

- working area (choose with the right mouse-key)
- choose attributes, tool-driver
- choose audio, video (soundcards, adjustments-controlling)

or start, programme, utilities, multimedia, volume-controlling
options, attributes

reproducing: volume control, line-in, speakers on

record : line-in or microphone inputs on

ATTENTION!!! turn off an included microphone

Adjust the volume that way, that you can listen and pay attention, that the adjustment-display didn`t work in the red area.

On the task-fillet (START) usually you can see a small speaker-symbol. If you click on it, you can adjust the volume from the listening-tone. If you click on it with a double-click, the whole sound-menue is on the screen.

Included microphones (often to find by note-books) which "listen refused" often produce jammings by receiving the radio-signals.

No listening-in tone ?

If you can hear nothing out of the speaker, then it might be, that the tone output is turn off or the connection from the radio to the line-in or microphone isn`t correct. Also it can be, that the inputs from the soundsystem aren`t adjust correctly in the sound-menue or they can be turn off too.

No listening-in ton after turning on the receiving programme ?

In some recording/volume menues you will find extended adjustments, in which you should turn on the recording-display.

See page 6 sound-adjustments

PROGRAMM START

The receiver must be connect before.

- First connect computer and receiver (see page 1)

Click on the icon **RadioCom 4.0** on the desktop.

- Pay attention, that the volume controller from the receiver is placed in the center, to hear something. After produce the basic for a good receive and test the programme.
- Adjust the audio-system (see page 2 and 6), then correct the slant in the SSTV- and FAX-programms.

SHORT INFOS

This instruction is no instruction for amateur radio. We proceed, that everybody knows his receiver. If not, read and acquaint the instructions from your radio.

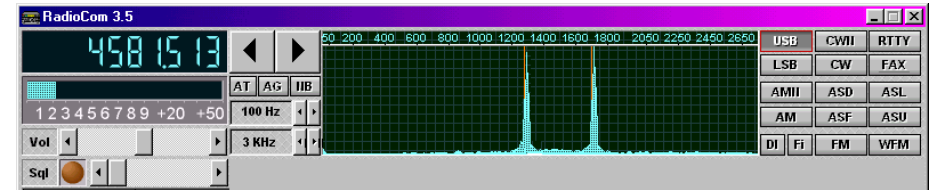
**Put the mouse on one of the windows
then you get a small info (don't click).**

The programme is build up that way, that later updates extend the functions. We assign sending / receiving programmes, analysing-tools for radio dates decoding and further new and old modes.

Expansion and Update

The RadioCom have a command-interpreter for Receiver-Control and Receiving. Manny Sanner-Programs , Frequency-Banks, -List's and Tools works bonito-compatible. Ask your dealer.

RADIOCONTROLLING



The main gadget got the important control functions to control the radio. These elements and functions should be known from the user. In the center is a audio spectrum analyser, which is adjustable. On the high left is the s-meter.

Frequencies will be count up and down in the respective direction with a click on one of the ◀ ▶ triangles. The tuning step size for it will be set with the first list. The numberfield of the frequency-display can be clicked with the mouse. Then an insert window appears, where you can type in a frequency manuel.

The field **NB** is the switch to stop "crack noises". **AGC** adjust the input signal, if the station is wavering. The signal power can be controled with the scale (high left on the screen) Is a signal over S7, then you can use the switch **ATN**. This one diminish the antenna, if the signal is too strong and the receiver is imminent to over-modulate.

The fields **USB, LSB, CW, AM, FM, WFM** are modes. By normally, digital receiving you choose USB with a bandwidth from 3KHc **IF**. AM you use for normally radio-stations on short-wave. Here you set up 6KHc IF. Air traffic stations use 15 KHc IF in AM mode. WMF will be used with 50 KHc IF as an UKW-radio on the frequencies 87-106 MHc.

SQL is the squelch, which stop jammings, if no station is sending. **VOL** is the speakercontroler, which should be controled never to slow, because no signal goes to the computer anymore. It's better to control the loudness in the audio-system.

PS.....

Click with the right mous button in the window from the frequency-analyser for switch ON /OFF. Or click with the left maus button and slide for Frequency offset.

TAB-TOOL WINDOWS



Under the radio-controlling there are the illustrated fields (Tabcontrols), with them you can choose different modes of the programme. These are following windows:

Audio	;Sound , frequenzliste, DSP- filter.
FAX	;FAX receiving and parameter
SSTV	;SSTV receiving und parameter
R TTY	;RTTY receiving und parameter
CW	;Morse receiving und parameter
DCF 77	;Atomoc (ATOM CLOCK GERMANY)



For using these windows you have to consider the section **Decoder** in the first audio window. You can switch to the window, but the function isn't turn on (Note! Klick the Tabcontrol with the right mouse button to activate indirect). You have to activate the corresponding field, then the programme and the DSP-filter will work. In our example FAX is activated, now only the window FAX is working. You can open different windows, but they didn't work.

OFF means, no decoder-programme is activated, only the audio evaluation is wanted.

SCAN, SREC, record and play are for the audio-DSP mode.
(SCAN and SREC is not for all receiver activated)

SCAN will search for an area together with the frequencylist, with SREC it will be recorded automatically.

Record will record the signal, the function OUT= AUDIO must be activated.

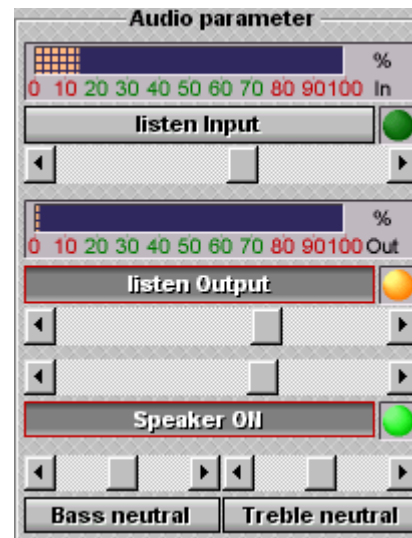
Play only works with unactivated **listen Input**, otherwise you get the message, that a part of the programme is still reproducing signals.

Further informations you always get in the respective part of the description.

AUDIO AND DSP-FILTER-SYSTEM

The essential characteristic of the programme is the sound-processing-system together with DSP from your soundcard. This is called DSP. You need to know following things:

The signal will be read in with line-in (or with the microphone input). Then it will be checked 11000 times per sec. which parts of the frequency this signal got. This we call sample-frequency. After it goes through different complex software processes, which we call filter. The signal is giving out parallel with listening. You can choose, if you want to hear the input directly (listening input) or after the run through of the filter (listening output). If you want to listen to the output, you need a bidirectional soundcard. In this case it's advisable to deactivate "listen input".



These options normally can be adjusted with the audio-drivers of the sound volume control. In this programme part we try to respond these sound-drivers. The programme tries to find the necessary components. It didn't work everytime. Therefore we offer an expedient.

SOUND-adjustment: Click with the right mousekey on the controler, control button or modulate display. After a list with different possibilities appears. See the examples in the appendix on page 27, 30. Choose a componnt or try until it works.

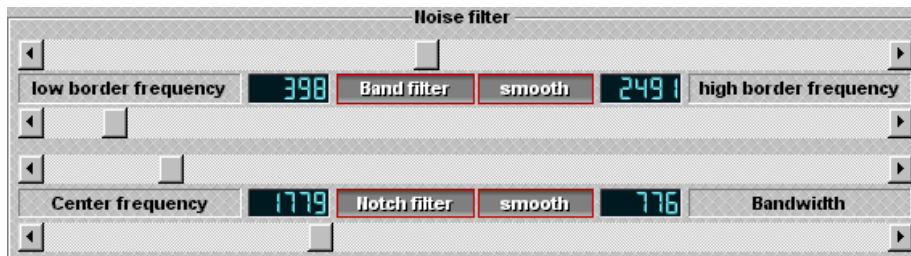
Pay attention to adjust the controler that way, that there is no over modulation (red area). To turn off the receiver-listening tone use the switch "listen input". This one only turn off the received signal. Other tones from the system are still hearable. If you turn off the speaker, there is no tone out of the **speaker** - and no sound system message too.

Filter-Output Listen:

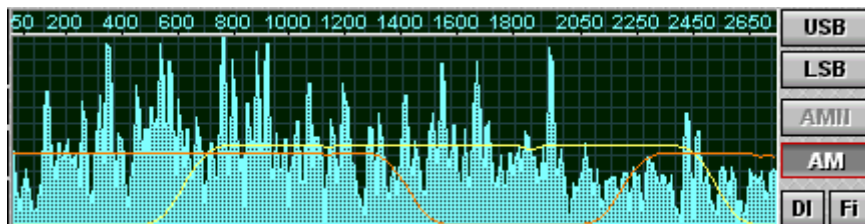
If you want to use the excellent efficiency of the decoder functions we recommend to use these options only for AUDIO. Decodertypes like RTTY etc. didn't get enough processor-power, to show their extreme efficiency. This option is be connected to the filter system. If no filter is turned on, then you hear the unfiltered signal. If you have activated a decodertype like CW, RTTY etc. you only can hear the signal, if tone frequencies are in the range of the filter. Choose the function OUT (AUDIO), then you can use the noise filter.

Noise-Filter:

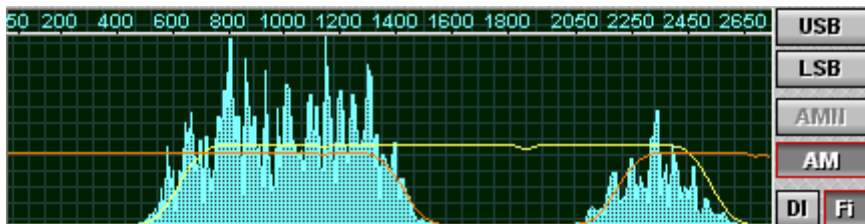
This is the adjust area for the audio-system and is be connected with the function OUT=AUDIO.



If you activate the **band filter** and adjust the example above, you can hear the result of the filter. The range of the bandfilter will be shown in the frequency-spectrum (see the following picture)



Now activate the small button **Fi** left beside the analyser, then only the run-through-area is on the screen.



The bottom **DI** determines the delay of the display, the slowness or the hold on of the point of worth.

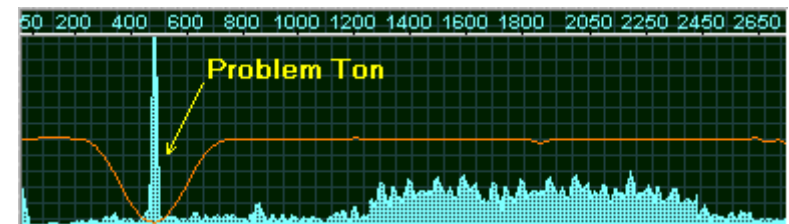
Frequency	Time (sec)	Spectrum
11025	0.093	2756
Set parameter		

You can determine under TIME (sec) how often (in a sec.) the green signal beams should be reproduced. Here you should work in very small parts of a second. With FREQUENCY you adjust the sample frequency. By audio recording the quality of the reproducing is very affected, if you use UKW. If you use 22 or 44 KHz. If you have activate one of the decoder types, never use a higher sample-frequency than 11 KHz. It will be shown very quickly, how efficient your pentium-system is. There will be a crash because totally overworking. By working only in audio-evaluation there are no problems. With SPECTRUM you can adjust the area of the spectrum-display. The maximum always is sample-frequency /2.

smooth be used to refine the outlet curve and is discern as a smooth drawing.

You use the **Notch filter** to stop an undesired area. You can use the notch filter when there a jammings.

The combination with notch filter and bandpa is possible.



Filter in a decoder-funktion:

The filter by decoder-functions like FAX, SSTV, RTTY, CW etc. you only can adjust in the respective windows. Is the field "listen output" activated and "listen input" unactivated, then you can hear what the decoder hears.

It's better, that the sample-frequency always has 11025 Hz.

Audio Play:



Here you can record the incoming signal and you determine the

type of compression your system can achieve. GSM is recommend. Here are a lot of possibilities for radio amateurs. There are a lot of combinations between recording and reproducing. Do some explanations with the audio-drivers and multimedia-programmes of your system (double-click on the small yellow speaker, task strip left). Record a signal, reproduce it, unactivate the line-in and activate Loop-backway or WAVE-IN. After the output signal of the audio-reproducing will een as an input-signal and the programme RadioCom will evulate this signal.

PEAKMETER - Quality of Evalution.

There is a connection between modulation and the quality of evaluation. This you will see, if you over modulate a RTTY-station. You will find out, that signals will be evaluate but you can't hear nothing. The input-controller is in connection with the volume controller of the radio. By tuning the line-in will be over modulate or less. If you got a perfect adjustment don't change something. Control the loudness with the speaker-output. Using the filter system by searching for a barely hearable station, you are using the filter-system reasonable.

Filter make possible to perceive signals. This we call receiver-quality. So the quality of the radio will be dependent on their filter. The IF-filter-width determine something too. The neighbour-selections are the cause for hearing additional undesired things. But all these things are unimportant for our programme. We could do something more, if you turn off the filter. If you confine the input before, the decoder-analysis can't evaluate the top- or side-waves, to get a better decision for IS or IS NOT. Are the top waves missing, then there is only one possibility. Are the top waves still there and the receiver is wide open, we can check more probabilities. Acoustically it's a terrible noise, but it's much more better for the evaluation.

STATIONS AND FREQUENCIES

Frequency (K...)	Range (KHz)	Mod...	IF	Deco...	Mode	Baud	Mark	Shift	Polar...	Stop...	Description
3825.500	0.000	USB	3 KHz	RTTY	Baud...	100	1275	425	Invers	1.5	Meteo Gregel
3855.000	0.000	USB	3 KHz	FAX	576	0	1900	800	0.0	0.0	Meteo Offenbach/Pinn
3875.000	0.000	USB	3 KHz	FAX	576	0	1900	800	0.0	0.0	Meteo Moskva
3957.000	0.000	USB	3 KHz	RTTY	Baud...	50	1275	425	1.5	1.5	Meteo Cairo
3995.000	0.000	USB	3 KHz	RTTY	Baud...	50	1275	425	1.5	1.5	Meteo Leningrad
4002.000	0.000	USB	3 KHz	RTTY	Baud...	50	1275	528	1.5	1.5	Meteo Bucuresti

You have got a list, which contens the necessary dates for receiving. With a double-click on the left frequency the station will steer on the receiver and the corresponding receiving-programme will be turn on with the necessary parametres. With a click (righ mouse-button) test the frequency. If you press "Frequency" or Designation", the programme assort. You can enlist new items, change old ones, save or delete them.

Station data

(Start-)Frequency (KHz): 3855.000 Stop-Frequency (KHz): 0.000 Decoder: FAX Baudrate: 0

Modulation: USB IF-Bandwidth: 3 KHz Mode: 576 Frequency (Hz): 1900

Stations-Description: Meteo Offenbach/Pinn Polarity: Normal Shift (Hz): 800

Stopbits: [dropdown]

OK Cancel

The right way to adjust a data-set is, to start the corresponding receiving-programme and adjust a frequency. After the parametres of the receiving-programme must be adjusted, until the receive is o. k. Then you have to press **NEW STATION** after **SAVE**. If you press **US SETTING** the just choosed list will assume the dates. Like that you can kill the selected list-input by choosing the field. If you forget "**SAVE**", all efforts are useless.

The SCAN-function only can be adjusted in this area.

INIT-FILE OR PROGRAMM-RESET

If you leave the programme fundamentally an INIT-list will be produced, which will be loaded by the next call. So all adjustments will be saved.

But sometimes it's useful to get a reset-function. There is no reset-function available. Here our solution:

In \PROGRAMM\BONITO_RC is the MRX-INIT-list
These list always close with .INI z.B.MRX.ini

If you kill such a list, then the items for these INIT-list will be reset by a new start. Don't forget, if you kill dates in a normal way, the INIT-list goes into the wastepaper-basket, from here they can be restore. You can manipulate an INIT-list with a textprogramme and you can correct some adjustments.

By starting the programme without INIT-list the system try to identify the sound system. You have to check the sound adjustments again, because they didn't work correctly. You also have to correct the slant by FAX and SSTV. It means, you have to adjust the same things like the first installation (see page 1).

RECEIVING, ADJUST AND PARAMETER

RECEIVING AND ANTENNA

Everything is being attached by the quality of the receiving. Decisive is the antenna. But it's not difficult to build the best antenna. Take an exactly 6 m simple wire and connect it with the core of a coaxial-wire. Then take a next 6 m simple wire and connect it with the screen. Then tight all horizontal like a T. 12 or 18 m are a little bit better. The simple-wire-antenna is still the reference-antenna, which is been compared with others. The result is:

"Nobody offer us an antenna, which were better"

There are different compromises, if you don't can place the wire. Activa-antenna are very difficult to handle. They amplify the jammings more than the signal. We offer a special antenna, but we never say, that our antenna is better than a perfect tightend wire. Our antenna is only better than all other compromises, when a wire-antenna can't be tightend.

The first try always should be started with a good receive. If you didn't get a clear signal, you have to optimize the antenna or you have to wait until the signal becomes better. If you ignore this and you try it with a senseless signal it's difficult to interpret the parts of adjustments and the function of it. But it doesn't mean, it didn't work. Because a profi can get something from a senseless signal.

"How to adjust something, what you can't see and hear?"

If you have adjust a signal by good receiving-conditions perfectly, you can decode it by worth conditions too. Because the adjustments and the parametres are saved in the frequency-list and you can call them later. It's not necessary to adjust again. In doing so, we will see what the decoder can do. In every case the decoder is working well, because it didn't "hear" the jammings like you. The electronity filtered a lot. On the other hand the speaker is repeating everything like it comes in. And so there is something to "hear" but your ears can't check, if there is a clear signal or not.

SIGNAL ADJUSTMENT - WHAT IS AN USEFUL SIGNAL?

Before you adjust a signal it's necessary to perceive the tone-signals. After you can start the corresponding receiving-programme.

A signal is being composed of, that there are different arts of tones (pitches), which will be interpret (decoded) different. The distance between the first and the last tone-condition you call band-width. There are a lot of different tones in the radio. One thing real decoded signals have common. If you have doubts, if there is a real and senseful signal, then there is no signal. Senseful signals always are very different to senseless signals. Now you have to perceive which kind of signal it is: MORSE, RTTY, SSTV or FAX.

These things you will learn soon. Only by the different types of RTTY-modes it's a little bit difficult. We only evaluate NAVTEX (SITOR) and RTTY. But there are a lot of types, which we didn't evaluate, but the radio is still sending it. Therefore not every senseful signal is an useful signal. There are signals, which we are decoding correctly, but the letters are very senseless. Maybe it was an arabian, who was writing letters with a telex, which are very senseless in our latin alphabet.

If you receive correct synoptical number-codes, it can happen, that an user think, this are senseless dates. Such dates are weatherdates and will be evaluated from professional programmes like BONITO-MeteoCom/BordTerminal/EasyWeather/ProMeteo etc. These programmes are working fullautomatically timercontroled and only have to evaluate the dates to give their results.

To adjust a signal that way, that the receiving-programme works exactly, you need an adjust-help. These adjust-helps shows, where the signal is and how jammed the surrounding is. The RTTY-programme got two possibilities, the FAX-programme got only one, which is the same like the RTTY-adjust-help.

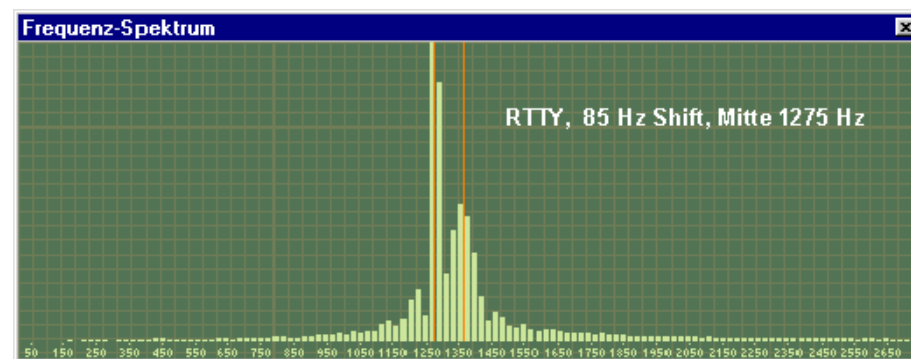
ADJUST HELPS



In the different programme parts the necessary adjust-helps always appear. These adjust-displays show the incoming tones, that you can follow up the adjust characteristics from the radio. These displays should help to make the adjust reference transparent. By testing the first time only rotate both angles to adjust the receiver manual.

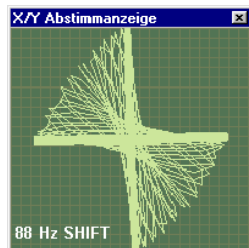
FREQUENCY-SPEKTRUM

This is the display, in which all tone-frequencies will be marked from left to right. The high is according to more volume (amplitude). By doing the adjustment you can see, how the amplitude is dependent from the pitch. Here you always should try to find the pitch, which devoted the biggest amplitude. There are exactly instructions, by which pitch the adjustment is o. k. but the practise is dependent from the filter-curves of the radio and they aren't always in the right way. The unfinished frequency-list always is a theoretical list and not adjusted to your individual radio.

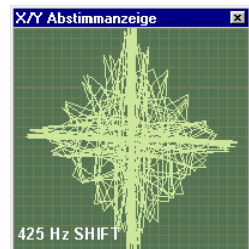


You have to take care that the signal exactly is between the red lines. The difference between the lines is being connected with the band-width (shift). The position on the scale is the pitch. The pitch is the amplitude. This picture is the reproduction of a RTTY-signal with two different tones. One for MARK and one for SPACE. Both tones should be placed on the red line. By a FAX-signal the band-width usually is bigger (the red lines have a bigger distance). Usually you only see one beam on the right red line. The adjustment-process will be explain more in the respectively programme-parts.

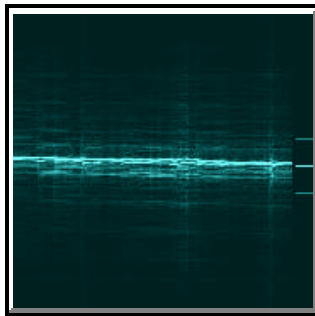
X/Y ADJUSTMENT DISPLAY (ADJUSTMENT CROSS)



On the page before is an example with a RTTY-signal, which exactly adjustment-possibilities is realized with a X/Y-display. This adjustment-help only will be used by RTTY. First you have to take care to come between the red lines of the shift. After you try to create a cross with an exactly adjustment. If that didn't work try to play with the shift. Is the shift exactly, the beams in the cross are right-angled. Now you have to watch, that the cross is in raise exactly.



On the nex Page you can found **PSK31**. This Mode used a time scale adjust. Justify your signal on the middel of this screen. It is marked on the right side.



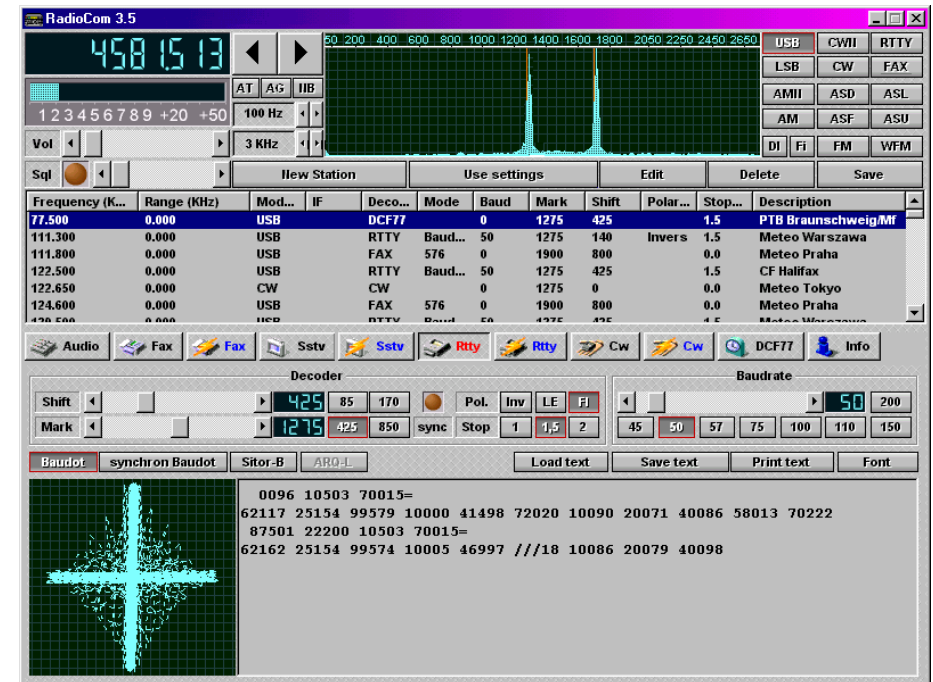
SPEED-PROBLEMS OF ADJUSTMENT-DISPLAY

The adjustments-display very often use the Kernel-CPU (Sytemprogramm / System-Monitor). If you consider now, that the receiving-programme is working, a lot of windows are open and a lot of different things are working too, then a computer with low measure-frequency can't work anymore very quickly. The only help now is:

CTRL + Alt + DEL

Stop the task with RTTY or FAX and retain, when and with what kind of doing you have overtaxed your computer. In the future only turn on one adjustment-window. Use the CPU-option in the receiving-programme. This shows, how wide you have overtax your computer and if you can risk to open a next window. BONITO-programmes are very busy and show, what multitasking is and what it means, to use multitasking and Pentium. P.S. If you click into the adjustment-display it will be turn off or turn on.

RTTY DECODER



This is the surface of a RTTY-receiving-programme. The text-windows reproduce the received text. In normal case you always can see the lowest line, which is writing live. If you want to read the invisible text, you have to click into the text. If you want to go back to the lowest line, you have to click on the highest blue window-edge.

LOAD / SAVE / PRINT TEXT

The whole text is in the text-memory. It's possible to save a marked text-part. You can load the text also. The text will be saved in RichTextFormat .RTF and can be revise and read with Windows-Wordpad. It can be print also.

FONT

The text can get a different size and character. Choose a propotional character (like Courier) and the weather list become clear arranged.

MODE

Baudot: This utility refers to the usual RTTY-text and is an asynchrone utility. This type is used by press- and weathermessages. Synop-messages will be send in this mode too.

sync.Baudot: You can assume that the dates will be send from automatically machines. If there are interferences the programme proceed, that start- and stop bites come to the expected postions. This contribute also, that the result will get less mistakes.

Sitor-B: This is a synchrone utility. It got peculiarities, which are essential undisturbed. Sitor is been used by NAVTEX and always got 100 baud.

PSK31 is a CW/RTTY Modes. Only the HAM-Radio Operator using this.

BAUDRATE

The speed of the different bits we call baudrate. Baudrate comes from baudot. The most used baudrates mostly are 50 baud, sometimes ist happens, that a message is been send with 75 baud (Meteo Bracknell). Seldom 100 baud will be used (Meteo Grenal). NAVTEX always got 100 baud, but this type is called Sitor-B.

SHIFT & MARKFREQUENCY

Shift is the distance between both tones, which signalize the bit condition of RTTY-bytes. They are marked with two red lines in the frequency-analyser. Mark frequency determines the position of both marks. 85 Hz Shift will be send from Meteo Offenbach 147,3. 170 Hz shift will be used from NAVTEX. 425 Hz will be used from Meteo Offenbach on short-wave > 3 Mhz. 850 Hz will be used from Meteo Moskau or Meteo Roma.

STOPBITS

By baudot there are only 1,5 stop bits. But it might be, that a station is sending 2 stop bits. By sitor it's not necessary to adjust something, because this utility got no stopbits.

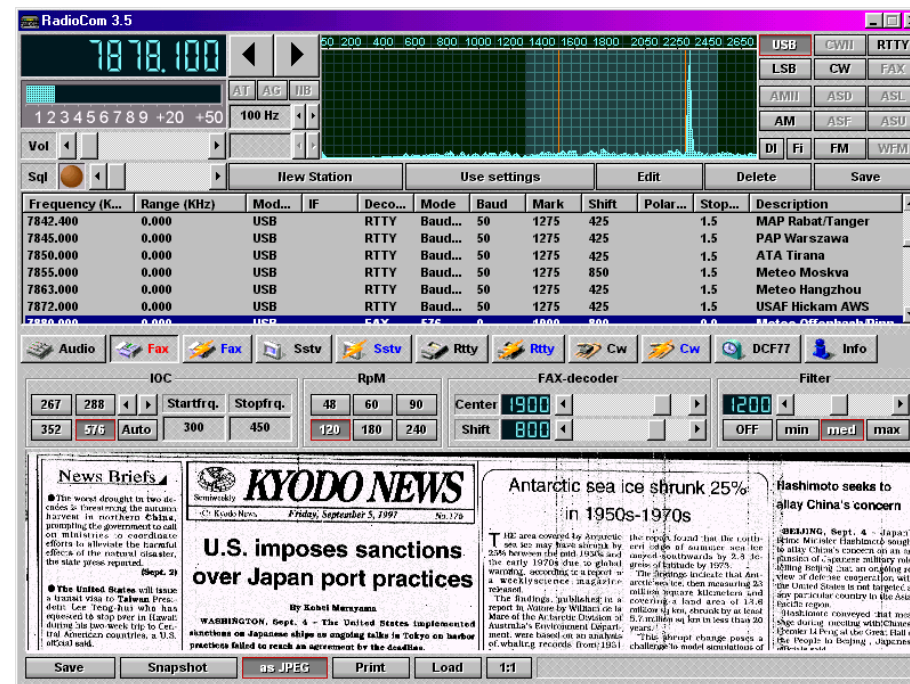
POLARITY

If you only got senseless signs, try with **INV** to get better conditions. NAVTEX always is sending invers. There can be different reasons, why it's unreadable and the decoder only is writing numbers and signs. Try if with LE or FI the letters become readable.

ADJUST

If you can perceive to signals, you also can perceive the shift. Adjust your receiver, that both signal amplitudes are placed on the red lines or the adjustment-cross is standing exactly vertical upon. For PSK31 is using a time scale adjustment. If necessary read under adjustment-display, X/Y adjustment display (adjustment-cross) page 14 or frequency-analyser page 15.

FAX DECODER



If you activate the FAX-programme, you can see such a window. You see the reduced screen. Click into the FAX picture, then a bigger window will be opened. The screen now is 1:1. You didn't see the whole picture, if the window is smaller than the icon-resolution. The reproducing of 1:1 is necessary, to realize the smallest details by recording. You can hold the picture with the left mousekey and pull to the left, right, up or down.

SAVE

If you activate this field, the picture will be recorded from this moment. Normally a picture will do this automatically by receiving the starttone by it's own. But if you have turned on just in the middle of the FAX-picture, you can activate the saving manuel. But it will be saved only from that moment, you had turn on "saving". The next stop signal will saved the momentary picture.

Not only "SAVE" isn't activated by starting the programme, the left screenmargine isn't synchrone too. Press the right mouse-key, then the picture becomes left-synchrone.

SAVE FAX-BUFFER

If you want to save the FAX-picture manuel, with this function the whole picture-memory will be saved. This picture can be revised and sized with FAX-view subsequently.

IOC AND SLANT-CORRECTION



Here you can changed start- and stop-frequencies. Start- and stop-frequencies are tones, which will be sended at the beginning and the end of a picture. Usually it is 450 by start and 300 for stop. A 288'r icon

always have 675 Hz. The starttone set the programme on "SAVE", the stoptone is writing the picture.

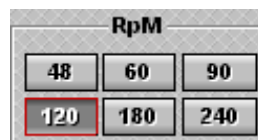
By weatherfax usually the icon 576 is used, somestimes 288'r too. Radio amateurs are using the 276'r icon.

- ICO 267: directly receiving of Meteosat pictures and amateurs
- ICO 288: small weathermap-IOC, ca. 800 pixel
- ICO 352: press-pictures, ca. 1100 pixel
- ICO 576: big weathermap-icon, ca. 1800 pixel

Here you can correct the slant of a FAX-picture. Trying the first time, the picture will come into in a slant. In this case you can equalize with both fields "<>" (with AUTO) the picture to the left or to the right. Press the small angel, until you can see an effect. Then press until the picture is running straight. After press "auto" to convert all icons to this equalize. If you didn't do that, you have to adjust every slant for every U/min and every icon yourself.

RPM

The number of revolution of a FAX is specify in U/min. A normal weather-fax use 120 U/min. Maps from Russia comes in with different rpm like 60, 90 or 120.



SHIFT & CENTER FREQUENCY



There are different reasons to slide the adjustment from the normally higher tonearea into a deeper, to didn't ge any interferences. You have to slide both red lines from the

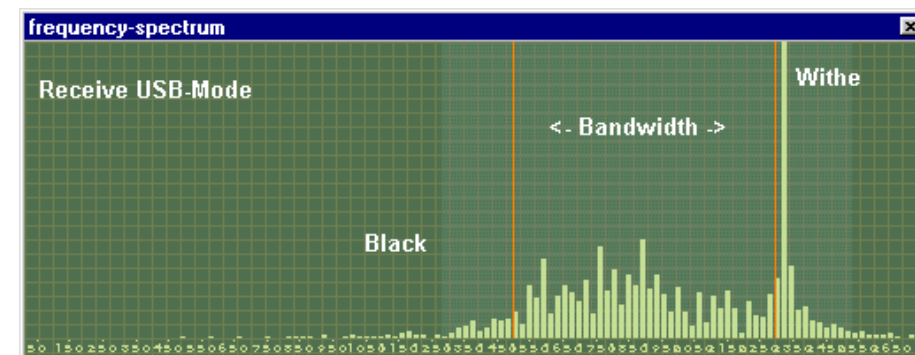
frequency-spectrum horizontal on the scale. With CENTER the average frequency is meaned, CENTER +/- SHIFT/2. The shift is the band-width. The band-width is the distance, which constitute a signal from the first tone frequency until to the last tone frequency, the distance between both red lines in the spectrum-display.

FILTER, BAND WIDTH



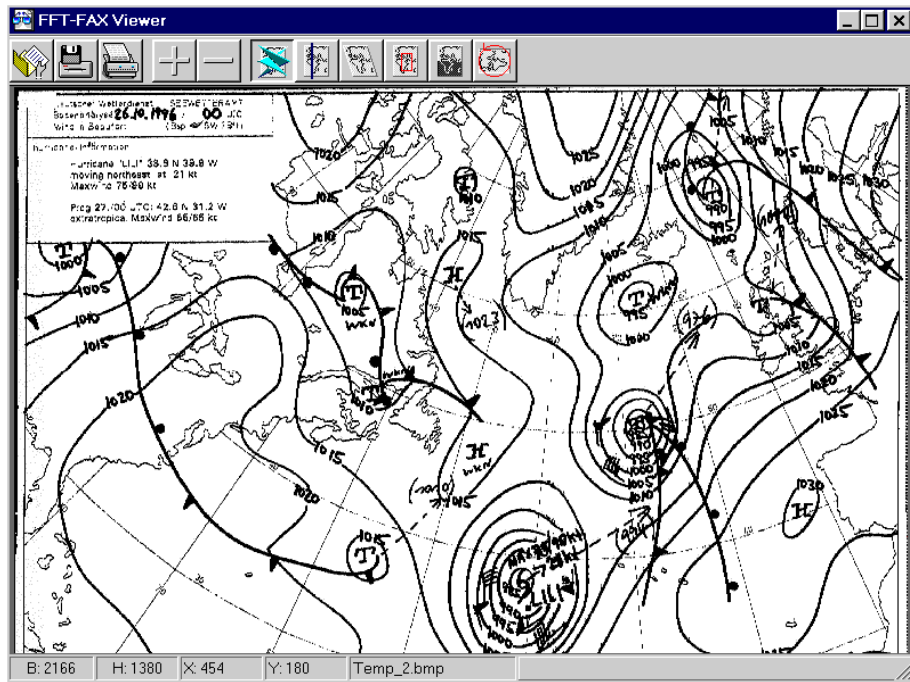
With it the filtertype and filterarea (brighter area) will be adjusted. The filter should go beyond the shift. Other adjustments will give improvements too. Otherwise you have to try, when and how a wrecked FAX becomes better conditions.

SPEKTRUM-ANALYSER



This is the display to adjust the tone-frequency (see page 14). Using USB the fax-picture usually got more signal-beams on the right, which deflect left to the end (left red line) of the band-width. The brighter area shows the sphere of action of the filter. To get clear, white pictures, the main beam always will before the red line. If there are interferences you can slide the center frequency to the left or to the right, reduce the bandwidth or change the filter.

FAX VIEW AND MANIPULATE



LOAD FAX

With the usual disk-requester you load a picture. In the lower part of the disk-requester you find a field, in which received pictures will be shown, if they are selected in the list above. In the index these pictures are named BBM. If there are no preview-pictures, you have to turn off in the window-explorer under view, options the display-option "No MS-DOS-extensions".



SAVE AND PRINT FAX

The pictures can be saved or print. The usual window appears without special attributes.



+/- ZOOM IN/OUT

The pictures can be ZOOM IN or ZOOM OUT with plus or minus. It's possible to choose a section with the mouse in the general-view-mode. That means too, only one time.



FAX-OVERVIEW AND EDIT PICTURE

If this field is pressed down, then the whole picture is on the screen. In this mode the following fields on the right are activated and the picture can be manipulate like follow.



SYNCHRONISIZE

If you received a picture, which got the left margin in the center of the picture, use this function to synchronise. Click the field and click exactly on the place, where the left margin should be placed the next time.



SLANT -CORRECTION

If a picture got a slant, use this function. After click on the picture-margin on the top and draw a line along the slant of the picture. With a next click the picture will be corrected.



CUT A PICTURE

Click on the field and draw a rectangle with the left mouse-key. The rectangle will be on the screen blinking, until you press the right mouse-key to cut the picture.



INVERT PICTURE

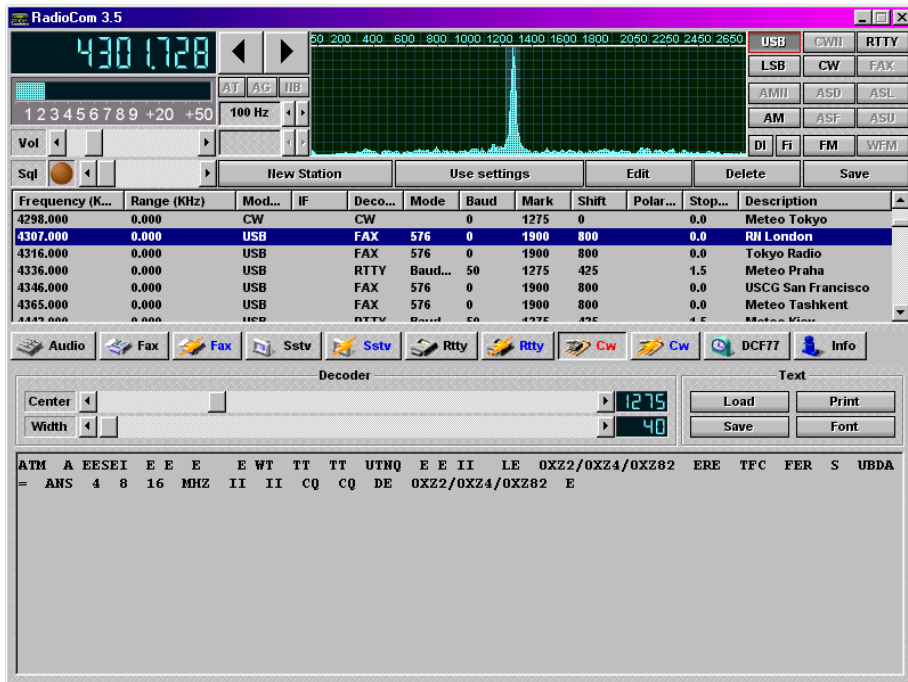
With LSB you can receive a picture revers. This you do, to get a better picture-quality. The picture becomes negative and with this function you can invert the picture, to become white.



ROTATE PICTURE

If the picture is placed wrong, you can rotate it, until it's in the correct position.

CW DECODER



Similar to RTTY it's a receiving-programme for CW, because the adjustments peculiarities are different by CW-signals..

SAVE AND PRINT

As usual you can print or save a received text. If a text is marked, only this one will be saved or printed.

SELECT FONT

You can change the font of the visible text.

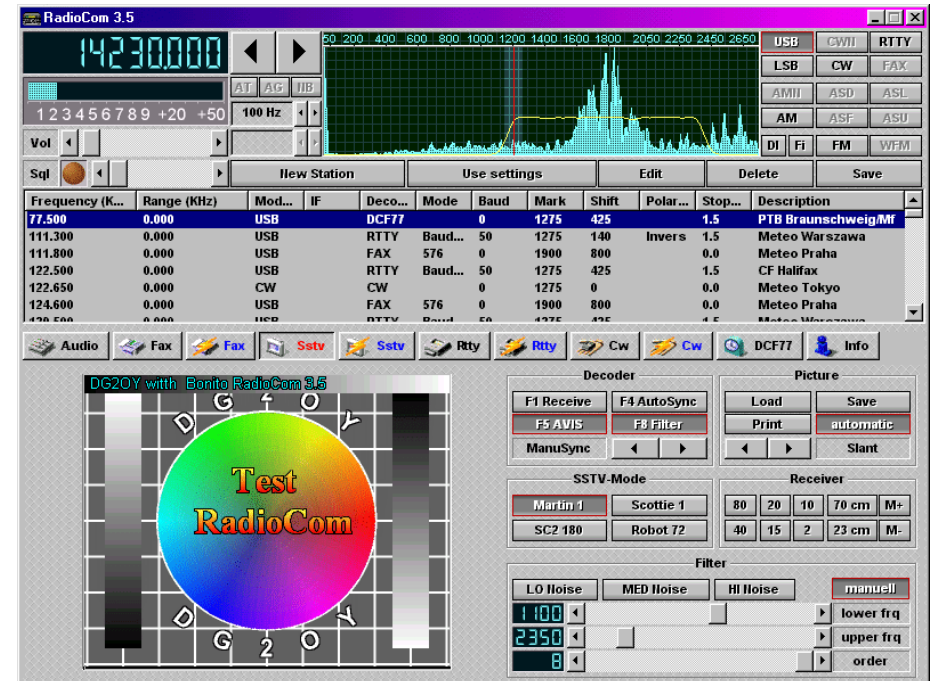
ABSTIMM-HILFE

The signal must be adjusted so, that the signal-flank exactly is on the filter-line.

CENTER: With the slide controller you can turn the filter horizontal. This determines the center.

WIDTH: The band-width of the filter determines this slide-controller.

SSTV DECODER



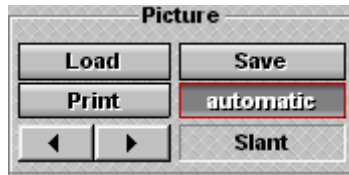
Here you got the possibility to work with special filter. Additional you'll find some fields for fast adjustments from SSTV-frequencies (receiver section). With **M+** you can save a good adjusted frequency. If you adjust something new, you can turn back fast to the saved frequency with **M-**.

Adjustment: There is always a small brighter area in the frequency-spectrum, in which a red line appears sometimes. The red line signalize the synchron-tone 1200 Hz. Adjust, that the complete signal is placed in the marked area. A good adjustment shows clear colors. Off shades signify wrong synchronizes (press F4, until the colors are correct).

The section **FILTER** got 3 standard-variants and an individual adjust-area. With **F 8-FILTER** this section will be activated or turned off.

F 5 AVIS: A SSTV-picture has a start-signal, which automatize and save the picture. It's not working always, so you have to press **F1-RECEIVE**. **F4-AUTOSYNC** tries to synchronise the picture new while receiving (F 1 ACTIVATE). Press, until the picture is colored correctly. The picture can be corrected with F 8-FILTER, until the colors are right and the picture is turned in right position.

SSTV-SLANT-CORREKTION

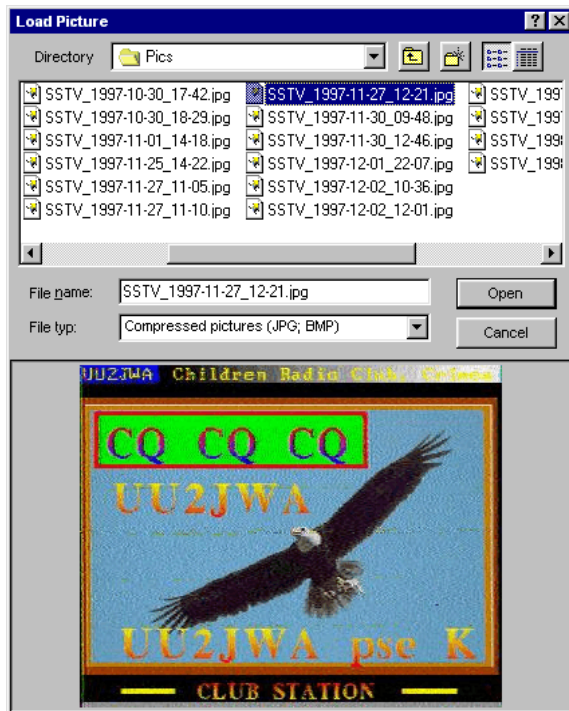


Press both triangles, until your receiving is running straight. It's only possible by receiving a picture.

The field **SAVE** will save the picture, which is in the receiving-window. **AUTOMATIC** will save the picture itself, respectively by reaching the lowest picture-margine.

You can **LOAD** and **PRINT** the picture too. Click into the picture-window and it becomes bigger.

PICTURE-REQUESTER



To see pictures in the lowest area, is determine of, if you have activate or deactivate in EXPLORER under VIEW, OPTIONS following things:

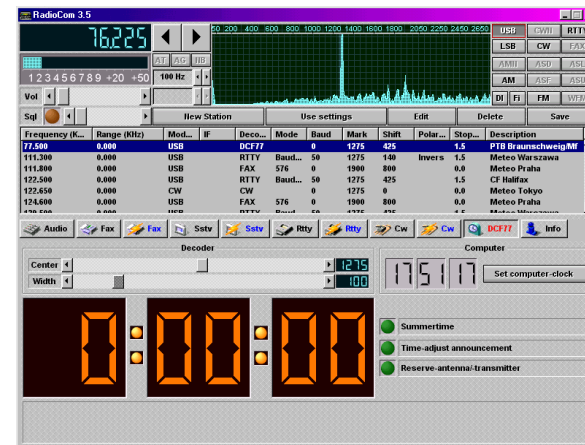
aktivate:

All files on display.

deaktivate:

no MS-DOS extension.....
(advise MS-DOS)

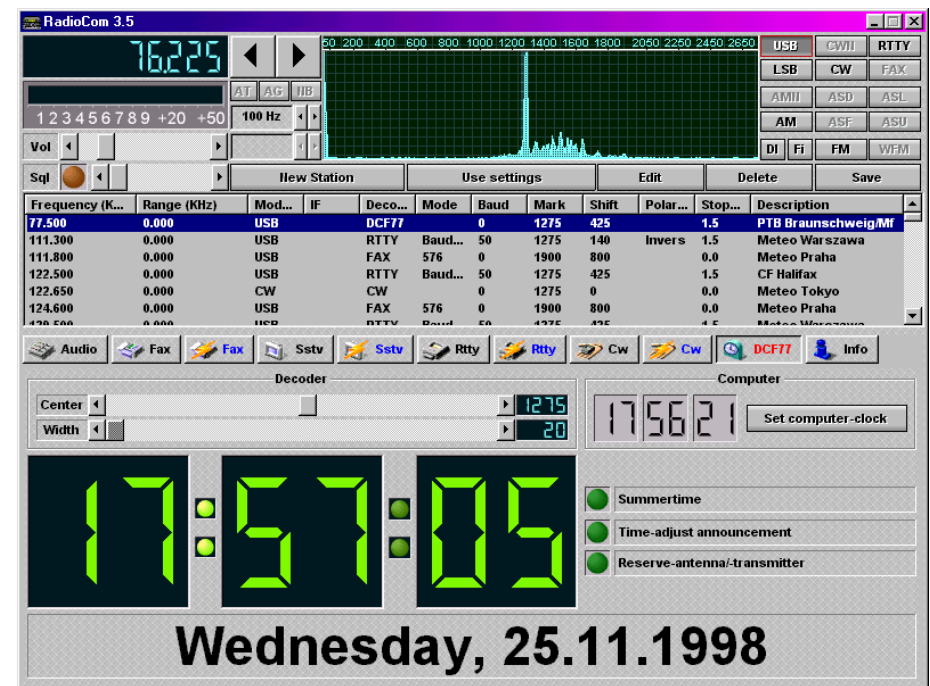
DCF77-DECODER

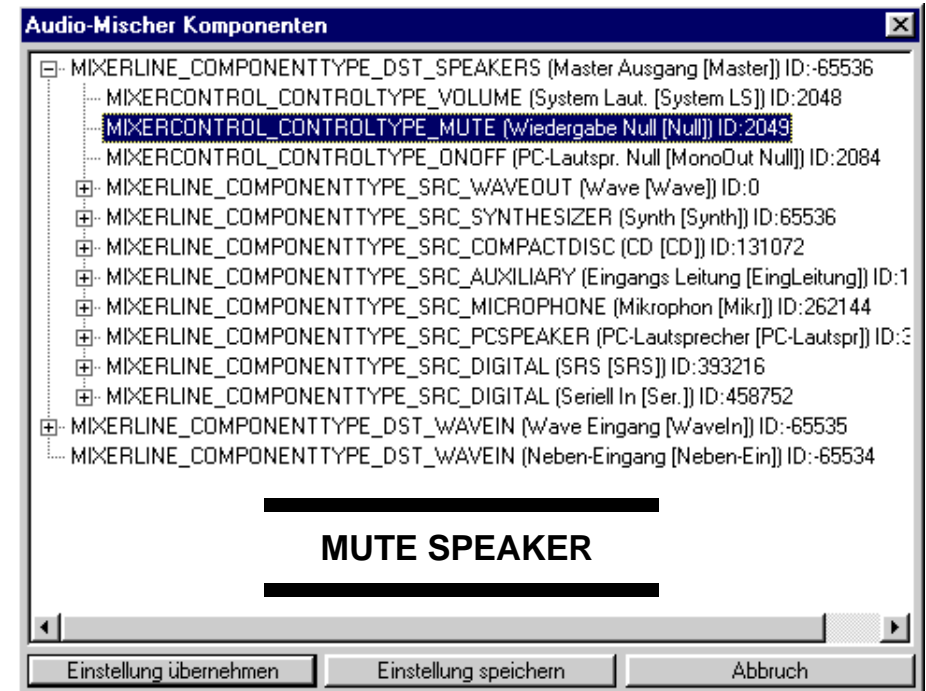
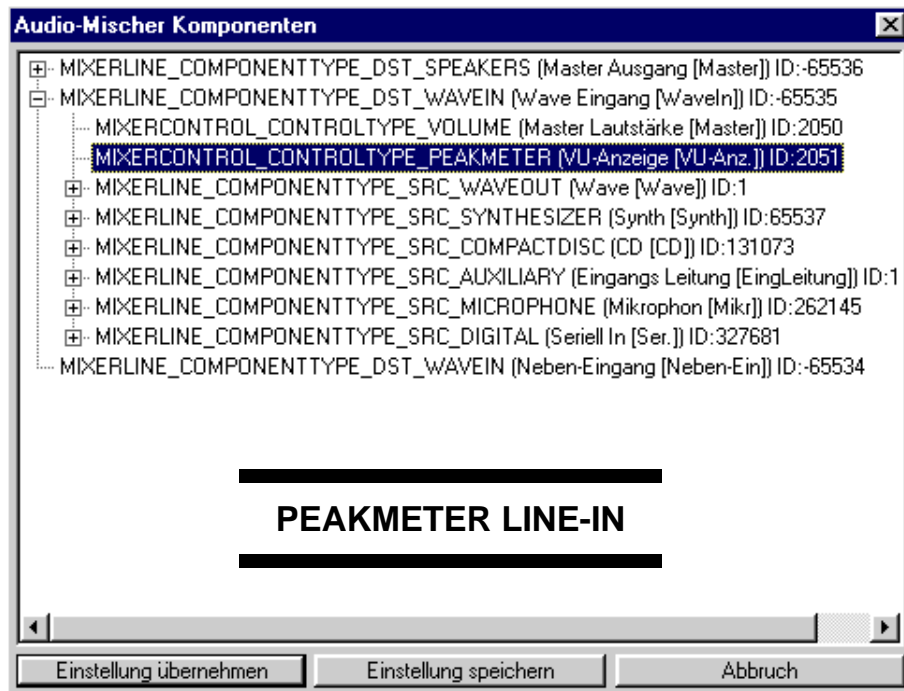
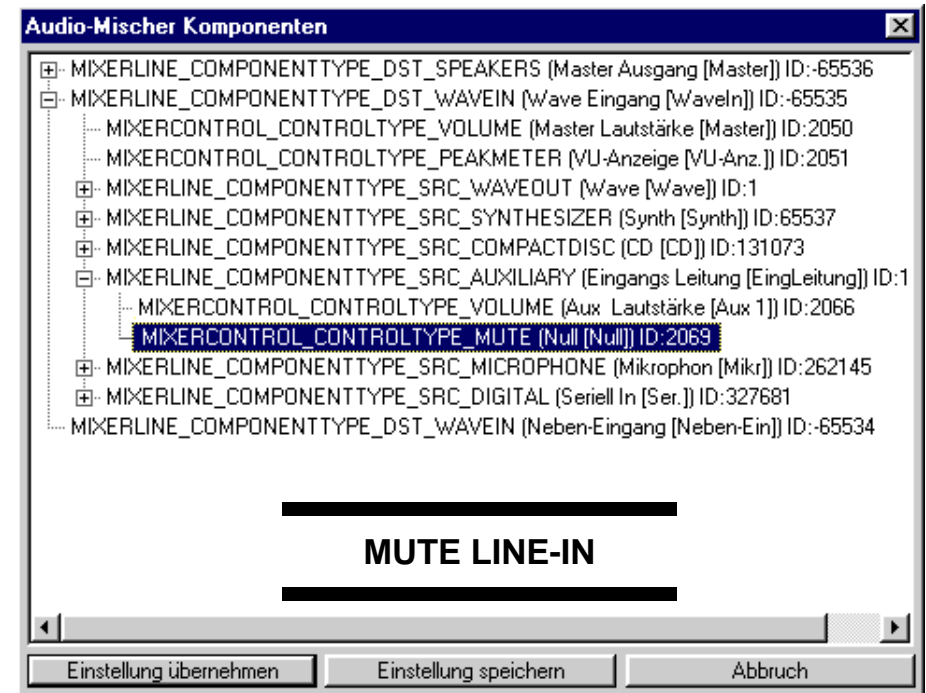
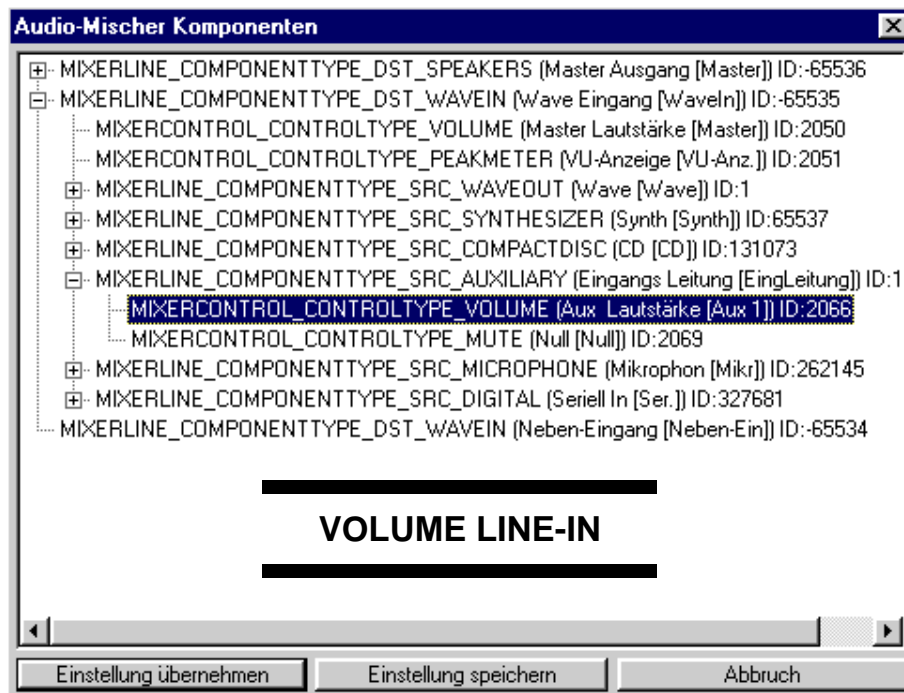


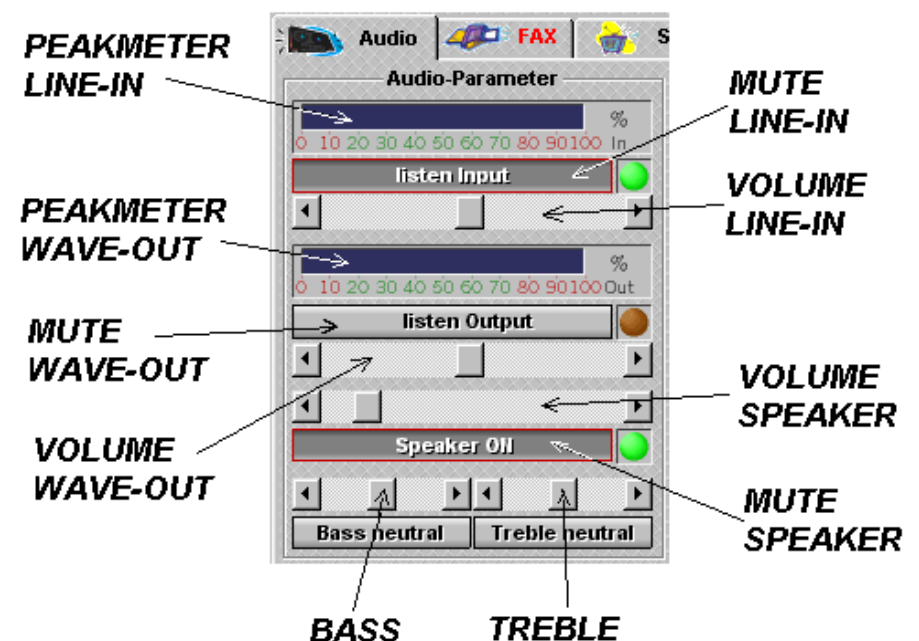
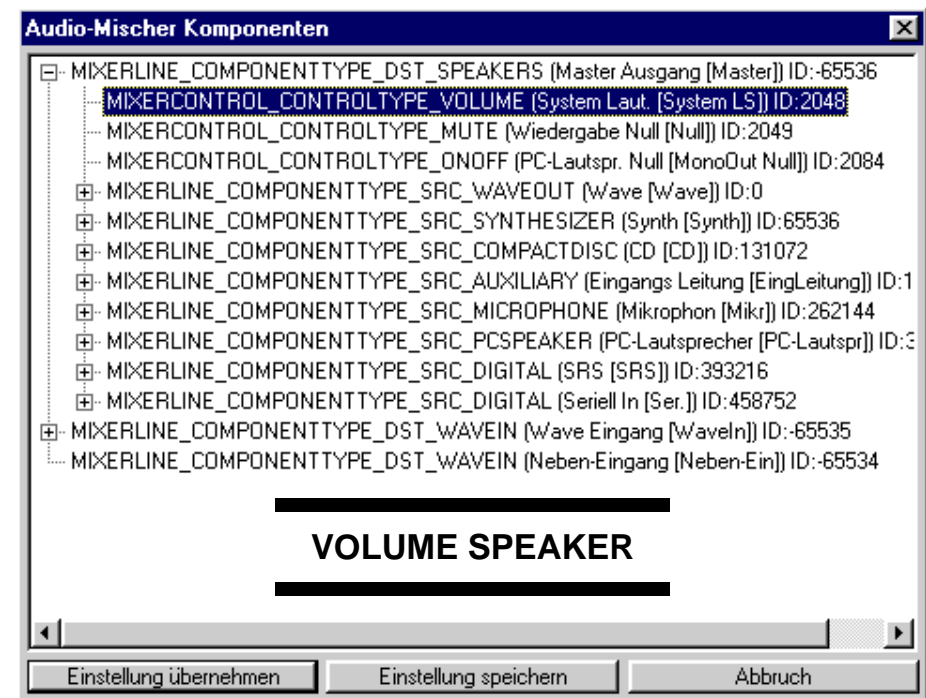
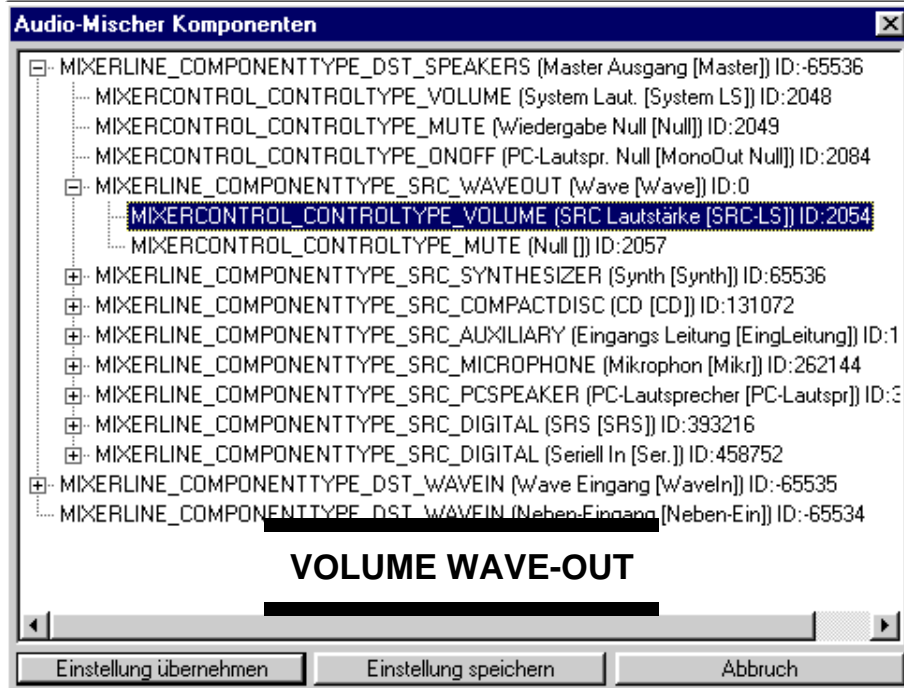
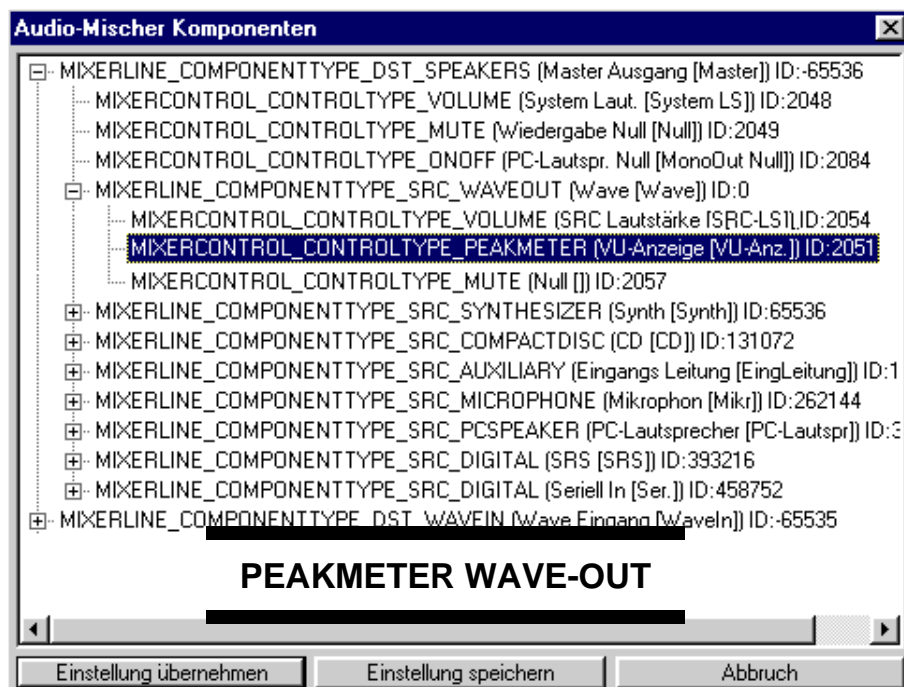
This window appears, if you turn to DCF77. The parametres from the test were - USB, filter band-width 30 Hz, center on 1275. If you didn't hear a tone by using this frequency you have to optimate your antenna.

You can synchronize the computer clock with the received clock. With that

the computer clock will be turned exactly to the received time. Every second you will hear a tone. From the 59. sec. you will hear a long tone, which ends exactly after 1 min., then the programme starts to count the seconds. If the receiving was without any mistakes, you will get the exactly time now.







CABLE JUNCTIONS

The switch-modem IC-SWL ist only for ICOM-receiver.

The switch-modem RC-SWL ist for all other receiver and need the junctions. The RC-SWL interface-controller is in a little box and got a 9-pol SUB-D socket and a 9-pol SUB D-plug. The socket must be connect with a comport of the computer. At the plug you can put different junctions from different tools.

The plug didn't got standard RS-232-junctions.

Following reciever can be control:

- A receiver-controlling for different receiver-types:
 1. LOWE-HF 150
 2. YEASU-FRG100 or CAT-controlling
 3. ICOM-Radios (replace CT17 Modem)
 4. Conventional serial receiver-controllings like:
KENWOOD, AOR, NRD etc....

LOWE-HF 150 and YEASU-FRG 100 can be plug without a next RS-232-modem directly. In RC-SWL-electronics there are the necessary things you need.

The described junctions can be delivered by trade ready-made. But also you can do it yourself.

SUB-D PLUG-PIN-COVERING:

Pin - 5 = ground, GND

Pin - 2 = RX from Computer

Pin - 3 = TX from Computer

Pin - 4 = LOWE-HF-150 keypad-junction (only RC-SWL)

Pin - 6 = YAESU-FRG100 to the connection to CAT-junktion-Pin-3

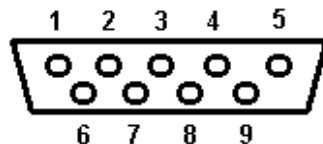
Pin - 6 = ICOM to the connection to remote-jack

only for RC-HAM switchbox:

Pin - 8 = PTT shwitch

Pin - 4 = Kennwod to substitute IF-232C interface

The necessary plug from the back.
(Seen on the soldering-place)



JUNCTION LOWE-HF-150

It needs a connection with a 3,5 mm mono-jack-plug between keypad-junction and LOWE-HF150.

RC-SWL modul

LOWE-Keypad

Pin-5GND..... jack-plug-shank

Pin-4 Receiver controlling jack-plug-head

JUNCTION YAESU-FRG100 / ICOM CT17

YAESU: It needs a connection with a 6-pol-diod-plug (see CAT-junction in YAESU-handbook).

ICOM: It needs a connection with a 3,5 mm mono-jack-plug between remote-junction and ICOM.

RC-SWL modul YAESU-CAT-socket ICOM

Pin-5 GND Pin-1 jack-plug-shank

Pin-6 Receiver controlling Pin-3 jack-plug-head

JUNCTION AOR 3030

RC-SWLmodul

AOR AR-3030 25-Pol

AOR AR-3030 9-Pol

Pin-5GND Pin-7 Signal-Masse-GND Pin-5 GND

Pin-3 .. RS-232-TX Pin-2 RXD/ DATA-IN Pin-2 RXD

Handshake..... Pin 5 with 4 and 6 with 20 connected Pin 7 with 8 and 6 with 4 connected

JUNCTION AOR 5000

RC-SWL modul

AOR AR-5000 9-Pol

Pin-5GND Pin-5 Signal-GND

Pin-3 RS-232-TX vom Computer..... Pin-2 RXD/ DATA-IN

JUNCTION AOR 7030

RC-SWL modul

AOR AR-7030 5-Pin

Pin-5GND Pin-5 Signal-GND

Pin-3 RS-232-TX from Computer..... Pin-2 RXD / DATA-IN

AOR 7030 Speaker cable 8-Pol

GND

Tone-Out

from Pin-2 to a 3.5 mm jack-plug-shank

from Pin-4+5 to jack-plug-head

JUNCTION NRD 535

RC-SWL modul

NRD 535 25-Pol

Pin-5GND Pin-7 Signal-GND

Pin-3 RS-232-TX from Computer..... Pin-3 RD/ DATA-IN

Handshake..... Pin 6-20 conected

JUNCTION KENWOOD TS50 / 570 / 870 ... (universal Kennwood)

RC-SWL modul

Kenwood 9Pol

Pin-5GND Pin-5 Signal-GND

Pin-3 RS-232-TX from Computer..... Pin-2 RXD/DATA-IN

JUNCTION FROM A DIFFERENT RECEIVER

For every receiver it needs a connection (see RS-232 junction in receiver-handbook). Usually the RX-junction from the computer wouldn't be use for the receiver. If you got a special BONITO-compatible driver, then you have got also the necessary junction-describings. Otherwise here are only the fundamental considerations.

RC-SWL-modul

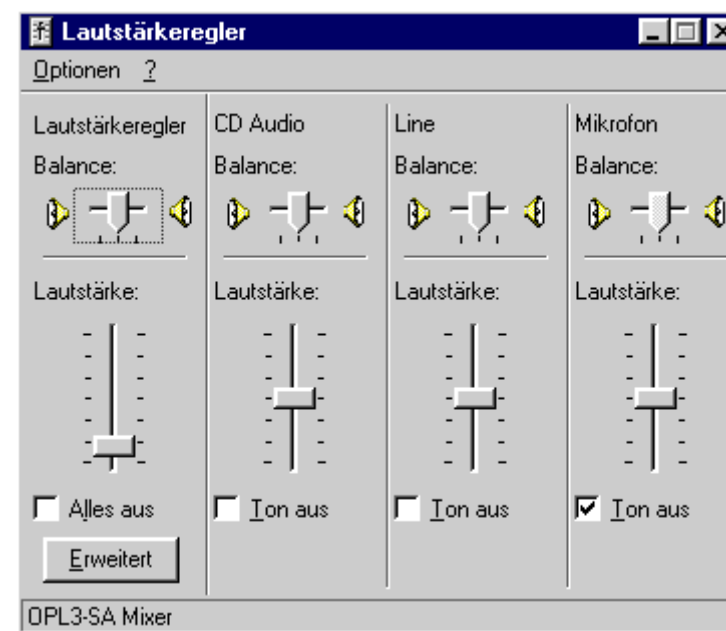
Pin-5GND Signal-GND
Pin-3 RS-232-TX from Computer..... to RX / DATA-IN (RD)

Handshake is not importend !:

RS-232-Junktion at the Radio

Handshake..... 25 Pol-SUB-D 9-Pol SUB-D
Pin 5 wiht 4 and 6 with 20 Pin 7 with 8 and 6 with 4

VOLOME-Control Example for playing (LINE-IN)



INPUT -Control Example for recording (LINE-IN)



TRANSMIT-OPTIONS

SEND-CONNECTIONS

*The function transmitting is blocked,
if the name of the small modul is not RC-HAM switchbox.*

If the connection presupposed for the reception is connected correctly and you have a RC-HAM switchbox, then require you to the transmitting still additional connections of the computer to the Transceiver. You require a connection for the sendton (AFSK) and for the PTT.

The sendton (AFSK) to the Transceiver join:

The AFSK comes from the soundcard output. Either you have a LINE-OUT or you use the output from the speaker of the soundcard. Therefore, which you hear when pressing the F1 - sendkey, that should come somehow in the Transceiver. The worst solution to the transmitting is: hold the microphone at the loudspeaker of the computer and then press then the PTT-key at the MIC. So something functions naturally also, but it should here only the basic principle the transmitting explain.

The tone, which comes does not have from the soundcard speaker-out however the necessary impedance for the AFSK-input to the transceiver. Thus you should use better the LINE-OUT. However, this is not available, then must itself a simple voltage-divider with one 1, 10 or 100 KOhm-Poti prepare. One can solder naturally also simply only a larger resistor in the AFSK - Line, if one tried has fits previously which value for well. It is to be installed more simply a resistor, than a Poti in the plug to hide.

Since now also still the loudspeaker is times softly, times loud or off, I recommend a activbox (2 loudspeaker with a simple amplifier) to use at the computer. Then you can adjust always a constant volume at the computer and per hand at the activbox at, from loudly or to influence softly put without the transmitting volume.

All the transmitting options have a regulator (slider-control) for line-out and for the volume from loudspeaker. These sliders are active however only when transmitting. That is to say also you have an other volume when transmitting like when listen.

You can not expect now, which you will find here, for each Transceiver, a most exact connection - description. Here the fundamentals is described only considerations for a AFSK transmit connection and given an example for ICOM 746 and IC-706 again.

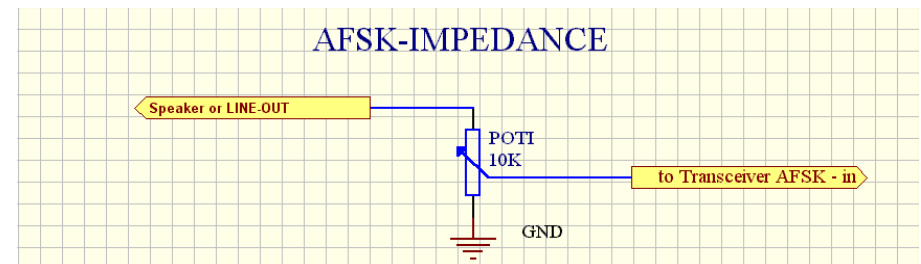
The simplest connection is: AFSK -----> microphone in.

e.g. at the **IC-746 / IC-706** use you the ACC(1)-Socket and join you:

PIN - 2 (GND) -----> with computers , soundcard GND
PIN - 3 (HSEND) -----> with (PTT) PIN-8 RC-HAM-switchbox
PIN - 4 (MOD) -----> with soundcard sound/tone out.

TX - APPENDIX - cable - connections:

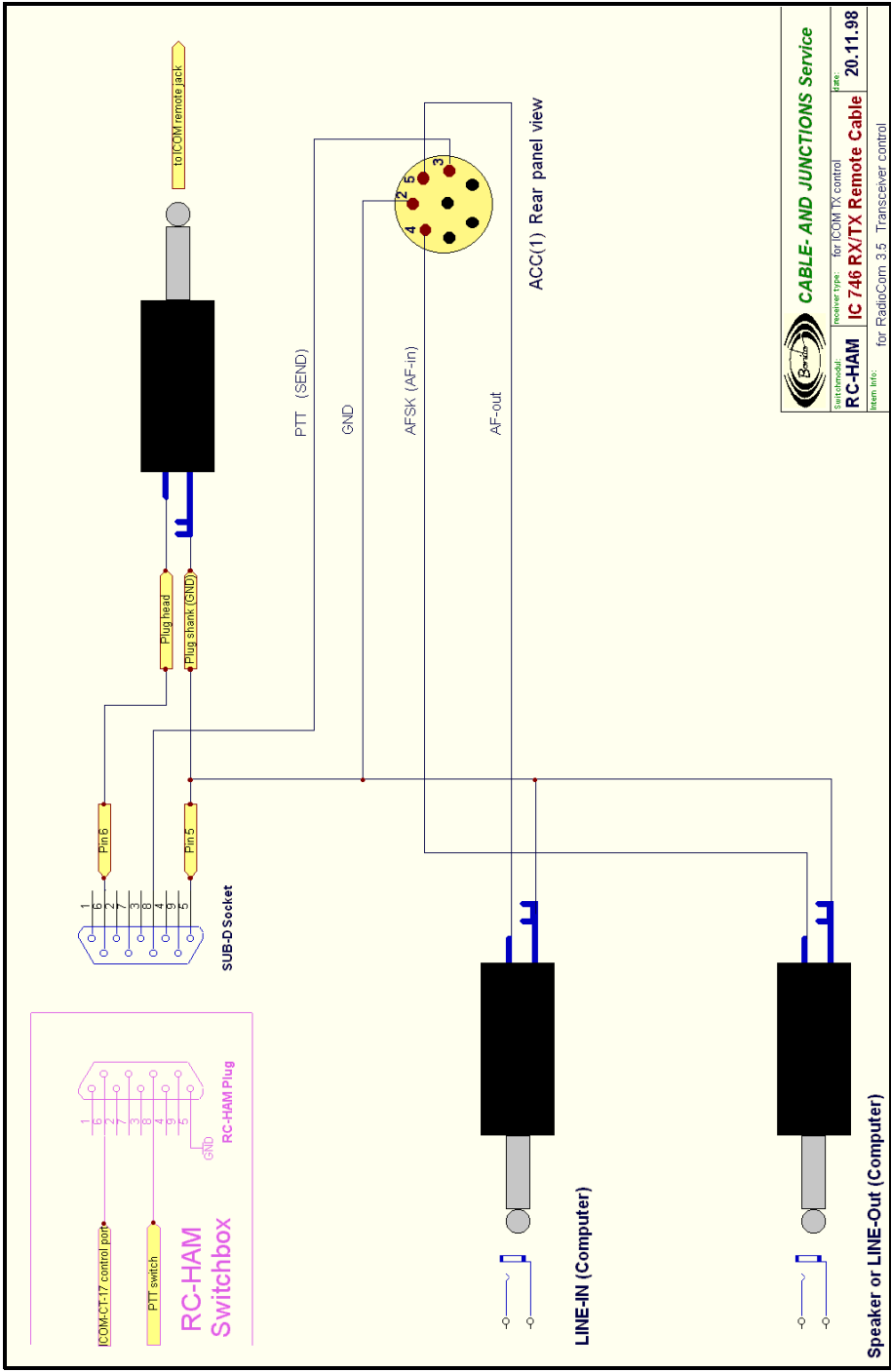
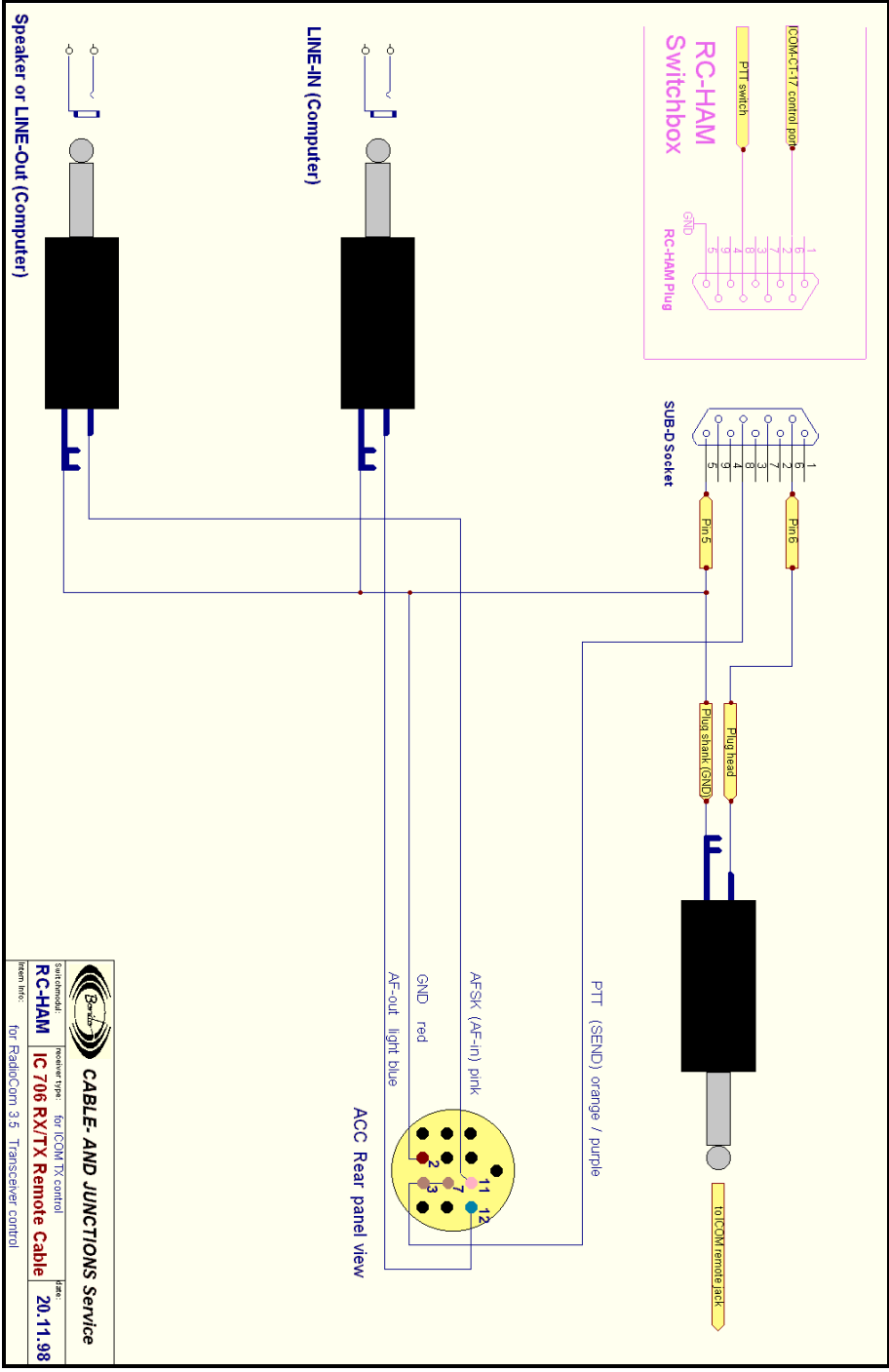
On the BONITO-CD (from service -release 2) are lists for the corresponding switchboxen and circuit diagrams for the cables to the control of receivers and the connections for the respective Transceiver. If you not dispose just of such one CD, so can give surely your dealer you a CD or do make at least an expression of the corresponding connection circuit diagram.

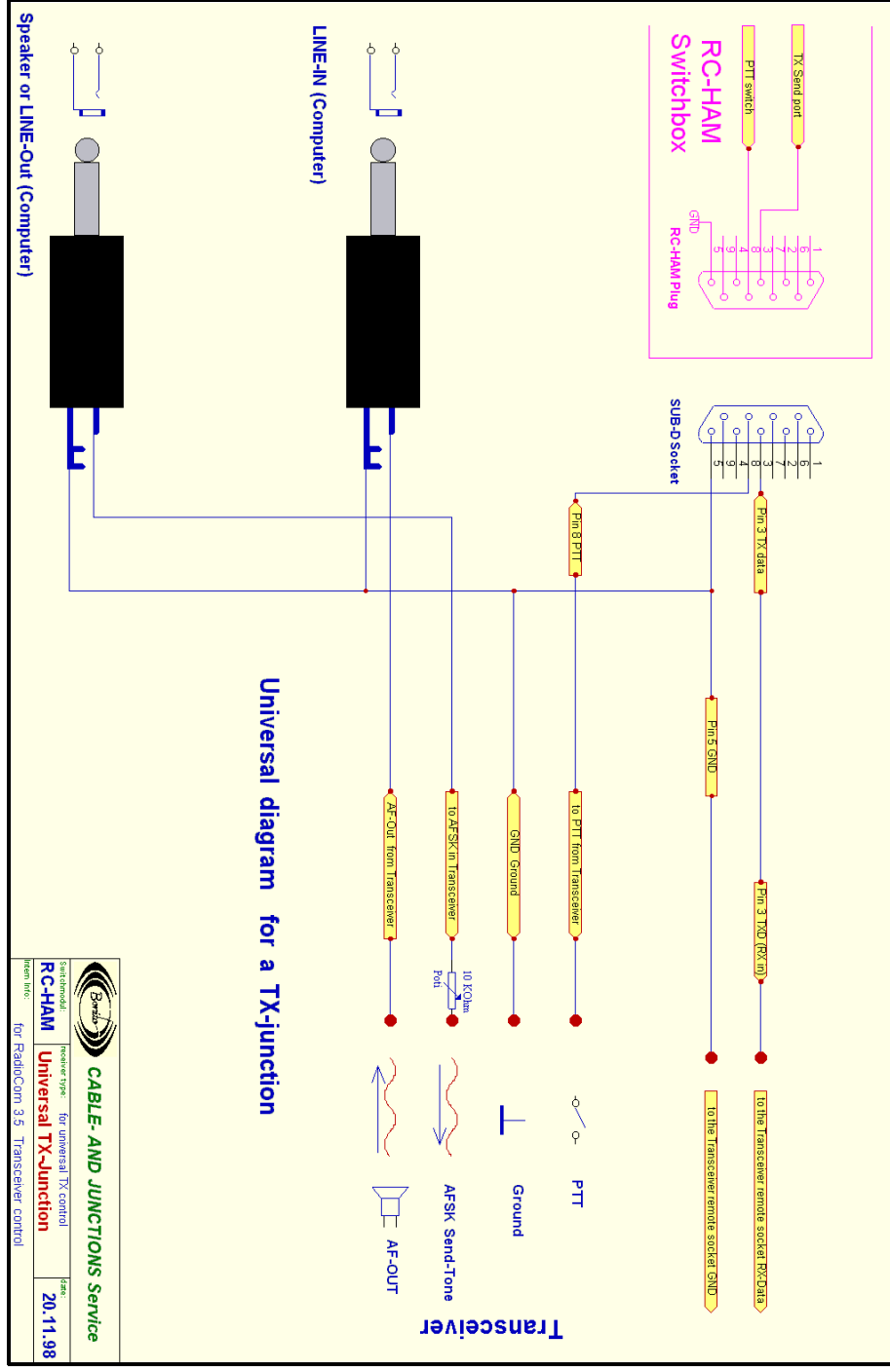
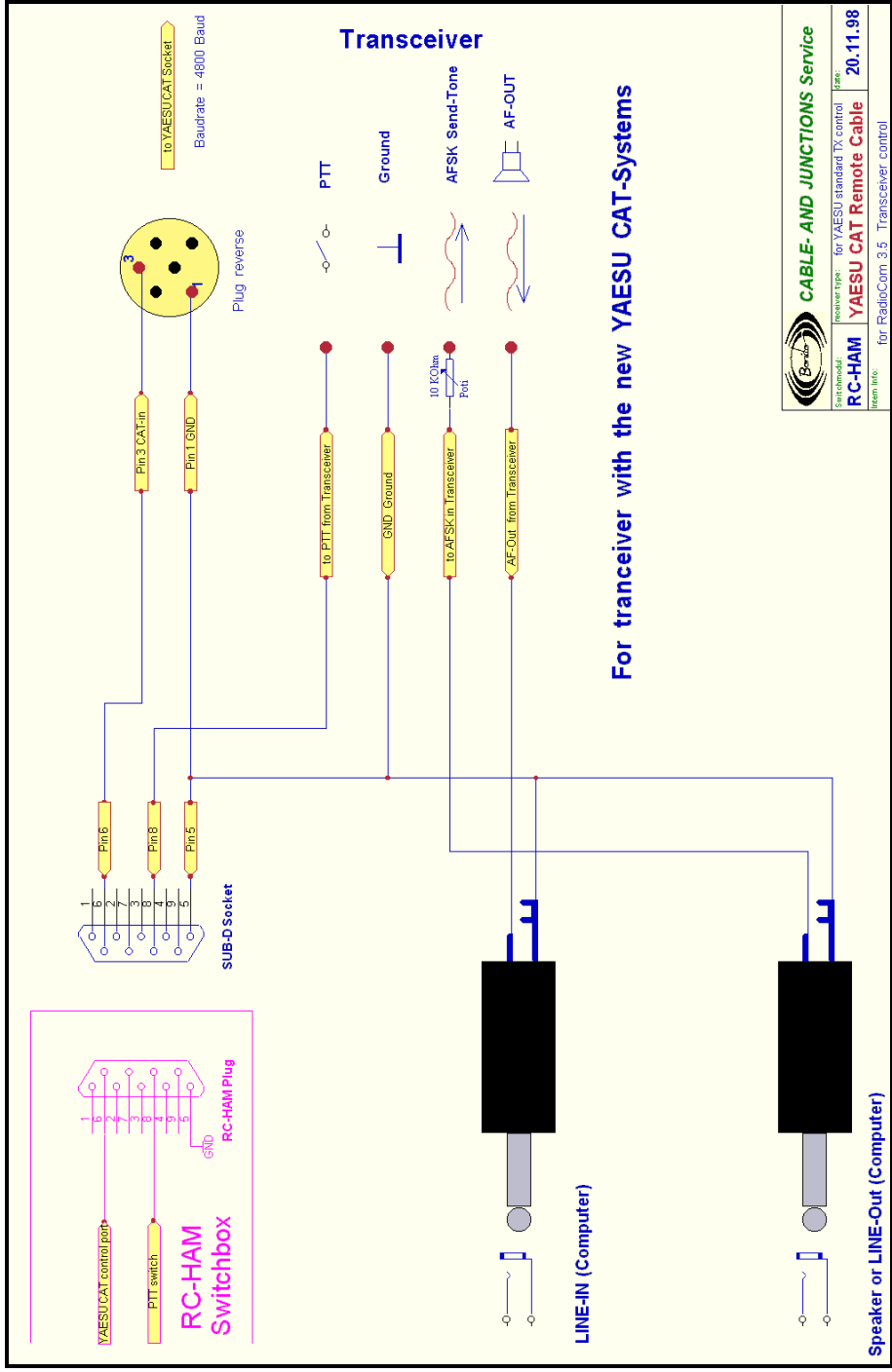


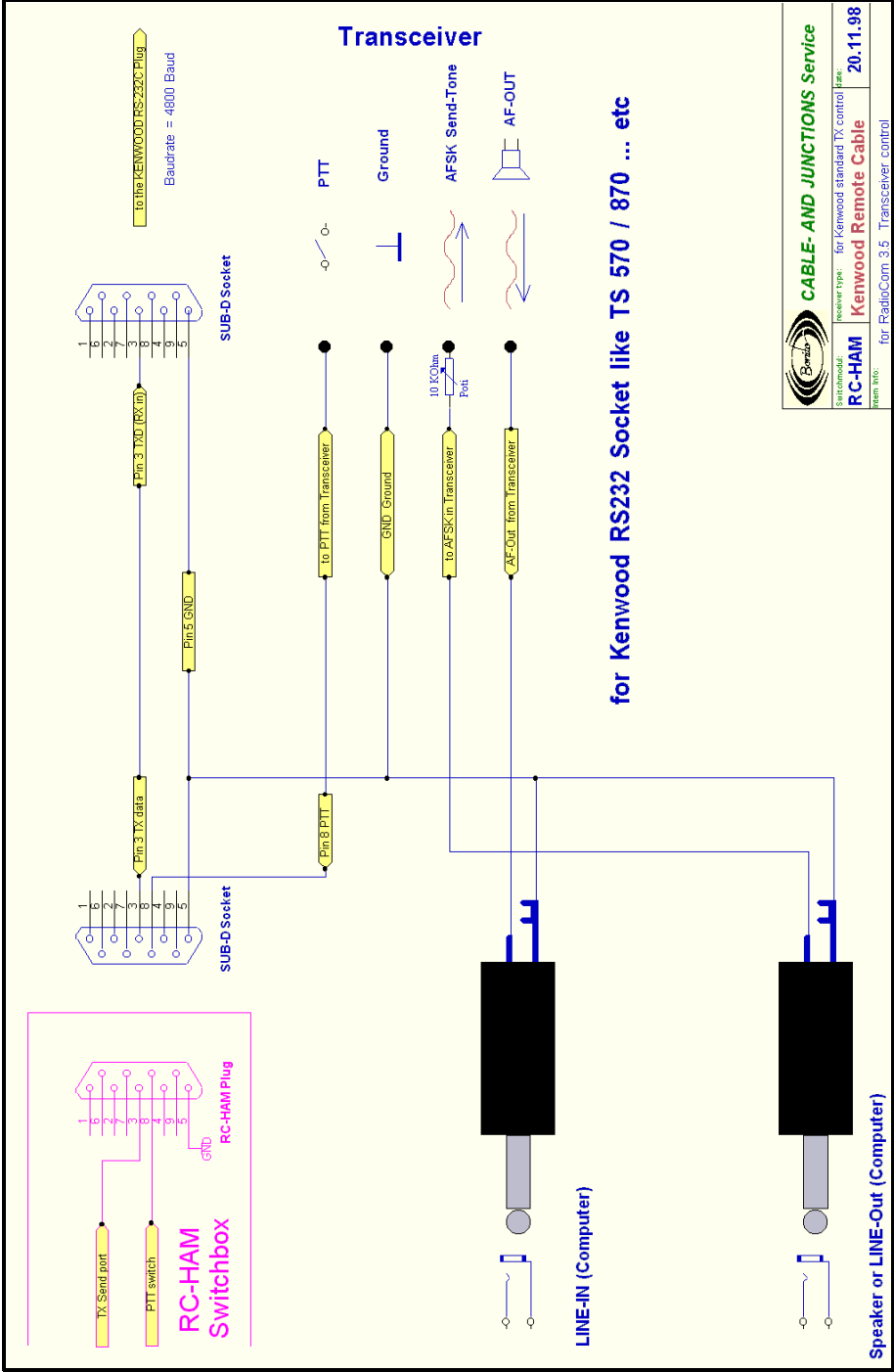
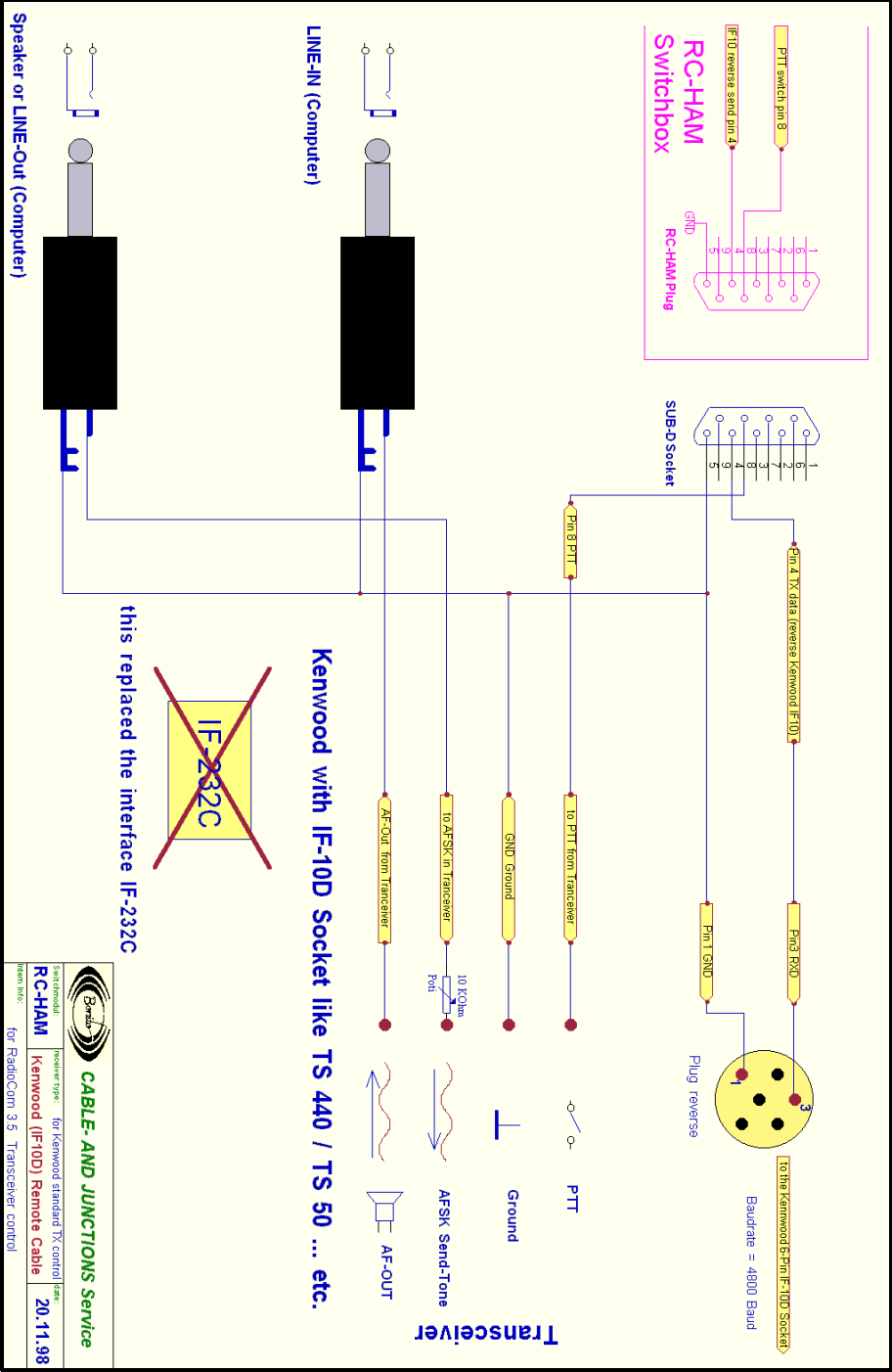
actuell technical INTERNET-SERVICE:

<http://www.bonito.net/bonito/service/service.htm>

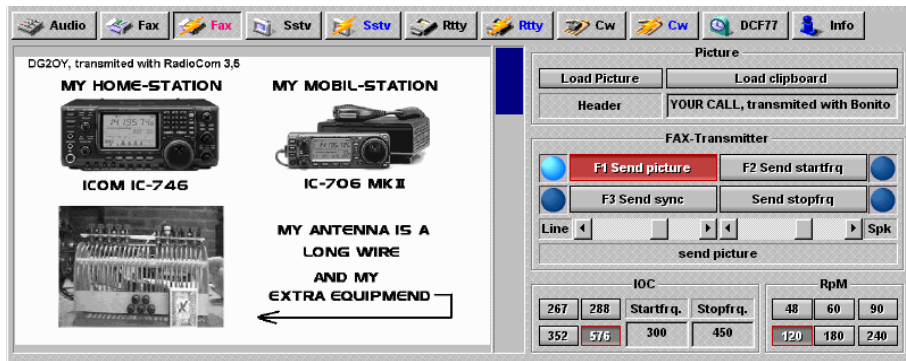
See on my webside for the new projet RadioCom 5.0







FAX TRANSMISSION



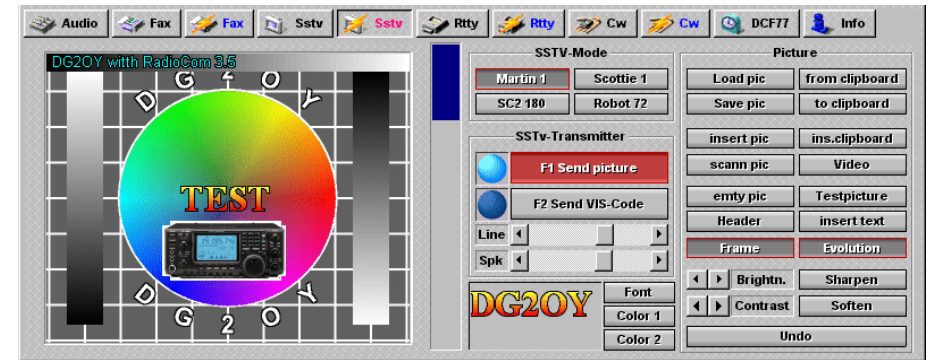
The blue texts are the transmitting options. Black is reception and red is active. To be able to send a picture must load you first a BMP- or JPG - picture. Produce themselves therefore first a picture with the program PAINT of Windows or by means of a program of your choice then store you it in a directory of your choice and load it with the function **Load Picture**. You can copy however also somewhere a picture from your draw program with COPY (ctrl+C) in the clipboard of Windows and then you can it bringing with the function **Load clipboard** in the buffer.

At that a header invite is written in the top part of the picture with text. This is dependent on text in the field on the right beside the field **Header**. You can click on the field **Header** to change in that you type with the mouse in the field and per keyboard the desired text.

Choose possibly still the corresponding IOC- and RpM- parameters. The picture requires a correct cooperation with the reception - function (see slant correction). Thus it is absolutely necessary, previously once the exact collaboration undertaken to have (see under FAX - reception). Also may you not have forgotten the AUTO-function when you adjust the slant-correction (the little angle). Otherwise you can adjust also with the help of an other transmitting amateur in the reception mode the ICO's. But sure values gets one only from commercial weatherfax with following pressing of the AUTO-function, so that all IOC's have a correct reference.

Now you can send with **F1 Send picture** the fax. To a test you can send also still a start, stop and sync - signal. But otherwise is sent out with the function F1 picture send start- , sync- , picture- and stop- signal and to the shot is switched automatically again to reception.

SSTV TRANSMISSION



As at FAX send you must load first a picture or bring one from the clipboard whit **from clipboard** in the buffer. You can create you however also personally a picture. With **insert pic** or **ins.clipboard** you can add still a further smaller picture. It appears then a small flashing rectangle, which can be placed with the mouse. Through touch in the middle can put off one it then. Through touch and pull the lines can increase or reduce one it. And with it right mousebutton is put down the picture then.

With **Testpicture** you can generate a test picture and with **Header** you can produce then a header. The text for the call signal and the header is changed through click-on of the field under fonts (where in the picture of the example DG2OY stands).

Under **insert text** can you write a text (like in a editor) in the picture. The font and colors you can adjust individually. With **Evolution** (as concerns **Color 1** and **2**) and **Frame** the text is changed and with **Brightn.**, **Contrast**, **Sharpen** and **Soften** can be manipulated the entire picture.

Picture scan can you naturally only, if you have installed a scanner on the system. Then same the usual scanner-driver is called up and you can prepare a picture. With 'video' the video or photo program installed by you is called up, in so far as a such on your system was installed.

With **F1 Send pic** is sent then the picture inclusively a VIS-signal and to the conclusion is switched again immediately on reception. To a test you can send also still a VIS-signal, which switched in the reception automatic transmission at the receiver of your transmission.

SRTTY TRANSMISSION



The blue texts are the transmitting options. Black is reception and red is active.

You write a text in the window or load an already written text and press then on the function **F1 Transmit**.

You will see when sending out under the text also a small stroke, which wanders slowly after in front. This stroke indicates, how far the text was written already in the buffer (therefore already as sent out counts). Behind this stroke you can edit any time still changes. Before it however the text has been sent already.

Press again on F1 then is switched on reception.

Baud, **Stopbit** and **Shift** should be adjusted before the transmitting. The frequency have the tone 1275 Hz + Shift.

By means of the slider **Line output** you can adjust the volume of the tone (AFSK). With the slider adjust you the volume of the **speaker** when transmitting and to the same time is it then the input volume of the transmitter, if you uses the speaker-out of computers as AFSK.

By means of **Load text** you can load a text in the buffer and with **Insert text** is added a further text at the cursor position.

With **Delete text** you deletes the whole buffer and with **Save text** is stored the text from the buffer on the hard disk.

CW TRANSMISSION

If you presses on  appears following window:



The blue texts are the transmitting options. Black is reception and red is active. It is completely simple, if you wants send CW:

You write a text in the window or load an already written text and press then on the function **F1 Transmit**.

You will see when sending out under the text also a small stroke, which wanders slowly after in front. This stroke indicates, how far the text was written already in the buffer (therefore already as sent out counts). Behind this stroke you can place any time still changes. Before it however the text has been sent already.

Press again on F1 then is switched on reception.

By means of the slider **Tempo** you can adjust the expenditure - speed in **Words per Minute**.

By means of the slider **Line output** you can adjust the volume the tone (AFSK). With the slide volume you adjust the volume of the **speaker** when transmitting and simultaneous is it then the input volume of the transmitter, if you uses the speaker-out of computers as AFSK.

By means of the slider audio-frequency you can adjust the expenditure - tone in Hz.

By means of **Load text** you can load a text in the buffer and with text insert is added a further text at the cursor position.

With **Delete text** you deletes the whole buffer and with **Save text** is stored the text from the buffer on the hard disk.