

The 1st CCF RTTY Contesting School 2010

- ⇒ RTTY operating hints & SO2M – OH2BP
- ⇒ RTTY Decoder Comparison – YL2KF
- ⇒ Contest Station tour – OK1DIG

... stay tuning ... QRX !



Contesting in RTTY

- As the Holy Book says, there are the Father, the Son and the Holy Spirit, but we hams define the three Contester's Choices as CW, SSB and the RTTY.
- CQ WW, CQ WPX, ARRL, WAE + 30 Others available
- To get there, you only need a '50 € USB DigiBox' and ...
- All other stuff @ your Shack as good antenna set-up, radio, linear, contest Sw, some skills and the winning mood for sure.
- RTTY is the **fastest growing** Mode in Contest World



Short cut to Top Level RTTY

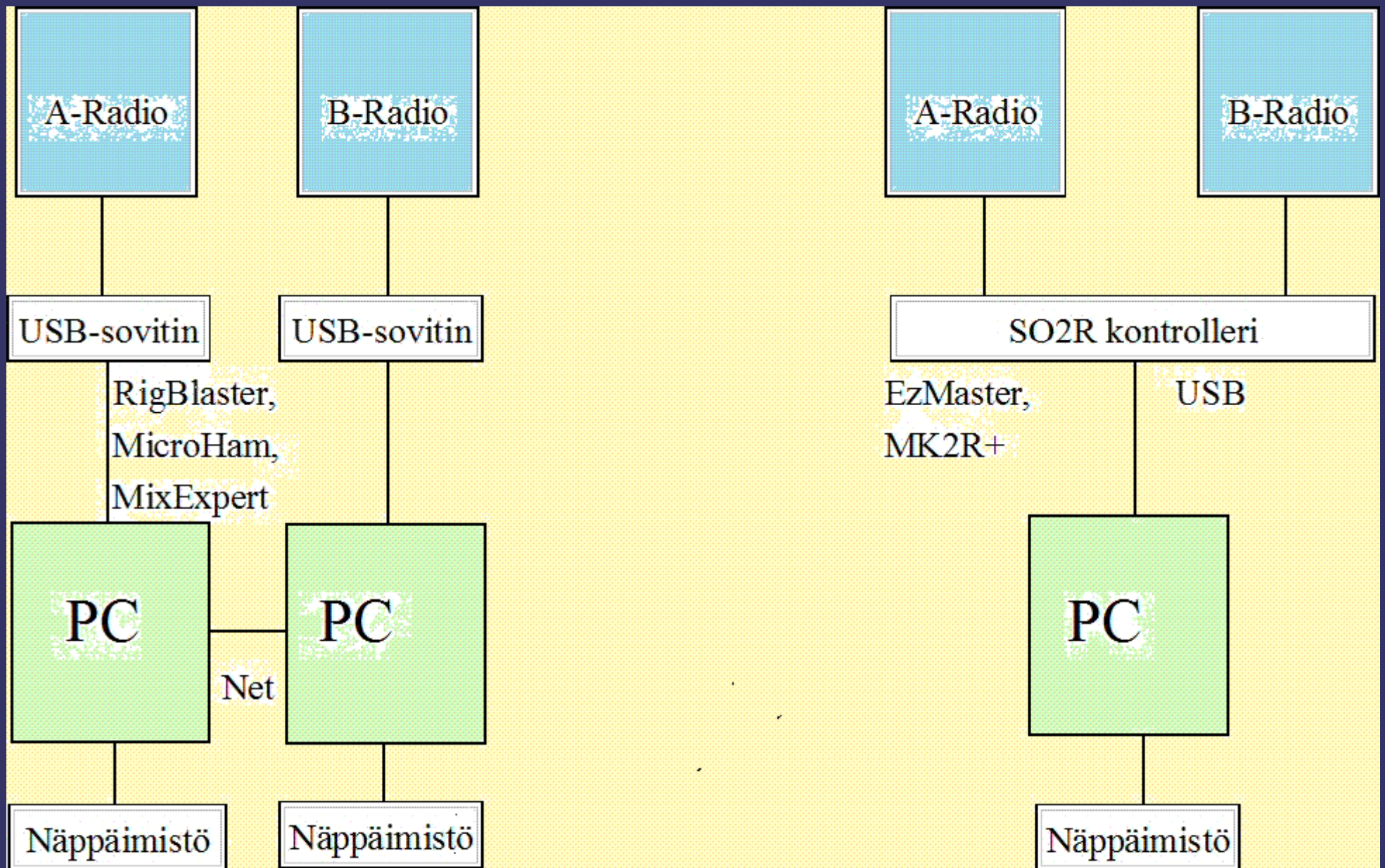
- Secret weapons a'la OH2BP
- Use of several radios SO2M (not SO2R)
- Benefit of Multi decoder set-up
- Best tuning tool - the Oscilloscope
Contesting Hints, Dual radio logics
- Operating with several keyboards, mice &
Touch screen, Multi Button wireless Mouse
- Programming and using Dynamic Text
Buffers



- ⇒ CW/SSB Operators normally use two radios and **one SO2R Controller** (MK2R+)
- ⇒ Swapping between radios is done by a continuous stream of Keystrokes (Tab) or by a foot pedal.
This means hassle and take some time to Get the lesson to do it flowless.



SO2M vs SO2R



SO2R vs. SO2M

- ⇒ New Idea:
Because RTTY is a rather slow mode,
I prefer to use two radios with two PCs, and
several Monitors all linked together to
archive a continuous QSO flow on two
bands simultaneously.
- ⇒ You work crazy **like a two men Multi team**
but you're in SOAB !



SO2R vs. SO2M

- While exchanging a report on A-radio you typically scan the B-radio for the S&P
- While focusing to the A-radio pile-up, you need easy and clear tune indicator(s)
- If rules allow, you're free to send with both radios simultaneously (need BPF's for sure)
- Any multiplier move is easy with 2 radios and all screens staying always open
- To synchronize the operating of 2 radios, head phones are recommended



SO2R vs. SO2M

- In addition the **2 networked PC's** give you a high rate of fault tolerance. If a PC would crash You may continue with the other one
- If you use the PC Dual Screen option, you can take number of PC monitors in use
- Showing the information can be done with the most ergonomic way (shack layout)
- Top Level SO2M Site has 4-6 pcs of different size & resolution Screens open



SO2R vs. SO2M

- SO2R Control Unit not needed – you save abt. € 600. The PC's & Displays are low cost or sourced from junk
- 2 PCs both with Dual Display Option gives you an easy 'Air plane Cock-pit' Shack view
- All of the most important windows stay open and can be placed to most useful and ergonomic position



SO2R vs. SO2M

- ⇒ Additional Control logic is recommended to
 - Prevent both radios to TX on same band (use the band data or define Sw control !)
 - Select proper BPF (Band Pass Filters) and/or cheap coaxial stubs
 - Select antennas, dual/single direction beaming, RX antenna use



SO2M Relay Box



RTTY multidecoder

- RTTY signal needs to be decoded into character flow on the screen. This is done by a Decoder automatically.
- Typically the DigiBox + MMTTY (as part of contest Sw) are working together.
- However, we all know the band conditions QSB, QRM and for example the polar flutter make the signal decode a difficult task.



RTTY multidecoder

- Received signal decoding can be improved a lot by using parallel several decoders
- All these may have different Hw or set of preprogrammed parameters, like Profile(s) in the MMTTY RTTY Engine (Freeware)
- One decoder may print well Polar fluttered or QRM'ed signal, one for multipath, and one might have very broad intake filter(s) for stations calling off the frequency.



RTTY w/o the PC

- Many radios today have the RTTY/PSK mode built-in. Together with a good select of DSP-filters all new ICOM radios are doing a very good job
- The latest IC-7600 and IC-7700 not even need any PC to work RTTY and PSK, just plug an USB keyboard and you're in business. Tune up your secret parameter set-up to multi decoders in use



RTTY tune

- ⇒ When running SO2R/SO2M at winning QSO rate you have no time to struggle with the right RTTY signal fine tune. If the audible tones are not fully matching the decoder filters, you're certainly getting some garbage on screen. Every second spent for unnecessary tuning is lost. LED bar, Waterfall, FFT or any virtual Scope are - no good !



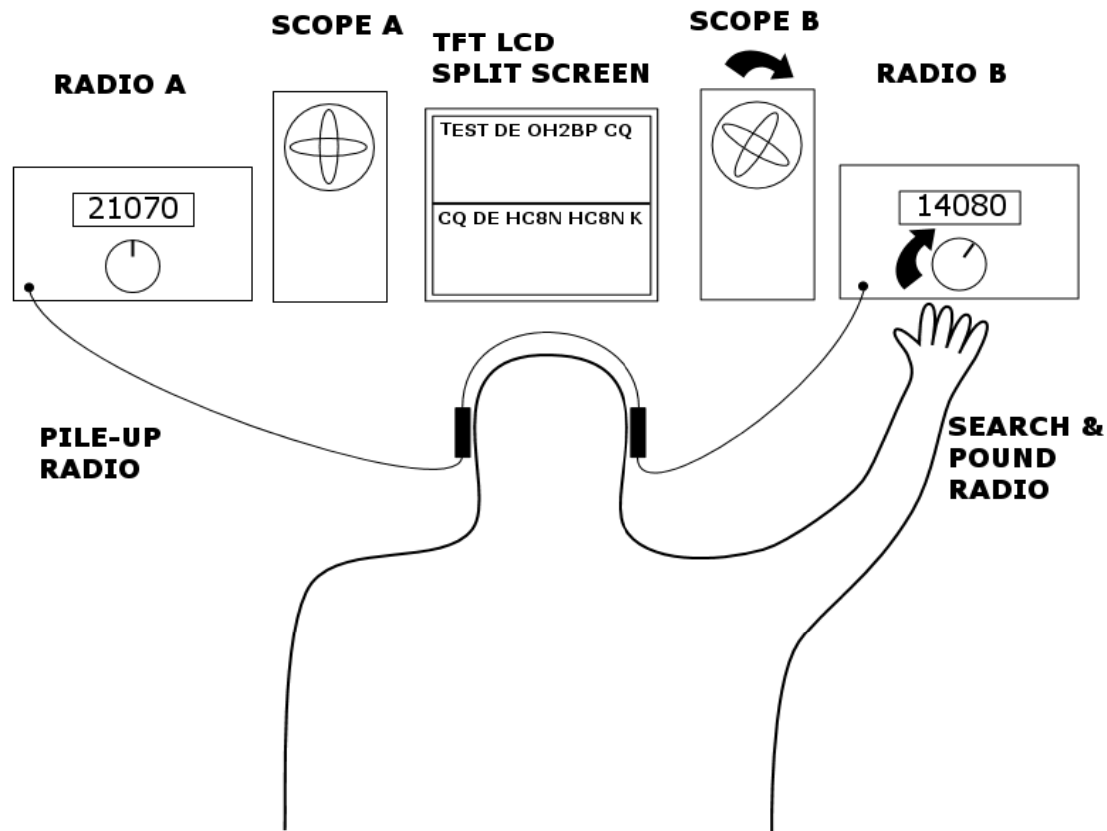
The old faithful *Oscilloscope*

- Radio RTTY indicator only shows the exact point of a good tune up, however, the operator needs to know where the caller is (to what direction and how far on VFO/RIT scale).
- The oscilloscope hooked up to decoder's X/Y output is the right tool. Use Pakratt, KAM or home brew Mark/Space filters.
- By proper set-up the RTTY Indicator follow in real time the same direction with your VFO dial (or RIT).



RTTY 2 Radio Op.

SO2R RTTY OPERATION EXAMPLE



RTTY HINTS

- A human Eye detects the RTTY Lissajous pattern on the Scope even when the signal is weak and thus not audible.
- Top operator catches all callers to the Log!
- Easy Scope tuning show visually RTTY signal, even it's wrong polarity and drifting - use Sw & Radio tools to correct em'.
- You're able to see several RTTY signals, identify them and manage the Pile-up.



MORE HINTS

- If you're receiving RST as TOO TOO, you know this is 599 599 (ShiftChange lost)
- Look at your keyboard: Q W E R T Y ... is
1 2 3 4 5 6 ... PPQ = 001, PPY = 006 ...
- Set radio(s) on 250/500 hz DSP (Cascade), fast AGC, TPF (noisy?), RIT on, Rig RTTY decoder on. Partial call check on.



Keyboard Hint

➤ Letters to Figures



RTTY data entry

- If you think to use just a small laptop for a serious RTTY- you're lost.
- You may use your laptop PC for sure, but Equip that with one good ergonomic and separate keyboard at least.
- You better fire the station with several keyboards; one very handy, one close to the radio, one for a 'milky hours' use when operator is dead tired and sitting back in the contest cheer.



RTTY data entry

- In addition to mouse a Touch Screen device works fine and maybe gives you an easy way to work with RTTY data entry.
- I have tested the Touch feature and found it usefull specially with B-radio S&P operating.
- The RTTY mode allows you to work the entire contest just using the (multi button) mouse or the Touch, just alone.
- Good call signs are **highlighted** on the screen (with CW / SSB not possible)



Multibutton Mouse

- Pick up the Call into the QSO entry field.
- Dupes automatically are painted in **RED**
- A mouse click exchanges the report and another logs the QSO.
- Top device is the 7 button wireless mouse with programmable keys on your tight control: **F1**, **+**, **Ins**, **CR** and **ESC**.
- What else would you need for the operating (Win-Test) ?

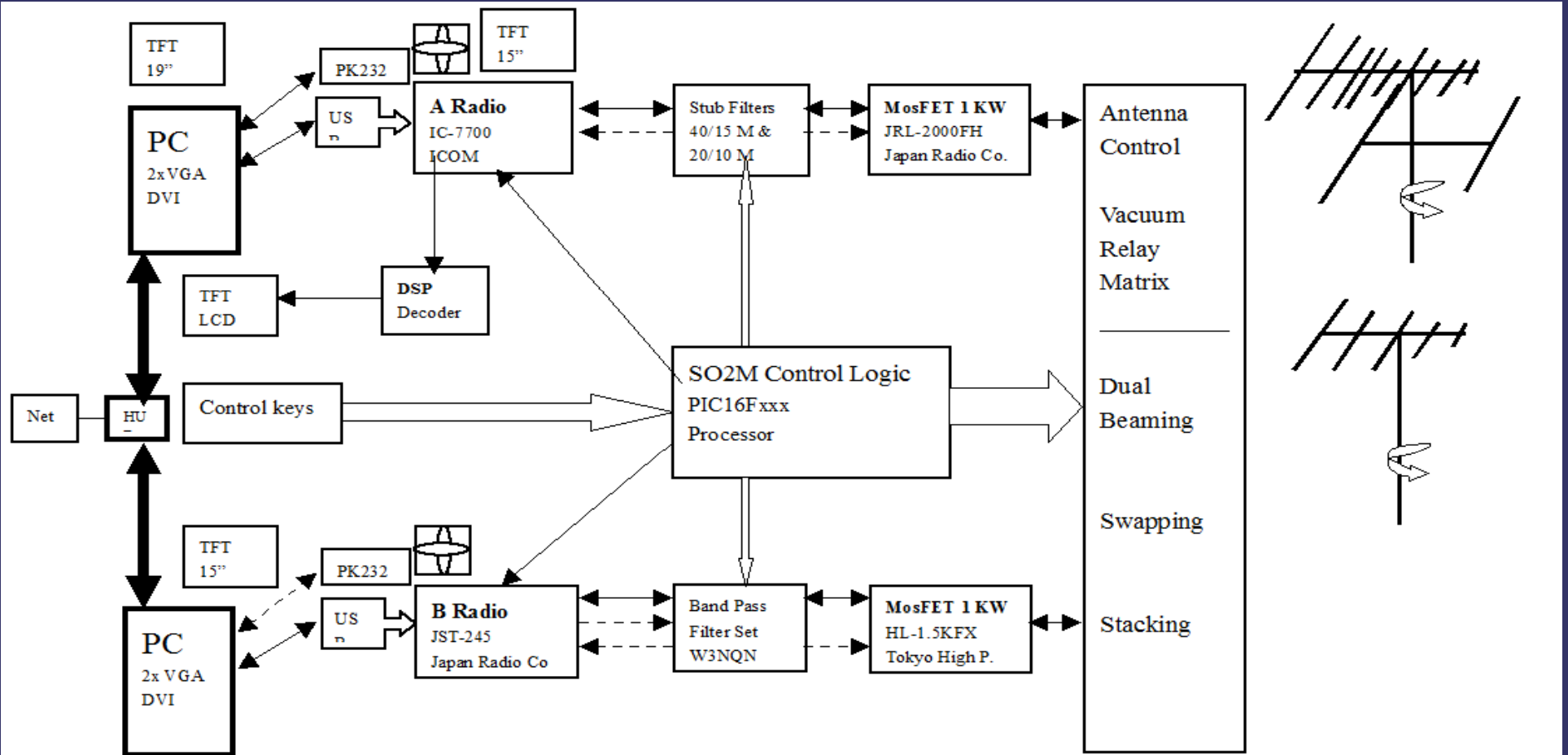


7 Button Wireless Device

- Left & Right + 5 programmable keys



SO2M Example



OH2BP SO2M 2009 CONCEPT / Cushcraft X9 9 el & XM240 + Fritel 5 el + sloopers

Dynamic Buffers

- In addition to just hit the **F1** (CQ), you need a set of other usefull F-buffers.
- These can be set free and handy way in all contest software.
- Upon so many tests in the past, these buffers have to set a proper way eq. to be **dynamic**. This means they adopt the current Qso rate, and are shortened by-the-fly with Operator's **ESC**-button.



Dynamic Buffers

- With the **ESC** key you manage the length of message buffer in current transmission.
- During pile-up you typically shorten the messages in real time and when ever needed you let them roll out full length.
- Both SO2M radios are set as Pile-up Stations (Win-Test)



Dynamic Buffers -1

⇒ A few examples and comments here:

Do M u l t i k e y s t r o k e s

⇒ F1: never more than this: CQ CQ

⇒ If you need a longer CQ – push twice the

⇒ F1 and get like CQ CQ CQ CQ !



Dynamic Buffers -2

- CQ call in the Contest
- F1: <TEST de Mycall Mycall CQ >
- Always terminate with a CQ message !
So the Rx Station sweeping the band knows You're QRV for the next Call
At end a Space or CR recommended
Never end like this PSE K K K
- Keep the CQ message short – repeat often



Dynamic Buffers -3

⇒ Exchange in the Contest

⇒ F2: < Logcall 599 001 001 (Esc) Logcall >

After your call you send a Space or CR

⇒ By **Esc** you control the Pile-up !

ESC terminates the TX msg output anytime
!



Dynamic Buffers -4

- ⇒ TU and QSL
- ⇒ F3: < LogCall TU – Call QRZ >
- ⇒ Always end with a QRZ (+Space or CR)
- ⇒ You reconfirm the worked & logged Station call after edit/correction/miscopy



QSO rate

- ⇒ Ed P49X (W0YK) did this month ARRL RU 2987 qso in 24 h. The 2nd hour logged big number reached 216 Qso. Average rate was 124. Last year a bit better 133 Q/h.
- ⇒ A top level SO2M operator collects an easy 4 Qso/minute (look, it's 240 Q/h).
- ⇒ When the Solar Spots together with increase of RTTY operator volume develop well, we'll see huge scores in the future



CCF RTTY 2010

➔ The Life is for RTTY Contesting !

