

IK2YCW

Remote Radio Station

Claudio Spiritelli
(*ik2ycw*)

E-mail : oldradio@ik2ycw.it
Web: www.ik2ycw.it

WE WILL TALK ABOUT:

- Why we need a Remote Radio Station?
- Macro Specifications
- Building the different Modules
- Final Considerations

Why do we need a Remote Radio Station?

- Many and Long Business trips.
- Restrictions for antennas space.
- DX opportunities must be always available.
- Advanced technology application.
- Others.....

Macro Specifications

- Access to all HF bands (160m-6m).
- Linear Amplifier operation.
- Usage of as many as possible commercial components.
- No proprietary software, only commercial packages.
- Standard Internet Provider (1M down- 300K up)
- Internet connection with Latency less than 100 ms.
- Fix IP or Dynamic DNS.
- Solid operational performances.

Macro Specifications Equipments

- PC Dualcore with Windows XP, 6 serials and 1 parallel port.
- 2 x SteppIR 4 elements (6 to 40 meters) at 23 and 13 meters high.
- Dipoles 80/ 160, Vertical 80 and several beverages, UHF antenna.
- Icom 756 ProII, Acom 2000 A, 2xProsistel , MicroHAM decoder.
- Several dedicated relees drivers, Internet relays board.
- UHF transceiver, GMS Board and *Audio frequencies mixer*.

Building the different modules

On/Off Module:

Double On/Off system : Redundancy

- Wake-On-LAN



- SMS Message



Building the different modules

On/Off Modules:

"Remote Desk Top" connection can controls many Parallel Port bits, used for antenna switching, reset equipment, etc.

Parallel port monitor

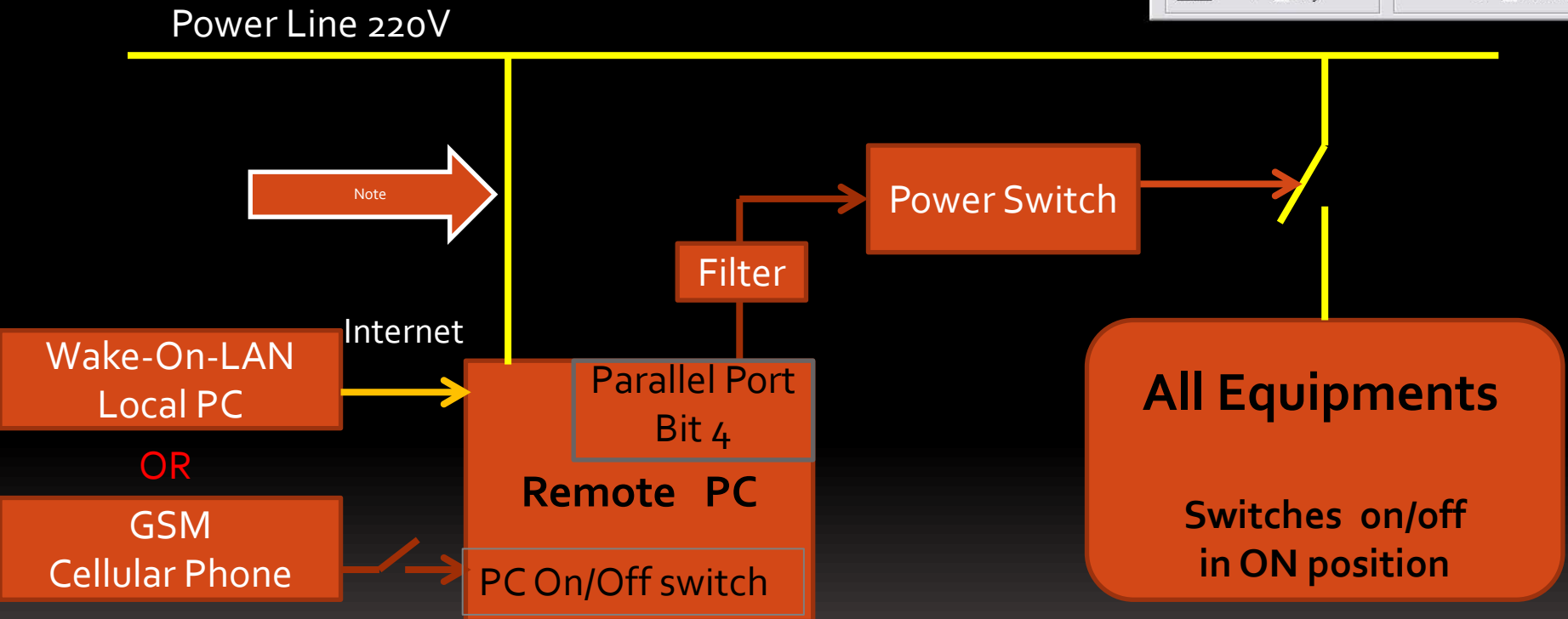
| Data output register: | | |
|-----------------------|---|--|
| pin 2 | 0 | <input checked="" type="checkbox"/> Data bit 0 |
| pin 3 | 1 | <input checked="" type="checkbox"/> Data bit 1 |
| pin 4 | 2 | <input checked="" type="checkbox"/> Data bit 2 |
| pin 5 | 3 | <input checked="" type="checkbox"/> Data bit 3 |
| pin 6 | 4 | <input checked="" type="checkbox"/> Data bit 4 |
| pin 7 | 5 | <input checked="" type="checkbox"/> Data bit 5 |
| pin 8 | 6 | <input checked="" type="checkbox"/> Data bit 6 |
| pin 9 | 7 | <input checked="" type="checkbox"/> Data bit 7 |

| Parallel port: | | |
|--|-----|--|
| <input checked="" type="radio"/> LPT1: | 3BC | |
| <input type="radio"/> LPT2: | 378 | |
| <input type="radio"/> LPT3: | 278 | |

About

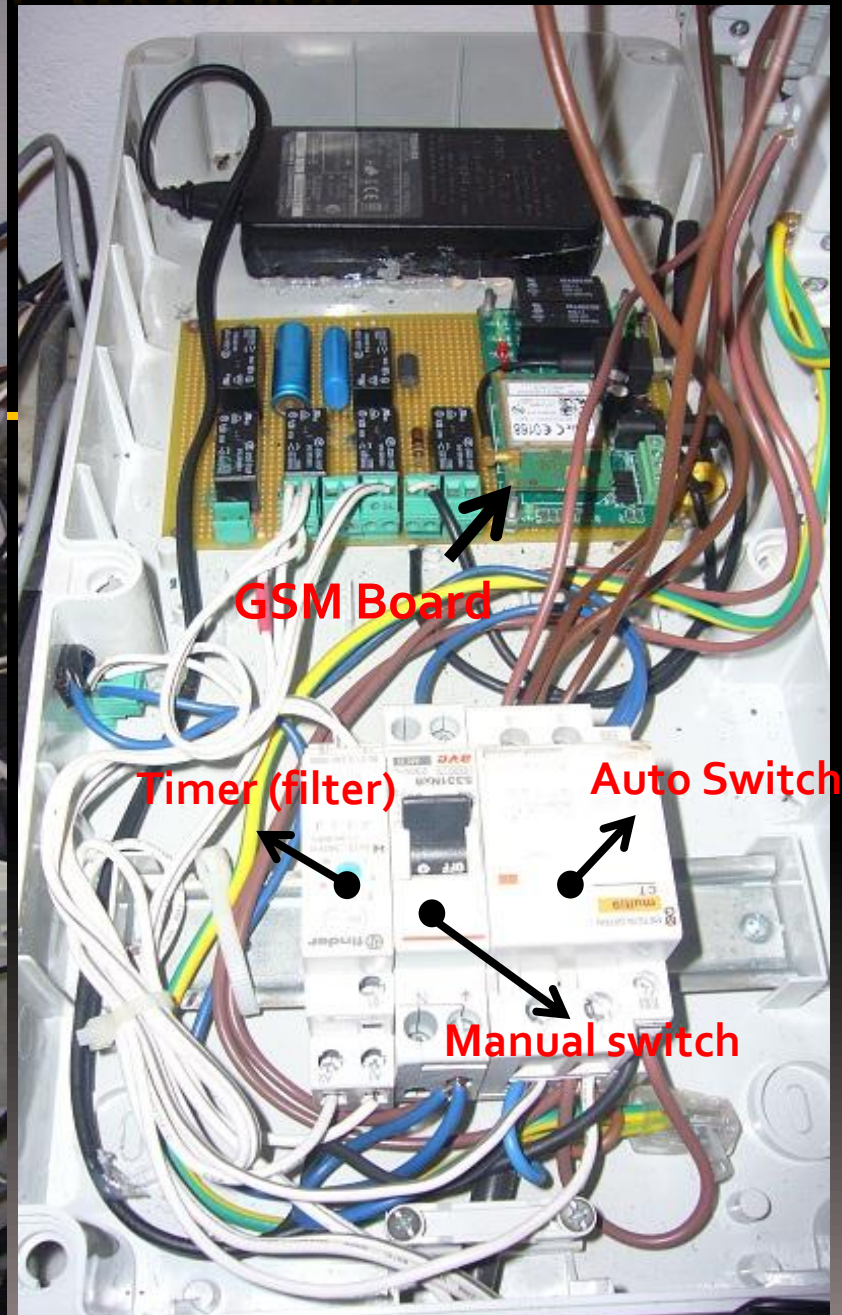
| Feedback register: | | |
|--------------------|---|--|
| pin 15 | 3 | <input checked="" type="checkbox"/> Error |
| pin 13 | 4 | <input checked="" type="checkbox"/> Select |
| pin 12 | 5 | <input checked="" type="checkbox"/> Out of paper |
| pin 10 | 6 | <input checked="" type="checkbox"/> Acknowledge |
| pin 11 | 7 | <input checked="" type="checkbox"/> Busy |

| Control register: | | |
|-------------------|---|--|
| pin 1 | 0 | <input checked="" type="checkbox"/> Strobe |
| pin 14 | 1 | <input checked="" type="checkbox"/> Auto line feed |
| pin 16 | 2 | <input checked="" type="checkbox"/> Initialise printer |
| pin 17 | 3 | <input checked="" type="checkbox"/> Select input |
| | 4 | <input checked="" type="checkbox"/> Interrupt enable |
| | 5 | <input checked="" type="checkbox"/> Tristate outputs |



To turn the complete system OFF, resent the SMS (0901 01ON.), relays will close the on/off PC switch, the PC will close Windows and it will shut down. Alternatively connect "Remote Desk Top" and type CTRL-ALT-END.

Building the different modules



Building the different modules

Equipment Software Control

Different commercial integrated solution available:

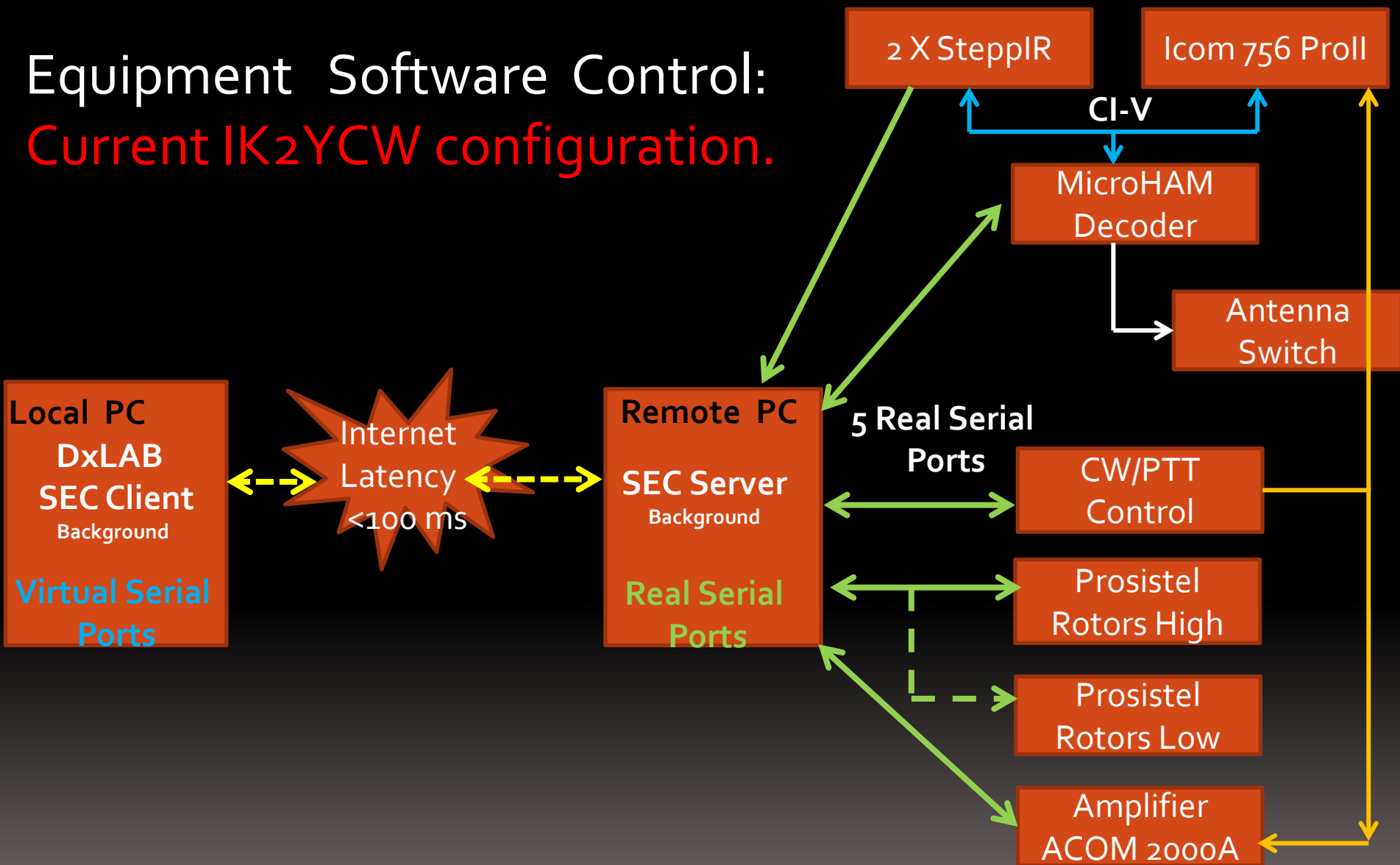
- Ham Radio Deluxe
- TRX Manager
- “Desk Top Connection”
- Others.....

My Choice:

DXLab plus SEC (“Serial to Ethernet Converter”).

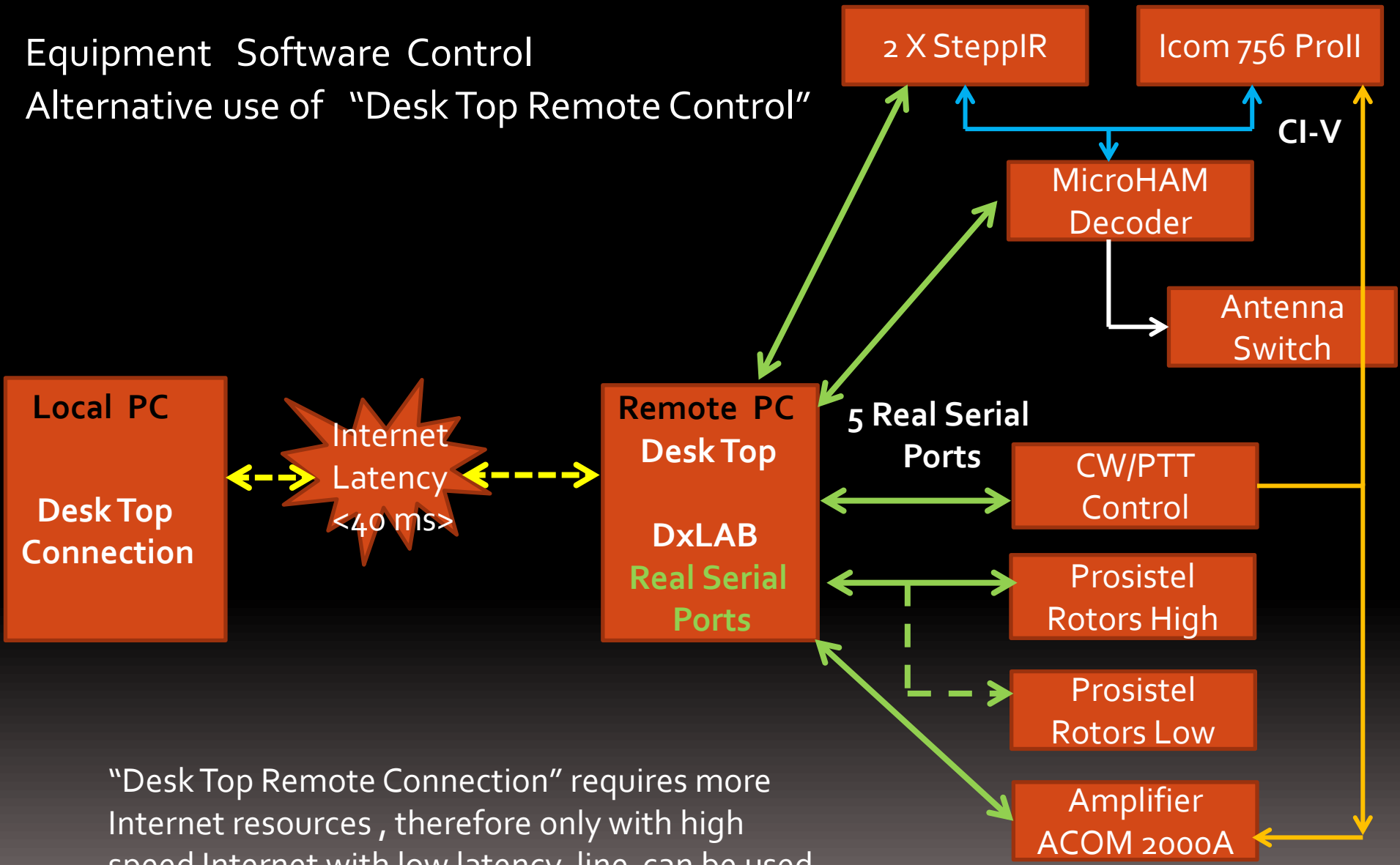
Building the different modules

Equipment Software Control:
Current IK2YCW configuration.



Building the different modules

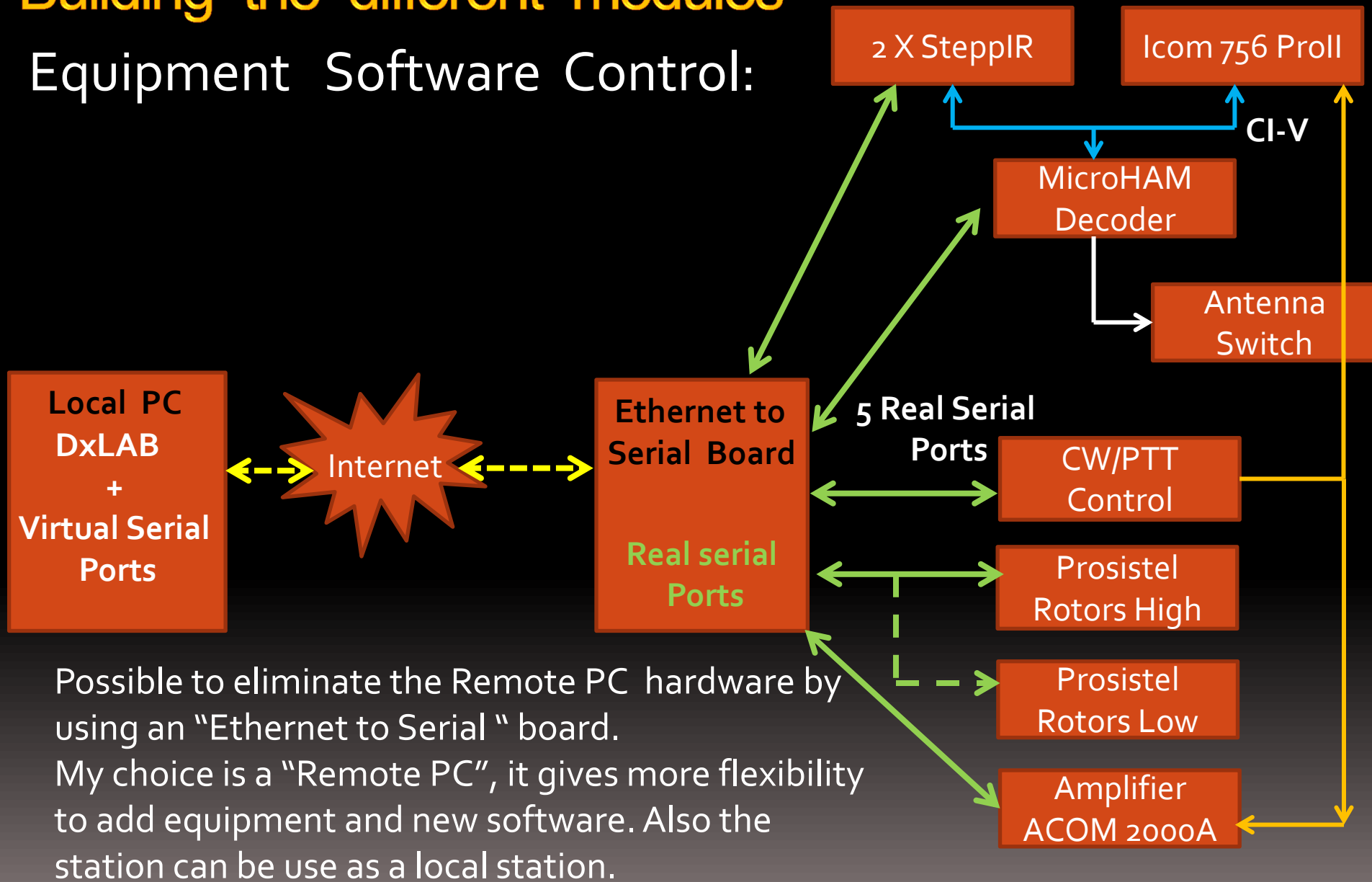
Equipment Software Control
Alternative use of “Desk Top Remote Control”



“Desk Top Remote Connection” requires more Internet resources , therefore only with high speed Internet with low latency line can be used with sufficient results.

Building the different modules

Equipment Software Control:



Building the different modules

Equipment Software Control on Local PC:

The image shows the Commander 9.2.5 software interface for an Icom IC-7800 radio, running on a local PC. The main window displays the frequency 14.139,00 MHz on the Main VFO. The interface includes various controls for VFOs, filters, PTT, and modes. The Mode is set to USB (narrow). A dialog box titled "Serial to Ethernet Connector 5.0 by Eltima Software" is open, showing a list of connections. The "COM3 [Server]" connection is selected, and the "Create connection" button is highlighted. The dialog box also shows options for selecting the connection type (Server, Client, or UDP) and the port type (Serial Port or Virtual Serial Port). The "Remote IP/Host name" is set to localhost, and the "Port" is set to 5004. The "Create as virtual serial port" checkbox is checked. The "Strict baudrate emulation" checkbox is unchecked. The "Use a different port to receive data" checkbox is unchecked, and the "Port" is set to 5004. The dialog box also includes an "Activity log" button at the bottom.

Commander 9.2.5 [Icom IC-7800] @ 18:02:55 Z 14.139,00 USB

Main VFO: 20M S4
14.139,00

Sub VFO
14.139,00

Filters
Group narrow

PTT
TX RX

Main Sub M = S M x S XFC
756 proll
flexradio
7800

Mode: USB
LSB (normal) FM (wide)
USB (narrow) AM (wide)
CW (narrow) RTTY (wide)
CW-R (wide) RTTY-R (wide)
Data-L (wide) Data-U (wide)

Bandsread Msgs Scan

User-defined Controls
F5 F6 F7 F8 ALT
O PWR Pwr 70 NR off NB on

Slider 1 Slider 2 Slider 3 Slider 4

Serial to Ethernet Connector 5.0 by Eltima Software

Edit Delete Delete all Create mirror Help

Create connection Edit connection Mirror connection

COM3 [Server] Create connection

Select connection type you want to create

- ☒ Share serial port for incoming connections (Server)
- ☐ Connect serial port to remote host (Client)
- ☐ Share serial port using UDP

Select port type you want to create

Select Serial Port: COM3 Create as virtual serial port
Strict baudrate emulation

Remote IP/Host name: localhost : 5004

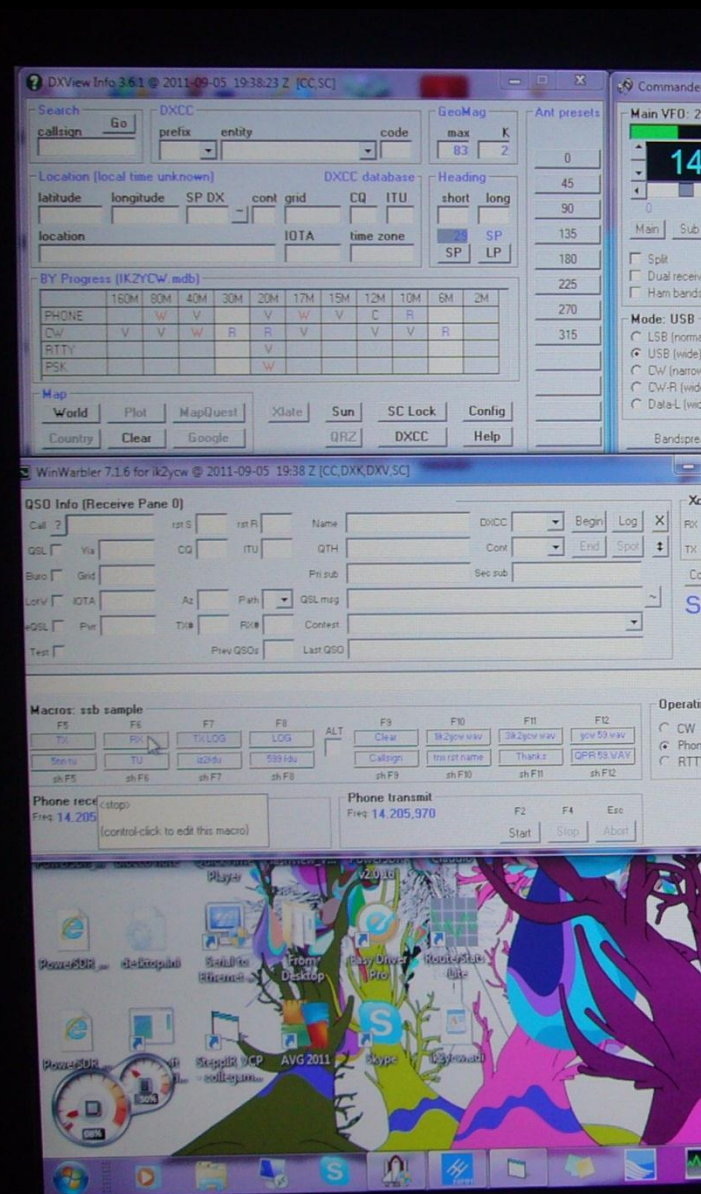
☐ Use a different port to receive data: 5004

Server connection will be waiting for incoming client connections and actually will share local serial port into network. Please, select TCP port which clients will connect to, then click 'Create connection'. Please, enable Advanced mode if you need more settings like port opening settings, underlayer data transmission protocol and encryption.

Activity log

Building the different modules

Equipment Software Control: Local PC or “Desk Top Remote”



San Giorgio Remote Station

IK2YCW

TCP/IP Stack www.ik2ycw.it

Change relays

Configuration

Welcome!

This site is utilized to manage remotely the IK2YCW San Giorgio Station:

Turn Main PC on

Turn Main PC off

RELAYS Control : (click on to toggle)

- Link 430 Mhz ON
- 50 Mhz Amplifier ON
- SSB bands ON
- To be defined
- Vertical 160m ON
- Switch antenna to FlexRadio
- Radio Station OFF
- Reset PC for 5 sec.

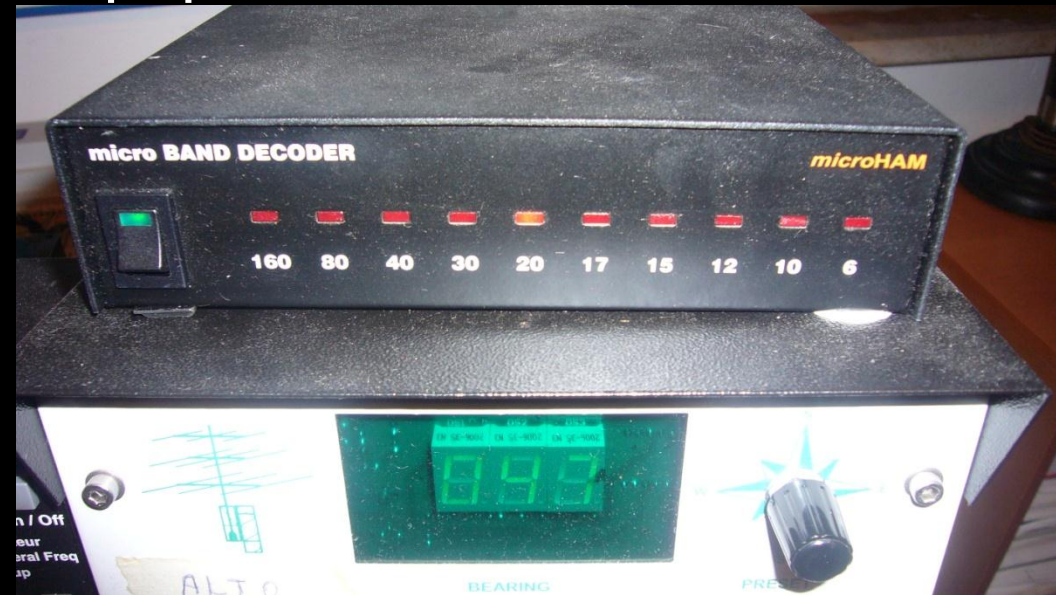
INPUTs Status:

Λ Λ Λ Λ Λ Λ Λ Λ
8 7 6 5 4 3 2 1

Copyright IK2YCW REMOTE STATION CONTROL 2010

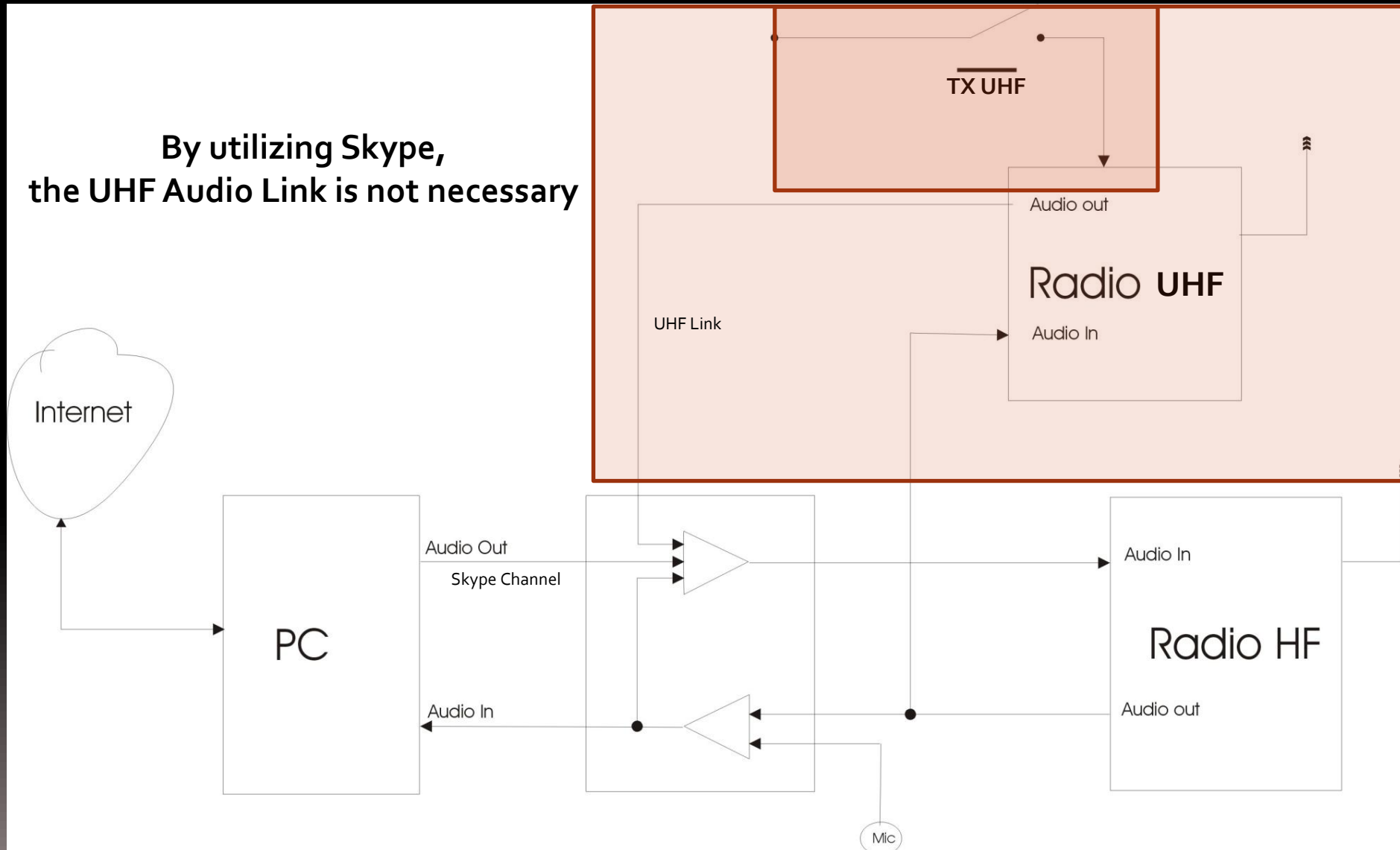
Building the different modules

Equipments:



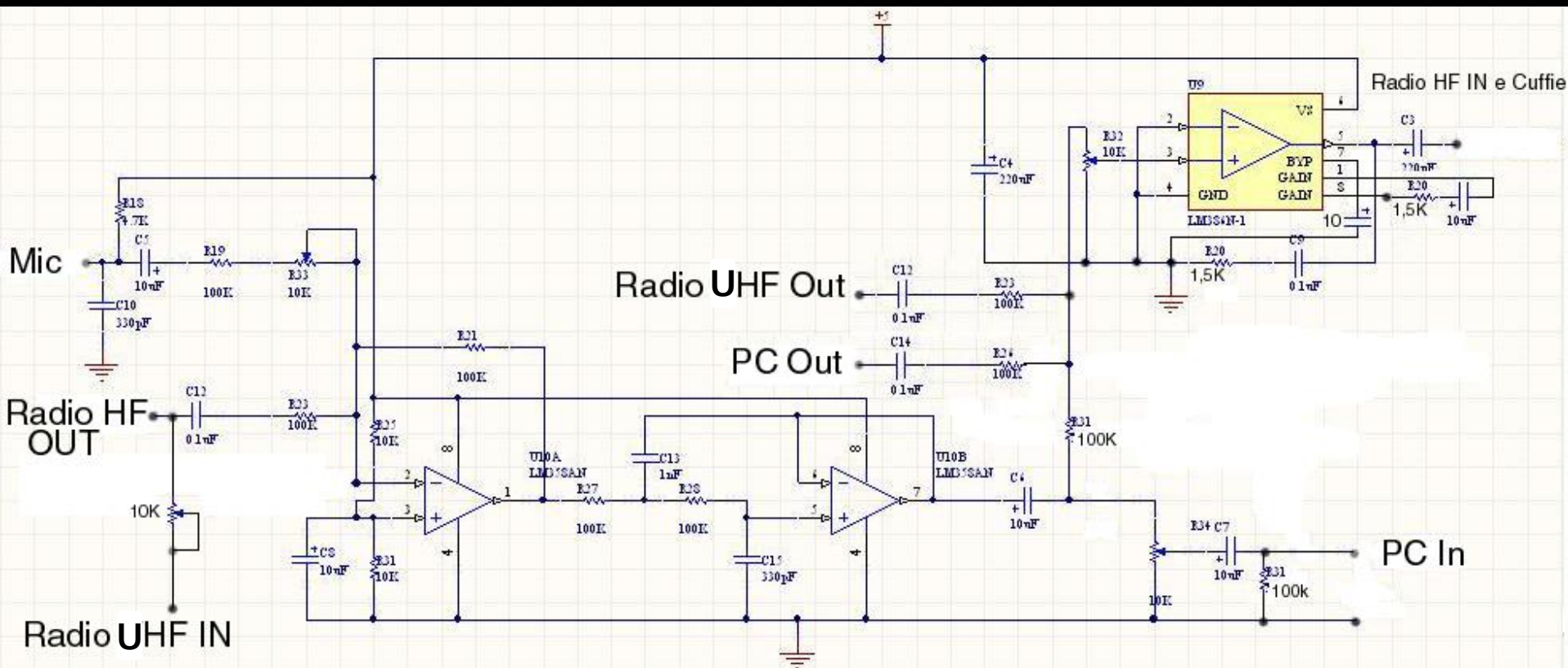
Building the different modules

Audio Control on remote site:

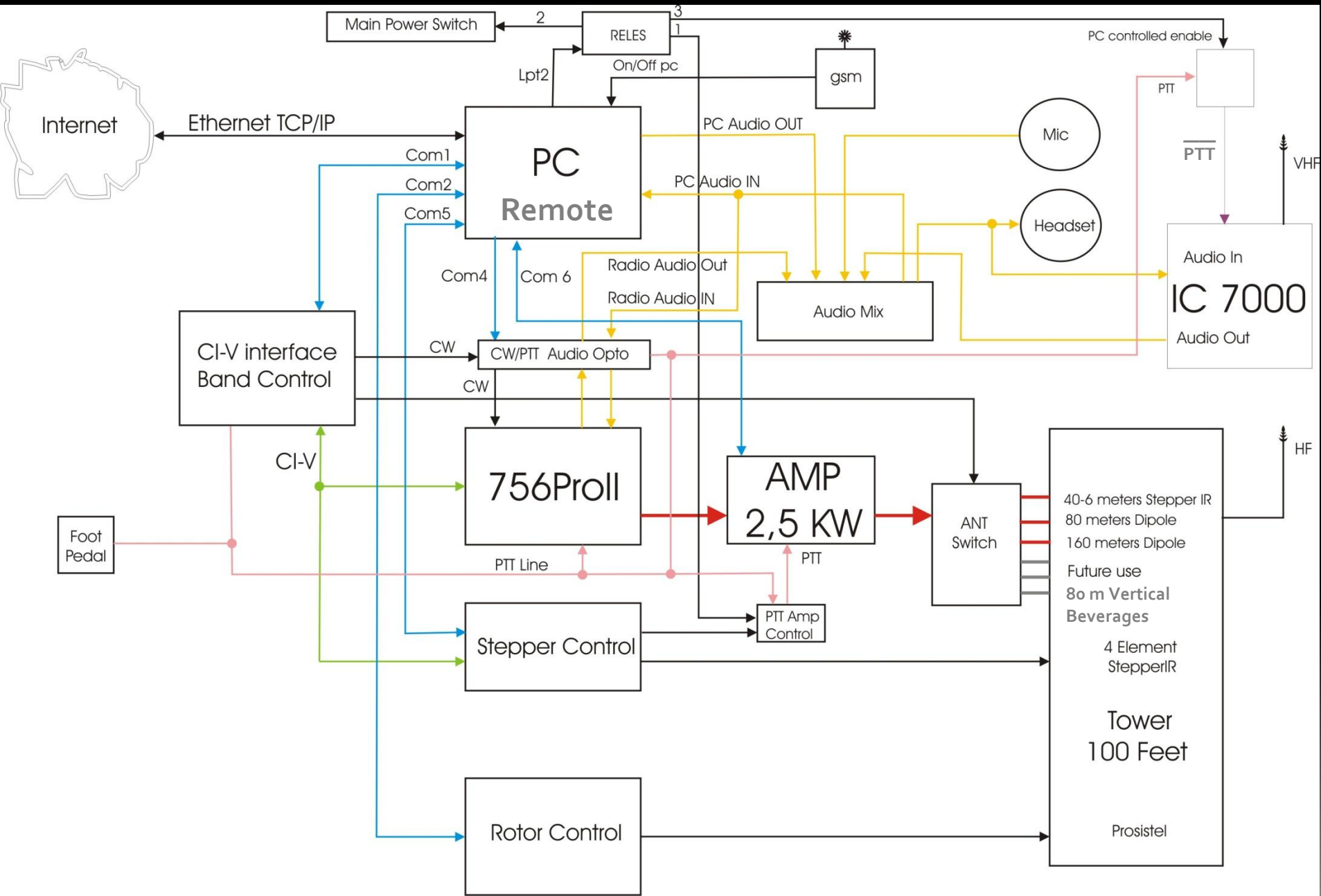


Building the different modules

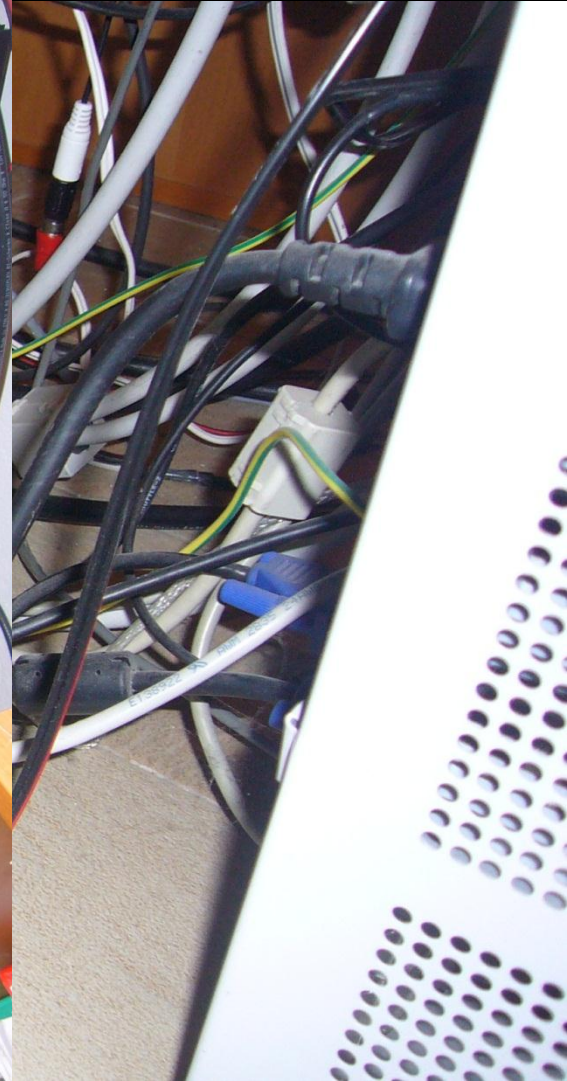
Audio Control on remote site: Audio Mix



Building the different modules



Building the





Building the different modules



Building the different modules

Bev. at 335 degrees
268 meter long

Bev. at 35 degrees
268 meter long



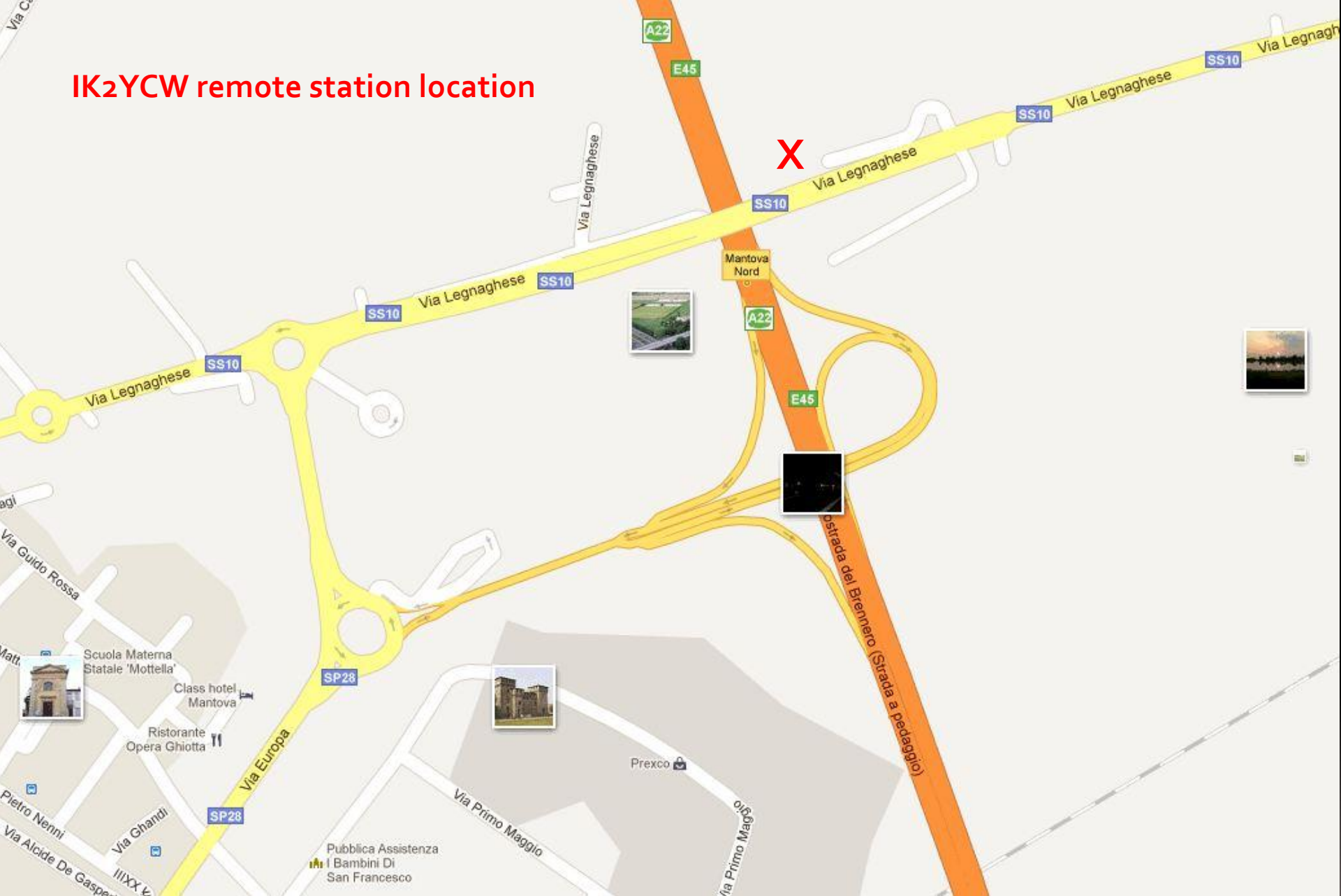
Vertical 80 & 160



Beverage 268 meters long at 335 degrees



IK2YCW remote station location



IK2YCW remote station location



Final Considerations:

What type of results can you expect from the describe Radio Station set-up?

- Never loose a DX station on the air.
- Always present on every DX-expedition.
- No more conflicts with Business Trips.
- Very high DXCC results.

✓ DXCC Summary (includes deleted countries)

| | Worked | Confirmed | Verified |
|------------------|--------|-----------|----------|
| HR Mixed | 324 | 321 | 318 |
| HR Phone | 320 | 313 | 309 |
| HR CW | 302 | 285 | 258 |
| HR RTTY | 272 | 231 | 203 |
| Mixed | 326 | 323 | 320 |
| Phone | 322 | 315 | 311 |
| CW | 304 | 287 | 260 |
| RTTY | 274 | 232 | 204 |
| PSK | 88 | 51 | |
| 160M | 159 | 137 | 120 |
| 80M | 222 | 195 | 171 |
| 40M | 293 | 257 | 231 |
| 30M | 259 | 202 | 173 |
| 20M | 321 | 312 | 304 |
| 17M | 296 | 251 | 226 |
| 15M | 295 | 266 | 246 |
| 12M | 237 | 176 | 136 |
| 10M | 247 | 200 | 182 |
| 6M | 99 | 71 | 64 |
| 2M | 1 | 1 | 1 |
| HF BandCountries | 2329 | 1996 | 1789 |
| HF ModeCountries | 900 | 834 | 775 |
| HF BandModes | 3229 | 2830 | 2564 |
| DXCC Challenge | 2412 | 2052 | 1841 |

Award Program - include deleted countries?

☒ DXCC (includes deleted)

TOP (non-deleted only) ☐

Summary

Update

Generate Reports

Progress

Summary

The chart shows the total
DXCC score for IK2YCW
Remote Station since 2005:

324HR Entities worked
2412 DXCC Challenge
9DXCC Verified.

Final Considerations:

If you decide to Build a Remote Radio Station, consider:

- Make a good planning.
- Decide on “Desk Top Connection” or “Local-Remote” like SEC application (analyze your Internet connection).
- Select equipment and software and learn it very well.
- Make sure you have a very good grounding.
- Remember that when nobody is present, every small problem is a big problem.
- All Software and Hardware must work properly.
- Good knowledge of Internet Server set-up, particularly about Firewalls and Ports redirection.
- “RF” is your big enemy.
- Buy thousands of “chokes” and use “chokes” on every wire.

IK2YCW

Stazione Radio Remota

Thanks

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(ik2ycw)

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