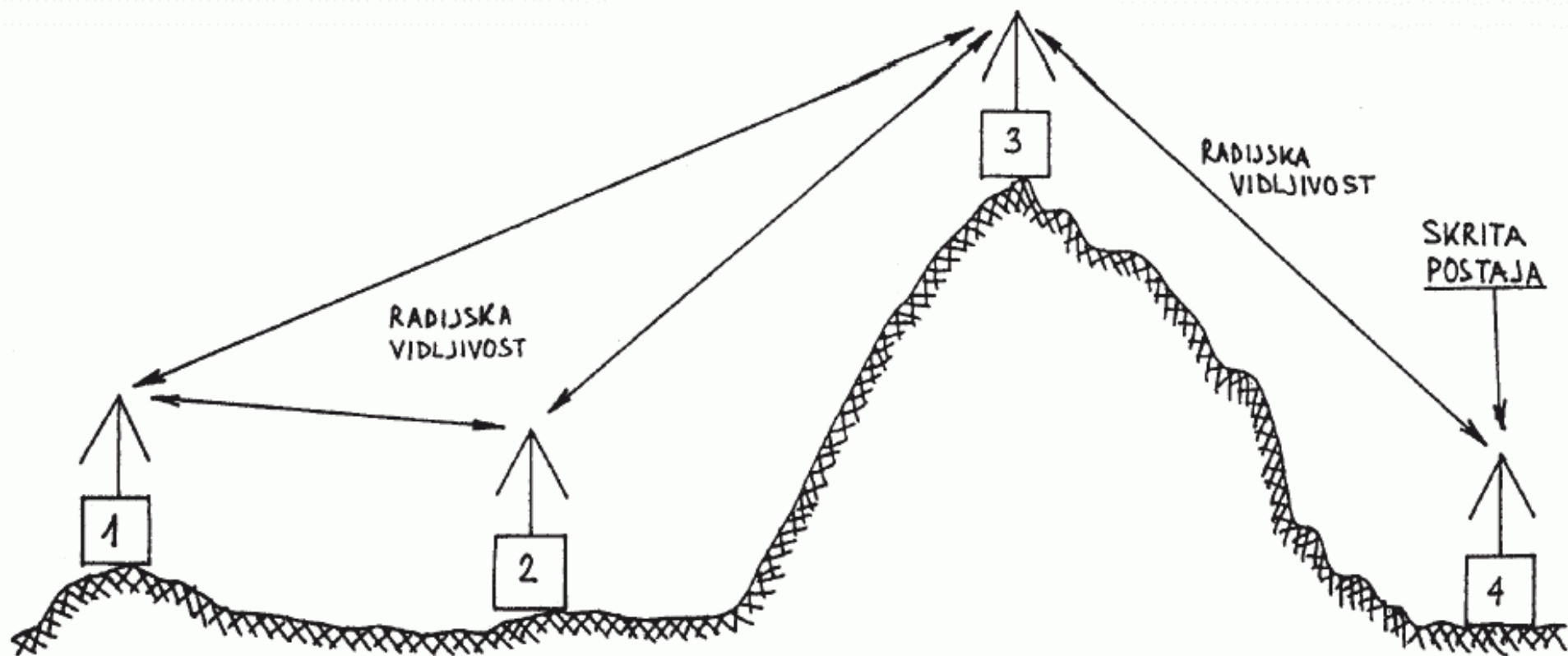


Društvo elektronikov Slovenije

NE-BREZHIBNI PROTOKOL

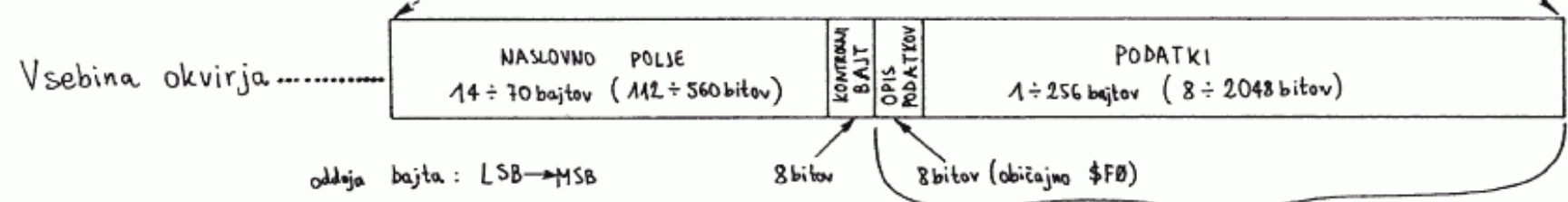
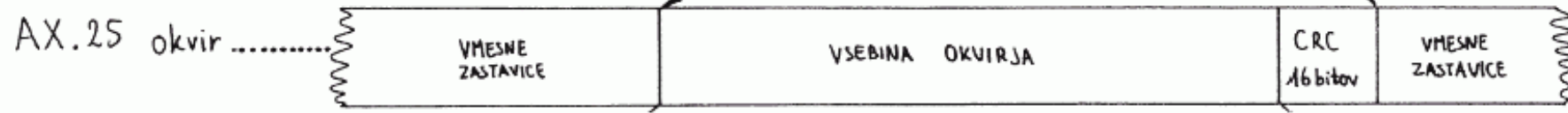
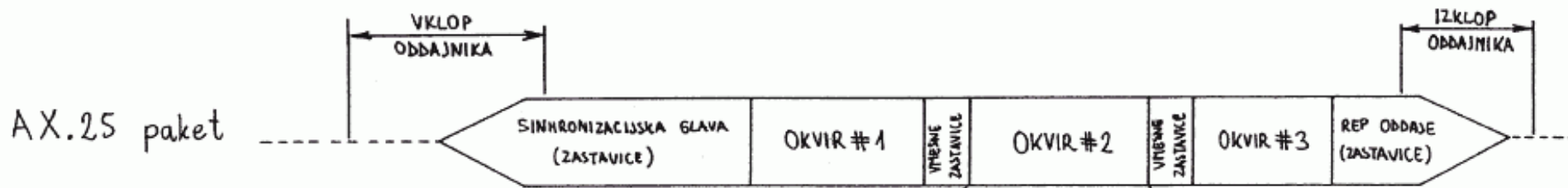
Matjaž Vidmar, S53MV

ŠC Novo Mesto, 06.03.2010

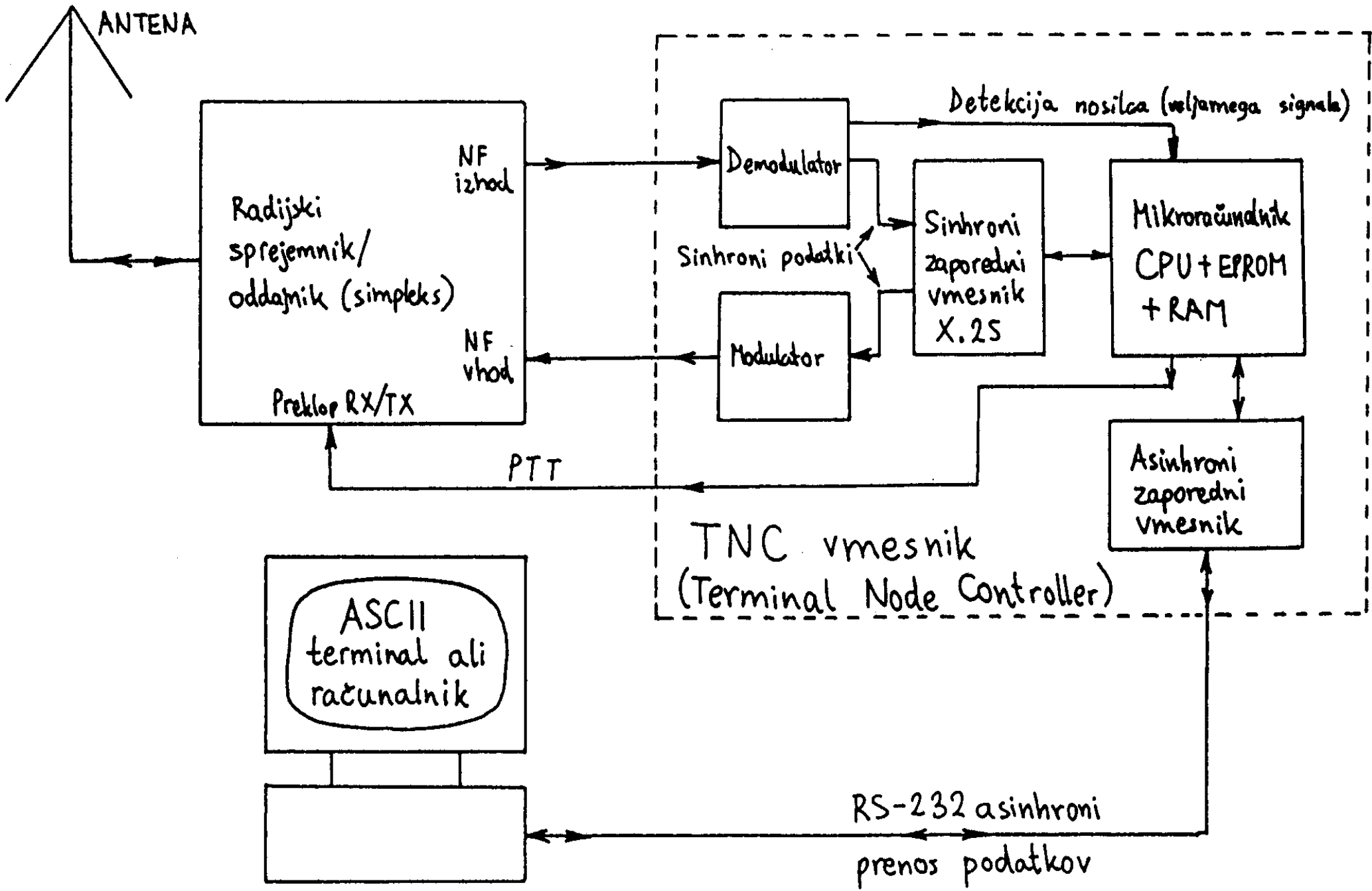


- Vsi udeleženci imajo simpleksne radijske postaje, vsi sprejemajo ali oddajajo na istem radiofrekvenčnem kanalu.
- CSMA dostop (Carrier-Sense Multiple Access) - udeleženci oddajajo samo takrat, ko je kanal prost in ko imajo novo sporočilo za oddajo.

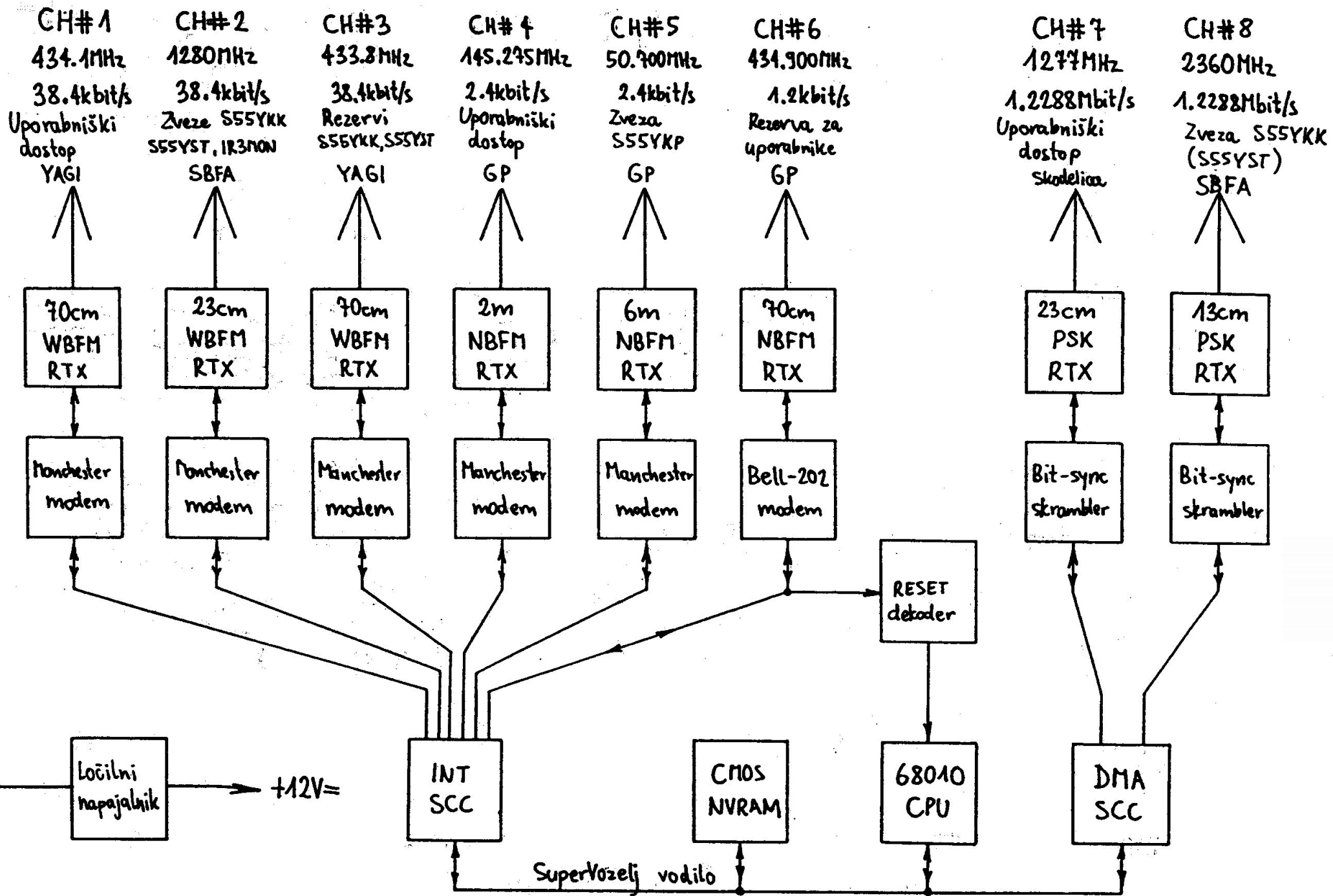
Radijski sistem zvez s paketnim prenosom



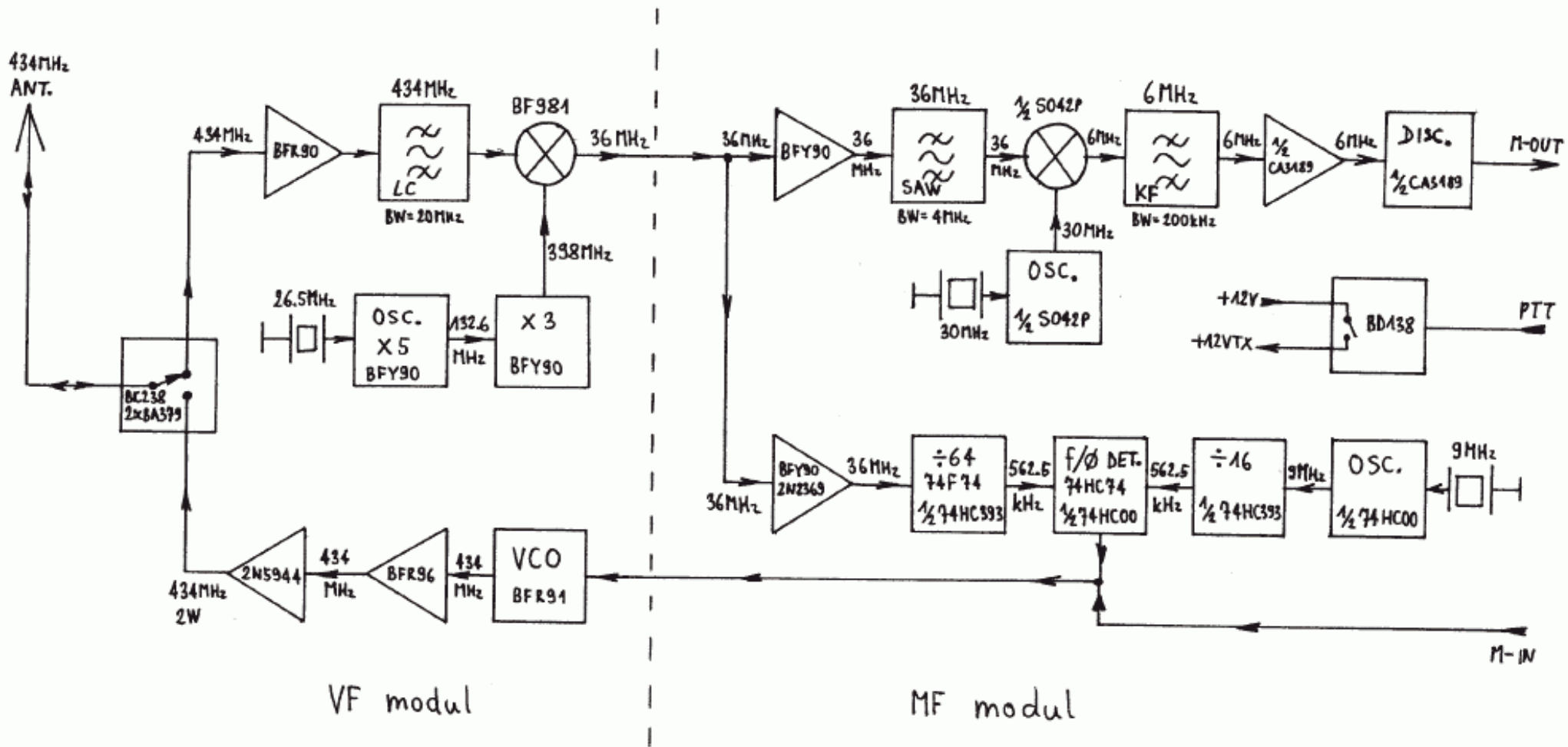
AX.25 paketi in okvirji



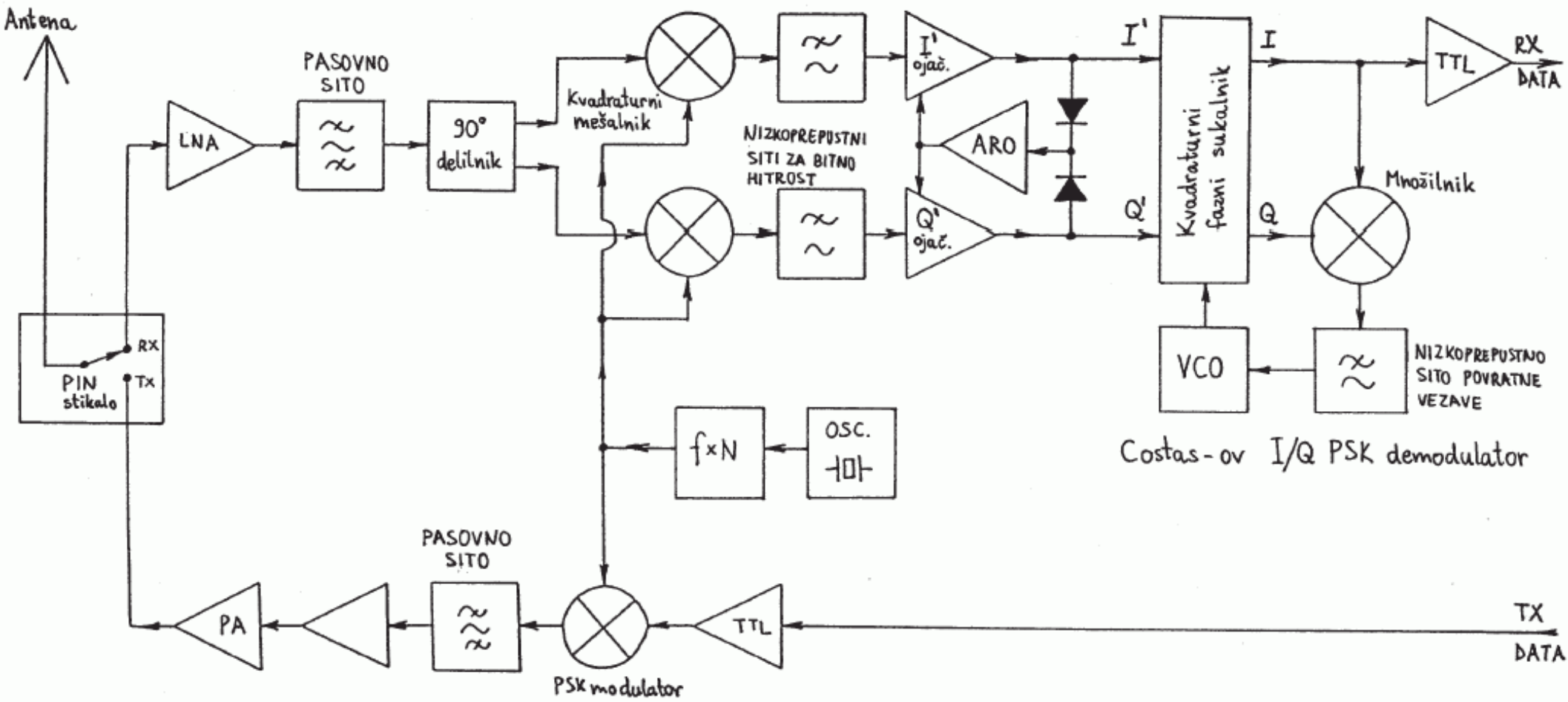
Priključitev in delovanje TNC vmesnika



Osnovni načrt packet-radio vozlišča



Osnovni načrt širokopasovne 70cm FM postaje



Osnovni načrt PSK radijske postaje z ničelno medfrekvenco



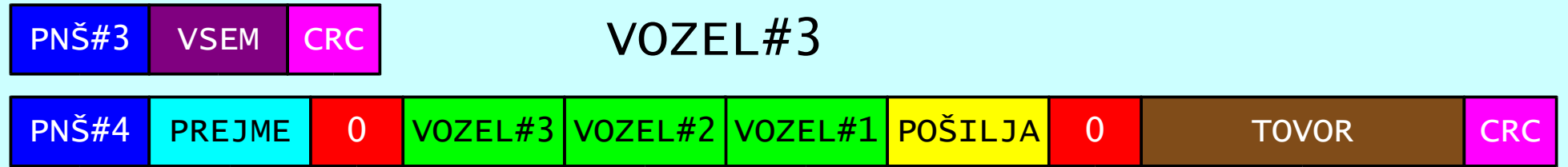
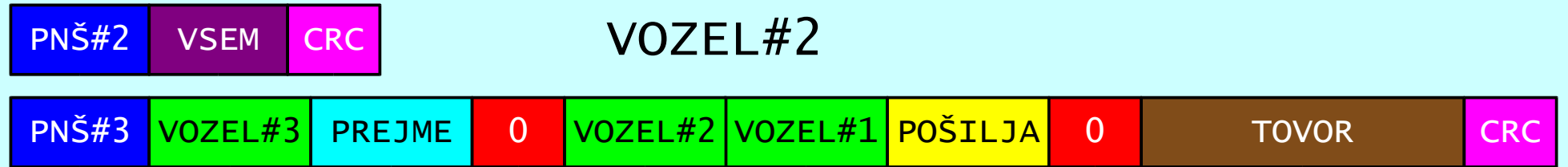
WC

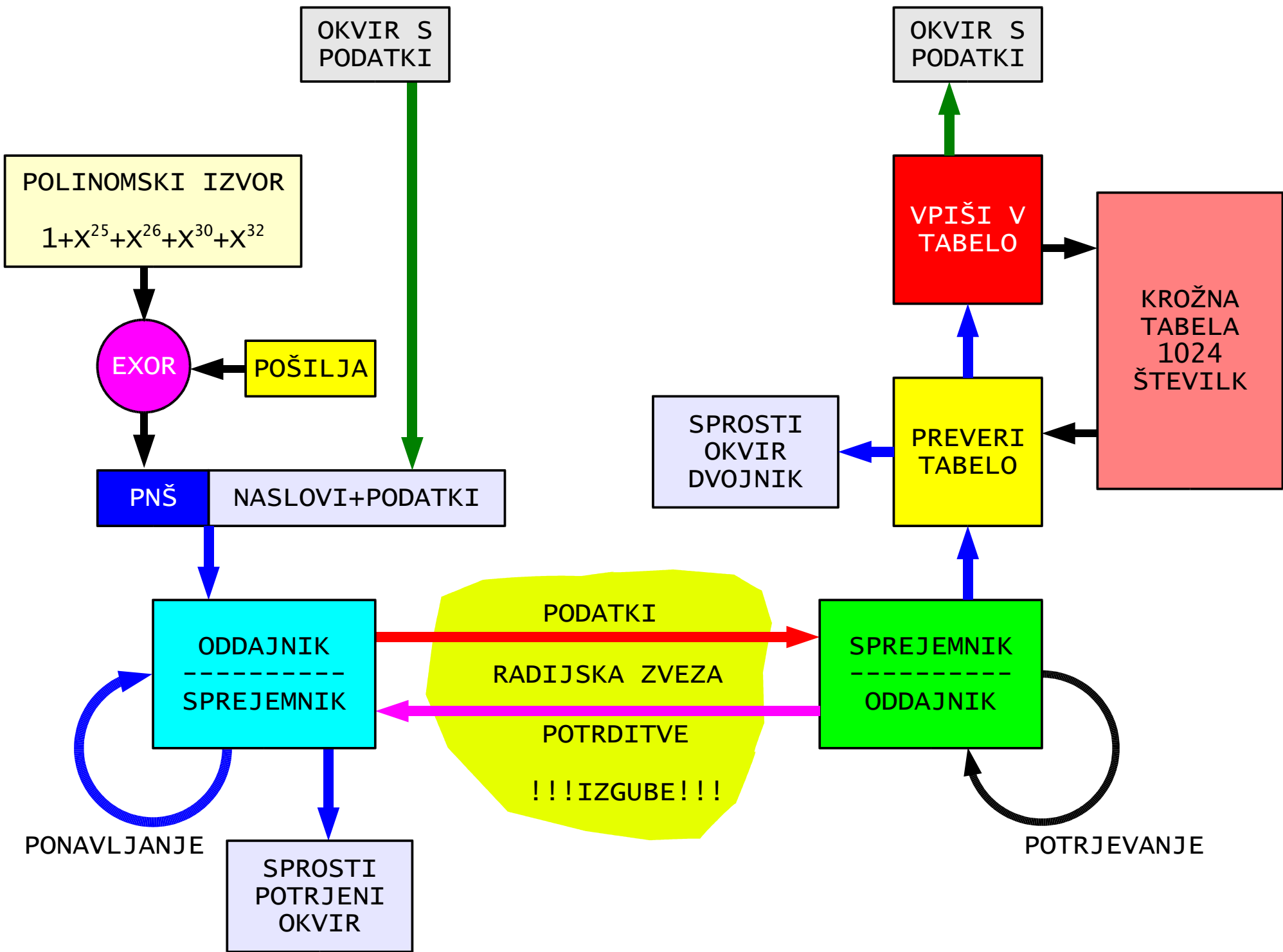
NOVO
SMO TUDI NA
INTERNETU:
WWW.WC.COM

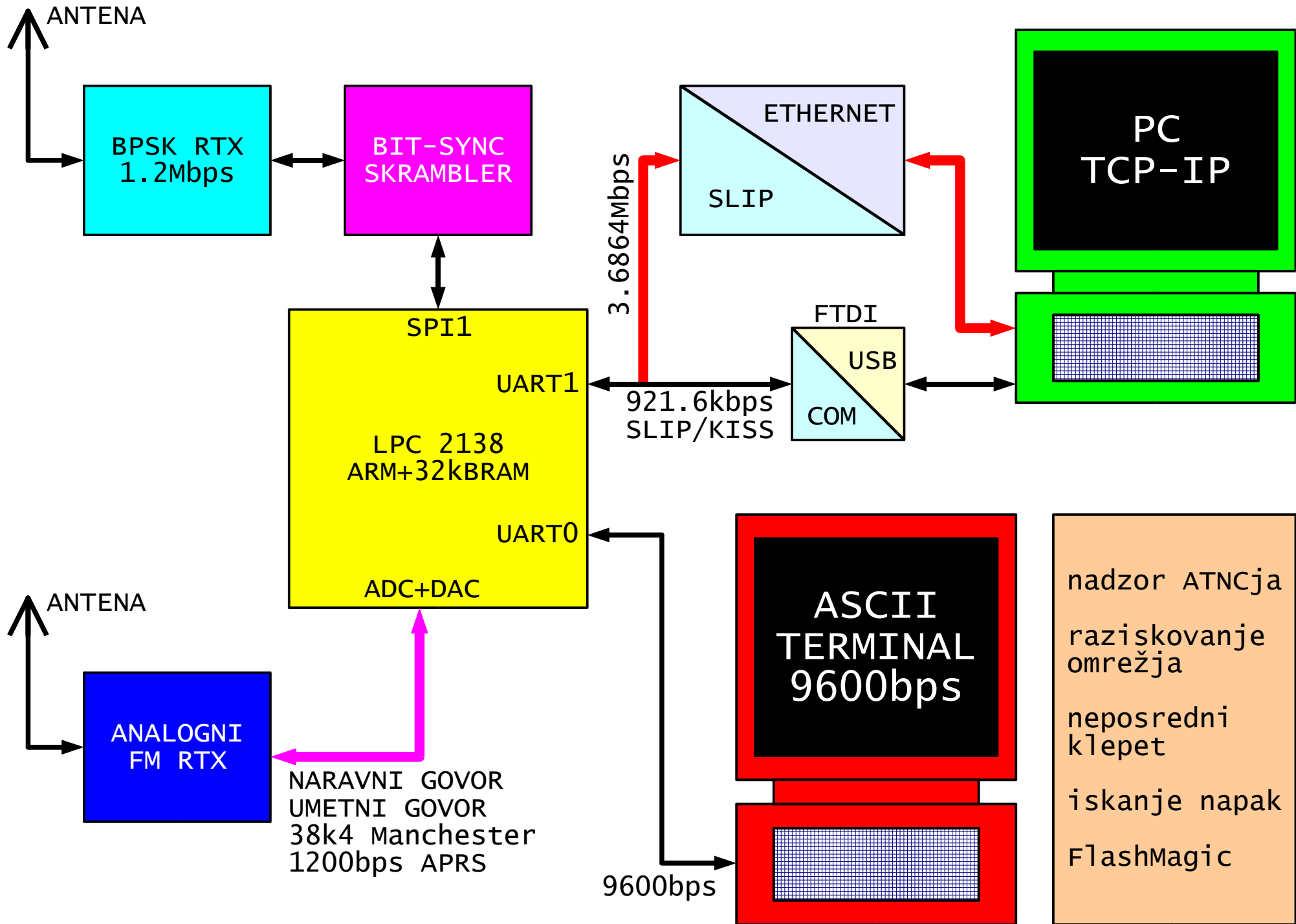
Pomanjkljivosti AX.25:

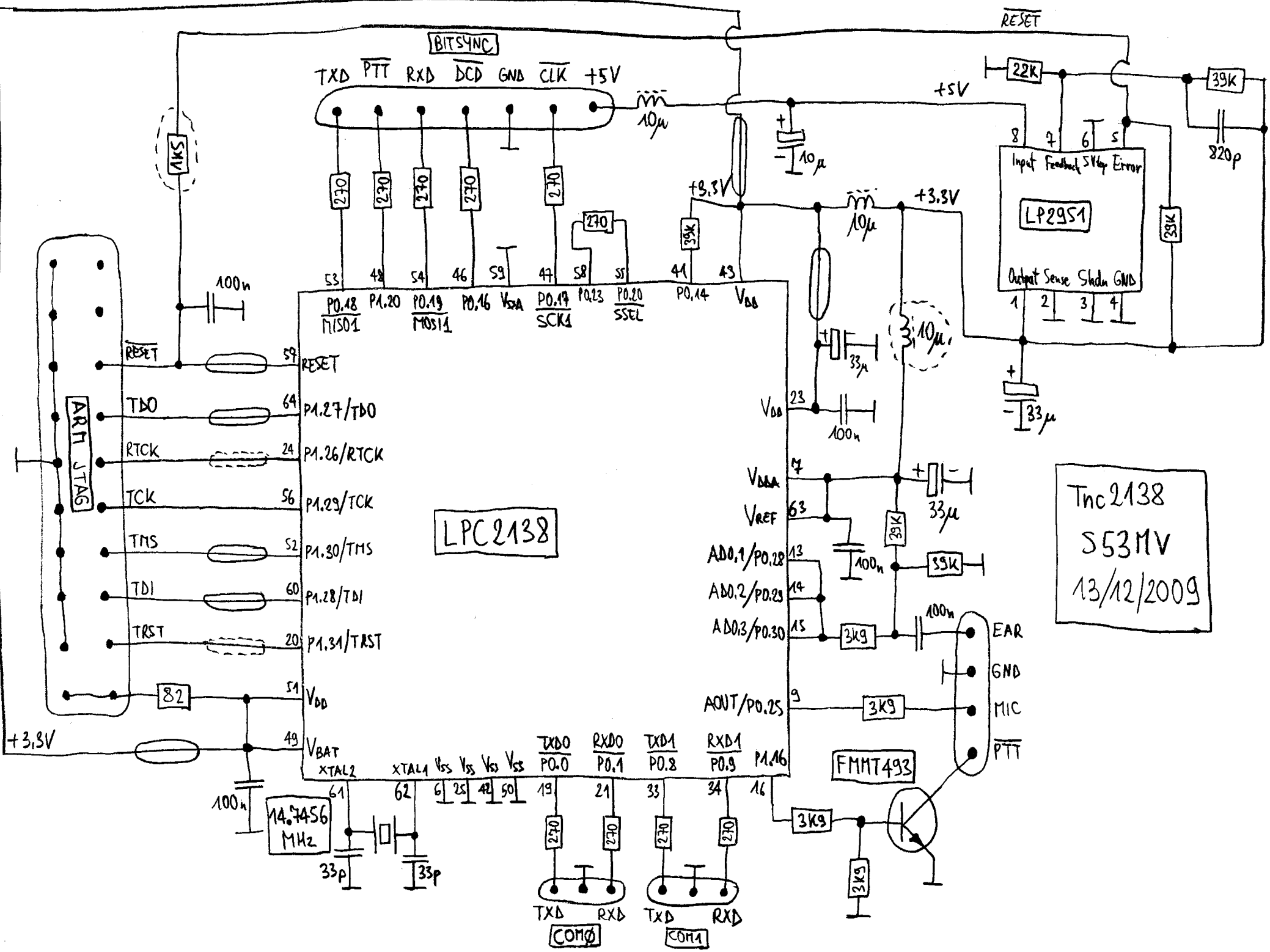
- (1) združuje vsaj tri OSI ravni (MAC+IP+TCP) v eno samo raven v enem samem protokolu: kompliciran protokol in hkrati slabo združljiv z IP svetom.
- (2) AX.25 strogo zahteva sprejem okvirjev v pravilnem vrstnem redu: če se izgubi prvi okvir paketa, je celoten paket izgubljen.
- (3) Naslovno polje je nestandardne dolžine (mnogokratnik 7 bajtov) in vsebuje poleg naslovov (radioamaterski znaki) še druge podatke, ki jih je nerodno izluščiti.
- (4) Delovanje protokola je odvisno od številnih notranjih spremenljivk: vzpostavitev zveze, števcji okvirjev, različni časovniki.
- (5) obstaja cela množica nezdružljivih inačic: vsak pisec programa si je standard AX.25 razlagal po svoje. Programi polni napak!!!

POŠILJATEJ prejme **TOVOR** in uporabi ARP tabelo



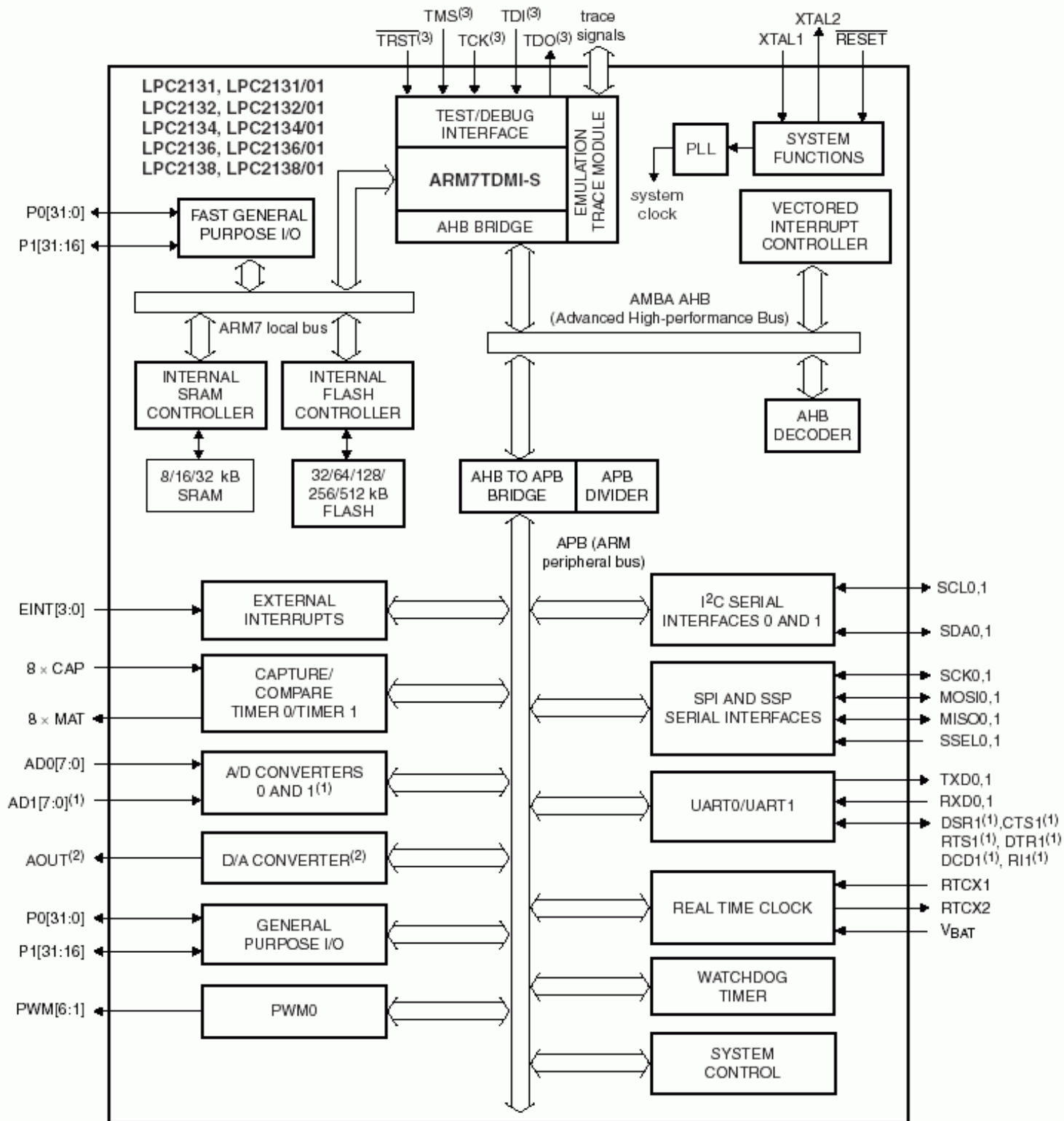






LPC2138

Tnc 2138
 S53MV
 13/12/2009



*** Izracunaj tabelo za racunanje CRCja *** (R1,R2,R3,R4,R5)

```

INICRC  LDR    R0,=TABCRC      ;tabela dolzine 256*16bit
        MOV    R1,#0
INICRC1 MOV    R2,R1
        MOV    R3,#7
INICRC2 LDR    R4,=0x00008408  ;CCITT polinom 1+X^5+X^12+X^16
        MOVS   R2,R2,LSR#1
        EORCS  R2,R2,R4
        SUBS   R3,R3,#1
        BPL   INICRC2
        STRH  R2,[R0],#2
        ADD   R1,R1,#1
        CMP   R1,#256
        BCC  INICRC1
        BX   LR

```

*** Dodaj HDLC CRC okvirju

```

HDLCCRC LDR    R2,=TABCRC
        MOV    R3,#0xFFFF
        LDRH  R4,[R8,#2]
        ADD   R4,R4,R8
        LDRH  R5,[R8]
        ADD   R0,R5,#2      ;podaljsaj okvir za CRC
        STRH  R0,[R8]
        B    HDLCCR2
HDLCCR1 LDRB  R0,[R4],#1    ;obracunaj CRC za byte v R0
        EOR   R0,R0,R3
        AND   R0,R0,#0x000000FF
        ADD   R0,R0,R0
        LDRH  R1,[R2,R0]   ;R2=TABCRC
        AND   R3,R3,#0x0000FF00
        EOR   R3,R1,R3,LSR#8

```

```

C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Scapi>cd desktop
C:\Documents and Settings\Scapi\Desktop>ime
C:\Documents and Settings\Scapi\Desktop>C:\flexlm\arnasm ime.s
C:\Documents and Settings\Scapi\Desktop>C:\flexlm\armlink --ro_base 0x00 ime.o -
o ime.axf
C:\Documents and Settings\Scapi\Desktop>C:\flexlm\fromelf --i32 -o ime.hex ime.a
xf
C:\Documents and Settings\Scapi\Desktop>

```




H-Flasher

Programmed and Verified x2 successfully.

18 KB/s + 14 KB/s Size = 14 KB

Close

H-Flasher - lpc.hfc

New Load Save Save As Options Exit About

Program Wizard

- 1 Flash Selection
- 2 Configuration
- 3 Init Scripts
- 4 Pgm Options
- 5 Programming**
- 6 H-Flasher Help

>> Programming - LPC2138

Flash: LPC2138 0x0002FF25 Reset

Target: ARM7TDMI-S LITTLE-ENDIAN Check

Type: Intel Hex Format Program

Dst Addr: Verify

Src File: C:\Documents and Settings\Scapi\ND ...

From: Entire Chip Erase

To: Entire Chip Blank

Address: 0 Read

Size: 0x3000

H-JTAG Server

File Operations Flasher Script Tools Settings Options Help

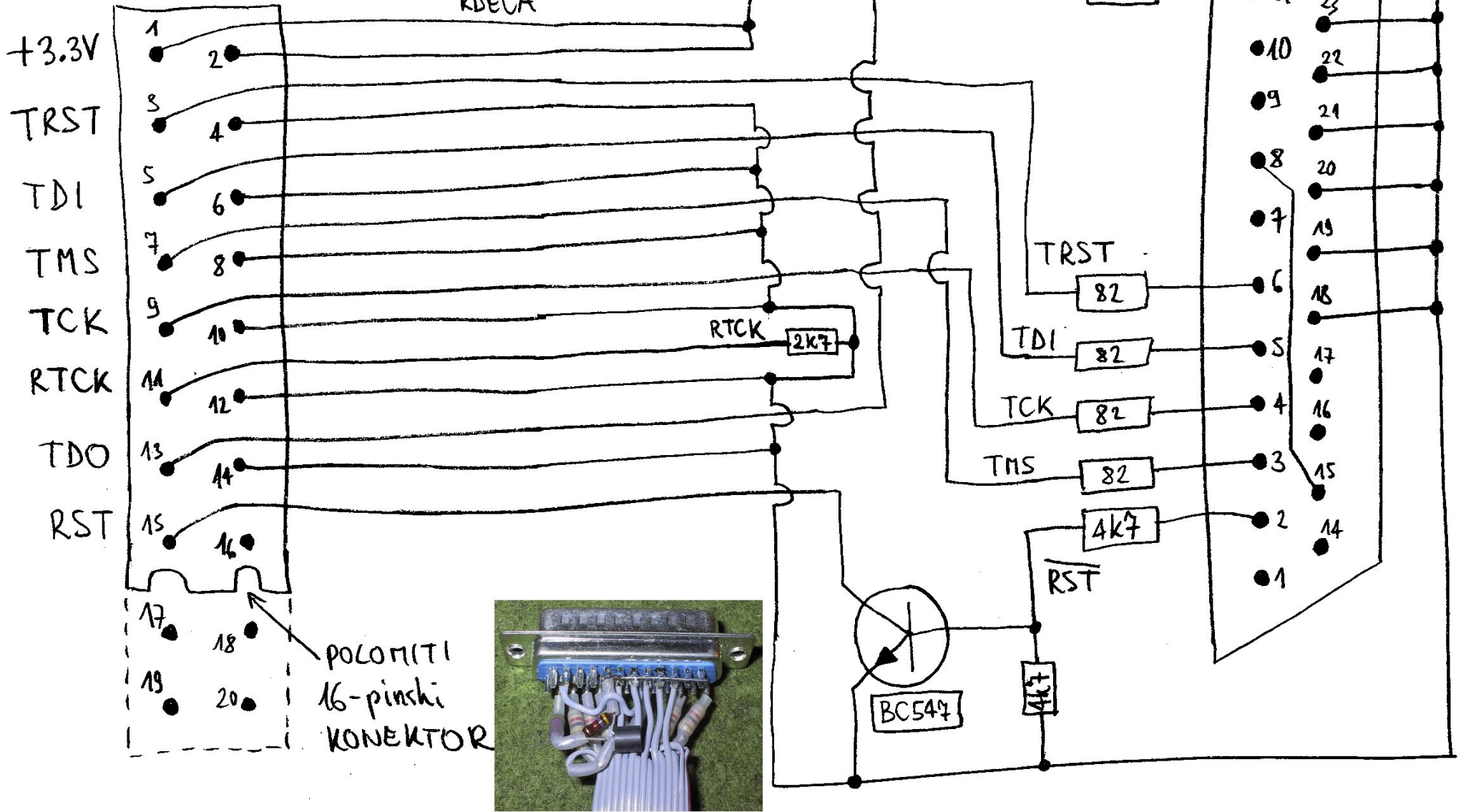
ARM7TDMI-S
0x4F1F0F0F

Ready TCK=Max/1 LPT

CIGOTAG

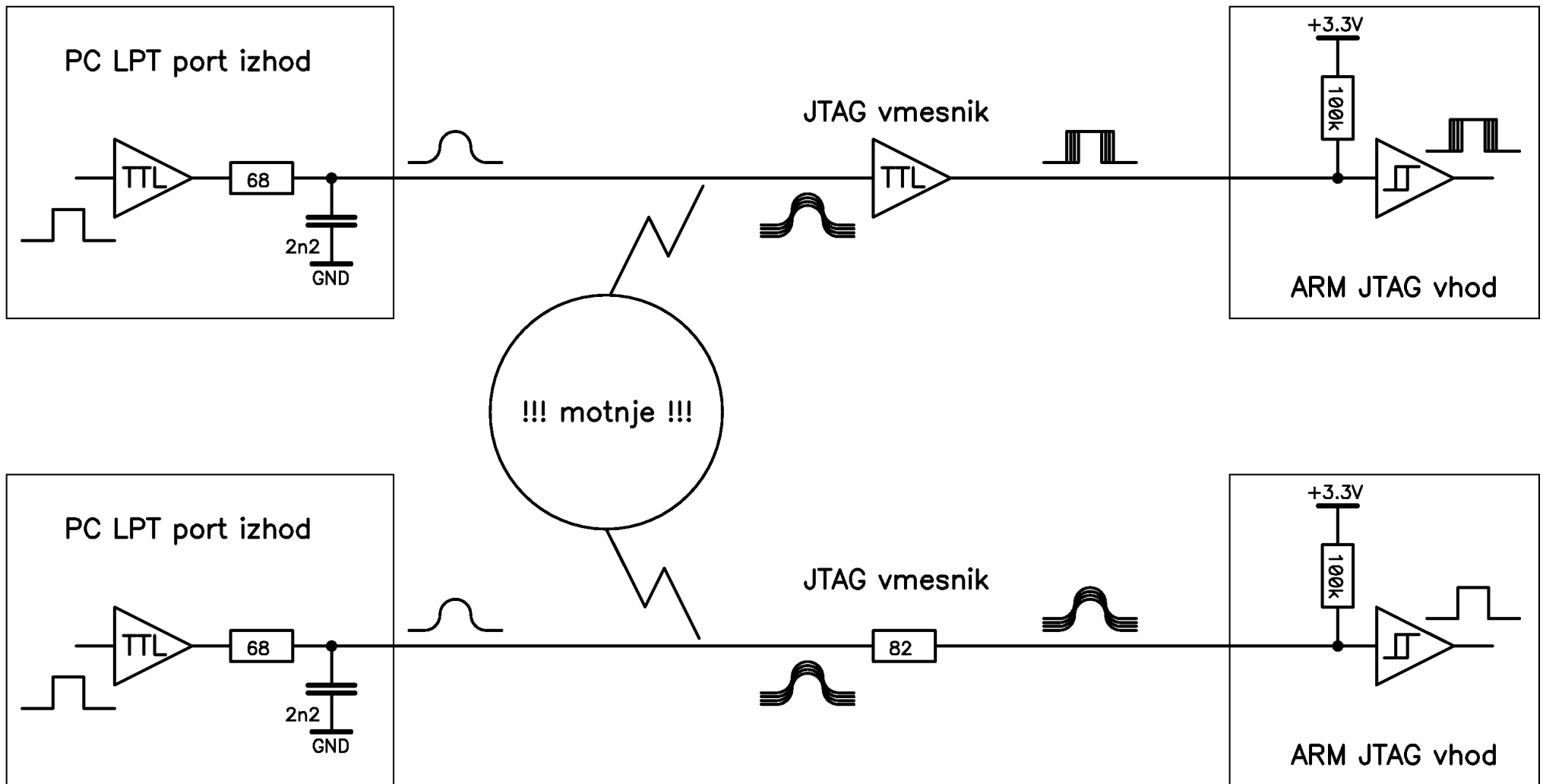
S53MV
7/12/2007

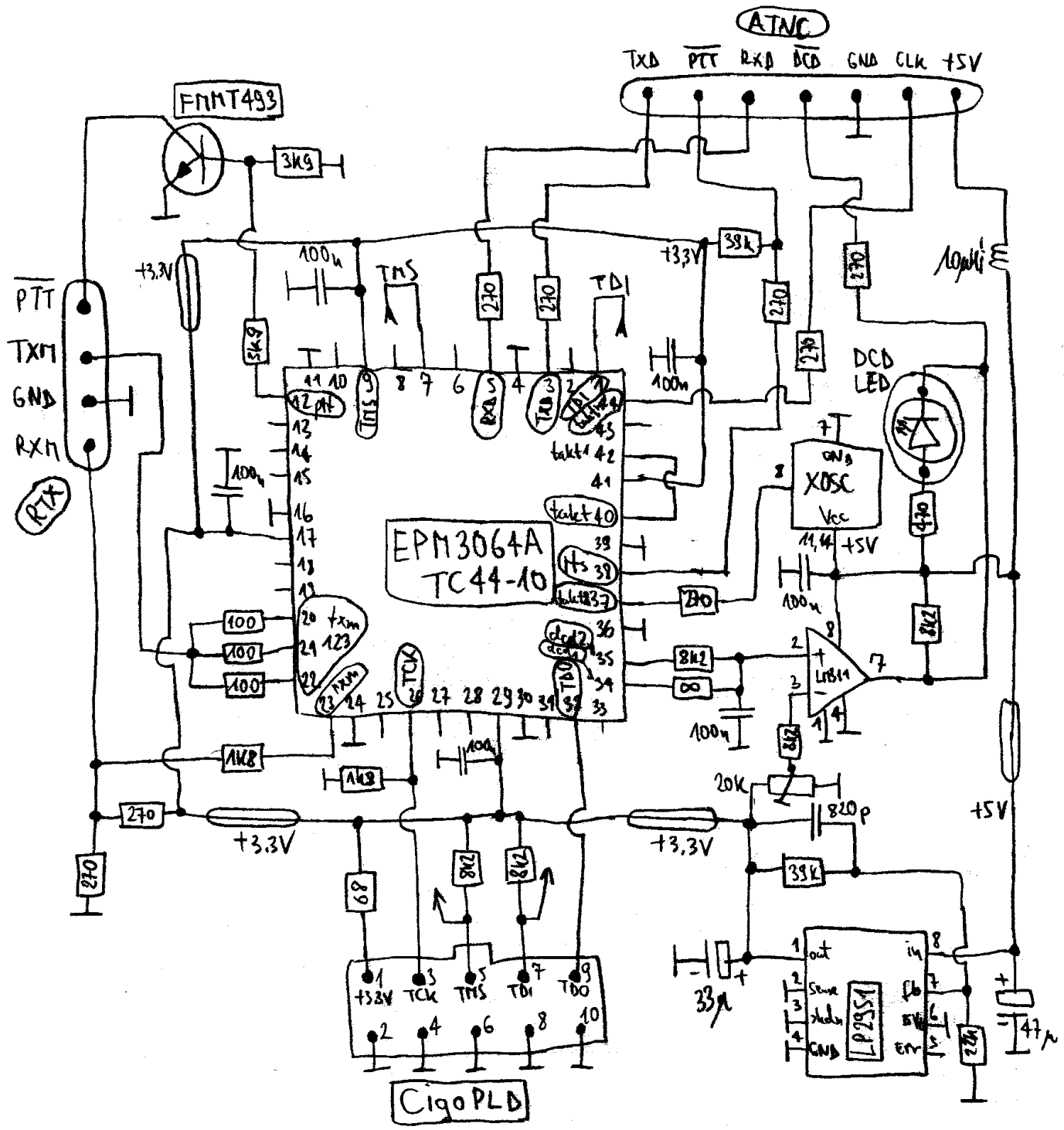
RDEČA



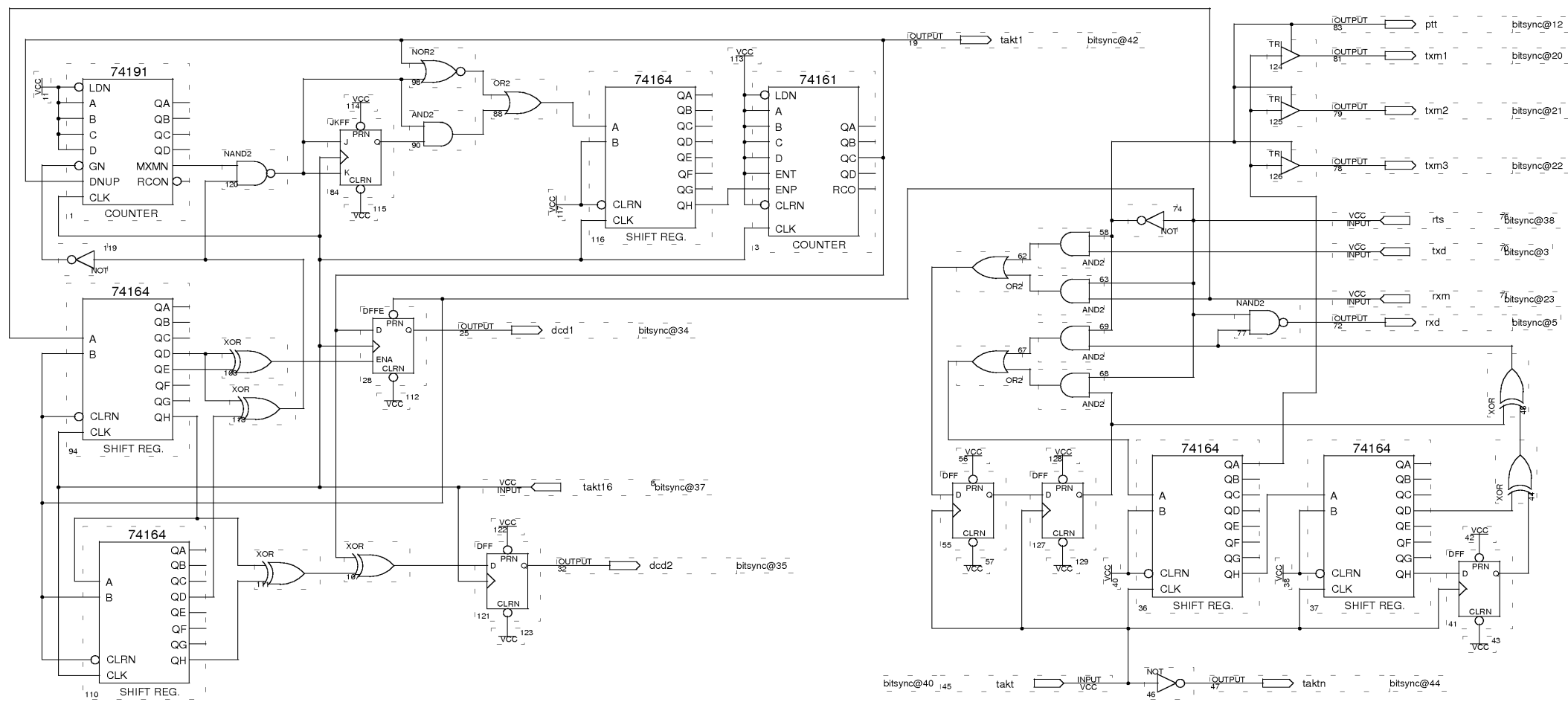
POLOMITI
16-pinški
KONEKTOR







Bit Sync SS3MV 22/1/2010





Compiler

Compiler Netlist Extractor (cnf)
Database Builder
Logic Synthesizer
Fitter (rpt)
Timing SNF Extractor (snf)
Assembler (pot)

0 _____ 100

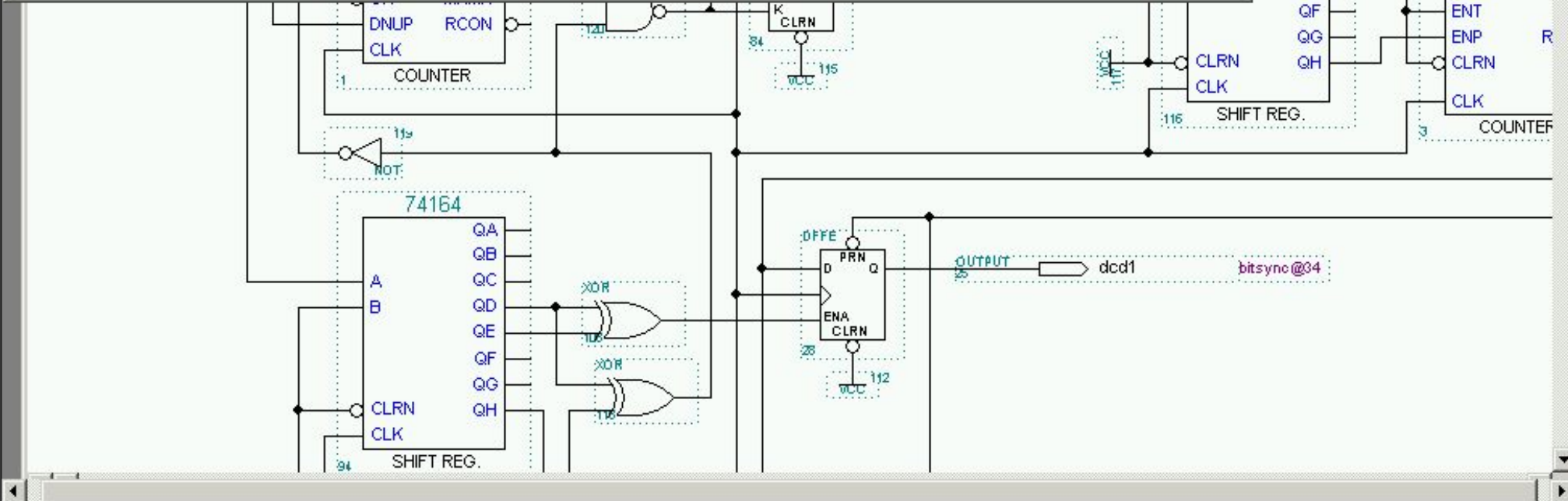
Start Stop

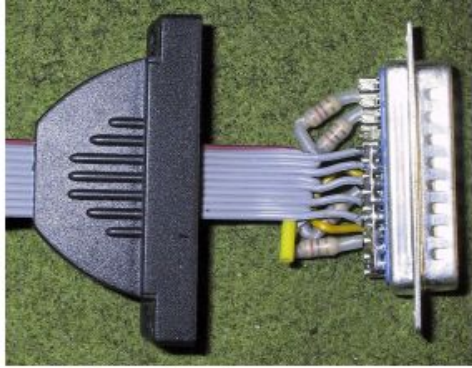
Messages - Compiler

Info: Design Doctor has given the project a clean bill of health based on the EPLD Rules set
 Info: Chip 'bitsync' in device 'EPM3064ATC44-4' has less than 10% of logic cells available for future logic changes – if your project is likely to change, Altera recommends using a larger device

◀ Message ▶ 0 of 2 Locate in Floorplan Editor Help on Message

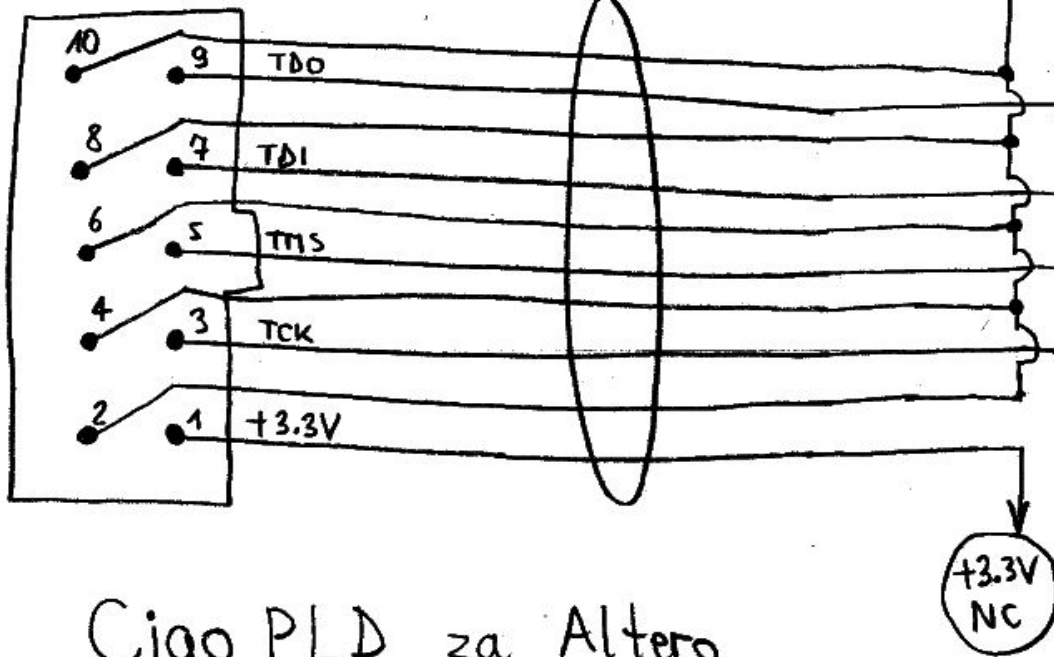
◀ Locate ▶ 0 of 0 Locate All





10-pinski konektor

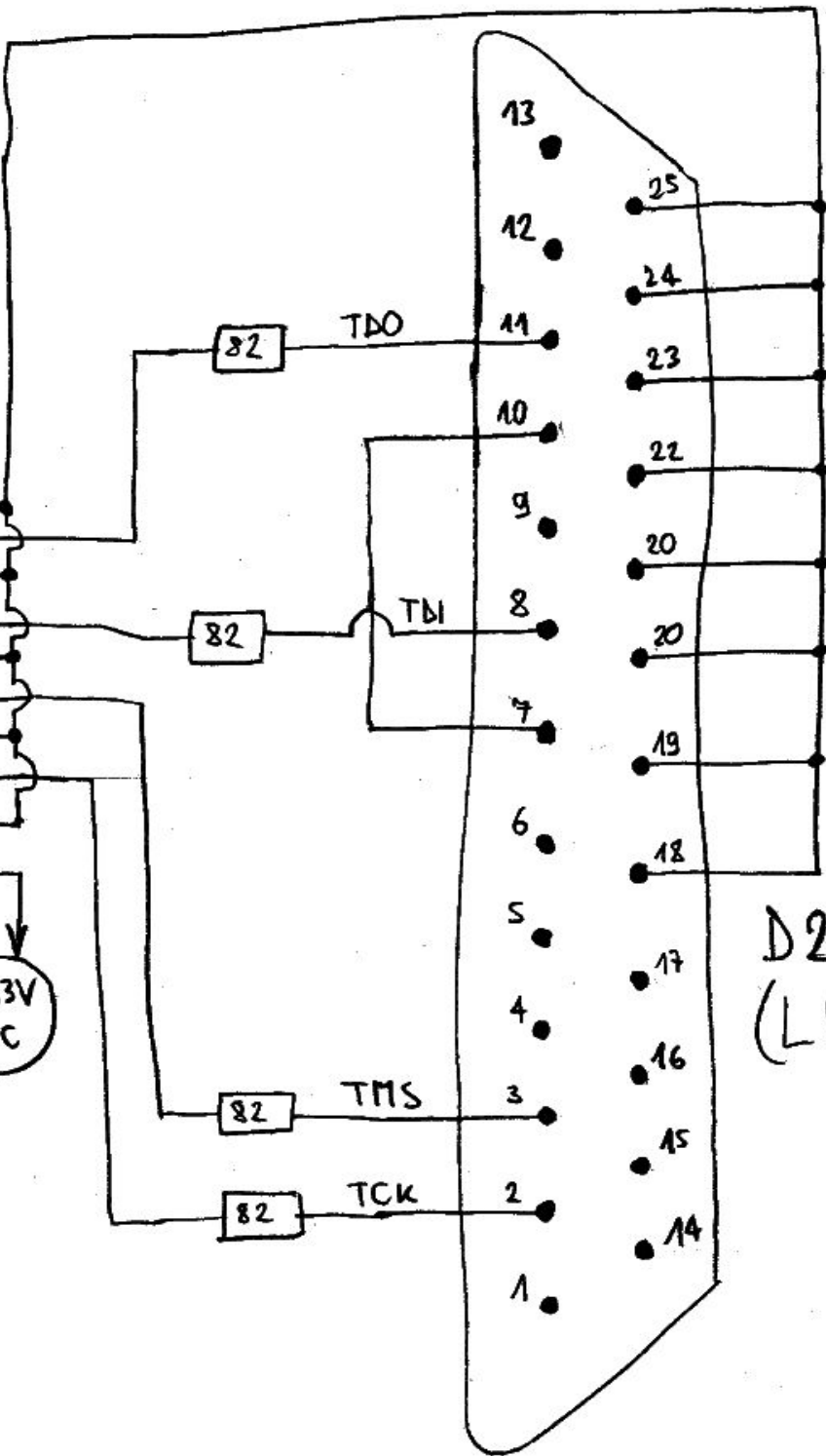
10-žilni ploščati kabl



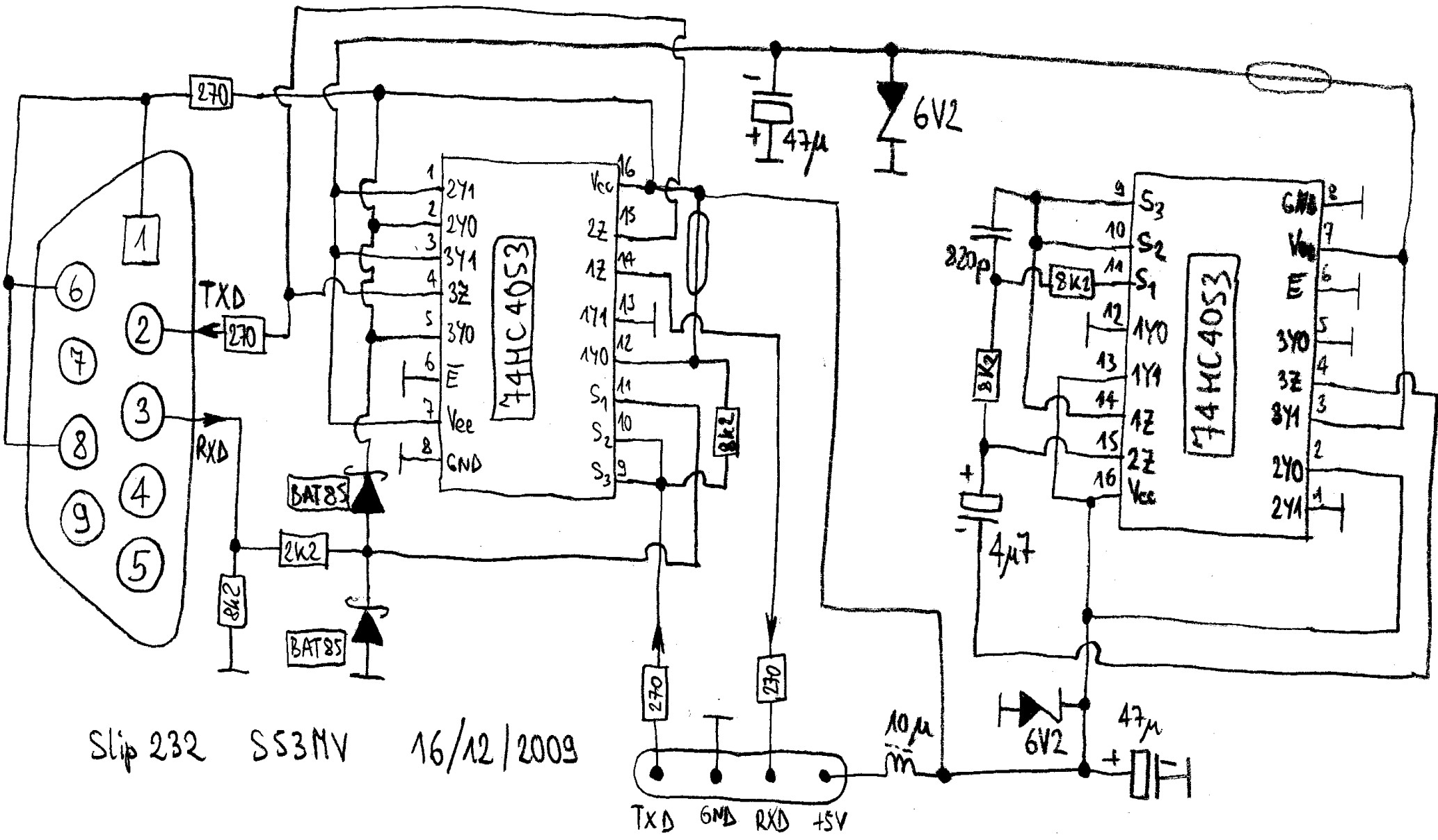
Cigo PLD za Altero

S53MV

22/1/2010



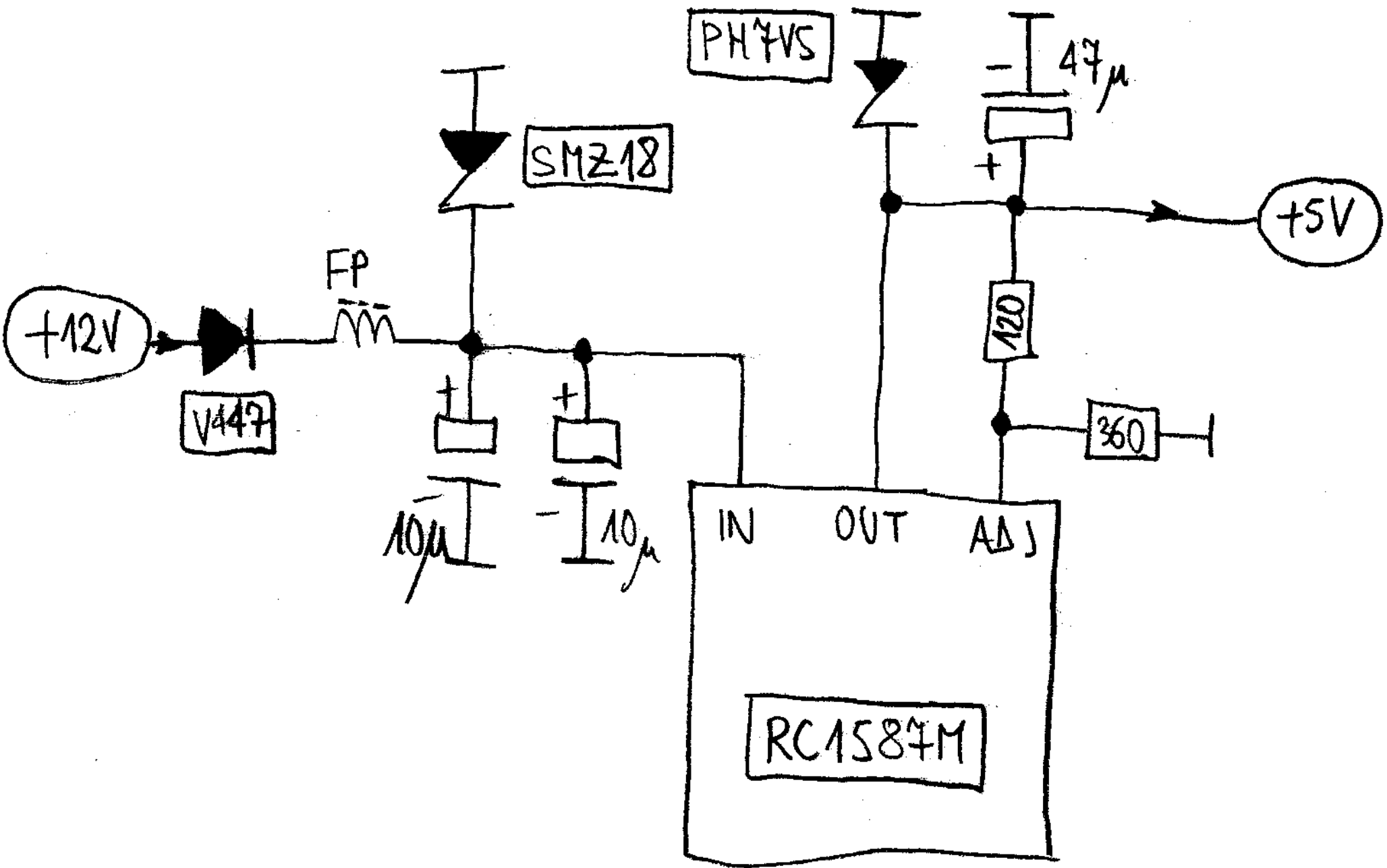
D25-M (LPT)



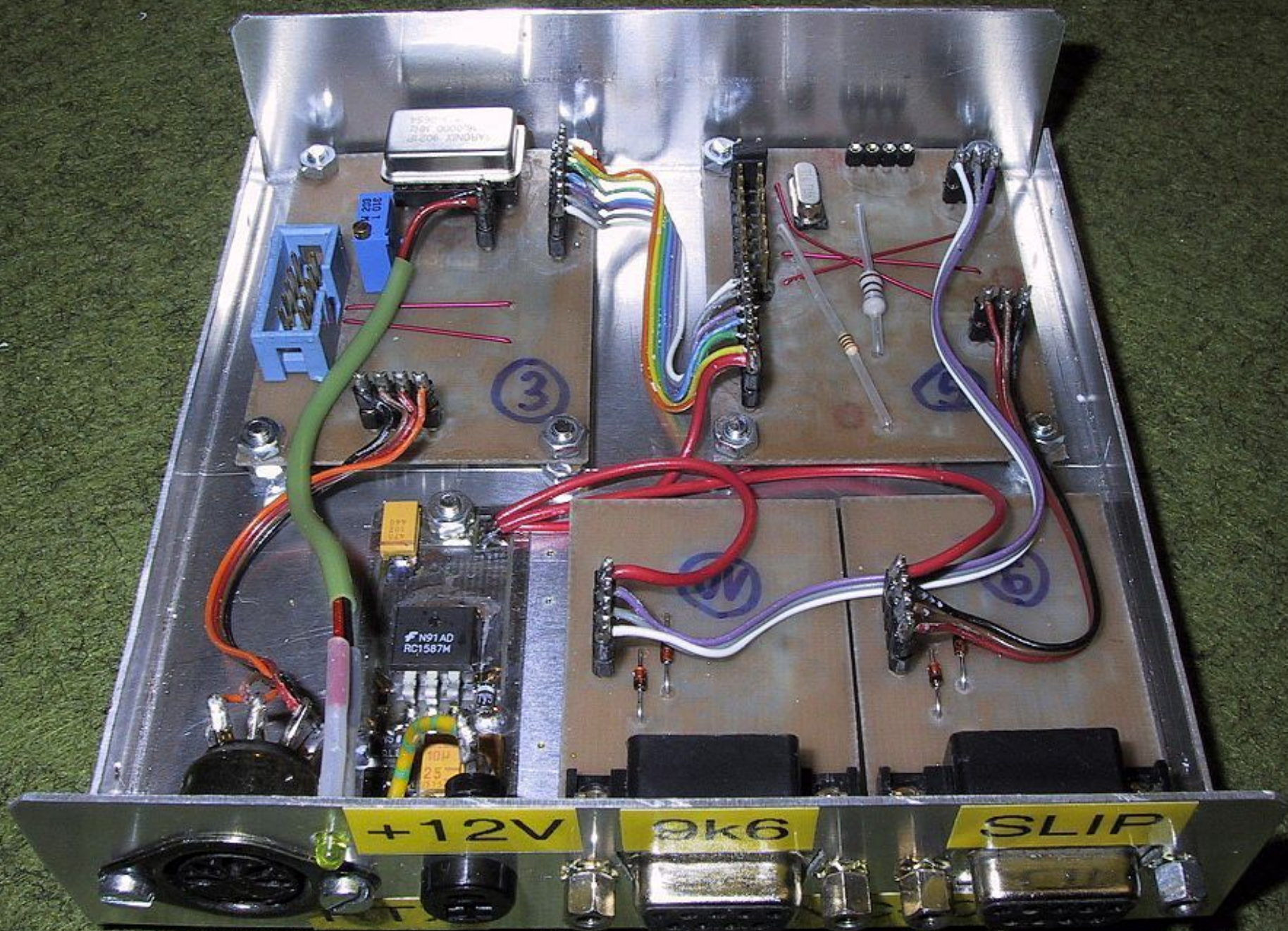
Slip 232 SS3MV 16/12/2009

TXD GND RXD +5V



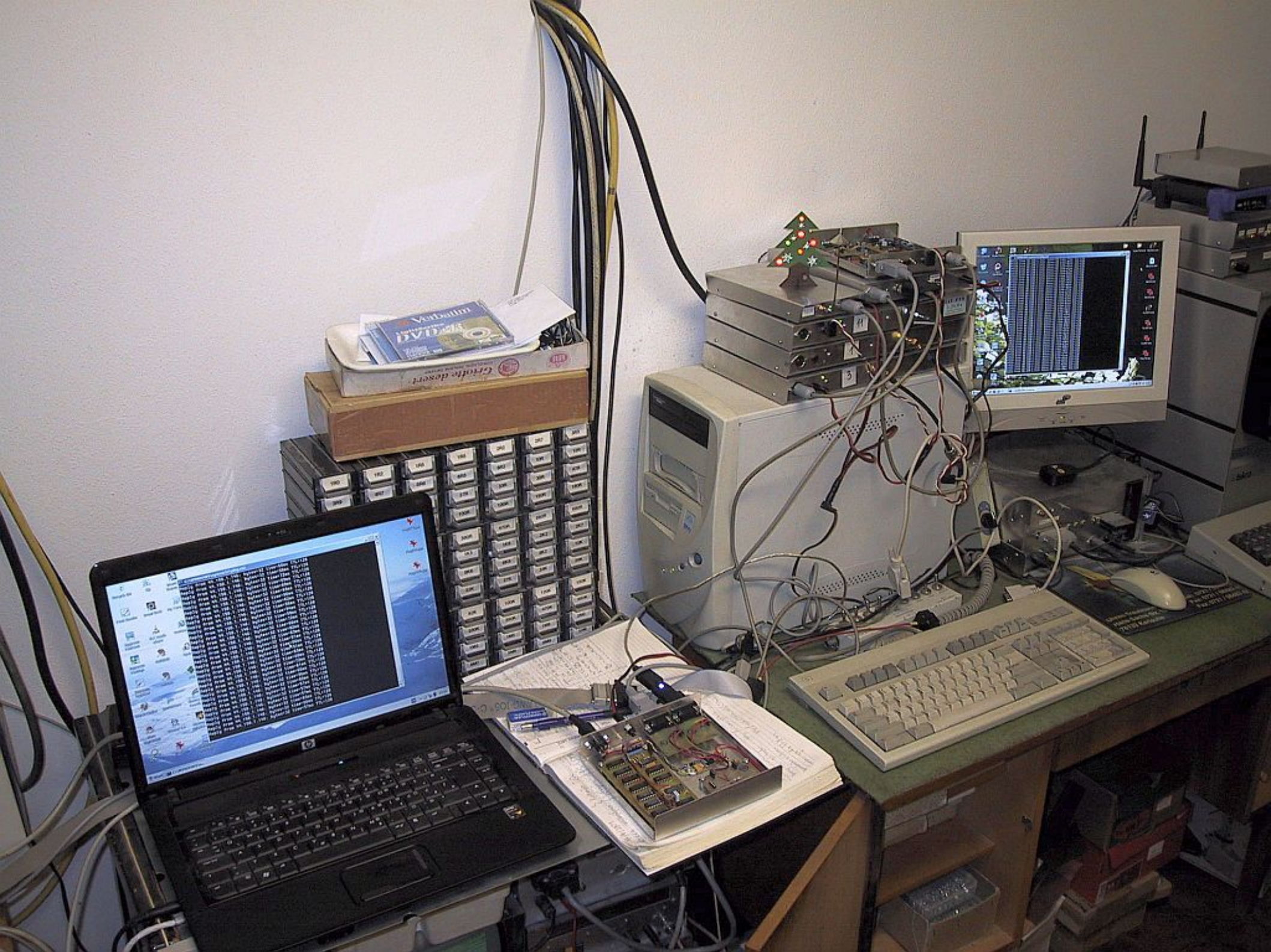


Napajalnik +5V S53MV 19/12/2009





```
a
*** ARP usmerjanje: 2=VPIS-DEF
44.150.1.146>A02
44.150.1.113>A03
44.150.8.1>A02,A01,A03
b
*** Baudrate UART1: 460800bit/s (FLASH+RESET)
h
*** HayesAT timeout: 600000us
j
*** Javi: Preizkus ATNC-001 S53MV
m
*** Moj naslov: A01
n
*** Naslov: A02
p
*** Ponovi: 33-krat Zakasnitev: 10000us
s
*** Slot: 3000us Glava: 1000us Rep: 200us
t
*** Tecnoba: 30000/65536 brez DCD: 300/65536
z
*** Zanke: 87409/s Delovanje: Od 3h 17min 35s Prosto: 13
_
```


```
C:\WINDOWS\system32\ping.exe
Reply from 44.150.13.13: bytes=1500 time=188ms TTL=128
Reply from 44.150.13.13: bytes=1500 time=149ms TTL=128
Reply from 44.150.13.13: bytes=1500 time=131ms TTL=128
Reply from 44.150.13.13: bytes=1500 time=161ms TTL=128
Reply from 44.150.13.13: bytes=1500 time=133ms TTL=128
Reply from 44.150.13.13: bytes=1500 time=147ms TTL=128
Reply from 44.150.13.13: bytes=1500 time=147ms TTL=128
Reply from 44.150.13.13: bytes=1500 time=131ms TTL=128
Reply from 44.150.13.13: bytes=1500 time=134ms TTL=128
Reply from 44.150.13.13: bytes=1500 time=135ms TTL=128
Reply from 44.150.13.13: bytes=1500 time=138ms TTL=128
Reply from 44.150.13.13: bytes=1500 time=134ms TTL=128
Reply from 44.150.13.13: bytes=1500 time=150ms TTL=128
Reply from 44.150.13.13: bytes=1500 time=142ms TTL=128

Ping statistics for 44.150.13.13:
    Packets: Sent = 64550, Received = 64550, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 126ms, Maximum = 363ms, Average = 149ms
Control-Break
Reply from 44.150.13.13: bytes=1500 time=153ms TTL=128
Reply from 44.150.13.13: bytes=1500 time=156ms TTL=128
Reply from 44.150.13.13: bytes=1500 time=137ms TTL=128
Reply from 44.150.13.13: bytes=1500 time=135ms TTL=128
```




- Recycle Bin
- H-Flasher
- slip2
- Foxit Reader
- H-Flasher Lite
- MAX+plus II 10.2 BASELINE
- IrfanView
- H-ITAG
- 9600.ht
- IrfanView Thumbnails
- NetMeeting
- 460k8.ht
- slip
- Opera
- VLC media player
- Shortcut to Flexctl.exe
- ime.bat
- Shortcut to My Computer
- Flash Magic
- Shortcut to WPP.EXE
- H-Converter
- Windows Explorer

- ime.s
- ime.exe
- ime.exe
- ime.o

```
C:\WINDOWS\system32\ping.exe
Reply from 44.150.1.113: bytes=1500 time=141ms TTL=128
Reply from 44.150.1.113: bytes=1500 time=152ms TTL=128
Reply from 44.150.1.113: bytes=1500 time=133ms TTL=128
Reply from 44.150.1.113: bytes=1500 time=154ms TTL=128
Reply from 44.150.1.113: bytes=1500 time=153ms TTL=128
Reply from 44.150.1.113: bytes=1500 time=137ms TTL=128
Reply from 44.150.1.113: bytes=1500 time=145ms TTL=128
Reply from 44.150.1.113: bytes=1500 time=142ms TTL=128
Reply from 44.150.1.113: bytes=1500 time=149ms TTL=128
Reply from 44.150.1.113: bytes=1500 time=142ms TTL=128
Reply from 44.150.1.113: bytes=1500 time=145ms TTL=128
Reply from 44.150.1.113: bytes=1500 time=153ms TTL=128
Reply from 44.150.1.113: bytes=1500 time=156ms TTL=128
Reply from 44.150.1.113: bytes=1500 time=139ms TTL=128
Reply from 44.150.1.113: bytes=1500 time=168ms TTL=128

Ping statistics for 44.150.1.113:
    Packets: Sent = 64634, Received = 64634, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 126ms, Maximum = 354ms, Average = 149ms
Control-Break
Reply from 44.150.1.113: bytes=1500 time=130ms TTL=128
Reply from 44.150.1.113: bytes=1500 time=143ms TTL=128
Reply from 44.150.1.113: bytes=1500 time=139ms TTL=128
```


Recycle Bin, Slip, IrfanView Thumbnails, Windows Explorer, Foxit Reader, SmartTRAK, My Computer, Yawcam, Jeppesen FiteDeck, VLC media player, NetMeeting, ManyCam 2.4, Jeppesen FiteMap, 460k8.ht, Opera, TeamTalk, Jeppesen JeppView, 9600.ht, PCB

webvideo

Client Me Users Channels Server Help

Cefizelj (3)

- Cefizelj
- Pajcevina
- Scapi

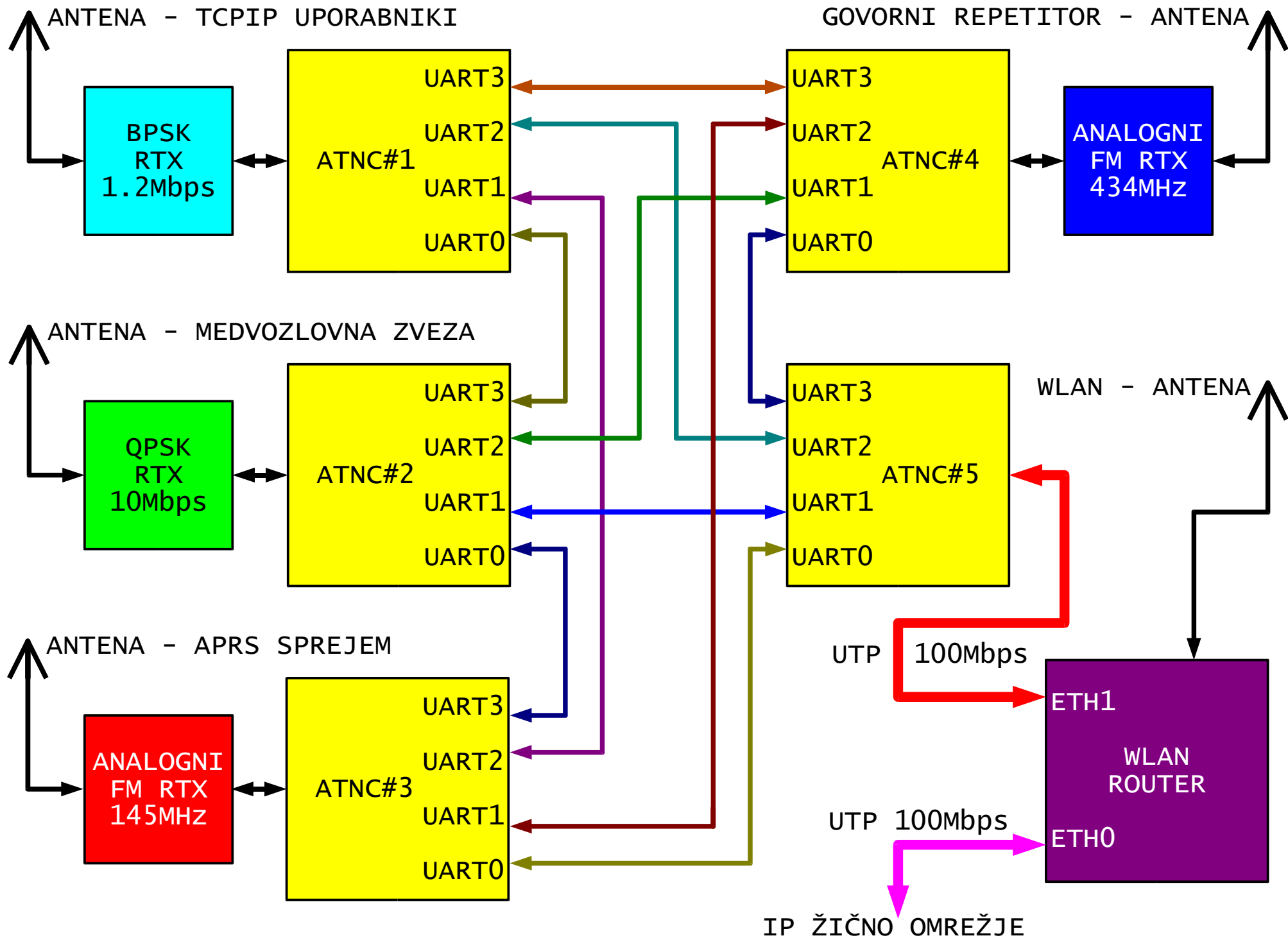
Chat Video Files

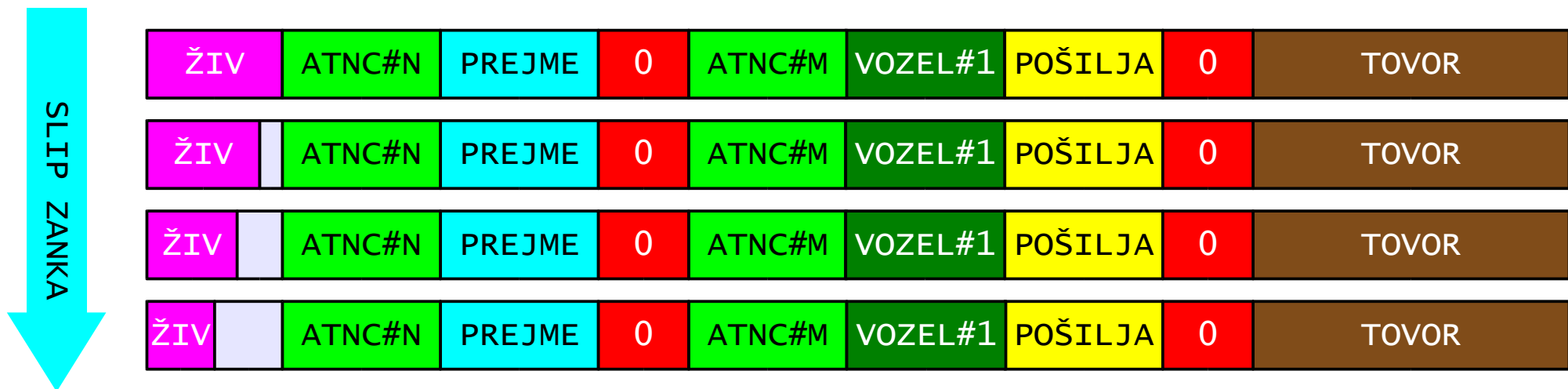
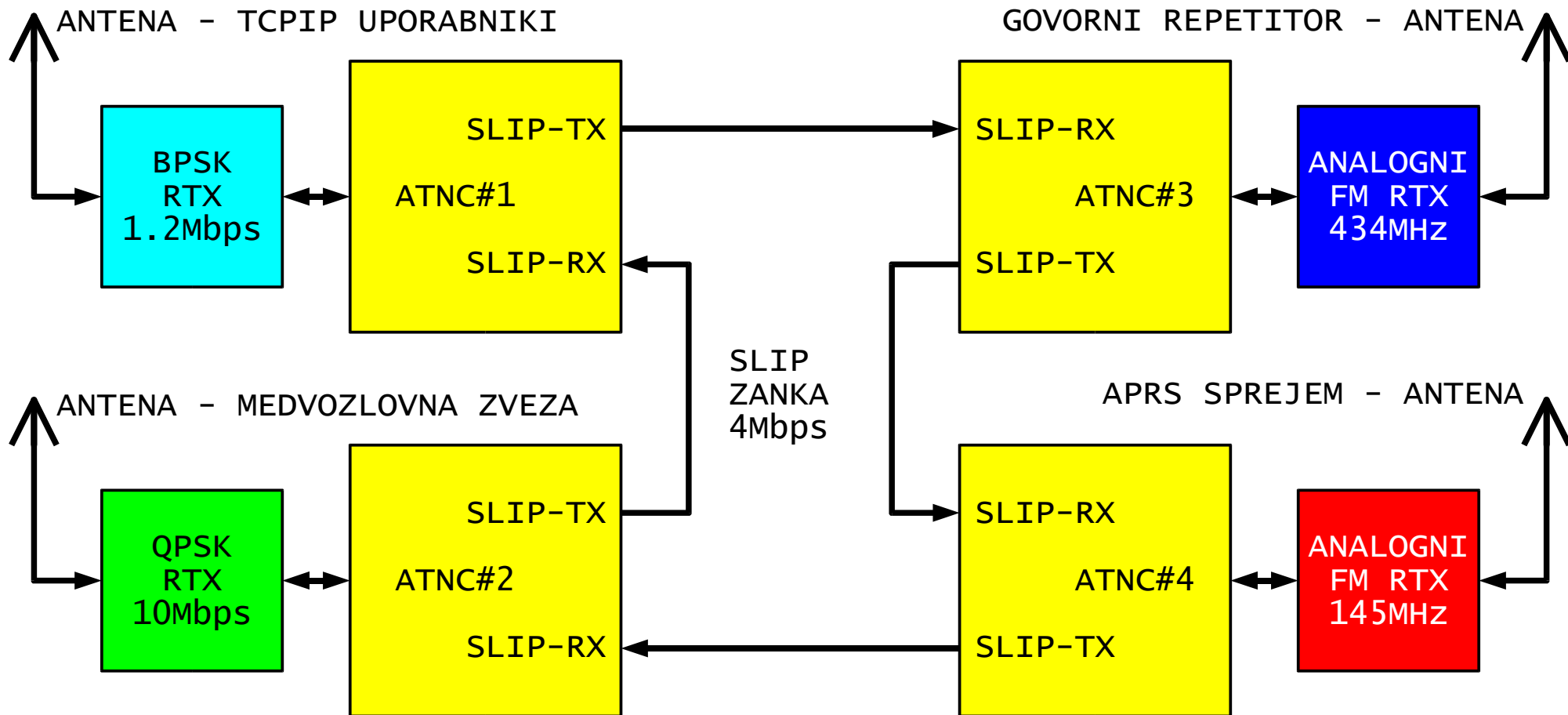
RX: 12.57KB TX: 4.56KB

Video - Pajcevina

Video - Myself

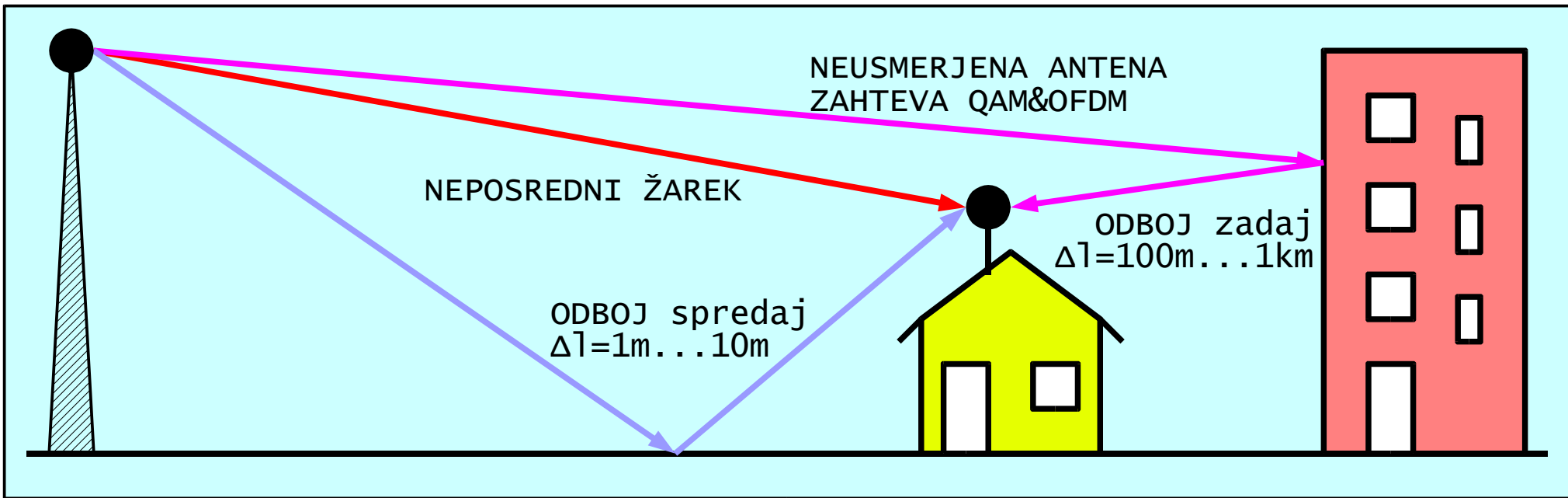
Video - Scapi



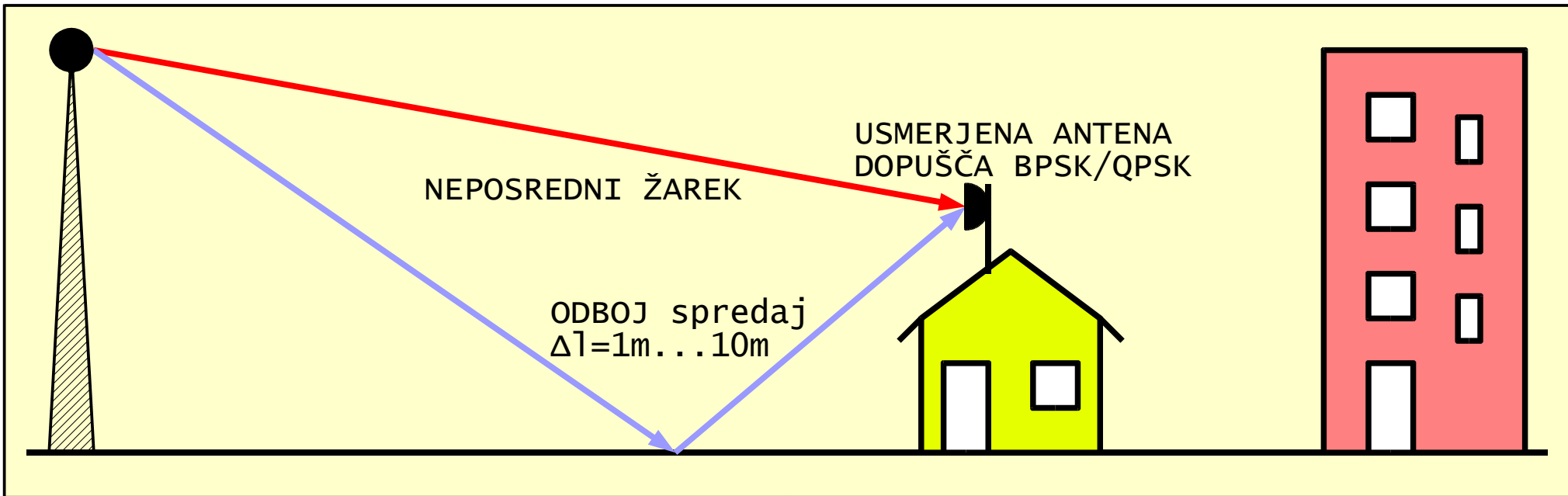




TOPLOTNI ŠUM 293K=20C	-174dBm/Hz				
ŠUM SPREJEMNIKA	+3dB				
BITNA HITROST	1200bps	38.4kbps	1.2288Mbps	10Mbps	50Mbps
PASOVNA ŠIRINA	+31dB.Hz	+46dB.Hz	+61dB.Hz	+70dB.Hz	+77dB.Hz
IZGUBA DEMODULATORJA	+2dB				
SIGNAL/ŠUM BPSK/QPSK	+10dB				
OBČUTLJIVOST PSK	-128dBm	-113dBm	-98dBm	-89dBm	-82dBm
IZKORISTEK PSK/FSK TX	40%...70%				
SIG/ŠUM QAM&OFDM (FSK)	+20dB (+15...+25dB)				
OBČUTLJIVOST QAM (FSK)	-118dBm	-103dBm	-88dBm	-79dBm	-72dBm
IZKORISTEK OFDM TX	3%...10%				
ZVEZA 100km ANTENI 30cm	1k2-NBFM Ptx=10mW	38k-WBFM Ptx=0.3W	1M2-BPSK Ptx=1W	10M-QPSK Ptx=8W	50M-OFDM Ptx=4kW



$R = 10\text{Mbps} \gg \text{---} \gg \text{DOLŽINA ENEGA BITA } l = 30\text{m}$



802.11b ZERO-IF RADIO DELIVERS -85dBm SENSITIVITY AT 11Mbps WITH LOWEST COST BOM

Higher Sensitivity and Fewer Components than All Other Solutions

The MAX2820 ZIF transceiver and MAX2242 power amplifier form a low cost, zero-IF radio that delivers 2dB to 3dB better sensitivity than other ZIF solutions. It saves up to three RF ICs, two RF filters, one IF SAW filter, and more than 30 extra components over existing superhet radio solutions. It is designed to support both 11Mbps CCK and 22Mbps PBCC™ modes.

