A.R.I.
Sezione di Parma

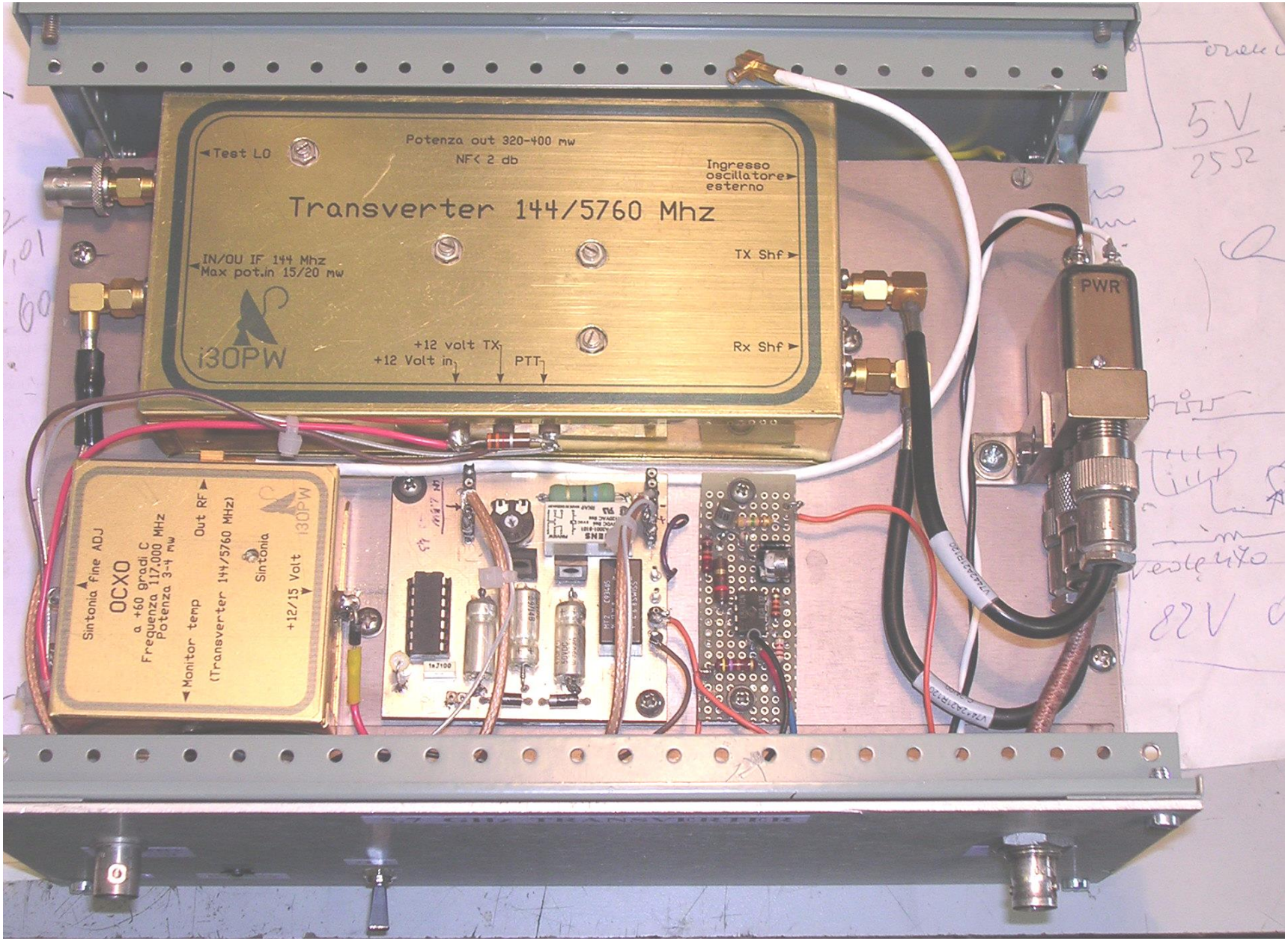
Transverter 144 MHz / 5.7 GHz –

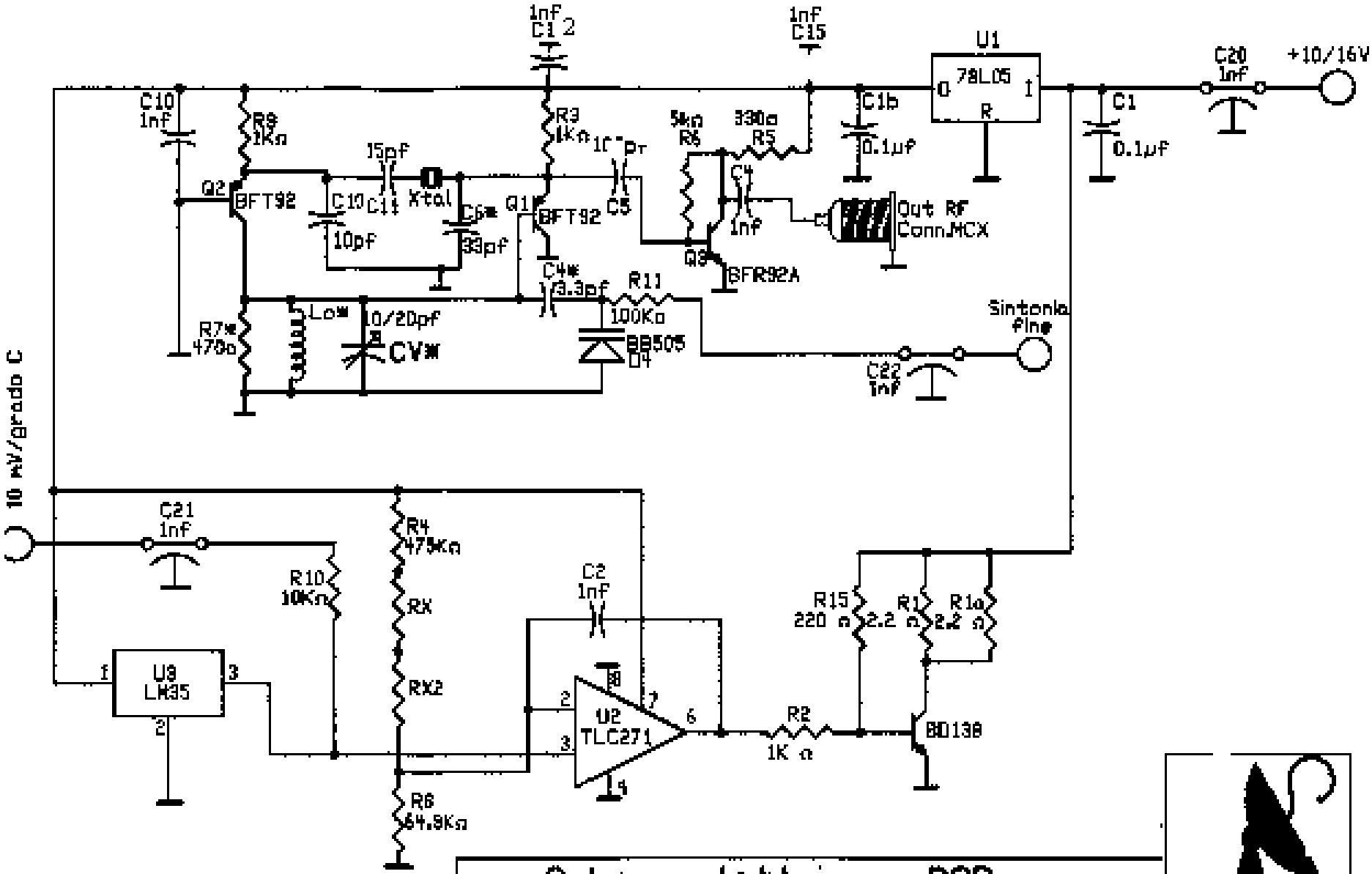
Presentazione –
Osservazioni e note costruttive
Misure con la strumentazione di laboratorio.

Venerdi, 6 marzo 2009 , ore 21

Carlo, I4VIL e Nicola, I4YMB

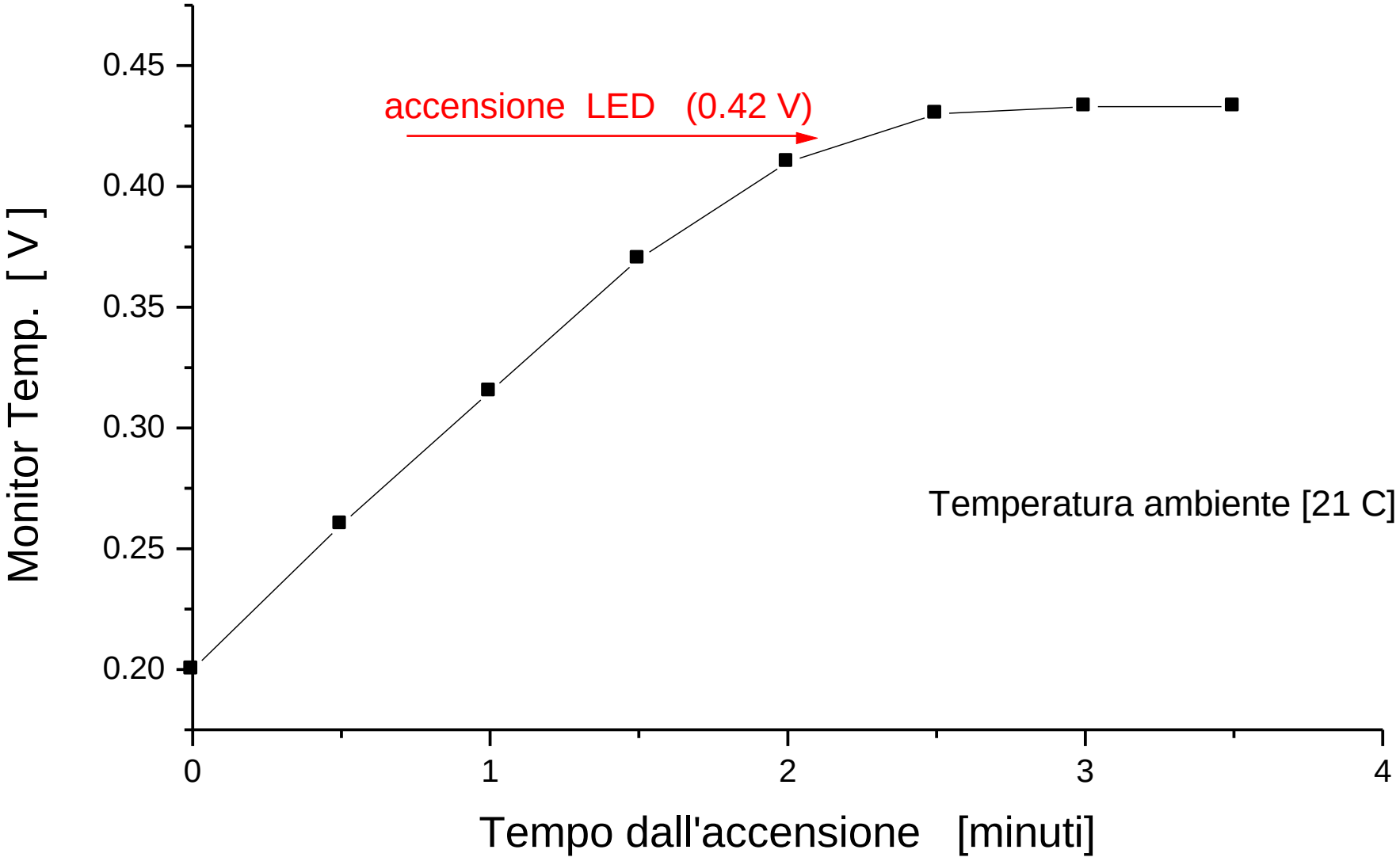
Tranverter 144/5760 Mhz
5.7 GHz TRANSVERTER
144 MHz
in / out
5.7 GHz
in / out
ON
PTT
READY

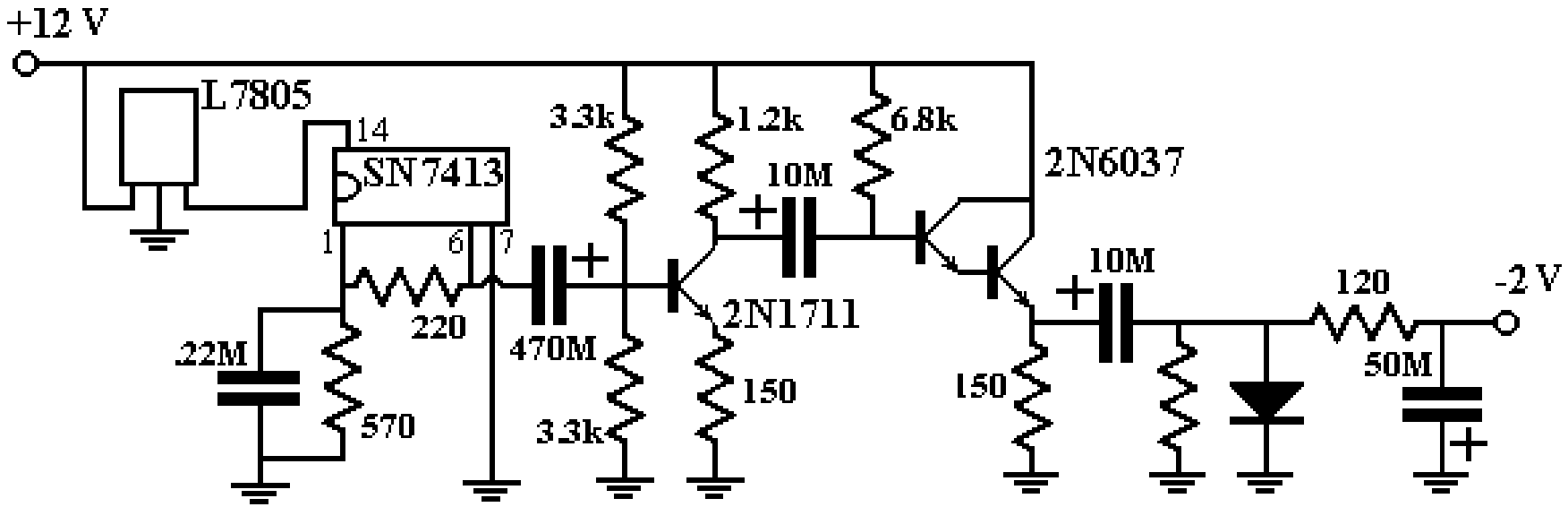

Potenza out 320-400 mw
NF< 2 db
Test LO
Ingresso oscillatore esterno
Transverter 144/5760 Mhz
IN/OU IF 144 Mhz
Max pot.in 15/20 mw
TX Shf
i30PW
+12 volt TX
+12 Volt in
PTT
Rx Shf
PWR
OCXO
Sintonia fine ADJ
a +60 gradi C
Frequenza 117.000 MHz
Potenza 3-4 mw
Monitor temp
Out RF
(Transverter 144/5760 MHz)
Sintonia
+12/15 Volt
i30PW



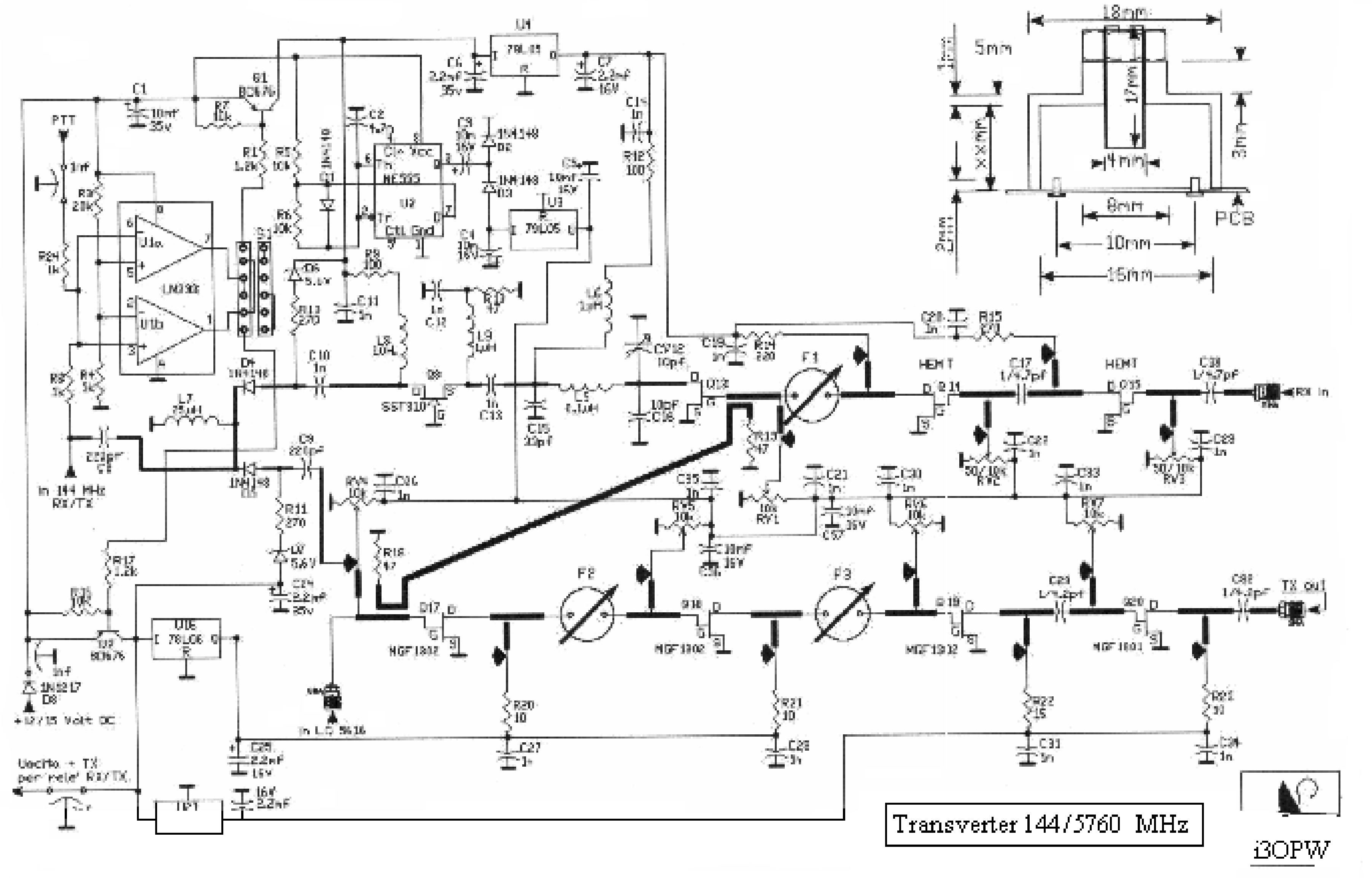
Title: Schema elettrico e PCB oscillatore termostatato a+ 60 gradi centigradi (OCxO).

i3OPW


accensione LED (0.42 V)
Temperatura ambiente [21 C]
Monitor Temp. [V]
0.45
0.40
0.35
0.30
0.25
0.20
0
1
2
3
4
Tempo dall'accensione [minuti]

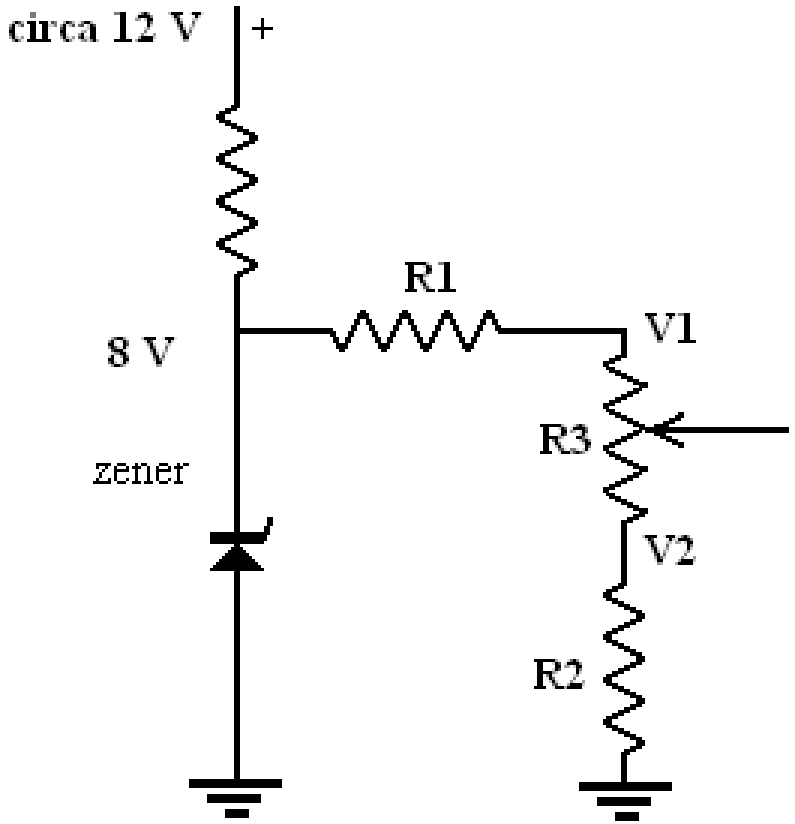


Alimentatore negativi per differenziale 741


PTT
NE555
78L05
LM393
SST310
HEMT
MGF1302
MGF1601
F1
F2
F3
RX in
TX out
In 144 MHz RX/TX
In L.O. 5616
+12/15 Volt DC
Uscita + TX per relè RX/TX
18mm
5mm
17mm
4mm
8mm
10mm
15mm
3mm
PCB
Transverter 144/5760 MHz
i3OPW

Ricerca valori delle resistenze del partitore.

Avendo a disposizione una tensione stabilizzata di V = 8 V , si vuole trovare i valori delle resistenze R1 ed R2 affinchè il potenziometro R3 di 470 ohm possa limitare la escursione del potenziale al cursore tra V1=0.8 V e V2 = 0.4 V.
La tensione "monitor di temperatura", a regime risulta essere di 0.6 V.



$V := 8$

$R3 := 470$

Tentative values

$R1 := 6000$ $R2 := 100$

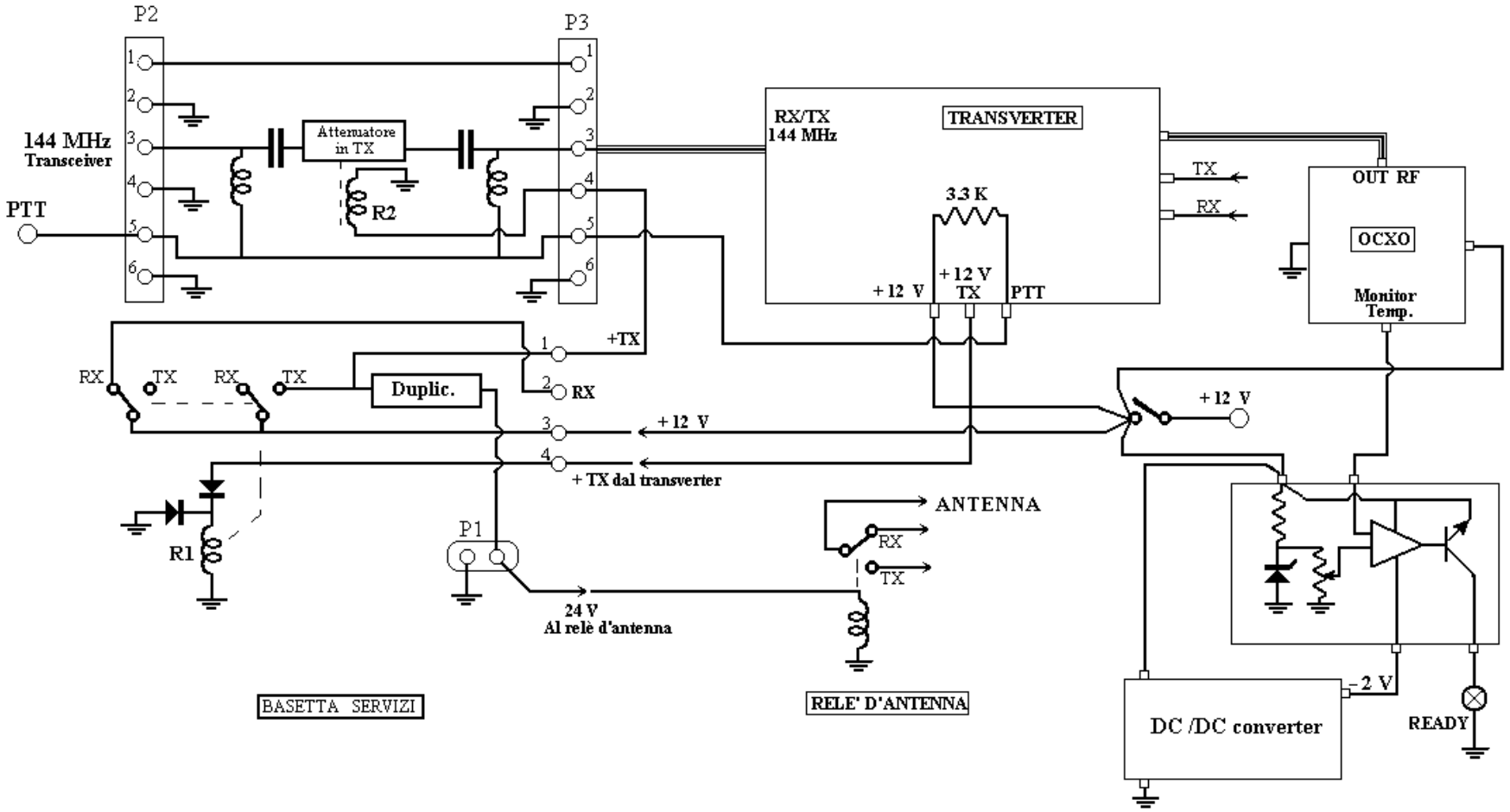
Given

$$R2 \cdot \frac{V}{R1 + R2 + R3} = 0.4$$

$$(R2 + R3) \cdot \frac{V}{R1 + R2 + R3} = 0.8$$

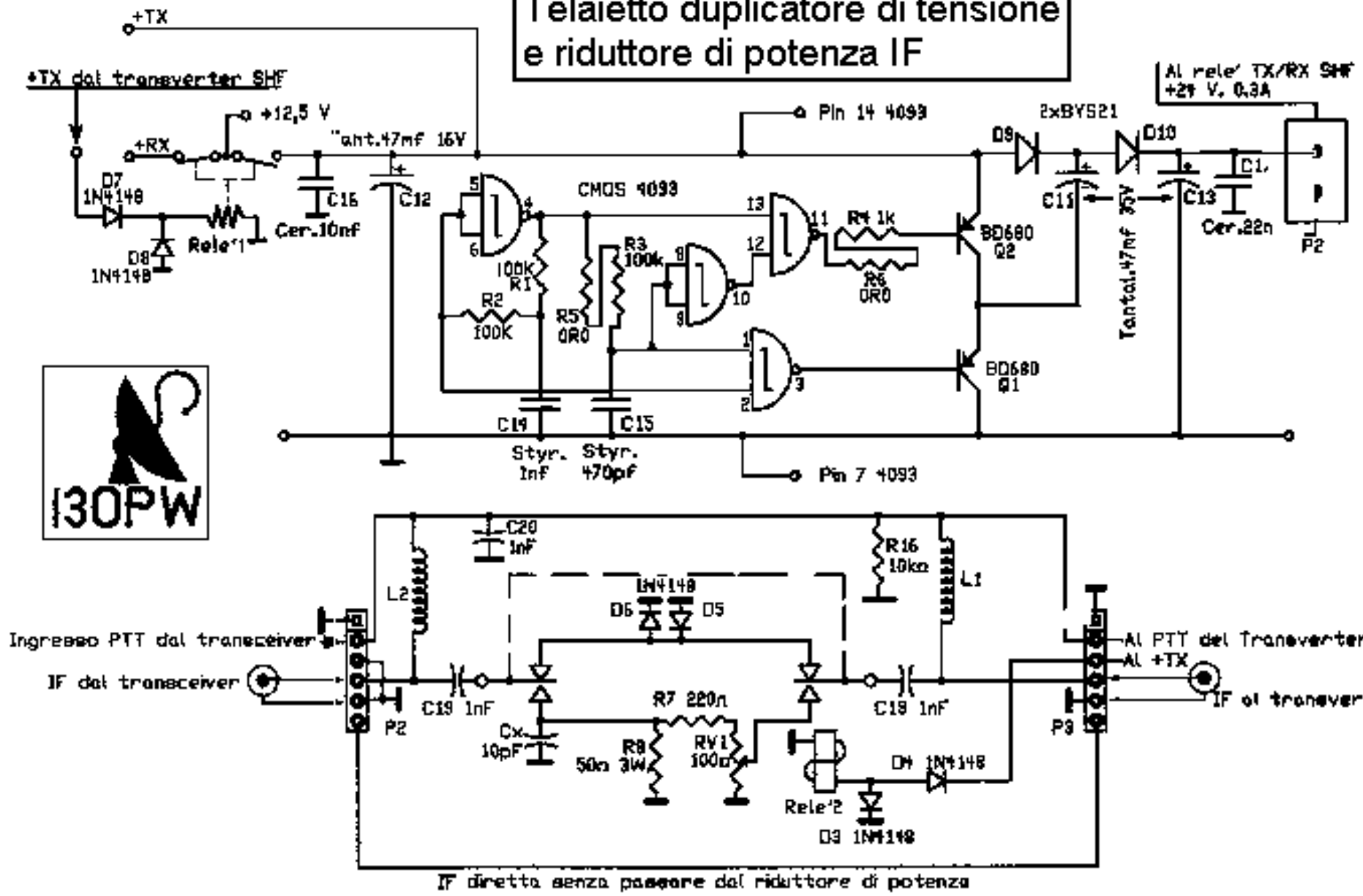
$$\text{Find}(R1, R2) = \begin{bmatrix} 8.461 \cdot 10^3 \\ 470 \end{bmatrix}$$

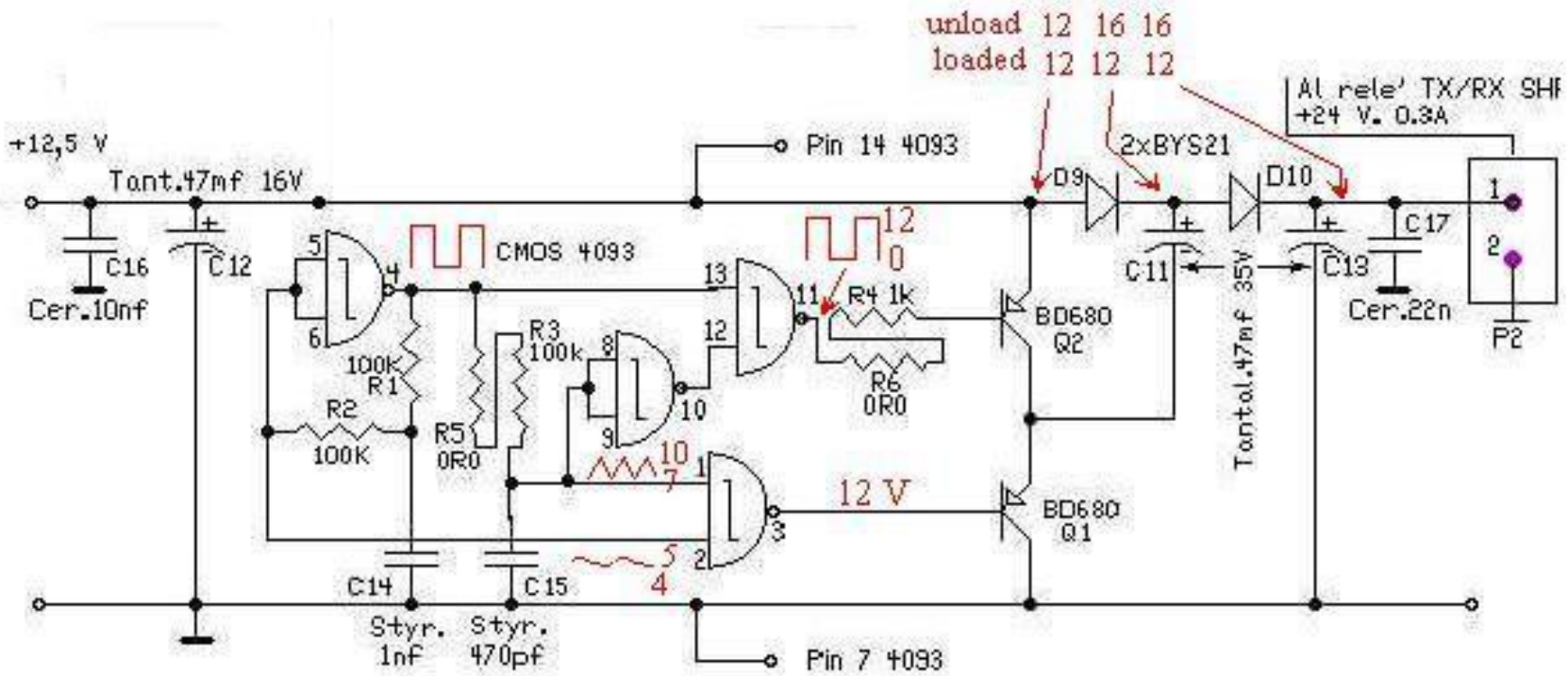
Occorrono quindi: R1 = 8460 ohm ed R2 = 470 ohm



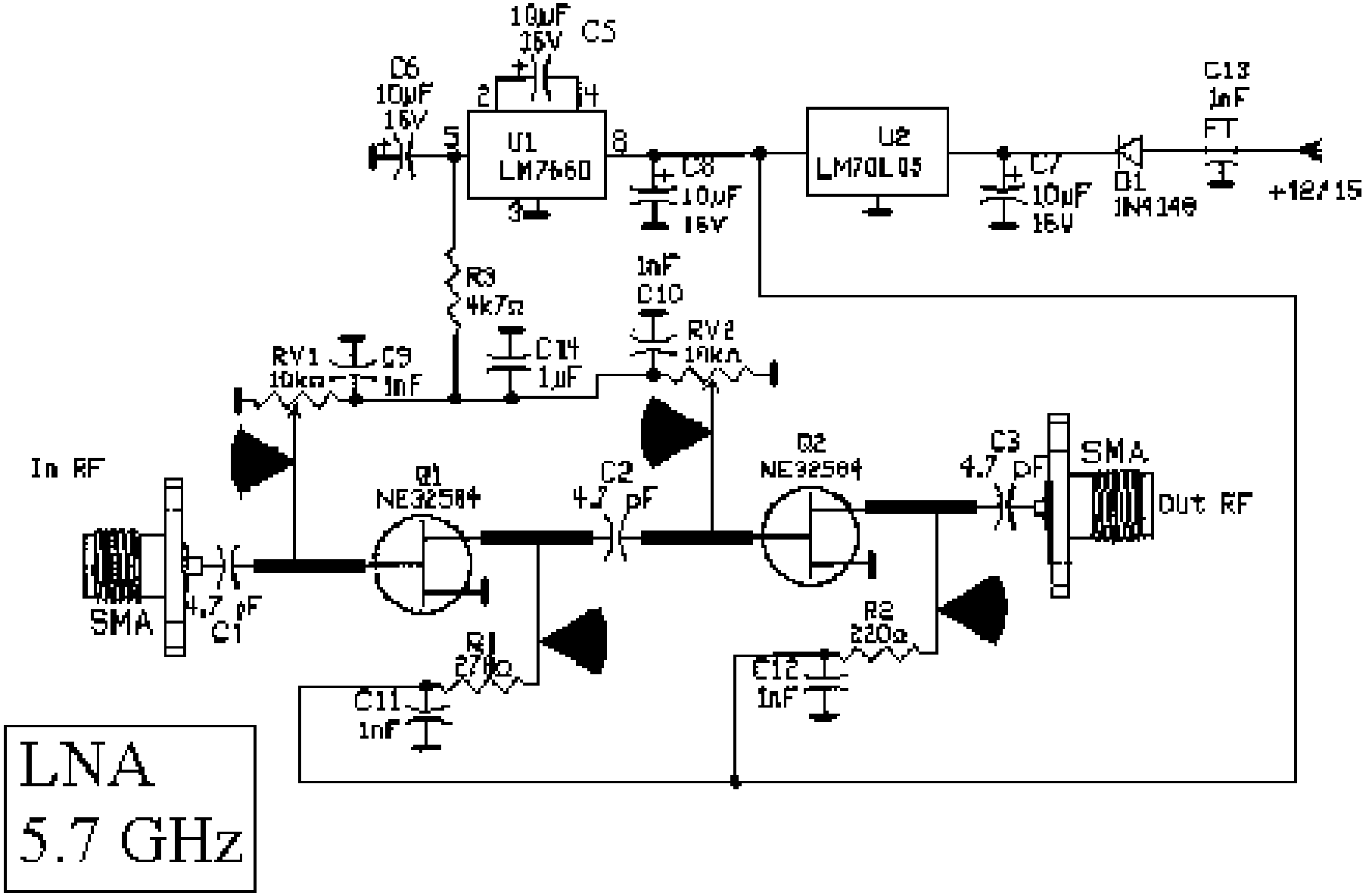
Connessioni tra i vari moduli

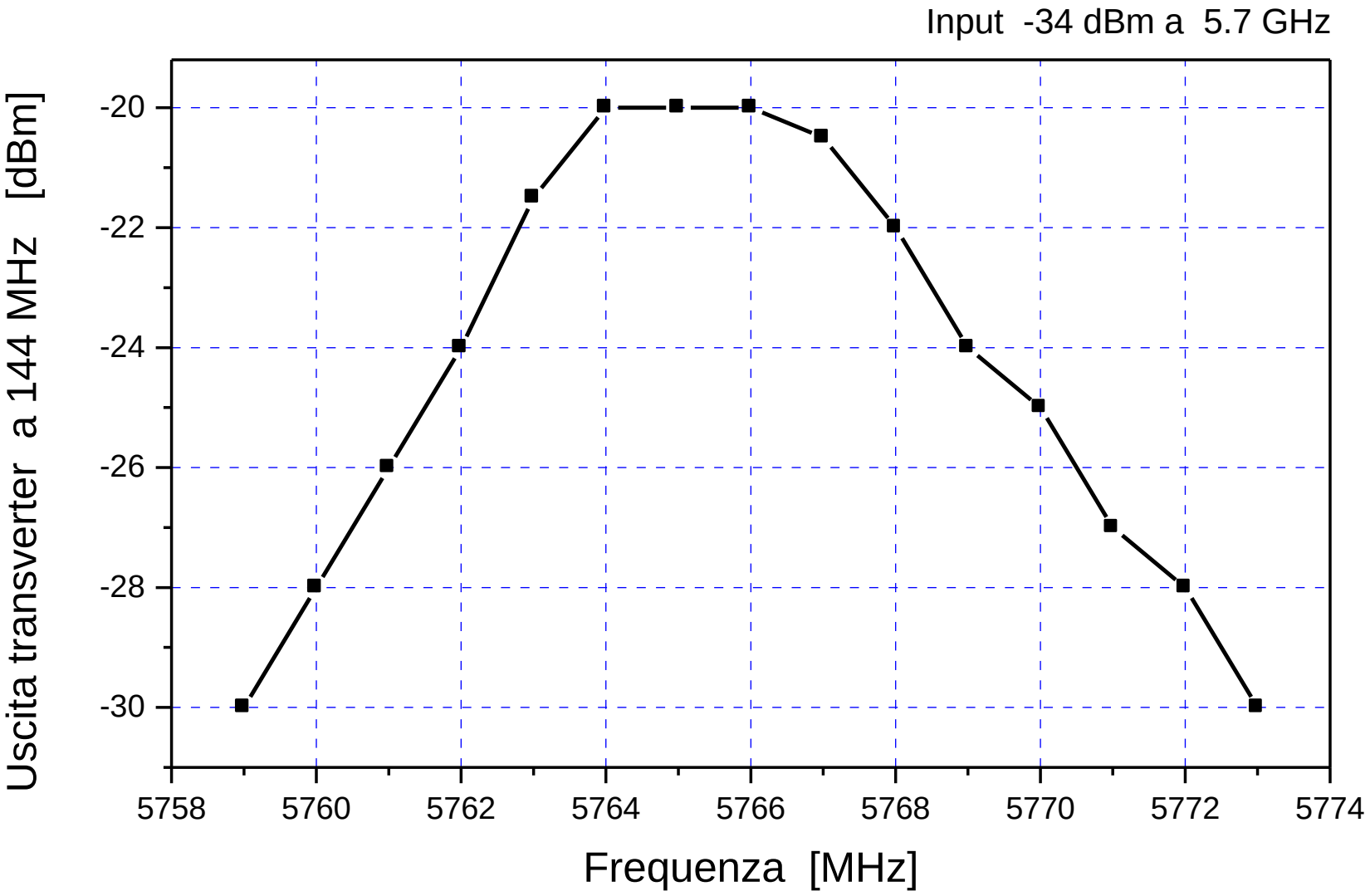
Telaietto duplicatore di tensione e riduttore di potenza IF

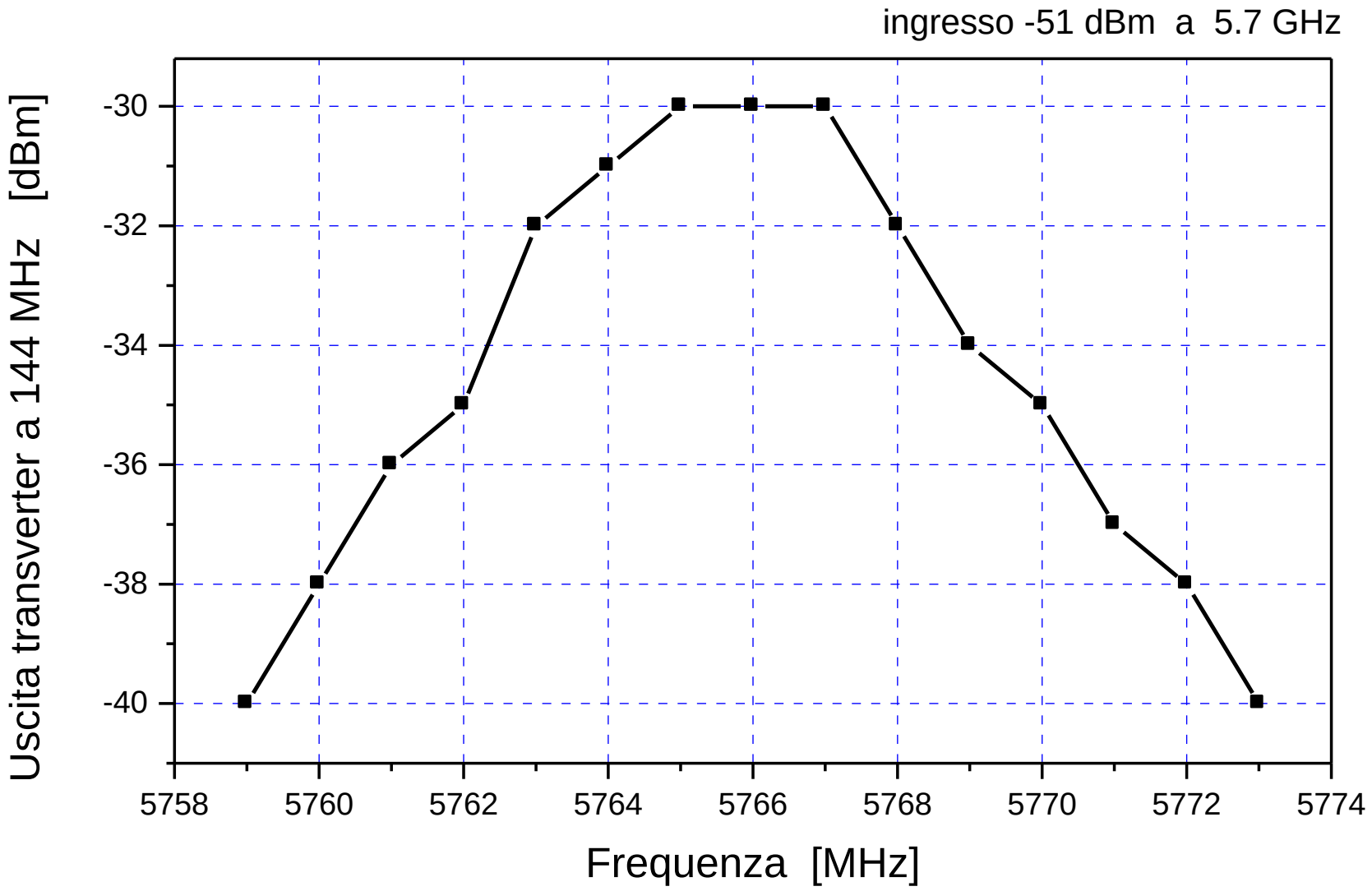


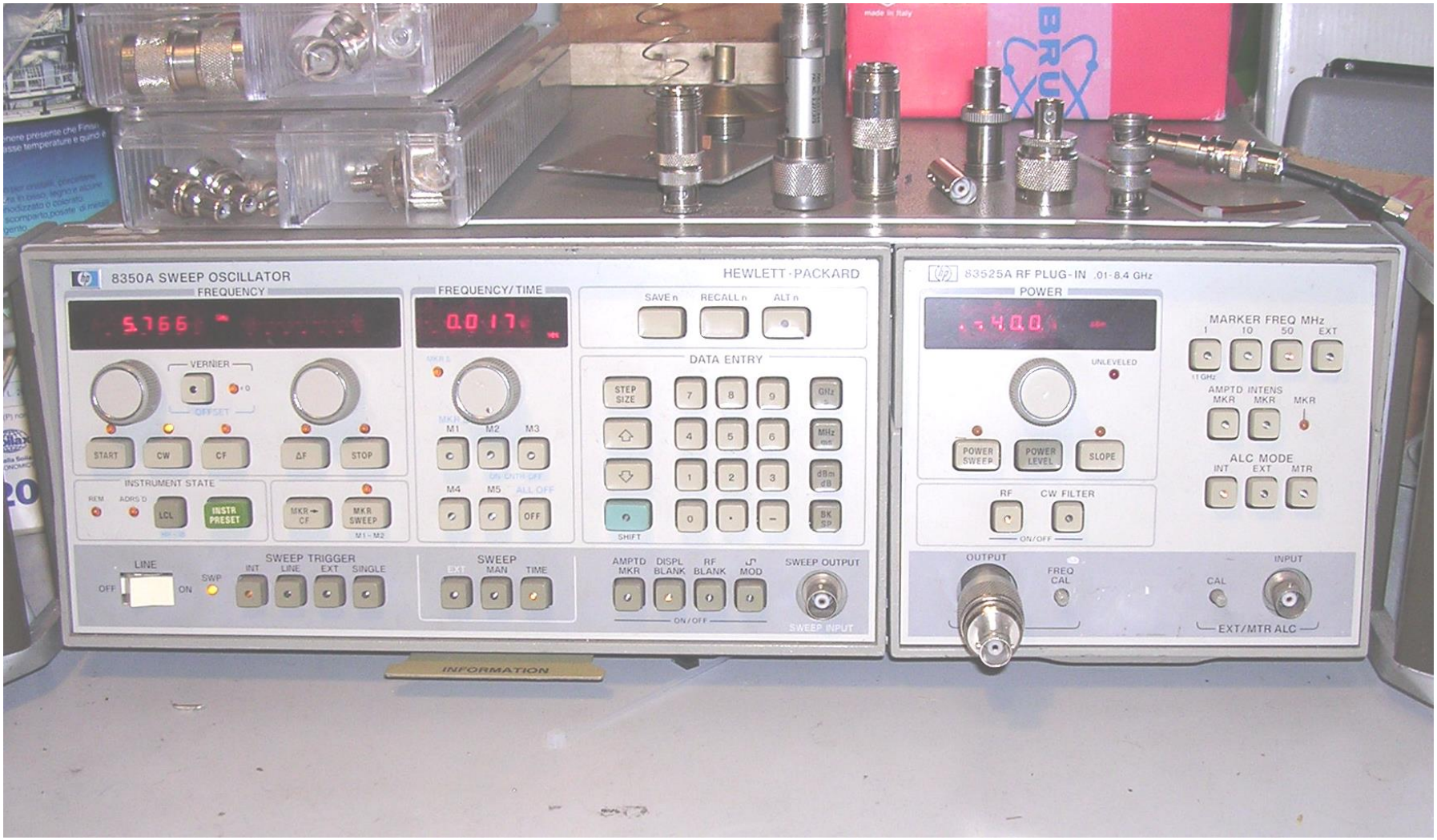


Duplicatore di tensione - funzionamento NOT OK


10µF
16V
C5
C6
10µF
16V
2
4
U1
LM7660
5
8
3
C8
10µF
16V
U2
LM79L05
C7
10µF
16V
D1
1N4148
C13
1nF
FT
+12/15
R3
4k7Ω
1nF
C10
RV2
10kΩ
RV1
10kΩ
C9
1nF
C14
1µF
In RF
Q1
NE32584
C2
4.7 pF
Q2
NE32584
C3
4.7 pF
SMA
Out RF
SMA
4.7 pF
C1
R1
270Ω
C11
1nF
R2
220Ω
C12
1nF
LNA
5.7 GHz


Input -34 dBm a 5.7 GHz
Uscita transverter a 144 MHz [dBm]
-20
-22
-24
-26
-28
-30
5758
5760
5762
5764
5766
5768
5770
5772
5774
Frequenza [MHz]


ingresso -51 dBm a 5.7 GHz
Uscita transverter a 144 MHz [dBm]
-30
-32
-34
-36
-38
-40
5758
5760
5762
5764
5766
5768
5770
5772
5774
Frequenza [MHz]


8350A SWEEP OSCILLATOR
HEWLETT-PACKARD
FREQUENCY
FREQUENCY/TIME
SAVE n
RECALL n
ALT n
DATA ENTRY
VERNIER
OFFSET
START
CW
CF
ΔF
STOP
INSTRUMENT STATE
REM
ADRS'D
LCL
INSTR PRESET
MKR→ CF
MKR SWEEP
M1 - M2
M1
M2
M3
M4
M5
ALL OFF
OFF
STEP SIZE
SHIFT
GHz
MHz
dBm dB
BK SP
LINE
OFF
ON
SWP
SWEEP TRIGGER
INT
LINE
EXT
SINGLE
SWEEP
EXT
MAN
TIME
AMPTD MKR
DISPL BLANK
RF BLANK
MOD
ON/OFF
SWEEP OUTPUT
SWEEP INPUT
INFORMATION
83525A RF PLUG-IN .01-8.4 GHz
POWER
UNLEVELED
POWER SWEEP
POWER LEVEL
SLOPE
RF
CW FILTER
ON/OFF
MARKER FREQ MHz
1
10
50
EXT
1 GHz
AMPTD INTENS
MKR
MKR
MKR
ALC MODE
INT
EXT
MTR
OUTPUT
FREQ CAL
CAL
INPUT
EXT/MTR ALC

PA 5GHz da 10 W;Pilota FLK102MH, finale TIM5053-8SL

eseguito entro box di alluminio fresato senza dissipatore.

Caratteristiche principali:
- Potenza di uscita 39 dBm;
- Guadagno totale a 1 dB di compressione 18 db;
- Alimentazione PA 12/15 volt dc;
- Assorbimento finale max 2.6 A;
- Alimentazione 12/15 volt dc;
- Monitor RF;
- Connettori in-out SMA;
- Protezione mancanza BIAS;
- Misure ingombro senza dissipatore 105x55x24mm.