4.6. Parts list MTV001:

Quant.	Description	Position	Code
1	JOTO SWITCH 7101 SIMPLE	CH1	41026
1	SHOCK 30 UH	L1,L3,L4	50001
1	INTEGRATED CIRC. 1458	IC2	60035
2	INTEGRATED CIRC. LM 311 P	IC1,IC3	60049
2	CAPAC. ELCO. RADIAL 100μF 25V	C13,C15	74010
1	CAPAC. ELCO. RADIAL 1000μF 25V	C19	74021
1	CAPAC. ELCO RADIAL 1μF X 100V	C7	74026
3	CAPAC. ELCO RADIAL 10μF X 25V	C17,C18,C25	74028
1	CAPAC. ELCO RADIAL 47μF X 25V	C11	74029
3	CAPAC. POL. METAL. 100ηF	C14,C21	75019
3	CAPAC. MULTILAYERS 1ηF	C20,C22,C28	76044
5	CAPAC. MULTILAYERS 22ηF	C2,C5,C6,C10,C24	76045
2	CAPAC. MULTILAYERS 10ηF	C8.C16	76046
1	CAPAC. PLATE 4 ρ 7	C27	79503
2	CAPAC. PLATE 10ρF	C3,C9	79506
1	CAPAC. PLATE 22ρF	C12	79507
1	CAPAC. MICA CMO 470ρF	C26	79925
2	CAPAC. MICA CMO 56ρF	C4,C23	79944
1	DIODE 1N 4148	D5	82011
3	TRIMPOT 1 K	R18,R20,R35	90002
1	TRIMPOT 5 K	R2	90004
1	TRIMPOT 10 K	R21	90005
1	TRIMPOT 50 K	R12	90006
1	COIL MODELING PP 107	L2	95009
2	RESISTOR 1/8W 10 Ohms	R6,R24	100008
1	RESISTOR 1/8W 75 Ohms	R38	100016
2	RESISTOR 1/8W 100 Ohms	R14,R15	100017
1	RESISTOR 1/8W 470 Ohms	R34	100017
3	RESISTOR 1/8W 1 K	R10,R17,R25	100028
2	RESISTOR 1/8W 2 K 2	R4,R28	100032
1	RESISTOR 1/8W 2 K 7	R1	100033
2	RESISTOR 1/8W 3 K 3	R23,R26	100035
2	RESISTOR 1/8W 4 K 7	R5,R16	100037
6	RESISTOR 1/8W 5 K 6	R8,R9,R30,R31,R32,R37	100038

2	RESISTOR 1/8W 10 K	R13,R22	100041
2	RESISTOR 1/8W 15 K	R7,R11	100043
1	RESISTOR 1/8W 22 K	R33	100045
1	RESISTOR 1/8W 82 K	R36	100050
1	RESISTOR 1/8W 270 K	R27	100057
2	RESISTOR 1/8W 1 M	R3,R29	100059
1	TRANSISTOR 2N 2369 A	Q2	120022
1	TRANSISTOR BF 245 C	Q1	128012
2	CONN SMA STRAIGHT FEM. FLANGE	COM1,COM2	801303
1	THROUGHT CAPAC. 1 K	C29	IMPC00053
2	INTEGRATED CIRC. ICL 7662 CPA	IC4,IC5	IMPCI0030
1	INTEGRATED CIRC. OPA 603 AP	IC6	IMPCI0039
3	DIODE HP 2800 (5082)	D1,D2,D3	IMPD00001
1	DIODE 1N 82	D4	IMPD00002
1	4.5 CERAMIC FILTER	FLT1	IMPF00001
1	PCB TV MONITOR	PCI1	PCIMTV001

5. Meter Panel:

5.1 Function:

Its function is to monitor the equipment, signalizing the measurement in the meter, according to the select switch, also by alarm Led.

5.2. Technical Description:

There is a “signalizing” (network) in the equipment superior frontal side, that when it switches on the equipment general breaker, that is in the left back base, it lights and signalizes the power supply; there is a Turn on/Turn off switch, that allows turning on/turning off all the equipment, after it receives the video signal; next to the Turn on/Turn off switch, there is another switch, ALT (Automatic Level Control), that when it is turned on, it corrects the equipment final power in + or – 5%.

According to the select switch position, the values that are indicated in the measurement meter, allows visualizing the following measurement: Power A, Power B, Current A, Current B, FWD Visual, FWD Aural and VSWR.

There are also in the panel the following Leds:

1- VIDEO IN: it indicates when the video signal is present;

2- P/S TEMP A: it indicates when the temperature is too high in the power A rectifying bridge;

3- P/S TEMP B: It indicates when the temperature is too high in the power B rectifying bridge;

4- LOAD TEMP: it indicates when the temperature is too high in the rejection load;

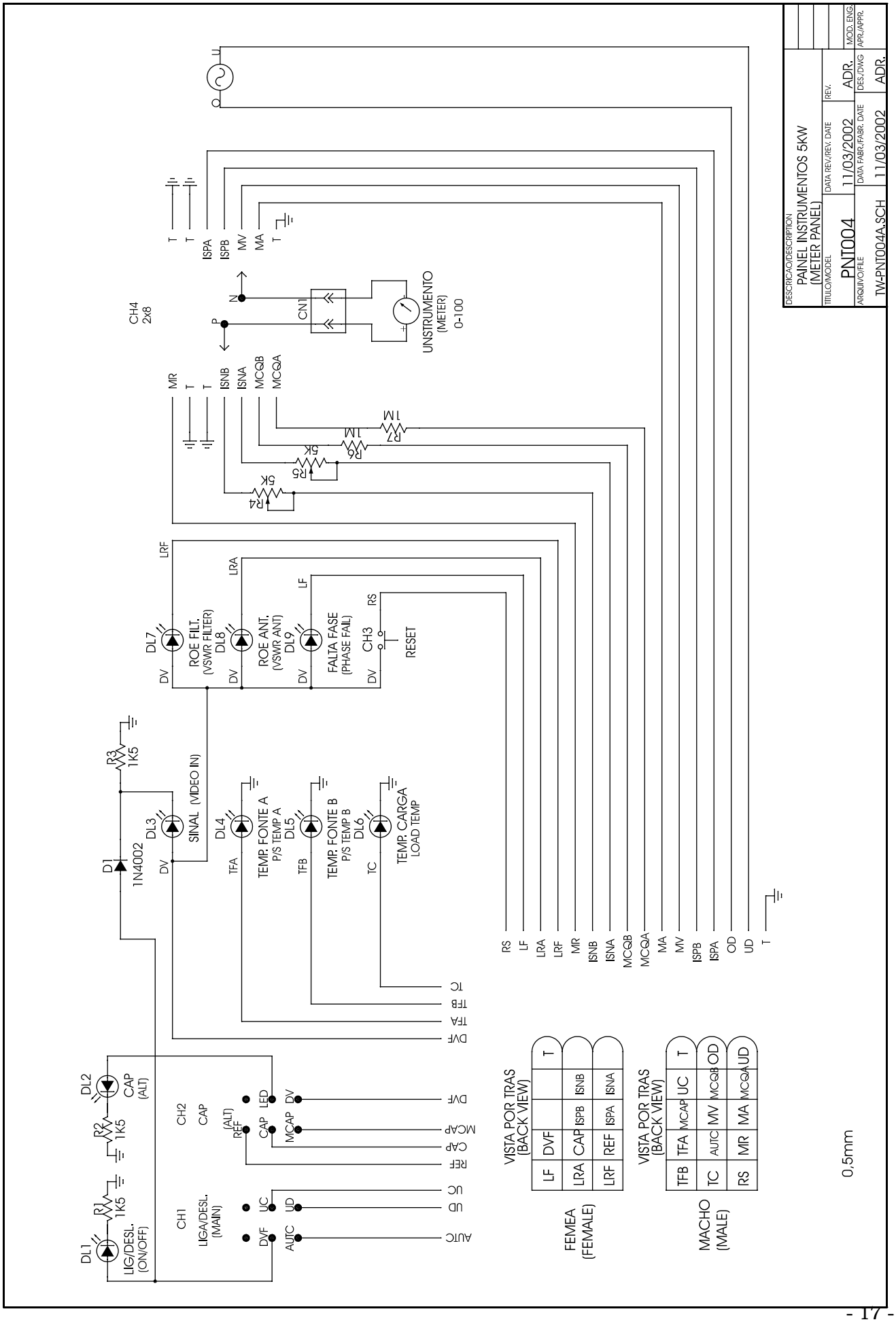
5- VSWR FILTER: it indicates when the reflected RF power is excessive in the filter;

6- VSWR ANT: it indicates when the reflected RF power in the antenna is excessive;

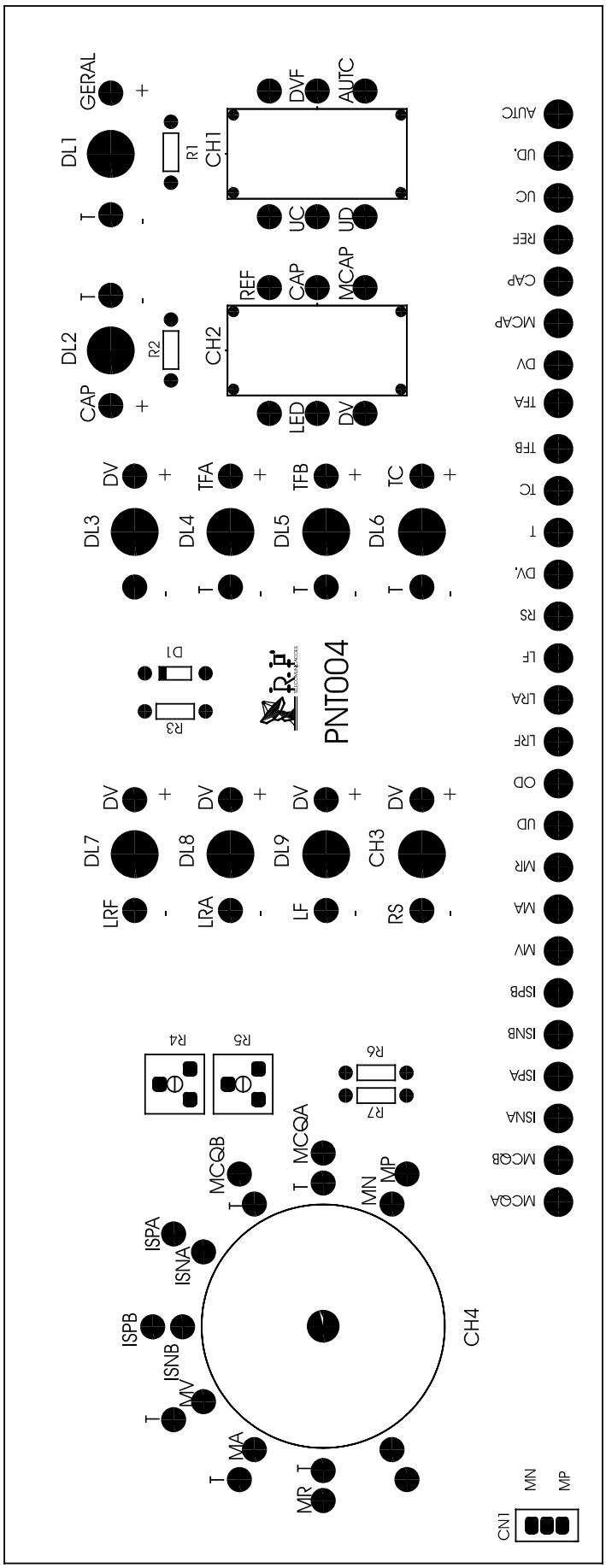
7- PHASE FAIL: it indicates when there is phase absence in the system.

Finally there is a reset switch, that when it is pressed, unlocks the protection system previously shown, causing the equipment starts working again, unless it has any other problem.

5.3. Circuit Diagram PNT004:



5.4. Layout PNT004:



5.5. Parts list:

Quant.	Description	Position	Code
1	ROTATIONAL SWITCH 2 X 8	CH4	41010
2	SWITCH15201	CH1,CH2	41047
1	CHAVE PUSH BUTTON	CH3	41083
1	DIODE 1N 4002	D1	82001
2	DIODE LED GREEN	DL1,DL2	82016
7	DIODE LED RED	DL3,DL4,DL5,DL6,DL7,DL8,DL9	82017
2	TRIMPOT 5 K	R4,R5	90004
3	RESISTOR 1/8W 1 K 5	R1,R2,R3	100030
2	RESISTOR 1/8W 1 M	R6,R7	100059
1	CONNECTOR MULTIP. MALE 3 PIN	CN1	800817
1	PCB METER PANEL	PCI1	PCIPNT004

6. Remote monitoring:

6.1 Function:

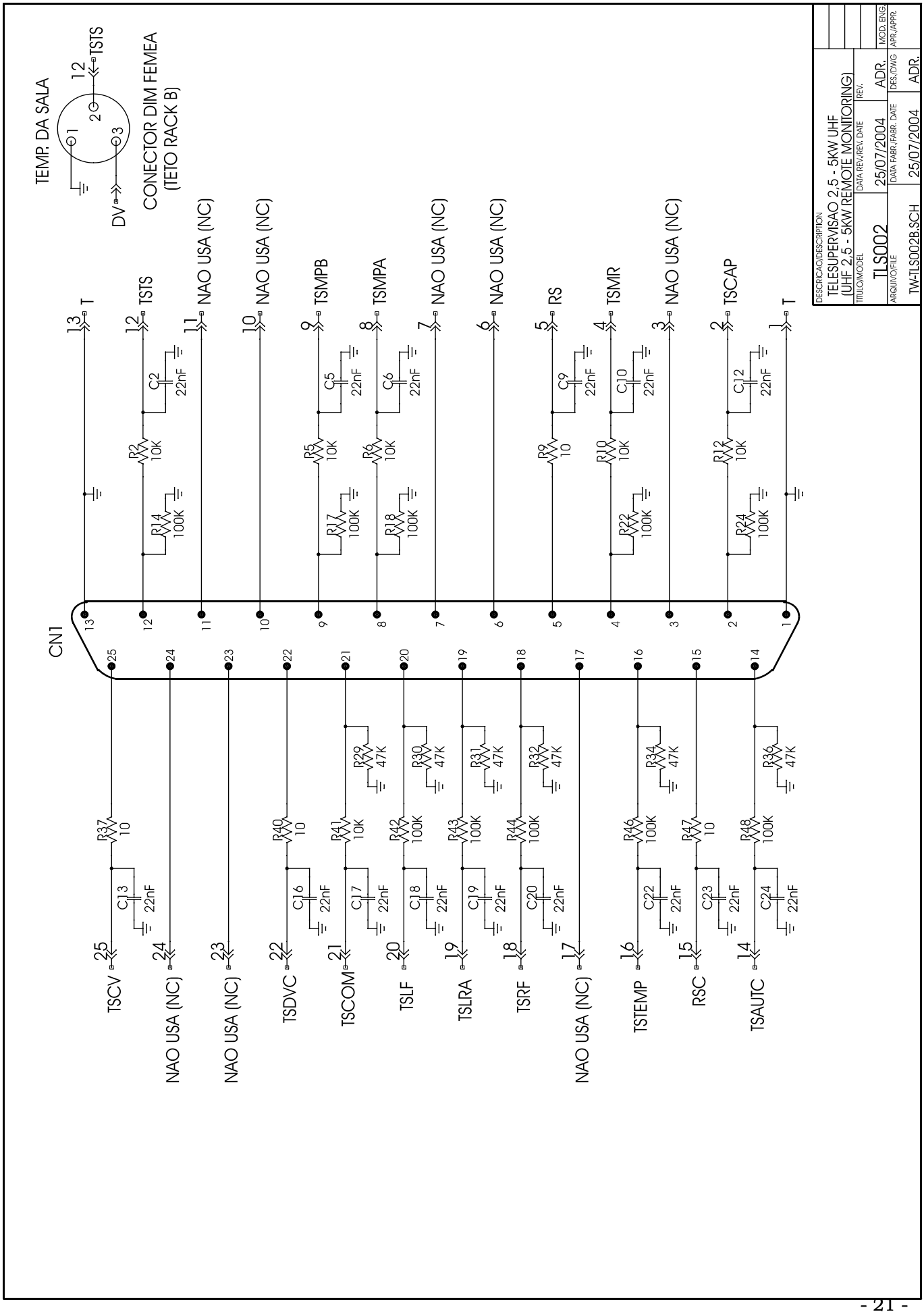
The remote monitoring function is to generate the equipment main parts information to external interface which may be a modem, a phone line, a micro-computer or others; the output transmitter provides DC voltage levels and should have a convertion from analogue to digital externaly.

This way we can verify the equipment performance or anomalies at distance.

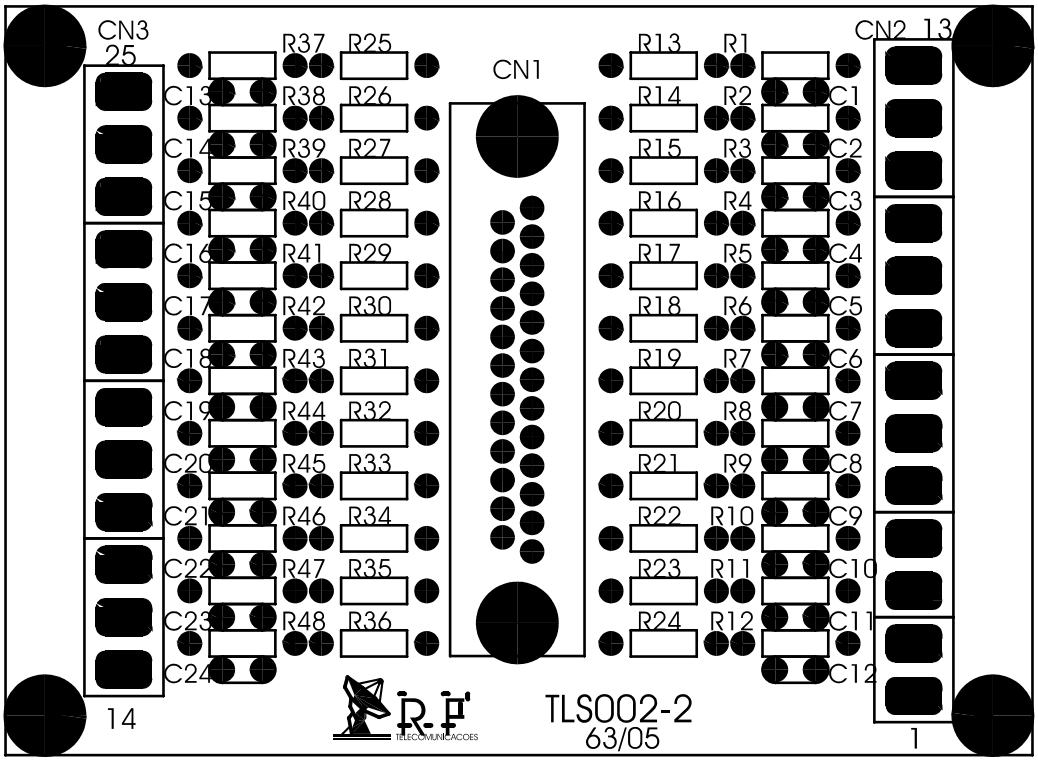
6.2. Pins:

1. GND: Ground;
2. TSCAP: Forward visual power measurement by TV monitor;
3. TSAUD: Forward aural power measurement by TV monitor;
4. TSMR: VSWR Antenna Measurement by command board (IC3A pin 1);
5. NC;
6. NC;
7. NC;
8. NC;
9. NC;
10. NC;
11. NC;
12. PRT: Drives commuting inhibiting by the central rack command board;
13. NC;
14. AUTC: Video absence/ video presence;
15. TSTFA: P/S temp A (2.5KW) temperature sensor;
16. TSTFB: P/s temp B (2.5KW) temperature sensor;
17. TSTCA: Rejection load temperature sensor;
18. TSRF: VSWR in the filter comes from the central command board by Q6 collector (detector +);
19. TSLRA: Antenna VSWR comes from the central command board by Q5 collector (detector -);
20. TSLF: Phase fail from the central rack command board in the Q7 collector;
21. TSCOM: Drives commuting, commuting led indication by IC3 pin 8;
22. NC;
23. NC;
24. NC;
25. NC;

6.3 Circuit Diagram TLS002:



6.4 Layout TLS002:



6.5 Parts List TLS002:

Quant.	Descrição	Posição	Código
23	COND. MULT. CAMADAS 22µF	C2,C5,C6,C9,C10,C12,C13,C16,C17 C18,C19,C18,C19,C20,C22,C23,C24	76045
4	RESISTOR 1/8W 10 Ohms	R9,R37,R40,R47	100008
6	RESISTOR 1/8W 10 K	R2,R5,R6,R10,R12,R41	100041
7	RESISTOR 1/8W 47 K	R29,R30,R31,R32,R34,R35,R36	100048
10	RESISTOR 1/8W 100 K	R14,R17,R18,R22,R24,R42,R43,R44, R46,R48	100051
1	CONECTOR DB PCI 25 VIAS FEMEA	CN1	801949
1	PCI TELESUPERVISÃO 24 PINOS	PCI1	PCITLS002

7. Notch filter:

7.1. Function:

Its function is to attenuate the adjacent channel spurious undesirable to the transmitter operation

7.2. Introduction:

We have in the transistorized equipments, after the final amplifier, besides the desired channel, spurious of –9, -4.5, +4.5, +9 and sometimes ±13.5 MHz. These spurious usually appear through the amplification of the output transistor, affecting the adjacent channels.

This filter is able to eliminate the spurious out of band, maintaining only the desired channel.

It is important to remember that there are specifications for these values, which must be followed.

7.3. Adjustment Procedure:

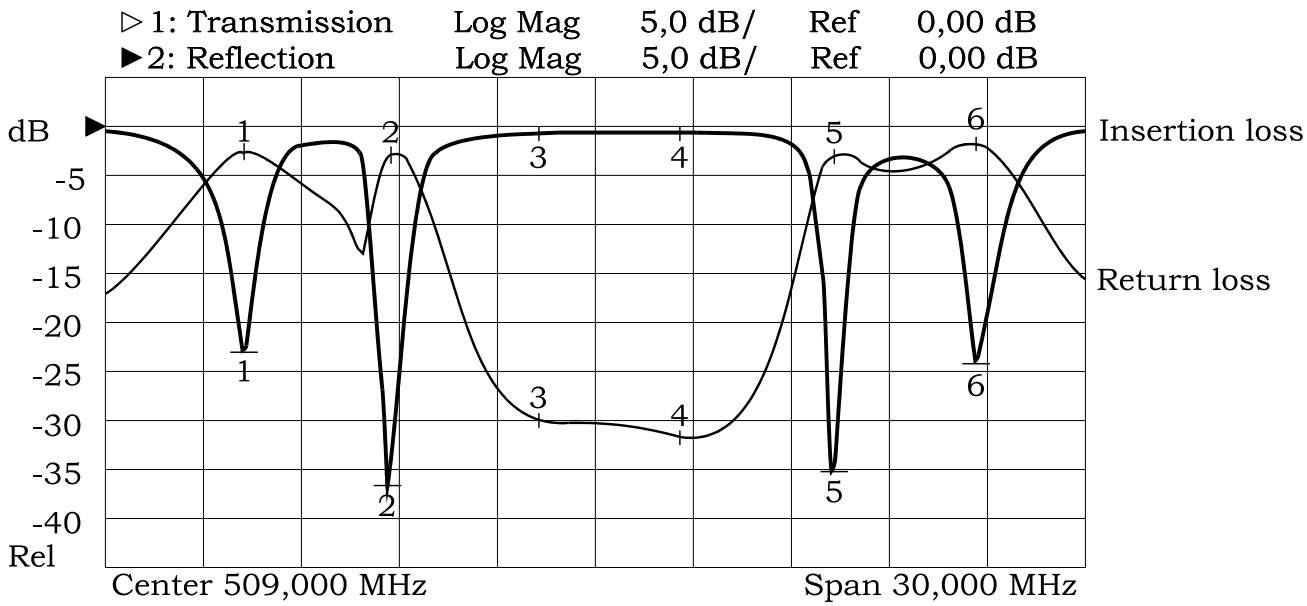
After the channel information, the filter is adjusted to the NETWORK analyzer, verifying the return loss and the insertion loss.

This filter is composed of six notch and in this manner they are calibrated as follows:

_ 1 trap to –9.0 MHz
_ 2 traps to –4.5 MHz
_ 2 traps to +4.5 MHz
_ 1 trap to +9.0 MHz

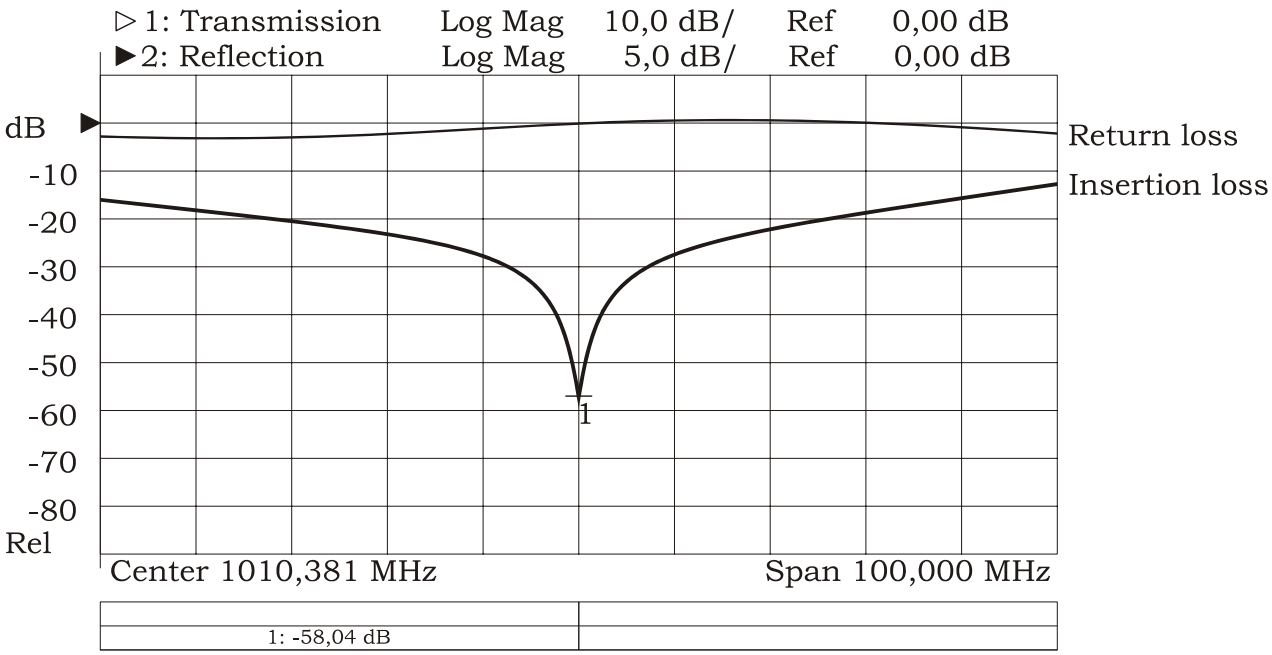
The combination of notches in the Notch filter performs a better return loss and insertion adjustment, as well as, its distribution causes smaller heating.

7.4. Characteristic Curve at the Network Analyzer:



1: -23,66 dB	1: -2,37 dB
2: -37,62 dB	2: -2,99 dB
3: -0,34 dB	3: -30,13 dB
4: -0,36 dB	4: -32,24 dB
5: -35,05 dB	5: -3,34 dB
6: -24,31 dB	6: -2,09 dB

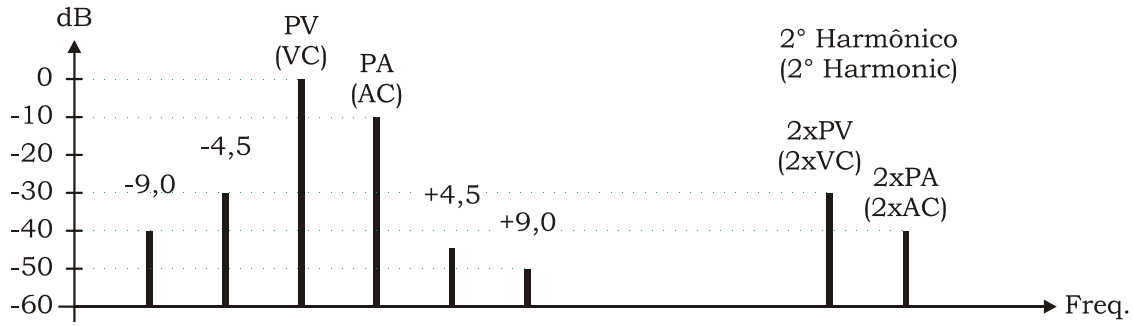
7.5. Characteristic Curve at the Network Analyzer -2° Harmonic:



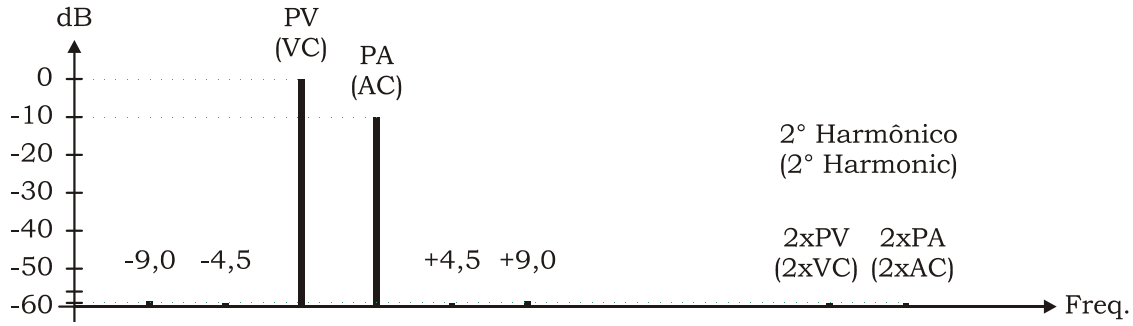
7.6. In practice

Below there are two RF signal diagrams in the Spectrum Analyzer.

1° without trap filter:

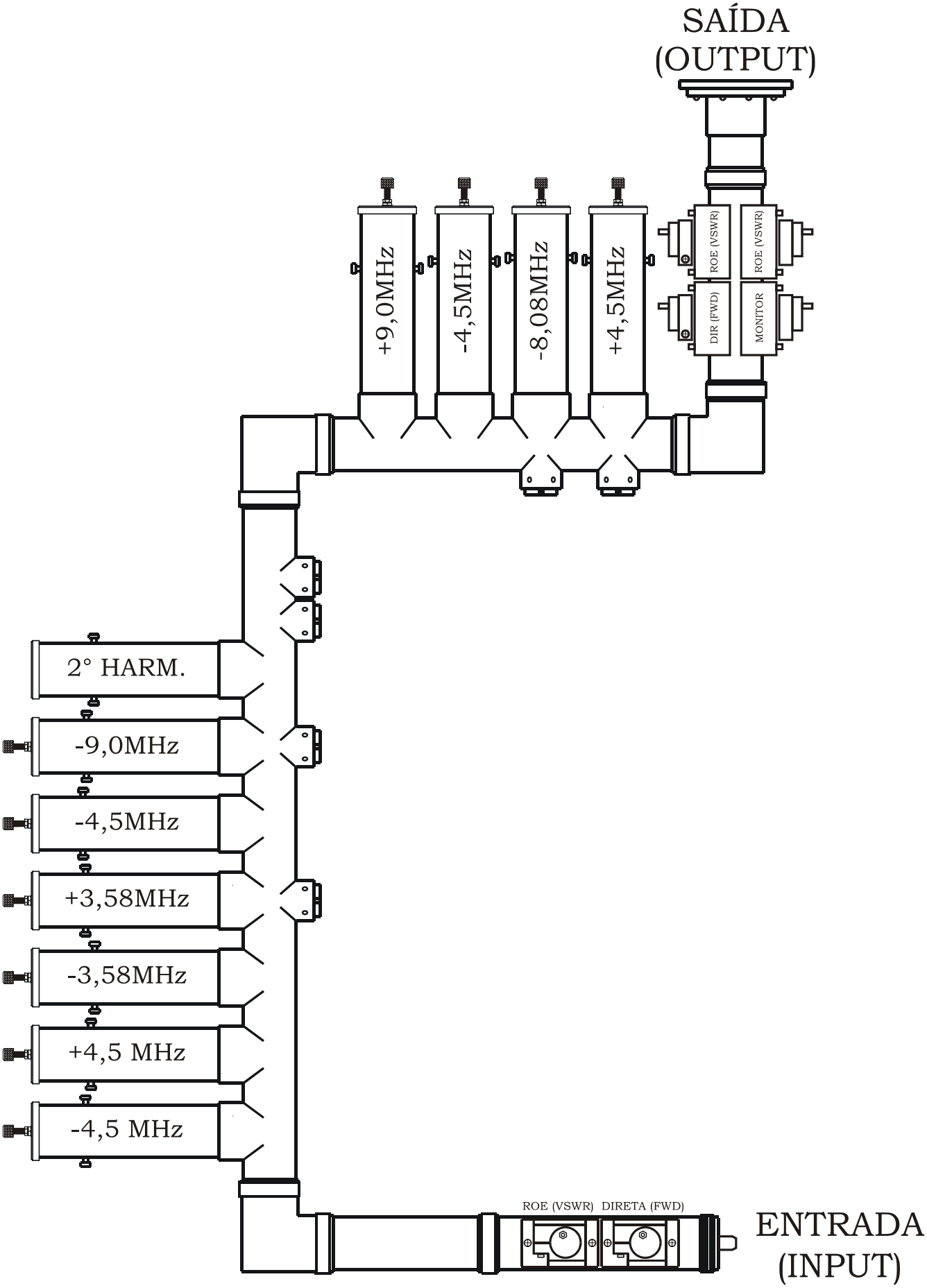


2° with trap filter:

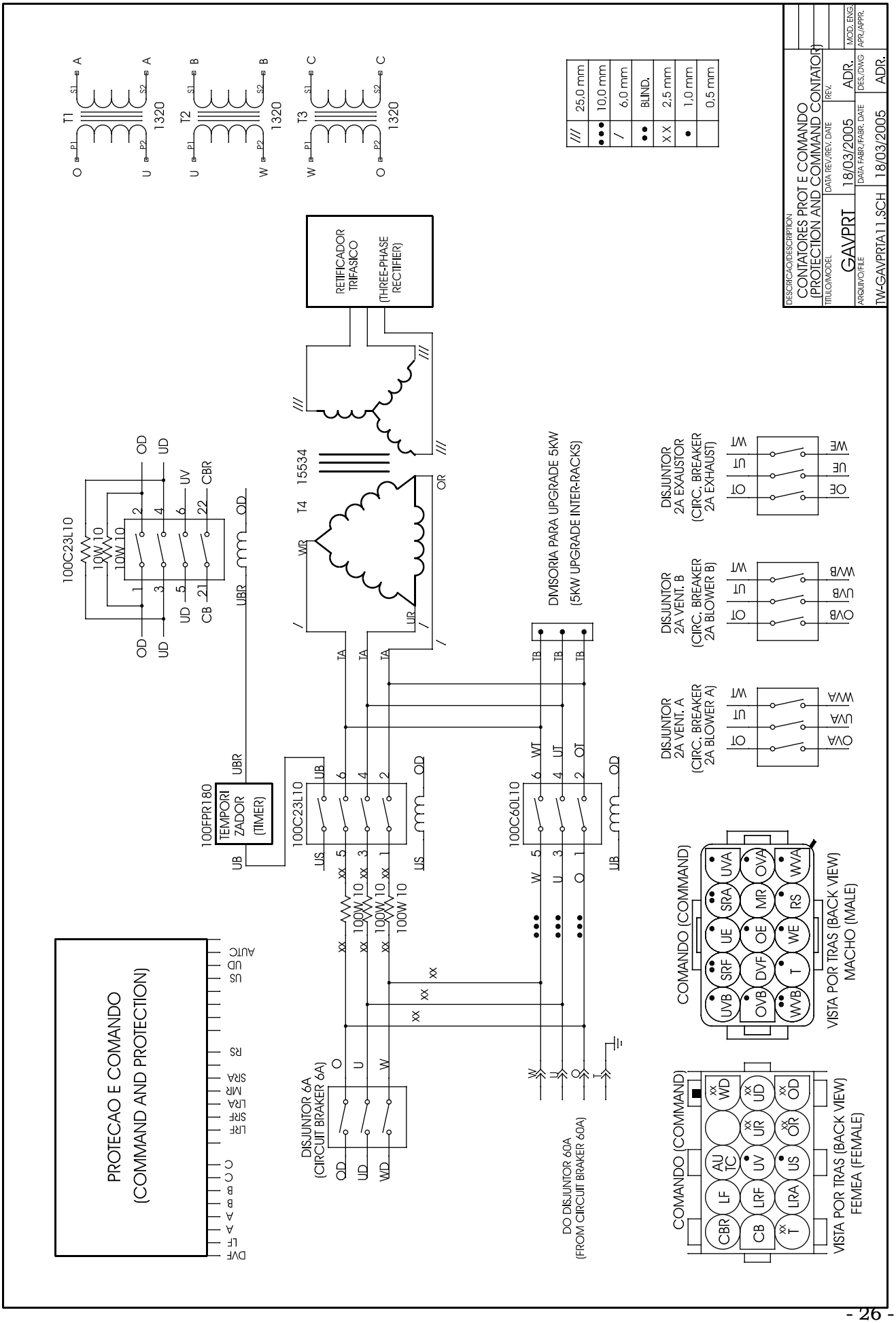


In the second chart the –9.0 MHz spurious should be at least –60dB, regarding to the video carrier.

7.7. Layout Notch filter:



8. Command and Protection board:



9. Rack Cabling: