TJ5KPS

User Manual

Volume 1

Manufactured by R.V.R. ELETTRONICA **Italia**

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TJ5KPS - User Manual
Version 1.0

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Notification of intended purpose and limitations of product use
This product is a FM transmitter intended for FM audio broadcasting. It utilises operating frequencies not harmonised in the intended countries of use.
The user must obtain a license before using the product in intended country of use. Ensure respective country licensing requirements are complied with.
Limitations of use can apply in respect of operating freuency, transmitter power and/or channel spacing.

Declaration of Conformity
Hereby, R.V.R. Elettronica SpA, declares that this FM transmitter is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

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1. Preliminary Instructions

This manual is written as a general guide for those having previous knowledge and experience with this kind of equipment, well conscious of the risks connected with the operation of electrical equipment.

It is not intended to contain a complete statement of all safety rules which should be observed by personnel in using this or other electronic equipment.

The installation, use and maintenance of this piece of equipment involve risks both for the personnel performing them and for the device itself, that shall be used only by trained personnel.

R.V.R. Elettronica SpA doesn't assume responsibility for injury or damage resulting from improper procedures or practices by untrained/unqualified personnel in the handling of this unit.

Please observe all local codes and fire protection standards in the operations of this unit.

WARNING: always disconnect power before opening covers or removing any part of this unit.
Use appropriate grounding procedures to short out capacitors and high voltage points before servicing.

WARNING: this device can irradiate radio frequency waves, and if it's not installed following the instructions contained in the manual and local regulations it could generate interferences in radio communications.
This is a "CLASS A" equipment. In a residential place this equipment can cause hash. In this case can be requested to user to take the necessary measures.

R.V.R. Elettronica SpA reserves the right to modify the design and/or the technical specifications of the product and this manual without notice.

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2. Warranty

Any product of **R.V.R. Elettronica** is covered by a 24 (twenty-four) month warranty.

For components like tubes for power amplifiers, the original manufacturer's warranty applies.
R.V.R. Elettronica SpA extends to the original end-user purchaser all manufacturers warranties which are transferrable and all claims are to be made directly to R.V.R. per indicated procedures.

Warranty shall not include:

1 Damage while the equipment is being shipped to R.V.R. for repairs;

2 Any unauthorized repair/modification;

3 Incidental/consequential damages as a result of any defect

4 Nominal non-incidental defects

5 Re-shipment costs or insurance of the unit or replacement units/parts

Any damage to the goods must be reported to the carrier in writing on the shipment receipt.

Any discrepancy or damage discovered subsequent to delivery, shall be reported to **R.V.R. Elettronica** within **5** (five) days from delivery date.

To claim your rights under this warranty, you shold follow this procedure:

1 Contact the dealer or distributor where you purchased the unit. Describe the problem and, so that a possible easy solution can be detected.

Dealers and Distributors are supplied with all the information about problems that may occur and usually they can repair the unit quicker than what the manufacturer could do. Very often installing errors are discovered by dealers.

2 If your dealer cannot help you, contact **R.V.R. Elettronica** and explain the problem. If it is decided to return the unit to the factory, **R.V.R. Elettronica** will mail you a regular authorization with all the necessary instructions to send back the goods.

3 When you receive the authorization, you can return the unit. Pack it carefully for the shipment, preferably using the original packing and seal the package perfectly. The customer always assumes the risks of loss (i.e., R.V.R. is never responsible for damage or loss), until the package reaches R.V.R. premises. For this reason, we suggest you to insure the goods for the whole value. Shipment must be effected C.I.F. (PREPAID) to the address specified by R.V.R.'s service manager on the authorization

DO NOT RETURN UNITS WITHOUT OUR AUTHORIZATION AS THEY WILL BE REFUSED

4 Be sure to enclose a written technical report where mention all the problems found and a copy of your original invoice establishing the starting date of the warranty.

Replacement and warranty parts may be ordered from the following address. Be sure to include the equipment model and serial number as well as part description and part number.

R.V.R. Elettronica SpA
Via del Fonditore, 2/2c
40138 BOLOGNA
ITALY
Tel. +39 051 6010506

3. First Aid

The personnel employed in the installation, use and maintenance of the device, shall be familiar with theory and practice of first aid..

3.1 Treatment of electrical shocks

3.1.1 If the victim is not responsive

Follow the A-B-C's of basic life support

- Place victim flat on his backon a hard surface.
- Open airway: lift up neck, push forehead back (Fig. 3-1).
- clear out mouth if necessary and observe for breathing
- if not breathing, begin artificial breathing (Figure 3-2): tilt head, pinch nostrils, make airtight seal, four quick full breaths. Remember mouth to mouth resuscitation must be commenced as soon as possible

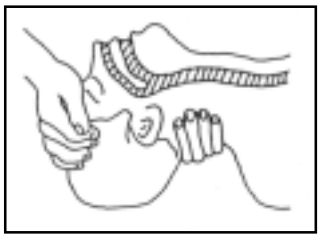


Figure 3-1

Figure 3-2

- Check carotid pulse (Fig 3-3); if pulse is absent, begin artificial circulation (Fig. 3-4) depressing sternum (Fig. 3-5)

Figure 3-3

Figure 3-4

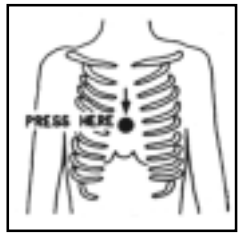


Figure 3-5

- In case of only one rescuer, 15 compressions alternated to two breaths.
- If there are two rescuers, the rythm shall be of one brath each 5 compressions.
- Do not interrupt the rythm of compressions when the second person is giving breath.
- Call for medical assistance as soon as possible.

3.1.2 If victim is responsive

- Keep them warm
- Keep them as quiet as possible
- Loosen their clothing (a reclining position is recommended)
- Call for medical help as soon as possible

3.2 Treatment of electrical Burns

3.2.1 Extensive burned and broken skin

- Cover area with clean sheet or cloth
- Do not break blisters, remove tissue, remove adhered particles of clothing, or apply any salve or ointment.
- Treat victim for shock as required.
- Arrange transportation to a hospital as quickly as possible.
- If arms or legs are affected keep them elevated

If medical help will not be available within an hour and the victim is conscious and not vomiting, give him a weak solution of salt and soda: 1 level teaspoonful of salt and 1/2 level teaspoonful of baking soda to each quart of water (neither hot or cold). Allow victim to sip slowly about 4 ounces (half a glass) over a period of 15 minutes. Discontinue fluid if vomiting occurs

DO NOT give alcohol

3.2.2 Less severe burns

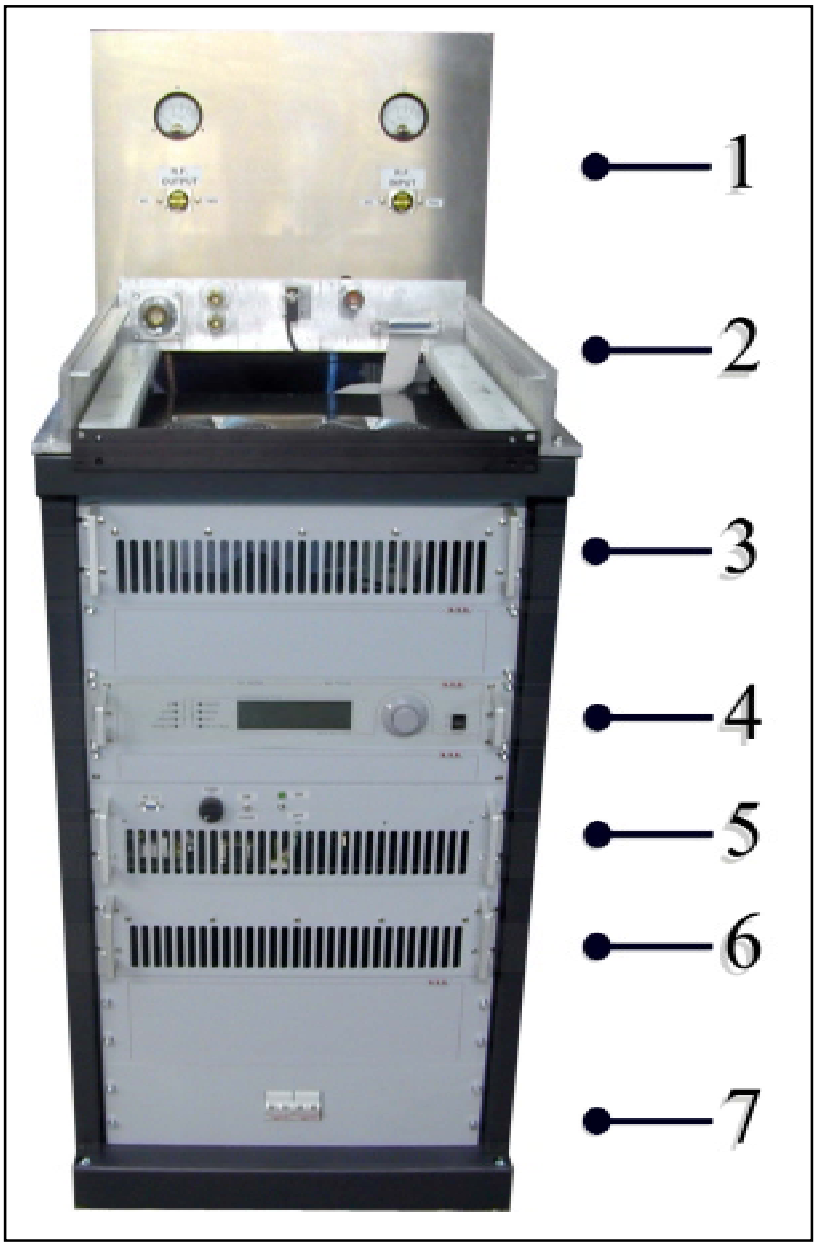
- Apply cool (not ice cold) compresses using the cleansed available cloth article.
- Do not break blisters, remove tissue, remove adhered particles of clothing, or apply salve or ointment.
- Apply clean dry dressing if necessary.
- Treat victim for shock as required.
- Arrange transportation to a hospital as quickly as possible
- If arms or legs are affected keep them elevated.

4. Introduction

The TJ5KPS is a bench of testing for the power's modules of the PJ5KPS amplifier product from the R.V.R. Elettronica. It includes the devices that allow to the modules to work out of the PJ5KPS and the necessary instruments for the check and the setting of the modules. Together the TJ5KPS comes furnished the software with which verify the states and the inner measures of the module under test, that during the normal operation comes managed from the CCU (Central Control Unit) of the PJ5KPS.

5. Description

The TJ5KPS has constituted from a series of apparatuses inserted in a rack from 19" designed expressly.

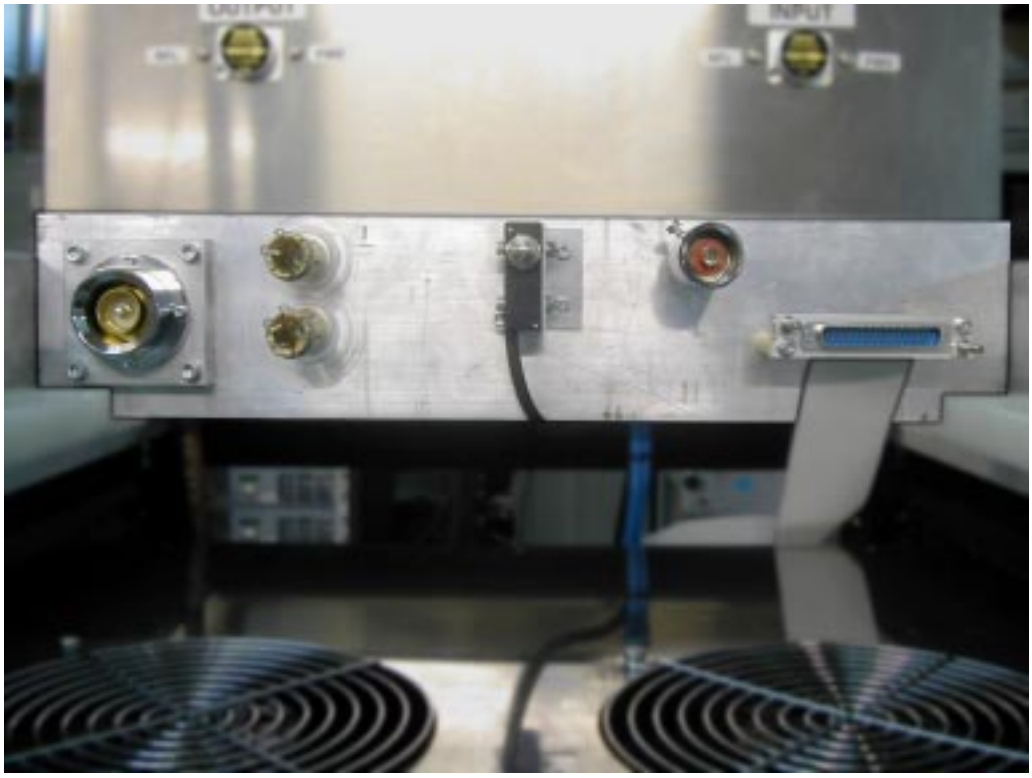


1 - Instruments Panel

It contains two analogical instruments for the power's measure power disbursed by the module (instrument of left) and of that in entry to the module. The instruments have connected to sections of line Bird Thruline in which they have lodged respectively the elements of measure model 1000B and 5B Bird. Orienting the elements of measure, each of the instruments could measure the forward or reflected power.

2 - Module's lodging

The module to test must be inserted inside this lodging. On the bottom have loadged the connectors to allow the operation of the RF module and a microswitch for survey his correct insertment in lodging.



1. Power Supply (+ 90 Vdc not stabilized)
2. Power SUpply (GND)
3. RF Output
4. RF Input
5. Microswitch for the module presence survey
6. DB37 Interface (measure, signal control, auxiliary power supply)

3 - Ventilation Unit

This device contains four fans for the cooling of the module. To the inside of the PJ5KPS the RF modules are in fact cooled from a single turbine, while for the operation on the testing bench is necessary provide to the autonomous ventilation.

4 - Exciter

The exciter furnishes the RF input for the module's test. Take note that the power disbursed from a normal exciter is very better regards to the necessary one to the module, therefore in series to the RF output of the exciter has inserted a 10dB coaxial attenuator.

5 - Control Unit / Power Suplly

This unit contains:
Power transformers and Rectifiers
Soft-start circuit
Address / interface board
RS 485 / RS 232 communication board
Interface board for modules' test

6 - EDL1000FM Dummy Load

Cargo from 50 Ohm optimized for operation FM. It dissipates the power generated from the module.

7 - Electric Panel

Are present two bipolar interrupters, one for the exciter and one for the other apparatuses ("services")

6. Use

In this procedure, it is presumed that the RF module is functioning correctly. In the typical case, the module will be in course of setting, reparation or verification, therefore it could be necessary apply the procedure with small variations.

- Connect the power supply to the rack.

  Is necessesary furnished 230 V A.C. 50 Hz, the cable of supply goes connected to the situated bare terminals on the bottom in the back part of the rack.

- Insert the RF module in his lodging.

  For practicality in the Test Jig the anterior fixing screws of the module doesn't come to use, to difference that in the PJ5KPS. It is necessary insert the module in his lodging with a certain strength and speed, so that all the connections come made correctly. We suggest to insert the module slowly up to around 10 centimeters from the bottom and therefore of push it with strength so that the all the connections are formed regularly.

- Setting the control unit

  Setup the controls of the two interrupters on the control unit in OFF position, rotate the encoder for the regulation of the power completely in counterclockwise sense.

- Supply the equipment

  Use to this purpose the electric panel switches at the base of the rack.

- Turn on the exciter

  Making sure of setting the pilotage power to the minimum. Increase the pilotage power gradually verifying the input power to the RF module onto the right analogical instrument, up to have it to 800 mW.

- Activate the module with the unit of control

  Put the switches of the control unit in "ON" position. Rotate the regulation knob of the power in clockwise sense gradually checking the output power level, up to that it reaches the 1000W.

It is possible connect itself with the PJXK software furnished together the Test Jig to verify the measures done from the machine.

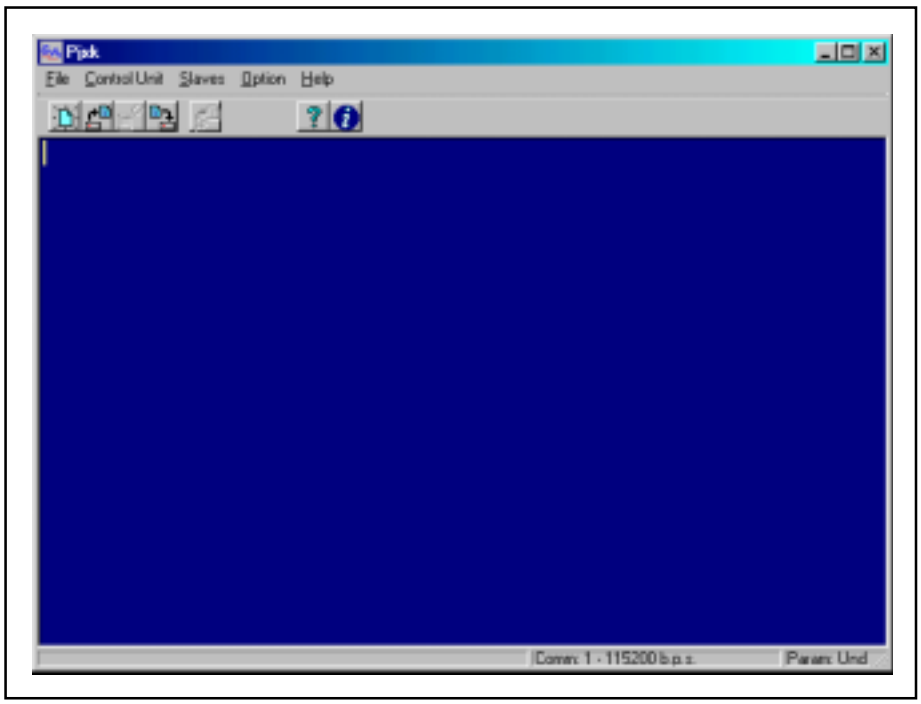
To this purpose, connect a PC serial port with a standard serial cable to the RS232 connector on the frontal panel of control unit.

WARNING:

- Remember that the present voltage on the supplying DC connectors of the module is approximately 90 V, and that to turning off of the power supply the filtration electrolitic capacitors, to the input of the module, stays loads for different seconds. Do attention to don't touch them or put them in short circuit. If necessary unload them with a resistor of wattage adequate.
- The role of the Test Jig is that to allow the maintenance on the RF modules. The modules comes employees normally with the cover removed. Is required the maximum attention to the technical personnel in way to avoid any risk of electric shock.

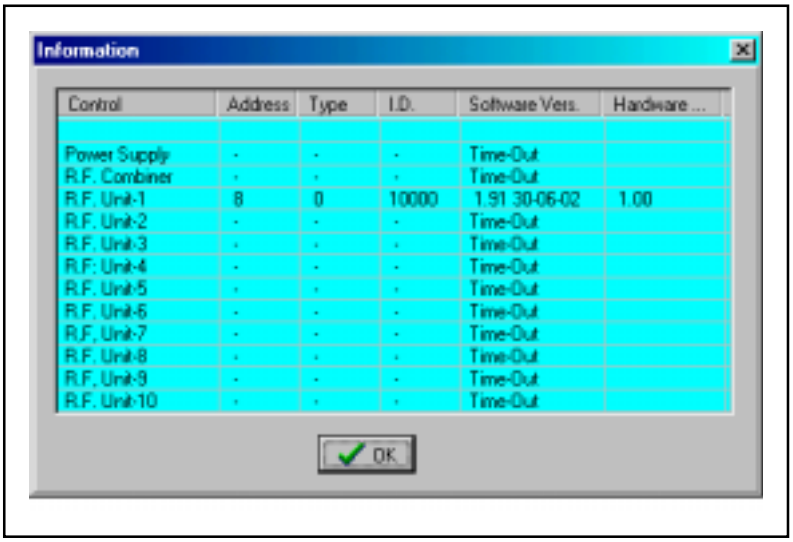
7. Software

- Exctract the files contained in the archive “**PJXK.ZIP**” of your choice, for example “**C:\PJXK_PS**”. Execute the computer program (in our example) “**C:\PJXK_PS\PJXK_SP.EXE**”. Will come shown the main window:



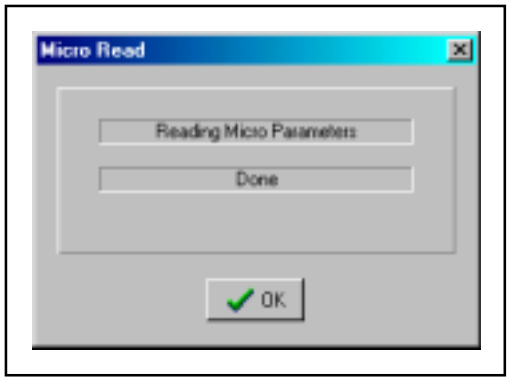
N.B.: There are different ways to execute a computer program, for example launches it with the start menu with **`Start -> Run`**... or with a double click on the name of the file in a window of Explorer. You can create a link to the file in your start menu also. The diverged modality depend on the operating system used.

- Set the communication port used on the PC doing click on **`Option -> Communication`**..., selecting the port desired in the descent box **`Communication port`** and confirming with **`OK`**.
- Effect the communication with the module doing click on **`Slaves -> Info`**... and attending some seconds. It will open a window in which it comes confirmed the presence of the module 1:



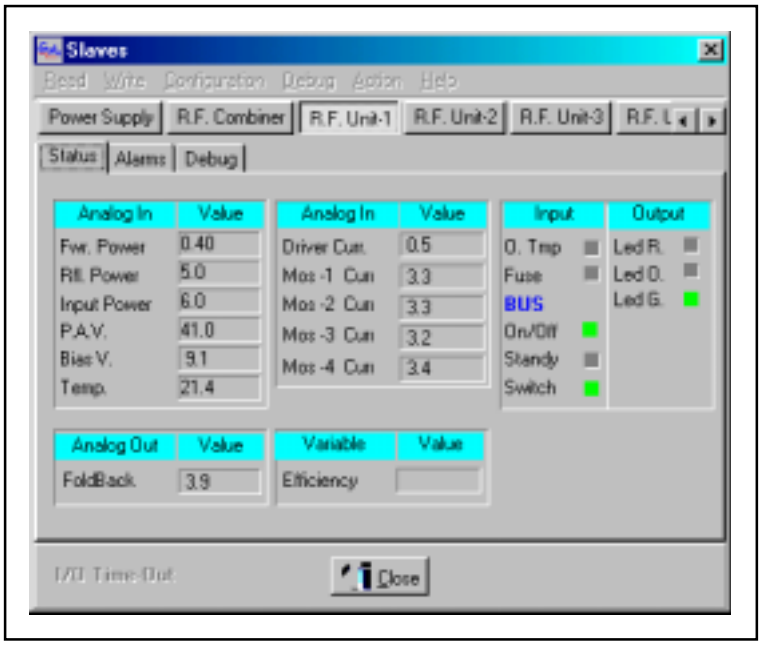
- Click on **`OK`** to close the window
- Do click on **`Slaves -> Read Configuration... -> RF Unit 1`**

At the end of the parameteres reading, click on OK to close the dialogue window:



- Do click on **`Slaves -> Slaves`**

  At this point are available all the parameters as like are measured from RF module



8. Procedure of module setting

Inhibit the power in entry to the module, switching off the exciter.

Click on SLAVES of the instruments bar, click on Slaves and select RF1, in order to bring back the measurements and effect the setting of the module.

Measure on the PSSW 5040 board (Power Supply) the voltage on TP3, moving the trimmer R58 up to obtain 60 mV.

Verify the presence of the 3,3 Volt on TP1 of the CPU card. Calibrate, if necessary, working on TR12.

Measurement of the voltage on the 18 di JP3 and bring back it on the computer working on TR4.

Measures on the DRIVER card.

Rotate the power regulation trimmer on the control unit completely in clockwise sense: this allows that the VPA arrives to approximately 50.2 Volt, then check that the relays work acting on the dip-switches.

Verify that there is Gate voltage in the module driver section, and bring it to 2.5 Volt through the trimmer.

Voltage measures on the BIAS card.

Measure the voltage on the pin 2 of U4, remove 500 mV and move the comma to a space to left, bringing back the resultant value on TR5 of the CPU like Temperature. Example: if the measured voltage is 721.0 mV, removing the 500 resulting 221,0: moving the comma to left of a cipher result 22,1; in degrees.

Be turned on the module acting on the ON/OFF switch of the control unit and measure the VPA value on the pin 1 of CN4, bringing back the value on the computer acting on TR9 of the CPU.

Setting of the BIAS Voltage and of the Finales current.

Interposing an amperometer between the VPA voltage (red cables of power) and the MosFet source, act on the pallet's trimmer up to obtain 20 mA of current.

With the help of an electronic load set the current of the current measurers of the finals and of the driver.

For the finals are made absorb 8A from each channel setting the load between GND and the supply wire of the pallet bring back the respective current on the computer acting on the TR11 for the pallet, TR2 for the pallet 2, TR3 for the pallet 3 and TR8 for the pallet 4.

For the driver are made absorb 1.2 - 1.3 A between GND and pin of the rear of the fuse carrier FS1, (you must get away the fuse carrier of the driver) bringing back the reading on the PC through TR10. Is recommended give between 4 and 5 turns in counterclockwise sense at TR10 before apply the load, avoiding that the module enters protection, delaying the testing.

Switch off power putting the switch on the control unit Stand-By, and connect the power wires of the pallet and the fuse carrier of the driver.

Setting and testing on RF

Be turned on the pilot on 98 Hz verify that the bolometer is to ZERO, and put the analyser on the internal state 7.

Acting on the power regulation PWR, checking the current, the harmonicses and the Pout, make go up the power up to 400 W, with the tester setted with full scale at mV. With the metal point on the pin 4 of CN3 on the bias card, trying to set to zero the measure most possible, acting through a non-metallic screwdriver on the trimmer more to left (toward the flank) that is situated on the measure card of Pout placed at the end of the filter, doing attention that the tester probes are to the outside of the module avoiding the interference of the RF on the measure. Then switch off the pilot and the H.T., carry the tester on the measure of Ohm, and measure the value of this trimmer brings back it on the trimmer more to the internal. This procedure is inclined to delineate the reading of the probes of Forward Power Output and Reflected Power Out.

Maintaining the pilot to 98 Mhz, carry the Pwr Out up to 1 kW. Bringing back the value of the bolometer on the TR1, then set the Pwr In on the TR6 to 4.8W, and finally equalize the mosfet current acting on the bridges of the pallet and on the bias resistances.

Carry the working frequency to 87.5 MHz, go up to 800 mW. Act on the power regulation RV2 that is placed on the driver card and obtain 1kW of Pwr Out. Bring back all the measures on the test tables of the computer and register it.

Then report the measures for the other working frequencies, 98 and 108 MHz, registers it too.

For all the frequencies, check that it is possible come at least to 1150 W of power.

Always to 98 Mhz. Connect a halved load to the ouput of the module and go up with the pilot up to read 90 Wtt of reflected power, act on the TR6 up to that the measure on the Bird doesn't level with the reading on the computer.

Then restored the load, go back to do the Pwr Out reading to 98MHz arriving to 1 kW and register it on the computer.

Withdraw the voltages measures of the bias, of the mosfet, of the pallet and of the driver, give a serial number and save the data on the computer.

Finally remove the coaxial cable from the withdrawal of the Bird and put it on the withdrawal that is situated on the module frontal and set the 10 Dbm acting on the device on the output board.