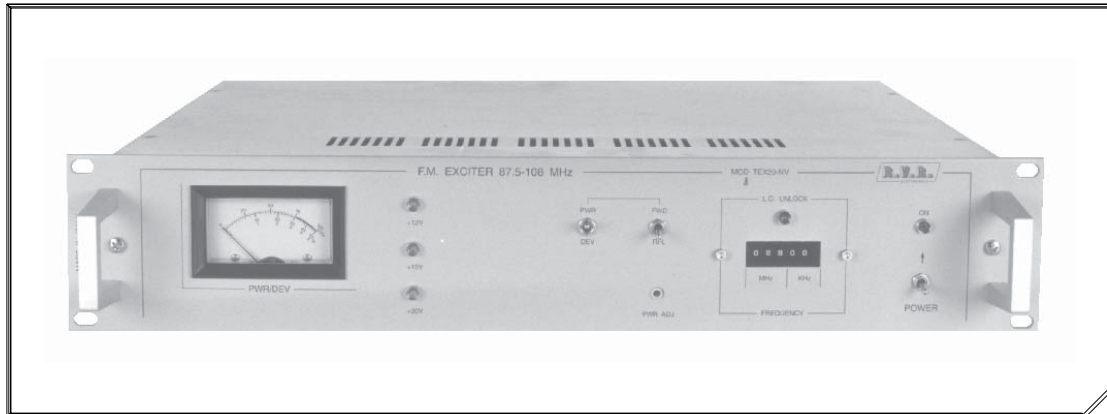
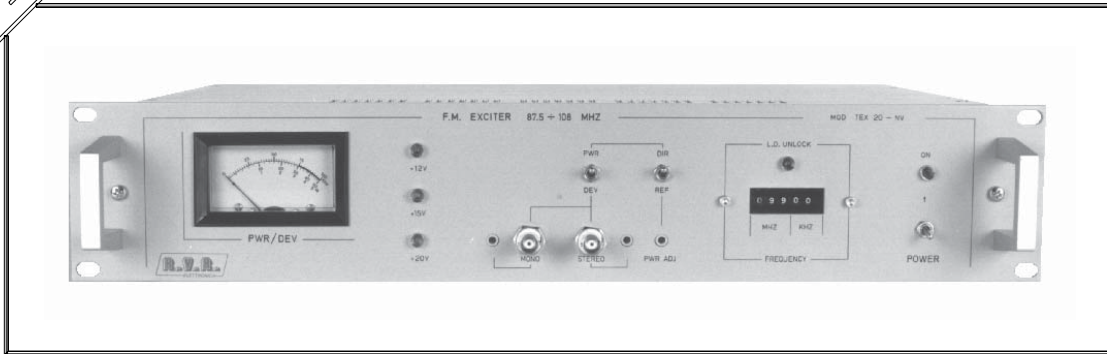

TEX20-NV

EURO



USA

TECHNICAL AND MAINTENANCE MANUAL



Manufactured by R.V.R. Elettronica - Italy

**TEX20 -
NV 20W FM EXCITER 87.5 -
108 MHz RANGE**

Technical and Maintenance Manual

INDEX

Preliminary Instructions and Warranty Information Pag. 5

Safety Regulations Pag. 7

CHAPTER 1

General Description Pag. 10

Technical Specifications (Table A) Pag. 12

Dimensional & Environmental Specifications (Table B) Pag. 15

CHAPTER 2

Electrical Description Pag. 16

"Europa" Version Front Panel Description Pag. 19

"Europa" Front Panel View (Fig.1A) Pag. 20

"USA" Version Front Panel Description Pag. 21

"USA" Version Front Panel View (Fig.1B) Pag. 22

"Europa" Version Rear Panel Description Pag. 23

"Europa" Version Rear Panel View (Fig.2A) Pag. 24

"USA" Version Rear Panel Description Pag. 25

"USA" Version Rear Panel View (Fig.2B) Pag. 27

"Europa" Version Top View Description Pag. 28

"Europa" Version Top View (Photo 1) Pag. 29

"USA" Version Top View Description Pag. 30

"USA" Version Top View (Photo 2) Pag. 31

Block Diagram (Fig.3) Pag. 32

Recommended Test Equipment (Table C) Pag. 33

CHAPTER 3

Installation Procedures Pag. 34

CHAPTER 4

Maintenance Pag. 40

CHAPTER 5

Calibration Procedures *Pag. 41*

APPENDIX A

Circuit Diagrams, Layouts and Bill of Material *Pag. 47*

Wiring Diagram *Pag. 48*

Main Card *Pag. 51*

Power Supply *Pag. 64*

CON-PA Card *Pag. 69*

R.F. Power Amplifier *Pag. 73*

Frequency Selector Card (Mod. TSW-1) *Pag. 78*

Frequency Selector Card (Mod. TSW-3) *Pag. 82*

USA Audio Input Card *Pag. 86*

Euro Audio Input Card *Pag. 90*

Clipper Card *Pag. 94*

TCXO Card *Pag. 98*

PRELIMINARY INSTRUCTIONS AND WARRANTY INFORMATION

WARNING: 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.

Please observe safety precautions when handling this unit. This equipment contains dangerous currents and high voltages.

This manual is written as a general guide for those having previous knowledge and experience with this kind of equipment. It is not intended to contain a complete statement of all safety warnings which should be observed by personnel in using this or other electronic equipment.

R.V.R. 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.

CAUTION: 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.

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. within five (5) days from its receipt.

R.V.R. extends to the original end-user purchaser all original manufacturers warranties which are transferable and all claims are to be made directly to R.V.R. per indicated procedures.

All manufacturers warranties will be supported by R.V.R. to ensure precise and speedy service where possible.

R.V.R. shall not be liable for any damage of whatsoever nature, arising out of or in connection with the product or its use thereof.

R.V.R. 's warranty shall not include:

- 1) Re-shipment of the unit to R.V.R. for repair purposes
- 2) Any unauthorized repair/modification
- 3) Incidental/consequential damages as a result of any defect
- 4) Nominal non-incidentals defects
- 5) Re-shipment costs or insurance of the unit or replacement units/parts

The warranty for a period of 12 months is referred to any R.V.R. product, while for products as Transistors, Mos-Fet and Tubes of the final stages is applied the manufacture's warranty of these devices.

To claim your rights under this warranty:

- a. Contact the dealer or distributor where you purchased the unit. Describe the problem and ask if he has an easy solution. 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.
- b. If your dealer cannot help you, contact R.V.R. in Bologna and explain the problem. If it is decided to return the unit to the factory, R.V.R. will mail you a regular authorization with all the necessary instructions to send back the goods.
- c. 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.

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 order 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 S.r.l. -
Broadcasting Equipment -
Via del Fonditore, 2/2c
40138 Bologna - Italy
Telephone +39-51-6010506
Fax +39-51-6011104

R.V.R. reserves the right to modify the design and specifications of the equipment in this manual without previous notice.

WARNING!

The currents and voltages in this equipment are dangerous!
Personnel must at all times observe safety regulation!

This manual is intended as a general guide for trained and qualified personnel who are aware of the dangers inherent in handling potentially hazardous electrical and electronic circuits.

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

The installation, operation, maintenance and service of this equipment involves risks both to personnel and equipment, and must be performed only by qualified personnel exercising due care.

R.V.R. ELETTRONICA S.r.l. shall not be responsible for injury or damage resulting from improper procedures or from the use of improperly trained or inexperienced personnel performing such tasks.

During installation and operation of this equipment, local building codes and fire protection standards must be observed.

WARNING!

Always disconnect power before opening covers, doors, enclosures, gates, panels or shields.
Always use grounding sticks and short out high voltage points before servicing. Never make internal adjustments, perform maintenance or service when alone or when fatigued.

Do not remove, short-circuit or tamper with interlock switches on access covers, doors, enclosures, gates, panels or shields.

Keep away from live circuits, know your equipment and don't take chances.

WARNING!

In case of emergency ensure that power has been disconnected

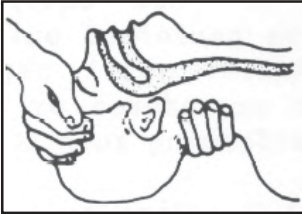
Treatment of electrical Shock

1) If victim is not responsive follow the A-B-C's of basic life support.

PLACE VICTIM FLAT ON HIS BACK ON A HARD SURFACE

A AIRWAY

IF UNCONSCIOUS,
OPEN AIRWAY



LIFT UP NECK,
PUSH FOREHEAD BACK,
CLEAR OUT MOUTH IF NECESSARY,
OBSERVE FOR BREATHING

B BREATHING

IF NOT BREATHING,
BEGIN ARTIFICIAL
BREATHING.



TILT HEAD,
PINCH NOSTRILS,
MAKE AIRTIGHT SEAL,
4 QUICK FULL BREATHS.
REMEMBER MOUTH TO MOUTH
RESUSCITATION MUST BE
COMMENCED AS SOON AS
POSSIBLE.

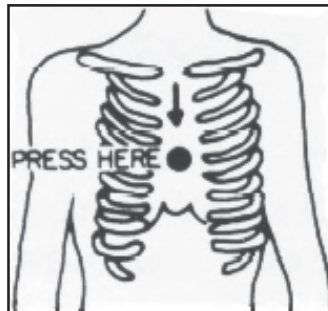
C CIRCULATION

CHECK CAROTID PULSE

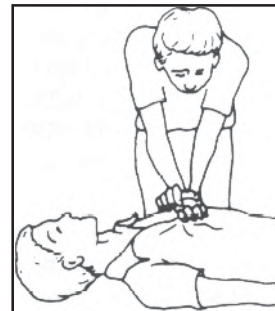


IF PULSE ABSENT,
BEGIN ARTIFICIAL
CIRCULATION

DEPRESS STERNUM 1 1/2" TO 2"



APPROX. 80 SEC. : ONE RESCUER, 15 COMPRESSIONS,
2 QUICK BREATHS.



APPROX. 60 SEC. : TWO RESCUERS, 5 COMPRESSIONS,
1 BREATH

NOTE: DO NOT INTERRUPT RHYTHM OF COMPRES-
SIONS WHEN SECOND PERSON IS GIVING BREATH.

Call for medical assistance as soon as possible.

2) If victim is responsive:

- a. Keep them warm.
- b. Keep them as quiet as possible.

c. Loosen their clothing (a reclining position is recommended).

FIRST-AID

Personnel engaged in the installation, operation, maintenance or servicing of this equipment are urged to become familiar with first-aid theory and practices. The following information is not intended to be a complete first-aid procedure, it is brief and is only to be used as a reference. It is the duty of all personnel using the equipment to be prepared to give adequate Emergency First Aid and thereby prevent avoidable loss of life.

Treatment of electrical Burns

- 1) Extensive burned and broken skin.
 - a. Cover area with clean sheet or cloth.
(Cleansed available cloth article).
 - b. Do not break blisters, remove tissue, remove adhered particles of clothing, or apply any salve or ointment.
 - c. Treat victim for shock as required.
 - d. Arrange transportation to a hospital as quickly as possible
 - e. If arms or legs are affected keep them elevated.

NOTE

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).

- 2) Less severe burns - (1st & 2nd degree)
 - a. Apply cool (not ice cold) compresses using the cleansed available cloth article.
 - b. Do not break blisters, remove tissue, remove adhered particles of clothing, or apply salve or ointment.
 - c. Apply clean dry dressing if necessary.
 - d. Treat victim for shock as required.
 - e. Arrange transportation to a hospital as quickly as possible.
 - f. If arms or legs are affected keep them elevated.

CHAPTER 1

DESCRIPTION OF THE TEX20- N.V.

1.1 GENERAL DESCRIPTION

The TEX20-N.V. is housed in a 2U, 19" rack-mounting container comprising a number of interconnected modules mounted internally on the bottom of the equipment, facilitating removal and substitution.

On the front panel there are: the power output control PWR ADJ, the PWR/DEV selector to select the power or deviation measuring on the analog meter, the switch on selector with its relative led and the analog meter for the measuring of main operating parameters.

For EUROPA version there are two BNC connectors too, one for MONO input and other for MPX input.

On the rear panel there are: the BNC connector for mains voltage input, the R.F. TEST -30dB BNC connector, the INTERLOCK BNC connector to block R.F. power output from external equipment, the R.F. Output N-type connector, and only for USA version, a EXT. REF. 1KHz BNC connector and audio inputs BNC connectors.

1.2 ELECTRICAL DESCRIPTION

The TEX20-N.V. is an exciter working in the 87.5 to 108 MHz band, programmable in steps of 10 KHz. Its power output is continuously adjustable from 2 to 20W into a 50 Ohm load.

It also accepts three SCA signals through the connectors placed on the rear panel (only for USA version).

The specification features low audio distortion and intermodulation figures (typ. 0.05%) and a high signal-to-noise ratio (typ. -72 dB).

A voltage selector on the transformer primary allows a variety of supply voltages to be used.

1.3 METERS AND INDICATORS

The operating parameters of the exciter can be monitored using the analog multimeter (1 Fig.1A EUROPA ver. and 1 Fig.1B USA ver.) situated on the front panel.

The parameter to be measured is selected by the selector (10-11 Fig.1A and 3-5 Fig.1B).

The frequency control (8 Fig.1A and 6 Fig.1B) allows frequencies to be selected in steps of 10 KHz.

Two red alarm leds indicate VCO unlock (12 Fig.1A and 7 Fig.1B) and the mains voltage line presence (13 Fig.1A and 9 Fig.1B).

Three green leds indicate the presence of +12V, +15V and +20V (2 Fig.1A and 1B) voltages which are used to power the various cards inside the exciter. There are a trimmer (7 Fig.1A and 4 Fig.1B) too that allows to choose the level

of the output power level and the switch ON selector (9 Fig.1A e 8 Fig.1B).

1.4 AUTOMATIC FREQUENCY CONTROL

The operating frequency is governed by a thermally-compensated, reference oscillator working within a phase-locked loop (PLL).
The TEX20-N.V. reaches frequency lock within a maximum of 30 seconds.

1.5 CONTROL CIRCUITS

The control circuits allow automatic control of output power, maintaining the chosen power level across the entire operating band. Furthermore another circuit protects the final stage against excessive VSWR or short circuits.

1.6 RF AMPLIFIER

The RF amplifier is a wide-band design and guarantees an adjustable power output of 2 to 20 watts across the entire band.
A low-pass filter enables the TEX20-N.V. to be used as a low power transmitter, connected directly to an antenna.

1.7 SPECIFICATIONS

Please refer to Table A for the electrical specifications and Table B for the mechanical specifications.

TABLE A

ELECTRICAL SPECIFICATIONS

<i>Power Supply</i>	<i>110-130V ±10%, 50-60Hz 198-250V ±10%, 50-60Hz</i>
<i>Power Consumption</i>	<i>approx. 130 W</i>
<i>Cooling</i>	<i>Forced Ventilation</i>
<i>Frequencies</i>	<i>from 87.5 to 108 MHz in steps of 10 KHz, microprocessor-controlled</i>
<i>Output power</i>	<i>adjustable from 2 to 20 W cont.</i>
<i>Output impedance</i>	<i>50 Ohm</i>
<i>Output Connector</i>	<i>N-type standard</i>
<i>Harmonic suppression</i>	<i>> -65dB</i>
<i>Spurious Signal Suppression</i>	<i>> -80dB</i>
<i>Frequency stability</i> <i>50°C</i>	<i>±500Hz (typ. ±300Hz) from 0° to</i>
<i>Modulation type</i>	<i>Direct frequency modulation of the RF oscillator at fundamental freq.</i>
<i>Frequency deviation</i>	<i>±75KHz nominal</i>
<i>Harmonic distortion</i>	<i>< 0.10% (typically 0.05%)</i>
<i>Residual AM (asynchronous)</i>	<i>approx. 0.05% = 65 dB RMS</i>
<i>Residual AM (synchronous)</i>	<i>0.1% = 55 dB</i>
<i>Pre-emphasis</i>	<i>50µs ±2% or 75µs ±2% selectable</i>

Composite Operations

<i>Composite Inputs</i>	<i>4 total, 1 for MPX and 3 for SCA for USA version</i>
-------------------------	---

1 for MPX for EUROPA version

MPX Input	BNC connector, balanced
MPX Input Impedance	10 KOhm
MPX Input Level	0dBm (775mVrms / 2,2Vpp) for ±75KHz of adjustable deviation
Composite FM S/N Ratio	> 75dB measured with ±75KHz deviation at 400Hz in a 30Hz to 15KHz band RMS.
Composite Intermodulation Distortion	0.1% or less (typ.0,05%), measured at 1KHz and 1.3 KHz, ratio 1:1 at 100% modulation
Composite Frequency Response	± 0.5dB from 30Hz to 100KHz
Stereo Separation	> 50 dB
Crosstalk	better than 55dB (typ. 60 dB)
SCA Inputs	3 BNC Connectors, unbalanced only for USA version
SCA Input Impedance	10 KOhm
SCA Input Level	0dBm (775mVrms / 2,2Vpp) for ±75KHz of adjustable deviation
SCA Frequency Response	± 0.5dB from 40KHz to 100KHz
Crosstalk	67KHz, 65dB 92KHz, 70dB

Mono Operations

Mono Input Impedance	600 Ohm balanced for USA vers. 1 KOhm unbalanced for EUROPA vers.
Mono Input Level	0dBm (775mVrms / 2,2Vpp) for ±75KHz of adjustable deviation
Mono FM S/N Ratio	> 75dB measured with ± 75KHz

deviation at 400Hz in a 30Hz-20KHz
band RMS.

Mono Frequency Response ± 0.5 dB from 30 Hz to 15 KHz

Mono Intermodulation Distortion 0.1% or less (typ.0,05%), measured
at 1KHz and 1.3 KHz, ratio 1:1 at
100% modulation

TABELLA B

DIMENSIONAL AND ENVIRONMENTAL SPECIFICATIONS

<i>Cabinet dimensions</i>	<i>483mm (19") W</i> <i>83mm (3,26") H</i> <i>327mm (13,7") D</i>
<i>Panel Dimensions</i>	<i>483mm (19") W</i> <i>88mm (3.46") H</i>
<i>Operating temperature</i>	<i>-10°C to 50°C</i>
<i>Humidity</i>	<i>95% max. non-condensing</i>
<i>Weight</i>	<i>15 1/2 Lbs (7 Kg)</i>

CHAPTER 2

ELECTRICAL DESCRIPTION

2.1 INTRODUCTION

This section describes, in detail, the operating theory behind the TEX20-N.V..

To aid understanding, the unit has been subdivided into blocks, each of which is fully described below.

A Block Diagram is shown in Fig.3.

2.2 POWER SUPPLY

This circuit comprises a board, mounted on a heat sink, which is fixed to the central part on the bottom of the unit (5 Foto 1-2).

The power supply generates the various stabilized voltages necessary for each of the various modules that make up the TEX20-N.V..

After having undergone filtering for mains-borne interference, the supply is transformed into lower voltages, rectified, smoothed and stabilized to the following values: +12V, +15V and 2 to 24V variable (+20V upstream of the voltage control stage).

The +15V supplies the EURO Audio Input card and the contraves card. The +12V supplies the RF power amplifier driver and the 2-24V variable supplies the final power stage of the same module.

The variable voltage of the final stage is controlled by the PWR ADJ control which determines the RF power output of the exciter.

The automatic control of output power guarantees the power level set by the PWR ADJ control right across the frequency range and independently of other variables such as temperature, load variations etc.

The system works by comparing the value set by the PWR ADJ control with the actual power output of the unit and compensating accordingly.

A power limiting circuit intervenes in the event of excess SWR on the output, thus protecting the final stage.

2.3 EURO AUDIO INPUT CARD

This card (2 Foto 1-2) is situated on the front panel of the exciter. This card, only for EUROPA version, filters all audio signal inputs to the unit, removing R.F. interference, before supplying them to the main card. This card works too as measures card allowing the measuring of forward and reflected power or deviation.

2.4 MAIN CARD

The main card is situated internally, on left of the unit's bottom (1 Foto 1-2).

The circuit includes a voltage-controlled oscillator (VCO) which generates

the selected operating frequency.

This signal is amplified to drive the phase-locked loop (PLL) control circuit and also the final stage.

The audio signal supplied by the Euro Audio Input card (for the EUROPA version) or from USA Audio Input card (for USA version), is amplified and processed in order to compensate for distortion caused by the varicap diodes; it is then injected into the VCO to provide modulation.

The operating frequency generated by the VCO is divided down before being compared to a reference frequency, generated by a high stability oscillator (standard 5 ppm). The error voltage is filtered and used to compensate the VCO frequency and guarantees its stability.

An indicator (situated on the front panel signals the "unlocked" condition. Three trimmers are present on this card for adjustment of deviation, distortion and pre-polarization of the varicaps.

2.5 R.F. POWER AMPLIFIER

The final power stage is mounted on a heat sink to dissipate waste heat and is enclosed in a totally screened, metal container, fixed to the middle part of the unit's bottom (6 Foto 1-2).

The R.F. signal coming from the Main card at a power level of about 150-200 mW, reaches the driver stage (MRF237 in Class C) and is amplified to a level of about 2W before being further amplified by the final stage (BLW86) to a level of upto 20W.

The resultant signal is then filtered by a low-pass filter which removes any harmonic content.

A directional coupler allows the direct and reflected power levels to be measured and displayed on the analog multimeter and also feedback to the power supply for automatic control of the output power (see Power Supply sec. 2.2). A BNC connector situated on the rear panel provides a power signal at -30dB of the amplifier output power.

2.6 FREQUENCY SELECTOR CARD (CONTRAVES)

This card (3 Foto 1-2) is fixed to the left-hand side of the front panel. The operating frequency selected by the frequency control is represented by a signal which is supplied to the frequency dividers that form part of the PLL circuits found on the Main card.

2.7 USA AUDIO INPUT CARD (only for USA version)

This card is situated on the left part of the rear panel of the exciter (7 Foto 1-2).

This card, only for USA version, filters all audio signals that input to the unit, removing RF interference, before supplying them to the main card.

In addition to three SCA input connectors and MPX input connector, there is a 10 poles socket that .

'EUROPA' VERSION FRONT PANEL DESCRIPTION (FIG. 1A)

1 METER

Analog meter used to display the

following operating parameters of the
exciter: Direct and Reflected power, and
Deviation

- 2 VOLTAGES Led indicators that indicate the presence of the +20V, +15V and +12V
- 3 MONO LEVEL Trimmer for the adjustment of MONO input level
- 4 MONO INPUT MONO input connector, BNC type
- 5 STEREO (MPX) LEVEL Trimmer for the adjustment of MPX input level
- 6 STEREO (MPX) INPUT MPX input connector, BNC type
- 7 PWR ADJ Trimmer to regulate the power output of the exciter. AGC maintains the level set by this control
- 8 MHz/KHz Rotary frequency selector
- 9 POWER ON/OFF Power switch
- 10 PWR/DEV The measurement made by the meter corresponds to the position of this selector: POWER or DEVIATION
- 11 FWD/RFL The measurement of the FORWARD or REFLECTED power are selected from the correspondent position of this selector
- 12 L.O. UNLOCK Indicates that the VCO is not locked to the reference frequency. The output power will drop to zero in this condition
- 13 LED ON Led indicator that indicates the presence of the mains voltage

"USA" VERSION FRONT PANEL DESCRIPTION (FIG. 1B)

- 1 METER Analog meter used to display the

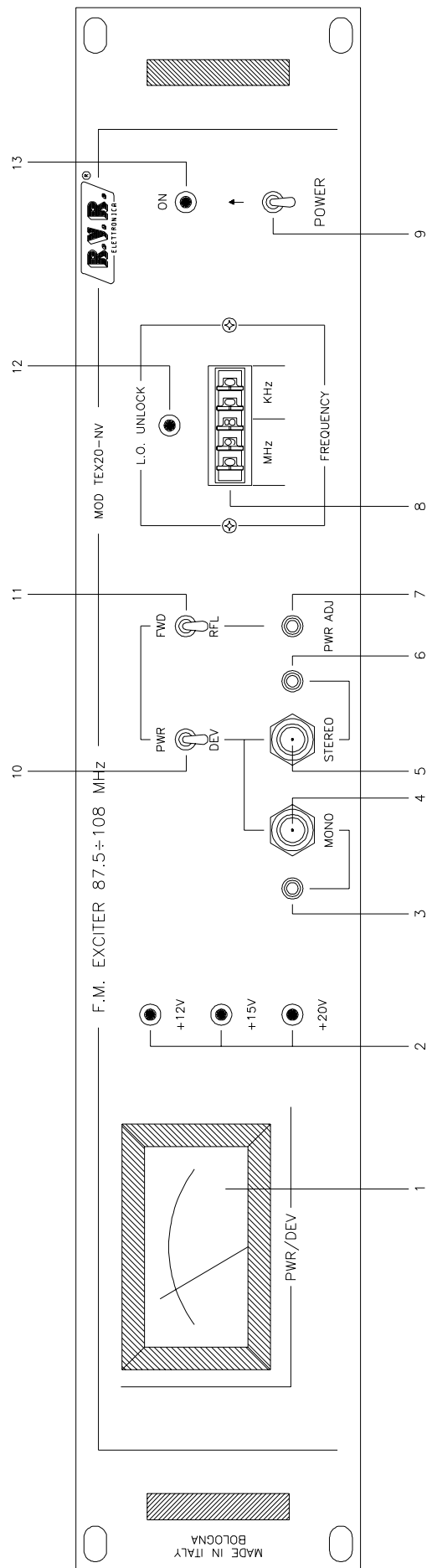


FIG. 1A

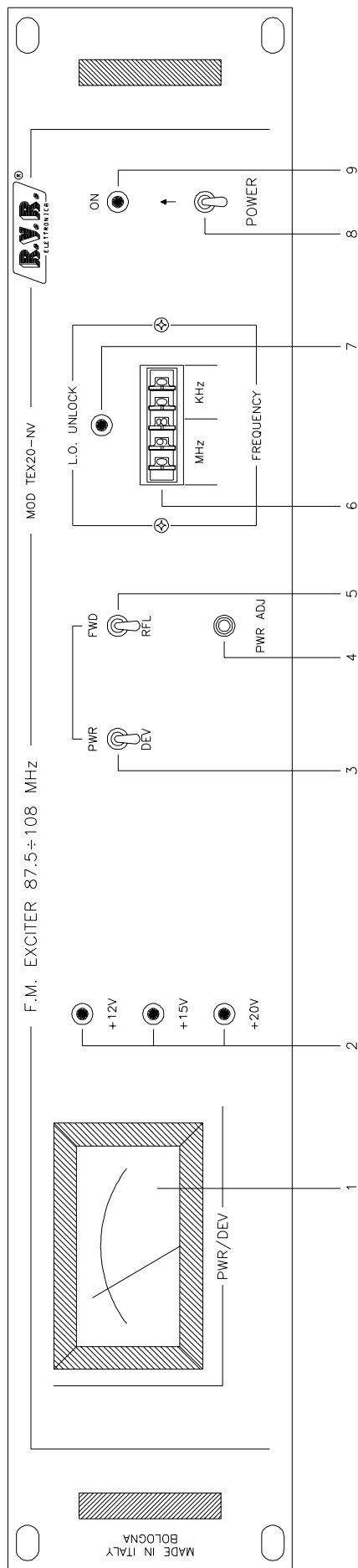


FIG. 1B

- 1 PLUG Mains voltage plug

- 2 FUSE BLOCK Fuse block and line voltage selector.
Use a small screwdriver to change the
fuse or the line voltage. Rotate the
block and position it for the desired voltage.

- 3 INTERLOCK BNC connector. Connecting the central
conductor to ground will cause the RF
output power level to drop to zero and to
stay there until the short is removed.
When used with an R.V.R. amplifier, this
connector should be connected to the
"REMOTE" output of the power amplifier.

- 4 EXT. +24V (Optional) External power supply inputs at +24V

- 5 FAN Fan-assisted cooling for the power stage
and the power supply.

- 6 R.F. OUTPUT "N-type" connector, 50 Ohm

- 7 R.F. TEST POINT -30 dB output referred to the output
power level (on request)

"USA" VERSION REAR PANEL DESCRIPTION (FIG.

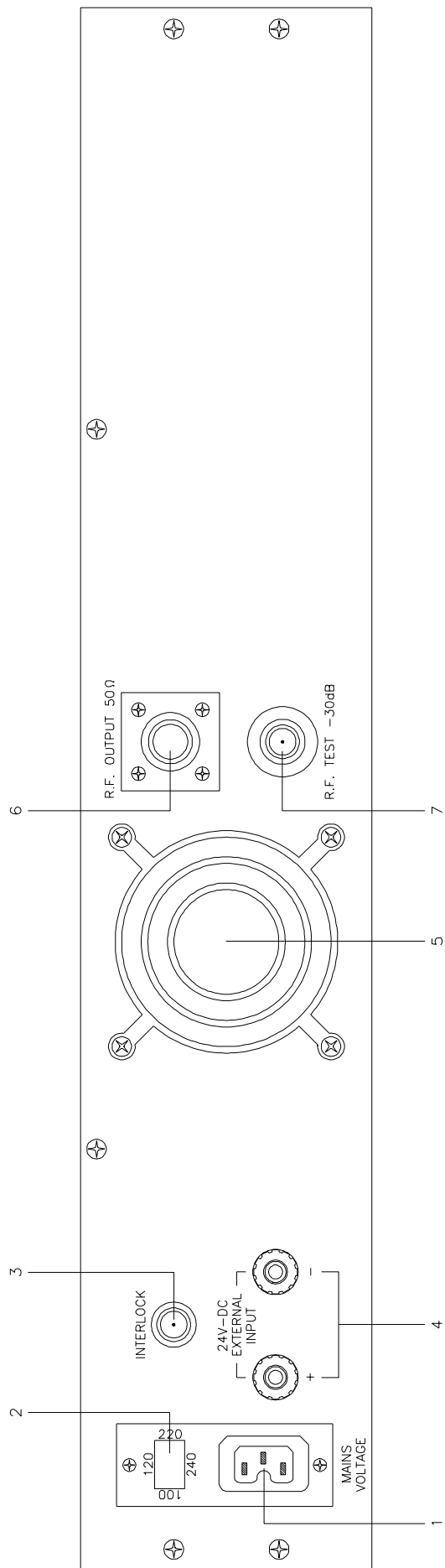


FIG. 2A

2B)

- 1 PLUG Mains voltage plug
- 2 FUSE BLOCK Fuse block and line voltage selector.
Use a small screwdriver to change the fuse or the line voltage. Rotate the block and position it for the desired voltage.
- 3 INTERLOCK BNC connector. Connecting the central conductor to ground will cause the RF output power level to drop to zero and stay there until the short is removed. When used with an R.V.R. amplifier, this connector should be connected to the "REMOTE" output of the power amplifier.
- 4 EXT. +24V (Optional) External power supply inputs at +24V
- 5 FAN Fan-assisted cooling for the power stage and the power supply.
- 6 R.F. OUTPUT "N-type" connector, 50 Ohm
- 7 R.F. TEST POINT -30 dB output referred to the output power level (on request)
- 8 EXT REF IN External 1KHz reference
- 9 MPX LEVEL Trimmer for the adjustment of MPX input level
- 10 MPX INPUT MPX input connector, BNC type
- 11 SCA 3 LEVEL Trimmer for the adjustment of SCA 3 input level
- 12 SCA 3 INPUT BNC connector, unbalanced SCA 3 input or pilot output for internally selectable RDS encoder
- 13 SCA 2 LEVEL Trimmer for the adjustment of SCA 2 input level
- 14 SCA 2 INPUT BNC connector, unbalanced SCA 2 input or pilot output for internally selectable

RDS encoder

- 15 SCA 1 LEVEL Trimmer for the adjustment of SCA 1
input level
- 16 SCA 1 INPUT BNC connector, unbalanced SCA 1 input or
pilot output for internally selectable
RDS encoder
- 17 TELEMETRY TERMINALS 10-pin telemetry socket:
- | | |
|-------|-----------------|
| 1 | Mono (+) |
| 2-5-7 | GND |
| 3 | Mono (-) |
| 4 | Direct power |
| 6 | Reflected power |
| 8 | VPA DC voltage |
| 9 | N.C. |
| 10 | VCC |

CHAPTER 3

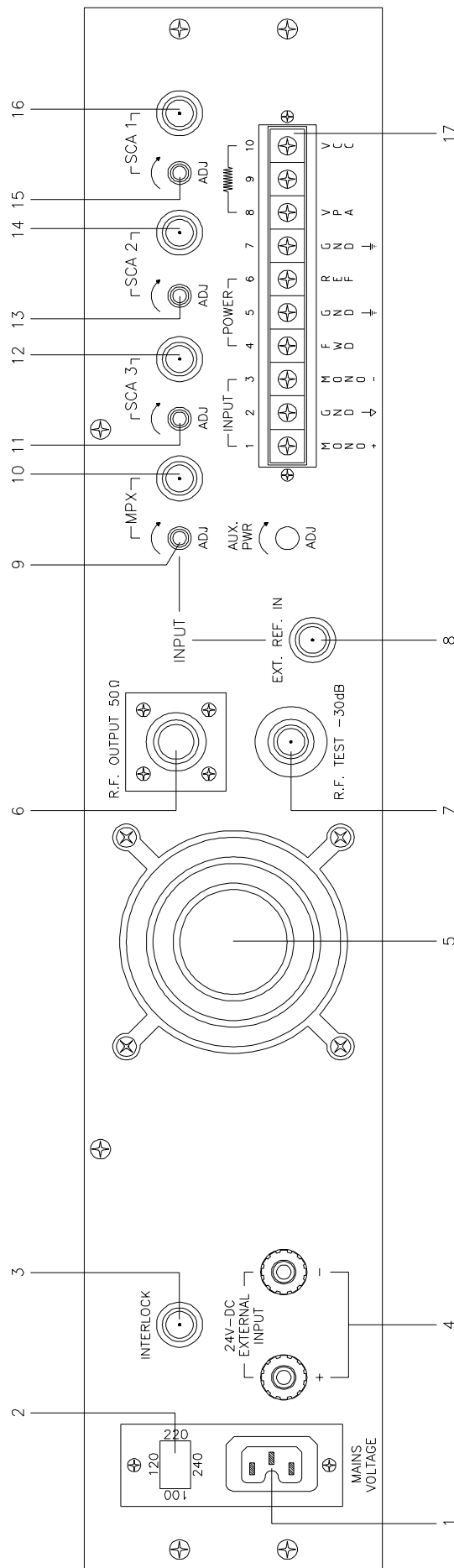


FIG. 2B

"EUROPA" VERSION TOP VIEW DESCRIPTION (PHOTO 1)

- 1 Main Card
- 2 Euro Audio Input Card
- 3 Frequency Selector Card
- 4 Transformer
- 5 Power Supply
- 6 R.F. Power Amplifier

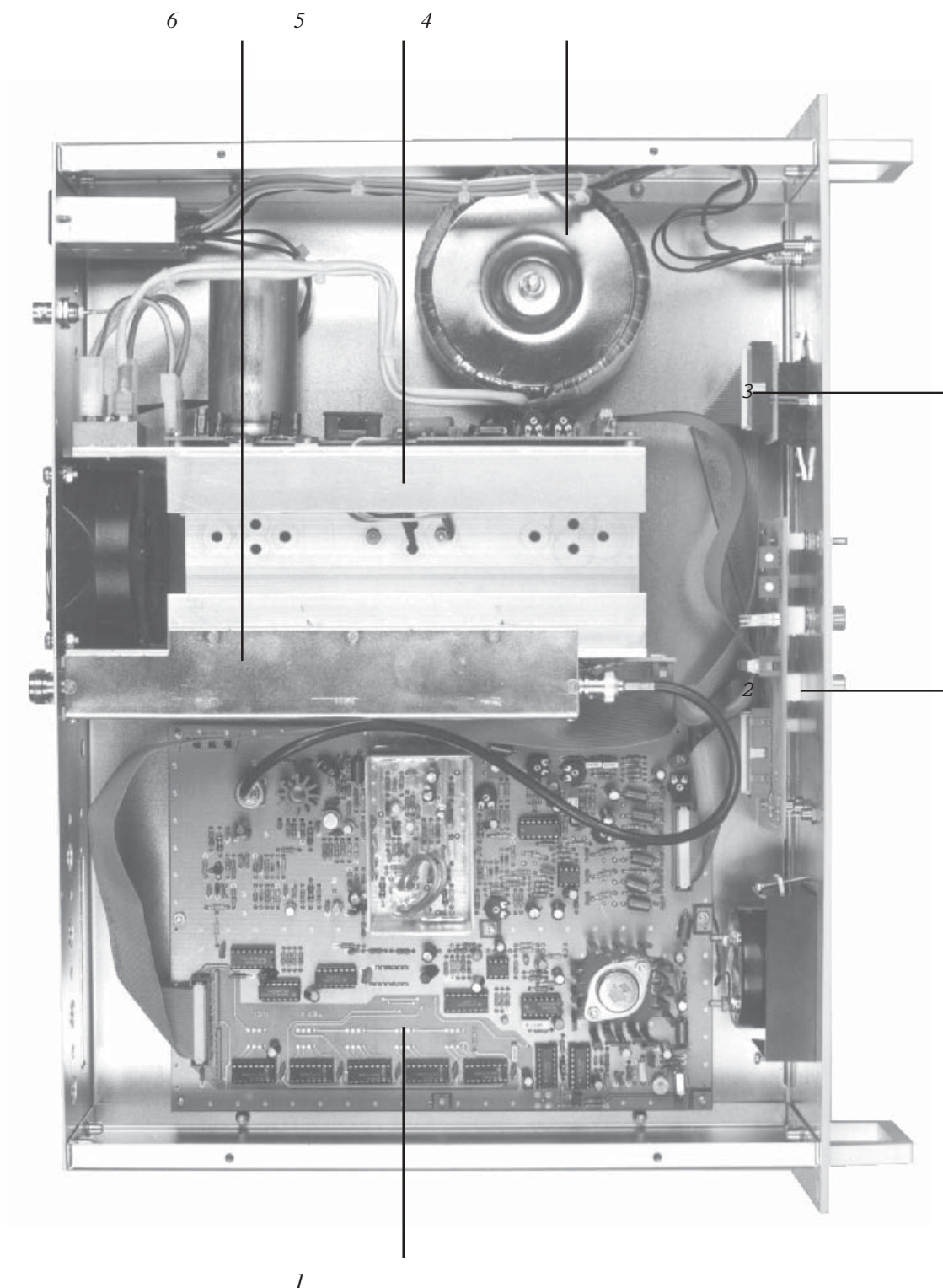


PHOTO 1

"USA" VERSION TOP VIEW DESCRIPTION (PHOTO 2)

- 1 *Main Card*

- 2 *Euro Audio Input Card*

- 3 *Frequency Selector Card*

- 4 *Transformer*

- 5 *Power Supply*

- 6 *R.F. Power Amplifier*

- 7 *USA Audio Input Card*

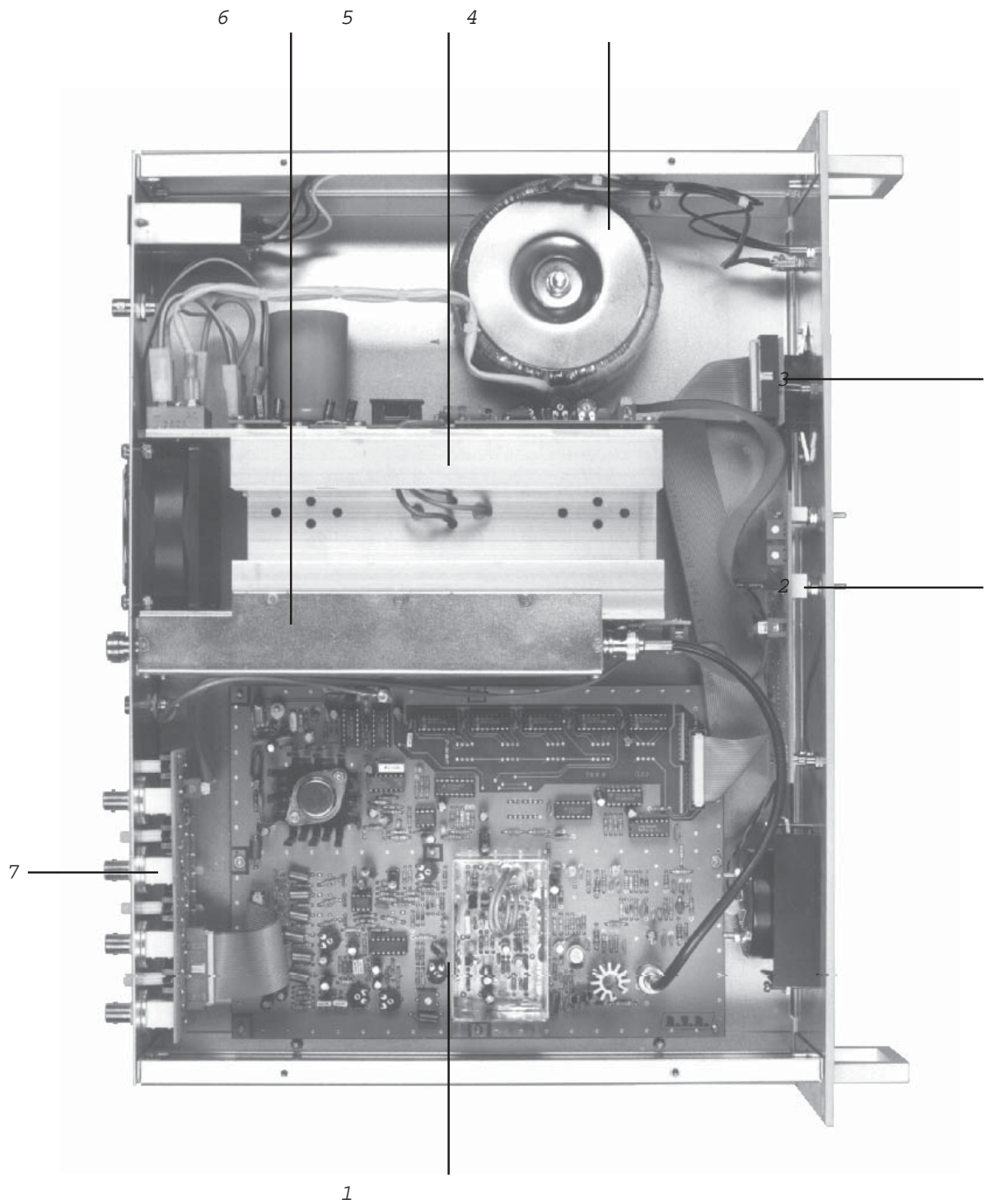


PHOTO 2

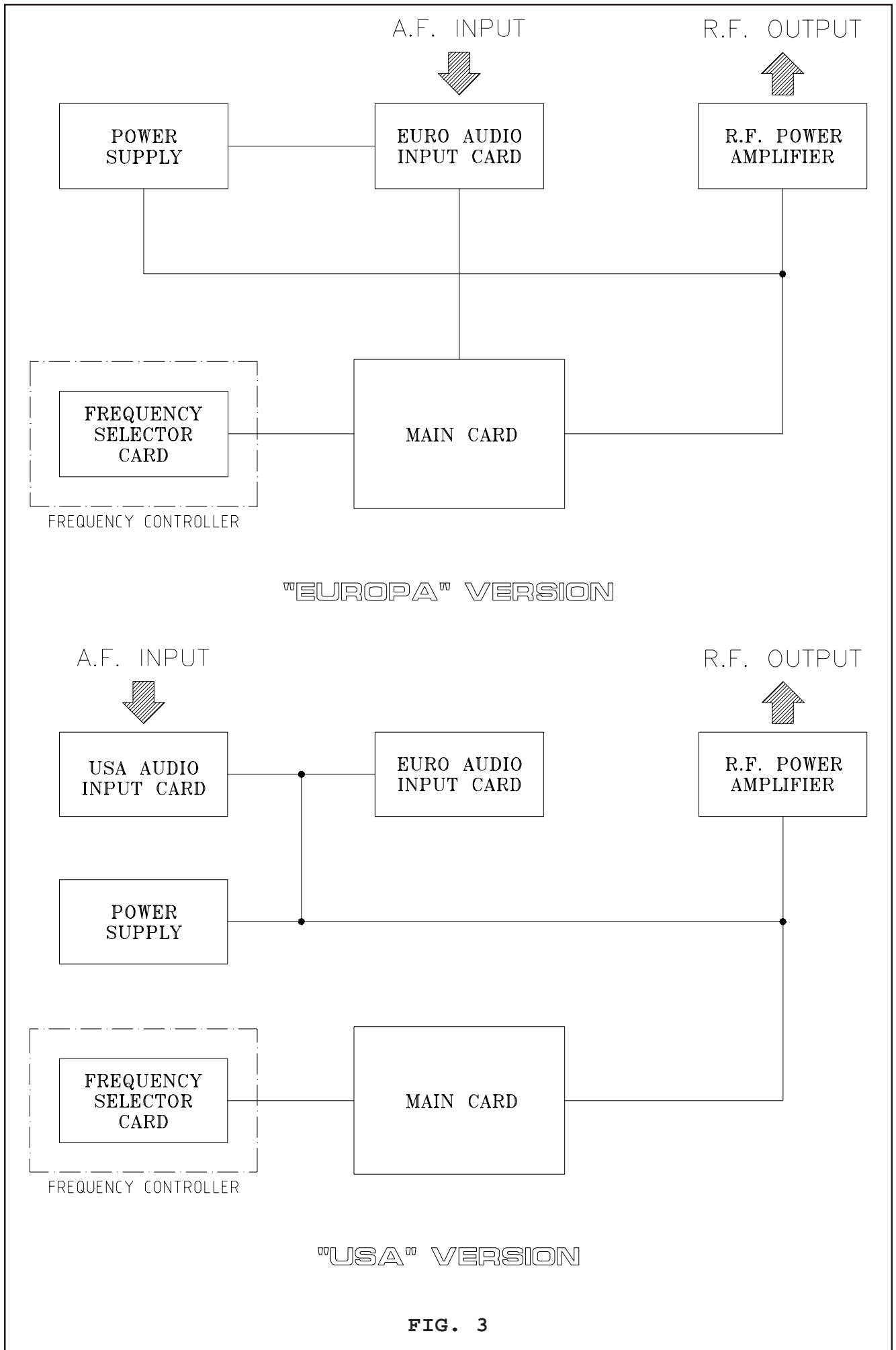


FIG. 3

TABLE C

RECOMMENDED TEST EQUIPMENT

<i>INSTRUMENT</i>	<i>MODEL</i>	<i>SPECIFICATION</i>
Coaxial Load Resistor	Bird Mod. 8085	Power rating 50W continuous
Wattmeter Mod. 43	Bird using Bird Plug-in-Elements	Power range : 100mW to 10KW Frequency range : 0.45 to 2300MHz
Plug-in-Elements	Bird Mod. 25B	Power rating : 25W Freq. range : 25 to 125MHz
Variable RF Signal Sampler Element	Bird Mod. 4275-100	Power rating : 1000W Freq. range : 25 to 1000MHz
Spectrum Analyzer	Adavntest Mod. R4141D	10KHz-3.5GHz
Low Distortion A.F. Genarator	Krohn-Hite Mod. 4400A	THD < 0.001%
Oscilloscope	Tektronix Mod. 2225	50MHz Oscilloscope
Stereo Decoder	A.E.V. Mod. SMD	Stereo separation > 60dB 30Hz to 15KHz
Stereo Coder	R.V.R. Mod. SDC20	
F.M. Modulation Meter	Rohde Schwarz Mod. F.A.M.	
Digital Multimeter	Metrix	

INSTALLATION

3.1 INTRODUCTION

This chapter contains the information required for installation of the TEX20-N.V. exciter and for preliminary checks.

3.2 UNPACKING

Remove the unit from its packaging and before any other operation, check for any damage that the unit may have suffered in transit and that all front and rear panel controls are functioning.

3.3 INSTALLATION

1) Check on the rear panel that the line voltage selector is correctly set for the local supply. If not, remove the cover (2 Fig.2A-2B) on which the voltages are printed and rotate it until the required value corresponds to the arrow, and reinsert it.

Check also that the fuse mounted inside the cover is present and in order.

The current capacity of the fuse are as follows:

220-240V - 2A
100-120V - 3.15A

2) Now ensure that the PWR ADJ control (7 Fig.1A and 4 Fig.1B) is rotated fully anti-clockwise, using a small screwdriver. Units are usually shipped with this control already at minimum.

WARNING: When the unit is switched on with the control at its minimum position, power output is about 2W.

3) Connect R.F. output connector (6 Fig.2A-2B) to antenna cable.

4) Inject Audio signal coming from external source, to MONO or MPX connector (it depends from the type of the external source).

5) Connect line power to the unit via the VDE socket (1 Fig.2A-2B), switch on the equipment through power selector (9 Fig.1A and 8 Fig.1B).

6) Select PWR/FWD power measuring, through the selector (10-11 Fig.1A and 3-5 Fig.1B) placed on the front panel, and adjust PWR ADJ trimmer to obtain the reading of 20W on the analog meter (1 Fig.1A-1B).

7) Now, Select DEV measuring through the selector PWR/DEV (10 Fig.1A and 3-5 Fig.1B) and adjust INPUT LEVEL trimmer (of the relative Audio

Input), so that to obtain a reading of 75 KHz on the analog meter.

3.4 PRE-INSTALLATION

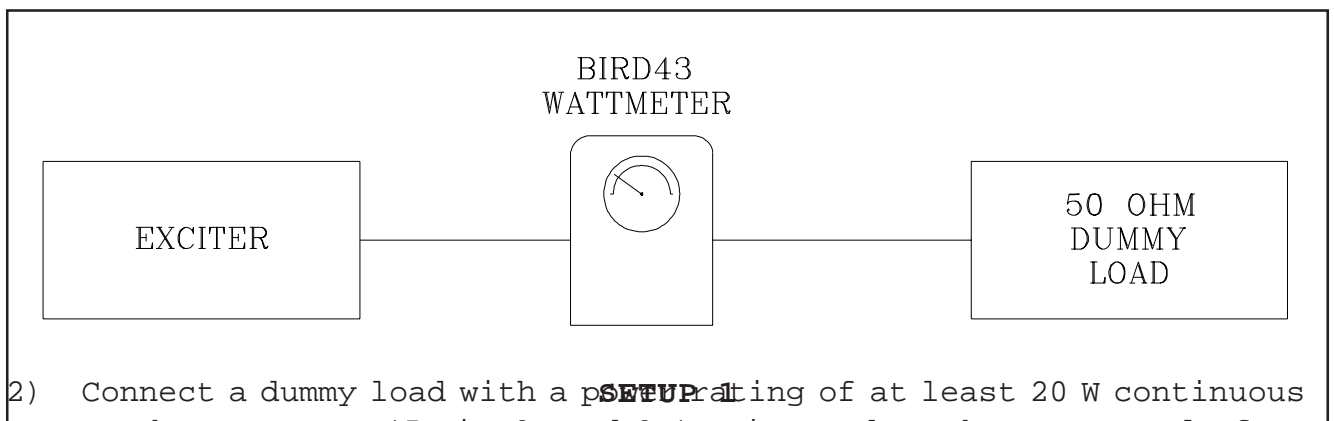
Before the installation of the equipment (on the transmitter station), we suggest to you to execute a complete check on it, to avoid problems during the installation.

If during this check, happen some faulties or you find non standard value for some working parameters, it's advisable to see as reference the "CALIBRATION PROCEDURES CHAPTER" of this manual.

Power Output Checking

- 1) Now ensure that the PWR ADJ control (7 Fig.1A and 4 Fig.1B) is turned fully anti-clockwise, using a small screwdriver. Units are usually shipped with this control already at minimum.

WARNING: When the unit is switched on with the control at its minimum position, power output is about 2W.



- 2) Connect a dummy load with a ~~power rating~~ **SETUP 1** of at least 20 W continuous to the RF output (5 Fig.2A and 2B), situated on the rear panel of the unit (SETUP 1).

It is advisable to connect a bypass wattmeter in series with this load in order to verify the accuracy of the unit's own internal wattmeter.

- 3) Connect a switch, via a cable, to the INTERLOCK connector (3 Fig.2A and 2B) on the rear panel so that the switch is able to short the central conductor to its screen. Leave the switch in the short-circuit position.

- 4) Switch the unit's ON/OFF switch (9 Fig.1A and 8 Fig.1B) to the OFF position.

- 5) Connect line power to the unit via the VDE socket (1 Fig.2A and 2B).

(Note It is essential that the unit be properly earthed to ensure both the safety of the operator as well as the correct functioning of the equipment).

6) Switch the power switch to the ON position and check that the both green voltages presence leds (2 Fig.1A and 1B) and the red UNLOCK led (12 Fig.1A and 7 Fig.1B) are both ON.

Select the desired operating frequency using the corresponding selector (8 Fig.1A and 6 Fig.1B).

The red UNLOCK led should switch off within 30 seconds, indicating that the oscillator has locked onto the operating frequency.

The frequency selector comprises five figures of which the three to the left of the decimal point represent (from left to right) hundreds of MHz, tens of MHz and MHz. The two figures to the right of the decimal point represent (from left to right) hundreds of KHz and tens of KHz.

Eg: 098.45 = ninety eight megahertz and four hundred and fifty Kilohertz.

Eg: 103.94 = one hundred and three Megahertz and nine hundred and forty Kilohertz.

Furthermore, if a frequency is selected beyond the two limits of the 87.5-108MHz band, the amplifier will continue to work even though the displayed frequency no longer corresponds to the operating frequency of the unit.

N.B. Transmitting outside the legal band (87.5-108 MHz) is an offence and may lead to prosecution.

7) After having verified that the UNLOCK led (12 Fig.1A and 7 Fig.1B) is switched off and that the unit is therefore locked to the selected operating frequency, switch the switch connected to the INTERLOCK connector so as to remove the short circuit between the central conductor and ground. The RF output is now enabled and should correspond to a power level of about 2W.

To check this reading, select PWR on the PWR/DEV selector (10 Fig.1A and 3 Fig.1B) and FWD on the FWD/REF (11 Fig.1A and 5 Fig.1B), and then read the power on the 50W FSD scale.

8) Using a small screwdriver, rotate the PWR ADJ control clockwise; the power output should increase progressively to a maximum of 20W.

Check the value with the bypass wattmeter which should be within $\pm 10\%$.

9) With the power output at 20W, select a new operating frequency well away from the current value.

Eg: 107 MHz: the UNLOCK led should switch on and the power output should fall to zero at the same time. Only when the UNLOCK led switches off (unit locked to new frequency) should the power output resume its previous level.

Automatic power control check

To execute this operation see as reference SETUP 1.

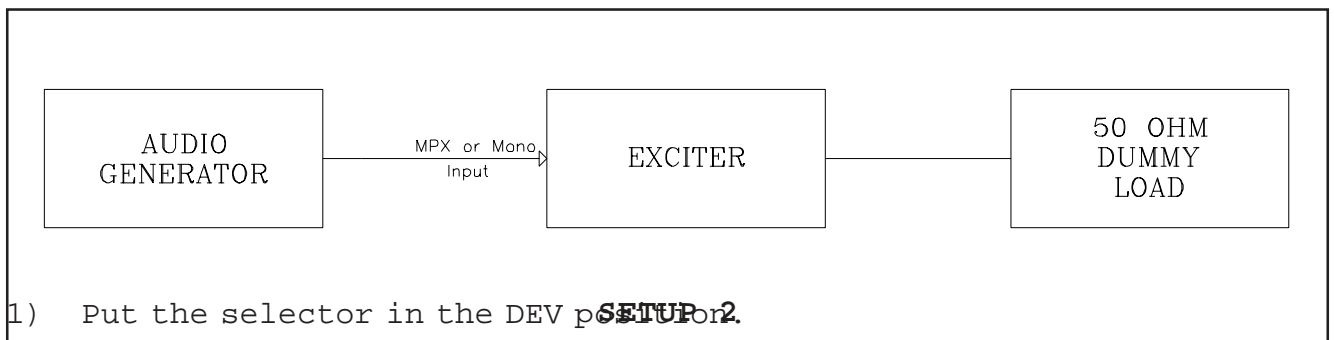
1) It's advisable to start this procedure with the operating frequency set to 87.50MHz. When locked to this frequency, the PWR ADJ control should be adjusted for an output power of 10W.

Now, with no further adjustment of the PWR ADJ control, change the operating frequency in steps of 4-5 MHz, ensuring that the output power remains constant at 10W.

2) Now short circuit the central conductor of the INTERLOCK input to ground and the output power should drop instantly to zero.

Removing the short should cause the power output to return, gradually, to its previous level.

Deviation reading check



1) Put the selector in the DEV position. **SETUP 2.**

Connect a low-distortion audio generator to the MONO and/or MPX inputs (4-5 Fig.1A and 10 Fig.2B), as shown on the SETUP 2.

Inject a 400 Hz tone at a level of 0dBm (775mV RMS = 2.2Vpp on the 600 Ohm impedance).

Check that the deviation reading is 100% (or 75 KHz).

Connection of an External Stereophonic Source

To execute this operation see as reference SETUP3.

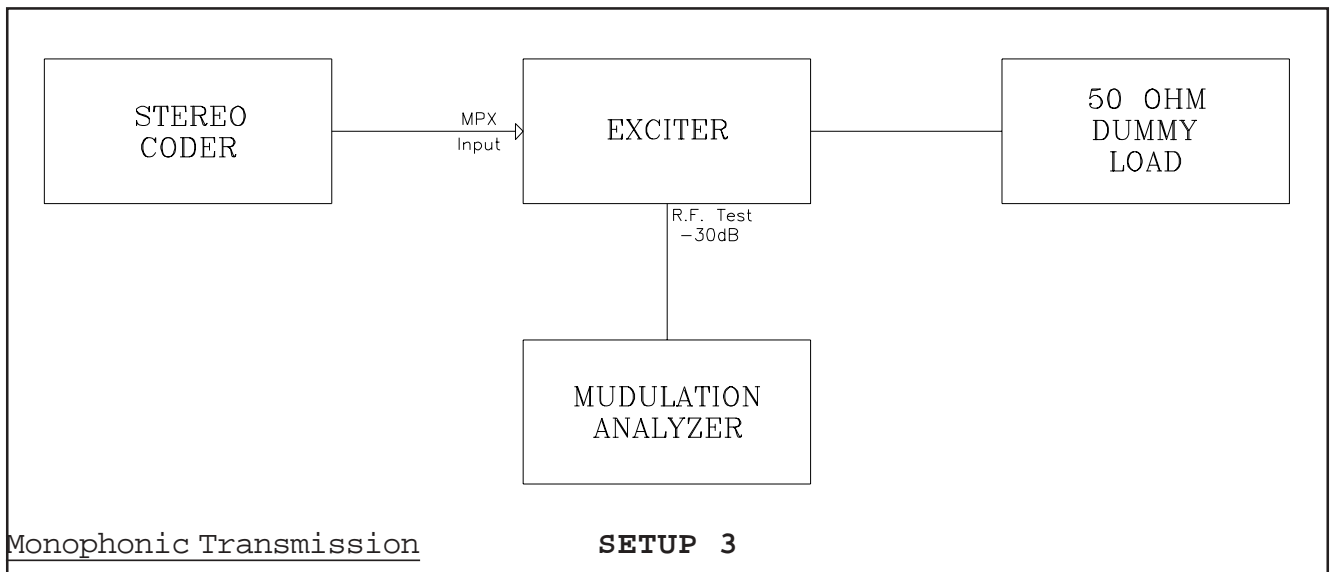
1) Connect the stereo source's output to the MPX input of the unit (5 Fig.1A or 10 Fig.2B).

2) Adjust the stereo encoder to obtain just the 19 KHz subcarrier output (without pre-emphasis) and ensure the total absence of signals on the left and right inputs of the encoder.

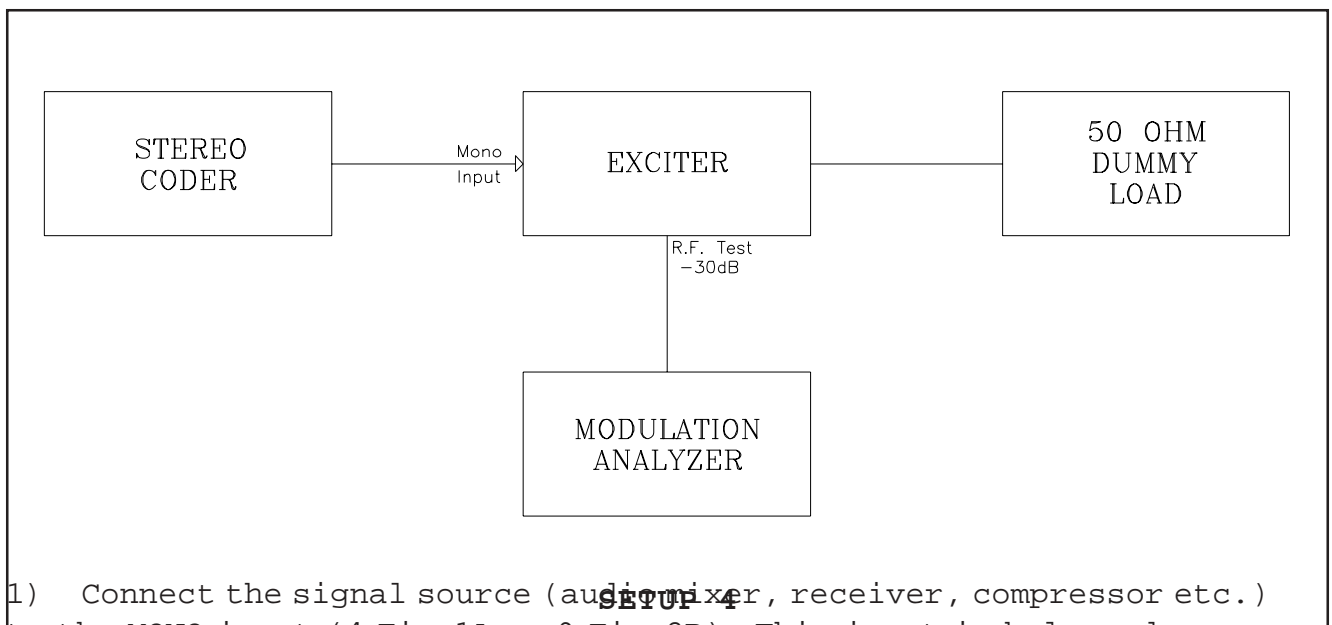
3) Adjust the output level of the encoder to obtain the correct level (-20dB under the carrier) as displayed on the F.A.M. Modulation Analyzer connected on the R.F. TEST -30dB of the TEX20-N.V..

4) Inject audio signals into the left and right inputs of the encoder and adjust the sensitivity of the input to obtain a peak reading of MAX=75KHz with both channels enabled.

5) Disconnect right and left channels on the encoder and verify that the reading is now of about 7.5 KHz.



Before to execute this operation see as reference SETUP4.



1) Connect the signal source (audio mixer, receiver, compressor etc.) to the MONO input (4 Fig.1A or 9 Fig.2B). This input is balanced for USA version and unbalanced for EUROPA version.

2) Adjust INPUT LEVEL trimmer (3 Fig.1A or 8 Fig.2B) on the desired level.

3) Adjust the signal level of the equipment connected to the TEX20-N.V. (with the audio signal present) for a peak reading of MAX DEV=75KHz.

Note that international standards permit a maximum deviation (DEV MAX) of 75 KHz for frequency modulated, radiophones transmissions.

Exceeding this limit will only result in the degradation of signal

quality.

In the case of mono transmissions, the MPX input is available for frequencies between 40KHz and 100KHz ie. subcarriers for SCA, RDS etc., with a sensitivity of 0 dBm ($775\text{mV}_{\text{rms}} = 2.2\text{V}_{\text{pp}}$, 600 Ohm) for a deviation of 75KHz.

CHAPTER 4

MAINTENANCE

4.1 SAFETY REQUIREMENTS

WARNING WARNING WARNING WARNING WARNING WARNING WARNING WARNING

When the exciter is operational, removing the top cover will expose lethal voltages on the line voltage selector and heavy currents on the power supply filter terminals and power transistors.

Use insulated tools for any type of maintenance work and do not touch any internal components when the exciter is switched on.

Ensure that the exciter is disconnected from the line supply before carrying out any maintenance work.

MAINTENANCE LEVEL 1

4.2 ROUTINE MAINTENANCE

The only routine maintenance required by the TEX20-N.V. is the periodic replacement of the cooling fan and the removal of accumulated dust.

The period between such action will depend on ambient operating conditions such as temperature, air-borne dust levels and humidity.

It is advisable to check the unit every 6 months and to replace noisy or worn fans. Fans should be replaced as a matter of course after no more than 18 months of operation.

MAINTENANCE LEVEL 2

4.3 RF POWER AMPLIFIER MODULE REPLACEMENT

- 1) Open the top cover of the unit.
- 2) Disconnect connector CN1 on the CON-PA card, near the front panel.
- 3) Unscrew the three fixing screws situated on the lower part of the bottom of the equipment.
- 4) Disconnect the screened cable connecting the RF Power Amplifier module to the Main Card.
- 5) Slide out the RF Power Amplifier.

4.4 MAIN CARD REPLACEMENT

- 1) Open the top cover of the unit.
- 2) Disconnect connectors CN1 and CN2.
- 3) Disconnect the CN4 connector of the screened cable connecting the

Main Card to the RF Power Amplifier module.

- 4) Unscrew the nuts fixing the card.
- 5) Remove the card upwards with great care.

4.5 EURO AUDIO INPUT CARD REPLACEMENT

- 1) Open the top cover of the unit.
- 2) Disconnect connectors CN3, CN4 and CN5 placed on the card.
- 3) Unscrew the nuts of the two connectors BNC (MONO and MPX) situated on the front panel (only for EUROPA version).
- 4) Unscrew the two fixing screws of the selectors (PWR/DEV and FWD/REF), situated on the rear panel.
- 5) Slide the card out.

4.6 USA AUDIO INPUT CARD REPLACEMENT (only for USA version)

- 1) Open the top cover of the unit.
- 2) Disconnect connectors CN6 and CN7 placed on the card.
- 3) Unscrew the nuts of the BNC connectors (MPX, SCA1, SCA2 and SCA3) situated on the rear panel.
- 4) Unscrew the two fixing screws of the Telemetry socket, situated on the rear panel.
- 5) Slide the card out.

4.7 POWER SUPPLY MODULE REPLACEMENT

- 1) Open the top cover of the unit.
- 2) Unscrew the three fixing screws situated on the lower part of the equipment.
- 3) Disconnect connector CN1 from the Power Supply.
- 4) Take careful note of the position of the various colored connecting wires (faston).
- 5) Disconnect the INTERLOCK faston connector situated on the power supply.

- 6) Disconnect fastons JP1 and JP2 situated on the bridge rectifier.
- 7) Carefully lift out the power supply.

4.8 FREQUENCY SELECTOR (CONTRAVES) CARD REPLACEMENT

- 1) Open the top cover of the unit.
- 2) Disconnect connector CN1 situated on the Contraves card.
- 3) Unscrew the two fixing screws on the front panel.
- 4) Remove the Contraves card.

4.9 FAN REPLACEMENT

- 1) Open the top cover of the unit.
- 2) For an easy replacement, remove R.F. Amplifier and Power Supply.
- 3) Desolder the power supply wires of the fan (for 220V version) or disconnect fastons on the diodes bridge (for 24V version).
- 4) Unscrew the four fixing screws of the fan situated on the rear panel.
- 5) Remove the fan from the equipment.

4.10 TRANSFORMER REPLACEMENT

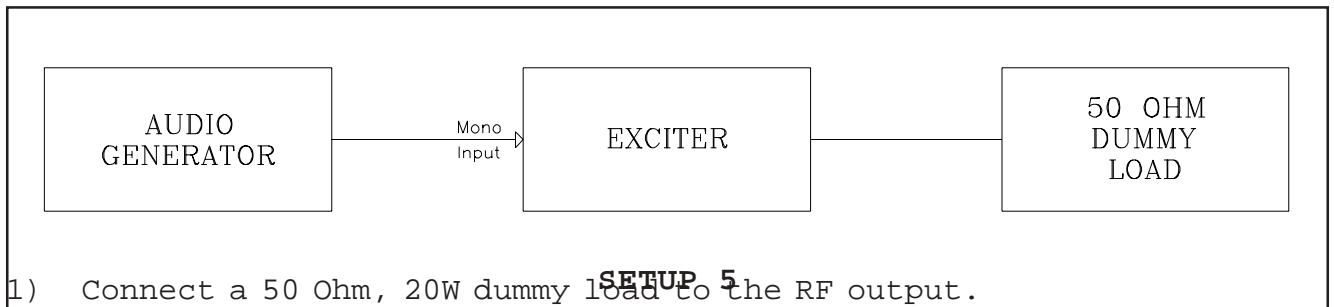
- 1) Open the top cover of the unit.
- 2) Cut the ties of the wires connecting the transformer to VDE socket.
- 3) Desolder the power supply wires of the transformer from VDE socket.
- 4) Disconnect JP1 and JP2 fastons on the diode bridge.
- 5) Unscrew the fixing nut of the transformer situated on its central kingbolt.
- 5) Remove the transformer from the equipment.

CHAPTER 5

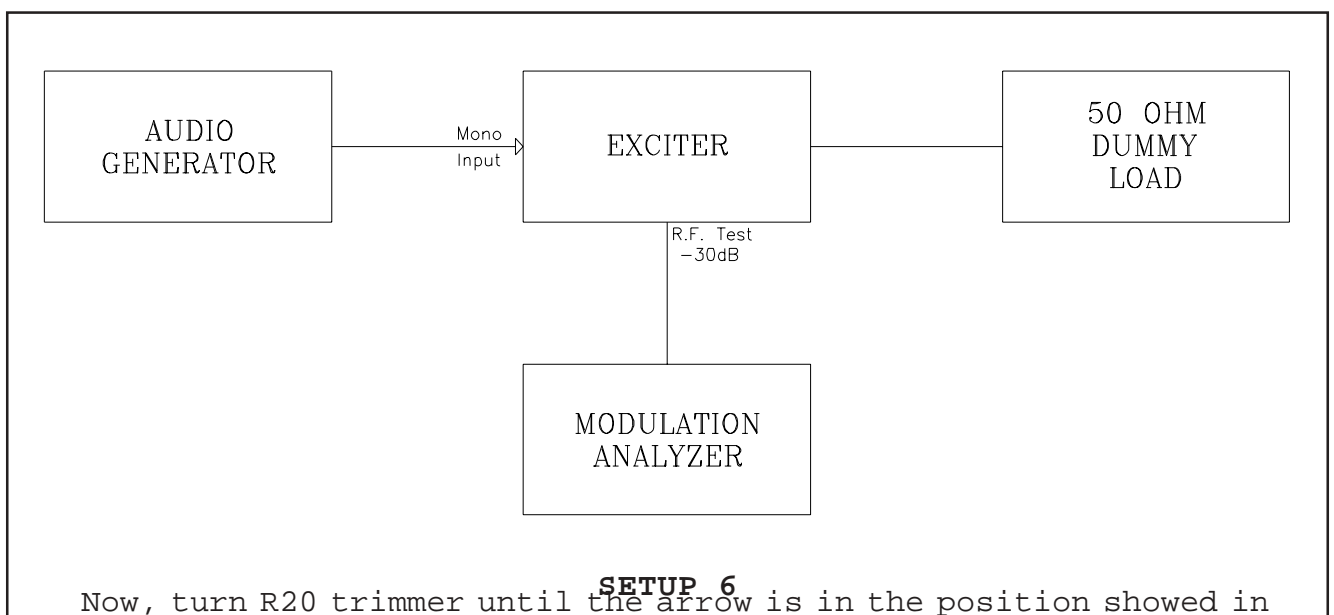
CALIBRATION PROCEDURE

5.1 MAIN CARD CALIBRATION

After having replaced the Main Card and relevant connectors, carry out the following procedure (see SETUP5):



- 1) Connect a 50 Ohm, 20W dummy load to the RF output.
- 2) Connect an audio generator to the MONO input.
- 3) Turn INPUT LEVEL trimmer completely clockwise to obtain maximum sensibility (0dBm). Select 98MHz frequency and switch on the equipment.
- 4) Connect the FAM or other modulation analyzer to the -30dB tap (7 Fig.2A and 2B).
- 5) Inject a 400Hz, 0dBm (775mVrms, 2.2Vpp) tone into the MONO input.
- 6) For EUROPA version, connect a coaxial cable to BNC connector with inner connected to MONO(+) and the braided wire to MONO(-).



Now, turn R20 trimmer until the arrow is in the position showed in Fig.4.

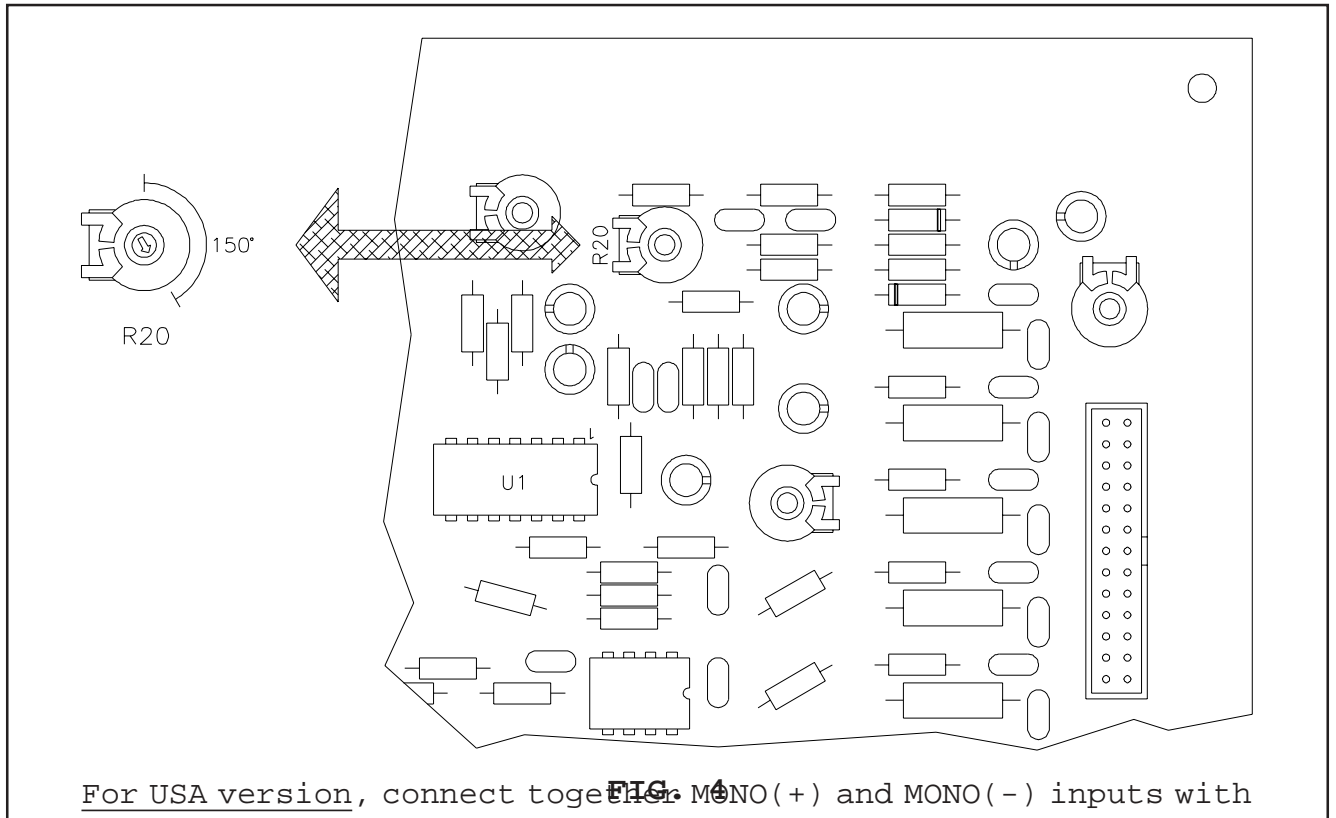
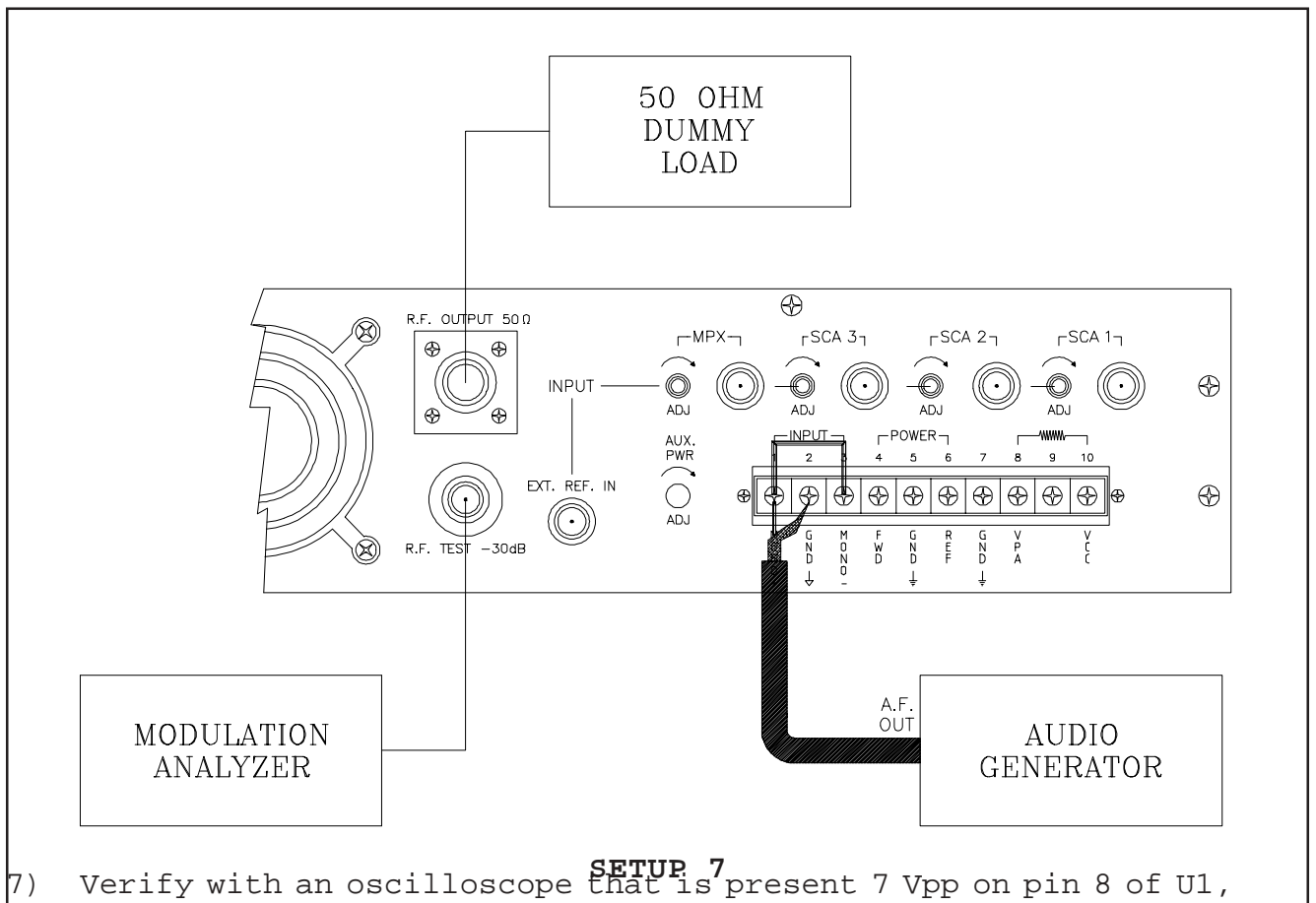


FIG. 6
 For USA version, connect together MONO(+) and MONO(-) inputs with a coaxial cable and connect its braided wire to ground. Now, through an oscilloscope on pin 7 of U1 and ground, adjust R20 trimmer to obtain minimum signal value (SETUP7).



SETUP 7
 7) Verify with an oscilloscope that is present 7 Vpp on pin 8 of U1, if not, adjust R23 trimmer.

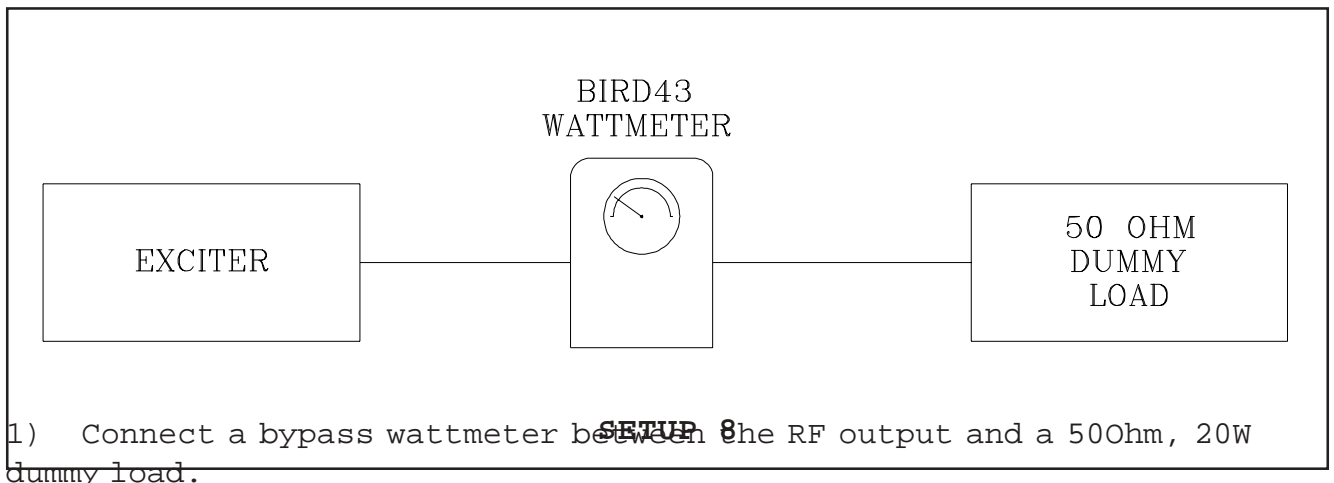
- 8) Verify on the meter that is present a reading of 75KHz, if not, adjust R33 trimmer.
- 9) Connect an audio generator to the MPX input.
- 10) Inject a 400Hz, 0dBm (775mVrms, 2.2Vpp) tone into the MPX input.
- 11) Configure the FAM to measure deviation with the 30Hz-200KHz/FM/P+ filters and check that it is 75KHz.
If not, adjust trimmer R35 accordingly.
Then, remove the pilot tone with the switch, configure the FAM to measure distortion and adjust trimmer R34 to minimize distortion.
- 12) Check that the deviation remains constant right across the band and, if not, adjust trimmer R36 on the Main Card, accordingly.
- 13) Repeat steps 11) and 12) to obtain the best adjustment on all frequency range.

N.B. The audio generator used in these tests must have a distortion figure better than 0.001%.

Perform this test at the operating frequency of the exciter.

5.2 RF POWER AMPLIFIER MODULE CALIBRATION

After having replaced the amplifier, carry out the following procedure (see SETUP8):



1) Connect a bypass wattmeter between the RF output and a 50ohm, 20W dummy load.

2) Rotate the PWR ADJ trimmer anti-clockwise (min. output power), switch on the exciter and set the frequency to 98.00 MHz. Wait for the PLL to lock and the power output to be enabled.

3) Rotate the PWR ADJ trimmer clockwise (6 Fig.1A and 4 Fig.1B) to obtain maximum power output.

4) Take a reading of the output power. If this is not 20W, adjust trimmer R1 on the Power Supply card accordingly.

- 5) Take the same reading from the analog meter on the TEX20-N.V., selecting PWR FWD. Adjust trimmer R4 on the EURO Audio Input card for a meter reading of 20W.
- 6) Rotate the PWR ADJ trimmer anticlockwise to obtain an output power reading of 5W. Now, disconnect the dummy load from exciter's R.F. output.
- 7) Verify the same reading on TEX20-NV's meter, selecting a FWD PWR reading through relative selectors placed on the front panel; if the reading on the meter is different from 5W reads on wattmeter, adjust R5 trimmer placed on the EURO Audio Input card.
- 8) Reconnect the dummy load and turn the PWR ADJ trimmer clockwise until the output power is once more 20W.

5.3 POWER SUPPLY CALIBRATION

The only calibration procedure required in the event of Power Supply replacement is that of the RF Power Amplifier from step (1) to step (8).

5.4 EURO AUDIO INPUT CARD CALIBRATION

The only calibration procedure required in the event of EURO Audio Input card replacement is that of the RF Power Amplifier from step (5) to step (8).

5.5 USA AUDIO INPUT CARD CALIBRATION

No calibration is required after the replacement of this card.

5.6 FREQUENCY SELECTOR CARD (CONTRAVES) CALIBRATION

No calibration is required after the replacement of this card.

APPENDIX A
CIRCUIT
DIAGRAMS, LAYOUTS AND BILLS OF MATERIAL

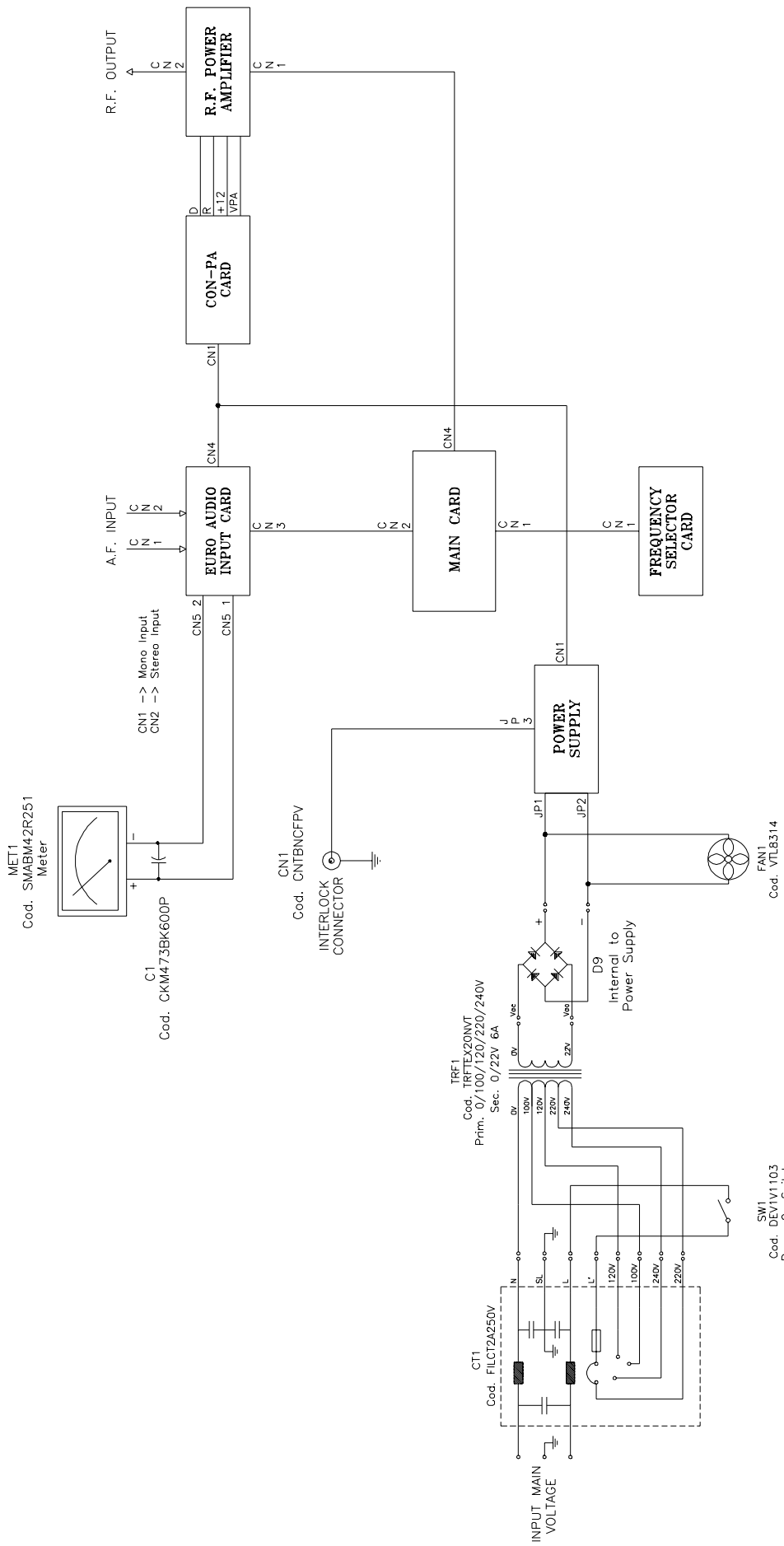
This section contains circuit diagrams, layouts and bills of material of the modules which composing the equipment.
For more information about each module see as reference Section 2.

APPENDICE A
SCHEMI
ELETRICI, PIANI DI MONTAGGIO E LISTE COMPONENTI

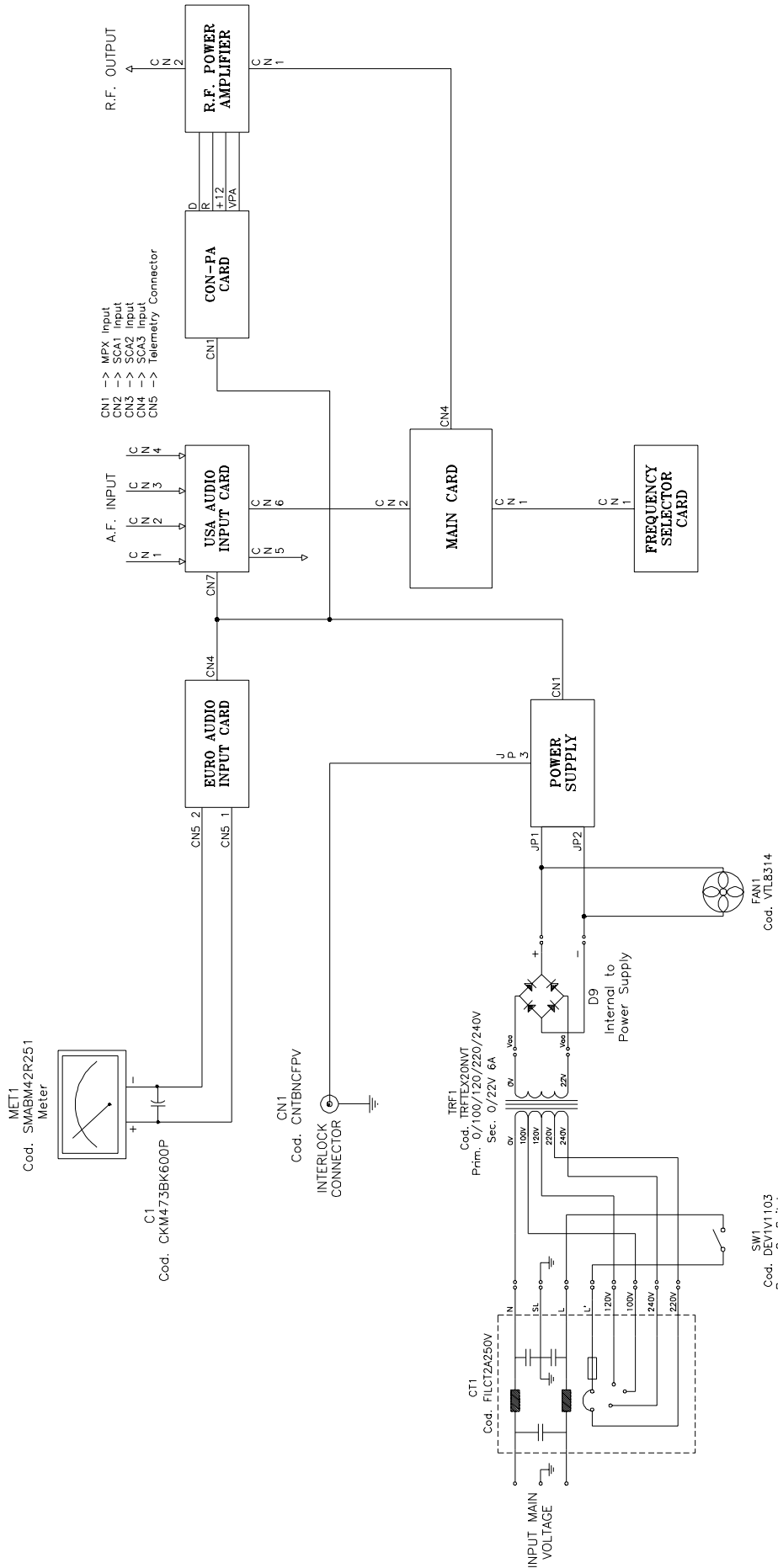
Questo capitolo contiene gli schemi elettrici, i piani di montaggio e le liste componenti delle schede che compongono la macchina.
Per ulteriori informazioni riguardanti le singole schede vedere come riferimento il Capitolo 2.

WIRING DIAGRAM

- | | | |
|---|--|----------------|
| 1 | <i>Exciter Wiring Diagram ("EUROPA" Version)</i> | <i>Pag. 49</i> |
| 2 | <i>Exciter Wiring Diagram ("USA" Version)</i> | <i>Pag. 50</i> |



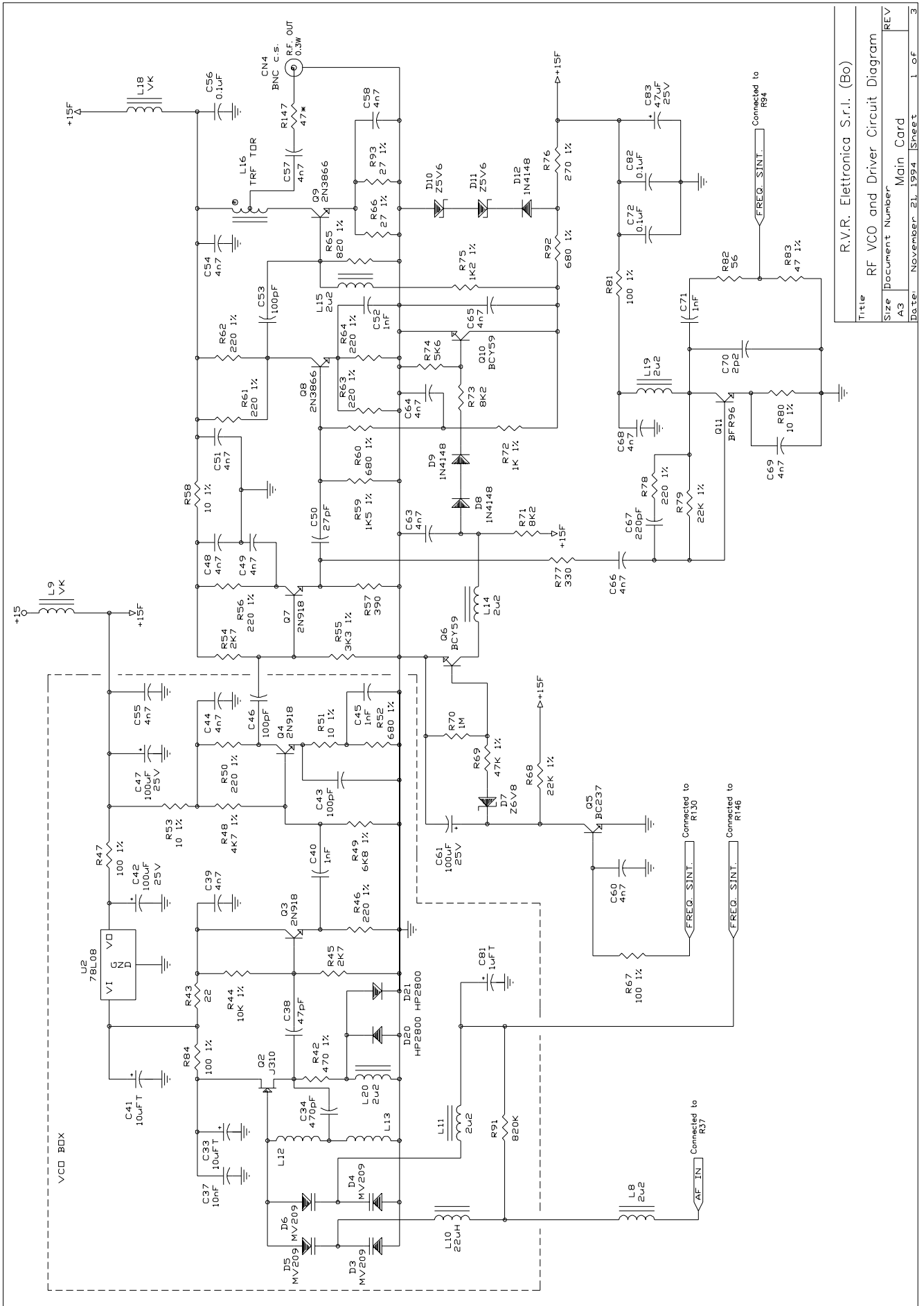
EXCITER WIRING DIAGRAM ("EUROPA" VERSION)
DIAGRAMMA DELLE CONNESSIONI DELL'ECCITATORE (VERSIONE "EUROPA")



EXCITER WIRING DIAGRAM ("USA" VERSION)
DIAGRAMMA DELLE CONNESIONI DELL'ECCITATORE (VERSIONE "USA")

MAIN CARD

1	V.C.O. & Driver Section Circuit Diagram	Pag. 52
2	V.C.O. & Driver Section Bill of Materials	Pag. 53
3	Audio Section Circuit Diagram	Pag. 56
4	Audio Section Bill of Materials	Pag. 57
5	Synthesis Section Circuit Diagram	Pag. 59
6	Synthesis Section Bill of Material	Pag. 60
7	Main Card Layout	Pag. 63



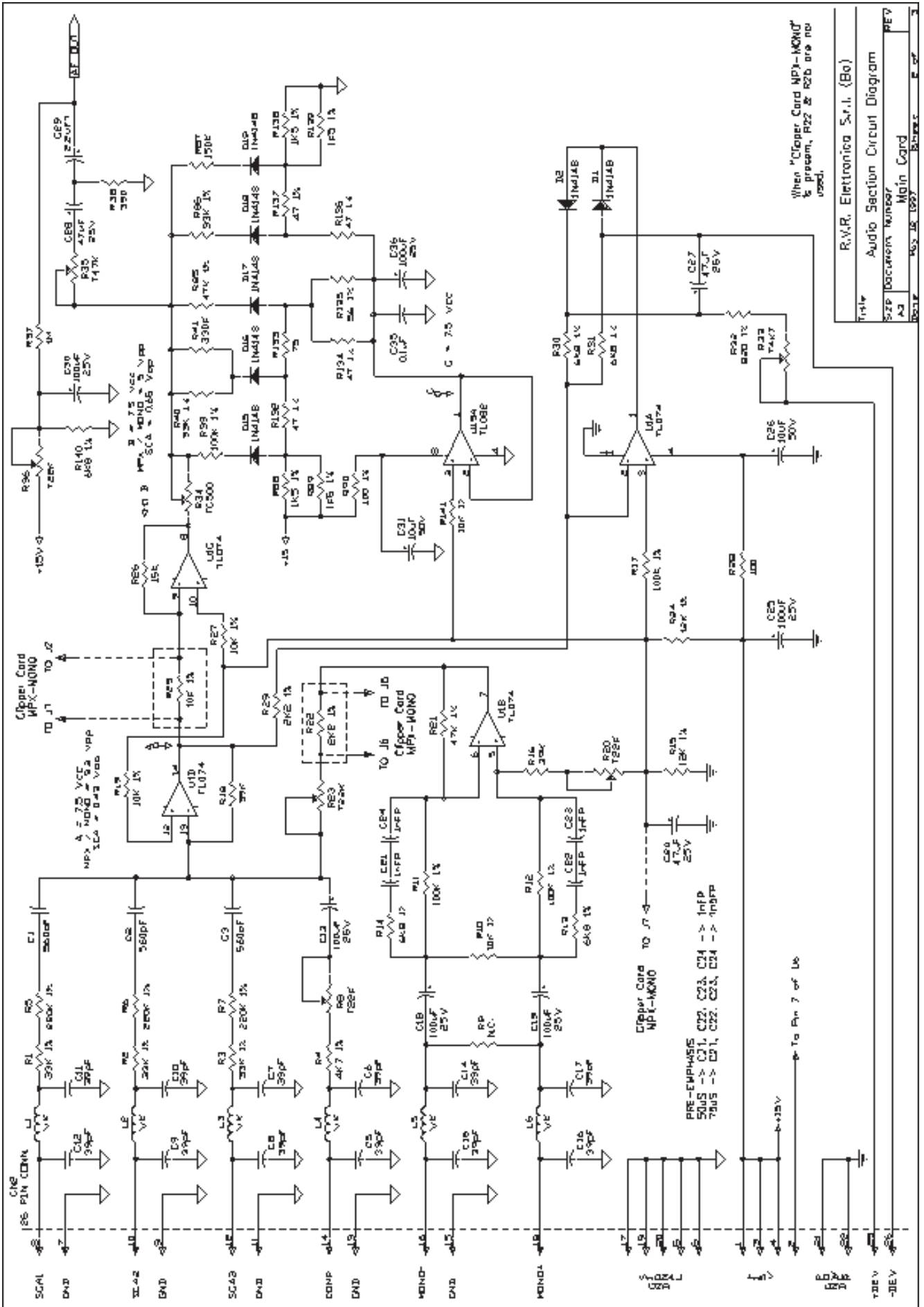
R.V.R. Elettronica S.r.l. (Bo)

Title	RF VCO and Driver Circuit Diagram
Size	Document Number
A3	Main Card
Date	November 21, 1994
Sheet	1 of 3

Item	Quantity	Reference Part	Description	Part Order Code
1	4	R51,R53, 10 1% R58,R80	RESISTOR 1/4W 1%	RSM1/4FH0010
2	1	R43 22	RESISTOR 1/4W 5%	RSC1/4JH0022
3	2	R66,R93 27 1%	RESISTOR 1/4W 1%	RSM1/4FH0027
4	1	R83 47 1%	RESISTOR 1/4W 1%	RSM1/4FH0047
5	1	R147 47*	RESISTOR 1/2W 5%	RSC1/2JH0047
6	1	R82 56	RESISTOR 1/4W 5%	RSC1/4JH0056
7	4	R47,R67, 100 1% R81,R84	RESISTOR 1/4W 1%	RSM1/4FH0100
8	8	R46,R50, 220 1% R56,R61, R62,R63, R64,R78	RESISTOR 1/4W 1%	RSM1/4FH0220
9	1	R76 270 1%	RESISTOR 1/4W 1%	RSM1/4FH0270
10	1	R77 330	RESISTOR 1/4W 5%	RSC1/4JH0330
11	1	R57 390	RESISTOR 1/4W 5%	RSC1/4JH0390
12	1	R42 470 1%	RESISTOR 1/4W 1%	RSM1/4FH0470
13	3	R52,R60,R92 680 1%	RESISTOR 1/4W 1%	RSM1/4FH0680
14	1	R65 820 1%	RESISTOR 1/4W 1%	RSM1/4FH0820
15	1	R72 1K 1%	RESISTOR 1/4W 1%	RSM1/4FK0001
16	1	R75 1K2 1%	RESISTOR 1/4W 1%	RSM1/4FK01,2
17	1	R59 1K5 1%	RESISTOR 1/4W 1%	RSC1/4FK01,5
18	2	R45,R54 2K7	RESISTOR 1/4W 5%	RSC1/4JK02,7
19	1	R55 3K3 1%	RESISTOR 1/4W 1%	RSM1/4FK03,3
20	1	R48 4K7 1%	RESISTOR 1/4W 1%	RSM1/4FK04,7
21	1	R74 5K6	RESISTOR 1/4W 5%	RSC1/4JK05,6
22	1	R49 6K8 1%	RESISTOR 1/4W 1%	RSM1/4FK06,8
23	2	R71,R73 8K2	RESISTOR 1/4W 5%	RSC1/4JK08,2
24	1	R44 10K 1%	RESISTOR 1/4W 1%	RSM1/4FK0010
25	2	R68,R79 22K 1%	RESISTOR 1/4W 1%	RSM1/4FK0022
26	1	R69 47K 1%	RESISTOR 1/4W 1%	RSM1/4FK0047
27	1	R91 820K	RESISTOR 1/4W 5%	RSC1/4JK0820

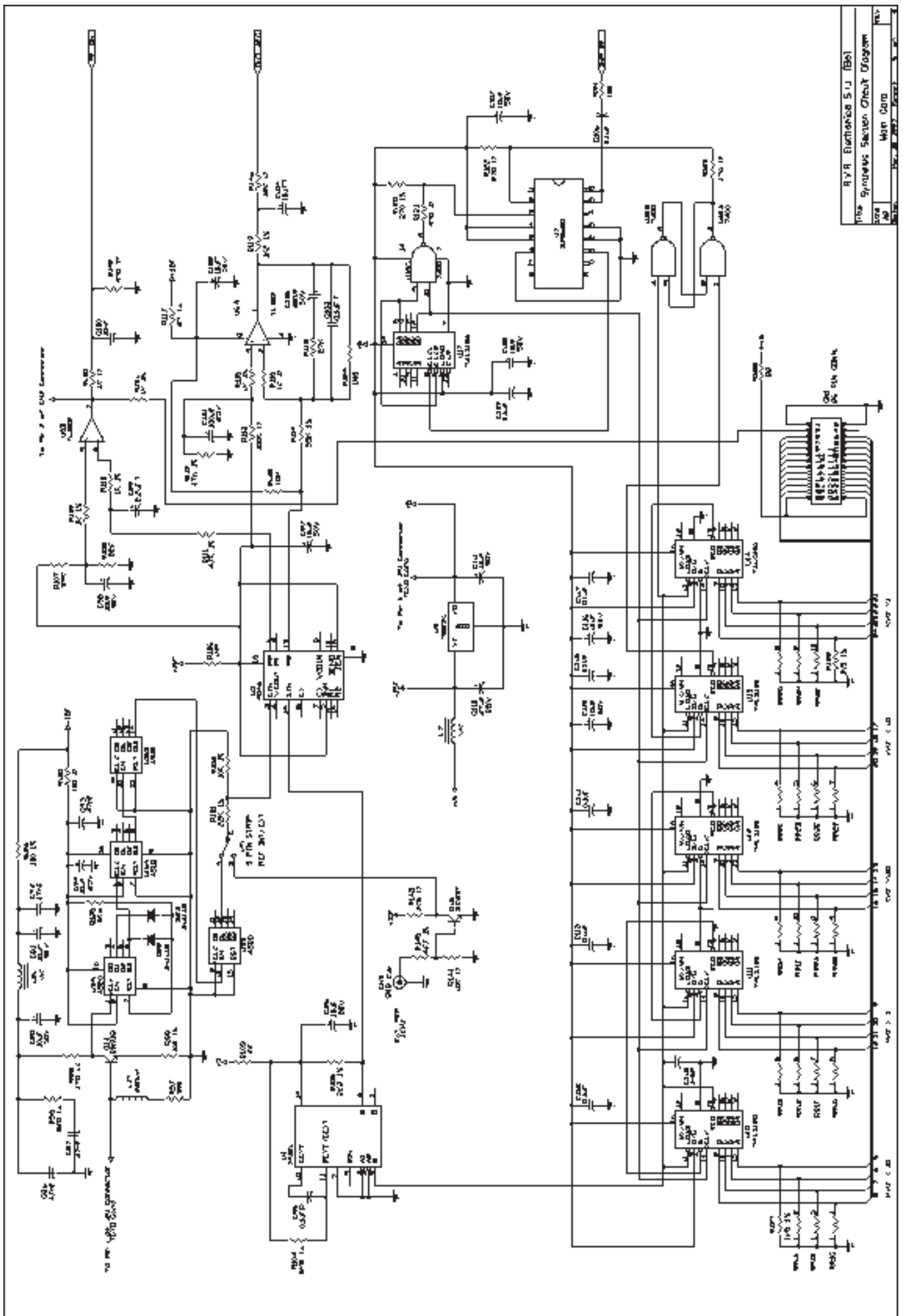
Item	Quantity	Reference Part	Description	Part Order Code
28	1	R70 1M	RESISTOR 1/4W 5%	RSC1/4JM0001
29	1	C70 2p2	CERAMIC CAPACITOR NP0	CKM2,2BJ600C
30	1	C50 27pF	CERAMIC CAPACITOR NP0	CKM270BJ600C
31	1	C38 47pF	CERAMIC CAPACITOR NP0	CKM470BJ600C
32	3	C43,C46,C53 100pF	CERAMIC CAPACITOR NP0	CKM101BJ600C
33	1	C67 220pF	CERAMIC CAPACITOR NP0	CKM221BK600C
34	1	C34 470pF	CERAMIC CAPACITOR	CKM471BK600P
35	4	C40,C45, 1nF C52,C71	CERAMIC CAPACITOR	CKM102BK600P
36	16	C39,C44, 4n7 C48,C49, C51,C54, C55,C57, C58,C60, C63,C64, C65,C66, C68,C69	CERAMIC CAPACITOR	CKM472BK600P
37	1	C37 10nF	CERAMIC CAPACITOR	CKM103BK600P
38	3	C56,C72,C82 0.1µF	CERAMIC CAPACITOR	CKM104BK600P
39	1	C81 1µFT	TANTALIUM CAPACITOR	CET105AM350
40	2	C33,C41 10µFT	TANTALIUM CAPACITOR	CET106AM350
41	1	C83 47µF	ELECTROLYTIC CAPACITOR	CEA476BM630
42	3	C42,C47,C61 100µF	ELECTROLYTIC CAPACITOR	CEA107BM350
43	6	L8,L11,L14, 2µ2 L15,L19,L20	RF CHOKE	IMP02U2A
44	1	L10 22µH	RF CHOKE	IMP22U0A
45	2	L9,L18 VK	RF CHOKE	IMPVK00A
46	2	L12,L13 IND COAX	COAX 75 OHM 9 CM	CAVRG179
47	1	L16 TOROIDE	TOROIDE DIA. 10 MM FTR10N	
48	1	CN4 BNC C.S.	CONN. BNC A STAMPATO	CNTBNCFCSD
49	3	D8,D9,D12 1N4148	SILICON DIODE	DIS1N4148
50	2	D20,D21 HP2800	HOT CARRIER DIODE	DHCBA481
51	4	D3,D4,D5,D6 MV209	VARICAP DIODE	DIVMV209
52	2	D10,D11 Z5V6	ZENER DIODE 5.6V 0.4W	DIZ5V60W4

Item	Quantity	Reference Part	Description	Part Order Code
53	1	D7 Z6V8	ZENER DIODE 6.8V 0.4W	DIZ6V80W4
54	1	Q5 BC237	NPN TRANSISTOR	TRNBC237
55	2	Q6, Q10 BCY59	NPN TRANSISTOR	TRNBCY59
56	3	Q3, Q4, Q7 2N918	NPN RF TRANSISTOR	TRN2N918
57	1	Q11 BFR96	NPN RF TRANSISTOR	TRNBFR96
58	2	Q8, Q9 2N3866	RF POWER TRANSISTOR	TRN2N3866
59	1	Q2 J310	FET TRANSISTOR	TRNJ310
60	1	U2 78L08	POS. STABILIZER 100mA	CIL78L08



Item	Quantity	Reference Part	Description	Part Order Code
1	4	R132,R134, R136,R137	47 1% RESISTOR 1/4W 1%	RSM1/4FH0047
2	1	R135	56 1% RESISTOR 1/4W 1%	RSM1/4FH0056
3	1	R133	75 RESISTOR 1/4W 5%	RSC1/4JH0075
4	1	R90	100 1% RESISTOR 1/4W 1%	RSM1/4FH0100
5	1	R28	100 RESISTOR 1/4W 5%	RSC1/4JH0100
6	1	R38	390 RESISTOR 1/4W 5%	RSC1/4JH0390
7	1	R32	820 1% RESISTOR 1/4W 1%	RSM1/4FH0820
8	4	R88,R89, R138,R139	1K5 1% RESISTOR 1/4W 1%	RSC1/4FK01,5
9	2	R22,R29	2K2 1% RESISTOR 1/4W 1%	RSC1/4FK02,2
10	1	R4	4K7 1% RESISTOR 1/4W 1%	RSM1/4FK04,7
11	5	R13,R14, R30,R31, R140	6K8 1% RESISTOR 1/4W 1%	RSM1/4FK06,8
12	5	R10,R19, R25,R27, R141	10K 1% RESISTOR 1/4W 1%	RSM1/4FK0010
13	2	R15,R24	12K 1% RESISTOR 1/4W 1%	RSM1/4FK0012
14	1	R26	15K RESISTOR 1/4W 5%	RSC1/4JK0015
15	5	R1,R2,R3, R40,R86	33K 1% RESISTOR 1/4W 1%	RSM1/4FK0033
16	2	R16,R18	39K RESISTOR 1/4W 5%	RSC1/4JK0039
17	2	R21,R85	47K 1% RESISTOR 1/4W 1%	RSM1/4FK0047
18	4	R11,R12, R17,R39	100K 1% RESISTOR 1/4W 1%	RSM1/4FH0100
19	1	R87	150K RESISTOR 1/4W 5%	RSC1/4JK0150
20	3	R5,R6,R7	220K 1% RESISTOR 1/4W 1%	RSM1/4FK0220
21	1	R41	330K RESISTOR 1/4W 5%	RSC1/4JK0330
22	1	R37	1M RESISTOR 1/4W 5%	RSC1/4JM0001
23	1	R34	TC500 TRIM. REG. VERT. CERMET RVTTCERVH0500	
24	1	R33	T4K7 TRIM. REG. VERT. 10mm RVTD10VK04,7	
25	4	R8,R20, R23,R36	T22K TRIM. REG. VERT. 10mm RVTD10VK0022	

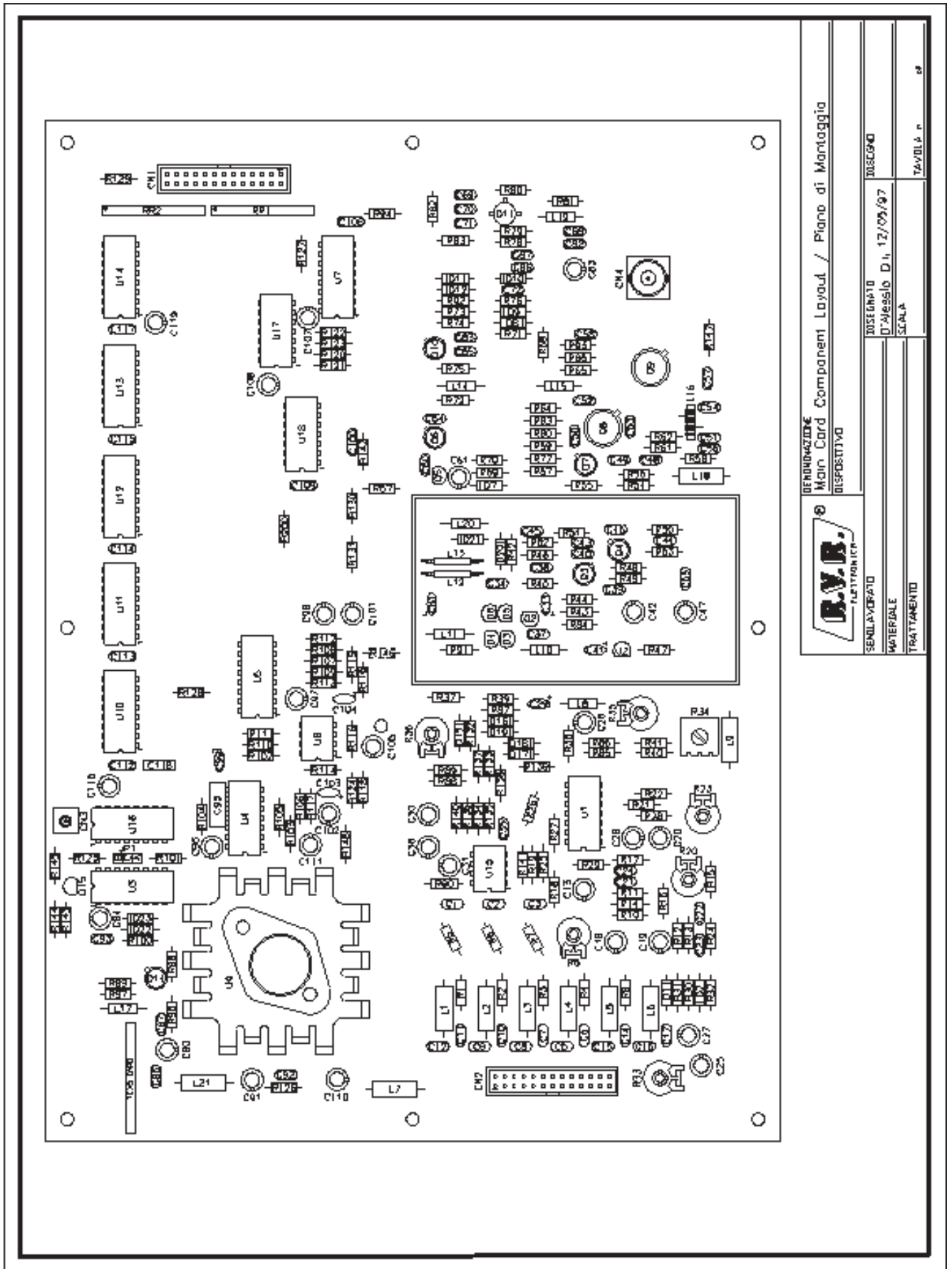
Item	Quantity	Reference Part	Description	Part Order Code
26	1	R35 T47K	TRIMMER REG. VERT. 10mm RVTD10VK0047	
27	12	C5,C6,C7, 39pF C8,C9,C10, C11,C12,C14, C15,C16,C17	CERAMIC CAPACITOR NP0	CKM390BJ600C
28	3	C1,C2,C3 560pF	CERAMIC CAPACITOR	CKM561BK600P
29	4	C21,C22, 1nFP C23,C24	POLIESTER CAPACITOR	CPE102BK161
30	1	C35 0.1µF	CERAMIC CAPACITOR	CKM104BK600P
31	1	C29 2.2UF	TANTALIUM CAPACITOR	CET225AM350
32	2	C26,C31 10µF	ELECTROLYTIC CAPACITOR	CEA106AM350
33	3	C20,C27,C28 47µF	ELECTROLYTIC CAPACITOR	CEA476BM630
34	6	C13,C18, 100µF C19,C25, C30,C36	ELECTROLYTIC CAPACITOR	CEA107BM350
35	6	L1,L2,L3, VK L4,L5,L6	RF CHOKE	IMPVK00A
36	1	CN2 26P CONN. CONN. M 2*13 P 2.54		CNTMCSFC26P
37	7	D1,D2,D15, 1N4148 D16,D17, D18,D19	SILICON DIODE	DIS1N4148
38	1	U15 TL082	DOUBLE OP. AMP.	CILTTL082
39	1	U1 TL074	QUAD OP. AMP.	CILTTL074
40	1	R9 N.C.	NOT CONNECTED	




Item	Quantity	Reference Part	Description	Part Order Code
1	2	R103,R128 22	RESISTOR 1/4W 5%	RSC1/4JH0022
2	1	R117 27 1%	RESISTOR 1/4W 1%	RSM1/4FH0027
3	3	R99,R100, 100 1% R126	RESISTOR 1/4W 1%	RSM1/4FH0100
4	1	R94 180	RESISTOR 1/4W 5%	RSC1/4JH0180
5	2	R120,R122 270 1%	RESISTOR 1/4W 1%	RSM1/4FH0270
6	1	R97 390	RESISTOR 1/4W 5%	RSC1/4JH0390
7	4	R98,R121, 470 1% R123,R142	RESISTOR 1/4W 1%	RSM1/4FH0470
8	1	R96 820 1%	RESISTOR 1/4W 1%	RSM1/4FH0820
9	7	R109,R110, 1K 1% R115,R116, R130,R131, R200	RESISTOR 1/4W 1%	RSM1/4FK0001
10	1	R119 1K2 1%	RESISTOR 1/4W 1%	RSM1/4FK01,2
11	3	R127,R129, 1K5 1% R143	RESISTOR 1/4W 1%	RSC1/4FK01,5
12	1	R105 2K2 1%	RESISTOR 1/4W 1%	RSC1/4FK02,2
13	1	R145 4K7 1%	RESISTOR 1/4W 1%	RSM1/4FK04,7
14	1	R125 5K6	RESISTOR 1/4W 5%	RSC1/4JK05,6
15	1	R104 6K8 1%	RESISTOR 1/4W 1%	RSM1/4FK06,8
16	2	R102,R144 10K 1%	RESISTOR 1/4W 1%	RSM1/4FK0010
17	1	R146 12K 1%	RESISTOR 1/4W 1%	RSM1/4FK0012
18	1	R101 22K 1%	RESISTOR 1/4W 1%	RSM1/4FK0022
19	1	R118 27K	RESISTOR 1/4W 5%	RSC1/4JK0027
20	1	R114 33K 1%	RESISTOR 1/4W 1%	RSM1/4FK0033
21	1	R107 39K	RESISTOR 1/4W 5%	RSC1/4JK0039
22	2	R111,R112 47K 1%	RESISTOR 1/4W 1%	RSM1/4FK0047
23	1	R108 82K	RESISTOR 1/4W 5%	RSC1/4JK0082
24	1	R113 100K 1%	RESISTOR 1/4W 1%	RSM1/4FH0100
25	1	R124 1M8	RESISTOR 1/4W 5%	RSC1/4JM01,8
26	1	R106 1M9	RESISTOR 1/4W 5%	RSC1/4JM01,9

Item	Quantity	Reference Part	Description	Part Order Code
27	1	R148 10M	RESISTOR 1/4W 5%	RSC1/4JM0010
28	2	RR1,RR2 RR1K5	RESISTOR NETWORK	RRR1/4JK01,5
29	1	C118 1n5P	POLIESTER CAPACITOR	CPE152BK101
30	1	C100 10nF	CERAMIC CAPACITOR	CKM103BK600P
31	4	C86,C87, 47nF C92,C93	CERAMIC CAPACITOR	CKM473BK600P
32	7	C106,C109, 0.1µF C112,C113, C114,C115, C117	CERAMIC CAPACITOR	CKM104BK600P
33	1	C95 0.1µFP	POLIESTER CAPACITOR	CPE104DK101
34	1	C103 0.1µFT	TANTALIUM CAPACITOR	CET104AM350
35	1	C99 2.2µFT	TANTALIUM CAPACITOR	CET225AM350
36	12	C90,C91, 10µF C94,C96, C97,C98, C102,C107, C108,C111, C116,C119	ELECTROLYTIC CAPACITOR	CEA106AM350
37	1	C104 10µFT	TANTALIUM CAPACITOR	CET106AM350
38	1	C105 22µF	ELECTROLYTIC CAPACITOR	CEA226BM350
39	1	C110 47µF	ELECTROLYTIC CAPACITOR	CEA476BM630
40	1	C101 100µF	ELECTROLYTIC CAPACITOR	CEA107BM350
41	1	L17 220µH	RF CHOKE	IMP220UA
42	2	L7,L21 VK	RF CHOKE	IMPVK00A
43	1	JP1 3 PIN STRIP	STRIP M P 2.54 3 PIN	CNTSTRIPMCS
44	1	J1 2 PIN JUMP	MINIJUMPER P 2.54	MINIJUMPER
45	1	CN1 26 P CONN.	CONN. M 2*13 P 2.54	CNTMCSFC26P
46	1	CN3 SMB C.S.	CONN. SMB A STAMPATO	CNTSMBMCS
47	2	D22,D23 1N4148	SILICON DIODE	DIS1N4148
48	1	U9 7805K	POS. STABILIZER 1.5A	CIL7805K
49	1	Q15 BC237	NPN TRANSISTOR	TRNBC237
50	1	Q14 2N918	NPN RF TRANSISTOR	TRN2N918
51	1	U6 TL082	DOUBLE OP. AMP.	CILTLO82

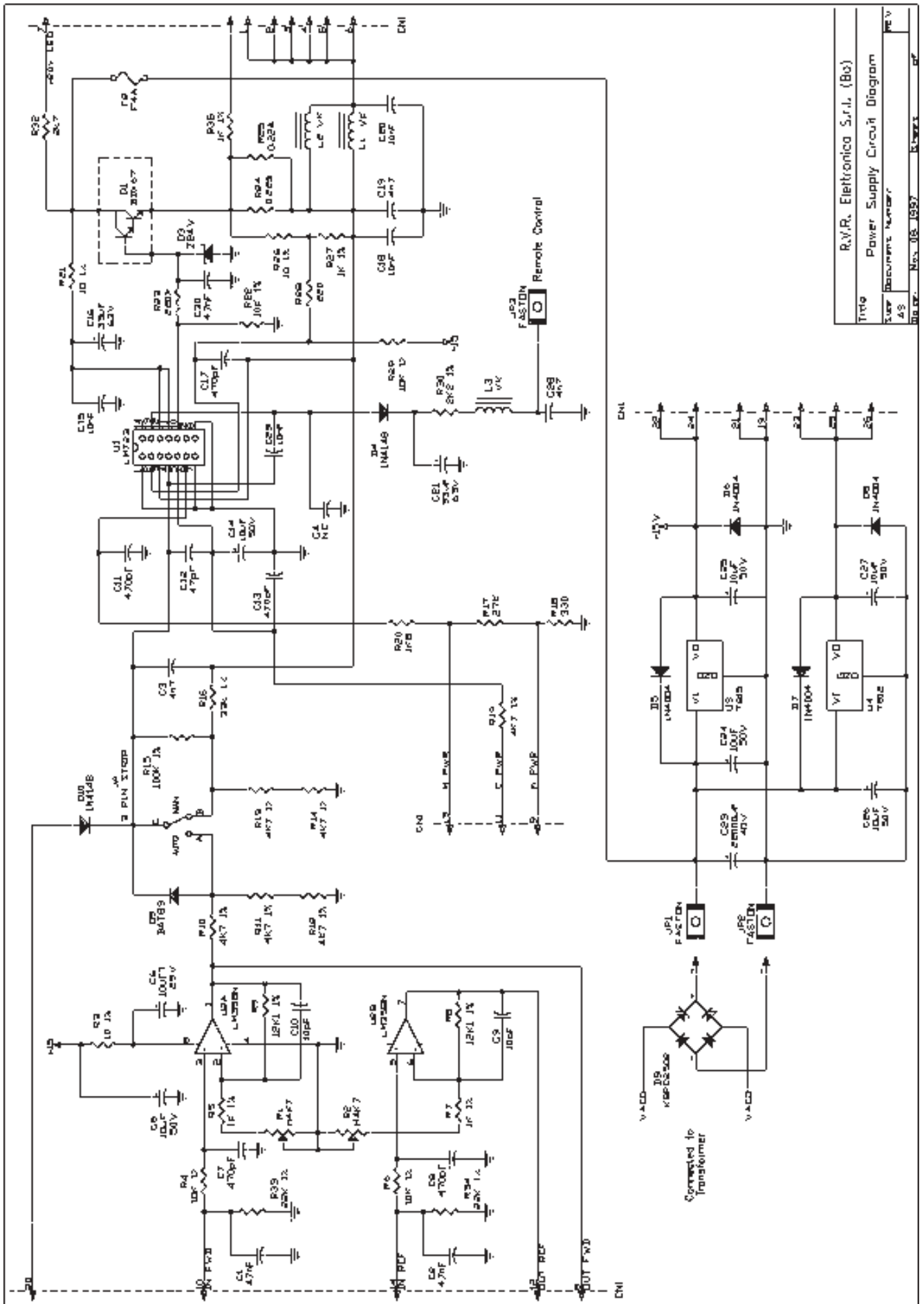
Item	Quantity	Reference Part	Description	Part Order Code
52	1 U7	SP8680	ECL DIVIDER	CIDSP8680B
53	1 U5	4046	CMOS PHASE COMPARATOR	CID4046
54	1 U16	4518	CMOS BCD DIVIDER	CID4518
55	1 U3	4520	CMOS BIN DIVIDER	CID4520
56	1 U18	7400	TTL QUAD NAND	CID7400
57	1 U4	74121	TTL MONOSTABLE	CID74121
58	5 U10,U11, U12,U13,U14	74LS190	TTL BCD DIVIDER	CID74LS190
59	1 U17	74LS196	TTL LS DIVIDER	CID74LS196



	DENOMINAZIONE Main Card Component Layout / Piano di Montaggio	
	DISPOSITIVO	
SENSILAVORATO	INGEGNERATO D. Messilo D. I. 12/09/97	DISSEGNO
TRATTAMENTO	SCALA	TAVOLA n.

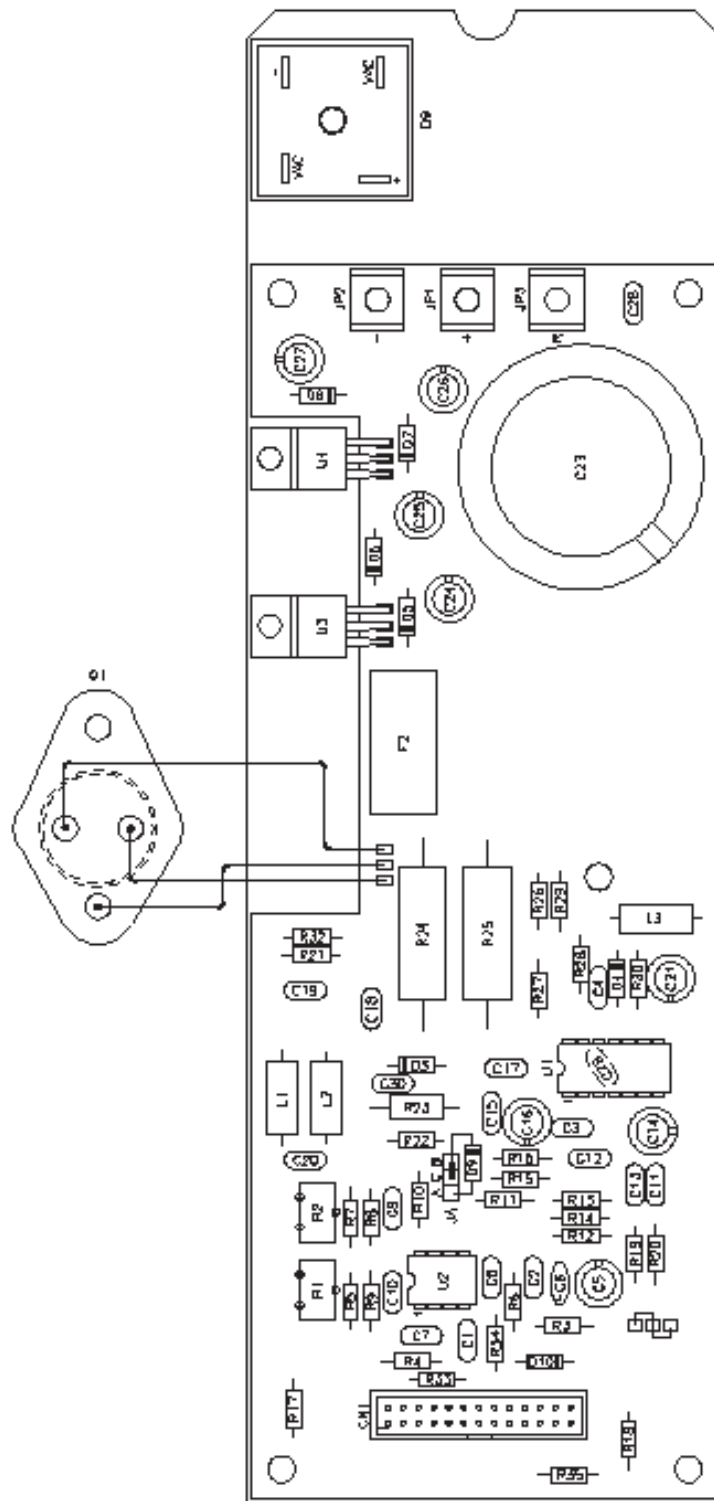
POWER SUPPLY

1	<i>Circuit Diagram</i>	<i>Pag. 65</i>
2	<i>Bill of Materials</i>	<i>Pag. 66</i>
3	<i>Layout</i>	<i>Pag. 68</i>



Item	Quantity	Reference Part	Description	Part Order Code
1	2	R24,R25 0.22 Ω	RESISTOR 5W	RAF005JH0,22
2	3	R3,R21,R26 10 1%	RESISTOR 1/4W 1%	RSM1/4FH0010
3	1	R28 220	RESISTOR 1/4W 5%	RSC1/4JH0220
4	1	R23 220*	RESISTOR 1/2W 5%	RSC1/2JH0220
5	1	R18 330	RESISTOR 1/4W 5%	RSC1/4JH0330
6	4	R5,R7,R27, R35 1K 1%	RESISTOR 1/4W 1%	RSM1/4FK0001
7	1	R20 1K8	RESISTOR 1/4W 5%	RSC1/4JK01,8
8	1	R30 2K2 1%	RESISTOR 1/4W 1%	RSC1/4FK02,2
9	1	R32 2K7	RESISTOR 1/4W 5%	RSC1/4JK02,7
10	6	R10,R11, R12,R13, R14,R19 4K7 1%	RESISTOR 1/4W 1%	RSM1/4FK04,7
11	4	R4,R6,R22, R29 10K 1%	RESISTOR 1/4W 1%	RSM1/4FK0010
12	2	R8,R9 12K1 1%	RESISTOR 1/4W 1%	RSM1/4FK12,1
13	2	R33,R34 22K 1%	RESISTOR 1/4W 1%	RSM1/4FK0022
14	1	R17 27K	RESISTOR 1/4W 5%	RSC1/4JK0027
15	1	R16 33K 1%	RESISTOR 1/4W 1%	RSM1/4FK0033
16	1	R15 100K 1%	RESISTOR 1/4W 1%	RSM1/4FH0100
17	2	R1,R2 H4K7	TRIM. REG. ORIZZ. 10mm	RVTD100K04,7
18	2	C9,C10 10pF	CERAMIC CAPACITOR NP0	CKM100BJ600C
19	1	C12 47pF	CERAMIC CAPACITOR NP0	CKM470BJ600C
20	5	C7,C8,C11, C13,C17 470pF	CERAMIC CAPACITOR	CKM471BK600P
21	1	C4 1nF	CERAMIC CAPACITOR	CKM102BK600P
22	3	C3,C19,C28 4n7	CERAMIC CAPACITOR	CKM472BK600P
23	4	C15,C18, C20,C29 10nF	CERAMIC CAPACITOR	CKM103BK600P
24	3	C1,C2,C30 47nF	CERAMIC CAPACITOR	CKM473BK600P
25	6	C5,C14,C24, C25,C26,C27 10 μ F	ELECTROLYTIC CAPACITOR	CEA106AM350
26	1	C6 10 μ FT	TANTALIUM CAPACITOR	CET106AM350

Item	Quantity	Reference Part	Description	Part Order Code
27	2	C16,C21	33 μ F ELECTROLYTIC CAPACITOR	CEA336BM350
28	1	C23	22000 μ F ELECTROLYTIC CAPACITOR	CEA229PM630
29	3	L1,L2,L3	VK RF CHOKE	IMPVK00A
30	1	F2	F4A FAST FUSIBLE	FUS5X20RP4
31	1	PF1	PFS520CS PORTA FUSIBILE 5*20 CS	PFS5X20CS
32	1	JA	3 PIN STRIP STRIP M P 2.54 3 PIN	CNTSTRIPMCS
33	3	JP1,JP2,JP3	FASTON CONN. FASTON M C.S.	CNTFSTMCSGR
34	2	J1,J2	2 PIN JUMP MINIJUMPER P 2.54	MINIJUMPER
35	1	CN1	26 P CONN. CONN. M 2*13 P 2.54	CNTMCSFC26P
36	2	D4,D10	1N4148 SILICON DIODE	DIS1N4148
37	1	D9	BAT83 HOT CARRIER DIODE	DHCBAT83
38	4	D5,D6,D7,D8	1N4004 SILICON DIODE 400V	DIS1N4004
39	1	D9	KBPC2502 DIODE BRIDGE 25A	PNRKBPC2502
40	1	D3	Z24V ZENER DIODE 24V 0.4W	DIZ24V0W4
41	1	U4	7812 POS. STABILIZER 1A	CIL7812P
42	1	U3	7815 POS. STABILIZER 1A	CIL7815P
43	1	U1	LM723 VAR. STABILIZER 100mA	CILLM723
44	1	Q1	BDX67 POWER TRANSISTOR	TRNBDX67
45	1	U2	LM358N DOUBLE OP. AMP.	CILLM358N

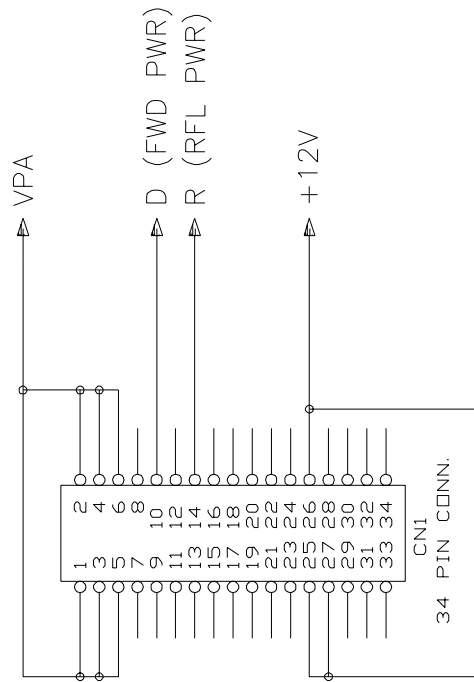


DENOMINAZIONE
Power Supply Component Layout / Piano di Montaggio
DISPOSITIVO

SEMILAVORATO	DISSEGNO	DISSEGNO
MATERIALE	D'Alessio D II	
TRATTAMENTO	SCALA	TAVOLA n. di

CON-PA CARD

1	<i>Circuit Diagram</i>	<i>Pag. 70</i>
2	<i>Bill of Materials</i>	<i>Pag. 71</i>
3	<i>Layout</i>	<i>Pag. 72</i>



R.V.R. Elettronica S.r.l. (Bo)		
Title CON-PA Card Circuit Diagram		
Size A4	Document Number	REV
Date:	Sheet	of

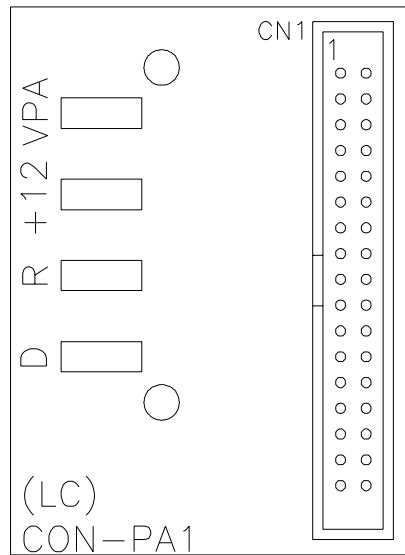
CON-PA Card Bill of Materials/Lista Componenti


Pag. 1

Item Quantity Reference Part Description

Part Order Code

1 1 CN1 34 P CONN. CONN. M 2*17 P 2.54 CNTMCSFC34P



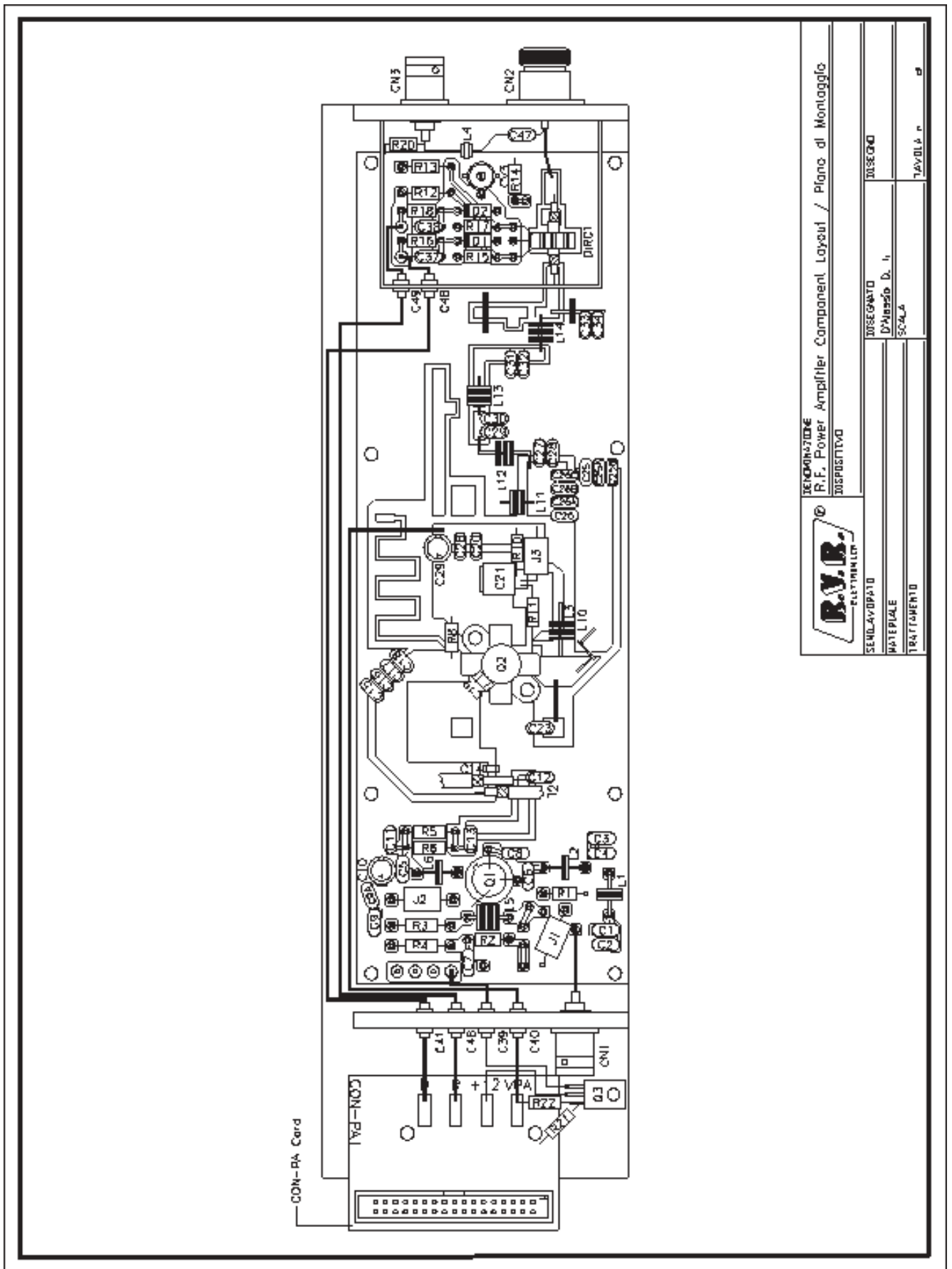
	DENOMINAZIONE	
	CON-PA Card Component Layout / Piano di Montaggio	
DISPOSITIVO		
SEMILAVORATO	DISEGNATO	DISEGNO
MATERIALE	D'Alessio D. U	
TRATTAMENTO	SCALA	TAVOLA n di


R.F. POWER AMPLIFIER

1	<i>Circuit Diagram</i>	<i>Pag. 74</i>
2	<i>Bill of Materials</i>	<i>Pag. 75</i>
3	<i>Layout</i>	<i>Pag. 77</i>

Item	Quantity	Reference Part	Description	Part Order Code
1	2	R3,R4	3.9** RESISTOR 1W	RSC001JH03,9
2	2	R5,R6	18** RESISTOR 1W	RSC001JH0018
3	3	R1,R8,R10 18#	RESISTOR 2W	RSC002JH0018
4	3	R15,R17,R20 47 1%	RESISTOR 1/4W 1%	RSM1/4FH0047
5	2	R12,R13 47*	RESISTOR 1/2W 5%	RSC1/2JH0047
6	2	R2,R11 270#	RESISTOR 2W 5%	RSC002JH0270
7	1	R22 820	RESISTOR 1/4W 5%	RSC1/4JH0820
8	1	R14 1K 1%	RESISTOR 1/4W 1%	RSM1/4FK0001
9	1	R21 1K5 1%	RESISTOR 1/4W 1%	RSC1/4FK01,5
10	2	R16,R18 3K3	RESISTOR 1/4W 5%	RSC1/4JK03,3
11	2	C36,C47 2p2	CERAMIC CAPACITOR NP0	CKM2,2BJ600C
12	2	C8,C34 6p8	CERAMIC CAPACITOR NP0	CKM6,8BJ600C
13	7	C5,C6,C7, 12pF C23,C27, C28,C33	CERAMIC CAPACITOR NP0	CKM120BJ600C
14	1	C12 15pF	CERAMIC CAPACITOR NP0	CKM150BJ600C
15	4	C26C,C26B, 18pF C26A,C26	CERAMIC CAPACITOR NP0	CKM180BJ600C
16	4	C29,C30, 27pF C31,C32	CERAMIC CAPACITOR NP0	CKM270BJ600C
17	3	C25B,C25A, 33pF C25	CERAMIC CAPACITOR NP0	CKM330BJ600C
18	2	C2,C11 39pF	CERAMIC CAPACITOR NP0	CKM390BJ600C
19	1	CV3 T40PF	TRIMMER CAPACITOR	CVF400BK
20	1	C3 47pF	CERAMIC CAPACITOR NP0	CKM470BJ600C
21	4	C15,C16, 82pF C17,C18	CERAMIC CAPACITOR NP0	CKM820BJ600C
22	1	C4 100pF	CERAMIC CAPACITOR NP0	CKM101BJ600C
23	1	C14 150pFHQ	HIGHT Q CAPACITOR	CHQ151AJ500
24	1	C22 680pFHQ	HIGHT Q CAPACITOR	CHQ681AJ500
25	1	C21 1nFUNELCO	SILVER MICA CAPACITOR	CSM102XK351
26	2	C9A,C20 0.1µF	CERAMIC CAPACITOR	CKM104BK600P

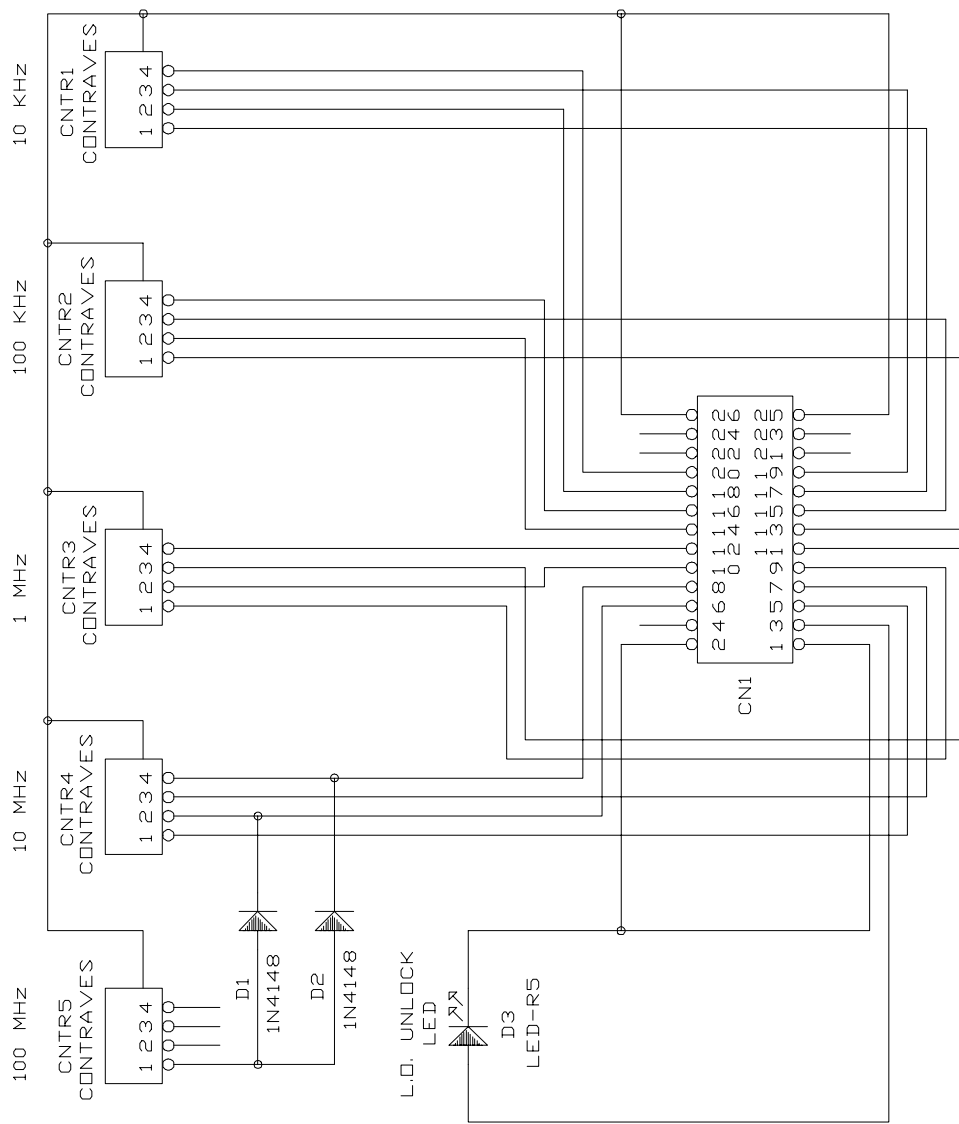
Item	Quantity	Reference Part	Description	Part Order Code
27	6	C39,C40, 1nFPAS C41,C46, C48,C49	CERAMIC THROUGH CAPAC.	CDP102XK500
28	6	C1,C9,C13, 4n7 C28,C37,C38	CERAMIC CAPACITOR	CKM472BK600P
29	1	C10 10 μ F	ELECTROLYTIC CAPACITOR	CEA106AM350
30	1	C29 100 μ F	ELECTROLYTIC CAPACITOR	CEA107BM350
31	3	J1,J2,J3 VK200	RF CHOKE	IMPVK200
32	1	L10 L16RVR1	1 SP D. 6 R.A. 1 mm	
33	1	L2 L24RVR0.8	2 SP D. 4 R.S. 0.8mm	
34	1	L6 L27RVR0.8	2 SP D. 7 R.S. 0.8mm	
35	1	L1 L35.5RVR0.8	3 SP D. 5.5 R.S. 0.8mm	
36	1	L11 L46RVR1	4 SP D. 6 R.S. 1 mm	
37	4	L3,L12,L13, L56RVR1 L14	5 SP D. 6 R.A. 1 mm	
38	1	L5 L65.5RVR0.8	6 SP D. 5.5 R.S. 0.8mm	
39	1	L15 L26RVR1	6 SP D. 7 R.A. 1.0mm	
40	1	L4 LINK	LINK FILO ARG. 1mm CAVARG1000	
41	4	STR1,STR2, S.L. STR3,STR5	STRIPLINE CIRC. STAMP.	
42	1	T2 4:1	TRASF. RF. CAVO 25 OHM	CAV7612/78
43	1	DIRC1 TOROIDE	TOROIDE DIA. 10 MM	FTR10N
44	2	CN1,CN3 BNC TELAIO	CONN. BNC A TELAIO	CNTBNCFPV
45	1	CN2 N TELAIO	CONN. N A TELAIO	CNTNFPFL
46	2	D1,D2 1N4148	SILICON DIODE	DIS1N4148
47	1	Q3 BD681	NPN DARLINGTON	TRNBD681
48	1	Q1 MRF237	RF POWER TRANSISTOR	TRNMRF237
49	1	Q2 BLW86	RF POWER TRANSISTOR	TRNBLW86



		DENOMINAZIONE R.F. Power Amplifier Component Layout / Piano di Montaggio DISPOSITIVO	
SEMPRE DISPONIBILE	DISPOSITIVO	DISPOSITIVO	DISPOSITIVO
MATERIALE	D'IMPRESA D. I.	SCALA	AVOLA n. 8
TRATTAMENTO			

FREQUENCY SELECTOR CARD (MOD. TSW-1)

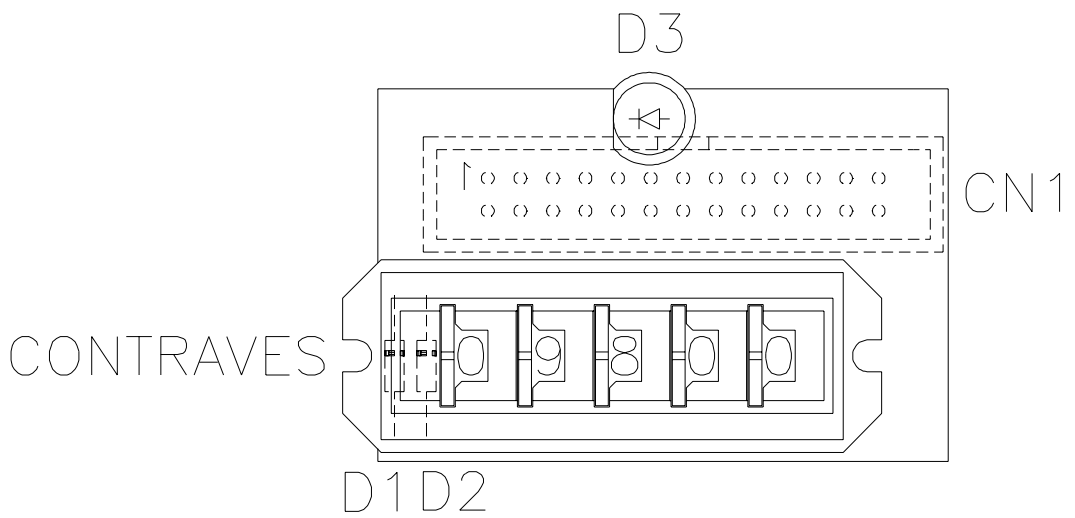
1	<i>Circuit Diagram</i>	<i>Pag. 79</i>
2	<i>Bill of Materials</i>	<i>Pag. 80</i>
3	<i>Layout</i>	<i>Pag. 81</i>




R.V.R. Elettronica S.r.l. (Bo)	
Title	Frequency Selector Card Circuit Diagram
Size	Document Number
A4	TSW-1
Date:	October 17, 1994
Sheet	1 of 1

Frequency Selector Card Bill of Materials/Lista Componenti Pag. 1
 Mod. TSW-1

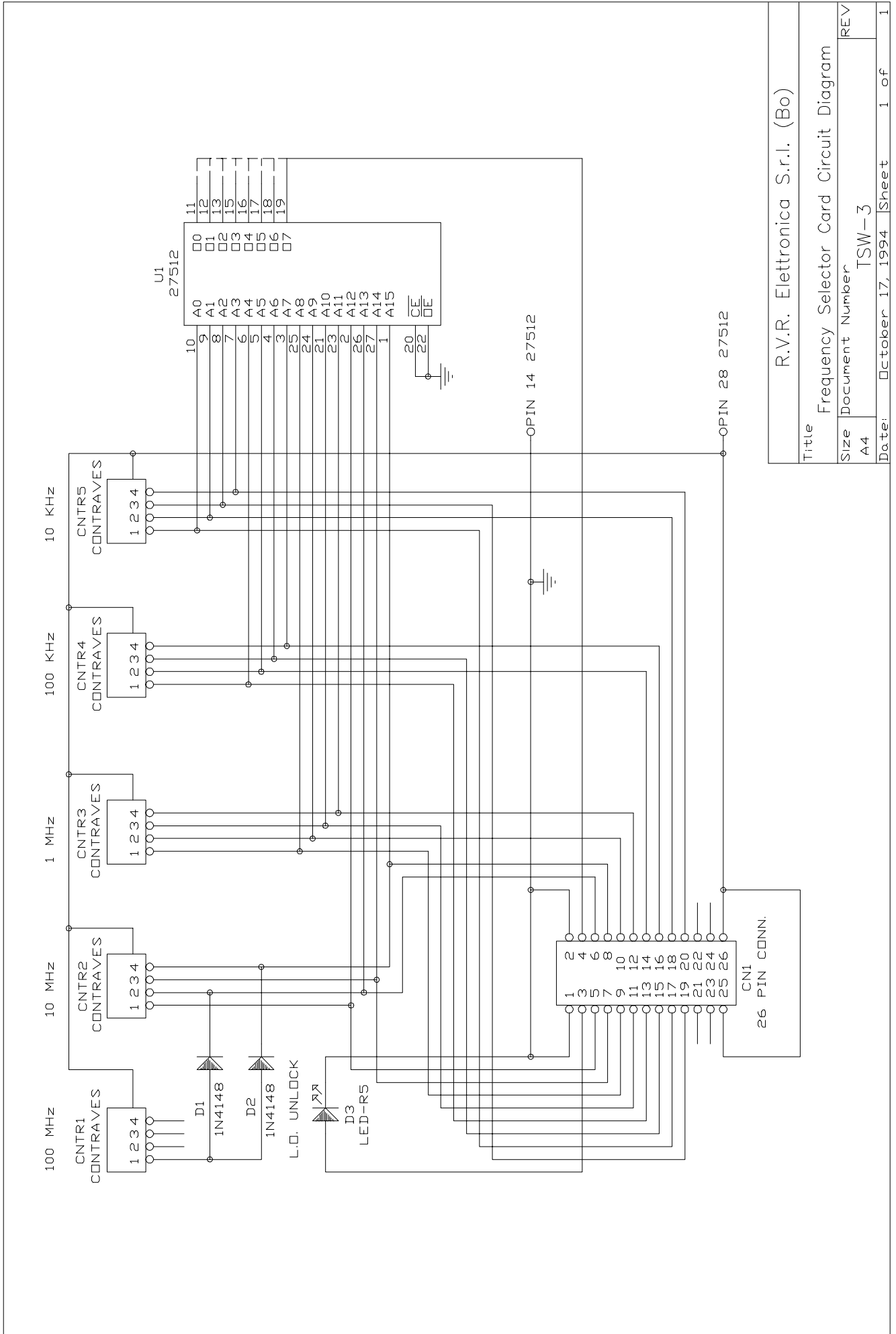
Item	Quantity	Reference Part	Description	Part Order Code
1	1	CN1	26P CONN. CONN. M 2*13 P 2.54	CNTMCSFC26P
2	5	CNTR1, CNTR2,CNTR3, CNTR4,CNTR5	CONTRAVES COMMUTATORI BCD 15mm	COMBCD15
3	2	D1,D2	1N4148 SILICON DIODE	DIS1N4148
4	1	D3	LED-R5 RED LED DIODE	LEDRO05



	DENOMINAZIONE	
	Frequency Selector Card Component Layout / Piano di Montaggio	
DISPOSITIVO		
SEMILAVORATO	DISEGNATO	DISEGNO
MATERIALE	D'Alessio D.lli	TSW-1
TRATTAMENTO	SCALA	TAVOLA n di

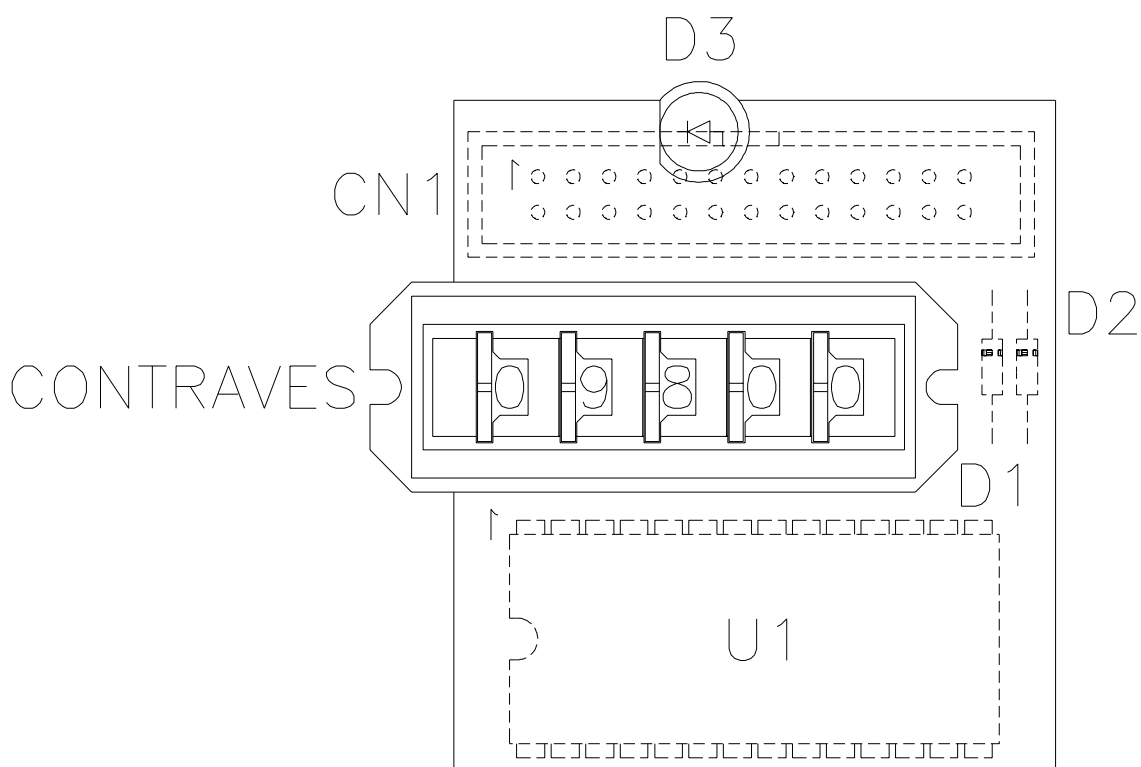
FREQUENCY SELECTOR CARD (MOD. TSW-3)


1	<i>Circuit Diagram</i>	<i>Pag. 83</i>
2	<i>Bill of Materials</i>	<i>Pag. 84</i>
3	<i>Layout</i>	<i>Pag. 85</i>



Title		
R.V.R. Elettronica S.r.l. (Bo)		
Frequency Selector Card Circuit Diagram		
Size	Document Number	REV
A4	TSW-3	
Date:	October 17, 1994	Sheet 1 of 1

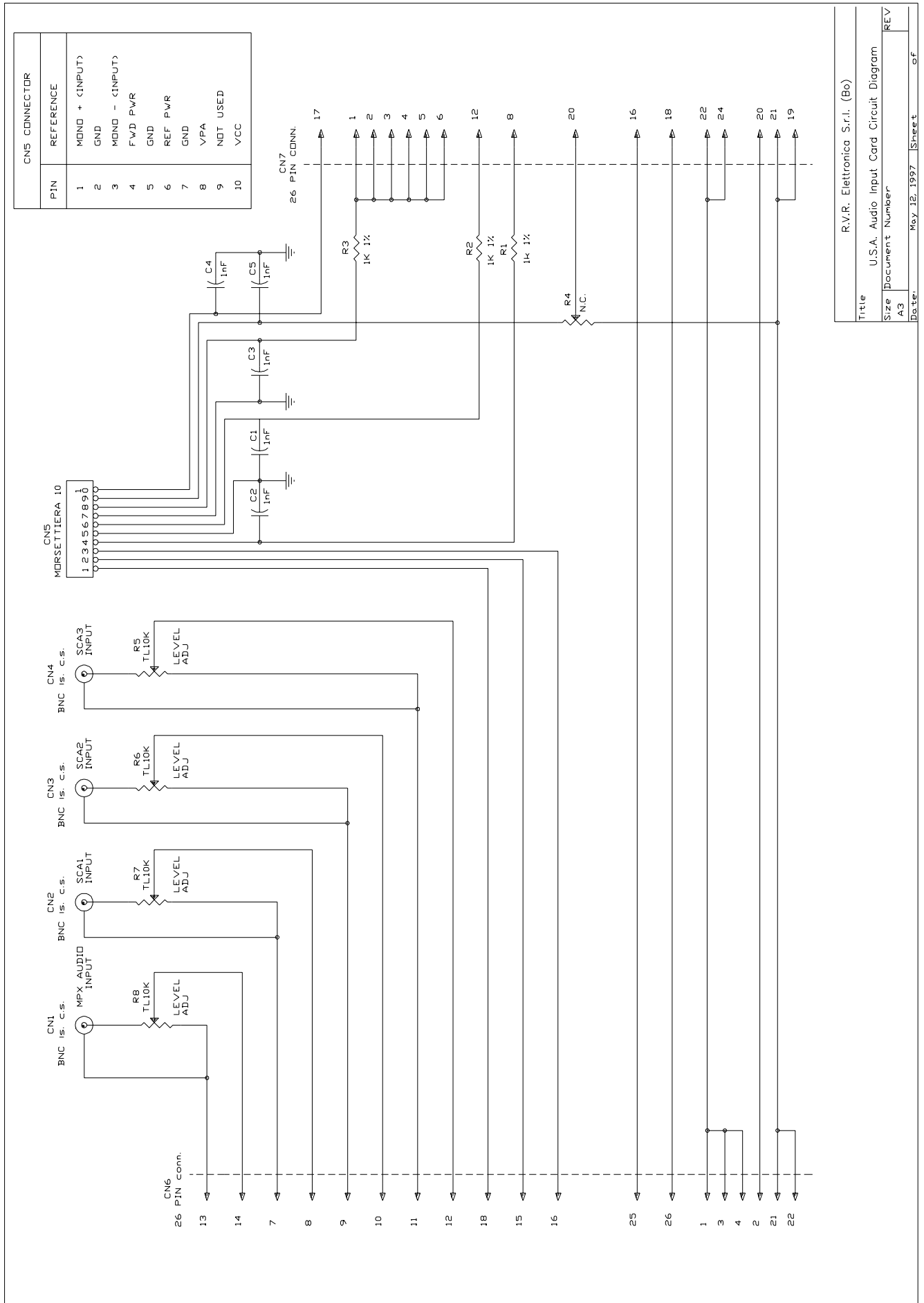
Item	Quantity	Reference Part	Description	Part Order Code
1	1	CN1	26P CONN. CONN. M 2*13 P 2.54	CNTMCSFC26P
2	5	CNTR1, CNTR2, CNTR3, CNTR4, CNTR5	CONTRAVES COMMUTATORI BCD 15mm	COMBCD15
3	2	D1, D2	1N4148 SILICON DIODE	DIS1N4148
4	1	D3	LED-R5 RED LED DIODE	LEDRO05
5	1	U1	27512 65,536x8 BIT CMOS EPROM	CID27512



	DENOMINAZIONE	
	Frequency Selector Card Component Layout / Piano di Montaggio	
	DISPOSITIVO	
SEMILAVORATO	DISEGNATO	DISEGNO
MATERIALE	D'Alessio D.	TSW-3
TRATTAMENTO	SCALA	TAVOLA n di

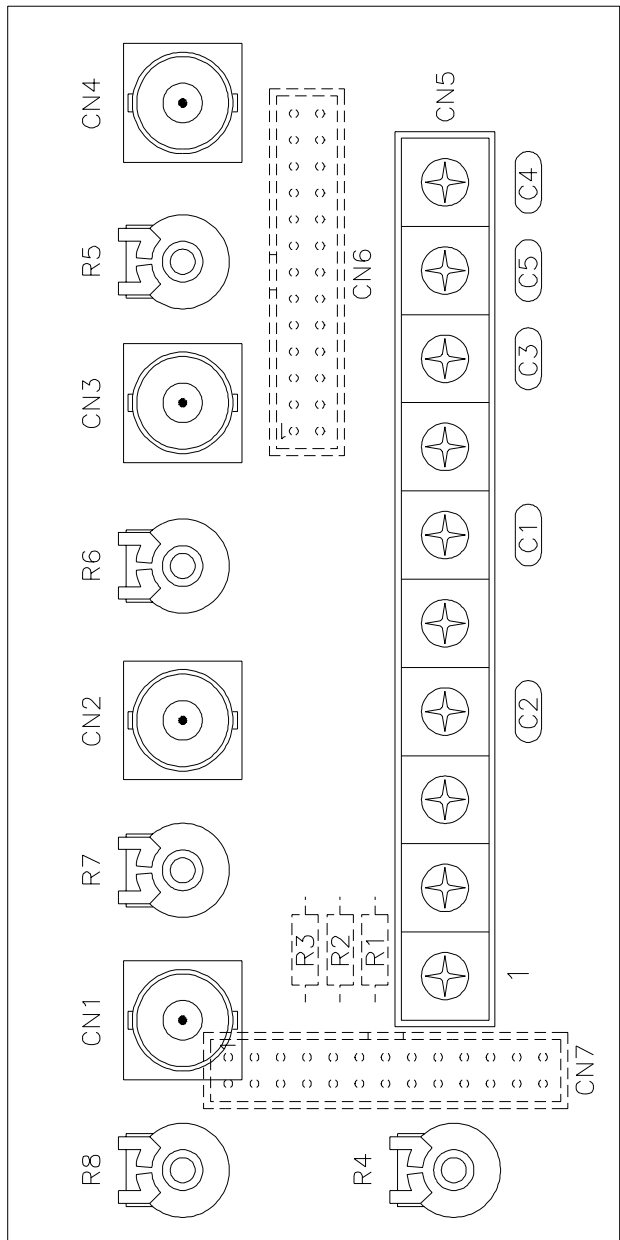
USA AUDIO INPUT CARD


1	<i>Circuit Diagram</i>	<i>Pag. 87</i>
2	<i>Bill of Materials</i>	<i>Pag. 88</i>
3	<i>Layout</i>	<i>Pag. 89</i>



R.V.R. Elettronica S.r.l. (Bo)	
Title	U.S.A. Audio Input Card Circuit Diagram
Size	Document Number
A3	REV
Date	May 12, 1997
Sheet	of

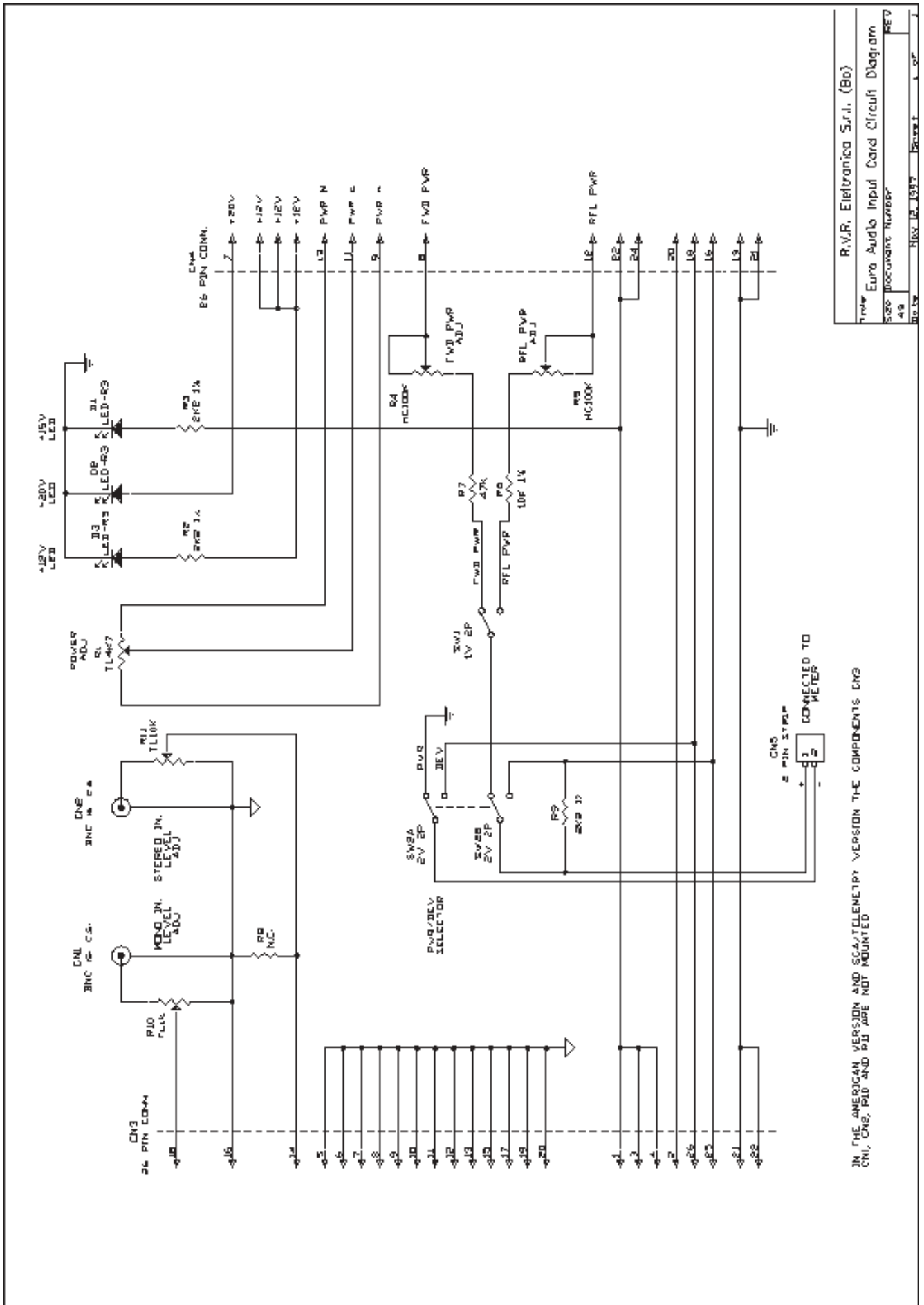
Item	Quantity	Reference Part	Description	Part Order Code
1	3	R1,R2,R3 1K 1%	RESISTOR 1/4W 1%	RSM1/4FK0001
2	4	R5,R6,R7,R8 TL10K	TRIMMER REG. VERT. 15mm	RVTD15VK0010
3	5	C1,C2,C3, 1nF C4,C5	CERAMIC CAPACITOR	CKM102BK600P
4	1	CN5 MORSET. 10	MORS. TELAIO 10 CONT.	MORSP10P
5	2	CN6,CN7 26P	CONN. CONN. M 2*13 P 2.54	CNTMCSFC26P
6	4	CN1,CN2, BNC IS. CS CN3,CN4	CONN. BNC A STAMP. IS.	CNTBNCFCISIS
7	1	R4 N.C.	NOT CONNECTED	



	DENOMINAZIONE	
	USA Audio Input Card Component Layout / Piano di Montaggio	
	DISPOSITIVO	
SEMILAVORATO	DISEGNATO	DISEGNO
MATERIALE	D'Alessio D. U	
TRATTAMENTO	SCALA	TAVOLA n di

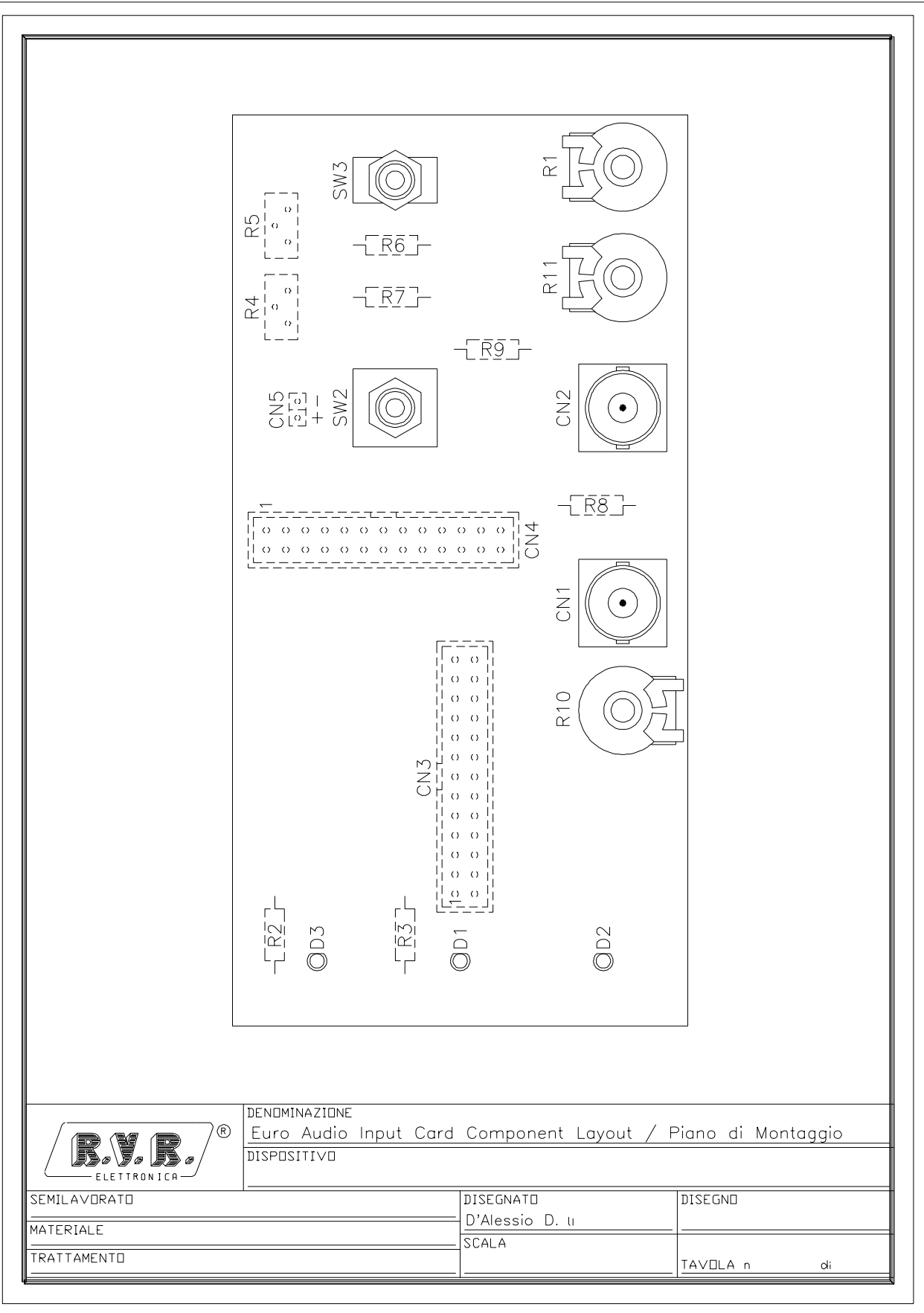
EURO AUDIO INPUT CARD


1	<i>Circuit Diagram</i>	<i>Pag. 91</i>
2	<i>Bill of Materials</i>	<i>Pag. 92</i>
3	<i>Layout</i>	<i>Pag. 93</i>



R.V.R. Elettronica S.r.l. (Bo)	
Title Euro Audio Input Card Circuit Diagram	
Size	Document Number
4x	
Bo/Bo	NOV 12, 1987
Page 1	of 1

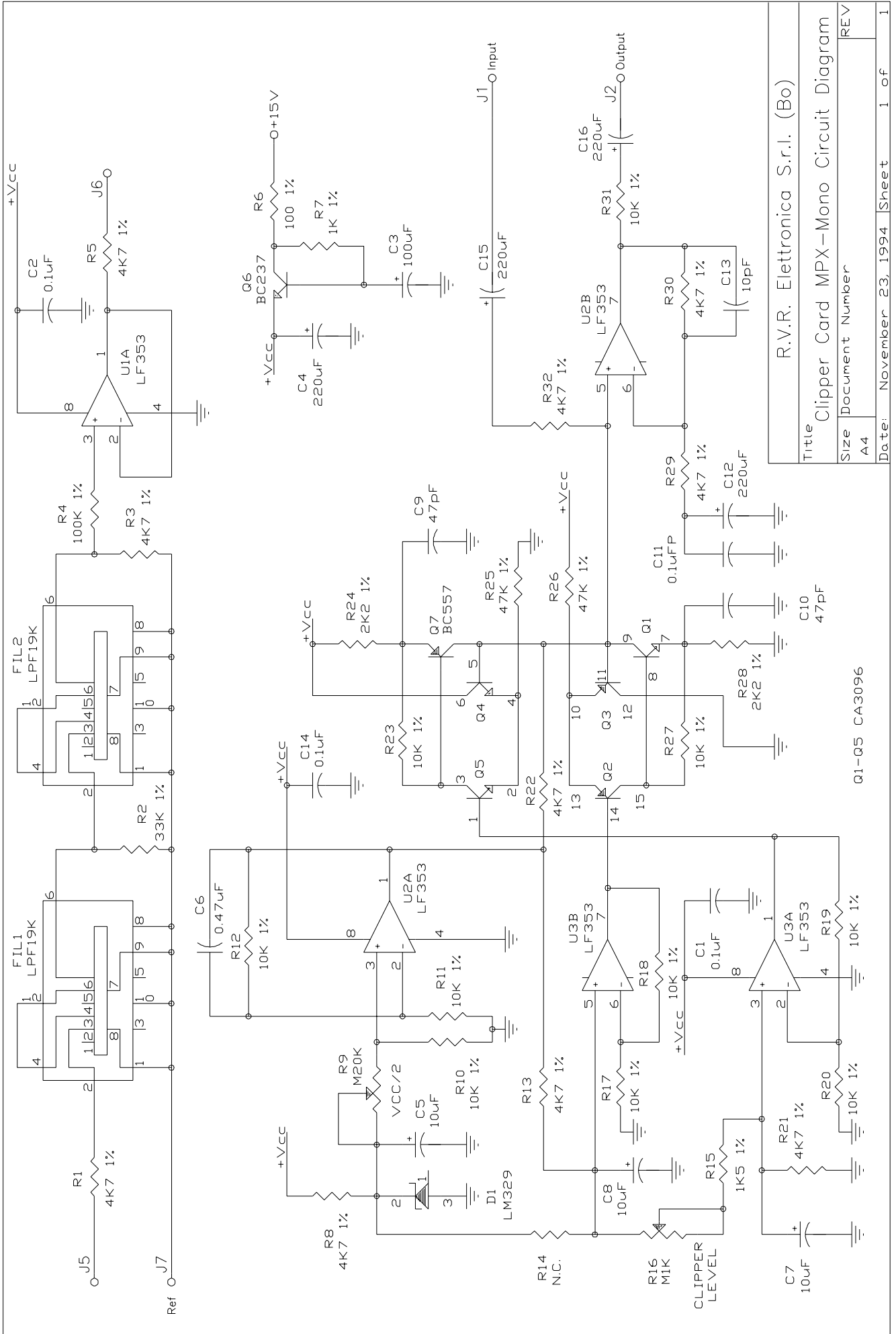
Item	Quantity	Reference Part	Description	Part Order Code
1	3	R2,R3,R9 2K2 1%	RESISTOR 1/4W 1%	RSC1/4FK02,2
2	1	R6 10K 1%	RESISTOR 1/4W 1%	RSM1/4FK0010
3	1	R7 47K	RESISTOR 1/4W 5%	RSC1/4JK0047
4	1	R10 TL1K	TRIMMER REG. VERT. 15mm	RVTD15VK0001
5	1	R1 TL4K7	TRIMMER REG. VERT. 15mm	RVTD15VK04,7
6	1	R11 TL10K	TRIMMER REG. VERT. 15mm	RVTD15VK0010
7	2	R4,R5 HC100K	TRIM. REG. ORIZ. CERMET	RVTCEROK0100
8	1	CN5 2 PIN STRIP	STRIP M P 2.54 2 PIN	CNTSTRIPMCS
9	2	CN3,CN4 26P CONN.	CONN. M 2*13 P 2.54	CNTMCSFC26P
10	2	CN1,CN2 BNC IS. CS	CONN. BNC A STAMP. IS.	CNTBNCFCISIS
11	1	SW1 1V 2P	DEVIATORE 1 VIA 2 POS	DEV1V1103CS
12	2	SW2B,SW2A 2V 2P	DEVIATORE 2 VIE 2 POS	DEV2V1103CS
13	3	D1,D2,D3 LED-R3	RED LED DIODE 3mm	LEDRO03
14	1	R8 N.C.	NOT CONNECTED	



	DENOMINAZIONE	
	Euro Audio Input Card Component Layout / Piano di Montaggio	
DISPOSITIVO		
SEMILAVORATO	DISEGNATO	DISEGNO
MATERIALE	D'Alessio D. ti	
TRATTAMENTO	SCALA	TAVOLA n di

CLIPPER CARD MPX-MONO

1	<i>Circuit Diagram</i>	<i>Pag. 95</i>
2	<i>Bill of Materials</i>	<i>Pag. 96</i>
3	<i>Layout</i>	<i>Pag. 97</i>

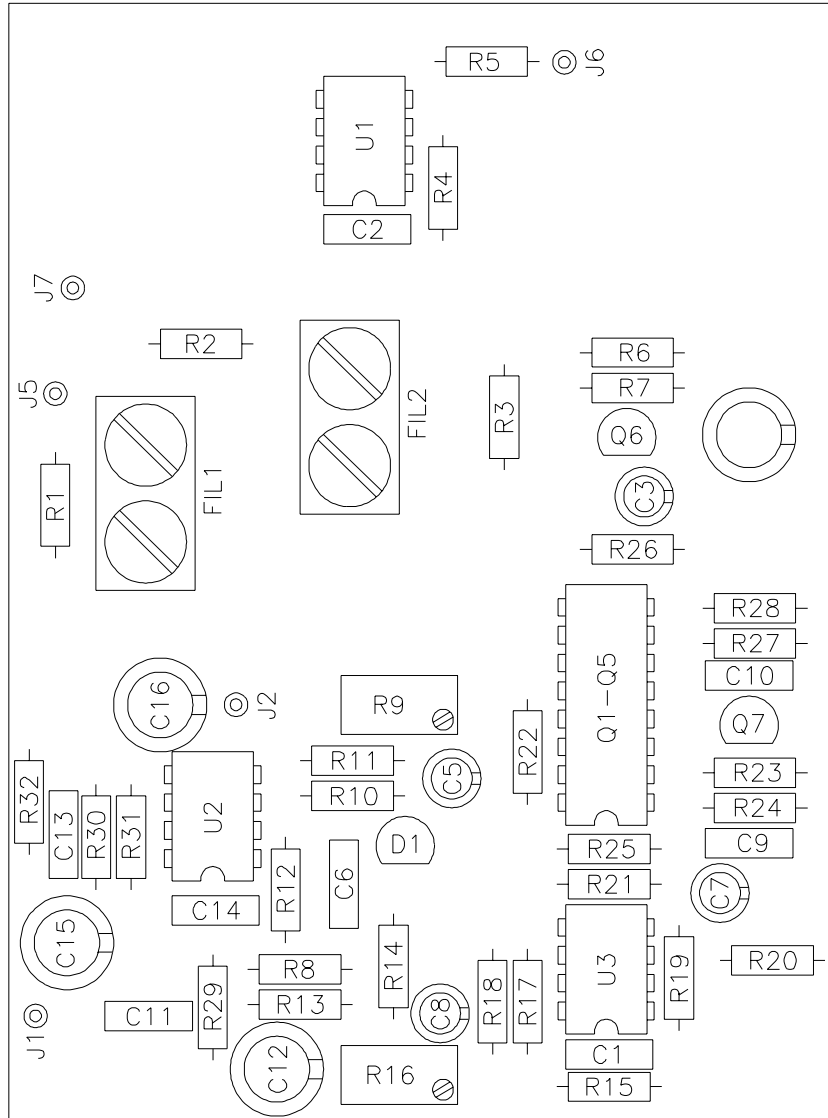


R.V.R. Elettronica S.r.l. (Bo)

Title		Clipper Card MPX-Mono Circuit Diagram
Size	Document Number	REV
A4		
Date:	November 23, 1994	Sheet 1 of 1

Q1-Q5 CA3096

Item	Quantity	Reference Part	Description	Part Order Code
1	1	R6 100 1%	RESISTOR 1/4W 1%	RSM1/4FH0100
2	1	R7 1K 1%	RESISTOR 1/4W 1%	RSM1/4FK0001
3	1	R15 1K5 1%	RESISTOR 1/4W 1%	RSC1/4FK01,5
4	2	R24,R28 2K2 1%	RESISTOR 1/4W 1%	RSC1/4FK02,2
5	10	R1,R3,R5, 4K7 1% R8,R13,R21, R22,R29, R30,R32	RESISTOR 1/4W 1%	RSM1/4FK04,7
6	10	R10,R11, 10K 1% R12,R17,R18, R19,R20,R23, R27,R31	RESISTOR 1/4W 1%	RSM1/4FK0010
7	1	R2 33K 1%	RESISTOR 1/4W 1%	RSM1/4FK0033
8	2	R25,R26 47K 1%	RESISTOR 1/4W 1%	RSM1/4FK0047
9	1	R4 100K 1%	RESISTOR 1/4W 1%	RSM1/4FH0100
10	1	R16 1K	TRIMMER MULTIGIRI	RVTMULAK0001
11	1	R9 M20K	TRIMMER MULTIGIRI	RVTMULAK0020
12	1	C13 10pF	CERAMIC CAPACITOR NP0	CKM100BJ600C
13	2	C9,C10 47pF	CERAMIC CAPACITOR NP0	CKM470BJ600C
14	3	C1,C2,C14 0.1µF	CERAMIC CAPACITOR	CKM104BK600P
15	1	C11 0.1µFP	POLIESTER CAPACITOR	CPE104DK101
16	1	C6 0.47µF	POLIESTER CAPACITOR	CPE474EK101
17	3	C5,C7,C8 10µF	ELECTROLYTIC CAPACITOR	CEA106AM350
18	1	C3 100µF	ELECTROLYTIC CAPACITOR	CEA107BM350
19	4	C4,C12,C15, 220µF C16	ELECTROLYTIC CAPACITOR	CEA227BM350
20	2	FIL1,FIL2 LPF19K	LOW PASS FILTER 19KHz	FLP19KHZ
21	5	Q1-Q5 CA3096	NPN/PNP TRANSIS. ARRAY	CILCA3096
22	1	D1 LM329	VOLT. PREC. REFERENCE	CILLM329
23	1	Q6 BC237	NPN TRANSISTOR	TRNBC237
24	1	Q7 BC557	PNP TRANSISTOR	TRNBC557
25	3	U1,U2,U3 LF353	DOUBLE OP. AMP.	CILLF353
26	1	R14 N.C.	NOT CONNECTED	

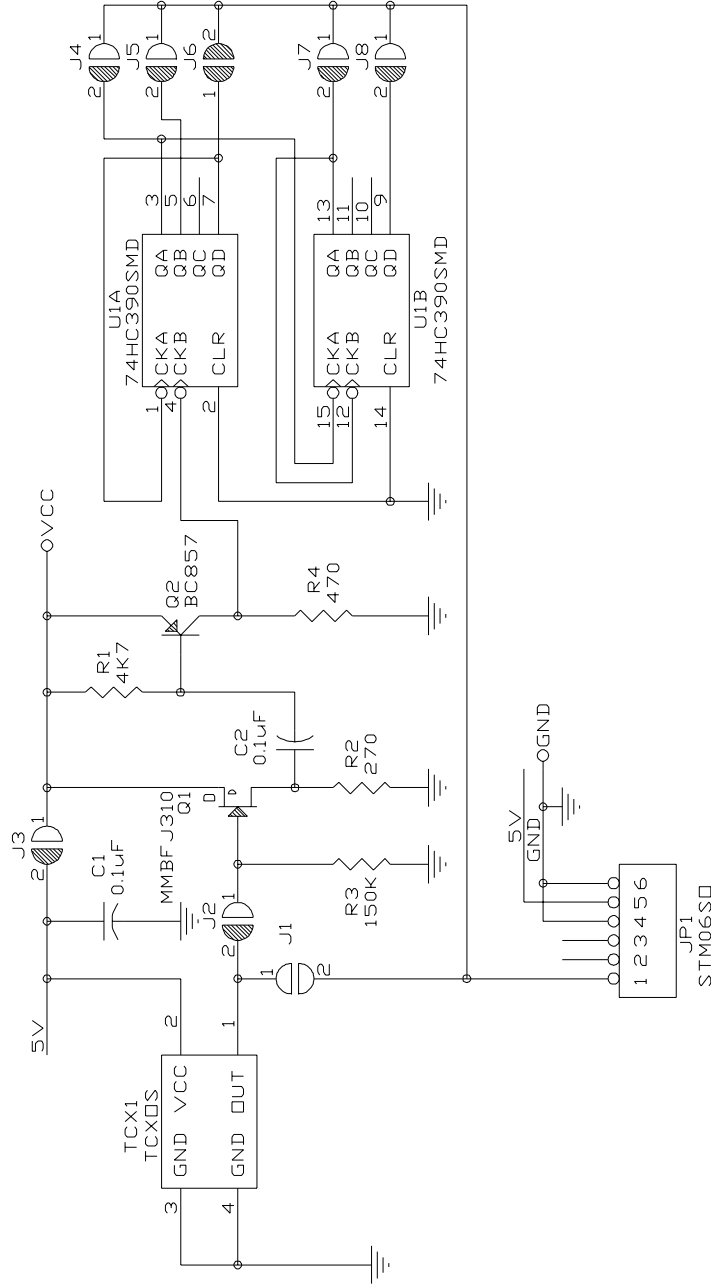


DENOMINAZIONE
Clipper MPX-Mono Card Component Layout / Piano di Montaggio
DISPOSITIVO

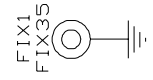
SEMILAVORATO	DISEGNATO D'Alessio D.	DISEGNO
MATERIALE	SCALA	TAVOLA n di
TRATTAMENTO		

TCXO CARD

1	<i>Circuit Diagram</i>	<i>Pag. 99</i>
2	<i>Bill of Materials</i>	<i>Pag. 100</i>
3	<i>Layout</i>	<i>Pag. 101</i>



F Out	J1	J2	J3	J4	J5	J6	J7	J8
10MHZ	X	X	X	X	X	X	X	X
4MHZ		X	X	X	X	X	X	X
2MHZ		X	X	X	X	X	X	X
1MHZ		X	X	X	X	X	X	X
500KHZ		X	X	X	X	X	X	X
100KHZ		X	X	X	X	X	X	X



R.V.R. Elettronica S.r.l. (Bo)	
Title TCXO Card Circuit Diagram	
Size A4	Document Number TCXO10MHz
Date: April 18, 1997	Sheet 1 of 1

TCXO Card		Bill Of Materials	Page 1
Item	Quantity	Reference	Part
1	2	C1,C2	0.1uF
2	1	FIX1	FIX35
3	1	JP1	STM06SO
4	8	J1,J2,J3,J4,J5,J6,J7,J8	JSMD
5	1	Q1	MMBFJ310
6	1	Q2	BC857
7	1	R1	4K7
8	1	R2	270
9	1	R3	150K
10	1	R4	470
11	1	TCX1	TCXOS
12	1	U1	74HC390SMD

© Copyright 1993
Fourth Edition - May '97
Created By D'Alessio D. & Morotti M.

R.V.R. Elettronica S.r.l. (Bo)
Via del Fonditore 2/2c - 40138 - Bologna (Italy)
National: Phone 051/601.05.06 r.a. Fax 051/601.11.04
International : Phone +39 51-601.05.06 Fax +39 51-601.11.04

Printed and bound in Italy. All rights reserved. No part of this manual may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

Tutti i diritti sono riservati. Stampato in Italia. Nessuna parte di questo libro può essere riprodotta, memorizzata in sistemi di archivio, o trasmessa in qualsiasi forma o mezzo, elettronico, meccanico, fotocopia, registrazione o altri senza la preventiva autorizzazione scritta dell'editore.

© Copyright 1993
Fourth Edition - May '97
Created By D'Alessio D. & Morotti M.

R.V.R. Elettronica S.r.l. (Bo)
Via del Fonditore 2/2c - 40138 - Bologna (Italy)
National: Phone 051/601.05.06 r.a. Fax 051/601.11.04
International : Phone +39 51-601.05.06 Fax +39 51-601.11.04

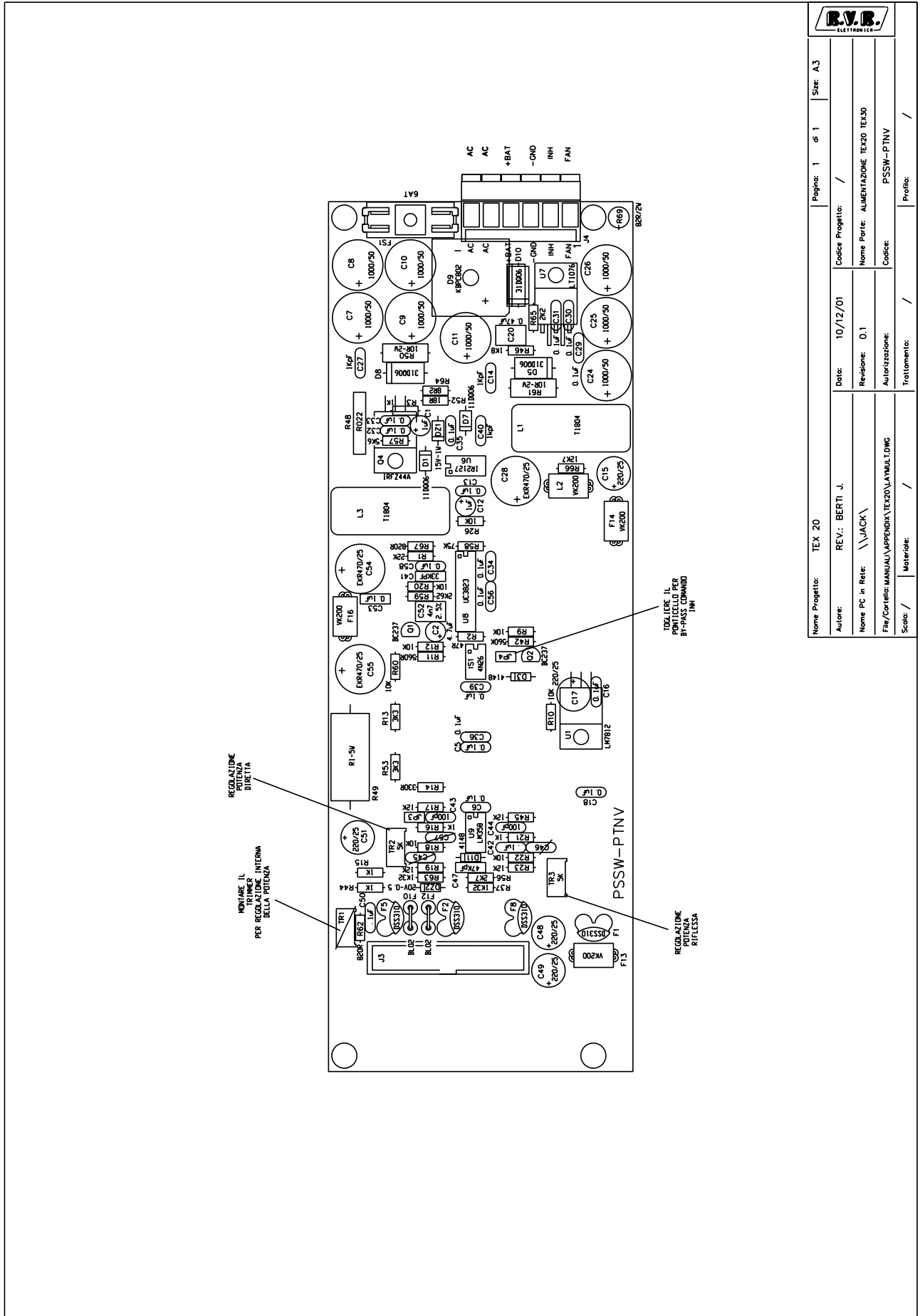
Printed and bound in Italy. All rights reserved. No part of this manual may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

Tutti i diritti sono riservati. Stampato in Italia. Nessuna parte di questo libro può essere riprodotta, memorizzata in sistemi di archivio, o trasmessa in qualsiasi forma o mezzo, elettronico, meccanico, fotocopia, registrazione o altri senza la preventiva autorizzazione scritta dell'editore.

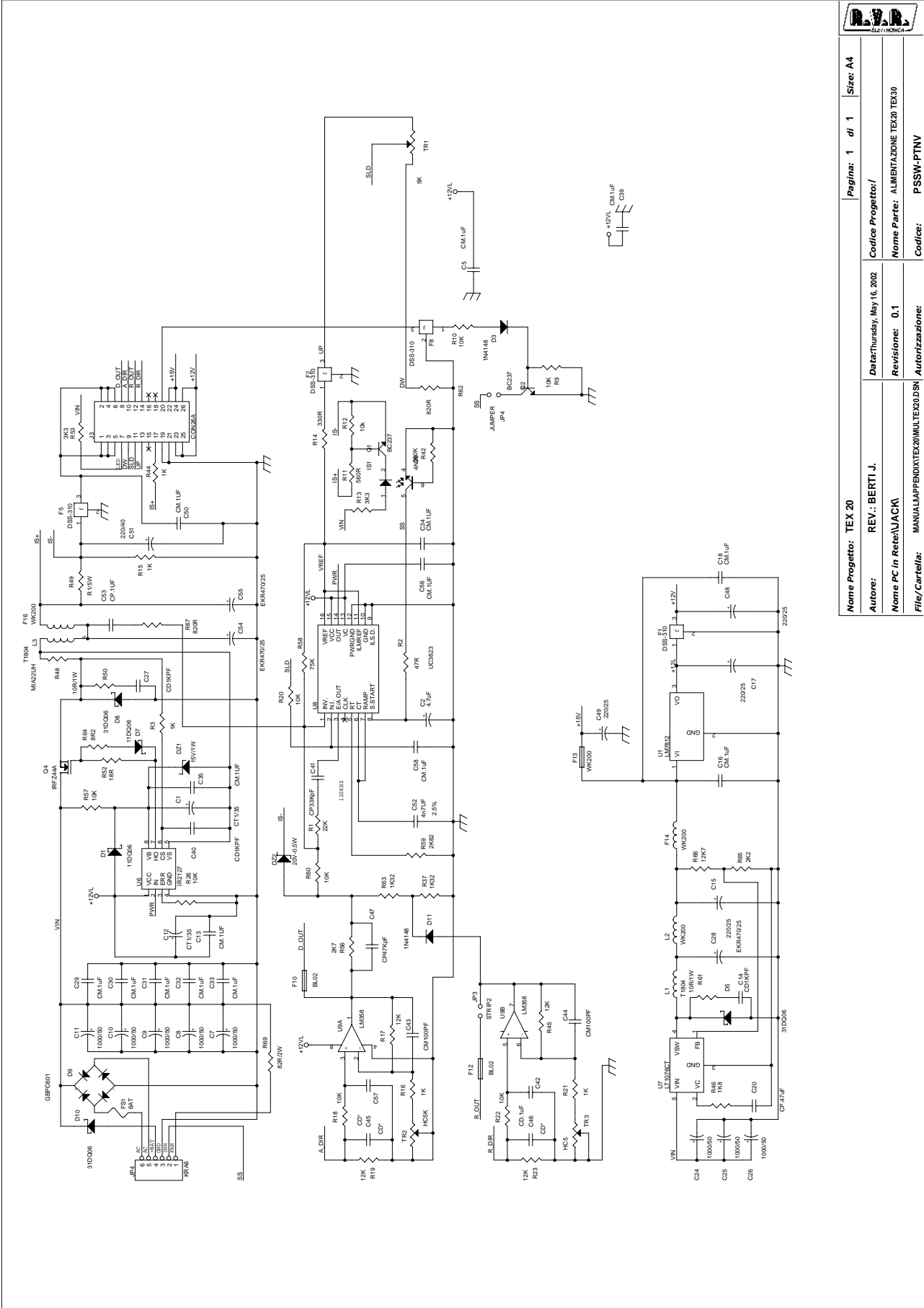
APPENDIX

Description	RVR Code Pages	Vers.
Power Supply	PSSW-PTNV	0.1 6

Pagina lasciata intenzionalmente in bianco



R.V.R. ELETTRONICA	
Nome Progetto: TEX 20	Pagina: 1 di 1 Size: A3
Autore: REV.: BERTI J.	Code Progetto: /
Nome PC in Rete: \\JACK\	Data: 10/12/01
File/Cartella: MANUALI\APPENDICI\TEX20\MULTI.DWG	Revision: 0.1
Scale: /	Autore: PSSW-PTNV
Modello: /	Trattamento: /
	Profilo: /



Nome Progetto: TEX 20	Pagina: 1 di 1
Autore: REV.: BERTI J.	Size: A4
Nome PC in Rete: \JACKI	Nome Parte: ALIMENTAZIONE TEX20 TEX30
File/ Cartella: MANUALEAPPENDIX\MULTI\TEX20.DSN	Revisione: 0.1
	Autore: P.SSW-PTNV

Nome Progetto: TEX 20	Pagina: 1 di 1
Autore: REV.: BERTI J.	Size: A4
Nome PC in Rete: \JACKI	Nome Parte: ALIMENTAZIONE TEX20 TEX30
File/ Cartella: MANUALEAPPENDIX\MULTI\TEX20.DSN	Revisione: 0.1
	Autore: P.SSW-PTNV

Item	Q.ty	Reference	Part
1	2	C1,C12	CT1/35
2	1	C2	4.7UF
3	15	C5,C13,C16,C18,C29,C30, C31,C32,C33,C34,C35,C39, C50,C56,C58	CM.1UF
4	8	C7,C8,C9,C10,C11,C24,C25, C26	1000/50
5	3	C14,C27,C40	CD1KPF
6	4	C15,C17,C48,C49	220/25
7	1	C20	CP.47UF
8	3	C28,C54,C55	EKR470/25
9	1	C41	CP33KPF
10	1	C42	CD.1UF
11	2	C43,C44	CM100PF
12	3	C45,C46,C57	CD*
13	1	C47	CP47KPF
14	1	C51	220/40
15	1	C52	4N7UF
16	1	C53	CP.1UF
17	1	DZ1	15V/1W
18	1	DZ2	20V-0.5W
19	2	D1,D7	11DQ06
20	2	D3,D11	1N4148
21	3	D5,D8,D10	31DQ06
22	1	D9	GBPC601
23	1	FS1	6AT
24	4	F1,F2,F5,F8	DSS-310
25	2	F10,F12	BL02
26	4	L2,F13,F14,F16	WK200

27	1	IS1	4N26
28	1	JP3	STRIP2
29	1	JP4	KRA6
30	1	JP4	JUMPER
31	1	J3	CON26A
32	2	L1 ,L3	T1804
33	2	Q1 ,Q2	BC237
34	1	Q4	IRFZ44A
35	1	R1	22K
36	1	R2	47R
37	5	R3 ,R15 ,R16 ,R21 ,R44	1K
38	9	R9 ,R10 ,R12 ,R18 ,R20 ,R22 , R26 ,R57 ,R60	10K
39	1	R11	560R
40	2	R13 ,R53	3K3
41	1	R14	330R
42	4	R17 ,R19 ,R23 ,R45	12K
43	2	R37 ,R63	1K32
44	1	R42	560K
45	1	R46	1K8
46	1	R48	MIA22UH
47	1	R49	R1/5W
48	2	R50 ,R61	10R/1W
49	1	R52	18R
50	1	R56	2K7
51	1	R58	75K
52	1	R59	2K62
53	2	R62 ,R67	820R
54	1	R64	8R2
55	1	R65	2K2

56	1	R66	12K7
57	1	R69	82R/2W
58	1	TR1	5K
59	1	TR2	HC5K
60	1	TR3	HC5
61	1	U1	LM7812
62	1	U6	IR2127
63	1	U7	LT1076CT
64	1	U8	UC3823
65	1	U9	LM358

Pagina lasciata intenzionalmente in bianco
This page was intentionally left blank