

A faint, light gray background illustration of a radio tower on the left side, with several concentric curved lines radiating from it, representing signal waves. The text is overlaid on this graphic.

**Meridian 2.5 kW UHF
Model T2500U
Technical Service Manual
TSM20-342**

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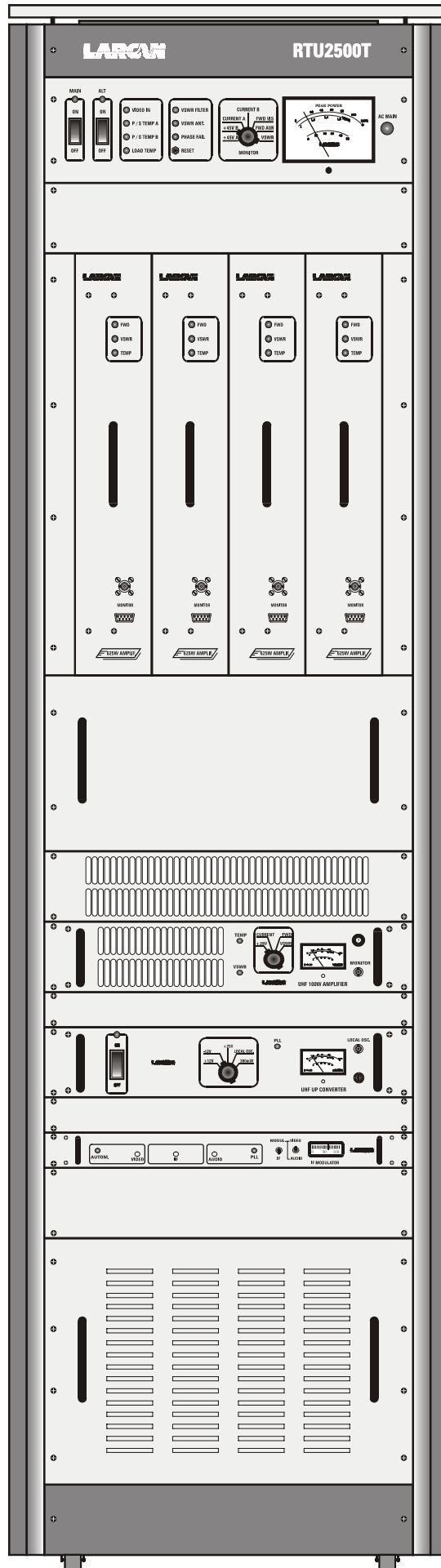
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Unit 1

Introduction

1. External Layout:



2. General Technical Descriptive:

2.1. IF Modulator (for transmitter):

This is the input module. It is a professional audio and video modulator. The audio and video signals are applied to their respective input for the modulation process in IF (41 to 47 MHz]. The audio and video input impedances are 600 balanced Ohms and 75 unbalanced Ohms, respectively.

2.1.1. Video processing:

The video signal passes through linearity correction circuits and then is applied to the 45.75 MHz video modulator. There are Synchronizing Separation circuits that generate the auxiliary outputs to “Automatic Circuits”. The video signal is also applied to a group delay predistortion circuit.

2.1.2. Audio processing:

The Mono-audio signal or stereo base band is applied to the module and modulates a 41.25 MHz audio carrier.

2.1.3 Module output:

Both carriers, audio and video modulated (41.25 and 45.75 MHz), are applied to the “Vestigial Side Band Filter” (SAW Filter). At the output there is a circuit to control the IF output level.

2.2. UHF UP Converter:

2.2.1. Introduction:

This module converts an IF frequency signal into an UHF band channel, keeping its characteristics and the same bandwidth.

2.2.2. IF filter and AGC amplifier (for transposer):

The IF amplifier and filter module establishes the adequate bandwidth for the input signal and supply the gain in this signal, keeping the level constant through an AGC loop.

2.2.3. Technical Descriptive:

The 2nd UHF converter has an oscillator controlled by PLL (Phase Locked Loop Integrated Circuit), which frequency is selected through the DIP switch from the Oscillator control board. When the modulated signal in IF is received in the 2nd converter, it is filtered and applied to a mixer. The result of this mixing is filtered (channel filter) and supplied to the following modules of the equipment, in the selected channel.

2.3. Amplifier Levels:

2.3.1. Comment/Composition/Origin:

The T2500U is composed for 4 625W amplifier modules combined through 3dB hybrid couplers. The final modules are driven by a 50W amplifier and 3 dB hybrid couplers as splitters. All the amplifiers are in solid state.

2.3.2. Protections/Signaling:

Each 625W amplifier has a VSWR protection, temperature and a power limiting circuit.

The output power, VSWR, temperature, current and module voltage can be monitored through a DB9 connector in the front panel.

In the frontal panel there are the normal power indication (Green Led), low power (red led) and excessive VSWR (red led). There is, also, a BNC connector for monitoring the output signal of each module.

At the transmitter output, there is the video and audio power monitoring, antenna VSWR, power supply antenna, current and voltage and indications of excessive VSWR, excessive filter VSWR, power supply temperature alarm, video absence, phase fail and others.

There is at the transmitter top, a DB25 connector with transmitter signals, for remote monitoring.

2.4. Notch filter:

It is used to attenuate out channel spurious generated by the transmitter. It is composed by 11 cavities, 10 are syntonized in the spurious frequencies and 1 in the 2nd harmonic.

3. Technical Characteristics:

3.1. Main Characteristics:

Model: _____ T2500U
 Operation Band: _____ 14 to 59 / 470-746 MHz
 Intermodulation: _____ better than 53 dB (in red)
 Power Supply: _____ 220Vca three phase
 Harmonic and spurious attenuation: _____ better than 60 dB
 Dimensions: _____ Width = 555mm; Height = 2100mm; Depth = 870mm
 Weight: _____ 180Kg
 Operating: _____ 2000 m (sea level)
 Maximum relative humidity: _____ 95% non condensing (temperature < 25°C)
 Operating temperature: _____ 0°C to 40°C
 Recommended operating temperature: _____ 20°C to 28°C

3.2. Video Characteristics:

Input Level: _____ 0.7 to 1.5Vpp
 Input impedance: _____ 75 Ohms (asymmetric)
 Output power: _____ 2500W peak sync
 Output impedance: _____ 50 Ohms
 Frequency Stability: _____ + or -500Hz
 Harmonic and Spurious attenuation: _____ better than 60 dB below of the video carrier
 Periodic Signal Noise ratio: _____ better than 40 dB below of the video carrier
 Differential Gain: _____ <5% to 87.5% of modulation
 Differential phase: _____ <5° to 87.5% of modulation
 Synchronism compression: _____ 0.5 dB maximum
 Luminance and chrominance delay _____ better than + or - 30 ns

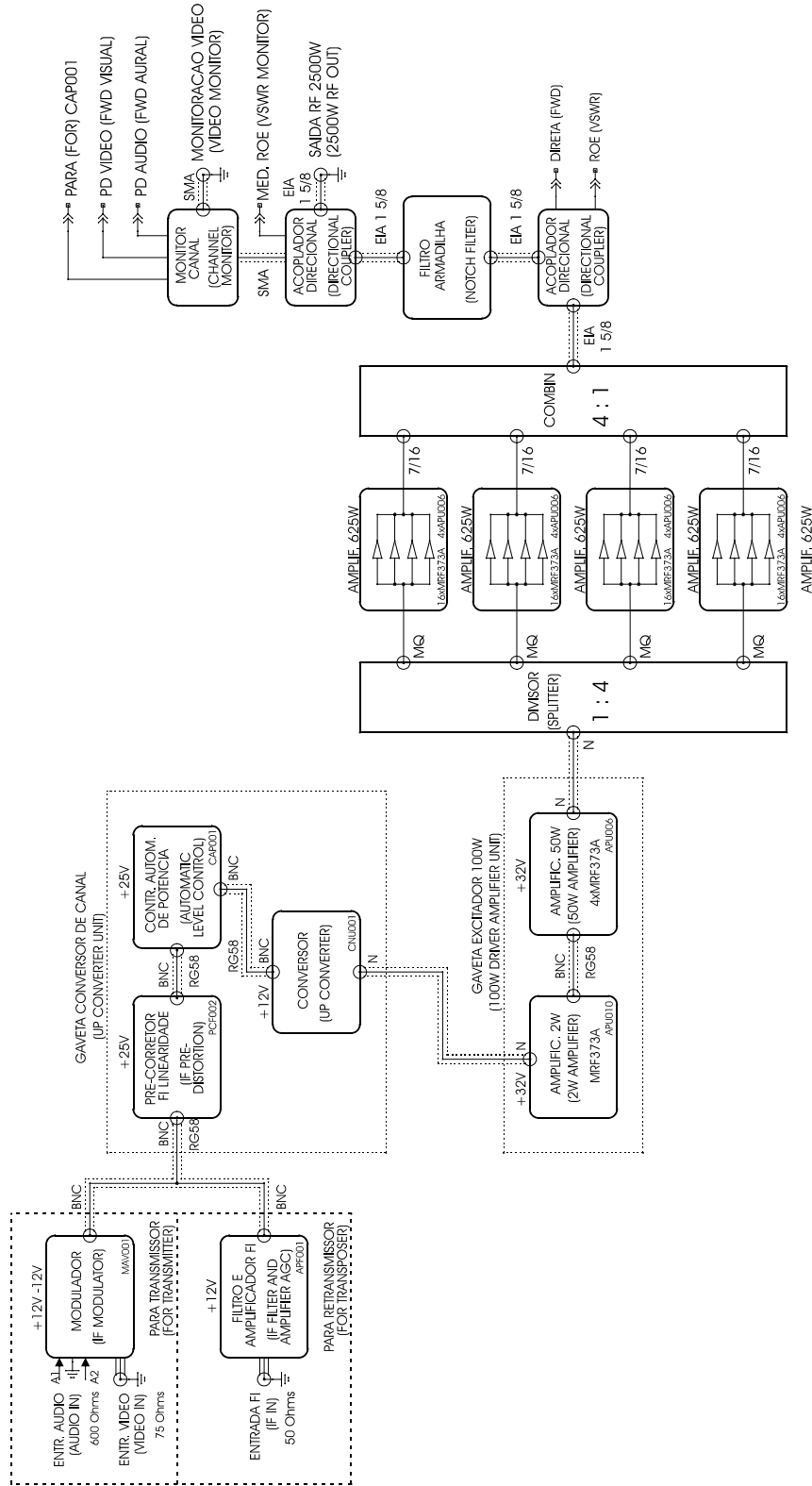
3.3. Audio Characteristics:

Input level: _____ 0 dBm to 25 KHz of deviation
 Input impedance: _____ 600 Ohms balanced
 Output power: _____ 250W
 Output impedance: _____ 50 Ohms
 Frequency Stability: _____ + or - 500 Hz
 Audio Response: _____ + or - 1 dB, 50 Hz to 15 KHz (with 75 μs of pre-emphasis)
 AM Noise: _____ 50 dB below the correspondent level for 100% modulation
 FM Noise: _____ 53 dB below the correspondent level for 100% modulation
 Harmonic Attenuation: _____ better than 60 dB

3.4. Supplementary Characteristics:

Input Connector: _____ audio = cannon; video = BNC
 Output Connector: _____ flange EIA 1 5/8"
 Maximum consumption: _____ 15
 kVA
 Final Stage: _____ 64 x MRF373A (LDMOS)

4. Block Diagram:



DESCRICAÇÃO/DESCRIPTION		DIAGRAMA EM BLOCOS	
(BLOCKS DIAGRAM)		(BLOCKS DIAGRAM)	
TÍTULO/MODEL	DATA REV./REV. DATE	REV	MOD. ENG.
RTU2500T	26/08/2004	ADR.	DES/DWG
ARQUIVO/FILE	DATA FABR./FABR. DATE	DES/DWG	ADR.
TW-DBU2500T.SCH	26/08/2004		