

Service Manual

Model TVP-2914



PanoramiC

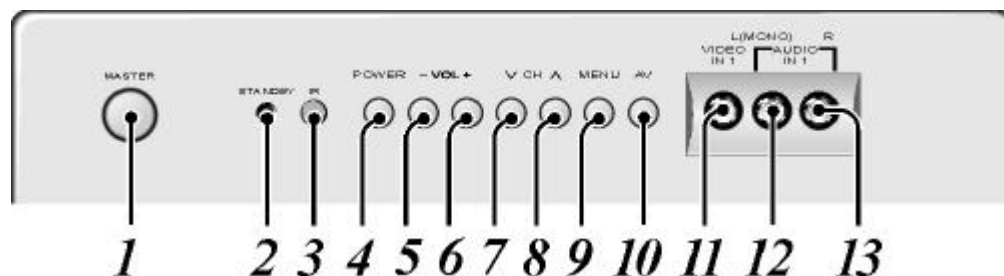
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1. GENERAL

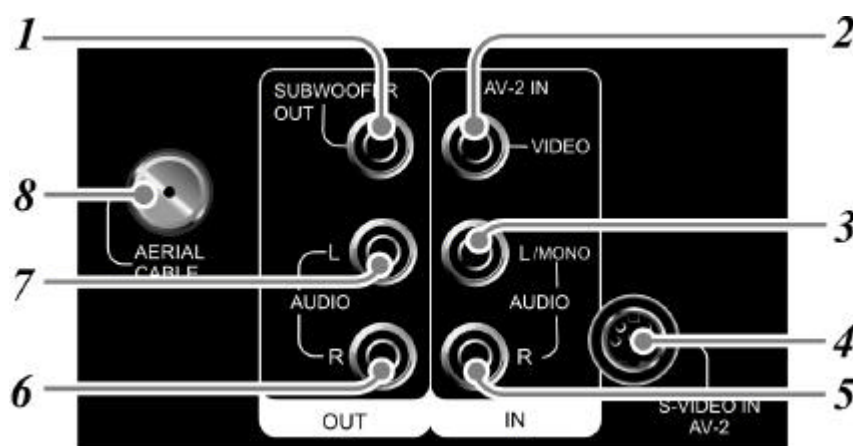
1.1 Product Front View



1.1.1 Front Panel Functions and Indications

1	Master	8	Channel +
2	Standby	9	Menu
3	Remote control sensor	10	AV
4	Power	11	Video IN 1
5	Volume -	12	Audio IN 1 L (mono)
6	Volume +	13	Audio IN 1 R
7	Channel -		

1.2 Product Back View



a) Back Panel Functions and Indications

1	Subwoofer OUT	5	AV-2 IN audio R
2	AV-2 IN video	6	Audio OUT R
3	AV-2 IN audio L/Mono	7	Audio OUT L
4	S-Video IN AV-2	8	AERIAL Cable

b) Functions

Menu Functions	Image		Sound
	Functions		Install
Channel	VHF	channel from 2 to13	
	UHF	channel from 14 to 69	
	Cable TV	channel from 1 to 125	

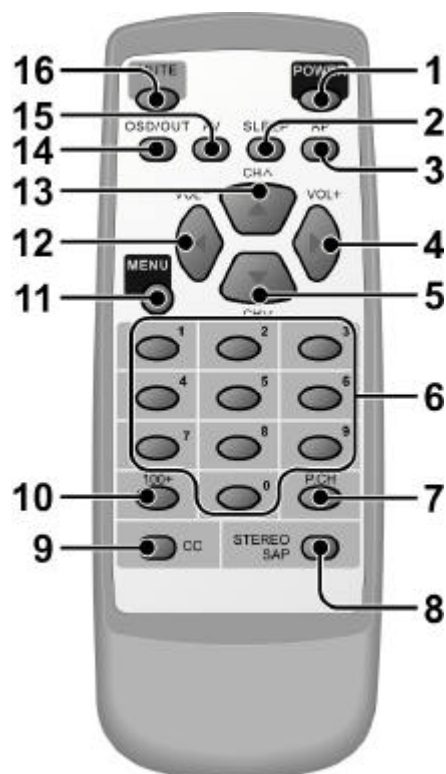
c) Characteristics

Product	Dimensions	672X610X515 mm
Weight		34,0 kg

d) Supply

		Unit	Nominal	Min.	Max.
Supply Voltage (FREE VOLTAGE)		Vac	120	-	-
			240	-	-
Supply Frequency		Hz	50/60	-	-
Consumed Power	Stand by	W	-	-	3
	In Operation	W	-	-	125

1.3 REMOTE CONTROL



1.3.1 Remote Control Functions

1	Power	9	CC
2	Sleep	10	100+
3	AP	11	Menu
4	Volume +	12	Volume -
5	Channel -	13	Channel +
6	Numerical keys	14	OSD/OUT
7	P.Channel	15	AV
8	Stereo SAP	16	Mute

2. TECHNICAL SPECIFICATION

Procedure to check up color TV electrical parameters

2.1 Audio

2.1.1 Output power at 10% THD

Connection through external video and audio input

- a) TV setup in "PP" condition.
- b) Connect a color bar generator (PAL-M system) to video input.
- c) Connect an audio generator with 500mV_{AC} level and 400Hz sinusoidal frequency to audio input.
- d) Connect to the power amplifier output a resistive load with equivalent Ohm value of speaker used on the tested TV.
- e) Connect a AC Voltmeter/Distortion Meter to the resistive load and increase volume control until Distortion Meter reading be 10%. Measure voltage on the resistive load and calculate power through next equation:

$$P = (V^2/R)$$

Where "V" is voltage in VOLTS, "R" is resistive load in OHMS and "P" is power in WATTS.

Minimum	Nominal	Maximum	Unit
4,50	5,00	-	W

2.1.2 Residual Audio

- a) TV setup in "PP" condition.
- b) Apply 60dB_{μV} signal (frequency and channel factory defined) to antenna input modulated with white pattern at 87,5% and audio signal with 400Hz frequency modulated in FM with 25kHz deviation.
- c) Connect an oscilloscope to power amplifier output (connect for the speaker).
- d) Adjust volume to minimum.
- e) Use the oscilloscope to measure peak-to-peak voltage, in Volt peak-to-peak (V_{pp}).

Minimum	Nominal	Maximum	Unit
-	-	500	mV _{pp}

2.1.3 Audio frequency response in TV's without tone control

- a) TV adjustment condition:
 - ✓ Balance center
 - ✓ Bass center
 - ✓ Treble center
- b) Connect a color bar generator (PAL-M system) to video-in.
- c) Connect to the audio input TV - an audio generator adjust to 500 mVac level, and sine wave 1kHz.
- d) Connect to the output power amplifier a resistive load with the same value of the impedance speaker.
- e) Connect na AC voltmeter over the resistive load and adjust volume control until obtain 1 Vac).
- f) Realign the audio generator to 100 Hz sine wave at the same level (500 mVac).
- g) Read the new voltage in the resistive load and calculate the change in dB through next equation:

$$A_{(100Hz)}=20 \log (V_L/V_{REF})$$

The result is defined in “**Decibel units** “

- h) Readjust the audio generator frequency to 10 kHz at the same level.
- i) Read the new voltage V_H at the resistive load and calculate the change in dB through the next equation:

$$A_{(10kHz)}=20\log V_H/V_{REF}$$

Condition	Minimum	Nominal	Maximum	Unit
100Hz	2,00	6,00	10,00	dB
10kHz	0,00	+4,00	+8,00	dB

2.1.4 Audio frequency response for the stereo television set with tonality control

- a) Repeat the above procedures (item 3) for the following additional conditions:

Condition		Minimum	Nominal	Maximum	Unit
Bass control in max. position	100Hz	+16,00	+20,00	+25,00	dB
Treble control in the meddle.	10kHz	-5,00	+7,00	+10,00	dB
Bass control in the min position.	100Hz	-10,00	-3,00	+3,00	dB
Treble control in the meddle.	10kHz	-5,00	+7,00	+10,00	dB
Bass contr. in the meddle pos..	100Hz	+4,00	+10,00	+15,00	dB
Treble control int the min pos..	10kHz	-15,00	-5,00	+10,00	dB
Bass contr. in the meddle pos.	100Hz	+4,00	+10,00	+15,00	dB
Treble contr in the max. pos..	10kHz	+10,00	+15,00	+25,00	dB

2.1.5 Channel separation in Stereo reception for the stereo television set

- a) TV setup in PP condition.
- b) Apply a 60dBmV signal (frequency and channel factory defined) with 88% video modulation and audio stereo carrier modulation within the standard "MTS" (BTSC).
- c) Connect an AC double voltmeter at the audio output L-R.
- d) Adjust the volume control to max. and the tremble, bass and balance to middle position.

Note:

✓ *Disconnect the speakers for more comfortable work.*

- e) Adjust the stereo generator for left channel only – with 30% modulation of 300 Hz sine wave and 7.5 kHz deviation.
- f) Read the Double Voltammeter value V_{ac} corresponding of Left and Right channel and calculate the stereo separation trough the equate:

$$Sep_{(300Hz) L \rightarrow R} = 20 \log (V_L/V_R)$$

- g) Adjust the stereo generator for left channel only – with 30% modulation of 3kHz sine wave and 7.5 kHz deviation.

$$Sep_{(3kHz) L \rightarrow R} = 20 \log (V_L/V_R)$$

- i) Repeat the procedures e, f and g, and now select Right channel only, at the same conditions above mentioned.

$$Sep_{(300Hz) R \rightarrow L} = 20 \log (V_R/V_L)$$

$$Sep_{(3kHz) R \rightarrow L} = 20 \log (V_R/V_L)$$

Condition	Minimum	Nominal	Maximum	Unit
$Sep_{(300Hz) L \rightarrow R}$	15,00	-	-	dB
$Sep_{(3kHz) L \rightarrow R}$	15,00	-	-	dB
$Sep_{(300Hz) R \rightarrow L}$	15,00	-	-	dB
$Sep_{(3kHz) R \rightarrow L}$	15,00	-	-	dB

2.1.6 Output and distortion level of S.A.P. signal

- a) TV setup in PP condition.
- b) Apply a 60dBμV signal (Frequency and channel factory defined) with 88% video modulation, and Stereo / S.A.P audio signal carrier in accordance of standard "MTS" (BTSC).
- c) Connect na AC volt-distortion-meter at the Left channel.
- d) Adjust the volume control to max. and the tremble, bass and balance to middle position.

Note:

✓ *Disconnect the speakers for more comfortable work.*

- e) Adjust the Stereo/SAP generator for 400 Hz sine wave and 100% modulation.
- f) Active the SAP function in the Test Television.
- g) Read Vac at the AC volt-distortion-meter.
- h) Repeat all above procedures, connecting the volt-distortion-meter at the Right channel

	Minimum	Nominal	Maximum	Unit
Output Level	450,00	500,00	550,00	mV _{AC}
Distortion (THD)	0,20	1,00	1,50	%

2.1.7 AM Rejection

- a) Connect at the IF sound input a FM generator adjust to 4.5 MHz modulated with 400 Hz sine wave and +/- 25 kHz deviation and 90 dBuV level.
- b) Connect na AC voltmeter in the audio detector output (after the emphasis circuit) and read the VFM tension.
- c) Connect at the IF sound input a AM generator pre-adjust to 4.5 MHz 30% modulated with 400 Hz sine wave, and 90 dBuV level.
- d) Read the Vam value in the voltmeter.

AM rejection will now be calculated by the equation:

$$Rej_{AM} = 20 \log(V_{FM}/V_{AM})$$

Note:

- ✓ Because this parameter is designed to define only the one circuit TV perform, the startup conditions adjust and what's circuits will be supplied, it will be defined separately for each one model.

Minimum	Nominal	Maximum	Unit
30,00	40,00	60,00	dB

2.2 POWER SUPPLY

2.2.1 Consume

Consume

- a) Connect the TV under test through a electronic wattmeter at the 220Vac/60Hz line.
- b) Turn-on the TV set and apply a 60dBμV (the preferred channel must to be defined by the production unit), modulated with a 88% video signal white pattern, and a ± 25 kHz deviation FM carrier with a 400Hz sine wave audio signal.
- c) Adjust for max. the bright, contrast and volume controls, and read the Sink Power show at the wattmeter.
- d) Active Standby mode and read again the Sink power.

- e) Repeat all below procedures, connecting now the television under test to a 110Vac/60 Hz line.

Condition	Minimum	Nominal	Maximum	Unit
117V _{AC} "PP"	-	-	125,00	W
117V _{AC} Stand-By	-	-	3,00	W
234V _{AC} "PP"	-	-	125,00	W
234V _{AC} Stand-By	-	-	3,00	W

2.2.2 Main Power Supply

- a) Connect the TV set under test to 110Vac/60Hz line.
b) Turn on the TV and apply a 60dBμV signal (frequency and channel defined by factory) 88% modulated with white pattern and audio signal with 400Hz frequency modulated in FM with ±25kHz of deviation.
c) Adjust the TV to a "PP" condition.
d) Utilizing a electronic DC voltmeter (over 10 M input impedance), read the next point in the power supply.

Condition	Test Point	Minimum	Nominal	Maximum	Unit
"PP" 117V _{AC}	+B (Cathode of D807)	130,50	132,50	134,50	V _{DC}
"PP" 117V _{AC}	Áudio (Cathode of D808)	20,00	22,00	24,00	V _{DC}
"PP" 117V _{AC}	Tuner (Cathode of DZ101)	30,00	33,00	36,00	V _{DC}
"PP" 117V _{AC}	+5V (Emitter of Q101)	4,50	5,00	5,50	V _{DC}
"PP" 117V _{AC}	+3V3 (Emitter of Q804)	3,00	3,30	3,60	V _{DC}
"PP" 117V _{AC}	+8V6 Áudio (Emitter of Q805)	8,00	8,60	9,00	V _{DC}
"PP" 117V _{AC}	+8V Video (Cathode of DZ807)	7,60	8,00	8,60	V _{DC}

2.2.3 Main Power Supply Regulation with fluctuation of the line

Repeat the procedure of the item 1 when the television is connected to the electric net with 100VAC/60Hz and also 220VAC/60Hz.

Condition	Test Point	Minimum	Nominal	Maximum	Unit
"PP" 240V _{AC}	+B (Cathode of D807)	130,50	132,50	134,50	V _{DC}
"PP" 240V _{AC}	Áudio (Cathode of D808)	20,00	22,00	24,00	V _{DC}
"PP" 240V _{AC}	Tuner (Cathode of DZ101)	30,00	33,00	36,00	V _{DC}
"PP" 240V _{AC}	+5V (Emitter of Q101)	4,50	5,00	5,50	V _{DC}
"PP" 240V _{AC}	+3V3 (Emitter of Q804)	3,00	3,30	3,60	V _{DC}
"PP" 240V _{AC}	+8V6 Áudio (Emitter of Q805)	8,00	8,60	9,00	V _{DC}
"PP" 240V _{AC}	+8V Video (Cathode of DZ807)	7,60	8,00	8,60	V _{DC}

Condition	Test Point	Minimum	Nominal	Maximum	Unit
"PP" 100V _{AC}	+B (Cathode of D807)	130,50	132,50	134,50	V _{DC}
"PP" 100V _{AC}	Áudio (Cahtode of D808)	20,00	22,00	24,00	V _{DC}
"PP" 100V _{AC}	Tuner (Cathode of DZ101)	30,00	33,00	36,00	V _{DC}
"PP" 100V _{AC}	+5V (Emitter of Q101)	4,50	5,00	5,50	V _{DC}
"PP" 100V _{AC}	+3V3 (Emitter of Q804)	3,00	3,30	3,60	V _{DC}
"PP" 100V _{AC}	+8V6 Áudio (Emitter of Q805)	8,00	8,60	9,00	V _{DC}
"PP" 100V _{AC}	+8V Vídeo (Cathode of DZ807)	7,60	8,00	8,60	V _{DC}

2.2.4 Auxiliary power supply from Fly Back Transformer.

- Connect the TV under test to a 117 Vac/60 Hz line.
- Turn on the TV and apply a 60dBmV signal (frequency and channel defined by factory) 88% modulated with white pattern and audio signal with 400Hz frequency modulated in FM with $\pm 25\text{kHz}$ of deviation.
- Adjust the TV to a "PP" condition.
- Utilizing a electronic DC voltmeter (over 10 M input impedance), read the auxiliary power supply from Fly-Back transformer :
- Read the RMS voltage apply to the CRT heat., Utilizing a true RMS voltmeter.
- When exist, read the auxiliary wind Peak to peak voltage, utilizing an oscilloscope.

Conition	Test Point	Minimum	Nominal	Maximum	Unit
"PP" 117V _{AC}	+13,00V (Cathode of D410)	11,90	12,70	13,50	V _{DC}
"PP" 117V _{AC}	-12,00V (Anode of D407)	-13,00	-12,50	-12,00	V _{DC}
"PP" 117V _{AC}	210V (Cathode of D408)	190,00	208,00	215,00	V _{DC}
"PP" 117V _{AC}	Filament (Pin 3 of CN401)	5,70	6,30	6,90	V _{RMS}

2.2.5 High Voltage (EHT)

- Connect a DC voltmeter to the resistor wired to the Fly Back ABL pin (the position and value of this resist is defined by each model.
- Connect a high voltage electronic DC voltmeter (over 1G impedance) in the electronic tube high voltage plug.
- Adjust the bright, color and contrast controls to minimum and read the high voltage E.H.T. ($I_{A\text{min}}$).
- Adjusting the bright control to the maximum position, contrast control to the maximum position and monitoring the voltage through the ABL resistor, adjust the bright control until the DC voltage reached the specific value. The anode electric current will now be define by the following equation:

$$I_A = (V_{ABL} / R_{ABL})$$

Read the high voltage E.H.T. in this conditions ($I_{A\text{min}}$).

Condition	Minimum	Nominal	Maximum	Unit
I_a mín.	28,50	30,50	32,50	kV _{DC}
$I_a=1,70$ mA	26,50	28,50	30,50	kV _{DC}

2.2.6 Dielectric Rigid

Adjust the HI_POT equipment to 1500 Vac voltage, and the desired test current, in accordance with the below specification table. When the TV set have a power switch, make sure that this switch stay in the ON mode. Connect the ground terminal of the test equipment in both pins of the line cord TV, and apply the HI-POT terminal (1.5KV) in every extern metal parts of the TV under test for one minute. In this condition the electric current must be equal or inferior that shown in the below specific table

Condition	Minimum	Nominal	Maximum	Unit
1500VAC	-	-	3,00	mA _{AC}

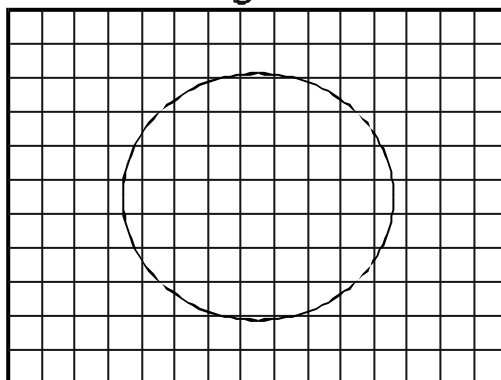
2.3 Frame geometric

Wide and height of the frame

Preparation:

- Connect the receiver under test to a 117V_{AC} line.
Turn on the TV and position the "brightness" and "contrast" controls at the maximum, and the "saturation" and "volume" controls at the minimum. Wait pre-heating time (see specification by model).
- Apply a 60 dB μ V signal to the antenna input 88% modulated with "CROSSHATCH" pattern. (The selected channel is determinated by factory).
- Position the contrast control at the maximum and reduce the brightness control until the black level of the aimage become "black".
- observing the image at the screen, make a blocks counting at the horizontal ad vertical direction. (See specification by model)

Figura A



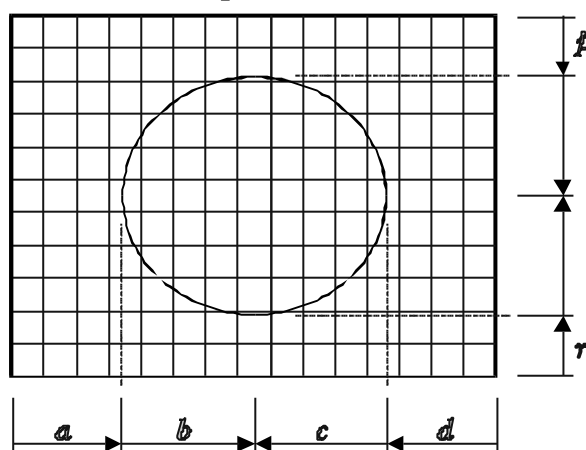
	Minimum	Nominal	Maximum	Unit
Altura (PAL-N)	12,50	12,80	13,10	Blocks
Largura (PAL-N)	16,20	16,50	16,80	Blocks
Altura (PAL-M)	12,70	13,00	13,30	Blocks
Largura (PAL-M)	16,70	17,00	17,30	Blocks

2.3.2 Frame centralization

Preparation:

- Connect the receiver under test to a 117 V_{AC} line.
Turn On the TV and position the bright and contrast control to the maximum, and the saturation and volume controls to the minimum position.
Wait for a pre-heating period.
- Apply a CIRCLE pattern 60dB μ V signal with 88% modulation (The preferred channel will be define by the fabric unit).
- Position to "nominal" the bright and contrast controls.
- For the next reading, please observe the figure B.
- Observe the image and make the measures (in centimeters) of the distances a, b, c and d.
- Apply the following formula to calculate the horizontal centralization.
$$\zeta(a/b)-(d/c)^{1/2}$$
- Observe the image and make the measures (in centimeters) of the distances p, q, r and s.
- Apply the formula to calculate the vertical centralization.
$$\hat{e}(p/q)-(s/r)^{1/2}$$

Figura B



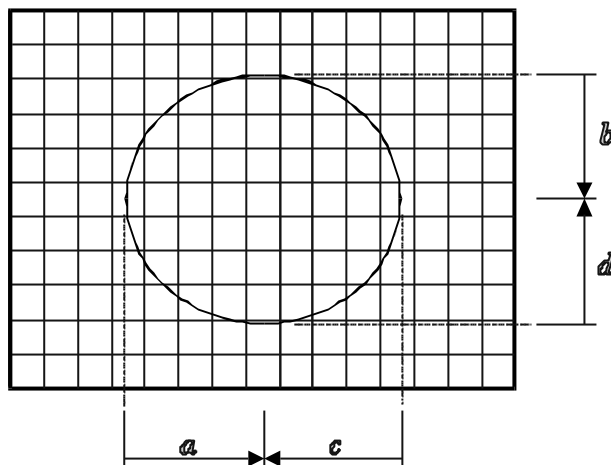
	Minimum	Nominal	Maximum	Unit
$ (a/b)-(c/d) $	-	0,00	0,10	
$ (p/q)-(r/s) $	-	0,00	0,20	

2.3.3 FRAME ASPECT RELATED

- Connect the receiver under test to a 117V_{AC} line.
Turn on the TV and adjust bright and contrast control to max. position, saturation and volume to min. Position. Wait for the heat period.
- Apply to the antenna input a 60dB μ V level signal with 88% modulated PHILIPS pattern (Frequency and channel factory defined)
- Adjust bright and contrast control to nominal position
- For the next reads, please utilizes figure C for reference.
- Observe the screen pattern and check the distances a, b, c, d (in centimeters)
- Apply the formula:

$M = (a + b + c + d) / 4$, and verify the proportion a/M , b/M , c/M e d/M .
Check for systems PAL-M and PAL-N

Figura C



	Minimum	Nominal	Maximum	Unit
a/M	0,95	1,00	1,05	
b/M	0,95	1,00	1,05	
c/M	0,95	1,00	1,05	
d/M	0,95	1,00	1,05	

2.3.4 Horizontal Linearity

- Connect the receiver under test in 117V_{AC} line.
Turn on the TV and adjust bright and contrast control to max. position, saturation and volume to min. Position. Wait for the heat period.
- Apply to the antenna input a 60dB μ V level signal with 88% modulated PHILIPS pattern (Frequency and channel factory defined)
- Adjust bright and contrast control to nominal position
- For the next reads, please take references by **figure D**.
- Observe the screen pattern and check the distances An - 15 blocks (in centimeters)
- Calculate the middle distances through blocks

$$M = A_n / 15.$$

Horizontal deviation between major blocks (DH_M)

Read first the 15 blocks wide (from b1 to b15) and select the biggest read (b_{\max}) for calculate the deviation:

$$DH_M = b_{\max} / M$$

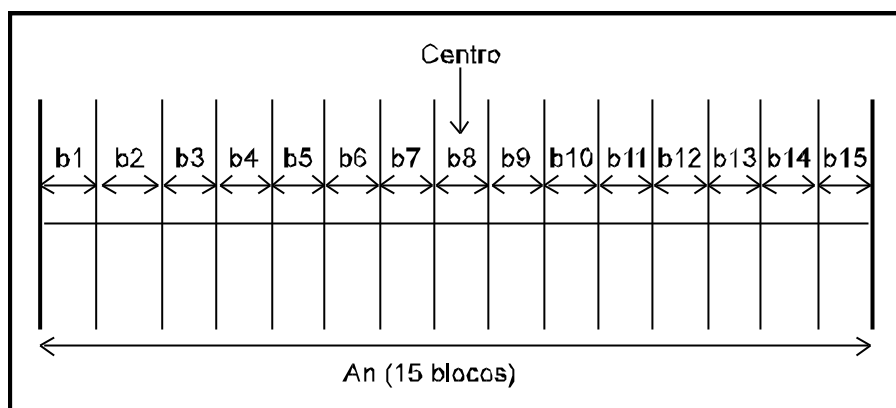
Minor Horizontal deviation between blocks (DH_m)

Read first the 15 blocks wide (from b1 to b15) and select the smallest read (b_{\min}) for calculate the deviation:

$$DH_m = b_{\min} / M$$

(*)Check for signals PAL-M and PAL-N

Figura D



PAL-M	Minimum	Nominal	Maximum	Unit
DH _M	-	1,10	1,30	
DH _m	0,70	0,90	-	

PAL-N	Minimum	Nominal	Maximum	Unit
DH _M	-	1,10	1,30	
DH _m	0,70	0,90	-	

2.3.5 Vertical Linearity

- Connect the receiver to a 117V_{AC} line
Turn on the TV and adjust bright and contrast control to max. position, saturation and volume to min. Position. Wait for the heat period (please see the specification for this model).
- Apply to the antenna input a 60dB μ V level signal with 88% modulated PHILIPS pattern (Frequency and channel factory defined).
- Adjust bright and contrast control to nominal position
- For the next reads, please take references by **figure E**
- Observe the screen pattern and check the distances X –(in centimeters)
- Calculate the middle distances through blocks:

$$a_{medium}=X/11.$$

Major vertical deviation between blocks (DV_M).

Read first the 11 blocks height (from a1 to a11) and select the biggest of them (a_{max}) for calculate the deviation :

$$DV_M = a_{max}/a_{medium}$$

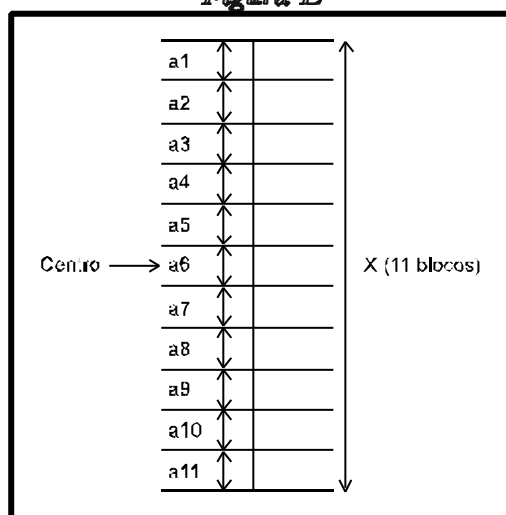
Minor vertical deviation between blocks (DV_m)

Read first the 11 blocks height (from a1 to a11) and select the smallest of them (a_{min}) for calculate the deviation:

$$DV_m = a_{min}/a_{medium}$$

(*)Check for signals PAL-M and PAL-N

Figura E



PAL-M	Minimum	Nominal	Maximum	Unit
DV_M	-	1,10	1,40	
DV_m	0,60	0,90	-	

PAL-N	Minimum	Nominal	Maximum	Unit
DV _M	-	1,10	1,40	
DV _m	0,60	0,90	-	

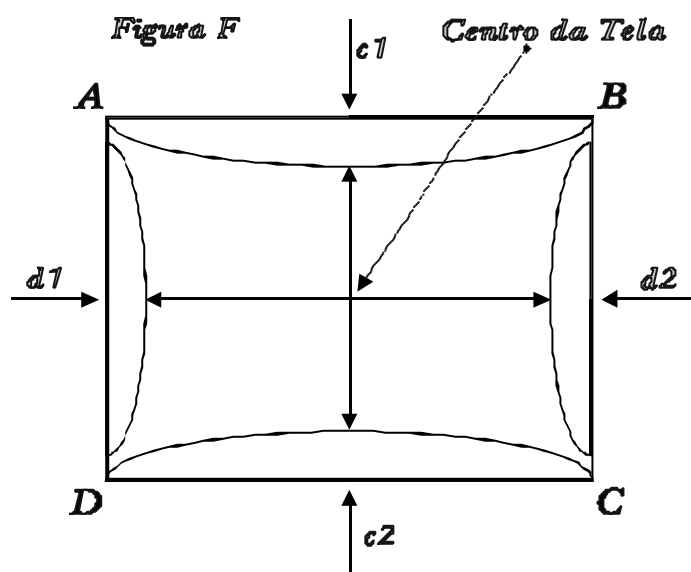
2.3.6 Pin-Cushion & Shape of Raster

- Connect the receiver to a 117V_{AC} line.
Turn on the TV and adjust bright and contrast control to max. position, saturation and volume to min. Position. Wait for the heat period (please see the specification for this model).
- Apply to the antenna input a 60dB μ V level signal with 88% modulated "CROSSHATCH" pattern (Frequency and channel factory defined)
- Turn the face tube to West/Lest orientation
- Adjust bright and contrast control to "PP" position
- For the next reads, please take references by **figure F** (distances in millimeters)
- Observe the screen pattern, to calculate:

$$\text{Top-Bottom} = 2(c1 + c2)/(AD + BC) \times 100$$

$$\text{Left-Right} = 2(d1 + d2)/(AB + CD) \times 100$$

(*) Check for signals PAL-M and PAL-N



	Minimum	Nominal	Maximum	Unit
TOP-BOTTOM	-	-	1,50	%
LEFT-RIGHT	-	-	2,00	%

2.4 Purity

- a) Connect the receiver to a 117V_{AC} line
Turn on the TV and adjust bright to nominal position and contrast control to min. position, saturation and volume to min. position.
- b) Apply to the antenna input a 60dB μ V level signal with 88% modulated "WHITE" pattern (Frequency and channel factory defined).
- c) Wait for pre-heating period (30 minutes).
- d) Turn the face tube to West/Lest orientation.
- e) Degauss the device properly.
- f) Increment the contrast controls to max. position, and wait for 3 minutes
- g) At a distance of 5 times the height of the screen, observe that no color dirty may appears.
- h) Repeat this procedures now utilizing a red pattern.

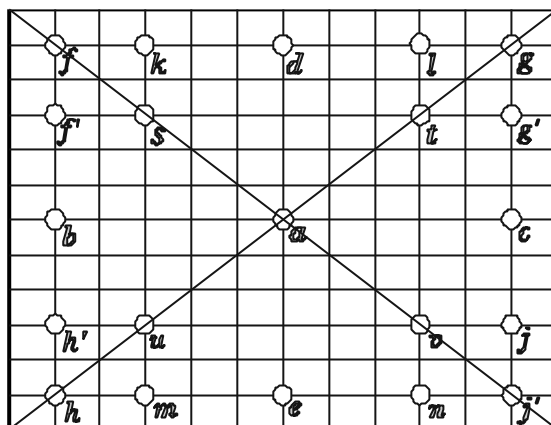
Note:

- ✓ If the receiver is moved during the test procedure, always degauss again the device

2.5 Convergence

- a) Connect the receiver to a 117V_{AC} line
Turn on the TV and adjust bright and contrast control to max.. position, saturation and volume to min. position. Wait for pre-heating period (please see specification for each model)
 - b) Apply to the antenna input a 60dB μ V level signal with 88% modulated "CROSSHATCH" pattern (Frequency and channel factory defined)
 - c) Turn the face tube to West/Lest orientation
 - d) Degauss the device properly
 - e) Adjust bright and contrast control to minimum position
 - f) For the next reads, please take references by **figure G** (distances in millimeters)
 - g) Observing the image on the screen and with *Gauge Convergence* help, measure the indicated positions by the screen:
 - a) distance between the center of the vertical lines (X),
 - b) distance between the center of the horizontal lines (Y) for:
 - ✓ R/G (red / green)
 - ✓ R/B (red / blue)
 - ✓ B/G (blue / green)
- (See specification by model)
(*) Apply for signals PAL-M and PAL-N

Figura G



Point	X, Y LIMITS (mm)	
	BG, RG	BG
a	0,4	0,4
b, c	1,2	1,2
d, e	1,0	1,0
f, g, h, j	1,5	2,0
f', g', h', j'	1,2	1,5
k, l, m, n	1,2	1,2
s, t, u, v	1,0	1,0

2.6 Video

2.6.1 Sensibility and Signal /Noise Rate

- Adjust the TV to a "PP" condition.
- Apply to the antenna input a 60dB μ V signal with 88% AM modulation, 1kHz sine wave (Frequency and channel factory defined).
- Connect at the output video detector na AC voltmeter and read the voltage V_{AC} .
- Turn off the AM modulation and read the noise level " V_r " (AC voltmeter).
- Calculate the signal-noise rate as following:

$$S/N = 20 \log (V_{AC} / V_R).$$

- Reduce the output level signal generator till the rate S/N reach 20 dB. In this condition the output level signal generator is the sensibility in dB μ V.

	Minimum	Nominal	Maximum	Unit
Sensibility	-	37,00	46,00	dB μ V
S/N	40,00	50,00	-	dB

2.6.2 Chrome sensibility

- Adjust the TV to a "PP" condition.
- Apply to the antenna input a 60dB μ V signal with 88% AM modulation with PAL-M color pattern (Frequency and channel factory defined), and FM sine wave 400Hz audio modulation \pm 25 kHz deviation.
- Observe the TV screen under test and reduce the output generator level until the color pattern be visible. At this condition the output generator level represents the sensibility of chrome in dB μ V.

Note.: If the TV under test is two or three-system mode, repeat this procedures for the PAL-N and NTSC-M signal system.

Condition	Minimum	Nominal	Maximum	Unit
PAL-M	-	28,00	30,00	dB μ V
PAL-N	-	28,00	30,00	dB μ V
NTSC-M	-	28,00	30,00	dB μ V

2.6.3 Sensibilidade de recepção de Closed Caption

- Adjust the TV to a "PP" condition.
- Apply a 60dB μ V signal (frequency and channel defined by factory) 88% modulated with color bars (Pal-M) with Closed Caption signal.
- Observe on the TV screen in test and reduce the generator output level until the minimum value that be possible identify the characters of the C.C without errors, being generator output level the value of the sensitivity of Closed Caption reciever.

Condition	Nominal	Limit	Unit
PAL-M	48	51	dB μ V

2.6.4 AGC circuit

- Apply to the antenna input a 60dB μ V signal with 88% AM modulation with "WHITE" pattern (Frequency and channel factory defined), and FM sine wave 400 Hz audio modulation \pm 25 kHz deviation.
- Adjust the TV to "PP" condition
- Read the DC voltage at the tuner AGC terminal. Utilize a DC electronic voltmeter with minimum 10 M Ω impedance.

Minimum	Nominal	Maximum	Unit
1,50	2,50	3,50	V _{DC}

2.6.5 AFT circuit.

- a) Apply to the antenna input a 60dB μ V signal with 88% AM modulation with PAL-M COLOR BAR pattern (Frequency and channel factory defined), and FM sine wave 400 Hz audio modulation +-25 kHz deviation
- b) Connect a oscilloscope in the output video detector and read the peak to peak burst level signal "Vb"
- c) Increment the generator frequency by 500 kHz and read the new value peak to peak burst signal "Vh" and calculate the percentage as following:

$$E_H = V_H / V_B$$

- d) Decrement the generator frequency by 500 kHz and repeat the procedure(c) reading the peak-to-peak burst signal V_L and calculate the percentage as following:

$$E_L = V_L / V_B$$

	Minimum	Nominal	Maximum	Unit
E_H	-0,80	0,00	+1,00	%
E_L	-0,80	0,00	+1,50	%

3. CALIBRATION GUIDE

Note: *This guide is only an orientation and, for some items, may be adapted by Factory Engineering to best conform to the productive process.*

INTRODUCTION

Note:

- ✓ *It is necessary to pre-heat the TV during 15 minutes, before its calibration.*

- 1) *Important recommendations*
- 2) *Definitions of the terms*
- 3) *Geometry of the Image*
- 4) *White Balance*
- 5) *Screen adjustment*
- 6) *AGC adjustment*

How to select the FACTORY MODE

- a) Short to ground pin 78 of IC101 (momentarily) or press the service key in the service remote control (see the description of service remote control).
- b) Select the adjustment options pressing the key **CH▲** or **CH▼** of the remote control, of the television front panel or use the service remote control (see the description of service remote control).

Note: *All the adjustment options can be selected directly by the remote control numeric keys.*

- c) Adjust the selected option pressing the key **VOL➤** or **◀VOL** of the remote control, of the television front panel or use the service remote control(see the description of service remote control).
 - c1) **VOL➤** - increases registers (MAX.).
 - c2) **◀VOL** - decreases registers (MIN.).
- d) To exit the FACTORY MODE, use the key **OSD/OUT** of the remote control.

3.1 Important recommendations

- 3.1.1** *Before beginning the adjustments, the TV set should be a pre-heated during at least 15 minutes.*
- 3.1.2** *The positioning of the TV set should obey the magnetic parameters of South America that it is -120 vertical mG. In the practice, this is gotten with a relative precision, positioning the TV set with the face (screen) of the CRT pointing to the geographical East.*

Note: *These cares should also be taken when CQ will analyze the TV set.*

3.2 Definitions of the registers

Description of service and factory registers					
Register	Name	Range		Description	Default Value
01	HSh	00	63	Horizontal shift	45
02	VSD	00	00	Vertical screen	0
03	VSI	00	63	Vertical slope	30
04	VAm	00	63	Vertical amplitude	44
05	VSh	00	63	Vertical shift	32
06	SC	00	63	S-correction	14

<i>The registers bellow must be set to the default values.</i>					
Register	Name	Range		Description	Default Value
10	TWBI	00	255	Timing of 'wide blanking'	88
11	PWLi	00	63	Peak white limiting	08
12	OSIF	00	63	Off-set IF demodulator	20
13	HzPI	00	63	Horizontal parallelogram	32
14	HBow	00	63	Horizontal bow	32
15	HSh	00	63	Horizontal shift	45
16	EW	00	63	EW width	34
17	PW	00	63	EW parabola/width	35
18	EWUC	00	63	EW upper corner parabola	35
19	EWLC	00	63	EW lower corner parabola	35
20	TC	00	63	EW trapezium	33
21	VSI	00	63	Vertical slope	30
22	VAm	00	63	Vertical amplitude	44
23	SC	00	63	S-correction	14
24	VSh	00	63	Vertical shift	32
25	VX	00	63	Vertical zoom	25
26	VOT	00	63	Vertical Offset	28
27	TAS	00	63	Text Area Start	13
28	OEA	00	127	Odd Even Alignment	60
29	BLOR	00	63	Black level offset R	32
30	BLOG	00	63	Black level offset G	32
31	WPR	00	63	White point R	32
32	WPG	00	63	White point G	32
33	WPB	00	63	White point B	32
34	PkFr	00	3	Peaking Frequency	1
35	YDI	00	15	Luminance delay time	10
36	AGC	00	63	AGC take-over	25
37	CDc0	00	15	Colour decoder 0	6
38	CDc1	00	7	Colour decoder 1	0
39	AVS0	00	127	AV-switch 0	64
40	AVS1	00	7	AV-switch 1	0
41	Syn0	00	127	Synchronisation 0	0
42	Syn1	00	63	Synchronisation 1	16

43	Defl	00	255	Deflection	16
44	VIF0	00	255	Vision IF 0	32
45	VIF1	00	255	Vision IF 1	2
46	SND0	00	255	Sound 0	10
47	CTL0	00	255	Control 0	0
48	CTL1	00	255	Control 1	0
49	SND1	00	255	Sound 1	0
50	FEA0	00	63	Features 0	0
51	FEA1	00	127	Features 1	0
52	BRI	00	63	Brightness	32
53	CON	00	63	Contrast	63
54	COL	00	63	Color	32
55	PEA	00	63	Peaking	45

*The registers bellow **must be** set to the **default values**.*

Register	Name	Range	Description	Default Value
56	HUE	00 63	Hue	32
57	VOL	00 63	Volume	15
58	STNT	00 15	Stereo noise threshold	8
59	SPNT	00 15	SAP noise threshold	8
60	LA	00 15	Input level adjustment	7
61	ALW	00 31	Alignment for wideband	15
62	ALS	00 31	Alignment for spectral	15

Please, look the functions of registers bellow, before of change to the default value.

Description of service and factory registers				
Register	Name	Range	Description	Default Value
94	STBY	00 2	Standby	1
95	AV-2	00 1	AV2-Conected	X
96	ASTU	00 3	Address Select of tuner	0
97	TUNE	00 1	Tuner protocol	X
98	INI	00 00	Initialization	0
99	VSD	00 00	Vertical screen	0

Register 94 (STBY)

Value	Function
0	The TV set DON'T return to the STANDBY, after of the Power On.
1	The TV set, always return to the STANDBY, after of the Power On
2	Only to the factory. Don't use this value.

Register 95 (AV-2)

Value	Function
0	1 AV input.
1	2 AV inputs.

Marcador 96 (ASTU)	
Valor	Função
0	Quando o pino MAS do tuner está aterrado.
1	Quando o pino MAS do tuner está aberto.
2	Quando o pino de MAS do tuner está entre 0.4 e 0.6V.
3	Quando o pino de MAS do tuner está conectado a +5V.

Marcador 97 (TUNER)	
Valor	Função
0	Para TUNER que roda com o protocolo europeu.(Ex. UV1336S/A)
1	Para TUNER que roda com protocolo americano.

Register 96 (ASTU)	
Value	Function
0	When the MAS pin of the tuner is grounded.
1	When the MAS pin of the tuner is opened.
2	When the MAS pin of the tuner is between 0.4 and 0.6V
3	When the MAS pin of the tuner is connected to the +5V.

Register 97 (TUNE)	
Value	Function
0	To TUNER that run with Europe protocol. (Ex. UV1336S/A)
1	To TUNER that run with U.S protocol.

Register 98 (INI)	
Value	Function
-	Initialize all the registers to the default value.

Register 99 (VSD)	
Value	Function
-	To adjust the Screen.

3.3 Geometry of the Image

- a) Using the PM - 5515 generator, apply the crosshatch pattern with circle.
- b) Adjust the bellow items, until obtaining the best circle symmetry and positioning, as well as the minor image geometric distortion:
 - ✓ Use the register (**VSI**) to adjust the Vertical slope;
 - ✓ Use the register (**VAm**) to adjust Vertical Height;
 - ✓ Use the register (**VSh**) to adjust Vertical position;
 - ✓ Use the register (**VSc**) to adjust Vertical Center Linearity;
 - ✓ Use the register (**HSh**) to adjust Horizontal position

3.4 White balance**Note:**

- ✓ *The cut point doesn't need adjustment, because it's automatically made by the IC101.*
- ✓ *The white adjustment is already pre-adjusted and incised in the IC101 and, thus, its adjustment is not necessary.*

Otherwise, if it is necessary to change the temperature of the white pattern, proceed in the following way:

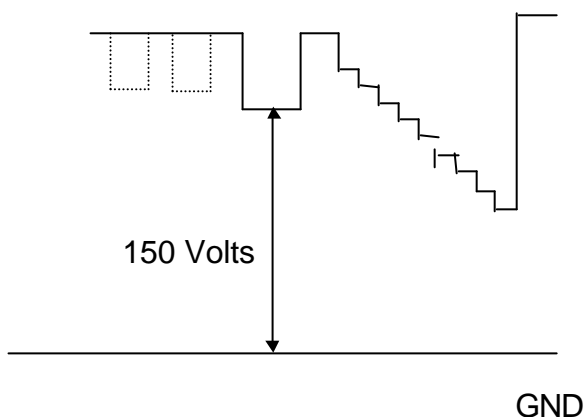
- a) Enter in the service mode.
- b) Select via **CH**▲ or **CH**▼ the WPR (29), WPG (30) and WPB (31) functions.
- c) Increase or decrease the function via **VOL**➤ or via ◀**VOL** respectively.

3.5 Screen adjustment

Mode 1:

- a) Apply a gray scale pattern.
- b) Adjust the controls to:
 - ✓ *Brightness* - 50%
 - ✓ *Contrast* - 70%
- c) Measure DC voltage on the three cathodes (CRT) (one at a time) and select the highest one.
- d) Connect a X100 test tip to the selected cathode (highest voltage DC).
- e) Adjust the screen potentiometer to obtain 130V, according to the illustration below:

Note. The oscilloscope should be positioned in the vertical mode.

**Mode 2:**

- a) Select the register 99 (**VSD**).
- b) Press **VOL**➤ or ➤**VOL** to select and adjust the screen control localized on the FBT, until the horizontal line be slightly visible on the screen center.

3.6 AGC adjustment

Mode 1:

- ✓ Apply a PHILIPS pattern with 60dBμV of intensity and adjust the delay until obtain 3.5V in AGC pin of tuner.

4. MATERIAL LIST

	MAIN PCB	
	CAPACITORS	
CODE	DESCRIPTION	POSITION
1330104106	C.POLYEMT 100KPF/63V K	C673
1330104106	C.POLYEMT 100KPF/63V K	C674
1330104106	C.POLYEMT 100KPF/63V K	C807
1330104106	C.POLYEMT 100KPF/63V K	C812
1330104421	C.POLYMET 100KPF/250V J	C404
1330104421	C.POLYMET 100KPF/250V J	C904
1330104421	C.POLYMET 100KPF/250V J	C907
1330104421	C.POLYMET 100KPF/250V J	C911
1330224222	C.POLYMET 220KPF/100V K	C302
1330474904	C.POLYMET 470KPF/63V K	C827
1363102601	C.C.D.Y5P 1KPF>=500V K	C405
1363331803	C.C.D. Y5P 330PF/2KV K 6LS	C828
1363391600	C.C.D. Y5E 390PF >=500V K	C422
1363471600	C.C.D.Y5P/Y5E 470PF>=500V K	C418
1363471600	C.C.D.Y5P/Y5E 470PF>=500V K	C419
1363471600	C.C.D.Y5P/Y5E 470PF>=500V K	C425
1363471600	C.C.D.Y5P/Y5E 470PF>=500V K	C427
1363471600	C.C.D.Y5P/Y5E 470PF>=500V K	C833
1363471600	C.C.D.Y5P/Y5E 470PF>=500V K	C839
1363471600	C.C.D.Y5P/Y5E 470PF>=500V K	C870
1363471600	C.C.D.Y5P/Y5E 470PF>=500V K	C903
1363471600	C.C.D.Y5P/Y5E 470PF>=500V K	C906
1363471600	C.C.D.Y5P/Y5E 470PF>=500V K	C910
1364104103	C.C.D. Y5V 100KPF/25V Z	C306
1364104103	C.C.D. Y5V 100KPF/25V Z	C806
1364104102	C.C.D.Y5V 100KPF>=25V Z	C842
1364222795	CCD.SWIT.MOD.Y5P 2,2KPF/1KV K	C401
1330473104	MYLLARCAP 47KPF/63V K	C421
1380100325	ELCO 10UF/25V K 6,3X11MM LL	C608
1380100325	ELCO 10UF/25V K 6,3X11MM LL	C609
1380100325	ELCO 10UF/25V K 6,3X11MM LL	C628
1380100524	ELCO 10UF/50V M 5X11MM	C104
1380100524	ELCO 10UF/50V M 5X11MM	C201
1380100524	ELCO 10UF/50V M 5X11MM	C423
1380100524	ELCO 10UF/50V M 5X11MM	C604
1380100524	ELCO 10UF/50V M 5X11MM	C623
1380100524	ELCO 10UF/50V M 5X11MM	C668
1380100524	ELCO 10UF/50V M 5X11MM	C718
1380100524	ELCO 10UF/50V M 5X11MM	C722
1380101224	ELCO 100UF/16V M 5X11MM	C613
1380101224	ELCO 100UF/16V M 5X11MM	C624
1380101224	ELCO 100UF/16V M 5X11MM	C647
1380101224	ELCO 100UF/16V M 5X11MM	C705
1380101224	ELCO 100UF/16V M 5X11MM	C706
1380101224	ELCO 100UF/16V M 5X11MM	C720
1380101224	ELCO 100UF/16V M 5X11MM	C742
1380101224	ELCO 100UF/16V M 5X11MM	C834
1380101224	ELCO 100UF/16V M 5X11MM	C851

CODE	DESCRIPTION	POSITION
1380101228	ELCO 100UF/16V M 6,3x11MM	C613
1380101228	ELCO 100UF/16V M 6,3x11MM	C624
1380101228	ELCO 100UF/16V M 6,3x11MM	C647
1380101228	ELCO 100UF/16V M 6,3x11MM	C705
1380101228	ELCO 100UF/16V M 6,3x11MM	C706
1380101228	ELCO 100UF/16V M 6,3x11MM	C720
1380101228	ELCO 100UF/16V M 6,3x11MM	C742
1380101228	ELCO 100UF/16V M 6,3x11MM	C834
1380101228	ELCO 100UF/16V M 6,3x11MM	C851
1380101731	ELCO 100UF/63V M 10X12,5MM	C428
1380109622	ELCO 1UF/100V M 5x11mm	C411
1380109622	ELCO 1UF/100V M 5x11mm	C606
1380109622	ELCO 1UF/100V M 5x11mm	C607
1380109622	ELCO 1UF/100V M 5x11mm	C614
1380109622	ELCO 1UF/100V M 5x11mm	C653
1380109622	ELCO 1UF/100V M 5x11mm	C657
1380109622	ELCO 1UF/100V M 5x11mm	C672
1380109622	ELCO 1UF/100V M 5x11mm	C824
1380220528	ELCO 22UF/50V M 5X11MM	C808
1380221231	ELCO 220UF/16V M 6,3X11MM	C645
1380221231	ELCO 220UF/16V M 6,3X11MM	C836
1380221231	ELCO 220UF/16V M 6,3X11MM	C838
1380229622	ELCO 2,2UF/100V M 5X11MM	C204
1380229622	ELCO 2,2UF/100V M 5X11MM	C610
1380229622	ELCO 2,2UF/100V M 5X11MM	C611
1380229622	ELCO 2,2UF/100V M 5X11MM	C612
1380229622	ELCO 2,2UF/100V M 5X11MM	C616
1380229622	ELCO 2,2UF/100V M 5X11MM	C631
1380229622	ELCO 2,2UF/100V M 5X11MM	C632
1380229622	ELCO 2,2UF/100V M 5X11MM	C633
1380229622	ELCO 2,2UF/100V M 5X11MM	C637
1380229622	ELCO 2,2UF/100V M 5X11MM	C646
1380229622	ELCO 2,2UF/100V M 5X11MM	C648
1380229622	ELCO 2,2UF/100V M 5X11MM	C649
1380229622	ELCO 2,2UF/100V M 5X11MM	C650
1380229622	ELCO 2,2UF/100V M 5X11MM	C670
1380330921	ELCO 33UF/160V M 10X20MM	C829
1290330921	ELCO 33UF/160V M 10X20MM	C829
1380470324	ELCO 47UF/25V M 5X11MM	C103
1380470324	ELCO 47UF/25V M 5X11MM	C654
1380470324	ELCO 47UF/25V M 5X11MM	C658
1380470324	ELCO 47UF/25V M 5X11MM	C661
1380470324	ELCO 47UF/25V M 5X11MM	C703
1380470324	ELCO 47UF/25V M 5X11MM	C835
1380470324	ELCO 47UF/25V M 5X11MM	C852
1380471333	ELCO 470UF/25V M 10X12,5MM	C655
1380471333	ELCO 470UF/25V M 10X12,5MM	C831
1380471932	ELCO 470UF/10V M 8X11MM	C107
1380471932	ELCO 470UF/10V M 8X11MM	C621
1380479622	ELCO 4,7UF/100V M 5x11mm	C414
1380479622	ELCO 4,7UF/100V M 5x11mm	C416
1380479622	ELCO 4,7UF/100V M 5x11mm	C602

CODE	DESCRIPTION	POSITION
1380479622	ELCO 4,7UF/100V M 5x11mm	C626
1380479622	ELCO 4,7UF/100V M 5x11mm	C629
1380479622	ELCO 4,7UF/100V M 5x11mm	C630
1380479622	ELCO 4,7UF/100V M 5x11mm	C644
1380479622	ELCO 4,7UF/100V M 5x11mm	C666
1380479522	ELCO 4,7UF/50V M 5X11MM	C414
1380479522	ELCO 4,7UF/50V M 5X11MM	C416
1380479522	ELCO 4,7UF/50V M 5X11MM	C602
1380479522	ELCO 4,7UF/50V M 5X11MM	C626
1380479522	ELCO 4,7UF/50V M 5X11MM	C629
1380479522	ELCO 4,7UF/50V M 5X11MM	C630
1380479522	ELCO 4,7UF/50V M 5X11MM	C644
1380479522	ELCO 4,7UF/50V M 5X11MM	C666
1380479732	ELCO 4,7UF/160V M 6,3X11MM	C408
1490512403	CAP.SMD X7R 120KPF/25V K 0805	C638
1490512420	CAP.SMD X7R 120KPF/16V K 0805	C617
1490522420	CAP.SMD X7R 220KPF/16V K 0805	C501
1490522420	CAP.SMD X7R 220KPF/16V K 0805	C627
1490522420	CAP.SMD X7R 220KPF/16V K 0805	C677
1490522420	CAP.SMD X7R 220KPF/16V K 0805	C678
1490522420	CAP.SMD X7R 220KPF/16V K 0805	C730
1490522420	CAP.SMD X7R 220KPF/16V K 0805	R654
1494222420	CAP.SMD Y5P 220KPF/16V K 0805	C501
1494222420	CAP.SMD Y5P 220KPF/16V K 0805	C627
1494222420	CAP.SMD Y5P 220KPF/16V K 0805	C677
1494222420	CAP.SMD Y5P 220KPF/16V K 0805	C678
1494222420	CAP.SMD Y5P 220KPF/16V K 0805	C730
1494222420	CAP.SMD Y5P 220KPF/16V K 0805	R654
1490610401	CAP.SMD Y5V 100KPF/50V M 0805	C656
1490647408	CAP.SMD Y5V 470KPF/16V Z 0603	C625
1491010104	CAP.SMD NP0 100PF/50V J 0603	C209
1491010104	CAP.SMD NP0 100PF/50V J 0603	C210
1491010104	CAP.SMD NP0 100PF/50V J 0603	C212
1491010104	CAP.SMD NP0 100PF/50V J 0603	C669
1491010104	CAP.SMD NP0 100PF/50V J 0603	C671
1491010104	CAP.SMD NP0 100PF/50V J 0603	C715
1491010104	CAP.SMD NP0 100PF/50V J 0603	C716
1491010104	CAP.SMD NP0 100PF/50V J 0603	C717
1491033004	CAP.SMD NP0 33PF/50V J 0603	C101
1491033004	CAP.SMD NP0 33PF/50V J 0603	C102
1491033004	CAP.SMD NP0 33PF/50V J 0603	C601
1491033004	CAP.SMD NP0 33PF/50V J 0603	C620
1491033004	CAP.SMD NP0 33PF/50V J 0603	C701
1491033004	CAP.SMD NP0 33PF/50V J 0603	C702
1491033004	CAP.SMD NP0 33PF/50V J 0603	C711
1491033004	CAP.SMD NP0 33PF/50V J 0603	C712
1492010200	CAP.SMD X7R 1KPF/50V K 0603	C205
1492010200	CAP.SMD X7R 1KPF/50V K 0603	C305
1492010200	CAP.SMD X7R 1KPF/50V K 0603	C307
1492010200	CAP.SMD X7R 1KPF/50V K 0603	C413
1492010200	CAP.SMD X7R 1KPF/50V K 0603	C664
1492010200	CAP.SMD X7R 1KPF/50V K 0603	C665

CODE	DESCRIPTION	POSITION
1492010200	CAP.SMD X7R 1KPF/50V K 0603	C714
1492010200	CAP.SMD X7R 1KPF/50V K 0603	C770
1492010200	CAP.SMD X7R 1KPF/50V K 0603	C771
1492010300	CAP.SMD X7R 10KPF/50V K 0603	C106
1492010300	CAP.SMD X7R 10KPF/50V K 0603	C213
1492010300	CAP.SMD X7R 10KPF/50V K 0603	C412
1492010300	CAP.SMD X7R 10KPF/50V K 0603	C642
1492010300	CAP.SMD X7R 10KPF/50V K 0603	C643
1492010300	CAP.SMD X7R 10KPF/50V K 0603	C837
1492010400	CAP.SMD X7R 100KPF/16V K 0603	C105
1492010400	CAP.SMD X7R 100KPF/16V K 0603	C203
1492010400	CAP.SMD X7R 100KPF/16V K 0603	C211
1492010400	CAP.SMD X7R 100KPF/16V K 0603	C603
1492010400	CAP.SMD X7R 100KPF/16V K 0603	C622
1492010400	CAP.SMD X7R 100KPF/16V K 0603	C721
1492010400	CAP.SMD X7R 100KPF/16V K 0603	C740
1492010400	CAP.SMD X7R 100KPF/16V K 0603	C765
1492012200	CAP.SMD X7R 1,2KPF/50V K 0603	C662
1492015300	CAP.SMD X7R 15KPF/50V K 0603	C634
1492015300	CAP.SMD X7R 15KPF/50V K 0603	C635
1492015403	CAP.SMD X7R 150KPF/25V K 0603	C639
1490515403	CAP.SMD X7R 150KPF/25V K 0805	C639
1492022100	CAP.SMD X7R 220PF/50V K 0603	C309
1492022100	CAP.SMD X7R 220PF/50V K 0603	C675
1492022100	CAP.SMD X7R 220PF/50V K 0603	C676
1492022200	CAP.SMD X7R 2,2KPF/50V K 0603	C410
1492022200	CAP.SMD X7R 2,2KPF/50V K 0603	C615
1492022200	CAP.SMD X7R 2,2KPF/50V K 0603	C636
1492022300	CAP.SMD X7R 22KPF/25V K 0603	C206
1492022300	CAP.SMD X7R 22KPF/25V K 0603	C260
1492022300	CAP.SMD X7R 22KPF/25V K 0603	C560
1492022300	CAP.SMD X7R 22KPF/25V K 0603	C561
1492022300	CAP.SMD X7R 22KPF/25V K 0603	C667
1492022300	CAP.SMD X7R 22KPF/25V K 0603	C704
1492022300	CAP.SMD X7R 22KPF/25V K 0603	C707
1492022300	CAP.SMD X7R 22KPF/25V K 0603	C760
1492033100	CAP.SMD X7R 330PF/50V K 0603	C663
1492033300	CAP.SMD X7R 33KPF/25V K 0603	C618
1492033300	CAP.SMD X7R 33KPF/25V K 0603	C640
1492047100	CAP.SMD X7R 470PF/50V K 0603	C310
1492047100	CAP.SMD X7R 470PF/50V K 0603	C311
1492047100	CAP.SMD X7R 470PF/50V K 0603	C316
1492047100	CAP.SMD X7R 470PF/50V K 0603	C415
1492047100	CAP.SMD X7R 470PF/50V K 0603	C502
1492047200	CAP.SMD X7R 4,7KPF/50V K 0603	C403
1492047300	CAP.SMD X7R 47KPF/16V K 0603	C202
1492047300	CAP.SMD X7R 47KPF/16V K 0603	C208
1492047300	CAP.SMD X7R 47KPF/16V K 0603	C605
1492056200	CAP.SMD X7R 5,6KPF/50V K 0603	C619
1492056200	CAP.SMD X7R 5,6KPF/50V K 0603	C641
1330473400	CAP. POLYMET MKT 47KPF/250V K	C819
1265224563	CAP.PP MKP 220KPF/250V K SUPX2	C845

CODE	DESCRIPTION	POSITION
1265224563	CAP.PP MKP 220KPF/250V K SUPX2	C846
1265224564	CAP.PP MKP 220KPF/250V K SUPX3	C845
1265224564	CAP.PP MKP 220KPF/250V K SUPX3	C846
1265472953	CAP. PP MFP RM15 4K7PF/1K6V J	C815
1265474552	CAP.POLYPRO MET.470KPF/250V J	C409
1291102318	ELCO 1000UF/16V M 10X16MM	C417
1291102318	ELCO 1000UF/16V M 10X16MM	C424
1291102318	ELCO 1000UF/16V M 10X16MM	C659
1291102318	ELCO 1000UF/16V M 10X16MM	C660
1291102317	ELCO 1000UF/16V M 10X16MM	C417
1291102317	ELCO 1000UF/16V M 10X16MM	C424
1291102317	ELCO 1000UF/16V M 10X16MM	C659
1291102317	ELCO 1000UF/16V M 10X16MM	C660
1291102719	ELCO 1000UF/25V M 10X20MM	C417
1291102719	ELCO 1000UF/25V M 10X20MM	C424
1291102719	ELCO 1000UF/25V M 10X20MM	C659
1291102719	ELCO 1000UF/25V M 10X20MM	C660
1291102419	ELCO 1000UF/25V M 10X20MM	C417
1291102419	ELCO 1000UF/25V M 10X20MM	C424
1291102419	ELCO 1000UF/25V M 10X20MM	C659
1291102419	ELCO 1000UF/25V M 10X20MM	C660
1291102419	ELCO 1000UF/25V M 10X20MM	C417
1291102419	ELCO 1000UF/25V M 10X20MM	C424
1291102419	ELCO 1000UF/25V M 10X20MM	C659
1291102419	ELCO 1000UF/25V M 10X20MM	C660
1291102419	ELCO 1000UF/25V M 10X20MM	C868
1291220017	ELCO 22UF/250V M 10X20MM	C420
1291220017	ELCO 22UF/250V M 10X20MM	C902
1292471058	ELCO 470UF/385V M 35X40MM	C816
1297101934	ELCO 100UF/160V M 16X25MM HR	C825
1297101924	ELCO 100UF/160V M 18X35MM	C825
1265143954	CAP.POLYPRO MFP 14KPF/2KV J	C407
1291222319	ELCO 2200UF/16V M 12,5X25MM	C869
1291222318	ELCO 2200UF/16V M 12,5X21MM	C869
1331104004	CAP.POLYPRO 100KPF/160V 5%	C301
1363331803	C.C.D. Y5P 330PF/2KV K 6LS	C402
1363472804	C.C.D. Y5U 4,7KPF/2KV M 5SS 5M	C802
1363472804	C.C.D. Y5U 4,7KPF/2KV M 5SS 5M	C803
1363472804	C.C.D. Y5U 4,7KPF/2KV M 5SS 5M	C810
1245472346	C.C.D.GAY 4,7KPF>=250VAC M	C867
1363102803	C.C.D. Y5P 1KPF/2KV K 6LS	C901
1363471600	C.C.D.Y5P/Y5E 470PF>=500V K	PARALELO C/D823

RESISTORS		
CODE	DESCRIPTION	POSITION
1183510092	RES.METAL FILME 1/2W 10R 5% N	R825
1183510092	RES.METAL FILME 1/2W 10R 5% N	R826
1183510192	RES.METAL FILME 1/2W 100R 5% N	R211
1183510192	RES.METAL FILME 1/2W 100R 5% N	R213
1183510192	RES.METAL FILME 1/2W 100R 5% N	R306
1183510192	RES.METAL FILME 1/2W 100R 5% N	R309
1183510192	RES.METAL FILME 1/2W 100R 5% N	R508

CODE	DESCRIPTION	POSITION
1183510192	RES.METAL FILME 1/2W 100R 5% N	R509
1183510192	RES.METAL FILME 1/2W 100R 5% N	R510
1183510192	RES.METAL FILME 1/2W 100R 5% N	R601
1183510192	RES.METAL FILME 1/2W 100R 5% N	R620
1183510192	RES.METAL FILME 1/2W 100R 5% N	R701
1183510192	RES.METAL FILME 1/2W 100R 5% N	R702
1183510192	RES.METAL FILME 1/2W 100R 5% N	R709
1183510192	RES.METAL FILME 1/2W 100R 5% N	R712
1183510192	RES.METAL FILME 1/2W 100R 5% N	R713
1183510192	RES.METAL FILME 1/2W 100R 5% N	R718
1183510192	RES.METAL FILME 1/2W 100R 5% N	R719
1183510192	RES.METAL FILME 1/2W 100R 5% N	R832
1183510292	RES.METAL FILME 1/2W 1K 5% N	R411
1183510292	RES.METAL FILME 1/2W 1K 5% N	R507
1183510292	RES.METAL FILME 1/2W 1K 5% N	R631
1183510292	RES.METAL FILME 1/2W 1K 5% N	R647
1183510292	RES.METAL FILME 1/2W 1K 5% N	R770
1183510292	RES.METAL FILME 1/2W 1K 5% N	R809
1183510292	RES.METAL FILME 1/2W 1K 5% N	R811
1183510292	RES.METAL FILME 1/2W 1K 5% N	R920
1183510392	RES.METAL FILME 1/2W 10K 5% N	R629
1183510392	RES.METAL FILME 1/2W 10K 5% N	R630
1183510392	RES.METAL FILME 1/2W 10K 5% N	R821
1183510392	RES.METAL FILME 1/2W 10K 5% N	R828
1183512292	RES.METAL FILME 1/2W 1,2K 5% N	R112
1183515292	RES.METAL FILME 1/2W 1,5K 5% N	R308
1183515392	RES.METAL FILME 1/2W 15K 5% N	R437
1183515492	RES.METAL FILME 1/2W 150K 5% N	R804
1183515492	RES.METAL FILME 1/2W 150K 5% N	R846
1183518292	RES.METAL FILME 1/2W 1,8K 5% N	R831
1183518292	RES.METAL FILME 1/2W 1,8K 5% N	R905
1183518292	RES.METAL FILME 1/2W 1,8K 5% N	R906
1183518292	RES.METAL FILME 1/2W 1,8K 5% N	R911
1183518292	RES.METAL FILME 1/2W 1,8K 5% N	R912
1183518292	RES.METAL FILME 1/2W 1,8K 5% N	R917
1183518292	RES.METAL FILME 1/2W 1,8K 5% N	R918
1183518392	RES.METAL FILME 1/2W 18K 5% N	R401
1183518392	RES.METAL FILME 1/2W 18K 5% N	R436
1183518392	RES.METAL FILME 1/2W 18K 5% N	R818
1183522192	RES.METAL FILME 1/2W 220R 5% N	R403
1183522192	RES.METAL FILME 1/2W 220R 5% N	R655
1183522192	RES.METAL FILME 1/2W 220R 5% N	R834
1183522292	RES.METAL FILME 1/2W 2,2K 5% N	R635
1183522392	RES.METAL FILME 1/2W 22K 5% N	R656
1183522392	RES.METAL FILME 1/2W 22K 5% N	R833
1183522992	RES.METAL FILME 1/2W 2,2R 5% N	R633
1183522992	RES.METAL FILME 1/2W 2,2R 5% N	R664
1183527192	RES.METAL FILME 1/2W 270R 5% N	R807
1183527392	RES.METAL FILME 1/2W 27K 5% N	R409
1183527492	RES.METAL FILME 1/2W 270K 5% N	R803
1183533292	RES.METAL FILME 1/2W 3,3K 5% N	R742
1183539192	RES.METAL FILME 1/2W 390R 5% N	R408

CODE	DESCRIPTION	POSITION
1183539292	RES.METAL FILME 1/2W 3,9K 5% N	R106
1183547092	RES.METAL FILME 1/2W 47R 5% N	R827
1183547092	RES.METAL FILME 1/2W 47R 5% N	R903
1183547092	RES.METAL FILME 1/2W 47R 5% N	R909
1183547092	RES.METAL FILME 1/2W 47R 5% N	R915
1183547292	RES.METAL FILME 1/2W 4,7K 5% N	R108
1183547292	RES.METAL FILME 1/2W 4,7K 5% N	R435
1183547292	RES.METAL FILME 1/2W 4,7K 5% N	R654
1183547992	RES.METAL FILME 1/2W 4,7R 5% N	R824
1183556192	RES.METAL FILME 1/2W 560R 5% N	R820
1183556192	RES.METAL FILME 1/2W 560R 5% N	R823
1183556392	RES.METAL FILME 1/2W 56K 5% N	R810
1183568192	RES.METAL FILME 1/2W 680R 5% N	R105
1183582192	RES.METAL FILME 1/2W 820R 5% N	R416
1183582292	RES.METAL FILME 1/2W 8,2K 5% N	R405
1183582992	RES.METAL FILME 1/2W 8,2R 5% N	R320
1185522851	RES.METAL FILME 1W 0,22R 5% V	R812
1185522851	RES.METAL FILME 1W 0,22R 5% V	R813
1502500003	RES.SMD 0R 5% 0603	R705
1502510103	RES.SMD 100R 5% 0603	R103
1502510103	RES.SMD 100R 5% 0603	R104
1502510103	RES.SMD 100R 5% 0603	R209
1502510103	RES.SMD 100R 5% 0603	R566
1502510103	RES.SMD 100R 5% 0603	R605
1502510103	RES.SMD 100R 5% 0603	R624
1502510203	RES.SMD 1K 5% 0603	R207
1502510203	RES.SMD 1K 5% 0603	R311
1502510203	RES.SMD 1K 5% 0603	R312
1502510203	RES.SMD 1K 5% 0603	R627
1502510203	RES.SMD 1K 5% 0603	R628
1502510203	RES.SMD 1K 5% 0603	R640
1502510203	RES.SMD 1K 5% 0603	R643
1502510203	RES.SMD 1K 5% 0603	R649
1502510203	RES.SMD 1K 5% 0603	R781
1502510303	RES.SMD 10K 5% 0603	R415
1502510303	RES.SMD 10K 5% 0603	R606
1502510303	RES.SMD 10K 5% 0603	R625
1502510303	RES.SMD 10K 5% 0603	R634
1502510303	RES.SMD 10K 5% 0603	R651
1502510303	RES.SMD 10K 5% 0603	R658
1502510303	RES.SMD 10K 5% 0603	R659
1502510303	RES.SMD 10K 5% 0603	R661
1502510303	RES.SMD 10K 5% 0603	R662
1502510303	RES.SMD 10K 5% 0603	R674
1502510303	RES.SMD 10K 5% 0603	R771
1502510303	RES.SMD 10K 5% 0603	R836
1502510303	RES.SMD 10K 5% 0603	R848
1502510403	RES.SMD 100K 5% 0603	R421
1502510403	RES.SMD 100K 5% 0603	R632
1502510403	RES.SMD 100K 5% 0603	R638
1502510403	RES.SMD 100K 5% 0603	R639
1502510403	RES.SMD 100K 5% 0603	R641

CODE	DESCRIPTION	POSITION
1502510403	RES.SMD 100K 5% 0603	R644
1502510403	RES.SMD 100K 5% 0603	R645
1502510403	RES.SMD 100K 5% 0603	R646
1502510403	RES.SMD 100K 5% 0603	R648
1502510403	RES.SMD 100K 5% 0603	R650
1502512103	RES.SMD 120R 5% 0603	R203
1502512203	RES.SMD 1,2K 5% 0603	R206
1502512203	RES.SMD 1,2K 5% 0603	R720
1502512203	RES.SMD 1,2K 5% 0603	R721
1502512203	RES.SMD 1,2K 5% 0603	R780
1502515103	RES.SMD 150R 5% 0603	R426
1502515203	RES.SMD 1,5K 5% 0603	R310
1502516103	RES.SMD 160R 5% 0603	R602
1502533103	RES.SMD 330R 5% 0603	R775
1502518303	RES.SMD 18K 5% 0603	R404
1502522003	RES.SMD 22R 5% 0603	R642
1502515203	RES.SMD 1,5K 5% 0603	R777
1502522203	RES.SMD 2,2K 5% 0603	R607
1502522203	RES.SMD 2,2K 5% 0603	R622
1502522203	RES.SMD 2,2K 5% 0603	R626
1502522203	RES.SMD 2,2K 5% 0603	R636
1502522203	RES.SMD 2,2K 5% 0603	R703
1502522203	RES.SMD 2,2K 5% 0603	R704
1502522203	RES.SMD 2,2K 5% 0603	R749
1502522203	RES.SMD 2,2K 5% 0603	R837
1502522303	RES.SMD 22K 5% 0603	R406
1502522303	RES.SMD 22K 5% 0603	R414
1502522303	RES.SMD 22K 5% 0603	R418
1502522303	RES.SMD 22K 5% 0603	R428
1502522303	RES.SMD 22K 5% 0603	R653
1502522303	RES.SMD 22K 5% 0603	R845
1502527103	RES.SMD 270R 5% 0603	R204
1502527103	RES.SMD 270R 5% 0603	R205
1502527303	RES.SMD 27K 5% 0603	R422
1502533103	RES.SMD 330R 5% 0603	R663
1502533103	RES.SMD 330R 5% 0603	R665
1502533203	RES.SMD 3,3K 5% 0603	R652
1502533303	RES.SMD 33K 5% 0603	R673
1502539103	RES.SMD 390R 5% 0603	R107
1502539203	RES.SMD 3,9K 5% 0603	R417
1502539203	RES.SMD 3,9K 5% 0603	R660
1502547003	RES.SMD 47R 5% 0603	R706
1502556103	RES.SMD 560R 5% N 0603	R776
1502556103	RES.SMD 560R 5% N 0603	R779
1502547203	RES.SMD 4,7K 5% 0603	R637
1502547203	RES.SMD 4,7K 5% 0603	R657
1502547203	RES.SMD 4,7K 5% 0603	R722
1502547203	RES.SMD 4,7K 5% 0603	R723
1502547203	RES.SMD 4,7K 5% 0603	R752
1502547203	RES.SMD 4,7K 5% 0603	R754
1502547203	RES.SMD 4,7K 5% 0603	R756
1502547203	RES.SMD 4,7K 5% 0603	R842

CODE	DESCRIPTION	POSITION
1502547303	RES.SMD 47K 5% 0603	R743
1502547303	RES.SMD 47K 5% 0603	R843
1502547903	RES.SMD 4,7R 5% 0603	R202
1502556203	RES.SMD 5,6K 5% 0603	R604
1502556203	RES.SMD 5,6K 5% 0603	R623
1502556203	RES.SMD 5,6K 5% 0603	R666
1502556203	RES.SMD 5,6K 5% 0603	R667
1502556203	RES.SMD 5,6K 5% 0603	R847
1502575003	RES.SMD 75R 5% 0603	R208
1502575003	RES.SMD 75R 5% 0603	R212
1502575003	RES.SMD 75R 5% 0603	R220
1502582103	RES.SMD 820R 5% 0603	R840
1502582203	RES.SMD 8,2K 5% 0603	R603
1189139331	RES.PRECISAO 0,4W 39K 1% N	R313
1189539395	RES.PRECISAO 1/2WS 39K 0,5%	R313
1189513495	RES.PRECISAO 1/2WS 130K 0,5%	R816
1189524995	RES.PRECISAO 1/2WS 2,49K 0,5%	R817
1189124931	RES.PRECISAO 0,6W 2,49K 0,5%	R817
1183510292	RES.METAL FILME 1/2W 1K 5% N	R844
1125709500	NTC 10R TP10D15LKBEGMNR	NTC801
1125707400	RES.COEF.NEG. NTC 10R	NTC801
1183615219	RES.COMPOS.1/2W 1,5K 5% N	R902
1183615219	RES.COMPOS.1/2W 1,5K 5% N	R908
1183615219	RES.COMPOS.1/2W 1,5K 5% N	R914
1183668519	RES.COMPOS.1/2W 6,8M K	R815
1183556292	RES.METAL FILME 1/2W 5,6K 5% N	
1183556292	RES.METAL FILME 1/2W 5,6K 5% N	
1184510025	RES.M.FILME 2W 10R 5% D.KINK	R420
1184510025	RES.M.FILME 2W 10R 5% D.KINK	R822
1184510045	RES.METAL FILM 2W 10R 5% N MG	R420
1184510045	RES.METAL FILM 2W 10R 5% N MG	R822
1184556025	RES.M.FILME 2W 56R 5% D.KINK	R113
1184556012	RES.METAL FILME 2W 56R 5% N	R113
1185510225	RES.M.FILME 1W 1K 5% D.KINK	R410
1185510225	RES.M.FILME 1W 1K 5% D.KINK	R423
1185510425	RES.M.FILME 1W 100K 5% D.KINK	R904
1185510425	RES.M.FILME 1W 100K 5% D.KINK	R910
1185510425	RES.M.FILME 1W 100K 5% D.KINK	R916
1185510926	FUSISTOR 1W 1R 5% D.KINK	FR421
1185510926	FUSISTOR 1W 1R 5% D.KINK	FR431
1185515325	RES.M.FILME 1W 15K 5% D.KINK	R407
1185518925	RES.M.FILME 1W 1,8R 5% D.KINK	R307
1185522026	FUSISTOR 1W 22R 5% D.KINK	R901
1185547025	RES.M.FILME 1W 47R 5% D.KINK	R830
1185547125	RES.M.FILME 1W 470R 5% D.KINK	R303
1185582825	RES.M.FILME 1W 0,82R 5% D.KINK	R304
1187556225	RES.M.FILME 3W 5,6K 5% D.KINK	R835
1185510025	RES.M.FILME 1W 10R 5% D.KINK	R439
1185510012	RES.METAL FILME 1W 10R 5% N	R439
1183510026	FUSISTOR 1/2W 10R 5% D.KINK	FR422
1183510026	FUSISTOR 1/2W 10R 5% D.KINK	FR423
1183510126	FUSISTOR 1/2W 100R 5% D.KINK	FR802

CODE	DESCRIPTION	POSITION
1183510126	FUSISTOR 1/2W 100R 5% D.KINK	FR803
1183510926	FUSISTOR 1/2W 1R 5% D.KINK	FR419
1183510926	FUSISTOR 1/2W 1R 5% D.KINK	FR801
1183522226	FUSISTOR 1/2W 2K2 5% D.KINK	FR804

SEMICONDUCTORS		
CODE	DESCRIPTION	POSITION
1320090800	TRANSISTOR KSP42TA/MPSA42RL1	Q401
1320091000	TRANSISTOR BC337/25	Q101
1320091000	TRANSISTOR BC337/25	Q802
1320091000	TRANSISTOR BC337/25	Q804
1320091000	TRANSISTOR BC337/25	Q805
1320030102	TRANSISTOR BC337/16	Q101
1320030102	TRANSISTOR BC337/16	Q802
1320030102	TRANSISTOR BC337/16	Q804
1320030102	TRANSISTOR BC337/16	Q805
1700100011	TRANSISTOR SMD BC856B	Q404
1700100011	TRANSISTOR SMD BC856B	Q806
1700100014	TRANSISTOR SMD BC817/25	Q703
1700100015	TRANSISTOR SMD BC846B	Q201
1700100015	TRANSISTOR SMD BC846B	Q405
1700100015	TRANSISTOR SMD BC846B	Q601
1700100015	TRANSISTOR SMD BC846B	Q602
1700100015	TRANSISTOR SMD BC846B	Q603
1700100015	TRANSISTOR SMD BC846B	Q604
1700100015	TRANSISTOR SMD BC846B	Q605
1700100015	TRANSISTOR SMD BC846B	Q606
1700100015	TRANSISTOR SMD BC846B	Q607
1700100015	TRANSISTOR SMD BC846B	Q807
1700100015	TRANSISTOR SMD BC846B	Q808
1139999392	TRANSISTOR BU2520DX-ON5126	Q402
1139999175	TRANSISTOR BU-2520DX	Q402
1139999397	TRANSISTOR 2SC-5280	Q402
1139999468	TRANS.POWER MOSFET STP6NK90ZFP	Q801
1139999468	TRANS.POWER MOSFET STP6NK90ZFP	Q803
1139999463	TRANS.POWER MOS-FET STF9NK90Z	Q801
1139999463	TRANS.POWER MOS-FET STF9NK90Z	Q803
1414621902	DIODO 1N4148 75V SINAL	D101
1414621902	DIODO 1N4148 75V SINAL	D400
1414621902	DIODO 1N4148 75V SINAL	D402
1414621902	DIODO 1N4148 75V SINAL	D403
1414621902	DIODO 1N4148 75V SINAL	D405
1414621902	DIODO 1N4148 75V SINAL	D406
1414621902	DIODO 1N4148 75V SINAL	D411
1414621902	DIODO 1N4148 75V SINAL	D814
1414621902	DIODO 1N4148 75V SINAL	D819
1414621902	DIODO 1N4148 75V SINAL	D820
1414621902	DIODO 1N4148 75V SINAL	D823
1414621903	DIODO BAV21	D302
1414621903	DIODO BAV21	D303
1414621903	DIODO BAV21	D902
1414621903	DIODO BAV21	D903

CODE	DESCRIPTION	POSITION
1414621903	DIODO BAV21	D904
1414621905	DIODO DE CHAVEAMENTO 1SS244T77	D302
1414621905	DIODO DE CHAVEAMENTO 1SS244T77	D303
1414621905	DIODO DE CHAVEAMENTO 1SS244T77	D902
1414621905	DIODO DE CHAVEAMENTO 1SS244T77	D903
1414621905	DIODO DE CHAVEAMENTO 1SS244T77	D904
1415166801	DIODO BZX79B9V1	DZ806
1415165701	DIODO MTZ-JT77-9,1C	DZ806
1415168901	DIODO ZENER BZX79C3V3	DZ808
1415169301	DIODO ZENER BZX79C4V7	DZ404
1415169401	DIODO ZENER BZX79C5V1	DZ102
1415169501	DIODO ZENER BZX79C5V6	DZ701
1415169501	DIODO ZENER BZX79C5V6	DZ702
1415169801	DIODO ZENER BZX79C8V2	D901
1415169801	DIODO ZENER BZX79C8V2	DZ807
1415169901	DIODO ZENER BZX79C10V	DZ601
1415169901	DIODO ZENER BZX79C10V	DZ809
1415169901	DIODO ZENER BZX79C10V	DZ811
1415171901	DIODO ZENER BZX79C18V	DZ801
1415180801	DIODO RETIFICADOR SK 4F1/06	D401
1415180801	DIODO RETIFICADOR SK 4F1/06	D407
1415180801	DIODO RETIFICADOR SK 4F1/06	D408
1415180801	DIODO RETIFICADOR SK 4F1/06	D409
1415180801	DIODO RETIFICADOR SK 4F1/06	D410
1415180901	DIODO RETIFICADOR SK107	D301
1415180901	DIODO RETIFICADOR SK107	D816
1415180901	DIODO RETIFICADOR SK107	D817
1415180901	DIODO RETIFICADOR SK107	D818
1410430015	DIODO RETIFICADOR 1N4004	D301
1410430015	DIODO RETIFICADOR 1N4004	D816
1410430015	DIODO RETIFICADOR 1N4004	D817
1410430015	DIODO RETIFICADOR 1N4004	D818
1129313999	DIODO SK-3G08 RETIFICADOR	D802
1129313999	DIODO SK-3G08 RETIFICADOR	D803
1129313999	DIODO SK-3G08 RETIFICADOR	D804
1129313999	DIODO SK-3G08 RETIFICADOR	D805
1129315899	DIODO MUR460	D807
1129315899	DIODO MUR460	D808
1129315899	DIODO MUR460	D811
1124503203	DIODO BYW-95C	D807
1124503203	DIODO BYW-95C	D808
1124503203	DIODO BYW-95C	D811
1415170901	DIODO ZENER BZX79C33V	DZ101
1459521800	DIODO LED SLR-56VC3F	LD701
1146300143	I.C. TL431BCLP-RA/KA431LZTA	IC802
1146300103	I.C.TL-431BCLP Ref.Voltag.0,5%	IC802
1146300104	I.C.TL431ACZ-T/TL431ACLPR	IC802
1710100023	I.C. SMD HCF4052B M1/BU4052BCF	IC-602
1710100195	I.C. SMD BR24L0F8-W	IC701
1710100081	I.C. SMD BR24C08/F	IC701
1710100163	I.C. SMD CAT24WC08J-TE13	IC701
1710100083	I.C. SMD M24C08WMN6	IC701

CODE	DESCRIPTION	POSITION
1710100081	I.C. SMD BR24C08/F	IC701
1710700119	I.C. GRAVADO 1710700000 V3.00	IC101
1710700019	I.C. SOFT V3.00 (TDA9570H/N1)	
1710700000	I.C. SMD TDA9570H/N1	
1710100160	I.C. TDA9570H/N1	
1139999159	PHOTOCOUPLER PS2501-1-H	IC803
1139999427	PHOTO COUPLER PC817X1 A (DIP)	IC803
1139999431	PHOTO COUPLER PS-2501-1-Q	IC803
1139999432	OPTO COUPLER H11A817A	IC803
1139999472	PHOTOCOUPLER PS2501A-1-H	IC803
1139999473	PHOTOCOUPLER PS2501A-1-Q	IC803
1141805799	I.C. TA8216H	IC601
1149382999	I.C. TDA-6106Q	IC901
1149382999	I.C. TDA-6106Q	IC902
1149382999	I.C. TDA-6106Q	IC903
1149388999	I.C. TDA-9855	IC-603
1149396599	I.C. STV9379FA	IC301
1149400399	I.C. TEA1507P	IC801

CODE	MISCELLANEOUS DESCRIPTION	POSITION
1027243401	PCI INS.MANUAL	
1027234212	PCI INS.SMD/AUTOMATICA	
1107234204	PCI PRINCIPAL	
1479907634	INDUTOR FIXO 5,6UH K AXIAL	L708
1479906734	INDUTOR FIXO 2,2UH K AXIAL	L703
1479906734	INDUTOR FIXO 2,2UH K AXIAL	L704
1479907634	INDUTOR FIXO 5,6UH K AXIAL	L705
1479907634	INDUTOR FIXO 5,6UH K AXIAL	L706
1479907634	INDUTOR FIXO 5,6UH K AXIAL	L707
1479908234	INDUTOR FIXO 10UH K AXIAL	L401
1479908234	INDUTOR FIXO 10UH K AXIAL	L701
1479908234	INDUTOR FIXO 10UH K AXIAL	L702
1479908265	INDUTOR FIXO 10UH 26MM	L401
1479908265	INDUTOR FIXO 10UH 26MM	L701
1479908265	INDUTOR FIXO 10UH 26MM	L702
1479908634	INDUTOR FIXO 15UH K AXIAL	L201
1480000400	FILTRO CERAMIC TPSRA4M50C00-A0	CF201
1427010820	FERRITE BEAD DUPLO	FB301
1427010820	FERRITE BEAD DUPLO	FB801
1637615640	GARRA P/FUSIVEL	F801
1449009400	CHAVE DE TOQUE 7,0MM 260GF	SW701
1449009400	CHAVE DE TOQUE 7,0MM 260GF	SW702
1449009400	CHAVE DE TOQUE 7,0MM 260GF	SW703
1449009400	CHAVE DE TOQUE 7,0MM 260GF	SW704
1449009400	CHAVE DE TOQUE 7,0MM 260GF	SW705
1449009400	CHAVE DE TOQUE 7,0MM 260GF	SW706
1621203299	ILHOS LATAO EST.2X3,5X3,2	C816
1621203299	ILHOS LATAO EST.2X3,5X3,2	C825
1621203299	ILHOS LATAO EST.2X3,5X3,2	C869
1621203299	ILHOS LATAO EST.2X3,5X3,2	FLY BACK
1621203299	ILHOS LATAO EST.2X3,5X3,2	R403

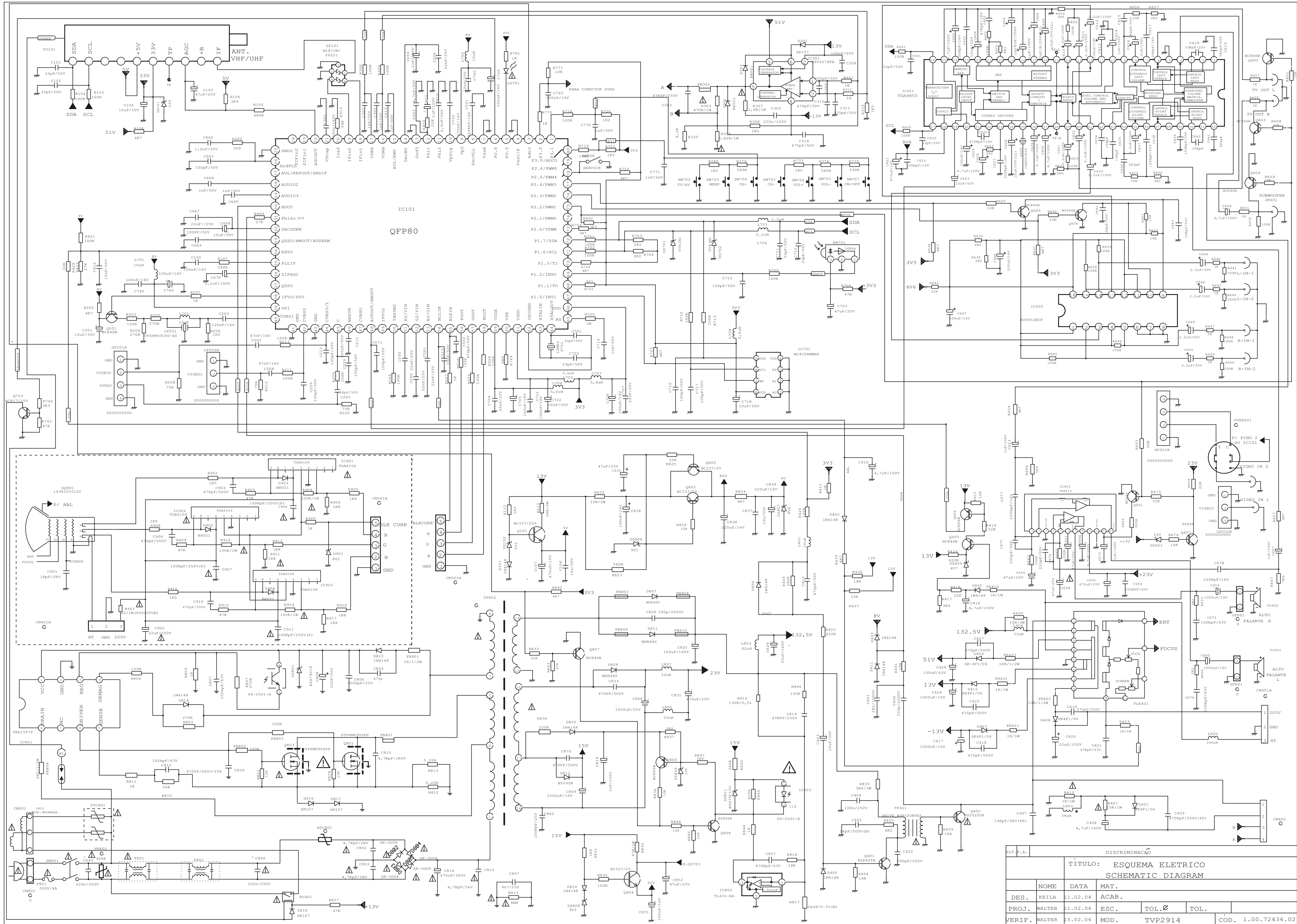
CODE	DESCRIPTION	POSITION
1068101700	ETIQ.NUMERO DE SERIE	
1068127201	ETIQ.ADES.N.SERIE C/5	
1125707500	PTC B59205-T80-B10 T205 9r+9r	PTC801
1125708600	PTC 96578	PTC801
1161000012	CABO FRAY 2,54 24AWG 5V 520MM	GF501
1161300522	CABO FRAY2,54 2V 24AWG 500MM	GF602
1169200130	FITA 2VIAS 24AWG PR 800MM	GF601
1169200268	CABO FLEX 600V 18AWG MR 420MM	W2
1641000167	CABO MON.1VC/TER.18AWG MR 320	W1
1271206100	RECPETOR IR 36KHZ TSOP34836	RM701
1271205900	RECEPTO IR 36KHZ TSOP1836SS3V3	RM701
1271206300	RECEPTOR IR 36KHZ KSM-602LM2D	RM701
1271505000	SINT 181CH UV1336B/A F S-2 USA	TU101
1312001100	BOBINA LINEARIDADE 34uH	L403
1319953000	INDUTOR 33UH K	L404
1319953000	INDUTOR 33UH K	L805
1319953000	INDUTOR 33UH K	L807
1319955400	FILTRO DE LINHA	T801
1319955400	FILTRO DE LINHA	T802
1319955300	FILTRO DE LINHA ELF18D603NBZ	T801
1319955300	FILTRO DE LINHA ELF18D603NBZ	T802
1319957800	INDUTOR 82uH +/- 10% 2A	L803
1319950500	INDUTOR 120UH +/-10%	L803
1319959300	INDUTOR FIXO 100uH+/-10% 480mA	L400
1353002900	TRAFO DRIVE TD-29B	TF401
1355219099	TRAFO FLY BACK TAT2908B	FLK401
1356006500	TRAFO CHAVEAMENTO ES42307-00	
1421506100	RESSONADOR CERAMICO CSB-503F58	X600
1421508300	SAW FILTER M1871M	SF101
1421506200	FILTRO CERAMICO M1967M	SF101
1425008100	CRISTAL 12,000MHZ CL=16pF HC49	X701
1427011200	FERRITE BEAD 2X5X5MM	D807
1427011200	FERRITE BEAD 2X5X5MM	D811
1440090058	CHAVE POWER	SW801
1461058002	FUS. ACAO RET. 20AG 4A/250V	F801
1600005107	PAR.AA.PAN.PH.PP1 3,0X8 ZNA	IC301
1600005107	PAR.AA.PAN.PH.PP1 3,0X8 ZNA	IC601
1631028304	BASE CONECTORA 04VIAS	CN402
1631281402	GUIA P/FIOS 02VIAS	GF601
1631281402	GUIA P/FIOS 02VIAS	GF602
1631281405	GUIA P/FIOS 05VIAS	CN501B
1631281402	GUIA P/FIOS 02VIAS	GF601
1631281402	GUIA P/FIOS 02VIAS	GF602
1631281404	GUIA P/FIOS 04VIAS	GF201A
1631281404	GUIA P/FIOS 04VIAS	GF201B
1631281403	GUIA P/FIOS 03VIAS	GF202A
1631281403	GUIA P/FIOS 03VIAS	GF202B
1631281405	GUIA P/FIOS 05VIAS	CN501A
1631281405	GUIA P/FIOS 05VIAS	
1633208600	CONECTOR Y/C S-VHS	SVHS201
1633212303	BASE CONECTORA 03VIAS	CN801
1633212400	CJT.TOMADA 3RCA HT C/CHAVE	

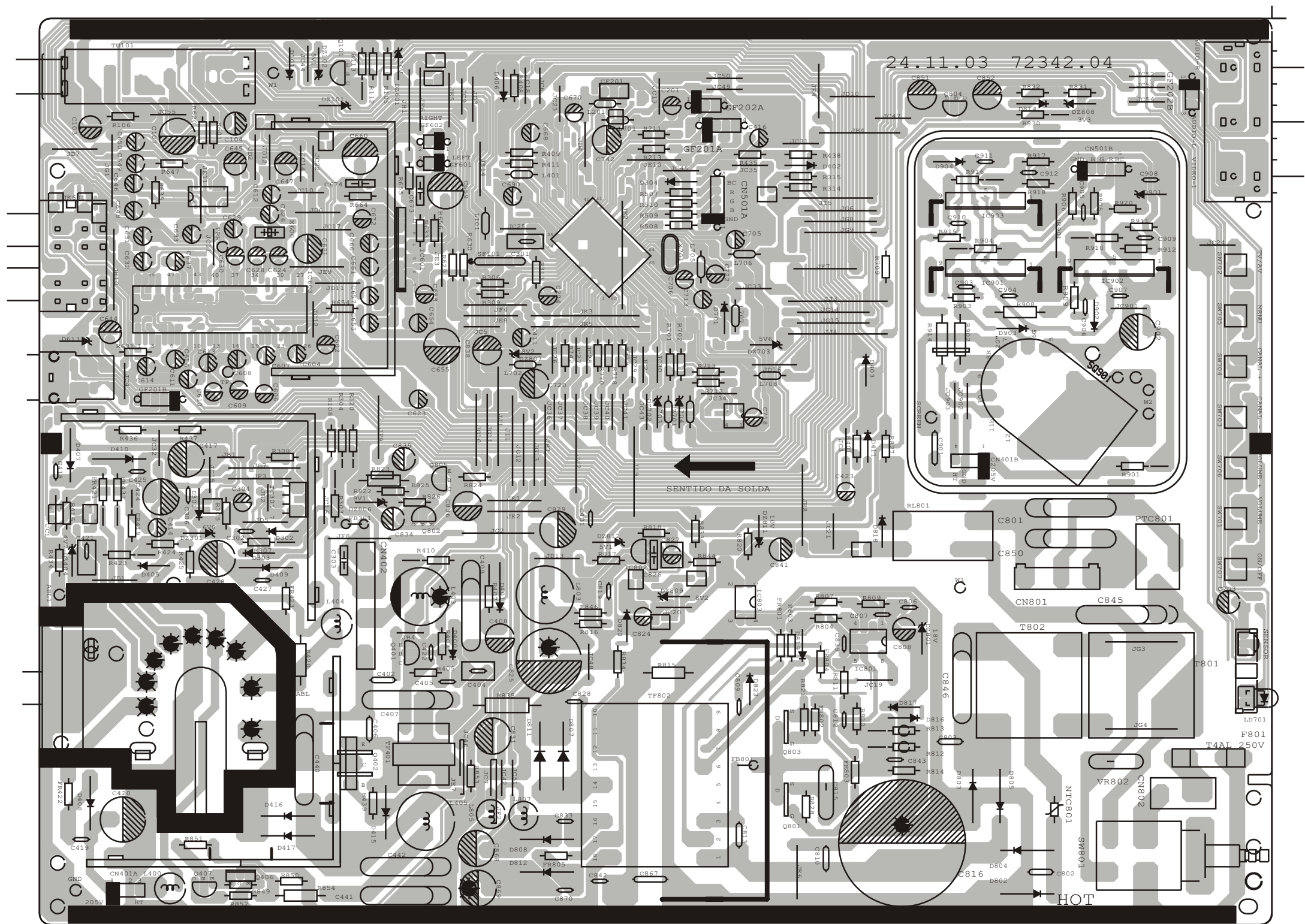
CODE	DESCRIPTION	POSITION
1633213100	CJT.TOMADA 3RCA HZ C/CHAVE	
1633213500	CJT.C/6 TOMADAS RCA	JK601
1638101012	SOQUETE P/CINESCOPIO 1SHM12S	SQ901
1647664200	CJT.CHIC.3V.450MM AMP IN HEAD	CN401
1657215402	CJT.DISSIPADOR SAIDA VT	IC301
1657234201	DISSIPADOR FONTE/POTENCIA	Q801,Q803
1657234252	DISSIPADOR SAIDA HT	Q402
1657234253	DISSIPADOR POTENCIA	IC601
1727225401	PRESILHA	Q801
1727225401	PRESILHA	Q803
1727225402	PRESILHA B	Q402
1777218606	SUPORTE P/LED SENSOR	LD701
1391004600	RELE SDT-SS-112DM	RL801
1644507400	CABO DE FORCA 2X18X2 C/CONNECT.	
1644502000	CABO FORCA 2X18X2P.CH.DP IS.BI	
1161300311	CABO FRAY2,54 4V 24AWG PR330MM	GF201
1161300296	CABO FRAY2,54 3V 24AWG PR330MM	GF202
1720187001	PRESILHA DO CABO ANODO	
1720187000	PRESILHA CABO ANODO	
1763604800	CAPA ISOLANTE DO ANODO	
1738001100	MALHA DE ATERRAMENTO	10(E7)
1577243450	GABINETE FRONTAL	1(F4)
1677239601	EMBLEMA PANORAMIC	4(H1)
1510454007	ALTO FALANTE 2x5" 7-10W 8R	9(2G5)
1600015112	PAR.AA.P.PH.PP1 4,0X12 ZNA RES	22(8G5)
1600015114	PAR.AA.P.PH.PP1 4,0X20 ZNA RES	22(8G5)
1408011900	CJT.CINESCOPIO A68AJB82X03	8(F5)
1607316362	P.AA.SEX.P.PP2 6,3X35ZNA AR.DT	21(4C4)
1761602600	FIXADOR DE FIOS 101mm	
1760206100	FIXADOR DE FIOS 274mm	
1677225206	PLACA DO CHASSI	6(B12)
1067243401	ETIQUETA DE IDENTIFICACAO	7(A12)
1677225205	TECLA POWER	3(H6)
1777205902	ESPAÇADOR	
1763303053	HIMERON 200X15X0,2	
1777221904	HIMERON 15X200	
1577237903	GABINETE TRASEIRO	2(D11)
1777214301	PRENDEDOR CABO AC	5(F2)
1600015515	PAR.AA.P.PH.PP1 4,0X25 ZNP RES	23(8A9)
1600015512	PAR.AA.P.PH.PP1 4,0X12 ZNP RES	26(F8)
1600015508	PAR.AA.P.PH.PP1 3,0X12 ZNP RES	25(B12)
1057225299	CJT.CALCO PROT.SUP.D/E	
1057225298	CJT.CALCO PROT.INF.D/E	
1067243404	MANUAL DE INSTRUÇÕES TVP2914	
1057243401	CAIXA DA EMBALAGEM	
1069100072	FOLHETO OFICINAS AUTORIZADAS	
1850120205	MANTA POLIPRO.EXP.1250x550x0,7	
1769900122	SACO PLATICO 250X400X0,05 AD	
1769900003	SACO PLASTICO 25X40X0,05MM A.D	
1769900058	SACO PLASTICO 120X120X0,05MM A	
1886510100	GRAMPO 35 X 15	
1777217803	CALCO DE BORRACHA	

CODE	DESCRIPTION	POSITION
1886000100	PILHA PEQUENA AA 1.5V	
1886000100	PILHA PEQUENA AA 1.5V	
1311604100	BOBINA DESMAGNETIZ.29"20r+20r	P802
1068130005	ETIQ.NUMERO DE SERIE - DL	
1067223803	ETIQ.ALERTA CABO DE FORÇA	
1067243402	ETIQUETA DO IMPORTADOR	
1067301907	ETIQ.A.ADES.PIMACO A4364	
1065222503	CERTIFICADO DE GARANTIA	

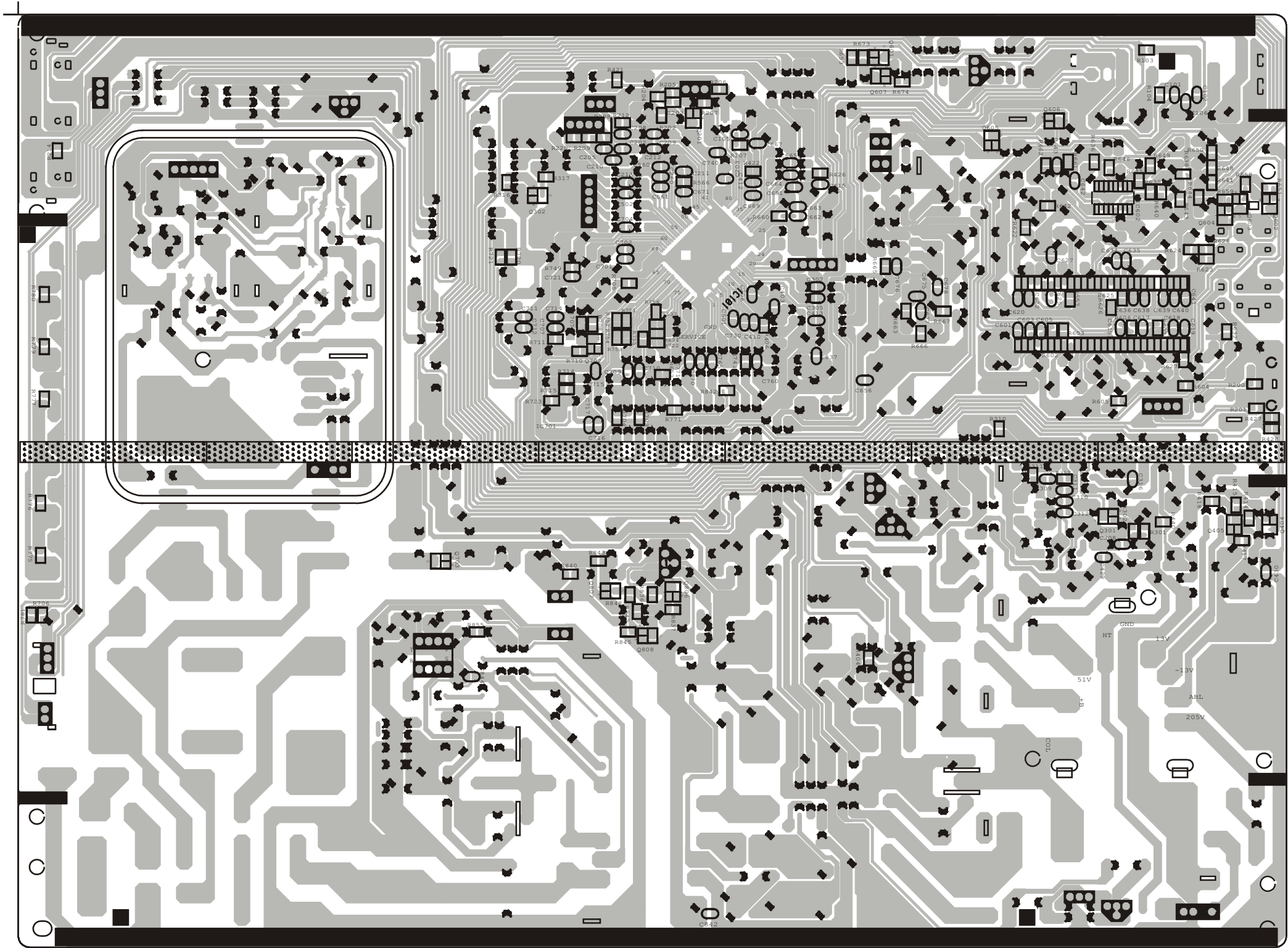
REMOTE CONTROL PCB		
CODE	DESCRIPTION	POSITION
1027237990	CONTROLE REMOTO MONTADO RC-203	
1577218508	GABINETE SUPERIOR C.REMOTO	
1577218504	GABINETE INFERIOR C.REMOTO	
1677238201	PLACA DO CONTROLE REMOTO	
1577218505	TPA PORTA PILHAS	
1777222007	TECLADO DE BORRACHA	
1777222006	TECLADO DE BORRACHA	
1687218501	MOLA DE CONTATO PILHA NEG	
1687218502	MOLA DE CONTATO PILHA POS	
1687218503	MOLA CONTATO PILHA POS/NEG	
1600059545	PAR.AA.BIND.PH.PP1 2,0X6 ZNP	
1600055502	PAR.AA.PAN.PH.PP1 2,0X5 ZNP	
1027222023	CJT.PCI MAN/MON CONT.REMOTO	
1027222033	CJT.PCI IA/SMD CONTR.REMOTO	
1107222030	PCI CONTROLE REMOTO (10PCS)	
1502518903	RES.SMD 1,8R 5% 0603	R1
1502518902	RES.SMD 1,8R 5% 0805	R1
1502547103	RES.SMD 470R 5% 0603	R2
1502547102	RES.SMD 470R 5% 0805	R2
1700100014	TRANSISTOR SMD BC817/25	Q1
1710100137	I.C.SMD PT1140/PT0249	IC1
1710100088	I.C. SMD UPD-64GS492-E2	IC1
1459522700	DIODO LED I.V SIR-563ST3F	
1459523600	DIODO LED IR LTE-3271TLLENTEAZ	
1459524000	DIODO LED INFRARED TLN115A	
1421508100	RESSONADOR CERAMICO 3.45MHZ	
1421507400	RESS.CER.CST-3.45MGW	
1380470324	ELCO 47UF/25V M 5X11MM	C1
1769900064	SACO PLASTICO 90X280X0,04B.D.	EMBALAR CONTROLE

5. ELECTRICAL SCHEME**5.1 MAIN AND REMOTE CONTROL PCB****6. SILKTOPS AND SOLDERS****6.1 MAIN PCB****6.2 REMOTE CONTROL PCB****7. EXPLODED VIEW****8. BLOCK DIAGRAM**

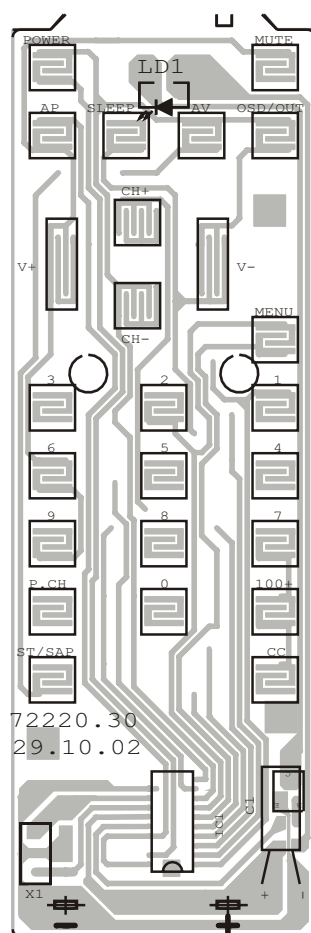




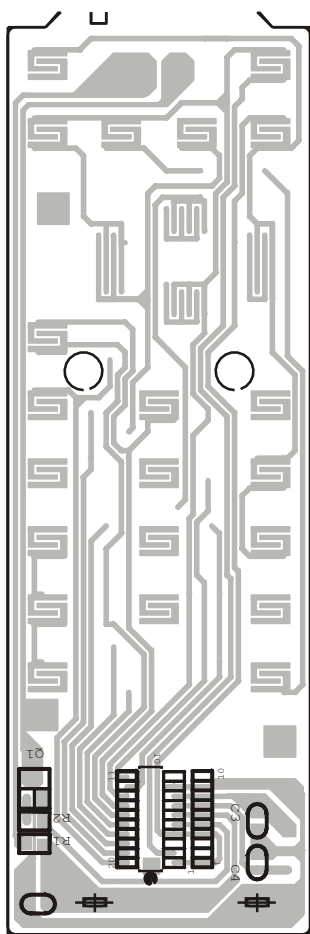
PanoramiC		TÍTULO			PROJEÇÃO	
		MAIN PCB			dimensões em mm	
	NOME	DATA	MAT.			
APROV.		15/08/00	MOD.	TVP-2914		N.º



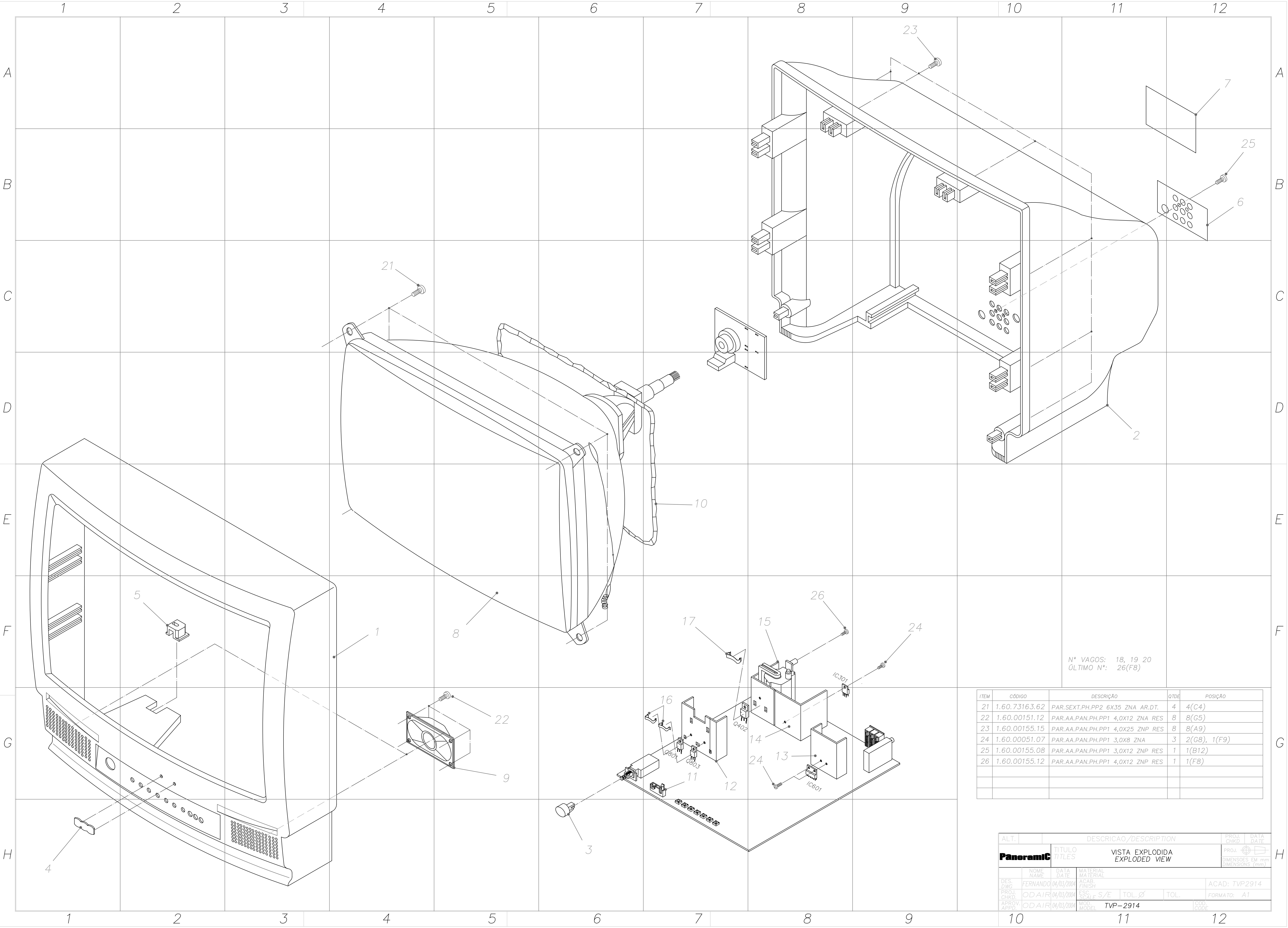
PanoramiC		TÍTULO MAIN PCB			PROJEÇÃO
					dimensões em mm
	NOME	DATA	MAT.		
APROV.		15/08/00	MOD.	TVP-2914	N.º



PanoramiC		TÍTULO: REMOTE CONTROL PCB				PROJEÇÃO
						dimensões em mm
	NOME	DATA	MAT.			
DES.		15/08/00	ACAB.			
PROJ.		15/08/00	ESC.		TOL.	N.º
APRO.		15/08/00	MOD.	TVP-2914		



PanoramiC		TÍTULO: REMOTE CONTROL PCB				PROJEÇÃO
						dimensões em mm
	NOME	DATA	MAT.			
DES.		15/08/00	ACAB.			
PROJ.		15/08/00	ESC.		TOL.	N.º
APRO.		15/08/00	MOD.	TVP-2914		



N° VAGOS: 18, 19 20
ÚLTIMO N°: 26(F8)

ITEM	CÓDIGO	DESCRIÇÃO	QTDE	POSIÇÃO
21	1.60.73163.62	PAR.SEXT.PH.PP2 6X35 ZNA AR.DT.	4	4(C4)
22	1.60.00151.12	PAR.AA.PAN.PH.PP1 4,0X12 ZNA RES	8	8(G5)
23	1.60.00155.15	PAR.AA.PAN.PH.PP1 4,0X25 ZNP RES	8	8(A9)
24	1.60.00051.07	PAR.AA.PAN.PH.PP1 3,0X8 ZNA	3	2(G8), 1(F9)
25	1.60.00155.08	PAR.AA.PAN.PH.PP1 3,0X12 ZNP RES	1	1(B12)
26	1.60.00155.12	PAR.AA.PAN.PH.PP1 4,0X12 ZNP RES	1	1(F8)

ALT:	DESCRICAO/DESCRIPTION				PROJ. CHKD.	DATA DATE
PanoramC		TITULO TITLES		VISTA EXPLODIDA EXPLODED VIEW		
DES. DWG.	NOME NAME	DATA DATE	MATERIAL MATERIAL	ACAB. FINISH	ACAD: TVP2914	
PROJ. CHKD.	ODAIR	04/03/2004	ESC. SCALE	S/E	TOL. Ø	FORMATO: A1
APROV. APPD.	ODAIR	04/03/2004	MOD. MODEL	TVP-2914		COD. ICODE

