

## **SOFIA FEATURES - HARDWARE**

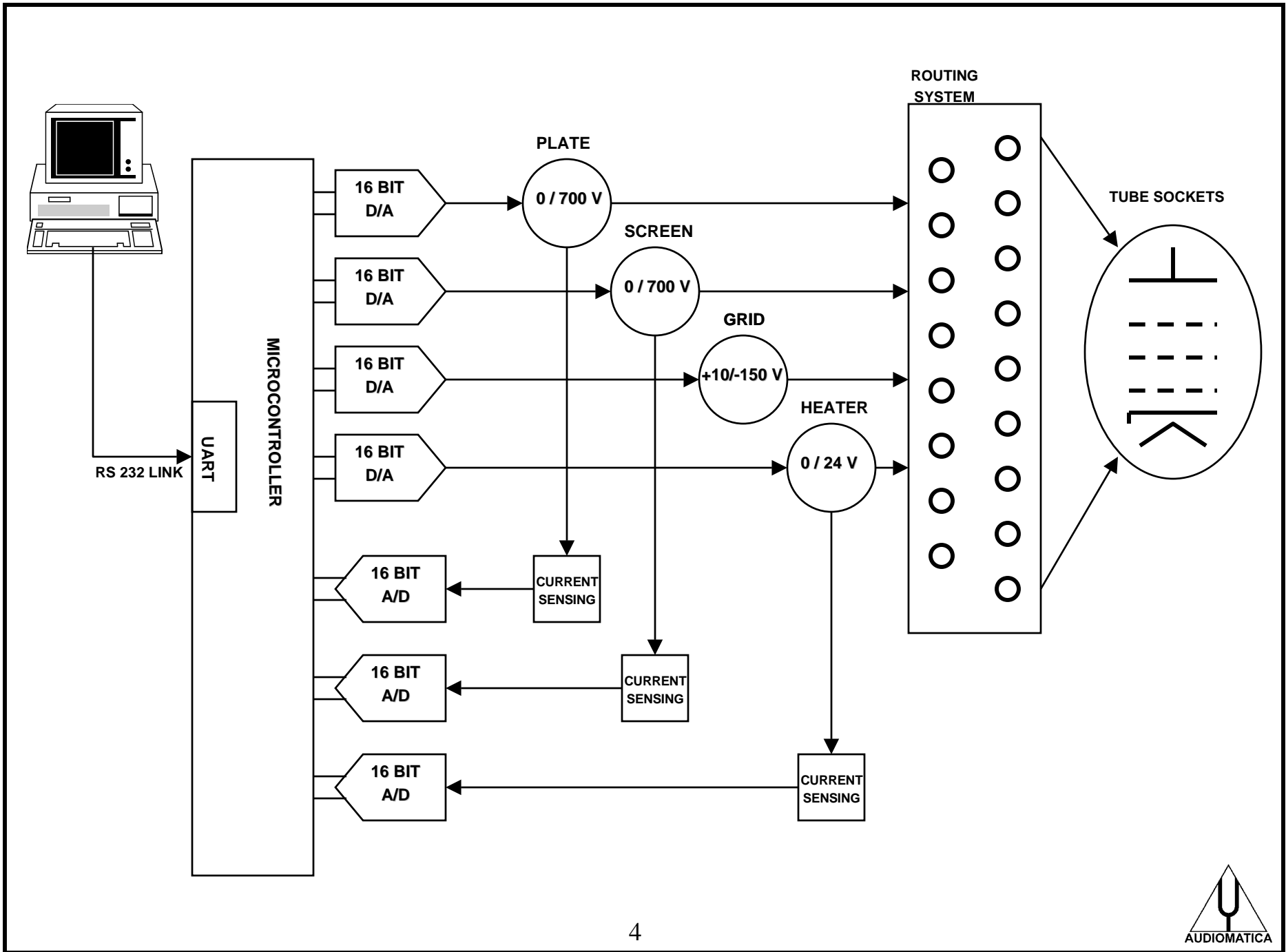
### **HOW DOES HARDWARE DESIGN REFLECT ON YOUR INSTRUMENT ?**

- **GENERAL PERFORMANCE AND ACCURACY**
- **EASY POSSIBILITY OF TUBE CONNECTION**
- **TWO SEPARATE HIGH VOLTAGE GENERATOR**
- **TRIODE, PENTODE, ULTRA LINEAR SUPPORTED**
- **STANDARD RS 232 CONNECTION TO IBM-PC**

## **SOFIA FEATURES - SOFTWARE**

### **HOW DOES SOFTWARE DESIGN REFLECT ON YOUR INSTRUMENT ?**

- IT'S EASY TO LEARN**
- IT'S EASY TO USE IN EVERYDAY WORK**
- GIVES YOU THE IMPRESSION OF FACING  
AND OPERATING A REAL INSTRUMENT**
- GIVES YOU FULL DATA STORAGE CAPABILITY**
- GIVES YOU A PREDEFINED, USER  
EXTENDABLE TUBE LIBRARY**



# **SOFIA SOFTWARE CAPABILITIES**

- **PLATE CHARACTERISTICS MEASUREMENT**

- **STATIC USER DEFINABLE, PROGRAMMABLE CONTROL PANEL WITH TRANSCODUCTANCE PLATE RESISTANCE AND MU**

- **FILE DRIVEN QC TESTS PROCEDURES**

- **BEST MATCH BETWEEN BATCH OF TUBES**

# SOFIA TUBE SETTINGS PANEL

MEASURE PARAMETERS

PIN DESCRIPTIONS

TUBE MODE

TUBE DATA

EL34PENT

Npin	8	Pin 1	SUPPRESSOR
Ufil [V]	6.30	Pin 2	FIL
Ifil [A]	2.00	Pin 3	ANODE
Ua max [V]	700.00	Pin 4	GRID SCR
Ia max [mA]	250.00	Pin 5	GRID
Usc [V]	200.00	Pin 6	N.C.
Isc max [mA]	250.00	Pin 7	FIL
P max [W]	30.00	Pin 8	CATHODE
Ug max [V]	0.00	Pin 9	
Ug min [V]	-20.0		
Ultra [%]	0.00		
Ua0 [V]	0.00		

JOB1

- 6C33C.TBE
- 12AX7.TBE
- 2A3.TBE
- 5998.TBE
- 12AT7.TBE
- 5U4.TBE
- 6DJ8.TBE
- 6SL7.TBE
- 8417PENT.TBE
- 8417TRIO.TBE
- 8417ULTR.TBE
- EF86.TBE
- EL34PENT.TBE
- EL34TRIO.TBE

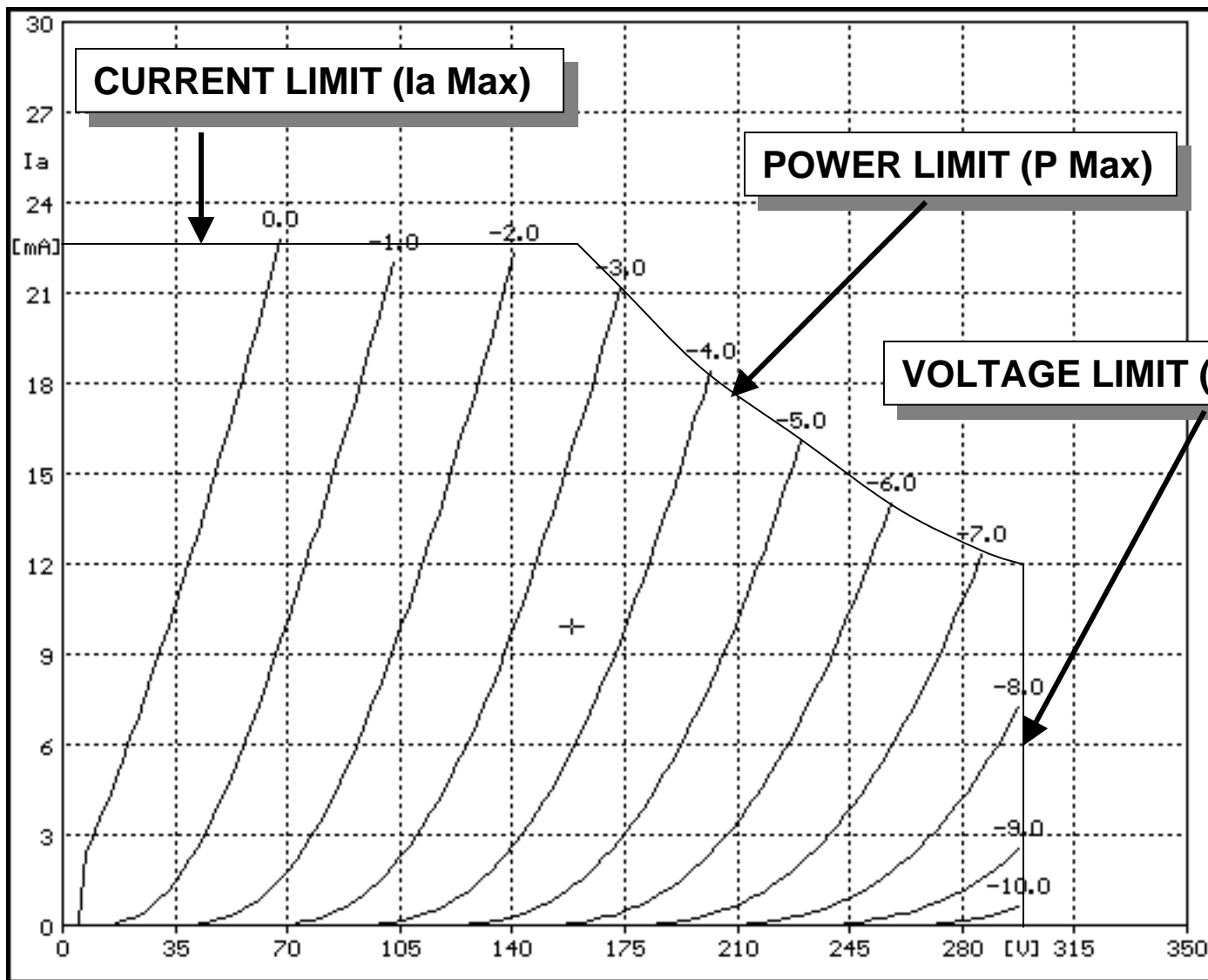
Buttons: Load, Save, OK, Cancel

MODE

- Triode
- Pentode
- Pseudo
- Ultra
- Diode

DISK TUBE LIBRARY

# SOFIA TUBE SETTINGS LIMITS



## **LIMITS WITH SCREEN GRID**

**BOTH  $I_{amax}$  AND  $I_{scmax}$  ARE EVALUATED**

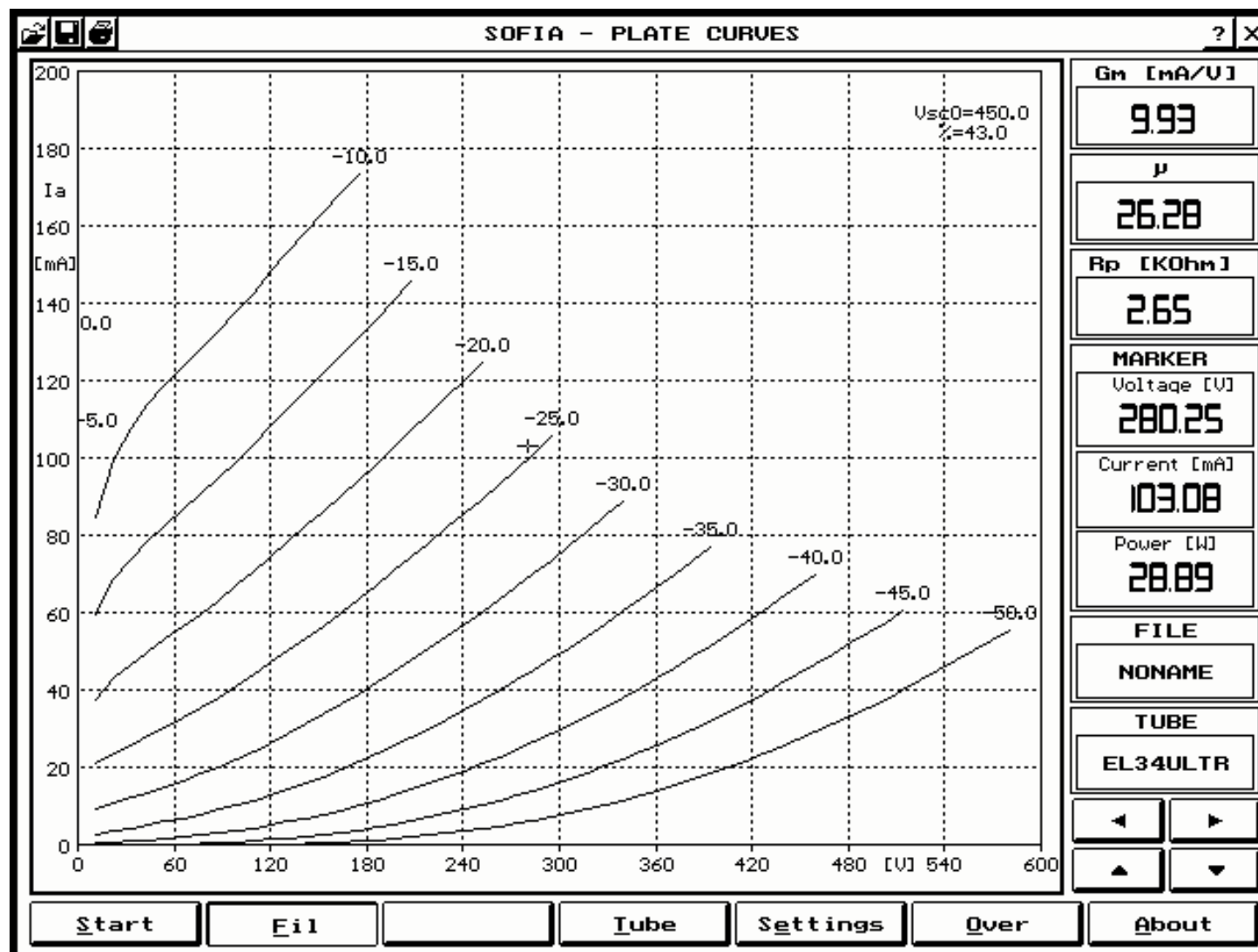
**THE FIRST ONE REACHED IS USED**

**$P_{max}$  IS THE SUM OF ANODE AND  
SCREEN DISSIPATION**

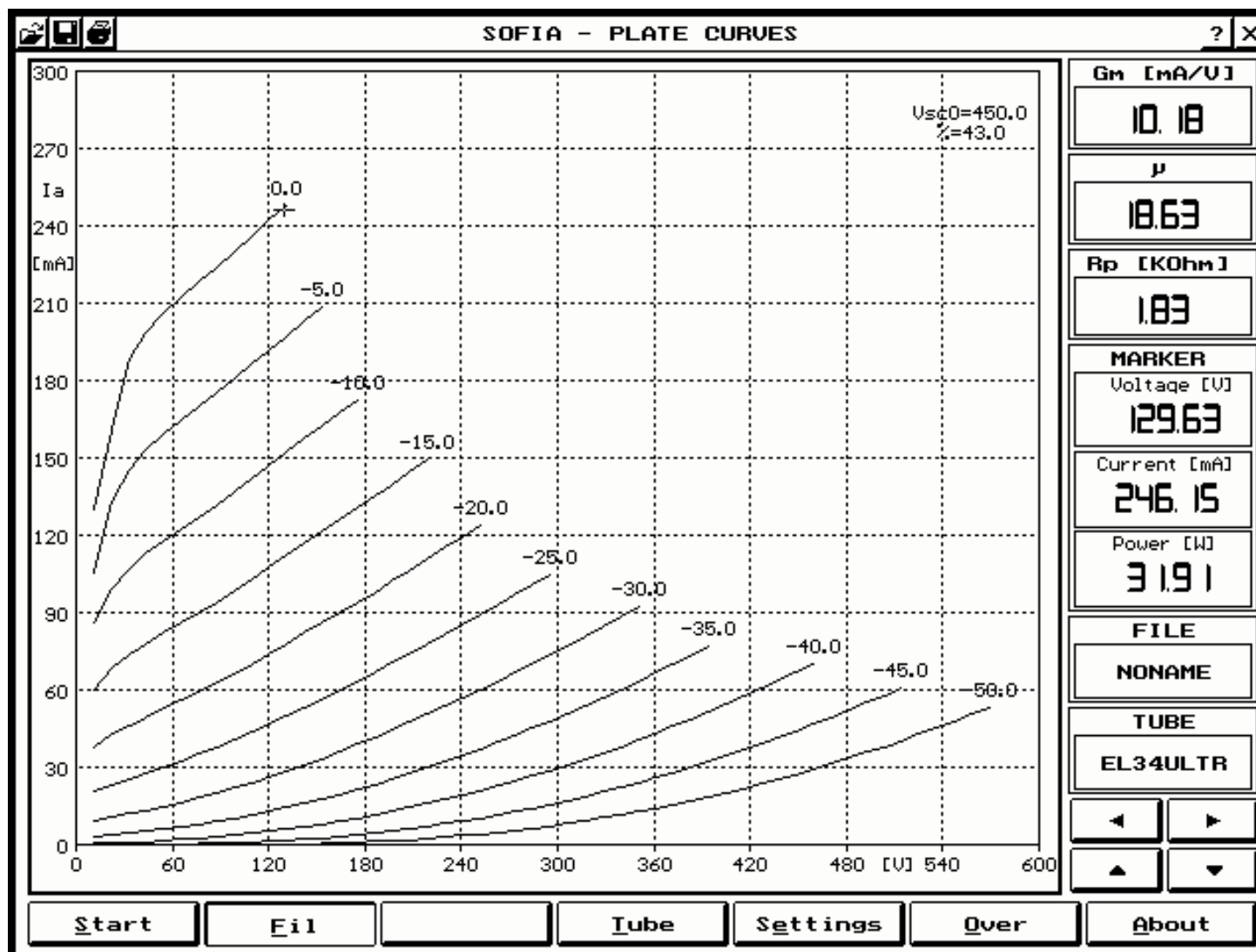
**USUALLY FOR ULTRALINEAR AND  
PSEUDOTRIODE MODE CURVES, TUBE  
MANUFACTURERS SCREEN CURRENT HAS  
TO BE EXCEEDED**



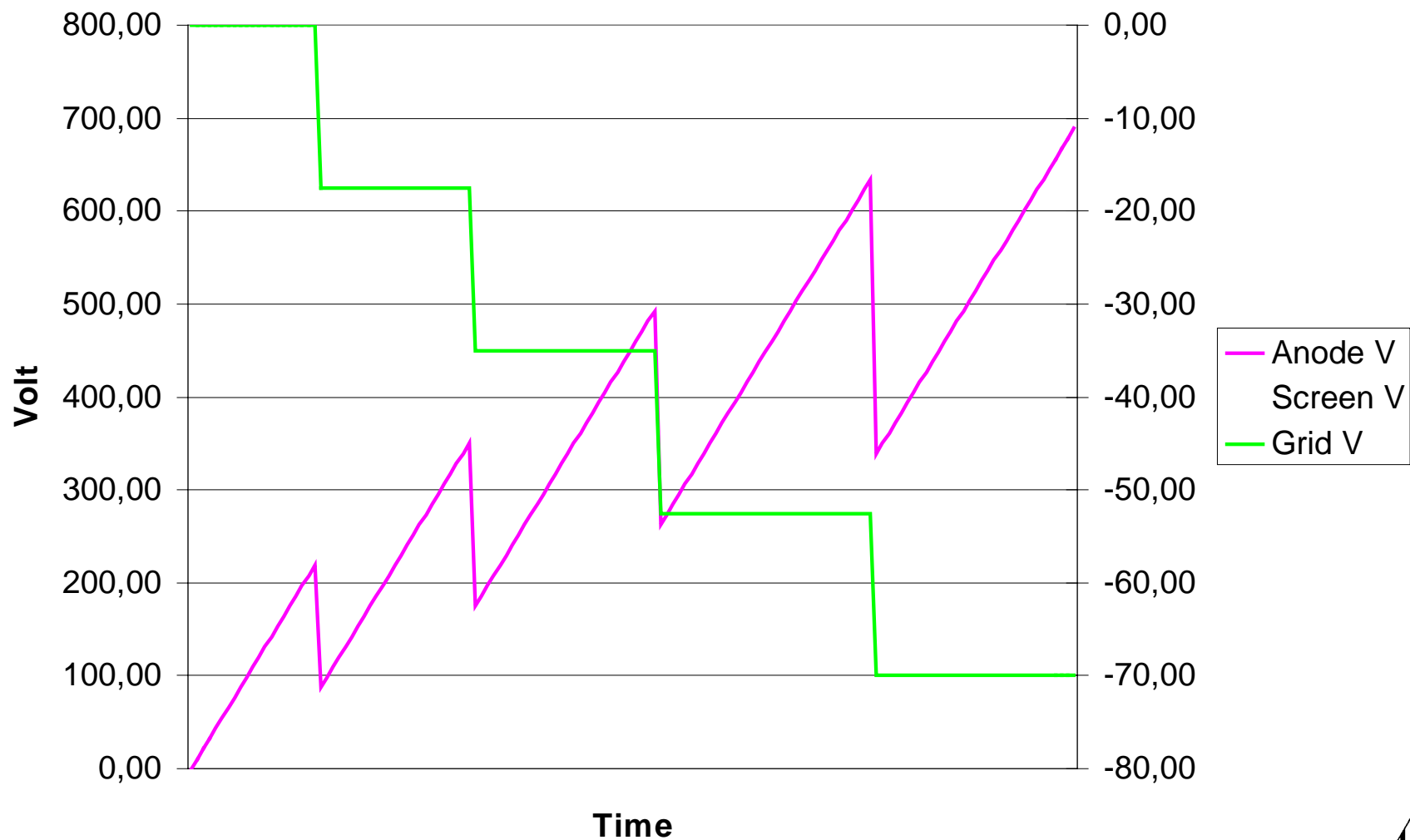
# 6L6GC ULTRA-LINEAR 40mA Iscmax



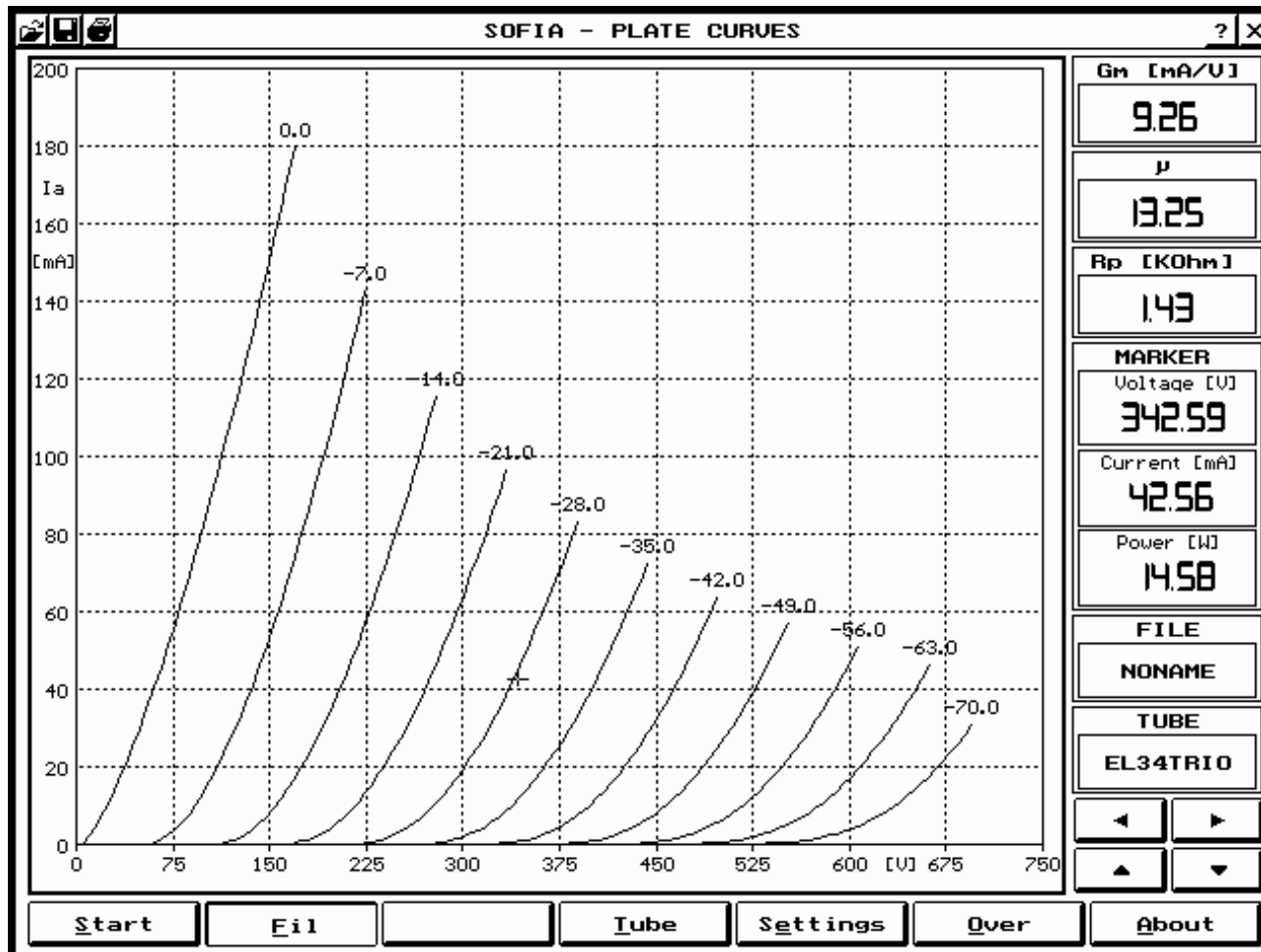
# 6L6GC ULTRA-LINEAR 100mA Iscmax



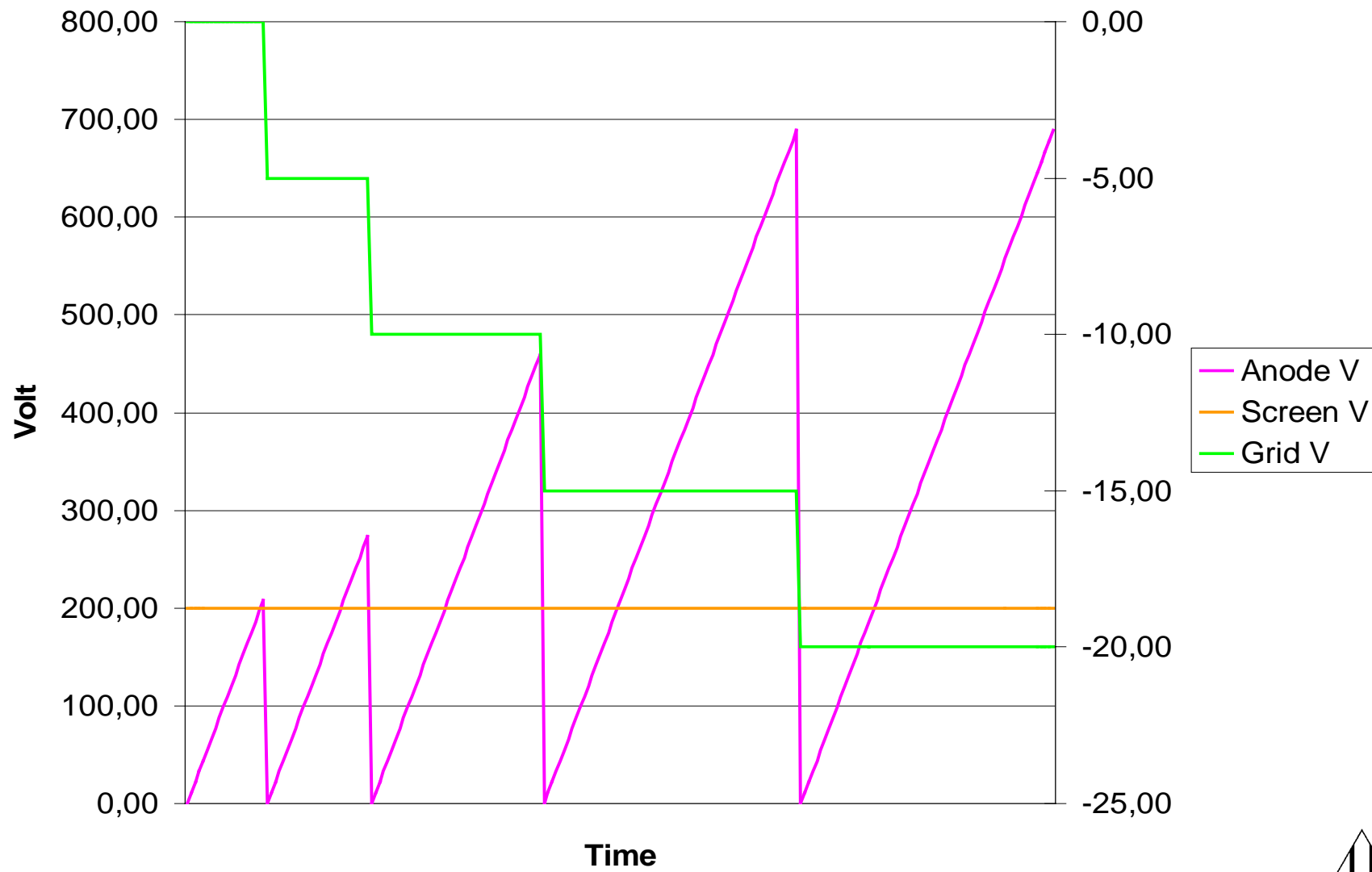
# SOFIA VOLTAGES Vs. TIME TRIODE



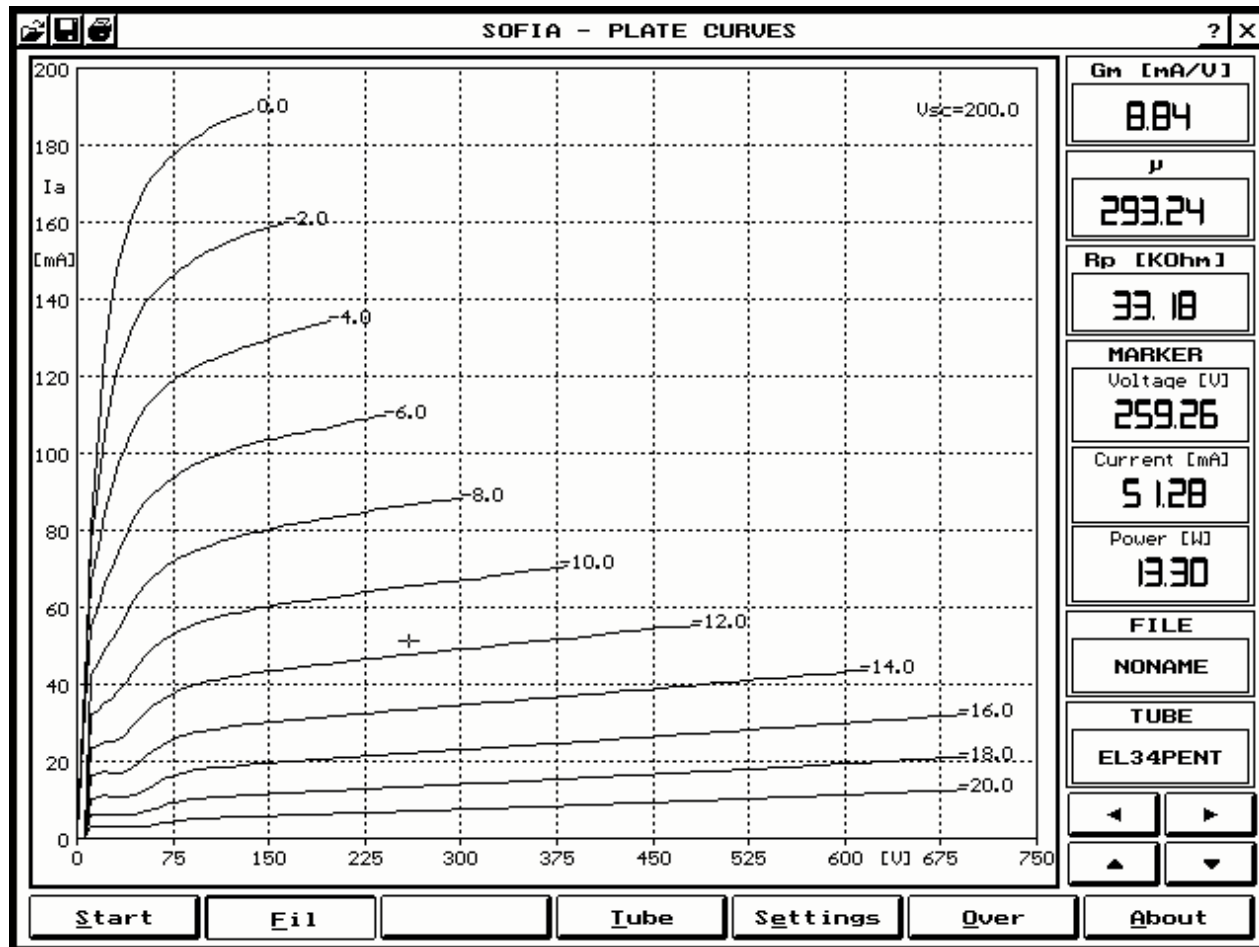
# SOFIA - EL 34 PSEUDO-TRIODE MODE



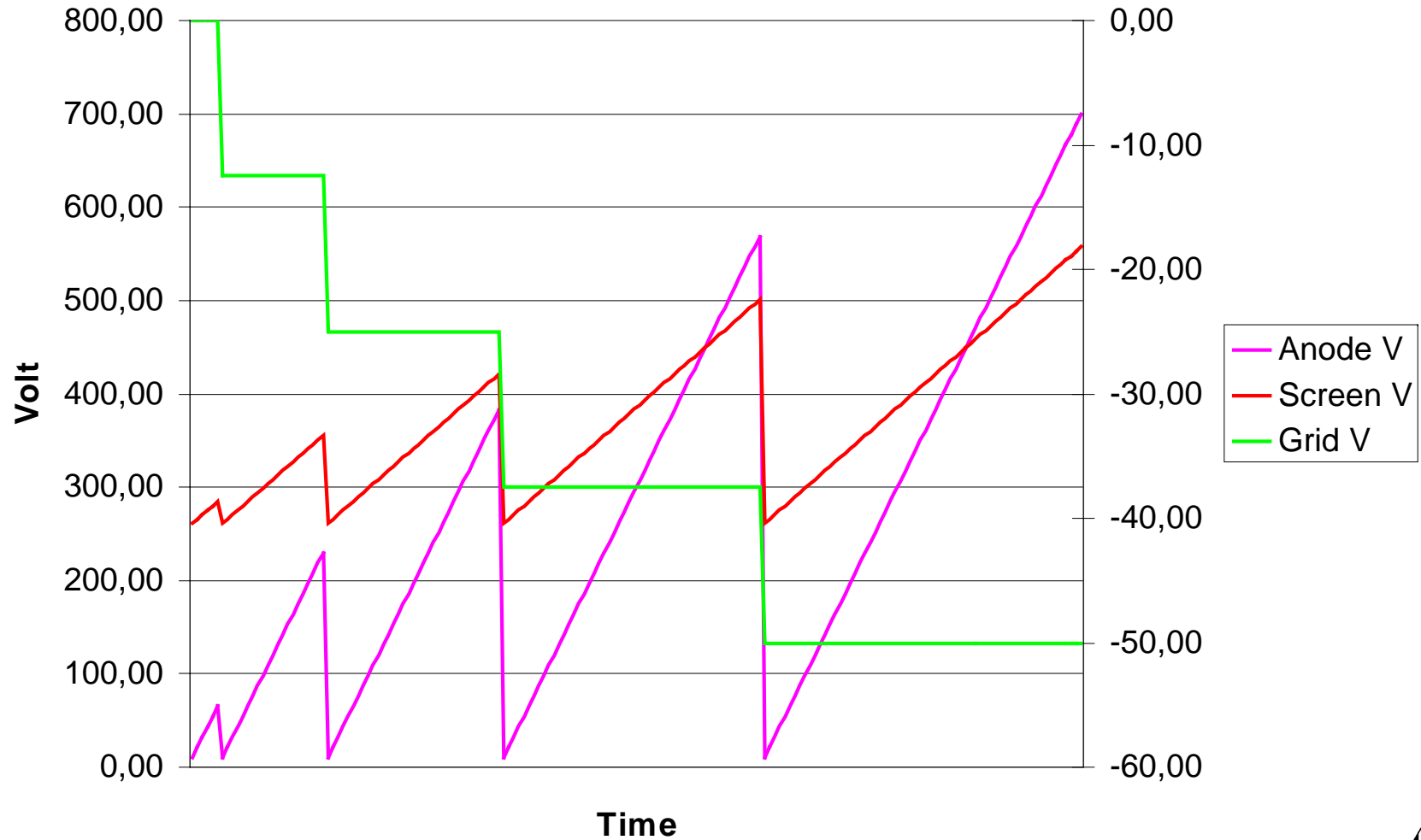
# SOFIA VOLTAGES Vs. TIME PENTODE



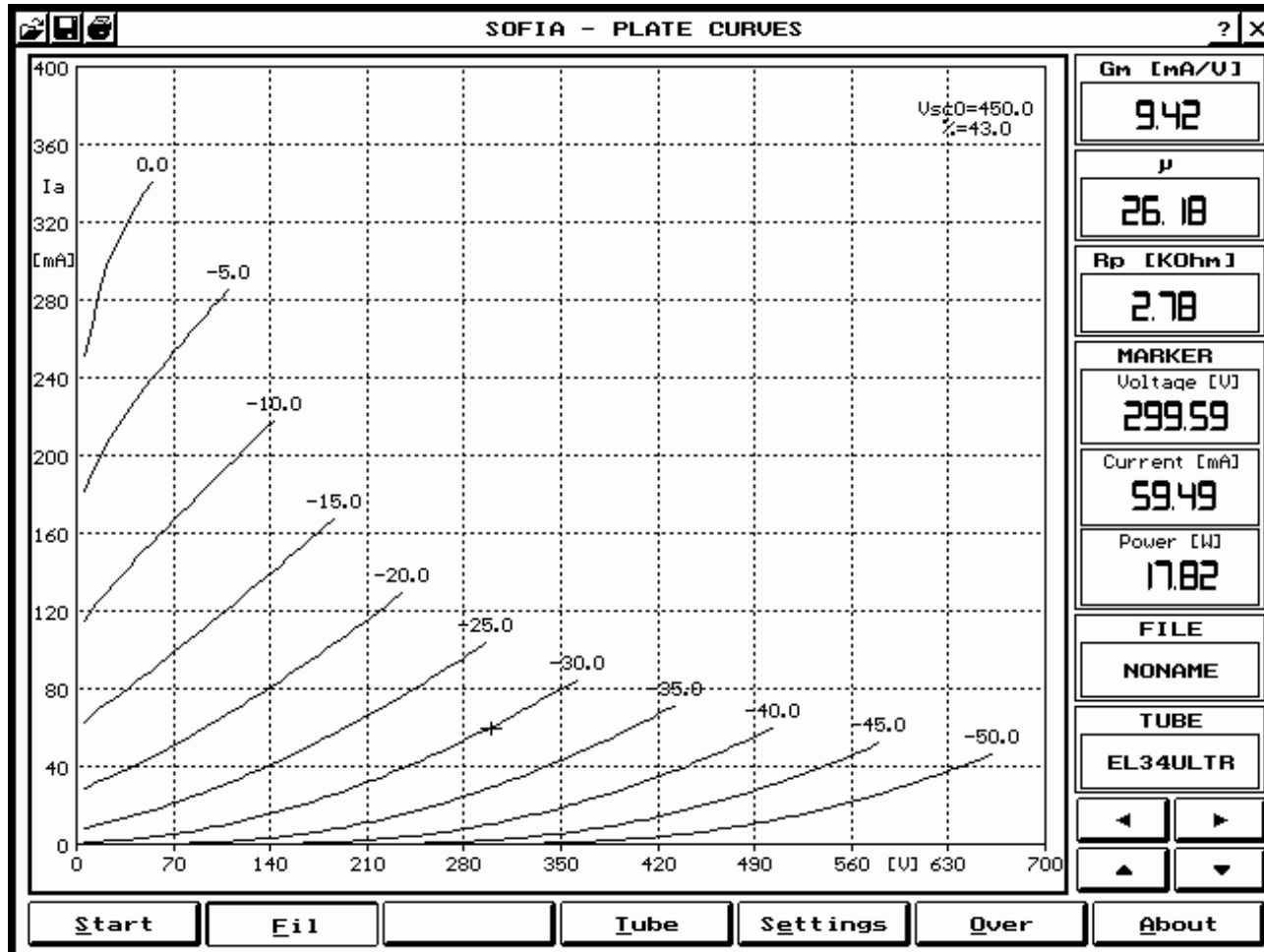
# SOFIA - EL 34 PENTODE MODE



# SOFIA VOLTAGES Vs. TIME ULTRA (43%, 450V)

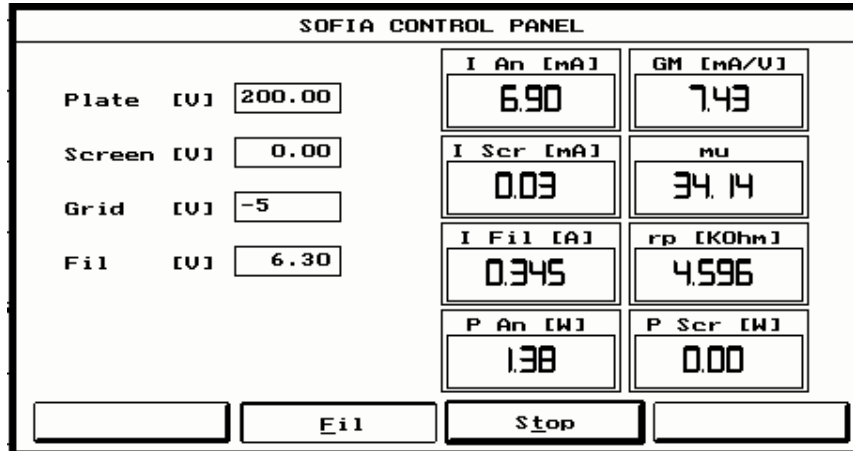


# SOFIA - EL 34 ULTRA-LINEAR MODE





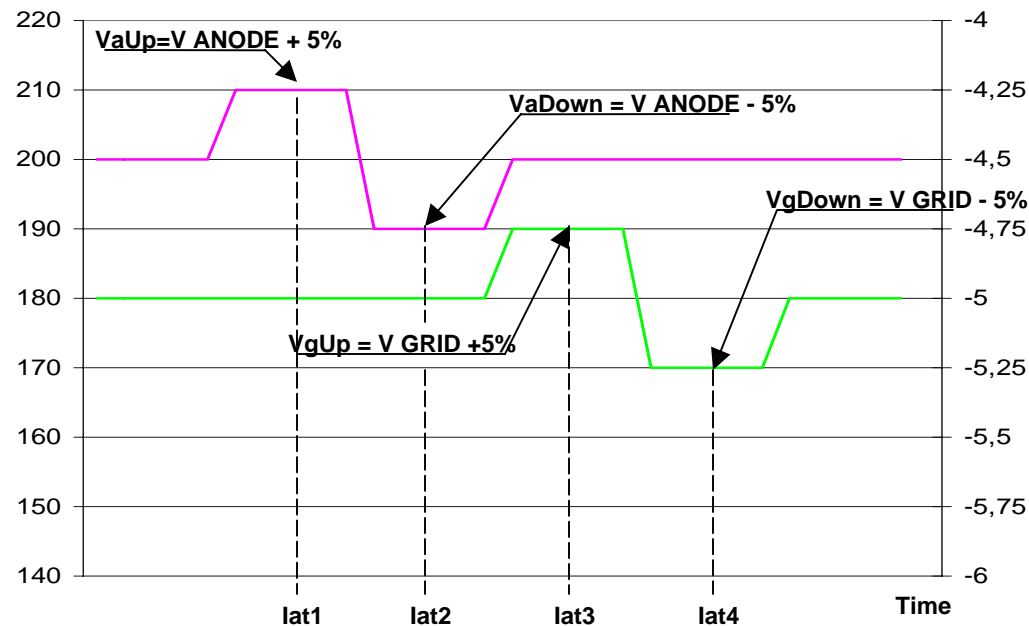
# SOFIA CONTROL PANEL



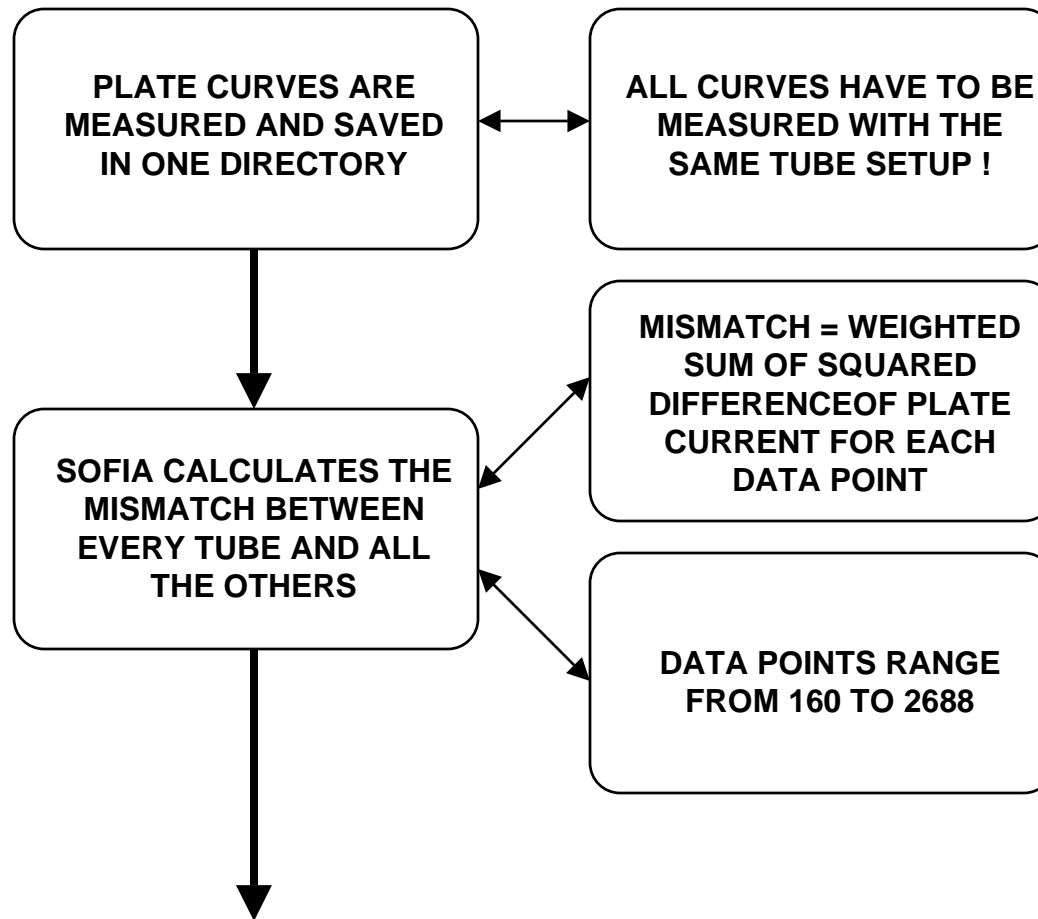
$$GM = \frac{Iat3 - Iat4}{VgUp - VgDown}$$

$$\mu = rp \cdot GM$$

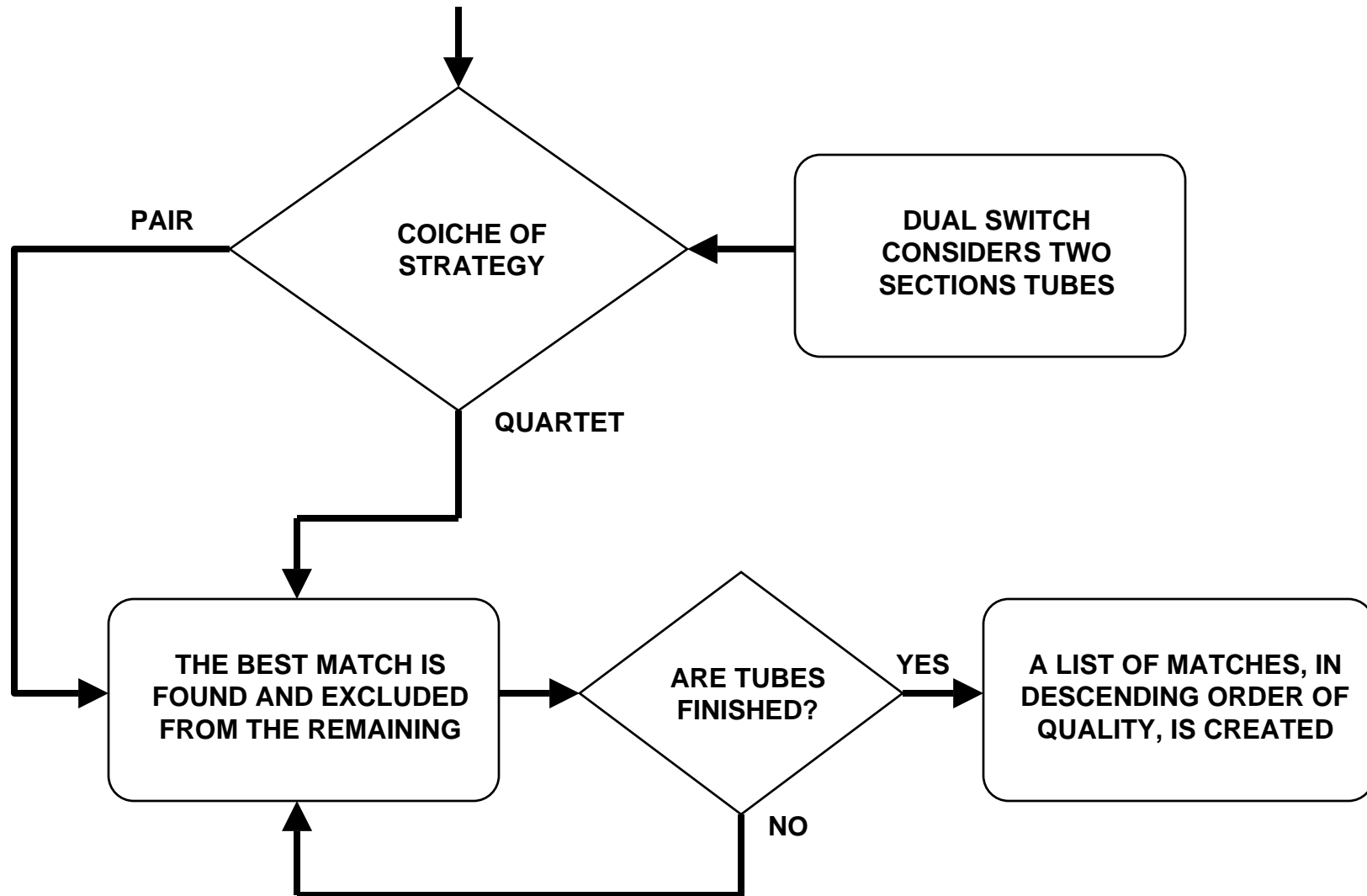
$$rp = \frac{Iat1 - Iat2}{VaUp - VaDown}$$



# MATCH PROCEDURE - 1



# MATCH PROCEDURE - 2



# SOFIA MATCH TO PAIR

SOFIA - MATCHING TOOL								
NAME 1	NAME 2	ERR	NAME 1	NAME 2	ERR	NAME 1	NAME 2	ERR
TUBE32.PT1	TUBE7.PT1	20	TUBE18.PT2	TUBE36.PT1	66	TUBE13.PT2	TUBE20.PT2	137
TUBE2.PT2	TUBE31.PT2	23	TUBE27.PT1	TUBE37.PT1	67	TUBE17.PT1	TUBE52.PT1	141
TUBE29.PT1	TUBE48.PT2	25	TUBE47.PT1	TUBE8.PT2	68	TUBE44.PT2	TUBE45.PT1	142
TUBE16.PT1	TUBE4.PT2	27	TUBE45.PT2	TUBE51.PT2	69	TUBE47.PT2	TUBE9.PT2	145
TUBE20.PT1	TUBE42.PT1	28	TUBE14.PT2	TUBE15.PT2	73	TUBE44.PT1	TUBE58.PT2	147
TUBE30.PT1	TUBE56.PT1	31	TUBE22.PT2	TUBE32.PT2	74	TUBE26.PT1	TUBE50.PT2	157
TUBE19.PT1	TUBE2.PT1	33	TUBE36.PT2	TUBE43.PT1	79	TUBE35.PT2	TUBE53.PT2	177
TUBE30.PT2	TUBE57.PT1	35	TUBE24.PT2	TUBE25.PT2	80	TUBE43.PT2	TUBE8.PT1	271
TUBE49.PT2	TUBE54.PT1	41	TUBE11.PT2	TUBE41.PT2	82	TUBE56.PT2	TUBE6.PT1	310
TUBE19.PT2	TUBE51.PT1	42	TUBE40.PT1	TUBE58.PT1	85	TUBE38.PT1	TUBE55.PT2	516
TUBE16.PT2	TUBE49.PT1	46	TUBE15.PT1	TUBE39.PT1	87			
TUBE1.PT1	TUBE52.PT2	48	TUBE26.PT2	TUBE46.PT2	89			
TUBE42.PT2	TUBE57.PT2	49	TUBE29.PT2	TUBE9.PT1	91			
TUBE33.PT2	TUBE40.PT2	52	TUBE34.PT1	TUBE54.PT2	93			
TUBE38.PT2	TUBE5.PT2	53	TUBE28.PT2	TUBE39.PT2	94			
TUBE11.PT1	TUBE22.PT1	54	TUBE13.PT1	TUBE25.PT1	95			
TUBE1.PT2	TUBE33.PT1	55	TUBE21.PT1	TUBE23.PT1	97			
TUBE31.PT1	TUBE48.PT1	56	TUBE50.PT1	TUBE7.PT2	98			
TUBE18.PT1	TUBE55.PT1	57	TUBE23.PT2	TUBE24.PT1	104			
TUBE12.PT2	TUBE21.PT2	58	TUBE17.PT2	TUBE27.PT2	105			
TUBE12.PT1	TUBE6.PT2	61	TUBE28.PT1	TUBE3.PT2	106			
TUBE10.PT1	TUBE10.PT2	63	TUBE46.PT1	TUBE53.PT1	115			
TUBE14.PT1	TUBE35.PT1	64	TUBE34.PT2	TUBE41.PT1	118			
TUBE37.PT2	TUBE4.PT1	65	TUBE3.PT1	TUBE5.PT1	129			

FILE: pairnd    DIRECTORY: BUGDIGI

# SOFIA MATCH TO PAIR WITH DUAL

SOFIA - MATCHING TOOL								
NAME 1	NAME 2	ERR	NAME 1	NAME 2	ERR	NAME 1	NAME 2	ERR
TUBE25.PT1	TUBE25.PT2	23	TUBE2.PT1	TUBE2.PT2	255	TUBE43.PT1	TUBE43.PT2	600
TUBE38.PT1	TUBE38.PT2	28	TUBE42.PT1	TUBE42.PT2	262	TUBE33.PT1	TUBE33.PT2	607
TUBE27.PT1	TUBE27.PT2	48	TUBE57.PT1	TUBE57.PT2	264	TUBE54.PT1	TUBE54.PT2	732
TUBE10.PT1	TUBE10.PT2	63	TUBE3.PT1	TUBE3.PT2	269	TUBE21.PT1	TUBE21.PT2	745
TUBE45.PT1	TUBE45.PT2	77	TUBE52.PT1	TUBE52.PT2	271	TUBE35.PT1	TUBE35.PT2	780
TUBE22.PT1	TUBE22.PT2	92	TUBE34.PT1	TUBE34.PT2	273			0
TUBE47.PT1	TUBE47.PT2	96	TUBE19.PT1	TUBE19.PT2	277			0
TUBE37.PT1	TUBE37.PT2	110	TUBE48.PT1	TUBE48.PT2	289			0
TUBE11.PT1	TUBE11.PT2	112	TUBE41.PT1	TUBE41.PT2	303			0
TUBE7.PT1	TUBE7.PT2	115	TUBE13.PT1	TUBE13.PT2	306			0
TUBE14.PT1	TUBE14.PT2	117	TUBE8.PT1	TUBE8.PT2	347			
TUBE31.PT1	TUBE31.PT2	119	TUBE30.PT1	TUBE30.PT2	348			
TUBE28.PT1	TUBE28.PT2	124	TUBE55.PT1	TUBE55.PT2	349			
TUBE4.PT1	TUBE4.PT2	140	TUBE56.PT1	TUBE56.PT2	369			
TUBE1.PT1	TUBE1.PT2	142	TUBE20.PT1	TUBE20.PT2	417			
TUBE26.PT1	TUBE26.PT2	155	TUBE50.PT1	TUBE50.PT2	432			
TUBE24.PT1	TUBE24.PT2	157	TUBE6.PT1	TUBE6.PT2	461			
TUBE9.PT1	TUBE9.PT2	167	TUBE16.PT1	TUBE16.PT2	467			
TUBE36.PT1	TUBE36.PT2	171	TUBE44.PT1	TUBE44.PT2	473			
TUBE23.PT1	TUBE23.PT2	188	TUBE49.PT1	TUBE49.PT2	485			
TUBE18.PT1	TUBE18.PT2	195	TUBE15.PT1	TUBE15.PT2	501			
TUBE17.PT1	TUBE17.PT2	212	TUBE39.PT1	TUBE39.PT2	516			
TUBE12.PT1	TUBE12.PT2	228	TUBE5.PT1	TUBE5.PT2	554			
TUBE46.PT1	TUBE46.PT2	241	TUBE53.PT1	TUBE53.PT2	574			

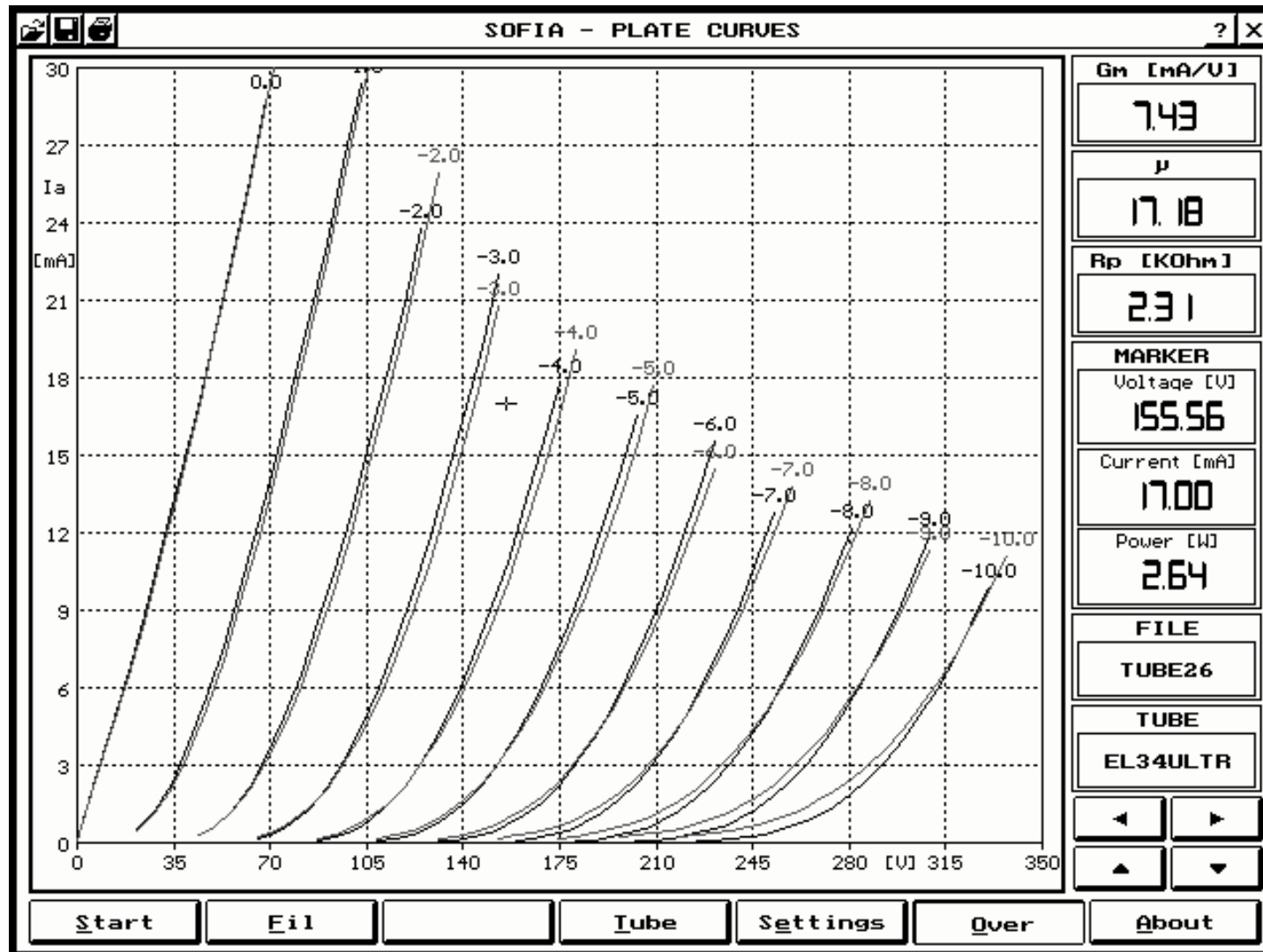
FILE: pair      DIRECTORY: BUGDIGI

# SOFIA MATCH TO QUARTET WITH DUAL

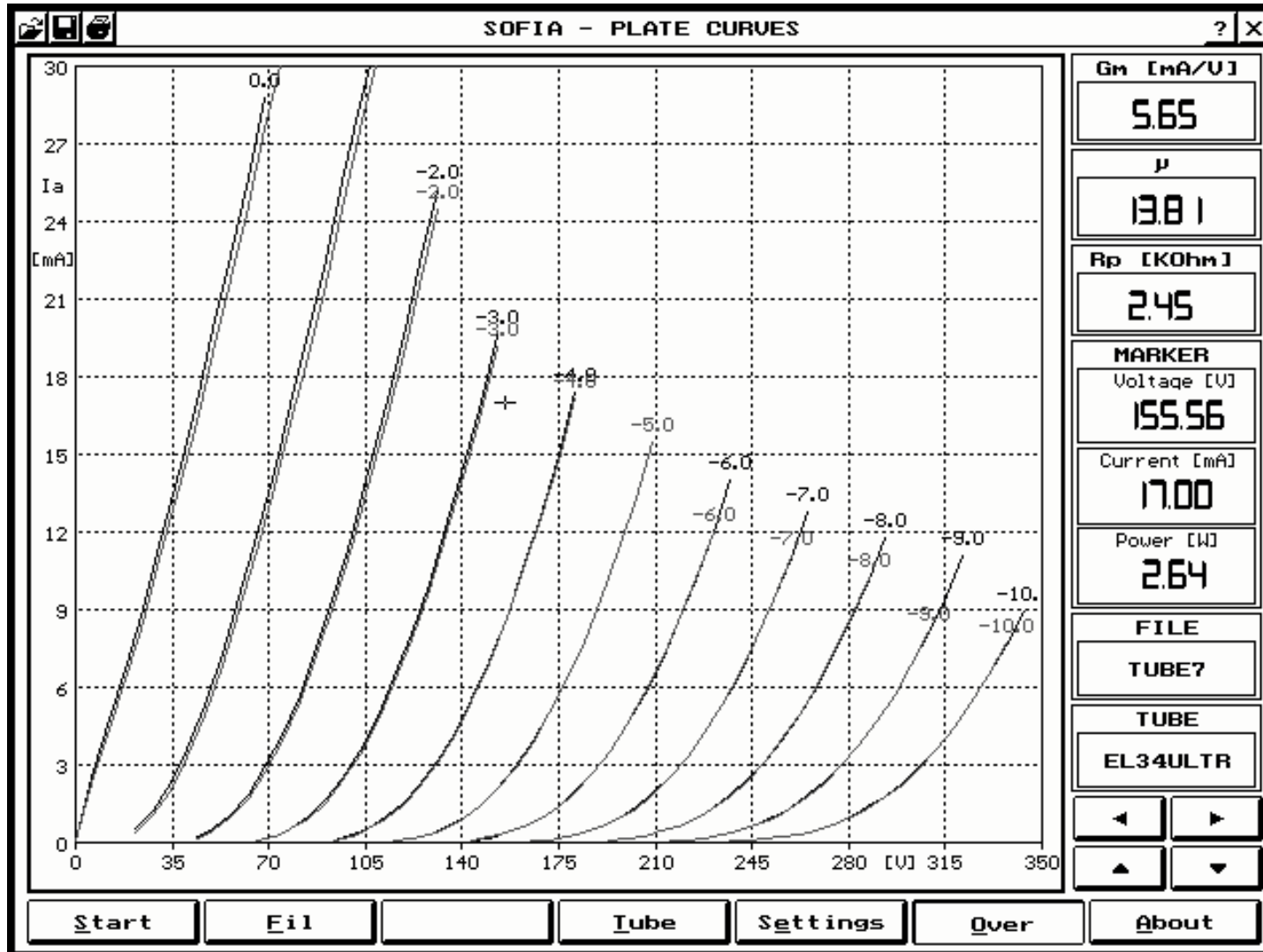
SOFIA - MATCHING TOOL									
NAME 1	NAME 2	NAME 3	NAME 4	ERR	NAME 1	NAME 2	NAME 3	NAME 4	ERR
TUBE11.PT1	TUBE11.PT2	TUBE38.PT1	TUBE38.PT2	75	TUBE3.PT1	TUBE3.PT2	TUBE53.PT1	TUBE53.PT2	404
TUBE27.PT1	TUBE27.PT2	TUBE37.PT1	TUBE37.PT2	76	TUBE33.PT1	TUBE33.PT2	TUBE39.PT1	TUBE39.PT2	476
TUBE10.PT1	TUBE10.PT2	TUBE14.PT1	TUBE14.PT2	84	TUBE21.PT1	TUBE21.PT2	TUBE43.PT1	TUBE43.PT2	562
TUBE24.PT1	TUBE24.PT2	TUBE25.PT1	TUBE25.PT2	91	TUBE16.PT1	TUBE16.PT2	TUBE54.PT1	TUBE54.PT2	582
TUBE29.PT1	TUBE29.PT2	TUBE51.PT1	TUBE51.PT2	107					0
TUBE22.PT1	TUBE22.PT2	TUBE31.PT1	TUBE31.PT2	109					
TUBE36.PT1	TUBE36.PT2	TUBE47.PT1	TUBE47.PT2	121					
TUBE4.PT1	TUBE4.PT2	TUBE7.PT1	TUBE7.PT2	130					
TUBE1.PT1	TUBE1.PT2	TUBE45.PT1	TUBE45.PT2	133					
TUBE40.PT1	TUBE40.PT2	TUBE58.PT1	TUBE58.PT2	144					
TUBE26.PT1	TUBE26.PT2	TUBE28.PT1	TUBE28.PT2	146					
TUBE17.PT1	TUBE17.PT2	TUBE32.PT1	TUBE32.PT2	164					
TUBE18.PT1	TUBE18.PT2	TUBE42.PT1	TUBE42.PT2	179					
TUBE12.PT1	TUBE12.PT2	TUBE19.PT1	TUBE19.PT2	189					
TUBE2.PT1	TUBE2.PT2	TUBE52.PT1	TUBE52.PT2	192					
TUBE30.PT1	TUBE30.PT2	TUBE57.PT1	TUBE57.PT2	216					
TUBE8.PT1	TUBE8.PT2	TUBE9.PT1	TUBE9.PT2	219					
TUBE34.PT1	TUBE34.PT2	TUBE41.PT1	TUBE41.PT2	231					
TUBE13.PT1	TUBE13.PT2	TUBE23.PT1	TUBE23.PT2	238					
TUBE48.PT1	TUBE48.PT2	TUBE55.PT1	TUBE55.PT2	267					
TUBE44.PT1	TUBE44.PT2	TUBE46.PT1	TUBE46.PT2	296					
TUBE49.PT1	TUBE49.PT2	TUBE50.PT1	TUBE50.PT2	332					
TUBE5.PT1	TUBE5.PT2	TUBE56.PT1	TUBE56.PT2	347					
TUBE15.PT1	TUBE15.PT2	TUBE20.PT1	TUBE20.PT2	391					

FILE: quartet DIRECTORY: BUGDIGI

# SOFIA MATCH WITH ERROR=150

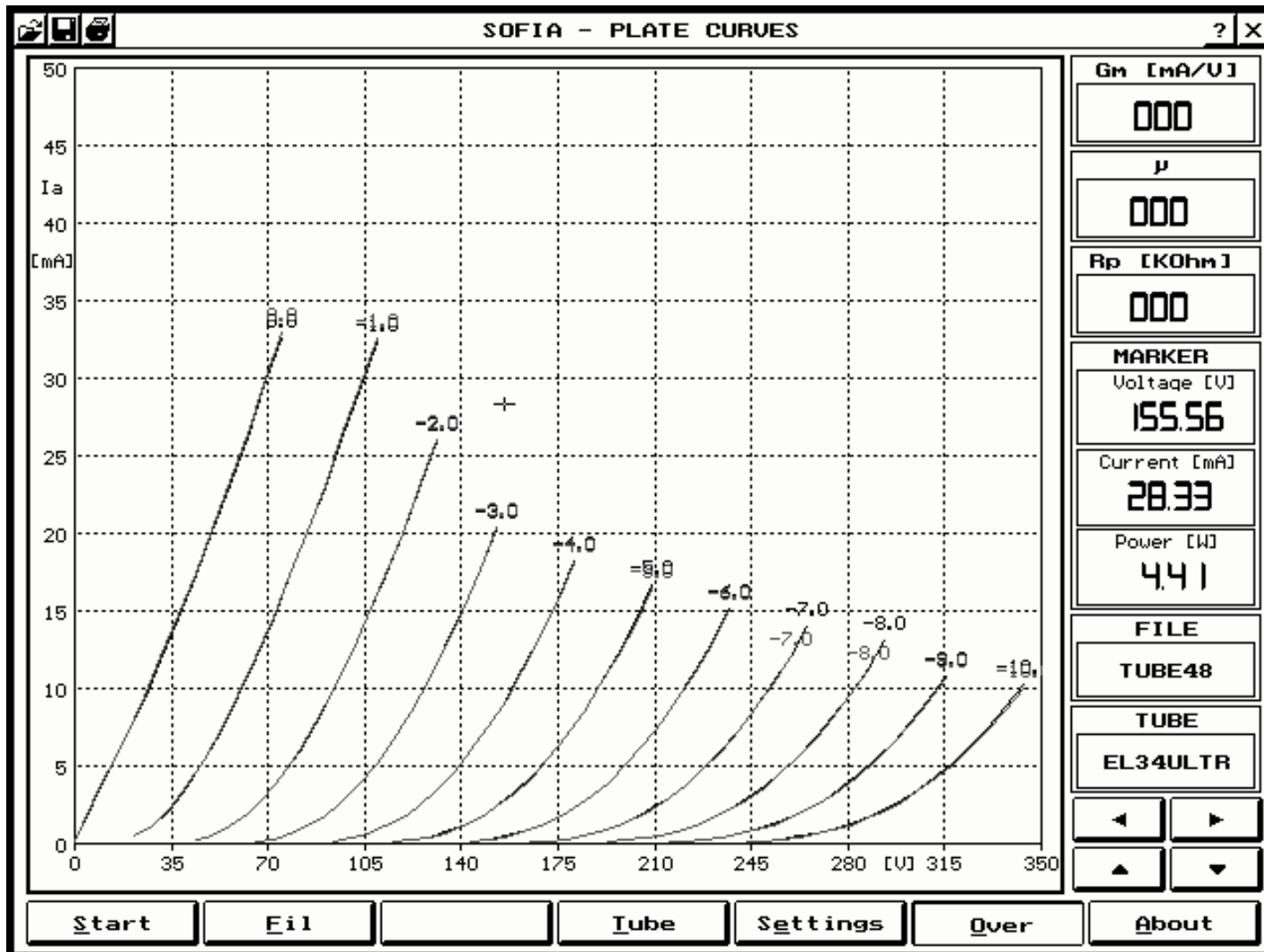


# SOFIA MATCH WITH ERROR=100





# SOFIA MATCH WITH ERROR=25



**ACCEPTABLE ERROR VALUE**

**IS LEFT TO THE USER EXPERIENCE**

**DESIGNERS SHOULD BASE THEIR CHOICE  
ON PRICE AND APPLICATION**

**RETAILERS SHOULD BASE THEIR  
CHOICE ON PRICE AND AVAILABILITY**

**AS AN ABSOLUTE CRITERIA ERROR < 100  
SHOULD BE CONSIDERED A VERY GOOD  
MATCH**

# SOFIA AND QUALITY CONTROL

SOFIA - QUALITY CONTROL

AUDIOMATICA SRL  
6DJ8 QUALITY CONTROL

TEST N°:

23                      **GOOD**

INSERT TUBE

Date	: 17/04/96	Ufil [V]: 6.3	Ifil [A]: 0.32
Total	: 23	Ug [V]: -5.0	
Good	: 21	Ua [V]: 195	Ia [mA]: 6.1
Bad	: 2	Usc [V]: 0	Isc [mA]: 0.1

StartAutoDetectSetupSoundExit

FILE: 6DJ8.QC

# SOFIA AND QUALITY CONTROL

```
;THIS IS A SAMPLE QUALITY CONTROL SETUP FILE ('.QC' EXTENSION)
```

```
COMPANY=AUDIOMATICA SRL
```

```
TITLE=6DJ8 Quality Control
```

```
VFIL=6.3 ; [Volts]
```

```
IFIL=0.33 ; [Amperes]
```

```
IFTOL=10 ; [%]
```

```
AUTODETECT=0 ; 0=off 1=on
```

```
HEATINGDELAY=1 ; [s]
```

```
[DATA]
```

VGRID[V]	VANODE[V]	IANODE[ma]	IATOL(%)	VSCREEN(V)	ISCREEN(mA)	ISTOL(%)
-4	190	14	20	0	0	0
-5	195	7	20	0	0	0

# SOFIA AND QUALITY CONTROL

