

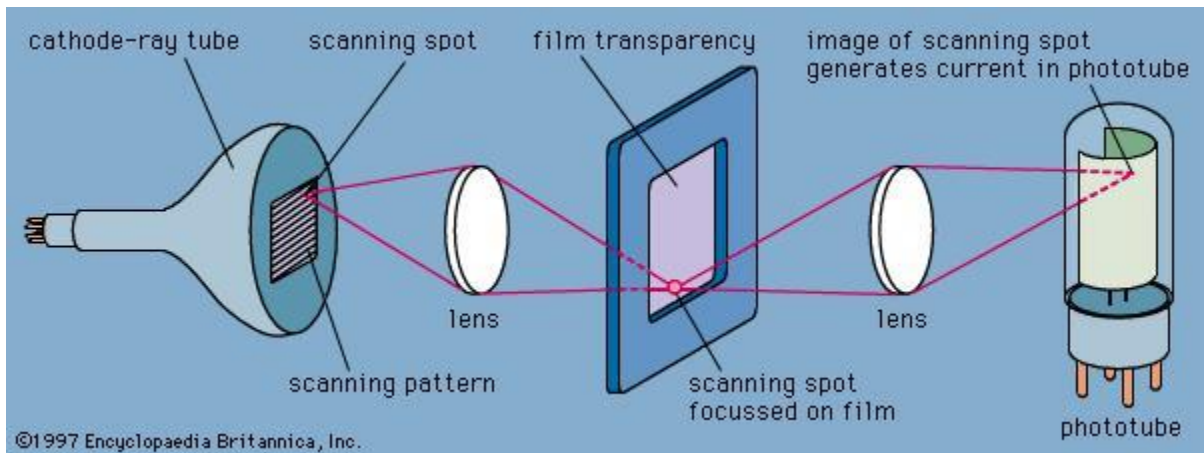
# 帶 ” 飛點掃描器 ” 的電視分析儀

## B & K 1077B Television Analyst

Aug. 30, 2016

從小就在書上看到 ” 飛點掃描器 ” (Flying Spot Scanner), 總以為是可望不可及的事. 想不到上週六在 Rowley 因偶爾的機會買到了一台帶 ” 飛點掃描器 ” 的電視分析儀 B&K 1077B.

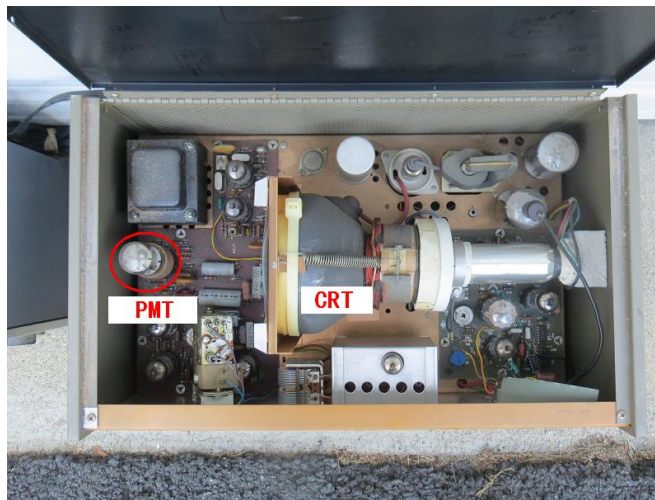
### I. 飛點掃描器原理图:



### II. 電視分析儀 B&K 1077B Television Analyst



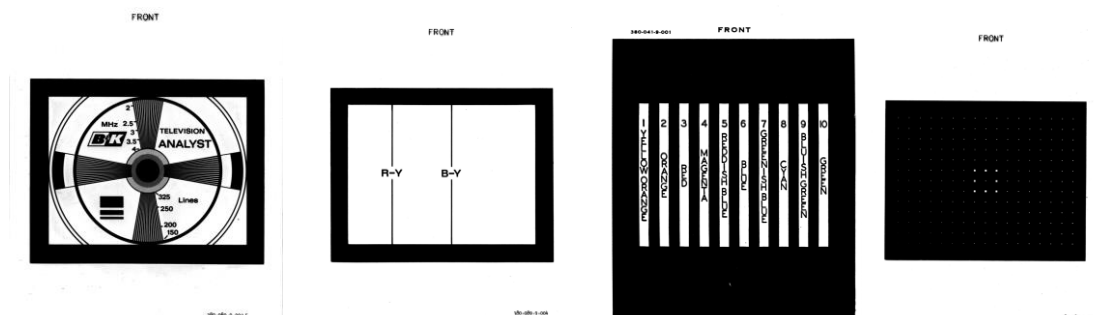
有人说, B&K 1077B 是一個 30 磅重的麵包盒電視台 (What the Analyst is, then, is a TV station in a 30-pound breadbox.). B&K 1077B 可能是历史上最有名的電視分析儀. 它有 16 個电子管, 一個光電倍增管 (photomultiplier tube, PMT) 和一個五英寸的短餘輝 CRT。



光電倍增管和五英寸的短餘輝 CRT 组成飛點掃描器。在 CRT 和光電倍增管之间有一片透明的標準測試圖案。因此当 CRT 掃描時光電倍增管就会产生測試圖案的 Video 信号。光電倍增管对紫外線特別敏感, 故 CRT 用紫外光掃描。



飛點掃描器只用于产生黑白 Video 信号。標準測試圖案有下列各式透明胶片, 可隨意換用。



B&K 1077B 的功能很强, 下表列出它的主要功能.

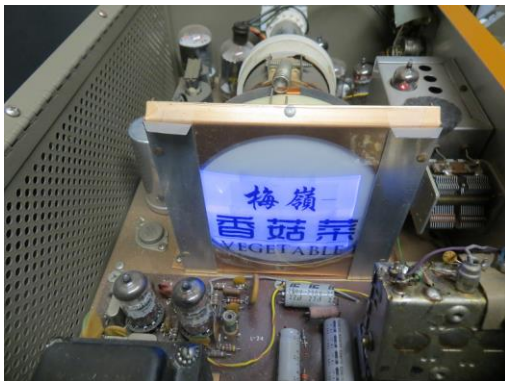
#### WHAT THE TELEVISION ANALYST WILL DO

1. Simplifies complete servicing on all black-and-white or color television receivers through use of a single test instrument.
2. Speeds servicing of transistorized, partially transistorized, and vacuum tube television receivers, including uhf and vhf tuners.
3. Generates all signals normally transmitted by a television station and those produced within a television receiver for point-by-point signal substitution troubleshooting techniques throughout a complete television receiver.
4. Generates uhf signals on channels 14 through 83 for testing uhf tuners.
5. Generates vhf signals on channels 2, 3, 4, 6, 7, 8, 12, and 13 for testing vhf tuners.
6. Generates i-f signals of 20 to 48 MHz for testing i-f amplifier stages.
7. Generates a positive or negative composite video signal for injection into video stages.
8. Generates a keyed color bar pattern which modulates the R.F. output for troubleshooting and adjusting color circuits.
9. Generates a color rainbow signal for injection into color amplifiers and demodulators.
10. Generates a 4.5 MHz sound channel test signal that is frequency modulated by a 1 KHz audio tone.
11. Generates a 1 KHz tone for audio circuit testing.
12. Generates composite sync pulse signals of positive or negative polarity, adjustable in amplitude, and with variable impedance for troubleshooting sync circuits, picture tubes, blanking circuits and transistorized keyed AGC circuits.
13. Generates vertical grid drive signal for troubleshooting vertical sweep circuits.
14. Generates vertical plate drive signal for checking vertical output transformers.
15. Generates solid state sweep drive signal for checking vertical and horizontal sweep circuits and vertical yoke windings.
16. Generates horizontal grid drive signal for troubleshooting horizontal sweep circuits.
17. Generates horizontal plate drive signal for checking horizontal output (flyback) transformers.
18. Provides B+ boost indication.
19. Provides high voltage indication.
20. Checks flyback transformers, horizontal deflection yokes, and width coils for shorted turns.
21. Generates a high level keying pulse for testing keyed circuits, AGC, burst amplifiers and blanking.
22. Provides positive or negative dc bias voltages, variable in amplitude, from a low impedance power supply which is completely isolated from the TELEVISION ANALYST chassis.
23. Provides a stable signal source for locating intermittent troubles.
24. Generates a test pattern for color convergence adjustments.
25. Generates test pattern for horizontal and vertical linearity, size, and aspect ratio checks and adjustment.
26. Checks bandwidth, resolution, shading, and contrast capabilities of television receivers.
27. Will reproduce any 3" x 4" positive transparency as a picture source to demonstrate the performance capabilities of television receivers.
29. Will display pictures on the screens of television receivers as an advertising medium.
30. Can be used as a transmitter for video paging at conventions, hospitals, and other gatherings.
31. Checks the performance of community and master antenna systems.

### III. 電視分析儀的应用

#### 1. 飛點掃描器产生黑白 Video 信号.

高频信號可選擇 **Channel 3**. 高频信號從 **RF** 輸出，把輸出電線 (紅色) 靠近電視天線即可。測試圖案用我自制的透明胶片。在 CRT 的紫外光掃描下，透明胶片字体现紫色。但 Video 信号还是黑白的。





## 2. 产生 Color Video 信号.

Color Video 信号可单独产生, 也可与飛點掃描器产生的黑白 Video 信号混合.



## IV. 检修 B&K 1077B Television Analyst

下表列出 Voltage Chart for Servicing:

# VOLTAGE CHART

PIN NUMBERS

TUBE	1	2	3	4	5	6	7	8	9	10	11	12	CAP
V-1 13GF7A	0	0	38	A.C. 101.2	A.C. 88.2	220	0	210	-10				
V-2 6GH8A	150	-4	143	A.C. 88.2	A.C. 81.9	345	0	5.1	-7				
V-3 21JZ6	A.C. 12.6	21	131	0	0					0		A.C. 33.6	0
V-4 230-004-9-001	A.C. 67.2	0				*				300	30	A.C. 73.5	
V-5 12AU7	136.4	9.5	12.8	A.C. 6.3	A.C. 6.3	110.6	-65	-15	0				
V-6 6GH8A	62	7	150	A.C. 6.3	0	218	11	2.2	-4				
V-7 8FQ7/CG7	250	-22	11.1	A.C. 73.5	A.C. 81.9	250	0	11.1	0				
V-8 33GY7	A.C. 67.2	225		★	★			7.25		-54.7	80	A.C. 33.6	
V-9 1BC2	→ 11,500 ALL PINS ←												★
V-10 6CB6	0	15	A.C. 6.3	0	195	55	0						
V-11 231-001-9-001	-170	-115	-58	0	22	43	61	75	90	385	-262		
V-12 12AT7	120	-1.64	0	A.C. 6.3	A.C. 6.3	133.4	-0.21	.5	0				
V-13 12AT7	70	-0.5	.5	A.C. 6.3	A.C. 6.3	70	-5	0	0				
V-14 6GH8A	60	0	175	A.C. 12.6	A.C. 6.3	225	3.3	.5	-5				

★ DO NOT MEASURE.

ALL READINGS REFERENCED TO CHASSIS GROUND

ALL DC READINGS TAKEN WITH 11 MEG VTVM

ALL AC READINGS TAKEN WITH 5000 OHMS/VOLT METER

AUDIO "ON OFF" IN THE ON POSITION

PLATE DRIVE SWITCH IN "VERTICAL POSITION"

ALL FRONT PANEL CONTROLS AT MID POSITION

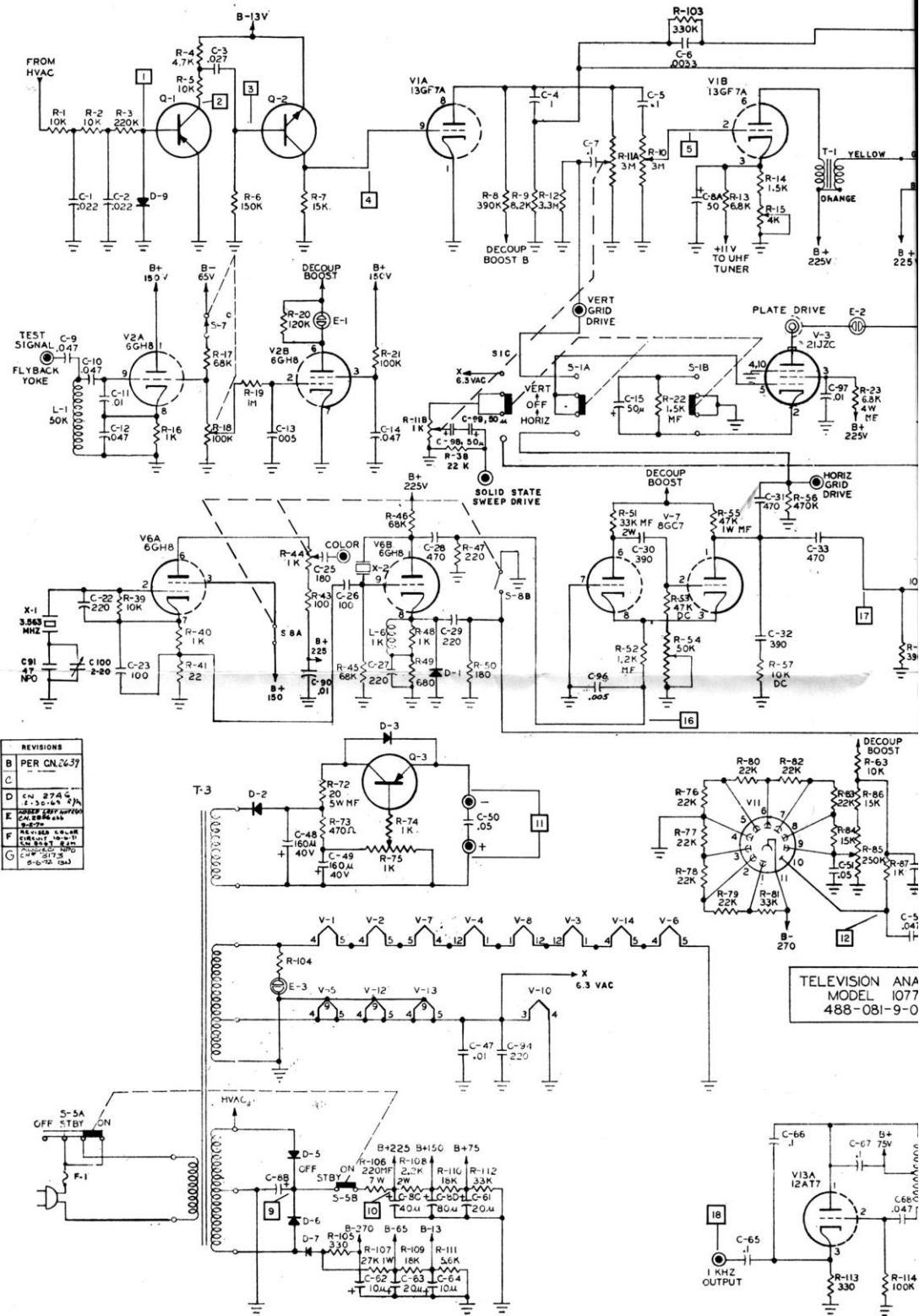
RF SELECTOR AT "UHF"

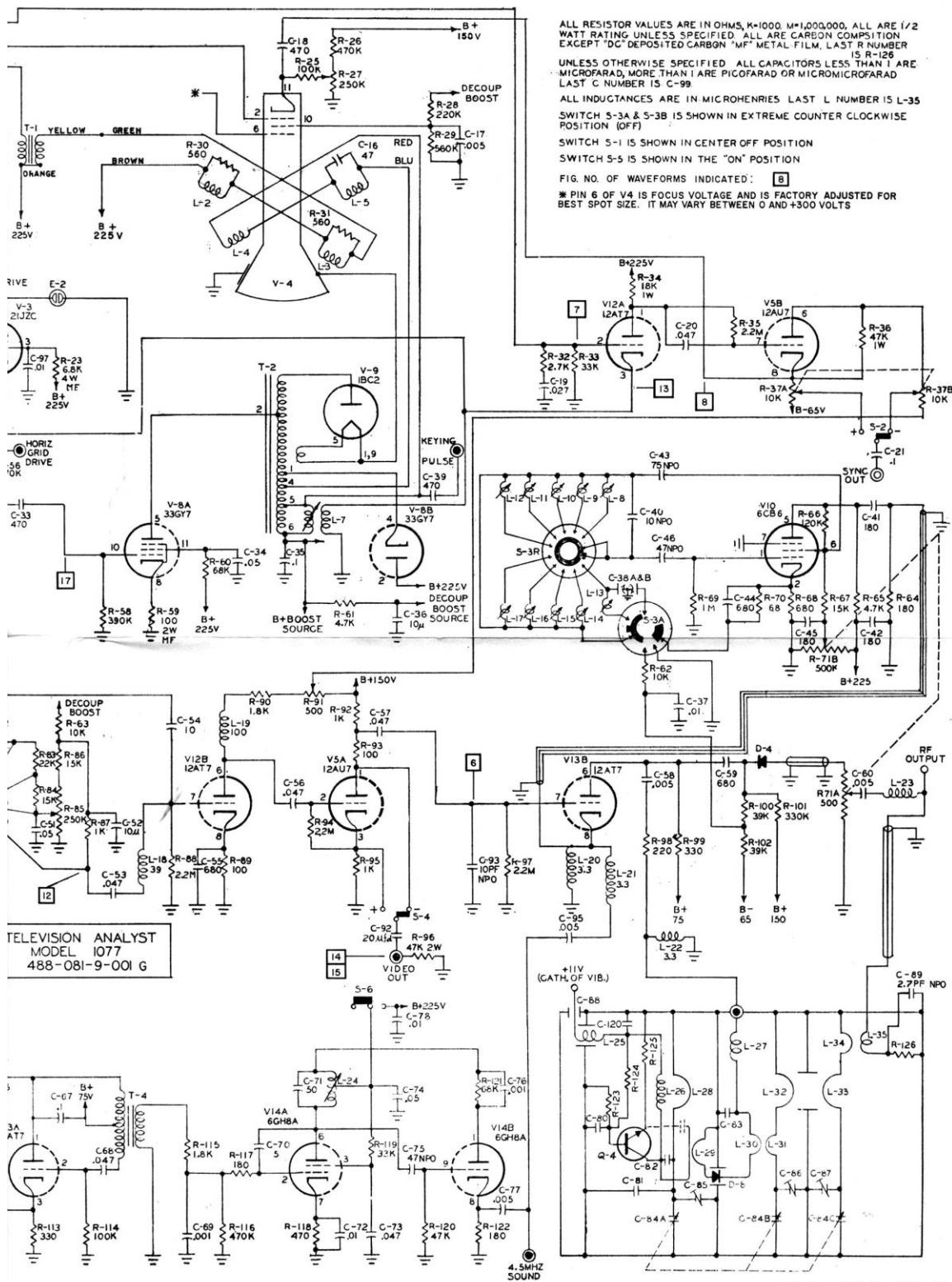
COLOR CONTROL ON

\*PIN 6 OF V4 IS FOCUS VOLTAGE AND IS FACTORY ADJUSTED FOR BEST SPOT SIZE. IT MAY VARY BETWEEN 0 AND +300 VOLTS.

ADJUST VIDEO FRONT PANEL CONTROL TO READ 22VDC AT PIN 5 OF V11 BEFORE READING OTHER VOLTAGES ON V11

VOLTAGES ARE FOR REFERENCE ONLY AND MAY VARY DUE TO CIRCUIT CONDITIONS







Reference:

- 1) LabGuy's World: B&K Television Analyst Model 1077B  
<http://www.labguysworld.com/BK-1077B.htm>
- 2) Phil's Old Radios: BK Precision 1077B Television Analyst (1968)  
<https://antiqueradio.org/BK1077BTelevisionAnalyst.htm>