

DATE 6/5/61
SH. 1 OF 2

TMC SPECIFICATION NO. S 156

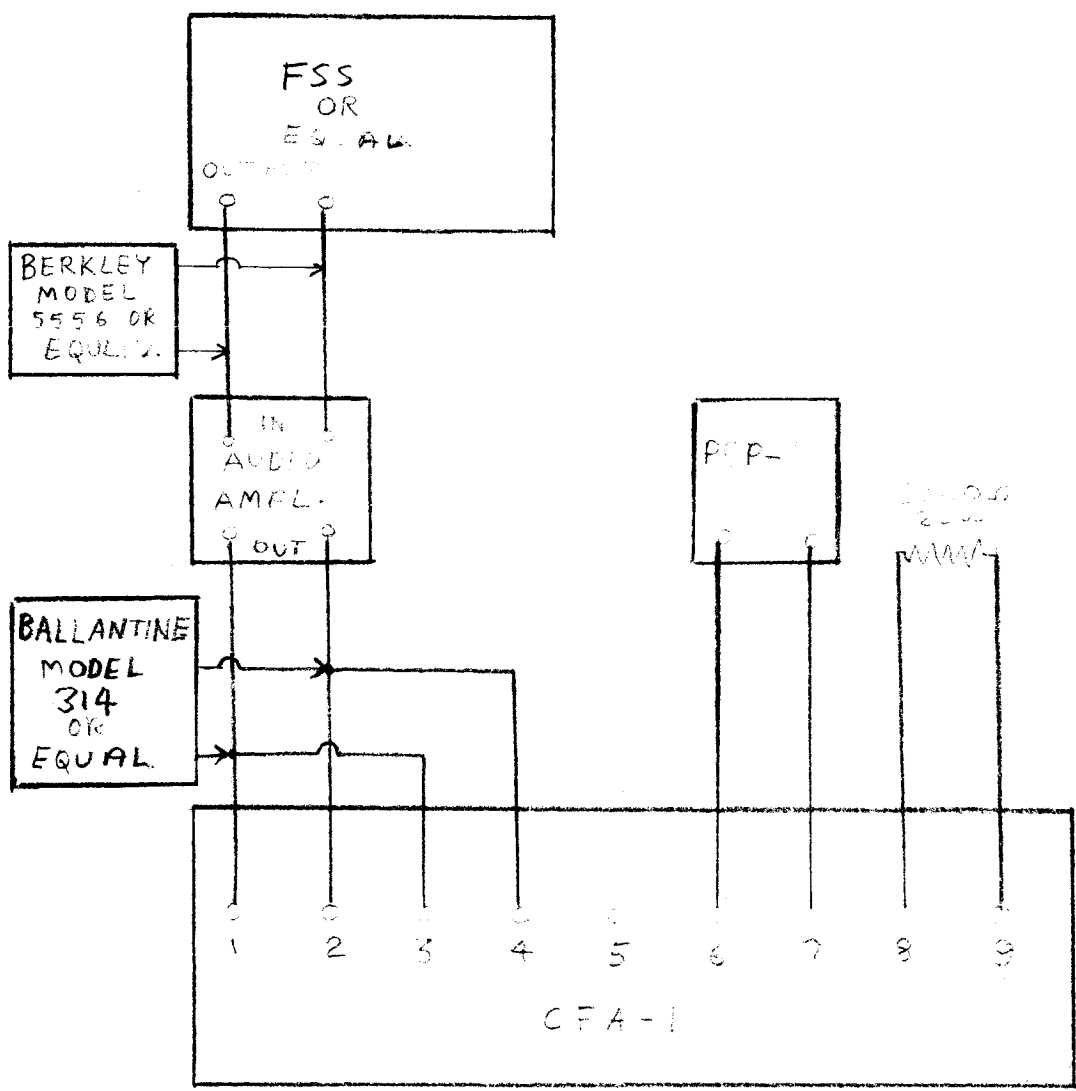
A

COMPILED BY
L. Liles

TITLE: CFA - 1 TEST PROCEDURE

JOB

APPROVED *PJM*



TEKTRONIX
TYPE 541
OR
EQUAL.

SIMPSON
MODEL
260
OR
EQUAL

DATE 6/5/61
SH. 2 OF 7
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TMC SPECIFICATION NO. S

156

H

TITLE: CFA - 1 TEST PROCEDURE

JOB

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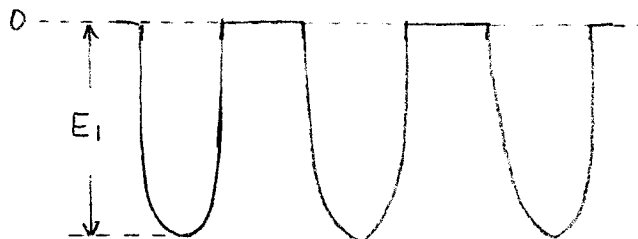
Set up equipment as shown on previous page.

- TEST (1) Read following resistances to GND.
from discriminator output (R-36).
Set Sense switch to plus.
- (A) Test switch to mark ----- 0 OHM
 - (B) Test switch to space----- 0 OHM
 - (C) Test switch to line ----- 450K OHMS \pm 20%
- Set sense switch to minus
- (D) Test switch to line ----- 450K OHMS \pm 20%

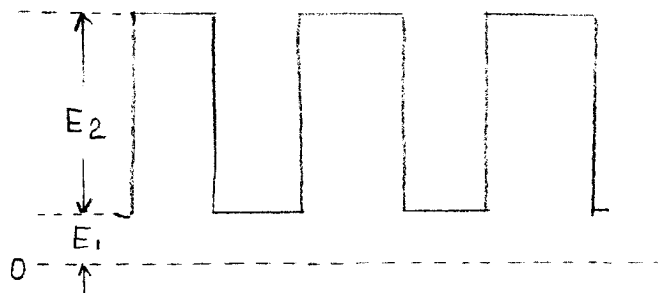
- TEST (2) Connect unit to 110 volt supply.
Read the following D.C. voltages to GND.
- (A) Pin "2" - V-15 + 350 \pm 10%
 - (B) Pin "1" - V-16 - 350 \pm 10%
 - (C) Pin "1" - V-20 + 215 \pm 10%
 - (D) Pin "1" - V-19 + 105 \pm 5%
 - (E) Pin 2,4,7 V-18 - 150 \pm 5%
 - (F) Pin 2,4,7 V-17 - 250 \pm 5%

- TEST (3) Adjust FSS and audio amplifier for output of 2550 cps, 0 cps shift, and + 30 dbm (24 VAC).
Adjust scope controls on unit. Record proper operation of same.

- TEST (4) Set controls on unit as follow:
- "Speed switch" - High
 - "Sense switch" - Minus
 - "Test switch" - Line
- Note the following waveforms.
- (A) Pin-1, V-1 E1.....500-600 Volts
 - (B) Pin-1, V-4 E1.....500-600 Volts



- TEST (5)
- (A) Pin-5, V-1 E₁ 9 \pm 10% E₂ 135 \pm 10%
 - (B) Pin-5, V-4 E₁ 9 \pm 10% E₂ 135 \pm 10%



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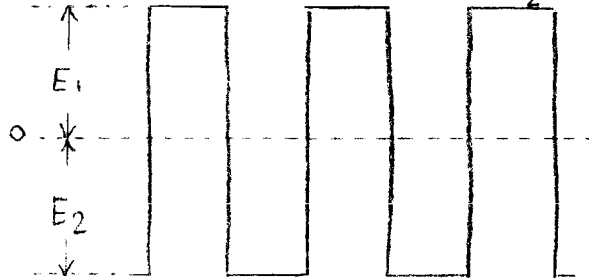
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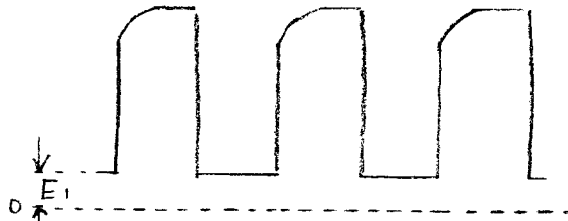
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TEST (6) Set both channel switches "OFF"

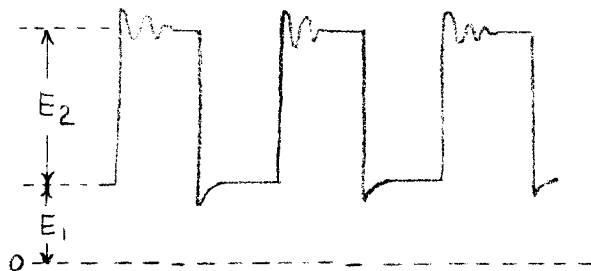
- (A) At juncture of R-9 & R-10 E₁ 20 - 30
E₂ 20 - 30
(B) At juncture of R-24 & R-25 E₁ 20 - 30
E₂ 20 - 30



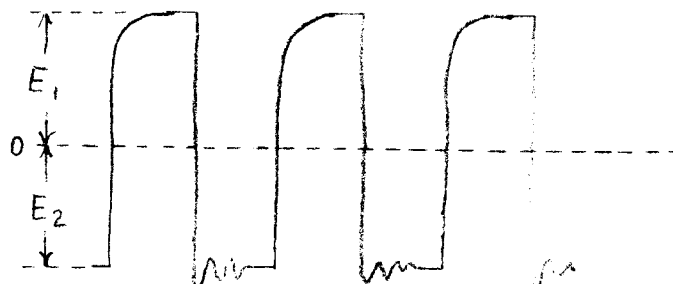
- TEST (7) (A) Channel 1 on channel 2 off.
At juncture of R-9 & R-10 E₁ 10-15v
(B) Channel 1 off channel 2 on
At juncture of R-24 & R-25 E₁ 10-15v



- TEST (8) (A) CH-1 on, CH-2 off Pin-6, V-3 E₁ 210-250
E₂ 100 ± 10%
(B) CH-1 off, CH-2 on Pin-1, V-3 E₁ 210-250
E₂ 100 ± 10%



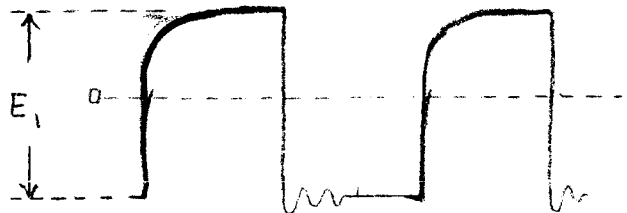
- TEST (9) (A) Secondary of T-5 E₁ 150-180 E₂ 100 ± 10%
(B) Secondary of T-6 E₁ 150-180 E₂ 100 ± 10%



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TEST (10) Adjust FSS to 850 cps shift with a keying speed of 25 cps. and zero bias. Observe the following at the output of discriminator.

- (A) CH-1 on, CH-2 off $E_1 70 \pm 10\%$
- (B) CH-1 off, CH-2 on $E_1 70 \pm 10\%$



Set sense switch to minus. Adjust FSS center Freq. until the wave form is symmetrical about the zero axis.

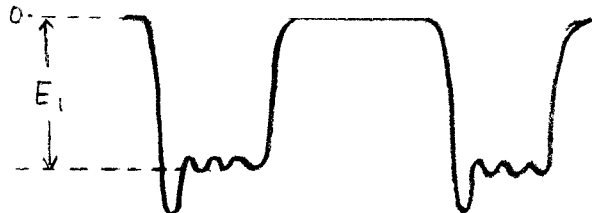
- (C) Center Freq. 2550 ± 100 cps

Set sense switch to plus adjust center Freq. as above.

- (D) Center Freq. 2550 ± 100 cps.

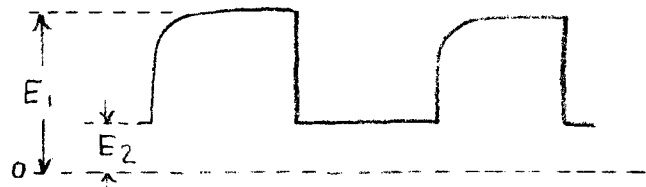
TEST (11) On this and succeeding tests, check each channel alternately. Both channels should conform with indicated waveshape.

- (A) Pin-1, V-9 $E_1 35-40$

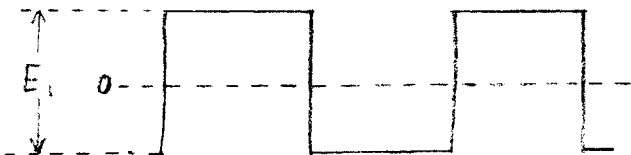


(B) Remove V-9 and note that waveform axis is varied by threshold control. Replace V-9 and return threshold control to max.

- TEST (12) Pin-5, V-9
- (A) $E_1 150 \pm 10\%$
 - (B) $E_2 2 - 6$

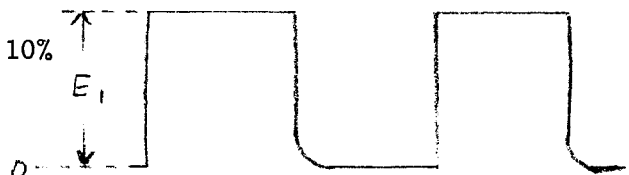


- TEST (13) Arm of S-5
- (A) $E_1 100 \pm 10\%$



Adjust mark bias control so that wave form is symmetrical about zero axis.

- TEST (14) Pin - 5, V-10 $E_1 300 \pm 10\%$



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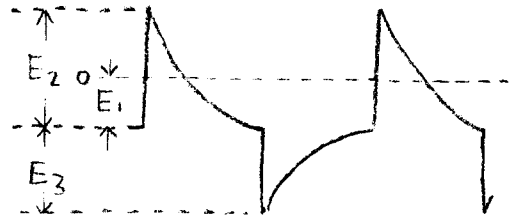
TITLE: CFA - TEST PROCEDURE

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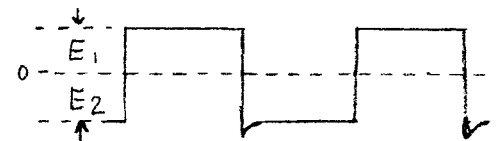
TEST (15) Juncture of R-53 & C-26

- (A) E_1 125 \pm 10%
- (B) E_2 150 \pm 10%
- (C) E_3 250 \pm 10%



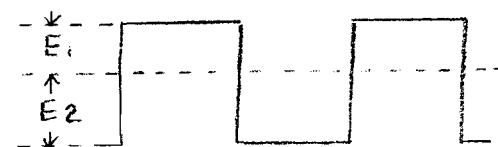
TEST (16) Pin-1, V-12

- (A) E_1 165 \pm 10%
- (B) E_2 90 \pm 10%



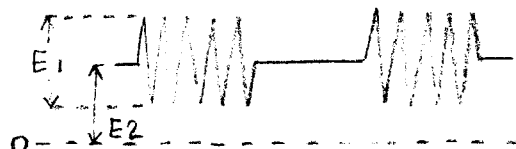
TEST (17) Pin-3, V-13

- (A) E_1 50 \pm 10%
- (B) E_2 110 \pm 10%

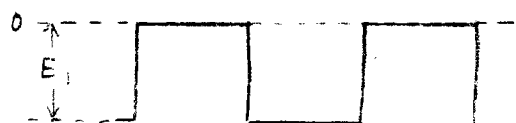


TEST (18) Pin-6, V-13

- (A) E_1 380 \pm 10%
- (B) E_2 310 \pm 10%



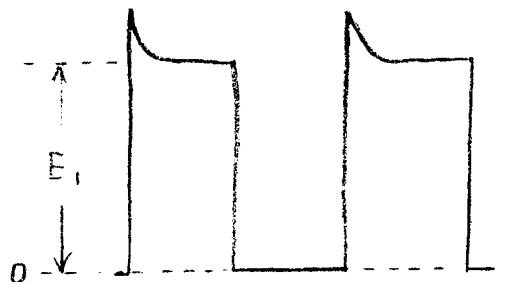
TEST (19) Pin-8 to Pin-5, V-14: E_1 100 \pm 10%



TEST (20) Connect scope to discriminator output. With 1,000 cps shift, adjust center freq. of FSS so that the waveform is symmetrical about the zero axis. Adjust R-59 so that a closed trace appears on monitor screen. Final setting of pot should be at a compromise between channel 1, channel 2 and the sense switch on "Plus" and "Minus"

TEST (21) Set threshold control 90% clockwise. Set test switch to "Mark". Adjust R-77 for output current of 60 MA. Set test switch to "space". Output current should go to zero. Set test switch to line.

- (A) Across 2000 OHMS external load
 E_1 120 \pm 10%



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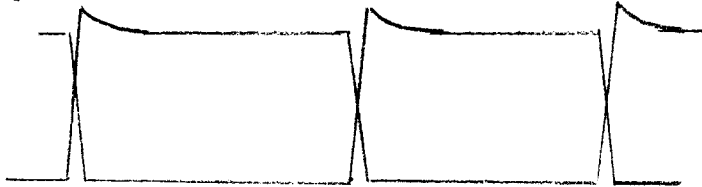
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TEST (21)

cont...

(B) Adjust sweep vernier so that "Mark" and "Space" pulses are super-imposed. Adjust mark bias control so that the cross-over point falls in the vertical portion of the waveforms.



Re-Adjust sweep vernier for a square wave.

TEST (22)

Vary center Freq. on FSS above and below 2550 cps. The signal across the 2000 OHM load must remain beyond the range of 1800 cps to 3300 cps. Return center frequency to 2550 cps. (A) highest Freq. (B) Lowest Freq.

TEST (23)

Decrease the input level to -30dbm. The signal across the 2000 OHM load must remain in normal. Return input level to +30 dbm

TEST (24)

Increase keying speed to 210 cps. (600 wpm). The signal across the 2000 OHM load must remain a good quality square wave.

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TEST					CH-1	CH-2
TEST 1	A					
	B		TEST 11	A E ₁		
	C			B OK		
	D		TEST 12	A E ₁		
TEST 2	A			B E ₂		
	B		TEST 13	E ₁		
	C		TEST 14	E ₁		
	D		TEST 15	A E ₁		
	E			B E ₂		
	F			C E ₃		
TEST 3	OK		TEST 16	A E ₁		
TEST 4	A	E ₁		B E ₂		
		E ₂	TEST 17	A E ₁		
	B	E ₁		B E ₂		
		E ₂	TEST 18	A E ₁		
TEST 5	A	E ₁		B E ₂		
		E ₂	TEST 19	E ₁		
	B	E ₁	TEST 20	OK		
		E ₂	TEST 21	A E ₁		
TEST 6	A	E ₁		B OK		
		E ₂	TEST 22	A cf		
	B	E ₁		B cf		
		E ₂	TEST 23	OK		
TEST 7	A	E ₁	TEST 24	OK		
	B	E ₁				
TEST 8	A	E ₁				
		E ₂				
	B	E ₁				
		E ₂				
TEST 9	A	E ₁				
		E ₂				
	B	E ₁				
		E ₂				
TEST 10	A	E ₁				
	B	E ₁				
	C	cf				
	D	cf				

SER. NO. _____
 MFG. NO. _____
 DATE _____
 TEST BY _____

REVISION SHEET THE TECHNICAL MATERIEL CORP. MAMARONECK NEW YORK

S-156

MODEL _____ PROJECT NO _____

DATE	REV.	PAGE	EMN#	DESCRIPTION	CHK.	APP.
5-19-61	A	1	4938	Completely Revise Test set-up Drawing.	}	K
5-19-61	A	3	4938	Chg. "Speed Switch" "LO" to "Speed Switch" "High".		
		"	"	Chg. "150 units" to "230 CPS".		
5-19-61	A	10	4938	Added "Test 21" & "Test 22".		
5-19-61	A	11	4938	Chg. "Test 21" to "Test 23".		
		"	"	chg. "Test 22" to "Test 24". Added new pg. &		
		"	"	renumbered pages.		
5-24-61	B	3	4962	On line six on page 3, deleted "230 CPS at".		
5-24-61	B	10	4962	Added Test 23:		
5-24-61	B	11	4962	Chg. test no. 23 to test no. 24.		
		"	"	Chg. test no. 24 to test no. 25.		
5-26-61	C	11	4972	Chg. sheet #11 to sheet #10,	}	K
		"	"	chg. Test #24 to Test #21, chg. Test #25 to Test #22.		
5-26-61	C	10	4972	Chg. Sheet #10 to sheet #11.		
		"	"	Chg. Test #21 to Test #23, chg. Test #22 to Test #24.		
		"	"	chg. Test #23 to Test #25.	}	K
		"	"	Relocate "NOTE" on new sheet #10 to new sheet #11 under Test #25.		
4/5/61	D	ALL	—	COMPLETELY REWRITTEN, RETYPED, ETC.		K
6/12/61	E	2	5070	A. On test 2, letter "E" change 250 ⁺⁵ to 150 ^{+5%}	}	K
6/12/61	E	2	5070	B. On test 2 letter "E" change 150 ^{+5%} to 250 ^{+5%} .		
6/12/61	E	3	5070	A. On test 6 change 25 ^{+10%} to 20-30.		
6/12/61	E	3	5070	B. On test 8, change 225-250 to 210-250.		
6/12/61	E	5	5070	A. On test 15, change 115 ^{+10%} to 125 ^{+10%} .		
6/12/61	E	5	5070	B. On test 16 change 80 ^{+10%} to 90 ^{+10%} .		
6/12/61	E	5	5070	C. On test 18, change 100 ^{+10%} to 110 ^{+10%} .		
6/12/61	E	6	5070	A. On test 22 change from "between 1950 cps and 3150		
				cps" to read "beyond the range of 1950 cps to		
				3150 cps."		
6/12/61	E	4	5070	On Test 12 chg. 2-4 to 2-6	}	K
4/30/63	F	4	8919	On Test 10 and Test 11 - Redraw "Waveform" lines		
5/20/63	G	5, 6	9096	Revised per EMN 9096	}	K
7/28/65	H	1, 4, 5	14552	Revised per EMN		