

# TMC SPECIFICATION

NO. S 155

REV:

A

B

C

D

COMPILED: J. ROBERTS

CHECKED:

APPD: *PEH*

SHEET 1 OF 7

TITLE: TEST PROCEDURES: FREQUENCY SHIFT EXCITER, MODEL XFK

## Test Equipment Required

1. VTVM H.P. 410B or equivalent
2. 70 ohm non-inductive load rated at 3 watts or better
3. Variac
4. Frequency counter H.P. 5261A or equivalent
5. DC power source 0-24 volts
6. Test crystals, CR-27/U, of the following frequencies:
  - a. 1.0 mc
  - b. 1.5 mc
  - c. 2.1 mc
  - d. 2.6 mc
  - e. 4.9 mc
  - f. 6.3 mc

## Frequency Control Elements

### Test I

- a. With AC power cord and F1 removed, and with "power" switch in "on" position, measure resistance at AC input terminals, (J16), \_\_\_\_\_ 150 ohms  $\pm 10\%$ . Record.
- b. Re-insert F1 and apply 110 VAC power to unit at J16, note operation of both XTAL and 200 KC oven lamps. The cycling time should be 10 to 15 minutes.
- c. With "plate" switch in "on" position, adjust "power" control for reading of 50 ma on "PA" plate current meter and check the following DC voltages:
  1. L4 \_\_\_\_\_ +400VDC  $\pm 20\%$
  2. Pin 1 V10 \_\_\_\_\_ +105 VDC
  3. Pin 2 V11 \_\_\_\_\_ -105 VDC
- d. Place 70 ohm load across "output" jack, J1.

### Test II -- 200 KC Oscillator Test

With the front panel controls set in the following manner \_\_\_\_\_

"band change" \_\_\_\_\_ position "1"

"XTAL" \_\_\_\_\_ position "ext"

"mode" \_\_\_\_\_ position "fax"

"frequency shift cps" \_\_\_\_\_ 0

"balance mixer" R13 \_\_\_\_\_ mid-range

- a. Record voltage at pin 5, V1 \_\_\_\_\_ -25 to -30 VDC
- b. Record voltage at pin 6, V1 \_\_\_\_\_ -25 to -30 VDC
- c. Set C7 approximately 7 degrees out of full mesh, and adjust "frequency" dial to -600 cycles. Tighten allen screws. Rotate dial to 0 cycles, and with frequency counter attached to pin 5, V5 set C8, "course frequency adjust" to read a frequency of 200 KC.
- d. Set dial to plus 200 cycles, record shift +200-220 cps.  $\pm 10\%$ .
- e. Set dial to plus 400 cycles, record shift +400-440 cps.  $\pm 10\%$ .

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## Test II 200 KC Oscillator Test (Continued)

- f. Set dial to plus 600 cycles, record shift +600 -700 cps.  $\pm 10\%$ .
- g. Set dial to minus 200 cycles, record shift -200 -220 cps.  $\pm 10\%$
- h. Set dial to minus 400 cycles, record shift -400 -440 cps.  $\pm 10\%$
- i. Set dial to minus 600 cycles, record shift -600 -700 cps.  $\pm 10\%$
- j. Return "frequency" dial to 0 cps.

## Test III Reactance Tube Linearity

- a. Set C2 at mid range.
- b. Apply +4 VDC to FAX terminals, E1 terminal 6 and ground, and note linearity of shift. Readjust C2 for better linearity of shift, if necessary. Each time C2 is reset, the 200 KC oscillator must be reset with C8, "course frequency adjust".
- c. Apply plus 1 volt. Record shift 130-150 cps
- d. Apply minus 1 volt. Record shift 130-150 cps
- e. Apply plus 2 volts. Record shift 260-300 cps
- f. Apply minus 2 volts. Record shift 260-300 cps
- g. Apply plus 3 volts. Record shift 390-450 cps
- h. Apply minus 3 volts. Record shift 390-450 cps
- i. Apply plus 4 volts. Record shift 500-600 cps
- j. Apply minus 4 volts. Record shift 500-600 cps
- k. Record voltage required for 1000 cps shift  
3.2-4 VDC
- l. Remove DC supply from FAX terminals.

## Test IV Keying Circuit Test

- a. Set "mode" switch to "space". Record voltage at pin 8, V7  
+70 -75 VDC
- b. Set "mode" switch to "mark". Record voltage at pin 8, V7  
+20 -25 VDC
- c. Align "frequency shift" dial so that 0 cycles lines up with indicator at minimum resistance stop of R8. Tighten allen screws.
- d. Plug "ext" jack into X1 position and set "frequency shift" to 500 cps. Alternately switching from "mark" to "space" on "mode" switch, adjust R38 "shift balance" so that mark and space shifts are equal. Adjust R40 "shift amplitude" until shift is  $\pm 250$  cycles. Readjust balance pot if necessary.
- e. Set "frequency shift" dial to the following settings and record the frequency shift in "mark" and "space" positions.
- f. 100 cycles mark +40 -60 cps
- g. 100 cycles space -40 -60 cps
- h. 300 cycles mark +140 -160 cps
- i. 300 cycles space -140 -160 cps
- j. 900 cycles mark +440 -460 cps
- k. 900 cycles space -440 -460 cps

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## Test IV Keying Circuit Test (continued)

- l. Set "mode" switch to "line" position and connect a 0-24 VDC supply across volt terminal, 4 on E1, and ground. Adjust "frequency" control for a reading of 200 KC on counter. Turn DC supply on and increase voltage until frequency just begins to increase. Measure voltage and record approximately 7 VDC.
- m. Increase voltage to 24 VDC and decrease voltage until frequency just begins to decrease. Measure and record approximately 15 VDC. Remove voltage supply.
- n. Return "mode" switch to "space".

## Test V Multiplication Panel Check

- a. Set "frequency shift" to 800 cps. Reset 200 KC oscillator with "frequency" dial to read 200 KC on counter. Switch "mode" to "mark" and note that the shift is 800 cps $\pm$ 10%.
- b. Test each crystal position jack in X1 multiplier in the same manner as step A. Shift should remain at 800 cps $\pm$ 10%.
- c. Set jack to XTAL #1 multiplication X1.
- d. Recheck "space" to "mark" shift of 800 cps.
- e. Plug into X2. Record shift. 400 cps  $\pm$ 10%
- f. Plug into X3. Record shift. 266 cps  $\pm$ 10%
- g. Plug into X4. Record shift. 200 cps  $\pm$ 10%
- h. Plug into X6. Record shift. 133 cps  $\pm$ 10%
- i. Plug into X8. Record shift. 100 cps  $\pm$ 10%
- j. Plug into X9. Record shift. 88 cps  $\pm$ 10%
- k. Plug into X12. Record shift. 66 cps  $\pm$ 10%
- l. Reset XTAL jack to respective sockets and return "frequency shift" to 0 cps and reset "frequency" dial to 0 cps.

## R. F. ALIGNMENT

### Test I Alignment of Band 2

- a. Insure the proper alignment of both bands by making sure that at the full mesh stop of C18, the indicator lines up at the low end of the band on the "output tuning mc dial".
- b. With "XTAL" switch in "ext" position, recheck 200 KC oscillator frequency at pin 5, V5 and reset, if necessary, with C8.
- c. Set all ceramic capacitors in the R.F. stages to minimum capacity.
- d. Switch "band change" to position 2.
- e. Insert 2.6 mc. XTAL in socket #1.
- f. Insert 4.9 mc. XTAL in socket #2.
- g. Insert 6.3 mc. XTAL in socket #3.
- h. Switch "XTAL" to position #1, and set "output" tuning mc."
- i. Connect VTVM (neg, DC) to pin 1, V4, Tune T1 for maximum voltage. Record -5.5 VDC minimum.

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## Test I Alignment of Band 2 (continued)

- j. Set R.F. probe of VTVM to pin 5, V5, tune T3 for maximum voltage. Select first peak going in from minimum inductance. Record.  
(power drive maximum) 5.5 VAC minimum.
- k. Place R.F. probe of VTVM and frequency counter across 70 ohm output load, and tune T5 for maximum output at the proper frequency (2.8 mc). Retune T3.
- l. Switch "XTAL" to position #3 and set "output tuning mc." to 6.5 mc.
- m. Set VTVM (neg. DC) to pin 1, V4, tune C30 for maximum voltage. Record -7 VDC minimum.
- n. Set R.F. probe to pin 5, V5, tune C43 for maximum voltage. Record. ("power" drive maximum). 8 VAC minimum.
- o. Set R.F. probe of VTVM across 70 ohm output load and tune C46 for maximum output at proper frequency (6.5 mc). See note on Page 5.
- p. Remove V1, 6J6 200 KC oscillator, and tune "output tuning mc" to XTAL frequency 6.3 mc. Balance out carrier with R84 to minimum across the 70 ohm load. Replace V1.
- q. "XTAL" switch to "ext" position and "power" drive at maximum, rotate tuning condenser C18 over entire tuning range and note the presence of parasitics. Presence of parasitics will be indicated by apparent tuning of output or plate current with no drive from crystal. Tune to such parasitic and remove by tuning trimmer C27.
- r. Retrack both ends of band.
- s. Switch "XTAL" to position #2 and tune for output peak at 5.1 mc. Note proper calibration of dial.
- t. With R.F. probe of VTVM and frequency counter across the 70 ohm output load, tune the output of each "XTAL" position and record the output frequency and output voltage with maximum "power" drive. Remove counter for voltage reading.
- u. Tune XTAL #1            2.8 mc.            15 VAC minimum
- v. Tune XTAL #2            5.1 mc.            15 VAC minimum
- w. Tune XTAL #3            6.5 mc.            15 VAC minimum

## Test II Alignment of Band 1

- a. Insert 1.0 mc XTAL in socket #1.
- b. Insert 1.5 mc XTAL in socket #2.
- c. Insert 2.1 mc XTAL in socket #3.
- d. Switch "band change" to position 1. set "output tuning" dial to 1.2 mc., "XTAL" position #1.
- e. Connect VTVM (neg. DC) to pin 1, V4, tune T2 for maximum voltage. Record. -10 VDC minimum.
- f. Set R.F. probe to pin 5, V5, tune T4 for maximum voltage, selecting the first peak going in from minimum inductance. Record. ("power" drive maximum) 8 VAC minimum.
- g. Set R.F. probe and frequency counter across 70 ohm output load and tune T6 for maximum output at the proper frequency (1.2 mc). See note on page 5.

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## Test II Alignment of Band 1 (continued)

- h. Switch to "XTAL" position #3, "output tuning" dial to 2.3 mc.
- i. Set VTVM (reg. DC) to pin 1, V4, tune C19 for maximum voltage. Record. -10 VDC minimum.
- j. Set R.F. probe of VTVM to pin 5, V5, tune C24 for maximum voltage. Record. 11 VAC minimum.
- k. Set R.F. probe and frequency counter across 70 ohm output load and tune C28 for maximum output at the proper frequency (2.3 mc).
- l. Recheck band for parasitics as in Test 1, q.
- m. Retrack both ends of band.
- n. Switch "XTAL" to position #2 and tune for output peak at 1.7 mc. Note proper calibration of dial.
- o. With R.F. probe of VTVM and frequency counter across the 70 ohm output load, tune the output of each "XTAL" position and record the output frequency and output voltage with maximum "power" drive. Remove counter for voltage reading.
- p. Tune "XTAL" #1                    1.2 mc                    15 VAC minimum
- q. Tune "XTAL" #2                    1.7 mc                    15 VAC minimum
- r. Tune "XTAL" #3                    2.3 mc                    15 VAC minimum

NOTE: If the proper side band selection in alignment cannot be made, as indicated by the output frequency the "mixer balance" R13 should be slightly readjusted until the proper side band is selected.

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TITLE: TEST PROCEDURES: FREQUENCY SHIFT EXCITER, MODEL XFK

## TEST DATA SHEET, MODEL XFK

### Test 1

(a) AC input \_\_\_\_\_ ohms

### Test 2

(a) Pin 5 V1 \_\_\_\_\_ volts  
(b) Pin 6 V1 \_\_\_\_\_ volts  
(d) Plus 200 cycles  $\pm 10\%$  \_\_\_\_\_ cycles  
(e) Plus 400 cycles  $\pm 10\%$  \_\_\_\_\_ cycles  
(f) Plus 600 cycles  $\pm 10\%$  \_\_\_\_\_ cycles  
(g) Minus 200 cycles  $\pm 10\%$  \_\_\_\_\_ cycles  
(h) Minus 400 cycles  $\pm 10\%$  \_\_\_\_\_ cycles  
(i) Minus 600 cycles  $\pm 10\%$  \_\_\_\_\_ cycles

### Test 3

(c) Plus 1 volt \_\_\_\_\_ cycles  
(d) Minus 1 volt \_\_\_\_\_ cycles  
(e) Plus 2 volts \_\_\_\_\_ cycles  
(f) Minus 2 volts \_\_\_\_\_ cycles  
(g) Plus 3 volts \_\_\_\_\_ cycles  
(h) Minus 3 volts \_\_\_\_\_ cycles  
(i) Plus 4 volts \_\_\_\_\_ cycles  
(j) Minus 4 volts \_\_\_\_\_ cycles  
(k) 1000 cycle shift \_\_\_\_\_ volts

### Test 4

(a) Pin 8 V7--Space \_\_\_\_\_ volts  
(b) Pin 8 V7--Mark \_\_\_\_\_ volts  
(f) 100 cycles Mark \_\_\_\_\_ cycles  
(g) 100 cycles Space \_\_\_\_\_ cycles  
(h) 300 cycles Mark \_\_\_\_\_ cycles  
(i) 300 cycles Space \_\_\_\_\_ cycles  
(j) 900 cycles Mark \_\_\_\_\_ cycles  
(k) 900 cycles Space \_\_\_\_\_ cycles  
(l) Minimum keying voltage space \_\_\_\_\_ volts  
(m) Minimum keying voltage mark \_\_\_\_\_ volts

### Test 5

(e) X2 \_\_\_\_\_ cycles  
(f) X3 \_\_\_\_\_ cycles  
(g) X4 \_\_\_\_\_ cycles  
(h) X6 \_\_\_\_\_ cycles  
(i) X8 \_\_\_\_\_ cycles  
(j) X9 \_\_\_\_\_ cycles

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## R.F. ALIGNMENT

### Test 1

(i)	Tune T1	_____	volts DC
(j)	Tune T5	_____	volts RF
(m)	Tune C30	_____	volts DC
(n)	Tune C43	_____	volts RF
(p)	Balance out Carrier	_____	OK
(q)	Parasitics	_____	OK
(u)	Tune XTAL #1	_____ mc	volts
(v)	Tune XTAL #2	_____ mc	volts
(w)	Tune XTAL #3	_____ mc	volts

### Test 2

(e)	Tune T2	_____	volts DC
(f)	Tune T4	_____	volts RF
(i)	Tune C19	_____	volts DC
(j)	Tune C24	_____	volts RF
(l)	Parasitics	_____	OK
(p)	Tune XTAL #1	_____ mc	volts
(q)	Tune XTAL #2	_____ mc	volts
(r)	Tune XTAL #3	_____ mc	volts

TESTER \_\_\_\_\_

MFG. NUMBER \_\_\_\_\_

DATE \_\_\_\_\_

SERIAL NUMBER \_\_\_\_\_

APPROVED \_\_\_\_\_

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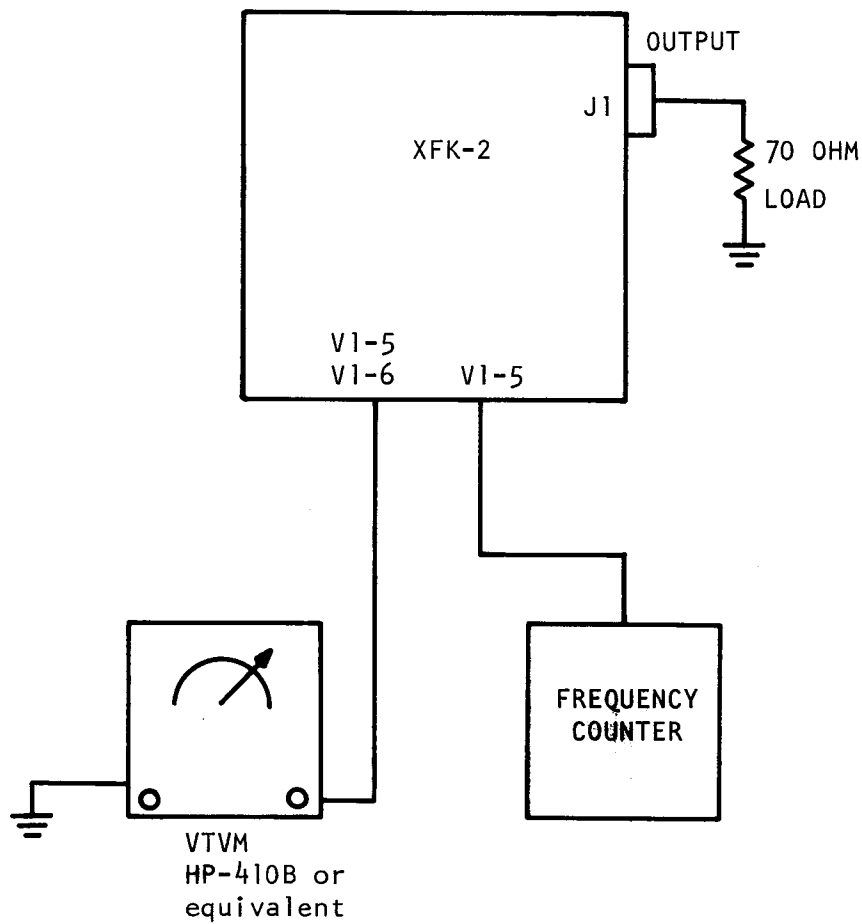
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OF 3

TITLE: Appendix to XFK-2 Test Procedure

## TEST SET-UP DIAGRAM



TEST II 200KC OSCILLATOR TEST



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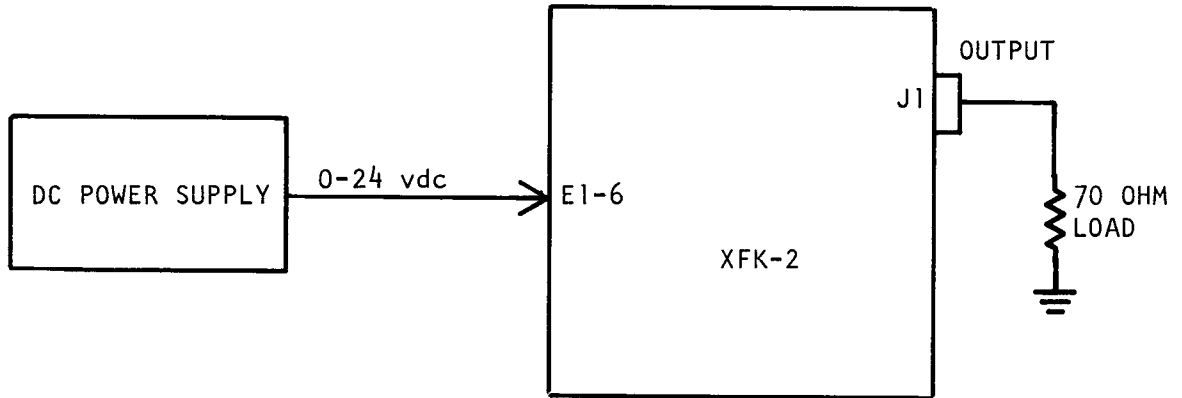
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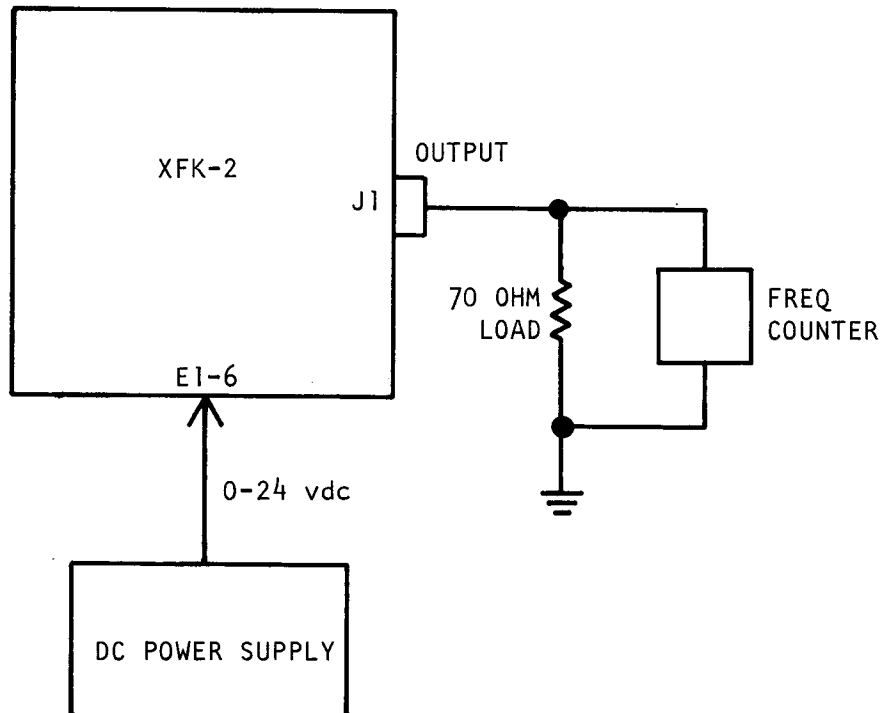
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TITLE: Appendix to XFK-2 Test Procedure

## TEST SET-UP DIAGRAMS



### TEST III REACTANCE TUBE LINEARITY



### TEST IV KEYING CIRCUIT TEST

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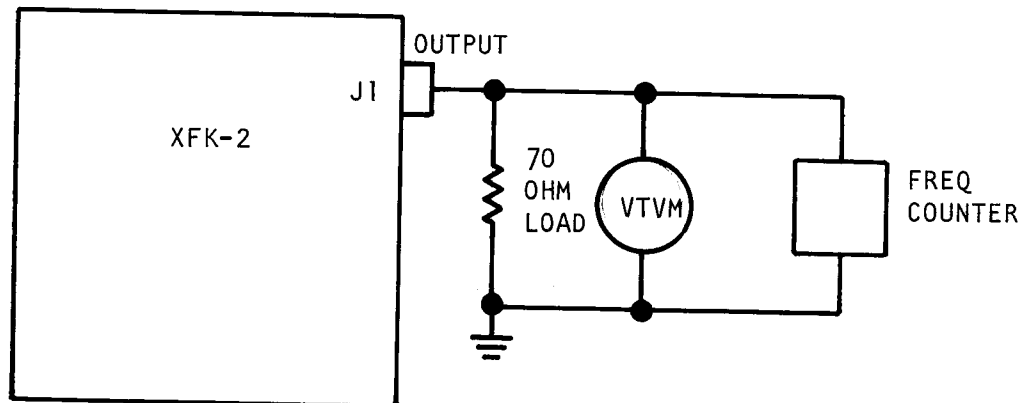
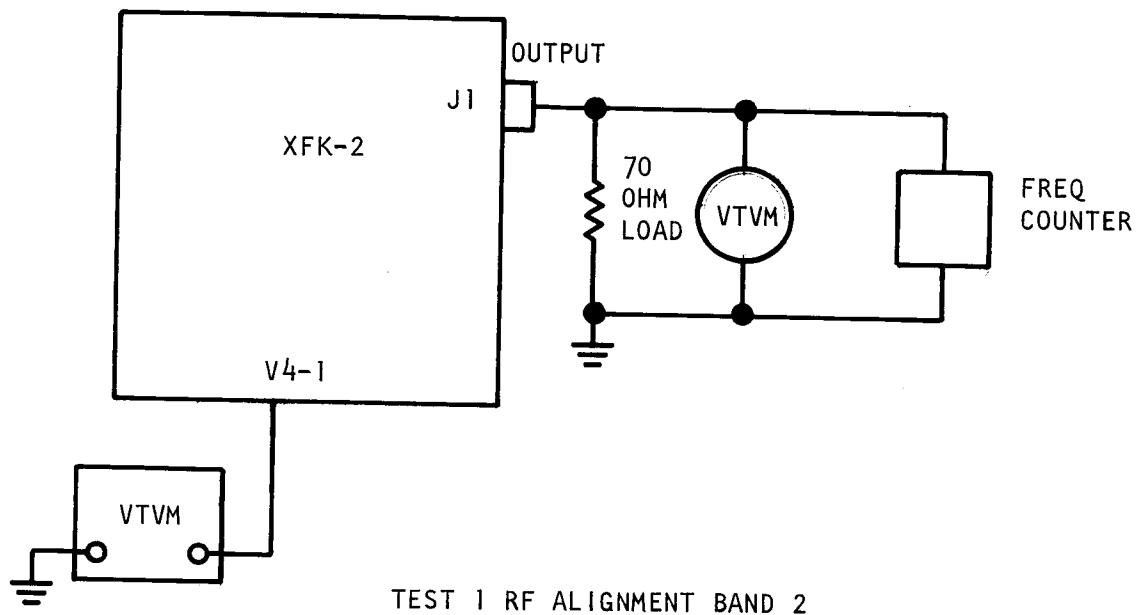
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TITLE: Appendix to XFK-2 Test Procedure

## TEST SET-UP DIAGRAMS





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# TMC SPECIFICATION NO. S-155

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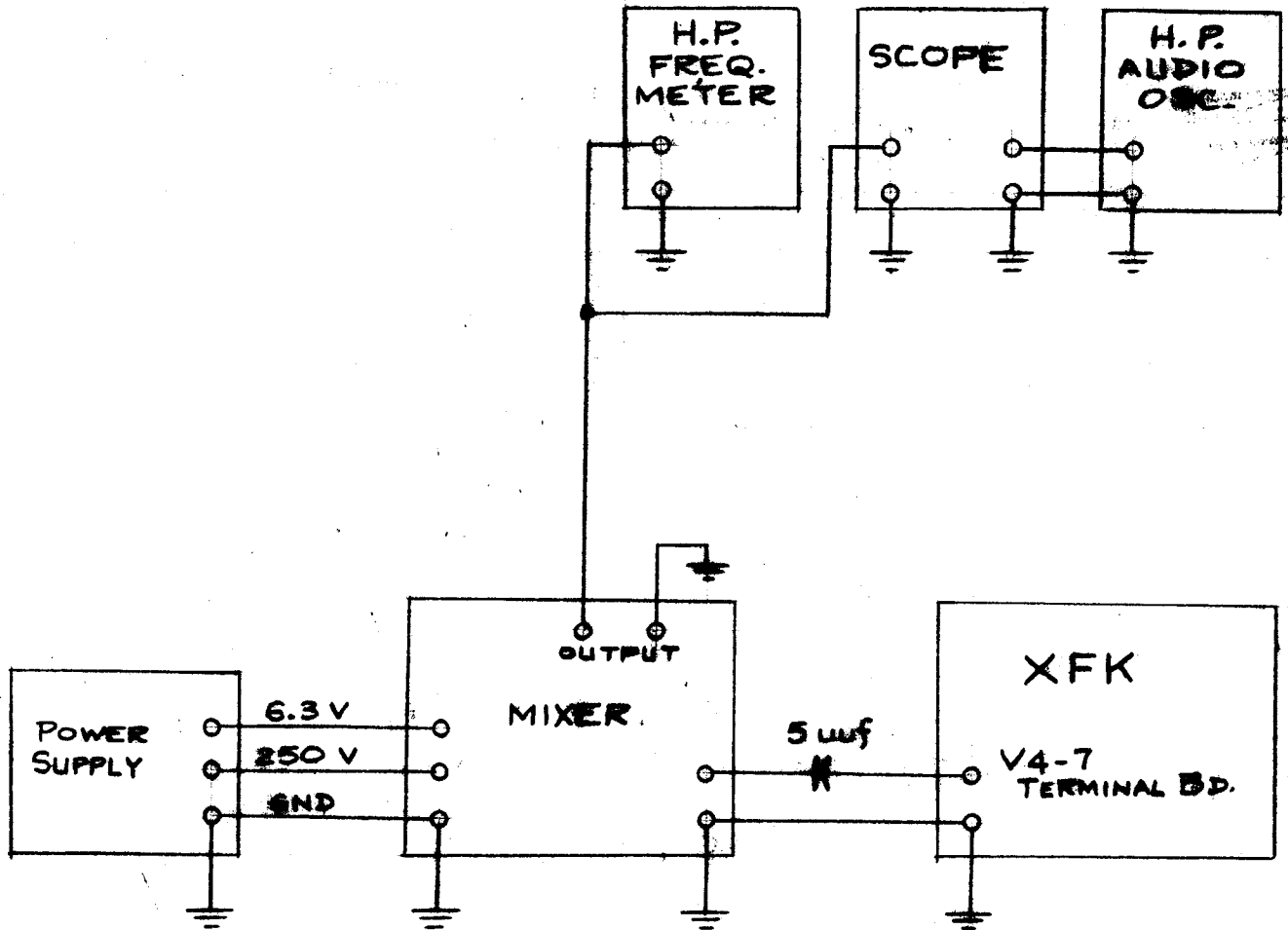
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TITLE: TEST PROCEDURE: MODEL XFK

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## DIAGRAM NO. 1



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DATE 10/19/51

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TMC SPECIFICATION NO. S-155

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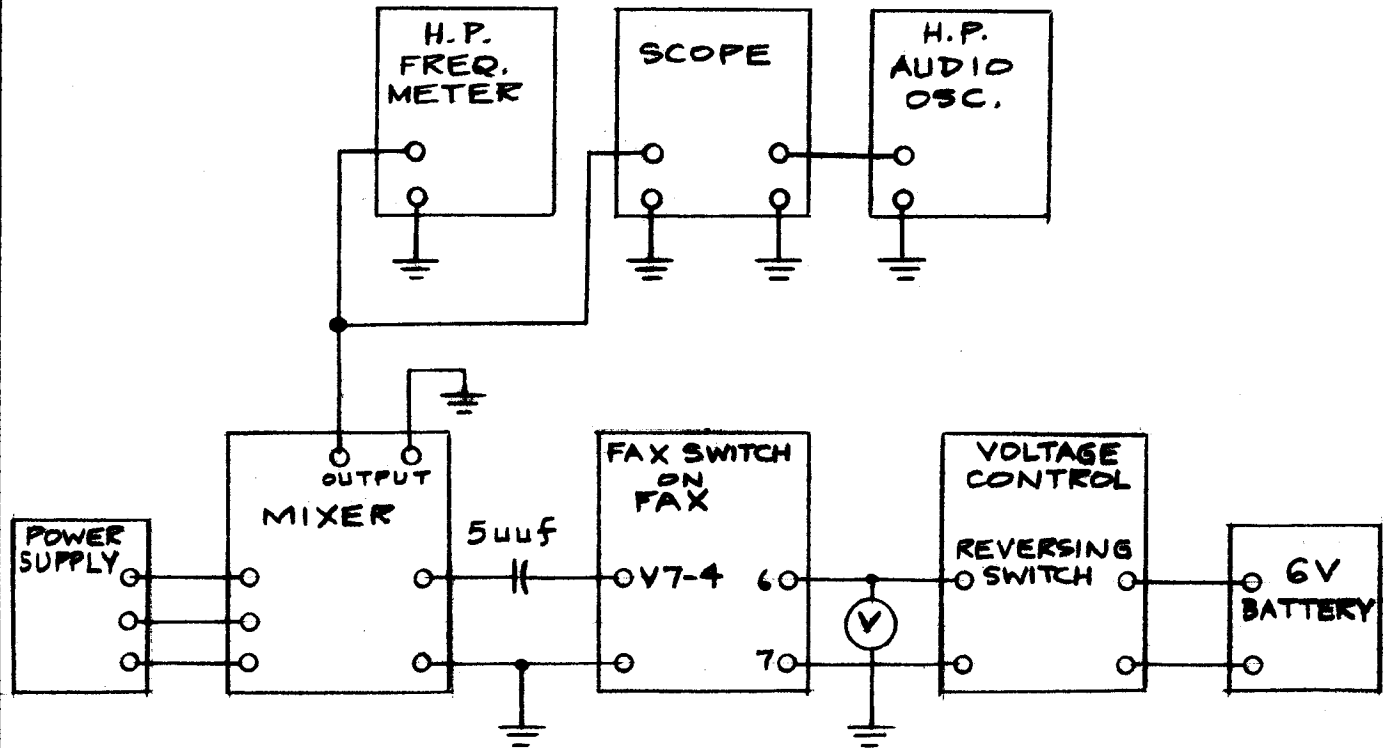
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TITLE: TEST PROCEDURE: MODEL XFK

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# DIAGRAM NO.2



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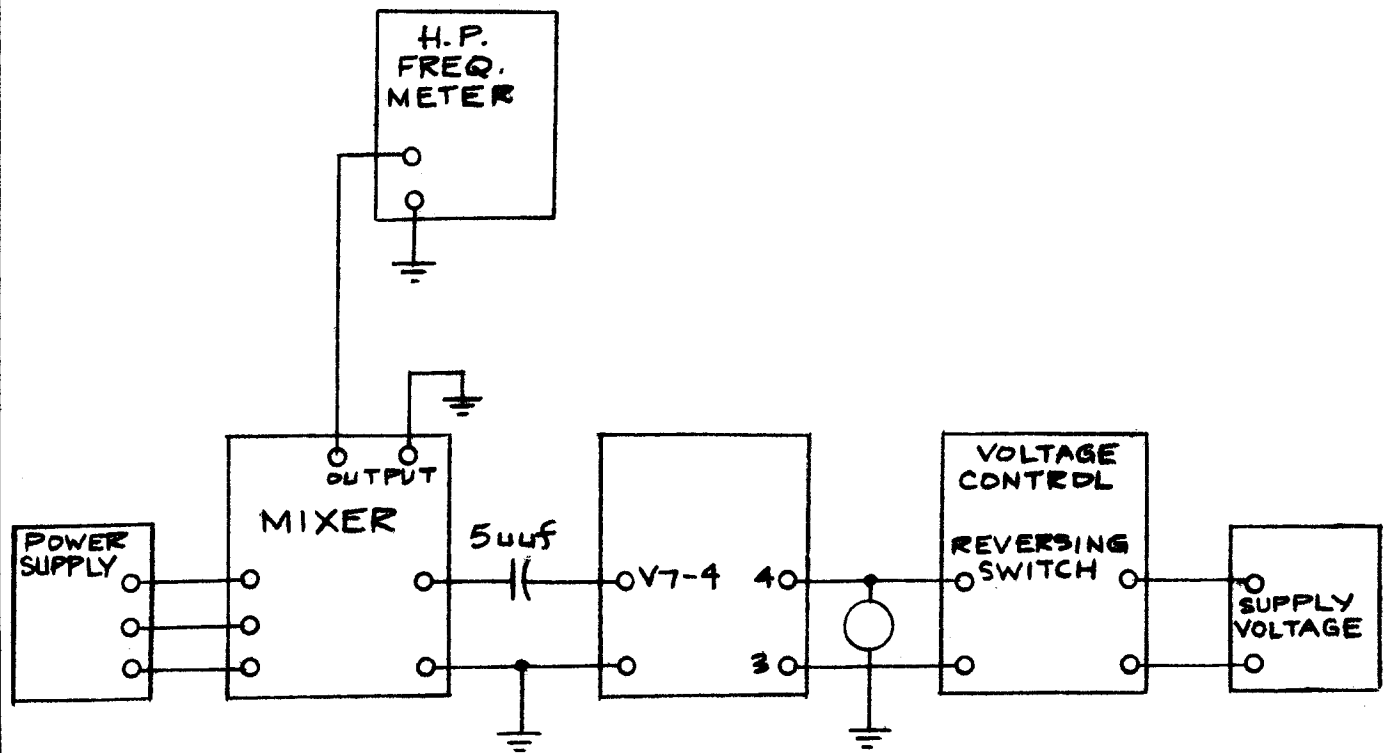
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# DIAGRAM NO. 3



FREQUENCY SHIFT EXCITER

MODEL XFK

## FREQUENCY CONTROL ELEMENTS

- Test 1 (a) Remove F1 from fuse holder, with power switch on measure resistance at AC input terminals. ----- Ohms.
- (b) Re-insert F1, place power on unit, note operation of both xtal and 200 KC ovens. From cold start ovens should reach operating temp. in 10 to 15 minutes.
- (c) Check following voltages ( 50 ma plate current)
1. Output L4 310 volts
  2. Pin 1 V10 105 volts
  3. Pin 2 V11 105 volts

Test 2 200 KC Osc. test. Set up equipment as per Diagram # 1

- (a) Record voltage (VTVM) pin 5, V 1 -25 to -30 volts
- (b) Record voltage " pin 6, V 1 -25 to -30 volts.
- (c) Set C7 approx. 7 deg. out of full mesh, adjust dial calibration to -600 cycles. Rotate dial to 0 cycles, Set padder C8 for 0 beat.
- (d) Set dial to plus 200 cycles record shift 200-220 cycles.
- (e) " # " " 400 cycles record shift 400-440 cycles.
- (f) Set dial to plus 600 cycles record shift 600-700 cycles.
- (g) Set dial to minus 200 cycles record shift 200-220 cycles
- (H) Set dial to minus 400 cycles record shift 400-440 cycles.
- (i) Set dial to minus 600 cycles record shift 600-700 cycles.

SEE NOTE SHEET 7

Test 3 Reactance Tube Liniarity Test. Set up equipment as per Dwg #2

- (a) Switch "Mode" switch to FAX
- (b) Initial setting of C2 at half capacity point. Apply 1 volt to Fax terminals note liniarity on plus and minus voltages. Apply 3 volts and note liniarity. Recheck liniarity over voltage range adjusting C2 if necessary to produce the best results.
- (c) Apply plus 1 volt Record shift 130-150 cycles
- (d) Apply minus 1 volt " " 130-150 cycles
- (e) Apply plus 2 volts " " 260-300 cycles
- (f) Apply minus 2 volts " " 260-300 cycles
- (g) Apply plus 3 volts " " 390-450 cycles
- (h) Apply minus 3 volts " " 390-450 cycles
- (i) Apply plus 4 volts " " 500-600 cycles
- (J) Apply minus 4 volts " " 500-600 cycles
- (k) Record voltage required for 1000 cycle shift 3.2-4 volts.

note: whenever C2 is reset to obtain better liniarity the 0 beat must be reset before applying test voltages.

Test 4 Keying Circuit Test. Set up equipment as per Dwg. # 3.

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Test Procedure  
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## Test 4 (con't)

- (a) Switch "Mode" switch to Key.
- (b) Connect all crystal positions to x 1 on the multiplier patch panel.
- (c) Test switch on "Space" Record voltage pin 8 V7 70-75 volts
- (d) Test switch on "Mark" Record voltage pin 8 V7 20-25 volts
- (e) Set ohmmeter to center arm of shift pot R8. Adjust pot to 400 ohms to ground. set dial to 50 cycles shift.
- (f) Re-set shift dial to 500 cycles, Alternately switching from mark to space on test switch adjust R38 "Balance Shift" so that mark and space shifts are equal. Adjust Shift Amplitude pot until shift is plus/minus 250 cycles. readjust balance pot if necessary.
- (g) Set shift dial to 100 cycles Mark 45-55 cycles
- (h) " " " " " " Space 45-55 cycles
- (i) " " " " 300 " Mark 140-160 cycles
- (j) " " " " " " Space 140-160 cycles
- (k) " " " " 900 " Mark 440-460 cycles
- (l) " 2 " " " " Space 440-460 cycles
- (m) Set test switch to line. check minimum and maximum keying voltages

## Test 5 Multiplication Panel Check

- (a) Set shift dial to 800 cycles. Test switch to space. zero beat output. switch to mark note that shift is 800 cycles.
- (b) Test each crystal position jack in x 1 multiplier, shift should remain at 800 cycles shift.
- (c) Set jack to xtal # 1 multiplication x 1
- (d) Recheck space zero beat and mark 800 cycle setting.
- (e) Plug into x 2 Record shift 400 cycles
- (f) Plug into x 3 " " 266 cycles
- (g) Plug into x 4 Record shift 200 cycles
- (h) Plug into x 6 Record shift 133 cycles
- (i) Plug into x 8 Record shift 100 cycles
- (j) Plug into x 9 Record shift 88 cycles

Upon completion of the above tests. Re-set zero setting with shift dial on zero. Place glyptol on balance and amplitude shift pots.

Periodically during above tests glance at the oven indicators and note proper operation of both ovens.

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DRN.		<b>MAMARONECK, NEW YORK</b>	
CHKD.		SHEET 5 OF 10	NO. S-155
APPD. AJJ(11/9/54)			



TEST PROCEDURE

REV. B

FREQUENCY SHIFT EXCITER

MODEL XFK

R.F. ALIGNMENT

Test 1 Alignment of Band 2

- (a) Set up equipment as per dwg. No 1
- (b) Switch band switch to Band No 2
- (c) Set all ceramic trimmers in R.F. stages to minimum capacity.
- (d) Check full mesh position of tuning condenser C 18 with indicator line on tuning dial.
- (e) Insert 2.6 mc. xtal in socket # 1
- (f) Insert 4.8 Mc. xtal in socket # 2
- (g) Insert 6.3 mc. xtal in socket # 3
- (h) Switch to xtal position # 1 , set dial to 2.8 mc.
- (i) Connect VTVM (neg) to pin 1 V<sub>4</sub>, Tune T1 for maximum voltage  
Record 5.5-10.0 volts
- (j) Set R.F. probe to pin 5 of V<sub>5</sub>, tune T3 for maximum voltage, select first peak going in from minimum inductance. 5.5-10.0 volts
- (k) Tune T5 for maximum current in thermocouple meter. retune T3
- (l) Switch to xtal position 3, tuning dial to 6.5mc.
- (m) Set VTVM to pin 1 V<sub>4</sub>, tune C30 for maximum voltage 7-11 volts
- (n) Set R.F. probe to pin 5 V<sub>5</sub> , tune C<sub>43</sub> for maximum output  
8-13 volts
- (o) Tune C<sub>46</sub> for maximum output on thermocouple meter.
- (p) Remove 6j6 200 kc. osc. tube. and ballance out carrier.
- (q) Disconnect Thermocouple ammeter, rotate tuning condenser over entire tuning range note prescense of parasitics (xtal switch to Ext position) Presence of parasitics will be indicated by apparent tuning of plate current with no drive from crystal. Tune to such parasitic and remove such by tuning condenser trimmer C 27.
- (r) RE-track both ends of bands.
- (s) Switch to xtal position 2 tune tuning condenser for output peak note calibration of dial near 5 mc.
- (t) Check for proper side band selection in alignment.
- (u) Tune xtal # 1 2.8 mc 15 V. } Across 70 Ω
- (v) Tune xtal # 2 5 mc 15 V. } Output
- (w) Tune xtal # 3 6.5 mc 18-25 V. } Load

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 CHKD.  
 APPD. AJJ(11/9/54)

Test Procedure  
 XFK

THE TECHNICAL MATERIEL  
 CORPORATION  
 MAMARONECK, NEW YORK  
 SHEET 6 OF 10 NO. S-155

## Test 2 Alignment of Band 1

- (a) Insert 1.0 mc xtal in socket # 1  
 (b) Insert 1.5 mc xtal in socket # 2  
 (c) Insert 2.1 mc xtal in socket # 3  
 (d) Switch to band No 1, set dial to 1.2 mc.  
 (e) Connect VTVM(neg) to pin 1 V4, Tune T2 for maximum voltage record 10-15 volts  
 (f) Set R.F. probe to pin 5 V5, Tune T4 for maximum voltage select first peak going in from minimum inductance. 8-13 volts  
 (g) Tune T6 for maximum output on thermocouple meter.  
 (h) Switch to xtal position #3, Tuning dial to 2.3mc.  
 (i) Set VTVM to pin 1 V4, tune C19 for maximum voltage 10-15 volts  
 (j) Set R.F. probe of VTVM to pin 5 of V5, tune C24 for maximum voltage 11-17 volts  
 (k) Tune C 28 for maximum output on thermocouple.  
 (l) Re-check band for parasitics.  
 (m) RE-track both ends of band.  
 (n) switch to xtal #2, check calibration at output, 1.7 mc  
 (o) check for proper side band selection.  
 (p) Tune xtal #1 1.2 mc 18-25 V. } Across 70 Ohm  
 (q) Tune xtal #2 1.7 mc 18-25 V. } Output  
 (r) Tune xtal #3 2.3 mc 20-30 V. } Load

DATE 10/19/51	Test Procedure XFK	<b>THE TECHNICAL MATERIEL          CORPORATION</b> MAMARONECK, NEW YORK	
DRN.			
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APPD. AJJ (11/9/54)		SHEET 7 OF 10   NO. S-155	

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SHEET 8 OF 10

# TMC SPECIFICATION NO. S-155

B

COMPILED

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TITLE: TEST PROCEDURE: MODEL XFK

APPROVED

## TEST DATA SHEET, MODEL XFK

### Test 1

(a) AC input 225 ohms

### Test 2

(a) Pin 5 V1 \_\_\_\_\_ volts  
(b) Pin 6 V1 \_\_\_\_\_ volts  
(d) Plus 200 cycles \_\_\_\_\_ cycles  
(e) Plus 400 cycles \_\_\_\_\_ cycles  
(f) Plus 600 cycles \_\_\_\_\_ cycles  
(g) Minus 200 cycles \_\_\_\_\_ cycles  
(h) Minus 400 cycles \_\_\_\_\_ cycles  
(i) Minus 600 cycles \_\_\_\_\_ cycles

### Test 3

(c) Plus 1 volt \_\_\_\_\_ cycles  
(d) Minus 1 volt \_\_\_\_\_ cycles  
(e) Plus 2 volts \_\_\_\_\_ cycles  
(f) Minus 2 volts \_\_\_\_\_ cycles  
(g) Plus 3 volts \_\_\_\_\_ cycles  
(h) Minus 3 volts \_\_\_\_\_ cycles  
(i) Plus 4 volts \_\_\_\_\_ cycles  
(j) Minus 4 volts \_\_\_\_\_ cycles  
(k) 1000 cycle shift \_\_\_\_\_ volts

### Test 4

(c) Pin 8 V7---Space \_\_\_\_\_ volts  
(d) Pin 8 V7---Mark \_\_\_\_\_ volts  
(g) 100 cycles Mark \_\_\_\_\_ cycles  
(h) 100 cycles Space \_\_\_\_\_ cycles  
(i) 300 cycles Mark \_\_\_\_\_ cycles  
(j) 300 cycles Space \_\_\_\_\_ cycles  
(k) 900 cycles Mark \_\_\_\_\_ cycles  
(l) 900 cycles Space \_\_\_\_\_ cycles  
(m) minimum keying voltage space \_\_\_\_\_ volts  
(n) minimum keying voltage mark \_\_\_\_\_ volts

### Test 5

(e) X2 \_\_\_\_\_ cycles  
(f) X3 \_\_\_\_\_ cycles  
(g) X4 \_\_\_\_\_ cycles  
(h) X6 \_\_\_\_\_ cycles  
(i) X8 \_\_\_\_\_ cycles  
(j) X9 \_\_\_\_\_ cycles

DATE 10/19/51

SHEET 9 OF 10

TMC SPECIFICATION NO. S-155

B

COMPILED

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TITLE: TEST PROCEDURE: MODEL XFK

APPROVED

TEST DATA SHEET, MODEL XFK

R.F. Alignment

Test 1

- (i) Tune T1 \_\_\_\_\_ volts DC
- (j) Tune T5 \_\_\_\_\_ volts RF
- (m) Tune C30 \_\_\_\_\_ volts DC
- (n) Tune C43 \_\_\_\_\_ volts RF
- (p) Balance out Carrier \_\_\_\_\_ OK
- (q) Parasitics \_\_\_\_\_ OK
- (u) Tune xtal #1 \_\_\_\_\_ mc \_\_\_\_\_ volts
- (v) Tune xtal #2 \_\_\_\_\_ mc \_\_\_\_\_ volts
- (w) Tune xtal #3 \_\_\_\_\_ mc \_\_\_\_\_ volts

Test 2

- (e) Tune T2 \_\_\_\_\_ volts DC
- (f) Tune T4 \_\_\_\_\_ volts RF
- (i) Tune C19 \_\_\_\_\_ volts DC
- (j) Tune C24 \_\_\_\_\_ volts RF
- (l) Parasitics \_\_\_\_\_ OK
- (p) Tune xtal #1 \_\_\_\_\_ mc \_\_\_\_\_ volts
- (q) Tune xtal #2 \_\_\_\_\_ mc \_\_\_\_\_ volts
- (r) Tune xtal #3 \_\_\_\_\_ mc \_\_\_\_\_ volts

FREQUENCY SHIFT EXCITER  
MODEL XFK

TYPICAL VOLTAGE DATA SHEET

SERIAL NO. 121  
DATE \_\_\_\_\_

TUBE SYM.	FUNCTION	TYPE	PIN	VOLTS	PIN	VOLTS	PIN	VOLTS	PIN	VOLTS	PIN	VOLTS	PIN	VOLTS	PIN	VOLTS
V1	200 KC OSC	6J56	1	85	2	85	5	-29	6	-29	7	0	4	AC 6.3		
V2	REACTANCE TUBE	12A17	1	85	2	0	3	8.2	6	85	7	0	8	7.8	5	AC 6.3
V3	MIXER	6BE6	1	-6	2	2	5	320	6	100	7	-7.3	4	AC 6.3		
V4	MIXER	6BE6	1	-6	2	2	5	320	6	100	7	-7.3	4	AC 6.3		
V5	RF AMPLIFIER	2E26	3	150	5	-11	CAP	360	7	AC 6.3						
V6	XTAL OSC. & BUFFER	12A17	1	80	2	-7.7	6	250	7	0	8	11.5	5	AC 6.3		
V7	KEYER(SPACE)	12A17	1	70	2	0	3	12	6	105	7	70	8	70	5	AC 6.3
V7	KEYER(MARK)	12A17	1	13	2	13	3	13	6	105	7	13	8	21		
V8	RECTIFIER	5U4G	8	360	4	AC 360	6	AC 360	2-8	AC 5						
V9	RECTIFIER	6X4	1	380	6	380	7	AC 360	4	AC 6.3						
V10	REGULATOR	OB2	1	105												
V11	REGULATOR	OB2	2	100												

ALL VOLTAGES TAKEN TO GROUND WITH VTVM  
2.3 CRYSTAL TUNED TO 2.5 mc BAND 2

DATE 3-18-53  
DRN. C.D.D.  
CHKD.  
APPD. AJJ 11/9/54

TYPICAL VOLTAGE DATA SHEET  
REV. B

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