

# OBSOLETE

## TEST DATA

### ANTENNA TUNING UNIT, MODEL TAC-1

The following tests were conducted, using Ohmite non-inductive dummy loads of 52,73, 300 and 600 ohms. The pertinent test data and efficiency curves are attached.

The following is a brief description of the tuning controls of the unit.

- a. COUPLING: This switch taps the coupling coils at the proper points for matching 75 ohms impedance at all frequencies.
- b. BAL. - UNBAL. For unbalanced loads, this switch removes one side of the coupling coil and gives all available power to the end of the circuit being used. Terminal #1 (left side) must be used for unbalanced loads.
- c. BAND SWITCH: This control taps the coil in the tuned circuit to enable a single coil to tune the entire range from 2 to 18 Mcs.
- d. 2-3 Mcs. 3-18 Mcs.: For operations below 3 Mcs., the 50 mmf vacuum capacitors are used in parallel with the variable capacitors in the tuned circuit.
- e. CAPACITOR: This calibrated control tunes the variable capacitors in the tuned circuit.
- f. ANT. TUNING: The cyclometer controls the sliding taps on the coils and is adjusted for a proper impedance match between the antenna in use, and the 75 ohm transmitter output. This also controls the proper balance for slightly unbalanced loads.

DATE		<b>THE TECHNICAL MATERIEL CORPORATION MAMAR NECK, NEW YORK</b>		
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		SHEET 1	OF 17	NO. S-171

S-171

LOAD OHMS	P. A. TUNING	P.A. PLATE MA.	COUPLING POSITION	BAND SWITCH POSITION	CAPACITOR TUNING	ANT. TUNING	APPROX. I <sub>1</sub> I <sub>2</sub>	
			2 Mc. (TU-47)					
52 - 0	17	280	1	1	80	22.8	2.7	0
73 - 0	15	280	1	1	80	23.8	2.3	0
146 - 0	15	280	1	1	75	21.1	1.6	0
300 - 0	15	280	1	1	75	17.9	1.1	0
600 - 0	15	275	1	1	75	16.6	.8	0
1200 - 0	14	270	1	1	75	11.8	.55	0
52 - 52	17	280	1	1	80	23.9	1.85	1.85
73 - 73	17	280	1	1	75	22.2	1.6	1.6
146 - 146	17	280	1	1	75	21.4	1.1	1.1
600 - 600	16	270	1	1	75	16.0	.5	.5
			3 Mc. (TU-47)					
52 - 0	45	280	1	1	70	23.5	2.65	0
73 - 0	45	280	1	1	70	24.1	2.3	0
146 - 0	45	280	1	1	71	21.8	1.6	0
300 - 0	45	280	1	1	72	19.2	1.1	0
600 - 0	45	275	1	1	72	16.7	.8	0
1200 - 0	45	275	1	1	74	11.3	.55	0
52 - 52	45	275	1	1	74	11.3	.55	0
73 - 73	45	275	1	1	74	11.3	.55	0
146 - 146	45	280	1	1	75	20.1	1.1	1.1
600 - 600	45	270	1	1	75	15.3	.5	.5

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SHEET 2 OF 17 NO. S-171

LOAD OHMS	P. A. TUNING	P.A. PLATE MA.	COUPLING POSITION	BAND SWITCH POSITION	CAPACITOR TUNING	ANT. TUNING	APPROX. I <sub>1</sub> I <sub>2</sub>	
			4 Mc. (TU-50)					
52 - 0	47	280	1	2	30	23.3	2.65	0
73 - 0	47	270	1	2	30	21.8	2.25	0
146 - 0	47	270	1	2	32	20.1	1.55	0
300 - 0	47	270	1	2	32	20.0	1.1	0
600 - 0	46	265	1	2	32	18.8	.8	0
1200 - 0	45	260	1	2	33	13.8	.55	0
52 - 52	47	280	1	2	30	21.9	1.87	1.87
73 - 73	47	275	1	2	30	21.3	1.6	1.6
146 - 146	47	270	1	2	31	19.3	1.1	1.1
600 - 600	46	270	1	2	31	15.1	.5	.5
			5 Mc. (TU-51)					
52 - 0	35	275	1	2	80	20.9	2.65	0
73 - 0	35	275	1	2	80	20.8	2.3	0
146 - 0	36	270	1	2	83	20.1	1.6	0
300 - 0	35	270	1	2	85	15.6	1.1	0
600 - 0	35	265	1	2	85	15.0	.8	0
1200 - 0	34	260	1	2	88	11.0	.5	0
52 - 52	36	275	1	2	80	18.0	1.85	1.85
73 - 73	36	275	1	2	80	17.3	1.6	1.6
146 - 146	36	270	1	2	80	16.1	1.1	1.1
600 - 600	34	260	1	2	85	11.0	.5	.5

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SHEET 3 OF 17 NO. S-171

LOAD OHMS	P.A. PLATE TUNING	P.A. PLATE MA.	COUPLING POSITION	BAND SWITCH POSITION	CAPACITOR TUNING	ANT. TUNING	APPROX. I <sub>1</sub> I <sub>2</sub>	
				6 Mc. (TU-51)				
52 - 0	28	260	1	3	25	19.2	2.60	0
73 - 0	28	260	1	3	20	18.1	2.15	0
146 - 0	27	260	1	3	20	17.9	1.5	0
300 - 0	27	255	1	3	20	17.2	1.1	0
600 - 0	27	250	1	3	20	16.5	.8	0
1200 - 0	26	250	1	3	18	16.0	.5	0
52 - 52	28	260	1	3	25	19.3	1.85	1.85
73 - 73	28	260	1	3	25	19.0	1.55	1.55
146 - 146	28	260	1	3	23	18.2	1.1	1.1
600 - 600	26	250	1	3	20	17.1	.5	.5
				7 Mc. (TU-52)				
52 - 0	57	255	1	3	15	18.6	2.6	0
73 - 0	57	255	1	3	15	17.2	2.2	0
146 - 0	58	260	1	3	14	16.5	1.5	0
300 - 0	56	260	1	3	12	15.0	1.1	0
600 - 0	56	260	1	3	12	13.1	.8	0
1200 - 0	55	260	1	3	12	12.7	.5	0
52 - 52	58	255	1	3	15	20.7	1.8	1.8
73 - 73	58	255	1	3	15	17.5	1.6	1.6
146 - 146	58	250	1	3	15	16.3	1.15	1.15
600 - 600	55	250	1	3	11	15.0	.5	.5

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SHEET 4 OF 17 NO. S-171

LOAD OHMS	P.A. PLATE TUNING	P.A. PLATE MA.	COUPLING POSITION	BAND SWITCH POSITION	CAPACITOR TUNING	ANT. TUNING	APPROX. I <sub>1</sub> I <sub>2</sub>	
8 Mc. (TU-53)								
52 - 0	20	260	1	3	10	16.2	2.60	0
73 - 0	20	260	1	3	10	15.0	2.30	0
146 - 0	20	260	1	3	10	13.2	1.70	0
300 - 0	20	255	1	3	12	12.9	1.10	0
600 - 0	18	255	1	3	12	12.1	.75	0
1200 - 0	18	255	1	3	13	11.7	.55	0
52 - 52	20	260	1	3	10	15.0	1.83	1.83
73 - 73	20	260	1	3	10	12.3	1.60	1.60
146 - 146	20	260	1	3	10	12.1	1.10	1.10
600 - 600	17	250	1	3	13	11.0	.5	.5
10 Mc. (TU-53)								
52 - 0	61	260	2	3	12	12.0	2.80	0
73 - 0	60	260	2	3	12	11.4	2.30	0
146 - 0	60	260	2	3	12	11.0	1.70	0
300 - 0	60	260	2	3	10	10.8	1.10	0
600 - 0	60	250	2	3	10	10.3	.8	0
1200 - 0	58	250	2	3	8	10.0	.5	0
52 - 52	61	265	2	3	12	11.9	1.80	1.80
73 - 73	60	265	2	3	12	11.1	1.60	1.60
146 - 146	60	260	2	3	10	11.1	1.1	1.1
600 - 600	57	250	2	3	10	10.5	.5	.5

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SHEET 5 OF 17 NO. S-171

LOAD OHMS	P.A. PLATE TUNING	P.A. PLATE MA.	COUPLING POSITION	BAND SWITCH POSITION	CAPACITOR TUNING	ANT. TUNING	APPROX.	
							I <sub>1</sub>	I <sub>2</sub>
12 Mc. (TU-54)								
52 - 0	54	250	2	3	20	14.7	2.5	0
73 - 0	53	250	2	3	20	14.2	2.3	0
146 - 0	53	250	2	3	20	14.0	1.65	0
300 - 0	52	250	2	3	25	13.6	1.0	0
600 - 0	52	245	2	3	25	12.5	.75	0
1200 - 0	52	240	2	3	30	11.7	.5	0
52 - 52	54	250	2	3	20	14.9	1.80	1.80
73 - 73	53	250	2	3	20	14.8	1.50	1.50
146 - 146	51	250	2	3	20	14.1	1.0	1.0
600 - 600	49	240	2	3	30	12.0	.5	.5
14 Mc. (TU-54)								
52 - 0	35	245	3	3	10	25.0	2.3	0
73 - 0	35	245	3	3	10	25.1	2.1	0
146 - 0	34	245	3	3	10	25.3	1.6	0
300 - 0	34	245	3	3	15	25.9	1.1	0
600 - 0	31	240	3	3	15	26.0	.7	0
1200 - 0	31	240	3	3	15	26.0	.7	0
52 - 52	33	245	3	3	10	24.9	1.6	1.6
73 - 73	33	245	3	3	15	24.1	1.3	1.3
146 - 146	33	245	3	3	15	24.0	.7	.7
600 - 600	31	235	3	3	25	23.2	.5	.5

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SHEET 6 OF 17 | NO. S-171

LOAD OHMS	P.A. PLATE TUNING	P.A. PLATE MA.	COUPLING POSITION	BAND SWITCH POSITION	CAPACITOR TUNING	ANT. TUNING	APPROX. I <sub>1</sub> I <sub>2</sub>	
16 Mc. (TU-54)								
52 - 0	54	230	3	3	53	10.3	1.4	0
73 - 0	54	230	3	3	55	10.5	1.2	0
146 - 0	54	220	3	3	58	10.7	1.1	0
300 - 0	55	200	3	3	65	10.7	1.0	0
600 - 0	55	200	3	3	70	10.8	.8	0
1200 - 0	55	200	3	3	72	11.0	.5	0
52 - 52	57	230	3	3	70	24.6	1.0	1.0
73 - 73	57	230	3	3	70	24.0	.8	.8
146 - 146	56	220	3	3	75	22.0	.7	.7
600 - 600	55	220	3	3	80	2.1	.5	.5
18 Mc. (TU-54)								
52 - 0	70	230	3	3	20	10.9	1.6	0
73 - 0	70	230	3	3	15	11.4	1.3	0
146 - 0	70	220	3	3	15	11.2	1.2	0
300 - 0	69	220	3	3	10	10.5	1.2	0
600 - 0	68	200	3	3	5	9.2	1.0	0
1200 - 0	68	200	3	3	5	9.0	.5	0
52 - 52	71		3	3	5	7.2	1.0	1.0
73 - 73	71	230	3	3	5	7.9	.8	.8
146 - 146	70		3	3	10	10.0	.7	.7
600 - 600	70	230	3	3	15	10.7	.5	.5

DATE

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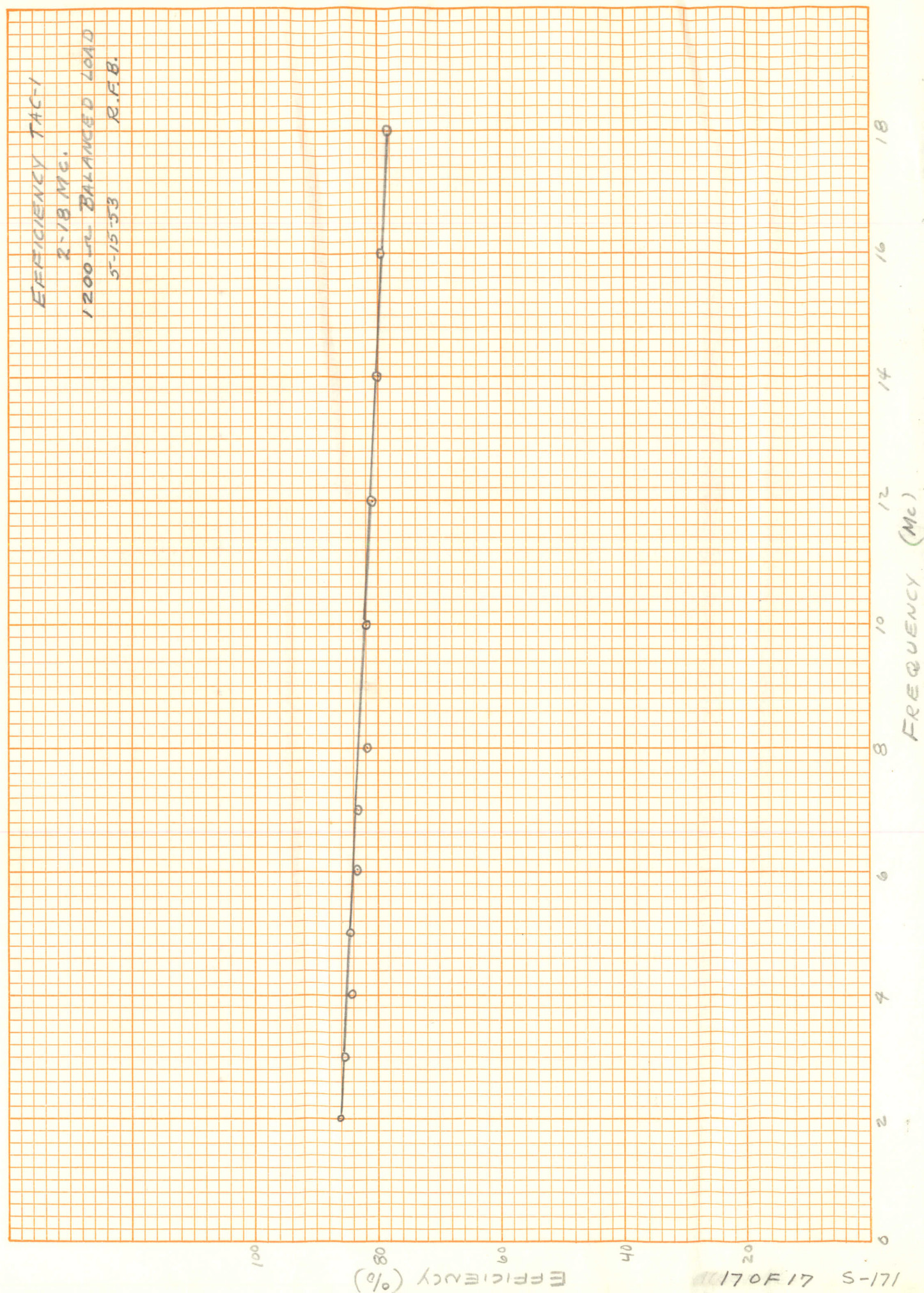
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SHEET 7 OF 17 NO. S-171

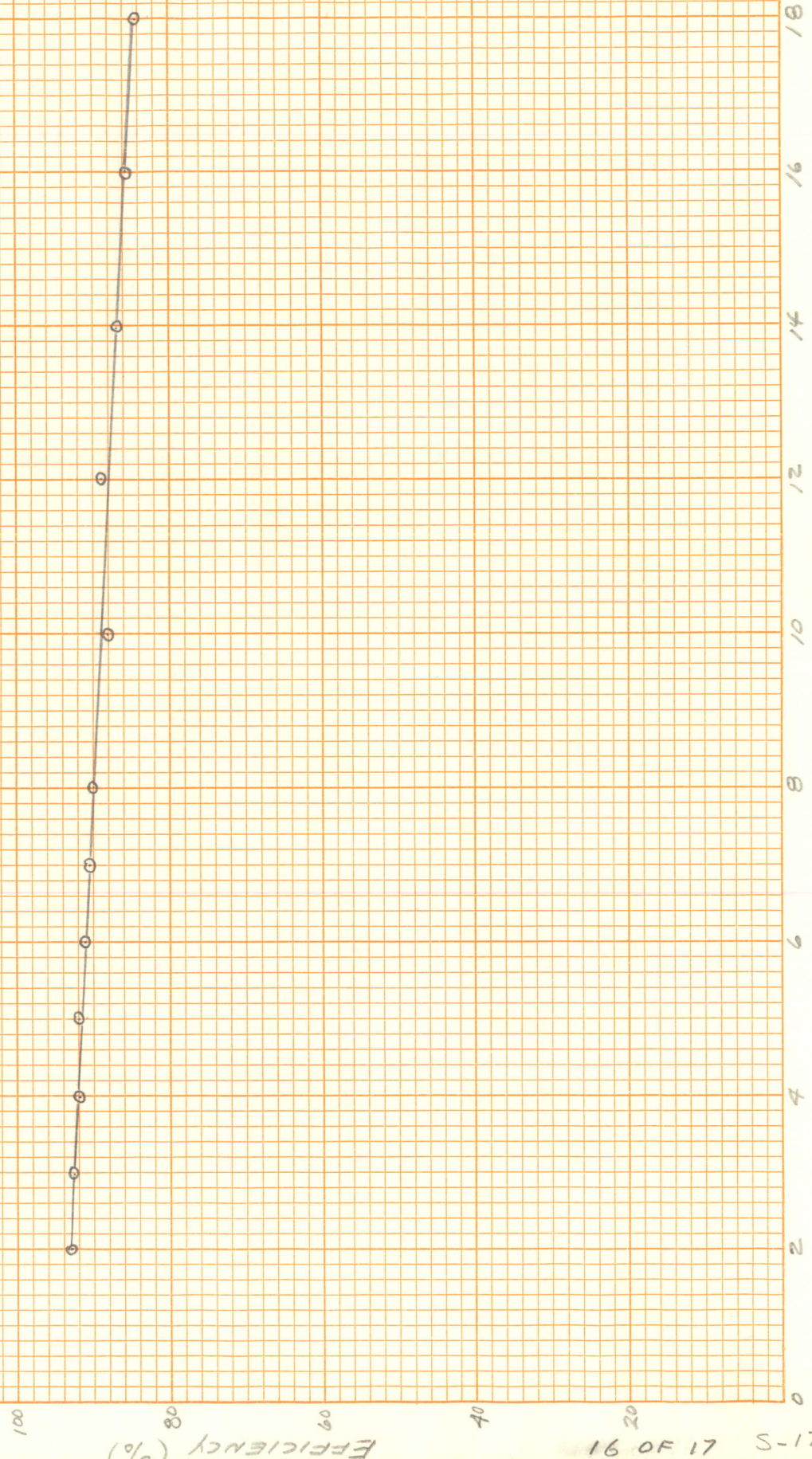
EFFICIENCY TAC-1  
2-18 MG.  
1200- $\mu$ L BALANCED LOAD  
5-15-53 R.F.B.



170F17 S-171



EFFICIENCY TAC-1  
2-18 MG.  
300-5 BALANCED LOAD  
5-15-53 R.F.B.



EFFICIENCY TAC-1

2-18 MC

150-0 BALANCED LOAD

5-15-53 R.F.B.

11-S LI FO 51 20 40 60 80 100  
EFFICIENCY (%)  
0 2 4 6 8 10 12 14 16 18  
FREQUENCY (MC)

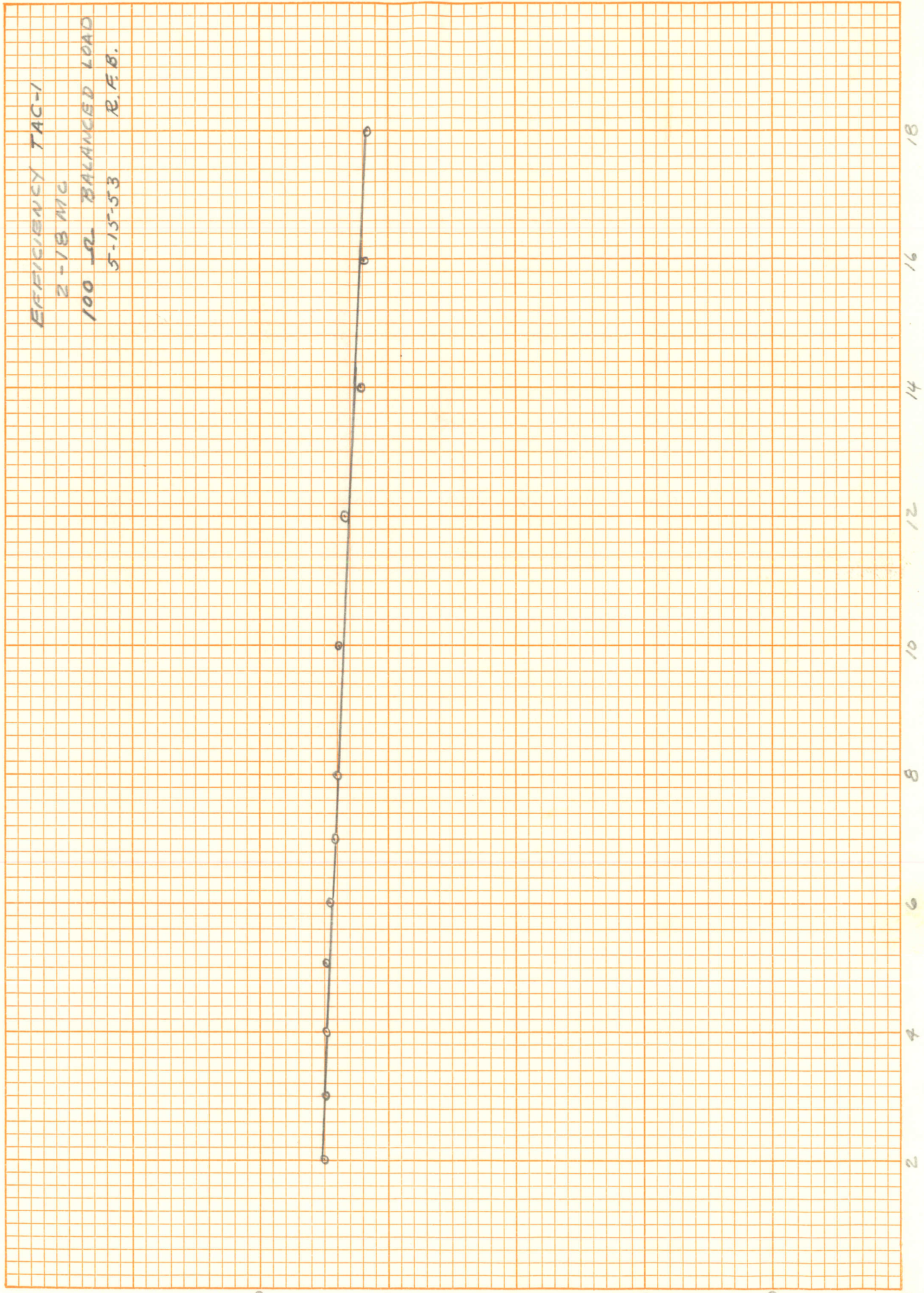


EFFICIENCY TAC-1

2-18 MC

100  $\Omega$  BALANCED LOAD

5-15-53 R.F.B.



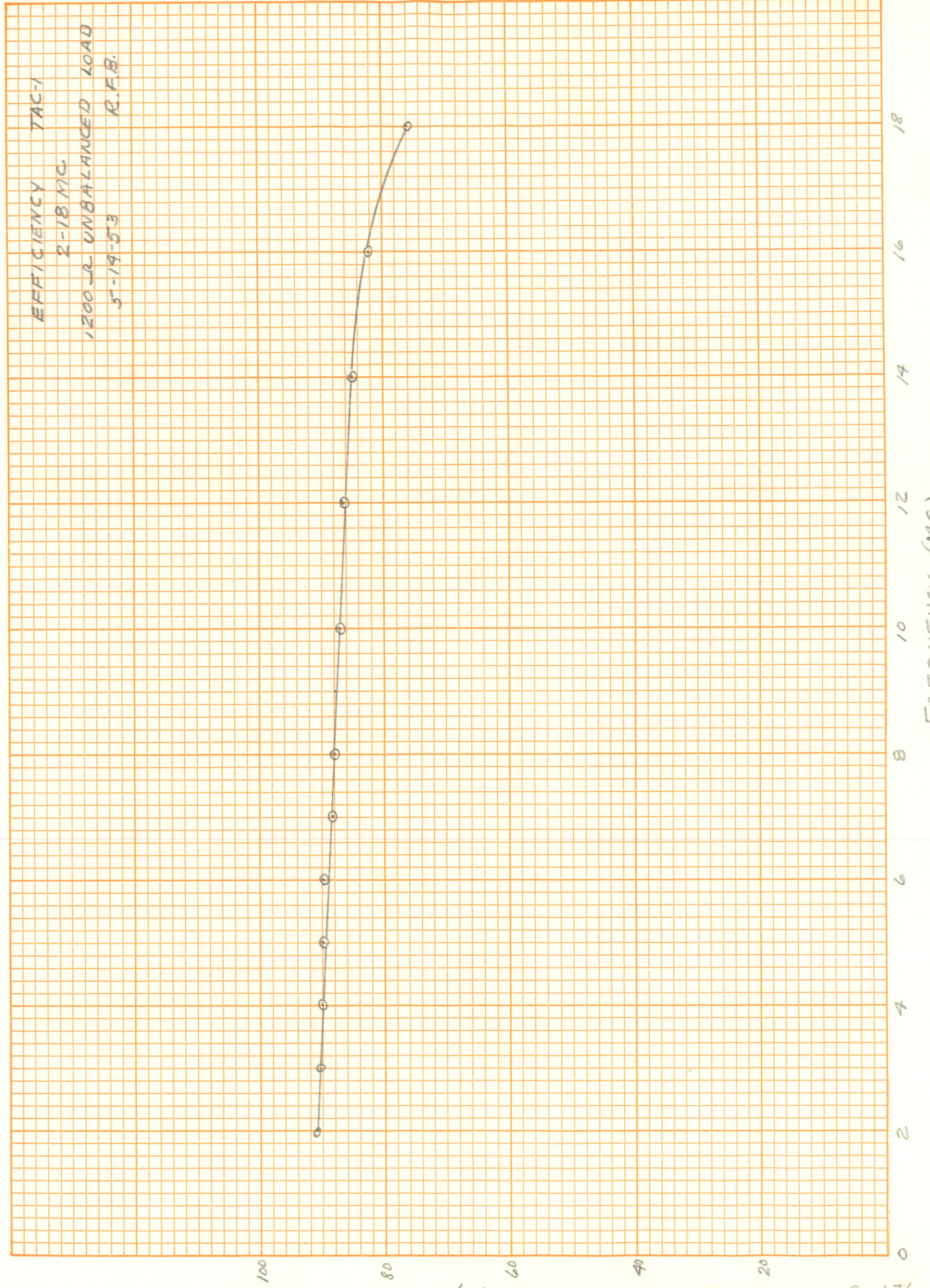
FREQUENCY (MC)

EFFICIENCY (%)

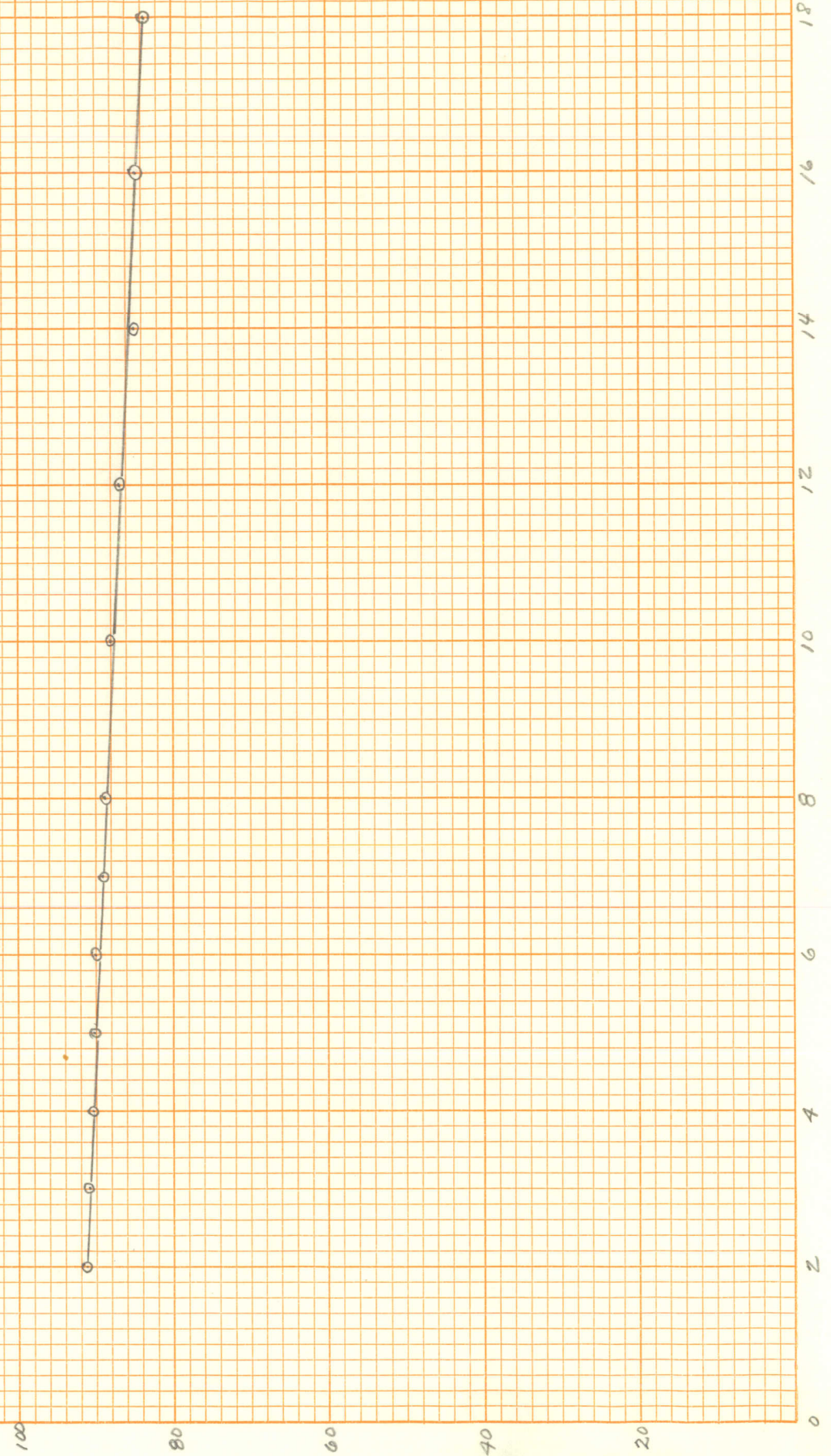
14 OF 17

11-5

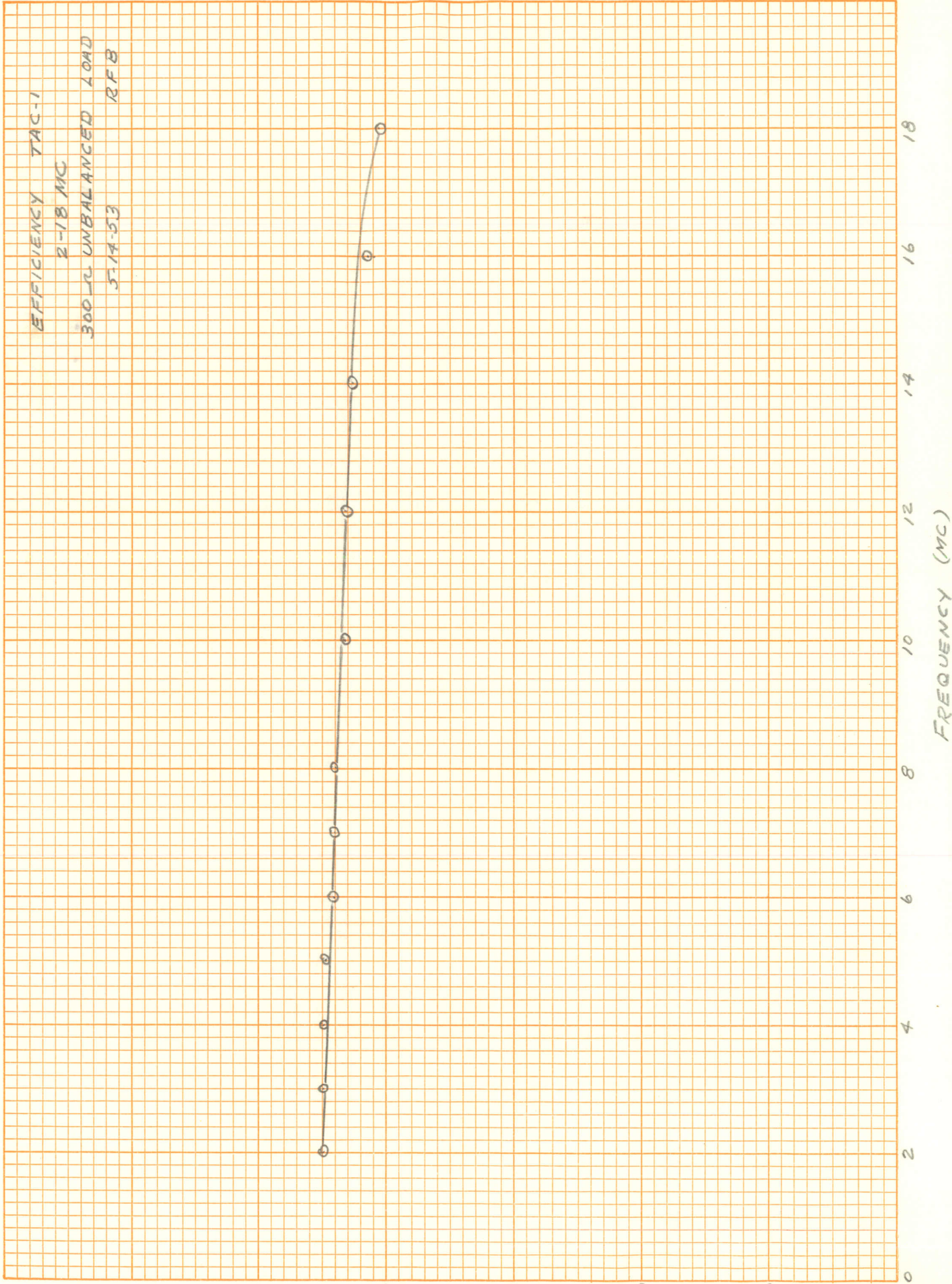
EFFICIENCY TAC-1  
2-18 MC.  
1200  $\mu$  UNBALANCED LOAD  
5-19-53 R.F.B.



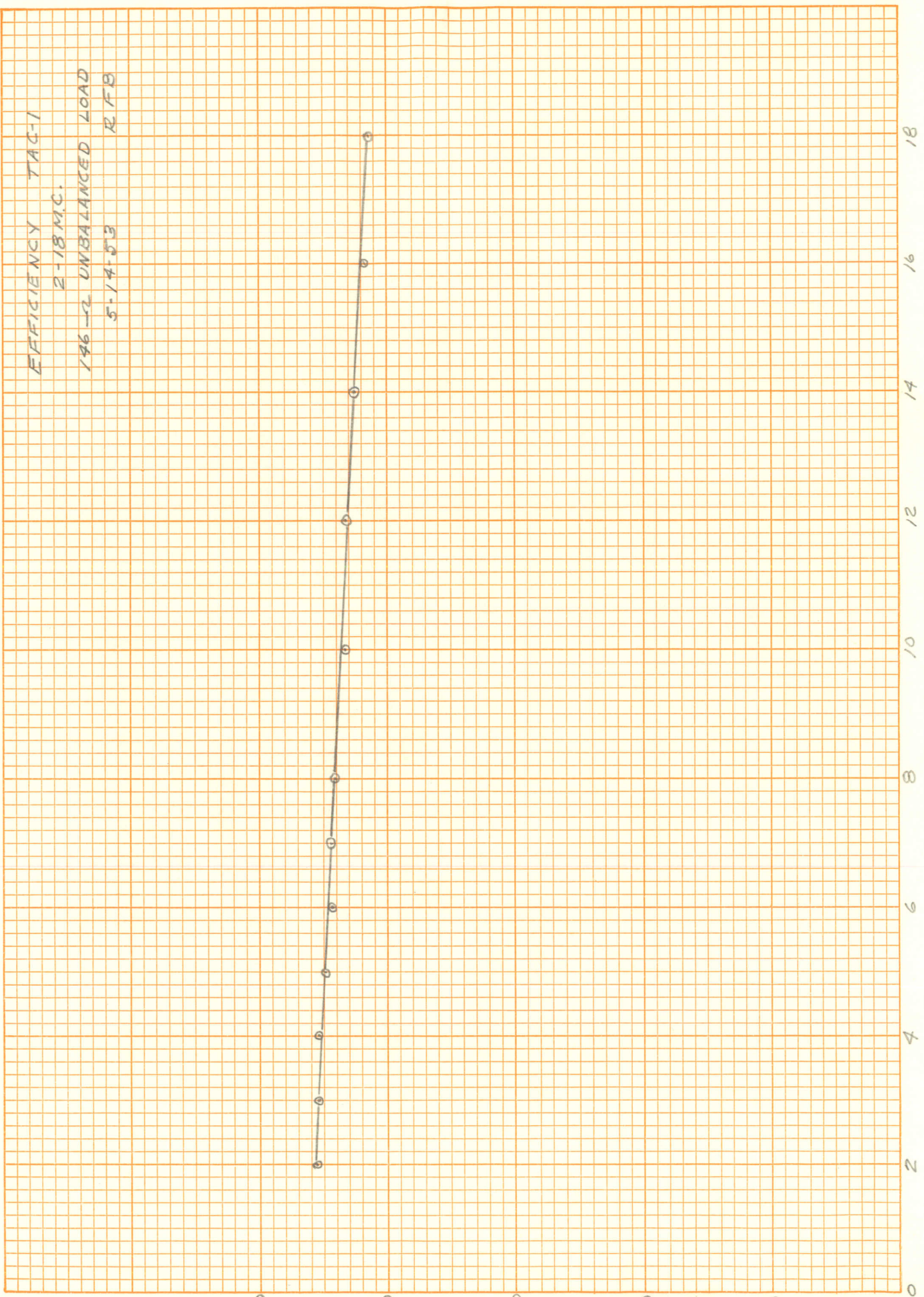
EFFICIENCY TAC-1  
2-18 MC  
600Ω UNBALANCED LOAD  
5-14-53 R.F.B.



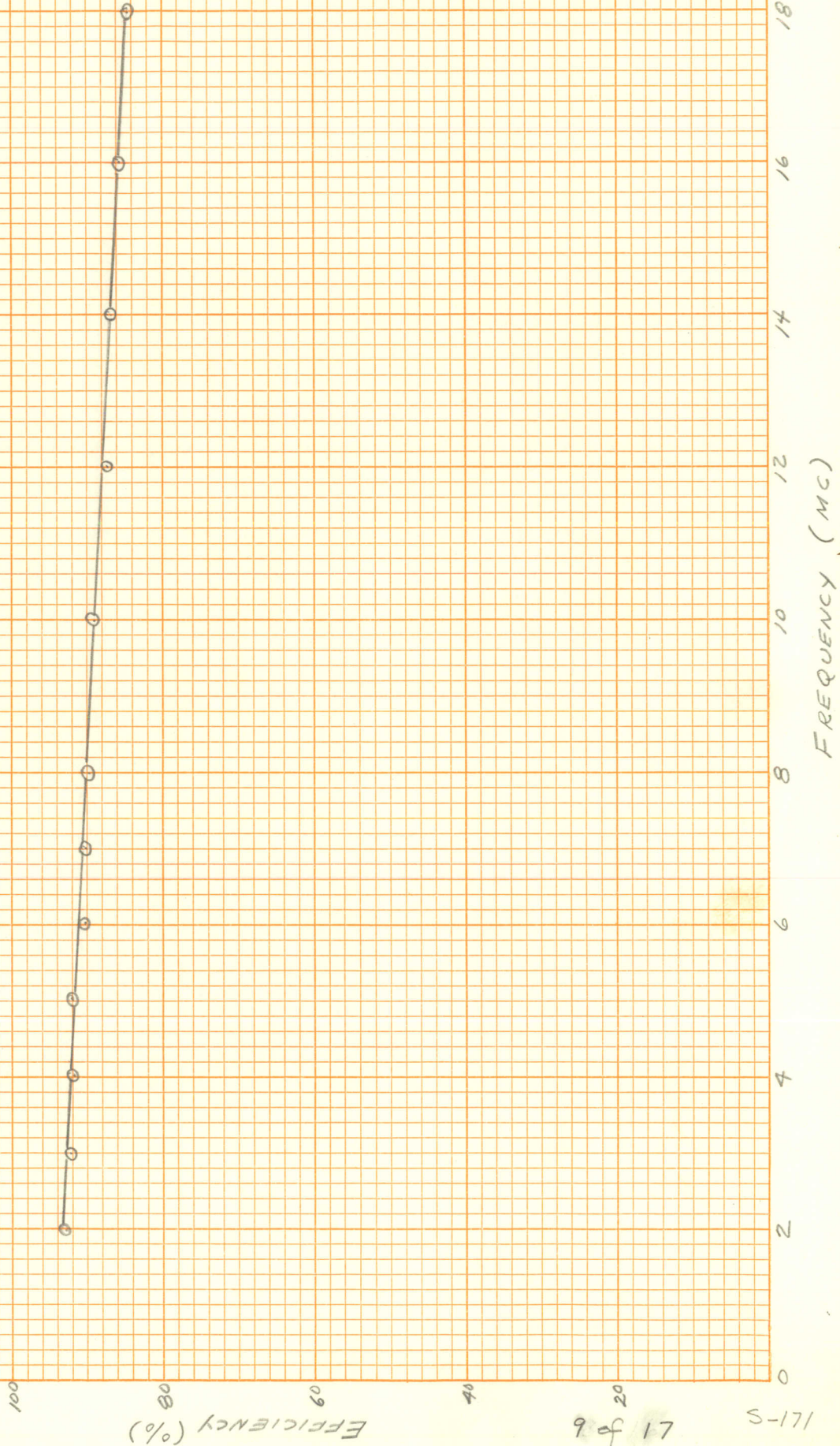
EFFICIENCY TAC-1  
2-18 MC  
300-Ω UNBALANCED LOAD  
5-14-53 RFB



EFFICIENCY TAC-1  
2-18 M.C.  
146-12 UNBALANCED LOAD  
5-14-53 RFB



EFFICIENCY TAC-1  
2-18 MC  
73-RL UNBALANCED LOAD  
5-14-53 R.F.B.





EFFICIENCY TAC-1  
2-18 MC  
52 Ω UNBALANCED LOAD  
5-14-53 R.F.B.

