


DATE 12-20-60
SH. 1 OF 15
COMPILED BY

TMC SPECIFICATION NO. S 492

TITLE: Production Testing For Model CHG JOB

APPROVED 

COMPLETE INSTRUCTIONS
FOR
PRODUCTION TESTING OF THE
MODEL CHG

DATE 12-20-60

SH. 2 OF 15

COMPILED BY

TMC SPECIFICATION NO. S 492

TITLE: Production Testing for Mod 1 CHG-1

JOB

APPROVED

Test Equipment Required.

1. Simpson Multimeter Model 260
2. Hewlett-Packard VTVM Model HP410B
3. Two(2) each signal generators, Measurements mod 1 B2 or equivalent.
4. Oscilloscope, Tektronix Type 545A or equivalent.
5. Electronic Counter, H.P. 524C.
6. Two-Tone 250 Kcs Generator.
7. Panoramic-Analyzer.

DATE 12-20-60

SH. 8 OF 15

COMPILED BY

TMC SPECIFICATION NO. S 492

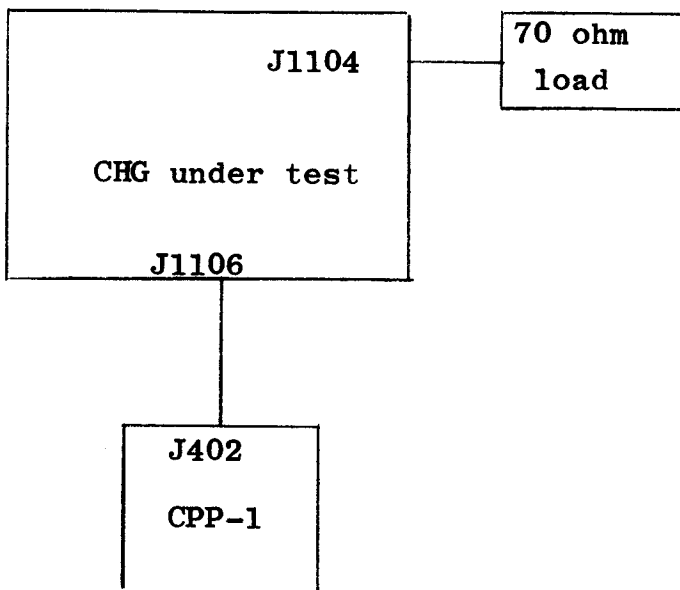
TITLE: Production T sting for Model CHG

JOB

APPROVED

General Instrument Layout

- 1 Set up for oven test.



DATE 12-20-60
SH. 4 OF 15
COMPILED BY

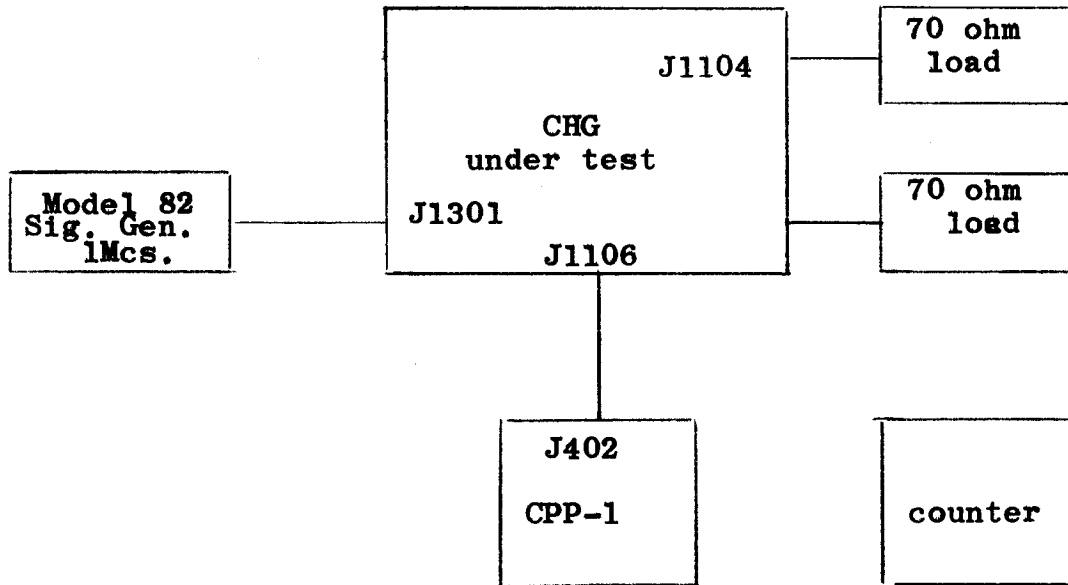
TMC SPECIFICATION NO. S 492

TITLE: T st Production for Mod 1 CHG

JOB

APPROVED

2. Set-up for 1 Mc. Standard Test



DATE 12-20-60
SH. 5 OF 15
COMPILED BY

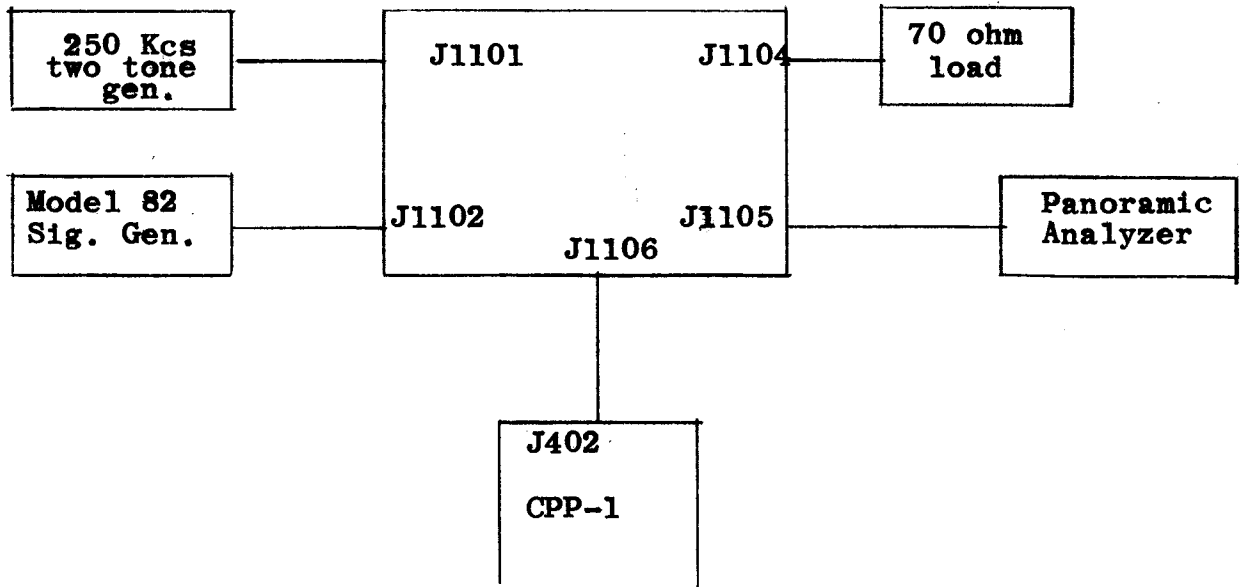
TMC SPECIFICATION NO. S 492

TITLE: Production Testing for Model CHG

JOB

APPROVED

3. Set-Up For Distortion Test



DATE 12-20-60

SH. 6 OF 15

COMPILED BY

TMC SPECIFICATION NO. S 492

TITLE: PRODUCTION TESTING FOR MODEL CHG-1

JOB

APPROVED

A. General Inspection

1. Inspect the unit for obvious mechanical imperfections.
2. Inspect the unit for obvious electrical imperfections.
3. Inspect the band switch, in position "0", T1112, T1191, and T1116 must be in the circuit.
4. In the positions "2" and "4", T1115, T1111, T1108, and T1127 must be in the circuit.
5. In the positions "6" through "12" inclusive, T-1114, T1110, T1107, T1117 must be in the circuit.
6. In positions "14" through "30" inclusive, T1113, T1109, T1106, and T1105 must be in the circuit.
7. Check output frequency dial alignment, with condensers fully meshed, the marker must be exactly under the line.
8. The mid-frequency must be on the starting line when condensers are fully meshed.

B. Oven

1. Connect units to CPP-1 as shown in paragraph I, instrument layout.
2. Throw power switch in "ON" position.
3. Leave B+ switch in "OFF" position.
4. Measure B+ at T1102 (red dot) approximately 180 Volts; record the voltage report sheet.
5. Observe the "oven" pilot light; it must light.
6. Allow the unit to warm-up for approximately two(2) hours. (During the warm-up period, the H.F. amplifiers and M.F. Channel may be aligned.)
7. After the oven begins to cycle, observe the time "ON" and

DATE 12-20-60

SH. 7 OF 15

COMPILED BY

TMC SPECIFICATION NO. S492

TITLE: PRODUCTION TESTING FOR MODEL CHG-1

JOB

APPROVED

time "OFF" periods; time "ON" approximately ten (10) minutes and time "OFF" approximately three (3) minutes at room temperature. Record the time intervals in the Report Sheet.

C. I MC Internal Standard

1. Set Standard Selector Switch, S1301, to "I MC Internal."
2. Connect H.P. VTVM to terminal J1502.
3. Adjust L1305 for Max. voltage output. The voltage must be 15V or greater. Record the voltage on the Report Sheet.
4. Connect 70 ohm load to J1302.
5. Connect Voltmeter to the 70 ohm load.
6. Connect counter to the 70 ohm load.
7. Adjust L1301 for max. output on the voltmeter. The voltage must be 2.5 or greater. Record the voltage on the report sheet.
8. Adjust C1306 until frequency become 1,000,000 cycles ⁺ - one count.
9. Set standard selector switch, S1301, to " I MC EXT."
- 10.. Connect signal generator to J1301 set at I mcs. and at 1 volt.
11. Measure voltage at J1302; it must be 1.0 V or greater.
12. Set the standard selector switch S1301 to "I MC Internal."
13. Lock the coils.

D. Synthesizer Chassis

1. Connect Scope to J1503.
2. Tune T1501 for max. 2 mc. signal. It must be approximately 35 V peak to peak.

DATE 12-20-60

SH. 8 OF 15

COMPILED BY

TMC SPECIFICATION NO. S 492

TITLE: PRODUCTION TESTING FOR MODEL CHG-1

JOB

APPROVED

3. Disconnect P1507 from J1307.
4. Disconnect P1509 from J1303.
5. Disconnect P1501 from J1501.
6. Connect signal generator set @ 2,000,000 cps ⁺ 200 cps and approximately 0.1 volts to pin 2 of V1503.
7. Connect scope to the junction of R1517 and R1518.
8. Tune L1502 for maximum signal at the scope, and lock the coil.
9. Connect P1501 to J1501.
10. Connect P1507 to J1307.
11. Disconnect signal generator.
12. Set Band Switch to position "2".
13. Tune C1501 for maximum signal at the scope approximately 1.5 V.P.P.
14. Set Band Switch to position "4".
15. Tune C1503 for maximum.
16. Set Band Switch to position "6".
17. Tune C1505 for max.
18. Set Band Switch to position "8".
19. Tune C1512 for max.
20. Set Band Switch to position "14".
21. Tune C1507 for max.
22. Set Band Switch to position "16".
23. Tune C1515 for max.
24. Set Band Switch to position "18".
25. Tune C1513 for max.
26. Set Band Switch to position "30".

DATE 12-20-60

SH. 9 OF 15

COMPILED BY

TMC SPECIFICATION NO. S 492

TITLE: PRODUCTION TESTING FOR MODEL CHG-1

JOB

APPROVED

27. Tune C1510 for max.
28. Reconnect P1509 to 1303.
29. Disconnect P1504 from J1304.
30. Measure DC Voltage at junction of R1524 and R1525. It must be approximately 4 volts. Record the voltage in the report sheet.
31. Connect the Voltmeter to junction of R1517 and R1518.
32. Set Balance Adjust for the recorded voltage in step 27 above, and lock it.
33. Reconnect P1504 to J1304.
34. Disconnect all equipment form synthesizer chassis.

E. H.F. Injunction Oscillator

1. Set Scope on DC Range and on .1 Volts per cm. vertical deflection scale.
2. Connect Scope to junction of R1524 and C1525 and adjust the vertical position control until the horizontal line appears exactly in the center of the screen.
3. Without touching the Scope controls, place the Scope probe to the junction of R1518 and C1533.
4. Tune crystals as per chart to the same horizontal reference line which was established in step 2 above. NOTE: when audio oscillation appears, tune toward maximum amplitude until oscillation disappears and continue turning the trimmer until the line appears in the center.

DATE 12-20-60SH. 10 OF 15

COMPILED BY

TMC SPECIFICATION NO. S492

TITLE: PRODUCTION TESTING FOR MODEL CHG-1

JOB

APPROVED

BAND SWITCH
POSITION

ADJUST

2	C1408
4	C1410
6	C1412
8	C1419
14	C1414
16	C1422
18	C1420
30	C1417

5. Check following band positions; the horizontal line must still be in the center within ± 0.25 Volt. and record the deviations on the report sheet.

BAND SWITCH
POSITIONS

0
10
12
20
22
24
26
28

6. Disconnect the Scope.

F. Sync Circuit Indicator

1. Set Band Switch to "2".
2. Set potentiometer R1522 fully clockwise, and adjust C1536 to the point where the sync light goes off. Then advance the potentiometer R1522, to the point where the light just goes on.
3. Set the Band Switch in between positions "2" and "4"; the light must go off.
4. Check all positions "2" through "30"; in all positions the light must go on.

DATE 12-20-60SH. 11 of 15

COMPILED BY

TMC SPECIFICATION NO. S492

TITLE: PRODUCTION TESTING FOR MODEL CHG-1

JOB

APPROVED

G. Alignment of H.F. Amplifier

1. Connect Scope to junction of C1122 and C1123.
2. Set Trimmer C1123 to mid-capacity.
3. Follow the chart below. In each case, the output voltage must be approximately 3 V peak to peak.

BAND SWITCHTUNE FOR MAXIMUM AND LOCK THE COILS

2	L1122
4	L1121
6	L1120
8	L1119
10	L1118
12	L1117
14	L1116
16	L1115
18	L1114
20	L1108
22	L1109
24	L1110
26	L1111
28	L1112
30	L1113

H. Mid-Frequency Channel

1. Connect the 250 mcs test unit to J1101 and set it for max. output.
2. Connect signal generator to J1102 and set it @ 1 volt and 2 mcs.
3. Set mid-frequency tuning ~~knob~~, to 1.75 mc. mark.
4. Set trimmers C1106, C1108, C1114, and C1119 to mid-capacity.
5. Connect AC VTVM to pin 5 of V1102.
6. Tune T1102, L1102, and T1101 for max indication on the VTVM; lock T1101 only.
7. Remove VTVM.

I. R.F. Channel

1. Connect signal generator to the junction of balanced mod-

DATE 12-20-60

SH. 12 OF 15

COMPILED BY

TMC SPECIFICATION NO. S492

TITLE: PRODUCTION TESTING FOR MODEL CHG-1

JOB

APPROVED

ulator and R1125.

2. Set Trimmers C1132, C1133, C1134, C1143, C1144, C1145, C1191, C1152, C1153, C1154, C1155, C1165, C1166, C1167, C1168 to mid-position.
3. Observe the output meter and reduce the drive from the generator to avoid pinning the meter.
4. Turn on the B+ switch.
5. Feed approximately 0.IV. @ 1.75 mcs.
6. Set the band switch to "0" position.
7. Set dial reading to 1.75 mcs.
8. Adjust T1116, T1118 and T1112 for maximum.
9. Set dial reading to 3.75 mcs.
10. Set generator to 3.75 mcs.
11. Adjust C1168, C1155 and C1191 for maximum.
12. Repeat steps 5 through 11 until no further adjustments are necessary, and lock the coils.
13. Set the Band Switch to "2" position.
14. Set generator to 3.75 mcs.
15. Set dial to 3.75 mcs. position (Band B).
16. Tune T1115, T1111, T1108 and L1127 for peak meter reading indication.
17. Set dial to 7.75 mcs position (Band B).
18. Tune C1167, C1154, C1145 and C1134 for peak meter reading indication.
19. Repeat steps 14 through 18 until no further adjustments are necessary, and lock both coils.

DATE 12-20-60

SH. 13 OF 15

COMPILED BY

TMC SPECIFICATION NO. S492

TITLE: PRODUCTION TESTING FOR MODEL CHG-1

JOB

APPROVED

20. Set Band Switch to "6" position.
 21. Set generator to 7.75 mcs.
 22. Set dial to 7.75 mcs. (Band C).
 23. Tune T1114, T1110, T1107 and T1117.
 24. Set generator to 15.75 mcs.
 25. Set dial to 15.75 mcs. (Band C).
 26. Tune C1166, C1153, C1144 and C1133.
 27. Repeat steps 21 through 26 until no further adjustments are necessary. Lock the coils.
 28. Set generator to 15.75 mcs.
 29. Set Band Switch to "20" position.
 30. Set dial to 15.75 mcs. (Band D).
 31. Tune T1113, T1109, T1106 and T1105.
 32. Set generator to 33.75 mcs.
 33. Set dial to 33.75 mcs. (Band D).
 34. Tune C1165, C1152, C1143 and C1132.
 35. Repeat steps 28 through 34 until no further adjustments are necessary. Lock the coil.
- J. Distortion Test
1. Set up equipment as shown in instrument layout.
 2. Take distortion measurements as shown in the chart on the following page. In each case, the distortion products must be at least 40 db below each tone.

DATE 12-20-60

SH. 14 OF 15

COMPILED BY

TMC SPECIFICATION NO. S 492

TITLE: PRODUCTION TESTING FOR MODEL CHG-1

JOB

APPROVED

J. continued.

F. MC	Band Sw.	Gen. Input	Output Tuning Dial Band	M.F.Tuning within white Field (MCS)	Output meter between
-------	----------	------------	-------------------------	-------------------------------------	----------------------

1.750	0	2	A	1.750	9-10
3.750	0	4	A	3.750	9-10
3.750	2	2	B	1.750	9-10
7.750	4	4	B	3.750	9-10
7.750	6	2	C	1.750	9-10
15.750	12	4	C	3.750	9-10
15.750	14	2	D	1.750	9-10
33.750	30	4	D	3.750	9-10

3. Disconnect all equipment and prepare the unit for shipment.

DATE 12-20-60

SH. 15 OF 15

COMPILED BY

TMC

SPECIFICATION NO. S492

TITLE: PRODUCTION TESTING FOR MODEL CHG

JOB

APPR VED

TEST REPORT SHEET

ACCEPT

A. General Inspection

B. Oven Time On-----Time Off-----

C. 1 Mc. Internal Standard
Out put Voltage-----V

D. Synthesizer Chassis
Step 2 -----VPto P
Step 30-----Volts

E. H.F. Injection Oscillator

F. Sync Circuit Indicator

G. Alignment of H.F. Amplifier

H. MID Frequency Channel Alignment

I. R.F. Channel

J. Distortion Test 45 DB below PEP

Tested by;-----

Accepted -----

Date:-----

Approved-----