

TMC SPECIFICATION

NO. S -493

REV:

A B C D

COMPILED: RBY

CHECKED: *LS*

APPD: *Alley 2/16/66*

SHEET 1

OF 8

TITLE:

CBE-1 TEST PROCEDURE

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TITLE: CBE-1 TEST PROCEDURE

I. TEST EQUIPMENT REQUIRED

1. TMC, CBE test jig, 250 KC at 1 volt \pm 10%.
2. A-C VTVM - Ballantine Mo 314 or equivalent.
3. Panalyzer Mo. SB12A (PTE), specially modified for 250KC input.
4. Audio Generator - Hewlett-Packard Mo. 200CD or equivalent.
5. Two-Tone Generator (PTE).
6. VTVM HP-410B, or equivalent.
7. 70 ohm non-inductive dummy load.

II. PRELIMINARY

1. Check CBE for mechanical defects.
2. Check CBE for wiring defects.
3. Connect output of TTG for PTE to terminals 2 and 4 (Channel 1) of E201 on CBE. (Unbalanced)
4. Connect output of Audio Generator to terminals 6 and 8 (Channel 2) of E201. (Unbalanced)
5. Connect 250 KC output from test jig to J201 on CBE. Check for 1V \pm 10% input. Record reading.
6. Connect J202 from CBE to a 70 ohm non-inductive dummy load.
7. Turn the LSB and USB switches of CBE to the CH-1 position.
8. Connect A-C VTVM across terminals 2 and 4 of E201. Turn TTG AUDIO TONE SELECTOR TO TONE 1 and adjust AUDIO OUTPUT control for .025 volts.
9. Turn the LSB and USB switches to the CH-2 position.

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10. Connect A-C VTVM across terminals 6 and 8 of E201. Turn Audio Generator to 1000 cycles and adjust gain Control for .03 volts.

NOTE: Do not change settings of TTG or Audio Generator Controls during test.

11. Turn LSB and USB switches to OFF position, CARRIER LEVEL control to full CCW position. This turns the switch off on the LEVEL control.

III. PROCEDURE

A. Alignment of lower sideband (LSB)

1. Connect Ballantine 314 AC VTVM to pin 1 of V208, with an AC isolation plug to lift the AC ground connection. Turn R-244 fully clockwise.
2. Adjust top and bottom slugs of T206 for a peak reading. Indicate completion of this step on test data sheet. Lock locking nuts on both top and bottom slugs.
3. Alternately adjust R-244 and C-233 for a minimum voltage reading. It shall not exceed 10MV. Record reading. Lock both locking nuts.

B. Alignment of upper sideband (USB)

1. Connect Ballantine 314 AC VTVM to pin 1 of V204. Turn R-213 fully clockwise.
2. Adjust top and bottom slugs of T203 for a peak reading. Indicate completion of this step on test data sheet. Lock locking nuts on both top and bottom slugs.
3. Alternately adjust R-213 and C-216 for a minimum voltage reading. It shall not exceed 10MV. Record reading. Lock both locking nuts.

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4. Disconnect AC VTVM.

C. Adjustment of meters and Comb. Net. Control

1. Turn LSB and USB switches to CH-1 position. Both gain controls should be turned to maximum.
2. Connect Ballantine 314 VTVM across 70 ohm load at J202.
3. Adjust R-237 by alternately turning ON and OFF one sideband and then the other until R-237 is adjusted for equal voltage readings of each sideband. Tighten R-237 locking nut.
4. Turn both channel switches to OFF.
5. Place unit flat on bench and place power switch to the OFF position. Check for mechanical zero of both meters.
6. Turn power switch ON and turn LSB channel to CH-1.
7. Adjust LSB gain control for a reading of 120 MV (.120V) on the Ballantine at J202.
8. Adjust R-247 to read 100 on LSB meter. Tighten R-247 locking nut. Turn LSB channel switch to OFF.
9. Turn USB channel switch to CH-1.
10. Adjust USB gain control for a reading of 120 MV (.120V) on the Ballantine meter at J202.
11. Adjust R-216 to read 100 on USB meter. Tighten R-216 locking nut. Turn USB channel switch to OFF.

D. Adjustment of Carrier Insert Control

1. Turn carrier level control fully CW to the ODB marking.
2. Adjust R-236 for a reading of 120 MV (.120V) on the Ballantine meter at J202. Tighten R-236 locking nut.
3. Disconnect 70 ohm load from J202 and connect CBE output to PTE.

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E. Carrier suppression and distortion check

1. Set the attenuators on the analyzer as follows. ALL INPUT ATTENUATOR switches off (up position) except the 20db switch which is left on 20db (down position) and the IF ATTENUATOR switch on 20db (down position).
2. Turn the CARRIER LEVEL control to the 0db position.
3. Adjust analyzer so that the carrier peak is on the 0db reference line.
4. Turn the CARRIER LEVEL control to the -20db position. The carrier peak should drop to the 20db line on the analyzer screen.
5. Switch off the 20db INPUT ATTENUATOR (up position). This adds 20db to the reference line on the screen. The carrier peak should return to the 0db line.
6. Turn CARRIER LEVEL control to the -40db position. The carrier peak should drop to the 20db line or lower.
7. Set the IF ATTENUATOR switch on 0db (up position). This adds 20db more to the reference line on the screen.
8. Turn CARRIER LEVEL control off. Any carrier peak remaining on the screen must be 55db down or lower.
9. Set the 20db INPUT ATTENUATOR and IF ATTENUATOR switches to the down position.
10. Set TTG for two tone output. Turn LSB switch to CH-1 and adjust LSB GAIN control for 100 on the LSB meter.
11. Adjust analyzer so that the peaks of the tones are set to the reference line.
12. Set IF ATTENUATOR switch to 0db (up position).

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13. All peaks on screen (except tones) shall be below the 25db line (45db down).
14. Turn LSB switch to the OFF position and the IF ATTENUATOR switch to the down position. Repeat steps 10 to 13 for USB.
15. Turn all front panel controls on CBE to the off position except power switch.

F. Bandwidth Check

1. Turn the LSB switch to the CH-2 position. Monitor Audio input at pins 6 and 8 of E-201 for constant amplitude during following tests.
2. Disconnect the PTE. Connect 70 ohm load to J202. Connect Ballantine 314 AC VTVM across the load and switch to .1 volt range.
3. Turn the LSB GAIN control for a reading of 10db on the AC VTVM.
4. Vary audio generator for a peak indication on VTVM from 250 to 7500cps.
5. Reset LSB GAIN control for 10db on the VTVM. This will be the reference point.
6. Turn audio generator slowly towards 250cps and note at what frequency the VTVM drops to 3db below the reference point. This should happen at 250 cps \pm 50 cps. Record this reading.
7. Turn audio generator slowly towards 7500cps and record at what frequency the VTVM drops to 3db below the reference point. This shall not happen before 7500cps. Record this reading.
8. Turn the LSB switch to the OFF position and the USB switch to the CH-2 position.
9. Turn the USB GAIN control for a reading of 10db on the AC VTVM. Repeat steps 4 to 8 using USB controls.

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TITLE: CBE-1 TEST DATA SHEET

THE TECHNICAL MATERIEL CORP.
MAMARONECK, NEW YORK
QUALITY ASSURANCE DEPT.

CBE-1 TEST DATA SHEET
TMC SPECIFICATION S-493

MFG. NO _____

SERIAL NO. _____

II. 5 250 KC INPUT

_____ VAC

III. A.2 LSB T206 TUNING

A.3 LSB CARRIER BALANCING

_____ MV

B.2 USB T203 TUNING

B.3 USB CARRIER BALANCING

_____ MV

C.3 ADJUSTMENT OF COMB. NET. CONTROL

C.8 LSB METER CALIBRATION

C.11 USB METER CALIBRATION

D.2 ADJUSTMENT OF CARRIER INSERT CONTROL

E.8 CARRIER SUPPRESSION

_____ DB

E.13 LSB PRODUCT DISTORTION

_____ DB

E.14 USB PRODUCT DISTORTION

_____ DB

F.6 LSB LOWER-3DB POINT
_____ CPSF.7 UPPER-3DB POINT
_____ CPS

F.9 USB _____ CPS

F.9 _____ CPS

DATE _____

TESTER _____

