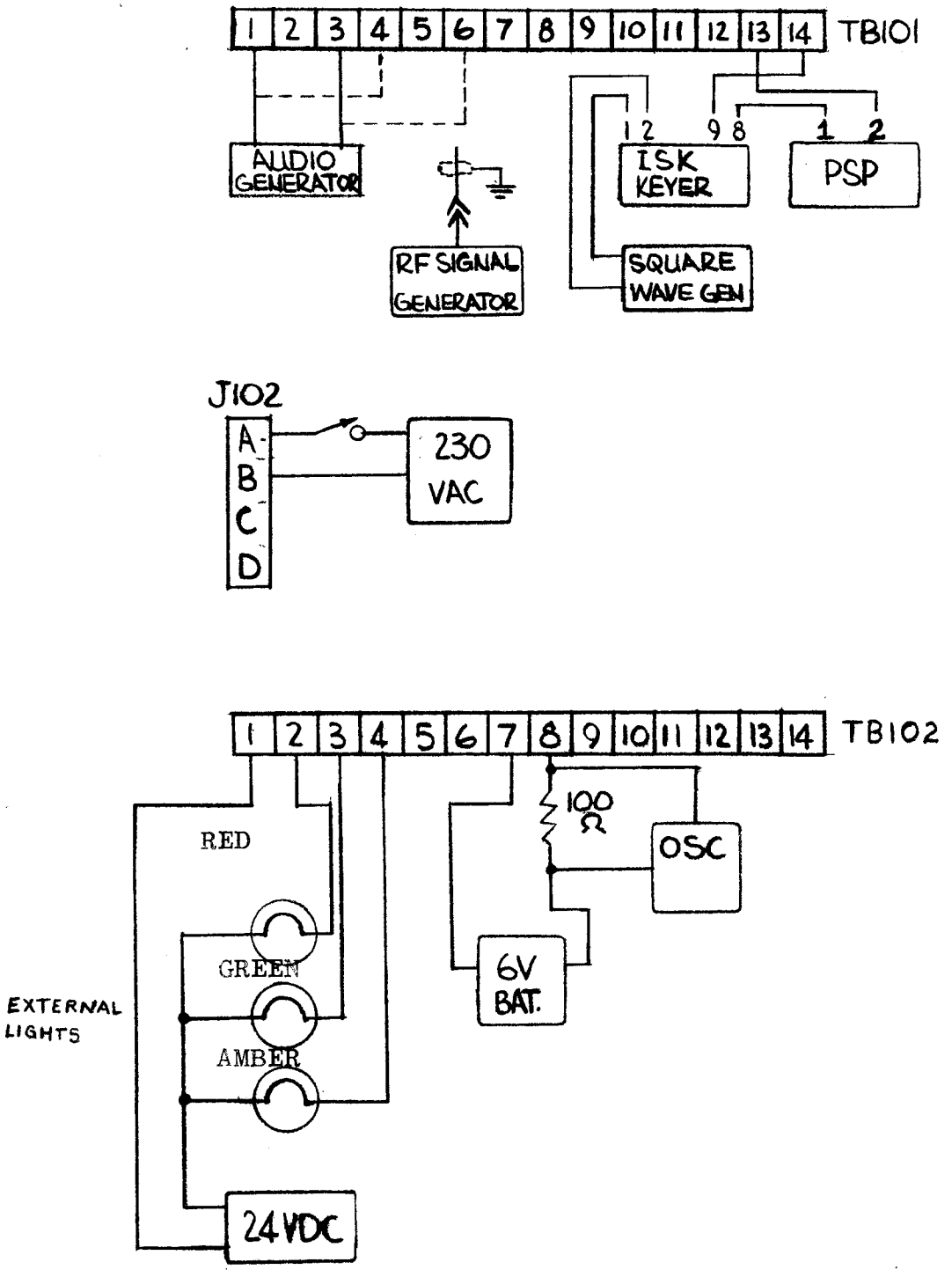
TMC SPECIFICATION				NO. S 1177
REV: A				
COMPILED: LB	CHECKED:	APPD: RB		SHEET 1 OF 10
TITLE: 3/16/67 jb/				

KMCU-2 TEST PROCEDURE

Figure 1


1 2 3 4 5 6 7 8 9 10 11 12 13 14
TB101
AUDIO GENERATOR
RF SIGNAL GENERATOR
12
98
ISK KEYER
SQUARE WAVE GEN
1 2
PSP
J102
A
B
C
D
230 VAC
1 2 3 4 5 6 7 8 9 10 11 12 13 14
TB102
100 Ω
OSC
6V BAT.
RED
GREEN
AMBER
EXTERNAL LIGHTS
24 VDC

Principles of Operation

General:

The KMCU-2 consists of two separater sections: A Keyer-control circuit and a monitor circuit. The Keyer is designed to sequentially control the various sections of a high power transmitter; the monitor section provides for remote observation of the transmitter operation, announcing failure of Radio frequency output, high voltage, or keying information (voltage, current or audio). The two sections are linked together during DC Keying to prevent false alarm since there is no audio under these conditions and intelligence is being transmitted.

Three status lights located on the front panel of the KMCU-2 receive their operating power from the internal power supply. The internal status lights work in sequence with the external lights but the control circuits are electrically isolated. The external lights require an external power source.

The alarm board has built in delays for the operation of the alarm relays:

Application of Plate Voltage.....No delay

Application of Traffic .....1/4 sec. delay

Failure of Traffic .....1 sec. to extinguish green

Application of R.F. .....No delay

Failure of R.F. .....1 - 1/2 sec. before extinguishing green
1 - 1/2 sec. before lighting red

* The above time delays are approx.

Function of Controls

1. Power - This switch applies the line voltage to the unit.
2. Keying Selector - This switch selects the voltage which will operate the Keyer.
3. Threshold - This control adjusts the KMCU-2 input to operate with the lines and installation in use. To adjust for a particular installation, set HOLD IN ADJUST Control to extreme counterclockwise (minimum hold in) and threshold clockwise until K2 operates with the Key closure.
4. Hold in Adjust - This control permits the operator to adjust the time K2 will stay actuated after K1 opens.
5. Local Remote - This switch permits the oper. to remove external Keying and open the alarm circuit.
6. Chan 1/Chan 2 - This switch monitor Channels 1 or 2 separately or the both together.
7. Test Key - Title self explanatory.

Test Equipment Required

1. Audio Generator
2. Square Wave Generator
3. R.F. signal generator
4. 28 Volt Power Supply
5. ISK Keyer

6. PSP Power Supply
7. 6 Volt Battery
8. Multimeter, Simpson
9. Osciloscope
10. 3 - 24 Volt Lamps
11. 1 - 100 ohm resistor.

Procedure

A. Mechanical Inspection

Refer to QA Inspection procedure.

B. Electrical Procedure

Caution....DO NOT INSERT OR REMOVE ANY CIRCUIT BOARDS while AC power is applied.

* NOTE - Check appropriate column on test report sheet.

1. Connect test equipment as shown on Page 2.

C.* Manual Keying Test (Hold in) Adj.)

1. Set KMCU-2 controls in the following manner, R-21-(Threshold) full CW, Keying selector 50V, R9 Mid range, Keying control Local. Turn on main power.
2. Connect Simpson 260 ohmeter to terminal 5 and 6 of TB102, depress test key S3, meter should read short. Release Key meter should read open.

3. Set R-21 Mid Range, depress test key meter should read short. Release key and meter will read short for approximately 3-4 seconds, at which time it will read open.

4. Repeat Step #3 for terminal 7 and 8 (RFC) terminals 9 and 10 (CMO.)

5. Remove ohmeter.

6. Place ohmeter across J102 C and D, depressing Test Key, meter open; Release Test Key meter open for approx. 3 sec. and then close.

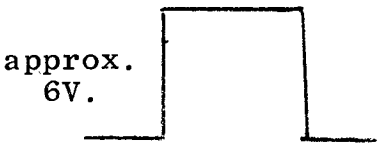
*D. Remote Keying Test

1. Place Keying control to remote.

2. Set Square Wave Generator for 50 volts and frequency for 21 Cps.

3. Connect 6 volt battery with a 100 ohm resistor in series across terminals 7 and 8 of TB102.

4. The following wave form should be observed across the 100 ohm resistor.



5. Repeat Steps 3 and 4 for terminals 9 and 10 of TB102.

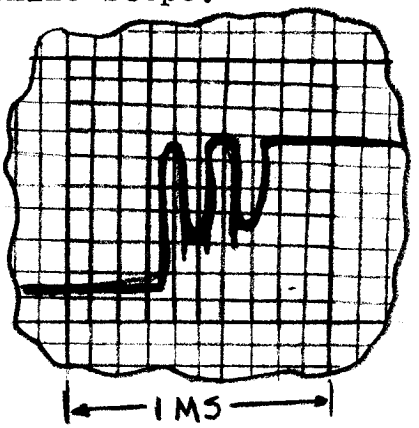
*6. Check the 100 V Keying.

*7. Check the 20 ma Keying position by adjusting the PSP to 20 ma.

*8. Check the 60 ma Keying position by adjusting the PSP to 60 ma.

E. K1 Contact Bounce

1. Repeat Steps 3 and 4 of Paragraph D.
2. Place test probe of scope across 100 ohm resistor in series with 6 volt battery.
3. Adjust time base of scope to one milisec/cm. It will be necessary to use signal being tested to synchronize scope.



*4. The contact bounce should be no more than one milisecond.

*F. Tone Keying

1. Remove leads on terminals 13 and 14 of TB101 and connect audio generator to 13 and 14 of TB101.
2. Adjust generator output for .1 volts, and frequency at 400 Cps.
3. Change Keying selector to tone bridge.
4. Connect Simpson 260 ohmeter across 9 and 10 of TB102,

meter should read short.

NOTE: (Threshold control may have to be slightly adjusted.)

*5. Tune generator from 400 Cps to 6000 Cps, meter must continue to read short.

6. Turn off generator, meter must read OPEN.

*7. Change Keying selector to tone and repeat Step F-2 thru 6.

G. Monitor Test

1. Connect equipment as follows:

R.F. Signal Generator .7 volts at 2 mc to J101,

Audio Generator .1 volts at 300 Cps to 1 and 3 of TB101, 220 VAC supply to A and B of J102.

*2. With the KMCU on and the equipment connected as above, the internal and external on Air indicator (Green) Lamp will light.

3. Tune Audio Generator from 300 Cps to 6000 Cps, Green light must remain on.

4. Repeat above test on Channel 2 input 4 and 6 of TB101.

5. Reduce audio output to 0 volts. Green light should go out and Red failure lamp will light.

6. Check continuity of Alarm circuit terminals 13 and 14 of TB102. Terminals 13 and 14 should only short upon removal of Audio or D.C. Keying.

7. Remove audio and place Key mode switch to a DC Keying position and depress Test Key to lock position.

8. Red Lamp should go out and Green lamp will light.
9. Removal of R.F. The Green lamp will go out and Red lamp will go on.
10. Place Test Key to neutral. The Red lamp will go out andthe Amber lamp will go on.
11. Remove 220 VAC. The Amber lamp will go out and the Red lamp will go on.
12. In all of the above tests the internal and external lights must operate together.

THIS COMPLETES TEST OF KMCU-2. REMOVE ALL TEST EQUIPMENT AND FILL OUT TEST DATA SHEET.

KMCU-2 TEST DATA SHEET

SERIAL NO. _____

MFG. NO. _____

A-1. QA Inspection Procedure _____

B. Manual Keying Test _____
CHG Keying _____
K2 Delay _____
RFC and CMO Keying _____
C and D of J102 Keying _____

C. Remote Keying
50 Volt Keying _____
100 Volt Keying _____
20 MA Keying _____
60 MA Keying _____

D. Contact Bounce (1 Milisec max.) _____

E. Tone Keying _____
Tone Bridge _____
Tone Response _____
Tone _____

F. Monitor Test
ON AIR LAMP _____
FAILURE LAMP _____
READY LAMP _____
Audio Response _____
Continuity of Alarm Circuit _____
(13 and 14) of TB102 _____

Tester _____

Date _____

REVISION SHEET	THE TECHNICAL MATERIEL CORP. MAMARONECK NEW YORK	S 1177 LIST NO.

DATE	REV.	SHEET	EMN #	DESCRIPTION	APP.
3/20/67	Ø			ORIGINAL RELEASE FOR PRODUCTION	
3/28/67	A		18060	CLARIFY ALARM CIRCUIT TEST	

TMC FORM MLR-1 2-65—AINS.