



GE Energy

Functional Testing Specification

Parts & Repair Services
Louisville, KY

LOU-GED-DS3820MSA-A

Test Procedure for a DS3820MSA Microsync Module

DOCUMENT REVISION STATUS: Determined by the last entry in the "REV" and "DATE" column

REV.	DESCRIPTION	SIGNATURE	REV. DATE
A	Initial release	F. Howard	05/30/2018
B			
C			
D			
E			

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PREPARED BY Frank Howard	REVIEWED BY	REVIEWED BY	QUALITY APPROVAL
DATE 05/30/18	DATE	DATE	DATE

1. SCOPE

1.1 This is a functional testing procedure for a DS3820MSA Microsync Module.

2. STANDARDS OF QUALITY

2.1 Refer to the current revision of the IPC-A-610 standard for workmanship standards.

3. APPLICABLE DOCUMENTS

3.1 The following document(s) shall form part of this specification to the extent specified herein.

Unless otherwise indicated, the latest issue shall apply.

3.1.1 See board's electronic folder for more information.

4. ENGINEERING REQUIREMENTS

4.1 Equipment Cleaning

4.1.1 Equipment should be clean and free of debris prior to applying power unless performing an initial check. Refer to site specific SRA's for cleaning guidelines.

4.2 Equipment Inspection

4.2.1 Equipment should be visually inspected for any defects prior to applying power. This inspection should include the following as a minimum:

4.2.1.1 Wires - broken, cracked, or loosely connected

4.2.1.2 Terminal strips / connectors - broken or cracked

4.2.1.3 Components - visually damaged

4.2.1.4 Capacitors - bloated or leaking

4.2.1.5 Solder joints - damaged or cold

4.2.1.6 Circuit board - burned or de-laminated

4.2.1.7 Printed wire runs / Traces - burned or damaged

5. EQUIPMENT REQUIRED

5.1 The following equipment is required to perform the process requirements. Equipment may be substituted provided that all accuracy's and test ratios are equivalent or better.

Qty	Reference #	Description
2		Fluke 87 DMM (or Equivalent)
1		Digital Oscilloscope
2		DC Power Supplies (0-100VDC/28VDC)
1		Function Generator
1		120VAC Variac

SCOPE

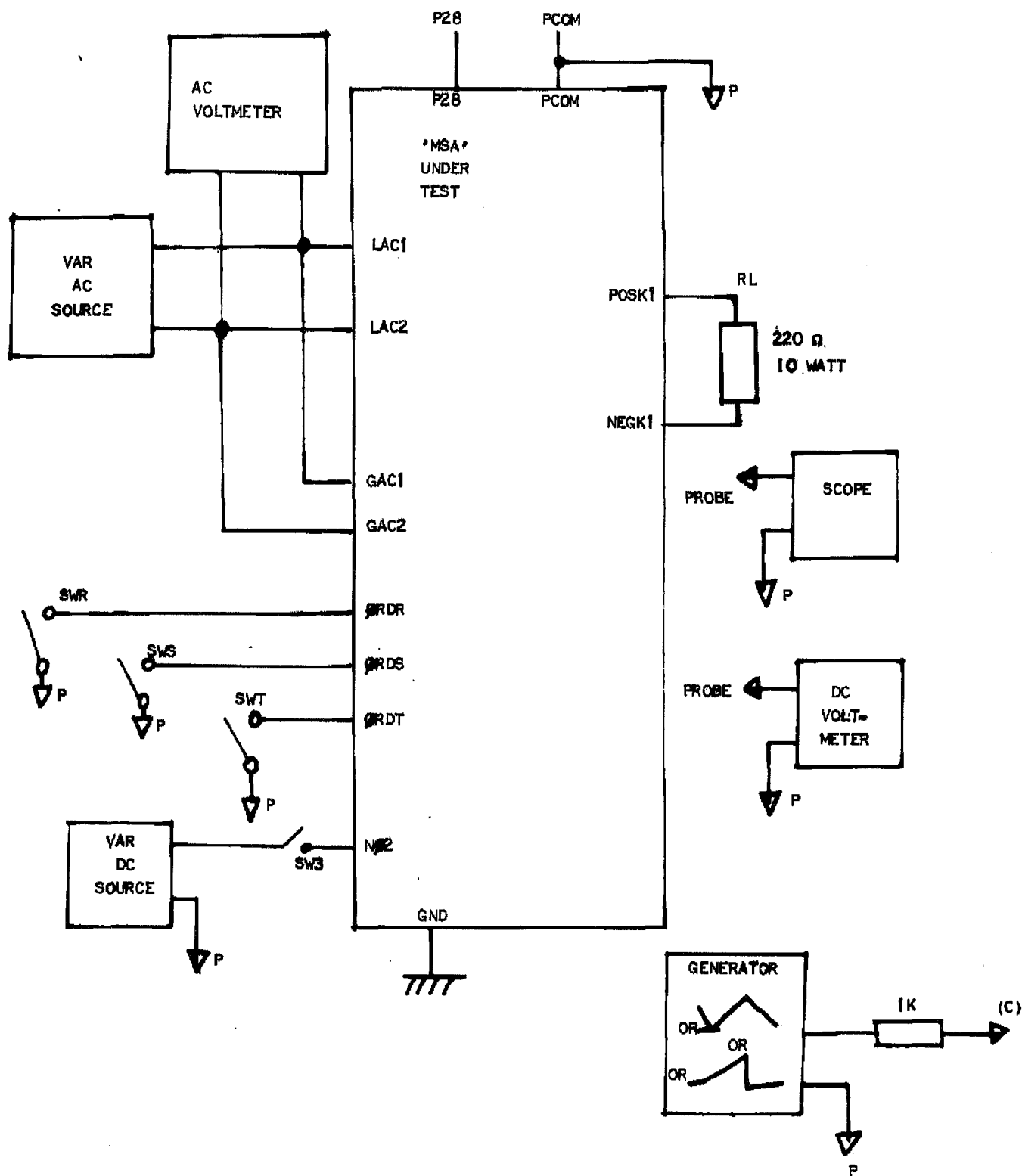
THIS DOCUMENT ESTABLISHES THE PERFORMANCE REQUIREMENT FOR DS3820MSA.

TEST EQUIPMENT

- TRIANGLE WAVE OR SAWTOOTH GEN.
- VARIABLE AC SOURCE 0-120 VAC. @ 25 MA.
- OSCILLOSCOPE.
- P28 POWER SUPPLY $\pm 1\%$ (0.75 AMP.)
- AC VOLTMETER. (3 1/2 PLACE OR BETTER.)
- DC VOLTMETER. (3 1/2 PLACE OR BETTER.)
- VAR. DC POWER SUPPLY 0-50V.
REGULATOR FOR AC, SORENSON MODEL 1001 OR BETTER.

REV. 1	REV. 4	REV. 7	PRINTED TO DL 2719	ENGINEER DER	GENERAL ELECTRIC SALEM, VA. U.S.A.	MICROSYNCH ISOLATION MODULE
REV. 2	REV. 5	ISSUED 4/8/82				DS3820MSA
REV. 3	REV. 6	MADE BY DE RHODES				CONT. ON SH. 9AB SH. NO. 9AA

CARS

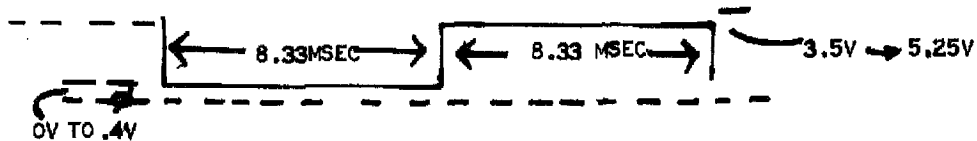


REV. 1	REV. 4	REV. 7	PRINTS TO 2325 DL 119	ENGINEER DSC	GENERAL ELECTRIC SALEM, VA. U.S.A.	MICROSYNCH ISOLATION MODULE
REV. 2	REV. 5	ISSUED 4/8/82				DS3620MSA
REV. 3	REV. 6	MADE BY DE RHODES				CONT. ON SH. 9AC SH. NO. 9AB

TEST

1. VISUAL INSPECT. WIRE CHECK, CHECK GND WIRE. (HAS STAR WASHER TO CASE.)
ADD 10K PULL RESISTOR TO 5 VOLTS; WHEN MEASURED WITH SCOPE.
2. APPLY POWER. VERIFY TP7 = 4.7V TO 5.3 VOLTS.
3. SET AC TO 0 VOLTS, CLOSE AC INPUT CB, GRADUALLY INCREASE AC TO 10 TO 20V.
4. SET AC TO 120 VAC.

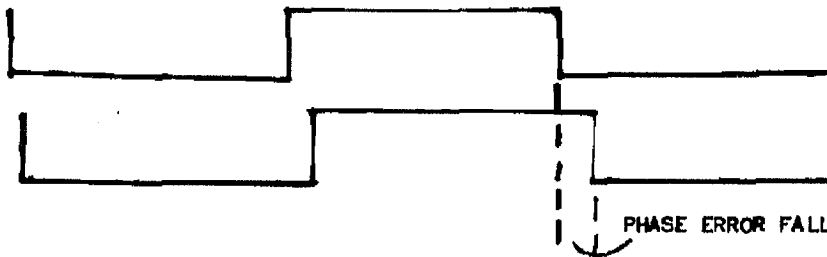
(A) VERIFY GR, GS, GT, LR, LS, LT, LC, TP1, TP2 HAS THE WAVE FORM BELOW:



(B) VERIFY THE RISING AND FALLING EDGES ARE CLEAN. NO EXTRA PULSES.

(C) CHAN. A TO LR. TRIG CHAN. A.
CHAN. B TO GR.

PHASE ERROR 50 μSEC



5. FOR STEPS 6 AND 7 AC SHOULD BE KEPT AT 120.00X VOLTS. (AS CLOSE AS POSSIBLE.)
AND D.C. VOLTMETER REFERENCED TO ACOM.
6. (A) PROBE JR09. ADJUST R106 CW TO CCW. JR09 SHOULD COVER RANGE <7.5V TO >8.5V.
SET TO 8.000V. (INPUT AC SET TO 120.00XV.)
- (B) TP4, JS09, JT09 = 8.000V
"VOLTAGE SETTINGS SET AS CLOSE TO ABOVE AS POSSIBLE."
7. PROBE JR07. ADJUST R105 THROUGH ITS RANGE. JR07 SHOULD COVER RANGE <7.5V TO >8.5V.
SET TO 8.000V. VERIFY TP3, JS07, JT07 = 8.000V. LOWER AC VOLTS TO 105V. TP3, TP4
SHOULD BE 6.93 - 7.07V.
8. VERIFY DROP ACROSS RL = 0V ± .2 V (POS1 TO NCGK1)
TEST PER TABLE 1. 0 = OPEN 1 = CLOSE

REV. 1 849388FL 2-12-83 ECR	REV. 4	REV. 7	PRINTS TO 2539	ENGINEER VER	GENERAL ELECTRIC	MICROSYNCH ISOLATION MODULE
REV. 2 284938FL CCN 12-13-83	REV. 5	ISSUED	4/8/82			DS3820MSA
REV. 3	REV. 6	MADE BY	DE RHODES		SALEM, VA. U.S.A.	CONT. ON SH. 9AD SH. NO. 9AC

SWR	SWS	SWT	DROP RL
0	0	0	0V
0	0	1	0V
0	1	0	0V
0	1	1	25V
1	0	0	0V
1	0	1	25V
1	1	0	25V
1	1	1	25V

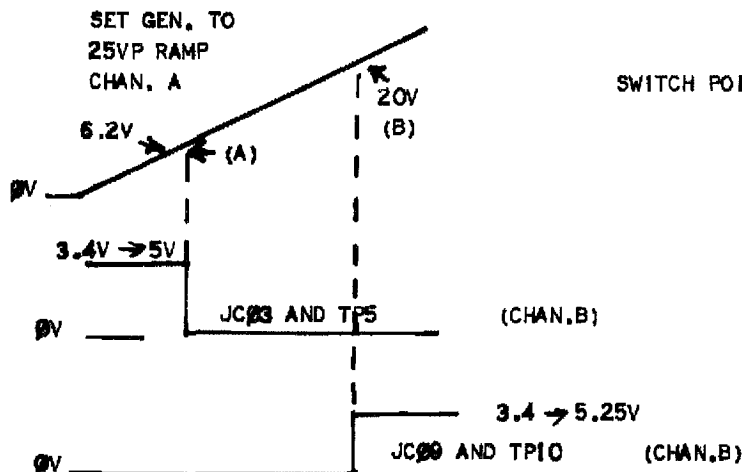
0V = $0 \pm .2V$

25V = 23.5V 27.5V

TABLE 1

OPEN SWR, SWS, SWT

9. ATTACH GENERATOR PROBE (C) TO NEGK1, REP. RATE OF 1KHZ. SCOPE CHAN. (A) TO NEGK1 - TRIG. CHAN. (A).



SWITCH POINTS A AND B CAN BE $\pm 5\%$

10. (A) SET VAR DC SOURCE TO ZERO VOLTS. CLOSE SW 3. VERIFY JC27 AND TP6 = 0.4V MAX.
(B) INCREASE VAR DC INPUT. OUTPUT JC27 AND TP6 SHOULD SWITCH TO > 3.5 VOLTS WHEN INPUT GETS TO RANGE 21.25 VDC TO 24.22 VDC.
(C) INCREASE INPUT TO 100V DC. MONITOR TP8 = 18.9 TO 21.3V.
(D) DECREASE VARIABLE DC INPUT. JC27 AND TP6 SHOULD SWITCH TO 0.4V MAX. WHEN 19.00V TO 22.4 VDC.
(E) REVERSE POLARITY OF VAR. DC SUPPLY. TP8 = $0V \pm .2V$.
11. WITH OHMMETER VERIFY RUN AUX1 TO AUX2.
12. SEAL R105 AND R106.

END OF TEST.

REV. 1 2-12-83 2-12-83	REV. 4	REV. 7	PRINTS TO 2520 JL113	ENGINEER NER	GENERAL ELECTRIC SALEM, VA. U.S.A.	MICROSYNCH ISOLATION MODULE
REV. 2	REV. 5	ISSUED 4/8/82				D53420MSA
REV. 3	REV. 6	MADE BY DE RHODES				CONT. ON SH. FL. SH. NO. 9AD