g GE Energy ***Parts & Repair Services*** ***Louisville, KY***	**Functional Testing Specification** **LOU–GED-IC3600TFCU**

Test Procedure for a IC3600TFCU1 Firing Card

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

REV.	DESCRIPTION	SIGNATURE	REV. DATE
A	Initial release	Dan Laemmle	08/23/02
B	Revised Note on Scope isolation and other minor wording	Dan Laemmle	11/21/2007
C	Changed voltage level on Step 6.1.1 from 10V to 12V	G. Chandler	2/5/2010

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DATE	**DATE**	**DATE**	**DATE**
8/23/2002	2/5/2010		11/26/2007

Functional test procedure for a IC3600 TFCU1 Firing Card

1. SCOPE

1.1 This is a functional testing procedure for an IC3600TFCU1 Firing Card

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 Factory Test Specification**
- **3.1.2 Paul Kelley's Test drawings in shop documentation folder**

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 the local documented procedures 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 or cracked
  - **4.2.1.2** Terminal strips / connectors broken or cracked
  - **4.2.1.3** Loose wires
  - **4.2.1.4** Components visually damaged
  - **4.2.1.5** Capacitors leaking
  - **4.2.1.6** Solder joints damaged or cold
  - **4.2.1.7** Circuit board burned or de-laminated
  - **4.2.1.8** Printed wire runs 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
1		Fluke 85 DMM (or Equivalent)
1		Dual trace O-scope Tektronix 2215 (or Equiv)
1	H033788	Test Fixture
1		Function Generator Tenma 72-5015 (or Equiv)

6. TESTING PROCESS

6.1 Setup

6.1.1 Remove TFCU Test Card from fixture and install UUT in outer TFCU socket (with guides). Leave TPSA and TRLH test cards in fixture as they provide the +16v and-16v and the –12vDC and +12vDC supplies for the fixture. Attach Function Generator to BNC jack on back of fixture. Set generator for 10khz square wave at 12v output level.

6.1.2 Set fixture switches as follows: SW1- open, SW2- off, SW3- open, SW4- RH1 pot, SW5- open, SW6- open, SW7- open, SW8- closed, Variac Transformer- 100, TFCU Pin 5 pot- fully CCW. Other controls don't matter.

✍ **Note: TEST FIXTURE AND FUNCTION GENERATOR SHOULD BE POWERED FROM THE AC LINE. THE SCOPE MUST BE ISOLATED OR THE FIXTUE FUSE WILL BLOW. THE SCOPE COMMON WILL BE CONNECTED TO PIN 29 (-12V) FOR PART OF THE TEST. THE –12V SUPPLY WILL BE SHORTED OUT (NO DAMAGE – IT'S PROTECTED) IF SCOPE AND GENERATOR HAVE A COMMON AC LINE GROUND.**

6.2 Testing Procedure

6.2.1 Power test fixture, scope and generator. Check with DMM for –12v (closely regulated by TPSA card) and + 12v (may be 11.5 to 12.5v due to zener on TRLH) at marked jacks on fixture. Use Pin 1 for Common.

6.2.2 Set scope to 1ms and channel 1 to 5v/div with X1 probe to TFCU Pin 17 jack (white jack) on fixture. Use pin 1 for common. See 2 pulses (approx 12v) 8 ms apart. Connect channel 2 probe to pin 33 (green jack by card). Set channel 2 for 2v/div and X10 probe. The sine wave is distorted by the fixture but the leading edge of the pulses should fall midway on the slope of the rise and fall of the sine wave. See figure 1.

6.2.3 Move the scope ground to pin 29. Leave channel 1 on pin 17 and move channel 2 to pin 37 then to pin 41. See figure 2. The pulses on pin 41 are in line with one of the Pin 17 pulses on the screen and the pin 37 pulses are in line with the other pulse and may not be visible without slightly adjusting the scope horiz. The pulses at pins 37 and 41 could be reversed on the waveform depending on phasing and scope setting. The pulses at 37 and 41 should spread to the left as the TFCU Pin 5 pot on the fixture is rotated clockwise. With

the pot fully CCW the pulses will be less than 1 ms wide after the adjustment in the next part of this test. (If no pulses are seen at pins 37 and 41 check R10 for open and Q22, 23, 24.)

6.2.4 Move channel 2 probe to TP6 on card and switch to X1. See figure 3. Adjust R99 for 7v firing amplitude and R97 for 7.5 ms time. The controls somewhat interact and it may be necessary to alternate between them. The TFCU test fixture card should have been adjusted to these specs and can be used as a rough guide to adjustment. Some very old versions of the card do not have pots but have fixed resistors from the factory. Seal trim pots on completion.

6.3 ***TEST COMPLETE ***

7. NOTES

8. Oscilloscope Verification Examples:

Fig. 1

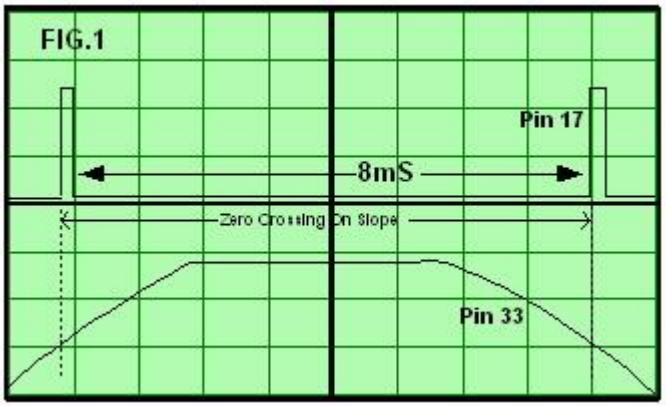

Fig. 2

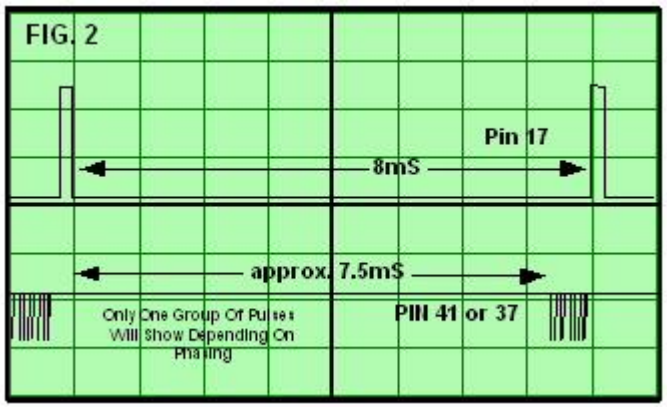

FIG.3