

Test Report of Microstim DB

Date: 11-May-04

Engineer:

Approved by:

Objective:

The functions of sample provided by customer and sample make by HTI are compared

Apparatus:

9V Power Supply

10k ohm Output Loading

Agilent CRO

Muti-Meter

HTI sample (All component are sourcing from local market except Potentiometer, Housing, External Connector and Buzzer. In addition, program in MCU is compiled from source code provided by Customer)

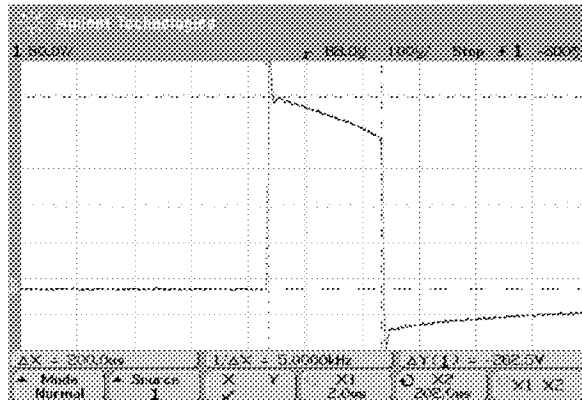
Test method:

9V power supply is applied and 10kohm resister acts as a loading. Each functional switch (T.O.F, D.B.S, P.T.C, 1Hz) is pressed once. The amplitude, Pulse width, and output current of maximum and minimum output by adjusting the Variable Resister for both HTI and Customer samples are recorded. In addition, frequencies (1Hz, 2Hz, and 50Hz) of the output for both samples are measured and Pulse Pattern for each mode is recorded.

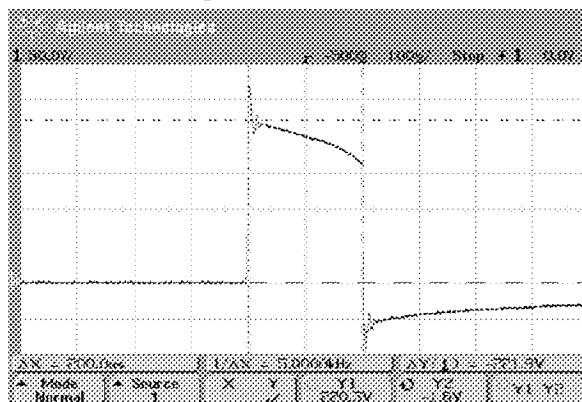
A. T.O.F mode

Maximum Output

HTI sample



Customer's sample



Result:

Amplitude:

HTI sample = 262volt Customer sample = 222volt

Pulse width:

HTI sample = 200us Customer sample = 200us

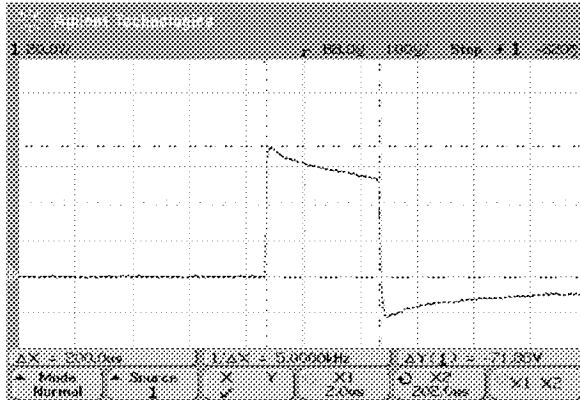
Output Current:

HTI sample = 8-10mA Customer sample = 8-10mA

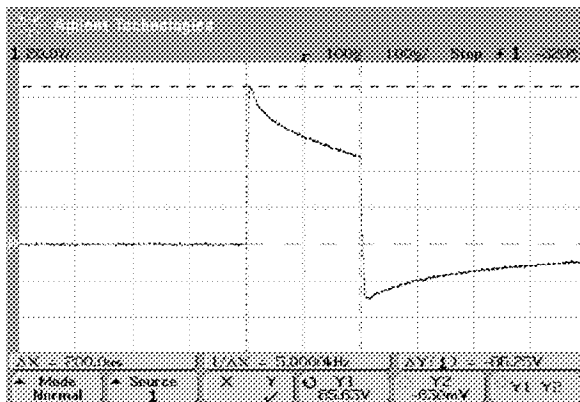
T.O.F mode

Minimum Output

HTI sample



Customer sample



Result:

Amplitude:

HTI sample = 72volt Customer sample = 86volt

Pulse width:

HTI sample = 200us Customer sample = 200us

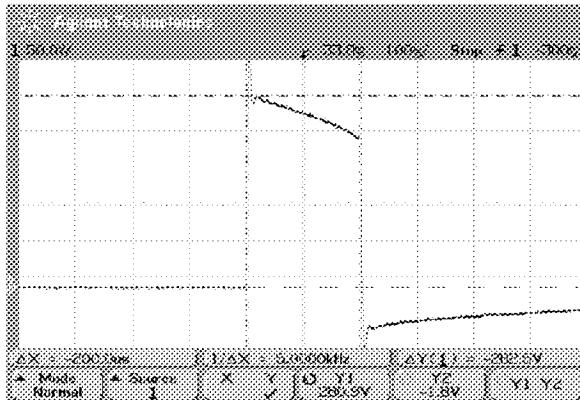
Output Current:

HTI sample = 7-9mA Customer sample = 8-10mA

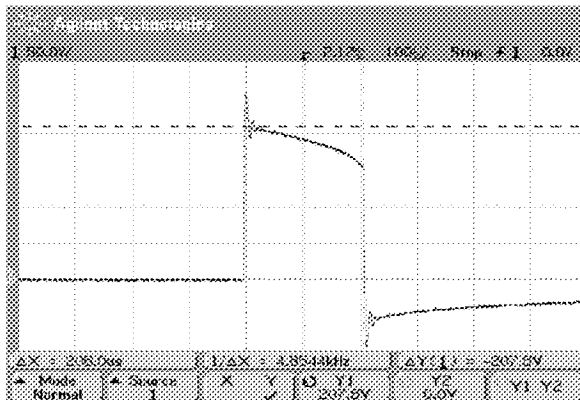
B. D.B.S mode

Maximum Output

HTI sample



Customer sample



Result:

Amplitude:

HTI sample = 262volt Customer sample = 207volt

Pulse width:

HTI sample = 200us Customer sample = 206us

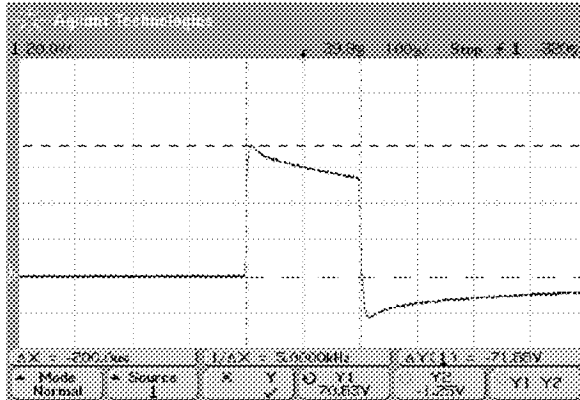
Output Current:

HTI sample = 8-10mA Customer sample = 8-10mA

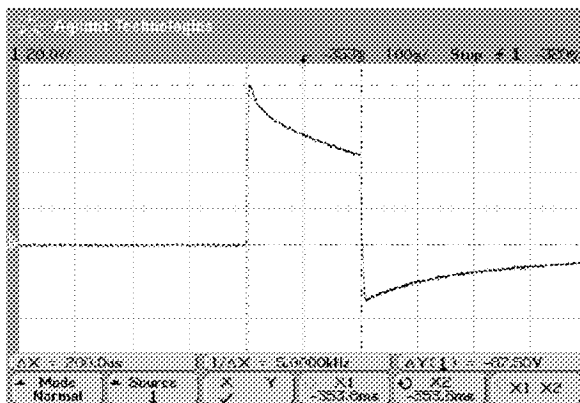
D.B.S mode

Minimum Output

HTI sample



Customer sample



Result:

Amplitude:

HTI sample = 71volt

Customer sample = 87volt

Pulse width:

HTI sample = 200us

Customer sample = 200us

Output Current:

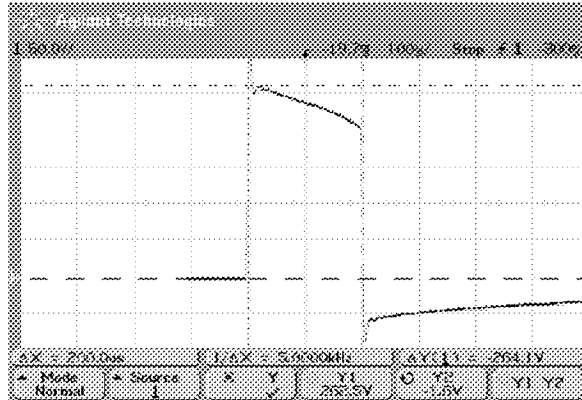
HTI sample = 7-9mA

Customer sample = 8-10mA

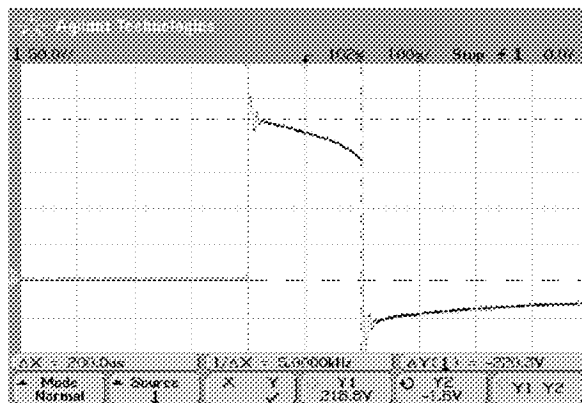
C.P.T.C mode

Maximum Output

HTI sample



Customer sample



Result:

Amplitude:

HTI sample = 264volt Customer sample = 220volt

Pulse width:

HTI sample = 200us Customer sample = 200us

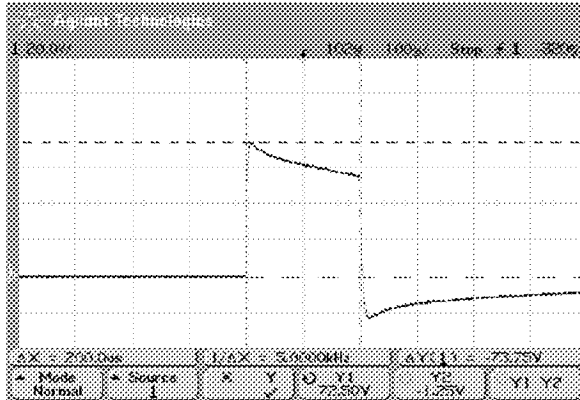
Output Current:

HTI sample = 28-30mA Customer sample = 28-30mA

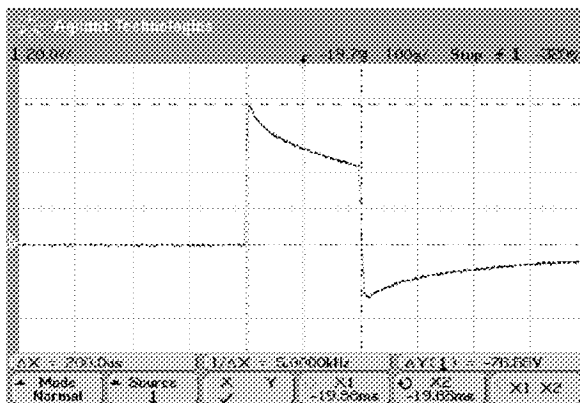
P.T.C mode

Minimum mode

HTI sample



Customer sample



Result:

Amplitude:

HTI sample = 74volt Customer sample = 77volt

Pulse width:

HTI sample = 200us Customer sample = 200us

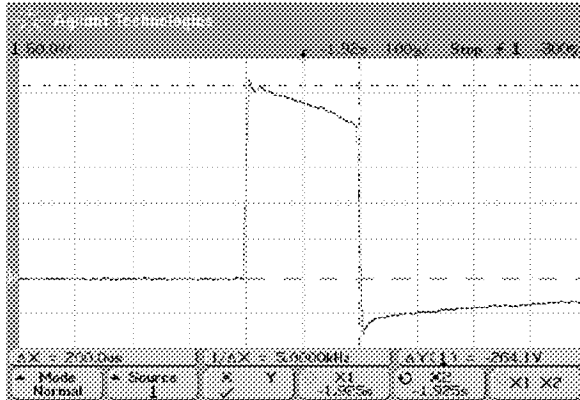
Output Current:

HTI sample = 17-19mA Customer sample = 13-15mA

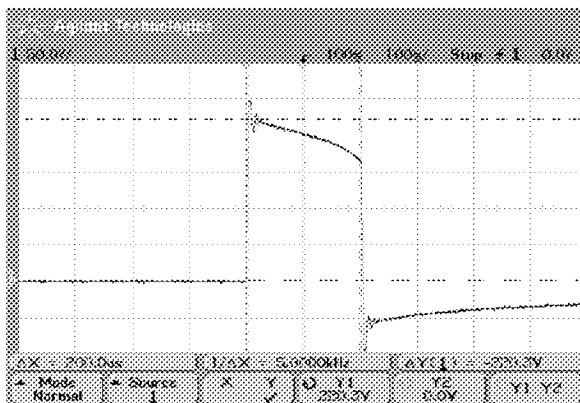
D. 1Hz mode

Maximum output

HTI sample



Customer sample



Result:

Amplitude:

HTI sample = 264volt Customer sample = 220volt

Pulse width:

HTI sample = 200us Customer sample = 200us

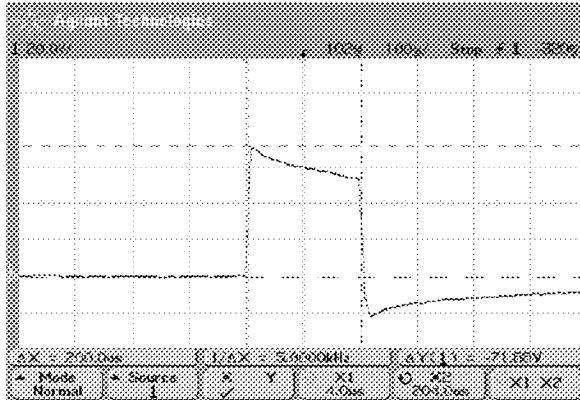
Output Current:

HTI sample = 8-10mA Customer sample = 8-10mA

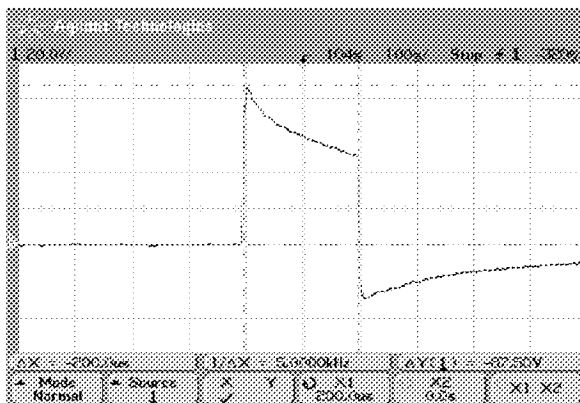
1 Hz mode

Minimum mode

HTI sample



Customer sample



Result:

Amplitude:

HTI sample = 72volt

Customer sample = 88volt

Pulse width:

HTI sample = 200us

Customer sample = 200us

Output Current:

HTI sample = 7-9mA

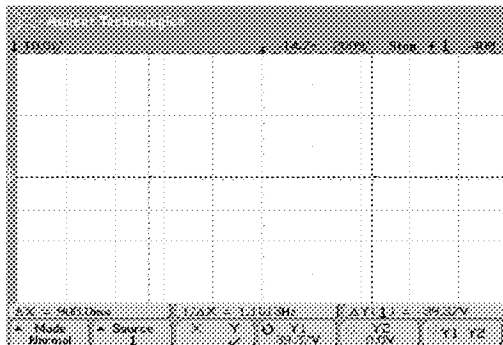
Customer sample = 8-10mA

Frequency measurement

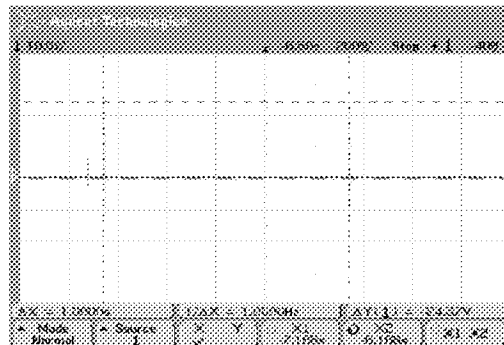
A. 1 Hz

Result:

HTI sample = 1Hz



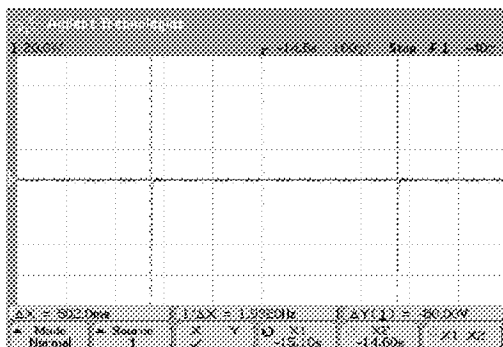
Customer sample = 1Hz



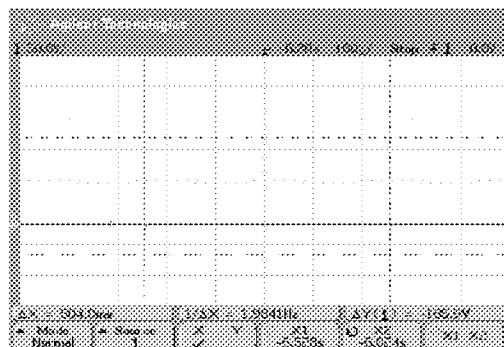
B. 2 Hz

Result:

HTI sample = 2Hz



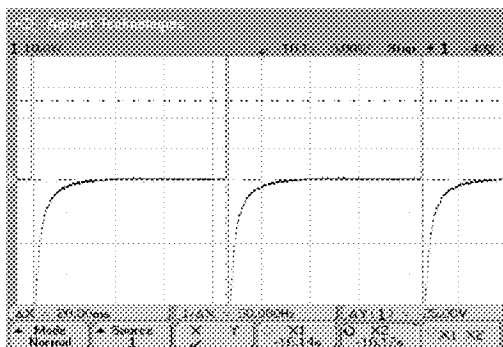
Customer sample = 2Hz



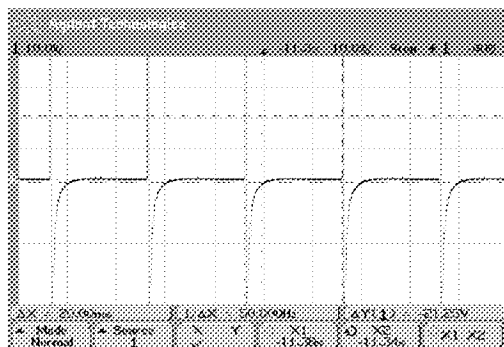
C. 50 Hz

Result:

HTI sample = 50Hz



Customer sample = 50Hz

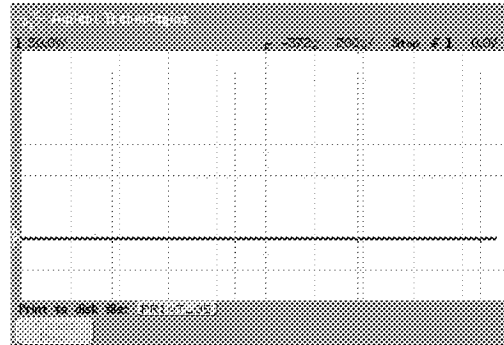
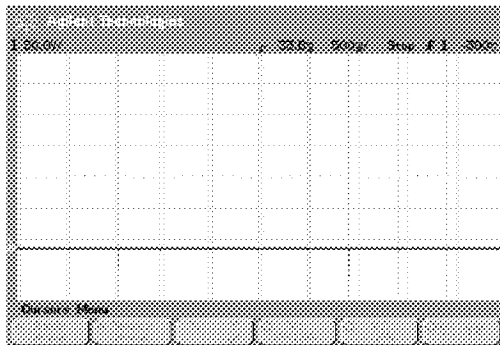


Pulse Pattern

A. T.O.F

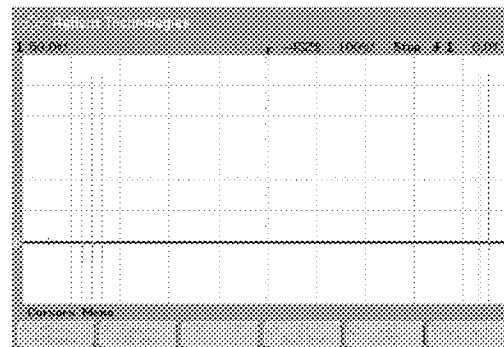
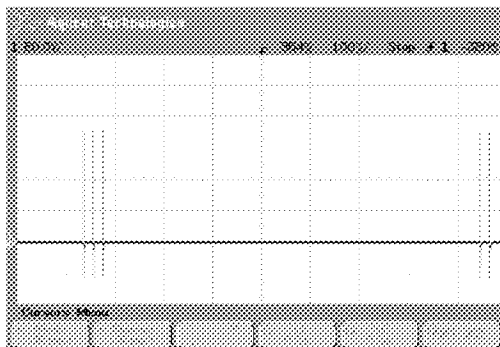
HTI sample generates more than 4 pulses

Customer sample generates 4 pulses



B. D.B.S

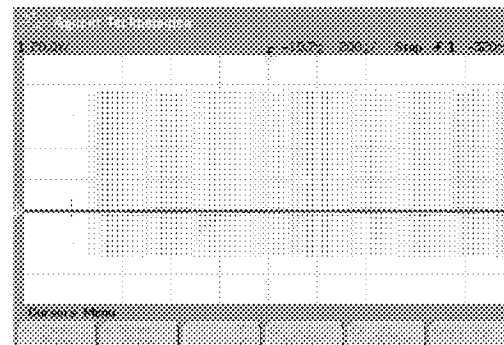
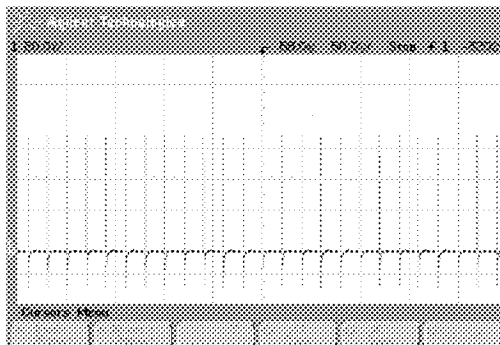
HTI sample: 3 pulses (50Hz), 0.75s, 2 pulses (50Hz) Customer sample: 3 pulses (50Hz), 0.75s, 2 pulses (50Hz)



C. P.T.C

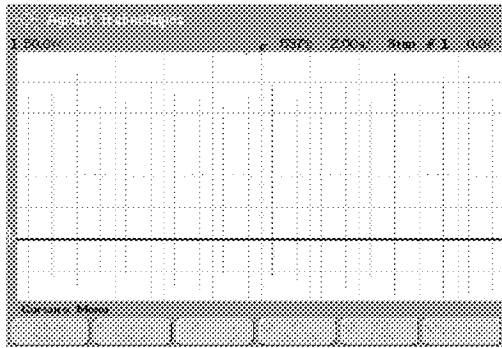
HTI sample: 50Hz for 5s, 3s, 1Hz continuous

Customer sample: 50Hz for 5s, 3s, 1Hz continuous

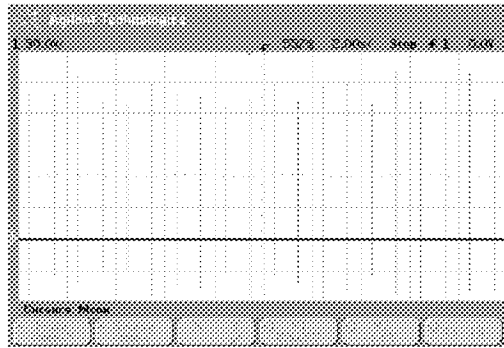


D. 1Hz

HTI sample 1Hz continuous pulses



Customer sample 1Hz continuous pulses



Conclusion:

The functions of both HTI sample and Customer sample are the same, except T.O.F mode in which, continuous pulses with 2 Hz are generated for HTI sample, but only 4 pulses are generated for Customer sample. In addition, the amplitude of the output is slightly different.

END