

Assignment 2

Testing

Simulinkers

Group 8

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SFWR ENG 3K04

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Testing

Test 1:

Purpose/Test Justification

This test was done to ensure that in the event that the heart is beating at the correct time, the pacemaker system does nothing.

System Input

Heart Rate: 62 BPM

Expected Output

The expected output of the pacemaker system is to do nothing because there's always a detected pulse within 1 second. Therefore, the pacemaker doesn't need to pulse.

Actual Output

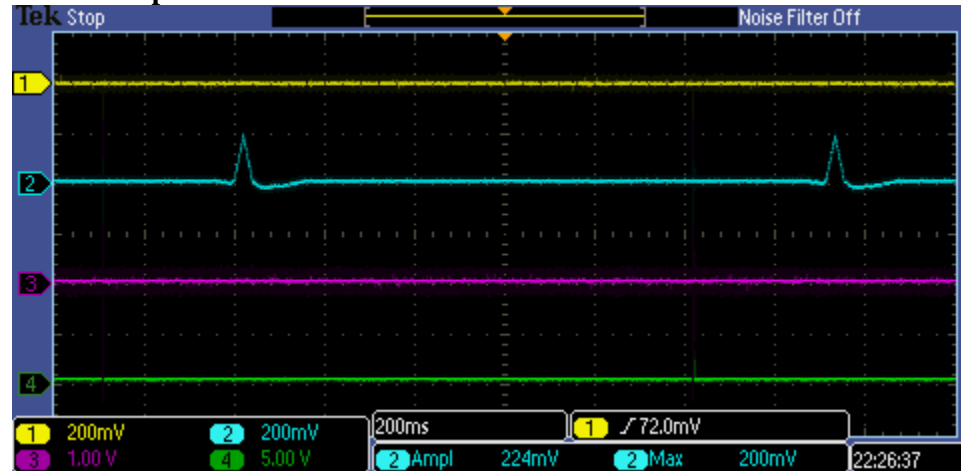


Figure 1: When the heart beat is normal (wave 2), the pacemaker does nothing

Result (Pass/Fail)

Pass

Test 2:

Purpose/Test Justification

This test was done to ensure that when the heart does not naturally beat after a previous beat, the pacemaker system acts to force the heart to beat.

System Input

Heart Rate: 46 BPM

Expected Output

The expected output of the pacemaker is to wait for one second and then discharges a pulse when the heart does not naturally beat.

Actual Output

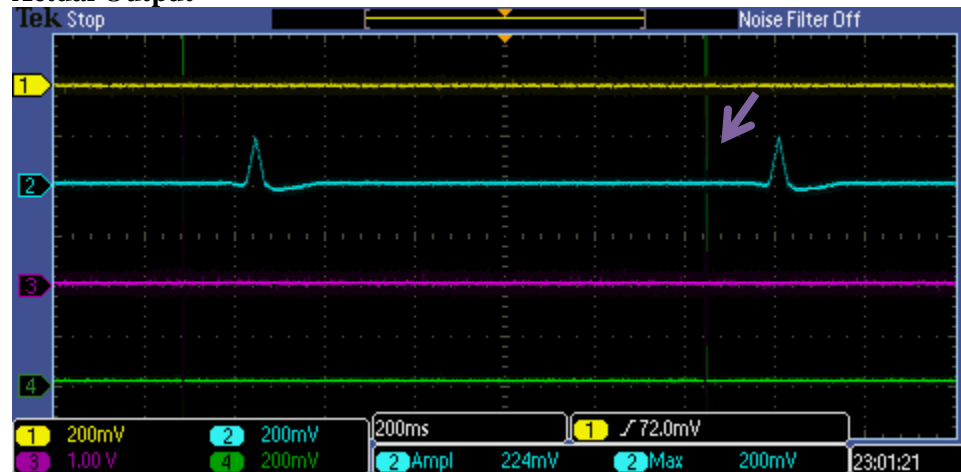


Figure 2: When the heart does not beat for one second (wave 2), the pacemaker pulses

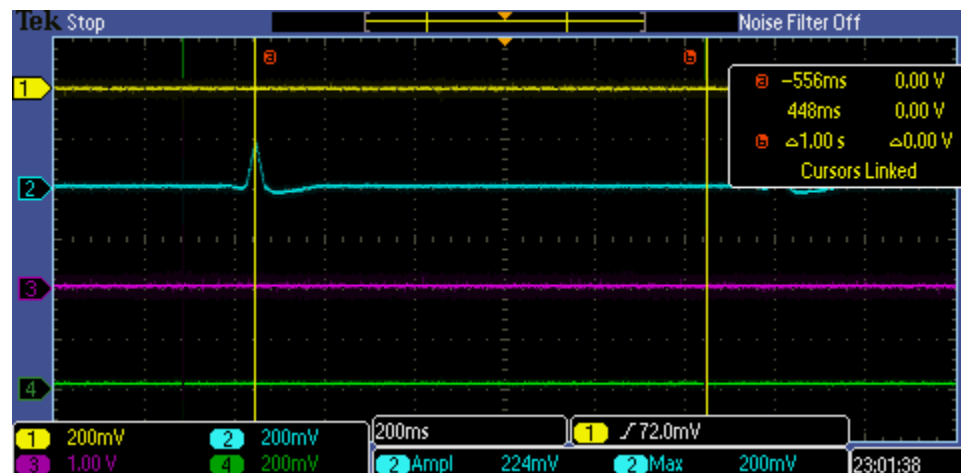


Figure 3: Exhibits one second wait period before pulsing

NOTE: Due to the voltage level of the pacemaker is small relative to the heart beat; the pulse is not as large

Result (Pass/Fail)

Pass

Test 3:

Purpose/Test Justification

This test was done to ensure that when the heart does not naturally beat after a previous beat, the pacemaker system acts to force the heart to beat. This test was done at a lower BPM than the previous test to ensure the pacemaker system still functions correctly.

System Input

Heart Rate: 30 BPM

Expected Output

The expected output of the pacemaker system is to discharge when it senses that the heart does not beat for one second.

Actual Output

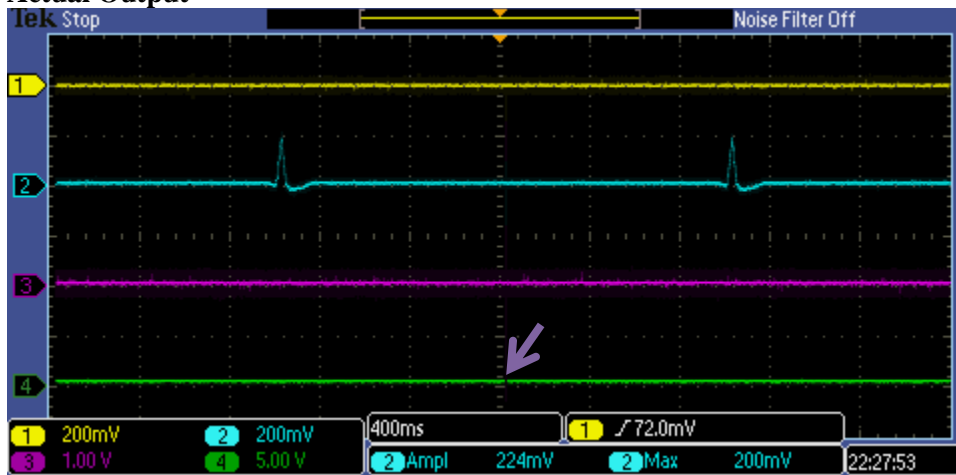


Figure 4: When the heart beat does not beat at the cursor (wave 2), the pacemaker pulses

NOTE: Due to the voltage level of the pacemaker is small relative to the heart beat; the pulse is not as large

Result (Pass/Fail)

Pass

Test 4:

Purpose/Test Justification

This test was done to ensure that in the event that the heart does not beat at all, the pacemaker system acts.

System Input

Heart Rate: 0 BPM

Expected Output

The expected output of the pacemaker system is to pulse on all occurrences where the heart does not beat (one second period).

Actual Output

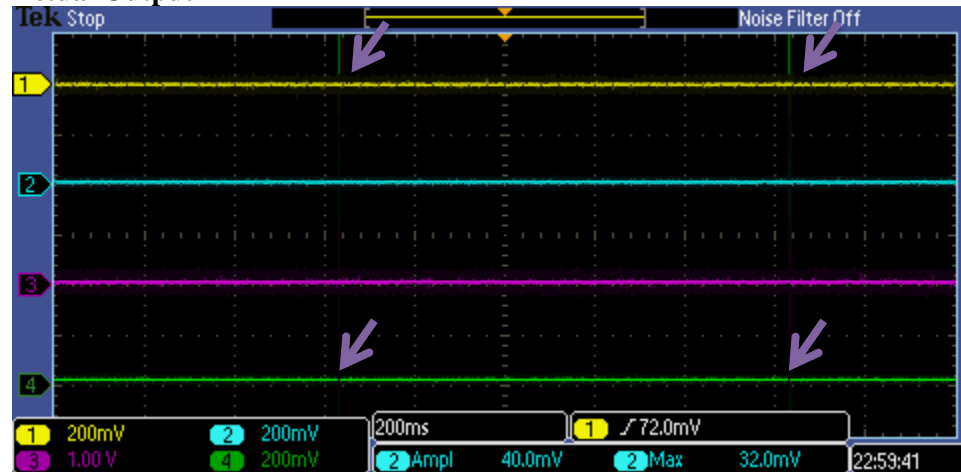


Figure 5: When the heart beat does not beat on both occurrences, the pacemaker pulses.

NOTE: Due to the voltage level of the pacemaker being large relative to the heart voltage, the pulses do not appear large.

Result (Pass/Fail)

Pass