WK6500 Series CV Test Report

WK6500 Performance Test with modified DC Bias Software

Introduction

The 6500 DC Bias function has the ability to detect when the DC voltage across a capacitive DUT has settled. This is required when testing high value capacitors. This function increases the overall measurement time. When testing low value capacitors, the settling time is very quick.

This document gives the measurement test results for 10pF and 200fF capacitors after the settling time function had been disabled.

Test Set Up

The test results were acquired using a Visual Basic (VB) Program operating over LAN.

The results were taken from one 6500 unit.

Each sweep contained 13 measurements made at the following DC Bias voltage levels:
–5, -2, -1, -0.5, -0.2, -0.1, 0, 0.1 ,0.2 ,0.5 ,1 ,2 ,5 volts DC

The AC settings were 1MHz, 1Vac. The speed was varied between tests (max,fast,medium)

The bias was enable once at the beginning of the tests and left permanently enabled.

At the end of each sweep the bias was set back to the start value (in this case –5V)

The timings given are the time from just before the first GPIB command to the time just after the bias had been reset back to –5V at the end of the test. These times include any time introduced by the VB program.

No additional time delays were included other than those introduced by VB.

GPIB Command Sequences Used:

Before start of test (only set once):-
:METER
:METER:FREQ 1000000;LEVEL 1V;BIAS-STAT ON;BIAS -5V
Test Cycle:-
(Start timer)
:METER:BIAS -5V;TRIG (read after every **TRIG**)
:METER:BIAS -2V;TRIG
:METER:BIAS -1V;TRIG
:METER:BIAS –0.5V;TRIG
:METER:BIAS –0.2V;TRIG
:METER:BIAS –0.1V;TRIG

WK6500 Series CV Test Report

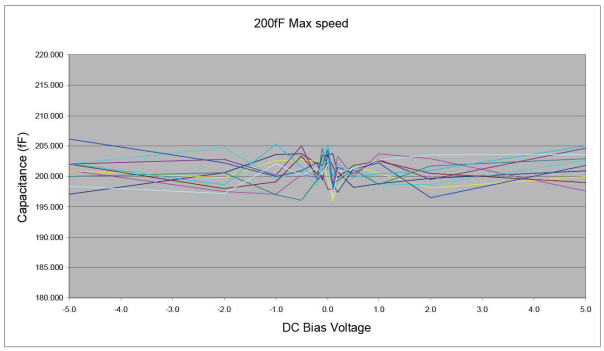
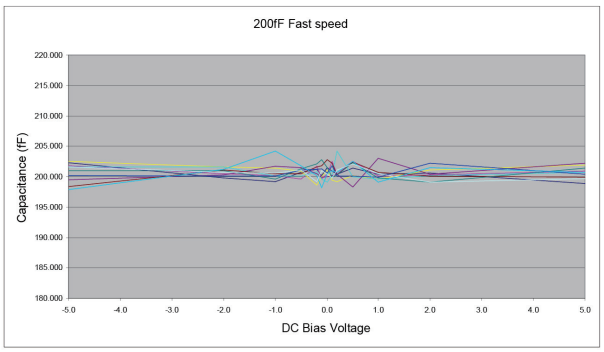
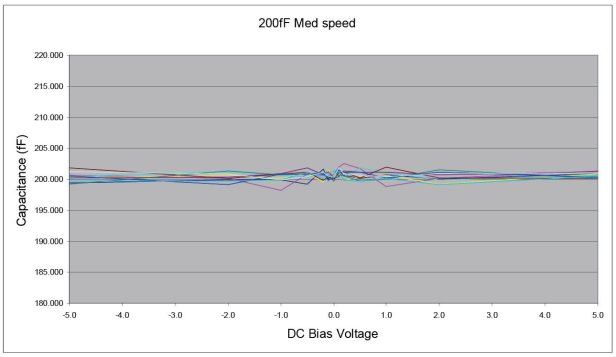
WK6500 Performance Test with modified DC Bias Software

:METER:BIAS –0.0V;TRIG
:METER:BIAS 0.1V;TRIG
:METER:BIAS 0.2V;TRIG
:METER:BIAS 0.5V;TRIG
:METER:BIAS 1V;TRIG
:METER:BIAS 2V;TRIG
:METER:BIAS 5V;TRIG
:METER:BIAS -5V Reset bias to –5V for start of next test
(Stop timer)
Note: Use ; between statements for faster execution

Results

Times
Times taken for performing 13 measurements at the voltages specified above.

Max speed: Total = 4.98 seconds (383ms/ measurement)
Fast speed: Total = 6.2 seconds (477ms/ measurement)
Med speed: Total = 8.96 seconds (689ms/ measurement)

Measurement Variations

The following graphs show the results taken from 10 sweeps (13 measurements/sweep).
The 10 sweeps were made consecutively.