

Diagnostic Test Results

The following diagnostic tests were performed:

- Cell Voltage Measurement
- VCn/BB OW Check
- CB OW Check
- CBFET Check (odd and even cells)

Cell Voltage Measurement

The screenshot shows the TI Diagnostic Utility interface for a Cell Voltage Measurement test. The interface includes a menu bar (File, Options, Tools, Zoom, Help), a status bar (USB2ANY/OneDemo device - Hardware Connected), and a main control area with buttons for AUTO ADDRESS, STOP POLLING, and CONTROL TONES. The left sidebar contains configuration options for MAIN & AUXILIARY ADC, AUX_CELL_SEL, AUX_CELL_ALIGN, AUX_GPIO_SEL, and AUX_SETTLING TIME. The main panel shows the test mode as 'Cell Voltage Measurement' with a voltage threshold of 6 mV. A 'Start Diagnostics' button is present, and the results show 'VCCB1 VCCB2 LPF' with a 'Diagnostics Complete' status. A table of measurements is displayed below.

DEVICE	AUX_CELL	GPIO	BAT	REFL	VBG2	AUX_VREF4P2	AVA0_REF	AVDD_REF	OV_DAC	UV_DAC	OTCB_DAC	UT_DAC	VCBDONE_DAC	VCI
0x00	-6.2498	-5.0001	65.3585	1.0994	1.0961	4.2548	2.4804	2.4738	-6.2501	-6.2501	-6.2501	-6.2501	-6.2501	2.5C

VCn/BB OW Check

The screenshot shows the TI Diagnostic Utility interface for a VCn/BB OW Check test. The interface is similar to the previous one, but the test mode is 'VCn/BB OW Check' with an open wire threshold of 500 mV and a waiting time of 500 ms. The 'Start Diagnostics' button is present, and the results show 'VCOW1 VCOW2' with a 'Diagnostics Complete' status. A table of measurements is displayed below.

DEVICE	AUX_CELL	GPIO	BAT	REFL	VBG2	AUX_VREF4P2	AVA0_REF	AVDD_REF	OV_DAC	UV_DAC	OTCB_DAC	UT_DAC	VCBDONE_DAC	VCI
0x00	-6.2498	-5.0001	65.3402	1.0991	1.0965	4.2595	2.4788	2.4733	-6.2501	-6.2501	-6.2501	-6.2501	-6.2501	2.5C

CBFET Check (even cells)

The screenshot shows the DIAGNOSTICS window in TI Studio. The 'MODE' is set to 'CBFET Check'. Under 'Choose Cells', the following cells are selected: CELL 2, CELL 4, CELL 6, CELL 8, CELL 10, CELL 12, and CELL 14. The 'Start Diagnostics' button is highlighted, and a message indicates 'Diagnostics Complete'. The 'MEASUREMENTS' table is visible below.

DEVICE	AUX_CELL	GPIO	BAT	REFL	VBG2	AUX_VREF4P2	AVA0_REF	AVDD_REF	OV_DAC	UV_DAC	OTCB_DAC	UT_DAC	VCBDONE_DAC	VCI
0x00	-6.2498	-5.0001	65.2761	1.1002	1.0971	4.2556	2.4829	2.4778	-6.2501	-6.2501	-6.2501	-6.2501	-6.2501	2.50

Cell voltage measurements during diagnostic test

The screenshot shows the DIAGNOSTICS window displaying cell voltage measurements for 16 cells. The 'Stop Polling' button is visible. Below the measurements is a graph showing Voltage (V) vs Time (s). The graph shows a red dip around 7.5 seconds and a change around 38 seconds.

CELL	Voltage (V)
CELL 1	4.0952
CELL 2	3.8720
CELL 3	4.2964
CELL 4	3.8681
CELL 5	4.2977
CELL 6	3.8726
CELL 7	4.2949
CELL 8	3.8712
CELL 9	4.2979
CELL 10	3.8726
CELL 11	4.2930
CELL 12	3.8756
CELL 13	4.2914
CELL 14	3.8648
CELL 15	4.3038
CELL 16	3.8569

- The initial dip shown in RED around 7.5 seconds occurred during the VCn/BB OW Check.
- The voltage change around 38 seconds is CBFET Check (odd cells).
- The voltage change around 52 seconds and shown on the display is CBFET Check (even cells).

After completing the CBFET diagnostic, the cell measurements remained with the voltage changes. I performed the CBFET Check with all cells unticked – this let cell voltage measurements return to normal, but temporarily causes an ADC Comparison fault.

