

# NATIONAL TECHNICAL SYSTEMS

## RTP / BTD TEST

Date Received: 10/15/18  
 Via: USPS  
 Returned Via: UPS

Record No.: HHV18001-8  
 Test Date: 10/16/18  
 Customer: Hard Head Veterans

**Sample Tested**

Manufacturer: Hard Head Veterans  
 Type: HHV ATE BALLISTIC  
 Color / Size: OD Green L / XL  
 Sample No.: Helmet #6  
 Weight (lbs.): 3.147  
 Crown Thickness: 0.325"  
 Style: High Cut  
 DoM: N/A  
 Threat Level: N/A  
 Conditioning: Ambient

**Threat**

Projectile: 9mm FMJ RN  
 Weight: 124 gr.  
 Powder: Universal  
 Barrel: 10"  
 Obliquity: 0°  
 Yaw: ≤ 5°

**Test Specification**

LW-ACH  
 AR/PD 10-02 Rev. A with Change 6  
 16 December 2013,  
 IAW TOP 10-2-217  
 21 March 2016  
 IAW ATC-MMTB-IOP 051  
 28 October 2014  
 ICW Geomagic Control 2014 Software

**Range 4**

Muzzle to Screen 1: 7.03 ft.  
 Screen 1 - 4: 5.00 ft.  
 Screen 2 - 3: 4.08 ft.  
 Screen 4 - Target: 4.59 ft.  
 Target to Witness: 0 ft.  
 \*Midpoint to Target: 7.09 ft.  
 Witness: Clay Headform  
 Temperature: 71 °F  
 Humidity: 40 %

SHOT INFORMATION		CHRONOGRAPH 1 - 4		CHRONOGRAPH 2 - 3		AVERAGE VELOCITY ft/s	LOSS VELOCITY ft/s	STRIKING VELOCITY ft/s	IMPACT LOCATION	TEST RESULTS
SHOT NO.	POWDER CHARGE	TIME sx-5	VELOCITY ft/s	TIME sx-5	VELOCITY ft/s					FARO® BTD (mm)
1	5.8	354.4	1411	290.0	1409	1410	9	1401	Crown	15.044
2	5.8	348.4	1435	285.0	1433	1434	9	1425	Back	8.527
3	5.8	353.1	1416	288.9	1414	1415	9	1406	Left	13.032
4	5.8	354.3	1411	289.9	1409	1410	9	1401	Right	14.802
5	5.8	353.3	1415	289.0	1413	1414	9	1405	Front	14.825

This test was performed in accordance with the specification requirements and the results properly reflect the ballistic performance of the listed sample.

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**REMARKS/NOTES**

\*Muzzle to Target measured for each shot to calculate loss.  
 •Required Velocity (IAW Section 3.7.3.1): 1400 + 50, -0 ft/s  
 •Helmet tested as a finished helmet:  
Pad / Component Configuration:  
 •Special pad configuration as received from customer  
 •Retention/Suspension System with Chinstrap and Accessory Rail Connectors  
 \*\*3-Hole NVG Shroud and bungee cords removed prior to testing

Headform/Block Calibration:

Calibration Block #:	1	
Headform #:	1	
Headform Temp.:	99.2	°F
Block Temp. #1:	99.8	°F
Block Temp. #2:	99.5	°F
Calibration Drops:	23.87, 24.67, 24.89	mm
Calibration Start Time:	13:00	PM
Calibration End Time:	17:00	PM
Crown Offset:	32.27	mm
	(Requirement 31.5 - 32.5mm)	
Left X-Axis Offset:	35.60	mm
Adjusted X-Axis Offset:	N/A	mm
Right X-Axis Offset:	37.50	mm
Adjusted X-Axis Offset:	N/A	mm
	(Requirement ≥ 22.5mm)	

**Crown Standoff Distance (IAW TOP 10-2-217, Section 4.6.6.1, Table 5):**

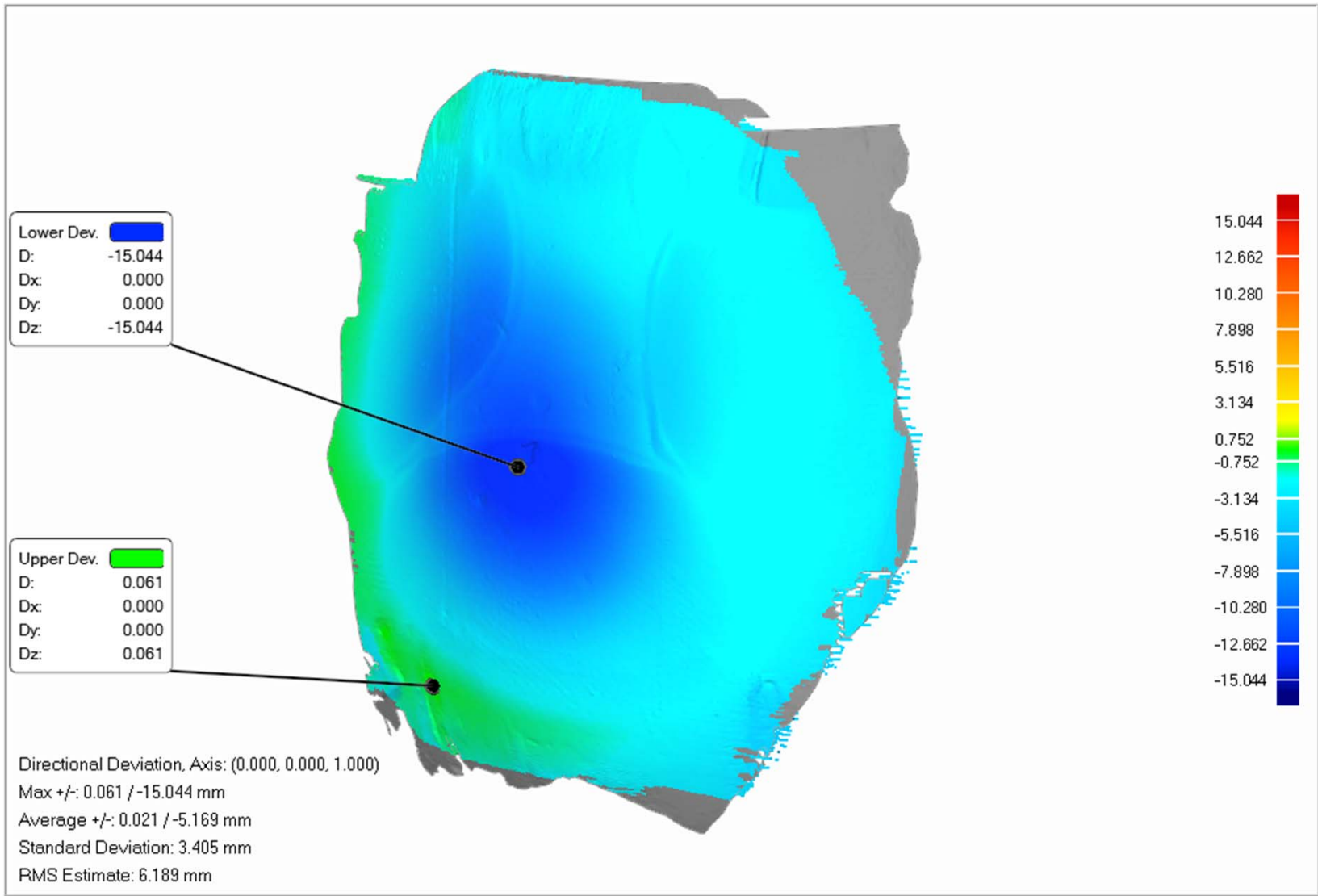
**3** individual crown thicknesses from **1** individual size helmet(s)  
 used to determine average crown thickness for crown offset measurement:  
**0.325"**    **8.26 mm**    **8.5 mm** (Rounded to nearest 0.5mm)

High Cut (LBH Style) Size:	<b>X-Large</b>	<b>23.5</b>	<b>8.5</b>	<b>32.0</b>
	(L / XL)	mm	mm	+/- 0.5mm

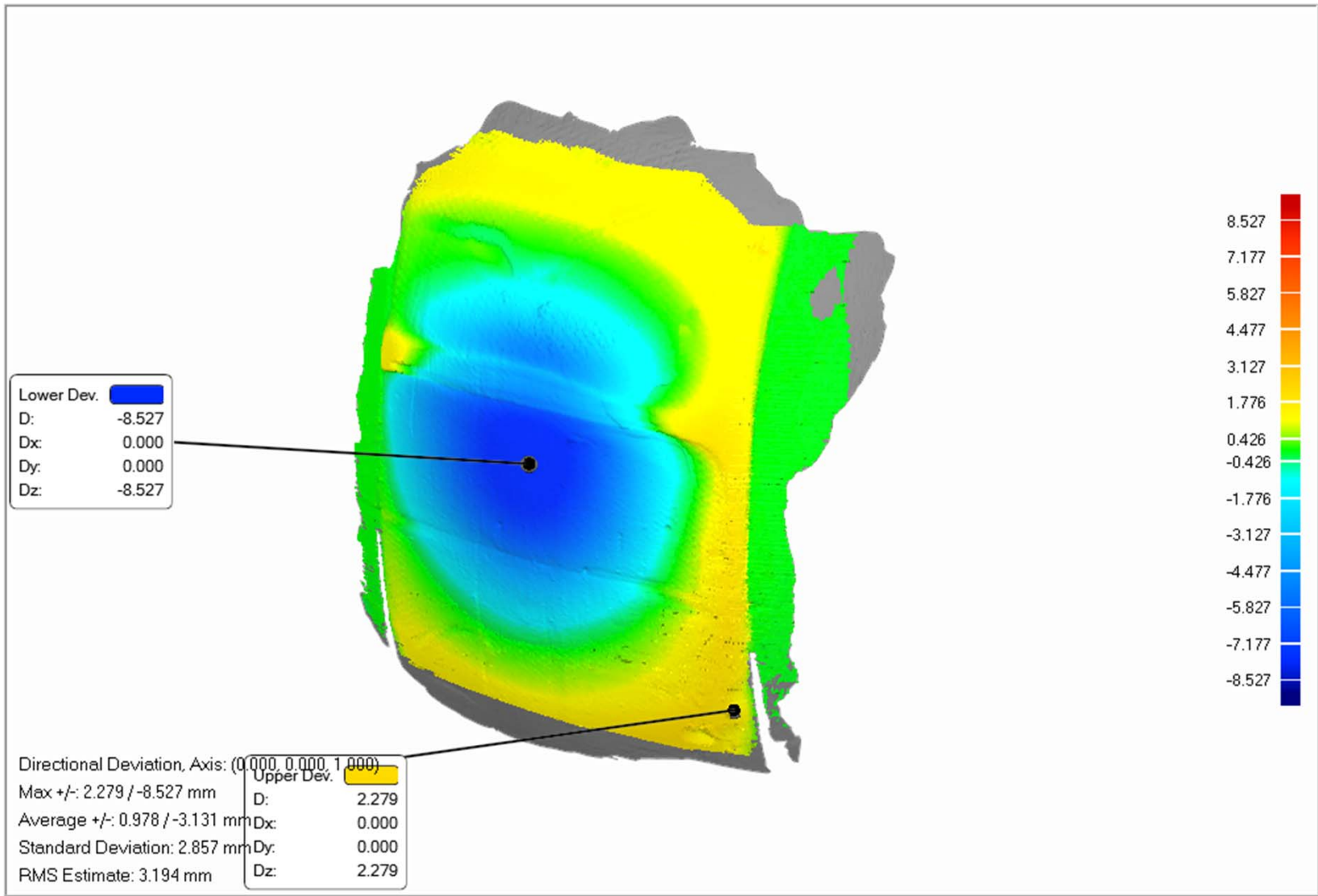
**Impact Locations / Shot Order:**

•Shot order per NTS  
 a) Crown: Approximate intersection of the mid-sagittal and coronal planes  
 d) Back: 75mm (+5mm / -0mm) from the rear edge of the finished helmet  
 \*b) Left: 65mm (+5mm / -0mm) above the earflap (20mm above accessory rail connector)  
 \*b) Right: 65mm (+5mm / -0mm) above the earflap (20mm above accessory rail connector)  
 \*c) Front: 55mm (+5mm / -0mm) from the front edge and at a minimum of 1.5" or 40mm from each of three NVG holes  
 \*Modified due to accessory rails and NVG holes

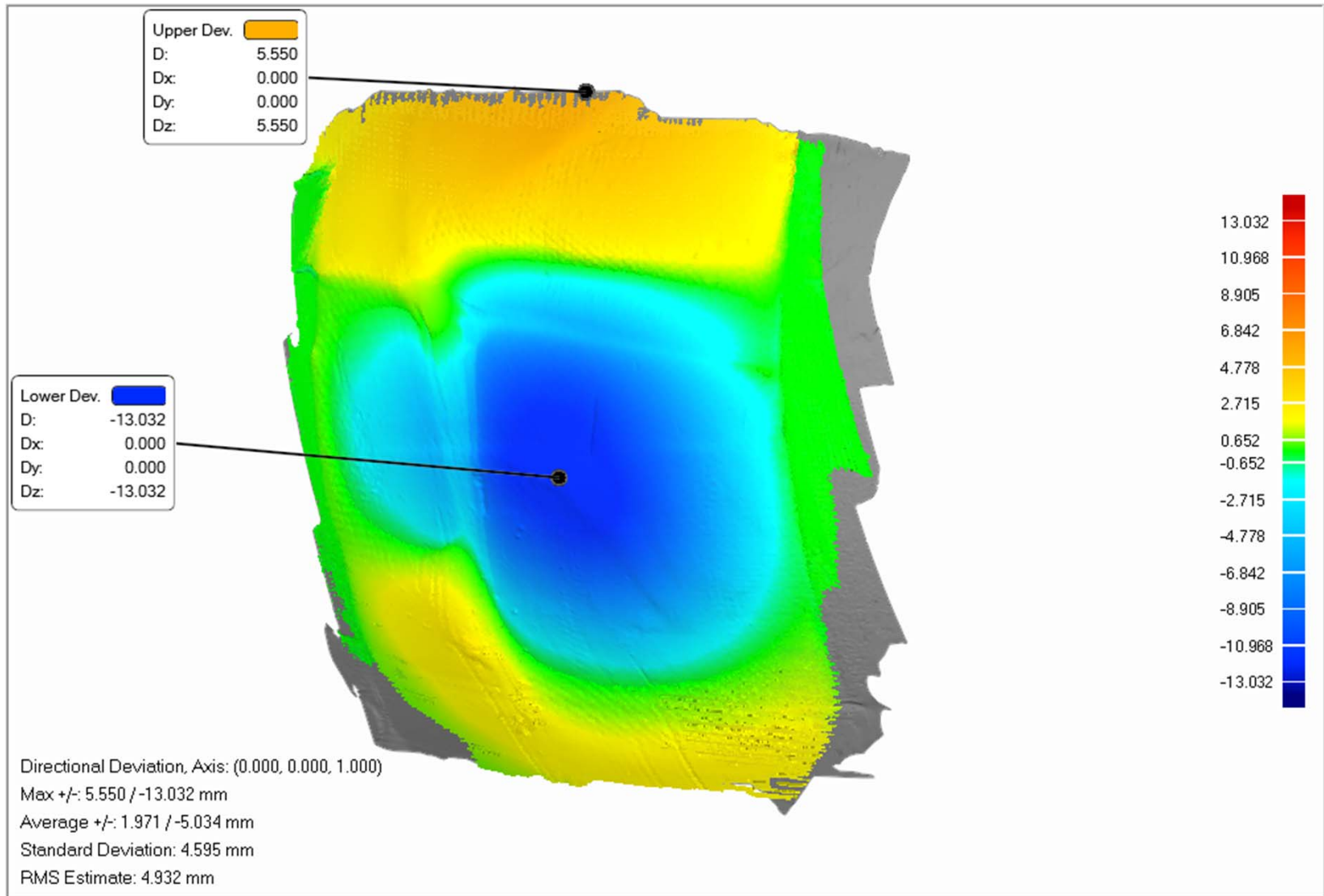
Nguyen/Crawford



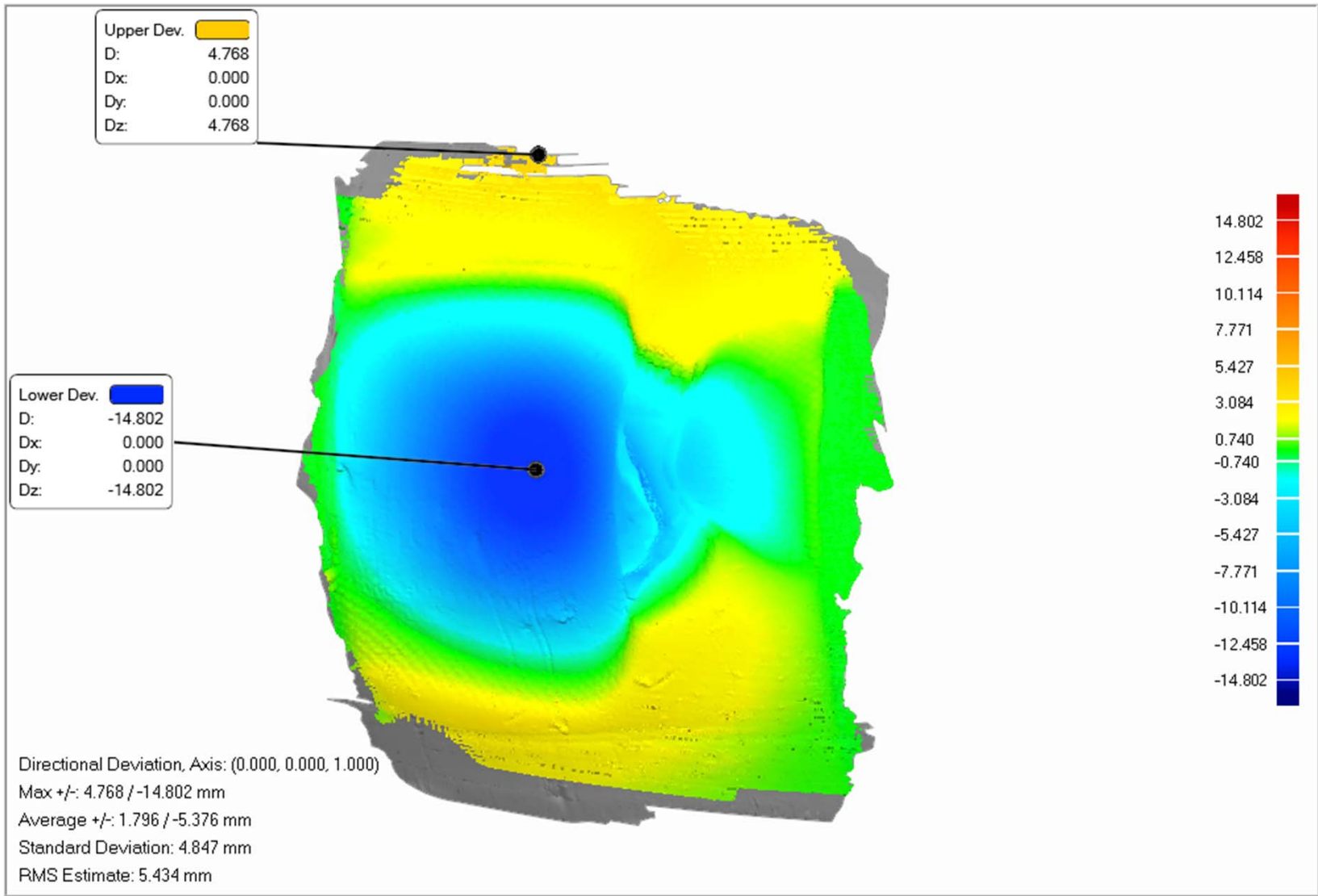
HHV18001-8 (#1\_Crown)



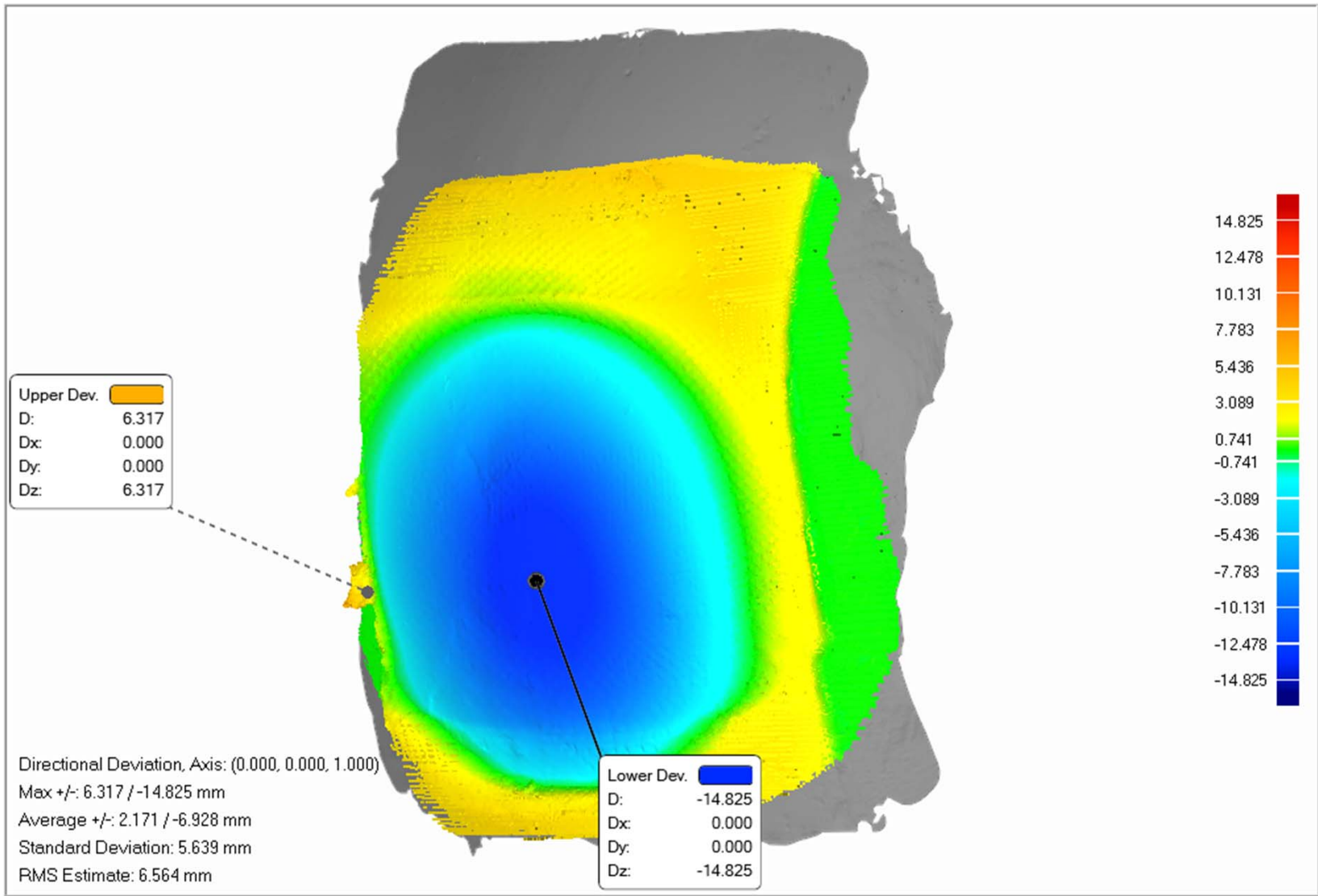
HHV18001-8 (#2\_Back)



HHV18001-8 (#3\_Left)



HHV18001-8 (#4\_Right)



HHV18001-8 (#5\_Front)