AlliedStar

AS 100 Intraoral Scanner Accuracy Study / April 2023

The AS 100 intraoral scanner changes your preconception of essential models by introducing ground-breaking, industry first features like Calibration Free design, incorporating top-notch scanning precision yet stays stunningly accessible.

Impeccable Precision

Calibration Free

Powered by Single USB Cable

Study Method

Mesh-to-mesh

Step 1: Get reference model file(.stl) from a lab scanner, the tooth model could be fullarch, incisor, molar and quadrant

Step 2: Scan the same tooth model with IOS for 5 times

Step 3: Compare the measured files with reference file separately, get the average error and standard deviation

Point-to-point

Step 1 Get reference model file(.stl) from a lab scanner, the tooth model is fixed with 4 balls

Step 2: Import the file into Geomagic Control and calculate the distances between centers of different balls. These 6 distance values are reference values

Step 3: Scan the same tooth model with IOS for 5 times

Step 4: Get the distances with the 5 measured scans respectively

Step 5: Calculate the gap between measured distance and reference distance

Step 6: Get the maximum gap

Defining 'Accuracy'

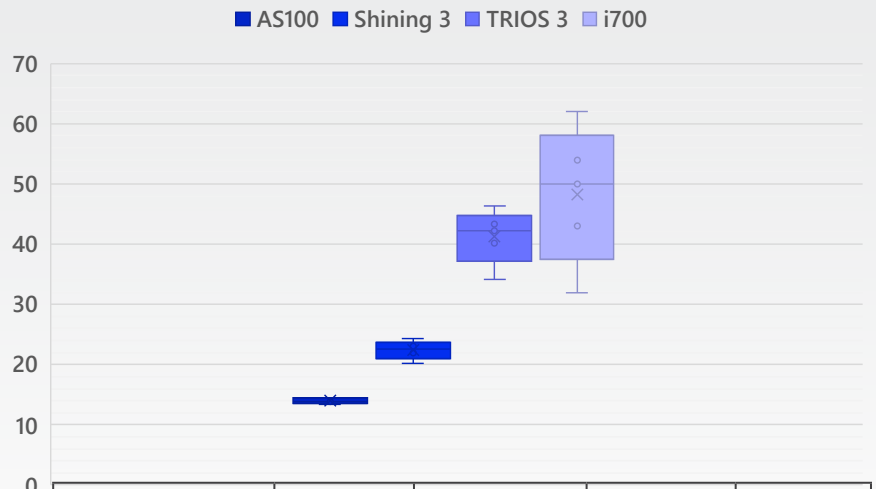
Accuracy: Indicates the combination of "trueness" and "precision"

Trueness: Closeness of agreement between the arithmetic mean of a large number of test results and the true or accepted reference value

Precision: The closeness of agreement between different test results

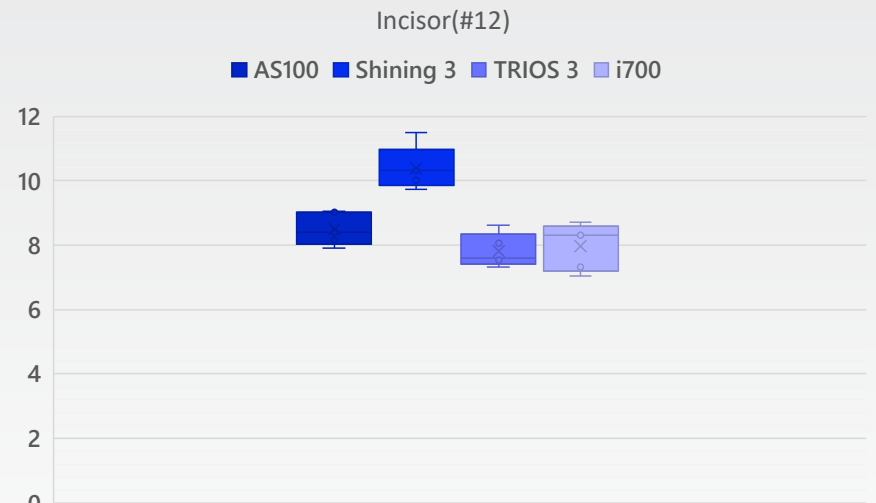
Mesh-to-mesh

Full arch



	AS 100	Aoralscan 3	TRIOS 3	i700
Mean (Trueness)	13.986	22.382	41.23	48.2
STD (Precision)	0.41166	1.3343	4.0551	10.1666

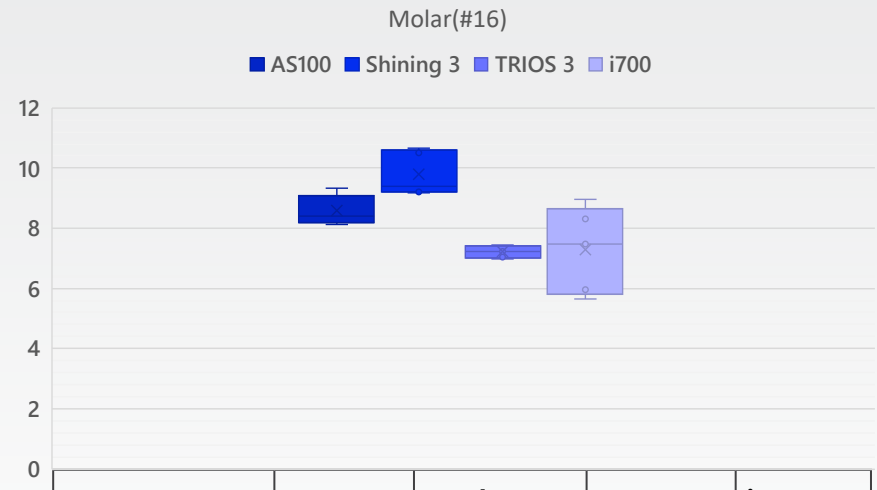
Incisor



	AS 100	Aoralscan 3	TRIOS 3	i700
Mean (Trueness)	8.51	10.398	7.83	7.978
STD (Precision)	0.4548	0.6064	0.4681	0.6605

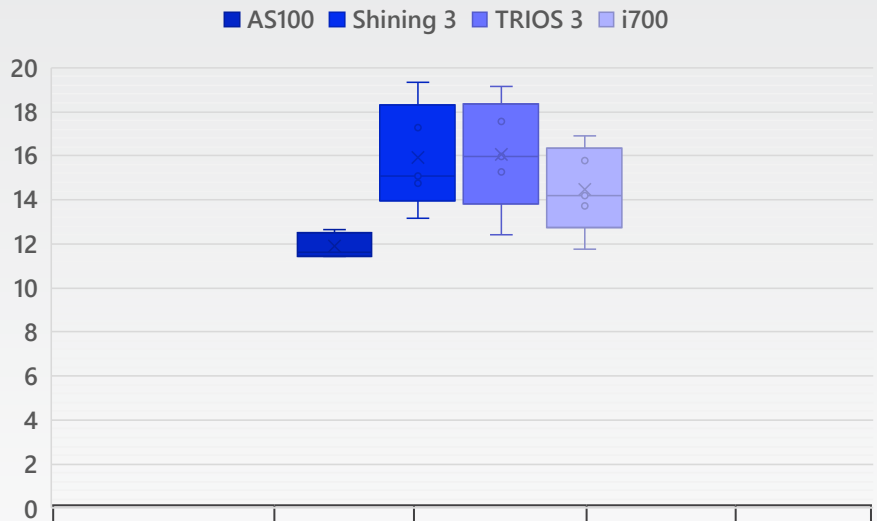
Mesh-to-mesh

Molar



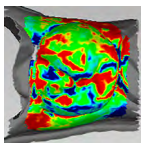
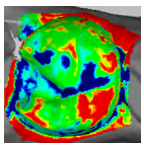
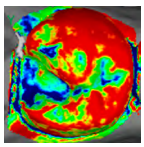
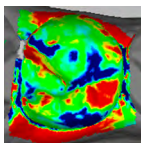
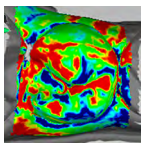
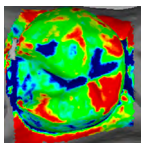
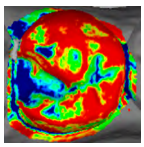
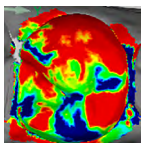
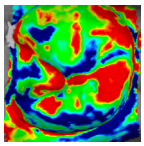
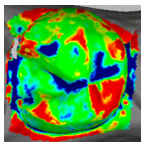
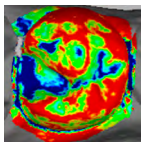
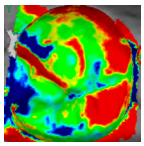
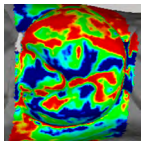
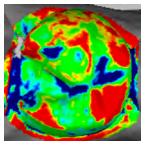
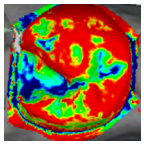
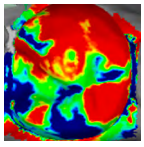
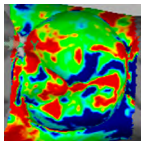
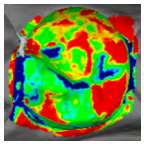
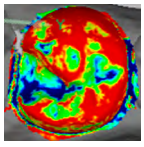
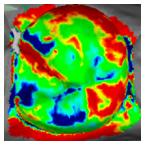
	AS 100	Aoralscan 3	TRIOS 3	i700
Mean (Trueness)	8.586	9.788	7.22	7.276
STD (Precision)	0.4476	0.6560	0.1855	1.2869

Quadrant

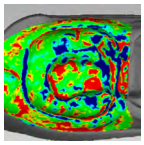
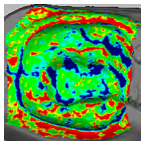
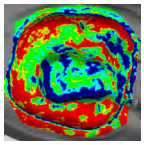
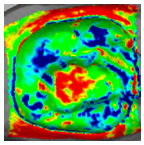
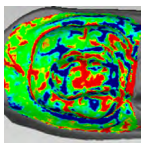
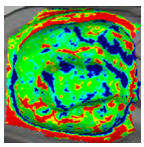
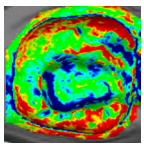
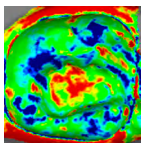
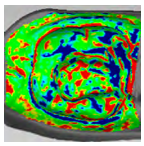
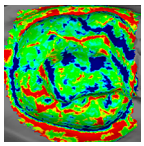
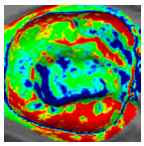
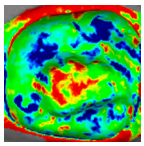
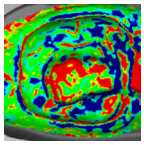
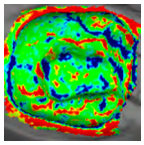
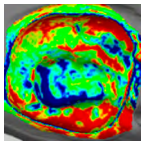
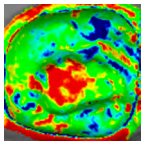
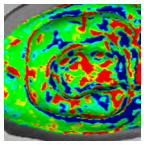
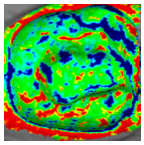
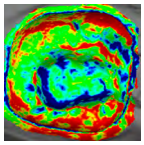
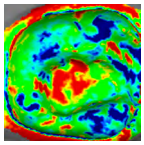


	AS 100	Aoralscan 3	TRIOS 3	i700
Mean (Trueness)	11.912	15.922	16.072	14.474
STD (Precision)	0.5132	2.1541	2.2751	1.7651

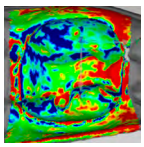
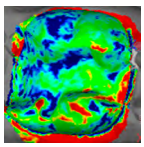
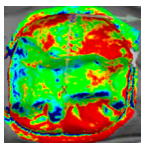
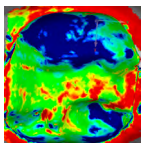
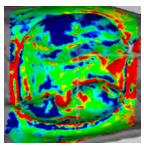
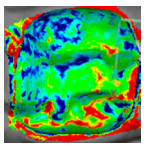
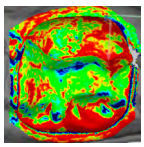
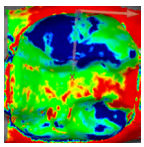
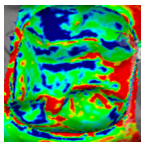
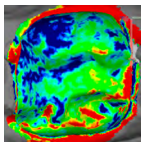
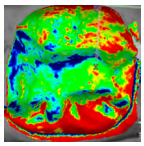
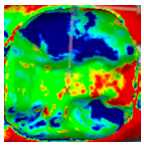
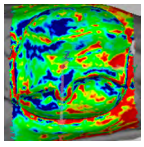
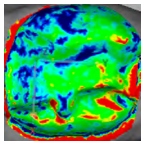
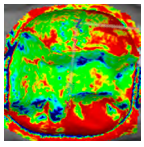
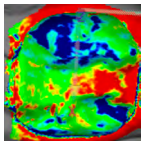
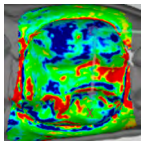
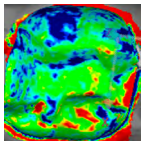
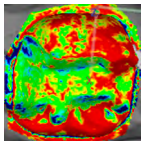
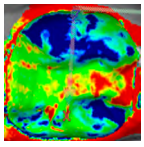
Mesh-to-mesh: Inlay

	AS 100		Aoralscan 3		TRIOS 3		i700	
Pass 1	20.9		22.85		29.58		22.79	
Pass 2	21.03		22.84		28.44		34.81	
Pass 3	17.71		23.85		26.8		24.18	
Pass 4	19.19		26.51		32.61		34.19	
Pass 5	21.24		25.3		31.71		25.28	
Mean (Trueness)	20.014		24.27		29.828		28.25	
STD (Precision)	1.3644		1.4364		2.1184		5.1675	

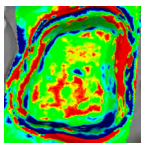
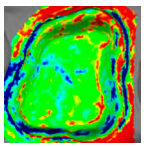
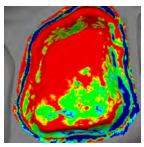
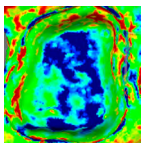
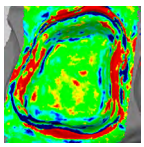
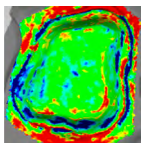
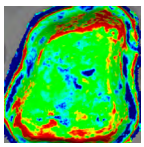
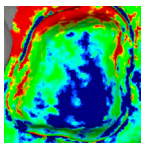
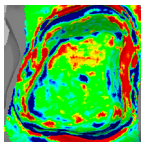
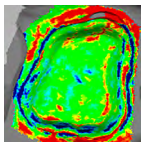
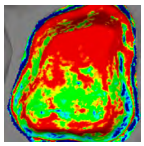
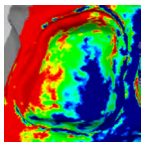
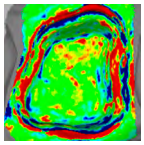
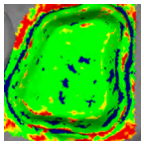
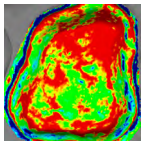
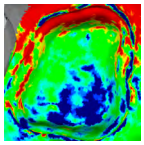
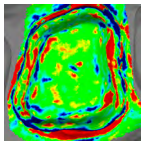
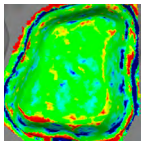
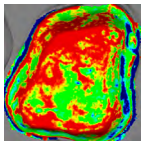
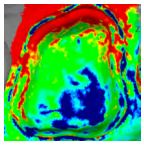
Mesh-to-mesh: Onlay

	AS 100		Aoralscan 3		TRIOS 3		i700	
Pass 1	10.84		8.72		14.6		10.95	
Pass 2	11.34		9.19		14.54		10.94	
Pass 3	10.58		9.36		15.88		11.33	
Pass 4	11.57		9.26		16.27		11.02	
Pass 5	10.97		9.5		15.05		12	
Mean (Trueness)	11.06		9.206		15.268		11.248	
STD (Precision)	0.3537		0.2956		1.3408		0.4020	

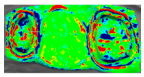
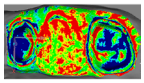
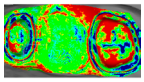
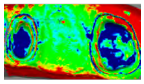
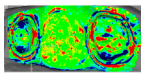
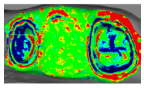
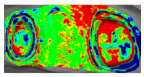
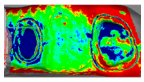
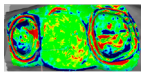
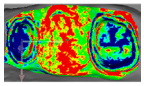
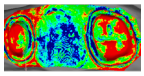
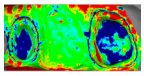
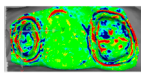
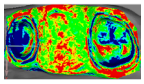
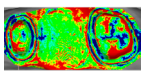
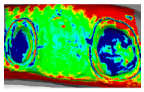
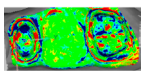
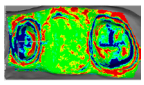
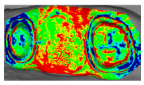
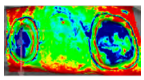
Mesh-to-mesh: Overlay

	AS 100		Aoralscan 3		TRIOS 3		i700	
Pass 1	17.55		16.58		20.49		19.52	
Pass 2	17.45		15.93		22.95		19.93	
Pass 3	15.02		17.26		19.44		21.99	
Pass 4	15.74		16.98		21.3		18.41	
Pass 5	15.34		17.37		21.92		20.22	
Mean (Trueness)	16.22		16.824		21.22		20.014	
STD (Precision)	1.0702		0.5237		1.1992		1.1637	

Mesh-to-mesh: Crown

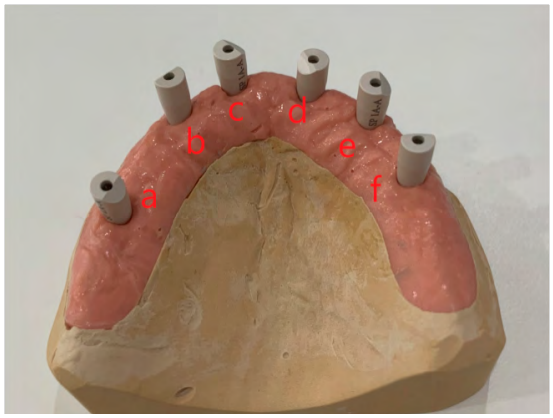
	AS 100		Aoralscan 3		TRIOS 3		i700	
Pass 1	16.54		14.45		29.01		14.56	
Pass 2	14.28		14.64		18.26		19.34	
Pass 3	16.62		14.13		24.22		22.19	
Pass 4	15.24		13.85		20.58		17.24	
Pass 5	15.23		14.43		20.84		17.23	
Mean (Trueness)	15.582		14.3		22.582		18.112	
STD (Precision)	0.8867		0.2780		3.7343		2.5414	

Mesh-to-mesh: Bridge-Crown

	AS 100		Aoralscan 3		TRIOS 3		i700	
Pass 1	9.17		13.24		11.24		17.38	
Pass 2	8.87		10.47		12.54		18.31	
Pass 3	10.03		11.85		14.57		15.73	
Pass 4	8.36		11.1		13.5		15.22	
Pass 5	8.91		10.08		12.09		13.99	
Mean (Trueness)	9.068		11.348		12.788		16.126	
STD (Precision)	0.5480		1.1200		1.1513		1.5416	

Point to point: scanbodies

Max Gap (mm)	AS 100	Aoralscan 3	TRIOS 3	i700
Pass 1	0.1195	0.1453	0.1292	0.0563
Pass 2	0.0987	0.1850	0.0671	0.0667
Pass 3	0.0696	0.1177	0.1409	0.1076
Pass 4	0.0848	0.1184	0.0744	0.0746
Pass 5	0.0777	0.1620	0.1299	0.0655



Point to point: balls

Max Gap (mm)	AS 100	Aoralscan 3	TRIOS 3	i700
Pass 1	0.0795	0.0839	0.1625	0.2848
Pass 2	0.0926	0.1206	0.0933	4.2062
Pass 3	0.0813	0.1332	0.113	0.2097
Pass 4	0.049	0.0852	0.0827	0.0769
Pass 5	0.0655	0.068	0.059	0.1611