

SUPREME ACCURATE DENTAL IMPLANT SCANNER



- ✓ ± 6 micron repeatability
- ✓ Fully wireless
- ✓ LCD display
- ✓ Competitive price
- ✓ Free software
- ✓ Easy to use

FEATURES WE ARE PROUD OF



Accuracy

100% Ti-Bar passive fit rate**
Positional Repeatability: $\pm 6 \mu\text{m}$
Angular Repeatability: $\pm 1/30$ th of a degree



Long Collar Dot Posts

More convenient to use - No tools needed!
Autoclavable and Reusable



Narrow Camera Separation

Allows more reliable capture of posts at the back of the mouth.



Ease Of Use

Fully Wireless - no messy cables!
Built in display - no need to look at a laptop

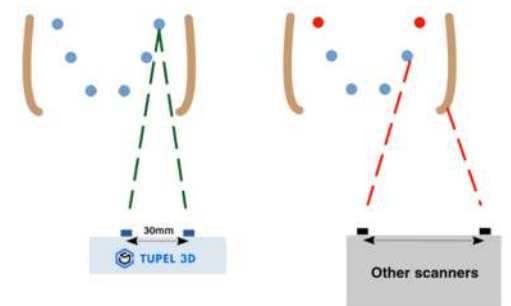


Affordability

We're on a crusade against over priced medical technology.



LONG COLLAR DOT POSTS



NARROW CAMERA SEPARATION

Full specifications

The Tupel 3D Implant Scanner captures implant positions. The output is an .STL CAD file of the implant positions that can be used as the basis for your next design step.

Accuracy

- Positional Accuracy*: $\pm 9 \mu\text{m}$
- Positional Repeatability*: $\pm 6 \mu\text{m}$
- Angular Repeatability*: $\pm 0.034^\circ$ (1/30th of a degree)
- Operating temperature: $23^\circ\text{C} \pm 5^\circ\text{C}$
- Operational in ambient lighting up to 5000 lux.

Scan Time (typical)

- Calibration: 1 min 30 sec typical.
- Scan time: 20 sec typical

Hardware Features

- Cameras: 2 x 2MP global shutter
- Battery Life: Up to 25 scans / 2.5 hours of standby
- Charge Time: 2.5 hours
- Battery Type: Lithium ion
- Dimensions (l w h): 14.2 x 11.8 x 9.7 cm (approx. 6" x 5" x 4")
- Weight (scanner only): 650g
- Storage temperature: 5°C to 40°C
(10°C to 25°C for optimum battery longevity)

Posts and Scan Bodies

- 6 Dot Posts are supplied with each scanner.
- To fit Multi Unit Abutments - generally speaking the shape of the MUA and the retaining screw are universal and the majority of implant companies follow this design.
- They are autoclavable and reusable.
- If you need a custom design of dot post, we can do that (please contact us to discuss).

Scan bodies

- Do you want to use your own scan bodies?
Just send us its STL and we will add it as an export option. Free of charge.

Software Functions

- Auto calibration
- Real-time scanning feedback
- Able to scan 6 posts per scan
- Auto merge can combine up to 10 posts per jaw.
- STL and coordinate export
- Iterative Noise Reduction for enhanced accuracy.

PC Requirements

- Windows 10 & 11
- RAM: 16 GB recommended, 8 GB minimum.
- CPU: > 8 cores recommended, 4 cores minimum.

Connectivity and Power Supply

- USB 2.0, USB 3.0, or Wi-Fi Data Transfer.
- Input Voltage: AC 110V – 240V, 50/60Hz, converted to 5V 4A.
- PSU supplied with a UK, EU, US, or AU plug type, depending on your location.
- Power consumption: 15W typical.

Posts

- 7mm diameter, 15.6mm height.
 - M1.4,
 - M1.6,
 - UNF 1-72 thread,
 - Bredent copaSKY uni.cone, Fast&Fix

**"Best 3D Dental Scanning
Innovation Company 2023"**



***Case study with more than 100 cases
Download our Accuracy report for full test details.

Extra reasons to buy

- ✓ Customer support via video, text or email.
- ✓ If you are not happy with the scanner within 30 days, we will refund all but the postage.
- ✓ It's a well tested product made to ISO 13485, and registered with the FDA, CE & TGA
- ✓ Patent pending, breakthrough marker post tracking technology.
- ✓ Free Training included with every scanner

Contact Us For More Information

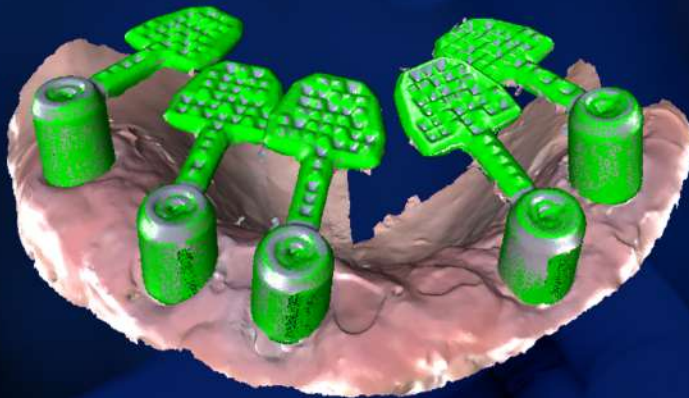
Tel, WhatsApp: **+44 (0) 783 302 5906**

✉ info@tupel3d.co.uk

🌐 www.tupel3d.co.uk

THE ALL NEW SCAN-TRACKS

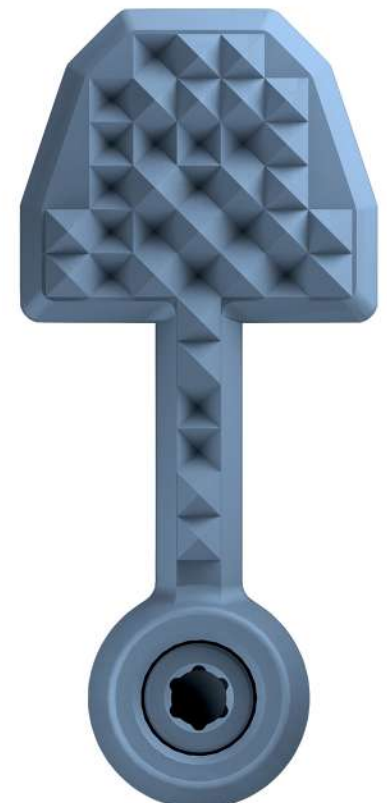
ENHANCE YOUR IOS ACCURACY



- ✓ All-in-One Scan
- ✓ 100% Titanium
- ✓ Compatible with any IOS
- ✓ Extensive Export Library
- ✓ Experience Passivity at a Lower Cost

FEATURES WE ARE PROUD OF

- 1 All-in-One Scan**
Capture Scan-Tracks and gum contour in a single intra-oral scan, reducing patient chair time
- ST Software Scan Enhancing**
Our software uses the Scan-Tracks information to enhance the overall intra-oral scan accuracy
- Compatible with any intra-oral scanner**
No need to change your existing set-up. Works with any IOS that exports a 3D CAD file
- Extensive Export Library**
For the next step of the design process



Compatible Systems



M1.4 (22 options)

- ANTHOGYR® AXIOM MU 4.8
- ASTRA TECH™ EV MULTI BASE
- BTI® MULTI
- BIOHORIZONS
- BSB
- CORTEX DENTAL MUA
- DIO® UF_MULTI 4.8
- LYRA ETK TETRA MUA
- HIOSSEN MULTI
- JD EVOLUTION MULTI
- MEGAGEN® N-TYPE 4.8 MULTI
- MEDENTIS MEDICAL® ICX_MULTI
- NEODENT® CM MINI CONICAL
- NEODENT® GM MINI CONICAL
- NOBEL BIOCARE® MULTI UNIT 4.8
- NORIS MEDICAL MU
- OSSTEM® MULTI
- SOUTHERN IMPLANTS MULTI 4.8
- STRAUMANN® SRA 4.6
- SWEDEN & MARTINA PAD.r MULTI
- ZIMMER® UNIVERSAL ABUTMENT MULTI UNIT
- BREDENT® copaSKY Uni.Cone MUA
- BREDENT® copaSKY Fast & Fixed MUA

M1.6 (4 options)

- IMPLANT SWISS MULTI 4.8
- GP IMPLANT
- RITTER IMPLANTS
- MIS® MULTI UNIT SYSTEM

M1.8 (4 options)

- BIOTEC MULTI
- DENTIUM® MULTI 4.5
- iRES MULTI
- TRI IMPLANTS® MULTI

And many more – If you need a custom design of dot post, we can do that (please contact us to discuss)

Accuracy testing of the MK2 Tupel 3D Implant Scanner

Chee Yik Goh, BEng
Dr. Jonathan F Mather, MPhys, FInstP
13th Sept 2023

SUMMARY

Repeatability

We scanned the same set of posts 3 times on the same scanner. The typical repeatability of a scanner was found to be ± 6 micrometers, and 1/30th of a degree.

Absolute accuracy

We scanned posts separated by a known distance to measure the absolute accuracy of the scanner. We found that the absolute accuracy of post measurements was ± 9 micrometers.

Note that these tests are performed in ideal conditions, for example in a laboratory with good scanning technique. Clinical use data will follow.

1.0 REPEATABILITY TESTING

If the same abutments are scanned twice, the two scans should, in theory, match perfectly. We made multiple scans of an abutment test setup (Figure 1) to find out how close our Implant scanner is to having perfect repeatability.



Figure 1: A stone cast model with 6 abutments embedded, used to measure the repeatability of post scanning measurements.

We tested 3 different scanners from our first production batch. With each scanner we scanned the test model 3 times. To find the repeatability, we align the 3 scans together, and calculate the standard deviation in position for each post. We also calculate the standard deviation in angular error for each post. The results are recorded in the following table.

Scanner serial number	Positional error (stdev in micrometers)	Angular error (stdev in degrees)
0011	±5.9	±0.031
0022	±6.3	±0.028
0024	±5.7	±0.044

The typical positional repeatability for 1 scanner was: ±6 micrometers

The typical angular repeatability for 1 scanner was: ±0.034 degrees (~1/ 30 of a degree).

2.0 ABSOLUTE MEASUREMENT ACCURACY TESTING

We must also measure the absolute accuracy of the implant scanner. The posts (Figure 2 below) are pushed against a steel block known to be 60.0 mm wide. If the scanner accurately measures the position of the posts, they should be spaced exactly 60.0 mm apart.



Figure 2: Posts pushed against a calibration block of known width, used to measure absolute accuracy.

The steel calibration block is certificated to be 60.0 mm ± 0.12 micrometers. Actually, the scanner should measure 60.0 mm + one post diameter since it measures centre to centre. We measured the diameter of the posts as 6.997 mm ± 5 micrometers (using with a calibrated micrometer). So the expected measurement distance is 60.0+6.997=66.997 mm.

The table below shows the actual measurement results.

Scanner serial number	Measured post separation, average of 10 scans (millimeters)	Absolute measurement error (micrometers)
0030	67.00529	+8.29
0033	66.99744	+0.44
0032	66.98628	-10.72

The average absolute measurement error over 3 scanners was: -0.66 micrometers \pm 9 micrometers.

4.0 SIGN OFF

We confirm that the results herein are accurate, correct and complete (13th Sept 2023):

Signed: 

Name: Chee Yik Goh, BEng

Position: Production Engineer, Tupel Ltd.

Signed: 

Name: Dr. Jonathan F Mather, MPhys, FInstP

Position: Director, Tupel Ltd.



TUPEL 3D

*Designed and manufactured
in Oxford, England*

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FOR MORE INFORMATION

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