

# wave-scan 3 dual

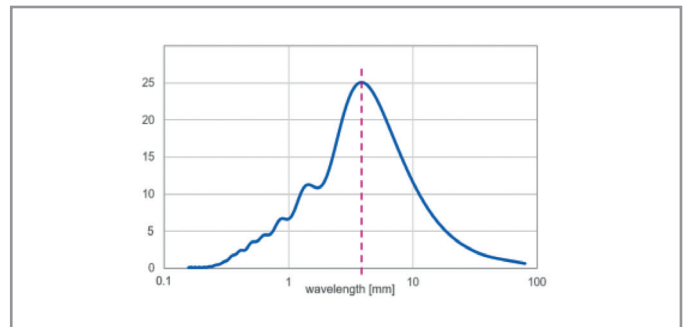
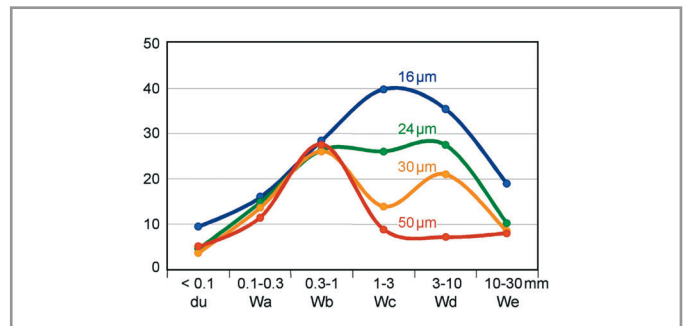
## Orange peel meter for medium to high gloss finishes

The new wave-scan 3 dual has a modern and ergonomic design with large color touch display as you know it from your smartphone. Introducing state-of-the-art chip technology to calculate waviness scales in no time – accelerating the measuring time. Even with these advanced powerful chips, the new wave-scan 3 dual still has an amazing long battery life to measure many cars in the production line or out in the field. For the first time the new wave-scan 3 dual shows Pass/Fail judgement right on the display. Go digital with the powerful smart-chart for SPC data analysis and to set up a standardized global QC management system.



## The reference for Orange Peel & DOI on high – medium gloss finishes

Surface appearance changes with the size and distinctness of wavy structures when perceived at different distances. The wave-scan scans the optical profile of a high gloss surface using a laser light source. The optical profile is analyzed with 5 wavelength ranges from 0.1 – 30 mm (Wa-We). In addition, a camera image is taken with the focus on a reflected image to evaluate the image forming qualities of the surface caused by structures < 0.1 mm (du). Thus, it simulates our visual appearance perception at a close distance (~ 30 cm) and a far distance (~ 2-3 m). The result is a “structure spectrum” which is the basis to calculate customer specific scales for orange peel and DOI. A new way was developed in cooperation with VW/Audi to filter the optical profile using Fast-Fourier-Transformation (FFT) to determine dominant waviness sizes and their intensity. In visual studies it became obvious that observers can distinguish samples based on the dominant wavelengths. wave-scan - your QC tool to check specifications and troubleshooting guide to analyze and optimize the surface quality based on material and process parameters.



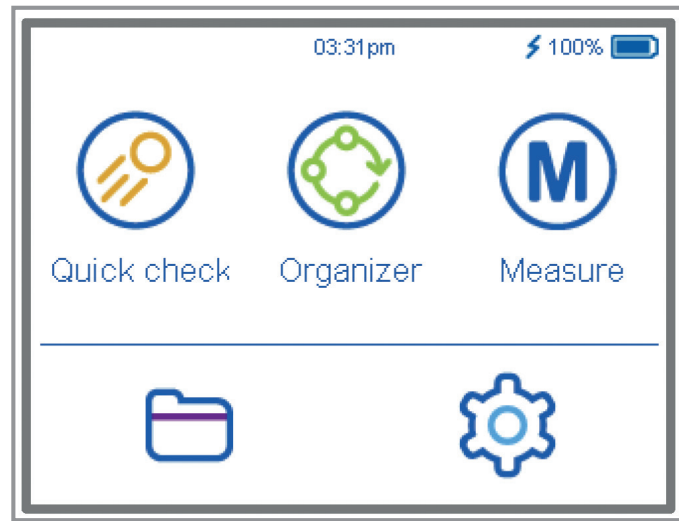
## Brilliant color touch display

The capacitive display technology provides a state-of-the-art haptic touch. Quick and easy operation including swipe functionality – no need of a stylus.

The display automatically rotates with you – so it is always in the right position.

The new design allows an extra-large, easy-to-read display with colorful icons for an intuitive menu navigation:

- Quick check: Just measure without saving
- Measure: Collect and automatically save data by using standards with defined scales, statistics and limits
- Organizer: Select a customized sampling procedure with standard colors and limits to measure a car body
- Data View: View your saved measurements
- Configuration: Customize your “Quick check and Measure” mode for your application



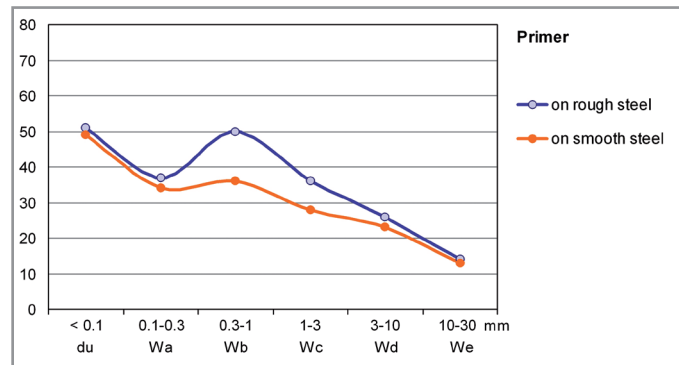
With standards created in smart-chart, the new wave-scan 3 dual shows Pass/Fail judgement right on the display.

## Orange Peel and DOI measurement on high to semi gloss surfaces

Appearance control is no longer limited to final topcoat inspection. An additional, infrared high energy LED allows measuring the structure spectrum on medium gloss surfaces. Thus, the surface quality after each paint process step can be objectively evaluated. No more guessing which substrate layer is influencing the final appearance. The wave-scan 3 dual will help you to objectively analyze appearance problems and reduce the time necessary for trouble shooting.

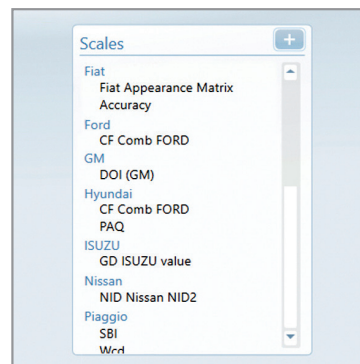
Example: Influence of Steel Quality

The same E-coat system was applied on rough and smooth steel and the primer surfacer was applied on both panels. The roughness of the steel quality can still be detected in increased Wb and Wc values. This primer system could not completely cover the steel influence.



## wave-scan 3 dual talks your language – company specific scales

The wave-scan family is the standard to objectively quantify the harmony of a class A surface finish in regard to orange peel and DOI used by all automotive, truck, aircraft, motorcycle, boat and yacht companies. Depending on the OEM's visual appearance evaluation customer specific scales with different target values have been developed over the years. These company specific scales are an objective check to ensure company specifications are met and eliminate heated discussions between automotive producers and their suppliers.



## Objective and reliable data

Excellent agreement with previous wave-scan models.

- In order to judge the brilliance of a high gloss surface the dullness measurement correlates best with the visual perception as it is independent of the refractive index of a paint system.
- Waviness data correlates with the slope information of mechanical profilometer readings.
- wave-scan can be used for measuring flat panels as well as curved body parts with excellent repeatability

## Always ready with smart docking station

The new generation optimizes the energy consumption of optical and electronic components in combination with the firmware. Thus, a long battery life is achieved: Up to 1000 readings can be taken with one charge.

- The charging takes place in the newly designed docking station – Park and charge at the same time.
- The docking station houses a second battery pack which is always fully charged. The status of both batteries is displayed with LED indicators.
- Transfer your measuring data via docking station or directly connect with USB - cable.

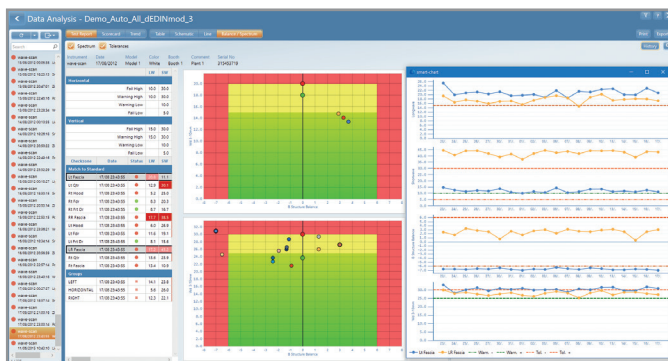
Optionally, wireless data transfer with Wi-Fi function can be activated on request.

## smart-chart for Data Analysis

The smart software to manage and analyze your data in more than one way.

- smart-chart includes a powerful standard management for defining scales and PASS/FAIL limits. For standardized sampling process so called "Organizers" are set up to define clear sample identification and a menu guided operation using your own schematics.
- The measured data is saved in a SQL database which allows handling of large data sets over time. This reliable database type ensures full network and server compatibility.
- Filter your database based on your specific criteria:
  - Example: Select a certain color, a certain time range or all "failed – red color coded" test series for further analysis.
  - The drill-in function shows history trend of the last 20 measurements of the same model, color and painting line. Just click on any point in the data table or graph!
  - smart-chart offers a dynamic print layout allowing you to create your own reports.
  - Data can be easily shared within the supply chain by extracting mini databases which can be combined with other databases.

With smart-process, you'll know where you are, where you're going, and how to get there.





<b>Catalog Number</b>	<b>7400</b>
<b>Short Description</b>	<b>wave-scan 3 dual</b>
<b>Application</b>	High to semi gloss, du < 65, linear range
<b>Structure Spectrum</b>	du: < 0.1 mm Wa: 0.1 to 0.3 mm Wb: 0.3 to 1 mm Wc: 1 to 3 mm Wd: 3 to 10 mm We: 10 to 30 mm
<b>Repeatability (Std. Dev.)</b>	du < 40: 4% or > 0.4 du > 40: 6% or > 0.6
<b>Reproducibility (Std.Dev.)</b>	du < 40: 6% or > 0.6 du > 40: 8% or > 0.8
<b>Object Curvature</b>	radius > 50 cm
<b>Scan Length</b>	5 / 10 / 20 cm
<b>Resolution</b>	375 Points/cm
<b>Min. Sample Size</b>	35 mm x 150 mm
<b>Light Source</b>	Laser diode, LED and IR-SLED
<b>Laser Energy</b>	< 390 µW (Laser class 1)
<b>Memory</b>	10.000 readings in 1000 test series
<b>Interface</b>	USB port, WiFi optionally
<b>Display type or no display without placeholder</b>	2.8 in capacitive color touch display
<b>Languages</b>	DE, EN, ES, FR, IT, JA, RU, ZH
<b>Power supply</b>	rechargeable Li-Ion battery pack, up to 1000 readings depending on usage
<b>Weight</b>	0.7 kg 1.55 lb
<b>Operating temperature</b>	10 - 40 °C 50 - 104 °F
<b>Storing temperature</b>	0 - 60 °C 32 - 140 °F
<b>Relative humidity</b>	up to 85 % at 35 °C (95 °F) non-condensing
<b>Dimensions: L x W x H</b>	15 x 7 x 11 cm 5.9 x 2.7 x 4.3 in

#### Delivery Content

Instrument, Checking tile (7404), Docking station with USB cable (7401), smart-process Software with 2 Licensees for download (4831), 2 rechargeable Li-Ion battery packs (7402), Certificate, Manual, Carrying case, 1-day training

#### System Requirements

Operating system: Windows® 10 1607 or later  
Hardware: i5 2.5 GHz; i9 recommended, or equivalent (x86 & x64 architecture only)  
Memory: 16 GB RAM, 32 GB recommended  
Free hard-disk capacity: 4 GB during installation  
Monitor resolution: 1920 x 1080 pixel; 4K recommended  
Interface: free USB-port

Catalog Number	Short Description	Delivery Content
7404	Checking tile for wave-scan 3 dual	
7401	Docking Station wave-scan 3	Docking station Li-Ion battery pack (7402) USB-cable
7402	Li-Ion battery pack for wave-scan 3	
4831	smart-process	Software with 2 licenses for download