

X-Smart® Apex Locator FactFile



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Precise root canal apex localization and correct working length determination are key factors for successful endodontic treatment. The European Society of Endodontists (ESE) and American Association of Endodontists (AAE) recommend using an apex locator in conjunction with verifying radiographs [1, 2]. Dentists report to use this advanced technology device in their daily practice for more than two decades [3-5]. Modern apex locators are valuable devices not only for primary endodontics, but also serve as a useful adjunct during retreatment and have been shown to be highly successful in the determination of root perforations. These devices produce accurate results in different environments, such as presence of blood, pulp tissue or sodium hypochlorite in the root canal space regardless of the file size, the alloy or the file type used [6-9].

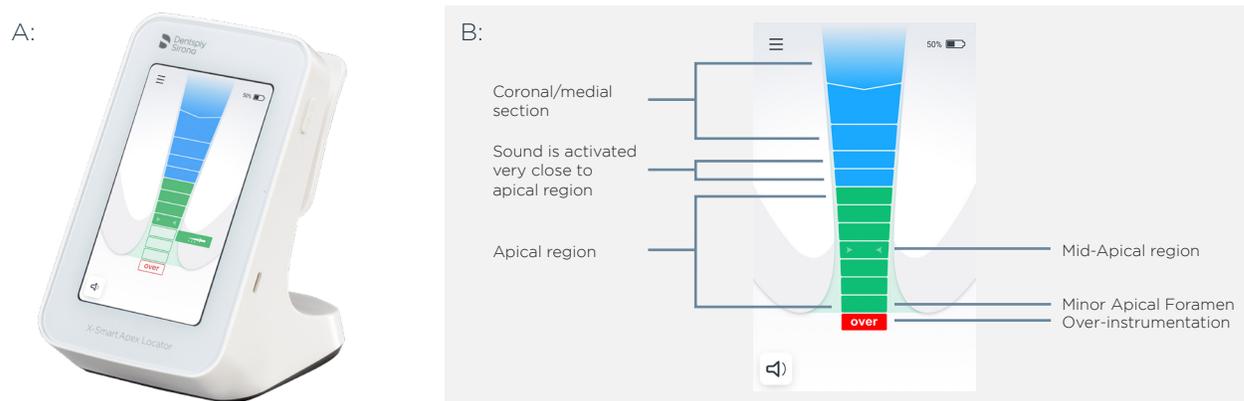


Figure 1: X-Smart® Apex Locator; A: Front-side view; B: During apex localization

The X-Smart® Apex Locator model (Figure 1) is based on a unique patented technology with more than 20 years of established clinical history, which uses electrical properties of different tissues inside the root canal system and provides correct results in canals with various conditions - dry and wet [10]. X-Smart® Apex Locator is enhanced with the cutting-edge technology for improved ergonomics and user interface. It has a modern design including cable management. The screen with capacitive touch panel presents larger viewing area with advanced graphical image of the tooth and root canal. The high-resolution display provides all viewing angles [11]. Visual and audio feedback guides the dentist during root canal measurements. X-Smart® Apex Locator is equipped with modern lithium-ion rechargeable battery, which can be charged 4 times faster and lasts longer compared to nickel-metal hydride battery.

“Dr’s Choice”  is a convenient optional function. This feature allows the user to mark a certain predefined position inside the root canal and to obtain additional visual and audio indication when the endodontic file tip reaches this position (Figure 2).

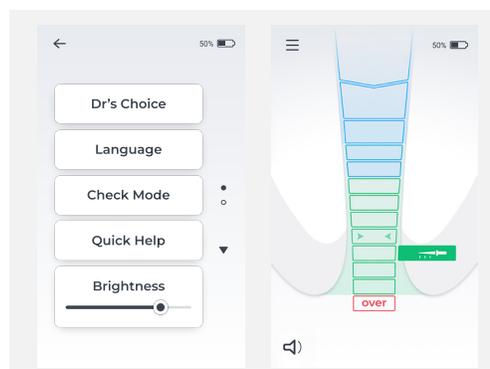


Figure 2: X-Smart® Apex Locator Dr's Choice.

***In vitro* [12] and *ex vivo* [13] data**

Accuracy, repeatability and stability of X-Smart® Apex Locator was tested on plastic blocks (root canal) filled with 0.9% Sodium Chloride (NaCl) and compared to the measurement of a gold-standard apex locator (Dentaport ZX, Morita Co, Japan) using K-files ISO size 10 and 40. The measurements of X-Smart® and the gold-standard apex locator were equivalent, demonstrating precise performance of the X-Smart® Apex Locator.

Accuracy and efficiency to detect the apical foramen position of X-Smart® Apex Locator was compared to the established competitor apex locators in 10 human extracted teeth [13]. Root canals were filled with 0.9% NaCl, different K-files of ISO size 8, 10, 15, 20 and 25 were used. X-Smart® Apex Locator presented 100% identical readings when compared to the reference devices [13].

Conclusion

X-Smart® Apex Locator could be your apex locator of choice, which has gold-standard equivalent performance, while providing improved ergonomics and user interface [12, 13].

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