SAR 電場探棒於可調整式開放波導內之耦合校正研究

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摘 要

近年來由於無線通訊科技的蓬勃發展，比吸收率（SAR：Specific Absorption Rate）已成為行動通訊與人體健康關係的重要議題，然而由於SAR量測系統幾乎都是使用E-probe進行量測SAR值，而E-probe經過一段時間的使用會慢慢的失去它的特性（精確度與準確性），由於國內無相關校正實驗室及校正製具，所以各實驗室所使用的E-Probe每年都需要送回原廠校正，曠日廢時，才能夠再次使用。有鑑於此，我們嘗試研究發展一套國內也能自行校正之系統，如此不僅節省時間、也省下了龐大的校正費用。 本論文在兩種情況下校正與查驗SAR測試探棒特性，第一種為在空氣中校正，另一種則在組織液中校正。首先必須先製作一個該頻段的波導管，而在短路端我們設計為可調式的裝置。在空氣中校正時，將E-Probe放置在波導開口端中央位置量測，紀錄量測到的電場值。而在組織液中校正時，波導管內部上端放置一Teflon容器，且Teflon容器的內部裝有模擬組織液，在校正時將E-Probe放置在模擬組織液體中，而且在Teflon容器正中央的位置，E-Probe由Teflon容器底部慢慢上升，計算且紀錄下由E-Probe所量測到的SAR值。在本研究中，我們將利用電磁數值模擬方法與實驗量測數值做比較，輔以模擬場強分佈，將以頻率900MHz與1800MHz各兩支波導管，加上Teflon與組織液，利用E-Probe與整組波導管作內部電場量測，並且使用兩支新舊探棒來量測作比較，針對數值方法來驗證我們所模擬以及量測結果的準確性，並提高量測可靠度。

關鍵詞 : SAR，波導管，E-Probe，模擬組織液

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