

# Survey on Different Samsung with Nokia Smart Mobile Phones in the Specific Absorption Rate Electrical Field of Head.

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## Abstract

The use of smart phones is increasing in the world. This excessive use, especially in the last two decades, has created too much concern on the effects of emitted electromagnetic fields and specific absorption rate on human health. In this descriptive-analytical study of the electric field resulting from smart phones of Samsung and Nokia by portable measuring device, electromagnetic field, Model HI-3603-VDT/VLF, were measured. Then, head absorption rate was calculated in these two mobiles by ICNIRP equation. Finally, the comparison of specific absorption rate, especially between Samsung and Nokia smart phones, was conducted by T-Test statistics analysis. The mean of electric field for Samsung and Nokia smart mobile phones was obtained  $1.8 \pm 0.19$  v/m and  $2.23 \pm 0.39$  v/m, respectively, while the range of the electric field was obtained as 1.56-2.21 v/m and 1.69-2.89 v/m for them, respectively. The mean of specific absorption rate in Samsung and Nokia was obtained  $0.002 \pm 0.0005$  W/Kg and  $0.0041 \pm 0.0013$  W/Kg at the frequency of 900 MHz and  $0.004 \pm 0.001$  W/Kg and  $0.0062 \pm 0.0002$  W/Kg at the frequency of 1800 MHz respectively. The ratio of mean electronic field to guidance in the Samsung mobile phone at the frequency of 900 MHz and 1800 MHz was 4.36% and 3.34%, while was 5.62% and 4.31% in the Nokia mobile phone, respectively. The ratio of mean head specific absorption rate in smart mobile phones of Samsung and Nokia in the guidance level at the frequency of 900 was 0.15% and 0.25%, respectively, while was 0.23 % and 0.38% at the frequency of 1800 MHz, respectively. The rate of specific absorption of Nokia smart mobile phones at the frequencies of 900 and 1800 MHz was significantly higher than Samsung (p value  $< 0.05$ ). Hence, we can say that in a fixed period, health risks of Nokia smart phones is higher than Samsung smart mobile phone.