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The Measurement of Electromagnetic Radiations from Mobile Base Stations in Sudan

Fatima Al-Emam Ali Al-Emam* ,Amin Babiker A/Nabi Mustafa* ,
Alaeldin Ibrahim Mohamed**
**Faculty of Engineering- Telecommunication Engineering Department Al-Neelain University*
***Faculty of Engineering- Chemical Engineering Department Al-Neelain University*
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Abstract: *The electrical devices that we used in our daily live such as: microwave ovens, washing machines, fans, mobile phones and mobile base stations, generate electromagnetic radiations. Many people are unaware of the effect of these radiations on their bodies when the presubscribed levels are exceeded.*

In this paper, we will measure the electromagnetic radiations(power density) that emit from Global System for Mobile (GSM) and Wideband Code Division Multiple Access (WCDMA) base stations in so many different areas in Sudan.

I. Introduction

Mobile base stations use radio signals to connect mobile devices to the network, enabling people to send and receive calls, texts, E-mails,

Pictures etc…., without base stations, mobiles will not work [1].

II. Methodology

We measured the power density that emit from base stations in differentareas in Sudan.

III. Results and Discussion

Table 1: the power density for WCDMA base stations in different areas

Area	Power density mW/cm^2					
	5m	10m	15m	20m	25m	30m
A	0.041	0.026	0.024	0.04	0.048	0.067
B	0.102	0.043	0.046	0.075	0.1	0.054
C	0.048	0.036	0.081	0.108	0.024	0.057
D	0.206	0.279	0.278	0.243	0.091	0.082
E	0.046	0.082	0.095	0.113	0.057	0.053
F	0.158	0.247	0.489	0.293	0.24	0.154
G	0.029	0.088	0.239	0.253	0.084	0.09
H	0.132	0.21	0.284	0.289	0.258	0.212
I	0.097	0.047	0.113	0.054	0.061	0.058
J	0.025	0.029	0.03	0.026	0.095	0.083

Table 2: The power density for GSM base stations in different areas

Area	Power density mW/cm2					
	5m	10m	15m	20m	25m	30m
K	0.043	0.037	0	0	0	0
L	0.021	0.08	0.153	0.119	0.014	0.013
M	0.116	0.061	0.187	0.024	0.02	0.003
N	0.175	0.258	0.151	0.031	0.009	0
O	0.083	0.099	0.155	0.036	0	0
P	0.1	0.228	0.336	0.191	0.049	0
Q	0.117	0.144	0.34	0.139	0.041	0.07
R	0.051	0.041	0.038	0.04	0.003	0.004
S	0.082	0.032	0.2	0.031	0.018	0.003
T	0	0.009	0.023	0	0.005	0.007

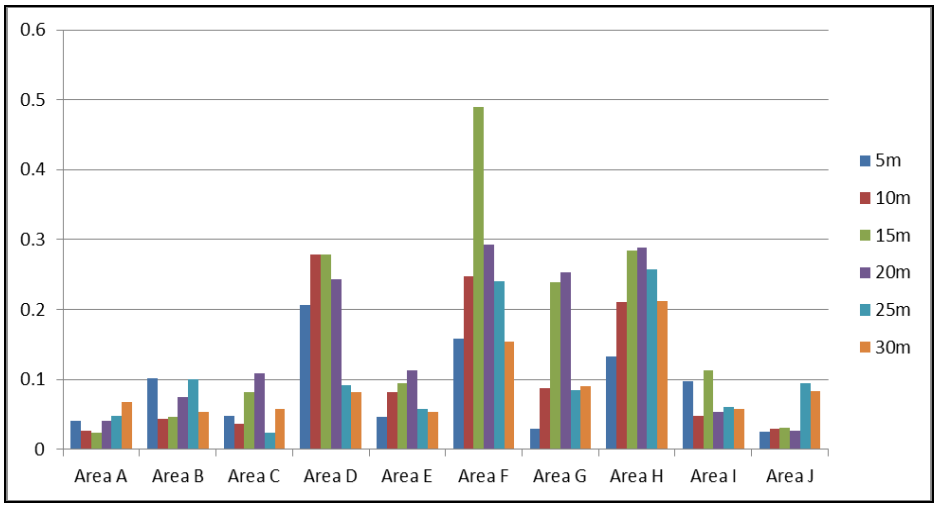

Figure 1: Shows the power density for WCDMA mobile base stations in differentareas

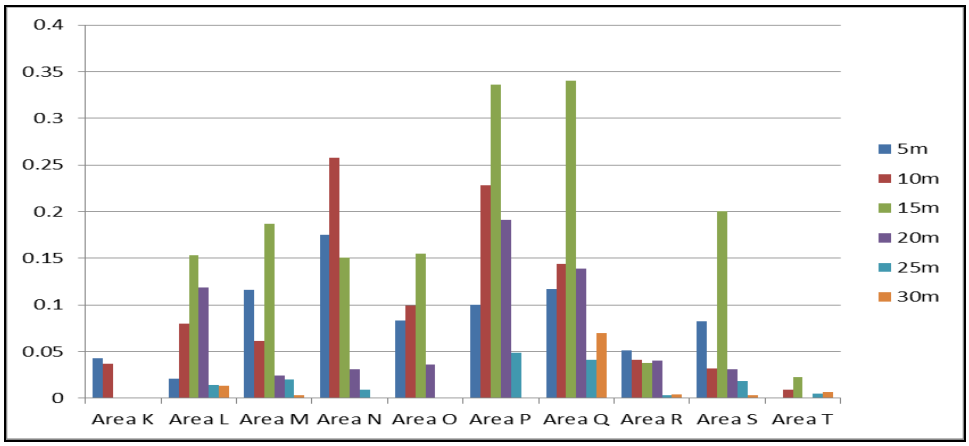

Figure 2: Shows the power density for GSM mobile base stations indifferentareas

Table1Shows that the power density for WCDMA mobile base stations in so many differentareas also, table 2 shows that the power density for GSM in Sudan, it is found that all measurements are within the standards that decided by International Telecommunication Union (ITU). Namely it is with 4.5W/m^2.

When comparedfigure1 with figure2 it is found that the power densities for WCDMA base stations in some areas are higher than the power densities for GSM base stations but all the values are within the standard range.

IV. Conclusion

We conclude that all results of power densities for both GSM and WCDMA base stations are within the standard rangeaccording to ITU and it is found that the NTC in Sudan plays an important role to apply the standards andtoprotect the users from electromagnetic radiation risks.

V. References

[1]. www.vodafone.com/content/index/about/sustainability/mpmh/how_work/base_stations.html