

# EMF Measurement and Analysis

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**Abstract:** *Electromotive force is a burning problem nowadays with the advent of Television, mobiles, laptops, and other such instruments. The hazards caused due to these instruments are severe. Human health is at stake today due to the above instruments. The paper focuses on measurements of emf due to devices like television, mobiles, electric iron, hairdryer, and many such instruments. Measures over this emf are also discussed. if proper measures are taken and the above devices are handled carefully there would be no risk of radiation. Moreover, plants provide a remedy and protect us from radiation. Measurements of emf are also taken on different plants like Olea vera and other plants.*

**Keywords:** EMF, measurement, analysis

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## INTRODUCTION

Emf is emitted by most electrical and electronic instruments like T.V, laptops, hair dryers, and hair straighteners. This emf is hazardous to human health. Therefore, it should be measured.

The emf is measured by a standard emf meter. It shows high values of emf towards hair straightener and hair dryer. The emf values towards plants such as aloe vera are measured, they show low values. hence plants can be used in minimizing the emf by electronic instruments. during the night the emf of television is measured and it is compared with its daytime readings. similarly, the emf of the laptop is measured with wi-fi on and with wi-fi off. The two readings are compared. graphs of some readings are plotted and analyzed.

System modeling:

To measure emf emitted through T.V, Laptop, refrigerator, washing machine, electric iron, electric hair dryer, hair straightener, emf meter is used.

Results are obtained from these readings and they are analyzed. Conclusions are drawn from these readings. Graphs of various readings are displayed.

Results:

Day time results for mobile emf measurement

Without wi fi

1. 0.26 micro Tesla
2. 0.51 micro Tesla
3. 0.52 micro Tesla
4. 0.68 micro Tesla
5. 0.28 micro Tesla
6. 0.43 micro Tesla
7. 0.72 micro Tesla
8. 0.62 micro Tesla
9. 0.78 micro tesla
10. 0.57 microTesla
11. 0.58 microTesla
12. 0.66 microTesla
13. 0.69 micro Tesla
14. 0.54 micro Tesla
15. 0.44 micro Tesla

with wi fi on

1. 0.69 micro Tesla
- 2.0.95 microTesla
- 3.1.15microTesla
- 4.1.63microTesla
- 5.0.77microTesla
- 6.0.59microTesla
- 7.0.87 microTesla
- 8.0.81 microTesla
- 9.0.69microTesla
- 10.0.72microTesla
- 11.0.44 microTesla
- 12.0.25microTesla
- 13.0.21microTesla
- 14.0.20microTesla
- 15.0.14microTesla

Daytime laptop emf measurement with wi fi on

H-field 0.69 microTesla

E-field 0.7 microTesla

16 0.00 microTesla.

48 v/m 0.26 microTesla

50 v/m 0.51 microTesla

21v/m 0.22 microTesla

22v/m 0.08 microTesla

Daytime laptop emf measurement with wi fi off

Efield 16v/m

20 v/m

25v/m

35 v/m

48 v/m harmful

65 v/m harmful

53 v/m harmful

68 v/m harmful

58v/m harmful

51 v/m harmful

Daytime readings for Television emf

Emf near T.V = 182 V/M

EMF near set top box = 202 v/m

R(radius)	emf (E)
3 cm	180 V/m
5 cm	149 v/m
7cm	142 v/m
10 cm	87 v/m
13 cm	97 v/m
17 cm	74 v/m
20 cm	63 v/m
25cm	69 v/m
30 cm	61 v/m

AT NIGHT EMF due to television

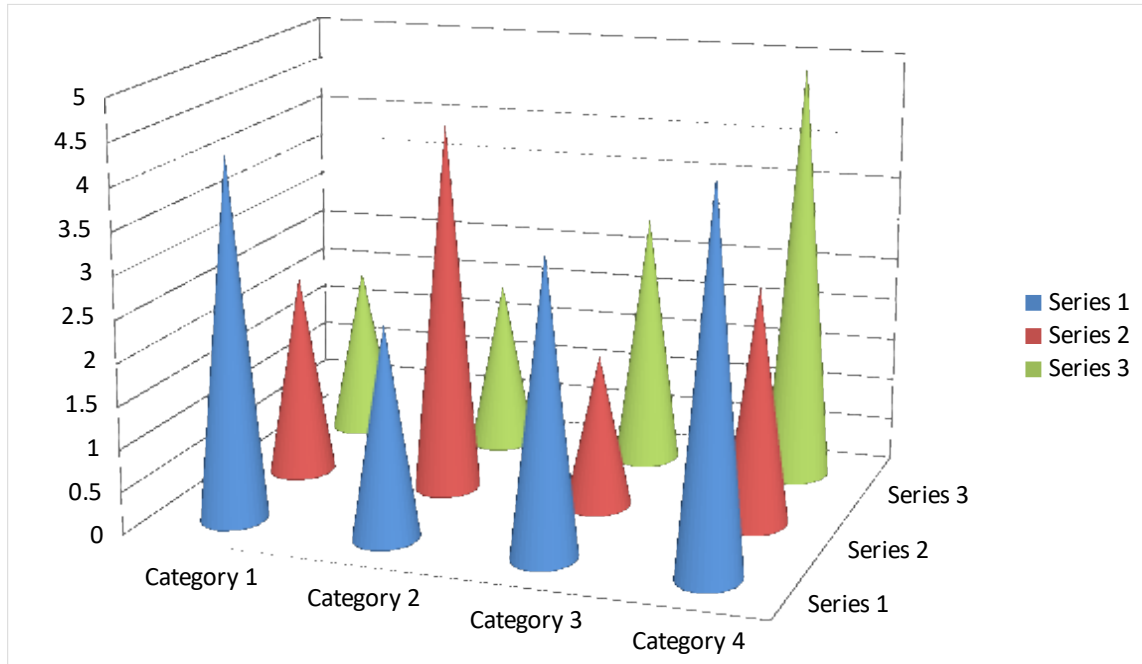
R	emf
1. 3cm	353 v/m
2. 5cm	309 v/m
3. 7 cm	253 v/m
4. 10 cm	128 v/m
5. 12 cm	209 v/m
6. 15 cm	172 v/m
7. 18 cm	136 v/m
8. 20 cm	121 v/m
9. 22 cm	107 v/m
10.24cm	84v/m
11.27cm	63v/m
12.30 cm	53 v/m
13. 60 cm	16v/m

Conclusions: Some conclusions can be drawn from the following readings

1. Emf is high when wifi is on, when wifi is off it is less
2. During night time emf is higher, during day time emf is lesser.
3. Emf due to laptop is highest as compared to t.v, or mobile
4. Emf decreases as time passes.

Graphs:

Graph for television emf at night:



Device	emf at 3cm	emf at 4cm	emf at 5 cm
Hair dryer	E-field 274 v/m	194 v/m	170v/m
	H-field 3.71 $\mu$ T	1.70 $\mu$ T	1.24 $\mu$ T
Iron	E-field 4v	1v	1v
	H-field 1.58 $\mu$ T	0.22 $\mu$ T	1.14 $\mu$ T

Device	emf at 3cm	emf at 4cm	emf at 5 cm
Hair Straightner	E-field 941v/m	941v/m	941v/m
	H-field 1.14 $\mu$ T	1.14 $\mu$ T	1.14 $\mu$ T

Conclusions:

Emf due to hair dryer is large and it decreases as distance increases.

Emf due to iron is comparatively smaller.

Emf due to hair straightener is largest of all and it remains constant even though distance increases.

We thus conclude that electrical and electronic instruments generate emf that is measurable and bad for human health.

### **References**

1. EMF Measurements by A.G.Andurkar,Mantech Publications,2021