



Measurement of MPE

1. Foreword

In adopt with the Human Exposure IEEE C95.1, and according to the FCC 1.1310. The *Maximum Permissible Exposure (MPE)* is obligated to measure in order to prove the safety of radiation harmfulness to the human body.

The *Gain* of the antenna used is measured in an *anechoic chamber*. The *maximum total power to the antenna* is to be recorded. By adopting the **Friis Transmission Formula** and the *power gain of the antenna*, we can find the distance right away from the product, where the limit of the MPE is.

2. Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	100	6
3.0-30	1842/f	4.89/f	900/f ²	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	100	30
1.34-30	824/f	2.19/f	180/f ²	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30



深圳康来士标准测试技术有限公司

COMPLIANCE CERTIFICATION SERVICES (SHENZHEN) INC.

深圳實驗室：中國深圳市寶安區觀瀾鎮大水坑村桔坑路 35 號 金澳工業科技園 5 號 (郵編: 518110) TEL.: (0755)28055000 FAX: (0755)28055221
SHENZHEN LAB.: No.5, Jinao Industrial Park, No.35, Jukeng Rd., Dashuikeng Village, Guanlan Town, Baoan District, Shenzhen, 518110, P.R.C.

According to **OET BULLETIN 56 Fourth Edition/August 1999, Equation for Predicting RF Fields:**

$$\text{Power density at the specific separation (mobile): } S = \frac{PG}{4\pi R^2} = \frac{67.61 \times 1.51}{4\pi(20)^2} = 0.02031 \text{ mW} / \text{cm}^2$$

Where: S = *power density* (in appropriate units, e.g. mW/cm²)

P = *power input* to the antenna (in appropriate units, e.g., mW)

G = *power gain* of the antenna in the direction of interest relative to an isotropic radiator

R = *distance* to the center of radiation of the antenna (appropriate units, e.g., cm)

The *Numeric gain* G of antenna with a gain specified in dB is determined by:

$$G = \text{Log}^{-1} (\text{dB antenna gain}/10)$$

$$G = \text{Log}^{-1} (1.8 / 10) = 1.51$$