Prediction of MPE at a given distance

1. Limits

The criteria listed in the following table shall be used to evaluate the environment impact of humanexposure to radio frequency (RF) radiation as specified in 1.1307(b)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (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
300-1,500			f/300	6
1,500-100,000			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
300-1,500			f/1500	30
1,500-100,000			1.0	30

2. Test Procedure

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \frac{P \times G}{4 \times \pi \times R^2}$$

Where:

S = power density

P = power input to the antenna

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

R = distance to the centre of radiation of the antenna

3. Result

2.4 GWIFI

For product Smart TV Box model X98PRO, the max. peak output power from antenna port is 12.51dBm at 2412MHz, and the antenna gain is 2.0dBi, so the max. EIRP is 12.51+2.0=14.51dBm=28.25mW

Therefore, the power density S is 0.0056mw/cm^2, which is less than 1mw/cm^2 at 20 cm distance.

As a result, we can draw a conclusion that MPE evaluation of this product can meet the requirement.

5G WIFI

For product Smart TV Box model X98PRO, the max. peak output power from antenna port is 8.61dBm at 5825MHz, and the antenna gain is 2.0dBi, so the max. EIRP is 8.61+2.0=10.61dBm=11.51mW

Therefore, the power density S is 0.002mw/cm^2, which is less than 1mw/cm^2 at 20 cm distance.

As a result, we can draw a conclusion that MPE evaluation of this product can meet the requirement.

Bluetooth:

For product Smart TV Box model X98PRO, the max. peak output power from antenna port is 3.605dBm at 2480MHz, and the antenna gain is 2.0dBi, so the max. EIRP is 3,605+2.0=5.605dBm=3.63mW

Therefore, the power density S is 0.0007mw/cm^2, which is less than 1mw/cm^2 at 20 cm distance.

As a result, we can draw a conclusion that MPE evaluation of this product can meet the requirement.

For this product, it can not be in a simultaneous transmitting mode, therefore, the product comply with MPE requirement.