

Application **CJ6PA3171WL**

For this Application three antenna types come along with the W-LAN Module, whereof two (Film and Dual Film Antenna) are intended to be inbuilt behind the Display of Notebooks (upper border), for the third one (Stick-on Antenna) a SAR Report has been submitted.

Prediction of MPE limit at given distance

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

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density
P = power input to the antenna
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

	Dual Film Antenna HTL-008	Film Antenna HTL-004	Stick-on Antenna HTL-007
Antenna Gain (dBi)	2.4	-0.8	-0.6

Prediction 1

Antenna Type: **Film Antenna HTL-004**
Location of Antenna: **behind Display of Notebook, upper border**

Maximum peak output power at antenna input terminal:	<u>19.2</u>	dBm
Maximum peak output power at antenna input terminal:	<u>83.17637711</u>	mW
Antenna gain(typical):	<u>-0.8</u>	dBi
Maximum antenna gain:	<u>0.831763771</u>	numeric
Prediction distance:	<u>20</u>	cm
Prediction frequency:	<u>2400</u>	MHz
MPE limit for uncontrolled exposure at prediction frequency:	<u>1</u>	$\frac{mW}{cm^2}$
Power density at prediction frequency:	0.013763539	$\frac{mW}{cm^2}$
Maximum allowable antenna gain:	17,81269842	dBi

Prediction 2

Antenna Type: **Dual Film Antenna HTL-008**
Location of Antenna: **behind Display of Notebook, upper border**

Maximum peak output power at antenna input terminal:	<u>19.2</u>	dBm
Maximum peak output power at antenna input terminal:	<u>83.17637711</u>	mW
Antenna gain(typical):	<u>2.4</u>	dBi
Maximum antenna gain:	<u>1,7378</u>	numeric
Prediction distance:	<u>20</u>	cm
Prediction frequency:	<u>2400</u>	MHz
MPE limit for uncontrolled exposure at prediction frequency:	<u>1</u>	$\frac{mW}{cm^2}$
Power density at prediction frequency:	0.0287561	$\frac{mW}{cm^2}$

This predictions, along with the following picture, demonstrate the following:

- 1) The power density levels at a distance of 20 cm. are well below the maximum levels allowed by the FCC regulations.
- 2) The distance to the antenna where $1 \frac{mW}{cm^2}$ will be reached is **R= 3,3915 cm** (with an antenna gain of 2.4 dBi)
- 3) A minimum separation distance of 20 cm. can practically be maintained during normal use of the equipment as shown in picture below.

