BABT. Segensworth Road, Titchfield
Fareham, Hampshire, United Kingdom, PO15 5RH
Tel: +44(0) 1329 443300, Fax: +44(0) 1329 443331
www.babt.com

MPE Calculation For Symbol Photon Wireless LAN

A 5GHz Spread Spectrum device has a measured output power of 83.75mW with a worst-case antenna gain of 3.7dBi. The equipment can operate in the bands listed in the table below. The equipment is proposed as meeting the OET65 requirements for use at 20cm.

The wavelength of the equipment is:

$$\frac{3x10^8}{5180\ x10^6} = 0.058m$$

Thus, the far field region is defined as being:

$$\frac{\lambda}{2\pi} = \frac{0.058}{6.283} = 0.009m \text{ or } 9mm$$

Therefore, the formula below is applicable as any distance greater than 9mm is in the far field. Thus, predicting the worst case RF Power Density at 20cm from the antenna would be:

$$S = \frac{P \times G}{4\pi R^2} = \frac{83.75 \times 2.34}{12.57 \times 20^2} = 0.039mW/cm^2$$

where:

P = power measured in mW
G = antenna gain as numeric gain, (2.34 numeric / 3.7dBi)
R = distance in cm

MPE for Occupational/Controlled Exposure from 5150 to 5825MHz is $5mW/cm^2$

MPE for General Population/Uncontrolled Exposure from 5150 to 5825MHz is $1mW/cm^2$

Therefore, the unit under test has a power density, which is less than both the General Population and Occupational exposure limits. This is the case for the equipment under test in all conditions of operation. The tables below show the Power Density result for each channel and antenna configuration.

Frequency (MHz)	Measured Conducted Power (mW)	Antenna Gain		Power Density (mW/cm^2)
		dBi	Numeric	
5180	49.20	3.7	2.34	0.023
5180	49.20	2	1.58	0.015
5240	49.55	3.7	2.34	0.023
5240	49.55	2	1.58	0.016
5260	83.75	3.7	2.34	0.039
5260	83.75	2	1.58	0.026
5320	75.51	3.7	2.34	0.035
5320	75.51	2	1.58	0.024

BABT. Segensworth Road, Titchfield
Fareham, Hampshire, United Kingdom, PO15 5RH
Tel: +44(0) 1329 443300, Fax: +44(0) 1329 443331
www.babt.com

MPE Calculation For Symbol Hydra Wireless LAN - continued

Frequency (MHz)	Measured Conducted Power (mW)	Antenna Gain		Power Density (mW/cm^2)
		dBi	Numeric	
5745	72.44	3.7	2.34	0.034
5745	72.44	2	1.58	0.023
5805	69.02	3.7	2.34	0.032
5805	69.02	2	1.58	0.022
5830	75.16	3.7	2.34	0.035
5830	75.16	2	1.58	0.024