



## **MPE/RF EXPOSURE REPORT**

**FCC CFR 47 Part 1.1310**

**Report No.: ALER03-U2 Rev A MPE**

**Company:** Alereon Inc.

**Model Name:** AL5350B Based UWB Modules

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**Model Name:** AL5350B Based UWB Modules

**To:** FCC CFR 47 Part 1.1310

Report Serial No.: ALER03-U2 Rev A MPE

This report supersedes: NONE

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## 1. MAXIMUM PERMISSIBLE EXPOSURE

### Calculations for Maximum Permissible Exposure Levels

$$\text{Power Density} = P_d \text{ (mW/cm}^2\text{)} = \text{EIRP}/(4*\pi*d^2)$$

$$\text{EIRP} = P * G$$

P = Peak output power (mW)

G = Antenna numeric gain (numeric)

d = Separation distance (cm)

Numeric Gain =  $10^{(G \text{ (dBi)}/10)}$

Because the EUT belongs to the General Population/Uncontrolled Exposure the limit of power density is 1.0 mW/cm<sup>2</sup>

These calculations represent worst case in terms of the exposure levels.

Freq. Band (MHz)	Ant Gain (dBi)	Numeric Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated Power Density (mW/cm <sup>2</sup> ) @ 20cm	Power Density Limit (mW/cm <sup>2</sup> )	Min Calculated safe distance (cm)
3100-10600	0.00	1.00	-41.3	7.41E-05	1.5E-08	1.00	2.43E-03

Note: for mobile or fixed location transmitters the minimum separation distance is 20cm, even if calculations indicate the MPE distance to be less.

### Specification - Maximum Permissible Exposure Limits

The Limit is defined in Table 1 of FCC §1.1310.

**Specification - Maximum Permissible Exposure Limits**

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposure</b>				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f <sup>2</sup>	6
30-300	61.4	0.163	1.0	6
300-1,500	--	--	f/300	6
1,500-100,000	--	--	5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f <sup>2</sup>	30
30-300	27.5	0.073	0.2	30
300-1,500	--	--	f/1500	30
1,500-100,000	--	--	1.0	30

f = frequency in MHz \* = Plane-wave equivalent power density



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