XXXX-YYYYY-ZZZZ

MPE Evaluation
Intel® Centrino® Advanced-N 6200
FCC ID: UGL622ANH IC: 7888B-622ANH

xxxx-yyyyy-zzzz	-	ENGINEERING
NUMBER	REVISION	DEPARTMENT

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Engineering Test Report

Program	ARMOR X7		
Report Title	MPE Evaluation – Intel® Centrino® Advanced-N 6200		
Author	Dillard Gilmore	Time	
Report Number		Date	

RECORD CHANGES TO DOCUMENT AS FOLLOWS

DOCUMENT: xxxx-yyyyy-zzzz	**ECO #:**	**OLD REV:**	**NEW REV:**

The following changes have been made:

1. Initial release

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1 Introduction

Systems operating under the provision of 47 CFR 1.1307(b)(1) shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the FCC guidelines.

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the user or nearby persons when used with the vehicle docking station and external antenna. It can therefore be considered a mobile transmitter per 47 CFR 2.1091(b) in this configuration. When docked, only Chain A of the WLAN module is available at the external antenna port. The MPE calculation for this exposure is shown below.

2 Antenna

The antenna used for this evaluation is Mobile Mark SMW-301-3C3J2C. The peak gain (G_{dB}) of this antenna is +5dBi in both frequency bands 2.4 – 2.5 GHz and 4.9 – 6.0 GHz.

3 MPE Calculations

From 47 CFR 1.1310 Table 1, the maximum permissible exposure (MPE) for the general population/ uncontrolled exposure is 1.0 mW/cm^2 for the frequency range 1500 – 100,000 MHz.

The peak radiated output power is calculated as follows

Frequency Band (MHz)	Power Input to Antenna (P_{dB}) (dBm)	Gain of the Antenna (G_{dB}) (dBi)	$EIRP_{dB}$ (dBm)	EIRP (mW)
2.4	16.74	5	21.74	149.3
5	16.94	5	21.94	156.3

$EIRP_{dB} = P_{dB} + G_{dB}$
EIRP = 10^($EIRP_{db}$/10)

The power density at 20 cm is

Frequency Band (MHz)	Power Input to Antenna (P) (mW)	Numeric Gain of the Antenna (G)	Power Spectral Density (mW/cm^2)	Maximum Power Spectral Density Limit (mW/cm^2)
2.4	47.21	3.16	0.030	1.0
5	49.43	3.16	0.031	1.0

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$G = 10^{(G_{dB}/10)} = 3.16$
$P = 10^{(P_{dB}/10)}$
$S = PG/(4\pi D^2)$

Where
S = Power spectral density (mW/cm^2)
P = Power input to the antenna (mW)
G = Numeric gain of the antenna
D = Distance from the center of the radiation of the antenna

4 Conclusion

The power density at 20 cm does not exceed the 1 mW/cm^2 limit. Therefore the exposure condition is compliant with FCC rules.

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