



Attn: Reviewing Engineer
Federal Communications Commission
7435 Oakland Mills Road
Columbia, MD 21046

**MPE calculation. USA FCC and Industry Canada IC application .
Project MDE_HARMAN_1303_LevB
Model BE L002,**

7 layers AG
Borsigstr.11
40880 Ratingen Germany

01 October 2014

**FCC-ID: 2ACRLBEL002
IC ID: 12339A-BEL002**

Maximum Permissible Exposure

as specified in Table 1B of 47 CFR 1.1310 – Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure

Frequency range (MHz)	Power density (mW/cm ²)
300 – 1,500	f/1500
1,500 – 100,000	1.0

Antenna information :

2400.0 MHz- 2483.5 MHz: Type: Internal PCB antenna

Polarization: Linear

Impedance: 50 Ohm

Frequency: 2.4 to 2.5GHz

Gain: -5.2 dB

VSWR: <2.5

Calculations

The output power at antenna input terminal: FCC conducted, (8-DPSK Modulation):3.89 dBm(2.45 mW);

FSK modulation 3.48dBm(2.23mW); .EN300328 RF output power measurements -8.4 dBm; ;
[Maximum output power declared by embedded chip
manufacturer value is 8 dbm (6.3mW)]
[antenna gain:-5.2 Dbi]

Prediction distance **R**: 20 cm

Prediction frequency :2400 MHz

MPE limit **S**: 1 mW/cm²

Equation OET bulletin 65, page 18, edition 97-01: **S = P*G / (4πR²)**

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 centre of radiation of the antenna (20cm)

P= 3.89 dBm =(2.45)mW
G= -5.20 dBi
S = 0.00014713979433 mW/cm²

Calculated maximum Power density (S)	Limit	Verdict
0.00014713979433 mW/cm ²	1.0 mW/cm ²	Pass

Yours sincerely

Aleksey Yevdokymov, Testing and certification project manager.

Ratingen, 1 October 2014

