MPE Calculation

Applicant:	Shining3D Tech Co.,Ltd
Address:	No.1398 Xiangbin Road, Xiaoshan, Hangzhou, China
Product:	Cradle
FCC ID:	2AMG4-CRA3W
Model No.:	Cra 3W
Reference RF report #	709502279701-00A

According to subpart 15.407(f)and subpart §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*($180/f^2$)	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;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:
Predication of MPE limit at a given distance

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm^2);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

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Calculated Data:

Antenna1: FPC Antenna

Maximum peak output power at antenna input terminal (dBm):	16.17
Maximum peak output power at antenna input terminal (mW):	41.40
Prediction distance (cm):	20
Antenna Gain, typical (dBi):	1.59
Maximum Antenna Gain (numeric):	1.44
The worst case is power density at predication frequency at 20 cm (mW/cm^2):	0.0119

Antenna2: FPC Antenna

Maximum peak output power at antenna input terminal (dBm):	16.56
Maximum peak output power at antenna input terminal (mW):	45.29
Prediction distance (cm):	20
Antenna Gain, typical (dBi):	1.52
Maximum Antenna Gain (numeric):	1.42
The worst case is power density at predication frequency at 20 cm (mW/cm^2):	0.0128

The max power density 0.0247 (mW/cm2) < 1 (mW/cm2)

Result: Compliant

- TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

Reviewed by:	Prepared by:	Tested by:
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EMC Section Manager	EMC Project Engineer	EMC Test Engineer
Date: 2023-03-17	Date: 2023-03-17	Date: 2023-03-17

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