MPE Calculation

Applicant:	Hangzhou Tuya Information Technology Co.,Ltd
Address:	Room701,Building3,More Center,No.87 GuDun Road,Hangzhou,Zhejiang China
Product:	Wi-Fi and Bluetooth Module
FCC ID:	2ANDL-AXY3S
Model No.:	AXY3S
Reference RF report #	7095021029128-00, 7095021029130-00

According to subpart 15.247(i)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);

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
3-13, No.151, Heng Tong Road, Shanghai, 200070, P.R. China
Phone: +86 21 61410123, Fax:+86 21 61408600

Calculated Data for Wi-Fi

Maximum peak output power at antenna input terminal (dBm):	24.87
Maximum peak output power at antenna input terminal (mW):	306.90
Prediction distance (cm):	20
Antenna Gain, typical (dBi):	1.81
Maximum Antenna Gain (numeric):	1.52
The worst case is power density at predication frequency at 20 cm (mW/cm^2):	0.0928
MPE limit for general population exposure at prediction frequency (mW/cm^2):	1.0

The max power density 0.0928 (mW/cm^2) < 1 (mW/cm^2)
Result: Compliant

Calculated Data for BLE

Maximum peak output power at antenna input terminal (dBm):	7.39
Maximum peak output power at antenna input terminal (mW):	5.48
Prediction distance (cm):	20
Antenna Gain, typical (dBi):	1.81
Maximum Antenna Gain (numeric):	1.52
The worst case is power density at predication frequency at 20 cm (mW/cm^2):	0.0019
MPE limit for general population exposure at prediction frequency (mW/cm^2):	1.0

The max power density 0.0019 (mW/cm^2) < 1 (mW/cm^2)
Result: Compliant

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

Reviewed by:	Prepared by:	Tested by:
Hui TONG	Jiaxi XU	Cheng Huali
EMC Section Manager	EMC Project Engineer	EMC Test Engineer
Date: 2022-01-12	Date: 2022-01-12	Date: 2022-01-12

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
3-13, No.151, Heng Tong Road, Shanghai, 200070, P.R. China
Phone: +86 21 61410123, Fax:+86 21 61408600