

FCC Maximum Permissible Exposure (MPE) Report

Report Number : **68.760.23.0754.01-S1** Date of Issue: 2023-11-17

Model / HVIN : **H8249-1.**

Product Type : **IP Touch Lite 7**

Applicant : **ABB Xiamen Smart Technology Co., Ltd.**

Address : **4th Floor, No. 881, FangShanXiEr Road, Xiang'An Industrial Area,**
Torch Hi-Tech Industrial Development Zone, 361000 Xiamen S.E.Z,
Fujian Province, PEOPLE'S REPUBLIC OF CHINA

Manufacturer : **ABB Xiamen Smart Technology Co., Ltd.**

Address : **4th Floor, No. 881, FangShanXiEr Road, Xiang'An Industrial Area,**
Torch Hi-Tech Industrial Development Zone, 361000 Xiamen S.E.Z,
Fujian Province, PEOPLE'S REPUBLIC OF CHINA

Test Result : **Positive** **Negative**

Total pages including Appendices : **8**

Any use for advertising purposes must be granted in writing. This technical report may only be quoted in full. This report is the result of a single examination of the object in question and is not generally applicable evaluation of the quality of other products in regular production. For further details, please see testing and certification regulation, chapter A-3.4.



1 Table of Contents

1	Table of Contents	2
2	Details about the Test Laboratory.....	3
3	Description of the Equipment Under Test.....	4
4	General Information	5
5	RF Exposure Requirements.....	6
6	FCC MPE Limits	7
7	RF Exposure Evaluation (FCC)	8
7.1	Calculation of Power Density for Single Transmission.....	8
7.2	Conclusion.....	8

2 Details about the Test Laboratory

Details about the Test Laboratory

Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12 & 13, Zhiheng Wisdomland Business Park,
Guankou Erlu, Nantou, Nanshan District,
Shenzhen, Guangdong, China

Telephone: 86 755 8828 6998

Fax: 86 755 8828 5299

FCC Registration No.: 514049

FCC Designation Number: CN5009

3 Description of the Equipment Under Test

Product:	IP Touch Lite 7
Model no.:	H8249-1.
FCC ID:	2AEBL-H8249
Rating:	20-27VDC, 9W
RF Transmission Frequency:	2412MHz - 2462MHz for 2.4GHz Wi-Fi; 5180MHz – 5320MHz, 5500MHz – 5700MHz, 5745MHz – 5825MHz for 5GHz Wi-Fi (This device shall not be capable of transmitting in the band 5600-5650 MHz. This restriction is for the protection of Terminal Doppler Weather Radar (TDWR) operating in this band.)
No. of Operated Channel:	11 for 2.4GHz WIFI (802.1b/g/n20); 43 for 5GHz Wi-Fi
Modulation:	802.11b: BPSK, QPSK, CCK, 802.11g: BPSK, QPSK, 16-QAM, 64-QAM 802.11a: BPSK, QPSK, 16-QAM, 64-QAM 802.11n: BPSK, QPSK, 16-QAM, 64-QAM 802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
Antenna Type:	Integrated FPC antenna
Antenna Gain:	4.5 dBi for 2.4GHz Wi-Fi 5.3 dBi for 5GHz Wi-Fi
Description of the EUT:	The EUT is an IP Touch Lite 7 supports Wi-Fi functions, 2412MHz - 2462MHz for 2.4GHz Wi-Fi, 5180MHz – 5320MHz, 5500MHz – 5700MHz, 5745MHz – 5825MHz for 5GHz Wi-Fi.

NOTE 1: The above EUT's information is declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

4 General Information

Any use for advertising purposes must be granted in writing. This technical report may only be quoted in full. This report is the result of a single examination of the object in question and is not generally applicable evaluation of the quality of other products in regular production. For further details, please see testing and certification regulation, chapter A-3.4.

Prepared By Project Engineer	2023-11-17	Myron Yu	
	Date	Name	Signature
Approved By Project Manager	2023-11-17	Jessie He	
	Date	Name	Signature



5 RF Exposure Requirements

An estimation of MPE in this application for product is used to ensure if it complies with the rules of the standard in the regulation list above.

Maximum permissible exposure (MPE) refers to the RF energy that is acceptable for human exposure. It is broken down into two categories, Occupational/controlled and General population/uncontrolled.

Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

A rough estimation of the expected exposure in power flux density on a given point can be made with the following equation:

$$S = \frac{P \times G}{4 \times \pi \times R^2}$$

Where:

S = power density

P = power input to the antenna

G = numeric gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the centre of radiation of the antenna

EIRP = P * G

The antenna of the product, under normal use condition is at least 20 cm away from the body of the user. Warning statement to the user for keeping at least 20cm separation distance and the prohibition of operating to a person has been printed on the user's manual. Therefore, the S of the device is calculated with R=20cm, and if it is below the limit S, then we can conclude the device complies with the rules.

6 FCC MPE Limits

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.

We analysis if it complies with the limits for General population/uncontrolled exposure. The FCC MPE limits for field strength and power density are given in 47CFR 1.1310 (Table below) and KDB447498 D01 v06. These limits are generally based on recommended exposure guidelines published by the National Council on Radiation Protection and Measurements (NCRP), and also partly based on guidelines recommended by the American National Standards Institute (ANSI) in Section 4.1 of ANSI/IEEE C95.1.

(B) Limits for General Population/uncontrolled Exposure				
Frequency Range(MHz)	Electric Field Strength(E)(V/m)	Magnetic Field Strength(H)(A/m)	Power Density (S)(mW/cm ²)	Averaging Time (minute) E ² , H ² or S
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

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

Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is ≤ 1.0

7 RF Exposure Evaluation (FCC)

7.1 Calculation of Power Density for Single Transmission

Mode	EIRP (dBm)	EIRP (mW)	R (cm)	S (mW/cm ²)	Limit (mW/cm ²)	MPE Ratio
2.4GHz WIFI	17.81	60.39	20	0.01202	1.0	1.20%
5GHz WIFI	20.60	114.82	20	0.02284	1.0	2.28%

Remark: The product also has multiple transmitters, the simultaneous transmit function is not supported.

7.2 Conclusion

According to the table above, the calculated power density S is below the limit, therefore, the product complies with the requirements.