

1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 General Information

Client Information

Applicant: Shenzhen Chuangwei Electronic Appliance Tech Co.,Ltd.
Address of applicant: 4F & 6F, Overseas plant south, Skyworth Industrial Park, Shiyan Street, Bao'an District, Shenzhen, China

Manufacturer: Shenzhen Chuangwei Electronic Appliance Tech Co.,Ltd.
Address of manufacturer: 4F & 6F, Overseas plant south, Skyworth Industrial Park, Shiyan Street, Bao'an District, Shenzhen, China

General Description of EUT:

Product Name: 15.6 inch WiFi Digital Photo Frame/15.6 inch WiFi Digital Photo Frame
Calendar
Trade Name: Skylight
Model No.: 150-FRM
Adding Model(s): 150-CAL
Rated Voltage: DC12V
Battery Capacity: /
MODEL: AP049U-12200
Power Adapter: INPUT: AC100-240V ~ 50/60Hz 0.6A MAX
OUTPUT: DC12V, 2.0A
FCC ID: 2AABK-150
Equipment Type: Fixed device

Technical Characteristics of EUT:

Wi-Fi (2.4G)

Support Standards: 802.11b, 802.11g, 802.11n
Frequency Range: 2412-2462MHz for 802.11b/g/n(HT20)
2422-2452MHz for 802.11n(HT40)
RF Output Power: 15.36dBm (Conducted)
Type of Modulation: CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM
Quantity of Channels: 11 for 802.11b/g/n(HT20); 7 for 802.11n(HT40)
Channel Separation: 5MHz
Type of Antenna: FPC Antenna
Antenna Gain: 3dBi

Wi-Fi (5G)

Support Standards: 802.11a, 802.11n(HT20), 802.11n-HT40, 802.11ac-VHT20,
802.11ac-VHT40,802.11ac-VHT80
Frequency Range: 5150-5250MHz, 5250-5350MHz,
5470-5725MHz, 5725-5850MHz
RF Output Power: 11.29dBm (Conducted)

Type of Modulation: BPSK, QPSK, 16QAM, 64QAM, 256QAM
 Type of Antenna: FPC Antenna
 Antenna Gain: 4.6dBi

1.2 Standard Applicable

According to § 1.1307(b)(1) and KDB 447498 D01 General RF Exposure Guidance v06, system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

(a) Limits for Occupational / Controlled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	F/300	6
1500-100000	/	/	5	6

(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 Times E ² , H ² or S (minutes)
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
1500-100000	/	/	1	30

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

1.3 MPE Calculation Method

$$S = (30 * P * G) / (377 * R^2)$$

S = power density (in appropriate units, e.g., mw/cm²)

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 (in appropriate units, e.g., cm)

1.4 MPE Calculation Result

For Wi-Fi (2.4G)

Maximum Tune-Up output power: 16.0 (dBm)

Maximum peak output power at antenna input terminal: 39.81 (mW)

Prediction distance: >20(cm)

Prediction frequency: 2422 (MHz)

Antenna gain: 3 (dBi)

Directional gain (numeric gain): 2.00

The worst case is power density at prediction frequency at 20cm: 0.0158 (mw/cm²)

MPE limit for general population exposure at prediction frequency: 1 (mw/cm²)

For Wi-Fi (5G)

Maximum Tune-Up output power: 12.0 (dBm)

Maximum peak output power at antenna input terminal: 15.85 (mW)

Prediction distance: >20(cm)

Prediction frequency: 5785 (MHz)

Antenna gain: 3.58 (dBi)

Directional gain (numeric gain): 2.88

The worst case is power density at prediction frequency at 20cm: 0.0091 (mw/cm²)

MPE limit for general population exposure at prediction frequency: 1 (mw/cm²)

Result: Pass