

1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 General Information

Client Information

Applicant: Shenzhen WOWOTO Technology Co., Ltd.
Address of applicant: Floor 4th, Gaoxinqi Industrial Park, Liuxian 1st Road, district 67, Bao'an, Shenzhen, China

Manufacturer: Shenzhen WOWOTO Technology Co., Ltd.
Address of manufacturer: Floor 4th, Gaoxinqi Industrial Park, Liuxian 1st Road, district 67, Bao'an, Shenzhen, China

General Description of EUT:

Product Name: SMART PROJECTOR
Trade Name: WOWOTO
Model No.: Q1, Q1 Pro, Q2, Q3, Q5, Q6, Q6 Pro, Q8, Q9
FCC ID: 2AQYK-QSERIEC
Rated Voltage: DC 3.7V

Technical Characteristics of EUT:

BT

Bluetooth Version: V4.0
Frequency Range: 2402-2480MHz
RF Output Power: 8.138dBm (Conducted)
Data Rate: 1Mbps, 2Mbps, 3Mbps
Modulation: GFSK, Pi/4 QDPSK, 8DPSK
Quantity of Channels: 79/40
Channel Separation: 1MHz/2MHz
Type of Antenna: Integral
Antenna Gain: 0dBi

Wi-Fi 2.4G

Support Standards: 802.11b, 802.11g, 802.11n-HT20
Frequency Range: 2412-2462MHz
RF Output Power: 14.41dBm (Conducted)
Type of Modulation: CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM
Data Rate: 1-11Mbps, 6-54Mbps, up to 72.2Mbps
Quantity of Channels: 11
Channel Separation: 5MHz
Type of Antenna: Integral
Antenna Gain: 0dBi

Wi-Fi 5G

Support Standards: 802.11a, 802.11n(HT20)

Frequency Range: 5150-5250MHz, 5725-5850MHz
 RF Output Power: 9.21dBm (Conducted)
 Type of Modulation: QPSK, 16QAM, 64QAM
 Data Rate: 6-54Mbps, up to 200Mbps
 Type of Antenna: Integral Antenna
 Antenna Gain: 0dBi

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

BT:

Maximum Tune-Up output power: 9(dBm)

Maximum peak output power at antenna input terminal: 7.94(mW)

Prediction distance: >20(cm)

Prediction frequency: 2402(MHz)

Antenna gain: 0(dBi)

Directional gain (numeric gain): 1

The worst case is power density at prediction frequency at 20cm: 0.0016(mw/cm²)

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

Wi-Fi 2.4G:

Maximum Tune-Up output power: 15(dBm)

Maximum peak output power at antenna input terminal: 31.62(mW)

Prediction distance: >20(cm)

Prediction frequency: 2412(MHz)

Antenna gain: 0(dBi)

Directional gain (numeric gain): 1

The worst case is power density at prediction frequency at 20cm: 0.0063(mw/cm²)

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

Wi-Fi 5G:

Maximum Tune-Up output power: 10(dBm)

Maximum peak output power at antenna input terminal: 10(mW)

Prediction distance: >20(cm)

Prediction frequency: 5180(MHz)

Antenna gain: 0(dBi)

Directional gain (numeric gain): 1

The worst case is power density at prediction frequency at 20cm: 0.0020(mw/cm²)

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

Result: Pass