

1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 General Information

Client Information

Applicant: ENLI INCORPORATION
Address of applicant: 4F,No.42,Aly.5,Ln.12,Sec.3,Bade Rd.Songshan Dist,Taipei 10559,Taiwan

Manufacturer: FN-LINK TECHNOLOGY LIMITED

Address of manufacturer: No. 8, Litong Road, Liuyang Economic and Technological Development Zone, Hunan Province, China

General Description of EUT:

Product Name: Wi-Fi 6 Dual Band Dual Current 2*2 + Bluetooth (V5.1 LE) M.2 2230 Card
Trade Name: Enli
Model No.: ENL-Q6391M2
Adding Model(s): /
Rated Voltage: DC3.3V
Battery Capacity: /
FCC ID: 2AWKZ-Q6391M2

Technical Characteristics of EUT:

Wi-Fi(5GHz)

Support Standards: 802.11a, 802.11n(HT20) , 802.11n-HT40,802.11ac-VHT80,
802.11ax-HE20, 802.11ax-HE40, 802.11ax-HE80
Frequency Range: 5150-5250MHz, 5725-5850MHz
5150-5250MHz: Antenna 0: 16.51dBm (Conducted)
Antenna 1:15.76dBm (Conducted)
5725-5850MHz: Antenna 0: 15.16dBm (Conducted)
Antenna 1: 16.22dBm (Conducted)

RF Output Power:

Type of Modulation: BPSK, QPSK,16QAM,64QAM, 256QAM

Wi-Fi(2.4GHz)

Support Standards: 802.11b, 802.11g, 802.11n, 802.11AX-HE20, 802.11AX-HE40
2412-2462MHz for 802.11b/g/n(HT20)/AX(HE20);
2422-2452MHz for 802.11n(HT40) /AX(HE40)
Antenna 0: 17.89dBm (Conducted)
Antenna 1: 18.01dBm (Conducted)

RF Output Power:

Type of Modulation: CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM, 256QAM, 1024QAM
11 for 802.11b/g/n(HT20)/AX(HE20)

Quantity of Channels:

7 for 802.11n(HT40)/AX(HE40)

Channel Separation:

5MHz

Bluetooth

Bluetooth Version: V5.1 (BR/EDR/LE mode)

Frequency Range: 2402-2480MHz
 RF Output Power: 8.86dBm (Conducted)
 Data Rate: 1Mbps, 2Mbps, 3Mbps
 Modulation: GFSK, Pi/4 DQPSK, 8DPSK
 Quantity of Channels: 79/40
 Channel Separation: 1MHz/2MHz

The antennas provided to the EUT, Please refer to the following table

Antenna No.	CON No.	Brand	Model	Ant.Net Gain (dBi)	Frequency range(GHz)	Antenna Type	Connector Type
1	CON1	ARiSTO	RFA - 27 -	3	2.4-2.4835	Dipole	IPEX
	CON2	TLE	C38H1 - MHF4300	5	5.15-5.85	Dipole	MHF4
2	CON1	ARiSTO	RFA - 27 -	3.5	2.4-2.4835	PIFA	IPEX
	CON2	TLE	JP326 - MHF4300	5	5.15-5.85	PIFA	MHF4

Note: The Antenna Gain is provided by the customer and can affect the validity of results.

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 equivalents 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(5GHz)

Maximum Tune-Up output power: 17.5(dBm)

Maximum peak output power at antenna input terminal: 56.23(mW)

Prediction distance: >20(cm)

Prediction frequency: 5825 (MHz)

Max. Antenna gain: 5 (dBi)

Directional gain (numeric gain): 3.16

The worst case is power density at prediction frequency at 20cm: 0.0354(mw/cm²)

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

For Wi-Fi(2.4GHz)

Maximum Tune-Up output power: 18.5(dBm)

Maximum peak output power at antenna input terminal: 70.79(mW)

Prediction distance: >20(cm)

Prediction frequency: 2412 (MHz)

Max. Antenna gain: 3.5 (dBi)

Directional gain (numeric gain): 2.24

The worst case is power density at prediction frequency at 20cm: 0.0315(mw/cm²)

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

For Bluetooth

Maximum Tune-Up output power: 9.0(dBm)

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

Prediction distance: >20(cm)

Prediction frequency: 2402(MHz)

Max. Antenna gain: 5 (dBi)

Directional gain (numeric gain): 3.16

The worst case is power density at prediction frequency at 20cm: 0.0050(mw/cm²)

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

Result: Pass