

1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 General Information

Client Information

Applicant: JOYO TECHNOLOGY CO., LTD
Address of applicant: 2/F, Lushi Industry Building, 28th District, Bao'an, Shenzhen, 518101
China

Manufacturer: JOYO TECHNOLOGY CO., LTD
Address of manufacturer: 2/F, Lushi Industry Building, 28th District, Bao'an, Shenzhen, 518101
China

General Description of EUT:

Product Name: Tube Guitar Amplifier
Trade Name: JOYO
Model No.: KLONZ
Adding Model(s): /
FCC ID: 2AIN7KLONZ
Rated Voltage: AC 120V/60Hz
Battery Capacity:

Technical Characteristics of EUT:

Support Standards: BT V4.0(BLE)
Frequency Range: 2402-2480MHz
Max RF Output Power: -2.391dBm (Conducted)
Type of Modulation: GFSK
Type of Antenna: Integral Antenna
Antenna Gain: 1.3dBi
Device Category: Mobile Device

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

Maximum Tune-Up output power: -2.391 (dBm)

Maximum peak output power at antenna input terminal: 0.58 (mW)

Prediction distance: >20(cm)

Prediction frequency: 2480(MHz)

Antenna gain: 1.3(dBi)

Directional gain (numeric gain): 1.35

The worst case is power density at prediction frequency at 20cm: 0.0002(mw/cm²)

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

Result: Pass

1.5 Test Setup Photos

