

FCC ID: 2AB7K-T1012

Maximum Permissible Exposure (MPE)

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency(RF) Radiation as specified in §1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm ²) | Averaging time (minutes) |
|--|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| (A) Limits for Occupational/Controlled Exposure | | | | |
| 0.3-3.0 | 614 | 1.63 | *100 | 6 |
| 3.0-30 | 1842/f | 4.89/f | *900/f ² | 6 |
| 30-300 | 61.4 | 0.163 | 1.0 | 6 |
| 300-1,500 | | | f/300 | 6 |
| 1,500-100,000 | | | 5 | 6 |
| (B) Limits for General Population/Uncontrolled Exposure | | | | |
| 0.3-1.34 | 614 | 1.63 | *100 | 30 |
| 1.34-30 | 824/f | 2.19/f | *180/f ² | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1,500 | | | f/1500 | 30 |
| 1,500-100,000 | | | 1.0 | 30 |

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

MPE Calculation Method

$$E \text{ (V/m)} = \frac{\sqrt{30 * P * G}}{d} \qquad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric field (V/m)

P = Average RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 * P * G}{377 * D^2}$$

From the EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained.

Measurement Result

WIFI:

Operation Frequency: WIFI 802.11b/g/n HT20: 2412-2462MHz,
 WIFI 802.11n HT40: 2422-2452MHz,
 Power density limited: 1mW/ cm²

Antenna Type: PCB Antenna

WIFI antenna gain: 1.0dBi;

R=20cm

$mW=10^{(dBm/10)}$

antenna gain Numeric= $10^{(dBi/10)}=10^{(1/10)}=1.26$

| Channel Freq. (MHz) | modulation | conducted power | Tune-up power | Max | | Antenna | Evaluation result at 20cm | Power density Limits |
|---------------------|-------------|-----------------|---------------|---------------|----------|---------|---------------------------|----------------------|
| | | (dBm) | (dBm) | tune-up power | | Gain | | |
| | | | | (dBm) | (mW) | Numeric | | |
| 2412 | 802.11b | 17.3 | 17.0±1 | 18 | 63.09573 | 1.26 | 0.01582 | 1 |
| 2437 | | 17.5 | 17.0±1 | 18 | 63.09573 | 1.26 | 0.01582 | 1 |
| 2462 | | 17.6 | 17.0±1 | 18 | 63.09573 | 1.26 | 0.01582 | 1 |
| 2412 | 802.11g | 14.3 | 14.0±1 | 15 | 31.62278 | 1.26 | 0.00793 | 1 |
| 2437 | | 14.6 | 14.0±1 | 15 | 31.62278 | 1.26 | 0.00793 | 1 |
| 2462 | | 14.5 | 14.0±1 | 15 | 31.62278 | 1.26 | 0.00793 | 1 |
| 2412 | 802.11n H20 | 14.9 | 14.0±1 | 15 | 31.62278 | 1.26 | 0.00793 | 1 |
| 2437 | | 14.8 | 14.0±1 | 15 | 31.62278 | 1.26 | 0.00793 | 1 |
| 2462 | | 14.9 | 14.0±1 | 15 | 31.62278 | 1.26 | 0.00793 | 1 |
| 2422 | 802.11n H40 | 13.5 | 13.0±1 | 14 | 25.11886 | 1.26 | 0.00630 | 1 |
| 2437 | | 13.6 | 13.0±1 | 14 | 25.11886 | 1.26 | 0.00630 | 1 |
| 2452 | | 13.8 | 13.0±1 | 14 | 25.11886 | 1.26 | 0.00630 | 1 |

Conclusion:

For the max result : $0.01582 \leq 1.0$ for Max Power Density, No SAR is required.

Jason chen

Signature:

Date: 2017-06-20

NAME AND TITLE (Please print or type): Jason Chen/Manager

COMPANY (Please print or type): Shenzhen NTEK Testing Technology Co., Ltd./ 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street Bao'an District, Shenzhen 518126 P.R. China