

RF Exposure

FCC ID: 2A4BW-FD06-0216

Applicant: ShenZhen Fairair Technology Co.,Ltd.

Exposure category: General population/uncontrolled environment

EUT Type: Smart Frame

Refer Standard: FCC Part 2.1091: Radio Frequency (RF) Exposure Compliance of Radio communication Apparatus (All Frequency Bands)

FCC MPE Limited:

| Limits for General Population/Uncontrolled Exposure | | | | |
|---|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm ²) | Averaging Time (minutes) |
| 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 |
| 300-1500 | / | / | f/1500 | 30 |
| 1500-100,000 | / | / | 1.0 | 30 |

Test Data

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

Where: S = power density

P = power input to the antenna

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 (appropriate units, e.g., cm)

Antenna Gain information

2.4G WLAN: 2.0 dBi

BT: 2.0 dBi

BLE: 2.0dBi

Worst-Case mode Conducted Output Power Results for 2.4G WIFI

802.11b mode

| Channel | Frequency (MHz) | Output Power(dBm) | Tune Up tolerance(dBm) |
|---------|-----------------|-------------------|------------------------|
| 1 | 2412 | 15.47 | 15 ±1 |
| 6 | 2437 | 15.74 | 15 ±1 |
| 11 | 2462 | 15.75 | 15 ±1 |

Worst-Case mode Conducted Output Power Results for BT /BLE

| Bluetooth | | | | |
|-----------|-----------|----------------|------------|------------------------|
| Band | Mode | Test Frequency | Power(dBm) | Tune-up tolerance(dBm) |
| BT EDR | GFSK | 2402 | 5.35 | 5 ±1 |
| | GFSK | 2441 | 5.93 | 5 ±1 |
| | GFSK | 2480 | 4.95 | 5 ±1 |
| | pi/4DQPSK | 2402 | 6.51 | 7 ±1 |
| | pi/4DQPSK | 2441 | 7.12 | 7 ±1 |
| | pi/4DQPSK | 2480 | 6.24 | 7 ±1 |
| | 8DPSK | 2402 | 6.81 | 7 ±1 |
| | 8DPSK | 2441 | 7.41 | 7 ±1 |
| | 8DPSK | 2480 | 7.40 | 7 ±1 |
| BLE | GFSK | 2402 | -1.71 | -1 ±1 |
| | GFSK | 2440 | -1.67 | -1 ±1 |
| | GFSK | 2480 | -0.68 | -1 ±1 |

Note: for power tolerance please refer to tune up for detail.

Calculation results (for 2.4G WIFI): Worst-case mode

| Frequency (MHz) | Maximum tune up power(dBm) | RF distance(cm) | Result (mW/cm ²) | Limit (mW/cm ²) |
|-----------------|----------------------------|-----------------|------------------------------|-----------------------------|
| 2412 | 16 | 20 | 0.0126 | 1.0 |
| 2437 | 16 | 20 | 0.0126 | |
| 2462 | 16 | 20 | 0.0126 | |

Calculation results (for BT/BLE)

| Bluetooth | | | | | |
|-----------|-----------|----------------|----------------------------|------------------------------|-----------------------------|
| Band | Mode | Test Frequency | Maximum tune up power(dBm) | Result (mW/cm ²) | Limit (mW/cm ²) |
| BT EDR | GFSK | 2402 | 6 | 0.0013 | 1.0 |
| | GFSK | 2441 | 6 | 0.0013 | |
| | GFSK | 2480 | 6 | 0.0013 | |
| | pi/4DQPSK | 2402 | 8 | 0.0020 | |
| | pi/4DQPSK | 2441 | 8 | 0.0020 | |
| | pi/4DQPSK | 2480 | 8 | 0.0020 | |
| | 8DPSK | 2402 | 8 | 0.0020 | |
| | 8DPSK | 2441 | 8 | 0.0020 | |
| | 8DPSK | 2480 | 8 | 0.0020 | |
| BLE | GFSK | 2402 | 0 | 0.0003 | |
| | GFSK | 2440 | 0 | 0.0003 | |
| | GFSK | 2480 | 0 | 0.0003 | |

Simultaneous Transmission Calculation (Worst-case mode)

| No. | Transmitter Combinations | Scenario Supported or not |
|-----|--------------------------|---------------------------|
| 1 | 2.4G WLAN+BT | Yes |

Max Simultaneous Transmission Calculation (Worst-case mode)

| No. | Worst Mode | MPE Ratio | Results |
|-----|--------------|----------------|------------------|
| 1 | 2.4G WIFI+BT | 0.0126+0.0020= | 0.0146<1.0(pass) |