# FCC RF EXPOSURE REPORT

| EUT | Building Automation System |
|---|---|
| **Model No.** | FW-28 |
| **FCC ID:** | 2AKZUFW28 |
| **Frequency band (Operating)** | ☒ WLAN: 2.412GHz ~ 2.462GHz <br> ☐ WLAN: 2.422GHz ~ 2.452GHz <br> ☐ WLAN: 5.180GHz ~ 5.240GHz <br> ☐ WLAN: 5.260GHz ~ 5.320GHz <br> ☐ WLAN: 5.500GHz ~ 5.700GHz <br> ☐ BLE: 2.402GHz ~ 2.480GHz <br> ☐ Bluetooth: 2.402GHz ~ 2.480GHz |
| **Device category** | ☐ Portable (<20cm separation) <br> ☒ Mobile (>20cm separation) |
| **Exposure classification** | ☐ Occupational/Controlled exposure (S = 5mW/cm$^2$) <br> ☒ General Population/Uncontrolled exposure (S=1mW/cm$^2$) |
| **Antenna diversity** | ☐ Single antenna <br> ☒ Multiple antennas <br>    ☐ Tx diversity <br>    ☐ Rx diversity <br>    ☒ Tx/Rx diversity |
| **Evaluation applied** | ☒ MPE Evaluation* <br> ☐ SAR Evaluation <br> ☐ N/A |
| | |

## TEST RESULTS

No non-compliance noted.

## Calculation

Given $E = \dfrac{\sqrt{30 \times P \times G}}{d}$ & $S = \dfrac{E^2}{3770}$

Where
E = Field strength in Volts / meter
P = Power in Watts
G = Numeric antenna gain
d = Distance in meters
S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770 d^2}$$

Changing to units of mW and cm, using:

P (mW) = P (W) / 1000 and
d (cm) = d(m) /100

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \qquad \textbf{\textit{Equation 1}}$$

Where
d = Distance in cm
P = Power in mW
G = Numeric antenna gain
S = Power density in mW / cm²

## Maximum Permissible Exposure

| Modulation Mode | Frequency band (MHz) | Measured power(dBm) | Tuneuptolerance(dBm) | Max.TuneupPower(dBm) | Peak output power(mW) | Antenna Gain (dBi) | Antenna gain (Numeric) | Distance (cm) | Power density (mW/cm2) | Limit (mW/cm2) |
|---|---|---|---|---|---|---|---|---|---|---|
| 802.11b | 2412-2462 | 16.25 | 16±1 | 17.00 | 50.11872336 | 5.01 | 3.17 | 20 | 0.03161208 | 1 |
| 802.11g | 2412-2462 | 21.23 | 21±1 | 22.00 | 158.4893192 | 5.01 | 3.17 | 20 | 0.099966175 | 1 |
| 802.11n HT20 | 2412-2462 | 20.99 | 20±1 | 21.00 | 125.8925412 | 5.01 | 3.17 | 20 | 0.079405956 | 1 |
| 802.11n HT40 | 2422-2452 | 21.39 | 21±1 | **22.00** | 158.4893192 | **5.01** | 3.17 | 20 | 0.099966175 | **1** |

Note: Directional gain =2dBi + 10log(2)=5.01dBi