



# RF EXPOSURE Test Report

**Report No.:** MTi220426020-01E3

**Date of issue:** 2022-05-20

**Applicant:** Shenzhen Smartrol Technology Limited

**Product name:** Alarm System

ZX-G95W, ZX-G95, ZX-G95Z, P7,  
CP7R, CP7S, CP8, ZX-P10, ZX-P20,

**Model(s):** ZX-R10, ZX-D10, ZX-D30, ZX-SN10,  
ZX-SN30, ZX-SN40, ZX-G30, ZX-G40,  
ZX-G60, ZX-P31, ZX-P31B, ZX-P30

**FCC ID:** 2AURI-ZX-G95W

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>



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5. Any objection to this report shall be submitted to the laboratory within 15 days from the date of receipt of the report.



| TEST RESULT CERTIFICATION              |                                                                                                                                                          |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Applicant's name.....                  | Shenzhen Smartrol Technology Limited                                                                                                                     |
| Address.....                           | 6F, Leishi Industrial Park, NO.1119, Guanlan Guanguang Road, Longhua District, Shenzhen, China                                                           |
| Manufacturer's Name .....              | Shenzhen Smartrol Technology Limited                                                                                                                     |
| Address.....                           | 6F, Leishi Industrial Park, NO.1119, Guanlan Guanguang Road, Longhua District, Shenzhen, China                                                           |
| Factory's Name .....                   | Shenzhen Smartrol Technology Limited                                                                                                                     |
| Address.....                           | 6F, Leishi Industrial Park, NO.1119, Guanlan Guanguang Road, Longhua District, Shenzhen, China                                                           |
| <b>Product description</b>             |                                                                                                                                                          |
| Product name .....                     | Alarm System                                                                                                                                             |
| Trademark .....                        | SMARTROL                                                                                                                                                 |
| Model Name .....                       | ZX-G95W                                                                                                                                                  |
| Serial Model .....                     | ZX-G95, ZX-G95Z, P7, CP7R, CP7S, CP8, ZX-P10, ZX-P20, ZX-R10, ZX-D10, ZX-D30, ZX-SN10, ZX-SN30, ZX-SN40, ZX-G30, ZX-G40, ZX-G60, ZX-P31, ZX-P31B, ZX-P30 |
| Standards.....                         | N/A                                                                                                                                                      |
| Test procedure .....                   | KDB 447498 D01 v06                                                                                                                                       |
| <b>Date of Test</b>                    |                                                                                                                                                          |
| Date (s) of performance of tests ..... | 2022-05-07 ~ 2022-05-19                                                                                                                                  |
| Test Result.....                       | Pass                                                                                                                                                     |

**Testing Engineer**

:

*Cindy Qin*

(Cindy Qin)

**Technical Manager**

:

*Leon Chen*

(Leon Chen)

**Authorized Signatory**

:

*Tom Xue*

(Tom Xue)



## RF EXPOSURE EVALUATION

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 <sup>2</sup> ) | Averaging time (minutes) |
|----------------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| <b>(A) Limits for Occupational/Controlled Exposure</b>         |                               |                               |                                     |                          |
| 0.3-3.0                                                        | 614                           | 1.63                          | *100                                | 6                        |
| 3.0-30                                                         | 1842/f                        | 4.89/f                        | *900/f <sup>2</sup>                 | 6                        |
| 30-300                                                         | 61.4                          | 0.163                         | 1.0                                 | 6                        |
| 300-1,500                                                      |                               |                               | f/300                               | 6                        |
| 1,500-100,000                                                  |                               |                               | 5                                   | 6                        |
| <b>(B) Limits for General Population/Uncontrolled Exposure</b> |                               |                               |                                     |                          |
| 0.3-1.34                                                       | 614                           | 1.63                          | *100                                | 30                       |
| 1.34-30                                                        | 824/f                         | 2.19/f                        | *180/f <sup>2</sup>                 | 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

Friis transmission formula:  $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

$P_d$  = Power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

$G$  = Numeric gain of the antenna relative to isotropic antenna

$\pi$  = 3.1415926

$R$  = distance between observation point and center of the radiator in cm(20cm)

$P_d$  the limit of MPE, 1mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

## Measurement Result

### BLE:

Operation Frequency: 2402-2480MHz,

Power density limited: 1mW/ cm<sup>2</sup>

### 2.4GWiFi:

Operation Frequency: WIFI 802.11b/g/n HT20: 2412-2462MHz, 802.11n HT40: 2422-2452MHz,

Power density limited: 1mW/ cm<sup>2</sup>

Antenna Type: PCB Antenna; antenna gain: 1.3dBi

$R=20\text{cm}$ ,  $\text{mW}=10^{(\text{dBm}/10)}$ , antenna gain Numeric= $10^{(\text{dBi}/10)}=10^{(1.3/10)}=1.35$

### BLE:

| Channel Freq.<br>(MHz) | modulation | conducted power | Tune-up power<br>(dBm) | Max           |       | Antenna |         | Evaluation result | Power density Limits |
|------------------------|------------|-----------------|------------------------|---------------|-------|---------|---------|-------------------|----------------------|
|                        |            | (dBm)           |                        | tune-up power |       | Gain    |         | (mW/cm2 )         | (mW/cm2)             |
|                        |            |                 |                        | (dBm)         | (mW)  | (dBi)   | Numeric |                   |                      |
| 2402                   | GFSK       | 5.59            | 5±1                    | 6             | 3.981 | 1.3     | 1.35    | 0.0011            | 1                    |
| 2440                   |            | 5.22            | 5±1                    | 6             | 3.981 | 1.3     | 1.35    | 0.0011            | 1                    |
| 2480                   |            | 4.50            | 5±1                    | 6             | 3.981 | 1.3     | 1.35    | 0.0011            | 1                    |

### 2.4GWiFi :

| Channel Freq. (MHz) | modulation  | conducted power | Tune-up power | Max           |           | Antenna | Evaluation result at 20cm          | Power density Limits  |
|---------------------|-------------|-----------------|---------------|---------------|-----------|---------|------------------------------------|-----------------------|
|                     |             | (dBm)           | (dBm)         | tune-up power |           | Gain    | Power density(mW/cm <sup>2</sup> ) | (mW/cm <sup>2</sup> ) |
|                     |             |                 |               | (dBm)         | (mW)      | Numeric |                                    |                       |
|                     |             |                 |               | Ant A         | Ant A     | Ant A   |                                    |                       |
| 2412                | 802.11b     | 15.35           | 15±1          | 16            | 39.810717 | 1.35    | 0.01069                            | 1                     |
| 2437                |             | 14.85           | 15±1          | 16            | 39.810717 | 1.35    | 0.01069                            | 1                     |
| 2462                |             | 14.75           | 15±1          | 16            | 39.810717 | 1.35    | 0.01069                            | 1                     |
| 2412                | 802.11g     | 14.1            | 15±1          | 16            | 39.810717 | 1.35    | 0.01069                            | 1                     |
| 2437                |             | 14.19           | 15±1          | 16            | 39.810717 | 1.35    | 0.01069                            | 1                     |
| 2462                |             | 14.78           | 15±1          | 16            | 39.810717 | 1.35    | 0.01069                            | 1                     |
| 2412                | 802.11n H20 | 14.07           | 15±1          | 16            | 39.810717 | 1.35    | 0.01069                            | 1                     |
| 2437                |             | 14.03           | 15±1          | 16            | 39.810717 | 1.35    | 0.01069                            | 1                     |
| 2462                |             | 14.19           | 15±1          | 16            | 39.810717 | 1.35    | 0.01069                            | 1                     |
| 2422                | 802.11n H40 | 14.11           | 15±1          | 16            | 39.810717 | 1.35    | 0.01069                            | 1                     |
| 2437                |             | 14.02           | 15±1          | 16            | 39.810717 | 1.35    | 0.01069                            | 1                     |
| 2452                |             | 14.03           | 15±1          | 16            | 39.810717 | 1.35    | 0.01069                            | 1                     |

Simultaneous transmit

BLE+2.4GWiFi=0.0011+0.01069=0.01179

### Conclusion:

For the max result:  $0.01179 \leq 1.0$ .

----END OF REPORT----