



FCC ID: SW8TR1B100Z1S  
Report No.: T200528D01-MF

Page 1 / 8  
Rev.: 02

**KDB 447498 D03**  
**47 C.F.R. Part 1, Subpart I, Section 1.1310**  
**47 C.F.R. Part 2, Subpart J, Section 2.1091**

## **RF EXPOSURE REPORT**

**For**

**Z-Wave® Scene Button**

**Model: TR1B100Z1**

**Trade Name: GOOD WAY**

*Issued to*

**GOOD WAY TECHNOLOGY CO., LTD.**  
**3F, No. 135, Ln. 235, Baociao Rd., Sindian Dist., New Taipei City 231, Taiwan**

*Issued by*

**Compliance Certification Services Inc.**  
**Wugu Laboratory**  
**No.11, Wugong 6th Rd., Wugu Dist.,**  
**New Taipei City, Taiwan. (R.O.C.)**  
**Issue Date: July 10, 2020**

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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Report No.: T200528D01-MF

Page 2 / 8

Rev.: 02

## Revision History

| Rev. | Issue Date    | Revisions                       | Effect Page | Revised By   |
|------|---------------|---------------------------------|-------------|--------------|
| 00   | July 2, 2020  | Initial Issue                   | ALL         | Allison Chen |
| 01   | July 8, 2020  | See the following note Rev.(01) | P.6, P.8    | Allison Chen |
| 02   | July 10, 2020 | See the following note Rev.(02) | P.6, P.8    | Allison Chen |

### **Rev.(01)**

1. Revised output power, tune up power and test result.

### **Rev.(02)**

1. Revised output power, tune up power and test result.



Report No.: T200528D01-MF

Page 3 / 8  
Rev.: 02

## TABLE OF CONTENTS

|                                      |   |
|--------------------------------------|---|
| 1. TEST RESULT CERTIFICATION .....   | 4 |
| 2. LIMIT .....                       | 5 |
| 3. EUT SPECIFICATION .....           | 6 |
| 4. TEST RESULTS .....                | 7 |
| 5. MAXIMUM PERMISSIBLE EXPOSURE..... | 8 |



Report No.: T200528D01-MF

Page 4 / 8

Rev.: 02

## 1. TEST RESULT CERTIFICATION

### We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10: 2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

The test results of this report relate only to the tested sample EUT identified in this report.

| APPLICABLE STANDARDS                                                                                                                                |                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| STANDARD                                                                                                                                            | TEST RESULT             |
| KDB 447498 D03<br>47 C.F.R. Part 1, Subpart I, Section 1.1310<br>47 C.F.R. Part 2, Subpart J, Section 2.1091                                        | No non-compliance noted |
| Statements of Conformity                                                                                                                            |                         |
| Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty. |                         |

Approved by:

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Kevin Tsai  
Deputy Manager  
Compliance Certification Services Inc.



Report No.: T200528D01-MF

Page 5 / 8

Rev.: 02

## 2. LIMIT

According to §15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.

### 3. EUT SPECIFICATION

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |  |        |           |            |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--|--------|-----------|------------|
| EUT                          | Z-Wave® Scene Button                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |  |        |           |            |
| Model                        | TR1B100Z1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |  |        |           |            |
| Model Discrepancy            | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |  |        |           |            |
| Frequency band (Operating)   | <div><input type="checkbox"/> Bluetooth: 2402MHz-2480MHz</div> <div><input type="checkbox"/> 802.11b/g/n HT20: 2412MHz ~ 2462 MHz</div> <div><input type="checkbox"/> 802.11n HT40: 2422MHz ~ 2452MHz<br/>802.11a/n HT20: 5180MHz ~ 5240MHz / 5260MHz ~ 5320MHz / 5500MHz ~ 5700MHz / 5745MHz ~ 5825MHz<br/>802.11n HT40: 5190MHz ~ 5230MHz / 5270MHz ~ 5310MHz / 5510MHz ~ 5670MHz / 5755MHz ~ 5795MHz<br/>802.11ac VHT80: 5210MHz / 5290MHz / 5530MHz / 5775MHz</div> <div><input checked="" type="checkbox"/> Z-wave: 908 MHz, 908.4 MHz, 916 MHz</div> <div><input type="checkbox"/> Others</div> |            |  |        |           |            |
| Device category              | <div><input type="checkbox"/> Portable (&lt;20cm separation)</div> <div><input checked="" type="checkbox"/> Mobile (&gt;20cm separation)</div> <div><input type="checkbox"/> Others</div>                                                                                                                                                                                                                                                                                                                                                                                                             |            |  |        |           |            |
| Exposure classification      | <div><input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm²)</div> <div><input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm²)</div>                                                                                                                                                                                                                                                                                                                                                                                                                |            |  |        |           |            |
| Antenna Specification        | Z-wave                      Antenna Gain :    -0.70 dBi    (Numeric gain 0.85)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |  |        |           |            |
| Maximum average output power | <table><tr><td>Z-wave</td><td>-1.57 dBm</td><td>(0.697 mW)</td></tr></table> <div>EIRP= E(dBuV/m) + 20 log (D) – 104.8<br/>= 93.69 + 20 log (3) – 104.8<br/>= 93.69 + 9.54 – 104.8 = -1.57 dBm</div>                                                                                                                                                                                                                                                                                                                                                                                                  |            |  | Z-wave | -1.57 dBm | (0.697 mW) |
| Z-wave                       | -1.57 dBm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | (0.697 mW) |  |        |           |            |
| Maximum tune up power        | <table><tr><td>Z-wave</td><td>0.57 dBm</td><td>(1.140 mW)</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |  | Z-wave | 0.57 dBm  | (1.140 mW) |
| Z-wave                       | 0.57 dBm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | (1.140 mW) |  |        |           |            |
| Evaluation applied           | <div><input checked="" type="checkbox"/> MPE Evaluation*</div> <div><input type="checkbox"/> SAR Evaluation</div> <div><input type="checkbox"/> N/A</div>                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |  |        |           |            |

## 4. TEST RESULTS

**No non-compliance noted.**

### Calculation

Given  $E = \frac{\sqrt{30 \times P \times G}}{d}$  &  $S = \frac{E^2}{377}$

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:

$$S = \frac{30 \times P \times G}{377 d^2}$$

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = d \text{ (m)} / 100$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{377 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \text{Equation 1}$$

Where  $d$  = Distance in cm

$P$  = Power in mW

$G$  = Numeric antenna gain

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



Report No.: T200528D01-MF

Page 8 / 8

Rev.: 02

## 5. MAXIMUM PERMISSIBLE EXPOSURE

Substituting the MPE safe distance using  $d = 20$  cm into Equation 1:

$$S = 0.000199 \times P \times G$$

Where  $P$  = Power in mW

$G$  = Numeric antenna gain

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

### Z-Wave:

| Frq.(MHz) | P (mW) | Gain (num.) | D (cm) | Power density in mW / cm <sup>2</sup> | Limit (mW/cm2) |
|-----------|--------|-------------|--------|---------------------------------------|----------------|
| 908.4     | 1.14   | 0.85        | 20     | 0.0002                                | 1              |
| 908.42    | 1.14   | 0.85        | 20     | 0.0002                                | 1              |
| 916       | 1.14   | 0.85        | 20     | 0.0002                                | 1              |

--End of Report--