

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                  |                                                                                                                |                             |                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------|----------------------------------------------|
| <b>Prüfbericht - Nr.:</b><br><i>Test Report No.:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>50323449 001</b>                                                                              | <b>Auftrags-Nr.:</b><br><i>Order No.:</i>                                                                      | 180116641                   | Seite 1 von 4<br><i>Page 1 of 4</i>          |
| <b>Kunden-Referenz-Nr.:</b><br><i>Client Reference No.:</i>                                                                                                                                                                                                                                                                                                                                                                                                                         | N/A                                                                                              | <b>Auftragsdatum:</b><br><i>Order date:</i>                                                                    | 18.11.2019                  |                                              |
| <b>Auftraggeber:</b><br><i>Client:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                              | Ring LLC<br>1523 26th St, Santa Monica, CA 90404, USA                                            |                                                                                                                |                             |                                              |
| <b>Prüfgegenstand:</b><br><i>Test item:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                         | Smart Lightbulb                                                                                  |                                                                                                                |                             |                                              |
| <b>Bezeichnung / Typ-Nr.:</b><br><i>Identification / Type No.:</i>                                                                                                                                                                                                                                                                                                                                                                                                                  | 5AT1S3, 5AT3S4                                                                                   |                                                                                                                |                             |                                              |
| <b>Auftrags-Inhalt:</b><br><i>Order content:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                    | TÜV Rheinland – Frequency Exposure Compliance                                                    |                                                                                                                |                             |                                              |
| <b>Prüfgrundlage:</b><br><i>Test specification:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                 | FCC Part1-1.1307(b)(1)<br>FCC Part1-1.1310<br>ANSI/IEEE C95.1-1992<br>RSS-102 Issue 5 March 2015 |                                                                                                                |                             |                                              |
| <b>Wareneingangsdatum:</b><br><i>Date of receipt:</i>                                                                                                                                                                                                                                                                                                                                                                                                                               | 18.11.2019                                                                                       |                                                                                                                |                             |                                              |
| <b>Prüfmuster-Nr.:</b><br><i>Test sample No.:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                   | A001035241 001-002                                                                               |                                                                                                                |                             |                                              |
| <b>Prüfzeitraum:</b><br><i>Testing period:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                      | 09.12.2019                                                                                       |                                                                                                                |                             |                                              |
| <b>Ort der Prüfung:</b><br><i>Place of testing:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                 | TÜV Rheinland / CCIC<br>(Ningbo) Co., Ltd.                                                       |                                                                                                                |                             |                                              |
| <b>Prüflaboratorium:</b><br><i>Testing laboratory:</i>                                                                                                                                                                                                                                                                                                                                                                                                                              | TÜV Rheinland / CCIC<br>(Ningbo) Co., Ltd.                                                       |                                                                                                                |                             |                                              |
| <b>Prüfergebnis*:</b><br><i>Test result*:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                       | Pass                                                                                             |                                                                                                                |                             |                                              |
| <b>geprüft von / tested by:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                  | <b>kontrolliert von / reviewed by:</b>                                                                         |                             |                                              |
| 08.01.2020 Caidong Xie/PE                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                  | 08.01.2020 Feng Liang/TC  |                             |                                              |
| <b>Datum</b><br><i>Date</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Name/Stellung</b><br><i>Name/Position</i>                                                     | <b>Unterschrift</b><br><i>Signature</i>                                                                        | <b>Datum</b><br><i>Date</i> | <b>Name/Stellung</b><br><i>Name/Position</i> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                  |                                                                                                                |                             |                                              |
| <b>Sonstiges/ Other:</b> The Radio Frequency Exposure Compliance Assessment of this product are evaluated in this report which was additional tests as test reports 50321015 001.                                                                                                                                                                                                                                                                                                   |                                                                                                  |                                                                                                                |                             |                                              |
| FCC ID: 2AEUPRB19001<br>IC: 20271-RB19001                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                  |                                                                                                                |                             |                                              |
| <b>Zustand des Prüfgegenstandes bei Anlieferung:</b><br><i>Condition of the test item at delivery:</i>                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                  | Prüfmuster vollständig und unbeschädigt<br><i>Test item complete and undamaged</i>                             |                             |                                              |
| *Legende: 1= Sehr gut 2 = gut 3= befriedigend 4= ausreichend 5 = mangelhaft<br>P(ass) =entspricht o.g. Prüfgrundlage(n) F(ail)= entspricht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T =nicht getestet<br>Legend: 1= very good 2 = good 3= satisfactory 4= sufficient 5 = poor<br>P(ass) = passed a.m. test specification(s) F(ail)= failed a.m. test specification(s) N/A = not applicable N/T = not tested                                                                    |                                                                                                  |                                                                                                                |                             |                                              |
| <b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b><br><i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i> |                                                                                                  |                                                                                                                |                             |                                              |

V04

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## Radio Frequency Exposure Compliance

Result:

Pass

### 1. Maximum E.I.R.P

#### E.I.R.P. BLE for Block A

| Modulation Type and Operation band | Channel      | Channel Frequency (MHz) | Peak Output Power (dBm) | Antenna Gain (dBi) | Maximum E.I.R.P. (dBm) |
|------------------------------------|--------------|-------------------------|-------------------------|--------------------|------------------------|
| BLE<br>2402MHz~2480MHz             | Low Channel  | 2402                    | 2.56                    | 2.44               | 5.00<br>(3.16mW)       |
|                                    | Mid Channel  | 2440                    | 2.49                    |                    |                        |
|                                    | High Channel | 2480                    | 2.43                    |                    |                        |

#### E.I.R.P. LoRa DTS, LoRa FHSS and FSK FHSS for Block B

| Modulation Type and Operation band       | Channel      | Channel Frequency (MHz) | Peak Output Power (dBm) | Antenna Gain (dBi) | Maximum E.I.R.P. (dBm) |
|------------------------------------------|--------------|-------------------------|-------------------------|--------------------|------------------------|
| 1. LoRa 500KHz DTS<br>902.5MHz~926.5     | Low Channel  | 902.5                   | 19.99                   | -1.69              | 19.54<br>(89.95mW)     |
|                                          | Mid Channel  | 914.5                   | 20.03                   |                    |                        |
|                                          | High Channel | 926.5                   | 20.02                   |                    |                        |
| 2. LoRa 500KHz DTS<br>902.5MHz~926.5     | Low Channel  | 903                     | 20.28                   |                    |                        |
|                                          | Mid Channel  | 907.8                   | 20.64                   |                    |                        |
|                                          | High Channel | 914.2                   | 20.35                   |                    |                        |
| 3. LoRa 500KHz DTS<br>902.5MHz~926.5     | Low Channel  | 923.3                   | 20.25                   |                    |                        |
|                                          | Mid Channel  | 925.1                   | 20.27                   |                    |                        |
|                                          | High Channel | 926.9                   | 20.22                   |                    |                        |
| 4. LoRa 250KHz FHSS<br>902.3MHz~926.7MHz | Low Channel  | 902.3                   | 20.60                   |                    |                        |
|                                          | Mid Channel  | 914.3                   | 20.27                   |                    |                        |
|                                          | High Channel | 926.7                   | 20.33                   |                    |                        |
| 5. LoRa 125KHz FHSS<br>902.3MHz~914.9MHz | Low Channel  | 902.3                   | 20.90                   |                    |                        |
|                                          | Mid Channel  | 908.5                   | 20.82                   |                    |                        |
|                                          | High Channel | 914.9                   | 20.64                   |                    |                        |
| 6. LoRa 125KHz FHSS<br>902.2MHz~927.8MHz | Low Channel  | 902.2                   | 21.23                   |                    |                        |
|                                          | Mid Channel  | 915                     | 20.91                   |                    |                        |
|                                          | High Channel | 927.8                   | 20.49                   |                    |                        |
| 7. FSK 150Kbps FHSS<br>902.4MHz~927.6MHz | Low Channel  | 902.4                   | 20.08                   |                    |                        |
|                                          | Mid Channel  | 914.8                   | 20.32                   |                    |                        |
|                                          | High Channel | 927.6                   | 19.07                   |                    |                        |
| 8. FSK 50Kbps FHSS<br>902.2MHz~927.8MHz  | Low Channel  | 902.2                   | 20.86                   |                    |                        |
|                                          | Mid Channel  | 915                     | 20.39                   |                    |                        |
|                                          | High Channel | 927.8                   | 20.06                   |                    |                        |
| 9. FSK 5Kbps FHSS                        | Low Channel  | 902.2                   | 20.53                   |                    |                        |

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|-------------------------------------------|--------------|-------|-------|--|--|
| 902.2MHz~927.8MHz                         | Mid Channel  | 915   | 20.39 |  |  |
|                                           | High Channel | 927.8 | 20.23 |  |  |
| 10. FSK 250Kbps FHSS<br>902.5MHz~927.5MHz | Low Channel  | 902.5 | 21.01 |  |  |
|                                           | Mid Channel  | 915   | 20.63 |  |  |
|                                           | High Channel | 927.5 | 20.31 |  |  |

## 2. RF Exposure Evaluation for FCC

### MPE Calculation

The power Density ( $mW / CM^2$ ) is calculated as follows:

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

S=power density ( $mW / CM^2$ )

P=power input to the antenna ( $mW$ )

G=power input to the antenna in the direction of interest relative to an isotropic radiator

R=distance to the center of radiation of the antenna ( $CM$ )

### FCC MPE, Block A standalone operation

| Block | Transmit Frequency (MHz) | Power Density limit ( $mW / CM^2$ ) | Max. Radio Power (dBm) | Antenna Gain (dBi) | Distance (CM) | Power Density ( $mW / CM^2$ ) | Result     |
|-------|--------------------------|-------------------------------------|------------------------|--------------------|---------------|-------------------------------|------------|
| A     | 2402                     | 1.0                                 | 2.56                   | 2.44               | 20            | 0.000629                      | 0.000629<1 |

**Conclusion:** Compliance with FCC's RF Exposure.

### FCC MPE, Block B standalone operation

| Block | Transmit Frequency (MHz) | Power Density limit ( $mW / CM^2$ ) | Max. Radio Power (dBm) | Antenna Gain (dBi) | Distance (CM) | Power Density ( $mW / CM^2$ ) | Result      |
|-------|--------------------------|-------------------------------------|------------------------|--------------------|---------------|-------------------------------|-------------|
| B     | 902.2                    | 0.61                                | 21.23                  | -1.69              | 20            | 0.0179                        | 0.0179<0.61 |

**Conclusion:** Compliance with FCC's RF Exposure.

### FCC MPE, Block A and Block B simultaneous operation

According to 865664D02 2.2 d) 1):

The sum of the ratios of the spatially averaged results to the applicable frequency dependent MPE limits:

| Simultaneous Transmission mode | The sum of the ratios   | Result       |
|--------------------------------|-------------------------|--------------|
| Block A + B                    | 0.000629/1 +0.0179/0.61 | =0.02997 < 1 |

**Conclusion:** Compliance with FCC's RF Exposure.

### 3. RF Exposure Evaluation for IC

#### EUT RF Exposure Evaluation standalone operation

##### Exemption Limits for Routine Evaluation – RF Exposure Evaluation

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

At or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum E.I.R.P. of the device is equal to or less than  $1.31 \times 10^{-2} f^{0.6834}$  W (adjusted for tune-up tolerance), where  $f$  is in MHz;

RF exposure evaluation exempted power for Block A: 2.67W

RF exposure evaluation exempted power for Block B: 1.37W

The max E.I.R.P. for Block A: 5dBm = 0.00316W

The max E.I.R.P. for Block B: 19.54dBm = 0.08995W

All E.I.R.P. are less than RF exposure evaluation exempted power. So RF exposure evaluation is not required.

#### EUT RF Exposure Evaluation simultaneous operation

The sum of the ratios of the spatially averaged results to the applicable frequency dependent MPE limits:

| Simultaneous Transmission mode | The sum of the ratios          | Result        |
|--------------------------------|--------------------------------|---------------|
| Block A + B                    | $0.003162/2.67 + 0.08995/1.37$ | $=0.0675 < 1$ |

**Conclusion:** Compliance with IC's RF Exposure.