

# TEST REPORT



**CTK Co., Ltd.**  
(Ho-dong), 113, Yejik-ro, Cheoin-gu,  
Yongin-si, Gyeonggi-do, Korea  
Tel: +82-31-339-9970  
Fax: +82-31-624-9501

Report No.:  
CTK-2019-02655  
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## 1. Client

- Name : SEOYON ELECTRONICS CO., LTD.
- Address : 100, Saneop-ro, 156beon-gil, Gwonseon-gu, Suwon-si, Gyeonggi-do, South Korea
- Date of Receipt : 2019-06-19

## 2. Manufacturer

- Name : SEOYON ELECTRONICS CO., LTD.
- Address : 100, Saneop-ro, 156beon-gil, Gwonseon-gu, Suwon-si, Gyeonggi-do, South Korea

## 3. Use of Report : For FCC Certification

## 4. Test Sample / Model : Wireless Charging System / SYECWPC1909

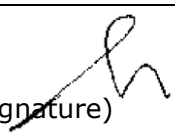
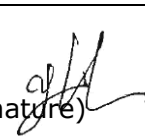
## 5. Date of Test : 2019-06-24 to 2019-06-27

## 6. Test Standard(method) used : FCC 47 CFR part 2 subpart J 2.1091

## 7. Testing Environment: Temp.: (23 ± 1) °C, Humidity: (48 ± 5) % R.H

## 8. Test Results : Compliance

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full.

|             |                                                                                                                |                                                                                                                   |
|-------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Affirmation | Tested by                                                                                                      | Technical Manager                                                                                                 |
|             | Bong-seok Kim: (Signature)  | Young-taek Lee: (Signature)  |

2019-07-13

Republic of KOREA **CTK Co., Ltd.**



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## REPORT REVISION HISTORY

| Date       | Revision                | Page No |
|------------|-------------------------|---------|
| 2019-07-13 | Issued (CTK-2019-02655) | all     |
|            |                         |         |

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## 1. General Product Description

### 1.1 Client Information

|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
| <b>Company</b>        | SEYON ELECTRONICS CO., LTD.                                                    |
| <b>Contact Point</b>  | 100, Saneop-ro, 156beon-gil, Gwonseon-gu, Suwon-si, Gyeonggi-do, South Korea   |
| <b>Contact Person</b> | Name : Hee tack Ryu<br>E-mail : shadow@seoyonelec.com<br>Tel : +82-31-420-3481 |

### 1.2 Product Information

|                                             |                                                                         |
|---------------------------------------------|-------------------------------------------------------------------------|
| <b>FCC ID</b>                               | NYOSYECWPC1909                                                          |
| <b>Product Description</b>                  | Wireless Charging System                                                |
| <b>Model name</b>                           | SYECWPC1909                                                             |
| <b>Variant Model name</b>                   | -                                                                       |
| <b>Operating Frequency Range</b>            | 112 kHz - 148 kHz                                                       |
| <b>Charging Frequency</b>                   | 115 kHz                                                                 |
| <b>RF Output Power</b>                      | 89.2 dBuV/m @ 3 m                                                       |
| <b>Power Transfer Method</b>                | Magnetic induction and only single primary coil coupling secondary coil |
| <b>Output power from each primary coil</b>  | <15W                                                                    |
| <b>That may have multiple primary coils</b> | No                                                                      |
| <b>Antenna Type</b>                         | Coil                                                                    |
| <b>Charging Method</b>                      | Directly contact                                                        |
| <b>Power Source</b>                         | DC 12 V                                                                 |

## 2. Facility and Accreditations

### 2.1 Test Facility

The measurement facility is located at (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea.

### 2.2 Laboratory Accreditations and Listings

| Country | Agency | Registration Number |
|---------|--------|---------------------|
| USA     | FCC    | 805871              |
| CANADA  | ISED   | 8737A-2             |
| KOREA   | NRRA   | KR0025              |

### 2.3 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

### 3. RF Exposure Assessment

#### 3.1 Maximum Permissible Exposure

##### Limit

| 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                       |

Note 1 : f = frequency in MHz; \*Plane-wave equivalent power density  
Note 2 : For the applicable limit, see FCC 1.1310

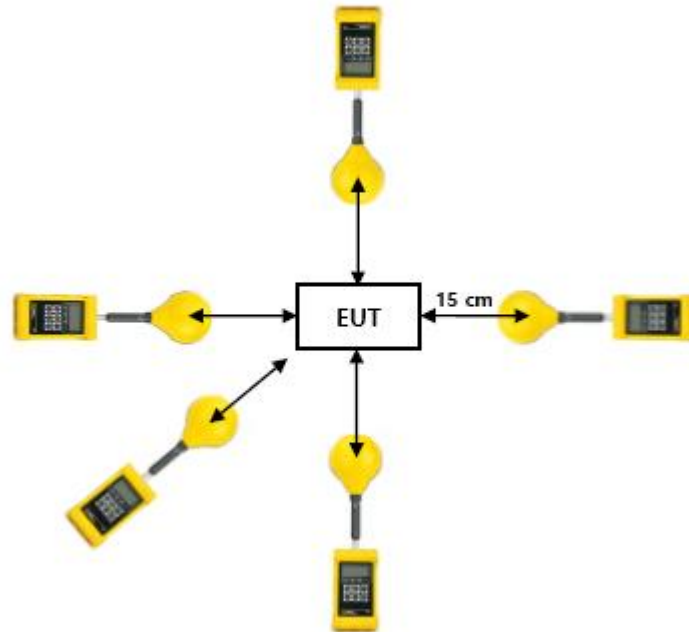
##### Test method

- Performed aggregate both leakage E-field and H-field at surrounding the device from all simultaneous transmitting coils.
- During testing, the EUT was placed on a non-conductive table top and the ancillary equipment (e.g., mobile phone) was placed on the EUT for charging. Maximum E-field and H-field measurement were tested 15cm from each side of the EUT. Along the side of the EUT to center of E-field probe and H-field probe were positioned at the location to search maximum field strength.

##### The Worst Condition

| Ancillary Equipment | Charging Condition |
|---------------------|--------------------|
| Fixture Load        | Charging Mode      |

## Test Setup



## Test results

| Maximum Permissible Exposure |            |                     |               |               |
|------------------------------|------------|---------------------|---------------|---------------|
| Charging Condition           | Separation | Probe from EUT Side | E-field (V/m) | H-field (A/m) |
| Operating                    | 15 cm      | right               | 0.64          | 0.141         |
| Operating                    | 15 cm      | bottom              | 0.81          | 0.165         |
| Operating                    | 15 cm      | left                | 0.57          | 0.157         |
| Operating                    | 15 cm      | top                 | 0.64          | 0.170         |
| Operating                    | 15 cm      | Y-axis above EUT    | <b>1.94</b>   | <b>0.930</b>  |
| Limit                        |            |                     | <b>614</b>    | <b>1.63</b>   |
| Margin Limit                 |            |                     | 0.32 %        | 57.06 %       |



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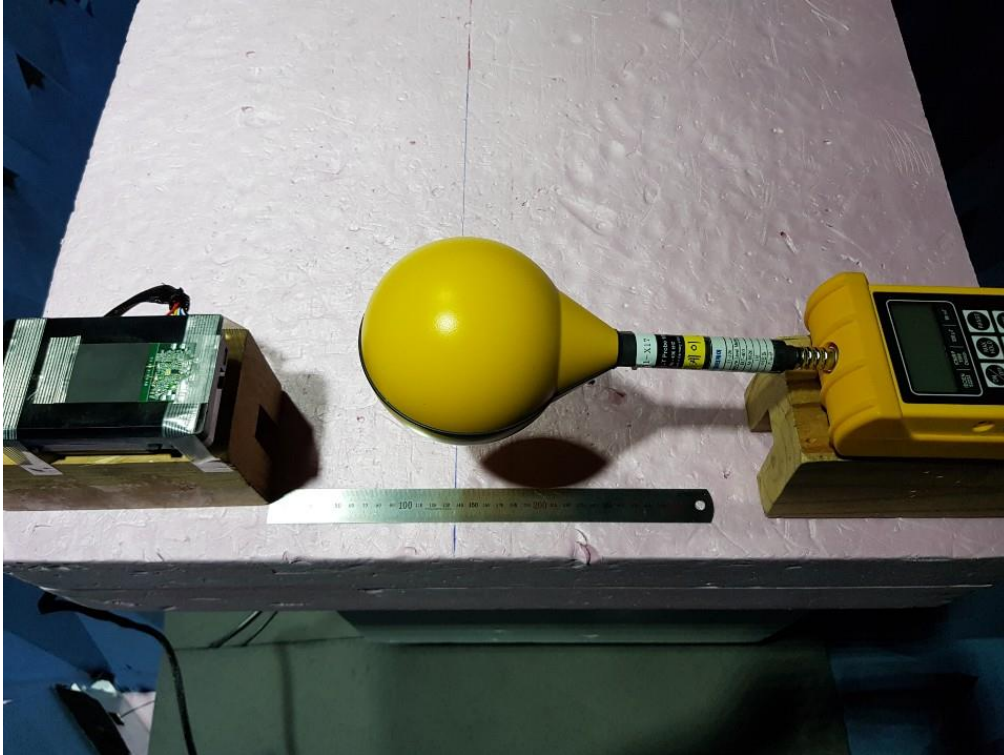
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## APPENDIX A – Test Equipment Used For Tests

| No. | Name of Equipment            | Manufacturer    | Model No. | Serial No. | Date of Calibration | Due Date   |
|-----|------------------------------|-----------------|-----------|------------|---------------------|------------|
| 1   | Exposure Level Probe         | Narda           | ELT-400   | M-0626     | 2019-05-22          | 2020-05-22 |
| 2   | Exposure Level Meter         | Narda           | ELT-400   | N-0181     | 2019-05-22          | 2020-05-22 |
| 3   | Electric Field Probe & Meter | SCHAFFNER-CHASE | EMC-20    | R-0029     | 2018-06-29          | 2019-06-29 |

## APPENDIX B – Test Photos

**H-field**



**E-field**

