

# RF Exposure Evaluation Declaration

Product Name : Barcode Scanner

Model No. : 1452g

FCC ID : H5D-1452G1

IC : 1693B-1452G1

Applicant : Honeywell International Inc

Address : 9680 old Bailes Rd Fort Mill SC29707 South Carolina United States

Date of Receipt : Nov. 17, 2014

Issued Date : Dec. 31, 2014

Report No. : 14B0410R-RF-US-P20V01

Report Version : V3.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

The test report shall not be reproduced without the written approval of QuieTek Corporation.

## Test Report Certification

Issued Date : Dec. 31, 2014

Report No. : 14B0410R-RF-US-P20V01

**Quietek**

Product Name : Barcode Scanner  
Applicant : Honeywell International Inc  
Address : 9680 old Bailes Rd Fort Mill SC29707 South Carolina  
United States  
Manufacturer : 1. Honeywell International Inc  
2. Metro(Suzhou)Technologies Co.,Ltd  
Address : 1. 9680 old Bailes Rd Fort Mill SC29707 South Carolina  
United States  
2. No.221 Xinghai street China-Singapore Suzhou  
Industrial Park  
Model No. : 1452g  
FCC ID : H5D-1452G1  
IC : 1693B-1452G1  
EUT Voltage : DC: 5.0 V  
Brand Name : Honeywell  
Applicable Standard : KDB 447498D01V05V02  
FCC Part1.1310(b)  
RSS-102: Issue 4, March, 2010  
Test Result : Complied  
Performed Location : Suzhou EMC Laboratory  
No.99 Hongye Rd., Suzhou Industrial Park Loufeng  
Hi-Tech Development Zone., Suzhou, China  
TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098  
FCC Registration Number: 800392; IC Lab Code: 4075B

Documented By : Alvin

Reviewed By : Dream Gao

Approved By : Jeff Chen

## Laboratory Information

We, **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

|               |   |                |
|---------------|---|----------------|
| Taiwan R.O.C. | : | BSMI, NCC, TAF |
| Germany       | : | TUV Rheinland  |
| Norway        | : | Nemko, DNV     |
| USA           | : | FCC            |
| Japan         | : | VCCI           |
| China         | : | CNAS           |

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site :<http://www.quietek.com/tw/ctg/cts/accreditations.htm>  
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site :  
<http://www.quietek.com/>

If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

## **HsinChu Testing Laboratory :**

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## **LinKou Testing Laboratory :**

No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C.  
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : [service@quietek.com](mailto:service@quietek.com)

## Suzhou Testing Laboratory :

No.99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., SuZhou, China  
TEL : +86-512-6251-5088 / FAX : 86-512-6251-5098 E-Mail : [service@quietek.com](mailto:service@quietek.com)

**History of This Test Report**

| REPORT NO.            | VERSION | DESCRIPTION                         | ISSUED DATE   |
|-----------------------|---------|-------------------------------------|---------------|
| 14B0410R-RF-US-P20V01 | V1.0    | Initial Issued Report               | Dec. 26, 2014 |
| 14B0410R-RF-US-P20V01 | V2.0    | Modified FCC ID and IC ID           | Dec. 26, 2014 |
| 14B0410R-RF-US-P20V01 | V3.0    | Modified applicant and manufacturer | Dec. 31, 2014 |
|                       |         |                                     |               |

## 1. RF Exposure Evaluation

### 1.1. Limits

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> ) | Average Time (Minutes) |
|--|-------------------------------|-------------------------------|-------------------------------------|------------------------|
| <b>(A) Limits for Occupational/ Control Exposures</b>            |                               |                               |                                     |                        |
| 300-1500   | --                            | --                            | F/300                               | 6                      |
| 1500-100,000   | --                            | --                            | 5                                   | 6                      |
| <b>(B) Limits for General Population/ Uncontrolled Exposures</b> |                               |                               |                                     |                        |
| 300-1500   | --                            | --                            | F/1500                              | 6                      |
| 1500-100,000   | --                            | --                            | 1                                   | 30                     |

F= Frequency in MHz

Friis Formula

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

$G$  = gain of antenna in linear scale

$\pi$  = 3.1416

$r$  = distance between observation point and center of the radiator in cm

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

## 1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18°C and 78% RH.

## 1.3. Test Result of RF Exposure Evaluation

|           |   |                        |
|-----------|---|------------------------|
| Product   | : | Barcode Scanner        |
| Test Item | : | RF Exposure Evaluation |
| Test Site | : | AC-6                   |

- Antenna Gain:

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.8dBi and 2 in logarithm scale.

- Output Power into Antenna & RF Exposure Evaluation Distance:

| Frequency Band (MHz) | Maximum Output Power to Antenna (mW) | Power Density at R = 20 cm (mW/cm <sup>2</sup> ) |
|----------------------|--------------------------------------|--|
| 2402- 2480 MHz       | 3.6813                               | 0.001108   |

Note:

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm<sup>2</sup>.

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The End

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