



SAR Exemption Evaluation Report

Product Name : Barcode Scanner

Model No. : 1952-BF

FCC ID : HD5-1952BFA

Applicant : HONEYWELL INTERNATIONAL INC
Honeywell Safety and Productivity Solutions
Address : 9680 OLD BAILES RD
FORT MILL SC 29707-7539

Date of Receipt : Mar. 15, 2019
Test Date : Mar. 15, 2019 ~ Apr. 15, 2019
Issued Date : Apr. 16, 2019
Report No. : 1932135R-RF-US-P20V02
Report Version : V1.0

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.

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Test Report Certification

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Applicant : HONEYWELL INTERNATIONAL INC
Honeywell Safety and Productivity Solutions

Address : 9680 OLD BAILES RD
FORT MILL SC 29707-7539

Manufacturer : 1、 HONEYWELL INTERNATIONAL INC
Honeywell Safety and Productivity Solutions
2、 Metro(Suzhou)Technologies Co.,Ltd

Address : 1、 9680 OLD BAILES RD
FORT MILL SC 29707-7539
2、 No.221 Xinghai street China-Singapore Suzhou
Industrial Park

Model No. : 1952-BF

FCC ID : HD5-1952BFA

EUT Voltage : 5VDC by charger cradle

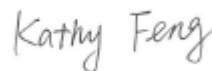
Test Voltage : AC120V/60Hz

Applicable Standard : KDB 447498 D01v06

Test Result : Complied

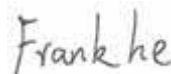
Performed Location : DEKRA Testing & Certification (Suzhou) Co., Ltd.
No.99 Hongye Rd., Suzhou Industrial Park, Suzhou,
215006, Jiangsu, China
TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098
FCC Designation Number: CN1199

Documented By :



(Project Assistant: Kathy Feng)

Reviewed By :



(Senior Engineer: Frank He)

Approved By :



(Engineer Supervisor: Jack Zhang)

1. RF Exposure Evaluation

1.1. Limits

According to **KDB 447498 D01 General RF Exposure Guidance v06**

4.3.1 Standalone SAR test exclusion considerations

1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$$\left[\frac{\text{max. power of channel, including tune-up tolerance, mW}}{\text{min. test separation distance, mm}} \right] \cdot \left[\sqrt{f(\text{GHz})} \right]$$
$$\leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

2) At 100 MHz to 6 GHz and for test separation distances > 50 mm, the SAR test exclusion threshold is determined according to the following, and as illustrated in Appendix B:

- a) $\left[\text{Power allowed at numeric threshold for 50 mm in step 1} + (\text{test separation distance} - 50 \text{ mm}) \cdot \left(\frac{f(\text{MHz})}{150} \right) \right]$ mW, at 100 MHz to 1500 MHz
- b) $\left[\text{Power allowed at numeric threshold for 50 mm in step 1} + (\text{test separation distance} - 50 \text{ mm}) \cdot 10 \right]$ mW at > 1500 MHz and ≤ 6 GHz

3) The 1-g and 10-g SAR test exclusion thresholds for below 100 MHz at test separation distances ≤ 50 mm are determined by:

- a) The power threshold at the corresponding test separation distance at 100 MHz in step 2) is multiplied by $\left[1 + \log(100/f(\text{MHz})) \right]$ for test separation distances > 50 mm and < 200 mm
- b) The power threshold determined by the equation in a) for 50 mm and 100 MHz is multiplied by $\frac{1}{2}$ for test separation distances ≤ 50 mm
- c) SAR measurement procedures are not established below 100 MHz. When SAR test exclusion cannot be applied, a KDB inquiry is required to determine SAR evaluation requirements for any test results to be acceptable. Note: when the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

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 Information

Antenna manufacturer	N/A					
Antenna Delivery	☒	1*TX+1*RX	☐	2*TX+2*RX	☐	3*TX+3*RX
Antenna technology	☒	SISO				
	☐	MIMO	☐	Basic		
			☐	CDD		
			☐	Beam-forming		
Antenna Type	☐	External	☐	Dipole		
	☒	Internal	☐	PIFA		
			☐	PCB		
			☐	Ceramic Chip Antenna		
			☐	Stamping Antenna		
			☒	Metal plate type F antenna		
			☐	Monopole antenna		
Antenna Gain	-1.76dBi					

Based on The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm and the formula below:

$$\text{Estimated SAR} = \sqrt{f(\text{GHz})} * \frac{(\text{Max Power of channel, mW})}{\text{Min. Separation Distance, mm}}$$

Band	Exposure Condition	Pmax	Pmax	Distance	f(GHz)	calculation result	Stand-alone Test exclusion threshold	SAR Test
		(dBm)	(mw)	(mm)				
BT	Body	2.92	1.959	5	2.402	0.607	3.00	No

Conclusion: 2.4GHz SAR was not required.

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