SAR Exemption Evaluation Report

Product Name	:	Barcode Scanner
Model No.	:	1932
FCC ID	:	HD5-1932A

Applicant	:	HONEYWELL INTERNATIONAL INC Honeywell Safety and Productivity Solutions
Address	:	9680 Old Bailes Rd, Fort Mill, SC 29707, USA

Date of Receipt	:	Feb. 22, 2018
Test Date		Feb. 23, 2018~ Apr. 20, 2018
Issued Date	:	May. 08, 2018
Report No.	:	1822056R-RF-US-P20V02
Report Version	:	V1.0

Test Report Certification

Issued Date : May. 08, 2018
Report No. : 1822056R-RF-US-P20V02

Product Name	:	Barcode Scanner
Applicant	:	HONEYWELL INTERNATIONAL INC Honeywell Safety and Productivity Solutions
Address	:	9680 Old Bailes Rd, Fort Mill, SC 29707, USA
Manufacturer	:	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.	:	1932
FCC ID	:	HD5-1932A
EUT Voltage	:	DC 4.0-5.5V
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;

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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:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR,where

- f(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) [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz

b) [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·10] 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 [1 + log(100/f(MHz))] 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 ½ 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℃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:

Model No.	N/A					
Antenna manufacturer	N/A					
Antenna Delivery	☒	1*TX+1*RX	☐	2*TX+2*RX	☐	3*TX+3*RX
Antenna technology	☒	SISO				
	☐	MIMO	☐	Basic		
			☐	CDD		
			☐	Sectorized		
			☐	Beam-forming		
Antenna Type	☐	External	☐	Dipole		
			☐	Sectorized		
	☒	Internal	☐	PIFA		
			☐	PCB		
			☒	Ceramic Chip Antenna		
			☐	Monopole Antenna		

Antenna Technology	Ant Gain (dBi)
☒ SISO	Ant1:2.9

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:

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

Band	Exposure Condition	Pmax (dBm)	Pmax (mw)	Distance (mm)	f(GHz)	calculation result	Stand-alone Test exclusion threshold	SAR Test
BT	Body	-4.69	2.94	5	2.40	0.91	3.0	No

Conclusion: 2.4GHz SAR was not required.

The End