



Test Report

Prepared for: Transact Campus, Inc.

Model: DR5000

Description: NFC reader

Serial Number: N/A

FCC ID: TMEDR5000X013

To

FCC Part 1.1310

Date of Issue: June 21, 2019

On the behalf of the applicant:

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Attention of:

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Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	June 21, 2019	Poona Saber	Original Document



ILAC / A2LA

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The tests results contained within this test report all fall within our scope of accreditation, unless below

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FCC Site Reg. #349717

IC Site Reg. #2044A-2

Non-accredited tests contained in this report:

N/A

EUT Description

Model: DR5000

Description: NFC reader

Additional Information:

The DR5000 reader is designed to work with blackboard's SA3000 door access system and third-party access control systems.

Device under test incorporates a NFC transmitter at 13.56 MHz.



Power and EIRP Calculations:

$$\text{EIRP} = E \text{ (dBuV/m)} + 20 \log (D) - 104.77$$

D: Distance at which measurement was taken

E: Electric Field (dBuV/m)

The highest electric field measured at the distance of 1 meter with loop antenna is 37.71 dBuV/m at 13.55 MHz hence

$$\text{EIRP} = 37.71 - 104.77 = -67 \text{ (dBm)} = 1.99 \text{ e-7}$$

Please refer to SAR evaluation exemption per KDB 447498 as below and the Table from Appendix C for frequencies below 100 MHz and separation distance below 200 mm.

Since the EIRP is way lower than 474 mW at 10 MHz for <50 mm unit is excluded for SAR testing.



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

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{\text{GHz}}}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR}_{25} \text{ where}$$

- f_{GHz} is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation²⁶
- 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 \leq 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,

- [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm) \cdot ($f_{\text{MHz}}/150$) mW, at 100 MHz to 1500 MHz]
- [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm) \cdot 10] mW at $>$ 1500 MHz and \leq 6 GHz

3) At frequencies below 100 MHz, the following may be considered for SAR test exclusion, and as illustrated in Appendix C:²⁸

- The power threshold at the corresponding test separation distance at 100 MHz in step 2) is multiplied by $[1 + \log(100/f_{\text{MHz}})]$ for *test separation distances* $>$ 50 mm and $<$ 200 mm
- The power threshold determined by the equation in step 2 for 50 mm and 100 MHz is multiplied by $\frac{1}{2}$ for *test separation distances* \leq 50

END OF TEST REPORT