



# Radio Frequency Exposure Evaluation Report

**FOR**  
Vara Safety

**Marketing Name**  
Reach 2

**Model Name**  
RCH-2-1

**Product Description**  
Reach is designed to retain and secure firearms and only release with proper authentication from a biometric scan or NFC tag.

**FCC ID: 2AV7CRCH-2-1**

Applied Rules and Standards:  
CFR 47 Part 2.1093  
FCC KDB 447498 D01 General RF Exposure Guidance v06

Test Report #: SAR\_EX\_VARAS\_001\_20001\_FCC\_Draft

**DATE:** 6/1/2020



**A2LA Accredited**

**IC recognized #**  
**3462B-1**

**CETECOM Inc.**

411 Dixon Landing Road ♦ Milpitas, CA 95035 ♦ U.S.A.

Phone: + 1 (408) 586 6200 ♦ Fax: + 1 (408) 586 6299 ♦ E-mail: [info@cetecom.com](mailto:info@cetecom.com) ♦ <http://www.cetecom.com>  
CETECOM Inc. is a Delaware Corporation with Corporation number: 2905571

*Contents*

1	Assessment .....	3
2	Administrative Data .....	4
2.1	Identification of the Testing Laboratory Issuing the Test Report.....	4
2.2	Identification of the Client.....	4
2.3	Identification of the Manufacturer.....	4
3	Equipment under Assessment.....	5
4	FCC Exemption Limits for Routine Evaluation.....	6
4.1	FCC SAR test exclusions are set by KDB 447498 D01 General RF Exposure Guidance v06 .....	6
4.1.1	Section: 4.3.1. Standalone SAR test exclusion considerations .....	6
5	SAR Exclusion Evaluation .....	7
5.1	Standalone .....	7
6	Revision History .....	8

## 1 Assessment

The following device meets the limits of general population uncontrolled exposure specified in CFR 47 Part 2.1093 according to SAR evaluation exclusion requirements specified in FCC regulation as listed in KDB 447498.

### Responsible for Testing Laboratory:

6/1/2020	Compliance	Cindy Li (Lab Manager)	
Date	Section	Name	Signature

### Responsible for the Report:

6/1/2020	Compliance	Ghanma, Issa (EMC Engineer)	
Date	Section	Name	Signature

The test results of this test report relate exclusively to the test item specified in Section 3.

CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM Inc. USA.

## 2 Administrative Data

### 2.1 Identification of the Testing Laboratory Issuing the Test Report

Company Name:	CETECOM Inc.
Department:	Compliance
Street Address:	411 Dixon Landing Road
City/Zip Code	Milpitas, CA 95035
Country	USA
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
Compliance Manager:	Li, Cindy
Responsible Project Manager:	Sivaraman, Sangeetha

### 2.2 Identification of the Client

Applicant's Name:	Vara Safety
Street Address:	49 4 <sup>th</sup> St. Suite 2424
City/Zip Code	Troy, NY 12180
Country	USA

### 2.3 Identification of the Manufacturer

Applicant's Name:	---Same as Client -----
Street Address:	---Same as Client -----
City/Zip Code	---Same as Client -----
Country	---Same as Client -----

### 3 Equipment under Assessment

Model #:	RCH-2-1
Hardware Version:	2.0
Software Version:	2.0
Minimum distance of antenna or radiating parts to user	5mm
Radios included in the device:	❖ NFC <ul style="list-style-type: none"> <li>○ Module name: NXP MFRC522</li> <li>○ Model number: MFRC52202HN1</li> <li>○ Frequency Range / number of channels: 13.56 MHz / 1 Channel</li> </ul>
Co-located Transmitters/ Antennas:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Exposure Category:	<input type="checkbox"/> Occupational/ Controlled <input checked="" type="checkbox"/> General Population/ Uncontrolled
Device Category:	<input checked="" type="checkbox"/> Fixed Installation <input type="checkbox"/> Mobile <input type="checkbox"/> Portable <input type="checkbox"/> Mixed Mobile and Portable
Power Supply/ Rated Operating Voltage Range:	Low 1.8 VDC, Nominal 3.3 VDC, High 6.0 VDC
Operating Temperature Range:	Low -20° C, Nominal 20° C, High 45° C
Sample Revision:	<input type="checkbox"/> Prototype Unit; <input type="checkbox"/> Production Unit; <input checked="" type="checkbox"/> Pre-Production
EUT Dimensions [mm]:	16.5 x 8.1 x 2.5
EUT Diameter:	<input checked="" type="checkbox"/> < 60 cm <input type="checkbox"/> Other _____

## 4 FCC Exemption Limits for Routine Evaluation

### 4.1 FCC SAR test exclusions are set by KDB 447498 D01 General RF Exposure Guidance v06

#### 4.1.1 KDB 447498 Section: 4.3.1. Standalone SAR test exclusion considerations

- a) For 100 MHz to 6 GHz and test separation distances  $\leq 50$  mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

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

- $f(\text{GHz})$  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
- The values 3.0 and 7.5 are referred to as *numeric thresholds* in step b) 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 4.1 f) is applied to determine SAR test exclusion.

- b) For 100 MHz to 6 GHz and *test separation distances*  $> 50$  mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following (also illustrated in Appendix B):<sup>32</sup>
- 1)  $\{[\text{Power allowed at numeric threshold for 50 mm in step a)}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot (f(\text{MHz})/150)]\}$  mW, for 100 MHz to 1500 MHz
  - 2)  $\{[\text{Power allowed at numeric threshold for 50 mm in step a)}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot 10]\}$  mW, for  $> 1500$  MHz and  $\leq 6$  GHz
- c) For frequencies below 100 MHz, the following may be considered for SAR test exclusion (also illustrated in Appendix C):
- 1) For *test separation distances*  $> 50$  mm and  $< 200$  mm, the power threshold at the corresponding test separation distance at 100 MHz in step b) is multiplied by  $[1 + \log(100/f(\text{MHz}))]$
  - 2) For *test separation distances*  $\leq 50$  mm, the power threshold determined by the equation in c) 1) for 50 mm and 100 MHz is multiplied by  $\frac{1}{2}$

## 5 SAR Exclusion Evaluation

### 5.1 Standalone

FCC Standalone Transmission SAR Exclusion Calculations $\leq 5$ mm							
Radio	Frequency [GHz]	Maximum output power *1 [dBm]	Maximum output power *1 [mW]	Gain [dBi]	EIRP *2 [mW]	Threshold *3	1-g SAR Limit
NFC	0.01356	3.00	2.00	0.3456	2.16	0.5	$\leq 3.0$

\*1 Maximum output power measured or declared by client, whichever is the highest.

\*2 Add the Average gain value to the Maximum power.

\*3 Formula used for threshold calculation described in [section 4.1 a\)](#) for cellular radio, and in [section 4.1 c\) 2\)](#) for the NFC radio, of this document.

**6 Revision History**

Date	Report Name	Changes to report	Report prepared by
6/1/2020	SAR_EX_VARAS_001_20001_FCC	Initial Version	Ghanma, Issa

**<<< The End >>>**