

RF Exposure Evaluation Report

Product : Wireless button
Trade mark : NICOR
Model/Type reference : PR-BUTTON-W-WH, PR-BUTTON-W-##
(##: Represents the housing color,
WH=white, BK=black, etc.)
Test Model No.: : PR-BUTTON-W-WH
Serial Number : N/A
Report Number : EED32N80882802
FCC ID : 2A3EFPR-BUTTON-W
Date of Issue : Dec. 28, 2021
Test Standards : 47 CFR Part 1.1307
47 CFR Part 2.1093
KDB447498D01 General
RF Exposure Guidance v06
Test result : PASS

Prepared for:

NICOR, Inc.**2200 Midtown Place NE, Albuquerque, N.M. 87107 USA**

Prepared by:

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1 Version

Version No.	Date	Description
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3 General Information

3.1 Client Information

Applicant:	NICOR, Inc.
Address of Applicant:	2200 Midtown Place NE, Albuquerque, N.M. 87107 USA
Manufacturer:	NICOR, Inc.
Address of Manufacturer:	2200 Midtown Place NE, Albuquerque, N.M. 87107 USA
Factory:	NICOR, Inc.
Address of Factory:	2200 Midtown Place NE, Albuquerque, N.M. 87107 USA

3.2 General Description of EUT

Product Name:	Wireless button
Model No.:	PR-BUTTON-W-WH, PR-BUTTON-W-## (##: Represents the housing color, WH=white, BK=black, etc.)
Test Model No.:	PR-BUTTON-W-WH
Trade Mark:	NICOR
Hardware Version:	V0
Software Version:	V0
Product Type:	☐ Mobile ☐ Portable ☒ Fix Location
Frequency Range:	433.92MHz
Modulation Type:	OOK
Number of Channels:	1 (declared by the client)
Antenna Type:	Spring antenna
Antenna Gain:	3.7dBi
Power Supply:	DC 12V
Test voltage:	DC 12V
Sample Received Date:	Sep. 15, 2021
Sample tested Date:	Sep. 15, 2021 to Oct. 9, 2021
Company Name and Address shown on Report, the sample(s) and sample Information was/ were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified. Model No.: PR-BUTTON-W-WH, PR-BUTTON-W-## (##: Represents the housing color, WH=white, BK=black, etc.) Only the model PR-BUTTON-W-WH was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being color of appearance.	

3.3 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

3.4 Deviation from Standards

None.

3.5 Abnormalities from Standard Conditions

None.

3.6 Other Information Requested by the Customer

None.

4 SAR Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06
Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

Limits

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:

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

Power and distance are rounded to the nearest mW and mm before calculation¹⁷

The result is rounded to one decimal place for comparison

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 is applied to determine SAR test exclusion

4.1.2 EUT RF Exposure

$$e_{irp} = p_t \times g_t = (E \times d)^2 / 30$$

where:

p_t = transmitter output power in watts,

g_t = numeric gain of the transmitting antenna (unitless),

E = electric field strength in V/m, $10^{((dB\mu V/m)/20)/10^6}$,

d = measurement distance in meters (m)---3m,

$$\text{So } p_t = (E \times d)^2 / 30 / g_t$$

The worst case (refer to report EED32N80882801) is below:

Antenna polarization: Horizontal		
Frequency (MHz)	Level (dBuV/m)	Polarization
433.92	86.99	Peak
433.92	73.74	Average

Antenna polarization: Vertical		
Frequency (MHz)	Level (dBuV/m)	Polarization
433.92	78.16	Peak
433.92	64.91	Average

For 433.92MHz wireless:

Field strength = 86.99dB μ V/m @3m

Ant. gain 3.7dBi; so Ant numeric gain=2.34

$$\text{So } p_t = \{ [10^{(86.99/20)/10^6} \times 3]^2 / 30 / 2.34 \} \times 1000\text{mW} = 0.064\text{mW}$$

$$\text{So } (0.064\text{mW}/5\text{mm}) \times \sqrt{0.43392\text{GHz}} = 0.00843,$$

$$0.00843 < 3.0 \text{ for 1-g SAR}$$

So the SAR report is not required.

PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No. EED32N80882801 for EUT external and internal photos.

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.

*** End of Report ***