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RF Exposure Exhibit

SCOPE OF WORK
EMC TESTING – Door Lock, Model(s): Mortise Sectional, Mortise Escutcheon, Exit Trim, Cylindrical

REPORT NUMBER
104902494MPK-010

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Non-Specific Radio Report Shell Rev. December 2017 MPK

RF Exposure Exhibit
(Mobile Devices)

Report Number: 104902494MPK-010
Project Number: G104902494

Report Issue Date: October 28, 2022

Testing performed on the
Door Lock
Model(s): Mortise Sectional,
Mortise Escutcheon,
Exit Trim,
Cylindrical

FCC ID: 2AEI3-HB01-HL01
IC: 20063-WLTHB01HL01
to

47CFR 2.1091
RSS-102 Issue 5

for

WaveLynx Technologies Corporation

Tested by:	**Client:**
Intertek	WaveLynx Technologies Corporation
1365 Adams Court	100 Technology Drive, Suite 130B
Menlo Park, CA 94025 USA	Broomfield, CO 80021 USA

Report prepared by:	**Report reviewed by:**
Kenneth Roque / EMC Project Engineer	**Anderson Sounpganya / EMC Team Leader**

Report No. 104902494MPK-010	
Equipment Under Test:	Door Lock
Model Number:	Mortise Sectional, Mortise Escutcheon, Exit Trim, Cylindrical
Applicant:	WaveLynx Technologies Corporation
Contact:	Daniel Field
Address:	100 Technology Drive, Suite 130B Broomfield, CO 80021 USA
Country:	USA
Tel. Number:	1 (530) 391-1155
Email:	danielfield@wavelynxtech.com
Applicable Regulation:	47CFR 2.1091 RSS-102 Issue 5

We attest to the accuracy of this report:

Kenneth Roque
EMC Project Engineer

Anderson Sounpganya
EMC Team Leader

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1.0 RF Exposure Summary

Test	Reference FCC	Reference Industry Canada	Result
Radio frequency Radiation Exposure Evaluation	47 CFR§2.1091	RSS-102 Issue 5	Complies

2.0 RF Exposure Limits

In this document, we evaluate the RF Exposure to human body due the intentional transmission from the transmitter (EUT). The limits for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 and RSS-102 are followed.

2.1 FCC Limits

According to FCC 1.1310 table 1: The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time (minutes)
(A)Limits For Occupational / Control Exposures				
0.3 – 3.0	614	1.63	*100	6
3.0 – 30	1842/f	4.89/f	$*900/f^2$	6
30-300	61.4	0.163	1.0	6
300 - 1500	…	…	F/300	6
1500 - 100,000	…	…	5	6
(B)Limits For General Population / Uncontrolled Exposure				
0.3 – 1.34	614	1.63	*100	30
1.34 – 30	824/f	2.19/f	$*180/f^2$	30
30 – 300	27.5	0.073	0.2	30
300 - 1500	…	…	F/1500	30
1500 - 100,000	…	…	1.0	30

F = Frequency in MHz

* = plane wave equivalent density

2.2 Industry Canada Limits

According to RSS-102, Industry Canada has adopted the SAR and RF field strength limits established in Health Canada's RF exposure guideline, Safety Code 6.

Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m^2)	Reference Period (minutes)
0.003-10	83	90	-	Instantaneous*
0.1-10	-	0.73/ ƒ	-	6**
1.1-10	$87/ ƒ^{0.5}$	-	-	6**
10-20	27.46	0.0728	2	6
20-48	$58.07/ ƒ^{0.25}$	$0.1540/ ƒ^{0.25}$	8.944/ ƒ0.5	6
48-300	22.06	0.05852	1.291	6
300-6000	$3.142 ƒ^{0.3417}$	$0.008335 ƒ^{0.3417}$	$0.02619 ƒ^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	$616000/ ƒ^{1.2}$
150000-300000	$0.158 ƒ^{0.5}$	$4.21 \times 10\text{-}4 ƒ^{0.5}$	$6.67 \times 10^{-5} ƒ$	$616000/ƒ^{1.2}$

Note: ƒ is frequency in MHz.
* Based on nerve stimulation (NS).
** Based on specific absorption rate (SAR).

3.0 Test Results (Mobile Configuration)

3.1 Classification

Radio is installed inside a mobile host device. The antenna of the product, under normal use condition, is at least 20 cm away from the body of the user and accessible to the end user. Warning statement to the user for keeping at least 20 cm or more separation distance with the antenna should be included in user's manual.

3.2 EIRP calculations

The Door Lock, Model(s): Mortise Sectional, Mortise Escutcheon, Exit Trim, and Cylindrical consists of two radios: 13.56 MHz RFID, and 2.4 GHz BLE.

For RF exposure compliance refer to reports below:

Radio	FCC ID	Report Number
13.56 MHz – RFID	2AEI3-HB01-HL01	104902494MPK-001
2.4 GHz - BLE	SQGBL5340	FR112703AE

3.3 Maximum RF Power

Frequency Range (MHz)	Peak FS @ 10m (dBµV/m)	Note
13.56	34.56	FS measurement was taken from Report #104902494MPK-001. The worst case power measurement was used.

Frequency Range (MHz)	RF Output [1] (dBm)	Antenna Gain[1] (dBi)	Note[1]
2402 – 2480	3.15	2.0	Conducted power measurements were taken from Report #FR112703AE.

[1]As declared by the manufacturer. Intertek takes no responsibility for the accuracy of this information.

3.4 RF Exposure Calculation

3.4.1 RF Exposure calculation for 13.56 MHz – RFID

Frequency Range (MHz)	Peak FS @3m (dBµV/m)	Peak FS @20 cm* (dBµV/m)	Peak FS @20 cm (V/m)	RSS Limit (V/m)	FCC Limit (V/m)	Results
13.56	34.56	102.52	0.14	27.46	60.77	Complies

Note: Peak FS measurement was taken from Report #104902494MPK-001.
* Distance Correction Factor was used.

3.4.2 RF Exposure calculation for 2.4 GHz – BLE

Frequency Range (MHz)	EIRP[1] (dBm)	EIRP[1] (mW)	Power Density (mW/cm^2) @20 cm	FCC Limit (mW/cm^2)
2402 – 2480	5.15	3.2734	0.0007	1.0000

Note: Antenna gains below 0 are considered as 0dBi.

Frequency Range (MHz)	EIRP[1] (dBm)	EIRP[1] (mW)	Power Density (W/m^2) @20 cm	RSS Limit (W/m^2)
2402 – 2480	5.15	3.2734	0.0065	5.4742

Note: Antenna gains below 0 are considered as 0dBi.

Appendix A: Power Density Calculation

The Power Density can be calculated using the formula

$$S = EIRP/ 4\pi D^2$$

Where: S is Power Density in mW/cm^2
D is the distance from the antenna in cm.

4.0 Document History

Revision/ Job Number	Writer Initials	Reviewers Initials	Date	Change
1.0 / G104902494	KR	AS	October 28, 2022	Original Document