

# Spectrum Brands, Inc.

## RF Exposure Exhibit

### SCOPE OF WORK

EMC TESTING – Halo ST Electronic Keypad Wi-Fi Enabled Deadbolt & Halo ST Electronic Touchscreen Wi-Fi Enabled Deadbolt, Model: 938 & 939

### REPORT NUMBER

105108581MPK-008

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**RF Exposure Exhibit  
(Mobile Devices)**

**Report Number: 105108581MPK-008**

**Project Number: G105108581**

**Issue Date: August 23, 2022**

**Product Designation: Halo ST Electronic Keypad Wi-Fi Enabled  
Deadbolt & Halo ST Electronic Touchscreen  
Wi-Fi Enabled Deadbolt**

**Model Tested: 938 & 939**

**FCC ID: NUL-WIFI-GIGST  
IC: 3022A-WIFIGIGST**

to

**47CFR 2.1091  
RSS-102 Issue 5**

for

**Spectrum Brands, Inc.**

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<b>Report No. 105108581MPK-008</b>	
<b>Equipment Under Test:</b>	Halo ST Electronic Keypad Wi-Fi Enabled Deadbolt & Halo ST Electronic Touchscreen Wi-Fi Enabled Deadbolt
<b>Trade Name:</b>	Spectrum Brands, Inc.
<b>Model(s) Tested:</b>	938 939
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<b>Applicable Regulation:</b>	47CFR 2.1091 RSS-102 Issue 5

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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 <sup>2</sup> )	Average Time (minutes)
<b>(A)Limits For Occupational / Control Exposures</b>				
0.3 – 3.0	614	1.63	*100	6
3.0 – 30	1842/f	4.89/f	*900/f <sup>2</sup>	6
30-300	61.4	0.163	1.0	6
300 - 1500	...	...	F/300	6
1500 - 100,000	...	...	5	6
<b>(B)Limits For General Population / Uncontrolled Exposure</b>				
0.3 – 1.34	614	1.63	*100	30
1.34 – 30	824/f	2.19/f	*180/f <sup>2</sup>	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.

<b>Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)</b>				
Frequency Range	Electric Field	Magnetic Field	Power Density	Reference Period
(MHz)	(V/m rms)	(A/m rms)	(W/m <sup>2</sup> )	(minutes)
0.003-10	83	90	-	Instantaneous*
0.1-10	-	0.73/ f	-	6**
1.1-10	87/ f <sup>0.5</sup>	-	-	6**
10-20	27.46	0.0728	-2	6
20-48	58.07/ f <sup>0.25</sup>	0.1540/ f <sup>0.25</sup>	8.944/ f <sup>0.5</sup>	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 f <sup>0.3417</sup>	0.008335 f <sup>0.3417</sup>	0.02619 f <sup>0.6834</sup>	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ f <sup>1.2</sup>
150000-300000	0.158 f <sup>0.5</sup>	4.21 x 10 <sup>-4</sup> f <sup>0.5</sup>	6.67 x 10 <sup>-5</sup> f	616000/ f <sup>1.2</sup>

Note: f 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 Halo ST Electronic Keypad Wi-Fi Enabled Deadbolt & Halo ST Electronic Touchscreen Wi-Fi Enabled Deadbolt, Model: 938 & 939 consist of two radios: Bluetooth and Wi-Fi.

**3.3 Maximum RF Power**

**Halo ST Electronic Keypad Wi-Fi Enabled Deadbolt & Halo ST Electronic Touchscreen Wi-Fi Enabled Deadbolt, Model: 938 & 939**

**BLE**

Frequency Range (MHz)	RF Output (dBm)	Antenna Gain <sup>1</sup> (dBi)	Note
2402-2480	5.09	2.0	Conducted power measurements were taken from 105108581MPK-006

<sup>1</sup>As declared by the manufacturer.

**Wi-Fi**

Frequency Range (MHz)	RF Output (dBm)	Antenna Gain <sup>1</sup> (dBi)	Note
2412-2462	17.00	2.5	Conducted power measurements were taken from Texas Instruments RF exposure report # FA731625 under IC: 451I-CC3220MOD and FCC ID: Z64-CC3220MODFCC.

<sup>1</sup>As declared by the manufacturer.

### 3.4 RF Exposure Calculation

#### 3.4.1 RF Exposure calculation for Bluetooth, Model: 938 & 939:

Calculations for this report are based on highest power measured for each band taken from 105108581MPK-006.

Frequency Range (MHz)	EIRP (dBm)	EIRP (mW)	Power Density (mW/cm <sup>2</sup> ) @20 cm	FCC Limit (mW/cm <sup>2</sup> )	Results
2402-2480	7.09	5.12	0.00102	1	Complies

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

Frequency Range (MHz)	EIRP (dBm)	EIRP (mW)	Power Density (W/m <sup>2</sup> ) @20 cm	RSS Limit (W/m <sup>2</sup> )	Results
2402-2480	7.09	5.12	0.0102	5.47	Complies

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

#### 3.4.1 RF Exposure calculation for Wi-Fi, Model: 938 & 939:

Calculations for this report are based on Texas Instruments RF exposure report # FA731625 under IC: 4511-CC3220MOD and FCC ID: Z64-CC3220MODFCC.

Frequency Range (MHz)	EIRP (dBm)	EIRP (mW)	Power Density (mW/cm <sup>2</sup> ) @20 cm	FCC Limit (mW/cm <sup>2</sup> )	Results
2412-2462	19.50	89.125	0.018	1	Complies

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

Frequency Range (MHz)	EIRP (dBm)	EIRP (mW)	Power Density (W/m <sup>2</sup> ) @20 cm	RSS Limit (W/m <sup>2</sup> )	Results
2412-2462	19.50	89.125	0.180	5.366	Complies

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

#### Power Density Calculation

The Power Density can be calculated using the formula

$$S = \text{EIRP} / 4\pi D^2$$

Where: S is Power Density in mW/cm<sup>2</sup>

D is the distance from the antenna in cm.



**4.0 Document History**

<b>Revision/ Job Number</b>	<b>Writer Initials</b>	<b>Reviewers Initials</b>	<b>Date</b>	<b>Change</b>
1.0/ G105108581	AK	AS	August 23, 2022	Original document