

# SAR & RF Exposure Exemption Technical Brief

## Application Information

<b>APPLICANT</b>	Alula
<b>DATE</b>	4/9/2020
<b>PROD DESC</b>	Glass Break Sensor
<b>PMN</b>	RE629 Glass Break Sensor
<b>HVIN</b>	RE629
<b>FVIN</b>	75-00111-08
<b>IC</b>	8310A-RE629

## SAR Evaluation Exemption (RSS-102, Section 2.5.1)

From RSS-102, Section 2.5.1 Exemption Limits for Routine Evaluation – SAR Evaluation

*“SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in Table 1.”*

This device is meant to be mounted to the wall or ceiling of a residence. As such, it will always be at least 20cm from the user, and is thus exempt from SAR evaluation.

## RF Exposure Exemption (RSS-102, Section 2.5.2)

Field strength measurements were taken at 3 meters. Because of the low duty cycle of this device, the 20dB duty cycle correction is allowed. Using the standard conversion from field strength, EIRP is calculated as follows:

$$\text{EIRP (dBm)} = (E - 20) + 20\log(3) - 104.8$$

From RSS-102, Section 2.5.2 Exemption Limits for Routine Evaluation – RF Exposure Evaluation

*“RF exposure evaluation is required if the separation distance between the user and/or bystander and the device’s radiating element is greater than 20 cm, except when the device operates as follows:*

- At or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than  $1.31 \times 10^{-2} f^{0.6834}$  W (adjusted for tune-up tolerance), where f is in MHz.”*

Thus, the EIRP limit for exemption from RF exposure evaluation is calculated as follows:

$$\text{EIRP Limit (dBm)} = 10\log(1.31 \times 10^{-2} f^{0.6834}) + 30$$

The table that follows will show that the device is exempt from RF exposure evaluation.

Frequency (MHz)	Peak Level (dBuV/m)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Test Result
433.92	97.60	-17.66	29.20	-46.85	PASS
1301.76	46.20	-69.06	32.46	-101.51	PASS
1735.68	55.30	-59.96	33.31	-93.27	PASS
2169.60	66.50	-48.76	33.97	-82.73	PASS
2603.52	61.60	-53.66	34.51	-88.17	PASS
3037.44	61.90	-53.36	34.97	-88.33	PASS
3471.36	63.40	-51.86	35.37	-87.23	PASS
3905.28	66.10	-49.16	35.72	-84.88	PASS
4339.20	60.00	-55.26	36.03	-91.29	PASS

Sincerely,



Paul Saldin  
Vice President  
Alula