

SAR & RF Exposure Exemption Technical Brief

Application Information

APPLICANT	Alula
DATE	4/9/2020
PROD DESC	Glass Break Sensor
PMN	RE129 Glass Break Sensor, RE129_FP Glass Break Sensor, FP-GB3 Glass Break Sensor
HVIN	RE129, RE129_FP, FP-GB3
FVIN	75-00111-01, 75-00111-01, 75-00111-01
IC	8310A-RE129

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
319.5	95.4	-19.9	28.3	-48.1	PASS
639.0	50.7	-64.6	30.3	-94.9	PASS
958.5	54.4	-60.9	31.5	-92.4	PASS
1278.0	55.1	-60.2	32.4	-92.6	PASS
1597.5	64.4	-50.9	33.1	-83.9	PASS
1917.0	66.8	-48.5	33.6	-82.1	PASS
2236.5	61.1	-54.2	34.1	-88.2	PASS
2556.0	62.0	-53.3	34.5	-87.7	PASS
2875.5	61.9	-53.4	34.8	-88.2	PASS
3195.0	63.2	-52.1	35.1	-87.2	PASS

Sincerely,



Paul Saldin
Vice President
Alula