

SAR & RF Exposure Exemption Technical Brief

Application Information

APPLICANT	Alula
DATE	4/9/2020
PROD DESC	Glass Break Sensor
PMN	RE229 Glass Break Sensor
HVIN	RE229
FVIN	75-00111-02
IC	8310A-RE229

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
345.0	94.5	-20.8	28.5	-49.3	PASS
690.0	61.2	-54.1	30.6	-84.6	PASS
1035.0	54.0	-61.3	31.8	-93.0	PASS
1380.0	54.8	-60.5	32.6	-93.1	PASS
1725.0	61.6	-53.7	33.3	-87.0	PASS
2070.0	59.6	-55.7	33.8	-89.5	PASS
2415.0	60.4	-54.9	34.3	-89.1	PASS
2760.0	61.3	-54.0	34.7	-88.6	PASS
3105.0	61.4	-53.9	35.0	-88.9	PASS
3450.0	63.2	-52.1	35.4	-87.4	PASS

Sincerely,



Paul Saldin
Vice President
Alula