

Manufacturer: Innohome Oy
Device: Wireless Heat Sensor
Model: SGS1030
FCC ID: 2AG2GSGS1030

REFERENCE DOCUMENTS

KDB447498 D01 General RF Exposure Guidance v06, 23 October 2015
 293779-2, FCC IC Test Report, 4 September 2018

EUT SPECIFICATION

RF characteristics of the assessed radio:

Operating Frequency Range:	315 MHz
Channels:	1
Maximum power:	0.014 mW (eirp)
Modulation:	OOK
Antenna gain:	0 dBi
Antenna type:	Internal antenna
Antenna count:	1
Device category:	Mobile Device (Human body distance > 20cm)

SAR EXCLUSION JUSTIFICATION

Guidance document reference: KDB447498 D01 General RF Exposure Guidance v06, page 12, section 4.3.1.

Step a)

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined:

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] * [√f(GHz)] ≥ 3.0 for 1-g SAR and 7.5 for 10-g extremity SAR, where

- f (GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric threshold in the step b)

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum distance is < 5 mm, a distance of 5 mm according to f) in section 4.1 is applied to determine SAR test exclusion.

Step b)

For 100 MHz to 6 GHz and test separation distances > 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

{[Power allowed at numeric threshold for 50 mm in step a)] + [(test separation distance – 50 mm) * (f_(MHz)/150)]} mW, for 100 MHz to 1500 MHz

These test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions.

CALCULATIONS AND ASSUMPTIONS

EUT is wireless heat sensor and normally installed above stove; therefore the 20 cm (200 mm) spacing was selected. The SAR exemption method was applied.

Actual evaluation:

Power allowed at numeric threshold for 50 mm separation distance in step a)

$$\left(\frac{P \text{ mW}}{50 \text{ mm}}\right) * \sqrt{0.315 \text{ GHz}} = 3.0 \rightarrow P \text{ mW} = \left(\frac{3.0}{\sqrt{0.315 \text{ GHz}}}\right) * 50 \text{ mm} = 267 \text{ mW}$$

SAR test exclusion threshold for 20 cm separation distance in step b)

$$267 \text{ mW} + (200 \text{ mm} - 50 \text{ mm}) * \left(\frac{315 \text{ MHz}}{150}\right) = 582 \text{ mW}$$

EUT maximum power is 0.014 mW.

CONCLUSION

The analysis shows that the device qualifies for exemption from SAR testing.

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