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SAR Exclusion Justification

Test exclusion thresholds for 100 MHz to 6 GHz at test separation distances \leq 50 mm

Guidance document reference: 447498 D01 General RF Exposure Guidance, page 11, paragraph 4.3.1(1).

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

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] *$

$[\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

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

SAR test exclusion analysis:

Assumptions: Since the exact separation distance may vary from sensor to sensor, the minimum separation distance of 5 mm is assumed per the guidance document.

Max. power of channel: 3.64 mW

Min. separation distance: 5 mm

Max. frequency: 2.44 GHz

$[(\text{Pwr/Dist}) * \sqrt{\text{Freq.}}] = 1.1$

Max. power is source-based time-averaged maximum conducted output power, adjusted for tune-up tolerance.

The result of the above SAR threshold calculation demonstrates that the result is less than the 1-g numeric threshold of 3 and the 10-g numeric threshold of 7.5.

Conclusion: The above analysis shows that the evaluated wireless keyboard qualifies for exemption from SAR testing.

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Signed: , Technical Manager 5/14/2019