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RF Exposure evaluation

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FCC ID: 2AKWC-ES188 Product: TPMS Sensor Model No.: ES188 Additional Model No.: N/A

Trade Mark: N/A

Issued for:

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According to KDB447498D01 General RF Exposure Guidance v06 4.3.1. Standalone SAR test exclusion considerations Unless specifically required by the published RF exposure KDB procedures,

standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

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:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] ·

 $[\sqrt{f}(GHz)] \le 3.0$ 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 the nearest mW and mm before calculation¹⁷ The result is rounded to one decimal place for comparison

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 is applied to determine SAR test exclusion

eirp = pt x gt = $(E x d)^{2/30}$ where:

pt = transmitter output power in watts,

gt = numeric gain of the transmitting antenna (unitless),

 $E = electric field strength in V/m, ---10^{((dBuV/m)/20)}/10^{6}$

d = measurement distance in meters (m)---3m,

So $pt = (E \times d)^{2/30/gt}$

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The worst case (refer to report ES188 WSCT-NVLAP-R&E191200024A) is

below:

For FM:

Mode	Pmax	Distance	f(GHz)	Calculati	Standalone SAR	SAR test
	(mW)	(mm)		on Result	test exclusion Threshold	exclusion
FM	0.00	<5.00	0.434	0.00	3.00	Yes

0.00<3.0 for 1-g SAR

So the SAR report is not required.

Note:

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According to the RF report: ES188 WSCT-NVLAP-R&E191200024A results 70.68 dBuV/m,

- Plug it into the formula :
- $pt = (E \times d)^{2/30/gt}$
- $=(10^{((dBuV/m)/20)}/10^{6} \times 3)^{2/30/gt}$
- =0.000035(W)
- So Pmax=0.0000035 x 10^3 =0.00 (mW)

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