RF Exposure evaluation

FCC ID: 2AKWC-ES188

Product: TPMS Sensor

Model No.: ES188

Additional Model No.: N/A

Trade Mark: N/A

Issued for:

Display & Technology Limited

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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 ≤ 50 mm are determined by:

[(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 the nearest mW and mm before calculation[17]
The result is rounded to one decimal place for comparison
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 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 x d)^2/30/gt

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

For FM:

Mode	Pmax (mW)	Distance (mm)	f(GHz)	Calculation Result	Standalone SAR test exclusion Threshold	SAR test 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:

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

Plug it into the formula :

pt = (E x d)^2/30/gt

$=(10^{((dBuV/m)/20)}/10^{6} \times 3)^2/30/gt$

=0.0000035(W)

So Pmax=0.0000035 x 10^3 =0.00 (mW)