MPE Calculation

Applicant:	Continental Automotive GmbH
Address:	Siemensstrasse 12, D-93055 Regensburg Germany
Product:	Tire pressure monitoring sensor
FCC ID:	KR5TIS-27
Model No.:	TIS-27
Reference RF report #	709502152701-00

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*($180/f^2$)	30
30–300	27.5	0.073	0.2	30
300–1,500	/	/	f/1500	30
1,500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

Calculation method

Calculate the EIRP from the radiated field strength in the far field using Equation (22):

$$EIRP = E_{Meas} + 20\log(d_{Meas}) - 104.7 \quad (22)$$

where

EIRP is the equivalent isotropically radiated power, in dBm
E_{Meas} is the field strength of the emission at the measurement distance, in dBµV/m
d_{Meas} is the measurement distance, in m

NOTE—Because this equation yields the identical result whether the field strength is extrapolated using the default 20 dB/decade of distance extrapolation factor, or the field strength is not extrapolated for distance, this equation can generally be applied directly (with no further correction) to determine EIRP. In some cases, a different distance correction factor may be required; see 9.1.

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For 433.92MHz.

Field Strength (EMeas):	80.69(dBuV/m) (f=433.92 MHz)
Measurement Distance(dMeas):	3 (m)
Equivalent Isotropically Radiated Power(EIRP):	-14.46dBm

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:
Predication of MPE limit at a given distance
$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm^2);
PG = −14.46dBm=0.0358mW (in appropriate units, e.g., mW);
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

The max power density $0.0358/4\pi R^2 = 7.125*10^{-6} (mW/cm^2) < 0.28928 (mW/cm^2)$
Result: Compliant

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Reviewed by:	Prepared by:	Tested by:
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