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MPE Calculation

Report No: C15586TR2
Project No: C8609
Date: 6th September 2024

Product details:

Product name	iTrack TPMS Sensor v5
Company name	Bridgestone Mining Solutions Technology Ltd
Address	2 Bakers Row
	London
	EC1R 3DB
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MPE Calculation for Bridgestone Mining Solutions Technology Ltd

FCC requirement:

This report contains calculation of maximum Possible Exposure for the iTrack TPMS Sensor v5.

Required distance to the user is assumed to be 20 cm

Mobile devices are defined by the FCC as transmitters designed to be used in other than fixed locations and generally to be used in such a way that a separation distance of 20cm is normally maintained between radiating structures and the body of the user or nearby persons.

These devices are normally evaluated for exposure potential with relation to the MPE limit.

As the 20cm separation may not be achievable under normal operating conditions, an RF exposure calculation is used to demonstrate the minimum distance required to be less than the power density limit, as required under FCC rules.

FCC rule part:47CFR2.1091(3)

Power density (S) relates to Equivalent Isotropic Radiated power (EIRP) according to the following:

$$S = \frac{EIRP}{4\pi R^2}$$

Where,

R is the distance to the centre of radiation of the antenna (cm)

SRD Power Density

The worst case output power of the SRD module was = 0.095 mW
(Value obtained from test report C15585TR1)

The Power density (S) is calculated as:

Frequency (MHz)	Maximum EIRP (mW)	Power density (S) (mW/cm^2)	Power density limit (S) (mW/cm^2) 47CFR1.1310 Table 1
434.375	0.095	0.000019	0.29 (f/1500)

f = Frequency (MHz)

MPE Calculation for Bridgestone Mining Solutions Technology Ltd

ISED Requirement

RSS Standard:

RSS-102 Issue 6 Posted on Industry Canada website: December 15, 2023

Clause: 6.6 Field reference level exposure exemption limits

At or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less then, in Watts,

$$1.31 \times 10^{-2} \, f^{0.6834}$$

adjusted for tune-up tolerance, where f is in MHz

SRD Evaluation

Calculation of e.i.r.p.:
Peak conducted power was measured, see Test Report C15585TR1.

frequency (MHz)	Measured Power (W)	Limit (W)
434.375	0.095	0.83

Conclusion

The apparatus meets the exclusion requirements for RF exposure Evaluation.

Prepared by:

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Radio Testing Team Lead

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