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RF exposure analysis for the equipment TXN1 (FCC ID: KR5TXN1; IC: 7812D-TXN1)

1. Introduction

The device **TXN1** (FCC ID: **KR5TXN1**; IC: **7812D-TXN1**) is a radio frequency transmitter-receiver used in vehicle locking/unlocking systems. It contains a 433.92 MHz transmitter and a 125 KHz receiver and is designed to be installed in and used in portable exposure conditions.

2. FCC SAR limits

According to § 2.1093 (d) (2) the limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and peak spatial-average SAR limit is 1.6 W/kg, averaged over any 1 gram of tissue over the whole body.

3. IC SAR limits

Industry Canada has adopted the SAR and RF field strength limits established in Health Canada's RF exposure guideline, Safety Code 6: *Limits of Human Exposure to Radiofrequency Electromagnetic Energy in the Frequency Range from 3 kHz to 300 GHz*.

4. Compliance criteria:

For FCC, individual transmitters are deeded to comply with § 2.1093 requirements if the output power of the transmitter meets the conditions specified in section 4.3.1 (Standalone SAR test exclusion) considerations of the document "KDB 447498 D01 Clause 4.3.1 General RF Exposure Guidance v05r02".

For IC, limits specified in section 2.5 of RSS 102, Issue 5 for exemption from Routine Evaluation Limits for devices to be used at less than or equal to 20 cm from the user:

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

5. Compliance calculations:

Frequency (MHz)	Peak field strength (dB μ V/m)	Peak output power (dBm)	Peak output power (mW)	Evaluation distance per KDB 447498 D01 General RF Exposure Guidance v05r02 - 4.3.1 (mm)	[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [Vf(GHz)]		SAR Test Exclusion Thresholds per KDB 447498 D01 General RF Exposure Guidance v05r02 - 4.3.1 - 1)
433,920	82.53	-12,70	0,0537	5	0,2237355	≤ 3	COMPLIANT

Sincerely,

P.A.



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