

**CTC**  **advanced**  
member of RWTÜV group



Bundesnetzagentur

BNetzA-CAB-02/21-102



**DAkkS**  
Deutsche  
Akreditierungsstelle  
D-PL-12076-01-04

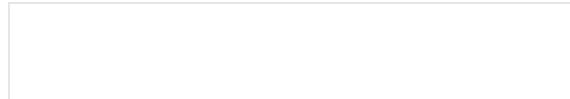
## Maximum Permissible Exposure (MPE) & Exposure evaluation

**Report identification number: 1-2497/21-01-08 MPE (FCC\_ISED)**

Certification numbers and labeling requirements	
FCC ID	NF3-FR5TPCC
ISED number	3887A-FR5TPCC
HVIN (Hardware Version Identification Number)	FR5TPCC
PMN (Product Marketing Name)	Front Radar 5 Truck Plus CAN CAN
FVIN (Firmware Version Identification Number)	-/-
HMN (Host Marketing Name)	-/-

This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

### Document authorised:



Alexander Hnatovskiy  
Lab Manager  
Radio Communications & EMC



Marco Scigliano  
Testing Manager  
Radio Communications & EMC

**EUT technologies:**

Technologies:	Max. measured average EIRP [dBm]	#
Radar 76.0 to 77.0 GHz	21.31	A

Details and origins of the measurements shown in the table above:

#	Results from:	Additional information
A	1-2497/21-01-03	CTC advanced GmbH Max. EIRP page 21

**Prediction of MPE limit at given distance - FCC**

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG / 4\pi R^2$$

where: S = Power density  
 P = Power input to the antenna  
 G = Antenna gain  
 R = Distance to the center of radiation of the antenna  
 PG = Output Power including antenna gain

The table below is excerpted from Table 1B of 47 CFR 1.1310 titled "Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure"

Frequency Range (MHz)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minutes)
300 -1500	f/1500	30
1500 - 100000	1.0	30

where f = Frequency (MHz)

**Prediction: worst case**

Technologies:	RADAR	
Frequency (MHz)	76 to 77	GHz
PG max power (EIRP)	21.31	dBm
R Distance	20	cm
S MPE limit for uncontrolled exposure	1	mW/cm <sup>2</sup>
<b>Calculated Power density:</b>	0.0269	mW/cm <sup>2</sup>
<b>Calculated percentage of Limit:</b>	2.69%	

**This prediction demonstrates the following:**

The power density levels for FCC at a distance of 20 cm are below the maximum levels allowed by regulations.

### Prediction of MPE limit at given distance - ISED

RSS-102, Issue 5, 2.5.2

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than  $4.49/f^{0.5}$  W (adjusted for tune-up tolerance), where  $f$  is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- 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 than  $1.31 \times 10^{-2} f^{0.6834}$  W (adjusted for tune-up tolerance), where  $f$  is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

#### Prediction: worst case

		RADAR	
	Frequency	76 to 77	GHz
R	Distance	20	cm
PG	Maximum EIRP	21.31	dBm
PG	<b>Maximum EIRP</b>	135.2	mW
	<b>Exclusion Limit from above:</b>	5.00	W
	<b>Calculated percentage of Limit:</b>	2.70%	

**Conclusion:** RF exposure evaluation is not required.