

**DEKRA Testing and Certification, S.A.U.**

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**RF exposure analysis for the equipment NAC EUR wave 3 (FCC ID:ZFW-NACEUR3)**

The device NAC EUR wave 3 (FCC ID: ZFW-NACEUR3) is a car radio integrating Bluetooth and Wi-Fi transmitter-receivers. This device is to be used only for fixed and mobile applications.

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all the persons and must not be co-located or operating in conjunction with any other antenna or transmitter except as under the conditions described KDB 447498 D01 General RF Exposure Guidance.

**MPE exposure limits**

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)
1500 – 100,000	1	30

**Compliance analysis**

Using the equation  $S = \frac{PG}{4\pi R^2}$  to calculate the exposure to electromagnetic fields

- where:
- S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>)
  - P = power input to the antenna (in appropriate units, e.g., mW)
  - G = power gain of the antenna in the direction of interest relative to an isotropic radiator
  - R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

compliance with FCC MPE limits is demonstrated following the calculations:

Frequency Band	Mode	Frequency Range (MHz)	Maximum conducted output power (per tune-up) (dBm)	Duty cycle (%)	Antenna gain (dBi)	Evaluation distance for compliance with MPE limits (cm)	$S = \frac{PG}{4\pi R^2}$ (mW/cm <sup>2</sup> )	FCC MPE limit (mW/cm <sup>2</sup> )
2400-2483.5 MHz	Bluetooth - GFSK	2402-2480 MHz	5,90	100,0%	-0,99	20	0,00062	1,00000
2400-2483.5 MHz	Bluetooth - Pi/4-DQPSK	2402-2480 MHz	5,11	100,0%	-0,99	20	0,00051	1,00000
2400-2483.5 MHz	Bluetooth - 8-DPSK	2402-2480 MHz	5,10	100,0%	-0,99	20	0,00051	1,00000
2400-2483,5 MHz	802,11 b	2412-2462 MHz	18,95	100,0%	-0,99	20	0,01244	1,00
2400-2483,5 MHz	802,11 g	2412-2462 MHz	22,15	100,0%	-0,99	20	0,02599	1,00
2400-2483,5 MHz	802,11 n20	2412-2462 MHz	21,72	100,0%	-0,99	20	0,02354	1,00