

Harman/Becker Automotive Systems GmbH
Becker-Görling-Straße 16
76307 Karlsbad
Germany

Carsten Steinroeder
03.08.2015
Phone +49 (0) 2102 749 331
Fax +49 (0) 2102 749 350

Maximum Permissible Exposure
PRSE

Dear Mr. Voegelé,

please find our Maximum Permissible Exposure calculations for the HERMES.

Best Regards

i.V.

A handwritten signature in blue ink, appearing to read 'Carsten Steinröder', written over a light blue grid background.

Carsten Steinröder

Maximum Permissible Exposure

(as specified in Table 1B of 47 CFR 1.1310 – Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure)

Frequency range (MHz)	Power density (mW/cm ²)
300 – 1500	f/1500
1,500 – 100000	1.0

Calculations 2.4 GHZ and 5 GHZ band

SAR Limit: 1 mW/cm²

Equation OET bulletin 65, page 18, edition 97-01: $S = P \cdot G / (4\pi R^2)$

S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the centre of radiation of the antenna

Operational Bands	Frequency (MHz)	Antenna Gain (dBi)	G		P		Limit (mW/cm ²)	S	
			Antenna Gain -numeric- (mW/cm ²)	Output Power -conducted- (dBm)	Output Power -conducted- (mW)	Output Power (EIRP) (mW)		Power Density value (mW/cm ²)	Margin to Limit (mW/cm ²)
WLAN - 802.11b	2437	1.8	1.5136	17.80	60.26	91.20	1.0000	0.0181	0.9819
WLAN - 802.11g	2437	1.8	1.5136	23.20	208.93	316.23	1.0000	0.0629	0.9371
WLAN - 802.11n (20 MHz BW)	2437	1.8	1.5136	24.60	288.40	436.52	1.0000	0.0868	0.9132
WLAN - 802.11n (40 MHz BW)	2422	1.8	1.5136	25.00	316.23	478.63	1.0000	0.0952	0.9048
WLAN - 802.11a	5745	6.6	4.5709	14.20	26.30	120.23	1.0000	0.0239	0.9761
WLAN - 802.11n (20 MHz BW)	5745	6.6	4.5709	14.00	25.12	114.82	1.0000	0.0228	0.9772
WLAN - 802.11n (40 MHz BW)	5755	6.6	4.5709	13.90	24.55	112.20	1.0000	0.0223	0.9777
Bluetooth	2480	1.8	1.5136	-0.59	0.87	1.32	1.0000	0.0003	0.9997

Distance to Antenna (R) in cm:	20
--------------------------------	----

Note 1: only worst case values are listed in the table above