

Maximum Permissible Exposure

Report Reference: MDE_MARELLI_2206_MPEa_rev.01

on

Giorgio 2.5
GRG2501

FCC ID: RX2GRG2501MY23
IC: 4983A-GRG2501MY23

To whom it may concern,

please find our Maximum Permissible Exposure calculations for GRG2501

Best Regards



i.A.

Abdellah Ahakki

Administrative Data:

Testing Laboratory

Company Name: 7layers GmbH
Address: Borsigstr. 11
40880 Ratingen
Germany

Project Data

Responsible for report: Mr. Abdellah Ahakki
Date of Report: 2022-12-30
Testing Period: 2022-08-16 to 2022-08-26

Applicant Data

Company Name: Marelli Europe S.p.A.
Address: V.le A. Borletti 61/63
20011 Corbetta (MI)
Italy
Contact Person: Gianluca Capuzzo

Manufacturer Data

Company Name: please see Applicant data
Address: -
-
-
Contact Person: -

Test object Data

General Description of Radio Device

Kind of Device product description	Head unit with Bluetooth
Product name	Giorgio 2.5
Type	GRG2501
Declared EUT data by the supplier	
Voltage Type	DC (vehicular battery)
Voltage Level	13.5 V
Antenna / Gain	External / -2 dBi
Tested Modulation Type	GFSK Modulation, 1-DHx packets n/4 DQPSK Modulation, 2-DHx packets 8-DPSK Modulation, 3-DHx packets
Specific product description for the EUT	The EUT supports Bluetooth.

RF Exposure evaluation

RF Exposure Evaluation

Standards
OET Bulletin 65 Edition 97-01 August 1997
FCC 47 CFR §1.1307
FCC 47 CFR §1.1310

Test limits

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 – 1,500	f/1500
1,500 – 100,000	1.0

Equation for calculation

$$S = P \cdot G / (4\pi R^2)$$

Where:

- S – Power density
- P – Power input to antenna
- G – Antenna gain relative to isotropic radiator
- R – Distance to antenna

Maximum peak output power at antenna terminal: +1.4 dBm (1.38 mW)

Antenna gain: -2 dBi

Prediction distance: 20cm

MPE limit for General Population/Uncontrolled Exposure: 1 mW/cm²

Calculation's results:

Power density at 20cm distance: 0.0002 mW/cm²

Band	Frequency (MHz)	Antenna Gain (dBi)	G		P		S		Margin to FCC Limit (mW/cm ²)	Margin to IC Limit (mW/cm ²)
			Antenna Gain -numeric- (mW/cm ²)	Output Power -conducted- (dBm)	Output Power -conducted- (mW)	IC Limit (mW/cm ²)	FCC Limit (mW/cm ²)	Power Density value (mW/cm ²)		
2480 MHz	2480	-2	0.6310	1.40	1.38	0.5469	1.0000	0.0002	0.9998	0.5467