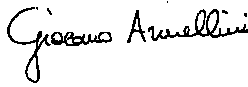
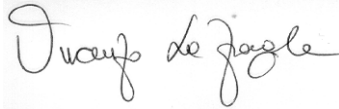




PRIMA

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RAPPORTO DI PROVA / TEST REPORT

Rif./Ref.No. MPETR_121238FCC-1	Data / Date: 28/11/2012	Pagine / Pages : 10
Scopo delle prove / Test object :	Prove di tipo in accordo a / Type test according to FCC Cfr 47 part 2 - §2.1091, part 1 - §1.1310	
Richiedente / Applicant :	ROTOR COMPONENTES TECNOLOGICOS SL C/Miño 16-18 – 28864 AJALVIR – MADRID - SPAIN	
Persona di riferimento / Applicant's referee :	Mr. Martinez (dmartinez@rotorbike.com)	
Marchio commerciale / Trade mark :	ROTOR POWER	
Fabbricante / Manufacturer :	ROTOR COMPONENTES TECNOLOGICOS SL	
Prodotto / Product :	FORCE/TORQUE MEASUREMENT BATTERY DEVICE INCLUDING RADIO TX/RX 2,4GHZ	
Modello / Model :	RPM1	
Data ricevimento campioni / Date of test samples receipt.	19/10/2012	
Campioni verificati / No. of tested samples	1	
Data verifiche / Testing date :	19/10/2012	
Sito di prova / Testing site :	Prima Ricerca & Sviluppo Via Campagna - 92 I-22020 FALOPPIO (CO)	
Esito delle valutazioni / Assessment results :	CONFORME / COMPLIANT	
Verifiche effettuate da / Verifications carried out by :	Giacomo ARMELLINI Responsabile Laboratorio EMC e RADIO/ EMC and RADIO Laboratory Manager	
Approvato / Approved by :	Vincenzo La Fragola Direttore generale/ General Manager	

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0 RELEASE CONTROL RECORD

TEST REPORT NUMBER	REASON OF CHANGE	DATE OF ISSUE
MPETR_121238FCC-0	Original Release	23/11/2012
MPETR_121238FCC-1	Correction of model name on page 2 Added new photos in sec4	28/11/2012

1 TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT)

1.1 EUT Identification

DESCRIPTION :	FORCE/TORQUE MEASUREMENT BATTERY DEVICE INCLUDING RADIO TX/RX 2,4GHZ
TRADEMARK:	ROTOR POWER
MODEL:	
S/N:	
MANUFACTURER:	ROTOR COMPONENTES TECNOLOGICOS SL
COUNTRY OF MANUFACTURER:	SPAIN
COMPOSED BY:	Two units: the first unit sends data to the second unit, the second unit sends data to a remote display or other devices.
EUT DIMENSIONS :	See photographic documentation
EUT STANDING:	On bicycle crank

1.2 EUT Technical Data

POWER SOURCE :	Internal Battery
POWER SUPPLY VOLTAGE:	3V battery (CR2477)
NOMINAL ABSORBED POWER	data not provided by the customer
FCC CLASS:	47 CFR FCC Part 15 Subpart C § 15.249
TYPICAL USAGE :	RADIO EQUIPMENT
TYPE:	INTENTIONAL RADIATOR
OPERATING FREQUENCY BAND	2400-2483.5MHz
FUNDAMENTAL FREQUENCY	2457MHz and 2470MHz
RADIATED OUTPUT POWER	78.9dBµV/m @ 3m (0.0000142W) for 2457MHz carrier

	76.7dB μ V/m @ 3m (0.0000085W) for 2470MHz carrier
FCC ID	R3A-RPM1
ANTENNA	INTEGRAL ANTENNA

1.3 EUT ports identification

This section contains descriptions of all ports, the length and the type of the cable provided by manufacturer needed for the tests. Moreover it is specified if the ports are ever or optionally connected.

Port	Description	Connector	Max cable length
1 Enclosure	Metallic (Bicycle crank)	---	---
2 AC mains input/output ports	Port not present	---	---
3 DC mains input/output ports	Internal Battery	---	---
4 Signals / Control Ports	Port not present	---	---
5 Telecommunication port	Port not present	---	---

Note: During the tests all cables must be what provided the manufacturer or the same that used in the real employment of the EUT.

1.4 EUT modification

- None

1.5 Auxiliary equipment

- None

2 REFERENCE STANDARDS

CODE OF FEDERAL REGULATIONS	
Title 47 Part 1 Subpart I § 1.1310	Procedures Implementing the National Environmental Policy Act of 1969. Radiofrequency radiation exposure limits.
Title 47 Part 2 Subpart J § 2.1091	Radiofrequency radiation exposure evaluation: mobile devices.
ANSI C63.4	American National Standard for Methods of Measuring of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz – 40 GHz

3 MEASUREMENTS AND CALCULATION RESULTS

3.1 Calculation Method

Far Field Power flux Calculation model.

This model is applicable in the far-field region and over-estimates in the radiating near-field region. The far-field calculations are accurate when the distance, r , from an antenna of length D to a point of investigation is greater than

$$r = \frac{2D^2}{\lambda}$$

The Power Flux is

$$S = \frac{PG}{4\pi r^2} \quad \text{or equivalent} \quad S = \frac{EIRP}{4\pi r^2}$$

where

P = input power of the antenna

G = antenna gain relative to an isotropic antenna

r = distance from the antenna to the point of investigation.

EIRP = Effective Isotropic Radiated Power

3.2 Limits

Tab. 1 of CFR Title 47 Part 1 Subpart I § 1.1310

Table 1—Limits for **Maximum Permissible Exposure (MPE)**

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

Note 1 to Table 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

Note 2 to Table 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

3.3 Measurements and Calculation Results

MEASUREMENTS			
TX Frequency (MHz)	Radiated Power (dBm)	Radiated Power (W)	Antenna Gain (dBi)
2457	-18.48	0.0000142	NA
Duty cycle factor (declared) 100,00%			
CALCULATION RESULTS			
Distance to the Area of Interest	0.6566 feet 0.2001 m		
Are Ground Reflections Calculated?	Yes		
Estimated RF Power Density	0.0001 mW/cm ²		
	Controlled Environment	Uncontrolled Environment	
Maximum Permissible Exposure (MPE)	5.005 mW/cm ²	1.005 mW/cm ²	
Distance to Compliance From Centre of Antenna	0.0508 feet 0.0155 m	0.0518 feet 0.0158 m	
Does the Area of Interest Appear to be in Compliance?	yes	yes	

MEASUREMENTS			
TX Frequency (MHz)	Radiated Power (dBm)	Radiated Power (W)	Antenna Gain (dBi)
2470	-20.68	0.0000085	NA
Duty cycle factor (declared) 100,00%			
CALCULATION RESULTS			
Distance to the Area of Interest	0.6566 feet 0.2001 m		
Are Ground Reflections Calculated?	Yes		
Estimated RF Power Density	0.0001 mW/cm ²		
	Controlled Environment	Uncontrolled Environment	
Maximum Permissible Exposure (MPE)	5.005 mW/cm ²	1.005 mW/cm ²	
Distance to Compliance From Centre of Antenna	0.0506 feet 0.0154 m	0.0514 feet 0.0157 m	
Does the Area of Interest Appear to be in Compliance?	yes	yes	

4 PHOTOGRAPHIC DOCUMENTATION

PHOTO 1 – EUT IDENTIFICATON



PHOTO 2 – MEASUREMENT SETUP

