PRIMA
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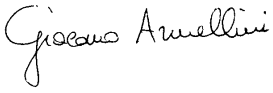
RAPPORTO DI PROVA / *TEST REPORT*

Rif./*Ref*.No. MPETR_131623-4	**Data / D*ate*:18/04/2014**	Pagine / *Pages* **: 8**
Scopo delle prove /*Test object :*	Prove di tipo in accordo a / *Type test acccording to* **FCC Cfr 47 part 2 - §2.1091, part 1 - §1.1310**	
Richiedente / *Applicant* **:**	POWER-ONE ITALY SPA Via San Giorgio 642 – 52028 Terranuova Bracciolini – AR – Italy Tel. +39 055 9195	
Persona di riferimento / *Applicant's referee :*	Sig. Gianfranco Iannuzzi (gianfranco.iannuzzi@power-one.com)	
Marchio commerciale / *Trade mark* **:**	power-one®	
Fabbricante / *Manufacturer :*	POWER-ONE ITALY SPA	
Prodotto / *Product :*	**WIFI LOGGER CARD for inverter**	
Modello / *Model* **:**	**WIFI LOGGER CARD identified by the FCC id: X6W-3N16E**	
Data ricevimento campioni / *Date of test samples receipt*:	25/11/2013	
Campioni verificati / *No. of tested samples*	1	
Data verifiche / *Testing date* :	28-29/11/2013	
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 :*	Andrea Bortolotti Tecnico di laboratorio / *Test Engineer*	
Approvato / *Approved by* **:**	Giacomo ARMELLINI Responsabile Laboratorio EMC e RADIO/ *EMC and RADIO Laboratory Manager*	

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0 RELEASE CONTROL RECORD

TEST REPORT NUMBER	REASON OF CHANGE	DATE OF ISSUE
MPETR_131623-0	Original Release	27/01/2014
MPETR_131623-1	Added FCC ID	29/01/2014
MPETR_131623-2	Added comments and new calculation results	18/03/2014
MPETR_131623-3	Editorial change and remove photographic section	08/04/2014
MPETR_131623-4	Editorial change: correction of calculation results	18/04/2014

1 TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT)

1.1 EUT Identification

BRAND NAME:	power-one®
MANUFACTURER:	Power-One Italy S.p.A.
TYPE OF EQUIPMENT :	WIFI LOGGER CARD for inverter
MODEL NAME OR NUMBER :	WIFI LOGGER CARD identified by the FCC id: X6W-3N16E
SERIAL NUMBER :	Not present
FCC ID :	X6W-3N16E
COUNTRY OF MANUFACTURER:	Italy

1.2 EUT Technical Data

FCC CLASS:	47 CFR FCC Part 15 Subpart C § 15.247
PRODUCT TYPE:	Radio Equipment
RADIO TYPE:	Intentional radiators
POWER SUPPLY REQUIREMENTS :	12Vdc powered by inverter board
FREQUENCY RANGE :	2400-2483,5MHz (frequency a of ERC REC 70-03 annex 3)
STD 802.11:	IEEE Std 802.11b, 802.11g and 802.11n
TYPE MODULATION :	GFSK
RF OUTPUT IMPEDANCE :	50 Ohms
CHANNEL BANDWIDTH:	22MHz
CHANNEL SPACING:	5MHz
ANTENNA CONNECTOR /TYPES :	RSMA connector

1.3 Technical information

MODULE MANUFACTURER:	EPCOS
MODULE TYPE:	LBEPSCLXRC-701
TYPE OF ANTENNA:	☐ Integral ; ☒ External ; ☐ Dedicated 
ANTENNA GAIN:	Max. 3.32dBi (worst case)

1.4 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***	***Connection***
1	**Enclosure**	Not present (electronic PCB board only)	Plug-in electronic board
2	**AC Power Supply**	Not present (electronic PCB board only)	-----
3	**DC power supply**	12Vdc	Plug-in electronic board
4	**Signal lines**	Signal line	Plug-in electronic board
5	**Telecomm. Lines**	Not present (electronic PCB board only)	-----
6	**Antenna**	RSMA connector	Connector
Note: During the tests all cables must be what provided the manufacturer or the same that used in the real employment of the EUT.			

1.5 EUT modification

- None

1.6 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 **M**aximum **P**ermissible **E**xposure (**MPE**)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(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 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

WORST CASE

MEASUREMENTS					
Channel	**Protocol**	**TX Frequency (MHz)**	**Conducted Power at RP-SMA connector (dBm)**	**Conducted Power at RP-SMA connector (mW)**	**Antenna Gain (dBi)**
6	b	2437	17.68	58.6	3.32
Duty cycle factor: 100%					

CALCULATION	
Distance to the Area of Interest	0.656feet 20cm
Are Ground Reflections Calculated?	NO
Estimated RF Power Density	0.0251 mW/cm2
	Uncontrolled Environment
Maximum Permissible Exposure (MPE)	1.000 mW/cm2
Distance to Compliance From Centre of Antenna	0.104 feet 0.0317 m
Does the Area of Interest Appear to be in Compliance?	Yes

RESULT
EUT is Compliant with the requirements of FCC rule part 2.1091