

MPE CALCULATION

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EUT DESCRIPTION INVERTER RADIO INTERFACE

EUT TRADEMARK Power-One

EUT MODEL PVI-RADIOMODULE-US

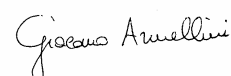
REFERENCE STANDARDS : 47 CFR FCC part 15.247
47 CFR FCC part 1.1310
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TEST REPORT NUMBER MPETR_100139-1

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|| The calculation results reported in this document shall refer only to Test Report above indicated and relevant tested sample

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1. EUT TECHNICAL DATA

Brand name:	POWER-ONE
Manufacturer:	POWER-ONE ITALY SPA
Equipment :	INVERTER RADIO INTERFACE
Serial number :	Not present
FCC ID :	X6W-MOD
FCC class:	47 CFR FCC Part 15 Subpart C § 15.247
Radio type:	Intentional radiators
Power type :	12 Vdc
Auxiliary Equipment:	(Power One) Inverter type PVI-4.2-OUTD-IT
Type Modulation:	FHSS
Modulation :	GFSK
Data Rate (Mbps) :	50 Kbps
Frequency range :	902 – 928 MHz
Channel number :	63
Channel Band Width (20dB) :	440 KHz
Channel space:	400KHz
Conducted/radiated Output Power :	11,2 dBm radiated 9,84 dBm conducted
Carrier Frequency:	Channel No.1: 902,65 MHz Channel No.63: 927,45 MHz
Field Antenna :	Antenna Type: Bondale Industrial Ltd. mod. G-RA0K11165032-1460 Gain 2,14 dBi

2. ASSESSMENT METHOD

EM reference level: Power flux density calculation in the Far Field region

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

The FCC's MPE limits for field strength and power density are given in Table 1 (and in 47 CFR § 1.1310)

Table 1. LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

(A) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
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

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
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

3.3 Calculation Results

Reference Test Report: FCCTR_100139-1 issued by Prima Ricerca&Sviluppo on 26/03/210

Channel 0 (worst case)

	Conducted (Antenna Connector)		Radiated	
Power at the Antenna	0.009638		0.013183 W	
Antenna Gain in dB	2.15 dBi		n.a.	
Distance to the Area of Interest	0.656 feet 0.1999 metres		0.656 feet 0.1999 metres	
Frequency of Operation	902.65 MHz		902.65 MHz	
Are Ground reflections Calculated	Yes		n.a.	
Estimated RF Power Density	0.0032 mW/cm ²		0.0027 mW/cm ²	
	Controlled Environment	Uncontrolled Environment	Controlled Environment	Uncontrolled Environment
Maximum Permissible Exposure (MPE)	3.0138 W/cm ²	0.6068 mW/cm ²	3.0138 W/cm ²	0.6068 mW/cm ²
Distance to Compliance From Centre of Antenna	0.0712 feet 0.0217 metres	0.0974 feet 0.0297 metres	0.0694 feet 0.0211 metres	0.0933 feet 0.0284 metres
Does the Area of Interest Appear to be in Compliance	yes	yes	yes	yes

4. EUT PHOTOGRAPHIC DOCUMENTATION

PHOTO N° 1 – SYSTEM IDENTIFICATION

