


RAPPORTO DI PROVA / TEST REPORT

Rif./Ref.No. EMFTR_171299-0	Data / Date: 23/06/2017	Pagine / Pages : 10
Scopo delle prove / Test object :	Prove di tipo in accordo alla Norma armonizzata / Type test according to Harmonized standards EN 62311:2008	
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Marchio commerciale / Trade mark :		
Fabbricante / Manufacturer :	RELOC S.r.l.	
Prodotto / Product :	Wi-Fi Pmod Adapter based on ATWINC15x0 module	
Modello / Model :	PMOD.WM1A (PMOD-WM1A-ATWINC15X0)	
Data ricevimento campioni / Date of test samples receipt :	19/06/2017	
Campioni verificati / No. of tested samples	1	
Data verifiche / Testing date :	19-20/06/2017	
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 :	Daniele AOSANI Tecnico Laboratorio EMC / EMC Laboratory Technician	
Approvato / Approved by :	Giacomo ARMELLINI Responsabile Laboratorio EMC & RADIO / EMC & RADIO Laboratory Manager	

I risultati delle prove riportati nel presente rapporto di prova si riferiscono solo ai campioni esaminati./
The test results reported in this test report shall refer only to the samples tested

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0 RELEASE CONTROL RECORD

TEST REPORT NUMBER	REASON OF CHANGE	DATE OF ISSUE
EMFTR_171299-0	Original Release	23/06/2017

1 TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT)

1.1 EUT Identification

DESCRIPTION	Wi-Fi Pmod Adapter based on ATWINC15x0 module
MODEL NAME	PMOD.WM1A (PMOD-WM1A-ATWINC15X0)
SERIAL NO.	R17P06R1D0A
TRADEMARK	 RELOC DESIGN & INTEGRATION
MANUFACTURER	RELOC s.r.l.
COUNTRY OF MANUFACTURER	Italy
SINGLE UNIT OR SYSTEM	Single
POWER SUPPLUY	DC power
WORKING VOLTAGE	3.0V to 4.2V
FREQUENCY RANGE	2.4 GHz ISM band (2.412 ÷ 2.472 MHz range)
CHANNEL NUMBER	1÷13
CHANNEL BANDWIDTH	22 MHz
CHANNEL SPACING	5 MHz
MODULATION TYPE	IEEE 802.11b DSSS-CCK IEEE 802.11g OFDM IEEE 802.11n HT modulations MCS0-7, 20MHz, 800 and 400ns guard interval
TRANSFER RATE:	Up to 72 Mbps
ADAPTIVE / NON ADAPTIVE:	Adaptive equipment without the possibility to switch to a non-adaptive mode
ANTENNA TYPE	Internal
ANTENNA GAIN	NA – Maximum system output power 17 dBm

Ports identification

Port		Description	Connection
1	Enclosure	Port not present	---
2	AC Power Supply	Port not present	---
3	DC power supply	3.0V to 4.2V	---
4	Signal lines	Port not present	---
5	Telecomm. Lines	Port not present	---
6	Antenna	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.

1.2 Auxiliary equipment

- The RELOC PMOD.WM1A device provides attached host boards with Wi-Fi access through the Microchip® ATWINC15x0-MR210 Wi-Fi™ radio module. Users can communicate with the IEEE 802.11b/g/n compliant chip through SPI and achieve data rates up to 72 Mbps.

1.3 EUT modification

- None

2 REFERENCE STANDARDS

Reference standard :	
EN 62311 (2008)	Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 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

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

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. 2 of Recommendation 1999/519/EC: Reference levels for electric, magnetic and electromagnetic fields (0Hz to 300GHz, unperturbed rms values)

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	Equivalent plane wave power density S_{eq} (W/m ²)
0-1 Hz	—	$3,2 \times 10^4$	4×10^4	—
1-8 Hz	10 000	$3,2 \times 10^4/f^2$	$4 \times 10^4/f^2$	—
8-25 Hz	10 000	$4\,000/f$	$5\,000/f$	—
0,025-0,8 kHz	$250/f$	$4/f$	$5/f$	—
0,8-3 kHz	$250/f$	5	6,25	—
3-150 kHz	87	5	6,25	—
0,15-1 MHz	87	$0,73/f$	$0,92/f$	—
1-10 MHz	$87/f^{1/2}$	$0,73/f$	$0,92/f$	—
10-400 MHz	28	0,073	0,092	2
400-2 000 MHz	$1,375\ f^{1/2}$	$0,0037\ f^{1/2}$	$0,0046\ f^{1/2}$	$f/200$
2-300 GHz	61	0,16	0,20	10

3.3 Measurements

RADIATED BY INTERNAL ANTENNA

(MODE:)

CH	TX Frequency (MHz)	Radiated Peak Power (dBm)	Radiated Average Power (dBm)	Radiated Average Power (W)
13	2473,2	29.6	29.6	0.912
MAXIMUM PERMISSIBLE EXPOSURE (MPE)				
Evaluation Distance (m)			0,2 ⁽¹⁾	
Power density at evaluation distance (W/m²)			0,0000766	
Power density Limit (W/m²)			10	
VERDICT				
The EUT Radiated Power density at evaluation distance is WHITIN THE LIMIT				

⁽¹⁾ Typical installation distance from human body declared by the manufacturer

4 PHOTOGRAPHIC DOCUMENTATION

PHOTO 1 – EUT IDENTIFICATON

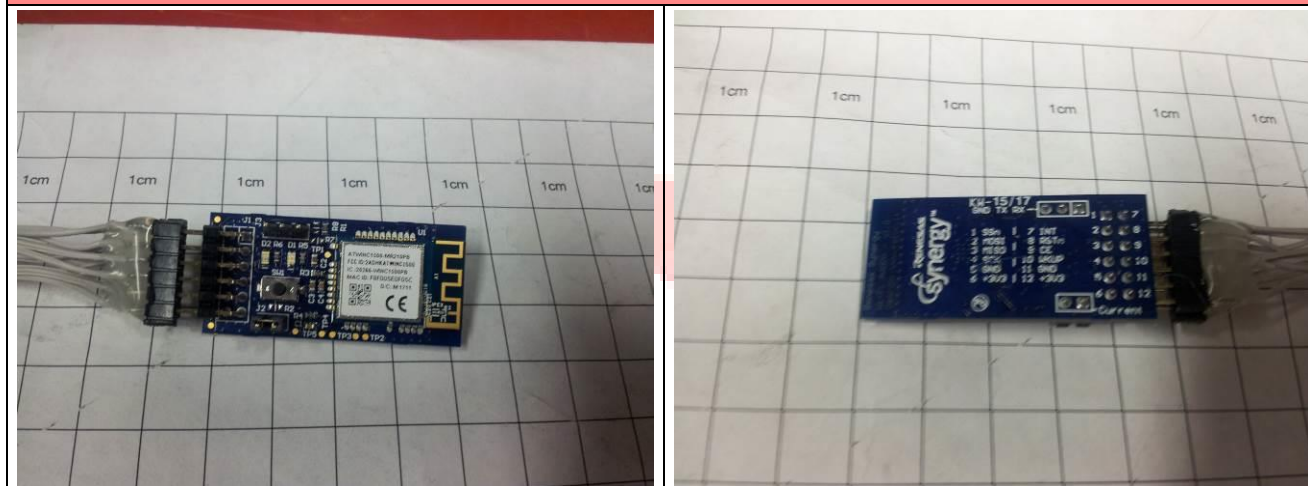


PHOTO N° 2 – RADIATED MEASUREMENT SETUP

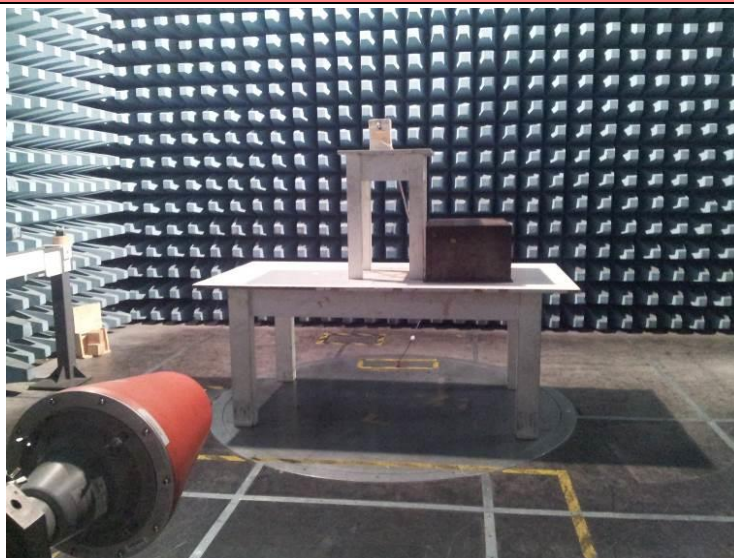


PHOTO 3 – AUXILIARY EQUIPMENT IDENTIFICATION

