

RAPPORTO DI PROVA

TEST REPORT

Rif. / Ref. n.	MPETR_173377-0	Data / Date:	15/02/2019	Pagine / Pages:	7
Scopo delle prove <i>Test object</i>	Prove di tipo in accordo alla Norma <i>Type test according to standards</i> FCC Cfr 47 part 2 - §2.1093				
Richiedente <i>Applicant</i>	CDVI Wireless S.p.A. Via Piave 23 – 31020 S. Pietro di Feletto – Treviso – Italy Tel. +39 0438 450860				
Marchio commerciale <i>Trade mark</i>					
Fabbricante <i>Manufacturer</i>	CDVI Wireless S.p.A.				
Prodotto <i>Product</i>	Touch sensor transmitter				
Modello testato <i>Testing model</i>	TTH2641E1N				
Identificativo FCC <i>FCC ID</i>	PWJTTH				
Data ricevimento campioni <i>Date of test samples receipt</i>	11/02/2019				
Campioni verificati <i>No. of tested samples</i>	1 – Sample by the applicant				
Data verifiche <i>Testing date</i>	14/02/2019				
Sito di prova <i>Testing site</i>	PRSLAB S.r.l. Unipersonale - Via Campagna 92 - 22020 Faloppio - Como - Italy				
Esito delle valutazioni <i>Assessment results</i>	CONFORME / COMPLIANT				
Verifiche effettuate da <i>Verifications carried out by</i>	Daniele AOSANI Tecnico laboratorio EMC & RADIO EMC & RADIO Test Engineer				
Approvato <i>Approved by</i>	Riccardo PFEIFFER Responsabile laboratori 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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CONTENUTO

TABLE OF CONTENTS

0. RELEASE CONTROL RECORD	2
1. TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT).....	3
1.1 EUT Identification	3
1.2 Derived models	4
1.3 Radio module technical data	5
1.4 Ports identification.....	6
1.5 Modifications incorporated in E.U.T.....	6
1.6 Auxiliary equipment.....	6
2. REFERENCE STANDARDS	6
3. MEASUREMENTS AND CALCULATION RESULTS	7
3.1 SAR exemption.....	7
3.2 Operational Description.....	7
3.3 RF Exposure Conditions	7
3.4 RF Output Power.....	7
3.5 Calculation method and limits	7
3.6 Calculation results.....	7

0. RELEASE CONTROL RECORD

TEST REPORT NUMBER	REASON OF CHANGE	DATE OF ISSUE
MPETR_173377-0	Original release	15/02/2019

1. TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT)

1.1 EUT Identification

DESCRIPTION	Touch sensor transmitter
MODEL NAME	TTH2641E1N
FCC ID	PWJTTH
SERIAL NO.	Prototype
TRADEMARK	
MANUFACTURER	CDVI Wireless S.p.A.
COUNTRY OF MANUFACTURER	Italy
SINGLE UNIT OR SYSTEM	Single
POWER SOURCE	Internal battery AA (model ER14505 manufactured by EVE ENERGY CO., LTD.)
ELECTRICAL SYSTEM RATED VOLTAGE	3.6Vdc
NOMINAL CAPACITY	2.6Ah
MAX POWER or ABSORBED CURRENT	Stand-by: 2µA Transmission: 60mA
OPERATING TEMPERATURE	-20°C ÷ +80°C
DIMENSIONS	105 x 70 x 23.5mm
EUT STANDING	Wall

1.2 Derived models

Difference declared by manufacturer			Reference document provided by manufacturer
Basic model	TTH2641E1N	Security code type: Rolling code Enclosure color: black	IS-TTHERML.pdf
Derived models	TTH2641E1B	Security code type: Rolling code Enclosure color: white	IS-TTHERML.pdf
	TTH39E1N	Security code type: Fixed Enclosure color: black	IS-TTH39ERML.pdf
	TTH39E1B	Security code type: Fixed Enclosure color: white	IS-TTH39ERML.pdf
Note: The documents mentioned are provided by the manufacturer to highlight the differences between the models.			

1.3 Radio module technical data

CHIP MANUFACTURER		
CHIP TYPE	TDK5110F	
WORKING FREQUENCY	433.92MHz	
NUMBER OF CHANNELS	1	
TYPE OF MODULATION	ASK	
DATA RATE	20kHz	
ANTENNA	Spiral antenna in phosphor bronze	
ANTENNA MANUFACTURER		

1.4 Ports identification

	PORT	DESCRIPTION	CONNECTION	NOTES
☒	Enclosure	Plastic	Snap	---
☐	AC Power input	Port not present	---	---
☐	DC Power input	Internal battery	---	---
☐	Signal/Control port	Port not present	---	---
☐	Telecomm. port	Port not present	---	---
☐	Antenna Port	Internal	---	---

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 Modifications incorporated in E.U.T.

The following items are the modifications introduced in the equipment under test:

- None

1.6 Auxiliary equipment

- None

2. REFERENCE STANDARDS

REFERENCE STANDARD	
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 SAR exemption

This device has been excluded from SAR testing based on source-based time-averaged radiated output power and KDB 447498 D01 section 4.3.1 1. This document serves as the RF exposure exhibit in the FCC Form 731 application in lieu of a SAR report.

3.2 Operational Description

The is a remote control using the 433MHz frequency for remote control of vehicle's door. The user's hand will touch the device when it is transmitting and there is nothing to stop him being within 20 cm therefore it is necessary a calculation for portable use demonstrating that the transmitter can be excluded from SAR testing.

3.3 RF Exposure Conditions

The device is intended for use in the portable exposure condition and the General Population / Uncontrolled RF exposure environment.

3.4 RF Output Power

Tx frequency: 433.92MHz

Maximum Rated Output Power: = -12.82dBm (0.052mW)

3.5 Calculation method and limits

SAR Test Exclusion Thresholds:

$$\left[\frac{(\text{max. power of channel, mW})}{(\text{min. test separation distance, mm})} \right] \cdot [f(\text{GHz})] \leq 3.0 \text{ (for 1-g body SAR) or } 7.5 \text{ (for 10-g extremity SAR)}$$

where respectively

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

3.6 Calculation results

Maximum Rated Output Power: 0.052mW

Min Test separation distance: 5mm

f: 0.43392GHz (as worst case)

Exclusion Threshold: 7.5 (10-g extremity SAR)

$$\frac{0.052mW}{5mm} * \sqrt{0.43392} = 0,0068 \leq 7.5$$

RESULT: The device is excluded from SAR testing