



Test report No. : 4790186595-US-R2-V0  
Page : 1 of 10  
Issued date : 2022/1/12  
FCC ID : BY4WFD1500PRO

# Maximum Permissible Exposure Report

**Product** : Full-HD Wireless Presentation Receiver  
**Model Name** : WFD-1500 PRO  
**FCC ID** : BY4WFD1500PRO  
**Test Regulation** : 47 CFR FCC Part 2.1091  
**Received Date** : 2021/8/18  
**Test Date** : 2021/8/18 ~ 2021/12/2  
**Issued Date** : 2022/1/12  
**Applicant** : Trans Electric Co., Ltd  
771 Sec.2 Chungsan Rd, Huatang, Changhua, Taiwan  
**Issued By** : Underwriters Laboratories Taiwan Co., Ltd.  
Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd.,  
Zhudong Township, Hsinchu County, Taiwan



The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report are responsible of the test sample(s) provided by the client only and are not to be used to indicate applicability to other similar products.

## **Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan  
Telephone : +886-2-7737-3000  
Facsimile (FAX) : +886-3-583-7948

Doc No: 17-EM-F0864 / 5.0





## Table of Contents

<b>1. Attestation of Test Results.....</b>	<b>4</b>
<b>2. Facilities and Accreditation .....</b>	<b>5</b>
<b>3. Equipment Under Test .....</b>	<b>6</b>
3.1. Description of EUT .....	6
3.2. Description of Available Antennas .....	8
<b>4. Requirement .....</b>	<b>9</b>
<b>5. Radio Frequency Radiation Exposure Evaluation .....</b>	<b>10</b>

### **Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan  
Telephone :+886-2-7737-3000  
Facsimile (FAX) :+886-3-583-7948



## 1. Attestation of Test Results

**APPLICANT:** Trans Electric Co., Ltd  
 771 Sec.2 Chungsan Rd, Huatang, Changhua, Taiwan

**MANUFACTURER:** Trans Electric Co., Ltd  
 771 Sec.2 Chungsan Rd, Huatang, Changhua, Taiwan

**EUT DESCRIPTION:** Full-HD Wireless Presentation Receiver

**BRAND:** PX

**MODEL:** WFD-1500 PRO

**SAMPLE STAGE:** Engineering Verification Test sample

<b>APPLICABLE STANDARDS</b>	
<b>STANDARD</b>	<b>Test Results</b>
47 CFR FCC PART 2.1091	PASS

Underwriters Laboratories Taiwan Co., Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by Underwriters Laboratories Taiwan Co., Ltd. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Underwriters Laboratories Taiwan Co., Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Underwriters Laboratories Taiwan Co., Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Prepared By:

Sally Lu  
 Project Handler

Date : 2022/1/12

Approved and Authorized By:

Waternil Guan  
 Engineer

Date : 2022/1/12

### Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan  
 Telephone : +886-2-7737-3000  
 Facsimile (FAX) : +886-3-583-7948



## Test Methodology and Reference Procedures

The tests documented in this report were performed in accordance with KDB 447498 D01 General RF Exposure Guidance v06.

## 2. Facilities and Accreditation

<b>Test Location</b>	Underwriters Laboratories Taiwan Co., Ltd.
<b>Address</b>	Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan
<b>Accreditation Certificate</b>	Underwriters Laboratories Taiwan Co., Ltd. is accredited by TAF, Laboratory Code 3398.

### **Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan  
Telephone :+886-2-7737-3000  
Facsimile (FAX) :+886-3-583-7948



### 3. Equipment Under Test

#### 3.1. Description of EUT

<b>Product Name</b>	Full-HD Wireless Presentation Receiver	
<b>Brand Name</b>	PX	
<b>Model Name</b>	WFD-1500 PRO	
<b>Operating Frequency</b>	WLAN	<b>2.4GHz:</b> 2412MHz ~ 2462MHz <b>5GHz:</b> 5180MHz ~ 5240MHz 5745MHz ~ 5825MHz
<b>Modulation</b>	WLAN	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM
<b>Number of Channel</b>	2.4G WLAN 2412 ~ 2462 MHz	11 for 802.11b, 802.11g, 802.11n (HT20)
		7 for 802.11n (HT40)
	5G WLAN 5180 ~ 5240 MHz	4 for 802.11a, 802.11n (HT20), 802.11ac (VHT20)
		2 for 802.11n (HT40), 802.11ac (VHT40)
		1 for 802.11ac (VHT80)
	5G WLAN 5745 ~ 5825 MHz	5 for 802.11a, 802.11n (HT20), 802.11ac (VHT20)
2 for 802.11n (HT40), 802.11ac (VHT40)		
1 for 802.11ac (VHT80)		
<b>Normal Voltage</b>	5Vdc from adapter	
<b>Sample ID</b>	Conducted Test: 4160488, 4423808	
	Radiated Test: 4148229, 4423808	
<b>Software Version</b>	00.0003.07.20190211	

#### Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan  
Telephone :+886-2-7737-3000  
Facsimile (FAX) :+886-3-583-7948



Note:

1. The EUT provides one completed transmitters and one receivers.

Modulation Mode	Tx,Rx Function
802.11a	1TX,1RX
802.11b	1TX,1RX
802.11g	1TX,1RX
802.11n (HT20)	1TX,1RX
802.11n (HT40)	1TX,1RX
802.11ac (VHT20)	1TX,1RX
802.11ac (VHT40)	1TX,1RX
802.11ac (VHT80)	1TX,1RX

2. The EUT contains following accessory devices:

Product	Brand	Model	Description
Type C USB Cable	PX	F1563G	Length: 1m

3. The above EUT information is declared by manufacturer and for more detailed features description, please refer the manufacturer's or user's manual.

**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan  
Telephone :+886-2-7737-3000  
Facsimile (FAX) :+886-3-583-7948



### 3.2. Description of Available Antennas

Ant. No.	Transmitter Circuit	Brand Name	Model Name	Ant. Type	Maximum Gain (dBi)
1	Chain (0)	PX	PX_Wifi	PCB PIFA	2.4GHz: -7 5GHz: -7

Note: The above antenna information was provided from customer and for more detailed features description, please refer the manufacturer's specification or user's manual.

#### **Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan  
Telephone :+886-2-7737-3000  
Facsimile (FAX) :+886-3-583-7948





## 4. Requirement

### Limits for General Population/Uncontrolled Exposure

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 <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f <sup>2</sup>	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

Note 1: f = frequency in MHz, \* means Plane-wave equivalent power density

Note 2: 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 cannot exercise control over their exposure.

Power Density (S) is calculated by the following formula:

$$S=(P*G)/4\pi R^2$$

where: S = power density (in appropriate units, e.g. mW/ cm<sup>2</sup>)

P = power input to the antenna (in appropriate units, e.g., mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

### Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-3-583-7948



## 5. Radio Frequency Radiation Exposure Evaluation

### WLAN 2.4GHz

Evaluation Frequency (MHz)	Max. Average power (dBm)	Directional Gain (dBi)	Max. EIRP (dBm)	Max. EIRP (mW)	Power density @ 20 cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2412 ~ 2462	17.04	-7.00	10.04	10.093	0.00201	1

### WLAN 5GHz

Evaluation Frequency (MHz)	Max. Average power (dBm)	Directional Gain (dBi)	Max. EIRP (dBm)	Max. EIRP (mW)	Power density @ 20 cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
5180 ~ 5240	14.94	-7.00	7.94	6.223	0.00124	1
5745 ~ 5825	15.01	-7.00	8.01	6.324	0.00126	1

Note:

1. Max. EIRP (dBm) = Max. Average power (dBm) + Antenna Gain (dBi)
2. Max. EIRP (mW) =  $10^{(\text{Max. EIRP (dBm)} / 10)}$
3. Power density (mW/cm<sup>2</sup>) = Max. EIRP (mW) / [  $4 \times \pi \times (\text{calculated distance})^2$  ], the calculated distance is 20 cm.

### Conclusion:

The WLAN 2.4GHz and WLAN 5GHz can transmit simultaneously, the formula of calculated the MPE is:

$$\text{CPD1} / \text{LPD1} + \text{CPD2} / \text{LPD2} + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

$$\text{WLAN 2.4GHz} + \text{WLAN 5GHz} = 0.00201 + 0.00126 = 0.00327$$

Therefore the maximum calculations of above situations are less than the “1” limit.

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.

**END OF REPORT**

**Underwriters Laboratories Taiwan Co., Ltd.**

Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-3-583-7948

Doc No: 17-EM-F0864 / 5.0