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Report No.: TMWK2606003023KS

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RF Exposure Evaluation Report

FCC 47 CFR § 2.1091

for

40W Wall Plate Multi-Zone Bluetooth Audio Amplifier Kit

Model Name.: A-1499WPT

Prepared for:

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	September 09, 2026	Initial Issue	ALL	Allison Chen



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1 Attestation of Test Results

Applicant Name	Ten-Tronics Co., Ltd.		
Model Name	A-1499WPT		
Applicable Standards	FCC 47 CFR § 2.1091 FCC 47 CFR § 1.1310 Published RF exposure KDB procedures		
Receive EUT Date:	June 25, 2026		
Date of Test:	August 28, 2026		
Compliance Certification Services Inc. , tested the above equipment in accordance with the requirements set forth in the above standards. Determination of compliance is based on the results of the compliance measurement,not taking into account measurement instrumentation uncertainty.All indications of Pass/Fail in this report are opinions expressed by Compliance Certification Services Inc, 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.			
Approved & Released By:		Tested by:	
			
Sky Zhou Asst. Supervisor Compliance Certification Services Inc.		KW Huang Engineer Compliance Certification Services Inc.	



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2 Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with FCC 47 CFR § 2.1091, the following FCC Published RF exposure [KDB](#) procedures:

- 447498 D04 Interim General RF Exposure Guidance v01
- 865664 D02 RF Exposure Reporting v01r02



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3 Device Under Test (DUT) Information

3.1 DUT Description

Product	40W Wall Plate Multi-Zone Bluetooth Audio Amplifier Kit
Trade Name	N/A
Model No.	A-1499WPT
Model Discrepancy	N/A
Hardware Version	V1.0
Software Version	V1.0
Sample Stage	Identical prototype

3.2 Wireless Technologies

Frequency bands	☒ Bluetooth: 2402MHz-2480MHz WIFI 2.4GHz ☐ 802.11b/g mode: 2412MHz ~ 2462 MHz ☐ 802.11n HT20 mode: 2412MHz ~ 2462 MHz ☐ 802.11n HT40 mode: 2422MHz ~ 2452 MHz WIFI 5GHz ☐ 802.11a/n HT20 / ac VHT20 / ax HE20 mode: 5180MHz ~ 5240MHz / 5260 ~ 5320MHz / 5500 ~ 5700MHz / 5745MHz ~ 5825MHz ☐ 802.11n HT40 / ac VHT40 / ax HE40 mode: 5190 MHz ~ 5230 MHz / 5270 MHz ~ 5310 MHz / 5510 MHz ~ 5670 MHz / 5755 MHz ~ 5795 MHz ☐ 802.11ac VHT80 / ax HE80 mode: 5210 MHz / 5290 MHz / 5530 ~ 5610 MHz / 5775 MHz ☒ Others: GFSK (5.2G) Mode: 5160 ~ 5240 MHz GFSK (5.8G) Mode: 5730 ~ 5845 MHz WWAN: ☐ WCDMA Band II: 1850 ~ 1910 MHz ☐ WCDMA Band IV: 1710 ~ 1755 MHz ☐ WCDMA Band V: 824 ~ 849 MHz ☐ LTE Band 2: 1850 ~ 1910 MHz ☐ LTE Band 4: 1710 ~ 1755 MHz ☐ LTE Band 5: 824 ~ 849 MHz ☐ LTE Band 7: 2500 ~ 2570 MHz ☐ LTE Band 12: 699 ~ 716 MHz ☐ LTE Band 13: 777 ~ 787 MHz ☐ LTE Band 25: 1850 ~ 1915 MHz ☐ LTE Band 26: 814 ~ 849 MHz ☐ LTE Band 38: 2570 ~ 2620 MHz ☐ LTE Band 41: 2496 ~ 2690 MHz ☐ LTE Band 66: 1710 ~ 1780 MHz
Exposure classification	☐ Occupational/Controlled exposure ☒ General Population/Uncontrolled exposure



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Antenna Specification	Bluetooth Manufacture: Ten-Tronics Model: A-1499 Type: Printed Circuit Board Antenna			
	Bluetooth, Gain: 0.5 dBi			
	GFSK Manufacture: Everestek Inc. Model: ETK52 Type: Wide-Band Antenna on Module			
	GFSK (5.2G) Mode, Gain: 0.48 dBi GFSK (5.8G) Mode, Gain: 0.26 dBi			
	Bluetooth	Gain :	0.50 dBi	(Numeric gain: 1.12) Worst
Maximum Tune up power	GFSK (5.2G)	Gain :	0.48 dBi	(Numeric gain: 1.12) Worst
	GFSK (5.8G)	Gain :	0.26 dBi	(Numeric gain: 1.06) Worst
	BT	1.00 dBm	(1.259 mW)	
	BLE	2.50 dBm	(1.778 mW)	
	GFSK (5.2GHz)	-6.00 dBm	(0.251 mW)	
	GFSK (5.8GHz)	-2.00 dBm	(0.631 mW)	

Notes:

1. For more details, please refer to the User's manual of the EUT.
2. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.
3. The tune up power referred the AVG power of the test report TMTN2606000584NR, TMTN2606000585NR and TMTN2606000588NR for RF Exposure assessment purpose.



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4 Measurement Uncertainty

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	±2.654dB
Channel Bandwidth	±0.216dB
RF output power (Spectrum)	±0.884dB
RF output power (Power Meter + Power sensor)	±0.442dB
Power Spectral density	±2.105dB
Radiated Emission_9kHz-30MHz	± 2.998 dB
Radiated Emission_30MHz-200MHz	± 3.308 dB
Radiated Emission_200MHz-1GHz	± 3.506 dB
Radiated Emission_1GHz-6GHz	± 4.068 dB
Radiated Emission_6GHz-18GHz	± 4.120 dB
Radiated Emission_18GHz-26GHz	± 3.411 dB
Radiated Emission_26GHz-40GHz	± 3.410 dB



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5 Maximum Permissible Exposure

5.1 Limits for Maximum Permissible Exposure (MPE)

Table 1 - Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
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
300-1,500			f/300	6
1,500-100,000			5	6
(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
300-1,500			f/1500	30
<u>1,500-100,000</u>			1.0	30

5.2 MPE Calculation Method

Calculation

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{377}$

Where E = Field strength in Volts / meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{377 d^2}$$

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = d \text{ (m)} / 100$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{377 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \text{ Equation 1}$$

Where d = Distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

If, Substituting the MPE safe distance using d = 20 cm into Equation 1:

$$S = 0.000199 \times P \times G$$

5.3 MPE EXEMPTION

- (A) The available maximum time-averaged power is no more than 1 mW
- (B) The available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by:

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

d = the separation distance (cm);

- (C) Using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least $\lambda/2\pi$, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Single RF Sources Subject to Routine Environmental Evaluation	
RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	1,920 R ² .
1.34-30	3,450 R ² /f ² .
30-300	3.83 R ² .
300-1,500	0.0128 R ² f.
1,500-100,000	19.2R ² .
Note: R is in meters, f is in MHz.	

5.4 Multiple RF sources

In the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation),

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k} \leq 1$$



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6 MPE Exemption Option B

Bluetooth

Mode	Frequency (MHz)	R(m)	Max Tune-up power (dBm)	G(dBi)	Max Tune-up EIRP (dBm)	Max Tune-up ERP (dBm)	Max Tune-up ERP (mW)	ERP Threshold (mW)	MPE Exemption
BT	2441	0.2	1.0	0.50	1.50	-0.65	0.861	3060	Complies
BLE	2402	0.2	2.5	0.50	3.00	0.85	1.216	3060	Complies

GFSK 5.2GHz

Mode	Frequency (MHz)	R(m)	Max Tune-up power (dBm)	G(dBi)	Max Tune-up EIRP (dBm)	Max Tune-up ERP (dBm)	Max Tune-up ERP (mW)	ERP Threshold (mW)	MPE Exemption
GFSK	5160	0.2	-6.0	0.48	-5.52	-7.67	0.171	3060	Complies

GFSK 5.8GHz

Mode	Frequency (MHz)	R(m)	Max Tune-up power (dBm)	G(dBi)	Max Tune-up EIRP (dBm)	Max Tune-up ERP (dBm)	Max Tune-up ERP (mW)	ERP Threshold (mW)	MPE Exemption
GFSK	5745	0.2	-2.0	0.26	-1.74	-3.89	0.408	3060	Complies



7 Simultaneous Transmission Analysis

In the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation),

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k} \leq 1$$

7.1 Sum of the GFSK 5GHz + Bluetooth

GFSK 5GHz + Bluetooth

Mode	Frequency (MHz)	Max Tune-up ERP(mW)	ERP Threshold(mW)	simultaneous Transmission	simultaneous Transmission Limit
GFSK 5GHz	5745	0.408	3060	0.001	≤1
Bluetooth	2402	1.216	3060		



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8 Facilities

All measurement facilities used to collect the measurement data are located at

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City, Taiwan.

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