

TEST REPORT

Reference No...... : WTD24D08203365W008
FCC ID : XUJEVB624
Applicant..... : Launch Tech Co., Ltd.
Address..... : Launch Industrial Park, North of Wuhe Rd. Banxuegang, Longgang
Shenzhen China
Manufacturer : Launch Tech Co., Ltd.
Address..... : Launch Industrial Park, North of Wuhe Rd. Banxuegang, Longgang
Shenzhen China
Product..... : Modularized Wireless Equalizer
Model(s) : EVB624
Standards..... : FCC 47CFR Part 2 Subpart J Section 2.1091
Date of Receipt sample : 2024-09-05
Date of Test : 2024-09-05 to 2024-11-05
Date of Issue..... : 2024-11-07
Test Result..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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3. Revision History

Test Report No.	Date of Receipt Sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTD24D08203365W008	2024-09-05	2024-09-05 to 2024-11-05	2024-11-07	Original	-	Valid

4. General Information

4.1. General Description of E.U.T.

Product:	Modularized Wireless Equalizer
Model(s):	EVB624
Model Description:	N/A
Test Sample No.:	1-1/1
Model Description:	N/A
BT Version:	5.0
Wi-Fi Specification:	2.4G-802.11b/g/n HT20/n HT40 5G-802.11a/n(HT20/40)/ac(VHT20/40/80)
Hardware Version:	XY-Y30-V2
Software Version:	V1.0.15

4.2. Details of E.U.T.

Operation Frequency:	Bluetooth: 2402~2480MHz BLE: 2402-2480MHz 2.4G Wi-Fi: 802.11b/g/n (HT20), 2412-2462MHz 11CH 802.11n (HT40), 2422-2452MHz 7CH 5G Wi-Fi: U-NII-1 802.11a/n(HT20)/ac(VHT20), 5180-5240MHz 4CH 802.11n(HT40)/ac(VHT40), 5190-5230MHz 2CH 802.11ac(VHT80), 5210MHz 1CH U-NII-3 802.11a/n(HT20)/ac(VHT20), 5745-5825MHz 5CH 802.11n(HT40)/ac(VHT40), 5755-5795MHz 2CH 802.11ac(VHT80), 5775MHz 1CH
Max. conducted RF power:	Main module Bluetooth: 8.95dBm BLE: 8.13dBm 2.4G Wi-Fi: 18.19dBm U-NII-1: 21.63dBm U-NII-3: 22.45dBm Sub-module 2.4G Wi-Fi: 18.55dBm U-NII-1: 16.49dBm U-NII-3: 16.73dBm
Modulation Technology:	GFSK, $\pi/4$ DQPSK, 8DPSK DSSS, OFDM 802.11b: DBPSK, DQPSK, CCK 802.11a/g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Antenna installation:	External antenna with RP-SMA connector

Antenna Gain:

Modular	No.	Operation Frequencies (MHz) /Antenna Gain (dBi)		
		2400~2500	5150~5250	5725~5850
Main	0	2.26	3.51	2.16
Sub	0	2.26	3.51	2.16
	1	2.26	3.51	2.16

Note:

#: The antenna gain is provided by the applicant, and the applicant should be responsible for its authenticity, WALTEK lab has not verified the authenticity of its information.

Ratings:

AC 90-264V 50/60Hz

4.3. Test Facility

The test facility has a test site registered with the following organizations:

ISED CAB identifier: CN0013. Test Firm Registration No.: 7760A.

Waltek Testing Group Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files.

Registration number 7760A, October 15, 2016.

FCC Designation No.: CN1201. Test Firm Registration No.: 523476.

Waltek Testing Group Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration number 523476, September 10, 2019.

4.4. Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

☐ Yes ☒ No

If Yes, list the related test items and lab information:

Test Lab: N/A

Lab address: N/A

Test items: N/A

4.5. Abnormalities from Standard Conditions

None.

5. Test Summary

Test Items	Test Requirement	Result
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	47 CFR Part 2 §2. 1091	PASS

6. RF Exposure

Test Requirement: FCC 47CFR Part 2 Subpart J Section 2.1091
 47 CFR Part 1 §1.1307
 47 CFR Part 1 §1.1310
 Evaluation Method: KDB 447498 D01 General RF Exposure Guidance v06

6.1. Definitions

According to § 2.1091(b), A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the RF source's radiating structure(s) and the body of the user or nearby persons.

This device belongs to mobile device and with multiple RF sources.

6.2. Method of Evaluation

Determination of Exemption:
For single RF sources

Option A

Option A 1-mW Test Exemption

Applies to all frequencies and all distances

- Could be considered SAR-based and MPE-based exclusions
- $P < 1\text{mW}$
- Limitation—when there are simultaneously operating transmitters this exclusion only applies when all simultaneously operating transmitters meet this exemption
- Refer 1.1307(b)(3)(i)(A) and 1.1307(b)(3)(ii)(A)

Option B SAR-Based Exemption

Frequency range 300 MHz -6 GHz, $5\text{mm} \leq \text{distance} \leq 40\text{cm}$

- The maximum time-averaged power or effective radiated power (ERP), whichever is greater, $\leq P_{th}$.
- P_{th} is calculated based on separation distance d cm from transmitter to person for the device operating at f GHz.

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

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);

Option C MPE-Based Exemption

1.1307(b)(3)(i)(C): ERP is below a threshold calculated based on the distance R between the person and the antenna / radiating structure, where $R > \lambda / 2\pi$.

Table 1 to § 1.1307(b)(3)(i)(C) - 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	$19.2 R^2$.
Note: R in meters, f in MHz	

For multiple RF sources

According to 47CFR 1.1307(b)(3)(ii), the calculation formula is as follow:

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

6.3. Evaluation Results

This device belongs to mobile device (separation distance of at least 20 centimeters is normally maintained between the RF source's radiating structure(s) and the body of the user or nearby persons) and with multiple RF sources.

Option B is applicable.

Single Source Transmissions

RF main module

Description	Frequency GHz	Conducted Power dBm	Gain dBi	Tune-up dB	ERP mW	ERP _{th} mW	Ratio
BT	2.402	8.95	2.26	±1.0	10.14	3060	0.00331
BLE	2.402	8.13	2.26	±1.0	8.40	3060	0.00274
2.4G Wi-Fi 802.11n HT40 TX	2.422	18.13	2.26	±1.0	83.98	3060	0.02744
5G Wi-Fi U-NII-1 802.11a TX	5.18	21.09	3.51	±1.0	221.39	3060	0.07235
5G Wi-Fi U-NII-3 802.11ac VHT20 TX	5.745	22.45	2.16	±1.0	221.90	3060	0.07252

RF sub-module

Description	Frequency GHz	Conducted Power dBm	Gain dBi	Tune-up dB	ERP mW	ERP _{th} mW	Ratio
2.4G Wi-Fi (Ant. 0) 802.11n HT20 TX	2.412	15.93	2.26	±1.0	50.60	3060	0.01654
2.4G Wi-Fi (Ant. 1) 802.11n HT20 TX	2.412	13.32	2.26	±1.0	27.74	3060	0.00907
5G Wi-Fi (Ant. 0) U-NII-1 802.11ac VHT80 TX	5.18	12.89	3.51	±1.0	33.51	3060	0.01095
5G Wi-Fi (Ant. 1) U-NII-1 802.11ac VHT80 TX	5.18	14.00	3.51	±1.0	43.27	3060	0.01414
5G Wi-Fi (Ant. 0) U-NII-3 802.11ac VHT80 TX	5.745	12.14	2.16	±1.0	20.66	3060	0.00675
5G Wi-Fi (Ant. 1) U-NII-3 802.11ac VHT80 TX	5.745	12.43	2.16	±1.0	22.09	3060	0.00722

Note:

EIRP= Conducted Power +Gain, ERP=EIRP-2.15

Simultaneous Transmissions

Description	Calculation	Limit
RF main module	0.10601	≤ 1.0
RF sub-module	0.05069	≤ 1.0
Simultaneous Transmissions	0.15670	≤ 1.0

Note:

1. For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band.
2. Chose the maximum power to do MPE analysis.
3. Three antennas could transmit simultaneously.

Conclusion:

RF Exposure is FCC compliant.

=====End of Report=====