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Report No.: TMWK2402000546KS

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Rev.: 03

SAR TEST REPORT

FCC 47 CFR § 2.1093

for

Wireless Handheld Barcode Scanner

Model Name.: Z-3190BT Plus, Z-3192BT Plus

Prepared for:

ZEBEX INDUSTRIES INC.

B1F.-1, No. 207, Sec. 3, Beixin Rd, Xindian Dist, New Taipei City 23143, Taiwan

Prepared by

Compliance Certification Services Inc.

Wugu Lab.

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Issue Date: July 18, 2024

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	June 7, 2024	Initial Issue	ALL	Peggy Tsai
01	July 3, 2024	See the following Note Rev. (01)	P.6, 7	Peggy Tsai
02	July 9, 2024	See the following Note Rev. (02)	P.1, 4, 6	Peggy Tsai
03	July 18, 2024	See the following Note Rev. (03)	P.4	Peggy Tsai

Note:

Rev. (01)

1. Modify peak antenna gain to 2.13 dBi.
2. Modify Wireless Technologies in section 3.2.
3. Modify Standalone SAR Test Exclusion Considerations in section 4.1.

Rev. (02)

1. Modify model name to Z-3190BT Plus, Z-3192BT Plus.
2. Modify Hardware Version in section 3.1.

Rev. (03)

1. Modify Software Version in section 3.1.



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1 Attestation of Test Results

Applicant Name	ZEBEX INDUSTRIES INC.
Model Name	Z-3190BT Plus, Z-3192BT Plus
Applicable Standards	FCC 47 CFR § 2.1093 KDB 447498 D04 Interim General RF Exposure Guidance v01
Receive EUT Date:	February 22, 2024
Test Results	Pass
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: 	
Sky Zhou Asst. Section Manager Compliance Certification Services Inc.	



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2 Test Methodology

All calculations were made in accordance with FCC KDB 447498 D04 Interim General RF Exposure Guidance v01

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3 Device Under Test (DUT) Information

3.1 DUT Description

Applicant Name	ZEBEX INDUSTRIES INC.
Applicant Address	B1F.-1, No. 207, Sec. 3, Beixin Rd, Xindian Dist, New Taipei City 23143, Taiwan
Manufacturer Name	ZEBEX INDUSTRIES INC.
Manufacturer Address	B1F.-1, No. 207, Sec. 3, Beixin Rd, Xindian Dist, New Taipei City 23143, Taiwan
Product	Wireless Handheld Barcode Scanner
Trade Name	ZEBEX
Model No.	Z-3190BT Plus, Z-3192BT Plus
Model Discrepancy	Z-3190BT Plus: CCD Wireless Handheld Barcode Scanner Z-3192BT Plus: 2D Image Wireless Handheld Barcode Scanner
Hardware Version	023-190BP1-034 & 023-190BP2-034 & 023-190BP3-034
Software Version	Z-3190BT Plus: Z-3190BT+(H02.x0) 09:27:50 Date:11/28/2023 Z-3192BT Plus: Z-3192BT+(M01.03) Ver:01.00 Jul 11 2024 SN:20240319 BT Controller(H02.B2) BT0103 Jul 12 2024
Sample Stage	PVT

3.2 Wireless Technologies

Wireless technologies	Frequency bands	Peak Antenna Gain (dBi)	Operating mode
Bluetooth	2.4 GHz	2.13	BR, EDR, BLE
Antenna Specification	Brand Name	PSA	
	Type	Chip Antenna	
	Parts Number	RFANT3216120A1T	

Notes:

1. The sample selected for test was prototype that representative to production product and was provided by manufacturer
2. Disclaimer :Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received
3. Disclaimer :Variant information between/among model numbers / trademarks are provided by the applicant, test results of this report are applicable to the sample EUT received of main test model name.)

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4 RF Exposure Conditions (Test Configurations)

Refer to Section 5 for the specific details of the antenna-to-antenna and antenna-to-edge(s) distances.

4.1 Standalone SAR Test Exclusion Considerations

Since the Dedicated Host Approach is applied, the SAR-based exemption in Appendix B of KDB 447498 D04 is applied together with KDB 616217 § 4.3 to determine the minimum test separation distance:

- When the separation distance from the antenna to an adjacent edge is ≤ 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.
- When the separation distance from the antenna to an adjacent edge is > 5 mm, the actual antenna-to-edge separation distance is applied to determine SAR test exclusion.

- 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.

P_{th} is given by:

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

- The separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz .

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

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

and f is in GHz, d is the separation distances (cm).

SAR Test Exclusion Calculations for $1.5 \text{ GHz} \leq f \leq 6 \text{ GHz}$

Maximum tune-up tolerance limit is 8 dBm.

The SAR test exemption is 2.5 times the SAR-based exemption threshold.

The device was assessed the 10g SAR limits.

Tx Interface	Frequency (GHz)	Output Power		Antenna Gain (dBi)	ERP (dBm)	ERP Threshold (mW)	Separation Distances (cm)	P_{th} (mW)	Exemption result
		dBm	mW						
BT	2.48	8.00	6	2.13	7.98	6.28	0.5	7	-EXEMPT-

Conclusion:

The Max. output power and $ERP \leq P_{th}$ (mW) ; therefore, this qualifies for SAR test exclusion.

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5 Facilities

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

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan.

END OF REPORT