TEST REPORT

Applicant:	TECHNO HORIZON CO., LTD.
Address:	2-13-1 Chikamatori Minami-ku, Nagoya, 457-0071, Japan
Equipment Type:	DOCUMENT CAMERA
Model Name:	TT-12Gex (refer section 2.4)
Brand Name:	ELMO
FCC ID:	X3XL-12G
Test Standard:	47 CFR Part 2.1091 KDB 447498 D01 v06
Test Date:	Mar. 11, 2022 - Mar. 31, 2022
Date of Issue:	Jun. 30, 2022

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Julie Zhu **Checked by:** Zong Liyao **Approved by:** Wei Yanquan (Chief Engineer)

Revision History

Version	Issue Date	Revisions Content
Rev. 01	Jun. 30, 2022	Initial Issue

TABLE OF CONTENTS

1 GENERAL INFORMATION

1.1 Identification of the Testing Laboratory

Company Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe West Road, Nanshan District, ShenZhen, GuangDong Province, China
Phone Number	+86 755 6685 0100
Fax Number	+86 755 6182 4271

1.2 Identification of the Responsible Testing Location

Test Location	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe West Road, Nanshan District, ShenZhen, GuangDong Province, China
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196. The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 11524A.
Description	All measurement facilities used to collect the measurement data are located at Block B, 1/F, Baisha Science and Technology Park, Shahe West Road, Nanshan District, ShenZhen, GuangDong Province, China

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	TECHNO HORIZON CO., LTD.
Address	2-13-1 Chikamatori Minami-ku, Nagoya, 457-0071, Japan

2.2 Manufacturer Information

Manufacturer	TECHNO HORIZON CO., LTD.
Address	2-13-1 Chikamatori Minami-ku, Nagoya, 457-0071, Japan

2.3 Factory Information

Factory 1	AIDEN VIETNAM LIMITED
Address 1	Lot L5, Nam Sach Industrial Zone, Ai Quoc Ward, Hai Duong City, Hai Duong Province, Vietnam

Factory 2	Dongguan Shingi Electronics Co., Ltd.
Address 2	151 Naner Street Qiaodong Road, Shanhe Village, Qiaotou Town, Dongguan City, Guangdong Province, P.R. China

Factory 3	DONG GUAN XU JIN OPTICAL COMPANY LIMITED
Address 3	2nd Floor, No. 62 Jinghai East Road, Shatou Community, Changan Town, Dongguan City, Guang Dong Province, P.R. China

2.4 General Description for Equipment under Test (EUT)

EUT Name	DOCUMENT CAMERA
Model Name Under Test	TT-12Gex
Series Model Name	TT-12G
Description of Model name differentiation	All models are same with electrical parameters and internal circuit structure, but only with or without a LAN port. No LAN port: TT-12G: Sold to North America Have LAN port: TT-12Gex: Sold to North America
Hardware Version	V11.1
Software Version	CAI-280-0000
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.5 Ancillary Equipment

N/A

2.6 Technical Information

Network and Wireless connectivity	2.4G WIFI 802.11b, 802.11g, 802.11n(HT20) 5G WIFI 802.11a, 802.11n(20/40), 802.11ac(VHT20/40/80) and U-NII-1/2A/2C/3

The requirement for the following technical information of the EUT was tested in this report:

Operating Mode	WLAN	
Frequency Range	2.4G WIFI	2400 ~ 2483.5 MHz
	5.2G WIFI	5150 ~ 5250 MHz
	5.3G WIFI	5250 ~ 5350 MHz
	5.6G WIFI	5470 ~ 5725 MHz
	5.8G WIFI	5725 ~ 5850 MHz
Antenna Type	WLAN	PIFA
Exposure Category	General Population/Uncontrolled Exposure	
EUT Stage	Mobile Device	

3 SUMMARY OF TEST RESULT

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 2.1091	Radiofrequency radiation exposure evaluation: mobile devices
2	KDB 447498 D01 v06	447498 D01 General RF Exposure Guidance D01 v06

4 DEVICE CATEGORY AND LEVELS LIMITS

Mobile Derives:

CFR Title 47 §2.1091(b)

(b) For purposes of this section, 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 transmitter's radiating structure(s) and the body of the user or nearby persons.

FCC KDB 447498 D01 General RF Exposure Guidance v06 Limit

Devices operating in standalone mobile exposure conditions may contain a single transmitter or multiple transmitters that do not transmit simultaneously. A minimum test separation distance ≥ 20 cm is required between the antenna and radiating structures of the device and nearby persons to apply mobile device exposure limits. The distance must be fully supported by the operating and installation configurations of the transmitter and its antenna(s), according to the source-based time-averaged maximum power requirements of § 2.1091(d)(2). In cases where cable losses or other attenuations are applied to determine compliance, the most conservative operating configurations and exposure conditions must be evaluated. The minimum test separation distance required for a device to comply with mobile exposure conditions must be clearly identified in the installation and operating instructions, for all installation and exposure conditions, to enable users and installers to comply with RF exposure requirements. For mobile devices that have the potential to operate in portable device exposure conditions, similar to the configurations described in § 2.1091(d)(4), a KDB inquiry is required to determine the SAR test requirements for demonstrating compliance.

When the categorical exclusion provision of § 2.1091(c) applies, the minimum test separation distance may be estimated, when applicable, by simple calculations according to plane-wave equivalent conditions, to ensure the transmitter and its antenna(s) can operate in manners that meet or exceed the estimated distance. The source-based time-averaged maximum radiated power, according to the maximum antenna gain, must be applied to calculate the field strength and power density required to establish the minimum test separation distance. When the estimated test separation distance becomes overly conservative and does not support compliance, MPE measurement or computational modeling may be used to determine the required minimum separation distance.

According to FCC Part 1.1307, systems operating under the provisions of this section shall be operated in a manner the ensures that the public is not exposed to radio frequency energy level in excess of the commission's guidelines.

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^2)
0.3-1.34	614	1.63	(100)*
1.34-30	824/f	2.19/f	(180/f2)*
30-300	27.5	0.073	0.2
300-1500			f/1500
1500-100,000			1.0

MPE calculation formula

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = power density

P = output power (mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Separation distance between radiator and human body (cm)

5 ASSESSMENT RESULT

5.1 Output Power

2.4G WIFI			
Mode	802.11b	802.11g	802.11n20
Peak Power (dBm)	20.03	21.90	**23.63**
Note: This report listed the worst case average power value, please refer to Report No. BL-SZ2230357-601 for more details.			

5.2G WIFI						
Mode	802.11a	802.11n20	802.11n40	802.11ac20	802.11ac40	802.11ac80
Conducted Power (dBm)	**18.74**	18.25	18.12	18.14	18.12	10.43
5.3G WIFI						
Mode	802.11a	802.11n20	802.11n40	802.11ac20	802.11ac40	802.11ac80
Conducted Power (dBm)	**18.95**	18.26	18.31	18.70	18.72	10.80
5.6G WIFI						
Mode	802.11a	802.11n20	802.11n40	802.11ac20	802.11ac40	802.11ac80
Conducted Power (dBm)	**18.55**	18.18	17.53	18.23	17.45	17.82
5.8G WIFI						
Mode	802.11a	802.11n20	802.11n40	802.11ac20	802.11ac40	802.11ac80
Conducted Power (dBm)	17.81	18.11	16.84	18.07	**18.16**	17.61
Note: This report listed the worst case conducted power value, please refer to Report No. BL-SZ2230357-602 for more details.						

5.2 Turn-up power

Mode	Range (dBm)
2.4G WIFI	20.00-24.00
5.2G WIFI	10.00-19.00
5.3G WIFI	10.00-19.00
5.6G WIFI	17.00-19.00
5.8G WIFI	17.00-19.00

5.3 RF Exposure Evaluation Result

Evolution mode	Max. output power (dBm)	Antenna Gain (dBi)	Total Power (mw)	Distance (cm)	Limit of Power Density (mW/cm²)	Power Density (mW/cm²)	Power Density/Limit	Verdict
2.4G WIFI	24.00	5.22	835.603	20	1.00	0.166	0.166	Pass
5.2G WIFI	19.00	4.09	203.704	20	1.00	0.040	0.040	Pass
5.3G WIFI	19.00	4.81	240.436	20	1.00	0.048	0.048	Pass
5.6G WIFI	19.00	5.41	276.058	20	1.00	0.055	0.055	Pass
5.8G WIFI	19.00	2.53	142.233	20	1.00	0.028	0.028	Pass

5.4 Conclusion

This EUT is deemed to comply with the reference level limits , therefore the basic restrictions are compliant with human exposure limits.

Statement

1. The laboratory guarantees the scientificity, accuracy and impartiality of the test, and is responsible for all the information in the report, except the information provided by the customer. The customer is responsible for the impact of the information provided on the validity of the results.
2. The report without China inspection body and laboratory Mandatory Approval (CMA) mark has no effect of proving to the society.
3. For the report with CNAS mark or A2LA mark, the items marked with "☆" are not within the accredited scope.
4. This report is invalid if it is altered, without the signature of the testing and approval personnel, or without the “inspection and testing dedicated stamp” or test report stamp.
5. The test data and results are only valid for the tested samples provided by the customer.
6. This report shall not be partially reproduced without the written permission of the laboratory.
7. Any objection shall be raised to the laboratory within 30 days after receiving the report.

--END OF REPORT--