

TEST REPORT

Applicant: Portable Multimedia Limited
Address: Unit 2, Caerphilly Business Park, Caerphilly, Mid Glamorgan CF83 3ED, United Kingdom
Equipment Type: Rear Dash Cam
Model Name: NBIQRWC
Brand Name: NEXTBASE
FCC ID: 2AOT9-NBIQRWC
Test Standard: 47 CFR Part 2.1091
KDB 447498 D04 v01
Sample Arrival Date: Apr. 12, 2023
Test Date: May 25, 2023
Date of Issue: Jun. 13, 2023

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.



Tested by: Zhong Weiqiang **Checked by:** Xiong Lining **Approved by:** Tolan Tu
(Testing Director)

*Zhong Weiqiang**Xiong Lining**Tolan Tu*

Revision History

<u>Version</u>	<u>Issue Date</u>	<u>Revisions Content</u>
<u>Rev. 01</u>	<u>Jun. 13, 2023</u>	<u>Initial Issue</u>

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1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100

1.2 Test Location

Name	Shenzhen BALUN Technology Co., Ltd.
Location	☒ Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	☐ 1/F, Building B, Ganghongji High-tech Intelligent Industrial Park, No. 1008, Songbai Road, Yangguang Community, Xili Sub-district, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Portable Multimedia Limited
Address	Unit 2, Caerphilly Business Park, Caerphilly, Mid Glamorgan CF83 3ED, United Kingdom

2.2 Manufacturer Information

Manufacturer	Shenzhen Samoon Technology Co., Ltd
Address	9th Floor, 6th Floor west, Block7, ZhongYunTai Industry Park, Songbai Road, Shiyan Town, ShenZhen, China

2.3 Factory Information

Factory	Shenzhen Samoon Technology Co., Ltd
Address	9th Floor, 6th Floor west, Block7, ZhongYunTai Industry Park, Songbai Road, Shiyan Town, ShenZhen, China

2.4 General Description for Equipment under Test (EUT)

EUT Name	Rear Dash Cam
Model Name Under Test	NBIQRWC
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	A2_004
Software Version	0.2.9
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.5 Ancillary Equipment

Note: Not applicable.

2.6 Technical Information

Network and Wireless connectivity	24GHz Radar
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The requirement for the following technical information of the EUT was tested in this report:

Operating Mode	24GHz Radar	
Frequency Range	24GHz Radar	24000 ~ 24250 MHz
Antenna Type	24GHz Radar	PCB Antenna
Exposure Category	General Population/Uncontrolled Exposure	
EUT Type	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 D04 v01	447498 D04 Interim General RF Exposure Guidance v01

4 DEVICE CATEGORY AND LEVELS LIMITS

Mobile Device:

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 D04 General RF Exposure Guidance v01 Limit

For 300MHz to 6000Mhz

Evaluation of compliance with the exposure limits in § 1.1310 is necessary if the ERP of the device is greater than ERP_{20cm} in Formula (B.1) [repeated from § 2.1091(c)(1) and § 1.1307(b)(1)(i)(B)].

$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases} \quad (\text{B.1})$$

If the ERP is not easily obtained, then the available maximum time-averaged power may be used (i. e., without consideration of ERP only 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.

SAR-based exemptions are constant at separation distances between 20 cm and 40 cm to avoid discontinuities in the threshold when transitioning between SAR-based and MPE-based exemption criteria at 40 cm, considering the importance of reflections.

The SAR-based exemption formula of § 1.1307(b)(3)(i)(B), repeated here as Formula (B.2), applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold P_{th} (mW).

This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by Formula (B.2).

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases} \quad (\text{B. 2})$$

where

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

and f is in GHz, d is the separation distance (cm), and $ERP_{20 \text{ cm}}$ is per Formula (B.1). The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

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Frequency (MHz)	Distance (mm)										
	5	10	15	20	25	30	35	40	45	50	
	300	39	65	88	110	129	148	166	184	201	217
	450	22	44	67	89	112	135	158	180	203	226
	835	9	25	44	66	90	116	145	175	207	240
	1900	3	12	26	44	66	92	122	157	195	236
	2450	3	10	22	38	59	83	111	143	179	219
	3600	2	8	18	32	49	71	96	125	158	195
	5800	1	6	14	25	40	58	80	106	136	169

For 6000MHz to 10000Mhz

Frequencies above 300 kHz but at distances $R > \lambda/2\pi$, R is the antenna-person separation distance.
 λ =wavelength of transmitted signal.

Can calculate from the frequency of operation using $v=f*\lambda$

v =speed of light= $3*10^8$ m/s

f =frequency(Hz)

Primarily an MPE-based exclusion but also SAR-based where $\lambda/2\pi$ is $< 20\text{cm}$.

TABLE B.1—THRESHOLDS FOR SINGLE RF SOURCES
SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION

RF Source Frequency		Minimum Distance		Threshold ERP
f_L MHz	f_H MHz	$\lambda_L / 2\pi$	$\lambda_H / 2\pi$	W
0.3	—	1.34	159 m	1,920 R ²
1.34	—	30	35.6 m	3,450 R ² /f ²
30	—	300	1.6 m	3.83 R ²
300	—	1,500	159 mm	0.0128 R ² /f
1,500	—	100,000	31.8 mm	19.2R ²

Subscripts L and H are low and high; λ is wavelength.
 From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns.

5 ASSESSMENT RESULT

5.1 Output Power

Mode	24GHz Radar	
Frequency (MHz)	Peak Power (dBuV/m)	EIRP Power (dBm)
24000	86.43	-8.83

Note 1: This report listed the worst case conducted power value, please refer to CQC-IVTS-2023-00189 report for more details.

Note 2: Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:
 $E = \text{EIRP} - 20 \log D + 104.8$
 where:
 E=electric field strength in dBuV/m
 EIRP =equivalent isotropic radiated power in dBm
 D=specified measurement distance in meters

5.2 RF Exposure Evaluation Result

For 6000MHz to 10000MHz

Evolution Mode	Distance (cm)	$\lambda / 2 \pi$ (mm)	$\lambda / 2 \pi$ (cm)	$R >$ $\lambda / 2 \pi$
24GHz Radar	20	2.000	0.2	Yes

Evolution Mode	Frequency (MHz)	EIRP (W)	EIRP (dBm)	EIRP (W)	Verdict
24GHz Radar	24000	0.768	-8.83	0.0001	Pass

5.3 Conclusion

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

Statement

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--END OF REPORT--