

TEST REPORT

Product Name : Loudbox
Brand Mark : LOUDBOX
Model No. : Loudbox Mini
FCC ID : RMU-494000135
Report Number : BLA-EMC-202212-A1703
Date of Sample Receipt : 2023/2/15
Date of Test : 2023/2/16 to 2023/3/2
Date of Issue : 2023/3/3
Test Standard : KDB447498D04 General RF Exposure
Guidance v01
Test Result : Pass

Prepared for:

Fishman

3 Riverside Drive, Andover MA 01810 USA

Prepared by:

BlueAsia of Technical Services(Shenzhen) Co.,Ltd.

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Date:

2023/3/3



REPORT REVISE RECORD

Version No.	Date	Description
00	2023/3/3	Original

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1 GENERAL INFORMATION

Applicant	Fishman
Address	3 Riverside Drive, Andover MA 01810 USA
Manufacturer	Fishman
Address	3 Riverside Drive, Andover MA 01810 USA
Factory	Longjoin Industrial CO.,LTD
Address	No.1 Workshop, No.828, Jiuzhou River Avenue, Economic Development Zone, Lianjiang City,, Guangdong Province, China
Product Name	Loudbox
Test Model No.	Loudbox Mini

2 GENERAL DESCRIPTION OF E.U.T.

Hardware Version	1.0
Software Version	1.0
Operation Frequency:	2402MHz-2480MHz
Modulation Type:	GFSK, pi/4DQPSK, 8DPSK
Channel Spacing:	1MHz
Number of Channels:	79
Antenna Type:	PCB Antenna
Antenna Gain:	2dBi(Provided by the customer)

3 LABORATORY LOCATION

All tests were performed at:
BlueAsia of Technical Services(Shenzhen) Co., Ltd.
Building C, No. 107, Shihuan Road, Shiyan Sub-District, Baoan District, Shenzhen, Guangdong Province,
China
Telephone: TEL: +86-755-28682673 FAX: +86-755-28682673
No tests were sub-contracted.

4 RF EXPOSURE COMPLIANCE REQUIREMENT

4.1 RF EXPOSURE COMPLIANCE REQUIREMENT

Standard Requirement

According to 447498 D04 Interim General RF Exposure Guidance v01

Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

Limits

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

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).

Example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

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

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

$$EIRP = P_t \times G_t = (E \cdot d)^2 / 30$$

where:

P_t = transmitter output power in watts,

G_t = numeric gain of the transmitting antenna (unitless),

E = electric field strength in V/m, --- $10((dBuV/m)/20)/106$

d = measurement distance in meters (m)---3m

$$S_{opt} = (E \cdot d)^2 / 30 \times G_t$$

Ant gain = 2 dBi

Max Output power = 4.108dBm @ 2402MHz

$$ERP = 4.108dBm + 2dBi - 2.15 = 3.958dBm$$

So

ERP is worse case

$$10^{0.4108} = 2.575 \text{ mW} < 3060 \text{ mW}$$

Comply with RF exposure exemption limit.

----END OF REPORT----

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