



RF Exposure Report

Report No. SST2504E0447

Applicant: Shenzhen LC Co., Ltd

Address of Applicant: Room 201, Building 4, Gonglianfuji Innovation Park, No. 58,
Ping'an Road, Dafu Community, Guanlan Street, Longhua
District, Shenzhen, China

Product Name: X99 Power Bank

Trade Mark: SmallRig

FCC ID: 2BC2U-4984

Test Report Form No: SST-RD-7.5-02-E01(A/0)

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in FCC KDB 447498 D04. Test results reported herein relate only to the item(s) tested.

2 Contents

1	COVER PAGE.....	1
2	CONTENTS	2
3	RF EXPOSURE EVALUATION MAXIMUM PERMISSIBLE EXPOSURE (MPE)	3
3.1	INTRODUCTION	3
3.2	MPE CALCULATION	5
4	CONCLUSION	5



3 RF EXPOSURE EVALUATION MAXIMUM PERMISSIBLE EXPOSURE (MPE)

3.1 Introduction

This document is prepared to show compliance with the RF Exposure requirements as required in §1.1307 of the FCC Rules and Regulations and RSS-102 of Industry Canada.

The limit for maximum permissible exposure(MPE), specific in §1.1307of the FCC Rules and KDB 447498 D04 were list in below

- The available maximum time-averaged power is no more than 1 mW, regardless of separation distance.
- 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.

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

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

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)

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 multiple RF sources

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

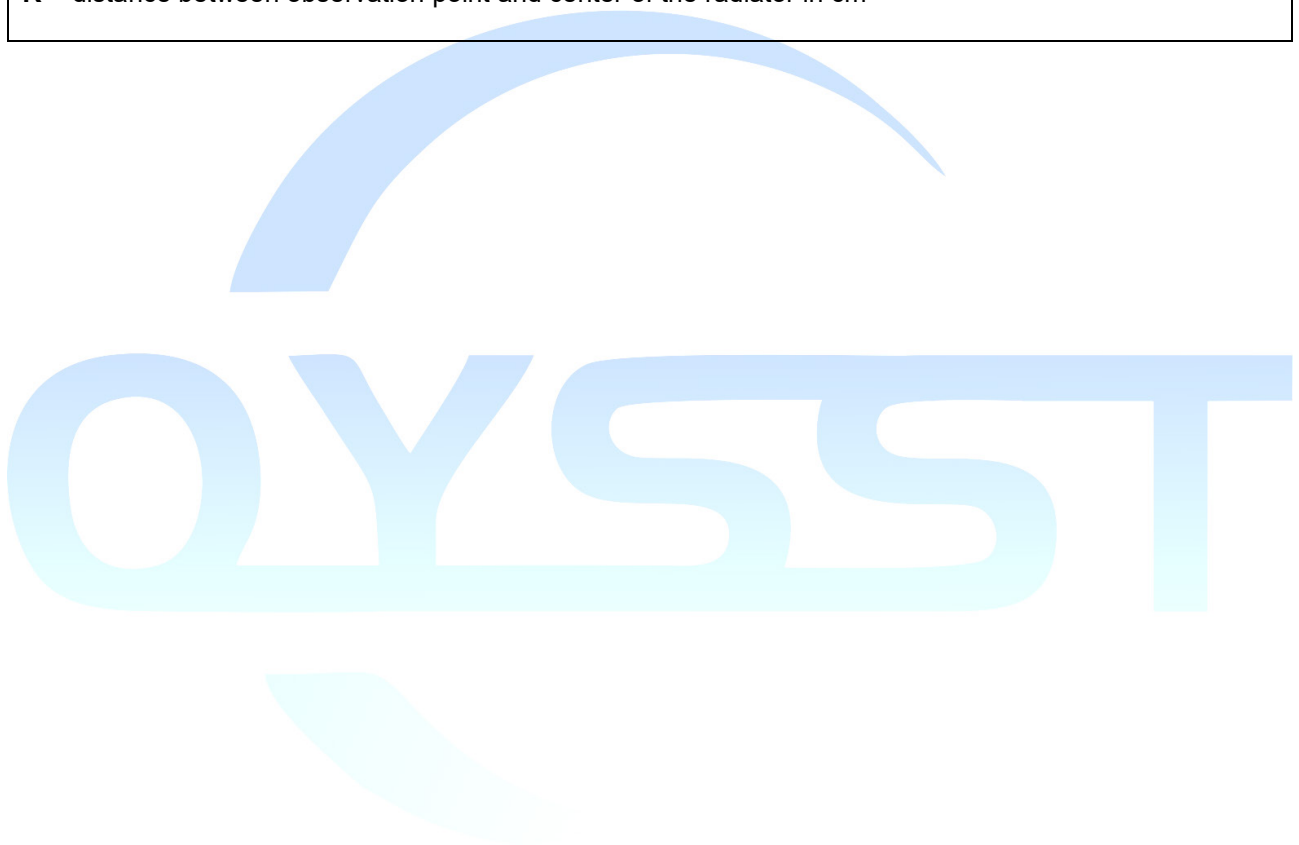
The limit for maximum permissible exposure(MPE), specific in §1.1310of the FCC Rules list in below

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6

(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500			f/1500	30
1500–100,000			1.0	30

f = frequency in MHz
Friis transmission formula: **$P_d = (P_{out} * G) / (4 * \pi * r^2)$**

Where
 P_d = power density in mW/cm², **P_{out}** = output power to antenna in mW;
 G = gain of antenna in linear scale, **π** = 3.1416;
 R = distance between observation point and center of the radiator in cm



3.2 MPE Calculation

Type	Frequency (MHz)	Antenna Gain (dBi)	Output power (dBm)	Output power (mW)	ERP (dBm)	ERP (mW)	Limit (mW, d=0.5cm)	Ratio (%)	Result
BLE	2480	-6.02	-11.11	0.077	-19.28	0.012	2.7	2.85	PASS

Note: The available RF source will be Maximum time-averaged power or ERP, whichever is greater.

$P_{th} = 3060 * (d/20)^x$, where x is $-\log_{10}(60/3060 * \sqrt{F, \text{ in GHz}})$;

eg: $3060 * (0.5/20)^{-\log_{10}(60/3060 * \sqrt{0.08})} = 2.7$

4 Conclusion

The device meets the portable RF exposure limit at a minimum separation distance as specified in §2.1093 of the FCC Rules and Regulations and Health Canada Safety Code 6. An appropriate RF exposure compliance statement will be placed in the user's manual.

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