

Maximum Permissible Exposure Evaluation

FCC ID: 2BC2U-S60RX&IC: 31675-S60RX

1. General Information about EUT

1.1 Client Information

Applicant	:	Shenzhen LC Co., Ltd
Address	:	Rooms 602, Building 5, Fenghe Industrial Park, No. 1301-50 Guanguang Road, Xinlan Community, Guanlan Street, Longhua District, Shenzhen, China
Manufacturer	:	Shenzhen Leqi Innovation Co., Ltd.
Address	:	Rooms 103, 501 and 601, Building 5, Fenghe Industrial Park, Nos. 1301-50 Guanguang Road, Longhua District, Shenzhen, Guangdong, China.

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	Wireless Microphone	
Models No.	:	S 60, S 50	
HVIN	:	S600	
Model Different	:	All these models are identical in the same PCB, layout and electrical circuit, The only difference is model name, brand name and product name.	
Brand Name	:	SmallRig	
Sample ID	:	HC-C-202406-0183-01-01	
Product Description	:	Operation Frequency:	Bluetooth&BLE: 2402MHz~2480MHz
		Antenna Gain:	0.3dBi Sheet Steel Antenna
Power Rating	:	USB Input:5V	
Software Version	:	V1.0	
Hardware Version	:	V1.2	

Remark: The adapter provided by the TOBY ,the antenna gain from the manufacturer, the verified for the RF conduction test provided by TOBY test lab.The above antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.



The RF Exposure Evaluation for FCC:

SAR Test Exclusion Calculations

FCC: According to KDB 447498 D01 Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies v06.

(1) Clause 4.3: General SAR test reduction and exclusion guidance

Sub clause 4.31: Standalone SAR test exclusion considerations

1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6GHz at test separation distance ≤ 5 mm are determined by:

$$\left[\frac{\text{max. power of channel, including tune-up tolerance, mW}}{\text{min. test separation, mm}} \right] \cdot \sqrt{f_{\text{(GHz)}}} \leq 3.0 \text{ for 1-g SAR}$$

$$\left[\frac{\text{max. power of channel, including tune-up tolerance, mW}}{\text{min. test separation, mm}} \right] \cdot \sqrt{f_{\text{(GHz)}}} \leq 7.5.0 \text{ for 10-g SAR}$$



Calculation:

Bluetooth Mode (GFSK)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dbm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2402	-0.003	0±1	1	1.259	0.390	3.0
2441	0.01	0±1	1	1.259	0.393	3.0
2480	0.758	0±1	1	1.259	0.397	3.0
Bluetooth Mode (π/4-DQPSK)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dbm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2402	0.024	0±1	1	1.259	0.390	3.0
2441	0.098	0±1	1	1.259	0.393	3.0
2480	0.789	0±1	1	1.259	0.397	3.0
Bluetooth Mode (8-DPSK)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dbm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2402	0.123	0±1	1	1.259	0.390	3.0
2441	0.222	0±1	1	1.259	0.393	3.0
2480	0.942	0±1	1	1.259	0.397	3.0

Test separation: 5mm						
BLE Mode(1Mbps)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dBm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.402	-1.878	-1±1	0	1.000	0.310	3.0
2.440	-1.848	-1±1	0	1.000	0.312	3.0
2.480	-1.071	-1±1	0	1.000	0.315	3.0
BLE Mode(2Mbps)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dBm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.402	-1.935	-1±1	0	1.000	0.310	3.0
2.440	-1.966	-1±1	0	1.000	0.312	3.0
2.480	-1.245	-1±1	0	1.000	0.315	3.0



The RF Exposure Evaluation for IC:

SAR Test Exclusion Calculations

IC: According to RSS-102 — Radio Frequency (RF) Exposure Compliance of Radio communication Apparatus (All Frequency Bands) Issue 5

(2) Clause 2.5.1: Exemption limits for Routine Evaluation – SAR Evaluation

SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in Table 1.

Table 1: SAR evaluation — Exemption limits for routine evaluation based on frequency and separation distance

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Table 1: SAR evaluation — Exemption limits for routine evaluation based on frequency and separation distance

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of ≥50 mm
≤300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW



1. Calculation:

Test separation: 5mm						
Bluetooth Mode (GFSK)						
Frequency (GHz)	Conducted Power (dBm)	Gain (dBi)	E.I.R.P. (dBm)	Tolerance ± (dB)	Output power (Max. Turn-up Procedure) (mW)	Limit (mW)
2402	-0.003	0.3	0.297	1±1	1.585	4.0
2441	0.01	0.3	0.31	1±1	1.585	4.0
2480	0.758	0.3	1.058	1±1	1.585	4.0
Bluetooth Mode (π/4-DQPSK)						
Frequency (GHz)	Conducted Power (dBm)	Gain (dBi)	E.I.R.P. (dBm)	Tolerance ± (dB)	Output power (Max. Turn-up Procedure) (mW)	Limit (mW)
2402	0.024	0.3	0.324	1±1	1.585	4.0
2441	0.098	0.3	0.398	1±1	1.585	4.0
2480	0.789	0.3	1.089	1±1	1.585	4.0
Bluetooth Mode (8-DPSK)						
Frequency (GHz)	Conducted Power (dBm)	Gain (dBi)	E.I.R.P. (dBm)	Tolerance ± (dB)	Output power (Max. Turn-up Procedure) (mW)	Limit (mW)
2402	0.123	0.3	0.423	1±1	1.585	4.0
2441	0.222	0.3	0.522	1±1	1.585	4.0
2480	0.942	0.3	1.242	1±1	1.585	4.0

BLE 1M						
Frequency (GHz)	Conducted Power (dBm)	Gain (dBi)	E.I.R.P. (dBm)	Tolerance ± (dB)	Output power (Max. Turn-up Procedure) (mW)	Limit (mW)
2402	-1.878	0.3	-1.578	-1±1	1.000	4.0
2440	-1.848	0.3	-1.548	-1±1	1.000	4.0
2480	-1.071	0.3	-0.771	-1±1	1.000	4.0
BLE 2M						
Frequency (GHz)	Conducted Power (dBm)	Gain (dBi)	E.I.R.P. (dBm)	Tolerance ± (dB)	Output power (Max. Turn-up Procedure) (mW)	Limit (mW)
2402	-1.935	0.3	-1.635	-1±1	1.000	4.0
2440	-1.966	0.3	-1.666	-1±1	1.000	4.0
2480	-1.245	0.3	-0.945	-1±1	1.000	4.0

Conclusion:

The measurement results comply with the FCC Limit per 47 CFR 2.1093 and the RSS-102§4 Table 4 for the uncontrolled RF Exposure and SAR Exclusion Threshold per KDB 447498 v06, No SAR is required.

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