

FCC RF Exposure

Applicant : Dongguan Liesheng Electronic Co., Ltd.
Address : Room 10073, No. 156, Humen Avenue, Humen
Town, Dongguan City, Guangdong Province
Product Name : HAYLOU Airfree Open Ear True Wireless Earbuds
Brand Mark : HAYLOU
Model : OW03
Series model : N/A
FCC ID : 2AMQ6-OW03R
Report Number : BLA-EMC-202411-A5303
Date of Receipt : 2024.11.21
Date of Test : 2024.11.21 to 2024.11.27
47 CFR Part 15, Part1.1307
Test Standard : 47 CFR Part 15, Part2.1093
KDB447498D04 General RF Exposure Guidance v01
Test Result : Pass

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Review by: Sweels

Approved by: Blue Zheng

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Revise Record

Version No.	Date	Description
01	2024.12.03	Original

1 General information

1.1 General information

Applicant	Dongguan Liesheng Electronic Co., Ltd.
Address	Room 10073, No. 156, Humen Avenue, Humen Town,Dongguan City, Guangdong Province
Manufacturer	Dongguan Liesheng Electronic Co., Ltd.
Address	Room 10073, No. 156, Humen Avenue, Humen Town,Dongguan City, Guangdong Province
Factory	Guangxi Yuanhang Electronics Co. LTD
Address	Floor 2-4, Building 5,Standard Workshop, Penn Electronic Information Industrial Park.Binyang Town, Nanning City, Guangxi Zhuang Autonomous Region

1.2 General description of EUT

Product name	HAYLOU Airfree Open Ear True Wireless Earbuds
Model no.	OW03
Operation Frequency:	BT/BLE:2402MHz-2480MHz
Modulation Type:	BLE:GFSK BT:GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channels:	BLE:40 BT:79
Antenna Type:	FPC Antenna
Product Type:	Portable
Antenna Gain:	1.72dBi(Provided by the customer)
Power supply:	Battery DC 3.7V
Test Voltage:	DC 3.7V
Hardware Version	V1.1
Software Version	V1.0

2 RF Exposure Compliance Requirement

2.1 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.

2.2 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

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

2.3 Result

$$\text{EIRP} = \text{pt} \times \text{gt} = (\text{E} \times \text{d})^{2/30}$$

Where:

pt = transmitter output power in watts,

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

E = electric field strength in V/m,

d = measurement distance in meters (m)

$$\text{Spot} = (\text{E} \times \text{d})^{2/30} \times \text{gt}$$

Separation distance = 0.5cm

Ant gain = 1.72dBi

For BLE 1M(Worst):

Max Output power = -0.652dBm @ 2402MHz (0.8606mW < 2.788 mW)

ERP = -0.652dBm + 1.72dBi - 2.15 = -1.055dBm = 0.784mW < 2.788 mW

For BT Classic(8DPSK):

Max Output power = 1.091dBm @ 2402MHz 1.2856mW < 2.788 mW

ERP = 1.091dBm + 1.72dBi - 2.15 = 0.661dBm = 1.164mW < 2.788 mW

Comply with RF exposure exemption limit.

----END OF REPORT----

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