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1 TEST SUMMARY

1.1 Test Facility

Shenzhen Central Standard International Center Co., Ltd. (CSIC)

Room 201, Building 1, Mogen Fashion Industrial Park, No. 10, Shilongzai Road, Xinshi Community, Dalang Street, Longhua District, Shenzhen.

The test facility is recognized, certified or accredited by the following organizations:

CNAS Registration No.: L11671

FCC Registration No.: 0031378433 Designation Number: CN1317

IC CAB identifier: CN0051

A2LA Lab Cert. No.: 6426.01

2 GENERAL INFORMATION

2.1 General Description of EUT

Product information		
Product Name:	Open-ear wireless headphones	
Trademark:	N.A.	
Model No:	UM-600	
Series Model:	N.A.	
Power supply:	DC input	DC 5V 1A
	battery	DC 3.7V 1.85Wh 500mAh
Hardware version:	V1.2	
Software version:	V20241220	
Technical Specification of Bluetooth LE		
Frequency Range:	2402 MHz to 2480 MHz	
Type of Modulation:	GFSK	
Channel Number:	40 channels	
Data Rate:	1 Mbps, 2 Mbps	
Channel Separation:	2 MHz	
Antenna type:	CHIP Antenna	
Antenna gain:	2.67dBi	
Technical Specification of Bluetooth		
Frequency Range:	2402 MHz to 2480 MHz	
Type of Modulation:	GFSK, $\pi/4$ DQPSK, 8DPSK	
Channel Number:	79 channels	
Data Rate:	1 Mbps, 2 Mbps, 3 Mbps	
Channel Separation:	1 MHz	
Antenna type:	CHIP Antenna	
Antenna gain:	2.67dBi	
Remark:		

Note:

1. For a more detailed features description, please refer to the manufacture's specifications or the user's manual.
2. Full tests were applied to the sample C241113041-Y01/01 only in this document.

3 Maximum Permissible Exposure (MPE)

3.1 RF Exposure

3.1.1 Limit

The limit for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 is followed. The gain of the antennas used in the product is extracted from the Antenna data sheets provided and also the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.

Although the Friis Transmission formula is far field assumption, the calculated result of that is an over-prediction for near field power density. It is taken as worst case to specify the safety range.

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of the human exposure to radio frequency (RF) radiation as specified in 1.1307 (b).

For FCC:

Frequency Range	Electric Field Strength	Magnetic Field Strength	Power Density
[MHz]	[V/m]	[A/m]	[mW/cm ²]
Limits for Occupational / controlled Exposures			
300 - 1500	--	--	f/300
1500 - 100000	--	--	5.0
Limits for General population / Uncontrolled Exposure			
300 - 1500	--	--	f/1500
1500 - 100000	--	--	1.0

NOTE: f = Frequency in MHz

3.1.2 Friss Formula

According to KDB447498 D01 General RF Exposure Guidance V06

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})]^*$

$[\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

$f(\text{GHz})$ is the RF channel transmit frequency in GHz ;

Power and distance are rounded to the nearest mW and mm before calculation ;

The result is rounded to one decimal place for comparison ;

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz.

If we know the maximum gain of the antenna and the total output power to the antenna, through calculation, we will know MPE value at distance 5mm.

3.1.3 Classification

The antenna of this product, under normal use condition, is at least 5mm away from the body of the user. Warning statement to the user for keeping at least 5mm or more separation distance from the antenna should be included in the User manual. So, this device is classified as Mobile device.

3.1.4 EUT Operating Conditions

EUT was enabled to transmit and receive at lowest, middle and highest channels.

3.1.5 Evaluation Result

1) tand-alone transmission MPE

Mode	Frequency (GHz)	*Measured RF Output Power (dBm)	Distance (mm)	Result calculation	Limit (1-g)
Bluetooth	2.441	8.393	5	2.16	3.0
Note: 1. Bluetooth RF Output Power: Refer to test report C241113041-RF04					

3.1.6 Conclusion

Therefore, the maximum calculations result of above are meet the requirement of Radio Frequency Exposure (MPE) limit.

*****THE END*****