SAR TEST EXCLUSION EVALUATION REPORT

Product Name:	Active Noise Canceling True wireless headphones
Trade Mark:	or PHILIPS
Model No./HVIN:	TAT6908
Add. Model No.:	TAT6908xx/yy(xx=AA-ZZ or blank denoted different color; yy=00-99 denoted different country destination)
Report Number:	2303064325RFC-3
Test Standards:	FCC 47 CFR Part 2.1093 RSS-102 Issue 5
FCC ID:	2AR2STAT6908
IC:	24589-TAT6908
Test Result:	PASS
Date of Issue:	May 11, 2023

Prepared for:

MMD Hong Kong Holding Limited
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Prepared by:

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Version

Version No.	Date	Description
V1.0	May 11, 2023	Original

CONTENTS

1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	MMD Hong Kong Holding Limited
Address of Applicant:	Units 1208-11,12th Floor,C-Bons International Center, 108 Wai Yip Street, Kwun Tong, Kowloon,Hong Kong
Manufacturer:	MMD Hong Kong Holding Limited
Address of Manufacturer:	Units 1208-11,12th Floor,C-Bons International Center, 108 Wai Yip Street, Kwun Tong, Kowloon,Hong Kong

1.2 EUT INFORMATION

Product Name:	Active Noise Canceling True wireless headphones	
Model No. /HVIN:	TAT6908	
Add. Model No.:	TAT6908xx/yy(xx=AA-ZZ or blank denoted different color; yy=00-99 denoted different country destination)	
Trade Mark:	or PHILIPS	
DUT Stage:	Production Unit	
EUT Supports Function: (Provided by the customer)	2.4 GHz ISM Band:	Bluetooth 5.3
Software Version:	0.0.0.45 (Provided by the customer)	
Hardware Version:	V1.2 Provided by the customer)	
Note: The additional model TAT6908xx/yy(xx=AA-ZZ or blank denoted different color; yy=00-99 denoted different country destination) is identical with the test model TAT6908 except the model number for marketing purpose.		

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

For BLE		
Frequency Band:	2400 MHz to 2483.5 MHz	
Frequency Range:	2402 MHz to 2480 MHz	
Bluetooth Version:	Bluetooth LE/2LE	
Type of Modulation:	GFSK	
Number of Channels:	40	
Channel Separation:	2 MHz	
Antenna Type:	FPCB Antenna	
Antenna Gain: (Provided by the customer)	Left earbud: -1.52dBi	
	Right earbud: 0.83dBi	
Maximum Conducted Peak Power:	LE	8.84 dBm
	2LE	8.93 dBm

For BT_EDR	
Frequency Band:	2400 MHz to 2483.5 MHz
Frequency Range:	2402 MHz to 2480 MHz
Bluetooth Version:	Bluetooth BR + EDR
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Type of Modulation:	GFSK, π/4DQPSK, 8DPSK
Number of Channels:	79
Channel Separation:	1 MHz
Antenna Type:	FPCB Antenna
Antenna Gain: (Provided by the customer)	Left earbud: -1.52dBi
	Right earbud: 0.83dBi
Maximum Conducted Peak Power:	10.61 dBm

1.4 OTHER INFORMATION

Test channels for BT_LE				
Type of Modulation	**Tx/Rx Frequency**	**Test RF Channel Lists**		
		Lowest(L)	**Middle(M)**	**Highest(H)**
GFSK	2402 MHz to 2480 MHz	Channel 0	Channel 19	Channel 39
		2402 MHz	2440 MHz	2480 MHz

Test channels for BT_EDR				
Mode	**Tx/Rx Frequency**	**Test RF Channel Lists**		
		Lowest(L)	**Middle(M)**	**Highest(H)**
GFSK (DH1, DH3, DH5)	2402 MHz to 2480 MHz	Channel 0	Channel 39	Channel 78
		2402 MHz	2441 MHz	2480 MHz
π/4DQPSK (DH1, DH3, DH5)	2402 MHz to 2480 MHz	Channel 0	Channel 39	Channel 78
		2402 MHz	2441 MHz	2480 MHz
8DPSK (DH1, DH3, DH5)	2402 MHz to 2480 MHz	Channel 0	Channel 39	Channel 78
		2402 MHz	2441 MHz	2480 MHz

1.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC 47 CFR Part 2.1093
RSS-102 Issue 5

All test items have been performed and recorded as per the above standards

1.6 DEVIATION FROM STANDARDS

None.

1.7 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

2. EQUIPMENT LIST

Please refer to the RF test report.

3. SAR TEST EXCLUSION EVALUATION

3.1 REFERENCE DOCUMENTS FOR EVALUATION

No.	Identity	Document Title
1	FCC 47 CFR Part 2.1093	Radiofrequency radiation exposure evaluation: portable devices.
2	RSS-102 Issue 5	Radio Frequency (RF) Exposure Compliance of Radio communication Apparatus (All Frequency Bands)
3	KDB 447498 D01 General RF Exposure Guidance v06	RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES FOR MOBILE AND PORTABLE DEVICES

3.2 EXEMPTION LIMITS FOR ROUTINE EVALUATION – SAR EVALUATION

3.2.1 SAR Test Exclusion Threshold

3.2.1.1 KDB 447498 D01 v06

Appendix A

***SAR Test Exclusion Thresholds* for 100 MHz – 6 GHz and ≤ 50 mm**

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table. The equation and threshold in 4.3.1 must be applied to determine SAR test exclusion.

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	*SAR Test Exclusion Threshold* (mW)
300	27	55	82	110	137	
450	22	45	67	89	112	
835	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	

MHz	30	35	40	45	50	mm
150	232	271	310	349	387	*SAR Test Exclusion Threshold* (mW)
300	164	192	219	246	274	
450	134	157	179	201	224	
835	98	115	131	148	164	
900	95	111	126	142	158	
1500	73	86	98	110	122	
1900	65	76	87	98	109	
2450	57	67	77	86	96	
3600	47	55	63	71	79	
5200	39	46	53	59	66	
5400	39	45	52	58	65	
5800	37	44	50	56	62	

Note: 10-g Extremity SAR Test Exclusion Power Thresholds are 2.5 times higher than the 1-g *SAR Test Exclusion Thresholds* indicated above. These thresholds do not apply, by extrapolation or other means, to occupational exposure limits.

3.2.1.2 RSS-102 Issue 5

Table 1: SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance[4,5]

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

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

4 The exemption limits in Table 1 are based on measurements and simulations of half-wave dipole antennas at separation distances of 5 mm to 25 mm from a flat phantom, providing a SAR value of approximately 0.4 W/kg for 1 g of tissue. For low frequencies (300 MHz to 835 MHz), the exemption limits are derived from a linear fit. For high frequencies (1900 MHz and above), the exemption limits are derived from a third order polynomial fit.

5 Transmitters operating between 0.003-10 MHz, meeting the exemption from routine SAR evaluation, shall demonstrate compliance to the instantaneous limits in Section 4.

3.2.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

3.3 MPE CALCULATION RESULTS

Note: *For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.*

3.3.1 For BT and BLE

For BR+EDR & BLE function, operating at 2402MHz to 2480 MHz for GFSK, π/4 DQPSK, 8DPSK

3.3.1.1 Antenna Type:

Chain 0: FPCB Antenna

3.3.1.2 Antenna Gain:

Chain 0: 2402MHz to 2480 MHz: Left earbud: -1.52dBi ,
Right earbud: 0.83dBi

3.3.1.3 Minimum contact distance:

The following is the product antenna location.

The minimum contact distance is 15.02 mm. So, the 15 mm separation distance applies.

3.3.1.4 Results for FCC 47 CFR Part 2.1093

Operating Mode	Frequency	Tune-up Power (conducted average)	Tolerance	Antenna Gain	Calculated maximum EIRP		Separation Distance	SAR Test Exclusion Threshold
	(MHz)	(dBm)	(dBm)	(dBi)	(dBm)	(mW)	(mm)	(mW)
BR+EDR	2402-2480	6	3	0.83	9.83	11.64	15	29
BT LE	2402-2480	5	2	0.83	7.83	7.35	15	29
BT 2LE	2402-2480	2.5	2	0.83	5.33	4.13	15	29

So the transmitter complies with the RF exposure requirements and the SAR is not required.

3.3.1.5 Results for RSS-102 Issue 5

Operating Mode	Frequency	Tune-up Power (conducted average)	Tolerance	Antenna Gain	Calculated maximum EIRP		Separation Distance	SAR Test Exclusion Threshold
	(MHz)	(dBm)	(dBm)	(dBi)	(dBm)	(mW)	(mm)	(mW)
BR+EDR	2402-2480	6	3	0.83	9.83	11.64	15	15
BT LE	2402-2480	5	2	0.83	7.83	7.35	15	15
BT 2LE	2402-2480	2.5	2	0.83	5.33	4.13	15	15

So the transmitter complies with the RF exposure requirements and the SAR is not required.

APPENDIX 1 PHOTOS OF TEST SETUP

N/A

APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal Photos.

*** End of Report ***