

# **RF Exposure Evaluation**

**Test report**

**On Behalf of**

**Guangdong Yier Acoustics Electronic Technology Co., Ltd.**

**For**

**TWS Bluetooth Headset**

**Model No.: HT28, HT18, HT38, HT48, HT58, HT68, HT78, HT88, HT98**

**FCC ID: 2ATZ9-TWSHTX**

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**Date of Report:**          **Nov. 20, 2019**

## 1 General Description of EUT

Product Name:	TWS Bluetooth Headset
Model/Type reference:	HT28
Serial Model:	HT18, HT38, HT48, HT58, HT68, HT78, HT88, HT98
Model Difference:	All model's the function, software and electric circuit are the same, only with a product outward and model named different. Test sample model: HT28
Trade Mark	Lenovo 联想
FCC ID	2ATZ9-TWSHTX
Hardware Version:	V1.1
Software Version:	V1.5
Modulation:	GFSK, $\pi/4$ DQPSK
Operation frequency:	2402MHz~2480MHz
Channel number:	79CH
Channel separation:	1MHz
Antenna type:	PCB Antenna
Antenna gain:	0 dBi
Power supply:	DC 3.7V from Battery

## 2 RF Exposure Compliance Requirement

### 2.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

#### 4.3.1. 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

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

$$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

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

Power and distance are rounded to the nearest mW and mm before calculation<sup>17</sup>

The result is rounded to one decimal place for comparison

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

distance is  $< 5$  mm, a distance of 5 mm is applied to determine SAR test exclusion

### 3 EUT RF Exposure

## Left Headset

GFSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	-4.158	$-4 \pm 1$	-3	0.501	0.155	3.0
Middle (2441MHz)	-4.067	$-4 \pm 1$	-3	0.501	0.157	
Highest (2480MHz)	-4.681	$-5 \pm 1$	-4	0.398	0.125	
Conclusion: the calculated value $\leq 3.0$ , SAR is exempted.						

$\pi/4$ DQPSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	-2.921	$-3 \pm 1$	-2	0.631	0.196	3.0
Middle (2441MHz)	-2.837	$-3 \pm 1$	-2	0.631	0.197	
Highest (2480MHz)	-3.506	$-3 \pm 1$	-2	0.631	0.199	

Conclusion: the calculated value  $\leq 3.0$ , SAR is exempted.

## Right Headset

GFSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	-4.276	$-4 \pm 1$	-3	0.501	0.155	3.0
Middle (2441MHz)	-4.308	$-4 \pm 1$	-3	0.501	0.157	
Highest (2480MHz)	-5.072	$-5 \pm 1$	-4	0.398	0.125	
Conclusion: the calculated value $\leq 3.0$ , SAR is exempted.						

π /4DQPSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	-3.083	-3±1	-2	0.631	0.196	3.0
Middle (2441MHz)	-3.143	-3±1	-2	0.631	0.197	
Highest (2480MHz)	-3.843	-3±1	-2	0.631	0.199	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: HK1911152897-E