

# Radio Frequency Exposure Report

On Behalf of

**Yinkman (Beijing) technology Co.,Ltd**

(NO.1056 Chaowai Incubator) 9/F (08) No.19 Ritan North Road, Chaoyang  
District, Beijing, China

Product Name:	<b>OMNOS 5.1.2 Soundbar</b>
Model/Type No.:	<b>YM-S100</b>
FCC ID:	<b>2ALWE-YMS100</b>
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## 1 - GENERAL INFORMATION

### 1.1 Product Description for Equipment Under Test (EUT)

#### Client Information

Applicant:	Yinkman (Beijing) technology Co.,Ltd
Address of applicant:	(NO.1056 Chaowai Incubator) 9/F (08) No.19 Ritan North Road, Chaoyang District, Beijing, China
Manufacturer :	Shenzhen AccoladeSound Technology Co.,Ltd
Address of manufacturer:	No.3010 Room, C1 Building,Yin Tian Industrial Area ,Yan Tian Community, Xi Xiang Street, Bao'an District, Shengzhen,China

#### General Description of E.U.T

Items	Description
EUT Description:	OMNOS 5.1.2 Soundbar
Model No.:	YM-S100
Supplementary Model:	N/A
Antenna Type:	BT:PCB Antenna, WIFI/2.4G RF Module: Internal antenna
Antenna Gain:	BT:0dBi, WIFI:1.94dBi, 2.4G RF Module: 2dBi
Power Rating:	Adapter : Input: AC 100~240V, 50/60Hz Output: DC 24V, 3.25A

Remark: \* The test data gathered are from the production sample provided by the manufacturer.  
\*We test all modes, but we chose the worst data for the report.

## 1.2 Objective

The objective of the following report is used to demonstrate that EUT operated in a manner that ensures the public is not exposed to radio frequency energy levels in excess of the relative provisions of FCC 47CFR Part 1.1307

## 1.3 General Description of Test

Items	Description
EUT Frequency band	<input checked="" type="checkbox"/> FHSS: 2.400GHz ~ 2.483GHz <input checked="" type="checkbox"/> WLAN: 2.400GHz ~ 2.483GHz <input type="checkbox"/> WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz <input type="checkbox"/> WLAN: 5.745GHz ~ 5825GHz <input type="checkbox"/> Others: _____
Device category	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others __
Exposure classification	<input type="checkbox"/> Occupational/Controlled exposure ( $S = 5\text{mW/cm}^2$ ) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure ( $S=1\text{mW/cm}^2$ ) <input type="checkbox"/> Others: _____
Antenna diversity	<input type="checkbox"/> Single antenna <input checked="" type="checkbox"/> Multiple antennas: <div style="margin-left: 20px;"> <input type="checkbox"/> Tx diversity  <input type="checkbox"/> Rx diversity  <input type="checkbox"/> Tx/Rx diversity           </div>
Max. output power	WIFI: 23.77dBm(0.173W), BT: 5.39dBm(0.0035W),
Antenna gain (Max)	WIFI:1.94dBi (Numeric gain:1.56), BT:0dBi(Numeric gain:1),
Evaluation applied	<input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> SAR Evaluation
<b>Note:</b> 1. The maximum output power is 23.77dBm(0.173W) at WIFI transmit mode (with 1.56 numeric antenna gain.) 2. For mobile or fixed location transmitters, no SAR consideration applied. The minimum separation generally be used is at least 20 cm, even if the calculations indicate that the MPE distance would be lesser.	

## 1.4 Human Exposure Assessment Results

### Calculation

Given  $E = \frac{\sqrt{30 \times P \times G}}{d}$  &  $S = \frac{E^2}{3770}$

Where  $E$  = Field Strength in Volts / meter

$P$  = Power in Watts

$G$  = Numeric antenna gain

$d$  = Distance in meters

$S$  = Power Density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770 d^2}$$

Changing to units of mW and cm, using:

$$P (mW) = P (W) / 1000 \text{ and}$$

$$d (cm) = 100 * d (m)$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2}$$

**Equation 1**

Where  $d$  = distance in cm

$P$  = Power in mW

$G$  = Numeric antenna gain

$S$  = Power Density in mW / cm<sup>2</sup>

<b>EUT parameter (data from the separate report)</b>	
Given $E = \frac{\sqrt{30 \times P \times G}}{d} \text{ \& \& } S = \frac{E^2}{3770}$	Where G: numerical gain of transmitting antenna; TP: Transmitted power in watt; d: distance from the transmitting antenna in meter
Max average output power in Watt (TP)	WIFI: 23.77dBm(0.173W), BT: 5.39dBm(0.0035W)
Antenna gain (G)	WIFI:1.94dBi (Numeric gain:1.56), BT:0dBi(Numeric gain:1),
Exposure classification	S=1mW/cm <sup>2</sup>
Minimum distance in meter (d) (from transmitting structure to the human body)	20cm (0.2m)

Yields

$$S = \frac{30 \times P \times G}{3770 d^2},$$

For BT: S1=0.0007mW/cm<sup>2</sup>

For 2.4G WIFI: S2=0.054mW/cm<sup>2</sup>

Or

$$d = \sqrt{\frac{30 \times P \times G}{3770 S}},$$

For BT: d1=0.005m

For 2.4G WIFI: d2=0.046m

Conclusion:

S1=0.0007mW/cm<sup>2</sup>, S2= 0.054mW/cm<sup>2</sup> is significant lower than the General Population Exposure Power Density Limit 1mW/cm<sup>2</sup> or except the distance when human body proximity to the antenna is less than d1=0.5cm,d2=4.6cm then will reach the General Population Exposure Power Density Limit

(For mobile or fixed location transmitters, the maximum power density is 1.0 mW / cm<sup>2</sup> even if the calculation indicates that the power density would be larger.)

