RF EXPOSURE
Test Report

Report No.:	MTi240307010-01E3
Date of issue:	2024-04-28
Applicant:	YOUTEK INC
Product:	Chatmaster Smart Speaker
Model(s):	CMB-101, CMB-102, MRS-101, MRS-102
FCC ID:	2BFK5-YUT2401

Shenzhen Microtest Co., Ltd.

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Test Result Certification	
Applicant:	YOUTEK INC
Address:	5030 Boardwalk Drive, Suite818, Colorado Springs, CO, USA
Manufacturer:	YOUTEK INC
Address:	5030 Boardwalk Drive, Suite818, Colorado Springs, CO, USA
Factory:	Shenzhen Junlan Electronic Ltd.
Address:	No.277,PingKui Rd.,Shijing Community,Pingshan District,Shenzhen,China
Product description	
Product name:	Chatmaster Smart Speaker
Trademark:	CHATMASTER
Model name:	CMB-101
Series Model:	CMB-102, MRS-101, MRS-102
Standards:	N/A
Test procedure:	KDB 447498 D01 v06
Date of Test	
Date of test:	2024-03-27 to 2024-04-24
Test result:	Pass

Test Engineer	:	Yanice Xie
		(Yanice.Xie)
Reviewed By	:	David. Lee
		(David Lee)
Approved By	:	Leon chen
		(Leon Chen)

RF EXPOSURE EVALUATION

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

Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	$*900/f^2$	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	$*180/f^2$	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

MPE Calculation Method

Friis transmission formula: $Pd= (Pout*G)\ (4*pi*R^2)$

Where

Pd= Power density in mW/cm^2

Pout=output power to antenna in mW

G= Numeric gain of the antenna relative to isotropic antenna

Pi=3.1415926

R= distance between observation point and center of the radiator in cm(20cm)

Pd the limit of MPE, $1mW/cm^2$. If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

Measurement Result

BLE:

Operation Frequency: 2402-2480MHz,

Power density limited: 1mW/ cm2

Antenna Type: FPC Antenna;

Antenna gain: 1.99 dBi

R=20cm

mW=10^(dBm/10)

Antenna gain Numeric=10^(dBi/10)= 10^(1.99/10)=1.58

2.4GWiFi:

Operation Frequency: WIFI 802.11b/g/n HT20: 2412-2462MHz, n HT40: 2422-2452MHz

Power density limited: 1mW/ cm^2

Antenna Type: FPC Antenna;

Antenna gain: 1.99 dBi

R=20cm

mW=10^(dBm/10)

2.4G: antenna gain Numeric=10^(dBi/10)= 10^(1.99/10)= 1.58

BLE:

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max		Antenna		Evaluation result (mW/cm^2)	Power density Limits (mW/cm^2)
				tune-up power		Gain			
				(dBm)	(mW)	(dBi)	Numeric		
2402	GFSK	-9.20	(-9)±1	-8	0.158	1.99	1.58	0.00005	1
2440		-9.16	(-9)±1	-8	0.158	1.99	1.58	0.00005	1
2480		-9.44	(-9)±1	-8	0.158	1.99	1.58	0.00005	1

2.4G WIFI:

Channel Freq. (MHz)	modulation	conducted power	Tune-up power	Max		Antenna		Evaluation result at 20cm	Power density Limits
		(dBm)	(dBm)	tune-up power		Gain		Power density(mW/cm2)	(mW/cm2)
				(dBm)	(mW)	(dBi)	Numeric		
		Ant A	Ant A	Ant A	Ant A	Ant A	Ant A	Ant A	
2412	802.11b	13.67	14±1	15	31.623	1.99	1.58	0.00995	1
2437		13.34	14±1	15	31.623	1.99	1.58	0.00995	1
2462		13.43	14±1	15	31.623	1.99	1.58	0.00995	1
2412	802.11g	8.89	9±1	10	10.000	1.99	1.58	0.00315	1
2437		8.97	9±1	10	10.000	1.99	1.58	0.00315	1
2462		9.15	9±1	10	10.000	1.99	1.58	0.00315	1
2412	802.11n H20	9.03	9±1	10	10.000	1.99	1.58	0.00315	1
2437		8.82	9±1	10	10.000	1.99	1.58	0.00315	1
2462		8.01	9±1	10	10.000	1.99	1.58	0.00315	1
2422	802.11n H40	5.65	5±1	6	3.981	1.99	1.58	0.00125	1
2437		5.33	5±1	6	3.981	1.99	1.58	0.00125	1
2452		4.29	5±1	6	3.981	1.99	1.58	0.00125	1

Conclusion:

For the max result: 0.00995≤ 1.0 test exclusion threshold, No SAR is required.

----END OF REPORT----