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RF Exposure Evaluation Report

Report No.: CQASZ20240901965E-04

Applicant: Kan Tsang New Technology Development Limited.

Address of Applicant: Unit 1, 11/F., Nan Fung Commercial Centre, No.19 Lam Lok Street, Kowloon Bay, Hong Kong.

Equipment Under Test (EUT):

Product: BABY MONITOR

Model No.: KT-568J, KT-568W, KT-318J, KT-318W, KT-438W, KT-428W, DC-BBM008, DC-BBM009, DC-SBM001, DC-SBM002, DC-SBM003, DC-SBM004, DC-SBM005

Test Model No.: KT-568W

Brand Name: N/A

FCC ID: PAZ-P8BU

Standards: 47 CFR Part 1.1307
47 CFR Part 1.1310
KDB447498 D01 General RF Exposure Guidance v06

Date of Receipt: 2024-09-11

Date of Test: 2024-09-11 to 2024-10-08

Date of Issue: 2024-12-04

Test Result: **PASS***

*In the configuration tested, the EUT complied with the standards specified above

Tested By: Lewis Zhou
(Lewis Zhou)

Reviewed By: Timo Lei
(Timo Lei)

Approved By: Jack Ai
(Jack Ai)



1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20240901965E-04	Rev.01	Initial report	2024-12-04

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3 General Information

3.1 Client Information

Applicant:	Kan Tsang New Technology Development Limited.
Address of Applicant:	Unit 1, 11/F., Nan Fung Commercial Centre, No.19 Lam Lok Street, Kowloon Bay, Hong Kong.
Manufacturer:	Dongguan Qinyuan Gaotu Electronic Technology Co., Ltd
Address of Manufacturer:	Room 401, Building 2, No. 6 Luyi 1st Road, Tangxia Town, Dongguan City, Guangdong
Factory:	Dong Guan Kan Tsang Electroacoustic Technology Co.,Ltd.
Address of Factory:	Room 402 First Building, No.8, LuYi First Road,TangXia Town, Dong Guan City, China.
Factory:	Dong Guan Kan Tsang Electroacoustic Technology Co.,Ltd.
Address of Factory:	Room 402 First Building, No.8, LuYi First Road,TangXia Town, Dong Guan City, China.

3.2 General Description of EUT

Product Name:	BABY MONITOR
Model No.:	KT-568J, KT-568W, KT-318J, KT-318W, KT-438W, KT-428W, DC-BBM008, DC-BBM009, DC-SBM001, DC-SBM002, DC-SBM003, DC-SBM004, DC-SBM005
Test Model No.:	KT-568W
Trade Mark:	N/A
Software Version:	JST31_BABY_MONITOR_KT01_202408100018
Hardware Version:	KT-P8-BU-V1.4
EUT Power Supply:	MODEL:AS011Z 0501500UU INPUT:100-240V ~ 50/60Hz 0.45A OUTPUT:5V $\pm$ 1.5A

3.3 General Description of BLE

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	Bluetooth Spec 5.0
Modulation Type:	GFSK
Number of Channel:	40
Transfer Rate:	1Mbps, 2Mbps
Sample Type:	☒ Mobile ☐ Portable
Antenna Type:	PIFA antenna
Antenna Gain:	2.12dBi

3.4 General Description of 2.4G WIFI Classic

Operation Frequency:	2412MHz~2462MHz
Type of Modulation:	IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE for 802.11g : OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n(HT20) : OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channel:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels
Channel Separation:	5MHz
Transfer Rate:	IEEE for 802.11b: 1Mbps/2Mbps/5.5Mbps/11Mbps IEEE for 802.11g : 6Mbps/9Mbps/12Mbps/18Mbps/24Mbps/36Mbps/48Mbps/54Mbps IEEE for 802.11n(HT20) : 6.5Mbps/13Mbps/19.5Mbps/26Mbps/39Mbps/52Mbps/58.5Mbps/65Mbps
Sample Type:	☒ Mobile ☐ Portable
Antenna Type:	2.4G WIFI Module(with BLE):PIFA antenna 2.4G WIFI Module:Copper pipe antenna
Antenna Gain:	2.4G WIFI Module(with BLE):2.12dBi 2.4G WIFI Module:2.79 dBi

4 RF Exposure Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Limits

According to FCC Part1.1310: 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 part1.1307(b)

TABLE 1—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 Exposures				
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
300–1500			f/300	6
1500–100,000			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
300–1500			f/1500	30
1500–100,000			1.0	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

P_d is the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

4.1.2 Test Procedure

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

4.2 1.1.3 EUT RF Exposure Evaluation

1) For BLE

Antenna Gain: 2.12dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.63 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-1.32	-1.5±1	-0.5	0.89
Middle(2440MHz)	-1.63	-1.5±1	-0.5	0.89
Highest(2480MHz)	-2.39	-2.5±1	-1.5	0.71

The worst case:

Maximum tune-up Power (mW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
0.89	2.12	0.0002888878	1.0	PASS

Note: 1) Refer to report No. CQASZ20240901965E-03 for EUT test Max Conducted Peak Output Power value.

$$2) P_d = (P_{out} * G) / (4 * \pi * R^2) = (0.89 * 1.63) / (4 * 3.1416 * 20^2) = 0.0002888878$$

2) For 2.4G WIFI(with BLE)

Antenna Gain: 2.12dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.63 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Measurement Data

OFDM mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2412MHz)	12.58	12.5±1	13.5	22.39
Middle(2437MHz)	11.18	11.0±1	12	15.85
Highest(2462MHz)	11.55	11.5±1	12.5	17.78

The worst case:

Maximum tune-up Power (mW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
22.387	2.12	0.0072565322	1.0	PASS

Note: 1) Refer to report No. CQASZ20240901965E-01 for EUT test Max Conducted AV Output Power value.

2) $P_d = (P_{out} * G) / (4 * \pi * R^2) = (22.387 * 1.63) / (4 * 3.1416 * 20^2) = 0.0072565322$

3) For 2.4G WIFI

Antenna Gain: 2.79dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.9 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Measurement Data

OFDM mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2412MHz)	13.02	13.0±1	14	25.12
Middle(2437MHz)	11.82	12.0±1	13	19.95
Highest(2462MHz)	12.29	12.5±1	13.5	22.39

The worst case:

Maximum tune-up Power (mW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm²)	Limit	Result
25.12	2.79	0.0095001208	1.0	PASS

Note: 1) Refer to report No. CQASZ20240901965E-02 for EUT test Max Conducted AV Output Power value.

2) $P_d = (P_{out} * G) / (4 * \pi * R^2) = (25.12 * 1.9) / (4 * 3.1416 * 20^2) = 0.0095001208$

Note:

Calculator multi TX:

2.4G WIFI(with BLE)+2.4GWIFI+BLE

$= 0.0072565322 / 1 + 0.0095001208 / 1 + 0.0002888878 / 1$

$= 0.0170455 \leq 1$