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RF Exposure Evaluation Report

Report No.: CQASZ20260300618E-03
Applicant: Shenzhen Interthings Technology Co., Ltd.
Address of Applicant: 701, Building 1, Lechuanghui Building, No. 1211 Guanguang Road, Longhua District, Shenzhen, China
Equipment Under Test (EUT):
Product: Smart Video Doorbell
Model No.: IPB239, HUVDB290
Test Model No.: IPB239
Brand Name: N/A
FCC ID: 2AQ7B-IPB239
Standards: 47 CFR Part 1.1307
47 CFR Part 1.1310
KDB447498 D01 General RF Exposure Guidance v06
Date of Receipt: 2026-06-16
Date of Test: 2026-06-16 to 2026-07-30
Date of Issue: 2026-07-30
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
CQASZ20260300618E-03	Rev.01	Initial report	2026-07-30

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3 General Information

3.1 Client Information

Applicant:	Shenzhen Interthings Technology Co., Ltd.
Address of Applicant:	701, Building 1, Lechuanghui Building, No. 1211 Guanguang Road, Longhua District, Shenzhen, China
Manufacturer:	Shenzhen Interthings Technology Co., Ltd.
Address of Manufacturer:	701, Building 1, Lechuanghui Building, No. 1211 Guanguang Road, Longhua District, Shenzhen, China
Factory:	Shenzhen Interthings Technology Co., Ltd.
Address of Factory:	701, Building 1, Lechuanghui Building, No. 1211 Guanguang Road, Longhua District, Shenzhen, China

3.2 General Description of EUT

Product Name:	Smart Video Doorbell
Model No.:	IPB239, HUVDB290
Test Model No.:	IPB239
Trade Mark:	N/A
Software Version:	V1.0
Hardware Version:	V1.0
EUT Power Supply:	Power supply DC5V form adapter

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:	FPC antenna
Antenna Gain:	3dBi

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:	FPC antenna
Antenna Gain:	3dBi

3.5 General Description of 433.92Mhz

Operation Frequency:	433.92MHz
Modulation Type:	FSK
Number of Channel:	1
Sample Type:	☒ Mobile ☐ Portable
Antenna Type:	Spring antenna
Antenna Gain:	-0.02dBi

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: 3dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2 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)	0.00	0±1	1	1.259
Middle(2440MHz)	1.93	2.0±1	3	1.995
Highest(2480MHz)	1.45	1.5±1	2.5	1.778

The worst case:

Maximum tune-up Power (mW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
1.995	3	0.0007920072	1.0	PASS

Note: 1) Refer to report No. CQASZ20260300618E-01 for EUT test Max Conducted Peak Output Power value.

$$2) P_d = (P_{out} * G) / (4 * \pi * R^2) = (1.995 * 2) / (4 * 3.1416 * 20^2) = 0.0007920072$$

2) For 2.4G WIFI

Antenna Gain: 3dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Measurement Data

11B mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2412MHz)	14.04	14±1	15	31.623
Middle(2437MHz)	14.31	14±1	15	31.623
Highest(2462MHz)	13.72	13.5±1	14.5	28.184

The worst case:

Maximum tune-up Power (mW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
31.623	3	0.0125524682	1.0	PASS

Note: 1) Refer to report No. CQASZ20260300618E-02 for EUT test Max Conducted AV Output Power value.

2) $P_d = (P_{out} * G) / (4 * \pi * R^2) = (31.623 * 2) / (4 * 3.1416 * 20^2) = 0.0125524682$

3) For 433.92Mhz

Measurement Data

$$EIRP = E_{Meas} + 20 \log(d_{Meas}) - 104.7$$

where

$EIRP$ is the equivalent isotropically radiated power, in dBm
 E_{Meas} is the field strength of the emission at the measurement distance, in dB μ V/m
 d_{Meas} is the measurement distance, in m

Worst case: FSK					
Test Frequency	EIRP(dBuV/m)	EIRP(dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
433.92MHz	81.76	-13.4	-13.0 $\pm$ 1	-12	0.06

The ERP of this product is less than 885.2mW

Remark: The Max EIRP data refer to report Report No.: CQASZ20260300618E-04

Simultaneous transmission:

2.4GWIFI+433.92Mhz:

=31.623/3060+0.06/885.2

=0.010402095 $\leq$ 1