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RF Exposure Evaluation Report

Report No.:	CQASZ20230300317E-04
Applicant:	Shenzhen Xinwu Technology Co., Ltd
Address of Applicant:	Floor 5, Building 2, Chungu Science park, Meisheng Huigu Science Park, 83 Dabao Road, Baoan District, Shenzhen, China
Equipment Under Test (EUT):	
EUT Name:	WIFI Visualizable Smart DoorBell
Model No.:	XW160-X8, XW160-X9, XW160-WIFI-X10, XW160-D8, XW160-D9, XW160-D10, XW160-U8, XW160-U9, XW160-U10
Test Model No.:	XW160-WIFI-X10
Brand Name:	N/A
FCC ID:	2AW97-X10
Standards:	47 CFR Part 1.1307 47 CFR Part 1.1310 447498 D04 Interim General RF Exposure Guidance v01
Date of Receipt:	2023-03-10
Date of Test:	2023-03-10 to 2023-03-20
Date of Issue:	2023-04-13
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
(Jack Ai)

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20230300317E-04	Rev.01	Initial report	2023-04-13

2 Contents

3 General Information

3.1 Client Information

Applicant:	Shenzhen Xinwu Technology Co., Ltd
Address of Applicant:	Floor 5, Building 2, Chungu Science park, Meisheng Huigu Science Park, 83 Dabao Road, Baoan District, Shenzhen, China
Manufacturer:	KEITHY INNOVATION TECHNOLOGY CO., LTD
Address of Manufacturer:	Room 1588 electronic technology building, Block C, No.2070 shennan mid road, futian shenzhen
Factory:	KEITHY INNOVATION TECHNOLOGY CO., LTD
Address of Factory:	Room 1588 electronic technology building, Block C, No.2070 shennan mid road, futian shenzhen

3.2 General Description of EUT

Product Name:	WIFI Visualizable Smart DoorBell
Model No.:	XW160-X8, XW160-X9, XW160-WIFI-X10, XW160-D8, XW160-D9, XW160-D10, XW160-U8, XW160-U9, XW160-U10
Test Model No.:	XW160-WIFI-X10
Trade Mark:	N/A
Software Version:	XW160-WIFI-X10-P0_X1.1
Hardware Version:	XW160-WIFI-X10-P0_V1.1
EUT Power Supply:	2*Li-ion battery: DC 3.7V 200mAh, Charge by DC 5V for adapter
Simultaneous Transmission:	☐ Simultaneous TX is supported and evaluated in this report. ☒ Simultaneous TX is not supported.

3.3 General Description of BLE

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	Bluetooth Spec 5.0
Modulation Technique:	Non-Frequency Hopping Spread Spectrum(NFHSS)
Modulation Type:	GFSK
Number of Channel:	79
Transfer Rate:	1Mbps
Sample Type:	☒ Mobile ☐ Portable
Antenna Type:	PCB antenna
Antenna Gain:	1.85dBi

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 and HT40) : OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channel:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels IEEE 802.11n HT40: 7 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 IEEE for 802.11n(HT40) : 13.5Mbps/27Mbps/40.5Mbps/54Mbps/81Mbps/108Mbps/121.5Mbps/135Mbps
Sample Type:	☒ Mobile ☐ Portable
Antenna Type:	PCB antenna
Antenna Gain:	1.85dBi

3.5 General Description of 433.92MHz

Operation Frequency:	433.92MHz
Type of Modulation:	Fsk
Number of Channel:	1
Operation Frequency:	433.92MHz
Sample Type:	☒ Mobile ☐ Portable
Antenna Type:	Internal Antenna
Antenna Gain:	3dBi

Note：

The above parameters will directly affect the test results. The information is provided by the applicant.

4 MPE Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Limits

The table applies to any RF source (i.e., single fixed, mobile, and portable transmitters) and specifies power and distance criteria for each of the five frequency ranges used for the MPE limits. These criteria apply at separation distances from any part of the radiating structure of at least $\lambda/2\pi$. The thresholds are based on the general population MPE limits with a single perfect reflection, outside of the reactive near-field, and in the main beam of the radiator.For mobile devices that are not exempt per Table B.1 [Table 1 of § 1.1307(b)(1)(i)(C)] at distances from 20 cm to 40 cm and in 0.3 GHz to 6 GHz, evaluation of compliance with the exposure limits in § 1.1310 is necessary if the ERP of the device is greater than ERP20cm inFormula (B.1) [repeated from § 2.1091(c)(1) and § 1.1307(b)(1)(i)(B)].

$$P_{\text{th}}\,(\text{mW}) = ERP_{20\,\text{cm}}\,(\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

If the ERP is not easily obtained, then the available maximum time-averaged power may be used (i.e., without consideration of ERP only if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave Dipole.
SAR-based exemptions are constant at separation distances between 20 cm and 40 cm to avoid discontinuities in the threshold when transitioning between SAR-based and MPE-based exemption criteria at 40 cm, considering the importance of reflections.

4.1.2 Test Procedure

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

4.1.3 EUT RF Exposure

1) For BLE

Measurement Data

GFSK mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2402MHz)	1.93	-0.22	-0.5±1	0.5	1.12
Middle(2440MHz)	2.35	0.2	0.5±1	1.5	1.41
Highest(2480MHz)	1.47	-0.68	-0.5±1	0.5	1.12

The ERP of this product is less than 3060mW

Note: 1) Refer to report No. CQASZ20230300317E-02 for EUT test Max Conducted Peak Output Power value.
2) EUT's module is more than 20cm away from the human body.

2) **For 2.4G WIFI Classic**

Measurement Data

11B mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2412MHz)	8.47	6.32	6.5±1	7.5	5.62
Middle(2437MHz)	9.41	7.26	7.5±1	8.5	7.08
Highest(2462MHz)	9.78	7.63	7.5±1	8.5	7.08
11G mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2412MHz)	6.72	4.57	4.5±1	5.5	3.55
Middle(2437MHz)	5.56	3.41	3.5±1	4.5	2.82
Highest(2462MHz)	5.88	3.73	3.5±1	4.5	2.82
11N20 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2412MHz)	4.84	2.69	2.5±1	3.5	2.24
Middle(2437MHz)	5.51	3.36	3.5±1	4.5	2.82
Highest(2462MHz)	5.65	3.5	3.5±1	4.5	2.82
11N40 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2422MHz)	4.6	2.45	2.5±1	3.5	2.24
Middle(2437MHz)	5.26	3.11	3.0±1	4.0	2.51
Highest(2452MHz)	5.3	3.15	3.0±1	4.0	2.51

The ERP of this product is less than 3060mW

Note: 1) Refer to report No. CQASZ20230300317E-01 for EUT test Max Conducted Peak Output Power value.
2) EUT's module is more than 20cm away from the human body.

3) For 433.92MHz

Measurement Data

433.92MHz					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
433.92MHz	-25.63	-27.78	-27.5±1	-26.5	0.0022

EIRP=E+20log(d)-104.7=69.53+9.54-104.7=-25.63dBm
The ERP of this product is less than 885.2mW

Note: 1) Refer to report No. CQASZ20230300317E-03 for EUT test Max Conducted Peak Output Power value.
2) EUT's module is more than 20cm away from the human body.

*** END OF REPORT ***