

EMF Exposure Report

Product: Video doorbell

Model No.: Video doorbell V5

Additional Model No.: Video doorbell V1, Video doorbell V2, Video doorbell V3, Video doorbell V4, Video doorbell V6, Video doorbell V7, Video doorbell V8, Video doorbell V9, Video doorbell V1 Pro, Video doorbell V2 Pro, Video doorbell V3 Pro, Video doorbell V4 Pro, Video doorbell V5 Pro, Video doorbell V6 Pro, Video doorbell V7 Pro, Video doorbell V8 Pro, Video doorbell V55

Trade Mark: N/A

Report No.: TCT200420E013

Issued Date: Apr. 27, 2020

Issued for:

EKEN GROUP LIMITED

Building E, Urban Construction Industrial Zone, No. 1 Fenghuang Lingxia Road, Fuyong Street, Baoan District, Shenzhen, China

Issued By:

Shenzhen TCT Testing Technology Co., Ltd.

1B/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District, Shenzhen, Guangdong, China

TEL: +86-755-27673339

FAX: +86-755-27673332

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1. Test Certification

Product:	Video doorbell
Model No.:	Video doorbell V5
Additional Model No.:	Video doorbell V1, Video doorbell V2, Video doorbell V3, Video doorbell V4, Video doorbell V6, Video doorbell V7, Video doorbell V8, Video doorbell V9, Video doorbell V1 Pro, Video doorbell V2 Pro, Video doorbell V3 Pro, Video doorbell V4 Pro, Video doorbell V5 Pro, Video doorbell V6 Pro, Video doorbell V7 Pro, Video doorbell V8 Pro, Video doorbell V55
Trade Mark:	N/A
Applicant:	EKEN GROUP LIMITED
Address:	Building E, Urban Construction Industrial Zone, No. 1 Fenghuang Lingxia Road, Fuyong Street, Baoan District, Shenzhen, China
Manufacturer:	EKEN GROUP LIMITED
Address:	Building E, Urban Construction Industrial Zone, No. 1 Fenghuang Lingxia Road, Fuyong Street, Baoan District, Shenzhen, China
Date of Test:	Apr. 21, 2020 - Apr. 26, 2020
Applicable Standards:	EN 50663:2017; EN 62479:2010

The above equipment has been tested by Shenzhen TCT Testing Technology Co., Ltd., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By:

Kevin Huang

Date:

Apr. 26, 2020

Kevin Huang

Reviewed By:

Beryl Zhao

Date:

Apr. 27, 2020

Beryl Zhao

Approved By:



Tomsin

Date:

Apr. 27, 2020

2. EUT Description

Product:	Video doorbell
Model No.:	Video doorbell V5
Additional Model No.:	Video doorbell V1, Video doorbell V2, Video doorbell V3, Video doorbell V4, Video doorbell V6, Video doorbell V7, Video doorbell V8, Video doorbell V9, Video doorbell V1 Pro, Video doorbell V2 Pro, Video doorbell V3 Pro, Video doorbell V4 Pro, Video doorbell V5 Pro, Video doorbell V6 Pro, Video doorbell V7 Pro, Video doorbell V8 Pro, Video doorbell V55
Trade Mark:	N/A
Hardware Version:	DoorBellV55_Main_V1.2_20191007
Software Version:	driver r8193, FW r8188
Operation Frequency:	For WIFI: 2412MHz~2472MHz (802.11b/802.11g/802.11n(HT20)) 2422MHz~2462MHz (802.11n(HT40)) For SRD: 433.92MHz
Modulation Type:	For WIFI: DSSS (802.11b) /OFDM (802.11g/802.11n) For SRD: FSK
Antenna Type:	For WIFI: Internal Antenna For SRD: Spring Antenna
Antenna Gain:	3.68dBi
Power Supply:	Rechargeable Li-ion battery DC 3.7V
Remark:	All models above are identical in interior structure, electrical circuits and components, just model names are different for the marketing requirement.

3. General Information

3.1. Test environment and mode

Item	Normal condition
Temperature	+25°C
Voltage	DC 3.7V
Humidity	56%
Atmospheric Pressure:	1008 mbar
Test Mode:	
Bluetooth Mode:	Keep the EUT in transmitting mode with modulation.

3.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
/	/	/	/	/

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

3.3. Test Instruments List

Conducted Emission				
Name	Model No.	Manufacturer	Date of Cal.	Due Date
Spectrum Analyzer	N9020A	Agilent	Sep. 12, 2019	Sep. 11, 2020
Signal Generator	N5182A	Agilent	Sep. 12, 2019	Sep. 11, 2020
Signal Generator	E4421B	Agilent	Jul. 30, 2019	Jul. 29, 2020

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

4. Facilities and Accreditations

4.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 645098

Shenzhen Tongce Testing Lab

The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A-1

The 3m Semi-anechoic chamber of Shenzhen TCT Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

4.2. Location

Shenzhen TCT Testing Technology Co., Ltd.

Address: 1B/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District, Shenzhen, Guangdong, China

TEL: +86-755-27673339

4.3. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Temperature	$\pm 0.1^{\circ}\text{C}$
2	Humidity	$\pm 1.0 \%$
3	Spurious Emissions, Conducted	$\pm 2.56 \text{ dB}$
4	All Emissions, Radiated	$\pm 4.28\text{dB}$

5. Technical Requirements Specification

Test Requirement:	EN 50663		
Limit:	Exposure tier	Region of body	Pmax (mW)
	General public	Head and trunk	20
		Limbs	40
Test Setup:			
Test Procedure	<p>Step 1:</p> <p>Use a fast power sensor suitable for 2,4 GHz and capable of 1 MS/s.</p> <p>Use the following settings:</p> <ul style="list-style-type: none"> - Sample speed 1 MS/s or faster. - The samples must represent the power of the signal. - Measurement duration: For non-adaptive equipment: equal to the observation period defined in clauses 4.3.1.2.1 or 4.3.2.3.1. For adaptive equipment, the measurement duration shall be long enough to ensure a minimum number of bursts (at least 10) are captured. <p>Note 1: For adaptive equipment, to increase the measurement accuracy, a higher number of bursts may be used.</p> <p>Step 2:</p> <p>For conducted measurements on devices with one transmit chain:</p> <ul style="list-style-type: none"> -Connect the power sensor to the transmit port, sample the transmit signal and store the raw data. Use these stored samples in all following steps. <p>For conducted measurements on devices with multiple transmit chains:</p> <ul style="list-style-type: none"> -Connect one power sensor to each transmit port for a synchronous measurement on all transmits ports. -Trigger the power sensors so that they start sampling at the same time. Make sure the time difference between the samples of all sensors is less than half the time between two samples. -For each instant in time, sum the power of the individual samples of all ports and store them. Use these stored samples in all following steps. <p>Step 3:</p>		

	<p>Find the start and stop times of each burst in the stored measurement samples.</p> <p>Note 2: The start and stop times are defined as the points where the power is at least 20 dB below the RMS burst power calculated in step 4.</p> <p>Step 4: Between the start and stop times of each individual burst calculate the RMS power over the burst. Save these Pburst values, as well as the start and stop times for each burst.</p> <p>Step 5: The highest of all Pburst values (value "A" in dBm) will be used for maximum e.i.r.p. calculations.</p> <p>Step 6: Add the (stated) antenna assembly gain "G" in dBi of the individual antenna. If applicable, add the additional beamforming gain "Y" in dB. If more than one antenna assembly is intended for this power setting, the maximum overall antenna gain (G or G + Y) shall be used. The RF Output Power (P) shall be calculated using the formula below: $P = A + G + Y$</p>
Test Instrument:	Refer to section 3.3 for details
Test Mode:	Refer to section 3.1 for details
Test Results:	PASS

5.1.1. Test Data

Maximum Emissions Level						
Mode	Frequency (MHz)	EIRP Level (dBm)	EIRP Level (mW)	Distance (mm)	Limit (mW)	Result
802.11b	2412	15.16	32.81	25	328	PASS
	2442	14.91	30.97	25	328	PASS
	2472	14.54	28.44	25	328	PASS
802.11g	2412	14.06	25.47	25	328	PASS
	2442	13.02	20.04	25	328	PASS
	2472	12.91	19.54	25	328	PASS
802.11n (HT20)	2412	13.94	24.77	25	328	PASS
	2442	13.12	20.51	25	328	PASS
	2472	13.24	21.09	25	328	PASS
802.11n (HT40)	2422	12.73	18.75	25	328	PASS
	2442	12.65	18.41	25	328	PASS
	2462	12.39	17.34	25	328	PASS

- Note:** 1. Pass means EUT complies with the essential requirements in the standard. The assess distance is 25mm.
 2. The assess distance and limit refer to EN IEC 62479-2010 for section Annex B of the Pmax' and Table B.1 – Some typical frequency bands of portable wireless devices and corresponding low-power exclusion levels Pmax' predicted using Equations (B.1) through (B.9).
 3. The SRD EIRP Level (mW) is very low, no SAR measurement is required.

*******END OF REPORT*******