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RF Exposure Evaluation Report

Report No. :	CQASZ20200700645E-02
Applicant:	ShenZhen Zorg Industries Ltd
Address of Applicant:	No.5, Longshan Five road, Xinsheng community, Longgang street, Longgang district, Shenzhen518116, Guangdong, China

Equipment Under Test (EUT):

EUT Name:	High Definition Wireless Camera and Monitor System
Model No.:	CCS701WHD, CCS702WHD, CCS703WHD
Test Model No.:	CCS704WHD
Brand Name:	SMART PARK
FCC ID:	2AXAI-CCS704WHD
Standards:	47 CFR Part 1.1307 47 CFR Part 1.1310 KDB447498D01 General RF Exposure Guidance v06
Date of Receipt:	2020-07-06
Date of Test:	2020-07-06 to 2020-07-16
Date of Issue:	2020-07-16
Test Result :	**PASS***

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

Tested By: Jun Li

(Jun Li)

Reviewed By: Sheek . Luo

(Sheek Luo)

Approved By:

(Jack Ai)

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20200700645E-02	Rev.01	Initial report	2020-07-16

2 Contents

3 General Information

3.1 Client Information

Applicant:	ShenZhen Zorg Industries Ltd
Address of Applicant:	No.5, Longshan Five road, Xinsheng community, Longgang street, Longgang district, Shenzhen518116, Guangdong, China
Manufacturer:	ShenZhen Zorg Industries Ltd
Address of Manufacturer:	No.5, Longshan Five road, Xinsheng community, Longgang street, Longgang district, Shenzhen518116, Guangdong, China
Factory:	ShenZhen Zorg Industries Ltd
Address of Factory:	No.5, Longshan Five road, Xinsheng community, Longgang street, Longgang district, Shenzhen518116, Guangdong, China

3.2 General Description of EUT

Product Name:	High Definition Wireless Camera and Monitor System
Model No.:	CCS701WHD, CCS702WHD, CCS703WHD
Test Model No.:	CCS704WHD
Trade Mark:	SMART PARK
Hardware version:	2019-1217 SI-HDW-TX v1.0
Software version:	S_TX_200323_V.27
Operation Frequency:	2412MHz to 2462MHz
Channel Numbers:	11 Channels
Channel Separation:	5MHz
Type of Modulation:	GFSK
Transfer Rate:	1Mbps
Product Type:	☐ Mobile ☐ Portable ☒ Fix Location
Test Software of EUT:	RF test (manufacturer declare)
Antenna Type:	External antenna
Antenna Gain:	0dBi
Power Supply:	DC 12V or DC 24V

Model No.: CCS701WHD, CCS702WHD, CCS703WHD

Only the model CCS704WHD was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being color of appearance, pack and model name.

4 SAR Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Limitst

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: Pd = (Pout*G)/(4* Pi * R^2)

Where

Pd = power density in mW/cm2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

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

Pd id 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.

4.1.3 EUT RF Exposure

1) For BT

Antenna Gain: 0dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Measurement Data

GFSK mode				
Test channel	Average Output Power (dBm)	Tune up tolerance (dBm)	Average tune-up Power	
			(dBm)	(mW)
Lowest(2412MHz)	12.34	12±1	13	19.953
Middle(2437MHz)	12.54	12±1	13	19.953
Highest(2462MHz)	12.83	12±1	13	19.953

The worst case:

Maximum tune-up Power (mW)	**Antenna Gain (dBi)**	**Power Density at R = 20 cm (mW/cm^2)**	**Limit**	**Result**
19.953	0	0.00397	1.0	PASS

Note: 1) Refer to report No. CQASZ20200700645E-01 for EUT test Max Conducted Average Output Power value.

2) $Pd = (Pout*G)/(4* Pi * R^2)=(19.953*1)/(4*3.1416*20^2)=0.00397$