Produkte
Products

Prüfbericht - Nr.: *Test Report No.:*	**14038899 001**	**Seite 1 von 9** *Page 1 of 9*

Auftraggeber: *Client:*	**Shantou City Hengdi Industry Co., Ltd** **West of NingchuanBei Road and South of Huancui Roda** **Guangyi St, Chenghai District** **Shantou, Guangdong** **CHINA**		
Gegenstand der Prüfung: *Test Item:*	**Short Range Device - Radio Control Camera (2.4GHz)**		
Bezeichnung: *Identification:*	**HZGC0308-V1**	**Serien-Nr.:** *Serial No.:*	**Engineering sample**
Wareneingangs-Nr.: *Receipt No.:*	**A000180038 (005-007)**	**Eingangsdatum:** *Date of Receipt:*	**31.03.2015**
Zustand des Prüfgegenstandes bei Anlieferung: *Condition of test item at delivery:*	Test samples received are not damaged and suitable for testing.		
Prüfort: *Testing Location:*	**TÜV Rheinland Hong Kong Ltd.** 8/F, First Group Centre, 14 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong **Global United Technology Services Co., Ltd.** 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, China		
Prüfgrundlage: *Test Specification:*	**FCC Part 15 Subpart C** **ANSI C63.4-2009**		
Prüfergebnis: *Test Results:*	**Das vorstehend beschriebene Gerät wurde geprüft und entspricht oben genannter Prüfgrundlage.** The above mentioned product was tested and **passed**.		
Prüflaboratorium: *Testing Laboratory:*	**TÜV Rheinland Hong Kong Ltd.** 8 - 10/F., Goldin Financial Global Square, 7 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong		

geprüft/ *tested by:*			**kontrolliert/** *reviewed by:*		
03.06.2015	Joey Leung Project Engineer		03.06.2015	Benny Lau Senior Project Manager	
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*	**Datum** *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges: Other Aspects — **FCCID: 2AALAT-HZGC0308-V1**

Abkürzungen:				*Abbreviations:*			
	P(ass)	=	*entspricht Prüfgrundlage*		*P(ass)*	=	*passed*
	F(ail)	=	*entspricht nicht Prüfgrundlage*		*F(ail)*	=	*failed*
	N/A	=	*nicht anwendbar*		*N/A*	=	*not applicable*
	N/T	=	*nicht getestet*		*N/T*	=	*not tested*

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Product information

Manufacturers declarations

	Transceiver
Operating frequency range	2410 - 2475 MHz
Type of modulation	GFSK
Number of channels	6
Type of antenna	Dedicated Antenna
Power level	fix
Connection to public utility power line	No
Nominal voltage	3.7 V

Product function and intended use

The equipment under test (EUT) is a radio control camera operating at 2.4GHz. It is powered by D.C. power only.

Submitted documents

Circuit Diagram
Block Diagram
Bill of material
User manual
Rating Label

Special accessories and auxiliary equipment

Client provide a reference dc power source to power up the camera during field strength measurement.

Independent Operation Modes

The basic operation modes are:

- Transmitting image data to associate LCD display.
- Receiving control signal from associate LCD display.

For further information refer to User Manual

Related Submittal(s) Grants

This is a single application for certification of the transmitter.

List of Test and Measurement Instruments

Global United Technology Services Co., Ltd. (Registration number: 600491)

Equipment	Manufacturer	Type	S/N	Cal. interval	Last cal.
3m Semi- Anechoic Chamber	ZhongYu Electron	9.0(L)*6.0(W)* 6.0(H)	---	1 year	05 Apr 2015
Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	---	1 year	N/A
ESU EMI Test Receiver	R&S	ESU26	---	1 year	27 Jun 2014
Loop Antenna	Zhinan	ZN30900A	---	1 year	27 Jun 2014
Bi-log Hybrid Antenna	SCHWARZBECK	VULB9163	---	1 year	08 Mar 2015
Double-ridged horn antenna	SCHWARZBECK	9120D	---	1 year	08 Mar 2015
RF Amplifier	HP	8347A	---	1 year	27 Jun 2014
RF Amplifier	HP	8349B	---	1 year	27 Jun 2014
EMI Test Software	AUDIX	E3	---	1 year	N/A
Coaxial cable	GTS	N/A	---	1 year	27 Jun 2014
Coaxial Cable	GTS	N/A	---	1 year	27 Jun 2014
Thermo meter	N/A	N/A	---	1 year	27 Jun 2014
Spectrum Analyzer	Rohde & Schwarz	FSP30	100007	1 year	12 Jan 2015

Results FCC Part 15 – Subpart C

Subclause 15.207 – Disturbance Voltage on AC Mains	**N/A**
There is no AC power input or output ports on the EUT.	

Subclause 15.215 (c) – 20 dB Bandwidth	**Pass**

Test Specification : ANSI C63.4 – 2009
Mode of operation : Tx mode
Port of testing : Enclosure
RBW/VBW : 100 kHz / 300 kHz
Supply voltage : 3.7VDC from DC power supply
Temperature : 23ºC
Humidity : 50%

Requirement: The intentional radiators must be designed to ensure that the 20dB bandwidth of the emission, is contained within the frequency band designated in the rule section under which the equipment is operated.

Results: For test protocols refer to Appendix 1, page 2-3.

Frequency (MHz)	**20 dB left (MHz)**	**Limit (MHz)**	**20 dB right (MHz)**	**Limit (MHz)**
2410	2407.700	> 2400	2412.480	< 2483.5
2445	2442.700	> 2400	2447.420	< 2483.5
2475	2472.660	> 2400	2477.360	< 2483.5

Subclause 15.249 (a) – Field Strength of Fundamental and Harmonics	**Pass**

Test Specification : ANSI C63.4 – 2009
Mode of operation : Tx mode
Port of testing : Enclosure
RBW/VBW : 100 kHz / 300 kHz for f < 1 GHz
1 MHz / 3 MHz for f > 1 GHz
Supply voltage : 3.7VDC from reference DC power source
Temperature : 23ºC
Humidity : 50%

Requirement: The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following limit.

Results: PASS

Fundamental Frequency 2410MHz Vertical Polarization

Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
2410.000	84.07	114.0 / PK
2410.000	78.17	94.0 / AV

Fundamental Frequency 2410MHz	Horizontal Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
2410.000	84.83	114.0 / PK
2410.000	78.39	94.0 / AV
Harmonics 2410MHz	Vertical Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
No peak found	---	74.0 / PK
No peak found	---	54.0 / AV
Harmonics 2410MHz	Horizontal Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
No peak found	---	74.0 / PK
No peak found	---	54.0 / AV
Fundamental Frequency 2445MHz	Vertical Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
2445.020	86.70	114.0 / PK
2445.020	80.91	94.0 / AV
Fundamental Frequency 2445MHz	Horizontal Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
2445.020	85.14	114.0 / PK
2445.020	79.10	94.0 / AV
Harmonics 2445MHz	Vertical Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
No peak found	---	74.0 / PK
No peak found	---	54.0 / AV
Harmonics 2445MHz	Horizontal Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
No peak found	---	74.0 / PK
No peak found	---	54.0 / AV
Fundamental Frequency 2475MHz	Vertical Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
2475.020	88.21	114.0 / PK
2475.020	82.21	94.0 / AV
Fundamental Frequency 2475MHz	Horizontal Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
2475.020	87.98	114.0 / PK
2475.020	80.32	94.0 / AV

Harmonics 2475MHz	Vertical Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
No peak found	---	74.0 / PK
No peak found	---	54.0 / AV
Harmonics 2475MHz	Horizontal Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
No peak found	---	74.0 / PK
No peak found	---	54.0 / AV

Subclause 15.249 (d) –Spurious Emission – Band Edge **Pass**

Test Specification : ANSI C63.4 – 2009
Mode of operation : Tx mode
Port of testing : Enclosure
Detector : Peak
RBW/VBW : 1 MHz / 3 MHz for f > 1 GHz
Supply voltage : 3.7VDC from reference DC power source
Temperature : 23ºC
Humidity : 50%

Requirement : Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Results: PASS.

Tx frequency 2410MHz	Vertical Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
2390.000	35.92	74.0 / PK
2390.000	26.92	54.0 / AV
Tx frequency 2410MHz	Horizontal Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
2390.000	36.67	74.0 / PK
2390.000	26.67	54.0 / AV
Tx frequency 2475MHz	Vertical Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
2483.500	39.98	74.0 / PK
2483.500	26.98	54.0 / AV
Tx frequency 2475MHz	Horizontal Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
2483.500	47.62	74.0 / PK
2483.500	30.62	54.0 / AV

Subclause 15.249 (d) – Emissions radiated outside of the specified frequency bands Pass

Test Specification : ANSI C63.4 - 2009
Mode of operation : Tx mode
Port of testing : Enclosure
Detector : Peak
Frequency range : 9kHz – 25GHz
RBW/VBW : 100 kHz / 300 kHz for f < 1 GHz
1 MHz / 3 MHz for f > 1 GHz
Supply voltage : 3.7VDC from reference DC power source
Temperature : 23ºC
Humidity : 50%

Requirement: Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Results: All three transmit frequency modes comply with the field strength within the restricted bands. There is no spurious found below 30MHz.

Tx frequency 2410MHz Vertical Polarization

Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
191.745	24.90	43.5 / QP
225.308	29.13	46.0 / QP
348.027	31.17	46.0 / QP
360.448	38.54	46.0 / QP
383.932	30.33	46.0 / QP
810.265	29.57	46.0 / QP
2615.000	49.05	74.0 / PK
2615.000	31.01	54.0 / AV

Tx frequency 2410MHz Horizontal Polarization

Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
191.745	24.13	43.5 / QP
815.968	36.47	46.0 / QP
824.597	37.34	46.0 / QP
842.130	36.46	46.0 / QP
866.088	32.98	46.0 / QP
2598.000	46.98	74.0 / PK
2598.000	30.74	54.0 / AV

Tx frequency 2445MHz Vertical Polarization

Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
191.745	24.96	43.5 / QP
227.691	33.38	46.0 / QP
348.027	29.59	46.0 / QP
360.448	34.80	46.0 / QP
383.932	28.28	46.0 / QP
815.968	31.20	46.0 / QP
2598.000	49.82	74.0 / PK

2598.000	32.17	54.0 / AV
Tx frequency 2445MHz	Horizontal Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
191.745	24.67	43.5 / QP
227.691	29.70	46.0 / QP
312.179	34.76	46.0 / QP
360.448	29.74	46.0 / QP
793.396	36.61	46.0 / QP
815.968	43.11	46.0 / QP
842.130	37.85	46.0 / QP
2598.000	45.95	74.0 / PK
2598.000	27.90	54.0 / AV
Tx frequency 2475MHz	Vertical Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
227.691	29.02	46.0 / QP
360.448	39.67	46.0 / QP
372.005	31.01	46.0 / QP
383.932	30.21	46.0 / QP
842.130	28.75	46.0 / QP
2615.000	48.38	74.0 / PK
2615.000	31.45	54.0 / AV
Tx frequency 2475MHz	Horizontal Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
40.276	22.63	40.0 / QP
191.745	24.23	43.5 / QP
227.691	27.28	46.0 / QP
304.610	33.05	46.0 / QP
312.179	33.10	46.0 / QP
360.448	40.51	46.0 / QP
383.932	29.88	46.0 / QP
818.834	39.68	46.0 / QP
842.130	42.11	46.0 / QP
962.162	35.53	54.0 / QP
2615.000	44.79	74.0 / PK
2615.000	34.10	54.0 / AV