

Produkte  
Products

<b>Prüfbericht - Nr.:</b> 14037774 001 <i>Test Report No.:</i>		Seite 1 von 10 Page 1 of 10	
<b>Auftraggeber:</b> <i>Client:</i>		Stadlbauer Marketing + Vertrieb G.m.b.H Rennbahn Allee 1 5412 Puch / Salzburg Austria	
<b>Gegenstand der Prüfung:</b> <i>Test Item:</i>		Short Range Device - Radio Control Toy Transmitter (2.4GHz)	
<b>Bezeichnung:</b> <i>Identification:</i>	401008	<b>Serien-Nr.:</b> <i>Serial No.:</i>	Engineering sample
<b>Wareneingangs-Nr.:</b> <i>Receipt No.:</i>	A000139099-001	<b>Eingangsdatum:</b> <i>Date of Receipt:</i>	03.12.2014
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> <i>Condition of test item at delivery:</i>		Test sample is not damaged and suitable for testing.	
<b>Prüfört:</b> <i>Testing Location:</i>		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	
<b>Prüfgrundlage:</b> <i>Test Specification:</i>		FCC Part 15 Subpart C ANSI C63.4-2003	
<b>Prüfergebnis:</b> <i>Test Results:</i>		Das vorstehend beschriebene Gerät wurde geprüft und entspricht oben genannter Prüfgrundlage. The above mentioned product was tested and <b>passed</b> .	
<b>Prüflaboratorium:</b> <i>Testing Laboratory:</i>		TÜV Rheinland Hong Kong Ltd. 8 - 10/F., Goldin Financial Global Square, 7 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong	
<b>geprüft/ tested by:</b>		<b>kontrolliert/ reviewed by:</b>	
07.01.2015	Joey Leung Project Engineer	07.01.2015	Sharon Li Department Manager
<i>Datum</i> <i>Date</i>	<i>Name/Stellung</i> <i>Name/Position</i>	<i>Datum</i> <i>Date</i>	<i>Name/Stellung</i> <i>Name/Position</i>
	<i>Unterschrift</i> <i>Signature</i>		<i>Unterschrift</i> <i>Signature</i>
<b>Sonstiges:</b> Other Aspects		FCCID: YFA9008	
<b>Abkürzungen:</b>	P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet	<b>Abbreviations:</b>	P(ass) = passed F(ail) = failed N/A = not applicable N/T = not tested
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i>			

## Table of Content

	Page
Cover Page .....	1
Table of Content .....	2
Product information.....	3
Manufacturers declarations .....	3
Product function and intended use.....	3
Submitted documents.....	3
Special accessories and auxiliary equipment .....	3
Independent Operation Modes .....	4
Related Submittal(s) Grants.....	4
List of Test and Measurement Instruments.....	5
Results FCC Part 15 – Subpart C .....	6
Subclause 15.207 – Disturbance Voltage on AC Mains..... N/A.....	6
Subclause 15.205 – Band edge compliance of radiated emissions..... Pass.....	6
Subclause 15.215 (c) – 20 dB Bandwidth..... Pass.....	7
Subclause 15.249 (a) – Radiated Emission (Fundamental and Harmonics)..... Pass.....	7
Subclause 15.249 (d) – Spurious Radiated Emissions..... Pass.....	9
Appendix 1 – Test Results.....	7 pages
Appendix 2 – Test Setup Photos.....	3 pages
Appendix 3 – Photo documentation.....	7 pages
Appendix 4 – Product documentation.....	15 pages
Appendix 5 – RF Exposure Information.....	2 pages

## Product information

### Manufacturers declarations

	<b>Transmitter</b>
Operating frequency range	2410 - 2470 MHz
Type of modulation	GFSK
Number of channels	61
Type of antenna	Wire Antenna
Power level	fix
Connection to public utility power line	No
Nominal voltage	V <sub>nom</sub> : 9.0 V

### Product function and intended use

The equipment under test (EUT) is a radio control toy transmitter operating at 2.4GHz. It is powered by batteries only.

### FCCID: YFA9008

<b>Models</b>	<b>Product description</b>
503001, 503002	Radio Controlled Toy Quadcopter

### Submitted documents

Circuit Diagram  
 Block Diagram  
 Bill of material  
 User manual  
 Rating Label

### Special accessories and auxiliary equipment

The product has been tested together with the following additional accessory:

Nil

## **Independent Operation Modes**

The basic operation modes are:

- Transmitting control signal for the RC toy quadcopter.

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. Due date
3m Semi- Anechoic Chamber	ZhongYu Electron	9.0(L)*6.0(W)* 6.0(H)	---	05 Apr 2015
Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	---	N/A
ESU EMI Test Receiver	R&S	ESU26	---	27 Jun 2015
Loop Antenna	Zhinan	ZN30900A	---	27 Jun 2015
Bi-log Hybrid Antenna	SCHWARZBECK	VULB9163	---	08 Mar 2015
Double-ridged horn antenna	SCHWARZBECK	9120D	---	08 Mar 2015
RF Amplifier	HP	8347A	---	27 Jun 2015
RF Amplifier	HP	8349B	---	27 Jun 2015
EMI Test Software	AUDIX	E3	---	N/A
Coaxial cable	GTS	N/A	---	27 Jun 2015
Coaxial Cable	GTS	N/A	---	27 Jun 2015
Thermo meter	N/A	N/A	---	27 Jun 2015
FSP 30 Spectrum Analyzer	Rohde & Schwarz	FSP3	100561	16 Apr 2016

## Results FCC Part 15 – Subpart C

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

<b>Subclause 15.205 – Band edge compliance of radiated emissions</b>			<b>Pass</b>
Test Specification : ANSI C63.4 – 2003 Mode of operation : Tx mode Port of testing : Enclosure Detector : Peak RBW/VBW : 100 kHz / 300 kHz for f < 1 GHz 1 MHz / 3 MHz for f > 1 GHz Supply voltage : 9.0VDC, 6 x 1.5V AA size new battery Temperature : 23°C Humidity : 50%			
Requirement:		Radiated emissions which fall in the restricted bands, as defined in 15.205 (a), must also comply with the radiated emission limits specified in 15.209(a).	
<b>Results:</b>		For test protocols refer to Appendix 1, page 4-7.	
Tx frequency 2410MHz                                          Vertical Polarization			
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>	
No peak found	---	74.0 / P	
No peak found	---	54.0 / A	
Tx frequency 2410MHz                                          Horizontal Polarization			
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>	
No peak found	---	74.0 / P	
No peak found	---	54.0 / A	
Tx frequency 2470MHz                                          Vertical Polarization			
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>	
2486.932	49.13	74.0 / P	
2486.932	29.71	54.0 / A	
Tx frequency 2470MHz                                          Horizontal Polarization			
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>	
2486.965	63.69	74.0 / P	
2486.965	34.51	54.0 / A	

<b>Subclause 15.215 (c) – 20 dB Bandwidth</b>		<b>Pass</b>		
Test Specification : ANSI C63.4 – 2003 Mode of operation : Tx mode Port of testing : Enclosure RBW/VBW : 100 kHz / 300 kHz Supply voltage : 9.0VDC, 6 x 1.5V AA size new battery Temperature : 23°C 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.				
<b>Results:</b> 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	2407.464	> 2400	2411.372	< 2483.5
2440	2437.392	> 2400	2441.680	< 2483.5
2470	2467.344	> 2400	2471.696	< 2483.5

<b>Subclause 15.249 (a) – Radiated Emission (Fundamental and Harmonics)</b>		<b>Pass</b>		
Test Specification : ANSI C63.4 – 2003 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 : 9.0VDC, 6 x 1.5V AA size new battery Temperature : 23°C Humidity : 50%				
Requirement: The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following limit.				
<b>Results:</b> PASS				
Fundamental Frequency 2410MHz		Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m		
2410.020	72.50	114.0 / P		
2410.020	41.68	94.0 / A		
Fundamental Frequency 2410MHz		Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m		
2410.020	79.40	114.0 / P		
2410.020	49.69	94.0 / A		

Harmonics 2410MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4820.120	44.31	74.0 / P	
4820.120	31.24	54.0 / A	
Harmonics 2410MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4820.120	56.05	74.0 / P	
4820.120	36.52	54.0 / A	
Fundamental Frequency 2440MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
2440.010	71.35	114.0 / P	
2440.010	42.75	94.0 / A	
Fundamental Frequency 2440MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
2440.010	78.54	114.0 / P	
2440.010	45.28	94.0 / A	
Harmonics 2440MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4880.110	50.50	74.0 / P	
4880.110	33.23	54.0 / A	
Harmonics 2440MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4880.110	59.12	74.0 / P	
4880.110	35.38	54.0 / A	
Fundamental Frequency 2470MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
2469.996	70.34	114.0 / P	
2469.996	41.97	94.0 / A	
Fundamental Frequency 2470MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
2469.996	78.66	114.0 / P	
2469.996	47.90	94.0 / A	
Harmonics 2470MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4940.030	52.82	74.0 / P	
4940.030	33.59	54.0 / A	



Harmonics 2470MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4940.030	52.57	74.0 / P	
4940.030	32.84	54.0 / A	

Subclause 15.249 (d) – Spurious Radiated Emissions		Pass	
Test Specification : ANSI C63.4 - 2003 Mode of operation : Tx mode Port of testing : Enclosure Detector : Peak RBW/VBW : 100 kHz / 300 kHz for f < 1 GHz 1 MHz / 3 MHz for f > 1 GHz Supply voltage : 9.0VDC, 6 x 1.5V AA size new battery Temperature : 23°C 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	
No peak found	---	74.0 / P	
No peak found	---	54.0 / A	
Tx frequency 2410MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
No peak found	---	74.0 / P	
No peak found	---	54.0 / A	
Tx frequency 2440MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
No peak found	---	74.0 / P	
No peak found	---	54.0 / A	
Tx frequency 2440MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
No peak found	---	74.0 / P	
No peak found	---	54.0 / A	

Tx frequency 2470MHz		Vertical Polarization	
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>	
No peak found	---	74.0 / P	
No peak found	---	54.0 / A	
Tx frequency 2470MHz		Horizontal Polarization	
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>	
No peak found	---	74.0 / P	
No peak found	---	54.0 / A	