

Produkte
Products

Prüfbericht - Nr.: 14037732 001 <i>Test Report No.:</i>		Seite 1 von 10 Page 1 of 10	
Auftraggeber: <i>Client:</i>		Stadlbauer Marketing + Vertrieb G.m.b.H Rennbahn Allee 1 5412 Puch / Salzburg Austria	
Gegenstand der Prüfung: <i>Test Item:</i>		Short Range Device - Radio Control Transmitter (2.4GHz)	
Bezeichnung: <i>Identification:</i>	401008	Serien-Nr.: <i>Serial No.:</i>	Engineering sample
Wareneingangs-Nr.: <i>Receipt No.:</i>	A000102653-009	Eingangsdatum: <i>Date of Receipt:</i>	29.08.2014
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of test item at delivery:</i>		Test sample is not damaged and suitable for testing.	
Prüfört: <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	
Prüfgrundlage: <i>Test Specification:</i>		FCC Part 15 Subpart C ANSI C63.4-2003	
Prüfergebnis: <i>Test Results:</i>		Das vorstehend beschriebene Gerät wurde geprüft und entspricht oben genannter Prüfgrundlage. The above mentioned product was tested and passed .	
Prüflaboratorium: <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	
geprüft/ tested by:		kontrolliert/ reviewed by:	
20.01.2015	Joey Leung Project Engineer	20.01.2015	Benny Lau Project 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>
Sonstiges: Other Aspects		FCCID: YFA401008	
Abkürzungen:	P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet	Abbreviations:	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

	Transmitter
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 _{nom} : 9.0 V

Product function and intended use

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

FCCID: YFA401008

Models	Product description
503001, 503002	Radio Controlled Helicopter

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 helicopter.

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

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

Subclause 15.205 – Band edge compliance of 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:	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).	
Results:	For test protocols refer to Appendix 1, page 4-7.	
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 2470MHz		Vertical Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2484.424	60.37	74.0 / P
2484.424	31.71	54.0 / A
Tx frequency 2470MHz		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2484.061	62.58	74.0 / P
2484.061	31.59	54.0 / A

Subclause 15.215 (c) – 20 dB Bandwidth		Pass		
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.				
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	2407.756	> 2400	2412.404	< 2483.5
2440	2437.936	> 2400	2442.144	< 2483.5
2470	2468.160	> 2400	2471.680	< 2483.5

Subclause 15.249 (a) – Radiated Emission (Fundamental and Harmonics)		Pass		
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.				
Results: PASS				
Fundamental Frequency 2410MHz		Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m		
2409.991	94.79	114.0 / P		
2409.991	62.15	94.0 / A		
Fundamental Frequency 2410MHz		Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m		
2409.991	89.10	114.0 / P		
2409.991	55.89	94.0 / A		
Harmonics 2410MHz		Vertical Polarization		

Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4819.985	59.28	74.0 / P
4819.985	38.88	54.0 / A
7229.984	61.59	74.0 / P
7229.984	41.21	54.0 / A
9640.000	53.59	74.0 / P
9640.000	40.45	54.0 / A
Harmonics 2410MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4819.985	55.64	74.0 / P
4819.985	35.33	54.0 / A
7229.984	64.08	74.0 / P
7229.984	44.21	54.0 / A
9640.000	49.06	74.0 / P
9640.000	37.53	54.0 / A
Fundamental Frequency 2440MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2439.960	97.15	114.0 / P
2439.960	63.62	94.0 / A
Fundamental Frequency 2440MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2439.960	95.27	114.0 / P
2439.960	62.82	94.0 / A
Harmonics 2440MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4879.240	59.12	74.0 / P
4879.240	38.83	54.0 / A
7318.890	61.49	74.0 / P
7318.890	43.76	54.0 / A
9760.000	52.15	74.0 / P
9760.000	41.18	54.0 / A
Harmonics 2440MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4879.240	63.55	74.0 / P
4879.240	41.65	54.0 / A
7318.890	63.74	74.0 / P
7318.890	45.70	54.0 / A
9760.000	50.35	74.0 / P
9760.000	40.19	54.0 / A
Fundamental Frequency 2470MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2469.970	95.20	114.0 / P

2469.970	64.12	94.0 / A
Fundamental Frequency 2470MHz		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2469.970	96.39	114.0 / P
2469.970	64.09	94.0 / A
Harmonics 2470MHz		Vertical Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4939.210	62.39	74.0 / P
4939.210	41.46	54.0 / A
7408.750	62.44	74.0 / P
7408.750	43.72	54.0 / A
9880.000	49.13	74.0 / P
9880.000	36.03	54.0 / A
Harmonics 2470MHz		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4939.210	62.22	74.0 / P
4939.210	44.72	54.0 / A
7408.750	59.03	74.0 / P
7408.750	45.13	54.0 / A
9880.000	49.82	74.0 / P
9880.000	39.23	54.0 / A

Subclause 15.249 (d) – Spurious Radiated Emissions		Pass
<p>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%</p>		
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		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
No peak found	---	74.0 / P
No peak found	---	54.0 / A
Tx frequency 2470MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
No peak found	---	74.0 / P
No peak found	---	54.0 / A