

Produkte
Products

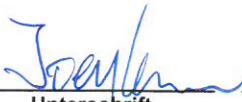
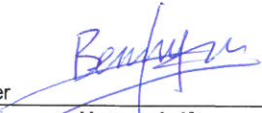
Prüfbericht - Nr.: 14038897 001		Seite 1 von 10	
<i>Test Report No.:</i>		<i>Page 1 of 10</i>	
Auftraggeber: <i>Client:</i>	Shantou City Hengdi Industry Co., Ltd West of NingchuanBei Road and South of Huancui Roda Guangyi St, Chenghai District Shantou, Guangdong CHINA		
Gegenstand der Prüfung: <i>Test Item:</i>	Short Range Device - Radio Control Toy Transmitter (2.4GHz)		
Bezeichnung: <i>Identification:</i>	Please refer to "Models" on page 3	Serien-Nr.: <i>Serial No.:</i>	Engineering sample
Wareneingangs-Nr.: <i>Receipt No.:</i>	A000180038-001 A000180038-004	Eingangsdatum: <i>Date of Receipt:</i>	31.03.2015
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of test item at delivery:</i>	Test samples received are 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 C63.4-2009		
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:		
27.04.2015 <i>Datum</i> Date	Joey Leung Project Engineer <i>Name/Stellung</i> Name/Position	 <i>Unterschrift</i> Signature	27.04.2015 <i>Datum</i> Date
			Benny Lau Project Manager <i>Name/Stellung</i> Name/Position
			 <i>Unterschrift</i> Signature
Sonstiges: Other Aspects	FCCID: 2AALA1315-1314-1326		
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>			

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Product information

Manufacturers declarations

	Transmitter
Operating frequency range	2410 - 2474 MHz
Type of modulation	GFSK
Number of channels	4
Type of antenna	Wire Antenna
Power level	fix
Connection to public utility power line	No
Nominal voltage	6.0 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: 2AALA1315-1314-1326

Models	Product description
1315, 1315S, 1315W, 1315C, 1315A, G08095, G08095M2, 1320, 1306, 1307, 1308, 1310, 1318, 1212, 1212L, 1212D, 1212S, 1314, 1319, 1319C, 1317, 1321, 1322, 1323, 1324, 1325, 1327, 1328, 1329, 1330, 1316, 1311, 1311B, 1313, 1326A, 1326B, 1309, 1305, 1304, 1304B, 1303, 2022, 1301, 1209, 1204, 1215, HM0710, HM0707, HM0920, HM0955	Radio Controlled Toy

Submitted documents

- Circuit Diagram
- Block Diagram
- Bill of material
- User manual
- Rating Label

Special accessories and auxiliary equipment

Client provide a test mode enabled LCD display for assessment of radiated emission of the transmitter.

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. 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 15.205 – Restricted bands – Spurious Emissions – Band edge	Pass	
Test Specification : ANSI C63.4 – 2009 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 : 6.0VDC, 4 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:	Both transmitter and LCD display are test mode enabled and transmit at the same channel simultaneously during testing. 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 2474MHz 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 2474MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
No peak found	---	74.0 / P
No peak found	---	54.0 / A

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 : 6.0VDC, 4 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	2408.980	> 2400	2411.130	< 2483.5
2442	2440.980	> 2400	2443.130	< 2483.5
2474	2472.970	> 2400	2475.160	< 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 : 6.0VDC, 4 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: Both transmitter and LCD display are test mode enabled and transmit at the same channel simultaneously during testing. PASS				
Fundamental Frequency 2410MHz		Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m		
2409.900	85.97	114.0 / P		
2409.900	69.47	94.0 / A		
Fundamental Frequency 2410MHz		Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m		
2409.900	96.37	114.0 / P		
2409.900	80.47	94.0 / A		

Harmonics 2410MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m			
4820.000	51.32	74.0 / P			
4820.000	44.58	54.0 / A			
Harmonics 2410MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m			
4820.000	62.73	74.0 / P			
4820.000	52.80	54.0 / A			
Fundamental Frequency 2442MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m			
2445.100	82.96	114.0 / P			
2445.100	66.96	94.0 / A			
Fundamental Frequency 2442MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m			
2445.100	95.76	114.0 / P			
2445.100	79.46	94.0 / A			
Harmonics 2442MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m			
4890.000	48.56	74.0 / P			
4890.000	42.23	54.0 / A			
Harmonics 2442MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m			
4890.000	59.53	74.0 / P			
4890.000	51.14	54.0 / A			
Fundamental Frequency 2474MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m			
2475.070	81.57	114.0 / P			
2475.070	65.47	94.0 / A			
Fundamental Frequency 2474MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m			
2475.070	93.27	114.0 / P			
2475.070	76.87	94.0 / A			
Harmonics 2474MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m			
4950.000	48.57	74.0 / P			
4950.000	42.10	54.0 / A			

Harmonics 2474MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4950.000	51.26	74.0 / P	
4950.000	44.17	54.0 / A	

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 RBW/VBW : 100 kHz / 300 kHz for f < 1 GHz 1 MHz / 3 MHz for f > 1 GHz Supply voltage : 6.0VDC, 4 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:		Both transmitter and LCD display are test mode enabled and transmit at the same channel simultaneously during testing. 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	
511.835	27.65	46.0 / QP	
528.246	31.90	46.0 / QP	
537.589	31.53	46.0 / QP	
545.183	32.95	46.0 / QP	
552.883	31.59	46.0 / QP	
576.644	35.41	46.0 / QP	
672.845	26.41	46.0 / QP	
Tx frequency 2410MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
239.987	30.17	46.0 / QP	
576.644	26.89	46.0 / QP	
Tx frequency 2442MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
520.888	28.94	46.0 / QP	
528.246	32.11	46.0 / QP	
545.183	30.94	46.0 / QP	
560.693	32.14	46.0 / QP	

576.644	34.88	46.0 / QP
593.050	29.12	46.0 / QP
Tx frequency 2442MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
576.644	27.07	46.0 / QP
768.748	26.03	46.0 / QP
815.968	27.18	46.0 / QP
Tx frequency 2474MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
528.246	31.08	46.0 / QP
560.693	30.90	46.0 / QP
576.644	35.17	46.0 / QP
593.050	28.78	46.0 / QP
672.845	26.58	46.0 / QP
Tx frequency 2474MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
239.987	27.44	46.0 / QP
576.644	27.59	46.0 / QP
768.748	26.89	46.0 / QP
815.968	27.71	46.0 / QP