

Produkte
Products
Prüfbericht - Nr.: 14038438 001
Test Report No.:
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Auftraggeber: Stadlbauer Marketing + Vertrieb Ges.M.B.H
Client: Rennbahnallee 1
 5412 Puch
 Salzburg
 Austria

Gegenstand der Prüfung: Short Range Device - Radio Control Toy Transmitter (2.4GHz)
Test Item:
Bezeichnung: Please refer to "Models" on
Identification: page 3
Serien-Nr.: Engineering sample
Serial No.:
Wareneingangs-Nr.: A000187736-001
Receipt No.:
Eingangsdatum: 18.04.2015
Date of Receipt:
Zustand des Prüfgegenstandes bei Anlieferung: Test sample is not damaged and suitable for
Condition of test item at delivery: testing.

Prüfort: TÜV Rheinland Hong Kong Ltd.
Testing Location: 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: FCC Part 15 Subpart C
Test Specification: ANSI C63.4-2009

Prüfergebnis: Das vorstehend beschriebene Gerät wurde geprüft und entspricht oben
Test Results: genannter Prüfgrundlage.
 The above mentioned product was tested and **passed**.

Prüflaboratorium: TÜV Rheinland Hong Kong Ltd.
Testing Laboratory: 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
 Datum Project Engineer
 Name/Stellung
 Date Name/Position


 Unterschrift
 Signature

 03.06.2015 Benny Lau
 Datum Senior Project Manager
 Name/Stellung
 Date Name/Position


 Unterschrift
 Signature

Sonstiges: FCCID: YFA900040
Other Aspects
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.

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.

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Product information

Manufacturers declarations

	Transmitter
Operating frequency range	2405 - 2475 MHz
Type of modulation	GFSK
Number of channels	71
Type of antenna	Wire Antenna
Power level	fix
Connection to public utility power line	No
Nominal voltage	V _{nom} : 3.0 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 battery only.

FCCID: YFA900040

Models	Product description
900028, 900040, 370900028, 370900040	Radio Controlled Toy Transmitter

Submitted documents

Circuit Diagram
Block Diagram
Bill of material
User manual
Rating Label
Declaration of Equivalence

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 car.

For further information refer to User Manual

Related Submittal(s) Grants

This is a single application for certification of the transmitter.

Remarks

Due to the client declaration of equivalence, the model 900040 was randomly selected as a representative for testing.

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)	---	2 year	27 Mar 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 : 3.0VDC, 2 x 1.5V AAA 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)
2405	2404.482	> 2400	2406.680	< 2483.5
2440	2439.436	> 2400	2441.632	< 2483.5
2475	2474.460	> 2400	2476.068	< 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 Frequency range : 9kHz – 25GHz RBW/VBW : 100 kHz / 300 kHz for f < 1 GHz 1 MHz / 3 MHz for f > 1 GHz Supply voltage : 3.0VDC, 2 x 1.5V AAA 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 2405MHz		Vertical Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2405.500	90.63	114.0 / PK
2405.500	64.46	94.0 / AV

Fundamental Frequency 2405MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2405.500	91.78	114.0 / PK	2405.500	65.41	94.0 / AV
Harmonics 2405MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4811.100	57.53	74.0 / PK	4811.100	38.06	54.0 / AV
7214.500	55.89	74.0 / PK	7214.500	38.31	54.0 / AV
Harmonics 2405MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4811.100	58.40	74.0 / PK	4811.100	38.05	54.0 / AV
7214.500	55.21	74.0 / PK	7214.500	38.72	54.0 / AV
Fundamental Frequency 2440MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2440.300	90.82	114.0 / PK	2440.300	64.61	94.0 / AV
Fundamental Frequency 2440MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2440.300	92.04	114.0 / PK	2440.300	66.75	94.0 / AV
Harmonics 2440MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4879.500	56.02	74.0 / PK	4879.500	37.98	54.0 / AV
7319.500	54.31	74.0 / PK	7319.500	38.84	54.0 / AV
Harmonics 2440MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4879.500	56.90	74.0 / PK	4879.500	38.06	54.0 / AV
7319.500	55.38	74.0 / PK	7319.500	38.02	54.0 / AV
Fundamental Frequency 2475MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2474.800	89.75	114.0 / PK			

2474.800	64.82	94.0 / AV
Fundamental Frequency 2475MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2474.800	92.13	114.0 / PK
2474.800	66.92	94.0 / AV
Harmonics 2475MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4950.700	58.42	74.0 / PK
4950.700	38.91	54.0 / AV
7425.000	54.36	74.0 / PK
7425.000	39.16	54.0 / AV
Harmonics 2475MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4950.700	59.14	74.0 / PK
4950.700	39.61	54.0 / AV
7425.000	54.87	74.0 / PK
7425.000	38.42	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 Frequency range : 9kHz – 25GHz RBW/VBW : 1 MHz / 3 MHz for f > 1 GHz Supply voltage : 3.0VDC, 2 x 1.5V AAA 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:	PASS.	
Tx frequency 2405MHz		Vertical Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2390.000	41.17	74.0 / PK
2390.000	27.13	54.0 / AV
Tx frequency 2405MHz		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2390.000	43.13	74.0 / PK
2390.000	29.09	54.0 / AV

Tx frequency 2475MHz			Vertical Polarization		
	Freq MHz		Level dBuV/m		Limit/ Detector dBuV/m
	2483.500		40.45		74.0 / PK
	2483.500		26.54		54.0 / AV
Tx frequency 2475MHz			Horizontal Polarization		
	Freq MHz		Level dBuV/m		Limit/ Detector dBuV/m
	2483.500		44.37		74.0 / PK
	2483.500		29.45		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 : 3.0VDC, 2 x 1.5V AAA 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 2405MHz			Vertical Polarization		
	Freq MHz		Level dBuV/m		Limit/ Detector dBuV/m
	No peak found		---		74.0 / PK
	No peak found		---		54.0 / AV
Tx frequency 2405MHz			Horizontal Polarization		
	Freq MHz		Level dBuV/m		Limit/ Detector dBuV/m
	No peak found		---		74.0 / PK
	No peak found		---		54.0 / AV
Tx frequency 2440MHz			Vertical Polarization		
	Freq MHz		Level dBuV/m		Limit/ Detector dBuV/m
	No peak found		---		74.0 / PK
	No peak found		---		54.0 / AV

Tx frequency 2440MHz			Horizontal Polarization		
	Freq MHz			Level dBuV/m	Limit/ Detector dBuV/m
	No peak found			---	74.0 / PK
	No peak found			---	54.0 / AV
Tx frequency 2475MHz			Vertical Polarization		
	Freq MHz			Level dBuV/m	Limit/ Detector dBuV/m
	No peak found			---	74.0 / PK
	No peak found			---	54.0 / AV
Tx frequency 2475MHz			Horizontal Polarization		
	Freq MHz			Level dBuV/m	Limit/ Detector dBuV/m
	No peak found			---	74.0 / PK
	No peak found			---	54.0 / AV