

Produkte
Products

Prüfbericht - Nr.: 14035562 001

Test Report No.:

Seite 1 von 10

Page 1 of 10

Auftraggeber: Stadlbauer Marketing + Vertrieb G.m.b.H
Client: Rennbahn Allee 1
5412 Puch / Salzburg
Austria

Gegenstand der Prüfung: Short Range Device - Radio Control Toy Transmitter (2.4GHz)
Test Item:

Bezeichnung: 900034, 900035 **Serien-Nr.:** Engineering sample
Identification: *Serial No.:*

Wareneingangs-Nr.: A000041497 (001-003) **Eingangsdatum:** 17.03.2014
Receipt No.: *Date of Receipt:*

Zustand des Prüfgegenstandes bei Anlieferung: Test samples are not damaged and suitable for testing.
Condition of test item at delivery:

Prüfört: TÜV Rheinland Hong Kong Ltd.
Testing Location: 8/F, First Group Centre, 14 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong
Hong Kong Productivity Council
HKPC Building, 78 Tat Chee Avenue, Kowloon, Hong Kong

Prüfgrundlage: FCC Part 15 Subpart C
Test Specification: ANSI C63.4-2003

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:

30.07.2014 Joey Leung
Datum Name/Stellung
Date Name/Position


Unterschrift
Signature

30.07.2014 Sharon Li
Datum Name/Stellung
Date Name/Position


Unterschrift
Signature

Sonstiges: FCCID: YFA90016
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.

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.....	20 pages

Product information

Manufacturers declarations

	Transmitter
Operating frequency range	2412 - 2477 MHz
Type of modulation	FSK
Number of channels	66
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 batteries only.

FCCID: YFA90016

Models	Product description
900034, 900035	Radio Controlled Toy Transmitter

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 car.

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

Hong Kong Productivity Council (FCC Registration number: 90656)

Equipment	Manufacturer	Type	S/N	Due Date
Semi-anechoic Chamber	Frankonia	Nil	Nil	14 Apr 2015
Cable	Hubersuhner	SUCOFLEX 104	72799 /6	31 Mar 2016
Test Receiver	R & S	ESU40	100190	18 Sep 2014
Log Periodic Antenna	R & S	HL223	841516/017	10 Jun 2015
Coaxial cable 50ohm	Rosenberger	RTK081-05S-05S-10m	LA2-001-10M / 001	15 Nov 2015
Microwave amplifier 0.5-26.5GHz, 25dB gain	HP	83017A	3123A00437	30 Dec 2015
High Pass Filter (cutoff freq. =1000MHz)	Trilithic	23042	9829213	28 Oct 2015
Horn Antenna	EMCO	3115	9002-3347	11 Jun 2015
Active Loop Antenna	EMCO	6502	9107-2651	21 Jun 2014
FSP 30 Spectrum Analyzer	Rohde & Schwarz	FSP 30	100007	03 Dec 2014

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 : 3.0VDC, 2 x 1.5V AAA 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 2471MHz 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 2471MHz 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 – 2003 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)
2410	2409.548	> 2400	2411.384	< 2483.5
2450	2449.524	> 2400	2451.708	< 2483.5
2471	2470.536	> 2400	2472.816	< 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 : 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 2410MHz		Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m		
2410.337	92.43	114.0 / P		
2410.016	29.87	94.0 / A		
Fundamental Frequency 2410MHz		Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m		
2410.321	96.77	114.0 / P		
2410.449	29.25	94.0 / A		
Harmonics 2410MHz		Vertical Polarization		

Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4820.705	60.58	74.0 / P
4819.968	32.51	54.0 / A
7231.266	66.20	74.0 / P
7229.920	36.20	54.0 / A
Harmonics 2410MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4820.721	59.53	74.0 / P
4820.048	32.28	54.0 / A
7229.712	65.27	74.0 / P
7230.000	36.04	54.0 / A
Fundamental Frequency 2450MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2449.840	93.38	114.0 / P
2450.160	29.89	94.0 / A
Fundamental Frequency 2450MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2450.561	94.86	114.0 / P
2450.080	29.58	94.0 / A
Harmonics 2450MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4900.689	54.57	74.0 / P
4900.208	32.48	54.0 / A
7349.471	60.71	74.0 / P
7350.144	35.99	54.0 / A
Harmonics 2450MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4900.689	59.55	74.0 / P
4899.904	32.26	54.0 / A
7349.583	62.44	74.0 / P
7350.016	36.01	54.0 / A
Fundamental Frequency 2471MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2469.696	88.74	114.0 / P
2470.962	30.00	94.0 / A
Fundamental Frequency 2471MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2471.362	98.24	114.0 / P
2470.721	30.56	94.0 / A

Harmonics 2471MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4941.490	50.15	74.0 / P
4941.827	31.69	54.0 / A
7412.647	61.28	74.0 / P
7412.596	36.05	54.0 / A
Harmonics 2471MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4941.651	54.56	74.0 / P
4941.619	31.85	54.0 / A
7410.529	63.89	74.0 / P
7412.853	36.09	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 : 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 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 2450MHz 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 2450MHz			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 2471MHz			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 2471MHz			Horizontal Polarization		
	Freq MHz			Level dBuV/m	Limit/ Detector dBuV/m
	No peak found			---	74.0 / P
	No peak found			---	54.0 / A