TEST REPORT

Product Name : Hot Wheels RIFT RALLY
Model Number : VEL001
FCC ID : 2A8JSVEL001

Prepared for	:	Velan Studios
Address	:	#5 3rd street, suite 300, Troy NY 12180 USA.
Prepared by	:	EMTEK (DONGGUAN) CO., LTD.
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Report Number	:	EDG2209220058E00204R
Date(s) of Tests	:	September 22, 2022 to October 22, 2022
Date of issue	:	October 22, 2022

Table of Contents

1. TEST RESULT CERTIFICATION

Applicant	:	Velan Studios
Address	:	#5 3rd street, suite 300, Troy NY 12180 USA.
Manufacturer	:	Velan Studios
Address	:	#5 3rd street, suite 300, Troy NY 12180 USA.
Factory	:	Shenzhen King Chuang Tech&Electronic Co., Ltd
Address	:	Building 7th, Yongchang Industrial Park, 58th Guangtian Rd, Bao'an District,Shenzhen
EUT	:	Hot Wheels RIFT RALLY
Model Name	:	VEL001
Trademark	:	N/A

Measurement Procedure Used:

APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 1.1310：§1.1307(b)	**PASS**

The above equipment was tested by EMTEK(DONGGUAN) CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules FCC 1.1310：§1.1307(b).

The test results of this report relate only to the tested sample identified in this report

Date of Test : September 22, 2022 to October 22, 2022

Prepared by : Warren Deng /Editor

Reviewer : Tim Dong /Supervisor

Approve & Authorized Signer : Sam Lv / Manager

Modified History

Version	Report No.	Revision Date	Summary
	EDG2209220058E00204R	/	Original Report

2. EUT Specification

Characteristics	Description
Product:	Hot Wheels RIFT RALLY
Model Number:	VEL001
Sample:	2#
Device Type:	2.4G+5G WIFI
Data Rate:	802.11b 802.11g 802.11n(20MHz channel bandwidth) 802.11n(40MHz channel bandwidth) 802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n: MCS0-MCS15 802.11ac: MCS0-MCS9
Modulation:	DSSS with DBPSK/DQPSK/CCK for 802.11b; OFDM with BPSK/QPSK/16QAM/64QAM for 802.11g/n; OFDM with BPSK/QPSK/16QAM/64QAM for 802.11a/n OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11ac
Operating Frequency Range(s) :	2412-2462MHz for 802.11b/g/n(HT20); 2422-2452MHz for 802.11n(HT40); Wifi 5G with 5150MHz-5250MHz Band Wifi 5G with 5250MHz-5350MHz Band Wifi 5G with 5470MHz-5725MHz Band Wifi 5G with 5725MHz-5850MHz Band
Number of Channels:	11 channels for 802.11b/g/n(HT20);
	7 Channels for 802.11n(HT40);
	UNII-1: 5150MHz-5250MHz Band
	5180-5240MHz for 802.11a/n(HT20)/ac(VHT20); 5190-5230MHz for 802.11n(HT40)/ac(VHT40); 5210MHz for 802.11ac(VHT80);
	UNII-2A: 5250MHz-5350MHz Band
	5260-5320MHz for 802.11a/n(HT20)/ac(VHT20); 5270-5310MHz for 802.11n(HT40)/ac(VHT40); 5290MHz for 802.11ac(VHT80);
	UNII-2C: 5470MHz-5725MHz Band
	5500-5700MHz for 802.11a/n(HT20)/ac(VHT20); 5510-5670MHz for 802.11n(HT40)/ac(VHT40); 5530MHz for 802.11ac(VHT80);
	UNII-3 with 5725MHz-5850MHz Band

	5745-5825MHz for 802.11a/n(HT20)/ac(VHT20); 5755-5795MHz for 802.11n(HT40)/ac(VHT40); 5775MHz for 802.11ac(VHT80);
Transmit Power Max:	2.4G: 16.71 dBm(0.047W) UNII-1 Band: 16.34 dBm(0.043W) UNII-2A Band: 9.53 dBm(0.009W) UNII-2C Band: 7.32 dBm(0.005W) UNII-3 Band: 14.82 dBm(0.030W)
Antenna Gain:	2.4G: 0.33 dBi 5G: -0.08
Power supply:	DC 5V from USB DC 3.7V/1800mAh from battery
Evaluation applied:	☒ MPE Evaluation ☐ SAR Evaluation

3. Test Requirement:

RF EXPOSURE EVALUATION

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency(RF) Radiation as specified in §1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density(mW/cm^2)	Average Time
(A) Limits for Occupational/Control Exposures				
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
300-1500	--	--	F/1500	6
1500-100000	--	--	1	30

Friis transmission formula: Pd= (Pout*G)\ (4*pi*R^2)

Where

Pd= Power density in mW/cm^2

Pout=output power to antenna in mW

G= Numeric gain of the antenna relative to isotropic antenna

Pi=3.1416

R= distance between observation point and center of the radiator in cm

Pd the limit of MPE, $1mW/cm^2$. If we know the maximum gain of the nd total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

4. Measurement Result

Antenna gain:
2.4G: 0.33 dBi
5G: -0.08

802.11b: Antenna A

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
1	2412	15.97	15±1	16	1.413	0.005	1
6	2437	16.38	16±1	17	1.413	0.005	1
11	2462	15	16±1	16	1.413	0.006	1

802.11g: Antenna A

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
1	2412	14.12	14±1	15	1.413	0.005	1
6	2437	13.15	13±1	14	1.413	0.011	1
11	2462	12.68	12±1	13	1.413	0.011	1

802.11n HT20: Antenna A

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
1	2412	13.08	13±1	14	1.413	0.009	1
6	2437	14.11	14±1	15	1.413	0.009	1
11	2462	12.62	12±1	13	1.413	0.009	1

802.11n HT40 : Antenna A

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
3	2422	13.2	13±1	14	1.413	0.009	1
6	2437	12.98	13±1	13	1.413	0.009	1
9	2452	12.64	13±1	13	1.413	0.009	1

802.11a : Antenna A

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
36	5180	14.54	14±1	15	0.982	0.006	1
44	5220	15.14	15±1	16	0.982	0.008	1

48	5240	16.42	16±1	17	0.982	0.010	1
52	5260	8.34	8±1	9	0.982	0.002	1
60	5300	9.15	9±1	10	0.982	0.002	1
64	5320	8.22	8±1	9	0.982	0.002	1
100	5500	6.64	6±1	7	0.982	0.001	1
116	5580	4.41	4±1	5	0.982	0.001	1
140	5700	5.44	5±1	6	0.982	0.001	1
149	5745	14.41	14±1	15	0.982	0.006	1
157	5785	14.72	14±1	15	0.982	0.006	1
165	5825	14.90	14±1	15	0.982	0.006	1

802.11ac VHT20 : Antenna A

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
36	5180	13.92	13±1	14	0.982	0.005	1
44	5220	15.02	15±1	16	0.982	0.008	1
48	5240	14.95	14±1	15	0.982	0.006	1
52	5260	7.52	7±1	8	0.982	0.001	1
60	5300	8.61	8±1	9	0.982	0.002	1
64	5320	8.22	8±1	9	0.982	0.002	1
100	5500	5.03	5±1	6	0.982	0.001	1
116	5580	4.35	4±1	5	0.982	0.001	1
140	5700	4.87	4±1	5	0.982	0.001	1
149	5745	13.74	13±1	14	0.982	0.005	1
157	5785	14.12	14±1	15	0.982	0.006	1
165	5825	14.29	14±1	15	0.982	0.006	1

802.11ac VHT40 : Antenna A

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
38	5190	12.49	12±1	13	0.982	0.004	1
46	5230	13.44	13±1	14	0.982	0.005	1
54	5270	7.54	7±1	8	0.982	0.001	1
62	5310	7.95	7±1	8	0.982	0.001	1
102	5510	4.86	4±1	5	0.982	0.001	1
110	5550	4.62	4±1	5	0.982	0.001	1
134	5670	4.39	4±1	5	0.982	0.001	1
151	5755	13.20	13±1	14	0.982	0.005	1
159	5795	13.37	13±1	14	0.982	0.005	1

802.11ac VHT80 : Antenna A

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power	Antenna Gain Numeric	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)

				(dBm)			
42	5210	11.74	11±1	12	0.982	0.003	1
58	5290	7.95	7±1	8	0.982	0.001	1
106	5530	6.58	6±1	7	0.982	0.001	1
122	5610	4.71	4±1	5	0.982	0.001	1
155	5775	11.76	11±1	12	0.982	0.003	1

802.11n HT20 : Antenna A

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
36	5180	13.60	13±1	14	0.982	0.005	1
44	5220	14.68	14±1	15	0.982	0.006	1
48	5240	15.45	15±1	16	0.982	0.008	1
52	5260	7.32	7±1	8	0.982	0.001	1
60	5300	8.99	8±1	9	0.982	0.002	1
64	5320	9.07	9±1	10	0.982	0.002	1
100	5500	6.25	6±1	7	0.982	0.001	1
116	5580	5.11	5±1	6	0.982	0.001	1
140	5700	5.31	5±1	6	0.982	0.001	1
149	5745	13.79	13±1	14	0.982	0.005	1
157	5785	14.16	14±1	15	0.982	0.006	1
165	5825	14.34	14±1	15	0.982	0.006	1

802.11n HT40 : Antenna A

Channel	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
38	5190	12.49	12±1	13	0.982	0.004	1
46	5230	14.34	14±1	15	0.982	0.006	1
54	5270	9.61	9±1	10	0.982	0.002	1
62	5310	8.95	8±1	9	0.982	0.002	1
102	5510	7.40	7±1	8	0.982	0.001	1
110	5550	6.71	6±1	7	0.982	0.001	1
134	5670	5.86	5±1	6	0.982	0.001	1
151	5755	12.96	12±1	13	0.982	0.004	1
159	5795	13.15	13±1	14	0.982	0.005	1

Note: 2.4G and 5G cannot be transmitted at the same time.

*** End of Report ***