

# TEST REPORT

**Product Name** : Polaris RC5 DSP System  
**Model Number** : 2417500  
**FCC ID** : CHX-RC5

**Prepared for** : Rockford Corporation.  
**Address** : 600 S. Rockford Drive Tempe, AZ 85281 U.S.A

**Prepared by** : EMTEK (DONGGUAN) CO., LTD.  
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**Report Number** : EDG2209280081E00403R  
**Date(s) of Tests** : September 28, 2022 to April 12, 2023  
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## 1. TEST RESULT CERTIFICATION

Applicant : Rockford Corporation.  
 Address : 600 S. Rockford Drive Tempe, AZ 85281 U.S.A  
 Manufacturer : Rockford Corporation.  
 Address : 600 S. Rockford Drive Tempe, AZ 85281 U.S.A  
 Factory : Gemmy Electronics Co. Ltd.  
 Address : Datianyang Ind. Estate, Dongfang Road, Songgang Town, Bao'an District, Shenzhen City, Guangdong, China  
 EUT : Polaris RC5 DSP System  
 Model Name : 2417500  
 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 28, 2022 to April 12, 2023

Prepared by : Warren Deng

Warren Deng /Editor

Reviewer : Tim Dong

Tim Dong /Supervisor

Approve & Authorized Signer : Sam Lv

Sam Lv / Manager



## Modified History

Version	Report No.	Revision Date	Summary
	EDG2209280081E00403R	/	Original Report



## 2. EUT Specification

Characteristics	Description
<b>Product:</b>	Polaris RC5 DSP System
<b>Model Number:</b>	2417500
<b>Sample:</b>	2#
<b>Device Type:</b>	2.4GWIFI+BLE
<b>Data Rate:</b>	802.11b 802.11g 802.11n(20MHz channel bandwidth) 802.11n(40MHz channel bandwidth) BLE 1Mbps for GFSK modulation
<b>Modulation:</b>	DSSS with DBPSK/DQPSK/CCK for 802.11b; OFDM with BPSK/QPSK/16QAM/64QAM for 802.11g/n; GFSK
<b>Operating Frequency Range(s) :</b>	2412-2462MHz for 802.11b/g/n(HT20); 2422-2452MHz for 802.11n(HT40); 2402-2480MHz
<b>Number of Channels:</b>	11 channels for 802.11b/g/n(HT20);
	7 Channels for 802.11n(HT40);
	40 Channels
<b>Transmit Power Max:</b>	WIFI:13.95 dBm(0.02483W) BLE: -1.2 dBm(0.000759W)
<b>Antenna Type:</b>	PCB Antenna
<b>Antenna Gain:</b>	3.76 dBi
<b>Power supply:</b>	DC14V
<b>Evaluation Applied:</b>	MPE 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 <sup>2</sup> )	Average Time
<b>(A) Limits for Occupational/Control Exposures</b>				
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
<b>(B) Limits for General Population/Uncontrol Exposures</b>				
300-1500	--	--	F/1500	6
1500-100000	--	--	1	30

### Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

$P_d$ = Power density in mW/cm<sup>2</sup>

$P_{out}$ =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

$P_d$  the limit of MPE, 1mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and 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: 3.76 dBi

### 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/cm <sup>2</sup> )	Power density Limits (mW/cm <sup>2</sup> )
1	2412	12.42	12±1	13	2.377	0.009435	1
6	2437	13.88	13±1	14	2.377	0.011878	1
11	2462	13.95	13±1	14	2.377	0.011878	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/cm <sup>2</sup> )	Power density Limits (mW/cm <sup>2</sup> )
1	2412	11.23	11±1	12	2.377	0.007494	1
6	2437	11.87	11±1	12	2.377	0.007494	1
11	2462	12.41	12±1	13	2.377	0.009435	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/cm <sup>2</sup> )	Power density Limits (mW/cm <sup>2</sup> )
1	2412	11.02	11±1	12	2.377	0.007494	1
6	2437	11.6	11±1	12	2.377	0.007494	1
11	2462	12.19	12±1	13	2.377	0.009435	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/cm <sup>2</sup> )	Power density Limits (mW/cm <sup>2</sup> )
3	2422	10.91	10±1	11	2.377	0.005953	1
6	2437	11.07	11±1	12	2.377	0.007494	1
9	2452	11.63	11±1	12	2.377	0.007494	1

BLE

Mode	Frequency (MHz)	Output Power (dBm)	Target Power W/tolerance (dBm)	Max tune up power tolerance (dBm)	Max tune up power tolerance (mW)	Antenna Gain Numeric	Power Density at R=20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
GFSK	2402	-2.58	-3±1	-2	0.63	2.377	0.000298	1
	2440	-1.2	-2±1	-1	0.79	2.377	0.000376	1
	2480	-1.96	-2±1	-1	0.79	2.377	0.000376	1

Note: 2.4wifi and BLE cannot be transmitted at the same time.

\*\*\* End of Report \*\*\*