RF Exposure Evaluation Declaration

FCC ID:	BRWQSTLMRX2
IC:	6157A-QSTMRX2
APPLICANT:	Horizon Hobby, LLC

Application Type:	Certification
Product:	Quad Serial Telemetry Receiver
Model No.:	SPM4651T
Brand Name:	Spektrum
FCC Classification:	Digital Transmission System (DTS)
Test Procedure(s):	KDB 447498 D01v06
Test Date:	July 04 ~ 10, 2019

Reviewed By: Sunny Sun
(Sunny Sun)

Approved By: Robin Wu
(Robin Wu)

ACCREDITED
TESTING LABORATORY
CERTIFICATE #3628.01

Revision History

Report No.	Version	Description	Issue Date	Note
1907RSU011-U2	Rev. 01	Initial Report	07-16-2019	Valid

§2.1033 General Information

Applicant:	Horizon Hobby, LLC
Applicant Address:	2904 Research Rd. Champaign, IL 61822
Manufacturer:	Horizon Hobby, LLC
Manufacturer Address:	2904 Research Rd. Champaign, IL 61822
Test Site:	MRT Technology (Suzhou) Co., Ltd
Test Site Address:	D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China

Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Tian'edang Rd., Suzhou, China.

- **MRT facility is a FCC registered (MRT Reg. No. 893164) test facility with the site description report on file and has met all the requirements specified in ANSI C63.4-2014.**
- **MRT facility is an IC registered (MRT Reg. No. 11384A-1) test laboratory with the site description on file at Industry Canada.**
- **MRT facility is a VCCI registered (R-20025, G-20034, C-20020, T-20020) test laboratory with the site description on file at VCCI Council.**
- **MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA) under the American Association for Laboratory Accreditation Program (A2LA Cert. No. 3628.01) in EMC, Telecommunications, Radio and SAR testing.**

1. PRODUCT INFORMATION

1.1. Feature of Equipment under Test

Product Name:	Quad Serial Telemetry Receiver
Model No.:	SPM4651T
Brand Name:	Spektrum
Frequency Range:	2402 ~ 2478 MHz
Type of Modulation:	GFSK
Channel Number:	23
Antenna Information:	2Tx & 2Rx, SISO Mode Only Monopole Antenna, 2dBi

1.2. Working Frequencies

Channel	Frequency	Channel	Frequency
01	2402 MHz	02	2405 MHz
03	2409 MHz	04	2412 MHz
05	2415 MHz	06	2418 MHz
07	2422 MHz	08	2425 MHz
09	2428 MHz	10	2431 MHz
11	2435 MHz	12	2438 MHz
13	2440 MHz	14	2444 MHz
15	2448 MHz	16	2451 MHz
17	2454 MHz	18	2457 MHz
19	2461 MHz	20	2464 MHz
21	2467 MHz	22	2471 MHz
23	2478 MHz	---	---

Note: The engineer test sample was provided by the manufacturer, it was configured into fixed frequency transmitter status after power on.

2. RF Exposure Evaluation

2.1. Limits

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 (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	f/1500	6
1500-100,000	--	--	1	30

f= Frequency in MHz

Calculation Formula: $Pd = (Pout*G)/(4*pi*r^2)$

Where
Pd = power density in mW/cm^2
Pout = output power to antenna in mW
G = gain of antenna in linear scale
Pi = 3.1416
r = distance between observation point and center of the radiator in cm

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

2.2. Test Result of RF Exposure Evaluation

Product	Quad Serial Telemetry Receiver
Test Item	RF Exposure Evaluation

Test Mode	Frequency Band (MHz)	Maximum EIRP (dBm)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)
GFSK	2402 ~ 2478	26.60	0.0909	1

Note: EIRP (dBm) = Conducted Power(dBm) + Peak Gain (dBi)

CONCLUSION:

The max Power Density at R (20 cm) = 0.0909mW/cm^2 < 1 mW/cm^2 for 2.4G Radio Frequency.

The End

Appendix A - EUT Photograph

Refer to “1907RSU011-UE” file.