RF Exposure Evaluation Declaration

FCC ID:	BRWSPMSLT200F
Applicant:	Horizon Hobby, LLC
Address:	2904 Research Road, Champaign, IL
Application Type:	Certification
Product:	SLT2 2CH TX
Model No.:	SPMSLT200F
Brand Name:	Spektrum
FCC Classification:	Digital Transmission System (DTS)
Test Procedure(s):	KDB 447498 D01v06

Reviewed By: Jame Yuan

Approved By: Robin Wu

ACCREDITED
TESTING LABORATORY
CERTIFICATE #3628.01

The test results relate only to the samples tested.
The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.
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Revision History

Report No.	Version	Description	Issue Date	Note
2108RSU036-U3	Rev. 01	Initial Report	11-30-2021	Invalid
2108RSU036-U3	Rev. 02	Add some description	12-22-2021	Valid

1. General Information

1.1. Applicant

Horizon Hobby, LLC

2904 Research Road, Champaign, IL

1.2. Manufacturer

Zhejiang Feishen Vehicle Co., Ltd

No.98, North Lake Rd, Science & Hardware Technology Industrial Zone Yongkang City, Zhejiang , P.R.China

1.3. Testing Facility

☒	**Test Site – MRT Suzhou Laboratory**				
	Laboratory Location (Suzhou - Wuzhong) D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China **Laboratory Location (Suzhou - SIP)** 4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China				
	Laboratory Accreditations				
	A2LA: 3628.01		CNAS: L10551		
	FCC: CN1166		ISED: CN0001		
	VCCI:	☐R-20025	☐G-20034	☐C-20020	☐T-20020
		☐R-20141	☐G-20134	☐C-20103	☐T-20104
☐	**Test Site – MRT Shenzhen Laboratory**				
	Laboratory Location (Shenzhen) 1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China				
	Laboratory Accreditations				
	A2LA: 3628.02		CNAS: L10551		
	FCC: CN1284		ISED: CN0105		
☐	**Test Site – MRT Taiwan Laboratory**				
	Laboratory Location (Taiwan) No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)				
	Laboratory Accreditations				
	TAF: L3261-190725				
	FCC: 291082, TW3261		ISED: TW3261		

1.4. Product Information

Product Name	SLT2 2CH TX
Model No.	SPMSLT200F
Brand Name	Spektrum
Frequency Range	2410MHz ~ 2480MHz
Modulation	GFSK
Number of Channels	57
Antenna Type	Monopole Antenna
Antenna Gain	3 dBi
Data Rate	250kbps
Working Voltage	4*AA Battery
Operating Temp.	-10 ~ 55°C
Note: The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.	

1.5. Description of Test Software

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

1.6. Working Frequencies

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
01	2410MHz	02	2411MHz	03	2412MHz	04	2413MHz
05	2414MHz	06	2415MHz	07	2416MHz	08	2417MHz
09	2418MHz	10	2419MHz	11	2420MHz	12	2421MHz
13	2422MHz	14	2423MHz	15	2424MHz	16	2425MHz
17	2426MHz	18	2427MHz	19	2428MHz	20	2429MHz
21	2430MHz	22	2431 MHz	23	2432 MHz	24	2433 MHz
25	2434 MHz	26	2435 MHz	27	2436 MHz	28	2437 MHz
29	2438 MHz	30	2439 MHz	31	2440 MHz	32	2441 MHz
33	2442 MHz	34	2443 MHz	35	2444 MHz	36	2445 MHz
37	2446 MHz	38	2447 MHz	39	2448 MHz	40	2449 MHz
41	2450 MHz	42	2451 MHz	43	2452 MHz	44	2453 MHz
45	2454 MHz	46	2455 MHz	47	2456 MHz	48	2457 MHz
49	2458 MHz	50	2459 MHz	51	2460 MHz	52	2461 MHz
53	2462 MHz	54	2463 MHz	55	2464 MHz	56	2465 MHz
57	2480 MHz	--	--	--	--	--	--

1.7. Duty Cyce

Data Channel	Advertising Channel
2410-2465MHz with each 1MHz interval	2480MHz

Product working description

Each EUT will use 15 data channels selected from 2410-2465MHz and one advertising channel 2480MHz.

Once the EUT matched with receiver via 2480MHz channel, this advertising channel will not be in use.

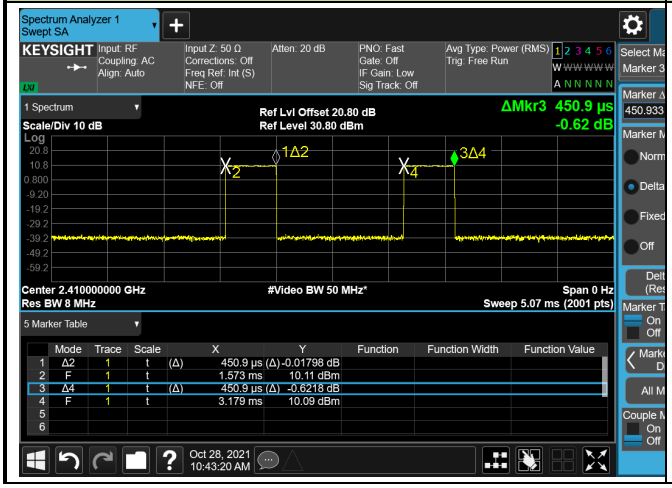
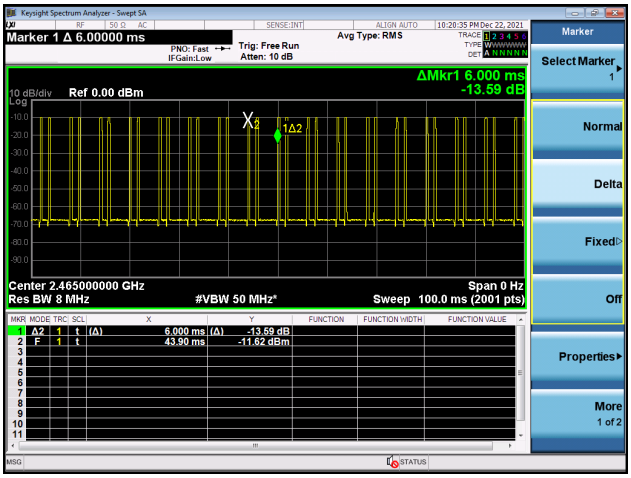
Then the EUT will use 15 hopping channels to transfer data with receiver and emit cyclically in a fixed hopping sequence, each channel's transmit time interval is 6ms and each channel will only launch once in a cycle.

Calculation

For one channel, 6ms period contains the launch time of the previous channel

"ON time" = 450.9 us + 450.9 us = 901.8 us.

Duty Cycle = 901.8 us / 6 ms *1000 = 0.15.

One pulse "ON time"	Period
	

Conclusion: Each device's duty factor is fixed and can't be changed regardless of the use of the device declared by the manufacturer. it is "source based controlled".

2. RF Exposure Evaluation

2.1. Limits

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table. The equation and threshold in Note 1 must be applied to determine SAR test exclusion.

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	SAR Test Exclusion Threshold (mW)
300	27	55	82	110	137	
450	22	45	67	89	112	
835	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	

MHz	30	35	40	45	50	mm
150	232	271	310	349	387	SAR Test Exclusion Threshold (mW)
300	164	192	219	246	274	
450	134	157	179	201	224	
835	98	115	131	148	164	
900	95	111	126	142	158	
1500	73	86	98	110	122	
1900	65	76	87	98	109	
2450	57	67	77	86	96	
3600	47	55	63	71	79	
5200	39	46	53	59	66	
5400	39	45	52	58	65	
5800	37	44	50	56	62	

Note: The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] * [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is ⩽ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

2.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18°C and 78% RH.

2.3. Test Result

Product	SLT2 2CH TX
Test Item	RF Exposure Evaluation

Test Mode	Channel No.	Frequency (MHz)	Conducted Average Power (dBm)	Tune-up Limit Power (dBm)	Duty Cycle (%)	Time-average Conducted Power (mW)
GFSK	01	2410	10.57	11.0	15	1.89
GFSK	29	2438	10.73	11.0	15	1.89
GFSK	56	2465	10.81	11.0	15	**1.89**
GFSK	57	2480	-18.10	-18.0	15	< 0.01

Note:

Per FCC KDB 447498 D01v06, the SAR exclusion threshold for distances < 50mm is defined by the following equation:

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] * [√f(GHz)] ≤ 3.0

Based on the maximum conducted power of this device and the antenna to use separation distance, The SAR test was not required:

[(1.89mW/5)* √2.465] = 0.59 < 3.0

Note: When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

Annex-EUT Photographs

Please refer to “2108RSU036-UE” file.