SAR EXEMPTION EVALUATION REPORT

Report Number	BWTR-2133-NABLE
FCC ID	2AILI-SDFV02101
IC	27697-SDFV02101
Applicant	SWISSDIGITAL (ASIA) CO., LIMITED
Product Name	FMN Finder
Marketing Name	N/A
Brand Name	SWISSDIGITAL DESIGN
Model Name	SWISSDIGITAL DESIGN
Serial Number	No.1: ebc7f1f03fd9cdd3
	No.2: f64a16f03fd9169c
Test Standard	FCC 47 CFR Part 1 Subpart I
	FCC 47 CFR Part 2 Subpart J
	ISED RSS-102 Issue 5
Tested Date	Sep. 08, 2021 ~ Sep. 14, 2021

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Revision History

Revision	Description	Issued Date
A	Initial issue of report	2021/11/11

1 Summary of Test Result

Report Section	FCC Section	ISED Section	Description	Result
3.1	KDB 447498 D01 4.3.1	RSS-102 2.5.1	Standalone SAR test exclusion	Pass

We, Beijing Boomwave Test Service Co. Ltd., would like to declare that the tested sample has been evaluated and in compliance with the requirements of applicable standards.

Prepared by:		2021.11.11 15:47:32 +08'00'
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Rationale:
The test results in this report apply exclusively to the tested model / sample.
The electrical copy of test report is invalid without the signatures. The hard copy is invalid without seal.
The test report shall not be modified, republished or copied without the written authorization of the laboratory.

2 General Information

2.1 Applicant

SWISSDIGITAL (ASIA) CO., LIMITED
FLAT/RM 1505B 15/F FORTRESS TOWER, 250 KING'S ROAD, NORTH POINT, Hong Kong, P.R. China

2.2 Manufacturer

SWISSDIGITAL DESIGN

Chengnan Industrial Zone, Hui'an County, Quanzhou City, Fujian Province, P.R.China

2.3 Product Feature of Equipment Under Test

Product Name	FMN Finder
Marketing Name	N/A
Model Name	SWISSDIGITAL DESIGN
Sample Status	Prototype
Operating Frequency Range	2402MHz ~ 2480MHz
Type of Wireless Technology	Bluetooth V5.2 LE
Modulation Type and Data Rate	GFSK: 1Mbps / 2Mbps
Number of Channels	40
Nominal Channel Bandwidth	2MHz
Number of Antenna	1
Antenna Type	PCB
Antenna Gain	1.1dBi
Hardware Version	EH-MY01-FinderT-V1.1
Software Version	V1.0.0
Power Supply Rating	DC 3.3V
Sample Received Date	2021/09/07

Note: According to the declaration of applicant, the EUT has various appearance and colors due to its marketing requirement. And the materials for these differences are all the same plastic. Since this case will not affect any wireless performance, all tests of this report were performed with only one appearance and color of EUT.

2.4 Ancillary Equipment

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following ancillary equipment were used to form a representative test configuration during the tests.

Support Unit	Engineering Controller
Manufacturer	Telink
Model Name	Burning evk
Serial Number	---

Support Unit	Laptop
Manufacturer	Lenovo
Model Name	ThinkPad E480
Serial Number	PF-1E0EL9

2.5 Description of Test Modes

40 channels are provided to this EUT:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

The EUT was linked by Bluetooth simulator or controlled by engineering test software to work in continious trasmitting and receiving mode. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports.

Following channels were selected for test:

Channel	No.	Frequency (MHz)
CH Lowest	0	2402
CH Middle	19	2440
CH Highest	39	2480

2.6 Duty Cycle of Test Signal

Modulation Type	Duty Cycle
GFSK (BLE 1Mbps)	100.00%
GFSK (BLE 2Mbps)	100.00%

2.7 Applicable Standards

Standard	Version	Title
FCC KDB 447498 D01	v06	RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES FOR MOBILE AND PORTABLE DEVICES
ISED RSS-102	Issue 5	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)

2.8 Test Facilities

Company Name: Beijing Boomwave Test Service Co. Ltd

Address: EMC Building, No.1 Wang Jing East Road, Chao Yang District Beijing, P.R. China 100102

FCC Test Firm Registration Number: 613197

ISED Canada Registration No.: 24289 (CAB Identifier: CN0010)

VCCI Registration No.: R-20062, G-20063, C-20050, T-20049

Test Site	Description	Dimension	Ground Plane Size
☐ SAC10	10m semi-anechoic chamber	19.5m×12.9m×8.6m	4m×4m
☒ SAC3	3m semi-anechoic chamber	9.6m×6.4m×6.0m	---
☐ SR#1	Shielding Room for EMS test	8.1m×4.05m×2.755m	8.1m×4.05m
☒ SR#2	Shielding Room for RF test	8.1m×4.05m×2.755m	---

3 Evaluation Result

3.1 Standalone SAR Test Exclusion

3.1.1. Limit

FCC KDB 447498 D01v06 - §4.3.1

For 100MHz to 6GHz and test separation distances ≤ 50mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] • $[\sqrt{f(GHz)}]$ ≤ 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;
- The values 3.0 and 7.5 are referred to as numeric thresholds in 2) below;

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

ISED RSS-102 - §2.5.1

SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in the following table:

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of ≥50 mm
≤300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW

3.1.2. Evaluation Result

Pmax (dBm)	Tune-up Tolerance (dB)	Pmax + Tune-up (mW)	Distance (mm)	f(GHz)	Evaluation Result	SAR Test Exclusion Thresholds	SAR Required
1.94	1	1.97	5	2.480	0.62	3.00	No

Note: Tune-up tolerance is declared by manufacturer

--- End of Test Report ---