

Report No.: SZEM210100084503

Page: 1 of 8

RF Exposure Evaluation Report

Application No.: SZEM2101000845CR

Applicant: Hon Lin Technology Co., Ltd.

Address of Applicant: 11F, No.32, Jihu Rd., Neihu Dist., Taipei City 114, Taiwan **Manufacturer:** NANNING FUGUI PRECISION INDUSTRIAL CO., LTD.

Address of Manufacturer: No.51, Tongle Avenue, Nanning, Guangxi. China

Factory: NANNING FUGUI PRECISION INDUSTRIAL CO., LTD.

Address of Factory: No.51, Tongle Avenue, Nanning, Guangxi. China

Equipment Under Test (EUT):

 EUT Name:
 Sirius Fly Pro

 Model No.:
 DTU-B048-101

 FCC ID:
 2AQ68T99B123-03

47 CFR Part 1.1307

Standards: 47 CFR Part 1.1310

47 CFR Part 2.1091

Date of Receipt: 2021-01-20

Date of Test: 2021-01-20 to 2021-02-01

Date of Issue: 2021-02-03

Test Result : Pass*

Keny Xu EMC Laboratory Manager



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issue defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention:To check the authenticity of testing inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, **Attention:**To check the authenticity of testing inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, **Totack the authenticity of testing inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, **Totack the authenticity of testing inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, **Totack the certificate in the certificate in the certificate in the certifi

or email: <u>CN. Doccheck@sgs.com</u> No. 1 Workshop, M-10, Midde Sedion, Science & Technology Park, Shenzhen, China 518057 t (86–755) 26012053 f (86–755) 26710594 www.sgsgroup.com.cn 中国 - 深圳 - 科技园中区M-10栋一号厂房 邮编: 518057 t (86–755) 26012053 f (86–755) 26710594 sgs.china@sgs.com

^{*} In the configuration tested, the EUT complied with the standards specified above.



Report No.: SZEM210100084503

Page: 2 of 8

2 Version

	Revision Record								
Version Chapter Date Modifier Remark									
01		2021-02-03		Original					

Authorized for issue by:		
	Cahin Weng	
	Calvin Weng /Project Engineer	
	EvicFu	
	Eric Fu /Reviewer	



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 83071443, or email: CN.Doccheck@sgs.com.

or email: <u>CN. Doccheek@sgs.com</u> No. 1 Workshop, M-10, Midde Section, Science & Technology Park, Shenzhen, China 518057 t (86–755) 26012053 f (86–755) 26710594 www.sgsgroup.com.cn 中国 - 深圳 - 科技园中区M-10株一号厂房 邮编: 518057 t (86–755) 26012053 f (86–755) 26710594 sgs.china@sgs.com



Report No.: SZEM210100084503

Page: 3 of 8

3 Contents

		Page
1	COVER	1
2	VERSION	2
3	CONTENTS	3
4	GENERAL INFORMATION	4
	4.1 GENERAL DESCRIPTION OF EUT	
	4.2 TEST LOCATION	5
	4.3 TEST FACILITY	5
	4.4 DEVIATION FROM STANDARDS	5
	4.5 ABNORMALITIES FROM STANDARD CONDITIONS	5
	4.6 OTHER INFORMATION REQUESTED BY THE CUSTOMER	5
5		
	5.1 RF Exposure Compliance Requirement	
	5.1.1 Limits	6
	5.1.2 Test Procedure	6
	5.1.3 EUT RF Exposure Evaluation	7



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com.

| No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China | 518057 | t (86-755) 26012053 | f (86-755) 26710594 | www.sgsgroup.com.cn | 中国・深圳・科技园中区M-10栋一号厂房 | 邮编: 518057 | t (86-755) 26012053 | f (86-755) 26710594 | sgs.china@sgs.com



Report No.: SZEM210100084503

Page: 4 of 8

4 General Information

4.1 General Description of EUT

Power supply:	Switching Adapter			
i owor suppry.	Model: DSA-12PFT-12 FUS 120100			
	Input: AC 100-240V, 50/60Hz, 0.5A			
	Output: DC 12V, 1.0A, 12.0W			
Cable(s):	DC cable: 146cm unshielded			
Sample Type:	Mobile Product			
For LTE:	Mobile 1 Toddot			
LTE Operation Frequency Band:	48			
Frequency range:	3550-3700 MHz			
Madulatia Tura	UL: QPSK, 16QAM, 64QAM			
Modulation Type:	DL: QPSK, 16QAM, 64QAM, 256QAM			
LTE Release Version:	R11			
LTE Power Class:	Level 3			
CA Capability MIMO:	DL 2CC 2X2 MIMO			
	DL 1CC 2X2 MIMO			
	UL 1CC 2X2 MIMO			
	UL 2CC SISO			
	Support Intra-band contiguous/non-contiguous CA and support UL MIMO			
	Dipole Antenna			
Antenna Type:	Ant 1: TX & RX			
	Ant 2: TX & RX			
Antenna Gain:	2.5dBi			
SIM Card:	This device has only one SIM Card sockets.			
Contained FCC ID:	2AQ68T99B123T03			
For 2.4G WIFI:				
Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz;			
Operation requestcy.	802.11n(HT40): 2422MHz to 2452MHz			
Modulation Type:	802.11b: DSSS (CCK, DQPSK, DBPSK);			
Modulation Type.	802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)			
Number of Channels:	802.11b/g/n(HT20):11;			
ramber of Offamilies.	802.11n(HT40):7			
Channel Spacing:	5MHz			
MIMO Capability:	802.11 n mode: 2*2UL			
ιντινίο Θαρασιική.	802.11 n mode: 2*2DL			
Antenna Type:	Ant 1:PCB Antenna; Ant 2: PCB antenna			



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issue defined therein. Any holder of this document is a Cilent's instructions, in any terms of the company's individed in the state of the state of the company of the company's individed in the state of the company of the company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CND.Doccheck@gs.com.

or email: <u>CN.Doccheck@sgs.com</u> No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 中国 - 深圳 - 科技园中区M-10株一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn



Report No.: SZEM210100084503

Page: 5 of 8

Antenna Gain: Ant 1: 3dBi; Ant 2: 2.3dBi

4.2 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

4.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

VCC

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• FCC -Designation Number: CN1178

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

• Innovation, Science and Economic Development Canada

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

4.4 Deviation from Standards

None.

4.5 Abnormalities from Standard Conditions

None

4.6 Other Information Requested by the Customer

None.



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@gs.com.

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.c
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com



Report No.: SZEM210100084503

Page: 6 of 8

5 RF Exposure Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Limits

According to FCC Part1.1310: 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 part1.1307(b)

Table 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm²)	Averaging time (minutes)						
(A) Limits for Occupational/Controlled Exposures										
0.3–3.0 3.0–30 30–300 300–1500 1500–100,000	614 1842/f 61.4	1.63 4.89/f 0.163	*(100) *(900/f²) 1.0 f/300 5	6 6 6 6						
(B) Limits	tor General Populati	on/Uncontrolled Exp	oosure							
0.3–1.34 1.34–30 30–300 300–1500 1500–100,000	614 824/f 27.5	1.63 2.19/f 0.073	*(100) *(180/f²) 0.2 f/1500 1.0	30 30 30 30 30						

F= Frequency in MHz

Friis Formula

Friis transmission formula: $Pd = (Pout*G)/(4*Pi*R^2)$

Where

Pd = power density in mW/cm²

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

For Uncontrolled Environment, the MPE limit of 1500MHz to 100000MHz is 1.0 mW/cm². 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.

5.1.2 Test Procedure

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



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@gs.com.

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.c 中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com



Report No.: SZEM210100084503

Page: 7 of 8

5.1.3 EUT RF Exposure Evaluation

1) Test Results

For WIFI:

Antenna Gain: Ant 1: 3dBi; Ant 2: 2.3dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is Ant 1: 2.00; Ant 2: 1.70 in linear

scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Frequency (MHz)	Max Conducted Output Power (dBm) (include tune-up power)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm²)	Limit	MPE Ratios	Result
2437	18	63.10	0.025	1.0	0.025	PASS

Note: Refer to report No. SZEM210100084502 for EUT test Max Conducted Output Power value. The distance r (4th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement.

Only recorded maximum power with the maximum gain.

For LTE Band 48:

As the antenna type and antenna gain is still the same with previous LTE module report, RF exposure in this section is same with LTE module RF report SZEM210100084403. SISO

Antenna	Max Antenna Gain (dBi)	Max Antenna Gain (Numeric)	Max tune-up tolerance power (dBm)	Max tune-up Tolerance power to Antenna (mW)	Power Density at R = 20 cm (mW/cm²)	Limit (mW/cm²)	MPE Ratios	Result
Ant1	2.5	1.78	20.5	112.20	0.0397	1.0	0.0397	PASS



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@gs.com.

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.c
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com



Report No.: SZEM210100084503

Page: 8 of 8

MIMO

Antenna	Max Antenna Gain (dBi)	Max Antenna Gain (Numeric)	Max tune-up tolerance power (dBm)	Max tune-up Tolerance power to Antenna (mW)	Power Density at R=20 cm (mW/cm²)	Limit (mW/cm ²)	MPE Ratios	Result
Ant1+2	2.5	1.78	20.5	112.20	0.0397	1.0	0.0397	PASS

Since the SAR Exclusion Threshold Level is well below the SAR low threshold level, so the EUT is considered to comply with SAR requirement without testing.

Simultanuously transmitting:

This device supports LTE and WIFI transmitting simultanuously.

Operating	Power	Limit	Result		
Mode	2.4G WIFI	LTE band 48	Combined	(mW/cm ²)	
2.4G WIFI+LTE band 48	0.025	0.0397	0.0647	1.0	PASS

- End of the Report -



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@gs.com.

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.
中国 • 深圳 • 科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com