

RF Exposure Evaluation Declaration

Product Name	:	915MHz LoRa Module
Model No.	:	LSD4RF-2F917N10
FCC ID	:	N8NLSD4RF2F917N10

Applicant : Lierda Science & Technology Group Co., Ltd.

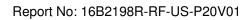
Address : Building 1#, Lierda IOT park, No.1326 Wenyi Xi Rd, Hangzhou, China

Date of Receipt	:	Nov. 29, 2016
Test Date	:	Nov. 29, 2016~ Dec. 23, 2016
Issued Date	:	Dec. 26, 2016
Report No.	:	16B2198R-RF-US-P20V01
Report Version	:	V1.0

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by CNAS, TAF or any agency of the government. The test report shall not be reproduced without the written approval of QuieTek Corporation.





Te	st	Report Certification Issued Date : Dec. 26, 2016
		Report No. : 16B2198R-RF-US-P20V01
		QuieTek
		a DEKRA company
Product Name	:	915MHz LoRa Module
Applicant	:	Lierda Science & Technology Group Co., Ltd.
Address	:	Building 1#, Lierda IOT park, No.1326 Wenyi Xi Rd,
		Hangzhou,China
Manufacturer	:	Zhejiang Xianxin Science & Technology Co., Ltd
Address	:	ZHEN ZHU BAN DAO, QIANDAOHU TOWN, CHUN'AN
		COUNTY, ZHEJIANG, CHINA
Model No.	:	LSD4RF-2F917N10
FCC ID	:	N8NLSD4RF2F917N10
EUT Voltage	:	DC 2.4~3.6V
Brand Name	:	Lierda
Applicable Standard	:	KDB 447498D01V06
		FCC Part1.1310(b)
Test Result	:	Complied
Performed Location	:	Quietek Corporation - Suzhou EMC Laboratory
		No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006,
		Jiangsu, China
		TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098
		FCC Registration Number: 800392
Documented By	:	Kenzher
		(Vice Supervisor: Kery Zha)
Reviewed By	:	Frankhe
		(Engineering Supervisor: Frank He)
Approved By	:	Harry 2han
		(Engineering Manager: Harry Zhao)



Laboratory Information

We, **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

Taiwan R.O.C.	:	BSMI, NCC, TAF
USA	:	FCC
Japan	:	VCCI
China	:	CNAS

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site : <u>http://www.quietek.com/english/about/certificates.aspx?bval=5</u> The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : <u>http://www.quietek.com/index_en.aspx</u>

If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

HsinChu Testing Laboratory :

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LinKou Testing Laboratory :

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Suzhou Testing Laboratory :

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1. RF Exposure Evaluation

1.1. 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)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm2)	Average Time (Minutes)				
(A) Limits for C	(A) Limits for Occupational/ Control Exposures							
300-1500			F/300	6				
1500-100,000			5	6				
(B) Limits for C	(B) Limits for General Population/ Uncontrolled Exposures							
300-1500			F/1500	6				
1500-100,000			1	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

R = distance between observation point and center of the radiator in cm

Pd id the limit of MPE, 0.603mW/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.



1.2. 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°_{0} RH.

1.3. Test Result of RF Exposure Evaluation

Product	•	915MHz LoRa Module
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

• Antenna Information

Model No.	N/A								
Antenna manufacturer	N/A								
Antenna Delivery	□ 1*TX+1*RX □ 2*TX+2*RX □ 3*TX+3*RX								
Antenna technology	\square								
		MIMO		Basic					
				CDD					
				Sectorized					
				Beam-forming					
Antenna Type		External		Dipole					
				Sectorized					
		Internal		PIFA					
				РСВ					
			\boxtimes	helical antenna					
				Ceramic Chip Antenna					
				Metal plate type F antenna				а	
							Directional Gain		
Antenna Technology	Ant Gain				(dBi)				
		(dBi)					For	Power	For PSD
SISO	2					2	2		



• Output Power into Antenna & RF Exposure Evaluation Distance:

Frequency Band (MHz)	Maximum Output Power to Antenna (dBm)	Directional Gain (dBi)	Power Density at R = 20 cm (mW/cm2)	Limit of Power Density S(mW/cm2)
904~925MHz	14.82	2	0.0096	0.603

Note: The power density is 0.0096mW/cm2 for 915MHz LoRa Module without any other radio equipment.

The End