



1 Cover Page

RF Exposure Evaluation Report

Application No.: SHEM1906014703CR
FCC ID: 2ATY6-TNBR1000
Applicant: THIRD NET USA INC.
Address of Applicant: UNIT 3600,1553 ROUTE 27 SOMERSET. NEW JERSEY 08873
Equipment Under Test (EUT):
EUT Name: T-LINK
Model No.: TN-BR-1000
Standard(s): FCC Rules 47 CFR §2.1091
KDB447498 D01 General RF Exposure Guidance v06
Date of Receipt: 2019-06-28
Date of Test: 2019-07-05 to 2019-08-13
Date of Issue: 2019-08-19

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

Parlan Zhan

Parlan Zhan
E&E Section Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.



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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

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
Testing Center China

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Revision Record			
Version	Description	Date	Remark
00	Original	2019-08-19	/

Authorized for issue by:				
				
		Bill Wu / Project Engineer		
				
		Parlam Zhan /Reviewer		



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3 General Information

3.1 General Description of E.U.T.

Power supply:	DC 12V 2A By adapter or DC 9V By 6*AAA size batteries Adapter: Model:A241-1202000U Input:100-240V~50/60Hz Output:12V 2A
Test voltage:	AC 120V/60Hz
Cable:	DC Cable:1.5m

3.2 Technical Specifications

Antenna Gain	Antenna 0: 1dBi Antenna 1: 1dBi
Antenna Type	PIFA Antenna
Channel Spacing	5MHz
Modulation Type	802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channels	802.11b/g/n(HT20):11 802.11n(HT40):7
Operation Frequency	802.11b/g/n(HT20): 2412MHz to 2462MHz 802.11n(HT40): 2422MHz to 2452MHz



3.3 Test Location

All tests were performed at:

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

588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China.

Tel: +86 21 6191 5666

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3.4 Test Facility

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

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **NVLAP (Certificate No. 201034-0)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the National Voluntary Laboratory Accreditation Program(NVLAP). Certificate No. 201034-0.

- **FCC –Designation Number: CN5033**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

Designation Number: CN5033. Test Firm Registration Number: 479755.

- **Innovation, Science and Economic Development Canada**

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

IC Registration No.: 8617A-1. CAB Identifier: CN0020.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-13868, C-14336, T-12221, G-10830 respectively.

4 Test Standards and Limits

4.1 FCC Radiofrequency radiation exposure limits:

According to §1.1310, the limit for general population/uncontrolled exposures

Frequency	Power density(mW/cm ²)	Averaging time(minutes)
300MHz~1.5GHz	f/1500	30
1.5GHz~100GHz	1.0	30

5 Measurement and Calculation

5.1 Maximum transmit power

The Power Data is based on the RF Test Report SHEM190601470301

Test Mode	Channel	Antenna 0 Power[dBm]	Antenna 1 Power[dBm]	MIMO Power[dBm]	Antenna 0 Power[mW]	Antenna 1 Power[mW]	MIMO Power[mW]
11B	2412	12.75	15.62	NA	18.84	36.48	N/A
11B	2437	12.61	15.73	NA	18.24	37.41	N/A
11B	2462	13.60	16.19	NA	22.91	41.59	N/A
11G	2412	12.82	15.89	NA	19.14	38.82	N/A
11G	2437	13.07	15.91	NA	20.28	38.99	N/A
11G	2462	13.72	16.30	NA	23.55	42.66	N/A
11N20MIMO	2412	11.13	14.11	15.88	12.97	25.76	38.73
11N20MIMO	2437	10.92	14.18	15.86	12.36	26.18	38.55
11N20MIMO	2462	11.38	14.30	16.09	13.74	26.92	40.64
11N40MIMO	2422	10.78	13.95	15.66	11.97	24.83	36.81
11N40MIMO	2437	11.10	13.76	15.64	12.88	23.77	36.64
11N40MIMO	2452	11.00	13.76	15.61	12.59	23.77	36.39

The power for LTE modular refer certificate of FCC ID: XMR201605EC25A.

5.2 MPE Calculation

According to the formula $S=P/4\pi R^2$, we can calculate S which is MPE.

Note:

- 1) P (mW)
- 2) R = distance to the center of radiation of antenna (in meter) = 20cm
- 3) MPE limit = 1mW/cm²

For WiFi

The max. antenna gain is: 1 dBi

Max. Conducted Power P(mW)	Gain in Linear Scale G	Operation Distance R(cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)	Result
42.66	1.259	20	0.01068	1	Pass

For MIMO

The max. antenna gain is: 4 dBi

Max. Conducted Power P(mW)	Gain in Linear Scale G	Operation Distance R(cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)	Result
40.64	2.512	20	0.02031	1	Pass

For LTE modular based on original module grantee,

Frequency for 826.4-846.6MHz: the max output power is 0.205W;

Frequency for 1850.7-1909.3MHz: the max output power is 0.244W;

Frequency for 669.7-715.3MHz: the max output power is 0.242W.

Frequency for 1710.7-1754.3MHz: the max output power is 0.24W.

LTE Module:

$$\text{Frequency for 826.4-846.6MHz: } S = \frac{PG}{4R^2\pi} = 205/(4*400*3.14) = 0.041 \text{ mW/cm}^2$$

$$\text{Frequency for 1850.7-1909.3MHz: } S = \frac{PG}{4R^2\pi} = 244/(4*400*3.14) = 0.049 \text{ mW/cm}^2$$

$$\text{Frequency for 669.7-715.3MHz: } S = \frac{PG}{4R^2\pi} = 242/(4*400*3.14) = 0.048 \text{ mW/cm}^2$$

$$\text{Frequency for 1710.7-1754.3MHz: } S = \frac{PG}{4R^2\pi} = 240/(4*400*3.14) = 0.048 \text{ mW/cm}^2$$

LTE Module and WiFi module can simultaneous transmitting, so the maximum rate of MPE is,

Frequency for 826.4-846.6MHz: $0.02/1 + 0.041/0.55 = 0.095 \leq 1.0$.

Frequency for 1850.7-1909.3MHz: $0.02/1 + 0.049/1 = 0.069 \leq 1.0$.

Frequency for 669.7-715.3MHz: $0.02/1 + 0.048/0.45 = 0.127 \leq 1.0$.

Frequency for 1710.7-1754.3MHz: $0.02/1 + 0.048/1 = 0.068 \leq 1.0$.

So the device is exclusion from SAR test.



--End of the Report--