

SGS-CSTC Standards Technical Services Co., Ltd.

Shenzhen Branch



Report No.: SZEM181200106603

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RF Exposure Evaluation Report

Application No.: SZEM1812001066CR(GZEM1812000139TX)
Applicant: SZEM1812001066CR(GZEM1812000139TX)
XIAMEN LEELEN TECHNOLOGY CO., LTD

Address of Applicant: 65 Sunban South Road, Jimei Industrial Zone, Xiamen, China

Manufacturer: XIAMEN LEELEN TECHNOLOGY CO., LTD

Address of Manufacturer: 65 Sunban South Road, Jimei Industrial Zone, Xiamen, China

Factory: XIAMEN LEELEN TECHNOLOGY CO., LTD

Address of Factory: 65 Sunban South Road, Jimei Industrial Zone, Xiamen, China

Equipment Under Test (EUT):

EUT Name: V31 Two Wires Digital Indoor Station

 Model No.:
 EH2W-IS-V31-003

 FCC ID:
 2AFVB- EH2W-IS-V31

Trade Mark: LEELEN

Standards: 47 CFR Part 1.1307 (2016)

47 CFR Part 1.1310 (2016)

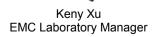
Date of Receipt: 2018-12-26

Date of Test: 2019-01-02 to 2019-02-25

Date of Issue: 2019-02-27

Test Result : Pass*

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





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2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2019-02-27		Original

Authorized for issue by:		
	Larew	
	Leo Lai /Project Engineer	-
	EvicFu	
	Eric Fu /Reviewer	_



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General Description of EUT

Power Supply:	DC 24V	
For 2.4G wifi:		
Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz	
	802.11n(HT40): 2422MHz to 2452MHz	
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	
Antenna Gain:	2.5dBi	
Antenna Type:	PCB Antenna	



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4.1 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.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.2 Test Facility

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

CNAS (No. CNAS L2929)

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC

Lab 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.

• 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.

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.



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4.3 Deviation from Standards

None.

4.4 Abnormalities from Standard Conditions

None.

4.5 Other Information Requested by the Customer

None.



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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	6 6 6 6	
(B) Limits for General Population/Uncontrolled Exposure					
0.3–1.34 1.34–30 30–300 300–1500 1500–100,000	614 824/ī 27.5	1.63 2.19/f 0.073	*(100) *(180/f²) 0.2 f/1500 1.0	30 30 30 30 30 30	

F= Frequency in MHz

Friis Formula

Friis transmission formula: Pd = (Pout*G)/(4* Pi * R²)

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, 1 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.



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5.1.3 EUT RF Exposure Evaluation

For 2.4G WIFI

Antenna 1: 2.5dBi;

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.78 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Max Conducted Output Power (including tune-up tolerance) (dBm)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm2)	Result
21.84	152.76	0.054	1.0	PASS

- End of the Report -



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