RED-Health Test Report

For

Shanghai High-Flying Electronics Technology Co., Ltd

WI-FI Module

Model No.: HF-LPT220

Prepared For	:	Shanghai High-Flying Electronics Technology Co., Ltd
Address	:	Room 1002, #1 Building A, No.3000 Longdong Avenue, Pudong, Shanghai, China
Prepared For	:	Shenzhen Anbotek Compliance Laboratory Limited
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Report Number	:	R0217060215H
Date of Test	:	Jul. 17~26, 2017
Date of Report	:	Jul. 28, 2017

Contents

TEST REPORT

Applicant	:	Shanghai High-Flying Electronics Technology Co., Ltd
Manufacturer	:	Shanghai High-Flying Electronics Technology Co., Ltd
Product Name	:	WI-FI Module
Model No.	:	HF-LPT220
Trade Mark	:	High-Flying
Rating(s)	:	Input DC 3.3V, 170~300mA

Test Standard(s) : EN 62311: 2008

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the ETSI EN 62311:2008 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Test : : Jul. 17~26, 2017

Prepared By : : Winkey Wang

(Tested Engineer / Winkey Wang)

Reviewer : : May Lu

(Project Manager / May Lu)

Approved & Authorized Signer : : Tom Chen

(Manager / Tom Chen)

1. GENERAL INFORMATION

1.1. Client Information

Applicant	:	Shanghai High-Flying Electronics Technology Co., Ltd
Address	:	Room 1002, #1 Building A, No.3000 Longdong Avenue, Pudong, Shanghai, China
Manufacturer	:	Shanghai High-Flying Electronics Technology Co., Ltd
Address	:	Room 1002, #1 Building A, No.3000 Longdong Avenue, Pudong, Shanghai, China

1.2. Description of Device (EUT)

Product Name	:	WI-FI Module	
Model No.	:	HF-LPT220	
Trade Mark	:	High-Flying	
Test Power Supply	:	AC 230V, 50Hz for adapter	
Product Description	:	Operation Frequency:	2412MHz ~ 2472MHz
		Transfer Rate:	802.11b:11/5.5/2/1Mbps 802.11g:54/48/36/24/18/12/9/6 Mbps 802.11n: up to 150Mbps
		Number of Channel:	13 Channels
		Modulation Type:	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
		Antenna Type:	PCB Antenna
		Antenna Gain(Peak):	2 dBi
		Max. Transmitting Power:	16.21 dBm Max.
Remark: 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.			

1.3. Auxiliary Equipment Used during Test

Adapter	:	M/N: FLD052-0501000C Input: AC 100-240V, 50/60Hz, 0.15A Max Output: DC 5.0V, 1.0A

1.4. Description of Test Facility

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

FCC-Registration No.: 752021
Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registed and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 752021, July 06, 2016.

ISED-Registration No.: 8058A-1
Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A-1, June 13, 2016.

Test Location
All Emissions tests were performed at
Shenzhen Anbotek Compliance Laboratory Limited.
1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong, China

1.5. Measurement Uncertainty

Radiation Uncertainty	:	Ur = 4.1 dB (Horizontal) Ur = 4.3 dB (Vertical)
Conduction Uncertainty	:	Uc = 3.4dB

2. GENERAL PRODUCT INFORMATION

2.1 Basic Restriction

The essential requirements of Directive 99/5/EC in the article 3.1(a) and the limits must be taken from Council Recommendation 99/519/EC for General Population or form the ICNIRP Guidelines for Occupational Exposure. EN 50371:2002 Generic standard to demonstrate the compliance of low power electronic and electrical apparatus with the basic restrictions related to human exposure to electromagnetic fields. The average power of EUT is less than 20mW then comply with basic restriction (1999/519/EC) without test.

2.2 Table for Filed Antenna

Ant.	Antenna Type	Gain (dBi)
1.	PCB Antenna	2

3.TEST TESULT

3.1 EMF Exposure Measurement

3.1.1 Limit

Basic Restrictions

Council Recommendation 99/519/EC Annex II
Basic restrictions for electric, magnetic and electromagnetic fields (0 Hz to 300 GHz)

Frequency range	Magnetic flux density (mT)	Current density (mA/m^2) (rms)	Whole body average SAR (W/kg)	Localized SAR (head and trunk) (W/kg)	Localized SAR (limbs) (W/kg)	Power density, S (W/m^2)
0Hz	40	-	-	-	-	-
>0-1Hz	-	8	-	-	-	-
1–4Hz	-	8/f	-	-	-	-
4Hz–1000Hz	-	2	-	-	-	-
1000Hz–100kHz	-	f/500	-	-	-	-
100kHz–10MHz	-	f/500	0.08	2	4	-
10MHz–10GHz	-	-	0.08	2	4	-
10GHz–300GHz	-	-	-	-	-	10

Note:

1. f is the frequency in Hz.

2. The basic restriction on the current density is intended to protect against acute exposure effects on central nervous system tissues in the head and trunk of the body and includes a safety factor. The basic restrictions for ELF fields are based on established adverse effects on the central nervous system. Such acute effects are essentially instantaneous and there is no scientific justification to modify the basic restrictions for exposure of short duration. However, since the basic restriction refers to adverse effects on the central nervous system, this basic restriction may permit higher current densities in body tissues other than the central nervous system under the same exposure conditions.

3. Because of electrical inhomogeneity of the body, current densities should be averaged over a cross section of 1 cm^2 perpendicular to the current direction.

4. For frequencies up to 100kHz, peak current density values can be obtained by multiplying the rms value by$\sqrt{2}$ (=1.414). For pulses of duration tp the equivalent frequency to apply in the basic restrictions should be calculated as-1/(2tp).

5. For frequencies up to 100kHz and for pulsed magnetic fields, the maximum current density associated with the pulses can be calculated from the rise/fall times and the maximum rate of change of magnetic flux density. The induced current density can then be compared with the appropriate basic restriction.

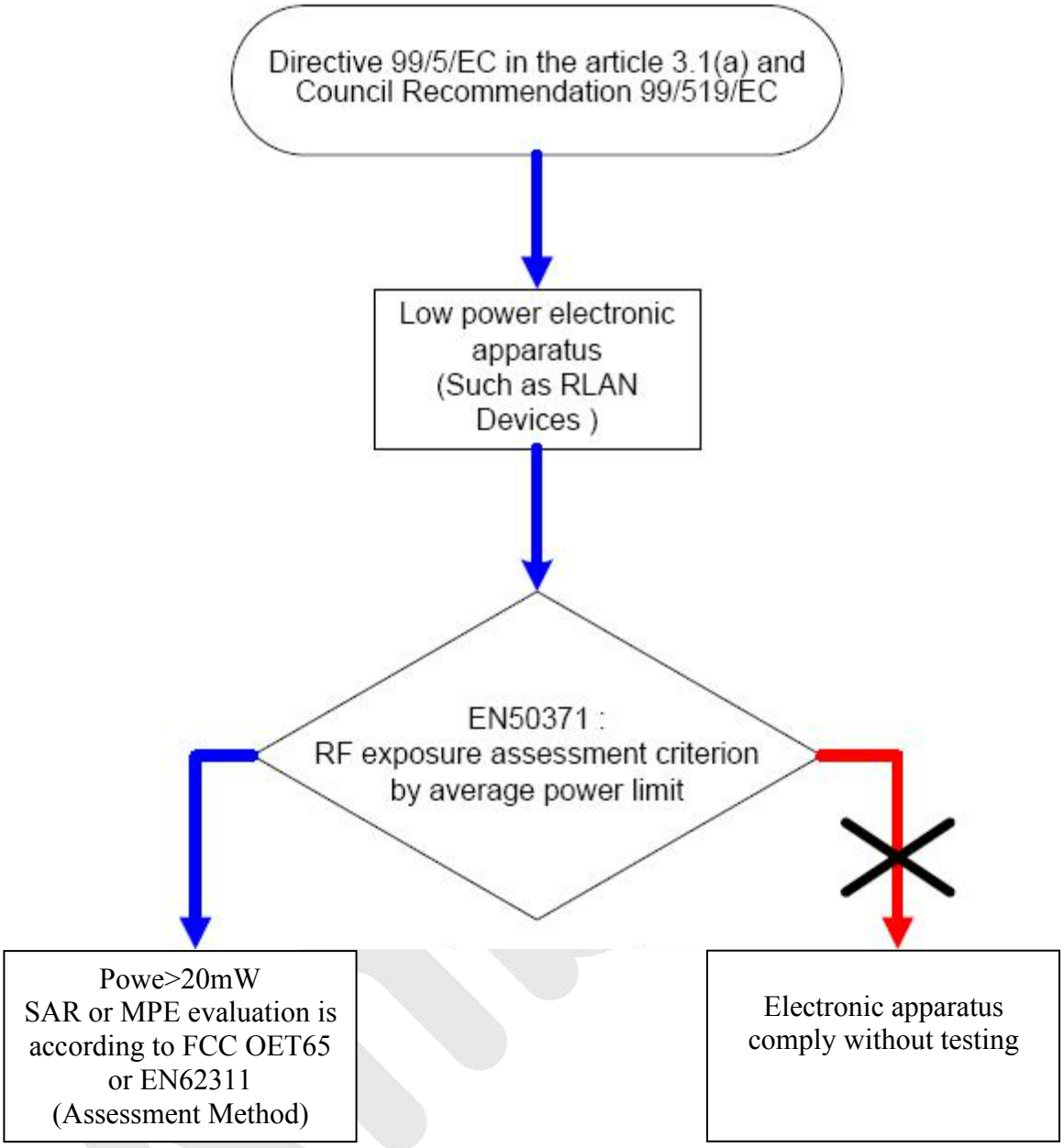
6. All SAR values are to be averaged over any six-minute period.

7. Localised SAR averaging Mass is any 10g of contiguous tissue; the maximum SAR so obtained should be the value used for the estimation of exposure. These 10g of tissue are intended to be a mass of contiguous tissue with nearly homogeneous electrical properties. In specifying a contiguous mass of tissue, it is recognized that this concept can be used in computational dissymmetry but may present difficulties for direct physical measurements. A simple geometry such as cubic tissue mass can be used provided that the calculated dissymmetric quantities have conservative values relative to the exposure guidelines.

8. For pulses of duration tp the equivalent frequency to apply in the basic restrictions should be calculated an=1/(2tp). Additionally, for pulsed exposures, in the frequency rage 0.3 to 10GHz and for localized exposure of the head, in order to limit and avoid auditory effects caused by thermoplastic expansion, an additional basic restriction is recommended. This is that the SA should not exceed 2mJ kg-1 averaged over 10g of tissue.

3.1.2. Evaluation Routine

Low Power Electronic Apparatus for RF exposure evaluation routine



3.2 Detailed results

3.2.1 MPE Evaluation

S =PG* Duty factor / $4\pi R^2$
P = Peak Power Input to antenna (Watts)
G =Antenna Gain (numeric)
R = distance to the center of radiation of antenna (in meter) = 0.20 m
Note:
1) P (Watts)=(10 ^ (dBm /10))/1000
2) G (Antenna gain in numeric) = 10^ (Antenna gain in dBi /1)
3) Duty factor=1
4) π=3.142

The maximum power density at a distance of 0.2 m for EUT is shown as below:

Test Mode	Antenna Gain(dBi)	Peak Output Power (dBm)	Peak Output Power (W)	Duty factor	Calculated RF Exposure (W/ m^2)	Limit (W/ m^2)
WiFi	2	16.21	0.0418	1	0.132	10

3.2.2 Measurement Uncertainty

Extended Uncertainty (k=2) 95% 0.5dB