

RF Exposure Evaluation Declaration

Product Name : GNSS receiver

Model No. : N72 WXYZ

FCC ID: SY4-A02003

Applicant : Shanghai Huace Navigation Technology LTD.

Address : Building C,599 Gaojing Road,Qingpu District,Shanghai,

Date of Receipt : 03/12/2015

Issued Date : 05/10/2015

Report No. : UL41320150312CE/FCC003-5

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.

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Address : Building C,599 Gaojing Road,Qingpu District,Shanghai
Manufacturer : Shanghai Huace Navigation Technology LTD.
Address : Building C,599 Gaojing Road,Qingpu District,Shanghai
Model No. : N72 WXYZ
Model Description: See Part1 Note.
EUT Voltage : Extreme Low:12,Nominal:12,Extreme High:36

Brand Name :



Applicable Standard : FCC's Rules(47 C.F.R. § 1.1310 and 2.1091)

Test Result : Complied

Performed Location : Unilab (Shanghai) Co.,Ltd.

FCC 2.948 register number is 714465

No.1350, Lianxi Road, Pudong New District, Shangha, China

TEL:+86-21-5027-5125/FAX:+86-21-5027-5126-876

Documented By :

(Technical Engineer: Jeffrey Wang)

Reviewed By :

(Senior Engineer: Forest Cao)

Approved By :

(Supervisor: Eva Wang)

1. EUT Description

Product Name:	GNSS receiver
Model Name:	N72 WXYZ
Hardware Version:	V2.2
Software Version:	1.0.11
RF Exposure Environment:	Uncontrolled
GPRS/EGPRS	
Support Band:	GSM850/ PCS 1900
Tx Frequency Range:	GSM 850: 824.2MHz to 848.8MHz PCS 1900: 1850.2MHz to 1909.8MHz
Rx Frequency Range:	GSM 850: 869.2MHz to 893.8MHz PCS 1900: 1930.2MHz to 1989.8MHz
Type of modulation:	GPRS for GMSK EGPRS for 8PSK
Antenna Type:	Connector
Antenna Peak Gain:	GSM 850:5 dBi PCS 1900: 5dBi
UMTS	
Support Band:	WCDMA Band II / V
Tx Frequency Range:	WCDMA Band II : 1850MHz ~1910MHz WCDMA Band V: 824MHz ~849MHz
Rx Frequency Range:	WCDMA Band II : 1930MHz ~1990MHz WCDMA Band V: 869MHz ~894MHz
Type of modulation:	WCDMA(UMTS): QPSK
Antenna Type:	Connector
Antenna Peak Gain:	WCDMA Band II / V: 5.0dBi

Note: Model N72 WXYZ, W is variable, it indicated A-Z or 0-9 or blank, X is variable, it indicated A-Z or 0-9 or blank, Y is variable, it indicated A-Z, 0-9 or blank. Z is variable, it indicated A-Z, 0-9 or blank. due to sales purpose in different countries or regions. The internal PCB design are no difference, but only distinct in colours and model names. This test model name is N72.

2. RF Exposure Evaluation

2.1 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)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range(MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (Minutes)
(A)Limits for Occupation/Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B)Limits for General Occupation/UnControlled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

P_d is 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.

2.2. 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: 22°C and 45% RH.

2.3. Test Result of RF Exposure Evaluation

This device is evaluated by mobile device with general population/uncontrolled exposure condition
 For this device, the calculation is using the most conservative values, and the results are as follows:

Test Mode	ERP (dBm)	EIRP (dBm)	Peak EIRP (mW)	Average EIRP (mW)	Calculated RF Exposure at d = 20cm (mW/cm ²)	MPE Limit (mW/cm ²)
GPRS850	31.26	33.41	2192.8	276.1	0.055	0.55
GPRS1900	/	28.71	743.0	93.5	0.019	1.00
EGPRS850	30.02	32.17	1648.2	115.08	0.023	0.55
EGPRS1900	/	28.33	680.8	115.1	0.023	1.00
Band V	21.91	24.06	254.7	254.7	0.051	0.55
Band II	/	22.90	195.0	195.0	0.039	1.00

Test Mode	Antenna Gain (dBi)	Maximum Output Power (dBm)	Maximum Output Power (mW)	Average EIRP (mW)	Calculated RF Exposure at d = 20cm (mW/cm ²)	MPE Limit (mW/cm ²)
GPRS850	5	35	3162.28	398.11	0.079	0.55
GPRS1900	5	32	1584.89	251.19	0.050	1.00
EGPRS850	5	35	3162.28	398.11	0.079	0.55
EGPRS1900	5	32	1584.89	251.19	0.050	1.00
Band II	5	24	251.12	794.3	0.158	0.55
Band V	5	24	251.12	794.3	0.158	1.00

This device can pass RF exposure limit.