



MPE TEST REPORT

FCC Per 47 CFR 2.1091(b)

Report Reference No. : TRE1312005402 R/C: 30385

FCC ID : PJ7-1232

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Date of issue : Jan 14, 2014

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Address : Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China

Applicant's name : Shenzhen Neoway Technology Co., Ltd

Address : 4F-2#, Lianjian Science & Industry Park, Huarong Road, Dalang, Longhua new district, Shenzhen, P.R.C

Test specification :

Standard : FCC Per 47 CFR 2.1091(b)

KDB447498 v05r02

TRF Originator : Shenzhen Huatongwei International Inspection CO., Ltd

Master TRF : Dated 2006-06

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Test item description : GPRS Module

Trade Mark : **neoway**

Manufacturer : Shenzhen Eternity Technology Co., Ltd

Model/Type reference : M680

Listed Models : /

Ratings : DC 3.90V

Modulation : GMSK for GPRS/EDGE

GPRS/ EGPRS Class : 12

GPRS operation mode : Class B

Frequency : GSM 850MHz; PCS 1900MHz;

Result : **PASS**

M P E T E S T R E P O R T

Test Report No. : TRE1312005402	Jan 14, 2014 Date of issue
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Equipment under Test : GPRS Module

Model /Type : M680

Listed Models : /

Applicant : **Shenzhen Neoway Technology Co.,Ltd**

Address : 4F-2#,Lianjian Science & Industry Park,Huarong Road,Dalang,Longhua new district,Shenzhen.P.R.C

Manufacturer **Shenzhen Eternity Technology Co.,Ltd**

Address : Block A2,Yingzhan Industrial Zone, Longtian Community, KengziOffice,Pingshan New District,Shenzhen,Guangdong Province,P.R.China

Test Result	PASS
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The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. SUMMARY

1.1. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

☐	Power Cable	Length (m) :	/
☐		Shield :	/
☐		Detachable :	/
☐	Multimeter	Manufacturer :	/
☐		Model No. :	/

1.2. NOTE

1. The EUT is a GPRS Module, The functions of the EUT listed as below:

	Test Standards	Reference Report
GPRS/EDGE	FCC Part 22/FCC Part 24	TRE1312005401
MPE	FCC Part 2.1091(d)	TRE1312005402

2. TEST ENVIRONMENT

2.1. Address of the test laboratory

Shenzhen Huatongwei International Inspection Co., Ltd
Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China
Phone: 86-755-26715686 Fax: 86-755-26748089

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2009) and CISPR Publication 22.

2.2. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	<u>15-35 ° C</u>
Humidity:	<u>30-60 %</u>
Atmospheric pressure:	<u>950-1050mbar</u>

2.3. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.57 dB	(1)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

3. Method of measurement

3.1. Applicable Standard

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

KDB447498 v05r02:Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies

3.2. Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	6
3.0 – 30	1842/f	4.89/f	(900/f ²)*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	/	/	f/300	6
1500 – 100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	30
3.0 – 30	824/f	2.19/f	(1800/f ²)*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	/	/	f/1500	30
1500 – 100,000	/	/	1.0	30

F=frequency in MHz

*=Plane-wave equivalent power density

3.3. MPE Calculation Method

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator

R=distance to the center of radiation of the antenna

As declared by the Applicant, the EUT transmits with the maximum source-based Duty Cycle of 100%-see the User manual, and the EUT is a wireless device used in a mobile application, at least 20 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum mobile separation distance, $r = 20\text{cm}$, as well as the gain of the used antenna is -2.00dBi , the RF power density can be obtained.

TEST RESULTS

Manufacturing tolerance

GSM850 GPRS				
Channel		251	190	128
1 Txslot	Target (dBm)	32.00	32.00	32.00
	Tolerance $\pm$ (dB)	1	1	1
2 Txslot	Target (dBm)	29.50	29.50	29.50
	Tolerance $\pm$ (dB)	1	1	1
3 Txslot	Target (dBm)	27.50	27.50	27.50
	Tolerance $\pm$ (dB)	1	1	1
4 Txslot	Target (dBm)	26.50	26.50	26.50
	Tolerance $\pm$ (dB)	1	1	1
GSM850 EDGE				
Channel		251	190	128
1 Txslot	Target (dBm)	31.50	31.50	31.50
	Tolerance $\pm$ (dB)	1	1	1
2 Txslot	Target (dBm)	29.50	29.50	29.50
	Tolerance $\pm$ (dB)	1	1	1

3 Txslot	Target (dBm)	27.50	27.50	27.50
	Tolerance $\pm$ (dB)	1	1	1
4 Txslot	Target (dBm)	26.50	26.50	26.50
	Tolerance $\pm$ (dB)	1	1	1
GSM1900 GPRS				
Channel		810	661	512
1 Txslot	Target (dBm)	29.00	29.00	29.00
	Tolerance $\pm$ (dB)	1	1	1
2 Txslot	Target (dBm)	26.50	26.50	26.50
	Tolerance $\pm$ (dB)	1	1	1
3 Txslot	Target (dBm)	24.50	24.50	24.50
	Tolerance $\pm$ (dB)	1	1	1
4 Txslot	Target (dBm)	23.50	23.50	23.50
	Tolerance $\pm$ (dB)	1	1	1
GSM1900 EDGE				
Channel		810	661	512
1 Txslot	Target (dBm)	29.00	29.00	29.00
	Tolerance $\pm$ (dB)	1	1	1
2 Txslot	Target (dBm)	26.50	26.50	26.50
	Tolerance $\pm$ (dB)	1	1	1
3 Txslot	Target (dBm)	24.50	24.50	24.50
	Tolerance $\pm$ (dB)	1	1	1
4 Txslot	Target (dBm)	23.50	23.50	23.50
	Tolerance $\pm$ (dB)	1	1	1

GPRS850

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Numeric)	Power Density At 20 cm (mW/cm ²)	Power Density Limit (mW/cm ²)	Test Results
824.20	20.00	31.69	1475.71	1.2589	0.3696	0.5495	PASS
836.60	20.00	31.85	1531.09	1.2589	0.3835	0.5577	PASS
848.80	20.00	32.24	1674.94	1.2589	0.4195	0.5659	PASS

EGPRS850

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Numeric)	Power Density At 20 cm (mW/cm ²)	Power Density Limit (mW/cm ²)	Test Results
824.20	20.00	31.68	1472.31	1.2589	0.3687	0.5495	PASS
836.60	20.00	31.89	1545.25	1.2589	0.3870	0.5577	PASS
848.80	20.00	32.25	1678.80	1.2589	0.4205	0.5659	PASS

GPRS1900

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Numeric)	Power Density At 20 cm (mW/cm ²)	Power Density Limit (mW/cm ²)	Test Results
1850.20	20.00	29.98	995.41	1.2589	0.2493	1.0000	PASS
1880.00	20.00	29.80	954.99	1.2589	0.2392	1.0000	PASS
1909.80	20.00	29.40	870.96	1.2589	0.2181	1.0000	PASS

EGPRS1900

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Numeric)	Power Density At 20 cm (mW/cm ²)	Power Density Limit (mW/cm ²)	Test Results
1850.20	20.00	29.92	981.75	1.2589	0.2459	1.0000	PASS
1880.00	20.00	29.81	957.19	1.2589	0.2397	1.0000	PASS
1909.80	20.00	29.56	903.65	1.2589	0.2263	1.0000	PASS

4. Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure.

.....**End of Report**.....