MPE Calculation REPORT

Report No.: GSM11541602M02
According to

FCC Rules 47 CFR §2.1091 & FCC OET Bulletin 65 supplement C

For

SAGEM COMMUNICATIONS

Model Name: HILONC

Final Hardware Version: V2

Final Software Version: HIC,A

CNAS
检 测
CNAS L1486

Prepared by Project Leader: Ken Wang **Date:** 2009-01-19

Ken Wang

Approved by Lab Manager: Zhiang Yuan **Date:** 2009-01-20

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Change History

Version	Change Contents	Author	Date
V1.0	First edition	Will Ni	2009-01-19

Standards

The Equipment under Test (EUT) has been tested at SGS's (own or subcontracted) laboratories. The following table summarizes the specific reference documents such as harmonized standards or test specifications which were used for testing as SGS's (own or subcontracted) laboratories.

Identity	Document Title	Version
FCC OET Bulletin 65 supplement C	Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields	2001

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

Remarks:

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. 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-CSTC Shanghai GSM Lab or testing done by SGS-CSTC Shanghai GSM Lab should be approved by SGS Shanghai GSM Lab in connection with distribution or use of the product described in this report in writing.

1. General Information

1.1 Testing Laboratory

1.1.1 Responsible Testing Laboratory

Wireless Telecommunications Laboratory SGS-CSTC Standards Technical Services Co., Ltd Shanghai Branch	
Address:	9F, 3rd Building, No.889, Yishan Rd, Xuhui District, Shanghai, China 200233
Telephone:	+86 (0) 21 6495 1616
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Internet:	http://www.cn.sgs.com
Contact:	Mr. Zhiang Yuan
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1.1.2 Testing Locations

Wireless Telecommunications Laboratory SGS-CSTC Standards Technical Services Co., Ltd Shanghai Branch	
Address:	9F, 3rd Building, No.889, Yishan Rd, Xuhui District, Shanghai, China 200233
Telephone:	+86 (0) 21 6495 1616
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Internet:	http://www.cn.sgs.com
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1.1.3 SGS Wireless Shanghai, Personnel

Project Management Team

Forename	Surname
Cai	Cai
Lisa	Song
Anya	Xu
James	Xia

Test Engineer

Forename	Surname
Will	Ni
Ken	Wang
Zenger	Zhang

1.2 Testing Environments

Ambient Temperature:	18~25℃
Relative Humidity:	25~60%

1.3 Client information

1.3.1 Details of Applicant

Company Name	SAGEM COMMUNICATIONS
Address	Le Ponan de Paris，27 rue Leblanc，75015 PARIS，France
Telephone	0755-33331230
Contact	Minghui Xiong and Tiejun Fu
Email	Minghui.xiong@sagem.com and Tiejun.fu@sagem.com

1.3.2 Details of Manufacture

Company Name	SAGEM COMMUNICATIONS
Address	Le Ponan de Paris，27 rue Leblanc，75015 PARIS，France
Telephone	0755-33331230
Contact	Minghui Xiong and Tiejun Fu
Email	Minghui.xiong@sagem.com and Tiejun.fu@sagem.com

1.4 Equipment Under Test (EUT) and Accessories

Description	GSM/GPRS Module	
Brand Name	SAGEM	
Model Name	HILONC	
Final Hardware Version	V2	
Final Software Version	HIC,A	
Normal Voltage	3.7V	
Low Voltage	3.2V	
High Voltage	4.5V	
Antenna Type	external Antenna	
GSM Frequency Bands	GSM 850	Tx: 824~849 MHz
		Rx: 869~894 MHz
	PCS 1900	Tx: 1850~1910 MHz
		Rx: 1930~1990 MHz
Modulation Mode	GMSK	
GSM Power Class	GSM 850	4: 33dBm(Nominal)
	PCS 1900	1: 30dBm(Nominal)
GPRS Multislot Class	Class10	

1.5 Test Standards and Limits

FCC LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	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

2. Measurement and Calculation

2.1 Summary of Results

Frequency Band	Limit (mW/cm²)	Result (mW/cm²)	Verdict
GSM850	0.55	0.085	Pass
PCS1900	1.0	0.027	Pass

2.2 Result of GSM850

Test Results: MPE Limit Calculation: the EUT's operating frequencies @824~849 MHz; as per the original test report the Measured maximum ERP is 33.34 dBm. Duty factor is 1/4 for GPRS operation (class 10).

$S = EIRP^* \text{ Duty factor} / 4\pi R^2$

EIRP = 33.34 + 2.14 = 35.48dBm = 3531.8mW
R = distance to the center of radiation of antenna = 20 cm
$S = 3531.8^*(1/4)/ (4\pi * 20^2) = 0.085 mW/cm^2$

MPE limit = 824/1500 = 0.55mW/cm²

2.3 Result of PCS1900

Test Results: MPE Limit Calculation: the EUT's operating frequencies @ 1850~1910 MHz MHz; as per the original test report The Measured maximum EIRP is 25.25dBm.Duty factor is 1/4 for GPRS operation (class 10).

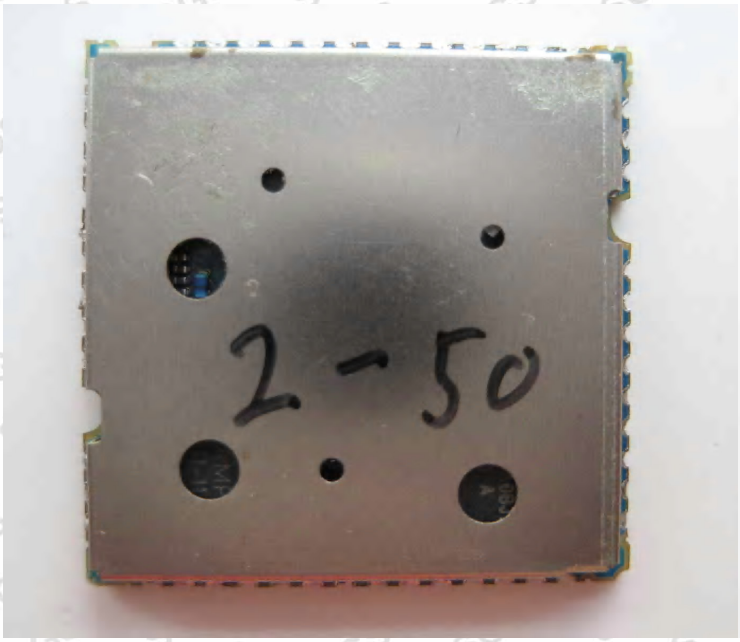
$S = EIRP^* \text{ Duty factor} / 4\pi R^2$

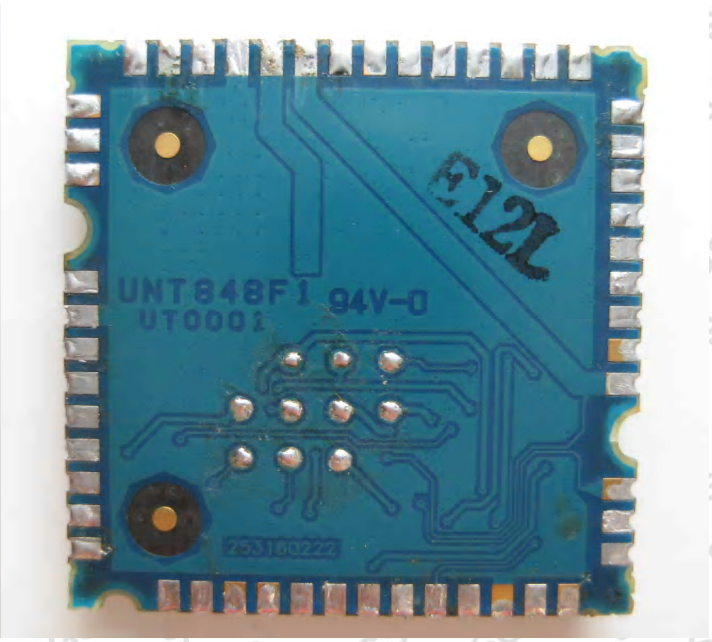
EIRP = 25.25 + 2.14 = 27.39dBm = 548.3mW
R = distance to the center of radiation of antenna = 20 cm
$S = 548.3^*(1/4)/ (4\pi * 20^2) = 0.027 mW/cm^2$

MPE limit = 1.0mW/cm²

Note: π=3.142

Annex.A Photographs of DUT





Annex.B Photographs of Antenna

End of Report