



FCC ID: VW3HILOC

Report No: ER/2008/20034  
Issue Date: Jun. 25, 2008  
Page: 1 of 13

# RADIO FREQUENCY RADIATION EXPOSURE REPORT

## Mobiles /Fixed Base Station Maximum Permissible Exposure (MPE)

OF

**Product Name:** GSM/GPRS Module

**Brand Name:** SAGEM

**Marketing Name:** N/A

**Model Name:** HILO

**FCC ID:** VW3HILOC

**Report No.:** ER/2008/20034

**Issue Date:** Jun. 25, 2008

**Prepared for:** SAGEM COMMUNICATIONS.

**Le Ponan de Paris 27 rue Leblanc 75015  
PARIS France**

**Prepared by:** SGS Taiwan Ltd.

**Electronics & Communication Laboratory**

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## VERIFICATION OF COMPLIANCE

**Applicant:** SAGEM COMMUNICATIONS.

Le Ponan de Paris 27 rue Leblanc 75015 PARIS France

**Product Name:** GSM/GPRS Module**FCC ID Number:** VW3HILOC**Brand Name:** SAGEM**Marketing Name:** N/A**Model No.:** HILO**Model Difference:** N/A**File Number:** ER/2008/20034**Date of test:** Feb. 26, 2008 ~ Mar. 14, 2008**Date of EUT Received:** Feb. 25, 2008**We hereby certify that:**

The above equipment was tested by SGS Taiwan Ltd., Electronics & Communication Laboratory. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in FCC OET Bulletin 65 Supplement C and 47 CFR §2.1091.

The test results of this report relate only to the tested sample identified in this report.

**Test By:****Date**

Jun. 25, 2008

*Jazz Huang / Engineer***Prepared By:****Date**

Jun. 25, 2008

*Gigi Yeh / Clerk***Approved By:****Date**

Jun. 25, 2008

*Vincent Su/Manager*

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## Report Version

Version No.	Date
00	Mar. 17, 2008
01	Jun. 25, 2008 Re-calculation MPE.

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## 1. GENERAL INFORMATION

Product Name:	GSM/GPRS Module	
Model Name:	HILO	
Market name:	N/A	
Model Difference:	N/A	
Brand Name:	SAGEM	
Simple Hands-Free (SHF):	N/A	
Power Supply:	3.7 Vdc	
	Battery Model:	N/A
	Adapter Model:	N/A

### GSM:

Frequency Range and Power	GSM/GPRS 850: 824.2MHz –848.8MHz GPRS Class 10	33 dBm
	PCS/GPRS 1900: 1850.2MHz –1909.8MHz GPRS Class 10	30 dBm
Type of Emission:	GSM/GPRS: 300KGXW	
Software Version:	HIC,A	
Hardware Version:	V2	

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## 1.2 Related Submittal(s) / Grant (s)

This submittal(test report) is intended to comply with section part22 subpart H and part 24 subpart E of the FCC CFR 47 Rules.

## 1.3 Special Accessories

Not available for this EUT intended for grant.

## 1.4 Equipment Modifications

Not available for this EUT intended for grant.

## 1.5 Limitation

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-15000	/	/	1.0	30

F = frequency in MHz

\* = Plane-wave equipment power density

## 1.6 Maximum Permissible Exposure (MPE) Evaluation

In this application we seek modular approval to the HILO GSM/GPRS class10 module. Based on the FCC OET Bulletin 65 Supplement C and 47 CFR §2.1091, we have concluded that the HILO module will comply with the FCC rules on RF exposure for mobile devices in cellular band and PCS band. The following analysis will demonstrate such compliance. The analysis will be done in two US bands.

### Operation in cellular band (824.2MHz – 848.8 MHz)

The ERP of HILO in cellular band is 28.42dBm max at GSM/GPRS mode. The resulted power density at a distance of 20 cm can be deducted as follows:

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
GSM 850	824.20	128	H	V	123.12	35.80	-7.87	3.64	24.28	38.45
				H	126.02	38.36	-7.87	3.64	26.85	38.45
	836.60	190	H	V	120.77	33.74	-7.88	3.70	22.17	38.45
				H	123.36	36.02	-7.88	3.70	24.45	38.45
	848.80	251	H	V	124.88	38.14	-7.88	3.75	26.51	38.45
				H	127.07	40.05	-7.88	3.75	28.42	38.45

$$\text{EIRP} = 28.42 + 2.14 = 30.56 \text{ dBm} = 1137.627 \text{ mW}$$

$$\text{Power Density} = \text{EIRP} * \text{Duty Cycle} / (4 \pi R^2)$$
$$= 1386.76 * 0.25 / (4 * \pi * 20^2) = 0.057 \text{ mW/cm}^2$$

where Duty Cycle is 0.25 for GPRS operation (class 10) and R is 20 cm.

The MPE limit for General Population/Uncontrolled Exposure is shown in the FCC OET Bulletin 65 Supplement C and can be calculated as follows:

$$\text{MPE limit} = 824 / 1500 = 0.55 \text{ mW/cm}^2$$

As we can see the resulted power density is below the MPE limit, therefore HILO module in cellular band is compliant with the FCC rules on RF exposure.

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Operation in PCS band (1850.2MHz – 1909.8MHz)

The EIRP of HILO module in PCS band is 25.79 dBm. max. The resulted ERP can be expressed as follows:

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
PCS 1900	1850.20	512	H	V	128.26	21.30	9.90	5.41	25.79	33.00
				H	122.35	15.46	9.90	5.41	19.95	33.00
	1880.00	661	H	V	127.65	20.70	9.99	5.46	25.23	33.00
				H	119.88	13.01	9.99	5.46	17.54	33.00
	1909.80	810	H	V	126.03	19.09	10.08	5.51	23.66	33.00
				H	119.09	12.24	10.08	5.51	16.80	33.00

$$\text{EIRP} = 25.79 \text{ dBm} = 379.315 \text{ mW}$$

$$\text{Power Density} = \text{EIRP} * \text{Duty Cycle} / (4 \pi R^2)$$

$$= 379.315 * 0.25 / (4 * \pi * 20^2) = 0.019 \text{ mW/cm}^2$$

where Duty Cycle is 0.25 for GPRS operation (class 10) and R is 20 cm.

The MPE limit for General Population/Uncontrolled Exposure is shown in the FCC OET Bulletin 65 Supplement C and can be calculated as follows:

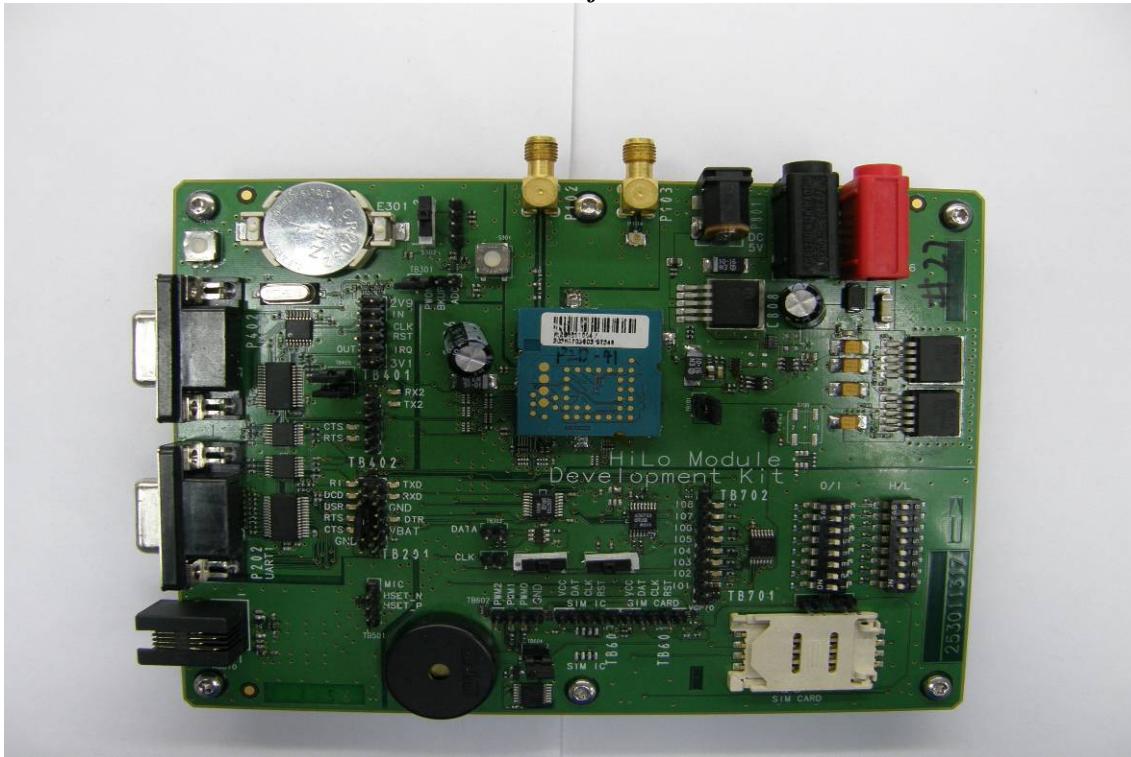
$$\text{MPE limit} = 1.0 \text{ mW/cm}^2$$

As we can see the resulted power density is below the MPE limit, therefore HILO module in PCS band is compliant with the FCC rules on RF exposure.

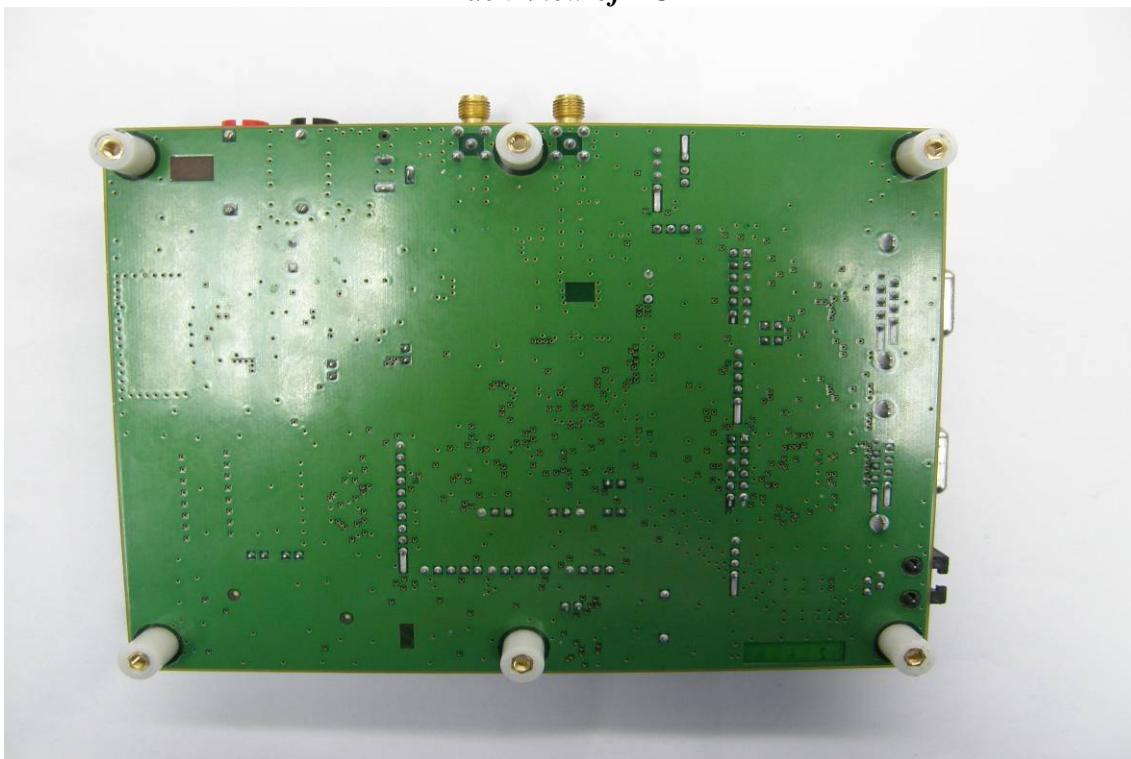
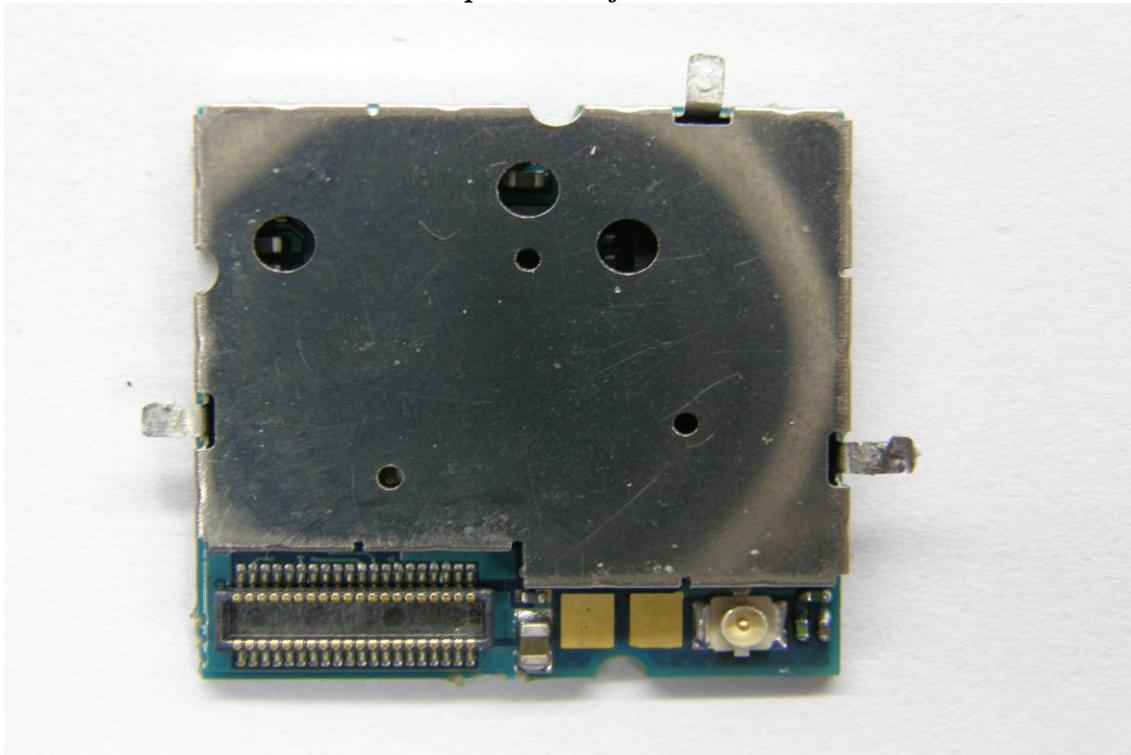
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## APPENDIX 1 PHOTOGRPHS OF EUT

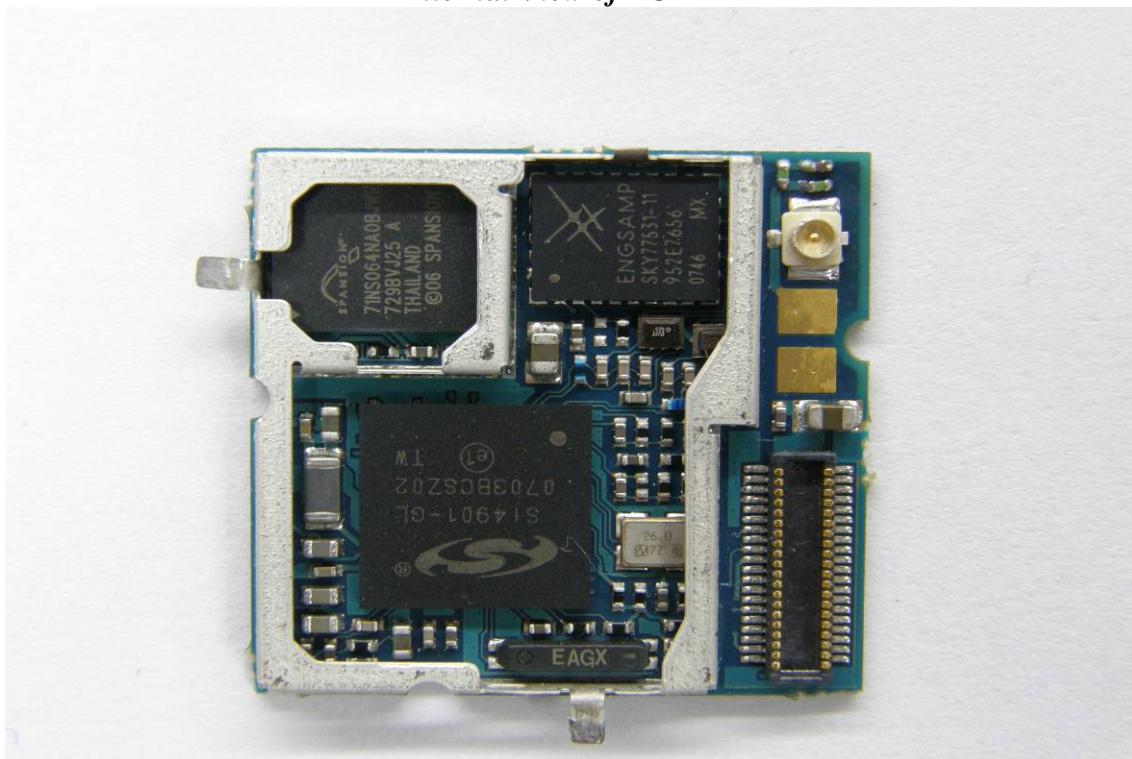
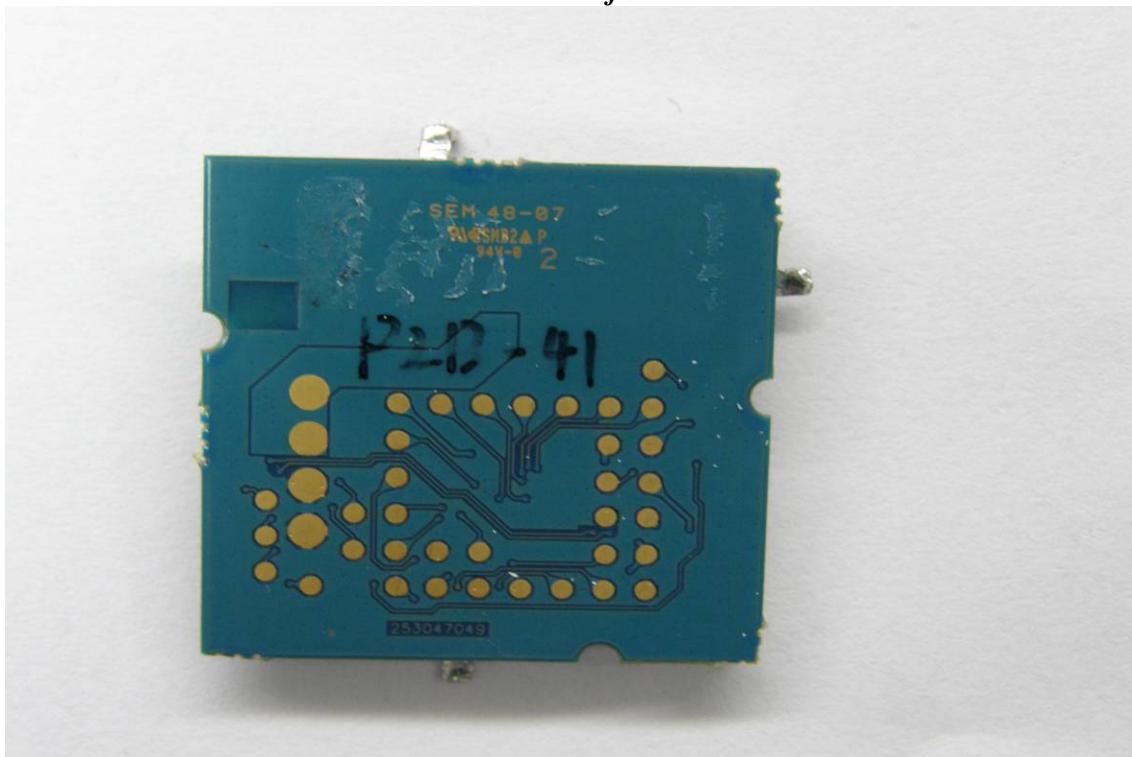
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*All View of EUT**Front View of EUT - 1*

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*Back View of EUT**Open View of EUT*

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*Internal View of EUT - 1**Internal View of EUT - 2*

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