

# RF Exposure Evaluation Declaration

Product Name : GSM/GPRS Module  
Model No. : Hilo V2  
FCC ID : VW3HILOV2  
IC : 9140A-HILOV2

Applicant : Sagemcom

Address : 250 route de l'empereur, 92848, France

Date of Receipt : Oct. 20, 2010  
Issued Date : Nov. 18, 2010  
Report No. : 10AS030R-RF-US  
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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# Test Report Certification

Issued Date: Nov. 18, 2010

Report No. : 10AS030R-RF-US



Product Name : GSM/GPRS Module  
 Applicant : Sagemcom  
 Address : 250 route de l'empereur, 92848, France  
 Manufacturer : Sagemcom  
 Address : 250 route de l'empereur, 92848, France  
 Model No. : Hilo V2  
 FCC ID : VW3HILOV2  
 IC : 9140A-HILOV2  
 EUT Voltage : Normal 3.7V/High 4.5V/Low 3.3V  
 Brand Name : Sagemcom  
 Applicable Standard : FCC OET Bulletin 65, ICNIRP Guidelines  
 RSS-102: Issue 4, 2010  
 Test Result : Complied  
 Performed Location : Suzhou EMC Laboratory  
 No.99 Hongye Rd., Suzhou Industrial Park Loufeng  
 Hi-Tech Development Zone., Suzhou, China  
 TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098  
 FCC Registration Number: 800392, IC Lab Code: 4075B

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## Laboratory Information

We, **Quietek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

<b>Taiwan R.O.C.</b>	<b>: BSMI, NCC, TAF</b>
<b>Germany</b>	<b>: TUV Rheinland</b>
<b>Norway</b>	<b>: Nemko, DNV</b>
<b>USA</b>	<b>: FCC, NVLAP</b>
<b>Japan</b>	<b>: VCCI</b>

The related certificate for our laboratories about the test site and management system can be downloaded from Quietek Corporation's Web Site : <http://www.quietek.com/tw/ctg/cts/accreditations.htm>  
The address and introduction of Quietek Corporation's laboratories can be founded in our Web site : <http://www.quietek.com/>  
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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## 1. RF Exposure Evaluation

### 1.1. 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 <sup>2</sup> )	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

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

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

$G$  = gain of antenna in linear scale

$\pi$  = 3.1416

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

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. 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.

## 1.2. 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: 18°C and 78% RH.

## 1.3. Test Result of RF Exposure Evaluation

### 1.3.1. Conducted Power Analysis

Table 1

No. of timeslots	1	2	3	4
Duty Cycle	1 : 8	1 : 4	1 : 2.66	1 : 2
Timebased avg. power compared to slotted avg. power	-9 dB	-6 dB	-4.25 dB	-3 dB

This device just supports GPRS Class 10 with maximum 2 slots uplink.

The following table shows the conducted power measured and time based average power calculated:

Table 2

Frequency Band	Modulation	Timeslots	Power Measured (dBm)	Time based average power (Calculated)
GSM850	GMSK	1	32.47	<b>23.47</b>
GSM850	GMSK	2	29.32	23.32
PCS1900	GMSK	1	29.46	<b>20.46</b>
PCS1900	GMSK	2	26.43	20.43

### 1.3.2. Host Platform Analysis

The MPE calculation was performed for the maximum antenna gain maybe used of stand-alone condition. According to FCC Part2.1091(c) requirement, the maximum ERP (below 1.5GHz) is 1.5W and (above 1.5GHz) is 3W. Conjunction with FCC Part22H&24E requirements, the following table shows the maximum antenna gain allowed for stand-alone situation.

According to FCC rules, maximum ERP allowed is 7W (38.45dBm) for Part22H, maximum EIRP is 2W (33dBm) for Part24E.

Table 3

System	Mode	Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Duty Cycle (%)	PAR (dB)	EIRP (dBm)
GSM850	GPRS	824.2~848.8	32.47	8.13	12.5	9	31.60
PCS1900	GPRS	1850.2~1909.8	29.46	3.54	12.5	9	24.00

### 1.3.3. MPE Evaluation Result

The device used should cover the following conditions:

- 1) The antenna-to-user distance of all transmitters(for example: WLAN, Bluetooth) above is 20cm or larger;
- 2) The maximum antenna gain of the device does not exceed the values listed in table 3.

Note: other antennas of different communication systems may be installed in the host platform as long as they are not collocated to the device antenna (distance > 20cm).

Test Mode	Frequency Band (MHz)	EIRP (dBm)	Distance (cm)	Power Density Seq (mW/cm <sup>2</sup> )	MPE Limit (mW/cm <sup>2</sup> )
GPRS850	824~849	31.60	20	0.29	0.55
GPRS1900	1850~1910	24.00	20	0.05	1.00