



RF Exposure Evaluation Declaration

Product Name : HiALLNC
Model No. : HiALLNC
FCC ID : VW3HIALLNC
IC : 9140A-HIALLNC

Applicant : Sagemcom

Address : 250 route de l'empereur 92848, France

Date of Receipt : 18/05/2012
Issued Date : 22/05/2012
Report No. : 124S024R-RF-US
Report Version : V1.2

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.

This report must not be used to claim product endorsement by TAF, CNAS or any agency of the Government.

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Test Report Certification

Issued Date : 22/05/2012

Report No. : 124S024R-RF-US



Product Name : HiALLNC
 Applicant : Sagemcom
 Address : 250 route de l'empereur 92848, France
 Manufacturer : Sagemcom
 Address : 250 route de l'empereur 92848, France
 Model No. : HiALLNC
 FCC ID : VW3HiALLNC
 IC : 9140A-HiALLNC
 EUT Voltage : Minimum: 3.3v, Normal: 3.7v, Maximum: 4.5v
 Trade 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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 (Engineering Manager: Marlin Chen)

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:

Taiwan R.O.C.	:	BSMI, NCC, TAF
Germany	:	TUV Rheinland
Norway	:	Nemko, DNV
USA	:	FCC, NVLAP
Japan	:	VCCI
China	:	CNAS

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 ²)	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: $Pd = (Pout \cdot G) / (4 \cdot \pi \cdot r^2)$

Where

Pd = power density in mW/cm²

Pout = 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

Pd 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.

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 and 78% RH.

1.3. Test Result of RF Exposure Evaluation

1.3.1. Conducted Power Analysis

Table 1: Duty Cycle of TDMA Signal

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

Note: This device just supports 2 timeslots.

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

Table 2

Frequency Band	Modulation	Timeslots	Avg. Burst Power (dBm)	Time based average power (Calculated)
GSM850	GMSK	1	33.05	24.05
GSM850	GMSK	2	32.58	26.58
PCS1900	GMSK	1	30.15	21.15
PCS1900	GMSK	2	29.22	23.22

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.

Compliance with MPE limits was calculated as below shows:

GSM850 Band

Maximum time avg. power input to the antenna:	455 mW
ERP power limit according to §2.1091	1.5 W
G ₁ Antenna gain (dBi) to comply with ERP limits: (ERP = Maximum time avg. power x Antenna gain / 1.64)	7.3 dBi

ERP power limit according to §22.913	7 W
Maximum avg. burst power input to the antenna:	2018 mW
G ₂ Antenna gain (dBi) to comply with ERP limits: (ERP = Maximum avg. burst output power x Antenna gain / 1.64)	7.6 dBi

G_{850 MHz band} Min (G₁, G₂) = 7.3 dBi

PCS1900 Band

Maximum time avg. power input to the antenna:	210 mW
ERP power limit according to §2.1091	3 W
G ₁ Antenna gain (dBi) to comply with ERP limits: (ERP = Maximum time avg. power x Antenna gain / 1.64)	13.7 dBi

EIRP power limit according to §24.232	2 W
Maximum avg. burst power input to the antenna:	1035 mW
G ₂ Antenna gain (dBi) to comply with ERP limits: (ERP = Maximum avg. burst output power x Antenna gain / 1.64)	2.9 dBi

G_{1900 MHz band} Min (G₁, G₂) = 2.9 dBi

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).

Table 3

Frequency Band (MHz)	Max Time avg. power (dBm)	Antenna Gain (dBi)	Max EIRP (dBm)	Distance (cm)	Power Density Seq (mW/cm ²)	MPE Limit (mW/cm ²)
GSM850	26.58	7.3	33.88	20	0.49	0.55
PCS1900	23.22	2.9	26.12	20	0.08	1.00

Note: Maximum antenna gain 7.3dBi allowed for GSM850 and maximum antenna gain 2.9dBi for PCS1900 are compliance with MPE limit.