

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
No. 134, Wu Kung Rd., Wuku Industrial
Zone, Taipei County, Taiwan.

Note: This report shall not be reproduced except in full, without the written approval of SGS Taiwan Ltd. This document may be altered or revised by SGS Taiwan Ltd. personnel only, and shall be noted in the revision section of the document.

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
	_____ <i>Jazz Huang / Engineer</i>		
Prepared By:		Date	Jun. 25, 2008
	_____ <i>Gigi Yeh / Clerk</i>		
Approved By:		Date	Jun. 25, 2008
	_____ <i>Vincent Su/Manager</i>		

This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at www.sgs.com. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放，請注意此條款列印於背面，亦可在www.sgs.com中查閱。將本公司之義務，免責，管轄權皆明確規範之。除非另有說明，此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可，不可部份複製。對本報告內容或外觀之任何未經授權之變更、偽造、竄改皆屬非法，違犯者將會被依法追訴。

Report Version

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

This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at www.sgs.com. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放, 請注意此條款列印於背面, 亦可在www.sgs.com中查閱。將本公司之義務, 免責, 管轄權皆明確規範之。除非另有說明, 此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可, 不可部份複製。對本報告內容或外觀之任何未經授權之變更、偽造、竄改皆屬非法, 違犯者將會被依法追訴。

Table of Contents

1.	GENERAL INFORMATION	5
1.2	RELATED SUBMITTAL(S) / GRANT (S)	6
1.3	SPECIAL ACCESSORIES	6
1.4	EQUIPMENT MODIFICATIONS	6
1.5	LIMITATION	6
1.6	MAXIMUM PERMISSIBLE EXPOSURE (MPE) EVALUATION	7
	PHOTOGRPHS OF EUT.....	9

This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at www.sgs.com. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放, 請注意此條款列印於背面, 亦可在www.sgs.com中查閱。將本公司之義務, 免責, 管轄權皆明確規範之。除非另有說明, 此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可, 不可部份複製。對本報告內容或外觀之任何未經授權之變更、偽造、竄改皆屬非法, 違犯者將會被依法追訴。

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 –1909.8 MHz GPRS Class 10	30 dBm
Type of Emission:	GSM/GPRS: 300KGXW	
Software Version:	HIC,A	
Hardware Version:	V2	

This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at www.sgs.com. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放，請注意此條款列印於背面，亦可在www.sgs.com中查閱。將本公司之義務，免責，管轄權皆明確規範之。除非另有說明，此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可，不可部份複製。對本報告內容或外觀之任何未經授權之變更、偽造、竄改皆屬非法，違犯者將會被依法追訴。

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 ²)	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 ²)	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

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

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

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.

This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at www.sgs.com. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放，請注意此條款列印於背面，亦可在www.sgs.com中查閱。將本公司之義務，免責，管轄權皆明確規範之。除非另有說明，此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可，不可部份複製。對本報告內容或外觀之任何未經授權之變更、偽造、竄改皆屬非法，違犯者將會被依法追訴。

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

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

$$\begin{aligned} \text{Power Density} &= EIRP * \text{Duty Cycle} / (4 \pi R^2) \\ &= 379.315 * 0.25 / (4 * \pi * 20^2) = 0.019 \text{ mW/cm}^2 \end{aligned}$$

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:

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

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.

APPENDIX 1

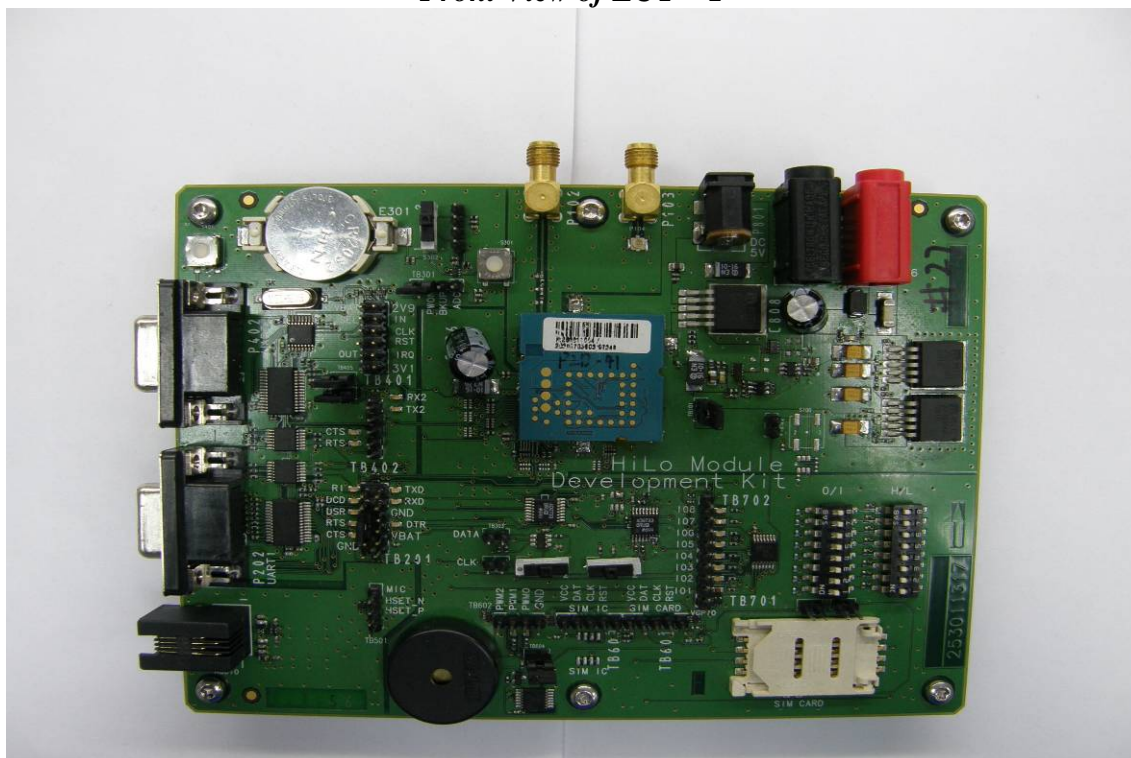
PHOTOGRPHS OF EUT

This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at www.sgs.com. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放, 請注意此條款列印於背面, 亦可在www.sgs.com中查閱。將本公司之義務, 免責, 管轄權皆明確規範之。除非另有說明, 此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可, 不可部份複製。對本報告內容或外觀之任何未經授權之變更、偽造、竄改皆屬非法, 違犯者將會被依法追訴。

All View of EUT

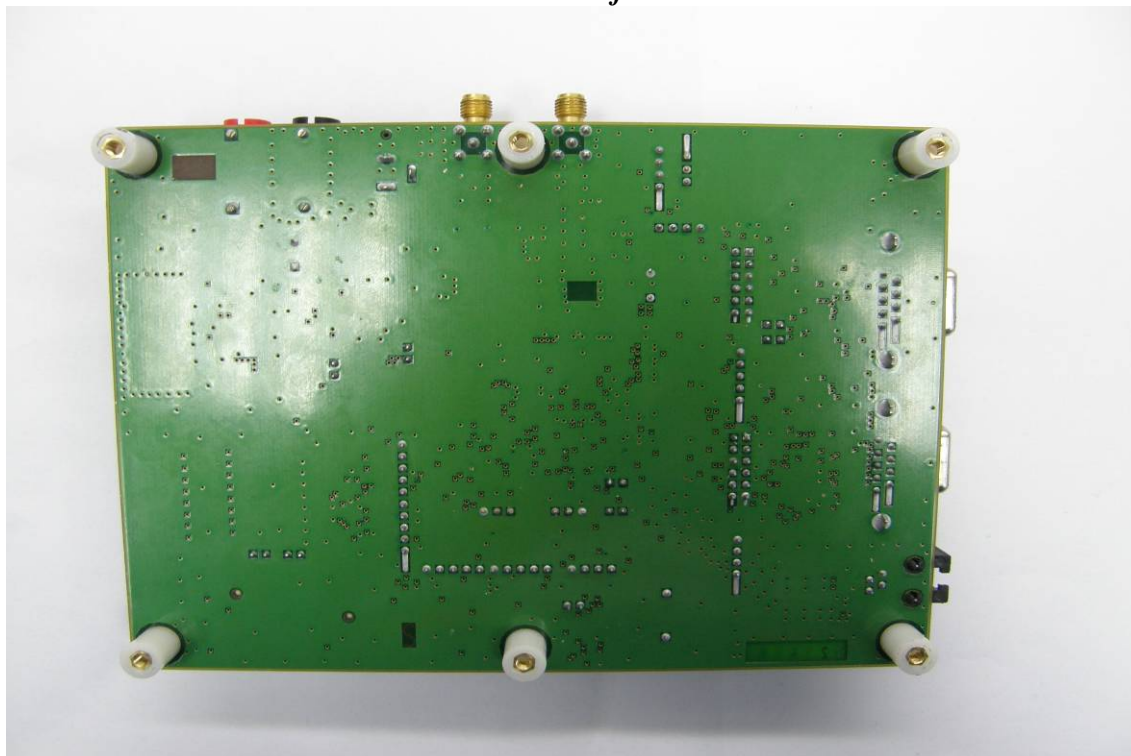


Front View of EUT - 1

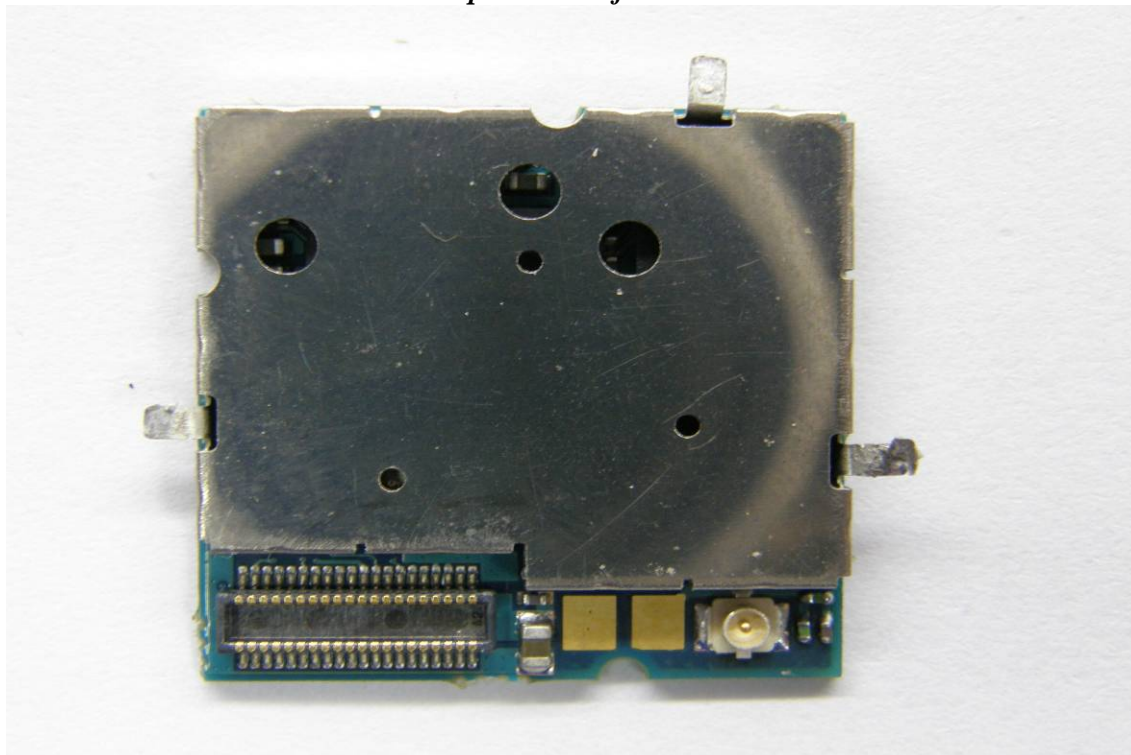


This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at www.sgs.com. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放，請注意此條款列印於背面，亦可在www.sgs.com中查閱。將本公司之義務，免責，管轄權皆明確規範之。除非另有說明，此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可，不可部份複製。對本報告內容或外觀之任何未經授權之變更、偽造、竄改皆屬非法，違犯者將會被依法追訴。

Back View of EUT

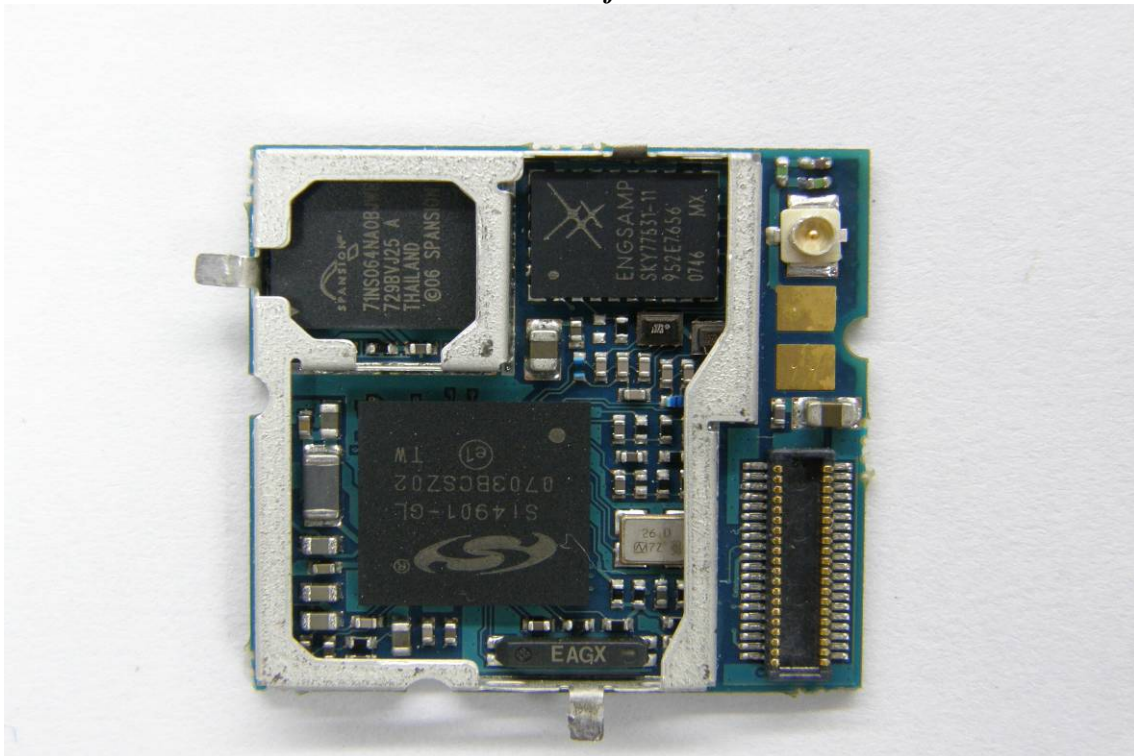


Open View of EUT

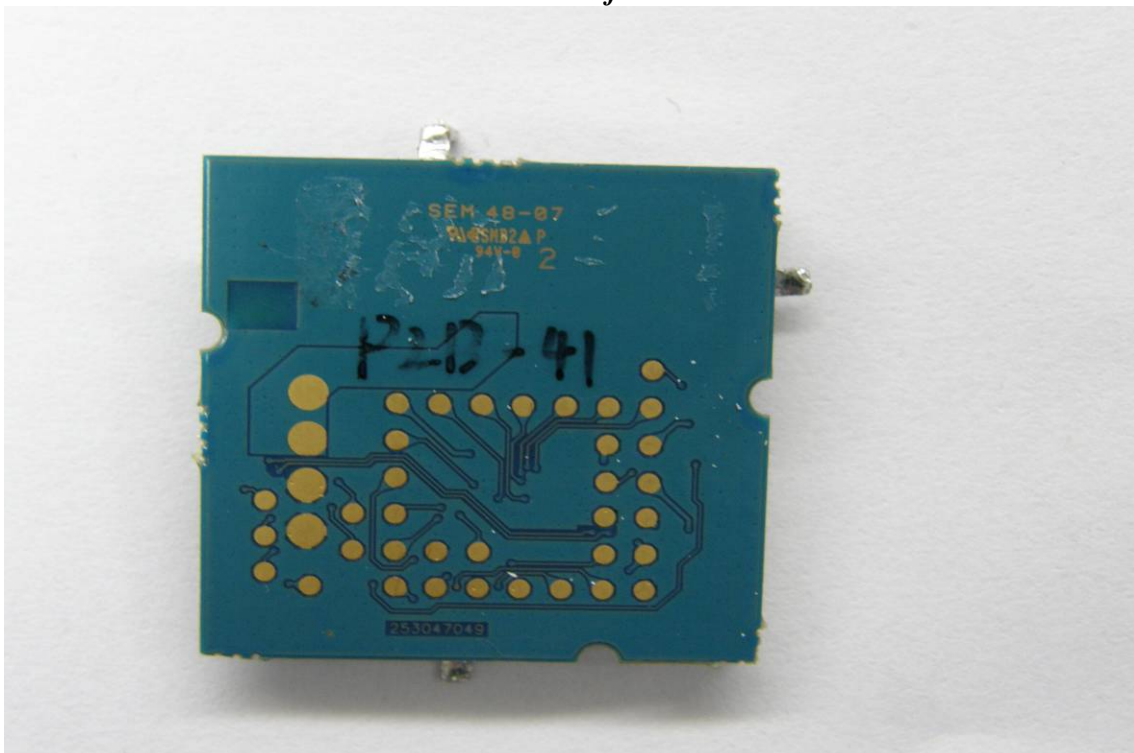


This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at www.sgs.com. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放，請注意此條款列印於背面，亦可在www.sgs.com中查閱。將本公司之義務，免責，管轄權皆明確規範之。除非另有說明，此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可，不可部份複製。對本報告內容或外觀之任何未經授權之變更、偽造、竄改皆屬非法，違犯者將會被依法追訴。

Internal View of EUT - 1



Internal View of EUT - 2



This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at www.sgs.com. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放，請注意此條款列印於背面，亦可在www.sgs.com中查閱。將本公司之義務，免責，管轄權皆明確規範之。除非另有說明，此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可，不可部份複製。對本報告內容或外觀之任何未經授權之變更、偽造、竄改皆屬非法，違犯者將會被依法追訴。



- End of Report -

This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at www.sgs.com. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放, 請注意此條款列印於背面, 亦可在www.sgs.com中查閱。將本公司之義務, 免責, 管轄權皆明確規範之。除非另有說明, 此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可, 不可部份複製。對本報告內容或外觀之任何未經授權之變更、偽造、竄改皆屬非法, 違犯者將會被依法追訴。