



## **RADIO FREQUENCY RADIATION EXPOSURE REPORT**

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

*OF*

**Product Name:** HSUPA Module

**Brand Name:** BandLuxe™

**Marketing Name:** N/A

**Model Name:** M250

**FCC ID:** UZI-M250

**Report No.:** EH/2008/90004-03

**Issue Date:** Nov. 13, 2008

**Prepared for:** BandRich Inc.  
7F., No. 188, Baociao Rd., Sindian City, Taipei  
County 23146, Taiwan (R.O.C.)

**Prepared by:** SGS Taiwan Ltd.  
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Taipei County, Taiwan.

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## VERIFICATION OF COMPLIANCE

**Applicant:** BandRich Inc.  
 7F., No. 188, Baociao Rd., Sindian City, Taipei County 23146, Taiwan  
 (R.O.C.)

**Product Name:** HSUPA Module

**FCC ID Number:** UZI-M250

**Brand Name:** BandLuxe™

**Model No.:** M250

**Model Difference:** N/A

**File Number:** EH/2008/90004-03

**Date of test:** Sep. 10, 2008 ~ Sep. 21, 2008

**Date of EUT Received:** Sep. 10, 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:*

*Jason Wu*

*Date:*

Nov. 13, 2008

*Jason Wu/Asst. Supervisor*

*Prepared By:*

*Alex Hsieh*

*Date:*

Nov. 13, 2008

*Alex Hsieh / Sr. Engineer*

*Approved By:*

*Vincent Su*

*Date:*

Nov. 13, 2008

*Vincent Su/Manager*

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## Report Version

Version No.	Date	Description
00	Nov 13, 2008	Initial creation of document

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### 1. GENERAL INFORMATION

Product Name:	HSUPA Module
Brand Name:	BandLuxe™
Model Name:	M250
Model Difference:	N/A
Power Supply	3.3 Vdc

#### GSM/WCDMA/HSUPA/HSDPA:

Cellular Phone Standards Frequency Range and Power	E-GSM/GPRS 850 Class 12	824 MHz– 849MHz	27.90 dBm
	E-GSM/GPRS 1900 Class 12	1850MHz – 1910MHz	24.80 dBm
	WCDMA/HSUPA/HSDPA Band II, Cat. 5	1850MHz – 1910MHz	21.82 dBm
	WCDMA/HSUPA/HSDPA Band V, Cat. 5	826MHz – 846MHz	22.10 dBm
final amplifier voltage and current information	Type	DC voltage (V)	DC current (mA)
	GPRS 850	5.0Vdc	553
	GPRS 1900	5.0Vdc	323
	EGPRS 850	5.0Vdc	526
	EGPRS 1900	5.0Vdc	322
	UMTS B2	5.0Vdc	530
	UMTS B5	5.0Vdc	384
	UMTS B2(HSUPA)	5.0Vdc	510
	UMTS B5(HSUPA)	5.0Vdc	375
Note: The EUT was install on a test kit, The test kit was rated 5V dc and powered from USB interface.			
Type of Emission	GPRS 850: 245KGXW GPRS 1900 :247KGXW EDGE 850: 248KG7W EDGE 1900:246KG7W WCDMA Band II: 4M17F9W WCDMA Band V:4M16F9W		
Hardware Version	M250_HW_01		
Software Version	120025_001_009C		
IMEI	35630602		

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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 M250 GPRS/EDGE/WCDMA class12 . Based on the FCC OET Bulletin 65 Supplement C and 47 CFR §2.1091, we have concluded that the M250 module will comply with the FCC rules on RF exposure for mobile devices if the antenna gain does not exceed -5.84dBi (The max. gain) in cellular band and -0.31 dBi in 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 peak conducted output power of module M250 in cellular band is 32.22 dBm at GPRS mode. Take the worst case as an example, in which an antenna with -5.84dBi (The max gain) gain is used. The resulted power density at a distance of 20 cm can be deducted as follows:

$$\text{EIRP} = 27.90 + (-5.84) = 22.06 \text{ dBm} = 160.69 \text{ mW}$$

$$\begin{aligned} \text{Power Density} &= \text{EIRP} * \text{Duty Cycle} / (4 * R^2) \\ &= 160.69 * 0.5 / (4 * 20^2) = 0.016 \text{ mW/cm}^2 \end{aligned}$$

where Duty Cycle is 0.5 for GPRS operation (class 12) 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 M250 module in cellular band is compliant with the FCC rules on RF exposure.

**Operation in PCS band (1850.2MHz – 1909.8MHz)**

The peak conducted output power of module M250 module in PCS band is 24.80 dBm. Take the worst case as an example, in which an antenna with -0.31 dBi gain is used. The resulted ERP can be expressed as follows:

$$\text{ERP} = 24.80 + (-0.31) - 2.14 = 22.35 \text{ dBm} (0.171 \text{ W}) < 3 \text{ W}$$

The FCC OET Bulletin 65 Supplement C states that mobile devices identified in 47 CFR §2.1091 that operate at frequencies above 1.5 GHz with an ERP of 3.0 watts or more are required to perform routine environmental evaluation for RF exposure prior to equipment authorization or use; otherwise, they are categorically excluded.

As we can see this resulted ERP is below 3 W, therefore routine environmental evaluation for RF exposure prior to equipment authorization or use for M250 module in PCS band is categorically excluded.

**Operation in WCDMA band V (826.4MHz – 846.6 MHz)**

The peak conducted output power of module M250 in WCDMA band V is 21.82 dBm. Take the worst case as an example, in which an antenna with -5.84 dBi (The max gain) gain is used. The resulted power density at a distance of 20 cm can be deducted as follows:

$$\text{EIRP} = 21.82 + (-5.84) = 15.98 \text{ dBm} = 39.63 \text{ mW}$$

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

$$= 39.63 * 1 / (4 * 20^2) = 0.008 \text{ mW/cm}^2$$

where Duty Cycle is 1 for WCDMA operation 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 M250 module in cellular band is compliant with the FCC rules on RF exposure.

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**Operation in WCDMA band II (1852.4MHz – 1907.6MHz)**

The peak conducted output power of module M250 module in WCDMA band II is 22.10 dBm. Take the worst case as an example, in which an antenna with -0.31 dBi gain is used. The resulted ERP can be expressed as follows:

$$\text{ERP} = 22.10 + (-0.31) - 2.14 = 19.65 \text{ dBm} (0.0922 \text{ W}) < 3 \text{ W}$$

The FCC OET Bulletin 65 Supplement C states that mobile devices identified in 47 CFR §2.1091 that operate at frequencies above 1.5 GHz with an ERP of 3.0 watts or more are required to perform routine environmental evaluation for RF exposure prior to equipment authorization or use; otherwise, they are categorically excluded.

As we can see this resulted ERP is below 3 W, therefore routine environmental evaluation for RF exposure prior to equipment authorization or use for M250 module in PCS band is categorically excluded.

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FCC ID: UZI-M250

Report No: EH/2008/90004-03

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## APPENDIX 1 PHOTOGRPHS OF EUT

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*External View of EUT – 1*



*External View of EUT – 2*

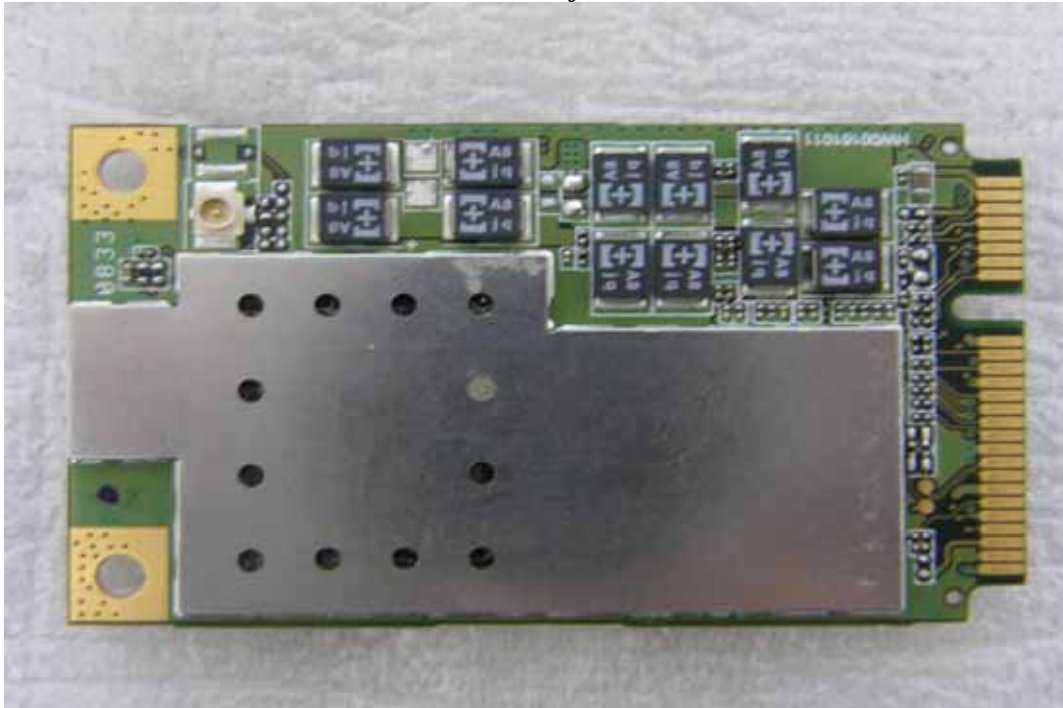


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*Internal View of EUT – 1*

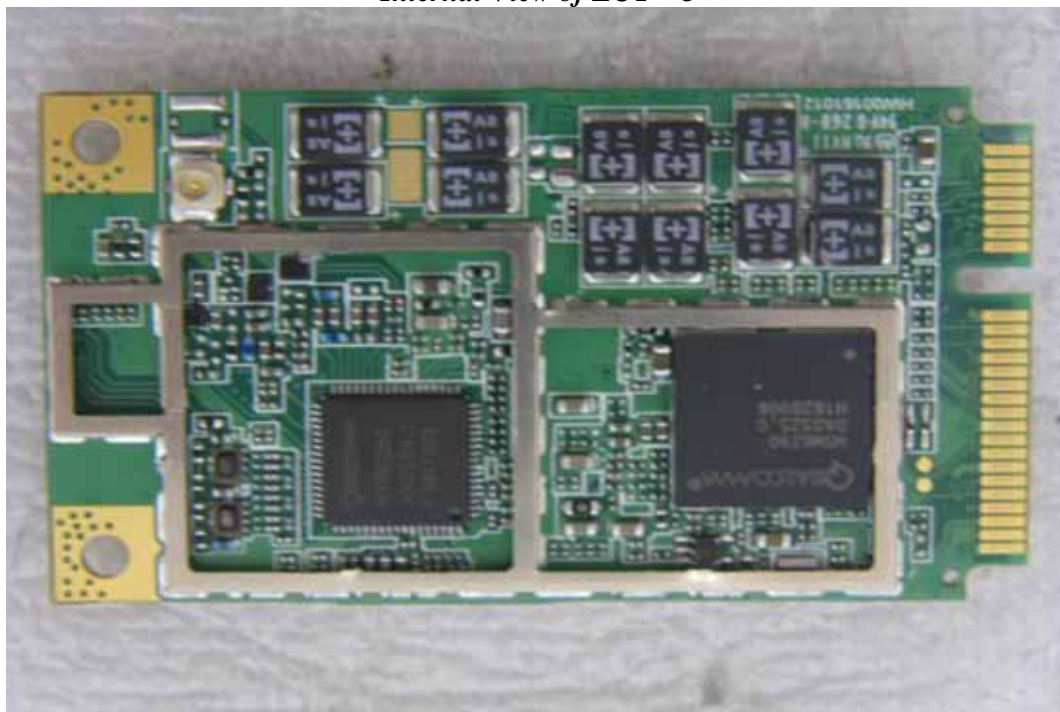


*Internal View of EUT – 2*



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*Internal View of EUT – 3*



*- End of Report -*

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