

RADIO FREQUENCY RADIATION EXPOSURE REPORT

Mobiles /Fixed Base Station Maximum Permissible Exposure (MPE)

OF

Product Name: M280 HSUPA Half Mini Card Module

Brand Name: BandLuxe™

Model Name: M280

Model Different: N/A

FCC ID: UZI-M280

Report No.: EH/2008/C0037-02

Issue Date: Feb. 04, 2009

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

Prepared by: SGS Taiwan Ltd.
Electronics & Communication Laboratory
No. 134, Wu Kung Rd., Wuku Industrial
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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: M280 HSUPA Half Mini Card Module

FCC ID Number: UZI-M280

Brand Name: BandLuxe™

Model No.: M280

Model Difference: N/A

File Number: EH/2008/C0037-02

Date of test: Feb. 04, 2009 ~ Feb. 04, 2009

Date of EUT Received: Feb. 04, 2009

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:

Feb. 04, 2009

Sky Wang/Asst. Supervisor

Prepared By:



Date:

Feb. 04, 2009

Alex Hsieh / Sr. Engineer

Approved By:



Date:

Feb. 04, 2009

Vincent Su/Manager

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Version

Version No.	Date	Description
00	Feb. 04, 2009	Initial creation of document
01	Feb. 12, 2009	Revise all test result and format
02	Feb. 16, 2009	Remove power output table

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1. GENERAL INFORMATION

General:

Product Name	M280 HSUPA Half Mini Card Module
Brand Name	BandLuxe™
Model Name	M280
Model Difference	N/A
Power Supply	3.8V from PCIE

GSM / WCDMA / HSUPA / HSDPA:

Cellular Phone Standards Frequency Range and Power	E-GSM/GPRS 850 Class 12	824.2 MHz– 848.8MHz	33 dBm
	E-GSM/GPRS 900 Class 12	880.2MHz – 914.8MHz	33 dBm
	E-GSM/GPRS 1800 Class 12	1710.2MHz-1784.8MHz	30 dBm
	E-GSM/GPRS 1900 Class 12	1850.2MHz – 1909.8MHz	30 dBm
	WCDMA / HSUPA Cat. 5 / HSDPA Cat. 8, Band I	1920.4MHz – 1979.6MHz	24 dBm
	WCDMA / HSUPA Cat. 5 / HSDPA Cat. 8, Band II	1852.4MHz – 1907.6MHz	24 dBm
	WCDMA / HSUPA Cat. 5 / HSDPA Cat. 8, Band V	826.4 MHz– 846.6MHz	24 dBm
IMEI	35247603		
Software Version	120065_001_022A		
Hardware Version	V01		
Type of Emission:	GSM 850 : 245KGXW GSM 1900 : 246KGXW EDGE: 247KG7W EDGE: 247KG7W WCDMA Band V: 4M19F9W WCDMA Band II : 4M18F9W		

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1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended to comply with Section Part 22, subpart H and part 15.247 of the FCC CFR 47 Rules. For 47 CFR 1.1310 Radio frequency Radiation Exposure requirement.

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 approval to the M280. Based on the FCC OET Bulletin 65 Supplement C and 47 CFR §2.1091, we have concluded that the M280 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 – 849 MHz)

The ERP of M280 in cellular band is 29.77dBm max at GSM/GPRS mode. The resulted power density at a distance of 20 cm can be deducted as follows:

$$\text{EIRP} = 29.77 \text{ dBm} = 948.42 \text{ mW}$$

$$\begin{aligned} \text{Power Density} &= \text{EIRP} * \text{Duty Cycle} / (4 * R^2) \\ &= 948.42 * 0.5 / (4 * 20^2) = 0.094 \text{ mW/cm}^2 \end{aligned}$$

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 M280 HSUPA Half Mini Card Module in cellular band is compliant with the FCC rules on RF exposure.

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**Operation in PCS band (1850 – 1910 MHz)**

The EIRP of M280 in PCS band is 26.56 dBm. max. The resulted EIRP can be expressed as follows:

$$\text{EIRP} = 26.56 \text{ dBm} = 452.90 \text{ mW}$$

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

$$= 452.90 * 0.5 / (4 * 20^2) = 0.045 \text{ mW/cm}^2$$

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:

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

As we can see the resulted power density is below the MPE limit, therefore M280 in PCS band is compliant with the FCC rules on RF exposure.

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

The ERP of M280 in cellular band is 21.57dBm max at GSM/GPRS mode. The resulted power density at a distance of 20 cm can be deducted as follows:

$$\text{EIRP} = 21.57 \text{ dBm} = 143.55 \text{ mW}$$

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

$$= 143.55 * 1 / (4 \pi * 20^2) = 0.028573 \text{ mW/cm}^2$$

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:

$$\text{MPE limit} = 826.4 / 1500 = 0.55 \text{ mW/cm}^2$$

As we can see the resulted power density is below the MPE limit, therefore M280 HSUPA Half Mini Card 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 EIRP of M280 in PCS band is 19.01 dBm. max. The resulted EIRP can be expressed as follows:

$$\text{EIRP} = 19.01 \text{ dBm} = 79.62 \text{ mW}$$

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

$$= 79.62 * 1 / (4 * 20^2) = 0.016 \text{ mW/cm}^2$$

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:

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

As we can see the resulted power density is below the MPE limit, therefore M280 in PCS band is compliant with the FCC rules on RF exposure.

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FCC ID: UZI-M280

Report No: EH/2008/C0037-02

Issue Date: Feb. 04, 2009

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APPENDIX 1

PHOTOGRAPHS OF EUT

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All of EUT



Front View of EUT



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Back View of EUT



Open View of EUT-1



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Open View of EUT-2



Antenna-1



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Antenna-2



~ End of Report ~

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