

# MPE REPORT

**REPORT NUMBER: I12GL9630-FCC-MPE\_1**

**ON**

**Type of Equipment:** LTE PCI-e Module

**Type of Designation:** LP15

**Manufacturer:** Asia Telco Technologies Co.

**ACCORDING TO**

FCC CFR 47, Part 2, FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS, Oct 1,2011  
Section 2.1091 Radiofrequency radiation exposure evaluation: mobile devices, Oct 1,2011

**China Telecommunication Technology Labs.**

*Month date, year*

*Jan, 24, 2014*

*Signature*



He Guili  
Director

FCC Part 2.1091  
Equipment: LP15

REPORT NO.: I12GL9630-FCC-MPE\_1

**FCC ID:** J26-4859300114

**Report Date:** 2014-1-24

**Test Firm Name:** China Telecommunication Technology Labs

**Registration Number:** 840587

Statement

The report is a Maximum Permissible Exposure evaluation report according to FCC CFR part 2.1091.

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## 1 General Information

### 1.1 Notes

The MPE report was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part 2.1091.

The test results of this report relate exclusively to the item(s) tested as specified in section 2.

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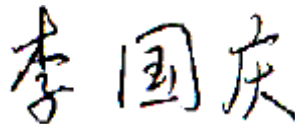
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## 1.2 Editor

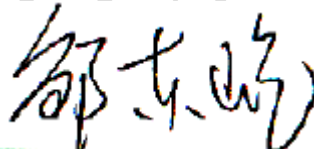
Editor of this test report:

Name: Li Guoqing  
Position: Engineer  
Department: Department of EMC test  
Date: 2014-1-24  
Signature:



### Technical responsibility for area of testing:

Name: Zou Dongyi  
Position: Manager  
Department: Department of EMC test  
Date: 2014-1-24  
Signature:



### 1.3 Testing Laboratory information

#### 1.3.1 Location

Name: China Telecommunication Technology Labs.  
Address: No. 11, Yue Tan Nan Jie, Xi Cheng District  
BEIJING  
P. R. CHINA, 100045  
Tel: +86 10 68094053  
Fax: +86 10 68011404  
Email: [emc@chinattl.com](mailto:emc@chinattl.com)

#### 1.3.2 Details of accreditation status

Accredited by: DATech Deutsche Akkreditierungsstelle Technik in der  
TGA GmbH(German Accreditation Body for Technology  
in the TGA)  
Lab number: DA7130  
DAR Registration  
number: DAT-PL-162/04-01  
Standard: ISO/IEC 17025:2005

#### 1.3.3 Test location, where different from section 1.3.1

Name: -----  
Address: -----

## 1.4 Details of applicant or manufacturer

### 1.4.1 Applicant

Name: CalAmp Wireless Networks  
Address: 299 Johnson Avenue, Suite 110 , Waseca MN,  
56093-0833, USA  
Country: USA  
Telephone: 001-507-833-6709  
Fax: 001-507-833-6758  
Contact: Allen Frederick  
Telephone: 001-507-833-6709  
Email: --

### 1.4.2 Manufacturer (if different from applicant in section 1.4.1)

Name: Asia Telco Technologies Co.  
Address: #289 Bisheng Road,Buiding-8,3F,Zhangjiang Hi-Tech  
Park,Pudong,Shanghai 201204,China

### 1.4.3 Manufactory (if different from applicant in section 1.4.1)

Name: --  
Address: --

## 2 Test Item

### 2.1 General Information

Manufacturer: Asia Telco Technologies Co.  
 Name: LTE PCI-e Module  
 Model Number: LP15  
 Serial Number: --  
 Production Status: Product  
 Receipt date of test item: 2014-1-24

### 2.2 Outline of EUT

EUT is a PCI e-Module. It supports LTE mode, with the frequency range of 788 MHz to 798 MHz for LTE Band 14. Its modulation type is QPSK and 16QAM.

### 2.3 Modifications Incorporated in EUT

The EUT has not been modified from what is described by the brand name and unique type identification stated above.

### 2.4 Equipment Configuration

Equipment configuration list:

Item	Generic Description	Manufacturer	Type	Serial No.	Remarks
A	LTE PCI-e Module	Asia Telco Technologies Co.	LP15	--	None
B	Battery	--	--	--	None
C	Earphone	--	--	--	None
D	Antenna	AEON Technology(Shanghai) CO., Ltd.	C6466-510003 PA	--	None

Cables:

Item	Cable Type	Manufacturer	Length	Shield	Quantity	Remarks
1	DC cable on Adapter	--	--	--	--	None

Note: the EUT has no earphone and battery.

### 2.5 Other Information

HW Version: --

SW Version: --



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Antenna information (provided by applicant):  
Typical Antenna Gain: 2dBi

### 3 Summary of Results

A brief summary of the tests carried out is shown as following.

Specification Clause	Name of Test	Result
2.1091	MPE	Pass
Note: --		

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## 4 Results

### 4.1 Applicable Standards

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

#### (a) Limits for Occupational / Controlled Exposure

Frequency Range [MHz]	Electric Field Strength (E) [V/m]	Magnetic Field Strength (H) [A/m]	Power Density (S) [mW/cm <sup>2</sup> ]	Averaging Times  E  <sup>2</sup> ,  H  <sup>2</sup> or S [minutes]
0.3 – 3.0	614	1.63	(100)*	6
3.0 – 30	1824/f	4.89/f	(900/f)*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	--	--	F/300	6
1500 - 100000	--	--	5	6

#### (b) Limits for General Population / Uncontrolled Exposure

Frequency Range [MHz]	Electric Field Strength (E) [V/m]	Magnetic Field Strength (H) [A/m]	Power Density (S) [mW/cm <sup>2</sup> ]	Averaging Times  E  <sup>2</sup> ,  H  <sup>2</sup> or S [minutes]
0.3 – 1.34	614	1.63	(100)*	30
1.34 – 30	824/f	2.19/f	(180/f)*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	--	--	F/1500	30
1500 - 100000	--	--	1.0	30

Note: f=frequency in MHz; \*Plane-wave equivalent power density

For the DUT, the limits for General Population / Uncontrolled Exposure are applicable.

## 4.2 Conducted RF Power Output

### Test Results for LTE Band 14:

LTE Band 14, 5MHz bandwidth, QPSK:

EARFCN	Conducted Power (dBm)
23305	22.51
23355	22.28

LTE Band 14, 5MHz bandwidth, 16QAM:

EARFCN	Conducted Power (dBm)
23305	22.85
23355	22.57

LTE Band 14, 10MHz bandwidth, QPSK:

EARFCN	Conducted Power (dBm)
23330	22.08

LTE Band 14, 10MHz bandwidth, 16QAM:

EARFCN	Conducted Power (dBm)
23330	22.48

Summary:

Time slot No.	Frequency band	Maximum power (dBm)	Channel	Frequency (MHz)	Duty cycle
1	<1 GHz	22.85	23305	790.5	1
	>1 GHz	--	--	--	--

## 4.3 Calculation Information

From the antenna specifications provided by the applicant, the typical antenna gain is 2 dBi.

So for conservative evaluation consideration, only maximum power of each frequency band based on the tighter limits respectively are used to calculate the boundary power density.

Based on the FCC OET Bulletin 65 Supplement C and 47 CFR §2.1091, the DUT is evaluated as a mobile device.

## 4.4 Evaluation Result

Operation in 788 – 798 MHz:

The Average conducted output power of DUT in this band is 22.85 dBm. The Tune-up procedure of DUT in this band is 23 dBm. Take the worst case as an example, in which an antenna with 2 dBi gain is used. The resulted power density at a distance of 20 cm can be deducted as follows:

$$\text{EIRP} = 23 + 2 = 25 \text{ dBm} = 316 \text{ mW}$$

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

$$= 316 \cdot 1 / (4 \cdot \pi \cdot 20^2) = 0.06 \text{ mW/cm}^2$$

where DutyCycle is 1 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:

$$\text{MPE limit} = 790.5 / 1500 = 0.527 \text{ mW/cm}^2$$

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

Note: The tighter limits are used for low and high band in above tables.

————— **The End of this Report** —————