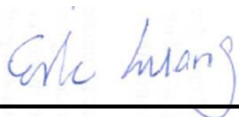


RF Exposure Evaluation Report

APPLICANT : Super Micro Computer, Inc.
EQUIPMENT : IoT Gateway System
BRAND NAME : Super Micro Computer, Inc.
MODEL NAME : SYS-E100-8Q-THAW/SYS-E100-8QE-THAW
MARKETING NAME : IoT Gateway System
FCC ID : 2AEVX-E100THAW
STANDARD : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC., would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091, and pass the limit. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.



Reviewed by: Eric Huang / Deputy Manager



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.)



Table of Contents

1. ADMINISTRATION DATA	3
1.1. Testing Laboratory	3
2. DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)	3
3. MAXIMUM RF AVERAGE OUTPUT POWER AMONG PRODUCTION UNITS	4
4. RF EXPOSURE LIMIT INTRODUCTION	5
5. RADIO FREQUENCY RADIATION EXPOSURE EVALUATION	6
5.1. Standalone Power Density Calculation	6
5.2. Collocated Power Density Calculation.....	6

Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA560818	Rev. 01	Initial issue of report	Aug. 31, 2015



1. Administration Data

1.1. Testing Laboratory

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978

Applicant	
Company Name	Super Micro Computer, Inc.
Address	980 Rock Ave., San Jose, CA, 95131, USA

Manufacturer	
Company Name	Super Micro Computer, Inc.
Address	980 Rock Ave., San Jose, CA, 95131, USA

2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	IoT Gateway System
Brand Name	Super Micro Computer, Inc.
Model Name	SYS-E100-8Q-THAW/SYS-E100-8QE-THAW
Marketing Name	IoT Gateway System
FCC ID	2AEVX-E100THAW
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz
Mode	• GSM/GPRS/EGPRS • HSDPA • HSUPA • 802.11 b/g/n HT20/HT40
HW Version	Module: HE910-D: 0, A1SQN-E/A1SQN MB V1.02
SW Version	Module: firmware 12.00.026, system:RCPL23
EUT Stage	Production Unit

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

**3. Maximum RF average output power among production units**

Burst average power(dBm)		
Mode	GSM 850	GSM 1900
GPRS/EDGE (GMSK, 1 Tx slot)	32.50	30.00
GPRS/EDGE (GMSK, 2 Tx slots)	32.50	30.00
EDGE (8PSK, 1 Tx slot)	27.00	26.00
EDGE (8PSK, 2 Tx slots)	27.00	26.00

Average power(dBm)		
WCDMA Band V	WCDMA Band II	WCDMA Band IV
22.50	22.50	22.50

Band / Frequency (MHz)	IEEE 802.11 Average Power (dBm)			
	11b	11g	HT20	HT40
2.4GHz WLAN	18.00	16.00	15.00	15.00



4. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) 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
1500-100,000			1.0	30

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna



5. Radio Frequency Radiation Exposure Evaluation

5.1. Standalone Power Density Calculation

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)	Power Density / Limit
GPRS 850 (1 Tx slot)	824.2	2.10	32.50	34.600	2.884	363.078	0.072	0.549	0.132
GPRS 850 (2 Tx slots)	824.2	2.10	32.50	34.600	2.884	724.436	0.144	0.549	0.262
EGPRS 850 (1 Tx slot)	824.2	2.10	27.00	29.100	0.813	102.329	0.020	0.549	0.037
EGPRS 850 (2 Tx slots)	824.2	2.10	27.00	29.100	0.813	204.174	0.041	0.549	0.074
GPRS 1900 (1 Tx slot)	1850.2	2.80	30.00	32.800	1.905	239.883	0.048	1.000	0.048
GPRS 1900 (2 Tx slots)	1850.2	2.80	30.00	32.800	1.905	478.630	0.095	1.000	0.095
EGPRS 1900 (1 Tx slot)	1850.2	2.80	26.00	28.800	0.759	95.499	0.019	1.000	0.019
EGPRS 1900 (2 Tx slots)	1850.2	2.80	26.00	28.800	0.759	190.546	0.038	1.000	0.038
WCDMA Band 5	826.4	2.10	22.50	24.600	0.288	288.403	0.057	0.551	0.104
WCDMA Band 4	1712.4	2.00	22.50	24.500	0.282	281.838	0.056	1.000	0.056
WCDMA Band 2	1852.4	2.80	22.50	25.300	0.339	338.844	0.067	1.000	0.067
2.4GHz WLAN	2412.0	2.10	18.00	20.100	0.102	102.329	0.020	1.000	0.020

Note:

For conservativeness, the lowest uplink frequency of each band is used to determine the MPE limit of that band

5.2. Collocated Power Density Calculation

Maximum WLAN Power Density / Limit	Maximum WWAN Power Density / Limit	Σ (Power Density / Limit) of WWAN+WLAN
0.020	0.262	0.282

Note:

1. For collocation analysis, GPRS850 (2TX slot) is chosen for summation due to the highest (power density/limit) among all WWAN wireless modes.
2. Σ (Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for WWAN + WLAN
3. Considering the WWAN collocation with the WLAN transmitter of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of 2 collocated transmitters is compliant

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.