SGS-CSTC Standards Technical Services Co., Ltd.

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SAR Evaluation Report

Application No.:	SZEM1412006769CR(SGS GZ No.:GZEM1412006406RF)
Applicant/ Manufacturer:	Disney Interactive Studios, Inc
Factory:	Shenzhen King Chuang Tech&Electronic Co., Ltd
Product Name:	Disney Infinity Base INF-8039228
Model No.(EUT):	INF-8039228
Trade mark:	Disney Infinity
FCC ID:	QOF-8039228
Standards:	47 CFR Part 1.1307(2014) 47 CFR Part 2.1093 (2014) KDB447498D01 General RF Exposure Guidance v05
Date of Receipt:	2014-12-08
Date of Test:	2014-12-09 to 2014-12-11
Date of Issue:	2014-12-23
Test Result :	**PASS***

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Jack Zhang
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.
If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.
The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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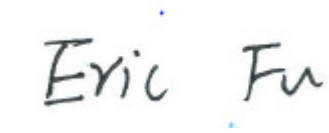
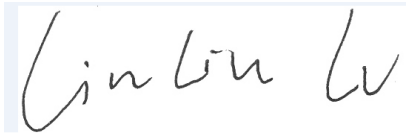
2 Version

Revision Record				
Version	*Chapter*	*Date*	*Modifier*	*Remark*
00		*2014-12-23*		*Original*

Authorized for issue by:				
Tested By		 **(Eric Fu) /Project Engineer**		2014-12-11 **Date**
Prepared By		 **(Linlin Lv) /Clerk**		2014-12-23 **Date**
Checked By		 **(Kevin Feng) /Reviewer**		2014-12-31 **Date**

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4 General Information

4.1 Client Information

Applicant:	Disney Interactive Studios, Inc
Address of Applicant:	1200 Grand Central Avenue, Glendale, California, 91201 United States
Manufacturer:	Disney Interactive Studios, Inc
Address of Manufacturer:	1200 Grand Central Avenue, Glendale, California, 91201 United States
Factory:	Shenzhen King Chuang Tech&Electronic Co., Ltd
Address of Factory:	Floor 4, 5, 7, 8, Block A, Mountain Top, Fuyuan Industrial Zone, Jiuwei, Xixiang Town, Shenzhen, China

4.2 General Description of EUT

Product Name:	Disney Infinity Base INF-8039228
Model No.:	INF-8039228
Trade Mark:	Disney Infinity
Operation Frequency:	2402MHz~2480MHz for Bluetooth; 13.56MHz for RFID
Bluetooth Version:	3.0
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, π/4DQPSK, 8DPSK for Bluetooth; BPSQ for RFID
Number of Channel:	79 for Bluetooth 1for RFID
Hopping Channel Type:	Adaptive Frequency Hopping systems
Sample Type:	Portable production
Test Power Grade:	03 (manufacturer declare)
Test Software of EUT:	RF Control Kit (manufacturer declare)
Antenna Type:	Integral
Antenna Gain:	-0.42 dBi
Power Supply:	Input: 5V 500mA
Battery:	DC 3.7V 1200mAh
USB Cable:	180cm (Shielded with two ferrite core)
Remark:	

IMPORTANT REMARKS: This test result is NOT AN AGREEMENT TO SHIP

Vendor/Supplier should obtain DISNEY agreement before shipping products

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4.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch E&E Lab

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

4.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L2929)**

  CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **VCCI**

  The 10m Semi-anechoic chamber and Shielded Room (7.5m x 4.0m x 3.0m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

- **FCC – Registration No.: 556682**

  SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.

- **Industry Canada (IC)**

  Two 3m Semi-anechoic chambers of SGS-CSTC Standards Technical Services Co., Ltd. have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1 & 4620C-2.

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4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.

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5 SAR Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v05

4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

5.1.2 Limits

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

f(GHz) is the RF channel transmit frequency in GHz
Power and distance are rounded to the nearest mW and mm before calculation[17]
The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion

5.1.3 EUT RF Exposure

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For Bluetooth part:

The Max Conducted Peak Output Power is -0.94dBm in Lowest channel(2.402 GHz);

The best case gain of the antenna is -0.42dBi

EIRP= -0.94dBm + (-0.42dBi) = -1.36 dBm

-1.36dBm logarithmic terms convert to numeric result is nearly 0.7311 mW

According to the formula. calculate the EIRP test result:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)]

General RF Exposure = (0.7311 mW / 5 mm) x √2.402 GHz = 0.2266 ①

SAR requirement:

S= 3.0 ②;

① < ②.

So the SAR report is not required.

Note: Refer to report No. SZEM141200676901 for The Max Conducted Peak Output Power value.

For RFID part:

The Field Strength of Fundamental Emission is 54.73dBuV/m, convert to EIRP is -40.53dBm.

-40.53dBm logarithmic terms convert to numeric result is nearly $8.85*10^{-5}$ mW

According to the formula. calculate the EIRP test result:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)]

General RF Exposure = ($8.85*10^{-5}$ mW / 5 mm) x √2.402 GHz = $2.743*10^{-5}$ ①

SAR requirement:

S= 3.0 ②;

① < ②.

So the SAR report is not required.

Note: Refer to report No. SZEM141200676902 for The Field Strength of Fundamental Emission value.

5.2 EUT Constructional Details

Refer to Report No. SZEM141200676901 for EUT external and internal photos.

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