RF Exposure Evaluation declaration

Product Name	Home Controller
Model No.	C4-HC800-BL, SCH-CONTROL-800
FCC ID	R33C4HC800

Applicant	Control4 corporation
Address	11734 S. Election Drive Suite 200 Draper Utah United States 84020

Date of Receipt	Nov. 14, 2011
Date of Declaration	Jan. 03, 2012
Report No.	11B334R-RFUSP46V01

1. RF Exposure Evaluation

1.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: $Pd = (Pout*G)/(4*pi*r^2)$

Where

Pd = power density in mW/cm^2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

Pd id the limit of MPE, 1 mW/cm^2. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18℃and 78％ RH.

1.3. Test Result of RF Exposure Evaluation

Product : Home Controller
Test Item : RF Exposure Evaluation
Test Site : No.3 OATS

802.11b (1Mbps) Output Power Into Antenna & RF Exposure Evaluation Distance (2dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
1	2412.00	35.8096	0.011291
6	2437.00	29.0402	0.009157
11	2462.00	38.7258	0.012210

The RF exposure at 20 cm is below limit.

802.11g (6Mbps) Output Power Into Antenna & RF Exposure Evaluation Distance (2dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
1	2412.00	90.1571	0.028427
6	2437.00	82.9851	0.026166
11	2462.00	96.1612	0.030320

The RF exposure at 20 cm is below limit.

802.11n-20MHz_14.4Mbps - 2.4G Band

Output Power Into Antenna & RF Exposure Evaluation Distance (2 dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
1	2412.00	89.1251	0.028102
6	2437.00	74.6449	0.023536
11	2462.00	85.3100	0.026899

The RF exposure at 20 cm is below limit.

802.11n-40MHz_30Mbps - 2.4G Band

Output Power Into Antenna & RF Exposure Evaluation Distance (2 dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
03	2422.00	65.7658	0.020736
06	2437.00	64.7143	0.020405
09	2452.00	68.7068	0.021664

The RF exposure at 20 cm is below limit.

Zigbee

Output Power Into Antenna & RF Exposure Evaluation Distance (2 dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
1	2405.00	93.1108	0.029358
8	2440.00	83.3681	0.026286
15	2475.00	70.7946	0.022322

The RF exposure at 20 cm is below limit.