RF Exposure Evaluation declaration

Product Name : CBS 2.5GHz
Model No. : BSMax-250
FCC ID. : W93-BSMAX250

Applicant : FRC INTERNET PRODUCTS, LLC
Address : 4421 SW 85th Way, Gainesville, Florida 32608, USA

Date of Receipt : 2011/12/14
Date of Declaration : 2013/02/05
Report No. : 11C277R-RF-US-Exp
Report Version : V1.0

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	CBS 2.5GHz
Test Mode	Mode 1: Transmit_ANT0
Test Condition	RF Exposure Evaluation

Antenna Gain(ANT0)

The maximum Gain measured in fully anechoic chamber is 16.5dB or 44.67 in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

3.5MHz Bandwidth				
Channel	Channel Frequency (MHz)	Output Power to Antenna (dBm)	Output Power to Antenna (mW)	Power Density at R = 100 cm(mW/cm^2)
Low	2497.75	27.93	620.87	0.22
Middle	2593	28.12	648.63	0.23
High	2688.25	28.89	774.46	0.28

5MHz Bandwidth				
Channel	Channel Frequency (MHz)	Output Power to Antenna (dBm)	Output Power to Antenna (mW)	Power Density at R = 100 cm(mW/cm^2)
Low	2498.5	28.33	680.77	0.24
Middle	2593	28.38	688.65	0.24
High	2687.5	28.93	781.63	0.28

7MHz Bandwidth				
Channel	Channel Frequency (MHz)	Output Power to Antenna (dBm)	Output Power to Antenna (mW)	Power Density at R = 100 cm(mW/cm^2)
Low	2499.5	26.67	464.52	0.17
Middle	2593	27.27	533.33	0.19
High	2686.5	28.44	698.23	0.25

10MHz Bandwidth				
Channel	Channel Frequency (MHz)	Output Power to Antenna (dBm)	Output Power to Antenna (mW)	Power Density at R = 100 cm(mW/cm^2)
Low	2499.5	28.03	635.33	0.23
Middle	2593	28.18	657.66	0.23
High	2686.5	29.25	841.40	0.30

The power density Pd (4th column) at a distance of 100 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm^2.

Product	CBS 2.5GHz
Test Mode	Mode 2: Transmit_ANT1
Test Condition	RF Exposure Evaluation

Antenna Gain(ANT1)

The maximum Gain measured in fully anechoic chamber is 16.5dB or 44.67 in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

3.5MHz Bandwidth				
Channel	Channel Frequency (MHz)	Output Power to Antenna (dBm)	Output Power to Antenna (mW)	Power Density at R = 100 cm(mW/cm^2)
Low	2497.75	28.05	638.26	0.23
Middle	2593	28.12	648.63	0.23
High	2688.25	28.91	778.04	0.28

5MHz Bandwidth				
Channel	Channel Frequency (MHz)	Output Power to Antenna (dBm)	Output Power to Antenna (mW)	Power Density at R = 100 cm (mW/cm^2)
Low	2498.5	27.99	629.51	0.22
Middle	2593	28.47	703.07	0.25
High	2687.5	29.27	845.28	0.30

7MHz Bandwidth				
Channel	Channel Frequency (MHz)	Output Power to Antenna (dBm)	Output Power to Antenna (mW)	Power Density at R = 100 cm(mW/cm^2)
Low	2499.5	28.61	726.11	0.26
Middle	2593	28.07	641.21	0.23
High	2686.5	28.04	636.80	0.23

10MHz Bandwidth				
Channel	Channel Frequency (MHz)	Output Power to Antenna (dBm)	Output Power to Antenna (mW)	Power Density at R = 100 cm(mW/cm^2)
Low	2499.5	28.42	695.02	0.25
Middle	2593	27.88	613.76	0.22
High	2686.5	28.51	709.58	0.25

The power density Pd (4th column) at a distance of 100 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm^2.

Product	CBS 2.5GHz
Test Mode	Mode 3: Transmit_ANT0+ANT1
Test Condition	RF Exposure Evaluation

The total power density at 100cm distance:

3.5MHz Bandwidth				
Channel	Channel Frequency (MHz)	ANT0_ Power Density at R = 100 cm(mW/cm^2)	ANT1_ Power Density at R = 100 cm(mW/cm^2)	ANT0+ANT1_Power Density at R = 100 cm(mW/cm^2)
Low	2497.75	0.22	0.23	0.45
Middle	2593	0.23	0.23	0.46
High	2688.25	0.28	0.28	0.56

5MHz Bandwidth				
Channel	Channel Frequency (MHz)	ANT0_ Power Density at R = 100 cm(mW/cm^2)	ANT1_ Power Density at R = 100 cm(mW/cm^2)	ANT0+ANT1_Power Density at R = 100 cm(mW/cm^2)
Low	2498.5	0.24	0.22	0.46
Middle	2593	0.24	0.25	0.49
High	2687.5	0.28	0.30	0.58

7MHz Bandwidth				
Channel	Channel Frequency (MHz)	ANT0_ Power Density at R = 100 cm(mW/cm^2)	ANT1_ Power Density at R = 100 cm(mW/cm^2)	ANT0+ANT1_Power Density at R = 100 cm(mW/cm^2)
Low	2499.5	0.17	0.26	0.43
Middle	2593	0.19	0.23	0.42
High	2686.5	0.25	0.23	0.48

10MHz Bandwidth				
Channel	Channel Frequency (MHz)	ANT0_ Power Density at R = 100 cm(mW/cm^2)	ANT1_ Power Density at R = 100 cm(mW/cm^2)	ANT0+ANT1_Power Density at R = 100 cm(mW/cm^2)
Low	2499.5	0.23	0.25	0.48
Middle	2593	0.23	0.22	0.45
High	2686.5	0.30	0.25	0.55

The power density Pd (4th column) at a distance of 100 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm^2.