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Federal Communications Commission
Authorization and Evaluation Division

Maximum Permissible Exposure Evaluation

Applicant name: BenchSoft
Product name: Bluetooth speaker
Model name: BN749-X
Brand name: None
Product Type: Fixed

SUBJECT : RF Exposure information for above device

To Whom It May Concern.

We the undersigned, hereby declaration of conformity this equipment is comply with required standard
This equipment is Bluetooth Speaker is designed as fixed in door and stand along type. It is to be used for wireless speakerphone and must not be co-located or operating in conjunction with and other antenna or transmitter and also use of a permanently attached antennal that user a unique coupling to the intentional radiator comply with the FCC Rule.
According to this product's antenna type is a fixed on PCB and it's gain is -1.0 ㏈i
It's output rated conducted power is 7.50 ㎽(8.75 ㏈m) declared by supplier and antenna specification is as follows;

Gain		Type	Length (cm)	Input impedance	Remark
Log. unit	Linear unit				
-1.0 ㏈i	0.79	Fixed on PCB	2.4	50Ω	Note

※ for more detailed antenna specification is see a uploaded files
※ Note: above Gain is Max.peak value within (2 402 ~ 2 483.5) ㎒ band of EUT

1. Limit and Guidelines on Exposure to Electromagnetic Fields
   The below table is excepted from Table 1B of 47 CFR 1.1310 title limits for Maximum Permissible Exposure(mpe), Limits for General Population / Uncontrolled Exposure
   Below table show the applied reference levels for calculations below ;

Frequency Range	Power Density (mW/cm^2)	Averaging Time (minutes)
300 – 1 500 ㎒	f/1 500	30
1 500 – 10 000 ㎒	1.0	30

※ Note: f is as indicated in the frequency range column (f in ㎒)

2. Under above describe specification of EUT and Antenna, Equivalent plane wave power density is calculated as below underlined quotation formula;

S_{eq} (W/m^2) = ExH = E^2/η = $\sqrt{PG}/4\pi r^2$

Where:

- S_{eq}(W/m^2) = Equivalent plane wave power density
- E(V/m) = Electric field strength
- H(A/m) = Magnetic field strength
- η (Ω) = Free space wave impedance = 120 π Ω
- P(W) = Power input to the antenna
- G(dBi) = Antenna gain relative to an isotropic antenna
- r(m) = distance from observation point to the antenna

Above formula is accurate when the point of investigation is in the far-field region and over-estimates in the radiating near-field. The far-field region is determined by:

r(m) = 2D$^2/\lambda$ = 0.06 m (In case of this system is 20 cm)

Where:

- D(m) = diameter of product with antenna is 0.06 m
- λ (m) = Wavelength of transmitting frequency (wavelength of this EUT is 300/2 442 = 0.12)
  2 442 ㎒ is center frequency

Accordingly as a result of calculated value

-. P(W) = 0.0075 W (7.50 ㎽)

-. G(dBi) = -1.0 dBi
  Conversion -1.0 dBi to Linearity value is 0.79

-. r(m) = measurement at a distance 0.2 m(20 cm) from the EUT antenna

∴ S_{eq}(W/m^2) : $\sqrt{0.0075 \times 0.79}$ /4 x 3.14 x 0.2^2 = 1.53

Conversion 1.53(W/m^2) to (W/cm^2) value is 0.0153
As below table required FCC MPE Limit value is S_{eq}(mW/cm^2),
So, Conversion above value 0.0153(W/cm^2) to (mW/cm^2) is **0.000153**

So, above calculated 0.000153 mW/cm^2 is comply with the value required FCC MPE Limit
(see a underline of below table. Limit and Guidelines on Exposure)

Date : Auguest. 08th ,2012 Mi Young Lee / Test Engineer