Article 133.　Emergency broadcasting equipments shall be installed pursuant to the following provisions:

1. The volume measured at the position 1m away from the speaker shall comply with the table below:

Type of speaker	Volume (V)
Grade L	≥92db
Grade M	87db≤V<92db
Grade S	84db≤V<87db

2. Speaker shall be installed pursuant to the following provisions:
   (1) Grade L speaker shall be used where the broadcasting area is larger than $100m^2$.
   (2) Grade L or Grade M speaker shall be used where the broadcasting area is larger than $50m^2$ but smaller than $100m^2$.
   (3) Grade L, Grade M or Grade S speaker may be used where the broadcasting area is smaller than $50m^2$.
   (4) The horizontal distance from any point of the broadcasting area to the speaker shall be less than 10m. But it is allowable that no speaker is installed where the floor area of living room is less than $6m^2$ or the floor area of the main aisles and passages from the living room to the ground is less than $6m^2$, the floor area of the parts other than living room less than $30m^2$, and the horizontal distance form the speaker in this area to the speaker in the adjacent area less than 8m.
   (5) When installed in stairways or ramped aisles, at least one Grade L speaker shall be installed for every 15m vertical distance.

The volume and equipments of speakers installed in places except stairwys and ramped aisles shall comply with the following provisions:

The volume of a place where is 1m away from the floor ground within the broadcasting areas shall be more than 75dB calculated depanding on the following formula:

$$P = p + 10\log_{10}\left(\frac{Q}{4\pi r^2} + \frac{4(1-\alpha)}{S\alpha} \right)$$

 P : Volume (Unit: dB)

 p : Audio Power of Speaker (Unit: dB)

 Q : Directivity Factor of Speaker

 r : Distance between Audio Point and Speaker (Unit: m)

 α : Average Sound Absorbing Rate in Broadcasting Area

 S : Total Area of Walls, Floorslabs and Ceilings within Broadcasting Area(Unit:m^2)

(6) When the echoing sound is more than 3s, the distance between the place 1m to the floorslabs and the speaker shall be calculated depending on the following formula:

$$r = \frac{3}{4}\sqrt{\frac{QS\alpha}{\pi(1-\alpha)}}$$

 r : Distance between Audio Point and Speaker (Unit: m)

 Q : Directivity Factor of Speaker

 S : Total Area of Walls, Floorslabs and Ceilings within Broadcasting Area(Unit:m^2)

 α : Average Sound Absorbing Rate in Broadcasting Area