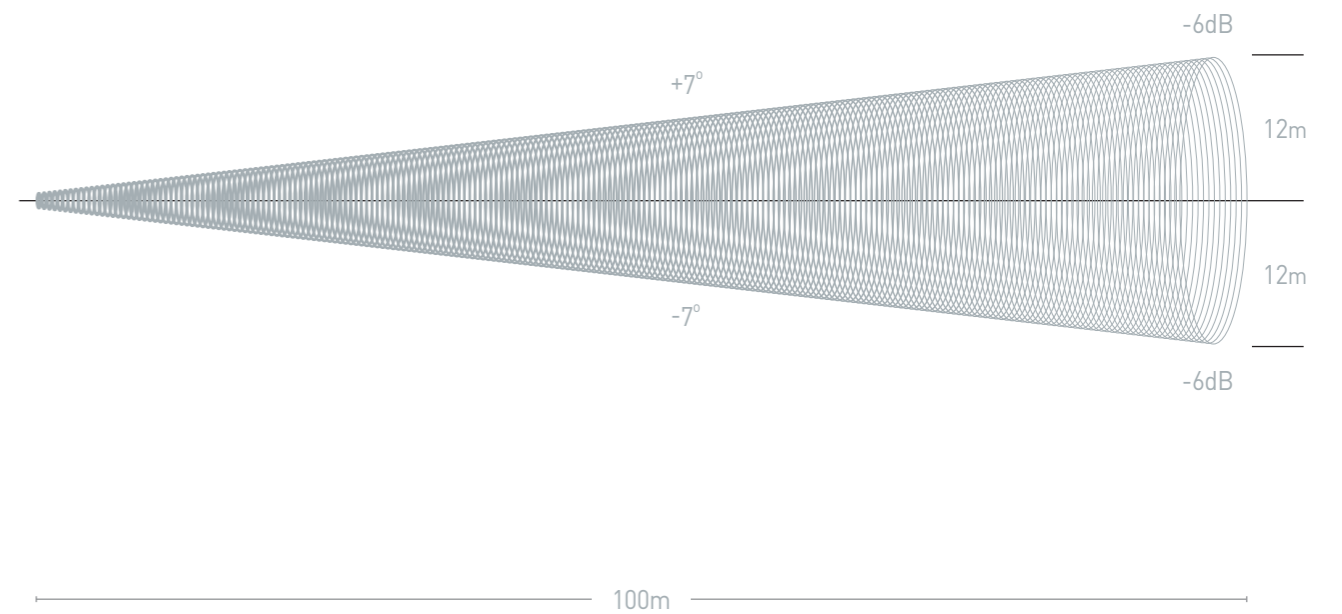


Sound Like a Light Will Protect You

www.thesoftgear.com
www.dufense.com

Innovative
SOFTGEAR

**SUPER
DIRECTIONAL
SPEAKER**



www.thesoftgear.com
www.dufense.com
Inquiry_thefirststep@thesoftgear.com





SOUND LIKE A LIGHT WILL PROTECT YOU

The First step for the great journey



Recognize the risks hidden in everyday life through an engineering analysis, Prevent the risks by appropriate technologies and Protect lives from incidents caused by the risks. Therefore, our society will be safer and more settled.

With the mission statement above, The great journey of the SOFTGEAR Inc. has begun with the first step.

Before a moment of a highly potential accident, you will have the moment to avoid the crash if a visual and audio warning are given to you.

DUFENSE is the last chance of your safety.

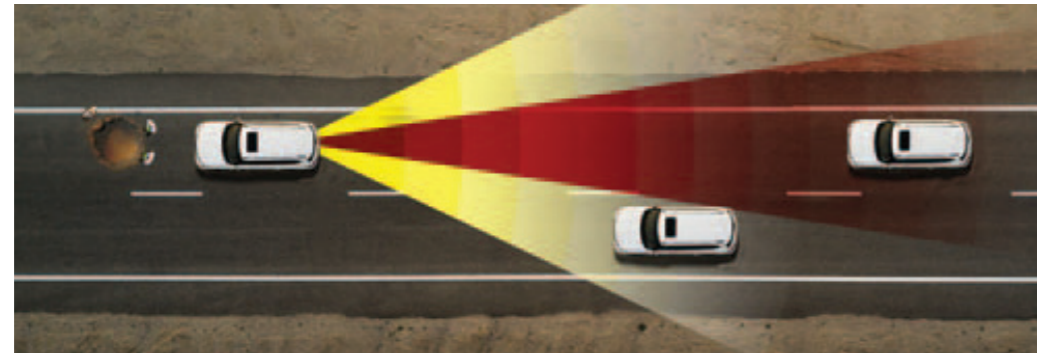




SUPER DIRECTIONAL SPEAKER

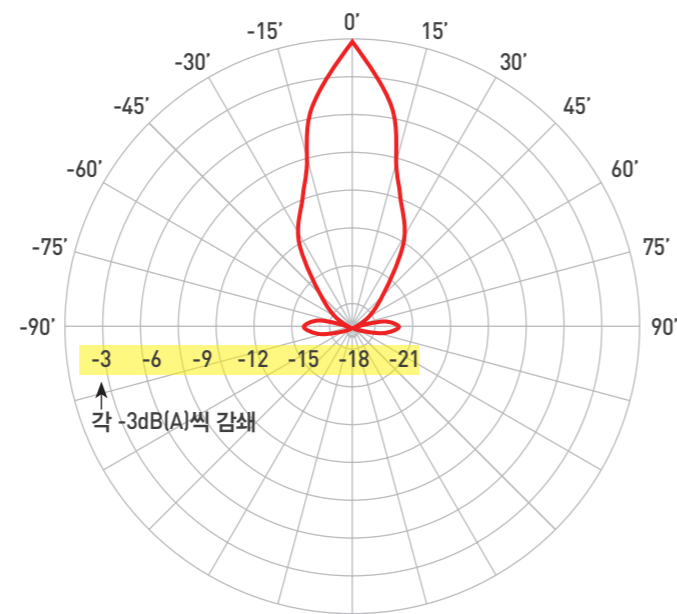
Compared to the sound angle of a conventional high output speaker, its angel is very narrow($\pm 7^\circ$ -6dB). Also, while a vehicle drives 100km/h(60mi/h), only the lane a speaker is installed can hear the sound warning and the audio message can be heard up to 200m in the car. However, after the car has been passed the point of the speaker installed, the loud warning sound cannot be listened. So, the workers behind the speaker can not exposed high level of warning sound during their work.

DUFENSE is the only the speaker not only an audible warning message can be listened at far for vehicles but also the speaker can protect ears of roadside workers.



Polar Plot of X16

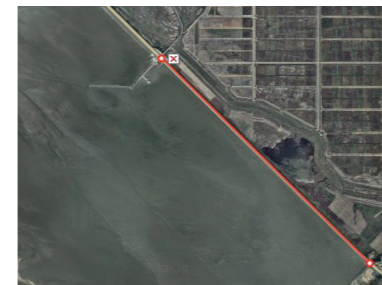
TEST SITE _ **OPEN OUTDOOR**
TEMP _ **7°C**
FREQUENCY _ **1KHz SINE WAVE**



OPERATION FIELD TEST

(SUV)

TEST SITE _ **HWASUNG SEAWALL**
WEATHER CONDITION _ **3°C**
VEHICLE TYPE _ **SUV (KIA SORRENTO)**
VEHICLE VELOCITY _ **100~110km/h**



SUV 1st Ln
Passing



SUV 2nd Ln
wo / Music



SUV 1st Ln
Passing w / Music

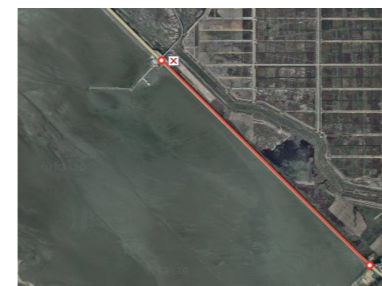


SUV 2nd Ln
w / Music

OPERATION FIELD TEST

(SEDAN)

TEST SITE _ **HWASUNG SEAWALL**
WEATHER CONDITION _ **4°C**
VEHICLE TYPE _ **SEDAN (RENAULT SM5)**
VEHICLE VELOCITY _ **100~110km/h**



SEDAN 1st Ln
Passing



SEDAN 2nd Ln
wo / Music



SUV 2nd Ln
w / Another Vehicles



SEDAN 2nd Ln
w / Music



DUFENSE TUBE

WHAT IS A TUNNEL-TYPE SUPER DIRECTIONAL SPEAKER?

Using the great directionality of DUFENSE X1, while X1s are installed in a tunnel, there is no echo and reflection of sound because the sound from X1 only can travel forward. This is the only speaker can be installed in a tunnel without any sound controller.



Installation every 50m in a tunnel according to the fire regulation code.

- Each speaker includes a doppler radar for vehicle speed detection.
- The collected traffic flow data from each radar can be analyzed by a control unit.
- Over speeding, unexpected congestion and emergency stop can be categorized.
- The Audio message will be played based on the events through the X1s without any echo.
- Prevent accident in a tunnel by broadcasting the audio warning directly.

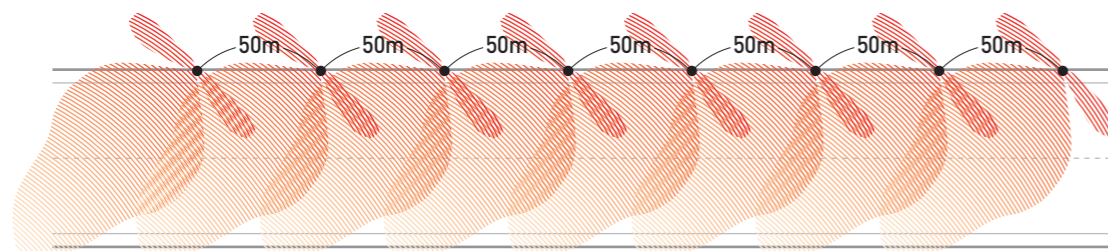
Running 30km/h

Audio warning in Korean for over speeding



Running 100km/h

Audio warning in Korean for over speeding



• SUPERDIRECTIONAL SPEAKER

DUFENSE SERIES

DUFENSE STANDS FOR DUAL DEFENSE.

DUFENSE can protect **once in visual waring** and **once again in audio warning**.
You can hear the sound even though you can not watch a sign of an accident.

DUFENSE X1

DUFENSE X1
MAX SPL _ 120dB @ 1m
MAX RANGE _ 100m 73dB
inside of vehicle
POWER INPUT _ 24VDC
DIMENSION _ 400x600x350
POWER CONSUMPTION _ 200W
OPERATION ENVIRONMENT
-IP 65 / -20°C~40°C



X1

DUFENSE X2

COMBINATION OF 2SET OF DUFENSE X1
MAX RANGE _ 200m 95dB
inside of vehicle
POWER INPUT _ 1kW
DIMENSION _ 800x600x350
POWER CONSUMPTION _ 200W
OPERATION ENVIRONMENT
-IP 65 / -20°C~40°C



X2

DUFENSE TUBE

COMBINATION OF 12SET OF DUFENSE X1 AND 1 CONTROL UNIT
Each X1 includes a doppler radar
For section of 800m, the control unit monitors traffic flows such as over speeding, emergency stop, unexpected congestion and etc. Based on the events, the unit executes the direct response in a tunnel.
The unit is linked to other units up to 256
INPUT _ 220VAC / 24VDC



TUBE



BUSINESS APPLICATIONS

WORK SAFETY ZONE

Delivery of a message, "Slow Down", for road workers

Repeating accidents in work zone although using visual aids.
Increasing the accidents caused by unconscious driving.
the audio warning should be heard at least 150m before the work zone.
Audio warning is more direct method than visual one.



More applications will be shown soon

EMERGENCY VEHICLES

Delivery of a precaution; priority at intersection and lanes

Hearing damages every time running with sirens
But the siren is not strong enough for other vehicles.
Sometime a car is blocking the way of emergency units.
It is not clear where the units are from and to.





BUSINESS APPLICATIONS

CAREFUL DRIVING ROAD

Delivery of Caution for safe driving on dangerous roads

Fogs, icing road, dangerous curved road and etc.
Receiving sound warning before approaching caution area.
Give an audio safety guide.



More applications will be shown soon

SCHOOL ZONE / CROSSWALKROAD

Delivery of a message, "Slow Down", for children

Speeding enforcement does not prevent accidents.
Give the audio warning to the over speeding vehicle before it comes a school zone.
Simultaneous deliver the audio warning to vehicle and pedestrians.
The speaker is also programmable.

