Multimodal
Emotion Recognition
AI **Sound** Technology

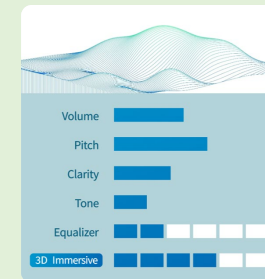**Product** Introduction

DLOGIXS
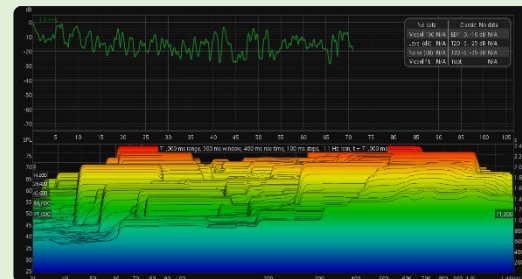
Contents

● Product Features

Feature 1

Real-time Emotion Recognition of Video Contents
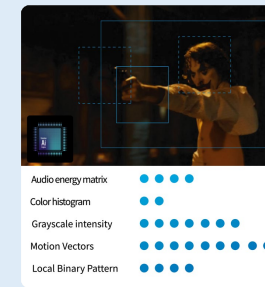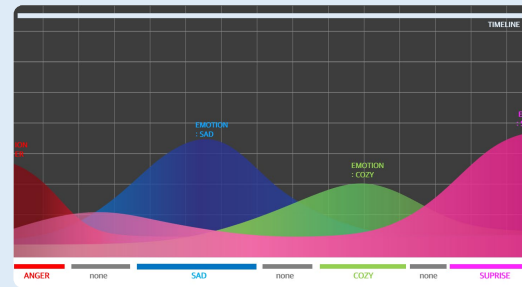
Feature 2

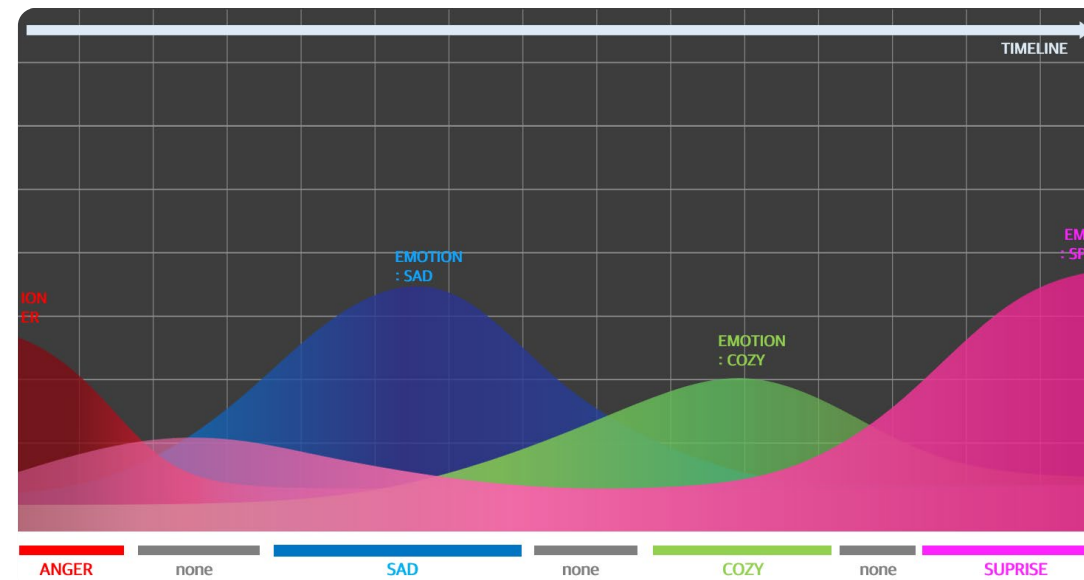Audio Enhancement based on Emotion Information

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Feature 1

Real-time Emotion Recognition of Video Contents

< Real-time Emotion Recognition AI >

● Real-time Video Analysis AI Engine

The real-time AI video analysis is used to understand the emotional atmosphere of the scene based on the flow of the content. The emotional atmosphere helps to recognize the emotion of the viewer, and mixed with the AI analysis of the scene's various elements such as character, environment, color, and sound, the AI finds the emotion value that best matches the scene and story.
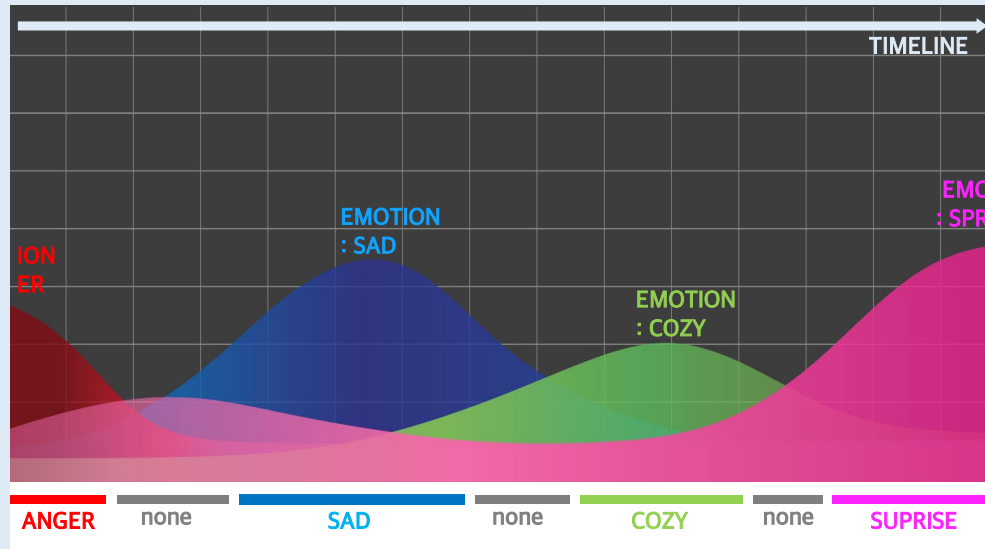
< Video emotion analysis timeline graph >

< Test image of emotion analysis of scene >

● Emotion Analysis AI Model

Using vectors such as image (CLIP), audio (Hubert), color, and intensity, the AI model analyzes 7 types of emotions in real-time.

DLOGIXS
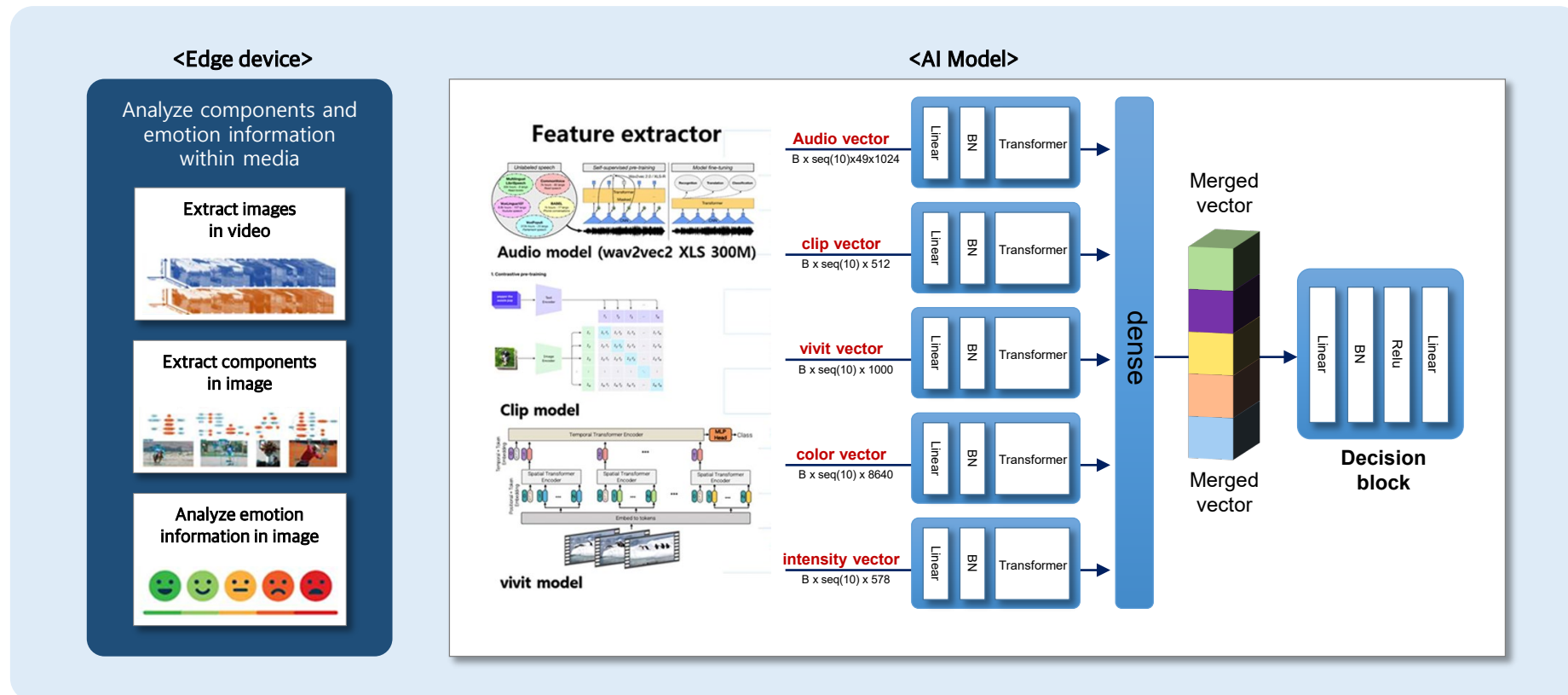
● Edge Device Equipped with Emotion Analysis AI Model

   – Edge device (JETSON NANO) equipped with the emotion information analysis technology based on streaming input
   – A lightweight model and fast inference made possible

CSI Interface

HDMI

< SET-TOP BOX >

VIDEO INPUT

< Emotion analysis AI engine >

Emotion Analysis
AI Model

< TV DISPLAY >

VIDEO OUTPUT

< Inference model & code >
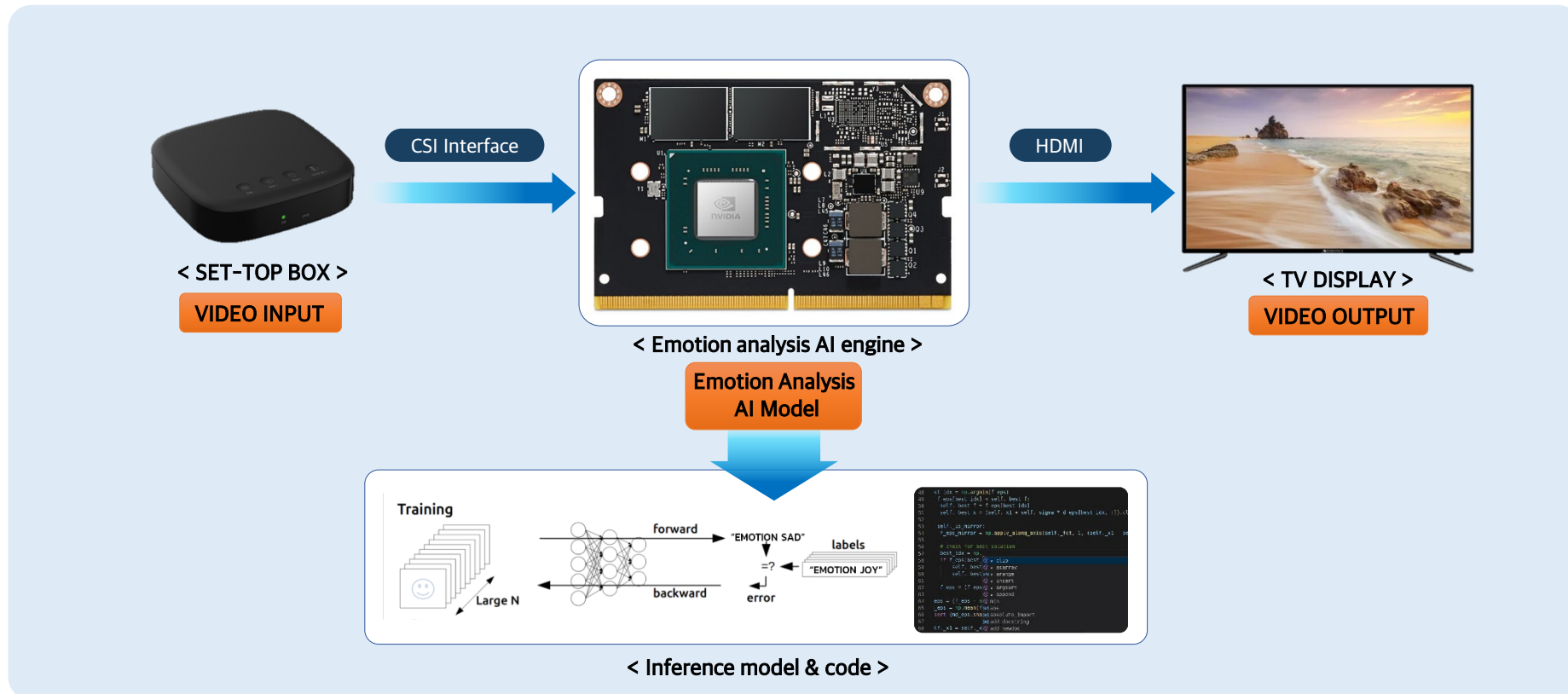
Feature 2

Audio Enhancement AI

< Audio Enhancement AI >

● Emotion AI Sound System #1

It provides sound tuning matching the emotion classes that have been selected through video emotion AI analysis.
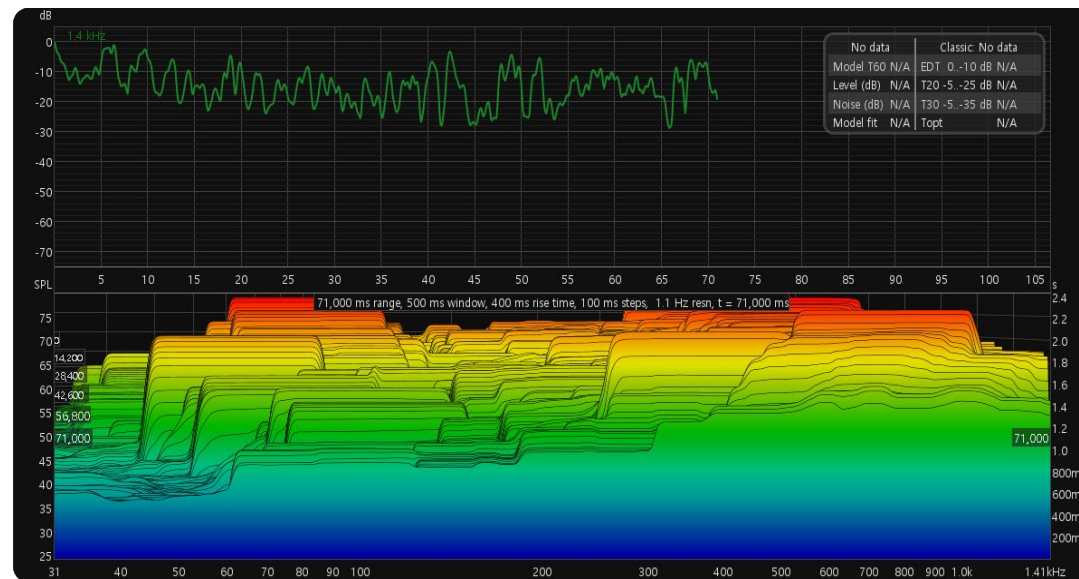It elevates the emotional atmosphere of the video and creates an immersive environment by enhancing the sounds of characters, objects, and environment.
It is a unique real-time emotion sound effect that is different from genre-based sound tuning.

Feature extractor
Shot Category
Scene graphs
Time and Loc information
Object and action vector
Audio vector
Clip vector

Transformer

Emotion Class

< Video AI emotion analysis >

Volume
Pitch
Clarity
Tone
Equalizer
3D Immersive

< Sound tuning by selected emotion class >

< Immersive audio experience >
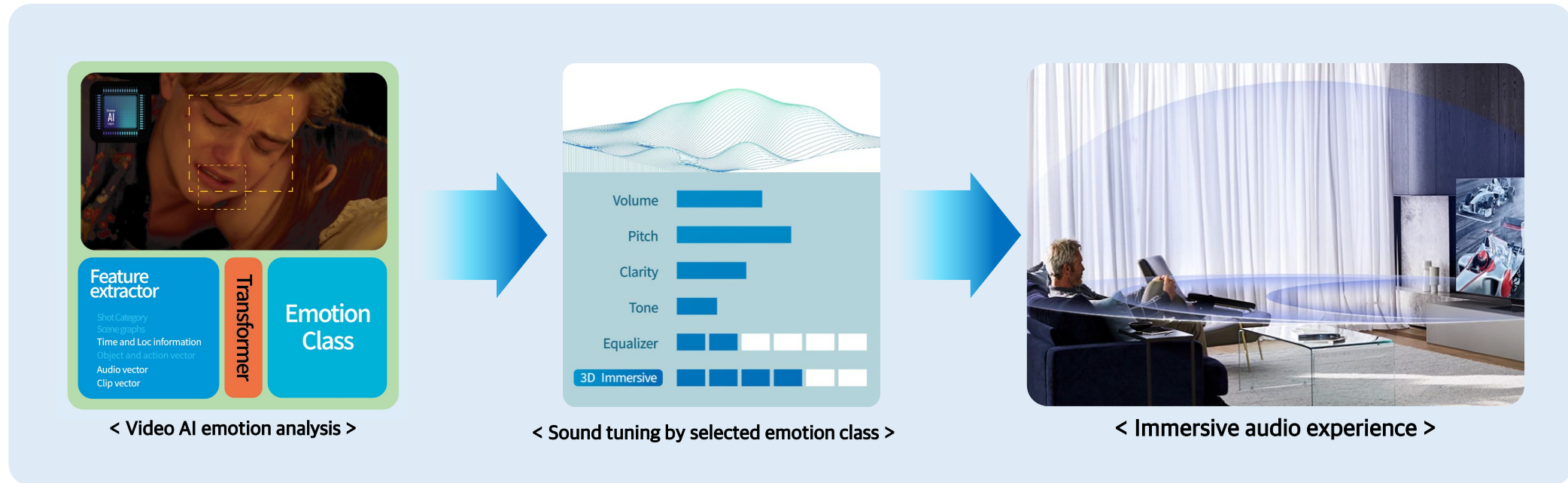
● Emotion AI Sound System's Sound Field Processing #2

Using Clear-Voice and 3D Immersive technology, we create sound effects that enhance the mood of scenes and elevate the emot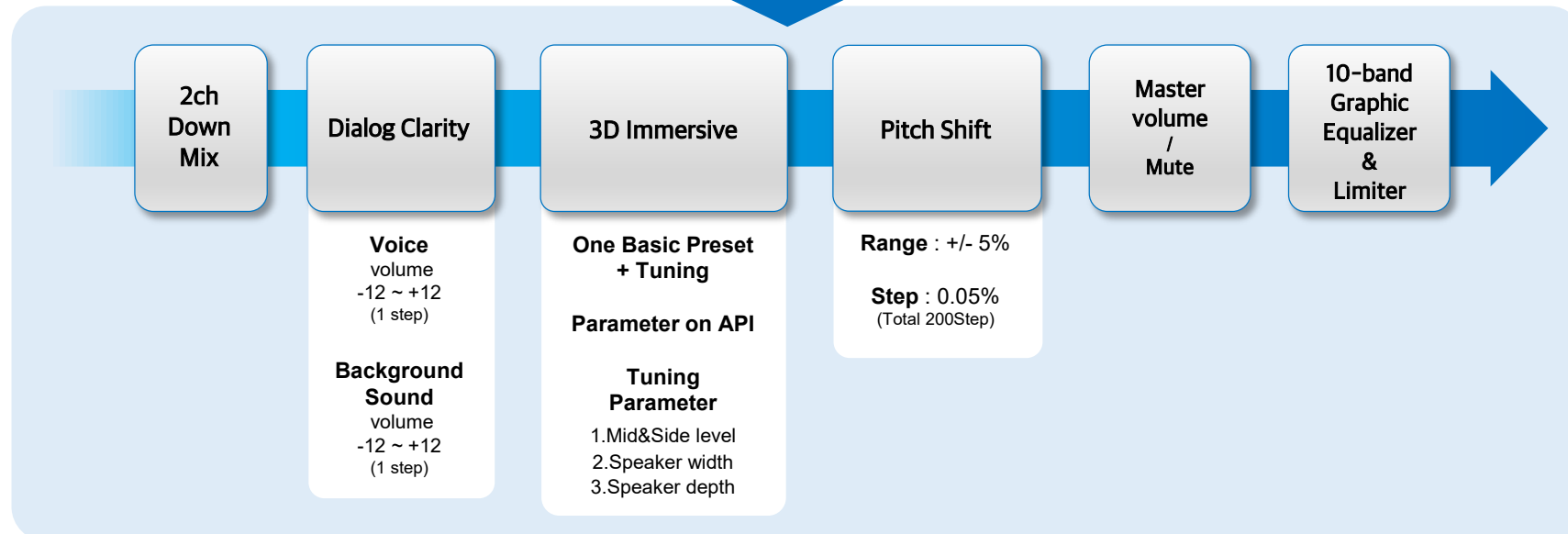ional impact of voices. This can bring the viewers to meet the upgraded audio condition customized to any visual content.
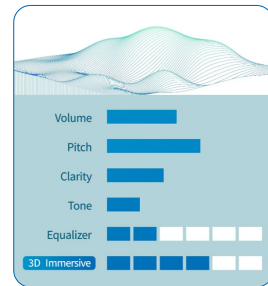
DLOGIXS' sound field processing

Sound tuning that refines the atmosphere of video, balances the sound of object and environment, and elevates spatial depth.
Reaches the desired sound effect by reflecting preset sound tuning values to elements such as Dialog / 3D Immersive / Pitch / Volume / EQ

Volume
Pitch
Clarity
Tone
Equalizer
3D Immersive

2ch Down Mix → **Dialog Clarity** → **3D Immersive** → **Pitch Shift** → **Master volume / Mute** → **10-band Graphic Equalizer & Limiter**

Dialog Clarity
Voice
volume
-12 ~ +12
(1 step)

Background Sound
volume
-12 ~ +12
(1 step)

3D Immersive
One Basic Preset + Tuning

Parameter on API

Tuning Parameter
1.Mid&Side level
2.Speaker width
3.Speaker depth

Pitch Shift
Range : +/- 5%

Step : 0.05%
(Total 200Step)

● Emotion AI Sound System Result #3

Using Clear-Voice and 3D Immersive technology, we create sound effects that enhance the mood of scenes and elevate the emotional impact of voices. This can bring the viewers to meet the upgraded audio condition customized to any visual content.

Live sound tuning tailored to movie scene

Select Emotion   Sad /Distress

Volume
Detailed Pitch
Dialog
Equalizer
3D Immersive
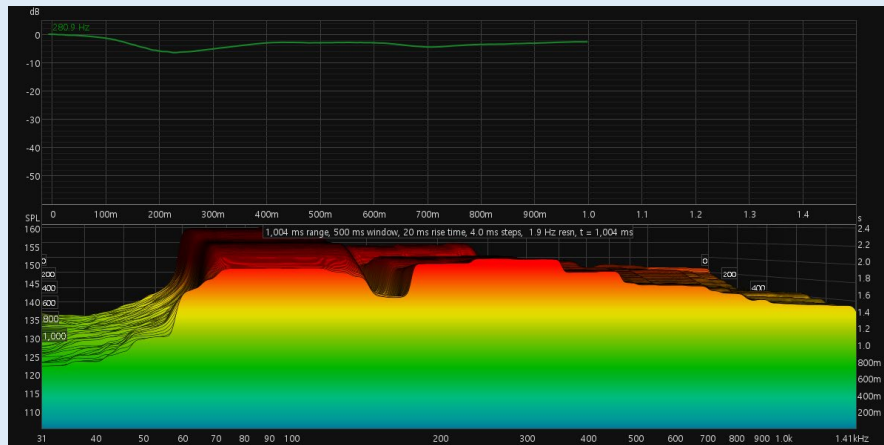
< Waveform of movie sound >

< Waveform of emotion sound tuning >

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Live Tuning AI Sound

We provide tuned sounds that match emotional states such as tension, horror, sadness, meditation, anger, and happiness through real-time AI screen analysis. The 'Emotion AI Engine' allows you to enjoy optimal sound in real-time for any scenes, without any manual adjustments. By incorporating technology optimized for the analyzed screen, we further enhance immersion.

Timeline of video scenes   **Emotion sound AI live tuning**   **Output AI emotion sound**
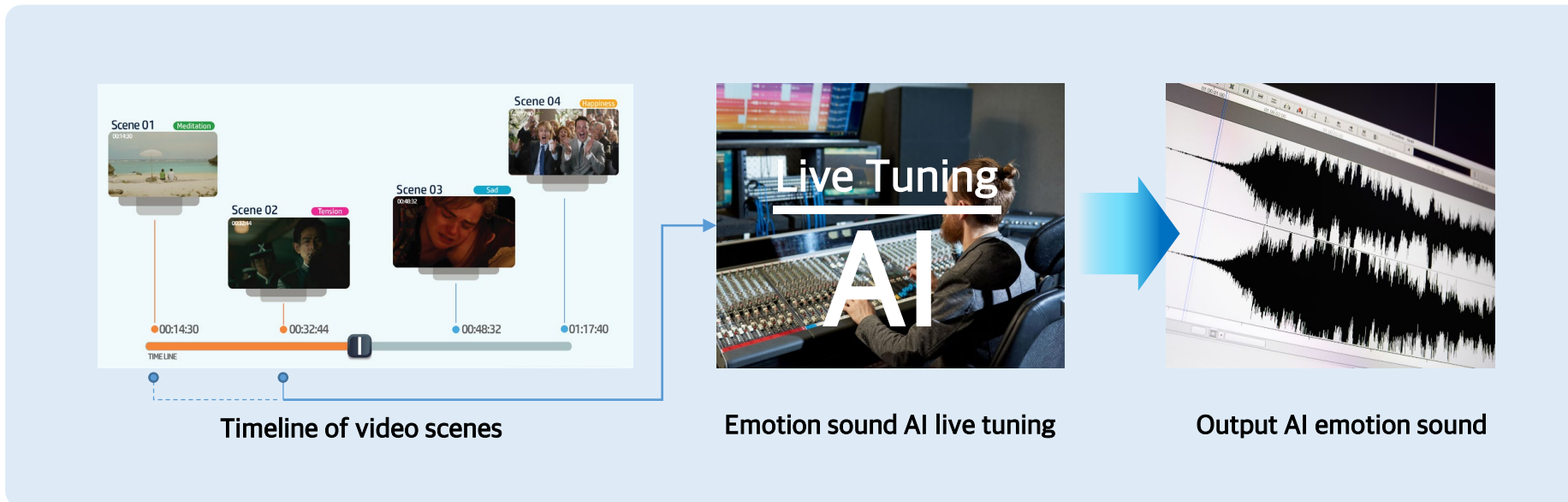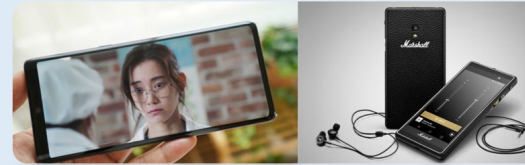
● Applicable Fields

Multimodal emotion sound technology can be used in numerous fields such as video systems, smart devices, contents platform services, and security video analysis services.

TV, Sound bar / Home Entertainment

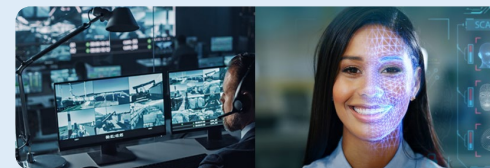Smartphones, Portable audio devices

XR / VR

OTT / Platform services

Theaters / Large format displays

Security systems using emotion recognition

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THANK YOU

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