



## Test Procedure for the LV3313PMGEVB Evaluation Board

# Test Items

### \*Step check

Input gain, Volume, Tone, Fader

### \*Characteristic

Loudness, Tone, Zero cross, Soft mute,  
Output noise voltage, THD, Maximum input voltage,  
Input selector, MUTE switch



# Test Setup 1

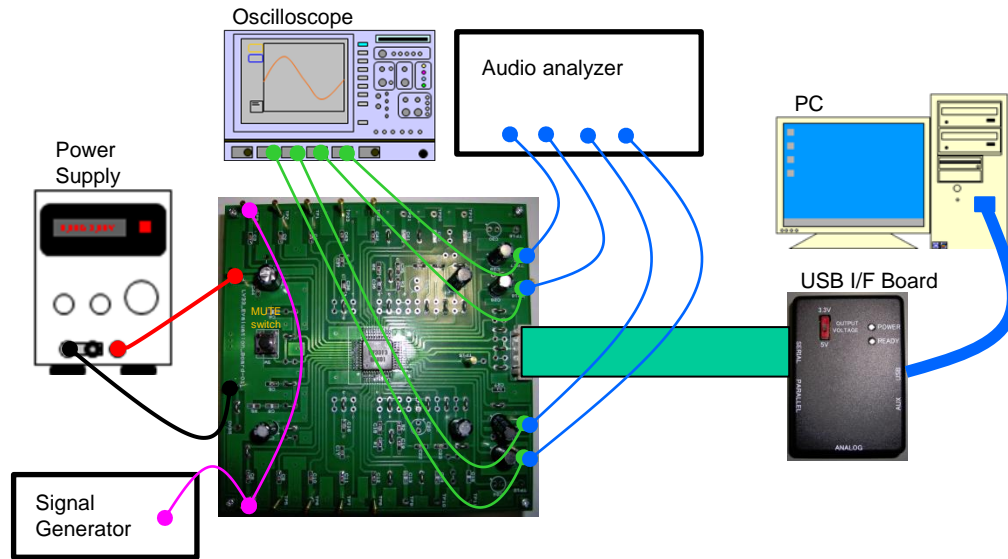


Fig 1

Equipment :

- ✓ Power Supply ... 1pc
- ✓ Oscilloscope ... 1pc
- ✓ Signal Generator ... 1pc
- ✓ Audio analyzer ... 1pc
- ✓ PC ... 1pc
- ✓ USB I/F Board ... 1pc
- ✓ LV3313PM Evaluation\_Board ... 1pc

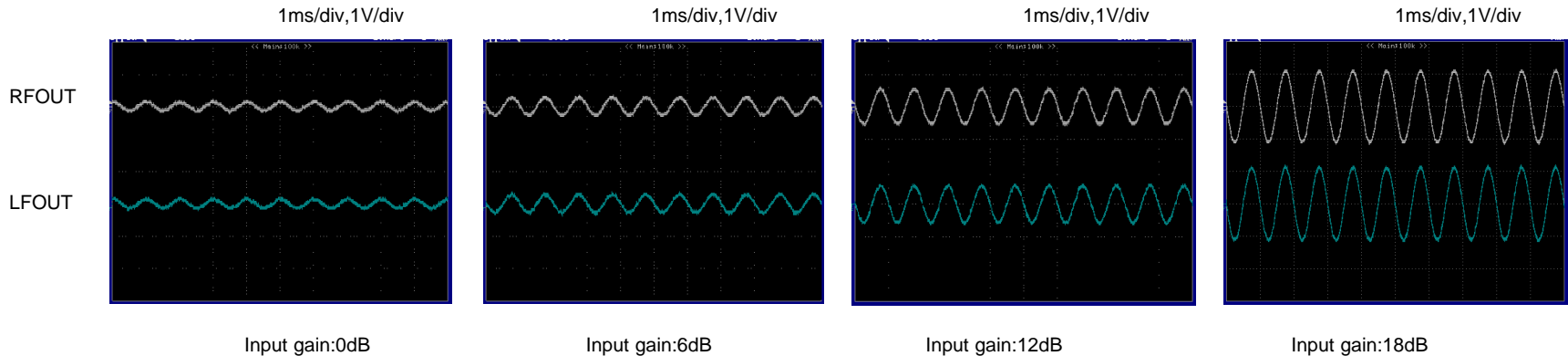


## Step check1 : Input gain

- ❑ Set up (Refer to Fig1)
- ❑ Please apply an electric power supply:8V.
- ❑ Input signal :  $V_{IN}=-20\text{dB}, f=1\text{kHz}$  → ch1(TP3,TP4)
- ❑ Setting from PC
  - Set Input selector in ch1. Each setting level:FLAT.
  - Transmit Input gain data. Confirm an output waveform.

Check the waveform in OSC. Confirm the step level in Audio Analyzer.

About the following waveforms. Setting of Input gain: Waveform of 0dB/6dB/12dB/18dB



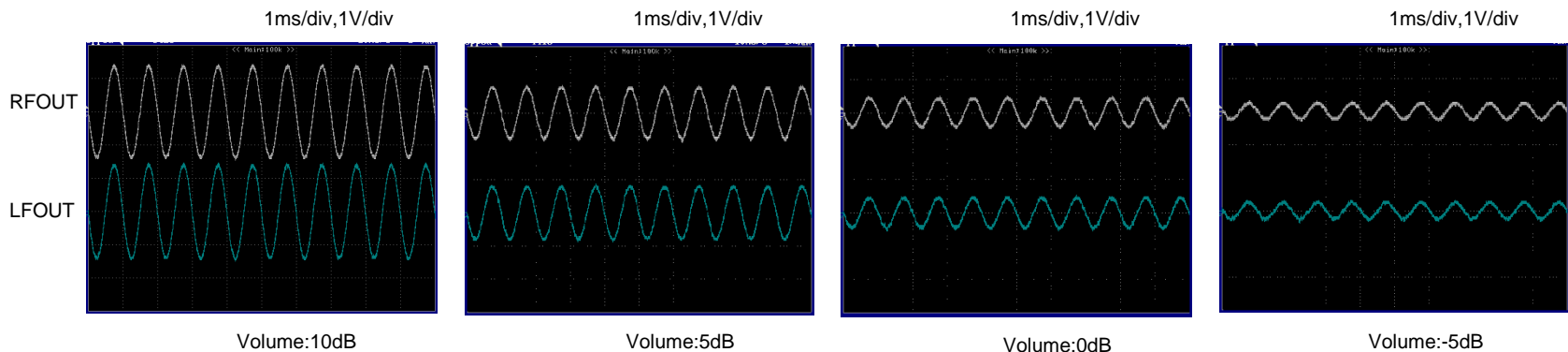


## Step check2 : Volume

- ❑ Set up (Refer to Fig1)
- ❑ Please apply an electric power supply:8V.
- ❑ Input signal :  $V_{IN}=-10\text{dB}, f=1\text{kHz}$  → ch1(TP3,TP4)
- ❑ Setting from PC
  - Set Input selector in ch1. Each setting level:FLAT.
  - Transmit Volume data. Confirm an output waveform.

Check the waveform in OSC. Confirm the step level in Audio Analyzer.

About the following waveforms. Setting of Volume: Waveform of 10dB/5dB/0dB/-5dB



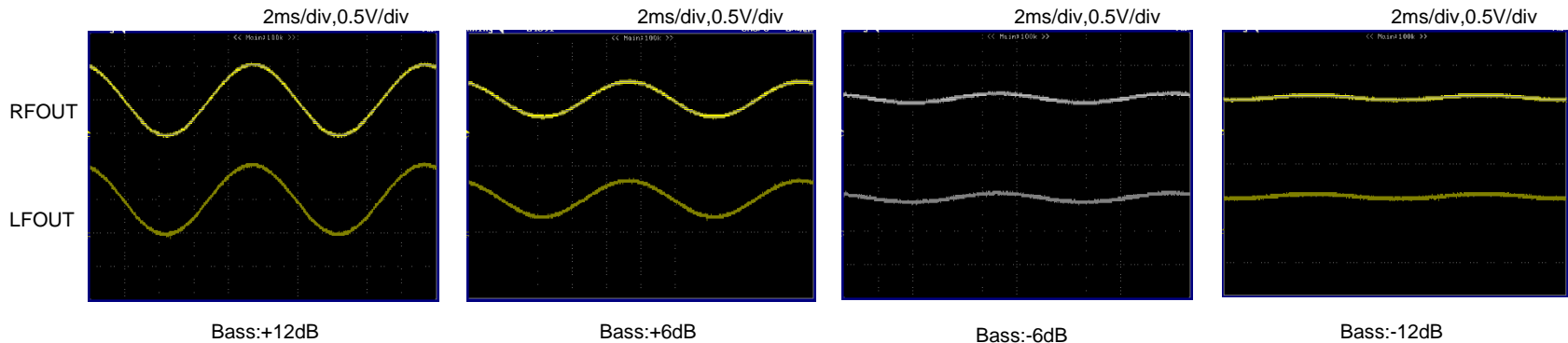


## Step check3 : Tone (Bass)

- ❑ Set up (Refer to Fig1)
- ❑ Please apply an electric power supply:8V.
- ❑ Input signal :  $V_{IN}=-20\text{dB}$ ,  $f=100\text{Hz}$ →ch1(TP3,TP4)
- ❑ Setting from PC
  - Set Input selector in ch1. Each setting level:FLAT.
  - Transmit Bass gain data. Confirm an output waveform.

Check the waveform in OSC. Confirm the step level in Audio Analyzer.

About the following waveforms. Setting of Bass gain: Waveform of +12dB/+6dB/-6dB/-12dB



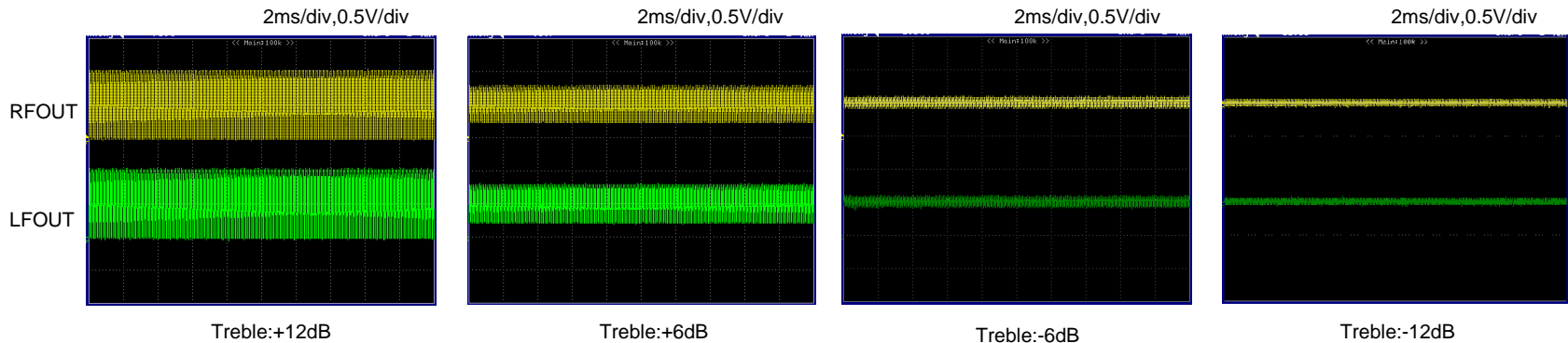


## Step check4 : Tone (Treble)

- ❑ Set up (Refer to Fig1)
- ❑ Please apply an electric power supply:8V.
- ❑ Input signal :  $V_{IN}=-20\text{dB}$ ,  $f=10\text{kHz}$  → ch1(TP3,TP4)
- ❑ Setting from PC
  - Set Input selector in ch1. Each setting level:FLAT.
  - Transmit Treble gain data. Confirm an output waveform.

Check the waveform in OSC. Confirm the step level in Audio Analyzer.

About the following waveforms. Setting of Treble gain: Waveform of +12dB/+6dB/-6dB/-12dB.



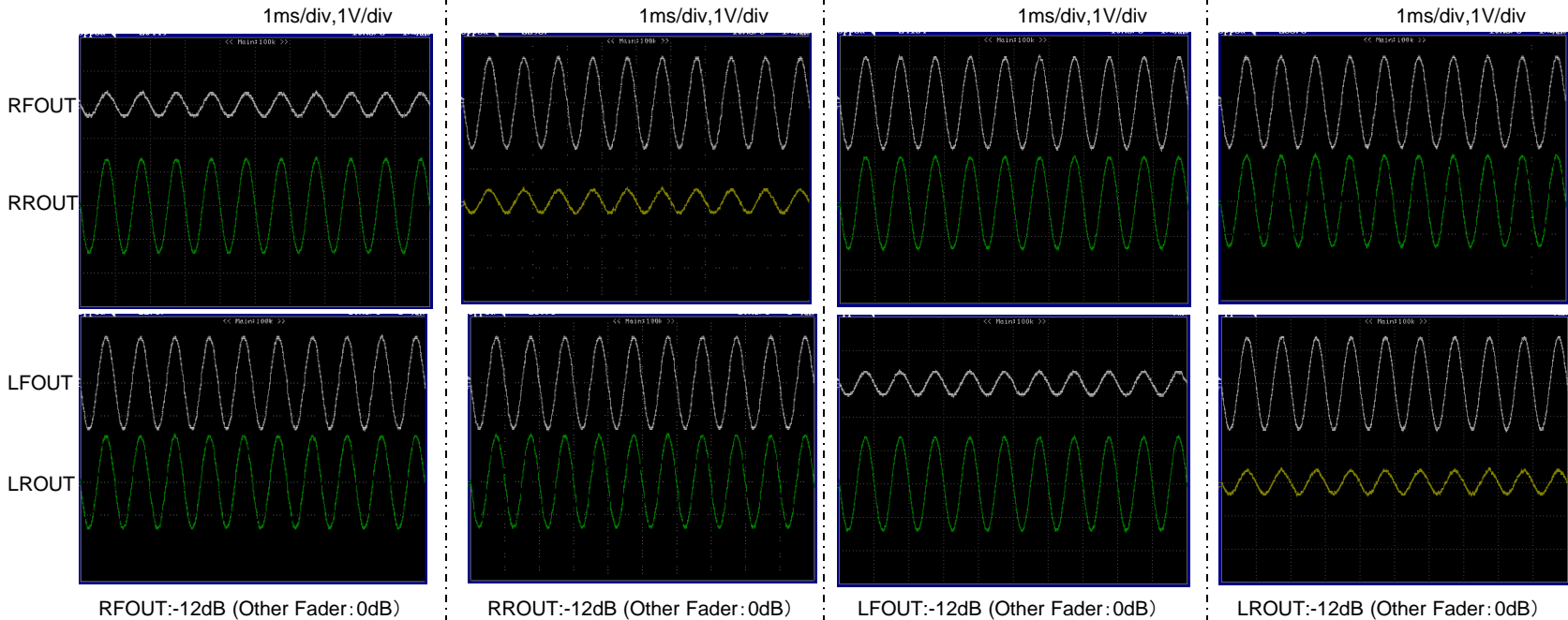


Step check5 : Fader

- ❑ Set up (Refer to Fig1)
- ❑ Please apply an electric power supply:8V.
- ❑ Input signal : **VIN=0dB, f=1kHz**→ch1(TP3,TP4)
- ❑ Setting from PC
  - Set Input selector in ch1. Each setting level:FLAT.
  - Transmit Fader data. Confirm an output waveform.

Check the waveform in OSC. Confirm the step level in Audio Analyzer.

About the following waveforms. Setting of Fader (RF/RR/LF/LR): Waveform of -12dB.



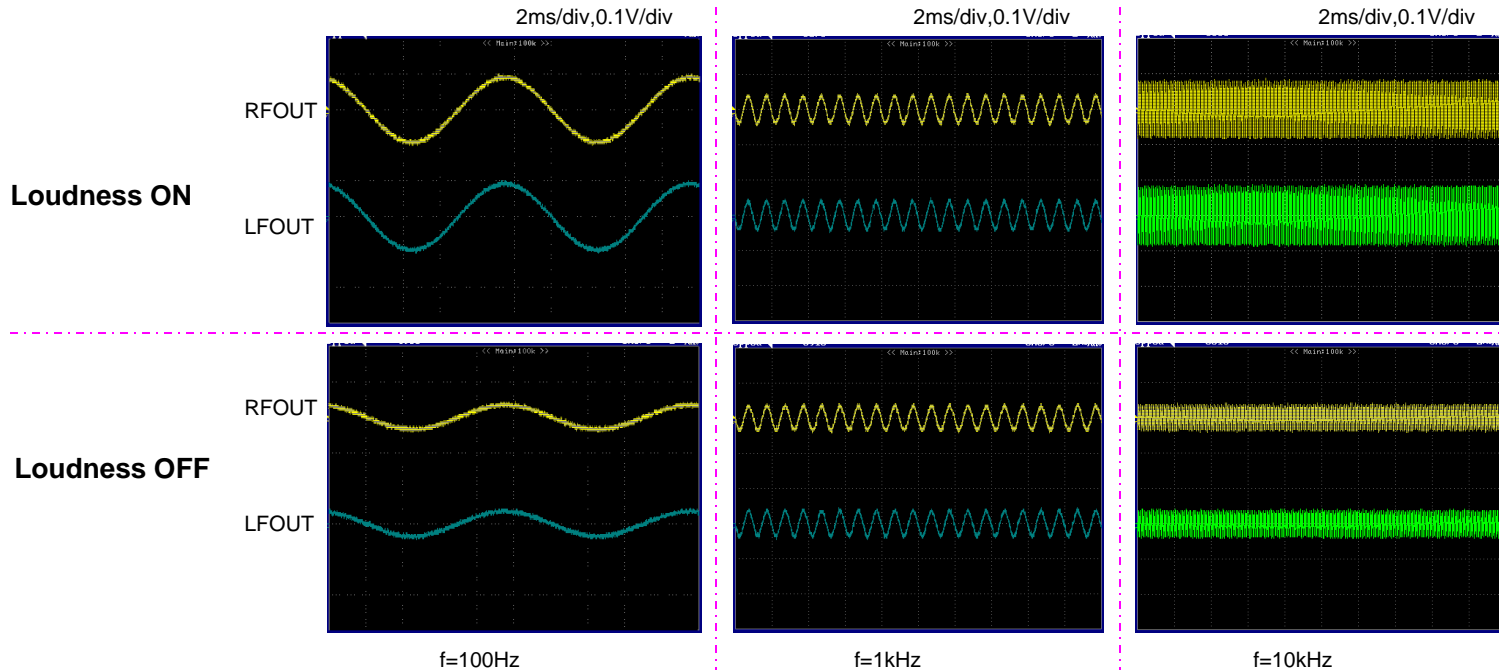


## Characteristic1 : Loudness

- ❑ Set up (Refer to Fig1)
- ❑ Please apply an electric power supply:8V.
- ❑ Input signal level : **VIN=0dB**→ch1(TP3,TP4)
- ❑ Setting from PC
  - Set Input selector in ch1. Each setting level:FLAT.
  - Transmit Volume data -32dB and Loudness mode ON.
  - Confirm output level : input frequency 100Hz/1kHz/10kHz.

Check the waveform in OSC. Confirm the output level in Audio Analyzer.

About the following waveforms. Condition : Loudness ON/OFF, input frequency 100Hz/1kHz/10kHz.





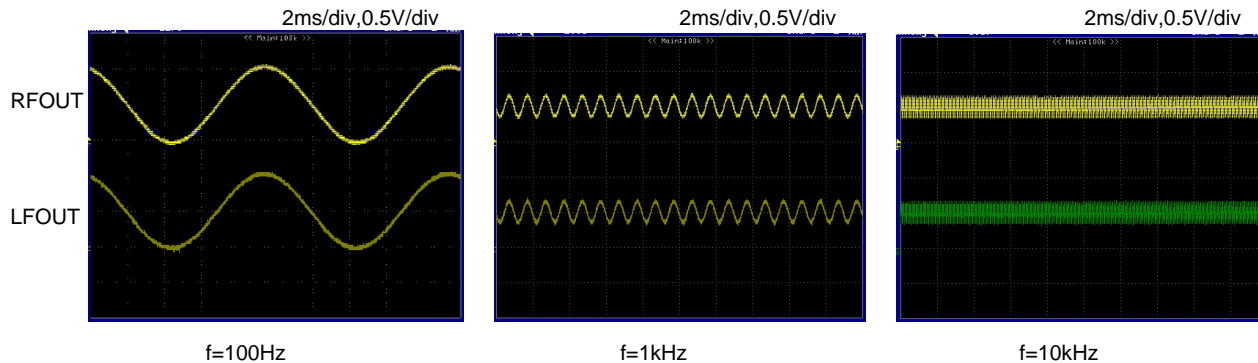


## Characteristic2 : Tone (Bass)

- ❑ Set up (Refer to Fig1)
- ❑ Please apply an electric power supply:8V.
- ❑ Input signal level : **VIN=-20dB**→ch1(TP3,TP4)
- ❑ Setting from PC
  - Set Input selector in ch1. Each setting level:FLAT.
  - Transmit Bass data .(Data contents: Gain=+12dB)
  - Confirm output level : input frequency 100Hz/1kHz/10kHz.

Check the waveform in OSC. Confirm the output level in Audio Analyzer.

About the following waveforms. Condition : input frequency 100Hz/1kHz/10kHz.



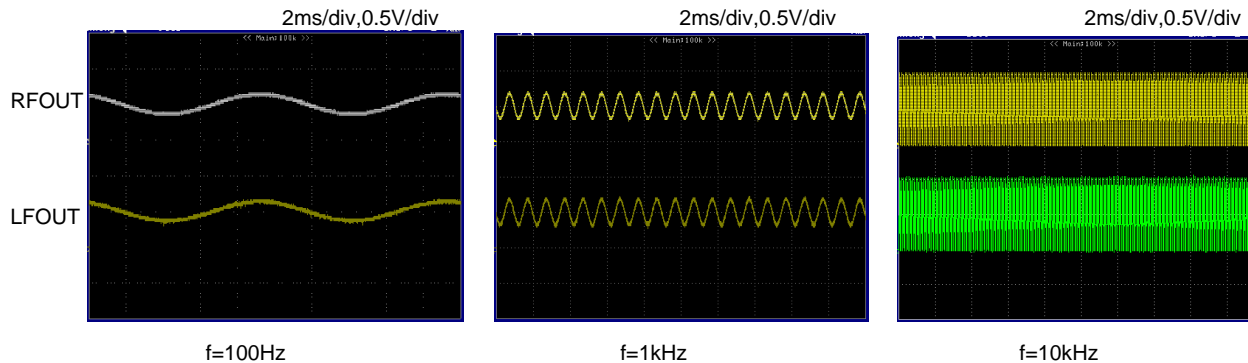


## Characteristic3 : Tone (Treble)

- ❑ Set up (Refer to Fig1)
- ❑ Please apply an electric power supply:8V.
- ❑ Input signal level : **VIN=-20dB**→ch1(TP3,TP4)
- ❑ Setting from PC
  - Set Input selector in ch1. Each setting level:FLAT.
  - Transmit Treble data .(Data contents: Gain=+12dB)
  - Confirm output level : input frequency 100Hz/1kHz/10kHz.

Check the waveform in OSC. Confirm the output level in Audio Analyzer.

About the following waveforms. Condition : input frequency 100Hz/1kHz/10kHz.



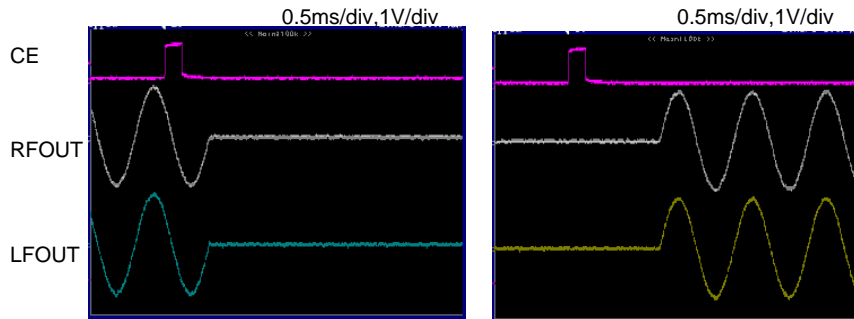


## Characteristic4 : Zero cross

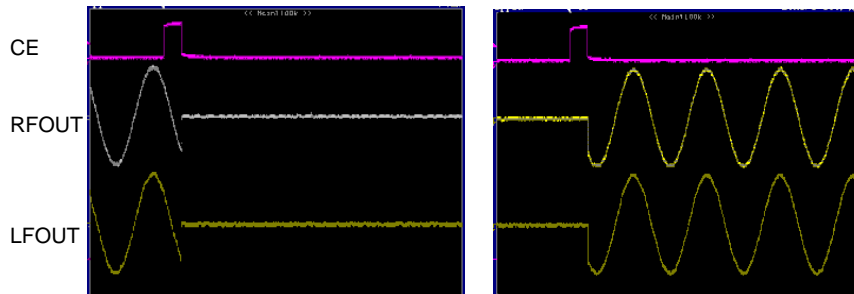
- ❑ Set up (Refer to Fig1)
- ❑ Please apply an electric power supply:8V.
- ❑ Input signal :  $V_{IN}=0dB, f=1kHz$  → ch1(TP3,TP4)
- ❑ Setting from PC
  - Set Input selector in ch1. Each setting level:FLAT.
  - Transmit Zero cross setting ON data .(Data contents: Zero cross detection =Input Gain,Zero cross Timer=10ms, Zero cross Auto detection=Auto) Check the waveform in OSC.

About the following waveforms. Condition: Zero cross ON/OFF, Volume setting (0dB → - infinity, - infinity → 0dB)

**Zero cross ON**



**Zero cross OFF**



Volume 0dB → -∞

Volume -∞ → 0dB



Characteristic5 : Soft mute

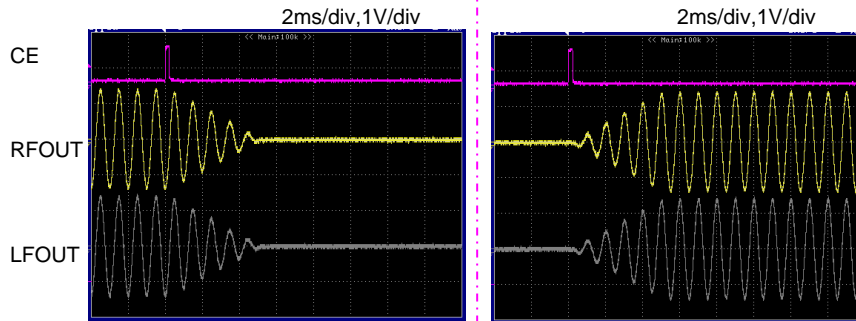
- ❑ Set up (Refer to Fig1)
- ❑ Please apply an electric power supply:8V.
- ❑ Input signal :  $V_{IN}=0dB, f=1kHz \rightarrow$  ch1(TP3,TP4)
- ❑ Setting from PC
  - Set Input selector in ch1. Each setting level:FLAT.
  - Transmit Mute ON.

(Data contents: Soft mute; mode ON, Soft Mute Time select ; 0.64ms/5.12ms/40ms/80ms, Mute setting;ON)

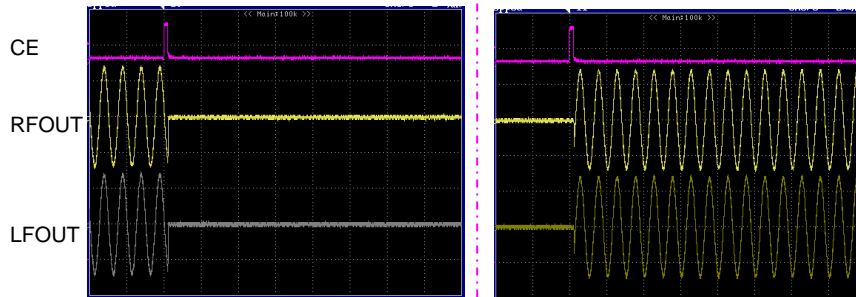
Check the waveform in OSC.

About the following waveforms. Condition: Soft mute ON/OFF, Mute setting ON/OFF, Mute setting Time=5.12ms

Soft mute ON  
(Mute setting Time ;5.12ms)



Soft mute ON



Mute setting ON

Mute setting OFF



## Test Setup 2

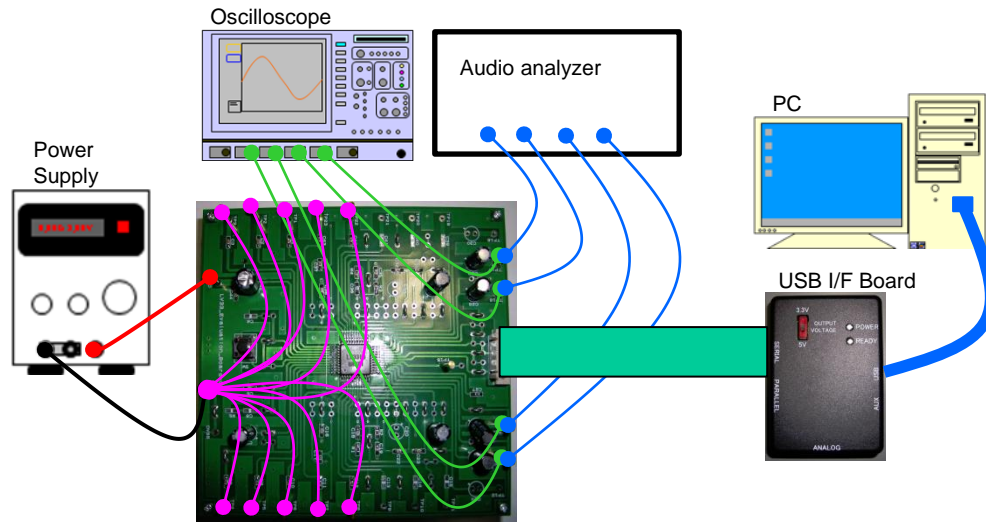


Fig 2



### Characteristic6 : Output noise voltage

- Set up (Refer to Fig2)
  - Please apply an electric power supply:8V.
  - Input pin is all GND.
  - Setting from PC
    - Set Input selector in ch1. Each setting level:FLAT
- Confirm the output level in Audio Analyzer.→noise level check

### Characteristic7 : THD

- Set up (Refer to Fig1)
  - Please apply an electric power supply:8V.
  - Input signal :  $V_{IN}=0dB, f=1kHz$ →ch1(TP3,TP4)
  - Setting from PC
    - Set Input selector in ch1. Each setting level:FLAT.
- Confirm the output level in Audio Analyzer.→THD

### Characteristic8 : Maximum input voltage

- Set up (Refer to Fig1)
  - Please apply an electric power supply:8V.
  - Input frequency:  $1kHz$ →ch1(TP3,TP4)
  - Setting from PC
    - Set Input selector in ch1. Each setting level:FLAT.
- The output level adjust  $V_{IN}$  to become level of  $THD=1\%$ .  
Confirm level of  $V_{IN}$  in Audio Analyzer .→Maximum input voltage



## Characteristic9 : Input selector

- ❑ Please apply an electric power supply:8V.
- ❑ Connect Signal Generator to the channel which wants to input a signal (input signal :VIN=0dB,f=1kHz).  
Other input channel ,OPEN.
- ❑ Setting from PC
  - Selector channel set. Each of other setting level : FLAT.
  - Check the waveform in OSC. →Confirm the output waveform of FLAT.
  - Choose the channel which does not enter of the signal . →Confirm the output waveform of no signal.

In the case of set up (Refer to Fig1) , ch1:signal input, other input channel: OPEN .



## Characteristic10 : MUTE switch

- ❑ Set up (Refer to Fig1)
- ❑ Please apply an electric power supply:8V.
- ❑ Input signal :  $V_{IN}=0dB, f=1kHz$  → ch1(TP3,TP4)
- ❑ Setting from PC
  - Set Input selector in ch1. Each setting level:FLAT.

Check the waveform in OSC. → Confirm the output waveform of FLAT.

Push "MUTE switch of the Evaluation board. → Confirm the output waveform of no signal.

