



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

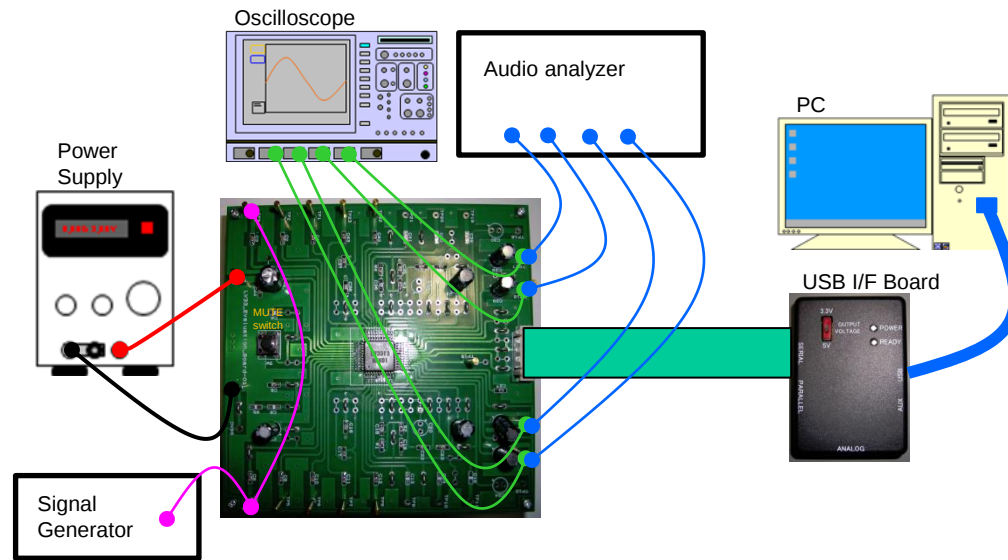


Fig 1

Equipment :

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

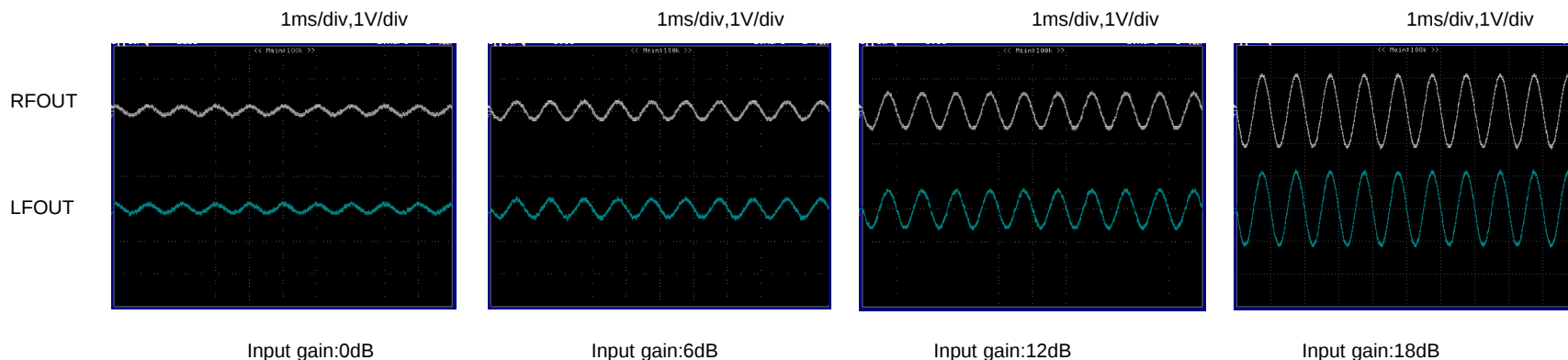


Step check1 : Input gain

- ❑ 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



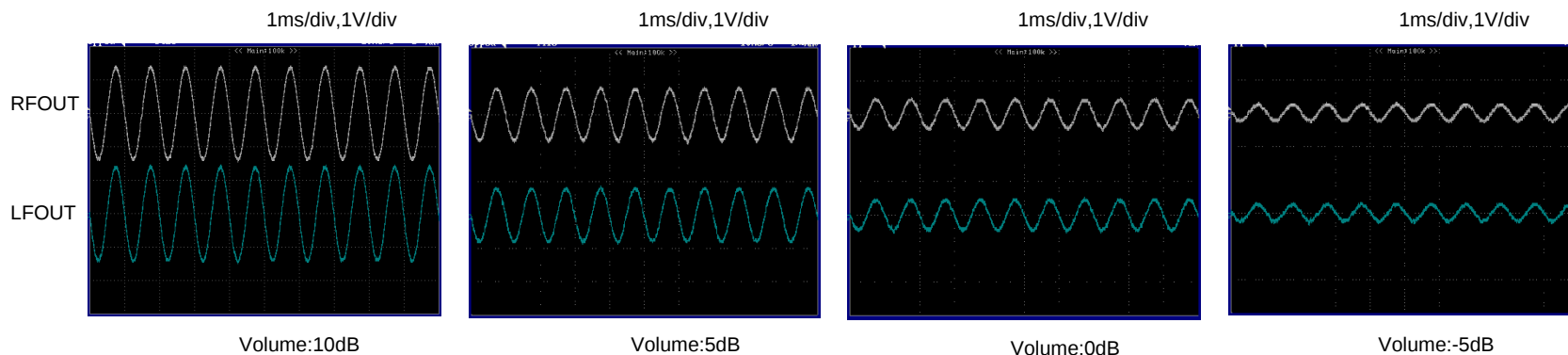


Step check2 : Volume

- ❑ Set up (Refer to Fig1)
- ❑ Please apply an electric power supply: 8V.
- ❑ Input signal : **VIN=-10dB, f=1kHz** → 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



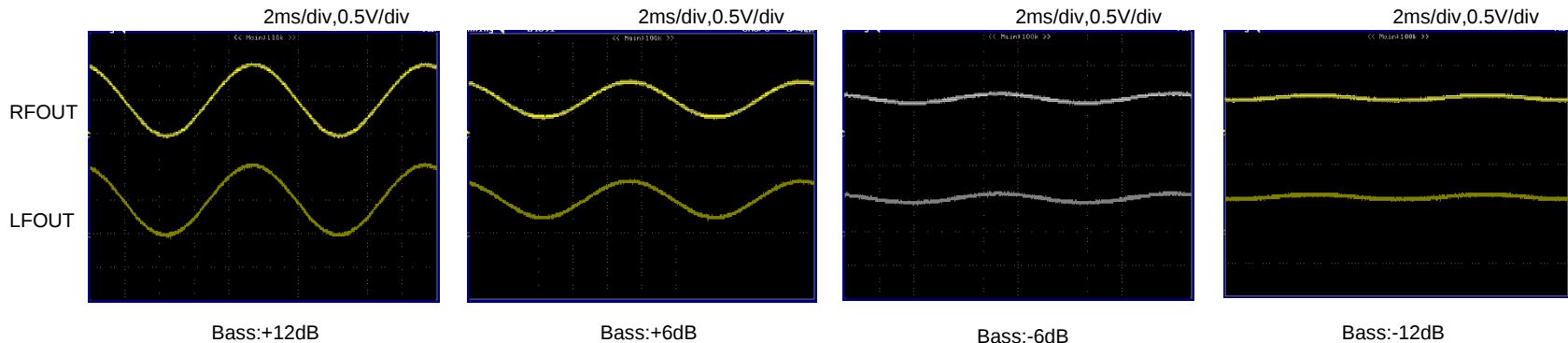


Step check3 : Tone (Bass)

- ❑ Set up (Refer to Fig1)
- ❑ Please apply an electric power supply:8V.
- ❑ Input signal : **VIN=-20dB,f=100Hz**→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



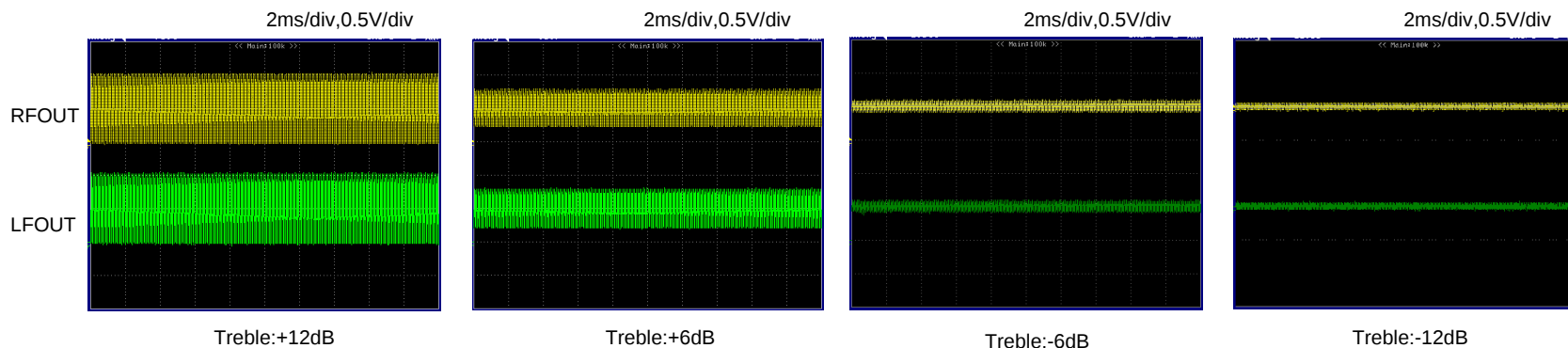


Step check4 : Tone (Treble)

- ❑ Set up (Refer to Fig1)
- ❑ Please apply an electric power supply:8V.
- ❑ Input signal : **VIN=-20dB,f=10kHz**→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.



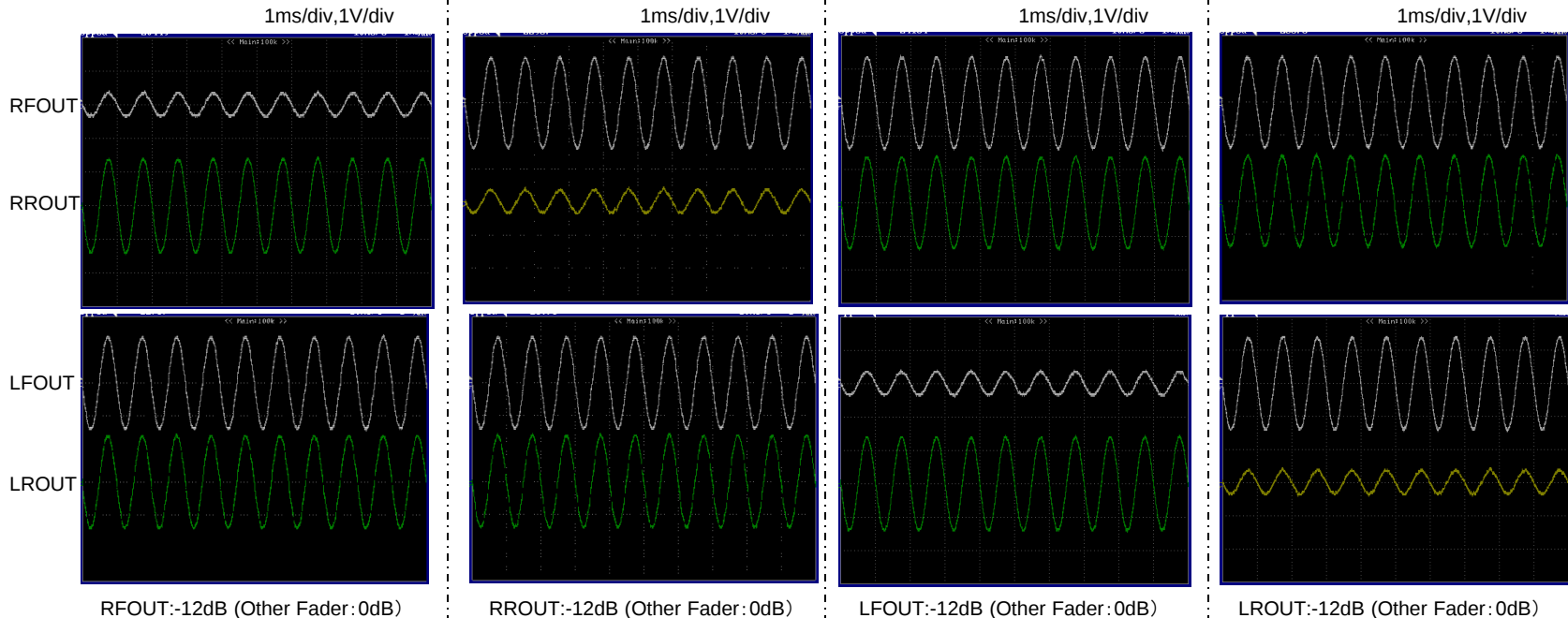


Step check5 : Fader

- ❑ 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.



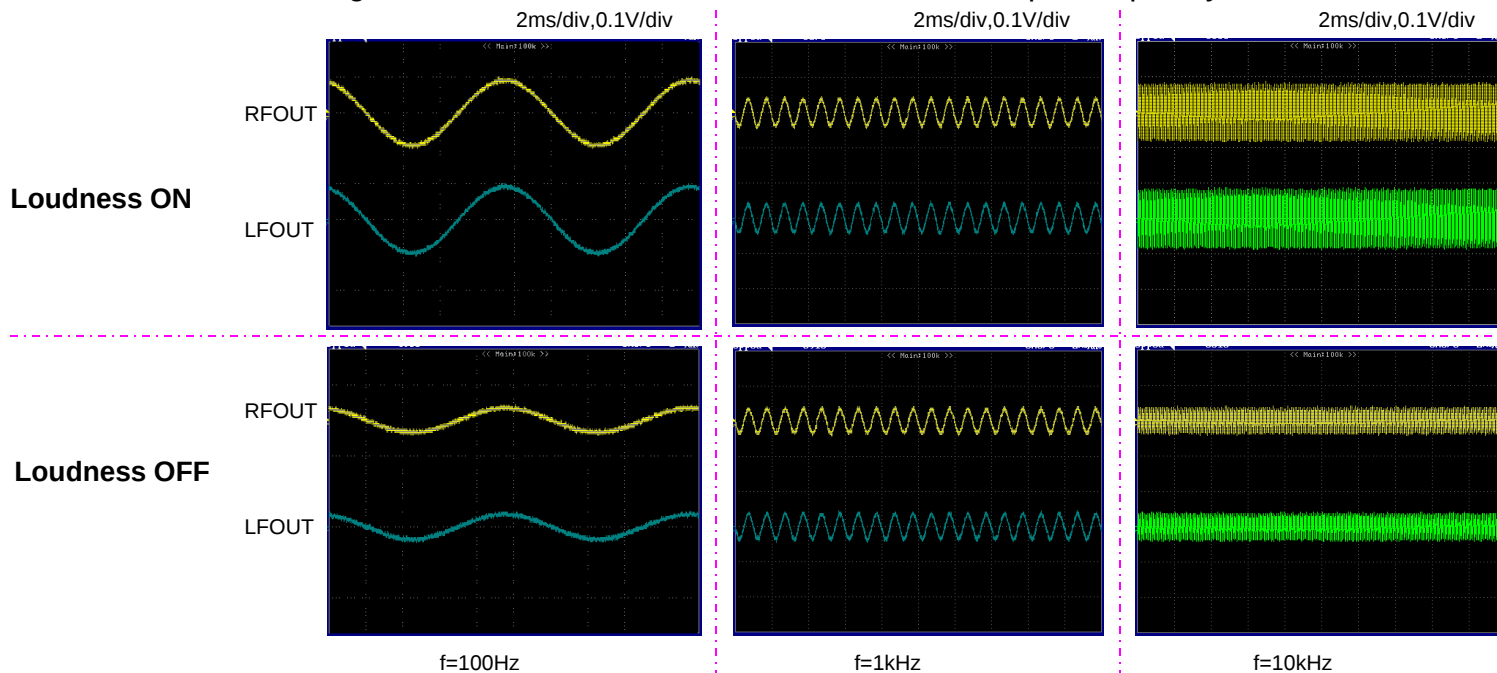


Characteristic1 : Loudness

- ❑ 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.

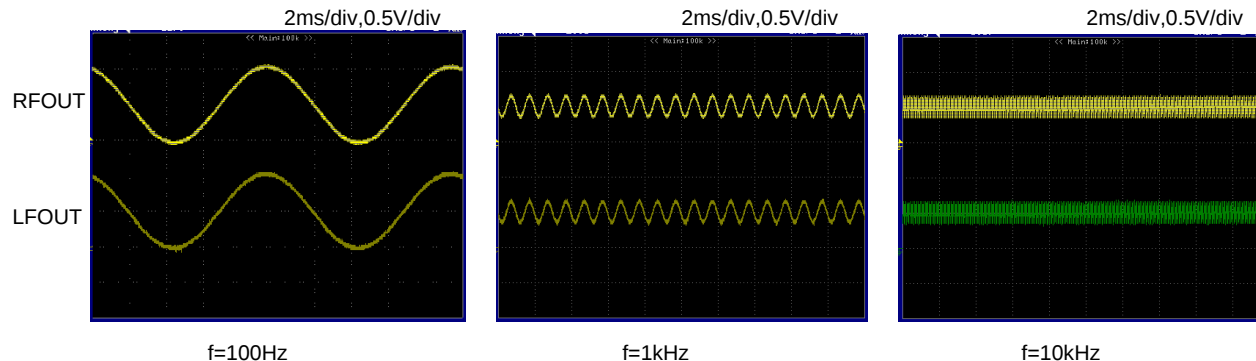
About the following waveforms. Condition : Loudness ON/OFF, input frequency 100Hz/1kHz/10kHz.





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.



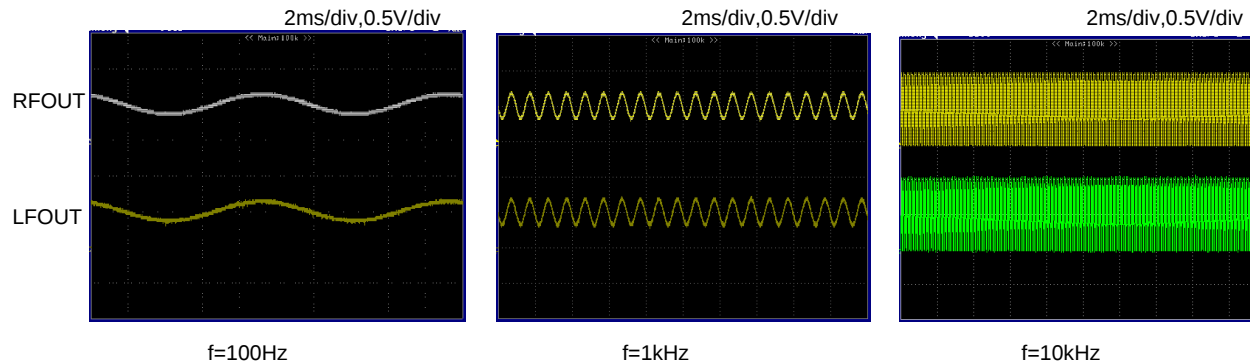


Characteristic3 : Tone (Treble)

- ❑ 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.

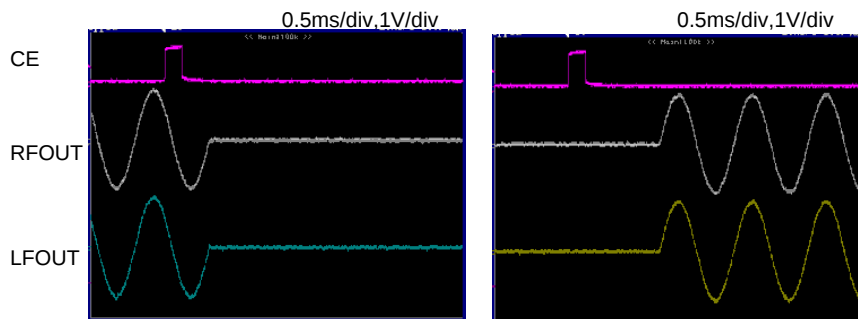




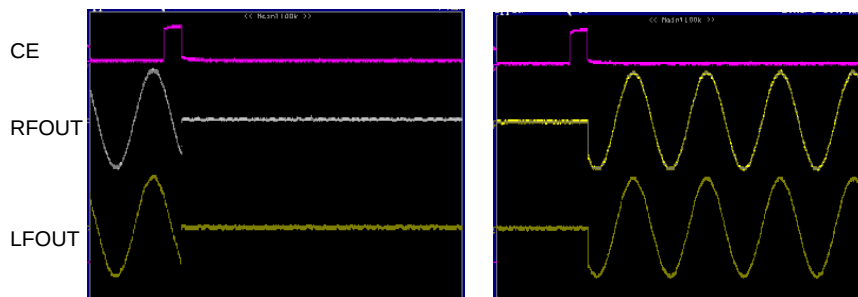
Characteristic4 : Zero cross

- ❑ Set up (Refer to Fig1)
 - ❑ Please apply an electric power supply:8V.
 - ❑ Input signal : $V_{IN}=0\text{dB}, f=1\text{kHz}$ → 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



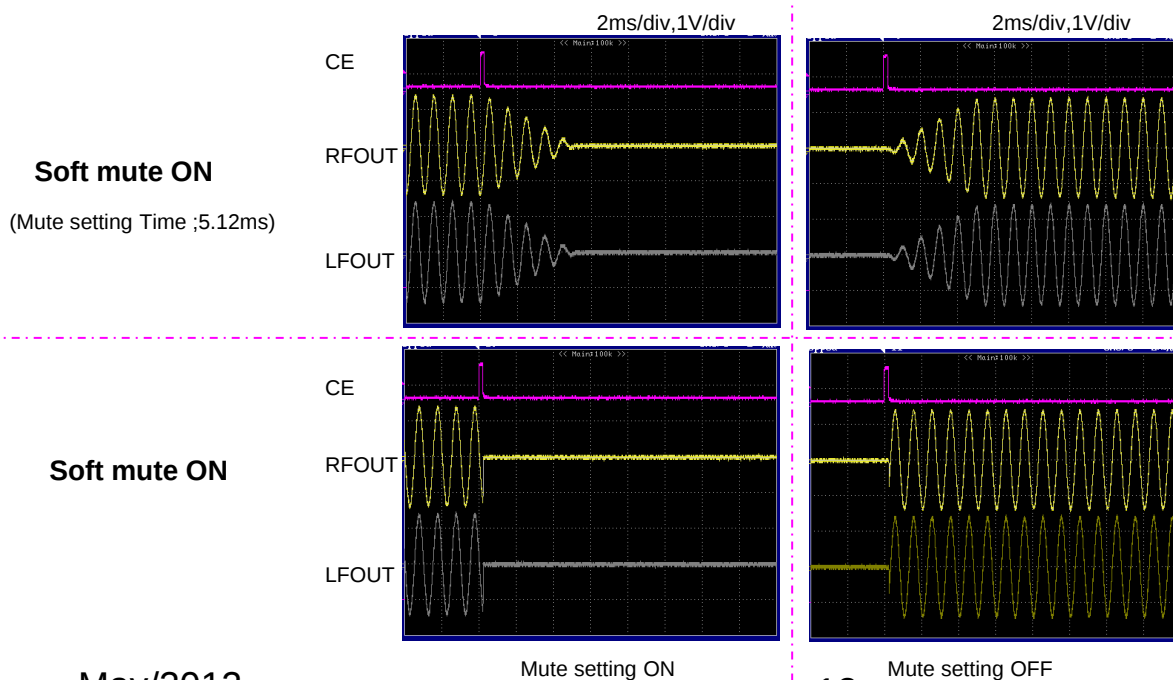
Characteristic5 : Soft mute

- ❑ 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



Test Setup 2

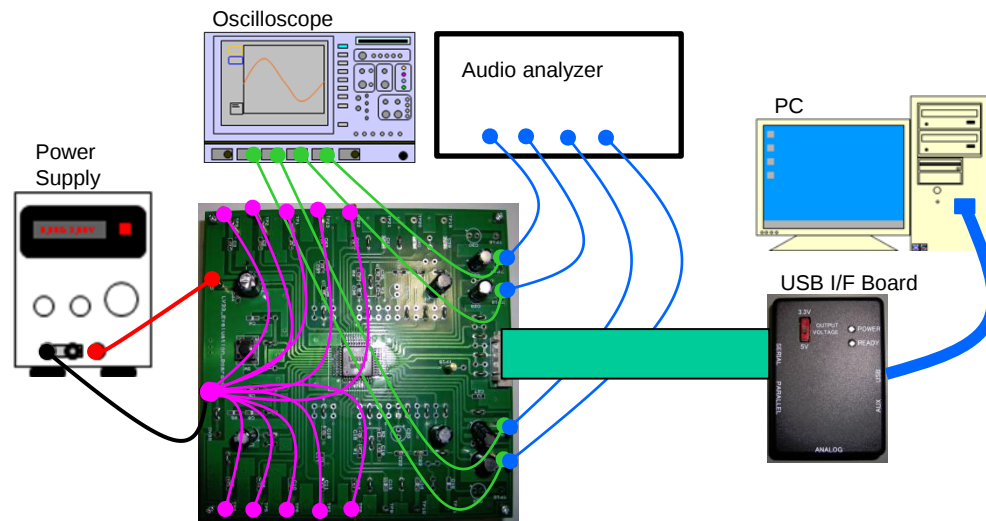


Fig 2



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 : $V_{IN}=0\text{dB}$, $f=1\text{kHz}$ → 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.

