Test Procedure for the LV3319PMGEVB Evaluation Board

Test Items

*Step check

Input gain, Volume, Equalizer, Fader, General-purpose volume

*Characteristic

Loudness, Equalizer, Zero cross, Soft mute, Soft step,
Output noise voltage, THD, Maximum input voltage,
Input selector, Tone path switching, Fader Front output select,
General purpose input mode select, Fade Rear output select,
EXTout select ,MUTE switch

Test Setup 1

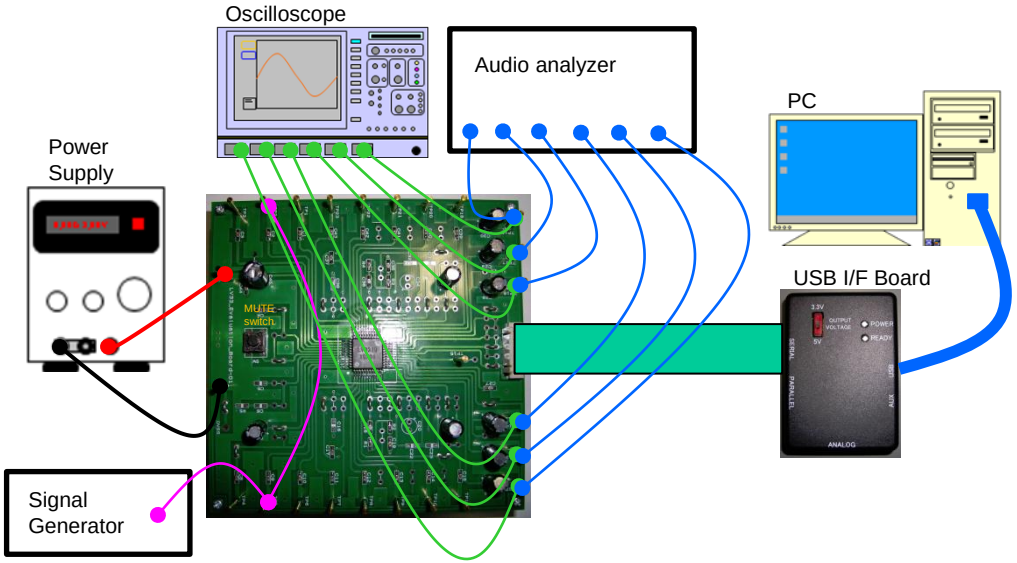


Fig 1

Equipment :

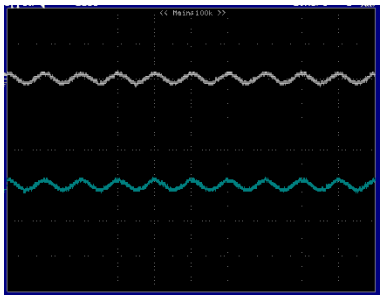
- ✓ Power Supply … 1pc
- ✓ Oscilloscope … 1pc
- ✓ Signal Generator … 1pc
- ✓ Audio analyzer … 1pc
- ✓PC … 1pc
- ✓USB I/F Board … 1pc
- ✓LV3319PM Evaluation_Board … 1pc

Step check1 : Input gain

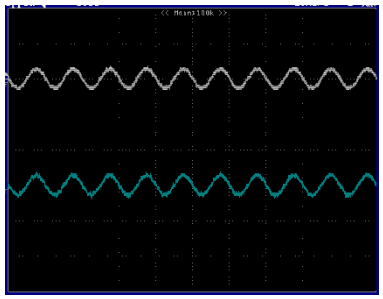
- Set up (Refer to Fig1)
- Please apply an electric power supply:9V.
- Input signal : VIN=-20dB,f=1kHz→ch1(TP2,TP5)
- Setting from PC
  - Set Input selector in ch1. Each setting level:FLAT .
  - Transmit Input gain data. Confirm an output waveform.

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

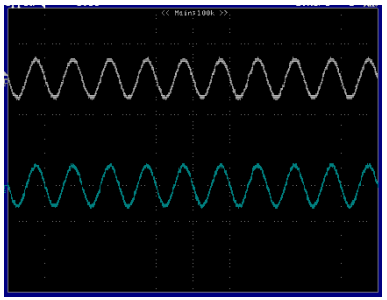
RFOUT
LFOUT



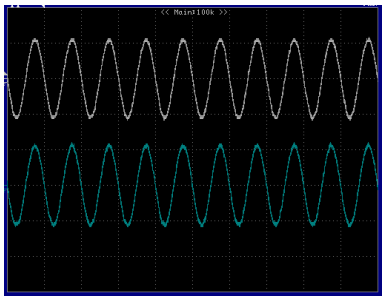
Input gain:0dB



Input gain:6dB



Input gain:12dB

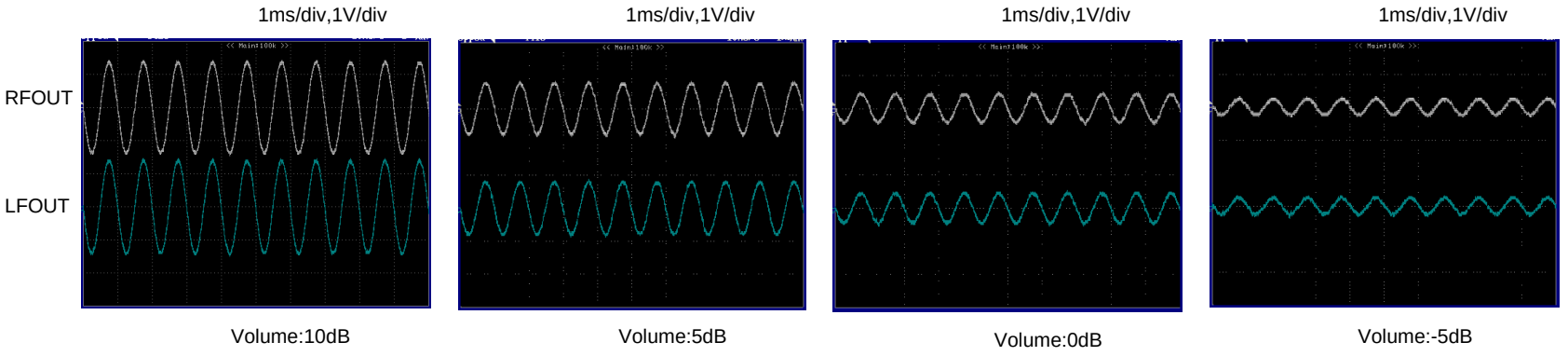


Input gain:18dB

Step check2 : Volume

- Set up (Refer to Fig1)
- Please apply an electric power supply:9V.
- Input signal : VIN=-10dB,f=1kHz→ch1(TP2,TP5)
- Setting from PC
  - Set Input selector in ch1. Each setting level:FLAT .
  - Transmit Volume data. Confirm an output waveform.

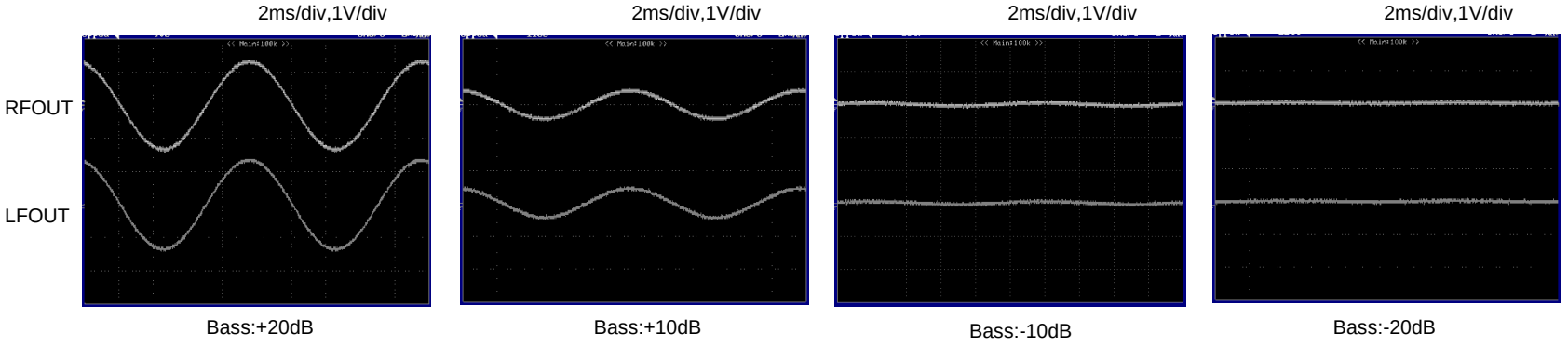
Check the waveform in OSC. Confirm the step level in Audio Analyzer.
About the following waveforms. Setting of Volume: Waveform of 10dB/5dB/0dB/-5dB



Step check3 : Equalizer (Bass)

- Set up (Refer to Fig1)
- Please apply an electric power supply:9V.
- Input signal : VIN=-20dB,f=100Hz→ch1(TP2,TP5)
- Setting from PC
  - Set Input selector in ch1. Each setting level:FLAT .
  - Set Bass menu (Center frequency:f0 / Quality factor:Q) → f0:100Hz,Q:1
  - Transmit Bass gain data. Confirm an output waveform.

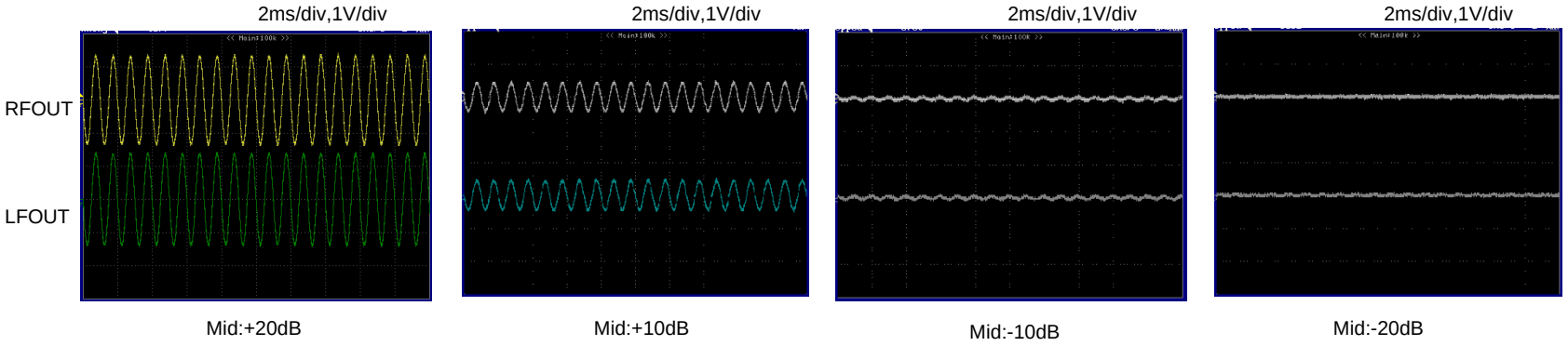
Check the waveform in OSC. Confirm the step level in Audio Analyzer.
About the following waveforms. Setting of Bass gain: Waveform of +20dB/+10dB/-10dB/-20dB



Step check4 : Equalizer (Mid)

- Set up (Refer to Fig1)
- Please apply an electric power supply:9V.
- Input signal : VIN=-20dB,f=1kHz→ch1(TP2,TP5)
- Setting from PC
  - Set Input selector in ch1. Each setting level:FLAT .
  - Set Mid menu (Center frequency:f0 / Quality factor:Q) → f0:1kHz,Q:1
  - Transmit Mid gain data. Confirm an output waveform.

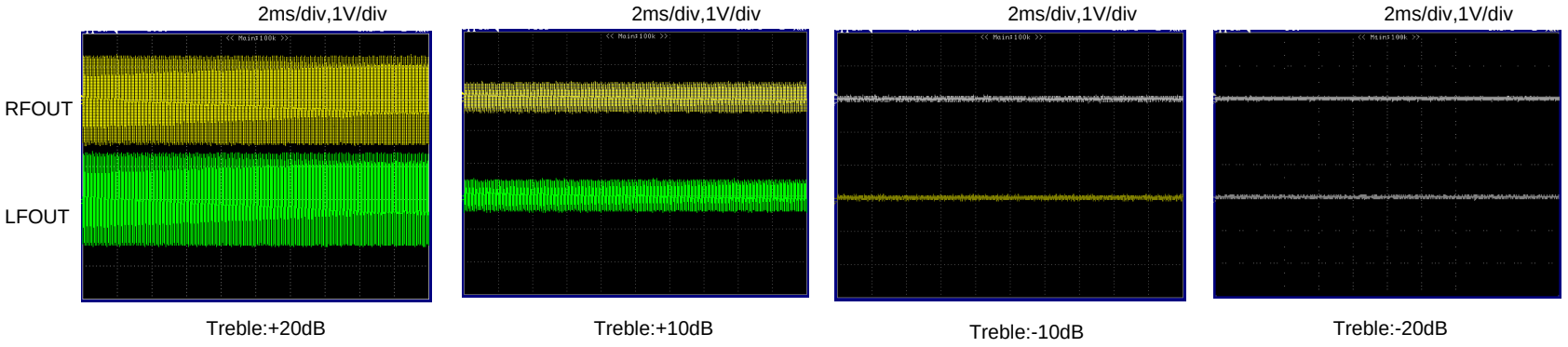
Check the waveform in OSC. Confirm the step level in Audio Analyzer.
About the following waveforms. Setting of Mid gain: Waveform of +20dB/+10dB/-10dB/-20dB



Step check5 : Equalizer (Treble)

- Set up (Refer to Fig1)
- Please apply an electric power supply:9V.
- Input signal : VIN=-20dB,f=10kHz→ch1(TP2,TP5)
- Setting from PC
  - Set Input selector in ch1. Each setting level:FLAT .
  - Set Treble menu (Center frequency:f0 / Quality factor:Q) → f0:10kHz,Q:1
  - Transmit Treble gain data. Confirm an output waveform.

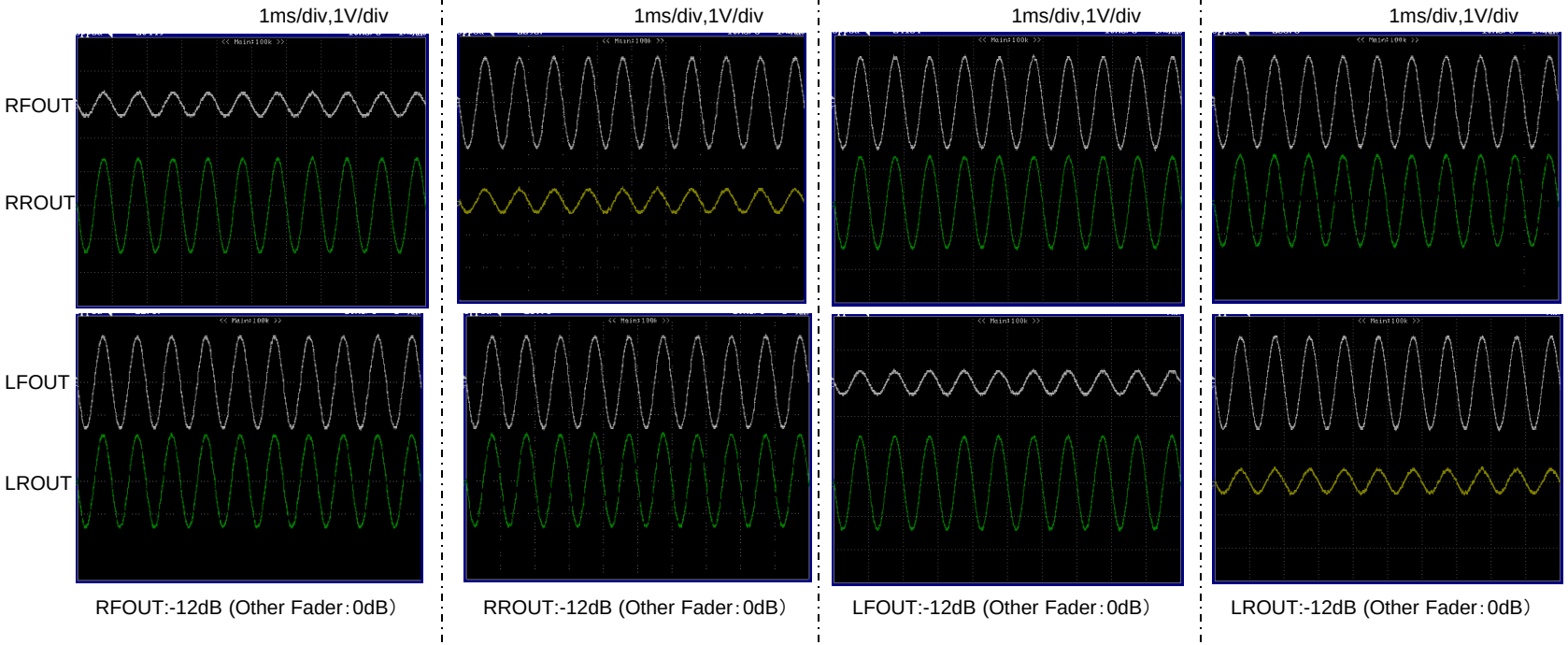
Check the waveform in OSC. Confirm the step level in Audio Analyzer.
About the following waveforms. Setting of Treble gain: Waveform of +20dB/+10dB/-10dB/-20dB.



Step check6 ：Fader

- Set up (Refer to Fig1)
- Please apply an electric power supply:9V.
- Input signal : VIN=0dB,f=1kHz→ch1(TP2,TP5)
- 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.



RFOUT:-12dB (Other Fader：0dB）　RROUT:-12dB (Other Fader：0dB）　LFOUT:-12dB (Other Fader：0dB）　LROUT:-12dB (Other Fader：0dB）

Test Setup 2

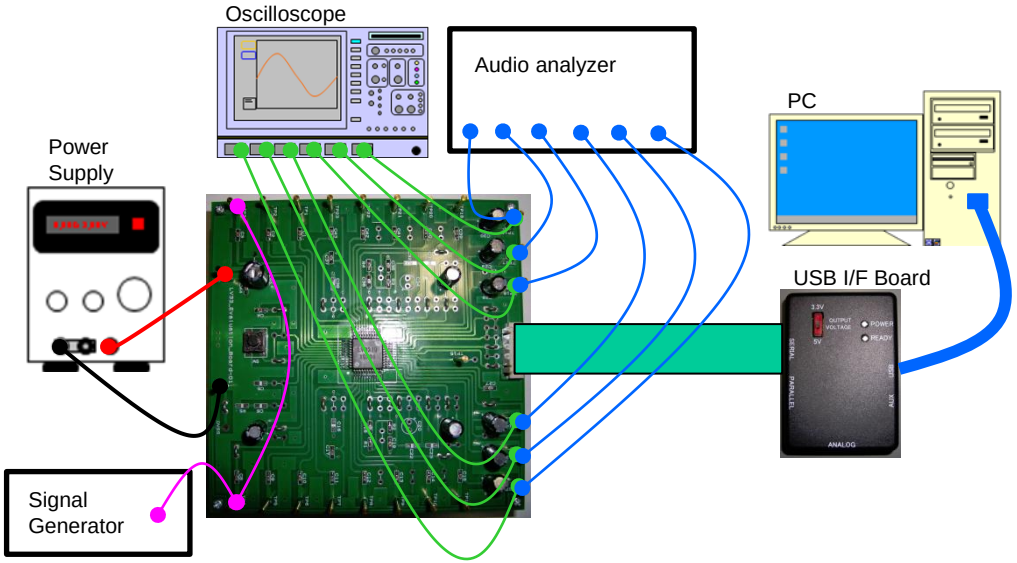
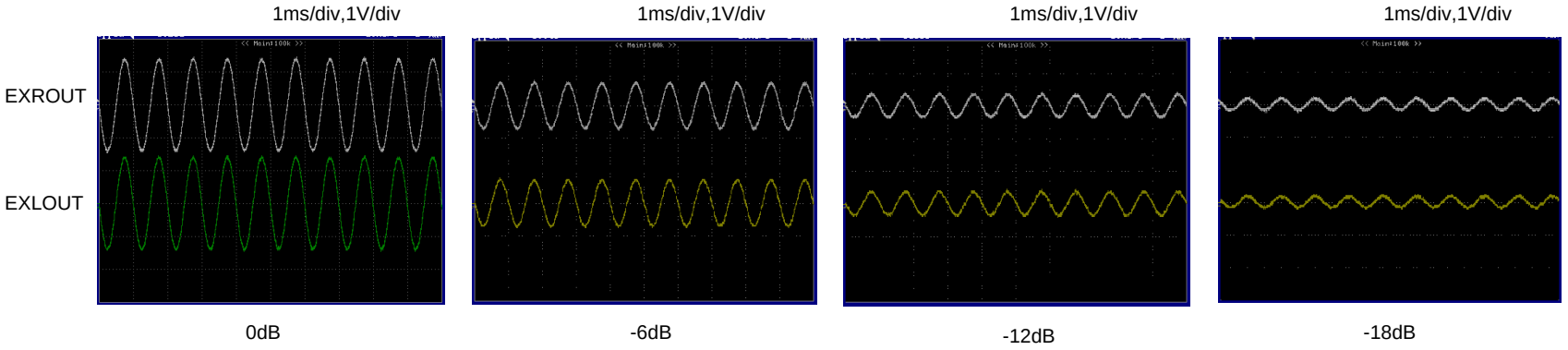


Fig 2

Step check7 : General-purpose volume

- PSet up (Refer to Fig2)
- lease apply an electric power supply:9V.
- Input signal : VIN=0dB,f=1kHz→EXLIN/EXRIN(TP3,TP4)
- Setting from PC
  - ・Set Input selector in ch1. Each setting level:FLAT .
  - ・Transmit General-purpose volume data. Confirm an output waveform.

Check the waveform in OSC. Confirm the step level in Audio Analyzer.
About the following waveforms. Setting of General-purpose volume: Waveform of 0dB/-6dB/-12dB/-18dB.

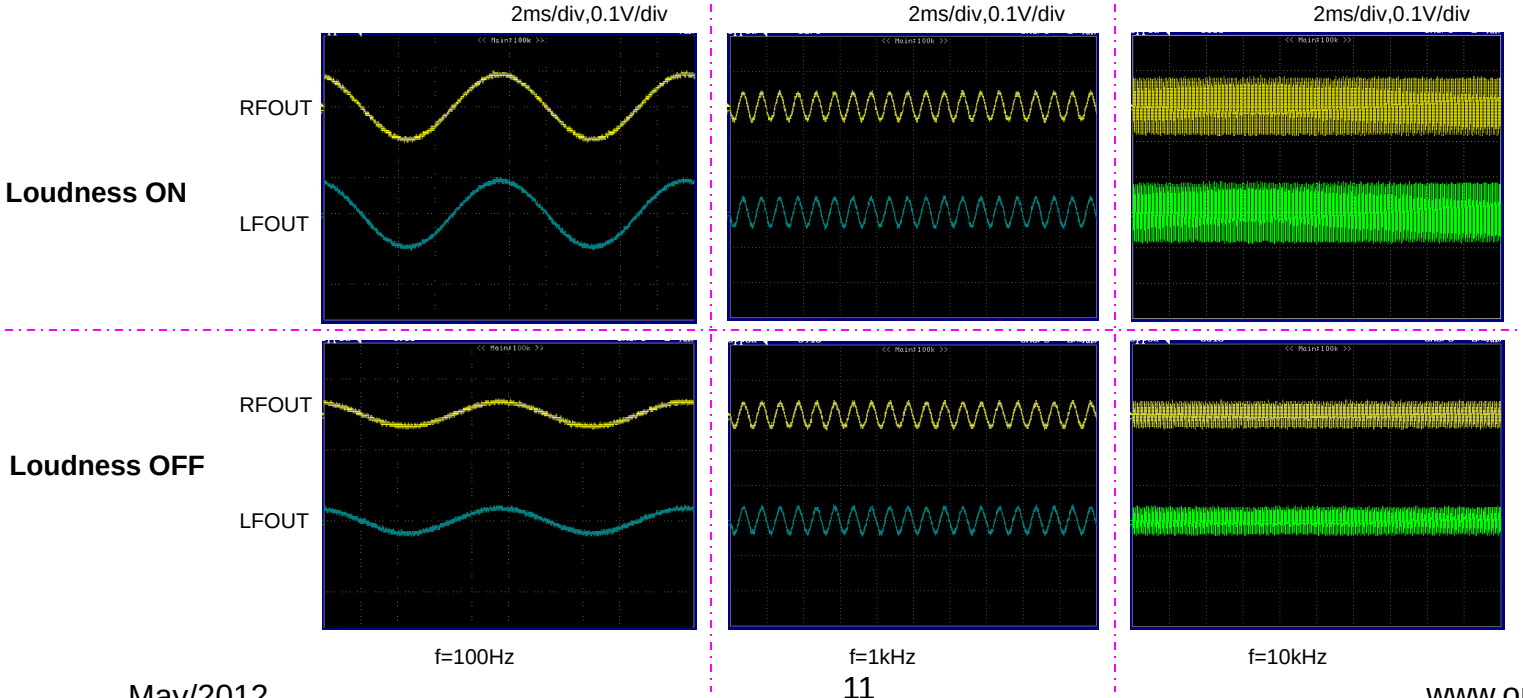


Characteristic1 : Loudness

- Set up (Refer to Fig1)
- Please apply an electric power supply:9V.
- Input signal level : VIN=0dB→ch1(TP2,TP5)
- 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.

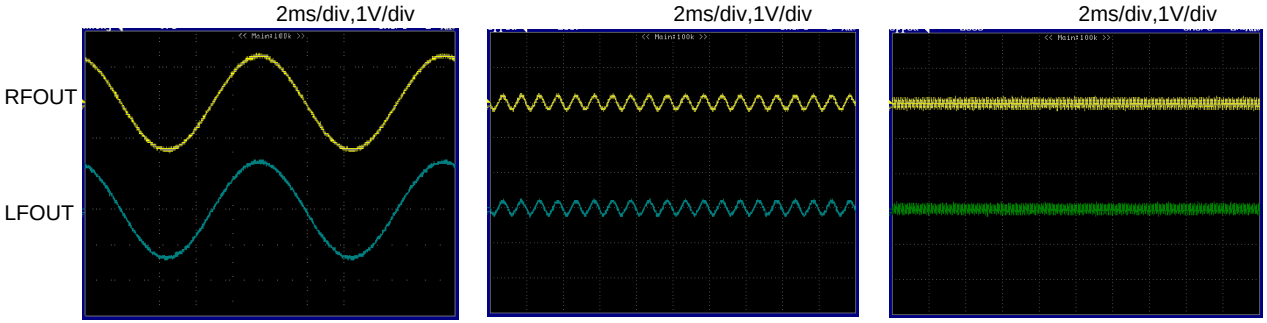
About the following waveforms. Condition : Loudness ON/OFF, input frequency 100Hz/1kHz/10kHz.



Characteristic2 : Equalizer(Bass)

- Set up (Refer to Fig1)
- Please apply an electric power supply:9V.
- Input signal level : VIN=-20dB→ch1(TP2,TP5)
- Setting from PC
  - ・Set Input selector in ch1. Each setting level:FLAT .
  - ・Transmit Bass data .(Data contents: Gain=+20dB, f0=100Hz, Q=1)
  - ・Confirm output level : input frequency 100Hz/1kHz/10kHz.

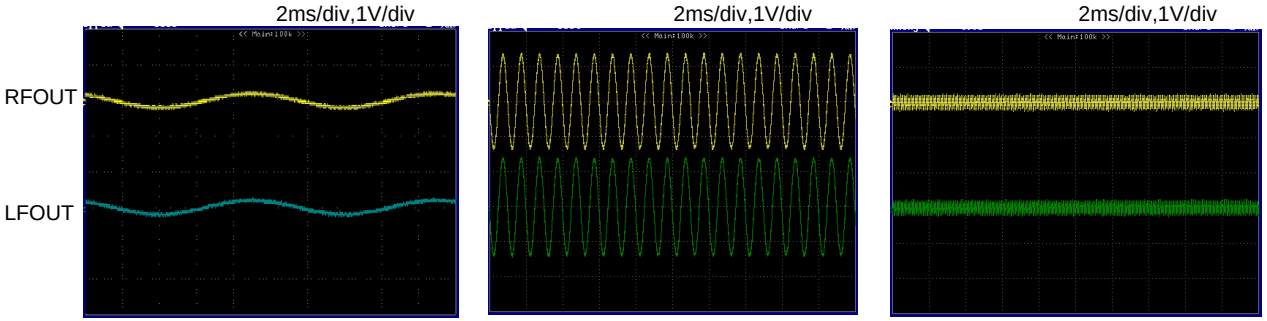
Check the waveform in OSC. Confirm the output level in Audio Analyzer.
About the following waveforms. Condition : input frequency 100Hz/1kHz/10kHz.



Characteristic3 : Equalizer(Mid)

- Set up (Refer to Fig1)
- Please apply an electric power supply:9V.
- Input signal level : VIN=-20dB→ch1(TP2,TP5)
- Setting from PC
  - ・Set Input selector in ch1. Each setting level:FLAT .
  - ・Transmit Mid data .(Data contents: Gain=+20dB, f0=1kHz, Q=1)
  - ・Confirm output level : input frequency 100Hz/1kHz/10kHz.

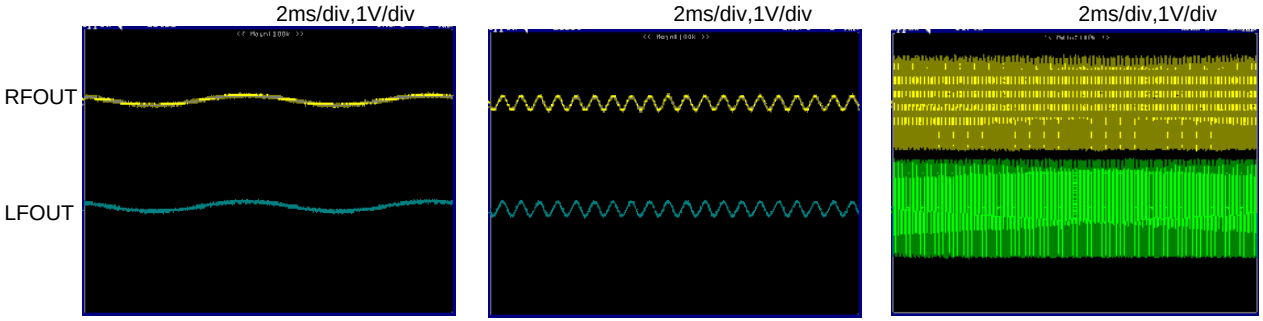
Check the waveform in OSC. Confirm the output level in Audio Analyzer.
About the following waveforms. Condition : input frequency 100Hz/1kHz/10kHz.



Characteristic4 : Equalizer(Treble)

- Set up (Refer to Fig1)
- Please apply an electric power supply:9V.
- Input signal level : VIN=-20dB→ch1(TP2,TP5)
- Setting from PC
  - ・Set Input selector in ch1. Each setting level:FLAT .
  - ・Transmit Treble data .(Data contents: Gain=+20dB, f0=10kHz, Q=1)
  - ・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.



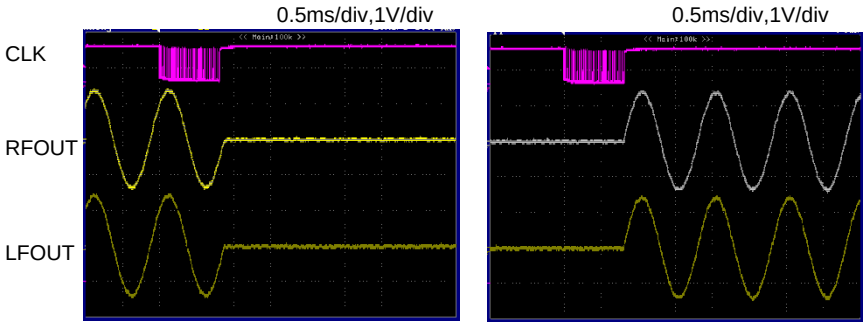
Characteristic5 : Zero cross

- Set up (Refer to Fig1)
- Please apply an electric power supply:9V.
- Input signal : VIN=0dB,f=1kHz→ch1(TP2,TP5)
- Setting from PC
  - ・Set Input selector in ch1. Each setting level:FLAT .
  - ・Transmit Zero cross ON data .(Data contents: Zero cross detection =Input Gain)

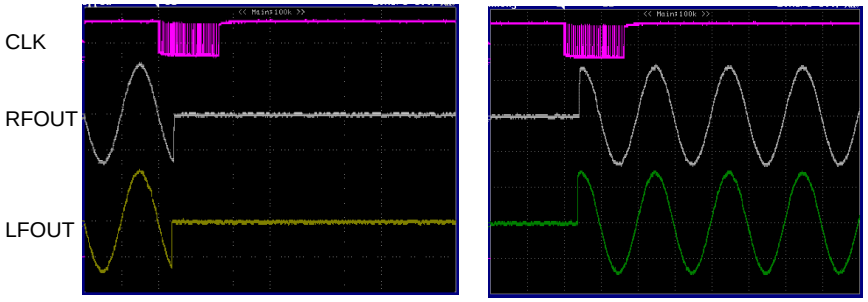
Check the waveform in OSC.

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

Zero cross ON



Zero cross OFF



Characteristic6 : Soft mute

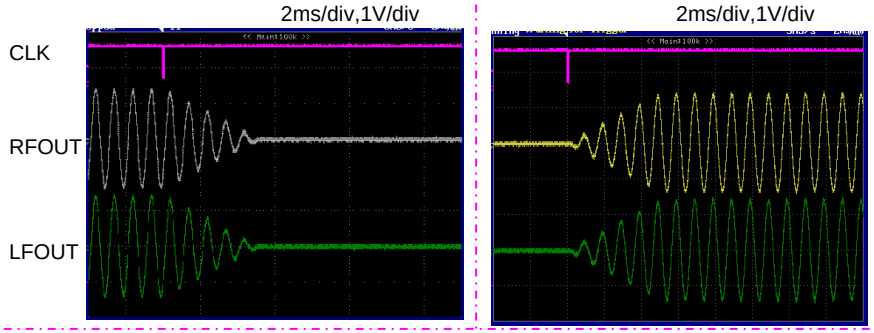
- Set up (Refer to Fig1)
- Please apply an electric power supply:9V.
- Input signal : VIN=0dB,f=1kHz→ch1(TP2,TP5)
- Setting from PC
  - ・Set Input selector in ch1. Each setting level:FLAT .
  - ・Transmit Mute ON.
    (Data contents: Soft mute; mode ON, Mute setting Time select ; 0.64ms/5.12ms/40ms/80ms, 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

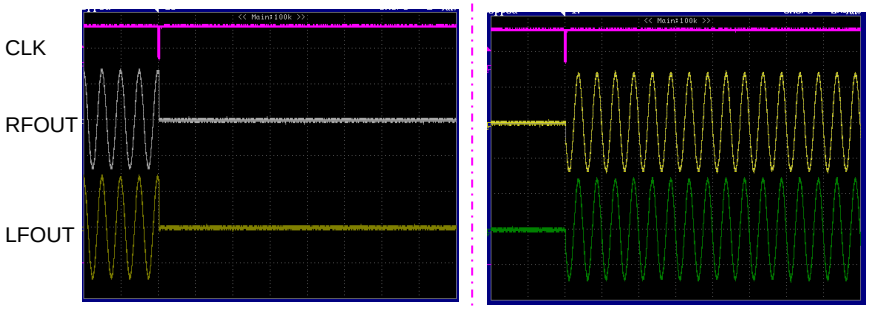
Soft mute ON

(Mute setting Time ;5.12ms)



Mute setting ON

Soft mute ON



Mute setting OFF

Characteristic7 : Soft step

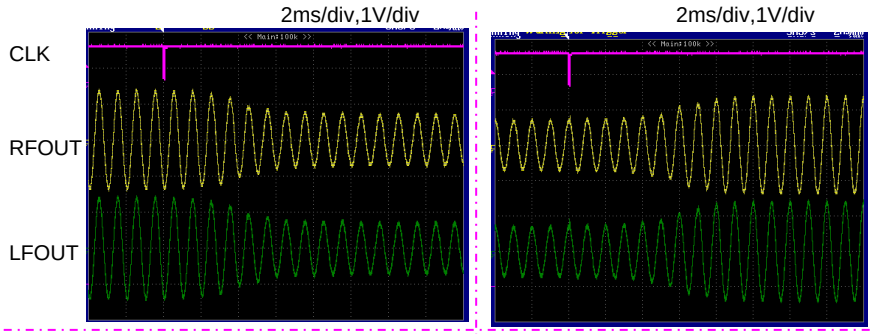
- Set up (Refer to Fig1)
- Please apply an electric power supply:9V.
- Input signal : VIN=0dB,f=1kHz→ch1(TP2,TP5)
- Setting from PC
  - ・Set Input selector in ch1. Each setting level:FLAT .
  - ・Transmit Equalizer step data.
    (Data contents: Soft step; mode ON, Soft step Time select ; 10ms/20ms/40ms/80ms)

Check the waveform in OSC.

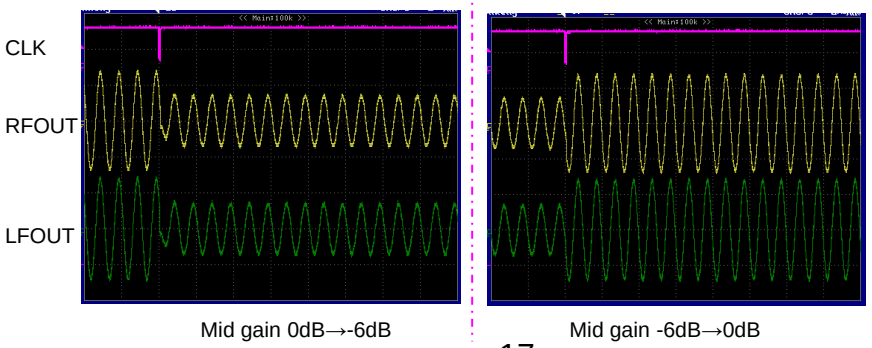
About the following waveforms. Condition: Soft step ON/OFF, Equalizer (Mid gain 0dB→-6dB,-6dB→0dB),Soft step Time=10ms

Soft step ON

(Soft step Time ;10ms)



Soft step OFF



Test Setup 3

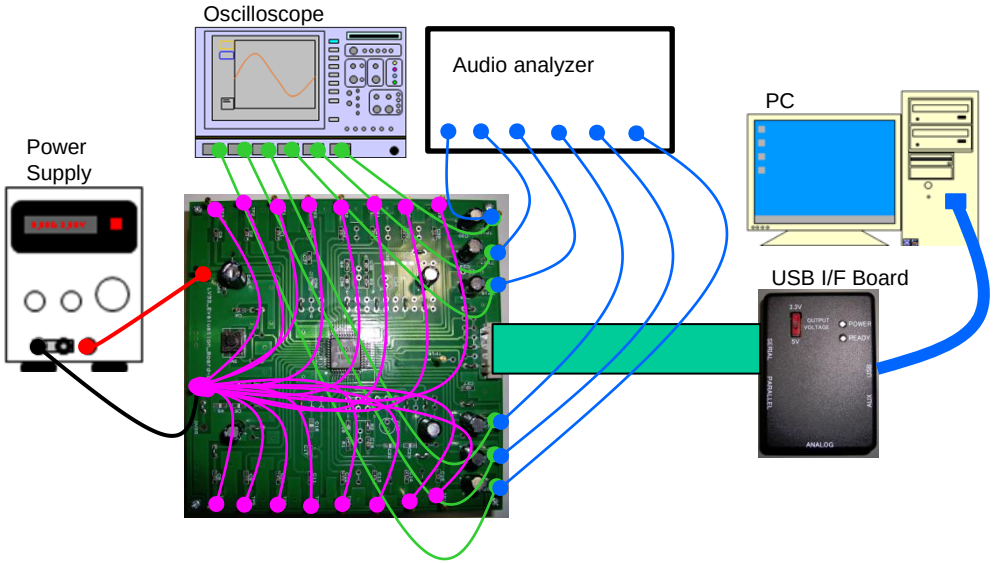


Fig 3

Characteristic8 : Output noise voltage

- Set up (Refer to Fig3)
- Please apply an electric power supply:9V.
- 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

Characteristic9 : THD

- Set up (Refer to Fig1)
- Please apply an electric power supply:9V.
- Input signal : VIN=0dB,f=1kHz→ch1(TP2,TP5)
- Setting from PC
  - ・Set Input selector in ch1. Each setting level:FLAT.

Confirm the output level in Audio Analyzer.→THD

Characteristic10 : Maximum input voltage

- Set up (Refer to Fig1)
- Please apply an electric power supply:9V.
- Input frequency: 1kHz→ch1(TP2,TP5)
- Setting from PC
  - ・Set Input selector in ch1. Each setting level:FLAT.

The output level adjust VIN to become level of THD=1 %.
Confirm level of VIN in Audio Analyzer .→Maximum input voltage

Characteristic11 : Input selector

- Please apply an electric power supply:9V.
- 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 .

Characteristic12 : Tone path switching

- Set up (Refer to Fig1)
- Please apply an electric power supply:9V.
- Input signal : VIN=0dB,f=1kHz→ch1(TP2,TP5)
- Setting from PC
  - ・Each setting level:FLAT .
  - ・Set Input selector in ch1. Mid menu set →gain=-6dB ,f0=1kHz,Q=1 (Other setting level : FLAT)

Waveform confirmation.(Condition:Tone circuitry block Pass /Detour)

Characteristic13 : Fader Front output select

- Set up (Refer to Fig1)
- Please apply an electric power supply:9V
- Input signal : VIN=0dB,f=1kHz→ch1(TP2,TP5), VIN=0dB,f=10kHz→EXLIN/EXRIN(TP3,TP4)
- Setting from PC
  - ・Each setting level:FLAT .
  - ・Set Input selector in ch1. Fader Fronf output select.(In the case of “Fader”select /In the case of ”Volume C”select)

Check the waveform in OSC.

Characteristic14 : General purpose input mode select

- Set up (Refer to Fig2)
- Please apply an electric power supply:9V.
- Input : VIN=0dB,f=1kHz→EXLIN(TP3) / OPEN→EXRIN(TP4)
- Setting from PC
  - ・Each setting level:FLAT .
  - ・Condition: General_Input_select→EXLIN. General-purpose Input Mode→MONORAL

Confirm the EXLOUT/EXROUT output waveform .

- ・Condition: General-purpose Input Mode→STEREO

Confirm the EXLOUT/EXROUT output waveform .

- Input : VIN=0dB,f=1kHz→EXRIN(TP4) / OPEN→EXLIN(TP3)
- Setting from PC
  - ・Condition: General_Input_select→EXRIN.

Confirm the EXLOUT/EXROUT output waveform .
Check the waveform in OSC.

Characteristic15 : Fader Rear output select

- Set up (Refer to Fig1)
- Please apply an electric power supply:9V.
- Input signal : VIN=0dB,f=1kHz→ch1(TP2,TP5) / VIN=0dB,f=10kHz→ch2(TP1,TP6)
- Setting from PC
  - ・Each setting level:FLAT .
  - ・Condition:Input selector(1)→ch1, Input selector(2)→ch2 (Other setting level : FLAT)

Confirm the LROUT/RROUT output waveform .
Fader Rear output select.(In the case of “Lch/Rch_Input1”select /In the case of ” Lch/Rch_Input2”select)
Check the waveform in OSC.

Test Setup 4

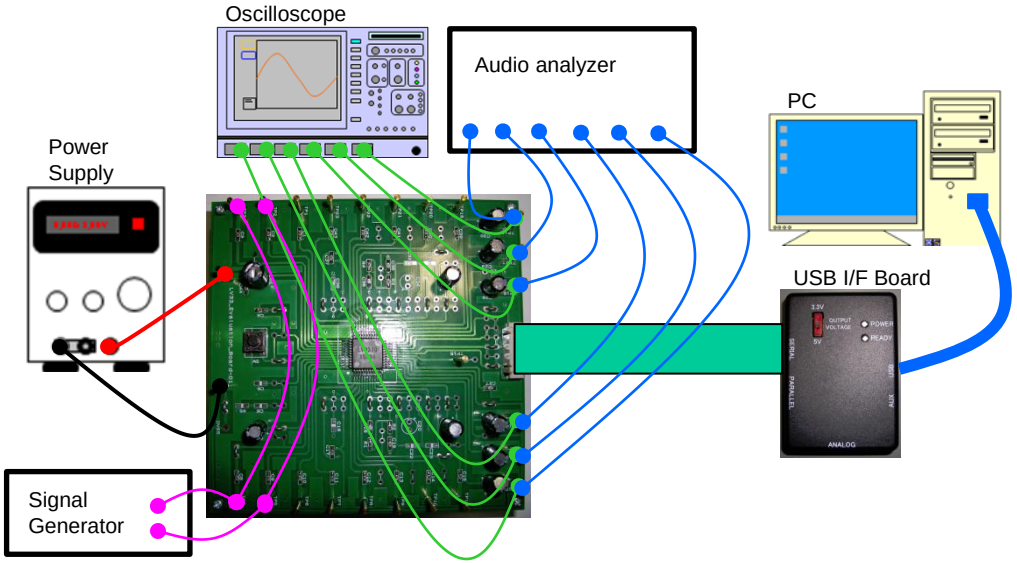


Fig 4

Characteristic16 : EXTout select

- Set up (Refer to Fig4)
- Please apply an electric power supply:9V.
- Input signal : VIN=0dB,f=1kHz→ch1(TP2,TP5) / VIN=0dB,f=10kHz→EXLIN/EXRIN(TP3,TP4)
- Setting from PC
  - Each setting level:FLAT .
  - Input selector(2)→ch1 (Other setting level : FLAT)

Confirm the EXLOUT/EXROUT output waveform .
EXTout select.(In the case of “EXTIN”select /In the case of ”Input2”select)
Check the waveform in OSC.

Characteristic17 : MUTE switch

- Set up (Refer to Fig1)
- Please apply an electric power supply:9V.
- Input signal : VIN=0dB,f=1kHz→ch1(TP2,TP5)
- 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.

