

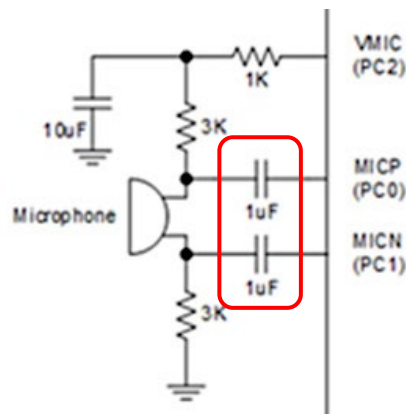
Setting of NX1 EF for Better Recording Quality

Description: Users could adjust the recording and playback settings separately per their needs in order to obtain better recording quality for the NX1 EF series.

Reason: There are many parameters associated with recording and playback, users can check and search those settings through this application note.

Solution: 1. Adjustment of hardware circuit.

- If CPU loading is concerned, users could set the DC_REMOVE filter of the recording setting as off (“0”), and use smaller MIC capacitors @ MICP / MICN instead, from recommended 1uF down to 0.22uF or 0.47uF. The low frequency component of recording will vary according to the selected capacitor value. The smaller capacitance selected, more attenuation of low-frequency component would be observed. Please set the capacitance value of the microphone input per need of application.



2. Adjustment of recording setting @ NX1 C_Module

- **PGA_GAIN:** the gain setting of the MIC preamplifier circuit. The larger the gain value, the larger the recording signal can be obtained. The default value of PGA_Gain is 12, which is linked to other parameters. When users change the PGA_GAIN to other values, it will affect other parameters as well. It is recommended to adjust other parameters separately according to the application requirements.
- **NOISE_GATE_ENABLE:** Smaller signals below noise gate threshold will be suppressed and reduced, so that the recording would be quieter. The default value is “1” (enabled).
- **DC_REMOVE:** It is a high-pass digital filter used to reduce the DC offset after the MIC signal is amplified, and can also decrease the energy of low-frequency signals. The default value is “1” (enabled).
- **SkipTailSetting():** Set the tail period of the recording for removing unwanted signals (like button noise) or shortening pause time at the end of recording for a talk-back application. Please set the

tail period per need of application.

- When the button is used to stop the recording, there will be a button noise at the end of the recording that can be removed through the skip tail setting.
- When `_ADPCM_RECORD_SOUND_TRIG` function is activated for talk-back application, users can reduce the pause period @ talk-back after recording through the skip tail setting.

3. Adjustment of recording playback setting @ NX1 C_Module

- `RECORD_PLAY_TYPE`: TYPE0 is for smooth and natural perceptual hearing, TYPE1 compresses the dynamic range of sound such that it makes the volume very loud. TYPE2 rather emphasizes the dynamic range of sound while making it loud and clean. The default value is TYPE2.
- When `RECORD_PLAY_TYPE` is set as TYPE2, users could further adjust the TYPE2 parameters per need of application.
 - `ADPCMDigiAmpArray[7]`: the volume gain. The larger this parameter is, the faster changing and larger gain would be. The default is 1966, the recommended range is 1638~2129.
 - `ADPCMVADArray[1]`: If the application environment is noisy, users could increase the setting value, and vice versa, lower the value in quiet environment. The default is 3, the recommended range is 3~6.
- `EQ_TYPE`: The default setting is TYPE0, which means more bright & sharp for the sound. TYPE1 can be selected to have thickness and warmth for the sound.