

## The Application Note of NX1 C\_Module Executes SPI Mode Record Erase

**Description:** When NX1 C\_Module executes SPI Mode record erase, please set the parameters based on the erasing specification and the types of SPI Flash.

**Reason:** Because the types of SPI Flash are various, the erasing time of Sector types are different, especially the erasing time of typical value (Typ.) and maximum value (Max.) have a big difference. To execute the record erase of NX1 C-Module normally, user needs to set the maximum erasing time (Max.) of SPI Flash.

**Solution:** 1. Check the maximum erasing time (Max.) from the SPI Flash specification

DESCRIPTION	SYMBOL	ALT	SPEC			UNIT
			MIN	TY P	MAX	
Sector Erase Time (4KB)	W25Q128FVxxIG	tSE		100	400	ms
	W25Q128FVxxIQ W25Q128FVxxIF			45		
Block Erase Time (32KB)		tBE1		120	1,600	ms
Block Erase Time (64KB)		tBE2		150	2,000	ms
Chip Erase Time		tCE		40	200	s

2. Fill the Max. parameter of Sector in NX1 C\_Module nx1\_config.h that is shown below.

- To use the SBC record erase, user needs to fill the parameter 400msec, the maximum erasing time (Max.) of Sector, in `_SBC_SECTOR_ERASE_MAXTIME`.
- If the actual Sector erasing time of SPI Flash is longer than `_SBC_SECTOR_ERASE_MAXTIME`, the record erase will not work properly. Please use the SPI Flash type of the Sector erasing time which is less than `_SBC_SECTOR_ERASE_MAXTIME` instead.
- The available maximum parameters of `_SBC_SECTOR_ERASE_MAXTIME` is 700msec.

```
#define _SBC_RECORD          ENABLE           // Enable or Disable recorder
#define _SBC_RECORD_ERASING  ENABLE         // Enable or Disable real-time erasing function during Recording
#define _SBC_SECTOR_ERASE_MAXTIME 700      // Set SPI Flash sector erase time max spec, unit:msec. User must ensure
```

- To use the ADPCM record erase, user needs to fill the parameter 400msec, the maximum erasing time (Max.) of Sector, in `_ADPCM_SECTOR_ERASE_MAXTIME`.
- If the actual Sector erasing time of SPI Flash is longer than `_ADPCM_SECTOR_ERASE_MAXTIME`, the record erase will not work properly. Please use the SPI Flash type of the Sector erasing time which is less than `_ADPCM_SECTOR_ERASE_MAXTIME` instead.
- The available maximum parameter of `_ADPCM_SECTOR_ERASE_MAXTIME` will be different according to the ADPCM recording sample rate `_ADPCM_RECORD_SAMPLE_RATE`, the relevant parameters are below.

- Recoding sample rate of 8000Hz can be set to the maximum value of 700msec.
- Recoding sample rate of 10000Hz can be set to the maximum value of 560msec.
- Recoding sample rate of 12000Hz can be set to the maximum value of 470msec.
- Recoding sample rate of 16000Hz can be set to the maximum value of 350msec.

```
#define ADPCM_RECORD ENABLE // Enable or Disable recorder
#define ADPCM_RECORD_SAMPLE_RATE SAMPLE_RATE_8000 // Set sample rate (support 8000/10000/12000/16000Hz)
#define ADPCM_RECORD_ERASING ENABLE // Enable or Disable real-time erasing function during Recording
#define ADPCM_SECTOR_ERASE_MAXTIME 700 // Set SPI Flash sector erase time max spec, unit:msec. User must ensure
```

3. The longer period of `_SBC_SECTOR_ERASE_MAXTIME` or `_ADPCM_SECTOR_ERASE_MAXTIME` is set, the more RAM resource is used. To execute NX1 RAM effectively, it is recommended as follows.

- Use the less time of the maximum parameters of Sector SPI Flash instead, for instance, `_SBC_SECTOR_ERASE_MAXTIME` or `_ADPCM_SECTOR_ERASE_MAXTIME`.
- For ADPCM record erase, set the smaller recoding sample rate of `_ADPCM_RECORD_SAMPLE_RATE`, that will occupy less RAM resource.
- When `_SBC_SECTOR_ERASE_MAXTIME` or `_ADPCM_SECTOR_ERASE_MAXTIME` is less than the Max. erasing time from the specification, user must make sure that the actual erasing time of Sector SPI Flash is less than the setting of `_SBC_SECTOR_ERASE_MAXTIME` or `_ADPCM_SECTOR_ERASE_MAXTIME`, otherwise, the record erase function will not work properly. The erasing time of SPI Flash will vary with the brand, type, version, and factory batch. In order to ensure that there will be no problems in mass production, it is recommended to arrange necessary inspection points on the production line to prevent the outflow of defective items.