NY5 Series Multi-Function Register Pointer Application Notice

Content: NY5 series provides a Multi-Function Register Pointer (RPT) that can be used to do data access.

The RPT of EV chip is 22 bits, but the maximum RPT of current Product IC is 21 bits. The valid RPT bits are defferent for different bodies: NY5A and NY5B series is only 18 bits (RPT bit[0:17]). NY5C series of voice duration under 520 sec is 20 bits (RPT bit[0:19]), NY5C series of voice duratin over 520 sec is 21 bits (RPT bit[0:20]).

Regarding to invalid bits, the data access must be specially taken care. Especially for the case that original program is developed by NY5C series 520~720 sec bodies, then changed bodies to NY5C series 112~345 sec.

Reason:

1. EV's RPT is 22 bits, and it is different from Product IC's.

	RPT bits	**RPT registers**		
EV	22	RPT5[1:0]	RPT4[3:0]	RPT3~RPT0
5A/5B	18	*X*	*RPT4[1:0]*	RPT3~RPT0
5C112 ~ 5C345	20	*X*	RPT4[3:0]	RPT3~RPT0
5C450/5C520/5C640/5C720	21	*RPT5[0]*	RPT4[3:0]	RPT3~RPT0

2. EV's RPT is valid whatever any product IC is applied, and the RPT can be read/written in EV chip. But in real Product IC the read value of invalid RPT is 0. 。

RPT is a 6 sets of 4-bit special function registers, that consists of RPT0, RPT1, RPT2, RPT3, RPT4 and RPT5. The related address is located at address 0, 1, 2, 3, 4 and 7 of SRAM. To access the address data of 0, 1, 2, 3, 4 and 7 in any memory page, it will be pointed to RPT directly. Meanwhile, the address 7 of ant memory page defines the special function registers: ROD2 and RPT5.

In real Product IC, if those RPT bits are invalid, they can still be accessed from SRAM. But even if writing data in those invalid RPT bits, the value is still 0.

The mapping table of SRAM address & RPT register：

RPT																								
SRAM	0x7				0x4				0x3				0x2				0x1				0x0			
Bit Index	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Register	RPT5		ROD2		RPT4				RPT3				RPT2				RPT1				RPT0			
RPT Bit	21	20	/	/	19	18	17	16	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

Example：(NY5C series over 520 sec)

(1) Write value into RPT5

    Ex. Play Voice File: To write the address of voice file into RPT.

MVLR	(Low0 VoiceLabel),RPT0	：Read VoiceLabel Address[3:0] into RPT0.
MVLR	(Low1 VoiceLabel),RPT1	：Read VoiceLabel Address[7:4] into RPT1.
MVLR	(Mid0 VoiceLabel),RPT2	：Read VoiceLabel Address[11:8] into RPT2.
MVLR	(Mid1 VoiceLabel),RPT3	：Read VoiceLabel Address[15:12] into RPT3.
MVLA	(High0 VoiceLabel)	：Read VoiceLabel Address[19:16] into ACC.
MVAM	RPT4	：Write ACC into RPT4.
MVLA	(High1 VoiceLabel<<2)	：Shift VoiceLabel Address[20] 2-bit, then write data into ACC.
MVAM	RPT5	：Write ACC into RPT5.
PLAY		：Play voice file.

(2) Read the value of RPT5.

    Ex. Rcopy RPT to RAM.

MVRM	(Low0 RAM0), RPT0	：Read RPT0 value, then write into RAM0.
MVRM	(Low0 RAM1), RPT1	：Read RPT1 value, then write into RAM1.
MVRM	(Low0 RAM2), RPT2	：Read RPT2 value, then write into RAM2.
MVRM	(Low0 RAM3), RPT3	：Read RPT3 value, then write into RAM3.
MVMA	RPT4	：Write RPT4 value into ACC.
MVAM	RAM4	：Write ACC into RAM4.
MVMA	RPT5	：Write RPT5 value into ACC.
ANDL	B'0100'	：Because RPT5 is one bit only, the bit[3:1:0] is screen out.
MVAM	RAM5	：Write ACC into RAM5.