

6.4.3 Anticollision and Select

6.4.3.1 Anticollision loop within each cascade level

The following algorithm shall apply to the anticollision loop:

Step 1	The PCD shall assign SEL with the code for the selected anticollision type and cascade level.
Step 2	The PCD shall assign NVB with the value of '20'. NOTE This value defines that the PCD will transmit no part of UID CLn. Consequently this command forces all PICCs in the field to respond with their complete UID CLn.
Step 3	The PCD shall transmit SEL and NVB.
Step 4	All PICCs in the field shall respond with their complete UID CLn.
Step 5	Assuming the PICCs in the field have unique serial numbers, then if more than one PICC responds, a collision occurs. If no collision occurs, steps 6 to 10 shall be skipped.
Step 6	The PCD shall recognize the position of the first collision.
Step 7	The PCD shall assign NVB with a value that specifies the number of valid bits of UID CLn. The valid bits shall be part of the UID CLn that was received before a collision occurred followed by a (0)b or (1)b, decided by the PCD. A typical implementation adds a (1)b.
Step 8	The PCD shall transmit SEL and NVB, followed by the valid bits.
Step 9	Only PICCs of which the part of UID CLn is equal to the valid bits transmitted by the PCD shall transmit their remaining bits of the UID CLn.
Step 10	If further collisions occur, steps 6 to 9 shall be repeated. The maximum number of loops will be 32.
Step 11	If no further collision occurs, the PCD shall assign NVB with the value of '70'. NOTE This value defines that the PCD will transmit the complete UID CLn.
Step 12	The PCD shall transmit SEL and NVB, followed by all 40 bits of UID CLn, followed by CRC_A checksum.
Step 13	The PICC which UID CLn matches the 40 bits shall respond with its SAK.
Step 14	If the UID is complete, the PICC shall transmit SAK with cleared cascade bit and shall transit from READY State to ACTIVE State or from READY* State to ACTIVE* State.
Step 15	The PCD shall check if the cascade bit of SAK is set to decide whether further anticollision loops with increased cascade level shall follow.

If the UID of a PICC is complete and known by the PCD, the PCD may skip step 2 - step 10 to select this PICC without performing the anticollision loop.

NOTE Figure 9 explains steps 1 to 13.

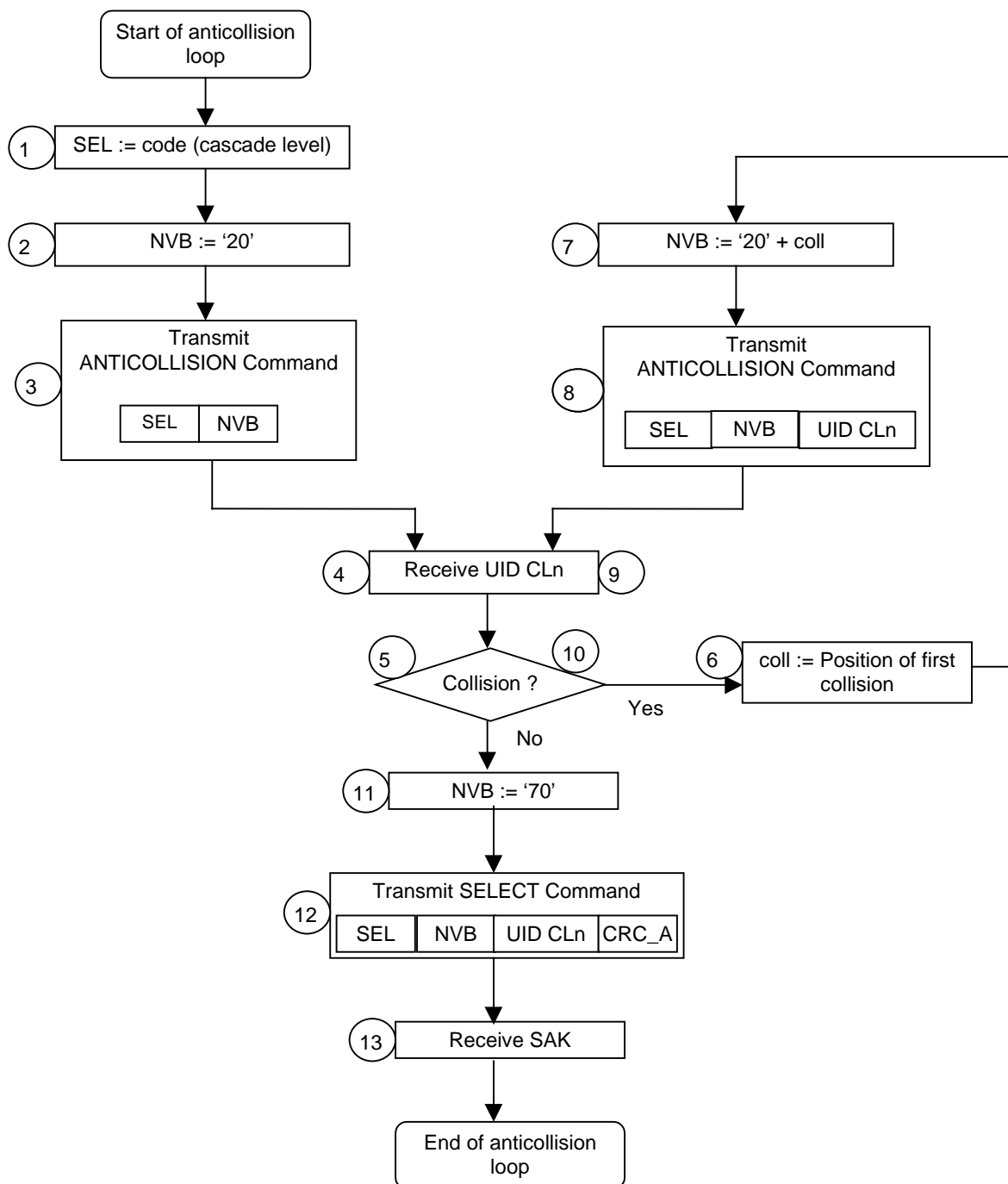


Figure 9 — Anticollision loop, flowchart for PCD

NOTE The circled numbers correspond to the steps of the algorithm.

6.4.3.2 Coding of SEL (Select code)

Length: 1 byte

Possible values: '93', '95', '97'

Table 6 — Coding of SEL

b8	b7	b6	b5	b4	b3	b2	b1	Meaning
1	0	0	1	0	0	1	1	'93': Select cascade level 1
1	0	0	1	0	1	0	1	'95': Select cascade level 2
1	0	0	1	0	1	1	1	'97': Select cascade level 3
1	0	0	1	other values except those here above				RFU

6.4.3.3 Coding of NVB (Number of Valid Bits)

Length: 1 byte

The upper 4 bits are called “Byte count” and specify the integer part of the number of all valid data bits transmitted by the PCD (including SEL and NVB) divided by 8. Consequently, the minimum value of “Byte count” is 2 and the maximum value is 7.

The lower 4 bits are called “bit count” and specify the number of all valid data bits transmitted by the PCD (including SEL and NVB) modulo 8.

Table 7 — Coding of NVB

b8	b7	b6	b5	Meaning
0	0	1	0	Byte count = 2
0	0	1	1	Byte count = 3
0	1	0	0	Byte count = 4
0	1	0	1	Byte count = 5
0	1	1	0	Byte count = 6
0	1	1	1	Byte count = 7

b4	b3	b2	b1	Meaning
0	0	0	0	bit count = 0
0	0	0	1	bit count = 1
0	0	1	0	bit count = 2
0	0	1	1	bit count = 3
0	1	0	0	bit count = 4
0	1	0	1	bit count = 5
0	1	1	0	bit count = 6
0	1	1	1	bit count = 7

6.4.3.4 Coding of SAK (Select acknowledge)

SAK is transmitted by the PICC when NVB has specified 40 valid data bits and when all these data bits match with UID CLn.

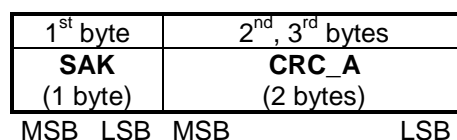


Figure 10 — Select acknowledge (SAK)

The coding of bits b3 (cascade bit) and b6 is given in Table 8.