

S → Cond Opcode

Cond → ["0000-1110"]

Opcode → Arithmetic | Logic | ConJump | Shift | UncJump

Arithmetic → Div | Sum | Sub | Mult

Sum → "[**(ADD | ADDS)** 0000100" S' A

Sub → "[**(SUB | SUBS)** 0000010" S' A

Mult → "[**(MUL | MULS)** 0000000" S' B

Div → "[**(SDIV)** 0111000" "1" B

UncJump → "[**(BLX)** 0001001" "0" C

Logic → ("["**(AND)** 0000000" | [**(NOR)** 0000001] | "[**(ORR)** 0001100") S' B

ConJump → "[**(CMP)** 0011010" "1" B

Shift → "[**(LSL | LSR | ASR)** 0001101" "0" C

S' → "0" | "1"

A → ([["0000-1111"] != "1101") D

B → ["0000-1111"] D

C → "0000" ["0000-1111"] ([["0000-1111"] E | D) | "111111111111" "0011"
["0000-1111"]

D → [["0000-1111"]] F

E → ("0101" | "0001" | "0010") ["0000-1111"]

F → ["00000-11111"] G | ([["0000-1111"]) [H]

G → stype2 "0" ["0000-1111"]

H → ("1001" | "0001") ["0000-1111"]