The Hellschreiber alphabet.

The Hellschreiber is based on an 84-unit code, with a stream of 84 'marks/spaces' to signify one letter (only the 26 letters of the alphabet are transmitted/printed and not other characters such as punctuation marks and figures). Only a very few of the vast number of possible combinations of those 84 bits are thus needed. The message, originating from a teleprinter (and possibly also a cipher attachment) in 5-unit Baudot code is converted to the 84-unit code and transmitted.

The special Hellschreiber printer receives the transmission as a stream of 84 'marks' and 'spaces'. It uses a grid of 7x12 (=84) squares to print each character, printing a black square for each mark it receives, while for each space it 'prints' a white square (i.e. the paper is left unmarked by the printer). The outer squares are always white, so errors in those squares are easily detected (or the printer can be set not to print any black marks in the outer squares). The visual image of each letter in the alphabet maintains its unique character despite any corruption of the squares due to noise corrupting the stream of marks and spaces during transmission.

The examples show 'N','K' & 'W'. Assuming the signals for the letter are transmitted line by line, reading each line horizontally, the letter 'N' would have a stream of marks (MK) and spaces (SP) (split into the same lines for convenience, but really a continuous stream):

SP, SP, SP, SP, SP, SP, SP,
SP, MK, SP, SP, SP, MK, SP,
SP, MK, MK, SP, SP, MK, SP
SP, MK, MK, SP, SP, MK, SP
SP, MK, MK, MK, SP, MK, SP