



Piccolo

The unmistakable warbling, musical cadence that gives the system its name, makes Piccolo one of the most well recognized of the complex digital signals. Designed by diplomatic communications engineers at what is now the British Foreign and Commonwealth Office (FCO) in the late 50s, the Piccolo Mark Six system exists in two forms, based on sending two audio tones in sequence from a selection of either six (for the ITA-2/Baudot alphabet) or 12 (for the ITA-5/ASCII alphabet). Most monitors refer to the systems as 6-tone and 12-tone Piccolo, or simply Piccolo-6 and Piccolo-12.

Both systems key at 20 baud but a newer "Mark 10" version of the 6-tone system has been heard keying at 40 bd. Other experimental versions with, for example, a missing tone have also been heard.

Who Pipes Piccolo?

Former users of the Piccolo 6-tone system include the Australian Forces, but most activity these days comes from Britain's Royal Navy, Army and Air Force, where both regular and reserve (Territorial Army) forces can often be heard using 2, 3 or even 4-channel units.

The 12-tone single channel system is rarely heard, always strongly encrypted, and is often used by the FCO as backup to more modern satellite links. The 6-tone system was also rumored to have been used by Chilean and Peruvian Forces at one time.

Here are some recently heard Piccolo frequencies:

MKD, RAF Akrotiri, Cyprus

10317.51 10927.51 11031.51 12170.51
13368.51 13505.51 14550.51 14643.51
18812.51 18981.51 19058.51

MTS, RAF Port Stanley, Falkland Islands

13998.01 14593.51 15857.51 16205.51
18422.01

MKK, RAF London, UK

10261.51 13580.51 14510.51 14708.51
14765.51 14970.51 15883.51 18057.51
19004.01 20265.51 20292.51

GYU, Royal Navy, Gibraltar

10428.51 10446.51 10615.51 10852.51
11115.51 12305.51 12322.51 13364.51
13348.51 13447.51 13525.51 14620.51
14950.51 15763.51 15797.51 18510.51

GXQ, Army, London, UK

9305.51 10370.51 10845.51 13502.51
14544.51 16120.51

You can see that regular ITU-conforming callsigns in the Mxx and Gxx series are used. However, transition of the Piccolo equipment from regular to reserve and exercising units often means that a unit using the callsign MKD is not actually located in Cyprus. MUH is another such callsign often seen, but no longer used by the former regular unit in Nanyuki, Kenya, to whom the callsign was originally allocated.

The operator's chit-chat is the often the clue to authentication. Frequencies are communicated amongst stations by tactical codes such as "F1234." Those using two digits are believed to be genuinely located in the allocated place, whereas those with four digits are not.

Decoding Piccolo

Both 6- and 12-tone variants of Piccolo are supported by Hoka, Wavecomm and Universal M8000 decoders. Because of the narrow tone spacing (20 Hz), precise tuning, frequency accuracy and a narrow filter are preferable for decoding Piccolo correctly. Most usually, a 6-tone Piccolo unit supports two channels, with the operator's (engineer's) channel centered on a .51 kHz offset, and the "traffic" channel 400Hz above this point, i.e., at .91 kHz offset. Three and 4-channel units will have additional traffic channels at 1.31 kHz and 1.71 kHz offsets.

Traffic channels are nearly always encrypted, so these tend to be of little interest. The action is on the engineer's channel. Tuning the signal is simple if the engineer's channel is idle (which it often is for long periods). If your receiver has high frequency accuracy, simply tune to the idling engineer's channel and wait for the chatter.

If not, tune in the signal roughly, and then use the decoder's tuning display (on Hoka decoders press the "G" key after selecting the Piccolo module) and position the two idling tones centrally about the decoder's center frequency. Then wait, and in within a few minutes you should see some exchanges between the two units.

Here is an extract of typical engineer's chatter that you might see...

mkk de mkd pse qsy f2398 f2398 f2398
1010z kkilo
mkk de mkd pse resync we have lots of middle
eastern qrm here 1015z kkilo
mkk de mkd rgr pal we see you now 1018z
kkilo
mkk de mkd chan 2 ok now pse send foxes on
chan 3 kkilo

You can find audio clips of Piccolo-6 and Piccolo-12 at the excellent Digital Modes website by pointing your browser to the following links. Good decoding and have fun with Piccolo!

<http://rover.wiesbaden.netsurf.de/~signals/WAV/PICC-MKVI.HTML>

<http://rover.wiesbaden.netsurf.de/~signals/WAV/PICC-MK12-TFC.WAV>

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